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NYC Technical Bulletin 2010-020

Special Inspection Requirements for Fire Resistant Rated Construction

Life Safety Engineering LLC

Review of Referenced Codes and Standards
Recommendations for Risk Management and Compliance

NYC Technical Bulletin 2010-020 clarifies the types of fire-resistance-rated construction that are subject to progress inspection, special inspection, or both.

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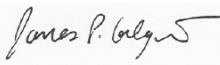
Robert D. LiMandri, Commissioner



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Purpose: This document clarifies the types of fire-resistance-rated construction that are subject to progress inspection, special inspection, or both.

Related Code Section(s): BC 109.3.4 BC 1704.15
BC 1704.11 BC 1704.25

Subject(s): Special inspection, firestop, draftstop and fireblock systems; Special inspection, sprayed fire-resistant materials; Special inspection, mechanical systems; Progress inspection, fire-resistance-rated construction; Sprayed fire-resistant materials; Fire damper; Firestopping; Draftstopping; Fireblocking; Fire-resistance-rated construction; Fire shutters; TR1, special inspection items; TR1, progress inspection items

A. Reference. Building Code section BC 109.3.4, excerpted below, provides a list of work to be inspected as part of the scope of progress inspections of fire-resistance-rated construction:

109.3.4 Fire-resistance-rated construction inspection. *Fire-resistance-rated construction shall be inspected to determine compliance with the approved construction documents, including inspection of the following work:*

1. Fire resistance rated partitions, floors, ceilings, shafts;
2. Fire blocking of concealed spaces;
3. Through-penetration firestopping, draftstopping and fireblocking;
4. Fire dampers;
5. Fire shutters; and
6. Protection of structural members.

Exception: *Work regulated and inspected under Chapter 17.*

In accordance with the above section, items numbered 2, 3, 4 and 6 are types of work regulated as special inspections in accordance with Chapter 17 in addition to the progress inspections required in section BC 109.3.4 (See Section B below). Items numbered 1 and 5 are types of work regulated as progress inspections, and for those items, no additional special inspection is required (See Section C below).

B. Types of work subject to both special inspection and progress inspection.

- i) Section BC 1704.25 requires periodic special inspections of all through-penetration firestopping, draftstopping and fireblocking prior to concealment;
- ii) Section BC 1704.15 requires special inspections of mechanical systems, which includes fire dampers; and
- iii) Section BC 1704.11 requires special inspection of sprayed fire-resistant materials.

The items in Section B (i), (ii) and (iii) above require both special inspections and progress inspections. Where the progress inspector and the special inspector are of the same person, no secondary verification is needed to confirm the required inspections. The progress/special inspector shall fill out sections 3 and 4 of the TR-1 form. Where the progress inspector and the special inspector are of different persons, the progress inspector's only obligation with regards to the aforementioned special inspection items is to track the special inspector's progress through the construction process, typically by reviewing the special inspector's reports, and to confirm that all such required special inspections were performed. The special inspector shall fill out section 3 of the TR-1 form, while the progress inspector shall fill out section 4 of the TR-1 form.

C. Work requiring only progress inspection. Where the scope of work includes fire-resistance-rated construction, but does not involve any through-penetration firestopping, draftstopping, fireblocking, fire dampers, or sprayed fire-resistant materials, only the progress inspection for fire-resistance-rated construction is required. The progress inspector shall fill out section 4 of the TR-1 form.

D. Work involving existing fire-resistance-rated construction. Where the scope of work is limited to firestopping of through penetrations in existing fire-resistance-rated construction and, in the course of work, the cutting away or removal of any part of the existing fire-resistance-rated construction becomes necessary in the general area surrounding the penetration, not to exceed 4 square feet in any given area, only the special inspection is required (TR1 form, section 3). Progress inspection is not required provided that the special inspector also verifies that the removed portion of fire-resistance-rated construction through the course of work has been restored to its original condition. If the cutting away or removal of any part of a fire-resistance-rated construction exceeds 4 square feet in any given area, both the special inspection (TR1 form, section 3) and the progress inspection (TR1 form, section 4) are required.

*The NY Building Code directly
referenced in this action includes:*

BC 109.3.4
BC 1704.11
BC 1704.15
BC 1704.25

Excerpts from NYC BC Referenced in 2010-020

BC 109.3.4

LSE Synopsis: Code provides a list of work to be inspected as part of the scope of progress inspections of fire-resistance-rated construction:

109.3.4 Fire-resistance-rated construction inspection. Fire-resistance-rated construction shall be inspected to determine compliance with the approved construction documents, including **inspection** of the following work:

1. Fire resistance rated partitions, floors, ceilings, shafts;
2. Fire blocking of concealed spaces;
3. Through-penetration firestopping, draftstopping and fireblocking;
4. Fire dampers;
5. Fire shutters; and
6. Protection of structural members.

BC 1704.11

LSE Synopsis: Code sets building permit requirements and outlines construction documents as a requirement.

