

City of St. Augustine

Residential Lot Grading Packet

FINAL February 22, 2023 v5



CITY OF
ST AUGUSTINE
EST. 1565

INTRODUCTION & OVERVIEW

APPLICABILITY

This overview and packet is specifically for single family or duplex residential structures (inclusive of short term rentals and long term residences) and increases of 500 square feet or more of lot coverage or impervious surface.

BULLETIN G-01-23

This informational packet was created in response to Bulletin G-01-23. The full bulletin can be read on page 4 in the Bulletin G-01-23 section. The bulletin's main concern is ensuring stormwater impact from future residential development is respectful of existing development. To achieve this, the city and applicants need to be able to clearly designate (a) the work to be completed and (b) its impacts to neighboring properties.

PACKET CONTENTS

This packet includes the following:

GOALS & KEYNOTES	03
BULLETIN G-01-23	04
APPLICATION COVER	05
PLAN CHECKLIST	06
EXHIBIT A: TYPICAL LOT GRADING	07
EXHIBIT B: EXAMPLE GRADING PLAN 1	08
EXHIBIT C: EXAMPLE GRADING PLAN 2	09
STORMWATER, RESILIENCY, AND LOW IMPACT DEVELOPMENT (LID)	10

COVER IMAGE: Accessed through Shutterstock. Royalty-free stock photo ID: 388981021. Licensed for use by Marquis Latimer + Halback, Inc. for web and limited print distribution.



GOALS

GOAL #1 PROTECT

Protect older homes from the flooding impacts of newer homes.



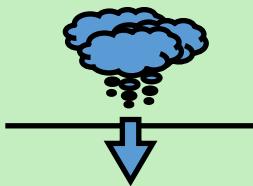
GOAL #2 MAINTAIN

Consider use of building techniques which do not require land filling for new construction.



GOAL #3 RECHARGE

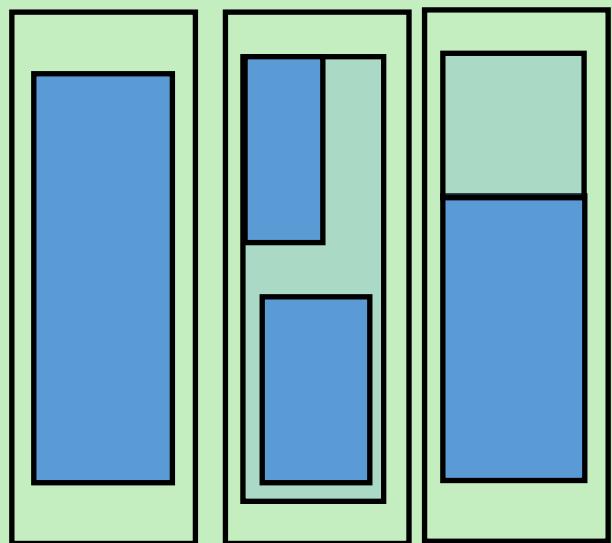
Limit amount of impervious surface area on residential lots.



KEYPOINTS

70%

IMPERVIOUS SURFACE RATIO



10 FEET

PROVIDE SPOT ELEVATIONS OFFSET 10 FEET ON BOTH SIDES OF THE PROPERTY LINE.

PLACE SPOT ELEVATIONS ON A 25 FOOT GRID ACROSS PROPERTY.

SEE EXHIBITS B AND C.



February 8, 2023

Bulletin G-01-23

To: Building Permit Applicants
 From: Richard Schauland, CBO, CFM, Building Official
Re: Residential Lot Grading Plan

This bulletin is to inform building permit applicants for residential structures of the requirement of additional construction documents. These additional documents are intended to ensure that the proposed construction complies with the Florida Building Code, Residential, Section R401.3 – Drainage. Applicants will have to provide a lot grading plan for all residential building permits for new single-family residences, an increase of 500 square feet or more of lot coverage or impervious surface, and for all Floodplain Management Permits.

Over the years, residential property owners have brought in fill to elevate their property to mitigate flood damage. This practice has caused flooding onto neighboring properties. Section R401.3 requires surface drainage to be diverted to a storm sewer conveyance or other approved point of collection that does not create a hazard. The lot grading plan and approval process are being implemented to ensure that the code is followed, which will help alleviate the flooding onto neighboring properties that is caused by normal rain events.

