

RIHousing

National Housing Trust Fund Rehabilitation Standards

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I. PURPOSE OF STANDARDS

- A. The National Housing Trust Fund Rehabilitation Standards (known herein as the “HTF Standards”) are designed to outline the requirements for building rehabilitation for all RIHousing National Housing Trust Fund (HTF) funded multi-family housing projects. The HTF Standards are applicable to all RIHousing HTF-funded rehabilitation projects. The HTF Standards, though a requirement specifically to the development entity in direct receipt of RIHousing HTF funding, are written to provide guidance to all relevant members of a project development team.
- B. The goal of the RIHousing HTF program is to provide functional, safe, affordable and durable housing that meets the needs of the tenants and communities in which the housing is located. The purpose of the HTF Standards is to ensure that property rehabilitation puts each building in the best possible position to meet this goal over its extended life and that, at a minimum, all health and safety deficiencies are addressed.
- C. If a project is out of compliance with the HTF Standards, the grantee shall bring to the attention of RIHousing staff the specific portion of the project that does not comply, stating the reasons for non-compliance. RIHousing staff will make a determination as to whether an exception to the HTF Standards shall be granted.

Note: At the time of publication and adoption of the HTF Standards, the adopted codes referenced are those currently in force. As standards and codes change and are put into effect by the governing authorities having jurisdiction, the new standards and codes will apply in lieu of those referenced.

II. ADDITIONAL STANDARDS

- A. Standards: In addition to the requirement that developers utilizing National Housing Trust Fund funding must conform to these HTF Standards, developments must also conform to Rhode Island Housing’s Guidelines for Development (“RIH Guidelines”). **Where conflicts exist between these HTF standards and the RIH Guidelines, the most stringent standards shall apply.** The HTF

Standards and the RIH Guidelines include the following:

1. The Housing Trust Fund Standards (HTF Standards) include three guidance documents:
 - a. **These HTF Standards**
 - b. **Exhibit A:** The Property Maintenance Code Inspection Form, also known as the “Inspectable Items and Observable Deficiencies form”.
 - i. Exhibit A is designed to exceed the Rhode Island Property Maintenance Code SBC-8-2013 and the Uniform Physical Condition Standards (UPCS). The form, also called the “Inspectable Items and Observable Deficiencies form”, includes descriptions of the types and degrees of deficiency for each item that any HTF-assisted project must address, at a minimum. Deficiency categories are: minor (Level 1), major (Level 2) or severe (Level 3). If the housing is occupied at the time of construction or rehabilitation, any life-threatening deficiencies must be identified and addressed immediately, per the instructions noted in Exhibit A. All other deficiencies found using Exhibit A will need to be addressed in the project’s scope of work per coordinated review with RIHousing staff.

- c. **Exhibit B:** The Capital Needs Assessment (CNA) Guidance.
 - i. Exhibit B is a tool for housing developers to plan for the long-term physical health of the affordable housing properties constructed or rehabilitated using HTF funding. The completion of a Capital Needs Assessment is critical to determining the scope of work, and thus in determining the project's capital expenses (Section V of these Standards). Further, the CNA is critical to determining the expected useful life of all building systems, and thus in determining the needed replacement reserves for maintenance expenses (Section VI of these Standards).
2. The RIHousing Guidelines for Development (RIH Guidelines) documentation is available online at <http://www.rhodeislandhousing.org/sp.cfm?pageid=570#anchor1>.
 - a. Link note: Select Section 3: Guidelines for Development (PDF) on the webpage referenced above.
 - b. The remaining sections of the HTF Standards will reference the parts and page numbers of the Guidelines for Development (**see red text throughout this document on cross-referencing directions**). **Please note** that the RIH Guidelines are updated annually and page number references are representative only of the Guidelines in effect for the current year. For this version of the HTF Rehab Standards, the **2017 Guidelines for Development** are in effect, available on the RIHousing website, see link above.
- B. The implementation of the most stringent standards to the design and construction of the housing rehabilitation (Section II.A above) is the responsibility of both the developer and RIHousing:
 1. Developers are required to use both these HTF Standards, Exhibit A and Exhibit B of these HTF Standards, and the RIH Guidelines, as guides in developing construction documentation (in coordination with architects and engineers) to be included in project applications.
 2. RIHousing Design and Construction staff will review construction documents (required of HTF grantees to complete per § 93.301(a)(2)(iv) and § 93.301(b)(2) of HTF Regulations) to make sure that the most stringent standards have been applied to all design, construction and health & safety components of the project. The Design and Construction staff will use these HTF Standards to check the standards against the referenced sections of the RIH Guidelines. The analysis of most stringent standards application will occur at the following project timeframe milestones:
 - a. The Scope and Cost Review process during the application review period;
 - b. Construction contract documents review process between preliminary award and funding commitment;
 - c. And all phases of inspection (required prior to processing funding requisitions, upon unit occupancy, etc.)

III. QUALITY OF WORK

- A. Grantees and developers shall ensure that all rehabilitation work is completed in a thorough and workmanlike manner in accordance with:

1. Industry practice and contractually agreed upon plans and specifications (**cross-reference with Part 2, Section 2 of RIH Guidelines, page 14 to 20**) and
 2. Mutually agreed upon change orders during the construction process (**cross-reference with Part 2, Section 5 of RIH Guidelines, parts A.B and A.I, pages 53 & 54**). Grantees and developers will employ best practice industry standards relating to quality assurance to verify all work completed.
- B. Project Design Professionals
1. Projects will be designed by licensed professional per the Rhode Island Rules and Regulations for Design Professionals (<http://www.bdp.state.ri.us/>). All architects, engineers and design professionals shall be registered and/or licensed in the State of Rhode Island.
 2. It is the responsibility of each licensed professional to ensure that the scope of work is completed in accordance with the generally accepted practices in their discipline, as well as designing the project to be in full conformance with all the applicable Federal, State and local codes. (See Section IV below for Code Compliance and Section V below for Scope of Work determination.)
 3. In addition, the architect or engineer will provide contract specifications that stipulate quality standards, materials choices and installation methods and standards. Such specifications may reference other appropriate standards set by different trades associations and testing agencies such as ASTM, Underwriters Laboratory (U/L), Tile Council of America, Gypsum National Roofing Contractors Association (NRCA) Architectural Woodwork Institute, SMACNA, AFME, etc.
- C. By meeting the various code requirements as a minimum standard (see Section IV below), together with the other standards herein or in attendant RIHousing policies, each building rehabilitation project is assured to be brought up to an acceptable level of rehabilitation.
- D. Warranties shall be required per the standard construction contracts on all materials, equipment and workmanship.

IV. CODE COMPLIANCE & HEALTH AND SAFETY

- A. All work shall comply with all applicable Rhode Island State and local codes, ordinances, and zoning requirements (**cross-referenced in introduction to Part II of RIH Guidelines, page 11**). Key currently updated Rhode Island State Building & Fire Code Regulations are located at: <http://sos.ri.gov/divisions/Open-Government/State/building-and-fire-codes>.
- Applicable state codes include but are not limited to:
1. Rhode Island Building Code SBC-1-2013
 2. Rhode Island One and Two Family Dwelling Code SBC-2-2013
 3. Rhode Island Plumbing Code SBC 3-2013
 4. Rhode Island Mechanical Code SBC-4-2013
 5. Rhode Island Electrical Code SBC-5-2013
 6. Rhode Island Property Maintenance Code SBC-6-2013
 7. Rhode Island Energy Conservation Code SBC-8-2013

8. Enforcement and Implementation Procedures for Projects Under the Jurisdiction of the State of Rhode Island SBC-9
 9. Code Interpretations SBC-10
 10. Public Building Accessibility Meeting Standards SBC-17
 11. Fuel Gas Code SBC-19-2013
 12. Rhode Island Rehabilitation Building and Fire Code for Existing Buildings and Structures SRC-1-202
 13. Rhode Island Fire Safety Code, 2013
 14. NFPA 1, Fire Code, 2012
 15. NFPA 101, Life Safety Code, 2012
 16. NFPA 72, National Fire Alarm and Signaling Code, 2010 edition
 17. NFPA 13, Installation of Sprinkler Systems, 2010 edition
 18. NFPA 720, Installation of Carbon Monoxide Detection and Warning Equipment, 2012 edition
- B. Please note that the RIHousing HTF grantee/developer must demonstrate compliance with all state and local codes through project affiliation with professional design team drawing certifications (e.g. architectural design stamp) and/or other approved methods such as state inspector certification.
- C. A code review analysis will be produced by the project's design professionals itemizing the applicable codes for each area of discipline.

V. SCOPE OF WORK DETERMINATION

- A. In developing scopes of work, grantees and developers will work with RIHousing to ensure that all requirements are satisfied under these HTF Standards (and its exhibits) and RIH Guidelines, and that the proposed scope of work meets the goals of Part I above.
- B. RIHousing approval of all scopes of work is required in accordance with RIHousing standard practice as outlined in RIHousing Policy & Procedures for Project Underwriting (see pages 2 thru 10 of RIH Guidelines).
- C. While it is required that a project application include a preliminary scope of work, RIHousing staff will review and propose revisions to the scope of work between the preliminary award of HTF funds and the commitment of HTF funds to a project.

VI. EXPECTED USEFUL LIFE / REHABILITATION SCOPE & CAPITAL PLANNING

- A. In developing scopes of work on housing rehabilitation projects, RIHousing HTF grantees and developers will consider the remaining expected useful life of all building components with regard to building long-term sustainability and performance. Specifically, each building component with a remaining expected useful life of less than the applicable HTF period of affordability (30 years) shall be considered for replacement, repair or otherwise updated. Additionally, new building components with an expected useful life of less than 30 years shall be considered for future replacement (for entire expected useful life requirements, see Exhibit B, Appendix II).

- B. The industry standard period for CNAs is 20 years; however, project CNAs must be updated every five years during the life of the project to ensure projected capital needs through the 30-year HTF affordability period are anticipated and planned for. The initial CNA will cover years 1-20. The first 5-year update will be done in year 5 and cover years 6-25. The second 5-year update will be done in year 10 and will cover years 11-30.
- C. Once a scope of work has been developed by the grantee and their development team, the grantee must also develop a capital plan in compliance with RIHousing policy on Capital Needs Assessments. Whether or not a particular building component has been replaced, repaired or otherwise updated as part of the rehabilitation scope of work, all building components and major systems must demonstrate adequate replacement reserves funding to be viable for at least 20 years (the length of the capital plan), with subsequent updates every five years during the 30-year affordability period.
- Example #1: Kitchen cabinets with a remaining useful life of 8 years may be permitted to remain in place and not included in the rehabilitation scope. However, adequate funding shall be demonstrated in the building capital plan to replace those cabinets in year 8 of the post-rehabilitation capital plan.
 - Example #2: If a building component such as a new roof is installed during the rehabilitation and this roof has an expected useful life of 25 years, it will not show up on the initial CNA as needing replacement during that 20-year period. However, since RIHousing requires updates of CNA's to be performed every 5 years, it will show up on the next 20-year CNA which will be performed in year 5 of the project and cover years 6-25. During these 5-year CNA updates, the project reserve contributions will be reviewed to ensure all future capital expenditures articulated in the CNA are adequately funded through the 30-year affordability period.
- D. Monthly replacement reserves contributions of at least \$25 per unit per month (pum) are required through the 30-year affordability period. If the initial 20-year CNA and capital plan (and/or any subsequent 5-year updates) indicate that replacement costs for the period exceed the amount generated by a \$25 pum contribution, a higher pum contribution will be required.
- E. Grantees and their development teams should ensure that all building components are analyzed as part of a comprehensive effort to balance rehabilitation scope and capital planning in a way that maximizes long-term building performance as much as possible within the parameters of both development and projected operational funding available.

VII. ENERGY EFFICIENCY

- A. All RIHousing HTF-funded projects shall be subject to the RIHousing "Policy on Sustainability and Water Conservation in Multifamily Residential Properties." Contained within this policy are as follows and can be found in detail in Section VII-C below. As outlined in those standards, all projects will either achieve the target energy efficiency objectives of the standard or present RIHousing with an operational case for project sustainability pursuant to the financial structure of the project ([cross-reference with RIH Guidelines, Division 1, General Requirements, Part B., page 23](#)).

