ELECTRICAL SERVICE INSTALLATION GUIDE FOR MANUFACTURED HOMES (100 AND 200 AMPERE SERVICES)

MANUFACTURED HOMES

If you are considering a manufactured home in our service area you need to know the necessary hookup procedures, because they differ from those for other types of housing. Manufactured homes are classified by the U.S. Department of Housing and Urban Development (HUD) as factory-built homes that have special electric service requirements because of their metal frame construction. A manufactured home will have a two-inch by three-inch HUD identification label attached to its exterior siding. Double-wide manufactured homes are not "true modular" homes and should not be confused with modular homes. A "true modular" will carry a six-inch round "modular label" on or near the electrical service panel in the home. Article 550 of the National Electric Code (NEC) lists the requirements for electric service connections to manufactured homes. The wiring diagrams found in this booklet are based on NEC requirements.

PURPOSE

While running underground electric entrance lines to manufactured homes may be common practice for some electricians, many do not understand the proper way to complete such a project. The purpose of this booklet is to list and illustrate the electrical service requirements that are

necessary for safe and reliable connection of manufactured homes to our electric lines. The wiring diagrams provide standards for both the layman and experienced electrician so that the design, materials, workmanship and applications of a member's electrical system will be safe, reliable and of adequate capacity. These standards are also important elements in our ability to make connection promptly and efficiently to members' wiring and to accommodate changes and repair whenever necessary.

SAFETY NOTICE

No one other than a qualified Rural Electric employee may make any connection on a Rural Electric pole. **Meter seals and meters must not be removed for any reason.**

NOTICE

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FOUR-WIRE SERVICE ENTRANCE IS REQUIRED

The NEC requires that a manufactured home be served by four wires. Two of the wires are current-carrying "hot" wires. The third is a neutral wire, which is necessary to complete 120 volt circuits. The fourth is a grounding wire, which provides electricity a path to ground if a short circuit should occur.

The electrical panel in a manufactured home (see Diagram #1) contains two separate connection bars - one for the neutral wires (insulated in white or yellow) and one for the grounding wires (bare copper or insulated in green). The neutral bar will be insulated from the rest of the metal enclosure with Bakelite or plastic brackets. The grounding bar is bonded directly to the metal enclosure. Neutral and grounding wires must not be connected to each other in the panel or anywhere else in the home.

A very important step in hooking up a manufactured home, which is often overlooked, is checking for interconnections or continuity between neutral wires and ground wires in the home. Such a connection could result in a serious shock hazard should the wiring develop a short. A visual check of the electrical panel and a continuity check between the neutral bar and grounding bar with an ohm meter (continuity tester) should help you locate any potential problems. We recommend you arrange for an electrician to make a continuity check if you are unsure about the wiring or if you are not familiar with operating an ohm meter.

Because of the metal-frame design of manufactured homes, *a #6 solid copper wire must run from the ground bar down to the metal frame of the home.* This grounding wire should be bonded to the frame with a mechanical lug. (This wire is usually factory-installed in new homes.)

Clothes dryers and ranges in manufactured homes must be connected to four-wire circuits (See Diagram #2). Factory installed appliances are usually wired correctly. Clothes dryers and ranges that are not factory installed are usually not wired correctly for installation in manufactured homes. Instructions and diagrams for connecting these appliances in manufactured homes are posted on the backs of the appliances.

INSTALLING UNDERGROUND WIRE

Exterior wiring between the REMC's meter location and the manufactured home is the owner's responsibility. It must be installed underground except by special permission. Diagrams are included in this booklet to show the proper underground installation.

- **The wire must be "URD" or "USE" type. Both are rated for direct burial use.**

- Any wires above ground level must be protected with conduit that extends 18 inches into the soil. Metal conduit or rigid nonmetallic conduit and fittings may be used. Plastic water pipe is not acceptable.

- Wires must be buried a minimum of 24 inches below final grade.

