



**Underground – General Specifications  
Trenching & Backfilling By  
Customer/Non-Joint Trench  
Customer Reference Specification  
6-14-121**

0000-000-ST-6014  
Custom ID: DCS 6-14  
Revision: 05  
Effective Date: 12/05/2016  
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**6-14-121 – Customer Reference Specification, Trenching & Backfilling By Customer/Non-Joint Trench**

**Requirements for Trenching and Backfilling by  
Developer/Customer for Primary and Secondary  
Installation in a Trench with Only Electric Lines  
(Non-Joint Trench)**

(Replaces CRS - 1003)

THIS CUSTOMER REFERENCE SPECIFICATION (CRS) IS PART OF THE  
RULES FOR ELECTRIC METER AND SERVICE INSTALLATION (REMSI) WEBSITE.



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This specification contains basic information which defines PPL EU's requirements for trenching and backfilling by developer/customer installation in a trench without gas lines.

All details of this specification shall be strictly followed. Any deviation must be approved by the PPL EU designer. Unapproved deviations are usually costly for the customer to correct and can result in delays or possible refusal to connect service.

Requirements for trenching and backfilling by customer for residential 120/240 volt underground service laterals installation in a trench without gas lines are specified in CRS 6-19-134.

Requirements for trenching and backfilling by developer/customer for primary and secondary installation in a trench with electric and/or gas, telecommunication lines are specified in CRS 6-14-122.

Requirements for trenching and backfilling by customer for residential 120/240 volt underground service laterals installation in a trench with electric and/or gas, telecommunication lines are specified in CRS 6-19-133.

This specification does not pertain to three-phase primary or service lateral burial. See CRS 6-15-180.

**General Notes:**

1. The Pennsylvania Underground Utility Line Protection Act requires any person doing excavation or demolition work to:
  - A. Ascertain the location and types of utility lines at each work site.
  - B. Request location of lines from utility at least 3 working days before beginning excavation or demolition work (call 811 or 800-242-1776 or use website [www.pa1call.org](http://www.pa1call.org)).
  - C. Notify utility of any break or damage to its line made or discovered during excavation or demolition.
2. The depth dimension shown on 6-14-121-A is minimum. Deeper trenches may be required due to obstacles or to maintain the following separation from other utilities.
  - A. Water, sewer, etc. – 12 inches of earth.
  - B. Steam, heat mains – 72 inches of earth.
  - C. Propane – 36 inches of earth; never above electric.
  - D. Gas – 6 inches minimum; 12 inches preferred; not below electric without prior approval from both PPL EU and the appropriate gas utility.
  - E. Communication – 6 inches minimum, 12 inches preferred.

Exception: Some communication companies may not require deliberate separation between their cables and PPL EU cables.



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All trenches must be built to meet approved protection for the job being performed per OSHA 29CFR1926.652.

3. Do not use power excavating equipment within 24 inches of any existing buried cables or other electrical or communications equipment.

**4. Site Preparation – by Customer:**

- A. Clear ground of trees, stumps, roots, rocks and other obstructions.
- B. Rough grade trench route to within 6 inches of final grade and establish finished grade at transformer and equipment locations.

**5. Primary and Secondary Trench Preparation – by Customer:**

- A. Excavate trench to the depth shown on 6-14-121-A.
- B. PPL EU will be installing conduit in trenches. Conduit does not bend at right angles. Round off all intersections when excavating trenches. The radius of turns is 36 inches minimum, 48 inches preferred.
- C. Material excavated from trench must be placed on only one side of trench and far enough away so piles of excavated material pose no danger or obstacle to people working in trench. Keep one side of trench clear so workers have clear access to trench.
- D. Provide an adequate amount of bedding material for use as protective backfill over PPL EU conduits and to bed the bottom of rough/uneven trenches if required. Distribute bedding material along trench route on same side of trench as removed trench material.
- E. Grade trench free of high spots, rock projections, stones, roots, and depressions. If the bottom of the trench is rough/uneven, PPL EU will require the developer to excavate 3 additional inches and bed the trench with stone fines or sand 3 inches deep.
- F. Trench must be clear of standing water before PPL EU crews will install electric facilities.
- G. Place 11 inch layer of bedding in transformer box pad foundation excavation to facilitate leveling foundation and to bring it up to grade (see 6-14-121-C).
- H. Customer must dig trench on their own property or will be subject to additional charges.

**6. Installation of Cable, Transformers, Etc. – by PPL EU:**

- A. Place conduit and cable in trench. See CRS 6-19-134 for service lateral requirements by customer.
- B. Install transformer/equipment foundations and grounding.



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**7. Backfilling – by Customer:**

**Bedding Material**

- A. Bedding material is stone screenings with fines or sand.
- B. Install as required in this specification.

**Select Backfill**

- A. Select backfill is:
  - Earth removed from trench provided it is mostly soil which contains some round gravel but no stones larger than one inch in diameter.
  - Flowable fill, self compacting cementitious material is also permitted for use as select backfill with prior approval.
  - Material such as: stone screenings with fines or earth meeting definition 7A above transported to the site by the customer at his cost. Shaley earth containing sharp angular stones, coal fines, fly ash, and/or cinders are not select backfill.
- B. Install above the bedding material to complete backfilling of a trench.

**Backfilling Procedures/Requirements**

- A. Using bedding material, cover conduits in layers and tamp carefully between layers until 12 inches above top of conduit. Underground direct-buried cables that are not encased or protected by concrete and are buried 30 inches or more below grade shall have their location identified by a warning ribbon that is placed in the trench at least 12 inches above the cables. Customer is responsible for placing 3 inch red caution tape stating electrical cable buried below.
- B. Coordinate installation of communication cables.
- C. Provide partial backfill/tamping using material as specified by communication company to meet required separation of facilities.
- D. Complete backfill using select backfill to final grade depth utilizing mechanical equipment as appropriate. Backfill trench in layers, thoroughly tamping each layer to eliminate air pockets.
- E. Do not run wheels or tracks of equipment along trench to compact backfill.
- F. Trench must be backfilled to full depth before primary cable will be energized.



