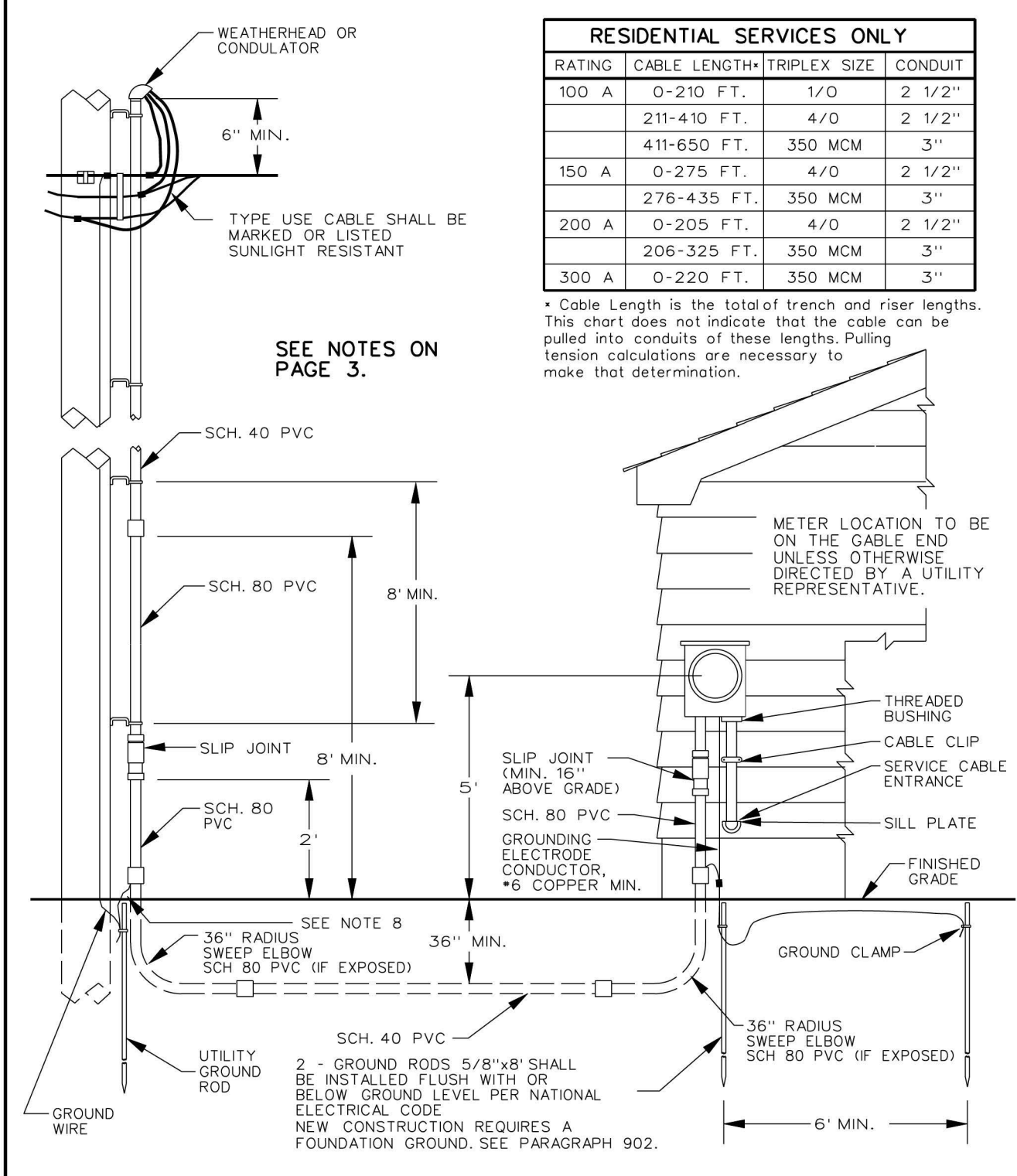


### UNDERGROUND SERVICE



**VERMONT UTILITIES ELECTRIC SERVICE REQUIREMENTS**

DRAWN: LAW DATE: 01-08-09  
 APPRVD: XEY DATE: 01-08-09  
 DRAWING No.: 201 PAGE: 1 of 3  
 DATA BASE No.: DTW01891g

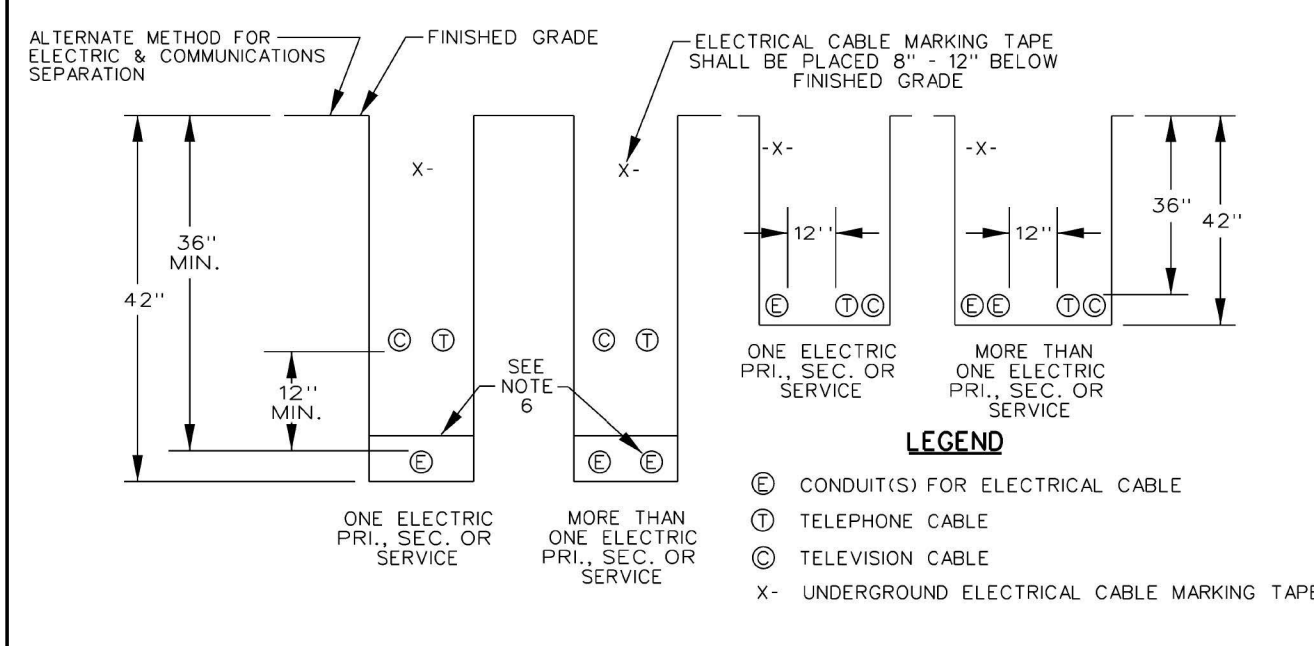
### UNDERGROUND SERVICE

- Notes:**
- All wiring and materials shall conform to the requirements of the National Electric Code (NEC) and to any applicable local codes. Where conflict exists the more stringent code will apply. For customer owned equipment, any requirements in excess of code specified minimums, are recommended not required.
  - This specification covers residential services. Commercial service equipment is under the jurisdiction of the electrical inspector. The cable sizes shown in the chart may not apply to commercial services.
  - The location of the conduit risers and the meter socket will be designated by the utility representative. Any relocation shall be approved by a utility representative.
  - Conduit Condulets may be required for multi-conductor services and for conductors of 350 MCM or larger. Exercise care in limiting water entry.
  - Locate the riser conduit on the quarter of the pole away from normal traffic.
