

Appendix F - Depth Damage Curves

TABLE 1.
Residential, One Story with Basement.

Structure			Content		
Depth	Mean of Damage	Standard Deviation of Damage	Depth	Mean of Damage	Standard Deviation of Damage
-8	0%	0	-8	0.10%	1.6
-7	0.70%	1.34	-7	0.80%	1.16
-6	0.80%	1.06	-6	2.10%	0.92
-5	2.40%	0.94	-5	3.70%	0.81
-4	5.20%	0.91	-4	5.70%	0.78
-3	9.00%	0.88	-3	8.00%	0.76
-2	13.80%	0.85	-2	10.50%	0.74
-1	19.40%	0.83	-1	13.20%	0.72
0	25.50%	0.85	0	16.00%	0.74
1	32.00%	0.96	1	18.90%	0.83
2	38.70%	1.14	2	21.80%	0.98
3	45.50%	1.37	3	24.70%	1.17
4	52.20%	1.63	4	27.40%	1.39
5	58.60%	1.89	5	30.00%	1.6
6	64.50%	2.14	6	32.40%	1.81
7	69.80%	2.35	7	34.50%	1.99
8	74.20%	2.52	8	36.30%	2.13
9	77.70%	2.66	9	37.70%	2.25
10	80.10%	2.77	10	38.60%	2.35
11	81.10%	2.88	11	39.10%	2.45
12	81.10%	2.88	12	39.10%	2.45
13	81.10%	2.88	13	39.10%	2.45
14	81.10%	2.88	14	39.10%	2.45
15	81.10%	2.88	15	39.10%	2.45

TABLE 1.
Residential, One Story with Basement.

Structure			Content		
16	81.10%	2.88	16	39.10%	2.45

TABLE 2.
Residential, Two or More Stories, With Basement

Structure			Content		
Depth	Mean of Damage	Standard Deviation of Damage	Depth	Mean of Damage	Standard Deviation of Damage
-8	1.70%	2.7	-8	0%	0
-7	1.70%	2.7	-7	1.00%	2.27
-6	1.90%	2.11	-6	2.30%	1.76
-5	2.90%	1.8	-5	3.70%	1.49
-4	4.70%	1.66	-4	5.20%	1.37
-3	7.20%	1.56	-3	6.80%	1.29
-2	10.20%	1.47	-2	8.40%	1.21
-1	13.90%	1.37	-1	10.10%	1.13
0	17.90%	1.32	0	11.90%	1.09
1	22.30%	1.35	1	13.80%	1.11
2	27.00%	1.5	2	15.70%	1.23
3	31.90%	1.75	3	17.70%	1.43
4	36.90%	2.04	4	19.80%	1.67
5	41.90%	2.34	5	22.00%	1.92
6	46.90%	2.63	6	24.30%	2.15
7	51.80%	2.89	7	26.70%	2.36
8	56.40%	3.13	8	29.10%	2.56
9	60.80%	3.38	9	31.70%	2.76
10	64.80%	3.71	10	34.40%	3.04
11	68.40%	4.22	11	37.20%	3.46
12	71.40%	5.02	12	40.00%	4.12
13	73.70%	6.19	13	43.00%	5.08
14	75.40%	7.79	14	46.10%	6.39
15	76.40%	9.84	15	49.30%	8.08
16	76.40%	12.36	16	52.60%	10.15

TABLE 3.
Residential, Split Level, With Basement

Structure			Content		
Depth	Mean of Damage	Standard Deviation of Damage	Depth	Mean of Damage	Standard Deviation of Damage
-8			-8	0.60%	2.09
-7			-7	0.70%	1.49
-6	2.50%	1.80%	-6	1.40%	1.14
-5	3.10%	1.60%	-5	2.40%	1.01
-4	4.70%	1.50%	-4	3.80%	1
-3	7.20%	1.60%	-3	5.40%	1.02
-2	10.40%	1.60%	-2	7.30%	1.03
-1	14.20%	1.60%	-1	9.40%	1.04
0	18.50%	1.60%	0	11.60%	1.06
1	23.20%	1.70%	1	13.80%	1.12
2	28.20%	1.90%	2	16.10%	1.23
3	33.40%	2.10%	3	18.20%	1.38
4	38.60%	2.40%	4	20.20%	1.57
5	43.80%	2.60%	5	22.10%	1.76
6	48.80%	2.90%	6	23.60%	1.95
7	53.50%	3.20%	7	24.90%	2.13
8	57.80%	3.40%	8	25.80%	2.28
9	61.60%	3.60%	9	26.30%	2.44
10	64.80%	3.90%	10	26.30%	2.44
11	67.20%	4.20%	11	26.30%	2.44
12	68.80%	4.80%	12	26.30%	2.44
13	69.30%	5.70%	13	26.30%	2.44
14	69.30%	5.70%	14	26.30%	2.44
15	69.30%	5.70%	15	26.30%	2.44
16	69.30%	5.70%	16	26.30%	2.44

