



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

May 23, 2012

Bruce A. Lacina, P.E.
Senior Engineer, Technical Services
TenCate Geosynthetics
365 South Holland Drive
Pendergrass, GA 30567

Subject: Approval of TenCate Geogrids

Dear Mr. Lacina:

The Materials and Tests Unit has reviewed the submittal dated November 16, 2011 for TenCate geogrids in accordance with the "NCDOT Guidelines for the Geogrid Evaluation Program". In addition to the November 16, 2011 submittal, final updated information was received on May 22, 2012. Based on this information, TenCate geogrids listed in the table below are approved for 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	
Miragrid 2XT (MD, CD)	PET	0.875 x 1.0	2,000	580	950	-	-	1.37	1.45	1.47	1.30
Miragrid 3XT (MD)	PET	1.0 x 1.0	3,500	800	1,056	-	-	1.37	1.45	1.47	1.30
Miragrid 5XT (MD)	PET	1.2 x 1.0	4,700	1,060	1,740	-	-	1.37	1.45	1.47	1.30
Miragrid 7XT (MD)	PET	1.3 x 0.9	5,900	1,250	2,160	-	-	1.37	1.45	1.47	1.30
Miragrid 8XT (MD)	PET	1.3 x 0.9	7,400	1,300	2,520	-	-	1.37	1.45	1.47	1.30
Miragrid 10XT (MD)	PET	1.3 x 0.8	9,500	1,900	3,120	-	-	1.37	1.45	1.47	1.30
Miragrid 20XT (MD)	PET	1.5 x 0.6	13,705	2,900	5,340	-	-	1.37	1.45	1.47	1.30
Miragrid 22XT (MD)	PET	1.4 x 0.6	20,559	3,700	6,700	-	-	1.37	1.45	1.47	1.30
Miragrid 24XT (MD)	PET	1.4 x 0.5	27,415	4,500	7,000	-	-	1.37	1.45	1.47	1.30

MAILING ADDRESS:
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LOCATION:
1801 BLUE RIDGE ROAD
RALEIGH NC 27607

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				
Miragrid 2XT (MD, CD)	1.05	1.44	1.98	2.01	1,390	1,010	997	0.85	0.49	0.85	26.1
Miragrid 3XT (MD)	1.05	1.44	1.98	2.01	2,433	1,768	1,744	0.85	0.49	0.85	26.1
Miragrid 5XT (MD)	1.05	1.44	1.98	2.01	3,267	2,375	2,342	0.85	0.49	0.85	26.1
Miragrid 7XT (MD)	1.05	1.44	1.98	2.01	4,101	2,981	2,940	0.85	0.49	0.85	26.1
Miragrid 8XT (MD)	1.05	1.44	1.98	2.01	5,144	3,739	3,688	0.85	0.49	0.85	26.1
Miragrid 10XT (MD)	1.05	1.44	1.98	2.01	6,604	4,800	4,734	0.85	0.49	0.85	26.1
Miragrid 20XT (MD)	1.05	1.44	1.98	2.01	9,527	6,924	6,830	0.85	0.49	0.85	26.1
Miragrid 22XT (MD)	1.05	1.44	1.98	2.01	14,292	10,387	10,246	0.85	0.49	0.85	26.1
Miragrid 24XT (MD)	1.05	1.44	1.98	2.01	19,058	13,851	13,663	0.85	0.49	0.85	26.1
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				
Miragrid 2XT (MD, CD)	1.10	1.51	2.07	2.10	1,327	965	951	0.90	0.61	0.90	31.3
Miragrid 3XT (MD)	1.10	1.51	2.07	2.10	2,322	1,688	1,665	0.90	0.61	0.90	31.3
Miragrid 5XT (MD)	1.10	1.51	2.07	2.10	3,119	2,267	2,236	0.90	0.61	0.90	31.3
Miragrid 7XT (MD)	1.10	1.51	2.07	2.10	3,915	2,845	2,807	0.90	0.61	0.90	31.3
Miragrid 8XT (MD)	1.10	1.51	2.07	2.10	4,910	3,569	3,520	0.90	0.61	0.90	31.3
Miragrid 10XT (MD)	1.10	1.51	2.07	2.10	6,304	4,582	4,519	0.90	0.61	0.90	31.3
Miragrid 20XT (MD)	1.10	1.51	2.07	2.10	9,094	6,610	6,520	0.90	0.61	0.90	31.3
Miragrid 22XT (MD)	1.10	1.51	2.07	2.10	13,642	9,915	9,780	0.90	0.61	0.90	31.3
Miragrid 24XT (MD)	1.10	1.51	2.07	2.10	18,192	13,222	13,042	0.90	0.61	0.90	31.3
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				
Miragrid 2XT (MD, CD)	1.25	1.71	2.36	2.39	1,168	849	837	0.90	0.70	0.90	35.1
Miragrid 3XT (MD)	1.25	1.71	2.36	2.39	2,044	1,485	1,465	0.90	0.70	0.90	35.1
Miragrid 5XT (MD)	1.25	1.71	2.36	2.39	2,745	1,995	1,968	0.90	0.70	0.90	35.1
Miragrid 7XT (MD)	1.25	1.71	2.36	2.39	3,445	2,504	2,470	0.90	0.70	0.90	35.1
Miragrid 8XT (MD)	1.25	1.71	2.36	2.39	4,321	3,141	3,098	0.90	0.70	0.90	35.1
Miragrid 10XT (MD)	1.25	1.71	2.36	2.39	5,547	4,032	3,977	0.90	0.70	0.90	35.1

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Page 3

Miragrid 20XT (MD)	1.25	1.71	2.36	2.39	8,003	5,816	5,737	0.90	0.70	0.90	35.1
Miragrid 22XT (MD)	1.25	1.71	2.36	2.39	12,005	8,725	8,607	0.90	0.70	0.90	35.1
Miragrid 24XT (MD)	1.25	1.71	2.36	2.39	16,009	11,635	11,477	0.90	0.70	0.90	35.1

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