- B. In both the design and implementation of project rehabilitation scopes of work, particular emphasis should be made to maximize the effectiveness of the energy efficiency related work scopes ([cross-reference with RIH Guidelines page 23](#)).
- C. **Sustainability and Water Conservation Standards:** Building healthy buildings requires a systematic approach to building planning. All the choices we make in our designs and specifications affect other choices in the system. RIHousing cannot list all the factors in building healthy homes in one place in a specification. Each application will be assessed according to the degree to which each development team succeeds in designing healthier and more sustainable developments ([cross-reference with RIH Guidelines for Development, Division 1, General Requirements, Part B. on page 23](#)).
- All buildings must be designed to meet RI Energy Conservation Code SBC-8-2013.
 - New construction multi-family homes financed through RIHousing are encouraged to achieve Energy Star Certification under the last iteration of the guidelines, Version 3.1 revision 8. At a minimum, all new construction homes are required to meet National Grid's Rhode Island Residential New Construction Tier 2 Program Requirements.
 - All completely rehabilitated buildings must be compliant with National Grid's Rhode Island Residential New Construction Code Plus, Tier 1 or Tier 2 Requirements. RIHousing strongly encourages all developments to meet the highest energy retrofit program requirements that their financing will allow.
 - Energy Star Program Rebates at development completion for building, lighting and appliances are required. Anticipated Energy Star Rebates and NGRID rebates are to be included as a capital source in the development budget.
 - All Moderate Rehabilitated Buildings are encouraged to seek energy efficiency program incentives and rebates from N-Grid when upgrading boilers, lighting, insulation, air sealing and appliances.
 - Promote Healthy Home / Asthma free design by thoroughly ventilating a building prior to occupancy.
 - Owners that intend to design their developments to LEED or similar sustainable standards must demonstrate that their projects are cost effective and must seek non-federal or state funding for all third party verifications and commissioning.
 - Building team approach. (Partnering with the owner, architect, contractor and RIHousing throughout the design phase)
 - Design basement spaces to be dry and conditioned to minimize mold and mildew. Discourage the use of unnecessary drywall in basement areas.
 - Building design to meet Rhode Island climate.
 - Provide adequate space for comprehensive trash recycling.
 - All newly installed plumbing fixtures shall meet the current published EPA Water Sense standards.
 - Properties with site irrigation systems shall be equipped with time clocks, rain sensors, abatement meters and drip systems at plantings.

VIII. DISASTER MITIGATION (No Cross-Reference in RIH Guidelines)

- A. To the extent applicable/relevant, the housing must be improved to mitigate the potential impact of potential disasters (e.g. earthquakes, hurricanes, floods, wildfires) in accordance with state or local codes, ordinances, and requirements, or such other requirements that HUD may establish.
- B. Specifically regarding flood hazards, the most relevant potential natural disaster for the State of Rhode Island:
 - 1. Projects shall meet FEMA federal regulation, and HUDs' floodplain management requirements at 24 CFR 55, including the 8-Step Floodplain Management Process (when applicable) at 24 CFR 55.20.
 - 2. Projects shall meet fluvial erosion prevention requirements per local municipality regulations.

IX. BIDDING AND PROJECT MANAGEMENT (Cross-Reference with RIH Guidelines, Section 1. Design and Construction, Underwriting Guidelines and Timeframe, pages 3 & 14).

All projects will be bid in accordance with the RIHousing procurement policy, which applies to all RIHousing HTF-funded projects. Grantees and developers will submit a project management plan with their application that will outline how the project will be managed (e.g. General Contractor (GC) competitive bid process using an AIA A101 Stipulated Sum Agreement or General Contractor (GC) open book, negotiated bid process using AIA A102 COST PLUS FEE with GMP agreement). Any changes to project management operational structure that substantially varies from the plan provided to RIHousing at the time the HTF funding is awarded requires prior notification to RIHousing HTF staff.

X. PROJECT ARCHITECTURAL REHABILITATION DESIGN STANDARDS

- A. **BUILDING OCCUPANCY & CONSTRUCTION TYPE (No Cross-Reference in RIH Guidelines)**
 - 1. Fire resistance rating separation requirements per code
 - 2. Shall comply with Rhode Island Fire Safety Code, 2013, NFPA 1, 2012 and NFPA 1012012
- B. **HISTORIC BUILDINGS (No Cross-Reference in RIH Guidelines)**
 - 1. Shall comply with NFPA 1012012
 - 2. Shall comply with RI SBC -1-2013 & SBC-2-2013
 - 3. Historic buildings shall be rehabilitated in a manner consistent with the requirements of Section 106 of the National Historic Preservation Act and the Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitation of Historic Buildings. In addition, all scopes of work shall be reviewed and approved by the Rhode Island Preservation & Heritage Commission Office.
- C. **ACCESSIBILITY REQUIREMENTS (Cross-Reference with standards found at RIH Guidelines, Section 1, Part F, pages 25 and 26).**
 - 1. Housing that is rehabilitated with HTF funds must meet all applicable federal and state regulations regarding accessibility for persons with disabilities. An overview of these requirements is provided below; however, the applicability of these rules is complex and

therefore it is recommended that developers seeking HTF funds consult with a qualified design professional.

2. General Requirements:
 - a. Projects shall meet applicable Federal and State Regulations and Rules
 - b. The number of accessible apartment units shall be determined by the code requirements
 - c. Projects shall comply with the American's with Disabilities Act (ADA), Title II (for public entities) and Title III (for places of public accommodations) implemented at 24 CFR parts 35 and 36, and 2010 ADA Standard for Accessible Design and attendant Design Guide (DOJ), as applicable
 - d. Projects, if applicable, shall comply with the Fair Housing Act, which states in part that covered multifamily dwellings as defined by HUD's implementing regulations at 24 CFR 100.201 must meet the design requirements at 24 CFR 100.205
 - e. Projects shall comply with the accessibility standards in the Rhode Island State Building Code SBC-1-2013.
 - f. Projects shall comply with the Rhode Island Public Buildings Accessibility Meeting Standards SBC-17.
 3. Projects shall comply with other standards as may apply or be required by funding sources (i.e. HOME Investment Partnerships Program)
 4. Projects, if applicable, shall comply with Section 504 of the Rehabilitation Act of 1973 implemented at 24 CFR Part 8
 - a. For "substantial" rehabilitation (projects with 15 or more total units and the cost of rehabilitation is 75% or more of the replacement cost):
 - i. At least 5% of the units (1 minimum) must be made fully accessible for persons with mobility impairments based on the Uniform Federal Accessibility Standards (UFAS)
 - ii. In addition, at least 2% of the units (1 additional unit minimum) must be made accessible for persons with sensory impairments.
 - iii. Common spaces must be made accessible to the greatest extent feasible
 - b. For projects with "less-than-substantial" rehabilitation (anything less than "substantial"), the project must be made accessible to the greatest extent feasible until 5% of the units are physically accessible, and common spaces should be made accessible as much as possible.
- D. **BUILDING DESIGN** (Cross-reference with RIH Guidelines Section 3, Division 1 General Requirements [pages 22 thru 27] and Section 6 Additional Recommended Practices [pages 64 thru 66])
1. The project developers are encouraged to draft an architectural program document outlining the goals for the project.
 2. Building access – in general the access to a building shall be safe, logical, readily identifiable, sheltered from the weather, and meeting the exit requirements to a public way. Pathways of circulation within a building shall also be safe and logical.
 3. Means of egress components shall be in conformance with Rhode Island Fire Safety Code, 2013 and NFPA 101, 2012 including complete layout of the exits, corridor and stair dimensional requirements and arrangement, doors sizes and swings, door hardware, panic exit devices, door

self-closers, interior finishes, walking surfaces, fire separations, stair enclosures, guards and railings, ramps, occupant load calculations, illumination, and signage.

4. Apartment layout:
 - a. Room sizes –minimum in accordance with RI SBC-1-2013 & RI SBC-2-2013.
 - b. Interior environment shall comply with RI SBC-1-2013 & RI SBC-2-2013. Note: Sections of IBC Chapter 12 not specifically adopted by State of Rhode Island are to be used as a design guideline parameter.
 - c. Kitchens – in general, for apartment buildings – each unit will have a functional and code-compliant kitchen
 - i. SRO's and other special housing types may be an exception
 - d. Baths – in general, for apartment buildings – each unit will have a functional and code compliant bath in accordance with RI SBC-1-2013 & RI SBC-2-2013
 - i. SRO's and other special housing types may be an exception
5. Storage – adequate clothes closets, pantry and general storage shall be provided.
6. Amenity Spaces - provision for laundry facilities, bike storage, trash & recycling, and other utility or common spaces may be made in accordance with the goals of the project program. The project developers are encouraged to consider adding such amenities as may be appropriate to enhance the livability of the housing for the tenants.
7. Solid Waste Disposal – provision shall be made to enable the tenants and property management staff to handle and store solid waste and recycling plan approved by RIHousing.
8. Existing outbuildings and utility structures which are being retained, shall be in sound and serviceable condition, and not create health, safety, or undue maintenance issues for the project.

XI. REHABILITATION CONSTRUCTION STANDARDS

A. SITE (Cross-reference with RIH Guidelines Section 3, Division 2 [pages 27 thru 29])

1. General:
 - a. Assure that the site is safe, clean and usable, and designed with details, assemblies and materials to provide ongoing durability without undue future maintenance.
 - b. Site design and engineering shall be by a licensed professional civil engineer, or other qualified professional.
 - c. Design and systems shall conform to all applicable codes, rules and regulations:
 - i. Local and municipal zoning
 - ii. 2013 Rhode Island Fire and Building Code or current adopted
 - d. A Project Review Sheet shall be submitted to the Rhode Island Department of Environmental Management (RIDEM) to determine other permit requirements related to site design and construction:
 - i. Sewer and Septic – Rhode Island Waste Water System and Potable Water Supply Rules – RIDEM permit
 - ii. Domestic Water - Rhode Island Waste Water System and Potable Water Supply Rules - RIDEM permit.

- iii. Storm Water Permits relating to erosion control and storm water management and discharge RIDEM permit.
 - iv. Hazardous Waste Site Remediation RIDEM permits.
 - v. Access to State Highways – RI Department of Transportation (RIDOT) rules and regulations as may be required
 - vi. RIDOT Physical Alteration permits.
 - vii. Wetlands – Review with State Water Quality Division permit.
 - viii. RI Coastal Resources permits
2. Sprinkler water service – Underground water service as required for building sprinkler system shall be in accordance with NFPA 24.
3. Drainage – assure that the grading surrounding the building will slope away from the building and drain properly, without ponding or erosion.
4. Sewer connections to municipal sewage systems and on-site waste water treatment system:
 - a. Existing sewer laterals that are to be reused should be evaluated to assure that they are serviceable and have a remaining useful life of 30 years, or are covered by the 20-year capital plan and/or subsequent 5- year updates during the 30-year affordability period.
 - b. New systems designed to conform to the State “Wastewater System & Potable Water Supply Rules” RIDEM permit) regulations.
5. Water service:
 - a. Existing municipal water supplies to buildings shall be evaluated to assure that they are serviceable, of adequate capacity and have a remaining useful life of 30 years, or are covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period.
 - b. Required new systems shall be designed to conform to the State “Wastewater System & Potable Water Supply Rules” RIDEM permit) regulations, and the American Waterworks Association (AWWA) guidelines.
6. Vehicular access to public way – site design shall conform to local zoning and RI Department of Transportation regulations, as well as be sensible in its layout to maximize vehicular and pedestrian safety.
7. On-site Parking – parking shall be adequate for project type, meet local codes, and be designed to drain well, with a durable appropriate surface material. Handicapped parking shall be provided as required. Designers may utilize Institute of Transportation Engineers (ITE) guidelines in the design.
8. Pedestrian access and hardscape – In general, paved walkways within the site will be designed to provide sensible pedestrian access from the public way into the site, from parking areas, and provide access to buildings. All walkways should generally conform to applicable codes for width and slopes, and fall protection. Site stairs shall be safe and sound, constructed of durable materials, with proper rise and run, and with code approved railings as required. Accessible routes into buildings shall be provided as required by code.

