

Residential (1 & 2 Family Dwellings) Flood Design Review Checklist

City of Charleston, SC

Construction Document Requirements	Building & Reference Codes	City Code of Ordinance	Comments/Requirements
Site Plan	2021 SCRC §R106.2 & §R322.2		<ul style="list-style-type: none"> Provide a site plan clearly indicating building/structure boundaries and all flood zones according to the applicable FIRM at time of apply for the building permit(s). For further guidance, refer to Zoning Site Plan Guidance.
General Notes	2021 SCRC §R322.2.10 & §R109.1.6.1		<ul style="list-style-type: none"> Provide FIRM effective date and panel information including all flood zones - if applicable LOMA/LOMR information. FIRM information can be located via FEMA's Map Service Center. Provide applicable South Carolina building codes. Provide note acknowledging an Under Construction Elevation Certificate and a Finished Construction Elevation Certificate are required to be submitted to the City to confirm compliance during construction.
Building Elevations	2021 SCRC §R322.1.4 & §R322.1.5	27-117 (1)(2)	<ul style="list-style-type: none"> On building elevations, clearly indicate the building/structure BFE, DFE, and FFE. On building elevations, clearly indicate vertical datum. Refer to the City's Flood Design Compliance Matrix for applicable DFE. Please note, building basements (enclosures with subgrade floor on all sides) are considered the lowest floor for compliance. Refer to FEMA's Lowest Floor Guide.
Mechanical, Electrical, Plumbing, and Fuel-gas (MEPG)	2021 SCRC §R322.1.6 & §R322.1.7	27-116(a)(2)	<ul style="list-style-type: none"> On MEPG plans, clearly indicate machinery and equipment (including HVAC ductwork) servicing the building is located at or above DFE. Elevators per 2014 ASCE 24 Chapter 7.5 For further guidance, refer to FEMA P-348.
Building Materials below DFE	2021 SCRC §R322.1.8	27-116(a)2	<ul style="list-style-type: none"> Building materials below DFE are required to be water/flood resistant. Provide note acknowledging materials below DFE will be water/flood resistant. For further guidance, refer to FEMA Technical Bulletin 2.
Permitted uses below DFE	2021 SCRC §R322.2.2	27-117(3)(b) 27-116	<ul style="list-style-type: none"> Building areas below DFE are only permitted to be used for storage, vehicle parking, and building access (occupant entries and exits). Non-residential commercial occupied areas below DFE, provided areas are protected using dry floodproofing. Residential dwellings, supporting systems, and ancillary spaces in mixed-use commercial buildings are <u>prohibited</u> below DFE. Plans shall indicate non-residential occupancies and uses of enclosures below DFE and identify the type of floodproofing system(s) for each enclosure. Elevators per 2014 ASCE 24 Chapter 7.5
Enclosures below DFE	2021 SCRC §R322.1.2 & §R322.2	27-117 (3)	<ul style="list-style-type: none"> Dry floodproofing is prohibited in residential buildings. Wet floodproofing allows the automatic entry and exit of floodwater using compliant flood openings. Compliant flood openings shall be installed on at least two (2) different sides of the enclosure, no more than 1ft above grade, and provide a minimum of 1 sq.in. of net opening area per 1 sq.ft. of enclosure space. Refer to FEMA Technical Bulletin 1. Plans shall identify locations of flood openings. Structural systems shall be designed to resist flotation, collapse, or lateral movement due to flood loads. Elevators per 2014 ASCE 24 Chapter 7.5

¹City of Charleston Code of Ordinance §27-116 and 117, Ratification Number 2020-032

²2021 South Carolina Residential Code §R322.1.6 and 2018 South Carolina Existing Building Code §503.2

V-Zone Certifications (if applicable)	2021 SCRC §R322.3	27-117 (6)	<ul style="list-style-type: none"> Plans shall indicate if the building/structure is in the V- or Coastal A-Zone (high hazard flood area with wave action). Provide pre-construction V-Zone Certificates (design, breakaway walls), required for plan review prior to building permit issuance. Provide as-built V-Zone Certificates (design, breakaway walls), required at building final inspection, prior to building permit completion and issuing the certificate of construction completion. Building/structure lowest horizontal structural member shall be at or above DFE. Plans shall indicate all building/structure enclosure walls below DFE are designed to breakaway. Building areas below DFE shall be free of obstructions, refer to FEMA Technical Bulletin 5, FEMA P-499. Buildings shall not be supported on structural fill. Landscaping fill and obstructions require engineering analysis to consider compaction, wave deflection, and wave run-up/ramping.
V-Zone Breakaway Wall Design Certification (if applicable)	2021 SCRC §R322.3	§27-117(6)	<ul style="list-style-type: none"> Plans shall indicate if the building/structure is in the V- or Coastal A-Zone (high hazard flood area with wave action). Plans shall indicate all building/structure enclosure walls below DFE are designed to breakaway. Provide pre-construction V-Zone Breakaway Wall Design Certificate, required for plan review prior to building permit issuance. Provide as-built V-Zone Breakaway Wall Design Certificate, required at building final inspection, prior to building permit completion and issuing the certificate of construction completion. Plans shall indicate all building/structure enclosure walls below DFE are designed to breakaway. MEPG systems are prohibited to be attached to breakaway walls
Unable to permit			<p>The City is unable to issue permits for projects including (but not limited to):</p> <ul style="list-style-type: none"> Projects in the OCRM critical line, wetlands/dunes, Coastal Barrier Resource Areas, Otherwise Protected Areas, or over water without state/federal permits Projects in the floodway Basements descending into fill Dry floodproofing is prohibited in all residential buildings.

Base Flood Elevation (BFE) - The elevation of the flood having a one (1) percent chance of being equaled or exceeded in any given year flood in reference to the applicable FIRM vertical datum. The BFE is found on Flood Insurance Rate Map (FIRM) – The official map of a community on which FEMA has delineated the Special Flood Hazard Area (SFHA)¹

Design Flood Elevation (DFE) – For the purposes relating to flood zone requirements, the Design Flood Elevation (DFE) equals the Base Flood Elevation (BFE) plus Freeboard. Freeboard means a factor of safety usually expressed in feet above a base flood level for purposes of floodplain management.¹

Mechanical, Electrical, Plumbing, Gas (MEPG) - Electrical systems, equipment and components; heating, ventilating, air-conditioning; plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall be located at or above the DFE. If replaced as part of a substantial improvement, electrical systems, equipment and components; heating, ventilating, air-conditioning and plumbing appliances and plumbing fixtures; duct systems; and other service equipment shall meet the requirements of current flood design requirements.²

Thank you for your assistance with maintaining our active participation in the National Flood Insurance Program and Community Rating System and efforts to build a more resilient City!

¹City of Charleston Code of Ordinance §27-116 and 117, Ratification Number 2020-032

²2021 South Carolina Residential Code §R322.1.6 and 2018 South Carolina Existing Building Code §503.2