

## 600 VOLT UNDERGROUND CABLE & CONDUIT SELECTION

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### 2.0 GENERAL

This standard will be utilized to size all underground service cables and conduit for residential, commercial and industrial applications. The standard incorporates both economic and physical constraints in cable and conduit application. The application of this standard will result in the most economical and reliable installation for both NVE and customers. All Services are to be designed to be as short as possible to minimize cable losses, especially with heavily loaded three phase service cables. Electric Utility Service Equipment Requirements Committee (EUSERC) specifications for landing lugs and box dimensions were also considered during the development of this standard.

### 3.0 NOTES

- A. Secondary or service cables shall be 600-volt XLPE AL in #2, 2/0, 4/0, 350, and 750 KCM sizes. The cable is to be installed in a conventional duct system or cable trench. The cable should be selected and installed to meet the expected electrical demand.  
Large single phase residential and three phase commercial services often require parallel runs of cable. Tables 1 through 4 are to be utilized to determine cable ampacity when multiple sets of cable are utilized to minimize cable losses.  
For services requiring 750 TPLX or 750 QUAD, the maximum service length will be limited to **100** feet from transformer to panel.  
Access to the panel is required for cable pulling. Access is defined as 9 feet from curb to center of transformer pad or box, 10 feet from curb to exterior panel or for interior panels (not recommended) 10 feet to electrical room access entry.
- B. The peak load of large services must be checked against the ampacity of the cable combination given in the table. If required, the number of cables should be increased to match the demand. Service load is assumed to be 65% of the main panel rating. The load factor at 75% should be good for most customers. Panels with exposed riser conduits must use the 100% LF data.
- C. Conduit should always be sized according to panel size, regardless of estimated load at the time service is provided. This allows for the future economical addition of cables if the customer's load grows.

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- D. Evaluation of flicker/voltage drop is necessary for applications involving long distance or heavily loaded cables.

## 4.0 TABLES

**TABLE 1**  
**SINGLE PHASE - THREE WIRE SERVICES**

Customer Main Panel Rating (Amps)	Estimated Peak Load (65%) (Amps)	Required Conductor Size (ALU. XLPE)	Cable Stock Number	Thermal Ampacity of Service @ 100% LF	Conduit Number – Size (1)
100	65	#2 Triplex	26-10012584	115	1-3"
200	130	2/0 Triplex (2)	26-10012491	175	1-3" (2)
200	130	4/0 Triplex (2)	26-10012491	235	1-3" (2)
320/400	260	350 Triplex	26-10010752	330	1-3"
600	390	2-350 Triplex (3) (4)	26-10010752	627	2-3"
800	520	2-350 Triplex (3) (4)	26-10010752	627	2-3"
1000 (6)	650	2 -750 Triplex (5)	4: 26-10012734 2: 26-10012380	985	2-4"

### NOTES:

1. Conduit size will vary depending upon local requirements and construction practices. Consult the local NVE district prior to construction, for the correct conduit size.
2. 2/0 Triplex if service is less than 75' in length. 4/0 Triplex if service is over 75' in length.
3. One 750 KCM in 1-4" conduit can be used as an alternative.
4. Use two-750 KCM (26-10012734) and one-350 KCM (26-10012380) XLPE conductors.
5. Use four-750 KCM (26-10012734) and two-350 KCM (26-10012380) XLPE conductors.
6. 1000A is the maximum single phase panel size; larger loads will require a three phase panel.

**TABLE 2**  
**THREE PHASE - FOUR WIRE SERVICES**  
**(60' maximum service cable length)**

Customer Main Panel Rating (Amps)	Estimated Peak Load 65% (Amps)	Required Conductor Size (Aluminum XLPE)	Cable Stock Number	Thermal Ampacity of Service @ 100% / 75% LF		Number of Conduits and Size (1)
100	65	1-#2 Quad	26-10010278	110	120	1-3"
200	130	1-4/0 Quad	26-10011247	215	240	1-3"
400	260	1-350 Quad	26-10012363	305	326	1-4"
600	390	1-750 KCM per phase with 1-350 KCM neutral	750 - 26-10012734 350 - 26-10012380	480	520	1-4"
800	520	2-750 KCM per phase with 2-350 KCM neutral	750 - 26-10012734 350 - 26-10012380	860	940	2-4"
1000 (1)	650	2-750 KCM per phase with 2-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	860	940	2-4" (3-4")
1200 (1)	780	3-750 KCM per phase with 3-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1110	1275	3-4" (4-4")
1400 (1)	880	3-750 KCM per phase with 3-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1110	1275	3-4" (5-4")
1600 (1)	1040	4-750 KCM per phase with 4-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1320	1520	4-4" (6-4")
2000 (1)	1300	5-750 KCM per phase with 5-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1525	1780	6-4" (7-4")
2001 - 4000 (2)	See GI0011U					

**NOTES:**

- 100% rated panels above 800 amp require the conduits (4-4"), as indicated by the number in parenthesis.
- Cable Trench (GI0011U) is required on 2001 amp or larger panel ratings. The number of cable runs and their ampacities are listed in Table 8 of this standard.
- This table is based on 60' maximum service cable lengths. For service length exceeding 60 feet please refer to table 3.


