Standards to Reduce Flood Risk for Non-Residential Buildings

MIAMIBEACH

Purpose

- To Encourage commercial development to be more resilient by providing:
  - Greater interior floor to ceiling height.
  - Elevated finished floors.
  - Transition areas that can accommodate and facilitate the harmonization between the elevated ground floors or future elevated streets.
  - Raising sidewalks when there is sufficient room.
  - Larger landscape areas to absorb stormwater.

Compliance with the 2040 Comprehensive Plan

- Comply with Comprehensive Plan Goal RLU 3 seeks to “encourage innovative development consistent with the historic resources of the City, while ensuring that redevelopment, investment, and new development is constructed utilizing principles of sustainable and resilient development practices;”

- Comprehensive Plan Policy RLU 2.1.6 seeks to “Maximize unpaved landscape to allow for more stormwater infiltration. Encourage planting of vegetation that is highly water absorbent, Florida friendly or native, able to withstand the marine environment, and tropical storm winds. Encourage development measures that include innovative climate adaption and mitigation designs with creative co-benefits where possible, through the Land Development Regulations and regulations related to the "Care and Maintenance of Trees and Plants" within the City Code of Ordinances;”.

- Comprehensive Plan Objective RLU 2.4 seeks to “Identify and implement resilient and sustainable development best practices to encourage effective long-term investments that sustain and/or the quality of life for residents;” .

Background

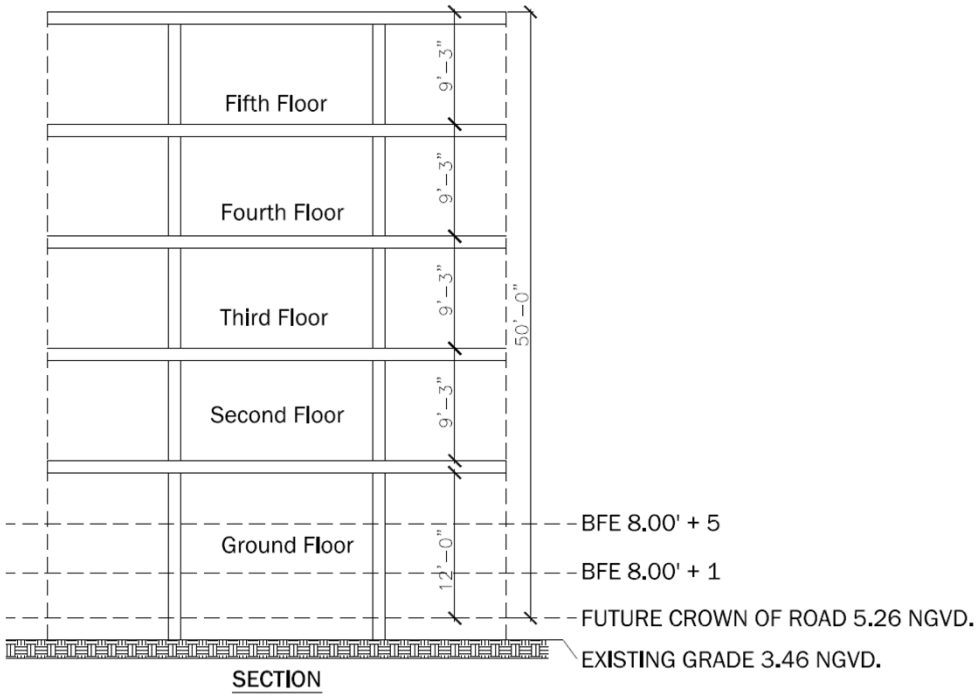
- **Ordinance 2016-4010:** to encourage that new commercial construction provide adequate interior floor to ceiling height to accommodate the future raising of adjacent streets and sidewalks. (12 feet from future crown of road)

- **Ordinance 2017-4124:** On July 26, 2017 the CC adopted regulations where the Design Review Board or Historic Preservation Board, in accordance with the applicable review criteria, may allow up to an additional five (5) feet of height. In order to utilize the additional height, the first floor shall provide at least 12 feet in height, as measured from the base flood elevation plus maximum freeboard, to the top of the second floor slab.

Current Code:

There is currently no minimum ground floor height requirement for commercial properties.

The code has an incentive, which allows commercial heights to be measured from base flood elevation plus freeboard, provided a minimum height of 12 feet of interior height is provided above the future crown of road. If a developer chooses not to provide this clearance, height is measured from the elevation of the lowest floor.

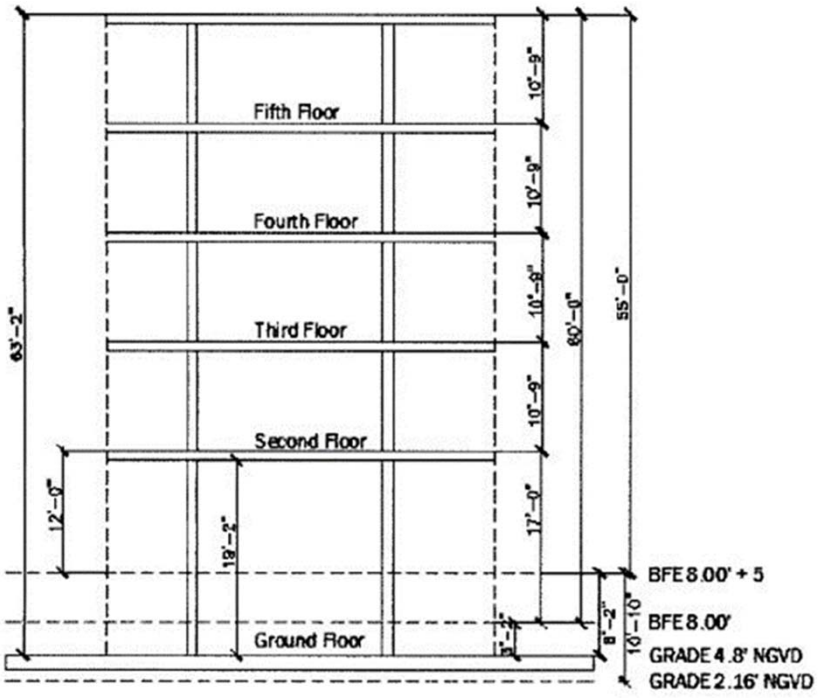


Current Code
Commercial District Incentives

CD-2 – Maximum height - Section 142-306:

50 *feet* (except as provided in section 142-1161).

Notwithstanding the above, the design review board or historic preservation board, in accordance with the applicable review criteria, may allow up to an additional five *(5)* feet of height, as measured from the base flood elevation plus maximum freeboard, to the top of the second floor slab.

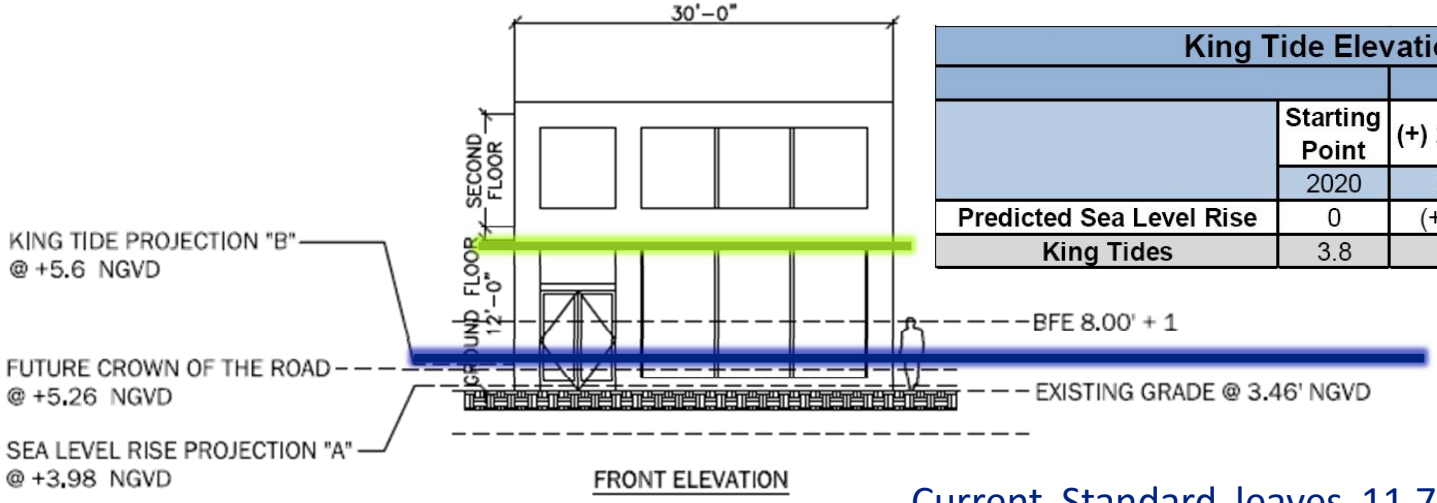


Sea Level Rise Projections

For the purpose of this proposal we took in to account the 2060 sea level rise, king tide and storm surge projections

