1. Project Introduction
2. Project Methodology
3. Common and Critical Deficiencies
   - Architecture
   - Building Systems
   - Egress
4. Conclusion
Project Introduction
Overview

• 34 houses reviewed
  - 2 to 4-hour site visits

• Systems reviewed:
  - Architecture
  - Structure
  - Mechanical, Electrical, Plumbing, Fire Protection
  - Life Safety / Egress

• Summary reports

• Meetings with house representatives
Project Methodology
The scope of the facility condition assessments included:
- Code compliance assessment
- Systems condition assessment
- Documentation of deficiencies and recommendations
- Order-of-magnitude cost estimates

Arup visually evaluated the conditions of the building structure, shell, interior, and services.

Building deficiencies were categorized based on the recommended time frame to take action.
# Priority Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Due Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>Due within 12 months</td>
<td>These recommendations are limited to immediate life safety risks or deficiencies that could cause major disruption to the use/function of the building and should be addressed as soon as possible.</td>
</tr>
<tr>
<td>Category 2</td>
<td>Due within 5 years</td>
<td>These recommendations include moderate deficiencies that could cause disruption to the use/function of the building and should be addressed within 5 years. <strong>Readily achievable items should be addressed as soon as possible.</strong></td>
</tr>
<tr>
<td>Category 3</td>
<td>Due within 10 years</td>
<td>These recommendations include deficiencies that should be addressed but are not considered to require immediate action and may require long term planning and investment. <strong>Readily achievable items should be addressed as soon as possible.</strong></td>
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</tbody>
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Applicable Codes

• Arup utilized the current edition of the MA Building Code to develop recommendations across all FSILG houses.

• NFPA 101, *Life Safety Code* is a nationally recognized code and was used as a reference for existing building requirements.

• The assessments include all code deficiencies, however, many deficiencies may require compliance only when major repairs or renovations occur.
Assessment Findings
Assessment Overview

• The overall conditions of the buildings vary.
• It is the nature of buildings of this age and occupancy type to require increased upkeep.
• There were many great examples of proactive building maintenance and improvements.
• Common themes:
  - Egress
  - System maintenance
  - Exterior building conditions
  - Housekeeping
Architectural issues include:
- Exterior façade
- Windows/skylights
- Exterior doors/door hardware
- Roof and/or roof decking

Routine inspection and repair plans should be developed.

Limited instances of immediate structural concerns (less than 10% of houses).
Building Systems

- Electrical
  - Exposed wiring
  - Emergency lighting

- Fire Alarm
  - Audio/visual coverage
  - System smoke detectors in sleeping areas

- Fire Protection
  - Painted, corroded, and taped sprinklers
  - Inadequate coverage
  - Residential sprinklers
Building Systems

- Mechanical
  - Equipment life expectancy
  - Restroom ventilation
  - Occupant comfort
- Plumbing
  - Age of fixtures
  - Pipe insulation
- Interior finishes
  - Cosmetic issues
Egress

• Remove storage from stairways to avoid fire spread into egress path.
  - Example: storage closets in stairs

• Installing door closers on bedroom doors will help compartmentalize the building and keep egress paths clear.
  - Combination door closer/door hold-open devices
Hazards in Means of Egress
Number of Exits

• The MA Building Code requires each floor to have two exits and for the stairways to be properly enclosed and separated from each other.

• Due to impracticality of installing fully compliant stairways, Arup developed strategies that could be used as a potential basis for a compliance alternative.
Fire Escapes

- Floors with access to only one stair or exit could use a fire escape as a second means of egress.
- Stairs and fire escapes should discharge onto a public way to be considered an exit.
- Observed issues include:
  - Fire escape balconies
  - Fire escapes that do not discharge to grade
Stairways

• Efforts should be made to enclose stairways to prevent fire spread and maintain a safe egress path.
  - Fire rated doors
  - Draftstop curtain

• Many stairs do not contain compliant railings and guards.
Conclusions
Conclusions

• Based on current codes and best practices, improvements are possible in all evaluated houses

• Some houses have immediate life safety concerns
  - Hazards in means of egress
  - Number of exits
  - Access to exits
  - Exit discharge
Other Considerations

• Each house should:
  - regularly inspect and maintain systems in accordance with applicable codes and best practices.
  - manage general housekeeping practices to limit combustible materials in egress paths.

• Renovations could trigger the requirement to upgrade building/life safety systems and accessibility features.
In Closing

• Assessment recommendations are based on current industry best practices.

• In general, the building code is not retroactive.
  - Building official can identify hazards and force corrections at any time.

• Registered design professionals and/or licensed contractors should be engaged for repairs and renovations.

• In many cases, alternate means and methods may need to be considered in consultation with the authority having jurisdiction due to age, space limitations, historic considerations, etc.