Printing Input Parameters.....

parameters	unit	values	Unnamed: 3	Unnamed: 4	Unnamed: 5	Unnamed: 6	Unnamed: 7	Unnamed: 8
Basin Area	sq mile	13.5	nan	nan	nan	nan	nan	nan
Avg_GL	feet-PWD	6.0	nan	nan	nan	nan	nan	nan
Highest Water Level, HWL	feet-PWD	11.6	nan	nan	nan	nan	nan	nan
Lowest Water Level, LWL	feet-PWD	-6.88	20.52	nan	nan	nan	nan	nan
Moonsoon Lowest Water Level	feet-PWD	-4.92	nan	nan	nan	nan	nan	nan
Embankment Crest Level	feet-PWD	16.4	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	27.55	nan	nan	nan	nan	nan	nan
Abutment_width	inch	31.48	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	19.68	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	20.82	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	4.0	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(%)
1389.95	8.0	3.0	19.59	70.946	5.387	13.17	22.121	62.833	2.706	23.223	32.9	42.248	8.263	5.113	2.488	38.346	82.7	1.919	17.3
1389.95	8.0	4.0	19.59	70.946	5.387	13.17	22.965	60.526	2.428	24.933	34.826	39.911	8.543	4.672	2.82	42.199	77.2	2.757	22.8
1389.95	9.0	3.0	19.59	70.946	5.387	13.17	22.443	61.933	2.66	23.287	34.613	40.156	8.228	4.881	2.516	38.422	82.2	1.973	17.8
1389.95	9.0	4.0	19.59	70.946	5.387	13.17	23.393	59.418	2.377	24.998	36.754	37.818	8.49	4.455	2.857	42.179	76.6	2.83	23.4
1389.95	10.0	3.0	19.59	70.946	5.387	13.17	22.766	61.055	2.615	23.349	36.338	38.25	8.193	4.669	2.545	38.487	81.7	2.025	18.3
1389.95	10.0	4.0	19.59	70.946	5.387	13.17	23.824	58.344	2.328	25.061	38.687	35.928	8.437	4.259	2.894	42.148	76.0	2.901	24.0
1389.95	11.0	3.0	19.59	70.946	5.387	13.17	23.091	60.196	2.572	23.409	38.075	36.506	8.157	4.475	2.572	38.543	81.3	2.077	18.7
1389.95	11.0	4.0	19.59	70.946	5.387	13.17	24.257	57.301	2.281	25.121	40.627	34.213	8.384	4.081	2.931	42.108	75.4	2.971	24.6
1389.95	12.0	3.0	19.59	70.946	5.387	13.17	23.418	59.355	2.529	23.467	39.823	34.903	8.122	4.297	2.6	38.59	80.8	2.129	19.2
1389.95	12.0	4.0	19.59	70.946	5.387	13.17	24.693	56.289	2.236	25.179	42.573	32.648	8.331	3.919	2.968	42.06	74.8	3.04	25.2

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(%)
39.38	8.0	0.91	5.97	6.59	1.64	4.02	6.74	5.84	0.82	7.08	10.03	3.93	2.52	1.56	2.488	12.0	82.7	0.59	17.3
39.38	8.0	1.22	5.97	6.59	1.64	4.02	7.0	5.63	0.74	7.6	10.62	3.71	2.6	1.42	2.82	13.0	77.2	0.84	22.8
39.38	9.0	0.91	5.97	6.59	1.64	4.02	6.84	5.76	0.81	7.1	10.55	3.73	2.51	1.49	2.516	12.0	82.2	0.6	17.8
39.38	9.0	1.22	5.97	6.59	1.64	4.02	7.13	5.52	0.72	7.62	11.21	3.51	2.59	1.36	2.857	13.0	76.6	0.86	23.4
39.38	10.0	0.91	5.97	6.59	1.64	4.02	6.94	5.67	0.8	7.12	11.08	3.55	2.5	1.42	2.545	12.0	81.7	0.62	18.3
39.38	10.0	1.22	5.97	6.59	1.64	4.02	7.26	5.42	0.71	7.64	11.79	3.34	2.57	1.3	2.894	13.0	76.0	0.88	24.0
39.38	11.0	0.91	5.97	6.59	1.64	4.02	7.04	5.59	0.78	7.14	11.61	3.39	2.49	1.36	2.572	12.0	81.3	0.63	18.7
39.38	11.0	1.22	5.97	6.59	1.64	4.02	7.4	5.33	0.7	7.66	12.39	3.18	2.56	1.24	2.931	13.0	75.4	0.91	24.6
39.38	12.0	0.91	5.97	6.59	1.64	4.02	7.14	5.52	0.77	7.15	12.14	3.24	2.48	1.31	2.6	12.0	80.8	0.65	19.2
39.38	12.0	1.22	5.97	6.59	1.64	4.02	7.53	5.23	0.68	7.68	12.98	3.03	2.54	1.19	2.968	13.0	74.8	0.93	25.2

Printing Basin Selection Data.....

Parmeter Name	Unit	Values
Discharge/ft	cfs/ft	70.946
Flare Angle	Degree	12.0
Glasis_Drop	Feet	4.0
Exit Velocity	Feet/sec	3.92
Fr1		2.97
Jump_Length	Feet	42.06
Energy Loss(%)	%	25.2
Floor Length	Feet	144.0
Point_1	Feet	0.0
Point_2	Feet	62.0
Point_3	Feet	82.0
Point_4	Feet	144.0

Printing Seepage Calcualtion Data.....

locations	uncorrected	mc_corr	t_corrr	corrected
Phi_E	39.45	-3.008452687935559	1.38	41.08
Phi_C1	60.55	3.008452687935559	1.38	64.94

Printing thickness calcualtion data.....

location	p(%)	p(feet)	th_min(feet)
1.0	64.94	13.52	0.0
2.0	54.67	11.38	0.0
3.0	51.35	10.69	7.64
4.0	41.08	8.55	6.11

Printing Detiled thickness calcualtion data.....

dist	P%	Hw	Bi	-WwL	Net(Hw)	t_req
0.0	41.08	8.55	33.0	2.27	6.28	4.49
3.0	41.577083333333334	8.66	32.35	2.31	6.35	4.54
6.0	42.07416666666666	8.76	31.7	2.36	6.4	4.57
9.0	42.57125	8.86	31.05	2.41	6.45	4.61
12.0	43.06833333333333	8.97	30.4	2.46	6.51	4.65
15.0	43.565416666666664	9.07	29.76	2.51	6.56	4.69
18.0	44.0625	9.17	29.11	2.57	6.6	4.71
21.0	44.55958333333333	9.28	28.46	2.63	6.65	4.75
24.0	45.056666666666665	9.38	27.81	2.69	6.69	4.78
27.0	45.55375	9.48	27.16	2.75	6.73	4.81
30.0	46.05083333333333	9.59	26.51	2.82	6.77	4.84
33.0	46.547916666666666	9.69	25.86	2.89	6.8	4.86
36.0	47.045	9.79	25.21	2.97	6.82	4.87
39.0	47.54208333333333	9.9	24.57	3.05	6.85	4.89
42.0	48.03916666666667	10.0	23.92	3.13	6.87	4.91
45.0	48.536249999999995	10.11	23.27	3.22	6.89	4.92
48.0	49.03333333333333	10.21	22.62	3.31	6.9	4.93
51.0	49.53041666666667	10.31	21.97	3.41	6.9	4.93
54.0	50.027499999999996	10.42	21.32	3.51	6.91	4.94
57.0	50.52458333333333	10.52	20.67	3.62	6.9	4.93
60.0	51.02166666666666	10.62	20.02	3.74	6.88	4.91

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	31.48	Abutmet Thicknes
Tb	inch	59.28	Bottom Slab Thicknes
Tp	inch	27.55	Pier Thicknes
gamma_s	pcf	120.0	Soil Fill Unit Wieght
phi	degree	20.0	friction angle of back fill soil
H	feet	4.0	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	16.4	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	-1.936	-1.936
BSL	Load on Bottom Slab	klf	UDL	2.293	2.293
SWL+	Load on Left Side Wall	klf	Trapizoidal	1.0592000000000001	1.6174
SWL(-)	Load on Right Side Wall	klf	Trapizoidal	-1.0592000000000001	-1.6174

Wrtitng Node Info.....

