Uniform Resilient Shoreline Protection
Model Ordinance Template

ARTICLE _____. – REGIONAL RESILIENCY STANDARDS FOR TIDAL FLOOD BARRIERS, LIVING SHORELINES, AND NATURAL AND NATURE-BASED SHORELINE FEATURES

Adopted by the _____ [ELECTED BODY] on _____, 202_ into the _____Code of Ordinances (Code), Article ____ within Chapter __ serves as a model code for adoption of regionally consistent minimum standards and a basis for tidal flood resilience and shoreline protection across the community.

Sec. __-01. Purpose and intent.
The purpose of this article is to ensure that local shorelines are resilient to changing sea levels and tidally influenced flooding through 2070 to provide community flood protection benefits and ensure the ecological integrity of coastal habitats and shorelines on bay waters and riverine systems. This includes establishing a consistent minimum elevation and design criteria for tidal flood barriers (which include, but are not limited to, banks, berms, green-grey infrastructure, seawalls, seawall caps, natural and nature-based features (NNBFs), upland stem walls, or other infrastructure) that impede tidal waters from flowing onto a subject and adjacent property or public right-of-way, and located within or along a tidally influenced area that will:

(a) Provide a standard for tidal flood barriers that serve as a mitigation strategy for tidal flooding, by accounting for water levels predicted under combined conditions of sea level rise and high tides, through the year 2070; and

(b) Ensure new shoreline protection structures and major shoreline modifications are designed for use as tidal flood barriers.

(c) Facilitate the construction of living shorelines and NNBFs, where appropriate, that can provide defense against tidal flooding, enhance water quality and improve natural resource benefits.

(d) Establish a policy for protecting and preserving natural shorelines, promoting living and hybrid shorelines and defining appropriate locations and land-use types for implementing hardened structures.

Sec. __-02. Applicability.
This article applies to 1) all new tidal flood barriers, 2) the replacement, substantial repair or substantial rehabilitation of shorelines and shoreline structures, and 3) the installation of any fixed infrastructure attached to tidal flood barriers (such as mooring structures). This article is not applicable to oceanfront beaches, passes, inlets or shorelines seaward of the Coastal Construction Control Line.

Sec. __-03. Definitions.
For the purposes of this article, the following terms, phrases, words, and their derivation shall have the meanings given herein, except when the context clearly indicates a different meaning. In the interpretation and application of this article, the definitions provided for herein shall control over definitions that may be included in other documents or manuals, including, but not limited to, the Florida Building Code. Words used in the present tense include the future tense, words in the plural number include the singular number, and words in the singular number include the plural number. The word “shall” is mandatory and the word "may" is permissive.

Appurtenant Structure includes boathouses, sheds, gazebos, detached apartments, and pool houses on the same parcel as the principal property.
Bank means the level space separating a waterway from an inland area, often sloped, elevated and constructed of compacted soil.

Berm an earthen mound designed with impermeability to resist the flow of tidal waters through it to an adjacent property or public right-of-way.

Bulkhead a vertical or near-vertical, substantially impermeable structure that provides shoreline protection from waves while retaining upland soils.

Breakwater a structure constructed from rip rap, armor stone or precast concrete units that has a top elevation at or above the Mean High Water Line, with a specified slope and linear geometry, that is placed offshore for the purpose of dissipating wave energy before reaching the shoreline.

Cap means the top of a seawall which is usually formed and poured with concrete and rebar.

Crest means the highest portion of a shoreline feature.

Datum (vertical) means a base elevation used as a reference from which to reckon heights or depths.

Escarpment an area of the shoreline where the elevation changes suddenly. Escarpments are usually caused by erosion and refers to a steep slope (greater than 2:1) and greater than 18 inches in height.

Erosion the process of losing soil to wind, water, through natural processes or anthropogenic means.

Fetch the distance of open water over which wind blows or waves propagate unobstructed.

Grade (Slope, incline, gradient, pitch) - a physical feature of a landform which is described by the tangent of the angle the surface makes to horizontal. Typically described by the ratio of “rise over run” or vertical to horizontal distance.

Green-grey infrastructure or *green-grey materials* a combination of engineered and natural elements that provide environmental qualities, ecosystem value and protective services.

High Tide Flooding refers to king tides or exceptional high tides which occur seasonally around a new or full moon when the Moon and Sun are at their perigee (closest point to Earth).

