RESIDENTIAL AND COMMERCIAL CONSTRUCTION HANDBOOK FOR NEW SERVICES

Touchstone Energy® Cooperatives

The power of human connections®

West River Electric Association, Inc.

"Powering You For A Brighter Future"

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INTRODUCTION

West River Electric Association (WREA) is providing this handbook of service specifications and drawings. This handbook is intended to be used when bidding, installing, or upgrading service entrances in WREA service territory. If specifications cannot be followed, then prior approval shall be obtained from WREA before proceeding.

This handbook is based on the current versions of the NEC & NESC. This handbook does not take precedence or redefine requirements in any Codes. Please consult with authority having jurisdiction in project area for compliance requirements.

WREA may update this booklet as deemed necessary at any time. For questions, please contact the staking personnel in the Rapid City office.

Last updated 02/24/2022

Contact Information:

West River Electric Association, Inc.

1200 West Fourth Ave. - P.O. Box 412

Wall, SD 57790

(605) 279-2135

(888) 279-2135

Fax # (605) 342-9587

http://westriver.coop

West River Electric Association, Inc.

3250 East Hwy 44

Rapid City, SD 57703

(605) 393-1500

(888) 393-1500

Fax # (605) 393-0275

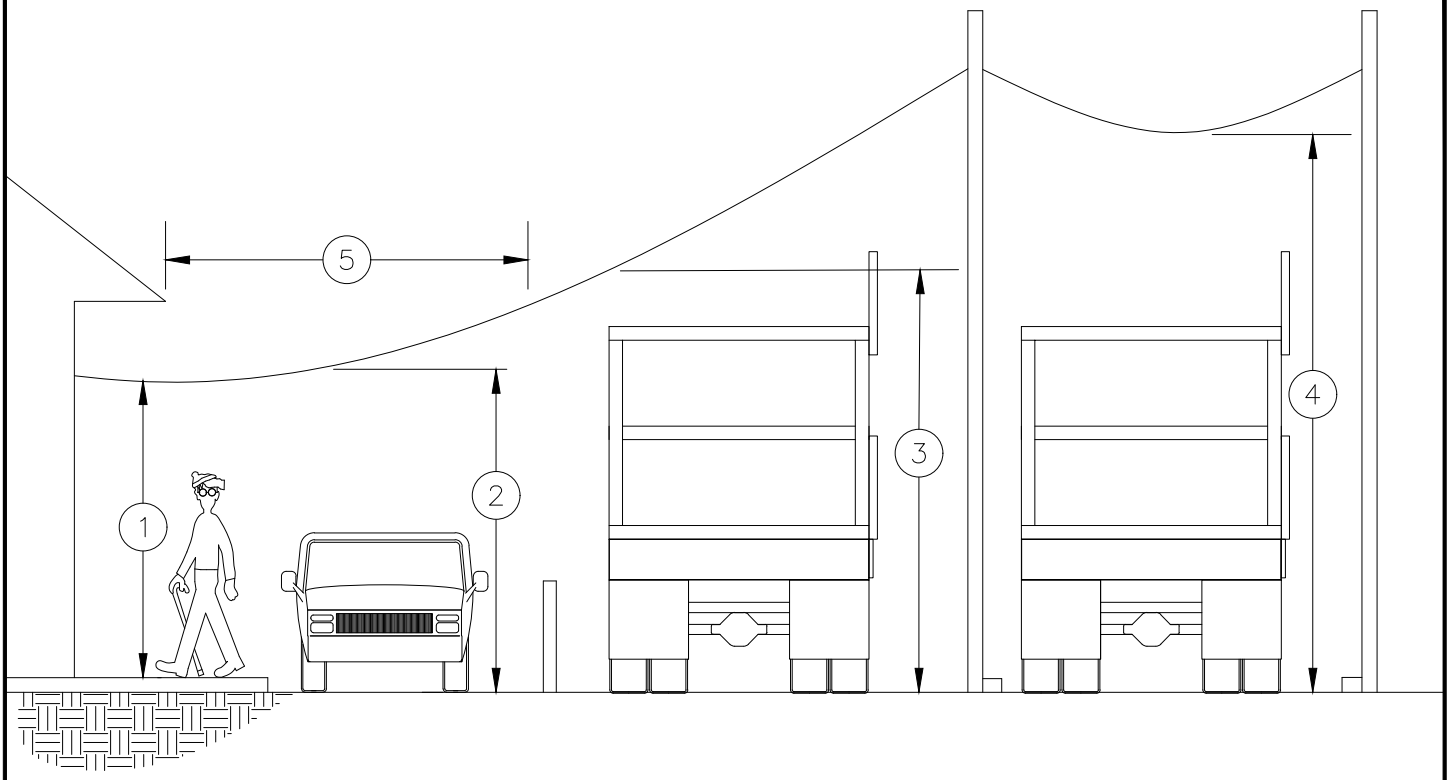
http://westriver.coop

West River Electric Association

Service can be started after these items are completed by Member/Contractor

- [ ] Provide service description and information (i.e. pump, irrigation, seasonal, residential, commercial, type of heat, demand controller, etc.)
- [ ] Provide service requirements including voltage, amperage and number of phases
- [ ] Provide 911 address of new service
- [ ] Provide courthouse copy of plat and deed for service location
- [ ] If crossing neighbor's property, provide courthouse copy of neighbor's plat and deed
- [ ] Complete WREA new service application and new membership form
- [ ] Provide a photo ID
- [ ] Complete signatures on all required easements
- [ ] Complete and sign "Line Extension Agreement"
- [ ] Make applicable payments such as service charge, line extension costs, or aid of construction
- [ ] Pay either a deposit or have good credit reference with another utility or acceptable credit per a credit bureau check
- [ ] Remove trees or vegetation required by WREA
- [ ] Contact other utilities and coordinate installation of other utilities with WREA
- [ ] Contact SD One Call, 811 or 1–800–781–7474
- [ ] Supply approved trench, bedding, and backfill at appropriate times
- [ ] City or state inspection of service completed
- [ ] Wiring certificate and permit for temporary service at WREA office
- [ ] Inspection blue sticker attached to the meter socket

DESIGN: SRB	MEMBER/CONTRACTOR NEW SERVICE CHECKLIST	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–20	REV NO. 1
DRAWING: SRB			DRAWING NUMBER CHECK–1	
APPROVED BY SRB / DATE 02–20				

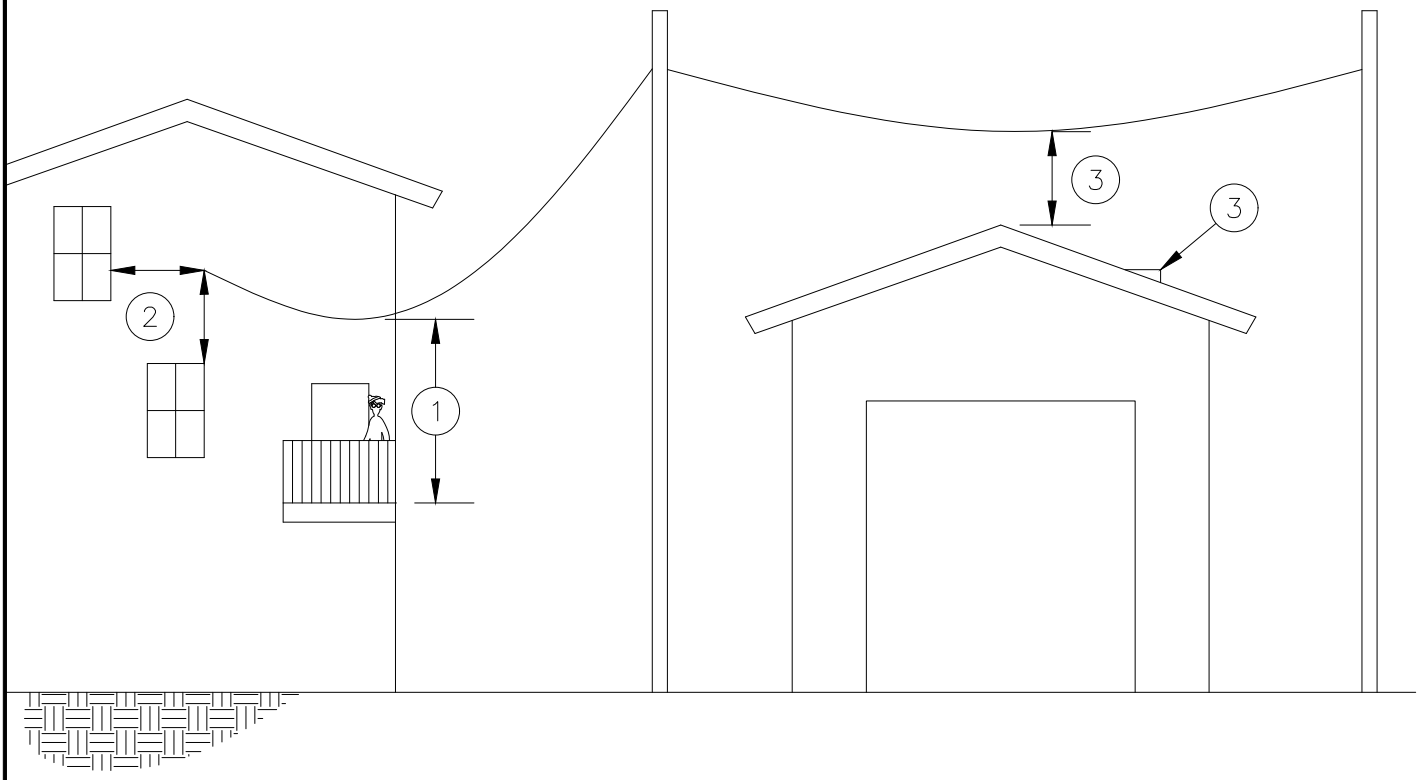


(NOT TO SCALE)

Overhead conductor clearances are listed below from the NEC and NESC. The overhead line shall never be lower than the values listed. Local requirements may vary, Member/Contractor shall consult with the authority having jurisdiction to ensure regulatory compliance.

1. 10'–6" – Above sidewalks or from platforms or projections from which reached or accessible to only pedestrians (0–300V)
2. 12'–6" – Over residential property and driveways & those commercial areas such as parking lots and drive–in establishments not subject to truck (0–388V)
3. 16'–0" – Over commercial areas, parking lots, agricultural or other areas subject to truck traffic
4. 18'–0" – Over public streets, alleys, roads and driveways on other than residential property subject to truck
5. 3'–0" – Horizontal clearance in all directions from the edge of the roof

DESIGN: M.S.	OVERHEAD CONDUCTOR CLEARANCE REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–20	REV NO. 4
DRAWING: A.K.				
APPROVED BY M.S. / DATE 1/2007			DRAWING NUMBER CLEARANCES–1	

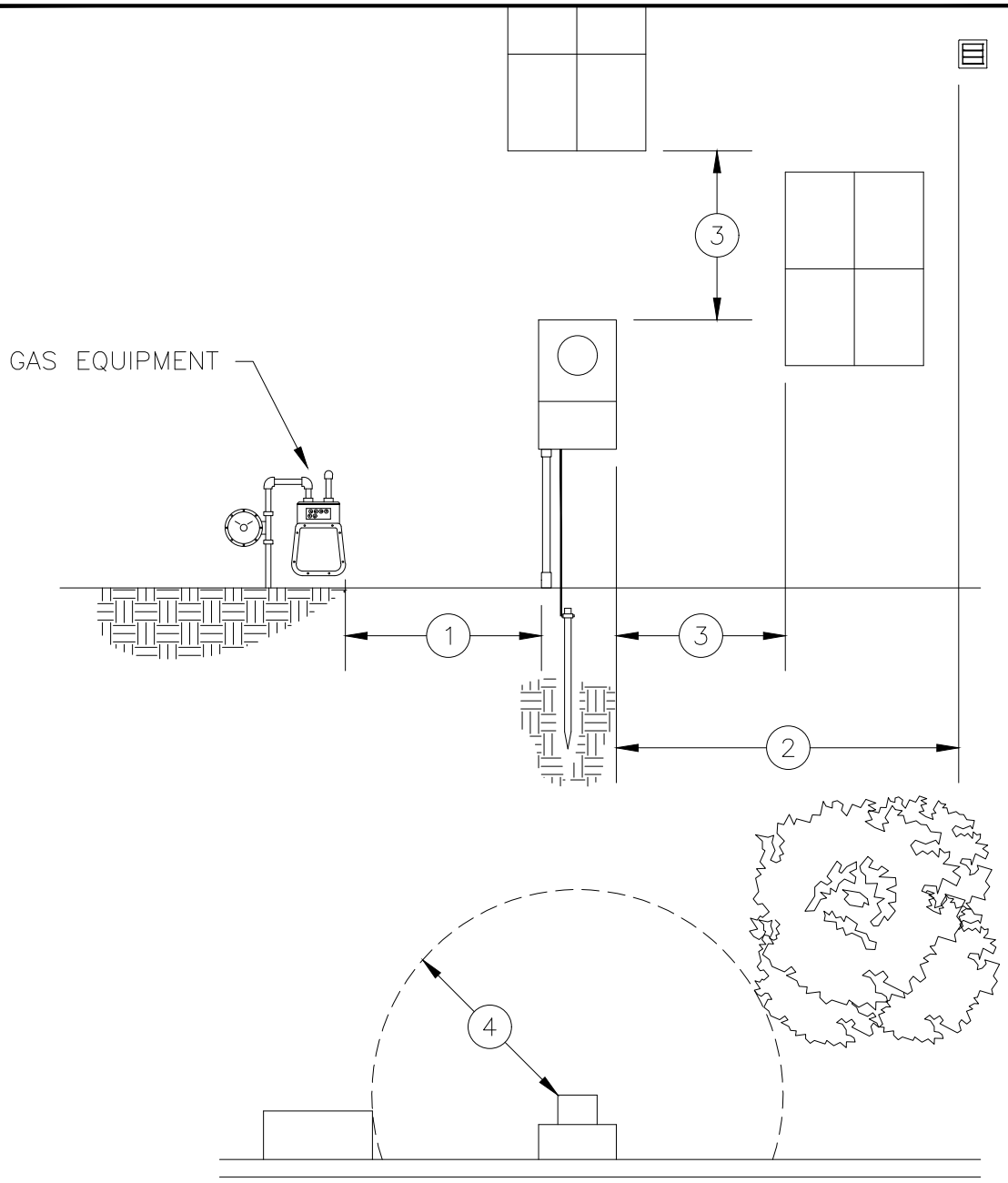


(NOT TO SCALE)

Overhead conductor clearances are listed below. These are directly from the latest NEC and NESC. Overhead lines shall never be lower than the values listed. Keep in mind lines will be lower during hot weather, ice loading, or other abnormal conditions. Local regulations may vary, Member/Contractor shall consult with the authority having jurisdiction to ensure regulatory compliance.