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**Backfilling – by Customer: (cont'd)**

**Cleaning of Duct – by Customer:**

After installation, the customer must clean debris from the ducts by pulling a stiff bristled brush and some clean rags through each conduit. A pulling line must be provided in each conduit and all conduit ends must be temporarily plugged to keep them clean and dry.

**Pulling Line – by Customer:**

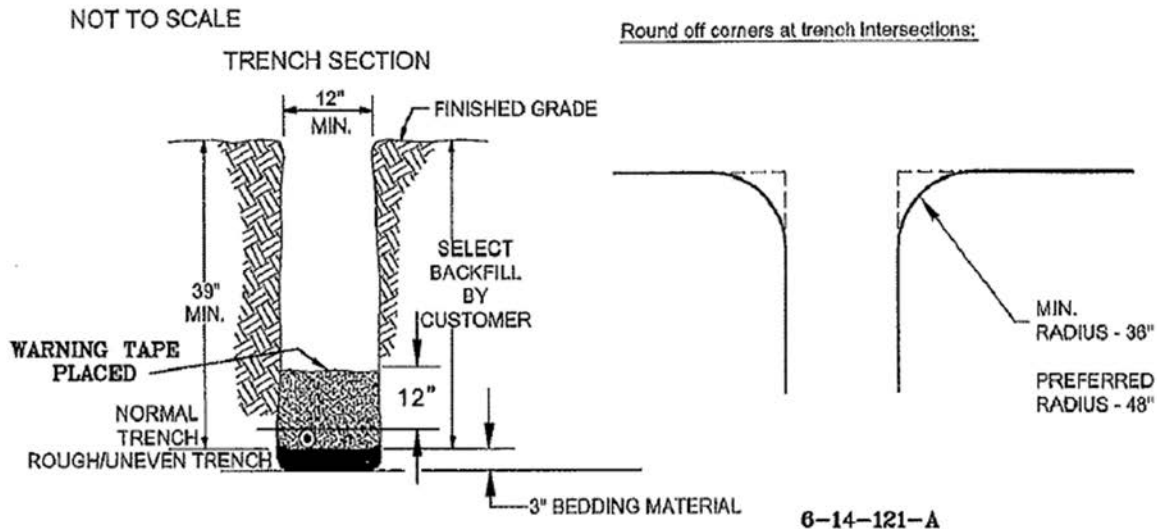
- A. The only acceptable pulling line is a flat polyester, woven, prelubed tape, ½ inch in width with a minimum breaking strength of 1200 pounds.
- B. When installing pulling line in PVC conduit, be sure conduit adhesive is dry before installing the pulling line to avoid gluing the pulling line to joint.
- C. When joining flat pulling line to PPL EU's flat pulling line, be sure to adequately knot the two pulling lines together. An example of a secure knot is shown within CRS 6-19-134.

**8. Road Crossings:**

- A. When trench crosses a street or road requiring a permit, PPL EU obtains necessary permits and performs necessary trenching and street restoration work.
- B. When circumstances require paving of customer-owned streets or driveways prior to placement of PPL EU facilities, customer installs PPL EU provided 4 inch and/or 6 inch PVC conduit. PPL EU will specify how conduits are to cross streets. There will be diagonal crossings as well as perpendicular crossing of streets.

Extend conduit at least 2 feet beyond edge of roadway. Clean all conduits and install PPL EU provided plugs in conduit ends. When a street crossing has multiple conduits, allow 4 inches to 6 inches of space between conduits. Install all conduits at the bottom of a 39 inch deep trench to match the depth of other trenches in the development.

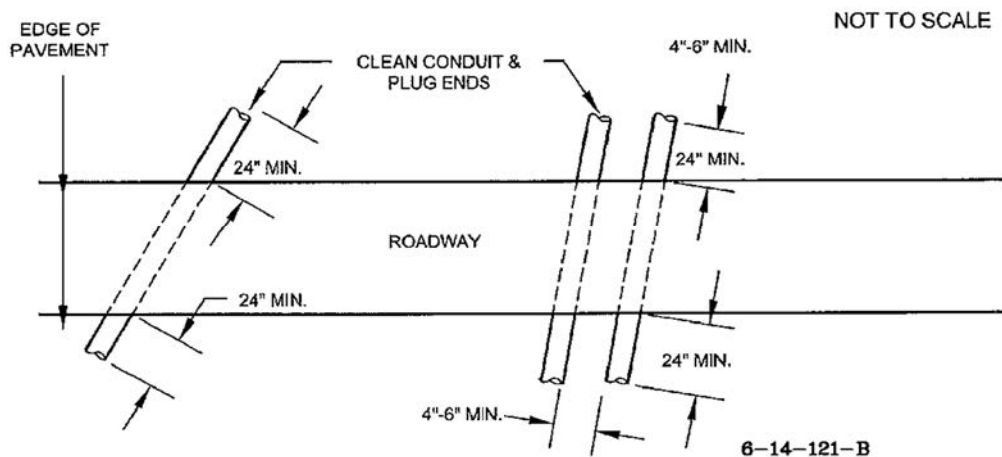
- C. Provide a smooth uniform surface for the conduit. Do not use bricks or other supports to bring conduit up to grade.
- D. Complete backfilling as outlined in Note 7 above.



**Notes:**

1. Customer must coordinate with communication companies as to backfill and separation required for their cables.
2. All trenches must be built to meet approved protection for the job being performed per OSHA 29CFR1926.652.

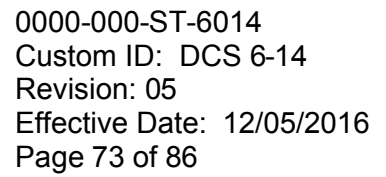
**Road Crossings**



**Notes:**

1. PPL EU provides 4 inch and/or 6 inch PVC conduit and end plugs. Customer installs, cleans, and seals conduit.
2. Install conduit(s) at the bottom of a 39 inch deep trench.