TABLE 4.
Residential, One Story, No Basement

Structure			Content		
Depth	Mean of Damage	Standard Deviation of Damage	Depth	Mean of Damage	Standard Deviation of Damage
-2	0%	0%	-2	0%	0%
-1	2.50%	2.70%	-1	2.40%	2.10%
0	13.40%	2.00%	0	8.10%	1.50%
1	23.30%	1.60%	1	13.30%	1.20%
2	32.10%	1.60%	2	17.90%	1.20%
3	40.10%	1.80%	3	22.00%	1.40%
4	47.10%	1.90%	4	25.70%	1.50%
5	53.20%	2.00%	5	28.80%	1.60%
6	58.60%	2.10%	6	31.50%	1.60%
7	63.20%	2.20%	7	33.80%	1.70%
8	67.20%	2.30%	8	35.70%	1.80%
9	70.50%	2.40%	9	37.20%	1.90%
10	73.20%	2.70%	10	38.40%	2.10%
11	75.40%	3.00%	11	39.20%	2.30%
12	77.20%	3.30%	12	39.70%	2.60%
13	78.50%	3.70%	13	40.00%	2.90%
14	79.50%	4.10%	14	40.00%	3.20%
15	80.20%	4.50%	15	40.00%	3.50%
16	80.70%	4.90%	16	40.00%	3.80%

TABLE 5.
Residential, Two of More Stories, No Basement

Structure			Content		
Depth	Mean of Damage	Standard Deviation of Damage	Depth	Mean of Damage	Standard Deviation of Damage
-2	0%	0%	-2	0%	0%
-1	3.00%	4.10%	-1	1.00%	3.50%
0	9.30%	3.40%	0	5.00%	2.90%
1	15.20%	3.00%	1	8.70%	2.60%
2	20.90%	2.80%	2	12.20%	2.50%
3	26.30%	2.90%	3	15.50%	2.50%
4	31.40%	3.20%	4	18.50%	2.70%
5	36.20%	3.40%	5	21.30%	3.00%
6	40.70%	3.70%	6	23.90%	3.20%
7	44.90%	3.90%	7	26.30%	3.30%
8	48.80%	4.00%	8	28.40%	3.40%
9	52.40%	4.10%	9	30.30%	3.50%
10	55.70%	4.20%	10	32.00%	3.50%
11	58.70%	4.20%	11	33.40%	3.50%
12	61.40%	4.20%	12	34.70%	3.50%
13	63.80%	4.20%	13	35.60%	3.50%
14	65.90%	4.30%	14	36.40%	3.60%
15	67.70%	4.60%	15	36.90%	3.80%
16	69.20%	5.00%	16	37.20%	4.20%

TABLE 6.
Residential, Split Level, No basement

Structure			Content		
Depth	Mean of Damage	Standard Deviation of Damage	Depth	Mean of Damage	Standard Deviation of Damage
-2	0%	0%	-2	0%	0%
-1	6.40%	2.90%	-1	2.20%	2.20%
0	7.20%	2.10%	0	2.90%	1.50%
1	9.40%	1.90%	1	4.70%	1.20%
2	12.90%	1.90%	2	7.50%	1.30%
3	17.40%	2.00%	3	11.10%	1.40%
4	22.80%	2.20%	4	15.30%	1.50%
5	28.90%	2.40%	5	20.10%	1.60%
6	35.50%	2.70%	6	25.20%	1.80%
7	42.30%	3.20%	7	30.50%	2.10%
8	49.20%	3.80%	8	35.70%	2.50%
9	56.10%	4.50%	9	40.90%	3.00%
10	62.60%	5.30%	10	45.80%	3.50%
11	68.60%	6.00%	11	50.20%	4.10%
12	73.90%	6.70%	12	54.10%	4.60%
13	78.40%	7.40%	13	57.20%	5.00%
14	81.70%	7.90%	14	59.40%	5.40%
15	83.80%	8.30%	15	60.50%	5.70%
16	84.40%	8.70%	16	60.50%	6.00%

TABLE 7.
Non-residential, Commercial and Industry

Structure		Contents	
Depth	Combined Commercial Industrial	Depth	Combined Commercial Industrial
-8		-8	
-7		-7	
-6		-6	
-5		-5	
-4	0.00%	-4	0.00%
-3	0.00%	-3	0.00%
-2	0.00%	-2	0.00%
-1	0.00%	-1	0.00%
0	0.68%	0	2.75%
1	10.21%	1	19.50%
2	14.21%	2	33.73%
3	17.46%	3	45.16%
4	20.92%	4	55.26%
5	24.02%	5	62.08%
6	27.35%	6	66.93%
7	30.50%	7	70.34%
8	33.72%	8	73.19%
9	36.89%	9	75.46%
10	39.86%	10	77.21%
11	43.52%	11	79.60%
12	46.85%	12	81.10%
13	49.45%	13	82.40%
14	51.85%	14	83.64%
15	54.31%	15	84.28%
16	56.53%	16	84.82%

Note: This curve was created by USACE,
Galveston District

References:

Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures with Basements.

United States Army Corp of Engineers, Galveston District, HAZUS application.