1. 12' – Above balcony, fire escapes, or any area subject to pedestrian occupation
2. 5' from any window
3. 3'–6" clearance over any roof with a slope greater than 4/12. Building is not being serviced by the line. WREA prohibits line to pass over roof of same structure being served by overhead electric lines.

DESIGN: M.S.	OVERHEAD CONDUCTOR CLEARANCE REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–20	REV NO. 4
DRAWING: A.K.				
APPROVED BY M.S. / DATE 1/2007			DRAWING NUMBER CLEARANCES–2	



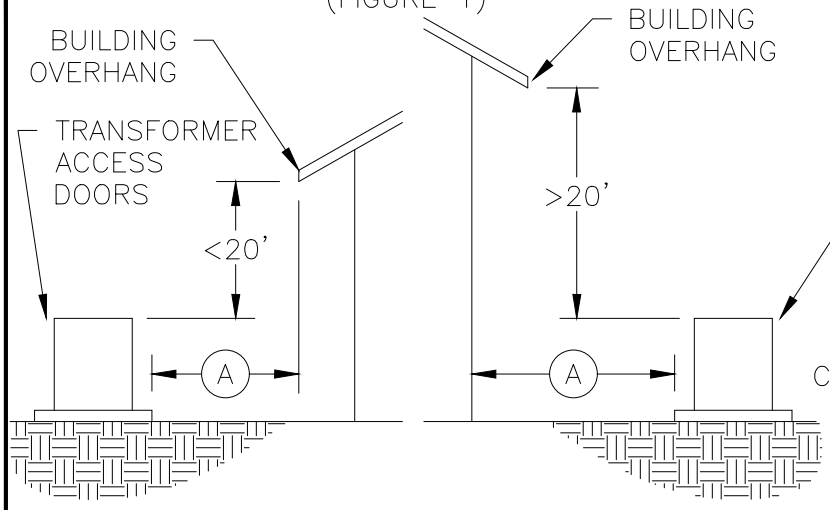
(NOT TO SCALE)

Local requirements may vary, Member/Contractor shall consult with the authority having jurisdiction to ensure regulatory compliance.

1. 3' – Measured horizontally from any gas equipment
2. 3' – Measured horizontally from any air vents, downspouts, or anything that may drip water/moisture from above
3. 3' – From any structure opening (e.g. window, door, air intake, etc..)
4. 3' – All directions from any obstruction (e.g. shrubs, A/C equipment, etc.)
5. Meter shall not be enclosed inside buildings, porches, or anywhere which inhibits access to WREA personnel
6. Meter shall not be located under or over decks

DESIGN: M.S.	METER CLEARANCE REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–20	REV NO. 2
DRAWING: A.K.			DRAWING NUMBER CLEARANCES–3	
APPROVED BY M.S. / DATE 10/2019				

HORIZONTAL BUILDING CLEARANCES
(FIGURE 1)



BUILDING SURFACE	CLEARANCE Ⓐ
COMBUSTIBLE	10'
NON-COMBUSTIBLE	4'

TYPE OF OPENING	CLEARANCE	
	Ⓑ	Ⓒ
FIRE ESCAPE	20'	20'
DOORWAY	10'	20'
AIR INTAKE (at or below)	10'	10'
AIR INTAKE (above) no more than 25' in any direction		
WINDOW (1st story)	8'	10'
WINDOW (2nd story) no more than 5' in any direction or directly below		

(NOT TO SCALE)

PLAN VIEW CLEARANCE AREA
(FIGURE 2)

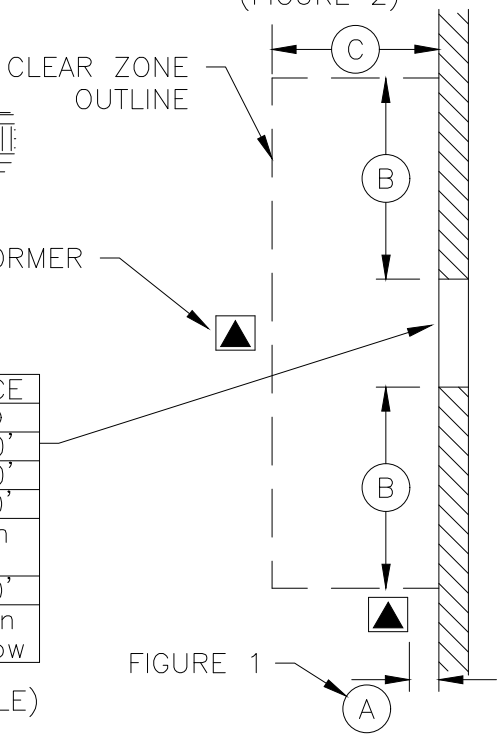


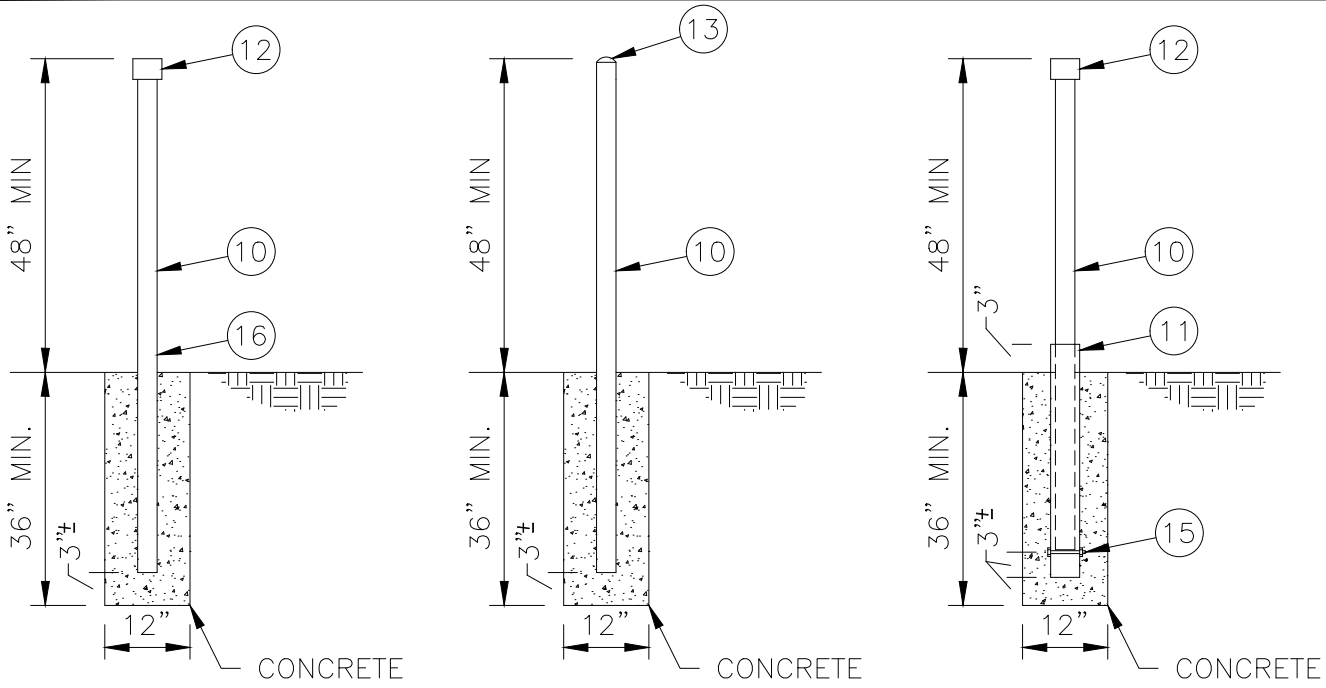
FIGURE 1

Notes:

1. The sections listed below are found in this booklet and apply to this drawing.
   a. GUARDING REQUIREMENTS
   b. CLEARANCE REQUIREMENTS

10. Transformers shall be located in areas:
    a. Easily accessible to WREA personnel and equipment
    b. Protected from landslides, flooding, land movement, etc...
11. Member/Contractor shall not install any fencing, enclosures, retaining walls, etc. around transformer without contacting WREA for approval.
12. Member/Contractor shall install and maintaining safeguards for transformer (e.g. retaining walls, bollards, etc...)
13. Transformer shall have 10' of working space directly in front of the doors free and clear of items at all times.
14. Transformer shall have greater than the minimum clearances shown in figures 1 and 2.
15. Transformer shall not be located within 5' of fire or water hydrants

DESIGN: M.S.	TRANSFORMER CLEARANCE REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20 / REV NO. 2
DRAWING: A.K.			DRAWING NUMBER CLEARANCES-4
APPROVED BY M.S. / DATE 10/2019			



END CAP BOLLARD (PREFERRED)

CONCRETE DOME BOLLARD

REMOVABLE BOLLARD

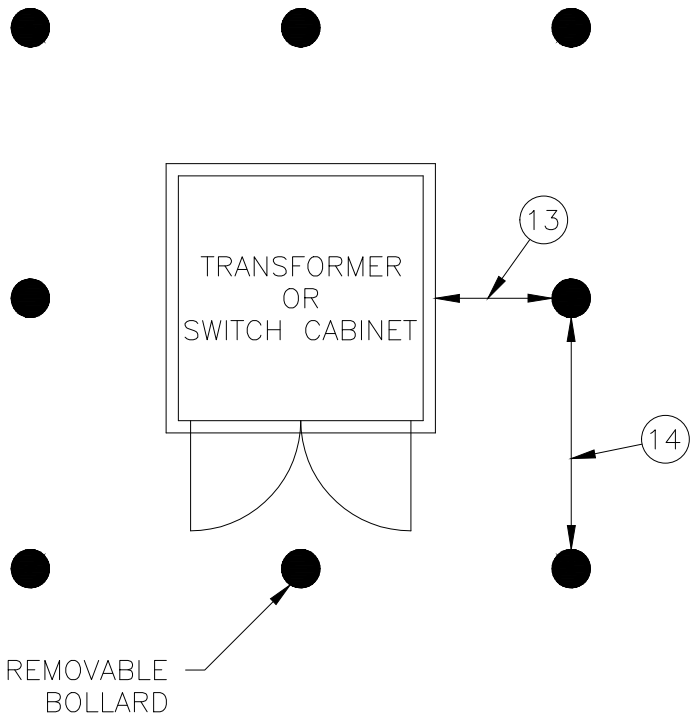
(NOT TO SCALE)

Notes:

1. The sections below are found in this booklet and apply to this drawing.
   a. GUARDING REQUIREMENTS

10. 4" standard galvanized pipe
11. 5" standard galvanized pipe for removable bollard to set into
12. End cap
13. Concrete dome top, pipe shall be free of sharp edges
14. Removable bollard filled with cured concrete before installation, approximate weight 150 lbs
15. 3/4" galvanized bolt to set removable bollard height
16. Drill weep holes as needed to avoid pipe burst from water freezing
17. Bollards shall be painted yellow

DESIGN: SRB	BOLLARD CONSTRUCTION GUARDING REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20 / REV NO. 1
DRAWING: SRB			DRAWING NUMBER GUARD-1
APPROVED BY SRB / DATE 02-20			



(NOT TO SCALE)

Notes:

1. The sections below are found in this booklet and apply to this drawing.
   a. GUARDING REQUIREMENTS
   b. CLEARANCE REQUIREMENTS

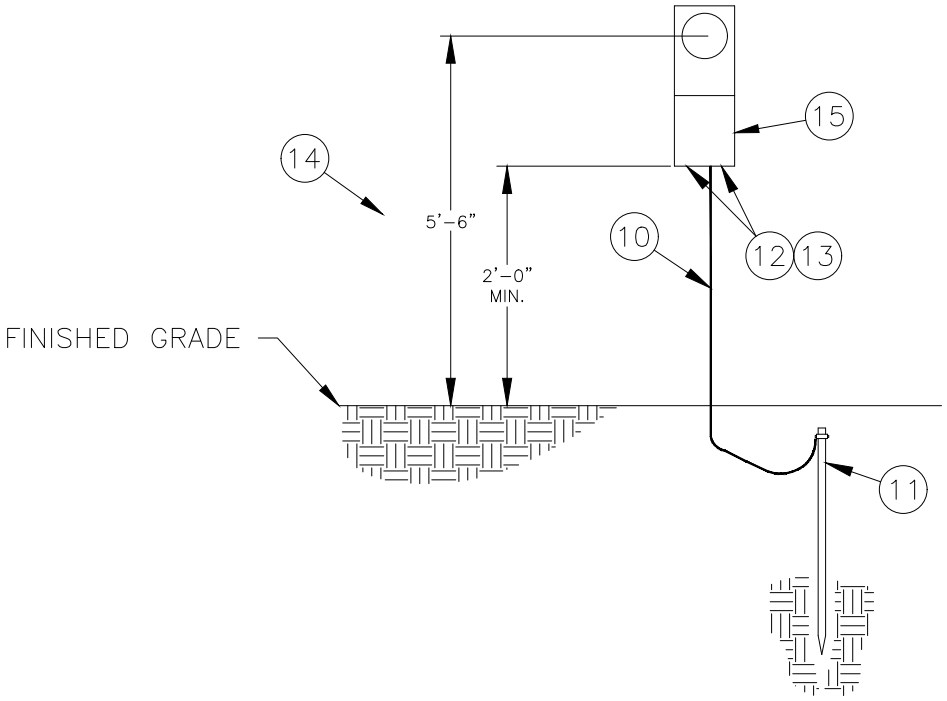
10. Any equipment located in areas close to or adjacent to vehicle traffic shall be protected per the NEC.
11. Member/Contractor shall provide protection at the request of and which is acceptable to WREA.
12. Bollards shall be removable if they prevent WREA from accessing equipment, interfere with operation of equipment doors, or at the request of WREA.
13. Bollards shall be installed 2' from the equipment
14. Bollards shall not exceed 5' spacing
15. Building walls will provide acceptable guarding if located consistent with bollard requirements above
16. Square faced street curb parallel to normal traffic flow will provide acceptable guarding if equipment is located 6' or more behind the curb.
17. Bollards shall be 4' or greater from any fire hydrant

DESIGN: SRB	BOLLARD PLACEMENT GUARDING REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20 / REV NO. 1
DRAWING: SRB			DRAWING NUMBER GUARD-2
APPROVED BY SRB / DATE 02-20			

METER REQUIREMENTS

1. Checklist in this booklet completed
2. Meter can must be ringless type, WREA approved, and installed level in all directions
3. All meter sockets shall be rated 200 amp unless WREA approves otherwise
4. Member/Contractor disconnect equipment must be weatherproof, covered when inspected, and installed per NEC
5. All meters shall be outside of buildings and accessible to WREA employees.
6. Meter base and conduit must be securely attached to temporary or permanent structures.
7. Commercial or 320 amps meter service shall have a lever bypass socket.
8. Member/Contractor shall provide and install a WREA approved CT cabinet and 13 terminal meter socket when required. All current metering will be done at 120 volts. See CT cabinet drawings in this booklet.
9. All elbows shall be of the long sweep type when conduit is used on the line side of meter
10. Service disconnect shall be installed on the load side or adjacent to the meter housing if a self contained meter housing is not attached to a building. Both the disconnect and conductor on the load side shall be Member/Contractor furnished and maintained.
11. All conduits shall be schedule 80 above grade per the NEC
12. When using a multiple meter housing, the service shall be clearly marked and securely attached to the meter socket.
13. For the following drawings, a number in a bubble "(##)" references to the note at the bottom of the page.