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**6-14-122 – Customer Reference Specification, Trenching & Backfilling By Customer/Joint Trench**

**Requirements for Trenching and Backfilling by  
Developer/Customer for Primary and Secondary  
Installation in a Trench with Electric and/or Gas,  
Telecommunication Lines (Joint Trench)**

(Replaces CRS - 1013)

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This specification contains basic information which defines PPL EU's requirements for trenching and backfilling by developer/customer installation in a trench with electric and gas and possibly telecommunications lines (joint trench).

All details of this specification shall be strictly followed. Any deviation must be approved by the PPL EU designer. Unapproved deviations are usually costly for the customer to correct and can result in delays or possible refusal to connect service.

Requirements for trenching and backfilling by customer for residential 120/240 volt underground service lateral installation in a trench with electric and gas, and possibly telecommunication lines are specified in CRS 6-19-133.

Requirements for trenching and backfilling by developer/customer for primary and secondary installation in a trench with only electric lines are specified in CRS 6-14-121.

Requirements for trenching and backfilling by customer for residential 120/240 volt underground service laterals installation in a trench without gas lines are specified in CRS 6-19-134.

This specification does not pertain to three-phase primary or service lateral burial. See CRS 6-15-180.

**General Notes:**

1. The Pennsylvania Underground Utility Line Protection Act requires any person doing excavation or demolition work to:
  - A. Ascertain the location and types of utility lines at each worksite.
  - B. Request location of lines from utility at least 3 working days before beginning excavation or demolition work (call 811 or 800-242-1776 or use website [www.pa1call.org](http://www.pa1call.org)).
  - C. Notify utility of any break or damage to its line made or discovered during excavation or demolition.
2. The depth dimension shown on 6-14-122-A and 6-14-122-B are minimum. Deeper trenches may be required due to obstacles or to maintain the following separation from other utilities.
  - A. Water, sewer, etc. – 12 inches of earth.
  - B. Steam, heat mains – 72 inches of earth.
  - C. Propane – 36 inches of earth; never above electric.
  - D. Gas – 6 inches minimum; 12 inches preferred; not below electric without prior approval from both PPL EU and the appropriate gas utility.
  - E. Communication – 6 inches minimum, 12 inches preferred.



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Exception: Some communication companies may not require deliberate separation between their cables and PPL EU cables.

All trenches must be built to meet approved protection for the job being performed per OSHA 29CFR1926.652.

3. Do not use power excavating equipment within 24 inches of any existing buried cables or other electrical or communications equipment.

**4. Site Preparation – by Customer:**

- A. Clear ground of trees, stumps, roots, rocks and other obstructions.
- B. Rough grade trench route to within 6 inches of final grade and establish finished grade at transformer and equipment locations.

**5. Primary and Secondary Trench Preparation – by Customer:**

- A. Excavate trench to the depth shown on 6-14-122-A and 6-14-122-B.
- B. PPL EU will be installing conduit in trenches. Conduit does not bend at right angles. Round off all intersections when excavating trenches. The radius of turns is 36 inches minimum, 48 inches preferred.
- C. Material excavated from trench must be placed on only one side of trench and far enough away so piles of excavated material pose no danger or obstacle to people working in trench. Keep one side of trench clear so workers have clear access to trench.
- D. Provide an adequate amount of bedding material for use as protective backfill over PPL EU conduits and to bed the bottom of rough/uneven trenches if required. Distribute bedding material along trench route on same side of trench as removed trench material.
- E. Grade trench free of high spots, rock projections, stones, roots, and depressions. If the bottom of the trench is rough/uneven, PPL EU will require the developer to excavate 3 additional inches and bed the trench with stone fines or sand 3 inches deep.
- F. Trench must be clear of standing water before PPL EU crews will install electric facilities.
- G. Customer must dig trench on their own property or will be subject to additional charges

**6. Installation of Cable, Transformers, Etc. – by PPL EU:**

- A. Place conduit and cable in trench. See CRS 6-19-133 for service lateral requirements by customer.
- B. Install transformer/equipment foundations and grounding.



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**7. Backfilling – by Customer:**

**Bedding Material**

- A. Bedding material is stone screenings with fines or sand.
- B. Install as required in this specification.

**Select Backfill**

- A. Select backfill is:
  - Earth removed from trench provided it is mostly soil which contains some round gravel but no stones larger than one inch in diameter.
  - Flowable fill, self-compacting cementitious material is also permitted for use as select backfill with prior approval.
  - Material such as: stone screenings with fines or earth meeting definition (A) transported to the site by the customer at their cost. Shaley earth containing sharp angular stones, coal fines, fly ash, and/or cinders are not select backfill.
- B. Install above the bedding material to complete backfilling of a trench.

**Backfilling Procedures/Requirements**

- A. Using bedding material, cover conduits in layers and tamp carefully between layers until 12 inches of total separation between conduit and other utilities to be installed.
- B. Coordinate installation of communication cables.
- C. Maintain spacings between the various utilities as shown on 6-14-122-A and 6-14-122-B. Once the gas company has completed covering their facilities, the remainder of the trench may be backfilled using select backfill. Backfill trench in layers, thoroughly tamping each layer to eliminate airpockets.
- D. Do not run wheels or tracks of equipment along trench to compact backfill.
- E. Trench must be backfilled to full depth before primary cable will be energized.

**Cleaning of Duct – by Customer:**

After installation, the contractor must clean debris from the ducts by pulling a stiff bristled brush and some clean rags through each conduit. A pulling line must be provided in each conduit and all conduit ends must be temporarily plugged to keep them clean and dry.



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**7. Backfilling – by Customer: (cont'd)**

**Pulling Line – by Customer:**

- A. The only acceptable pulling line is a flat polyester, woven, prelubed tape, ½ inch in width with a minimum breaking strength of 1200 pounds.
- B. When installing pulling line in PVC conduit, be sure conduit adhesive is dry before installing the pulling line to avoid gluing the pulling line to joint.
- C. When joining flat pulling line to PPL EU's flat pulling line, be sure to adequately knot the two pulling lines together. An example of a secure knot is shown within CRS 6-19-133.

