

SESD Residential Service Construction Standards



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South Utah Valley Electric Service District
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SESD RESIDENTIAL SERVICE CONNECTIONS

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1.00 General Information

The following guidelines & requirements is intended to aid homeowners, contractors in electrical installations to residential single-family & multi-family building lots & homes. These requirements may not apply to Subdivision or Commercial/Industrial applications or installations. See the full SESD Construction Standards booklet for additional information.

All contractors, developers and customers shall conform to the guidelines within this manual. Any requests for variances shall be directed to an official SESD employee.

These requirements are issued with the intent of complying with all applicable codes, ordinances, and tariffs. However, in the case of conflict SESD reserves the right to require the more stringent appropriate tariff, code or ordinance.

The Customer shall comply with including, but not limited to, the latest edition of the NEC and NESC electrical codes; federal, state, and local laws and regulations concerning activities in the vicinity of SESD'S electrical lines and equipment. The Customer shall comply with all laws and regulations to protect themselves, their Family, their employees, SESD and its employees and contractors and all third parties from injury, loss, or damage.

South Utah Valley Electric Service District hereafter known as SESD or District shall determine locations of meters and associated service equipment on a customer's premises.

Care and consideration should be given by the customer in choosing a location of an electrical service. The service will serve your house for a long time and you should try to think of future needs for your particular circumstances.

SESD requires access to the meter and service for meter reading and maintenance. The meter and service should also be readily accessible to the customer in case of fire, natural disasters, electrical repair and maintenance, or other electrical issues or hazards that may arise. Proper planning is important when choosing the electrical meter & service location.

The electric meter & service shall be kept accessible and unobstructed. Carports, garages, additions, fences, etc shall not enclose the service... The service shall be kept 3 feet from doors, windows, window wells, gas meters.

The location of the service shall be on the side of the house closest to the power source and shall be within 10 feet of the front wall of the house. Contact SESD if you are unsure of the location of the power source.

The service conduit shall be anchored to the concrete foundation of the house by 2 unistrut assemblies. Each unistrut assembly includes; unistrut (typically cut 36" in length), unistrut conduit clamps, 3/8"x3" concrete anchors & bolts. If the unistrut is cut at least 36 inches in length you will be able to attach the other communications conduits (such as SMC, Century Link, Comcast) to it. Or you can choose to use separate unistrut for the power & communications conduits.

Contact SESD if you are unsure if your service location meets these requirements. Please refer to the SESD Standards drawings for more information.

In general, all new services shall be installed underground. Existing Overhead services that are being upgraded or relocated may be required to be rerouted underground. Contact SESD with questions.

Services 100 amps to 200 amps shall be installed in a minimum trade size of **3" conduit**. The length of the service shall not be greater than 150 feet from the power source unless otherwise approved in writing by SESD. The service lateral conduit(s) shall have no more than 360 degrees of total bend in the run. All approved bends shall be factory made long sweep elbows.

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For services greater than 150 feet in distance from the power source contact SESD.

For services larger than 200 amps contact SESD.

2.00 Service Lateral Conductor & conduit sizes; Conduit depths

*Refer to following table & the current version of the NEC for correct service lateral conductor sizes.

Table 2.01 Residential Service Lateral Sizes

| Service Size | Service Conductor Size | Conduit Size | Conduit Depth (ft) |
|---------------|------------------------|--------------|--------------------|
| 100 amp | #2 alum. | 3" | 3' |
| 125 amp | 1/0 alum. | 3" | 3' |
| 150 amp | 2/0 alum. | 3" | 3' |
| 200 amp | 4/0 alum. | 3" | 3' |
| 201- 400 amps | Contact SESD | | |

