Welcome

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Using ASCE 24 for CDBG-MIT Projects

2020 CDBG-MIT Webinar Series

June 11, 2020
Introduction and Agenda
**Introductions**

- Adam J Reeder, PE, CFM, Principal, CDM Smith
- William Clay Lloyd, Department of Housing and Urban Development, CPD Specialist
Agenda

- CDBG-MIT Program Overview (FRN language on use of ASCE 24)
- Overview of the Flood Requirements for a CDBG Mitigation Grant
- What is ASCE 24 and what does it cover?
- Complying with ASCE 24 for a CDBG Mitigation Grant?
- Overview of ASCE 24 use with Residential and Non-Residential Mitigation Projects
- Historic Buildings
- The Benefits of Using ASCE 24
- Getting Access to ASCE 24
- FEMA Resources when using ASCE 24
Background: CDBG-MIT

Clay Lloyd, HUD
CDBG-MIT Purpose:
The CDBG Program provides Grantees funds to develop viable communities by providing **decent housing** and a **suitable living environment**, and by **expanding economic opportunities**, principally for low- and moderate-income persons.

HUD’s Federal Register Notice requires:

- ▪ 1. Meet the definition of a mitigation activity;
- ▪ 2. Address current and future risks as identified in the grantee’s mitigation needs assessment of most impacted and distressed (MID) areas;
- ▪ 3. Be CDBG-eligible activities or otherwise eligible pursuant to a waiver or alternative requirement; and
- ▪ 4. Meet a national objective, including additional criteria for mitigation activities and covered projects.

CDBG-MIT funds may be used to:

- ▪ Support infrastructure projects, housing activities, public services, economic development, disaster preparedness, and planning efforts.
- ▪ Increase resilience and reduce or eliminate risk, per HUD’s definition of mitigation.
- ▪ 50% of CDBG-MIT funds must also be used to benefit low-to-moderate income (LMI) persons.
Maximizing CDBG-MIT

To maximize the impact of all available funds, grantees should coordinate and align these CDBG–MIT funds with other mitigation projects funded by FEMA, the U.S. Army Corps of Engineers (USACE), the U.S. Forest Service, and other agencies as appropriate.

According to the CDBG-MIT Notice, grantees must:

1. Advance long-term resilience to current and future hazards;
2. Align its CDBG–MIT programs or projects with other planned federal, state, regional, or local capital improvements; and
3. Promote community-level and regional planning for current and future disaster recovery efforts and additional mitigation investments.
Use of ASCE 24

Adam Reeder, CDM Smith
Long-term planning and risk mitigation considerations (45847)
The grantee must describe how it plans to: Promote local and regional long-term planning and implementation informed by its Mitigation Needs Assessment, including through the development and enforcement of building codes and standards (such as ASCE 24 and ASCE 7, as may be applicable), vertical flood elevation.

Building code and hazard mitigation planning (45848)
Grantees are encouraged to propose an allocation of CDBG–MIT funds for building code development and implementation, land use planning and/or hazard mitigation planning activities that may include but need not be limited to: (a) The development and implementation of modern and resilient building codes consistent with an identified model or standard, such as ASCE 24 and ASCE 7 as may be applicable, in order to mitigate against current and future hazards;
Elevation standards for new construction, repair of substantial damage, or substantial improvement (45864)

- All structures, defined at 44 CFR 59.1, designed principally for residential use and located in the 100-year (or 1 percent annual chance) floodplain that receive assistance for new construction, repair of substantial damage, or substantial improvement, as defined at 24 CFR 55.2(b)(10), must be elevated with the lowest floor, including the basement, at least two feet above the base flood elevation.

