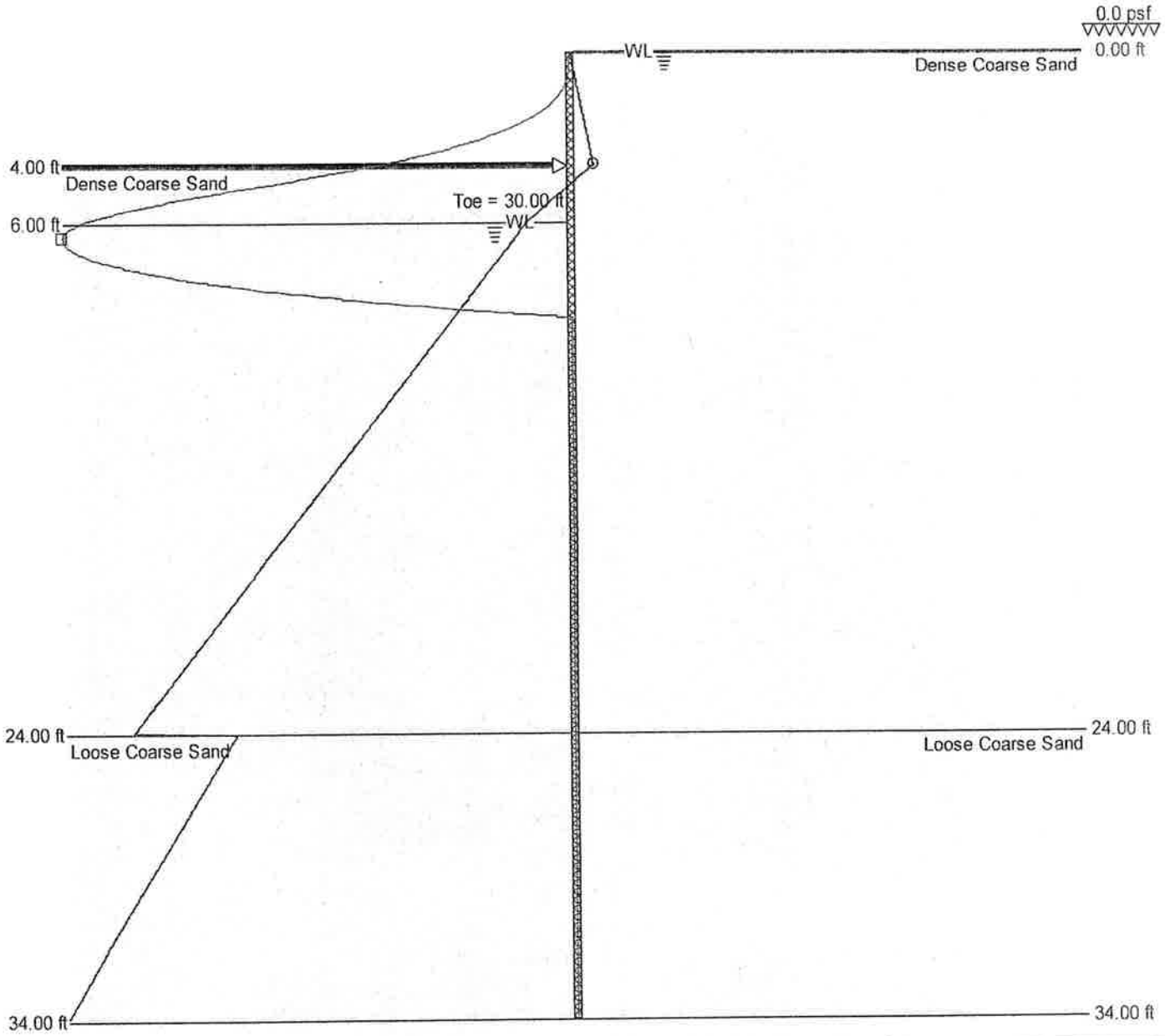
Railroad Gate 1

Client: Town of Derby

Title: Levee Certification
Designer: Glenn jarvis
Ref: 1560-119
Page: 1
Date: 11.24.10

Sheet: MZ-32
Pressure: Rankine
Toe: Cantilever

Maximum		d (ft)
O	310.0 psf	4.00
□	2163.7 ftlb/ft	6.49



Milone & MacBroom, Inc.

99 Realty Drive
Cheshire, CT 06410
Tel: 2032711773
Fax: 2032729733
EMail: gdjarvis@miloneandmacbroom.com

SPW911, v2.00

© 2001, Pile Buck®, Inc
Email: pilebuck@pilebuck.com
Web www.pilebuck.com

Client: Town of Derby

Title: Levee Certification
Designer: Glenn jarvis
Ref: 1560-119
Page: 2
Date: 11.24.10

Sheet: MZ-32
Pressure: Rankine
Toe: Cantilever

Input Data

Depth Of Excavation = 4.00 ft
Surcharge = 0.0 psf
Depth Of Active Water = 0.00 ft
Depth Of Passive Water = 6.00 ft
Water Density = 62.37 pcf
Minimum Fluid Density = 31.82 pcf

Soil Profile

Depth (ft)	Soil Name	γ (pcf)	γ'(pcf)	C (psf)	C_a (psf)	ϕ (°)	δ (°)	K_a	K_{ac}	K_p	K_{pc}
0.00	Dense Coarse Sand	115.82	68.73	0.0	0.0	40.0	0.0	0.22	0.00	4.60	0.00
24.00	Loose Coarse Sand	106.28	68.73	0.0	0.0	35.0	0.0	0.27	0.00	3.69	0.00

Solution

Sheet

Sheet Name	I (in⁴/ft)	E (psi)	Z (in³/ft)	f (psi)	Maximum Bending Moment (ftlb/ft)	Upstand (ft)	Toe (ft)	Pile Length (ft)
MZ-32	385.70	3.04E+07	38.30	25000.0	79696.6	0.00	30.00	34.00

Maxima

	Maximum	Depth
Bending Moment	2163.7 ftlb/ft	6.49 ft
Pressure	310.0 psf	4.00 ft
Shear Force	726.0 lb/ft	4.67 ft

Milone & MacBroom, Inc.
99 Realty Drive
Cheshire, CT 06410
Tel: 2032711773
Fax: 2032729733
EMail: gdjarvis@miloneandmacbroom.com

SPW911, v2.00
© 2001, Pile Buck®, Inc.
Email piebuck@piebuck.com
Web www.piebuck.com

Client: Town of Derby

Title: Levee Certification
Designer: Glenn jarvis
Ref: 1560-119
Page: 4
Date: 11.24.10

