

**PAYSON CITY POWER AND LIGHT**

**Electrical Construction**

**Standard Specifications**



**Revised March 20, 2019 As Proposed March 3, 2021**

## Table of Contents

4-2.1 Purpose	1
4-2.2 Codes and Ordinances	1
4-2.3 Changes or Conflicts in Requirements and Guidelines	1
4-2.4 Application for Services	1
4-2.5 Types of Service	2
4-2.6 Approval for Service	2
4-2.6.1 Inspection Check List	3
4-2.6.1.1 Subdivision (for details, sizes refer to spec book)	3
4-2.6.1.2 Final If Materials Purchased From Payson City	4
4-2.6.1.3 Final If Materials Provided By Contractor	4
4-2.6.1.4 Services	4
4-2.7 Permanent Service Connection	4
4-2.8 Seals	5
4-2.9 Work Activity near High Voltage Overhead Power Lines	5
4-2.10 Services	5
4-2.11 Working Space	5
4-2.12 Sealing of Cabinets and Gutters	6
4-2.13 Conductor Identification	6
4-2.14 Location of Meters	7
4-2.15 Temporary Service	7
4-2.16 Disconnection And Reconnection Of Service	7
4-2.17 Customer Equipment On Utility Poles	7
4-2.18 Overhead Service, 480 Volts And Under, Service Drop	7
4-2.19 Multiple-Unit Residential Overhead Service	8
4-2.20 Nonresidential Overhead Service	8
4-2.21 Overhead Service to Manufactured Homes with Factory Installed Meter Bases	8
4-2.22 Underground Service, General	8
4-2.23 Trenches, Conduit and Backfill Provided By The Customer	8
4-2.24 Depth	9
4-2.25 Backfill	9
4-2.26 Joint Use	9

Payson City Power

Standard Specifications  
[Proposed March 3, 2021](#)

4-2.27 Conduits	10
4-2.28 Clearances From Swimming Pools	10
4-2.29 Underground Service To Residential, subdivisions	10
4-2.30 Nonresidential Underground Service	14
4-2.31 Service at Primary Voltage General	15
4-2.32 Customer Equipment	15
4-2.33 Utility Equipment	15
4-2.34 Painting of Utility Equipment	16
4-2.35 Padmount Transformer specifications	16
4-2.36 Street Light Specifications	16
4-2.37 Splice Box and Connector Specification	167
4-2.38 Sectionalizing Enclosures Specifications	17

**4-2.1 Purpose**

This manual was prepared to aid developers, contractors and engineers in establishing electric service for new and remodeled structures. We recognize that you may require personal assistance from our staff, and we encourage you to contact us by calling Payson City Power and Light at 465-5270 to discuss your electric service requirements with us. Additional copies are also available online. It is the desire of Payson Power and Light, and the local electrical code enforcing authority to provide you, the Customer (developers, contractors, owners etc.), with high-quality, safe electric service.

In order to avoid unnecessary repetition, the word "Utility" as used in the following pages shall mean Payson City Power and Light.

The requirements of this manual are intended to apply to relocated services, rewired services, and house moves, as well as to new services, unless a specific exception is granted.

**4-2.2 Codes and Ordinances**

It is necessary that the construction of new or, remodeled installations conform to applicable provisions of the National Electrical Code (NEC), National Electrical Safety Code (NESC), and Payson City codes. This includes OSHA rules both during construction and maintenance.

Provision for qualifications of contractors, bonding, permits, inspection, fees, etc., are outlined in chapter 13 of the Payson City Ordinances and resolutions shall apply here-in. Items contained therein that must be complied with relating to electrical distribution construction include:

- Obtaining a business license
- Inspections
- Obtaining permits
- Penalties for violations
- Power line extension fees
- Customer deposits Electrical connection fees
- Metering

**4-2.3 Changes or Conflicts in Requirements and Guidelines**

These requirements and guidelines are issued with the intent of complying with all applicable codes, ordinances, regulations, and tariffs; however, in the case of conflict, the appropriate regulation, tariff, code, or ordinance will supersede the interpretation offered in this manual.

In addition, these, requirements are subject to change in the event that the governing codes, ordinances, regulations, or tariffs are changed. The Utility does not assume responsibility for keeping this manual current and should be consulted in case of doubt on the applicability of any item.

The phrase "consult Utility" as used in this manual shall mean a consultation with Payson City Power and Light is to be made for each and every installation or project.

**4-2.4 Application for Services**

It is important the Utility be provided as early as possible with accurate load information and the date when the Customer will require service, so all necessary arrangements for the service may be completed. Requests for service to commercial and industrial customers normally require 60 days advance planning by the Utility in order to serve the load.

Installations requiring transformers or other equipment not in stock require six months lead time or more.

For commercial, industrial, residential subdivisions, mobile home parks, and apartment complex applications, the requests for service shall include a plot plan. Commercial, industrial or plot plans should show preferred service and meter, location, and single line diagram of the electrical layout. The request must show all load information, including lighting, receptacle, water heating, cooking, electric heat, air conditioning, and motor loads, plus sufficient information on equipment operations to allow the kilowatt demand of the load to be estimated.

The Utility has a staff available to provide advice on service requirements and related problems relative to electric energy utilization for new, existing, and reconstructed installations. The Customer or the Contractor will be held liable for any damage to Utility equipment or personal injury unless adequate notice is given to the Utility and approval is granted regarding the change or addition.

When conditions are encountered during construction that require changes in the service arrangements, the Utility must be consulted so mutually satisfactory alternate arrangements can be made. Communication with the Utility will bring this service to you.

**All Utilities such as Cable TV, Phone, Gas, etc. must be contacted after approval for service has been given.**

#### 4-2.5 Types of Service

The electric service available is 60 hertz (cycles), alternating current, single or three-phase.