JointNo	Marker	Xcoordiante	Ycoordinate	R_x	R_y	R_rotation
1	A	0.0	111.64	1	1	0
2	B	89.515	111.64	1	1	0
3	C	177.065	111.64	1	1	0
4	D	266.58	111.64	1	1	0
5	E	0.0	0.0	1	1	0
6	F	89.515	0.0	1	1	0
7	G	177.065	0.0	1	1	0
8	H	266.58	0.0	1	1	0

Writing Member Info.....

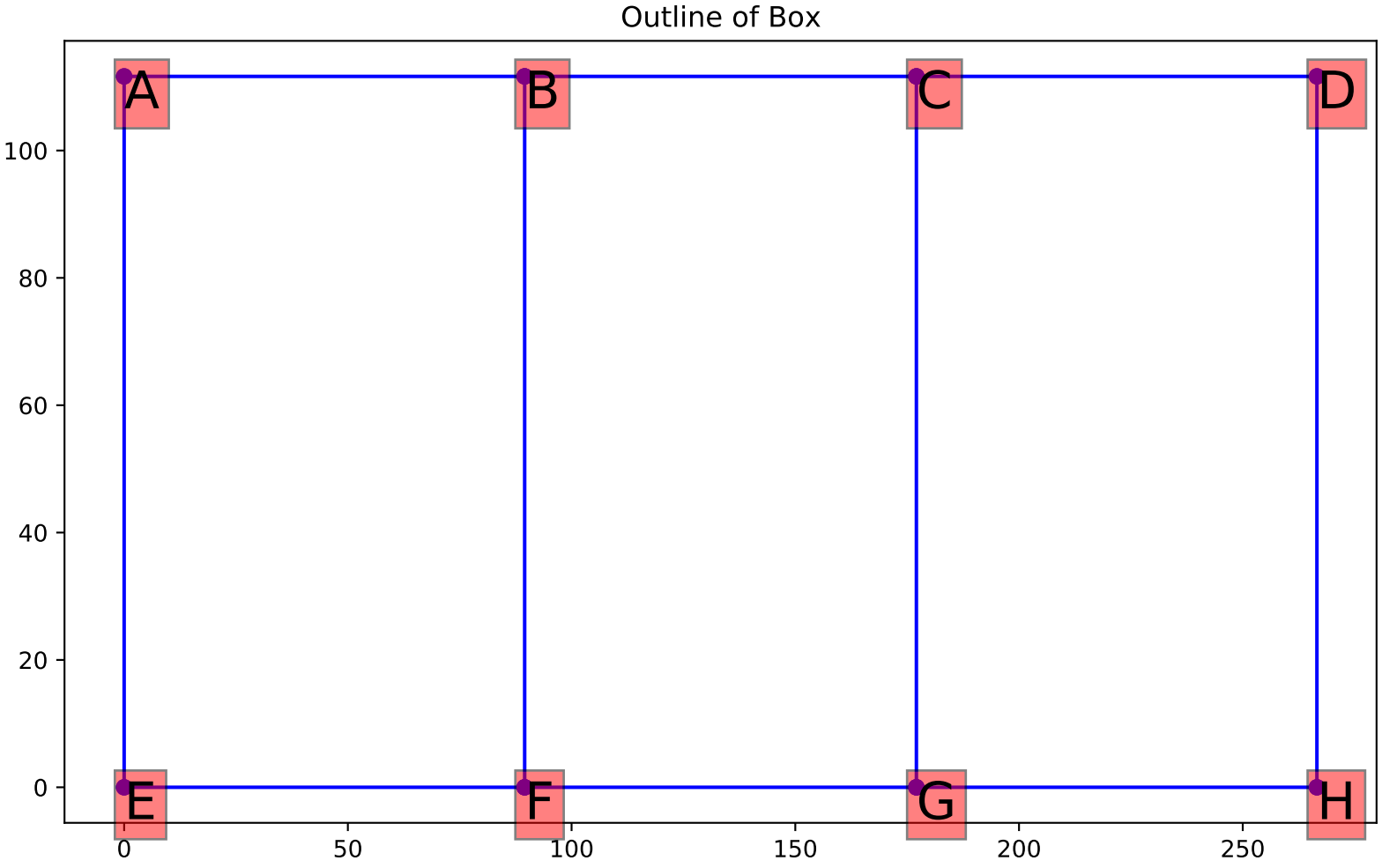
MemberNo	joint_i	joint_k	Area	I	E
1.0	1.0	2.0	240.0	8000.0	3122.0
2.0	2.0	3.0	240.0	8000.0	3122.0
3.0	3.0	4.0	240.0	8000.0	3122.0
4.0	5.0	6.0	711.36	208316.93875200002	3122.0
5.0	6.0	7.0	711.36	208316.93875200002	3122.0
6.0	7.0	8.0	711.36	208316.93875200002	3122.0
7.0	1.0	5.0	2.623333333333333	31196.377792000003	3122.0
8.0	2.0	6.0	330.6	20910.518875	3122.0
9.0	3.0	7.0	330.6	20910.518875	3122.0
10.0	4.0	8.0	2.623333333333333	31196.377792000003	3122.0

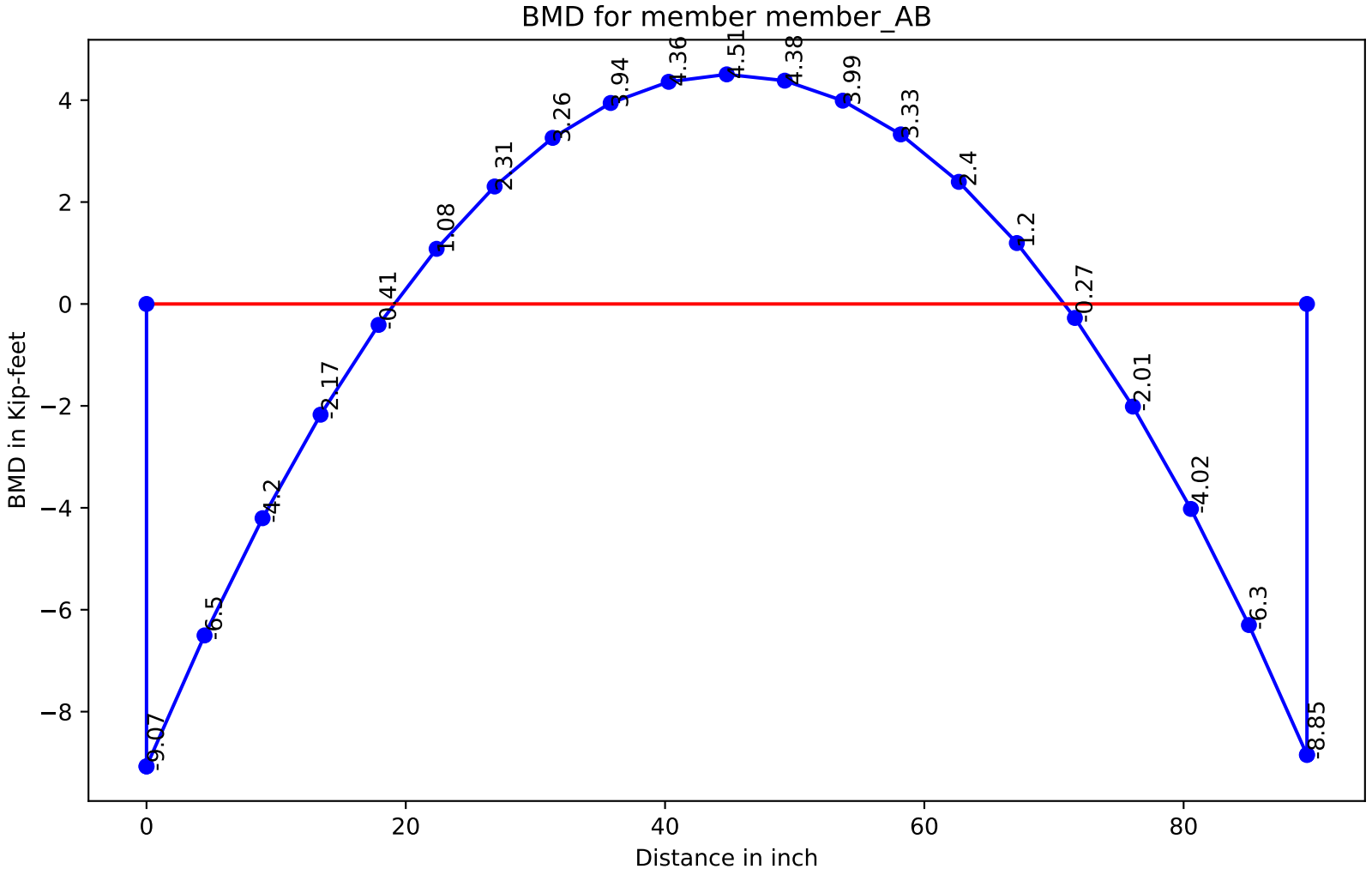
Writing Member Load Info.....

