



BTU Conduit Installation Guidelines

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Preface

This booklet is issued by Bryan Texas Utilities (“BTU”) to acquaint developers and their representatives with the general requirements for electric service supplied by BTU and to serve as a guide to architects, builders, electrical contractors, engineers, and others in the planning of electrical installations as it relates to subdivisions within BTU’s electric service territory. Although BTU Staff made every effort to simplify this guide, developers are advised that specifications contained in this booklet supplement the applicable ordinances, policies, standards, and procedures of the City of Bryan, Texas and BTU and shall be subordinate to these ordinances, policies, standards, and procedures as well as the National Electrical Safety Code in effect at the time.

It is BTU’s intent to work closely with the Developer to provide a technically sound and financially responsible design of electric infrastructure needed to serve their development. To facilitate this, as early as possible during the development’s design stage, the Developer or their agent should contact BTU Line Design at (979) 821-5770 to allow us the opportunity to start our design process.

BTU requires the Developer make adequate electrical service available to each lot within their development as part of the infrastructure construction phase of their subdivision. As lots within each development start construction, BTU will extend service from a transformer to a house or business on an individual basis dealing directly with the owner/builder/etc. according to BTU policy.

This Guide will be updated on a regular basis, and its effectiveness will depend on input from the development community. Please feel free to forward any comments or suggestions that would make this guide more useful to the Scheduling Manager at:

Field Engineering and Scheduling Manager
Bryan Texas Utilities
PO Box 1000
Bryan, TX 77805

The information presented is subject to change and will be revised periodically to reflect any changes which may develop. Please refer to our website at www.btutilities.com for additional information as well as an electronic version of this document.

We look forward to working with you as your electrical provider.

NOTES

I. Overview of BTU Line Extension Policy

A. AIC Calculation

The developer shall be responsible for furnishing and installing, and the expense related there to, of conduit for the installation of all on-site underground development feeder, lateral, street lights and service lines utilized to provide electric service to the subdivision. The specification for the conduit and its manner of installation shall be approved by BTU prior to installation and shall follow BTU's conduit installation specifications.

As part of providing service to platted developments of ten lots or greater, BTU will provide cable, transformers, connections and switches as necessary at its expense up to \$1,650 per lot. All such costs greater than \$1,650 per lot shall be paid by the developer prior to construction. For overhead construction, BTU will provide the estimate and the developer shall pay a contribution in aid of construction for all costs greater than \$1,650 per lot.

B. Execution of Subdivision Service Contract

As part of the subdivision development process, the developer shall execute BTU's Subdivision Contract. This document summarizes the developer's responsibilities as it relates to obtaining electrical service as defined under BTU's line extension policy.

C. Front Lot Construction

All overhead or underground distribution lines in all new subdivisions shall be installed on the front lot lines along public streets. Lines may be installed along rear lot lines if there is an accessible roadway from an alley or road dedicated to the public along the route of the proposed distribution line. The dedication shall include language that prohibits obstructions being placed in the roadway that would prevent ready access, including but not limited to, fences, storage buildings, etc. and are required to be recorded in the deed restrictions for the applicable areas.

D. Relocation of BTU underground electrical lines or equipment after installation

- a. If the developer changes finish grade after the installation of BTU's underground electrical lines and equipment any relocation necessary to maintain proper depth shall be at the developer's expense.
- b. If, after the installation of BTU's electrical lines and equipment, the developer replats their subdivision and it becomes necessary to relocate any electrical lines or equipment to match new property lines it shall be at the developer's expense.

NOTES

II. Developer's Responsibility

A. *Approved Plat*

In order to be served, a subdivision shall have a preliminary plat approved by the appropriate authority in which it is located. Should such subdivision be in the extraterritorial jurisdiction limits of the City of Bryan or College Station or within the City of Bryan or College Station, such plat shall have been approved by the appropriate authority of such jurisdiction. Should such subdivision be outside the extraterritorial jurisdiction of either city, a plat or plan must be filed with the appropriate county authority. In all cases, plats shall have adequate easements as determined by BTU dedicated for the construction of electrical lines to all of the plots or parcels of land laid out in the plat allowing room for anchors, guys and other appurtenances.

B. *Easement Requirements*

The developer shall provide, at no cost to BTU, all necessary easements to support all planned electrical lines, either by an approved platted document or separate descriptive document. If needed, the developer is responsible for obtaining easements from adjacent parcels. The owner shall also provide BTU a temporary blanket easement during construction until all plats are filed.

C. *Property Lot Lines*

Prior to BTU staking the proposed route and the developer installing the conduit, all lot lines shall be surveyed and readily marked. In addition the developer shall certify that all locations of any electrical lines or equipment shall have proper cover at finished grade.

D. *Right of Way Clearing*

The developer is responsible to clear all right of way to support overhead or underground electric lines and allow accessibility for construction. Refer to page 23 thru 26.

E. *Installation of Underground Conduit*

The developer must ensure their contractor adheres to BTU's conduit installation specifications and coordinates with BTU's inspector to correct any problems as noted. Otherwise, acceptance of conduit system by BTU may be delayed. This, in turn, may delay installation of electrical facilities by BTU. Refer to ***BTU Specifications for Underground Conduit and Equipment Installation*** beginning on page 9 for more information.

F. *Street Lights*

Payment for the monthly charge for street lighting service shall be the responsibility of the appropriate entity according to city ordinance or, in the absence of a city ordinance, the responsibility of the developer or an entity designated by the developer.

1. Within the City Limits of Bryan

City of Bryan ordinance states that street lights shall be installed at all street intersections and other locations in accordance with the utility standards of BTU. It also states that all street lights shall be installed by BTU at the expense of the developer. However the developer may, at his option, supply and install approved the street lights. BTU reserves the right to supply and install all street light conductors and terminations. BTU's portion of any part of the street light installation shall be at the developer's expense.

BTU requires all street lights to be installed at all street intersections, at the end of dead-end cul-de-sacs that are at least 300' in length and one every 300' along tangent streets. If additional lights are requested by the developer, they must first be approved by the City of Bryan prior to installation. Consult with BTU Line Design on the types of street lights available.

2. Within the City Limits of College Station

City of College Station ordinance states that adequate street lighting for the protection of the public and property shall be installed in all new subdivisions. It also states street lights shall normally be installed at all street intersections and access ways, in cul-de-sacs and at generally 300' intervals or less along tangent streets. BTU typically installs all street lights. However the developer may, at his option, supply and install approved the street lights. BTU reserves the right to supply and install all street light conductors and terminations. BTU's portion of any part of the street light installation shall be at the developer's expense. Consult BTU Line Design on the types of street lights available.

3. Areas Outside the City Limits of Bryan or College Station

BTU does not require installation of street lights within subdivisions outside the city limits of Bryan or College Station. However, if the developer chooses to install street lights, it will be at the developer's expense. The developer or an entity designated by the developer shall authorize and assume the responsibility for the monthly street light fee paid to BTU. Quantity and location of street lights shall be at the developer's discretion. Consult with BTU Line Design on the types of street lights available.

III. BTU's Responsibility

A. Conduit Inspection

The developer or their contractor shall allow BTU the opportunity to inspect the installation of the conduit at various stages of construction to ensure adherence to BTU's specifications. BTU shall be given, at the start of the installation process, a contact person representing the developer's contractor that will coordinate and meet with BTU's inspector as needed. BTU will require an open ditch inspection that includes, but is not limited to, areas where equipment will be set and at least one location in the middle of a run. The developer or their contractor shall provide BTU one working day notice prior to any request for inspection. Upon notification by contractor, BTU inspector will respond by the end of the next business day and report any deficiencies found. All deficiencies must be corrected prior to BTU accepting the conduit installation.

B. Work Scheduling Process

After the conduit installation has been inspected and approved by BTU, installation of the equipment and conductors will be scheduled according to BTU's standard scheduling process.

NOTES

IV. BTU Specifications for Underground Conduit and Equipment Installation

A. General Specifications for Developer Installed Conduit

1. **Ditch Line** – On all underground installations BTU will allow a shared ditch line with dry utilities only (Cable TV, Telephone). Refer to pages 12 & 13 for installation. BTU does not allow any type of public or private wet utilities (Sewer, Water, Gas) installed in the same ditch with any BTU owned electrical line.