This new requirement will be implemented on or after January 1, 2024. If an application is submitted on or after this date without the lot grading plan, the application will not be accepted, and the applicant will be notified as to what is needed.

The requirements for the lot grading plan are:

1. Shall have spot elevations, including all roofed areas and impervious surfaces. This includes the site elevations on neighboring properties 10 feet from the boundaries of the subject property. Spot elevations shall be included in the boundary and topographic survey prepared by a Professional Land Surveyor.
2. Shall show existing and proposed ground elevations.
3. Shall show that all stormwaters will not be directed to or add impact onto any adjacent private property.
4. The grading plan must demonstrate that existing drainage patterns are managed according to all applicable legal requirements.

The lot grading plan will be reviewed and approved by the City Public Works Department. If, during the planning and design phase, it is determined that grading is not sufficient or acceptable, the use of gutters, swales, retaining walls or low impact development techniques can be used to divert or manage rainwater on site. These techniques shall be shown on the lot grading plan and will have to be approved by the Building Official (Floodplain Manager).

A post development lot grading plan shall be submitted to the Building Official prior to the final building inspection. The post development lot grading plan will be verified and inspected by the City Public Works Department. The Certificate of Occupancy or Certificate of Completion will not be issued until the post development lot grading plan has been approved.

NOTE: Once the lot grading has been approved, it is the property owner's responsibility to maintain the surface grading in perpetuity.

Applicant Name	
Applicant Phone Number	
Property Owner Name	
Property Owner Phone Number	
Site Parcel No.	
Site Address	

Please also refer to Bulletin G-01-23 issued by the Planning and Building Department.

Pursuant to Bulletin G-01-23, applicants will have to provide a lot grading plan for all residential building permits that will produce an increase of 500 square feet or more of impervious surface and for all Floodplain Management Permits.

Over the years, residential property owners have brought in fill to elevate their property to mitigate flood damage. This practice has caused flooding onto neighboring properties. Section R401.3 requires surface drainage to be diverted to a storm sewer conveyance or other approved point of collection that does not create a hazard. The lot grading plan and approval process are being implemented to ensure that the code is followed, which will help alleviate the flooding onto neighboring properties that is caused by normal rain events.

This new requirement will be implemented on or after January 1, 2024. If an application is submitted on or after this date without the lot grading plan, the application will not be accepted, and the applicant will be notified as to what is needed. The requirements for the lot grading plan are:

1. Shall have spot elevations, including all roofed areas and impervious surfaces. This includes the site elevations on neighboring properties 10 feet from the boundaries of the subject property. Spot elevations shall be included in the boundary and topographic survey prepared by a Professional Land Surveyor.
2. Shall show existing and proposed ground elevations.
3. Shall show that all stormwaters will not be directed to or add impact onto any adjacent private property.
4. The grading plan must demonstrate that existing drainage patterns are managed according to all applicable legal requirements.

The lot grading plan will be reviewed and approved by the City Public Works Department. If, during the planning and design phase, it is determined that grading is not sufficient or acceptable, the use of gutters, swales, retaining walls or low impact development techniques can be used to divert or manage rainwater on site. These techniques shall be shown on the lot grading plan and will have to be approved by the Building Official (Floodplain Manager).

A post development lot grading plan shall be submitted to the Building Official prior to the final building inspection. The post development lot grading plan will be verified and inspected by the City Public Works Department. The Certificate of Occupancy or Certificate of Completion will not be issued until the post development lot grading plan has been approved.

General questions related to the City permitting, review, approval, construction, and acceptance process should be directed to the Planning and Building Department at (904) 825-1060. Technical questions related to the lot drainage and grading plans should be addressed to Jonathan C. Foster, P.E., Development Supervisor at (904) 209-4273 or jfoster@citystaug.com.



PLAN CHECKLIST

Submittal information and plans should include, but shall not be limited to, the following (examples are provided in Exhibits A, B, and C):

→ A **boundary and topographic survey** shall be submitted as prepared by a **registered professional surveyor**. The survey should include at a minimum:

- Property line.**
- Spot elevations of the existing parcel** in question—shown on a 25' grid.
- Spot elevations on all adjacent properties** - 10-feet from the boundaries of the subject property at approximately 25-foot intervals.
- Limits of structure(s)** with **Finish Floor Elevation (FFE)** in NAVD88.
- Limits of impervious surfaces** (patios, pool decks, driveways, etc).
- Jurisdictional lines** (wetlands or easements).
- The **proposed grading plan** shall be drawn to a legible conventional engineering scale (1-inch = 20 feet, smallest scale accepted) using the site plan and survey as a base map.
- Show that all **stormwater will not be directed to or add impact onto any adjacent private property**.
- The grading plan must (a) **establish positive drainage** and (b) **not re-direct existing runoff** to an adjacent property unless an existing drainage easement or property owner agreement is provided.

