

# Summary of Coastal Construction Requirements and Recommendations

**Purpose:** *To summarize recommendations for exceeding National Flood Insurance Program (NFIP) regulatory requirements concerning coastal construction.*

## Key Issues

- *New construction\** in coastal flood hazard areas (V Zone and A Zone) should be designed using the engineering standards (ASCE 24 and ASCE 7) or the International Residential Code (IRC), as applicable. Best practices must exceed the minimum NFIP requirements and must meet, or exceed, all community zoning and building code requirements. *Repairs, remodeling, and additions* must always meet NFIP and building code requirements for the part of the structure impacted. Should these costs exceed 50 percent of the fair market value of the structure, the entire building must be brought to local floodplain management and building code compliance.
- Engineering standards ASCE 24-05 and ASCE 7-10 are *more stringent in V Zones than in A Zones*, to protect against the increased flood, wave, flood-borne debris, and erosion hazards typical of V Zones.
- **For added protection, it is strongly recommended that buildings in flood zones that are subject to breaking waves between 1.5 and 3 feet as well as erosion and scour be designed and constructed to V Zone standards.** These coastal areas, mapped as A Zones, may be subject to damaging waves and erosion and are often referred to as “Coastal A Zones.” Buildings in these areas are typically constructed to the minimum NFIP A Zone requirements and have at least a 1-percent-annual-chance of sustaining major damage or being destroyed. This regulatory standard is known as the *base flood*.
- Buildings constructed to minimum NFIP A Zone standards and subject solely to shallow flooding (i.e., not subject to breaking waves greater than 1.5 feet or erosion) are still subject to flood damage and should be built with a first floor elevation above the BFE (usually at least one foot or greater), which is referred to as “freeboard.”
- Following the recommendations in the following table will result in less damage to the building and may reduce flood insurance premiums (see the V Zone Risk Factor Rating Form in FEMA’s *Flood Insurance Manual* (<http://www.fema.gov/nfip/manual.shtm>)).

\* For floodplain management purposes, **new construction** refers to structures for which construction began on or after the effective date of adoption of the community’s floodplain management ordinance. Substantial improvements, repairs of substantially damaged buildings, and some enclosures must meet the same floodplain management ordinance and building code requirements as new construction where such ordinances and codes have been adopted by the community.

The following table summarizes NFIP regulatory requirements and recommendations for exceeding those requirements for both (1) new construction and (2) repairs, remodeling, and additions.