  - Residential 320 amp meter sockets, and all commercial meter sockets, shall have a manual bypass. For Utility-specific details see Paragraph 705E. See Paragraph 707 for requirements and Utility-specific details of how a Service Grounding Connection is to be made. See the Meter Socket Specification (Dwg 601) included in this manual.
  - The grounding electrode conductor, to a driven ground, shall be a minimum of #6 copper. The conductor shall be adequately protected. The driven grounds shown shall be a minimum of 5/8" in diameter and 8' long. See Paragraph 901 through 905 for details of the Service Ground.
  - Any steel conduit within 18" of the surface shall be bonded. Steel conduit is not required.
  - Any construction, at the pole, above ground level, shall be done by the utility company. Exception: The customer may install that portion of their equipment that can be reached while standing on the ground.
  - Any trench near the base of the pole shall be immediately backfilled and properly tamped.
  - Depths shallower than 36" may be allowed where obstructions such as ledge are encountered. Any portion of conduit shallower than 24" shall be covered by a minimum 2" concrete cap. See the utility for additional requirements for conduit buried near underground facilities, under driveways or roadways, or for depths shallower than 12".
  - All gas valves shall be a minimum of 10 ft from electric meter equipment. For clearances less than 10 ft see Dwg. 401 and NFPA 58.
  - The Service Disconnecting Means shall be installed at a readily accessible location, either outside of a building or structure, or inside a building or structure nearest the point of entrance of the service conductors, not to exceed 10 feet conductor length, from the point of entrance.
  - The chart shows the acceptable total cable length for given service amp ratings and conductors. The chart is based on a maximum 3% voltage drop in an aluminum underground service cable for a 120/240 volt service. For other voltages, cables or multiple cables consult your local utility.
  - A marker tape shall be installed, above the conduit, 12 inches below grade. Type USE cable shall be marked or listed sunlight resistant.
  - A side bus bar meter socket is required if 350MCM cable is used.
  - URD Service Risers, from a pole-mounted three-phase transformer bank, shall be limited to an 800 amp rating. Larger services shall be supplied by a padmounted transformer.
  - Customer must provide sufficient cable to reach the transformer or secondary cable and to make connections.