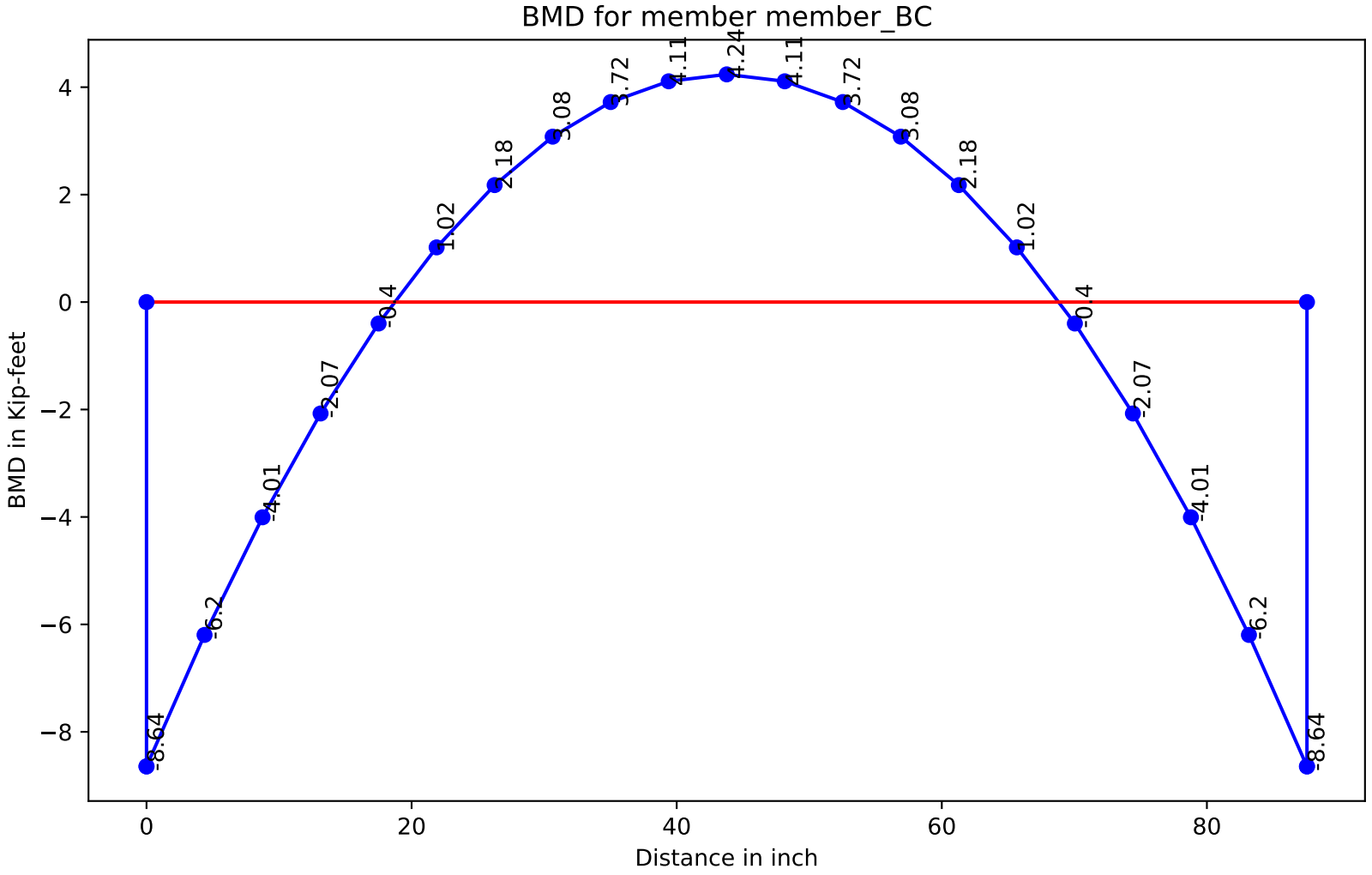
load_value	application_point	Type	memberNo	w2
-0.16133333333333333	0.0	3.0	1.0	-0.16133333333333333
-0.16133333333333333	0.0	3.0	2.0	-0.16133333333333333
-0.16133333333333333	0.0	3.0	3.0	-0.16133333333333333
0.19108333333333336	0.0	3.0	4.0	0.19108333333333336
0.19108333333333336	0.0	3.0	5.0	0.19108333333333336
0.19108333333333336	0.0	3.0	6.0	0.19108333333333336
0.08826666666666667	0.0	7.0	7.0	0.13478333333333334
-0.08826666666666667	0.0	7.0	10.0	-0.13478333333333334