9. Site amenities – site amenities may be provided which enhance the livability of the project including playground areas, seating, benches, patio areas, picnic tables, bike racks, grills, and fencing, etc.
 10. Mailboxes - Provision will be made for USPS-approved cluster mailbox units if required by the USPS.
 11. Landscaping – lawns, ground cover, planting beds, perennial plants, shrubs and trees may be provided to enhance the livability, and to provide a positive aesthetic sense.
 - a. Planting choices specified should be low maintenance, non-invasive species, of an appropriate size and scale and located, when adjacent to building structures, with regard to their size at maturity.
 12. Solid waste collection & storage –Provision shall be made for the outdoor storage and collection of solid waste and recycling materials in receptacles (dumpsters, wheeled trash cans, totes). Enclosures with gates shall be provided and must be accessible as required by code.
 13. Site lighting with shielded fixtures may be provided to illuminate parking and pedestrian walkways, and will conform to local zoning.
 - a. Energy efficient lighting shall conform to current Energy Star Standards and the RHODE ISLAND HOUSING “Policy on Energy Efficiency & Water Conservation in Multi-family Residential Properties” (see section VII-C of these standards).
 14. Fuel Storage – On site outdoor placement and storage of fuels per applicable regulations and utility requirements.
 15. Underground or overhead utilities – as regulated by code and utility rules.
- B. FOUNDATIONS** (Cross-Reference with RIH Guidelines Section 3, Division 3 [page 29])
1. Existing foundations shall be examined by qualified professionals
 - a. Foundations to be adequately sized, free of broken components or deterioration which may compromise the load bearing structural integrity.
 - b. Design and implement structural reinforcements or reconstruction as necessary.
 2. Above-grade masonry unit block or brick shall be reasonably stable, plumb and sound with no missing units or voids.
 3. Pointing of mortar joints shall be specified as necessary to assure the continued integrity of the structural assembly.
 4. New below-grade structures to conform to RI SBC-1-2013 & RI SBC-2-2013 as appropriate.
 5. Basement floors:
 - a. Mechanical rooms - Provide sound concrete floors with raised housekeeping pads for equipment.
 - b. Tenant accessed utility spaces (storage, laundry rooms, etc.) – provide sound concrete floors.
 - c. Dead spaces
 - i. provide concrete rat slabs,
 - ii. where earthen floors are to remain, provide wear layer of peastone (or similar suitable material) over vapor barriers.

6. Moisture mitigation
 - a. Water and damproofing – where possible and as may be required by existing conditions of groundwater and storm-water intrusion into subsurface portions of buildings, provide waterproofing or damp proofing as appropriate.
 - b. Provide vapor barriers covered with a wear layer of pea-stone over earthen basement or crawl space floors to remain.
 - c. Ventilation of basements and crawl spaces per RI SBC-1-2013 & RI SBC-2-2013.
- C. MASONRY COMPONENTS** (Cross-Reference with RIH Guidelines Section 3, Division 4 [pages 29 & 30])
1. Buildings with masonry bearing walls shall be examined for their structural integrity. Existing masonry building components shall be examined to assure sound condition, and repaired as necessary to provide the load-bearing capacity, resistance to water penetration, and aesthetic quality to assure the assemblies will perform for the purpose intended. Masonry shall be plumb, and structurally sound.
 2. Repair or replace deteriorated portions or missing units. Brick veneer shall be sound, or repaired to be sound.
 3. Masonry mortar joints shall be sound, and free of loose or deteriorated mortar, with no voids. Pointing of mortar joints shall be specified as necessary to assure the continued integrity of the structural assembly, and prevent water intrusion.
 4. Historic masonry designated to remain shall be restored to sound serviceable condition, and in accordance with Section 106 of National Historic Preservation Act. Where masonry is considered historic, repairs will be carried out utilizing the Secretary of the Interior’s “Standards of Rehabilitation” (<https://www.nps.gov/tps/standards/rehabilitation.htm>) and related NPS Preservation Briefs for “Repointing Mortar Joints on Historic Masonry Buildings”
 5. Chimneys
 - a. Assure structural integrity, reconstruct, and point as necessary
 - b. If used for fuel heating appliances – provide lining as may be required by code and as prescribed by the heating appliance manufacturer.
- D. STRUCTURE** (Cross-Reference with RIH Guidelines Section 3, Division 1, Part G [page 26])
1. A qualified professional shall examine each building’s load-bearing structure, and assess its existing condition to determine suitability of continued use.
 2. In general, structure evaluation and design shall be in conformance with RI Building and Fire Code, current edition.
 - a. In most residential rehab projects where there is no change in use, it is not expected that the structure will be brought up to new construction standards.
 - b. Consideration shall be given if there are any proposed changes in use which would impact the historical loading.
 3. Deficiencies identified shall be addressed and repairs designed and specified as necessary to correct such conditions:
 - a. Repairs shall be made to any deteriorated load-bearing structural elements.
 - b. Reinforce, install supplemental or replace structural members determined not to be adequate for use.

E. **ENCLOSURE - SHELL** (Cross-reference with RIH Guidelines Section 3, Division 7, Parts B and C [pages 31 & 32])

1. Roofing

a. Existing

- i. Examine existing roofing and flashing systems to determine suitability for continued use. Continued life expectancy of existing roofing should be a minimum of 30 years, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period.
- ii. Repair existing roofing as required.
- iii. Existing historical slate roofs shall be repaired in accordance with the Secretary of the Interior's "Standards for Rehabilitation" project requirements if applicable (<https://www.nps.gov/tps/standards/rehabilitation.htm>).

b. New Roofing

- i. New roofing shall be installed where existing roofing does not meet requirements for continued use.
- ii. New roofing system components shall be compatible, and include - the nail base, the underlayment layer, ice & water shield self-adhesive membrane flashings, metal flashings and roofing.
 - Strip existing roofing and dispose of properly.
 - Examine exposed existing substrate for structural soundness
 - Install new roofing system per code and per NCRA trade practices, and manufacturer specifications.
 - Flashings – deteriorated flashings shall be replaced, and the weather proof integrity of the roof system shall be assured.

c. Ventilation

- i. Roof assemblies shall be properly ventilated in accordance with applicable code requirements, and appropriate building science detailing.

2. Exterior Finishes

a. Cladding

i. Wood Siding –

- Examine existing siding for soundness – shall be free of major cracks, rot, and other deterioration which may compromise its useful life and be suitable to hold exterior paint.
- Siding shall be free of gaps and holes and provide continuous weatherproof system.
- Repair or re-side as necessary to provide a weather resistant enclosure.
- Replace existing wood siding on historic buildings as necessary in accordance with the Secretary of the Interior's "Standards for Rehabilitation" project requirements.

ii. Masonry

- Masonry bearing walls and veneers shall be restored as necessary
 1. Refer to Section XI C – Masonry
 2. Refer also to Section XI F.2.b for insulation requirements

- ii. Shall meet code requirements for height of protective guards, or have supplemental guards installed.
 - c. Steps shall be safe and sound and meet applicable codes, with railings as necessary.
 - d. Historic porches designated to remain shall be restored to sound serviceable condition, and in accordance with the Secretary of the Interior's "Standards for Rehabilitation" project requirements.
 - e. All porch elements shall be able to withstand the weather elements to prevent premature deterioration.
- F. **ENCLOSURE – THERMAL** (Cross-Reference with RIH Guidelines Section 3, Division 7, Part A [page 31] & Part D.2 [pages 33 & 34])
- 1. Energy Efficiency - In general, most buildings will be rehabbed with a goal of increasing the thermal shell efficiency.
 - a. All RIHousing HTF funded projects shall be subject to the RIHousing "Policy on Sustainability and Water Conservation in Multifamily Residential Properties." Contained within this policy are as follows and can be found in detail in Section VII-C. As outlined in those standards all projects will either achieve the target energy efficiency objectives of the standards or present RIHousing with an operational case for project sustainability pursuant to the financial structure of the project.
 - b. In both the design and implementation of project rehabilitation scopes of work, particular emphasis should be made to maximize the effectiveness of the energy efficiency related work scopes.
 - 2. Insulation
 - a. Insulation levels shall conform to the RIHousing "Policy on Sustainability & Water Conservation in Multi-family Residential Properties" Contained within this policy are as follows and can be found in detail in section VII-C.
 - b. Masonry walls shall be insulated utilizing current building science detailing to ensure ongoing integrity of masonry systems.
 - 3. Air sealing – comply with the Rhode Island Multifamily Air Sealing Protocol (MASP) per the "RIHousing "Policy on Sustainability & Water Conservation in Multi-family Residential Properties". Contained within this policy are as follows and can be found in detail in section VII-C.
 - a. Attention must be paid to the air barrier of each building and should be well thought out, detailed, and carefully executed.
 - b. Blower door testing shall be performed to verify compliance and successful execution.
 - 4. Indoor air quality
 - a. In general, all thermal upgrades to a building will take into consideration indoor air quality and moisture control/mitigation, and apply the current state of the art building science in this regard. Treatment of existing stone, concrete or masonry basement walls and of existing basement earthen floors or uninsulated basement slabs will be taken into consideration with regard to the need for moisture mitigation.
 - 5. Ventilation
 - a. Venting of crawl spaces, attics and sloped ceilings shall be per code.

- b. See Section XI E.1.c of these HTF Standards for roof assembly ventilation.
- G. **ACOUSTICAL TREATMENTS** (Cross-Reference with RIH Guidelines Section 3, Division 7, Part D. Sound Insulation [pages 33 & 34])
- Dwelling units separated acoustically per RI SBC-1-2013 & RI SBC-2-2013 as a guideline minimum standard.
- H. **DOORS** (Cross-Reference with RIH Guidelines Section 3, Division 8, Part B [pages 36 & 37])
- 1. General
 - a. Doors to meet code requirements of Rhode Island Fire Safety Code, 2013 and NFPA 101, 2012
 - b. Meet egress requirements for dimensions, swing and clearances, and be accessibility compliant as required.
 - c. Be sound and secure.
 - d. New doors shall be installed per manufacturers' recommendations and standard trade practice standards.
 - e. Flash properly, and have shim spaces insulated.
 - f. Existing doors to remain should be examined and determined to be suitable for reuse with a remaining life after restoration of 30 years, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period.
 - i. Restore as required to provide useful life.
 - ii. Shall be tested and modified as necessary to operate properly.
 - iii. Install new weather stripping and sweeps to provide seal against weather elements and air infiltration.
 - iv. Historic doors designated to remain shall be restored to sound serviceable condition, and in accordance with the Secretary of the Interior's "Standards for Rehabilitation" project requirements.
 - 2. Apartment doors
 - Apartment unit entry doors shall be fire rated as required.
 - 3. Other doors – Access doors shall meet code requirements for fire rating.
 - 4. Door hardware shall operate properly, be secure and shall meet accessibility standards Rhode Island Fire Safety Code, 2013 and NFPA 101, 2012.
- I. **WINDOWS** (Cross-Reference with RIH Guidelines Section 3, Division 8, Part A [pages 35 & 36])
- 1. Windows shall be of legal egress size when required by code. In townhouse apartments, existing windows which are non-conforming egress size shall be reviewed and meet the RI SBC-1-2013, SBC-2-2013, Rhode Island Fire Safety Code, 2013 and NFPA 101, 2012
 - 2. Existing windows:
 - a. Existing windows to remain should be examined and determined to be suitable for reuse with a reasonable remaining life after restoration of 30 years without undue future maintenance, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period.

- b. Capable of providing adequate seal against air infiltration, weather elements, and be determined to be appropriately energy efficient in keeping with the overall energy efficiency strategy of the project.
 - c. Install new weather stripping to provide seal against weather elements and air infiltration.
 - d. Air seal shim spaces and window weight pockets if possible.
 - e. Restore and modify as required to provide useful life.
 - f. Shall be tested and modified as necessary to operate smoothly and properly per code.
 - g. Historic windows designated to remain shall be restored to sound serviceable condition, and in accordance with the Secretary of the Interior's "Standards for Rehabilitation" project requirements.
 - h. Hardware shall be intact and operational, or be replaced with new hardware as required
3. New Windows:
- a. Where existing windows do not meet the standards for egress, condition, and/or energy efficiency deemed appropriate to the project, they shall be replaced by new windows.
 - b. New windows shall be code compliant, and conform with the RIHousing "Policy on Sustainability & Water Conservation in Multi-family Residential Properties". Contained within this policy are as follows and can be found in detail in section VII-C.
 - c. Additionally, new window units should be tested assemblies meeting ASTM standards for water penetration & air leakage.
 - d. All windows shall be installed per manufacturer's installation guidelines and specifications, and shall incorporate appropriate detail, flashings, joint sealers, and air sealing techniques.
- J. **INTERIOR FINISHES** (Cross-reference with RIH Guidelines Section 3, Division 9, Parts A & B[pages 37 & 38])
1. In general, all interior finishes will be new and installed per manufacturer's recommendations and the standards of quality construction per trade practices and associations related to the particular product or trade.
 2. Rhode Island Fire Safety Code 2013, NFPA 101, 2012 (Reference also Chapter 8 of the RI SBC-1-2013).
 3. Walls & ceilings
 - a. Where existing finishes are proposed to remain, they will be determined to meet the standard of being sound, durable, lead-safe, and have a remaining useful life of no less than 30 years, or covered by the 20- year capital plan and/or subsequent 5-year updates during the 30-year affordability period.
 - b. Where existing finishes are proposed to remain as part of a fire rated assembly, the State Preservation & Heritage Commission Office shall assist in making a determination as to the suitability. Refer to codes as they pertain to archaic materials, and relevant NPS Preservation Briefs.
 4. Flooring
 - a. Existing wood flooring in good condition should be repaired, sanded and refinished.

