

STUDY GUIDE FOR CONTRACTOR PRE-QUALIFICATION TEST

Cables shall be pulled so that all conduit and bends will be installed and backfilled before any wire is pulled. This will result in minimum tension on the cables.

In highly congested manholes or where cables must be bent sharply to permit pulling a feed-in-tube shall be used for pulling cables. This will reduce pulling tensions and prevent damage to the cables being pulled and to other adjacent cables.

Three phase conductor cables must be installed three cables per conduit.

Before making a pull, conduits shall be cleared and free of dirt, rocks, etc.

Cable pulling compounds (Bentonite clay in a water slurry or pulling compound) shall be used to facilitate pulling of primary and secondary cables. Compounds shall be compatible for use with high voltage cable(s) shield(s).

When two or more cables are pulled into one conduit, they shall be pulled at the same time.

Primary cables shall not be installed in the same conduit with secondary or communication cables.

Primary or secondary cables shall not be pulled into plastic conduit until all conduit joint made using plastic conduit cement have been allowed to dry for at least 30 minutes.

Sufficient excess cable shall be pullet into all duct runs to allow at list five feet (5') of cable to be removed from each end of the installed cable, yet providing adequate cable for termination or racking. Removal of the five feet (5') of cable will eliminate cable damaged by pulling grips from the system.

MAXIMUM PULLING LINE TENSIONS

When pulling cables into conduit, the pulling line used shall have a safe working load rating (minimum) equal to the manufacturer's specification maximum allowable pulling line tensions. An approved hydraulic pressure cable tension monitoring system or dynamometer will be used on all pulls where the cable(s) cannot be pulled by hand.

PULLING EYES AND GRIPS

Cables shall be pulled into conduit with a pulling eye attached to the cable's conductor or a pulling grip placed over the cable sheath, insulation or jacket.

PULLING WITH BENDS AND/OR SWEEPS

Extreme care must be exercised when pulling cable into runs containing sweeps or bends. There are two (2) concerns; 1) the cable manufacturer’s maximum recommended pulling tension must not be exceeded, and 2) the cable manufacturer’s maximum sidewall bearing pressure is not to be exceeded. Different manufacturers of cable have differing requirements as to the maximum pulling tension depending on the type of pulling rigging used (pulling grips such as kellams or pulling eyes affixed to the cable’s conductor). Sidewall bearing pressures are also dependent on the manufacturer. It is the Contractor’s and/or Engineers responsibility to calculate expected cable pulling tensions and sidewall bearing pressures based on the manufacturer’s recommendations.

The number of 90 degree turns is going to vary for different installations. A good rule of thumb is that no more than three 90 degree turns will be used on any secondary or primary up to 4” PVC three phase. Only one 90 degree turn, if any, on 6” PVC three phase applications.

PHASE IDENTIFICATION

When individual phases in a primary or secondary multi-cable installation are to be identified, bands of colored tape shall be used. Each phase shall be identified with bands as follow:

- “A” Phase.....Black
- “B” Phase.....Red
- “C” Phase.....Blue

LOCATION OF JOINT UTILTIY TRENCH

Phone, cable and power joint trench will be located on the north and west sides of roadways. In new developments, with sidewalks, the joint trench will be located at the back of sidewalk. In planned developments without sidewalks, the joint utility trench will be five feet (5’) back of curb. Locations must be approved by Hurricane City Staff.

BACKFILLING OF JOINT UTILITY TRENCH

The JUT trench shall be backfilled with one inch (1”) minus material from the bottom of the trench to the top. No spoil material shall be used, unless screened, (1”) minus, and is compactable material. The JUT trench shall be machine compacted in twelve inch (12”) increments to help avoid settling of the trench.

If conduit is damaged during installation, damaged section(s) shall be removed and replaced with like conduit and couplings. Use of split ducts for repair of damage during installation is not permitted. A full stock length (usually 10 foot segments) will be used to repair a damaged section. Repair collars will not be allowed.

