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City of Sanibel

800 Dunlop Road
Sanibel, FL 33957

Meeting Minutes - Draft

Planning Commission

The times are estimated, but public hearings will not commence prior to the time stated

Tuesday, July 25, 2023 | **9:00 AM** | **BIG ARTS - 900 Dunlop Rd**

1. Call To Order

The meeting convened at 9:02 a.m.

2. Pledge of Allegiance (Chair Grogman)

Chair Grogman led the Pledge of Allegiance.

3. Roll Call

Present: 5 - Chairperson Roger Grogman, Vice Chair Eric Pfeifer, Commissioner Ken Colter, Commissioner Paul Nichols, and Commissioner Ty Symroski

Absent: 2 - Commissioner Laura DeBruce, and Commissioner Lyman Welch

a. Motion to excuse absent member(s): Commissioner DeBruce and Commissioner Welch

Vice Chair Pfeifer moved, seconded by Commissioner Colter to excuse absent Commissioners: Welch and DeBruce. The motion carried.

Excused: 2 - Commissioner Laura DeBruce, and Commissioner Lyman Welch

4. Public Comments on Items Not Appearing on the Agenda

Public Comment:
- Matt DePaolis - Environmental Policy Director of Sanibel Captiva Conservation Foundation (SCCF) - spoke to the issue being important enough to address a Community. Adding that Community engagement reflects how much the citizenry cares.

5. City Council Liaison Report

Council Liaison Miller gave a brief report regarding the July 18th City Council meeting as follows:

- Received update from Florida Department of Transportation regarding Sanibel Causeway Repair Project
- Presentation from Assistant County Manager, Glen Slayer regarding the Community Development Block Grants (CDBG) funding for the area
- County Action plan to be published Tuesday, August 1, 2023 followed by 9 public meetings

- Heard first reading of 4 items : elevated swimming pools, driveways, site planning for setbacks, as well as the Recreation Center Fee structure as recommended by the consultant study
- Second readings included: eliminating 180 day limitation for temporary recreational vehicles and trailers, ensuring the use of temporary use permits are in compliance with Senate Bill 250 as well as the design standards for build back. Finally, the Ordinance establishing the Parks and Recreation Advisory Committee.
- Approved two contracts: revenue study for the Building Department and the grant for the Tradewinds Drainage project
- Passed preliminary operating millage rate of 2.9598
- Solid Waste Assessment Rate approved - 7.7% increase
- Conducted a shade session to discuss negotiations with City unions
- Selected auditor from the Selection Committee - CliftonAllenLarson, LLP
- Endorsed the principles set forth by the Captiva Community Panel objecting to the proposed changes to height and density restrictions in South Seas/Captiva within the Lee County Land Development Code

Discussion ensued regarding the causeway spoil island parks. Mr. Symroski noted the increased recreational use by Bailey Road and the Commissioners thanked Vice Mayor Miller for the report.

6. Consent Agenda

a. Adoption of Minutes: July 11, 2023

Vice Chair Pfeifer moved, seconded by Commissioner Nicols to adopt the July 11th meeting minutes. The motion carried.

7. 9:05 - Public Hearings:

a. Consideration of a request for Conditional Use Permit, filed pursuant to Land Development Code Section 82-204 - Application and hearing, and Section 126-91 - Eating places, restaurant, grocery stores, etc., not listed as a permitted use, to allow for an existing restaurant (Shima Japanese Steakhouse) an increase of 32 seats (64 seats total) with no increase to the overall seat count at Sundial Resort (285 seats) referenced in Planning Commission Resolution 15-015, located at 1451 Middle Gulf Drive (Sundial Resort) - tax parcel (STRAP) no. 30-46-23-T4-00009.0010. The application is submitted by Lisa Bramm on behalf of the property owner RLR Investments LLC. **Application No. CUP-2023-000156.**

Planning Director Paula McMichael read into record the description of application CUP-2023-000156.

Deputy City Clerk Anna Hicks polled the Commission for site visits, ex-parte communications, and conflict:

- Chair Grogman	Site Visit	No Ex-parte	No Conflict
- Vice Chair Pfeifer	Site Visit	No Ex-parte	No Conflict
- Commissioner Colter	Site Visit	No Ex-parte	No Conflict
- Commissioner Nichols	Site Visit	No Ex-parte	No Conflict
- Commissioner Symroski	Site Visit	No Ex-parte	No Conflict

By motion and second, Commissioners DeBruce and Welch were excused from the meeting.

Deputy Clerk Hicks swore in the following:
- Craig Chandler - Deputy Planning Director
- Holly Milbrandt - Natural Resources Director
- Paula McMichael - Planning Director
- Lisa Bramm - On Behalf of property owner RLR Investments LLC

Craig Chandler, Deputy Planning Director spoke to the proposed request to allow an existing restaurant (Shima Japanese Steakhouse) an increase of 32 seats with no increase to overall seat count. Mr. Chandler summarized the staff report and detailed the attachments included with the agenda packet and gave a brief presentation regarding the proposed changes. Mr. Chandler noted Sundial being compatible with its use, and recognizes this does not change the overall seat count for the property in accordance with Planning Commission Resolution 15-015. Mr. Chandler noted no public comment had been received as of this meeting and that staff recommends approval with the 12 conditions listed in the staff report.

Discussion ensued regarding the front landscaping buffer and whether the beach and dune buffers were compliant. Mr. Chandler noted that prior to Hurricane Ian, the resort was legally conformed use to develop. Further discussion ensued regarding sea turtle lighting and whether the large proposed windows would be compliant. Lisa Bramm, representing the property owner noted the contractor, Sanibel Glass, being very familiar with Sanibel standards and regulations. Director Holly Milbrandt added that staff had reviewed the plans and added standards for sea turtle lighting regulations.

Commissioner Symroski moved, seconded by Vice Chair Pfeifer, to adopt Resolution 23-23, approving application CUP-2023-000156 with the 12 conditions listed in the staff report, to close the public hearing in this matter, and to authorize the Chair to execute the Resolution without bringing it back for further consideration. The motion carried 5-0 with Commissioners DeBruce and Welch excused.

Excused: 2 - Commissioner Laura DeBruce, and Commissioner Lyman Welch

b. Consideration of an application for Development Permit pursuant to Land Development Code Chapter 82, Article IV, Division 2, Subdivision III - Long-Form, Section 82-421(1) and Section 82-422 - Scheduling and notice, accompanied by a Major Subdivision Plat filed pursuant to Land Development Code Section 114-106 - Preliminary plat, to allow a Unified Residential Housing

(Cluster Housing) development including six parcels for single-family residential use and associated improvements, known as "Coastal Creek" subdivision. The subject properties are located at STRAP tax parcel no. 13-46-21-T2-00002.2000 and 13-46-21-T2-00002.4000. The application is submitted by Brian Smith, Ensite Inc., on behalf of the property owner, Buckingham 225 Development Inc. (Daniel W. Dodrill). **Application No. SPLT-2022-000074 and Application DP-2021-001803.**

Planning Director Paula McMichael read into the record the description of applications of SPLT-2022-000074 and DEP- 2021-001803.

Deputy City Clerk Anna Hicks polled the Commission for site visits, ex-parte communications, and conflict:

- Chair Grogman	Site Visit	No Ex-parte	No Conflict
- Vice Chair Pfeifer	Site Visit	No Ex-parte	No Conflict
- Commissioner Colter	Site Visit	No Ex-parte	No Conflict
- Commissioner Nichols	Site Visit	No Ex-parte	No Conflict
- Commissioner Symroski	Site Visit	No Ex-parte	No Conflict

By motion and second, Commissioners DeBruce and Welch were excused from the meeting.

Deputy Clerk Hicks swore in the following:
- Craig Chandler - City of Sanibel - Deputy Planning Director
- Holly Milbrandt - City of Sanibel - Natural Resources Director
- Korroush Saeian - President of Heron's Landing HOA
- Cathy Kozik - 5419 Osprey Court
- Sally Haynes - 5430 Osprey Court
- Doug Stimmel - 5418 Osprey Court
- Gil Dendinger - 5406 Osprey Court
- Melissa Laidlaw - 1983 My Tern Court
- Ed Ridlehoover - 4547 Buck Key Road
- Menashe Ben-David - 1983 My Tern Court
- Barbara Joy Cooley - Environment Committee CoChair - Committee of the Islands
- Brian Smith - Ensite - on behalf of Applicant Buckingham 225 Development Inc
- Don Main - RMA Geologic Consultants
- Dan Dodrill - Applicant Buckingham 225 Development Inc
- Sawyer Smith - Attorney on behalf of Applicant Buckingham 225 Development Inc

Attorney Agnew spoke to the process for the hearing, stating that this was an entirely new hearing and the previous applications and evidence were not being considered today. Deputy Planning Director Chandler entered the staff report including

attachments as City exhibit C-1. Mr. Chandler provided a brief Powerpoint presentation that detailed the project and the task of the Commission.

Holly Milbrandt, Director of Natural Resources, spoke to the report provided by the Natural Resources Department, speaking to the history of the site being a wastewater package plant and focusing on departmental processes to review Land Development Code Section 86-40. Ms. Milbrandt further summarized her report and spoke to the positives of Unified Residential Housing also known as Cluster Housing. She further detailed the part of the City owned parcel which contains an existing active bird rookery, including how this property does not directly abut the lake but the department would still be reviewing to protect the adjacent environmental habitats. Ms. Milbrandt additionally spoke to water discharge and the distance from the vegetation setback standards. Ms. Milbrandt then detailed working with the Department of Environmental Protection (DEP) to locate the Certificate of Completion for remediation of the site. Ms. Milbrandt detailed how the City changed the zoning use of the property which included additional soil testing that was submitted to the DEP who required no additional testing. Ms. Milbrandt concluded by detailing the soil and groundwater reports included in the staff report.

Mr. Chandler spoke to the Staff recommendation of approval with the 25 conditions listed in the staff report.

Commissioner Colter stepped out of the meeting at 10:16 a.m.

Chair Grogman asked the applicants to provide their presentation:

Sawyer Smith spoke to staff being thorough and that the applicant agrees with all conditions listed except the one that requires 100% native coverage in the landscaping, requesting the allowance for 75% native coverage on the six residential lots.

Commission Colter rejoined the meeting at 10:20 a.m.

Commissioner Symroski inquired of Staff about process, detailing how he sees two applications - one for clearing and developing the plot and the other being the preliminary plat planning neither of which authorize the immediate building of homes. Mr. Chandler confirmed. Mr. Symroski spoke regarding the final plat approval and how the plots would be numbered and no longer named by monument/place/legal description. He further inquired about requiring an HOA (Home Owners Association) to maintain the common areas, noting this could be the only time to look at these standards and require more deed restrictions. Mr. Chandler noted the final plat review will include all the concerns Mr. Symroski brought forward but that today the Commission would be looking at the actual building and landscaping techniques to

protect the environment.

Vice Chair Pfeifer reminded the Commission why the item was remanded back from City Council due to failure to properly apply LDC Section 86-40 - Location and Construction Maintenance that minimizes environmental impacts. Mr. Pfeifer noted Staff was doing a good job at presenting the information and minimizing environmental damage. Commissioner Colter and Chair Grogman echoed Vice Chair Pfeifer's comments.

Public Comment:
- Mr. Bob Brooks - Attorney for Heron's Landing Homeowners provided a brief Powerpoint presentation (Presentation added to the record.)
- Doug Stimmel - 5418 Osprey Court - overall spoke to concerns with nutrient loads in the lake
- Cathy Kozik - Heron's Landing Resident - spoke to the need to be stewards of the land and use of the environment around Sanibel
- Melissa Laidlaw - spoke to health concerns with blue-green algae. Commission inquired about the date of the photo in the presentation. Ms. Laidlaw noted it was taken by Natural Resources on June 21st.
- Sally Haines - Osprey Court - spoke to living on the most polluted lake on the island and inquired why the City would allow more homes to be built on or near the most polluted lake on Sanibel Island.
- Dr. Korroush Saeian - Cardiologist - spoke to environmental issues being exacerbated by algae blooms.
- Ed Ridlehoover - Sanibel Bayous - expressed concerns for the maintenance at the entryway to Herons Landing, Sanibel Bayous, and others, noting there was no mention that Coastal Creek would be required to help with the maintenance at the front of the development.
- Gil Dendinger - spoke to the need to work with homeowners to make the plat a preserve. Owners would have to agree to sell to preserve this land thus the Sanibel plan could be abided by.
- Barbra Joy Cooley - Committee of the Islands: Environment Committee Chair, Commended residents of Heron's Landing and Sanibel Bayous for bringing discussion forward.

Chair Grogman spoke to the process of the hearing, concerns for whether construction will exacerbate issues with the lake or remediate them, would this change help or hurt, and to what degree the Community acts in order to find a benefit for all parties.

The meeting recessed at 11:17 a.m. and reconvened at 11:22 a.m.

Sawyer Smith introduced Don Main, who provided a brief background of his

experience and stated the proposed development would not exacerbate the nutrient loads of the lake. Commission inquired why the nutrient loads would not get worse to which Mr. Main simply answered that the typical remediation was completed and that fill was placed on the site following remediation.

Commissioner Nichols inquired if the testing was comprehensive enough, if the report was based on DEP's request for additional sampling, inquired about the depth of testing, and noted hearing two different scientists on either side of the table. The Applicant's team then clarified that the testing had been performed at the proposed locations of the homes.

Discussion ensued whether there would be more data if more samples were taken and the types of nutrients found in the soil bores. The Commission further inquired about the comment that phosphorus has no adverse health effects which Mr. Main confirmed. Vice Chair Pfeifer noted the Community recognizes issues with phosphorus loads, forcing water around the land and not through it.

Chair Grogman spoke to the removal of the soil remediation effort and inquired if that the accepted remediation effort. Further noting that encapsulation is not DEP's methodology simply because it's still there. Mr. Grogman concluded by inquiring if the City did anything more than place more fill and scrape the soil to which Staff replied they followed the recommendations of the DEP.

Mr. Brooks stated in looking at plans and site; construction will only disturb the necessary areas to build homes and roadways. Limiting disturbances by adding more fill and not digging, adding more layers. He further noted working with the City's rules and requirements. Getting conditions that have gone above and beyond any other property but being happy to comply.

Discussion ensued in regards to damages to the lake water quality and what factors in overall lake health. Continued discussion ensued regarding excavation and digging for utilities. Commissioner Symroski inquired if the excavated materials from digging for utilities and landscaping will be held in a nonporous container so that rainwater does not leach the underlying ground. Some means during the excavation to contain the phosphorus loaded soil.

Deputy Planning Director Chandler noted the condition only addresses excavation in terms of placement of a residential swimming pool. Excavation does not address plantings or utility placement.

Discussion ensued regarding setbacks and exterior home maintenance and whether contractors or owners would be doing work outside the property line in order to make repairs. For example erecting scaffolding for repair work entering the protected

common areas and or neighboring properties. Mr. Chandler noted Staff would not authorize work that impacts any of these areas.

Discussion continued regarding the condition for 100% native vegetation. Commissioner Symroski inquired about the front of the road and entrance landscaping. Mr. Smith on behalf of the owner noted the property came with entrance easement access. The deed is included in the agenda packet. Discussion ensued regarding roadside parking. Staff noted the road side parking prohibitions would be enforceable in public rights-of-way.

Vice Chair Pfeifer noted the proposed development is consistent with Sanibel Plan and Land Development Code Section 86-40 (Cluster Housing) and so does the accompanying plat and spoke to the referenced lake not being a concern to the applicant as it is not abutting the proposed site.

Chair Grogman spoke to the lake being singled out due to the extent of the conditions, inquired as to what level the nutrients needed to be to improve the conditions of the lake, concurring with the fact that the Applicants did not cause the nutrient loads in the lake, and if a condition for remediation would be appropriate. Ms. Milbrandt commented that the lake is jointly owned between the City and the 9 owners who abut the lake, noting lake management reports include sampling community lakes as well as the canal system. Additional sampling occurring for all water bodies due to Hurricane Ian impacts. Any additional sampling would require approval and funding by Council.

Public Comment:
- Ralph Brooks - Heron's Landing Attorney - Expressed concerns for lake water quality

Discussion ensued regarding the 75% native/25% non-native requirements and if they were applicable to Heron's Landing or if they too had to comply with 100% native vegetation. Attorney Agnew spoke to the agreement differences. Deputy Planning Director Chandler reminded the Committee that the lake is not included in the proposed conditions by staff as best management practices.

Commissioner Colter inquired if the City should look at the possibility of adding berms or mitigation measures for current Osprey Court owners. Attorney Agnew responded that this would be a City consideration and that conversation has not occurred.

Discussion ensued regarding modifying conditions to allow for 75/25 native vegetation on the small 6 lots and removing all excavated soils from the site, including for swimming pools, foundations, and utility trenches. Attorney Agnew proposed the

amendment to Condition 19 be "All landscaping within the Coastal Creek subdivision shall be 100% native except the six platted lots which are required to be at least 75% native; the use of sod is prohibited."

Vice Chair Pfeifer inquired if the applicant is comfortable with proposed condition 22 related to soil disposal. Mr. Smith noted the cost being prohibitive and stated that this would be an unfavorable burden for the project. Discussion ensued regarding the City's definition of excavation. Mr. Smith noted the deminimus amount of soil that would have to be removed. Mr. Chandler spoke to the intentions of the conditions and the specifics of the site related to contaminated soils. Mr. Chandler noted the intention was to remediate by the placement of fill being used as opposed to the soil from the original site.

Commissioner Pfeifer moved, seconded by Commissioner Colter to approve Resolution 23-24, approving application SPLT-2022-000074 and DP-2021-0001803 with the 24 conditions listed in the staff report, with the revision to the whereas clause to reference 86-40, and amending Condition 19 as state by Attorney Agnew, to close the public hearing in this matter, and to authorize the Chair to execute the Resolution without bringing it back for further consideration. The motion carried by a vote of 4-1 with Commissioner Symroski opposed and Commissioner DeBruce and Welch excused..

Opposed: 1 - Commissioner Ty Symroski

Excused: 2 - Commissioner Laura DeBruce, and Commissioner Lyman Welch

8. Report from Planning Department

a. Upcoming meeting dates:

i. Planning Commission - Tuesday, August 8, 2023

ii. Report to City Council - Tuesday, August 15, 2023 - Chair Grogman

iii. Below Market Rate Housing Review Subcommittee Meeting - Tuesday, September 26, 2023

Planning Director McMichael spoke to the next meeting on Aug 8th pertaining to one public hearing for water ward extension and cancelling the October 10th meeting. The Land Development Code Subcommittee meeting on the 24th will be for Green Building standards and best practices. Finally the Below Market Rate Housing Meeting will be held on September 26th.

Holly Milbrandt Director of Natural Resources spoke to Coconut palms and the Proposed changes to vegetation Standards, Senate Bill 250 cannot make more strict rules post storm. Coconut palm was added in 2011 to the invasive exotic plants list. Planting in the gulf beach zone is prohibited and staff has spent lots of time educating the public of the status of the coconut palm. Ms. Milbrandt spoke to reviewing the code to make allowances for plaiting of coconut palms in particular zones.

9. Report from Commission Members

Commissioner Pfeifer inquired about height limits and process for changes on Sanibel to which discussion with staff ensued.

10. Public Comment

There were no additional public comments.

11. Adjournment

There being no further business, the meeting adjourned at 1:36 p.m.

COASTAL CREEK

MAJOR SUBDIVISION AND
SITE DEVELOPMENT PLANS

PART OF SECTION 13, TOWNSHIP 46 SOUTH, RANGE 21 EAST
SANIBEL, FLORIDA

PREPARED FOR: Buckingham 225 Development, Inc.

PARCEL ZONING
D-2 RESIDENTIAL DISTRICT

PARCEL STRAP NUMBERS
13-46-21-T2-00002.2000

13-46-21-T2-00002.4000

PARCEL BOUNDARY
±3.36 ACRES

FLOOD ZONE DESIGNATION
ZONE VE: ELEV. 11 N.A.V.D.

CONSTRUCTION
INFORMATION

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WWW.SUNSHINE811.COM

VICINITY MAP
N.T.S.

PLAN INDEX

SHEET NO.	DESCRIPTION
C-01	COVER SHEET, VINCINTY MAP & INDEX
C-02	GENERAL NOTES
C-03	AERIAL MAP
C-04	SOILS & EXISTING CONDITIONS MAP
C-05	EROSION & SEDIMENT CONTROL PLAN
C-06	SITE PLAN
C-07	PAVING, GRADING & DRAINAGE PLAN
C-08	TYPICAL SECTIONS
C-09	PAVING, GRADING & DRAINAGE DETAILS
C-10	UTILITY PLAN
C-11	UTILITY DETAILS
~~LA-01~~	~~EXISTING LANDSCAPE & DEMOLITION~~
~~LA-02~~	~~LANDSCAPE PLAN~~
~~LA-03~~	~~EXISTING VEGETATION~~
~~LA-04~~	~~LANDSCAPE DETAILS~~

SITE PLAN SET

CERTIFICATION BY ENGINEER

THIS DOCUMENT IS SIGNED AND SEALED TO SECURE THE DATA IN THE PERMIT APPLICATION AND ANY REFERENCED SHEETS THAT WERE SUBMITTED ELECTRONICALLY AS DESCRIBED IN FLORIDA ADMINISTRATIVE CODE (PROCEDURES FOR SIGNING AND SEALING ELECTRONICALLY TRANSMITTED PLANS, SPECIFICATIONS, REPORTS OR OTHER DOCUMENTS) FOR THE APPLICABLE REGISTERED PROFESSIONAL REGULATORY BOARD. SHEETS INCLUDE: C-01, C-02, C-05-C-10

Jonathan Wadas, P.E.

Digitally signed by Jonathan Wadas, P.E.
DN: C=US, E=jonathanw@en-site.com, O="EnSite, Inc.", OU=State of Florida License No. 76911, CN="Jonathan Wadas, P.E."
Date: 2022.06.29 08:42:09-04'00'

THE SEAL APPEARING ON THIS DOCUMENT IS AUTHORIZED BY:	
REGISTERED PROFESSIONAL:	JONATHAN WADAS
LICENSE:	LIC. # 76911
DATE:	6-26-22
REGISTERED PROFESSIONAL COMPANY:	ENSITE, INC.

ensite
2401 FIRST STREET, SUITE 201
FORT MYERS, FLORIDA 33901
PH: (239)-226-0024
EB-26544 CA-LC26000374

Buckingham 225 Development, Inc.
5961 Northland Rd.: #1
Fort Myers, FL 33905
CLIENT NAME AND ADDRESS

COASTAL CREEK
SANIBEL, FLORIDA
PROJECT NAME AND LOCATION

This item has been electronically signed and sealed by Jonathan Wadas, PE, on 6/29/2022 using a SHA authentication code.Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

JONATHAN WADAS LICENSE No. 76911 STATE OF FLORIDA PROFESSIONAL ENGINEER

JONATHAN WADAS, PE
FL License No. 76911

NO.	REVISION	DATE
R1	PER SFWMD AND CITY COMMENTS	2-18-22

REVISIONS DESCRIPTION

DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

COVER SHEET, VINCINTY MAP & INDEX
SHEET TITLE

C-01
SHEET NUMBER

C:\Users\brians\Ensite\Active Projects - Documents\1419 Daniel Wayne Homes\1419-01 Sanibel 3,35 Acres\CAD\Engineering_Working Files\1419-01 CNA.dwg (COV) brians Jun 29, 2022 - 6:53am

GENERAL NOTES:

1. THE SURVEY SHOWS EXISTING EASEMENTS, IF ANY, THAT WERE PROVIDED.
2. PROPOSED AND EXISTING ELEVATIONS ARE BASED ON NAVD88.
3. THIS SITE IS LOCATED IN FEMA FLOOD ZONE VE 11.
4. THIS SITE CAN BE USED SAFELY FOR BUILDING PURPOSES WITHOUT UNDUE DANGER FROM FLOOD OR ADVERSE SOIL OR FOUNDATION CONDITIONS CONTINGENT UPON SOIL BORINGS AND DESIGN FOR EACH STRUCTURE BY THE BUILDING ARCHITECT TO ACCOMMODATE SUBSOIL CONDITIONS. THIS STATEMENT DOES NOT INCLUDE SINKHOLES.
5. THE LOCATION OF EXISTING UTILITIES, PAVEMENT, VEGETATION, AND MISCELLANEOUS IMPROVEMENTS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
6. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE CONTRACTOR SHOULD NOTIFY THE OWNER/ENGINEER WITHOUT DELAY.
7. EXISTING FACILITIES SHALL BE RESTORED TO A CONDITION EQUIVALENT TO THAT WHICH EXISTED PRIOR TO COMMENCING CONSTRUCTION, AT NO ADDITIONAL COST TO OWNER.
8. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS, (LATEST EDITION). AND CITY OF SANIBEL STANDARDS, DETAILS, AND SPECIFICATIONS.
9. LOCATIONS OF INLETS AND STORM DRAINS MAY BE FIELD ADJUSTED TO PRESERVE EXISTING VEGETATION.
10. THE CONTRACTOR IS REQUIRED TO ADJUST ALL VALVE BOXES, MANHOLE RIMS, GRATES, FIRE HYDRANTS, ETC. AS NECESSARY TO MATCH PROPOSED GRADES.
11. CONTRACTOR SHALL NOTIFY CITY OF SANIBEL A MINIMUM OF 72 HOURS PRIOR TO ALL REQUIRED INSPECTIONS.
12. CONTRACTOR TO PROVIDE AND MAINTAIN SILT FENCE AND OTHER APPROPRIATE MEASURES TO EFFECT THE FILTRATION OF SURFACE WATER FLOWS AND TO PROVIDE EROSION PROTECTION DURING CONSTRUCTION ACTIVITIES. PROTECTION IS TO BE MAINTAINED DURING THE CONSTRUCTION PERIOD UNTIL DISTURBED SOILS HAVE BEEN STABILIZED WITH GRASS OR SUITABLE EROSION PROTECTION TREATMENT.
13. PROPOSED ROADWAYS SHOWN ARE PRIVATE AND SHALL BE PRIVATELY MAINTAINED.
14. ALL UNPAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED WITH NATIVE VEGETATION AND MULCHED UNLESS NOTED OTHERWISE.
15. EXISTING OFF-SITE DRAINAGE PATTERNS SHALL BE MAINTAINED DURING CONSTRUCTION.
16. CONTRACTOR SHALL RETAIN, ON THE WORK SITE, COPIES OF ANY PERMITS NECESSARY FOR CONSTRUCTION.
17. CONTRACTOR SHALL PROMPTLY REPORT ALL FIELD CHANGES TO THE ENGINEER.
18. CONTRACTOR SHALL CLEAR ALL EXCAVATION AND FILL AREAS; ACTUAL LIMITS OF CLEARING SHALL BE DETERMINED IN THE FIELD BY OWNER OR ENGINEER. CLEARING SHOULD ADHERE TO LDC ECOZONE STANDARDS.
19. CONTRACTOR SHALL REMOVE ALL MUCK AND OTHER UNSUITABLE MATERIAL FROM FILL AREAS PRIOR TO PLACEMENT OF FILL, IF ENCOUNTERED. ALL MUCK AND OTHER UNSUITABLE MATERIAL EXCAVATED FROM LAKES OR REMOVED FROM FIll AREAS SHALL BE STOCKPILED AT THE PROPOSED PROJECT AS DETERMINED BY THE OWNER.
20. SITE GRADES MAY BE ADJUSTED IN FIELD BY ENGINEER.
21. LOCATION OF STORM DRAINAGE END TREATMENTS ARE SUBJECT TO MODIFICATION IN THE FIELD BY OWNER OR ENGINEER TO PRESERVE EXISTING VEGETATION.
22. CONTRACTOR SHALL USE DESIGNATED CONSTRUCTION ENTRANCES FOR EMPLOYEES AND DELIVERY OF MATERIALS.
23. THE LOCATIONS OF EXISTING UTILITIES AND STORM SEWERS SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM RECORD DRAWINGS AND FIELD INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXACT LOCATION PRIOR TO CONSTRUCTION AND PROVIDE IN WRITING ANY DISCREPANCIES TO THE ENGINEER.
24. DURING CONSTRUCTION, GRATE INLET AND JUNCTION BOX OPENINGS SHALL BE COVERED WITH FILTER FABRIC (MIRAFI 140N OR APPROVED EQUAL) TO PREVENT DEBRIS AND FILL FROM FALLING INTO THE INLET.
25. THE CONTRACTOR SHALL ACCURATELY PLOT THE LOCATIONS AND DEPTHS OF ALL IMPROVEMENTS INSTALLED ON A FINAL SET OF RECORDED DRAWINGS WHICH SHALL BE DELIVERED TO THE ENGINEER.
26. CONTRACTOR IS REQUIRED TO OBTAIN FROM THE ENGINEER AND OWNER WRITTEN APPROVAL FOR ANY DEVIATIONS FROM THE PLANS AND/OR SPECIFICATIONS.
27. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND USAGE OF THE EXISTING STREETS ADJACENT TO THE PROJECT. ALL TRAFFIC MAINTENANCE CONTROL SHALL BE IN ACCORDANCE WITH THE FLORIDA MANUAL OF TRAFFIC CONTROL AND SAFE PRACTICES FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, AND UTILITY OPERATIONS.
28. ANY CRACKS OR DAMAGE TO THE SIDEWALK, DRIVEWAY APRON, ROADWAY, STREET-TREES, LIGHTING, METER BOXES, BACKFLOW PREVENTERS, CLEAN-OUTS, STORM-WATER STRUCTURES, OR VALVES WILL NEED TO BE REPAIRED PER PUBLIC WORKS DIRECTOR OR ASSIGNED DESIGNEE.
29. NO PONDING OR STANDING WATER WILL BE ALLOWED THROUGHOUT THE SITE IN CONSTRUCTION AREAS AND A LEVELING COURSE MAY BE REQUIRED.

GENERAL UTILITY NOTES:

1. ALL WORK SHALL CONFORM TO LATEST REVISION OF CITY OF SANIBEL AND THE ISLAND WATER ASSOCIATION INC (IWAI) UTILITIES DESIGN STANDARDS.
2. ANY QUANTITIES SHOWN ON PLANS ARE NOT VERIFIED BY CITY OF SANIBEL PUBLIC WORKS OR IWAI.
3. A PRE-CONSTRUCTION MEETING IS REQUIRED BEFORE WORK MAY BEGIN. CITY OF SANIBEL AND IWAI SHALL BE NOTIFIED 48 HOURS PRIOR TO PROJECT MOBILIZATION.
4. ALL WORK AND MATERIALS, WHICH DO NOT CONFORM TO LEE COUNTY UTILITIES SPECIFICATIONS, ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
5. ANY WORK PERFORMED WITHOUT THE KNOWLEDGE OF LEE COUNTY UTILITIES IS SUBJECT TO RE-EXCAVATION, REMOVAL AND REPLACEMENT OF SAME TO BE DONE AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR SHALL PROVIDE SUFFICIENT PERSONNEL AND EQUIPMENT ON THE JOB AT ALL TIMES DURING CONSTRUCTION TO SATISFY THE SPECIFICATIONS AND TO COMPLETE WORK.
7. LEE COUNTY UTILITIES INSPECTION STAFF MAY OBSERVE PROJECT CONSTRUCTION.
8. THE CONTRACTOR IS TO UNCOVER ALL EXISTING LINES BEING TIED INTO AND VERIFY GRADES BEFORE BEGINNING CONSTRUCTION.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND TAKE ALL POSSIBLE PRECAUTIONS TO AVOID ANY DAMAGE TO ALL UNDERGROUND PIPELINES, TELEPHONE, CABLE TV, ELECTRIC LINES/CONDUITS AND STRUCTURES IN ADVANCE OF ANY CONSTRUCTION. LEE COUNTY UTILITIES WILL NOT GUARANTEE ANY LOCATIONS AS SHOWN ON THESE PLANS OR THOSE OMITTED FROM THESE PLANS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR BY HIS FAILURE TO EXACTLY LOCATE AND PROTECT EXISTING UTILITIES AND STRUCTURES.
10. CONTRACTOR SHALL VERIFY ALL QUANTITIES SHOWN ON THE PLANS. IF ANY DISCREPANCIES IN QUANTITIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER.
11. ALL REGULATORY AND PERMITTING AGENCY REQUIREMENTS SHALL BE COMPLIED WITH.
12. IN THE EVENT THAT HARD LIMESTONE FORMATION IS ENCOUNTERED, MAKING IT IMPOSSIBLE TO EXCAVATE TO THE DEPTH REQUIRED UNDER THIS CONTRACT, THE CONTRACTOR MAY BE ALLOWED TO REDUCE THE PIPE COVER TO NOT LESS THAN TWO (2) FEET WHILE MAINTAINING LEE COUNTY UTILITIES REQUIRED THICKNESS OF BEDDING UNDER THE PIPE. SUCH DEVIATION FROM THE PLANS MUST BE FIRST BE APPROVED BY LEE COUNTY UTILITIES AND THE ENGINEER PRIOR TO THE PIPE LAYING. IF TWO FEET OF COVER OR MORE CAN NOT BE ATTAINED, THE CONTRACTOR SHALL PROVIDE OTHER METHOD OF CONSTRUCTION OR PIPE PROTECTION WHICH SHALL FIRST BE APPROVED BY LEE COUNTY UTILITIES AND THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.
13. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES AFFECTING HIS WORK. ANYTHING NOT SHOWN ON THESE DRAWINGS SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND SHALL NOT CONSTITUTE AN EXTRA, UNLESS APPROVED BY THE ENGINEER.
14. THE CONTRACTOR SHALL CONTACT THE ENGINEER AND LEE COUNTY UTILITIES IMMEDIATELY CONCERNING ANY CONFLICTS WITH LEE COUNTY UTILITIES/STRUCTURES ARISING DURING CONSTRUCTION OF ANY FACILITIES SHOWN ON THESE DRAWINGS.
15. TRAFFIC MUST BE MAINTAINED AT ALL TIMES PER CITY OF SANIBEL AND PER FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
16. THE CONTRACTOR SHALL VERIFY ALL UTILITIES AND PROVIDE AT LEAST 48 HOURS NOTICE TO THE INDIVIDUAL UTILITY COMPANIES PRIOR TO CONSTRUCTION.
17. THE CONTRACTOR SHALL REPLACE ALL PAVEMENT, CURBS, DRIVEWAYS, SIDEWALKS, FENCES, ETC., WITH THE SAME TYPE OF MATERIAL THAT WAS REMOVED DURING CONSTRUCTION OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL RESTORE ALL AREAS AFFECTED BY THE CONSTRUCTION TO ITS ORIGINAL CONDITION, OR BETTER.
18. THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF CONDITION WHICH MAY BE ENCOUNTERED DURING THE COURSE OF WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATIONS THEY MAY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSION REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED.
19. ALL FRAMES, COVERS VALVE BOXES, METER BOXES, AND MANHOLES SHALL BE ADJUSTED TO FINISHED GRADE UPON COMPLETION OF PAVING OR RELATED CONSTRUCTION. ALL VALVE PADS SHALL BE POURED IN PLACE. NO PRE-FORMED VALVE PADS ALLOWED.
20. LOCATIONS OF PROPOSED UTILITY LINES ARE SUBJECT TO MODIFICATION TO PRESERVE EXISTING VEGETATION AS DETERMINED BY THE ENGINEER AND NATURAL RESOURCES IF AVAILABLE.
21. CONTRACTOR TO PROVIDE UTILITY RECORD DRAWINGS TO OWNER PRIOR TO FINAL PAYMENT REQUEST.
22. CONTRACTOR SHALL PROVIDE A MINIMUM OF 10' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SANITARY SEWER AND POTABLE WATER LINES. WHERE IT IS NOT PRACTICAL TO MAINTAIN THIS SEPARATION, THE WATER MAIN (OR REUSE LINE) AND SEWER LINE SHALL BE LAID IN SEPARATED TRENCHES SO THAT AT LEAST 18" SEPARATION BETWEEN THE INVERT OF THE UPPER PIPE (WATER OR REUSE LINE) AND THE CROWN OF THE LOWER PIPE (SEWER LINE) IS MAINTAINED. ALTERNATELY, THE SEWER LINE OR THE WATER MAIN (OR REUSE LINE) MAY BE PLACED IN A SLEEVE TO OBTAIN THE EQUIVALENT OF THE 10' SEPARATION.
23. SEWER LINES AND POTABLE WATERLINES (OR REUSE LINES) SHALL BE INSTALLED TO PROVIDE A MINIMUM VERTICAL SEPARATION OF 18" BETWEEN THE INVERT OF THE UPPER PIPE AND CROWN OF THE LOWER PIPE AT CROSSINGS. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSINGS SHALL BE ARRANGED SO THAT THE SEWER MAIN AND WATER MAIN (OR REUSE LINE) JOINTS ARE AN EQUAL DISTANCE FROM THE POINT OF CROSSING WITH NO LESS THAN 10' BETWEEN ANY TWO JOINTS. ALTERNATELY, THE SEWER MAIN OR THE WATER MAIN (OR REUSE LINE) MAY BE PLACED IN A SLEEVE TO OBTAIN THE EQUIVALENT OF THE REQUIRED SEPARATION.
24. EXERCISE CARE TO PROTECT THE ROOTS OF TREES TO REMAIN. WITHIN THE BRANCH SPREAD OF SUCH TREES, PERFORM ALL TRENCHING BY HAND. OPEN THE TRENCH ONLY WHEN UTILITIES CAN BE INSTALLED IMMEDIATELY. PRUNE INJURED ROOTS CLEANLY AND BACKFILL AS SOON AS POSSIBLE.
25. CONTRACTOR SHALL NOT EXCEED 80% OF THE MANUFACTURERS RECOMMENDED MAXIMUM DEFLECTION WHEN DEFLECTING PIPE. ENGINEER WILL DETERMINE MAXIMUM DEFLECTION AFTER PIPE MANUFACTURER IS SELECTED.
26. THE CONTRACTOR SHALL KEEP A RECORD OF ALL CHANGES AND MAINTAIN AN AS-BUILT PLAN. PRIOR TO FINAL ACCEPTANCE, THIS PLAN WILL BE FURNISHED TO THE ENGINEER. THE CONTRACTOR SHALL ALSO FURNISH THE ENGINEER WITH A STATEMENT THAT THE AS-BUILT PLAN REPRESENTS ALL CHANGES MADE AND THAT THE LOCATION OF WATER LINES SHOWN ARE WITHIN 2'.
27. UTILITY EASEMENTS FOR WATER, SEWER, POWER, AND TELEPHONE COMPANIES WILL BE PROVIDED AFTER INSTALLATION OF THOSE UTILITIES IS COMPLETED AND AS-BUILT LOCATIONS KNOWN.

