

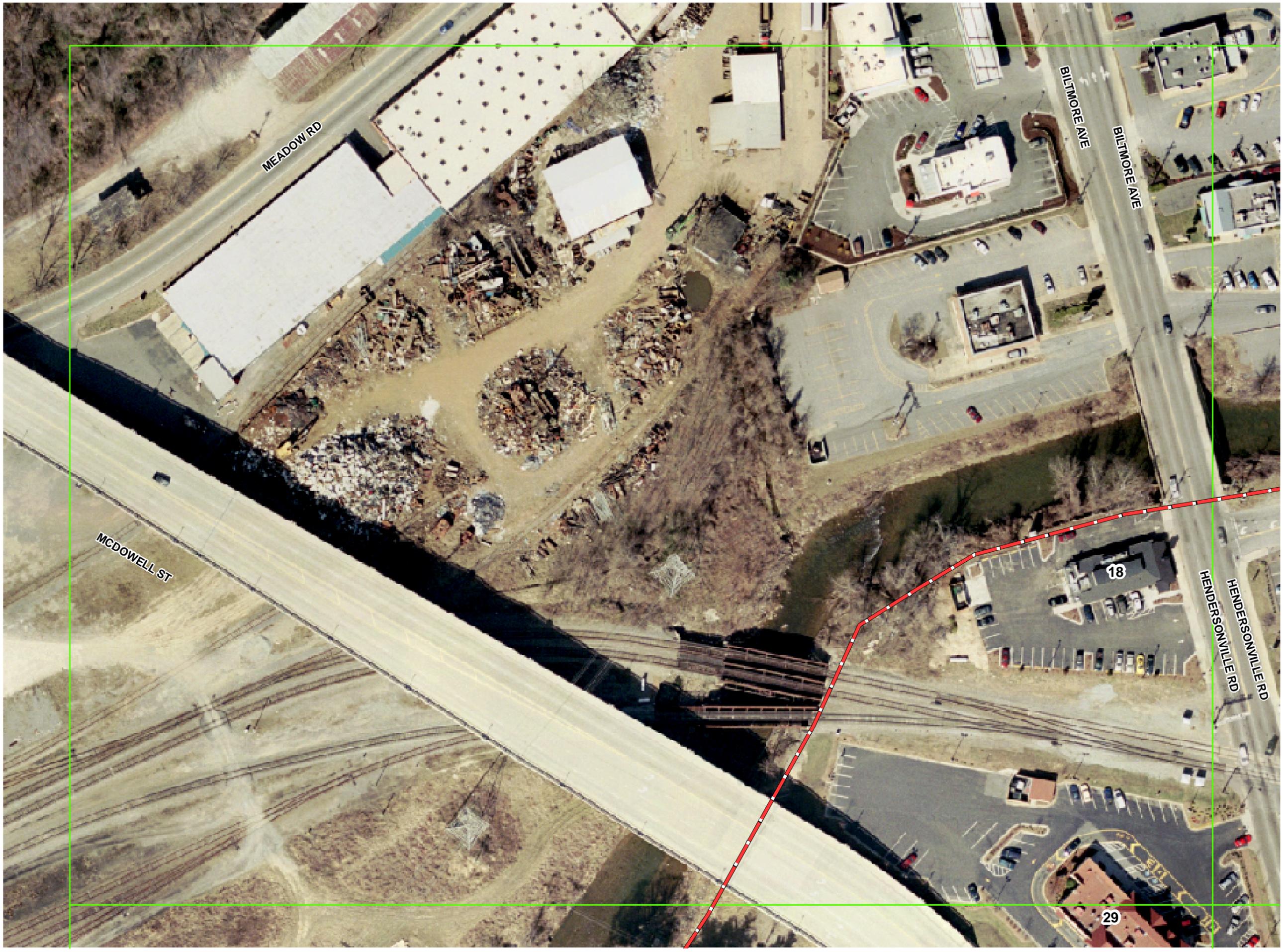
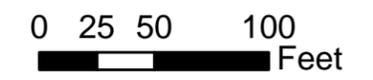
Biltmore Village Site Map

Index

A1	A2	A3
B1	B2	B3
C1	C2	C3

Legend

-  Study Limits
-  Map Grid



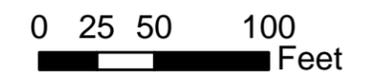
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Legend

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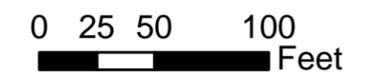
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Legend

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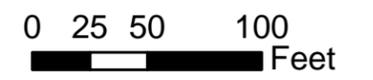
Biltmore Village Site Map

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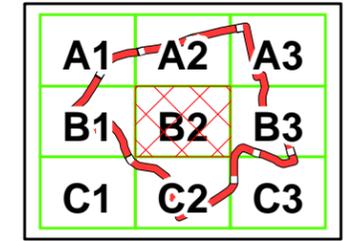
Legend

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-  Map Grid



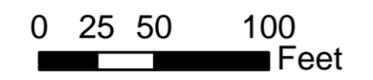
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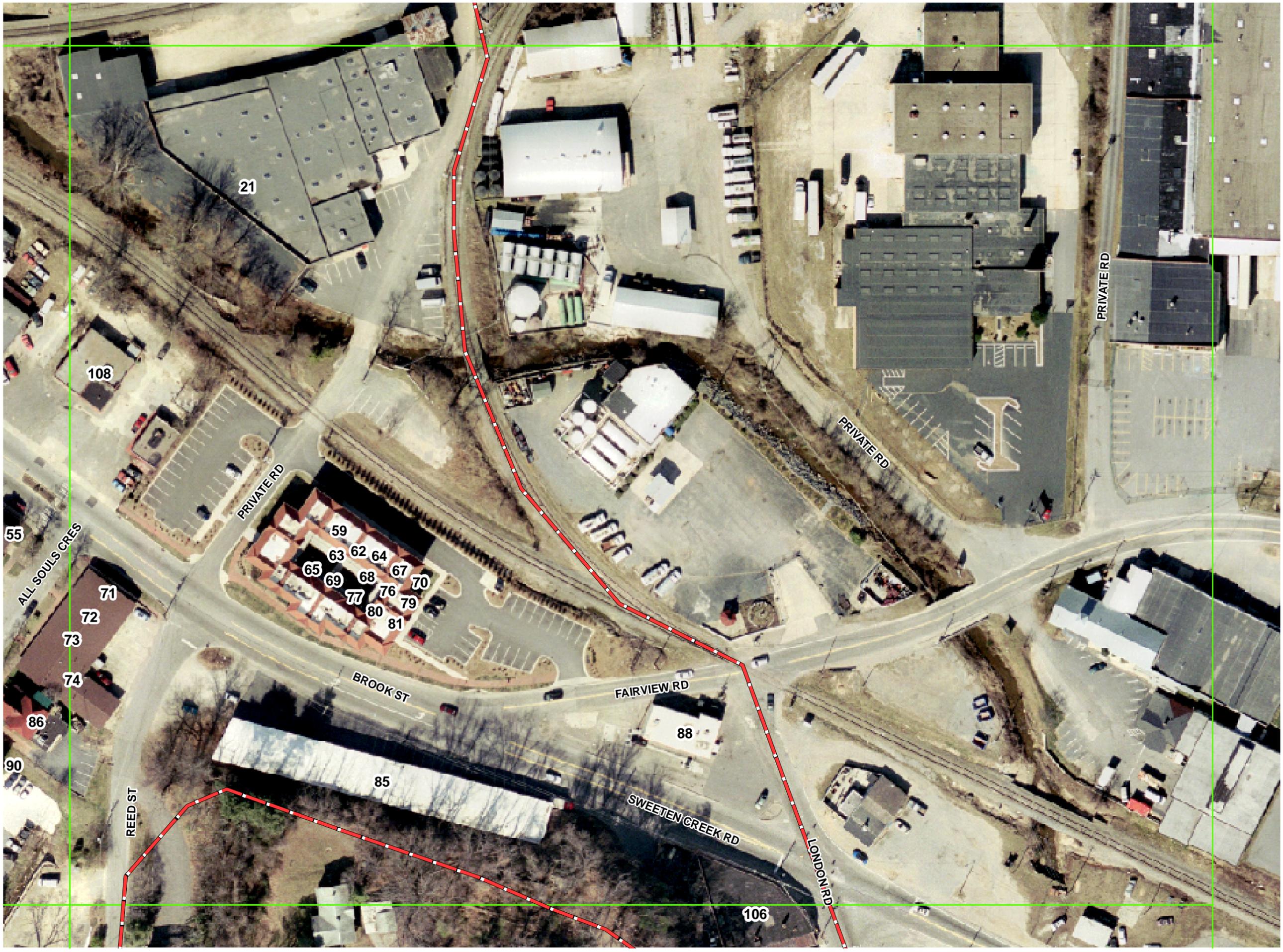
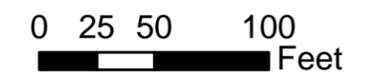
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Legend