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**TABLE 3**  
**THREE PHASE - FOUR WIRE SERVICES**  
**(For service cable lengths over 60' not to exceed 100')**

Customer Main Panel Rating (Amps)	Estimated Peak Load 65% (Amps)	Required Conductor Size (Aluminum XLPE)	Cable Stock Number	Thermal Ampacity of Service @ 100% / 75% LF		Number of Conduits and Size (1)
100	65	1-2/0 Quad	26-10010429	160	180	1-3"
200	130	1-4/0 Quad	26-10011247	215	240	1-3"
400	260	1-750 KCM per phase with 1-350 KCM neutral	750 - 26-10012734 350 - 26-10012380	480	520	1-4"
600	390	2-750 KCM per phase with 2-350 KCM neutral	750 - 26-10012734 350 - 26-10012380	860	940	2-4"
800	520	3-750 KCM per phase with 3-350 KCM neutral	750 - 26-10012734 350 - 26-10012380	1110	1275	3-4"
1000	650	3-750 KCM per phase with 3-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1110	1275	3-4"
1200	780	4-750 KCM per phase with 4-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1320	1520	4-4"
1400 (1)	880	4-750 KCM per phase with 4-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1320	1520	4-4" (5-4")
1600 (1)	1040	5-750 KCM per phase with 5-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1525	1780	5-4" (6-4")
2000 (1)	1300	6-750 KCM per phase with 6-350 KCM neutrals	750 - 26-10012734 350 - 26-10012380	1750	2070	6-4" (7-4")
2001 - 4000 (2)	See GI0011U, Section 7- Services					

**NOTES:**

- 100% rated panels above 1200 amp require the conduits (5-4"), as indicated by the number in parenthesis.
- Cable Trench (GI0011U) is required on 2001 amp or larger panel ratings. The number of cable runs and their ampacities are listed in Table 5 of this the standard.
- This table is based on service cable lengths being longer than 60' up to 100'.

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**TABLE 4**  
**AMPACITIES OF U/G XLPE ALUMINUM CABLES IN CONDUIT**

SINGLE PHASE				THREE PHASE			
# of Runs	Cable	Ampacity		Number of Runs	Cable	Ampacity	
		100% LF	50% LF			100% LF	75% LF
1	#2 Triplex	115	140	1	#2 Quad	110	120
1	2/0 Triplex	175	195	1	2/0 Quad	160	185
1	4/0 Triplex	235	285	1	4/0 Quad	215	240
1	350 Triplex	330	385	1	350 Quad	305	326
1	750 Triplex (1)	520	600	1	750 Quad (1)	480	520
2	4/0 Triplex	470	520	2	350 Quad	550	620
2	350 Triplex	627	710	2	750 Quad (1)	860	940
2	750 Triplex (1)	985	1120	3	350 Quad	720	825
3	350 Triplex	845	990	3	750 Quad (1)	1110	1275
				4	750 Quad (1)	1320	1520
				5	750 Quad (1)	1525	1780
				6	750 Quad (1)	1740	2070
				7	750 Quad (1)	2010	2250
				8 (2)	750 Quad (1)	2230	2420
				10 (2)	750 Quad (1)	2680	2815
				12 (2)	750 Quad (1)	3150	3320
				14 (2)	750 Quad (1)	3640	3800
				16 (2)	750 Quad (1)	4140	4280


**NOTES:**

- 750 KCM is not available in Triplex or Quad configuration.  
Use 2-1/C- 750 KCM (26-10012734) and 1-1/C- 350 km (26-10012380) XLPE conductors or  
Use 3-1/C- 750 KCM (26-10012734) and 1-1/C- 350 km (26-10012380) XLPE conductors.
- Reference only. See Cable Trench Installation Guide for new construction, GI0011U and Table 5 of this standard show ampacities of cables in cable trench.

**TABLE 5**  
**THREE PHASE SERVICE AMPACITIES INSTALLED IN CABLE TRENCH**

Sets of Cables (Wire Size)	4 (750)	5 (750)	6 (750)	7 (750)	8 (750)	9 (750)
24" x 30" (ID) Cable Trench - (GI0011U)	1880	2350	2820	3290	3760	4230

**NOTE:** The cable runs must be racked with the proper clearances to provide the capacities.

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