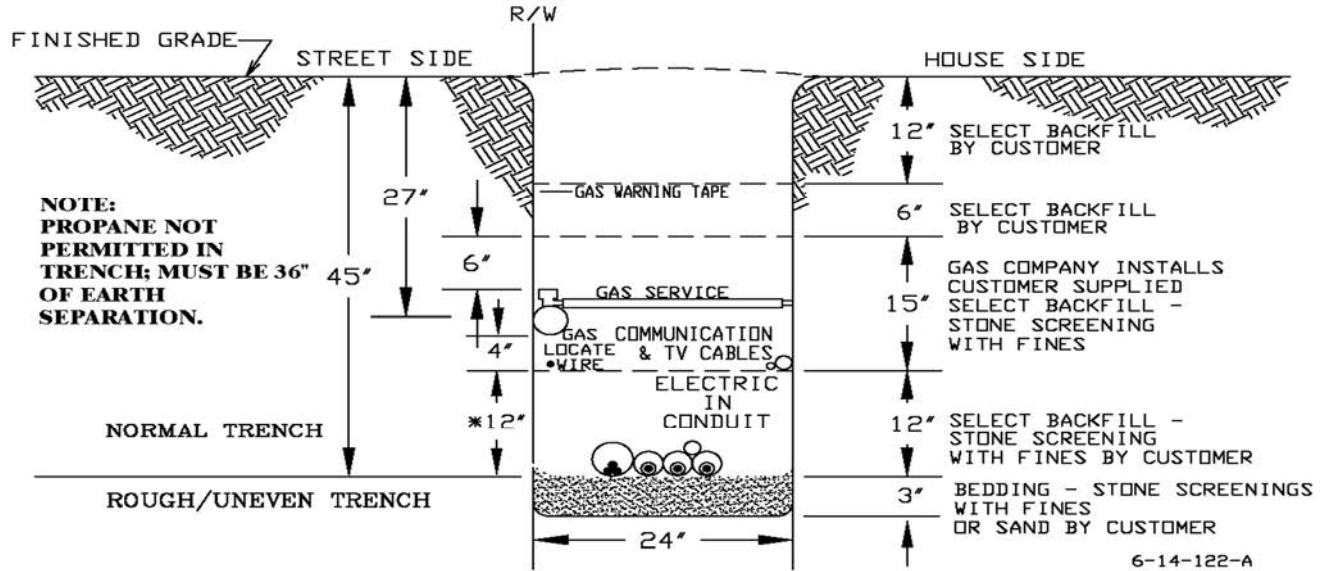
**8. Road Crossings:**

- A. When trench crosses a street or road requiring a permit, PPL EU obtains necessary permits and performs necessary trenching and street restoration work.
- B. When circumstances require paving of customer-owned streets or driveways prior to placement of PPL EU facilities, customer installs PPL EU provided 4 inch and/or 6 inch PVC conduit. PPL EU will specify how conduits are to cross streets. There will be diagonal crossings as well as perpendicular crossing of streets.

Extend conduit at least 2 feet beyond edge of roadway. Clean all conduits and install PPL EU provided plugs in conduit ends. When a street crossing has multiple conduits, allow 4 inches to 6 inches of space between conduits. Install all conduits at the bottom of a 45 inch deep trench to match the depth of other trenches in the development.

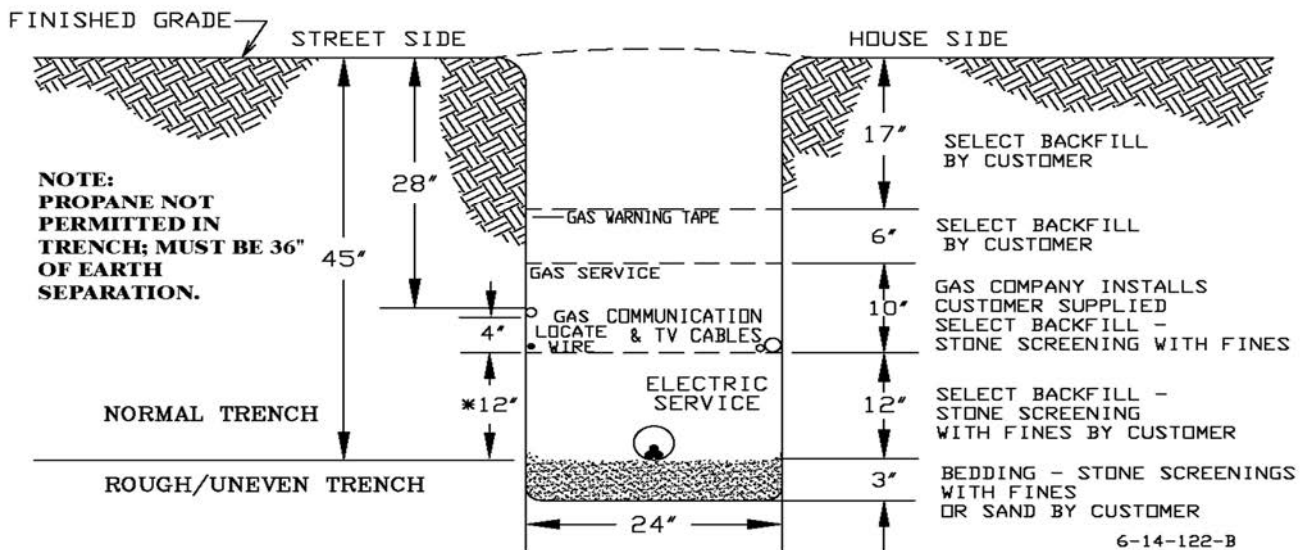
- C. Provide a smooth uniform surface for the conduit. Do not use bricks or other supports to bring conduit up to grade.
- D. Complete backfilling as outlined in Note 7 above.

**JOINT ELECTRIC/GAS  
Common Trench Main Lines**



\* MAINTAIN 12" TOTAL SEPARATION FROM TOP OF CONDUIT TO CLOSEST UTILITIES. IF JOINT UTILITY IS LOCATED DIRECTLY ABOVE, WITH NO HORIZONTAL COMPONENT TO SEPARATION, TRENCH DEPTH MAY NEED TO BE INCREASED.