Living shorelines, a suite of shoreline protection techniques that incorporate habitat restoration alone or in combination with some type of built infrastructure to provide coastal protective services. Living shorelines use native vegetation alone or in conjunction with low sills, encompassing riprap, oyster bag arrays, in front of low elevation Seawalls or Bulkheads to stabilize the shoreline.

Mean High Water Line the average of the high tide water levels over a 19-year time period (tidal epoch). These water levels vary based on the area of tidal influence, the distance from a pass or inlet or distance upstream from the mouth of a river.

Mooring structure a boat dock, slip, davit, hoist, lift, floating vessel platform, mooring pile, or similar structure attached to land or to a seawall, to which a vessel can be secured by ropes or cables.

North American Vertical Datum (NAVD 88) means the vertical control for datum of orthometric height established for vertical control surveying in the United States of America based upon the General Adjustment of the North American Datum of 1988. The National Geodetic Survey (NGS) is working on replacing NAVD 88 with plans to release the new datums in 2022.

Overtopping water levels or waves that are above the crest height of a shoreline treatment or seawall.

Natural and Nature-Based Features (NNBFs) are landscape features that are used to provide engineering functions relevant to flood risk management, while producing additional economic, environmental, and/or social benefits. Examples include beaches and dunes; vegetated environments such as salt marshes, freshwater wetlands and fluvial flood plains, and seagrass beds; coral and oyster reefs, barrier islands and others. NNBFs may occur naturally or be engineered, constructed and/or restored to mimic natural conditions.

Public interest determination an analysis that balances criteria for a determination on whether a seawall/bulkhead tidal flood barrier project is not contrary to the public interest.

Public nuisance a condition injurious to the public health or safety of the community or a neighborhood, or injurious to any considerable number of persons, or a condition that obstructs the free passage or use, in the customary manner, of any public right-of-way or adversely impacts the operation of public infrastructure.

Revetments structures usually made of large, loose, irregularly shaped stone or other material such as limerock or clean concrete rubble and have a specified slope on the waterward face. Revetments are constructed directly on the shoreline on or around the Mean High Water Line.

Rip Rap/Armor Stone generally rounded, limestone or granite that is placed on a slope to interlock and dissipate wave energy. Rip rap is effective at retaining sediment when used in conjunction with geotextile fabric.

Sea level rise projections the projected rise in water level for the Gulf of Mexico without the influence of a storm. Sea level rise projections are defined by the State of Florida in Section 380.093, F.S. to include National Oceanic and Atmospheric Administration 2017 tech report scenarios for Intermediate Low and Intermediate High for 2040 and 2070. Sea level rise projections will be updated approximately every five (5) years, based on updated information produced by the National Oceanic and Atmospheric Administration, the National Climate Assessment, the Florida Flood Hub and other appropriate sources predicting future flood risk.

Seawall a vertical or near-vertical, substantially impermeable structure typically made of concrete, vinyl or steel, that provides shoreline protection from waves while retaining upland soils. The elevation of the top of a seawall must comply with the current minimum finished elevation requirements in the Code as set by the Department of _____ [insert local government building department here] to ensure protection of adjacent property, public right-of-way or other public infrastructure from flooding associated with currently realized and expected future sea level rise.

Seawall Enhancement Project work performed in conjunction with an existing seawall/bulkhead which cannot be removed due to requirements of the immediately adjacent upland infrastructure. Enhancement projects improve water quality, increase soil retention, provide habitat and reduce wave energy impacts to the seawall. Examples of enhancements include installing vegetation, planter tubes and riprap at the wall base to prevent scour.

Seawall height standards the height of seawall structures as prescribed in this Article or by a local building code represented in NAVD 88 or a subsequent vertical datum. Seawall height standards shall incorporate sea level rise projections, seasonal tidal fluctuations and other factors influencing water levels that should be considered for protecting shorelines and property from future flood risk by the year 2070. The elevation of the top of a seawall, bulkhead cap or other protection must comply with the current minimum finished elevation of 5.0' NAVD 88 by the City/County to ensure protection of adjacent property, public right-of-way or other public infrastructure from flooding associated with currently realized and expected future sea level rise.

Shoreline means a tidally influenced area where land meets water.

