1. INTRODUCTION

1.1. Scope
This work covers excavation, backfilling and compacting of soil for structural foundations and trenches.

1.2. Reports and Studies
The project geotechnical report contains site specific requirements pertaining to anticipated location of bedrock, over-excavation and backfill requirements and shall be considered as part of this specification.

2. EXCAVATION & BACKFILL FOR STRUCTURES

2.1. Excavation

2.1.1. Excavations for structural foundations for this project will be in previously placed fill, natural soils over bedrock and in weathered and unweathered bedrock. All foundations shall be placed on foundation excavations that are in accordance with the specific requirements for that particular foundation as outlined in the Geotechnical Report.

2.1.2. The Geotechnical Engineer shall inspect and approve all footing excavations prior to concrete placement.

2.1.3. Where directed or where required for the protection of workmen or public safety, substantial barricades shall be erected and maintained, and warning flares and lights shall be installed and maintained.

2.1.4. Where required to prevent caving, damage to existing buildings, foundations, utilities, equipment or other installations and for the protection of workmen, excavations shall be sheeted and braced in a safe, substantial manner. Unless ordered left in place, all sheeting and bracing shall be removed during the backfill operations.

2.1.5. Adequate pumping facilities shall be provided and operated to maintain excavations in a dry condition suitable for either backfilling or for placing concrete as required. Adequate drainage shall be maintained to ensure that surface drainage is directed away from all open excavations.

2.1.6. Excavated materials not required for backfill and materials not suitable for backfill shall be hauled to an on-site disposal area as designated by the Owner. The disposal area shall be maintained in an orderly manner and sloped to drain.

2.1.7. Excessive wetting or drying of the foundation excavations and under slab areas is to be avoided during construction.
2.2. Backfill

2.2.1. Backfill materials are available from a borrow pit area located approximately 2 miles from the site. Materials are to be selectively taken from this area and shall meet the gradation requirements as specified in the Geotechnical Report.

2.2.2. Laboratory classification testing of soils proposed for use as structural backfill shall be performed and submitted to the Owner for approval to verify compliance with the requirements for fills as specified in the Geotechnical Report.

2.2.3. Backfill shall be deposited in uniform layers not exceeding 8" in depth, moistened when required, and thoroughly compacted by pneumatic, vibrating or other approved types of tampers to a minimum relative compaction of at least 95 percent of the modified Proctor maximum dry density (ASTM D-1557).

2.2.4. Compacting backfill of granular materials by flooding is not permitted.

2.2.5. Where backfill is to be placed on each side of members subject to bending, the backfill material shall be placed and compacted in equal layers on each side of the member.

2.2.6. Backfill shall be brought up to final grade unless otherwise specified. Backfill shall be placed evenly and concurrently on opposite sides of walls and foundations. Care shall be exercised to avoid any wedging action or eccentric action upon or against the structure and to avoid any damage to the work. Heavy equipment for spreading and compacting backfill shall not be operated closer to the wall than a distance equal to the height of the backfill above the top of the footing.

3. EXCAVATION & BACKFILL FOR TRENCHES

3.1. Excavation

Trenches shall not be excavated more than one day in advance of pipe and/or conduit laying. Trenches shall be accurately excavated to the lines and grades shown on the drawings, and shall be only of sufficient width to properly make up joints or install pipe and/or conduits. Excavation for trenches shall also comply with Paragraphs 2.1.3 through 2.1.6.

3.2. Backfilling

3.2.1. All trenches within buildings, under roads or sidewalks, or under or within five feet of any other structure shall meet the backfill requirements as stated for “backfill for structures” above.
3.2.2. Trenches in open areas not within buildings, under roads or sidewalks or under or within five feet of any other structure shall be backfilled and compacted to a minimum relative compaction of at least 85 percent of the modified Proctor maximum dry density (ASTM D-1557).

4. SUB-GRADES FOR FLOOR SLABS

4.1. Sub-grade preparation for floor slabs includes the fine grading and preparation of previously rough graded surfaces upon which floor slabs are to be constructed. Sub-grades shall be accurately graded to the elevations and shapes as required to install the work shown on the drawings. All fill material beneath the floor slabs shall meet the material and compaction requirements as stated for “backfill for structures” above.

4.2. A 6” layer of Select Granular Fill shall be placed beneath the slabs. Laboratory classification testing of soils proposed for use as Select Granular Fill shall be performed and submitted to the Owner for approval.

5. INSPECTION

Inspection of densities and moisture contents during construction will be performed by the Owner. Fill sections failing to meet these specifications shall be removed and replaced, or reworked until satisfactory to the Owner, at no additional cost.