2. **Conduit and Elbows** – All conduit used shall be minimum schedule 40 grey electrical PVC. All conduits shall be properly glued at all couplings and joints.

| Description | 600A Primary | 200A Primary | Secondary to Pedestal | Service to Meter | Street Light |
|----------------------------------|---|---------------------|-----------------------|-----------------------------|--------------|
| Conduit Size/Type | 4" PVC | 2" PVC | 3" PVC | 3" PVC (See Notes 2 & 4) | 2" PVC |
| Elbow Type | Aluminum wrapped with Scotchrap™ 50 (See Note 3) | PVC (See Note 1) | PVC | PVC | PVC |
| Elbow radius | 42" | 36" | 12" | 12" | 9" |
| Maximum Wire Pull Lengths | 500' | 700' | 150' | 200' | 300' |

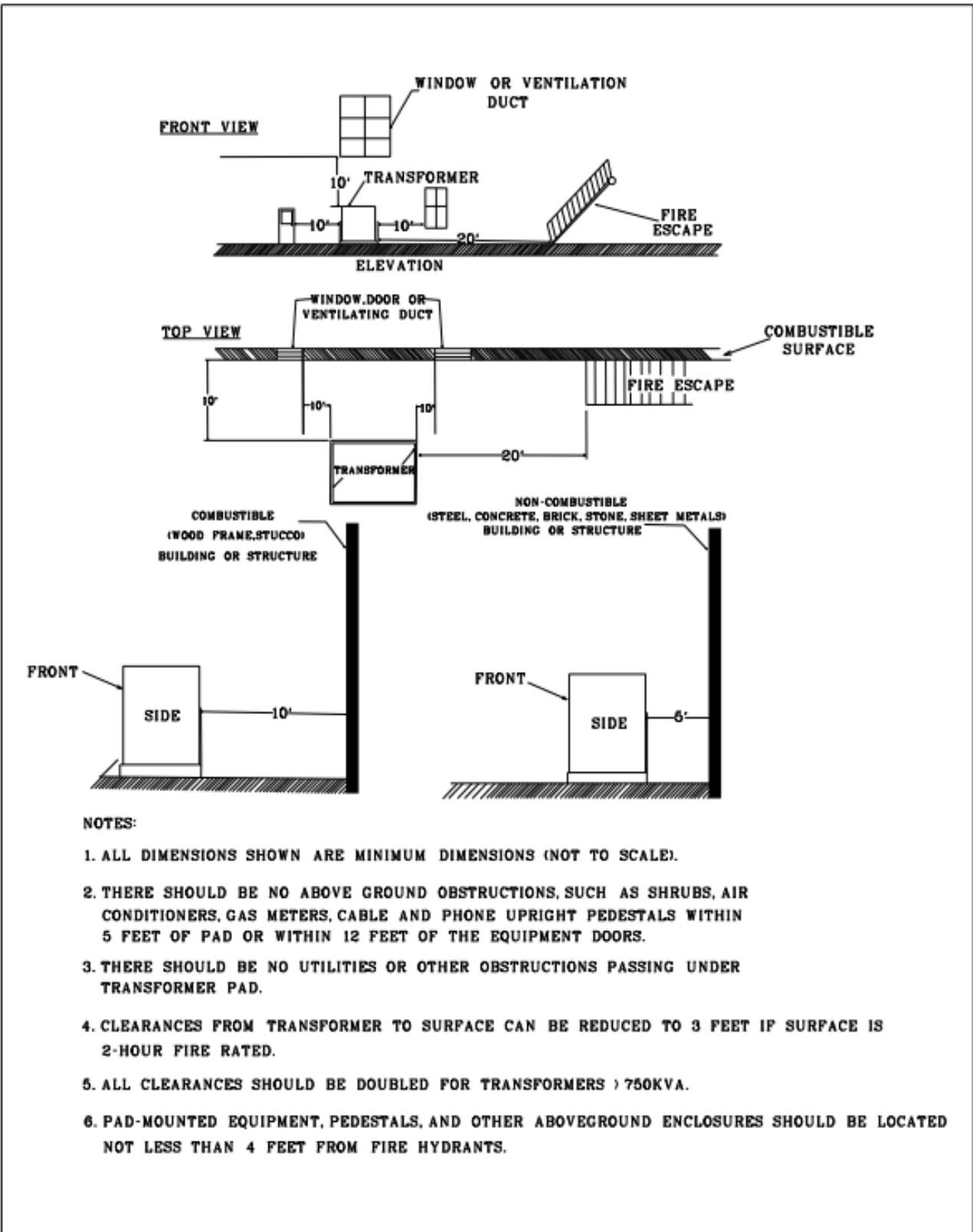
NOTE 1: All primary runs in excess of 300' and with (3) or more 90 degree elbows OR all runs in excess of 500' shall have aluminum elbows installed at all ditch line elbow locations and at all equipment locations.

NOTE 2: Single phase services larger than 320 amps and three phase services may require larger PVC conduit to be installed. Consult with BTU Line Design on these installations. Combined lengths of service and secondary to any meter shall not exceed 200 feet.

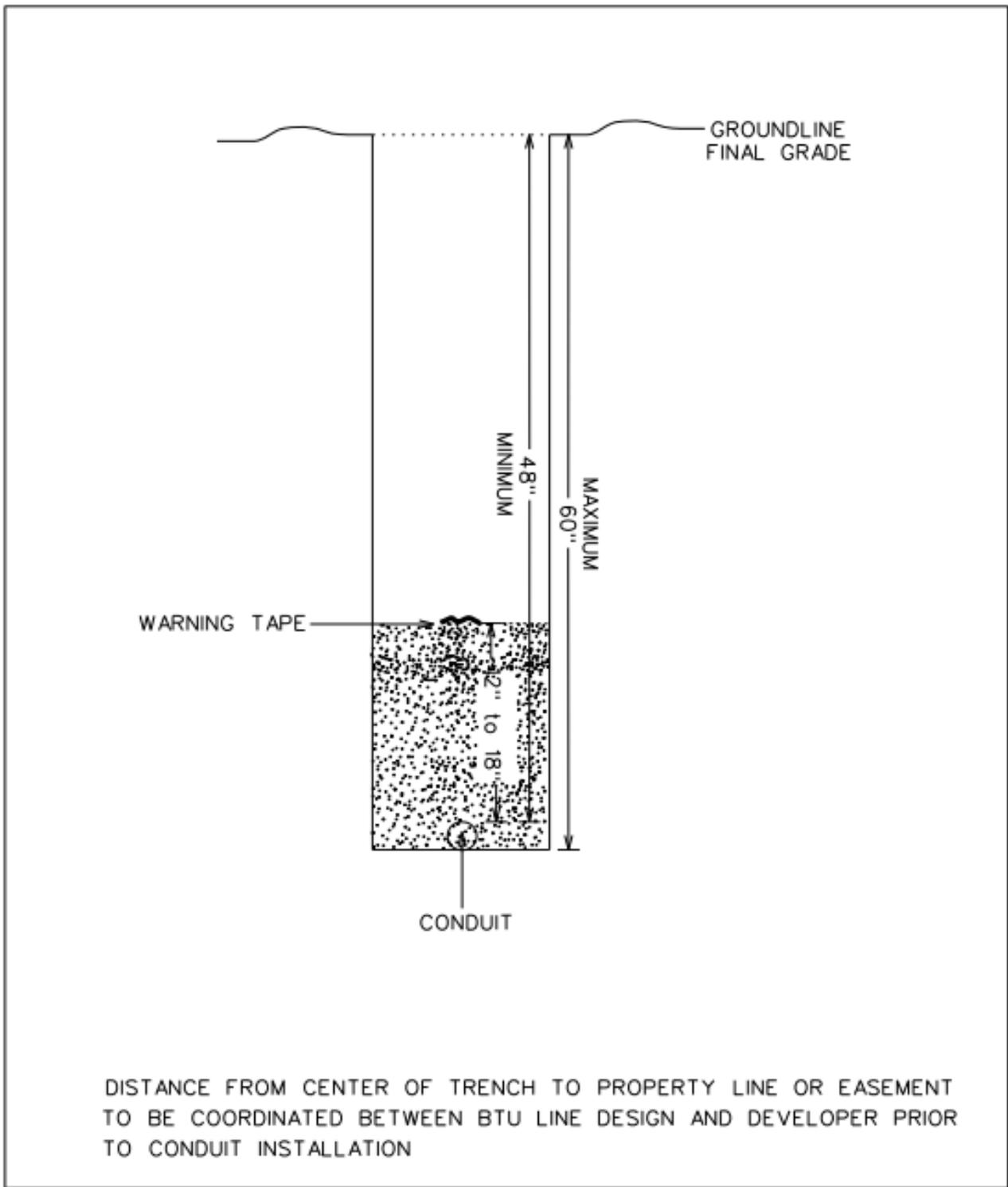
NOTE 3: Information on Scotchrap™ 50 can be found at <http://multimedia.3m.com>

NOTE 4: All primary and secondary stub outs shall be extended a minimum of 10' from transformer or pedestal. End of stub out shall be marked with a 6'- 6" T-Post painted red to denote electric.

