Printing Input Parameters.....

parameters	unit	values	Unnamed: 3	Unnamed: 4	Unnamed: 5	Unnamed: 6	Unnamed: 7	Unnamed: 8
Basin Area	sq mile	10.4	nan	nan	nan	nan	nan	nan
Avg_GL	feet-PWD	4.92	nan	nan	nan	nan	nan	nan
Highest Water Level, HWL	feet-PWD	16.7	nan	nan	nan	nan	nan	nan
Lowest Water Level, LWL	feet-PWD	-4.92	21.619999999999997	nan	nan	nan	nan	nan
Moonsoon Lowest Water Level	feet-PWD	-4.592	nan	nan	nan	nan	nan	nan
Embankment Crest Level	feet-PWD	18.04	nan	nan	nan	nan	nan	nan
Embankment Top Width	feet-PWD	19.68	nan	nan	nan	nan	nan	nan
C/S Slope (1:N)	nan	2.0	nan	nan	nan	nan	nan	nan
R/S Slope	nan	3.0	nan	nan	nan	nan	nan	nan
Invert Level	feet-PWD	-4.92	nan	nan	nan	nan	nan	nan
Discharge/sq mile	cfs/sqmile	54.0	nan	nan	nan	nan	nan	nan
No Vent	nan	3.0	nan	nan	nan	nan	nan	nan
Vent Width	feet	5.0	nan	nan	nan	nan	nan	nan
Vent Height	feet	6.0	nan	nan	nan	nan	nan	nan
Pier_width	inch	15.0	nan	nan	nan	nan	nan	nan
Abutment_width	inch	18.0	nan	nan	nan	nan	nan	nan
flare_Angle_min	degree	8.0	nan	nan	nan	nan	nan	nan
flare_Angle_max	degree	12.0	nan	nan	nan	nan	nan	nan
glacis_drop_min	feet	3.0	nan	nan	nan	nan	nan	nan
glacis_drop_max	feet	4.0	nan	nan	nan	nan	nan	nan
Barrel Length	feet	34.0	nan	nan	nan	nan	nan	nan
cutoff_depth_min	min	9.84	nan	nan	nan	nan	nan	nan

cutoff_depth_max	max	21.32	nan	nan	nan	nan	nan	nan
Laycey's Silt Factor	nan	0.4	nan	nan	nan	nan	nan	nan
maximum head difference	feet	17.876	nan	nan	nan	nan	nan	nan
Allowable Exit Gradient	nan	0.143	nan	nan	nan	nan	nan	nan
maximum_floor_thickness	feet	3.28	nan	nan	nan	nan	nan	nan
Top_slab_thickness	inch	20.0	nan	nan	nan	nan	nan	nan
unit weight of fill soil	pcf	120.0	nan	nan	nan	nan	nan	nan
friction Angle of fill soil	degree	20.0	nan	nan	nan	nan	nan	nan
surcharge height	feet	17.04	nan	nan	nan	nan	nan	nan
return wall level	feet-pwd	16.7	nan	nan	nan	nan	nan	nan

Printing Stilling Basin Calcualtion in FPS unit.....

Q	FAngle	g_drop	Bc	q	dc	vc	B1	q1	d1	v1	B2	q2	d2	v2	Fr1	LJ	Eff	Del_E	Del_E(%)
1275.5	8.0	3.0	17.5	72.886	5.485	13.289	20.03	63.681	2.721	23.405	30.961	41.198	8.357	4.93	2.501	38.888	82.5	1.968	17.5
1275.5	8.0	4.0	17.5	72.886	5.485	13.289	20.873	61.108	2.433	25.114	32.876	38.797	8.622	4.5	2.837	42.703	76.9	2.825	23.1
1275.5	9.0	3.0	17.5	72.886	5.485	13.289	20.351	62.675	2.67	23.475	32.695	39.013	8.317	4.691	2.532	38.968	81.9	2.028	18.1
1275.5	9.0	4.0	17.5	72.886	5.485	13.289	21.301	59.879	2.378	25.185	34.819	36.632	8.562	4.278	2.878	42.674	76.2	2.905	23.8
1275.5	10.0	3.0	17.5	72.886	5.485	13.289	20.674	61.696	2.621	23.542	34.44	37.036	8.278	4.474	2.563	39.034	81.4	2.086	18.6
1275.5	10.0	4.0	17.5	72.886	5.485	13.289	21.732	58.693	2.324	25.253	36.767	34.692	8.503	4.08	2.919	42.634	75.6	2.984	24.4
1275.5	11.0	3.0	17.5	72.886	5.485	13.289	20.999	60.742	2.573	23.607	36.196	35.239	8.238	4.278	2.594	39.09	80.9	2.144	19.1
1275.5	11.0	4.0	17.5	72.886	5.485	13.289	22.165	57.546	2.273	25.319	38.719	32.942	8.444	3.901	2.96	42.582	75.0	3.062	25.0
1275.5	12.0	3.0	17.5	72.886	5.485	13.289	21.326	59.81	2.527	23.67	37.963	33.599	8.199	4.098	2.624	39.136	80.4	2.202	19.6
1275.5	12.0	4.0	17.5	72.886	5.485	13.289	22.601	56.435	2.223	25.381	40.677	31.356	8.386	3.739	3.0	42.521	74.3	3.138	25.7

Printing Stilling Basin Calcualtion in MKS unit.....

Q	FAngle	g_drop	Bc	q	dc	vc	B1	q1	d1	v1	B2	q2	d2	v2	Fr1	LJ	Eff	Del_E	Del_E(%)
36.13	8.0	0.91	5.34	6.77	1.67	4.05	6.11	5.92	0.83	7.14	9.44	3.83	2.55	1.5	2.501	12.0	82.5	0.6	17.5
36.13	8.0	1.22	5.34	6.77	1.67	4.05	6.36	5.68	0.74	7.66	10.02	3.61	2.63	1.37	2.837	14.0	76.9	0.86	23.1
36.13	9.0	0.91	5.34	6.77	1.67	4.05	6.2	5.82	0.81	7.16	9.97	3.63	2.54	1.43	2.532	12.0	81.9	0.62	18.1
36.13	9.0	1.22	5.34	6.77	1.67	4.05	6.49	5.56	0.73	7.68	10.62	3.4	2.61	1.3	2.878	14.0	76.2	0.89	23.8
36.13	10.0	0.91	5.34	6.77	1.67	4.05	6.3	5.73	0.8	7.18	10.5	3.44	2.52	1.36	2.563	12.0	81.4	0.64	18.6
36.13	10.0	1.22	5.34	6.77	1.67	4.05	6.63	5.45	0.71	7.7	11.21	3.22	2.59	1.24	2.919	13.0	75.6	0.91	24.4
36.13	11.0	0.91	5.34	6.77	1.67	4.05	6.4	5.65	0.78	7.2	11.04	3.28	2.51	1.3	2.594	12.0	80.9	0.65	19.1
36.13	11.0	1.22	5.34	6.77	1.67	4.05	6.76	5.35	0.69	7.72	11.8	3.06	2.57	1.19	2.96	13.0	75.0	0.93	25.0
36.13	12.0	0.91	5.34	6.77	1.67	4.05	6.5	5.56	0.77	7.22	11.57	3.12	2.5	1.25	2.624	12.0	80.4	0.67	19.6
36.13	12.0	1.22	5.34	6.77	1.67	4.05	6.89	5.24	0.68	7.74	12.4	2.91	2.56	1.14	3.0	13.0	74.3	0.96	25.7

Printing Basin Selection Data.....

