### Geosynthetic Reinforcement Property Requirements

**Table 10**

<table>
<thead>
<tr>
<th>Geosynthetic Type</th>
<th>Test Methods</th>
<th>Units</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geogrid</td>
<td>ASTM D6357</td>
<td>kN/m</td>
<td><strong>Minimum Strength to Resist Installation Damage</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>T&lt;sub&gt;inst&lt;/sub&gt;</strong></td>
</tr>
<tr>
<td>Geogrid</td>
<td>ASTM D6357</td>
<td>kN/m</td>
<td><strong>Ultimate Tensile Strength based on Structure Specific Design</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>R&lt;sub&gt;U&lt;/sub&gt;&lt;sup&gt;c&lt;/sup&gt;</strong></td>
</tr>
<tr>
<td>Geogrid</td>
<td>ASTM D6357</td>
<td>kN/m</td>
<td><strong>Stiffness at 1,000 lbs and 2% Strain</strong>&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

- <sup>a</sup> The minimum strength required here are to limit damage to the geosynthetic during installation to a tolerable and predictable level. All values are maximum values unless otherwise specified.
- <sup>b</sup> **T<sub>inst</sub>** is determined from internal stability analysis of the wall or reinforced slope under consideration in accordance with the AASHTO LRFD Bridge Design Specifications, Article 11.10.6. 6 lb. FS is the safety factor, or for Load and Resistance Factor Design (LRFD), the combination of load factor divided by the resistance factor, **R<sub>inst</sub>** = **R<sub>FS</sub>**/**R<sub>FS</sub>**
- <sup>c</sup> The default value of **R<sub>U</sub>** shall be used only if the geosynthetic meets the minimum requirements for Table 10. If the effective design tension is greater than 20% but less than 30%, a default value for **R<sub>U</sub>** of 0.7 shall be used. If **R<sub>U</sub>** is greater than 1.0, consideration should be given to either using a thinner backfill material with a smaller top size to reduce installation damage, or conducting larger tension tests on damaged material to justify the use of a default reduction factor of **R<sub>FS</sub>**.
- <sup>d</sup> Minimum strength requirements are based on the results of numerous evaluations of geogrids, as it was determined that installation damage was manifested for products with a minimum weight of 279 g/m² (10 oz/yd²) (Koenze and Koenzer, 1999; Allen, 1991). This roughly corresponds to a Class 1 geogrid as specified in Table 1. A lighter weight geogrid class may be used if site specific installation damage testing is conducted in accordance with R 69, and RF<sub>U</sub> is determined to be 1.7 or less.
- <sup>e</sup> Property requirement is optional as specified by the purchasing agency.

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**Enhancement Geotextile**

Based on properties in Table 6

**HP570**

NTPEP Listed

**CLASS 1A**

Woven (elongation < 50%)

Enhancement Geotextile:

For the engineer choosing geotextile reinforcement, we recommend using NTPEP REGEO data and Miragrid XT geogrids as outlined in Section 11.

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**Geotextile and Geogrid Property Requirements for Reinforced Soil Applications**

Table 10 has been added for MSE structures. Section 11.1 does indicate – “This specification is applicable to placing a geotextile or geogrid between layers of compacted fill for reinforced soil structures such as retaining walls or reinforced slopes.” If a roadway specs or other applications referenced with properties in Table 10, we should explain the proper applications for Table 10 is MSE walls and slopes. If specifications for retaining walls reference Table 10 and indicate a Class 1 geotextile which is Mirafi 600X and Mirafi 180N, these products should not be used as reinforcement for MSE structures. Section 11 should only be used for Miragrid XT geogrid products. It is not for Class 1 or even Class 1A materials. We recommend using NTPEP REGEO data and Miragrid XT geogrids for MSE structures as outlined in Section 11.