

## 7.1.2 RESILIENCE AND ADAPTATION STANDARDS

### 7.1.2.1 Purpose

This section describes regulations that are intended to promote adaptation to rising sea levels, storm surge, king tide and fair-weather flooding.

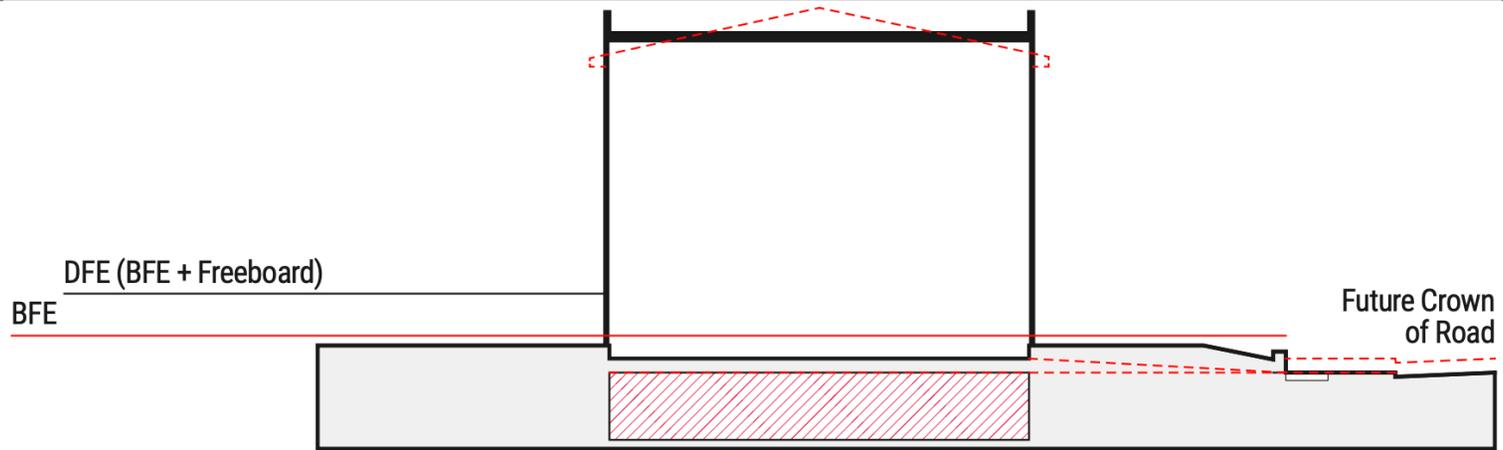
### 7.1.2.2 Resilience and Adaptation Standards for Buildings

#### a. *Purpose*

In order to ensure that buildings have a long life and ‘loose fit’ and so that they may be retrofitted to accommodate the raising of streets, certain dimensions can be established that will ease the process of retrofitting them. The lowest levels of a building bear the brunt of this need to be flexible enough for a changing grade over time. These lower levels can be divided into Subterranean, [Understory](#), and [First Habitable Level \(FHL\)](#) Standards. Furthermore, [First Habitable Level \(FHL\)](#) standards can be divided into strategies for residential FHLs and nonresidential FHLs.

LOWER LEVELS OF A BUILDING DEFINITION'S TABLE
SUBTERRANEAN LEVEL (SL)
Subterranean means that portion of a building or structure which is equal to or less than Grade. Subterranean levels shall only be permitted in the event that the space is purposed and designed as part of a stormwater management plan, including, but not limited to, stormwater collection and cisterns for reuse of captured water.

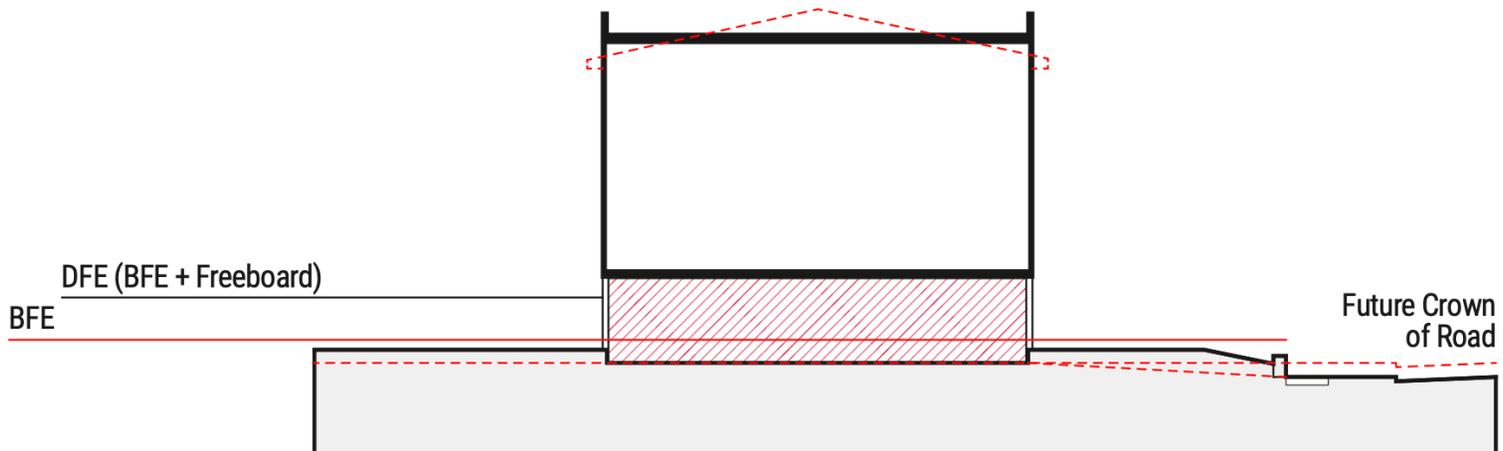
## LOWER LEVELS OF A BUILDING DEFINITION'S TABLE



## UNDERSTORY LEVEL (UL)

**Understorey** means the non-air-conditioned space(s) located below the **First Habitable Level (FHL)**. Notwithstanding the foregoing access to the **First Habitable Level (FHL)** may be air-conditioned.

The **Understorey** ground level should not be lower than the Future Crown of the Road for single-family residential structures and **Base Flood Elevation (BFE)** plus minimum **Freeboard** for multi-family residential structures.