The secondary voltages and connections available are given below:

1. Overhead Service
2. Single-phase, 120/240 volt, three-wire, grounded
3. Three-phase, 208Y/120 volt, four-wire, grounded, wye
4. Three-phase, 480Y/277 volt, four-wire, grounded, wye
5. Under certain conditions, at the option of the Utility the following services may be supplied:
  6. Single-phase, 240/480 volt, three-wire, grounded
  7. Three-phase, 240/120 volt, four-wire, grounded delta
  8. Three-phase, 480/240 volt, four-wire delta
9. Underground Service
10. Single-phase, 120/240 volt, three -wire, grounded
11. Three-phase, 208Y/120 volt, four-wire, grounded, wye
12. Three-phase, 480Y/277 volt, four-wire, grounded, wye

The nominal primary voltage of the Utility's distribution system may differ from under certain conditions. Primary delivery will be at the distribution voltage standard for the location at which it is requested.

#### 4-2.6 Approval for Service

It is required that an electrical installation be approved by the Building inspector before it can be energized by the Utility. The service will be energized by the Utility only after all service requirements have been met. A minimum of 24 to 48 hours notice is required for inspections and GPS. Prior to beginning, a representative from the power utility will meet on site with the excavator, electrical contractor and developer, with an approved stamped set of plans from the utility, to answer any questions or unique problems with the projects.

**4-2.6.1 Inspection Check List****4-2.6.1.1 Subdivision A Stamp Approved set of plans from the utility**

1. Provide an electronic map of subdivision
2. Approved stamped plan must be completed prior to pre-construction meeting
3. Property corners with elevations are required before digging begins.
4. Map must denote sidewalk being Monolithic, park strip or none
5. Trenching 1' behind walk. If no sidewalk trenching needs to be 3' behind curb.
6. 4' top of conduit for primary from final grade. Exception 6" conduit at all equipment must be 6 foot deep.
7. 2' separation between communication and power with power closest to the sidewalk
8. Warning tape placed 2' above power conduit
9. All 90's need to be 36" sweeps
10. Flat bottom trench. Any trenching needs to be inspected and GPS before backfilling.
11. Road sleeves for conduit min of 70 feet in length and need to be in line 1' behind back of walk with proper staking and elevation stakes
12. Shading Conduit with sand needs to be around conduit and 1 foot above conduit.
13. 90's are stubbed up and placed 2' off front and side of property line
14. 6" 90's have to be 6 feet deep at all equipment and covered in concrete 2 feet deep.
15. Communication equipment is located on a different property corner other than power
16. All conduits are capped.  
16.a Schedule 40 End Bell Couplings installed at end of conduit.
17. All future stubs need marker flags (available through Payson City)
18. Electrical conduit is gray schedule 40 pvc, communication use a different color, including UTOPIA.
19. Under all electrical sleeves and equipment need s to be backfilled with 1" minus rock, not roadbase, to bottom of virgin trench.
20. Secondary junction boxes need to be equivalent with 16"x25"x15"Carson Model 1324 CP-121 or equivalent with 9/16" twist locking latch.
21. Transformer need to be 6", Sectionalizers need to be 10" to 12" and Switches need to be 12" to 18" above back of walk and level at final grade.
22. Secondary junction boxes need to be 2-3 inches above final grade and matching the slope of final grade.
23. Street light location needs to be verified before installation
24. Street light foundation needs to be level and bolts need to be above grade
25. Conduit for streetlight follows the secondary conduit and 90's in to streetlight foundation.
26. Conduit needs to be 2-4" above 1" rock inside and in the middle of the opening of transformer sleeves and secondary junction boxes
27. 2500# Mule tape installed inside of all Primary conduit

Formatted: Highlight

28. Three phase transformer pad needs to be 6" above grade with #4 rebar with 1' center mat. Require dimensions for pad from Payson City. 1 1/2' separation between secondary and primary conduits in the pad
29. Metering ( transformer or Building)

#### 4-2.6.1.2 Final If Materials Purchased From Payson City

1. Final property corners permantely marked in concrete curb and staked rear property lines.
2. Secondary wire pulled in and extended 3' above box
3. Secondary junction boxes terminated to manufacturing torque specifications
4. Secondary terminator connectors need to be pre lubed with oxide inhibiting compound and dielectric silicone libricand on rubber components
5. Streetlights installed including poles, head, wire and all connections made up

#### 4-2.6.1.3 Final If Materials Provided By Contractor

1. Transformers need to have all insulated secondary connectors, busbars and well bushings installed and tight, transformer tank ground lugs (2).
2. #6 bare copper attached to the ground rod and transformer tank ground connector.
3. Transformer secured to sleeve
4. Secondary terminated in transformer
5. All primary terminators must meet specifications
6. All ground sleeves and switch boxes must meet specifications per utility
7. Secondary wire pulled in and extended 3' above box
8. Secondary junction boxes terminated to manufacturing torque specifications
9. Secondary terminator connectors need to be pre lubed and meet specifications
10. Streetlights installed including poles, head, wire and all connections made up

#### 4-2.6.1.4 Services

1. Minimum depth of trench needs to be 2' from top of conduit to final grade.
2. 36" sweep 90's
3. Attached to existing secondary conduit stub (stub may need to be adjusted to be straight)
4. Trench flat and straight from junction to meter base
5. Meter base location (see specifications)
6. Check service connections to be tight and oxide inhibiting compound used.
7. Meter hub on service conduit
8. For purpose of grounding a minimum of #2 bare copper stranded to be insalled with a minimum of 20' buried in trench. Meter base also tied to UFER in foundation.

#### 4-2.7 Permanent Service Connection

Only authorized Utility employees shall make the permanent (or temporary) connection or disconnection of the Utility's electric service to a building or structure.

**4-2.8 Seals**

The purpose of seals placed by the Utility on meters and associated service equipment is to prevent injury and/or tampering.

Under normal circumstances, seals are not to be removed except by the Utility. If an emergency should require seal removal (only by authorized electrical contractors) without prior notification, the Utility must be notified as soon as possible, so the installation can be inspected and the seal replaced. When this occurs, the party removing the seal shall accept all liability for damage or alteration to equipment, injury to persons or property, and loss of revenue to the Utility. From the time the seal is removed until 72 hours after the Utility has been notified that the equipment is ready to be re-sealed.