3.00 Requirements for Residential New Construction

1. In new construction installations you should first determine the future/proposed location of the electrical meterbase or service on the building/house foundation. You should take into consideration the future locations of windows, doors, gas meters, stairs, window wells and other possible conflicts with the electrical service. If you are unsure if the location you select meets SESD's Standards please contact SESD.
 - a. The electrical service should be placed on the side of the building no more than 10 feet from the front corner (street side) of the house. The service should be located on the side of the building closest to the power source.
 - b. The service shall not be obstructed from view from the road by fences or bushes.
 - c. The service shall be kept a minimum of 3 feet from doors, windows, window wells, gas meters and any other items or obstructions that will limit the access to the electrical service.
 - d. Height to the center of the meter socket shall not be less than 4'6" and more than 6' from finished grade.
 - e. The electrical meterbase shall not be recessed into the brick or stucco exterior of a building or home. Meterbases shall only be surface mounted on the exterior of the building.
 - f. All main disconnects and meters shall be located outside on the exterior of the building. Indoor or

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enclosed disconnects and meters are strictly prohibited. The service disconnect and meter shall be readily accessible to SESD and Emergency Personnel. If in the opinion of SESD the service disconnect and meter installation is in-accessible for maintenance and meter reading, then the Customer shall move the meter cabinet at the Customer's expense to an accessible location approved by SESD.

- g. If you have any questions on the locations or clearances of the electrical service please contact SESD for assistance.
 - h. SESD reserves the right to reject any service location and shall retain the right to approve all service locations before electrical service will be installed to the service location.
 - i. SESD reserves the right to disconnect electrical service to any customer if in the opinion of SESD, the service & associated appurtenances are electrically or mechanically unsafe.
2. The next step is to locate the power source. The power source will be a transformer, junction box or, in some cases, it may be a pole that will be in one of the corners of the lot or in a corner of an adjacent property. You should always install your electrical service on the same side as the electrical power source. If you cannot install your service on the same side as the power source or you have questions about the location of the power source, contact SESD for assistance.
 3. Once you have determined the location of your electrical service on the building or house & you have determined the power source location & you have called Bluestakes One Call Center, you can begin to dig your trench from the building to the power source. **① Read #4 before digging into or around electrical boxes!**
 - a. The trench shall be a minimum of 40" in depth measured from finished grade.
 - b. The trench shall be excavated in as straight of a line from the building/house service location to the power source as possible.
 - c. The trench shall be free from large rocks and debris.
 - d. The trench shall be backfilled with-in 48 hours after passing inspection.
 - e. Sand may be required below, above and on the conduit if soils or backfill materials are rocky.
 4. **Transformers contain ⚡ 7,200 volts! The risk of electrical shock & death are possible if you dig into energized electrical transformers, boxes or cabinets! Please contact SESD for assistance digging the trench around electrical boxes. Always call Bluestakes One Call Location Center at least two working days prior to digging any trench! It's the law and it could save your life!** You may excavate the trench to within 4 feet of transformers but you need to call SESD for assistance before digging any closer.
 5. Service Lateral Installation
 - a. Once the trench has been excavated, the electrical contractor should then install the electrical meterbase/service on the foundation of the building/home.
 - b. The electrical contractor (EC) is required to install the meterbase, 3" rigid metal riser conduit, a 3" x 36" long sweep rigid metal elbow, (2) pieces of unistrut with clamps mounted on the foundation, and all other

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associated appurtenances.

- c. EC is required to install a 2" long sweep pvc elbow & 2" schedule 40 pvc riser conduit on the house foundation for the SESD Metering Conduit System (SMC).
- d. EC to install schedule 40 pvc electrical service lateral conduit from the house meterbase location to the power service lateral stubs at the power transformer or junction box at the street. (See #7)
- e. For services larger than 200 amps contact SESD for special requirements.
- f. Refer to the rules in #1 for locations, clearances, for electrical services.
- g. Contact the County or respective City with jurisdiction to inspect the meterbase, bonding, ufer ground.

6. Customer Options

- a. Once the trench is excavated & the electrical meterbase service is installed on the foundation, the customer has the option to finish the electrical conduit installation or to pay SESD to install the conduit and pull the wire.
- b. If the customer chooses to install the conduit, they must pay SESD for any associated inspection fees to inspect the customer installed conduit.
- c. If the customer chooses to have SESD install the conduits, then the customer must pay SESD all associated costs for SESD installation.