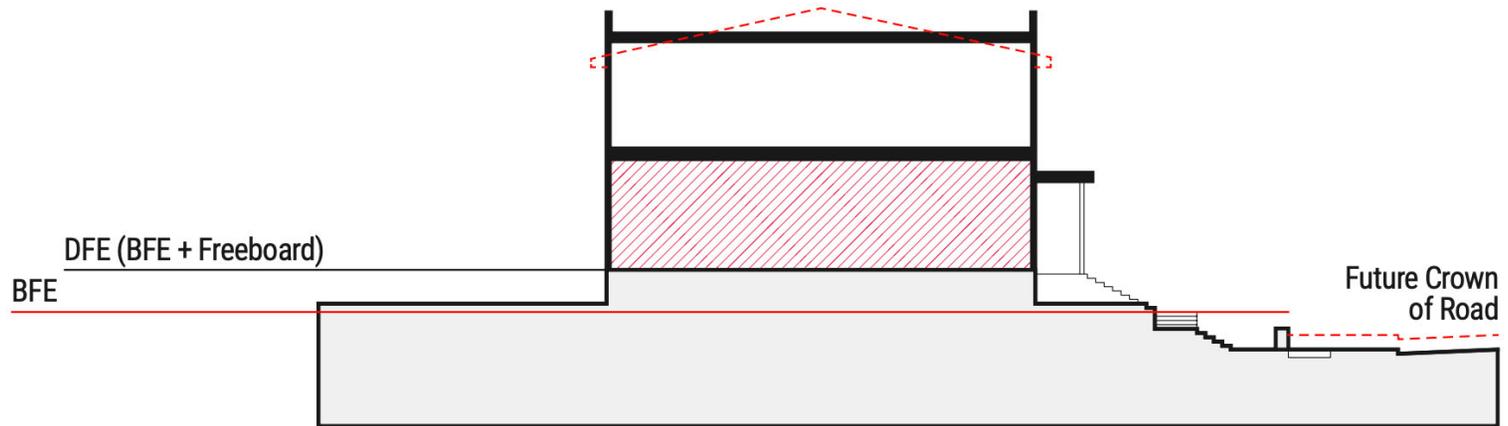


## RESIDENTIAL FIRST HABITABLE LEVEL (FHL) (NEW CONSTRUCTION)

## LOWER LEVELS OF A BUILDING DEFINITION'S TABLE

First Habitable Level above the Design Flood Elevation (DFE)

Design Flood Elevation (DFE) = BFE + Freeboard



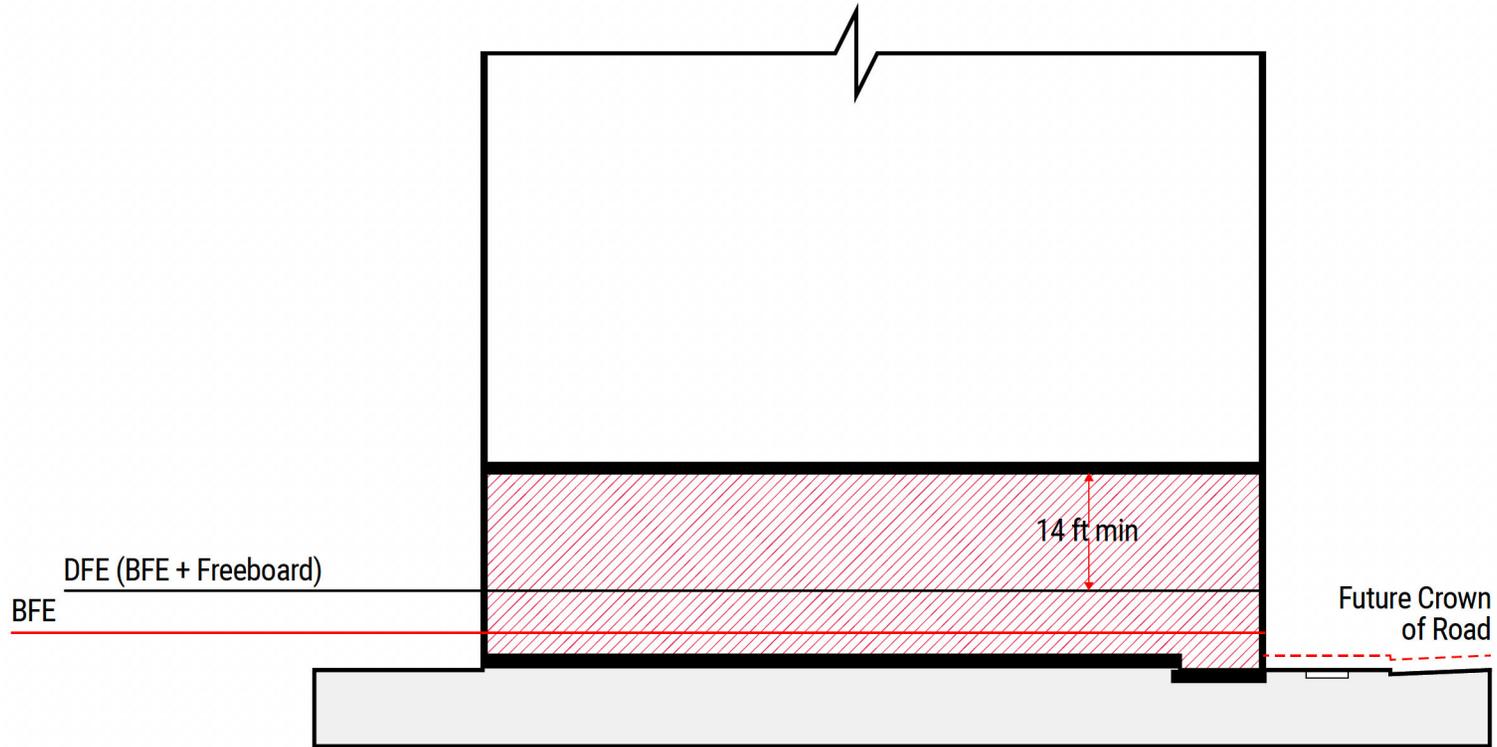
## NON-RESIDENTIAL FIRST HABITABLE LEVEL (FHL)

Non-Residential First Habitable Level (FHL)

First Habitable Level above the Future Crown of the Road (frontages of 150 feet or less) or

First Habitable Level above the Future Crown of the Road + 14 inches (frontages greater than 150 feet)

## LOWER LEVELS OF A BUILDING DEFINITION'S TABLE



### b. *Subterranean Level Standards for Buildings*

Subterranean levels shall only be permitted in the event that the space is purposed and designed as part of a stormwater management plan, including, but not limited to, stormwater collection, vaults and cisterns for reuse of captured water.