- Leave a minimum of 8 feet of wire above the final ground level at the meter location.

- Please trench as close as possible to the REMC's pole or pedestal without damaging existing underground wire or equipment.

- Leave about five feet of trench uncovered at the meter location. Leave about the same amount of trench open at the home end. If a member owned disconnect is installed, leave trench open on both sides.

- Backfill the trench after all inspections have been made and before energizing the service.

- The NEC requires that a weatherproof disconnect be located within 30 feet and in sight of the home, but not mounted on the home. If the REMC's meter pedestal is to be installed **within** 30 feet of the home, the REMC will provide a disconnect in combination with its meter (See Diagram #3).

- If your home will be **more than** 30 feet from the REMC's meter, you must install your own disconnect (See Diagram #4).

- If you provide your own weatherproof disconnect panel, it should include additional breakers to serve accessory buildings or additional electrical equipment, if desired by the member.

- If the underground wires are going to be installed in rocky soil or if they will cross under a driveway, it is recommended that the wires be run in conduit to prevent damage to them.

CHECKING THE INSTALLATION

Before the REMC connects a manufactured home, a field representative will check the work for completion and make a continuity check for interconnections between the neutral and grounding wires. If the wiring is incomplete, or if it is not properly installed, we cannot connect the home until the problems are corrected and rechecked by the REMC.

If the manufactured home is located in an area that requires inspection and tagging by a county or local inspector, approval from that inspector is also required before the REMC can make its safety and completion check.

THE MANUFACTURED HOME SHOULD BE IN PLACE BEFORE THE ELECTRIC SERVICE IS BUILT.

The REMC requires that a manufactured home be delivered to the site, set up, and have the electrical entrance wires installed and checked before any construction of REMC lines takes place. This allows the REMC to build its lines and make permanent connection of the entrance with one crew trip. We have also found that this practice helps to eliminate several potential problems that could delay getting service to you. If there is a special need that requires the REMC to install the

lines before the home arrives, an additional up-front fee will be required to cover the second crew trip to make the final permanent connection.

Some of the problems we have encountered with installing our lines before the manufactured home is set include:

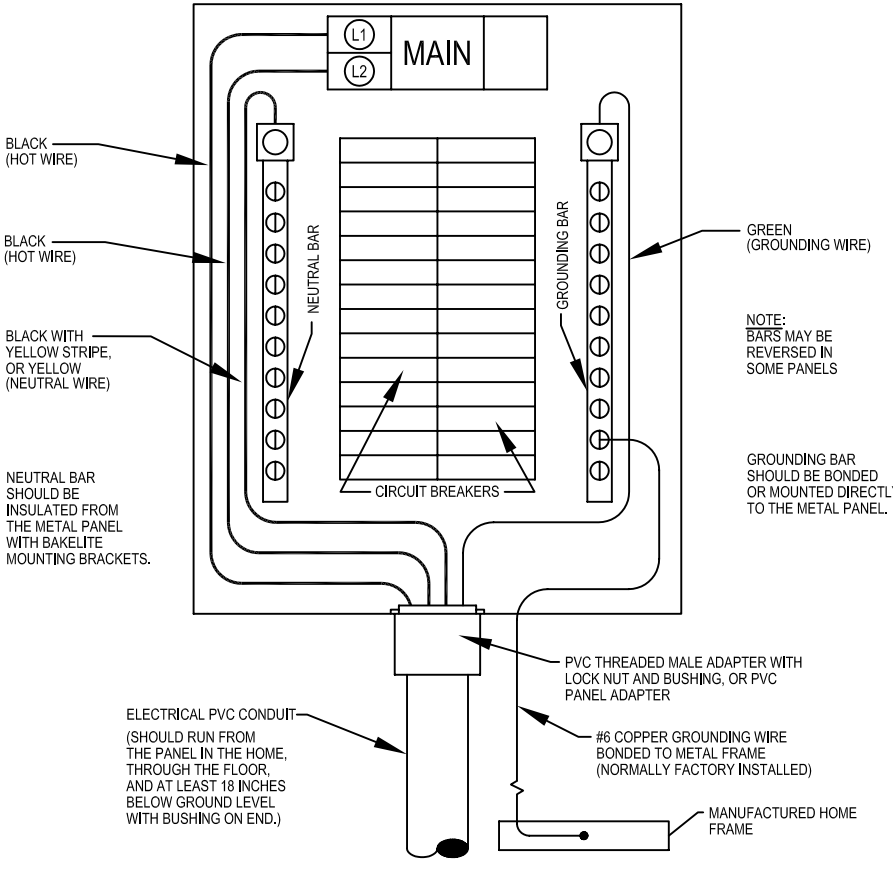
- Poles or guy wires interfering with home installations
- Homes set too close to power lines or poles for safety (homes, antennas, satellite dishes, and other equipment should not be located within fifty feet of high voltage power lines)
- Homes set on the REMC's easements or over the REMC's underground wires
- Poles or wires damaged when homes are set