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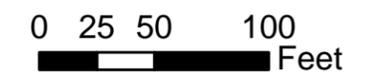
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C1	C2	C3

Legend

-  Study_Limits
-  Map Grid



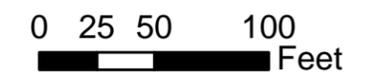
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Legend

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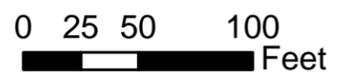
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C1	C2	C3

Legend

-  Study_Limits
-  Map Grid



Biltmore Village, Asheville, North Carolina

Structure Address: 14 Village LN, Asheville, NC 28803

Structure ID: 0-3



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	2007.10	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	2008.64	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-17.97	-19.51
		5-yr	-13.94	-15.48
		10-yr	-11.52	-13.06
		25-yr	-9.73	-11.27
		50-yr	-8.76	-10.3
		100-yr	-7.63	-9.22

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: Village LN, Asheville, NC 28803

Structure ID: 4-9,11



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	2007.09	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	2007.68	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-17.98	-18.57
		5-yr	-13.96	-14.55
		10-yr	-11.53	-12.12
		25-yr	-9.75	-10.34
		50-yr	-8.79	-9.38
		100-yr	-7.71	-8.30

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: 160 Hendersonville RD, Asheville, NC 28803

Structure ID:10



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	2007.09	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	2007.68	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-18.01	-18.60
		5-yr	-14.00	-14.59
		10-yr	-11.57	-12.16
		25-yr	-9.79	-10.38
		50-yr	-8.83	-9.42
		100-yr	-7.76	-8.35

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: 71 Thompson ST, Asheville, NC 28803

Structure ID: 12



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1995.76	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.76	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.46	-6.46
		5-yr	-2.37	-2.37
		10-yr	0.05	0.05
		25-yr	1.84	1.84
		50-yr	2.83	2.83
		100-yr	3.92	3.92

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

This structure has higher than normal ceilings so implementation of wet flood proofing measures can be used to protect this structure. In order to wet flood proof this structure, the owner should raise the floor to the desired level of protection or to a reasonable elevation such that the operation of the business is not adversely affected. All damageable goods and materials would be raised to this new first floor elevation and therefore would be protected up to this elevation. All electrical, HVAC, and utility systems should also be raised along with the floor to prevent damage to these vital systems. In many cases, a combination of dry and wet flood proofing measures can be implemented to provide greater level of protection than if just one method of flood proofing were used.

Biltmore Village, Asheville, North Carolina

Structure Address: 22 Garfield ST, Asheville, NC 28803

Structure ID: 13



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1990.81	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.40	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-1.46	-6.05
		5-yr	2.65	-1.94
		10-yr	5.07	0.48
		25-yr	6.86	2.27
		50-yr	7.85	3.26
		100-yr	8.94	4.35

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The vent openings in this crawl space must also be blocked from incoming flood waters. The owner may either permanently block these vent openings or a simple barrier can be fitted to easily snap into place when a damaging flood event is predicted.

Biltmore Village, Asheville, North Carolina

Structure Address: 22 Garfield ST, Asheville, NC 28803

Structure ID:14



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.06	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.39	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-1.66	-5.99
		5-yr	2.47	-1.86
		10-yr	4.90	0.57
		25-yr	6.68	2.35
		50-yr	7.68	3.35
		100-yr	8.77	4.44

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. After observing the thickness of the exterior walls of this structure, the USACE believes that this structure may be able to withstand greater than 3 feet of dry flood proofing, i.e the thickness of the walls may support greater than 3 feet of water above the first floor.

Biltmore Village, Asheville, North Carolina

However, the owner should have a structural analysis done to determine exactly how much hydrostatic pressure this structure can withstand. In cases where the structure has a crawl space or basement, the layer of water proof material must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 22 Garfield ST, Asheville, NC 28803

Structure ID:15



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.13	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.27	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-1.99	-4.13
		5-yr	2.03	-0.11
		10-yr	4.46	2.32
		25-yr	6.24	4.10
		50-yr	7.21	5.07
		100-yr	8.29	6.15

Permanent Flood Proofing Measures:

This structure has a break in elevation from one end to the other. The western portion of this structure (from the west end to the center where there is a hallway entrance) is at a higher elevation than the eastern portion of this structure (from the hallway entrance in the center of the structure to the eastern end of the structure). The USACE recommends two separate flood proofing measures for each portion of the building (western and eastern).

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection on the eastern portion of this structure. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term;

Biltmore Village, Asheville, North Carolina

therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

For the western portion of this structure, the USACE recommends that an engineered wall with proper dry flood proofing be used to protect the businesses on this end of the structure. This engineered wall should extend out from the northwest corner of the structure, be tied into the stairwell and elevator structure on the western side, and then should extend around the southwestern corner to the center of the structure where the engineered wall should be tied in to protect the businesses at a lower elevation. This engineered wall should have limited openings and temporary closure structures should be used in the case of a flood event. On the north side of the structure (backside or riverside), the owner could use dry flood proofing the entire length of the structure if a structural analysis justifies that dry flood proofing is safe up to the desired level of protection. If a structural analysis does not justify that it is safe to use dry flood proofing, then an engineered wall directly against the north side can be used to protect up to the desired level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 22 Garfield ST, Asheville, NC 28803

Structure ID: 16



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1990.23	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.21	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-1.04	-6.02
		5-yr	3.01	-1.97
		10-yr	5.42	0.44
		25-yr	7.21	2.23
		50-yr	8.19	3.21
		100-yr	9.28	4.30

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 22 Garfield ST, Asheville, NC 28803

Structure ID: 17



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1990.96	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.00	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-1.69	-5.73
		5-yr	2.39	-1.65
		10-yr	4.81	0.77
		25-yr	6.59	2.55
		50-yr	7.58	3.54
		100-yr	8.67	4.63

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The vent openings in this crawl space must also be blocked from incoming flood waters. The owner may either permanently block these vent openings or a simple barrier can be fitted to easily snap into place when a damaging flood event is predicted.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Hendersonville RD, Asheville, NC 28803

Structure ID: 18



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1992.97	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.59	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.01	-5.63
		5-yr	-0.36	-1.98
		10-yr	2.17	0.55
		25-yr	3.95	2.33
		50-yr	4.87	3.25
		100-yr	5.93	4.31

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 35 Garfield ST, Asheville, NC 28803

Structure ID:19



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.11	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.01	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-1.76	-4.66
		5-yr	2.35	-0.55
		10-yr	4.77	1.87
		25-yr	6.55	3.65
		50-yr	7.55	4.65
		100-yr	8.64	5.74

Permanent Flood Proofing Measures:

The USACE recommends that this structure be bought out and demolished. This structure has exterior walls that have obvious structural issues.

