

SECTION 31 23 16 EXCAVATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Excavation and disposal of excavated materials.
- B. Protection of existing facilities, utilities, and structures affected by excavation.

1.2 DEFINITIONS

- A. Extra Excavation: Upper limit of Excavation is proposed excavation limit. Lower and lateral limits are as authorized by ENGINEER.
- B. Classified Excavation: The excavation of specified materials.
- C. Incidental Excavation: Excavation done for CONTRACTOR's benefit, excavation error, dewatering of Excavation, slough, or over-break.
- D. Unclassified Excavation: The excavation of all materials encountered regardless of the nature, size, or manner in which they are removed. Presence of isolated boulders or Rock fragments will not be sufficient cause to change classification of surrounding materials.

1.3 STORAGE AND HANDLING

- A. Stockpile excavated material to cause a minimum of inconvenience to public and provide for emergency services as necessary.
- B. Provide free access to all existing fire hydrants, water and gas valves, and meters.
- C. Provide free flow of storm water in all gutters, conduits, and natural water courses.
- D. Utilize traffic control signs, markers, and procedures in product storage and handling activities.
- E. Promptly remove other material from site.

1.4 SITE CONDITIONS

- A. Prior to excavation, photograph existing surfaces along which work may take place in order to determine, after construction is completed, whether any damage to existing improvements occurred prior to construction operations. Refer to construction photograph requirements, Section 01 78 39.
- B. Perform Incidental Excavation at no additional cost to OWNER.

PART 2 PRODUCTS

2.1 MATERIALS FOR OVER EXCAVATED AREAS

- A. Common fill, Section 31 05 13.
- B. Crushed aggregate base, Section 32 11 23.
- C. Stabilization fill, crushed aggregate base or common fill with maximum rectilinear particle size of 2 inches.
- D. Stabilization fabric, Section 31 05 19.

PART 3 EXECUTION

3.1 PREPARATION

- A. Use white paint and mark the proposed Excavation.
- B. Call the one-call center and wait the required amount of time. Color of one call center marks indicate the following.
 - 1. White: Proposed Excavation
 - 2. Pink: Temporary survey markings
 - 3. Red: Electric power lines, cables, conduit and lighting cables
 - 4. Yellow: Gas, oil, steam, Petroleum or gaseous materials
 - 5. Orange: Communications, alarm, signal, cables or conduits.
 - 6. Blue: Potable water.
 - 7. Purple: Reclaimed Water, irrigation and slurry lines
 - 8. Green: Sewer and storm drain lines

3.2 PROTECTION

- A. Identify required lines, grades, contours, and benchmarks, Section 01 71 23.
- B. Pothole, expose or otherwise locate utilities as necessary to give utility company at least 4 days notice to protect, preserve, or relocate a utility that interferes with or may be damaged by excavation work.
- C. Where utilities or structures conflict with design grades, report conflict to the appropriate utility company and ENGINEER 14 days prior to the initiation of work within the conflict area.
- D. For temporary controls, refer to Section 01 57 00.
- E. Support and protect from damage any existing facility and structure that exists in, passes through, or passes under the site.
- F. No Contract Time extension shall be granted and no additional compensation shall be made if CONTRACTOR fails to pothole and identify buried utilities or structures which conflict with the Work.

3.3 TOPSOIL

- A. Excavate topsoil only to depth that will preserve topsoil quality.
- B. Do not mix topsoil with subsoil during stockpiling or spreading.

3.4 LANDSCAPE SPRINKLER SYSTEMS

- A. Protect existing landscape sprinkler systems.
- B. When disturbance of existing sprinkler system is required, interrupt and repair system so operation of system is maintained.

3.5 SHORING

- A. Slope, shore, sheet, brace or otherwise support Excavations over 4 feet deep, Section 31 41 00.
- B. When soil conditions are unstable, Excavations shallower than 4 feet deep must also

be sloped, supported or shored.

3.6 DEWATERING

- A. Keep Excavation free from surface and ground water.
- B. If ground water table is in the intended construction operations, dewater Excavations.
- C. If there are no olfactory or visual indications of contamination in the water, discharge according to requirements of Federal, State or local agency having jurisdiction.
- D. If any evidence of contamination in the water, based on olfactory or visual indications, cease excavation work until potential risks are evaluated. During evaluation, handle water as a contaminated material.
- E. Pay for damages and costs resulting from dewatering operations.

3.7 GENERAL EXCAVATION REQUIREMENTS

- A. Excavate topsoil from areas to be relandscaped or regraded and other marked areas.
- B. Excavate site to line and grade indicated.
- C. Carefully excavate soils in vicinity of buried utility marks placed by the one-call center.
- D. Where soil has been softened or eroded by flooding or hardened by drying during unfavorable weather, rework all damaged areas or replace with approved material at no additional cost to OWNER.
- E. Notify ENGINEER of unexpected subsurface conditions.
- F. Underpin adjacent structure, service utilities and pipe chases that may be damaged by Excavation work.
- G. Protect Excavation walls as required. If conditions permit, slope Excavation Sides to maintain a safe and clean working area. Remove loose materials.
- H. Where ENGINEER deems Subgrade material to be susceptible to frost heave or otherwise unsatisfactory, excavate additional depth.

3.8 ROADWAY EXCAVATION

- A. In advance of setting line and grade stakes, clean Subgrade area of brush, weeds, vegetation, grass, and debris. Drain all depressions or ruts that contain water.
- B. Backfill and compact over excavation, Section 33 05 05.

3.9 STRUCTURAL AND LANDSCAPE EXCAVATION

- A. Provide Shoring, cribs, cofferdams, caissons, pumping, bailing, draining, sheathing, bracing, and related items.
- B. For piling work, coordinate special requirements for piling. Protect Excavation walls.
- C. If conditions permit, slope Excavation Sides as excavation progress. Maintain a safe and clean working area.
- D. Support Excavations. Do not interfere with the bearing of adjacent foundations, pipelines, etc.

3.10 TRENCH EXCAVATION

- A. Grade bottom of Trenches to provide uniform bearing surface.

- B. If necessary, make bellholes and depressions required to complete joining of pipe or box.
- C. Limit width of Trench excavations to the dimensions suitable for worker access per pipe manufacturer's recommendation. Provide enough space for compaction equipment. Notify ENGINEER if excavation operations exceed any indicated line and grade limits.
- D. In public thoroughfares and regardless of Trench depth, limit length of open Trenches to 200 lineal feet day or night. Provide barricading, Section 01 55 26. Protect Trenches over night.

3.11 EXTRA EXCAVATION

- A. If unstable material is encountered at the bottom or face of any Excavation, do not perform extra excavation without written consent.
- B. Correct excavations beyond the specified lines and grades by filling and compacting the resulting voids with acceptable fill.
- C. Volume of Excavation within any specified pay limit will be determined by the method of average-end-areas in the original position.

3.12 TOLERANCE

- A. Grading: Top surface of Subgrade = plus or minus 1 inch.

END OF SECTION