7. Conduit Stubs

- a. In some cases, conduits stubs may already be extended out from the junction box or transformer with the subdivision improvements. This is true in subdivisions or areas that have been recorded later than 2010. Subdivisions or areas recorded or developed prior to 2010 usually do not have conduits stubs extending from the electrical boxes. If you have questions if your subdivision or lot may have the conduit stubs please contact SESD.
- b. If your subdivision has conduits stubbed out from the electrical & SMC boxes, you will need to excavate & locate the conduit stubs. The conduits should be stubbed out approximately 12' to 15' from the electrical box at an approximate 45-degree angle. The conduit stubs should be 36" in depth and the conduit ends are typically marked. There should be a 2 1/2" or 3" conduit stub for the electrical, a 2" conduit stub for the SESD Metering Conduit System (SMC).
- c. Once the conduit stubs are excavated you can attach to the conduits and finish installing them to the house or building.

8. Conduit Installation

- a. Electrical Service Conduits shall be installed so they are 36" in depth measured from the top of the conduit to finished grade. This means the trench should be excavated to a greater depth (typically 40" to 42"). The conduit shall be electrical grade schedule 40 PVC.
- b. The electrical service lateral shall have a long sweep (36") rigid metal elbow & rigid metal riser conduit

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installed at the house/building service point. All rigid metal conduits below grade shall be taped with a 10 mil. corrosion tape that is listed for the purpose applied to the conduit.

- c. The electrical service shall have a long sweep (36") PVC elbow installed on the electrical power source side which is a transformer or junction box.
- d. The SMC service lateral shall have a long sweep (36") PVC elbow installed at the street side and the house side.
- e. The electrical service conduit & the communications utility conduits may be installed in a joint trench; however, the electrical conduits shall have a horizontal separation of at least 6" from the communications conduits.

4.00 Requirements for Existing Construction, Remodeling, Building Additions

1. Existing buildings or homes that are upgrading services or installing new services must contact SESD to determine if the existing service may need to be relocated or otherwise upgraded to comply with the current National Electric Code & current SESD Standards.
2. Existing buildings, structures, or homes that may be remodeling or adding additions, or otherwise altering the structure, that may affect the electrical service, must contact SESD to determine if the existing service may need to be relocated or otherwise upgraded to comply with the current National Electric Code & current SESD Standards.
3. Before starting any service upgrade, service replacement, addition or remodel that may affect the electrical service, you should first contact SESD. SESD will send a representative out on site to meet with you and determine if the service would need to be relocated or if there are any other possible requirements that need to be addressed.
4. Here is a list of general requirements for services that includes but is not limited to;
 - a. The service or meter shall not be located under carports.
 - b. The service or meter shall not be enclosed by any means. This includes, but is not limited to; garages, sheds, doors, walls.
 - c. SESD requires access to all services or meters. The service and meter shall have (8) eight feet of clearance in front of service or meter, and 3 feet of clear space around all sides.
 - d. The meter shall be placed at a height of no less than 4'6" to center of meter, and no more than 6' to center of meter, from finished grade.
 - e. The service disconnect shall be placed at a height of no more than 6'7" with the handle in the "up" position, from finished grade.
 - f. The area around a service or meter shall be level and clear for a minimum of 6' in all directions.

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- g. SESD reserves the right to reject any service location and shall retain the right to approve all service locations before electrical service will be installed to the service location.
 - h. SESD reserves the right to disconnect electrical service to any customer if in the opinion of SESD, the service & associated appurtenances are electrically or mechanically unsafe.
5. Grounding & bonding shall meet current National Electric Codes, State, County & SESD Codes & requirements. Older homes & buildings often do not meet the current NEC Codes for grounding or bonding. If you cannot ground to a concrete encased ‘ufer’ or metal water line, or other approved means, you should drive at least (2) 5/8”x8’ copper-clad ground rods for the service. Refer to the current NEC for other requirements.