### c. *Understory Level Standards for Buildings*

1. The use of the **Understory** shall be allowed in RS Districts for non-habitable purposes and subject to section 7.2.2.3 b.6.

In RM Districts, in order to avoid the appearance of a dingbat, the following applies:

- A. Where a commercial **First Habitable Level** (FHL) is allowed, the **Understory Level** (UL) shall be screened by non-residential uses according to section 7.1.6
  - B. For a multifamily building the **Understory Level** (UL) below the **First Habitable Level** (FHL) shall be screened by the lobby and other features described in section 7.1.6.
2. New Construction. In RM Districts, when parking or amenity areas are provided at the **Understory Level** (UL) below the **First Habitable Level** (FHL), the following requirements shall apply:

- A. A minimum height of 12 feet shall be provided, as measured from **Base Flood Elevation** plus minimum **Freeboard** to the underside of the first floor slab. The design review board or historic preservation board, as applicable, may waive this height requirement by up to two feet, in accordance with the design review of **certificate of appropriateness** criteria, as applicable.
- B. All ceiling and sidewall conduits shall be internalized or designed in such a manner as to be part of the architectural language of the building in accordance with the design review or **certificate of appropriateness** criteria, as applicable.
- C. All parking and driveways shall substantially consist of permeable materials.
- D. Active outdoor spaces that promote walkability, social integration, and safety shall be provided at the ground level, in accordance with the design review or **certificate of appropriateness** criteria, as applicable.
- E. At least one stair shall be visible and accessible from the building's main lobby (whether interior or exterior), shall provide access to all upper floors, shall be substantially transparent at the ground level and shall be located before access to elevators from the main building lobby along the principal path of travel from the street. Such stair, if unable to meet minimum life-safety egress requirements, shall be in addition to all required egress stairs. Single-family detached houses are exempt from this requirement.

d. ***Residential First Habitable Level (FHL) Standards***

1. *New Construction*

- A. The floor of the **first habitable level** for residential uses shall be located no lower than the **Design Flood Elevation** (DFE). With the exception of **understory** homes in the RS districts, the **first habitable level** shall have a minimum floor-to-ceiling height of 12 feet in order to allow for the future retrofit and raising of the **first habitable level**, or if **Design Flood Elevation** (DFE) is adjusted upward in the future.
- B. For residential lobbies and enclosed stairwells that screen parking and that are also located below DFE, these shall have floodproofing for all facades below DFE extending 36 inches above DFE.

e. ***Non-residential First Habitable Level (FHL) Standards***

1. *Existing Structures*

Existing buildings with nonresidential uses on the ground floor that are repaired or rehabilitated, pursuant to section 2.12.7, by more than 50 percent (50%) of the building, as determined by the building official, shall be subject to the following standards:

- A. Where feasible, the ground floor shall be located at a minimum elevation of 1 foot above the highest sidewalk elevation adjacent to the frontage. Ramping and stairs from the sidewalk elevation to the ground floor elevation shall occur inside the property and shall not encroach into the public sidewalk
- B. Except where there are doors, facades shall have a knee wall with a minimum height of 2 feet, 6 inches above the sidewalk elevation. Such knee walls shall include any required flood barrier protection. The planning director or designee may waive this knee wall requirement if the applicant can substantiate that the proposed glass storefront system satisfies all applicable Florida Building Code requirements for flood barrier protection, or if the finished floor meets the minimum **freeboard** requirements of the city Code

- C. Where feasible, ground floors, wall systems, partitions, doors and finishes shall utilize waterflood damage resistant materials in accordance with all applicable requirements of the Florida Building Code, FEMA regulations, and American Society of Civil Engineer (ASCE) - Flood Resistant Design and Construction Standards, for a minimum of the first 2 feet and 6 inches above the floor elevation
- D. Flood panels for doorways shall be permanently stored adjacent to all doorways, except when in use
- E. Where implementation of the regulations in this section is unfeasible or incompatible with the environment and adjacent structures, they may be waived to the minimum extent necessary by the historic preservation board (HPB) or design review board (DRB), in accordance with the [certificate of appropriateness](#) review criteria or design review criteria, as applicable; however, an applicant may be required to implement alternative approaches for adequate mitigation of flooding.

f. *New Construction*

The nonresidential [First Habitable Level](#) (FHL) shall have a minimum floor-to-ceiling height of 14 feet above DFE in order to allow for the future retrofit and raising of the [first habitable level](#).

For lobbies and non-residential uses that screen parking and that are also located below DFE, these shall have floodproofing for all facades below DFE extending 36 inches above DFE.

**1. Short Frontage Standard**

The following regulations shall apply to new construction with nonresidential uses on the ground floor on frontages with a width of 150 feet or less:

A. *Sidewalk standards.* Where feasible, sidewalks shall be constructed as follows:

- I. Circulation zone. The sidewalk shall contain a "circulation zone" with a minimum dimension of 10 feet in width, pursuant to the following standards:
  - (1). The circulation zone shall be fully illuminated, consistent with the city's street and sidewalk lighting requirements and subject to the review and approval of the public works director.
  - (2). The design of the circulation zone shall be consistent with the city's public sidewalk requirements.
  - (3). The circulation zone may be constructed in areas of the public right-of-way and required yards that are in front of a building facade.
  - (4). The circulation zone shall remain free from obstructions created by landscaping, signage, utilities, and lighting fixtures.
  - (5). Pedestrians shall have 24-hour access to the circulation zone.
  - (6). The circulation zone shall include a minimum 5 foot wide "clear pedestrian path," free from obstructions, including, but not limited to, stairs, ramping, handrails, outdoor cafés, sidewalk cafés, and door swings. The clear pedestrian path shall be

delineated by in-ground markers that are flush with the path, including differing pavement tones, differing pavement type, or by another method approved by the planning director.

- (7). An easement providing for perpetual public access shall be provided to the city for portions of the circulation zone that are constructed within the setback area on private property.