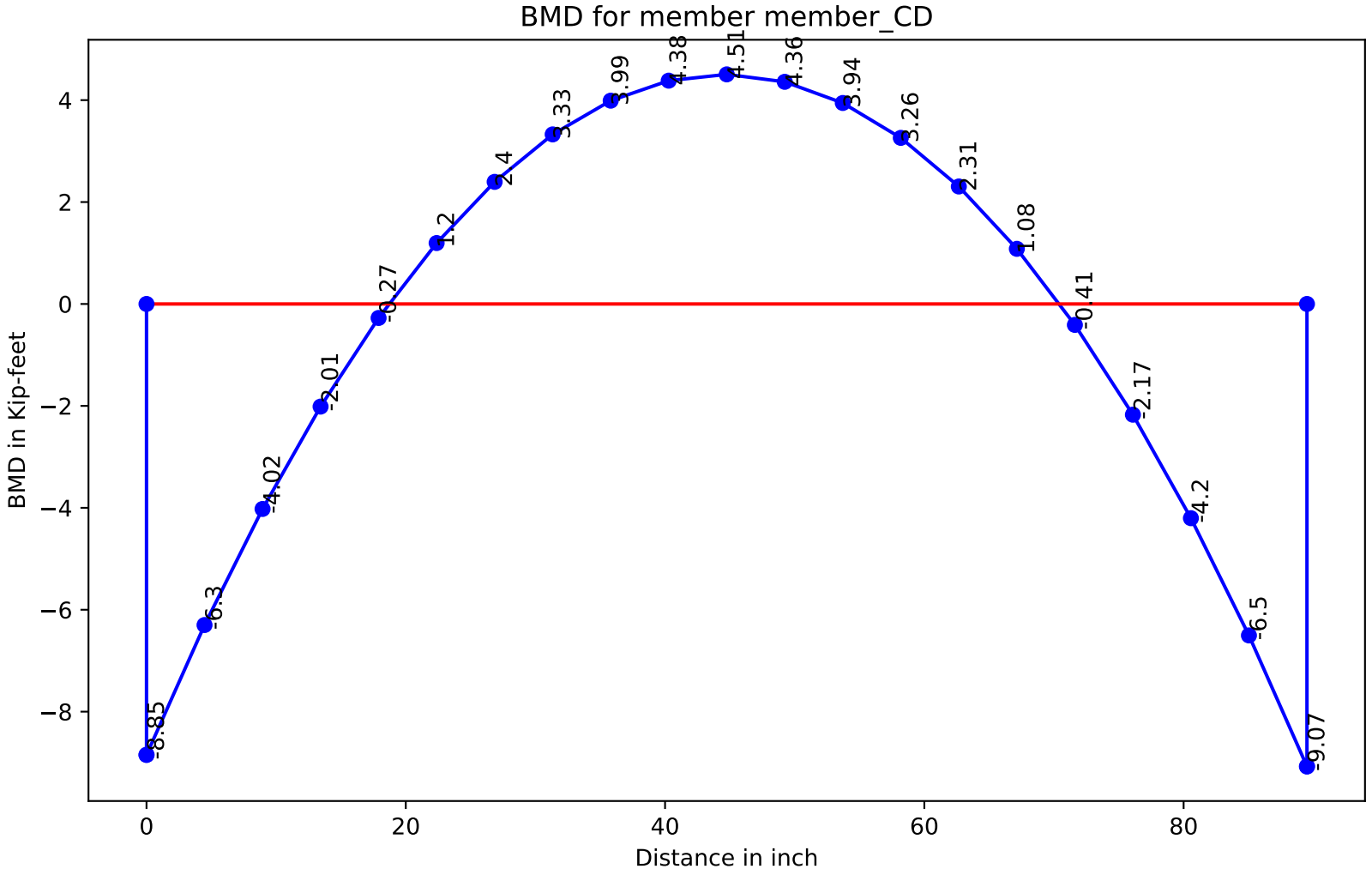
Wrting Joint Load Info.....