- Alternatively, grantees may choose to adopt the design flood elevation standards of ASCE 24 if it results in an elevation higher than two feet above base flood elevation. Mixed use structures with no dwelling units and no residents below two feet above base flood elevation must be elevated or floodproofed, in accordance with FEMA floodproofing standards at 44 CFR 60.3(c)(3)(ii) or successor standard, up to at least two feet above base flood elevation.
Note about the handouts

- We will be using several terms and acronyms during the remaining presentation
- Please download the handout to aid in following along
ASCE 7 - Calculating Flood Loads

ASCE 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures

- Methods to determine design loads and load combinations in flood hazard areas

Some key chapters for flood design

- Chapter 5 is Flood Loads
  - Commentary is located in Section C5
- Chapter 2 is Load Combinations
  - Commentary is located in Section C2
- Chapter 3 is Dead Loads, Soil Loads, and Hydrostatic Pressure
  - Commentary is located in Section C3
ASCE 24 - Overall Flood Standard

- Addresses:
  - Construction materials
  - Design and engineering requirements
  - Testing practices

- ASCE standards are developed by a consensus process that includes balloting by a committee and a public review

- Developed by industry organizations and professional associations

- Supplements the building code

- May be incorporated by reference into the building code
ASCE 24 Sections (1 of 2)

1. General (scope, definitions, basic requirements, and flood loading per ASCE 7)
2. Basic Requirements for Flood Hazard Areas that are not identified as Coastal High Hazard Areas and Coastal A Zones (buildings in most A zones)
3. High Risk Flood Hazard Areas (alluvial fans, flash flood areas, mudslide areas, erosion-prone areas, high-velocity flow areas, areas subject to wave action, and ice jams and debris areas)
4. Coastal High Hazard Areas and Coastal A Zones (V Zones included)
5. Materials (specific requirements for flood hazard areas, steel, concrete, masonry, wood, and finishes)

Note: ASCE 24 and the International Building Codes utilize a modified flood zone designation that is more restrictive than the NFIP.
6. Dry Floodproofing and Wet Floodproofing

7. Attendant Utilities and Equipment (*electrical, mechanical, plumbing, and elevators*)

8. Building Access

9. Miscellaneous Construction (*decks, porches, garages, carports, accessory structures, chimneys, pools, and tanks*)

10. References

**Commentary** (*covers all chapters*)

**Note:** Buildings are grouped by Flood Design Classes, which increase requirements based on the importance of the building to a community or life safety.
# Key Concept: Structure Category

<table>
<thead>
<tr>
<th>Nature of Occupancy</th>
<th>Flood Design Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low hazard to human life in the event of failure:</td>
<td>1</td>
</tr>
<tr>
<td>• Agricultural facilities</td>
<td></td>
</tr>
<tr>
<td>• Minor storage facilities</td>
<td></td>
</tr>
<tr>
<td>All buildings except those listed in Categories I, III, and IV.</td>
<td>2</td>
</tr>
<tr>
<td>Substantial hazard to human life in the event of failure:</td>
<td>3</td>
</tr>
<tr>
<td>• Buildings where &gt;300 people congregate</td>
<td></td>
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<tr>
<td>• Day-care facilities with capacity of &gt;150</td>
<td></td>
</tr>
<tr>
<td>• Elementary/secondary schools with capacity of &gt;250</td>
<td></td>
</tr>
<tr>
<td>Essential facilities:</td>
<td>4</td>
</tr>
<tr>
<td>• Hospitals</td>
<td></td>
</tr>
<tr>
<td>• Fire, rescue, ambulance, police</td>
<td></td>
</tr>
<tr>
<td>• Emergency operation centers</td>
<td></td>
</tr>
</tbody>
</table>

Source: ASCE 24, Table 1-1
**ASCE 24 Categories of Coastal Flood Zones**

**V Zones:** 3 foot or higher waves – Require Open Foundations and Compliance is measured to the Bottom of Lowest Horizontal Structural Member of the Lowest Floor Designated on Flood Insurance Rate Maps (FIRMs)
Categories of Coastal Flood Zones

Coastal A Zones: 1.5 foot to 3 foot waves – Require Open Foundations and Compliance
is measured to the Bottom of Lowest Horizontal Structural Member of the Lowest Floor
Only required if the Line of Moderate Wave Action (LiMWA) is shown on the FIRM
A Zones: Less than 1.5 foot waves – Allows Closed Foundations (with openings) and Fill. Compliance is measured to the Top of the Lowest Floor Designated on Flood Insurance Rate Maps (FIRMs)
Riverine Flood Zones

- A, AE, A1-A30 are all areas within the floodplain
- AO Zones = shallow flooding area
  - There may or may not be a depth of flooding, but no BFE.
- AH Zones = shallow flooding but there is a BFE
- A99 Zones = protected by a certified levee or flood control measure
- AR Zones = areas protected by a levee or flood control measure that is not certified.

