



**PAYSON CITY  
POWER DEPARTMENT**

**ELECTRICAL CONSTRUCTION  
STANDARD SPECIFICATIONS**

As Adopted ~~December 18~~January 21, 2024~~2026~~

## TABLE OF CONTENTS

INTRODUCTION.....	3
SECTION 1: CODES AND ORDINANCES .....	4
SECTION 2: SERVICES .....	5
SECTION 3: INSPECTIONS.....	7
SECTION 4: SAFETY .....	9
SECTION 5: METERING .....	10
SECTION 6: OVERHEAD POWER SERVICE .....	13
SECTION 7: UNDERGROUND POWER SERVICE.....	15
SECTION 8: INSTALLATION .....	19
SECTION 9: EQUIPMENT.....	22
SECTION 10: CONCRETE PAD SPECIFICATIONS AND INSTALLATION.....	24
SECTION 11: PAYSON CITY STANDARD DETAILS.....	27

## INTRODUCTION

This document has been prepared and compiled by the Payson City Power Department. This manual is to assist developers, contractors, and engineers in establishing electric service for new and remodeled structures. It is encouraged to contact Payson City Power by calling 801-465-5270 to discuss your electrical service requirements. Personal assistance from Payson City staff is available. It is the goal of Payson Power and the local electrical code enforcing authority to provide customers (developers, contractors, owners etc.), with high-quality, safe electric service.

To avoid unnecessary repetition, the word "Utility" as used in the following pages indicates Payson City Power.

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

This document includes a TABLE OF CONTENTS that directs the user to a specific topic and page.

The use of this document will allow the developer to more closely comply with adopted standards. This document is not intended to fully represent the current adopted ordinances, construction standards and drawings, master plans, or other City requirements. The developer is responsible for familiarizing themselves and complying with all the adopted ordinances and standards of Payson City. Review of submitted plans will be performed to the maximum extent practicable by qualified Payson City employees. The reviews are not to be used as quality assurance or quality control (QA/QC). Responsibility for thorough peer review of design plans and other submitted products belongs to the Engineer/Architect of Record. Permission to develop based on the submitted plans does not constitute approval or acceptance of responsibility by Payson City. Submittals that contain insufficient information to perform the required reviews will be returned to the applicant as incomplete and will not be reviewed. Items that fail to comply with Payson City standards and ordinances and are not caught during the review process will be corrected in the field at the Developer's expense.

## SECTION 1: CODES AND ORDINANCES

### 1. GENERAL

- a. 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. OSHA rules must be followed both during construction and maintenance.

### 2. DEFINITIONS:

- a. CONTRACTOR refers to the person or persons actually performing the construction work.
- b. CUSTOMER refers to any individual requiring utility services.
- c. DEVELOPER refers to the contractor, property owner or agent as applicable.
- d. CITY ENGINEER refers to the Payson City Engineer or an authorized representative.
- e. OWNER refers to subdividers, developers, contractors or others responsible for the project within Payson City.

### 3. CITY ORDINANCES

- a. Provisions for qualifications of contractors, bonding, permits, inspection, fees, etc., are outlined in Title 4 of the Payson City Municipal Code. Items contained therein that must be complied with relating to electrical distribution construction include:
  - i. Obtaining a business license
  - ii. Inspections
  - iii. Obtaining permits
  - iv. Penalties for violations
  - v. Power line extension fees
  - vi. Customer deposits Electrical connection fees
  - vii. Metering.

### 4. CHANGES OR CONFLICTS IN REQUIREMENTS AND GUIDELINES

- a. 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.
- b. The phrase "consult Utility" as used in this manual indicates a consultation with Payson City Power is required for each and every installation or project.

### 5. UTILITY DISCLAIMER

The locations, materials, slopes, flow line, rim elevations, and sizes of the existing underground or overhead utilities are shown as accurately as possible. Due to the age of the infrastructure and reporting errors, the sizes and locations of the utilities shown on the Payson City GIS map are approximate and should not be used for design purposes. The owner and/or contractor of a development project are responsible for contacting Blue Stakes to locate all the existing utilities and performing potholes to field verify the sizes, materials, and depths of the existing utilities to prevent errors in design based solely on the information shown on the GIS map. Cost changes due to the failure to field verify the existing conditions are the responsibility of the owner and/or contractor.

## SECTION 2: SERVICES

### 1. APPLICATION FOR SERVICES

- a. 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.
- b. It is the responsibility of the Developer to purchase from Payson City any and all transformers, sectionalizers, switches, or other equipment as required by the Utility. Equipment purchased without approval that does not meet the Utility's specifications will be returned to the Developer unused.
- c. For commercial, industrial, residential subdivisions, mobile home parks, and apartment complex applications, the requests for service shall include a plot plan. 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.
- d. 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.
- e. 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.
- f. All Utilities such as Cable TV, Phone, Gas, etc. must be contacted after approval for service has been given.

### 2. TYPES OF SERVICE

- a. The electric service available is 60 hertz (cycles), alternating current, single or three-phase.
- b. The secondary voltages and connections available are:
  - i. Overhead Service
    - Single-phase, 120/240 volt, three-wire, grounded
    - Three-phase, 208Y/120 volt, four-wire, grounded, wye
    - Three-phase, 480Y/277 volt, four-wire, grounded, wye
  - ii. Under certain conditions, at the option of the Utility, the following services may be supplied:
    - Single-phase, 240/480 volt, three-wire, grounded
    - Three-phase, 240/120 volt, four-wire, grounded delta
    - Three-phase, 480/240 volt, four-wire delta
  - iii. Underground Service
    - Single-phase, 120/240 volt, three-wire, grounded
    - Three-phase, 208Y/120 volt, four-wire, grounded, wye
    - Three-phase, 480Y/277 volt, four-wire, grounded, wye
- c. 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.