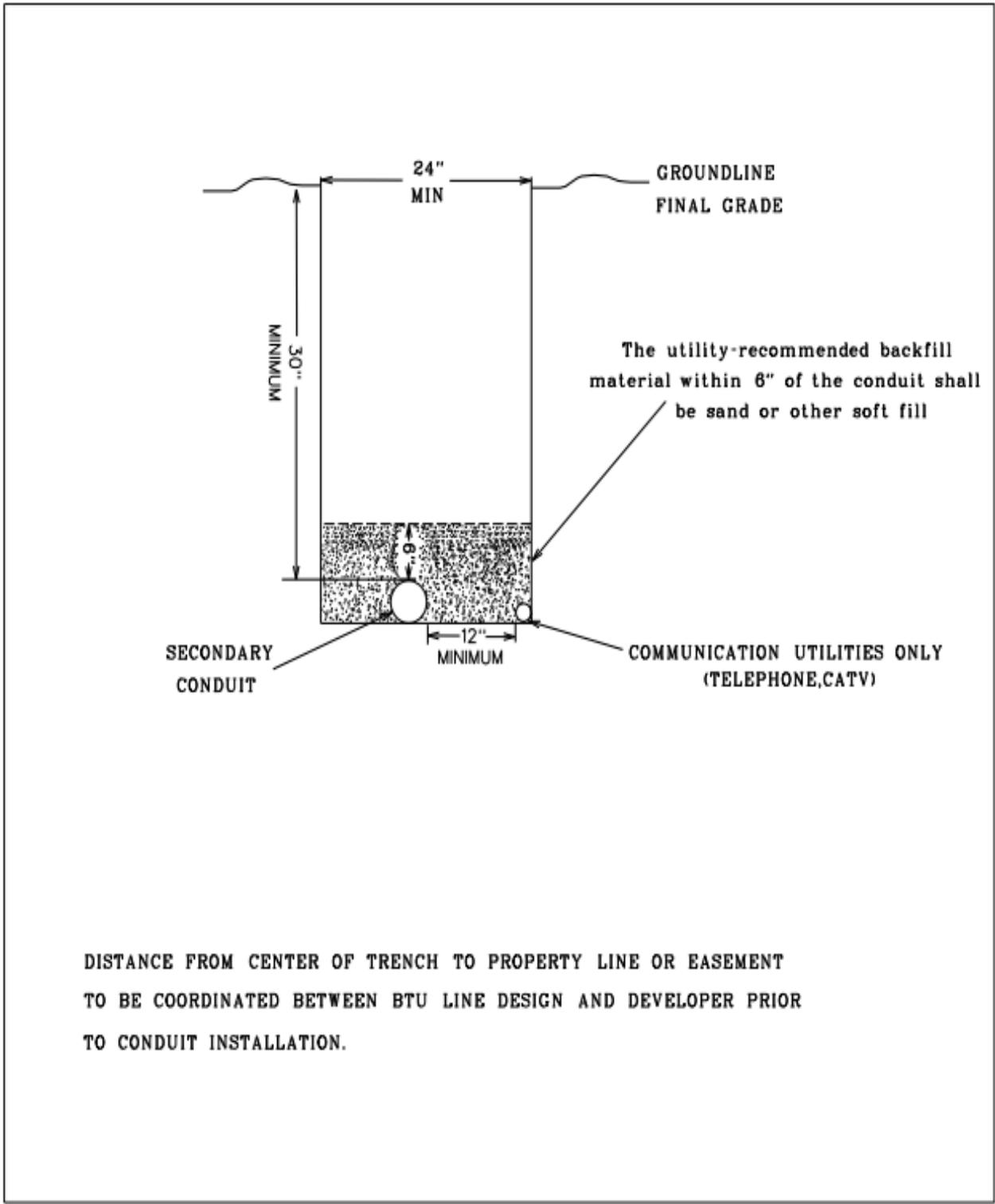
B. Pad Mounted Transformer Clearances



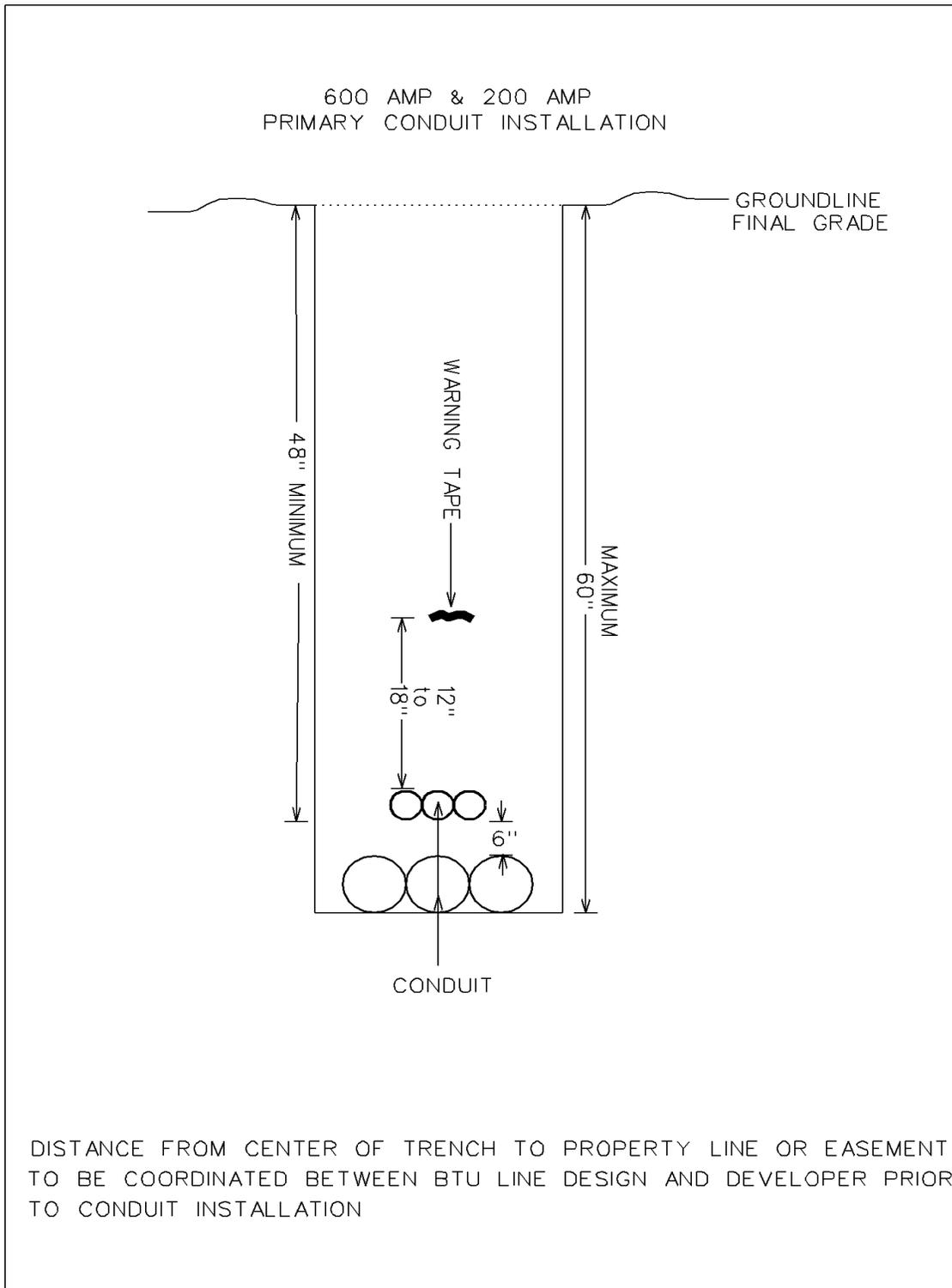
C. Primary Conduit Installation



D. Secondary Conduit Installation

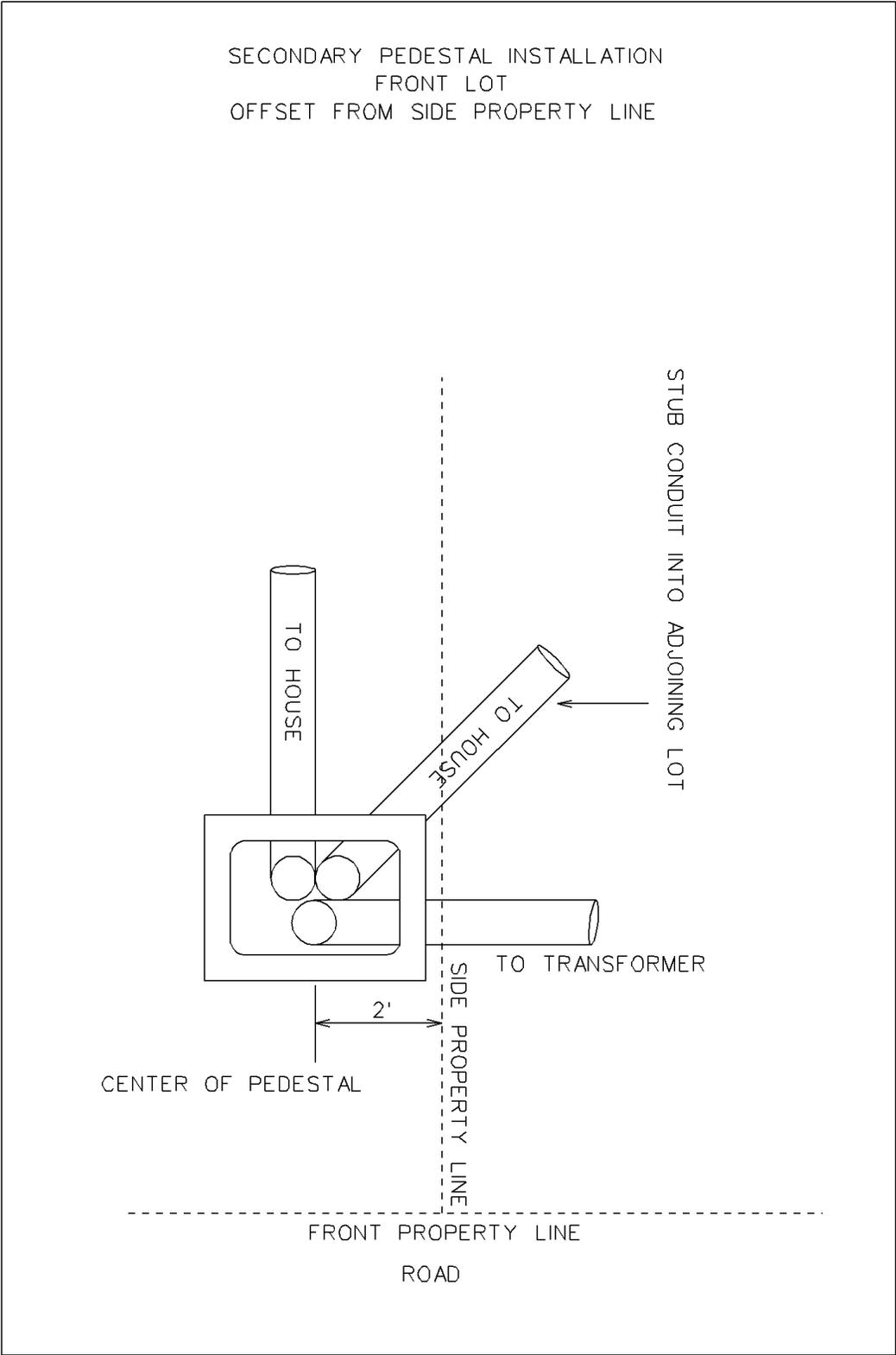


F. 600 Amp and 200 Amp Primary Conduit Installation in the Same Ditch Line



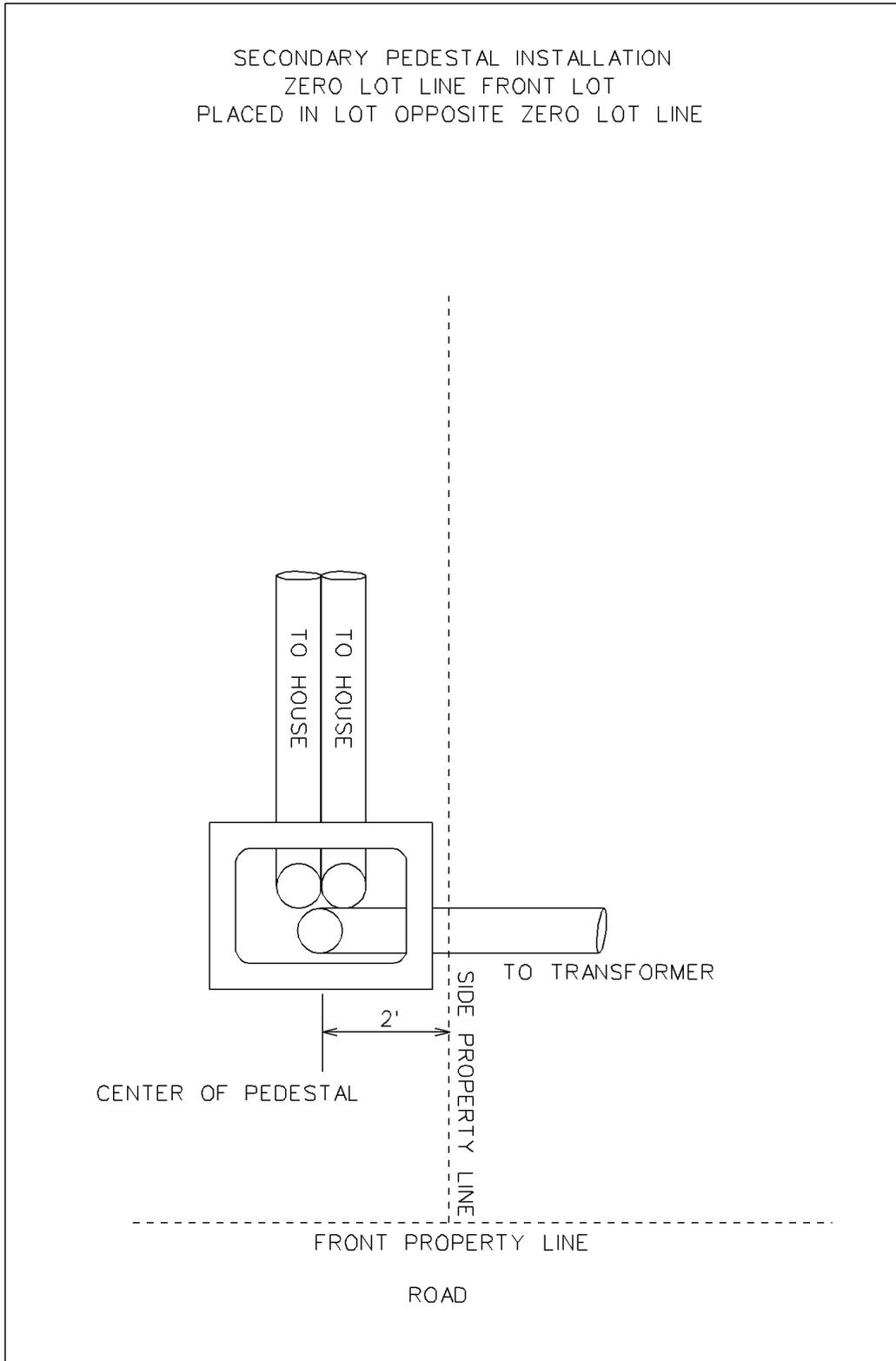
