



**TO: To Whom It May Concern**

**FROM: Encore Wire Codes and Standards**

**DATE: SEPTEMBER 2020**

**RE: Direct Burial Bedding Recommendations**

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## TECHNICAL DOCUMENT

Extreme care should be taken when installing “Direct Burial” rated conductors or cables in trenches to avoid potential damage to the insulation and subsequently the conductors themselves. The National Electrical Code® [NEC] provides guidance in Section 300.5(F) titled Backfill; which states “ Where necessary to prevent physical damage to the raceway or cable, protection shall be provided in the form of granular or selected material”.

The NEC® also states that backfill material that contains large rocks, paving material, cinders, large or sharply angled substances such as rocks or site material shall not be placed in an excavation where it could damage the raceways or cables or create voids in the compacted material. The following method of conductor and cable protection should provide adequate protection to direct burial cables and conductors.

### 1. Bedding

Three (3) inches of bedding is required in the bottom of all trenches. Bedding is defined as dirt or stone granular dust. Soil containing occasional rounded rocks ½” diameter or less is acceptable.

### 2. Covering the Conductors and Cables

A minimum of three (3) inches of cover, measured to the top of the cables, is required to cover all cables. Cover is defined as dirt or stone dust. Soil containing occasional rounded rocks ½” diameter or less is acceptable. The material should fill the voids around the conduit or cable.

### 3. Backfilling (Beyond three (3) inches)

a. Removed material from the trench may be used as long as it is free of debris or other material that may damage the cable system or cause settling.

b. Backfill shall not contain ashes, cinders, shale, frozen material, loose debris, vegetation, or rocks larger than six (6) inches in any dimension.

c. Trenches should be immediately backfilled following cable system inspection by local AHJ.

d. Backfilling shall be accomplished in a continuous manner from one structure to the next, and shall not be placed over any exposed cable ends.

e. All backfill shall be mechanically compacted to the density of the surrounding undisturbed soil by means available to prevent settling. Mechanical compaction shall not be within twelve (12) inches of the cables.

IMPORTANT NOTE: **DO NOT** drag conductors across backfill material when installing them into a trench. Direct Burial conductors should be carefully laid onto the bedding material and seated firmly into the bedding material before backfilling begins.

3. Conductors/wire or Cables installed in the same trench when installed in accordance with the National Electrical Code. Each set of conductors/wires or cables shall be separated by no less than 6 inches between conductor/wire or cable complete sets. Otherwise where 6 inches is not maintained and where single conductor/wire sets or multiconductor cables are installed without maintaining spacing for a continuous length longer than 600 mm (24 in.) and are not installed in raceways, the allowable ampacity of each conductor shall be reduced as shown in Table 310.15(B)(3)(a). Each current carrying conductor of a paralleled set of conductors shall be counted as a current-carrying conductor.

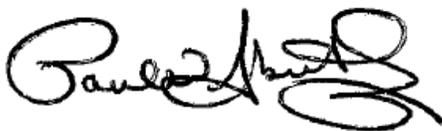
4. Direct-buried conductors and cables emerging from grade and specified in columns 1 and 4 of Table 300.5 shall be protected by enclosures or raceways extending from the minimum cover distance below grade required by 300.5(A) to a point at least 2.5 m (8 ft) above finished grade. In no case shall the protection be required to exceed 450 mm (18 in.) below finished grade.

5. Service Conductors - Underground service conductors that are not encased in concrete and that are buried 450 mm (18 in.) or more below grade shall have their location identified by a warning ribbon that is placed in the trench at least 300 mm (12 in.) above the underground installation.

6. Backfill - Backfill that contains large rocks, paving materials, cinders, large or sharply angular substances, or corrosive material shall not be placed in an excavation where materials may damage raceways, cables, conductors, or other substructures or prevent adequate compaction of fill or contribute to corrosion of raceways, cables, or other substructures. Where necessary to prevent physical damage to the raceway, cable, or conductor, protection shall be provided in the form of granular or selected material, suitable running boards, suitable sleeves, or other approved means.

7. Bushing. A bushing, or terminal fitting, with an integral bushed opening shall be used at the end of a conduit, pull box, hand-hole box or other approved raceway that terminates underground where the conductors/wires or cables emerge as a direct burial wiring method. Do not pull direct bury conductors through junction points that contain sharp edges before and after the pulling process.

8. Earth Movement. Where direct-buried conductors, raceways, or cables are subject to movement by settlement or frost, direct-buried conductors, raceways, or cables shall be arranged so as to prevent damage to the enclosed conductors or to equipment connected to the raceways.

A handwritten signature in black ink, appearing to read "Paul W. Abernathy". The signature is stylized with a large, looping initial "P" and a long, sweeping underline.

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