**JOINT ELECTRIC/GAS  
Common Trench Service Lines**

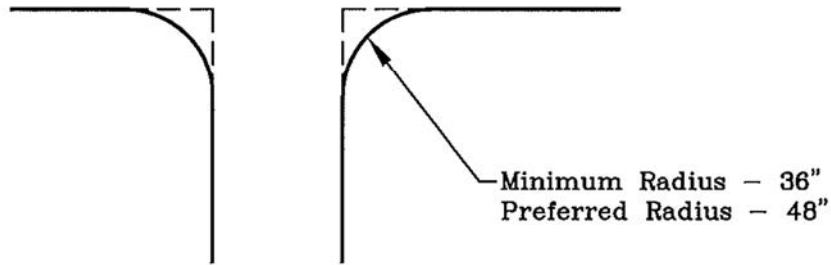


\* MAINTAIN 12" TOTAL SEPARATION FROM TOP OF CONDUIT TO CLOSEST UTILITIES. IF JOINT UTILITY IS LOCATED DIRECTLY ABOVE, WITH NO HORIZONTAL COMPONENT TO SEPARATION, TRENCH DEPTH MAY NEED TO BE INCREASED.

6-14-122-B

NOT TO SCALE

Round off corners at trench intersections:



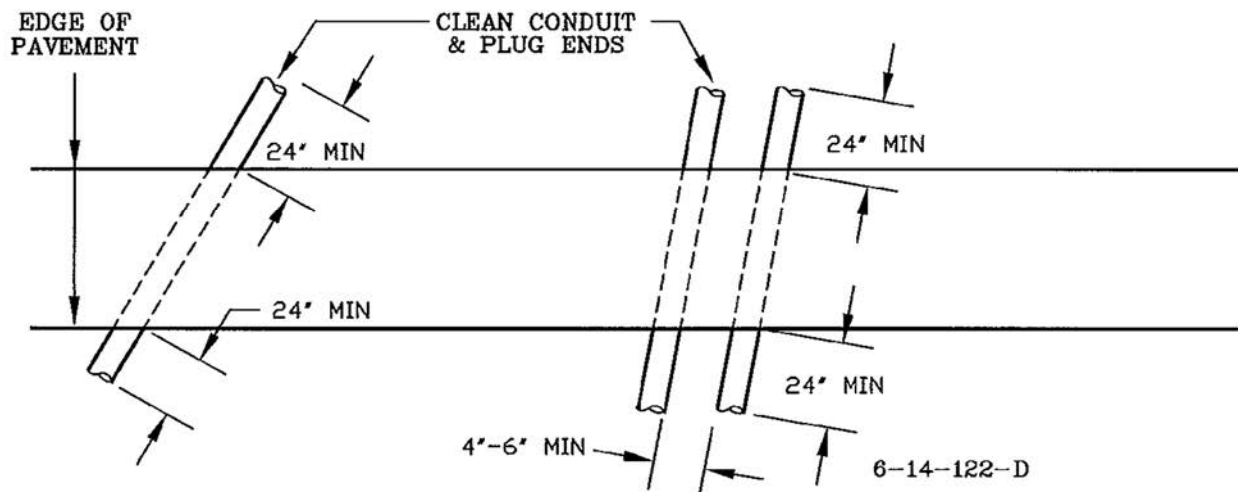
6-14-122-C

**Notes:**

1. Customer must coordinate with communication companies as to backfill and separation required for their cables.
2. All trenches must be built to meet approved protection for the job being performed per OSHA 29CFR1926.652.

**Road Crossings**

NOT TO SCALE



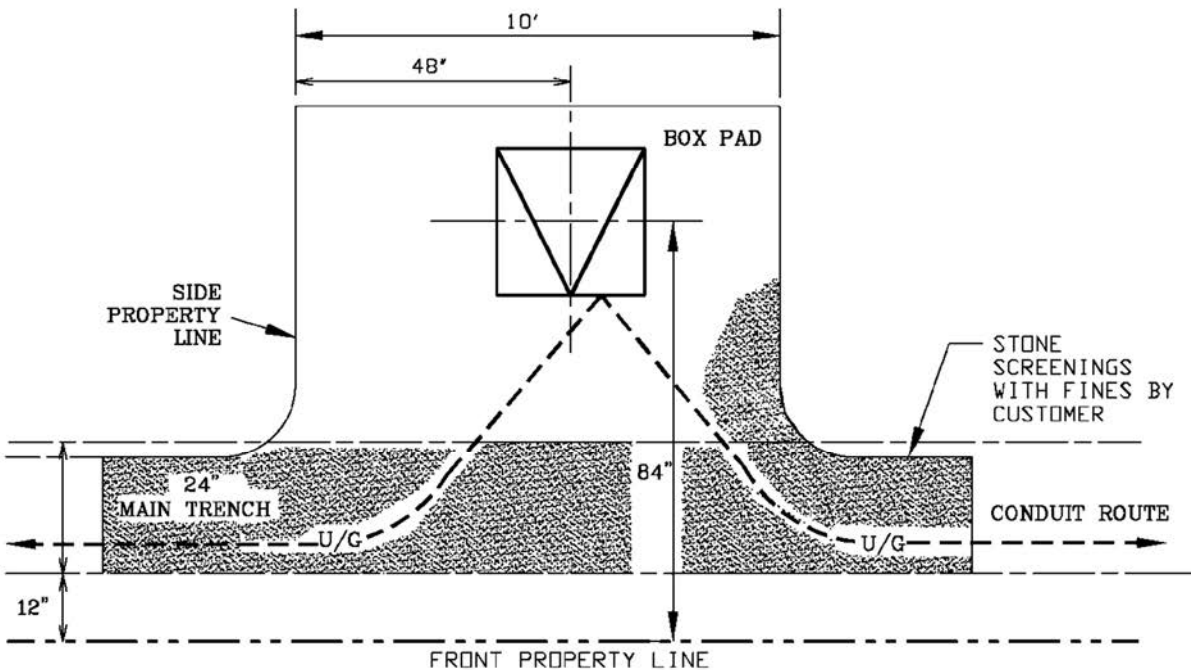
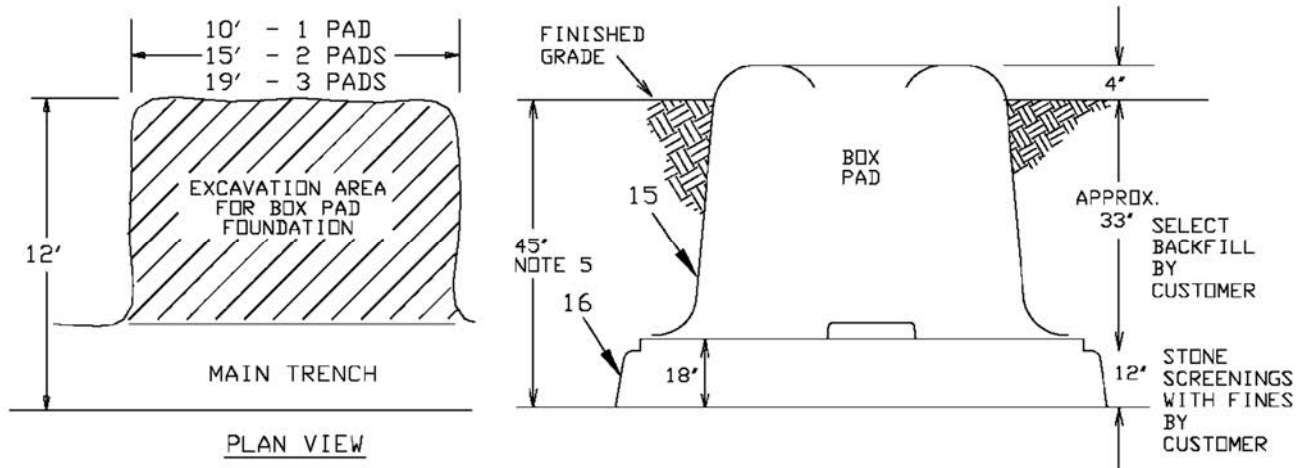
6-14-122-D