- b. All new flooring materials (resilient flooring, wood flooring, laminate flooring, carpet, and/or ceramic tile) shall be installed over suitable substrates per manufacturer's specs and the trade association practices.
- 5. Trim - Wood trim and architectural woodwork
 - a. Existing trim shall be repaired and restored to usable condition, free of deterioration which compromises its use. Repair of historic woodwork & trims shall be in accordance with the Secretary of the Interior's "Standards for Rehabilitation" project requirements (<https://www.nps.gov/tps/standards/rehabilitation.htm>).
 - b. New wood trim shall be installed in a workmanlike manner. Reference may be made to AWI standards.
 - 6. Paint - In general, all interior ceiling, wall, and trim surfaces shall receive renewed coatings of paint (or other clear/stain) finishes. Painting shall be done in a workmanlike manner, and in accordance with the manufacturer's recommendations. All painting including preparation of existing surfaces shall be done in a lead-safe manner (See Section XI N.1.b).
- K. **SPECIALTIES** (Cross-Reference with RIH Guidelines Section 3, Division 10, [page 39])
- 1. Toilet accessories – each bath will have appropriate accessories such as towel bars, robe hooks, bath tissue holders, etc., installed and securely fastened in place. Accessories shall be located per accessibility requirements where necessary.
 - 2. Medicine cabinets and mirrors – install in each apartment bath as appropriate.
 - 3. Signage and identification – building signage shall be provided as appropriate:
 - a. Including building address 911 #'s, apartments' identification, building directory, exits, stairways, common and utility spaces, etc. shall be in conformance with Rhode Island Fire Safety Code, 2013, NFPA 101, 2012 Life Safety Code, and be accessibility compliant and 911 approved.
 - 4. Exit signage will be provided as required by code and be accessibility compliant as required.
 - 5. Fire protection specialties – provide fire extinguishers in buildings, and in apartments as required by code and/or by state or local fire marshal "AHJ". Locate as directed by AHJ.
 - 6. Shelving – provide durable, cleanable shelving for pantries, linen closets, clothes closets and other storage as appropriate, securely fastened in place.
- L. **EQUIPMENT** (Cross-Reference with RIH Guidelines Section 3, Division 11 [pages 39 & 40])
- 1. All new equipment to be ENERGY STAR® rated. Existing equipment to be retained and continued to be used shall be in serviceable condition with an expected useful life of 30 years, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30- year affordability period.
 - 2. Equipment shall conform to the RIHousing "Policy on Sustainability & Water Conservation in Multi-family Residential Properties". Contained within this policy are as follows and can be found in detail in section VII-C.
 - 3. Kitchen appliances –
 - a. provide new, full-size (30", 4 burner) stove and refrigerator in each apartment.

- b. Existing appliances to be reused shall be in good and serviceable condition.
 - c. Provide other appliances (such as microwaves) as may be appropriate to the project.
 - d. All appliances in accessible apartment units shall be accessibility compliant, and located in an arrangement providing required clear floor spaces.
4. Laundries –where adequate space is available and when appropriate to meet the project goals, washers and dryers may be provided in laundry rooms or in apartments.
- a. Heat pump dryers are encouraged where appropriate and readily available.
 - b. Where a project is served by natural gas, consideration of the use of natural gas dryers is encouraged. In projects not served by natural gas, propane fired dryers should be considered for cost of operation reasons where feasible and appropriate.
5. Solid waste handling – Provide trash and recycling receptacles as appropriate to enable the tenants and property management staff to handle and store solid waste in compliance with Rhode Island Resource Recovery Corporation’s Rules and Regulations. Playground: For all family oriented developments, the developer shall demonstrate that playground facilities are in reasonable proximity or shall incorporate a playground as part of the development.

M. FURNISHINGS - CASEWORK (Cross-Reference with RIH Guidelines Section 3, Division 12 [pages 40 & 41])

1. Kitchen cabinetry and counters
- a. Existing cabinetry and/or countertops proposed to remain shall be in good condition with a remaining useful life of 30 years, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period.
 - b. New cabinetry
 - i. High-pressure plastic laminate and/or wood exterior surfaces. Minimum ¾” thickness of face frames and 5/8” thickness for doors, drawer faces and end panels. ½” thick shelves. Solid wood doors preferred.
 - ii. All cabinets shall meet requirements for HUD severe use. Cabinet doors will be equipped with raised or recessed panels and door knobs. The use of flat panel cabinet doors shall be reviewed on a case-by-case basis. Door pulls shall be installed at handi-capped units. Shall be of good quality, meeting ANSI/KCMA A161.1-2012 “Performance & Construction Standards for Kitchen Cabinetry and Bath Vanities” standards. Other industry standards for cabinetry may be used as guidelines, such as the Kitchen Cabinet Manufacturer’s Association (KCMA) “Severe Use Specification – 2014,” the Architectural Woodwork Institute’s (AWI) Woodwork Standards and Cabinet Fabrication Handbook.
 - iii. Counter Tops: Materials - laminate with rolled front edge and backsplash.
 - Shop fabricated as one piece assembly where possible. Seal field joints.
 - Installed level and securely fastened to cabinetry
2. Bath cabinetry and counters – vanity lavatory tops, when used, should be one piece integral bowl with integral backsplash

N. SPECIAL CONSTRUCTION (Cross-Reference with RIH Guidelines Section 3, Division 13 [page 41])

1. Hazardous materials and remediation – see “RIHousing Guidelines for Development Section 3.3 (Environmental Guidelines including HUD's Lead Safe Housing Rule, see page 67 of RIH Guidelines).
 - a. Asbestos – project will be assessed for the existence of asbestos-containing building materials by qualified professionals:
 - i. National Emission Standards for Hazardous Air Pollutants (NESHAP) apply.
 - ii. Removal of asbestos shall be carried out per Federal EPA and State regulations and rules.
 - b. Lead - Health and Safety and Lead Safe Housing
 - i. All scopes of work performed pursuant to this rehabilitation standard shall support the maintenance of project compliance with the Rhode Island Department of Health Rules and Regulations for Lead Poisoning Prevention R23-24.6PB and Rhode Island Department of Environmental Management Regulations 9 & 24.
 - ii. Lead-Based Paint
 - Federal and state regulations related to lead-based paint apply to target housing, which is defined as any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless a child of less than 6 years of age resides or is expected to reside in such housing for the elderly or persons with disabilities). Rehabilitation of target housing must be completed in a manner which insures the health and safety of workers and residents, especially children. A number of regulations apply when lead painted surfaces are disturbed in residential properties, primarily requiring the appropriate training of workers and the use of safe work practices. In some cases, use of federal funds for rehabilitation will trigger a higher level of lead paint treatments based on the amount of federal money being used. The following regulations must be adhered to during all rehabilitation of target housing:

Federal Regulations:

 - HUD Lead Safe Housing Rule (24 CFR, Part 35) requires various levels of evaluation and treatment of lead paint hazards when federal money is used for rehabilitation of target housing.
 - EPA Renovation Repair and Painting Rule (40 CFR Part 745) – Requires contractors conducting renovation, repair or maintenance that disturbs paint in target housing or child-occupied facilities to be licensed by EPA and use lead-safe work practices to complete the work. Developers must ensure contractors are properly trained and licensed. More information is available at: <http://www2.epa.gov/lead>
 - HUD/EPA Disclosure Regulations (24 CFR, Part 35, Subpart A) – Requires owners of target housing to disclose all lead paint records and related information to potential buyers and/or tenants. More information is available at: http://portal.hud.gov/hudportal/documents/huddoc?id=DOC_12347.pdf
 - OSHA Lead in Construction Rule (29 CFR Part 1926.62) - Proscribes personal protection measures to be taken when workers are exposed to any lead during construction projects. More information is available at:

https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARD&p_id=10641

- Rhode Island Rules and Regulations for Lead Poisoning Prevention, R23-24.6-PB, April 2014 (T) Title 18, Chapter 38:
 - Rhode Island law requires all work that disturbs paint in target housing and child care facilities to be completed using lead safe work practices. Rehabilitation completed according to the federal regulations described above will generally fulfill this requirement. Rhode Island does ban certain unsafe practices that are allowed under some of the federal regulations, including power sanding and grinding, dry scraping, and use of certain kinds of paint strippers.

O. CONVEYANCE SYSTEMS (Cross-Reference with RIH Guidelines Section 3, Division 14 [page 41])

1. Elevators may be installed when appropriate and possible, when such elevator is part of the project's program goals, or as required by code, as follows:
 - a. Installed per code NFPA 101,
 - b. Rhode Island Fire Safety Code, 2013
 - c. ASME 17.1-17.3 Safety Code for Elevators - 2013
 - d. State of Rhode Island Elevator Safety Code, 2012
2. Existing elevators and lifts may be retained if they are appropriate to the use of the building and in serviceable condition with an expected useful life of 30 years, or covered by the 20-year capital plan and/or subsequent 5- year updates during the 30-year affordability period, and approved by agencies having jurisdiction.

P. MECHANICAL (Cross-Reference with RIH Guidelines Section 3, Division 15 [pages 41 thru 45])

1. General:
 - a. All mechanical systems shall be designed by a mechanical engineer or other qualified professional.
 - b. Energy efficiency:
 - i. All RIHousing HTF funded projects shall conform to the RIHousing "Policy on Sustainability & Water Conservation in Multi-family Residential Properties". Contained within this policy are as follows and can be found in detail in section VII-C.
 - ii. As outlined in the HTF Standards, all projects will either achieve the target energy efficiency objectives of the standard or present RIHousing with an operational case for project sustainability pursuant to the financial structure of the project.
 - iii. In both the design and implementation of project rehabilitation scopes of work, particular emphasis should be made to maximize the effectiveness of the energy efficiency related work scopes.
 - c. All mechanical systems shall meet all applicable codes:
 - i. Rhode Island 2013 Fire & Building Code & NFPA 101 Life Safety Code, 2012 Edition
 - ii. Rhode Island Mechanical Code, RI SBC-4-2013.
 - iii. Rhode Island Fuel Gas Code, RI SBC-19-2013

- iv. Rhode Island Plumbing Code, RI SBC-3-2013. 2012 Rhode Island Fire & Building Code
 - v. Rhode Island Energy Conservation Code, RI SBC-8-2013 as they may apply:
 - vi. Plumbing fixtures will be accessibility compliant as required.
 - vii. Rhode Island Rules & Regulations for Boiler and Pressure Vessels (R.I.G.L -28-25) effective 12/12/2011 as it pertains to boilers and pressure vessels
(<http://sos.ri.gov/documents/archives/regdocs/released/pdf/3b493e49b0a2a162589891f1e4b0f9c3/4721.pdf> Page 16).
2. Fire protection
- a. In general, all buildings assisted with HTF funds shall have fire suppression as required by applicable codes with approved sprinkler systems installed as required by Rhode Island Fire Safety Code, 2013, NFPA 101, 2012 and NFPA 1, 2012:
 - i. System design to conform to applicable NFPA standard 13, 2013.
 - ii. System installed by State approved persons holding appropriate licenses..
 - b. Where possible, piping for the sprinkler system shall be concealed.
3. Plumbing
- a. Where existing components of a system are to be reused, they will be examined and determined to be in good condition, code compliant and have a remaining useful life of a minimum of 30 years, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period. Substandard or critical non-code compliant components shall be replaced.
 - b. Use water-saving shower heads and faucet aerators as required by the RHODE ISLAND HOUSING "Policy on Sustainability & Water Conservation in Multi-family Residential Properties". Contained within this policy are as follows and can be found in detail in section VII-C.
 - c. All fixtures, piping fittings and equipment shall be lead-free in accordance with the Rhode Island Plumbing Rules.
 - d. Kitchen fixtures – When existing kitchen fixtures are not reused in accordance with a. above, new sinks and faucets, and associated plumbing shall be installed in each apartment.
 - e. Bath fixtures – When existing bath fixtures are not reused in accordance with a. above, new water saving toilets, tubs and tub surrounds, lavatory sinks, and faucets shall be installed in each apartment.
 - i. Three and four-bedroom apartments are encouraged to be designed to include 1½ baths minimum where adequate space is available.
 - f. Provision for laundry rooms or laundry hook-ups may be made per project's program requirements.
 - g. Provision for other utility plumbing for janitor sinks, floor drains, outdoor faucets, drains for dehumidification systems, etc., may be made as desired or required.
4. Heating
- a. System design:

- i. Designed and constructed to conform to the RIHousing “Policy on Sustainability & Water Conservation in Multi-family Residential Properties”. Contained within this policy are as follows and can be found in detail in section VII-C.
 - ii. Where existing components of a system are proposed to be reused, they will be examined and determined to be in good and serviceable condition, code compliant and have a remaining useful life of a minimum of 30 years, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period.
 - b. Temperature control - The temperature in each apartment shall be individually thermostatically controlled.
 - c. Provide adequate heat in common spaces.
5. Pipe Insulation:
 - a. Insulate all hot and cold water pipes for both domestic and mechanical use to conserve heat and minimize condensation. Large buildings require insulation on all domestic and mechanical hot and cold water piping throughout the building. In handicapped units all exposed pipes shall be insulated with a protective insulated jacket.
 - b. Insulate interior rainwater conductors.
 - c. For hot and cold water and mechanical pipes up to 2”, insulation shall be 1” thick. For larger pipes, insulation shall be 1.5” thick. For runouts insulation thickness shall be ½”.
6. Avoid installing plumbing piping in exterior walls.
 - a. Minimum equipment efficiencies per Efficiency Rhode Island’s Energy Conservation Code RI SBC-8-2013.
 - b. Motors and pumps – high efficiency Brushless Permanent Magnet Pumps (BLPM) with variable frequency drives (VFD).
 - c. Control wiring and control strategies with outdoor temperature reset.
 - d. Finned Tube Radiation – where used - high output heavy gauge enclosure baseboard finned tube radiation is recommended to provide a more durable product with a longer expected useful life. Replace existing as appropriate.
7. Ventilation
 - a. Code-compliant indoor air quality will be addressed by the installation of either exhaust only or balanced (heat recovery) ventilation systems as required by:
 - i. Fire protection of system ducts per NFPA 101, 2012
 - ii. ASHRAE 62.2
 - b. RIHousing “Policy on Sustainability & Water Conservation in Multi-family Residential Properties”. Contained within this policy are as follows and can be found in detail in section VII-C. Balanced mechanical ventilation systems are encouraged.
 - c. Ventilation controls shall be per applicable codes
8. Domestic Hot Water:

- a. System shall be designed RIHousing “Policy on Sustainability & Water Conservation in Multi-family Residential Properties”. Contained within this policy are as follows and can be found in detail in section VII-C.
- b. Install pipe insulation per code.

Q. ELECTRICAL (Cross-Reference with RIH Guidelines Section 3, Division 16 [pages 45 thru 47])

1. Project electrical design should be done by a licensed electrical engineer, or other qualified professional.
2. Project electrical must be installed by a licensed electrician
3. Energy efficiency:
 - a. RIHousing “Policy on Sustainability & Water Conservation in Multi-family Residential Properties”. Contained within this policy are as follows and can be found in detail in section VII-C. Design shall be comply with all the applicable codes:
 - Rhode Island State Fire & Building Code, 2013
 - NFPA 101, 2012 Life Safety Code
 - NFPA 72, National Fire Alarm and Signaling Code, 2010
 - NFPA 720, Standard for the Installation of Carbon Monoxide Detection and Warning Equipment, 2012 edition.
4. In general, the electrical system should be new throughout a building:
 - a. Where existing service entrances, disconnects, meters, distribution wiring, panels, and devices are proposed to remain, they will be examined and determined to be in good condition, code compliant and have a remaining useful life of a minimum of 30 years, or covered by the 20-year capital plan and/or subsequent 5-year updates during the 30-year affordability period. The designer, in concert with the State electrical inspector, shall examine the system and equipment. Existing components of the electrical system may be reused as appropriate. Substandard or critical non-code compliant components shall be replaced.
5. Utility connections shall be installed per the rules and regulations of the electrical utility.
6. Electrical service and metering:
 - a. The service entrance size shall be calculated to handle the proposed electrical loads.
 - b. Metering and disconnects shall be per code and mounted at approved locations.
7. Elevator wiring shall conform to the ANSI 17.1 as modified by the Rhode Island Elevator Safety Code, 2012.
8. Electrical distribution system:
 - a. Lighting and receptacle circuits shall be designed per code.
 - b. Locations and layout of devices and lighting to be logical and accessibility compliant where required.
 - c. Provision shall be made for the wiring of dedicated equipment circuits and connections for heating, ventilation equipment/exhaust fans, pumps, appliances, etc.

9. Artificial Lighting shall be provided using Rhode Island Energy Conservation Code, RI SBC-8-2013.
 - a. Developers are required to upgrade to Energy Star® Category.
10. Site lighting with shielded fixtures may be provided to illuminate parking and pedestrian walkways, and will conform to local zoning.
 - a. Energy Star compliant site lighting fixtures are required.
11. Emergency and exit lighting/illuminated signage shall be per the Rhode Fire Safety Code, 2013, NFPA 101, 2012, Life Safety Code.
12. Fire detection and alarms:
 - a. Shall be installed as required by code: NFPA 101, and comply with NFPA 72, 2010 and NFPA 1, 2012.
 - b. Smoke detectors shall be installed per Rhode Island Fire Safety Code, 2013.
 - c. CO detectors shall be installed per 2013 Rhode Island State Fire and NFPA 720, 2012.d. Where required – system annunciation shall be in accordance with NFPA 1, 2012.
13. Communication low-voltage wiring – provisions for TV, telephone, internet data, security, and intercoms should be considered and installed as appropriate to the project's use and livability.
14. PV Solar – an optional solar-powered photovoltaic panel system may be installed in accordance with the National Electrical code, RI SBC-5-2013, State energy code, and the regulations of the governing utility.

These Housing Trust Fund Standards include two additional guiding documents:

Exhibit A: The Property Maintenance Code Inspection Form,

also known as the “Inspectable Items and Observable Deficiencies form”

Exhibit B: Capital Needs Assessment (CNA) Guidance

Notes to Developers on the Requirements/Directions in Using this Form:

1. Inspections using this form are required to be conducted on 10% of units (if development is in one building) or in at least 1-unit per building (if development includes multiple buildings).
2. Developer is required to address Level 1, Level 2, or Level 3 Non Life Threatening deficiencies in the scope of work approved by RIHousing staff between preliminary award and commitment of funds (See Section V. Scope of Work Determination in HTF Rehab Standards document).
3. "NOD" means No Observed Deficiency and "NA" means that the inspectable item is not present in that unit/building. If there is no observed deficiency for that item, check mark the "NOD" box; if the inspectable item listed is not present at that site then check-mark "NA".
4. One box must be checked for each observable deficiency row in this Form.
5. If there is a deficiency found at any level and the H&S (Health and Safety) column is grayed-out, then the deficiency is not considered a health and safety hazard. If the H&S column contains an "NLT", then a marked deficiency is non-life threatening and correction of that deficiency can be included in the scope of work.
6. **Level 3 Deficiencies noted as Life Threatening (LT) Hazards in the H&S column of this report must be corrected immediately within 12 hours, if the housing is occupied. RIH requires a written response and completed work orders within 24 hours of repairs.**
7. In instances in which the Level 1, 2 or 3 deficiency is grayed-out, then this level of deficiency is not applicable for that inspectable item for the Final Dictionary of Deficiency Definitions (link in footer, below table).
8. In order to accurately categorize a deficiency as a "Level 1", "Level 2" or "Level 3" (including independent Health & Safety items), you must refer to the Final Dictionary of Deficiency Definitions (PASS) Version 2.3, dated 03/08/2000. This document can be found at http://www.hud.gov/offices/reac/pdf/pass_dict2.3.pdf (325 Pages, 343 KB)
9. Additional clarification to these definitions is contained in the REAC PASS Compilation Bulletin which can be found at https://portal.hud.gov/hudportal/documents/huddoc?id=CompBullet4Ver2_31515.pdf (40 Pages, 459 KB)

Uniform Physical Condition Standards – Comprehensive Listing

Page: _____ of _____

Inspectable Area: Site

Property ID / Name: _____

Inspection Date: _____

Building Number: _____

Inspectable Item	Observable Deficiency	NOD	Level			NA	H&S
			1	2	3		
Fencing and Gates	Damaged/Falling/Leaning						NLT
	Holes						NLT
	Missing Sections						NLT
Grounds	Erosion/Rutting Areas						NLT
	Overgrown/Penetrating Vegetation						
	Ponding/Site Drainage						
Health & Safety	Air Quality - Sewer Odor Detected						NLT
	Air Quality - Propane/Natural Gas/Methane Gas Detected						LT
	Electrical Hazards - Exposed Wires/Open Panels						LT
	Electrical Hazards - Water Leaks on/near Electrical Equipment						LT
	Flammable Materials - Improperly Stored						NLT
	Garbage and Debris - Outdoors						NLT
	Hazards - Other						NLT
	Hazards - Sharp Edges						NLT
	Hazards - Tripping						NLT
	Infestation - Insects						NLT
	Infestation - Rats/Mice/Vermin						NLT
Mailboxes/Project Signs	Mailbox Missing/Damaged						
	Signs Damaged						
Market Appeal	Graffiti						
	Litter						
Parking Lots/Driveways/Roads	Cracks						
	Ponding						
	Potholes/Loose Material						
	Settlement/Heaving						
	Motor Vehicles - inoperative/unregistered/unlicensed/abandoned/ parked/left on the premises						NLT
Play Areas and Equipment	Damaged/Broken Equipment						NLT
	Deteriorated Play Area Surface						
Refuse Disposal	Broken/Damaged Enclosure-Inadequate Outside Storage Space						
Retaining Walls	Damaged/Falling/Leaning						NLT
Storm Drainage	Damaged/Obstructed						
Walkways/Steps	Broken/Missing Hand Railing						NLT
	Cracks/Settlement/Heaving						
	Spalling						

Uniform Physical Condition Standards - Comprehensive Listing

Page: _____ of _____

Inspectable Area: **Building Exterior**

Property ID / Name: _____

Inspection Date: _____

Building Number: _____

Inspectable Item	Observable Deficiency	NOD	Level			NA	H&S
			1	2	3		
Doors	Damaged Frames/Threshold/Lintels/Trim						NLT
	Damaged Hardware/Locks						
	Damaged Surface (Holes/Paint/Rusting/Glass)						
	Damaged/Missing Screen/Storm/Security Door						NLT
	Deteriorated/Missing Caulking/Seals						
	Missing Door						
Fire Escapes	Blocked Egress/Ladders						LT
	Visibly Missing Components						LT
Foundations	Cracks/Gaps						
	Spalling/Exposed Rebar						
Health and Safety	Electrical Hazards - Exposed Wires/Open Panels						LT
	Electrical Hazards - Water Leaks on/near Electrical Equipment						LT
	Emergency Fire Exits - Emergency/Fire Exits Blocked/Unusable						LT
	Emergency Fire Exits - Missing Exit Signs						NLT
	Flammable/Combustible Materials - Improperly Stored						NLT
	Garbage and Debris - Outdoors						NLT
	Hazards - Other						NLT
	Hazards - Sharp Edges						NLT
	Hazards - Tripping						NLT
	Infestation - Insects						NLT
	Infestation - Rats/Mice/Vermin						NLT
Lighting	Broken Fixtures/Bulbs						
Roofs	Damaged Soffits/Fascia						
	Damaged Vents						
	Damaged/Clogged Drains						
	Damaged/Torn Membrane/Missing Ballast						
	Missing/Damaged Components from Downspout/Gutter						
	Missing/Damaged Shingles						
	Ponding						
Walls	Cracks/Gaps						
	Damaged Chimneys						NLT
	Missing/Damaged Caulking/Mortar						
	Missing Pieces/Holes/Spalling						
	Stained/Peeling/Needs Paint						
Windows	Broken/Missing/Cracked Panes						NLT
	Damaged Sills/Frames/Lintels/Trim						
	Damaged/Missing Screens						
	Missing/Deteriorated Caulking/Seals/Glazing Compound						
	Peeling/Needs Paint						
	Security Bars Prevent Egress						LT

Uniform Physical Condition Standards - Comprehensive Listing
Inspectable Area: Building Systems