PAVING, GRADING AND DRAINAGE NOTES:

1. LENGTH OF STORM DRAIN PIPES ARE APPROXIMATE AND ARE MEASURED FROM CENTER OF STRUCTURE.
2. CONTRACTOR SHALL NOTIFY CITY OF SANIBEL A MINIMUM OF 72 HOURS PRIOR TO ALL REQUIRED INSPECTIONS.
3. CONTRACTOR SHALL NOTIFY THE OWNER AND CONTACT ALL UTILITY COMPANIES FOR LOCATIONS OF EXISTING UTILITIES IN THE AREA 72 HOURS (MIN) PRIOR TO COMMENCING CONSTRUCTION.
4. PLACE 200 S.F. OF SOD AROUND ALL INLETS, HEADWALLS, AND CONTROL STRUCTURES IN OPEN SPACE AREAS UNLESS SPECIFIC LANDSCAPING HAS BEEN PROVIDED. USE ARGENTINE BAHIA AND CONFORM TO FDOT SECTION 575.
5. PLACE 18" OF SOD CONTINUOUS ALONG EDGES OF PAVEMENT OF ALL ROADS AND/OR CURB, LAYING PARALLEL WITH THE ROAD MAINTAINING 1" BELOW FINISHED PAVEMENT GRADE.

WATER LINE NOTES:

1. THE ENDS OF ALL CAPPED IRRIGATION AND POTABLE WATERLINES SHALL BE MARKED WITH ELECTRONIC MARKERS AND 2'X4' STAKES 5' IN LENGTH WITH 2' ABOVE GROUND.
2. ALL POTABLE AND IRRIGATION WATERLINES SHALL BE AWWA C-900, DR18, CLASS 150 PVC UNLESS OTHERWISE NOTED. POTABLE WATERLINES LOCATED UNDER PROPOSED PAVEMENT SHALL BE AWWA C-900, DR 14 PVC.
3. ALL WATERLINES SHALL HAVE A MINIMUM COVER OF 30" AND A MAXIMUM OF 48" BELOW FINISHED GRADE.
4. CONTRACTOR SHALL USE 45° BENDS WITH MEGALUGS AT CONFLICTS.
5. NOT ALL PROPOSED BENDS ARE SHOWN IN WATERLINE. ADDITIONAL FITTINGS MAY BE REQUIRED TO BEND WATERLINE AS SHOWN.
6. THE CONTRACTOR SHALL PLACE PROPOSED VALVES AS SHOWN. THE VALVE BOX SHALL NOT BE LOCATED IN PAVEMENT OR DRIVEWAY AREAS.
7. PROPOSED FIRE HYDRANTS SHALL BE LOCATED AS SHOWN ON UTILITY DETAIL SHEETS. THE CONTRACTOR SHALL PROVIDE AND INSTALL REFLECTIVE PAVEMENT MARKERS AS REQUIRED NEAR PROPOSED FIRE HYDRANTS.
8. WATER MAIN TO BE 5' MINIMUM CLEARANCE DISTANCE FROM BACK OF CURB.

SANITARY SEWER / FORCE MAIN NOTES:

1. ALL PIPE LENGTHS ARE APPROXIMATE AND ARE MEASURED FROM CENTER OF STRUCTURE OR FITTINGS.
2. ALL GRAVITY SEWER LINES SHALL BE PVC (SDR-26) UNLESS NOTED OTHERWISE.
3. CLEANOUT TOP ELEVATIONS ARE APPROXIMATE AND SHOULD BE ADJUSTED TO FINAL ELEVATION.
4. ALL SANITARY SEWER SERVICE INVERTS TO BE PLACED 36" BELOW BACK OF CURB (MIN. 1% SLOPE) TYPICAL UNLESS IN CONFLICT WITH WATERLINE.
5. U.S. FOUNDRY CLEAN OUT RING AND COVER IS REQUIRED IN ALL AREAS, INCLUDING GREEN AREAS.

SIGNING AND PAVEMENT MARKING NOTES:

1. ALL SIGNING AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH FDOT STANDARDS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION), "THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION)", AND CITY OF SANIBEL REQUIREMENTS.
2. MATCH EXISTING PAVEMENT MARKINGS AT EXISTING ROADS.
3. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION).

CLEARING AND SITE PREPARATION NOTES:

1. ALL CONSTRUCTION DEBRIS AND OTHER WASTE MATERIAL SHALL BE DISPOSED OF OFF SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS

LEE COUNTY STANDARD DETAIL NOTES:

1. ALL REFERENCES TO LEE COUNTY STANDARD DETAILS ARE FROM THE LEE COUNTY STANDARD DETAILS AND SPECIFICATIONS, CURRENT VERSION. THESE STANDARD DETAILS WERE PREPARED BY OR AT THE DIRECTION OF LEE COUNTY AND WERE FURNISHED TO ENSITE, INC.
2. THE STANDARD DETAILS REFERENCED WITHIN THIS PLAN SET HAVE BEEN INCORPORATED HERIN VERBATIM AS SET FORTH WITHIN THE ABOVE REFERENCED LEE COUNTY UTILITIES STANDAR DETAILS AND SPECIFICATIONS, CURRENT VERSION.

LANDSCAPE NOTE:

SEE LANDSCAPE PLANS FOR PLANTING REQUIREMENTS, LOCATIONS AND SPECIFICATIONS.

UTILITIES SERVING THIS SITE:

WATER SERVICE BY:

THE ISLAND WATER ASSOCIATION, INC.
3651 SANIBEL CAPTIVA RD.
SANIBEL, FL 33957
(239) 472-1502

SEWER SERVICE BY:

CITY OF SANIBEL PUBLIC WORKS
750 DUNLOP RD.
SANIBEL, FL 33957
(239) 472-6397

CABLE AND INTERNET SERVICE BY:

COMCAST CABLE
4290 COLONIAL BOULEVARD
FORT MYERS, FLORIDA 33966
(239) 277-5679
&
CENTURY LINK
2820 CARGO STREET
FORT MYERS, FLORIDA 33916
(239) 336-2011

ELECTRIC SERVICE BY:

LCEC SANIBEL
5050 SANIBEL CAPTIVA RD
SANIBEL, FL 33957
(239) 995-2121

TELEPHONE SERVICE BY:

COMCAST CABLE
4290 COLONIAL BOULEVARD
FORT MYERS, FLORIDA 33966
(239) 277-5679
&
CENTURY LINK
2820 CARGO STREET
FORT MYERS, FLORIDA 33916
(239) 336-2011

REFUSE COLLECTION SERVICE BY:

ADVANCED DISPOSAL
17101 PINE RIDGE RD.
FORT MYERS BEACH, FL 33931
(239) 334-1224

FIRE AND RESCUE SERVICE BY:

SANIBEL FIRE AND RESCUE
2351 PALM RIDGE RD.
SANIBEL, FL 33957
(239) 472-5525

NATURAL GAS SERVICE BY:

N/A

ensite
2401 FIRST STREET, SUITE 201
FORT MYERS, FLORIDA 33901
PH: (239)-226-0024
EB-26544 CA-LC26000374

Buckingham 225 Development, Inc.
5961 Northland Rd. #1
Fort Myers, FL 33905
CLIENT NAME AND ADDRESS

COASTAL CREEK
SANIBEL, FLORIDA
PROJECT NAME AND LOCATION

JONATHAN WADAS LICENSE No. 76911 STATE OF FLORIDA PROFESSIONAL ENGINEER

JONATHAN WADAS, PE
FL License No. 76911

NO.	REVISION	DATE
R1	PER SFWMD AND CITY COMMENTS	2-18-22

REVISIONS DESCRIPTION

DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

GENERAL NOTES

SHEET TITLE

C-02

SHEET NUMBER

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FORT MYERS, FLORIDA 33901
PH: (239)-226-0024
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Buckingham 225 Development, Inc.
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NO.	REVISION	DATE
#1	PER SFWMD AND CITY COMMENTS	2-18-22

REVISIONS DESCRIPTION

DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

AERIAL MAP

SHEET TITLE

C-03

SHEET NUMBER

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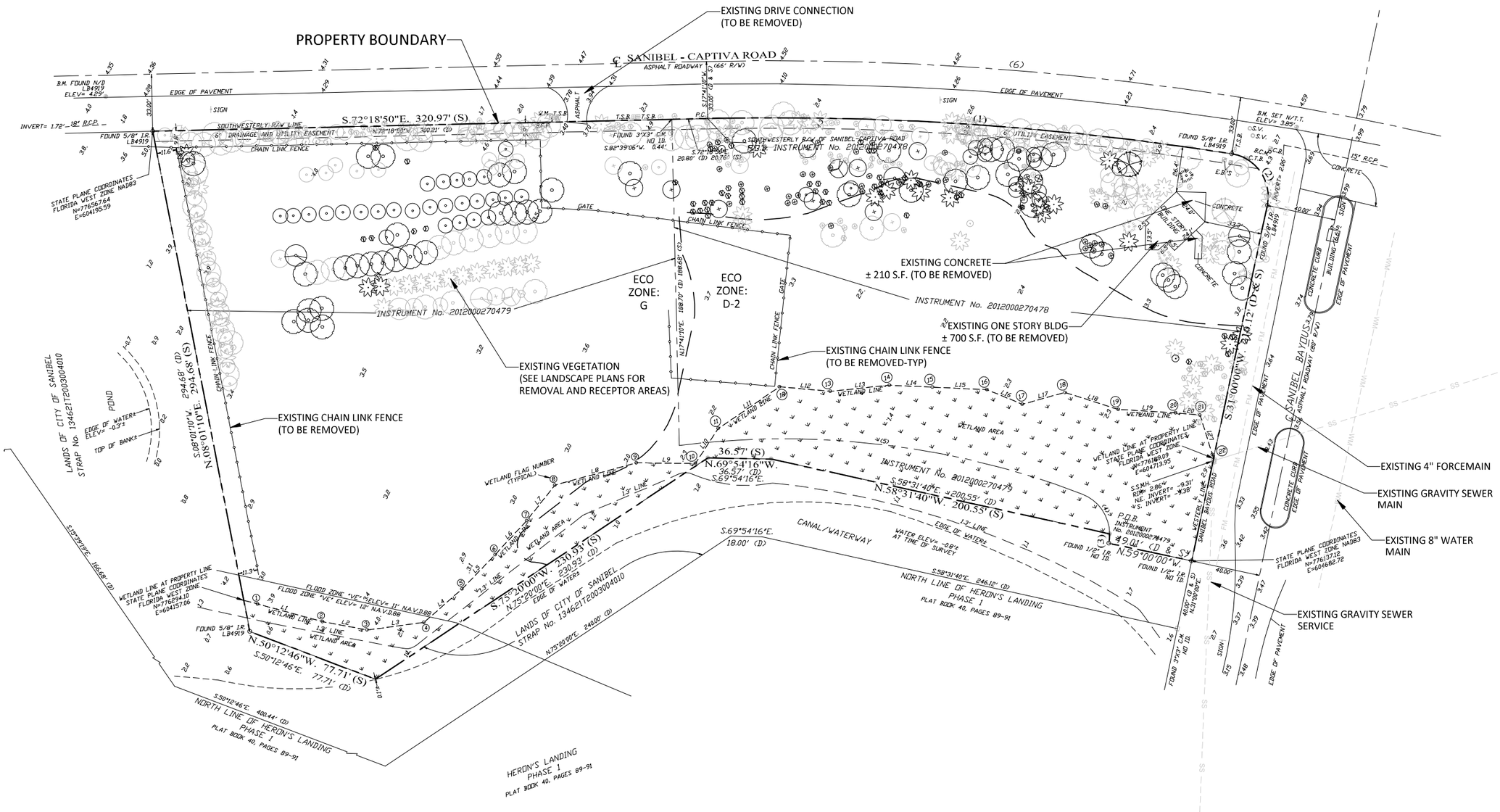

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FORT MYERS, FLORIDA 33901
PH: (239)-226-0024
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Buckingham 225 Development, Inc.
5961 Northland Rd. #1
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JONATHAN WADAS, PE
Fl License No. 76911

NO.	REVISION	DATE

REVISIONS DESCRIPTION

DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 XCM.dwg
SCALE:	AS SHOWN

SOILS & EXISTING CONDITIONS MAP

SHEET TITLE

C-04

SHEET NUMBER

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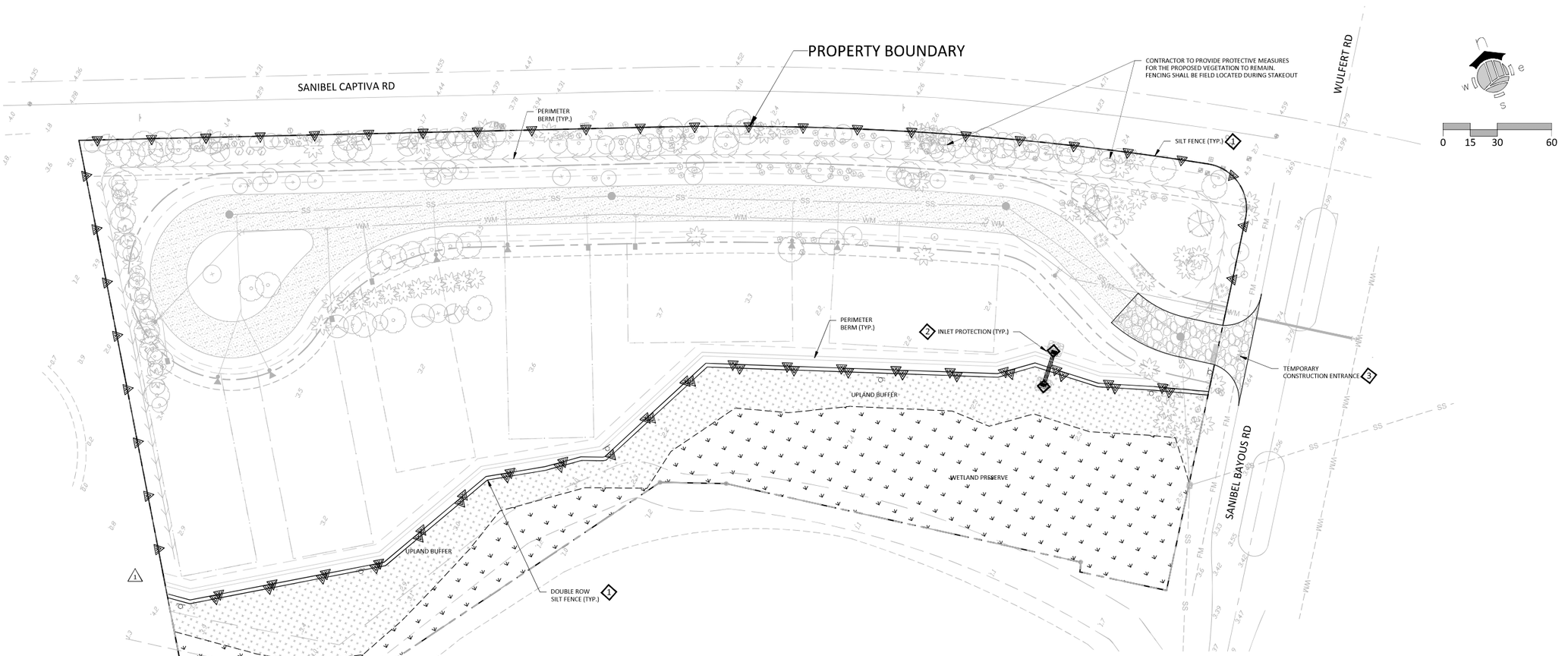
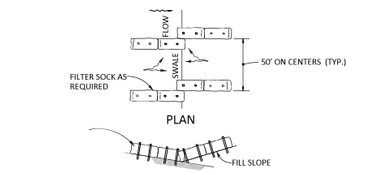
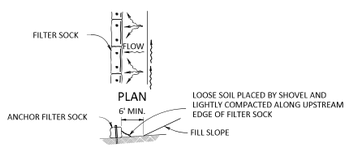




ELEVATION

TO BE USED AT SELECTED SITES WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE

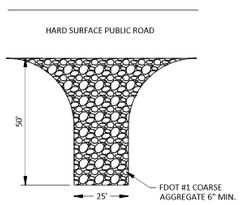


ELEVATION

TO BE USED AT SELECTED SITES WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE

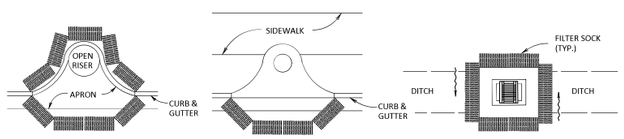
BARRIERS FOR FILL SLOPES

N.T.S.



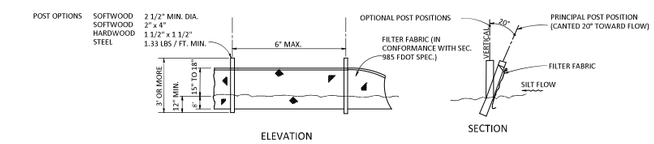
TEMPORARY GRAVEL CONST. ENTRANCE 3

N.T.S.



PROTECTION AROUND INLETS OR SIMILAR STRUCTURES 2

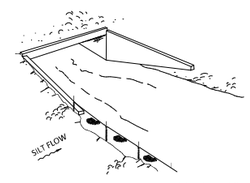
N.T.S.



NOTE: SILT FENCE TO BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR STAKED SILT FENCE (LF)

TYPE III SILT FENCE

N.T.S.



TYPE III SILT FENCE

TYPE III SILT FENCE PROTECTION AROUND DITCH BOTTOM INLETS

NOTE: SPACING FOR TYPE III FENCE TO BE IN ACCORDANCE WITH CHART I, SHEET 1 OF 3 AND DITCH INSTALLATIONS AT DRAINAGE STRUCTURES SHEET 2 OF 3

TYPE III SILT FENCE

DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

SILT FENCE APPLICATIONS

N.T.S.

FILTER SOCK OR SILT FENCE 1

PER F.D.O.T. INDEX 102

N.T.S.

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JONATHAN WADAS, PE
Fl License No. 76911

NO.	REVISION	DATE
1	PER SFWMD AND CITY COMMENTS	2-18-22

REVISIONS DESCRIPTION

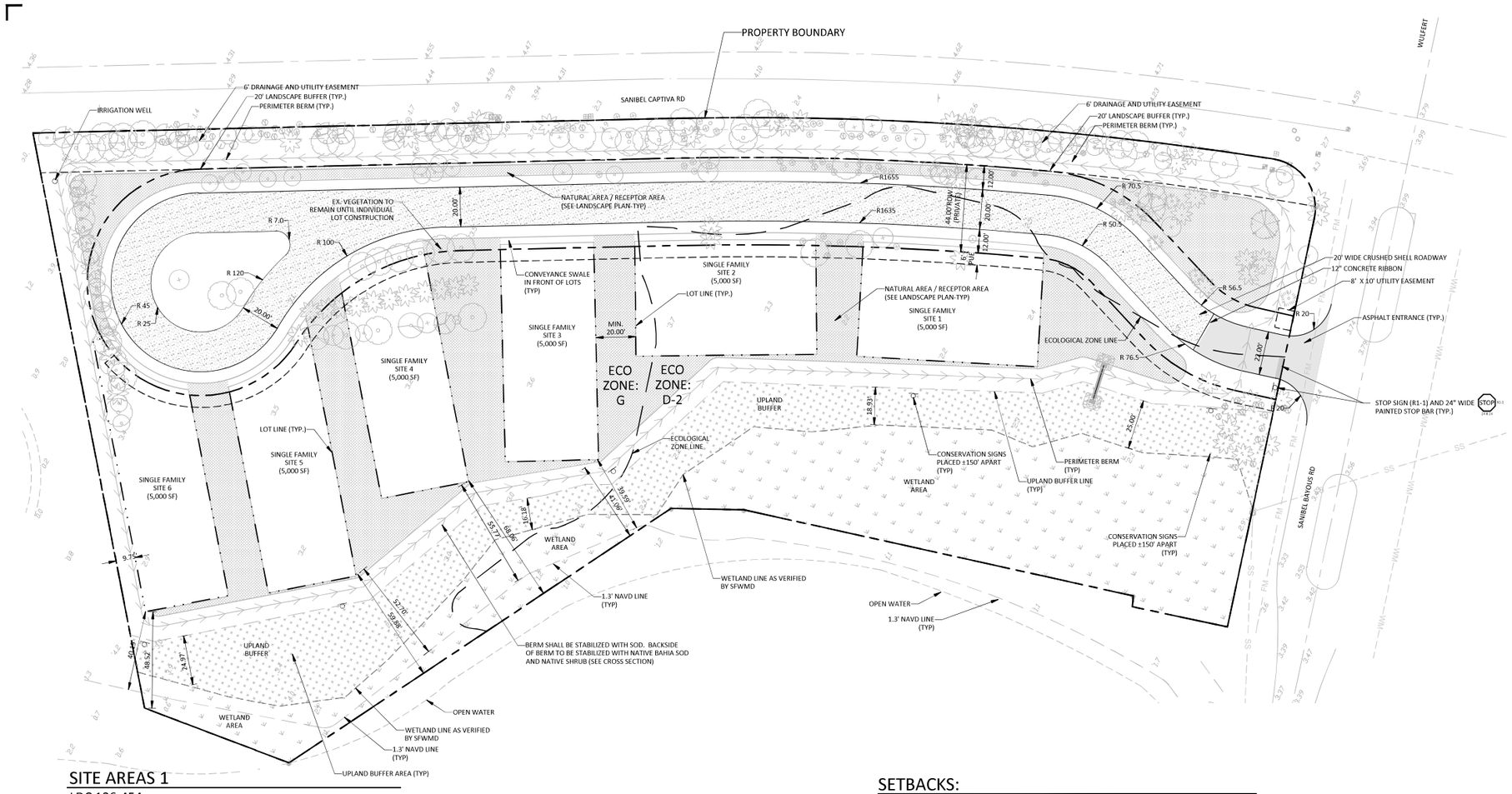
DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 ECP.dwg
SCALE:	AS SHOWN

EROSION & SEDIMENT CONTROL PLAN

SHEET TITLE

C-05

SHEET NUMBER



SITE AREAS 1

LDC 126-454

G - ECO ZONE:

TOTAL AREA =		95,576 S.F.
MAX COVERAGE =		35% UP TO 10,000 S.F. AND 30% OVER 10,000 S.F. = 29,172 S.F.
MAX VEGETATION REMOVAL AND DEVELOPMENT AREA =		40% UP TO 10,000 S.F. AND 35% OVER 10,000 S.F. = 33,952
S.F.IMPERVIOUS AREA		
PROPOSED GRAVEL ROADWAY =	13,464 S.F.	
PROPOSED ASPHALT ROADWAY =	579 S.F.	
PROPOSED BUILDING =	9,073 S.F.	
PROPOSED POOL / DECK =	2,176 S.F.	
TOTAL IMPERVIOUS AREA =	25,292 S.F.	
PROPOSED PERVIOUS BRICK DRIVES =	2,930 S.F.	
IMPERVIOUS COVERAGE CALCULATIONS:		
PROPOSED =	25,292 S.F.	

SITE AREAS 1

LDC 126-394

D-2 - ECO ZONE:

TOTAL AREA =		50,663 S.F.
MAX COVERAGE =		25% = 12,665 S.F.
MAX VEGETATION REMOVAL AND DEVELOPMENT AREA =		30% = 15,198 S.F.
IMPERVIOUS AREA		
PROPOSED GRAVEL ROADWAY =	1,422 S.F.	
PROPOSED BUILDING =	4,400 S.F.	
PROPOSED POOL / DECK =	1,088 S.F.	
TOTAL IMPERVIOUS AREA =	6,910 S.F.	
PROPOSED PERVIOUS BRICK DRIVES =	1,074 S.F.	
IMPERVIOUS COVERAGE CALCULATIONS:		
PROPOSED =	6,910 S.F.	

ECOLOGICAL ZONES:

G = ±2.19 ACRES (66%) OF SITE
D-2 = ±1.16 ACRES (34%) OF SITE

SIGNING AND PAVEMENT MARKING NOTES:

1. ALL SIGNING AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH FDOT STANDARDS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION), "THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION)," AND THE CURRENT LEE COUNTY DEPARTMENT OF TRANSPORTATION REQUIREMENTS.
2. MATCH EXISTING PAVEMENT MARKINGS AT EXISTING ROADS.
3. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION).
4. CONTRACTOR SHALL SET ROADWAY GROUND MOUNT SIGNS AT PROPER DEFLECTION ANGLE TO THE ROADWAY IN ACCORDANCE WITH FDOT INDEX NUMBER 17302.
5. SEE FDOT INDEX NUMBERS 17346 AND 17352 FOR ADDITIONAL DETAILS.

STOP SIGN

(R1-1) 24"x 24"

NOTE: SIGNS SHALL BE A MINIMUM 5"x5", COLOR AND DESIGN MAY BE ADJUSTED

SIGNS

N.T.S.

SETBACKS:

G-ECOZONE	MIN. REQUIRED
FRONT (SANIBEL CAPTIVA RD-CENTERLINE)	75'
FRONT (PRIVATE ROAD)	10'
SIDE (FROM STRUCTURES-NOT INTERNAL ON LOTS)	10'
OPEN WATER OR 1.3' NAVD	20'
PERIMETER	10'

D-2-ECOZONE	MIN. REQUIRED
FRONT (SANIBEL CAPTIVA RD-CENTERLINE)	75'
FRONT (PRIVATE ROAD)	10'
SIDE (FROM STRUCTURES-NOT INTERNAL ON LOTS)	10'
OPEN WATER OR 1.3' NAVD	20'
PERIMETER	10'

TOTAL SITE DATA TABLE:

ON-SITE

LAND USE TABLE:	EXISTING	PERCENT %	PROPOSED	PERCENT %
BUILDING	0.02 AC.	0.3%	0.55 AC.	16%
PAVEMENT (ASPHALT)	0.004 AC.	0%	0.02 AC.	1%
PERVIOUS PAVERS	0.00 AC.	0%	0.11 AC.	4%
GRAVEL	0.00 AC.	0%	0.34 AC.	10%
OPEN SPACE	2.81 AC.	84%	0.90 AC.	27%
DRY DETENTION	0.00 AC.	0%	0.55 AC.	16%
WETLAND	0.53 AC.	16%	0.54 AC.	16%
UPLAND BUFFER	0.00 AC.	0%	0.35 AC.	10%
TOTAL	3.36 AC.	100%	3.36 AC.	100%

AREA WITHIN PERIMETER BERM FOR WATER MANAGEMENT CALCULATIONS = 89,733 S.F. (2.06 AC.)

OFF-SITE IMPROVEMENTS

	PROPOSED	PERCENT %
PAVEMENT	0.01 AC.	100%
TOTAL	0.01 AC.	100%

DEVELOPMENT REGULATIONS:

45' HEIGHT LIMITATION IN BOTH THE G AND D-2 ECOLOGICAL ZONES

MAX LOT COVERAGE:

	ALT A	ALT B
BUILDING	3,000 S.F.	2,200 S.F.
POOL AREA	1,000 S.F.	1,000 S.F.
PERVIOUS PAVERS (DRIVE)	800 S.F.	800 S.F.
PERVIOUS AREA	200 S.F.	1,000 S.F.
	5,000 S.F. TOTAL	5,000 S.F. TOTAL

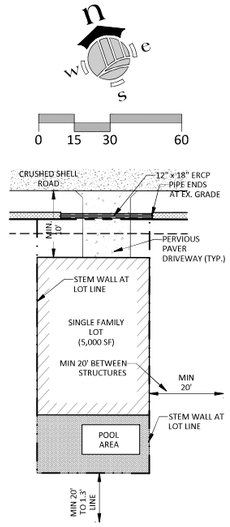
DEVELOPER MAY PROVIDE ANY COMBINATION OF SIZES AND FINAL LOT LAYOUT SUBJECT TO DEVELOPMENT REVIEW AND PERMITTING

COMMON AREA MAINTENANCE:

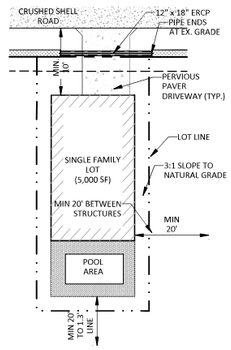
IT IS THE INTENT OF THE OWNER, Buckingham 225 Development, Inc., OR ITS SUCCESSORS, TO OWN AND MAINTAIN COMMON AREAS ON THE SUBJECT PROPERTY, INCLUDING BUT NOT LIMITED TO STORM WATER FACILITIES, PRIVATE UTILITIES, LANDSCAPING, IRRIGATION, EXOTIC CONTROL, ETC.

LEGEND

- ASPHALT
- CRUSHED SHELL ROAD
- WETLAND AREA
- UPLAND BUFFER
- DRY DETENTION
- ECOLOGICAL ZONE LINE



TYPICAL UNIT LOT LAYOUT ALT. A (5,000 S.F. LOTS)



TYPICAL UNIT LOT LAYOUT ALT. B (5,000 S.F. LOTS)

- LOTS MUST ADHERE TO ALL SETBACK REQUIREMENTS
- 100% OF THE LOT CAN BE DEVELOPED
- INDIVIDUAL LOT/BUILDING PERMITS REQUIRED
- ALTERNATES HEREIN FOR REPRESENTATIONAL PURPOSES ONLY

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EB-26544 CA-LC26000374

Buckingham 225 Development, Inc.
5961 Northland Rd. #1
Fort Myers, FL 33905

CLIENT NAME AND ADDRESS

COASTAL CREEK
SANIBEL, FLORIDA

PROJECT NAME AND LOCATION

JONATHAN WADAS LICENSE No. 76911 STATE OF FLORIDA PROFESSIONAL ENGINEER

JONATHAN WADAS, PE
FL License No. 76911

NO.	REVISION	DATE
R1	PER SFWMD AND CITY COMMENTS	2-18-22
R2	PER CITY OF SANIBEL COMMENTS	6-26-22

REVISIONS DESCRIPTION

DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 SITE.dwg
SCALE:	AS SHOWN

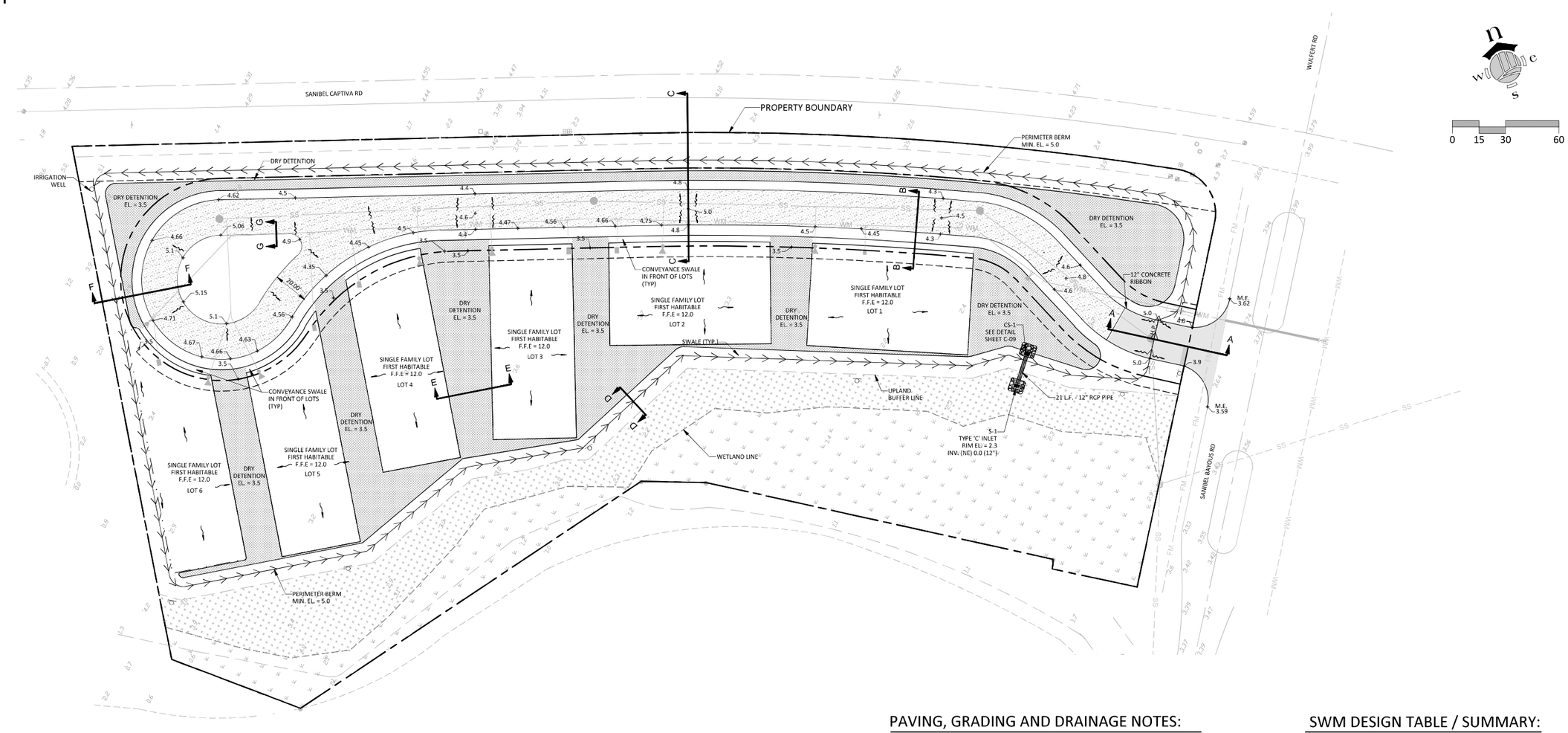
SITE PLAN

SHEET TITLE

C-06

SHEET NUMBER

C:\Users\brians\Ensite\Active Projects - Documents\1419 Daniel Wayne Homes\1419-01 Sanibel 3,35 Acres\CAD\Engineering_Working Files\1419-01 SITE.dwg (SITE) brians Jun 29, 2022 - 8:39am



PAVING, GRADING AND DRAINAGE NOTES:

1. LENGTH OF STORM DRAIN PIPES ARE APPROXIMATE AND ARE MEASURED FROM CENTER OF STRUCTURE.
2. CONTRACTOR SHALL NOTIFY THE CITY OF SANIBEL DIVISION OF DEVELOPMENT SERVICES A MINIMUM OF 72 HOURS PRIOR TO ALL REQUIRED INSPECTIONS.
3. CONTRACTOR SHALL NOTIFY THE OWNER AND CONTACT ALL UTILITY COMPANIES FOR LOCATIONS OF EXISTING UTILITIES IN THE AREA 72 HOURS (MIN.) PRIOR TO COMMENCING CONSTRUCTION.
4. PLACE 200 S.F. OF SOD AROUND ALL INLETS, HEADWALLS, AND CONTROL STRUCTURES. USE ARGENTINE BAHIA AND CONFORM TO FDOT SECTION 575.
5. PLACE 18" OF SOD CONTINUOUS ALONG EDGES OF PAVEMENT OF ALL ROADS AND/OR CURB, LAYING PARALLEL WITH THE ROAD MAINTAINING 1" BELOW FINISHED PAVEMENT GRADE.
6. THE STORM DRAINAGE PIPING AND FILTRATION SYSTEM SHALL BE SUBJECTED TO A VISUAL INSPECTION BY THE OWNER'S ENGINEER PRIOR TO THE PLACEMENT OF BACKFILL. CONTRACTOR TO NOTIFY THE ENGINEER 48 HOURS IN ADVANCED TO SCHEDULE INSPECTION.
7. THE CONTRACTOR SHALL MAINTAIN THE STORM DRAINAGE SYSTEM UNTIL FINAL ACCEPTANCE OF THE PROJECT. THE STORM SYSTEM WILL BE INSPECTED BY THE OWNER'S ENGINEER PRIOR TO FINAL ACCEPTANCE.
8. ALL SIDEWALKS & SITE FEATURES TO MEET ADA STANDARDS. CONTRACTOR TO VERIFY & TO NOTIFY ENGINEER OF RECORD IF ANY COMPLIANCE ISSUES ARE FOUND; OR ACCEPT RESPONSIBILITY.
9. NO ACCESS POINTS SHALL EXCEED 5% SLOPE.
10. ALL PAVEMENT GRADES ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE SPECIFIED. REFER TO CURB DETAILS FOR BACK OF CURB GRADE.
11. ON-SITE DRAINAGE MAINTENANCE TO BE PERFORMED BY OWNER, AND OR SUCCESSOR.
12. DRY DETENTION AREAS HATCHED FOR PRESENTATIONAL PURPOSES ONLY. AREA IS AT NATURAL GRADE FOR LESSER VEGETATIVE IMPACT PER CITY OR SANIBEL.

