RESILIENT BUILDING DESIGN GUIDELINES ADDENDUM

VIRTUAL PUBLIC MEETING
TUESDAY, JUNE 7, 2022 | 6:00 – 7:00 PM

Meeting Link: https://us06web.zoom.us/meeting/register/tZIkfuGqqz4vGNT_aekLCoxNKRwXgg7yiEEb
HOUSEKEEPING ITEMS

- All participants will be muted until the conclusion of the presentation
- Please hold verbal Q&A until the conclusion of the presentation
- The chat and meeting will be recorded if questions need to be addressed at the conclusion of the presentation
Project Timeline

- **October 13, 2021: Resilient Buildings Workshop**
  - Information about how residents can reduce risk to their buildings from flood damage and lower their flood insurance rates.

- **April/May 2022: Building Design Guidelines Update**
  - Site visits to understand the various building typologies and flooding concerns.
  - Met with residents to understand the flooding issues and potential mitigation actions to reduce the risk of property damage.
  - Coordinated with NHSA on potential strategies.

- **July 2022: Resilient Building Design Guidelines Addendum**
  - Addendum will be released to the public.
HOUSING TOPOLOGY: GARDEN APARTMENT

DRAFT DELIBERATIVE
HOUSING TOPOLOGY: FLUSH

DRAFT DELIBERATIVE
THE SEWER SYSTEM

**STORMWATER**
- A. YARD DRAIN
- B. ROOF DRAIN
- C. EXTERIOR FLOOR DRAIN
- D. STORMWATER INLET

**GROUNDWATER**
- E. INTERIOR FLOOD DRAIN
- F. SUMP PIT WITH PUMP

**WASTEWATER**
- G. FIXTURE DRAINS WITH TRAPS
- H. VENT STACK

**COMBINED INFRASTRUCTURE**
- I. SEWER LATERAL
- J. HOUSE TRAP
- K. SEWER MAIN
WHERE WATER IS COMING FROM

STORMWATER
A. Saturated soils, sheet flow runoff from yards
B. High concentration of runoff from roof
C. Sheet flow from street entering building
D. Clogged inlets overflowing onto sidewalk

GROUNDWATER
E. Seepage through floors and walls
F. Malfunctioning sump pump, high water table

WASTEWATER
G. Clogged or leaky drainpipes creating wastewater seepage

BACKFLOW
H. Leaky, clogged, or collapsed laterals and/or house traps.
I. Reverse flow from combined sewer wet weather.
WHAT’S INCLUDED IN THE ADDENDUM

• Why Hoboken Floods and How to Prepare
• Evaluating What Makes Sense for Your Property
• Strategies for Reducing Flood Risk to Your Home
  o Maintain Indoor & Outdoor Infrastructure
  o Floodproofing Strategies: Prevent Flooding
  o Flood-Resistant Construction Strategies: Lessen the Effects of Flooding
  o Alleviate the Burden on the Sanitary System: Reduce Water Use & Stormwater Runoff
• Permitting & Approvals
HIGHLIGHTS FROM OCTOBER MEETING

1. Scope/Send camera down the sewer lateral
2. Tree root tracing and removal
3. Repair or replace malfunctioning house connection piping
4. Repair or replace defective and/or leaking plumbing fixtures
5. Repair or replace lateral house connection
6. Repair or replace collapsed house traps

Flood Barrier System
Seal Openings
Perimeter or Basement Drainage
Sump Pumps
Check Valves
Ejector Pump

Maintain Indoor & Outdoor Infrastructure

Floodproofing Strategies: Prevent Flooding

Flood-Resistant Construction Strategies: Lessen the Effects of Flooding

- Water-Resistant Materials
- Install Flood Alert System
- Anchor Fuel Tanks
- Floodproof Equipment
- Elevate Equipment
- Flood Vents
- Raise Cellar or Basement Floor above BFE
- Fill in Cellar or Basement

Alleviate the Burden on the Sanitary System: Reduce Water Use & Stormwater Runoff

- Disconnect or redirect downspouts away from CSO
- Disconnect sump pump from CSO
- Retain stormwater
- Decrease stormwater runoff
STRATEGY FACT SHEETS

• Quick Facts
  o Complexity – Is this strategy easy, medium, or hard to implement?
  o Cost – Is this action affordable, moderately priced, or expensive?
  o Applicability – Who might this strategy work for?
  o Longevity – How long will this last?
  o Permits – Are permits required?
  o Contractor – Do you need a professional to install?