5.00 SESD Metering Conduit System (SMC) & Other Communication Utilities

1. SESD requires a (2”) service lateral conduit to each home for the possible future use of SCADA, smart metering and net metering systems. The conduit may be used to install cables that would allow the remote reading of meters through the cable system or the use of a net metering system associated with alternative means of customer generated electricity and other future uses such as broadband. The system will also be utilized for SCADA operation, monitoring control of electrical systems. The conduit system is referred to as “SESD Metering System Conduit” or “SMC”.
2. The customer is responsible to provide a 2” Schedule 40 PVC service riser conduit & 2”x 36” PVC elbow on the house service side for the SESD Metering System. The conduit can then be installed to the SMC pedestal (adjacent to power source)
3. Attach to the existing 2” SMC conduit stub if present and run the conduit to the home. Stub the conduit out of the ground using a 2”x36” PVC elbow and 2” schedule 40 PVC gray conduit riser at the house along with the Century Link & Comcast conduits if applicable. Place a PVC cap on the end of the conduit. If there isn’t a conduit stubbed out for the SESD Metering System you may need to dig a trench and run the conduit to the box. If there aren’t any conduits stubbed out for Century Link or Comcast you need to call Century Link and Comcast to come out and run direct burial cable to house if so desired. **Trench shall not be covered until Power & SMC conduits are installed.**
- 4.

6.00 Premise conduit inside the home

There are many things to think about when building a new home or remodeling an existing home. There are a few things that may help plan for future use and ease if installing telecommunications, fiber broadband, phone, catv or other technologies inside your home. The most important thing is to plan ahead with spare or empty conduits inside your home. Electrical outlets should also be planned to power various communications devices such as modems, routers, network hubs.

1. SESD recommends that you install a 1” flexible electrical non-metallic tubing conduit (ENT), often referred to as “smurf tube” for its blue color, from the

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exterior of the home and within 2 feet of the electrical meter, to the mechanical room and adjacent to the electrical panel. This is an area where most of your premise interior wiring such as fiber optics, Cat-5, catv coax, phone lines will be installed. This can be an ideal place to set up your home network routers & equipment.

2. SESD also recommends installing a GFCI outlet adjacent to the electrical panel to power the network.
3. SESD also recommends installing a GFCI outlet on the exterior of the home within 2 feet of the meterbase.

7.00 Inspection Requirements

1. There will be a 48-hour notice required for inspections.
2. Inspection requests shall include owner, and address and inspection type.
3. The address shall be posted on the site.
4. Timed inspections will only be accepted for special circumstances or emergencies.
5. SESD shall inspect electrical conduits and SESD Metering System Conduits prior to being backfilled.
6. SESD will leave a green “passed inspection” sticker on the service conduit if conduit & trench pass inspection. If the conduit & trench fail inspection SESD will leave a correction notice on the meterbase. Once the corrections have been made contact SESD for a re-inspection.
7. If a customer chooses to install his/her own conduit & wire then SESD will require and charge for an inspection. (2) Two Inspections are included in the initial service application if customer is installing his/her own conduit & wire. If you fail your inspections and require more than (2) two inspections, each subsequent inspection shall incur a \$100.00 re-inspection fee. The re-inspection fee will have to be paid before the re-inspections will take place.
8. The County or respective City having jurisdiction will inspect the meterbase at the house. SESD will inspect the service lateral trench, service lateral conduit, service lateral urd wiring & connections up to the meter or line side of the meterbase.
9. The meterbase must be inspected by the County or City having jurisdiction before permanent power will be installed to the house.

8.00 Trees

A. Scope

This standard provides general information about trees. SESD offers suggestions on locations and types of trees appropriate for planting close to power lines.

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B. Trees and Shrubs

- Plant tall growing trees (over 25 feet when mature) at least 35 feet away from overhead power lines.
- Low-growing trees (under 25 feet when mature) may be planted adjacent to overhead power lines, but no closer than 15 feet.
- Trees and shrubs should be planted at least 10 feet away from pad-mounted ground transformers.
- Plant deciduous trees on your home's southeast and southwest exposures to create shade in summer and let the sun warm the house in winter.
- SESD has a list of trees & shrubs that will provide beauty and shade for homes and yard.