SWM DESIGN TABLE / SUMMARY:

BASIN	= 2.06 ACRES
WET SEASON WATER TABLE ELEV.	= 1.3' NAVD
CONTROL ELEV.	= 2.5'
WATER QUALITY VOLUME REQUIRED:	= 0.20 AC-FT
WATER QUALITY VOLUME PROVIDED:	=0.72 AC-FT
5 YEAR, 24 HOUR PEAK STAGE	= 4.19' NAVD
25 YEAR, 72 HOUR PEAK STAGE	= 4.65' NAVD
100 YEAR, 72 HOUR ZERO DISCHARGE	= 5.61' NAVD
PEAK DISCHARGE (POST) CONTROLLED BY THE 3" DIA. ORIFICE (MIN. SIZE) THE MAX FLOW IS 0.35 CFS.	
MINIMUM ROAD CROWN ELEV.	= 4.5' NAVD
MINIMUM BERM ELEV.	= 5.0' NAVD
MINIMUM FINISHED FLOOR ELEV.	= 12.0' NAVD (FIRST HABITABLE FLOOR)

LEGEND

- ASPHALT
- CRUSHED SHELL
- WETLAND AREA
- X.XX SPOT ELEVATION
- DRY DETENTION
- UPLAND BUFFER

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Buckingham 225 Development, Inc.
5961 Northland Rd. #1
Fort Myers, FL 33905

PROJECT NAME AND LOCATION
COASTAL CREEK
SANIBEL, FLORIDA

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FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

PAVING, GRADING & DRAINAGE PLAN

SHEET TITLE

C-07

SHEET NUMBER

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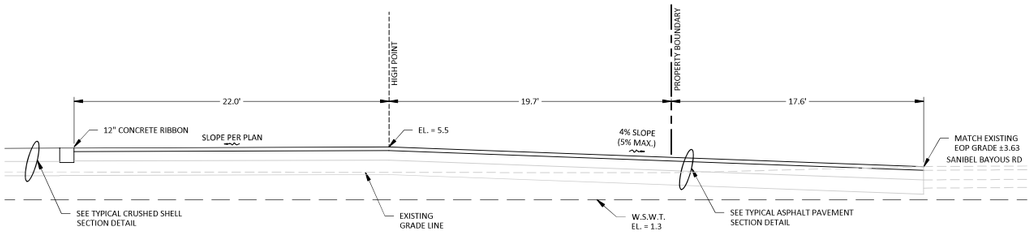
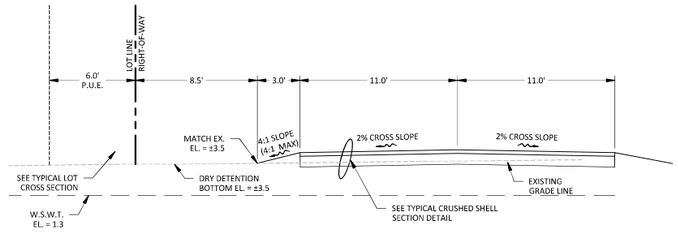
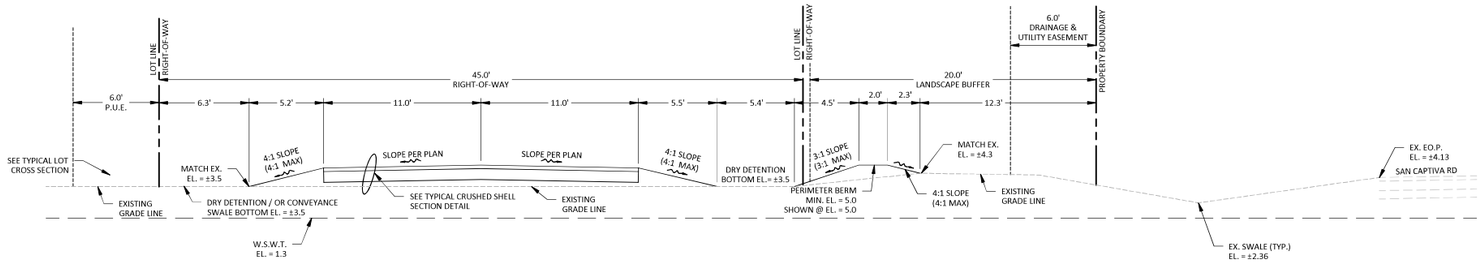


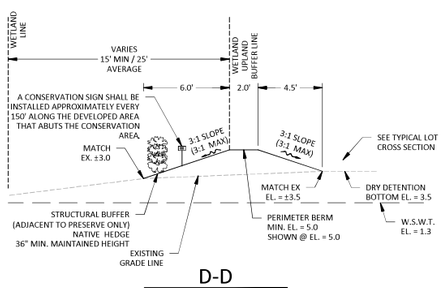
A-A
N.T.S.



B-B
N.T.S.



C-C
N.T.S.



D-D
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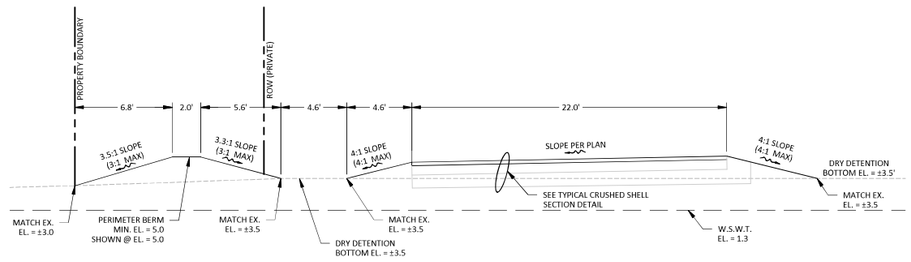
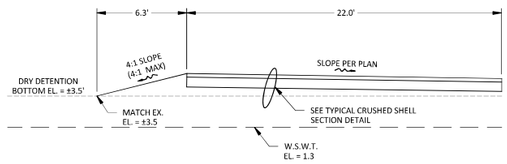
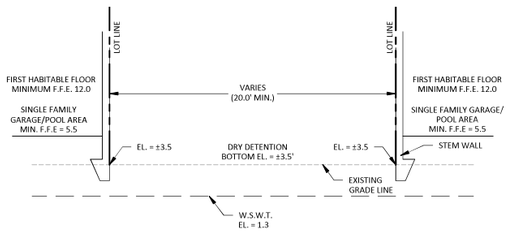


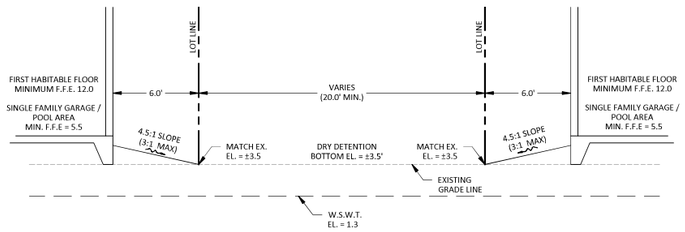
F-F
N.T.S.



G-G
N.T.S.



TYPICAL LOT CROSS SECTION
E-E ALTERNATE A
N.T.S.



TYPICAL LOT CROSS SECTION
E-E ALTERNATE B
N.T.S.

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PROJECT NO.	1419-01
FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

TYPICAL SECTIONS

SHEET TITLE

C-08

SHEET NUMBER

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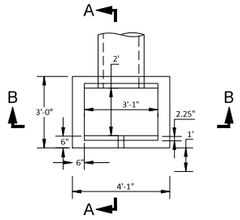
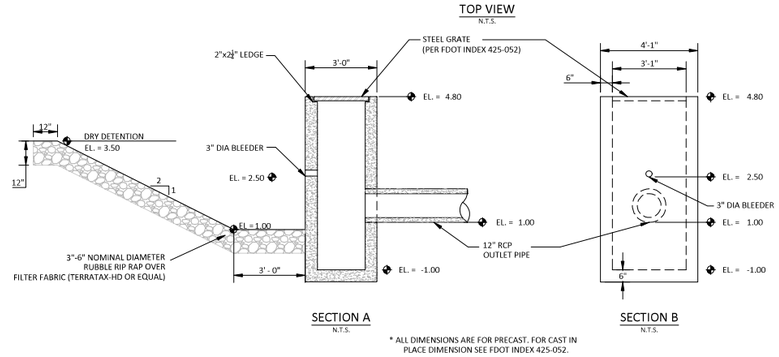


TOP VIEW



SECTION A
N.T.S.

SECTION B
N.T.S.

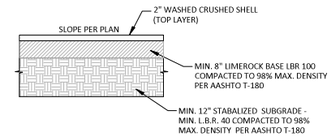
* ALL DIMENSIONS ARE FOR PRECAST. FOR CAST IN PLACE DIMENSION SEE FDOT INDEX 425-052.

MODIFIED FDOT TYPE "C" INLET

(PER FDOT INDEX 425-052)

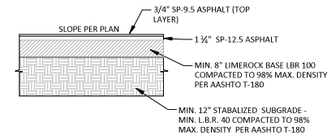
CS-1

N.T.S.



NOTE: STABILIZATION SHALL EXTEND 1 FOOT BEHIND BACK OF CURB AND EDGE PAVEMENT, AS APPLICABLE. LIMEROCK SHALL EXTEND 6 INCHES BEYOND EDGE OF PAVEMENT WHERE NO CURB IS PROPOSED.

ROADWAY
CRUSHED SHELL SECTION
N.T.S.



NOTE: STABILIZATION SHALL EXTEND 1 FOOT BEHIND BACK OF CURB AND EDGE PAVEMENT, AS APPLICABLE. LIMEROCK SHALL EXTEND 6 INCHES BEYOND EDGE OF PAVEMENT WHERE NO CURB IS PROPOSED.

ROADWAY
ASPHALT PAVEMENT SECTION
N.T.S.

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FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

PAVING, GRADING & DRAINAGE DETAILS

SHEET TITLE

C-09

SHEET NUMBER

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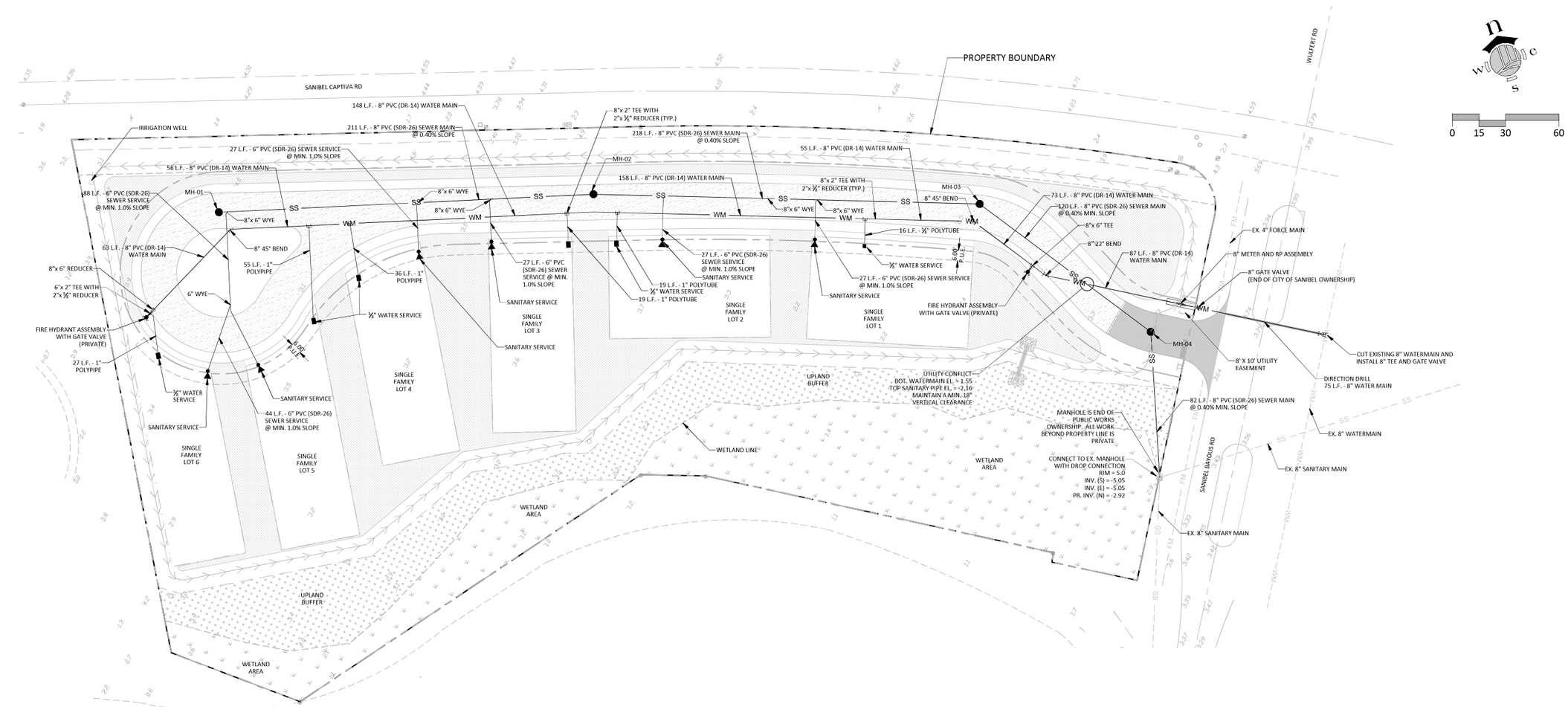

STRUCTURE SCHEDULE:

MH-01
MANHOLE
RIM ELEV. 4.84
INV. OUT: (E) -0.10 (8")

MH-02
MANHOLE
RIM ELEV. 4.7
INV. IN: (W) -0.94 (8")
INV. OUT: (E) -1.04 (8")

MH-03
MANHOLE
RIM ELEV. 4.45
INV. IN: (E) -1.91 (8")
INV. OUT: (E) -2.01 (8")

MH-04
MANHOLE
RIM ELEV. 5.0
INV. IN: (W) -2.49 (8")
INV. OUT: (E) -2.59 (8")

NOTES:

1. ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS AS PROVIDED BY THE MERIDIAN GROUP OF SOUTH FLORIDA, INC. AND LEE COUNTY AS-BUILT RECORD DRAWINGS. CONTRACTOR WILL FIELD VERIFY ALL LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. A SEPARATE RIGHT OF WAY USE PERMIT WILL BE REQUIRED FOR ALL UTILITY WORK WITHIN THE PUBLIC RIGHT OF WAY. SPECIFIC STIPULATIONS OR CONDITIONS WILL BE IMPOSED AT THE TIME OF PERMIT APPLICATION.

LEGEND

- ASPHALT
- CRUSHED SHELL
- WETLAND AREA
- UPLAND BUFFER
- DRY DETENTION

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NO.	REVISION	DATE

REVISIONS DESCRIPTION

DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

UTILITY PLAN

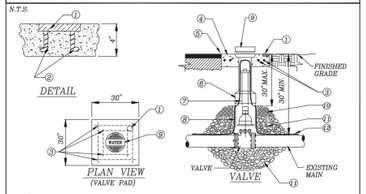
SHEET TITLE

C-10

SHEET NUMBER

STANDARD DETAIL NO. 6.2
~~LEE COUNTY UTILITIES~~
VALVE INSTALLATION

N.T.S.

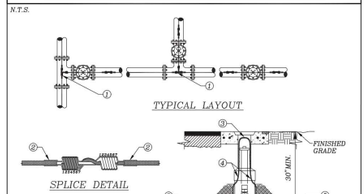


① BRASS PLATE: SIZE OF VALVE, VALVE TYPE
No. OF TURNS & DIRECTION TO OPEN
VALVE M.F.G. & YEAR INSTALL
SYSTEM "WATER" OR "SEWER" OR "REUSE" OR "FIRE"
② ANCHOR
③ EIGHT (8) #4 HARD OVERLAP EACH CORNER BY 4"
④ 30"SQ X 4" THK.CONC.PAD SURROUNDING BOX, MIN. 3,000 P.S.I. POURED IN PLACE
⑤ SET TOP OF BOX FLUSH WITH FINISHED GRADE
⑥ HEAVY DUTY TRAFFIC BEARING CAST IRON VALVE BOX, ADJUSTABLE SCREW TYPE, 5 1/4" DIAMETER SHAFT THAT IS LCU APPROVED
⑦ EXTENSION STEM WITH 2" OPERATING NUT AS REQUIRED, IF NUT IS MORE THAN 30" BELOW FINISH GRADE
⑧ RISER NOT TO BEAR ON VALVE OR PIPE
⑨ CAST IRON DROP COVER MARKED "WATER" OR "SEWER" OR "REUSE OR "FIRE"
⑩ COMPACTED SUITABLE EARTH BACKFILL
⑪ 3/4" GRANULAR MATERIAL #57 STONE
⑫ 12 GAUGE DOUBLE INSULATED COPPER LOCATING WIRE (SEE LCU STANDARD DETAIL)

REV: 12/10/2015

STANDARD DETAIL NO. 6.3
~~LEE COUNTY UTILITIES~~
LOCATING WIRE FOR PRESSURE MAINS

N.T.S.



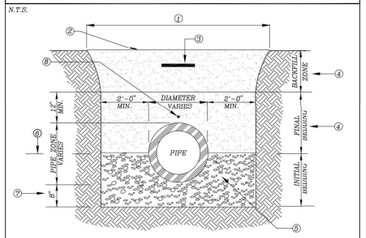
NOTES
1 WIRE SHALL BE CONTINUOUS BETWEEN VALVE BOXES. THE PVC RISER PIPE SHALL BE NOTCHED AND THE WIRE ATTACHED TO THE RISER PIPE TO ALLOW FOR THE WIRE TO FIT INSIDE THE CAST IRON VALVE BOX WITHOUT SHEARING THE WIRE.
2 LOCATING WIRE SHALL BE LAID ON TOP OF THE MAIN AND SHALL BE TAPED TO IT AT 10' INTERVALS AND TAPED AT ALL FITTINGS. TAPE SHALL BE 10 MIL POLYETHYLENE.
3 CONTRACTOR SHALL CONDUCT A CONTINUITY TEST ON ALL LOCATING WIRE SPLICES PRIOR TO SCHEDULING THE OFFICIAL FINAL INSPECTION WITH LCU.
4 ALL SPLICES SHALL UTILIZE A DIRECT BURY WATERPROOF SPLICE KIT. (SEE APPROVED MATERIAL LIST)

① SPLICE RUN TOGETHER, KEEP CLEAR OF FITTING, TYPICAL
② COVER SPLICE WITH 2 WRAPS OF 10 MIL POLYETHYLENE TAPE
③ 6" LOOP OF BARE WIRE, 6" MAX. DEPTH TO TOP OF BARE WIRE
④ 12 GAUGE DOUBLE INSULATED COPPER LOCATING WIRE
⑤ SPLICE (SEE DETAIL THIS SHEET)

REV: 12/10/2015

STANDARD DETAIL NO. 6.5
~~LEE COUNTY UTILITIES~~
TRENCH CROSS SECTION

N.T.S.

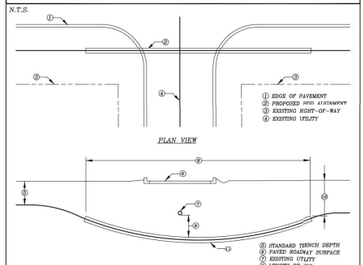


① EXCAVATED TRENCH
② FINISHED GRADE
③ MARKING TAPE 12" DEPTH MAX.
④ MATERIALS CLEAN DRY SAND, FINE LIME ROCK OR PIT SHELL MECHANICALLY COMPACTED IN 6" LIFTS TO AT LEAST 95% OF MAX. DENSITY, OR 98% IF UNDER PAVED AREA OF ROADWAY.
⑤ #57 STONE LOCATED UNDER PIPE OR EXISTING UNDISTURBED SUITABLE MATERIAL
⑥ SPRING LINE
⑦ STANDARD 8" MIN TRENCH UNDERCUT AND BACKFILL WITH #57 STONE COMPACTED IN 6" LIFTS
ADDITIONAL UNDERCUT AND CRUSHED ROCK BEDDING FOUNDATION WHEN DIRECTED BY L.C.U. THE CONTRACTOR IS TO REMOVE UNSTABLE MATERIAL FROM THE TRENCH FOUNDATION. THEN INSTALL STABILIZED CRUSHED ROCK BACKFILL WITH #57 STONE COMPACTED IN 6" LIFTS
⑧ LOCATING WIRE IS REQUIRED FOR ALL PRESSURIZED PIPELINES.

REV: 12/10/2015

STANDARD DETAIL NO. 6.7
~~LEE COUNTY UTILITIES~~
HORIZONTAL DIRECTIONAL DRILL UNDER A ROADWAY

N.T.S.

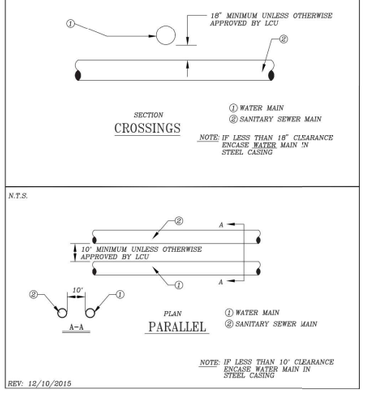


HDD INSTALLATION NOTES:
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LEE COUNTY UTILITIES DESIGN MANUAL.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF AFFECTED AGENCIES AND COORDINATION WITH ALL UTILITIES PRIOR TO CONSTRUCTION.
3. ALL CONSTRUCTION MATERIALS, INCLUDING DRILLING FLUID, SHALL BE CONTAINED AND REMOVED PRIOR TO RESTORATION OF DISTURBED AREAS.
4. ALL RESTORATION WORK SHALL BE IN ACCORDANCE WITH THE LCU DESIGN MANUAL.
5. CASING DIAMETER SHALL BE IN ACCORDANCE WITH THE LCU DESIGN MANUAL.
6. NO CASING SPACERS REQUIRED.
7. WHEN CASING IS REQUIRED INSTALL 1" HDPE PIPE ATTACHED TO THE CARRIER PIPE WITH 12 GAUGE DOUBLE INSULATED COPPER WIRE INSIDE THE HDPE PIPE.

REV: 12/10/2015

STANDARD DETAIL NO. 6.8
~~LEE COUNTY UTILITIES~~
WATER AND SEWER CROSSING DETAIL

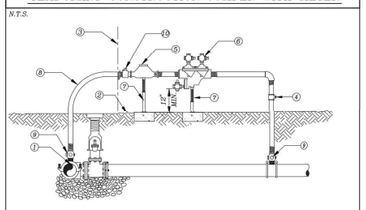
N.T.S.



REV: 12/10/2015

STANDARD DETAIL NO. 6.15
~~LEE COUNTY UTILITIES~~
TEMPORARY CONSTRUCTION JUMPER WITH METER

N.T.S.



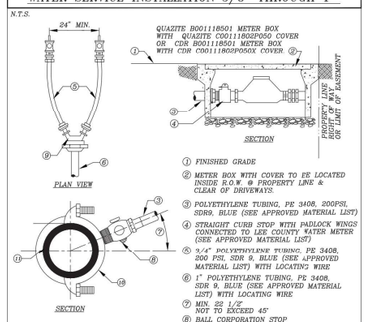
NOTES:
CONTRACTOR/CUSTOMER SHALL APPLY AT LEE COUNTY UTILITIES FOR TEMPORARY WATER SERVICE FIVE DAYS PRIOR TO REQUIRED SERVICE DATE.
THE METER ONLY WILL BE FURNISHED BY LEE COUNTY UTILITIES. ALL FITTINGS, PIPING, VALVES AND MATERIALS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR/CUSTOMER. THE APPROVED BACKFLOW PREVENTION DEVICE SHALL BE TESTED AND CERTIFIED BY LEE COUNTY UTILITIES APPROVED CERTIFIED BACKFLOW PREVENTION TECHNICIAN (FURNISHED BY CONTRACTOR/CUSTOMER) AT TIME OF METER INSTALLATION. CONTRACTOR/CUSTOMER SHALL PROTECT THE ASSEMBLY FROM DAMAGE. TEMPORARY CONSTRUCTION JUMPER/METER ASSEMBLY SHALL NOT BE REMOVED UNTIL SYSTEM IS ACCEPTED AND DEPARTMENT OF HEALTH CERTIFICATION AND CLEARANCE FOR SERVICE FORM HAS BEEN RECEIVED BY LEE COUNTY UTILITIES. WHEN THE NEW SYSTEM IS ACCEPTED, THE TEMPORARY CONSTRUCTION JUMPER METER ASSEMBLY MUST BE COMPLETELY REMOVED DOWN TO CORP STOPS.

① TAPPING SLEEVE AND VALVE TO BE FULLY RESTRAINED ON EXISTING MAIN (SEE LCU STANDARD DETAIL)
② GRADE
③ PROPERTY LINE AND/OR RIGHT OF WAY LINE
④ BRONZE BALL VALVE
⑤ METER FURNISHED BY LEE COUNTY UTILITIES
⑥ REDUCED PRESSURE BACKFLOW PRETENTER
⑦ PIPE STAND (SEE LCU STANDARD DETAIL)
⑧ 2" DIA. HDPE IR9
⑨ 2" DIA. CORPORATION STOP
⑩ 2" DIA. CURB STOP

REV: 12/10/2015

STANDARD DETAIL NO. 6.16
~~LEE COUNTY UTILITIES~~
WATER SERVICE INSTALLATION 5/8" THROUGH 1"

N.T.S.



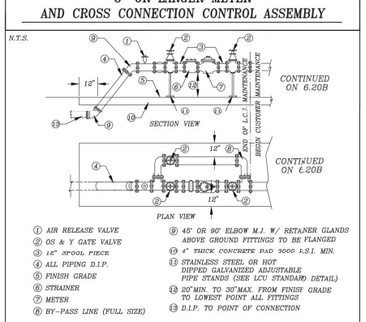
① FINISHED GRADE
② METER BOX WITH COVER TO BE LOCATED INSIDE R.O.W. @ PROPERTY LINE & CLEAR OF DRIVEWAYS.
③ POLYETHYLENE TUBING, PE 3408, 200PSI, SDR9, BLUE (SEE APPROVED MATERIAL LIST)
④ STRAIGHT CURB STOP WITH PADLOCK WINGS CONNECTED TO LEE COUNTY WATER METER (SEE APPROVED MATERIAL LIST)
⑤ ¾"x¾" POLYETHYLENE TUBING, PE 3408, 200 PSI, SDR 9, BLUE (SEE APPROVED MATERIAL LIST) WITH LOCATING WIRE
⑥ 1" POLYETHYLENE TUBING, PE 3408, SDR 9, BLUE (SEE APPROVED MATERIAL LIST) WITH LOCATING WIRE
⑦ MIN. 22 1/2" NOT TO EXCEED 45°
⑧ BALL CORPORATION STOP (SEE APPROVED MATERIAL LIST)
⑨ BRASS "Y" OR "T" CONNECT (SEE APPROVED MATERIAL LIST)
⑩ DOUBLE STRAP SERVICE SADDLE PROVIDE SPRING LOADED TAPPING SADDLE WHEN TAPPING HDPE (SEE APPROVED MATERIAL LIST)
⑪ WATER MAIN

NOTES:
1. TUBING UNDER ROADWAY SHALL BE ENCASED IN 4" P.V.C. PIPE SCHEDULE 40 MINIMUM AND EXTEND 4 FEET BEYOND THE EDGES OF PAVEMENT OR BACK OF CURB.

REV: 12/10/2015

STANDARD DETAIL NO. 6.20A
~~LEE COUNTY UTILITIES~~
3" OR LARGER METER AND CROSS CONNECTION CONTROL ASSEMBLY

N.T.S.



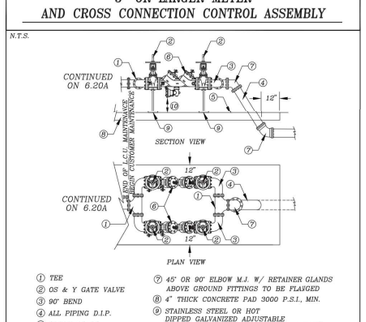
① AIR RELEASE VALVE
② OS & Y GATE VALVE
③ 12" SPOOL PIECE
④ ALL PIPING D.I.P.
⑤ FINISH GRADE
⑥ STRAINER
⑦ METER
⑧ BY-PASS LINE (FULL SIZE)
⑨ 45° OR 90° ELBOW M.J. W/ RETAINER GLANDS ABOVE GROUND FITTINGS TO BE FLANGED
⑩ 4" THICK CONCRETE PAD 3000 S.S.I. MIN.
⑪ STAINLESS STEEL OR HOT DIPPED GALVANIZED ADJUSTABLE PIPE STANDS (SEE LCU STANDARD DETAIL)
⑫ 20" MIN. TO 30" MAX. FROM FINISH GRADE TO LOWEST POINT ALL FITTINGS
⑬ D.I.P. TO POINT OF CONNECTION

NOTES:
1. USE COMPOUND METER IF FOR POTABLE WATER ONLY
2. USE FIRELINE METER IF FOR POTABLE AND FIRE SUPPRESSION
3. PAINT IN ACCORDANCE WITH LCU STANDARDS
4. ALL PIPING BETWEEN THE BELOW GROUND 45 BENDS AND THROUGH THE ASSEMBLY SHALL BE DIP, PRESSURE CLASS 350 ABOVE GROUND DIP SHALL BE FLANGED
5. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB AND SHALL PROVIDE A 3' ACCESS OPENING

REV: 12/10/2015

STANDARD DETAIL NO. 6.20B
~~LEE COUNTY UTILITIES~~
3" OR LARGER METER AND CROSS CONNECTION CONTROL ASSEMBLY

N.T.S.



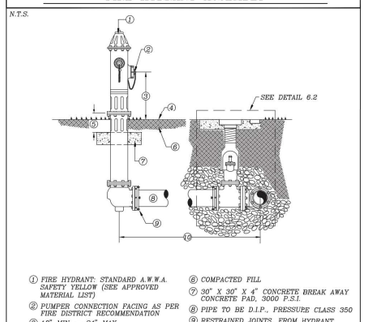
① TEE
② OS & Y GATE VALVE
③ 90° BEND
④ ALL PIPING D.I.P.
⑤ FINISH GRADE
⑥ LCU APPROVED DOUBLE CHECK VALVE ASSEMBLY
⑦ 45° OR 90° ELBOW M.J. W/ RETAINER GLANDS ABOVE GROUND FITTINGS TO BE FLAGGED
⑧ 4" THICK CONCRETE PAD 3000 P.S.I., MIN.
⑨ STAINLESS STEEL OR HOT DIPPED GALVANIZED ADJUSTABLE PIPE STANDS (SEE LCU STANDARD DETAIL)
⑩ 12" MIN. TO 24" MAX. FROM FINISH GRADE TO LOWEST POINT ALL FITTINGS

NOTES: 1. IF UNINTERRUPTED SERVICE IS NOT REQUIRED, A SINGLE BACKFLOW PREVENTION DEVICE MAY BE INSTALLED, AND TEES AND BENDS ELIMINATED.
2. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB AND SHALL PROVIDE A 3' ACCESS OPENING.

REV: 12/10/2015

STANDARD DETAIL NO. 6.24
~~LEE COUNTY UTILITIES~~
FIRE HYDRANT ASSEMBLY

N.T.S.

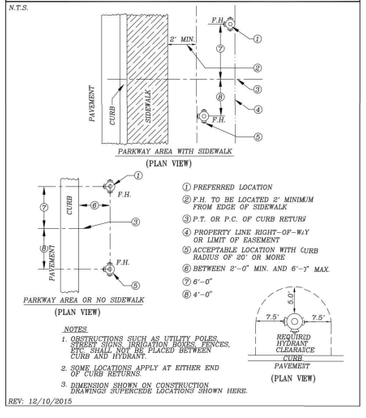


① FIRE HYDRANT: STANDARD A.W.W.A. SAFETY YELLOW (SEE APPROVED MATERIAL LIST)
② PUMPER CONNECTION FACING AS PER FIRE DISTRICT RECOMMENDATION
③ 18" MIN. – 24" MAX.
④ FINISHED GRADE
⑤ 6" MIN. CLEARANCE
⑥ COMPACTED FILL
⑦ 30" X 30" X 4" CONCRETE BREAK AWAY CONCRETE PAD, 3000 P.S.I.
⑧ PIPE TO BE D.I.P., PRESSURE CLASS 350
⑨ RESTRAINED JOINTS, FROM HYDRANT TO WATER MAIN
⑩ VARIABLE DISTANCE, IF GREATER THAN 100' A VALVE SHALL BE INSTALLED AT HYDRANT BASE

REV: 12/10/2015

STANDARD DETAIL NO. 6.25
~~LEE COUNTY UTILITIES~~
FIRE HYDRANT LOCATIONS/CLEARANCE

N.T.S.



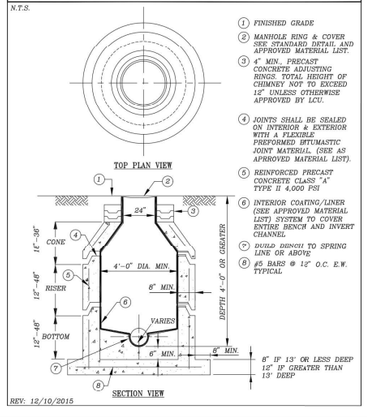
① PREFERRED LOCATION
② F.H. TO BE LOCATED 2' MINIMUM FROM EDGE OF SIDEWALK
③ P.T. OR P.C. OF CURB RETURN
④ PROPERTY LINE RIGHT-OF-W.Y OR LIMIT OF EASEMENT
⑤ ACCEPTABLE LOCATION WITH CURB RADIUS OF 20' OR MORE
⑥ BETWEEN 2'-0" MIN. AND 6'-7" MAX.
⑦ 6'-0"
⑧ 4'-0"

NOTES:
1. OBSTRUCTIONS SUCH AS UTILITY POLES, TREES, FENCES, VEGETATION, HOSE BIBS, SIGNS, ETC. SHALL NOT BE PLACED BETWEEN CURB AND HYDRANT.
2. SOME LOCATIONS APPLY AT EITHER END OF CURB RETURNS.
3. DIMENSION SHOWN ON CONSTRUCTION DRAWINGS SUPERCEDES LOCATIONS SHOWN HERE.

REV: 12/10/2015

STANDARD DETAIL NO. 6.33
~~LEE COUNTY UTILITIES~~
PRECAST MANHOLE-CONCENTRIC

N.T.S.

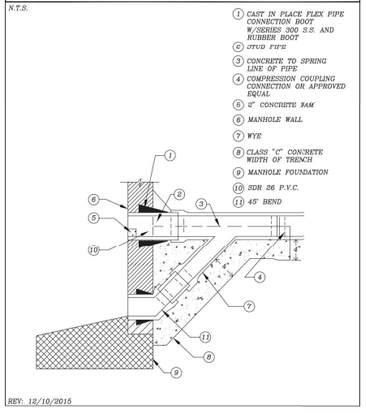


① FINISHED GRADE
② MANHOLE RING & COVER SEE STANDARD DETAIL AND APPROVED MATERIAL LIST.
③ 4" MIN. PRECAST CONCRETE ADJUSTING RINGS. TOTAL HEIGHT OF CHIMNEY NOT TO EXCEED 12" UNLESS OTHERWISE APPROVED BY LCU.
④ JOINTS SHALL BE SEALED ON INTERIOR & EXTERIOR WITH A FLEXIBLE PREFORMED BITUMASTIC JOINT MATERIAL. (SEE AS APPROVED MATERIAL LIST).
⑤ REINFORCED PRECAST CONCRETE CLASS "A" TYPE II 4,000 PSI
⑥ INTERIOR COATING/LINER (SEE APPROVED MATERIAL LIST) SYSTEM TO COVER ENTIRE BENCH AND INVERT CHANNEL
⑦ DOUBLE BENDS TO SPRING LINE OR ABOVE
⑧ #5 BARS @ 12" O.C. E.W. TYPICAL
8" IF 13' OR LESS DEEP
12" IF GREATER THAN 13' DEEP

REV: 12/10/2015

STANDARD DETAIL NO. 6.36
~~LEE COUNTY UTILITIES~~
OPTIONAL MANHOLE DROP 2' TO 4'

N.T.S.

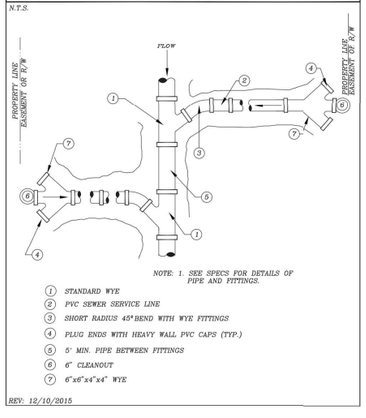


① CAST IN PLACE FLEX PIPE CONNECTION BOOT W/SERIES 300 S.S. AND RUBBER BOOT
② CPVC PIPE
③ CONCRETE TO SPRING LINE OF PIPE
④ COMPRESSION COUPLING CONNECTION OR APPROVED EQUAL
⑤ 6" CONCRETE 36M
⑥ MANHOLE WALL
⑦ WYE
⑧ CLASS "C" CONCRETE WIDTH OF TRENCH
⑨ MANHOLE FOUNDATION
⑩ SDR 26 P.V.C.
⑪ 45° BEND

REV: 12/10/2015

STANDARD DETAIL NO. 6.38
~~LEE COUNTY UTILITIES~~
STANDARD SEWER SERVICE LATERALS

N.T.S.



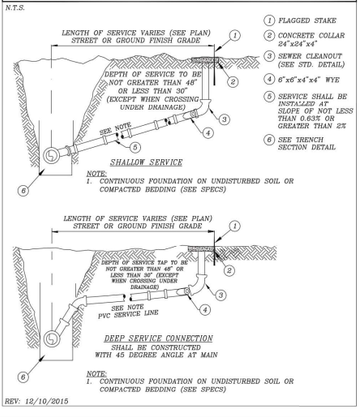
NOTE: 1. SEE SPECS FOR DETAILS OF PIPE AND FITTINGS.

① STANDARD WYE
② PVC SEWER SERVICE LINE
③ SHORT RADIUS 45°BEND WITH WYE FITTINGS
④ PLUG ENDS WITH HEAVY WALL PVC CAPS (TYP.)
⑤ 5' MIN. PIPE BETWEEN FITTINGS
⑥ 6" CLEANOUT
⑦ 6"x6"x4"x4" WYE

REV: 12/10/2015

STANDARD DETAIL NO. 6.39
~~LEE COUNTY UTILITIES~~
STANDARD SEWER SERVICE LATERAL

N.T.S.



① FLAGGED STAKE
② CONCRETE COLLAR 24"x24"x4"
③ SEWER CLEANOUT (SEE STD. DETAIL)
④ 6"x6"x4"x4" WYE
⑤ SERVICE SHALL BE INSTALLED AT SLOPE OF NOT LESS THAN 0.63% OR GREATER THAN 2%
⑥ SEE TRENCH SECTION DETAIL

REV: 12/10/2015

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ensite
2401 FIRST STREET, SUITE 201
FORT MYERS, FLORIDA 33901
PH: (239)-226-0024
EB-26544 CA-LC26000374

CLIENT NAME AND ADDRESS
Buckingham 225 Development, Inc.
5961 Northland Rd. #1
Fort Myers, FL 33905

PROJECT NAME AND LOCATION
COASTAL CREEK
SANIBEL, FLORIDA

JONATHAN WADAS
LICENSE
No. 76911
STATE OF FLORIDA
PROFESSIONAL ENGINEER

JONATHAN WADAS, PE
FL License No. 76911

REVISIONS DESCRIPTION
REVISION
DATE
NO.