DESIGN: M.S.		METER CAN METER REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20	REV NO. 2
DRAWING:A.K.				DRAWING NUMBER METER-1	
APPROVED BY M.S.	DATE 05/19				



(NOT TO SCALE)

NOTES:

1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS

10. Ground wire shall be #6 minimum installed in separate conduit per NEC

11. 8' long 5/8" diameter ground rod shall be driven not laid in the ditch per the NEC

12. Conduit shall come into the bottom of meter can on right or left side not in the center.

13. Protective bushing required on all conduit ends above or below grade

14. Meter height shall be as shown

15. Disconnect per the NEC

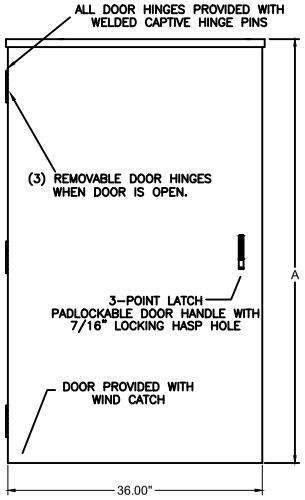
DESIGN: SRB	METER CAN INSTALLATION METER REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–20	REV NO. 1
DRAWING: SRB			DRAWING NUMBER METER–2	
APPROVED BY SRB / DATE 02–20				

DESIGN: M.S.
DRAWING:A.K.
APPROVED BY M.S.
DATE –

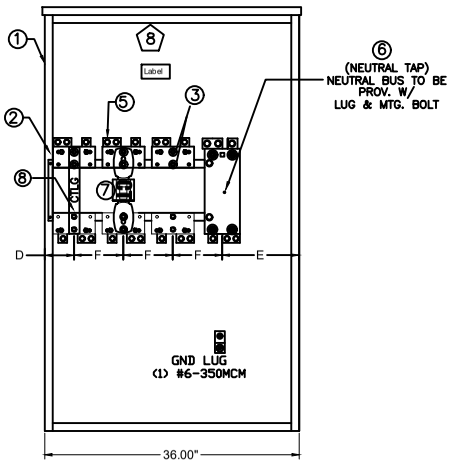
WREA APPROVED CT CABINET METER REQUIREMENTS

West River Electric Association, Inc.
Your Touchstone Energy® Cooperative

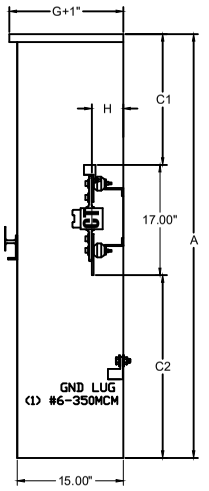
DRAWING NUMBER METER–3
REV. DATE 02–20
REV. NO. 2



FRONT VIEW



SECTION VIEW A–A



SIDE VIEW

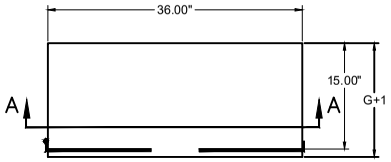
GENERAL NOTES

1– CURRENT TRANSFORMER CABINET COMPLIES WITH 'NATIONAL ELECTRICAL CODE'. DOOR HAS (3) HINGES WITH A 3 POINT DOOR LATCH AND PADLOCKABLE HANDLE WITH 7/16" LOCKING HASP HOLE.
2– 14 GA. GALV. STEEL MOUNTING PAN WITH 1 3/8" INSULATOR SUPPORTS FOR BUS WORK.
3– TWO 1/2" TRANSFORMER MOUNTING BOLTS, 1 3/4" CENTER TO CENTER FOR MOUNTING POWER CO. CT'S
4– 3/8" LUG MOUNTING BOLTS.
5– COPPER–ALUMINUM (1) 750MCM–#6 OR (2) 300MCM–#6 CABLE CONNECTION LUG. (UP TO 4 MAX.) SEE TABLE
6– NEUTRAL OR GROUNDED CONDUCTOR PROVIDED WITH (1) 10–24NC BOLT & A35 LUG FOR NEUTRAL TAP.
7– CENTER POTION – IS NOT REQUIRED IF SERVICE IS 1ø,3W.
8– SHIPPING LINK/ TEMPORARY SUPPORT INSTALLED ON EACH PHASE
* FAULT CURRENT RATINGS FOR ALL AMPERAGES 85,000 AMPS AT 600VAC WITH NO CABLE BRACING REQUIRED.

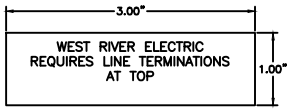
* ALL CABINETS ARE ETL LABELED FOR TYPE–3R APPLICATION PER U.L. 50 AND U.L. 414 STANDARDS. MEET ALL NATIONAL ELECTRICAL CODES & NEMA STANDARDS.

STANDARD ACCESSORIES:
–WIND CATCH ON EXTERIOR DOOR
–MOUNTING HARDWARE FOR UTILITY CURRENT TRANSFORMERS.
–NEUTRAL PROVIDED WITH (1) #10–24NC BOLT & A35 LUG FOR NEUTRAL TAP
–LUGS PROVIDED ON TOP PADS ONLY (LOAD SIDE) UTILITY SUPPLIES THE LUGS FOR BOTTOM PADS (LINE SIDE)

"INSTALL SHIPPING LINKS"



PLAN VIEW



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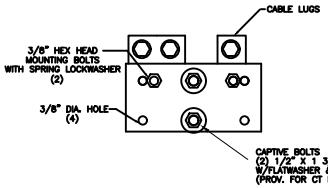
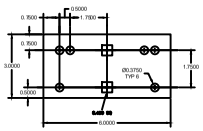


PHASE BUS PAD DETAILS



LOAD

* CT CABINET APPROVED FOR WEST RIVER ELECTRIC WITH ADDITION OF CTL2 BUS LINKS INSTALLED ON EACH PHASE.
400A CABINET REQUIRES QTY. 1 CTL–2 PER ø
800A CABINET REQUIRES QTY. 3 CTL–2 PER ø

APPROVED FOR LINE & LOAD CONDUCTORS TO ENTER AND EXIT SAME END OF ENCLOSURE

AMPACITY	LUGS	MINIMUM DIMENSION									CATALOG NUMBER		
		A	B	C1	C2	D	E	F	G	H	CABINET	3ø CABINET	1ø CABINET
400	1	48"	36"	11.00"	21.00"	4.125"	10.50"	7"	15"	4.5"	CR48SL	BHCT4–4TM	BHCT4–3TM
600/800	2/3	48"	36"	11.00"	21.00"	4.125"	10.50"	7"	15"	4.5"	CR48SL	BHCT68–4TM	BHCT68–3TM

NOTE: FOR SINGLE PHASE UNITS, OMIT Bø BUS ASSEMBLY

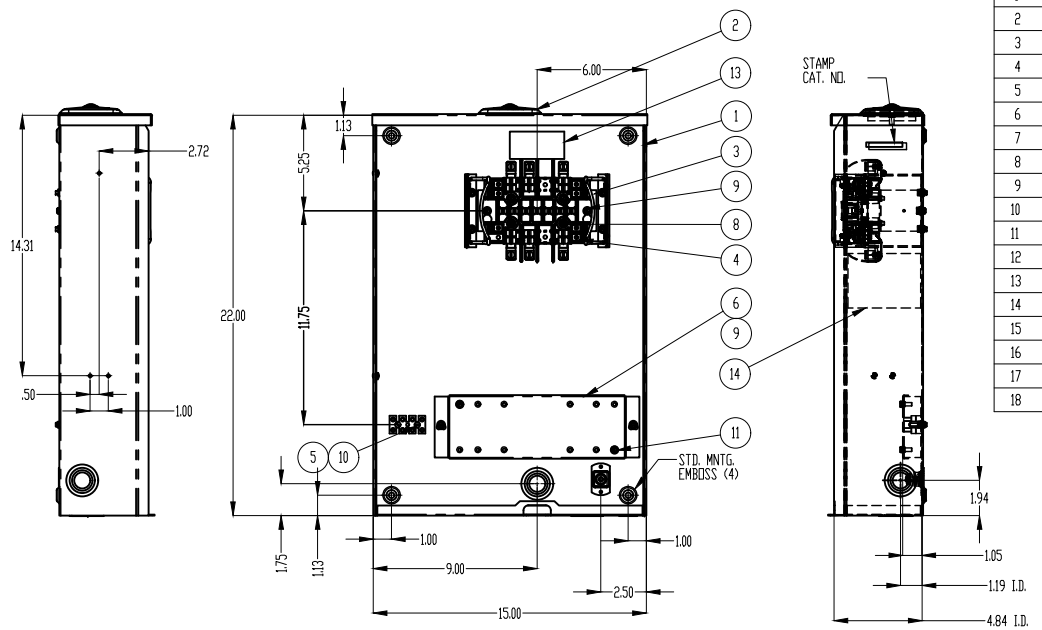
REV. BY DATE	JOB NAME: WEST RIVER ELECTRIC METERING TRANSFORMER CABINET APPROVAL DRAWING	TITLE: 400-800 AMP, 480 VOLT OR LESS CURRENT TRANSFORMER CABINET
	DRAWN: TK; DATE: 03/24/20; DO NOT SCALE DRAWING	CUSTOMER
	APPROVED; DATE; SCALE: NTS	CUSTOMER NUMBER
	AMERICAN MIDWEST POWER, MINNEAPOLIS, MINNESOTA, PHONE (763) 551-1555 FAX. (763) 551-9275	DRAWING NUMBER: BHCT4-8TM; SHEET 1 OF 1

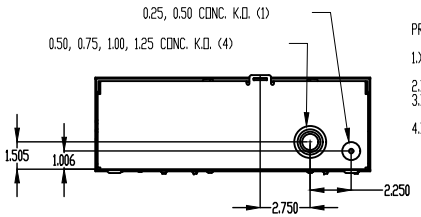
NOTES:
1. USE THIS CABINET FOR CT METERING
2. WREA WILL PROVIDE CT'S. MEMBER/CONTRACTOR SHALL INSTALL
3. MEMBER TO SUPPLY CT CABINET

Monday, September 23, 2019 8:05:28 AM caragonez

4726-101

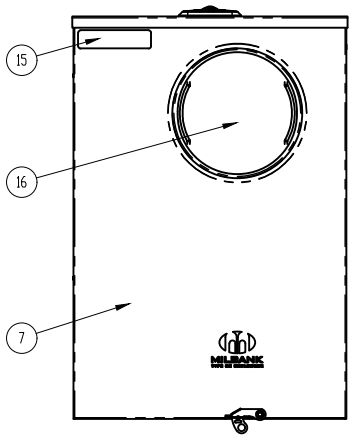
ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	1167973	SHELL WELDMENT
2	1	1028222	CLOSING PLATE ASS'Y
3	1	1153700	BRIDGE
4	1	1026536	NO BYPASS BLOCK ASSY.
5	1	1138903	4 POS. TERM. CONN.
6	1	1159186	T/S BRIDGE
7	1	1153698	FRONT ASSY.
8	4	1025353	SCREW 10-32 x 1
9	8	1000183	SCREW 12-24 x 5/16
10	2	1022084	SCREW 8-32 X 3/4
11	2	1001311	SHW-SC 10-32 .5 SR ST
12	1	N/A	STAMP CAT. NO.
13	1	1000044	LABEL, HUB OPENING
14	1	1153701	LABEL, INSTRUMENT TRANSFORMER
15	1	1000064	LABEL, DANGER
16	1	1000158	PAD WIREMAN, 8.37 x 7.50
17	2	1212980	RISER ASSY 4.78 HEIGHT
18	1	1172462	CARTON 1-PER (NOT SHOWN)





PRODUCTION NOTES:

1.) SCREW 1022084 TO BE INSTALLED FINGER TIGHT ONLY IF TERMINAL STRIP NOT INSTALLED.
2.) SCREW1001311 TO BE INSTALLED FINGER TIGHT ONLY.
3.) INSTALL PLASTIC BACKER STRIP TIED TO TERMINAL CONNECTOR WHICH IS SUPPLIED WITH WIRING HARNESS.
4.) WHEN WIRING HARNESS IS USED, THE WIRES ARE ROUTED INTO THE TOP OF THE 4 POS. TERM. CONNECTOR.