Sheet: MZ-32
Pressure: Rankine
Toe: Cantilever

depth (ft)	P (psf)	M (ftlb/ft)	D (in)	F (lb/ft)
0.00	0.0	0.0	0.0	0.0
0.30	24.2	0.4	0.0	4.0
0.60	48.3	3.1	0.0	15.7
0.90	70.3	9.6	0.0	32.8
1.20	94.4	23.3	0.0	58.8
1.50	118.6	46.1	0.0	92.3
1.81	140.5	76.9	0.0	129.3
2.11	164.7	123.8	0.0	177.2
2.41	186.6	180.2	0.0	227.3
2.71	210.8	259.7	0.0	289.6
3.01	234.9	359.6	0.0	359.4
3.31	256.9	470.2	0.0	429.3
3.61	281.0	615.8	0.0	513.5
3.91	305.2	788.6	0.0	605.2
4.21	209.0	970.5	0.0	680.9
4.51	67.1	1189.7	0.0	722.0
4.81	-61.9	1395.0	0.0	720.9
5.12	-203.8	1614.7	0.0	677.5
5.42	-345.7	1814.5	0.0	589.9
5.72	-474.7	1967.5	0.0	471.8
6.02	-611.2	2091.3	0.0	300.0
6.32	-705.0	2156.3	0.0	93.6
6.62	-790.3	2161.1	0.0	-48.3
6.92	-884.1	2126.1	0.0	-161.3
7.22	-969.4	2048.0	0.0	-238.6
7.52	-1063.2	1923.1	0.0	-295.8
7.82	-1157.1	1747.9	0.0	-323.7
8.12	-1242.4	1550.7	0.0	-323.7
8.42	-1336.2	1232.8	0.0	-295.8
8.73	-1421.5	932.7	0.0	-245.0
9.03	-1515.3	529.8	0.0	-161.3
9.33	-1609.1	59.5	0.0	-48.3
9.63	-1694.4	0.0	0.0	0.0
9.93	-1788.3	0.0	0.0	0.0
10.23	-1882.1	0.0	0.0	0.0
10.53	-1967.4	0.0	0.0	0.0
10.83	-2061.2	0.0	0.0	0.0
11.13	-2146.5	0.0	0.0	0.0
11.43	-2240.3	0.0	0.0	0.0
11.73	-2334.1	0.0	0.0	0.0
12.04	-2419.4	0.0	0.0	0.0
12.34	-2513.3	0.0	0.0	0.0
12.64	-2607.1	0.0	0.0	0.0
12.94	-2692.4	0.0	0.0	0.0
13.24	-2786.2	0.0	0.0	0.0
13.54	-2871.5	0.0	0.0	0.0
13.84	-2965.3	0.0	0.0	0.0
14.14	-3059.2	0.0	0.0	0.0
14.44	-3144.5	0.0	0.0	0.0
14.74	-3238.3	0.0	0.0	0.0
15.04	-3323.6	0.0	0.0	0.0
15.35	-3417.4	0.0	0.0	0.0
15.65	-3511.2	0.0	0.0	0.0
15.95	-3596.5	0.0	0.0	0.0
16.25	-3690.3	0.0	0.0	0.0
16.55	-3784.2	0.0	0.0	0.0
16.85	-3869.5	0.0	0.0	0.0
17.15	-3963.3	0.0	0.0	0.0
17.45	-4048.6	0.0	0.0	0.0
17.75	-4142.4	0.0	0.0	0.0
18.05	-4236.2	0.0	0.0	0.0
18.35	-4321.5	0.0	0.0	0.0
18.65	-4415.4	0.0	0.0	0.0
18.96	-4509.2	0.0	0.0	0.0
19.26	-4594.5	0.0	0.0	0.0
19.56	-4688.3	0.0	0.0	0.0
19.86	-4773.6	0.0	0.0	0.0
20.16	-4867.4	0.0	0.0	0.0
20.46	-4961.2	0.0	0.0	0.0
20.76	-5046.5	0.0	0.0	0.0
21.06	-5140.4	0.0	0.0	0.0
21.36	-5225.7	0.0	0.0	0.0
21.66	-5319.5	0.0	0.0	0.0
21.96	-5413.3	0.0	0.0	0.0
22.27	-5498.6	0.0	0.0	0.0
22.57	-5592.4	0.0	0.0	0.0
22.87	-5686.3	0.0	0.0	0.0
23.17	-5771.6	0.0	0.0	0.0
23.47	-5865.4	0.0	0.0	0.0
23.77	-5950.7	0.0	0.0	0.0
24.07	-4613.2	0.0	0.0	0.0
24.37	-4693.2	0.0	0.0	0.0
24.67	-4759.8	0.0	0.0	0.0
24.97	-4833.0	0.0	0.0	0.0
25.27	-4906.3	0.0	0.0	0.0
25.58	-4972.9	0.0	0.0	0.0
25.88	-5046.2	0.0	0.0	0.0
26.18	-5112.8	0.0	0.0	0.0
26.48	-5186.0	0.0	0.0	0.0
26.78	-5259.3	0.0	0.0	0.0
27.08	-5325.9	0.0	0.0	0.0
27.38	-5399.1	0.0	0.0	0.0
27.68	-5465.7	0.0	0.0	0.0
27.98	-5539.0	0.0	0.0	0.0
28.28	-5612.3	0.0	0.0	0.0
28.58	-5678.9	0.0	0.0	0.0
28.88	-5752.1	0.0	0.0	0.0
29.19	-5825.4	0.0	0.0	0.0
29.49	-5892.0	0.0	0.0	0.0
29.79	-5965.2	0.0	0.0	0.0
30.09	-6031.8	0.0	0.0	0.0
30.39	-6105.1	0.0	0.0	0.0
30.69	-6178.4	0.0	0.0	0.0
30.99	-6245.0	0.0	0.0	0.0
31.29	-6318.2	0.0	0.0	0.0
31.59	-6391.5	0.0	0.0	0.0
31.89	-6458.1	0.0	0.0	0.0
32.19	-6531.3	0.0	0.0	0.0
32.50	-6597.9	0.0	0.0	0.0
32.80	-6671.2	0.0	0.0	0.0
33.10	-6744.5	0.0	0.0	0.0
33.40	-6811.1	0.0	0.0	0.0
33.70	-6884.3	0.0	0.0	0.0
34.00	-6950.9	0.0	0.0	0.0

Milone & MacBroom, Inc.