Additional restrictions apply to buildings within a mapped floodway.
Substantial Improvement/Substantial Damage impacts on the application of ASCE 24

- **Substantial Damage (SD):** Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damage condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

- **Substantial Improvement (SI):** Any repair, reconstruction rehabilitation, addition, or improvement of a building, the cost of which equals or exceeds 50 percent of the market value before the repair is started.

The best resource for this is FEMA P-758, Substantial Improvement/Substantial Damage Desk Reference (2010)
ASCE 24 and the NFIP

- The provisions of ASCE 24 are consistent with NFIP performance requirements.
- ASCE 24 provisions meet or exceed NFIP regulations.
- Establishes new minimum requirements (ASCE 24 is now the standard of practice)
- ASCE 24 in comparison with NFIP requirements:
  1. Provides more specific requirements
  2. Incorporates the Coastal A Zone with foundation requirements
  3. Requires new construction and Substantial Improvement/Damage construction to incorporate freeboard
  4. Requires to dry floodproofing to consider human intervention requirements
CDBG-MIT Programmatic Compliance with ASCE 24

Projects that do not constitute *new construction* or Substantial Improvements:

- May not be required to comply with every provision of ASCE 24

CDBG-MIT Funded Retrofitting projects:

- Some requirements of ASCE 24 may be satisfied via a “deemed to comply” approach meeting the spirit of ASCE 24

**Note:**
City and/or state building codes may require compliance with ASCE 24. Adherence to ASCE 24 may also be required for compliance with other funding sources.
Design and Construction Documentation for CDBG-MIT

- Make sure that you can document that the project was both designed and constructed to comply with ASCE 7 and ASCE 24
- Make sure that you can document that the project complies with all applicable building codes and floodplain ordinances

Examples might be:

- A statement or affidavit from a design professional involved in evaluating the building and developing the design to meet ASCE 24 “deemed to comply” requirements
- A statement or affidavit from a local official with technical competency certifying that the design meets the spirit of ASCE 24

Design professionals should be familiar with ASCE 24 and incorporate it into their design and construction oversight estimate. Local building officials should verify that projects incorporated ASCE 24 into the design and should verify that the construction meets ASCE 24 requirements.
Recommendation to use the latest-issued flood data

- The relevant data source for this provision is the State, local, and tribal government land use regulations and hazard mitigation plans and the latest-issued FEMA data or guidance, which includes advisory data (such as Advisory Base Flood Elevations) or preliminary and final Flood Insurance Rate Maps.
Applying Codes, Standards, and Ordinances

CDBG-MIT projects must comply with:

- State and local laws/ordinances
- If no code exists, then the proposed project should meet a code consistent with an identified model or standard.
- Federal laws, regulations, and statutes, and requirements within NFIP

Even if a project is technically feasible and cost effective, if implementing the project violates a Federal, State, or local ordinance, code, or requirement, the project will be ineligible for Federal assistance.
Plan on doing a Code Compliance Check

- Each project should undergo a code compliance check
- If improvements trigger Substantial Improvement/Damage requirements, provisions in the building code or flood ordinance must be met
- 2018 and 2015 IRC, IBC, and IEBC describe various categories to classify work on existing buildings
States and communities regulate building construction by adopting and enforcing building codes

- Building codes set minimum requirements for structural design, materials, natural hazard mitigation, etc.

- Numerous standards are incorporated into building codes by reference

"1612.2 Design and construction. The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and coastal A zones, shall be in accordance with Chapter 5 of ASCE 7 and with ASCE 24."