Shoreline Overlay District means an area that is established including tidally influenced areas to preserve and enhance the environmental qualities of surface waters and the natural and economic values of shoreline areas within _____, to provide for the efficient and beneficial utilization of those waters and shoreline areas, and to protect the public health, safety and welfare.

Shoreline modification structures or actions that permanently change the physical configuration or quality of the shoreline, particularly at the point where upland areas and tidal waters meet.

Shoreline type the state of the shoreline in terms of environmental or structural elements that presently exist or could exist in the future at that tidally influenced area.

Sill - a low-elevation, shore-parallel structure constructed of precast concrete units with proper pH balance, riprap, oyster bags, oyster domes, or similar material on the waterward side of a created tidal wetland fringe marsh. A sill is typically constructed below the Mean High Water Line.

Storm surge the abnormal rise in the water elevation caused by a combination of effects from a storm including the atmospheric pressure changes, wind effects, the Earth's rotation, shallow water depth and rainfall.

Substantial modification, repair or *substantial rehabilitation* means:
(a) Any modification to the shoreline or a shoreline structure along more than fifty percent (50%) of the length of the property's shoreline; or
(b) Any modification, alteration, or installation of an appurtenant structure that exceeds fifty percent (50%) of the replacement cost of the existing tidal flood barrier along the shoreline.

Substantially impermeable means any shoreline protection constructed, repaired, or reconstructed pursuant to this Section, in a manner that prevents groundwater on the landward side of the structure from being affected by tidal waters on the seaward side of the wall.

Tidal datum a standard elevation defined by measurement of a certain phase of the tide over long time periods. Tidal datums are used as references to measure local water levels and should not be extended

into areas having differing oceanographic characteristics without substantiating measurements. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. Tidal datums are also the basis for establishing privately owned land, state owned land, territorial sea, exclusive economic zone, and high seas boundaries.

Tidal flood barrier means any structure or shoreline feature including, but not limited to, banks, berms, green-grey infrastructure, seawalls, seawall caps, NNBFs, upland stem walls, or other infrastructure that impedes tidal waters from flowing onto a subject and adjacent property or public right-of-way, and located within or along a tidally influenced area.

Tidal waters mean any water that alternately rises and falls in a predictable and measurable rhythm or cycle due to the gravitational attraction of the moon and sun, including seasonal tide events such as King Tides. Extreme tidal elevation changes caused by a storm event (i.e. storm surge) are not to be used as a determining factor of whether or not an existing shoreline protection structure is in violation of the _____'s maintenance requirements.

Tidally influenced area means the real property adjacent to, or affected by, a body of water with water level changes in response to the daily tide.

Toe scour – loss of soil or erosion at the outside toe base of a seawall, breakwater or revetment due to wave action, overflowing flood waters or currents. If the issue is not addressed the area of influence may grow to the point the foundational base is damaged or structural stability is affected.

Wetland a distinct ecosystem that is inundated by water, either permanently or seasonally, where oxygen-free processes prevail. The primary factor that distinguishes wetlands from other landforms or water bodies is the characteristic vegetation of aquatic plants, adapted to the unique hydric soil.

Sec. __-04. Minimum elevations for tidal flood barriers within tidally influenced areas.
(a) By 2040, all new or substantially repaired or substantially rehabilitated banks, berms, green-grey infrastructure, revetments, seawalls, seawall caps, upland stem walls, or other similar infrastructure shall be designed and constructed to perform as tidal flood barriers. Tidal flood barriers shall have a minimum elevation of five (5) feet NAVD 88 to account for projected sea level rise in combination with high tides by 2070. Heights specified by this Section shall be reviewed no less than every 5 years in conjunction with updates to the national sea level rise projections.

(b) Tidal flood barriers shall be improved, designed, and constructed to prevent current and future tidal waters from impacting adjacent property, public right-of-way, or other public infrastructure. Causing, suffering, or allowing the trespass of tidal waters onto adjacent property, public right-of-way or other public infrastructure is hereby declared a public nuisance and a citable offense requiring abatement. The owner shall demonstrate progress toward addressing the cited concern within sixty (60) days after receipt of the citation and complete the construction of an approved remedy no later than three hundred sixty-five (365) days after receipt of the citation. For projects that require specialized environmental analysis (e.g. benthic resources survey) that have defined seasonal limitations or for other just cause, the jurisdiction may approve extensions of the 60-day and 365-day timelines herein pursuant to this section in writing or as defined in_____ [other relevant existing Code Section for the JURISDICTION],