II. Landscape area. A "landscape area" between the circulation zone and the adjacent automobile parking or vehicle travel lanes shall be provided as follows:

- (1). The landscape area shall be predominantly landscaped, except where there are access paths, public transit stops, valet parking stands, lighting fixtures, pedestrian crossings, or driveways.
- (2). The landscape area shall have a minimum width of 5 feet.
- (3). Street trees shall be planted within the landscape area.
- (4). Where the landscape area is adjacent to on-street parking, access paths shall be provided between parking spaces so that each parking space has access to the circulation zone generally from either the front end or rear end of the vehicle. Access paths shall be no wider than 36 inches.
- (5). Street and pedestrian lighting fixtures shall be located within the landscape area.
- (6). The circulation zone may encroach into the landscape area in order to meet adjacent sidewalks and street crossings.

B. *Setbacks.* The building's ground floor façade, parking areas, and loading areas shall be set back a minimum of 15 feet from the back of curb to provide sufficient area to accommodate the required circulation zone and landscape area in cases where the public right-of-way is not sufficiently wide. If the underlying zoning regulations require a larger setback, the larger setback shall be required.

C. *Ground floor elevation.* The ground floor shall be located no lower than the future [crown of road](#) elevation.

D. *Ramping and stairs.* Ramping and stairs from the sidewalk elevation to 14 inches below the ground floor elevation may occur on the exterior of the building and encroach into the circulation zone only if within 5 feet of the façade of the building. Ramping and stairs shall not encroach into the clear pedestrian path. Ramping above 14 inches below the ground floor elevation shall occur within the property and shall not encroach into the public sidewalk or setback areas.

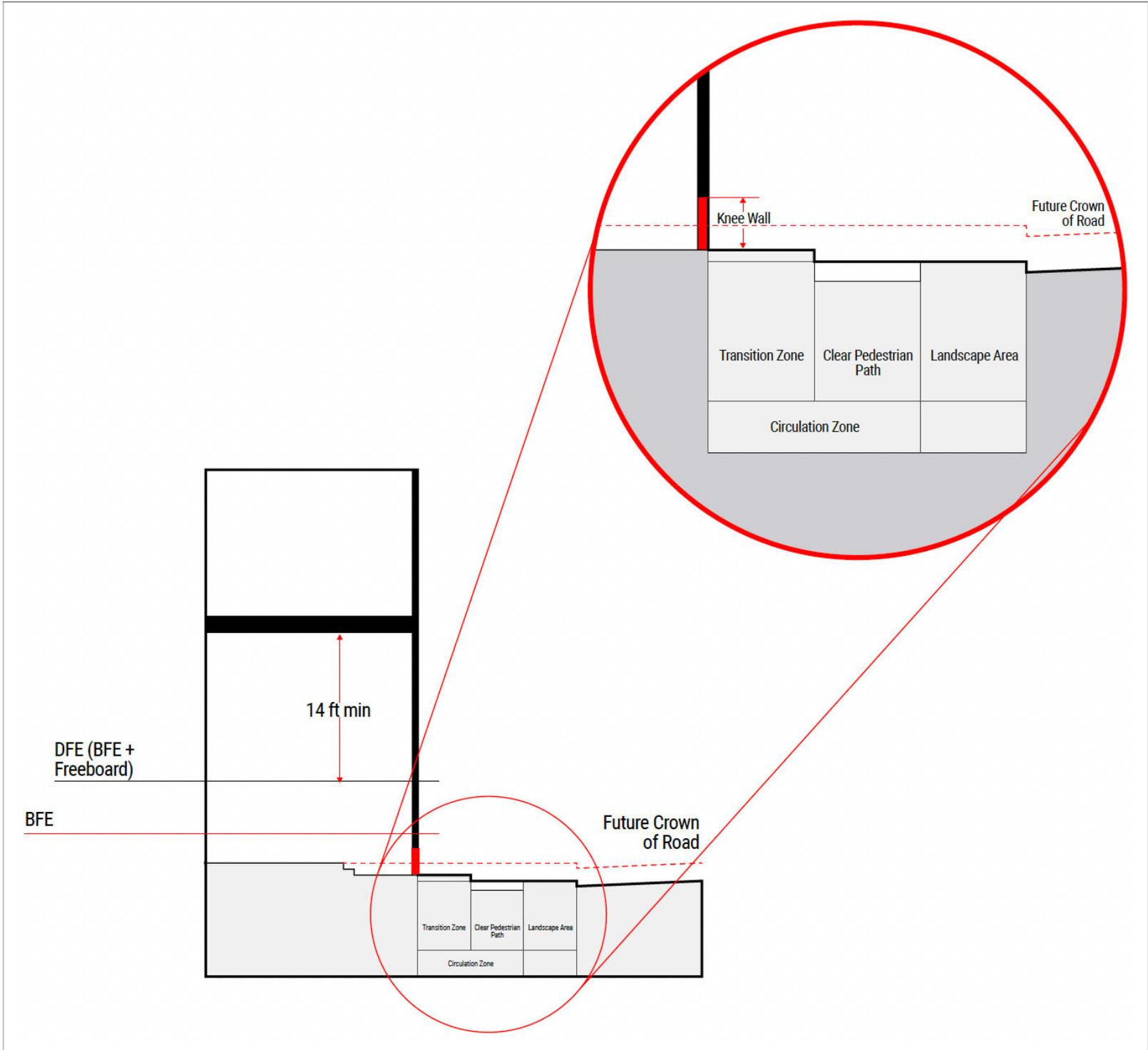
E. *Knee wall.* Except where there are doors, facades shall have a knee wall with a minimum height of two feet, 6 inches above the sidewalk elevation. Such knee walls shall include any required flood barrier protection. The planning director or designee may waive this knee wall requirement if the applicant can substantiate that the proposed glass storefront system satisfies all applicable Florida Building Code requirements for flood barrier protection or if the finished floor meets the minimum [freeboard](#) requirements of the city Code.

F. *Flood panels.* Flood panels for doorways shall be permanently stored next to doorways, except when in use.

G. *Multiple frontages.* For developments that contain more than one frontage, and where one such frontage is greater than 150 feet, the requirements of section [7.1.2.2.e.2.B.](#) shall apply.

H. *Waivers*. Where implementation of the regulations in this section is unfeasible or incompatible with the environment and adjacent structures, they may be waived to the minimum extent necessary by the historic preservation board (HPB) or design review board (DRB), in accordance with the certificate of appropriates review criteria or design review criteria, as applicable; however, an applicant may be required to consider alternative approaches for adequate mitigation of flooding.