(Source: 2018 International Building Code, Section 1612 Flood Loads)

**Note:** Communities that do not currently have a building code will need to plan for how they will make sure the requirements have been met during design and construction of the building.
Using ASCE 24 with Residential Mitigation Projects

- Applies to single family, multi-family, and residential portions of mixed-use buildings
- Mitigation options discussed:
  - Retrofit Elevation
  - Reconstruction of a new building (Mitigation Reconstruction)
- Dry Floodproofing is **NOT** an allowable mitigation measure
- Wet Floodproofing is only allowable for parking, building access, and storage areas
- Prior to design determine whether the provisions in ASCE 24, State/Local Building Codes, or Local Floodplain Management Ordinances are more restrictive – this standard should be applied to each facet of the design (e.g. elevation, materials, foundation types).
Minimum Elevation Requirements

Example of A Zone requirements

<table>
<thead>
<tr>
<th>Flood Design Class</th>
<th>Minimum Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DFE</td>
</tr>
<tr>
<td>2</td>
<td>BFE+2 or DFE*</td>
</tr>
<tr>
<td>3</td>
<td>BFE+2 or DFE*</td>
</tr>
<tr>
<td>4</td>
<td>BFE+3 or DFE or 500-year flood elevation*</td>
</tr>
</tbody>
</table>

* Whichever elevation is higher

* The local DFE may be equal to or higher than the BFE or the ASCE 24 required BFE + freeboard. The highest of the three elevations should be adhered to for building elevation mitigation projects.

Note: The CDBG-MIT requirements add an additional foot of freeboard above the ASCE 24 minimum elevation requirements.
Minimum Elevation Requirements

V Zone and Coastal A Zone

<table>
<thead>
<tr>
<th>Flood Design Class</th>
<th>Minimum Elevation of Bottom of Lowest Horizontal Structural Member of the Lowest Floor</th>
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</thead>
<tbody>
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<td>BFE + 3 feet, 500 yr., or DFE, whichever is higher</td>
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</tbody>
</table>

Adapted from CDBG-MIT Guidance

Using ASCE 24 for CDBG-MIT Projects
Allowable Foundation Types for Elevation

**A Zones**

- Slab-on-fill
- Perimeter wall (crawlspace)
- Open foundation – piers/posts/columns
- Open foundation – piles

**V Zones and Coastal A Zones**

- Slab-on-fill
- Perimeter wall (crawlspace)
- Open foundation – piers/posts/columns
- Open foundation – piles

**ASCE 24**

- Top of lowest floor
- DFE = lowest floor elevation

- BFE + 2 ft or DFE*
- or
- BFE + 3 ft or DFE*

- Structure Category I
- LHSM = lowest horizontal structural member

*whichever is higher
Flood Design Category 2 & 3 (BFE + 2)
Flood Design Category 4 (BFE + 3)

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Using ASCE 24 for CDBG-MIT Projects
Foundation Design: A Zones

- Foundations should be designed to:
  - Resist flotation, collapse, or permanent lateral movement under design loads
  - Have adequate connections between foundation and superstructure
  - Meet building code or ASCE 24, whichever is more restrictive

<table>
<thead>
<tr>
<th>Foundation Type</th>
<th>ASCE 24 Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slab-on-grade</td>
<td>• Placed on structural fill or soil with adequate bearing capacity</td>
</tr>
<tr>
<td>Piers, posts, columns, piles</td>
<td>• Properly designed enclosures below the DFE</td>
</tr>
<tr>
<td>Perimeter wall (crawlspace)</td>
<td>• Properly designed flood openings</td>
</tr>
</tbody>
</table>
Foundation Design: V Zones, Coastal A Zones

- Foundations should be designed to:
  - Minimize flood forces acting on the foundation
  - Be free of obstructions
  - Meet building codes or ASCE 24, whichever is more restrictive

<table>
<thead>
<tr>
<th>Foundation Type</th>
<th>ASCE 24 Requirement</th>
</tr>
</thead>
</table>
| Piles                   | • Foundations on erodible soils must be constructed on piles or the provisions in ASCE 24, Section 4.5.1 must be met  
                          | • ASCE 24, Sections 4.5.5 and 4.5.6                                                 |
| Piers, posts, columns   | • ASCE 24, Section 4.5.7                                                             
                          | • If elevating on existing spread, mat, or raft foundation, the requirements differ   |
Foundation Design: A Zones, V Zones, and Coastal A Zones