(c) All property owners must maintain any existing tidal flood barrier in good repair. A tidal flood barrier is presumed to be in disrepair if it allows tidal waters to flow unimpeded through or over the barrier and onto adjacent property or public right-of-way. Failure to maintain a tidal flood barrier in good repair shall be a citable offense. The owner of the tidal flood barrier shall demonstrate progress towards repairing the cited defect within ninety (90) days after receiving a citation and shall complete repairs within three hundred sixty-five (365) days after receipt of the citation. If the required repair or rehabilitation meets the substantial repair or substantial rehabilitation threshold, no later than three hundred sixty-five (365) days after receipt of the citation, the property owner shall design, obtain permits, cause to be constructed, and obtain final inspection approval of shoreline modifications that meet the minimum elevation and design requirements. The _____Department is permitted to extend these timelines upon good cause shown and reasonable progress towards compliance being diligently pursued by the property owner. Reasonable progress towards compliance may include, but is not limited to, hiring a licensed contractor, submitting a building permit application, diligently pursuing the issuance of a building permit with the applicable departmental disciplines charged with review of the same, and any acts evidencing progress towards the actual construction of the repaired or new shoreline modifications. Should the property owner adhere to the timeframes set forth in this Section (including any extensions granted by the _____Department) the property owner shall be entitled to a complete abatement of any fines accrued pursuant to this Section. The foregoing shall not be an exclusive remedy and the _____ [JURISDICTION] may at its option additionally institute a civil action to enforce the provisions in this chapter.

(d) Subject to the provisions of this Article, tidal flood barriers shall be designed to reach the required elevation as determined in (a) and constructed to adjoin immediately proximate or adjacent tidal flood barriers, to the extent practicable, to close gaps and prevent trespass of tidal water.

(e) All tidal flood barriers undergoing replacement, substantial repair or substantial rehabilitation shall be constructed along the property's entire shoreline.

(f) For tidal flood barriers, property owners are required to implement approaches and materials that enhance the biological value of traditional vertical seawalls and flood barriers with the incorporation of seawall enhancement design, living shoreline features, use of hybrid grey-green materials, and the use of biological forms, where practicable.

(g) This section shall not be construed to require the installation of a seawall where other shoreline protection measures serve as an equally effective tidal flood barrier.

(h) Tidal flood barriers capable of automatically being elevated in advance of high tides or other technologies to prevent tidal flooding are permissible if automation does not require daily human intervention. Permitting for such barriers shall include documented evidence signed and sealed by a licensed engineer that such structures shall not cause damage to natural resources including those located in uplands or nearshore waters or adverse impact from wave deflection, run-up , etc..

(i) All elevations shall be in the NAVD 88 datum.

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Sec. __-05. Shoreline overlay districts, shoreline structures and hierarchy of response.

(a) A Shoreline Overlay District shall be established identifying the types of tidal flood barriers that will be permitted based upon regionally uniform environmental conditions, engineering attributes and resilience factors. Shoreline Overlay Districts are comprised of shoreline uses that identify the shoreline type that presently exists within that specific geographic area. All property located within the Shoreline Overlay District is subject to both the standards applicable to that property as well as the requirements imposed by this Section.

(b) Purpose. The purpose of the Shoreline Overlay District is the protection of the _____ [JURISDICTION's] private property, public right-of-way, or other public infrastructure, natural shoreline and coastal resources. These features require protection because of their important flooding and erosion prevention functions, their scenic qualities, their value for public recreation and water access, and their value as wildlife habitat. The district establishes rules and standards for tidal flood barriers and shoreline types.

(c) Boundaries. The Shoreline Overlay District shall encompass all lands, including underwater lands, which are located within the following area: landward of the mean high water line of any tidal waters within the [JURISDICTION], to a line which is fifty (50) feet landward of said mean high water line. The overlay district shall consist of shoreline types as follows:

(1) Natural Shoreline: any shoreline that is designed to gradually slope to achieve the minimum elevation for tidal flood barriers and can support native wetland plants (marsh, mangroves, cypress trees) and native upland plants.