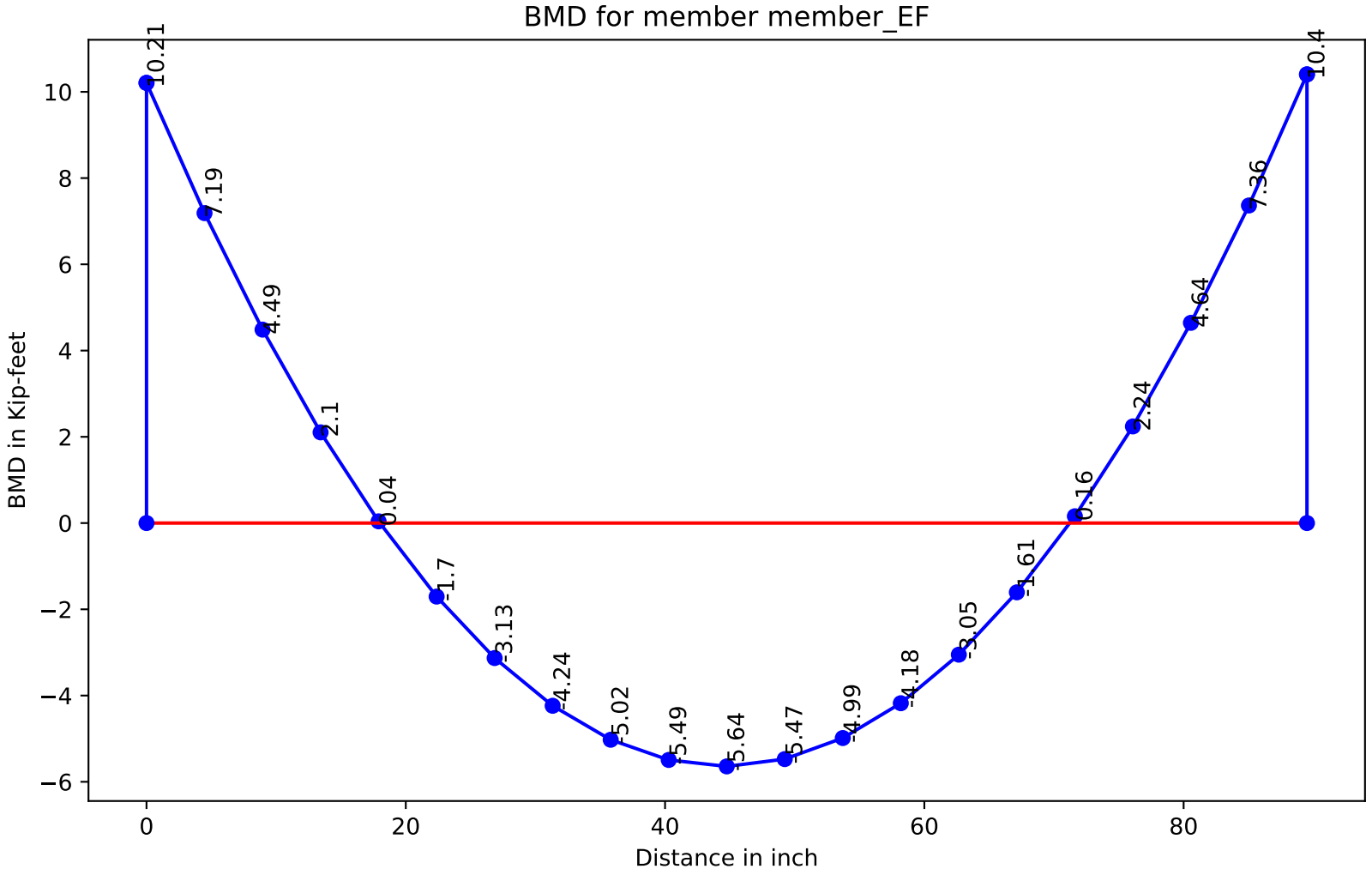
JointNo	xvalue	yvalue	mvalue
0	0	0	0

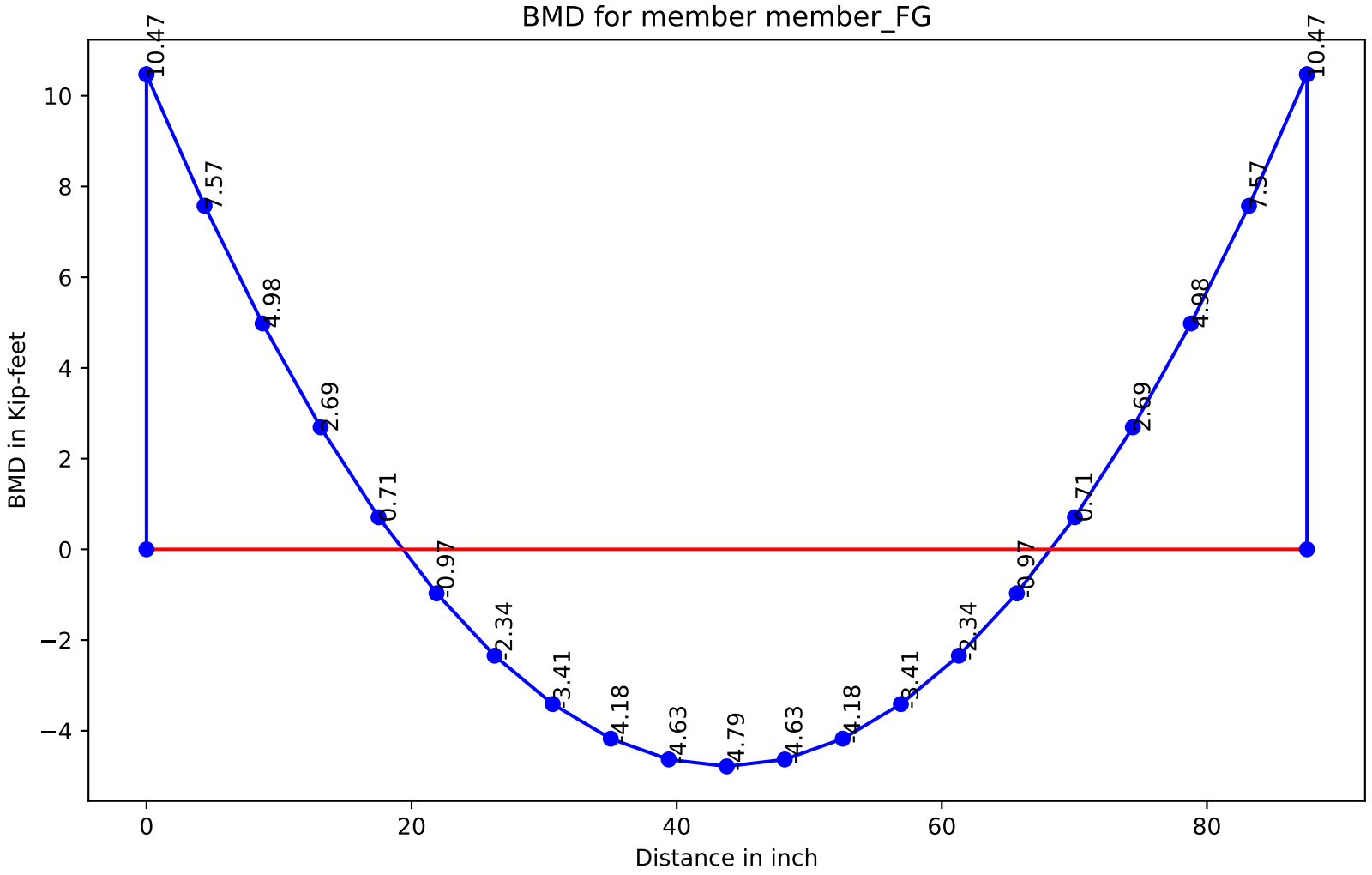

Outline of Box
A
B
C
D
E
F
G
H
100
80
60
40
20
0
0
50
100
150
200
250

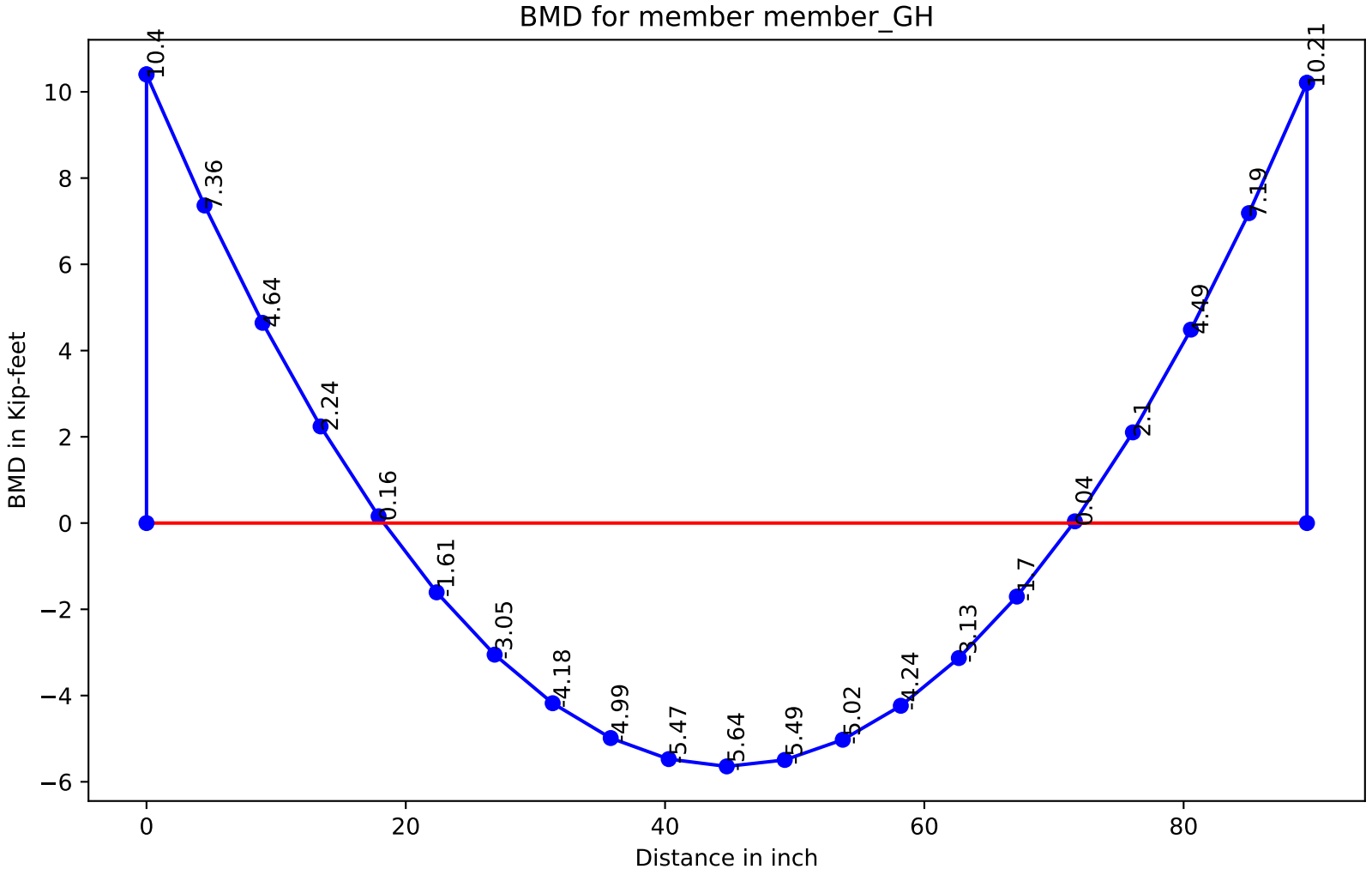

BMD for member member_AB
BMD in Kip-feet
Distance in inch
0
20
40
60
80
4
2
0
−2
−4
−6
−8
-9.07
-6.5
-4.2
-2.17
-0.41
1.08
2.31
3.26
3.94
4.36
4.51
4.38
3.99
3.33
2.4
1.2
-0.27
-2.01
-4.02
-6.3
-8.85

