

ARTICLE XII. - ENVIRONMENTAL IMPACTS AND NATURAL HAZARD STUDIES (EINHS) AND COASTAL HIGH HAZARD AREA (CHHA) DESIGNS^[8]

Sec. 7-371. - Requirement for EINHS.

Any applicant for a building permit whose development requires site plan approval in accordance with the zoning ordinance, including hotels, motels, condominiums, or planned multi-unit developments, and whose north-south property boundaries intersect the construction control line (CCL) in the Coastal High Hazard Area (CHHA) shall be required to prepare and submit an Environmental Impact and Natural Hazards Study (EINHS) for review a minimum of thirty (30) days prior to issuance of the building permit for which he is applying.

(Ord. No. 1217, § 1, 1-26-04)

Sec. 7-372. - Required contents of EINHS.

The EINHS submitted as above shall contain at a minimum the following:

- (1) Applicable information as required by Section 335-8-2-.08(d)2. of Division 8 of the Alabama Department of Environmental Management Administrative Code as follows:
 - a. Wave height study addressing the flood hazard and erosion potential at the project site using eroded beach profiles for pre and post developed conditions;
 - b. Location and delineation of the velocity zone;
 - c. Analysis of the project's potential to significantly increase the likelihood that damage will occur from floods, hurricanes, or storms.
- (2) Data and submittals for the above should include the following:
 - a. The person or entity on whose behalf the EINHS is being submitted shall be identified, as well as design team members known at the time of submittal; i.e., project architect, structural engineer, site engineer, etc.
 - b. A "vicinity" map shall be supplemented by a site "location" map. Adequate resolution of the project location is required.
 - c. A current site survey of existing conditions only shall be submitted as a separate exhibit. Any armoring, seawalls, buildings, decks or other existing site improvements, etc., shall be known and described in addition to current beach/dune topography and other spot elevations or contours typifying the upland landward of the CCL and southward of Highway 182. The approximate mean high water line (MHWL) and the 0.0 foot contour shall be labeled. The corners of pools, buildings, seawalls, etc., on abutting properties shall be noted.
 - d. A site improvement plan (without the depiction of existing structures) shall be submitted. It shall show all proposed site construction (including changes in grade) between the MHWL and Highway 182. More than one (1) sheet may be required. All FEMA Flood Zones (and elevations) shall be accurately depicted. If relevant, a demolition plan should be provided indicating what development is to be removed and what is to remain.
 - e. Sufficient cross-sectional drawings of the structure(s) (to be constructed) shall be provided, including at a minimum, the ground and first two (2) floors. For major structures, the sections shall specify the elevation of the lowest supporting structural members in the shore parallel direction and pertinent elevation for the first habitable floor, parking elevations and volumes and location of excavation or fill, etc. The building support system shall be defined on the schematic cross-sections. Any breakaway walls,

shear walls, proposed pile cap elevations, grade berms, pool, dunes, decks, etc. in proximity to the CCL shall likewise be graphically defined. A wave model shall be run for a representative site cross-section utilizing topographic and hydrographic survey data representing the beach width which existed prior to the 2001 beach fill/nourishment project. Sites exceeding one thousand (1000) feet in width shall necessitate that two (2) sections be modeled. The city's coastal engineering consultant will provide pre-beach fill survey data upon request.