99 Realty Drive
Cheshire, CT 06410
Tel: 2032711773
Fax: 2032729733
EMail: gdjarvis@miloneandmacbroom.com

SPW911, v2.00

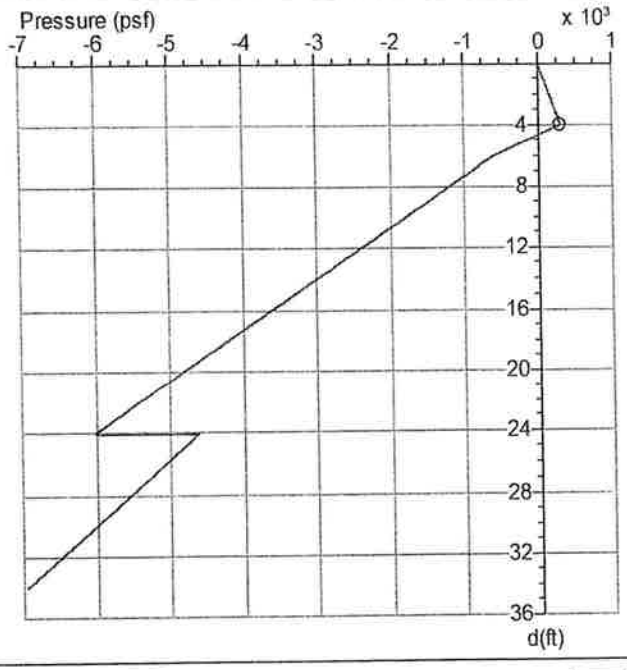
© 2001, Pile Buck®, Inc
Email pilebuck@pilebuck.com
Web www.pilebuck.com

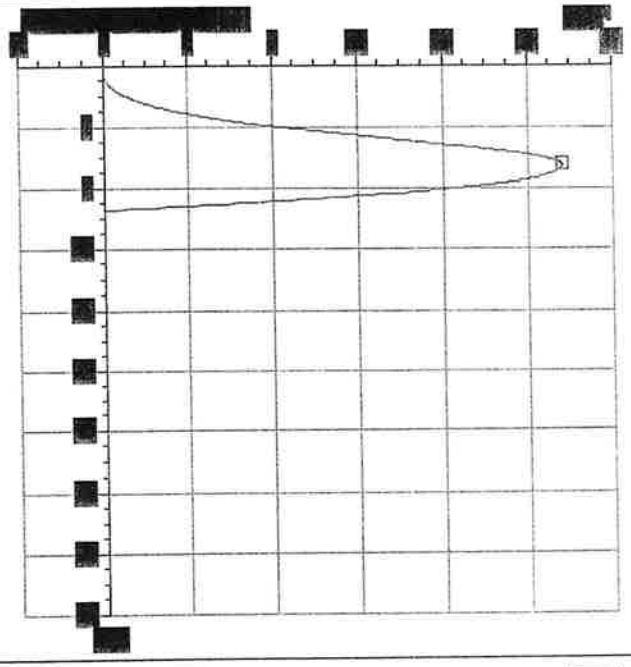
Client: Town of Derby

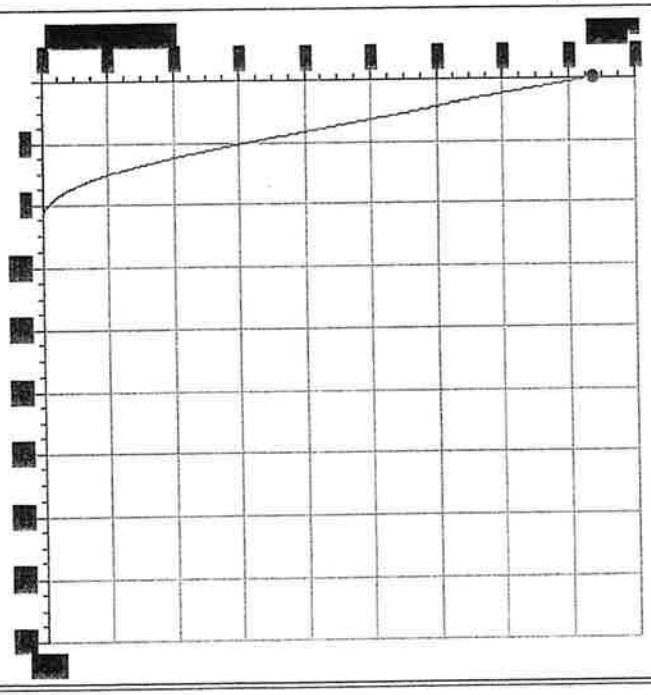
Title: Levee Certification
Designer: Glenn jarvis
Ref: 1560-119
Page: 3
Date: 11.24.10

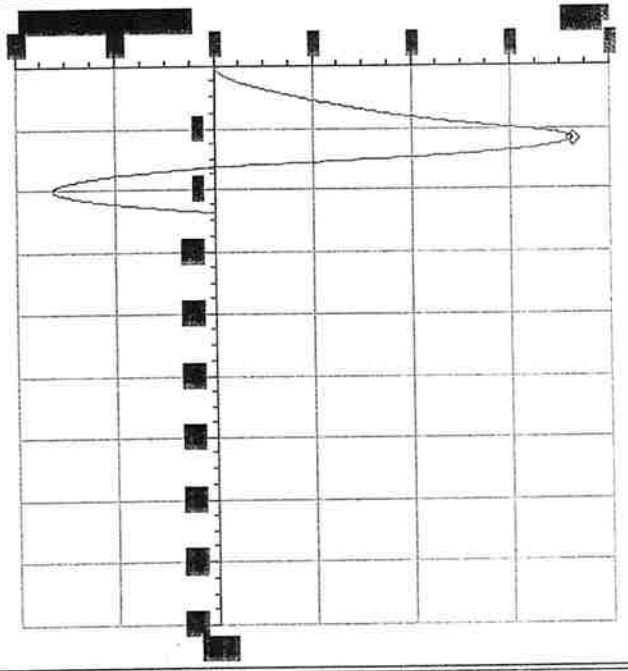
Sheet: MZ-32
Pressure: Rankine
Toe: Cantilever

	Maximum	d (ft)
○	310.0 psf	4.00
□	2163.7 ftlb/ft	6.49
◇	726.0 lb/ft	4.67
●	0.0 in	0.00









Milone & MacBroom, Inc.