DATE:	9-17-21
PROJECT NO.	1419-01
FILE NO.	1419-01 CNA.dwg
SCALE:	AS SHOWN

UTILITY DETAILS
SHEET TITLE

C-11
SHEET NUMBER

COASTAL CREEK

STORMWATER MANAGEMENT REPORT

Prepared By:

EnSite, Inc.
2401 First Street, Suite 201
Fort Myers, Florida 33901
Phone (239) 226-0024
Fax (239) 226-0094

November 2021

THIS IS TO CERTIFY THAT THE ENCLOSED ENGINEERING CALCULATIONS WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION.

Jason Tomassetti, P.E.
Florida License No. 66263

TABLE OF CONTENTS

SECTION ONE

REPORT

PROJECT LOCATION

The project area is located in the City of Sanibel, Florida. Within Section 13, Township T46S, Range 21E. The site is +/-3.36 acres situated on the southwest corner of Sanibel Captiva Road and Sanibel Bayous Road.

EXISTING CONDITIONS

As previously mentioned, the project site is 3.36 acres in size. The eastern portion of the site as identified as STRAP #13-46-21-T2-00002.2000 was a commercial sales center and the building exists today (northeast corner). The western portion of property identified as STRAP #13-46-21-T2-00002.4000 was a waste treatment facility. This facility was removed and the land was reclaimed in 2010. It is currently vacant. The topography of the site ranges from +/-5.0 to +/-1.3 NAVD. There is an existing wetland along the southern property line that has been verified and determination has been made and approved.

The site currently sheet flows to the south into the south canal/waterway and wetland.

PROPOSED CONDITIONS

The site is 3.36 acres in size and will consist of 6 single-family residential units/lots, associated infrastructure and master surface water management system. The proposed stormwater system is composed of a dry detention system utilized to treat the required water quality volume and to provide the attenuation of the 25 yr-72 hr storm event prior to discharging into the existing wetland on the south side of the property.

The owner/developer of the property will be the maintenance entity of the master stormwater system:
Buckingham 225 Development, Inc.
5961 Northland Rd, Unit 1
Fort Myers, FL 33905

LAND USE

Existing

Building:	0.02 acres
Impervious:	0.00 acres
Pervious:	2.80 acres
Wetlands:	0.54 acres
SWMS	0.00 acres
TOTAL:	3.36 acres

Proposed

Building:	0.35 acres
Impervious:	0.58 acres
Pervious:	1.50 acres
Wetlands/Preserve:	0.54 acres
SWMS:	0.39 acres
TOTAL:	3.36 acres

SOIL STORAGE & SCS CURVE NUMBER

Average Site Grade = 3’
Depth to Water Table (Avg. grade – WSWT) = 3’ – 1.3’ = 2.5’

Depth to Water Table	Cumulative Water Storage	Compacted Water Storage
1 ft	0.60 in.	0.45 in.
2 ft	2.50 in.	1.88 in.
3 ft	6.60 in.	4.95 in.
4 ft	10.9 in.	8.18 in.

Depth = 3.42 in.

(% pervious) = 53%
Site Soil Storage = 1.81 in
CN = 1000 / (1.81+10) = 85

TIME OF CONCENTRATION (Tc)

Tc = 0.0078 (L^0.77/S^0.385)
Tc = 10 min

WATER QUALITY VOLUME

1. First 1” x drainage area:

   1” x 2.82 acres x 1’/12” = 0.24 ac-ft.

2. 2.5” x % impervious:

   a. Drainage area for water quality:
   = total drainage area – (water surface + roof)
   = 2.82 acres – (0.00 acres + 0.35 acres) = 2.47 acres

   b. Impervious area for water quality:
   = road/parking/sidewalk
   = 0.58 acres

   c. Percentage impervious for water quality (b/a):
   = 0.58 / 2.47 acres = 0.23%

   d. Treatment Depth:
   = 2.5” x 0.23 = 0.58”

   e. Treatment Volume:
   = 0.58” x (2.47 acres – 0.00 acres) x 1’ / 12” = 0.12 ac-ft.

WATER QUALITY VOLUME (CONT.)

3. Dry detention volume shall be provided equal to 75% of the above amounts computed for wet detention. Wet detention shall provide the greater of the first inch of runoff from the developed site or the total runoff of 2.5 times the percent impervious, whichever is greater.

4. Required Treatment Volume = 0.75 x 0.24 ac-ft. = 0.18 ac-ft.

5. Required Treatment Volume plus 50% = 0.27 ac-ft.

6. Treatment Elevation

   a. Depth = 0.27 / 0.39 acres = 0.70 ft
   b. Treatment Elevation = 0.70 + 1.3 = 2.0 ft

7. Treatment Volume Provided

   a. Depth = CS WQ Weir Elev. – Circular Orifice. = 4.9’ – 1.3’ = 3.6’
   b. Treatment Volume Provided = 3.6’ x 0.39 ac = 1.4 ac-ft.

DESIGN SUMMARY

Wet Season Water Table:	1.3’
Water Quality Volume Required:	0.27 ac-ft.
Water Quality Volume Provided:	1.40 ac-ft.

5 year, 24 hour peak stage = 3.86’
25 year, 72 hour peak stage = 4.79’
100 year, 72 hour zero discharge stage = 6.53’

Peak Discharge (Post) controlled by the 3” dia orifice (min. size). The max flow is 0.43 cfs.

APPENDIX A

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Site	025Y-72H	13.12	60.0167	11.00	9.12	2.8200	85.0	0.00	0.00
Site	05Y-24H	7.59	12.2667	5.50	3.83	2.8200	85.0	0.00	0.00

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
POND	025Y-72H	4.90	4.79	0.0010	13.12	0.43	37323
POST	025Y-72H	0.00	1.36	0.0010	0.43	0.43	100
WETLAND	025Y-72H	0.00	1.30	0.0000	0.43	0.00	0
POND	05Y-24H	4.90	3.86	-0.0010	7.59	0.37	22562
POST	05Y-24H	0.00	1.36	0.0010	0.37	0.37	100
WETLAND	05Y-24H	0.00	1.30	0.0000	0.37	0.00	0

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
POND	100Y-72H (Zero)	4.90	6.53	0.0010	16.96	0.00	40598

COASTAL CREEK
STORMWATER MANAGEMENT REPORT

Prepared For:

Buckingham 225 Development, Inc.
5961 Northland Road Unit 1
Fort Myers, FL 33905

Prepared By:

EnSite, Inc.
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Phone (239) 226-0024
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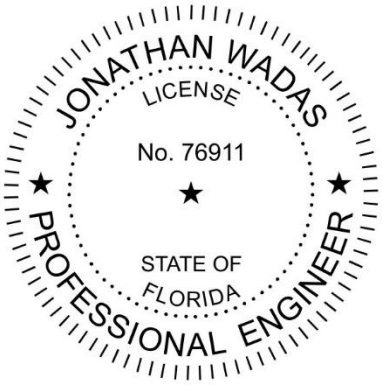
EB 26544
CA LC26000374



This item has been electronically signed and sealed using an SHA-1 authentication code by Jonathan Wadas, P.E. on 6/28/2022.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Site Information

Location

The project site is located in the City of Sanibel, Florida. Within Section 13, Township T46S, Range 21E. The site is +/-3.36 acres situated on the southwest corner of Sanibel Captiva Road and Sanibel Bayous Road.

Site Conditions

The 3.36-acre project site is currently vacant land. The topography of the site ranges from 1.3 to 5.0 feet, NAVD. There is an existing wetland along the southern property line that has been verified and determination has been made and approved.

The site currently sheet flows to the south into the wetland and south canal/waterway.

Background

The eastern portion of the site, identified as STRAP #13-46-21-T2-00002.2000, was a commercial sales center and the building exists today (northeast corner). The western portion of property identified as STRAP #13-46-21-T2-00002.4000 was a waste treatment facility. The facility has been removed, and the land was reclaimed in 2010.

Project Information

The proposed project will consist of 6 single-family residential units/lots, associated utility infrastructure and dry detention stormwater management (SWM) system. The proposed SWM system is composed of a "Natural Area" dry detention system utilized to treat the required water quality volume and to provide the attenuation of the 25-year-72-hour storm event prior to discharging into the existing on-site wetland. The individual lot plans have been designed with two layout options. The SWM system has been designed for Layout Option A which maximizes the impervious coverage on the lot and includes stem walls constructed at the lot line.

Wet Season Water Table and Control Elevation

The wet season water table (WSWT) is estimated to be 1.3 feet, NAVD for the entire site. The City of Sanibel considers 1.3 feet, NAVD as the wet season water table for the entire island. Additionally, SFWMD design information on control elevations (provided as Exhibit A) states the minimum control elevation along the west coast of the District from Cape Romano to Charlotte County is 2.5 feet, NGVD or 1.3 feet, NAVD.

From Cape Romano to Charlotte County

Minimum control elevation for wet water management areas where salt water inflow cannot be tolerated is 2.5 Feet above the NGVD.

Minimum bottom elevation for dry water management areas is 2.5 Feet above the NGVD.

Minimum control elevation for wet water management areas where occasional salt water inflow can be tolerated is 2.0 Feet above the NGVD.

The proposed control elevation for the SWM system is 2.5 feet, NAVD. The control elevation was raised above the WSWT to provide an outfall with positive discharge to the on-site wetland.

Stormwater Management System

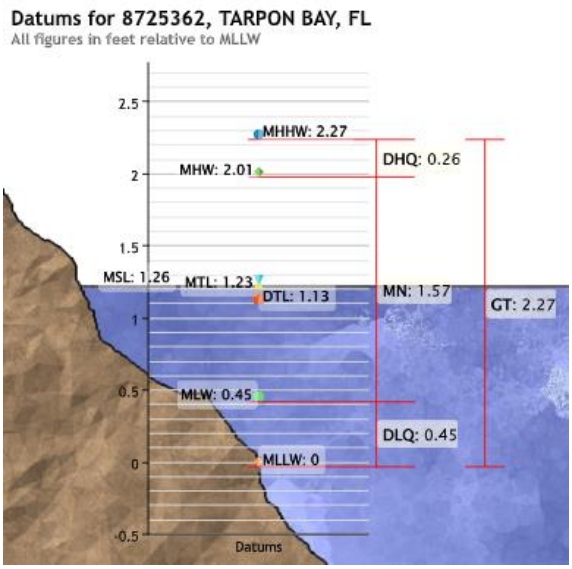
The SWM system consists of dry detention in natural areas between the proposed lots, roadway, and perimeter berm. Per Section 4.3 of the SFWMD Applicant's Handbook Vol. II, natural areas may be used for detention purposes. These areas will not be altered from the current condition in order to meet the City of Sanibel development criteria. The existing elevation is approximately 3.5 feet, NAVD. Discharges from the "Natural Area" dry detention ponds are through a control structure with a three-inch diameter bleeder set at 2.5 feet, NAVD and the top grate elevation set at the 25-year storm event peak stage.

Design Discharge Rate

The proposed peak design discharge rate is within the allowable limit based on a minimum sized 3-inch diameter bleeder.

Tailwaters

The project discharges to the on-site wetland on the south side of the project. The wetland discharges to the tidal waters of Clam Bayou on Sanibel Island. Per NOAA Station 8725362, in Tarpon Cove also on Sanibel Island, the mean higher-high water (MHHW) elevation in 2.27 feet, NAVD. The control structure is fitted with a bubble-up inlet at the downstream end of the pipe set at elevations 2.3 feet, NAVD. The tailwater used in the model is set at 2.3 feet, NAVD and remains constant for the duration of each storm event. See Exhibit B for additional details.



Floodplain

The project is located within FEMA Flood Zone AE with a base flood elevation (BFE) of 11 feet, NAVD. The BFE is based on a storm surge event in the Gulf of Mexico and essentially inundates the entire island. This creates a floodplain contiguous to the Gulf of Mexico and the amount of floodplain volume lost due to fill on the project site is negligible when compared to the

available floodplain storage at the storm surge BFE. There is also no known historic basin storage provided by the site. No compensating storage is required. The floodplain contours are shown in the revised plans.

Project Land Coverage

The following tables provide the existing and proposed land coverage for the project site.

Existing Conditions		
Coverage	Acres	Percent
Building	0.02	*1%*
Impervious	0.00	*0%*
Pervious/Upland	2.80	*83%*
Wetland	0.54	*16%*
Total	3.36	*100%*

Proposed Conditions		
Coverage	Acres	Percent
Building	0.41	*12%*
Impervious	0.61	*18%*
Pervious	0.90	*27%*
"Natural Area" Dry Detention	0.55	*16%*
Upland Buffer (Preserve)	0.35	*10%*
Wetland (Preserve)	0.54	*16%*
Total	3.36	*100%*

SWM System Land Coverage

The following tables provide the proposed land coverage for the SWM system.

SWM Basin Land Coverages		
Coverage	Acres	Percent
Building (max)	0.41	*20%*
Impervious (max)	0.60	*29%*
Pervious	0.50	*24%*
"Natural Area" Dry Detention	0.55	*27%*
Total	2.06	*100%*

SWM System Design Summary

Stormwater Management Design Summary	
Basin Area (acres)	2.05
WSWT Elev. (ft, NAVD)	1.30
Control Elev. (ft, NAVD)	**2.50**
5-Year, 1-Day Storm Event	
Rainfall (in)	5.50
Peak Stage (ft, NAVD)	**4.19**
Minimum Road Crown Elev. (ft, NAVD)	4.50
25-Year, 3-Day Storm Event	
Rainfall (in)	11.00
Design Discharge* (cfs)	0.35
Peak Stage (ft, NAVD)	**4.65**
Minimum Berm Elevation (ft, NAVD)	5.00
100-Year, 3-Day Storm Event (zero discharge)	
Rainfall (in)	14.00
Peak Stage (ft, NAVD)	**5.61**
FEMA Base Flood Elevation (ft, NAVD)	11.00
Min. Building Finished Floor Elev. (ft, NAVD)	12.00

*Discharges through minimum sized 3-inch bleeder.

Construction Schedule and Techniques

A Construction Pollution Prevention Plan or Stormwater Pollution Prevention Plan (SWP3) was prepared for the project and is provided in a separate attachment.

Operation and Maintenance

An Urban Stormwater Management Program was prepared for post construction operation and maintenance of the SWM system and is provided in a separate attachment.

Water Quality Calculations

Site Areas:

Land Coverage	Area
Building (max)	0.41 ac
Impervious (max)	0.60 ac
Pervious	0.50 ac
"Natural Area" Dry Detention	0.55 ac
TOTAL	2.06 ac
Off-site Impervious	0.02 ac

Design Parameters:

Wet Season Water Table Elev. (WSWT) =	1.30 ft
Control Elevation (CE) =	2.50 ft
Dry Detention Bottom Elevation =	3.50 ft
Overflow Elevation =	4.80 ft

One Inch of Runoff from the Basin (WQ1):

WQ1 = Basin Area x 1 inch = 0.17 ac-ft

Site Area for Water Quality Calculations (SAWQ):

The water surface area meeting dimensional criteria is subtracted from the total site area for water quality treatment volume calculations.

SAWQ = Total - Wet Detention Pond = 2.06 ac

Site Area for Water Quality Pervious/Impervious Calculations (SAWQ2):

Water surface and roofed areas are deducted from site areas only for water quality pervious/impervious calculations.

SAWQ2 = Total Site - Building - Wet Detention Pond - OSW = 1.65 ac

Water Quality Percent Impervious (WQ%IMP):

Water surface and roofed areas are deducted from site areas only for water quality pervious/impervious calculations.

WQ%IMP = Impervious / SAWQ2 = 36%

2.5 Inches times the Percentage of Imperviousness from the Basin (WQ2):

WQ2 = 2.5 inches x %IMP x SAWQ = 0.16 ac-ft

Wet Detention Water Quality Volume (WDV):

Wet detention volume shall be calculated for the first inch of runoff from the developed project, or the total runoff of 2.5 inches times the percentage of imperviousness, whichever is greater.

WDV = MAX (WQ1, WQ2) = 0.17 ac-ft

Dry Detention Water Quality Volume: (DDV)

Dry detention volume shall be provided equal to 75 percent of the above amounts computed for wet detention.

DDV = WDV x 75% = 0.13 ac-ft

Compensating Water Quality:

Compensating water qualtiy volume is provided for the proposed off-site impervious area.

Off-site Impervious x 2.5 inches = 0.004 ac-ft

Required Water Quality Volume - 150%: (WQ-Req)

The required water quality volume includes an additional 50% volume.

WQ-Req = (DDV + Comp WQ) x 150% = 0.20 ac-ft

Provided Water Quality Volume (WQ-Provided):

WQ-Provided = DDA x (Overflow Elev. - DDA Bottom Elev.) 0.72 ac-ft

Stage-Storage Calculations

	Dry Detention	Pervious	Impervious
Total Areas >	0.55 ac	0.50 ac	0.60 ac
Start Elev. >	3.50 ft	3.50 ft	4.50 ft
End Elev. >	na	5.00 ft	5.50 ft

Stage (ft-NAVD)	Dry Detention (ac)	Pervious (ac)	Impervious (ac)	Total Area (ac)	Inc. Volume (ac-ft)	Cumulative Volume (ac-ft)
2.30	0.001	0.00	0.00	0.00	0.00	0.00
3.49	0.001	0.00	0.00	0.00	0.00	0.00
3.50	0.55	0.00	0.00	0.55	0.00	0.00
4.00	0.55	0.17	0.00	0.72	0.32	0.32
4.50	0.55	0.33	0.00	0.88	0.40	0.72
5.00	0.55	0.50	0.30	1.35	0.56	1.28
5.50	0.55	0.50	0.60	1.65	0.75	2.03
6.00	0.55	0.50	0.60	1.65	0.82	2.85
6.50	0.55	0.50	0.60	1.65	0.82	3.67
7.00	0.55	0.50	0.60	1.65	0.82	4.50
7.50	0.55	0.50	0.60	1.65	0.82	5.32

Soil Storage Calculations

Proposed Conditions:

Area =	2.06	acres
Average Grade =	4.00	ft, NGVD
WSWT =	1.30	ft, NGVD
Depth to WSWT =	2.7	ft

Soil Type: Coastal (compacted)

Depth to WSWT (ft)	S (in)
1	0.45
2	1.88
3	4.95
4	8.18

Soil Storage in pervious areas =	4.0	inches
Curve Number (CN) =	71.3	
Pervious area =	0.50	acres
Site Soil Storage =	0.98	inches
Weighted Curve Number (CN) =	91.1	

ICPR Model

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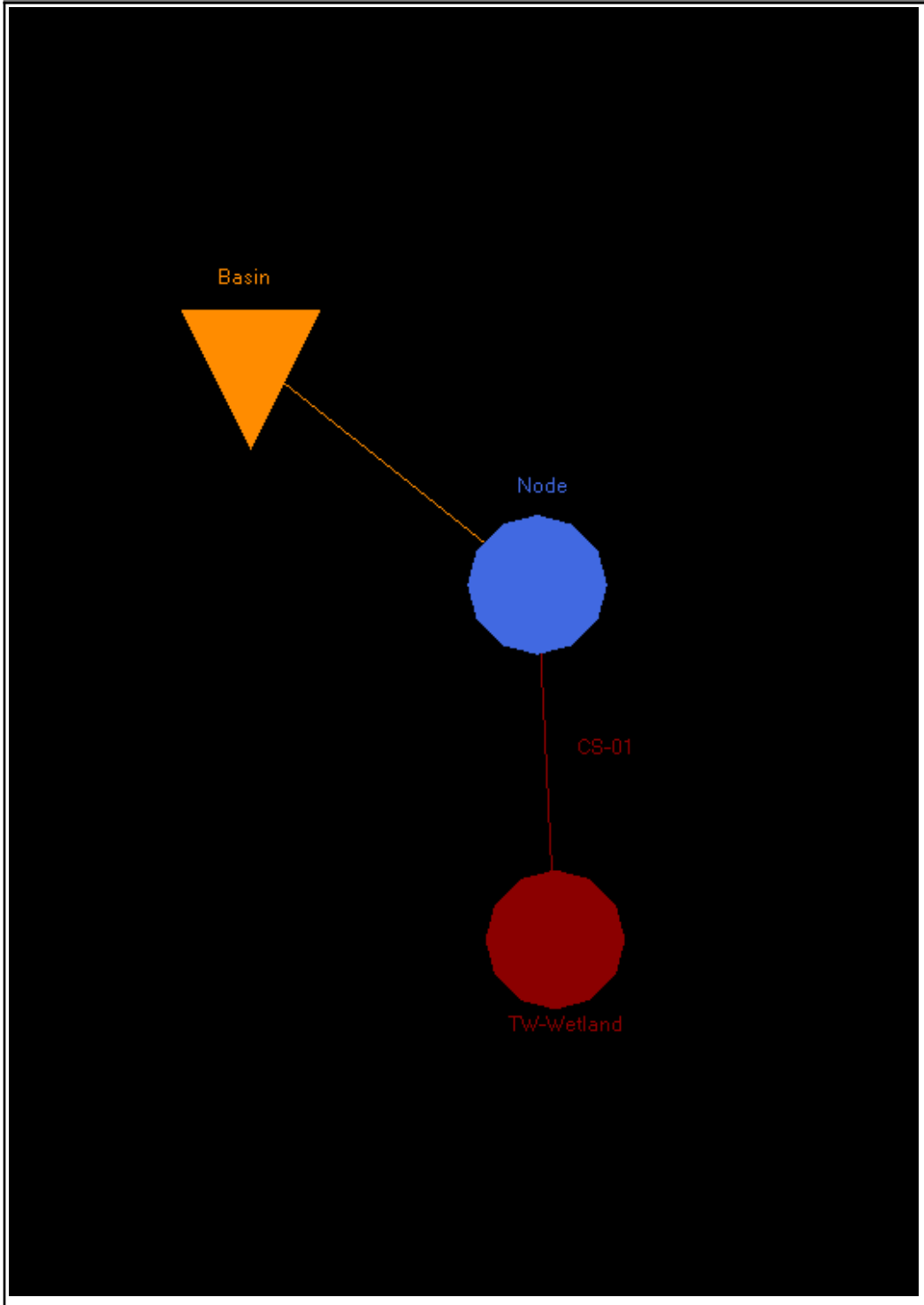
Background Image: Node Dia



Simple Basin: Basin

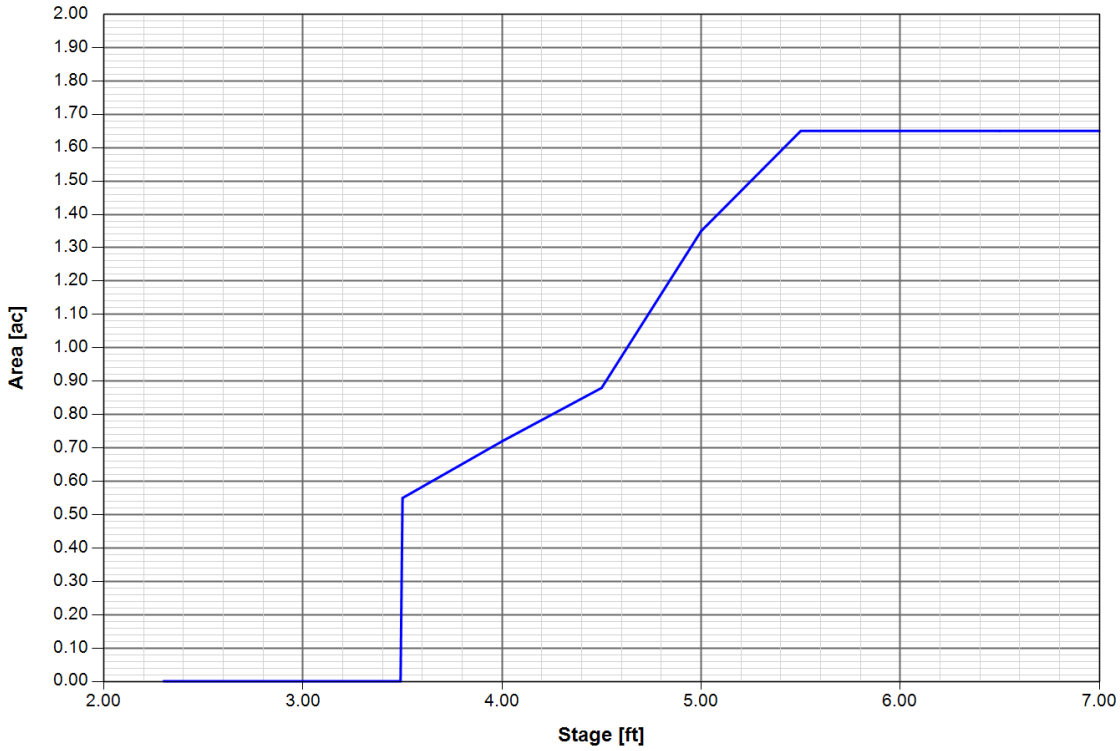
Scenario:	Scenario1
Node:	Node
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	2.0600 ac
Curve Number:	91.1
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Basin	005YR-1D	8.58	12.0500	5.50	4.47	2.0600	91.1	0.00	0.00
Basin	025YR-3D	9.87	60.0167	11.00	9.90	2.0600	91.1	0.00	0.00

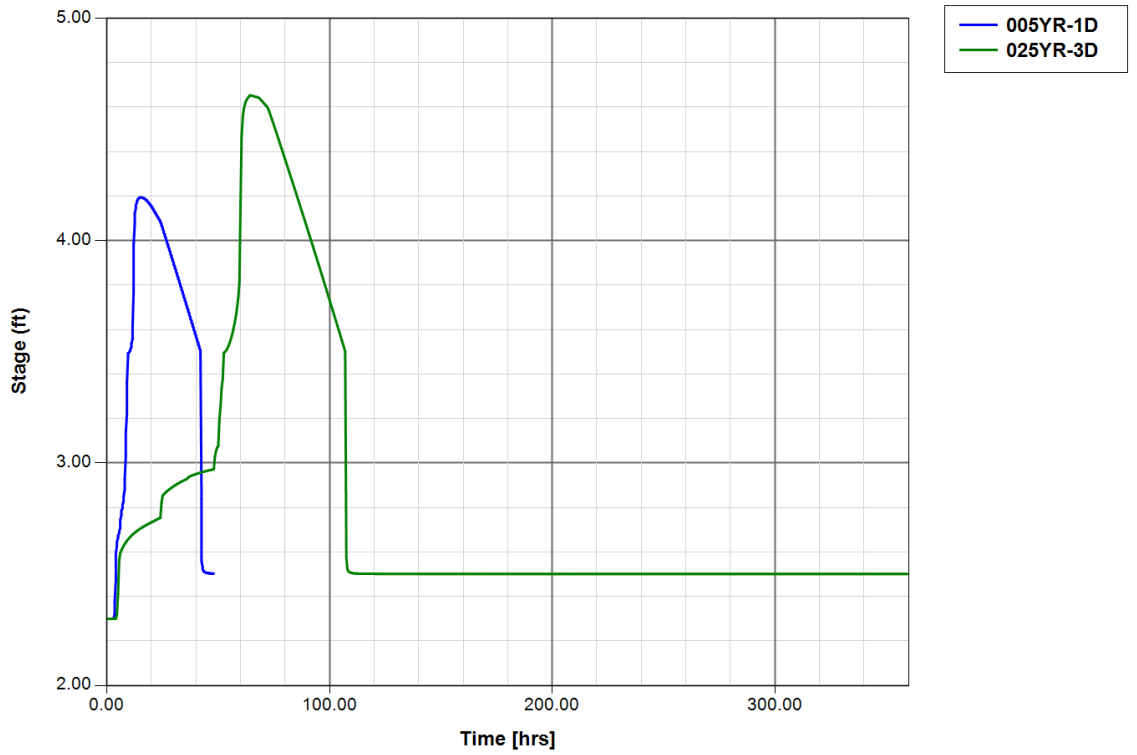
Node: Node Scenario: Scenario1



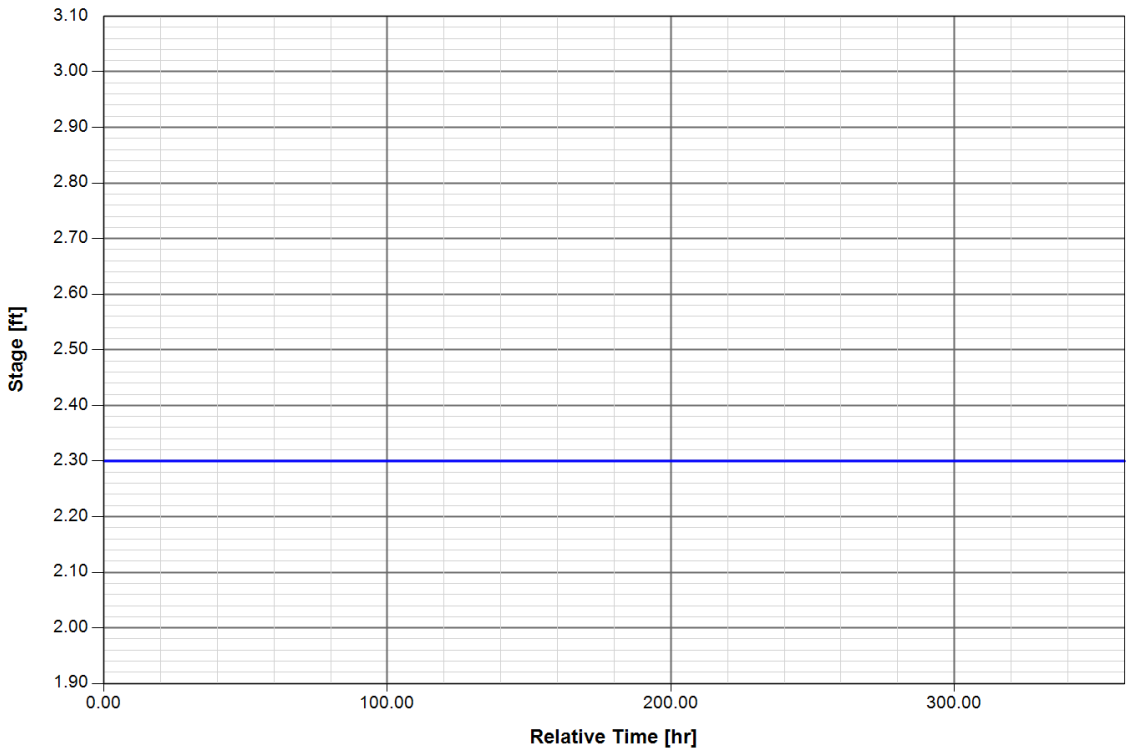
Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
Node	005YR-1D	4.00	4.19	0.0010	8.57	0.30	34072	15.3849	9.0648	12.0494	15.3183
Node	025YR-3D	4.00	4.65	0.0010	9.87	0.34	44603	64.4293	59.9491	60.0162	64.3710

Stage [Node: Node]



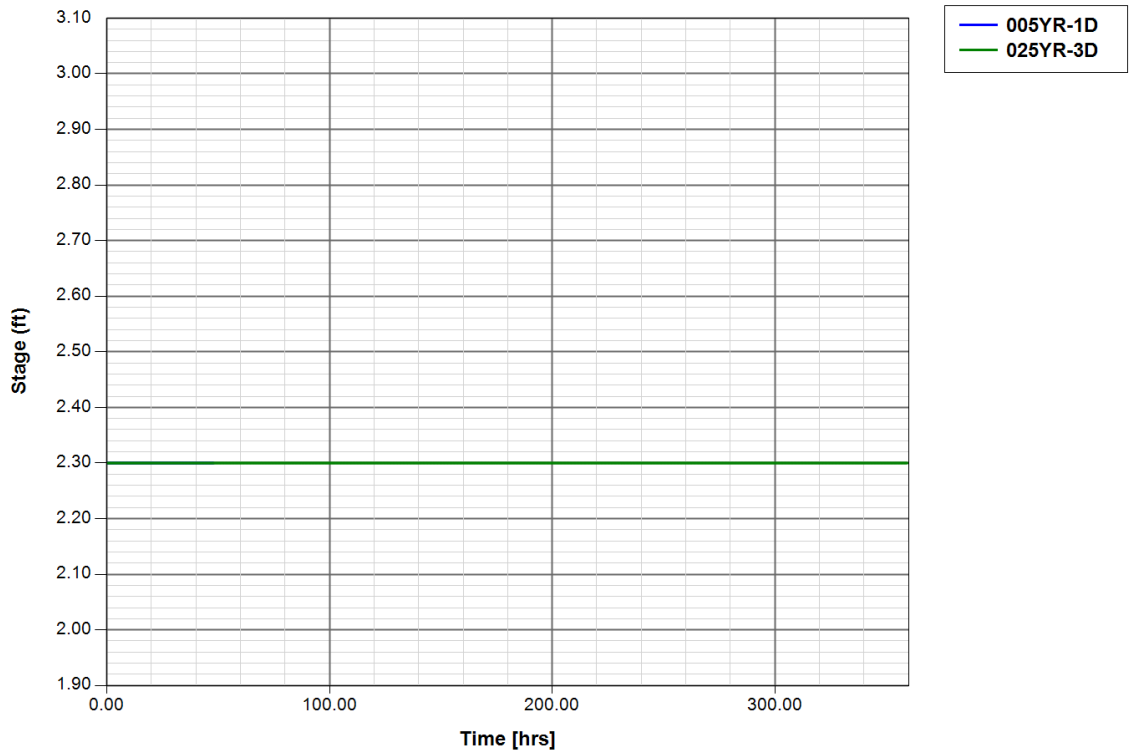
Node: TW-Wetland Scenario: Scenario1



Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
TW-Wetland	005YR-1D	0.00	2.30	0.0000	0.30	0.00	0	0.0000	0.0000	15.3183	0.0000
TW-Wetland	025YR-3D	0.00	2.30	0.0000	0.34	0.00	0	0.0000	0.0000	64.5877	0.0000

Stage [Node: TW-Wetland]



Drop Structure Link: CS-01		Upstream Pipe		Downstream Pipe	
Scenario:	Scenario1	Invert:	0.10 ft	Invert:	0.00 ft
From Node:	Node	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	TW-Wetland	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Positive	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	0	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	21.00 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	1.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component	
Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Circular
Invert:	2.50 ft
Control Elevation:	2.50 ft
Max Depth:	0.25 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

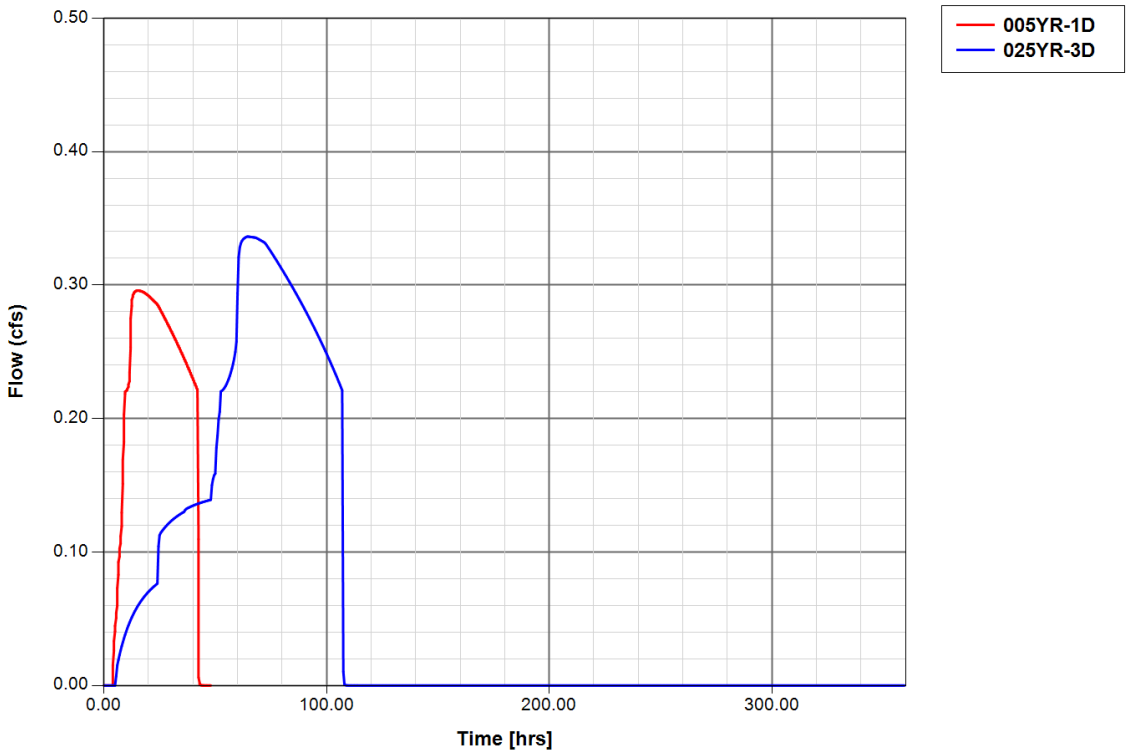
Weir Comment: 3-inch diameter bleeder.