**4-2.9 Work Activity near High Voltage Overhead Power Lines**

As set forth in Section 54-8c-1 through 54-8c-7 of the Utah Code, no person or thing may be brought within 10 feet of any high voltage overhead power line unless:

1. The responsible party has notified the Utility operating the high voltage line of the intended activity; and
2. The responsible party and the Utility have completed mutually satisfactory safety precautions for the activity; and
3. The responsible party has made prior arrangements to pay the Utility for the mutually satisfactory safety precautions (if applicable).

The Utility recommends a minimum of 3 business day's notice be given before any work near its lines is scheduled to begin.

**NOTE: The National Electrical Safety Code requires that homes, buildings, bridges, signs, antennas, etc. have sufficient horizontal and vertical clearance to overhead power lines. Consult with the Utility for applicable distances.**

**4-2.10 Services**

The location of the service entrance on the Customer's premises is an important consideration to both the Customer and the Utility. The location where the developer or contractor metered service is five (5') feet from the front on the side of the house. Some exceptions can be made by the utility. The location where the developer or contractor attaches to the City Electrical system shall be determined by the Utility.

The Utility shall be consulted in order to designate the point of attachment for overhead service drops, underground service laterals.

For secondary voltage service, the Utility will provide, install, and maintain meters. The Customer will provide, install, and maintain all service equipment, including switches, service entrance conductors, raceways, enclosures, and meter sockets, and will provide right-of-way and space for the installation and maintenance of the Utility facilities.

**4-2.11 Working Space**

To permit access to metering installations and to provide safety for Personnel, a working and standing space entirely on the property of the customer is to be provided in front of all meter socket(s). All clearances must be at least as shown below.

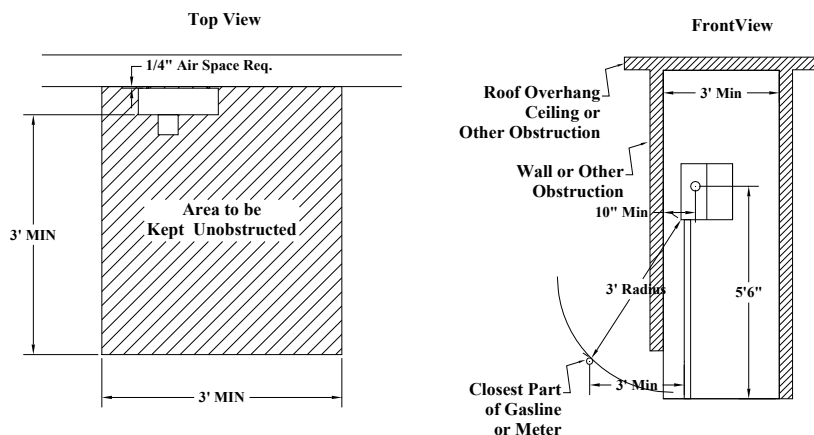


Figure 4-2.11-1 Minimum Clearances around Meters

**NOTE:**

Maintain a three (3) foot minimum radius from gas meter to electrical meter base. The customer will furnish, install and maintain or make a contribution in aid of construction to the Utility at the Utility option for permanent barricades to provide protection where the working space is exposed to vehicles or hazardous conditions. The determination of need, type, size and location of barricades is at the sole discretion of the Utility.

All service entrance conductors must be installed in continuous rigid galvanized steel or IMC. Electrical grade PVC schedule 40 may only be used below ground. Risers will be rigid galvanized steel or IMC for the first 10 feet then PVC schedule 40 maybe used up the pole.

All rigid galvanized steel or IMC conduit will be supported with a wrapped rigid galvanized steel or IMC 36 inch sweep 90.

**4-2.12 Sealing of Cabinets and Gutters**

All cabinets and gutters containing unmetered conductors, other than mainline switches required by applicable electrical codes, must be arranged for sealing with the Utility's seal. Removable conduit fittings may be installed between the service outlet and the meter when approved by the Utility. These fittings must be visible from the meter location or from an exterior ground position and must be arranged for sealing.

Unmetered conductors passing through a service disconnect compartment in mobile home service equipment must be in an enclosed raceway and arranged for sealing.

**4-2.13 Conductor Identification**

Neutral shall be identified with the color white. In a four-wire delta service, the conductor with the higher voltage to ground will be identified with the color orange. For multi-housing, commercial and industrial, gang meter bases requiring parrallel wire feeds will be required. The wire needs to be the appropriate color per industry standard for identification and size determined by the utility. Number and size will be determined by the utility.

**4-2.14 Location of Meters**

Suitable space and provisions for mounting meter bases must be provided by the customer at a location acceptable to the Utility. Residential Meters should be located on the side within the front 5 feet of the building. If more than 5' exceptions can be made at the utilities discretion. The center of any meter socket located outdoors on structures shall not be more than 6 feet or less than 5 feet above the finished grade or floor immediately in front of the meter. The center of meter sockets in mobile home pedestals shall not be less than 42 inches above finished grade. Meters in pedestals must be suitably protected from physical damage, In the case of vertical 4-gang meter bases, the bottom of the lowest meter socket shall be at least 36 inches above final grade

**4-2.15 Temporary Service**

A pre-assembled temporary service "loop" will be furnished and installed by the contractor according to NEC regulations. The location of the temporary will be determined by the Utility.

All temporary power stations, that are located on the housing foundations, will provide permanent power upon final completion and inspection of residence. The temporary power stations are to be affixed permanently anchoring to the concrete foundation. Meter base must be supported with a hub. Conduit must be supported a manner to prevent it from settling with (2) unistruts and clamps, anchored to the foundation with two (2) 3/8 inch (min.) expandable steel bolt anchors.(see detail A Drawing NO. 02-05-0001).