99 Realty Drive
Cheshire, CT 06410
Tel: 2032711773
Fax: 2032729733
EMail: gdjarvis@miloneandmacbroom.com

SPW911, v2.00

© 2001, Pile Buck®, Inc.
Email: pilebuck@pilebuck.com
Web: www.pilebuck.com

DESIGNER GDJ | Derby Levee | SHEET NO .....
CHECKER | T-Wall Section D | OF .....
DATE 11/19/010 | JOB 1560-119 | Time 16:25:16

****
* Retaining Structure *
* by NECO *
****

****
* INPUT DATA *
****

1. Retaining Structure Geometry

Struct.Type	Abutment		Struct.Shape	Cantilever 1	
Footing Type	Spread		Stem Sections	2	
Wall Height	14.000	ft	Stem Width	1.500	ft
Toe Thickness	2.420	ft	Toe Width	5.670	ft
Heel Thickness	2.420	ft	Heel Width	12.000	ft
Front Batt.El.	7.100	ft	Back Batt.El.	0.000	ft
Front Slope	50.000	%	Back Slope	0.000	%
Seat Width	0.000	ft	Seat Depth	0.000	ft
Seat Thick	0.000	ft	Front Fill	10.000	ft
Concrete Weight	150	pcf	Concrete, fc	3	ksi
Wind Pressure	0	psf	Concrete Cover	3.000	in
Earthquake	0.000		Ground Water	Yes	
Es/Ec ratio	8.00		Z, Quantity	145	k/in

2. Soil Characteristics

Soil Weight	125	pcf	Surcharge	0.000	ft
Friction Angle	32.000	deg	Back Fill Slope	0.000	%
Front Water El.	4.000	ft	Back Water El.	14.000	ft
Overturn Coef.	2.000		Sliding Coef.	1.500	
Friction Coef.	0.600				

3. Superstructure Load System (per LF)

Distance, X	7.25	ft	Distance, Y	14.00	ft
Dead Load	1.80	kip	Live Load	0.00	kip
Centrifug.Load	0.00	kip	Wind Load	0.00	kip
Wind on LL	0.00	kip	Longitud.Load	0.00	kip
Termal Load	0.00	kip	Earthquake	0.00	kip

4. Stem Sections

Section	Elevation
1	0.00 ft
2	0.00 ft

DESIGNER GDJ | Derby Levee | SHEET NO .....
CHECKER | T-Wall Section D | OF .....
DATE 11/19/010 | JOB 1560-119 | Time 16:25:16

5. Footing Section Properties (per LF)

Width	21.510 ft
Area	21.510 ft^2
Moment of Ineria	829.354 ft^4
Section Modulus	77.113 ft^3

****
* OUTPUT DATA *
****

1. FOOTING LOAD SYSTEM
1.1 From Superstructure

Load	Intens. kip V	H	Moment, kft Pos	Neg
DL	1.80	0.00	27.47	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
EQ	0.00	-0.00	0.00	-0.00

1.2 From Substructure
1.2.1 Dead Load

Load	Intens.kip V	H	Load Arm, ft x	y	Moment, kft Pos	Neg
			Concrete			
C 1	2.06	0.00	2.84	0.00	5.8	0.00
C 2	3.15	0.00	8.76	0.00	27.6	0.00
C 3	4.36	0.00	15.51	0.00	67.6	0.00
C 4	0.85	0.00	6.84	0.00	5.8	0.00
C 5	0.82	0.00	7.23	0.00	5.9	0.00
C 6	0.00	0.00	0.00	0.00	0.0	0.00
C 7	0.00	0.00	0.00	0.00	0.0	0.00
C 8	0.00	0.00	0.00	0.00	0.0	0.00
			Earth			
E 1	7.09	0.00	2.84	0.00	20.1	0.00
E 2	17.37	0.00	15.51	0.00	269.4	0.00
E 3	2.24	0.00	6.72	0.00	15.1	0.00
E 4	0.00	0.00	0.00	0.00	0.0	0.00
E 5	0.00	0.00	0.00	0.00	0.0	0.00
TOT	37.93	0.00			417.3	0.0

1.2.2 Surcharge Load

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
Sc1	0.00	0.00	0.00	0.00	0.0	0.00
Sc2	0.00	0.00	0.00	0.00	0.0	0.00
Sc3	0.00	0.00	0.00	0.00	0.00	0.0
TOT	0.00	0.00			0.0	0.0

1.2.3 Earth Pressure

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
Ep1	0.00	-0.00	21.51	14.00	0.0	-0.0
Ep2	0.00	-1.88	21.51	4.67	0.0	-8.8
TOT	0.00	-1.88			0.0	-8.8

1.2.4 Buoyancy Forces

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
B1	0.00	-5.62	0.00	4.96	0.00	-27.9
B2	-12.09	0.00	12.75	0.00	0.00	-154.1
B3	0.00	0.00	0.00	0.00	0.00	0.0
TOT	-12.09	-5.62			0.0	-181.9

1.2.5 Wind Forces

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
W1	0.00	-0.00	0.00	13.21	0.00	-0.0
TOT	0.00	-0.00			0.0	-0.0

Milone & Macbroom, Inc.

DESIGNER GDJ
CHECKER
DATE 11/19/010

Derby Levee
T-Wall Section D
JOB 1560-119

SHEET NO .....
OF .....
Time 16:25:16

1.2.6 Earthquake Forces

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
S 1	0.00	-0.00	0.00	1.21	0.00	-0.0
S 2	0.00	-0.00	0.00	7.00	0.00	-0.0
S 3	0.00	-0.00	0.00	1.21	0.00	-0.0
S 4	0.00	-0.00	0.00	1.21	0.00	-0.0
S 5	0.00	-0.00	0.00	3.98	0.00	-0.0
S 6	0.00	-0.00	0.00	0.00	0.00	-0.0
S 7	0.00	-0.00	0.00	0.00	0.00	-0.0
S 8	0.00	-0.00	0.00	0.00	0.00	-0.0
S 9	0.00	-0.00	0.00	12.75	-0.0	0.00
S10	0.00	-0.00	0.00	7.42	0.00	-0.0
S11	0.00	-0.00	0.00	8.21	0.00	-0.0

S12	0.00	-0.00	0.00	8.47	0.00	-0.0
S13	0.00	-0.00	0.00	0.00	0.00	-0.0
S14	0.00	-0.00	0.00	0.00	0.00	-0.0
SE1	0.00	0.00	0.00	14.00	0.00	0.0
SE2	0.00	0.00	0.00	4.67	0.00	0.0
TOT	0.00	0.00			0.0	0.0

1.2.7 Total Substructure Loads

Load	Intens. kip V	H	Moment, kft Pos	Neg
DL	37.93	0.00	417.30	0.00
LL	0.00	0.00	0.00	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
W	0.00	-0.00	0.00	-0.00
EQ	0.00	0.00	0.00	0.00

DESIGNER GDJ
CHECKER
DATE 11/19/010

Derby Levee
T-Wall Section D
JOB 1560-119

SHEET NO .....
OF .....
Time 16:25:16

2. SERVICE LOADS
2.1 Load Combinations
2.1.1 GROUP I
DL+LL+CF+E+B

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	1.80	0.00	27.47	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
Substructure:				
DL	37.93	0.00	417.30	0.00
LL	0.00	0.00	0.00	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
TOT	27.65	-7.50	444.77	-190.73

2.1.2 GROUP II
DL+E+B+W

Load	Intens. kip V	H	Moment, kft Pos	Neg
Substructure:				
DL	37.93	0.00	417.30	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
W	0.00	-0.00	0.00	-0.00
TOT	25.85	-7.50	417.30	-190.73

