

# WEST RIVER ELECTRIC CONSTRUCTION HANDBOOK FOR NEW SERVICES



Touchstone Energy®  
*The power of human connections*

*“Powering You For A Brighter Future”*

## BUILDER INFORMATION FOR RESIDENTIAL AND COMMERCIAL DEVELOPERS



# **WEST RIVER ELECTRIC**

## **NEW MEMBER/CONTRACTOR PACKET**

This packet contains details regarding information needed for new consumers to acquire electrical service from West River Electric Association. Listed below is the index contained in the packet.

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## **Introduction**

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

WREA has specific guidelines on routing underground power cable, so the trench route must be flagged by WREA staking personnel before digging the trench.

WREA standard voltage is 120/240 volts for single phase and 120/208 or 277/480 for three phase. Note (No delta connected three phase will be allowed.)

WREA may update this booklet as deemed necessary. If you have questions, please contact our staking personnel in the Rapid City office.

Last updated 10/09/2019

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Wall, SD 57790

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## **Responsibility for new Residential Services**

### **WREA Responsibility**

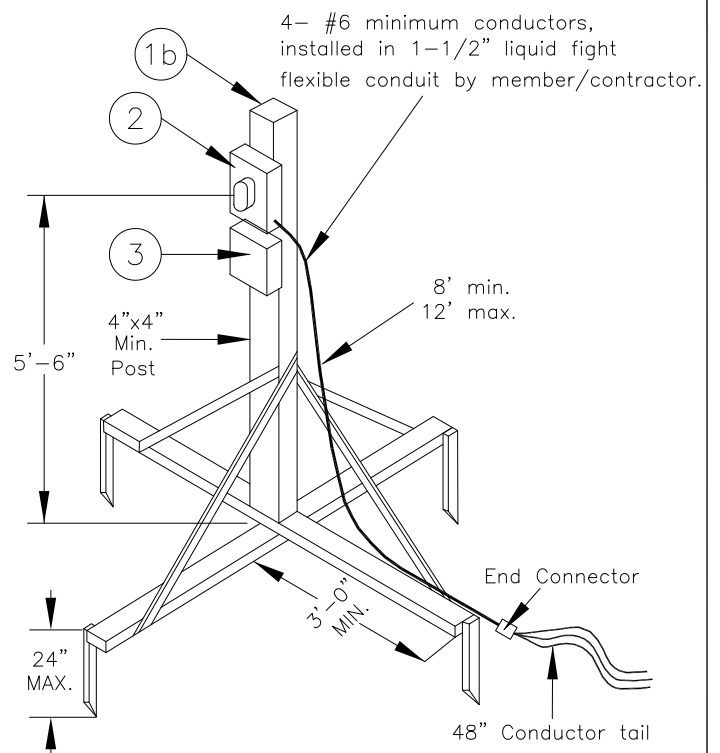
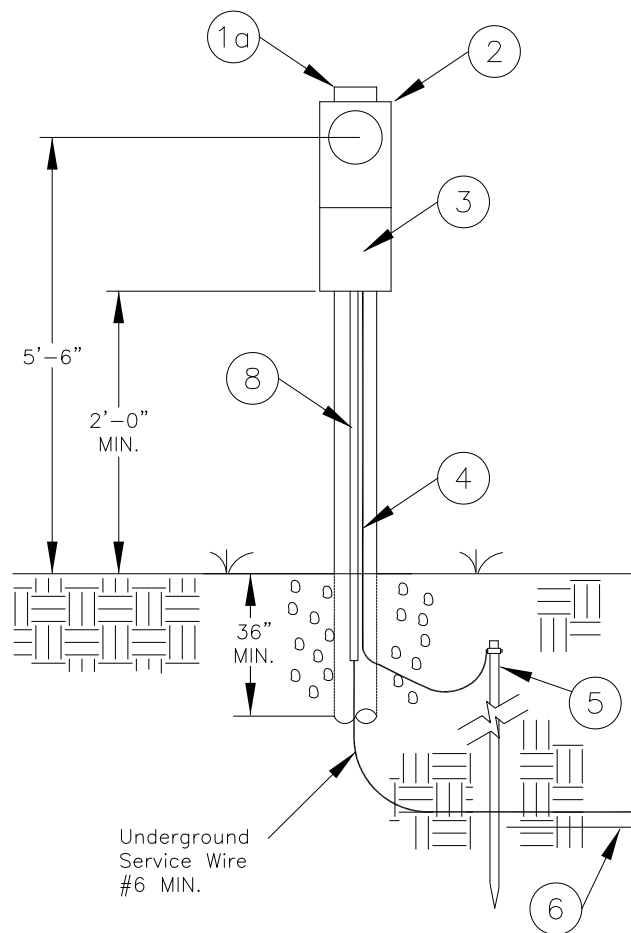
- A. WREA will supply
  - a. Primary Conductors
    - i. Either overhead or underground.
    - ii. Located in utility easements.
  - b. Secondary conductors for residential service under 400 amp from the transformer to meter.
  - c. Transformer
  - d. Meter
- B. Installation of the above.
- C. Archaeological survey if required.

### **Member/Contractor**

- A. Service Description Information
  - a. Size of service, voltage, amperage and number of phases
  - b. Load type, (pump, irrigation, seasonal, residential, commercial, type of heat, demand controller, etc.)
  - c. Location of service.
- B. Sign Up for Service
  - a. Provide a photo ID and complete a membership form.
  - b. Pay either a deposit or have good credit reference with another utility or good credit per a credit bureau check.
  - c. Pay connect fee and any line extension costs.
  - d. Sign a “Line Extension Contract/Easement” if required.
- C. Before Service is Energized, the member/contractor must
  - a. Provide proper sized trench per attached specifications (for underground cables) at final grade for the lot.
  - b. Provide proper backfill for the trench.
  - c. Provided WREA with required copy of the “Wiring Affidavit” (either a City Affidavit or from the State of South Dakota).
  - d. Install the Blue Sticker from the Affidavit to the meter socket of the service.
- D. Member/Contractor to provide secondary conductors on single phase services of 400 amps or more and on all three phase services.

1. The member/contractor is urged to make early contact with local West River Electric for temporary service.
2. The member/contractor is required to pay a standard fee for temporary service. When special construction is required there will be additional charges.
3. Required affidavits or city inspections must be obtained before service can be provided.
4. In addition to installation and removal charges, the member/contractor will be required to pay a service charge for each metered connection.
5. Temporary service for construction work must be located where the meter will be protected from mechanical injury and, when practical, a location should be selected that would be usable throughout the construction period. Should relocation of a temporary service become necessary the relocation cost will be the responsibly of the member.
6. Overhead temporary service drop shall be supported on a West River Electric approved pole or timber and shall be furnished and installed by the member/contractor. The maximum service drop length from a West River Electric pole to the service depends upon conductor size. Consult with your West River Electric representative to determine the maximum distance. Temporary service must meet West River Electric standards.
7. Member/contractor – owned metering equipment, switching devices, conduits, conductors, luminaries, etc., are not to be mounted on West River Electric poles.
8. Member/contractor owned guying, when required, to be adequate for wire size, and span lengths. See your West River Electric representative for recommendations.
9. All underground temporary meter loops will be located at the transformer or at the secondary service wire on the lot line. Any variation to this standard;  
SEE A REPRESENTATIVE FROM WEST RIVER ELECTRIC FOR RECOMMENDATIONS

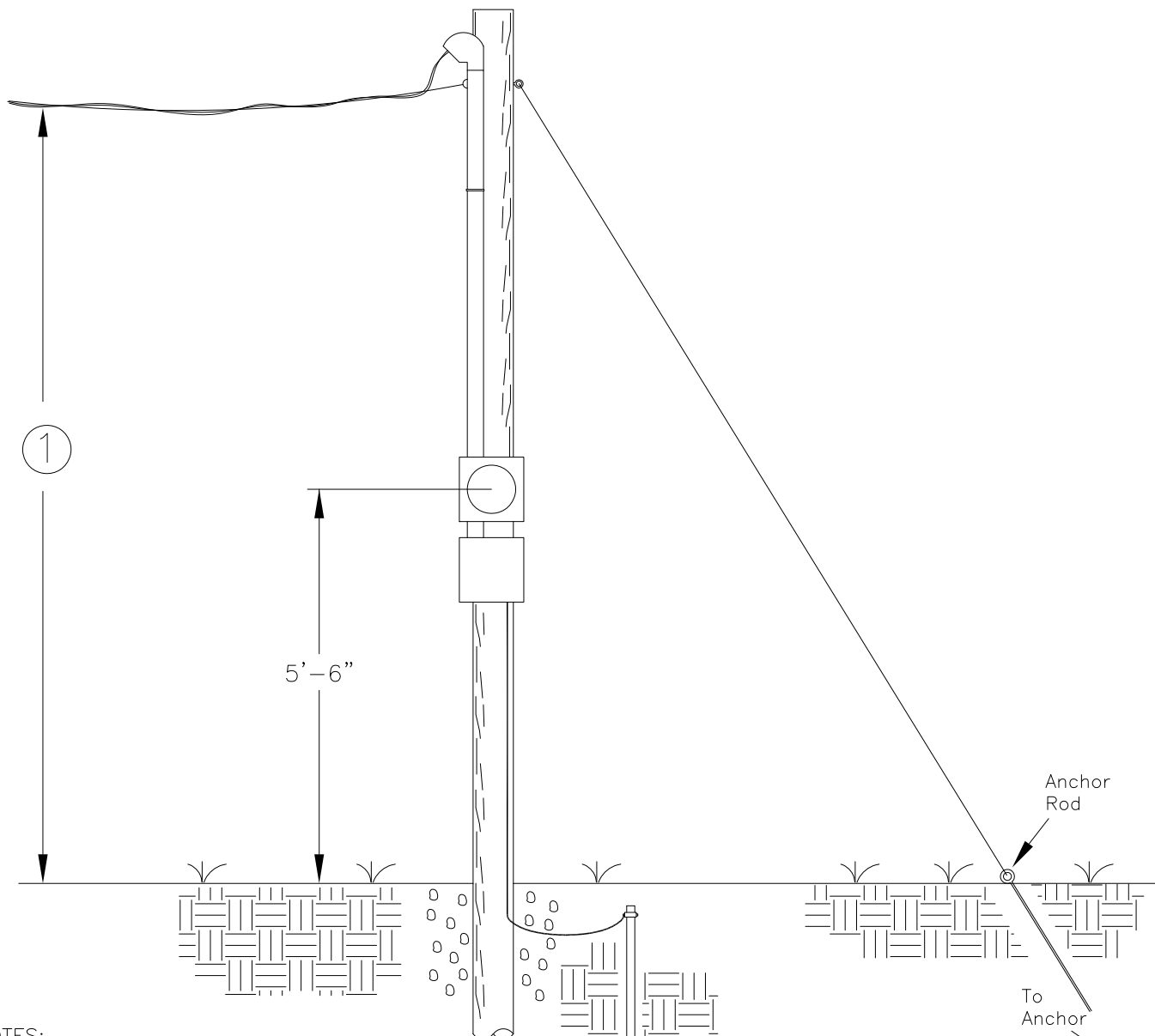
DESIGN: M.S.		REQUIREMENTS FOR TEMPORARY ELECTRIC SERVICE CONSTRUCTION POWER WEST RIVER ELECTRIC ASSOCIATION		REV. DATE 10/2019		REV. NO. 3	
DRAWING: A.K.							
APPROVED BY M.S.		DATE 1/2007		Pg 03		DRAWING NUMBER TEMP-1	



## NOTES:

- 1a.- Pressure treated 5" x 7" wood post, owned by member/contractor, to be buried 36" in ground.
- 1b.- Free standing pedestal, adequately braced and anchored. (for use with pad mount transformer)
2. Meter can must be West River Electric approved and installed level in all directions, Ringless Type.
3. Member/contractor disconnect equipment must be weatherproof. Switch box must be covered when inspected. Installed per NEC & local utility specifications.
4. Ground wire No. 6 copper Minimum.
5. 8'-5/8" long ground rod. NOTE: ground rod is not required if temp service is adjacent to pad mount transformer.
6. Trench according to West River Electric specifications. (Trench 2, TR3)
7. Permit for temporary service or a wiring affidavit approving the service for connection must be obtained before service can be provided.
8. Post Conduit: 2" PVC electrical conduit to a depth 12" in ground.
9. Underground service line must be covered or back filled before service may be energized.

DESIGN: M.S.	TEMPORARY SERVICE	REV. DATE 10/2019	REV. NO. 2
DRAWING: A.K.	UNDERGROUND TEMPORARY SERVICE	Pg 04	DRAWING NUMBER TEMP-2
APPROVED BY MS	DATE 1/2007	WEST RIVER ELECTRIC ASSOCIATION	



NOTES:

1. Wiring certificate must be at WREA office before service is energized also blue sticker must be attached to meter socket.
2. Clearances shown below pertain to distance #1 above.
3. 10'-6" - Above finished grade, sidewalks or from any platform or projection from which they might be reached, accessible to pedestrians only (0-300V)
4. 12'-6" - Over residential property and driveways & those commercial areas such as parking lots and drive-in establishments not subject to truck (0-388V)
5. 16'-0" - Over commercial areas, parking lots, agricultural or other areas subject to truck traffic
6. 18'-0" - Over public streets, alleys, roads and driveways on other than residential property subject to truck
7. Meter can must be West River Electric approved and installed level in all directions, Ringless Type.
8. Member/contractor disconnect equipment must be weatherproof. Switch box must be covered when inspected. Installed per NEC & local utility specifications.
9. Ground wire No. 6 copper Minimum.
10. 5. 8'-5/8" long ground rod. NOTE: ground rod is not required if temp service is adjacent to pad mount transformer.
11. Permit for temporary service or a wiring affidavit approving the service for connection must be obtained before service can be provided.

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY M.S.	DATE 1/2007

TEMPORARY  
OVERHEAD  
TEMPORARY SERVICE  
WEST RIVER ELECTRIC ASSOCIATION

	REV. DATE 10/2019	REV. NO. 3
Pg 05	DRAWING NUMBER TEMP-3	



# PERMANENT SERVICE REQUIREMENTS

1. The Member is urged to make early contact with WREA for permanent service.
2. A wiring certificate or city inspection must be obtained before service is energized.
3. Permanent services must be located where the meter will be protected from damage. No meter shall be installed over or under any decks. Should relocation be necessary, the cost to move the service will be consumer's responsibility.
4. Overhead permanent services shall be supported on 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.
5. Member/contractor – owned metering equipment, switching devices, conduits, conductors, lights, etc., are not to be mounted on WREA's primary poles.
6. A 5 foot working distance must be maintained between the meter socket, meter pedestal, or meter loop and any obstructions. (fences,walls,etc)  
(Per latest NEC Requirements)
7. Grounding Requirements:
  - a. Ground wire to be minimum #6 copper in separate conduit.
  - b. Ground rod to be a minimum 8' long 5/8" copper. (Per latest NEC Requirements)  
Ground rods are to be driven, not laid in ditch. (Per latest NEC Requirements)
8. Metering Requirements:
  - a. All meter sockets to be rated 200 amp unless prior approval is given.
  - b. Commercial or 320 amps meter service requires a lever bypass socket.
  - c. Three phase services will, at the option of WREA, be CT metered.
  - d. When CT metering is required the consumer will provide and install a West River Electric approved CT cabinet (See CT drawing page Meter-4) and 13 terminal meter socket (See three phase meter drawing page Meter-5).  
All current metering will be done at 120 volts. See CT cabinet drawing page (METER-4).
  - e. Meter locations may be determined by the West River Electric and may vary depending on front or rear location of existing facilities.
  - f. All meters must be outside of buildings and accessible to WREA employees.
  - g. When conduit is used on the line side of meter, all elbows shall be of the long sweep type.
  - h. See meter socket drawing on page Meter-5 for CT metered serviced.
  - i. Three phase instrument meter sockets will be purchase from WREA (METER-5)
  - j. If a self contained meter housing is not attached to a building then a service disconnect will be required on the load side or adjacent to the meter housing.  
Both the disconnect and conductor on the load side will be member/contractor owned.
  - k. When using a multiple meter housing, the service shall be clearly marked and securely attached to the meter socket.
9. Trench & Conduit Requirements:
  - a. All primary trenches to be backfilled before services can be energized.
  - b. Secondary trench must run at a right angle from the meter socket for at least 6' before turning 90 degrees.
  - c. Maintain 6' of separation from building footing, water and sewer lines.
  - d. PVC minimum is schedule 80.
  - e. No LB elbows on the line side conduit allowed. All corners shall be of the long sweep variety.
  - f. Slip sleeves are required on all PVC risers.