Drop Structure Comment:

Link Min/Max Conditions with Times [Scenario1]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Time to Max Flow [hrs]	Time to Min Flow [hrs]	Time to Min/Max Delta Flow [hrs]	Time to Max Us Velocity [hrs]	Time to Max Ds Velocity [hrs]
CS-01 - Pipe	005YR-1D	0.30	0.00	0.00	0.00	0.00	15.3183	0.0000	42.5126	0.0000	0.0000
CS-01 - Weir: 1	005YR-1D	0.30	0.00	0.00	0.00	0.00	15.3183	0.0000	42.5178	0.0000	0.0000
CS-01 - Pipe	025YR-3D	0.34	0.00	0.00	0.00	0.00	64.5877	0.0000	107.3307	0.0000	0.0000
CS-01 - Weir: 1	025YR-3D	0.34	0.00	0.00	0.00	0.00	64.3710	0.0000	24.1737	0.0000	0.0000

Link Flow: CS-01 [Scenario1]



Simulation: 005YR-1D

Scenario: Scenario1
Run Date/Time: 6/28/2022 11:39:26 AM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	48.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
IA Recovery Time: 24.0000 hr

dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSII-24
		Rainfall Amount:	5.50 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 025YR-3D

Scenario: Scenario1
Run Date/Time: 6/28/2022 11:39:26 AM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	360.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	30.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	30.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
IA Recovery Time: 24.0000 hr

dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SFWMD-72
		Rainfall Amount:	11.00 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simple Basin: Basin

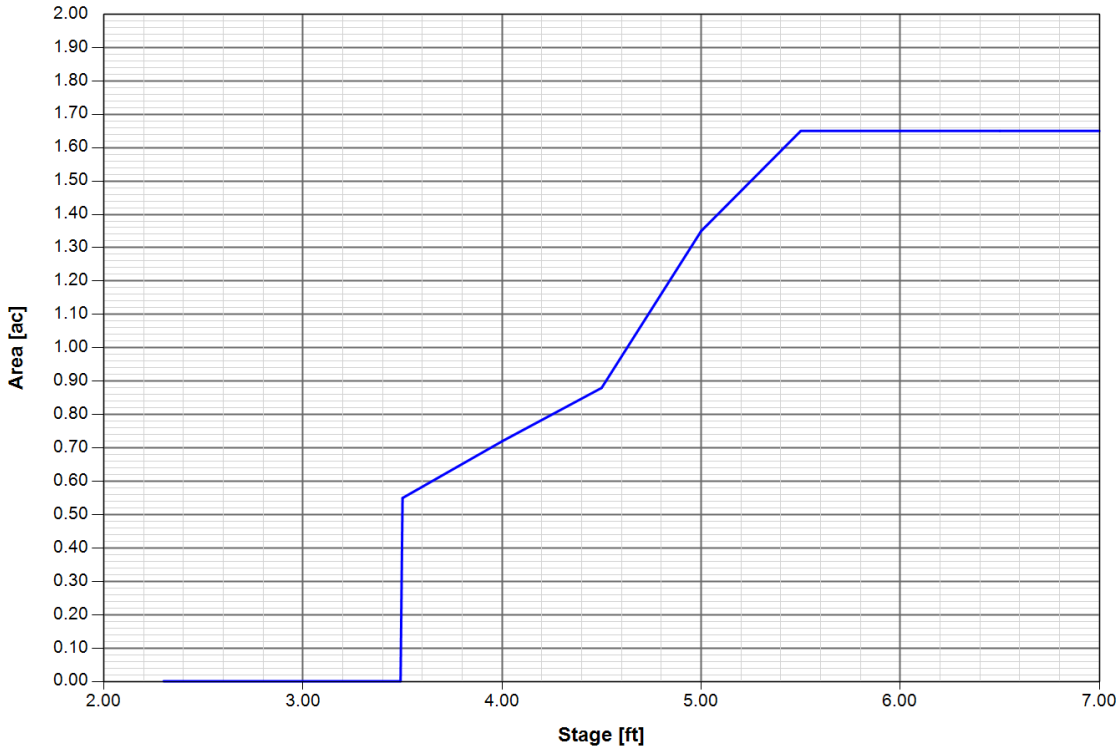
Scenario:	Scenario1
Node:	Node
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	2.0600 ac
Curve Number:	91.1
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Basin	100YR-3D	12.63	60.0167	14.00	12.85	2.0600	91.1	0.00	0.00

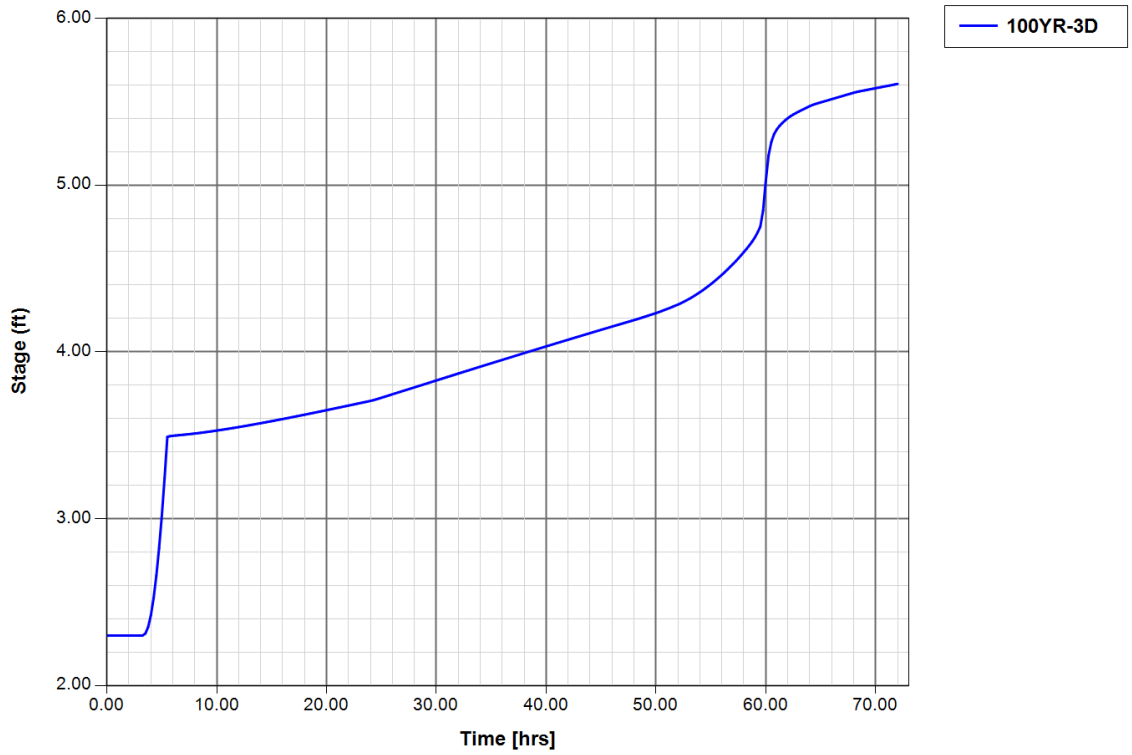
Node: Node Scenario: Scenario1



Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
Node	100YR-3D	4.00	5.61	0.0010	12.63	0.00	71874	72.0035	5.2605	60.0165	0.0000

Stage [Node: Node]



Drop Structure Link: CS-01		Upstream Pipe		Downstream Pipe	
Scenario:	Scenario1	Invert:	0.10 ft	Invert:	0.00 ft
From Node:	Node	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	TW-Wetland	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	None	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	0	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	21.00 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	1.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component	
Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Circular
Invert:	2.50 ft
Control Elevation:	2.50 ft
Max Depth:	0.25 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

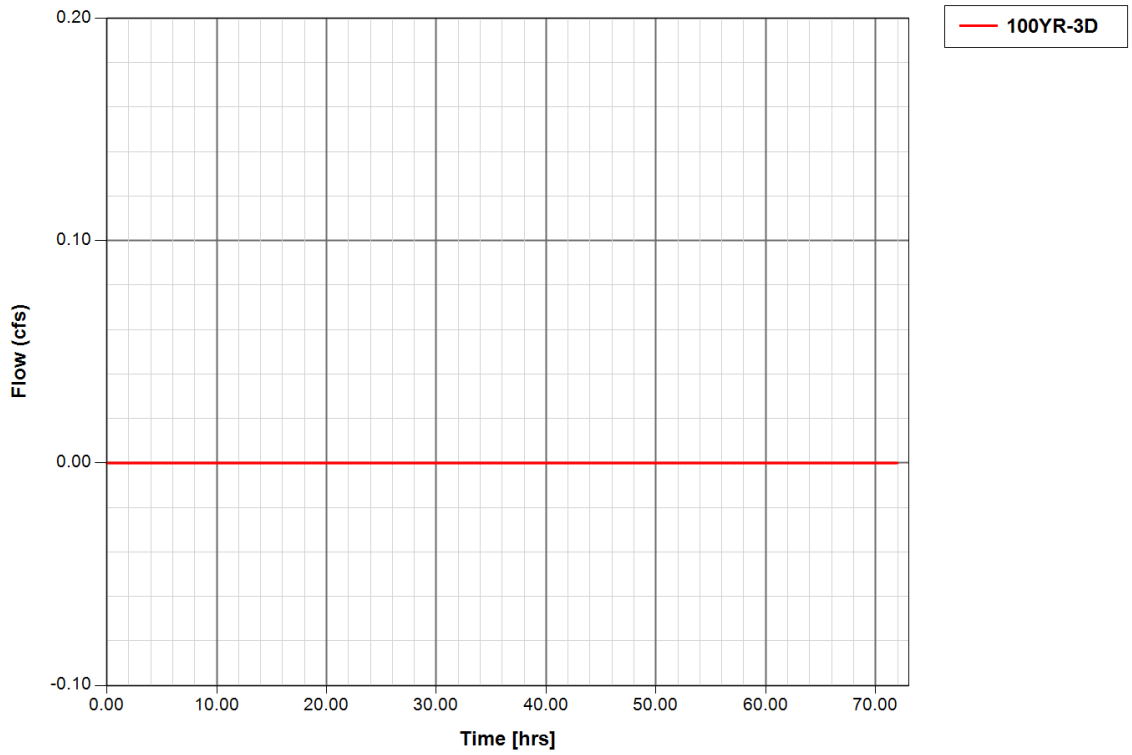
Weir Comment: 3-inch diameter bleeder.

Drop Structure Comment:

Link Min/Max Conditions with Times [Scenario1]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Time to Max Flow [hrs]	Time to Min Flow [hrs]	Time to Min/Max Delta Flow [hrs]	Time to Max Us Velocity [hrs]	Time to Max Ds Velocity [hrs]
CS-01 - Pipe	100YR-3D	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000
CS-01 - Weir: 1	100YR-3D	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.0000

Link Flow: CS-01 [Scenario1]



Simulation: 100YR-3D

Scenario: Scenario1
Run Date/Time: 6/28/2022 11:43:41 AM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
IA Recovery Time: 24.0000 hr

dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SFWMD-72
		Rainfall Amount:	14.00 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

2017

FLOODPLAIN MANAGEMENT IN FLORIDA

Quick Guide

Florida Division of Emergency Management

Bureau of Mitigation
State Floodplain Management Office
2555 Shumard Oak Boulevard, Tallahassee, FL 32399

www.floridadisaster.org/mitigation

Table of Contents

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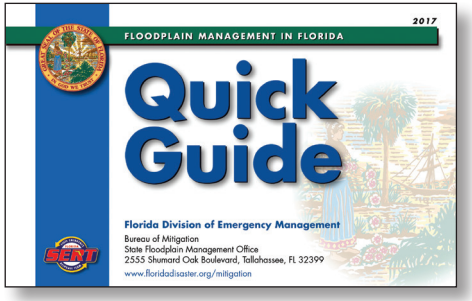
About This Guide

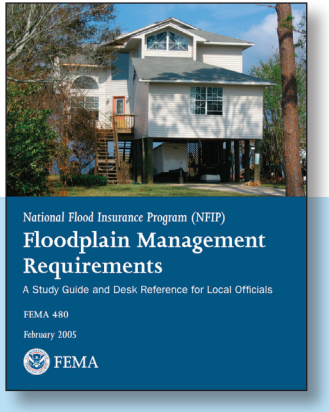
This **Quick Guide** helps local officials and citizens understand why and how Florida communities must manage development in floodplains to protect people and property. Flood-prone communities adopt codes and ordinances that detail the rules and requirements. In cases of conflict, those codes and ordinances, not the guidance provided in this publication, must be followed.



This **Quick Guide** was developed and funded jointly by the Florida Division of Emergency Management and the Federal Emergency Management Agency (FEMA).

Questions, comments and requests for additional copies should be directed to the Florida Division of Emergency Management, State Floodplain Management Office at floods@em.myflorida.com and (850) 815-4556.

For more detail on all aspects of floodplain management, please refer to FEMA 480, *National Flood Insurance Program, Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials.*



Prepared by:

RCQUINN CONSULTING, INC.

Why Do We Regulate the Floodplain?

To protect people and property. Implementing floodplain management regulations reduces vulnerability to future flood risk. If we know low lying land will flood from time to time, we should make reasonable decisions to help protect our families, homes, and businesses.

To make sure Federal flood insurance is available. Communities must join the NFIP and administer floodplain management requirements before residents and businesses can purchase Federal flood insurance and to be eligible for some types of Federal assistance, including flood mitigation grants.

To save tax dollars. Every time communities experience flood disasters local budgets are impacted. If we build smart, we'll have fewer problems the next time the water rises. Remember, Federal disaster assistance is not available for all floods. Even when the President declares a disaster, communities still must pay a portion of repair and clean-up costs, temporary housing assistance, and evacuation expenses.

To avoid liability and lawsuits. If we know an area is mapped as a flood hazard area, and if we know people could be in danger and buildings could be damaged, doesn't it make sense to take reasonable protective steps as our communities develop and redevelop?

Since 1978, Federal flood insurance policy holders in Florida have received over $4 billion in claim payments. Even though that represents many payments, most of the State's flood-prone property owners do not have flood insurance.

What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) was created by Congress in 1968 to protect lives and property and to reduce the financial burden of providing disaster assistance. The NFIP is administered by the Federal Emergency Management Agency (FEMA). Nationwide, over 22,200 communities participate in the NFIP— more than 460 Florida counties, cities and towns participate.

The NFIP is based on a mutual agreement between the Federal Government and communities. Communities that participate agree to regulate development in mapped flood hazard areas according to certain criteria and standards. The partnership involves:

- **Flood hazard maps.** In partnership with water management districts, communities and the State, FEMA produces flood maps in accordance with FEMA standards. The maps are used by communities, insurance agents, real estate professionals, and others.
- **Flood insurance.** Property owners and renters in participating communities are eligible to purchase Federal flood insurance for buildings and contents.
- **Regulations.** Communities must adopt and enforce minimum floodplain management regulations so that development, including buildings, is undertaken in ways that reduce exposure to flooding.

To learn more about the NFIP, including your potential flood risk and the approximate cost of a flood insurance policy, go to FEMA's FloodSmart website www.floodsmart.gov.

Community Responsibilities

To participate in the National Flood Insurance Program, communities agree to:

- **Recognize** flood hazards in community planning (see page 5)
- **Adopt and enforce** flood maps and a flood damage prevention ordinance
- **Require** permits for all types of development in the floodplain (see page 26)
- **Assure** that building sites are reasonably safe from flooding
- **Establish** Base Flood Elevations (BFE) where not determined on Flood Insurance Rate Maps (FIRMs)
- **Require** new and substantially improved homes and manufactured homes to be elevated above the BFE
- **Require** non-residential buildings to be elevated above the BFE, or dry floodproofed
- **Determine** if damaged buildings are substantially damaged
- **Conduct** field inspections; cite and remedy violations
- **Require and maintain** surveyed elevation information to document compliance (see pages 38, 39, and 41)
- **Carefully consider** requests for variances
- **Resolve** non-compliance and violations of floodplain management requirements
- **Advise and work** with FEMA and the State when updates to flood maps are needed
- **Maintain** records for review and respond to periodic requests for reports to FEMA

NFIP Recommended Planning Considerations

Florida communities should consider incorporating planning considerations in comprehensive plans, land development codes, floodplain management regulations, and Local Mitigation Strategies to reflect the long-term goal of increasing resiliency to future flooding. NFIP regulations (Section 60.22(c)) outline 19 factors for consideration, including:

- Divert development to areas outside the SFHA to reduce flood damage
- Full public disclosure to potential buyers of properties in the SFHA
- Acknowledge that SFHA development may increase flood risk of existing development
- Improve local drainage to control increased runoff that increases the probability of flooding on other properties
- Require additional elevation above the Florida Building Code (1-foot freeboard or more above BFE)
- Require elevation methods such as pilings or columns rather than fill to maintain the storage capacity of the floodplain and to minimize environmental impacts
- Require evacuation plans for manufactured home parks and subdivisions

Flood Insurance: Property Owner's Financial Protection

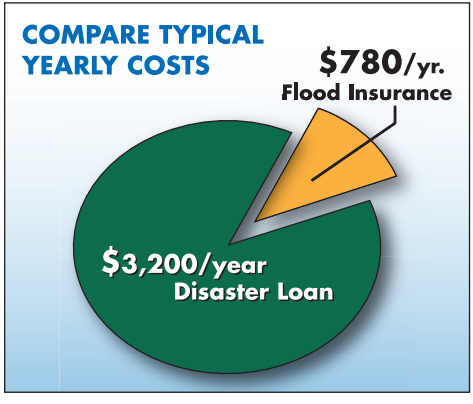
Who needs flood insurance? Federal flood insurance is required for all buildings in mapped flood zones shown on FEMA's maps if they are financed by Federally-backed loans or mortgages. All homeowners, business owners, and renters in communities that participate in the NFIP may purchase Federal flood insurance on any building and its contents, even if outside of the mapped flood zone. Homes in mapped flood zones are five times more likely to be damaged by flooding than by major fires.

Not in a mapped flood zone? Unfortunately, it's often after a flood that many people discover that their home or business property insurance does NOT cover flood damage. Approximately 25% of all flood damage occurs in low risk zones, commonly described as being "outside the mapped flood zone."

Protected by a levee or dam? Even areas protected by levees or other flood control structures have some risk of flooding if the structures are overtopped or fail. Even when levees provide "100-year" flood protection, there is still a chance that a higher flood will cause flooding.

What about disaster grants and loans? Federal disaster grants do not cover most losses and repayment of a disaster loan can cost many times more than the cost of a flood insurance policy.

Want to know more? Learn more at www.floodsmart.gov. To purchase a policy, call your insurance agent. To get the name of an agent in your community, use `<Find an Agency>` on the FloodSmart webpage.



The NFIP's Community Rating System (CRS)

The NFIP recognizes communities that achieve better flood resiliency by providing policy holders with reduced flood insurance premiums. Communities must apply to participate in CRS and commit to implement and certify activities that contribute to reduced flood risk. Examples of actions communities can take to reduce the cost of flood insurance premiums include:

- Preserve open space in the floodplain
- Enforce higher standards for safer development through zoning, stormwater, subdivision, and flood damage protection ordinances
- Develop hazard mitigation plans and watershed and storm management plans
- Undertake engineering studies and prepare flood maps
- Obtain grants to buy out or elevate houses or to floodproof businesses
- Maintain drainage systems
- Monitor flood conditions and issue warnings
- Inform people about flood hazards, flood insurance, and how to reduce flood damage

Community officials can request assistance from CRS specialists to help with the application process and prerequisites. Check the online CRS Resource Center (see page 70).

Property owners in more than 234 Florida communities that participate in the CRS receive premium discounts ranging from 5% to 35% (as of May 2017).

Community Rating System in Florida

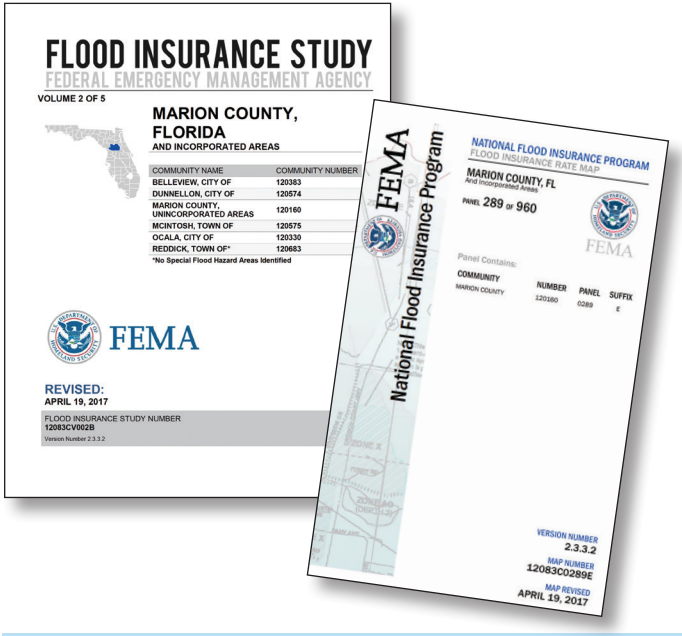
The State Floodplain Management Office helps CRS communities improve their ratings and helps non-CRS communities qualify for the program. Every community benefits by adopting and committing to implementation of Florida's *CRS Seven Performance Measures*:

1. Adopt floodplain regulations coordinated with the Florida Building Code (see page 33)
2. Conduct annual inspections of flood hazard areas and resolve compliance matters
3. Adopt a flood zone permit application form, procedures and checklists
4. Use FEMA's Elevation Certificate form and verify accurate completion when certificates are submitted
5. Send letters to local propane and air conditioning companies about compliant installations
6. Use a set of forms and develop Substantial Improvement/Substantial Damage determination procedures
7. Provide online public access to digital Flood Insurance Rate Maps and Elevation Certificates

Download the *CRS Seven Performance Measures* at www.floridadisaster.org/Mitigation

Florida's CRS communities save property owners more than $195 million each year by qualifying for Federal flood insurance premium discounts. If every Florida non-CRS community qualified at the lowest level for 5% discounts on Federal flood insurance premiums the additional savings would be about $976,000 each year. Data as of May, 2017.

Looking for FEMA Flood Map Information?



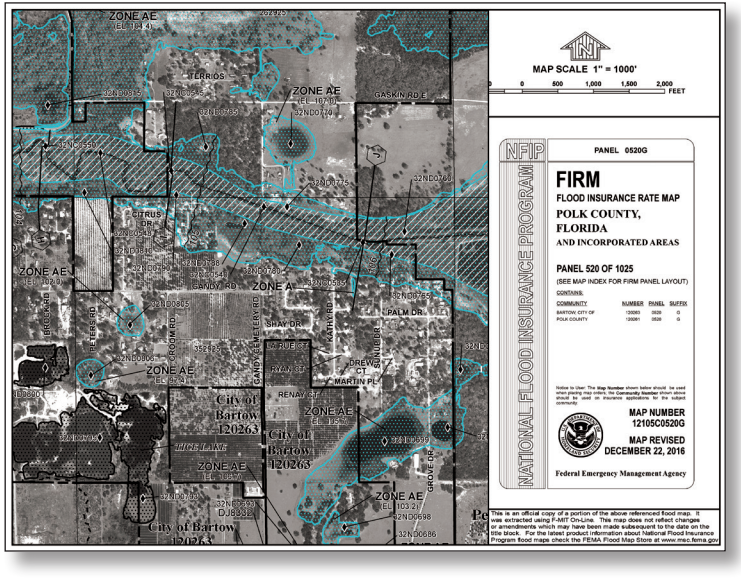
- Flood Insurance Studies (FISs) are compilations of flood risk information used for community planning and development.
- Flood Insurance Rate Maps (FIRMs) show flood zones subject to regulations and where Federal flood insurance is required.
- Access FIRMs at the FEMA Flood Map Service Center at www.fema.gov, where current and historical flood maps may be viewed and downloaded.
- Many cities and counties also make digital flood maps available online, sometimes with property parcel data.

Need a fast answer? Community planning, engineering, or permit offices and water management districts may also have paper flood maps available for viewing by the public.

FIRMette: FEMA Flood Maps Online

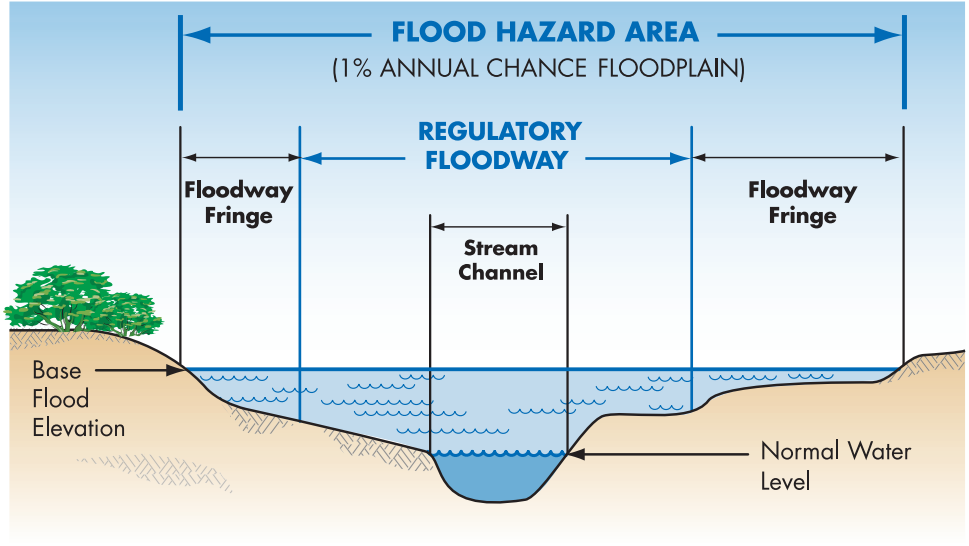
Portions of flood maps can be produced, saved, and printed by making a "FIRMette." FIRMettes are full-scale sections of FIRMs.

- The tutorial "How to Find Your FIRM and Make a FIRMette" is available at www.fema.gov/media-library/assets/documents/34930.
- Making a FIRMette is easy after a property is located. Use the <Search by Address> link or <Search All Products> to find the community and map panel of interest.
- Earlier versions of FIRMs are available for many communities, so current flood hazard information can be compared to historic data.



Go to www.msc.fema.gov and check out the "MSC Frequently Asked Questions." For step-by-step instructions on how to read flood maps, view the How to Read a Flood Insurance Rate Map Tutorial.

Understanding the Riverine Floodplain



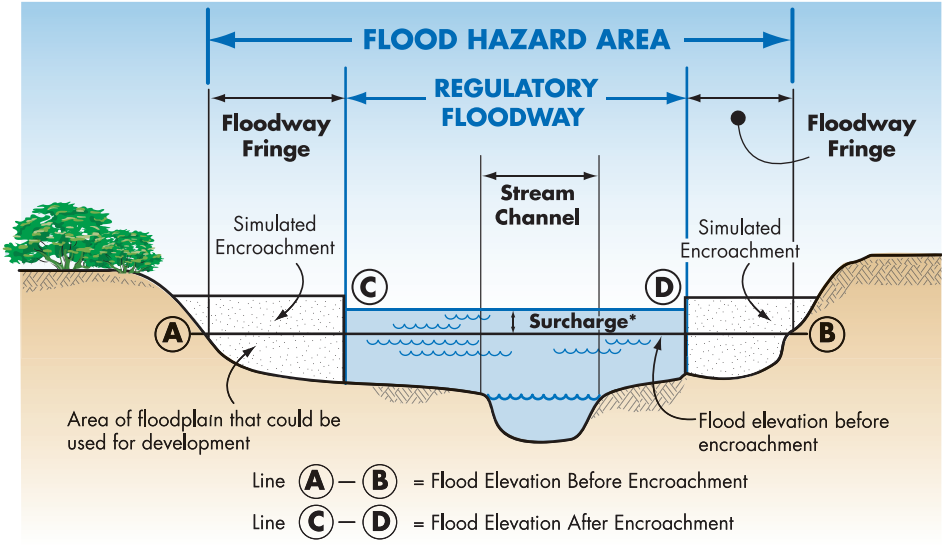
For riverine floodplains with Base Flood Elevations (BFEs) determined by detailed flood studies, the Flood Profile in the Flood Insurance Study shows water surface elevations for different frequency floods (see page 15).

Terms and Definitions

The **Special Flood Hazard Area (SFHA)** is that portion of the floodplain subject to inundation by the base flood (1% annual chance) and/or flood-related erosion hazards. Riverine SFHAs are shown on FIRMs as Zones A, AE, AH, AO, AR, and A99. Older FIRMs may have Zones A1-A30.

See page 12 to learn about the floodway, the area of the regulatory floodplain where flood waters usually are deeper and flow faster.

Understanding the Regulatory Floodway



Terms and Definitions

The **Floodway** is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to pass the base flood discharge without cumulatively increasing flood elevations.

Computer models are used to simulate "encroachment" or development in the floodway fringe in order to predict where and how much the Base Flood Elevation would increase if the floodway fringe is allowed to be developed.

For any proposed floodway development, the applicant must provide evidence that "no rise" will occur or obtain a Conditional Letter of Map Revision (CLOMR) before a local floodplain permit can be issued (see page 23). Experienced registered professional engineers must make sure proposed projects either won't increase flooding or that any increases do not impact structures on other properties.

The Regulatory Floodway "No Rise" Certification

- Floodways convey the largest volume of water and may have high velocities.
- Some communities restrict development in regulatory floodways.
- Engineers must prepare floodway encroachment analyses to evaluate the hydraulic impact of proposed development.
- Development is not allowed unless certified to cause “no rise” (no increase) in Base Flood Elevations.
- “No rise” certifications must be signed, sealed, and dated by a Professional Engineer licensed in Florida and qualified to conduct hydraulic analyses.

XYZ Engineering, Inc.,
Anytown, Florida

Mr. Floodplain Manager
1000 Main Street
Anytown, Florida

Re: 1200 Jackson Street
Anytown, Florida

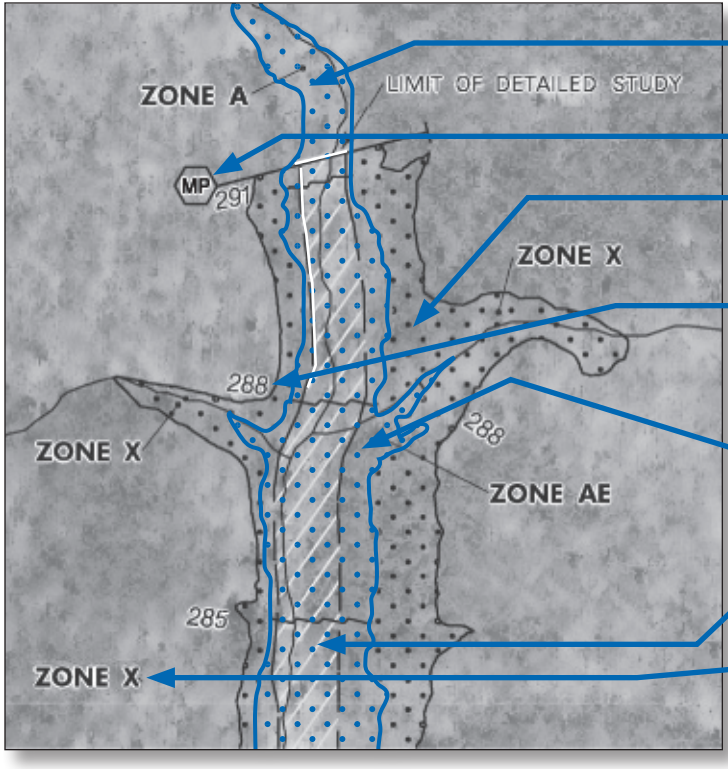
This is to certify that I am a duly qualified Professional Engineer licensed to practice in the State of Florida. It is to further certify that the attached technical data supports the fact that the proposed (Name of Development) will not increase Base Flood Elevations, floodway elevations and the floodway widths on (Name of Stream) as published in the Flood Insurance Study for (Name of Community), dated (Date of Effective FIS).

P.E.

The floodway encroachment analysis must be based on technical data obtained from FEMA.

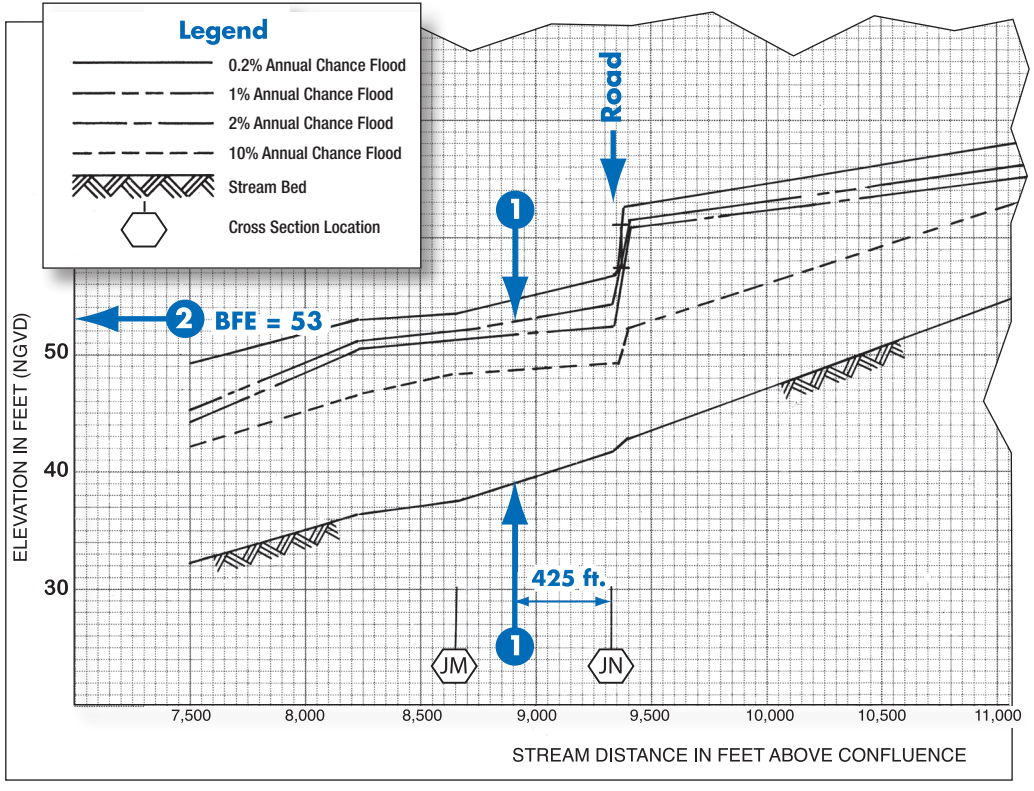
Reduce flood risk – don’t build in the Floodway!

Flood Insurance Rate Map (Riverine)



1. **Zone A** (approximate) is the flood hazard area without BFEs.
2. **Cross Section** location (see page 15).
3. **Shaded Zone X** is the 0.2% annual chance (500-year) floodplain (formerly Zone B).
4. **Base Flood Elevation (BFE)** is the water surface elevation of the base flood rounded to the nearest whole foot (consult FIS profiles and tables for more accurate elevations).
5. **Zone AE** is the 1% annual chance (100-year) floodplain with BFEs (formerly Zones A1- A30).
6. The **Floodway** is the cross-hatched area (see page 12).
7. **Unshaded Zone X** is all other areas considered low risk (formerly Zone C).

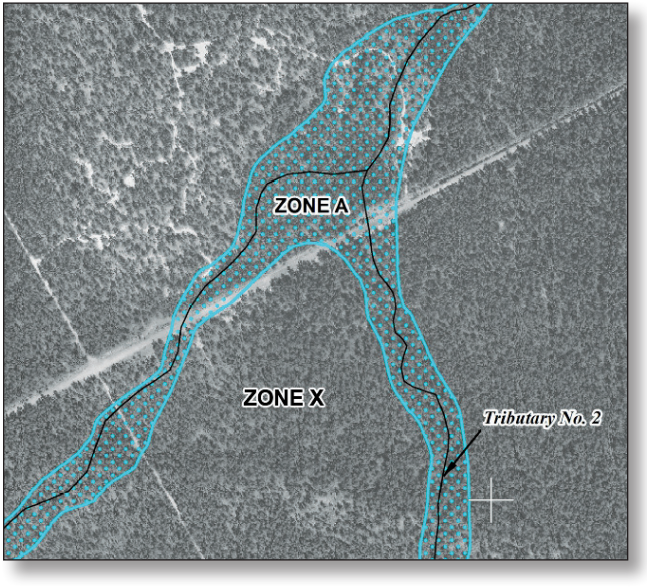
Using the Riverine Flood Profile to Determine Riverine BFEs



Flood Profiles from Flood Insurance Study reports can be used to determine the BFE at a specific site. Profiles also show estimated water surface elevations for floods other than the 1% annual chance flood (100-year).

1. On the effective flood map, locate the site by measuring the distance, along the profile baseline of the stream channel, from a known point such as a road or cross section, for example, (JM) or (JN).
2. Scale that distance on the Flood Profile and read up to the profile of interest, then across to determine the BFE, to the nearest 1/10 of a foot. (Answer: 53 feet).

Approximate Flood Zones



FEMA uses existing information – not engineering studies – to draw Approximate Zone A boundaries. Information may be provided by the U.S. Army Corps of Engineers, other federal agencies, State and local agencies, and historic records.

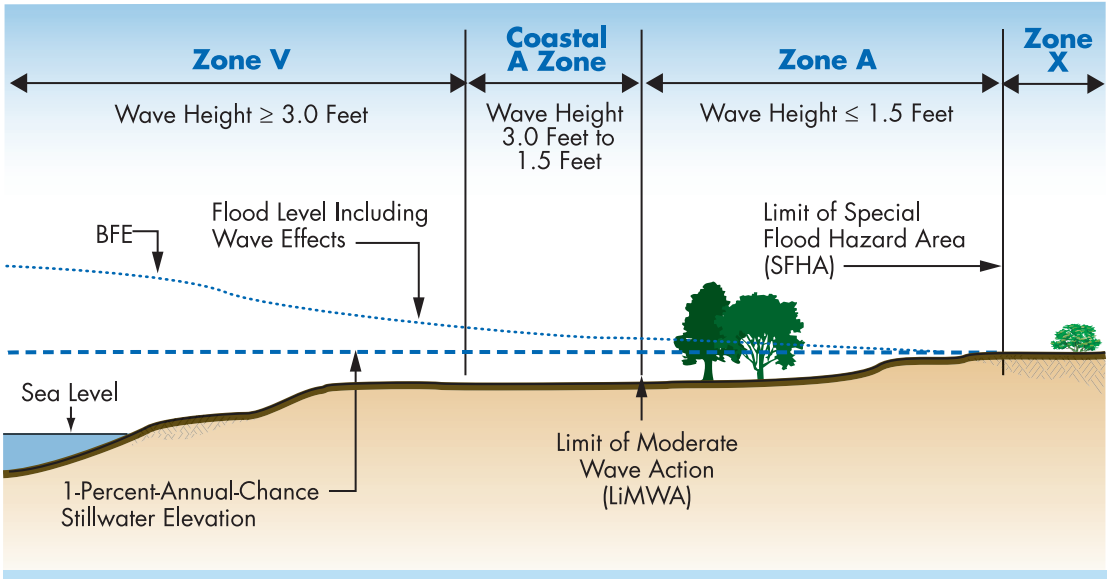
For assistance determining BFEs, contact community planning, engineering or permit offices or water management districts. Useful guidance for local officials and engineers is found in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas*.

Terms and Definitions

An **Approximate Zone A** is a special flood hazard area where BFE information is not provided.

If data are not available from another source, and provided there is no evidence indicating flood depths have been or may be greater than two-feet deep, local officials may specify the BFE is two feet above the highest adjacent grade.