DESIGNER GDJ | Derby Levee | SHEET NO .....
CHECKER | T-Wall Section D | OF .....
DATE 11/19/010 | JOB 1560-119 | Time 16:25:16

2.1.3 GROUP III
DL+LL+CF+E+B+0.3*W+WL+LF

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	1.80	0.00	27.47	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
Substructure:				
DL	37.93	0.00	417.30	0.00
LL	0.00	0.00	0.00	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
W	0.00	-0.00	0.00	-0.00
TOT	27.65	-7.50	444.77	-190.73

2.1.4 GROUP IV
DL+LL+CF+E+B+T

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	1.80	0.00	27.47	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	37.93	0.00	417.30	0.00
LL	0.00	0.00	0.00	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
TOT	27.65	-7.50	444.77	-190.73

DESIGNER GDJ | Derby Levee | SHEET NO .....
CHECKER | T-Wall Section D | OF .....
DATE 11/19/010 | JOB 1560-119 | Time 16:25:16

2.1.5 GROUP V
DL+E+B+W+T

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	1.80	0.00	27.47	0.00
W	0.00	-0.00	0.00	-0.00

T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	37.93	0.00	417.30	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
W	0.00	-0.00	0.00	-0.00
TOT	27.65	-7.50	444.77	-190.73

2.1.6 GROUP VI
DL+LL+CF+E+B+0.3*W+WL+LF+T

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	1.80	0.00	27.47	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	37.93	0.00	417.30	0.00
LL	0.00	0.00	0.00	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
W	0.00	-0.00	0.00	-0.00
TOT	27.65	-7.50	444.77	-190.73

2.1.7 GROUP VII
DL+E+B+EQ

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	1.80	0.00	27.47	0.00
EQ	0.00	-0.00	0.00	-0.00
Substructure:				
DL	37.93	0.00	417.30	0.00
E	0.00	-1.88	0.00	-8.79
B	-12.09	-5.62	0.00	-181.94
EQ	0.00	0.00	0.00	0.00
TOT	27.65	-7.50	444.77	-190.73

2.2 Total Service Loads

Group	Intens. kip V	H	Moment, kft Pos	Neg

I	27.65	-7.50	444.77	-190.73
II	25.85	-7.50	417.30	-190.73
III	27.65	-7.50	444.77	-190.73
IV	27.65	-7.50	444.77	-190.73
V	27.65	-7.50	444.77	-190.73
VI	27.65	-7.50	444.77	-190.73
VII	27.65	-7.50	444.77	-190.73

2.5 Moments (kft) and Shears (kip), per LF

Group	Toe		Heel	
	V	M	V	M
I	-9.46	-17.37	0.88	8.64
	-9.46	-17.37	0.88	8.64
II	-7.54	-22.32	10.84	73.99
	-6.03	-17.85	8.68	59.19
III	-9.46	-17.37	0.88	8.64
	-7.57	-13.90	0.71	6.91
IV	-9.46	-17.37	0.88	8.64
	-7.57	-13.90	0.71	6.91
V	-7.57	-22.27	9.28	63.21
	-5.41	-15.91	6.63	45.15
VI	-9.46	-17.37	0.88	8.64
	-6.76	-12.41	0.63	6.17
VII	-7.57	-22.27	9.28	63.21
	-5.70	-16.74	6.98	47.53

2.3 Sliding & Overturning Safety Factors

Group	Coef.	Sliding		Overturning	
		Allow	Service	Allow	Service
I	1.000	1.500	2.211	2.000	2.332
II	1.250	1.200	2.067	1.600	2.188
III	1.250	1.200	2.211	1.600	2.332
IV	1.250	1.200	2.211	1.600	2.332
V	1.400	1.071	2.211	1.429	2.332
VI	1.400	1.071	2.211	1.429	2.332
VII	1.330	1.128	2.211	1.504	2.332

2.4 Foundation Pressures, TSF

Group	Coef.	Maxim	Minim	Active Zone Pres.	Width, ft
I	1.000	0.923	0.362		
		0.923	0.362		
II	1.250	0.934	0.267		
		0.747	0.214		
III	1.250	0.923	0.362		
		0.739	0.289		
IV	1.250	0.923	0.362		
		0.739	0.289		
V	1.400	0.923	0.362		
		0.660	0.258		
VI	1.400	0.923	0.362		

		0.660	0.258
VII	1.330	0.923	0.362
		0.694	0.272

DESIGNER GDJ
CHECKER
DATE 11/19/010

Derby Levee
T-Wall Section D
JOB 1560-119

SHEET NO .....
OF .....
Time 16:25:16

3. REINFORCEMENT (LFD)

3.1 Sections Data

	Cover in	Depth in	Ms kft	Mu kft
Toe	3.000	29.040	17.37	29.60
Heel	3.000	29.040	8.64	98.20
Stem:				
0.00'	3.000	46.080	4.98	8.41
0.00'	3.000	46.080	4.98	8.41

3.2 Rebar Spacing, in

		#4	#5	#6	#7	#8	#9	#10
Toe:	Flexure	9.24	14.44	20.79	28.30	36.96	46.78	57.75
	Crack	9.04	12.42	16.05	19.90	23.93	28.11	32.43
Heel:	Flexure	2.72	4.25	6.12	8.33	10.88	13.77	17.00
	Crack	15.36	21.10	27.28	33.84	40.70	47.84	55.20
Stem:								
0.00'	Flexure	54.27	84.79	99.99	99.99	99.99	99.99	99.99
	Crack	34.33	47.24	61.17	75.95	91.47	99.99	99.99
0.00'	Flexure	54.27	84.79	99.99	99.99	99.99	99.99	99.99
	Crack	34.33	47.24	61.17	75.95	91.47	99.99	99.99

NOTE: See AASHTO 8.21 for rebar spacing limits

DESIGNER GDJ
CHECKER
DATE 11/19/010

Derby Levee
T-Wall Section D
JOB 1560-119

SHEET NO .....
OF .....
Time 16:25:16

4. QUANTITIES, per LF

Item	Unit	Quantity
Concrete	CY	2.77
Backfill	CY	5.15
Gravel	CY	1.89
Dampproofing	SY	1.56

March 3, 2004
Naugatuck River Valley
1560-88-4
Flood Wall Analysis

The flood wall section was taken from As-Built-Drawings dated March 1970; title "Housatonic River Flood Control". The critical section along the flood wall was analyzed using the AASHTO Load Factor Design method. The additional fill against the existing flood wall will not be an overburden; the wall shall remain structurally sound.