**4-2.16 Disconnection And Reconnection Of Service**

The Utility will disconnect and reconnect any service supplying Customer-owned, service equipment, that, for safe working conditions must be de-energized prior to modification. There will be no charge for the disconnection. The reconnection will be done without charge if it can be completed on the initial trip or on a second trip scheduled during regular working hours and at the Utility's convenience; otherwise, the Customer will be billed a reconnection charge according to Title 13 of the Payson City Ordinances.

**4-2.17 Customer Equipment On Utility Poles**

Customer-owned metering equipment, switching devices, conduits, conductors, luminaries, etc. are not to be mounted on the Utility's poles.

**4-2.18 Overhead Service, 480 Volts And Under, Service Drop**

The Utility will locate the service entrance, to avoid having conductors pass over swimming pools, buildings, trees, or other obstructions if at all possible.

In areas served from overhead lines, an overhead service drop will be installed by the Utility from the Utility distribution line to the point of connection to the Customer's service entrance. Customer's service entrance conductors must extend a minimum of 18 inches from the service entrance weather head on the Customer's residence, building, or structure.

The Customer will provide a suitable point of attachment for the service drop. The point of attachments will be high enough above both initial and final grade and in a proper position to provide not less than minimum clearances as specified in the NESC. It is the Customers responsibility to ensure that the route of the service drop is not obstructed by buildings, trees,

or other objects. The point of attachment will be on the side of the building designated by the Utility. Supports for service drops must meet NEC requirements and be extended from and tied into the main structural members of the building. The service mast shall extend through the roof on a building. Where mast is longer than 10 feet top of mast shall be solid or a full 10 foot of ridged or IMC.

#### **4-2.19 Multiple-Unit Residential Overhead Service**

The Utility will locate the service entrance, to avoid having conductors pass over swimming pools, buildings, trees, or other obstructions if at all possible.

The Utility will extend an overhead service drop from its distribution lines to the point of connection to the Customer's service entrance conductors at the service head. The Utility requires the grouping of service heads at a common location and will not extend service drop conductors from the point of attachment to the individual service heads.

#### **4-2.20 Nonresidential Overhead Service**

The Utility will locate the service entrance., to avoid having conductors pass over swimming pools, buildings, trees, or other obstructions if at all possible..

The point of attachment to the Customer service entrance conductors and service voltage for nonresidential installations must be approved by the Utility prior to the installation of the Customer's service equipment. Where more than one service entrance of the same voltage and phase to a building is necessary, the service entrance(s) must be grouped so that they may be served from the same set of service drops.

Pole-mounted transformer installations are limited to a size that can safely be supported. Installations requiring transformers that cannot be safely mounted on poles must be served by pad mount transformers. A Customer whose load may require 300 kilovolt-amperes or more of installed transformer capacity must consult the Utility to determine what the installation requirements will be.

#### **4-2.21 Overhead Service to Manufactured Homes with Factory Installed Meter Bases**

Overhead service to manufactured homes with factory installed meter bases will be provided under the same requirements as outlined in this specification book.

#### **4-2.22 Underground Service, General**

Before making any preparation for underground service, the Customer or his representative must obtain approval and construction standards from the Utility covering the proposed installation and the Customer's responsibilities.

Customers adequately served by existing overhead distribution facilities, but desiring underground service should contact the Utility for details of the Utility Electric Service Regulations for conversions. In areas where underground service is specified by local ordinances, special rules may apply.

**The minimum wire size for residential service is 1/0 URD Triplex for 100 amp and 125 amp breakers. 2/0 URD Triplex for 150 amp breaker. 4/0 URD Triplex for 200 Amp Breaker.**

Oxide inhibiting compound shall be used on all connections.

#### **4-2.23 Trenches, Conduit and Backfill Provided By The Customer**

The Customer is to provide the trench, conduit and wire to meet Utility requirements.

Trenches are to be as straight as possible to avoid excessive bends from transformers or junction boxes to meterbase, trenches may only deviate a maximum of two (2) feet from a

straight line. Existing conduit stubouts are provided but may be required to be moved to keep conduit straight in line with utility equipment and customer meterbase.

**All metal conduit below ground level must be protected by a corrosion inhibiting wrap. (10 mill PVC pipe wrap), No wrap will be allowed under the top unistrut clamp.**

#### **Call Before You Dig**

Utah law requires The Blue Stakes One Call Location Center be notified at least two working days prior to excavation. The excavation must not be started until locations have been made or the Utility has informed the excavator that they have no facilities in the area. This notification may be made by calling 1-800-662-4111 (Utah toll free). More information is available at all Utility business offices.

Damaged equipment, electrical cable and/or materials resulting from carelessness by equipment operators will be repaired at the expense of the responsible party.

#### **4-2.24 Depth**

The trench depth shall have a minimum of 4' of back fill over the top of primary conduit and a depth of 2' for secondary. **Depth will be measured from final grade to the top of conduit.**

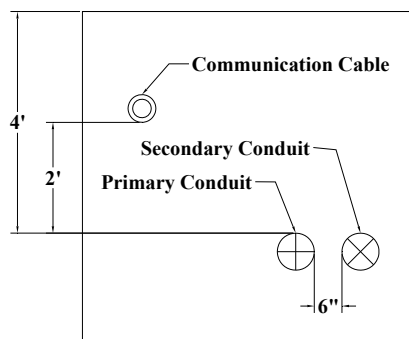
#### **4-2.25 Backfill**

The Customer will be responsible for back filling trenches. Cables shall not be energized until backfill is complete.

Three-inch red warning tape will be placed in all primary trenches, two-(2) foot above conduit.

#### **4-2.26 Joint Use**

Telephone, TV, and other electrical communication cables may be placed in the same trench as the Utility cables, provided that the installation is in accordance with the Utility specifications and is mutually agreed upon by all parties concerned. See Figure 4-2.26-1. The Utility normally will not install electrical cables in a common trench with non-electric utilities such as water, gas, and sewer, unless unusual conditions such as adverse soil or route restrictions exist. All such installations require the prior approval of the Utility.



