

Exterior Elevated Elements Inspection Guidelines

Planning and Development
Building & Safety Division
Housing Code Enforcement

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1. Guideline Purpose

These guidelines are intended to assist practicing professionals in complying with Berkeley Municipal Code (BMC) Section 19.040.035 and to assist City of Berkeley Building and Safety Division staff with enforcing BMC Section 19.040.035, also known as the Exterior Elevated Elements Inspection Program (E3 Program). For more information please refer to the Frequently Asked Questions posted on the E3 Program webpage: <http://www.cityofberkeley.info/E3/>

2. Program Scope

The Berkeley City Council passed Ordinance No.7,431-N.S. adding Section 601.4 to the Berkeley Housing Code requiring inspection of weather-exposed, exterior, elevated elements of buildings. The Ordinance requires inspection of exterior elevated elements every three years, and it applies to buildings containing R-1 and R-2 Occupancies, as defined by the California Building Code. The program applies to all such buildings regardless of their original construction date.

The City delivered E3 Program notifications to building owners in August 2015. Building owners must file the Inspection Certification form with the Housing Code Enforcement office on or before January 14, 2016, and every three years thereafter. If building owners believe their building is exempt from the program, they must file the Exemption Declaration form on or before January 14, 2016 to be removed from the program's inventory.

The program applies to the following elements located more than 30 inches above adjacent grade, constructed of wood or steel, and accessible to occupants, known collectively in this document as exterior elevated elements (E3s):

- 2.1. Balconies
- 2.2. Exterior walkways
- 2.3. Decks
- 2.4. Exterior stairs and landings
- 2.5. Guards and associated handrails serving any elements listed above

E3s whose structural system is constructed of reinforced concrete are exempt from the program. E3s featuring a concrete topping slab as a wearing surface are subject to the program if the topping slab is supported by wood or steel framing.

E3s located in areas accessible only to maintenance personnel, such as roofs, are not subject to the program.

Figure 1 on page 6 is a sample illustration of E3s that are subject to the program.

3. Program Purpose

The program's purpose is to safeguard the public safety by maintaining the strength of structural components supporting E3s. Program objectives include the following:

- 3.1. Identify wood framed E3s exhibiting significant deterioration due to wood destroying organisms (fungal decay or insect infestation).
- 3.2. Identify steel framed E3s exhibiting significant section loss due to corrosion.
- 3.3. Ascertain whether the extent of deterioration or corrosion poses a significant compromise to the load-carrying adequacy of structural components supporting E3s.
- 3.4. Attempt to locate the water source if wood destroying organism infestation or corrosion is observed in wood framing or steel framing respectively.
- 3.5. Remediate deficient components.

Before assessing the building's E3s, confirm the applicability of the program to the building. If the building is not subject to the program, the building owner should file the Exemption Declaration form with the City. In this case, the City would not require assessment of the building's E3s.

The inspection and condition assessment process is comprised of a Tier 1 screening and a Tier 2 evaluation and remediation. An overview of the Tier 1 screening and Tier 2 evaluation and remediation procedures is illustrated in **Figure 2** on page 7.

4. Tier 1 Screening Procedure

The Tier 1 screening by a licensed professional is comprised of two components: condition assessment of E3s' structural components and condition assessment of the waterproofing system.

4.1. Tier 1 Structural Screening

The Tier 1 screening of structural components will most commonly entail the following:

4.1.1. *Visit the Site*

Visually review all E3s, and interior and exterior areas proximate thereto, as necessary.

4.1.2. *Develop an Investigative Program*

In the case of E3s with soffit finishes, selectively identify locations for investigative openings to reveal concealed structural components. Finish removal need only be the minimum amount sufficient to ascertain whether or not wood structural components have suffered decay due to wood destroying organisms or whether or not steel structural components have suffered corrosion. Inspections should be conducted at the most probable locations where water intrusion may occur, for example at the intersection of horizontal and vertical assemblies, guardrail penetrations of the element assembly, floor drains where present, or other similar locations.