Coastal Construction Requirements and Recommendations				
	V Zone 	Coastal A Zone 	A Zone 	Additional Resources
<b>Foundation</b>				
<b>Structural Fill</b> NFIP 60.3(e)(6)	Prohibited	<b>Requirement:</b> Compaction where used; protect against scour and erosion.	<b>Requirement:</b> Compaction where used; protect against scour and erosion.	<b>IBC:</b> 1804.4, App. G 401.1, App. G 401.2 <b>IRC:</b> R322.3.2 <b>ASCE:</b> ASCE 24 Sec. 2.4 <b>Other:</b> FEMA TB #5
<b>Solid Foundation Walls [see Fact Sheet Nos. 3.1, 3.5]</b> NFIP 60.3(c)(3)	Prohibited	<b>Requirement:</b> Flood vents must be installed to equalize pressures (see Fact Sheets Nos. 3.5 and 8.1). <b>Recommendation:</b> An open foundation system should be used.	<b>Requirement:</b> Where used, the walls must allow floodwaters to pass between or through the walls using flood openings (see Fact Sheets Nos. 3.5 and 8.1).	<b>IBC:</b> 1612.5.1 <b>IRC:</b> R322.2.3 <b>ASCE:</b> ASCE 24 Sec. 2.5, ASCE 7 Sec. 5.4.4.2 <b>Other:</b> FEMA TB #5, FEMA 550
<b>Open Foundation [see Fact Sheet No. 3.1]</b> NFIP 60.3(e)(5) and 60.3(c)(5)	<b>Recommendation:</b> Site new construction landward of the long-term erosion setback and landward of the area subject to erosion during the 1% coastal flood event. <b>Requirement:</b> All new construction shall be landward of the reach of the mean high tide; alteration of sand dunes and mangrove stands that increases the potential of flood damage is prohibited.	<b>Recommendation:</b> Open foundations are recommended in Coastal A Zones.	<b>Recommendation:</b> Open foundations are recommended in A Zones.	<b>IBC:</b> 1803.5.5 <b>IRC:</b> R322.3.3 <b>ASCE:</b> ASCE 7 Sec. 5.4.4.1, ASCE 24 Sec 4.5.5 <b>Other:</b> FEMA TB #5
<b>Lowest Floor Elevation (not in a V Zone) [see Fact Sheet No. 1.5]</b> NFIP 60.3(c)	Not Applicable	<b>Recommendation:</b> Elevate the bottom of the lowest horizontal structural member at, or above, BFE. <b>Requirement:</b> Top of floor must be at or above BFE.	<b>Requirement:</b> Top of floor must be at or above BFE.	<b>IBC:</b> 1603.1.7, 1612.5 <b>IRC:</b> R105.3.1.1, R322.2.1, R322.1.5 <b>ASCE:</b> ASCE 24 Sec. 1.5.2, ASCE 24 Sec. 2.5, ASCE 24 Ch. 5, ASCE 24 Ch. 7 <b>Other:</b> FEMA TB #5
<b>Bottom Lowest Horizontal Structural Member [see Fact Sheet No. 1.4]</b> NFIP 60.3(e)(4)	<b>Requirement:</b> Bottom of the lowest horizontal structural member of the first floor must be at, or above, the BFE (see Fact Sheet No. 1.5).	<b>Recommendation:</b> Follow the V Zone building elevation requirement.	<b>Recommendation:</b> The minimum recommendation is to follow the Coastal A Zone requirements. Users should consider following V Zone recommendations for the lowest horizontal structural member elevation to further minimize the risk of flood damage.	<b>IBC:</b> 1603.1.7, 1605.2.2, 1605.3.1.2, 1612.4, 1612.5.2 <b>IRC:</b> R322.3.2 <b>ASCE:</b> ASCE 24 Sec. 4.4, ASCE 24 Sec. 2.5, ASCE 24 Ch. 5 <b>Other:</b> FEMA 55, FEMA TB #8, FEMA TB #5

1.2: SUMMARY OF COASTAL CONSTRUCTION REQUIREMENTS AND RECOMMENDATIONS

Coastal Construction Requirements and Recommendations			
V Zone 	Coastal A Zone 	A Zone 	Additional Resources

Foundation				
<b>Orientation of Lowest Horizontal Structural Member</b>	<b>Requirement:</b> Elevate the bottom of the lowest horizontal structural member at, or above, BFE.	<b>Recommendation:</b> If the orientation of the lowest horizontal structural member is parallel to the expected direction of waves, elevate the bottom of the member to or above BFE; If the orientation of the lowest horizontal structural member is perpendicular to the expected direction of waves, elevate the bottom of the member to BFE plus one foot. Diagonal bracing for decks, stairways, balconies and other attached structures should also be elevated at, or above, the BFE.	<b>Recommendation:</b> Follow the Coastal A Zone recommendation.	<b>IBC:</b> see ASCE 24 <b>IRC:</b> R322.3.2 <b>ASCE:</b> ASCE 24 Sec 4.4 <b>Other:</b> FEMA TB #5
<b>Freeboard [see Fact Sheet Nos. 1.1, 1.4]</b>	<b>Requirement:</b> No NFIP requirement, but freeboard is required by IRC and ASCE.	<b>Recommendation:</b> Freeboard is recommended in Coastal A Zones. <b>Note:</b> Per ASCE 24-05 one foot of freeboard required for Risk Category II structures.	<b>Recommendation:</b> Freeboard is recommended in A Zones. <b>Note:</b> One foot above BFE is required per IRC R322.2.1 Item #2 for Coastal A Zones.	<b>IBC:</b> see ASCE 24 <b>IRC:</b> R322.2.1, R322.3.2 <b>ASCE:</b> ASCE 24 Sec. 2.3
<b>Enclosures Below the BFE (not in a V Zone)</b>	<b>Not Applicable</b>	<b>Recommendation:</b> If an enclosure is constructed, use breakaway walls, open lattice, or screening (as required in V Zones). <b>Requirement:</b> If an area is fully enclosed, the enclosure walls must be equipped with openings to equalize hydrostatic pressure; the size, location, and covering of openings governed by regulatory requirements.	<b>Recommendation:</b> If an enclosure is constructed, use breakaway walls, open lattice, or screening (as required in V Zones). <b>Requirement:</b> If an area is fully enclosed, the enclosure walls must be equipped with openings to equalize hydrostatic pressure; the size, location, and covering of openings governed by regulatory requirements.	<b>IBC:</b> 1203.3.2, 1403.5, 1612.4, 1612.5.1 <b>IRC:</b> R322.2.2, R408.7 <b>ASCE:</b> ASCE 24 Sec. 2.6, ASCE 24 Sec 4.6 <b>Other:</b> FEMA TB #1
<b>Enclosures Below the BFE (not in V Zones) [see Fact Sheet No. 8.1]  NFIP 60.3(c)(5)</b>	<b>Prohibited</b> , except for breakaway walls, open wood lattice, and screening.	<b>Not Applicable</b>	<b>Not Applicable</b>	<b>IBC:</b> 1403.5, 1403.6, 1612.4, 1612.5.2 <b>IRC:</b> R322.3.2, R322.3.4, R322.3.5 <b>ASCE:</b> ASCE 24 Sec. 4.6, ASCE 7 Sec. C5.3.3 <b>Other:</b> FEMA 55, FEMA TB #5, FEMA TB #9

