

**PART 1 - GENERAL****1.01 DESCRIPTION OF WORK**

- A. This Section and related drawings describe requirements pertaining to earthwork.
- B. The soils reports, boring logs, supplemental reports, letters etc. are included in these specifications and hereby made a part of these specifications. The project shall be constructed in accordance with the recommendations contained in these reports.
- C. The work includes, but is not limited to:
  - 1. Site clearing and removal of all existing construction.
  - 2. Earth moving and excavation including:
    - a. Excavation and haul off site of all unsatisfactory materials identified in the Geotechnical Report.
    - b. All stockpiling, placement, removal, re-stocking, etc. of all soil materials.
    - c. Installation of all subgrade drainage systems.
    - d. Excavation and undercut to produce designated lines and grades and reuse on site of suitable materials.
    - e. Import and place fill materials as may be required to produce designated lines and grades of fills, backfills and rough grades.
    - f. Dewatering all trenches and excavations.
    - g. Trench Rock Removal and reuse on site (if allowed by geotech report)
    - h. Mass Rock Removal and reuse on site (if allowed by geotech report)
    - i. Installation of Geotechnical fabric.
    - j. Proof-rolling and compacting subgrade soils and fill.
    - k. Monitoring of the consolidation of underlying soils after new fill has been placed. This includes the installation of settlement plates, settlement pins, etc. The Geotechnical Engineer shall determine when settlement has become substantially complete.
    - l. Utility trenching work within the building areas and extending 5' -0" beyond perimeter walls.
    - m. Sheeting, shoring and other protection, as required, to complete the work of this section.
    - n. Protection of existing site features and adjacent properties during the course of the work.
    - o. Preparation of Building pad. Building Pad: Shall mean that portion of the site upon which the store is constructed and includes, without limitation, the "footprint" of the store building and Garden Center and a minimum of five feet (5') beyond such "footprint", as well as the area to be occupied by vestibules, the building apron, lumber canopy and drive-thru, rear lumber area, material storage areas, utility pads, stairs, ramps, stoops and loading pads, to the extent the same lie beyond said five foot (5') strip.
- D. Related work specified elsewhere:
  - 1. Special Conditions
  - 2. Testing and Inspection
  - 3. Building Demolition

1.02 Unit Prices: See Bid Proposal Form for required unit price breakdown.

**ADD ADDITIONAL ITEMS AS REQUIRED****1.03 SITE INFORMATION TECHNOLOGY**

- A. The soils report on indicated subsurface conditions is not intended as a representation or warranty of the continuity of such conditions. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. The data is included as an appendix to these Specifications for the convenience of the Contractor.
- B. Additional soil investigations may be made by the Contractor at no cost to the Owner provided such operations are acceptable and approved in writing by the Owner's Representative.

**1.04 QUALITY ASSURANCE**

- A. It shall be the responsibility of the Contractor to perform all earthwork in accordance with the Geotechnical Engineering Report, contract drawings, and specifications.
- B. The Owner will reserve the right to employ and pay for the services of an Independent Testing Contractor (ITC) to provide testing and inspections of the earthwork
- C. The services of the ITC, and the information provided by the ITC, are provided for the sole benefit of the Owner. The information is provided to Contractor only, so Contractor is aware of what is being reported to Owner. The Contractor shall not, and is not entitled to, rely upon any information provided by the ITC in any manner. Contractor is solely responsible for assuring that the Work complies with the Contract Documents in all respects and may not rely on the ITC

for this, or any other, assurance. The ITC and its representatives are not authorized to revoke, alter, relax, enlarge or release any requirements of the Contract Documents, approve or accept any portion of the Work, perform or excuse any duties of the Contractor, or be a party to the scheduling of the Work. The ITC is not an authorized agent of the Owner with respect to the relationship between Owner and Contractor.

- D. Earthwork materials and operations shall be tested and inspected as the work progresses. Failure by the ITC to detect any defective work or material shall not in any way prevent later rejection (when such defect is discovered) nor shall it obligate the Owner for final acceptance.
- E. When tests indicate compaction does not meet requirements, fill and backfill shall be dried out or moistened as necessary, scarified, and re-compacted or removed and replaced with acceptable fill-material. Re-compacted areas shall be retested. This procedure shall be repeated until tests indicate compliance with specified requirements. Reworking and retesting shall be provided at no cost to the Owner. Cost of retesting shall be withheld from Contractor's retainage.
- F. See Section 01411 Testing and Inspection for a more thorough description of the testing and inspections to be performed and the Contractor's responsibilities to facilitate that work.
- G. Layout of work: Contractor to provide all surveying and layout services. All work shall be carefully laid out and under the supervision of a state registered land surveyor.