• Description

• How This Could Help

• Materials & Considerations

• Maintenance

• Resources

SECTION 4. STRATEGIES FOR REDUCING FLOOD RISK TO YOUR HOME
4.4: ALLEVIATE THE BURDEN ON THE SANITARY SYSTEM; REDUCE WATER USE & STORMWATER RUNOFF

E DRY WELL

OVERVIEW
A dry well is an underground structure or hole that collects excess stormwater runoff, letting it slowly filter back into the ground. Dry wells collect stormwater runoff from gutter downspouts, roof valleys, and other areas where water concentrates and flows. They help infiltrate runoff and reduce erosion.

HOW COULD THIS HELP?
Dry wells control erosive runoff on and off your property and reduce overall wear on your house by minimizing splashback. Also, they contain oxygen which aids in health of your landscape.

MATERIALS & CONSIDERATIONS
Required: measuring tape, shovel, crushed stone, non-woven geotextile fabric (not pictured)
Optional: perforated, open-bottom plastic barrel, gutter downspout extension [image]

Considerations for Installation:
• Call 811 or 800-242-1000 before you dig.
• Research the system and installation.
• Test your property to ensure a dry well system will work on your lot.
• Dig 18 feet away from foundation.

MATERIALS & CONSIDERATIONS

RESOURCES:
• New Hampshire Homeowner’s Guide to Stormwater Management
• How to Install a Dry Well by Roger Cook
## SUMMARY OF STRATEGIES

### Maintain Indoor & Outdoor Infrastructure

<table>
<thead>
<tr>
<th>Flood Reduction Strategy</th>
<th>Description</th>
<th>Type of Flooding Addressed</th>
<th>Where Could This Be Implemented?</th>
<th>Contractor(s) Needed?</th>
<th>Permit(s) Needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scope/Send Camera Down the Sewer Lateral</strong></td>
<td>Hire a licensed plumber to locate blockage in your sewer lateral.</td>
<td>Backflow</td>
<td>All properties</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td><strong>Tree Root Tracing and Removal</strong></td>
<td>Hire a landscape specialist to locate and remove problematic tree roots that may grow into piping, foundations, or house walls.</td>
<td>Backflow, Leaks</td>
<td>All properties</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Repair or Replace Malfunctioning House Connection Piping</strong></td>
<td>Turn off all water supply for your home and check your meter. If there is a leak, simply tighten the nuts and bolts on the fixture itself to resolve the problem or replace the piping.</td>
<td>Backflow</td>
<td>All properties</td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td><strong>Repair or Replace Defective and/or Leaking Plumbing Fixtures</strong></td>
<td>Identify defective and/or leaking plumbing fixtures and if required, replace with low-flow fixtures to conserve water and save money.</td>
<td>Backflow, Leaks</td>
<td>All properties</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td><strong>Repair or Replace Lateral House Connection</strong></td>
<td>Pipes can be repaired with pipe lining or by feeding a cone shape through the existing lateral line.</td>
<td>Backflow, Leaks</td>
<td>All properties</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Repair or Replace Collapsed House Traps</strong></td>
<td>Repair or replace the small trap of the main connection and each individual plumbing fixture.</td>
<td>Backflow</td>
<td>All properties</td>
<td>Y</td>
<td>Y</td>
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# SUMMARY OF STRATEGIES

