GENERAL INSTALLATION REQUIREMENTS FOR UNDERGROUND FACILITIES

- Underground electric service and meter location will be established by NHEC upon site visit.

- In some instances the type, nature, and/or size of the service requested by a Member may not be available at a desired location.

- When **temporary underground service** is required, the installation shall be in accordance with Construction Standard UTS 1, located in the back of the book. The process and costs of obtaining temporary underground service varies, depending upon the location of existing facilities. After contacting NHEC and meeting a Line Design Technician in the field, the Member then installs the temporary service equipment and structure, has it inspected(when required by the town), and then calls NHEC. Service will be connected once the required documentation, prepayments, and permits have been completed. "Temporary" is installed to provide power during the construction phase of a project and is defined as less than one year by the Federal Energy Regulatory Commission. To continue service beyond one year, the service must be converted to a permanent service and meet all pertinent requirements of this handbook.

- For conductor requirements:
  - Single phase service 400 amps or less, NHEC provides conductors to the line side of the meter socket.
  - Single phase service 800 amps or less for mulit-gang meter socket requires parallel runs, NHEC provides conductors to the line side of the meter socket.
  - Single phase service greater than 400 amps, Member provides all underground service conductors.
  - Three phase service Member provides all underground service conductors.

- In the case of underground facilities, a Member shall not erect or maintain any building, structure, or any part of the septic system over such facilities, and shall not plant any trees or shrubs over such facilities, and shall not substantially change the grade over or adjacent to such facilities.

- NHEC vaults and other equipment are to be within 15' of a traveled way or driveway, considered to be truck accessible year round.

- Minimum Clearances from equipment see Specification SP-2, located in the back of the book. The Member must contact NHEC to determine appropriate clearances. These clearances shall not supersede any local ordinance or code which requires greater clearance. If additional fire protection is necessary for insurance and/or other purposes, it is the responsibility of the building/property owner and/or Member to provide additional protection.

- The Member shall furnish at their expense and adhere to NHEC specifications all trenching, backfilling, manholes, conduits, ground wire and vaults necessary for the installation of underground electric distribution facilities.
  - Red Caution Ribbon shall be furnished and installed by the Member. This shall be installed the entire length of the trench above the conduit, a foot below finished grade.
  - A pulling rope, 1/4 inch diameter polypropylene, shall be installed in each conduit.

- Trenches shall be as straight as possible with no more than 180° of bends which will consist of no more than two 90° sweeps where the run transitions from underground to above ground. Routes through unstable soil such as mud, shifting soils, or other hazards should be avoided.

- Any significant change in the direction of the run shall be accomplished by use of an appropriate pull box.

- Underground facilities shall be a minimum of schedule 40 PVC and maintain a minimum depth of 36 inches to finish grade.

  EXCEPTIONS:
  - Conduits emerging from grade, above grade, under travel ways, roads and driveways, Schedule 80 PVC shall be used.
  - Conduits installed less than 36 inches in depth require NHEC approval after site review and shall be encased in concrete to NHEC's specs.

- Any conduits crossing or within 6 feet of drainage, water, gas, septic or sewer lines, must be encased in concrete.

- Underground conduit systems shall not be installed within 15 feet of any building foundation, swimming pool, etc., except for where service conduit merges to intercept the service equipment.

- The ends of the conduit shall be plugged during construction to prevent the entrance of foreign matter. The conduit shall be terminated as follows:
  - Conduit shall terminate not more than 3 inches inside a vault. Whenever possible the conduit should run straight into the vault without sweeps or bends. Where the conduit enters the vault, it shall be sealed with hydraulic cement to prevent water, soil and rock intrusion.

- All ends, joints and internal finish of the conduit shall be free of sharp edges or burrs which could damage the cable.

- All conduit joints shall be glued as recommended by the conduit manufacturer. Colored PVC cleaner shall be used before applying glue.

- The Member shall be responsible for having the conduit/vault system ready, prior to NHEC personnel installing the cable. Any additional changes, repairs or other work required to the underground conduit/ vault system in order for NHEC personnel to pull the cable into the conduit shall be the responsibility of the Member.

- Member shall be responsible to cover all open holes or trenches to mitigate any hazardous conditions at the job site prior to NHEC starting their work.

SECONDARY

- Sweeps: Electrical grade schedule 40 PVC 90° sweep(s) with a minimum radius of 36 inches may be suitable in straight runs between riser pole and meter locations less than 200 feet for 3 inch PVC and 150 feet for 4 inch PVC. If runs exceed these limits, then all 90° sweeps must be galvanized steel.