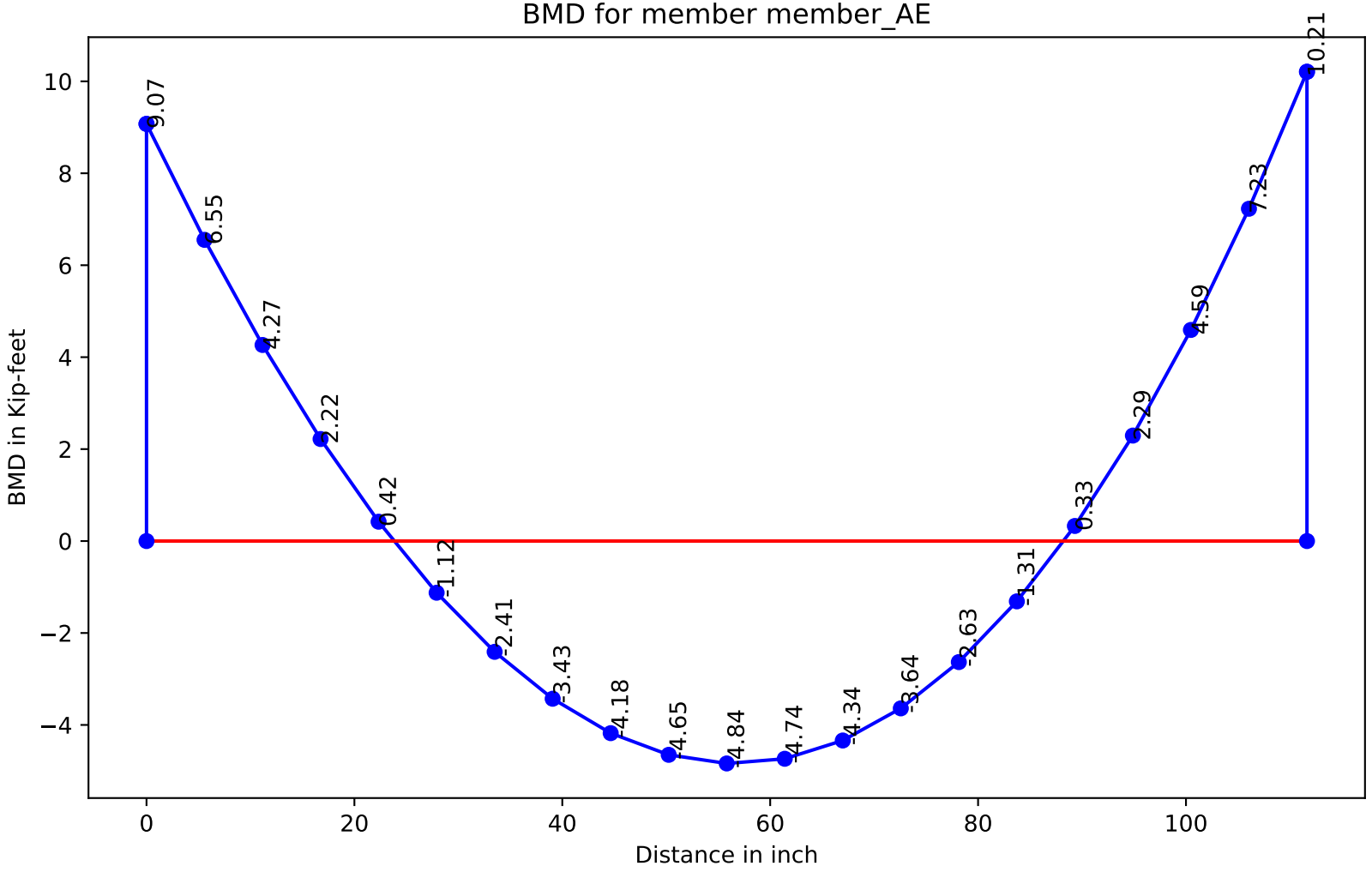

BMD for member member_BC
BMD in Kip-feet
Distance in inch
4
2
0
−2
−4
−6
−8
0
20
40
60
80
-8.64
-6.2
-4.01
-2.07
-0.4
1.02
2.18
3.08
3.72
4.11
4.24
4.11
3.72
3.08
2.18
1.02
-0.4
-2.07
-4.01
-6.2
-8.64

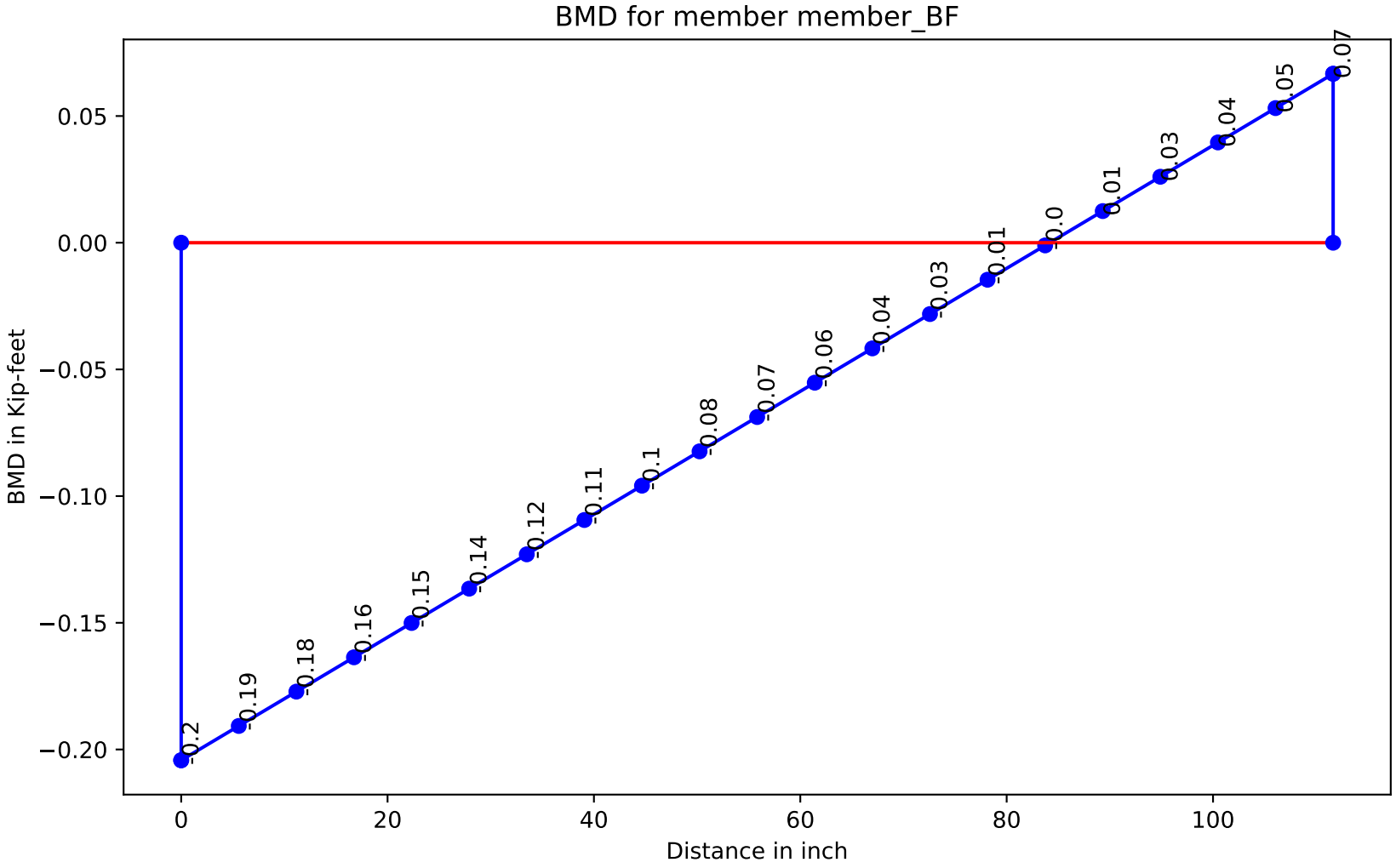

BMD for member member_CD
BMD in Kip-feet
Distance in inch
-8.85
-6.3
-4.02
-2.01
-0.27
1.2
2.4
3.33
3.99
4.38
4.51
4.36
3.94
3.26
2.31
1.08
-0.41
-2.17
-4.2
-6.5
-9.07
0
20
40
60
80
4
2
0
−2
−4
−6
−8