- Where portions of existing foundation will be used:
  - Verify that existing foundation elements are able to resist design loads and conditions
  - Apply design loads to existing and new portions of foundation

- Where existing foundation will be removed and replaced with new foundation:
  - ASCE 24 applies to entire foundation as well as to connection of existing structure to new foundation

- When structure is being (retrofit) elevated, ASCE 24 load provisions do not apply to the superstructure
Enclosures Below the DFE

A Zones

▪ Space used for parking, access, storage
▪ Will affect the insurance premium
▪ Requirements for number, size, location, and spacing of openings in walls
▪ Breakaway walls must have openings

V Zones and Coastal A Zone

▪ Space used for parking, access, storage
▪ No size restrictions, but size may affect insurance premium
▪ Breakaway walls must fail in base flood or lesser conditions
▪ Breakaway walls in Coastal A Zone that form an enclosure must have openings (in ASCE 24 this also applies to V Zones)
Enclosures Below the DFE

A Zones

V Zones

Source: FEMA 765
FEMA Technical Bulletin Guidance on Enclosures

Requirements for Flood Openings in Foundation Walls and Walls of Enclosures
Below Elevated Buildings in Special Flood Hazard Areas
in Accordance with the National Flood Insurance Program
NFIP Technical Bulletin 1 / March 2020

Free-of-Obstruction Requirements
For Buildings Located in Coastal High Hazard Areas
in Accordance with the National Flood Insurance Program
NFIP Technical Bulletin 5 / March 2020

Design and Construction Guidance for Breakaway Walls
Below Elevated Buildings Located in Coastal High Hazard Areas in accordance with the National Flood Insurance Program
Technical Bulletin 9 / August 2008
Building Materials: A Zones

- Portions of the building below the minimum elevation specified by ASCE 24 must be constructed of flood-damage-resistant materials.

- Materials must resist:
  - Damage
  - Corrosion
  - Deterioration
  - Decay
  - Flood-related and other loads (except breakaway walls)

- ASCE 24 has additional requirements beyond those in FEMA TB 2.

- Key difference between A Zone and V Zone / Coastal A Zone requirements for building materials is **minimum elevation**
Utilities: A Zones, V Zones, Coastal A Zones

- Must be:
  - Elevated above minimum elevations specified in ASCE 24
  - Anchored to resist damage from wind and flood loads

- Utility systems include (but are not limited to):
  - Electrical service, plumbing, mechanical systems
  - Heating, ventilation, and air-conditioning (HVAC) systems
  - Elevators

- **Key difference** between A Zone and V Zone / Coastal A Zone:
  - Minimum elevation
  - V Zone / Coastal A Zone requirement that utilities resist wave loads, erosion, and scour
## A Zone

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Adapted from CDBG-MIT Guidance
### Elevation Requirements: Materials and Utilities

#### V Zone and Coastal A Zone

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Adapted from CDBG-MIT Guidance
Elevation Example: Zone A

**Elevation**: The raising of an existing structure on fill or foundation elements, such as solid perimeter walls, piers, posts, columns, or pilings.

Note: Allowable solid foundation walls
Elevation Example: Zone V

Before

After

Note: Open foundation – piles or columns
Applying ASCE 24 Requirements to Elevation Projects

- Allowable foundation types and requirements will be dictated by the applicable flood zone.
- Foundation designed/constructed to resist floatation, collapse, or lateral movement under design loads (applies only to foundation).
- If existing foundation is used then the design needs to verify that the used portions of the foundation will meet ASCE 24 requirements – this could be impacted based on flood zones.
- Foundation walls must include flood openings.
- All materials below the required elevation will need to meet NFIP Technical Bulletin 2.
- All utilities below the required elevation will need to be elevated or protected.
Applying ASCE 24 Requirements to Mitigation Reconstruction

**Definition:** Constructing a compliant building on the same site where an existing building has been partially or completely demolished or destroyed

- Must meet NFIP and CDBG-MIT general policy requirements
- Must be designed to meet all building code requirements applicable to the grant
- Eligible for assistance under the CDBG-MIT programs