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G. Front Lot Secondary Pedestal Installation Offset from Property Line



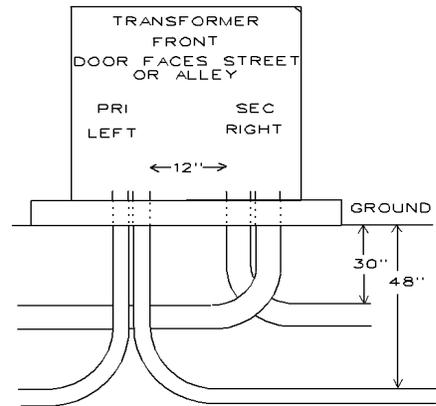
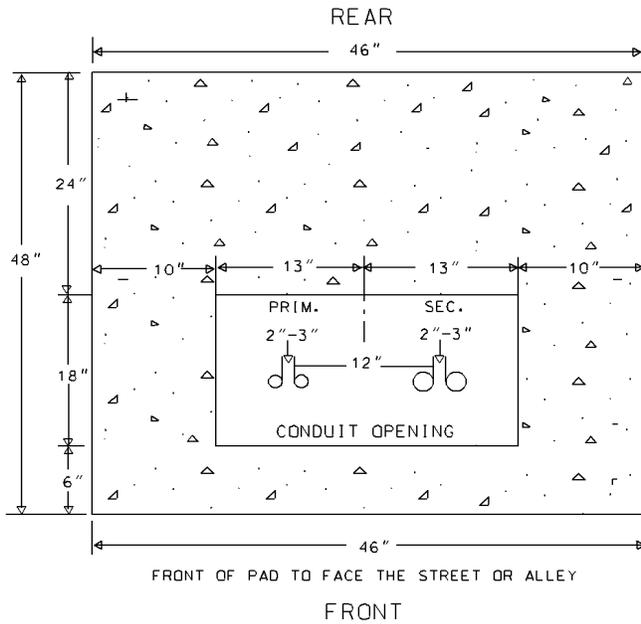
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H. Front Lot Secondary Pedestal Installation with Zero Lot Lines



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I. BTU Transformer Specification for Single Phase Transformer Pad

