Appendix D
Problematic Materials and Design Issues

General Requirements. Problematic building materials or specific design issues identified by the CNA Provider must be addressed in the Capital Needs Assessment Report, and must include an evaluation of the problematic building material or design issue, including:

- The current condition of the material and quality of construction of that System;
- An evaluation of the long-term physical and financial impacts of the material or design issue if not addressed;
- Recommendations for remediation or mitigation, including estimated replacement costs or further testing as applicable; and
- Photographic documentation of problematic materials or design issues in sufficient quality and quantity to accurately describe the issue.

Some of the most commonly known problematic building materials are addressed herein, but this document does not constitute a comprehensive list. It is the responsibility of the CNA Provider to identify additional problematic building materials and recalled equipment and appliances that may exist.

The CNA Provider should use best professional judgement in identifying design issues that have led to current damage or problematic issues, or have the potential for such.

1. Architectural Components

1.1 Fire Retardant Treated Plywood (FRTP). Certain treatment chemicals have potential for delamination of wood plies leading to failure of positive attachment of roof coverings.

1.2 Compressed Wood/Composite Board Siding. Board that is manufactured from various combinations of wood fibers, fillers, binders and glue (commonly referred to as T1-11 siding) has the tendency to absorb water at locations where raw edges are exposed, leading to edge swell, delamination, warping, and fungus growth.

1.3 Exterior Insulation Finish Systems (EIFS). An exterior wall system consisting of a finish coat, a base coat, reinforcing mesh, adhesive and insulation board secured to a substrate (commonly referred to as synthetic stucco or Dryvit). EIFS has the potential for water to leak behind the EIFS cladding at penetrations and become trapped inside the walls, producing mildew and rot in the sheathing and framing.

1.4 Problem Drywall (aka "Chinese Drywall"). A specific drywall primarily used from approximately 2001 to 2007 containing extraneous metals and minerals, such as sulfur, strontium and iron, which in warm, humid climates emits sulfur gasses that create a noxious odor and corrode copper and other metal surfaces, affecting alarms, detectors and electrical system components. Refer to the Consumer Products Safety Commission (CPSC) Identification Guidance for Problem Drywall dated March 18, 2011, or as amended.

1.5 Phenolic Foam Roofing Insulation (PFRI). Rapid corrosion of steel decks has the potential to occur due to acids used in manufacturing combining with moisture. Older insulation has the potential for shrinkage or being crushed.

1.6 Single-Ply Thermoplastic Olefin (TPO) Membrane Roofing. TPO roofing membranes in southern states have been noted to have an issue of material degradation, accelerated weathering and premature failure when subjected to high thermal or solar loading. TPO membrane roofing produced prior to 2002 experienced material formulation problems leading to physical failures.

2. Mechanical Components

2.1 Air Conditioning Systems with Hydrochlorofluorocarbon (HCFC) and Chlorofluorocarbon (CFC)

Refrigerants. The Federal Clean Air Act requires that all CFC and HCFC refrigerants must be recovered, recycled, and reclaimed during equipment servicing and repairs. Replacement refrigerant of that type may not be available due to phasing out of HCFC and CFC products. Systems requiring these refrigerants should be noted and scheduled for replacement in the CNA as appropriate.

3. Plumbing and Fire Protection Components

3.1 Cross-Linked Polyethylene (PEX) Piping. Water systems with a high chlorine content and prolonged exposure of pipe to UV rays cause significant degradation to PEX piping. Brass PEX pipe fittings with a high zinc content can degrade prematurely and cause system leaks.

3.2 Microbiologically Influenced Corrosion (MIC) in Fire Sprinkler Systems. MIC is an electro-chemical corrosion process that is concentrated and accelerated by the activity of specific bacteria within a fire sprinkler system. The result is localized corrosion where material is lost at discrete points leading to pinhole leaks and obstructive growth.

3.3 Acrylonitrile Butadiene Styrene (ABS) Sanitary Lines. ABS pipe produced from 1984 to 1990 may crack circumferentially at the joint. The manufacturers are Apache, Polaris, Centaur, Phoenix, and Gable. If ABS piping is identified as being installed as the primary sanitary piping within the buildings (i.e., the material is not limited to the stub out from the wall to the fixture), the current condition and manufacturer must be verified.