RISERS ATTACHED TO POLES

Conduits for a riser pole shall be rigid steel and shall continue up the pole from the PVC elbow to the top of the riser. The riser pole conduit shall be straight and supported with a

six inch (6") alumina form strut system. Any crooked or misaligned conduits will not be accepted. The contractor shall install the first ten feet (10') of the riser and one six inch (6") alumina form standoff. The City will provide the rest of the materials for the completion of the power riser at the developer's expense. Placement and height of the riser shall be approved by Hurricane City Power Department personnel.

TRANSFORMERS

All transformers shall be loss evaluated, with certified test reports. It is the contractor's responsibility to bring the test reports to Hurricane City Powers office before requesting walk thru inspection of a project. All certified test reports will be handed in to Hurricane Power Department with the address of where the transformer is located. At this time Hurricane Power staff will review the certified test report to make sure the transformer meets Hurricane Specifications. If the transformer meets all requirements Hurricane Power will assign an "H" number (Hurricane identification number) for the transformer. The contractor will need to write the identification number on the transformer, per inspector's requirements. If the transformer does not meet Hurricane Specs, the transformer will not be accepted.

No rebuilt transformers will be accepted into Hurricane Power System for new developments and/or projects.

Three phase transformers shall be equipped with (2) 2-1/2 percent taps above and (2) 2-1/2 percent taps below normal voltage. All taps shall be full capacity taps.

IDENTIFICATION TAGGING OF CONDUCTORS

Approved tags shall be used in tagging all primary and secondary wire. Primary wires shall be tagged with one tag per primary wire. Approved tags (cow tags) must contain the following information:

- A. Footage of the run
- B. Direction that it is running (north, south, east, west)
- C. What piece of equipment that it is running to.
- D. Phase identification on primary (A, B or C phase)
- E. "H" number if going to a transformer

ARRESTOR ELBOW REQUIREMENTS

Hurricane City Power requires arrestor elbows on all primary underground systems to help protect the electrical equipment and lines. If primary lines come to a dead end in any of the following pieces of electrical equipment, arrestor elbows are required.

- A. Single phase vaults
- B. Three phase vaults
- C. Single phase transformers
- D. Three phase transformers

TYPES OF ACCEPTABLE UNDERGROUND CONDUIT

Plastic conduit shall be one of the following types:

1. PVC Schedule 40
2. HDPE Schedule 40

Any stubs for future shall be capped or have a temporary plug installed. HDPE pipes shall have a coupler installed on the end if buried in the ground.

INSTALLATION HEIGHTS ABOVE FINISH GRADE OF ELECTRICAL EQUIPMENT

All pieces of electrical equipment shall be installed with six inches (6") above finish grade and/or sidewalk level. If there is a conflict due to slopes or sudden grade changes, it is the contractor's responsibility to contact Hurricane City Power with questions and concerns.

CONTRACTOR WILL NEED TO KNOW ALL MATERIALS REQUIRED IN PRIMARY VAULTS, SWITCHES AND TRANSFORMERS. THE TEST WILL ASK TO LIST ALL ITEMS NEEDED FOR DIFFERENT SCENARIOS IN DETAIL AND WITH QUANTITIES.

HURRICANE CITY ALLOWS ONLY PRECAST CEMENT PRODUCTS FROM APPROVED VENDORS. KNOW THE DIFFERENT TYPES OF PRECAST CEMENT PRODUCTS USED ON HURRICANE'S SYSTEM. FIVE FOOT ST. LIGHT BASE (UP TO 25' POLE), SEVEN FOOT ST. LIGHT BASE (ABOVE 25' AND UP A TO 40' POLE), THREE PHASE TRANSFORMER PAD AND SWITCH BASEMENT.

Also included is the JUT trench detail, study this.

There is also an information sheet include. This is for future use for the contractor's. Contractor's starting new projects in Hurricane City will be required to fill this out and turn it in to Hurricane City Power. All contractors are required to meet with Hurricane City Power on any new project to go over the set of signed plans before beginning. This will help in resolving problems up front before the project begins. Call 435-635-5536 ext 4 for scheduling appointments.

Thanks

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Operations Coordinator