### 3. APPROVAL FOR SERVICE

- a. 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 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 project.

### 4. PERMANENT SERVICE CONNECTION

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

## SECTION 3: INSPECTIONS

### 1. INSPECTION CHECKLIST

- a. Provide an electronic map of the project.
- b. Approved stamped plan must be completed prior to pre-construction meeting.
- c. Property corners with elevations are required before digging begins.
- d. Map must denote sidewalk being Monolithic, park strip, or none.
- e. Trenching 1-foot behind walk. If no sidewalk trenching shall be 3-feet behind curb.
- f. 4-feet from final grade to top of conduit for primary. Exception 6-inch conduit at all equipment must be 6-feet deep.
- g. All 90-degree bends are 36-inch fiberglass sweeps. No cutting or modification of the sweeps in any way is permitted.
- h. Trench depth at locations of equipment to be deep enough to allow the 36-inch 90-degree sweeps to be fully utilized without cutting or modifying in any way.
- i. Install 2-foot concrete cap covering the coupling that joins the fiberglass sweep and PVC conduit for all 4- and 6-inch primary conduit.
- j. 2-foot separation between communication and power with power being closest to the sidewalk.
- k. Warning tape placed on 2-feet of sand above power conduit.
- l. If joint trenched with other utilities, place warning tape on 1-foot of sand and cover with 1-foot of sand, then install communications conduits.
- m. Flat bottom trench. All trenching must be inspected and GPS obtained prior to backfill. Trenches backfilled before inspection will be excavated at the Contractor's expense.
- n. Road sleeves for conduit to be gray PVC 70-feet in length (min) and in line 1-foot behind the sidewalk.
- o. Shade conduit with sand 1-foot on all sides of the conduit.
- p. 90-degree bends stubbed up and placed 2' off front and side of property line.
- q. Communication equipment to be located on a different property corner than power.
- r. All conduits are capped.
  - i. Schedule 40 Bell End Couplings installed at end of conduit.
  - ii. Duct tape over the ends is not permitted. Expandable blank duct plug with loop end preferred.
- s. All future stubs plugged and capped with a PVC cap and marked with flags (available through Payson City). Duct tape over the ends is not permitted.
- t. Electrical conduit is gray Schedule 40 PVC. Communication, including UTOPIA, in a non-blue stake colored pipe.
- u. All electrical sleeves and equipment backfilled and bedded with 1-inch minus rock, not road base, to bottom of virgin trench.
- v. Secondary junction boxes are 32-inch x 20-inch x 15-inch Carson Model 1324 CP-121 or approved equal with 9/16" twist locking latch.
- w. Transformer sleeves and pads are ~~6~~8-inches, Sectionalizers are 10- to 12-inches, and Switches are 12- to 14-inches above back of walk and level at final grade.
- x. Secondary junction boxes are 2- to 3-inches above final grade and matching the slope of final grade.
- y. Street light location verified before installation.
- z. Street light foundation level and bolts oriented upward with nuts fastened on the top side of the

mounting plate.

- aa. Conduit for streetlight follows the secondary conduit and turns 90-degrees in to streetlight foundation.
- bb. Conduit to be 2- to 4-inches above 1-inch rock at the final grade inside transformer sleeves, secondary junction boxes, sectionalizers and switches.
- cc. 2500# Mule tape installed inside all Primary conduit.
- dd. Three-phase transformer pad 6-inches above grade with #4 rebar center mat. Pad dimensions and reinforcing meets Payson City Standards. See Standard Details at the end of this document. 1-foot and 6-inch separation between secondary and primary conduits in the pad.
- ee. Metering (transformer or building).

## 2. SERVICES

- a. Depth of trench 3-feet (min) from top of conduit to final grade.
- b. 90-degree bends are 36-inch fiberglass sweeps. Sweeps at meter base are rigid 36-inch.
- c. Attached to existing secondary conduit stub (stub may need to be adjusted straight).
- d. Trench flat and straight from junction to meter base. Install 2-feet of sand above conduit upon backfill.
- e. Meter base location (see specifications).
- f. Check service connections to be tight and oxide inhibiting compound used.
- g. Bolt on meter hub on service conduit.
- h. Minimum #2 bare copper stranded or #2 copper solid installed with 20-feet (min) buried in trench for grounding or two ground rods spaced 6-feet apart.
- i. For overhead services a 5/8-inch x 8-foot copper clad ground rod is required with a minimum #6 solid copper connecting to the meter base.
- j. Meter base tied to UFER in foundation.

## 3. FINAL INSPECTION

- a. All Contractor furnished equipment and material meets Payson City Standards and Specifications.
- b. Transformers have all insulated secondary connectors, busbars, and well bushings installed and tight, (2) transformer tank ground lugs.
- c. #6 bare copper attached to the ground rod and transformer tank ground connector.
- d. Transformer secured to 5/8-inch x 8-foot sleeve.
- e. Secondary terminated in transformer.
- f. All primary terminators meet Utility specifications.
- g. All ground sleeves and switch boxes meet Utility specifications.
- h. Secondary wire pulled in and extended 3-feet above secondary junction box or 6-feet above transformer.
- i. Secondary junction boxes terminated to manufacturing torque specifications.
- j. Secondary terminator connectors pre-lubed with dielectric grease with oxide inhibiting compound on connections and meet Utility specifications.
- k. Street lights installed including poles, head, wire, and all connections made with photocells pointing north.



**SECTION 4: SAFETY****1. SEALS**

- a. The purpose of seals placed by the Utility on meters and associated service equipment is to prevent injury and/or tampering.
- b. Under normal circumstances, seals are not to be removed except by the Utility.
- c. 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 alternation 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.