SHORT FRONTAGE STANDARDS TABLE



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## 2. Long Frontage Standards

The following regulations shall apply to new construction with nonresidential uses on the ground floor on frontages with a width greater than 150 feet

A. Sidewalk standards. The sidewalk shall be raised to the future [crown of road](#) elevation, except for transition areas and where there are street crossings, intersections, or driveways, as follows

I. *Circulation zone*. The sidewalk shall contain a "circulation zone" with a minimum dimension of 10 feet wide, pursuant to the following standards:

- (1). The "circulation zone" shall be fully illuminated, consistent with the city's street and sidewalk lighting requirements and subject to the review and approval of the public works director.
- (2). The design of the circulation zone shall be consistent with the city's public sidewalk requirements.
- (3). The circulation zone may be constructed in areas of the public right-of-way and required yards that are in front of a building facade.
- (4). The circulation zone shall remain free from obstructions created by landscaping, signage, utilities, stairs, ramping, handrails, and lighting fixtures.
- (5). Pedestrians shall have 24-hour access to the circulation zone.
- (6). The circulation zone shall include a minimum 5-foot wide "clear pedestrian path," free from obstructions, including, but not limited to, outdoor cafés, sidewalk cafés, handrails, and door swings. The clear pedestrian path shall be delineated by in-ground markers that are flush with the path, including differing pavement tones, differing pavement type, or by another method approved by the planning director.
- (7). An easement providing for perpetual public access shall be provided to the city for portions of the circulation zone that are constructed within the setback area on private property.

II. *Parallel transition areas*. "Parallel transition areas" between the raised circulation zone and lower level sidewalks, street crossings, intersections, and driveways shall be accommodated within the frontage adjacent to the new development as follows

- (1). The parallel transition areas shall not contain steps, switchback ramps, or handrails.
- (2). The parallel transition areas shall be of the minimum length necessary so as to not require the use of steps, switchback ramps, and handrails between the higher future [crown of road](#) elevation and the lower level sidewalk, pedestrian crossing, or driveway elevation.

III. *Landscape transition areas*. "Landscape transition areas" between the raised circulation zone and the adjacent automobile parking or vehicle travel lanes shall be provided as follows

- (1). The landscape transition area shall be predominantly landscaped, except where there are access steps, lighting fixtures, pedestrian crossings, or driveways.
- (2). The landscape transition area shall have a minimum width of 5 feet.
- (3). Street trees shall be planted within the landscape transition area in raised planters or stabilized planting areas that at a minimum match the elevation of the circulation zone.
- (4). Where the landscape transition area is adjacent to on-street parking, access steps shall be provided between parking spaces so that each parking space has access to the circulation zone generally from either the front end or rear end of the vehicle. Steps shall be no wider than 36 inches, not included handrails.
- (5). Handrails shall only be permitted for access steps to on-street parking.
- (6). Street and pedestrian lighting fixtures shall be located within the landscape transition area.
- (7). The circulation zone may encroach into the landscape transition area in order to meet adjacent sidewalks and street crossings. The encroachment shall be the minimum necessary to comply with the requirements for and shall comply with the requirements of parallel transition areas.

Notwithstanding the standards in subsections [1] to [2]. above, public transit stops and valet parking stands, may be located within the landscape transition area. In the event of a conflict, the provisions in this section shall be superseded by any requirement in the city Code, Miami-Dade County Code, or state law that is applicable to public transit stops or valet parking stands.

IV. *Setbacks.* The building's ground floor facade, parking areas, and loading areas shall be set back a minimum of 15 feet from the back of curb to provide sufficient area to accommodate the required circulation zone and landscape transition areas in cases where the public right-of-way is not sufficiently wide. If the underlying zoning regulations require a larger setback, the larger setback shall be required.

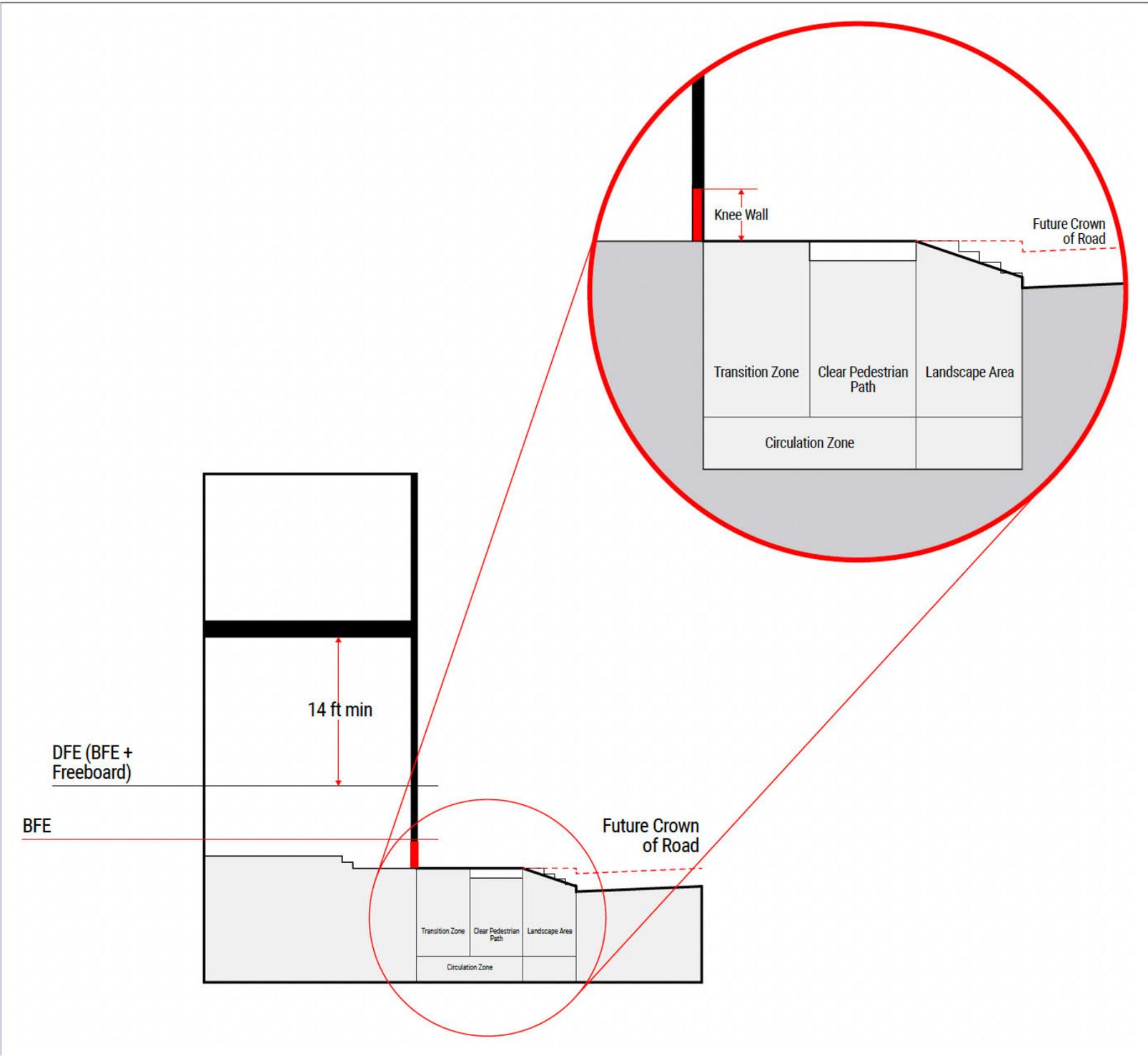
B. *Driveways.* Driveways to access off-street parking, drop-off, and loading areas shall comply with the following:

