Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

February 3, 2016

Gilbert Flores
Tricon Precast, Ltd.
15055 Henry Road
Houston, TX 77060

Subject: Renewal of Tricon's Retained Soil Wall System

Dear Mr. Flores:

The Geotechnical Engineering Unit (GEU) has reviewed the renewal submittal for Tricon's Retained Soil Wall System in accordance with the *NCDOT Policy for Mechanically Stabilized Earth Retaining Walls* and the GEU Standard *Mechanically Stabilized Earth (MSE) Retaining Walls* Provision. Based on the information submitted, Tricon's MSE wall system is **approved for use** on North Carolina Department of Transportation (NCDOT) projects in accordance with the MSE wall policy and standard provision. This policy and provision may be obtained from: https://connect.ncdot.gov/resources/Geological/Pages/Products.aspx

This letter includes the approved facing elements, bearing pads, reinforcements and connectors with design parameter tables and miscellaneous components for the Tricon system in accordance with the GEU standard MSE wall provision.

Facing Elements
10 ft x 5 ft x 5 ½" thick and 5 ft x 5 ft x 5 ½" thick Rectangular Precast Concrete Panels

Bearing Pads
5" x 2 ¼" x 0.875" and 0.750" thick HDPE Bearing Pads per the table below:

Panel Size	Maximum Wall Height Above Horizontal Panel Joint	Pad Thickness	Minimum Number of Pads per Horizontal Panel Joint
10 ft x 5 ft	35 ft[1]	0.875"	2
5 ft x 5 ft		0.750"	

1. Additional bearing pads per horizontal panel joint may be required for wall heights above joints greater than 35 ft.

Reinforcements and Connectors
W9.0 x W9.0, W11.0 x W9.0, W13.0 x W9.0 and W14.0 x W9.0 Welded Wire Steel Mats with Crimplock Connectors in accordance with the design parameter tables attached to this letter

Miscellaneous Components
W9.0 Locking Rod for mat connections as required by Tricon

A renewal is required if the Tricon system changes or 5 years from the date of this letter for the system to stay on the NCDOT list of approved MSE wall systems. If there are any questions, I can be reached at (919) 707-6850.

Sincerely,

DocuSigned by:
John Pilipchuk
52C44B94B8BE444...

John L. Pilipchuk, L.G., P.E.
State Geotechnical Engineer

Attachments: Design Parameter Tables

cc: Mohammed Mulla, P.E., Geotechnical Contracts & Statewide Services Manager
K. J. Kim, Ph.D., P.E., Eastern Regional Geotechnical Manager
Eric Williams, P.E., Western Regional Geotechnical Manager
Brian Hanks, P.E., Assistant State Structures Engineer
Chris Peoples, P.E., State Materials Engineer
Jessica Kuse, P.E., State Value Management Engineer
Kevin Bowen, P.E., State Bridge Construction Engineer

TEG CIVIL STRUCTURAL ENGINEERING

Aggregate: Coarse	Design Life: 75 Years	Abutment: N/A	Connection: Crimplock				
Carbon Steel Corrosion Rate: 0.47 mil/year		Fy = 65 ksi	b = 12 in	α = 1	CR = 0.89		
Steel Grid Reinforcement (WLongit dia x WTrans dia)	S_t (in)	E_n (in)	A_c (in^2)	$R_{c\ 5x10}$ (Sh_1 = 40 in, Sh_2=30 in, Sh_3 = 24 in)	$R_{c\ 5x5}$ (Sh_1 = 24 in, Sh_2 = 18 in)	F^*_{top}	$F^*_{20\ ft}$
W9.0 x W9.0	4	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W9.0 x W9.0	8	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W9.0 x W9.0	12	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W9.0 x W9.0	16	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W9.0 x W9.0	20	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W9.0 x W9.0	24	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W9.0 x W9.0	28	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W9.0 x W9.0	32	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W9.0 x W9.0	36	0.339	0.189	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W11.0 x W9.0	4	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W11.0 x W9.0	8	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W11.0 x W9.0	12	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W11.0 x W9.0	16	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W11.0 x W9.0	20	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W11.0 x W9.0	24	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W11.0 x W9.0	28	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W11.0 x W9.0	32	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W11.0 x W9.0	36	0.374	0.239	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W13.0 x W9.0	4	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W13.0 x W9.0	8	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W13.0 x W9.0	12	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W13.0 x W9.0	16	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W13.0 x W9.0	20	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W13.0 x W9.0	24	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W13.0 x W9.0	28	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W13.0 x W9.0	32	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W13.0 x W9.0	36	0.407	0.291	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W14.0 x W9.0	4	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W14.0 x W9.0	8	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W14.0 x W9.0	12	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W14.0 x W9.0	16	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W14.0 x W9.0	20	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W14.0 x W9.0	24	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W14.0 x W9.0	28	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W14.0 x W9.0	32	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W14.0 x W9.0	36	0.422	0.317	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094