Page: _____ of _____

Property ID / Name: _____
 Building Number: _____

Inspection Date: _____

Inspectable Item	Observable Deficiency	NOD	Level			NA	H&S
			1	2	3		
Domestic Water	Leaking Central Water Supply						
	Misaligned Chimney/Ventilation System						LT
	Missing Pressure Relief Valve						NLT
	Rust/Corrosion on Heater Chimney						NLT
	Water Supply Inoperable						NLT
Electrical System	Blocked Access/Improper Storage						NLT
	Burnt Breakers						NLT
	Evidence of Leaks/Corrosion						NLT
	Frayed Wiring						
	Missing Breakers/Fuses						LT
	Missing Covers						LT
Elevators	Not Operable						NLT
Emergency Power	Auxiliary Lighting Inoperable						
	Run-Up Records/Documentation Not Available						
Fire Protection	Missing Sprinkler Head						NLT
	Missing/Damaged/Expired Extinguishers						LT
Health & Safety	Air Quality - Mold and/or Mildew Observed						NLT
	Air Quality - Propane/Natural Gas/Methane Gas Detected						LT
	Air Quality - Sewer Odor Detected						NLT
	Electrical Hazards - Exposed Wires/Open Panels						LT
	Electrical Hazards - Water Leaks on/near Electrical Equipment						LT
	Elevator - Tripping						NLT
	Emergency Fire Exits - Emergency/Fire Exits Blocked/Unusable						LT
	Emergency Fire Exits - Missing Exit Signs						NLT
	Flammable Materials - Improperly Stored						NLT
	Garbage and Debris - Indoors						NLT
	Hazards - Other						NLT
	Hazards - Sharp Edges						NLT
	Hazards - Tripping						NLT
Infestation - Insects	Infestation - Insects						NLT
	Infestation - Rats/Mice/Vermin						NLT
HVAC	Boiler/Pump Leaks						
	Fuel Supply Leaks						NLT
	General Rust/Corrosion						NLT
	Misaligned Chimney/Ventilation System						LT
Roof Exhaust System	Roof Exhaust Fan(s) Inoperable						
Sanitary System	Broken/Leaking/Clogged Pipes or Drains						NLT
	Missing Drain/Cleanout/Manhole Covers						
	Windows - Missing/Deteriorated Caulking/Seals/Glazing Compound						
	Windows - Peeling/Needs Paint						
	Windows - Security Bars Prevent Egress						LT

Uniform Physical Condition Standards - Comprehensive Listing

Page: _____ of _____

Inspectable Area: **Building Systems**

Property ID / Name: _____

Inspection Date: _____

Building Number: _____

Inspectable Item	Observable Deficiency	NOD	Level			NA	H&S
			1	2	3		
Health & Safety	Air Quality - Mold and/or Mildew Observed						NLT
	Air Quality - Propane/Natural Gas/Methane Gas Detected						LT
	Air Quality - Sewer Odor Detected						NLT
	Electrical Hazards - Exposed Wires/Open Panels						LT
	Electrical Hazards - Water Leaks on/near Electrical Equipment						LT
	Emergency Fire Exits - Emergency/Fire Exits Blocked/Unusable						LT
	Emergency Fire Exits - Missing Exit Signs						NLT
	Flammable/Combustible Materials - Improperly Stored						NLT
	Garbage and Debris - Indoors						NLT
	Garbage and Debris - Outdoors						NLT
	Hazards - Other						NLT
	Hazards - Sharp Edges						NLT
	Hazards - Tripping						NLT
	Infestation - Insects						NLT
	Infestation - Rats/Mice/Vermin						NLT
Pools and Related Structures	Fencing - Damaged/Not Intact						
	Pool - Not Operational						
Trash Collection Areas	Chutes - Damaged/Missing Components						

Uniform Physical Condition Standards - Comprehensive Listing

Page: _____ of _____

Inspectable Area: **Building Systems**

Property ID / Name: _____

Inspection Date: _____

Building Number: _____

X	Inspectable Item Location
---	---------------------------

Observable Deficiency	NOD	1	2	3	NA	H&S
Baluster/Side Railings - Damaged						
Cabinets - Missing/Damaged						
Call for Aid - Inoperable						NLT
Ceiling - Bulging/Buckling						
Ceiling - Holes/Missing Tiles/Panels/Cracks						
Ceiling - Peeling/Needs Paint						
Ceiling - Water Stains/Water Damage/Mold/Mildew						
Countertops - Missing/Damaged						
Dishwasher/Garbage Disposal - Inoperable						
Doors - Damaged Frames/Threshold/Lintels/Trim						NLT
Doors - Damaged Hardware/Locks						
Doors - Damaged Surface (Holes/Paint/Rust/Glass)						
Doors - Damaged/Missing Screen/Storm/Security Door						NLT
Doors - Deteriorated/Missing Seals (Entry Only)						
Doors - Missing Door						
Dryer Vent -Missing/Damaged/Inoperable						
Electrical - Blocked Access to Electrical Panel						NLT
Electrical - Burnt Breakers						NLT
Electrical - Evidence of Leaks/Corrosion						NLT
Electrical - Frayed Wiring						
Electrical - Missing Breakers						LT
Electrical - Missing Covers						LT
Floors - Bulging/Buckling						
Floors - Floor Covering Damaged						
Floors - Missing Floor/Tiles						
Floors - Peeling/Needs Paint						
Floors - Rot/Deteriorated Subfloor						
Floors - Water Stains/Water Damage/Mold/Mildew						
GFI - Inoperable						NLT
Graffiti						

Please complete these two pages for each community/public space in the proposed project. Check location below.

Basement/Garage/Carport

Closet/Utility/Mechanical

Community Room

Day Care

Halls/Corridors/Stairs

Kitchen

Laundry Room

Lobby

Office	HVAC - Convection/Radiant Heat System Covers Missing/Damaged					
	HVAC - General Rust/Corrosion					
Other Community Spaces	HVAC - Inoperable					
	HVAC - Misaligned Chimney/Ventilation System					LT
Patio/Porch/Balcony	HVAC - Noisy/Vibrating/Leaking					
	Lavatory Sink - Damaged/Missing					NLT
Restrooms/Pool Structures	Lighting - Missing/Damaged/Inoperable Fixture					
	Mailbox - Missing/Damaged					
Storage	Outlets/Switches/Cover Plates - Missing/Broken					LT
	Pedestrian/Wheelchair Ramp					
	Plumbing - Clogged Drains					NLT
	Plumbing - Leaking Faucet/Pipes					NLT
	Range Hood /Exhaust Fans - Excessive Grease/Inoperable					
	Range/Stove - Missing/Damaged/Inoperable					
	Refrigerator - Damaged/Inoperable					
	Restroom Cabinet - Damaged/Missing					
	Shower/Tub - Damaged/Missing					
	Sink - Missing/Damaged					NLT
	Smoke Detector - Missing/Inoperable					LT
	Stairs - Broken/Damaged/Missing Steps					NLT
	Stairs - Broken/Missing Hand Railing					NLT
	Ventilation/Exhaust System - Inoperable					
	Walls - Bulging/Buckling					
	Walls - Damaged					
	Walls - Damaged/Deteriorated Trim					
	Walls - Peeling/Needs Paint					
	Walls - Water Stains/Water Damage/Mold/Mildew					
	Water Closet/Toilet - Damaged/Clogged/Missing					
	Windows - Cracked/Broken/Missing Panes					NLT
	Windows - Damaged Window Sill					
	Windows - Inoperable/Not Lockable					NLT

Uniform Physical Condition Standards - Comprehensive Listing

Page: _____ of _____

Inspectable Area: Unit

Property ID / Name: _____

Inspection Date: _____

Building/Unit Nmbr: _____

Inspectable Item	Observable Deficiency	NOD	Level				H&S
			1	2	3	NA	
Bathroom	Bathroom Cabinets - Damaged/Missing						
	Lavatory Sink - Damaged/Missing						NLT
	Plumbing - Clogged Drains						NLT
	Plumbing - Leaking Faucet/Pipes						NLT
	Shower/Tub - Damaged/Missing						NLT
	Ventilation/Exhaust System - Inoperable						
	Water Closet/Toilet - Damaged/Clogged/Missing						NLT
Call-for-Aid	Inoperable						NLT
Ceiling	Bulging/Buckling						
	Holes/Missing Tiles/Panels/Cracks						
	Peeling/Needs Paint						
	Water Stains/Water Damage/Mold/Mildew						
Doors	Damaged Frames/Threshold/Lintels/Trim						NLT
	Damaged Hardware/Locks						
	Damaged/Missing Screen/Storm/Security Door						NLT
	Damaged Surface - Holes/Paint/Rusting/Glass						
	Deteriorated/Missing Seals (Entry Only)						
	Missing Door						NLT
Electrical System	Blocked Access to Electrical Panel						NLT
	Burnt Breakers						NLT
	Evidence of Leaks/Corrosion						NLT
	Frayed Wiring						
	GFI - Inoperable						NLT
	Missing Breakers/Fuses						LT
	Missing Covers						LT
Floors	Bulging/Buckling						
	Floor Covering Damage						
	Missing Flooring Tiles						
	Peeling/Needs Paint						
	Rot/Deteriorated Subfloor						
	Water Stains/Water Damage/Mold/Mildew						
Health & Safety	Air Quality - Mold and/or Mildew Observed						NLT
	Air Quality - Sewer Odor Detected						NLT
	Air Quality - Propane/Natural Gas/Methane Gas Detected						LT
	Electrical Hazards - Exposed Wires/Open Panels						LT
	Electrical Hazards - Water Leaks on/near Electrical						LT
	Emergency Fire Exits - Emergency/Fire Exits						LT
	Emergency Fire Exits - Missing Exit Signs						NLT
	Flammable Materials - Improperly Stored						NLT
	Garbage and Debris - Indoors						NLT
	Garbage and Debris - Outdoors						NLT
	Hazards - Other						NLT
	Hazards - Sharp Edges						NLT
	Hazards - Tripping						NLT
	Infestation - Insects						NLT
	Infestation - Rats/Mice/Vermin						NLT
Hot Water Heater	Misaligned Chimney/Ventilation System						LT
	Inoperable Unit/Components						NLT
	Leaking Valves/Tanks/Pipes						
	Pressure Relief Valve Missing						NLT
	Rust/Corrosion						NLT
HVAC System	Convection/Radiant Heat System Covers Missing/Damaged						
	Inoperable						
	Misaligned Chimney/Ventilation System						LT

	Noisy/Vibrating/Leaking						
	Rust/Corrosion						
Kitchen	Cabinets - Missing/Damaged						NLT
	Countertops - Missing/Damaged						NLT
	Dishwasher/Garbage Disposal - Inoperable						
	Plumbing - Clogged Drains						NLT
	Plumbing - Leaking Faucet/Pipes						NLT
	Range Hood/Exhaust Fans - Excessive Grease/Inoperable						
	Range/Stove - Missing/Damaged/Inoperable						
	Refrigerator-Missing/Damaged/Inoperable						NLT
	Sink - Damaged/Missing						NLT
Laundry Area (Room)	Dryer Vent - Missing/Damaged/Inoperable						
Lighting	Missing/Inoperable Fixture						NLT
Outlets/Switches	Missing						LT
	Missing/Broken Cover Plates						LT
Patio/Porch/Balcony	Baluster/Side Railings Damaged						
Smoke Detector	Missing/Inoperable						LT
Stairs	Broken/Damaged/Missing Steps						NLT
	Broken/Missing Hand Railing						NLT
Walls	Bulging/Buckling						
	Damaged						
	Damaged/Deteriorated Trim						
	Peeling/Needs Paint						
	Water Stains/Water Damage/Mold/Mildew						
Windows	Cracked/Broken/Missing Panes						NLT
	Damaged Window Sill						
	Missing/Deteriorated Caulking/Seals/Glazing Compound						
	Inoperable/Not Lockable						NLT
	Peeling/Needs Paint						
	Security Bars Prevent Egress						LT

RIHOUSING

EXHIBIT B – Housing Trust Fund Program Capital Needs Assessment (CNA) Guidance

February 2017

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This joint document has been developed by the RI Housing Finance Agency (RIHOUSING) as guidance for housing developers, asset managers and property managers who rely on capital needs assessments as a tool for the long term physical health of affordable housing properties.

For the purpose of this document, capital expenses (also referred to as Physical Condition Assessments – PCAs) are considered expenses involving the replacement of building components over time. They are not annually recurring expenses and differ from routine building maintenance expenses in this way.

Definition of Capital vs. Maintenance Operating Expense

Capital Expense – Major capital improvements to maintain the physical integrity and upkeep of a property are usually funded from the Replacement Reserve account. Funds from this account should be restricted for uses consistent with the CNA unless otherwise approved by the funding agencies. Typical uses include: new appliances, heating equipment, hot water heaters, re-shingling roofs, exterior painting and repair, kitchen and bathroom fixtures, doors and windows, flooring, plumbing equipment, kitchen cabinetry, elevators, grounds maintenance equipment, major site-work modifications, septic/sewer line repair, sprinkler and alarm systems, electrical equipment, and similar improvements or replacements.

Maintenance Expense – any and all regular and recurring expenses associated with maintaining the physical integrity and upkeep of a property not otherwise considered a capital expense.

Turnover Expense – the costs of interior painting, cleaning and unit prep (exclusive of carpet, appliance and cabinetry replacement) should be maintenance expenses and not capital expenses.