**VERMONT UTILITIES ELECTRIC SERVICE REQUIREMENTS**

App'd: XEY DATE: 02/10  
 201 Page 3  
 20pg3h.doc

### TYPICAL TRENCH CROSS-SECTION U.G. CABLE IN CONDUIT



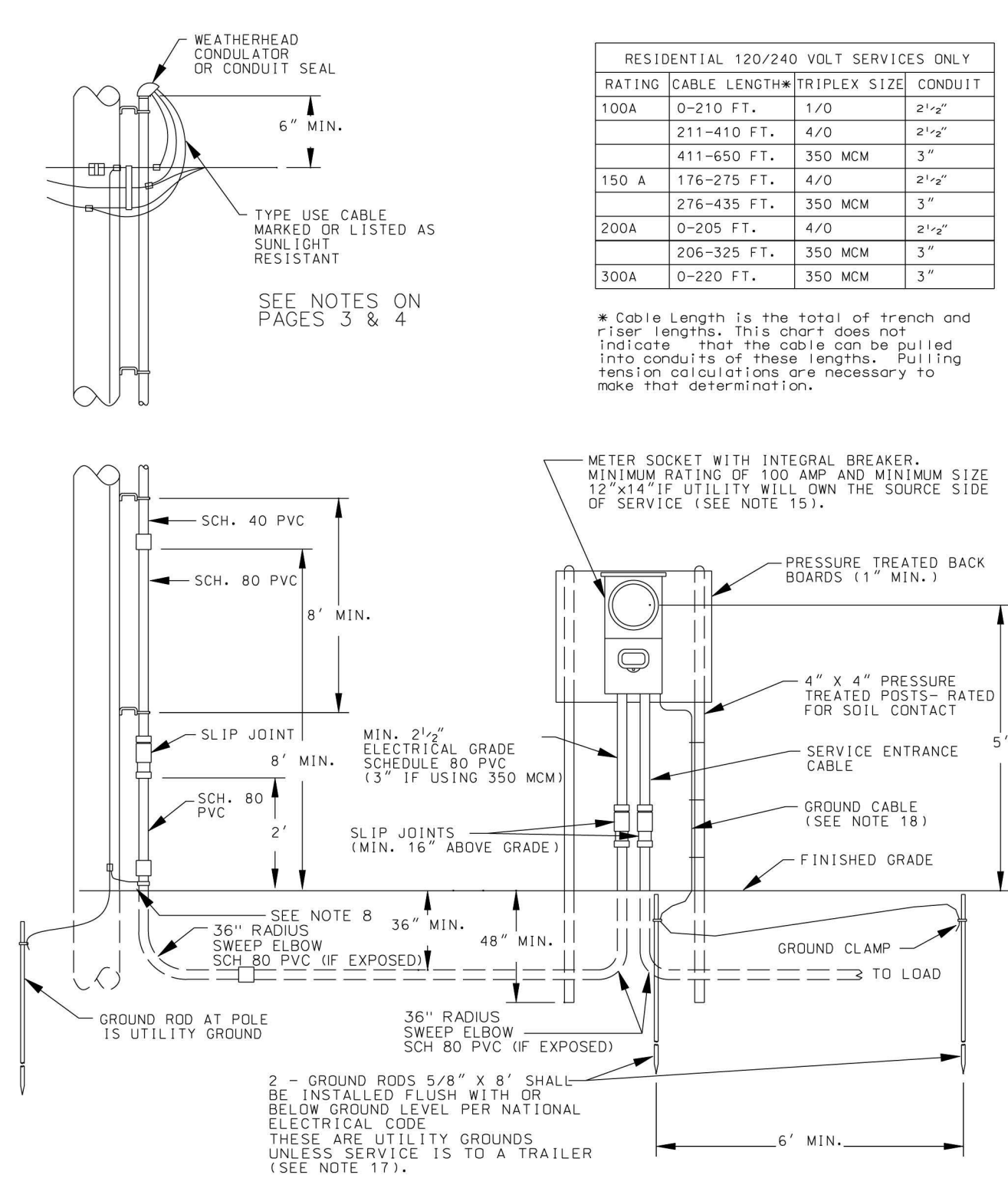
- NOTES:**
- ALL TRENCHES AND ELECTRICAL CONDUIT(S) REQUIRE APPROVAL BY UTILITY INSPECTOR BEFORE BACKFILLING.
  - ALL TRENCHES SHALL BE 18 INCH MINIMUM WIDTH, THE CONDUIT SHALL BE EMBEDDED IN UNFROZEN SAND OR FINE GRAVEL, THAT WILL PASS A 1 INCH MESH. THIS MATERIAL SHALL BE A MINIMUM OF 4 INCHES THICK ON ALL SIDES OF THE CONDUIT. THE REMAINDER OF THE BACKFILL SHALL BE CLEAN, AND, SHALL NOT CONTAIN ROCKS LARGER THAN 8 INCHES IN ANY DIMENSION. CAREFULLY COMPACT THE FULL DEPTH OF BACKFILL UNDER TRAVELLED WAYS AND PARKING LOTS. THE MINIMUM DEPTH UNDER A HIGHWAY SHALL BE 48 INCHES RATHER THAN 36 INCHES. MOUNDING THE TRENCH, TO PROVIDE THE REQUIRED DEPTH, IS NOT ALLOWED.
  - CONDUIT SHALL BE ENCASED IN A 4 INCH ENVELOPE OF CONCRETE UNDER THE FOLLOWING CONDITIONS:
    - BROOK CROSSINGS.
    - CROSSINGS OF WATER, SEWER, AND GAS PIPELINES. CROSSINGS SHALL BE DONE AT NINETY DEGREES IF POSSIBLE. NORMALLY, THE ELECTRICAL CONDUIT SHALL BE A MINIMUM OF 18 INCHES ABOVE THE PIPE. CAREFULLY COMPACT THE FILL BELOW THE ELECTRICAL CONDUIT. CONCRETE ENCASEMENT IS REQUIRED FOR 10 FEET ON EACH SIDE OF THE PIPE.
