

# Inspections and Work Scopes for Healthy Homes

OHHN Conference 2024

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## Session Content:

This session will be an overview of tips and techniques for doing home assessments/inspections, including the following topics:

- The inspection process and standardization
- The concept of locational based inspections
- Key health and safety considerations
- Using checklists
- Formats for specifications

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## Armand Magnelli

Armand has over 40 years of experience in sustainable construction, affordable housing and community development. Armand has managed production of a city-wide owner-occupied rehab program, and housing development for two Community Development Corporations, including 6 years as an Executive Director. In addition to his work as a practitioner, he has worked nationally as a consultant and trainer for over 30 years. Working with nonprofits and city governments, he provides training and technical assistance on Community Development, Affordable Housing Production, Disaster Preparedness and Recovery, Organizational Development, Volunteer Training and Management, and Healthy, Green, Resilient and Sustainable approaches to all of the above.

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# The Inspection Process

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# The Inspection Process

- There are hundreds of details to examine
- It's easy to become distracted
- Houses are systems and components affect each other

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# My preliminary Scan:

- I take a quick scan of the property before I try to document the work required in each location and before I take photos.
- This scan includes the exterior and interior.
- It may only take me 15 to 20 minutes. The scan allows me to make connections between exterior and interior spaces. Also, connections between one interior space and another.
- I may have the homeowner accompany me, depending on their mobility and other considerations, and while the scan will take longer it may save time overall.

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## The Inspection Process

- Create a standard pattern/process for your inspections. It will minimize the potential to miss something.
- Consider using a checklist that follows your system.
- Take photographs in that same order.
- Have your scope of work separate the tasks by room and follow the same order as your inspection.
- Use the wall naming protocol that LBP Risk Assessors use.

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## Speaking of Standard Practices/Processes

### This is Always my First Photo

The camera is an underappreciated inspection tool.



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## Location Focused Inspection Strategies

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## Location Types to Consider for their Uniqueness

- Exterior and Site
- Basements & Crawlspaces (possibly Utility Room)
- Kitchens
- Bathrooms
- Generic Interior Rooms
- Stairs
- Attics



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## Appropriate Inspection Goals for all Locations

### Identifying:

- Health and safety issues (priority)
- Structural problems
- Water Management Issues
- Code violations
- Opportunities for energy or utility cost savings

### and...

- Defining the work required to maintain the program standard
- This means we need to know what to specify



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## Inspecting the Exterior & Site

1. Overriding Topics
  - a. Housing Rehabilitation Standards and Building Codes
  - b. Related Building Science
  - c. Environmental issues
2. Roofing Systems
3. Gutters, Downspouts & Storm Water Management
4. Walls, Windows and Doors: Structure, Cladding, Insulation
5. Lighting and Electrical Receptacles
6. Porches, Exterior Stairs, Ramps and Walkways
7. Site and Vegetation
8. Utility Connections



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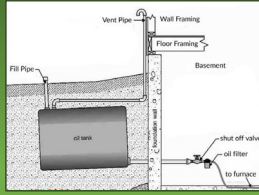
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## Environmental Issues

### For Exterior and Site

- Asbestos
- LBP
- Lead Service Lines (LSL)
- Pest infestations
- Leaking Underground Storage Tanks (LUST)
- Defective Septic System (see Utilities)
- Well Water Contamination (see Utilities)



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## Environmental Issues: Typical Roofing and Cladding Materials that may Contain Asbestos



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## Environmental Issues: Pest Infestations

For the exterior and site of a building, this is all about exclusion. AKA, finding and sealing entry points. Focus on:

- Where the building meets grade for signs of openings.
- Soffit areas.
- Any openings the size of a dime or larger.

Pesticides are also an environmental hazard!



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### Pest Infestations

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### Pest Infestations

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### Pest Infestations

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## Roofing

- Nothing is more important! (some components are equally important)
- Key standards issues related to building science
  - Roofing underlayment (ice & water shield?)
  - Flashing and drip edge
  - Penetrations
    - Chimneys
    - Ventilation outlets
    - Plumbing vents



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Examples of "Start with a Scan"

You would likely scan the roof from the ground.

What are the components worth noting?



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## How would you inspect this roof?