Sea Level Rise Projections (NGVD)				
	Low Prj.	High Prj.	Low Prj.	High Prj.
	Mean Sea Level		Mean High Water	
1992	0.60	0.60	1.81	1.81
2030	1.10	1.43	2.31	2.64
2060	1.77	2.77	2.98	3.98

Storm Surge Elevation (Feet NGVD)			
		USACE 2013 High Curve	
Storm Frequency	Starting Point	(+) 20 YEAR	(+) 40 YEAR
	2003	2040	2060
Predicted Sea Level Rise	0	(+) 1.1 ft	(+) 2.2 ft
10 YEAR	8.1	9.2	10.3
20 YEAR	9.5	10.6	11.7
50 YEAR	10.8	11.9	13.0
100 YEAR	13.6	14.7	15.8
500 YEAR	17.7	18.8	19.9



King Tide Elevation (Feet NGVD)			
		USACE 2013 High Curve	
	Starting Point	(+) 20 YEAR	(+) 40 YEAR
	2020	2040	2060
Predicted Sea Level Rise	0	(+) 0.8 ft	(+) 1.8 ft
King Tides	3.8	4.6	5.6

2060 King Tide Projection

Current Standard leaves 11.7’ of headroom if floor is raised to match the 2060 King Tide Elevation

SEA LEVEL RISE PROJECTION "A" : 2060 HIGH PRJ. MEAN HIGH WATER @ +3.89 NGVD
KING TIDES PROJECTION "B " 2060 @ +5.6 NGVD

Draft Ordinance Outline

- Modify definition of “Height”
  - Establish definition for “Design Flood Elevation” (DFE) – *Base Food Elevation (BFE) plus the City of Miami Beach Freeboard*
  - Establish a “Minimum Height of Non-Residential Ground Floor”
- Buildings w/ Ground Floor Commercial Standards:
  - Existing Building Standards
  - New Building Short-Frontage Standards
  - New Building Long-Frontage Standards (Raised Sidewalks)

What to avoid - again

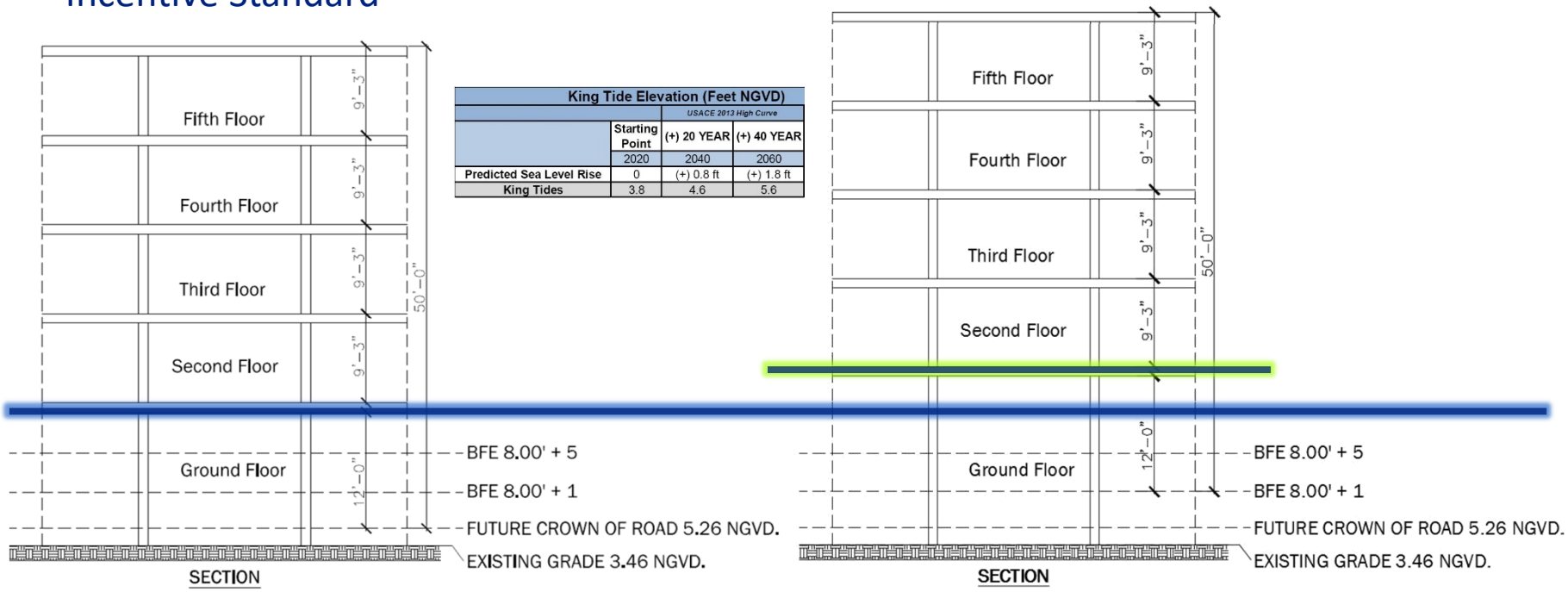
Prevent travel lanes being located higher than sidewalk (Sunset Harbor)

Proposed Amendment:

- Define Base Flood Elevation plus City of Miami Beach Freeboard as the **“DESIGN FLOOD ELEVATION” (DFE)**.
- Require the **“Minimum Height of Non-Residential Ground Floor”** to be **12’** above the DFE

Current Minimum Incentive Standard

Currently permitted but not mandated Proposed Minimum Standard



King Tide Elevation (Feet NGVD)			
		USACE 2013 High Curve	
	Starting Point	(+) 20 YEAR	(+) 40 YEAR
	2020	2040	2060
Predicted Sea Level Rise	0	(+) 0.8 ft	(+) 1.8 ft
King Tides	3.8	4.6	5.6

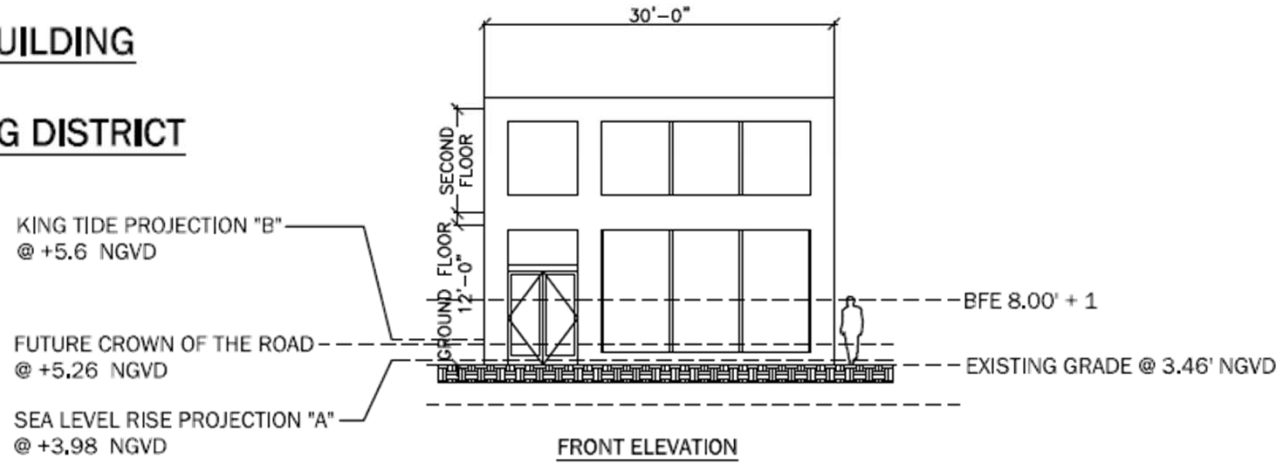
Proposed standard leaves 15.4’ of headroom if floor is raised to match the 2060 King Tide Elevation. This is an extra 3.74’ from the current standard.