Parmeter Name	Unit	Values
Discharge/ft	cfs/ft	72.886
Flare Angle	Degree	12.0
Glasis_Drop	Feet	4.0
Exit Velocity	Feet/sec	3.74
Fr1		3.0
Jump_Length	Feet	42.52
Energy Loss(%)	%	25.7
Floor Length	Feet	158.0
Point_1	Feet	0.0
Point_2	Feet	62.0
Point_3	Feet	96.0
Point_4	Feet	158.0

Printing Seepage Calcualtion Data.....

locations	uncorrected	mc_corr	t_corrr	corrected
Phi_E	32.29	-1.4660634479078605	1.53	32.22
Phi_C1	67.71	1.4660634479078605	1.53	70.71

Printing thickness calcualtion data.....

location	p(%)	p(feet)	th_min(feet)
1.0	70.71	12.64	0.0
2.0	55.61	9.94	0.0
3.0	47.32	8.46	6.04
4.0	32.22	5.76	4.11

Printing Detiled thickness calcualtion data.....

dist	P%	Hw	Bi	-WwL	Net(Hw)	t_req
0.0	32.22	5.76	31.0	2.41	3.35	2.39
3.0	32.95082278481013	5.89	30.35	2.47	3.42	2.44
6.0	33.68164556962025	6.02	29.69	2.52	3.5	2.5
9.0	34.41246835443038	6.15	29.04	2.58	3.57	2.55
12.0	35.1432911392405	6.28	28.39	2.64	3.64	2.6
15.0	35.87411392405063	6.41	27.73	2.7	3.71	2.65
18.0	36.604936708860755	6.54	27.08	2.76	3.78	2.7
21.0	37.335759493670885	6.67	26.43	2.83	3.84	2.74
24.0	38.06658227848101	6.8	25.77	2.9	3.9	2.79
27.0	38.79740506329114	6.94	25.12	2.98	3.96	2.83
30.0	39.52822784810127	7.07	24.47	3.06	4.01	2.86
33.0	40.25905063291139	7.2	23.81	3.14	4.06	2.9
36.0	40.98987341772152	7.33	23.16	3.23	4.1	2.93
39.0	41.72069620253164	7.46	22.51	3.32	4.14	2.96
42.0	42.45151898734177	7.59	21.85	3.42	4.17	2.98
45.0	43.1823417721519	7.72	21.2	3.53	4.19	2.99
48.0	43.91316455696202	7.85	20.55	3.64	4.21	3.01
51.0	44.643987341772146	7.98	19.9	3.76	4.22	3.01
54.0	45.374810126582275	8.11	19.24	3.89	4.22	3.01
57.0	46.105632911392405	8.24	18.59	4.02	4.22	3.01
60.0	46.83645569620253	8.37	17.94	4.17	4.2	3.0

Printing Input Data for Load Calcualtions.....

Parameter Name	Unit	Parameter Value	Detail Name
VW	feet	5.0	Vent Inner Span/width
VH	feet	6.0	Vent Height
NV	nos	3.0	No of Vents
Tt	inch	20.0	Top Slab thicjness
Ts	inch	18.0	Abutmet Thicknes
Tb	inch	36.12	Bottom Slab Thicknes
Tp	inch	15.0	Pier Thicknes
gamma_s	pcf	120.0	Soil Fill Unit Wieght
phi	degree	20.0	friction angle of back fill soil
H	feet	17.04	Height of srcharge above pier
MPF	unitless	1.2	Multiple Presnce Factor
IM	unitless	1.3	Impact factor for Dynamic Loading
INVERT_LEVEL	ft-pwd	-4.92	Invert Level of Regulator
EMBANKMENT_CREST_LEVEL	ft-pwd	18.04	Emnakment Crest Level
h_prime	ft	3.0	Additional Surcharge load above Embankemt

Printing Barrel Load.....

Notations	LoadName	LoadUnits	LoadType	Load_Value_Maximum	Load_Value_Minimum
TSL	Load on Top Slab	klf	UDL	-2.128	-2.128
BSL	Load on Bottom Slab	klf	UDL	2.369	2.369
SWL+	Load on Left Side Wall	klf	Trapizoidal	1.1576	1.6579000000000002
SWL(-)	Load on Right Side Wall	klf	Trapizoidal	-1.1576	-1.6579000000000002

Wrtitng Node Info.....

JointNo	Marker	Xcoordiante	Ycoordinate	R_x	R_y	R_rotation
1	A	0.0	100.06	1	1	0
2	B	76.5	100.06	1	1	0
3	C	151.5	100.06	1	1	0
4	D	228.0	100.06	1	1	0
5	E	0.0	0.0	1	1	0
6	F	76.5	0.0	1	1	0
7	G	151.5	0.0	1	1	0
8	H	228.0	0.0	1	1	0

Writing Member Info.....

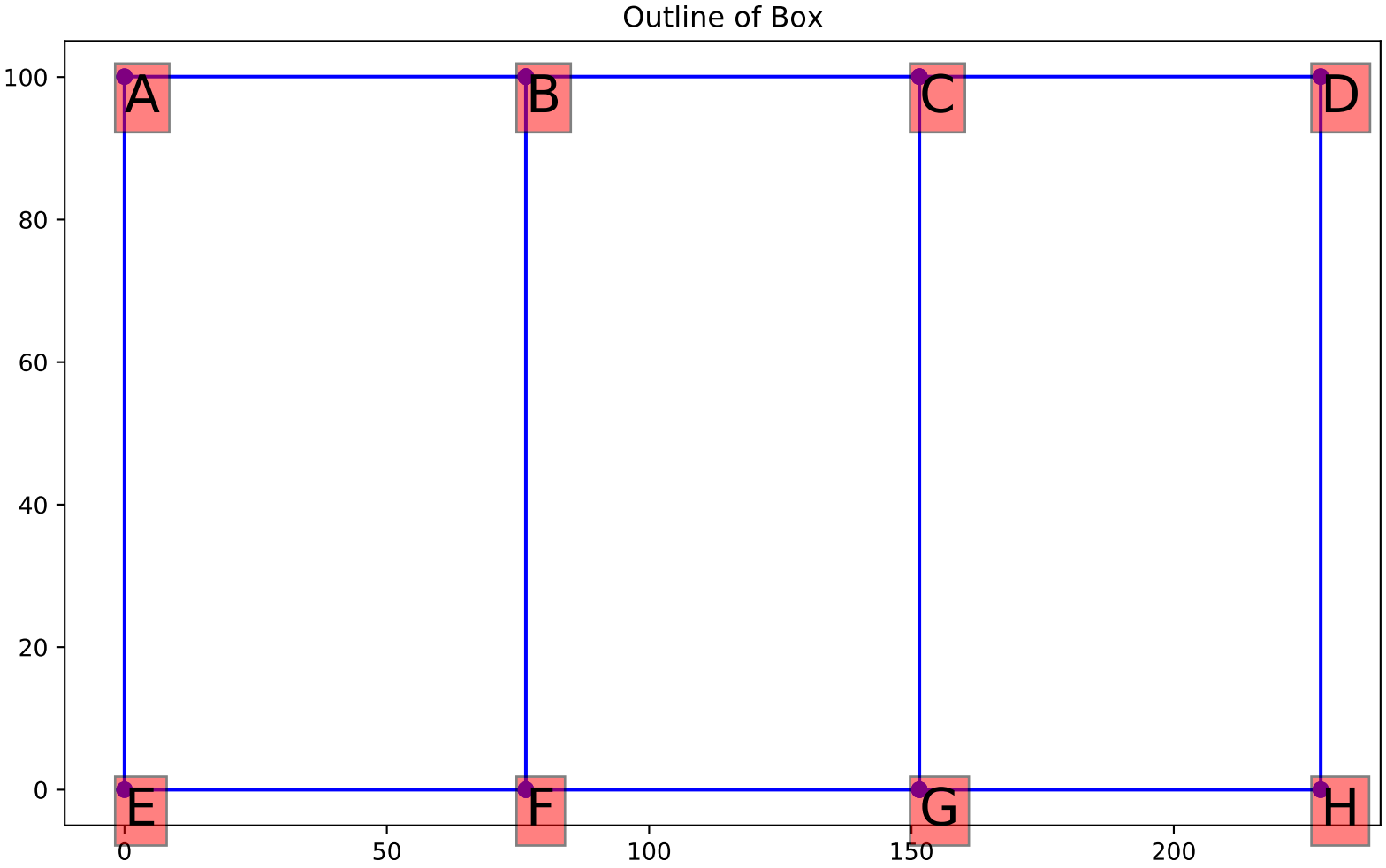
MemberNo	joint_i	joint_k	Area	I	E
1.0	1.0	2.0	240.0	8000.0	3122.0
2.0	2.0	3.0	240.0	8000.0	3122.0
3.0	3.0	4.0	240.0	8000.0	3122.0
4.0	5.0	6.0	433.43999999999994	47124.11692799998	3122.0
5.0	6.0	7.0	433.43999999999994	47124.11692799998	3122.0
6.0	7.0	8.0	433.43999999999994	47124.11692799998	3122.0
7.0	1.0	5.0	1.5	5832.0	3122.0
8.0	2.0	6.0	180.0	3375.0	3122.0
9.0	3.0	7.0	180.0	3375.0	3122.0
10.0	4.0	8.0	1.5	5832.0	3122.0

