SECTION 222220 - MECHANICAL TRENCHING, BACKFILLING, AND EXCAVATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Excavating for piping systems

B. Backfilling for piping systems

C. Consolidation and compaction

D. Fill for over-excavation

1.2 RELATED SECTIONS

A. Document: Geotechnical report; bore hole locations and findings of subsurface materials.

1.3 FIELD MEASUREMENTS

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

PART 2 - PRODUCTS

2.1 BACKFILL MATERIALS

A. Fill Type: Select Common Fill shall consist of mineral soil, substantially free of clay, organic material, loam, wood, trash and other objectionable material which may be compressible or which cannot be properly compacted. Select common fill shall be no more than 5 percent by weight finer than No. 200 mesh sieve. The material shall contain no stones larger than 1½ " in largest dimension.

PART 3 - EXECUTION

3.1 EXCAVATION PREPARATION

A. Refer to pipe and duct details on drawings for additional requirements.

B. Contractor shall locate all existing utilities in the areas of Work. If the utilities are to remain in service the Contractor shall provide adequate means of protection during earthwork operations. Contractor shall be responsible for repairs and/or replacement of utilities damaged with no costs incurred to Owner.

C. Identify required lines, levels, contours, and datum.

D. Notify utility company to remove and relocate utilities.

E. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.

F. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.

G. If required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction and to protect adjacent structures, existing piping and/or foundation material from disturbance, undermining or other damage, the Contractor shall construct, brace and maintain cofferdams consisting of sheeting and bracing. Care shall be taken to prevent voids outside of sheeting, but if voids are formed, they shall be immediately filled and rammed.

H. Contractor shall at all times during construction, provide and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition until the fill or pipes to be installed thereon have been completed.

3.2 TRENCH EXCAVATION

A. Underpin adjacent structures which may be damaged by excavation work.

B. Excavate subsoil required to accommodate piping system and air distribution systems.

C. Do not interfere with 45 degree bearing splay of foundation.

D. Grade top perimeter of excavation to prevent surface water from draining into excavation.

E. Hand trim excavation. Remove loose matter.

F. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Larger material will be removed under another Division 1 Section.

G. Immediately notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

H. Correct areas over-excavated.

I. Trench work shall be performed in strict accordance with the requirements of OSHA standards for safety.

3.3 EXCAVATION PROTECTION

A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.

3.4 BACKFILLING PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Cut out soft areas of subgrade not capable of compaction. Backfill with Type A fill and compact to density equal to or greater than requirements for subsequent fill material.

3.5 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Soil Fill: Place and compact material in continuous layers not exceeding 12 inches compacted depth.

D. Employ a placement method that does not disturb or damage other work.

E. Maintain optimum moisture content of backfill materials to attain required compaction density.

F. Make gradual grade changes. Blend slope into level areas.

G. Remove surplus backfill materials from site.

H. Leave fill material stockpile areas free of excess fill materials.

3.6 BACKFILLING TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.7 FIELD QUALITY CONTROL

A. Provide for visual inspection of bearing surfaces.

3.8 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION 222220