Existing Building Standards

For buildings undergoing a substantial renovation (50% rule):

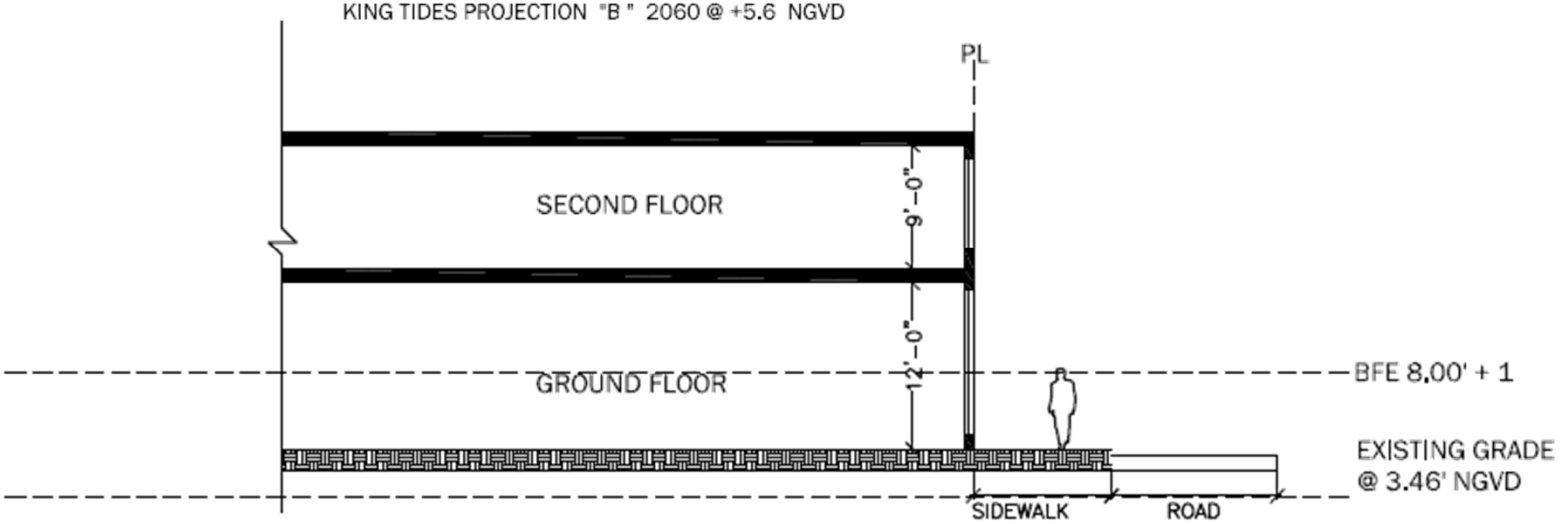
- Where feasible, the ground floor shall be located at a minimum elevation of one foot (1’) above the highest sidewalk elevation adjacent to the frontage.
  - Ramping and stairs from the sidewalk elevation to the ground floor elevation shall occur inside the property and not encroach into the public sidewalk or setback areas.
- Except where there are doors, facades shall have a knee wall with a minimum height of two feet-six inches (2’-6”) above the sidewalk elevation.
- Where feasible, ground floors shall utilize flood damage resistant materials for a minimum of 2’ 6” above the floor elevation.
- Flood panels for doorways shall be permanently located next to all doorways.

1- CASE STUDY - COMMERCIAL BUILDING
EXISTING CODE
1428 ALTON ROAD - CD 2 ZONING DISTRICT
EXISTING GRADE 3.46 NGVD



FRONT ELEVATION

SEA LEVEL RISE PROJECTION "A" : 2060 HIGH PRJ. MEAN HIGH WATER @ +3.89 NGVD
KING TIDES PROJECTION "B " 2060 @ +5.6 NGVD



SECTION

Short-Frontage Standards

Frontages less than 150’ wide

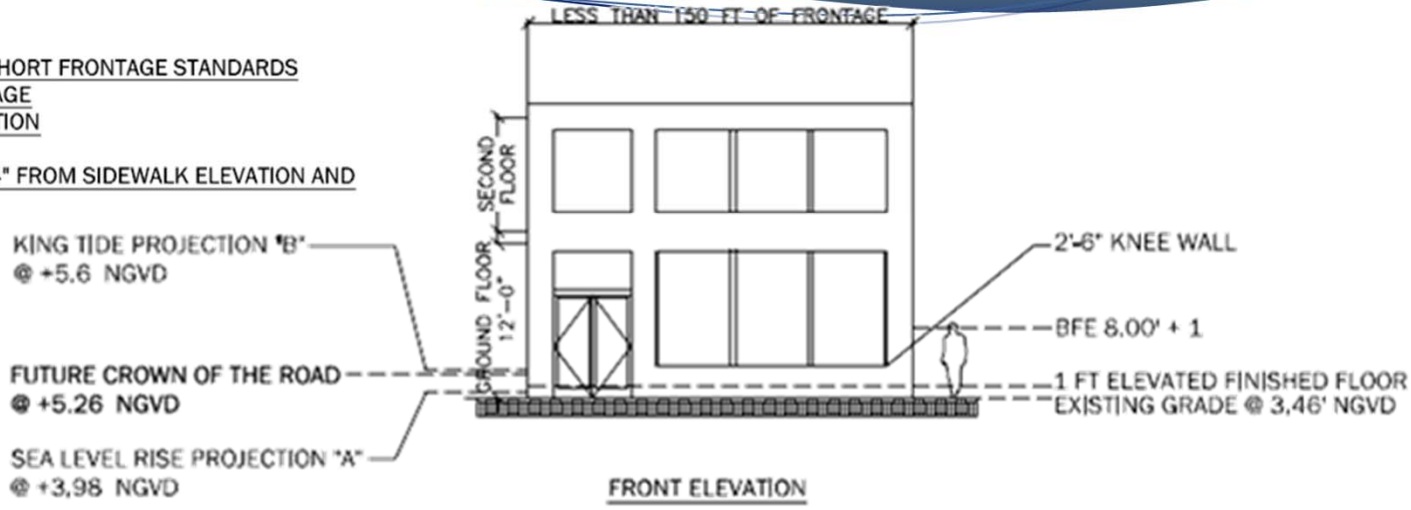
Incorporates Existing Building Standards + the following:

- The ground floor shall be located a minimum of 14” *(2 steps)* above the highest sidewalk elevation adjacent to the frontage.
  - Ramping and stairs from the sidewalk elevation to the ground floor elevation shall occur within the property and shall not encroach into the public sidewalk or setback areas
- Minimum ground floor setback of 15’ from the back of the curb of the roadway, to provide:
  - 10’ wide sidewalk Circulation Zone
    - 5’ must be a “Clear Pedestrian Path”
  - 5’ wide landscape area

(Harmonization purposes)

- For developments that have multiple frontages and one frontage is greater than 150’, the development shall follow the more stringent standards for buildings with long frontages

3- COMMERCIAL BUILDING - SHORT FRONTAGE STANDARDS
LESS THAN 150 FT OF FRONTAGE
EXISTING BUILDING - RENOVATION
EXISTING GRADE 3.46 NGVD
GROUND FLOOR ELEVATED 14" FROM SIDEWALK ELEVATION AND
A 2'-6" KNEE WALL