**Notes:**

1. PPL EU provides 4 inch and /or 6 inch PVC conduit and end plugs. Customer installs, cleans and seals conduit.
2. Install conduit(s) at the bottom of a 45 inch deep trench.



**Box Pad Excavation**

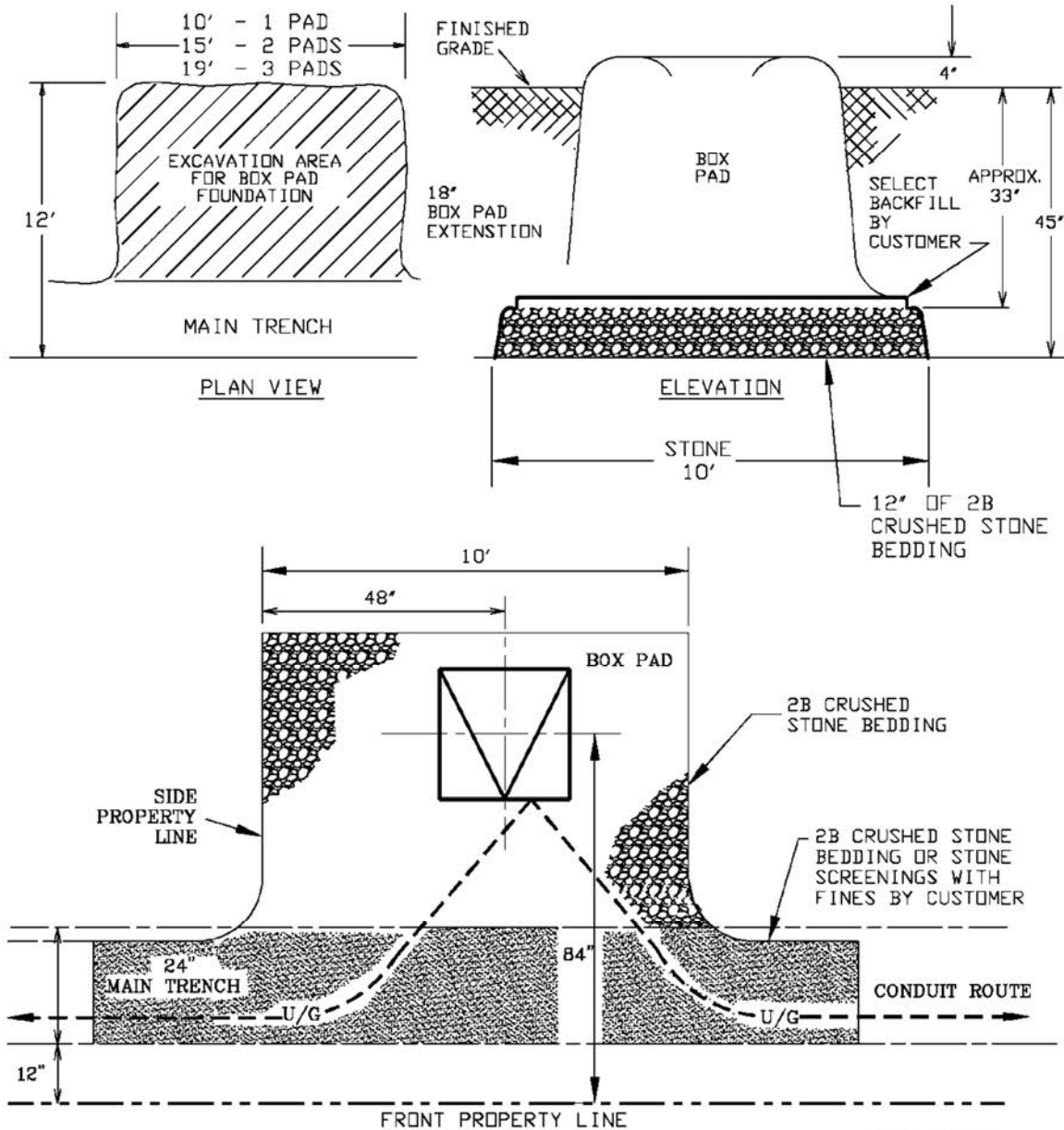


6-14-122-E



**Poor Drainage Areas (As Determined by Local PPL EU Personnel)**  
**Install 12" of 2B Crushed Stone Within the Box Pad Excavation**  
**Box Pad Excavation**