#### 1.05 SUBMITTALS TO CONTRACTOR

- A. A letter from a Registered Surveyor certifying the foundation location and bottom of footing elevations.

#### 1.06 GENERAL EARTHWORK REQUIREMENTS

- A. All work shall be executed in accordance with the contract documents. Any conflict shall be brought to the attention of the Architect, who shall decide the controlling specification.

#### 1.07 COMPACTION EQUIPMENT

- A. The Contractor shall use whatever equipment is capable and required to attain the desired results in an acceptable manner and time frame.

#### 1.08 FOUNDATION INSPECTION

- A. After excavations for footings are completed to required depths, the ITC shall verify the bearing capacity.
- B. Contractor shall make arrangements for and provide required temporary access routes to locations to be inspected and shall fill test holes with cement and sand grout at no expense to Owner when required.

#### 1.09 SITE CONDITIONS

- A. Existing Utilities: The Contractor shall verify the location of any existing underground utilities in the areas of work. If utilities are to remain in-place, provided adequate means of support and protection during earthwork operations.
  - 1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the utility owner and Architect immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner.
  - 2. If water, gas pipes, conduits or other utilities become broken in the prosecution of the work, the Contractor should give immediate notice to the proper authorities and shall be responsible for all damage to persons or properties caused by such breaks. Failure to give prompt notice to authorities shall make the contractor responsible for all losses of water or gas, and responsible for any interruption of services.
  - 3. The use of explosives is not permitted unless specifically recommended by Geotechnical Engineer and authorized by the Owner. Contractor shall be responsible for obtaining all required permits and/or approvals for regulatory agencies.

### PART 2 - PRODUCTS

#### 2.01 SATISFACTORY SOIL MATERIALS

- A. Satisfactory soil materials shall be in accordance with the recommendations of the soils report and the requirements of the Geotechnical Engineer. Flyash shall not be used as a soil material in the preparation of the building pad (subgrade or subbase).

#### 2.02 FILL MATERIALS

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**Construction Specification**

- A. Excavated material that is suitable as defined in the Geotechnical report may be used for fills and backfills. Provide any additional fill material from off the site as may be required to produce designated lines and grades of fills, backfills and rough grades. Fills brought from off the site shall be tested for compliance with the specifications for various uses as specified. All fill and topsoil materials brought from offsite shall be free of hazardous contaminants as defined by State and Federal requirements.
- B. Fill materials shall be approved by the soils testing laboratory and conform to the following requirements, except as specifically indicated otherwise.
  - 1. Fill shall be earth, free of debris, cinders, combustibles, frost, ice, roots, sod, wood, cellulose, organic materials, and materials that may be subject to termite attack and as indicated in the soils report.
  - 2. Top 18" of fills under topsoil of lawn and planted areas shall be earth, free of debris, cinders, frost, ice, sod, wood and roots over 1/4" in diameter. Fill shall be free of any toxic materials that will interfere with plant root development.
  - 3. Fill, within ten feet from buildings and other structures, shall be soil free of debris, cinders, combustibles, frost, ice, roots, sod, wood, cellulose, and organic materials and as indicated in the soils report.
  - 4. All fill to replace excess excavation under footings and foundations shall be in accordance with the requirements of the soils report and the recommendations of the Geotechnical Engineer.
  - 5. Topsoil: Relatively free of decomposed organic material, including roots, sticks, leaves, paper and other undesirable trash (glass, plastic or metal fragments) that could interfere with soil drainage and plant growth. Topsoil shall be free of any toxic materials that will interfere with plant root development.

2.03 GEOSYNTHETICS

- A. Geotextile Drainage Fabric: Mirafi 140N
- B. Geotextile Stabilization Fabric: Mirafi HP370 or HP570
- C. Geogrid Base Reinforcement Mirafi BasXgrid 11 or BasXgrid 12
- D. Geogrid Wall/Slope Reinforcement: Miragrid XT Series