We encourage you to contact the REMC if you have questions or encounter problems during any part of your service installation.

FOR YOUR SAFETY!

Manufactured homes, antennas, satellite dishes, and other equipment should not be located within fifty feet of high voltage power lines.

MANUFACTURED HOME -- ELECTRICAL SERVICE PANEL



CIRCUIT NEUTRAL WIRES ARE COVERED WITH WHITE OR GRAY INSULATION. THEY ARE CONNECTED TO THE NEUTRAL BAR, ALONG WITH THE ENTRANCE NEUTRAL WIRE (USUALLY INSULATED IN YELLOW OR BLACK WITH A YELLOW STRIPE).

CIRCUIT GROUNDING WIRES ARE BARE COPPER OR COVERED WITH GREEN INSULATION. THEY ARE CONNECTED TO THE GROUNDING BAR ALONG WITH THE GREEN GROUNDING WIRE OF THE ENTRANCE CIRCUIT.

JACKSON COUNTY REMC
BROWNSTOWN, IN

DATE: 3-24-98	DRAWN BY:	FILE NAME:
SCALE: N.T.S.	TODD HARRISON	C:\TODD\ES-PANEL

MANUFACTURED HOME
ELECTRICAL SERVICE PANEL

DIAGRAM #1

CORD CONNECTIONS FOR RANGES & DRYERS

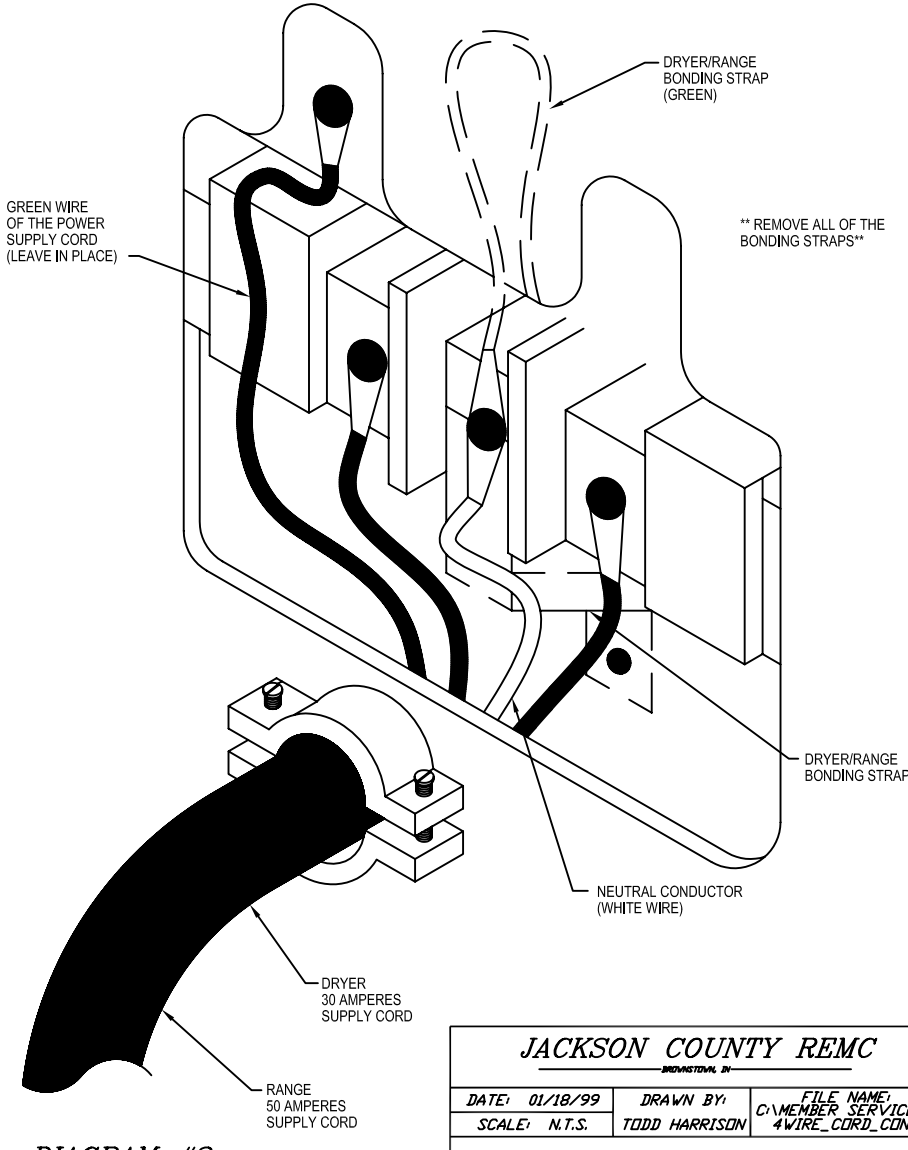


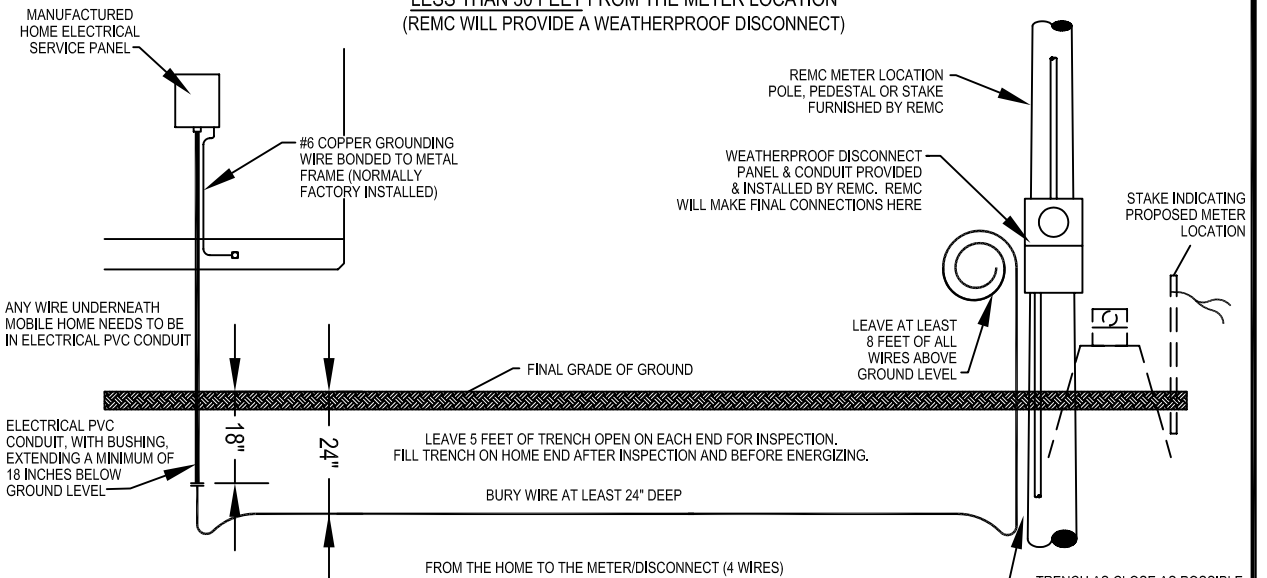
DIAGRAM #2

JACKSON COUNTY REMC
BROWNSTOWN, IN

DATE: 01/18/99	DRAWN BY:	FILE NAME:
SCALE: N.T.S.	TODD HARRISON	C:\MEMBER SERVICES\ 4WIRE_CORD_CONN

4 WIRE CORD CONNECTIONS

FOLLOW THIS WIRING DIAGRAM IF YOUR HOME IS TO BE
LESS THAN 30 FEET FROM THE METER LOCATION
(REMC WILL PROVIDE A WEATHERPROOF DISCONNECT)



FROM THE HOME TO THE METER/DISCONNECT (4 WIRES)

SERVICE SIZE	LINE (L1 &L2) CONDUCTORS		NEUTRAL CONDUCTOR		GROUNDING WIRE	PVC SIZE
	ALUMINUM	COPPER	ALUMINUM	COPPER	COPPER	
100 AMP	#2	#2	#4	#4	#8	1 1/2"
200 AMP	#4/O	#3/O	#2/O	#1/O	#6	2"
	TYPE URD OR USE				GREEN	

DO NOT ATTEMPT TO MAKE CONNECTIONS IN REMC'S PANEL OR METER BASE,
ONLY REMC EMPLOYEES ARE AUTHORIZED TO ACCESS THIS EQUIPMENT.

