



BOILER INSTALLATION PROJECTS EXISTING CHIMNEY REPAIR DESIGN, TESTING AND LINER INSTALLATION ALTERNATIVES

This *Standard Notice* addresses the Procedure and Criteria to be considered regarding the rehabilitation of existing chimneys currently in service.

INTRODUCTION

A significant design component of new Boiler Installation Projects is the design and installation of a new Chimney Liner. The following Code references apply to masonry chimneys:

- 2014 NYC Building Code §14, §16, §17, §21
- National Fire Protection Association (NFPA) 211-10
- 1 Rules of the City of New York (RCNY) §16-01
- 2014 NYC Fuel Gas Code, Chapter 5 §503
- 2014 NYC Mechanical Code, Chapter 8 §810

As per 2014 NYC Fuel Gas Code, the “construction tightness” of existing chimneys to remain in service must be verified. The NYC Department of Buildings (DoB) requires the Inspection of a masonry chimney to be performed by one of the following qualified persons:

- Licensed Professional Engineer (PE)
- Registered Architect (RA)
- Licensed Oil Burner Installer (LOBI)
- Licensed Master Plumber (LMP)
- DoB approved Special Inspector for Chimneys

DESIGN PHASE – SCOPE OF SERVICES

New Boiler Installation Projects – The Chimney Liner Design **must** be included in the Scope of Services. A “*Condition Survey Report*” with a recommendation on chimney repair or the need for a chimney liner must be prepared. The chimney repair design will conclude with a chimney liner alternative included in the Contract Documents.

DESIGN PHASE – PROCEDURES AND CRITERIA

The Procedures and Criteria to be followed during the project design are:

- A. **Building Code: BC1704.26** requires the design professional to specify that no chimney testing is required. This determination may not be applicable as a standard throughout all boiler replacement installations, but should be explored and used wherever possible.
- B. **Chimney Stack Calculations:** “*Chimney Draft*” calculations **shall** be part of the required project design calculations to ensure chimney stack adequacy. As per BC §1704.26 a Smoke Test need not be performed if all requirements for its exception are met.

CONSTRUCTION ADMINISTRATION PHASE – PROCEDURES AND CRITERIA

For the two design tasks of chimney inspection and testing, which finalize the rehabilitation design, the temporary provision for scaffolding for chimney top access would be required. The General Contractor **shall** provide scaffolding arrangements for chimney top access for inspections and tests. The scaffolding & related costs are to be built into the Boiler Replacement Project. Therefore, it is appropriate that such inspections and tests be performed during an appropriate early phase of construction when scaffolding has been installed. The procedures and criteria to be followed by the Designer of Record during construction are:

- A. **Chimney Inspection:** This effort, which includes video screening, nondestructive physical testing, and visual observation, **shall** be performed by one of the certified chimney specialists. The chimney inspection may be done during the Design Phase if the chimney’s location and access requirements are feasible. Otherwise, this effort **must** be performed during an early phase of the project construction schedule and coordinated with the chimney’s cap and brick repair work. The chimney inspector may be hired by NYCHA, or the Designer of Record may be asked to provide the inspection services through their contract’s “*Additional Services*” provision.
- B. **Smoke Test:** This effort **must also** be coordinated with project construction scheduling and all physical work, and must be performed during an appropriate phase of construction. It is essential to ensure that the temporary boiler and/or chimney are installed on site to provide uninterrupted heating/hot water service. Smoke test feasibility in occupied buildings needs to be reviewed further with NYCHA for the phasing/scheduling of the tests to determine Chimney Airtightness and the Chimney Liner requirements. Smoke testing shall be included in the cost estimate, as an allowance, based on unit prices.
- C. Smoke Test after the installation of a Chimney Liner **must** be performed as per Special Testing Requirements (TR-1). A Smoke Test might be omitted **if the chimney is detached from a building.**

CONSTRUCTION PHASE – SCOPE OF SERVICES

The anticipated Chimney Liner **must** be included in the Contract Documents and will become part of the accepted Contractor’s Bid Price. The results of the Chimney Inspection and Smoke Test, conducted during the Design Phase or an early phase of construction, will verify and conclude if the designed chimney liner is in fact required. If it is determined the masonry chimney does not require a new liner then the Contractor **will be required** to issue a ***Credit Change Order*** commensurate with the anticipated new liner’s Bid Price

CHIMNEY LINER ALTERNATIVES

Dependent on the above listed Design Phase Procedures, Construction Administration Phase Inspections and Smoke Test, the Chimney Alternatives and/or Recommendations to be considered are:

- A. **Existing Chimney and/or Liner is Adequate:** No Chimney Liner is required.
- B. **New Chimney Liner:** If required and feasible, and if determined a new chimney liner is required, the following alternatives are available:
 - **Stainless Steel:** Typically, a 10 GA stainless steel welded liner shall be designed and all details, as well as specifications, shall be provided in the Contract Documents. For taller Chimneys the additional height may require thicker gauge stainless steel sections at the bottom level. Chimney liner, insulation, draft inducer systems, or any other related equipment/accessories that are part of the chimney liner installation shall be included in the cost estimate.
 - **Reinforced Fiber Glass:** Glass Fiber Reinforced Thermosetting Resin Liner is on the DoB "*Approved Products List.*" The design, and all details, as well as specifications, shall be provided in the Contract Documents. Chimney liner, insulation, draft inducer systems, or any other related equipment/accessories that are part of the chimney liner installation shall be included in the cost estimate.

ADDITIONAL ALTERNATIVES

NYCHA has been exploring other economical chimney liners alternatives that currently include:

- **Alumina Silica Based Ceramic Liner:** NYCHA is working with DoB to finalize this material approval.

End of Standard Notice CPDDESIGN2016006