Capital Needs Issues to Consider During the Development Process

Several critical areas play an important role in assuring both new and existing properties are able to meet future capital replacement costs. They include:

- When acquiring and/or rehabbing an existing building, the scope of rehabilitation work and CNA must be in sync so that the CNA for a rehabbed property reflects the new infrastructure and systems. This will also result in establishing accurate replacement reserve deposit levels so reserves can accumulate prior to the need for replacement of building components.
- Funds for completing the first post-construction or rehabilitation CNA should be included in the development budget.
- Accurate assumptions in the development and underwriting phase are critical to a property's ability to fund reserves in the required amount. Income, expense and trending estimates must be realistic and based on experience of asset management staff using the most similar properties' actual history.

Pre-Capitalized Reserves and Completion of Initial CNA

- The funding agencies strongly encourage and in some cases may require the capitalization of a replacement reserve account initially during the development stage in combination with required ongoing deposits in order to help match the future funds needed with actual replacement costs.
- New loan/grant applications for existing buildings not undergoing substantial rehabilitation must include a CNA to support the budgeted reserve deposit levels. For the purpose of this document, substantial rehabilitation is defined as rehabilitation that involves the upgrading or replacement of the majority of building components to achieve a "like new" condition. Moderate rehabilitation is defined as selective

replacement of building components that have come to the end of their useful life or are within five years of coming to the end of their useful life, or need to be upgraded to meet current building code requirements. In general, the cost of construction in a building undergoing moderate rehabilitation is less than 25% of the total development cost (consult with funders' staff on a case by case basis).

- New construction and/or substantial rehab properties must also complete a Capital Needs Assessment as part of Rhode Island Housing's firm commitment due diligence process. If the CNA is provided prior to loan closing, the replacement reserve deposit levels in the operating budget should reflect the amount indicated in the CNA.

General CNA Report Requirements

- Initial CNAs on all projects must be completed by an approved third party who does not have an identity of interest relationship with the developer, owner or sponsor.
- Initial CNAs on projects that are not new construction or substantial rehab must not be older than two years of the loan application date. Site inspection must confirm that project's physical condition is consistent with the findings of the CNA.
- Each CNA report must cover a period of 20 years for both existing (rehab.) projects and new construction.
- Each CNA report must include a cash flow model, in spreadsheet format, providing an analysis of existing capital reserves and a detailed year by year schedule of expected repairs and replacement costs incurred. An inflation factor that is consistent with actual experience and historical data shall also be built into future replacement cost projections. It is recommended that an electronic copy of the spreadsheet be provided to the developer, owner or sponsor so that it can be used as an interactive record of capital costs and reserve balances moving forward.

CNA Updates

Each CNA must be updated every five years for the life of the project. Updated CNAs should be incorporated into the yearly annual budget process as an integral part of capital planning and should reflect any changes in federal, state or local codes which may impact on future capital needs.

Property owner/managers will have two options for fulfilling the requirement for five year CNA updates:

Option one: Owners/managers will hire a third party approved CNA provider to provide a new/updated CNA every five years.

Option two: Owners/managers who show the interest and capacity (in the opinion of funders) to perform an "in house" CNA review and update will be permitted to do so at the 5, 15, 25 , etc. year review period. The requirement for a formal third party CNA will be for years 1, 10, 20, etc.. Owners/managers wishing to pursue Option two shall perform the following:

- 1) Submit a letter of intent to the Asset Management Staff of your funding agency outlining the property to be reviewed, the name(s) of the in house staff tasked with performing the review, the qualifications of this/these staff member/s to perform a CNA review, and the current reserve balance surplus/shortfall projection based on the previous formal third party CNA which is to be reviewed and updated.

- 2) In house staff in performing the CNA review/update shall assess all appropriate building systems. Estimated Useful Life (EUL) estimates provided with these guidelines together with on-site experience and other sources shall be utilized to extend the review period an additional five (5) years maintaining a 20 year projection time horizon.
- 3) Upon completion of the update/review process a report shall be submitted to RIHousing Development staff outlining the findings of the CNA update/review together with a projection spreadsheet reflecting the new extended 20 year time horizon. This report shall be reviewed and signed by owner/manager's Director of Asset Management (or equivalent) as well as by the owner/manager's Executive Director

Required Components of a Capital Needs Assessment (CNA)

An effective CNA is composed of the following elements:

The inventory component must include all of the building systems, not just those that may require attention during the 20 year report period. Any item that has recently been replaced, and may not be expected to need attention again for the next 20 years or more, should still be listed for reference. If the assessor has made an assumption that a particular item represents an operating cost concern, the analysis should be shown to facilitate discussion and remediation.

Each system or item included must have its age identified. In older properties, ages of components may not coincide with the development's age. Ages may vary widely between items and even across a single item. i.e., Unit flooring may have been installed over a five-year period, which began eight years ago.

Expected useful life (EUL) estimates are the key to replacement timing. Capital planning is built on the idea that even systems that operate properly now will eventually fail. EULs should be adjusted from the norms found in various tables to the actual conditions at each development. EULs should be adjusted for climate, original materials and installation, maintenance practices, and resident demographic profiles. For example, elderly and family occupancy present different issues. Tables for typical estimated useful life cycles may be found on the Fannie Mae website and are attached as Appendix II of this document.

Cost estimating is a critical part of capital planning and the CNA consultant should take into account replacement costs adjusted for the local area. The ability to adjust costs for individual building circumstances and the relative purchasing power of the developer/owner/manager are equally important. [RS Means](#) and [Marshall and Swift](#) are reliable resources for this information.

A detailed year-by-year cost summary of all of the anticipated capital needs should list not only how much needs to be spent but when. While a steady level may be desirable from a financial viewpoint, peaks and valleys will more accurately describe the real needs of the property, especially at single-building developments.

Narrative presentations should describe the current condition, maintenance history, and the rationale behind the consultant's cost and timing decisions, therefore, an Executive Summary is especially helpful. Narratives allow for a description of the cause of current problems, details on location of problems, or discussion of alternatives like rebuilding a pump motor instead of replacing the whole pump.

Photographs are required and are an invaluable tool when the report has a non- technical audience or is shared with a third party. These readers may never have been in a boiler room or crawl space and may be unfamiliar with technical terms. Photographs can also support the findings and recommendations of the consultant. Showing the extent of the siding damage or the width of the foundation cracks can overcome a lot of resistance.

Capital Need Assessments must incorporate plans to install or maintain required building code requirements and improvements required under ADA, Section 504 and/or Fair Housing Guidelines.

Optimum Energy Efficiency is critical. In today's escalating and volatile utility markets, properties must be as energy efficient as possible and meet the highest standards possible to assure long-term operating sustainability. Recommendations on energy and utility efficiency improvements must be included as an essential part of the CNA. RHODE ISLAND Energy Conservation Code SBC-8-2013 and RIHousing Sustainability Standards and Water Conservation Standards, which can be found in RIHousing HTF Rehabilitation Standards, Section VII-C should be used as a frame of reference in achieving optimum energy efficiency.

RIHousing shall evaluate past and current operating and maintenance practices for consistency with the project's operating pro forma and most recent CNA, and to ensure practices are consistent with the findings of the most recent physical inspection.

Life Safety Issues. The CNA must report the presence of potentially hazardous materials, waste or toxic substances including but not limited to the presence of mold, asbestos, lead, urea formaldehyde, etc. if observed.

Most importantly, the CNA must evaluate existing capital reserves and annual contributions to reserves against the long-term spending plan. This analysis, presented as a spreadsheet cash flow analysis, will indicate the optimum annual contribution to reserves in a way that can be convincingly presented to funding agencies. The reserve plan should reflect real life constraints that are at odds with making the "optimum" contribution. Please go to www.on-site-insight.com, or www.efanniemae.com/mf/guidesforms/pdf/forms/III-12.PDF for detailed information and an example of acceptable CNA formatting.

Requirements of a Capital Needs Assessment Consultant

The CNA Consultant must meet minimum qualifications, professional education, training and experience to perform site visits and prepare CNA reports.

Professional Experience

CNA Consultant, its personnel and subcontractors must be independent third-parties, unrelated to, and not have any financial or economic interest in the property; or

CNA Consultant must not be an affiliated entity of the property owner unless previously approved by RIHousing.

CNA Consultant must not be under suspension or debarment by HUD or Fannie Mae, involved as a defendant in criminal or civic action with HUD or Fannie Mae, and not be an Federal Housing Finance Agency (FHFA) prohibited party.

- Five years of professional experience in one or more of the following disciplines:
 - architecture;
 - engineering (structural, mechanical or civil); or
 - Construction management and cost estimating (which may include cost estimating experience associated with the preparation of a CNA Report). Three years of experience performing multifamily property condition physical needs assessments, completed a minimum of five property

inspections, and reporting of property condition assessment findings in a manner consistent with these Instructions or ASTM E2018-08 “Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process”; or

- Knowledge and experience with ASTM E2018-08; or
- Minimum of three years history providing CNA reports acceptable to RIHousing either directly or through a RHODE ISLAND approved CNA Consultant.

RHIOUSING may approve new CNA Consultants based on a review of a resume, sample reports and references.

Education Requirements

CNA Consultants must possess or have completed one of the following programs:

- Bachelor of Science degree in engineering, architecture, construction management, historic preservation, construction/building science or building facilities management.
- Property Inspection Risk Management course offered by the MBA;
- Real Estate Assessment Center (“REAC”) for the Department of Housing and Urban Development (“HUD”) as a Certified Home Inspector;
- Building Performance Institute (BPI);
- American Society of Home Inspectors (“ASHI”);
- National Association of Home Inspectors (“NAHI”);
- At least five years assessing multifamily properties and preparation of ASTM E2018-08 compliant reports; or
- Other approved professional certifications, registrations, or training recognized by a Government Sponsored Enterprise (GSE) or HUD.

Insurance Requirements

The CNA Consultant must provide evidence of the following insurance coverage to RHODE ISLAND as an exhibit to the CNA report:

- Commercial General Liability Insurance with limits of at least \$1 million per occurrence and \$2 million aggregate with a maximum deductible amount of \$35,000.
- Professional Liability Insurance with limits of \$1 million per claim and \$2 million aggregate with a maximum deductible amount of \$100,000;
- Worker’s Compensation insurance; and
- Automobile Liability Insurance for all owned (if any), non-owned and hired vehicles of \$1 million per accident.

The CNA Consultant should have appropriate insurance coverage in place for traveling to and from the Property and conducting work at the Property.

Appendix I – Approved Independent CNA Consultants

CNA Realty Advisors

165 Pine Street
Rehoboth, MA 02769
508-252-4638
info@cnarealtyadvisors.com

Criterion Engineering

22 Monument Square, Suite 600
Portland, ME 04101
800-242-1969
Peter Holland

Dominion Due Diligence Group

4121 Cox Road, Suite 200
Glen Allen, VA 23060
804-358-2020

Environmental Management Group

222 Schilling Circle, Suite 275
Hunt Valley, Maryland 21031
888-364-8258

On-site Insight

38 Chauncy Street, Suite 600
Boston, MA 02111
617-502-5985

Appendix II - Estimated Useful Life (EUL) Tables

These Estimated Useful Life Tables for multifamily property systems and components are intended to represent standardized average estimated useful life (“EUL”) values and are not intended to replace the professional judgment of the CNA Consultant in determining the Effective Age and Remaining Useful Life of the systems and components at the Property. The CNA Consultant should consider preventive maintenance practices, as well as environment, geographic, resident, and other factors when determining Effective Age and Remaining Useful Life of the systems and components of a multifamily Property. In addition to providing guidance on EUL values typically considered capital expenditure items, the EUL tables may include items that are typically considered general maintenance and repair items to be handled by in-house maintenance staff.