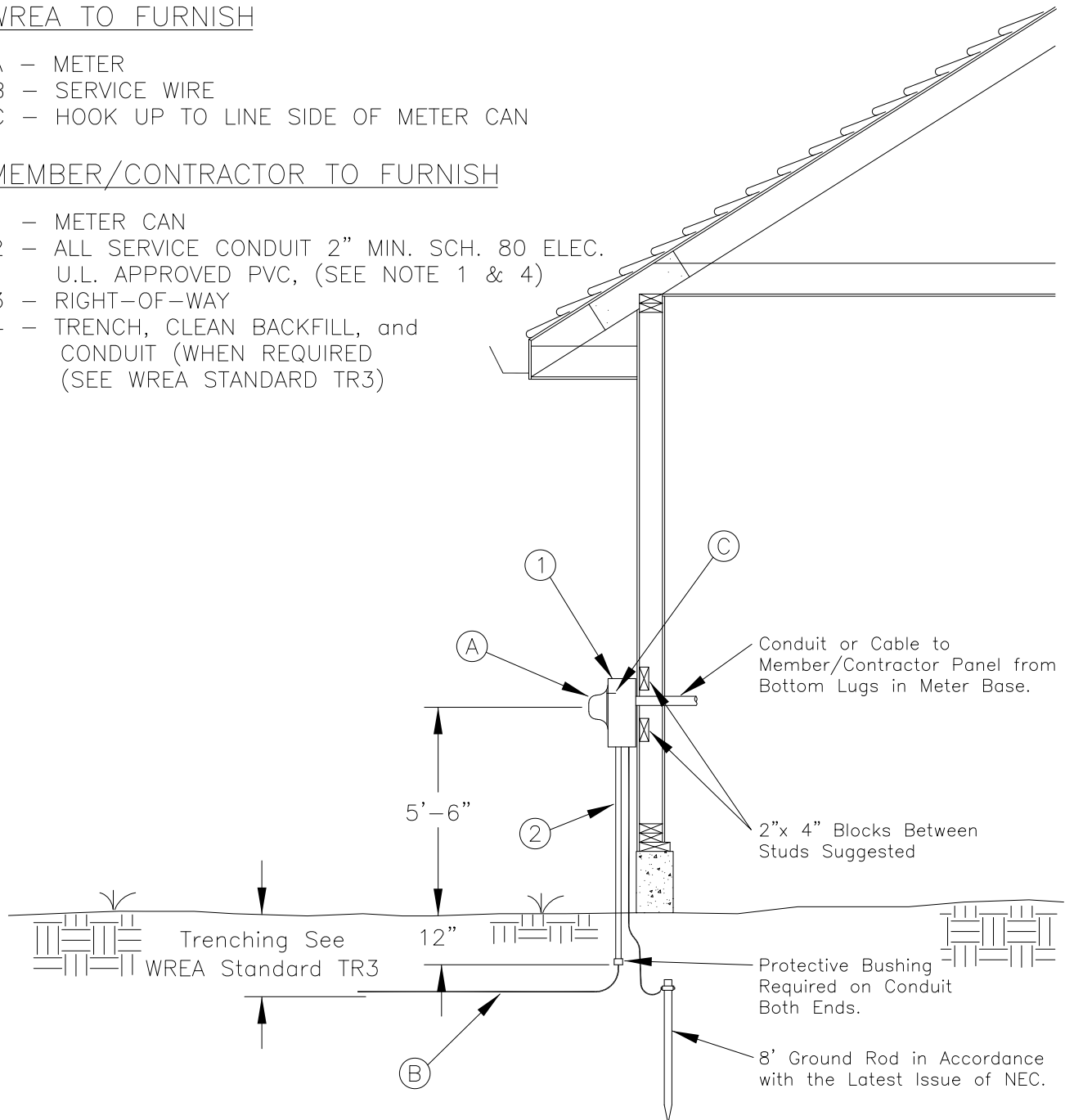
DESIGN: M.S.	PERMANENT SERVICE			REV. DATE 10/2019	REV. NO. 2
DRAWING: A.K.	REQUIREMENTS FOR			DRAWING NUMBER	
APPROVED BY M.S.	DATE 1/2007	PERMANENT ELECTRIC SERVICE		Pg 06	
		WEST RIVER ELECTRIC ASSOCIATION		PERM-1	

## WREA TO FURNISH

- A – METER
- B – SERVICE WIRE
- C – HOOK UP TO LINE SIDE OF METER CAN

## MEMBER/CONTRACTOR TO FURNISH

- 1 – METER CAN
- 2 – ALL SERVICE CONDUIT 2" MIN. SCH. 80 ELEC. U.L. APPROVED PVC, (SEE NOTE 1 & 4)
- 3 – RIGHT-OF-WAY
- 4 – TRENCH, CLEAN BACKFILL, and CONDUIT (WHEN REQUIRED (SEE WREA STANDARD TR3)



## NOTES:

1. If paved area is adjacent to building foundation, the conduit must be installed beyond the pavement. All elbows shall be long sweep variety.
2. Service entrance to be on the outside of structure.
3. Meter base and conduit must be securely attached to structure.
4. Conduit to come into the bottom of meter can on right or left side not in the center.
5. Meter socket and conduit shall not be located under or over decks
6. WREA will flag route for trenching.
7. Wiring certificate must be at WREA's office before service is energized also blue sticker/city inspection must be attached to meter socket.

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY: M.S.	DATE: 1/2007

PERMANENT SERVICE  
STANDARD METHOD OF INSTALLING UNDERGROUND SERVICE  
SELF-CONTAINED METERING 320 AMPERE AND BELOW  
WEST RIVER ELECTRIC ASSOCIATION

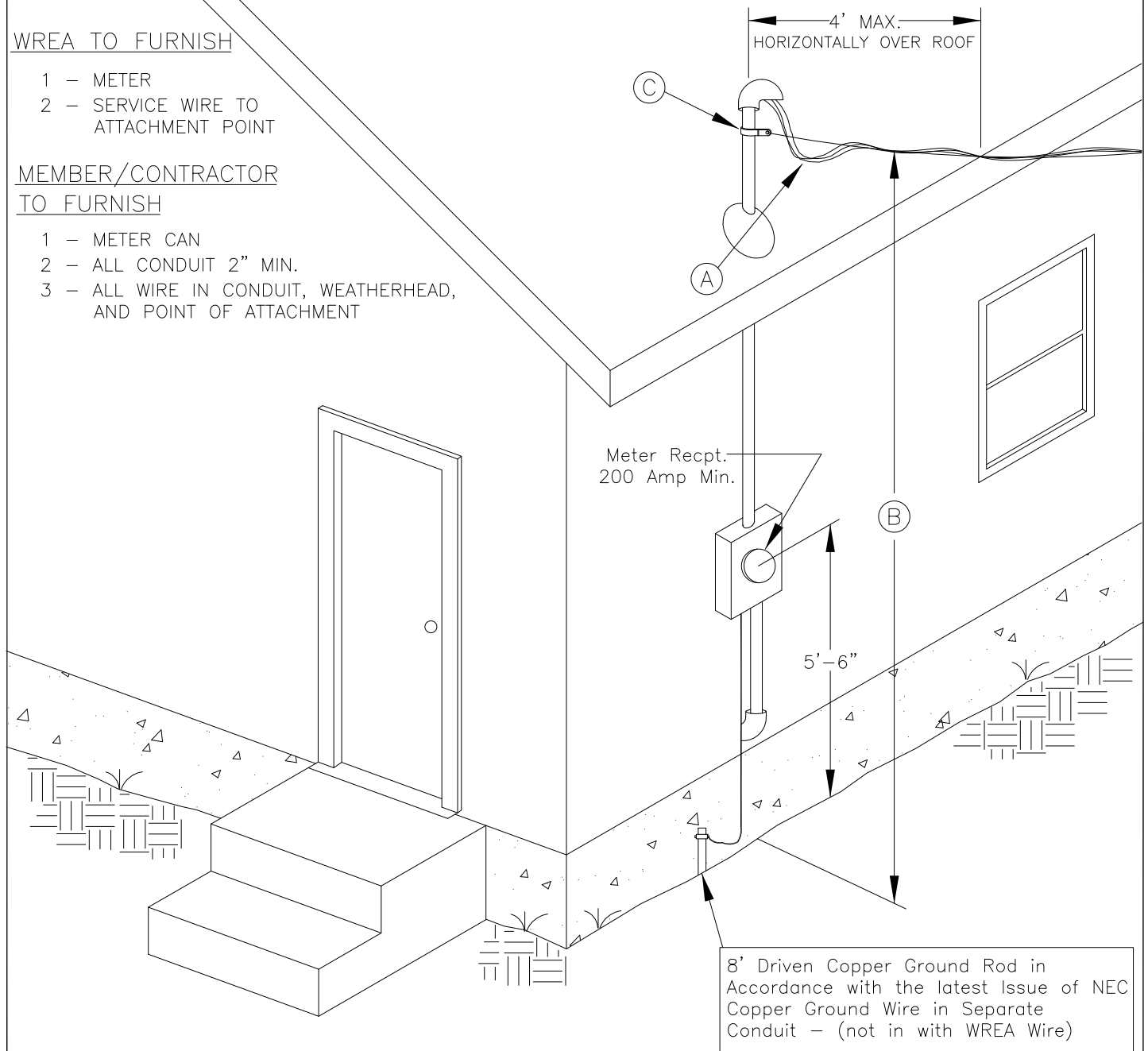
REV. DATE: 10/2019	REV. NO.: 3
Pg 07	DRAWING NUMBER: PERM-2

### WREA TO FURNISH

- 1 - METER
- 2 - SERVICE WIRE TO ATTACHMENT POINT

### MEMBER/CONTRACTOR TO FURNISH

- 1 - METER CAN
- 2 - ALL CONDUIT 2" MIN.
- 3 - ALL WIRE IN CONDUIT, WEATHERHEAD, AND POINT OF ATTACHMENT



### NOTES:

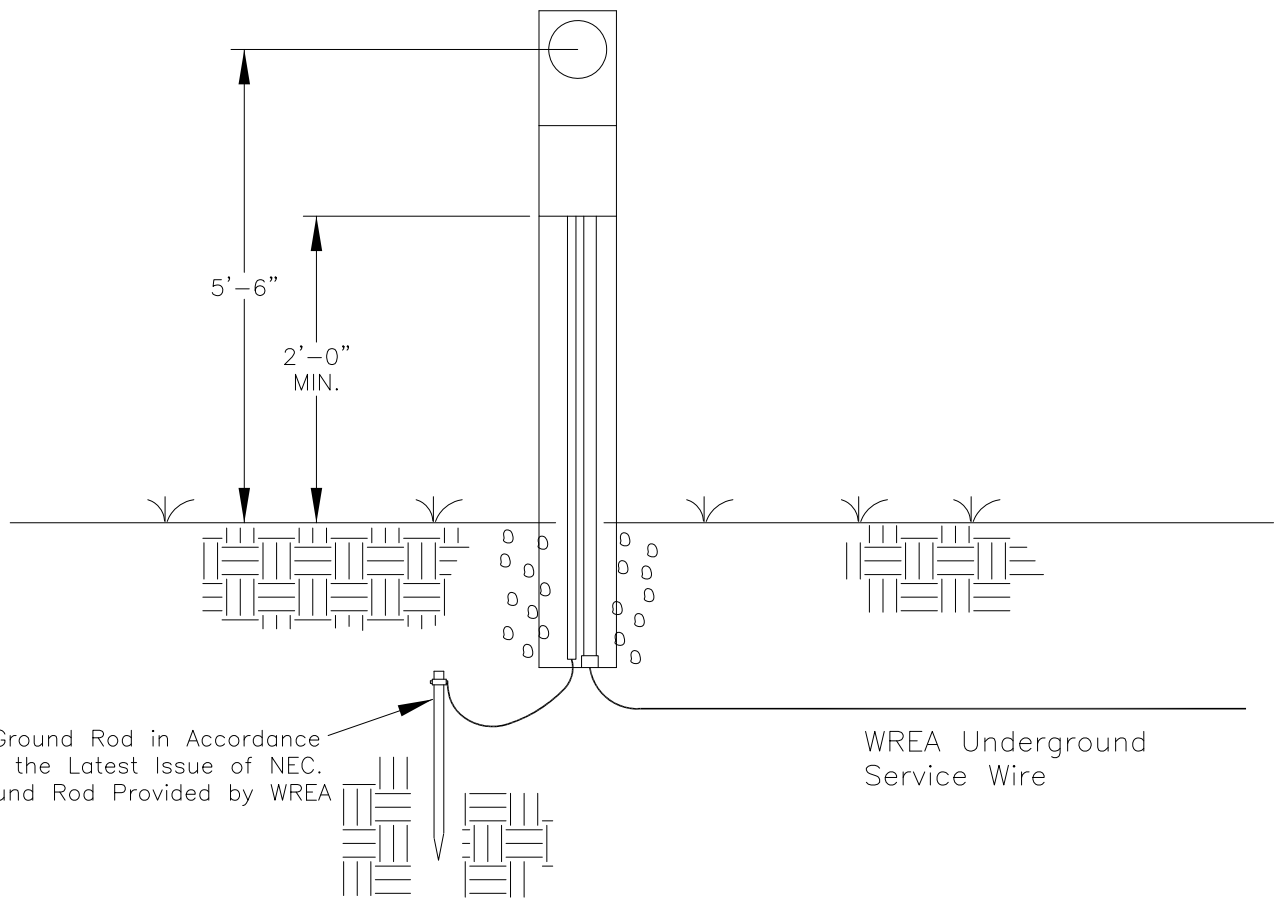
CLEARANCES A, B, AND C ARE BASED ON THE CURRENT NESC AND ARE APPLICABLE WHERE VOLTAGE IS LIMITED TO 150 VOLTS TO GROUND.

- a. The cable drip loop must be at least 18" above the roof.
- b. 12' above finished grade, or from any platform or projection from which conductors may be reached by pedestrian traffic - 14' over residential driveways - 18' over streets. More if practical.
- c. Consumer to supply insulated dead-end for 2" minimum rigid conduit or for side of building 1/2" min. eye bolt dead-end and insulator - eye bolt must go through wall and fasten inside with nut and washer - no lag bolts - no house knobs allowed.
- d. See drawing "PERM" (Page 3) for any other requirements.
- e. Electrical inspection or wiring certificate must be present.
- f. Conductor must be 18" outside the weatherhead.
- g. Meter socket shall not be located under or over a deck.