**2. WORK NEAR HIGH VOLTAGE OVERHEAD POWER LINES**

- a. 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:
  - i. The responsible party has notified the Utility operating the high voltage line of the intended activity; and
  - ii. The responsible party and the Utility have completed mutually satisfactory safety precautions for the activity; and
  - iii. The responsible party has made prior arrangements to pay the Utility for the mutually satisfactory safety precautions (if applicable).
- b. The Utility recommends a minimum of 3 business days' notice be given before any work near its lines is scheduled to begin.
- c. The National Electrical Safety Code (NESC) 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.

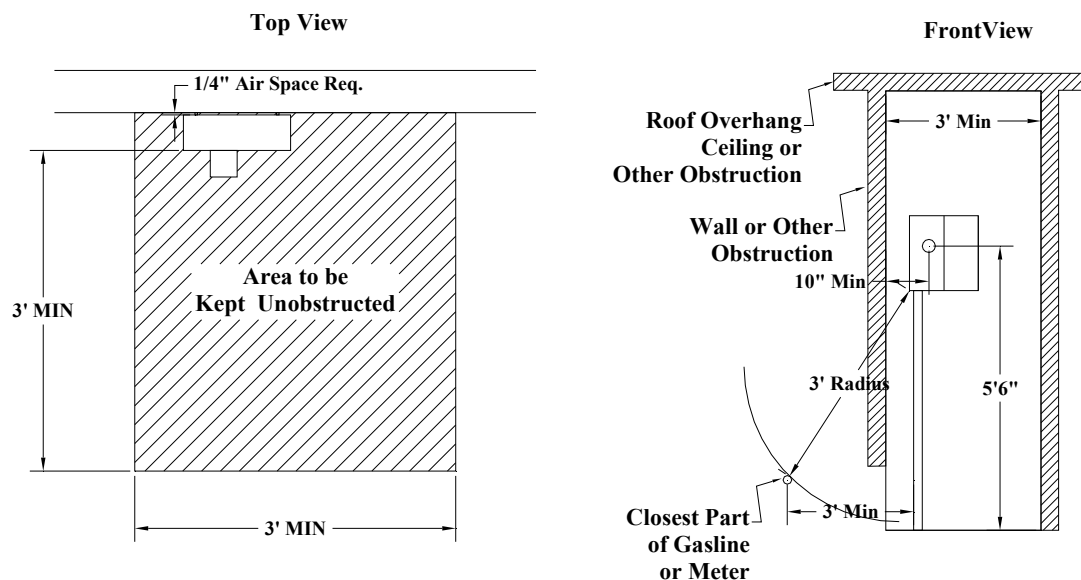
## SECTION 5: METERING

### 1. SERVICES

- The location of the service entrance on the Customer's premises is an important consideration to both the Customer and the Utility. The typical service meter location is 5-feet from the front on the side of the building. Some exceptions to this location 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 and underground service laterals.
- The Utility will provide, install, and maintain meters for secondary voltage service.
- 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.

### 2. WORKING SPACE

- To permit access to metering installations and to provide safety Personnel, a working and standing space entirely on the property of the customer is to be provided in front of all meter socket(s).
- Clearances must be at least as shown in figure 5-2.1 below:



**Figure 5-2.1 – Minimum Clearances around Meters**

- Maintain a three (3) foot minimum radius from gas meter to electrical meter base. The customer will furnish, install, and maintain or make contribution in aid of construction to the Utility at the option of the Utility 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 may be used up the pole.

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

### 3. SEALING OF CABINETS AND GUTTERS

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

### 4. CONDUCTOR IDENTIFICATION

- a. Neutral shall be identified with the color white or yellow. No colored tape is allowed.
- b. In a four-wire delta service, the conductor with the higher voltage to ground will be identified with the color orange.
- c. For multi-housing, commercial and industrial, gang meter bases requiring parallel wire feeds will be required.
- d. The wire needs to be the appropriate color per industry standard for identification and size determined by the Utility. 120- and 208-volt 3 phase to be black, red, blue, and white. 480-volt 3 phase to be brown, orange, yellow, and whitegray. No colored tape will be accepted.
- e. Number and size will be determined by the Electrical Engineer and/or Utility.

### 5. LOCATION OF METERS

- a. Suitable space and provisions for mounting meter bases must be provided by the customer at a location acceptable to the Utility.
- b. Residential meters should be located on the side within the front 5-feet of the building. More than 5-foot exceptions can be made by the Utility.
- c. 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.
- d. 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.
- e. 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.

### 6. TEMPORARY SERVICE

- a. All temporary power stations that are located on the housing foundations will provide permanent power upon final completion and inspection of the residence.
- b. The temporary power stations are to be affixed permanently anchoring to the concrete foundation.
- c. Bolt on meter base must be supported with a hub.
- d. Conduit must be supported in a manner to prevent it from settling with two (2) unistruts and clamps, anchored to the foundation with two (2) 3/8-inch (min) expandable steel bolt anchors. Refer to Detail A found on Payson City Standard Plan P-2.

### 7. DISCONNECTION AND RECONNECTION OF SERVICE

- a. 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.

- b. 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 4 of the Payson City Municipal Code.

## SECTION 6: OVERHEAD POWER SERVICE

### 1. CUSTOMER EQUIPMENT ON UTILITY POLES

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

### 2. OVERHEAD SERVICE DROP – 480 VOLTS AND UNDER

- a. The Utility will locate the service entrance, to avoid having conductors pass over swimming pools, buildings, trees, or other obstructions if at all possible.
- b. 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 (URD Triplex) must extend a minimum of 18-inches from the service entrance weather head on the Customer's residence, building, or structure.
- c. 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.
- d. It is the Customer's 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.
- e. Supports for service drops must meet NEC requirements and be extended from and tied into the main structural members of the building.
- f. 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-feet of rigid or IMC.