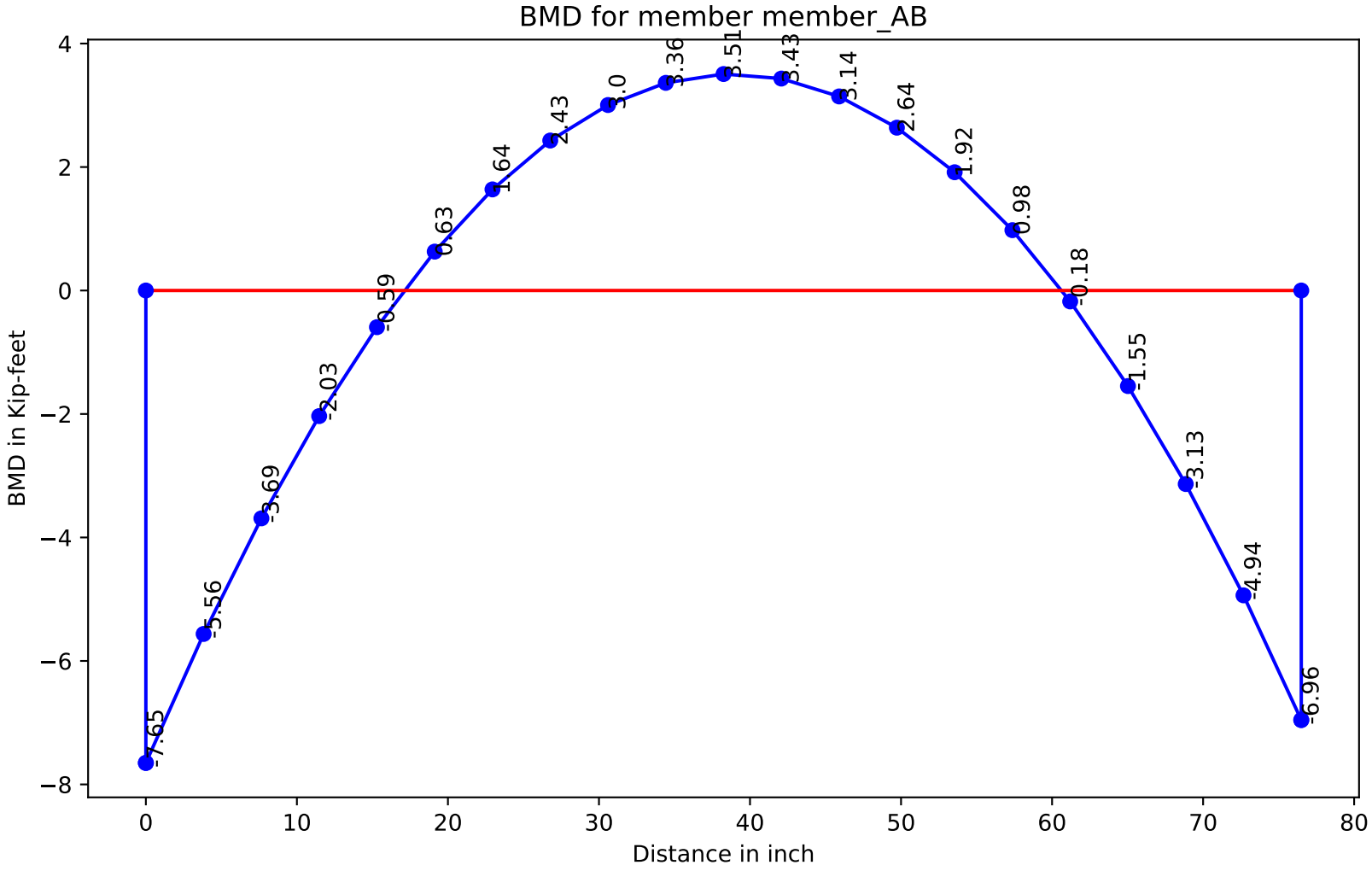
Writing Member Load Info.....

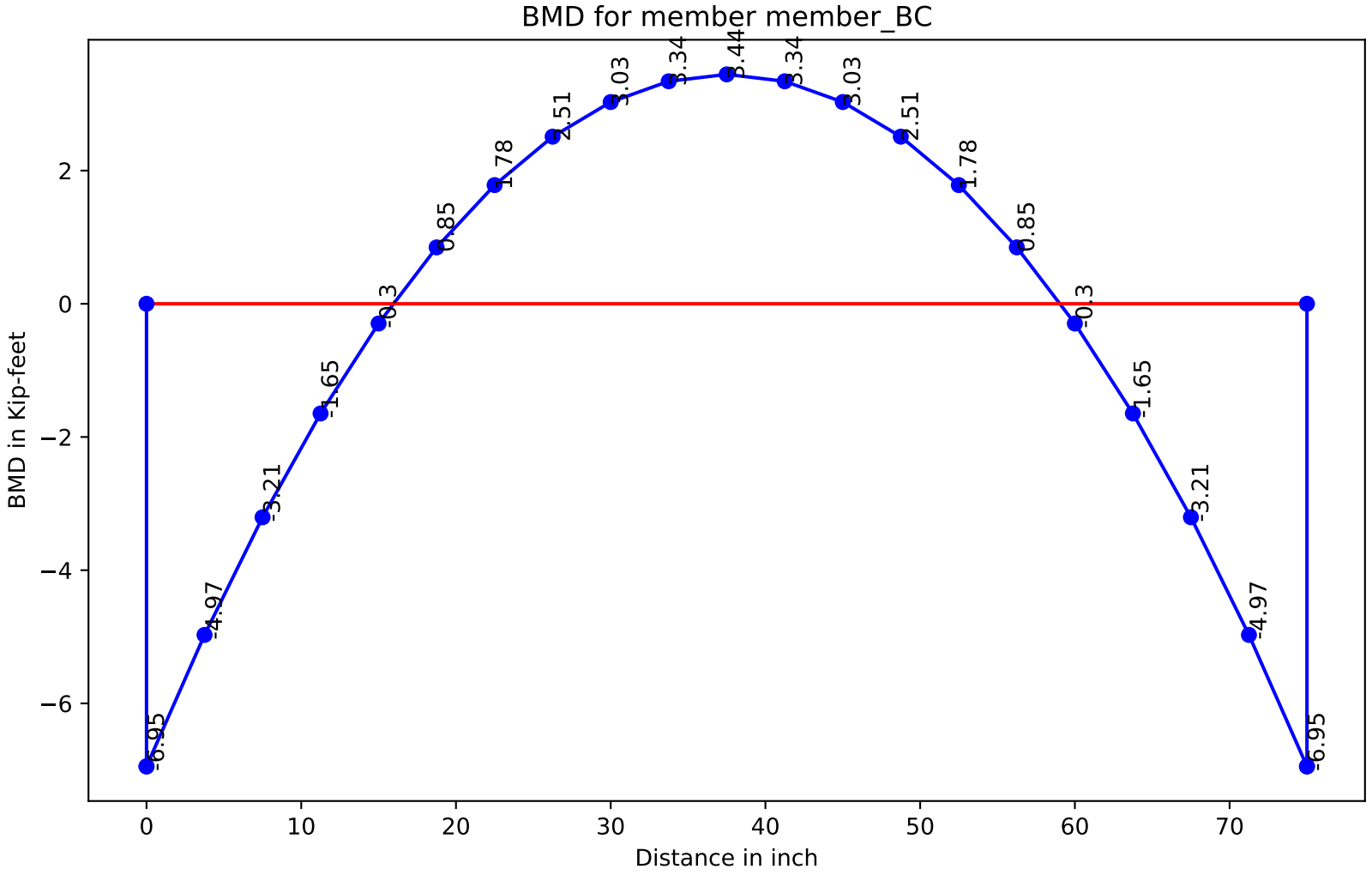
load_value	application_point	Type	memberNo	w2
-0.17733333333333334	0.0	3.0	1.0	-0.17733333333333334
-0.17733333333333334	0.0	3.0	2.0	-0.17733333333333334
-0.17733333333333334	0.0	3.0	3.0	-0.17733333333333334
0.19741666666666668	0.0	3.0	4.0	0.19741666666666668
0.19741666666666668	0.0	3.0	5.0	0.19741666666666668
0.19741666666666668	0.0	3.0	6.0	0.19741666666666668
0.09646666666666666	0.0	7.0	7.0	0.13815833333333336
-0.09646666666666666	0.0	7.0	10.0	-0.13815833333333336