**Figure 4-2.26-1 Joint Trench Use Separation Requirements**

**Communication conduits must be secured every 15 feet to keep separation during back filling.**

**Communication conduits for Utopia must not be gray Electrical Conduit.**

Formatted: Highlight

Formatted: Highlight

**4-2.27 Conduits**

The Utility requires the use of conduit for all underground service installations. Rigid galvanized steel, IMC and gray electrical grade PVC schedule 40 (underground only) conduits are acceptable materials for conduits installed by the Customer. Generally conduits are installed in property fronts. All PVC Duct network must be inspected before back filling. The following procedure for making cemented conduit joints will be used to join PVC to PVC

- Cut the conduit square and remove all burrs from both the inside and outside with a file or knife.
- Remove dirt, grease and moisture from the end of the conduit and inside the coupling.
- Test fit the conduit into the coupling. It should penetrate easily 1/4 to 3/4 of the way.
- End Bell Couplings required to be placed at the end of conduit

CAUTION: Cement that is jelly-like or that has not been used within one year of the date stamped on the can, should be replaced, and not used.

- Apply an even layer of cement to the conduit and inside the coupling. A second layer should be applied to the conduit if necessary to completely fill the gap.
- Assemble the joint immediately while the cement is still soft and wet. Forcefully bottom the conduit into the coupling. Turn the pipe or fitting during (but not after) assembly to distribute the cement evenly. Hold in position for 30 seconds. Wipe off excess cement.
- Allow 15 minutes setting time for good handling strength. The joint will be completely set within 24 hours.

Conduit must be approved by the Utility before installation. All 90-degree bends must be minimum 36 inch radius. All conduits must contain a suitable non-conductive pull line (2500 lbs mule tape.). All conduits shall be terminated at the open end with plastic bushings. Conduit sizes must be approved by the Utility.

When the conduit terminates at the Utility pole, consult the Utility for exact conduit location. For a utility service lateral, the top of the conduit is to be a minimum of 24 inches below finished grade.

Stub-outs must be put at all transformers and splice box locations for future hookups.

Stubouts must be at least 3 feet from transformers and splice boxes.

**All metal conduits below ground level must be protected by a corrosion inhibiting wrap.**

**4-2.28 Clearances From Swimming Pools**

Follow National Electrical Safety Code.

**4-2.29 Underground Service To Residential, subdivisions**

Underground services are provided under terms and condition detailed in Chapter 13 of Payson Cities Ordinances.

High voltage distribution systems in subdivisions will be loop connected where advantageous and be connected in a balanced three phase network if practical as determined by the Power and Light Director.

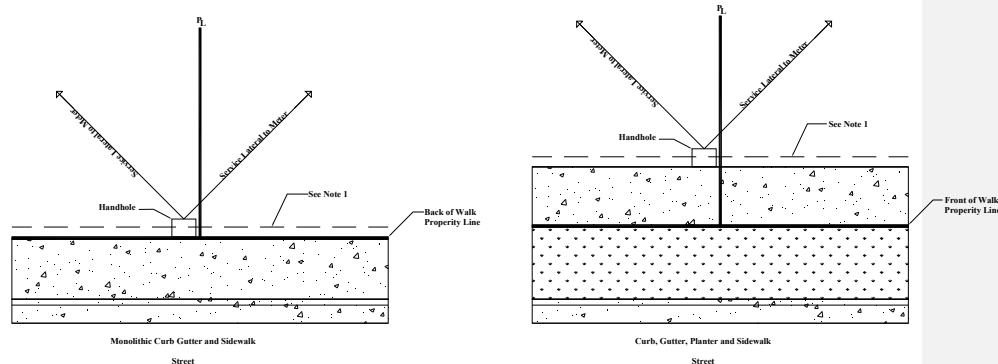
All high voltage distribution systems in subdivisions and mobile home parks will be installed according to design and layout prepared by an Electrical Engineer and Payson Power and Light. An as-built map of the power net work must be submitted to the department of Power and Light after installation. All changes must be pre-approved before work begins, must use a "Stamped Approved" set of plans from Payson City.

As per the Title 20 Subdivision Ordinance, all costs incurred, including labor and material, will be paid by the developer. The City will terminate primary connections and will pull any underground primary wire. The City will perform all work done on overhead energized conductors and the Contractor will pay all costs associated with any line extensions involving live primary wires.

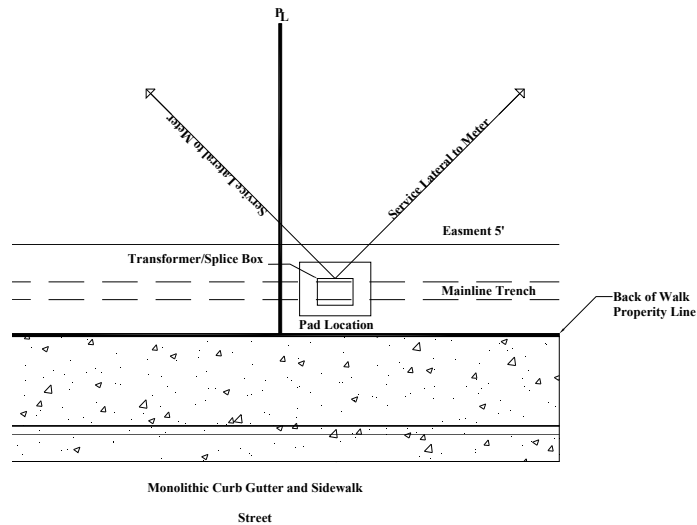
Material and labor charges are to be paid prior to ordering of high voltage wire, connectors, and transformers. All secondary wire system will need to be bonded prior to installation. The Developer or subcontractor can install the secondary system; however they must be licensed with the city prior to beginning construction. All installations must be inspected and approved prior to burial of underground systems. Costs incurred as a result of a grade change or transformer realignment shall be born by the subdivider/developer.

Individual residences within the subdivision will be responsible to trench, back fill, and install 600 Volt URD triplex cable in a PVC (sch 40) Duct from the secondary splice box or transformer to the meter main disconnect (rigid pipe and 36 inch sweep 90') according to the original design and layout.