### 3. MULTIPLE UNIT RESIDENTIAL OVERHEAD SERVICE

- a. The Utility will locate the service entrance, to avoid having conductors pass over swimming pools, buildings, trees, or other obstructions if at all possible.
- b. 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. NON-RESIDENTIAL OVERHEAD SERVICE

- a. The Utility will locate the service entrance, to avoid having conductors pass over swimming pools, buildings, trees, or other obstructions if at all possible.
- b. The point of attachment to the Customer service entrance conductors and service voltage for non-residential 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.
- c. 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.
- d. 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.

5. OVERHEAD SERVICE TO MANUFACTURED HOMES

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

## SECTION 7: UNDERGROUND POWER SERVICE

### 1. GENERAL

- a. 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.
- b. 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.
- c. 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.
- d. Oxide inhibiting compound shall be used on all connections.

### 2. TRENCHES, CONDUIT, AND BACKFILL PROVIDED BY THE CUSTOMER

- a. The Customer is to provide the trench, conduit and wire to meet Utility requirements.
- b. Trenches are to be as straight as possible to avoid excessive bends from transformers or junction boxes to meter base. Trenches may only deviate a maximum of two (2) feet from a straight line. Existing conduit stub outs are provided but may be required to be moved to keep conduit straight in line with utility equipment and customer meter base.
- c. All metal conduit below ground level must be protected by a corrosion inhibiting wrap. (10 mil PVC pipe wrap). No wrap will be allowed under the top unistrut clamp. Top unistrut must remain above final grade.
- d. 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 811 or 1-800-662-4111 (Utah toll free). More information is available at all Utility business offices.
- e. Damaged equipment, electrical cable and/or materials resulting from carelessness by equipment operators will be repaired at the expense of the responsible party.

### 3. DEPTH

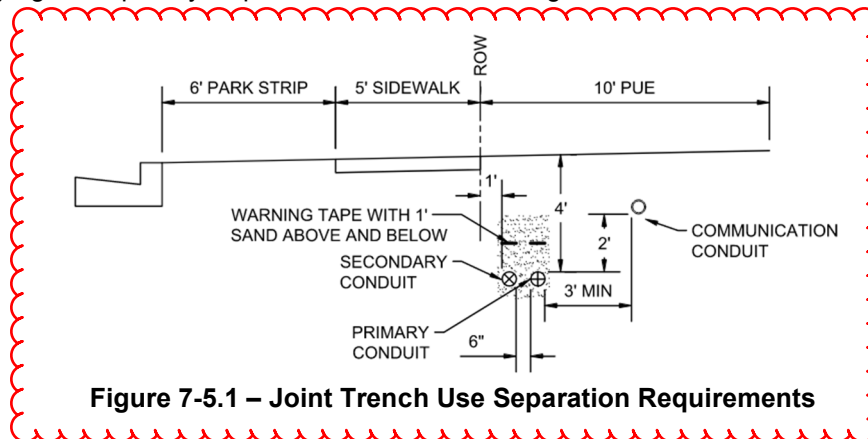
- a. The trench depth shall have a minimum of 4-feet of backfill over the top of the primary and secondary conduits ~~and a minimum depth of 3-feet for secondary~~. Depth at equipment to utilize full 36-inch sweep without cutting or modification to the sweep in any way.
- b. Depth is measured from final grade to the top of conduit.

### 4. BACKFILL

- a. The Customer will be responsible for backfilling trenches. Cables shall not be energized until backfill is complete.
- b. 3-inch red magnetic warning tape will be placed in all primary trenches, on top of 2-feet of sand above the conduit.
- c. If joint trenched with other utilities, place 1-foot of sand over conduit, warning tape on sand, then cover with 1-foot of sand, then install communications conduits.

## 5. JOINT USE

- a. 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 7-5.1.



- b. 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.
- c. Communication conduits must be secured every 15 feet to keep separation during backfilling.
- d. Communication conduits must NOT be in gray electrical conduit.

## 6. CONDUITS

- a. 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 and GPS obtained before backfilling.
- b. The following procedure for making cemented conduit joints will be used to join PVC to PVC:
  - i. Cut the conduit square and remove all burrs from both the inside and outside with a file or knife.
  - ii. Remove dirt, grease and moisture from the end of the conduit and inside the coupling.
  - iii. Test fit the conduit into the coupling. It should penetrate easily 1/4 to 3/4 of the way.
  - iv. End Bell Couplings required to be placed at the end of conduit.
  - v. 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.
  - vi. 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.
  - vii. 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.
  - viii. Allow 15 minutes setting time for good handling strength. The joint will be completely set within 24 hours.
- c. Conduit must be approved by the Utility before installation. All 90-degree bends must be 36-inch fiberglass sweeps except when attaching to a building foundation. Rigid metallic 36-inch 90-degree sweep and rigid metallic conduit must be used above ground. Consult with Utility to determine which conduits need to have pull line installed. All conduits must contain a suitable non-conductive pull line



(2500# Mule tape). All conduits shall be terminated at the open end with end bell bushings and blank expandable plug (REF# CALM-2250 Poly Plug). Conduit sizes must be approved by the Utility.

- d. When the conduit terminates at the Utility pole, consult the Utility for exact conduit location.
- e. For a utility service lateral, the top of the conduit is to be 36-inches (min) below finished grade.
- f. Stub outs must be put at all transformers and splice box locations for future hookups. Stub outs must be at least 3-feet from transformers and splice boxes and have a PVC plug and cap on both ends. Duct tape is not permitted.
- g. All metal conduits below ground level must be protected by a corrosion inhibiting wrap.