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY M.S.	DATE 1/2007

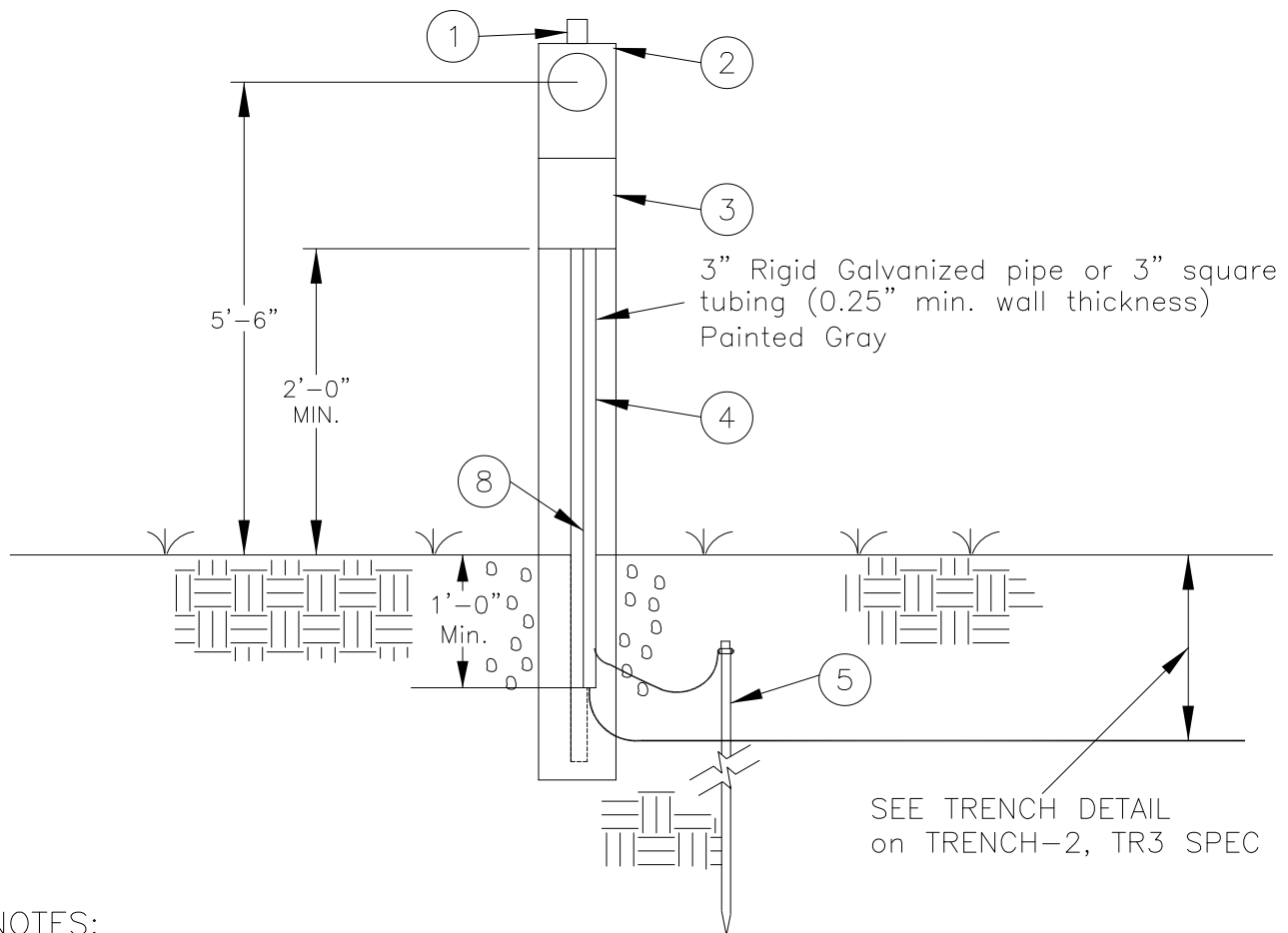
PERMANENT SERVICE  
320 AMP OR LESS RESIDENTIAL  
OVERHEAD SERVICE  
WEST RIVER ELECTRIC ASSOCIATION

REV. DATE 10/2019	REV. NO. 3
Pg 08	DRAWING NUMBER PERM-3



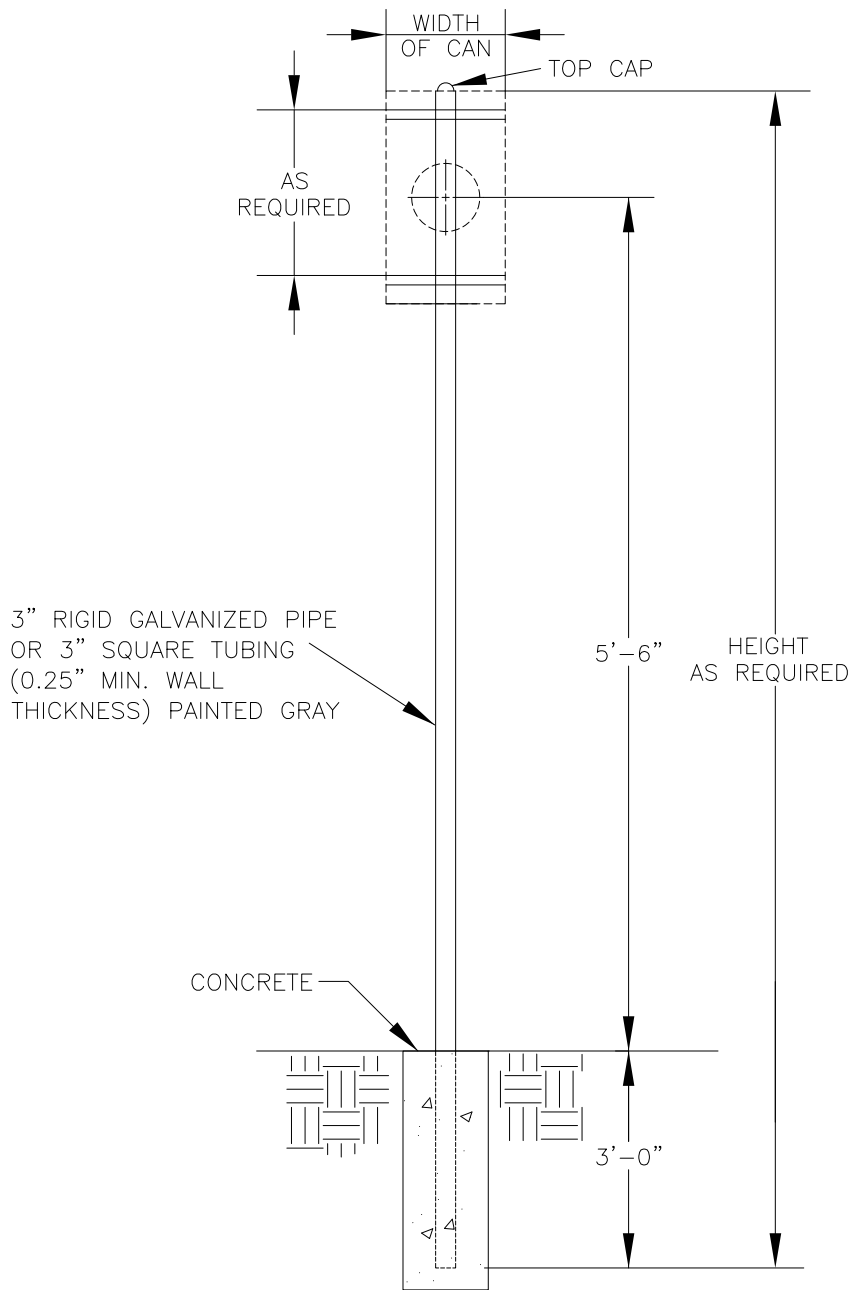
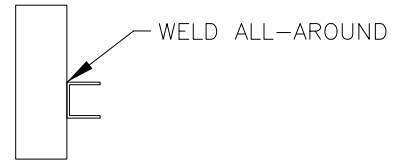
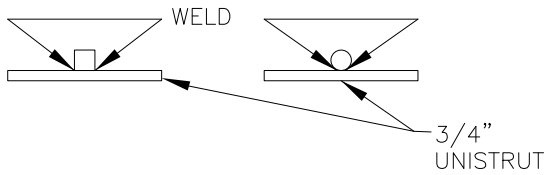
## NOTES:

1. Meter pedestal to be provided and owned by WREA.
2. Trench according to WREA specifications. WREA standard TR3 on Trench-2
3. Pedestal to be located at least 5' from this building; also clear of decks, porches, and other permanent obstructions.
4. WREA will flag route for trenching.
5. Wiring certificate must be at WREA office before service is energized also blue sticker/city inspection must be attached to meter socket.



#### NOTES:

1. For pedestal detail see: For U.L. approved, factory made meter/pedestal cabinet with service disconnect. Other designs must be pre-approved by a West River Electric Representative.
2. Meter can must be West River Electric approved ringless type and installed level in all directions. All commercial meter can installations must have a mechanical bypass
3. Member/contractor disconnect equipment weather light self contained switch box must be covered when inspected.
  - a.) Single Phase minimum capacity 30 amperes. To maximum capacity of 400 amperes.
  - b.) Three phase services over 200 amperes, must be instrument metered.
  - c.) All 480 volt services, must be instrument rated.
4. Ground wire No. 6 copper Minimum.
5. Ground rod 8' long 5/8" copper ground rod.
6. A permit for permanent service or a wiring affidavit approving the service for connection must be obtained before service can be provided.
7. Service Entrance – member/contractor will provide:
  - a.) Commercial – from a pad mount transformer to member/contractor Service Entrance;
    - \*All secondary conductors
    - \*All PVC Conduit (3" Schedule 80 minimum size) required.
  - b.) Commercial – From overhead transformers:
    - \*member/contractor to provide all secondary conductors and conduit, West River will provide the riser conduit up the pole.
  - c.) Residential from overhead or padmount transformer to member/contractor service entrance: \*West River Electric will provide all line side conductors, and pole conduit – all other conduit shall be provided by member/contractor.



#### NOTES:

PEDESTALS THAT ARE NOT MADE TO SPECIFICATION, AND ARE NOT AESTHETICALLY APPEALING TO THE MEMBER/CONTRACTOR OR WREA MAY BE REJECTED AND REQUIRE REPLACEMENT.

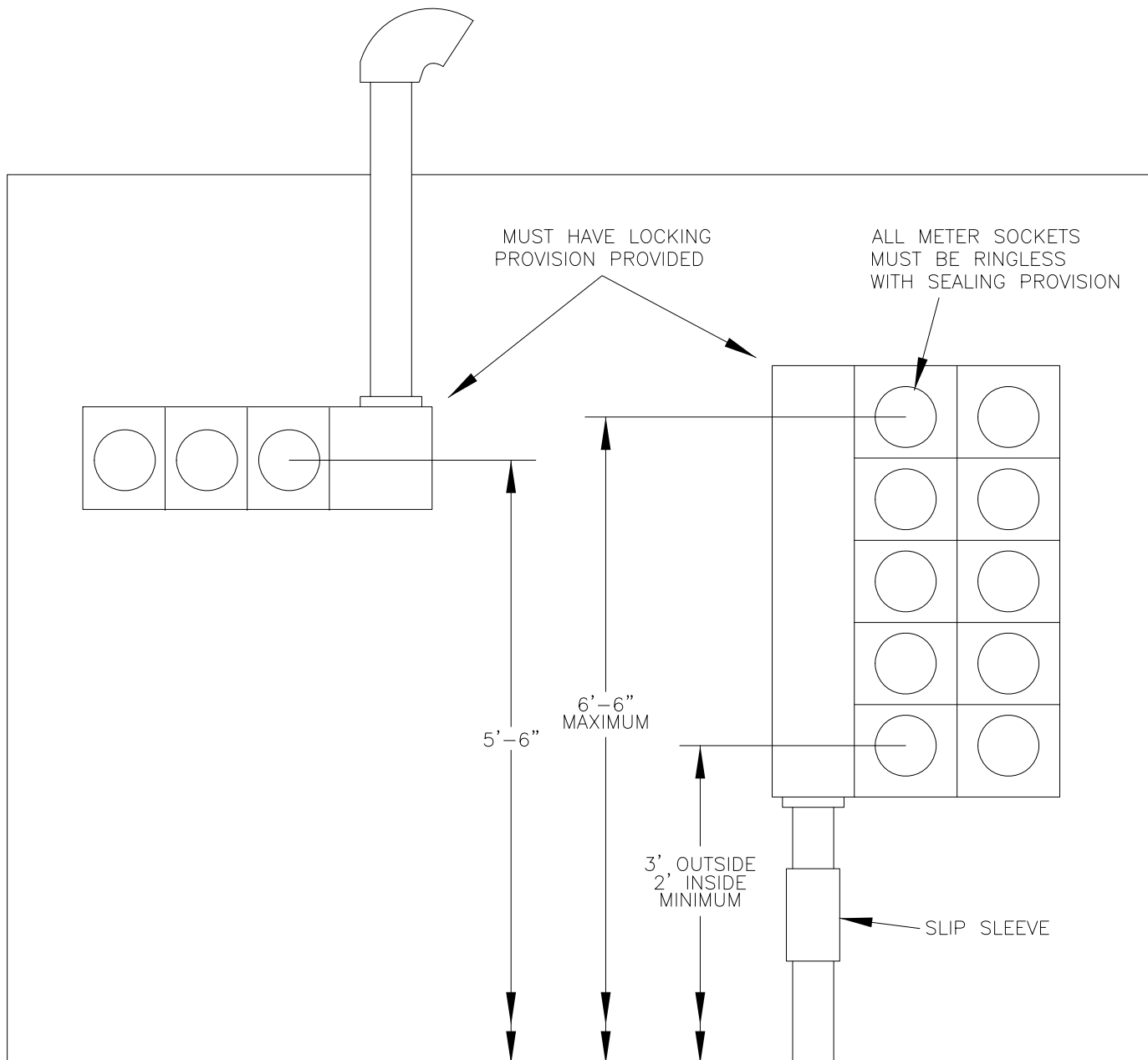
\*8'x5/8" COPPER GROUND  
(PER LATEST NEC REQUIREMENTS)

\*1-1/4" CONDUIT FOR METERING  
CABLE (GRC OR EMT ABOVE GRADE).

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY M.S.	DATE 05/19

PERMANENT SERVICE  
INSTRUMENT METERING PEDESTAL FOR  
PERMANENT UNDERGROUND SERVICES  
WEST RIVER ELECTRIC ASSOCIATION

REV. DATE 10/2019	REV. NO. 1
Pg 11	DRAWING NUMBER METER-2



\* METER MODULES OF ALL TYPES ARE TO BE MOUNTED NO LOWER THAN 24 INCHES CENTERLINE TO THE FIRST METER FROM THE GROUND AND NO HIGHER THAN 78 INCHES CENTERLINE TO THE TOP METER FROM THE GROUND. STANDARD SINGLE METER HEIGHT IS 66 INCHES FROM THE GROUND.

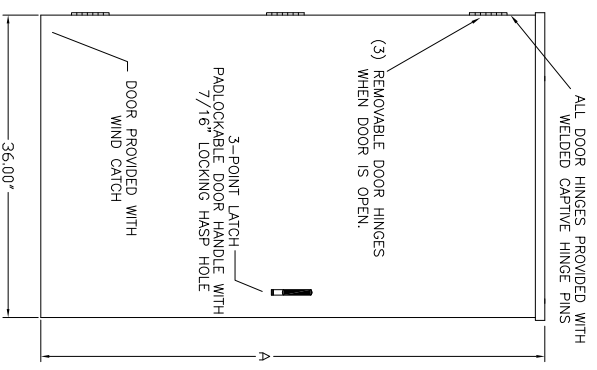
NOTE:

- LEVER OPERATED BYPASS REQUIRED ON ALL COMMERCIAL SOCKETS.
- PERMANENTLY AFFIXED IDENTIFICATION TAGS ARE REQUIRED
- UL APPROVED MANUFACTURED METER MODULES INSTALLED BY MEMBER/CONTRACTOR PER NEC, LOCAL AUTHORITY AND WEST RIVER ELECTRIC RULES.
- ATTACHED CT COMPARTMENTS OR ANY SWITCHGEAR / CT COMPARTMENTS MUST OBTAIN PRE-APPROVAL FROM WEST RIVER ELECTRIC.
- WIRING CERTIFICATE MUST BE AT WREA OFFICE BEFORE SERVICE IS ENERGIZED ALSO BLUE STICKER/CITY INSPECTION MUST BE ATTACHED TO METER SOCKET.