(2) Hybrid Shoreline: any shoreline that is designed to achieve the minimum elevation for tidal flood barriers that includes an engineered treatment such as a sill made from oyster domes, oyster bags, or rip rap, etc. to reduce wave energy and includes natural vegetation upland of the sill.

(3) Seawall/bulkhead (armored): a shoreline design with a vertical structure to achieve the minimum elevation for tidal flood barriers to high wave energy conditions and/or spatial limitations such as adjacent upland infrastructure (roads, buildings, pools).

(d) All shoreline types must connect to the adjacent natural or manmade feature of equal or higher elevation to provide a continuous protection to achieve the minimum elevation for tidal flood barriers.

(e) The Shoreline Overlay District map identifies the shoreline types at the individual parcel level, as well as a generalized representation of the extent of the JURISDICTION's shoreline overall. The Shoreline Overlay District map is an approximate representation of the extent and location of the Shoreline Overlay District and has not been formally delineated or surveyed. Additional site-specific evaluation may be required to confirm the location of the Shoreline Overlay District prior to undertaking any shoreline modification.

(f) Permitted, conditionally permitted or prohibited tidal flood barriers pursuant to existing shoreline conditions. The 3 shoreline types defined in this section shall be authorized for implementation according to the existing shoreline condition.

Tidal flood barriers shall be permitted, conditionally permitted or determined to be in the public interest as defined in Table ___-___.

Table ___-___.

Existing Shoreline Condition / Type	Future Permitted Tidal Flood Barriers	Future Conditionally Permitted Tidal Flood Barriers	Future Tidal Flood Barriers subject to the public interest determination
Natural	Living Shoreline	Sill with plants (if erosion exists)	Seawall/bulkhead (armored)
Hybrid	Sill and plants	Sill without plants	Seawall/bulkhead (armored)
Seawall/bulkhead (armored)	Sea wall with Enhancements (riprap and sediment tubes with plants)	Sea wall with riprap only	Seawall/bulkhead (armored) with no enhancements

(g) Public interest determination. Seawalls or bulkheads (armored) tidal flood barriers with or without enhancements shall be determined to be not contrary to the public interest. A public interest evaluation shall be undertaken that balances design of the seawall or bulkhead with or without enhancements considering future impacts such as sea level rise and tidal flooding with the benefits, costs, protection and potential adverse impact of the tidal flood barrier for its projected useful life of 50 years. The following criteria shall be considered and balanced in determining whether or not the seawall or bulkhead (armored) tidal flood barrier with or without enhancements is not contrary to the public interest.

1. Whether or not the seawall or bulkhead (armored) tidal flood barrier will adversely affect the public health, safety, or welfare or the property of others;
2. Whether or not the seawall or bulkhead (armored) tidal flood barrier will adversely affect the conservation of fish and wildlife, including endangered or threatened species, or their habitats;
3. Whether or not the seawall or bulkhead (armored) tidal flood barrier will adversely affect navigation or the flow of water or cause harmful erosion or shoaling;
4. Whether the seawall or bulkhead (armored) tidal flood barrier will adversely affect the fishing or recreational values or marine productivity in the vicinity of the activity;
5. Whether the seawall or bulkhead (armored) tidal flood barrier will be of a temporary or permanent nature (subparagraph 62-330.302(1)(a)5, F.A.C.);
6. Whether the seawall or bulkhead (armored) tidal flood barrier will adversely affect or will enhance significant historical and archaeological resources under the provisions of Section 267.061, F.S. (subparagraph 62-330.302(1)(a)5, F.A.C.);
7. The current condition and relative value of functions being performed by areas affected by the proposed seawall or bulkhead (armored) tidal flood barrier (subparagraph 62-330.302(1)(a)7, F.A.C.);
8. The condition of the waterway where the seawall or bulkhead (armored) tidal flood barrier will be located (width or open waterway, vegetation, etc.);
9. The current elevation of the subject and adjacent properties; and
10. The type of property served by the seawall or bulkhead (armored) tidal flood barrier (single family residential, multi-family residential, industrial, commercial, etc.).

Applicants shall submit materials to _____[JURISDICTION] staff to assist with the public interest evaluation for seawall or bulkhead (armored) tidal flood barrier projects. For further guidance interpreting 1-7 in the criteria above, consult Sections 10.2.3.1-10.2.3.7 of the Environmental Resource Permit Applicant's Handbook Volume 1, December 2, 2020, for the Department of Environmental Protection and all five water management districts, or its successor Handbook.[1]

(h) No shoreline modification shall be made unless consistent with this Section.