- Details:
- 3 dormers, at front and sides
  - Gable end porch roof
  - Similar porch roof at rear.
  - Main roof has an 8/12 pitch



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This was taken with a telephoto lens



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Telephoto Lens Cropped



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### Inspection Techniques and Tools

For Gutters, Downspouts and Storm Water Management

Look for signs of:

- Dysfunctional gutters and downspouts
- Puddling near the foundation
- Poor grading
- Water intrusion inside
- High moisture levels inside
  - Relative humidity above 55% inside the home
  - Interior wood moisture content above 15%



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## Cause and Effect



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Sometimes the problems with Gutters and Downspouts are Obvious

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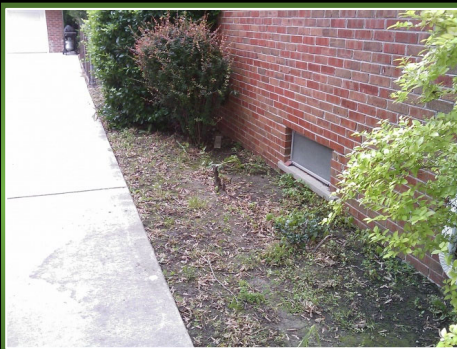
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### Potential Moisture Problems?

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**How much rain does it take?**

How many gallons of water will fall on 1 square foot of horizontal surface when we receive 1 inch of rain?  
0.625 gal per Square Foot (SF)

How many gallons falls on a roof that represents 1,000 SF of horizontal plane?  
625

How many gallons arrive at each of 4 downspouts?  
About 156

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## Inspection Techniques and Tools

For Porches, Exterior Stairs, Ramps and Walkways

### Items to consider for Access & Egress:

- Evaluating the access to and egress from the home, requires understanding the occupants' level of mobility.
- Good lighting can reduce injuries from falls and deter potential intruders.
- For issues related to accessibility, an Occupational Therapist may be helpful.



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What's wrong with this picture?

What code or standards violations do you see?



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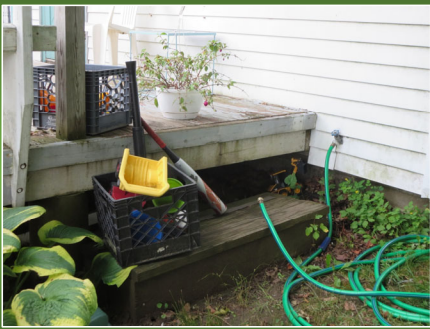
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And this Picture?



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Check out the top step, it's 10 1/2" high, and there ought to be a landing.

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Consider two handrails for occupants with mobility issues

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Handrail Returns are Code

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**Metal railings have advantages**

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**Inspection Techniques and Tools**  
For Exterior Electrical and Plumbing Fixtures



- Flood lights reduce the risk of falls and discourage intruders.
- This traditional style fixture uses incandescent bulbs, which could easily be replaced with LED bulbs.

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## Inspection Techniques and Tools

### For Exterior Electrical and Plumbing Fixtures



- This LED flood lamp has a motion detector built in.
- The motion detector enables the fixture to be off until an occupant approaches in the dark and needs light to navigate a walkway.
- It also lights up when it sees a potential intruder approaching.



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## Inspecting Kitchens

1. Overriding Topics
  - a. Housing Rehabilitation Standards & Building Codes
  - b. Related Building Science
  - c. Environmental issues
2. Electrical Distribution and Outlets
3. Plumbing
4. HVAC
5. Ventilation
6. Cabinetry and Countertops
7. Wall and Floor Finishes
8. Windows and Doors
9. Appliances
10. Accessibility



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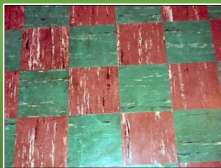
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## Environmental Issues – Asbestos & LBP

### For Kitchens

- 9x9 is the most common size of tile containing asbestos.
- There have been examples of 12x12 vinyl tiles, containing asbestos.
- Don't forget about the mastic.



LBP is common in pre 1978 Bathrooms.



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## Environmental Issues - Pests

### For Kitchens

- Cockroaches and rodents will hang out wherever there is food, so Kitchens are a favored location.
- Also look near pet food bowls.

Cockroach frass under a cabinet shelf



Mouse droppings



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## Environmental Issues - Pests

### For Kitchens

- Mice and cockroaches love stoves, if they provide a source of food.
- Look for signs of both around the stove and under the cooktop.
- Mice are particularly fond of nesting in the insulation inside stoves.



Mouse nesting in insulation



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## Environmental Issues - Pests

### For Kitchens

- Cleaning is key to addressing both cockroach and mouse infestations.
- Both pests leave a constant stream of droppings, and their colleagues will follow the scent in hopes of finding reliable food sources.
- Do not touch or disturb droppings. Mouse droppings are especially dangerous because of the high level of pathogens.