## Floodproofing Strategies: Prevent Flooding

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<td>Flood Barrier System</td>
<td>Includes sandbags and sand-filled systems; flood planks, shields, and barrier panels; and barriers, floodwalls, and point-of-use.</td>
<td>Stormwater</td>
<td>Depends on the structure and temporary use</td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td>Seal Openings</td>
<td>Includes installing waterproof windows and doors amid sealing basement slabs.</td>
<td>Stormwater</td>
<td>All Properties</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Perimeter or Basement Drainage</td>
<td>Includes internal and exterior French drains.</td>
<td>Groundwater, Stormwater</td>
<td>All properties, but not recommended by NHSA</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Sump Pumps</td>
<td>A sump pump defends against basement seepage by drawing in groundwater from the basement and directing it away from your home through drainage pipes.</td>
<td>Groundwater, Stormwater</td>
<td>All bottom floor units, single-family homes</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Check Valves</td>
<td>Check valves only allow fluid to flow in one direction. They are fitted to prevent flow in the wrong direction caused by certain pressure conditions.</td>
<td>Backflow</td>
<td>All bottom floor units, single-family homes</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Ejector Pump</td>
<td>The purpose of an ejector pump is to remove sewage from your home, different from a sump pump which removes excess water.</td>
<td>Backflow</td>
<td>All bottom floor units, single-family homes</td>
<td>Y</td>
<td>Y</td>
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### Flood-Resistant Construction Strategies: Lessen the Effects of Flooding

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<tr>
<td>Water-Resistant Materials</td>
<td>Materials that are not damaged by water inundation and dry easily after getting wet.</td>
<td>All</td>
<td>All properties</td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td>Install Flood Alert System</td>
<td>Detects water in the home and alerts residents to these conditions.</td>
<td>All</td>
<td>All properties</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Anchor Fuel Tanks</td>
<td>All tubes should be above the 100-year flood level or surrounded by watertight floodwalls.</td>
<td>All</td>
<td>All properties</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Floodproof Equipment</td>
<td>Use reusable flood covers to protect critical equipment that cannot be elevated.</td>
<td>All</td>
<td>All properties</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Elevate Equipment</td>
<td>Elevate utilities and their related equipment above the BFE. If utilities are outside the home, they should be anchored to a platform that is attached at on one side to the main structure.</td>
<td>All</td>
<td>All properties</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Flood Vents</td>
<td>Openings in the foundation wall located below the BFE to allow for water to automatically flow in and out.</td>
<td>Stormwater</td>
<td>Properties with non-living space on bottom level/in the floodplain</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Raise Cellar or Basement Floor above DFE</td>
<td>Elevate the lowest floor above the BFE; depending on the height of the BFE and height of floods, may require elevating all the floors.</td>
<td>Stormwater, Groundwater</td>
<td>Properties with non-living space on bottom level/in the floodplain</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Fill in Cellar or Basement</td>
<td>Fill in a cellar or basement that is located below the BFE. If any of the basement wall remains above ground level, homeowners must install flood vents.</td>
<td>Stormwater, Groundwater</td>
<td>Properties with non-living space on bottom level/in the floodplain</td>
<td>Y</td>
<td>Y</td>
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#### Alleviate the Burden on the Sanitary System: Reduce Water Use & Stormwater Runoff

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<tr>
<td>Disconnect or Redirect Downspouts Away from CSO</td>
<td>External downspouts lead from a roof gutter, down the side of your home, then discharge onto your property or into the CSO.</td>
<td>Backflow</td>
<td>Homes with external downspouts</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Disconnect Sump Pump from CSO</td>
<td>Disconnect sump pump from CSO and drain into a cistern, rain barrel, garden or green space, or planter box, as this gives stormwater a chance to infiltrate slowly before entering and overwhelming the CSO.</td>
<td>Backflow</td>
<td>All properties</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Retain Stormwater</td>
<td>Retain stormwater through a rain barrel, rain cistern, retention wells, dry wells, a green roof, and/or a blue roof.</td>
<td>Backflow, Stormwater</td>
<td>Any property with yard or roof space</td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td>Decrease Stormwater Runoff</td>
<td>Decrease stormwater runoff with pervious walkways, patios, paving; green roofs, bio-infiltration (rain gardens &amp; bioswales); and downspout planters.</td>
<td>Backflow, Stormwater</td>
<td>All properties</td>
<td>Varies</td>
<td>Varies</td>
</tr>
</tbody>
</table>
PERMITTING & APPROVALS

• Construction Permits
  o Zoning permit
  o Building Subcode
  o Fire Protection Subcode
  o Plumbing Subcode
  o Electrical Subcode

• Floodplain Permit
• Historic Preservation Commission Approval
• Tree Permits
• Street & Sidewalk Openings Permit
• Hudson County Road Permit
THANK YOU!

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ONLINE SURVEY:  
https://arcg.is/188GCP
Open until June 20th

Resilient Building Design Guidelines Addendum will be released in July