EXISTING FLOOD CONTROL WALL
STRUCTURAL CALCULATIONS

NAUGATUCK RIVER GREENWAY

Derby, Connecticut

State Project No. 36-178
Federal Aid Project No. TEA-PEDS(50)
MMI Project No. 1560-88-4

March 3, 2004

Prepared by:

Milone & MacBroom, Inc.
716 South Main Street
Cheshire, Connecticut 06410

(203) 271-1773

Engineering,
Landscape Architecture
and Environmental Science

MILONE & MACBROOM®
716 South Main Street
Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-9733

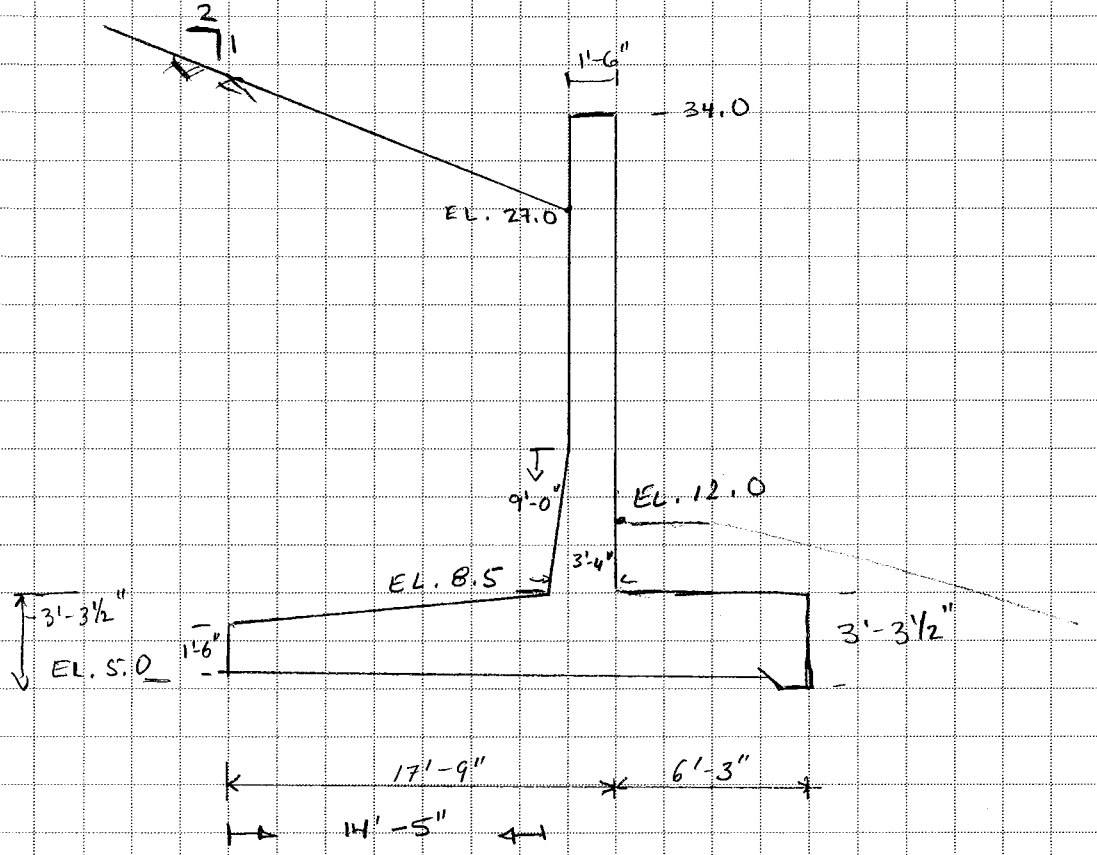
JOB 1560-88

SHEET NO. 1 OF

CALCULATED BY KP DATE 3/01/04

CHECKED BY DATE

SCALE



DESIGNER KP/RFL	EX. WALL ANALYSIS	SHEET NO .....
CHECKER	NAUGATUCK RIVER	OF .....
DATE 3/ 3/04	JOB 1560-88	Time 10:46:21

****
* Retaining Structure *
* by NECO *
****

****
* INPUT DATA *
****

1. Retaining Structure Geometry

Struct.Type	Ret.Wall		Struct.Shape	Cantilever 1	
Footing Type	Spread		Stem Sections	1	
Wall Height	29.000	ft	Stem Width	3.250	ft
Toe Thickness	3.250	ft	Toe Width	6.250	ft
Heel Thickness	2.000	ft	Heel Width	16.250	ft
Front Batt.El.	0.000	ft	Back Batt.El.	0.000	ft
Front Slope	0.000	%	Back Slope	0.000	%
Seat Width	0.000	ft	Seat Depth	0.000	ft
Seat Thick	0.000	ft	Front Fill	4.000	ft
Concrete Weight	150	pcf	Concrete, fc	3	ksi
Wind Pressure	0	psf	Concrete Cover	2.000	in
Earthquake	0.140		Ground Water	No	
Es/Ec ratio	8.00		Z, Quantity	145	k/in

2. Soil Characteristics

Soil Weight	120	pcf	Surcharge	2.000	ft
Friction Angle	25.000	deg	Back Fill Slope	0.000	%
Overturn Coef.	2.000		Sliding Coef.	1.500	
Friction Coef.	0.600				

3. External Load System (per LF)

Distance, X	0.00 ft	Distance, Y	0.00 ft
Dead Load	0.00 kip	Live Load	0.00 kip

4. Stem Sections

Section	Elevation
1	0.00 ft

DESIGNER KP/RFL	EX. WALL ANALYSIS	SHEET NO .....
CHECKER	NAUGATUCK RIVER	OF .....
DATE 3/ 3/04	JOB 1560-88	Time 10:46:21

5. Footing Section Properties (per LF)

Width	25.750 ft
Area	25.750 ft^2
Moment of Ineria	1422.822 ft^4
Section Modulus	110.510 ft^3

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

****
* OUTPUT DATA *
****

1. FOOTING LOAD SYSTEM
1.1 From Superstructure

Load	Intens. kip V	H	Moment, kft Pos	Neg
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
EQ	0.00	-0.00	0.00	-0.00

1.2 From Substructure
1.2.1 Dead Load

Load	Intens.kip V	H	Load Arm, ft x	y	Moment, kft Pos	Neg
			Concrete			
C 1	3.05	0.00	3.12	0.00	9.5	0.00
C 2	14.14	0.00	7.88	0.00	111.3	0.00
C 3	4.88	0.00	17.62	0.00	85.9	0.00
C 4	0.00	0.00	0.00	0.00	0.0	0.00
C 5	0.00	0.00	0.00	0.00	0.0	0.00
C 6	0.00	0.00	0.00	0.00	0.0	0.00
C 7	0.00	0.00	0.00	0.00	0.0	0.00
C 8	0.00	0.00	0.00	0.00	0.0	0.00
			Earth			
E 1	3.00	0.00	3.12	0.00	9.4	0.00
E 2	52.65	0.00	17.62	0.00	928.0	0.00
E 3	-0.00	0.00	0.00	0.00	-0.0	0.00
E 4	0.00	0.00	0.00	0.00	0.0	0.00
E 5	0.00	0.00	0.00	0.00	0.0	0.00
TOT	77.71	0.00			1144.1	0.0