## 7. CLEARANCES FROM SWIMMING POOLS

- a. Follow all National Electrical Safety Code (NESC) recommendations for clearances from swimming pools.

## 8. RESIDENTIAL SUBDIVISIONS

- a. Underground services are provided under terms and conditions detailed in Title 4 of the Payson City Municipal Code.
- b. 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 Utility Director.
- c. 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 the Utility. An as-built map of the power network must be submitted to the Utility after installation. All changes must be approved before work begins.
- d. A set of plans stamped "~~Approved for Construction~~ CONSTRUCTION PLANS" from Payson City must be used and available on site at all times.
- e. As per the Title 12 Subdivision Regulations of the Payson City Municipal Code, 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.
- f. Material and labor charges are to be paid prior to ordering of high voltage wire, connectors, and transformers. All secondary wire systems will need to be bonded prior to installation.
- g. 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 because of a grade change or transformer realignment shall be borne by the subdivider/developer.
- h. Individual residences within the subdivision will be responsible to trench, backfill, and install 600 Volt URD triplex cable in an electrical grade schedule 40 PVC Duct from the secondary splice box or transformer to the meter main disconnect. Rigid 36-inch 90-degree sweep must be used at meter base.
- i. All street lighting in Subdivisions and Mobile Home parks shall be installed by the subdivider according to City specifications. After final inspection of lighting system, Payson City will assume ownership and will maintain said system.
- j. Lights must have 6-gauge copper THHN red, black, and green between junction boxes and transformers and 10-gauge copper installed in the poles. No colored tape is allowed.

## 9. NON-RESIDENTIAL

- a. For underground service to commercial or industrial buildings or projects, the Customer or Developer is responsible for all trenching, backfilling, conduit, wire terminators, pulling and terminating secondary wire, ~~meters~~ and transformer pads or vaults within the project.
- b. Where a pad mounted 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 barrier posts approved by the Utility to protect this equipment.
- c. 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 36-inch rigid or fiberglass sweep and 10-feet of rigid, IMC or fiberglass at the base of the pole.
- d. All conduits shall be capped at both ends with blank expandable plugs at the time of installation to keep free of dirt and debris. Duct tape is not permitted.

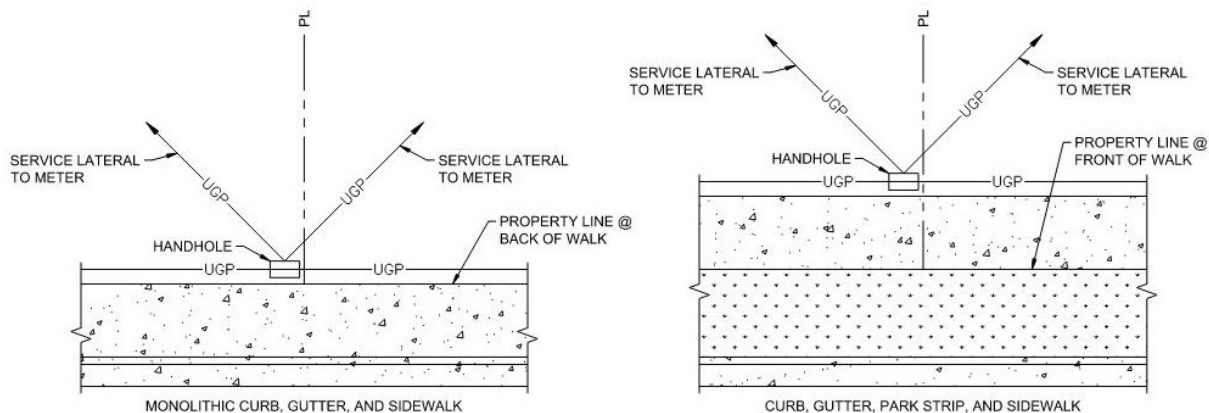
## 10. SERVICE AT PRIMARY VOLTAGE

- a. 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:
  - i. The distribution system's nominal voltage is used;
  - ii. 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
  - iii. Such service Can be supplied in a safe and reliable manner.
- b. 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.

## SECTION 8: INSTALLATION

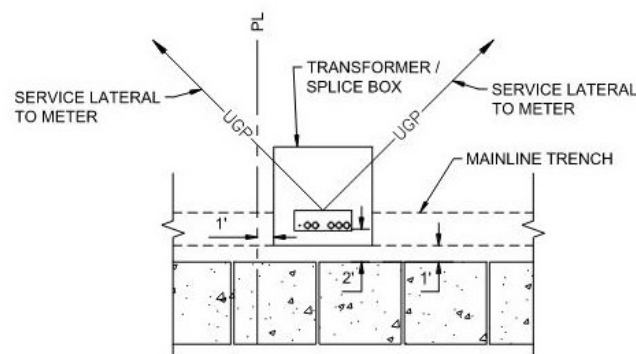
### 1. TRENCH

- a. Preferred location of trench is 1-foot behind the back of sidewalk. Other locations between back of curb or street and property line may be approved. 2-inch secondary stubs (90-degree 36-inch sweeps only) are angled to service both lots from handholes. Locate splice boxes and transformers on one side of the property line.