SUFFIX	CUSTOMER	#1138903 TERM. QTY.
-NTS	WEST RIVER ELECTRIC	0
-TSTRIP	TWO SOCKETS TWO METER	1

REV.	DATE	DESCRIPTION	ECO No.	BY
B	9-1-16	ADD NOTE #3. REMOVE 1138923.	034770	KSP
B1	09/05/18	ADD NOTE 4; CORRECT K.O. AND MNTG. EMBOSS QTY; UPDATE DRAWING TO STANDARD	039874	BU
C	9/17/19	ADDED RISER 1212980 (2), SCREW 1000183 (8) WAS (4)	043441	CGA

Material:	16 GA. GALV. STEEL		
Shear/Die No.:			
Finish:	MILBANK LIGHT GRAY		
Part Wt.:	21.721	LBS. EA.	
Square Inches:			

Tolerances: Unless Specified Otherwise
X.X ± .1
X.XX ± .03
X.XXX ± .015
X ° ± 2°

Third Angle

Scale:	NTS	Checked By:	
Drawn By:	D.F.	Approved By:	

MILBANK ENERGY AT WORK
KANSAS CITY, MO USA

Title:	TEST SWITCH ENCLOSURE NO-BYPASS, 20 AMP/TRF RATED RINGLESS, 1-PC. COVER
Catalog No.:	SC4726-XL-( )-TSTM
Customer:	(SEE CHART)
Drawing No.:	4726-101
Date:	1/3/14
Sheet:	1 of 1

NOTES:

1. WREA WILL PROVIDE METER CAN TO MEMBER/CONTRACTOR AT SPECIFIED COST

DESIGN: M.S.
DRAWING:A.K.
APPROVED BY M.S.
DATE –

WREA APPROVED METER CAN
METER REQUIREMENTS

West River Electric Association, Inc.
Your Touchstone Energy® Cooperative

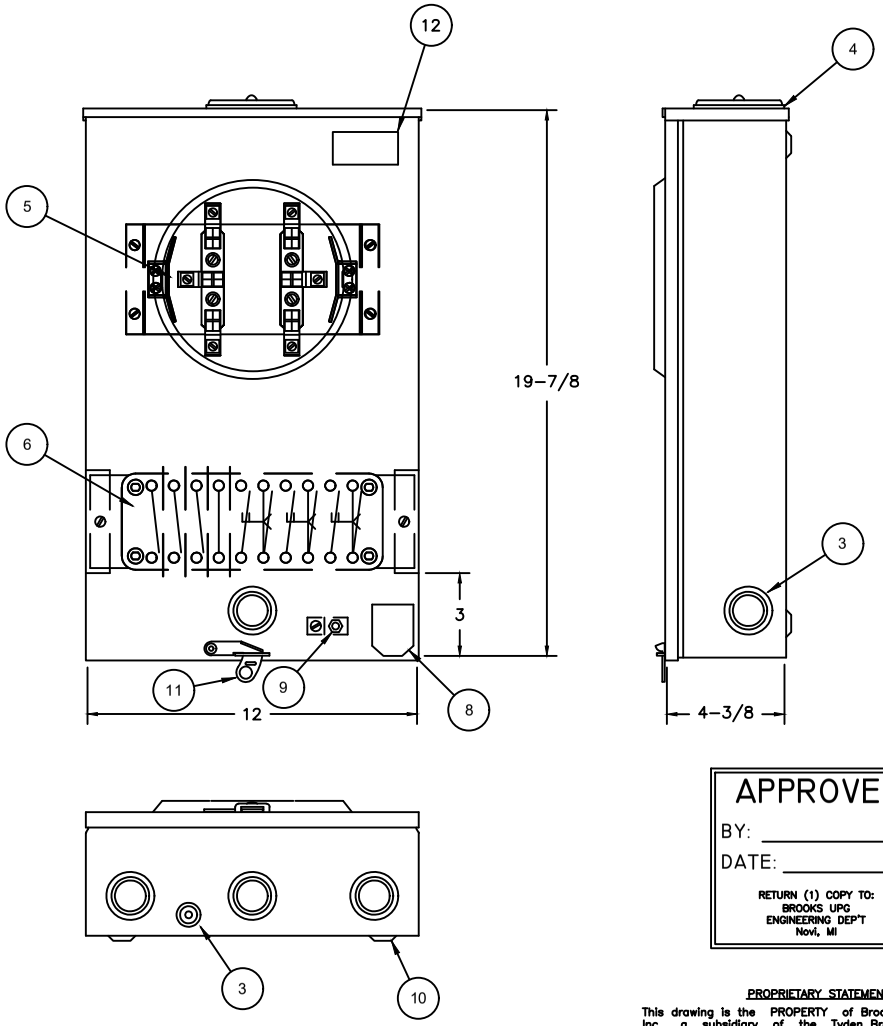
REV DATE 02-20
REV. NO. 1
DRAWING NUMBER METER-4

DESIGN: M.S.
DRAWING:A.K.
APPROVED BY M.S.
DATE -

CT METER CAN WITH TEST SWITCHES
METER REQUIREMENTS

West River Electric Association, Inc.
Your Touchstone Energy® Cooperative

REV. DATE 02-20
REV. NO. 1
DRAWING NUMBER METER-5



FEATURES:

1. MATERIAL: 16GA G-90 GALVANIZED STEEL
2. FINISH: GRAY POWDER COAT (MUNSELL 70 5.0BG 7.0/0.4)
3. KNOCKOUTS:
   - (3) 3/4 * 1 * 1-1/4 BACK PAN (1 EA SIDE, 1 CENTERED)
   - (3) 3/4 * 1 * 1-1/4 BOTTOM
   - (1) 1/4"DIA * 5/8"DIA * 1/2 KO IN BOTTOM
4. HUB OPENING W/HUB CLOSURE PLATE
5. 6-TERMINAL BLOCK W/SURGE BRACKET ASS'Y
6. 110W1268-18TSTE 10-POLE TEST SWITCH, TIN, NO COVER (UL)
7. PRE-WIRED PER WH-1650
   #12 AWG THHN 600V STRANDED CU WIRE
8. HIGH VOLTAGE WARNING LABEL
9. #2 - 14 ILSCO CONNECTOR FOR GROUND
10. 3/16 DEEP MOUNTING EMBOSSMENTS WITH 5/16DIA KO (4 PROVIDED)
11. STN STL HASP & SWINGING LATCH W/WIRE SEAL OR PADLOCKING CAPABILITIES
12. UL LISTING LABEL

APPROVED
BY: _____
DATE: _____
RETURN (1) COPY TO:
BROOKS UPG
ENGINEERING DEP'T
Novi, MI

REV	DESCRIPTION	DATE
1	CHG TS TO TIN, NO COVER	4/23/2020

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS +/- 1/32 DECIMALS X +/- .015 XX +/- .010 XXX +/- .005 ANGLES +/- 1
MATERIAL N/A
FINISH N/A
DO NOT SCALE DRAWING

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE

APPROVALS	DATE
DRAWN J. OLSON	4/17/2020
CHECKED N/A	N/A
MFG ENG	
PRODUCTION	
INSPECTION	

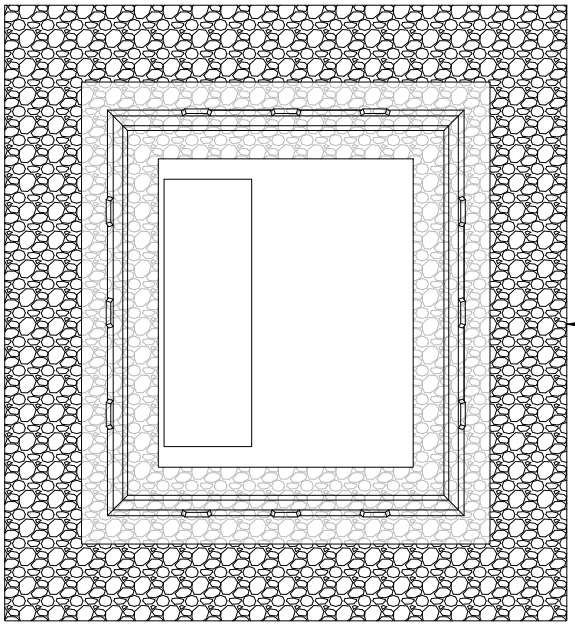
Brooks Utility Products

DESCRIPTION
6-TERM METER SOCKET W/
10-POLE TEST SWITCH AND
6-TERM BLOCK, UL R&D 200408

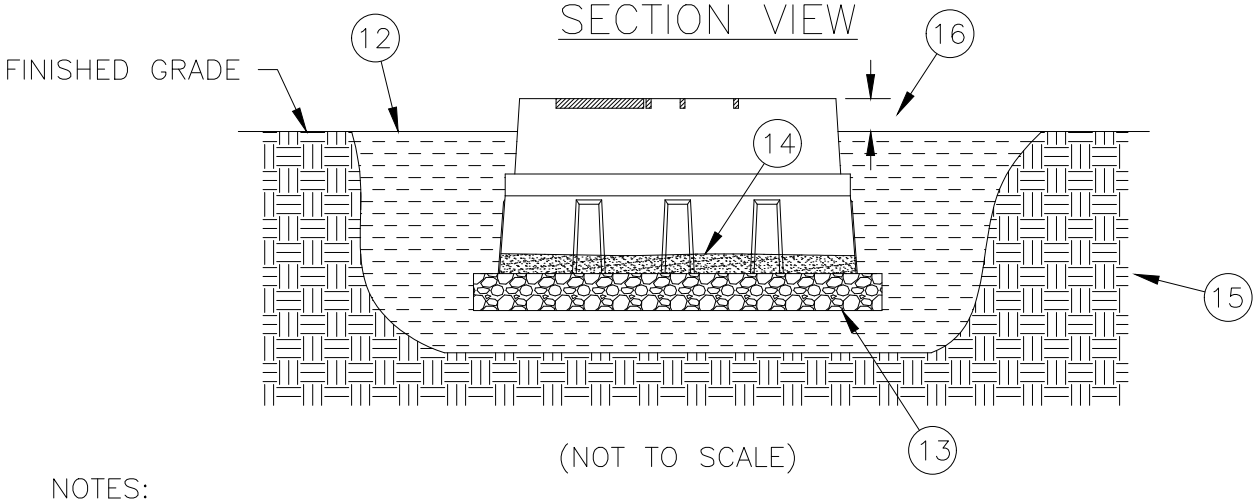
SIZE B | DWG. NO. 602U3010C6-1650 MK | REV.
SCALE | CAD FILE: | SHEET OF

NOTES:
1. WREA WILL PROVIDE METER CAN TO MEMBER/CONTRACTOR AT SPECIFIED COST

PLAN VIEW



SECTION VIEW



(NOT TO SCALE)

NOTES:

1. The sections listed below are found in this booklet and apply to this drawing.
   a. TRENCH REQUIREMENTS

10. Member/Contractor shall achieve 95% compaction in and around pad to avoid settling. Consult project geotechnical evaluation for procedures and recommendations to achieve proper compaction.
11. If geotechnical evaluation is not available, Member/Contractor shall use compaction methods to ensure the pad does not settle. Using compaction machinery, loose lifts no greater than 3", and proper moisture levels should provide acceptable results.
12. 95% compacted fill
13. 8" compacted base course 12" wide around the edge of pad
14. 4" sand
15. Undisturbed soils
16. 3" to 15" of pad exposed depending on size of pad (consult with WREA for specific elevation above final grade)

DESIGN: SRB	TYPICAL BASEMENT INSTALLATION PAD REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20 / REV NO. 1
DRAWING: SRB			DRAWING NUMBER PAD-1
APPROVED BY SRB / DATE 02-20			

PERMANENT SERVICE REQUIREMENTS

1. Checklist in this booklet completed

2. Member/Contractor is urged to make early contact with WREA for permanent service.

3. WREA will connect the service after copy of the State wiring certificate and/or City inspection is on file.

4. Permanent service location shall be determined and approved by WREA staking personnel and will vary depending on multiple factors.

5. Permanent service shall be located where the meter will be protected from damage.

6. Equipment shall be located according to clearance requirements found in this booklet. Should relocation be necessary, the cost shall be the responsibly of the Member/Contractor.

7. Member/Contractor owned metering equipment, switching devices, conduits, conductors, luminaries, etc. shall not be mounted to WREA poles.

8. Three phase services will, at the option of WREA, be CT metered provided by Contractor/Member.

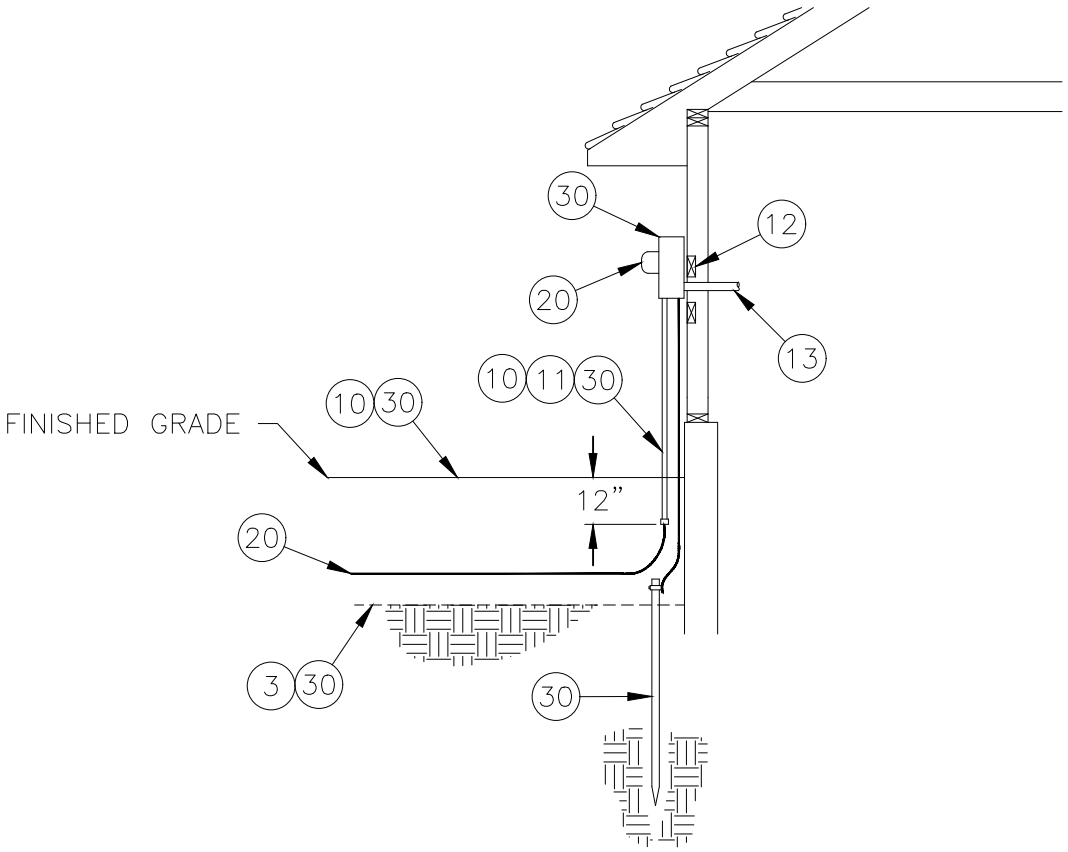
9. Overhead permanent services shall be supported on a WREA approved pole, wall, or structure. The maximum service drop length from WREA's pole to the service will be dependent upon conductor size. Consult WREA's staking department to determine the maximum distance.