    - UNDER THE TRAVELLED WAY OF CITY STREETS, AND UNDER TOWN HIGHWAYS, IF REQUIRED BY THE TOWN, A PIPE SLEEVE, SURROUNDING THE CONDUIT, MAY BE SUBSTITUTED.
    - CONDUITS WITHIN 20 FEET OF TANKS CONTAINING FUELS OR SOLVENTS. THESE TANKS MAY BE ABOVE OR BELOW GRADE. THIS REQUIREMENT DOES NOT APPLY TO URD SERVICES.
  - TRENCHES SHOULD BE LOCATED TO FEET FROM ANY STRUCTURE UNLESS THE CONDUIT IS GOING TO THE STRUCTURE. CONTACT THE UTILITY IF CLOSER APPROACHES ARE NECESSARY.
  - TRENCHES SHOULD BE LOCATED TO FEET FROM ANY WATER, SEWER, OR GAS PIPELINE THAT PARALLELS THE CONDUIT. CONTACT THE UTILITY IF CLOSER APPROACHES ARE NECESSARY.
  - COMMUNICATIONS CABLES AND CONDUITS MAY BE LOCATED IN THE SAME TRENCH WITH ELECTRICAL CABLES OR CONDUITS, A MINIMUM OF 12 INCHES SEPARATION OF 12 INCHES IS REQUIRED. ELECTRICAL CONDUITS SHALL BE SEPARATED BY 4 INCHES. THESE DISTANCES ARE MEASURED SURFACE-TO-SURFACE, NOT CENTER-TO-CENTER.
  - DEPTHS SHALLower than 36 INCHES MAY BE ALLOWED WHERE OBSTRUCTIONS SUCH AS LEDGE ARE ENCOUNTERED. ANY PORTION OF THE CONDUIT SHALLower than 24 INCHES SHALL BE COVERED WITH A MINIMUM 2 INCH CONCRETE CAP. SEE THE UTILITY FOR DEPTHS SHALLower than 12 INCHES.
  - CHECK WITH THE LOCAL UTILITY FOR SPECIFIC REQUIREMENTS.