- If a reduction in the service conduit is required, it will occur at the top of the slip joint/expansion fitting utilizing a reducing bushing. The slip joint/expansion fitting will remain the same size as the conduit installed in the trench with the transition occurring above ground. Refer to Construction Standard IU Service Reduction located in the back of the book.

- Secondary trenches: Required 6 inch minimum spacing between all conduits and trench sidewalls. Refer to Construction Standard IU Secondary Trench, located in the back of the book.

- Conduits installed in pedestals must be straight up and in close proximity in order to make proper connections.

- At meter locations, the conduit shall terminate as per appropriate meter installation specs. If the meter socket is at a lower grade than the pad mounted equipment location or part of the underground conduit system, provisions shall be made as necessary so that the conduit will not fill with water and run into the meter socket. If a slip coupling (with O-rings removed) is utilized, a six inch deep, one foot wide, and two foot long stone base will be set up under the slip joint for drainage.

PRIMARY

- Sweeps: Electrical grade steel 90° sweep(s) with a minimum radius of 36 inches shall be required where the run transitions from underground to above ground. Sweep shall not be used in the underground portion of the primary run.

- Primary trenches: Require 6 inch minimum spacing between all electric conduits and requires a continuous #6 bare AWG copper grounding conductor that shall be directly buried in the bottom of the trench, prior to installation of any conduit, with a 20 foot coil at each end for connections by NHEC. Refer to Construction Standard IU Primary Trench located in the back of the book.

- Joint trenches: When electric facilities are installed jointly with communication facilities, clearance between conduits have to maintain 12 inch, the #6 AWG copper bonding conductor, should be readily accessible with adequate length at both ends and shall be installed at each vault and pad mounted equipment location between electric and communication facilities. Refer to Construction Standard IU Primary Trench, located in the back of the book.

- A drainage system must be installed to daylight in all vaults and sub surface structures. In areas of high water table, vaults and conduit may need to be elevated to promote effective drainage. If the first vault from the riser pole is at a higher grade than the riser location, provisions shall be made as necessary so that the conduit will not fill with water and run up into the riser. If a slip coupling (with O-rings removed) is utilized, a six inch deep, one foot wide, and two foot long stone base will be set up under the slip joint for drainage.

- The maximum length between vaults is no more than 600’ without Engineering approval.

- Primary splices must be made in vaults.

- All vaults have to be parallel with the travel way.

- All primary conduits entering vaults must use the pre-casted knockouts located on the long end of the vault.

- Loop feeds are required when two or more underground transformers are installed. Refer to Construction Standard URD 1B, located in the back of the book.

Underground Checklist

In order to improve our efficiency, we ask that you review the entire Section 2: Underground; of this handbook in order to ensure a timely and correct underground installation. Please be advised, NHEC can best serve you providing that you give us as much notice in advance as possible. If NHEC specifications are not met, applicable charges, per NHEC's Tariff will apply. Please call our Member Solutions Department at (800) 698-2007 and reference your Work Order #_____

Please be sure to that you have completed all applicable steps below:

- ❑ Did you contact NHEC for a trench inspection?
- ❑ Is your trench the proper depth?
- ❑ Did you install the correct conduit meeting NHEC minimal requirements?
- ❑ Did you use the correct minimal radius 36" sweeps? (Steel or PVC)
- ❑ Did you use the proper amount of sand in the trench?
- ❑ Did you install the Copper Ground Conductor (if applicable)?
- ❑ Did you install the correct Caution Ribbon at the right depth?
- ❑ Did you install the correct Pulling Rope?
- ❑ Is the meter located in the NHEC pre-determined location?

Conduit and Trench Inspection Notice

All contractors and developers requesting underground inspections shall call the Member Solutions Department at 1-800-698-2007 a minimum of 2 business days before the trench is started to make arrangements for an on-site inspection by NHEC Construction personnel. NHEC will conduct an on-site inspection within 2 business days of the inspection request.

At the time of inspection NHEC will verify the following:

- Proper trench depth and location
- Conduit Schedule
- Installation of copper wire as required
- Conduit properly bedded in sand or select backfill

Refer to Section 2: *"Underground Service Installations, Permanent & Temporary"*

Once certification has been completed, an NHEC "approval" sticker will be placed on the conduit in order to notify all parties that the underground electrical system has been inspected and approved.

Failure to comply with this requirement will result in the system being re-exposed so that the proper inspection can be performed. No electrical service will be installed until the inspection sticker is in place.

Please be prepared to give all information regarding your project to our Member Solutions representative, including your Service Order # _____.

CONTACT NUMBER:
1-800-698-2007