C. Customer's Responsibility

Any trees too close to a power line(s), will be trimmed by SESD at the owner's expense. The owner may employ a private tree trimming company if they so choose, however the finished job must be inspected and approved by SESD.

D. Trees and Power Line Safety

Trees are as much a part of the community as its people and buildings. Electricity makes possible many of the modern conveniences that we all take for granted, it is important to remember that it must be used with utmost care and respect. Always use electricity wisely and safely.

Overhead power lines are not insulated; they are bare wires, DO NOT attempt to remove branches or trees that have fallen on lines. Call SESD 465-8020 or after hours 465-8053

Trees are the number one reason for electric service interruption, SESD has an extensive tree-trimming program and will aid in any way to help maintain trees near power lines

E. The Right Tree

Trees that are planted under or near SESD power lines; within SESD Right-of-Way's, easements, will be trimmed at the homeowner's expense and without any notification. SESD will maintain its Right-of-Ways & Easements to assure the most reliable power possible for all the customers.

Trees can play a significant role in controlling energy use if used as part of energy conservation strategy. The cooling requirements in a typical home can be reduced by 20 % through correct tree placement.

Deciduous trees that shed leaves in the autumn can provide shade to cool a home in the summer, while allowing sunlight and its warmth into the interior of the home in the winter.

Well-placed conifers and other evergreen trees and shrubs can deflect or block winter's harshest winds.

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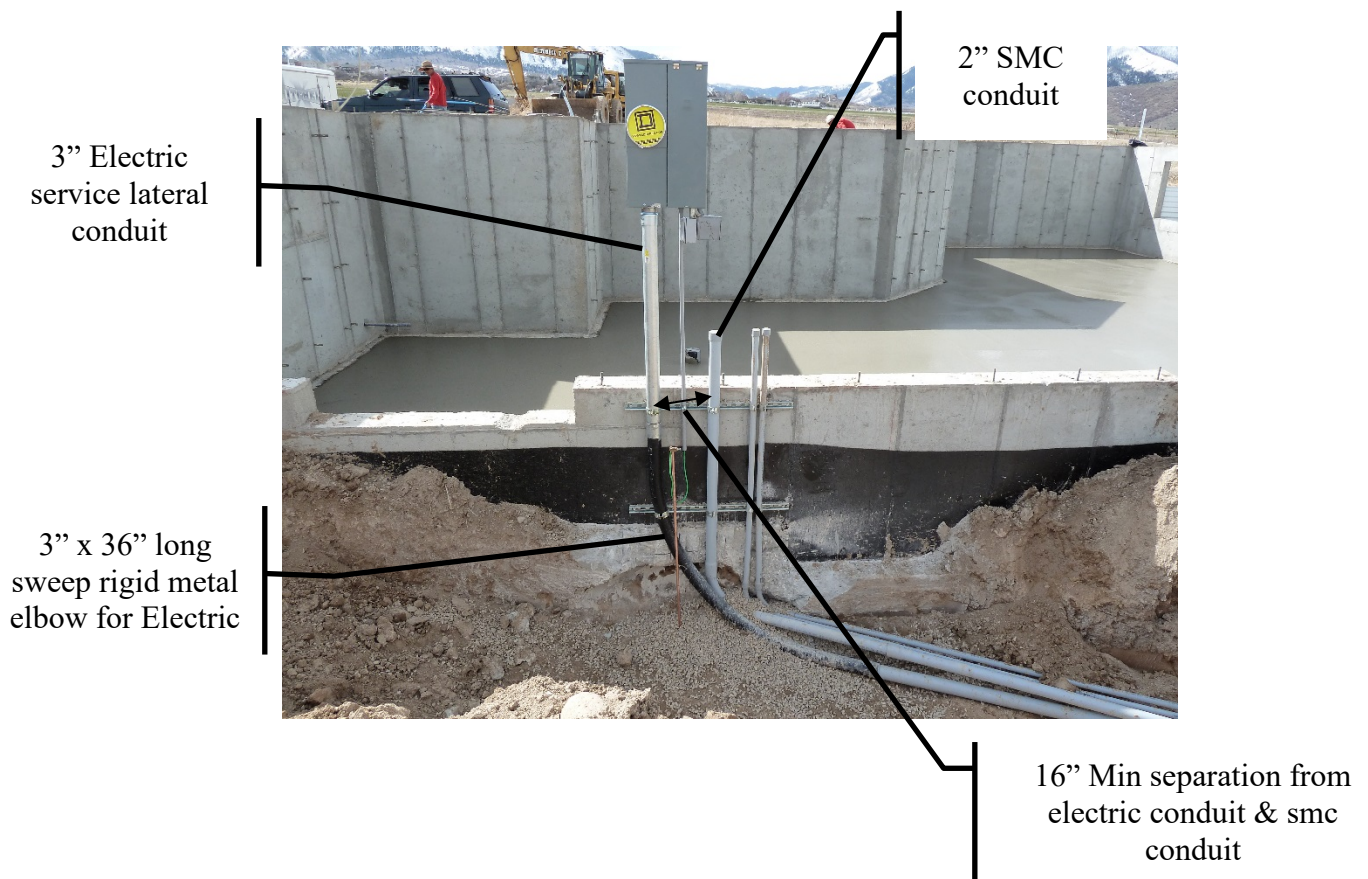
9.00 Residential Construction Standard Drawings