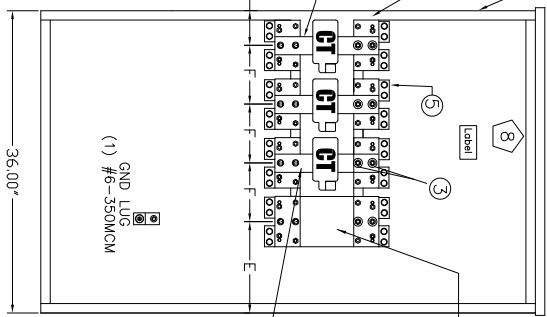
DSGN. M.S.	DISTRIBUTION STANDARD		REV. DATE	REV. NO.
DR. A.K.			10/2019	1
APPROVED BY	DATE	DRAWING NO.		
M.S.	05/19			
GANG METER MODULES AND METER PEDESTALS			Pg 12	METER-3
WEST RIVER ELECTRIC ASSOCIATION				

GENERAL NOTES

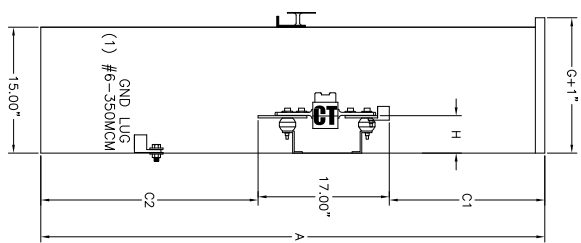
- 1- CURRENT TRANSFORMER CABINET COMPLES WITH NATIONAL ELECTRICAL CODE. DOOR HAS (3) HINGES WITH A 3 POINT DOOR LATCH AND PADLOCKABLE HANDLE WITH 7/16" LOCKING HASP HOLE.
- 2- INSULATOR SUPPORTS FOR BUS WITH 1 3/8"
- 3- TWO 1/2" MOUNTING BOLTS. 1 3/4".
- 4- CENTER TO CENTER FOR MOUNTING CT BAR
- 5- COPPER-ALUMINUM (1) 750MCM-#6 OR (2) 300MCM-#6
- 6- CABLE CONNECTION LUG. (UP TO 4 MAX.) SEE TABLE
- 7- NEUTRAL OR GROUNDED CONDUCTOR PROVIDED WITH (1) 10-24NC BOLT & A35 LUG FOR NEUTRAL TAP.
- 8- CENTER POINT - IS NOT REQUIRED IF SERVICE IS 1Ø.3W.
- 9- PROVIDE SHIPPING LINK/CT BAR. INSTALL CT BAR.
- \* 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 UL 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
  - CONTRACTOR TO PROVIDE TERMINAL LUGS



FRONT VIEW



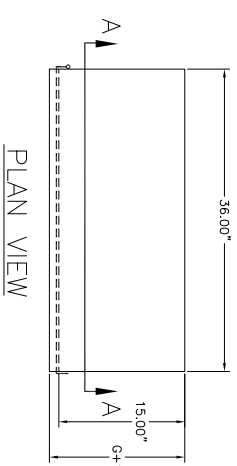
SECTION VIEW A-A



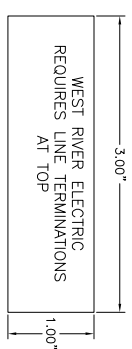
SIDE VIEW



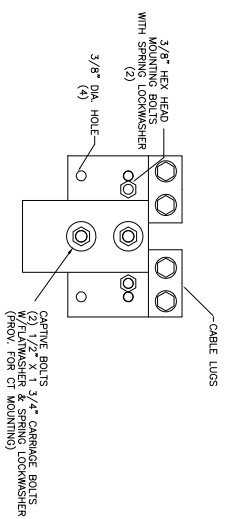
"INSTALL SHIPPING LINKS"



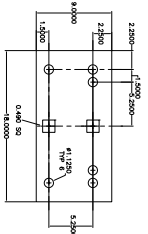
PLAN VIEW



LABEL



LOAD



AMPACITY		MINIMUM DIMENSION								CATALOG NUMBER			
LUGS		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"	CR48S	WRET4-4TM	WRET4-3TM
	2/3	48"	36"	11.00"	21.00"	4.125"	10.50"	7"	15"	4.5"	CR48S	WRET6-4TM	WRET6-3TM

NOTE: FOR SINGLE PHASE UNITS, OMIT BØ BUS ASSEMBLY

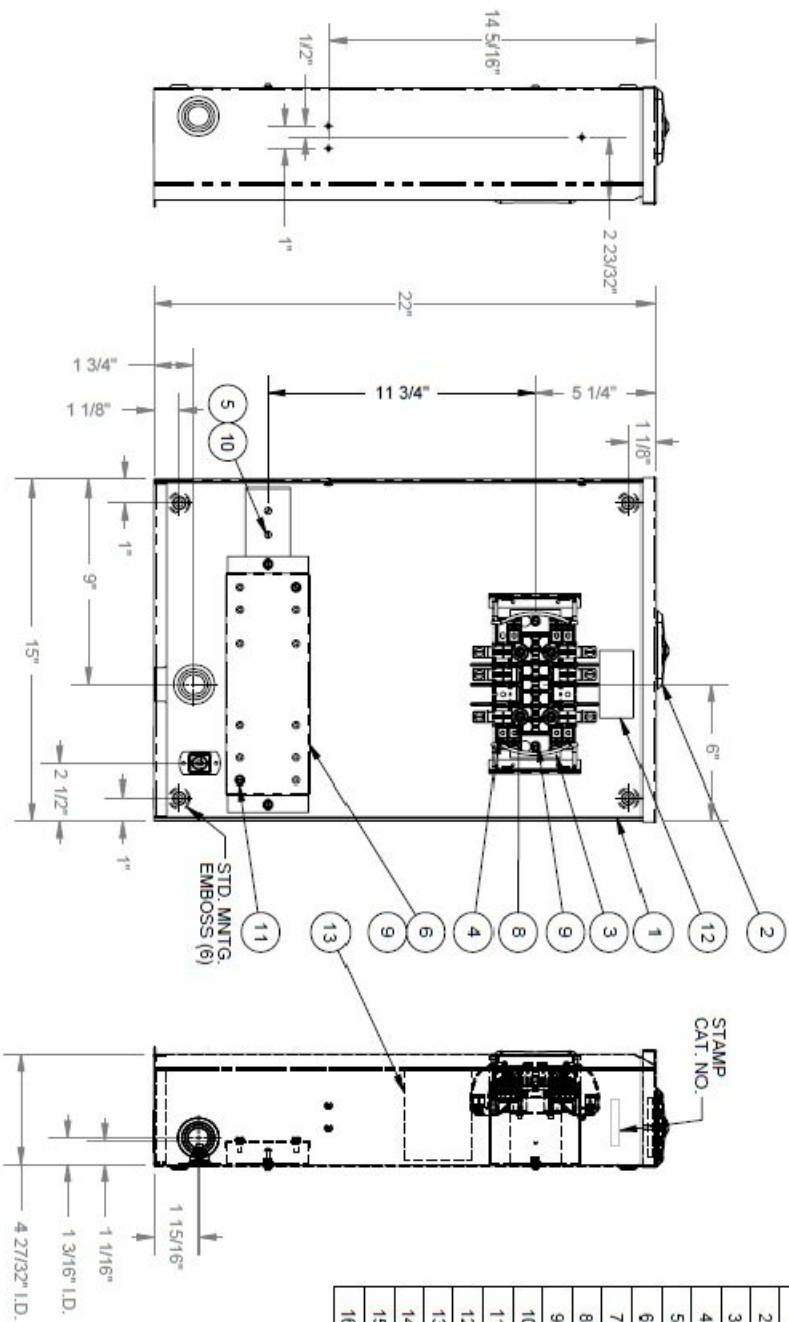
PHASE BUS PAD DETAILS

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

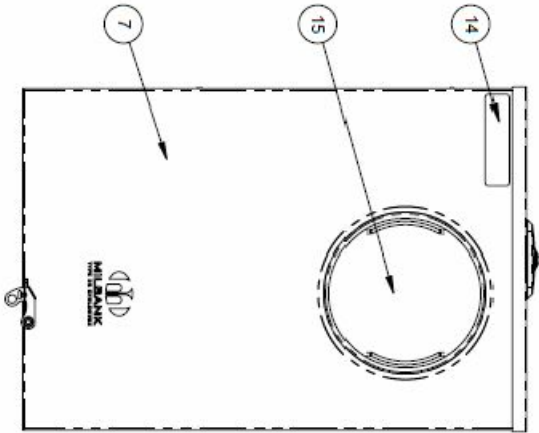
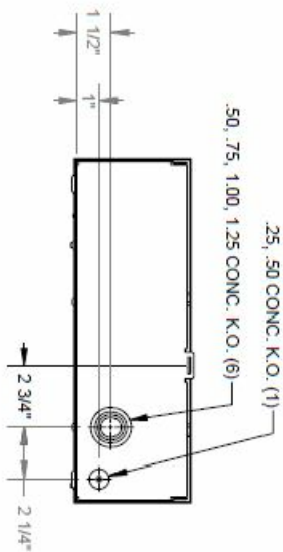
REQ. BY DATE	DESIGN DATE	FOR NAME	FILE
CP 04/16/12	05/04/11	WEST RIVER ELECTRIC	400-800 AMP
AK 03/03/14		WESTERN TRANSFORMER CABINET	480 VOLT OR LESS
AK 04/03/19		APPROVAL DRAWING	CURRENT TRANSFORMER CABINET
AK 10/09/19		ECP	REV DATE 03/2014
AMERICAN Midwest POWER		DRAWING NUMBER	
MINNEAPOLIS, MINNESOTA		NTS	
PHONE (763) 551-1555		FAX (763) 551-8275	
Pg 13		METER-4	



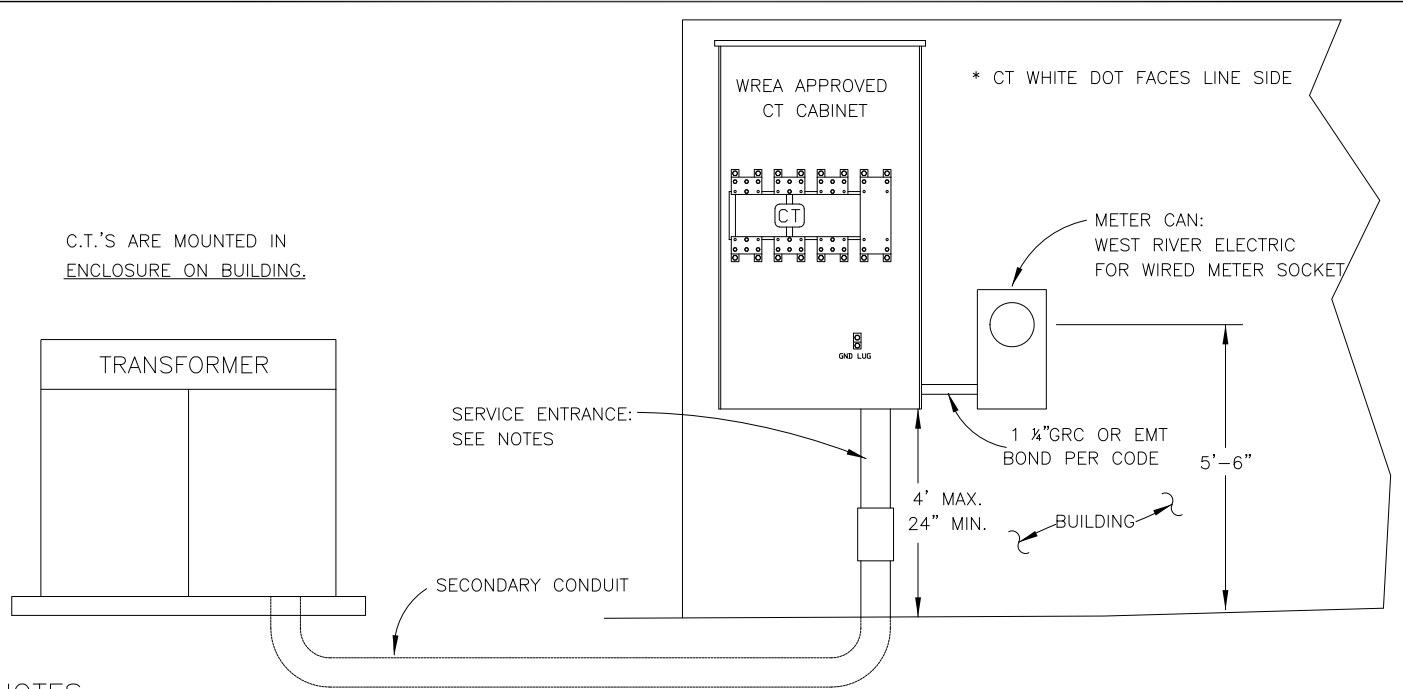
ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	1167973	SHELL WELDMENT
2	1	1028222	CLOSING PLATE ASSY
3	1	1153700	BRIDGE
4	1	1026536	NO BYPASS BLOCK ASSY.
5	1	1138923	INSULATOR
6	1	1159186	BRIDGE
7	1	1153698	FRONT ASSY.
8	4	1025353	SCREW 10-32 x 1 1/16
9	4	1000183	SCREW 12-24 x 5/16
10	2	1022084	SCREW 8-32 x 3/4
11	2	1001311	SCREW, SHW-SC #10-32 x 1/2 ST
12	1	1000044	LABEL, HUB OPENING
13	1	1153701	INSTRUMENT TRANS. LABEL
14	1	1000064	LABEL, WARNING
15	1	1000158	WIREMAN PAD
16	1	1154280	CARTON (NOT SHOWN)



NOTES:  
1.) SCREWS 1022084 AND 1001311 TO BE INSTALLED  
FINGER TIGHT ONLY.