Understanding the Coastal Floodplain



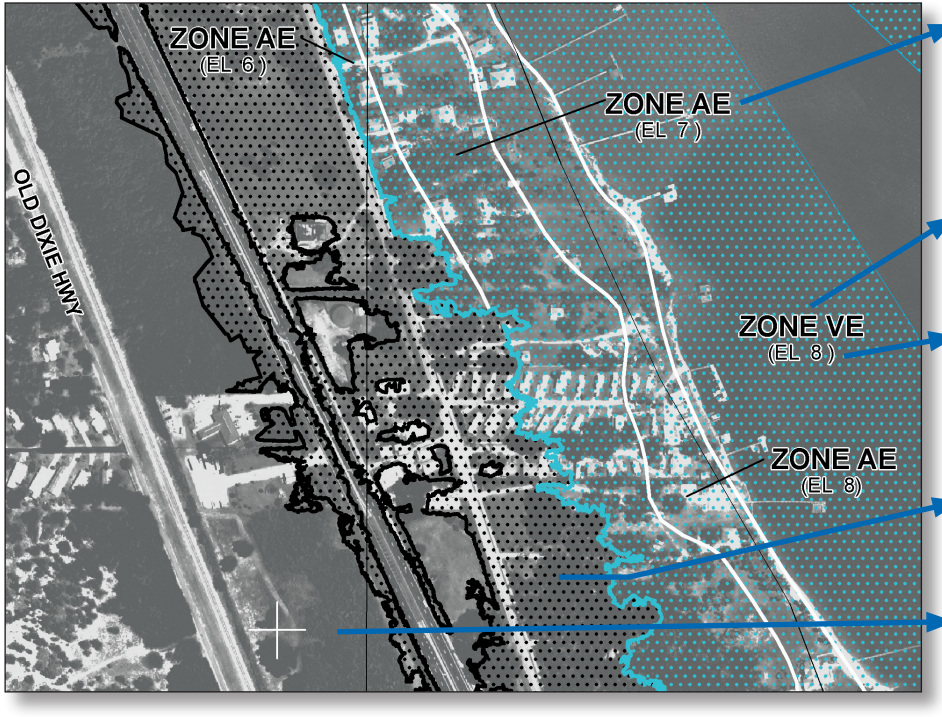
Areas subject to Coastal A Zone conditions (wave heights between 3 feet and 1.5 feet) may not be shown on FIRMs (see page 19). The Florida Building Code treats the CAZ area as Zone V and requires development to comply with the Zone V requirements.

Terms and Definitions

The **Coastal High Hazard Area (Zone V)** is the Special Flood Hazard Area that extends from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action. The area is designated on the FIRM as Zone VE.

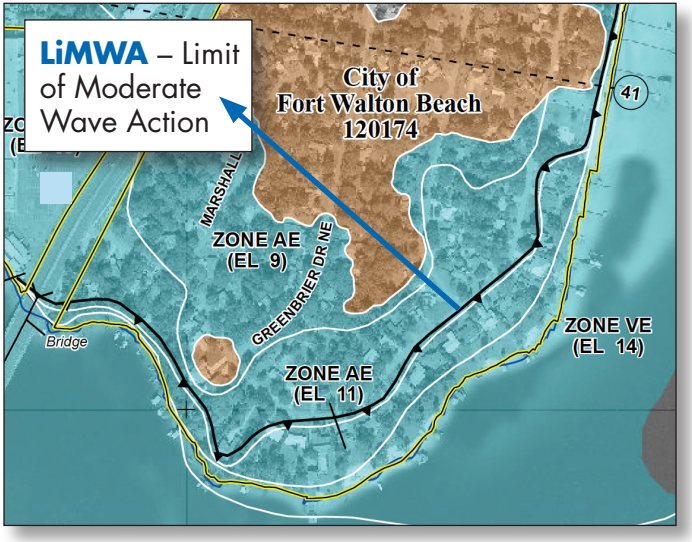
The term **Coastal A Zone (CAZ)** refers to a portion of the SFHA landward of a Zone V or landward of an open coast without Zone V. CAZs may be subject to breaking waves between 3 and 1.5 feet high.

Flood Insurance Rate Map (Coastal)



1. **Zone AE** is subject to flooding by the base or 1% annual chance (100-year) flood, and waves less than 3 feet high, (formerly Zones A1-A30).
2. **Zone VE** is where wave heights are expected to be 3 feet or more.
3. **Base Flood Elevation (BFE)** is the water surface elevation (in feet above the vertical datum shown on the map).
4. **Shaded Zone X** is the 0.2% annual chance (500-year) floodplain (formerly Zone B).
5. **Unshaded Zone X** is the area of minimal flood risk outside the 0.2% annual chance (500-year) floodplain (formerly Zone C).

The Coastal A Zone (CAZ)



Legend

Limit of Moderate Wave Action

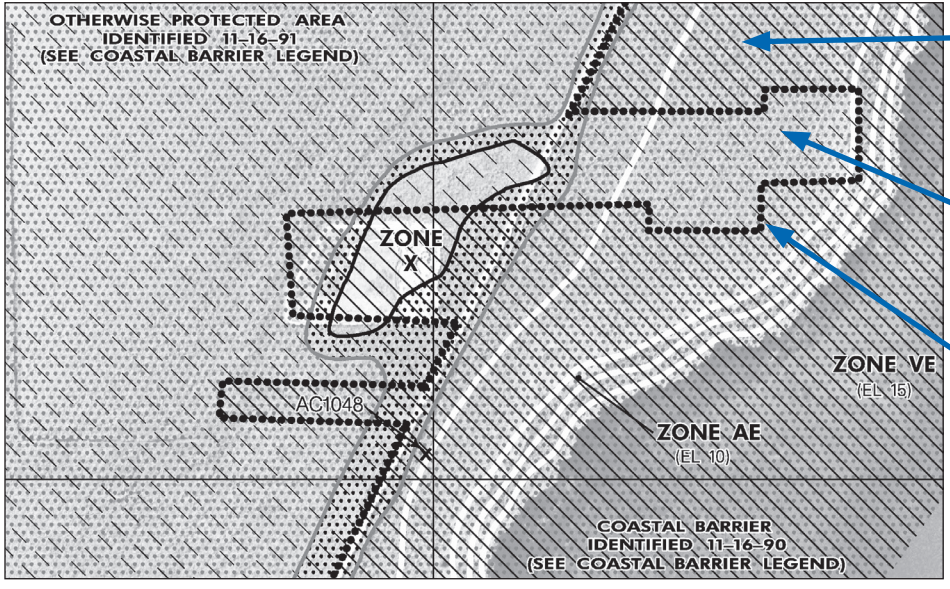
Notes to Users

AE Zone has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than, those in the VE Zone.

- Post-flood evaluations and laboratory tests confirm that breaking waves as small as 1.5 feet high cause damage to walls and scour around foundations.
- The Limit of Moderate Wave Action may be shown on revised FIRMs to delineate the inland extent of Coastal A Zone conditions inland of Zone V or along shorelines without Zone V.
- Scour and erosion should be considered in CAZ if soils are sandy and erodible.
- Federal flood insurance in CAZs is rated using Zone A rates (lower than Zone V rates).

If a LiMWA is delineated or a community designates a CAZ, the Florida Building Code requires buildings to comply with Zone V construction requirements.

Coastal Barrier Resource System (CBRS)



1. Coastal Barrier Resources System (CBRS) Areas
2. Otherwise Protected Areas (OPAs)
3. CBRS and OPA Boundary

CBRS areas and OPA are normally located within or adjacent to Special Flood Hazard areas.

FIRMS show CBRS and OPA areas in undeveloped Coastal Barrier Resource System Areas. In these areas, NFIP insurance is not available for new construction and substantially improved structures built after October 1, 1983 or after the date the areas were designated.

Florida's Coastal Construction Control Line (CCCL)

The Department of Environmental Protection's Coastal Construction Control Line (CCCL) program is an essential element of Florida's coastal management program. The CCCL:

- **Provides protection** for Florida's beaches and dunes while assuring reasonable use of private property
- **Establishes areas in which special siting and design criteria** are applied for construction and related activities
- **Allows activities** that will not cause significant adverse impacts to the beach and dune system – local permits generally required.

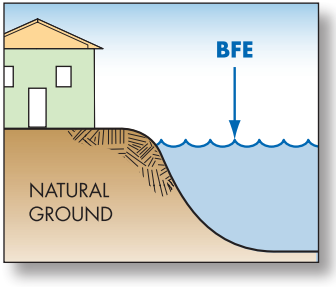
The Florida Building Code Section 3109 contains CCCL requirements for the design and construction of buildings (see page 34). Those requirements are similar to the code requirements for buildings in coastal high hazard areas (Zone V).

Alert! Code officials and design professionals are required to comply with the building code requirement for both the CCCL and flood hazard areas and must ensure that the more restrictive provisions prevail.

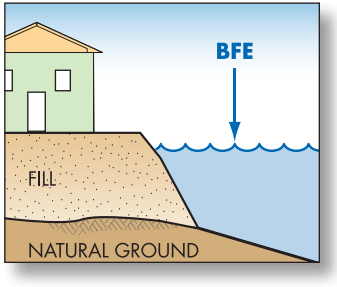
www.dep.state.fl.us/beaches/programs/ccclprog.htm

FIRM Revisions: LOMAs and LOMR-Fs

The most accurate information available is used to make flood maps, including topographic base maps and detailed engineering methods or methods of approximation. FEMA issues map revisions if technical data are submitted to support the changes.



Letter of Map Amendment (LOMA) is an official amendment to an effective FIRM that may be issued when a property owner provides additional technical information from a Florida licensed professional surveyor, such as ground elevation relative to the BFE. Lenders may waive the flood insurance requirement if the LOMA removes a building site from the SFHA because natural ground at the site is above the BFE.



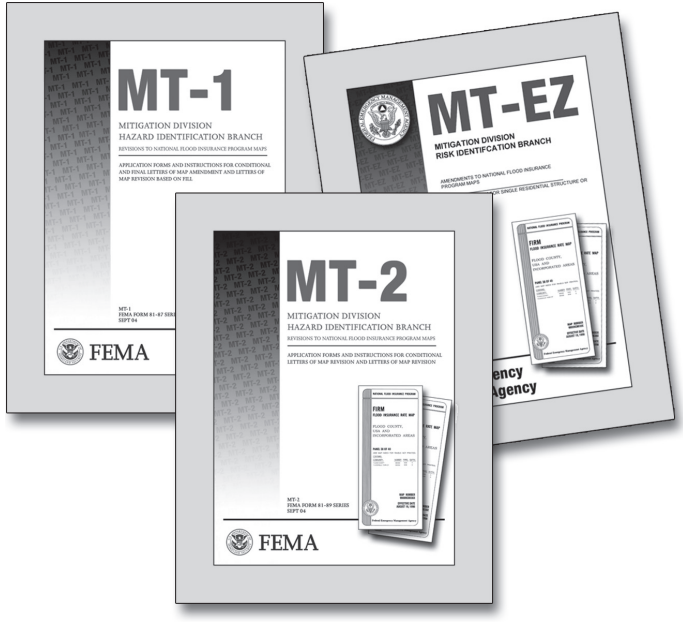
Letter of Map Revision Based on Fill (LOMR-F) is an official revision to an effective FIRM that is issued to document FEMA's determination that a structure or parcel of land has been elevated by fill above the BFE, and therefore is no longer in the SFHA. Lenders may waive the insurance requirement if the LOMR-F removes a building site from the SFHA.

Check www.fema.gov/letter-map-amendment-letter-map-revision-based-fill-process for guidance on maps revisions. Access to FEMA's web-based application for licensed land surveyors to submit eLOMAs is hazards.fema.gov/femaportal/resources/whatiseloma.htm.

FIRM Revisions: CLOMRs and LOMRs

- **Conditional Letter of Map Revision (CLOMR)** comments on whether a proposed project, if built as shown on the submitted documentation, would meet the standards for a map revision. Communities should require this evidence prior to issuing permits for fill or alteration of a watercourse. Certificates of Occupancy/Compliance should be withheld until receipt of the final LOMR based on "as-built" documentation and certification.

- **Letter of Map Revision (LOMR)** is an official revision to an effective FIRM that may be issued to change flood insurance risk zones, special flood hazard areas and floodway boundary delineations, BFEs and/or other map features. Lenders may waive the insurance requirement if the approved map revision shows buildings to be outside of the SFHA.



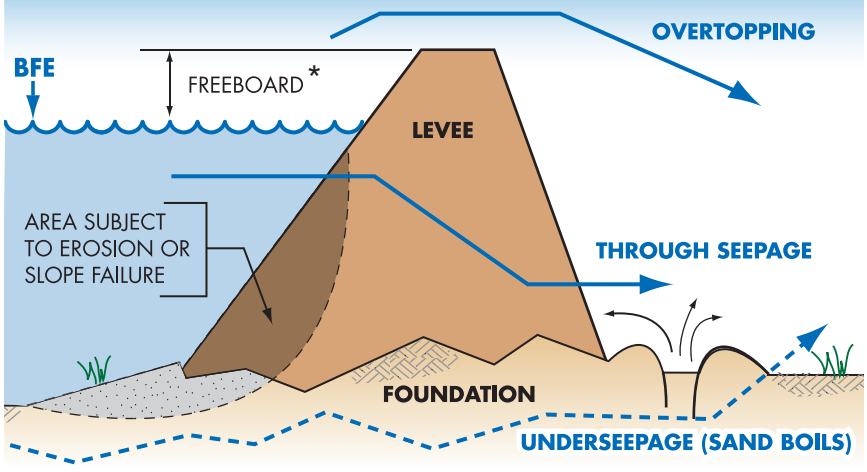
To learn more and download forms, find links by searching key words "MT-EZ," "MT-1," and "MT-2."

Levee Certification for FIRMs

Many levees are designed to protect land against flooding from the Base Flood. In order for FEMA to show those areas as outside of the Special Flood Hazard Area, communities and levee owners must certify that levees meet certain design criteria. Certification will present significant challenges during the map revision process.

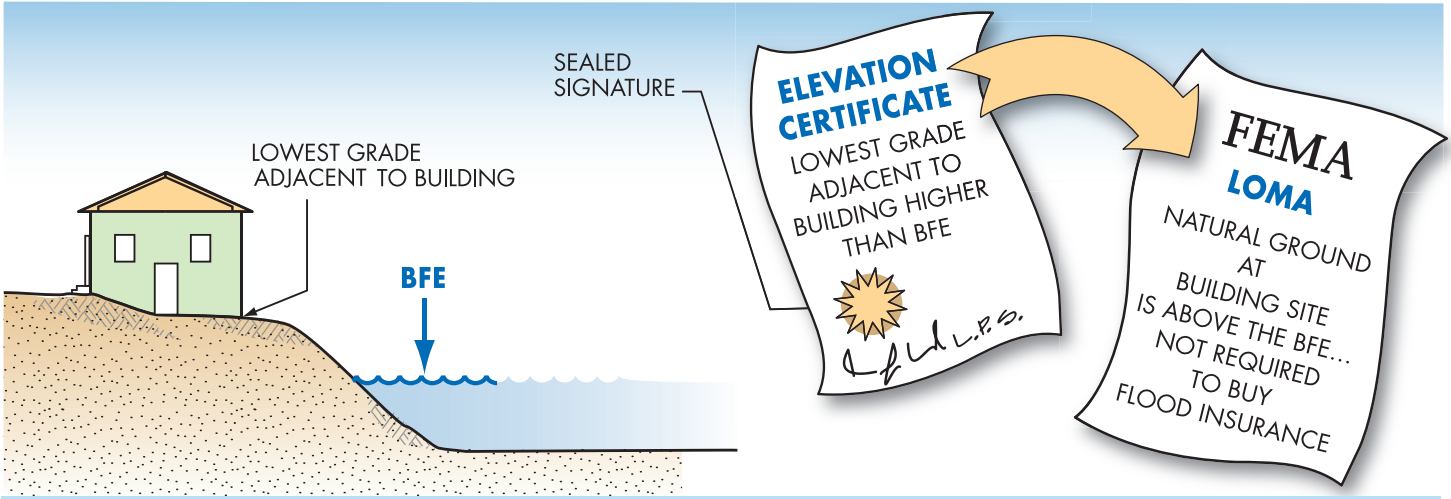
Communities that have levees should determine as soon as possible whether certification will be required. Pursuant to FEMA's Procedural Memoranda 34 and 43, and as outlined in Federal regulations at 44 CFR Section 65.10, the documentation requirements address:

- Freeboard
- Closures
- Embankment protection for erosion
- Embankment and foundation stability
- Settlement
- Interior drainage and seepage
- Operation and maintenance plans
- Other site specific criteria



* Freeboard is the distance between the BFE and the top of the levee; for FEMA accreditation freeboard is usually 3 feet

Are Building Sites Higher than the BFE?



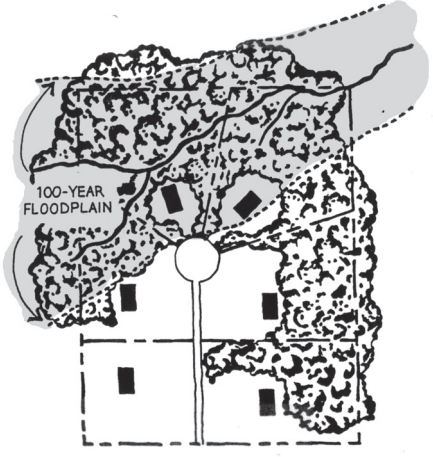
If land is shown on the map as "in" the SFHA, but the building site is higher than the Base Flood Elevation (BFE)… get a Florida licensed professional surveyor to complete a FEMA Elevation Certificate (EC). Submit a request for a Letter of Map Amendment to FEMA along with the EC to verify that the structure is above the BFE (see page 22). If FEMA approves the request, lenders are not required to require flood insurance policies, although some may still require them. Owners should keep certificates and LOMAs with deeds— the documentation will help future buyers.

Activities in SFHAs that Require Local Permits and Approvals

- Construction of new buildings
- Additions to buildings
- Substantial improvements of buildings
- Renovation of building interiors
- Repair of substantially damaged buildings
- Placement of manufactured (mobile) homes
- Subdivision of land
- Construction or placement of temporary buildings and accessory structures
- Construction of agricultural buildings
- Construction of roads, bridges, and culverts
- Placement of fill, grading, excavation, mining, and dredging
- Alteration of stream channels

Floodplain development or building permits must be obtained before these and **ANY** land-disturbing activities occur in flood zones.

Avoid Flood Area When Possible

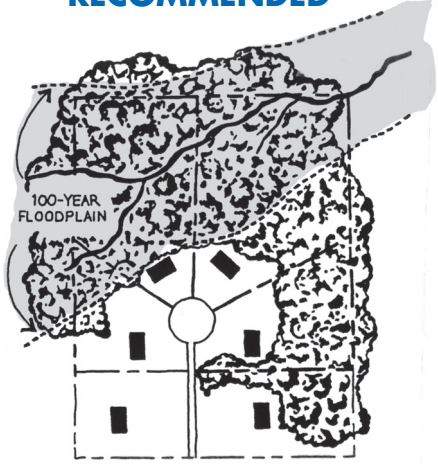


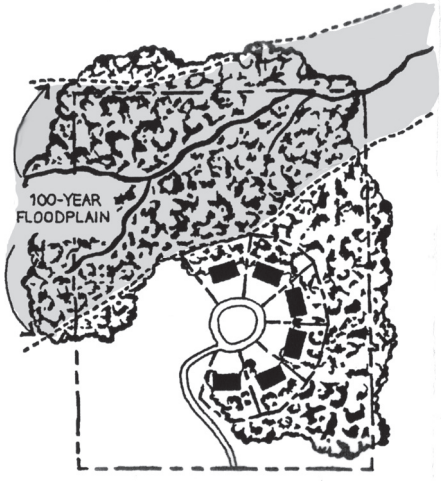
All land subdivided into lots, some homesites and lots partially or entirely in the floodplain.

NOT RECOMMENDED

All land subdivided into lots, some lots partially in the floodplain, setbacks modified to keep homesites on high ground.

RECOMMENDED





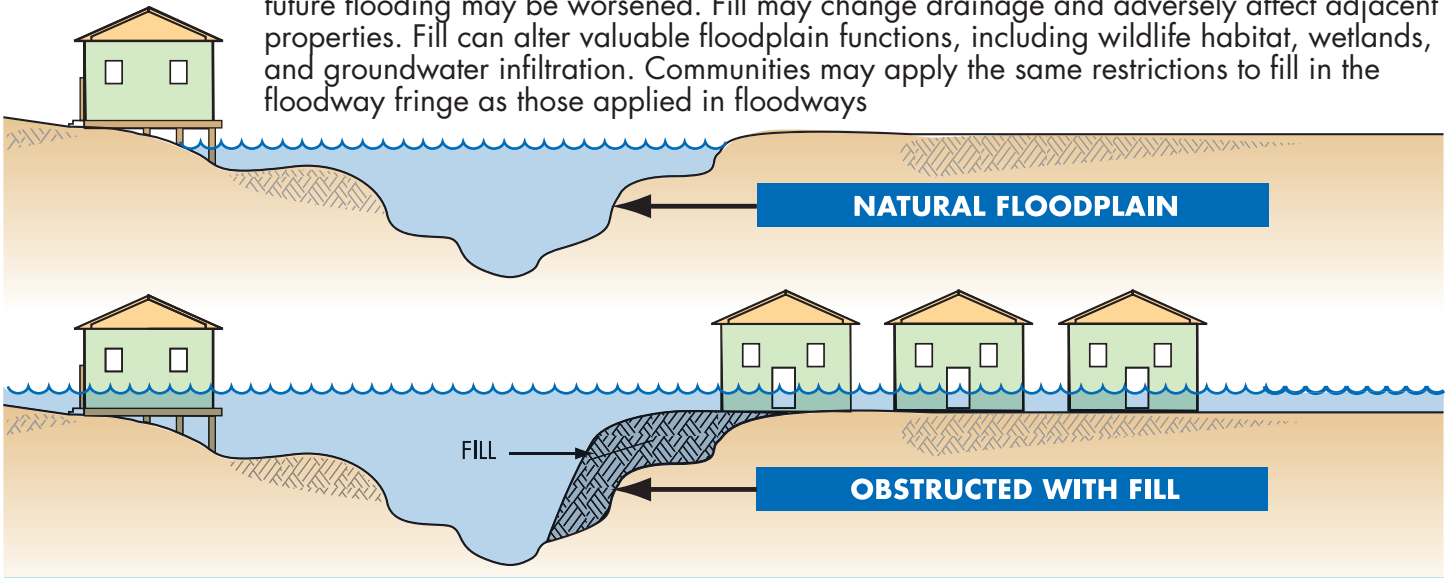
Floodplain land put into public/ common open space, net density remains, lot sizes reduced and setbacks modified to keep homesites on high ground.

RECOMMENDED

Let the floodplain perform its natural function – if possible, keep it as open space. Other compatible uses: recreational areas, playgrounds, reforestation, unpaved parking, gardens, pasture, and created wetlands.

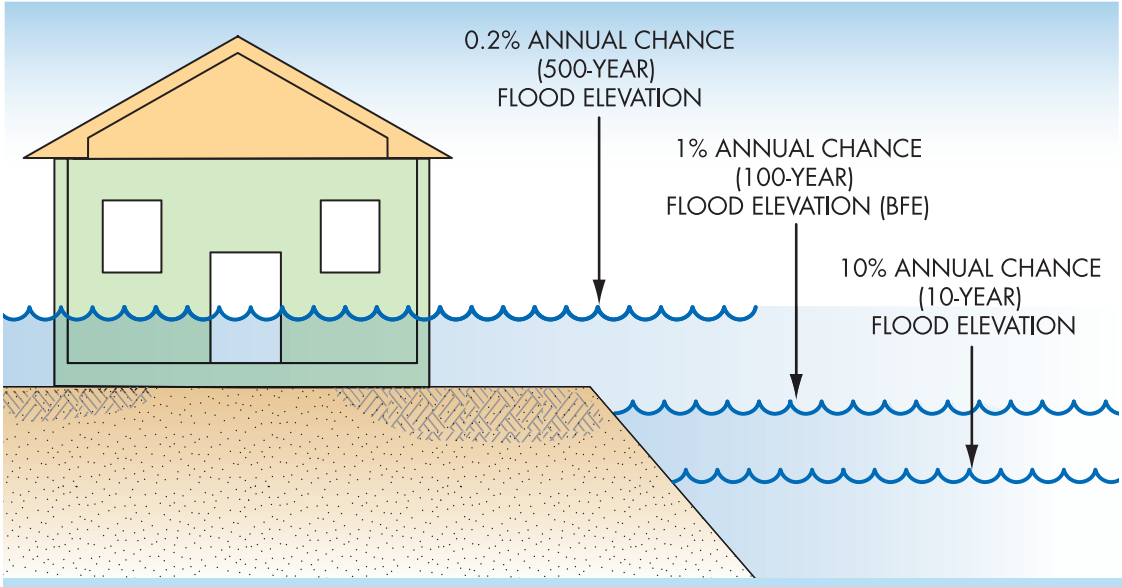
Fill Can Adversely Affect Floodplain Functions

Floodplains are supposed to store floodwater. If storage space is blocked by fill material, future flooding may be worsened. Fill may change drainage and adversely affect adjacent properties. Fill can alter valuable floodplain functions, including wildlife habitat, wetlands, and groundwater infiltration. Communities may apply the same restrictions to fill in the floodway fringe as those applied in floodways



Communities should make sure fill in flood zones won't harm neighboring properties. Before deciding to use fill, property owners should check with local planning, engineering, or permit offices. Engineering analyses may be required to demonstrate that fill will cause "no rise" (see page 13).

Floods Don't Always Stop at the BFE



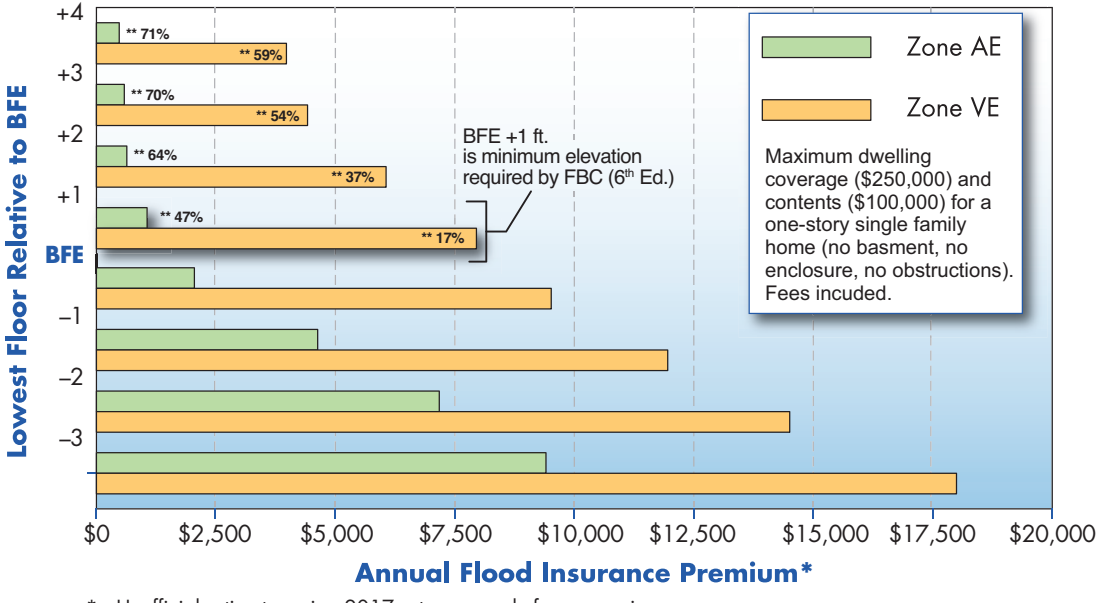
Important Information

Many people don't understand just how risky building in flood zones can be. There is a greater than 26% chance that a non-elevated home in the SFHA will be flooded during a 30-year mortgage period. The chance that a major fire will occur during the same period is less than 5%!

CAUTION! Major storms and flash floods can cause flooding that rises higher than the Base Flood Elevation (BFE). Be safer – protect your home or business by avoiding flood zones or building higher. See page 30 to see how this will save you money on flood insurance.

Freeboard: Build Higher, Reduce Damage, Save on Insurance

Freeboard is additional height – a factor of safety – above the BFE. Buildings that are higher than the BFE experience less damage. Starting with the 6th Edition, the Florida Building Code requires all buildings to be elevated to at least BFE plus 1 foot. Owners of buildings elevated above the BFE also save on Federal flood insurance.



* Unofficial estimates using 2017 rates; use only for comparison purposes

** Savings over at-BFE premium

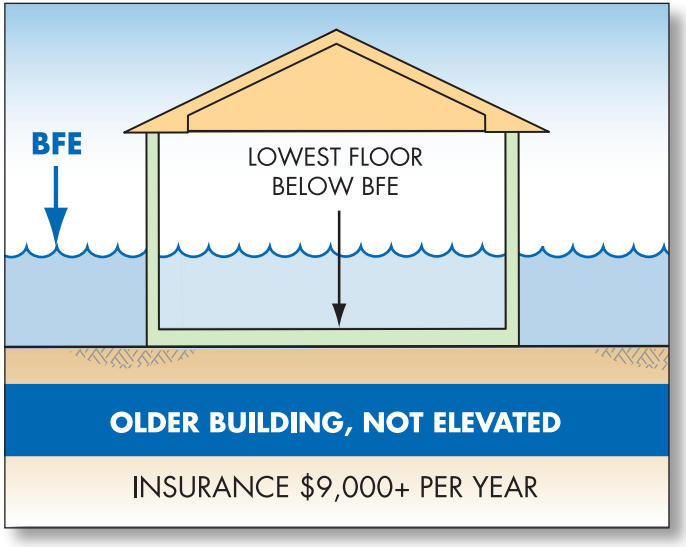
Important Information

NOTE! Flood insurance rates and various fees change from time to time. Rather than specific costs for insurance, these figures give a feel for how much difference just a foot or two can make.

Remember! Builders must submit floor elevations as part of foundation inspections. An error of just 6 or 12 inches could more than double the cost of Federal flood insurance.

A community may be able to grant a variance, but the owner will probably be required to buy insurance. Imagine trying to sell a house if the bank requires insurance that costs more than $9,000 to $18,000 a year!

Variances From Elevation Requirements



Very specific conditions related to the property (not the owner's actions or preferences) must be satisfied to justify a variance:

- Good and sufficient cause
- Unique site conditions
- Non-economic hardship
- If in the floodway, no increase in flood level

A variance that allows construction below the BFE does not waive the lender's flood insurance requirement. Flood insurance will be very expensive – perhaps more than $9,000 to $18,000 per year (see page 30)!

Property owners and communities must carefully consider the impacts of variances to allow buildings below the BFE. Not only will buildings be more likely to sustain flood damage, but Federal flood insurance will be very costly. Communities with a pattern of granting variances may be subject to NFIP sanctions, costing all insurance policyholders even more.

Fundamentals of Flood Resistant Construction

The flood resistant construction requirements of the NFIP and the Florida Building Code (FBC) share the common objective of increasing resistance to flooding. Although there are some differences between specific requirements, they all include the following fundamentals – buildings should have:

- **Foundations** capable of resisting flood loads (including dry floodproofed nonresidential buildings)
- **Structurally sound walls and roofs** capable of minimizing penetration by wind, rain, and debris
- **Lowest floors elevated** high enough to prevent floodwaters from entering during the design event
- **Equipment and utilities** elevated or designed to remain intact and be restored easily
- **Enclosures below elevated floors** limited to parking, limited storage, and building access and are designed to minimize damage
- **Flood damage-resistant materials** used below elevated lowest floors

In short ... flood resistant buildings!

Flood Provisions of the Florida Building Code

Starting with the 2010 edition, the Florida Building Code (FBC) includes flood provisions that meet or exceed the NFIP requirements for buildings and structures. All counties, cities and towns are required to enforce the FBC. Many Florida communities enforce some "higher standards" than those required by the FBC.

- **FBC, Building:** Flood provisions are primarily in Section 1612 Flood Loads, which refers to the standard *Flood Resistant Design and Construction* (ASCE 24). Table 1612.1 shows cross references to all of the flood provisions in all of the Florida codes.
- **FBC, Residential:** Flood provisions are primarily in Section R322 Flood-Resistant Construction, although there are requirements in several other sections.
- **FBC, Existing Building:** Flood provisions are found in sections on repairs, alterations, additions, and historic structures and in sections on prescriptive and performance compliance methods.
- **FBC, Plumbing, Mechanical, Fuel Gas:** Flood provisions are in a number of sections.

Excerpts of the flood provisions of the FBC, "Highlights of ASCE 24," and other building code resource materials are available online www.floridadisaster.org/Mitigation.

New Flood Requirements in the 6th Edition of FBC

Significant changes included in the 6th Edition FBC:

- **Requires Freeboard.** Minimum BFE plus 1 foot for dwellings in all flood zones
- **Coastal A Zone.** If delineated, regulated like Zone V with stemwalls permitted
- **Flood Openings.** Required in all walls, including breakaway walls, and performance of engineered flood openings emphasized
- **Exterior Door.** Required at top of stairways enclosed by breakaway walls
- **Critical Facilities.** Elevated or protected to the higher of BFE plus 2 feet or 500-year flood elevation
- **Local Scour and Erosion.** Must be considered for foundations in Zone V and CAZ
- **Mixed Use.** Defined in ASCE 24 commentary for limitations on dry floodproofing nonresidential portions of mixed use buildings

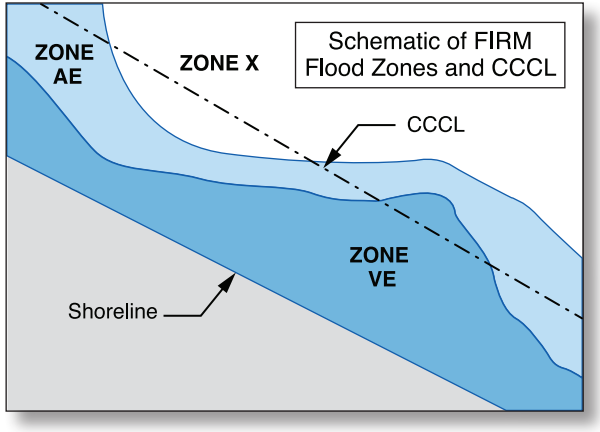
Visit
www.buildingasaferflorida.org
to download fact sheet summaries of the flood resistant construction requirements and CCCL requirements of the Florida Building Code

CCCL Requirements in the Florida Building Code (6th Ed.)

The CCCL requirements in the FBC, Section 3109, were modified from previous editions to align more closely with the Coastal High Hazard Area (Zone V) requirements of Section 1612, which refers to ASCE 24. This minimizes variations in case-by-case interpretations to determine which requirements are more restrictive.

The Florida Division of Emergency Management worked with the Florida Department of the Environment Protection to modify Section 3109 which:

- Applies to habitable structures (a defined term) and retains statutory exemptions, while clarifying Section 1612 applies to all buildings and structures and exemptions in flood zones
- Requires use of the BFE or the FDEP 100-year storm elevation, whichever is higher
- Uses the Section 1612 definitions for substantial improvement and lowest floor
- Uses the ASCE 24 requirements for breakaway walls and permits elevator shafts and shear walls (with limitations)
- Limits uses of enclosures below the BFE to parking, storage, and building access, but permits other defined "allowed uses" in areas that are above the BFE and below the DEP 100-year storm elevation
- Permits non-breakaway structural slabs below the lowest floor provided the slabs are designed to withstand flood loads



Some Key Floodplain Development Permit Review Steps

The permit reviewer must check many things. Some of the key questions are:

- Is the site near a watercourse?
- Is the site in the mapped flood zone or floodway?
- Are applicants advised that other State or Federal permits must be obtained before work starts?
- Is the site reasonably safe from flooding?
- Does the site plan show the flood zone, Base Flood Elevation and building location?
- Is substantial improvement or repair of substantial damage proposed?
- Is an addition proposed?
- Will new buildings and utilities be elevated properly?
- Will manufactured homes be properly elevated and anchored?
- Do the plans show an appropriate and safe foundation?
- Are all required design certifications submitted?
- Will the owner/builder have to submit an as-built Elevation Certificate?

Carefully Complete the Permit Application

Owner's Name
David & Sally Jones

Site Address, Tax#, Parcel #
781 Orange Blossom Ct., 400-33A-002

A. Description of Work

1. Proposed Development Description:

- [x] New Construction
- ❑ Alteration or Repair
- [x] Filling
- ❑ Grading
- ❑ Dredging
- ❑ Manufactured/Modular
- ❑ Logging
- ❑ Other

2. Size and Location of Development:

single family (2,000 cu yds. fill); flood fringe of dry river

3. Type of Construction

- [x] New Residential
- ❑ New Non-Residential
- ❑ Addition
- ❑ Improvement
- ❑ Renovation
- ❑ Accessory Structure
- ❑ Temporary

Applicant's Signature
David M. Jones

Part of a sample Flood Zone Permit Application

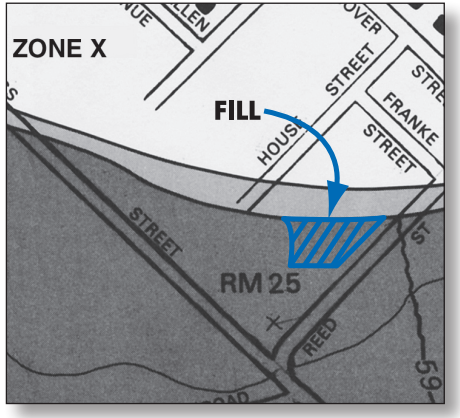
(may vary by community)

Community Map and Elevation Data:

1. Community No. 120243
2. Panel No. 125C
3. Zone AE
4. Base Flood Elevation 59.2
5. Floodway ❑ Yes [x] No
6. Required Lowest Floor Elevation (including basement) 60.2
7. Elevation to which all attendant utilities, including all heating, duct work, and electrical equipment will be installed or floodproofed 60.2

Important Information

You must get all permits **before** you do work in a flood zone.



Good information will lead to better construction and less exposure to future flood damage. Download a sample application form at www.floridadisaster.org/Mitigation (CRS Resources).