Biltmore Village, Asheville, North Carolina

Structure Address: Garfield ST, Asheville, NC 28803

Structure ID:20



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1990.94	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1990.94	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-1.53	-1.53
		5-yr	2.61	2.61
		10-yr	5.04	5.04
		25-yr	6.82	6.82
		50-yr	7.82	7.82
		100-yr	8.91	8.91

Permanent Flood Proofing Measures:

The USACE recommends that this structure be bought out and demolished. This structure has exterior walls that have obvious structural issues.

Biltmore Village, Asheville, North Carolina

Structure Address: 9 Reed ST, Asheville, NC 28803

Structure ID:21



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.69	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.69	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.25	-4.25
		5-yr	-0.10	-0.10
		10-yr	2.33	2.33
		25-yr	4.11	4.11
		50-yr	5.11	5.11
		100-yr	6.20	6.20

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement wet flood proofing measures for this structure. All electrical, HVAC, and utilities should be raised to the desired level of protection. The tenants of this structure should be able to remove their goods and merchandise above the desired level of protection very quickly in the case of an incoming flood.

However, the owner of this structure could implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be

Biltmore Village, Asheville, North Carolina

placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The issue with dry flood proofing this structure is cost as this structure is very large and a portion is actually cantilevered over an adjacent creek. Also, dry flood proofing would not provide a high level of protection as the 100-yr flood depth on this structure is over six feet; however, a structural analysis may justify using dry flood proofing above 3 feet for this structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 26 Hendersonville RD, Asheville, NC 28803

Structure ID: 22 & 26



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.37	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.84	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.33	-4.80
		5-yr	-0.33	-0.80
		10-yr	2.11	1.64
		25-yr	3.88	3.41
		50-yr	4.83	4.36
		100-yr	5.90	5.43

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The ceilings in this structure are higher than normal so the owner could consider raising the floors. Raising the floor in combination with dry flood proofing could provide a greater level of protection. Also, a structural analysis could justify greater than 3 feet of dry flood proofing. This structure already has a backflow valve and sump pump implemented.

Biltmore Village, Asheville, North Carolina

Structure Address: 22 Lodge ST, Asheville, NC 28803

Structure ID:23



Front View

Right Side View



n/a

Back View

Left Side View

Ground Elev. (NAVD)	1993.11	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.40	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.02	-5.31
		5-yr	-0.01	-1.30
		10-yr	2.42	1.13
		25-yr	4.20	2.91
		50-yr	5.16	3.87
		100-yr	6.23	4.94

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. An engineered wall around this structure may be necessary as normal dry flood proofing measures may not provide a reasonable level of protection. This structure also shares a narrow alleyway with Structure 27 so an engineered cut off between these two structures would provide protection for the sides of Structure 23 and 27 adjacent to this alley. This structure was under construction when the USACE assessed this structure in the field so a full evaluation of flood proofing options could not be made.

Biltmore Village, Asheville, North Carolina

Structure Address: 26 Lodge ST, Asheville, NC 28803

Structure ID:24



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.34	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.73	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.22	-4.61
		5-yr	-0.20	-0.59
		10-yr	2.23	1.84
		25-yr	4.01	3.62
		50-yr	4.98	4.59
		100-yr	6.06	5.67

Permanent Flood Proofing Measures:

The USACE recommends that this structure's floor be raised to the desired level of protection. This structure has very high ceilings; therefore, a floor raise should not affect any business that wishes to occupy this structure. Also, the electrical, HVAC, and utilities will need to be raised to the desired level of protection. Closure structures for entrances and windows may be necessary depending on how high the floor is raised.

Biltmore Village, Asheville, North Carolina

Structure Address: 30 Lodge ST, Asheville, NC 28803

Structure ID:25



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.25	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.97	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.07	-4.79
		5-yr	-0.03	-0.75
		10-yr	2.38	1.66
		25-yr	4.18	3.46
		50-yr	5.16	4.44
		100-yr	6.24	5.52

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will only provide a level of protection up to about a 25-yr flood event.

Biltmore Village, Asheville, North Carolina

Structure Address: 14 Lodge ST, Asheville, NC 28803

Structure ID:27



Front View

n/a

Right Side View



Back View

n/a

Left Side View

Ground Elev. (NAVD)	1993.68	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.68	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.60	-4.60
		5-yr	-0.59	-0.59
		10-yr	1.84	1.84
		25-yr	3.62	3.62
		50-yr	4.58	4.58
		100-yr	5.65	5.65

Permanent Flood Proofing Measures:

The USACE considered Structures 27 and 28 as one because they act as one structure in terms of flood proofing. The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below

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and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not protect up to a 100-yr event. If a 100-yr level of protection is desired, an engineered wall will be necessary. A narrow alleyway separates Structure 27 and 23 so the use of an engineered cutoff between the two structures could provide the desired level of protection between these two structures.

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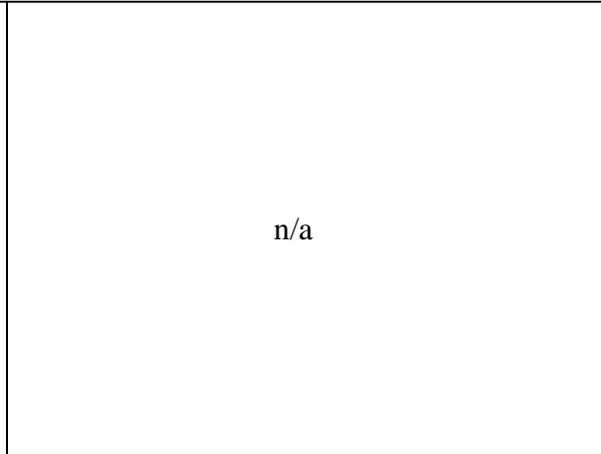
Biltmore Village, Asheville, North Carolina

Structure Address: 14 Lodge ST, Asheville, NC 28803

Structure ID:28



Front View

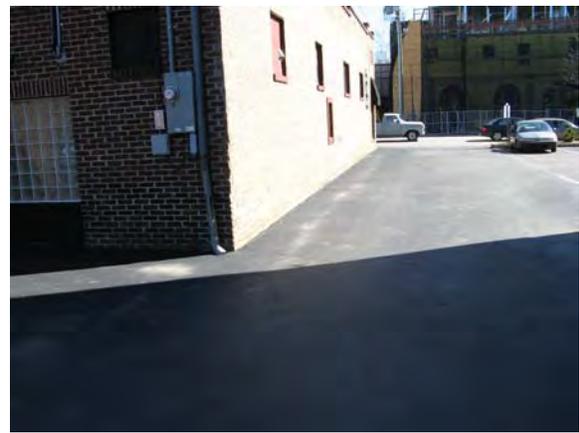


n/a

Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.20	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.20	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.13	-4.13
		5-yr	-0.12	-0.12
		10-yr	2.31	2.31
		25-yr	4.09	4.09
		50-yr	5.04	5.04
		100-yr	6.11	6.11

Permanent Flood Proofing Measures:

The USACE considered Structures 27 and 28 as one because they act as one structure in terms of flood proofing. The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below

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and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not protect up to a 100-yr event. If a 100-yr level of protection is desired, an engineered wall will be necessary. A narrow alleyway separates Structure 27 and 23 so the use of an engineered cutoff between the two structures could provide the desired level of protection between these two structures.

Biltmore Village, Asheville, North Carolina

Structure Address: 35 Hendersonville RD, Asheville, NC 28803

Structure ID:29



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1995.50	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.77	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.68	-7.95
		5-yr	-3.34	-4.61
		10-yr	-1.28	-2.55
		25-yr	0.76	-0.51
		50-yr	1.91	0.64
		100-yr	3.00	1.73

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The first floor of this structure is almost already at the 100-yr flood event elevation so no real modification would be necessary to protect to the 100-yr level of protection. However, if a greater level of protection is desired, dry flood proofing can be used to achieve a greater level of protection. Windows may need modification and closure structures will be required at entrances. Also, the drive thru window will need a temporary closure structure in the case of a projected flood event.