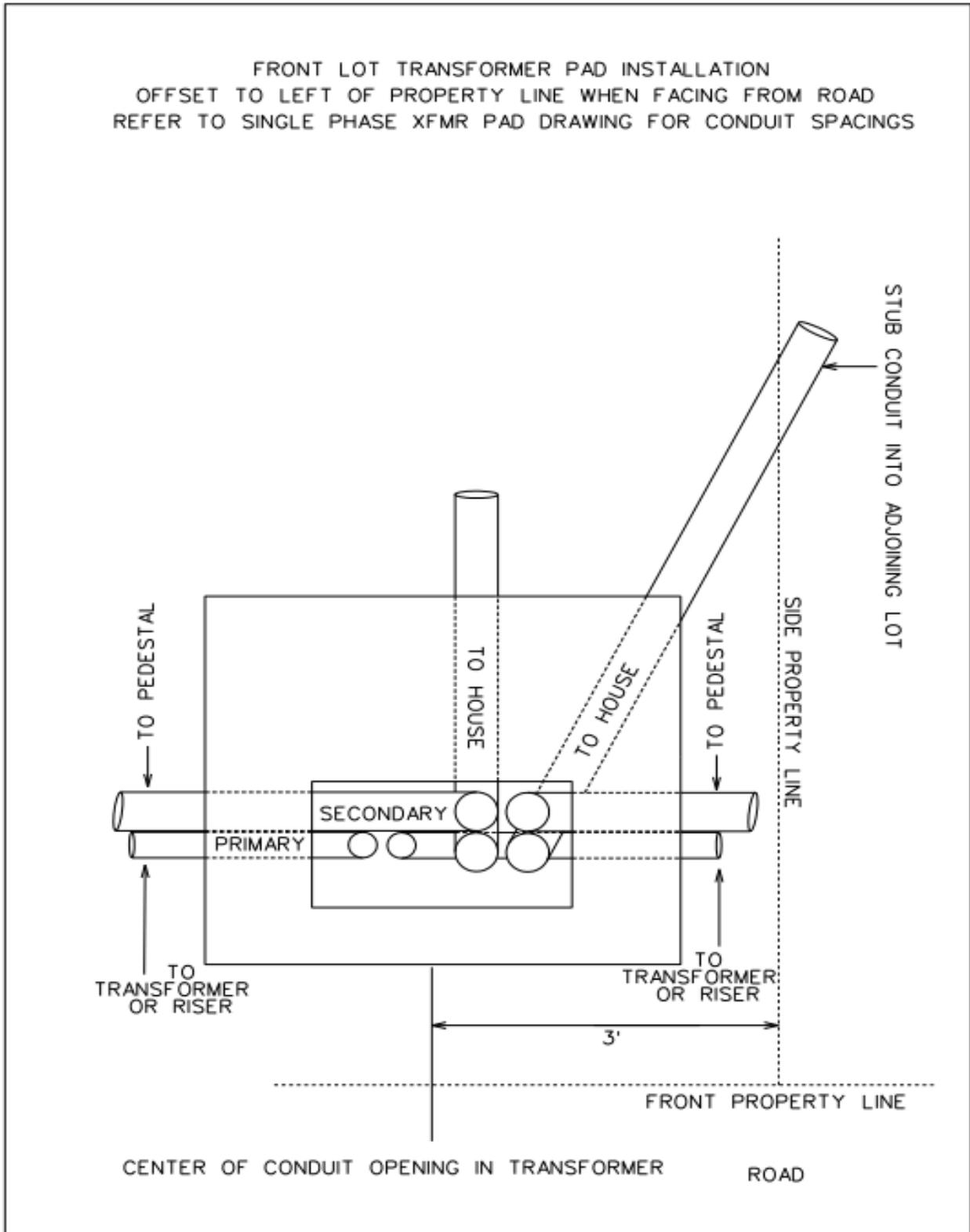


PREFAB XFMR PAD – FURNISHED BY BTU

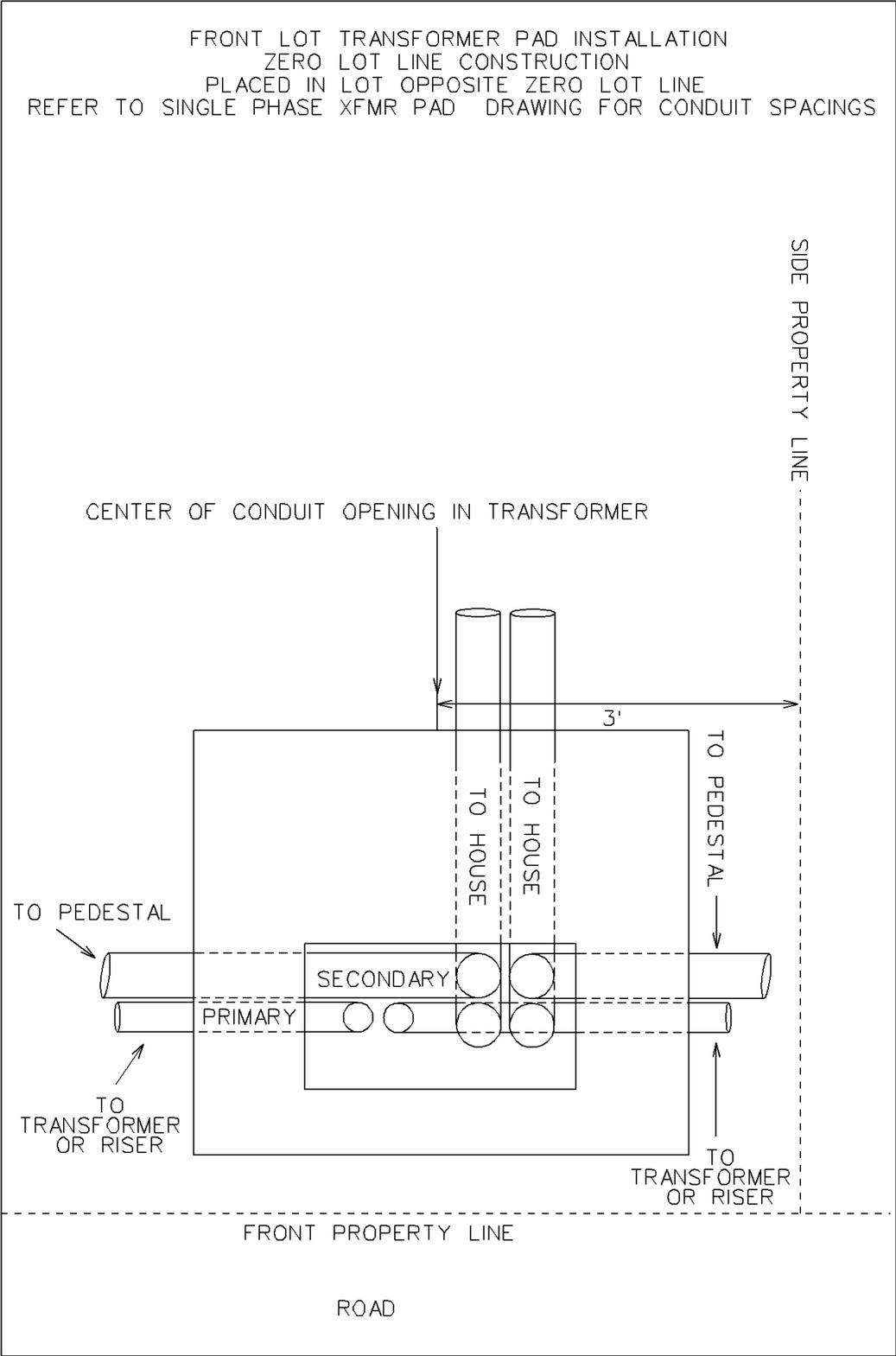
| |
|--|
| SINGLE PHASE XFMR PAD 25 TO 167 KVA |
| BRYAN TEXAS UTILITIES |
| NAME : |
| INVESTIGATION NO. : |
| REVISED: 12/6/06 BRYAN, TEXAS |

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J. Conduit Location for Single Phase Transformer Pad Offset from Property Line

