

Organization
 Designed By
 Date 7/2/2017

Client
 Project
 Job #

TBWall Report

Project Information

Designed By
 Organization
 Date 7/2/2017
 Project
 Job #
 Client

Number of Tieback Levels Four

Units System ft

Geometry

a 7.0 ft
 b 10.8 ft
 c 10.8 ft
 d 10.8 ft
 e 10.8 ft
 h 50.0 ft
 L 55.0 ft

Properties

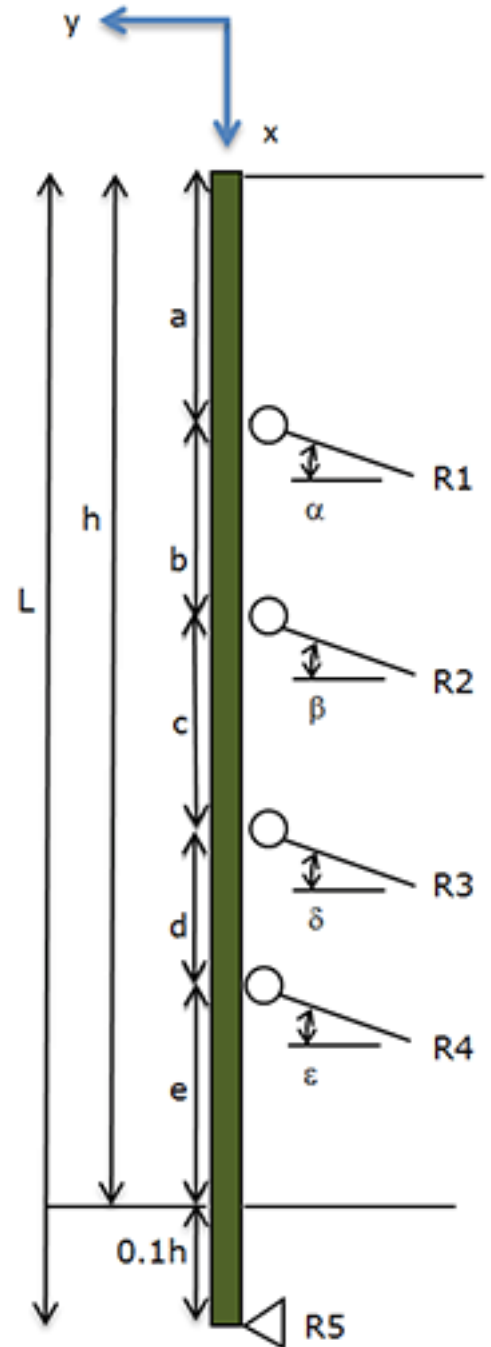
E 29000 ksi
 fy 50 ksi

Max. Deflection 0.7 in

Beam Shape W16X57

Tieback Data

Angle1 20
 Angle2 20
 Angle3 20
 Angle4 15



Organization
Designed By
Date 7/2/2017

Client
Project
Job #

Design Philosophy

The analysis is based on "Equivalent Beam Method" first proposed by Blum and explained in detail in "Foundation Design" Teng, 1962, 1st & only edition or in "Foundation Engineering" Jumikis, 1987 2nd ed.

The design is based on classical structural analysis:

- * This program uses classic-beam-theory beam elements to solve the multispans tieback design.

- * The equivalent nodal loads for each span are determined by numerical integration of the beam equations to allow for the non uniform loads.

- * The equivalent nodal loads, the stiffness matrix, and the support conditions are used to solve for the support reactions and the support rotations.

- * The support reactions are then used to numerically integrate the entire span for values to display in the plots, and to find the max/min values.

- * Steel Shapes only include compact sections, If noncompact sections are desired, additional design checks are required.

- * The deflection output is based on structural analysis but an independent check should be made by Finite Element method or by site surveying.