**VERMONT UTILITIES ELECTRIC SERVICE REQUIREMENTS**

DRAWN: LAW DATE: 11-11-12  
 APPRVD: XEY DATE: 11-11-12  
 DRAWING No.: 203 PAGE: 1  
 DATA BASE No.: DTW01893d

Record Drawings  
 Work completed in general conformance with contract plans.

### TYPICAL METER PEDESTAL



**VERMONT UTILITIES ELECTRIC SERVICE REQUIREMENTS**

DRAWN: LAW DATE: 01-08-09  
 APPRVD: XEY DATE: 01-08-09  
 DRAWING No.: 204 PAGE: 1 of 4  
 DATA BASE No.: DTW01894g

### TYPICAL METER PEDESTAL

- Notes:**
- All wiring and materials shall conform to the requirements of the National Electric Code (NEC) and to any applicable local codes. Where conflict exists the more stringent code will apply. For customer owned equipment, any requirements in excess of code specified minimums, are recommended not required.
  - This specification covers residential services. Commercial service equipment is under the jurisdiction of the electrical inspector. The cable sizes shown in the chart may not apply to commercial services.
  - The location of the meter pedestal and conduit risers and the meter socket will be designated by the utility representative. Any relocation shall be approved by a utility representative.
  - Locate the riser conduit on the quarter of the pole away from normal traffic.
  - The pedestal shall be a minimum of 10 feet from the pole or padmount transformer, and 5 feet from the mobile home.
  - All gas valves shall be a minimum of 10 ft from electric meter equipment. For clearances less than 10 ft, see Drawing No. 401 in this manual or refer to NFPA 58.
  - The customer shall supply and install the pedestal, conduit, meter socket/disconnect and grounding. A pull rope having a minimum pull strength of 500 lbs. is required to be installed in the conduit by the customer if the Utility supplies the cable. If the customer supplies the cable, it shall be installed in the conduit, and connected to the meter socket.
  - The trench shall be dug a minimum of 18 inches wide and 36 inches deep to the top of the conduit.
  - Depths shallower than 36" may be allowed where obstructions such as ledge are encountered. Any portion of conduit shallower than 24" shall be covered by a minimum 2" concrete cap. See the Utility for additional requirements for conduit buried near underground facilities, under driveways or roadways, or for depths shallower than 12".
  - A marker tape shall be installed, above the conduit, 12 inches below grade. Type USE cable shall be listed or marked sunlight resistant.
  - Any steel conduit within 18" of the surface shall be bonded. Steel conduit is not required.
  - Any construction, at the pole, above ground level, shall be done by the utility company. Exception: The customer may install that portion of their equipment that can be reached while standing on the ground. Any trench near the base of the pole shall be immediately backfilled and properly tamped.
  - The chart shows the acceptable total cable length for given service amp ratings and conductors. The chart is based on a maximum 3% voltage drop in an aluminum underground service cable for a 120/240 volt service. For other voltages, cables or multiple cables consult your local Utility.
  - Residential 320 amp meter sockets, and all commercial meter sockets, shall have a manual bypass. For Utility-specific details see Paragraph 705E. The meter socket shall have a separate grounding electrode conductor connector. The connector shall be appropriately connected to the service neutral bus. The service neutral, and not the grounding electrode conductor, shall extend from the meter socket to the main disconnect in the building. An exception would occur if a breaker, under the meter socket, is the main disconnect for a mobile home. See the Meter Socket Specification (Dwg. 401) included in this manual.
  - A side bus bar meter socket and 3 inch conduit are required if 350 MCM cable or a double run of cable is used.
  - The Service Disconnecting Means shall be installed at a readily accessible location, either outside of a building or structure, or inside a building or structure nearest the point of entrance of the service conductors, not to exceed 10 feet of conductor length, from the point of entrance.
  - A disconnect is required to be within 30 feet of a mobile home. Four wire services are required from the disconnect to the subpanel (in the mobile home). The breaker in the disconnect shall be sized to protect the feeder to the subpanel. Modular homes, rated by the manufacturer "For Permanent Foundation", may have the meter socket mounted directly on the structure.
  - The grounding electrode conductor, from the main disconnect, to a driven ground, shall be a minimum of #6 copper. The conductor shall be adequately protected. The driven grounds shown shall be a minimum of 5/8" in diameter and 8' long. See Paragraph 901 through 905 for details of the Service Ground.
  - The Utility recommends that the customer install an integral breaker/meter socket. The purpose of the breaker is to allow the customer to maintain their underground service without an expensive linecrew visit. Check with your Utility to determine whether the breaker is required.
  - Where subject to state or local electrical inspection, such inspection must be made prior to energizing.

