



City of Newton – NSTAR Underground Service Partnership Initiative

OVERVIEW OF THE PROCESS

- Residents who wish to underground utilities to their home may call the Engineering Office, City of Newton, (617 796-1020). The City Engineer, Darrell Azure, will be able to assist you. You may learn more about the process of undergrounding utilities by calling this number, including the safety and aesthetic benefits of undergrounding.
- The homeowner or designee will contact NSTAR (800-633-3797) and NSTAR will assign a Customer Service Engineer to work with you or your electrician to suggest the best possible route for the underground conduit across your property.
- At the time of your request to NSTAR you will need to pay a fee of \$250, which will be payable to NSTAR, to initiate the process for “Simple Overhead to Underground Service Relocation (pole top connection).”
- Please provide the name and contact information of your electrician to NSTAR when you initiate the undergrounding process.
- NSTAR will provide the home owner or designee with a copy of the design within 30 business days (6 weeks) of the initial request for service.
- If the homeowner or designee does not receive a copy of this plan, the City Engineering Office will make a courtesy call to NSTAR to try to expedite the process.
- Once you receive the plan from NSTAR, you will be ready for underground conduit excavation. First, you will be required to apply for a “Street Opening” permit with the City Engineering Office. The plan from NSTAR will need to be attached to the Permit. The City will waive its “Street Opening” permit and inspection fees for purposes of undergrounding utilities (when not required by Ordinance).
- Most homeowners will use a private contractor to create an underground conduit. You or your contractor will need to inform the Engineering Office at least 48 hours in advance of when your trench will be excavated so that an inspection can take place. Your contractor will need to contact DIG SAFE (**Phone: 888 344-7233**) and show a Certificate of Insurance in order to obtain a “Street Opening” permit. Bonds and Certificates of Insurance are typically obtained through the contractor’s commercial or general liability insurance.

- Your electrician will need to obtain an "Electrical Permit" from the City of Newton Inspectional Services department (**617 796-1060**) prior to installation of the underground conduits. Please contact the City "wire inspector" to complete this process.
- Your electrician will need to be present for installation of conduits for electrical service immediately on completion of trenching. For most projects, the trenching, installation of conduits and inspection will occur on the same day.
- You will need to notify your trenching contractor as to how many conduits will need to be installed. A typical undergrounding installation will include at least two conduits: one for electrical service and the other for telephone/cable/internet.
- Please note that the City has the authority to inspect the trench so that it meets the specifications required per NSTAR. The trench must not be filled until the work has been inspected by the City Engineer.
- On completion of trenching, your contractor will need to repair any sidewalks and/or streets that have been disrupted by the undergrounding process within one week of the process.
- After trenching, your electrician will need to install your cable and service equipment from the building to the pole. Please see Figures 1 and 2 on next page, from NSTAR's booklet "Information and Requirements for Electric Service" available on NSTAR's website at http://www.nstar.com/business/Default.asp?menu=service_requirements&
- Upon receipt of notice of approval from the city electrical inspector, removal of your overhead service and connection of your underground service will be scheduled and completed within 10 business days (2 weeks).
- After conduits are installed, notify your telephone and cable providers that you would like them to install their service underground and remove the overhead wires.
- Congratulations!! Your *Underground Service Conversion* has now been completed!

TECHNICAL DETAILS OF THE UNDERGROUNDING PROCESS

GETTING STARTED

The first step when installing a new underground service is to contact the City Engineering Office at the City of Newton (617 732-1020) to initiate the process of underground conversion. The Homeowner or Designee will then need to contact the NSTAR service office and ask an engineering technician for a “Design Consult,” which will determine where your service will originate.

Next, you should determine the location of your meter base. Your meter base should be located outside of your home and on the front side, or within 4 feet of it on the side closest to normal public access (see Figures 1 and 2).

When choosing your meter base location, be sure to consider the types of terrain where your conduit will be buried. You are required to provide, install and maintain conduit, as NSTAR is not responsible for repairing service line on private property. You must use minimum 3" inch Schedule 40 PVC electrical grade conduit unless dictated by other ordinances and approved by NSTAR. You will also need a service hand-hole.

Customer-installed continuous conduit runs shall not contain more than three 90-degree elbows, or a maximum of 270 degrees of long radius bends, unless pre-approved by an engineering technician. Conduit runs of more than 50 feet or containing more than two 90-degree PVC elbows shall have a pull string installed by the customer’s electrician.

