

IHCDA National Housing Trust Fund Rehabilitation Standards

IHCDA has established rehabilitation standards of which all HTF-assisted housing undergoing rehabilitation must meet at the time of project completion, pursuant to the regulations at 24 CFR 93. These standards are designed to outline the requirements for building rehabilitation for all IHCDA national Housing Trust Fund funded multi-family housing projects.

All IHCDA National Housing Trust Fund (HTF) projects constructed or rehabilitated must meet the stricter of the Indiana State Building Code, local building codes, or manufacturer's instructions. The General Administrative Rules at 675 IAC 12 provides State of Indiana codes and standards for rehabilitation. The Rules can be accessed at the following address: <http://www.in.gov/dhs/2490.htm>

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

Please note this Guide is to be used only as a supplement to compliance with all applicable State and Federal codes, laws, regulations, statutes, and rules. This Guide should not be considered a complete guide to physical inspection compliance. The responsibility for compliance with Federal program regulations lies with the HTF grantee and/or property owner. IHCDA's obligation to monitor for compliance with the requirements of the Code does not make IHCDA or its subcontractors liable for any non-compliance issues.

I. Health and Safety

If the housing is occupied at time of rehabilitation, any life-threatening deficiencies must be identified and addressed immediately. Appendix A defines the list of Inspectable Items and Observable Deficiencies, including the identification of life-threatening deficiencies for the property site, building exterior, building systems, common areas and units. Critical Violation code deficiencies (CVC) are identified in both the following Rehabilitation Standards, as well as Appendix A. Critical violations must be repaired within 24 hours of the inspection and IHCDA must be provided with written notification of the action taken to complete the correction(s). The following would be considered a Critical Violation Code:

- Exposed Energized Electrical
- Water Leak by Electrical equipment
- Gash/Methane Leaks
- Fire Exit Blocked
- Unusable Fire Escapes
- Flue Gas Vents with CO leakage
- Missing/inoperable smoke detector
- Expired/Discharged Fire Extinguisher/Inspector Tag
- Inoperable Emergency Escape/Rescue Windows
- Inoperable Emergency Lightening
- Inoperable EXIT sign
- Improper Fuel Storage
- Missing or Lose Guard Rail
- Ground Fault Protection Inoperable
- Fire Alarm Inoperable
- Other with Explanation

II. Major Systems

The remaining useful life of the major systems must be determined for rental housing and a Capital Needs Assessment will be required for projects of 26 units or more. For more information on the CNA the certificate and affidavit, please see Schedule F.

- All developments are required to have replacement reserves. Replacement reserves must be included in the operating budget but are not included as part of the operating reserves. Contributions must be made to the reserve account starting at or before the conversion date of the construction loan to permanent loan and must be funded for the term of the loan. Replacement reserve funds must only be used for capital improvements (substantial improvements to the real estate such as re-roofing, structural repairs, or major projects to replace or upgrade existing furnishings, but not including replacement of individual appliances or minor repairs) and must not be used for general maintenance expenses. Less restrictive provisions required by lenders must be approved by IHCDA.
 - Replacement reserves must escalate at a rate of 3% per year.
 - IHCDA will, at its discretion, adjust the replacement reserve to reflect reasonable and customary capital and replacement expenditures.
 - See 5.6: Underwriting Guidelines for Rental Projects in the HTF Policy for more information.
- An independent, experienced third party must perform the CNA and this party can have no financial interest in ownership of the development. It is required that an Indiana licensed professional, an engineer/architect, perform the assessment and supply IHCDA with their professional opinion of a property's current overall physical condition. This includes the identification of significant deferred maintenance, existing deficiencies, and material building code violations that effect the property's use and its structural or mechanical integrity.
- The assessment should include a site visit and physical inspection of the interior and exterior of units and structures, as well as an interview with available on-site property management and maintenance personnel to inquire about past repairs/improvements, pending repairs and existing or chronic physical deficiencies. The assessment should include an opinion as to the proposed budget for recommended improvements and should identify critical building systems or components that have reached or exceeded their expected useful lives. The assessment should also include recurring probable expenditures for significant systems and components impacting use and tenancy, which are not considered operation or maintenance expenses, in order to determine the appropriate replacement reserve deposits on a per unit per year basis. The following components should be examined and analyzed for a CNA:
 - Site, including topography, drainage, pavement, curbing, sidewalks, parking, landscaping, amenities, water, sewer, storm drainage, gas and electric utilities and lines;
 - Structural systems, both substructure and superstructure, including exterior walls and balconies, exterior doors and windows, roofing system and drainage.
 - Interiors, including unit and common area finishes and appliances, unit bathroom finishes and fixtures, and common area lobbies and corridors;
 - Mechanical systems, including plumbing and domestic hot water, HVAC, electrical, and fire protection; and
 - Elevators (if applicable).
- The CNA must provide the following information in the order and format below:
 - Company certification;