REV. DATE		DESCRIPTION		ECO No. I. BY	
1	1/3/14	NEW		24915	D.F.
Material:		16 GA. GALV. STEEL		Drawn By:	
ShearDie No.:		MILBANK LIGHT GRAY		D.F.	
Finish:		MILBANK LIGHT GRAY		Approved By:	
Part No.:		LBS. EA.		Date:	
Paint Qty.:		GRAMS		Sheet	
Tolerances:		Third Angle		1 of 2	
Unless Specified Otherwise		X.X		Drawing No.:	
X.XX		1.03		Date:	
X.XXX		1.016		1/3/14	
X"		1/2"		4726-101	
Scale:		NTS		WEST RIVER ELECTRIC	
Drawn By:		Checked By:		Customer:	
D.F.		D.F.		SC4726-XL-NTS-TSTM	
Material:		KANSAS CITY, MO. USA		Catalog No.:	
ShearDie No.:		MILBANK ENERGY AT WORK		Customer:	
Finish:		TEST SWITCH ENCLOSURE		WEST RIVER ELECTRIC	
Part No.:		NO-BYPASS, 20 AMP/TRF RATED		Drawing No.:	
Paint Qty.:		RINGLESS, 1-PC. COVER		Date:	
Tolerances:		Third Angle		1/3/14	
Unless Specified Otherwise		X.X		4726-101	
X.XX		1.03		WEST RIVER ELECTRIC	
X.XXX		1.016		Customer:	
X"		1/2"		SC4726-XL-NTS-TSTM	
Scale:		NTS		Catalog No.:	
Drawn By:		Checked By:		Customer:	
D.F.		D.F.		WEST RIVER ELECTRIC	
Material:		KANSAS CITY, MO. USA		Drawing No.:	
ShearDie No.:		MILBANK ENERGY AT WORK		Date:	
Finish:		TEST SWITCH ENCLOSURE		1/3/14	
Part No.:		NO-BYPASS, 20 AMP/TRF RATED		4726-101	
Paint Qty.:		RINGLESS, 1-PC. COVER		WEST RIVER ELECTRIC	
Tolerances:		Third Angle		Customer:	
Unless Specified Otherwise		X.X		SC4726-XL-NTS-TSTM	
X.XX		1.03		Catalog No.:	
X.XXX		1.016		Customer:	
X"		1/2"		WEST RIVER ELECTRIC	
Scale:		NTS		Drawing No.:	
Drawn By:		Checked By:		Date:	
D.F.		D.F.		1/3/14	
Material:		KANSAS CITY, MO. USA		4726-101	
ShearDie No.:		MILBANK ENERGY AT WORK		WEST RIVER ELECTRIC	
Finish:		TEST SWITCH ENCLOSURE		Customer:	
Part No.:		NO-BYPASS, 20 AMP/TRF RATED		SC4726-XL-NTS-TSTM	
Paint Qty.:		RINGLESS, 1-PC. COVER		Catalog No.:	
Tolerances:		Third Angle		Customer:	
Unless Specified Otherwise		X.X		WEST RIVER ELECTRIC	
X.XX		1.03		Drawing No.:	
X.XXX		1.016		Date:	
X"		1/2"		1/3/14	
Scale:		NTS		4726-101	
Drawn By:		Checked By:		WEST RIVER ELECTRIC	
D.F.		D.F.		Customer:	
Material:		KANSAS CITY, MO. USA		SC4726-XL-NTS-TSTM	
ShearDie No.:		MILBANK ENERGY AT WORK		Catalog No.:	
Finish:		TEST SWITCH ENCLOSURE		Customer:	
Part No.:		NO-BYPASS, 20 AMP/TRF RATED		WEST RIVER ELECTRIC	
Paint Qty.:		RINGLESS, 1-PC. COVER		Drawing No.:	
Tolerances:		Third Angle		Date:	
Unless Specified Otherwise		X.X		1/3/14	
X.XX		1.03		4726-101	
X.XXX		1.016		WEST RIVER ELECTRIC	
X"		1/2"		Customer:	
Scale:		NTS		SC4726-XL-NTS-TSTM	
Drawn By:		Checked By:		Catalog No.:	
D.F.		D.F.		Customer:	
Material:		KANSAS CITY, MO. USA		WEST RIVER ELECTRIC	
ShearDie No.:		MILBANK ENERGY AT WORK		Drawing No.:	
Finish:		TEST SWITCH ENCLOSURE		Date:	
Part No.:		NO-BYPASS, 20 AMP/TRF RATED		1/3/14	
Paint Qty.:		RINGLESS, 1-PC. COVER		4726-101	
Tolerances:		Third Angle		WEST RIVER ELECTRIC	
Unless Specified Otherwise		X.X		Customer:	
X.XX		1.03		SC4726-XL-NTS-TSTM	
X.XXX		1.016		Catalog No.:	
X"		1/2"		Customer:	
Scale:		NTS		WEST RIVER ELECTRIC	
Drawn By:		Checked By:		Drawing No.:	
D.F.		D.F.		Date:	
Material:		KANSAS CITY, MO. USA		1/3/14	
ShearDie No.:		MILBANK ENERGY AT WORK		4726-101	
Finish:		TEST SWITCH ENCLOSURE		WEST RIVER ELECTRIC	
Part No.:		NO-BYPASS, 20 AMP/TRF RATED		Customer:	
Paint Qty.:		RINGLESS, 1-PC. COVER		SC4726-XL-NTS-TSTM	
Tolerances:		Third Angle		Catalog No.:	
Unless Specified Otherwise		X.X		Customer:	
X.XX		1.03		WEST RIVER ELECTRIC	
X.XXX		1.016		Drawing No.:	
X"		1/2"		Date:	
Scale:		NTS		1/3/14	
Drawn By:		Checked By:		4726-101	
D.F.		D.F.		WEST RIVER ELECTRIC	

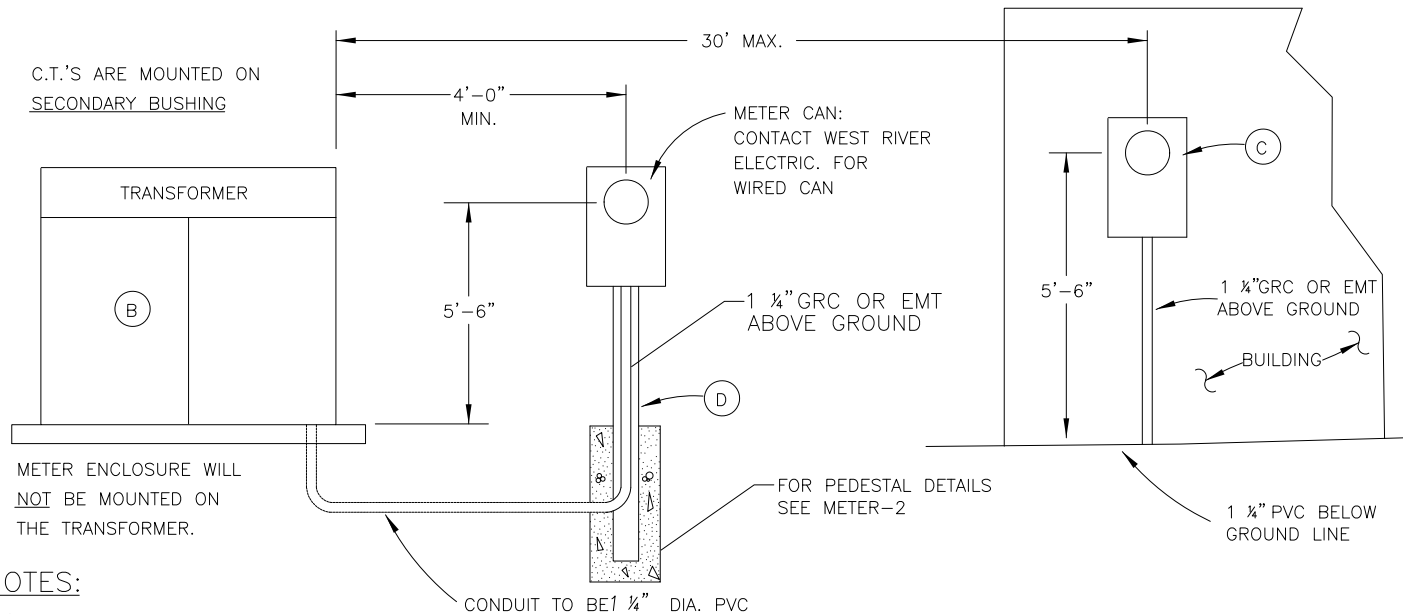


#### NOTES:

- INSTRUMENT METERING WILL BE REQUIRED ON:
  - \*1Ø LOADS ABOVE 400 AMPS
  - \*3Ø LOADS ABOVE 200 AMPS
  - \*480 VOLT SERVICES
- SERVICE ENTRANCE RISERS IN EXCESS OF TWO (2) WITH A SINGLE SET OF CONDUCTORS IN EACH RISER MUST OBTAIN PRE-APPROVAL FROM WEST RIVER ELECTRIC
- SERVICE ENTRANCE CONDUCTORS SHALL NOT PASS THRU ANY OTHER ENCLOSURE PRIOR TO CT CABINET
- CONDUCTORS SHALL NOT PASS IN FRONT OF BUSS OR CT.
- TOP LUGS IN CT CABINET SHALL BE LINE SIDE.

#### C.T. CABINETS:

- \* MUST BE APPROVED BY WEST RIVER ELECTRIC
- \* NEMA 3R RATED
- \* UL LISTED C.T. CABINET
- \* FURNISHED WITH FACTORY LUGS FOR PHASE AND NEUTRAL CONDUCTORS AND PROVISIONED FOR USE WITH STANDARD BAR-TYPE C.T.s
- \* RATED AND/OR INSTALLED TO MEET APPROPRIATE SHORT CIRCUIT CURRENT RATING. (SEE NEC)
- \* CABINET USE FOR SERVICES UP TO 800 AMPS. PRIOR APPROVAL FROM WEST RIVER ELECTRIC MUST BE OBTAINED FOR USE OVER 800 AMPS.



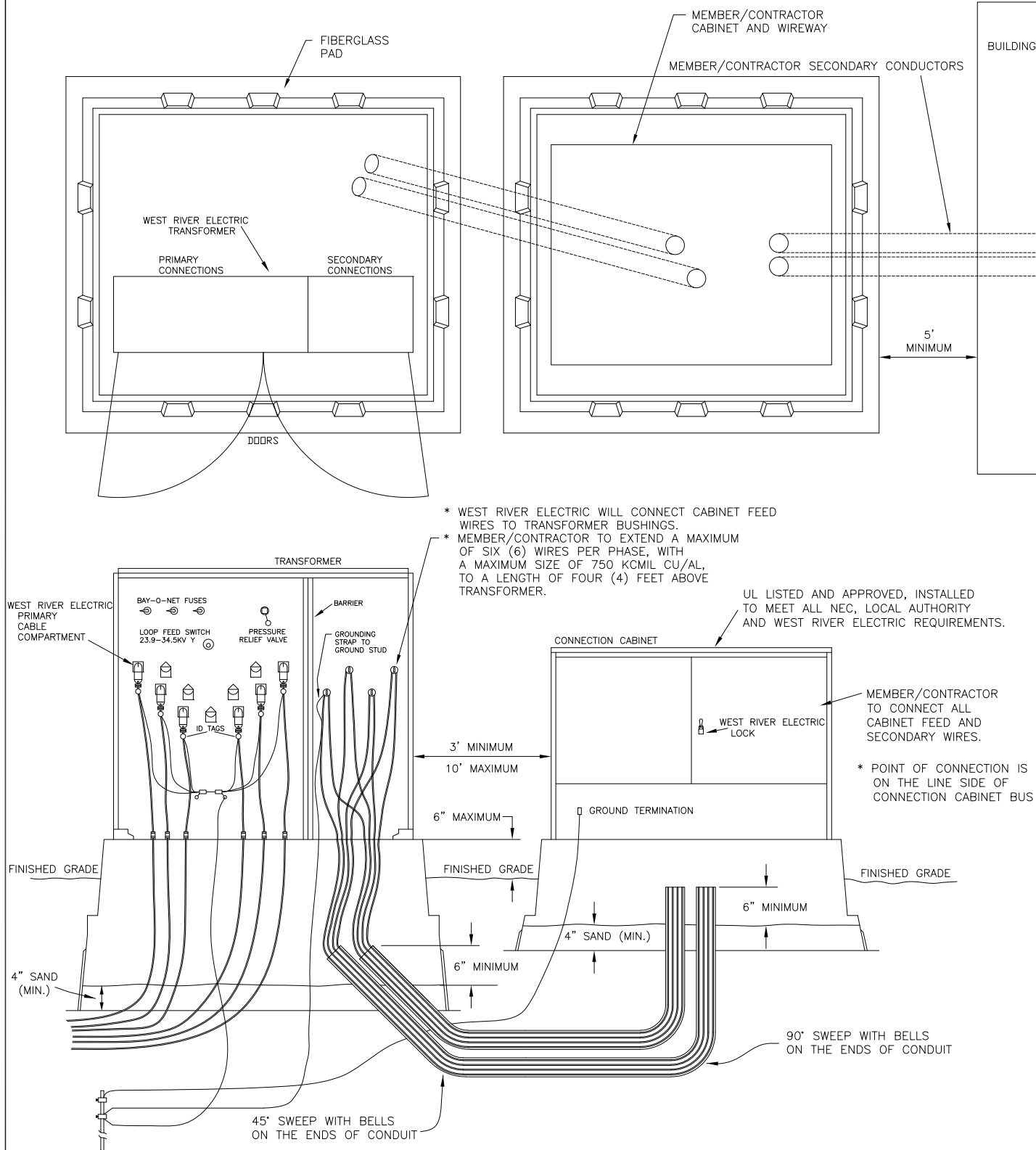
#### NOTES:

- INSTRUMENT METERING WILL BE REQUIRED ON:
  - \*1Ø 400 AMPS AND ABOVE
  - \*3Ø LOADS ABOVE 200 AMPS
  - \*480 VOLT SERVICES
- TRANSFORMER MUST BE FOR SINGLE SERVICE ONLY (DEDICATED TRANSFORMER)
- THE PREFERRED METER LOCATION IS ON THE BUILDING LOCATION MUST BE WITHIN 30' CONDUIT RUN. FOR DISTANCES GREATER THAN 30' A PEDESTAL MUST BE USED.
- METER STAND TO BE SUPPLIED BY THE MEMBER/CONTRACTOR.

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY M.S.	DATE 10/2019

METERING STANDARD  
INSTRUMENT METERING  
UNDERGROUND SERVICES  
WEST RIVER ELECTRIC ASSOCIATION

REV DATE 10/2019	REV NO. 1
Pg 15	DRAWING NUMBER COMM-1



WEST RIVER ELECTRIC WILL FURNISH, INSTALL, OWN AND MAINTAIN

1. PAD-MOUNTED TRANSFORMER
2. PRIMARY CABLE AND TERMINATIONS
3. TRANSFORMER GROUNDING SYSTEM
4. TRANSFORMER SECONDARY TERMINATION LUGS
5. WEST RIVER ELECTRIC LOCKS ON TRANSITION CABINET

METERING LOCATION:

1. METERING CURRENT TRANSFORMERS ON TRANSFORMER BUSHINGS, NOT IN THE CONNECTION CABINET.
2. SEE WEST RIVER ELECTRIC IF METERING IS REQUIRED IN CONNECTION CABINET.