Organization
Designed By
Date 7/2/2017

Client
Project
Job #

Reaction 1	Reaction 2	Reaction 3	Reaction 4	Reaction 5
-114.33 kips	-73.49 kips	-75.99 kips	-131.59 kips	-52.29 kips

Maximum Shear -75.9 kip at 39.25 ft
 Maximum Moment 199.4 kip-at 7.00 ft
 Maximum Deflection -0.4060 in at 0.00 ft

Required Aw	3.80 in ²	Adequate for Shear
Required Zx	79.93 in ³	Adequate for Bending
Utilized Ix	61%	Adequate for Deflection

	R1	R2	R3	R4
Tieback Force	121.7 kips	78.2 kips	80.9 kips	136.2 kips
Unbonded Tieback Length	29.8 ft	23.6 ft	17.4 ft	15.0 ft
Test Load	161.8 kips	104.0 kips	107.6 kips	181.2 kips

Lateral Torsional Buckling Check

Lb	129 in
Cb	1
ry	1.60 in
ly	43.10 in ⁴
h0	15.68 in
J	2.22 in ⁴
rts	1.9 in
Lp	67.8 in
Lr	219.4 in
Fcr	78 ksi
Mn/Q	221 kip-ft

Axially-Loaded Member Check

P	0 kips
L	11 ft
K	0.8
A	16.8 in ²
KL/r	64.5
Fe	69 ksi
Fcr	37 ksi
Pn/Q	371 kips

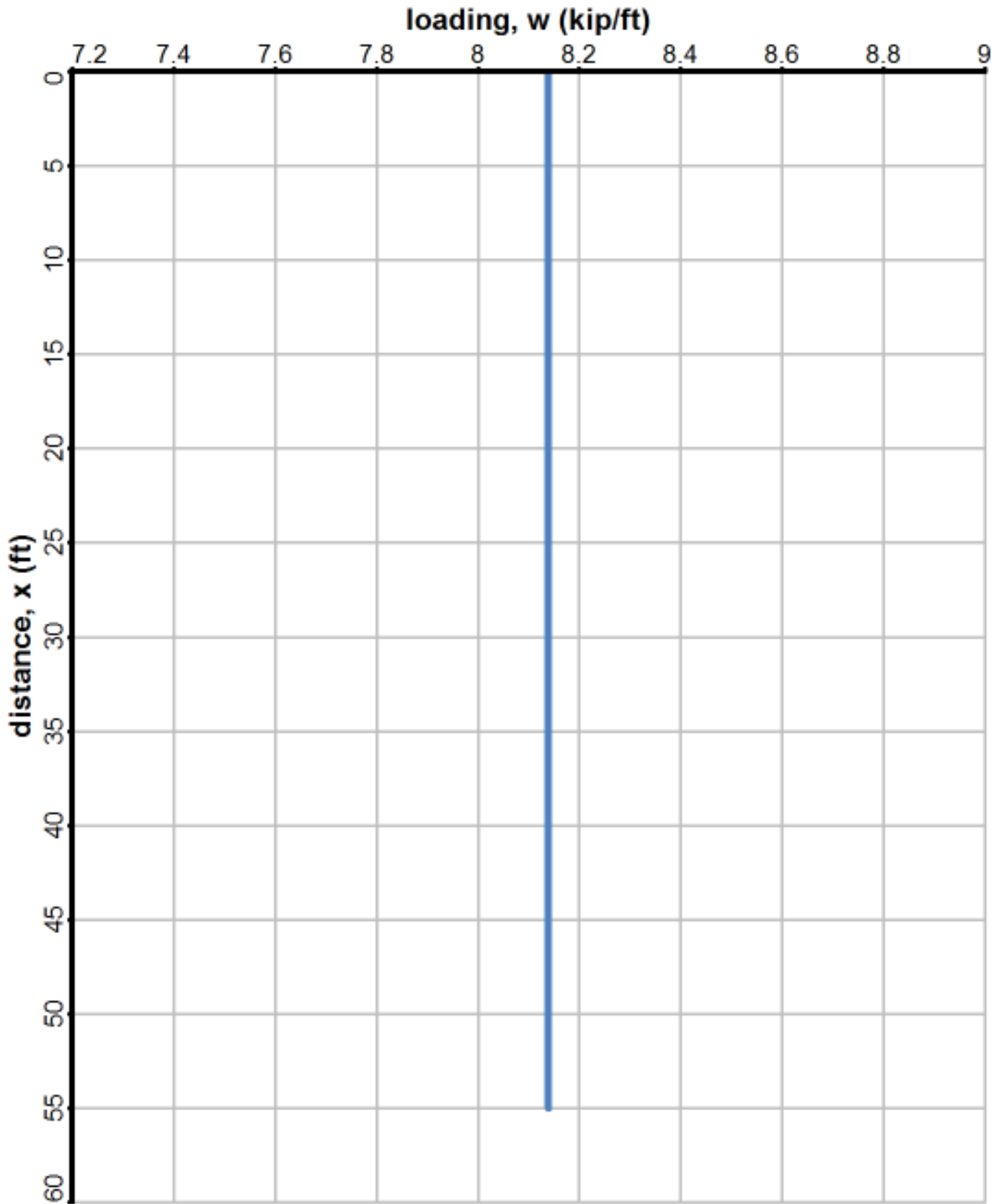
Required Embedment	30.50 ft
Tschebotarioff Check	26.50 ft