- Executive summary – including a general building description, evaluation definitions, process used to create the Capital Needs Assessment (including interviews with the current owner and/or management company);
 - Existing Building Systems and Conditions Summary;
 - Critical Repair Items Cost Summary – including all health and safety deficiencies violation of state or local building codes that require immediate correction:
 - Site and grounds
 - Building exteriors
 - Common areas
 - Building interiors
 - Rehab and Renovations Cost Summary – An estimate of the repairs, replacements and renovations that will be completed before the final placed in service date:
 - Site and grounds
 - Building exteriors
 - Common areas
 - Building interiors
 - Market improvements
 - Contingency (not to exceed 15%)
 - Long Term Physical Needs Cost Summary – an estimate of the repairs and replacements, during and beyond the final placed in service date, that will be required to maintain the properties physical integrity over the next 15 years.
 - Remaining useful life schedule
 - Physical condition Inspection Report
 - Site, building and floor plans
 - Capital Needs Assessment Certification
 - Photo Log
- IHCDCA will, after receiving the application and the CNA, schedule a physical inspection of the development in order to verify the accuracy of the CNA submitted with the application. Additionally, IHCA may make a report, which identifies deficiencies and/or inaccurate statements concerning the identification of repairs in the CNA submitted with the application.

III. Lead Based Paint:

HUD's Lead Safe Housing Rule 24 CFR Part 35 must be addressed in all projects receiving IHCDCA HTF funding. The Rule may be accessed here:

http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/enforcement/lshr

IV. Accessibility

The Uniform Federal Accessibility Standards sets standards for facility accessibility by physically handicapped persons for Federal and federally-funded facilities. These standards are to be applied during the design, construction, and alteration of buildings and facilities to the extent required by the Architectural Barriers Act of 1968, as amended. Guidelines and standards may be found at:

<https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/ufas>

Section 504 of the Rehabilitation Act of 1973- provides accessibility requirements for New Construction, Substantial Rehabilitation, and Rehabilitation. Please see [Chapter 3 - Accessibility Requirements](#) of the IHCDCA CDBG & HOME Program Manual for an outline of Section 504 requirements.

V. Disaster Mitigation

These standards require housing to be improved to mitigate any potential impacts from potential disasters, such as earthquakes, hurricanes, floods, and wildfires. Improved housing must comply with State or local codes, ordinances, and any other HUD requirements. Currently new projects located in a flood hazard

area will not be funded, and any other rehabilitation of existing units must comply with any federal, State and local flood mitigation plans. Any other potential disaster issues will be mitigated as necessary.

VI: Uniform Physical Condition Standards

The property conditions must also be in accordance with the Uniform Physical Conditions Standards. These are the standards to which projects requiring on-going compliance will be inspected by during the affordability period.

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Site Conditions

1. Site Drainage

- a. There shall be positive surface water drainage away from all dwellings.
- b. The storm water drainage system shall be free of obstructions, structurally sound, free of hazards, and properly drain.

2. Concrete and Masonry

- a. Cracks in concrete, and/or masonry porches, steps or landings more than ¼ inch wide and change in elevation more than ½ inch tall shall be corrected.
- b. Walkways/Steps: cracking, spalling, exposed reinforcing material creating health/safety issues shall be repaired.
- c. Foundations: Cracking, spalling, excessive bowing (bulges vertically), sweeping (bulges horizontally), leaning, and mortar deterioration shall be corrected. Cracks 1/8 inch and larger shall be corrected.

3. Accessory Buildings

- a. Health and/or Safety issues shall be corrected.

4. Trees and Shrubs

- a. Landscaping shall not pose any health or safety hazard.
- b. Trees near the foundation shall not cause an immediate or potential drainage and/or structural problem.
- c. Excessive bushes and trees shall not cause health or safety hazards (overgrown areas).
- d. Dead branches and/or trees, which pose a hazard of falling and/or causing personal harm or property damage, shall be removed.