All street lighting in Subdivision and Mobile Home parks shall be installed by the subdivider according to city specifications. After city final inspection of lighting system Payson City will assume ownership and will maintain said system.

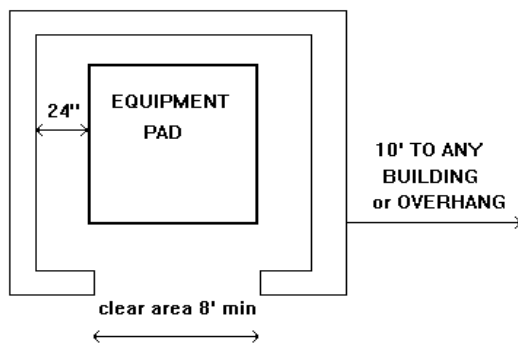


**NOTE 1 Preferred location of trench is 12 inches back of sidewalk. Other locations between back of curb or street and property line may be approved. Two (2) inch secondary stubs (36" 90° sweeps only) are angled to service both lots from handhole. Locate splice boxes and transformers on one side of the property line.**



**NOTE 2 TRANSFORMERS AND SPLICE BOXES ARE TO BE SET 1 FOOT OFF SIDE PROPERTY LINE and 12 " behind sidewalk. Two (2) inch secondary stubs are angled to service both lots.**

#### EQUIPMENT ENCLOSERS IN COMMERCIAL AREAS



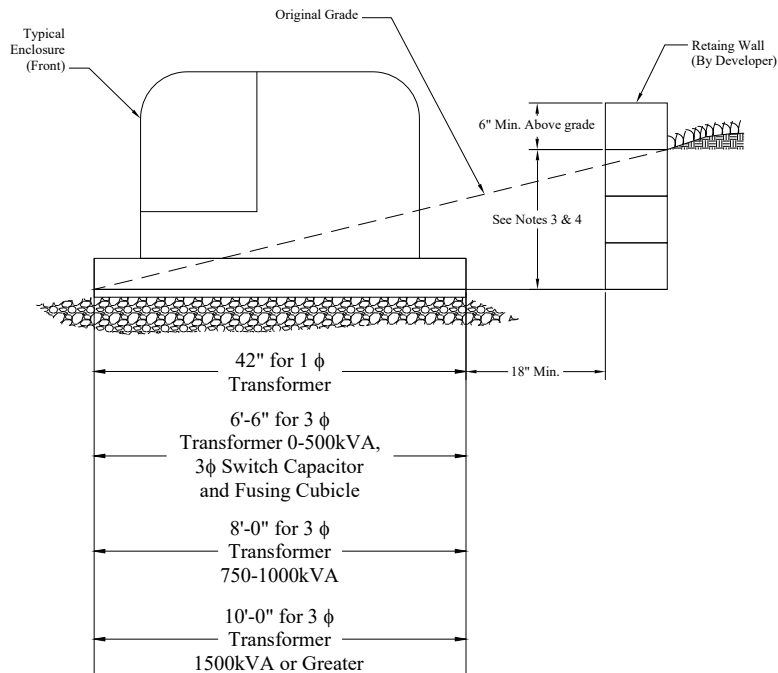
**NOTE 3: CLEARANCES ARE ALSO REQUIRED FOR RESIDENTIAL EQUIPMENT CUSTOMER FENCING OR OBSTRUCTIONS ADJACENT TO PROJECT EQUIPMENT INSTALLATIONS**

1. No building addition, building overhang or structure shall be built closer than 10 ft. horizontally from the edge of any equipment pad unless approved in writing by the Utility.
2. There shall be no roof or covering over any pad-mounted equipment.

3. A gate the full width of the opening is permissible across the front or equipment. The gate may be of solid material if a 6 inch clearance for ventilation is maintained between bottom of gate and ground level. The gate is allowed to be lower than 6 inches if constructed of mesh bar, louver or similar ventilating material. Gate must open at least 90 degrees for full opening width access and must be free of locks which would inhibit access by utility personnel. Any gate must be furnished by customer.
4. Obstructions, including but not limited to, fences, trees, shrubs, or other similar large vegetation and large rocks, shall NOT be permitted within 10 feet of the opening side of equipment. The back and sides of all transformers and equipment require at least 18 inches of clearance from edge of the pad to any obstruction. For front or side lot easements, the clearance to the back of pad-mounted equipment is defined by the easement line.
5. Hinged gate(s), when open, may not block the exit route. When gate(s) is in the maximum open position, the exit shall allow a 24 inch wide minimum opening, a minimum of 6 feet from the equipment pad.
6. When equipment enclosures are constructed in commercial areas, the exit route shall be directly away from the opening side of the pad-mounted equipment

**NOTE 4:**

1. Connect ground rod to transformer ground lugs with a minimum of # 6 copper wire.
2. Top of ground rod and all conduits are to be 46" above final grade.
3. Install non-metal plugs in all conduit stub-ups or seal with duct tape.
4. 2500 lbs mule tape must be installed in all conduits and capped
5. Stubouts do not need string installed.
6. End Bell Couplings installed at end of conduit.



7.  
**NOTE 5:**

1. When it becomes necessary to notch-out or fill a slope to install an enclosure, the cleared area should be of sufficient size to accommodate the enclosure and shoring. Slope in front of enclosure shall not be greater than 20 inches in 8 feet.
2. Filled with 1" minus rock to the bottom of the trench.
3. A wall is required if this dimension is 12" or more.
4. Side walls also required if this dimension is over 18". Side wall to be 6" above existing grade and 18" from side of transformer pad.
5. All grading is to be done by developer.
6. If assistance is required, contact the Utility.

#### 4-2.30 Nonresidential Underground Service

For underground service to commercial or industrial buildings or projects, the Customer or developer is responsible for all trenching, back filling, conduit, wire terminators, pulling and terminating secondary wire, meters and transformer pads or vaults within the project.