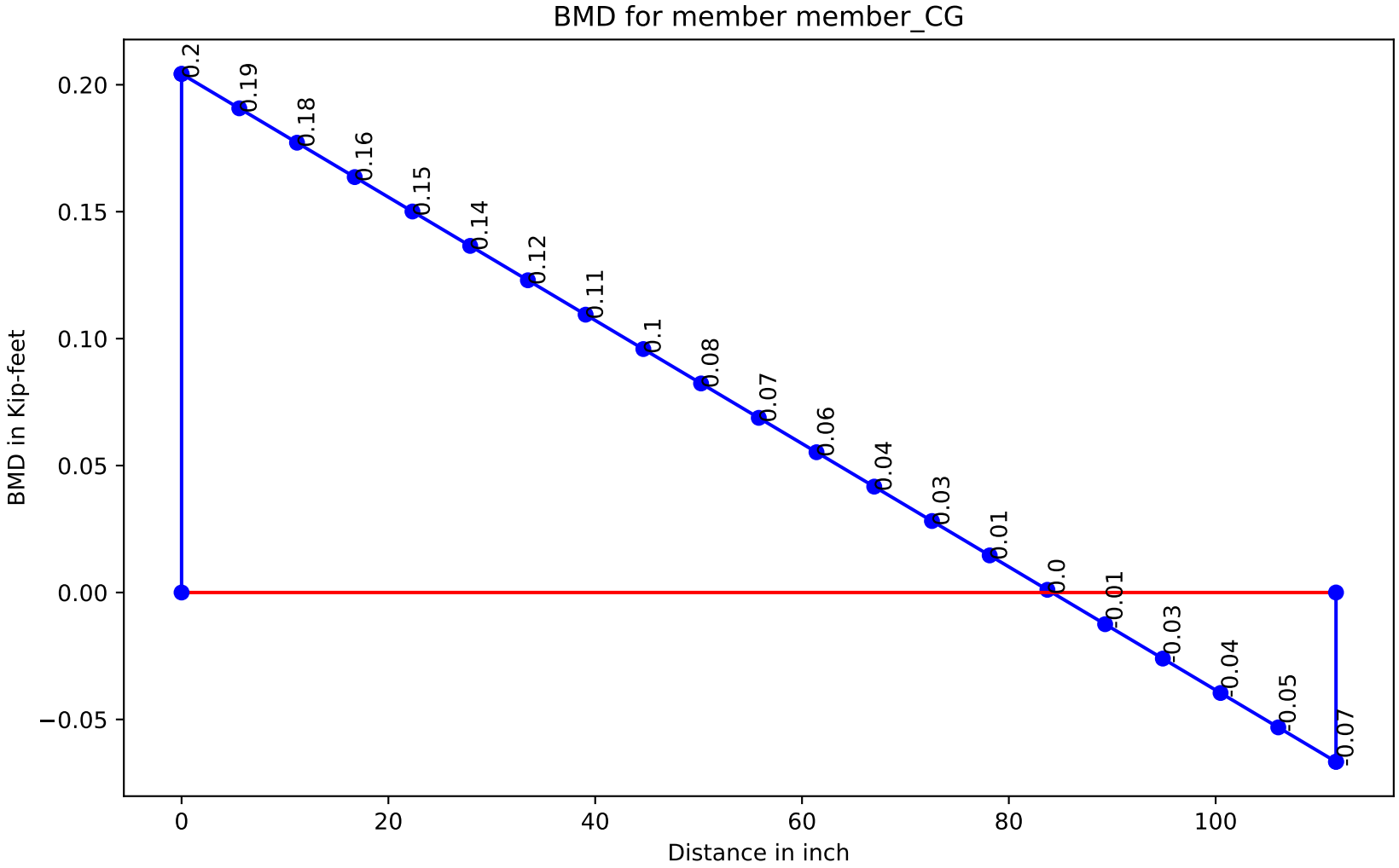

BMD for member member_EF
BMD in Kip-feet
Distance in inch
10.21
7.19
4.49
2.1
0.04
-1.7
-3.13
-4.24
-5.02
-5.49
-5.64
-5.47
-4.99
-4.18
-3.05
-1.61
0.16
2.24
4.64
7.36
10.4
10
8
6
4
2
0
−2
−4
−6
0
20
40
60
80

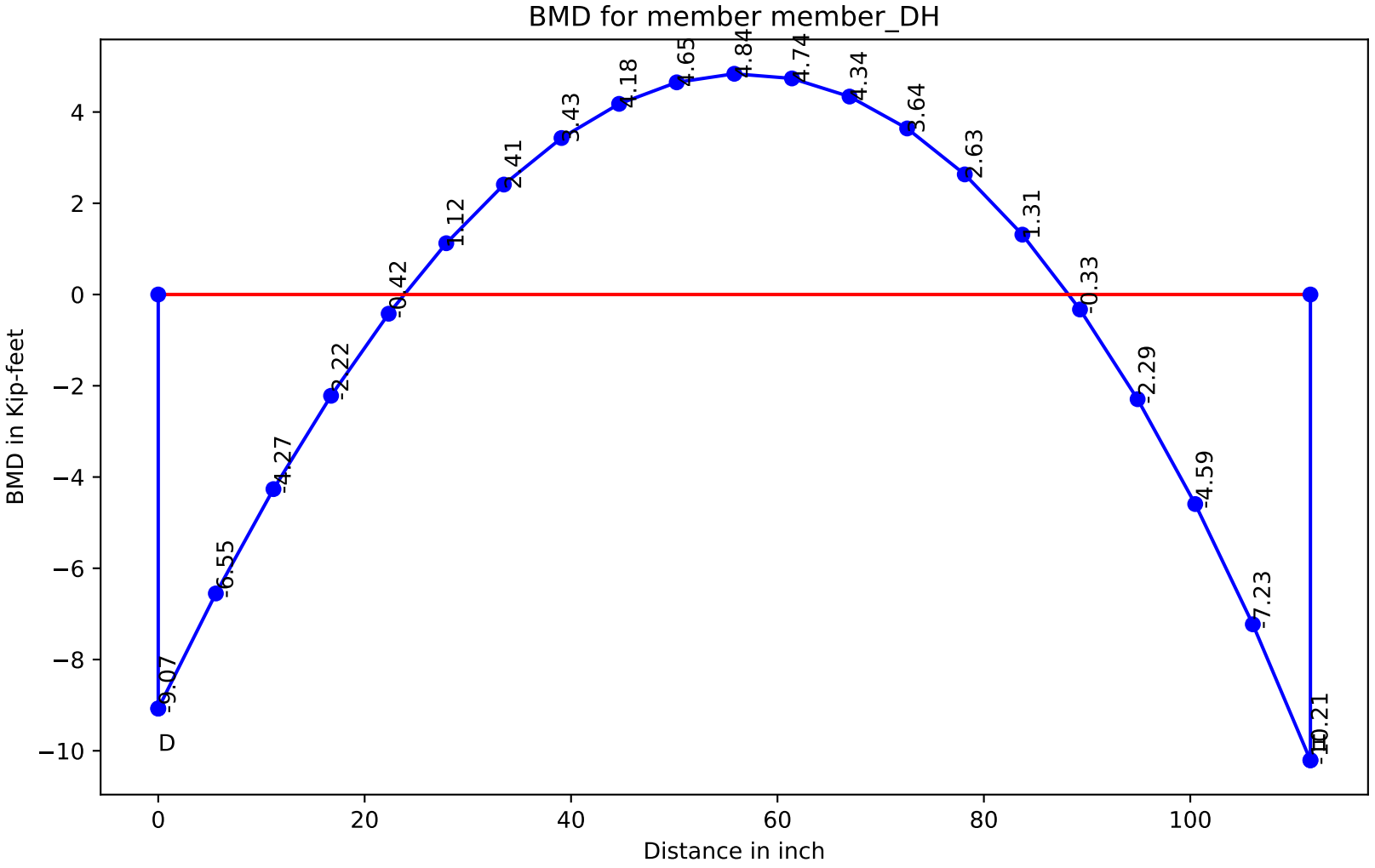

BMD for member member_FG
BMD in Kip-feet
Distance in inch
10.47
7.57
4.98
2.69
0.71
-0.97
-2.34
-3.41
-4.18
-4.63
-4.79
-4.63
-4.18
-3.41
-2.34
-0.97
0.71
2.69
4.98
7.57
10.47
10
8
6
4
2
0
−2
−4
0
20
40
60
80