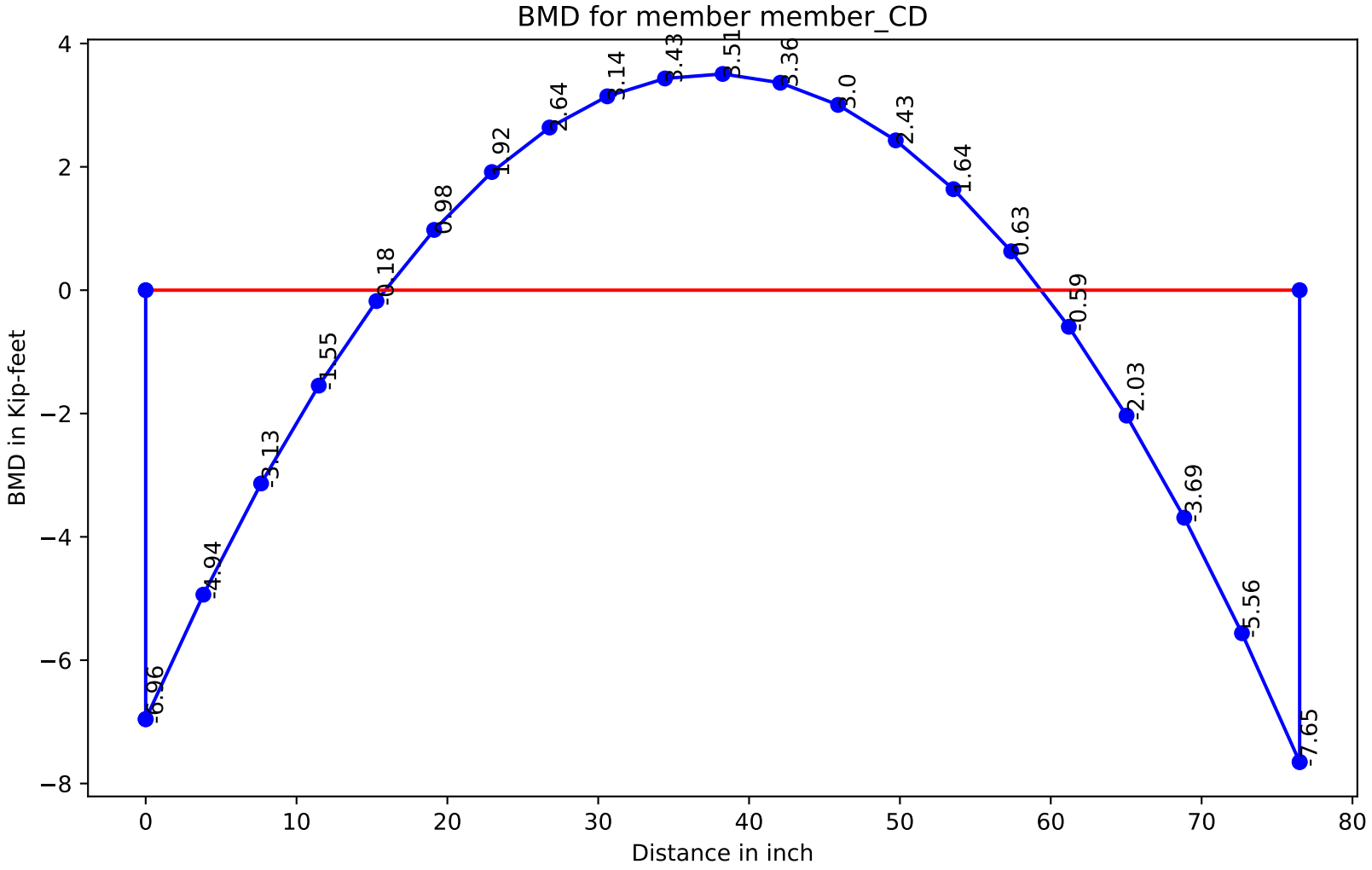
Wrting Joint Load Info.....

