INSTALLATION PROCEDURES

1) BEFORE STARTING

A) Ensure that the site conditions and the geogrid earth retention system layout are as indicated on the construction drawings.
B) Ensure that all the specified materials and system components are delivered to the site.

2) SITE & SUBGRADE PREPARATION

A) Start site preparation for the geocell earth retention system installation by removing debris and vegetative cover from the installation area.
B) Complete initial earthwork, excavation or fill according to the project plans.
C) Remove in-situ soils that are unacceptable for the geocell earth retention system foundation and replace with suitable materials.
D) Prepare the foundation soils as specified prior to base material placement.

3) INSTALLATION OF THE FOOTING

A) Expand the specified geocell footing section into its designated position.
B) Hold the expanded geocell footing section open using one of the following options:
   a) Straight stakes or J-Hooks
   b) Stretcher Frame
   c) Other options may be acceptable
C) Overfill the geocell footing section with the specified infill material and level to approximately 2 inches above the cell wall.
D) Place the infill material around the geocell footing section. Ensure that the placement of this material does not conflict with the placement of the drainage system.
E) Compact the fill and infill material to 95% of SPD using conventional equipment and materials.

4) INSTALLATION OF THE DRAINAGE SYSTEM

A) Install specified sub-drain pipe at the location and elevation shown on the construction drawings ensuring that a minimum gradient of 2% is maintained to all free outlets.
B) Ensure that all pipe connections are properly made and that the sub-drain pipe is connected to outlet pipes or an existing and functional subsurface drainage system.

C) Where specified, encapsulate the sub-drain pipe with a geotextile wrapped bedding material. (e.g. sand, pea gravel, clear stone, etc.)

D) Wrap all outlet pipes passing through the wall face with a suitable geotextile to prevent loss of the cell infill material.

E) Ensure that the discharge of the outlet end will not cause localized erosion that may affect the stability of the geocell wall.

5) EXCAVATION PROTECTION & DRAINAGE

A) Where specified, place a suitable geotextile over the base and on the cut slope behind the geocell wall.

B) Where specified, install the appropriate drainage composite materials. Ensure that the system is functional and connected to a suitable outlet or sub-drain system.

6) INSTALLATION OF THE GEOCELL SECTIONS

A) Expand the specified geocell wall section into its designated position.

B) Hold the expanded geocell wall section open using one of the following options:
   a) Strait stakes or J-Hooks (permanent or temporary)
   b) stretcher frame
   c) Other options may also be acceptable

C) Check each geocell wall section to ensure that it is fully expanded.

D) Correctly align and interleaf edges of adjoining geocell wall sections and ensure that the upper surface of the adjoining sections is flush.

E) Fasten geocell wall sections together with staples or as specified on the construction drawings.

F) Overfill the geocell wall section with the specified infill material and level to approximately 2 inches above the cell wall.

G) Compact the infill material 95% of SPD using conventional compaction equipment and methods.

H) Place specified backfill material behind the geocell wall sections and compact to 95% of SPD.
   a) In cut areas, extend the backfill materials back to the cut slope.
   b) In fill areas, place backfill materials as specified on the construction drawings.

I) Heavy compaction equipment can be used to compact backfill materials to within 3 feet of the geocell wall sections. Use lighter walk-behind compaction equipment to compact infill and backfill materials directly behind the wall sections.

J) After compaction of each lift, remove excess materials off the top of the geocell wall section so that the top of the cellular structure is visible.

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K) When positioning the next layer ensure that:
   a) The proper setback of each later is maintained.
   b) Proper side-to-side cell alignment is maintained to prevent loss of cell infill material.
L) When installing freestanding or very steep geocell structures, a 16 inch strip of nonwoven geotextile should be laid over the outer row of cells in each layer to prevent loss of infill material.
M) When special infill material (such as topsoil) is required in the exposed row of face cells, the following construction techniques should be employed:
   a) Cover the outer cells with movable boards to prevent the interior cell infill material from spilling into the cells requiring the special infill. After completing compaction remove the boards and fill the empty cells with the special infill.
   b) The outer row of cells can be collapsed and stapled shut with a single staple. After the infilling and compaction, the outer cells can be reopened and infilled with the special infill material.
   c) Each layer should be opened and infilled separately starting with the lowest layer and working to the upper layers.

7) INSTALLATION OF GEOSYNTHETIC REINFORCEMENT (when required by design)
   A) Place precut sections of geosynthetic reinforcement (woven geotextiles or geogrids), dimensioned and oriented according to construction drawings, between the specified geocell layers. Make sure the geosynthetic is oriented with its highest strength direction perpendicular to the wall face.
   B) Flatten and remove any folds after placement.
   C) Place the geosynthetic so that the leading edge is within a minimum of 6 inches of the front of the wall and extend it horizontally into the compacted backfill zone.
   D) Place and infill the next geocell wall section layer.
   E) Manually tension the reinforcement by pulling it back from the infilled geocell sections.
   F) Pin the back edge of the reinforcement layer so that it is taut and free from loose folds.
   G) Tracked equipment should operate within the reinforced backfill zone only after a minimum of 6 inches has been placed over each reinforcement layer.
   H) Rubber tired equipment can operate directly on the reinforcement using care to avoid sudden stops and sharp turns.
   I) Place backfill over the reinforcement in lifts of 10 inches starting from behind the geocell wall sections and spreading the backfill towards the back of the reinforced zone.
   J) Ensure that excessive displacement of the reinforcement does not occur during backfill placement.
K) Shape and compact the infill material to 95% SPD using conventional equipment and methods.

L) Continue with this sequence until the geocell retaining wall is complete.

PHOTOS