Biltmore Village, Asheville, North Carolina

Structure Address: 4 Brook ST, Asheville, NC 28803

Structure ID:31



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.23	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.08	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.01	-4.86
		5-yr	0.04	-0.81
		10-yr	2.46	1.61
		25-yr	4.25	3.40
		50-yr	5.23	4.38
		100-yr	6.32	5.47

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The ceilings in this structure are relatively high so a combination of dry flood proofing and a floor raise could be used to achieve the greatest level of protection. Unfortunately, dry flood proofing alone will not provide a 100-yr level of protection. Structure 31 shares a narrow alleyway with Structure 107 so an engineered cutoff may be used to protect the adjacent exterior walls between these two structures.

Biltmore Village, Asheville, North Carolina

Structure Address: 2 Lodge ST, Asheville, NC 28803

Structure ID:36



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1989.34	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1989.34	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-0.62	-0.62
		5-yr	2.59	2.59
		10-yr	4.49	4.49
		25-yr	6.28	6.28
		50-yr	7.33	7.33
		100-yr	8.34	8.34

Permanent Flood Proofing Measures:

The USACE recommends that an engineered wall be built around this structure with minimal openings. The first floor of this structure is well below the 100-yr flood depth, which is why an engineered wall would be necessary. However, if an engineered wall is cost prohibitive, the first floor of this structure could be wet flood proofed. Anything damageable should be moved to the second floor including electrical systems. Anything left on the first floor should be easily removed during a flood event. If neither of these options is acceptable, relocation of this structure or this structure's functionality should be considered.

Biltmore Village, Asheville, North Carolina

Structure Address: 13 Kitchen PL, Asheville, NC 28803

Structure ID:37



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.66	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.90	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.56	-7.80
		5-yr	-0.54	-3.78
		10-yr	1.89	-1.35
		25-yr	3.67	0.43
		50-yr	4.64	1.40
		100-yr	5.71	2.47

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. One issue with this structure is the fact that it has a basement that may not be able to withstand the hydrostatic pressure caused by flood water against the exterior walls. The USACE recommends that the basement be filled to prevent structural failure. However, a structural analysis should be used to determine how much hydrostatic pressure is acceptable.

This structure also has higher than normal ceilings so a floor raise could almost provide a 100-yr level of protection. This structure needs about 2.5 feet to achieve 100-yr level of protection. A combination of dry flood proofing and a floor raise could be used to achieve a greater than 100-yr level of protection. This option may also require that the basement be filled.

Biltmore Village, Asheville, North Carolina

Structure Address: 10 Biltmore PZ, Asheville, NC 28803

Structure ID:39



Front View



Front View



Right Side View

n/a

Left Side View

Ground Elev. (NAVD)	1994.81	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.21	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-5.61	-7.01
		5-yr	-1.56	-2.96
		10-yr	0.86	-0.54
		25-yr	2.65	1.25
		50-yr	3.63	2.23
		100-yr	4.72	3.32

Permanent Flood Proofing Measures:

Structures 39 and 40 act as one structure from a flood proofing perspective; therefore the USACE considers these structures as one. The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below

Biltmore Village, Asheville, North Carolina

and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The railing at the entrance of La Paz should be replaced with an engineered wall and dry flood proofing should be utilized where the wall would not provide protection. The floor in these structures could also be raised to provide a greater level of protection. An engineered cutoff could be used between structure 40 and 44 and between Structure 39 and 46.

Biltmore Village, Asheville, North Carolina

Structure Address: 10 Biltmore PZ, Asheville, NC 28803

Structure ID:40



Front View



Right Side View View



Right Side View



Left Side View

Ground Elev. (NAVD)	1993.36	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.33	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.13	-7.10
		5-yr	-0.07	-3.04
		10-yr	2.35	-0.62
		25-yr	4.13	1.16
		50-yr	5.12	2.15
		100-yr	6.21	3.24

Permanent Flood Proofing Measures:

Structures 39 and 40 act as one structure from a flood proofing perspective; therefore the USACE considers these structures as one. The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below

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and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The railing at the entrance of La Paz should be replaced with an engineered wall and dry flood proofing should be utilized where the wall would not provide protection. The floor in these structures could also be raised to provide a greater level of protection. An engineered cutoff could be used between structure 40 and 44 and between Structure 39 and 46.

Biltmore Village, Asheville, North Carolina

Structure Address: 7 Boston WAY, Asheville, NC 28803

Structure ID:42



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1994.40	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.81	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-5.29	-5.70
		5-yr	-1.27	-1.68
		10-yr	1.16	0.75
		25-yr	2.94	2.53
		50-yr	3.91	3.50
		100-yr	4.99	4.58

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures in combination with a floor raise for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a

Biltmore Village, Asheville, North Carolina

means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The ceilings in this structure are also higher than normal so a floor raise should be used in combination with dry flood proofing. This structure needs approximately 4.5 feet of flood proofing to be protected to a 100-yr level. If a floor raise is not possible, the owner should dry flood proof up to the greatest level of protection. A structural analysis could justify greater than 3 feet of dry flood proofing, which could provide even greater level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 7 Boston Way Asheville, NC 28803

Structure ID:43



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1994.40	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.96	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-5.34	-6.90
		5-yr	-1.33	-2.89
		10-yr	1.10	-0.46
		25-yr	2.88	1.32
		50-yr	3.83	2.27
		100-yr	4.90	3.34

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures in combination with a floor raise for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a

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means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The ceilings in this structure are also higher than normal so a floor raise should be used in combination with dry flood proofing. This structure needs approximately 4.5 feet of flood proofing to be protected to a 100-yr level. If a floor raise is not possible, the owner should dry flood proof up to the greatest level of protection. A structural analysis could justify greater than 3 feet of dry flood proofing, which could provide even greater level of protection.

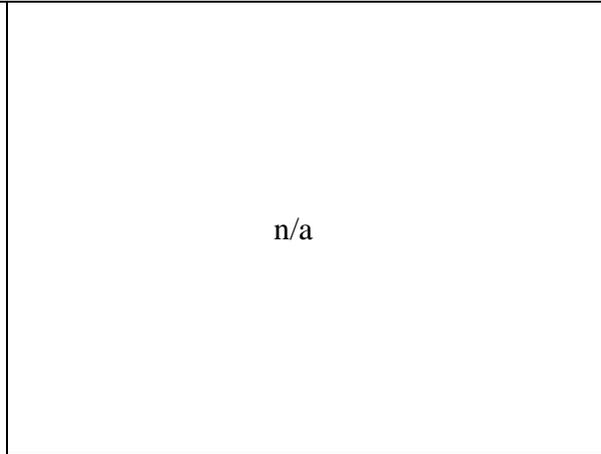
Biltmore Village, Asheville, North Carolina

Structure Address: 2 Swann ST, Asheville, NC 28803

Structure ID:44

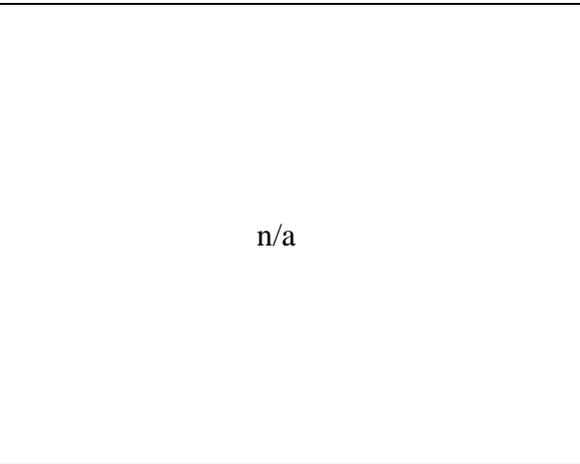


Front View



n/a

Right Side View



n/a

Back View



Left Side View

Ground Elev. (NAVD)	1992.67	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.32	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.43	-5.08
		5-yr	0.64	-1.01
		10-yr	3.06	1.41
		25-yr	4.84	3.19
		50-yr	5.83	4.18
		100-yr	6.92	5.27

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. A structural analysis could justify greater than 3 feet of dry flood proofing. An engineered cutoff between structures 44 and 40 and between 44 and 46 could be used to protect the adjacent exterior walls between these structures.