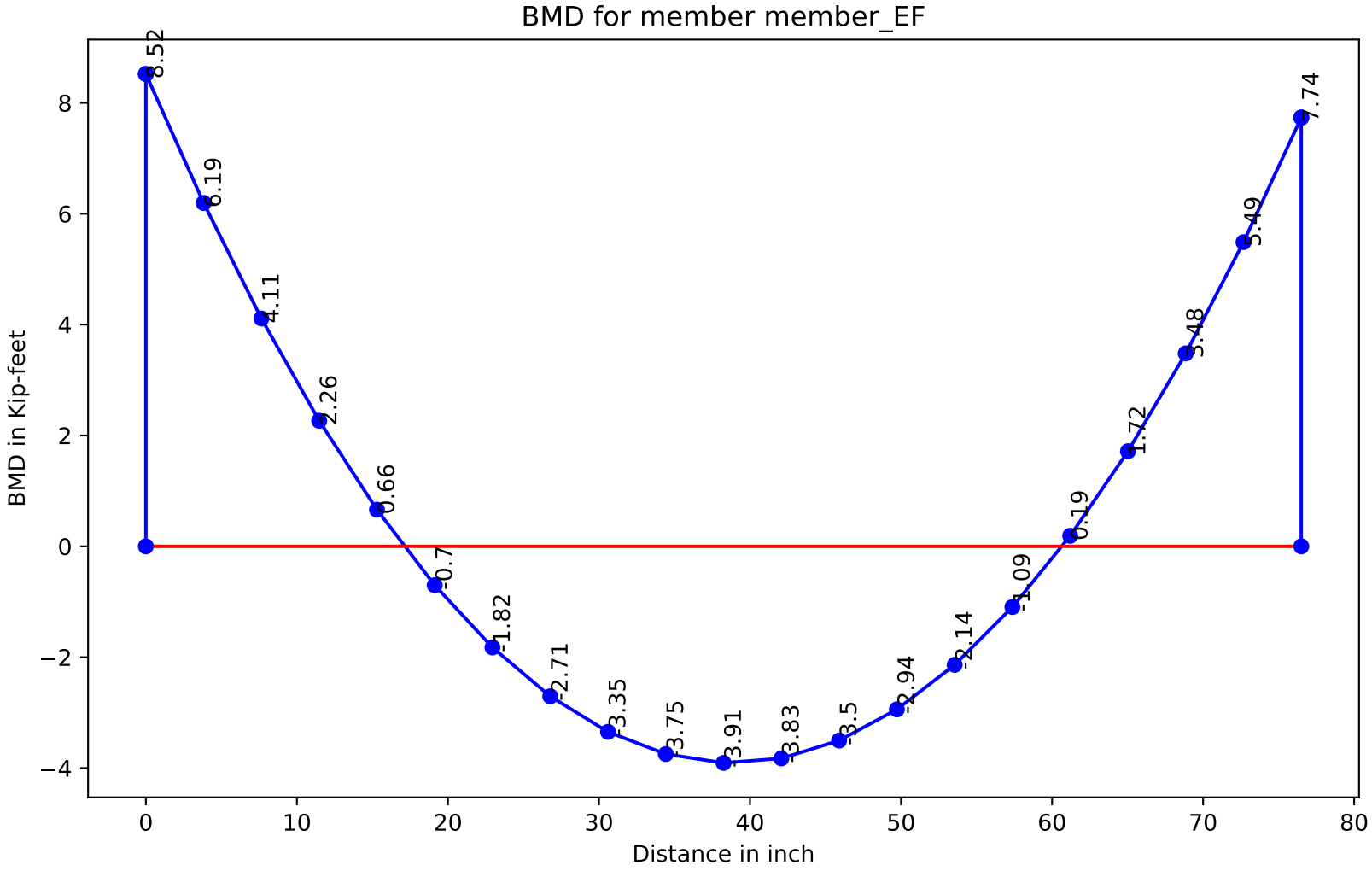
JointNo	xvalue	yvalue	mvalue
0	0	0	0

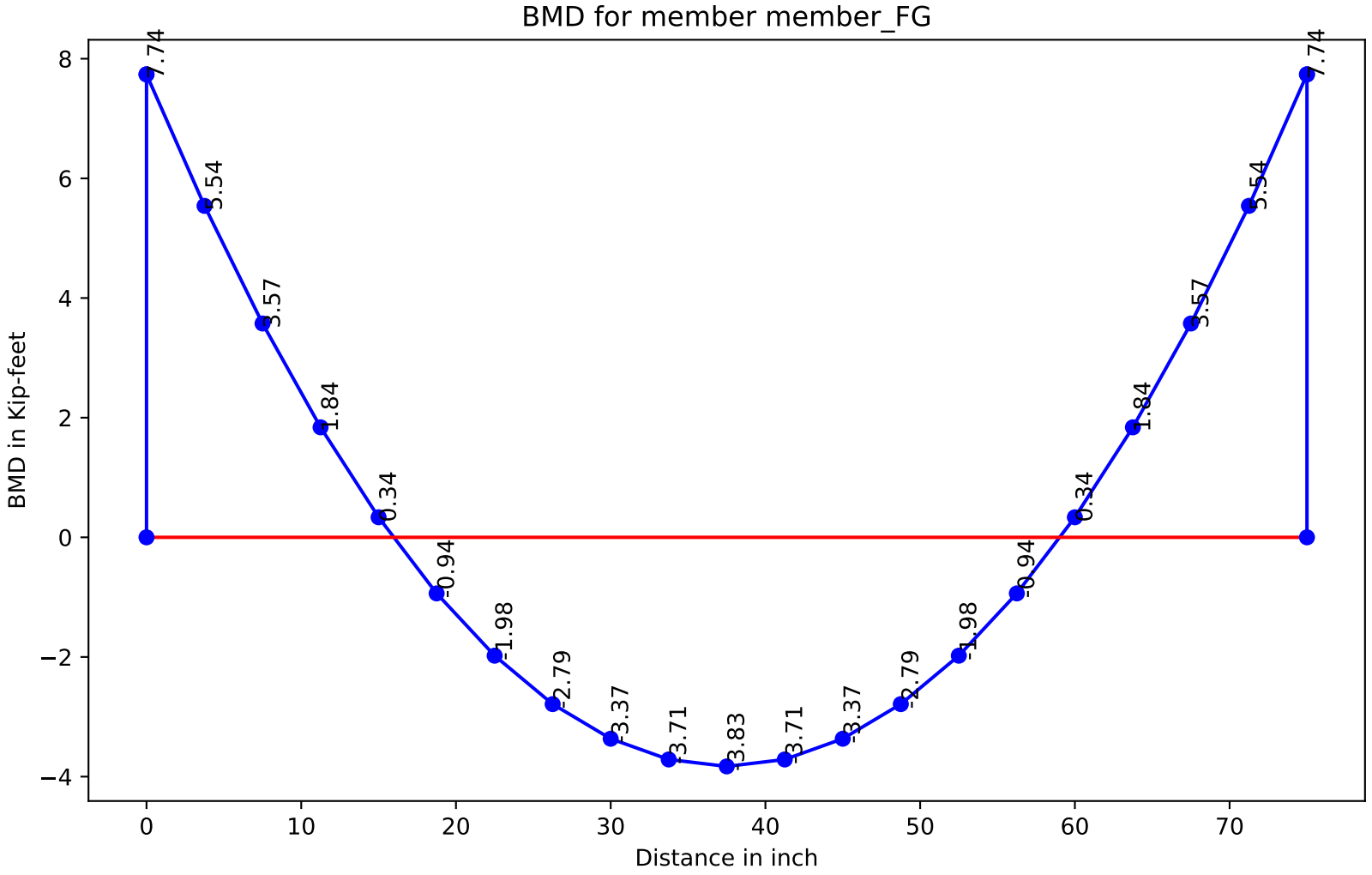

Outline of Box
A
B
C
D
E
F
G
H
100
80
60
40
20
0
0
50
100
150
200

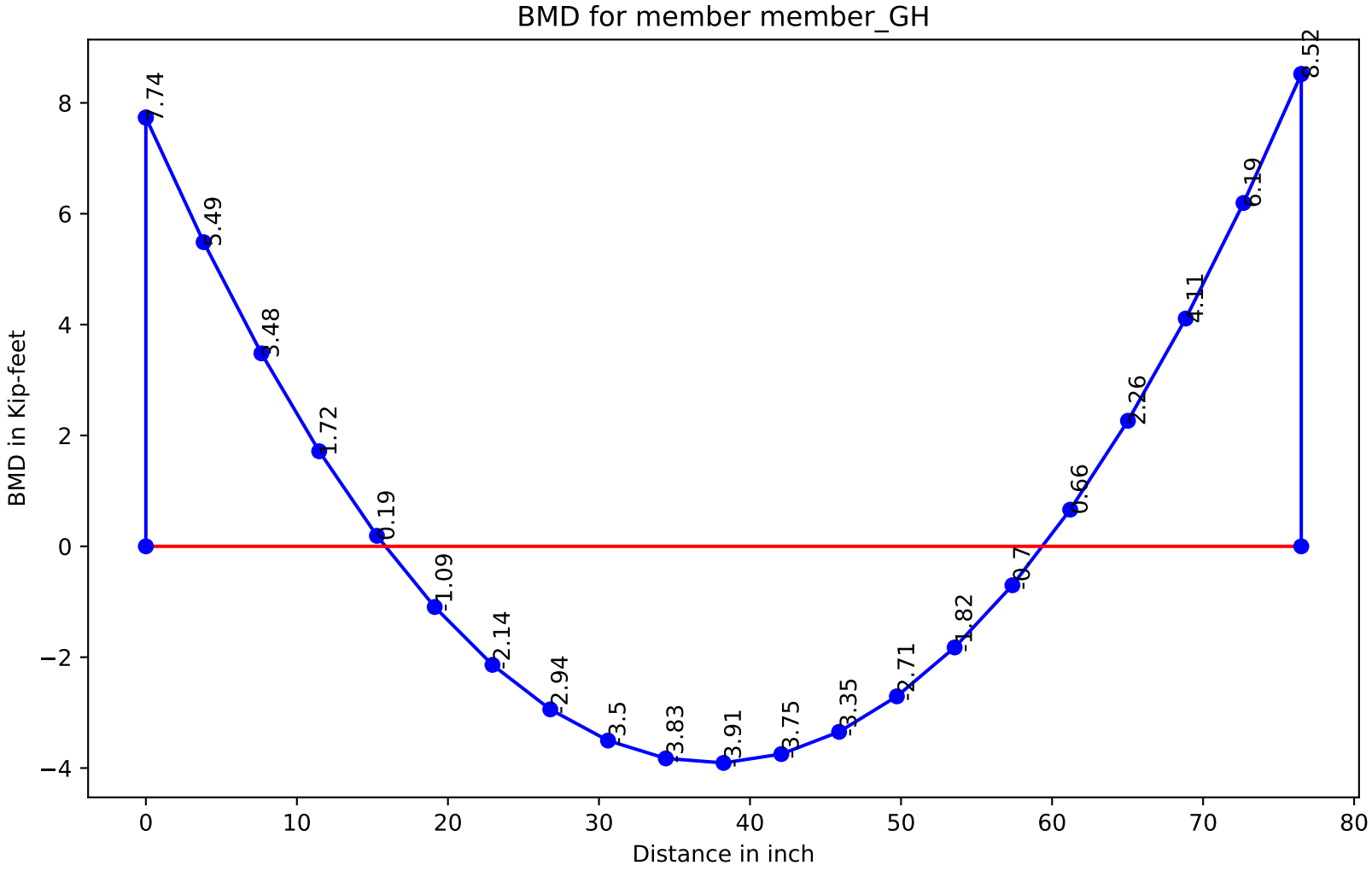

BMD for member member_AB
BMD in Kip-feet
Distance in inch
4
2
0
−2
−4
−6
−8
0
10
20
30
40
50
60
70
80
-7.65
-5.56
-3.69
-2.03
-0.59
0.63
1.64
2.43
3.0
3.36
3.51
3.43
3.14
2.64
1.92
0.98
-0.18
-1.55
-3.13
-4.94
-6.96