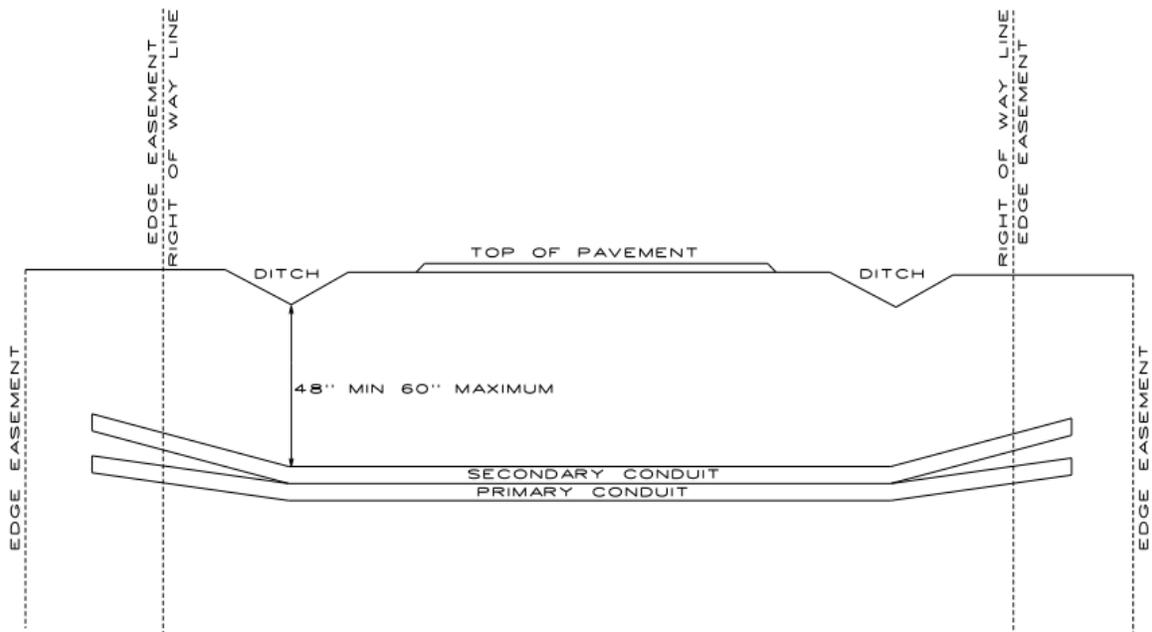


K. Conduit Location for Single Phase Transformer Pad With Zero Lot Line



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L. Conduit Installation for Crossing a Proposed Road Right of Way



BACKFILL ROAD CROSSINGS PER LOCAL CODE REQUIREMENTS

INSTALL WARNING TAPE PER TRENCHING SPECIFICATIONS

WHEN TRENCHING, PRIMARY AND SECONDARY CONDUIT MAY BE INSTALLED WITHOUT SEPARATION UNDER PAVEMENT AND MUST TRANSITION TO NORMAL OPERATING DEPTH BEFORE EXITING ROAD RIGHT OF WAY AND ENTERING EASEMENT

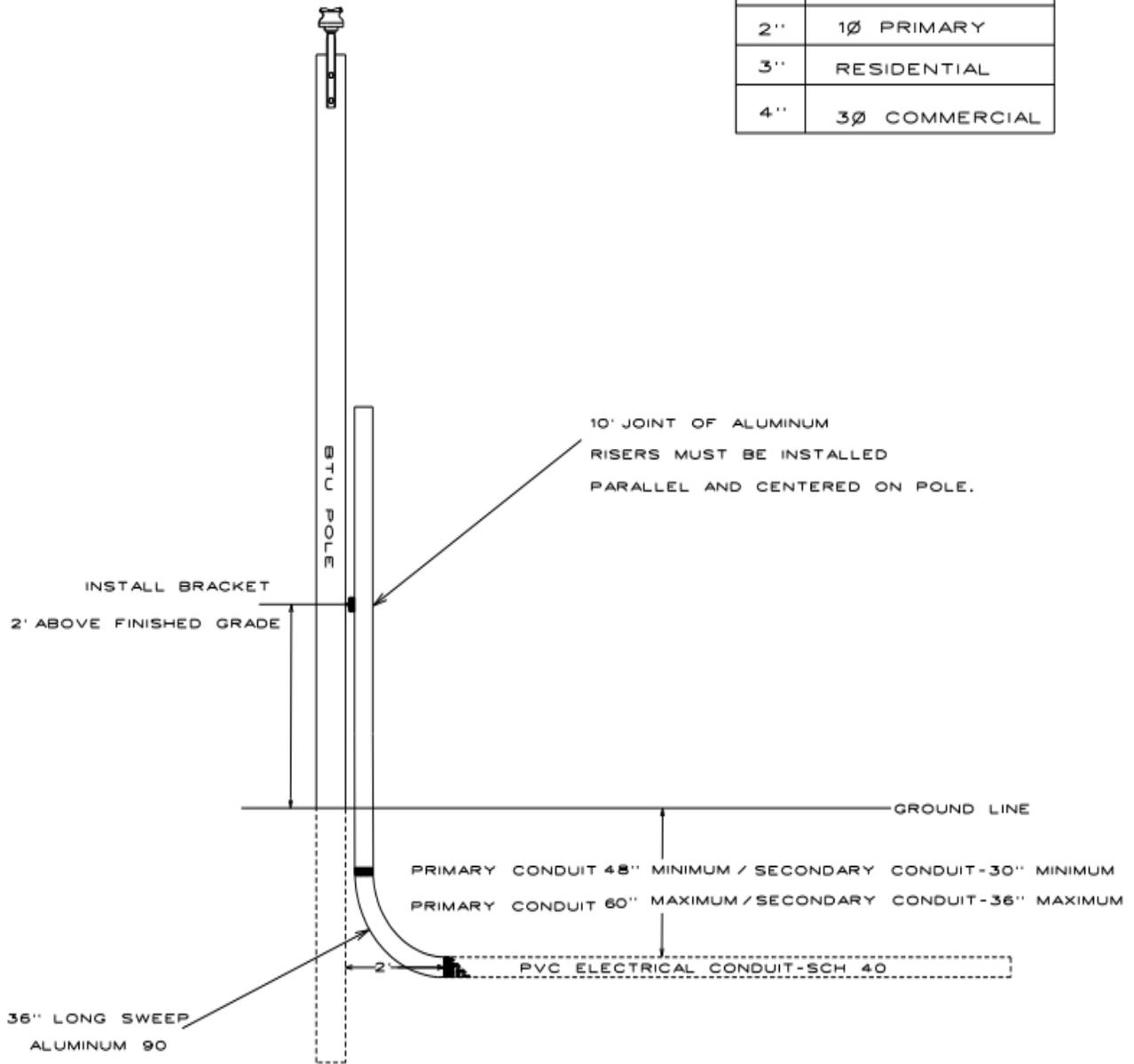
WHEN BORING EXISTING ROAD, PRIMARY AND SECONDARY CONDUIT MAY BE INSTALLED WITHOUT SEPARATION FOR ENTIRE LENGTH OF ROAD RIGHT OF WAY AND MUST TRANSITION TO STANDARD DEPTHS IN EASEMENT AREA

90's OR 45's WILL NOT BE ACCEPTED WHEN TRANSITIONING CONDUITS TO STANDARD DEPTHS

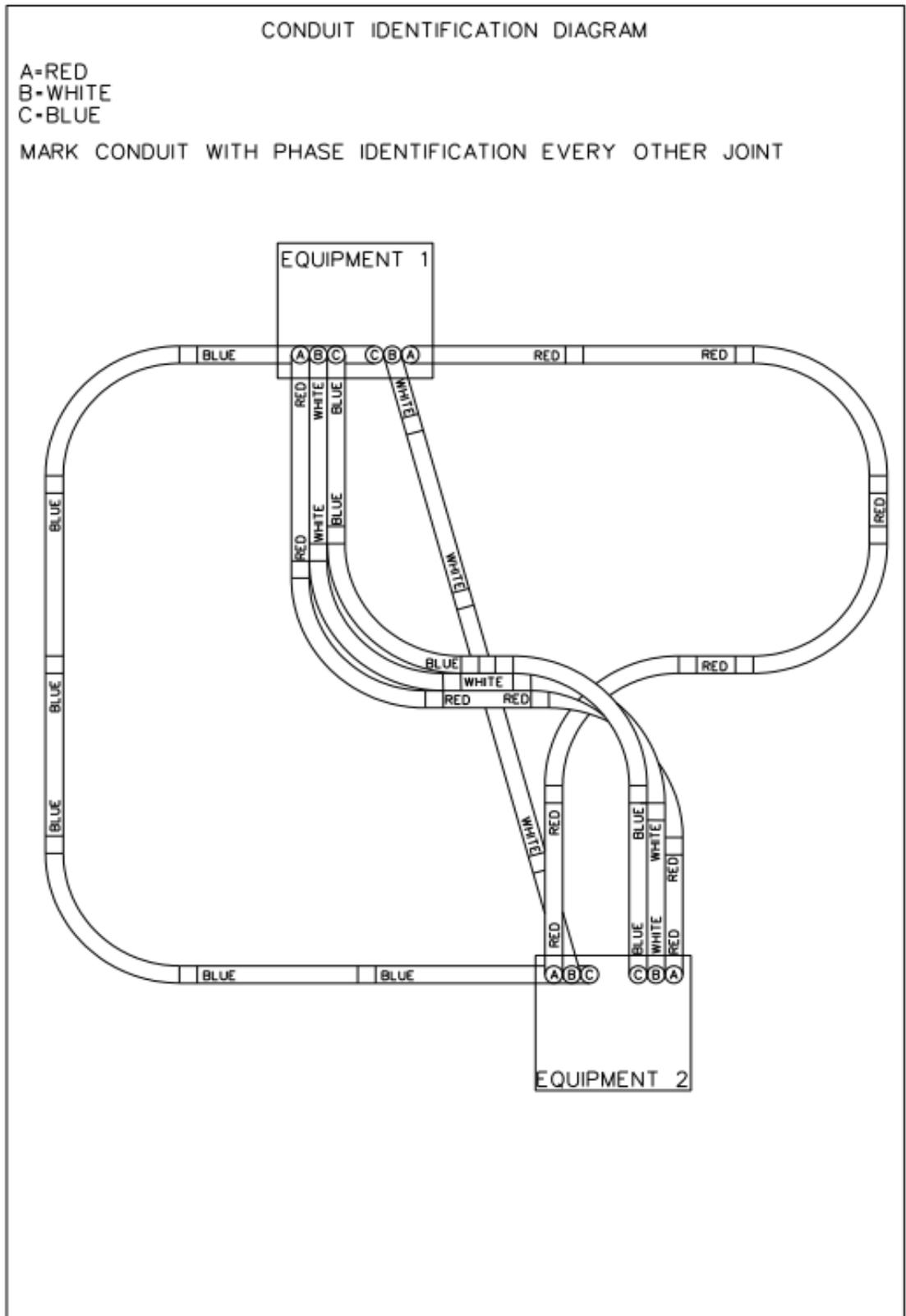
M. Riser Diagram for as Primary or Secondary Installations Attached to a Pole