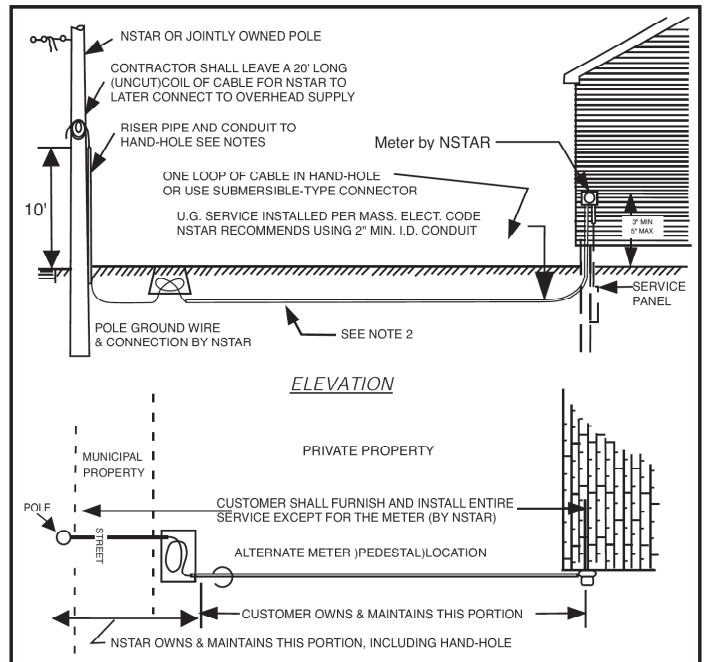


Figure 1: Typical overhead to underground service (same side of street)

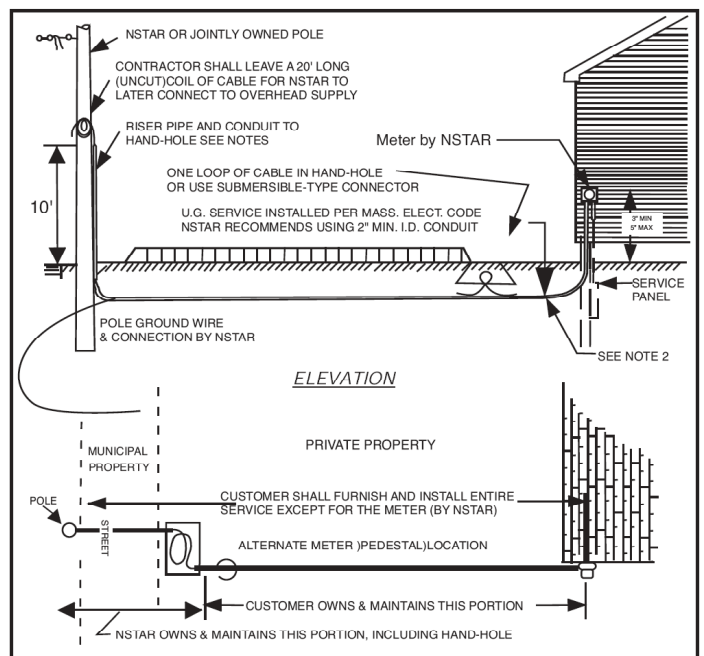


Figure 2: Typical overhead to underground service (opposite side of street)

SERVICE EQUIPMENT INSTALLATION REQUIREMENTS

After you have determined the meter base location, the service line route, the size of the service you want (200 or 400 amp), you are ready to begin installing your service equipment.

There are two ways this equipment can be installed:

- Flush mounted (see Figure 4)
- Surface mounted (see Figure 5)

When installing your service equipment, make sure that you install your meter base so that the center of the meter will be between 5 and 6 feet above finished grade.

TRENCHING REQUIREMENTS

A contractor of your choice will dig a trench and provide conduit from your meter base to the service hand-hole location, then to the location where your service will originate. Your contractor must provide a trench, 24 inches deep, from your meter base to the service hand-hole (HH-14 or HH-20). Your trench will then continue, at 36 inches deep, to the pole, transformer, or secondary hand-hole where your service will originate. The trench must have a level, flat bottom, void of shifting soil. The trench must be free of all sharp rock and construction debris. The trench must be a minimum of 3 feet from sewer and gas, 5 feet from septic tanks and 10 feet from any drain fields. (See Figure 3).