3.4 Polybutylene (PB) Water Distribution Lines. Polybutylene water supply piping was manufactured between 1979 until about 1995 as a substitute for traditional copper piping. It is believed that oxidants in public water supplies (such as chlorine) react with the piping and fittings, causing micro-fractures of the piping, and the basic structural integrity of the pipe is reduced. Other factors may also contribute to the failure of PB systems, such as improper installation.

3.5 Galvanized Steel Water Distribution Lines. Steel or wrought-iron pipe which has been galvanized utilized as a water supply system has high potential for corrosion depending upon several factors (including acidity, electrical conductivity, temperature, oxygen concentration and the presence of sulfate and chlorides). Current and historical condition of galvanized pipe and any reported replacements should be noted.

3.6 Omega Brand Fire Sprinkler Heads. All Omega sprinkler models are being recalled, including those Omegas manufactured after May 1, 1996 for failure to activate as they should. All Omega sprinklers contain the word “Central” or “CSC” somewhere on the daisy-like device.

3.7 Central Brand Fire Sprinkler Heads. Central manufactured wet sprinklers with O-rings from 1989 until 2000, dry sprinklers with O-rings from the mid-1970's to June 2001, sprinklers with O-rings manufactured by Gem Sprinkler Co. and Star Sprinkler Inc. from 1995 to 2001 are covered by a recall program due to performance of O-rings degrading over time causing the sprinkler heads not to activate in a fire. The fire sprinkler heads have the words "CENTRAL" or "STAR", the letters "CSC", the letter "G" in triangle, or a star-shaped symbol stamped on either the metal sprinkler frame or on the deflector.

4. Electrical Components

4.1 Unit Level Electrical Amperage. The amperage measurement that must be included in every Capital Needs Assessment is the amperage as measured at the individual electric meter. The amperage should be a minimum of **60 amps**. In almost all individually metered properties there is a breaker located somewhere near, if not directly below, the electric meter. This is the amperage measurement required. NOTE: this is not the amperage identified by adding all the individual breakers at the unit level subpanel.

4.2 Aluminum Branch Wiring. Unequal expansion rates between the aluminum wire and the copper, steel or brass connection point occur when heated due to electrical load. Recurring expansion causes the connection to become loose, resulting in an overheated connection that could lead to a fire. NOTE: All CNA reports must indicate the type of branch wiring observed (i.e., visually verified and photographed) by the CNA Provider. If aluminum wiring is identified, the CNA report must also indicate whether a retrofit, such as the installation of CO/ALR devices, is already in place and provide recommendations and values for retrofit procedures as applicable.

4.3 Zinsco or GTE-Sylvania Electrical Panels. The circuit breakers inside many Zinsco panels melt to the main bus bar, resulting in failure of the breaker to trip in the event of a short or overloaded circuit. This is an extreme fire hazard.

4.4 Federal Pacific Electric (FPE) “Stab-Lok” Panels. Federal Pacific Electric (FPE) “Stab-Lok” panels have a high potential for breaker trip failure when overloaded and may also have interconnection problems resulting in a high risk of overheating. This is an extreme fire hazard.

4.5 Fused Sub-Panels. Fuse boxes are unsafe because of potential for oversized replacement fuses, double tapping fuse lugs and the ability to be modified for serving higher load demands, such as circumventing the fuse with a metallic object. **NOTE:** All CNA Reports must indicate the type of sub panels and include recommendations and values regarding replacement of circuit breaker panels as applicable.

4.6 Ground Fault Circuit Interrupter (GFCI) Receptacles. The 2017 National Electrical Code calls for ground fault circuit interrupter protection in the following locations:

- Bathrooms
- Kitchens (receptacles serving countertop surfaces)
- Sinks (receptacles within 6 feet of sink edge)

- Garages / accessory storage buildings at or below grade
- Unfinished basements and crawl spaces
- Outdoor locations

NOTE: All CNA reports must indicate the presence of GFCI receptacles in these locations, and include recommendations and values regarding replacement of non-GFCI receptacles in these locations as applicable.

5. Appliances and Equipment.
Appliances or equipment identified by the CPSC as subject to recall must be identified. The CNA Provider should be aware of recalled appliances and equipment, and make recommendations for replacement or repair consistent with the CPSC guidelines.