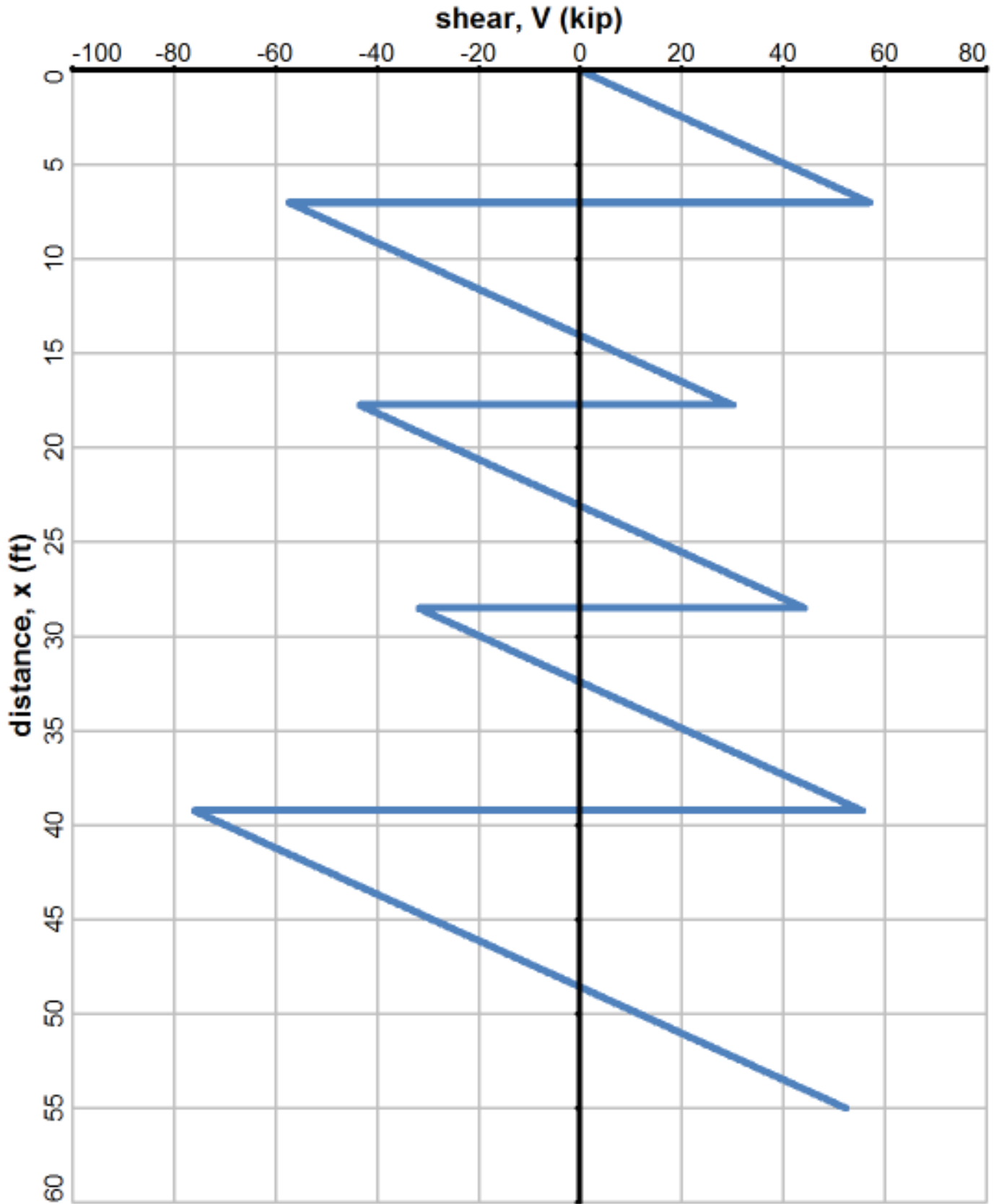
Combined Forces Utilization 90%

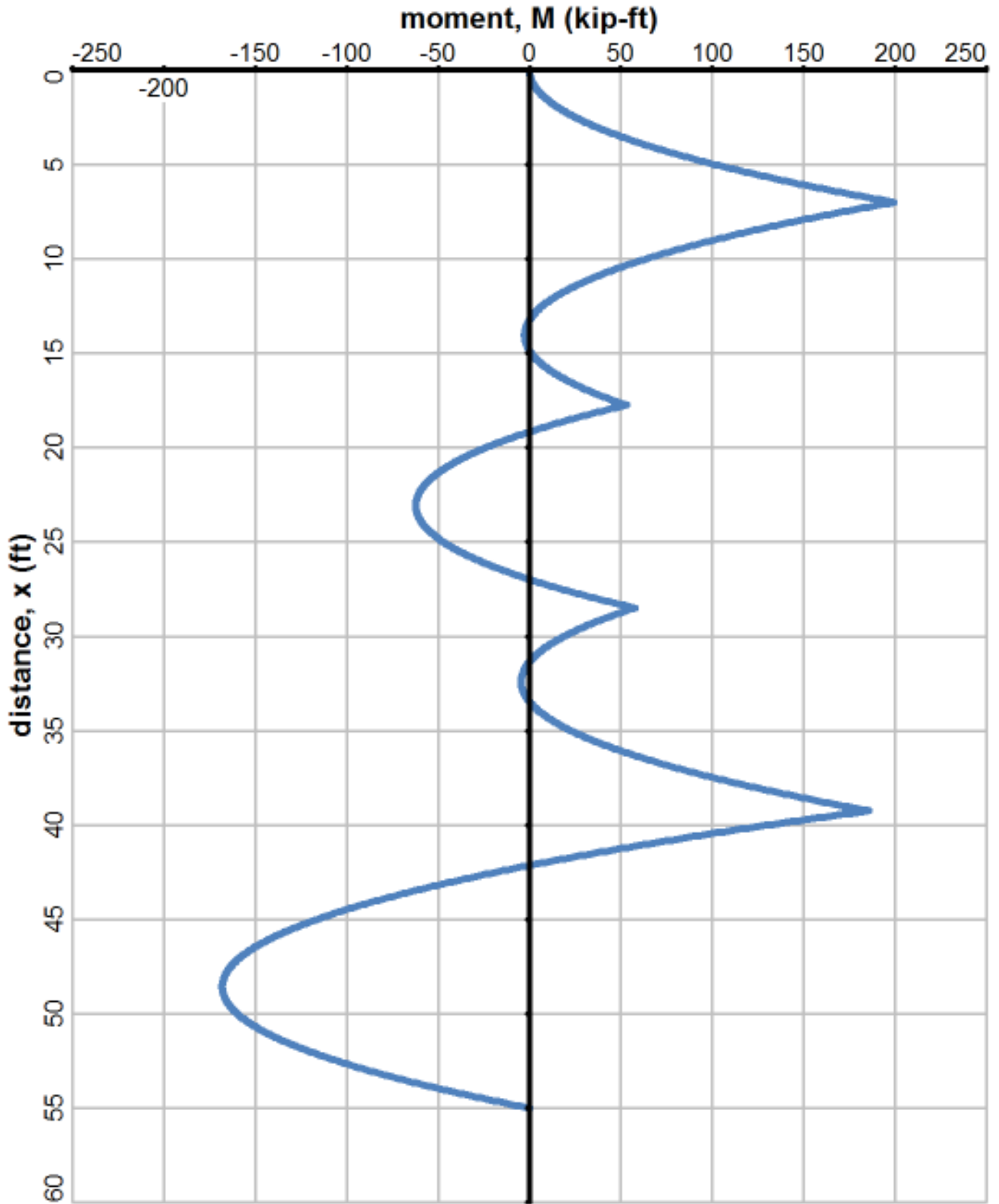
Organization
Designed By
Date

7/2/2017

Client
Project
Job #







Organization
Designed By
Date

7/2/2017

Client
Project
Job #

