

1 **(February 6, 2023)**

2 **Welded Wire Faced Structural Earth Wall Materials**

3 **Welded Wire Mats and Backing Mats**

4 Welded wire fabric for welded wire mats, welded wire form facing units, and  
5 backing mats shall conform to AASHTO M 336, and shall be fabricated from plain  
6 wire fabric conforming to AASHTO M 336 Grade 65.

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8 The minimum clear opening dimension of the backing mat, or the combination of  
9 welded wire form facing unit with geosynthetic wall facing wrap, shall not exceed  
10 the minimum particle size of the wall facing backfill as specified below.

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12 Welded wire fabric for welded wire mats, welded wire form facing units, and  
13 backing mats shall be galvanized after fabrication in accordance with either ASTM  
14 A641 (two ounces minimum per square foot) or AASHTO M 111. All damage to the  
15 galvanizing shall be repaired with one coat of paint conforming to Section 9-  
16 08.1(2)B.

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18 **Backfill for Welded Wire Faced Structural Earth Wall**

19 The coarse, granular material used for the wall facing backfill placed immediately  
20 behind the wall face, as shown in the Plans, shall conform to the following  
21 gradation requirements:

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- 23 1. The minimum particle size shall be no less than the width of the minimum  
24 opening dimension in the backing mat or the geosynthetic wall facing  
25 wrap.
  - 26
  - 27 2. The maximum particle size shall be no greater than six inches for welded  
28 wire reinforced walls, and no greater than four inches for geosynthetic  
29 reinforced walls.
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31 **Proprietary Materials**

32 **Hilfiker Welded Wire Retaining Wall (WWW) System**

33 Welded wire fabric wire size for backing mats shall be W2.1 minimum for wall  
34 face backing layers of 1'-6" maximum thickness, and shall be W2.5 minimum  
35 for wall face backing layers between 1'-6" and 2'-0".

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37 Construction geotextile for wall facing shall conform to the requirements in  
38 Section 9-33.1 for Construction Geotextile for Underground Drainage,  
39 Moderate Survivability, Class A.

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41 **Tensor Wire Form Retaining Wall System**

42 Wire support struts shall conform to AASHTO M 336, and shall be galvanized  
43 after fabrication in accordance with either ASTM A641 (two ounces minimum  
44 per square foot) or AASHTO M 111. All damage to the galvanizing shall be  
45 repaired with one coat of paint conforming to Section 9-08.1(2)B.

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47 Geosynthetic connection rods shall be manufactured from high-density  
48 polyethylene with either fiberglass inclusions or oriented polypropylene, as  
49 recommended by Tensor Earth Technologies, Inc.

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51 Geosynthetic separating the wall facing backfill from the welded wire faced  
52 structural earth wall backfill shall conform to the requirements in Section 9-33.1

for Construction Geotextile for Underground Drainage, Moderate Survivability, Class A.

#### **Tensar Geogrid Materials**

Geogrid reinforcement and geosynthetic wall facing wrap shall conform to Section 9-33.1, and shall be a product listed in Appendix D of the current WSDOT Qualified Products List (QPL). The values of  $T_{al}$  and  $T_{ult}$  as listed in the QPL for the products used shall meet or exceed the values required for the wall manufacturer's reinforcement design as specified in the structural earth wall design calculation and working drawing submittal.

The minimum ultimate tensile strength of the geogrid shall be a minimum average roll value (the average test results for any sampled roll in a lot shall meet or exceed the values shown in Appendix D of the current WSDOT QPL). The strength shall be determined in accordance with ASTM D6637 for multi-rib specimens.

For geogrid reinforcement and geosynthetic wall facing wrap, the ultraviolet (UV) radiation stability, in accordance with ASTM D4355, shall be a minimum of 70 percent strength retained after 500 hours in the weatherometer.

The longitudinal (i.e., in the direction of loading) and transverse (i.e., parallel to the wall or slope face) ribs that make up the geogrid shall be perpendicular to one another.

The Engineer will take random samples of the geogrid materials at the job site. Approval of the geogrid materials will be based on testing of samples from each lot. A "lot" shall be defined as all geogrid rolls sent to the project site produced by the same manufacturer during a continuous period of production at the same manufacturing plant having the same product name. The Contracting Agency will require 14 calendar days maximum for testing the samples after their arrival at the WSDOT Materials Laboratory in Tumwater, WA.

The geogrid samples will be tested for conformance to the specified material properties. If the test results indicate that the geogrid lot does not meet the specified properties, the roll or rolls which were samples will be rejected. Two additional rolls for each roll tested which failed from the lot previously tested will then be selected at random by the Engineer for sampling and retesting. If the retesting shows that any of the additional rolls tested do not meet the specified properties, the entire lot will be rejected. If the test results from all the rolls retested meet the specified properties, the entire lot minus the roll(s) which failed will be accepted.

All geogrid materials which have defects, deterioration, or damage, as determined by the Engineer, will be rejected. All rejected geogrid materials shall be replaced at no expense to the Contracting Agency.

Except as otherwise noted, geogrid identification, storage and handling shall conform to the requirements specified in Section 2-12.2. The geogrid

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materials shall not be exposed to temperatures less than -20°F and greater than 122°F.