Communities Must Retain Flood Records Permanently

Communities that participate in the NFIP agree to maintain certain documentation for all development in flood zones, including:

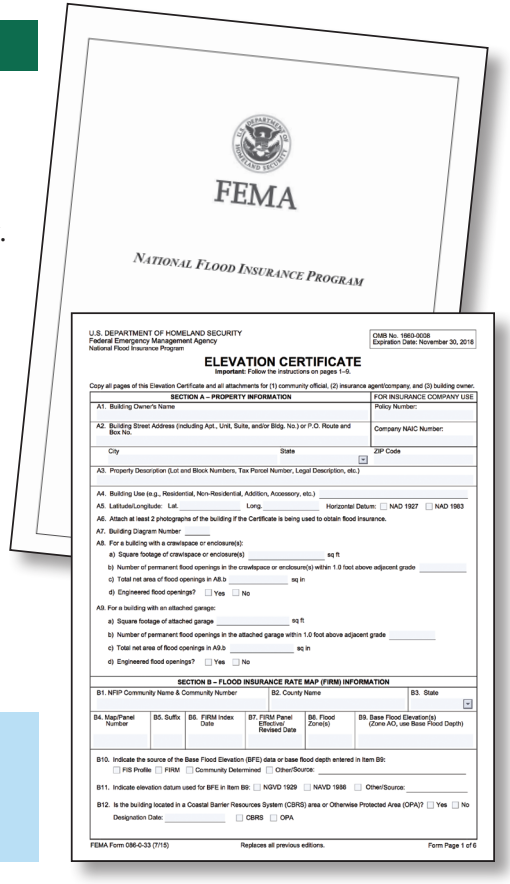
- Permits issued and variances granted
- Floodway encroachment (no rise) and watercourse alteration
- Design certifications for buildings in Zone V and CAZ, including breakaway walls
- Design certifications for dry floodproofed nonresidential buildings
- Design certification for engineered flood openings
- Determinations of whether work on existing buildings is substantial improvement or repair of substantial damage
- Surveyed "as-built" building elevations (Elevation Certificates)

Important Information

Florida's *General Records Schedule GS1-SL For State and Local Government Agencies* requires permanent retention of records "documenting the authorization process for construction" including applications, maps, Elevation Certificates, and related documentation. CRS communities must maintain records related to recertification as last as they are active CRS participants.

What is the Elevation Certificate and How is it Used?

- The Elevation Certificate (EC) is a FEMA form. Go to www.fema.gov and search for "Elevation Certificate."
- The EC must be completed and sealed by a Florida licensed surveyor.
- Community officials may complete the EC for sites in Approximate Zone A and Zone AO (see Section G of the EC).
- It can be used to show lowest grades adjacent to planned or existing building sites are above the Base Flood Elevation (see page 25).
- It is used to verify building and equipment elevations.
- Insurance agents use the EC to write and rate flood insurance policies.
- See page 71 for online Elevation Certificate training information


FEMA

NATIONAL FLOOD INSURANCE PROGRAM

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB No. 1660-0008
Expiration Date: November 30, 2018

ELEVATION CERTIFICATE
Important: Follow the instructions on pages 1–9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A – PROPERTY INFORMATION | FOR INSURANCE COMPANY USE

A1. Building Owner's Name | Policy Number:

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. | Company NAIC Number:

City | State | ZIP Code

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.)

A5. Latitude/Longitude: Lat. _____ Long. _____ Horizontal Datum: ☐ NAD 1927 ☐ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number _____

A8. For a building with a crawlspace or enclosure(s):
a) Square footage of crawlspace or enclosure(s) _____ sq ft
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____
c) Total net area of flood openings in A8.b _____ sq in
d) Engineered flood openings? ☐ Yes ☐ No

A9. For a building with an attached garage:
a) Square footage of attached garage _____ sq ft
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____
c) Total net area of flood openings in A9.b _____ sq in
d) Engineered flood openings? ☐ Yes ☐ No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth)

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:
☐ FIS Profile ☐ FIRM ☐ Community Determined ☐ Other/Source: _____

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☐ No
Designation Date: _____ ☐ CBRS ☐ OPA

FEMA Form 086-0-33 (7/15) Replaces all previous editions. Form Page 1 of 6

By itself, the EC cannot be used to waive the requirement to obtain flood insurance. See page 22 to learn about FEMA's Letter of Map Amendment process.

Completing the Elevation Certificate

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☒ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: _____ Vertical Datum: _____

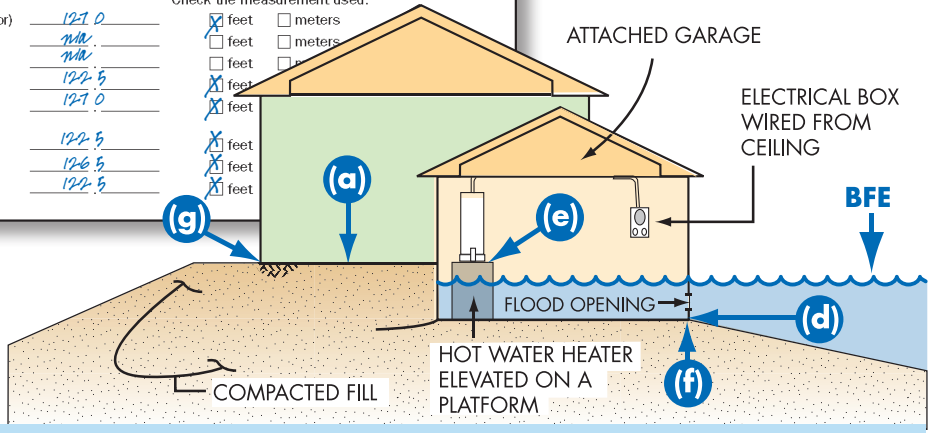
Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☐ NAVD 1988 ☐ Other/Source: _____
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	127.0	☒ feet	☐ meters
b) Top of the next higher floor	n/a	☐ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	n/a	☐ feet	☐ meters
d) Attached garage (top of slab)	122.5	☒ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	127.0	☒ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	122.5	☒ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	126.5	☒ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	122.5	☒ feet	☐ meters

ELEVATION CERTIFICATE
(partial)

In this example, the BFE is 125.0 feet.

The slab-on-grade house was elevated on fill 2 feet above the BFE; the garage is 2.5 feet below the BFE (with flood openings).

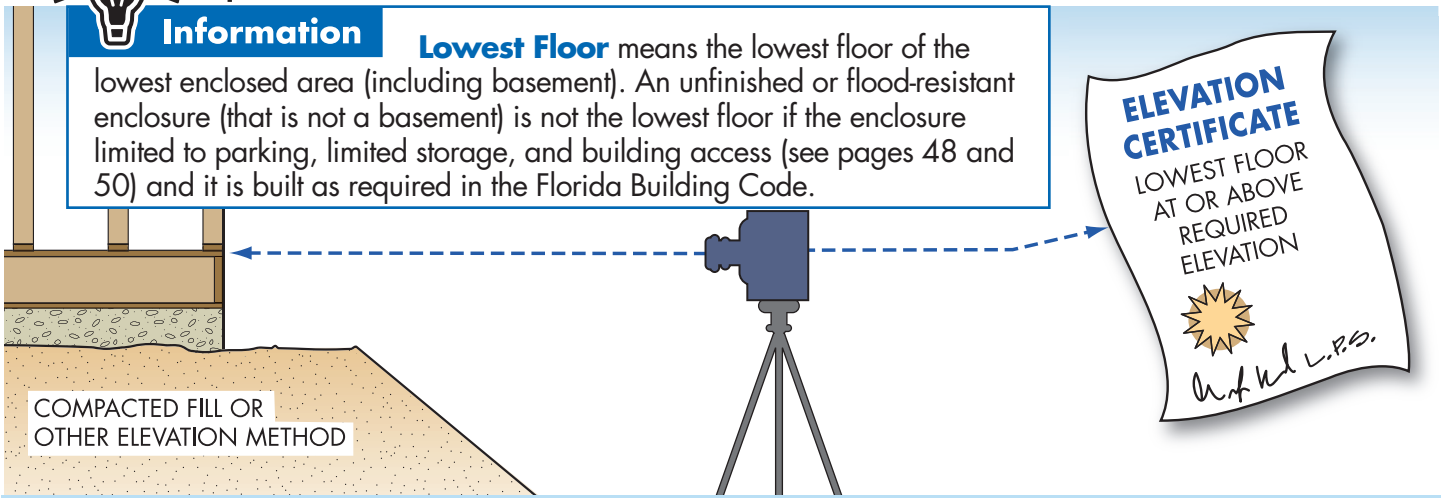


The FBC requires submission of elevation documentation two times, when the lowest floor is set and prior to further vertical construction and again prior to the final inspection. A Florida licensed professional surveyor must fill out and seal the EC form (except in zones without BFEs). The EC includes diagrams for different building types. Several points must be surveyed.

Paperwork is Important for Owners

Important Information

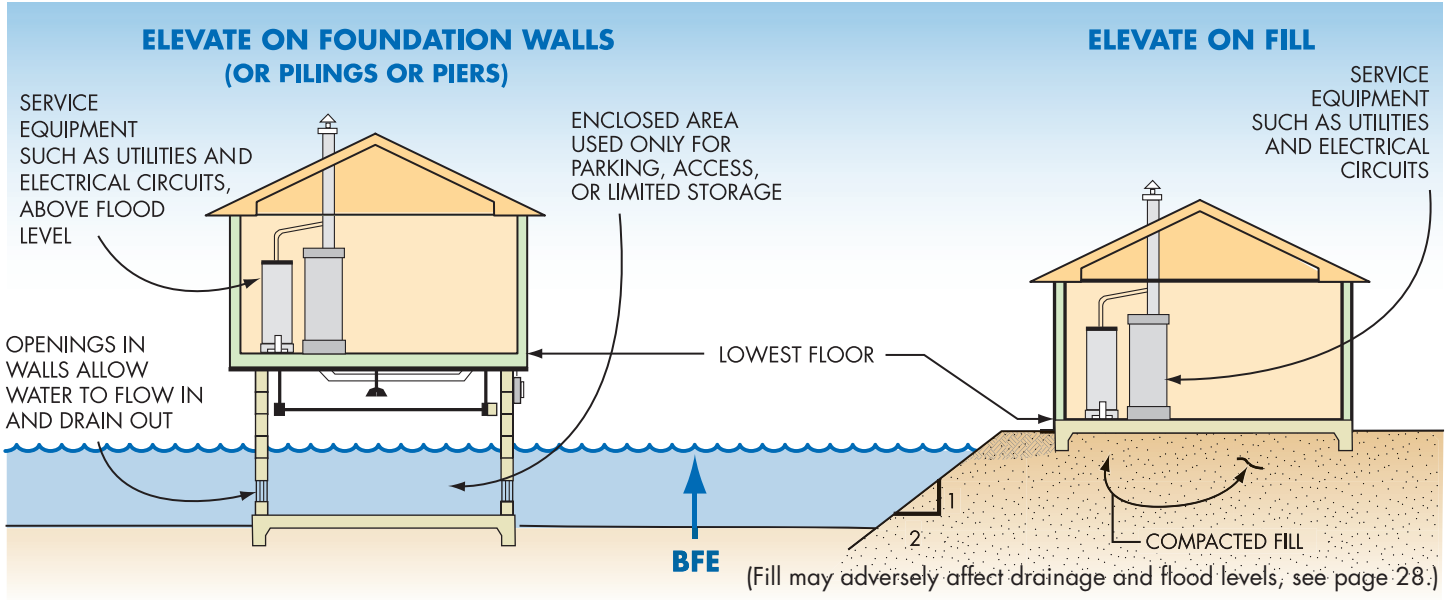
Lowest Floor means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure (that is not a basement) is not the lowest floor if the enclosure limited to parking, limited storage, and building access (see pages 48 and 50) and it is built as required in the Florida Building Code.



Permittees must submit Elevation Certificates after the lowest floor (or lowest horizontal structural member) is placed and prior to further vertical construction. When construction is finished, another Elevation Certificate ("as-built") must be submitted prior to the final inspection.

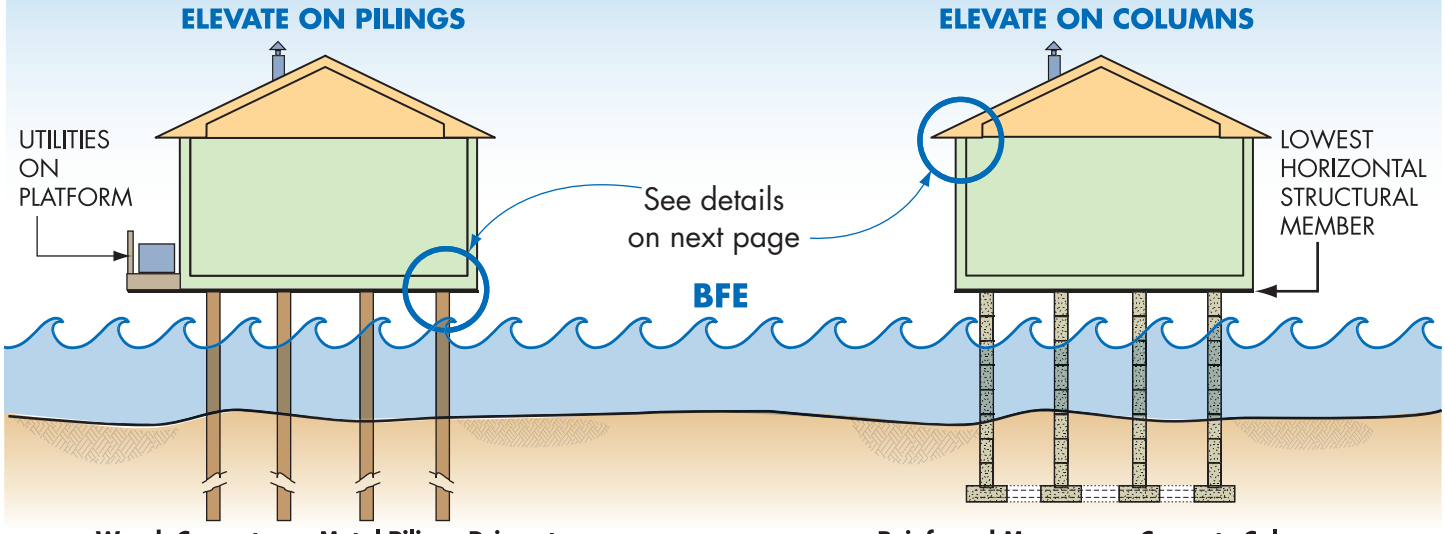
Owners should keep Elevation Certificates in a safe place. They can be used to demonstrate buildings were compliant at the time of construction. Also, Elevation Certificates are required to obtain Federal flood insurance policies.

How to Elevate Buildings in Flood Zone A/AE



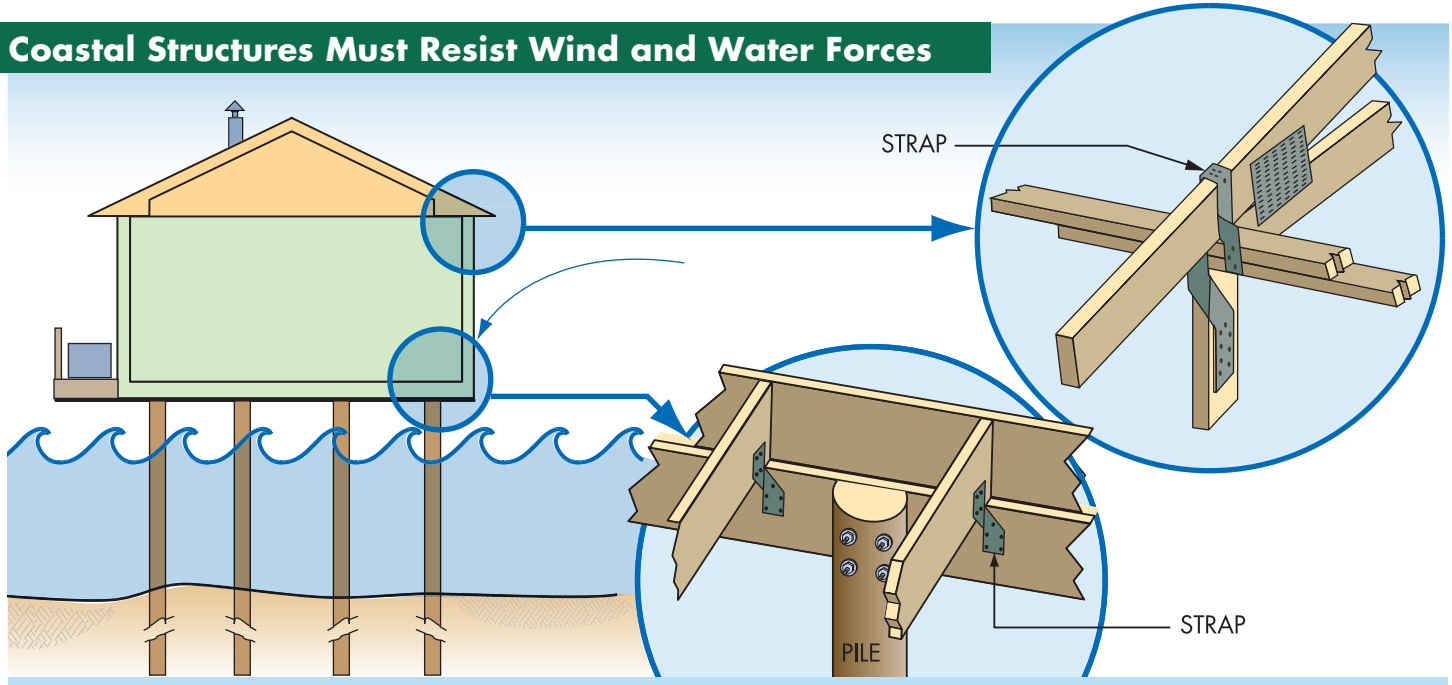
CAUTION! Enclosures (including crawlspaces) have some special requirements (see pages 48 and 50).
Note: When the walking surface of the lowest floor is at the BFE, under-floor utilities are not allowed.
Fill used to elevate buildings must be placed properly (see pages 28 and 46).

How to Elevate Buildings in Flood Zone V and CAZ



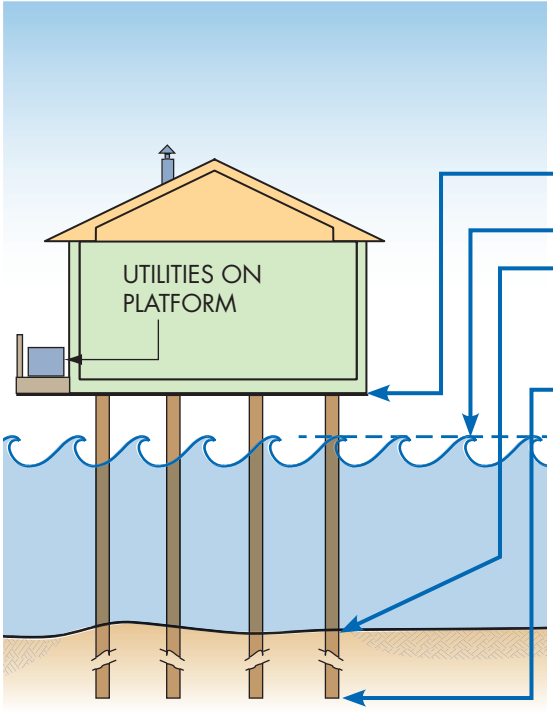
In Zone V and CAZ, the design specifics will be determined by an architect or engineer based on the site, including how the building will be elevated and how deep the foundation elements will be in the ground. A *Zone V Design Certificate* or statement will be required (see page 45). For more information, see FEMA P-55, *Coastal Construction Manual*.

Coastal Structures Must Resist Wind and Water Forces



Coastal buildings may be exposed to hurricane winds, waves, and floodwater. Structural building components must be connected together to transfer forces in a continuous load path from the roof to the foundation and the ground. The details above are some examples of how this is done. An architect or engineer must determine the types of connections required for the roof, building, and foundation.

The Zone V Design Certificate



ZONE V DESIGN CERTIFICATE (Partial)

SECTION II: Elevation Information Used for Design

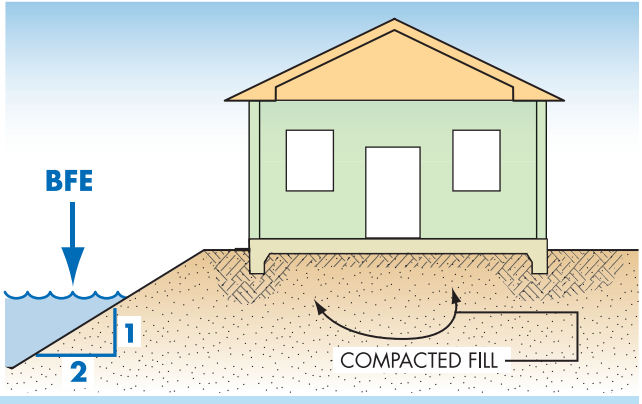
1. Datum..... ☐ NGVD ☒ NAVD ☐ Other
2. Elevation of the Bottom of Lowest Horizontal Structural Member ..... 14 feet above datum
3. Base Flood Elevation (BFE)..... 12 feet above datum
4. Elevation of Lowest Adjacent Grade ..... 6 feet above datum
5. Approximate Depth of Anticipated Scour/Erosion used for Foundation Design..... 3 feet
6. Embedment Depth of Pilings or Foundation Below Lowest Adjacent Grade..... 16 feet

A Florida licensed engineer or architect must review and/or prepare the building design and complete a *Zone V Design Certificate* for any new construction, substantial improvement, or the repair of a substantially damaged structure. This form is on the State Floodplain Management Office webpage (see page 70).

Placement and Compaction of Fill in Zone A/AE

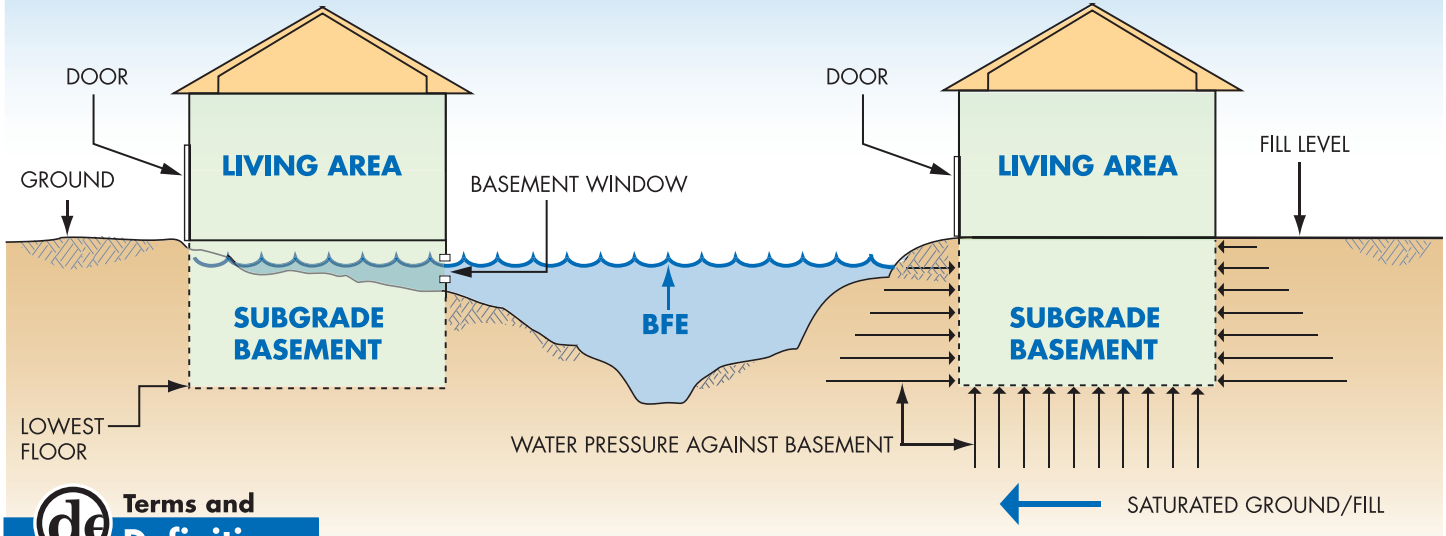
Earthen fill used to raise the ground above the flood elevation must be placed properly so that it does not erode or slump when water rises. For safety and to meet requirements, fill should:

- Not be placed in areas with poor drainage or where the fill may divert water onto adjacent properties. Instead, use perimeter walls, piers or pilings to minimize drainage problems.
- Be good clean soil, free of large rocks, construction debris, and woody material (stumps, roots)
- Be machine-compacted to 95 percent of the maximum density (determined by a design professional)
- Have graded side slopes that are not steeper than 2:1 (one foot vertical rise for every 2 feet horizontal extent); 3:1 flatter slopes are recommended
- Have slopes protected against erosion (vegetation for "low" velocities, durable materials for "high" velocities – determined by a design professional)
- Avoid the floodway (see page 12)



Engineers can find more information in FEMA's instructions for Letters of Map Revision based on Fill (FEMA Form MT-1) and NFIP Technical Bulletin #10.

Basements in Flood Zones Are Unsafe



Terms and Definitions

A **basement** is any portion of a building that has its floor subgrade (below ground level) on all sides.

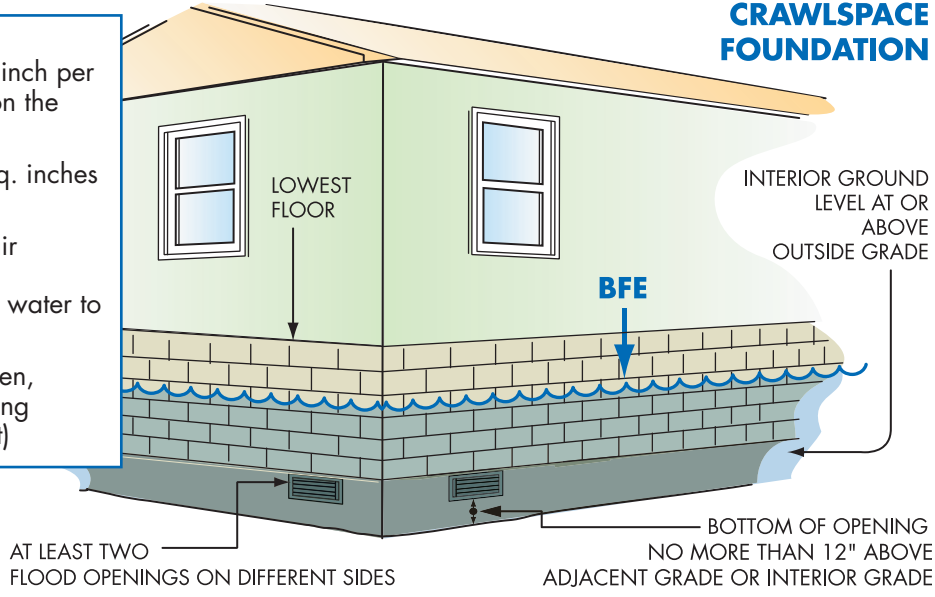
New buildings are not allowed to have basements below the BFE and Federal flood insurance coverage is very limited in existing basements for a very good reason. It only takes an inch of water over a door threshold or window sill and the entire basement fills up! Excavating a basement into fill doesn't always make it safe because saturated groundwater can damage the walls.

Enclosures Below the Lowest Floor (Zone A/AE)

NOTE:

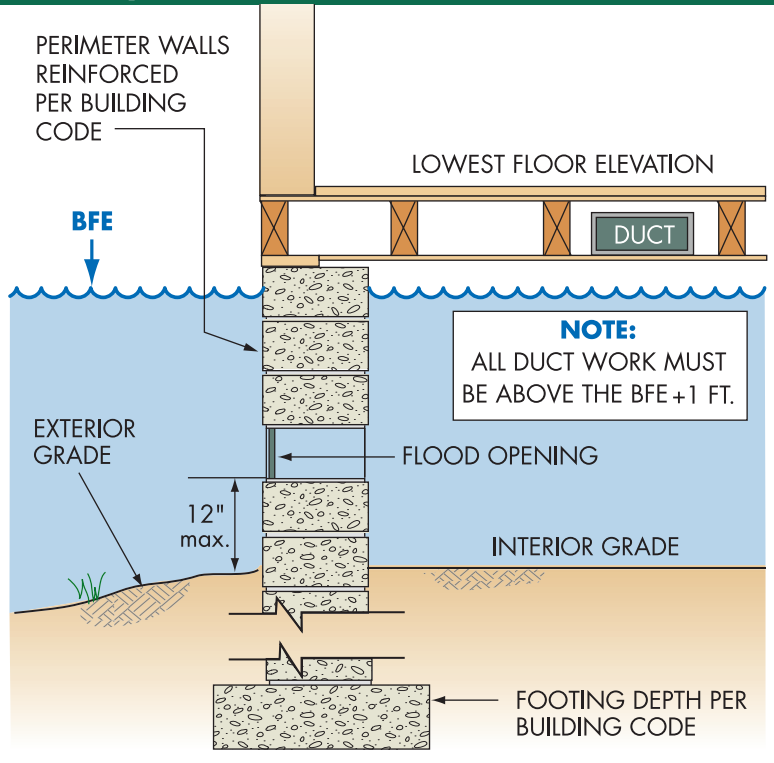
- Total net area of all openings is 1 sq. inch per sq. foot of enclosed area (measured on the outside)
- A 30' x 40' enclosure needs 1,200 sq. inches of openings
- If inserted in flood openings, typical air ventilation units must be permanently disabled in the open position to allow water to flow in and out
- A typical air ventilation unit, with screen, provides 42 to 65 sq. inches of opening (look for "net free area" stamp on unit)

ALTERNATIVE: Engineered openings are acceptable **if certified** to allow adequate automatic inflow and outflow of floodwater.



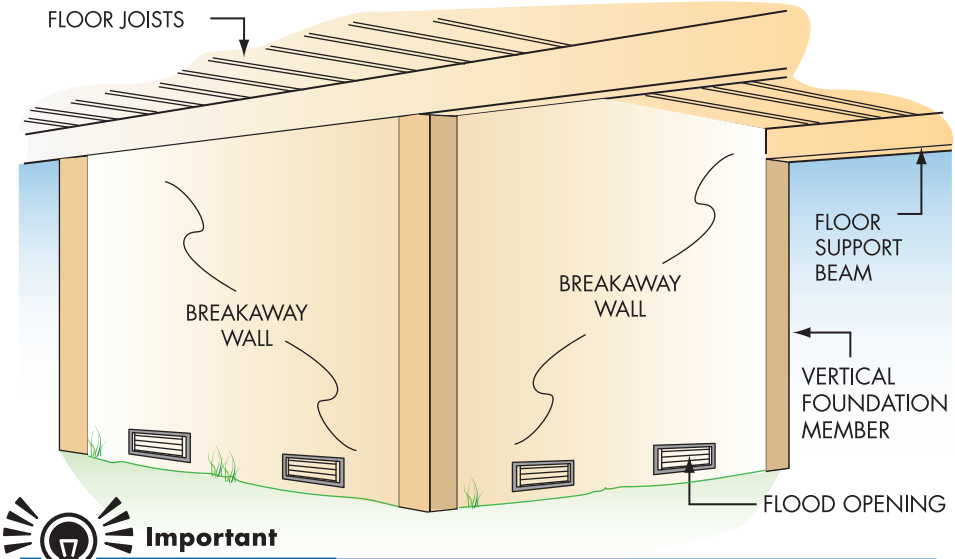
Solid perimeter wall foundations can enclose flood-prone space. A crawlspace is a good way to elevate just a couple of feet. The following are required: flood openings, elevated utilities, flood-resistant materials, and limitations on use.
See NFIP Technical Bulletin #1 *Openings in Foundation Walls and Walls of Enclosures.*

Crawlspace Details (Zone A/AE)



- The FBC requires the Lowest Floor at or above BFE plus 1 foot. Florida recommends another foot or more for greater protection.
- All materials below the lowest floor must be flood resistant.
- Flood openings must provide 1 sq. in. of net open area for every sq. ft. of area enclosed by the perimeter walls – or certified engineered openings may be used.
- A 30' x 40' building needs 1,200 sq. in. of net opening (non-engineered).
- The bottom of flood openings must be no more than 12 inches above the higher of the interior and exterior grades.
- Standard air ventilation units must be permanently disabled in the "open" position to allow water to flow in and out.
- Interior grade must be equal to or higher than exterior grade on at least one side.

Enclosures Below Zone V and CAZ Buildings



Enclosures under elevated buildings should be avoided. If small areas are enclosed, the FBC requires:

- Walls designed to collapse or "break away" under flood conditions and have flood openings
- Enclosures must be unfinished and made of flood resistant materials
- Utility wires and pipes must not go through or be attached to breakaway walls
- Enclosures must be used only for parking, limited storage, and building access (no bathrooms, recreation, or utility rooms)
- Minimal electric service for safety (light switch)

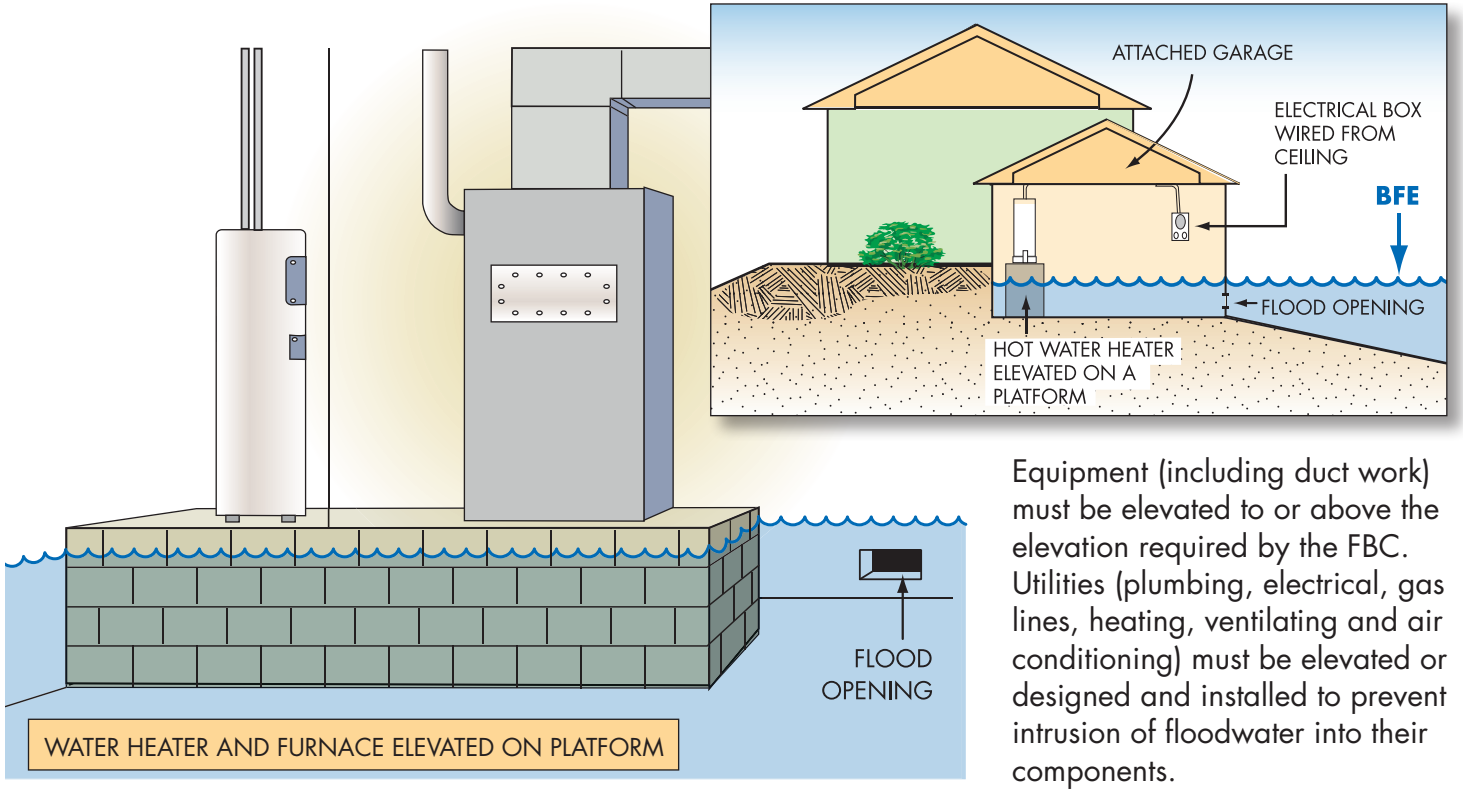
Enclosures larger than 299 sq. ft. may have higher insurance premiums.

Important

Information

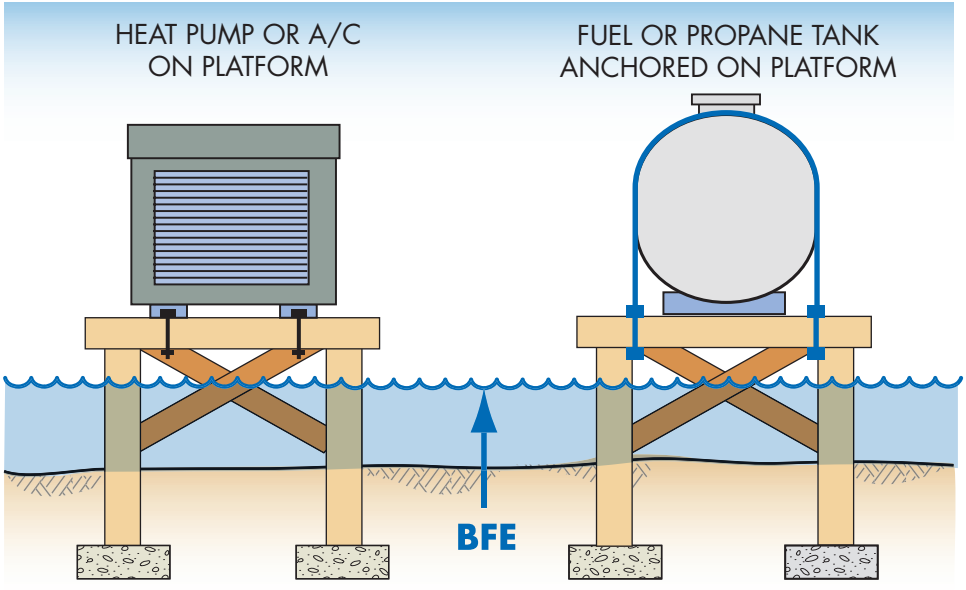
It is a violation of the FBC if enclosures below elevated buildings are modified or used for purposes other than parking, storage, and access. Not only will damage be increased during floods, but flood insurance policies will be more expensive.