5. Refrigerator/Stoves

- a. It is recommended that the appliance(s) be replaced if any of the following conditions exist:
 - Broken or missing shelving.
 - Deteriorated seals.
 - Health and safety hazards.
 - Coolant leaks from the refrigerator.
 - Missing hardware (handles, controls knobs).
 - Inefficient or inoperable.

6. Fencing and Gates

- a. Shall be fully functional, securely installed, and free of health and safety issues.
- b. Any missing sections, holes, and/or components shall be repaired.

7. Air Quality

- a. Indoor and outdoor spaces must be free from high levels of sewer gas, fuel gas, mold, mildew, or other harmful pollutants.

8. Garbage, Debris, Chutes

- a. Garbage and debris shall not exceed the capacity of the designated container within each unit and/or exterior collection points.
- b. Exterior garbage containers shall be adequately sized for the number of units within the development.
- c. Walls and gates surrounding exterior trash collection points shall remain in good repair and free of leaning, broken, and collapsing components or sections.
- d. Garbage chutes shall be in proper working condition

9. Hazards

- a. All sharp edges or cutting hazards which could cause bodily harm shall be properly repaired.
- b. Trip and fall hazards shall be identified and repaired.

10. Infestation

- a. Insect and/or rodent infestation shall be treated by a professional within 48 hours to prevent infestation of other units and areas.

11. Mailboxes/Signs

- a. Mailboxes shall be present and in good repair.
- b. All signage shall be present, legible, and in good repair.

12. Parking Lots, Driveways, and Roads

- a. Cracks greater than $\frac{3}{4}$ inch, hinging/tilting, or missing section(s) that affect traffic's ability on the property's parking lots/driveways/roads shall be repaired.
- b. Water ponding affecting the use of the parking lot and/or driveway shall be properly remediated.
- c. Cracks, settling, heaving, and/or potholes creating unsafe or unusable surfaces for walking or driving shall be properly repaired.

13. Play Areas, Equipment, Surface

- a. Damaged or inoperable equipment creating a safety issue shall be repaired.
- b. Deteriorated play surface creating a tripping hazard or not providing adequate protection from falls shall be remediated.

14. Graffiti

- a. Inappropriate inscriptions or drawings scratched, painted, or sprayed on a building surface shall be removed.

Exterior Wall Assembly Standards

- a. All exterior walls shall be reasonably weather tight as to prevent moisture from entering the building and preventing heat from leaving the building.
- b. All siding and exterior wall coverings shall be free of loose, cracked, broken and/or missing sections.
- c. Painted surfaces shall be free of deteriorated paint.
- d. Crawl space access panels and vents shall be in good repair.
- e. Basement/Cellar doors and access panels shall be in good repair.
- f. Retaining walls deteriorated, damaged, falling, or leaning creating a health/safety issue shall be properly repaired.

Floor Standards

1. Wood Floor Standards

- a. Floors shall not excessively sag or become springy when live or dead loads are applied.

2. Floor Sheathing

- a. Sheathing shall be in good repair and free from structural defects and tripping hazards.

3. Floor Finishes

- a. Floor finishes shall be in good repair, securely fastened, and free of any tripping hazards.
- b. Sub-flooring and cement floors, in living spaces, shall be covered with carpeting or other approved floor finishes.

4. Toilet, Bath, Shower, and Kitchen Spaces

- a. When a new floor finish is installed in the kitchen, it shall extend under moveable appliances, including stoves and refrigerators.

Windows and Doors

1. Windows

- a. Window panes that are cracked or broken shall be repaired or replaced.
- b. Any deteriorated components of window units shall be corrected.
- c. All windows shall have properly operating locks and hardware.
- d. Damaged storm windows or screens creating a possible safety hazard shall be repaired or removed.

2. Interior/Exterior Doors

- a. All doors and hardware shall be present and in good working condition.
- b. Interior and exterior doors shall be in good condition free of damage which may cause a hazard.
- c. Doors leading to the outside of the unit shall be weather-stripped to prevent air infiltration.
- d. Doors shall be located in the following areas: attic areas where there is a staircase, bathrooms, shower rooms, restrooms, bedrooms, basement entrances, and storage rooms.

- e. Storm doors, components, and screens shall be in good repair.
- f. Door frames, thresholds, and components shall be in good repair.

Partition Standards

1. Wall Coverings

- a. All wall coverings shall be securely fastened to the wall assembly.
- b. Wall coverings shall be free from excessively loose material, large gouges, holes, and cracks.
- c. Excessive amounts of loose or torn wallpaper shall be corrected.