4.1.3. *Create Investigative Openings*

Selectively create investigative openings to reveal concealed structural components and conditions. A building permit is not required for selective removal of finishes associated with investigative work.

4.1.4. *Determine if Wood Destroying Pests, Organisms or Corrosion are Present*

If wood destroying organisms are identified on wood components or corrosion is identified on steel structural components, initiate Tier 2 structural evaluation as recommended below.

4.1.5. *Patch Investigative Openings*

If no significant presence of wood destroying organisms or corrosion is identified, patch the openings to match the existing surface. The owner may wish to install vents and/or access openings to provide easy access for future inspections. Be mindful that the affected areas may be components of a fire rated assembly where located in close proximity to side or rear property lines and therefore subject to certain building code requirements.

Note: A building permit is not required for patching of selectively removed finishes in-kind.

Note: A building permit is required for the installation of vents and/or access openings.

4.2. Tier 1 Waterproofing System Screening

Practically assessing the adequacy of the waterproofing system is difficult in many instances. The waterproofing barrier is often concealed by a wearing surface topping, in the case of balconies and walkways, or wall finish. At a minimum, the Tier 1 screening of the waterproofing system ought to include visual review of readily observable exposed surface areas, including topping membrane if surface-applied, and flashings for signs of active water intrusion. It is not necessary to replace the waterproofing system if it is performing adequately.

If minor waterproofing defects are observed, but have not caused water intrusion or triggered a Tier 2 Evaluation and Remediation, these defects should be reported to the building owner with recommended maintenance measures.

4.3. File Certification Form

If no significant presence of wood destroying organisms, corrosion or water intrusion are identified and after investigative openings are patched, file the Certification form with the City's Housing Code Enforcement office.

5. Tier 2 Evaluation and Remediation Procedure

5.1. Methods of Evaluation and Remediation

When the Tier 1 screening determines that wood destroying organisms, corrosion or water intrusion are present, further evaluation and/or remediation are required. This process may consist of replacement of damaged components in-kind, an engineering analysis assessing whether or not the damaged components are structurally adequate, modification of the existing components to repair the damage, or any combination thereof. Analysis of, and modifications to, existing structural components requires a licensed structural or civil engineer or architect.

5.2. Search for Documents

Consider searching for the original building design drawings. Inquire about availability with the building owner and/or the City of Berkeley.

5.3. Tier 2 Evaluation and Remediation

5.3.1. Structural Evaluation and Remediation

Evaluate the original element design and extent of damage in order to determine the most practical and economic means of remediation. In most cases it would be advantageous to have a licensed engineer or architect perform a structural evaluation of the damaged components to determine their adequacy. In some circumstances, for example when the damage is significant or easily observable, the complete removal and replacement in-kind of damaged components can be a possible solution. The following types of remediation require a licensed engineer or architect:

- 5.3.1.1. Modifications to existing structural systems, for example alterations to cantilever framing members that are not a complete replacement in-kind.
- 5.3.1.2. Complete removal and replacement of E3s.
- 5.3.1.3. Complete removal of E3s with associated restoration of building facade.

Note: Replacement or retention of original materials and the use of original methods of construction is permitted provided such materials or methods complied with the building code provisions in effect at the time of original construction. Complete replacements will require conformance to current code requirements.

5.3.2. Waterproofing Remediation

If water damage or signs of active water intrusion are observed, the licensed professional should make a reasonable attempt to locate the source(s) of water and remediate it prior to completion of the Certification Form. The exact method of determining leakage is up to the licensed professional; it may or may not include the following:

- 5.3.2.1. Review of available original and prior modification construction documents.
- 5.3.2.2. Review slope to drain at surface and membrane levels.
- 5.3.2.3. Review drain/gutter/downspout function.
- 5.3.2.4. Review conditions at penetrations, fenestrations, changes in plane, etc. (e.g., door threshold, deck-to-wall flashing).
- 5.3.2.5. Review function of existing concealed space ventilation if present.
- 5.3.2.6. Perform water testing, thermal imaging, and/or electronic leak detection (as appropriate for the existing building conditions).
- 5.3.2.7. Determine moisture content of materials.