FRONT ELEVATION

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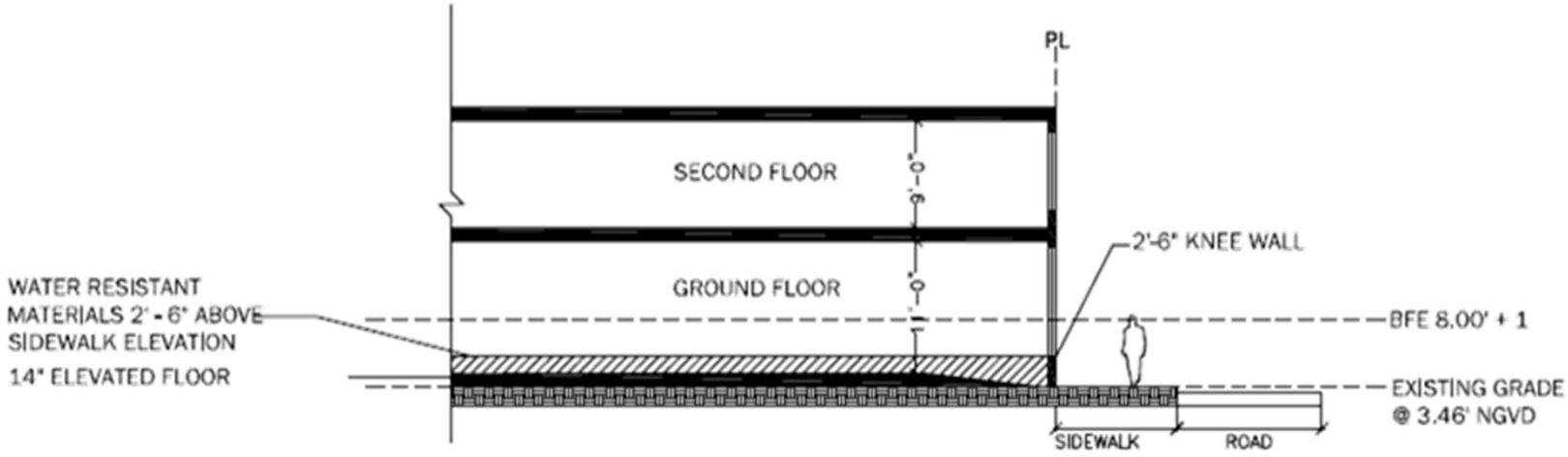
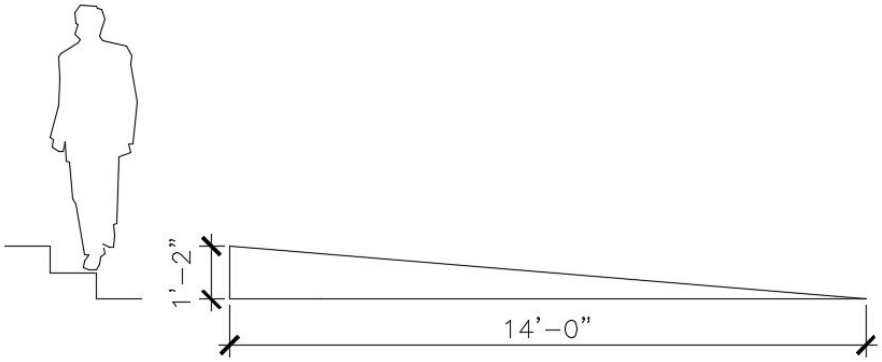


SECTION

INTERIOR RAMP & STEPS REQUIREMENTS



Long-Frontage Standards

Long frontage standards: frontages with a width greater than 150 feet, where sidewalks are currently being raised.

Recent projects that have elevated ground floors and sidewalks:

709 Alton Road:
Frontage: 300 feet

1614 Alton Road Phase I:
Frontage: 250 feet

1824 Alton Road
Frontage: 150 feet on Alton Rd

Building & Sidewalk gets elevated first:

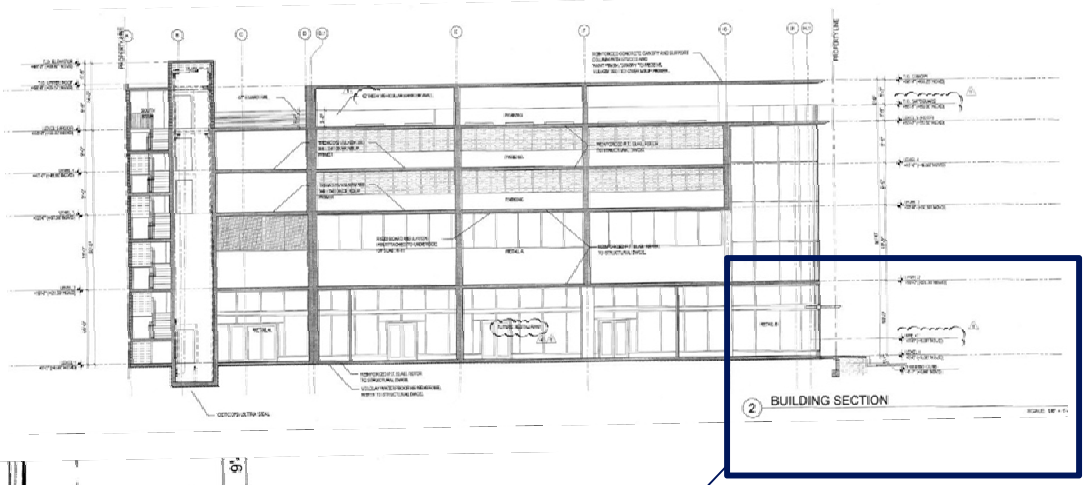
(1614 Alton Road -1212 Lincoln Road)

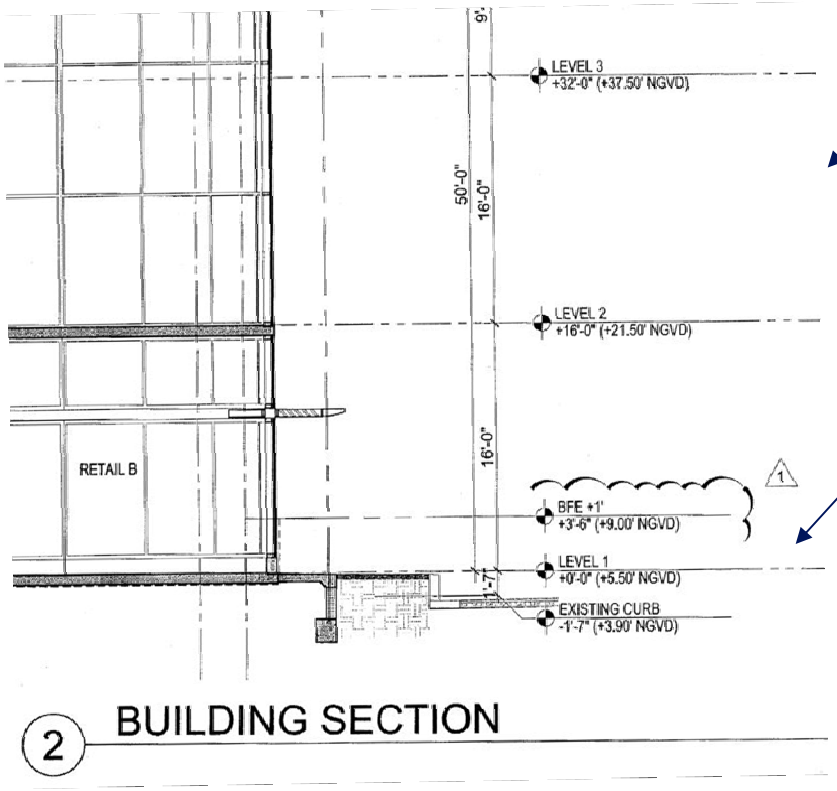
Examples

- Projects that have ground floor and elevated sidewalks to the future crown of the road elevation – ~5.26’ NGVD
  - (Not BFE+1).
- There are NO uniform standards
  - There are pros and cons to each example.