2. Bathrooms and Kitchens

- a. Bathtubs with showerheads and shower compartments shall be finished with a nonabsorbent surface. Such wall surfaces shall extend to a height of not less than six feet above the floor.
- b. If mildew is present, measures shall be taken to prevent future mildew as well as removing the current mildew.

3. Cabinets and Countertops

- a. Cabinets shall be in good repair, all components operational, and be free of safety hazards.
- b. Countertop surfaces shall be in good repair, in kitchens provide a sanitary surface to prepare food, and be free of safety hazards.

Stair Standards

1. Stairs

- a. Staircases and stairwells shall be in good repair.
- b. Stairs shall not pose a tripping hazard.
- c. Deteriorated, missing or otherwise defective tread, risers, stringers or the supporting structure shall be corrected.

2. Illumination

- a. All exterior and interior stairways shall be provided with illumination of the stairs, landings, and treads.
- b. Exterior stairways shall have an artificial light source located in the immediate vicinity of the top landing of the stairway.
- c. Exterior stairways providing access to a basement from the outside grade level shall have an artificial light source in the immediate vicinity of the bottom landing of the stairway.
- d. The control for the illumination of interior stairways shall be accessible in habitable areas without traversing any step of the stairway. The control for the illumination of exterior stairways shall be located inside the dwelling unit. Lights that are continuously illuminated or automatically activated are exempt from the control standards.

Handrails and Guardrails

1. Handrails

- a. All interior and exterior stairways having four or more risers must have at least one handrail. Spiral and winding stairways shall have a handrail on the outside perimeter.

- b. Handrails shall have a height of no less than 34 inches and no more than 38 inches, and shall be in good repair. Handrails shall be securely fastened to the floor and/or wall to support loads applied by people using the rails.

2. Guardrails

- a. All unenclosed floor and roof openings, open sides of stairways, landings and ramps, balconies, decks or porches that are more than 30 inches above grade or floor below, and roofs used for other than service of the building shall be protected by a guardrail in accordance with the Indiana State Building.

Ceiling Standards

1. Ceiling Performance

- a. Ceiling framing shall be in good repair and free from structural defects.
- b. Acoustical tile and suspended ceilings shall be in good repair.
- c. Ceilings that excessively sag shall be corrected.
- d. Any bulging, holes, or loose plaster shall be corrected.

2. Attic Access

- a. Existing access panels shall be weatherized and provide a weather-tight seal between the conditioned and unconditioned space.

3. Insulation Clearance

- a. Combustible insulation shall be at least three inches from recessed lighting fixtures, fan motors, and other heating devices. However, when heat producing devices are listed for lesser clearances, combustible insulation complying with the listing requirements may be located at the distance specified by the heat producing device.

4. Exhaust Ducts and Plumbing Stack Terminations

- a. All plumbing stacks shall continue through the roof, wall, or gable and not terminate in the attic. Plumbing stacks shall be in good repair.
- b. Exhaust ducts shall be in good repair and continue through the roof, wall, or gable and not terminate in the attic.

Roofs

1. Re-roofing

- a. Roof repairs to existing roofs and roof coverings shall comply with the provisions of the Indiana State Building Code.
- b. Standing-Seam metal roof systems, that are designed to transmit the roof loads directly to the buildings structure system and that do not rely on existing roofs and roof coverings for support, and comply with all provisions of the Indiana State Building Code, are permitted.

2. Sheathing

- a. Sheathing that is sagging, buckling, rotted, or not structurally sound shall be repaired and/or replaced.

3. Underlayment and Moisture Barriers

- a. Where shingles or sheathing need to be repaired or replaced, the underlayment and moisture barrier must also be replaced.
- b. For roof slopes from 2 units vertical in 12 units horizontal (17% slope) up to four units vertical in 12 units horizontal (33% slope) underlayment shall be two layers cemented together. For roof slopes 4 units vertical in 12 units horizontal (33% slope) or greater, underlayment shall be one layer. The felt paper must be rolled and fastened according to manufacturer's directions. Successive courses shall be overlapped 2 inches, and fastened properly.

4. Shingles

- a. Shingles must be replaced if one of the following exists: missing, excessive curling, cupping, or deterioration.
- b. Shingles installed on a roof slope below State Building Code requirements for shingles shall be removed and an approved covering installed.
- c. Standing water causing potential or visible damage shall be repaired.

5. Flat Roofs

- a. Punctured, cracked, blistered, wrinkled, or otherwise distressed areas shall be corrected.
- b. Drains shall be in good repair and free of obstructions.