- 5.3.2.8. Perform invasive testing to observe condition of concealed membrane system. Invasive testing may include isolated borescope openings or selective demolition of larger areas.

5.4. Prepare Remedial Design

Develop the remediation design, prepare construction drawings and file a building permit application. Some forms of maintenance based remediation, for example application of preservatives or sealants, may not require a building permit.

5.5. Execute Remediation Work

Perform the remedial work, restore building finishes and final building permits, as applicable.

5.6. File Certification Form

After the remedial work is completed, file the Certification form with the City of Berkeley's Housing Code Enforcement office. One certification form must be filed for each separate building and a single professional must be responsible for certification of all E3s on the building.

Figure 1

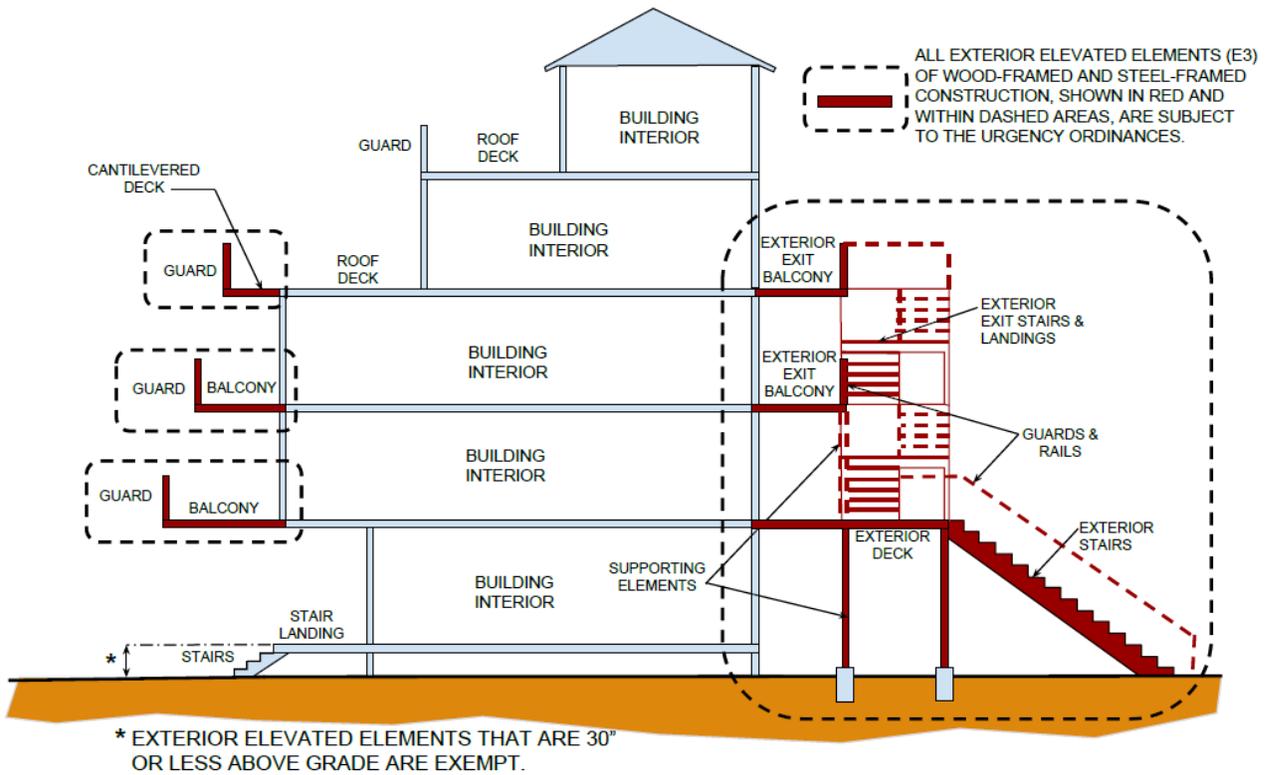


Figure 2