A. Scope

The following Residential Construction Standard drawings & pictures are intended to assist in electrical service installations for residential buildings.

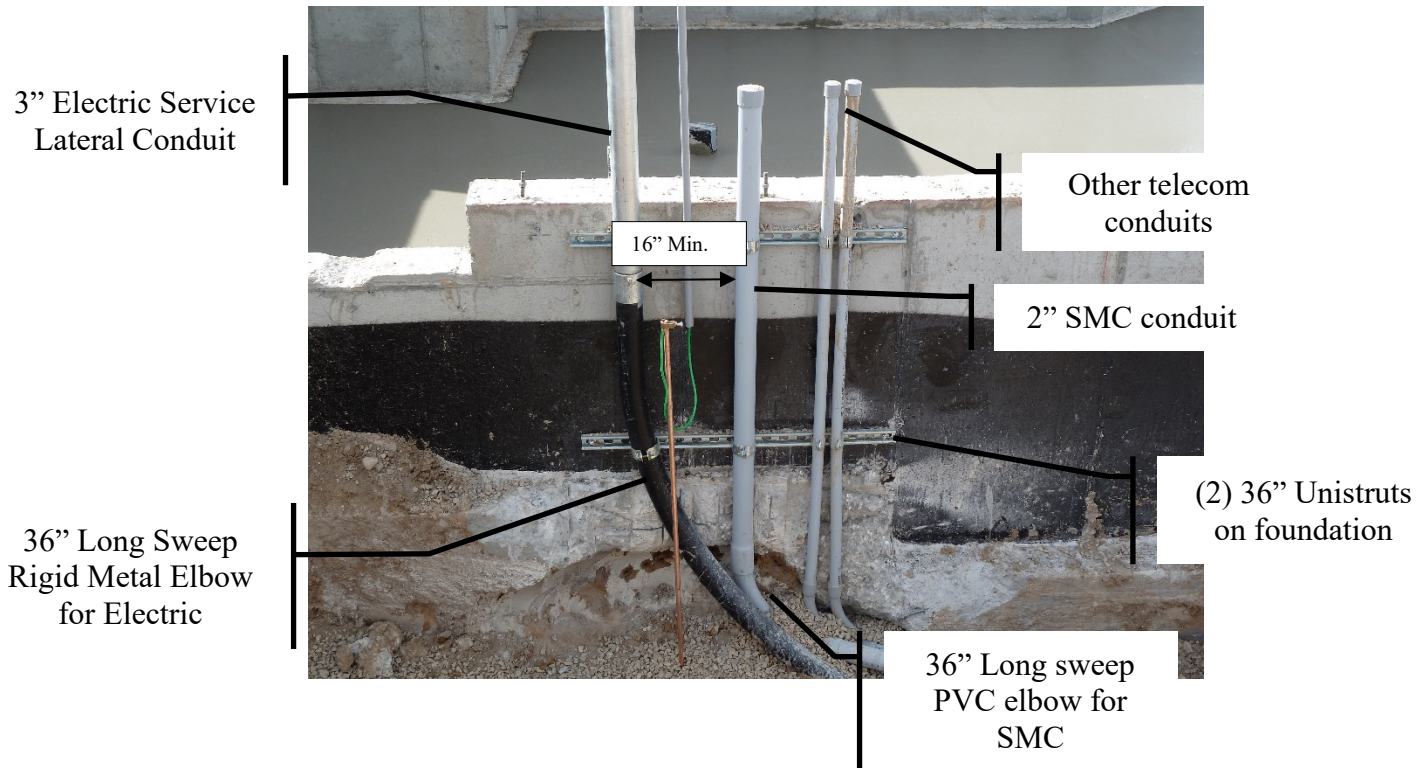
These drawings are intended to cover standard and basic electrical service installations for residential single-family buildings. These drawings may not cover special or unusual installations. Refer to SESD with questions.