709 Alton Road - Baptist

1824 Alton Road – Michael’s





- 1824 Alton Road – Michael's:
- Raised sidewalk
- Ground floor at 5.5 NGVD

1212 Lincoln Road

1212 Lincoln Road

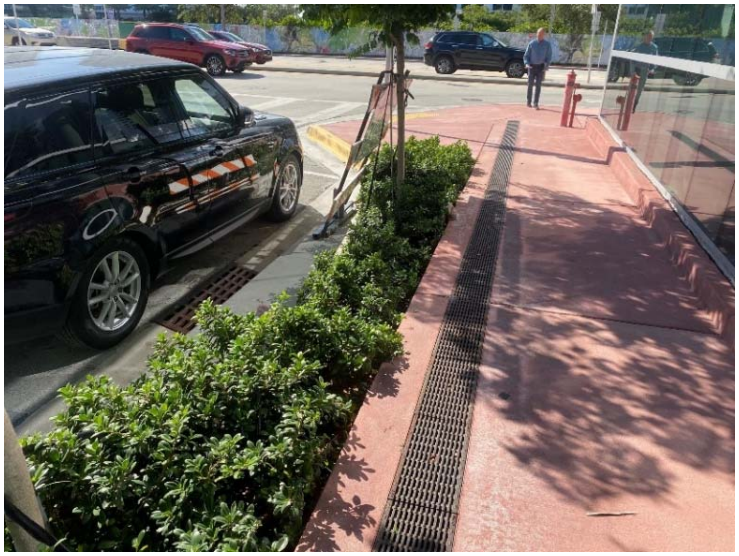
Positive:

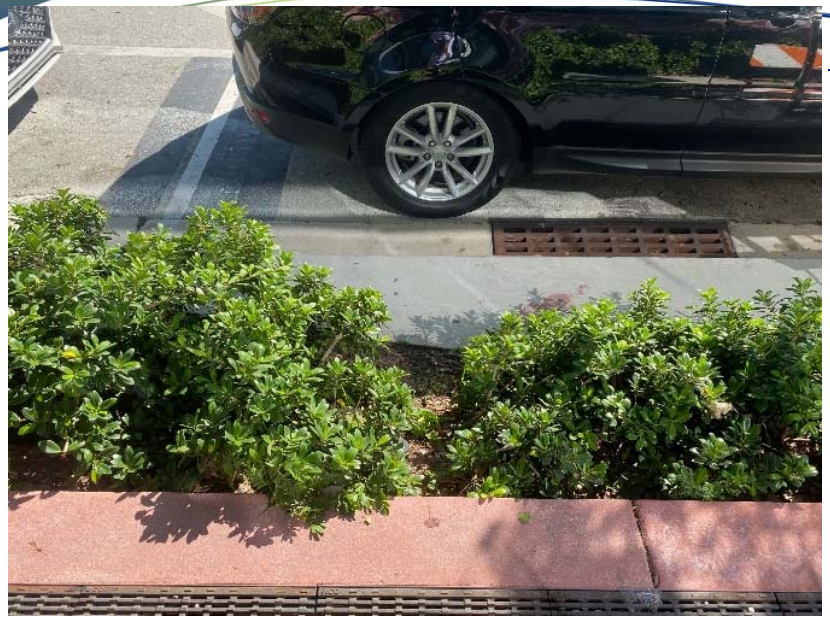
- Ground floor level has an additional setback that provides a wider sidewalk.
- Some access to on-street parking.

Negative:

- Insufficient and poorly located access to street parking
- Insufficient room for landscape to thrive and green infrastructure co-benefits.

709 Alton Road – Baptist Urgent Care





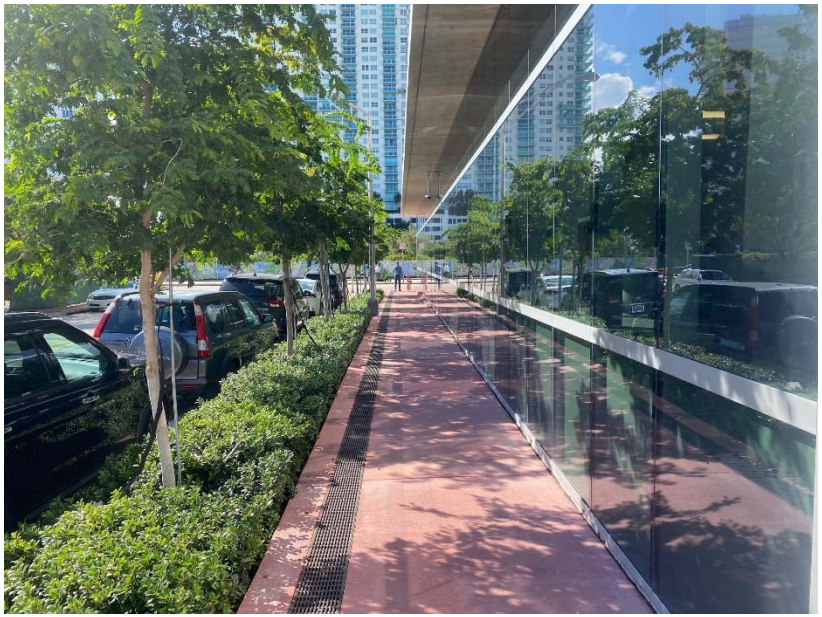
Baptist Urgent Care

Positive

- Wide sidewalks accommodate pedestrian activity
- Wide landscape area allows landscape to thrive
- Wide landscape area minimizes need for rails

Negative:

- No access to sidewalk
- Landscape gets trampled
- Handrails in the public right of way



1045 5th Street – Target

Right of way harmonization issues between sidewalk elevation/size, landscape areas, driveways, street parking and the street.

Positive:

- Trees are elevated

Negative:

- Inadequate space for tree planter and pedestrian paths
- Railings necessary
- Landscape verge inadequate for co-benefits
- Landscape quality
- Quality of finish materials for planters

1045 5th Street - Target

Negative:

- Unnecessary steps in public sidewalk due to unplanned building access points.
- Heavy use of unsightly handrails.

What **NOT** to Do

Undesirable commercial spaces that create isolated pedestrian circulation areas with minimal landscaping

Knee walls that block eyes on the street and limit pedestrian interaction

Findings:

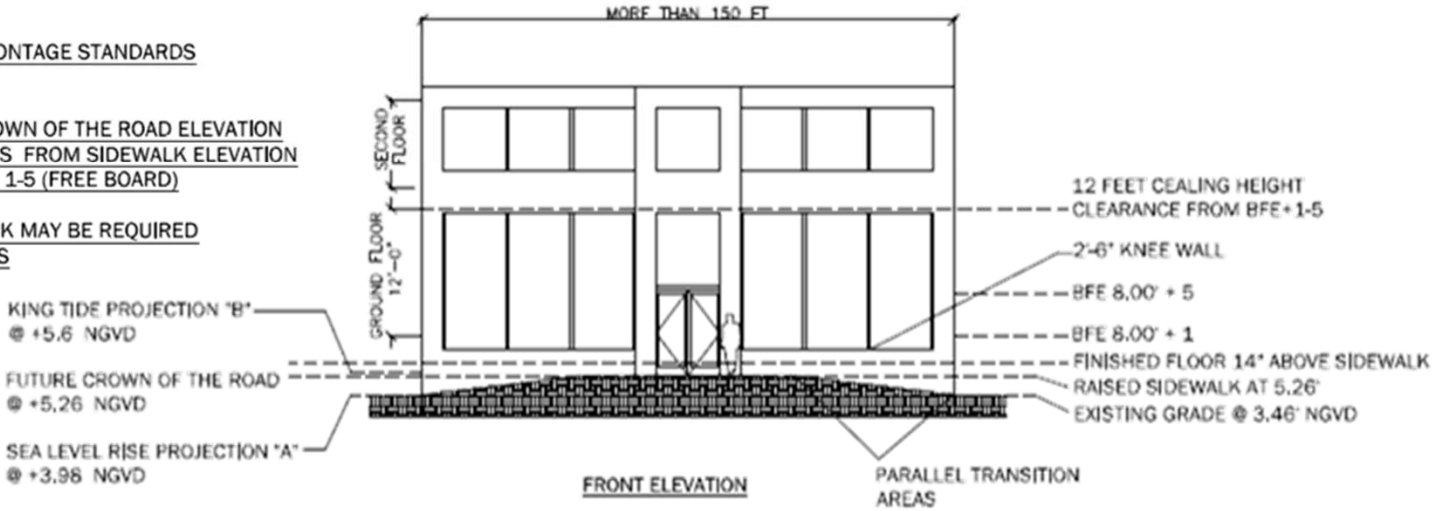
- Need for additional ground floor height for future adaption
- When ground floors are elevated, right of way harmonization must be considered.
- Issues arise between sidewalk elevation/width/access, landscape areas, driveways, street parking and street travel lanes.
- Appropriate transition areas inside the structure or in larger setbacks provide opportunities to mitigate the negative urbanistic impacts.
  - Need for extra space for harmonization purposes.
  - Need for wider sidewalks on commercial zoning districts.
  - Appropriate and safe pedestrian facilities that encourage walking.
  - Better landscape that works for these transition areas.