NOT TO SCALE



6-14-122-F



**Underground – General Specifications  
Customer Reference Specification, Customer-  
Installed Screening of Padmounted Devices  
6-14-125**

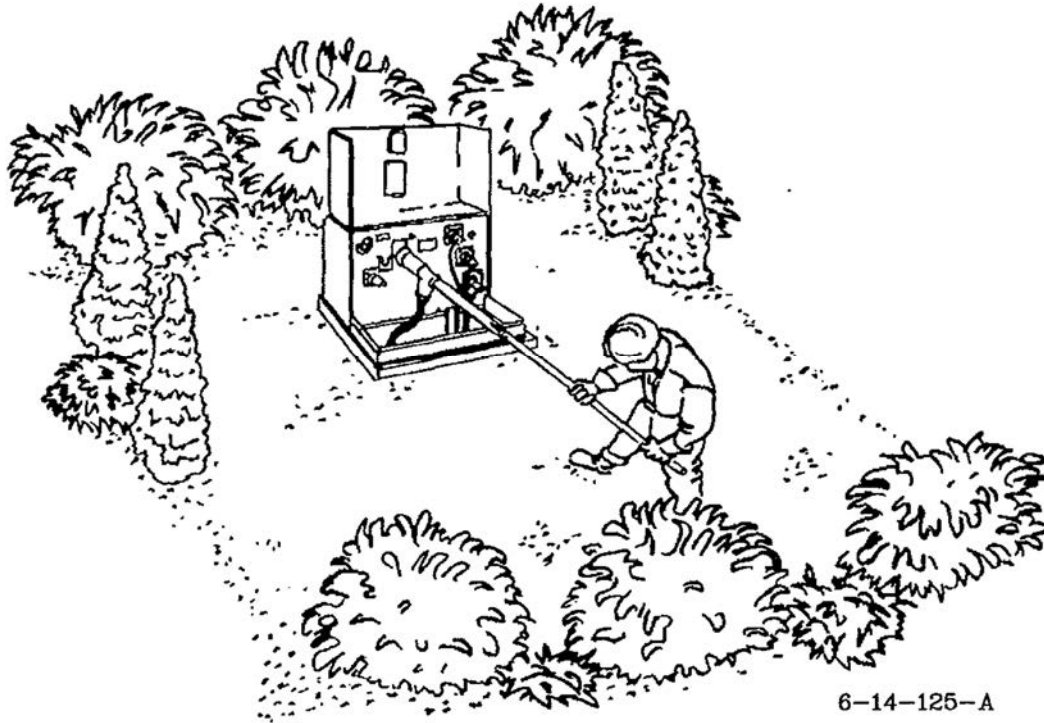
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**6-14-125 – Customer Reference Specification, Customer-Installed Screening Of Padmounted Devices**

## **Customer-Installed Screening of Pad-mounted Devices**

(Replaces CRS – 1010)

THIS CUSTOMER REFERENCE SPECIFICATION (CRS) IS PART OF THE  
RULES FOR ELECTRIC METER AND SERVICE INSTALLATION (REMSI) WEBSITE.



## 1.0 Purpose And Scope

- 1.1 This specification defines clearance requirements which must be maintained when shrubbery is planted and when fences or walls are installed to screen padmounted devices.
- 1.2 Placing plants or structures too close to a padmounted device may jeopardize the safety of PPL EU workers, will hinder routine maintenance, and will delay restoration of service when your power is off.
- 1.3 **DO NOT COVER TRANSFORMER.**