→ The **proposed grading plan** shall include, at a minimum, the following features:

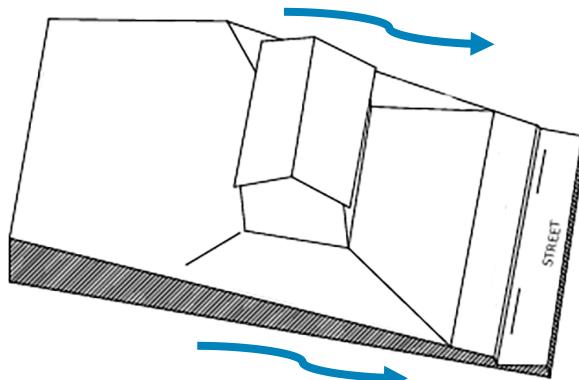
- Provide a **lot drainage plan** with the **finish floor elevation (FFE)** of the building in NAVD 88, along with **flow arrows and spot elevations** of anticipated flow. In general, drainage should be routed along the shortest practicable flow path to the street or other approved point of collection.
- Spot elevations**, including all roofed areas and impervious surfaces. This includes the **site elevations on neighboring properties** 10-feet from the boundaries of the subject property.
- Show all **existing and proposed ground elevations for new features** (structures, docks, etc).
- Identify existing drainage features on the lot, adjacent lots and the streets, such as storm **inlets, storm drain pipes, culverts, swales, berms, walls etc.** within 10-feet of the property line.
- Lot dimensions** (length and width) for each side of the parcel.
- Identify streets.**
- Show **limits of fill**.
- Label **proposed and existing buildings** – including distances from **property lines, zoning, setbacks, buffers etc.**
- Show **proposed impervious areas** with dimensions and square footage (walkways, driveways, sidewalks, garages, buildings, pools, etc.).
- Show **proposed Lot Grading Type (A, B, C)** as applicable. (See Exhibit A).
- Show appropriate **erosion control measures** (i.e. silt fence, filter socks, gutter buddies) to be used during construction to prevent impacts to adjacent properties and City infrastructure (streets, storm drains).
- Show **FEMA flood zones**.
- Show any designed **Low Impact Development (LID) features**.

NOTE: Once the lot grading plan has been approved, it is the property owner's responsibility to maintain the surface grading in perpetuity. The City may, at any time, require maintenance on the surface grading if alterations result in surface drainage problems.

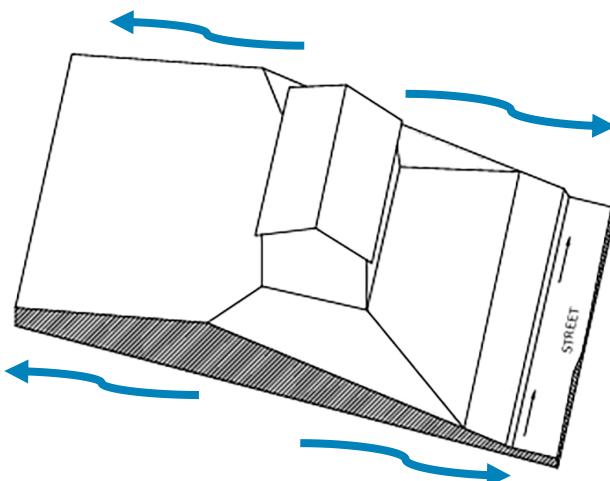


EXHIBIT A

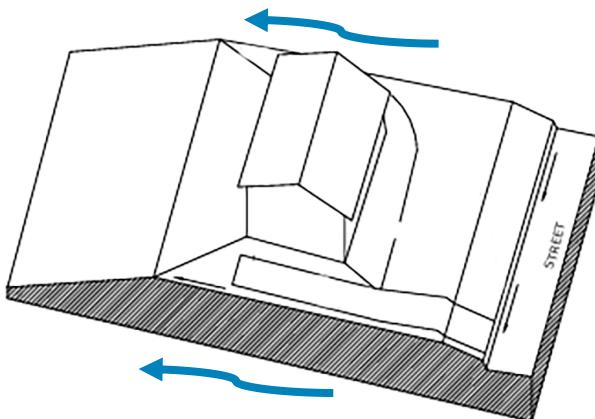
TYPICAL LOT GRADING TYPE



TYPE A | ALL DRAINAGE TO STREET.