10. Standard voltage is 120/240V for single phase and 120/208V or 277/480V for three phase.

11. No delta connected three phase services are allowed

12. For the following drawings, a number in a bubble "(##)" references to the note at the bottom of the page.

DESIGN: M.S.		REQUIREMENTS PERMANENT SERVICE REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20	REV NO. 3
DRAWING:A.K.				DRAWING NUMBER PERM-1	
APPROVED BY M.S.	DATE 1/2007				



NOTES: (NOT TO SCALE)

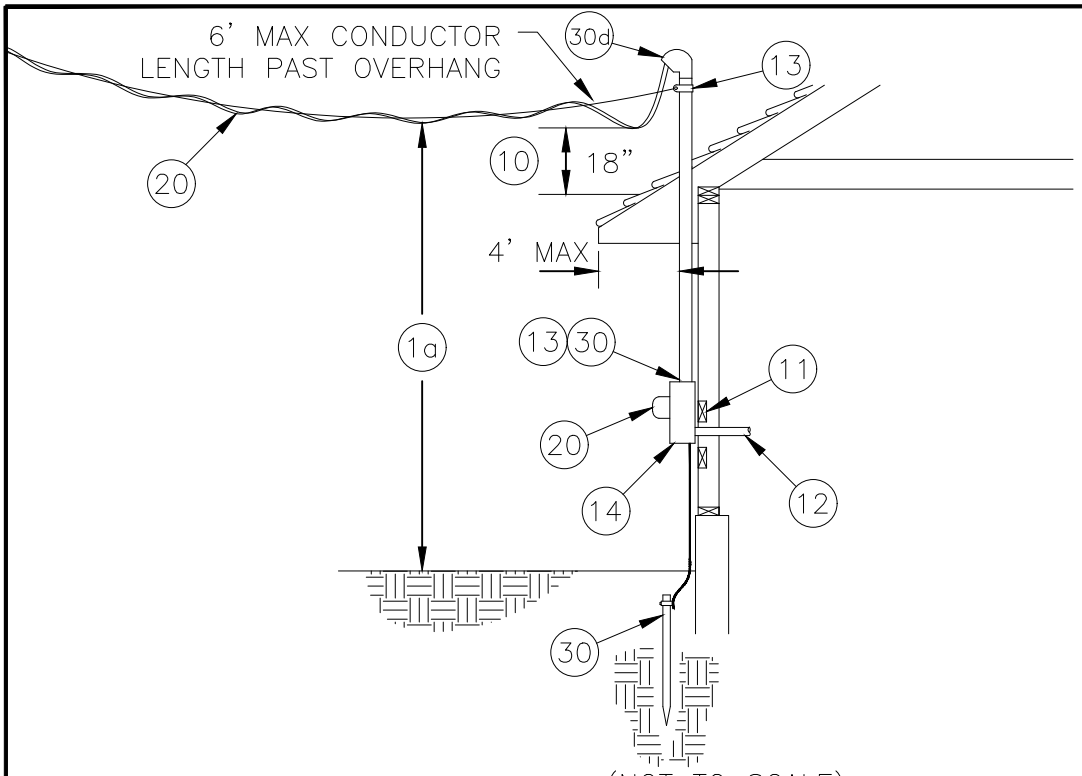
1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS
   d. TRENCH REQUIREMENTS

10. If paved area is adjacent to building foundation, the conduit must be installed beyond the pavement. All elbows shall be long sweep variety.
11. WREA will flag route for secondary trenching for Member/Contractor to provide.
12. Adequate framing for anchoring meter can to structure. Minimum 2 horizontal 2x4 blocks installed behind sheathing as shown.
13. Connection to Member/Contractor panel from bottom lugs in the meter can
14. Underground service line shall be backfilled before energizing service

20. WREA will furnish/install:
   a. Meter
   b. Secondary wire from WREA transformer to meter

30. Member/Contractor shall furnish/install
   a. Meter can and mounting
   b. Grounding per the NEC, at least one driven ground rod
   c. All service conduit 3" minimum schedule 80 with slip sleeve
   d. Trench, clean backfill, and conduit as explained in this booklet

DESIGN: M.S.	320 AMP UNDERGROUND PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-22	REV NO. 5
DRAWING: A.K.				
APPROVED BY M.S. / DATE 1/2007			DRAWING NUMBER PERM-2	



(NOT TO SCALE)

NOTES:

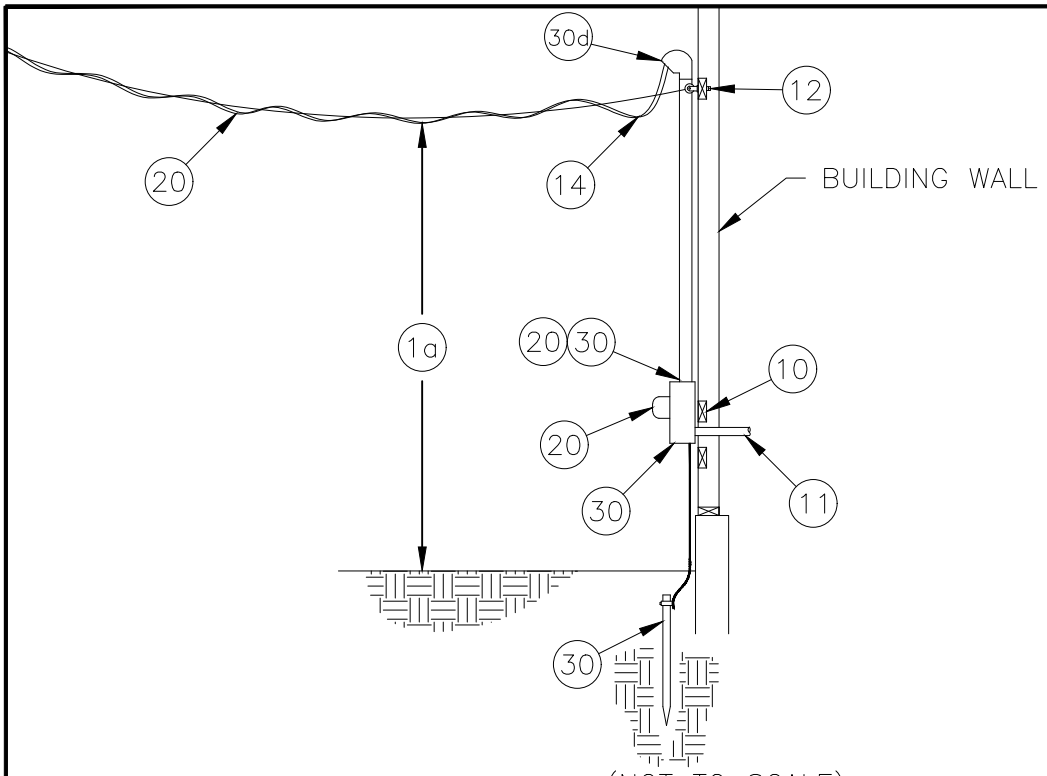
1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS

10. Cable drip loop must be at least 18" above roof when installed above an overhang roof penetration. Conductors shall not exceed 6' in length and 4' horizontally past the overhang per the NEC
11. Adequate framing for anchoring meter can to structure. Minimum 2 horizontal 2x4 blocks installed behind sheathing as shown.
12. Connection to Member/Contractor panel from bottom lugs in the meter can
13. Member/Contractor to provide 2" rigid galvanized steel conduit attachment of adequate strength below weatherhead and directly above hub identified for service entrance equipment with no counduit couplings per the NEC.

20. WREA will furnish/install:
    a. Meter
    b. Secondary wire from WREA transformer to meter

30. Member/Contractor shall furnish/install
    a. Meter can and mounting
    b. Weatherhead
    c. All 2" steel service entrance conduit 2"
    d. Wire in conduit with 18" of length outside of weatherhead
    e. Grounding per the NEC, at least one driven ground rod

DESIGN: M.S. DRAWING:A.K. APPROVED BY M.S. / DATE 1/2007	320 AMP OVERHEAD PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-22 / REV NO. 5 DRAWING NUMBER PERM-3



(NOT TO SCALE)

NOTES:

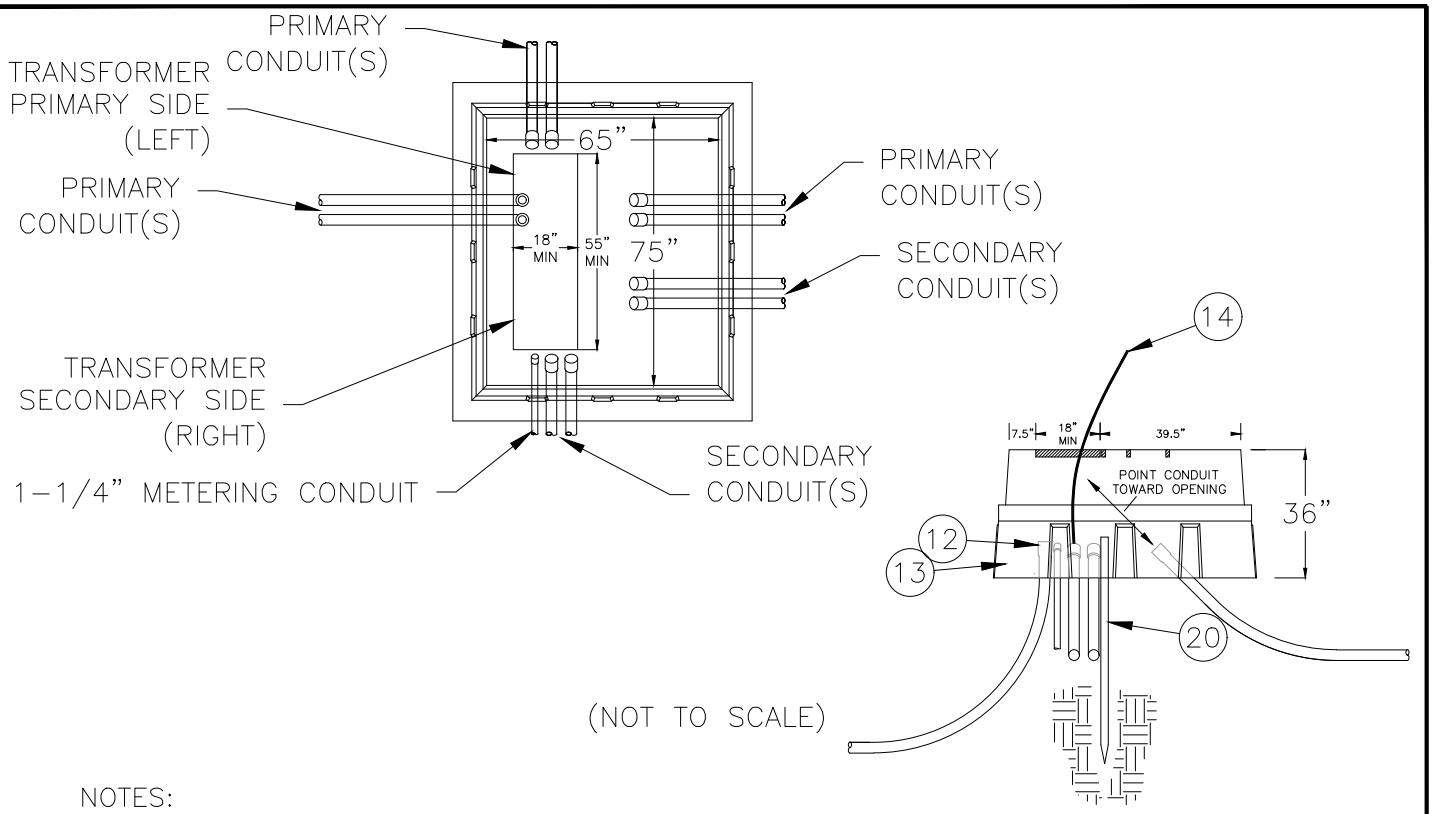
1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS

10. Adequate framing for anchoring meter can to structure. Minimum 2 horizontal 2x4 blocks installed behind sheathing as shown.
11. Connection to Member/Contractor panel from bottom lugs in the meter can
12. Member/Contractor to provide insulated deadend with 1/2" eye bolt that fastens with nut and washer inside structure
13. Weatherhead must be located above and within 12" of the point of attachment to the structure per the NEC.
14. Drip loop must be installed per the NEC

20. WREA will furnish/install:
   a. Meter
   b. Secondary wire from WREA transformer to meter

30. Member/Contractor shall furnish/install
   a. Meter can and mounting
   b. Weatherhead
   c. All 2" steel service entrance conduit 2"
   d. Wire in conduit with 18" of length outside of weatherhead
   e. Grounding per the NEC, at least one driven ground rod

DESIGN: M.S.	320 AMP OVERHEAD TO STRUCTURE PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-22	REV NO. 5
DRAWING:A.K.				
APPROVED BY M.S. / DATE 1/2007			DRAWING NUMBER PERM-4	



NOTES:

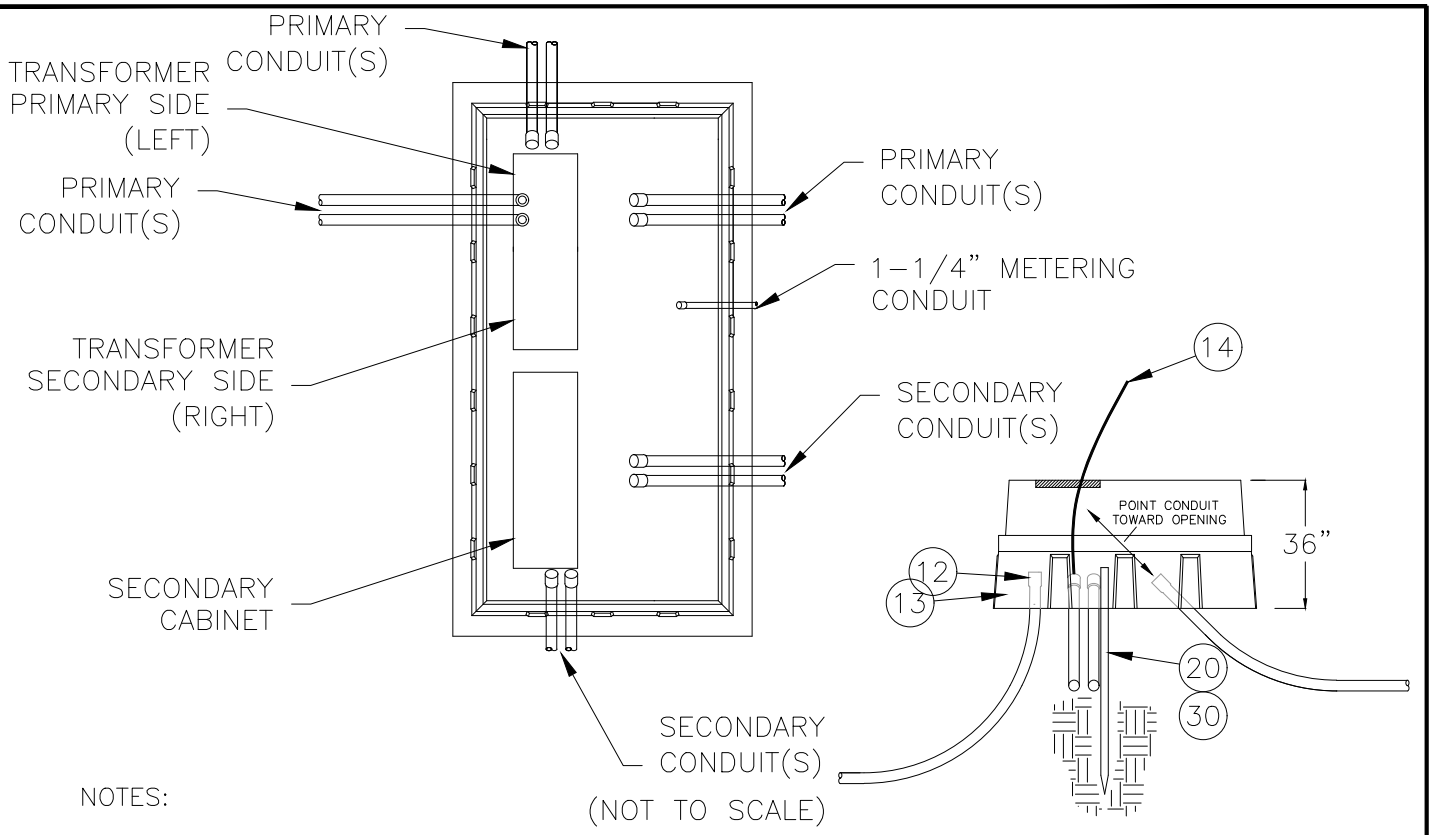
1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS
   d. PAD REQUIREMENTS
   e. TRENCH REQUIREMENTS

10. Transformer will be 75–1,500 kVA, maximum 6 connections per phase
11. Meter shall not be mounted to or in the transformer cabinet
12. Bell ends shall be installed on all conduits
13. Conduits shall extend 4" to 6" above sand inside transformer pad
14. Member/Contractor shall extend secondary wires 7' above transformer pad with a maximum of six wires per phase with maximum size of 750 kcmil copper or aluminum.