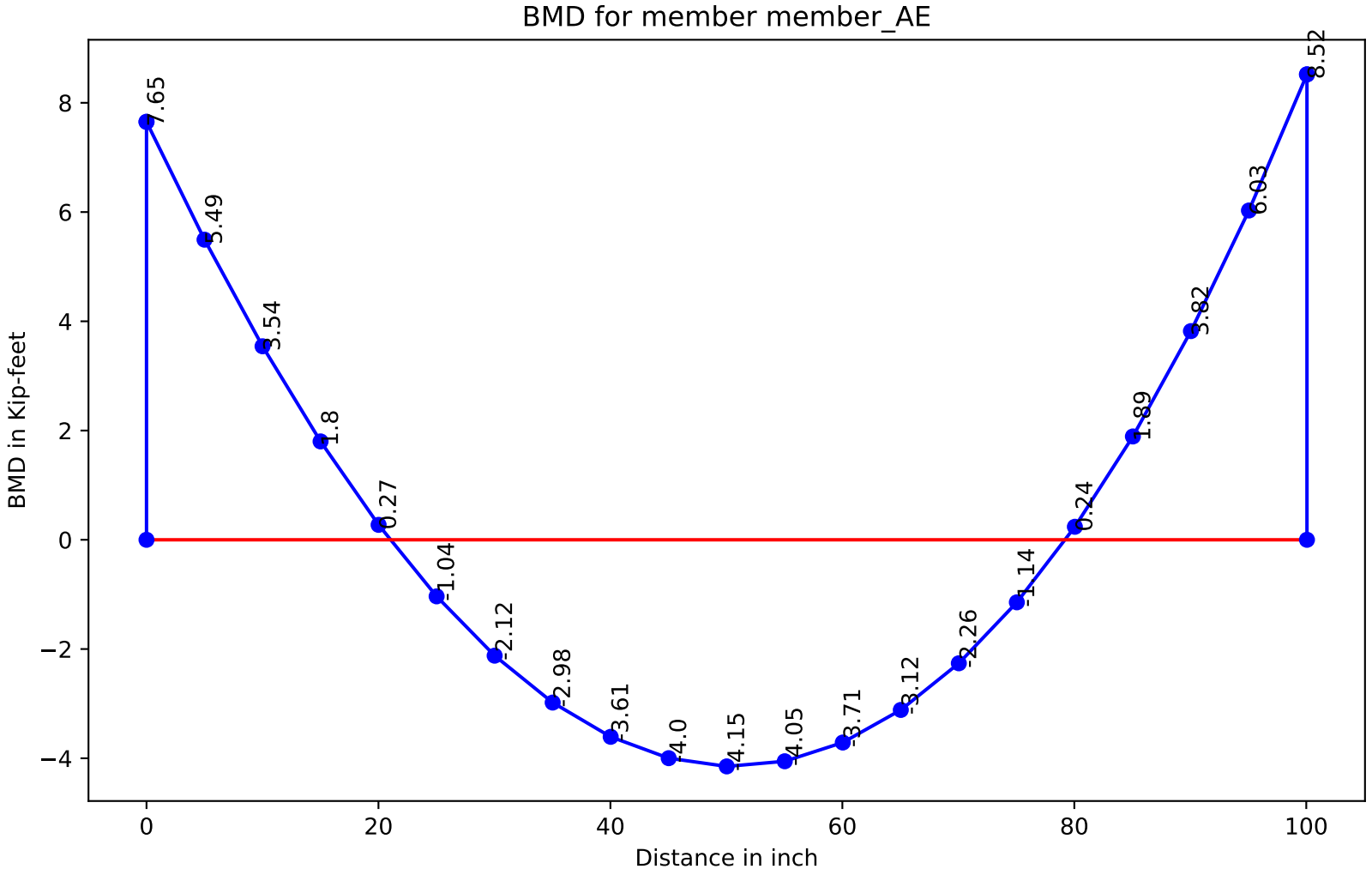

BMD for member member_BC
BMD in Kip-feet
Distance in inch
-6.95
-4.97
-3.21
-1.65
-0.3
0.85
1.78
2.51
3.03
3.34
3.44
3.34
3.03
2.51
1.78
0.85
-0.3
-1.65
-3.21
-4.97
-6.95
0
10
20
30
40
50
60
70
2
0
−2
−4
−6

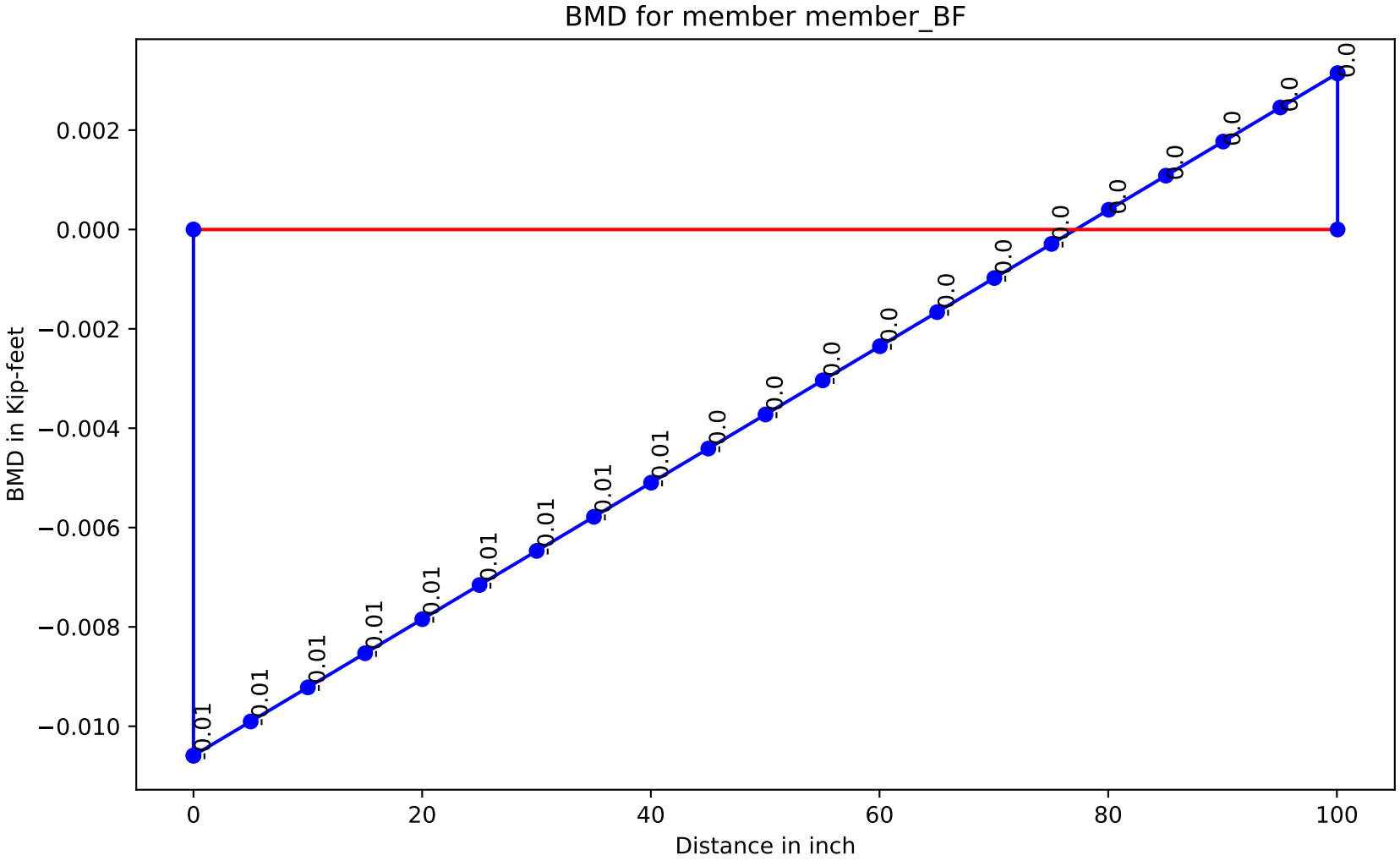

BMD for member member_CD
BMD in Kip-feet
Distance in inch
-6.96
-4.94
-3.13
-1.55
-0.18
0.98
1.92
2.64
3.14
3.43
3.51
3.36
3.0
2.43
1.64
0.63
-0.59
-2.03
-3.69
-5.56
-7.65
4
2
0
−2
−4
−6
−8
0
10
20
30
40
50
60
70
80


BMD for member member_EF
BMD in Kip-feet
Distance in inch
8.52
6.19
4.11
2.26
0.66
-0.7
-1.82
-2.71
-3.35
-3.75
-3.91
-3.83
-3.5
-2.94
-2.14
-1.09
0.19
1.72
3.48
5.49
7.74
8
6
4
2
0
−2
−4
0
10
20
30
40
50
60
70
80


BMD for member member_FG
BMD in Kip-feet
Distance in inch
7.74
5.54
3.57
1.84
0.34
-0.94
-1.98
-2.79
-3.37
-3.71
-3.83
-3.71
-3.37
-2.79
-1.98
-0.94
0.34
1.84
3.57
5.54
7.74
8
6
4
2
0
−2
−4
0
10
20
30
40
50
60
70


BMD for member member_GH
BMD in Kip-feet
Distance in inch
7.74
5.49
3.48
1.72
0.19
-1.09
-2.14
-2.94
-3.5
-3.83
-3.91
-3.75
-3.35
-2.71
-1.82
-0.7
0.66
2.26
4.11
6.19
8.52


BMD for member member_AE
BMD in Kip-feet
Distance in inch
7.65
5.49
3.54
1.8
0.27
-1.04
-2.12
-2.98
-3.61
-4.0
-4.15
-4.05
-3.71
-3.12
-2.26
-1.14
0.24
1.89
3.82
6.03
8.52
8
6
4
2
0
−2
−4
0
20
40
60
80
100