Coastal Construction Requirements and Recommendations				
	V Zone 	Coastal A Zone 	A Zone 	Additional Resources
<b>Foundation</b>				
<b>Non Structural Fill</b>	<b>Requirement:</b> Allowed for minor landscaping and site drainage as long as the fill does not interfere with free passage of flood waters and debris beneath the building, or cause changes in flow direction during coastal storms that could result in damage to buildings.	<b>Recommendation:</b> Follow the V Zone fill requirement.	<b>Recommendation:</b> Follow the V Zone fill requirement.	<b>IBC:</b> 803.11.1 <b>IRC:</b> R322.14.2, R322.3.2 <b>ASCE:</b> ASCE 24 Sec 1.5.4, 45.4 <b>Other:</b> FEMA TB #5
<b>Use of Space Below BFE</b> [see Fact Sheet No. 8.1]	<b>Requirement:</b> Allowed only for parking, building access, and storage	<b>Requirement:</b> Allowed only for parking, building access, and storage	<b>Requirement:</b> Allowed only for parking, building access, and storage	<b>IBC:</b> 1107.7.5, G105.7 (5), 801.5, G103.5, G103.8 <b>IRC:</b> R309.3, R322.1, R322.1.2, R322.1.3, R322.1.4, R322.1.4.1, R322.2.1, R322.2.2, R322.3.2, R322.3.5 <b>ASCE:</b> ASCE 24 1.5.2, 2.6, 2.6.1, 2.6.2.1, 2.6.2.2, 4.6, 4.6.1, 4.6.2
<b>Utilities</b>				
<b>Sanitary Sewer</b> NFIP 60.3(a)(6)(i) and 60.3(a)(6)(ii)				<b>IBC:</b> 1403.6, App. G 401.3 <b>IRC:</b> R322.1.7, R P2602.2, R P3001.3, R P3101.5 <b>ASCE:</b> ASCE 24 Sec. 7.3.4 <b>Other:</b> FEMA 348, FEMA TB #4
<b>Utilities</b> [see Fact Sheet No. 8.3] NFIP 60.3(a)(3) (iv)	<b>Requirement:</b> Must be designed, located, and elevated to prevent flood waters from entering and accumulating in components during flooding. Utility lines must not be installed or stubbed out in enclosures below BFE unless flood proofed to the extent practicable.	<b>Requirement:</b> Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities to be designed and/or located as to prevent water from entering or accumulating within the components during periods of flooding. <b>Recommendation:</b> Follow the V Zone utility recommendation	<b>Requirement:</b> Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities to be designed and/or located as to prevent water from entering or accumulating within the components during periods of flooding.	<b>IBC:</b> 1403.6, 1612.4, App. G 701 <b>IRC:</b> R322.1.6, IFGC 301.11, R G2404.7, R P2601.3, R P2602.2, R M1301.1.1, R M1401.5, R M1601.4.9, R M1701.2, R M2001.4, R M2201.6 <b>ASCE:</b> ASCE 24 Ch. 7 <b>Other:</b> FEMA 348, FEMA TB #4
<b>Certification</b>				
<b>Permits</b> NFIP 60.3(b)(1)	<b>Requirement:</b> V Zone certificate, Breakaway Wall certificate, and Elevation Certificate.	<b>Requirement:</b> Elevation Certificate.	<b>Requirement:</b> Elevation Certificate.	<b>IBC:</b> App. G 101.3, App. G 103, App. G 104 <b>IRC:</b> R104.2, R105, App. E, App. J <b>ASCE:</b> ASCE 24 Sec. 4.6, ASCE 7 Sec. C5.3.3 <b>Other:</b> FEMA EMI IS-9