FLATWORK, PARKING AREAS AND WALKWAYS	Multifamily / Coop	Seniors	Students
Asphalt pavement	25	25	25
Asphalt seal coat	5	5	5
Concrete pavement	50	50	50
Curbing, asphalt	25	25	25
Curbing, concrete	50	50	50
Parking, stall striping	5	5	5
Parking, gravel surfaced	15	15	15
Security gate (site ingress/egress) - rolling gate / lift arm	10	10	10
Sidewalk, asphalt	25	25	25
Sidewalk, brick paver	30	30	30
Sidewalk, concrete	50	50	50

SITE LIGHTING	Multifamily / Coop	Seniors	Student
Building mounted exterior lighting	10	10	10
Building mounted High Intensity Discharge (HID) lighting	10	20	10
Lighting (pole mounted)	25	25	25

SITE FENCING AND RETAINING WALLS	Multifamily / Coop	Seniors	Students
Bulkhead (barrier) / partition wall /embankment	10	20	10
Fencing, chain-link (4' height)	40	40	40
Fencing, concrete masonry unit (CMU)	30	30	30
Fencing, dumpster enclosure (wood)	12	15	10
Fencing, PVC (6' height)	25	25	25
Fencing, Tennis Court (10' height)-Chain link	40	40	40
Fencing, wood privacy (6' height)	15	20	10
Fencing, wrought iron (4-6' height and decorative)	50	50	50
Retaining walls, 80 lb block type	50	50	50
Retaining walls, concrete masonry unit (CMU) with brick face	40	40	40
Retaining walls, timber (railroad tie)	25	25	25

STRUCTURAL FRAME AND BUILDING ENVELOPE			
BUILDING STRUCTURES	Multifamily / Coop	Seniors	Students
Carports	40	40	40
Canopy, concrete	50	50	50
Canopy, wood / metal	40	40	40
Garages	50	50	50
Storage Sheds	30	30	30
Penthouse (mechanical room)	50	50	50

FOUNDATIONS	Multifamily / Coop	Seniors	Students
Foundations	50+	50+	50+
Waterproofing (foundations)	50+	50+	50+

FRAMING	Multifamily / Coop	Seniors	Students
Brick or block	40	40	40
Precast concrete panel (tilt-up)	40	40	40
Wood floor frame	50+	50+	50+

BUILDING ENVELOPE / CLADDING / EXTERIOR WALL FINISHES	Multifamily / Coop	Seniors	Students
Aluminum Siding	40	40	40
Brownstone	40	40	40
Brick or Stone Veneer	50+	50+	50+
Cement-board siding (Hardi-plank)/ Cementitious (mfgr) siding	45	45	45
Exterior Insulation Finishing Systems (EIFS)	20	20	20
Glass block	40	40	40
Granite block	40	40	40
Insulation, wall	50+	50+	50+
Metal/ glass curtain wall	30	30	30
Painting, Exterior	5-10	5-10	5-10
Pre-cast concrete panel	45	45	45
Stucco systems	50+	50+	50+
Vinyl siding	25	25	25
Wood shingle/ clapboard/ plywood, stucco, composite wood	20	20	20

ROOF SYSTEMS	Multifamily / Coop	Seniors	Students
Asphalt shingle (3-tab)	20	20	20
Built-up roof - Ethylene Propylene Diene Monomer (EPDM) / Thermoplastic Polyolefin (TPO)	20	20	20
Metal	40	40	40
Parapet wall	50+	50+	50+
Caps, copings (aluminum/ terra-cotta) - Parapet	25	25	25
Roof drainage exterior (gutter/ downspout)	10	10	10
Roof drainage interior (drain covers)	30	30	30
Roof railing	25	25	25
Roof structure	50+	50+	50+
Roof hatch	30	30	30
Roof skylight	30	30	30
Slab	50+	50+	50+
Slate, clay, concrete tile	40	40	40
Soffits (wood/ stucco)	20	20	20
Soffits (aluminum or vinyl)	25	25	25
Wood shingles (cedar shake)	25	25	25

DOORS AND WINDOWS	Multifamily / Coop	Seniors	Students
Exterior common door, aluminum and glass	30	30	30
Exterior common door, solid core wood or metal clad	25	25	25
Exterior unit door, solid wood/ metal clad	25	30	20
Residential Sliding Glass Doors	25	30	20
Residential French Glass Doors	25	30	20
Ceilings, open or exterior	30	30	30
Service door (roof)	25	30	20
Storm/ screen doors	7	10	5
Storm/ screen windows	10	15	7
Windows (frames and glazing), vinyl or aluminum	30	30	30

APPURTENANCES:	Multifamily / Coop	Seniors	Students
Chimney	40	40	40
Exterior stairs, wood	15	20	15
Exterior stairs, metal pan- concrete filled	30	30	30
Exterior stairs, concrete	50	50	50
Fire Escapes	40	40	40
Porches, concrete	50	50	50
Wood Decks	20	20	20

AMENITIES	Multifamily / Coop	Senior	Student
Basketball court	25	25	25
Mail kiosk	10	15	10
Mail facility, interior	20	25	20
Pool deck	15	15	15
Pool/ spa plaster liner	8	8	8
Tennis court / basketball court surface (paint markings)	5	7	5
Tennis court Surface (acrylic emulsion)	10	12	10
Tot-lot (playground equipment)	10	15	10
Tot-lot, uncompressed ground cover	2+	3+	2+

MECHANICAL/ELECTRIC/ PLUMBING SYSTEMS

WATER DISTRIBUTION AND DOMESTIC HOT WATER SYSTEMS	Multifamily / Coop	Seniors	Students
Feedwater only (hydronic)	10	10	10
Condensate and feedwater (steam)	Included in boiler	Included in boiler	Included in
Cooling Tower	25	25	25
DHW Circulating Pumps	by size	by size	by size
Domestic Hot Water (DHW) - supply / return	30	30	30
Tank only, dedicated fuel	10	10	10
Exchanger in storage tank	15	15	15
Exchanger in boiler	15	15	15
External tankless	15	15	15
Instantaneous (tankless type)	10	10	10
Domestic Hot Water Storage Tanks, Small (up to 150 gallons)	15	15	15
Domestic Hot Water Storage Tanks, Large (over 150 gallons)	15	15	15
Domestic Cold Water Pumps	15	15	15
Heating Water Circulating Pumps	by size	by size	by size
Heating Water Controller	15	15	15
Hot and Cold Water Distribution	50	50	50
Solar Hot Water	20	20	20
Water Softening and Filtration	15	15	15

SANITARY WASTE AND VENT	Multifamily / Coop	Seniors	Students
Purchased Steam Supply Station	50	50+	50+
Sanitary Waste and Vent System	50	50+	50+
Sewage Ejectors	50	50	50

SUMP PUMP	Multifamily / Coop	Seniors	Students
Residential Sump Pump	7	7	7
Commercial Sump Pump	15	15	15

HEATING/COOLING SYSTEM AND CONTROLS	Multifamily / Coop	Senior	Student
Pad/ roof condenser	20	20	20
A/C window unit or through wall	10	10	10
Evaporative Cooler	15	15	15
Fan coil unit, electric	20	20	20
Fan coil unit, hydronic	30	30	30
Furnace (electric heat with A/C)	20	20	20
Furnace (electric heat with A/C)	20	20	20
Furnace (gas heat with A/C)	20	20	20
Packaged terminal air conditioner (PTAC)	15	15	15
Packaged HVAC (roof top units)	20	20	20
Heat pump condensing component	20	20	20
Heater, electric baseboard	25	25	25
Heater, wall mounted electric or gas	20	20	20
Hydronic heat/ electric A/C	20	20	20
Line Dryers	15	15	15
Master TV System	10	10	10
Motorized Valves	12	12	12
Outdoor Temperature Sensor	10	10	10
Pneumatic lines and Controls	30	30	30

BUILDING HEATING WATER TEMPERATURE CONTROLS	Multifamily / Coop	Seniors	Students
Chilled Water Distribution	50+	50+	50+
Chilling Plant	15	15	15
Cooling Tower	25	25	25
Fuel Oil Storage	25	25	25
Fuel Transfer System	25	25	25
Gas Distribution	50+	50+	50+
Heat Sensors	15	15	15
Heat Exchanger	35	35	35
Heating Risers and Distribution	50+	50+	50+

VENTILATION SYSTEMS	Multifamily / Coop	Seniors	Students
Combustion Air, Duct with fixed louvers	30	30	30
Combustion Air, Motor louver and duct	25	25	25
Flue Exhaust	w/boiler	w/boiler	w/boiler
Free Standing Chimney	50+	50+	50+

ELECTRICAL SYSTEMS	Multifa	Seniors	Student
Common area	15	15	15
Buzzer/Intercom, central panel	20	20	20
Central Unit Exhaust, roof mounted	15	15	15
Compactors	15	15	15
Dumpsters	10	10	10
Electrical distribution center	40	40	40
Electric main	40	40	40
Emergency Generator	25	25	25
Gas lines	40	40	40
Gas main	40	40	40
Heating supply/ return	40	40	40
Power distribution	40	40	40
Transformer	30	30	30

BOILER ROOM EQUIPMENT	Multifamily / Coop	Seniors	Students
Blowdown and Water Treatment	25	25	25
Boiler Room Pipe Insulation	Included in boiler	Included in boiler	Included in boiler
Boiler Room Piping	Included in boiler	Included in boiler	Included in boiler
Boiler Room Valves	15	15	15
Boiler Temperature Controls	Included in boiler	Included in boiler	Included in boiler

VERTICAL TRANSPORTATION - ELEVATORS	Multifamily / Coop	Senior	Student
Electrical Switchgear	50+	50+	50+
Electrical Wiring	30	30	30
Elevator, Controller, dispatcher	15	20	10
Elevator, Cab	15	20	10
Elevator, Machinery	30	30	30
Elevator, Shaft-way Doors	20	20	20
Elevator, Shaft-way Hoist rails, cables, traveling	25	25	25
Elevator, Shaft-way Hydraulic piston and leveling	25	25	25

BOILERS	Multifamily / Coop	Seniors	Students
Oil-fired, sectional	22	22	22
Gas/ dual fuel, sectional	25	25	25
Oil/ gas/ dual fired, low MBH	30	30	30
Oil/ gas/ dual fired, high MBH	40	40	40
Gas fired atmospheric	25	25	25
Electric	20	20	20

FIRE SAFETY AND FIRE PROTECTION SYSTEMS	Multifamily / Coop	Senior	Student
Call station	10	15	10
Emergency Generator	25	25	25
Emergency Lights	8	10	5
Fire Extinguisher	10	15	5
Fire Pumps	20	20	20
Fire Suppression	50+	50+	50+
Smoke and Fire Detection System, central panel	15	15	15

INTERIOR ELEMENTS (COMMON AREA / DWELLING UNIT)			
INTERIOR / COMMON AREA FINISHES	Multifamily / Coop	Seniors	Students
Common area doors, interior (solid wood/ metal clad)	20	20	20
Common area floors, ceramic / quarry tile, terrazzo	50+	50+	50+
Common area floors, wood (strip or parquet)	30	30	30
Common area floors, resilient tile or sheet	15	15	15
Common area floors, carpet	5	5	5
Common area floors, concrete	50+	50+	50+
Common area railing	20	20	20
Common area ceiling, concrete	50+	50+	50+
Common area ceiling, acoustic tile (drop ceiling), drywall /	10	10	10
Common area countertop and sink	20	20	20
Common area, refrigerator	10	10	10
Common area dishwasher	15	15	10
Common area disposal	5	7	3
Common area kitchen cabinets, wood	15	20	10
Common area walls	15	25	10
Interior railings	20	25	15
Interior lighting	15	20	10
Public bathroom accessories	7	12	5
Public bathroom fixtures	15	20	10

DWELLING FIRE, SAFETY AND SECURITY	Multifamily / Coop	Seniors	Students
Unit Smoke/Fire Detectors *	5	5	5
Unit Carbon Monoxide Detectors *	5	5	5
Unit Buzzer/Intercom	20	20	20

*Tested annually, batteries changed annually.

DWELLING UNIT CEILINGS	Multifamily / Coop	Seniors	Students
Concrete	50	50+	50+
Acoustic Tile / Drywall / Plaster	10	15	10

DWELLING UNIT FIXTURES	Multifamily / Coop	Senior	Student
Bathroom: Vanity	10	15	10
Bathroom: Fixtures / Faucets	15-	20+	15-20
Bathroom: Fiberglass Bath / Shower	20	25	18
Bathroom: Toilet	50+	50+	40
Bathroom: Toilet Tank Components	5	5	5
Bathroom: Vent / Exhaust	10	10	10
Interior Doors	15	30	10
Kitchen: Cabinets (wood construction)	20	25	15
Kitchen: Cabinets (particle board)	15	20+	13
Kitchen: Dishwasher	5-10	10-12	5-8
Kitchen: Microwave	10	12	8
Kitchen: Range	15	25	15
Kitchen: Range-hood	10	20	10
Kitchen: Refrigerator	10	20	10
Window covering	3	5	1+

DWELLING UNIT FLOORS	Multifamily / Coop	Senior	Student
Ceramic / Tile / Terrazzo	20	25	20
Wood (strip/ parquet)	15	20	20
Resilient Flooring	10	15	7
Carpet	7	10	3+
Concrete	50+	50+	50+

DWELLING UNIT HVAC AND MECHANICAL EQUIPMENT	Multifamily / Coop	Senior	Student
A/C window unit or through wall	10	10	10
Evaporative cooler	15	15	15