(i) A shoreline modification must be authorized in accordance with the Shoreline Overlay District, the underlying zoning and any other overlay district in which it is located. In the event of a conflict, the more restrictive regulation shall apply.

(j) Nonconforming shoreline types are those that were legally established or constructed prior to the adoption of Sec. _____. Nonconforming shoreline types shall be subject to the same requirements as nonconforming uses/structures in Sec. _____.

(k) Variances for limited relief relative to the shoreline types as permitted or conditionally permitted in Table ___-___ shall be considered pursuant to Sec. _____ when the requirements of this Code will create an unnecessary hardship, as distinguished from a mere inconvenience, where the requirements of this Code render the land difficult to use because of some rare and unique physical attribute of the property itself or some other factor unique to the property, such as the width of the adjoining water body, for which the variance is requested.

(l) Waivers or administrative adjustments shall be available consistent with Section ___-___. [*If no such section exists within the relevant Code, consider*: There are situations that require flexibility to technical standards, dimensional standards, design criteria, and/or specific use standards to respond to unique site conditions and/or existing conditions in the immediate vicinity. The waiver and administrative adjustment provisions are intended to allow an applicant to seek flexibility to certain code requirements and allow the _____ to administratively process and take action on said requests.]

Sec. __-06. Design and Construction of Natural Shorelines.

Natural shorelines are gradually sloped to achieve the minimum elevation for tidal flood barriers and can support native wetland plants (marsh, mangroves, cypress trees) and native upland plants. Natural shorelines shall consist of a gradual slope no steeper than 4:1 with a minimum top elevation of 5.0 feet NAVD88 coupled with native plants and could include a sill to address wave energy dissipation if necessary. Natural shorelines shall be kept in their current state if there are no erosional features. If there are ongoing erosional features, these can be addressed by implementing nature-based shoreline designs such as Living Shorelines, which could include a sill of natural material such as riprap, precast concrete units, oyster bags, or precast domes to provide protection from wave energy, but must include a naturally sloped shoreline with native plants to stabilize the shoreline itself. Natural shorelines that do not have an existing elevation of 5 feet NAVD88 shall also include the addition of an earthen or other type of berm to achieve the minimum elevation. Natural shorelines shall meet all applicable state and federal regulatory requirements and allow for the trimming of mangroves beyond a height of 6 feet, per the current FDEP mangrove trimming guidelines or those of an applicable deleted agency with that authority. A Living Shoreline may have its waterside face consist of plants and other natural elements that improve

[1] Environmental Resource Permit Applicant's Handbook Volume 1, December 2, 2020, for the Department of Environmental Protection and all five water management districts available at: https://www.sfwmd.gov/sites/default/files/documents/erp_swerp_manual.pdf

water quality, provide additional fish habitat, and foster increased biodiversity, provided that the landside interface of a Living Shoreline be substantially impermeable and constructed to a finished elevation that meets Federal and State permitting guidelines as applicable. The landside interface may be located anywhere on an existing property fronting the Living Shoreline, as long as it is constructed in a manner and location that ensures any habitable structures on that property are protected from flooding from tidal waters and it prevents flooding of adjacent properties and the public right-of-way.

Sec. __-07. Design and Construction of Hybrid Shorelines

Hybrid shorelines include an engineered treatments such as a sill to reduce wave energy and include natural vegetation upland of the sill. Hybrid shorelines shall include a minimum top elevation of 5.0 feet NAVD88 and remain in place with the addition of native plants, as appropriate. Engineered treatments such as a sill made from precast concrete units, oyster bags, or riprap, etc. shall be designed to reduce wave energy and should also include natural vegetation upland of the sill. Hybrid shorelines shall meet all applicable state and federal regulatory requirements and allow for the trimming of mangroves beyond a height of 6 feet, per the current FDEP mangrove trimming guidelines.

Sec. __-08. Design and Construction of all Seawalls/bulkheads (armored).