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. Surface preparation shall be performed in accordance with the soils report and the requirements of the Geotechnical Engineer.
- B. All building, pavement, and walkway areas shall be stripped of all topsoil, plant growth, or organics prior to the commencement of excavation. A sufficient quantity of topsoil shall be stockpiled on-site to complete the necessary landscape operations. The topsoil shall be free of roots, stumps, debris, or other deleterious materials, and as specified in Fine Grading. Excess topsoil may be utilized as general fill in landscaped areas, or should be disposed of or stockpiled, as directed by the Owner.
- C. Perform earthwork and site grading in a manner to prevent surface water and subsurface or groundwater from flowing into excavations, and to prevent water and sedimentation from flooding the project site and surrounding area.
- D. Provide temporary ditches, pumps, sedimentation basins and other diversions etc., as required to maintain cut and convey the water away from the site. Direct stormwater away from deep fill areas. Maintain until no longer required, and then backfill to specified compaction and fill matching required new or original grades. Immediately prior to placing of other work, recheck base, fill voids and if necessary, reroll to required density and compaction. Do not use trench excavations for site utilities as temporary drainage ditches.
- E. Remove all water from excavations using dewatering methods, which will prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Soils which are deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control will be the responsibility of the contractor for removal and replacement.
- F. The building pad shall be constructed in such a manner as to provide positive drainage of surface water off the pad and to protect the pad surface and subgrade. Temporary ditches shall be constructed to carry any surface run off away from the pad area, as directed by the Geotechnical Engineer. At start of building construction, the pad shall be prepared for foundations and all temporary ditches properly backfilled.
- G. The Contractor shall install all subsurface drainage dewatering measures as indicated on the construction documents and as directed by the Geotechnical Engineer.

3.02 EXCAVATION

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**Construction Specification**

- A. General: Earth Excavation consists of removal and disposal of pavements and other obstructions visible on the ground surface, material of any classification indicated in the data on subsurface conditions and all material encountered when establishing required finished grade elevations as shown on the design plans.
- B. Excavate cut areas within confines of site to required grades, levels, contours, and to sufficient depth necessary to obtain specified density when rolled and, in any case, to depth required to allow for materials that are to be placed. When cut is complete, before placing of cover materials, compact in accordance with the soils report and the requirements of the Geotechnical Engineer.
- C. Unauthorized Excavation: Consists of removal of materials beyond indicated subgrade elevation not required by the Contract Documents. Unauthorized excavation, as well as remedial work directed by Owner, shall be at the Contractor's expense.
  - 1. Under footings, foundations, retaining walls, etc., fill unauthorized excavation by extending indicated bottom elevation of footing, etc. to the excavation, without altering the required top elevation. Lean concrete fill shall be used to bring elevation to proper level, as deemed acceptable by the Geotechnical Engineer.
  - 2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavation of same classification, unless otherwise directed by Owner.
- D. If ground water is discovered to exist within 12" below the bottom of the lowest floor slab, the Contractor shall notify the Geotechnical Engineer who will determine if the underground structure and drainage as designed are adequate.

**3.03 REMOVAL OF UNSUITABLE SOIL MATERIALS AND MEASUREMENT OF IMPORT**

- A. Additional Excavation: When excavation has reached required elevations, notify Geotechnical Engineer who will observe subgrade condition. If unsuitable materials are encountered at required elevations, excavation shall proceed until suitable materials are encountered, and excavation shall be backfilled with soils of same classification, as directed by Geotechnical Engineer.
- B. Where the removal of unsuitable soil materials is due to the fault or negligence of the Contractor in his performance of earthwork and site grading operations, excavate the resulting unsatisfactory soil material and replace with compacted satisfactory soil material as required and as determined by the Geotechnical Engineer at no additional cost to the owner.
- C. Over excavation below required elevations and corrective fill materials shall be at the contractor's expense.

**3.04 FILL AND BACKFILL**

- A. Notification of Geotechnical Engineer: The Geotechnical Engineer shall be notified 48 hours prior to any fill, backfill, or compaction operations.
  - 1. Permit Geotechnical Engineer to observe all subgrades for each layer of fill or backfill. Additional fill or backfill should not be placed unless Geotechnical Engineer has approved the subgrade and/or previous layer of fill.
  - 2. When required by the Geotechnical Engineer, the Contractor shall certify the field elevations of the compacted subgrade or fill layer.
  - 3. If based on the Geotechnical Engineer's reports and inspections, subgrade or fill which has been placed is below specified density for respective construction areas, provide additional compaction at no additional expense to Owner.
- B. Provide the required minimum density and moisture content of compacted fill in accordance with the soils report and the requirements of Geotechnical Engineer.
- C. When temporary sheeting, shoring or bracing is removed, fill remaining voids with backfill material and compact to required density.
- D. Fill shall be placed in lifts in accordance with the soils report. Fill settlement shall be monitored with settlement plates to be installed with new fill, in accordance with the recommendations of the soils report and the requirements of the Geotechnical Engineer. Settlement plates shall be located in accordance with the soils report. Construction of building, site utilities, pavement and other site amenities may proceed once settlements have been essentially completed. Geotechnical Engineer shall determine when satisfactory settlements have occurred.
- E. Redress and recompact any areas that settle below required grades before execution of other work required and leave solid and secure against future settlement.
- F. All existing slope faces require benching and inspection prior to adjacent fill placement.
- G. Subgrades, structural and granular fills and compaction requirements shall extend beyond the outer edge of site improvements as follows. In areas of overlapping requirements, the more restrictive compaction and fill requirements shall govern.
  - 1. Buildings: 5 feet