Meterbase on foundation

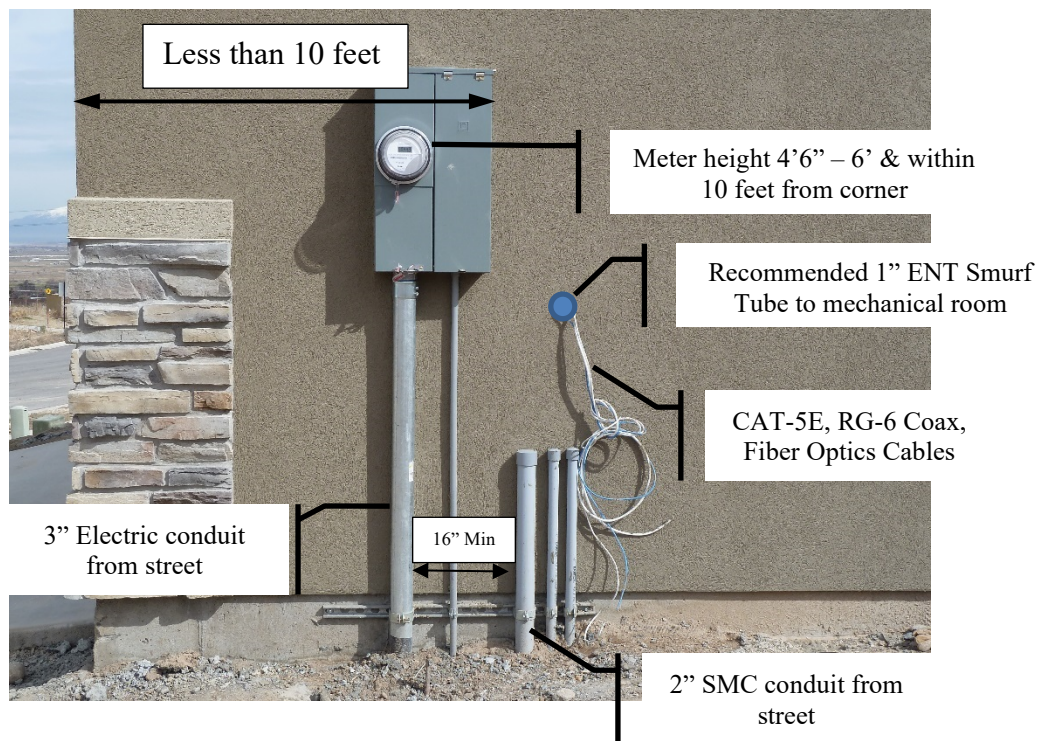


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Conduits on foundation



Finished meterbase on house



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Premise Customer inside house