Long-Frontage Standards

Incorporates Short-Frontage Standards + the following:

- With the exception of transition areas, the sidewalk must be raised at a minimum to the future crown of road elevation (5.26’ NGVD).
- Minimum ground floor setback of 15’ from the back of the curb of the roadway
  - 10’ wide sidewalk circulation zone
    - 5’ must be a “Clear Pedestrian Path”
  - 5’ wide landscape transition area between the raised sidewalk and the lower vehicular roadway.
- Trees be planted in raised planters or stabilized planting areas with a minimum elevation of the future crown of road.
- The use of ramp switchbacks, and handrails be prohibited in parallel transition areas.
- Steps that are no wider than 36 inches should be placed between every two parking spaces where parallel parking exists.
- The ground floor elevations be located a minimum of 14” (2 steps) above the raised sidewalk elevation.
- Except where there are doors, facades shall have a knee wall with a minimum height of two feet-six inches (2’-6”) above the raised sidewalk elevation.

6- COMMERCIAL BUILDING - LONG FRONTAGE STANDARDS
MORE THAN 150 FT - NEW BUILDING
EXISTING GRADE 3.46 NGVD
ELEVATED SIDEWALK TO FUTURE CROWN OF THE ROAD ELEVATION
GROUND FLOOR ELEVATED 14 INCHES FROM SIDEWALK ELEVATION
12 FT CEILING CLEARANCE FROM BFE 1-5 (FREE BOARD)
2' - 6" KNEE WALL
ADDITIONAL GROUND FLOOR SET BACK MAY BE REQUIRED
TO ACCOMMODATE TRANSITION AREAS



FRONT ELEVATION

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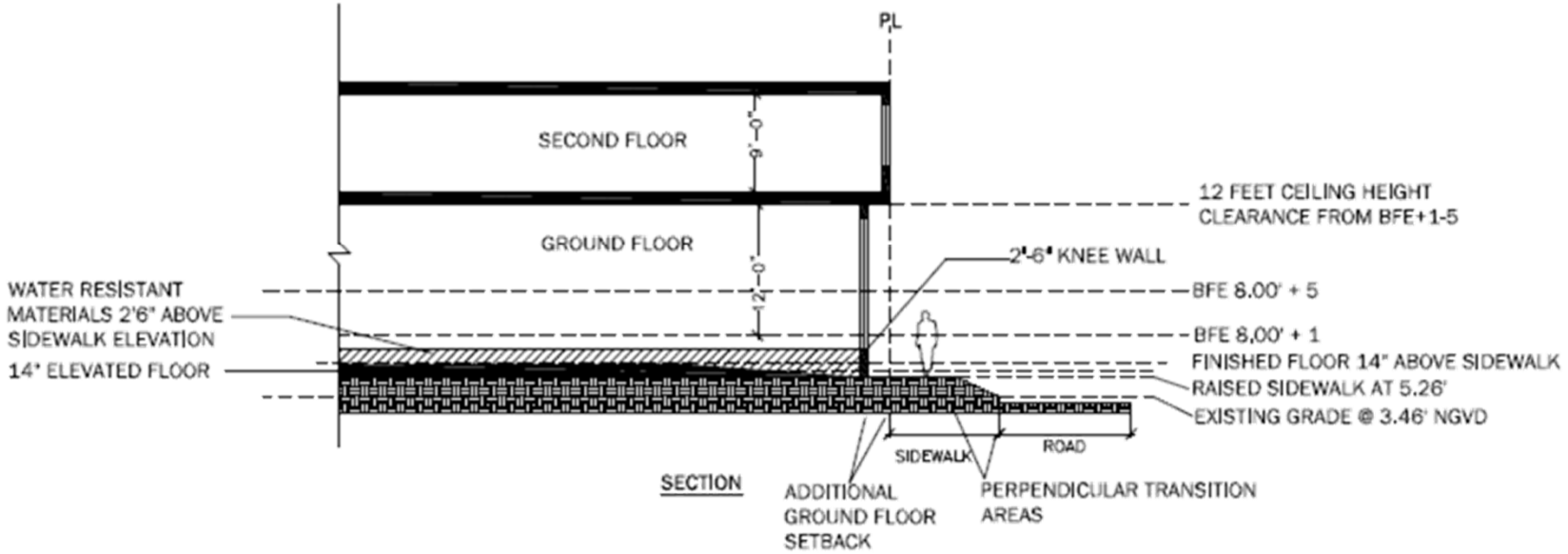
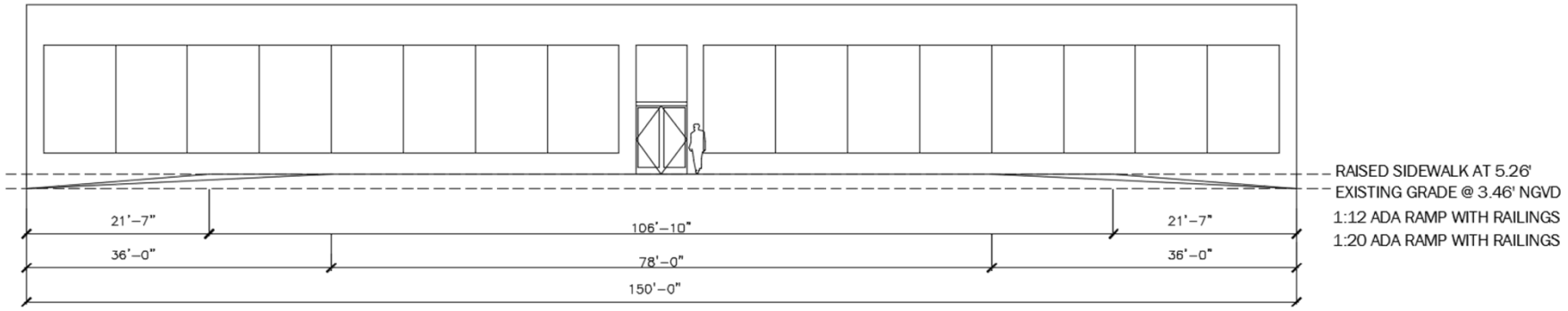
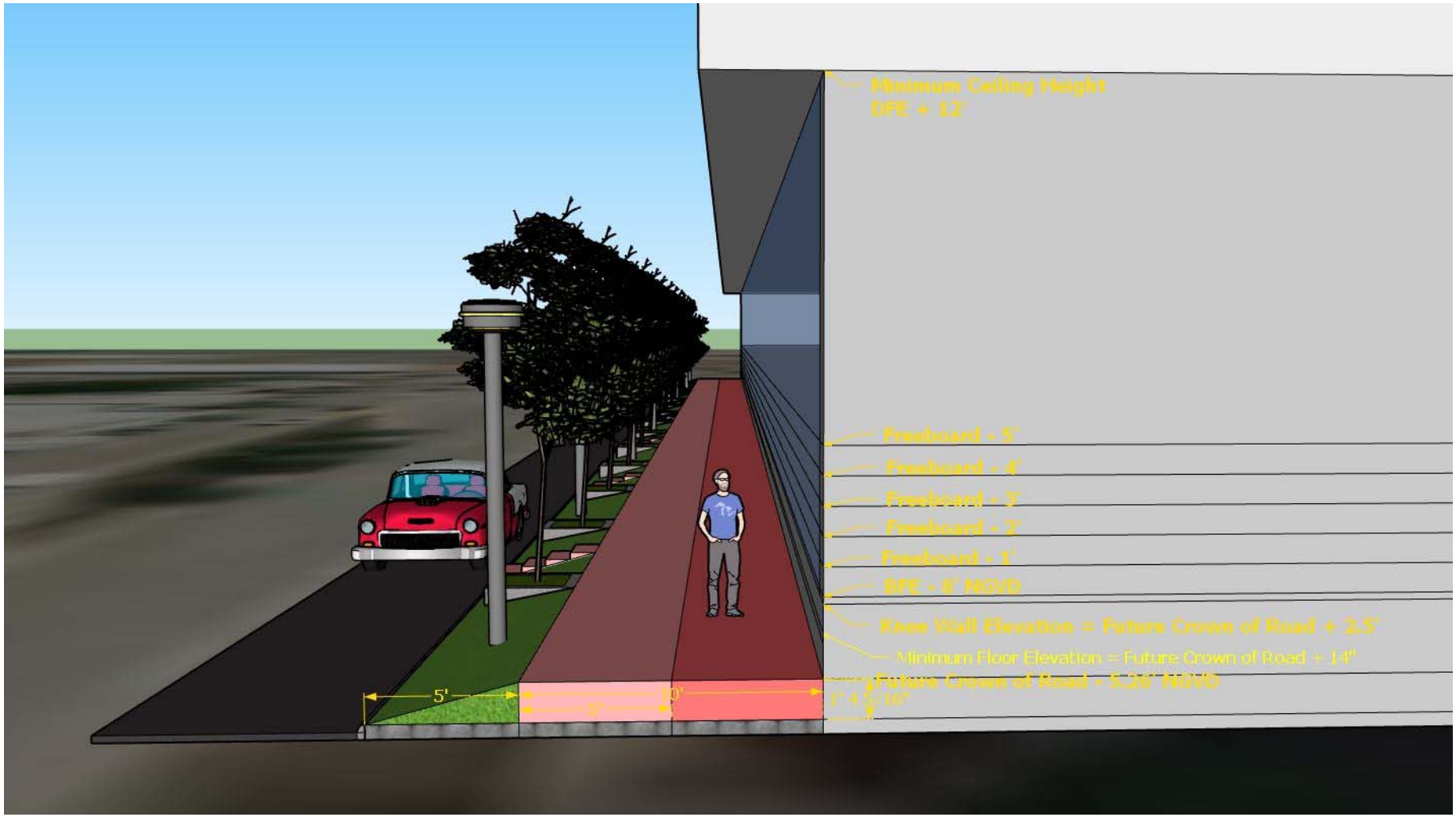