Where a padmounted transformer, current transformer enclosure, or other equipment are installed in a location where it might be struck by a motorized vehicle, the Customer is to install Utility-approved barrier posts to protect this equipment.

Primary cables will be installed by the Utility in Customer provided conduit. The Utility will install the conduit up the pole. The Utility will designate the proper position on the pole for the conduit prior to the contractor installation of the 90-degree bend and 10 foot of Rigid, IMC or fiberglass at the base of the pole.

All conduits shall be capped at both ends at the time of installation to keep free of dirt and debris.

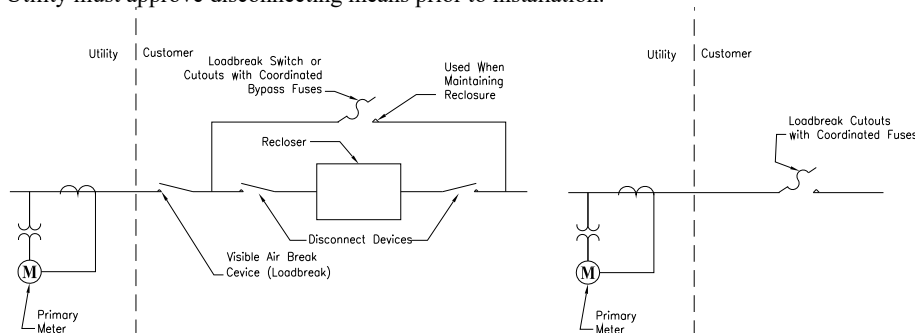
#### 4-2.31 Service at Primary Voltage General

The Utility will provide primary voltage delivery to qualified Customers without transformation, from the high-voltage or primary" distribution system under terms and conditions set forth in which provide that: (1) The distribution system's nominal voltage is used; (2) Service at primary voltage will not, in the Utility's judgment, adversely affect the operation of the Utility's distribution System or service to other Customers; and (3) Such service Can be supplied in a safe and reliable manner. All Customers requesting service at a primary voltage must agree to those special requirements that the Utility may from time to time establish as necessary,

#### 4-2.32 Customer Equipment

The Customer receiving service at primary or higher Voltage shall own and maintain poles, conductors, cables, transformers and associated protective devices in accordance with the current filed Electric Service Regulations and tariff or special contract. All such equipment, its arrangement, and its operation will be subject to Utility approval. Except by prior written approval of the Utility, three-phase transformers connected to primary voltage lines are to be in conformance with the utility's transformer specification.

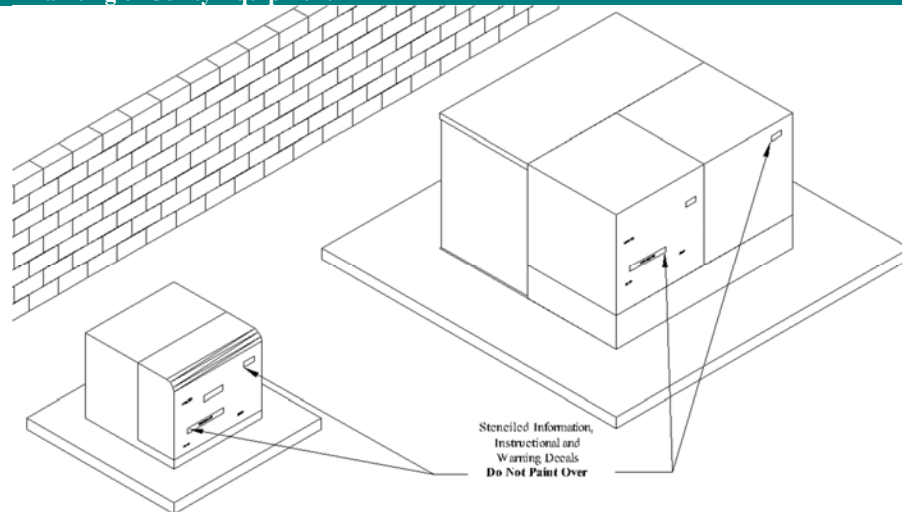
The customer will provide a disconnecting means, such as Option I or Option 2 as shown below, at the point of delivery, to disconnect the customers system-from the Utility's system. Utility must approve disconnecting means prior to installation.



To assure timely restoration of service in case of failure, all primary voltage Customer owned wiring and equipment, including transformers and associated protective devices, should be the same types and have the same characteristics as those used by the Utility. The arrangement and operation of such equipment will be subject to the utilities approval.

#### 4-2.33 Utility Equipment

The Utility will normally provide at Customer expense the pole or a padmounted enclosure, containing the primary metering equipment. The point of interconnection, or the padmounted primary metering enclosure when the service is underground, shall be designated as the point of delivery.

**4-2.34 Painting of Utility Equipment****NOTES:**

1. At the customers request and expense, the customer may paint pad mounted equipment such as transformers, switching and fusing cubicles, and capacitor enclosures. Substation fences or other equipment are not allowed to be painted by the customer. The customer must notify the Payson City prior to painting utility equipment by calling 465-5270.
2. All identifying lettering, numbering, warning signs, handles, locks and pads will not be painted over
3. The utility retains the right to charge customers full cost of restoring its equipment to acceptable condition (repainting to original utility color) if:
  - a. The customer fails to comply with these requirements.
  - b. The painting done by the customer on utility equipment is not maintained by the customer.
4. Color choices used by the customer shall be complimentary to the surroundings of the equipment. It is recommended that to prevent conflicts, color acceptance should be obtained from the utility prior to painting.
5. If for any reason, the utility has to replace a piece of pad mounted equipment that has been painted by a customer, the new equipment will be standard utility color - if the customer wants to paint and change the color of the equipment after replacement, they may do so (see note 1).
6. Preparation of utility equipment is limited to cleaning the surface using a detergent and water. No sanding or chemicals solvents are to be used on the painted surface of the equipment.