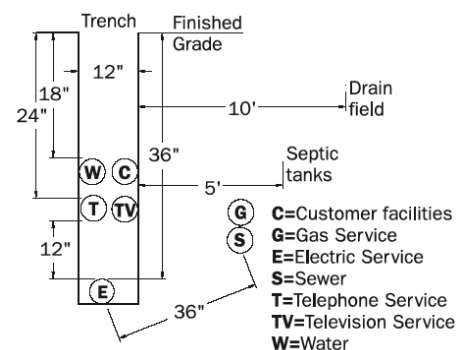


Figure 3: Service line trench detail

When trenching to a transformer, or any energized structures, do not use any digging equipment other than a hand shovel within 5 feet of transformer. NOTE: For underground service installation, don't dig or install any conduit or wire into an existing NSTAR vault without assistance from a qualified NSTAR employee. (*Access to NSTAR equipment by persons other than NSTAR employees is prohibited.*) Remember; do not dig under the transformer.

Also remember: Call DIG SAFE before you dig: 1-888 DIG-SAFE.

CONDUIT

Your electrician will install your service equipment. First, your electrician will need to obtain an "Electrical Permit" from the City Inspectional Services department (617) 796-1060). The customer (or their electrician) will need to provide conduit and conduit elbows from the meter base to the service hand-hole (*generally 2"*). Continue with a second set of 3" conduit and conduit elbows from the service hand-hole to the NSTAR source (pole, transformer or secondary hand-hole). The conduit will be Schedule 40 PVC electrical grade

unless otherwise required by the engineering technician, road right-of-way administrator, or electrical inspector (see *Figure 1*).

You are required to keep the conduit clean and clear of debris and water. End plugs will be provided by NSTAR, and you are required to have these installed.

Do not install conduit into energized equipment such as a transformer or an energized hand-hole.

At a transformer, or energized hand-hole location, you will need to call our service office to coordinate our being at the site to assist you in installing the elbow, pull string and backfill.

You will need to install all conduit, pull string, service hand-hole, trenching and backfill from the meter base to the NSTAR source (*pole, transformer, secondary hand-hole*). This includes the electrical cable, which should be brought 10 feet up the pole and with 20 feet of cable left wrapped up for NSTAR to connect to the overhead supply (see *Figures 1 and 2*).

CONDUIT FOR TELEPHONE AND CABLE

To insure that all of your overhead wires are underground, you will probably want to put telephone and cable wires underground at the same time as the electrical. These must go in a separate conduit which can be 2 or 3-inch PVC.

SERVICE HAND-HOLE

Your electrician will need to install a service hand-hole to your site. (*Ask the City Engineering Office for details.*) NSTAR will provide the hand-hole equipment (HH-14 or HH-20) for your electrician to install. If your service is a 200 amp single meter base installation an HH-14 hand-hole will suffice.

If you have a bigger meter base, or more than one meter, you'll need to pick up a larger service hand-hole.

It is your responsibility to install the service hand-hole in the trench between the NSTAR pole and your house. Hand-holes may be placed in the berm near the pole, in the sidewalk, or just inside your property from the sidewalk (usually 2 feet into property line). The lid portion of the service hand-hole must be accessible, although landscaping can be used to conceal it if it is on your property.

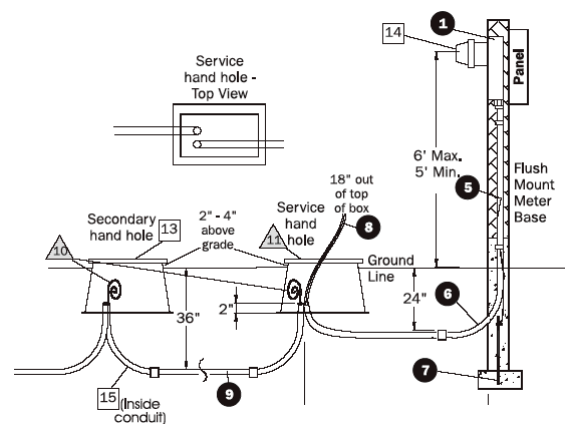


Figure 4: Flush mounted base with secondary hand-hole

Two conduit elbows are required inside the service hand-hole (*one from the meter and one from the pole, transformer or secondary hand-hole*). The two elbows are to be 2" above the

bottom of the dirt floor of the hand-hole, and centered in the short side of the hand-hole (*see the Top View in Figures 4 and 5*).