**VERMONT UTILITIES ELECTRIC SERVICE REQUIREMENTS**

App'd: XEY DATE: 02/10  
 204 Page 3  
 20pg3d.doc

### TYPICAL METER PEDESTAL

- Notes:**
- The drawing pictures two 4x4 pressure treated posts comprising the support for the meter pedestal. The posts are labeled "rated for soil contact". The "rated for soil contact" or "more completely" Ground Contact and Fresh Water Use" is from the wood preservative treatment standard AWPA C2. "Ground Contact" rated posts are acceptable. A lesser level of treatment, "Above Ground", which is not intended to be in contact with soil, are not acceptable. A higher level of treatment "Permanent Wood Foundation", is preferred, because the timbers will have the longest life. There are several types of preservative chemicals referenced in this standard. Generally, this Manual does not specify which types of treatment may be used; however, posts treated with creosote, are strongly discouraged.
  - Currently available copper-based preservatives are very corrosive to steel items embedded in, and in contact with, the treated timber. Use stainless steel fasteners, and place a permanent barrier between the meter socket and the post.
  - Other factors, affecting the durability of a pedestal installation, are the depth of burial, the surface area of the post exposed to the soil, the type of backfill material, and the compression of the backfill material. Increasing the quality of these factors will result in a pedestal that is less likely to be overturned, by forces experienced in the environment.
  - Supports of descriptions, other than two 4x4 pressure treated posts (rated for soil contact) and buried 48" (min.) depth, may be preferred, or allowed, by particular Utilities. The alternative supports, listed below, are examples. The Customer/Contractor may suggest other alternative methods; however, the Utility retains the right to make a determination of acceptability.
    - Larger dimension pressure treated wood (PTW) posts
    - Posts with a greater burial depth
    - Single posts supporting, at most, two sockets, on opposite sides of post
    - Concrete posts
    - Structural fiberglass, plastic, or plastic/wood posts
    - Rigid hot-dipped galvanized steel conduit (RSCC) (minimum 2" dia.) posts. Individual conduit supports shall not be used as both a support and as a wire conduit. The two posts shall be embedded in 8" diameter-48" depth (minimum) concrete footings. The socket's neutral bus (and the socket) shall be connected to grounding electrodes and the posts shall be bonded to the socket, by metal Unistrut socket supports. The two posts shall be capped.
    - Manufactured metal meter pedestals, direct embedded or mounted on concrete slab
    - Socket support of pressure treated boards, or metal Unistrut, between the two posts

Meter Pedestal Variations	Applicability by Utility							
	GM	VE	WE	LE	HE	VJ	NE	
Meter Pedestals for other than Mobile Homes	O	U	O	N	U	U	O	
Two 4"x4" PTW Posts set 48" deep	O	U	P	P	P	O	O	
Two 6"x6" PTW Posts set 48" deep	O	P	O	O	O	P	O	
One 4"x12" PTW Posts set 60" deep (2 sockets max.)	O	U	N	O	N	N	O	
One 8"x8" PTW Posts set 60" deep (2 sockets max.)	O	U	N	O	N	N	O	
Two 2" RSCC Posts set in concrete 48" deep	O	O	N	O	N	O	N	
Alternate Materials (concrete, fiberglass, etc.)	U	N	U	U	U	U	U	
Manufactured Metal Pedestal direct embedded	O	N	N	N	N	N	N	
Manufactured Metal Pedestal on concrete slab	O	N	O	O	O	O	N	
Other Supports Suggested by Customer/Contractor	U	U	N	U	U	U	U	
PTW Board Socket Support (no plywood)	O	P	O	O	O	O	O	
Unistrut Socket Support	O	O	N	O	O	O	O	

U-Utility Option, O-Customer Option, P-Preferred Option, N-Not Available as an Option

**VERMONT UTILITIES ELECTRIC SERVICE REQUIREMENTS**

App'd: XEY DATE: 11/12  
 204 Page 4  
 20pg4c.doc

- NOTES:**
- THE CONTRACTOR SHALL INSTALL FUSED, NEMA 3R, DISCONNECT SWITCH ON LOAD SIDE OF THE ELECTRIC METER.

REV	APPROVED DATE	DESCRIPTION	DATE	APPROVED
	05/20/2013	CONSTRUCTION, WR *12738 (RUT)	992395	01/31/2013

DEPARTMENT OF TRANSPORTATION  
 FEDERAL AVIATION ADMINISTRATION  
 ATO - TECHNICAL OPERATIONS EASTERN SERVICE AREA

VASI  
 RUNWAY 19  
 MISCELLANEOUS DETAILS  
 SHEET 2 OF 2

RUTLAND RUTLAND - SOUTHERN VERMONT REGIONAL AIRPORT VT

DESIGNED: DLW  
 DRAWN: RUT  
 CHECKED: DLW

ISSUED BY: P. KIRBY  
 MGR: ENGINEERING - CENTER C  
 DATE: 05/20/2013  
 DRAWING NO.: 992395  
 REV: RUT-NEZ120016-C003