Hopewell Township Overhead Service Handout Based on 2005 NEC

June 2008

Dear Homeowner,

This informational handout is provided in order to help guide the homeowner only. It is not totally inclusive and is not intended for design purposes. When in doubt, obtain the services of a N.J. Licensed Electrical Contractor. The installation of service equipment may require the working with live wires with shock and burn hazards.

A. METER ENCLOSURE

1. Verify with utility company for height and installation requirements. Generally 48 inches to 72 inches maximum.
2. PSE&G may provide a free meter enclosure upon receipt of electrical permit.
3. There are two Electrical utilities in Hopewell Township be sure to contact them for any special requirements.

B. CONDUIT OR CABLE FROM POINT OF ATTACHMENT TO METER ENCLOSURE

1. Conduit may be PVC, Ridged Steel, IMC or EMT conduit. All steel conduits require special bonding locknuts and bushings around concentric and eccentric knockouts.
2. Cable types must be approved Service entrance conductors type “SE Cable”
3. Service drop conductors and exposed service entrance conductors (point of attachment) must be above any window that opens and/or must maintain a 3 foot horizontal distance from any window that opens.
4. Conduit clamp is required within 36" of meter for support.
5. Service entrance conductors must be secured every 30 inches and within 12 inches of meter and service panel.
6. Service entrance conductors must maintain 3 foot clearance when installed over roof overhangs etc. This clearance may be reduced to 18 inches for a through roof mast installation.
7. Service drop conductors must maintain the following minimum clearances to grade: 10 feet at point of attachments of service entrance conductors, 10 feet over decks and built up areas, 12 feet over residential driveways not subject to truck traffic, and 18 feet over public roads.

C. SERVICE ENTRANCE CABLE FROM METER TO PANEL

1. May require protection if installed near sidewalks, walkways or driveways and subject to physical damage.
2. Cable and conduit penetrations through wall to panel shall be drilled in a upward direction to avoid water traveling down cable or conduit thru wall and into panel. Provide duct seal or equal at penetration to stop water/moisture movement and vermin available entrances to house.

D. SERVICE PANEL (Normal installation)

1. Disconnecting means located inside or outside but must be "readily accessible", which means, must be capable of being reached quickly, without having to climb over or remove obstacles or use portable ladders.
2. If the service is installed inside; it must be nearest to the point of entry of the service entrance cable, typically located within 2 to 4 ft. All service’s are required to have main breakers 100, 150, 200, 300, or 4oo amp. If the distance exceeds 4 feet provide Service Disconnect (main breaker enclosure) and feeder. (See below)
3. Service disconnecting means not permitted in bath rooms.
4. Clear working space required is 30" wide, 36" in front and 6 ft. 6" in height.
5. Adequate illumination of service panel is required for safety.

E. SERVICE DISCONNECTING MEAN REQUIREMENT: (Extra Requirements due excess service cable in house)

Service entrance conductors are limited in length (about 2-4 feet) into house without the protection of over-current protection (main breaker) This may require the use of a Main breaker enclosure outside the house or where the Service entrance conductors enter house. Please note the following requirements:

1. The feeder cable from the Service disconnect to the panel-board will be required to have a 4-wire system. (Two ungrounded conductors, one neutral and one ground) Type SER cable or in conduit.
2. The grounds and neutral will be required to be separated/isolated from each other in the remote panel (sub-panel). All grounding connections will now be required to go to Main Breaker disconnecting means.

F. GROUNDING AND BONDING

I. Typically only one neutral conductor is allowed per terminal but grounds may be multiple conductors. Check listing and labeling of service panel.
2. Generally based on soil conditions: (2) ground rods may be required and must be installed a minimum of 6 ft. apart.
3. Ground rods to be 5/8" galvanized *or* 1/2" copper and a minimum of 8 ft. in length.
4. Rods must be driven the full length with ground clamps rated for direct burial.
5. Grounding electrode conductor outside to the ground rods required to be a copper conductor only.
6. Grounding conductor must be install to cold water piping, bonding jumpers are required to jump out the following: hot water pipes, metal drain pipes, interior side of metal gas pipe and around city water meter.
7. Grounding conductor to cold water pipe and ground rods to be installed without splices.

SERVICE ENTRANCE, GROUNDING AND BONDING SIZES

A. Typically dwelling, service size conductors and types for 120/240 volt, 3-wire single-phase services entrance conductors and feeders

Service size or Feeder	Conductor size Copper	Aluminum
100 amp	#4	#2
150 amp	#1	#2/0
200 amp	#2/0	#4/0
300 amp	#250 kcmil	#350 kcmil
400 amp	#400 kcmil	#600 kcmil

B. Grounding electrode conductor sizes for 120/240 volt, 3-Wire single-phase dwelling services.
National Electric Code Table 250-66

Size of largest service conductor		Conductor Size	
Copper	Aluminum	Copper	Aluminum
2 or smaller	1/0 or smaller	#8	#6
l or 1/0	2/0 or 3/0	#6	#4
2/0 or 3/0	4/0 or 250 kcmil	#4	#2
Over 3/0 to 350 kcmil	Over 250 to 500 kcmil	#2	#1/0
Over 350 to 600 kcmil	Over 500 to 900 kcmil	#1/0	#3/0
Over 600 to 1100 kcmil	Over 900 to 1750 kcmil	#2/0	#4/0
Over 1100 kcmil	Over 1750kcmil	#3/0	250 kcmil