Do not install the service hand-hole in a concrete area unless you receive approval from the City. If the service hand-hole fills with water, you are required to provide adequate drainage, possibly excavating a larger area and underlying the service hand-hole with gravel.

NSTAR crews must have easy access to the hand-hole cover at all times. Hand-hole must not be covered with pavement, deck, or objects difficult to remove.

PULLSTRING

Pull string is to be blown in after the sections of the conduit have been glued and the glue has properly dried. Make sure the pull string does not get glued to the conduit. You will not be required to install pull string unless your trench is over 50 feet long, or has more than 180 degrees in elbows. Your electrician will provide the appropriate pull string material.

BACKFILL

After you have installed the trench, conduit, service hand-hole and pull string, the City will conduct a trench inspection, per standards determined jointly by the City and NSTAR. Trenches across public streets and sidewalks must be backfilled with Control Density Fill (CDF Excavatable Type). Your contractor will know where to obtain this fill or can request information about it at the Engineering Department.

FINAL INSPECTION

All underground box and duct systems done by customers, contractors or builders will require a final inspection and approval by a City inspector. The City inspector must approve all jobs requiring trenching before the homeowner can begin trenching, conduit installation, and begin electrical installation.

The Homeowner or designee will coordinate an inspection with the City Engineering Office to approve the service installation. Upon successful inspection, you will be provided a "approval" tag on your meter base.

Items owned and installed by customer or customer's electrician are generally everything between the hand hole to the customer's meter (*Figs. 4 and 5*)

1. Meter base and meter socket.
2. Insulating bushing and lock nut.
3. Terminal adapter.

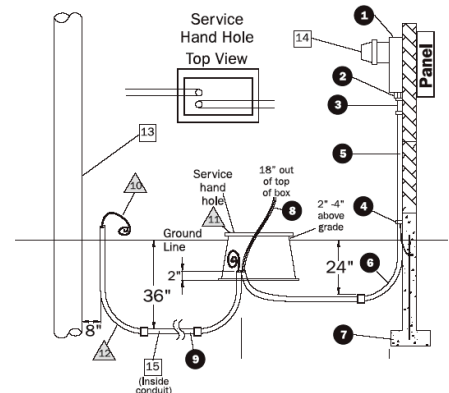


Figure 5: Surface mounted base with pole

4. Conduit strap.
5. Service entrance conduit as specified by NSTAR or local electrical inspector.
6. 90° elbow.
7. UFER grounding installation in accordance with NSTAR.
8. Customer's service wire - 18" out of top of box.
9. 3" Schedule 40 PVC conduit, couplings and 36" minimum radius elbows.
10. Pull string.
11. Service hand-hole (HH-14 or HH-20).
12. 3" Schedule 80 PVC, 36" minimum radius elbow.

Items owned and installed by NSTAR are generally those between the pole and the hand hole, but also include the meter itself (Figs. 4 and 5)

13. Secondary hand-hole, or Pole.
14. Meter.

PRIVATE PROPERTY RIGHTS

The customer may be required to provide private property rights or NSTAR may be required to obtain public way rights from the City. Where this may be an issue, this should be addressed early in the process. Note that the customer is responsible for any tree trimming or clearing that may be necessary on private property.

SCHEDULE ESTIMATES

The following is an estimated timeline for you to use as a guideline for your own particular project:

- Please allow 6 weeks (30 business days) for the design of the project. At that time, an appointment for trenching will be made.
- Please allow 4 weeks for trenching to be performed once the design has been approved.
- Please note that trenching, inspection (by the City), and backfilling should be planned to occur in one day.
- Sidewalk and/or street repair will take place within one week of trenching.
- Please plan on having your electrician install service wires within 2 weeks of trenching. After your cable is installed, NSTAR will convert service to underground within 10 business days and a final inspection will take place.

Prepared by: The Newton Task Force on Undergrounding Utilities, NSTAR, and the City of Newton Engineering Department. Updated August 29, 2007.