6. Flashing and Vents

- a. Flashing shall be in good repair and used wherever the roof abuts a wall or vent, around other extensions through the roof, and around masonry chimneys.
- b. Properly sized attic venting shall be installed on all new construction and re-roofs and shall be free of damage or obstructions.

7. Gutters, Downspouts, Soffit, and Fascia

- a. Missing, sagging, or deteriorated gutters must be repaired or replaced.
- b. Wood is only acceptable if required by Department of Natural Resources – Division of Historic Preservation & Archeology.
- c. Downspouts shall be color coordinated with gutters and shall be proportional in size to the drainage needs of the roof.
- d. Gutters shall be supported as per the manufacturer's specifications with spikes and ferrules, wrap-around straphangers, or with hidden hangers.
- e. Downspouts shall be securely attached to the house and connected to an exterior drainage system if one exists or installed in such a manner that storm water will drain away from the house and not result in washing, erosion, or damage to the foundation of the house. If there is no drainage system present, splash blocks or leaders shall be present.
- f. Damage and missing soffit and/or fascia shall be repaired or replaced.

Chimney Standards

1. General Performance

- a. Any operable chimney must meet all applicable chimney requirements.

- b. When an existing chimney is found not fit for its intended application it shall be repaired, rebuilt, lined, relined, or replaced with a vent or chimney to conform to the applicable code.
- c. Inoperable and/or deteriorated chimneys, which pose a health/safety risk, shall be corrected or removed.
- d. All empty or cracked mortar joints, including those in interior areas, such as basements and attics shall be tuck-pointed.
- e. Solid fuel burning chimneys, for burning of wood or coal, shall be provided with spark arrestors (screens).

2. Flue Lining

- a. All operable chimneys shall have flue liners in good condition.

3. Chimney Hood

- a. The chimney hood shall have a height above the vent of at least 25 percent of the narrowest dimension of the vent. Hoods shall also be free from spalling or rust.
- b. Minor spalling shall be repaired. If more than small portions are spalling, the hood shall be replaced. If a metal chimney hood has excessive rust, it shall be replaced.

Electrical – Hazards

1. General

- a. There shall be a minimum service of 100-ampere per dwelling unit.
- b. Fused service panels shall be replaced by a panel with circuit breakers.
- c. Open ports within a panel box shall be properly concealed.
- d. Service-drop conductors shall meet the applicable code requirements.
- e. All circuits within the panel-box shall be identified and labeled.
- f. All wiring in basements, attics and/or garages shall be properly secured.
- g. Whereas a bathroom does not have a receptacle, one shall be installed in accordance with the Indiana State Building Code. Half-bathrooms are exempt from this requirement.
- h. All counter-top receptacles, in the kitchen, shall be GFCI protected.
- i. Bathroom and exterior receptacles shall be GFCI protected.
- j. All 240-volt appliances or equipment except baseboard heating units shall be on separate circuits.
- k. Wall or ceiling light fixtures and/or ceiling fans shall be securely installed.
- l. Moisture leaks, puddling, or ponding on or near energized electrical components shall be investigated and remediated.
- m. Electrical panel access and working clearance shall not be obstructed.
- n. Breakers with evidence of melting, arcing, or carbon residue shall be investigated and properly repaired.
- o. Electrical enclosures/equipment shall be free of moisture stains, water leaks in close proximity, rust, and other signs of corrosion, or safety issues.

2. Wiring

- a. Existing wiring and equipment shall be in proper operating condition, free of fraying, nicks, and abrasions, and pose no health or safety risk.
- b. All wiring in areas other than the basement, unused attic areas, and garages shall be run in walls, wire mold or in conduit.
- c. A new or old service shall be grounded to a ground rod.

- d. Circuit extensions made with flexible cord wiring in lieu of permanent wiring shall be eliminated.
- e. Copper wiring shall have proper connections to aluminum wiring. It is recommended that aluminum wiring be replaced with copper wiring when possible.

3. Receptacles

- a. All damaged or inoperable receptacles shall be replaced. Broken cover plates shall be replaced.
- b. Replacement of an existing non-utility or non-appliance two-prong receptacle may be with a 15-ampere non-grounding type receptacle.
- c. New or existing grounding type receptacles must be grounded or meet the current requirements of the Indiana State Building Code.
- d. Existing baseboard receptacles properly set are acceptable.
- e. Any equipment or appliances with grounded plugs shall have immediate access to a proper size grounded receptacle.