## Coastal Construction Requirements and Recommendations

V Zone



Coastal A Zone



A Zone



Additional Resources

### Certification

<p><b>Elevation</b> NFIP 60.3(b)(5)(i) and 60.3(e)(2)</p>	<p><b>Requirement:</b> The lowest horizontal structural member must be at, or above, BFE; electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities (including ductwork) must be designed and/or located so as to prevent water from entering or accumulating within the components during flooding (see Fact Sheet Nos. 1.4, 1.5, 8.3)</p>	<p><b>Recommendation:</b> Follow the V Zone building elevation requirement.</p> <p><b>Requirement:</b> Top of lowest floor must be at, or above, BFE; electrical heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork) must be designed and/or located so as to prevent water from entering or accumulating within the components during flooding (see Fact Sheet Nos. 1.4 8.3)</p>	<p><b>Recommendation:</b> The minimum recommendation is to follow the Coastal A Zone requirements. Users should consider following V Zone recommendations for the lowest horizontal structural member elevation to further minimize the risk of flood damage.</p> <p><b>Requirement:</b> Top of the lowest floor must be at, or above, BFE; electrical heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork) must be designed and/or located so as to prevent water from entering or accumulating within the components during flooding (see Fact Sheet Nos. 1.4, 8.3)</p>	<p><b>IBC:</b> 110.3.3, 1603.1.7, 1612.5 <b>IRC:</b> R106.1.3, R322.1.2, R322.1.5, R322.2.1 <b>ASCE:</b> ASCE 24 Sec. 1.5.1, 1.5.2, 4.4</p>
<p><b>Structure</b></p>	<p><b>Requirement:</b> Registered engineer or architect must certify that the design and methods of construction are in accordance with an accepted standard of practice for meeting design requirements described under General Requirement (see Fact Sheet No. 1.5)</p>	<p><b>Recommendation:</b> Follow the V Zone requirement.</p>	<p><b>Recommendation:</b> Follow the V Zone requirement.</p>	<p><b>IBC:</b> 1604.1, 1604.2, 1604.3 <b>IRC:</b> R301.1, R301.1.3, R301.2 <b>ASCE:</b> ASCE 7 Sec. 1.3.1.3.3</p>