20. WREA will furnish/install:
   a. Transformer
   b. Primary cable to transformer
   c. Grounding of transformer
   d. Transformer secondary lugs

30. Member/Contractor shall furnish/install
   a. Transformer base purchased from WREA
   b. Trenching and backfilling
   c. All conduits
   d. All conductors and equipment past transformer secondaries

DESIGN: SRB	3Ø TRANSFORMER PAD PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 06-20 / REV NO. 2
DRAWING: SRB			DRAWING NUMBER PERM-5
APPROVED BY SRB / DATE 02-20			



NOTES:

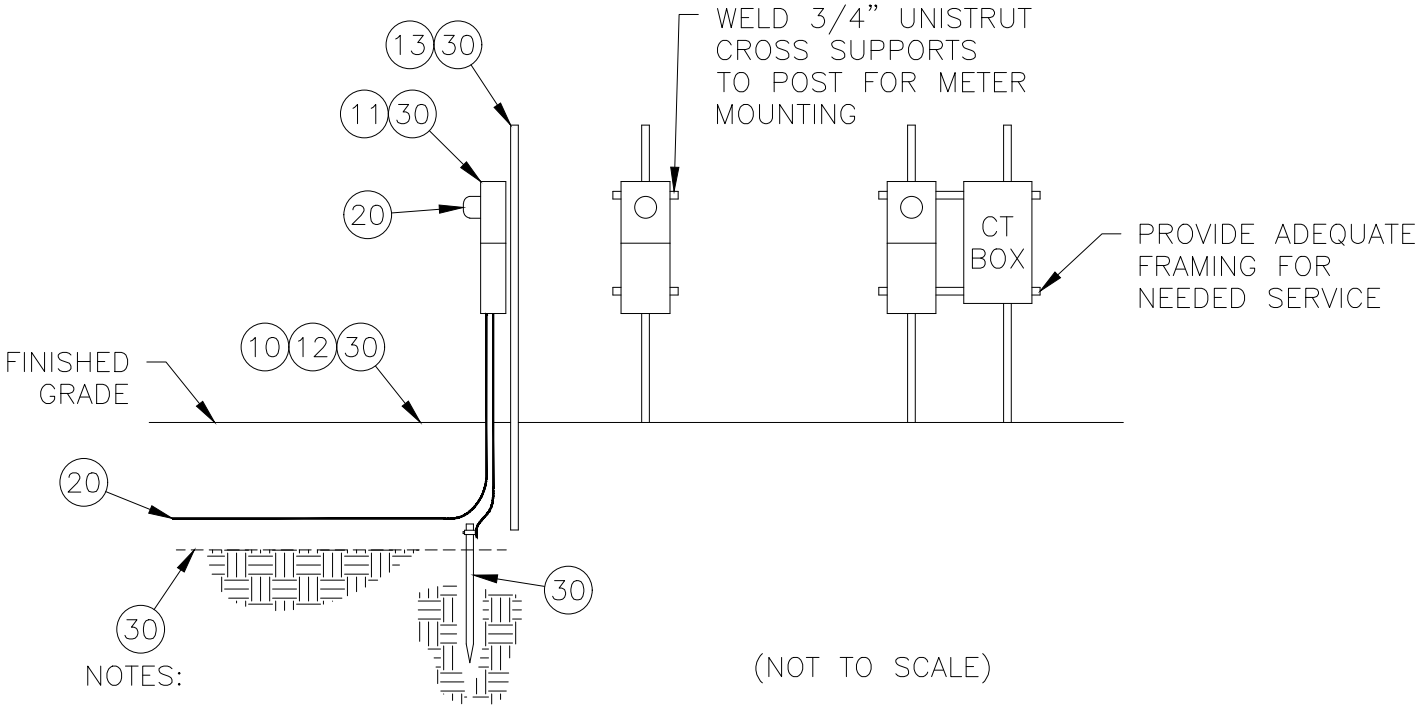
1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS
   d. PAD REQUIREMENTS
   e. TRENCH REQUIREMENTS

10. Transformer will be 75–1,500 kVA, maximum 6 connections per phase
11. Meter shall not be mounted to or in the transformer cabinet
12. Bell ends shall be installed on all conduits
13. Conduits shall extend 4" to 6" above sand inside transformer pad
14. Member/Contractor shall extend secondary wires 7' above transformer pad with a maximum of six wires per phase with maximum size of 750 kcmil copper or aluminum.

20. WREA will furnish/install:
    a. Transformer
    b. Primary cable to transformer
    c. Grounding of transformer
    d. Transformer secondary lugs

30. Member/Contractor shall furnish/install
    a. Transformer and secondary cabinet base purchased from WREA
    b. Secondary cabinet
    c. Grounding of secondary cabinet
    d. Trenching and backfilling
    e. All conduits
    f. All conductors and equipment past transformer secondaries

DESIGN: SRB	3Ø TRANSFORMER WITH SECONDARY PAD PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–20 / REV NO. 1
DRAWING: SRB			DRAWING NUMBER PERM–6
APPROVED BY SRB / DATE 02–20			



NOTES: (NOT TO SCALE)

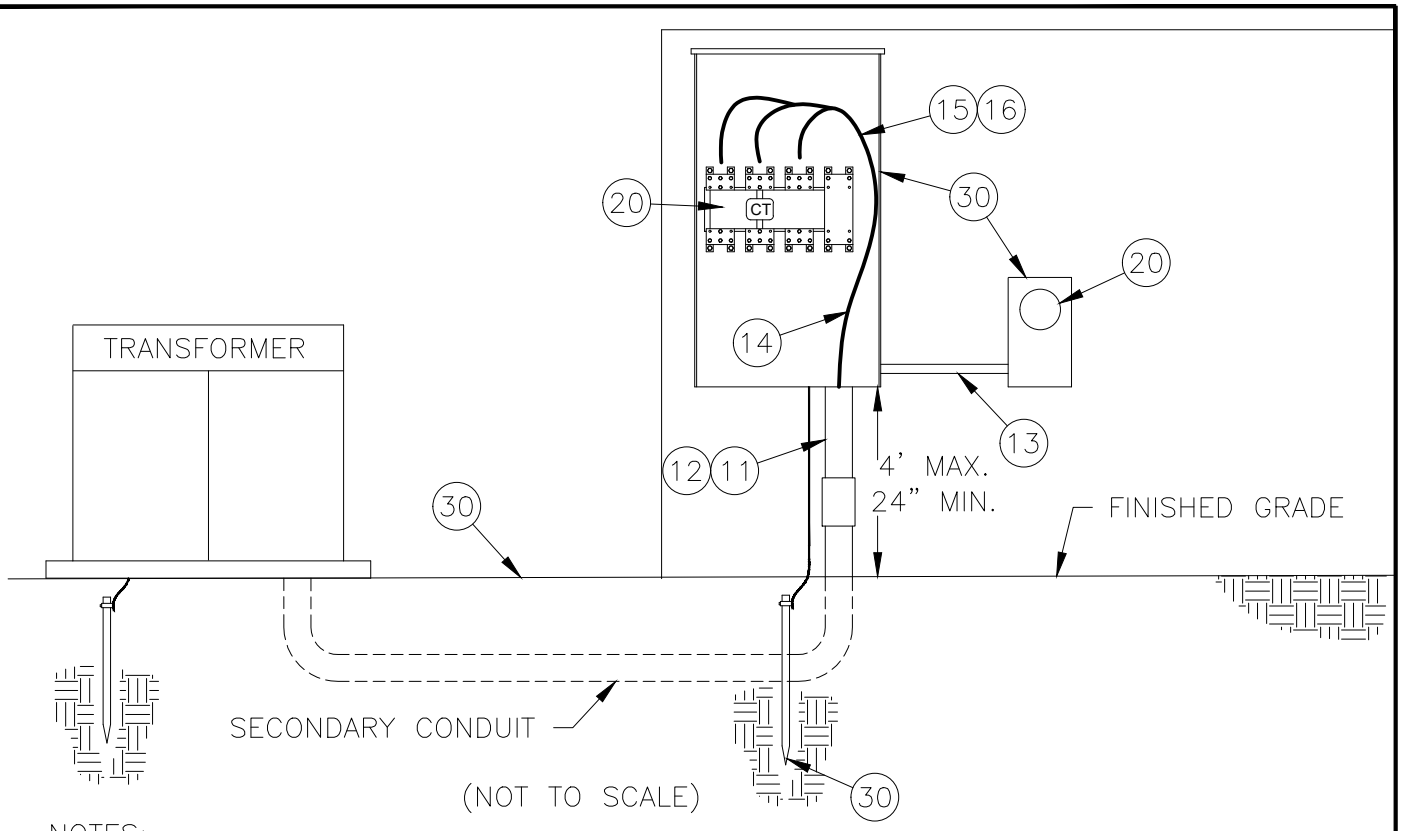
1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS
   d. TRENCH REQUIREMENTS

10. WREA will flag trench route from transformer to service for member/contractor to provide.
11. Service shall be
   a. WREA approved
   b. Single phase 200–320 amp no ct metering
   c. Single phase 400 amp and above ct metered
   d. Three phase over 200 amp ct metered
   e. Any 480V service shall be instrument rated
   f. Commercial meters shall have mechanical bypass
12. Underground service line shall be backfilled before energizing service
13. 3" rigid galvanized pipe or 3" square tubing (1/4" min wall thickness) painted gray

20. WREA will furnish/install:
   a. Secondary wire from WREA transformer to meter
   b. Meter

30. Member/Contractor shall furnish/install
   a. Meter rack and mounting
   b. Grounding per the NEC, ar least one driven ground rod
   c. Trench, clean backfill, and conduit as explained in this booklet
   d. All conduit, conductors, and equipment past meter

DESIGN: SRB	STEEL POST PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–22 / REV NO. 3
DRAWING: SRB			DRAWING NUMBER PERM–7
APPROVED BY SRB / DATE 02/20			



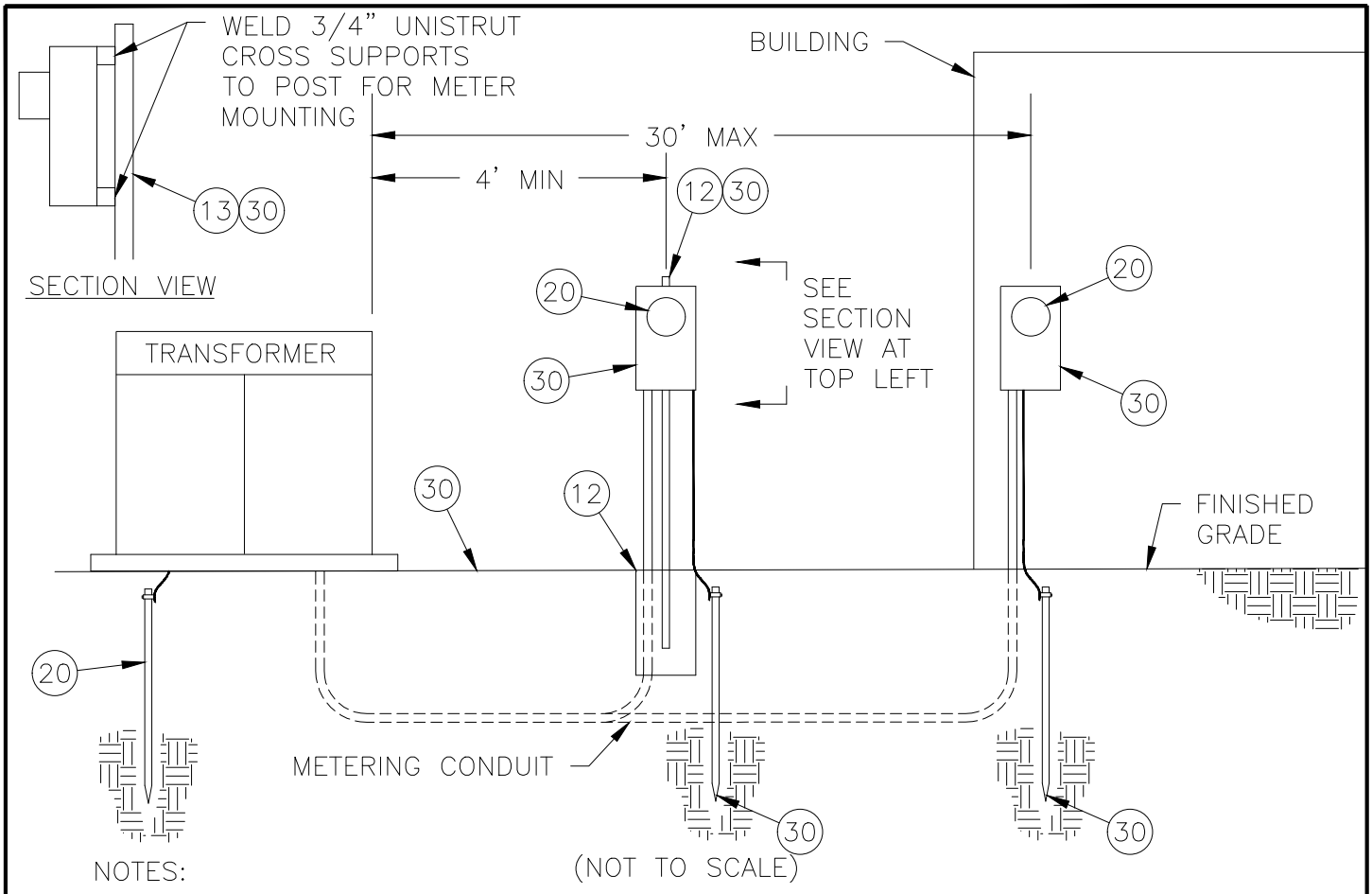
NOTES:

1. The sections below are found in this booklet and apply to this drawing.
   a. GUARDING REQUIREMENTS
   b. METER REQUIREMENTS
   c. TRENCH REQUIREMENTS
   d. CLEARANCE REQUIREMENTS

10. CT metering is required on:
    a. 1Ø loads 400 Amps & above
    b. 3Ø loads above 200 Amps
    c. 480 Volt service
11. No more than two service entrance risers shall be installed
12. Service entrance conductors shall pass directly from transformer to CT cabinet (i.e. no intermediate cabinets)
13. 1–1/4" GRC or EMT bonded per NEC
14. Conductors shall pass behind bus or CT
15. White dot on CTs shall be incoming line from transformer
16. Installed per manufacturers instructions
17. Underground service line shall be backfilled before energizing service

20. WREA to furnish/install:
    d. Meter
    e. Furnish CTs
30. Member/Contractor to furnish/install
    a. CT cabinet and meter can purchased from WREA
    b. Installation of CTs
    c. Meter can mounting
    d. Grounding per the NEC, at least one driven ground rod
    e. All conduit, conductors, and equipment past transformer secondaries

DESIGN: SRB	CT CABINET METERING PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–22	REV NO. 2
DRAWING: SRB				
APPROVED BY SRB / DATE 02–20			DRAWING NUMBER PERM–8	



NOTES:

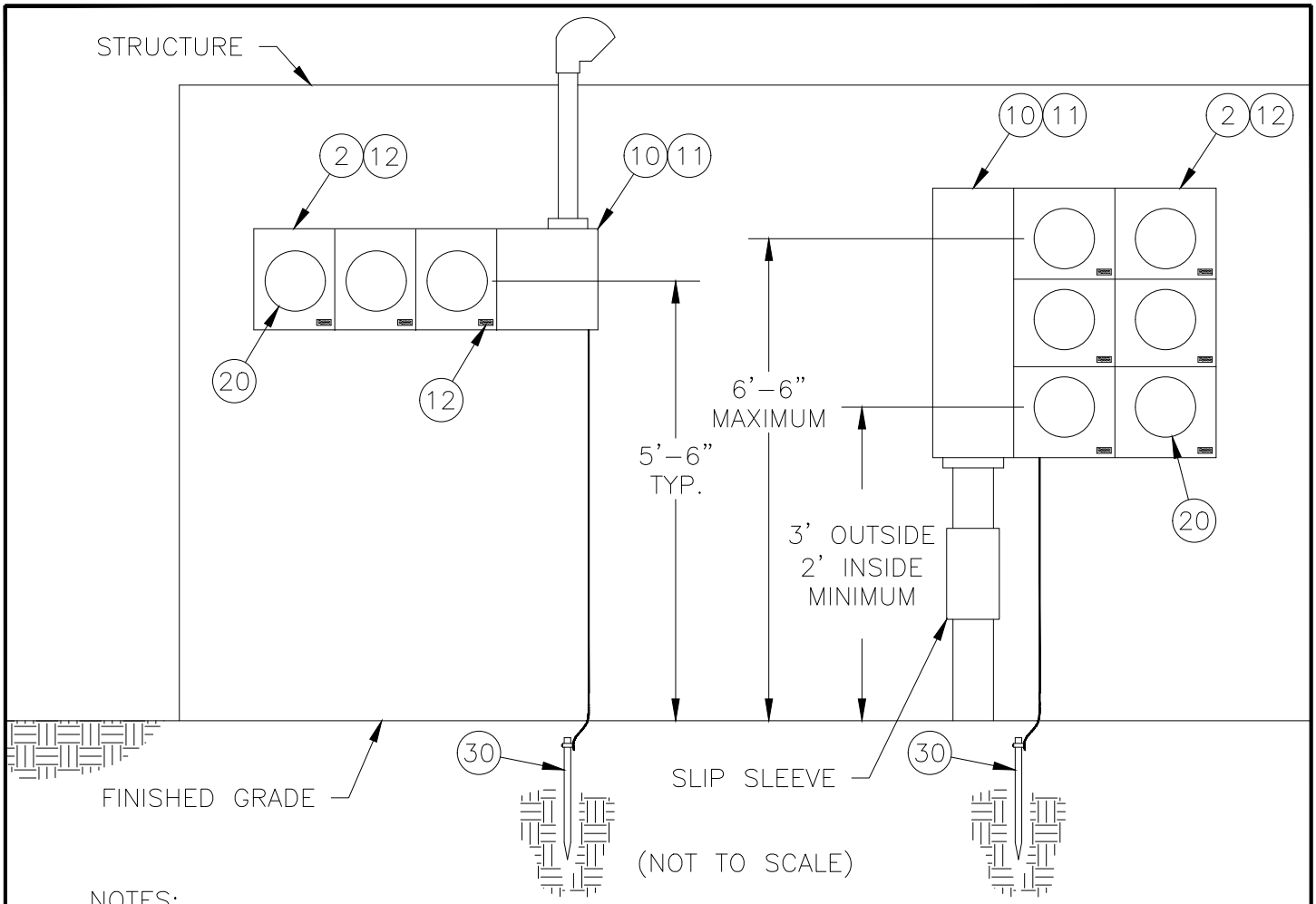
1. The sections below are found in this booklet and apply to this drawing.
   a. GUARDING REQUIREMENTS
   b. METER REQUIREMENTS
   c. TRENCH REQUIREMENTS
   d. CLEARANCE REQUIREMENTS

10. Transformer shall be for single service only
11. Meter shall not be mounted to or in the transformer cabinet
12. Meter is preferred to be mounted to building. If distance between transformer and building exceed 30', meter pedestal set in concrete shall be used.
13. 3" rigid galvanized pipe or 3" square tubing (1/4" min wall thickness) painted gray
14. Underground service line shall be backfilled before energizing service

20. WREA to furnish/install:
    a. Meter

30. Member/Contractor to furnish/install
    a. CT cabinet and meter can
    b. Meter can mounting
    c. Grounding per the NEC, at least one driven ground rod
    d. All conduit, conductors, and equipment past transformer secondaries

DESIGN: SRB	CT'S IN TRANSFORMER METERING PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-22 / REV NO. 2
DRAWING: SRB			DRAWING NUMBER PERM-9
APPROVED BY SRB / DATE 02-20			



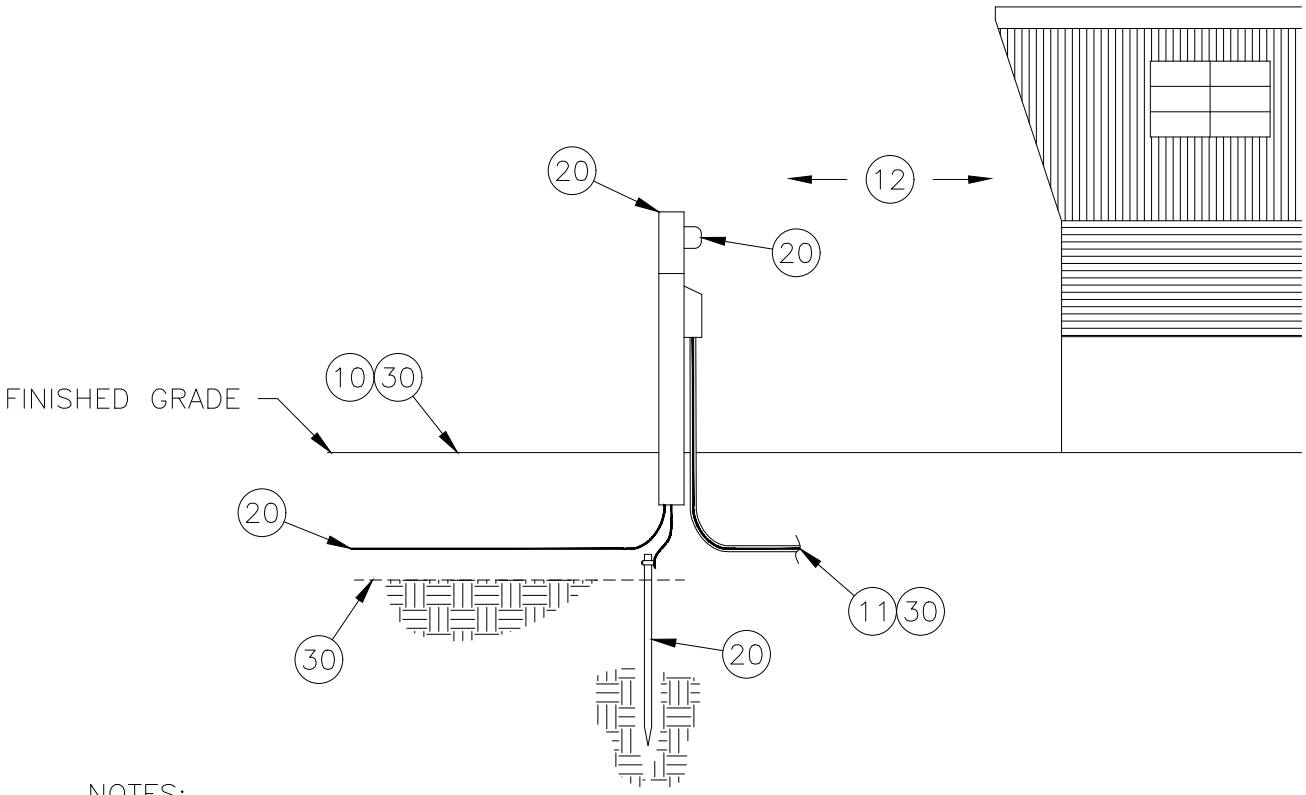
NOTES:

1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS

10. Locking provisions provided and utilized after energization
11. Lever operated bypass shall be installed on all commercial sockets
12. Permanently affixed identification tags shall be installed
13. Meter modules shall be approved by WREA
14. CT compartments and/or swichtgear shall be approved by WREA
15. Meter modules shall be mounted between 24" and 78" to centerline from finished grade as shown above Single meter height shall be mounted per METER REQUIREMENTS drawings in this booklet.

20. WREA will furnish/install:
    a. Meters
30. Member/Contractor shall furnish/install
    a. Meter modules
    b. Meter mounting as described in PERMANENT SERVICE in this booklet
    c. Grounding per the NEC, at least one driven ground rod
    d. Secondary wire from WREA transformer to meter
    e. All conduit, conductors, and equipment past meter
    f. Right of way in recorded easement

DESIGN: SRB	GANG METER MODULES PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–22	REV NO. 2
DRAWING: SRB			DRAWING NUMBER PERM–10	
APPROVED BY SRB / DATE 02–20				



(NOT TO SCALE)

NOTES:

1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS
   d. TRENCH REQUIREMENTS

10. WREA will flag trench route from transformer to service for member/contractor to provide.
11. Mobile home feeder cable shall be adequately protected and sized per the NEC.
12. Mobile home shall be located at least 5' and no more than 30' from meter pedestal per the NEC. Meter not allowed to be attached to mobile home unless prior approval from WREA.
13. Underground service line shall be backfilled before energizing service

20. WREA will:
   a. Furnish meter pedestal
   b. Furnish and install secondary wire from WREA transformer to meter
   c. Furnish and install ground rod
   d. Furnish and install meter

30. Member/Contractor shall furnish or install
   a. Meter pedestal
   b. Mobile home feeder cable
   c. Trench, clean backfill, and conduit as explained in this booklet

DESIGN: SRB	MOBILE HOME PERMANENT SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20 / REV NO. 1
DRAWING: SRB			DRAWING NUMBER PERM-11
APPROVED BY SRB / DATE 02/20			

TEMPORARY SERVICE REQUIREMENTS

1. Checklist in this booklet completed

2. Member/Contractor is urged to make early contact with WREA for temporary service.

3. WREA will connect the service after copy of the State wiring certificate and/or City inspection is on file.

4. Temporary service for construction work must be located where the meter will be protected from damage and usable throughout the construction period. Should relocation be necessary, the cost shall be the responsibly of the Member/Contractor.

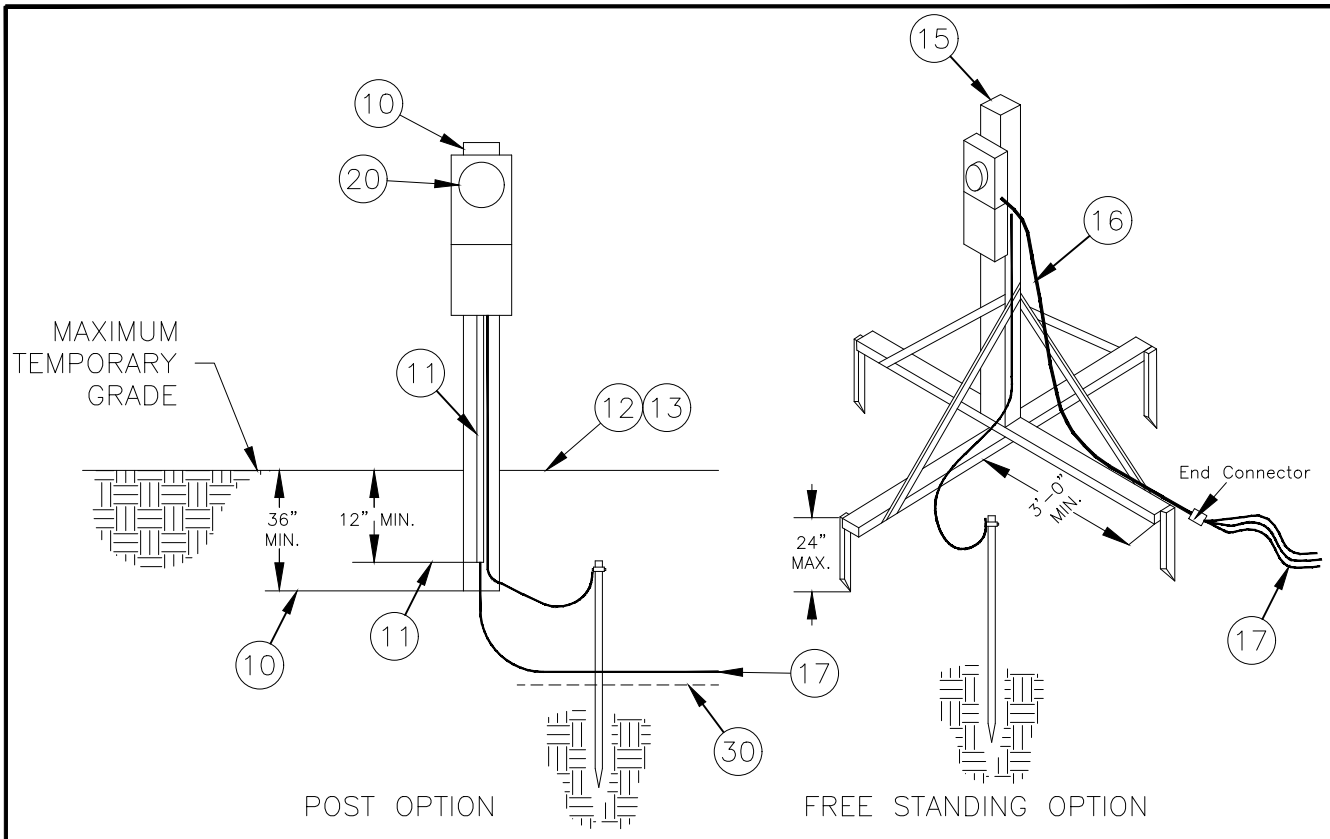
5. Member/Contractor owned metering equipment, switching devices, conduits, conductors, luminaries, etc. shall not be mounted to WREA poles.