TEG CIVIL STRUCTURAL ENGINEERING

Aggregate: Fine	Design Life: 75 Years	Abutment: No	Connection: Crimplock			
Carbon Steel Corrosion Rate: 0.58 mil/year		Fy = 65 ksi	b = 12 in	α = 1	CR = 0.88	
Steel Grid Reinforcement (WLongit dia x WTrans dia)	S_t (in)	E_n (in)	A_c (in^2)	$R_{c\ 5x10}$ (Sh_1 = 40 in, Sh_2=30 in, Sh_3 = 24 in)	$R_{c\ 5x5}$ (Sh_1 = 24 in, Sh_2 = 18 in)	F^*_{top}	$F^*_{20\ ft}$
W9.0 x W9.0	4	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W9.0 x W9.0	8	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W9.0 x W9.0	12	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W9.0 x W9.0	16	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W9.0 x W9.0	20	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W9.0 x W9.0	24	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W9.0 x W9.0	28	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W9.0 x W9.0	32	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W9.0 x W9.0	36	0.339	0.172	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W11.0 x W9.0	4	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W11.0 x W9.0	8	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W11.0 x W9.0	12	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W11.0 x W9.0	16	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W11.0 x W9.0	20	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W11.0 x W9.0	24	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W11.0 x W9.0	28	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W11.0 x W9.0	32	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W11.0 x W9.0	36	0.374	0.220	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W13.0 x W9.0	4	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W13.0 x W9.0	8	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W13.0 x W9.0	12	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W13.0 x W9.0	16	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W13.0 x W9.0	20	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W13.0 x W9.0	24	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W13.0 x W9.0	28	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W13.0 x W9.0	32	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W13.0 x W9.0	36	0.407	0.270	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W14.0 x W9.0	4	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W14.0 x W9.0	8	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W14.0 x W9.0	12	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W14.0 x W9.0	16	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W14.0 x W9.0	20	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W14.0 x W9.0	24	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W14.0 x W9.0	28	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W14.0 x W9.0	32	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W14.0 x W9.0	36	0.422	0.295	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094

TEG CIVIL STRUCTURAL ENGINEERING

Aggregate: Fine	Design Life: 75 Years	Abutment: Yes	Connection: Crimplock				
Carbon Steel Corrosion Rate: 0.7 mil/year		Fy = 65 ksi	b = 12 in	α = 1	CR = 0.85		
Steel Grid Reinforcement (WLongit dia x WTrans dia)	S_t (in)	E_n (in)	A_c (in^2)	$R_{c\ 5x10}$ (Sh_1 = 40 in, Sh_2=30 in, Sh_3 = 24 in)	$R_{c\ 5x5}$ (Sh_1 = 24 in, Sh_2 = 18 in)	F^*_{top}	$F^*_{20\ ft}$
W9.0 x W9.0	4	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W9.0 x W9.0	8	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W9.0 x W9.0	12	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W9.0 x W9.0	16	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W9.0 x W9.0	20	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W9.0 x W9.0	24	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W9.0 x W9.0	28	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W9.0 x W9.0	32	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W9.0 x W9.0	36	0.339	0.154	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W11.0 x W9.0	4	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W11.0 x W9.0	8	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W11.0 x W9.0	12	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W11.0 x W9.0	16	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W11.0 x W9.0	20	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W11.0 x W9.0	24	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W11.0 x W9.0	28	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W11.0 x W9.0	32	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W11.0 x W9.0	36	0.374	0.200	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W13.0 x W9.0	4	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W13.0 x W9.0	8	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W13.0 x W9.0	12	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W13.0 x W9.0	16	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W13.0 x W9.0	20	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W13.0 x W9.0	24	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W13.0 x W9.0	28	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W13.0 x W9.0	32	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W13.0 x W9.0	36	0.407	0.248	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W14.0 x W9.0	4	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W14.0 x W9.0	8	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W14.0 x W9.0	12	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W14.0 x W9.0	16	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W14.0 x W9.0	20	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W14.0 x W9.0	24	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W14.0 x W9.0	28	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W14.0 x W9.0	32	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W14.0 x W9.0	36	0.422	0.272	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094