4. Lighting

- a. A permanently installed light fixture controlled by a wall switch is required in the kitchen, bathroom, basement, stairwells, and hallways.
- b. Light fixtures shall be installed properly and have a shield/globe installed.

Plumbing

1. Water Distribution System

- a. Please ensure that anyone performing plumbing work meets the proper licensing requirements as required by the State of Indiana or local jurisdictions.
- b. Dwelling units shall be served by an approved sanitary sewage disposal system.
- c. Leaking drain or supply lines, the presence of lead piping, failed polybutylene joints or pipes, low water pressure, or corroded or broken pipes shall be repaired or replaced. Any cross connections or siphonage between fixtures shall be corrected.
- d. There shall be a properly operating main shut-off valve on the house side of the meter.
- e. Replacement sill-cocks shall be freeze-proof and/or have a shut-off valve located and in accordance with the Indiana State Building Code.

2. Drain, Waste, and Vent System

- a. Leaks; clogged, slow, or non-working drains; or odors and any cross connections or siphonage between fixtures shall be corrected. Supplies that are located below the overflow drain must be corrected.
- b. Horizontal drainage piping shall be installed in uniform alignment at uniform slopes.
- c. The size of drainage pipe shall not be reduced in the direction of flow. A 4-inch by 3-inch water closet connection shall not be considered a reduction in size.

3. Hot Water Supply System

- a. Each dwelling unit shall have a water heater located, equipped, and installed in accordance to the Indiana State Building Code.
- b. A discharge pipe, extending from the TPR (temperature relief valve) and no less than the diameter of the TPR inlet, shall be installed not less than six inches from the floor. The end of the discharge pipe shall not be threaded.

4. Fixtures and Faucets

- a. Kitchen Sink. Any sink rusted, severely chipped or with badly worn enamel or not in good repair shall be corrected.
- b. Lavatory Sink and Cabinet. A rusted, severely chipped or badly worn enamel or not in good repair shall be corrected. The lavatory sink may be located in the same room as the flush water closet, or, if located in another room, it shall be in close proximity to the water closet compartment. Damaged or missing cabinet components shall be repaired/replaced.
- c. Bathtub/Showers. A rusted bathtub and/or shower unit or one that is chipped or has badly worn enamel, or not in good repair shall be corrected.
- d. Flush Water Closet. The water closet shall be in good repair and securely installed. All water closets, existing or newly installed, shall have a functioning shut-off valve.

HVAC Standards

1. Controls and Operation

- a. Each thermostat shall be functional and user friendly.
- b. Each gas and oil combustion system shall have a master switch that serves as an emergency shutoff for the HVAC burner. The switch shall be easily accessible by the client in case an emergency shutoff is necessary. The switch shall also be in the line of sight of the appliances it controls.
- c. Abnormal vibrations, noise, or leaks shall be investigated and repaired if needed.

2. Fuel Supply

Piping

- a. Piping shall be properly supported, but not supported by other piping. A sediment trap shall be located as close as practical to the inlet of each combustion appliance (illuminating appliances, ranges, dryers, and outdoor grills need not be equipped). Shutoff valves shall be installed where required by the Indiana State Building Code and have easy access, be user friendly, and be protected from damage.
- b. Piping shall be supported with appropriate hangers for the size of pipe. Supports shall be at such an interval and strength to prevent or dampen excessive vibration. Pipe supports shall be installed so movement of the pipe being supported will not detach them.
- c. Any leaks from a fuel tank or line shall be reported and immediately repaired.

3. Combustion Heat (Forced Air Systems only)

Basic Conditions

- c. The unit must have the minimum manufacturer's requirements in front of the unit for maintenance. The unit shall also be free from rust or other physical damage. The heat

- exchanger must be free from cracks or other openings. Barometric draft regulators shall be located above the unit or on the vent or vent connector in oil burning appliances.
- d. The heating system must be capable of heating all habitable rooms, bathrooms, and water closets to a temperature of at least 70° F for a local design temperature at a distance of 36 inches above floor level.
 - c. Combustion air requirements shall be in accordance with the Indiana State Building Code.

Vents

General Conditions

- a. Vents shall be sized to properly exhaust all combustion products outdoors. Vents shall also consist of the appropriate vent type for the combustion appliance(s) being vented. Vents shall be free from damage or rust and be tightly connected.
- b. Vents shall be properly supported so that they are generally vertical and comply with the listed clearance to combustible materials of the vent.
- c. Direct vent sealed combustion; power venting, and other approved methods of venting are permitted if they are installed according to manufacturer's instructions.