If a CDBG-MIT grantee chooses to apply ASCE 7 and ASCE 24, the requirements *should be met in their entirety* as mitigation reconstruction qualifies as **new construction**
Using ASCE 24 with Non-Residential Mitigation Projects

- Applies to any non-residential buildings (e.g., commercial, government, critical actions) and non-residential portions of mixed-use buildings

- Mitigation options:
  - Dry Floodproofing
  - Retrofit Elevation
  - Reconstruction of a new building (Mitigation Reconstruction)

- Minimum elevation requirements are based on the building’s ASCE 24 Flood Design Class

- Prior to design determine whether the provisions in ASCE 24, State/Local Building Codes, or Local Floodplain Management Ordinances are more restrictive – this standard should be applied to each facet of the design (e.g. elevation, materials, foundation types).
How CDBG-MIT applies to Critical Actions

All Critical Actions, as defined at 24 CFR 55.2(b)(3), within the 500-year (0.2 percent annual chance) floodplain must be elevated or floodproofed (in accordance with the FEMA standards) to:

- The higher of the 500-year floodplain elevation or
- 3 feet above the 100-year floodplain elevation.

- If the 500-year floodplain is unavailable, and the Critical Action is in the 100-year floodplain, then the structure must be elevated or floodproofed at least 3 feet above the 100-year floodplain elevation.

Critical Actions are defined as an “activity for which even a slight chance of flooding would be too great, because such flooding might result in loss of life, injury to persons or damage to property.” For example, Critical Actions include hospitals, nursing homes, police stations, fire stations and principal utility lines.
How CDBG-MIT applies to Mixed Use

**Mixed-use building**: A building that has both residential and commercial uses.

- Nonresidential portions of mixed-use structures (no dwelling units and no residential uses) currently below the minimum elevation requirement (2 feet above Base Flood Elevation) must be elevated or floodproofed, in accordance with FEMA floodproofing standards at 44 CFR 60.3(c)(3)(ii) or successor standard, up to at least 2 feet above Base Flood Elevation.

- Residential sections of mixed-use structures below 2 feet above Base Flood Elevation must be elevated to at least +2BFE.
What is Dry Floodproofing?

**Dry floodproofing:** A combination of measures that results in a structure, including the attendant utilities and equipment, being watertight, with all elements substantially impermeable and with structural components having the capacity to resist flood loads.

**Note:** Dry floodproofing is not an allowable project type in High Risk Flood Hazard Areas, Coastal High Hazard Zones, and Coastal A Zones.
# Dry Floodproofing Minimum Elevation Requirements

## A Zone

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Adapted from CDBG-MIT Guidance
Applying ASCE 24 Requirements to Dry Floodproofing

- Must meet elevation requirements, flood zone restrictions, and flood velocity restrictions
- ASCE 24 materials requirements apply to all aspects of the protection
- A system that can render the floodproofed area “substantially impermeable” to floodwaters without the assistance of sump pumps
- Sump pumps shall provide a means to remove accumulated water
- Meet egress requirements of one exit door, window, or opening above the minimum elevation
- Meet flood warning time of 12 hours unless the community has a system with time for notification, travel time to site, installation time, and evacuation time.
- All removable covers and shields must meet flood load requirements
- Where shields and covers are used, have a flood emergency plan and approved by AHJ
Applying ASCE 24 Requirements to Dry Floodproofing

- Strict compliance with ASCE 24 can be difficult with existing structures. Dry floodproofing provisions should be applied as follows:
  - **Primarily Intended for:**
    - Nonresidential Buildings and nonresidential portions of mixed-use buildings
  - **Protection of Building Utility Systems:**
    - Utility lines/systems within the floodproofed area will be protected.
    - Utility lines/sanitary systems outside dry floodproofed area must be protected.
  - **Historic Residential Buildings** (currently occupied in a nonresidential capacity):
    - Adhere to ASCE 24 provisions as closely as possible without compromising historic designation of building.
ASCE 24 Applies to the Floodproofing Certificate

- Required by the NFIP and building codes for dry floodproofing projects
- Required for NFIP flood insurance
- It is now an “as-built” certification

- Required in Zone A for:
  - Non-residential structures
  - Portions of mixed-use buildings with all residential uses above the required level of protection
- Important for building owners to understand
- Requires compliance with ASCE 24
Considerations for Historic Structures
What Makes a Building Historic?