- f. The erosion analysis of the pre-nourishment beach profile(s) shall be based upon the numerical/computer model SBEACH. The city may, however, consider the utilization of a model which predicts levels of 100-year storm erosion and wave height greater than SBEACH. The specified onshore surge level (with set up) shall be +11.3 feet as referenced from the National Geodetic Vertical Datum (NGVD). Depth limited waves across the site shall be predicted based upon the co-existence of the peak surge and the minimum grade elevation as eroded by the 100-year storm. Required calibration coefficients for the SBEACH model are represented in Exhibit A [of Ordinance No. 1217, incorporated herein by reference]. The erosional effects of abutting seawalls on immediately adjacent properties shall be predicted.
- g. Each project specified wave height study report submitted to the city for review and approval shall acknowledge the fact that the shoreline (where improved by beach nourishment) is at an artificially maintained width and elevation. The impacts of twenty, fifty, and one hundred-year frequency storm events (at a minimum) shall be evaluated for consideration by the owner as well as the design professionals responsible for the implementation of the subject development (i.e., architect, structural engineer, site engineer, etc.).
- h. The wave height study report shall identify and recommend for consideration the site-specific design criteria for at least a statistically determined 100-year storm with parameters as defined by Exhibit A [of Ordinance No. 1217, incorporated herein by reference]. The design criteria for the project shall include, but not necessarily be limited to: hydrodynamic loadings to be evaluated concurrently with maximum wind loadings required by the code; additional localized scour due to the presence of structural components; horizontal and uplift forces resulting from wave impact; elevations of the soil surface to be utilized for the calculation of bearing capacities and foundation design, the need to minimize the formation of destructive hydrodynamic loadings, etc. The potential effects of swimming pools, or pool shells on littoral processes or adjacent properties during and after the one hundred-year storm shall be addressed, when relevant.

(Ord. No. 1217, § 2, 1-26-04)

Sec. 7-373. - Conformance with CHHA design criteria.

Designs for all new hotels, motels, condominiums, and other multi-unit structures to be constructed in the Coastal High Hazard Areas shall conform to the following design criteria:

- (1) The tops of pile caps and all other grade level structural members which lie in a shore parallel direction shall be constructed below the predicted limit of erosion associated with the one hundred-year storm. The maximum depth of erosion shall be as determined by SBEACH. The effects of localized scour at/or adjacent to piles or columns shall likewise be considered by the design architect or structural engineer. In no event shall the top of pile cap elevation exceed +3 feet NGVD.
- (2) The elevation of the lowest above grade supporting structural member (LSSM) in the shore parallel direction shall be at, or above the maximum wave crest elevation associated with the 100-year storm. Wave crest determination shall consider the simultaneous occurrence of a depth-limited wave at peak surge with the

maximum eroded graded as predicted by SBEACH. In no event shall the elevation be lower than one (1) foot above the base flood elevation required by FEMA. Only pre-beach fill/nourishment topography shall be analyzed for purposes of this computation.

- (3) Structural designs shall consider all applicable hydrostatic loads. Habitable major structures shall be designed in consideration of the hydrostatic loads, which would be expected under the conditions of maximum inundation associated with the 100-year storm event. Calculations for hydrostatic loads shall consider the maximum water pressure resulting from a fully peaked, breaking wave superimposed on the design storm surge with dynamic wave setup. Both free and confined hydrostatic loads shall be considered. Hydrostatic loads, which are confined, shall be determined using the maximum elevation to which the confined water would freely rise if unconfined. Vertical hydrostatic loads shall be considered as forces acting both vertically downward and upward on horizontal or inclined surfaces of major structures (i.e., floors, roofs, and walls). Lateral hydrostatic loads shall be considered as forces acting horizontally above and below grade on vertical or inclined surfaces of major structures. Hydrostatic loads on irregular or curving geometric surfaces may be determined in consideration of separate vertical and horizontal components acting simultaneously under the distribution of the hydrostatic pressures.
- (4) Structural designs shall consider all applicable hydrodynamic loads. Habitable major structures shall be designed in consideration of the hydrodynamic loads, which would be expected under the conditions of a one hundred-year storm event. Calculations for hydrodynamic loads shall consider the maximum water pressures resulting from the motion of the water mass associated with a one hundred-year storm event. Full intensity loading shall be applied on all structural surfaces above the design grade, which would affect the flow velocities.
- (5) Pile foundations for habitable major structures shall be designed to withstand all reasonable anticipated erosion, scour, and loads resulting from a 100-year storm including wind, wave, hydrostatic, and hydrodynamic forces acting simultaneously with typical structure (live and dead) loads.
- (6) Applicants for site plan approval shall provide written certification from one (1) or more registered design professionals certifying that the above standards have been met in the building design process.

(Ord. No. 1217, § 3, 1-26-04)

Secs. 7-374—7-400. - Reserved.