Coastal Construction Requirements and Recommendations				
	V Zone 	Coastal A Zone 	A Zone 	Additional Resources
<b>Certification</b>				
<b>Breakaway Walls</b> [see Fact Sheet Nos. 1.5, 8.1] (also see Enclosures Below BFE) NFIP 60.3(e)(5)	<b>Requirement:</b> Walls must be designed to break free under larger of the following allowable stress design loads: (1) design wind load, (2) design seismic load, or (3) 10 psf, acting perpendicular to the plane of the wall; if loading intended to cause collapse exceeds 20 psf using allowable stress design, the breakaway wall design shall be certified; when certification is required, a registered engineer or architect must certify that the walls will collapse under a water load associated with the Base Flood and that the elevated portion of the building and its foundation will not be subject to collapse, displacement, or lateral movement under simultaneous wind and water loads.	<b>Recommendation:</b> Breakaway walls are recommended with an open foundation in lieu of solid walls; if breakaway walls are used and enclose an area, flood openings are required (see Fact Sheet Nos. 3.1, 3.5).		<b>IBC:</b> 1612.5 (2.3) <b>IRC:</b> R322.3.4 <b>ASCE:</b> ASCE 24 Sec. 4.6.1, 4.6.2, 2.6.1.1, ASCE 7 Sec. 5.3.3 <b>Other:</b> FEMA TB #5, FEMA TB #9
<b>Openings in Below-BFE Walls</b> [see Fact Sheet Nos. 3.1, 3.5] (also see Enclosures Below BFE) NFIP 60.3(c)(5)	<b>Not Applicable</b>	<b>Requirement:</b> Unless the number and size of the openings meet regulatory requirements, a registered engineer or architect must certify that the openings are designed to automatically equalize hydrostatic forces on the walls by allowing automatic entry and exit of flood waters.	<b>Requirement:</b> Unless the number and size of the openings meet regulatory requirements, a registered engineer or architect must certify that the openings are designed to automatically equalize hydrostatic forces on the walls by allowing automatic entry and exit of flood waters.	<b>IBC:</b> 1203.4.12, G1001.4 <b>IRC:</b> R322.2.2 <b>ASCE:</b> ASCE 24 Sec. 2.6.1, 2.6.2.1, 2.6.2.2 <b>Other:</b> FEMA TB #1
<b>Repairs, Remodeling, and Additions [See Fact Sheet No. 9.1]</b>				
<b>Substantial Improvements and Repairs of Substantial Damage</b> NFIP 60.3(e)(5) and 60.3(c)(5)	<b>Requirement:</b> Must meet current NFIP requirements concerning new construction in V Zones except for siting landward of mean high tide (see Fact Sheet Nos. 1.4, 1.5, 2.2, 3.1, 3.5, 8.1, 8.3).	<b>Recommendation:</b> Follow the V Zone requirement for building elevation and open foundations. <b>Requirement:</b> Must meet current NFIP requirements concerning new construction in A Zones (see Fact Sheet Nos. 1.4, 3.1, 3.5, 8.1, 8.3).	<b>Recommendation:</b> Elevate bottom of lowest horizontal structural member to or above BFE. <b>Requirement:</b> Must meet current NFIP requirements concerning new construction in A Zones (see Fact Sheet Nos. 1.1, 3.1, 3.5, 8.1, 8.3)	<b>IBC:</b> 1612.1, 1612.2, 3403.2, 3404.2, 3405.2, 3405.3, 3405.4 <b>IRC:</b> R322.1.6, R322.3.1 <b>ASCE:</b> ASCE 24 Sec. 4.3, ASCE 7 Sec. 1.6 <b>Other:</b> FEMA P-758