- I. Where a development has more than one frontage, driveways should be located facing the street with the lowest traffic volumes.
- II. The number of driveways should be minimized to the greatest extent possible.
- III. Where the circulation zone passes through a driveway, the surface shall be fully horizontal in a direction perpendicular to the facade of a building, so as to provide a safe and comfortable pedestrian environment.
- IV. Mountable curbs shall be utilized, where feasible.

C. *Ground floor elevation.* The ground floor shall be located a minimum elevation of 14 inches above the future [crown of road](#) elevation. Ramping and stairs from the sidewalk circulation zone to the ground floor elevation shall occur within the property and not encroach into the circulation zone or setback areas, unless adequate space exists on the exterior.

- I. *Knee wall.* Except where there are doors, facades shall have a knee wall with a minimum height of 2 feet, 6 inches above the future [crown of road](#) elevation. Such knee walls shall include any required flood barrier protection. The planning director or designee may waive this knee wall requirement if the applicant can substantiate that the proposed glass storefront system satisfies all applicable Florida Building Code requirements for flood barrier protection.
- II. *Flood damage-resistant materials.* Ground floors, walls system, partitions and doors shall utilize water flood damage resistant materials in accordance with all applicable Florida Building Code, FEMA regulations and American Society of Civil Engineer (ASCE) - Flood Resistant Design and Construction Standard, for a minimum of the first 2 feet, 6 inches above the ground floor elevation.
- III. *Flood panels.* Flood panels for doorways shall be permanently stored adjacent to all doorways, except when in use.
- IV. *Waivers.* Where implementation of the regulations in this section is unfeasible or incompatible with the environment and adjacent structures, they may be waived to the minimum extent necessary by the historic preservation board (HPB) or design review board (DRB), in accordance with the [certificate of appropriateness](#) review criteria or design review criteria, as applicable; however, an applicant may be required to implement alternative approaches for adequate mitigation of flooding.