Vent Termination

- a. Gas vents 12 inches or smaller must terminate at least 8 feet from a vertical wall or other similar obstruction and have a minimum height (from highest roof penetration to lowest discharge opening) according to the Indiana State Building Code. All other gas vents must terminate at least 2 feet from the highest point where the vent passes through the roof and at least 2 feet higher than any portion of a building within 10 feet.
- b. Type B or L vents shall terminate at least 5 feet above the highest connected draft hood or flue collar. Vents must terminate vertically unless direct vent sealed combustion, power venting, or other approved methods of horizontal venting are used and installed according to manufacturer's instructions.

Vent Connectors

- a. Vent connectors shall be sized to properly vent combustion products. Vents shall also consist of the appropriate vent type for the combustion appliance(s) being vented. Vents shall be free from damage or rust and be tightly connected. All segments of vent connectors shall be accessible at all times.
- b. Vent connectors shall be properly supported and have a minimum slope of $\frac{1}{4}$ inch per foot and comply with the listed clearance to combustible materials of the vent.

4. Electric Heat

Observable heat source

- a. All heating elements shall be functional. Heating units shall also be in good condition. The heating system must be capable of heating all habitable rooms, bathrooms, and water closets to a temperature of at least 70° F for local design temperatures at a distance of 36 inches above floor level. Heating elements shall have good connections and no damaged or charred wires. Aluminum shall not be used as wiring unless specified by the manufacturer.
- b. Any heating element that does not adequately heat shall be checked to make sure the connections to the element are satisfactory and that the relay is not malfunctioning.

5. Cooling

- a. Central air conditioners shall be in good, working condition.
- b. Unit/Window and Packaged terminal air conditioners shall have a tight seal around the unit and be properly supported. Unit/Window air conditioners shall also be properly grounded.
- c. If a heat pump is equipped with a reversing valve, it shall function properly.
- d. Bent fins on air conditioners should be combed to straighten them. The condensate shall be properly drained so that moisture problems are not created. Fiberglass shall not be used as an air sealant around window/unit air conditioners. Both indoor and outdoor coils should be clean. Suction lines should also be insulated to prevent possible moisture problems.
- e. A disconnecting means shall be installed in accordance with the Indiana State Building Code.

6. Distribution Systems

- a. Duct systems shall be intact, supported properly, and well-sealed.
- b. Air shall be allowed to flow freely from supply registers into return registers.
- c. When furnaces are converted from a gravity fed heating system to a forced air system the duct system should be reconfigured and properly sized so that the heating system functions properly.
- d. Duck tape shall not be used to seal or connect ducts.
- e. When possible, supply and return registers shall be located in the same room, except for bathrooms or kitchens. No returns should be located in bathrooms and kitchens. If supplies and returns cannot be in the same room, measures must be taken to allow for air to flow from supplies to a return even if doors are closed separating the rooms. Grills and louvers are two methods of allowing air to flow from room to room.
- f. Boiler/Pump water or steam leaks creating a safety hazard shall be properly repaired.

Ventilation

1. Minimum Ventilation Standards

- a. All habitable rooms shall be provided with natural or mechanical ventilation.
- b. Louvers, windows and doors shall be able to let air pass freely between the room and the outdoors.
- c. Exhaust fans must terminate outdoors and not in the attic. Excessive amounts of exhaust ductwork shall be avoided.

Bathrooms

- a. Bathrooms that have a tub or shower shall be ventilated.
- b. Windows must have at least 1.5 square feet of area that air can pass through if mechanical ventilation is not available.
- c. Ventilated air shall be exhausted directly outside and not terminate in any other part of the building.
- d. Any ductwork passing through attics shall be insulated.

2. Clothes Dryer Exhaust

General

- a. Dryer exhaust systems shall be independent of all other systems; shall convey the moisture to the outdoors and shall terminate on the outside of the building. Screens shall not be installed at the duct termination. Transition ducts shall not be concealed within construction.
- b. Exhaust ducts shall not be connected with sheet-metal screws or fastening means which extend into the duct.
- c. Exhaust ducts shall be equipped with a backdraft damper.
- d. Exhaust ducts shall be constructed of minimum 0.016-inch thick rigid metal ducts, having smooth interior surfaces with joints running in the direction of the airflow.
- e. Flexible transition ducts used to connect the dryer to the exhaust duct system shall be limited to single lengths, not to exceed eight feet in length, and shall be listed and labeled in accordance with UL 2158A.
- f. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions.