BMD for member member_BF
BMD in Kip-feet
Distance in inch
0.002
0.000
−0.002
−0.004
−0.006
−0.008
−0.010
0
20
40
60
80
100
-0.01
-0.01
-0.01
-0.01
-0.01
-0.01
-0.01
-0.0
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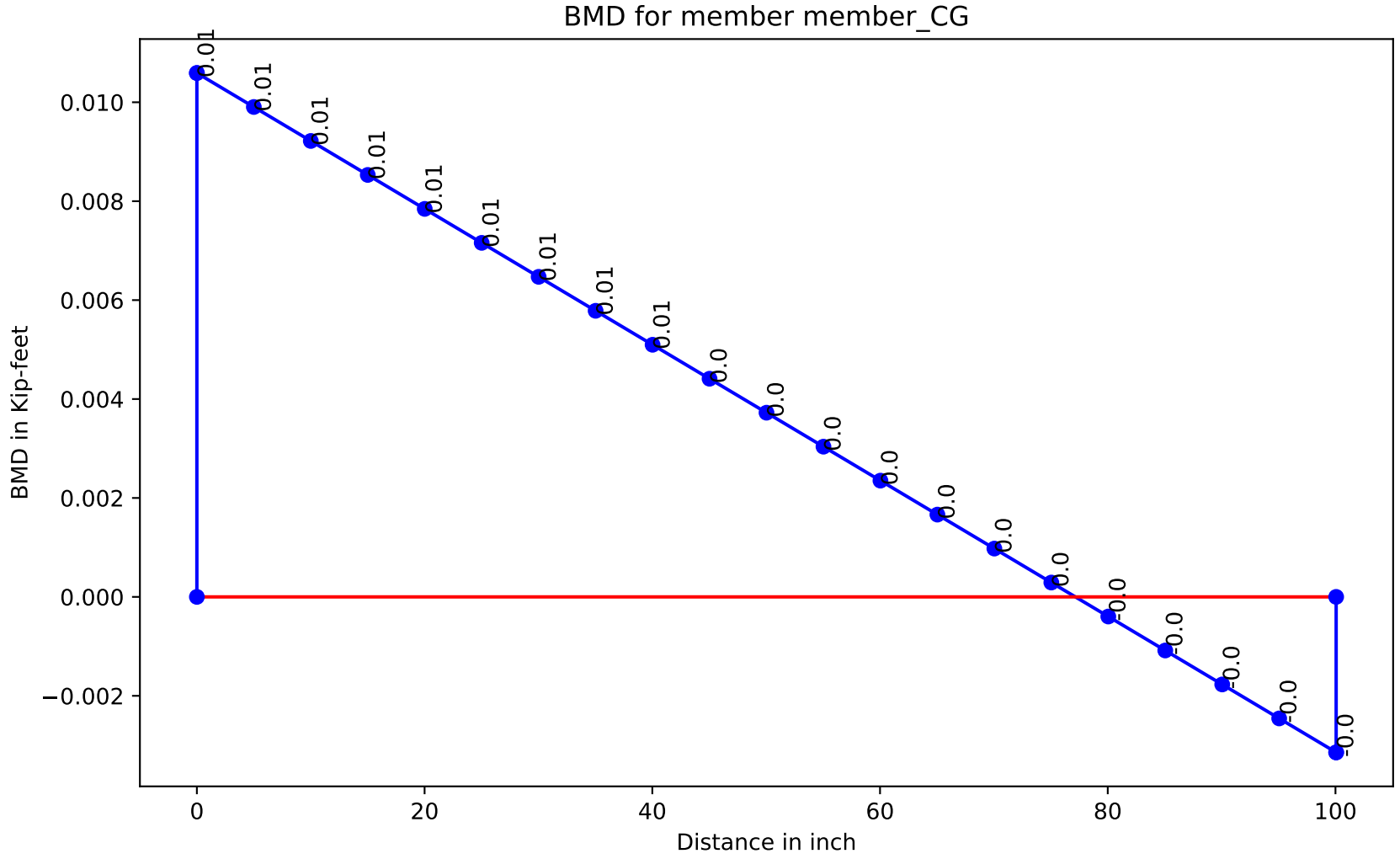
-0.0


BMD for member member_CG
BMD in Kip-feet
Distance in inch
0.010
0.008
0.006
0.004
0.002
0.000
−0.002
0
20
40
60
80
100
0.01
0.01
0.01
0.01
0.01
0.01
0.01
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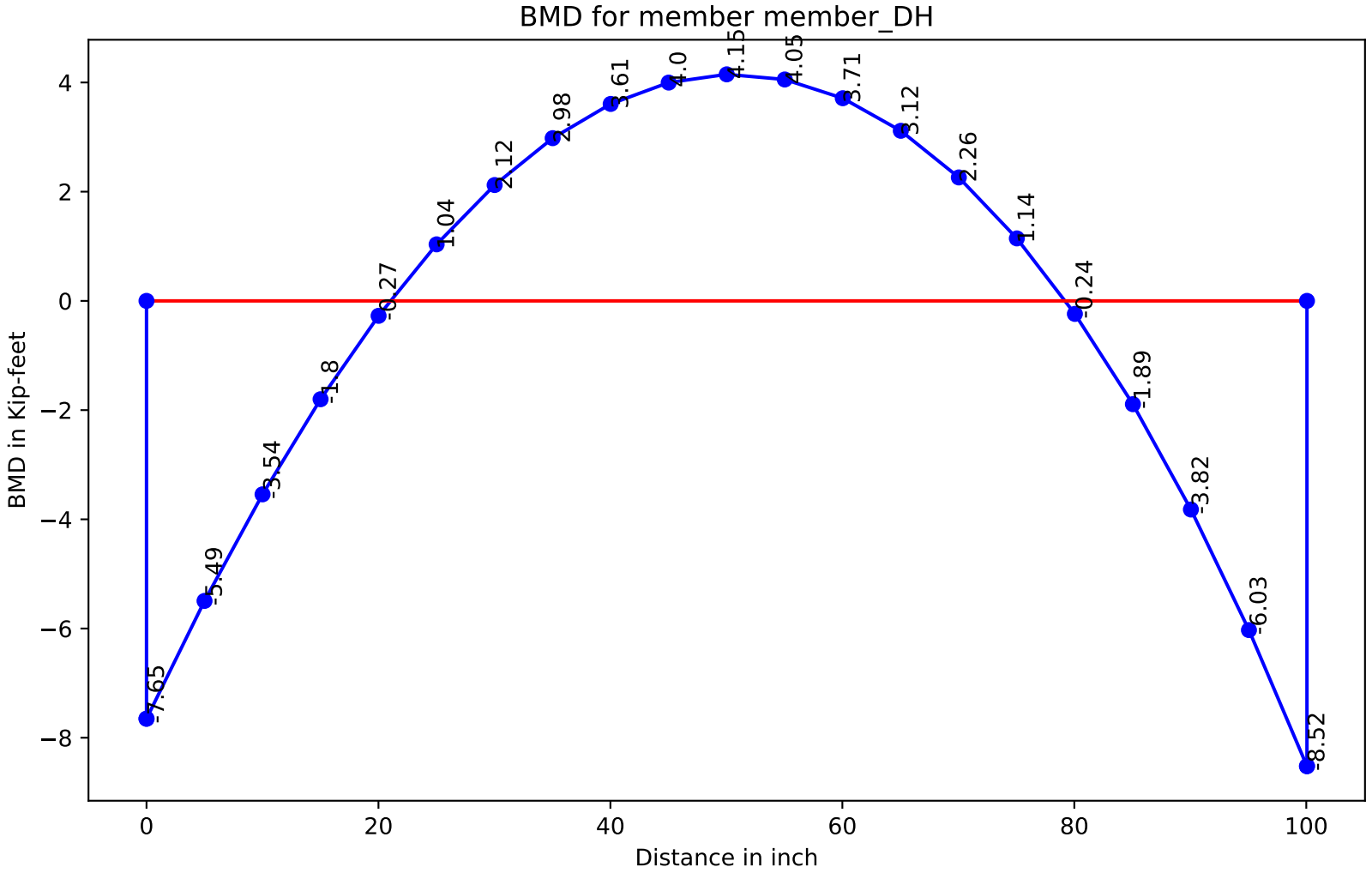
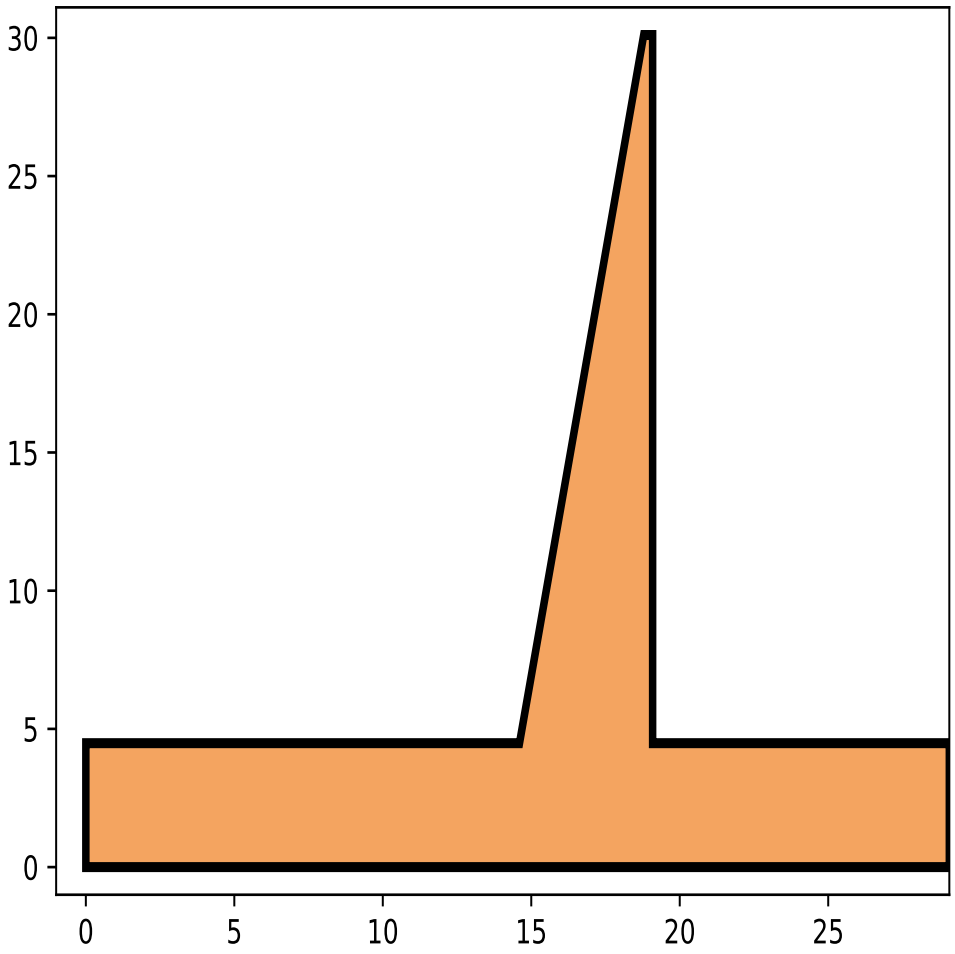

