



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

October 22, 2012

Willie Liew, P.E.
Application Technology Manager
Tensar International Corporation
2500 Northwinds Parkway
Suite 500
Alpharetta, GA 30009

Subject: Approval of Tensar Geogrids

Dear Mr. Liew:

The Materials and Tests Unit has reviewed the submittal dated August 14, 2012 for Tensar geogrids in accordance with the “NCDOT Guidelines for the Geogrid Evaluation Program”. In addition to the August 14, 2012 submittal, final updated information was received on October 15, 2012. Based on this information, Tensar geogrids listed in the table below are approved for provisional use on North Carolina Department of Transportation projects in accordance with the applicable contract and the following:

| Geogrid and Direction (MD, CD) | Polymer (PET, HDPE, PP) | Aperture Size (inches) | T _{ult} (lb/ft) | T _{2%} (lb/ft) | T _{5%} (lb/ft) | J _{ave} (lb) | J (m-N/deg) | RF _{CR} | | | RF _D |
|--------------------------------|-------------------------|------------------------|--------------------------|-------------------------|-------------------------|-----------------------|-------------|------------------|-------|--------|-----------------|
| | | | | | | | | 3-yr | 75-yr | 100-yr | |
| UX1100MSE/HS (MD) | HDPE | 16.9 | 3,970 | 890 | 1,850 | | | 2.33 | 2.59 | 2.62 | 1.3 |
| BX1120 (MD) | PP | 1.0 | 850 | 280 | 580 | | | | | | |
| BX1120 (CD) | PP | 1.3 | 1,300 | 450 | 920 | | | | | | |
| BX1220 (MD) | PP | 1.0 | 1,310 | 410 | 810 | | | | | | |
| BX1220 (CD) | PP | 1.3 | 1,970 | 620 | 1,340 | | | | | | |

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| Geogrid and Direction (MD, CD) | Borrow ($\phi = 30^\circ$) | | | | | | | | | | |
|---|--|------|-------|--------|-------------------------|-------|--------|----------------------------|-------------------------------|-----------------|--------------|
| | RF _{ID} | RF | | | T _{al} (lb/ft) | | | C _i | F* | C _{ds} | ρ (deg) |
| | | 3-yr | 75-yr | 100-yr | 3-yr | 75-yr | 100-yr | | | | |
| UX1100MSE/HS (MD) | 1.1 | 2.56 | 3.70 | 3.75 | 1,551 | 1,073 | 1,058 | 0.6 | 0.346 | 0.8 | 24.79 |
| BX1120 (MD) | | | | | | | | 0.8 | 0.462 | 0.8 | 24.79 |
| BX1120 (CD) | | | | | | | | 0.8 | 0.462 | 0.8 | 24.79 |
| BX1220 (MD) | | | | | | | | 0.8 | 0.462 | 0.8 | 24.79 |
| BX1220 (CD) | | | | | | | | 0.8 | 0.462 | 0.8 | 24.79 |
| Geogrid and Direction (MD, CD) | Fine Aggregate ($\phi = 34^\circ$) | | | | | | | | | | |
| | RF _{ID} | RF | | | T _{al} (lb/ft) | | | C _i | F* | C _{ds} | ρ (deg) |
| | | 3-yr | 75-yr | 100-yr | 3-yr | 75-yr | 100-yr | | | | |
| UX1100MSE/HS (MD) | 1.12 | 2.61 | 3.77 | 3.81 | 1,521 | 1,053 | 1,042 | 0.75 0.6 ⁽¹⁾ | 0.506 0.405 ⁽¹⁾ | 0.8 | 28.35 |
| BX1120 (MD) | | | | | | | | 0.8 | 0.54 | 0.8 | 28.35 |
| BX1120 (CD) | | | | | | | | 0.8 | 0.54 | 0.8 | 28.35 |
| BX1220 (MD) | | | | | | | | 0.8 | 0.54 | 0.8 | 28.35 |
| BX1220 (CD) | | | | | | | | 0.8 | 0.54 | 0.8 | 28.35 |
| (1) UX1100 geogrid greater than 2 ft. below top of wall | | | | | | | | | | | |
| Geogrid and Direction (MD, CD) | Coarse Aggregate ($\phi = 38^\circ$) | | | | | | | | | | |
| | RF _{ID} | RF | | | T _{al} (lb/ft) | | | C _i | F* | C _{ds} | ρ (deg) |
| | | 3-yr | 75-yr | 100-yr | 3-yr | 75-yr | 100-yr | | | | |
| UX1100MSE/HS (MD) | 1.25 | 2.91 | 4.21 | 4.26 | 1,364 | 943 | 932 | 0.8 | 0.625 | 0.8 | 32.0 |
| BX1120 (MD) | | | | | | | | 0.9 | 0.7 | 0.8 | 32.0 |
| BX1120 (CD) | | | | | | | | 0.9 | 0.7 | 0.8 | 32.0 |
| BX1220 (MD) | | | | | | | | 0.9 | 0.7 | 0.8 | 32.0 |
| BX1220 (CD) | | | | | | | | 0.9 | 0.7 | 0.8 | 32.0 |

If you have any questions, please contact C. K. Su at (919) 329-4150 or Jack Cowser at (919) 329-4000.

Sincerely,



Christopher A. Peoples, P.E.
 State Materials Engineer

cc: Njoroge Wainaina, P.E., State Geotechnical Engineer