TYPE B | DRAINAGE TO STREET AND REAR OF PROPERTY.



TYPE C | ALL DRAINAGE TO REAR OF PROPERTY.

Image by others.

EXHIBIT B

EXAMPLE GRADING PLAN 1

IMPERVIOUS SURFACE RATIO WORKSHEET (Method of Calculation)

IMPERVIOUS SURFACE - Any hard-surfaced, man-made area that does not readily absorb or retain water, including but not limited to building roofs, parking and driveway areas, sidewalks and paved recreational facilities.

IMPERVIOUS SURFACE RATIO (ISR) - The total area of impervious surfaces divided by the net area (excluding right-of-way) of the lot.

LOT AREA - The total horizontal area included within the lot lines of the lot. No public right-of-way or access easement for a public street or handle of a panhandle lot shall be included in the calculation of the lot area, nor shall the public right-of-way cross the lot area.

Property Address _____

Lot Area _____ square feet

Impervious Surfaces:

1. Existing building(s) footprint _____ sq.ft.

2. Existing concrete/paver patios, driveways, walkways, etc. _____ sq.ft.

3. Proposed roofed building(s) footprint _____ sq.ft.

4. Proposed concrete/paver patios, driveways, walkways, etc. _____ sq.ft.

Total Impervious Surfaces _____ sq.ft.

_____ divided by _____ = _____
Total Impervious Surface Lot Area Impervious Surface Ratio %

I, _____ (Signature) certify that the calculations submitted above for the Impervious Surface Ratio are accurate and complete to the best of my knowledge.

Date _____

A | PROPERTY LINE

B | SETBACKS

Note: setbacks and/or yards vary per zoning; see appendix for residential zoning categories.

C | JURISDICTIONAL LINES

Note: typical examples may include wetlands, utility easements, or access easements.

D | STRUCTURES & FINISHED FLOOR ELEVATIONS

Note: include FFE of each structure at NAVD 88.

E | IMPERVIOUS SURFACES

F | EXISTING TREES

Note: Trees over 3" in diameter may require PZB approval and/or tree removal permit if being removed.

G | SPOT ELEVATIONS

Note: Spot Elevations to be included within 10' of boundaries both on existing and adjacent parcels.

H | DIRECTIONS OF FLOW

I | EXTENTS OF FILL

Note: Piers and/or stem walls may help limit impact

J | STORMWATER MANAGEMENT STRATEGIES

Note: See Stormwater, Resilience, and LID section (Page 10) for examples.