### 2. TRANSFORMERS AND SPLICE BOXES

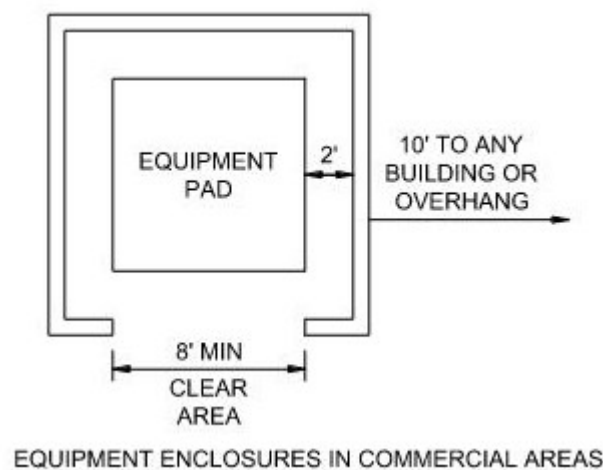
- a. Transformers and splice boxes are to be set 1-foot off side property line and 1-foot behind sidewalk. 2-inch secondary stubs are angled to service both lots.



### 3. CLEARANCES

- a. Clearances are required for residential equipment near customer fencing or obstructions adjacent to project equipment installations.
- b. No building addition, building overhang or structure shall be built closer than 10-feet horizontally from the edge of any equipment pad unless approved in writing by the Utility.
- c. There shall be no roof or covering over any pad-mounted equipment.
- d. 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.
- e. 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 the edge of 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.
  - f. 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 (min) opening, a minimum of 6-feet from the equipment pad.
  - g. When equipment enclosures are constructed in commercial areas, the exit route shall be directly away from the opening side of the pad-mounted equipment.

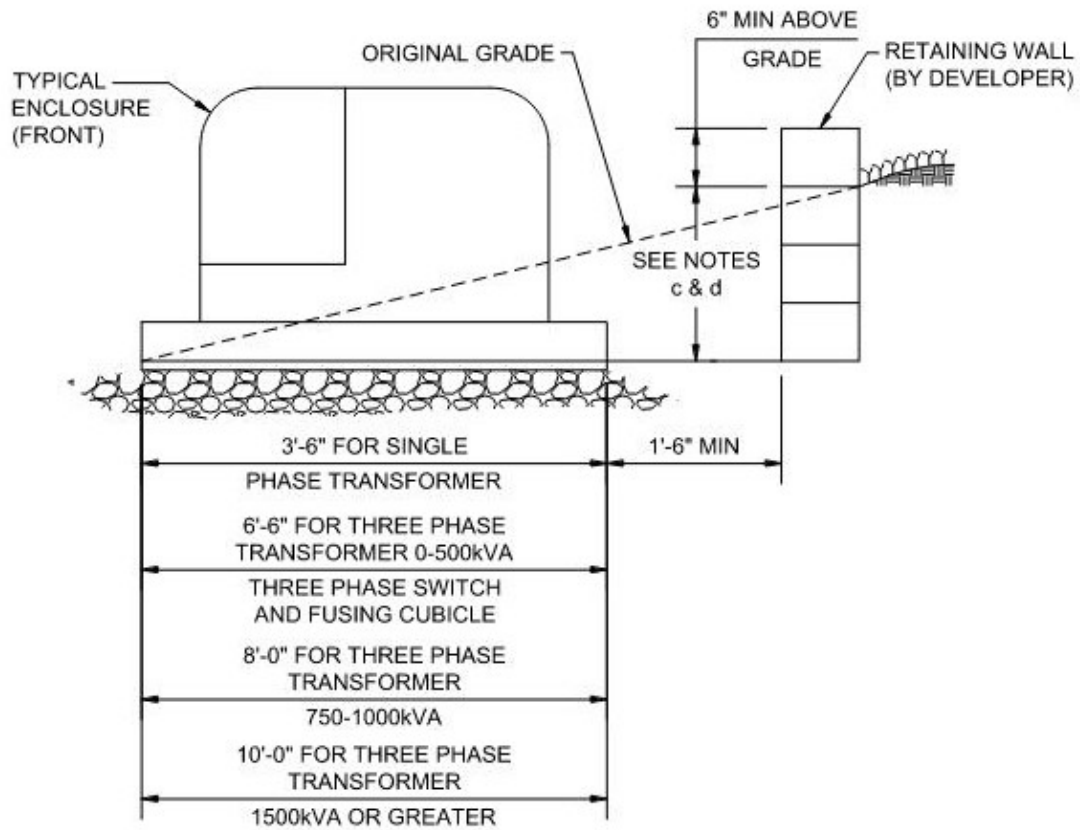


#### 4. FINAL

- a. Connect ground rod to transformer ground lugs with a minimum of #6 copper wire.
- b. Top of ground rod to be 4- to 6-inches above final grade inside box, except at switches where top of ground rod to be 1-foot above final grade.
- c. Install non-metal plugs and caps on all conduit stub ups. Duct tape is not permitted.
- d. 2500# Mule tape must be installed in all conduits and capped.
- e. Stub outs do not need string installed.
- f. End bell bushings installed at end of conduit.