MEMBER/CONTRACTOR WILL FURNISH, INSTALL AND MAINTAIN

1. SECONDARY CONNECTION CABINET AND FIBERGLASS PAD
2. SOIL COMPACTION UNDER FIBERGLASS PADS OF AT LEAST 2,000 POUNDS PER SQUARE FOOT
3. CONDUITS FROM CABINET TO TRANSFORMER SECONDARY COMPARTMENT

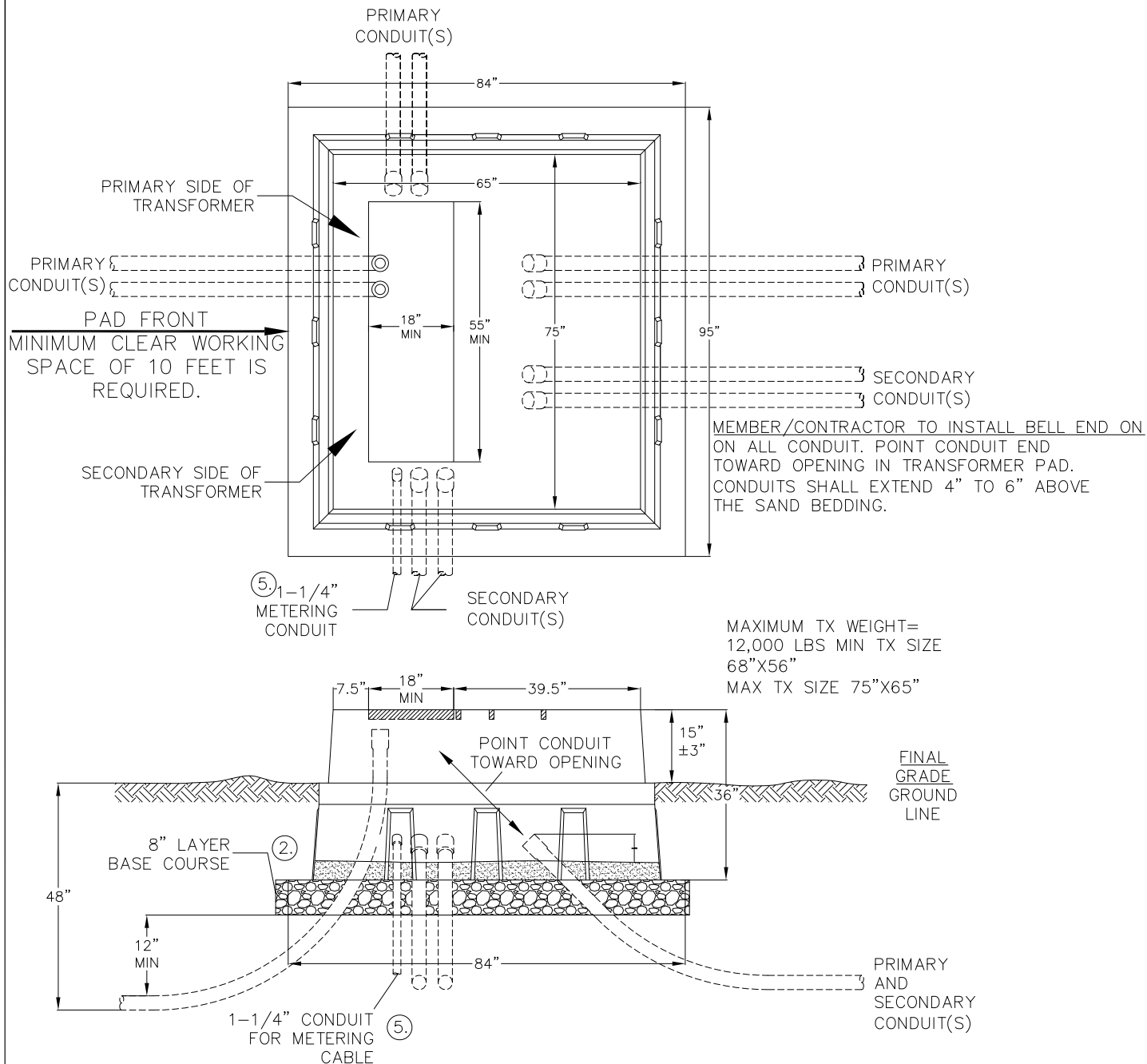
CONTACT WEST RIVER ELECTRIC REPRESENTATIVE FOR FURNISHING, INSTALLING AND MAINTAINING

1. TRANSFORMER FIBERGLASS PAD
2. PRIMARY CONDUIT INTO PAD IF REQ'D BY WREA
3. BARRIER OR OTHER PROTECTION FOR TRANSFORMER IF SPECIFIED BY WEST RIVER ELECTRIC
4. INSTALLATION OF SECONDARY CONDUCTOR FROM TRANSFORMER TO CONNECTION CABINET
5. METER SOCKET

DESIGN: M.S.  
DRAWING: A.K.  
APPROVED BY: M.S. DATE: 10/2019

METERING STANDARD  
3Ø PAD-MOUNTED SECONDARY  
TRANSITION CABINET  
(SHOWING MEMBER/CONTRACTOR-OWNED CABINET AND WIREWAY REQUIRED WHEN MEMBER/CONTRACTOR INSTALLS MORE THAN SIX CABLES PER LUG)

REV. DATE: 10/2019  
REV. NO.: 1  
DRAWING NUMBER: COMM-2  
Pg 16



NOTES:

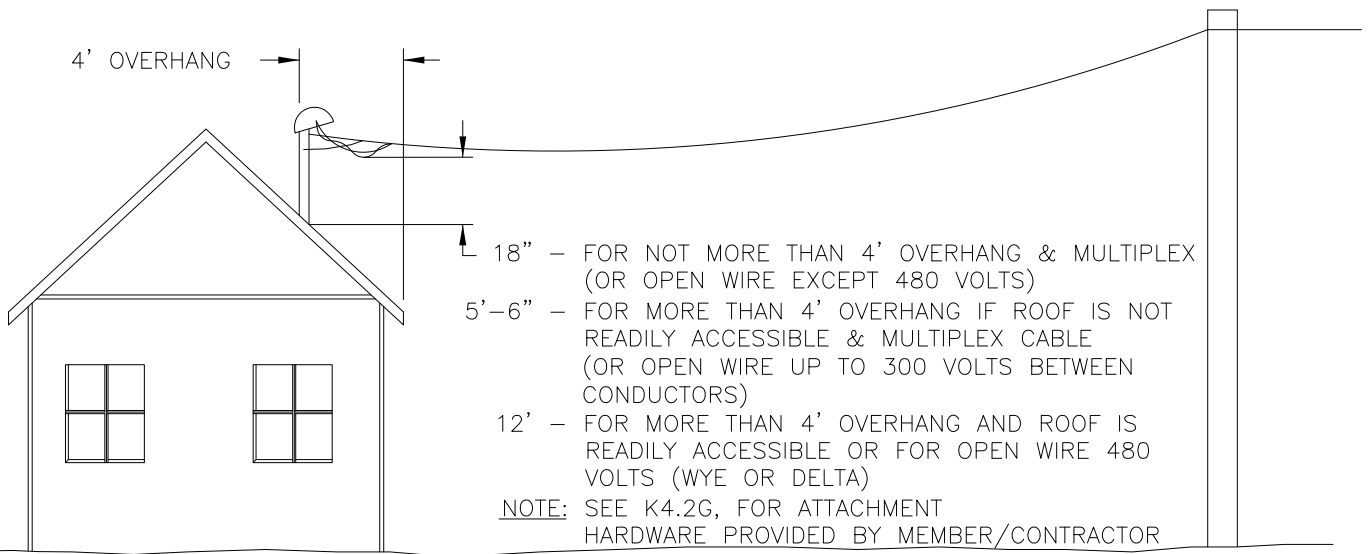
- 1: MEMBER/CONTRACTOR WILL BE REQUIRED TO LEAVE AN EXCESS OF SECONDARY WIRE, STARTING AT THE CONDUIT BELL, SUFFICIENT TO REACH 3 FEET ABOVE THE TRANSFORMER SECONDARY BUSHINGS (OR 7 FEET ABOVE PAD WHEN TRANSFORMER HAS NOT BEEN INSTALLED).
- 2: MEMBER/CONTRACTOR WILL PROVIDE THE BACKFILLING, 8" COMPACTED BASE COURSE 12" WIDE (MINIMUM) CENTERED ALONG THE BOTTOM EDGE OF THE PAD, SET PAD, AND PROVIDE 4" LAYER OF SAND. INSTALL MECHANICAL PROTECTION PER WREA SPECIFICATIONS WHEN TRANSFORMER PAD IS LESS THAN 6 FEET AWAY FROM SURFACES TRAVERSED BY VEHICLES (INCLUDING PARKING AREAS).

MINIMUM CLEAR WORKING SPACE OF 10 FEET IS REQUIRED IN FRONT OF TRANSFORMER.

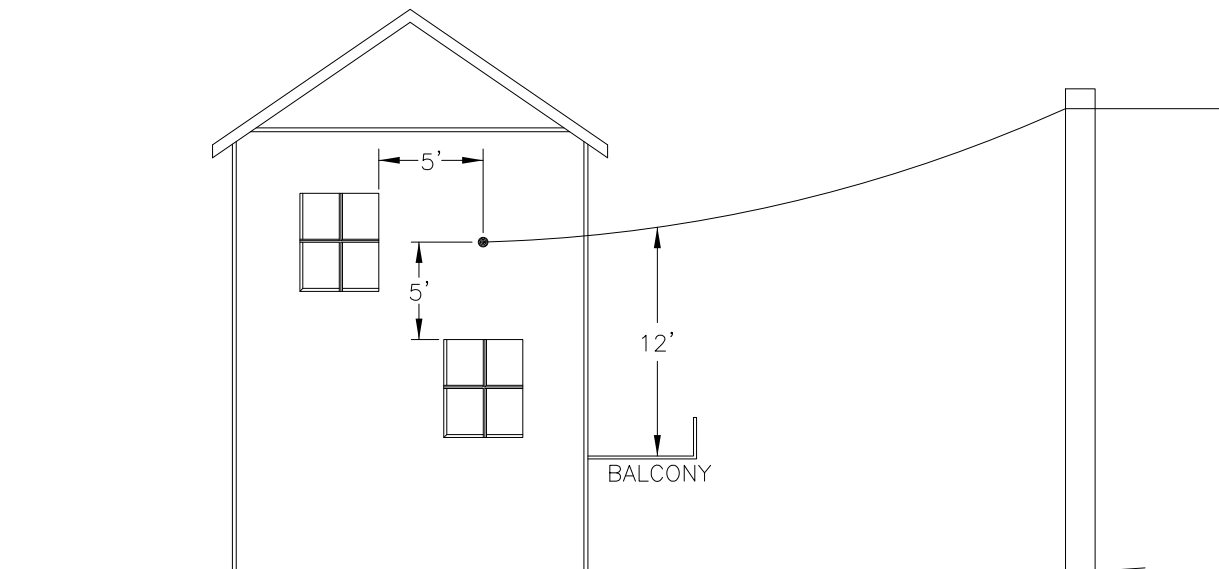
TRANSFORMER SHALL BE LOCATED PER WREA SPECIFICATIONS.

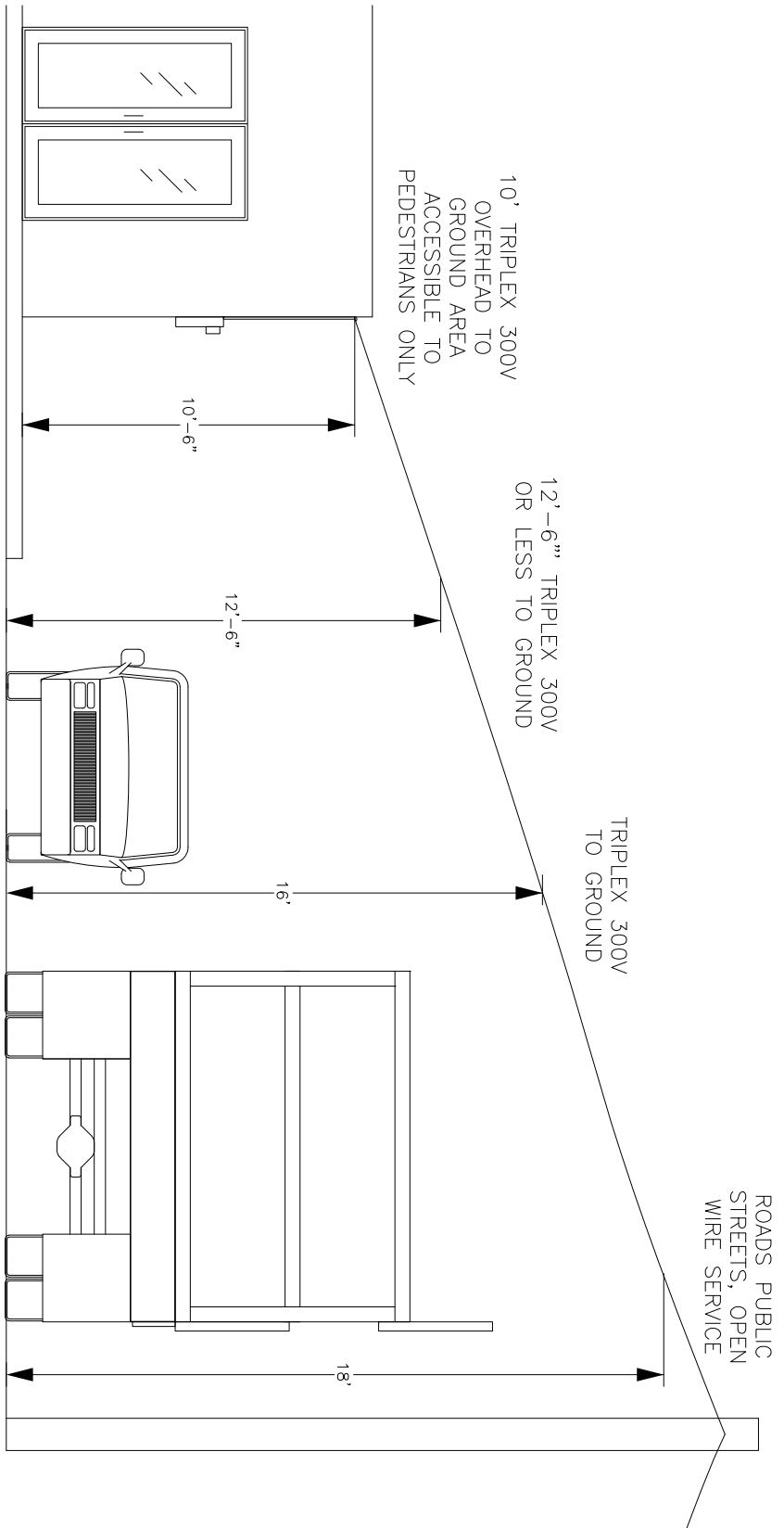
DESIGN: M.S.	3Ø TRANSFORMER PAD (75 KVA – 1,500 KVA) WEST RIVER ELECTRIC ASSOCIATION	REV. DATE 10/2019	REV. NO. 1
DRAWING: A.K.		DRAWING NUMBER COMM-3	
APPROVED BY M.S.		Pg 17	

