

SECTION 16051

ELECTRICAL RELATED WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Extent of electrical related work required by this section is indicated on Drawings and/or specified in other Division 16 sections.
- B. Types of electrical related work specified in this section include the following:
 - 1. Access to Electrical Work.
 - 2. Excavating, Trenching and Backfill for Electrical Work.
 - 3. Foundations and Supports.
 - 4. Cutting and patching.
 - 5. Painting.
 - 6. Concrete for Electrical Work:
 - a. Encasement of electrical work.
 - b. Underground structural concrete to accommodate electrical work.
 - c. Electrical equipment foundations and mounting pads.
 - d. Rough grouting in and around electrical work.
 - e. Patching concrete which has been cut to accommodate electrical work.

1.2 RELATED DOCUMENTS

- A. Drawings
- B. General provisions of Contract, including General and Supplementary Conditions.
- C. Division 01 - Specification Sections.
- D. Section 16010 - General Electrical Provisions

1.3 PROJECT/SITE CONDITIONS

- A. Existing Utilities: Locate and protect existing utilities and other underground work in manner which will ensure that no damage or service interruption will result from excavating and backfilling.
- B. Protect property from damage which might result from excavating and backfilling.
- C. Protect persons from injury at excavations by barricades, warnings and illumination.

- D. Coordinate excavations with weather conditions, to minimize possibility of washouts, settlements and other damages and hazards.

PART 2 - PRODUCTS

- 2.1 **ACCESS TO ELECTRICAL WORK:** Where switches, control devices, pull boxes and similar elements of electrical work are located within or behind wall, ceiling or floor construction of finishes, or below grade, provide removable access plates or types and sizes needed for access requirements. Provide manufacturer's complete units with anchorages, fasteners and finishes in accordance with Specification 08305 "Access Doors".

2.2 EXCAVATING FOR ELECTRICAL WORK

- A. Backfill Materials: Refer to Division 2.
- B. Materials of Concrete Work: Refer to Division 3.

PART 3 - EXECUTION

3.1 EXCAVATION, TRENCHING AND BACKFILLING

- A. Perform all excavation of every description and of whatever substances encountered to the depths indicated on the Drawings or as otherwise specified. During excavation, material suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or not suitable for backfill shall be removed and wasted or removed from jobsite as indicated on the drawings or as directed by Architect at not additional cost to Owner. Prior to doing any excavation with power tools, carefully investigate and locate any existing conduit, pipes, and other lines. **CALL BEFORE YOU DIG.**
- B. Sheet piling and shoring shall be done as necessary for the protection of the work and for the safety of personnel. Provide necessary pumping and/or well pointing at all times to maintain a dry working condition in all trenches. Unless otherwise indicated, excavations shall be by open cut except that short sections of a trench may be tunneled if, in the opinion of the Architect the conduit can be safely and properly installed and backfill can be properly tamped in such tunneled sections.
- C. No excavation or trenches shall be cut near or under footings without first consulting Architect.
- D. Bottom of trench shall be shaped to give substantially uniform circumferential support to lower third of each pipe. Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with adjoining pipe and to prevent sudden

- offset to flow line. As work progresses, interior of pipe shall be cleared of dirt and superfluous materials of every description.
- E. Wherever wet or otherwise unstable soil that is incapable of properly supporting the pipe, as determined by the Architect is encountered in the bottom of the trench, such soil shall be removed to the depth required and the trench backfilled to the proper grade with coarse sand, fine gravel, or other suitable material, and approved by the Architect.
- F. Trenches for utilities shall be of a depth that will provide the following minimum depth of cover from existing grade or from indicated finish grade, whichever is lower, unless otherwise specifically shown:
1. 30-Inch Minimum Cover - Electrical Conduits/Cables over 600 volts.
 2. 24-inch Maximum (See NEC 300-5) - Electrical Cables/Conduits Under 600 volts.
- G. Backfill shall be installed in layers 6" deep, adequately wetted (if approved by Architect) and tamped using materials as noted above. The surface shall be graded to a reasonable uniformity and the mounding over trenches left in a uniform and neat condition as approved by the Architect. Refer to Division 2 for compaction densities.
- H. Restore all hard finished surfaces such as roadways, sidewalks, grass, shrubbery, etc., removed for installation of utilities (and not shown on Drawings or specified to be reworked under other sections of the work) to their original condition using the same type as original materials. Patching concrete roadways shall require doweling to tie-in matching reinforcement rods or highway mesh to existing roadway. Doweling shall occur every 18 inches on both sides of the trench. Restore to near original condition acceptable to Architect.
- I. Carefully plan all work to avoid existing utilities and other interferences. Architects/Engineers have not attempted to indicate all existing underground utilities. Existing utility lines to be retained that are shown on the Drawings or the locations of which are made known to the Contractor prior to excavation, as well as all utility lines uncovered during excavation operations, shall be protected from damage during excavation and backfilling and, if damaged, shall be repaired by Contractor at his expense. Prior to doing any excavation with power tools, carefully investigate and locate any existing conduit, pipes, and other lines.

3.2 FOUNDATIONS AND SUPPORTS

- A. Provide concrete pedestals, bases, pads, curbs, anchor blocks, anchor bolts, slab inserts, hangers channels, cradles, saddles, etc. for installation of floor mounted equipment such as switchboards, transformers, etc. and apparatus shown on the Drawings and specified in the various sections of Specification Division 16.
- B. Concrete pads for floor mounted electrical equipment shall be 6 inch (15 cm) high, unless otherwise indicated, poured integral with the floor slab wherever practical. Wherever integral slab poured pads are not practicable, construct 6 inch high

housekeeping pads, reinforced with No. 3 steel wire mesh 6 X 6 inches, fastened to structural slabs with 1/2" inch diameter bolts embedded in structural slabs with expansion bolts at all corners (inset 3 inches) and no further apart than 18 inches. Score structural slab thoroughly to assure concrete bonding between structural slab and housekeeping pad. Construct in full accordance with "concrete" specifications for 2500 psi minimum compressive strength. Finish tops of housekeeping pads smooth and level within 1 percent of span. Pads shall be extended at least 4" (10 cm) beyond the equipment outline on all four sides.

- 3.3 CUTTING AND PATCHING:** Comply with the requirements of DIVISION 1 for cutting and patching of other work to accommodate the installation of electrical work. Except as individually authorized by the Architect/Engineer, cutting and patching of electrical work to accommodate the installation of other work is not permitted. Coordinate all cutting and patching of walls and ceiling with Division 1 requirements to install and conceal new raceway in finished areas.
- 3.4 PAINTING:** Exposed conduits, supports, pull boxes, etc., shall be painted as described under Section 09900 of these Specifications. Contractor shall be responsible for having electrical items painted to the finish called for on the Drawings. Factory painted equipment shall have finish restored to Manufacturer's finish if scratched or damaged before acceptance or use by Owner.

END OF SECTION