## Coastal Construction Requirements and Recommendations

V Zone



Coastal A Zone



A Zone



Additional Resources

### Repairs, Remodeling, and Additions [See Fact Sheet No. 9.1]

<p><b>Lateral Additions That Constitute Substantial Improvement</b> NFIP 60.3(e)(5)</p>	<p><b>Requirement:</b> Both the addition and the existing building must meet current NFIP requirements concerning new construction in V Zones (see Fact Sheet Nos. 1.4, 1.5, 2.2, 3.1, 3.5, 8.1, 8.3).</p>	<p><b>Recommendation:</b> Follow V Zone requirement for building elevation and open foundations for the addition and the existing building.</p> <p><b>Requirement:</b> Only additions must meet current NFIP requirements concerning new construction in A Zones (see Fact Sheet Nos. 1.4, 1.5, 3.1, 3.5, 8.1, 8.3), provided the existing building is not subject to any work other than cutting an entrance in a common wall and connecting the existing building to the addition; if any other work is done to the existing building it too must meet current NFIP requirements for new construction in A Zones.</p>	<p><b>Recommendation:</b> Elevate bottom of lowest structural member of the addition to or above BFE (same for the existing building if it is elevated).</p> <p><b>Requirement:</b> Only additions must meet current NFIP requirements concerning new construction in A Zones (see Fact Sheet Nos. 1.4, 2.2, 3.1, 3.5, 8.1, 8.3), provided the existing building is not subject to any work other than cutting an entrance in a common wall and connecting the existing building to the addition; if any other work is done to the existing building it too must meet current NFIP requirements for new construction in A Zones.</p>	<p><b>IBC:</b> 3403.2, 3412.2.3, 3405.3 <b>IRC:</b> R322.3.1 <b>ASCE:</b> ASCE 7 Sec. 1.6 <b>Other:</b> FEMA TB #1, FEMA TB #5, FEMA TB #9, FEMA 550</p>
<p><b>Lateral Additions That Do Not Constitute Substantial Improvement</b> NFIP 60.3(e)(5) and 60.3(c)(5)</p>	<p><b>Recommendation:</b> Make addition compliant with current NFIP requirements for V Zone construction.</p> <p><b>Requirements:</b> Post-FIRM existing building – the addition must meet NFIP requirements in effect at time the building was originally constructed. Pre-FIRM existing building – NFIP requirements concerning new construction are not triggered (see Fact Sheet Nos. 1d, 1e, 2b, 3a, 3e, 8a, 8c)</p>	<p><b>Recommendation:</b> Follow V Zone requirement for building elevation and open foundations for the addition and the existing building.</p> <p><b>Requirements:</b> Post-FIRM existing building – the addition must meet NFIP requirements in effect at the time the building was originally constructed (see Fact Sheet Nos. 1d, 1e, 2b, 3a, 3e, 8a, 8c). Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered.</p>	<p><b>Recommendation:</b> Elevate bottom of lowest horizontal structural member to or above BFE (same for existing building if it is elevated) (see Fact Sheet No. 1d)</p> <p><b>Requirements:</b> Post-FIRM existing building – the addition must meet NFIP requirements in effect at the time the building was originally constructed (see Fact Sheet Nos. 1d, 1e, 2b, 3a, 3e, 8a, 8c). Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered.</p>	<p><b>BC:</b> 3403.2, 3412.2.3, 3405.3 <b>IRC:</b> R322.3.1 <b>ASCE:</b> ASCE 7 Sec. 1.6 <b>Other:</b> FEMA TB #1, FEMA TB #5, FEMA TB #9, FEMA 550</p>

Coastal Construction Requirements and Recommendations				
	V Zone 	Coastal A Zone 	A Zone 	Additional Resources
Repairs, Remodeling, and Additions [See Fact Sheet No. 9.1]				
<b>Vertical Additions That Constitute Substantial Improvement</b>  <b>NFIP 60.3(e)(5) and 60.3(c)(5)</b>	<b>Requirement:</b> Entire building must meet current NFIP requirements concerning new construction in V Zones (see Fact Sheet Nos. 1d, 1e, 2b, 3a, 3e, 8a, 8c).	<b>Recommendation:</b> Follow V Zone requirements for building elevation and open foundations.  <b>Requirement:</b> Entire building must meet current NFIP requirements concerning new construction in A Zones (see Fact Sheet Nos. 1d, 1e, 2b, 3a, 3e, 8a, 8c).	<b>Recommendation:</b> Elevate bottom of lowest horizontal structural member to or above BFE (same for existing building if it is elevated) (see Fact Sheet No. 1d).  <b>Requirements:</b> Post-FIRM existing building – the addition must meet NFIP requirements in effect at the time the building was originally constructed (see Fact Sheet Nos. 1d, 1e, 2b, 3a, 3e, 8a, 8c). Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered.	IBC: 3405.3.1, 3405.4, 3405.5 IRC: N/A ASCE: N/A
<b>Vertical Additions That Do Not Constitute Substantial Improvement</b>  <b>NFIP 60.3(e)(5) and 60.3(c)(5)</b>	<b>Recommendation:</b> Make the addition compliant with current NFIP requirements for V Zone construction.  <b>Requirements:</b> Post-FIRM existing building – the addition must meet NFIP requirements in effect at the time the building was originally constructed. Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered (see Fact Sheet Nos. 1.4, 1.5, 2.2, 3.1, 3.5, 8.1, 8.3).	<b>Recommendation:</b> Follow the V Zone requirement for building elevation and open foundations for the existing building.  <b>Requirements:</b> Post-FIRM existing building – the addition must meet NFIP requirements in effect at the time the building was originally constructed (see Fact Sheet Nos. 1.4, 1.5, 2.2, 3.1, 3.5, 8.1, 8.3). Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered.	<b>Recommendation:</b> Elevate bottom of lowest horizontal structural member at, or above, BFE (same for the existing building if it is elevated) (see Fact Sheet No. 1.4).  <b>Requirements:</b> Post-FIRM existing building – the addition must meet NFIP requirements in effect at the time the building was originally constructed (see Fact Sheet Nos. 1.4, 1.5, 2.2, 3.1, 3.5, 8.1, 8.3). Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered.	IBC: 3405.3.1, 3405.4, 3405.5 IRC: N/A ASCE: N/A