RISER POLE DIAGRAM

| SIZE | APPLICATIONS |
|------|---------------|
| 2" | 1Ø PRIMARY |
| 3" | RESIDENTIAL |
| 4" | 3Ø COMMERCIAL |



N. Conduit Identification Diagram



O. Right of Way Clearance Standard for City Distribution Circuits

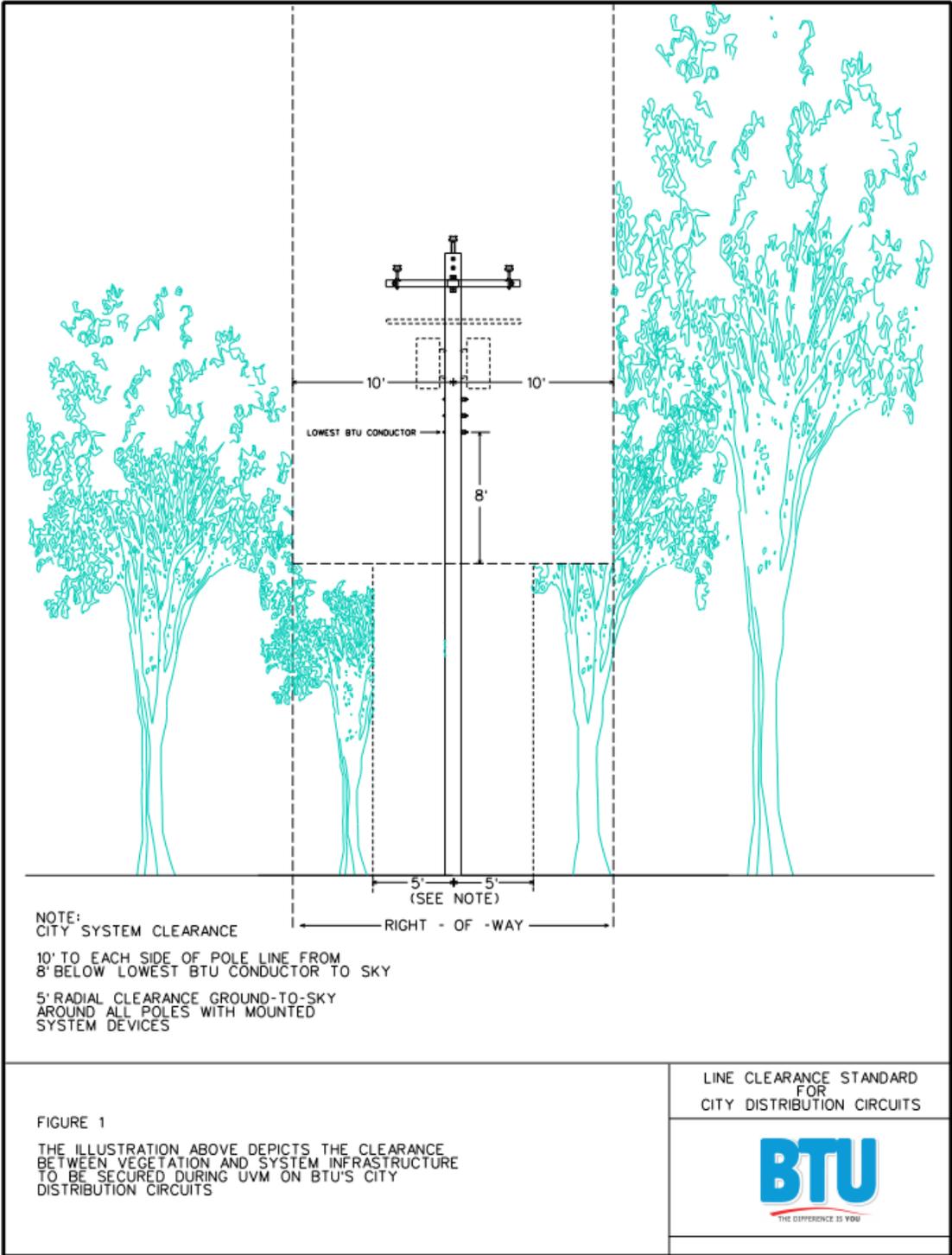
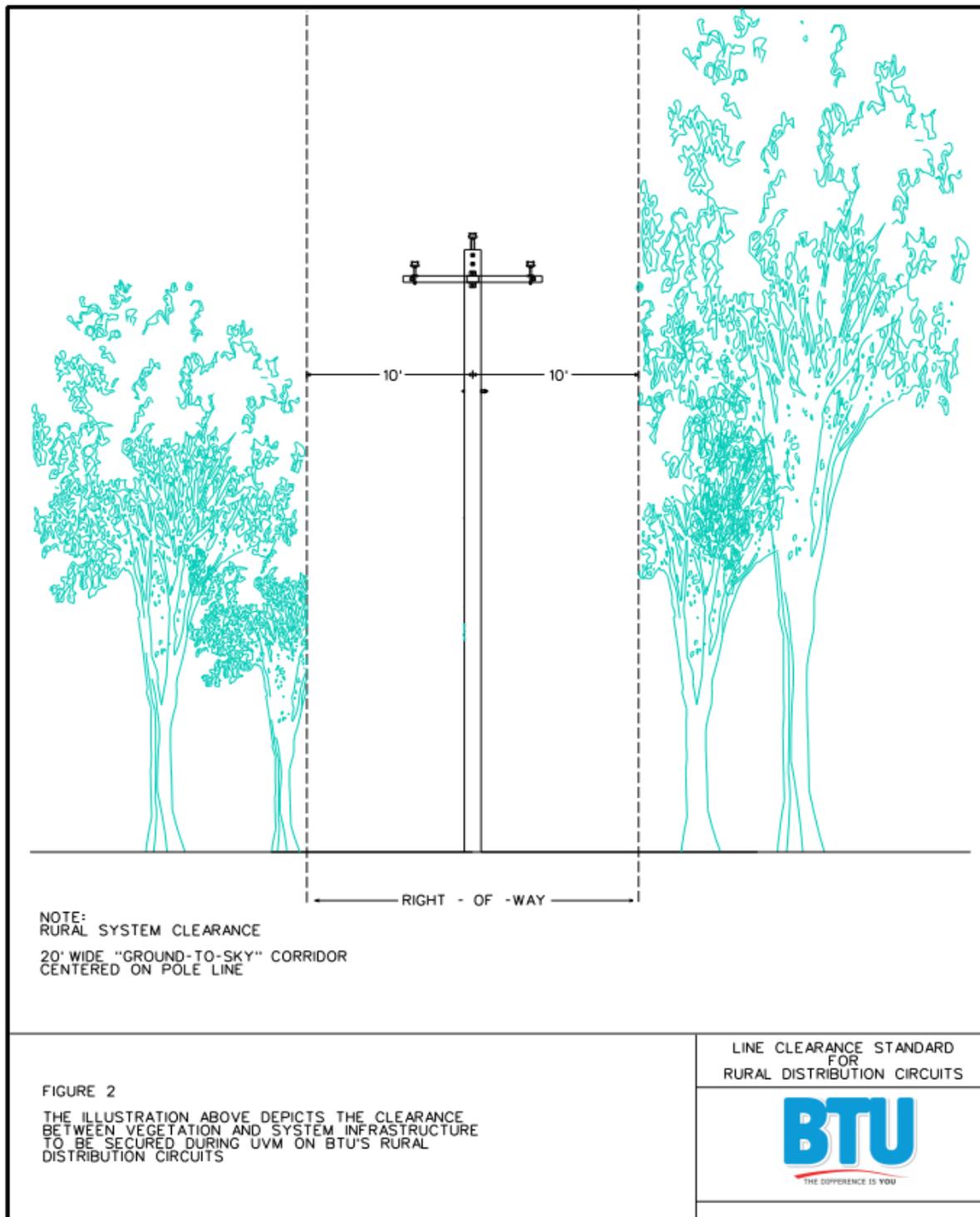