BMD for member member_DH
BMD in Kip-feet
Distance in inch
-7.65
-5.49
-3.54
-1.8
-0.27
1.04
2.12
2.98
3.61
4.0
4.15
4.05
3.71
3.12
2.26
1.14
-0.24
-1.89
-3.82
-6.03
-8.52
4
2
0
−2
−4
−6
−8
0
20
40
60
80
100


30
25
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0
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10
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20
25

Printing Earth Pressure Calcualtion for CASE(B) After Construction

component	area	PV	PH	Arm_V	Arm_H	M
C1	7.686	-1152.9	0.0	-10.1418	0.0	11692.481220000001
C2	53.590635000000006	-8038.595250000001	0.0	-11.686300000000003	0.0	93941.43567007504
C3	130.37435145	-19556.1527175	0.0	-14.53935	0.0	284333.74901318364
S1	53.590635000000006	-5894.96985	0.0	-11.686300000000003	0.0	68890.38615805501
S2	374.13910799999996	-41155.30188	0.0	-21.777	0.0	896239.00904076
SH	0.0	0.0	24422.6481951375	0.0	13.023500000000002	-318068.35876937327

Printing Earth Pressure Calcualtion for CASE(C) During Operation

component	area	PV	PH	Arm_V	Arm_H	M
C1	7.686	-1152.9	0.0	-10.1418	0.0	11692.481220000001
C2	53.590635000000006	-8038.595250000001	0.0	-11.686300000000003	0.0	93941.43567007504
C3	130.37435145	-19556.1527175	0.0	-14.53935	0.0	284333.74901318364
S1	18.623609601873536	-2048.597056206089	0.0	-19.766895199063235	0.0	40494.40331513521
S2	0.08164519906323209	-8.98097189695553	0.0	-10.400660265417645	0.0	93.40803755349792
S3	359.535708	-43144.28496	0.0	-21.777	0.0	939553.09357392
S4	49.488780199063235	-5938.653623887588	0.0	-13.135230132708822	0.0	78005.58202820868
W	9.991800000000001	-623.48832	0.0	-4.995900000000001	0.0	3114.8852978880004
U	846.2919454500001	52808.61739608	0.0	-14.53935	0.0	-767802.9713376958
P1	0.0	0.0	26.95	0.0	29.436833333333333	-793.3226583333333
P2	0.0	0.0	1568.67865	0.0	14.55175	-22827.0195451375
P3	0.0	0.0	38379.885329471996	0.0	9.701166666666667	-372329.6642287628
P4	0.0	0.0	1043.6048142	0.0	1.8278333333333334	-1907.5356662219

Printing Earth Pressure Calcualtion for CASE(B) After Construction

dist	P	A_list	P/A	I	c	S	P*e	M/S	R
0.0	75797.92	29.08	2606.53	2049.28	-14.54	-140.94	65186.0	-462.51	2144.02
14.6	75797.92	29.08	2606.53	2049.28	0.06	34154.67	65186.0	1.91	2608.44
18.79	75797.92	29.08	2606.53	2049.28	4.25	482.18	65186.0	135.19	2741.72
19.09	75797.92	29.08	2606.53	2049.28	4.55	450.39	65186.0	144.73	2751.26
29.08	75797.92	29.08	2606.53	2049.28	14.54	140.94	65186.0	462.51	3069.04

Printing Earth Pressure Calcualtion for CASE(C) During Operation

dist	P	A_list	P/A	I	c	S	P*e	M/S	R
0.0	27703.04	29.08	952.69	2049.01	-14.54	-140.93	117215.6	-831.74	120.95
14.6	27703.04	29.08	952.69	2049.01	0.06	31990.76	117215.6	3.66	956.36
18.79	27703.04	29.08	952.69	2049.01	4.25	482.4	117215.6	242.99	1195.68
19.09	27703.04	29.08	952.69	2049.01	4.55	450.57	117215.6	260.15	1212.84
29.08	27703.04	29.08	952.69	2049.01	14.54	140.93	117215.6	831.74	1784.43

Stem Design Force.....

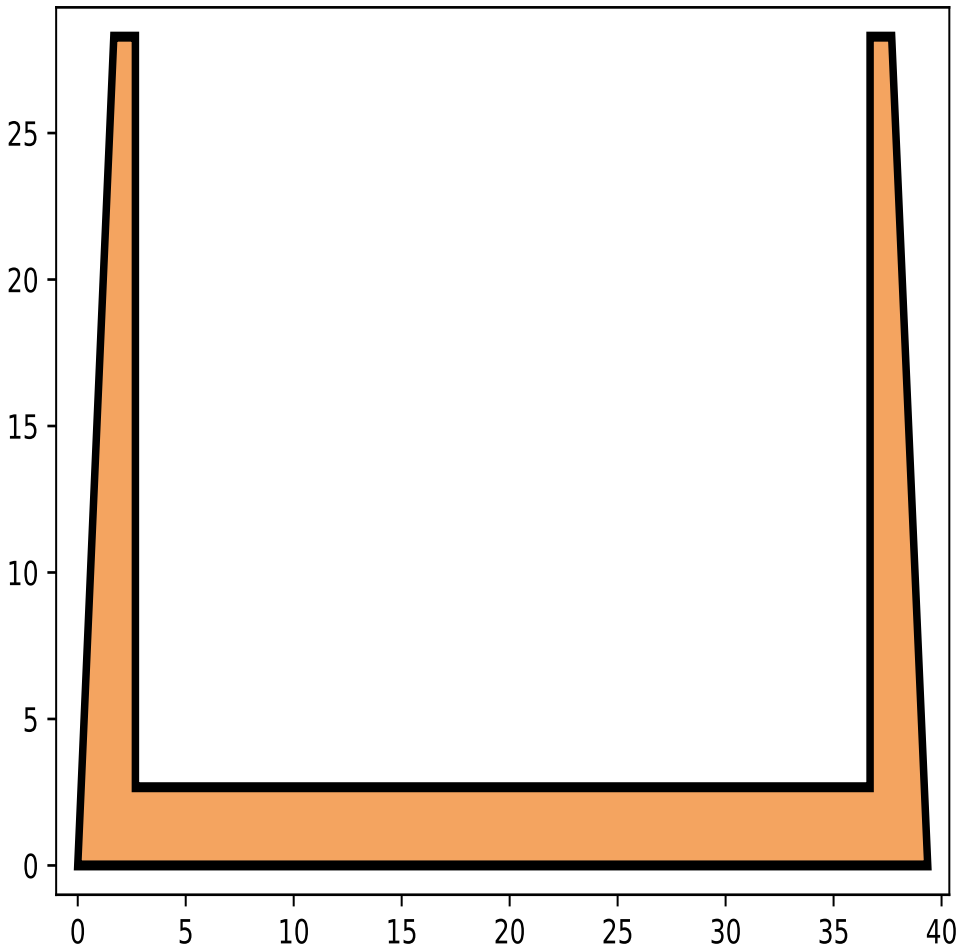
Case	Desc	V	M
Case B	After Construction	17689.55958	151068.8388132
Case C	During Operation	28819.5830528	242409.23144664534

Toe Design Force.....

Case	Desc	V	M
Case B	After Construction	22353.873749999995	114300.47236274998
Case C	During Operation	26395.262315999997	136598.06353166996

Heel Design Force.....

Case	Desc	V	M
Case B	After Construction	-16271.627000000004	-127032.52436666674
Case C	During Operation	-8288.323639999995	-162155.778628


25
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Design Load Effects on Utype wing wall.....

Description	Load Case	F	P	Mend	Mcl
During Construction	A	14932.86	0.0	0.0	59968.96
After Construction	B	16871.04	17689.56	151068.84	-74615.68
During Operation	C	3656.8	21172.2	172356.55	-103804.59
During Maintenance	D	-2261.7	22142.27	174159.58	-97706.42