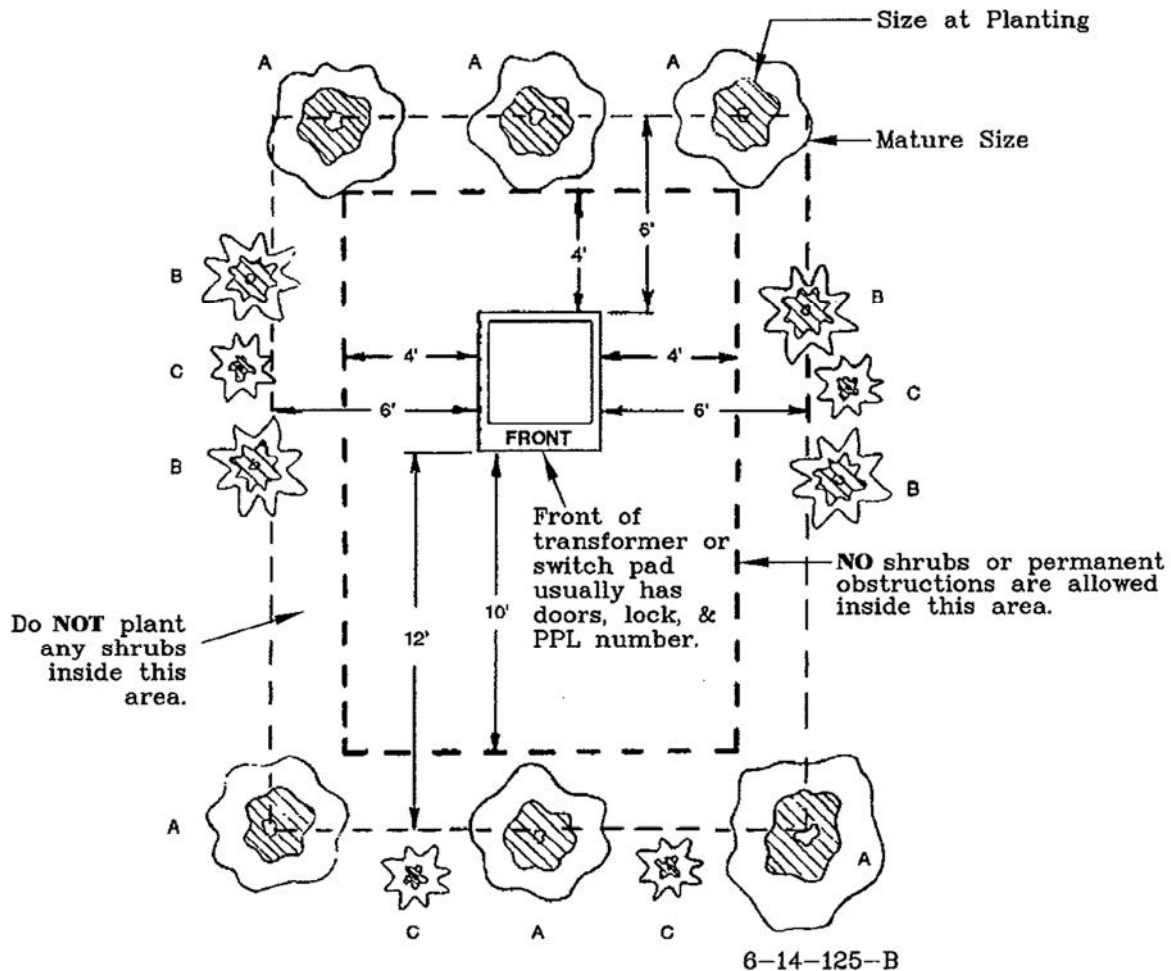
## 2.0 General Instructions

### 2.1 Call Before You Dig

When you decide to plant around the transformer, please call before digging so we can tell you where the underground cables are. Simply call the One-Call Center toll free:

811 or 1-800-242-1776 or use website [www.pa1call.org](http://www.pa1call.org). A PPL company representative will locate the underground cables for you. There is no charge for this service.

### Shrubby Screening



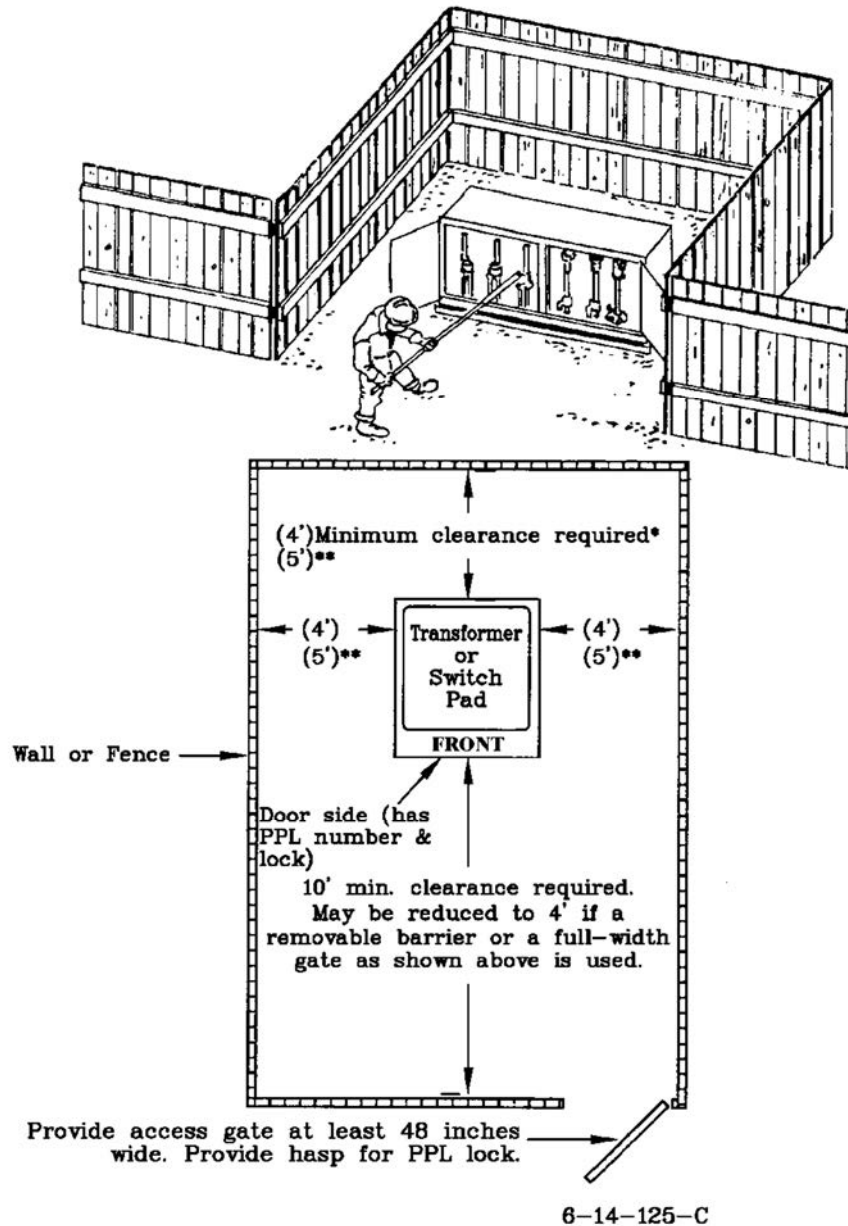
## 2.2 Suggested Planting

### Location      Type of Plant

- A.....Compact winged euonymus, rhododendron, or burkwood viburnum  
B.....Upright yew or upright arborvitae  
C.....Juniper (Prostrate) or evergreen azalea

2.3 PPL EU recommends these plants as practical ways of screening a ground-level device. You may want to consider different plants than the ones suggested, but remember to allow adequate space for the plants to grow.

## FENCE OR WALL SCREENING



### **Note:**

\*If device has access doors on the front, back, and sides, increase clearance to 10 feet. If in doubt, contact PPL toll free: 1-800-342-5775 (1-800-DIAL PPL)

\*\*Three-phase devices require 5 feet minimum clearance. Check with PPL technician to determine proper clearance.