## Coastal Construction Requirements and Recommendations

V Zone



Coastal A Zone



A Zone



Additional Resources

### Repairs, Remodeling, and Additions [See Fact Sheet No. 9.1]

<p><b>Elevating on New Foundation</b></p> <p>NFIP 60.3(e)(5) and 60.3(c)(5)</p>	<p><b>Requirement:</b> New foundation must meet current NFIP requirements concerning new construction in V Zones; the building must be properly connected and anchored to the new foundation.</p> <p><b>Note:</b> Repairing a foundation that does not constitute a substantial improvement does not require current compliance, but compliance to the year of construction.</p>	<p><b>Recommendation:</b> Follow the V Zone requirement for building elevation and open foundations.</p> <p><b>Requirement:</b> New foundation must meet current NFIP requirements concerning new construction in A Zones; the building must be properly connected and anchored to the new foundation.</p>	<p><b>Recommendation:</b> Elevated bottom of lowest horizontal structural member to or above BFE (see Fact Sheet No. 1d).</p> <p><b>Requirement:</b> New foundation must meet current NFIP requirements concerning new construction in A Zones; the building must be properly connected and anchored to the new foundation.</p>	<p><b>IBC:</b> 1808.1, 1808.2, 1808.3, 1808.6, 1808.6.1</p> <p><b>IRC:</b> R401.1, R401.2, R401.3, R401.4, R401.4.1</p> <p><b>ASCE:</b> ASCE 24 Sec. 1.5.3, 1.5.3.1, 1.5.3.2, 1.5.3.3, ASCE 7 Sec. 1.6</p> <p><b>Other:</b> FEMA 550, FEMA TB #1, FEMA TB #5</p>
<p><b>Enclosures Below Buildings—When Enclosure Constitutes a Substantial Improvement</b></p> <p>NFIP 60.3(e)(5) and 60.3(c)(5)</p>	<p><b>Requirement:</b> Both the enclosure and the existing building must meet current NFIP requirements for new construction in V Zones (see Fact Sheets Nos. 1.4, 1.5, 2.2, 3.1, 8.1, 8.3).</p>	<p><b>Recommendation:</b> Follow the V Zone requirement for building elevation and open foundations.</p> <p><b>Requirement:</b> Both the enclosure and the existing building must meet current NFIP requirements for new construction in A Zones (see Fact Sheets Nos. 1.4, 1.5, 2.2, 3.1, 8.1, 8.3).</p>	<p><b>Recommendation:</b> Elevated bottom of lowest horizontal structural member at, or above, BFE (see Fact Sheet No. 1.4).</p> <p><b>Requirement:</b> Both the enclosure and the existing building must meet current NFIP requirements for new construction in A Zones (see Fact Sheets Nos. 1.4, 1.5, 2.2, 3.1, 8.1, 8.3).</p>	<p><b>IBC:</b> 1612.1, 3404.2</p> <p><b>IRC:</b> R322.1, R322.1.8, R322.3.5</p> <p><b>ASCE:</b> ASCE 24 Sec. 4.6, ASCE 7 Sec. 1.6</p> <p><b>Other:</b> FEMA TB #5, FEMA TB #9</p>
<p><b>Enclosures Below Buildings—When Enclosure Does Not Constitute a Substantial Improvement</b></p> <p>NFIP 60.3(e)(5) and 60.3(c)(5)</p>	<p><b>Recommendation:</b> Make the enclosure compliant with current NFIP requirements for new V Zone construction.</p> <p><b>Requirement:</b> Post-FIRM existing building – the enclosure must meet NFIP requirements in effect at the time the building was originally constructed. Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered (see Fact Sheet No. 8.1).</p>	<p><b>Recommendation:</b> Construct only breakaway enclosures; install flood openings in the enclosure; do not convert the enclosed space to habitable use.</p> <p><b>Requirement:</b> Post-FIRM existing building -- the enclosure must meet NFIP requirements in effect at the time the building was originally constructed. Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered (see Fact Sheet Nos. 3.5, 8.1).</p>	<p><b>Recommendation:</b> Install flood openings in the enclosure; do not convert the enclosed space to habitable use.</p> <p><b>Requirement:</b> Post-FIRM existing building – the enclosure must meet NFIP requirements in effect at the time the building was originally constructed. Pre-FIRM existing building -- NFIP requirements concerning new construction are not triggered (see Fact Sheet Nos. 3.5, 8.1).</p>	<p><b>IBC:</b> 1612.1, 3404.2</p> <p><b>IRC:</b> N/A</p> <p><b>ASCE:</b> ASCE 24 Sec. 4.6</p> <p><b>Other:</b> FEMA TB #1, FEMA TB #5, FEMA TB #9</p>