#### 5. GRADING

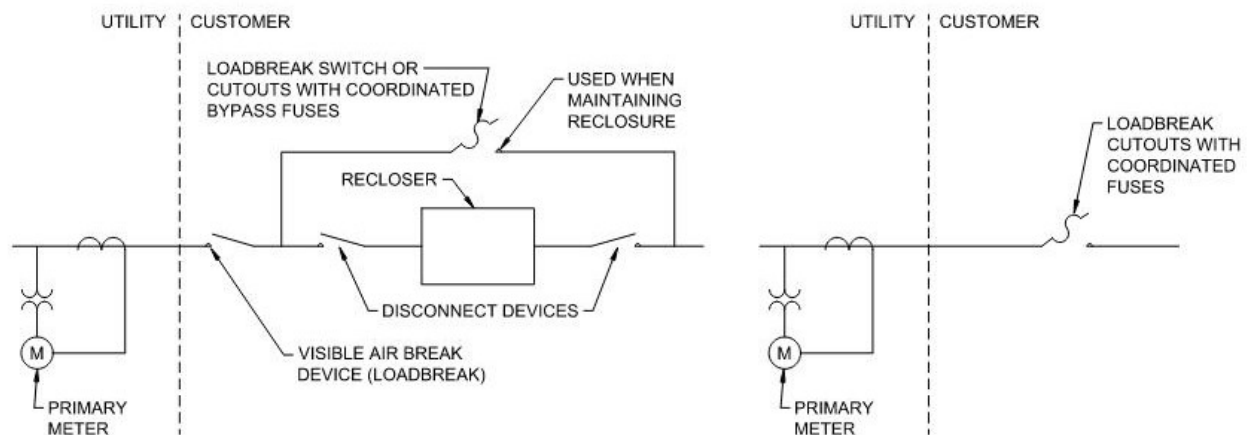
- a. When it becomes necessary to notch out or fill a slope to install an enclosure, the cleared area should be of sufficient size to accommodate the enclosure and shoring. Slope in front of enclosure shall not be greater than 20-inches in 8-feet (5H:1V). See figure on next page.
- b. Filled with 1-inch minus rock to the bottom of the trench.
- c. A wall is required if this dimension is greater than or equal to 12-inches.
- d. Side walls also required if this dimension is over 18-inches. Side wall to be 6-inches above existing grade and 18-inches from side of transformer pad.
- e. All grading is to be done by Developer.
- f. If assistance is required, contact the Utility.



## SECTION 9: EQUIPMENT

### 1. CUSTOMER EQUIPMENT

- a. 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.
- b. The Customer will provide a disconnecting means, such as Option 1 or Option 2 as shown below, at the point of delivery, to disconnect the Customer's system from the Utility's system. Utility must approve disconnecting means prior to installation.
- c. 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 Utility's approval.
- d. All commercial buildings with CTs are required to have a disconnect breaker before the CT and a disconnect on the outside of the building.



### 2. UTILITY EQUIPMENT

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

### 3. PAINTING OF UTILITY EQUIPMENT

- a. At the Customer's 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 Utility prior to painting utility equipment by calling 801-465-5270.
- b. All identifying lettering, numbering, warning signs, handles, locks, and pads will not be painted over.
- c. The utility retains the right to charge customers full cost of restoring its equipment to acceptable condition (repainting to original utility color) if:
  - i. The Customer fails to comply with these requirements.

- ii. The painting done by the Customer on Utility equipment is not maintained by the Customer.
  - d. 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.
  - e. If for any reason, the Utility must 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 by following the previously outlined procedures.
  - f. 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. PAD MOUNTED TRANSFORMER SPECIFICATIONS
- a. Pad mounted transformers will be billed and supplied by the Utility.
5. STREET LIGHT SPECIFICATIONS
- a. Street light poles, heads, and bases will be billed and supplied by the Utility.
6. SPLICE BOX AND CONNECTOR SPECIFICATION
- a. Connectors will meet or exceed ANSI C119.4-1991 and C119.1-1986. Must except wire size #12 AWG to 350 MCM.
  - b. Secondary underground junction connectors must all be insulated and waterproof and equipped with the number of positions suitable for location of connectors. Connectors will have pre-applied oxide inhibitor, with silicone grease on all rubber joints. EXAMPLE: CONNECTOR MANUFACTURE CO. ~~Cat. # SSBC 350-6L~~RAYCHEM GEL-PORT – Black #14-350MCM 6 Position or equivalent.
  - c. Splice box shall be a minimum of ~~3230~~- x ~~2017~~- x 15-inch with 9/16-inch latching bolt down lid. EXAMPLE: CARSON INDUSTRIES MODEL ~~1324CP-12L~~1730.
7. SECTIONALIZING ENCLOSURE SPECIFICATIONS
- a. Sectionalizing enclosures will be billed and supplied by the Utility.

**SECTION 10: CONCRETE PAD SPECIFICATIONS AND INSTALLATION****1. THREE-PHASE TRANSFORMER 0 kVA TO 150 kVA**

- a. Refer to Payson City Standard Plan P-6, Sheet 1.
- b. Pad may be precast or cast-in-place.
- c. The subgrade and trench backfill shall be 1-inch minus crushed rock. The subgrade shall be inspected by Utility inspector before the concrete pad is poured. Concrete may be required over the 90-degree sweeps.
- d. Top of pad shall be 6-inches (min) above surrounding grade and at sufficient elevation to prevent flooding.
- e. Pad shall be located to be readily accessible and oriented to provide 8-feet (min) clear working space at front of unit. Maintain 18-inches (min) clearance at sides and back of pad.
- f. When pad is cast-in-place, stub up conduit 4-inches 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.
- g. Install 5/8-inch x 8-foot 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.
- h. For precast pad:
  - i. Concrete shall be mag class AA (4000-psi @ 28 days).
  - ii. Aggregate per ASTM C33, grading no. 57.
  - iii. Slump range 3" (min) to 5" (max).
  - iv. Water to Cement ratio = 0.5 (max).
- i. For cast-in-place pad:
  - i. Concrete shall be mag class B (4000-psi @ 28 days).
  - ii. Aggregate per ASTM C33, grading no. 57.
  - iii. Slump range 3" (min) to 5" (max).
  - iv. Water to Cement ratio = 0.6 (max).
- j. Reinforcing shall be per ASTM A615, GR.60, #4 bars spaced as shown on Standard Plan P-6.
- k. Pad anchors (precast only):
  - i. Dayton Superior P-52 SL 4-Ton x 4-3/4-inch length.
  - ii. Use round recess when casting pad.
  - iii. Top of anchor shall be 9/16-inch below pad surface.
- l. Surface shall be flat to within 1/16-inch across top surface. Top edge to be 45-degree chamfer.
- m. Primary and Secondary openings to depend on individual transformer opening size.