TEG CIVIL STRUCTURAL ENGINEERING

Aggregate: Coarse	Design Life: 100 Years	Abutment: N/A	Connection: Crimplock				
Carbon Steel Corrosion Rate: 0.47 mil/year		Fy = 65 ksi	b = 12 in	α = 1	CR = 0.86		
Steel Grid Reinforcement (WLongit dia x WTrans dia)	S_t (in)	E_n (in)	A_c (in^2)	$R_{c\ 5x10}$ (Sh_1 = 40 in, Sh_2=30 in, Sh_3 = 24 in)	$R_{c\ 5x5}$ (Sh_1 = 24 in, Sh_2 = 18 in)	F^*_{top}	$F^*_{20\ ft}$
W9.0 x W9.0	4	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W9.0 x W9.0	8	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W9.0 x W9.0	12	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W9.0 x W9.0	16	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W9.0 x W9.0	20	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W9.0 x W9.0	24	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W9.0 x W9.0	28	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W9.0 x W9.0	32	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W9.0 x W9.0	36	0.339	0.159	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W11.0 x W9.0	4	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W11.0 x W9.0	8	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W11.0 x W9.0	12	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W11.0 x W9.0	16	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W11.0 x W9.0	20	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W11.0 x W9.0	24	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W11.0 x W9.0	28	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W11.0 x W9.0	32	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W11.0 x W9.0	36	0.374	0.205	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W13.0 x W9.0	4	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W13.0 x W9.0	8	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W13.0 x W9.0	12	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W13.0 x W9.0	16	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W13.0 x W9.0	20	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W13.0 x W9.0	24	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W13.0 x W9.0	28	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W13.0 x W9.0	32	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W13.0 x W9.0	36	0.407	0.253	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W14.0 x W9.0	4	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W14.0 x W9.0	8	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W14.0 x W9.0	12	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W14.0 x W9.0	16	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W14.0 x W9.0	20	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W14.0 x W9.0	24	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W14.0 x W9.0	28	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W14.0 x W9.0	32	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W14.0 x W9.0	36	0.422	0.278	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094

TEG CIVIL STRUCTURAL ENGINEERING

Aggregate: Fine	Design Life: 100 Years	Abutment: No	Connection: Crimplock			
Carbon Steel Corrosion Rate: 0.58 mil/year	Fy = 65 ksi	b = 12 in	α = 1	CR = 0.89		
Steel Grid Reinforcement (WLongit dia x WTrans dia)	S_t (in)	E_n (in)	A_c (in^2)	$R_{c\ 5x10}$ (Sh_1 = 40 in, Sh_2=30 in, Sh_3 = 24 in)	$R_{c\ 5x5}$ (Sh_1 = 24 in, Sh_2 = 18 in)	F^*_{top}	$F^*_{20\ ft}$
W9.0 x W9.0	4	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W9.0 x W9.0	8	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W9.0 x W9.0	12	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W9.0 x W9.0	16	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W9.0 x W9.0	20	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W9.0 x W9.0	24	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W9.0 x W9.0	28	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W9.0 x W9.0	32	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W9.0 x W9.0	36	0.339	0.137	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W11.0 x W9.0	4	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W11.0 x W9.0	8	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W11.0 x W9.0	12	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W11.0 x W9.0	16	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W11.0 x W9.0	20	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W11.0 x W9.0	24	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W11.0 x W9.0	28	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W11.0 x W9.0	32	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W11.0 x W9.0	36	0.374	0.181	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W13.0 x W9.0	4	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W13.0 x W9.0	8	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W13.0 x W9.0	12	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W13.0 x W9.0	16	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W13.0 x W9.0	20	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W13.0 x W9.0	24	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W13.0 x W9.0	28	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W13.0 x W9.0	32	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W13.0 x W9.0	36	0.407	0.226	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094

TEG CIVIL STRUCTURAL ENGINEERING

Aggregate: Fine	Design Life: 100 Years	Abutment: Yes	Connection: Crimplock				
Carbon Steel Corrosion Rate: 0.7 mil/year		Fy = 65 ksi	b = 12 in	α = 1	CR = 0.86		
Steel Grid Reinforcement (WLongit dia x WTrans dia)	S_t (in)	E_n (in)	A_c (in^2)	$R_{c\ 5x10}$ (Sh_1 = 40 in, Sh_2=30 in, Sh_3 = 24 in)	$R_{c\ 5x5}$ (Sh_1 = 24 in, Sh_2 = 18 in)	F^*_{top}	$F^*_{20\ ft}$
W9.0 x W9.0	4	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W9.0 x W9.0	8	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W9.0 x W9.0	12	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W9.0 x W9.0	16	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W9.0 x W9.0	20	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W9.0 x W9.0	24	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W9.0 x W9.0	28	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W9.0 x W9.0	32	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W9.0 x W9.0	36	0.339	0.115	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W11.0 x W9.0	4	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W11.0 x W9.0	8	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W11.0 x W9.0	12	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W11.0 x W9.0	16	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W11.0 x W9.0	20	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W11.0 x W9.0	24	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W11.0 x W9.0	28	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W11.0 x W9.0	32	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W11.0 x W9.0	36	0.374	0.155	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094
W13.0 x W9.0	4	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	1.693	0.846
W13.0 x W9.0	8	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.846	0.423
W13.0 x W9.0	12	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.564	0.282
W13.0 x W9.0	16	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.423	0.212
W13.0 x W9.0	20	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.339	0.169
W13.0 x W9.0	24	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.282	0.141
W13.0 x W9.0	28	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.242	0.121
W13.0 x W9.0	32	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.212	0.106
W13.0 x W9.0	36	0.407	0.197	0.3, 0.4, 0.5	0.5, 0.667	0.188	0.094