Coastal Construction Requirements and Recommendations

V Zone 	Coastal A Zone 	A Zone 	Additional Resources
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Repairs, Remodeling, and Additions [See Fact Sheet No. 9.1]

<p><b>Reconstruction of Destroyed or Razed Building</b> NFIP 60.3(e)(5) and 60.3(c)(5)</p>	<p><b>Requirement:</b> Where the entire building is destroyed, damaged, or purposefully demolished or razed, the replacement building must meet current NFIP requirements concerning new construction in V Zones, even if it is built on the foundation from the original building (see Fact Sheet Nos. 1.4, 1.5, 9.1).</p>	<p><b>Recommendation:</b> Follow the V Zone requirement for building elevation and open foundations.   <b>Requirement:</b> Where the entire building is destroyed, damaged, or purposefully demolished or razed, the replacement building must meet current NFIP requirements concerning new construction in A Zones, even if it is built on the foundation from the original building (see Fact Sheet Nos. 1.4, 9.1).</p>	<p><b>Requirement:</b> Where the entire building is destroyed, damaged, or purposefully demolished or razed, the replacement building must meet current NFIP requirements concerning new construction in A Zones, even if it is built on the foundation from the original building (see Fact Sheet Nos. 1.4, 9.1).</p>	<p><b>IBC:</b> 1810.1.2, 105.1, K103.1  <b>IRC:</b> R105.1, AJ501.3, AJ501.4, AJ501.5.1, AJ501.5, AJ501.5.1, AJ501.5.2, AJ501.5.3, AJ501.5.3.1, AJ501.5.3.2, AJ501.5.3.3, AJ501.5.3.4 AJ501.5.3.5, AJ501.6, AJ501.7, AJ501.8, AJ501.8.1, AJ501.8.2, AJ501.8.3  <b>ASCE:</b> N/A  <b>Other:</b> FEMA 550</p>
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<p><b>Moving Existing Building</b> NFIP 60.3(e)(5) and 60.3(c)(5)</p>	<p><b>Requirement:</b> Where the existing building is moved to new location or site, the relocated building must meet current NFIP requirements concerning construction in V Zones (see Fact Sheet Nos. 1.4, 1.5, 9.1).</p>	<p><b>Recommendation:</b> Follow the V Zone requirement for building elevation and open foundations.   <b>Requirement:</b> Where the existing building is moved to new location or site, the relocated building must meet current NFIP requirements concerning construction in A Zones (see Fact Sheet Nos. 1.4, 9.1).</p>	<p><b>Recommendation:</b> Elevate bottom of lowest horizontal structural member at, or above, BFE (see Fact Sheet No. 1.4).   <b>Requirement:</b> Where the existing building is moved to new location or site, the relocated building must meet current NFIP requirements concerning construction in A Zones (see Fact Sheet Nos. 1.4, 9.1).</p>	<p><b>IBC:</b> 3410.1  <b>IRC:</b> AE102.6  <b>ASCE:</b> ASCE 7 Sec. 1.6  <b>Other:</b> FEMA 550</p>
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Manufactured Housing

<p><b>General</b></p>				<p><b>IRC:</b> R322.1.9, App. AE101  <b>ASCE:</b> Not Applicable  <b>Other:</b> FEMA 85</p>
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