## OVER PORTION OF ROOF (OVERHANG)



## TO WINDOWS, DOORS, FIRE ESCAPES, ETC.





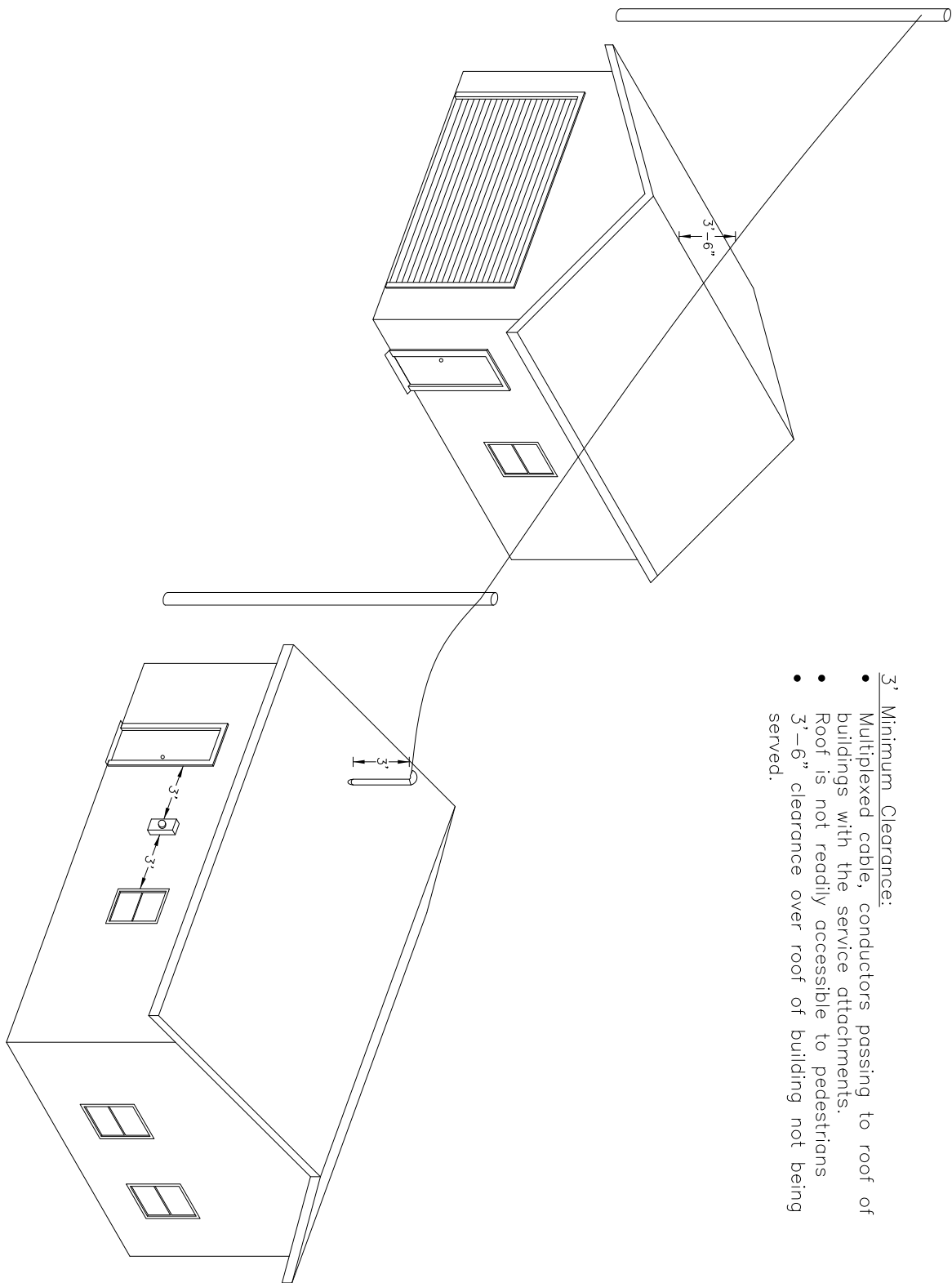
MINIMUM CLEARANCES

- 10'-6" – Above finished grade, sidewalks or from any platform or projection from which they might be reached, accessible to pedestrians only (0-300V)
- 12'-6" – Over residential property and driveways & those commercial areas such as parking lots and drive-in establishments not subject to truck (0-388V)
- 16'-0" – Over commercial areas, parking lots, agricultural or other areas subject to truck traffic
- 18'-0" – Over public streets, alleys, roads and driveways on other than residential property subject to truck traffic

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY M.S.	DATE 10/2019

PERMANENT SERVICE  
 CLEARANCES OF SERVICE DROPS 600 VOLTS OR LESS  
 ATTACHED TO BUILDINGS, SIGNS, AND OTHER INSTALLATIONS.  
 WEST RIVER ELECTRIC ASSOCIATION

REV. DATE 10/2019	REV. NO. 1
DRAWING NUMBER	
Pg 19	Clearances-2



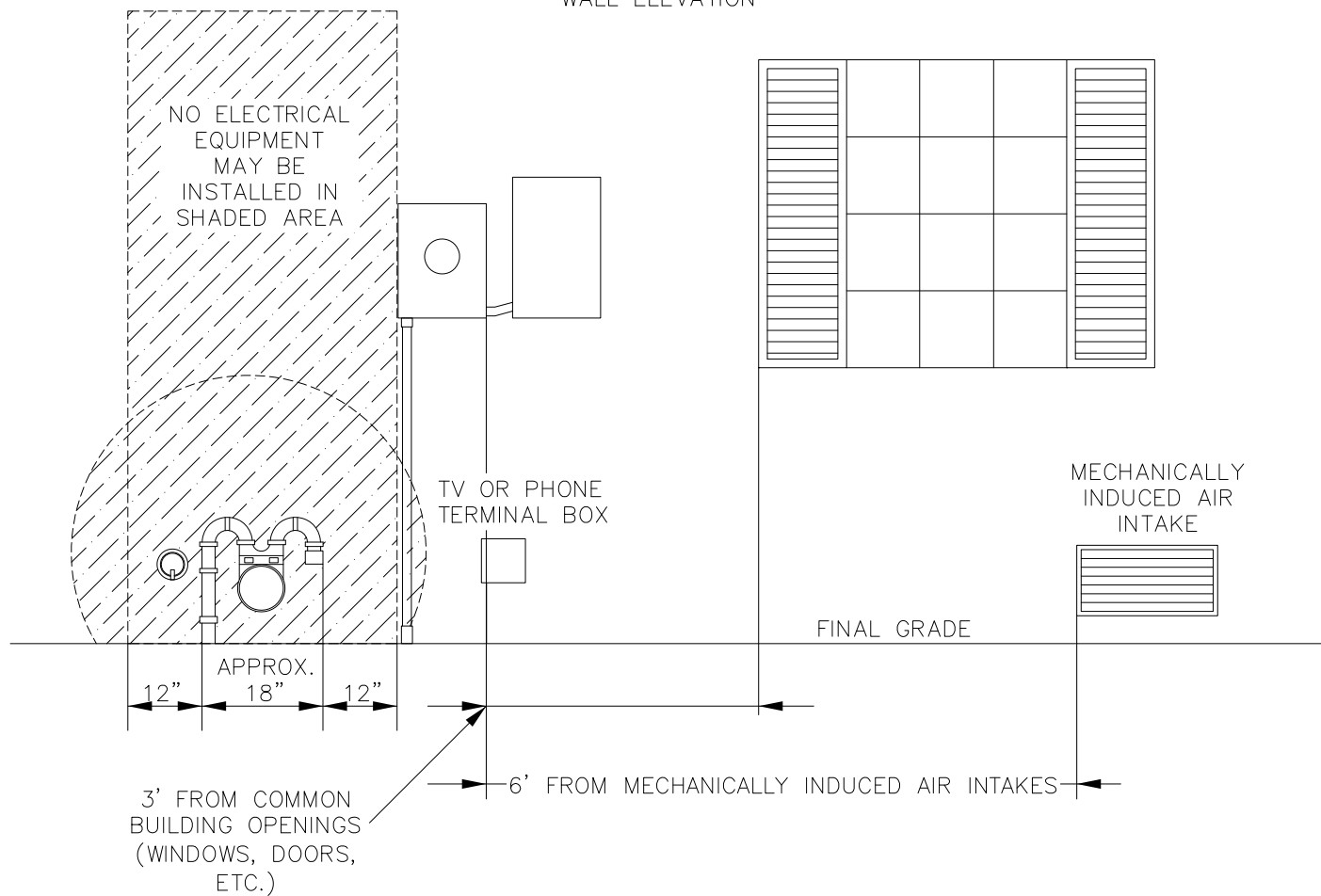
- 3' Minimum Clearance:
- Multiplexed cable, conductors passing to roof of buildings with the service attachments.
  - Roof is not readily accessible to pedestrians
  - 3'-6" clearance over roof of building not being served.

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY M.S.	DATE 10/2019

PERMANENT SERVICE  
 CLEARANCES OF SERVICE DROPS 600 VOLTS OR LESS  
 ATTACHED TO BUILDINGS, SIGNS, AND OTHER INSTALLATIONS  
 WEST RIVER ELECTRIC ASSOCIATION

REV. DATE 10/2019	REV. NO. 1
Pg 20	DRAWING NUMBER Clearances-3

# WALL ELEVATION



12' HORIZONTAL CLEARANCE BETWEEN GAS METER SET AND EDGE OF METER  
 CLEARANCES REQUIRED IN SPECIFIC CASES MAY BE OBTAINED FROM WEST RIVER  
 3' RADIAL CLEARANCE FROM GAS REGULATOR

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY M.S.	DATE 10/2019

METERING STANDARD

CLEARANCE REQUIREMENTS FROM GAS METER

WEST RIVER ELECTRIC ASSOCIATION

REV. DATE 10/2019	REV. NO. 1
Pg 21	DRAWING NUMBER CLEARANCES-4



## GENERAL:

- 1) PAD MOUNT TRANSFORMERS SHALL BE LOCATED IN AN AREA ACCESSIBLE TO LINE TRUCKS FOR EASY INSTALLATION AND REMOVAL.
- 2) PAD MOUNT TRANSFORMERS SHALL BE LOCATED IN AN AREA NOT SUBJECTED TO FLOODING.
- 3) PADS FOR TRANSFORMERS SHALL BE PROTECTED AGAINST LANDSLIDES, DRAINAGE WASH OR DRIFTING SAND, ETC. THE INSTALLATION OF RETAINING WALLS OF SUFFICIENT STRENGTH AND SUITABLE CONSTRUCTION TO PROVIDE ADEQUATE PROTECTION SHALL BE THE RESPONSIBILITY OF THE MEMBER/CONTRACTOR.
- 4) PADS FOR TRANSFORMERS SHALL BE INSTALLED AND MAINTAINED LEVEL.
- 5) ANY PROTECTIVE OR DECORATIVE FENCING OR ENCLOSURE TO BE BUILT AROUND A PAD MOUNTED TRANSFORMER MUST BE APPROVED BY MEMBER/CONTRACTOR SERVICES AND ENGINEERING PRIOR TO INSTALLATION.

## BASIC HORIZONTAL CLEARANCES: (FIGURE 1)

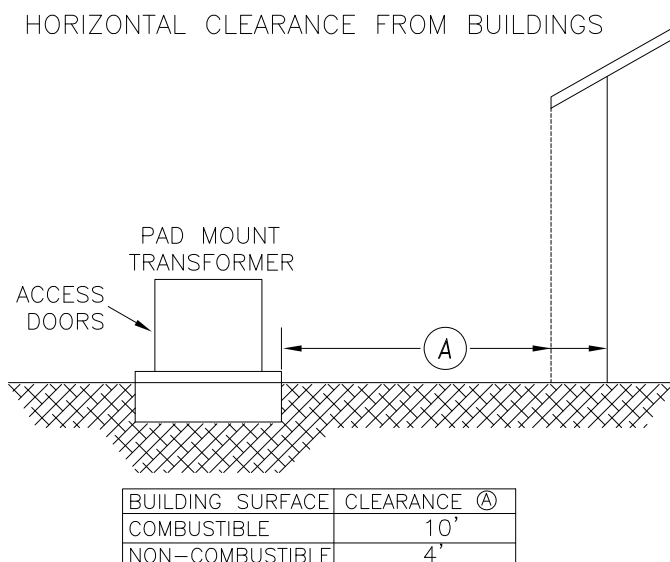
THE FOLLOWING HORIZONTAL CLEARANCES BETWEEN PAD MOUNTED TRANSFORMERS AND ADJACENT STRUCTURES ARE REQUIRED:

- 1) TEN FEET MINIMUM FROM COMBUSTIBLE SURFACES. MEMBER/CONTRACTOR SHALL PROVIDE NON-COMBUSTIBLE SURFACES OR FIRE-RESISTANT BARRIERS IF CLEARANCE IS LESS THAN 10'.
- 2) FOUR FEET MINIMUM FROM A NON-COMBUSTIBLE SURFACE ON ANY SIDE AND AT LEAST 10' CLEAR WORKING SPACE ON THE FRONT SIDE OF THE TRANSFORMER.
- 3) OVERHANGS (COMBUSTIBLE)
  - a) IF AN OVERHANG OF COMBUSTIBLE MATERIAL CLEARS THE TOP OF OIL-FILLED PAD MOUNTED TRANSFORMERS BY A MINIMUM OF 20' VERTICALLY, THE REQUIRED DISTANCE SHALL BE MEASURED FROM THE BUILDING WALL.
  - b) IF AN OVERHANG OF COMBUSTIBLE MATERIAL CLEARS THE TOP OF OIL-FILLED PAD MOUNTED TRANSFORMERS LESS THAN 20' VERTICALLY THE REQUIRED CLEARANCE SHALL BE MEASURED FROM THE FARTHEST PROJECTION OF THE OVERHANG.

## CLEARANCE FROM AIR INTAKE, WINDOWS, DOOR AND FIRE ESCAPES: (FIGURE 2)

- 1) DOORS: A PAD MOUNT TRANSFORMER SHALL NOT BE PLACED WITHIN A ZONE EXTENDING 20' OUT FROM AND 10' TO EITHER SIDE OF A DOOR.
- 2) WINDOWS: A PAD MOUNT TRANSFORMER SHALL NOT BE PLACED WITHIN A ZONE EXTENDING 10' OUT OR 8' EITHER SIDE OF A WINDOW ON THE 1st FLOOR. THE TRANSFORMER SHALL NOT BE ANY CLOSER THAN 5' FROM ANY PART OF A SECOND STORY WINDOW, NOR DIRECTLY BELOW AN OPERATING WINDOW.
- 3) AIR INTAKES: A PAD MOUNT TRANSFORMER SHALL NOT BE PLACED WITHIN A ZONE EXTENDING 10' OUT FROM AND 10' TO EITHER SIDE OF AN AIR INTAKE. IF THE AIR INTAKE IS ABOVE THE TRANSFORMER, THE TRANSFORMER SHOULD BE 25' FROM THE OPENING.
- 4) FIRE ESCAPES: A PAD MOUNT TRANSFORMER SHALL NOT BE PLACED WITHIN A ZONE EXTENDING 20' OUT FROM AND 20' TO EITHER SIDE OF A FIRE ESCAPE.

HORIZONTAL CLEARANCE FROM BUILDINGS



NOTE: DIMENSION (A) IS FROM THE PAD TO THE BUILDING SURFACE IF THE OVERHANG IS NON-COMBUSTIBLE OR MORE THAN 20' FROM TOP OF TRANSFORMER.

FIGURE 1

CLEAR ZONE FOR BUILDING OPENING OR FIRE ESCAPE

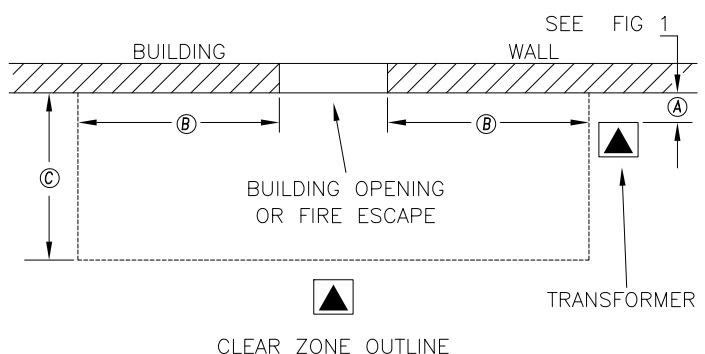


FIGURE 2

## APPLICATION:

IF PAD MOUNTED EQUIPMENT MUST BE LOCATED IN PAVED OR TRAVELED AREAS, OR ADJACENT TO SUCH AREAS WITH THE POSSIBILITY OF DAMAGE FROM VEHICLES, PHYSICAL PROTECTION ACCEPTABLE TO WEST RIVER ELECTRIC MUST BE PROVIDED AND MAINTAINED BY THE MEMBER/CONTRACTOR. WEST RIVER ELECTRIC WILL DETERMINE WHEN SUCH PROTECTION IS NECESSARY.

## MATERIAL:

GALVANIZED 4" STANDARD PIPE AND END CAP IS THE PREFERRED METHOD OF POST FABRICATION. A SMOOTH CONCRETE DOME IS PERMITTED IN PLACE OF THE END CAP. WHEN A CONCRETE DOME IS USED, THE PIPE END MUST BE FREE OF SHARP EDGES. THE 5" DIAMETER SECTION FOR INSTALLING REMOVABLE POSTS MUST ALSO BE GALVANIZED.