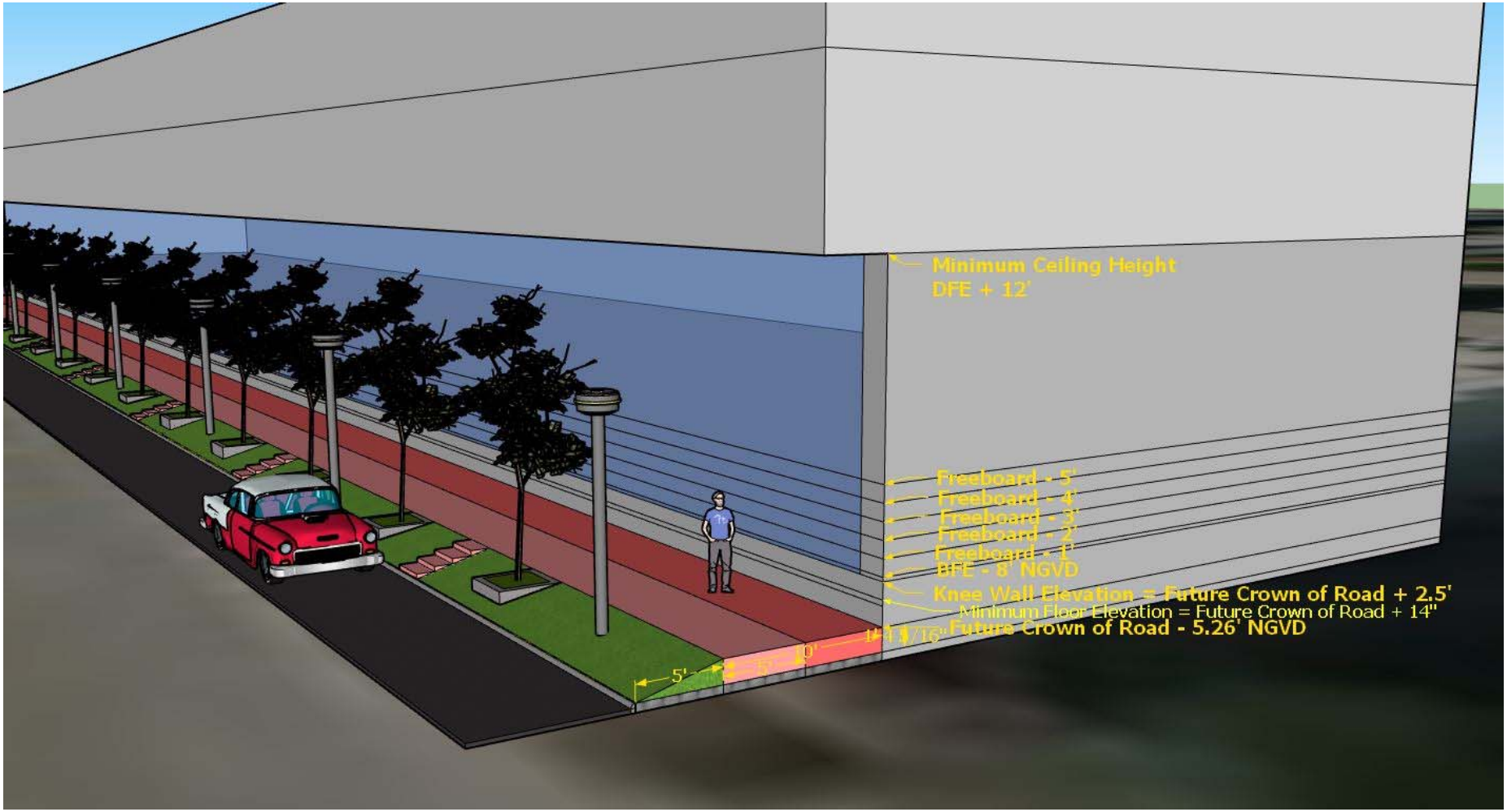
SECTION

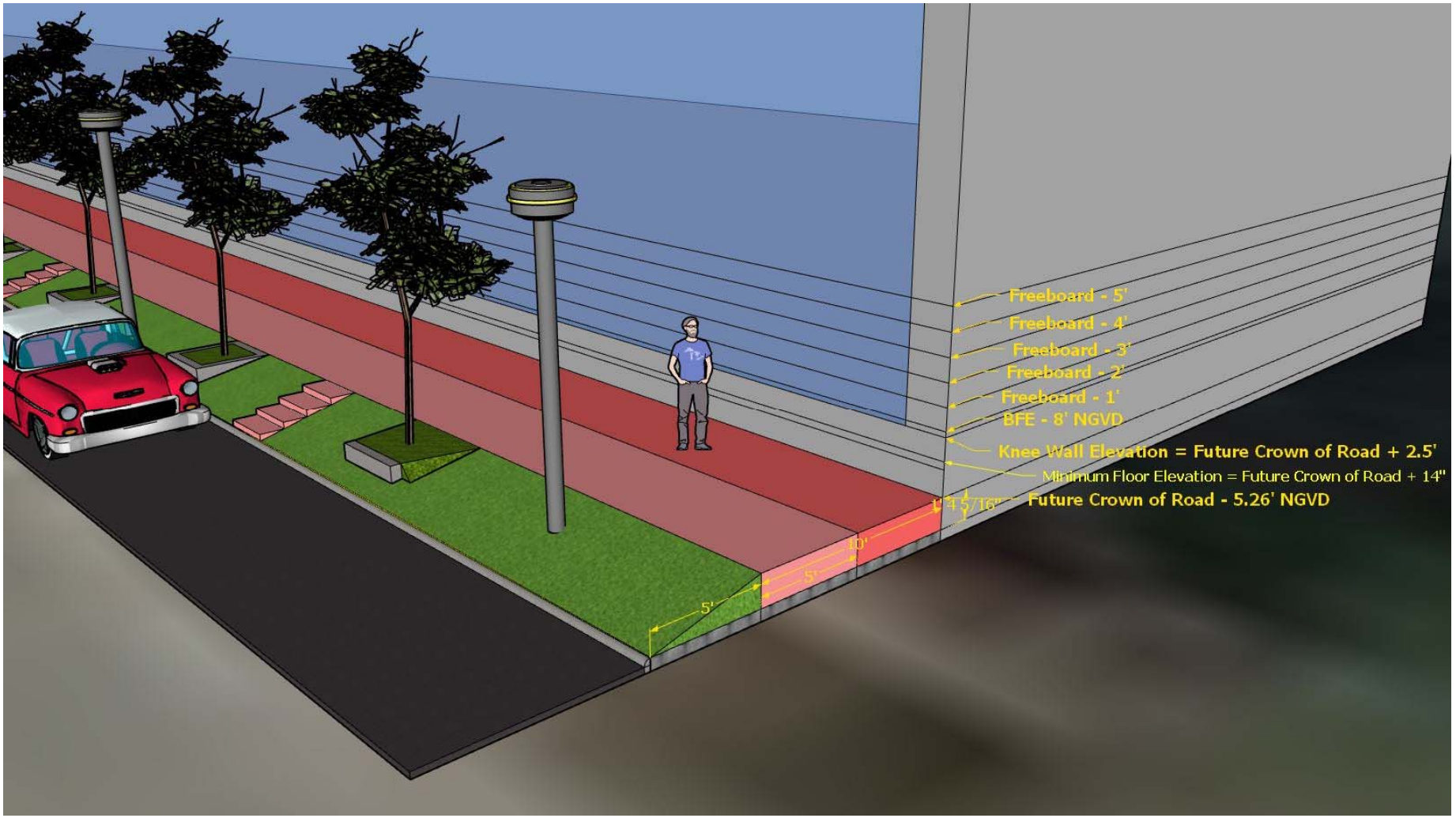
EXTERIOR RAMP REQUIREMENTS



Requires architects to consider the placement of doorways in relation to raised sidewalks before the building is designed. *Currently this is an afterthought.*