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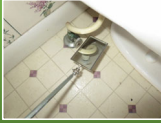
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## Inspection Techniques and Tools

For Kitchens - Moisture



Sometimes the problem is obvious.



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## Inspection Techniques and Tools

For Kitchens- Moisture

- In addition to using your sense of smell, or touch, consider using a moisture meter. (mentioned in Basements and Crawlspace session).
- It is important to determine if the moisture problem remains active, or if the water-stained components are now dry.
- A moisture meter can help to quantify the moisture levels.



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## Inspection Techniques and Tools

For Kitchens – Electrical Receptacles

Test every receptacle that you can access. Use a tester like the one pictured to test GFCI receptacles.



Amprobe® ST-1028  
Receptacle Tester w/  
GFCI - 811



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## Inspection Techniques and Tools

For Kitchens – Floor Finishes

- It is difficult to inspect flooring when there is clutter.
- Kitchen flooring should be waterproof, cleanable and free from holes and tears.
- Look for flooring defects in the traffic patterns, and where tables and chairs contact the floor.
- Examine the flooring at the edges of the room. There should be a well sealed connection between the walls and floor.



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## Inspection Techniques and Tools

For Kitchens – Ventilation



Is there a clue that this range hood is recirculating?

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## Inspection Techniques and Tools

For Kitchens – Ventilation



Mistakes to Avoid

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## Inspection Techniques and Tools

For Kitchens – Ventilation

- Determine if an existing range hood is:
  - working,
  - vented to the outside,
  - vented to an interior space such as an attic or crawlspace, or is recirculating.
- Look for ductwork, and for an outlet.



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## Inspection Techniques and Tools

For Kitchens – Ventilation

- Ask the homeowner if they notice cooking odors in other rooms.
- Do they ever see visible smoke from cooking?
- Do smoke alarms or CO alarms go off near the Kitchen?
- Is there anyone in the household with asthma whose symptoms worsen because of cooking?
- An answer of yes to any of these questions suggests insufficient kitchen ventilation, or that the exhaust fan is not being used.

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## Reach Limits & Sink Clearances

For Inspections and Specifications



The reach limits in the UFAS and ADA guidance is research based, and protects individuals from the risks associated with excessive and awkward reaching positions.

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## Inspecting Bathrooms

1. Overriding Topics
  - a. Housing Rehabilitation Standards & Building Codes
  - b. Related Building Science
  - c. Environmental issues
2. Plumbing and Plumbing Fixtures
3. Electrical Distribution, Lighting and Outlets and Ventilation
4. HVAC
5. Accessibility/Universal Design
6. Wall and Floor Finishes
7. Windows and Doors
8. Insulation



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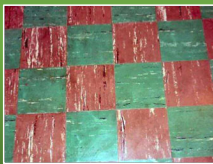
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## Environmental Issues – Asbestos & LBP

For Bathrooms – a review

- 9x9 is the most common size of tile containing asbestos.
- There have been examples of 12x12 vinyl tiles, containing asbestos.
- Don't forget about the mastic.

LBP is common in pre 1978 Bathrooms.



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## Environmental Issues - Pests

For Bathrooms

- Cockroaches and rodents will hang out wherever there is food, so clean Bathrooms may not be an attraction.
- Moisture may attract cockroaches. Mice have surprisingly little need for moisture, except in their food.
- Regardless, it is good practice to seal potential access points.

Access points under a bathroom vanity.



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## Inspection Techniques and Tools

### For Bathrooms - Moisture

- Moisture problems in Bathrooms are common.
- Surfaces that are less absorbent help.
- Ventilation is key.



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## Inspection Techniques and Tools

### For Kitchens - Ventilation

- Determine if an existing bathroom exhaust fan is:
  - working,
  - vented to the outside,
  - vented to an interior space such as an attic or crawlspace.
- Look for ductwork, and for an outlet.
- Is there exhaust at the outlet when the fan is running?



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## Inspection Techniques and Tools

### For Kitchens - Ventilation



But how do you know if it is working?

- Use a convenient testing tool, TP
- If the fan is able to hold a single sheet of double-ply TP when it's running, it is operating at 25 cubic feet per minute (CFM). That's not great.
- Two sheets of double-ply TP equal at least 50 CFM. That's a good minimum.
- An 8 1/2 x 11 sheet of copy paper equals approximately 80 CFM. Much better.