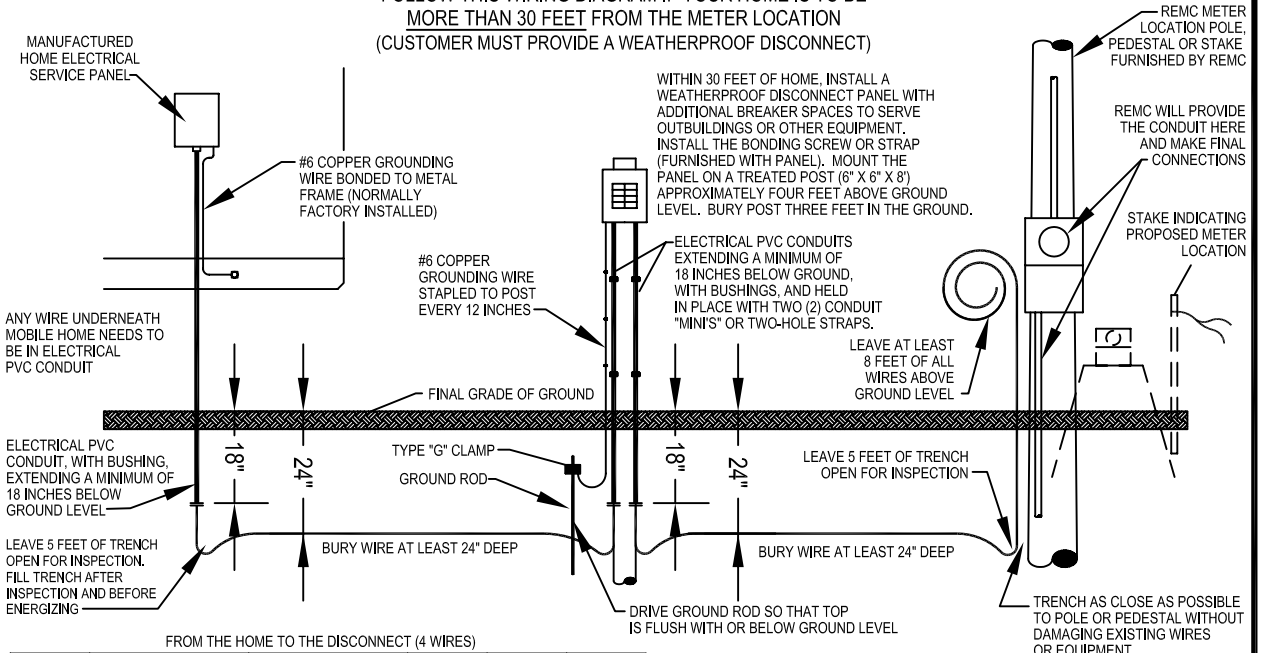
DIAGRAM #3

JACKSON COUNTY REMC
BROWNSTOWN, IN

DATE: 3-24-98	DRAWN BY:	FILE NAME:
SCALE: N.T.S.	TODD HARRISON	C:\TODD\-30TO_METER

WIRING DIAGRAM FOR A MANUFACTURED HOME LESS THAN 30' FROM THE METER

FOLLOW THIS WIRING DIAGRAM IF YOUR HOME IS TO BE MORE THAN 30 FEET FROM THE METER LOCATION (CUSTOMER MUST PROVIDE A WEATHERPROOF DISCONNECT)



FROM THE HOME TO THE DISCONNECT (4 WIRES)

SERVICE SIZE	LINE (L1 &L2) CONDUCTORS		NEUTRAL CONDUCTOR		GROUNDING WIRE	GROUND ROD	PVC SIZE
	ALUMINUM	COPPER	ALUMINUM	COPPER	COPPER	COPPER	
100 AMP	#2	#2	#4	#4	#8	1/2" X 8'	1 1/2"
200 AMP	#4/O	#3/O	#2/O	#1/O	#6	5/8" X 8'	2"
	TYPE URD OR USE				GREEN		

FROM THE DISCONNECT TO THE METER LOCATION (3 WIRES)

SERVICE SIZE	LINE (L1 & L2) CONDUCTORS		NEUTRAL CONDUCTOR		PVC SIZE
	ALUMINUM	COPPER	ALUMINUM	COPPER	
100 AMP	#2	#2	#4	#4	1 1/2"
200 AMP	#4/O	#3/O	#2/O	#1/O	2"
	TYPE URD OR USE				

DO NOT ATTEMPT TO MAKE CONNECTIONS IN REMC'S PANEL OR METER BASE, ONLY REMC EMPLOYEES ARE AUTHORIZED TO ACCESS THIS EQUIPMENT

DIAGRAM #4

JACKSON COUNTY REMC
BROWNSTOWN, IN

DATE: 3-24-98	DRAWN BY:	FILE NAME:
SCALE: N.T.S.	TODD HARRISON	C:\TODD\30+TO_METER

WIRING DIAGRAM FOR A MANUFACTURED HOME MORE THAN 30' FROM THE METER

Jackson County REMC

PO Box K, Brownstown IN 47220
812-358-4458 / 800-288-4458 Toll free / 812-358-5719 FAX
e-mail: info@jacksonremc.com website: www.jacksonremc.com

Your Touchstone Energy Cooperative

The power of human connections

Avoid Power Line Easement Encroachment!

Keep all structures at least 20 feet away from power lines and poles! If you have questions about power line easements, please call us at once. We'll be happy to meet with you to discuss your plans.

When you're planning to dig, do your part. Call

811

two full working days before you start!

Contact the Indiana Utility Plant Protection Service (also known as Holey Moley) to have any possible underground utilities located before you begin to dig.

In Indiana, it's the law!

Danger! High Voltage!

Electric equipment may cause shock, burn, or death. If you find equipment open or unlocked or power lines on the ground, CALL IMMEDIATELY!