Minimum Ceiling Height
DFE + 12'
Freeboard - 5'
Freeboard - 4'
Freeboard - 3'
Freeboard - 2'
Freeboard - 1'
BFE - 6' NGVD
Knee Wall Elevation = Future Crown of Road + 2.5'
Minimum Floor Elevation = Future Crown of Road + 14"
Future Crown of Road - 5.26' NGVD
5'
10'
5'
1' 4 5/16"


Minimum Ceiling Height
DFE + 12'
Freeboard - 5'
Freeboard - 4'
Freeboard - 3'
Freeboard - 2'
Freeboard - 1'
BFE - 8' NGVD
Knee Wall Elevation = Future Crown of Road + 2.5'
Minimum Floor Elevation = Future Crown of Road + 14"
Future Crown of Road - 5.26' NGVD
5'
5'
10'


Freeboard - 5'
Freeboard - 4'
Freeboard - 3'
Freeboard - 2'
Freeboard - 1'
BFE - 8' NGVD
Knee Wall Elevation = Future Crown of Road + 2.5'
Minimum Floor Elevation = Future Crown of Road + 14"
1' 4 5/16"
Future Crown of Road - 5.26' NGVD
10'
5'
5'

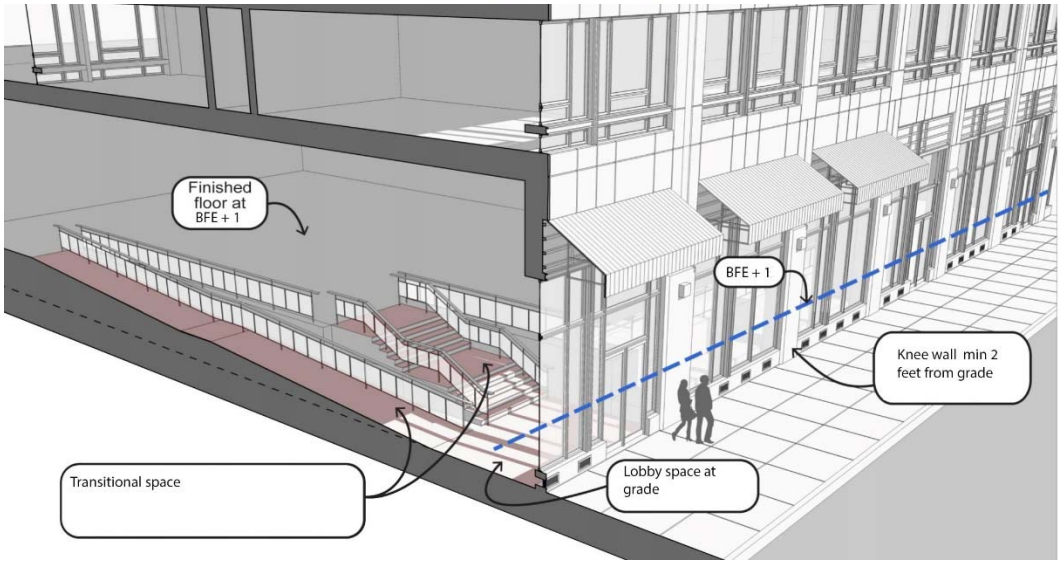
Why not raise floors higher today?

If commercial ground floors are required to be located at BFE + 1-5, there could be negative impacts, especially on small sites :

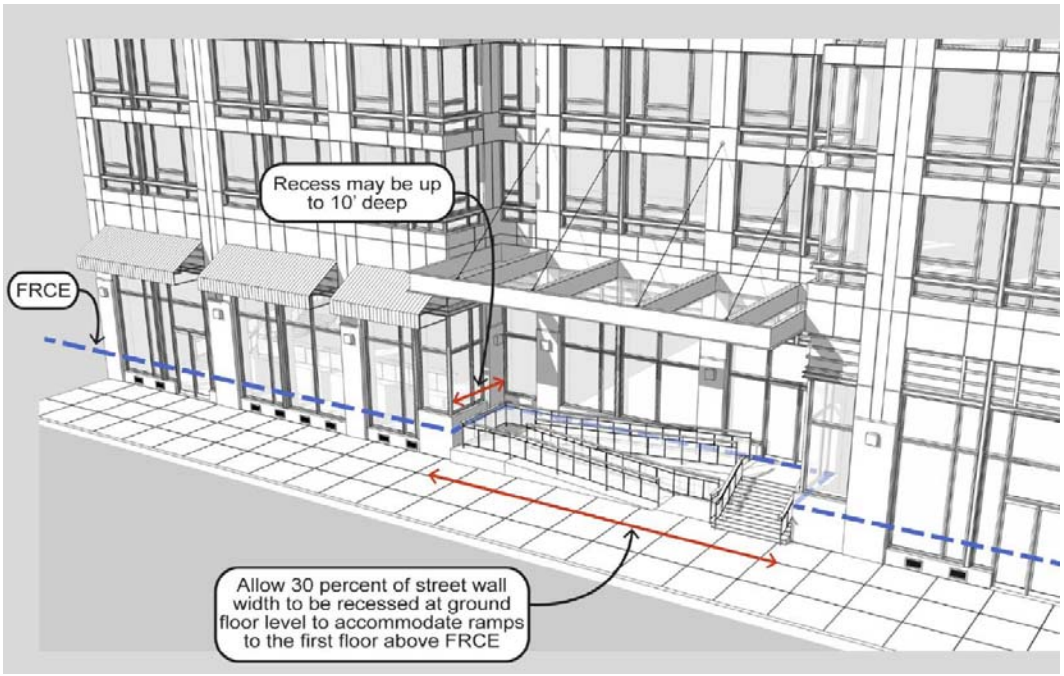
- Undesirable pedestrian experience.
- Undesirable commercial space since large areas are required for transition areas.
- Undesirable commercial space related to transparency and difference of heights between sidewalk and interior space.
- Potential unsafe spaces (lack of eyes on the street).
- Undesirable Architecture (tall knee walls).
- Elevated Construction Cost.
- Can be offset by large transition areas inside the structure or outside by providing greater setbacks; however, many sites do not have the depth, FAR, or historic character to accommodate this.
- Transitions between elevations are more complex.

The most important thing is for buildings to have sufficient height so that they can adapt as necessary. Windows and other façade elements are typically changed every 20 years, raising floors can be considered at those times.

Interior ramps consume a significant amount of floor area

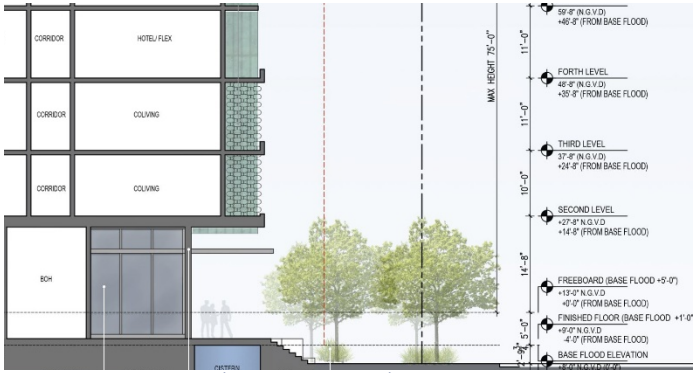


Unsightly exterior ramps



Project with a ground floor at BFE+ 1

1234 Washington Ave



Plaza

Greater setback to accommodate ramps and steps

Any Questions?