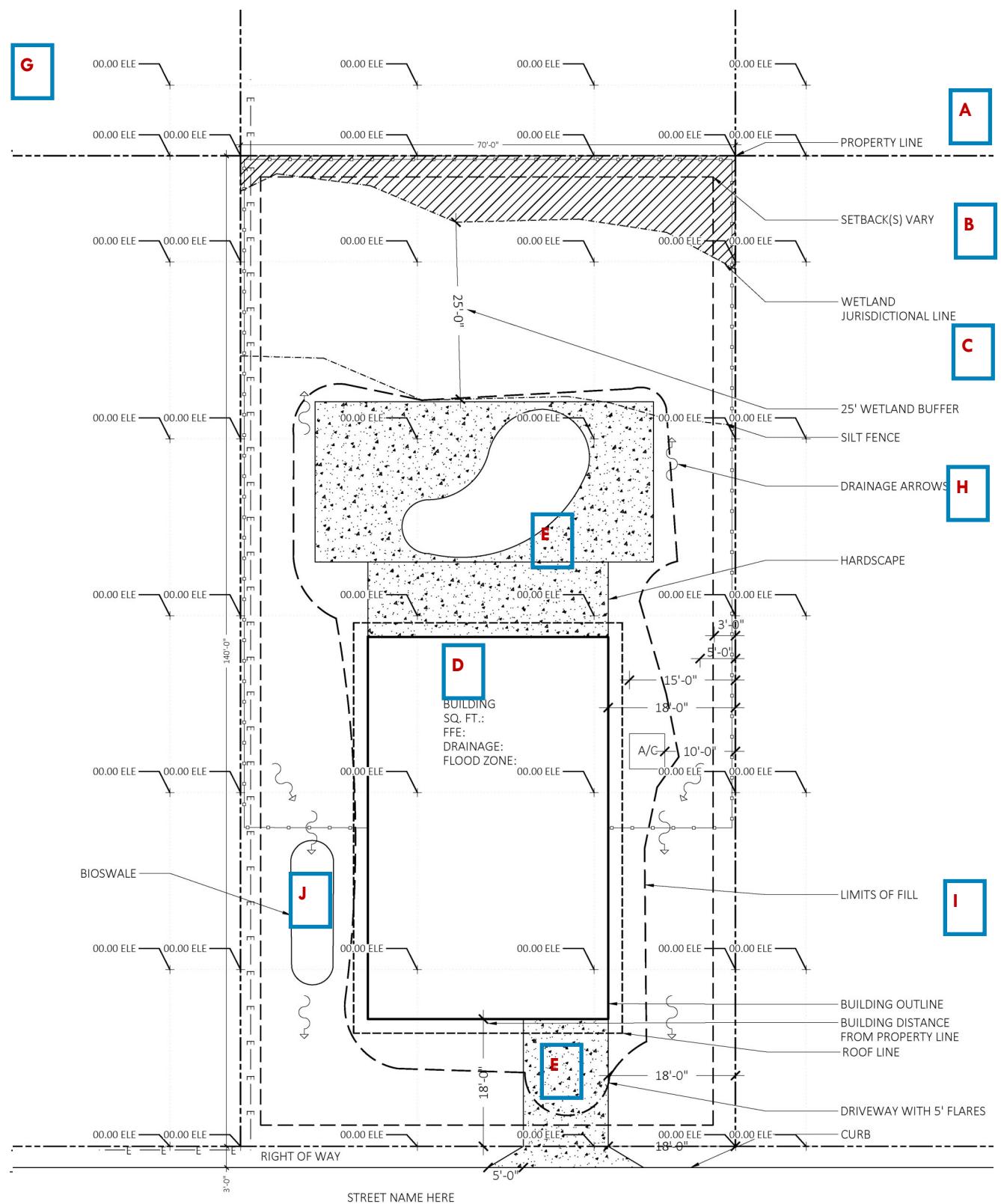


EXHIBIT C

EXAMPLE GRADING PLAN 2

IMPERVIOUS SURFACE RATIO WORKSHEET (Method of Calculation)

IMPERVIOUS SURFACE - Any hard-surfaced, man-made area that does not readily absorb or retain water, including but not limited to building roofs, parking and driveway areas, sidewalks and paved recreational facilities.

IMPERVIOUS SURFACE RATIO (ISR) - The total area of impervious surfaces divided by the net area (excluding right-of-way) of the lot.

LOT AREA - The total horizontal area included within the lot lines of the lot. No public right-of-way or access easement for a public street or handle of a panhandle lot shall be included in the calculation of the lot area, nor shall the public right-of-way cross the lot area.

Property Address _____

Lot Area _____ square feet

Impervious Surfaces:

1. Existing building(s) footprint _____ sq.ft.

2. Existing concrete/paver patios, driveways, walkways, etc. _____ sq.ft.

3. Proposed roofed building(s) footprint _____ sq.ft.

4. Proposed concrete/paver patios, driveways, walkways, etc. _____ sq.ft.

Total Impervious Surfaces _____ sq.ft.

_____ divided by _____ = _____
Total Impervious Surface Lot Area Impervious Surface Ratio %

I, _____ (Signature) certify that the calculations submitted above for the Impervious Surface Ratio are accurate and complete to the best of my knowledge.

Date _____

A | PROPERTY LINE

B | SETBACKS

Note: setbacks and/or yards vary per zoning; see appendix for residential zoning categories.

C | JURISDICTIONAL LINES

Note: typical examples may include wetlands, utility easements, or access easements.

D | STRUCTURES & FINISHED FLOOR ELEVATIONS

Note: include FFE of each structure at NAVD 88.