Lint collector

- a. All ducts expelling lint shall be provided with a lint collector unless the dryer is already equipped with one.
- b. Lint collectors shall be installed according to manufacturer's instructions.

Exhaust duct size

- a. The minimum diameter of the exhaust duct shall be as recommended by the manufacturer and shall be at least the diameter of the appliance outlet.

Exhaust clearance

- a. Exhaust ducts for clothes dryers shall have a clearance of at least one inch from combustible materials.

Length limitation

- a. The maximum length of a clothes dryer exhaust duct shall not exceed 25 feet from the dryer location to the wall or roof termination. The maximum length of the duct shall be reduced by 2.5 feet for each 45-degree turn and 5 feet for each 90-degree turn. The maximum length of the exhaust duct does not include the transition duct.

3. Range Hoods

- a. Range hoods for gas stoves that discharge to the outdoors must be through a single wall duct. The duct serving the hood shall be airtight and shall be equipped with a backdraft damper. Ducts serving range hoods shall be constructed of galvanized steel or stainless steel and not terminate in an attic or crawl space or areas inside the building.
- b. Variations can be made where installed in accordance with the manufacturer's installation instructions, and where mechanical or natural ventilation is otherwise provided

4. Overhead exhaust hoods

- a. Overhead exhaust hoods shall discharge to the outdoors and shall be equipped with a backdraft damper. Broiler units incorporating an integral exhaust system, and listed and labeled for use without an exhaust hood, need not be provided with an exhaust hood.
- b. Domestic open-top broiler units shall be provided with a metal exhaust hood, not less than 28 gauge, with a clearance of not less than 0.25 inch between the hood and the underside of

combustible material or cabinets. A clearance of at least 24 inches shall be maintained between the cooking surface and the combustible material or cabinet. The hood shall be at least as wide as the broiler unit and shall extend over the entire unit and be centered over the unit

Fire Safety

1. Emergency Escape and Rescue Openings

- a. Emergency escape and rescue opening shall comply with the Indiana State Building Code.
- b. Fire escapes, including ladders, shall not be blocked by stored items or barriers.
- c. All components of a fire escape such as a ladder, shall be present and in proper working order.

2. Exits

- a. Exits shall comply with the Indiana State Building Code.
- b. Emergency lighting that provides illumination during power outages shall be in proper working order at all times.

3. Smoke Alarms

- a. Individual dwelling units shall be provided with smoke alarms as required by the Indiana State Building Code.

4. Flammable Materials

- a. All flammable materials shall be properly stored in accordance with the manufacturer's specifications, state, and/or local codes.

5. Fire Protection

- a. All components of a sprinkler system shall be present and in proper working order.
- b. Required fire extinguishers shall be present, accessible, and the inspection tag up to date.

Hazardous Materials

1. Asbestos

- a. The Local or State Health Department should be contacted regarding any questions concerning the proper treatment and/or disposal of any material possibly containing asbestos.

2. Lead-Based Paint – Reference HUDs Lead Safe Housing Rule at 24 CFR Part 35

Energy Efficiency

1. Exterior Walls

- a. Walls should be insulated in accordance with the Indiana State Building Code when any of the following activities occur:
 - New walls,
 - Walls that have become exposed during rehabilitation, and

- If the exterior covering is removed.

2. Attics/Ceilings

- a. Attic areas are recommended to have a minimum of R-38 insulation.
- b. Any attic walls that connect to an interior space are recommended to be insulated at a minimum of R-18.
- c. Insulation should be installed in accordance to manufacturer's specifications. All insulation in the attic should meet the appropriate fire safety codes. Thorough air sealing of the attic floor must be accomplished prior to addition of insulation.

3. Ductwork

- a. All supply and return air ducts and plenums shall be insulated with a minimum of R-5 insulation when located outside the thermal boundary and with a minimum of R-8 insulation when located outside the building envelope.

4. Piping

- a. All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with the Indiana State Building Code.

5. Air Sealing

- a. Exterior joints, seams or penetrations in the building envelope, that are sources of air leakage, shall be sealed.

Accessible Features

1. Elevators

- a. Elevators shall be operational with an up to date inspection certificate present, and properly aligned and leveled with each floor to prevent trip hazards.

2. Call for aid

- a. Systems shall be fully operational as designed.