Seawall/bulkhead (armored) shorelines include an existing vertical structure that cannot be removed due to high wave energy conditions and/or spatial limitations such as adjacent upland infrastructure (roads, buildings, pools). Armored shorelines shall include a minimum top elevation of 5.0 feet NAVD88 and maximum elevation not to exceed X feet or X%. Armored shorelines in disrepair or not meeting the minimum height for tidal flood protection shall be replaced with natural treatments where feasible. If a natural shoreline is not possible, a hybrid shoreline design option should be assessed and implemented. For sites that cannot employ a natural shoreline, nor a hybrid shoreline, then seawall enhancements shall be employed which include some provision for riprap and planters for native wetland species. If there is sufficient space above the mean higher high water line to soften the bank to a 4:1 slope, or gentler slope, then the seawalls/bulkhead (armored) should be removed, and a hybrid shoreline implemented. All existing vertical seawalls shall require enhancements including, at a minimum, riprap placed at the toe of the seawalls/bulkhead (armored) shoreline. It is preferable that riprap extend up to the intertidal range to include embedded planted tubes that are planted with marsh or mangrove plants to provide habitat value. Seawall/bulkhead (armored) shorelines shall meet all applicable state and federal regulatory requirements and allow for the trimming of mangroves beyond a height of 6 feet, per the current FDEP mangrove trimming guidelines or those of an applicable deleted agency with that authority. Exemptions to enhancement requirements shall be addressed through the public interest determination process subject to a site-specific analysis. Seawall/bulkhead (armored) shorelines shall be designed to prevent harmful diversion of floodwaters or wave runup and wave reflection and prevent adverse impacts to adjacent property. Tidal flood barriers shall also be constructed, operated and maintained to prevent tidal waters from flowing through the barrier, while still allowing for the release of upland hydrostatic pressure.

Sec. __-9. Permits and authorizations for tidal flood barriers, living shorelines and NNBFs—Required and Hardships.

No tidal flood barriers, living shorelines and NNBFs shall be constructed, reconstructed or repaired until a permit authorizing such construction, reconstruction or repair has been obtained from the building department. No such permit shall be issued for any new construction or shoreline modification or repair to an existing shoreline modification or structure which is deemed, substandard by _____of the _____ department or not in compliance with design and construction standards. If a property owner, who is required to repair or replace a tidal flood barrier, living shoreline or NNBF due to

the existing structure being in disrepair or allowing tidal waters to flood the public right-of-way, public infrastructure and/or neighboring properties can demonstrate an extreme financial hardship related to the costs associated with such work, then the _____may consider such hardship on a case-by-case basis and elect to waive a portion of or all fees associated with the permitting for such construction taking into account the following criteria:

(a) The property owner's income as evidenced by prior years' income tax returns for as many years as requested by the _____; and

(b) The property owner's general ability to pay or finance the required shoreline modifications without causing an undue economic hardship.

Sec. __-10. - Same—Application.

(a) Permits required by this article shall be applied for either by the owner-builder or by a licensed contractor certified in a proper category and having a bona fide contract with the owner to perform such work. Application shall be made upon a suitable form provided by the _____ Department.

(b) For new construction or repairs amounting to $X,000.00 (TBD) or more in value, two copies of the certified/signed and sealed plans shall be submitted with the application, plans shall include the following information, at a minimum, except as to any item which may be waived in writing by the _____ department:

(1) A current (less than one (1) year old) certified/signed and sealed survey drawing of the property upon which the shoreline modification is to be made, referenced to the NAD 83 horizontal and NAVD88 vertical datums and showing sufficient topographic information to determine the impacts of the proposed shoreline modifications to the adjacent private and public lands. Other publicly available data such as LiDAR can be utilized to fulfill this requirement.

(2) A plan view drawing, showing the relation of the proposed shoreline modification to the site and to adjoining land or areas.

(3) Arrangement and structural details in the plan, section, and elevation views sufficiently detailed to serve as construction drawings.

(4) The type and character of the soil substrata which will bear the shoreline modification or structure. When required by the building department, core borings shall be taken to a depth six feet deeper than the proposed base of construction or to a depth below the deepest piling, and the findings of the same shall be made a part of the permit application.

(5) Soundings, pertinent elevations, and horizontal locations of the proposed structures shall be shown and referenced to the NAVD88 vertical datum and NAD 83 horizontal datums.