The USACE believes that this structure should also be considered for a raise or buyout.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Lodge ST, Asheville, NC 28803

Structure ID:45



Front View



Right Side View

n/a

Back View



Left Side View

Ground Elev. (NAVD)	1989.09	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1989.47	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-0.37	-0.75
		5-yr	2.84	2.46
		10-yr	4.74	4.36
		25-yr	6.53	6.15
		50-yr	7.58	7.20
		100-yr	8.59	8.21

Permanent Flood Proofing Measures:

The USACE recommends that this structure be bought out by the city or relocated to less flood prone area of the Biltmore Estate. If these options are not acceptable, the owner could consider wet flood proofing. Wet flood proofing would involve the removal of electrical systems from the first floor and moving the electrical systems up stairs. In speaking with the workers in this business, they have previously been able to remove all goods from the first floor to the second floor within two hours, which would be acceptable with proper warning time. Operating this way is risky; however if the owners choose to operate in this manner, they do so at their own risk. The USACE also recommends that the owner consider expanding the upstairs large enough to house and sell all the goods that currently reside on the first floor of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 4 Swann ST, Asheville, NC 28803

Structure ID:46



Front View



Right Side View



Right Side View



Left Side View

Ground Elev. (NAVD)	1993.61	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.27	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.38	-5.04
		5-yr	-0.32	-0.98
		10-yr	2.09	1.43
		25-yr	3.88	3.22
		50-yr	4.87	4.21
		100-yr	5.95	5.29

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. An engineered cutoff between Structure 46 and 44 could be used to protect the adjacent exterior walls between these two structures. This structure was currently being remodeled when this structure was assessed by the USACE.

Biltmore Village, Asheville, North Carolina

Structure Address: 40 All Souls Cres, Asheville, NC 28803

Structure ID:48



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1995.35	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.85	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.63	-7.13
		5-yr	-3.42	-3.92
		10-yr	-1.52	-2.02
		25-yr	0.27	-0.23
		50-yr	1.32	0.82
		100-yr	2.33	1.83

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Swann ST, Asheville, NC 28803

Structure ID:49



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1992.05	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.08	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-2.80	-5.83
		5-yr	1.28	-1.75
		10-yr	3.69	0.66
		25-yr	5.48	2.45
		50-yr	6.47	3.44
		100-yr	7.55	4.52

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide a 100-yr flood event level of protection. Also, the large window in the front of this structure will need to be modified to fully flood proof this structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Angle ST, Asheville, NC 28803

Structure ID:50



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1996.44	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.44	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-7.36	-7.36
		5-yr	-3.35	-3.35
		10-yr	-0.92	-0.92
		25-yr	0.86	0.86
		50-yr	1.82	1.82
		100-yr	2.89	2.89

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Kitchen PL, Asheville, NC 28803

Structure ID:51



Front View

n/a

Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1995.00	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.26	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-5.83	-6.09
		5-yr	-1.79	-2.05
		10-yr	0.63	0.37
		25-yr	2.42	2.16
		50-yr	3.40	3.14
		100-yr	4.48	4.22

Permanent Flood Proofing Measures:

Structures 51 through 53 act as one in terms of flood proofing so the USACE considered all three as one. These structures pose a very unique challenge in terms of flood proofing because multiple flood proofing methods will be necessary to protect these structures. Structure 51 should consider raising the floor to provide the desired level of protection. The Kismet Café portion of this will need to modify usage to the upstairs portion of the restaurant. If this change in usage is not possible, an engineered wall around structure 51 will be necessary to protect this structure. In either case, the basement should be filled to prevent structural failure when flood waters stack up against the exterior walls. A dry flood proofing barrier will be necessary between Structure 51 and 52. The USACE recommends that this barrier be placed on the interior wall of Structure 52 that is adjacent to Structure 51. For Structures 52 and 53, The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry

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flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Kitchen PL, Asheville, NC 28803

Structure ID:52



Front View

n/a

Right Side View



Back View

n/a

Left Side View

Ground Elev. (NAVD)	1995.50	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.86	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.34	-6.70
		5-yr	-2.30	-2.66
		10-yr	0.11	-0.25
		25-yr	1.90	1.54
		50-yr	2.88	2.52
		100-yr	3.96	3.60

Permanent Flood Proofing Measures:

Structures 51 through 53 act as one in terms of flood proofing so the USACE considered all three as one. These structures pose a very unique challenge in terms of flood proofing because multiple flood proofing methods will be necessary to protect these structures. Structure 51 should consider raising the floor to provide the desired level of protection. The Kismet Café portion of this will need to modify usage to the upstairs portion of the restaurant. If this change in usage is not possible, an engineered wall around structure 51 will be necessary to protect this structure. In either case, the basement should be filled to prevent structural failure when flood waters stack up against the exterior walls. A dry flood proofing barrier will be necessary between Structure 51 and 52. The USACE recommends that this barrier be placed on the interior wall of Structure 52 that is adjacent to Structure 51. For Structures 52 and 53, The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry

Biltmore Village, Asheville, North Carolina

flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Kitchen PL, Asheville, NC 28803

Structure ID: 53



Front View



Right Side View



Back View

n/a

Left Side View

Ground Elev. (NAVD)	1996.11	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.53	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.96	-7.38
		5-yr	-2.92	-3.34
		10-yr	-0.50	-0.92
		25-yr	1.28	0.86
		50-yr	2.26	1.84
		100-yr	3.34	2.92

Permanent Flood Proofing Measures:

Structures 51 through 53 act as one in terms of flood proofing so the USACE considered all three as one. These structures pose a very unique challenge in terms of flood proofing because multiple flood proofing methods will be necessary to protect these structures. Structure 51 should consider raising the floor to provide the desired level of protection. The Kismet Café portion of this will need to modify usage to the upstairs portion of the restaurant. If this change in usage is not possible, an engineered wall around structure 51 will be necessary to protect this structure. In either case, the basement should be filled to prevent structural failure when flood waters stack up against the exterior walls. A dry flood proofing barrier will be necessary between Structure 51 and 52. The USACE recommends that this barrier be placed on the interior wall of Structure 52 that is adjacent to Structure 51. For Structures 52 and 53, The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry

Biltmore Village, Asheville, North Carolina

flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 3 Swann ST, Asheville, NC 28803

Structure ID: 54



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1992.69	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.72	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.45	-6.48
		5-yr	0.61	-2.42
		10-yr	3.03	0.00
		25-yr	4.82	1.79
		50-yr	5.80	2.77
		100-yr	6.89	3.86

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor.

Biltmore Village, Asheville, North Carolina

Structure Address: 2 All Souls Crescent CRES, Asheville, NC 28803

Structure ID: 55



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.54	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.51	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-2.28	-5.25
		5-yr	1.80	-1.17
		10-yr	4.22	1.25
		25-yr	6.00	3.03
		50-yr	6.99	4.02
		100-yr	8.08	5.11

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor. Also, the large window near the front entrance of this structure poses an issue with dry flood proofing. Either the window should be modified or a flood proof wall can be placed inside the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 71 Hendersonville RD, Asheville, NC 28803

Structure ID: 56



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.33	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1997.93	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.49	-9.09
		5-yr	-4.99	-5.59
		10-yr	-2.66	-3.26
		25-yr	-0.76	-1.36
		50-yr	0.24	-0.36
		100-yr	1.33	0.73

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Approximately a foot of dry flood proofing is required to protect this structure up to the 100-yr level of protection; however, the owner could chose to go greater than a foot to protect the structure to a level of protection greater than the 100-yr event.