Utility Service and Equipment Inside Enclosures



Equipment (including duct work) must be elevated to or above the elevation required by the FBC. Utilities (plumbing, electrical, gas lines, heating, ventilating and air conditioning) must be elevated or designed and installed to prevent intrusion of floodwater into their components.

Utility Service, Equipment, and Tanks



Important Information

Fuel and propane tanks may explode or release contents during flooding. Even shallow water can create large buoyant forces on tanks. In all flood zones tanks may be underground or elevated on platforms or columns. In Zone A/AE only, tanks may be at-grade and anchored to resist flood loads.

The FBC has requirements for tanks in ASCE 24 and in R322.2.4 (Zone A) and R322.3.3.7 (Zone V and CAZ).

Whether inside an attached garage or outside the building, all utilities and equipment must be elevated above required elevation or protected against flood damage. Utilities include plumbing, electrical components, gas lines, tanks, and heating and air conditioning equipment.

Pools in Flood Hazard Areas

The type of flood zone and whether a pool is in-ground, above-ground, or a combination (perhaps with associated grading and fill) determine which requirements apply. The Florida Building Code has specific provisions:

- **Pools at private dwellings in flood Zone A/AE** have requirements only if the pool location is in a floodway or riverine flood hazard area where BFEs are specified but floodways have not been designated. [FBC Section R322.2.4]

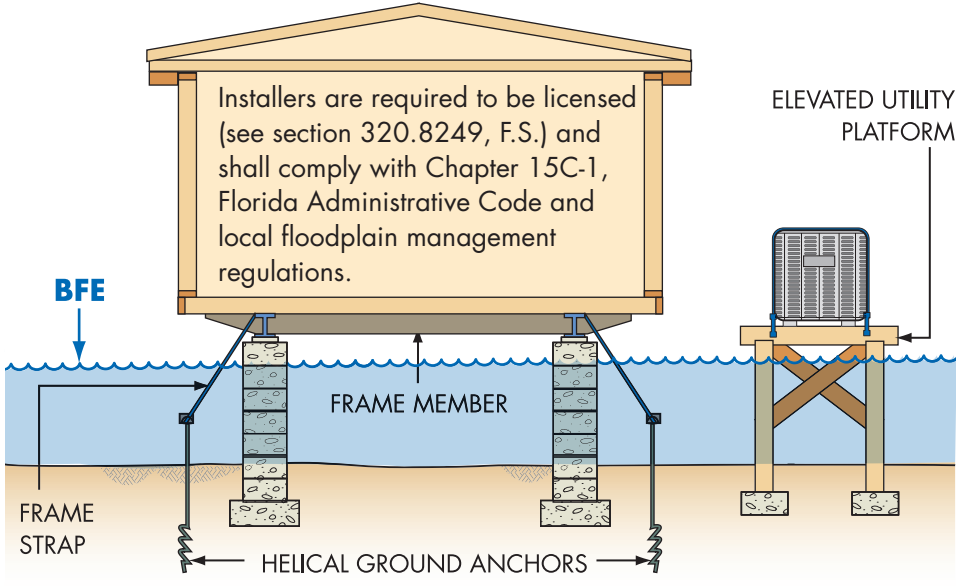
- **Pools at private dwellings in flood Zone V and CAZ** have more stringent requirements and must be designed in accordance with ASCE 24. [FBC Section R322.3.3.1]

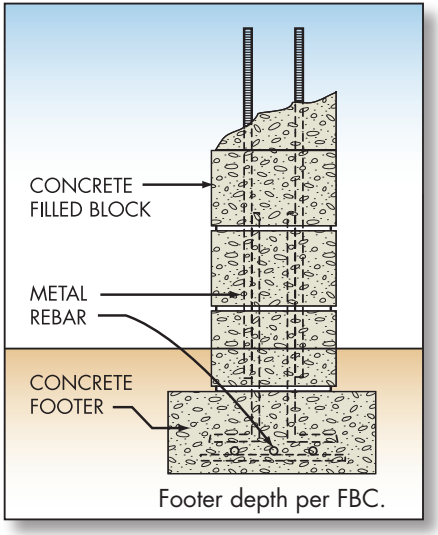
- **Public swimming pools and other private pools** must be designed to withstand all flood-related loads and load combinations. [FBC Sections 454 and 1612, which refers to ASCE 24]

- **Pool controls and equipment** must meet the requirements for utility service (see page 52).

For guidance on pools in Zone V and CAZ, see NFIP Technical Bulletin 5 *Free-of-Obstruction Requirements* and FEMA P-499 *Home Builders Guide to Coastal Construction.*

Manufactured Homes Require Special Attention





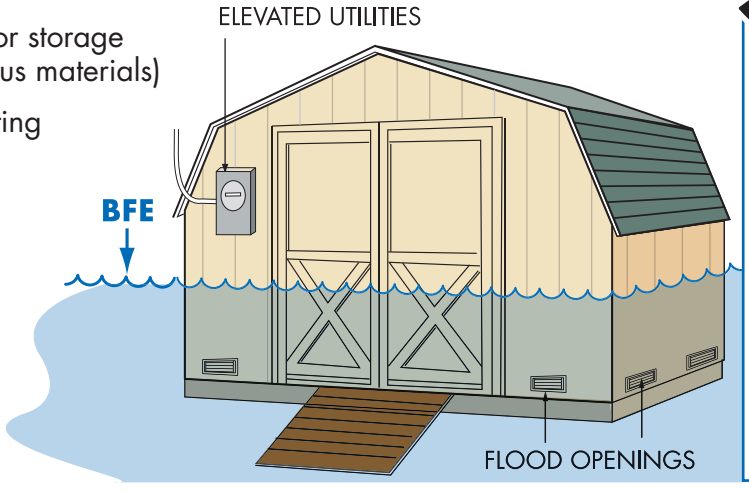
Experience shows that manufactured homes are easily damaged. Just a few inches of water above the floor can cause substantial damage.

Homes must be anchored to reinforced foundations to resist flotation, collapse, and lateral movement and must be tied down in accordance with community ordinances or the manufacturers' installation specifications for SFHAs. See guidance and some pre-engineered designs in FEMA P-85, *Protecting Manufactured Homes from Floods and Other Hazards*.

Accessory Structures

If not elevated, accessory structures in flood zones must:

- Not be habitable
- Be used only for parking or storage (not pollutants or hazardous materials)
- Be anchored to resist floating
- Have flood openings
- Be built of flood damage-resistant materials
- Have elevated utilities
- Not be modified for different use in the future



Terms and Definitions

Accessory Structure, defined in the FBC, Residential, is a structure not greater than 3,000 square feet in floor area and not over two stories in height, the use of which is customarily accessory to and incidental to a dwelling and which is located on the same lot as a dwelling.

Even small buildings are "development" and permits or variances with noted conditions are required. They must be elevated or anchored and built to withstand flood damage.
Caution! Remember, everything inside will get wet when flooding occurs.

Recreational Vehicles and Park Trailers

In Flood Zones, RVs and park trailers must:

- Be licensed and titled as an RV or park trailer (not as a permanent residence)
- Be built on a single chassis
- Must measure 400 sq.ft. or less (measured at largest horizontal projection)
- Have inflated tires and be self-propelled or towable by a light-duty truck
- Have no attached deck, porch, shed, or utilities
- Be used for temporary recreational, camping, travel or seasonal use (no more than 180 consecutive days)
- Have quick-disconnect sewage, water and electrical connectors

Important Information

Camping near the water?
Ask the campground or RV park operator about flood warnings and plans for safe evacuations.

RVs and park trailers that do not meet these conditions must be installed and elevated like manufactured homes, including permanent foundations and tie-downs (see page 54).

Improvements and Repairs of Buildings in Flood Zones

Permits to improve and repair buildings are required. Local officials must:

- Review costs estimated in construction contracts or other cost estimates (including estimate market value of owner labor and donated labor and materials).
- Estimate the market value using property assessment records or use an independent assessment of market value performed by a licensed appraiser.
- Compare the cost of improvements and repairs to the market value of the building.
- Require buildings to be brought into full compliance if the costs equal or exceed 50% of the market value, called Substantial Improvement.
- Encourage owners to consider other ways to reduce future damage if the comparison is less than 50% (see page 65).

Terms and Definitions

Substantial Improvement means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the start of construction of the improvement. This term includes structures which have incurred substantial damage from any cause (flood, fire, hurricanes, tornadoes, etc.), regardless of the actual repair work performed (see page 62). Some Florida communities track improvements over a period of time and trigger compliance when the cumulative improvement value equals or exceeds 50%.

Important Information

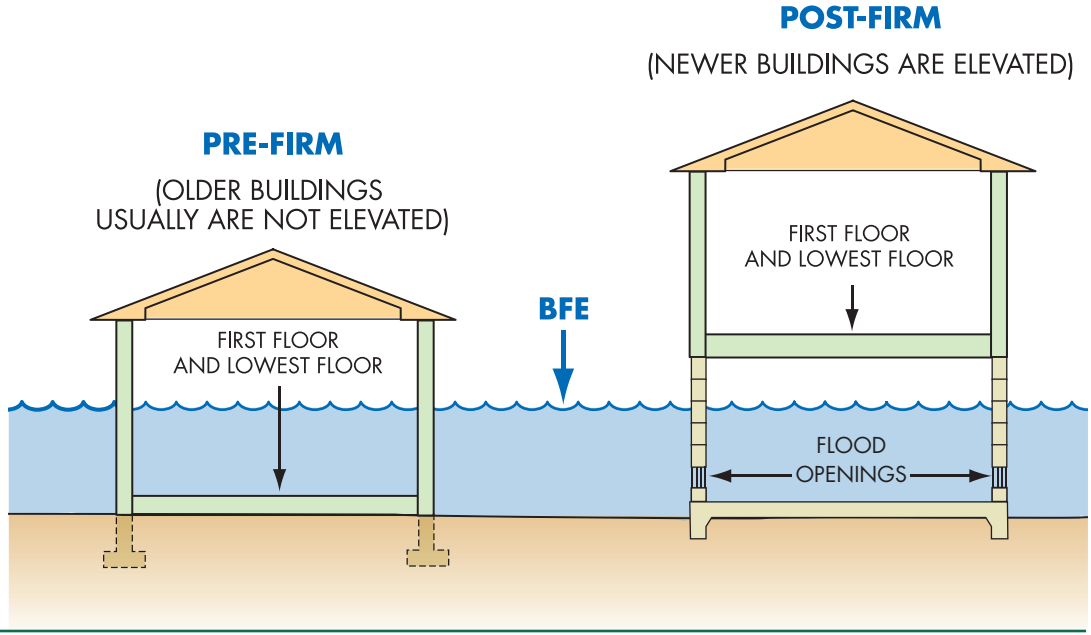
Improvements include:

- Renovation/ rehabilitation of the interior of the existing building (see page 59)
- Lateral addition, without renovation or structural alteration of the existing building (see page 60)
- Lateral addition, with renovation or structural alteration of the existing building (see page 61)
- Vertical addition (add new story)

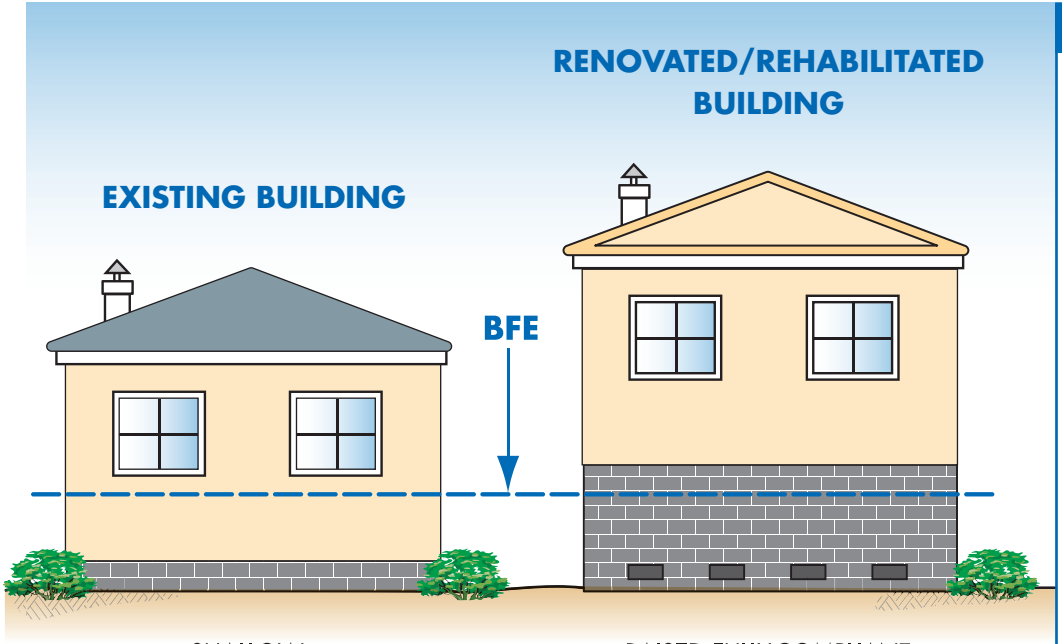
What is Meant by Pre-FIRM and Post-FIRM?

Pre-FIRM and **Post-FIRM** are insurance terms tied to a community's initial FIRM. The terms are used to determine flood insurance rates. Although common, the terms should not be used to distinguish between new construction built before a community joined the NFIP and those built after, especially in communities where the FIRMs have been revised.

The FBC Existing Building Code specifies when permits are required for work on existing buildings. Buildings must be brought into compliance when work is determined to be substantial improvement or repair of substantial damage.



Substantial Improvement: Renovation Only



SHALLOW CRAWLSPACE FOUNDATION

RAISED FULLY-COMPLIANT CRAWLSPACE FOUNDATION

(SEE PAGE 63)

Important Information

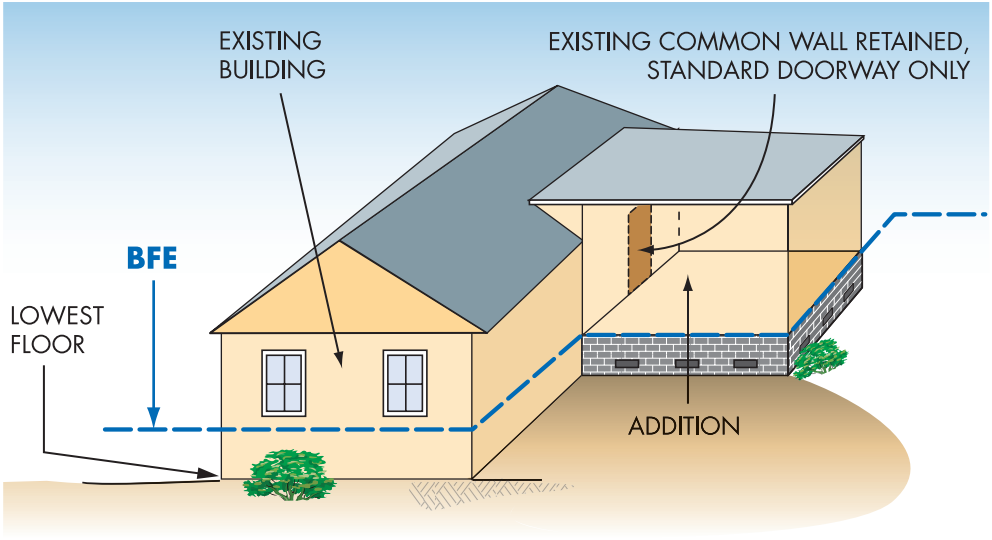
Floodplain buildings can be improved, renovated, rehabilitated or altered, but special rules apply.

Consult local permit offices before beginning work. Provide complete information about all proposed work.

If local code officials have cited violations of State or local health, sanitary, or safety codes, minimum costs to correct violations to provide safe living conditions can be excluded from the cost of renovations.

Alteration of registered historic structures are allowed, by variance, as long as the structures continue to meet the criteria for listing as historic structures.

Substantial Improvement: Lateral Addition Only



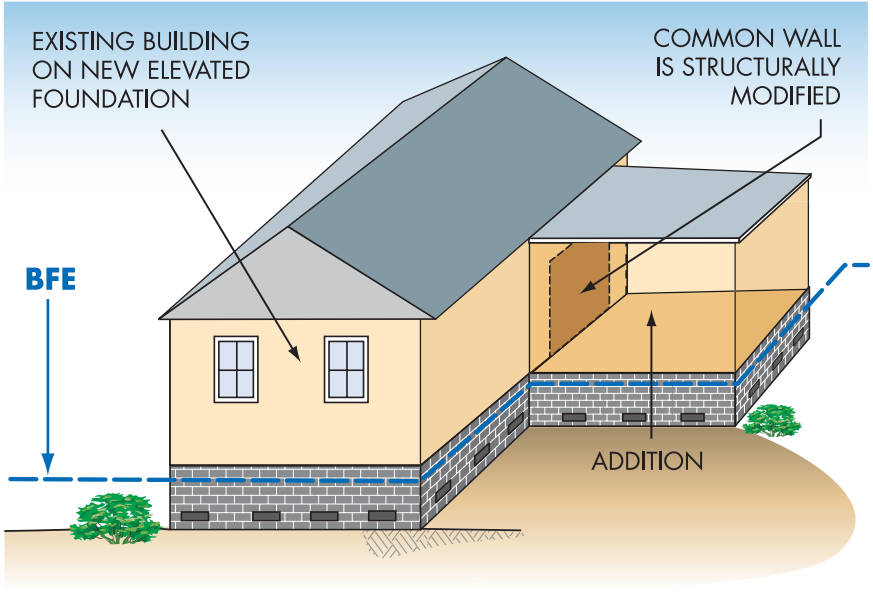
Important Information

See page 61 for projects to add lateral additions that also modify the interior of the existing building or make structural modifications to the existing common wall.

Permits are required to build additions to buildings in flood zones. Only the addition must be elevated and comply with the FBC, provided:

- There are no other modifications to the existing building, and
- There are no structural modifications to the existing common wall other than adding a standard 36" doorway

Substantial Improvement: Addition Plus Other Work

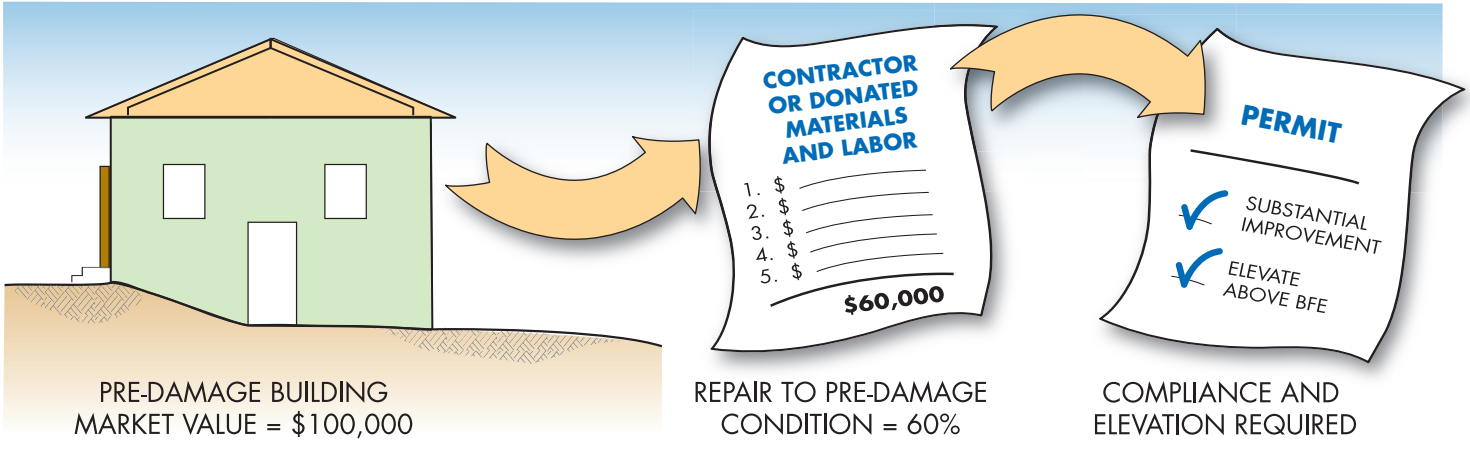


Communities must prepare evaluations to determine if all proposed work will trigger the substantial improvement requirement. Substantial improvement is triggered if:

- The work involves adding a new top floor, modifying the interior of the existing building, or structural modifications to the existing common wall (for lateral addition); and
- The cost of all proposed work plus the cost of improvements equals or exceeds 50% of the market value of the existing building.

Community permit offices can help determine which requirements apply when buildings must be brought into compliance. A preliminary review of proposed improvements is recommended before projects are designed and before permit applications are submitted.

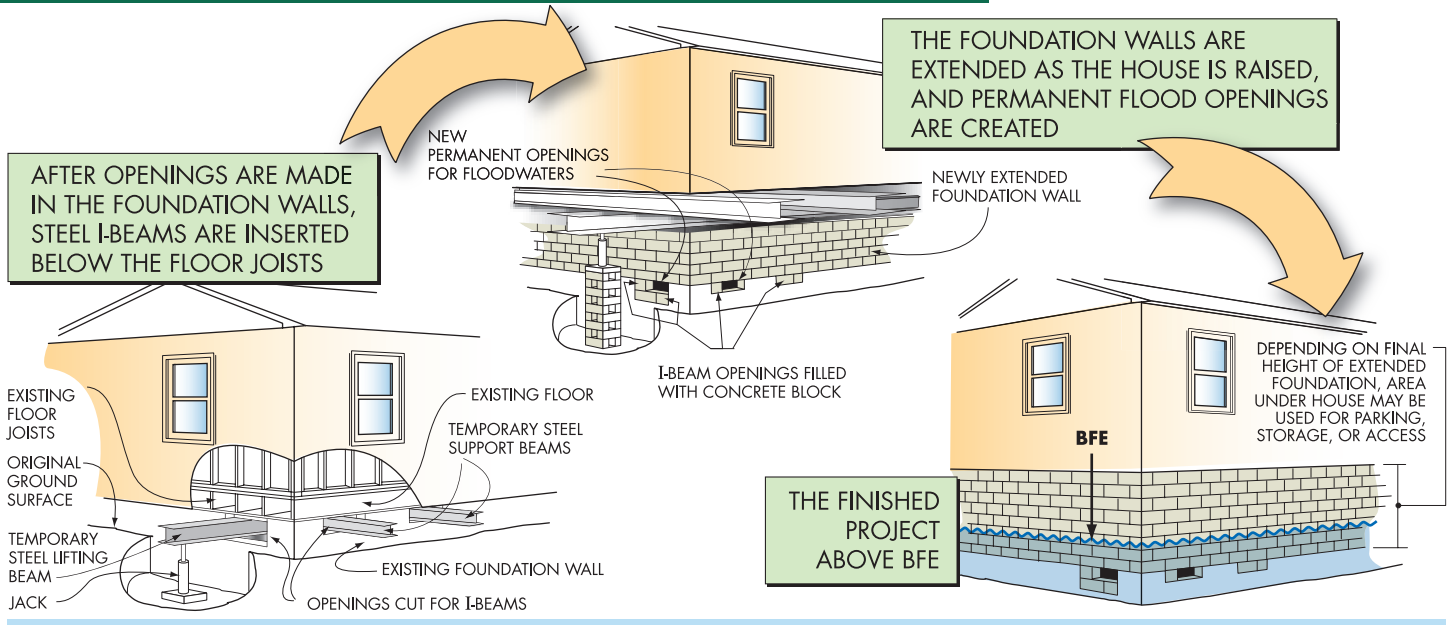
Repair of Damaged Buildings



Permits are required to repair damaged buildings, regardless of the cause – fire, flood, wind, or even vehicle impact. Detailed estimates of the cost to repair a building to pre-damage condition are required. If the costs are 50% or more of the pre-damage market value of the building, then it is "substantially damaged" and must be brought into compliance, which may involve raising the foundation and other measures. Consult with local permit offices before repairs are started.

See page 63 for an example of elevating an existing building above a crawlspace.

Elevating an Existing Building



This is one way to elevate an existing building to comply with building code and floodplain regulations (also see FEMA P-312, *Homeowner's Guide to Retrofitting*). If an NFIP-insured building is damaged by flood and the community determines it is substantially damaged, the owner may be eligible for an **Increased Cost of Compliance** payment (see page 64).

Paying for Post-Flood Compliance

Owners may be eligible for up to $30,000 to help pay to bring buildings into compliance with building code and community requirements – if all of the following apply:

- Buildings are located in a mapped flood zone
- Buildings are covered by Federal flood insurance, which includes Increased Cost of Compliance coverage
- Buildings have lowest floors below the elevation required by the FBC
- The community has made an official determination that buildings were substantially damaged by flooding
- Owners act quickly with their claims adjusters and community officials to process all required paperwork

Learn more at www.fema.gov/increased-cost-compliance-coverage.

Owners whose buildings are substantially damaged are required to "bring the building into compliance" with flood zone requirements. Substantial damage is a special case of substantial improvement.

USE THE ICC CLAIM TO:

ELEVATE-IN-PLACE

RELOCATE TO HIGH GROUND

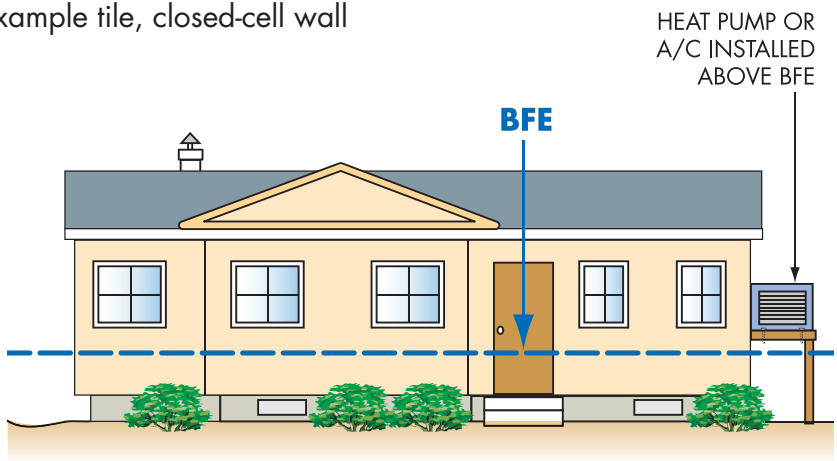
DEMOLISH

FLOODPROOF (NON-RESIDENTIAL ONLY)

Non-Substantial Improvements

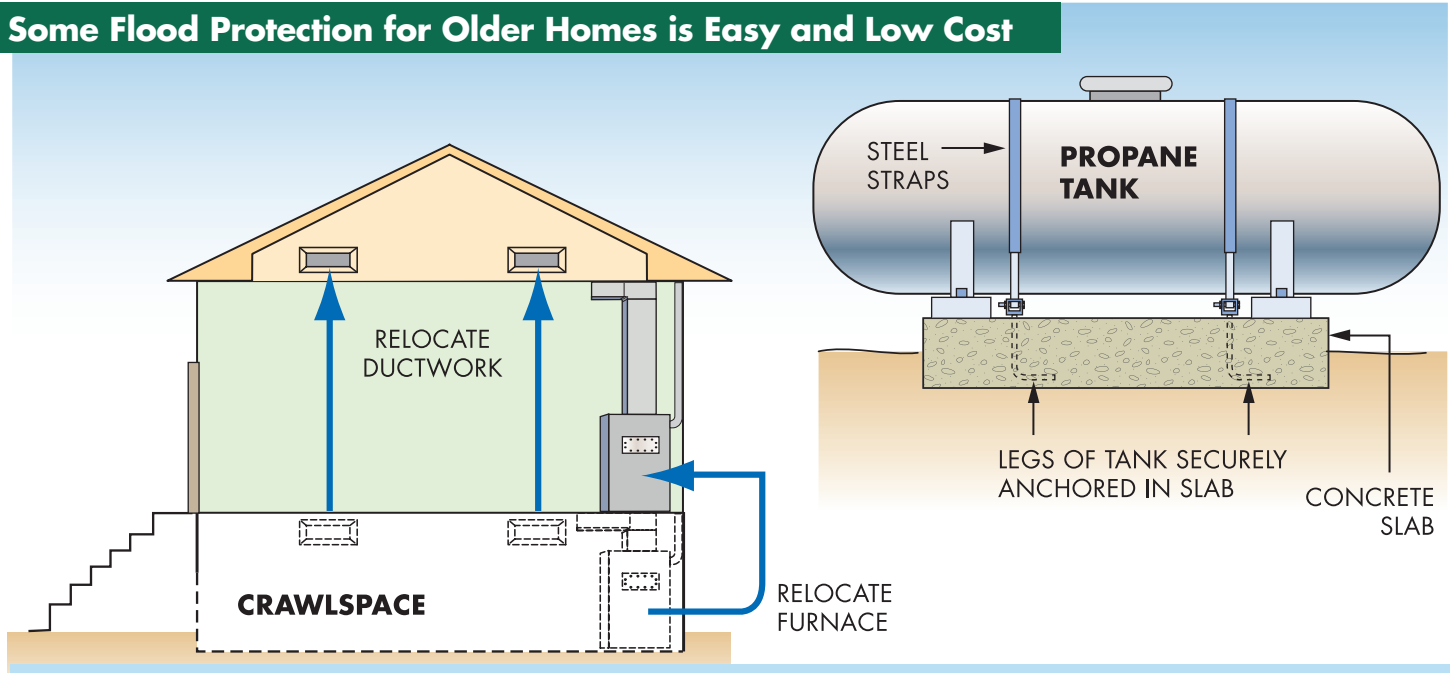
Proposed improvements are "non-substantial" if the costs are less than 50% of the market value of the building. In these cases, buildings are not required to be brought into compliance. However, there are many things owners can do to reduce exposure to future flooding. Owners should consider the following:

- Use flood damage-resistant materials, for example tile, closed-cell wall insulation, and polyvinyl wall coverings
- Raise air conditioning equipment, heat pumps, furnaces, water heaters, and other appliances on platforms
- Move electric outlets higher above the floor
- Add flood openings to crawlspace foundations
- Move ductwork out of crawlspaces
- Fill in below-grade crawlspace



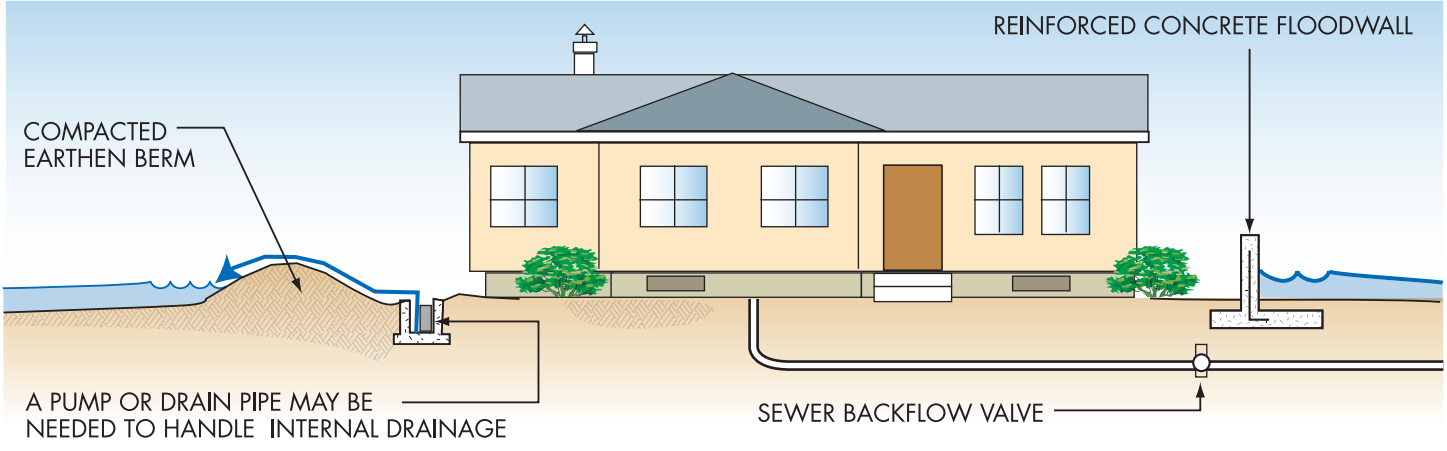
Note! ALL proposed work must be included in permit applications. If more work is proposed or undertaken after a permit is issued, community officials must determine whether the additional work changes the substantial improvement determination.

Some Flood Protection for Older Homes is Easy and Low Cost



Move fuse boxes, water heaters, furnaces, and ductwork out of crawlspaces and basements.
Anchor heating oil and propane gas tanks to prevent flotation and lateral movement.
Do not store valuables or hazardous materials in a flood-prone crawlspace or basement.
Use water-resistant materials when repairs are made.

Small Berms or Floodwalls May Protect Older Buildings



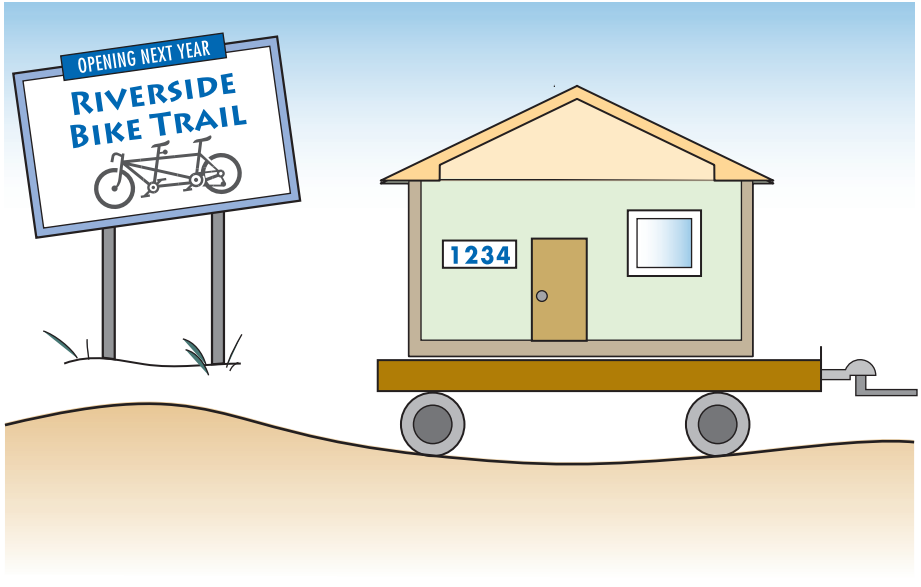
In areas where floodwater isn't expected to be deep, sometimes individual buildings can be protected by earthen berms or concrete floodwalls. Permits are required for these protection measures and extra care must be taken if sites are in floodways (see page 12). Small berms or floodwalls cannot be use to achieve compliance for new construction, substantially improved buildings, or substantially damaged buildings.

Important! These protective measures will not reduce your flood insurance premium!

Some Flood Mitigation Projects are More Costly

But Give More Protection

After floods, some communities purchase and demolish homes that were severely damaged. The acquired land is dedicated to stormwater storage or open space and can be used for recreation or to help restore wildlife habitat and wetlands. Some homes have been elevated on new, higher foundations, and others have been moved to safer high ground outside of flood zones.



The Florida Division of Emergency Management administers FEMA mitigation grant programs. Learn more at www.floridadisaster.org/Mitigation.

Be Prepared for Flood Emergencies

Everyone should be prepared for floods and other emergencies. Preparation begins at home, at work places, at schools, and in communities.

Sometimes floods and other disasters can strike quickly and without warning and evacuation may be required. Basic services (water, gas, electricity and telephones) may be interrupted, perhaps for several days. Local officials and emergency relief works will be on the scene after disasters, but they cannot reach everyone right away. Communities, families, and businesses should prepare before disasters occur by:

- Learning about natural hazards (Florida communities participate in developing Local Mitigation Strategies)
- Making family and workplace emergency plans
- Knowing where to go if evacuations are required
- Putting together disaster kits with supplies to last a few days

To learn more about preparing for disasters, visit the American Red Cross at www.redcross.org/get-help/how-to-prepare-for-emergencies/make-a-plan and contact local emergency management agencies.

Useful Resources and Common Acronyms

- Florida State Floodplain Management Program, resources for local officials, Florida Building Code resources, and Florida CRS guidance: www.floridadisaster.org/Mitigation
- NFIP regulations, Title 44 CFR: www.fema.gov/national-flood-insurance-program/laws-and-regulations
- NFIP Technical Bulletins: www.fema.gov/floodplain-management/nfip-technical-bulletins/4
- CRS Resources: www.fema.gov/national-flood-insurance-program-community-rating-system
- Florida Floodplain Management Association: www.flfloods.org
- Building Officials Association of Florida: www.boaf.net
- American Red Cross www.redcross.org/get-help/how-to-prepare-for-emergencies/make-a-plan

Common Acronyms

- BFE = Base Flood Elevation
- EC = Elevation Certificate
- FBC = Florida Building Code
- FIRM = Flood Insurance Rate Map
- ICC = Increased Cost of Compliance
- NFIP = National Flood Insurance Program
- SFHA = Special Flood Hazard Area (100-year floodplain)

Want to Learn More?

- For information and advice on permits, contact local building or planning departments.
- For advice on permitting and managing floodplains, contact the State Floodplain Management Office at floods@em.myflorida.org or (850) 815-4556.
- For flood zone permit applications, SI/SD determinations, letters to HVAC and tank companies, visit www.floridadisaster.org/mitigation.
- For information about workshops, training and conferences, contact the Florida Floodplain Management Association at www.flfloods.org.
- To learn more about flood maps, go to www.fema.gov/national-flood-insurance-program-flood-hazard-mapping.
- FEMA's on-line publications can be found in the FEMA Library (www.fema.gov/library/) or by using an Internet search engine to search on the publication number or title.
- To learn about Federal flood insurance, call an insurance agent. Most insurance companies can write NFIP policies.
- To learn the importance of taking steps to financially protect homes and businesses from flood damage go to www.floodsmart.gov.
- Find out about Elevation Certificates and training for surveyors by searching for Elevation Certificate at www.fema.gov.

This **Quick Guide** may be downloaded from the
Florida Division of Emergency Management web site at:
www.floridadisaster.org/Mitigation/SFMP/Index.htm

or

the **Florida Floodplain Managers Association** website at:
www.flfloods.org