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## Inspection Techniques and Tools

For Kitchens – Ventilation



- The ductwork material and installation has a huge effect on performance.
- Short runs with smooth metal duct are best.
- Flex duct is very restrictive compared to smooth duct of the same diameter.
- The duct must exhaust to outdoors.
- The attic is not considered outdoors.



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## Grab Bars and Handrails

Three Key Considerations:

- Appropriate Placement
- Functional Design
- Secure Fastening



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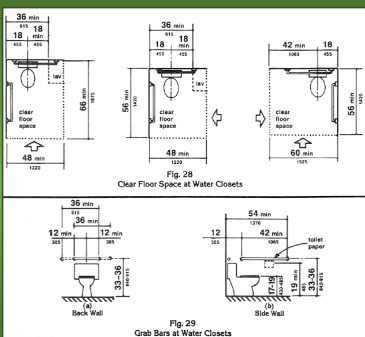
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## Grab Bars



Remember the clearance and location requirements from the Standards slides.



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### Tub/Shower Grab Bars

**Controls**

- Note the importance of seat location if one is incorporated into the tub/shower

**Seat**

- Off-setting the controls is helpful

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**An Example of Good Grab Bar Placement**

Note how the Shower Controls are Shifted toward the Outside of the Tub

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### Handrails and Grab Bars

**(a) Handrail**

**(b) Handrail**

**(c) Grab Bar**

**(d) Grab Bar**

**(e) Handrail**

Fig. 33  
Site and Sizing of Handrails and Grab Bars

- Note the shape of approved designs for both handrails and grab bars.
- Also note the size & clearances

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Using a backer board to mount a toilet area grab bar.




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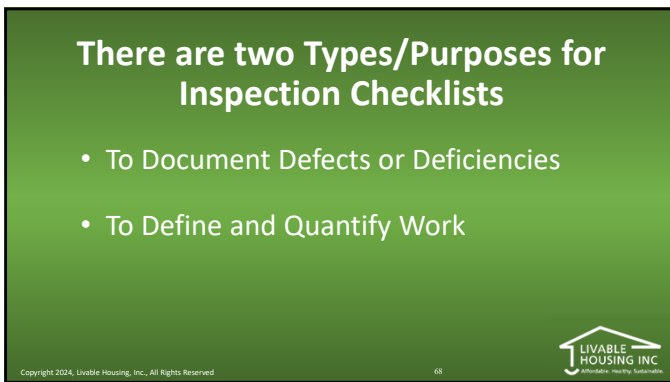
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## There are two Types/Purposes for Inspection Checklists

- To Document Defects or Deficiencies
- To Define and Quantify Work




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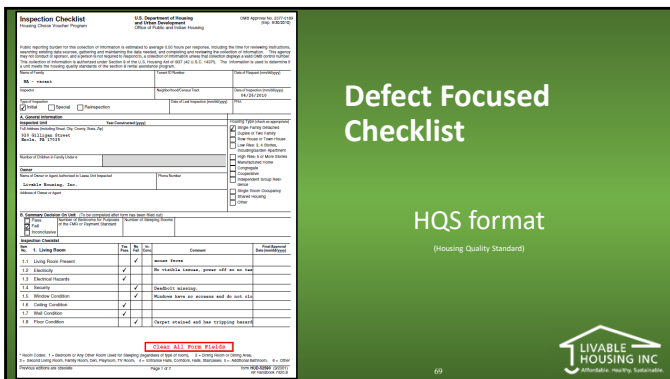
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## Defect Focused Checklist

HQS format  
(Housing Quality Standard)




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## Sample Specification System

- This is an example of a work specification
- Note the level of detail and references to standards

Spec #	Spec Title	Spec Description	Unit of Measure	Unit Cost
2313	SUBFLOOR-- 3/4" REPAIR	Replace specified section of subfloor with 3/4" tongue and groove CDX plywood decking glued to floor framing per American Plywood Assoc. (APA) Performance Specification AFG-01 or ASTM D3498 e.g., 1/4" diameter bead on floor framing and 1/8" in groove of T&G joints, and nailed per APA Download Q300 Table 1 Panel and Attachment Recommendations www.apawood.org e.g., for 16" OC joist spacing, 6d ring or screw shank nails every 6" on supported panel edges, and every 12" on intermediate supports.	SF	\$4.55

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# Questions?

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# Thank You!

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