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**Construction Specification**

2. Paving: 5 feet

H. Sidewalks and truck wells shall be considered pavement areas in addition to parking and drives.

**3.05 MOISTURE CONTROL**

- A. Provide sufficient equipment capable of adding measured amounts of moisture to the soil material as determined by moisture-density relation tests. Maintain the actual moisture content in the soil material at the time of compaction to within the limits specified for satisfactory soil materials.
- B. Where the subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply the required amount of water to the surface of subgrade, or layer of soil material, in such manner as to prevent free water appearing on the surface during or subsequent to compaction operations.
- C. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified percentage of maximum density.
- D. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread on the surface where directed and permitted to dry. Assist drying by discing, harrowing or pulverizing, until the moisture content is reduced to a satisfactory value, as determined by moisture-density relation tests. When accepted by the Geotechnical Engineer, the soil material may be used in compacted backfill or fill.

**3.06 GRADING**

- A. The subgrade for lawn and planting areas shall be not less than 6" inches below final finish grade.
- B. The subgrade for paved areas shall be finished to elevations and compacted to density required by Geotechnical Report to allow for sub-base and finished paving.
- C. Grading, including excavated and filled sections and adjacent transition areas, shall be reasonably smooth, compacted and free from irregular surface changes. Degree of finish shall be that ordinarily obtainable from either blade grader or scraper operations, except as otherwise specified. Tolerance for areas within 10 feet of buildings and all areas to be paved shall not exceed .10 feet above or below established subgrade. All ditch swales and gutters shall be finished to drain readily. Unless otherwise indicated on drawings, subgrade shall be evenly sloped to provide drainage away from building walls in all directions at a grade not less than 1/4" per foot. Provide roundings at top and bottom of banks and at other breaks in grade.
- D. Redress and recompact any areas that settle below required grades because of traffic, precipitation, or storage loading before execution of other work required.
- E. The finished grades may be adjusted to yield a "balanced" site. All adjusted grades must be approved by the Civil Engineer and documented by as-built survey by the Contractor.
- F. The General Contractor is responsible for final grades on site.

**3.07 PROOFROLLING**

- A. Exposed subgrade in the building area and in the paved areas shall be proof rolled to detect soft or unsuitable soil conditions if required by the Geotechnical Report and/or by the Geotechnical Engineer.
- B. Proof rolling shall be done after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade.
- C. Proof rolling shall be performed with a loaded dump truck or similar vehicle as per the Geotechnical Report recommendations or Geotechnical Engineer's recommendation in the field. Geotechnical Engineer's recommendation in the field governs. The vehicle shall make a minimum of four overlapping passes with the latter two passes at right angles to previous passes.
- D. Soft, organic, highly plastic, or excessively wet soils or old fill materials encountered during the proof rolling operation, causing deflection exceeding 1/2" inch or not acceptable by the Geotechnical Engineer, shall be excavated and replaced with clean fill or material specified by the Geotechnical Engineer in the field to facilitate compaction at no extra cost under the base contract.

**3.08 MATERIAL STORAGE**

- A. Stockpile excavated materials classified as satisfactory soil material where directed, until required for fill. Place, grade and shape stockpiles for proper drainage. Stockpiles shall be compacted to at least 90 percent of the soil's standard proctor maximum dry density or as directed by the Geotechnical Engineer to minimize water infiltration.

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- B. Dispose of excess soil material and waste materials, such as excavated material classified as unsatisfactory soil material, trash and debris by hauling from the site.
- C. All stockpiling of materials, placement removal, re-stocking, etc. shall be performed as required and at no additional cost to the owner.

3.09 EXCAVATION FOR DITCHES

- A. Cut ditches to the cross-sections and grades as shown on the drawings. Deposit excavated materials a sufficient distance from the edge of ditches to prevent cave-ins or material falling or sliding into the ditch. Keep ditches free of an accumulation of leaves, sticks and other debris until final acceptance of the work. Slope sides of trenches and ditches as necessary to comply with current OSHA Regulations. Utility trenches/ditches shall not be excavated, and utility lines shall not be installed until Geotechnical Engineer has determined that fill settlement (if required) is substantially complete.

END OF SECTION