**2. THREE-PHASE TRANSFORMER 225 kVA TO 750 kVA**

- a. Refer to Payson City Standard Plan P-6, Sheet 2.
- b. Pad may be precast or cast-in-place.
- c. The subgrade and trench backfill shall be 1-inch minus crushed rock. The subgrade shall be inspected by Utility inspector before the concrete pad is poured. Concrete may be required over the 90-degree sweeps.
- d. Top of pad shall be 6-inches (min) above surrounding grade and at sufficient elevation to prevent



- flooding.
- e. Pad shall be located to be readily accessible and oriented to provide 8-feet (min) clear working space at front of unit. Maintain 18-inches (min) clearance at sides and back of pad.
  - f. When pad is cast-in-place, stub up conduit 4-inches 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.
  - g. Install 5/8-inch x 8-feet 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.
  - h. For precast pad:
    - i. Concrete shall be mag class AA (4000-psi @ 28 days).
    - ii. Aggregate per ASTM C33, grading no. 57.
    - iii. Slump range 3" (min) to 5" (max).
    - iv. Water to Cement ratio = 0.5 (max).
  - i. For cast-in-place pad:
    - i. Concrete shall be mag class B (4000-psi @ 28 days).
    - ii. Aggregate per ASTM C33, grading no. 57.
    - iii. Slump range 3" (min) to 5" (max).
    - iv. Water to Cement ratio = 0.6 (max).
  - j. Reinforcing shall be per ASTM A615, GR.60, #4 bars spaced as shown on Standard Plan P-6.
  - k. Pad anchors (precast only):
    - i. Dayton Superior P-52 SL 4-Ton x 4-3/4-inch length.
    - ii. Use round recess when casting pad.
    - iii. Top of anchor shall be 9/16-inch below pad surface.
  - l. Surface shall be flat to within 1/16-inch across top surface. Top edge to be 45-degree chamfer.
  - m. Primary and Secondary openings to depend on individual transformer opening size.
3. THREE-PHASE TRANSFORMER 750 kVA TO 1000 kVA
- a. Refer to Payson City Standard Plan P-6, Sheet 3.
  - b. Pad may be precast or cast-in-place.
  - c. The subgrade and trench backfill shall be 1-inch minus crushed rock. The subgrade shall be inspected by Utility inspector before the concrete pad is poured. Concrete may be required over the 90-degree sweeps.
  - d. Top of pad shall be 6-inches (min) above surrounding grade and at sufficient elevation to prevent flooding.
  - e. Pad shall be located to be readily accessible and oriented to provide 8-feet (min) clear working space at front of unit. Maintain 18-inches (min) clearance at sides and back of pad.
  - f. When pad is cast-in-place, stub up conduit 4-inches 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.
  - g. Install 5/8-inch x 8-feet 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.

- h. For precast pad:
    - i. Concrete shall be mag class AA (4000-psi @ 28 days).
    - ii. Aggregate per ASTM C33, grading no. 57.
    - iii. Slump range 3" (min) to 5" (max).
    - iv. Water to Cement ratio = 0.5 (max).
  - i. For cast-in-place pad:
    - i. Concrete shall be mag class B (4000-psi @ 28 days).
    - ii. Aggregate per ASTM C33, grading no. 57.
    - iii. Slump range 3" (min) to 5" (max).
    - iv. Water to Cement ratio = 0.6 (max).
  - j. Reinforcing shall be per ASTM A615, GR.60, #4 bars spaced as shown on Standard Plan P-6.
  - k. Pad anchors (precast only):
    - i. Dayton Superior P-52 SL 4-Ton x 4-3/4-inch length.
    - ii. Use round recess when casting pad.
    - iii. Top of anchor shall be 9/16-inch below pad surface.
  - l. Surface shall be flat to within 1/16-inch across top surface. Top edge to be 45-degree chamfer.
  - m. Primary and Secondary openings to depend on individual transformer opening size.
4. THREE-PHASE TRANSFORMER 1500 kVA TO 2500 kVA
- a. Refer to Payson City Standard Plan P-6, Sheet 4.
  - b. Pad to be cast-in-place.
  - c. The subgrade and trench backfill shall be 1-inch minus crushed rock. The subgrade shall be inspected by Utility inspector before the concrete pad is poured. Concrete may be required over the 90-degree sweeps.
  - d. Top of pad shall be 6-inches (min) above surrounding grade and at sufficient elevation to prevent flooding.
  - e. Pad shall be located to be readily accessible and oriented to provide 8-feet (min) clear working space at front of unit. Maintain 18-inches (min) clearance at sides and back of pad.
  - f. Stub up conduit 4-inches 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.
  - g. Install two (2) 5/8-inch x 8-feet 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.
  - h. Cast-in-place pad:
    - i. Concrete shall be mag class B (4000-psi @ 28 days).
    - ii. Aggregate per ASTM C33, grading no. 57.
    - iii. Slump range 3" (min) to 5" (max).
    - iv. Water to Cement ratio = 0.6 (max).
  - i. Reinforcing shall be per ASTM A615, GR.60, #4 bars spaced as shown on Standard Plan P-6.
  - j. Surface shall be flat to within 1/16-inch across top surface. Top edge to be 45-degree chamfer.
  - k. Primary and Secondary openings to depend on individual transformer opening size.

## **SECTION 11: PAYSON CITY STANDARD DETAILS**

See attached