Biltmore Village, Asheville, North Carolina

Structure Address: 18 Brook ST, Asheville, NC 28803

Structure ID: 59, 62-65, 67-70, 76, 77, & 79-81



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1992.49	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1999.53	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.16	-10.20
		5-yr	0.95	-6.09
		10-yr	3.37	-3.67
		25-yr	5.16	-1.88
		50-yr	6.15	-0.89
		100-yr	7.24	0.20

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Closure structures at the open ends of the courtyard should be used to protect the interior business in this structure. This structure is almost already protected to the 100-yr level of protection; however, if the owner wishes to protect to a greater level of protection, the windows would need to be modified.

Biltmore Village, Asheville, North Carolina

Structure Address: 5 Boston WAY, Asheville, NC 28803

Structure ID:60



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.69	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.75	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.47	-7.53
		5-yr	-0.41	-3.47
		10-yr	2.01	-1.05
		25-yr	3.80	0.74
		50-yr	4.78	1.72
		100-yr	5.87	2.81

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Dry flood proofing up to 3 feet above the first floor should just provide 100-yr level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 4 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:61



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1992.30	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1994.11	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.06	-4.87
		5-yr	1.01	-0.80
		10-yr	3.42	1.61
		25-yr	5.21	3.40
		50-yr	6.20	4.39
		100-yr	7.29	5.48

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 Angle ST, Asheville, NC 28803

Structure ID:66



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.38	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1998.84	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.34	-9.80
		5-yr	-4.34	-5.80
		10-yr	-1.91	-3.37
		25-yr	-0.13	-1.59
		50-yr	0.82	-0.64
		100-yr	1.89	0.43

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure only needs approximately 0.5 feet of dry flood proofing to achieve the 100-yr level of protection; however, greater level of protection can be achieved with dry flood proofing higher on the structure. The USACE did notice that there was a wood panel on the side of the building. A structural analysis should be conducted to ensure that this panel can withstand the hydrostatic load from the flood waters stacked up against the side of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:71



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.52	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.84	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-2.25	-4.57
		5-yr	1.84	-0.48
		10-yr	4.25	1.93
		25-yr	6.04	3.72
		50-yr	7.03	4.71
		100-yr	8.12	5.80

Permanent Flood Proofing Measures:

The USACE recommends that Structures 71-74 be bought out and removed by the city.

Unfortunately, dry flood proofing as referenced for other structures is not viable for these structures as the first floor elevation of these structures is so low. The only way to dry flood proof this structure is for an engineered wall to be constructed either around the entire structure out away from the building or up against the structure. For either case, openings and entrances in the wall should be kept to a minimum. Closure structures for all openings should be created such that the closure structure can be simply and quickly snapped into place in the case of a flood event.

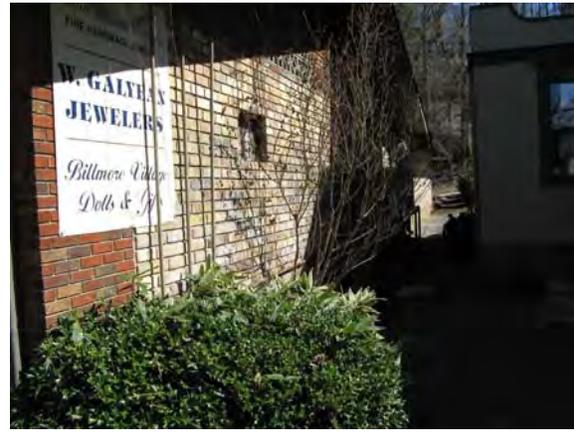
Biltmore Village, Asheville, North Carolina

Structure Address: 1 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:72



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.52	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.79	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-2.25	-4.52
		5-yr	1.82	-0.45
		10-yr	4.24	1.97
		25-yr	6.03	3.76
		50-yr	7.02	4.75
		100-yr	8.10	5.83

Permanent Flood Proofing Measures:

The USACE recommends that Structures 71-74 be bought out and removed by the city.

Unfortunately, dry flood proofing as referenced for other structures is not viable for these structures as the first floor elevation of these structures is so low. The only way to dry flood proof this structure is for an engineered wall to be constructed either around the entire structure out away from the building or up against the structure. For either case, openings and entrances in the wall should be kept to a minimum. Closure structures for all openings should be created such that the closure structure can be simply and quickly snapped into place in the case of a flood event.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:73



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.52	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.63	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-2.26	-4.37
		5-yr	1.81	-0.30
		10-yr	4.23	2.12
		25-yr	6.02	3.91
		50-yr	7.01	4.90
		100-yr	8.09	5.98

Permanent Flood Proofing Measures:

The USACE recommends that Structures 71-74 be bought out and removed by the city.

Unfortunately, dry flood proofing as referenced for other structures is not viable for these structures as the first floor elevation of these structures is so low. The only way to dry flood proof this structure is for an engineered wall to be constructed either around the entire structure out away from the building or up against the structure. For either case, openings and entrances in the wall should be kept to a minimum. Closure structures for all openings should be created such that the closure structure can be simply and quickly snapped into place in the case of a flood event.

Biltmore Village, Asheville, North Carolina

Structure Address: 1 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:74



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1991.52	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1993.85	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-2.27	-4.60
		5-yr	1.80	-0.53
		10-yr	4.22	1.89
		25-yr	6.01	3.68
		50-yr	7.00	4.67
		100-yr	8.08	5.75

Permanent Flood Proofing Measures:

The USACE recommends that Structures 71-74 be bought out and removed by the city.

Unfortunately, dry flood proofing as referenced for other structures is not viable for these structures as the first floor elevation of these structures is so low. The only way to dry flood proof this structure is for an engineered wall to be constructed either around the entire structure out away from the building or up against the structure. For either case, openings and entrances in the wall should be kept to a minimum. Closure structures for all openings should be created such that the closure structure can be simply and quickly snapped into place in the case of a flood event.

Biltmore Village, Asheville, North Carolina

Structure Address: 3 Boston WAY, Asheville, NC 28803

Structure ID:75



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.20	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.20	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.98	-6.98
		5-yr	0.09	-2.91
		10-yr	2.50	-0.50
		25-yr	4.29	1.29
		50-yr	5.28	2.28
		100-yr	6.36	3.36

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor.

Biltmore Village, Asheville, North Carolina

Structure Address: 11 Kitchen PL, Asheville, NC 28803

Structure ID:78



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.70	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1998.60	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.57	-9.47
		5-yr	-4.55	-5.45
		10-yr	-2.12	-3.02
		25-yr	-0.34	-1.24
		50-yr	0.63	-0.27
		100-yr	1.71	0.81

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure only needs approximately 1 foot of dry flood proofing to be protected to the 100-yr event; however, the owner could choose to go higher with the dry flood proofing to achieve a greater level of protection. The ATM and Teller window should be considered when dry flood proofing.

Biltmore Village, Asheville, North Carolina

Structure Address: 36 All Souls CRES, Asheville, NC 28803

Structure ID:82



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1995.63	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.10	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.89	-7.36
		5-yr	-3.65	-4.12
		10-yr	-1.68	-2.15
		25-yr	0.22	-0.25
		50-yr	1.31	0.84
		100-yr	2.33	1.86

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure needs almost 2 feet of dry flood proofing to achieve 100-yr level of protection. The USACE could not determine if the rock walls were a façade on top of cinder block walls or if the walls were rock all the way through. If these rocks are a façade, the rock will need to be removed so the dry flood proofing can be applied to the cinder block wall. Then the rocks can be placed on top of the dry flood proofing. If these walls are constructed totally of rock, they may need to be replaced with a material that can be dry flood proofed.