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

1.2.2 Surcharge Load

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
Sc1	3.90	0.00	17.62	0.00	68.7	0.00
Sc2	0.00	0.00	0.00	0.00	0.0	0.00
Sc3	0.00	-2.83	0.00	14.50	0.00	-41.0
TOT	3.90	-2.83			68.7	-41.0

1.2.3 Earth Pressure

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
Ep1	0.00	-20.48	25.75	9.67	0.0	-198.0
Ep2	0.00	-0.00	25.75	0.00	0.0	-0.0
TOT	0.00	-20.48			0.0	-198.0

1.2.4 Buoyancy Forces

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
B1	0.00	0.00	0.00	0.00	0.00	0.0
B2	0.00	0.00	0.00	0.00	0.00	0.0
B3	0.00	0.00	0.00	0.00	0.00	0.0
TOT	0.00	0.00			0.0	0.0

1.2.5 Wind Forces

Load	Intens.kip V	Intens.kip H	Load Arm, ft x	Load Arm, ft y	Moment, kft Pos	Moment, kft Neg
W1	0.00	-0.00	0.00	18.12	0.00	-0.0
TOT	0.00	-0.00			0.0	-0.0

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

1.2.6 Earthquake Forces

Load	Intens.kip V	H	Load Arm, ft x	y	Moment, kft Pos	Neg
S 1	0.00	-0.43	0.00	1.62	0.00	-0.7
S 2	0.00	-1.98	0.00	14.50	0.00	-28.7
S 3	0.00	-0.68	0.00	1.00	0.00	-0.7
S 4	0.00	-0.00	0.00	0.00	0.00	-0.0
S 5	0.00	-0.00	0.00	0.00	0.00	-0.0
S 6	0.00	-0.00	0.00	0.00	0.00	-0.0
S 7	0.00	-0.00	0.00	0.00	0.00	-0.0
S 8	0.00	-0.00	0.00	0.00	0.00	-0.0
S 9	0.00	-0.00	0.00	0.00	-0.0	0.00
S10	0.00	-0.42	0.00	5.25	0.00	-2.2
S11	0.00	-7.37	0.00	15.50	0.00	-114.3
S12	0.00	0.00	0.00	0.00	0.00	0.0
S13	0.00	-0.00	0.00	0.00	0.00	-0.0
S14	0.00	-0.00	0.00	0.00	0.00	-0.0
SE1	0.00	-2.69	0.00	9.67	0.00	-26.0
SE2	0.00	-0.00	0.00	0.00	0.00	-0.0
TOT	0.00	-13.57			0.0	-198.6

1.2.7 Total Substructure Loads

Load	Intens. kip V	H	Moment, kft Pos	Neg
DL	77.71	0.00	1144.11	0.00
LL	3.90	-2.83	68.74	-40.97
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
EQ	0.00	-13.57	0.00	-198.62

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

2. SERVICE LOADS
2.1 Load Combinations
2.1.1 GROUP I
DL+LL+CF+E+B

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
Substructure:				
DL	77.71	0.00	1144.11	0.00
LL	3.90	-2.83	68.74	-40.97
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
TOT	81.61	-23.31	1212.84	-238.97

2.1.2 GROUP II
DL+E+B+W

Load	Intens. kip V	H	Moment, kft Pos	Neg
Substructure:				
DL	77.71	0.00	1144.11	0.00
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	77.71	-20.48	1144.11	-198.00

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

2.1.3 GROUP III
DL+LL+CF+E+B+0.3*W+WL+LF

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
Substructure:				
DL	77.71	0.00	1144.11	0.00
LL	3.90	-2.83	68.74	-40.97
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	81.61	-23.31	1212.84	-238.97

2.1.4 GROUP IV
DL+LL+CF+E+B+T

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	77.71	0.00	1144.11	0.00
LL	3.90	-2.83	68.74	-40.97
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
TOT	81.61	-23.31	1212.84	-238.97

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

2.1.5 GROUP V
DL+E+B+W+T

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	77.71	0.00	1144.11	0.00
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	77.71	-20.48	1144.11	-198.00

2.1.6 GROUP VI
DL+LL+CF+E+B+0.3*W+WL+LF+T

Load	Intens. kip V	H	Moment, kft Pos	Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	77.71	0.00	1144.11	0.00
LL	3.90	-2.83	68.74	-40.97
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	81.61	-23.31	1212.84	-238.97

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

2.1.7 GROUP VII
DL+E+B+EQ

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
EQ	0.00	-0.00	0.00	-0.00
Substructure:				
DL	77.71	0.00	1144.11	0.00
E	0.00	-20.48	0.00	-198.00
B	0.00	0.00	0.00	0.00
EQ	0.00	-13.57	0.00	-198.62
TOT	77.71	-34.06	1144.11	-396.62

2.2 Total Service Loads

Group	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
I	81.61	-23.31	1212.84	-238.97
II	77.71	-20.48	1144.11	-198.00
III	81.61	-23.31	1212.84	-238.97
IV	81.61	-23.31	1212.84	-238.97
V	77.71	-20.48	1144.11	-198.00
VI	81.61	-23.31	1212.84	-238.97
VII	77.71	-34.06	1144.11	-396.62

2.5 Moments (kft) and Shears (kip), per LF

Group	Toe V	Toe M	Heel V	Heel M
I	-20.05	-63.76	10.19	102.13
	-20.05	-63.76	10.19	102.13
II	-18.14	-57.48	11.44	106.59
	-14.52	-45.98	9.15	85.28
III	-20.05	-63.76	10.19	102.13
	-16.04	-51.01	8.15	81.70
IV	-20.05	-63.76	10.19	102.13
	-16.04	-51.01	8.15	81.70
V	-18.14	-57.48	11.44	106.59
	-12.96	-41.06	8.17	76.14
VI	-20.05	-63.76	10.19	102.13

	-14.32	-45.54	7.28	72.95
VII	-26.65	-86.90	22.21	358.31
	-20.04	-65.34	16.70	269.40

DESIGNER KP/RFL EX. WALL ANALYSIS SHEET NO .....
CHECKER NAUGATUCK RIVER OF .....
DATE 3/ 3/04 JOB 1560-88 Time 10:46:21

2.3 Sliding & Overturning Safety Factors

Group	Coef.	Sliding		Overturning	
		Allow	Service	Allow	Service
I	1.000	1.500	2.101	2.000	5.075
II	1.250	1.200	2.276	1.600	5.778
III	1.250	1.200	2.101	1.600	5.075
IV	1.250	1.200	2.101	1.600	5.075
V	1.400	1.071	2.276	1.429	5.778
VI	1.400	1.071	2.101	1.429	5.075
VII	1.330	1.128	1.369	1.504	2.885