## LOCATION:

- 1) LOCATE BARRIER POST SO THEY DO NOT INTERFERE WITH THE OPENING OF EQUIPMENT DOORS. USE REMOVABLE BARRIER POSTS AS FOLLOWS:
  - a) ON DOOR SIDE(S) OF EQUIPMENT WHERE POSTS COULD INTERFERE WITH OPERATION OF LIVE LINE TOOLS.
  - b) WHERE THE USE OF FIXED POSTS WOULD OBSTRUCT ACCESS FOR INSTALLATION OR REPLACEMENT OF EQUIPMENT.
- 2) DIMENSIONS FOR LOCATION OF POSTS WITH RESPECT TO EQUIPMENT PAD ARE DETERMINED AS FOLLOWS: (SEE FIGURE 1)
  - a) DETERMINE THE MOST PRACTICABLE DISTANCE (FOR EACH SIDE) THAT THE POSTS CAN BE LOCATED FROM THE EDGE OF THE PAD.
  - b) BOLLARDS TO BE INSTALLED 2' OFF THE SIDES OF THE EQUIPMENT.
  - c) THE MAXIMUM DISTANCE BETWEEN THE BOLLARDS SHOULD NOT EXCEED 5'. IF THE DISTANCE IS GREATER THEN 5' ADDITIONAL BOLLARD INSTALLATION WILL BE REQUIRED. IF THE INSTALLATION IS LOCATED ON THE SIDE THAT DOORS ARE PRESENT, THEN THE REMOVABLE POST STYLE INSTALLATION WILL NEED TO BE USED.

## NOTES:

- 1) A BUILDING WILL FURNISH PROTECTION PROVIDED IT IS LOCATED AT A POINT WHERE A POST WOULD NORMALLY BE REQUIRED.
- 2) SQUARE FACED STREET CURBING PARALLEL TO NORMAL TRAFFIC FLOW CAN BE CONSIDERED SUITABLE PROTECTION IF THE PAD-MOUNT EQUIPMENT IS LOCATED A MINIMUM OF 6 FEET BEHIND THE CURBING.

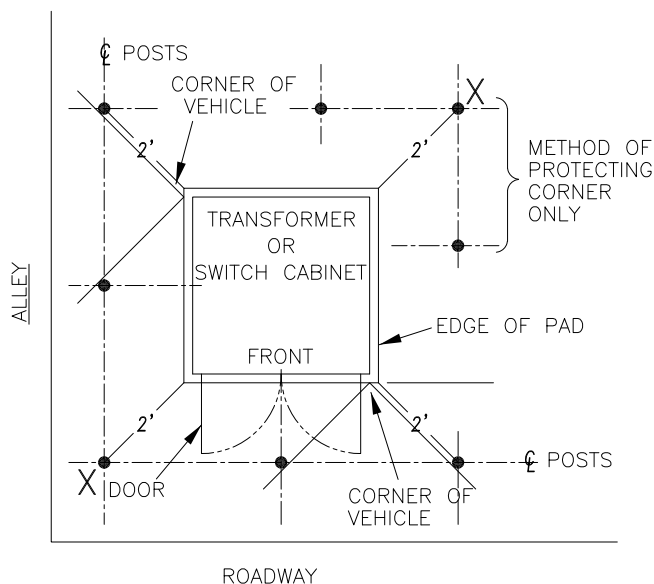
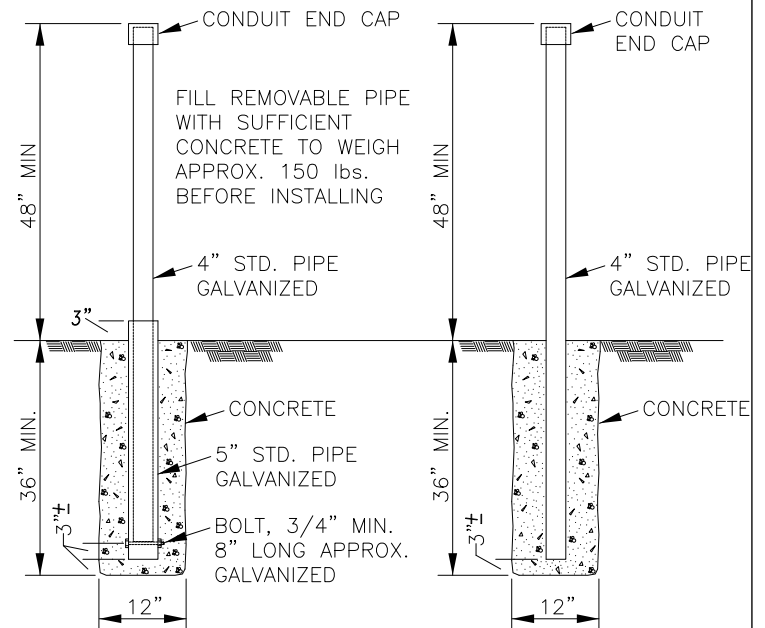
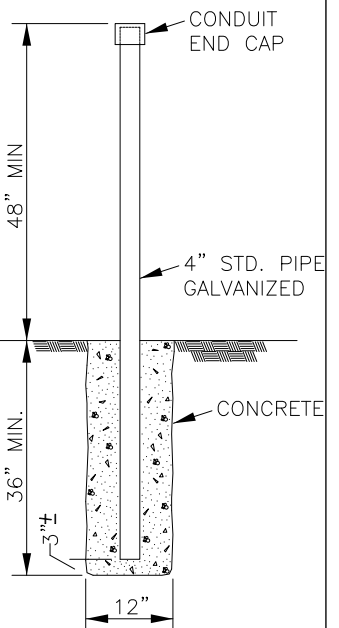


FIGURE 1



REMOVABLE POST DETAIL

FIGURE 2



FIXED POST DETAIL

FIGURE 3

DESIGN: M.S.	
DRAWING: A.K.	
APPROVED BY: M.S.	DATE: 10/2019

DISTRIBUTION STANDARD  
MECHANICAL PROTECTION FOR  
PAD-MOUNTED EQUIPMENT  
WEST RIVER ELECTRIC ASSOCIATION

REV. DATE: 10/2019	REV. NO.: 1
Pg 23	DRAWING NUMBER: CLEARANCES-6

#### Definitions:

1. Electric utilities include power, lighting, telephone, cable t.v., signal circuits, etc.
2. Non-electric utilities Include water, gas, sewer, storm drains, etc.
3. Clean dirt, fines or sand are approved bedding material for the conduit system. Deviation from approved bedding can only be authorized by a West River Electric representative.

#### Trench:

1. All cable to be installed in conduit system unless approved by a West River Electric representative
2. Clearances must be obtained from all other buried utilities before digging.
3. The conduit system should be located a minimum of one and half feet (1'-6") off the property line.
4. The conduit trench must meet the specifications of Standard Drawings TR1 thru TR3.
5. Where the surface grade of the trench location is not final, steps must be taken to ensure minimum standard depth subsequent to installation.
  - a. If the grade is to be raised, the trench must be standard depth at the time it is dug.
  - b. Curb and gutter must be installed in subdivisions prior to trenching to insure proper grade.
6. Back fill or bedding within 4 inches of conduit systems shall be free of all rocks or other materials that may damage the conduit. Refer to "definitions" above for standard approved material for the "cushion" around the conduit.
7. Back fill must be adequately tamped or packed to prevent sinking and meet the specifications of governmental agencies when necessary. Machine compaction must not be used within 6 inches of the conduit to prevent damage.

#### Conduit:

1. All conduit shall be approved HDPE black endless w/3 red stripes or PVC schedule 40 electrical conduit if required by West River Electric.
  - a. 3" conduit shall be used for residential service cables serving a 200A meter can.
  - b. 6" conduit shall be used on all three phase services.
2. Minimum residential service cable conduit size will be 3" and standard 24" PVC RADIUS sweeps up to 150 feet, with no more than 270 degree of bends.
3. Any residential service cable conduit systems 150 feet in length or longer with 270 degree of bends or more need to have 24" RADIUS fiberglass sweeps installed. 200A secondary conduit systems should not exceed 250' (total wire length) or 270 degree of bends without prior approval.
4. A 1/2", 1200lb pull tape shall be installed in all conduits.  
INSTALLER RESPONSIBLE TO KEEP PULL TAPE FREE TO PULL
5. Conduit ends must be sealed with PLUG with PULL TABS and extend out of the ground 4 to 8 inches.
6. All primary conduit sweeps shall be FIBERGLASS with a minimum RADIUS of 48".
7. Conduit risers shall be installed in accordance with PVC molded riser drawings.
8. Schedule 80 pipe under all roads

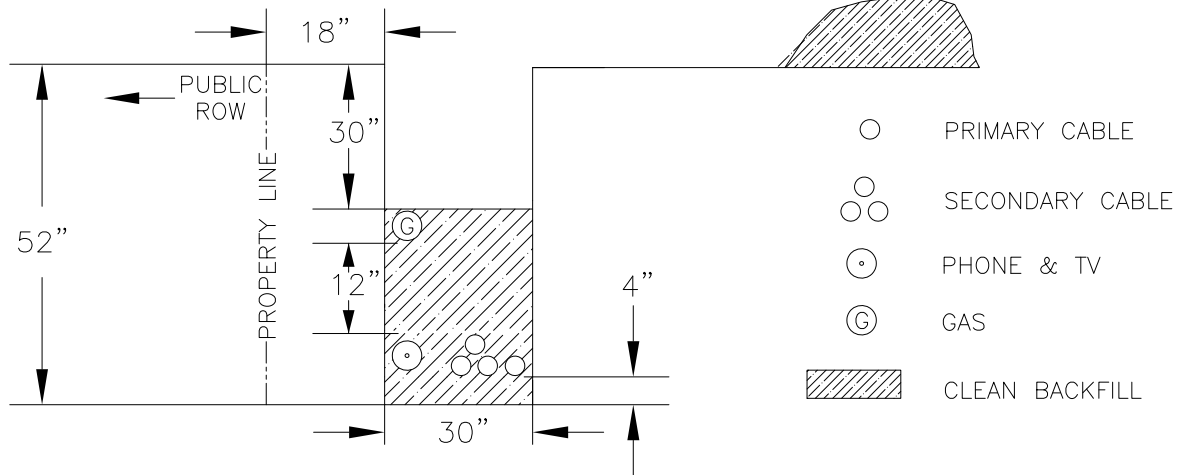
DESIGN: M.S.	DISTRIBUTION STANDARD URD CABLE AND TRENCH GUILDLINES		REV. DATE 10/2019	REV. NO. 1
DRAWING: A.K.			DRAWING NUMBER	
APPROVED BY M.S.	DATE 10/2019	WEST RIVER ELECTRIC ASSOCIATION		Pg 24 TRENCH-1

TR1

SINGLE PHASE PRIMARY  
SECONDARY WIRES  
PHONE, TV, & GAS

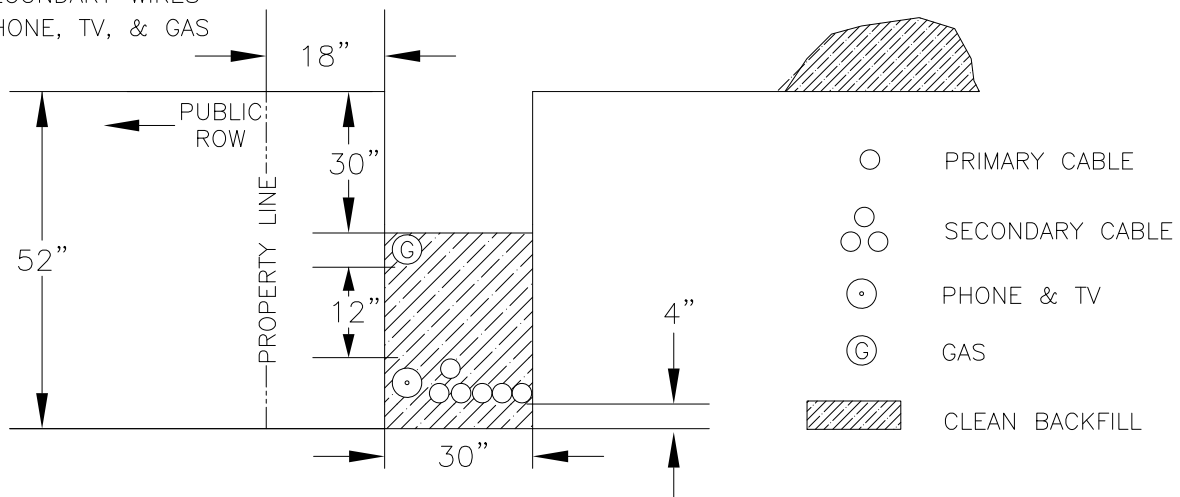
NOTE: WREA WILL FLAG ALL

TRENCH ROUTES BEFORE DIGGING



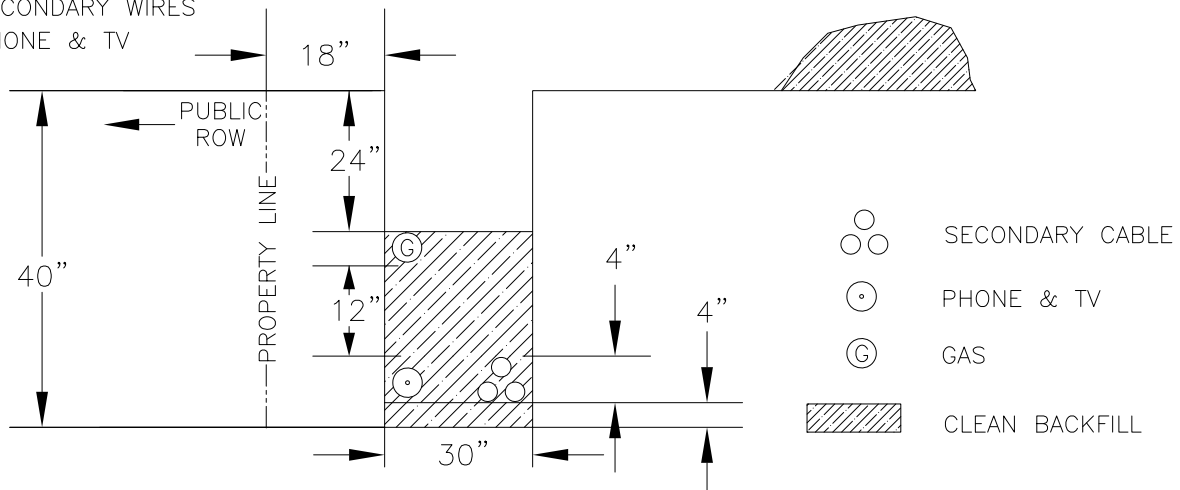
TR2

THREE PHASE PRIMARY  
SECONDARY WIRES  
PHONE, TV, & GAS



TR3

SECONDARY WIRES  
PHONE & TV



# West River Electric

## Member/Contractor Responsibilities

\*Service can not be supplied until these items are completed\*

- ☐ Supply WREA with courthouse copy of your plat and deed
- ☐ Supply WREA with courthouse copy of your neighbor's plat and deed (if crossing their property to serve you)
- ☐ Provide 911 address of new service to WREA
- ☐ Obtain signatures on all easements
- ☐ Sign "Line Extension Agreement"
- ☐ Make any applicable payment
- ☐ Cut trees
- ☐ Contact other utilities
- ☐ Contact SD One Call, 811
- ☐ Supply proper trench, bedding, and backfill at appropriate time
- ☐ Provide wiring certificate or city inspection of service