Biltmore Village, Asheville, North Carolina

Structure Address: 2 Boston WAY, Asheville, NC 28803

Structure ID:83



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1994.80	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.72	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-5.62	-6.54
		5-yr	-1.58	-2.50
		10-yr	0.84	-0.08
		25-yr	2.63	1.71
		50-yr	3.61	2.69
		100-yr	4.69	3.77

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor.

Biltmore Village, Asheville, North Carolina

Structure Address: 6 Boston WAY, Asheville, NC 28803

Structure ID:84



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.70	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.40	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.51	-6.21
		5-yr	-0.47	-2.17
		10-yr	1.95	0.25
		25-yr	3.74	2.04
		50-yr	4.72	3.02
		100-yr	5.81	4.11

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor. It will be necessary to build an engineered flood proof wall to replace the gate in front of the middle section of this structure. Depending on what is located in the rear of the structure, an engineered wall may also be necessary around the addition in the rear of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 63 Brook ST, Asheville, NC 28803

Structure ID:85



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.81	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1997.81	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.49	-8.49
		5-yr	-4.39	-4.39
		10-yr	-1.96	-1.96
		25-yr	-0.18	-0.18
		50-yr	0.81	0.81
		100-yr	1.90	1.90

Permanent Flood Proofing Measures:

This USACE recommends that this structure utilize multiple flood proofing methods due to its mixed use commercially. This structure only needs about 2 feet of flood proofing to achieve a 100-yr level of protection. The west end of this structure is used as a garage and could fairly easily be wet flood proofed. The owner of this structure can move any equipment for storage when not in use. Any equipment to be left on the floor can be put on wheels such that it can be easily removed during an event. Electrical systems should be raised above the 100-yr level of protection as well. Most importantly, the owner should develop an evacuation plan to get all damageable items out or above the 100-yr level of protection.

For the remainder of the structure, the USACE recommends dry flood proofing measures. A flood proof barrier will need to be installed between the garage portion and the

Biltmore Village, Asheville, North Carolina

remainder of the structure. The windows will need to be modified to the desired level of protection. Closure structures will need to be designed to protect any entrances to this portion of the structure.

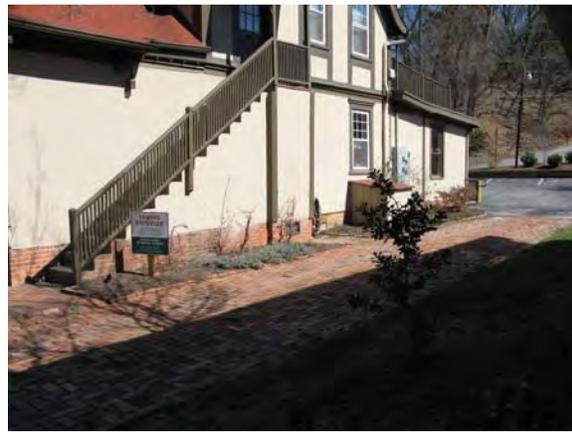
Biltmore Village, Asheville, North Carolina

Structure Address: 5 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:86



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1992.94	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.73	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.71	-6.50
		5-yr	0.36	-2.43
		10-yr	2.78	-0.01
		25-yr	4.57	1.78
		50-yr	5.55	2.76
		100-yr	6.64	3.85

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor.

Biltmore Village, Asheville, North Carolina

Structure Address: 9 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:87



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.94	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1999.25	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.80	-10.11
		5-yr	-4.76	-6.07
		10-yr	-2.34	-3.65
		25-yr	-0.56	-1.87
		50-yr	0.42	-0.89
		100-yr	1.50	0.19

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure only needs about 0.2 feet of dry flood proofing to reach a 100-yr level of protection. The USACE recommends that the owner of this structure dry flood proof up to at least 2.75 feet above the first floor to achieve a 500-yr level of protection. However, this structure could be left as is because it is already essentially at a 100-yr level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 2 Sweeten Creek RD, Asheville, NC 28803

Structure ID:88



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1994.55	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.94	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-5.20	-7.59
		5-yr	-1.08	-3.47
		10-yr	1.34	-1.05
		25-yr	3.12	0.73
		50-yr	4.12	1.73
		100-yr	5.21	2.82

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

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a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure needs about 3 feet of dry flood proofing to achieve a 100-yr level of protection. The large window next to the entrance will need to be modified.

Biltmore Village, Asheville, North Carolina

Structure Address: 34 All Souls CRES, Asheville, NC 28803

Structure ID:89



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.84	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	2000.26	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-9.11	-11.53
		5-yr	-5.90	-8.32
		10-yr	-3.98	-6.40
		25-yr	-2.15	-4.57
		50-yr	-1.08	-3.50
		100-yr	-0.08	-2.50

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: 6 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:90



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.17	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.20	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.96	-6.99
		5-yr	0.10	-2.93
		10-yr	2.51	-0.52
		25-yr	4.31	1.28
		50-yr	5.29	2.26
		100-yr	6.37	3.34

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. Unfortunately, dry flood proofing will not quite provide 100-yr level of protection; however, a structural analysis may justify extending the dry flood proofing greater than 3 feet above the first floor. This structure only needs about 3.3 feet of dry flood proofing to achieve a 100-yr level of protection. The large bay windows would need to be modified if 3 feet of dry flood proofing is to be used.

Biltmore Village, Asheville, North Carolina

Structure Address: 32 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:91



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1999.27	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1999.27	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-10.50	-10.50
		5-yr	-7.20	-7.20
		10-yr	-5.17	-5.17
		25-yr	-3.20	-3.20
		50-yr	-2.08	-2.08
		100-yr	-1.05	-1.05

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: 3 Angle ST, Asheville, NC 28803

Structure ID:92



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1998.02	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1998.54	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.89	-9.41
		5-yr	-4.86	-5.38
		10-yr	-2.44	-2.96
		25-yr	-0.65	-1.17
		50-yr	0.32	-0.20
		100-yr	1.40	0.88

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure only needs about 1 foot of dry flood proofing to achieve a 100-yr level of protection. The USACE noticed that this structure has many doors on the South side of the structure. The USACE recommends that these doors be filled in as this will facilitate the flood proofing process. If that is not possible, closure structures will need to be designed to be temporarily placed in these openings in the case of a flood.

Biltmore Village, Asheville, North Carolina

Structure Address: 99999 All Souls CIR, Asheville, NC 28803

Structure ID:93



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	2001.18	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	2002.67	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-12.11	-13.60
		5-yr	-8.11	-9.60
		10-yr	-5.67	-7.16
		25-yr	-3.90	-5.39
		50-yr	-2.94	-4.43
		100-yr	-1.87	-3.36

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: 7 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:94



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.84	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1997.51	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-4.64	-8.31
		5-yr	-0.59	-4.26
		10-yr	1.82	-1.85
		25-yr	3.61	-0.06
		50-yr	4.60	0.93
		100-yr	5.68	2.01

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure only needs 2 feet of dry flood proofing to achieve a 100-yr level of protection.

:

Biltmore Village, Asheville, North Carolina

Structure Address: 97 Hendersonville RD, Asheville, NC 28803

Structure ID:95



Front View

Right Side View

Back View

Left Side View

Ground Elev. (NAVD)	1997.48	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1997.48	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.55	-8.55
		5-yr	-4.91	-4.91
		10-yr	-2.39	-2.39
		25-yr	-0.60	-0.60
		50-yr	0.32	0.32
		100-yr	1.38	1.38

Permanent Flood Proofing Measures:

The USACE recommends that the owner of Structures 95 and 96 implement wet flood proofing measures. This structure only needs about 2 feet of protection to achieve a 100-yr level of protection so the owner should raise all electrical systems and equipment at least 2 feet from the floor. Materials and equipment that can not be stored 2 feet above the floor should be easily raised during a flood event. Also, the owner should ensure that flood waters can easily enter and leave the structure during an event to prevent damages to the structure. As a precaution, the owner should also develop an emergency evacuation plan for these structures.