A. Consult the National Register of Historic Places and State Inventories of Historic Places
B. Meets one or more of National Register Criteria for Evaluation
C. Significance in American history, architecture, archaeology, engineering and culture
D. Maintains integrity of location, design, setting, materials, workmanship, feeling and association

- Criteria (36 CFR Part 60) makes property eligible for NRHP listing:
Historic Structure Considerations

Effects on structures can be direct or indirect

- HUD encourages retention of historic integrity
- In some cases, the benefits of providing a higher level of protection outweigh some loss of historic integrity
- If historic integrity cannot be maintained, contact the grant administrator to understand possible restrictions and how to apply ASCE 24 as outlined in previously
Mitigation Considerations for Historic Properties

Consider these things when evaluating effects:

- Building height, scale, mass, and proportions
- Architectural character (design elements, features, materials)
- Building footprint, orientation, and location
- Landscape features
- Archaeology
- Site elevation and topography
- Adjoining historic properties/historic district

Guidelines on Flood Adaptation for Rehabilitating Historic Buildings
Benefits of using ASCE 24

- Reduced building and building contents damage during a base flood event
- A factor of safety if changes in the floodplain increase flood heights
- Reduced time out of the house
- Potential for reduced flood insurance premiums

- Communities who adopt and enforce ASCE 24 can be eligible for Community Rating System (CRS) Credits
Getting Access to ASCE 24

- Web Address -
  https://sp360.asce.org/PersonifyEbusiness/Merchandise/Product-
  Details/productId/233129242

- Purchased through the American Society of Civil Engineers
FEMA Resources

- FEMA NFIP Technical Bulletins

Flood Code Resources

- **CodeMaster for Flood Resistant Design**
  - 12-step procedure for determining loads for design
  - Based on IBC, IRC, ASCE 7 and ASCE 24
  - Includes illustrations
  - Steps through an example
  - ICC with FEMA support

CodeMasters can be purchased through the ICC Website
https://shop.iccsafe.org/
FEMA’s Guidance for Applying ASCE 24

- Different from the actual ASCE 24 Standard (You should have both for project oversight)
- Ensures that each project meets FEMA’s HMA requirements which includes adhering to project-related design standards
- Supports integration of ASCE 24 as the minimum standard for flood-related HMA projects

For CDBG-MIT projects, note that the elevation requirements are potentially more restrictive
Summary and Resources

Roosevelt Grant, FEMA
Value of ASCE 24: Meeting CDBG-MIT’s Goals

- **HUD Goal 1:** Support data-informed investments, focusing on repetitive loss of property and critical infrastructure
  - ASCE-24 a consensus standard for flood construction for new construction, repair of substantial damage, or substantial improvement

- **HUD Goal 2:** Build capacity to comprehensively analyze disaster risks and update hazard mitigation plans
  - Grantees are encouraged to use the best available data (e.g. ABFE’s) to assess their flood risk

- **HUD Goal 3:** Support the adoption of policies that reflect local and regional priorities that will have long-lasting effects on community risk reduction, including risk reduction to community lifelines and decreasing future disaster costs
  - Use of ASCE 24 can help reduce future disaster costs, reduce building occupant displacement, and protect community lifelines (e.g. critical actions)

- **HUD Goal 4:** Maximize the impact of funds by encouraging leverage, private/public partnerships, and coordination w/other federal dollars
  - ASCE 24 as a “standard of practice” provides partners confidence in the long-term resiliency for their investment
HUD CDBG-MIT Resources

• Community Development Block Grant Mitigation Program: https://www.hudexchange.info/programs/cdbg-mit/


Questions?

**HUD CDBG-MIT Guidance Questions**

**HUD Policy Unit**

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**FEMA Flood/Wind Building Science Helpline**

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