**Long Frontage Standards Table**



7.1.2.3 Resilience and Adaptation Standards for Exterior Building and Lot

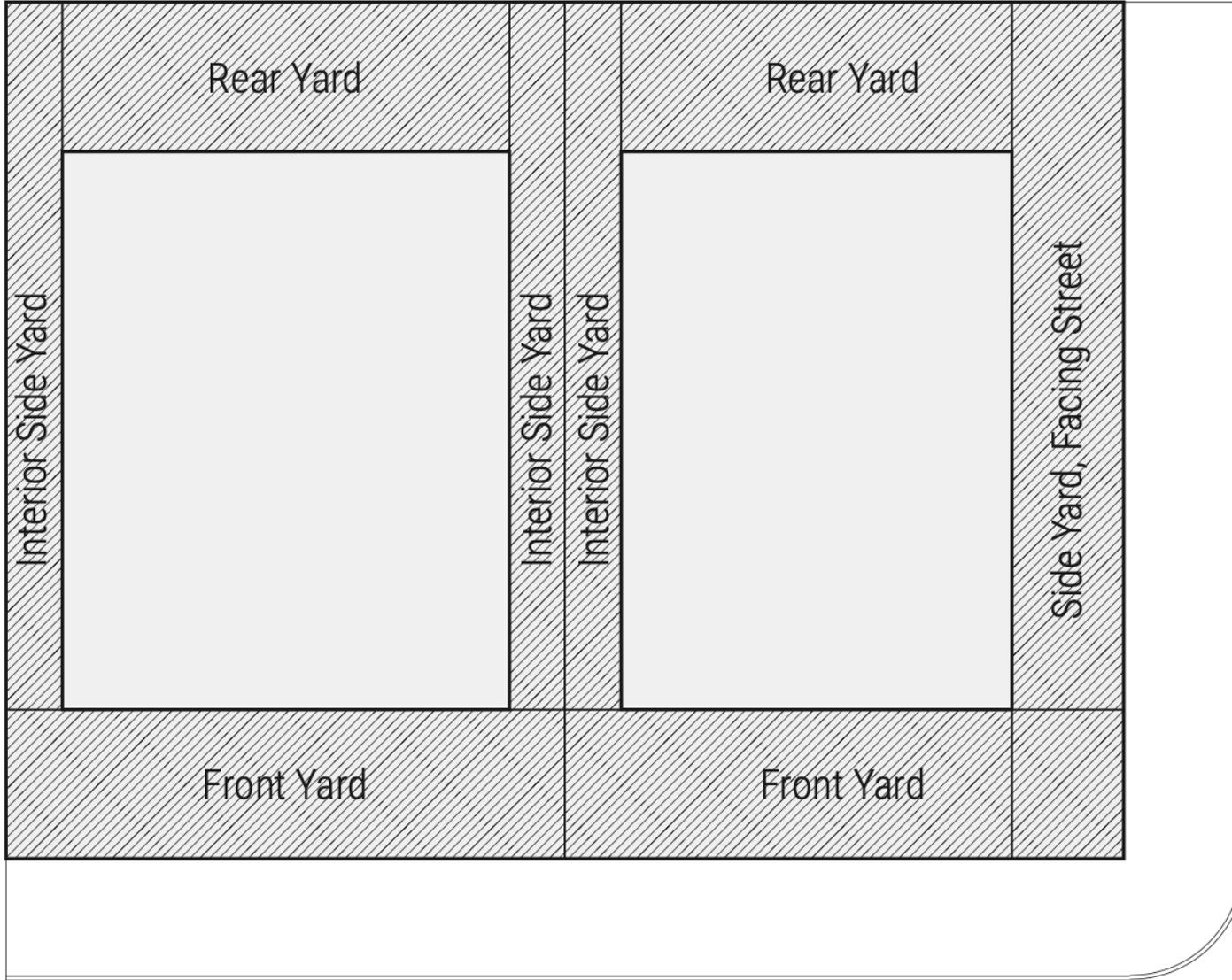
a. **Purpose**

To encourage the incremental raising of grade on private parcels that accompanies and anticipates the future raising of rights-of-way. These design standards, when bolstered by ecological restoration at water’s edge, can reduce wave energy from storm surge as well as make properties less vulnerable to flooding.

b. **New Construction**

1. Minimum and maximum Yard Elevation Requirements. The following shall apply to all residential building types that have required yards. Requirements for RS-1, RS-2, RS-3 and RS-4 are located in section 7.2.2.3.b.10.B.

MINIMUM AND MAXIMUM YARD ELEVATION REQUIREMENTS		
	Minimum	Maximum
Front Yard	Future Adjusted Grade (1) (2) (4)	Base Flood Elevation (BFE) (1) (3) (4)
Side, Facing a street Yard		
Side, Interior Yard		Base Flood Elevation (BFE) (1) (3)
Rear Yard - Non Waterfront		
Rear Yard - Waterfront		



Interior Side Yard

Rear Yard

Interior Side Yard

Interior Side Yard

Rear Yard

Side Yard, Facing Street

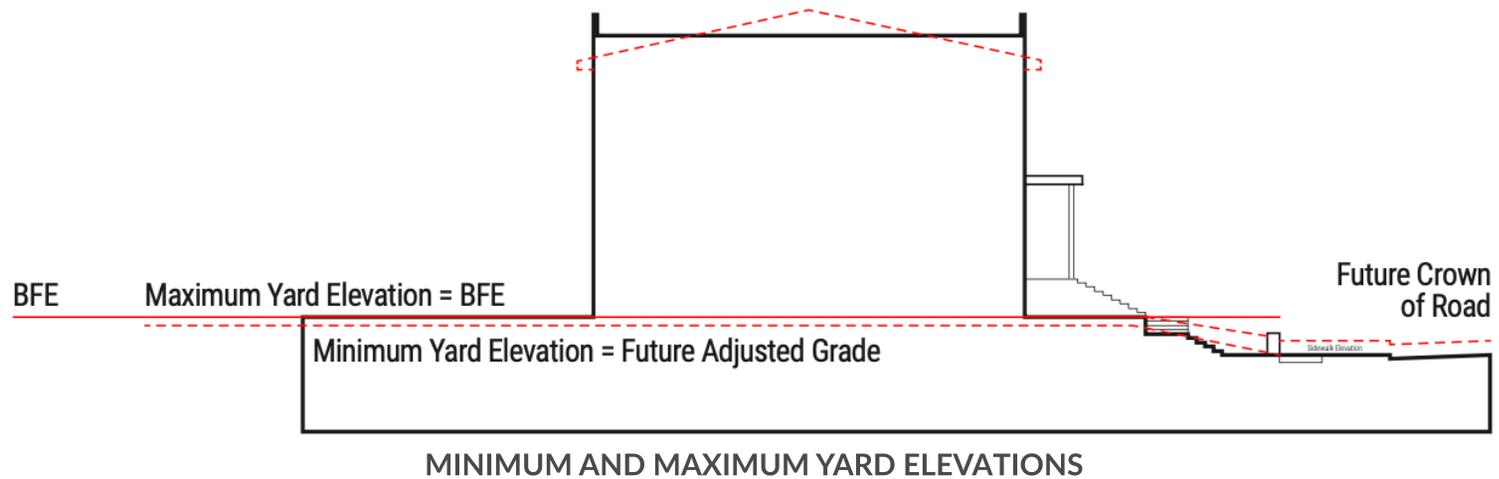
Front Yard

Front Yard

Front

Side Facing a Street

YARD LOCATIONS (FOR REQUIREMENTS ONLY)