(6) Tidal flood barriers inclusive of living seawalls, living shorelines and NNBFs must be provided with specific purpose surveys certifying the alignment and elevation of the top of wall or bulkhead line with elevations spaced at a maximum of 25-ft intervals showing the highest and lowest elevations of the barrier and clearly identifying the location and elevation of the structure/barrier at each property corner. Elevations of adjacent properties and public rights-of-way must also be

provided to ensure consistency is provided between the proposed barrier with the surrounding lands.

(7) The name and address of the owner and property tax folio(s) of the property(ies) upon which the shoreline modification(s) is(are) to be made or constructed.

(8) A construction cost estimate of the proposed shoreline modification substantiated by a fully executed construction contract or validated and attested to by a licensed professional engineer.

(9) The signature and seal of the engineer designing the shoreline modifications.

(10) The engineer's design computations, when required by the _____ Department.

(c) For shoreline modifications addressing less than 25% of the length or surface area; less than $X,000.00. For construction or repairs less than $X,000.00 in value, no approvals required.

(1) A current (less than 1 year old) certified/signed and sealed survey sketch drawing of the property upon which the shoreline modification is to be made, referenced to the NAD 83 horizontal and NAVD88 vertical datums and showing sufficient topographic information to determine the impacts of the proposed shoreline modifications to the adjacent private and public lands. Other publicly available data such as LiDAR can be utilized to fulfill this requirement.

(2) A plot plan, showing the relation of the proposed shoreline modification to the site and to adjoining land or areas.

(3) The name and address of the owner of the property upon which the shoreline modification is to be made.

(4) Arrangement and structural details in the plan, section, and elevation views sufficiently detailed to serve as construction drawings.

(5) A cost estimate of the proposed shoreline modification substantiated by a fully executed construction contract or validated and attested to by a licensed professional engineer.

(6) The signature and seal of the engineer designing the shoreline modification(s)., when required by the _____ Department.

(7) The engineer's design computations, when required by the building department.

Sec. __-11. – Maintenance and operations of tidal flood barriers, living shorelines and NNBFs.
All property owners must maintain their tidal flood barriers, living shorelines and NNBFs in good repair to address general tidal flooding conditions from high tides and projected sea level rise, understanding that storm events are not general conditions. A tidal flood barrier is presumed to be in disrepair if it ~~is substantially impermeable and~~ allows for upland erosion, transfer of material through the tidal flood barrier/wall, or allows tidal waters to flow unimpeded over or through the barrier/wall beyond the intended design of the tidal flood barrier such that it adversely impacts ~~to~~ adjacent properties, ~~adversely impact~~ public infrastructure or the public right-of-way. Property owners with tidal flood barriers below the minimum required finished elevation, with permeable erosion barriers such as riprap, or a land/water

interface of another nature are prohibited from allowing tidal waters entering their property to flow onto adjacent properties, public infrastructure or public rights-of-way. Privately owned waterfront shoreline modifications shall be privately maintained, even though a portion of the shoreline modification may extend into publicly owned land. Failure by the owner to keep the above-mentioned shoreline modifications in a state of repair to address general tidal flooding conditions from high tides and sea level rise acceptable to the _____ department or failure to prevent tidal waters from flowing overland ~~leaving it substantially impermeable~~ or through the above-mentioned shoreline modifications beyond the intended design of the tidal flood barrier to adversely impact adjacent properties, ~~impact~~ public infrastructure or the public right-of-way shall be subject to enforcement as set forth in chapter _____, article ___ of the _____Code, entitled "Code enforcement," and may be brought for further proceedings before the code enforcement board.

Sec. __-12. Required disclosure in contracts for sale of real estate.

In any contract for the sale of real estate located in tidally influenced areas of _____ executed (date to be determined by Coalition) the seller shall include in the contract or a rider to the contract the following disclosure in not less than fourteen-point, capitalized, bold-faced type:

> THIS REAL ESTATE IS LOCATED IN A TIDALLY INFLUENCED AREA. THE OWNER MAY BE REQUIRED BY COUNTY OR MUNICIPAL ORDINANCE TO MEET MINIMUM TIDAL FLOOD BARRIER ELEVATION STANDARDS DURING CONSTRUCTION OR SUBSTANTIAL REPAIR OR SUBSTANTIAL REHABILITATION OF SEAWALLS, BANKS, BERMS, AND SIMILAR INFRASTRUCTURE OR WHEN REQUIRED TO ABATE NUISANCE FLOODING.