**4-2.35 4-2.35 Padmount Transformer specifications**

Padmount transformer will be billed and supplied by the utility

**4-2.36 Street Light Specifications**

Street light poles, heads and bases will be billed and supplied by the utility

**4-2.37 Splice Box and Connector Specification**

Connectors will meet or exceed ANSI C119.4-1991 and C119.1-1986. Must except wire size #12 AWG to 350 MCM. Secondary underground junction connectors must all be insulated and water proof and equipped with the number of positions suitable for location of connectors. They will have pre-applied oxide inhibitor, with silicone grease on all rubber joints. EXAMPLE: CONNECTOR MANUFACTURE CO. Cat. # SSBC 350-6LI. Splice box shall be a minimum of 16" X 25" X 15" with 9/16" latching bolt down lid. EXAMPLE: Carson industries Model 1324CP-12L.

**4-2.38 Sectionalizing Enclosures Specifications**

Sectionalizing enclosures will be billed and supplied by the utility.

INSTALLATION INSTRUCTIONS / PAD SPECIFICATIONS PRECAST OR CAST-IN-  
PLACE PAD FOR THREE PHASE TRANSFORMER  
0-500 KVA

1. The subgrade and trench backfill shall be 1" minus crushed rock.
- a) The subgrade shall be inspected by utility inspector before the concrete pad is poured.
2. Top of pad shall be 6" minimum above surrounding grade and at sufficient elevation to prevent flooding.
3. Pad shall be located to be readily accessible and oriented to provide a minimum of 8 feet clear working space at front of unit. Maintain min. clearance of 18" at sides & back of pad.
4. When pad is cast in place, stub-up conduit 2' above the pad. Do not encase conduit in concrete. Install temporary protective covers to keep debris out of all conduits. See electrical plans for size and number of conduits.
5. Install 5/8"x 8 ft. copper clad ground rod in the high voltage opening of the transformer pad. the top of the ground rod shall be 2 inches above top of pad. The customer shall supply and install the ground rod.
6. For precast: concrete shall be mag class AA (fc 4000psi @28 days) with aggregate per ASTM C33, grading no. 57; slump range 3" min. to 5" max. ; water cement ratio =5 max.
7. For cast-in-place: concrete shall be mag class b ( fc =2500psi @ 28 days) with aggregate per ASTM C33, grading no. 57; slump range 3" min. to 5" max.; water cement ratio = .6 max.
8. Reinforcing shall be per ASTM A615, GR.60, #4 bars spaced as shown (equally).
9. Pad anchors (precast only): Dayton superior p-52 SL 4 ton x 4 3/4" length. Use round recess when casting pad. Top of anchor shall be 9/16" below pad surface.
10. Surface shall be flat to within 1/16" across top surface. Top edge to be 45' chamfer.
11. Primary and Secondary openings to depend on individual transformer opening size.

INSTALLATION INSTRUCTIONS / PAD SPECIFICATIONS PRECAST OR CAST-IN-  
PLACE PAD FOR THREE PHASE TRANSFORMER INSTALLATION  
750-1000 KVA

1. The subgrade and trench backfill shall be 1" minus crushed rock.
- a) The subgrade shall be inspected by utility inspector before the concrete pad is poured.
2. Top of pad shall be 6" minimum above surrounding grade and at sufficient elevation to prevent flooding.
3. Pad shall be located to be readily accessible and oriented to provide a minimum of 8 feet clear working space at front of unit. Maintain min. clearance of 18" at sides & back of pad.
4. When pad is cast in place, stub-up conduit 2" above the pad. Do not encase conduit in concrete. Install temporary protective covers to keep debris out of all conduits. See electrical plans for size and number of conduits.
5. Install 5/8"x 8 ft. copper clad ground rod in the high voltage opening of the transformer pad. The top of the ground rod shall be 2 inches above top of pad.
6. For precast: concrete shall be mag class AA ( $f_c = 4000\text{psi}$  @28 days) with aggregate per ASTM C33, grading no. 57; slump range 3" min. to 5" max.; water cement ratio = 5 max.
7. For cast-in-place: concrete shall be mag class b ( $f_c = 4000\text{psi}$  @ 28 days) with aggregate per ASTM C33, grading no. 57; slump range 3" min. to 5" max.; water cement ratio = .6 max.
8. Reinforcing shall be per ASTM A615, GR.60, #4 bars spaced as shown (equally).
9. Pad anchors (precast only): Dayton superior p-52 SL 4 ton x 4 3/4" length. Use round recess when casting pad. Top of anchor shall be 9/16" below pad surface.
10. Surface shall be flat to within 1/16" across top surface. Top edge to be 45° chamfer.
11. Primary and Secondary openings to depend on individual transformer opening size.

INSTALLATION INSTRUCTIONS & PAD SPECIFICATIONS  
CAST-IN-PLACE PAD FOR THREE PHASE TRANSFORMER  
1500-2500

1. The subgrade and trench backfill shall be 1" minus crushed rock.
- a) The subgrade shall be inspected by utility inspector before the concrete pad is poured.
2. Top of pad shall be 6" minimum above surrounding grade and at sufficient elevation to prevent flooding.
3. Pad shall be located to be readily accessible and oriented to provide a minimum of 8 feet clear working space at front of unit. Maintain min. clearance of 18" at sides & back of pad.
4. When pad is cast in place, stub-up conduit 2" above the pad. Do not encase conduit in concrete. Install temporary protective covers to keep debris out of all conduits. See electrical plans for size and number of conduits.
5. Install 2 5/8"x 8 ft. copper clad ground rod in the high voltage opening of the transformer pad. the top of the ground rod shall be 2 inches above top of pad.
6. Concrete shall be mag class B ( $f_c = 4000$  psi @28 days) with aggregate per ASTM C33, grading No. 57; slump range 3" min. to 5" max. ; water cement ratio = . 6 max.
7. Reinforcing shall be per ASTM A615, GR.60, #4 bars spaced as shown (equally).
8. Surface shall be flat to within 1/16" across top surface. Top edge to be 45' chamfer.
9. Primary and Secondary openings to depend on individual transformer opening size.