Biltmore Village, Asheville, North Carolina

Structure Address: 97 Hendersonville RD, Asheville, NC 28803

Structure ID:96



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.48	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1997.95	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.55	-9.02
		5-yr	-4.91	-5.38
		10-yr	-2.38	-2.85
		25-yr	-0.59	-1.06
		50-yr	0.32	-0.15
		100-yr	1.38	0.91

Permanent Flood Proofing Measures:

The USACE recommends that the owner of Structures 95 and 96 implement wet flood proofing measures. This structure only needs about 2 feet of protection to achieve a 100-yr level of protection so the owner should raise all electrical systems and equipment at least 2 feet from the floor. Materials and equipment that can not be stored 2 feet above the floor should be easily raised during a flood event. Also, the owner should ensure that flood waters can easily enter and leave the structure during an event to prevent damages to the structure. As a precaution, the owner should also develop an emergency evacuation plan for these structures.

Biltmore Village, Asheville, North Carolina

Structure Address: 10 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:97



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1995.37	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1998.36	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.20	-9.19
		5-yr	-2.16	-5.15
		10-yr	0.26	-2.73
		25-yr	2.05	-0.94
		50-yr	3.03	0.04
		100-yr	4.11	1.12

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and remove just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure will only require about 1.5 feet of dry flood proofing to protect this structure up to the 100-yr level of protection. The large bay windows may need to be modified in order to reach the desired level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 10 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:98



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1995.50	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1996.23	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-6.33	-7.06
		5-yr	-2.29	-3.02
		10-yr	0.12	-0.61
		25-yr	1.92	1.19
		50-yr	2.89	2.16
		100-yr	3.98	3.25

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and remove just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. This structure will only require about 3 feet of dry flood proofing to protect this structure up to the 100-yr level of protection. The front windows at the entrance of this structure will need to be modified to acquire desired level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 2 Village LN, Asheville, NC 28803

Structure ID:100



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1999.64	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1999.64	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-10.46	-10.46
		5-yr	-6.41	-6.41
		10-yr	-4.00	-4.00
		25-yr	-2.21	-2.21
		50-yr	-1.23	-1.23
		100-yr	-0.14	-0.14

Permanent Flood Proofing Measures:

This structure is already protected to the 100-year level of protection. If the owner desires additional protection, the USACE recommends implementation of dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and remove just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The lower end of this structure (north end) is the most vulnerable to incoming flood waters. A combination of flood proof walls and utilizing existing landscape beds can be used to achieve the desired level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 12 All Souls Crescent CRES, Asheville, NC 28803

Structure ID:101



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.99	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1999.81	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.85	-10.67
		5-yr	-4.81	-6.63
		10-yr	-2.39	-4.21
		25-yr	-0.61	-2.43
		50-yr	0.37	-1.45
		100-yr	1.45	-0.37

Permanent Flood Proofing Measures:

This structure is already protected to the 100-year level of protection. If the owner desires additional protection, the USACE recommends implementation of dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances during

Biltmore Village, Asheville, North Carolina

a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and remove just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 20 All Souls CRES, Asheville, NC 28803

Structure ID:103



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	2001.96	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	2002.49	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-12.87	-13.40
		5-yr	-8.85	-9.38
		10-yr	-6.42	-6.95
		25-yr	-4.64	-5.17
		50-yr	-3.68	-4.21
		100-yr	-2.60	-3.13

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: 124 Hendersonville RD, Asheville, NC 28803

Structure ID:104



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	2007.78	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	2008.89	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-18.74	-19.85
		5-yr	-14.74	-15.85
		10-yr	-12.31	-13.42
		25-yr	-10.53	-11.64
		50-yr	-9.58	-10.69
		100-yr	-8.51	-9.62

Permanent Flood Proofing Measures:

This structure is above the elevation considered by the USACE for this study. If you would still like to know how to permanently protect your structure, please use the other structures in this study as an example.

Biltmore Village, Asheville, North Carolina

Structure Address: 0 , Asheville, NC 28803

Structure ID:105



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1987.48	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1987.90	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	1.01	0.59
		5-yr	4.14	3.72
		10-yr	5.94	5.52
		25-yr	7.62	7.20
		50-yr	8.64	8.22
		100-yr	9.62	9.20

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure utilize wet flood proofing to protect this structure. This structure theoretically would be inundated by almost 10 feet in a 100-year event; therefore, everything in this structure should be removable during an incoming event. Most importantly, the owner of this structure should develop an evacuation plan for removing all persons and damageable items during an event. As with any wet flood proofing measure, flood waters should be able to easily enter and leave the structure.

Biltmore Village, Asheville, North Carolina

Structure Address: 2 London RD, Asheville, NC 28803

Structure ID:106



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1997.39	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1997.78	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-8.08	-8.47
		5-yr	-3.98	-4.37
		10-yr	-1.56	-1.95
		25-yr	0.23	-0.16
		50-yr	1.22	0.83
		100-yr	2.31	1.92

Permanent Flood Proofing Measures:

At the time of inspection of this structure, it was vacant. Therefore, depending on the intended use of this structure, wet or dry flood proofing methods can be used. If the next tenant of this structure intends to use this structure for a purpose with easily removable goods and equipment, the USACE recommends wet flood proofing this structure. However, this structure could be easily dry flood proofed due to the limited number of windows. This structure only needs about 2 feet of flood proofing to achieve a 100-yr level of protection.

Biltmore Village, Asheville, North Carolina

Structure Address: 4 Brook ST, Asheville, NC 28803

Structure ID: 107



Front View



Right Side View



Back View



Left Side View

Ground Elev. (NAVD)	1993.16	<u>Depth of Flooding (ft)</u>		
1 st Floor Elev. (NAVD)	1995.97	<u>Flood Event</u>	<u>Ground</u>	<u>1st Floor</u>
		2-yr	-3.93	-6.74
		5-yr	0.14	-2.67
		10-yr	2.55	-0.26
		25-yr	4.34	1.53
		50-yr	5.33	2.52
		100-yr	6.41	3.60

Permanent Flood Proofing Measures:

The USACE recommends that the owner of this structure implement dry flood proofing measures for long-term protection. In order to dry flood proof this structure, the owner needs to modify the windows such that the bottom of the window is at the top of the desired level of protection. Modifying the windows to this elevation allows the addition of a layer of water proof material up to the desired level of protection. The layer of water proof material is intended to be in place long-term; therefore, a veneer of some sort should be placed to cover this material to prevent physical damage to the layer or damage from excessive and continuous sunlight. This layer of protection should also be extended far enough down below the first floor to prevent the entrance of water from below. In cases where the structure has a crawl space or basement, this layer must be applied much farther down to prevent water from seeping in from below and up through the floor. For any doorways or entrances, the owner should establish a means to block these entrances

Biltmore Village, Asheville, North Carolina

during a flood event up to the desired level of protection. These types of openings can be fitted with simple barriers that snap into place quickly and removed just as quickly. The USACE also suggests that the number of doors and windows be limited to only those necessary. Floodproofing is much more effective when there are fewer openings in a structure. As with any of the structures in this study, any HVAC and utilities should be raised to the desired level of protection or to the highest possible elevation when the desired level of protection can not be attained in order to prevent damages to these aspects of the structure. The ceilings in this structure are relatively high so a combination of dry flood proofing and a floor raise could be used to achieve the greatest level of protection. Unfortunately, dry flood proofing alone will not provide a 100-yr level of protection. Structure 107 shares a narrow alleyway with Structure 31 so an engineered cutoff may be used to protect the adjacent exterior walls between these two structures.