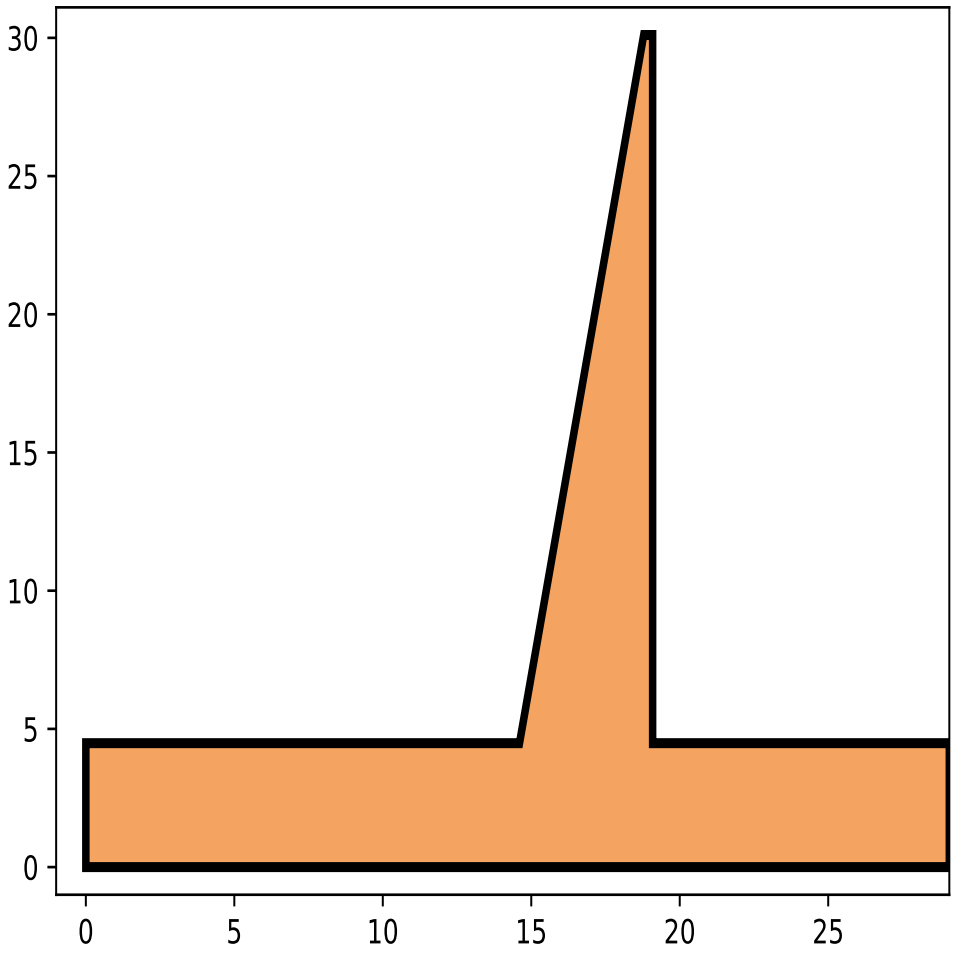

BMD for member member_GH
BMD in Kip-feet
Distance in inch
10.4
7.36
4.64
2.24
0.16
-1.61
-3.05
-4.18
-4.99
-5.47
-5.64
-5.49
-5.02
-4.24
-3.13
-1.7
0.04
2.1
4.49
7.19
10.21
10
8
6
4
2
0
−2
−4
−6
0
20
40
60
80


BMD for member member_AE
BMD in Kip-feet
Distance in inch
9.07
6.55
4.27
2.22
0.42
-1.12
-2.41
-3.43
-4.18
-4.65
-4.84
-4.74
-4.34
-3.64
-2.63
-1.31
0.33
2.29
4.59
7.23
10.21
10
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
0.05
0.00
−0.05
−0.10
−0.15
−0.20
0
20
40
60
80
100
-0.2
-0.19
-0.18
-0.16
-0.15
-0.14
-0.12
-0.11
-0.1
-0.08
-0.07
-0.06
-0.04
-0.03
-0.01
-0.0
0.01
0.03
0.04
0.05
0.07


BMD for member member_CG
BMD in Kip-feet
Distance in inch
0.20
0.15
0.10
0.05
0.00
−0.05
0
20
40
60
80
100
0.2
0.19
0.18
0.16
0.15
0.14
0.12
0.11
0.1
0.08
0.07
0.06
0.04
0.03
0.01
0.0
-0.01
-0.03
-0.04
-0.05
-0.07


BMD for member member_DH
BMD in Kip-feet
Distance in inch
D
-9.07
-6.55
-4.27
-2.22
-0.42
1.12
2.41
3.43
4.18
4.65
4.84
4.74
4.34
3.64
2.63
1.31
-0.33
-2.29
-4.59
-7.23
-10.21
0
20
40
60
80
100
4
2
0
−2
−4
−6
−8
−10


30
25
20
15
10
5
0
0
5
10
15
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.....

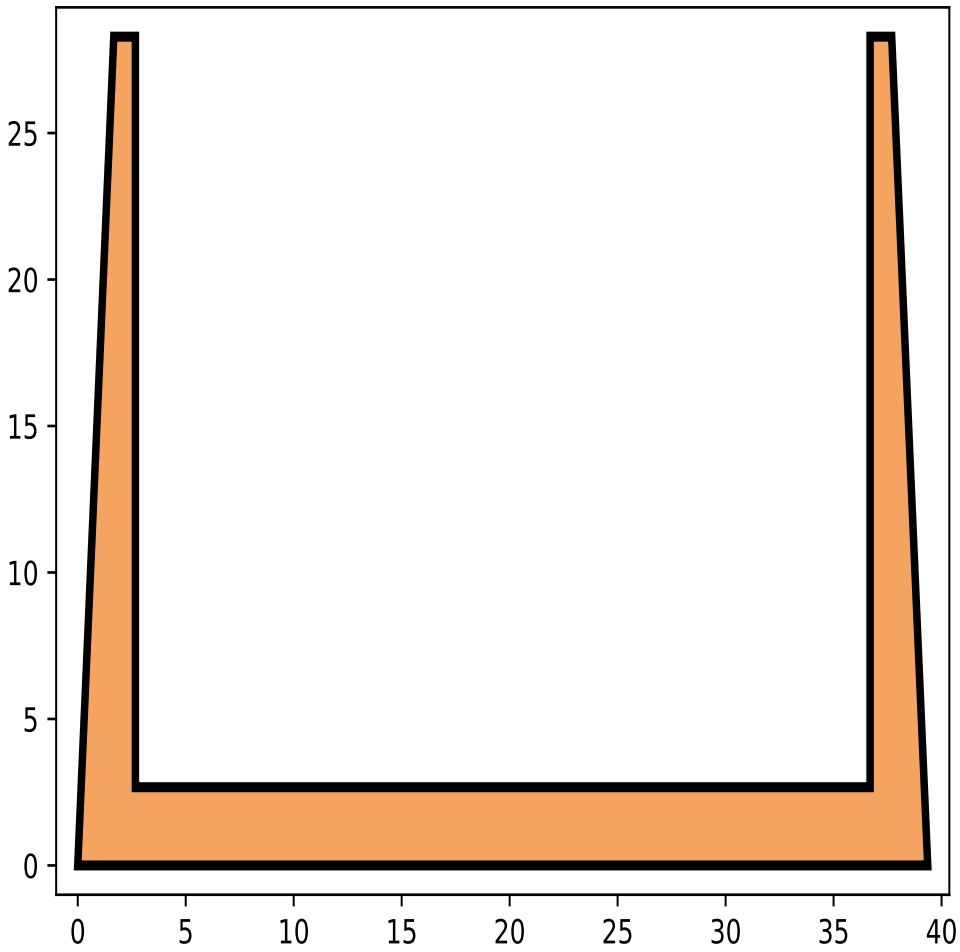
Case	Desc	V	M
Case B	After Construction	17689.55958	151068.8388132
Case C	During Operation	28819.5830528	242409.23144664534

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
20
15
10
5
0
0
5
10
15
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25
30
35
40

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