E | IMPERVIOUS SURFACES

F | EXISTING TREES

Note: Trees over 3" in diameter may require PZB approval and/or tree removal permit if being removed.

G | SPOT ELEVATIONS

Note: Spot Elevations to be included within 10' of boundaries both on existing and adjacent parcels.

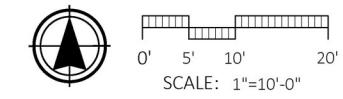
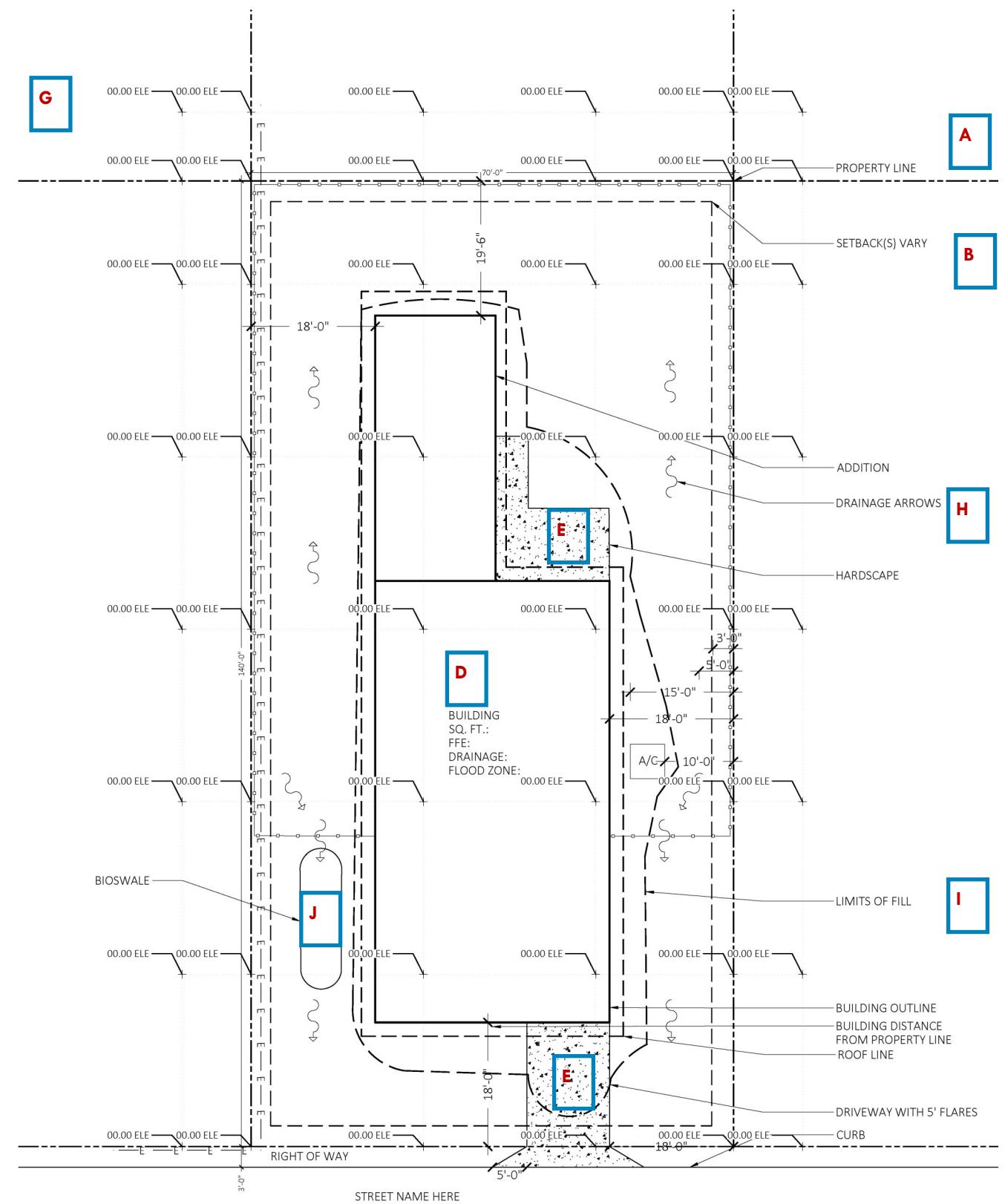
H | DIRECTIONS OF FLOW

I | EXTENTS OF FILL

Note: Piers and/or stem walls may help limit impact

J | STORMWATER MANAGEMENT STRATEGIES

Note: See Stormwater, Resilience, and LID section (Page 10) for examples.