FIGURE 1
THE ILLUSTRATION ABOVE DEPICTS THE CLEARANCE
BETWEEN VEGETATION AND SYSTEM INFRASTRUCTURE
TO BE SECURED DURING UVM ON BTU'S CITY
DISTRIBUTION CIRCUITS

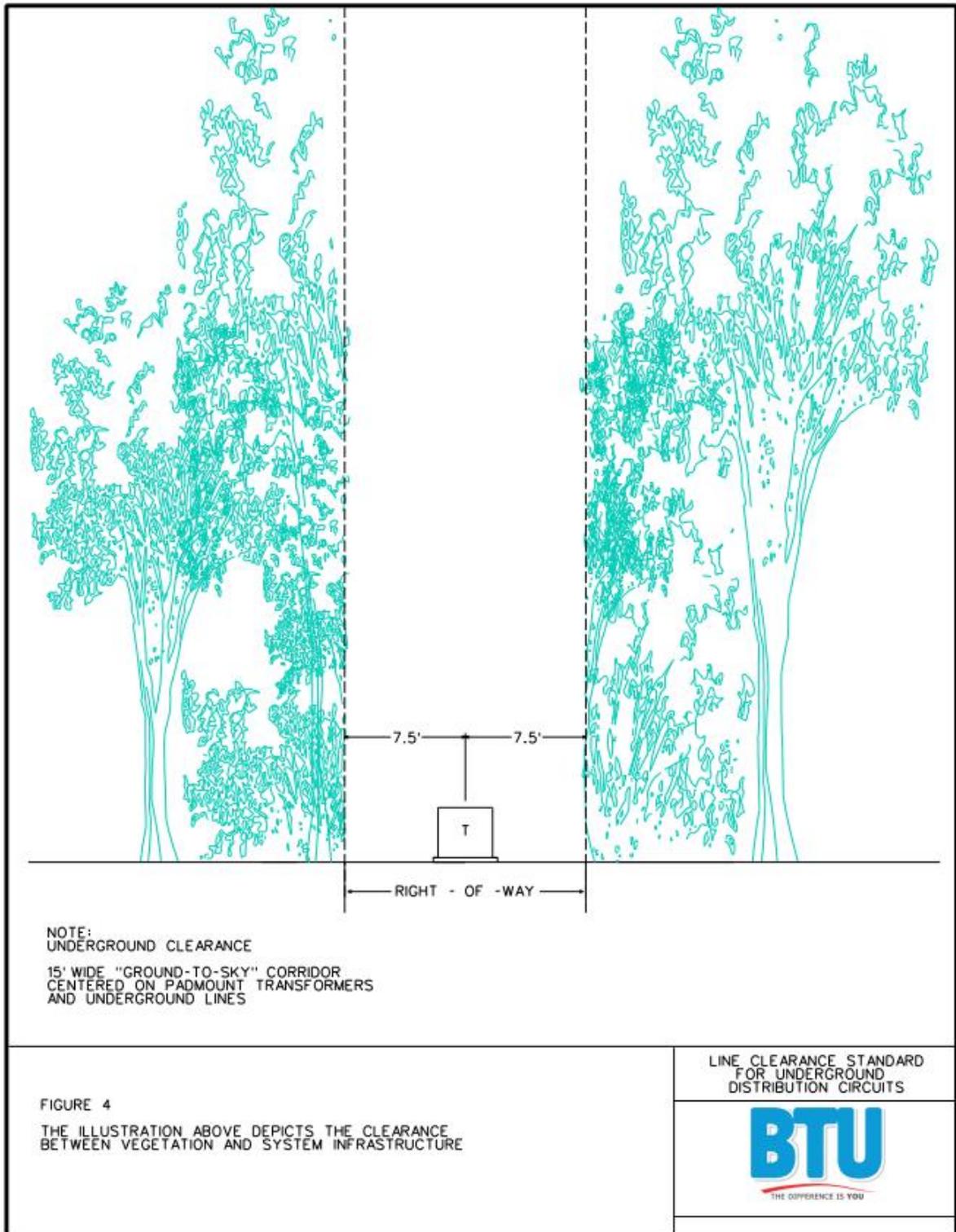
P. Right of Way Clearance Standard for Rural Distribution Circuits



Q. Right of Way Clearance Standard for Secondary Distribution Circuits



R. Right of Way Clearance Standard for Underground Distribution Circuits



V. Overview of Subdivision Design & Construction Process

1. Preliminary Design

Participants: Developer or developer's representative, BTU personnel

- A. Obtain preliminary development information from the developer including the following CAD design files of development showing:
 - i. property lines
 - ii. easements
 - iii. existing BTU facilities
 - iv. water lines
 - v. sewer lines
 - vi. storm sewer lines
 - vii. phone lines
 - viii. cable lines
 - ix. gas lines including pipelines
- B. Discuss design considerations and cost drivers including zero lot lines
- C. Discuss developer requirements including easement clearing and access, construction schedule and developer installed conduit, street lighting requirements and BTU's requirements for underground
- D. Discuss the need for property pins and proper control to be in place prior to BTU line designer staking the job

2. BTU Preliminary Design

Participants: BTU personnel

- A. Prepare preliminary design
- B. Notify warehouse personnel of major material items by submitting a material request form.

3. Developer Review BTU Preliminary Design Meeting

Participants: Developer or developer's representative, BTU personnel

- A. Discuss preliminary design with developer
- B. Discuss right of way requirements for preliminary design
- C. Discuss easement requirements for preliminary design
- D. Discuss street lighting & select a type of street light
- E. Discuss developer responsibilities for installing conduit and guidelines to follow for installation

4. Detail Design Meeting

Participants: BTU personnel

- A. Prepare detail design
- B. Schedule detail design meeting with BTU supervisors to review design prior to preparing cost estimate
- C. Prepare cost estimate and subdivision development package to include the following if applicable:
 - i. Aid in construction letter

- ii. Subdivision contract
 - iii. Customer installed conduit guidelines
 - iv. Application for service
 - v. Lighting Agreement
 - vi. Easements
- D. Send detailed material notification to warehouse personnel including all SEDC numbers

5. **Mandatory Conduit Installation Preconstruction Meeting**

Participants: Developer or developer's representative, developer's contractor, BTU personnel

- A. Review final design including street lighting
- B. Discuss developer installed conduit guidelines with developer and contractor
- C. Confirm property pins and proper control are in place
- D. Identify "hot spots"
- E. Discuss right of way clearing, proposed start date, and who to contact for inspection
- F. Discuss final grade concerns with developer
- G. Discuss conduit installation start date, inspection process, inspection check list and who to notify for inspection
- H. Obtain developer contractor's contact information for conduit installation
- I. Discuss how all items that developer is responsible for to be complete before BTU or its contractor will perform BTU's portion of construction

6. **BTU Construction Meeting with Developer**

Participants: Developer or developer's representative, developer's contractor, BTU personnel

- A. Confirm developer responsibilities are 100% complete
- B. Identify if BTU or a BTU contractor will perform the work
- C. Prepare construction schedule acceptable to all parties
- D. Notify developer of who to contact with problems questions or concerns
- E. Developer to locate developer installed facilities such as water, sewer, storm sewer, etc. prior to BTU digging

7. **Post Construction Meetings**

Participants: Developer or developer's representative, developer's contractor, BTU personnel

- A. Schedule post construction meeting with developer to address any problems, questions or concerns
- B. Schedule post construction meeting with BTU contractor to address an problems, questions or concerns

8. **Project Review**

Participants: BTU personnel

- A. Review project and identify solutions to problems encountered in project
- B. Modify process if needed to provide better customer service

VI. Frequently Called Numbers

| | |
|--|--|
| 24-Hour Outage/Emergency Hotline: | (979) 822-3777 |
| Line Design | (979) 821-5770 |
| Line Design Fax: | (979) 821-5796 |
| Scheduling Manager: | (979) 821-5773 |
| Conduit Inspection | (979) 821-5925 |
| Streetlight Outage | www.btutilities.com or (979) 822-3777 |
| New Service Applications (Fax): | (979) 821-5781 |
| Customer Service General Number: | (979) 821-5700 |
| Temporary Construction Pole Connections | (979) 821-5770 |
| City Of Bryan Planning and Development | (979) 209-5010 |
| City of College Station planning and Development | (979) 764-3570 |
| Texas 811 (Line Locates) | (800) 344-8377 |

NOTES

Bryan Texas Utilities

Physical Address

205 E. 28th Street
Bryan, TX 77803

Mailing Address

PO Box 1000
Bryan, TX 77805

Telephone.....(979) 821-5715

Fax.....(979) 821-5795

Line Design Telephone.....(979) 821-5770

Line Design Fax..... (979) 821-5796

<http://www.btutilities.com>