6. Standard voltage is 120/240V for single phase and 120/208V or 277/480V for three phase.

7. No delta connected three phase services are allowed

8. For the following drawings, a number in a bubble "(##)" references to the note at the bottom of the page.

DESIGN: M.S.		REQUIREMENTS TEMPORARY SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20	REV NO. 4
DRAWING: A.K.				DRAWING NUMBER	
APPROVED BY M.S.	DATE 1/2007			TEMP-1	



(NOT TO SCALE)

NOTES:

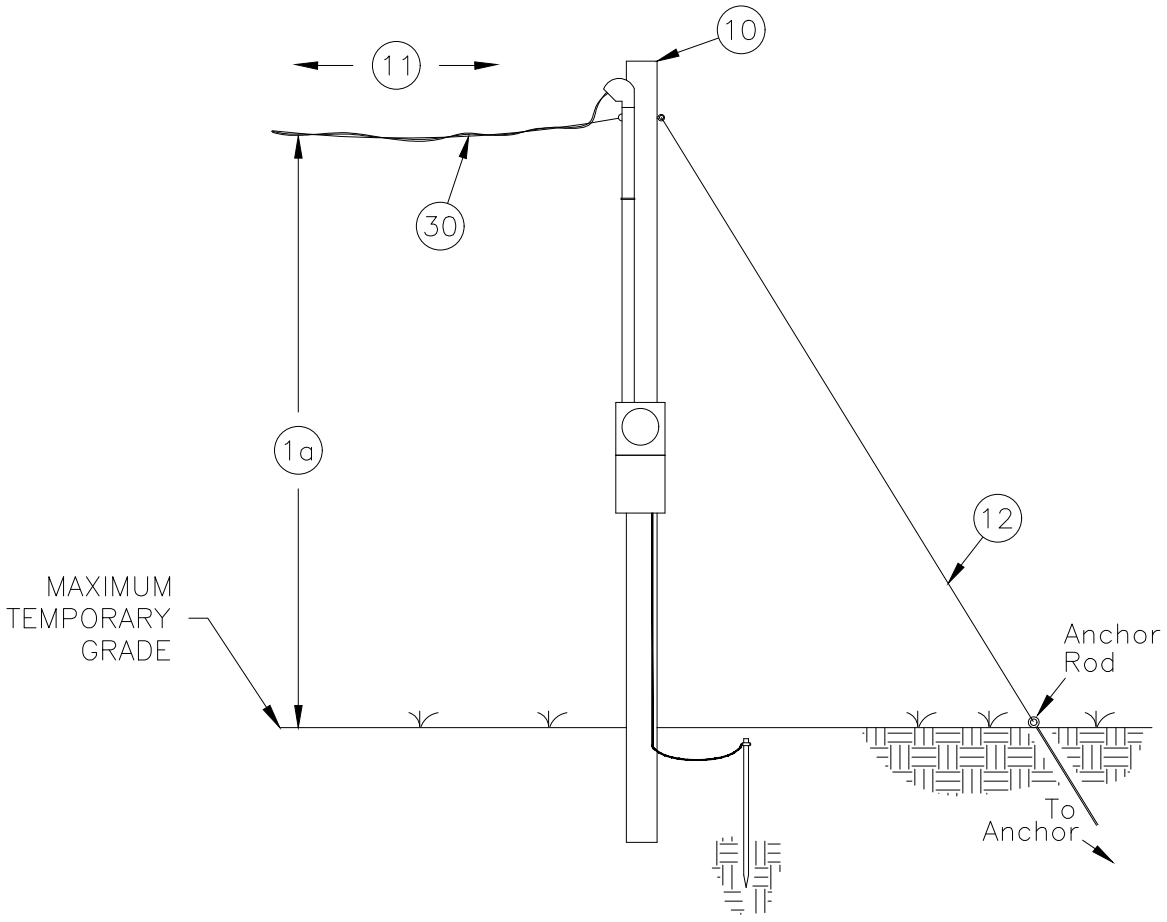
1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS
   d. TRENCH REQUIREMENTS

10. Pressure treated 4x6 wood post and installed as shown above
11. Post conduit 2" PVC and installed as shown above
12. WREA will flag trench route from transformer to service for Member/Contractor to provide.
13. Underground service line shall be backfilled before energizing service
14. All underground temporary meter loops shall be located at the transformer or secondary service wire on the lot line.
15. Free standing pedestal must be adequately braced and anchored with minimum 4x4 post. This pedestal will be used with pad mount transformer.
16. Qty. 4 #6 minimum conductors installed in 1–1/2" liquid tight flexible conduit. 8' min. and 12' max. length between meter and transformer
17. 48" conductor tails left for pad mount transformer or secondary junction box connections by WREA.

20. WREA will furnish/install:
   a. Meter
   b. Transformer or secondary junction box connection, no secondary conductors

30. Member/Contractor shall furnish/install
   a. Meter pedestal
   b. Meter mounting
   c. Grounding per the NEC
   d. Secondary wire from WREA transformer or secondary junction box to meter
   e. Trench, clean backfill, and conduit as explained in this booklet

DESIGN: M.S.	UNDERGROUND METER MOUNTING TEMPORARY SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–2019 / REV NO. 3
DRAWING: A.K.			DRAWING NUMBER TEMP–2
APPROVED BY M.S. / DATE 1/2007			



(NOT TO SCALE)

NOTES:

1. The sections listed below are found in this booklet and apply to this drawing.
   a. CLEARANCE REQUIREMENTS
   b. GUARDING REQUIREMENTS
   c. METER REQUIREMENTS

10. Overhead temporary service drop shall be supported on a WREA approved pole or timber.
11. The maximum service drop length from a WREA pole to the service is designed and approved by WREA staking personnel.
12. Guying design to be designed and approved by WREA staking personnel.

20. WREA will furnish/install:
    a. Meter
    b. Transformer connection, no secondary conductors
30. Member/Contractor shall furnish/install
    a. Meter pedestal
    b. Meter mounting pole or timber
    c. Grounding per the NEC
    d. Secondary wire from WREA transformer to meter
    e. Trench, clean backfill, and conduit as explained in this booklet

DESIGN: M.S.	OVERHEAD METER MOUNTING TEMPORARY SERVICE	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20	REV NO. 4
DRAWING:A.K.				
APPROVED BY M.S. / DATE 1/2007			DRAWING NUMBER TEMP-3	

DEFINITIONS:

Electric Utilities:

Power, lighting, telephone, cable t.v., signal circuits, etc...

Non–electric Utilities:

Water, gas, sewer, storm drains, etc...

Approved Conduit Bedding Material:

4" of sand, fines, or clean dirt around each conduit free of rocks with proper moisture levels

Approved Conduit:

a. HDPE black endless with 3 red stipes
b. PVC
   - Schedule 40 for under open ground
   - Schedule 80 for under roadways
c. SIZE
   - 3" for residential services
   - 6" for three phase services
d. Bends
   - Primary conduit to use fiberglass 48" sweeps on all corners
   - Residential to use fiberglass 24" radius sweeps on all corners if length exceeds 150'
   - Maximum of 270° of turns (e.g. three right turns)
d. Length
   - Residential secondary maximum length of 250'

Approved Pull Tape:

Minimum 1/2" width, 1,200lb in strength

Adequate Trench Compaction:

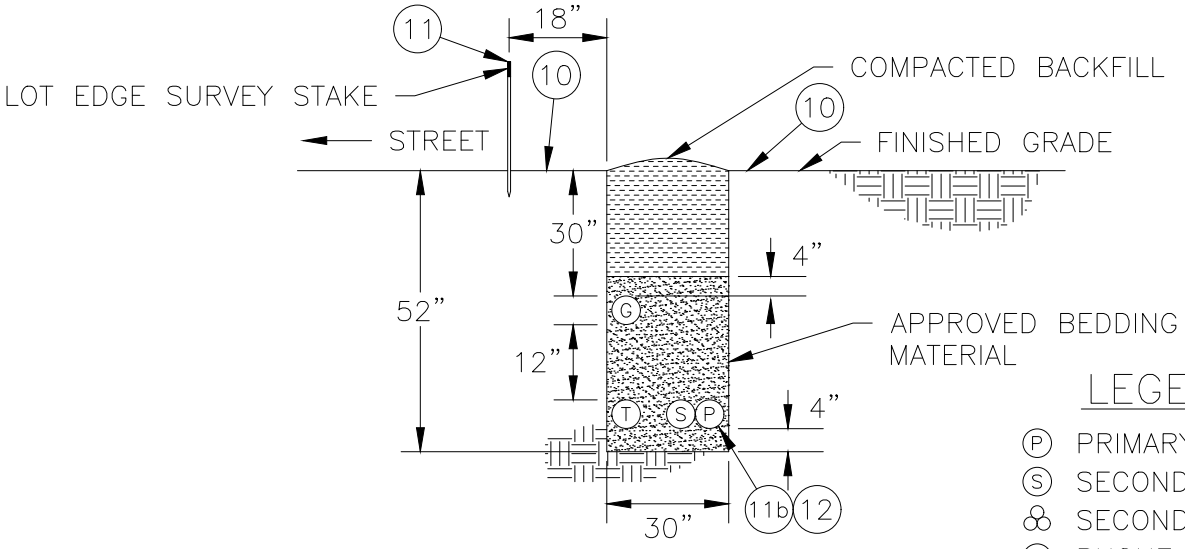
Follow project geotechnical evaluation for procedures and recommendations to achieve proper compaction to avoid settling. If geotechnical evaluation is not available, Member/Contractor shall use compaction methods to ensure the trench does not settle. Using compaction machinery, loose lifts no greater than 6", and proper moisture levels should provide acceptable results.

NOTES:

1. Member/Contractor shall follow all trenching and excavation local, state, and federal OSHA regulations regarding safe work practices.
2. Before digging, Member/Contractor shall locate underground utilities and verify clearances by contacting One Call of South Dakota at 811 or 1–800–781–7474 if calling from out of state.
3. WREA will flag all trench routes to be followed before excavation.
4. Secondary trench shall run at a right angle from the meter socket for at least 6' before turning 90 degrees.
5. LB elbows not allowed on the line side conduit
6. All corners shall be of the long sweep variety
7. Slip sleeves are required on all PVC risers
8. Maintain 6' of separation from building footing, water and sewer lines
9. Curb and gutter shall be installed prior to utility installation
10. Final grading shall be completed before underground utilities are installed
11. WREA will provide conduit plan with number and size of conduits needed for each project.
12. Approved Pull Tape shall be installed in all conduits with care taken to ensure pull tape is free to pull
13. Conduit ends shall be sealed with plug and pull tabs and extend 4" to 8" above final grade or be marked with a conduit marker
14. WREA will inspect trench before backfilling. Member/Contractor responsible for re–excavating if inspection not completed in time.
15. Compaction machinery shall not be used within 6" of conduits
16. All primary trenches shall be backfilled before services can be energized.

DESIGN: M.S.	URD CABLE AND TRENCHING TRENCH REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02–20	REV NO. 2
DRAWING:A.K.			DRAWING NUMBER TRENCH–1	
APPROVED BY M.S. / DATE 10/2019				

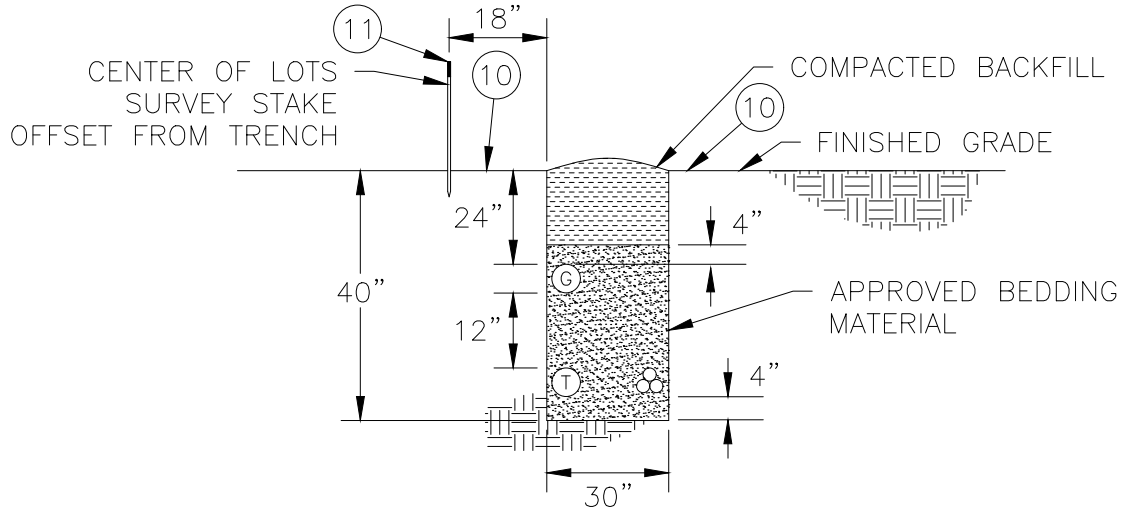
PRIMARY UTILITY TRENCH



LEGEND

- (P) PRIMARY CONDUIT
- (S) SECONDARY CONDUIT
- SECONDARY CABLE
- (T) PHONE & TV
- (G) GAS

SECONDARY TRENCH



(NOT TO SCALE)

NOTES:

1. The sections listed below are found in this booklet and apply to this drawing.
   a. TRENCH REQUIREMENTS

10. Member/Contractor shall allow adequate space along and around the trench for personnel to access and work during construction.
11. Member/Contractor shall furnish and install:
    a. Survey of lot corners by Professional Land Surveyor
    b. Approved Conduits
    c. Trench excavation
    d. Approved Conduit Bedding Material
    e. Adequate Trench Compaction
12. Primary conduit shall be installed always to the outside of the trench

DESIGN: M.S.	TYPICAL TRENCH PROFILE TRENCH REQUIREMENTS	West River Electric Association, Inc. Your Touchstone Energy® Cooperative	REV DATE 02-20	REV NO. 4
DRAWING: A.K.			DRAWING NUMBER TRENCH-2	
APPROVED BY M.S. / DATE 1/2007				