2.4 Foundation Pressures, TSF

Group	Coef.	Maxim	Minim	Active Zone	
				Pres.	Width, ft
I	1.000	1.932	1.237		
		1.932	1.237		
II	1.250	1.755	1.263		
		1.404	1.010		
III	1.250	1.932	1.237		
		1.546	0.990		
IV	1.250	1.932	1.237		
		1.546	0.990		
V	1.400	1.755	1.263		
		1.254	0.902		
VI	1.400	1.932	1.237		
		1.380	0.884		
VII	1.330	2.654	0.364		
		1.995	0.274		

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

3. ULTIMATE LOADS

3.1 Load Combinations

3.1.1 GROUP I

1.3*(DL+1.67*LL+CF+1.3*E+B)

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
Substructure:				
DL	101.02	0.00	1487.34	0.00
LL	8.47	-6.13	149.23	-88.94
E	0.00	-34.62	0.00	-334.63
B	0.00	0.00	0.00	0.00
TOT	109.49	-40.75	1636.57	-423.56

3.1.2 GROUP II

1.3*(DL+1.3*E+B+W)

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Substructure:				
DL	101.02	0.00	1487.34	0.00
E	0.00	-34.62	0.00	-334.63
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	101.02	-34.62	1487.34	-334.63

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

3.1.3 GROUP III
1.3*(DL+LL+CF+1.3*E+B+0.3*W+WL+LF)

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
Substructure:				
DL	101.02	0.00	1487.34	0.00
LL	5.07	-3.67	89.36	-53.26
E	0.00	-34.62	0.00	-334.63
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	106.09	-38.29	1576.70	-387.88

3.1.4 GROUP IV
1.3*(DL+LL+CF+1.3*E+B+T)

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	101.02	0.00	1487.34	0.00
LL	5.07	-3.67	89.36	-53.26
E	0.00	-34.62	0.00	-334.63
B	0.00	0.00	0.00	0.00
TOT	106.09	-38.29	1576.70	-387.88

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

3.1.5 GROUP V
1.25*(DL+1.3*E+B+W+T)

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	97.14	0.00	1430.13	0.00
E	0.00	-33.29	0.00	-321.76
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	97.14	-33.29	1430.13	-321.76

3.1.6 GROUP VI
1.25*(DL+LL+CF+1.3*E+B+0.3*W+WL+LF+T)

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
LL	0.00	0.00	0.00	0.00
CF	0.00	-0.00	0.00	-0.00
W	0.00	-0.00	0.00	-0.00
WL	0.00	-0.00	0.00	-0.00
LF	0.00	-0.00	0.00	-0.00
T	0.00	-0.00	0.00	-0.00
Substructure:				
DL	97.14	0.00	1430.13	0.00
LL	4.87	-3.53	85.92	-51.21
E	0.00	-33.29	0.00	-321.76
B	0.00	0.00	0.00	0.00
W	0.00	-0.00	0.00	-0.00
TOT	102.01	-36.82	1516.06	-372.96

DESIGNER KP/RFL | EX. WALL ANALYSIS | SHEET NO .....
CHECKER | NAUGATUCK RIVER | OF .....
DATE 3/ 3/04 | JOB 1560-88 | Time 10:46:21

3.1.7 GROUP VII
1.3*(DL+1.3*E+B+EQ)

Load	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
Superstructure:				
DL	0.00	0.00	0.00	0.00
EQ	0.00	-0.00	0.00	-0.00
Substructure:				
DL	101.02	0.00	1487.34	0.00
E	0.00	-34.62	0.00	-334.63
B	0.00	0.00	0.00	0.00
EQ	0.00	-17.65	0.00	-258.20
TOT	101.02	-52.26	1487.34	-592.83

3.2 Total Ultimate Loads

Group	Intens. kip V	Intens. kip H	Moment, kft Pos	Moment, kft Neg
I	109.49	-40.75	1636.57	-423.56
II	101.02	-34.62	1487.34	-334.63
III	106.09	-38.29	1576.70	-387.88
IV	106.09	-38.29	1576.70	-387.88
V	97.14	-33.29	1430.13	-321.76
VI	102.01	-36.82	1516.06	-372.96
VII	101.02	-52.26	1487.34	-592.83

3.3 Moments (kft) and Shears (kip), per LF

Group	Toe V	Toe M	Heel V	Heel M
I	-31.04	-99.80	16.36	182.32
II	-26.90	-86.16	19.06	192.02
III	-29.38	-94.33	17.44	186.21
IV	-29.38	-94.33	17.44	186.21
V	-25.86	-82.85	18.32	184.63
VI	-28.25	-90.70	16.77	179.05
VII	-37.95	-124.41	33.06	519.24

DESIGNER	KP/RFL	EX. WALL ANALYSIS	SHEET NO .....
CHECKER		NAUGATUCK RIVER	OF .....
DATE	3/ 3/04	JOB 1560-88	Time 10:46:21

3.4 Sliding & Overturning Factors

Group	Slide	Overturn
I	1.612	3.864
II	1.751	4.445
III	1.662	4.065
IV	1.662	4.065
V	1.751	4.445
VI	1.662	4.065
VII	1.160	2.509

3.5 Foundation Pressures, TSF

Group	Maxim	Minim	Active Zone Pres.	Active Zone Width, ft
I	3.016	1.236		
II	2.631	1.292		
III	2.861	1.259		
IV	2.861	1.259		
V	2.530	1.243		
VI	2.751	1.210		
VII	3.799	0.124		

DESIGNER KP/RFL	EX. WALL ANALYSIS	SHEET NO .....
CHECKER	NAUGATUCK RIVER	OF .....
DATE 3/ 3/04	JOB 1560-88	Time 10:46:21

4. REINFORCEMENT (LFD)

4.1 Sections Data

	Cover in	Depth in	Ms kft	Mu kft
Toe	2.000	39.000	63.76	124.41
Heel	2.000	24.000	102.13	519.24
Stem:				
0.00'	2.000	39.000	159.80	270.95

4.2 Rebar Spacing, in

		#4	#5	#6	#7	#8	#9	#10
Toe:	Flexure	3.09	4.83	6.95	9.46	12.36	15.64	19.31
	Crack	4.43	6.08	7.86	9.75	11.72	13.78	15.90
Heel:	Flexure	0.28	0.44	0.63	0.86	1.13	1.43	1.76
	Crack	2.04	2.80	3.61	4.46	5.36	6.28	7.24
Stem:								
0.00'	Flexure	1.38	2.16	3.11	4.24	5.53	7.00	8.64
	Crack	2.20	3.01	3.89	4.82	5.80	6.81	7.85

NOTE: See AASHTO 8.21 for rebar spacing limits