SKAPS INDUSTRIES

SKAPS GEONET
DROP-IN SPECIFICATIONS

1.GENERAL

1.1 SCOPE OF WORK

The Contractor shall furnish all labor, materials, tools, supervision, transportation, and installation equipment necessary for the installation of geonet, as specified herein, as shown on the Construction Drawings, and in accordance with Construction Quality Assurance (CQA) Plan.

A. The Contractor shall install geonet in conjunction with the earthwork and other components of the project.

1.2 REFERENCES

A. Construction Quality Assurance (CQA) Plan
B. Latest Version of American Society for Testing and Materials (ASTM) standards

1. *ASTM D 1238*, Standard Test Method for Measuring Melt Flow Rates of Thermoplastics by Extrusion Plastometer.
2. *ASTM D 1505*, Standard Test Method for Density of Plastics by the Density-Gradient Technique.
3. *ASTM D 4218*, Standard Test Method for Determination of Carbon Black Content in Polyethylene Compound by the Muffle Furnace Technique.
4. *ASTM D 4716*, Standard Test Method Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of Geosynthetic Using a Constant Head.
5. *ASTM D 7179*, Standard Test Method for Determining Geonet Breaking Force.
6. *ASTM D 5199*, Standard Test Method for Measuring Nominal Thickness.

1.3 QUALIFICATIONS

A. MANUFACTURER

1. The Geonet Manufacturer shall be responsible for the production of geonet rolls and shall be well established firm with more than 10 years of experience in the manufacture of geonet.
2. The Geonet Manufacturer shall have manufactured a minimum of 10,000,000 square feet of geonet during the last year.

B. INSTALLER

1. The Installer shall be responsible for field handling, storing, deploying, seaming or joining, temporary restraining against wind, anchoring systems, and other site aspects of the geonet.
2. The Installer shall be trained and qualified to install geonet.
3. The Installer shall have a minimum of 1,000,000 square feet of geonet in the last 5 (five) years.
4. The Installation Supervisor shall have worked in a similar capacity on projects similar in complexity to the project described in the contract documents.

1.4 MATERIAL LABELING, DELIVERY, STORAGE AND HANDLING

A. LABELING

Each roll delivered to the site shall be wrapped and labeled by the manufacturer. The label will identify:

1. Manufacturer's name
2. Product identification
3. Length
4. Width
5. Roll number

B. DELIVERY

Rolls will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.

C. STORAGE

The on-site storage location provided by the contractor to protect the geonet from abrasions, excessive dirt and moisture shall have the following characteristics:

1. Level (no wooden pallets)
2. Smooth and dry surface
3. Protected from theft and vandalism

D. HANDLING

1. The contractor and installer shall handle all rolls in such a manner to ensure they are not damaged in any way.
2. The installer shall take necessary precautions to prevent damage to underlying layers during placement of the geonet.

1.5 WARRANTY

A. Material shall be warranted on a pro-rata basis against defects for a period or one year from the date of the geonet installation.
B. Installation shall be warranted against defects in workmanship for a period of one year from the date of the geonet installation.

2. PRODUCTS

2.1 GEOCOMPOSITE PROPERTIES

The geonet shall be manufactured by extruding two crossing strands to form a bi-planar drainage net. The geonet core of the geocomposite shall be manufactured from pure virgin HDPE resin, having minimum density of 0.94 g/cm^3. The pure virgin resin shall be mixed with 2 to 3 percent carbon black. The manufacturer shall furnish geonet having properties that comply with the required property values shown in Table 1. The manufacturer shall provide certification that the materials meet or exceed the required values.

Property	Test Method	Required Value	Qualifier
Thickness	ASTM D 5199		MAV [3]
Carbon Black	ASTM D 4218		MAV
Tensile Strength	ASTM D 7179		MAV
Melt Flow	ASTM D 1238[2]		Maximum
Density	ASTM D 1505		MAV
Transmissivity [1]	ASTM D 4716		MAV

1. Transmissivity measured using water at 21+2 °C (70+4 °F) with a gradient of 0.1 and a confining pressure of 10,000 psf between steel plates after 15 minutes
2. Condition 190/2.16
3. Minimum average value

2.2 MANUFACTURER QUALITY CONTROL

A. The geonet shall be manufactured with quality control procedures that meet generally accepted industry standards.
B. The geonet manufacturer shall sample and test the geonet rolls to demonstrate that the material conforms to the requirements of this section.
C. Any geonet sample does not comply with this section shall result in rejection of the roll from which the sample was obtained. The rejected roll shall not be used.
D. The geonet shall be tested by the geonet manufacturer for quality control, at the typical frequencies used at manufacturer's plant to evaluate its physical and mechanical properties.

2.3 TRANSPORT

A. Transportation of the geonet shall be the responsibility of the contractor.
B. During shipment, the geonet shall be protected from precipitation, mud, dirt, dust, puncture, or other damaging and deteriorating conditions.

3. EXECUTION

3.1 FAMILIARIZATION

A. Prior to implementing any of the work, the installer shall carefully inspect the installed work and verify that all work is complete to the point where the next installation may properly commence without adverse impact.
B. If the installer has any concerns regarding the installed work, he/she shall notify the project engineer.

3.2 MATERIAL PLACEMENT

A. The geonet rolls shall be handled in such manner as to ensure that they are not damaged in any way.
B. The geonet shall be installed in the direction of the slope and in the intended direction of flow unless otherwise specified by the Engineer.
C. The geonet shall be rolled down the slope in such manner as to continuously keep the geonet in tension by self-weight. The geonet shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.

D. In the presence of wind, all geonets shall be weighted down with sandbags or approved equivalent. Such anchors shall be used during placement and shall remain in place until replaced with cover material.
E. The contractor shall take necessary precautions to prevent damage to adjacent or underlying materials during placement of the geonets.
F. The contractor shall take care not to entrap soil, stones or excessive moisture in the geonet during placement.
G. In applying fill material, no equipment can drive directly across the geonet. The specified fill material shall be place and spread utilizing vehicles with low ground pressure.
H. Placement of cover soil shall proceed immediately following the placement and inspection of the geonet.

3.3 SEAMS AND OVERLAPS

A. Adjacent edges of along the length of the geonet roll shall be overlapped a minimum of 4 inches or as recommended by the Engineer.
B. The overlapped edges shall be joined by tying the geonet using natural or yellow cable ties spaced every five feet along roll length.
C. Adjoining rolls across the roll width should be shingled down in the direction of the slope and joined together with cable ties spaced every one foot along the roll width

3.4 REPAIR

A. Prior to covering the deployed geonet, each roll shall be inspected for damage resulting from construction.
B. Any rips, tears or damaged areas on the deployed geonet shall be removed and patched. The patch shall be secured to the original geonet by tying every six inches with approved tying devices. If the area to be repaired is more than 50 percent of the width of the panel, the damaged area shall be cut out and two portions of the remaining geonet shall be joined in accordance with above subsection 3.3.
C. Care shall be taken to remove any soil or other material which may have penetrated to geonet.

END OF SECTION