STORMWATER, RESILIENCE, AND LOW IMPACT DEVELOPMENT

STORMWATER DESIGN OVERVIEW

Stormwater is recommended to be incorporated into the overall design of the project as amenities. The goal of encouraging the use of these mechanisms is to reduce stormwater runoff, capture contaminants closer to the source and reduce the use of potable water for irrigation and grey water activities.

LOW IMPACT DEVELOPMENT (LID) STORMWATER TECHNIQUES

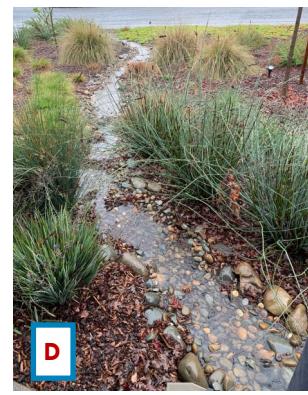
It is recommended that projects include **at least two of the following** low impact design concepts, which may be located anywhere on the project (including the front setback):

- A. Raised pier construction for homes (allowing for movement of stormwater and additional infiltration area)
- B. Rain water harvesting (rain barrels, underground cisterns, and similar to assist in water conservation)
- C. Green roofs
- D. Bio-swales
- E. Rain gardens
- F. Pervious pavement (permeable concrete, permeable pavers, and/or other permeable pavements)


B

C

E

A

D

F

Example of Rainwater harvesting and green roof.

Image from Unsplash and Shutterstock.

Example of rain garden and raised pier construction with porous skirting.

Image from Shutterstock and ML+H.

Examples of Stormwater Facility Design

Sources: The Urban Report; Green and Sustainable Services, LLC.



Masonry site walls with floodgates can provide flood protection.

Image from ML+H.

STREET WALL AS FLOOD PROTECTION

1. It is recommended that the street wall be considered as part of flood protection to the site. When used in conjunction with neighboring walls and earthen berms, it is possible to create an initial barrier to storm surge and flooding.
2. Openings in the wall for pedestrian walkways and driveways can be closed during storm events by using temporary barriers.

STREET WALLS

1. Low block / masonry walls may be appropriate. Street walls are recommended to not exceed 36", but four (4) feet is the maximum per Code. Wall height should be measured from the lower elevation of the public sidewalk or final elevation of adjacent interior development.
2. Portions of the wall above 3 feet should not be more than 50% solid.
3. Street walls shall be constructed of brick or masonry. Fencing may be included.
4. When landscaping is provided between the wall and the sidewalk, the landscaping strip is recommended to be a minimum of two (2) feet wide.

FOUNDATION

The relationship of the building floor height to the surrounding context of the neighborhood is important to consider.

Raised Pier Foundations: There are multiple advantages to raising the foundation, including (a) opportunities for stormwater infiltration, (b) movement of storm surge through a site in hurricane events, and (c) cross ventilation.

Design recommendations should consider:

1. Brick, tabby or concrete block (with texture) piers.
2. Spaces between piers left open.
3. Lattice infill between piers is common.



A low site wall can help to provide flood protection. Also shown is an open "pier system" for the front porch. Image from ML+H.



Example of Raised Pier construction with porous skirting (lattice).
Image from ML+H.

RECOMMENDED FIRST FLOOR ELEVATIONS

Homeowners may consider further elevating the first floor. General recommendations to keep the architectural context of the homes include:

1. Take into consideration maximum heights of FEMA and City required minimum elevations of 35' (conforming lot) and 30' (non conforming lot).
2. Do not raise the home more than 4' from existing grade.
3. When raising the home more than 4' from existing grade, consider bringing it up one floor by building a non-occupied space such as garages, storage, and similar under the structure. The inclusion of an exterior porch and first floor entry should be considered in lieu of open "stilt house" base.
4. The City encourages sensitivity to the neighborhood character and sense of place created by the streetscape.



COVER IMAGE: Accessed through Shutterstock. Royalty-free stock photo ID: 388981021. Licensed for use by Marquis Latimer + Halback, Inc. for web and limited print distribution.