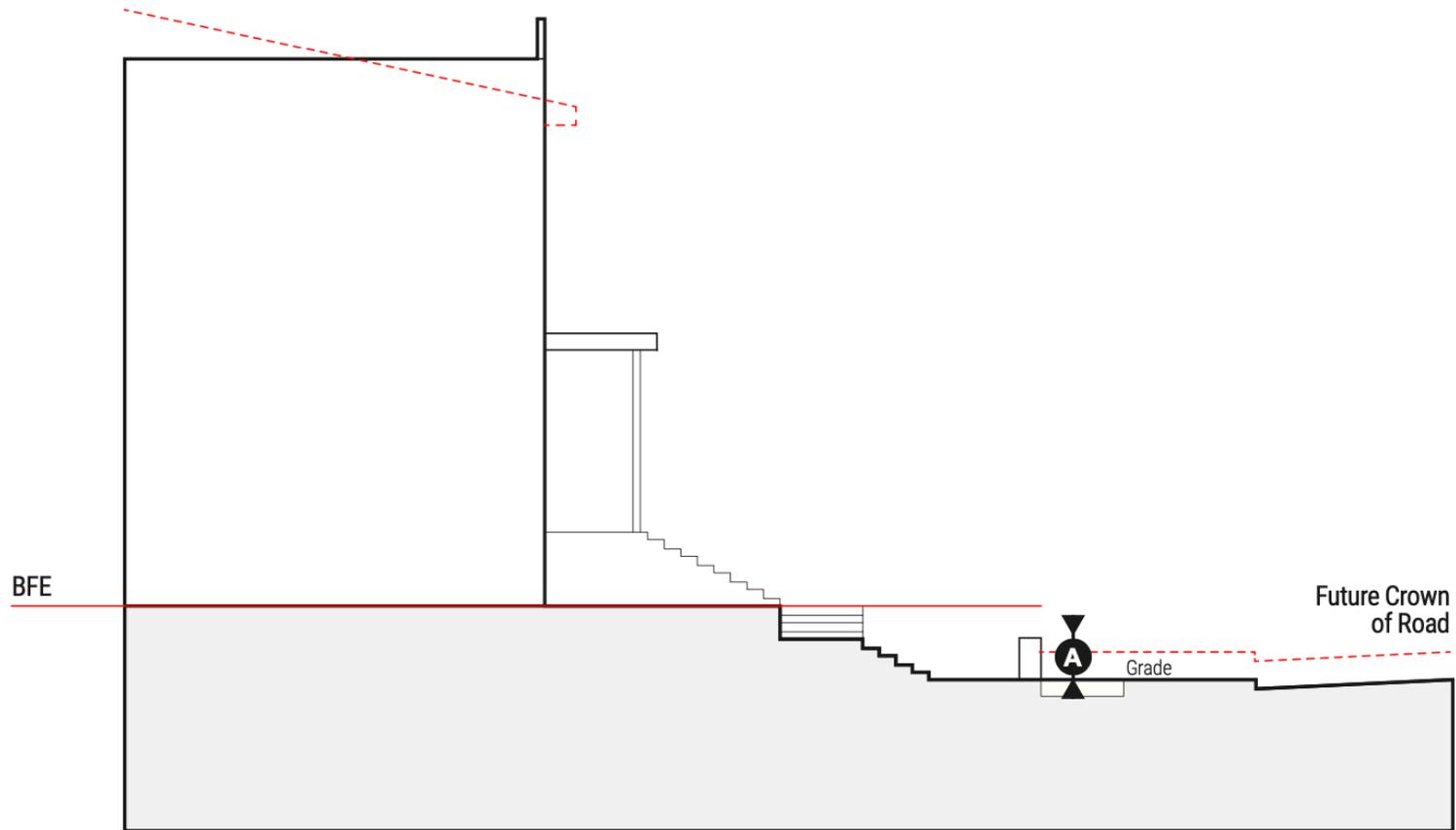
- (1) With the exception of driveways, walkways, transition areas, green infrastructure (e.g., vegetated swales, permeable pavement, rain gardens, and rainwater/stormwater capture and infiltration devices), and areas where existing landscaping is to be preserved, which may have a lower elevation. When in conflict with the maximum elevation requirements as outlined in this table, the minimum elevation requirements shall still apply.
- (2) The minimum yard elevation requirements shall not apply to existing structures.
- (3) In no instance shall the elevation of a required yard exceed the [Design Flood Elevation \(DFE\)](#).
- (4) The maximum height of any fence(s) or wall(s) in the required front yard, shall be measured from existing grade.

2. *Stormwater retention.* In all instances where the existing elevation of a site is modified, a site shall be designed with adequate infrastructure to retain all stormwater on site in accordance with all applicable state and local regulations.
3. *Retaining wall and yard slope requirements.* The following shall apply to all residential building types that have required yard. Within the required front yard, required side yard facing a street and rear and side interior yards the following shall apply (Requirements for RS-1, RS-2, RS-3 and RS-4 are located in section [7.2.2.3.b.10.D](#)):

RETAINING WALL REQUIREMENTS	
	Maximum Height of Retaining Wall

## RETAINING WALL REQUIREMENTS

Front	30 inches above sidewalk elevation, or adjacent grade if no sidewalk is present (1) (3)
Side, Facing a Street	
Side, Interior	At the property line, the maximum height of retaining walls shall not exceed BFE. (2) (3)
Rear	



- (1) The maximum slope of the required front and side yard facing a street shall not exceed 11 percent (11%) (5:1 horizontal:vertical)
- (2) For properties in which the required yard elevation is greater than the yard elevation of the neighboring lot, either a retaining wall at the perimeter of the property or a slope of maximum (5:1 horizontal: vertical), or a combination of both, shall be provided. (See section [7.5.3.2.h](#))

## RETAINING WALL REQUIREMENTS

(3) Retaining walls shall be finished with stucco, stone, or other high quality materials, in accordance with the applicable design review or appropriateness criteria.

### 7.1.2.4 Sea Level Rise and Resiliency Review Criteria

#### a. *Criteria*

The city's land use boards shall consider the following when making decisions within their jurisdiction, as applicable:

##### 1. Criteria for development orders

- A. A recycling or salvage plan for partial or total demolition shall be provided.
- B. Windows that are proposed to be replaced shall be hurricane proof impact windows.
- C. Where feasible and appropriate, passive cooling systems, such as operable windows, shall be provided.
- D. Resilient landscaping (salt tolerant, highly water-absorbent, native, or Florida-friendly plants) shall be provided, in accordance with [chapter 4](#) in Land Development Regulations.
- E. The project applicant shall consider the adopted sea level rise projections in the Southeast Florida Regional Climate Action Plan, as may be revised from time-to-time by the Southeast Florida Regional Climate Change Compact. The applicant shall also specifically study the land elevation of the subject property and the elevation of surrounding properties.
- F. The ground floor, driveways, and garage ramping for new construction shall be adaptable to the raising of public rights-of-way and adjacent land, and shall provide sufficient height and space to ensure that the entry ways and exits can be modified to accommodate a higher street height of up to 3 additional feet in height.
- G. As applicable to all new construction, all critical mechanical and electrical systems shall be located above [base flood elevation](#). All redevelopment projects shall, whenever practicable and economically reasonable, include the relocation of all critical mechanical and electrical systems to a location above [base flood elevation](#).
- H. Existing buildings shall, wherever reasonably feasible and economically appropriate, be elevated up to [base flood elevation](#), plus City of Miami Beach [Freeboard](#).
- I. When habitable space is located below the [base flood elevation](#) plus City of Miami Beach [Freeboard](#), wet or dry flood proofing systems will be provided in accordance with [chapter 54](#) in General Ordinances.
- J. As applicable to all new construction, stormwater retention systems shall be provided.

K. **Cool pavement** materials or **porous pavement** materials shall be utilized.

L. The design of each project shall minimize the potential for heat island effects on-site.

2. Criteria for ordinances, resolutions, or recommendations:

A. Whether the proposal affects an area that is vulnerable to the impacts of sea level rise, pursuant to adopted projections.

B. Whether the proposal will increase the resiliency of the city with respect to sea level rise.

C. Whether the proposal is compatible with the city's sea level rise mitigation and resiliency efforts.