1704.1.1 Building permit requirement. The permit applicant shall submit a statement of special inspections as a condition for permit issuance on forms supplied by the department. This statement shall include a complete list of materials and work requiring **special inspections** by this section, the inspections to be performed and a list of the individuals or approved agencies to be retained for conducting the special inspections listed on the approved plans. Within each category of work, multiple special inspectors may be employed.

BC 1704.1.1.1

LSE Synopsis: Accountability and design document definitions.

1704.1.1.1 Identification of design professionals providing design documents for certain construction operations. The registered design professionals responsible for the production of design, sequence of construction operations or shop drawings for projects that require design as defined in Chapter 33, shall file documentation of their intent to perform those duties on forms supplied by the department.

BC 1704.15

1704.15 Special inspection for mechanical systems. Mechanical systems regulated by the *New York City Mechanical Code* Sections 107 and 507 and Chapters 10, 11, and 12 shall be inspected for conformance with the approved construction documents.

1704.15.1 Tests for mechanical systems. Tests of mechanical systems shall be performed in accordance with *New York City Mechanical Code* Sections 507.16, 1011, 1108 and 1208.

Exception: Listed and labeled self-contained factory built equipment and appliances deemed to meet the design, manufacture and factory test requirements of this code shall be field tested in accordance with their manufacturer's installation and operational test standards.

1704.15.2 Special Inspection of Mechanical Systems. Inspections of mechanical systems shall include the following as applicable to the system:

1. Visual certification that required components of such systems are complete in accordance with the manufacturers installation guidelines and the **approved construction documents**.
2. Supports, hangers, seismic bracing, and vibration isolation equipment are properly spaced and anchored to supporting structure,
3. Installation of required signage and safety instructions,
4. Electrical components are installed and electrical sign-off issued,
5. Ventilation balancing report is complete and in accordance with design documents,
6. Required labeling, operational instructions and safety signage properly posted,
7. All related **special inspections** for such systems are complete,
8. Noise producing mechanical equipment located within 100 feet (30 480 mm) of habitable room windows shall be tested at the equipment for compliance with the design STC rating of the equipment,
9. Required fire and smoke dampers are installed and functioning properly.

Exception: Systems and equipment exempt from service equipment certificate of compliance in accordance with Section 109.3.8.2.1.

BC 1704.25

1704.25 Through-penetration firestop systems, concealed draftstop and fireblock systems. All through-penetration firestopping, draftstopping and fireblocking shall be subject to periodic special inspection prior to concealment to determine compliance with the approved construction documents. Listed systems shall be inspected for compliance with their listing.

Exception: Through-penetration firestop systems may be inspected in accordance with **ASTM E2174-04*** when authorized by the registered design professional of record and when the contractor applies the procedures established in that standard.

*LSE provides ASTM E-2174 Compliant Firestop Inspection Services**

Additional Codes and Standards

IBC Chapter 7 – Fire and Smoke protection Features

703.6 Marking and identification. *Fire walls, fire barriers, fire partitions, smoke barriers* and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:

1. Be located in accessible concealed floor, floor-ceiling or *attic* spaces;
2. Be repeated at intervals not exceeding 30 feet (914 mm) measured horizontally along the wall or partition; and
3. Include lettering not less than 0.5 inch (12.7 mm) in height, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER-PROTECT ALL OPENINGS," or other wording.

Exception: Walls in Group R-2 occupancies that do not have a removable decorative ceiling allowing access to the concealed space.

Partial List NY 2008 Building Codes Applicable to Fire Code, Electrical Code and Mechanical Code

NYC BC 106.6 – Architectural Plans
NYC BC 109.3.4 – Fire Resistive Rated Construction Inspection
NYC BC 503 – Height and Area Limitations
NYC BC 602 – Construction Classification
NYC BC 603 – Combustible materials in Type 1 and 2 Construction
NYC BC 702.1 - Definitions of Fire Resistant Rated Construction
NYC BC 706.3.7 – FRR Requirements by Occupancy Group
NYC BC 706.4 – Continuity of Fire Barrier Walls
NYC BC 901.7 – Fire Areas
NYC BC 909.20 – Smoke Proof Enclosures
NYC BC 909.5 – Smoke Barrier Construction
NYC BC 909 – General Design Requirements
NYC BC 706 – Fire Barriers

NYC FC 701 General Requirements
NYC FC 703 - NYC FC 703.4 – Testing
NYC FC 703.1 - Maintenance
NYC FC 703.2 – Maintenance of Openings
NYC FC 703.3 – FRR Ceilings
NYC FC 704 – Floor Openings and Shafts
NYC FC 704.1 – Enclosures
NYC FC 901 – General Requirements
NYC FC 909.1 – Smoke Control Systems

NYC MC 302 – General Requirements
NYC MC 302.2 – Penetrations in Rated Construction

NYC EC 110.33 – Electric Closets
NYC EC 706.52 – Mechanical Rooms
NYC EC 706.131 – Installations
NYC EC 706.179 – Cable Marking and FRR



Recommendations from LSE

NYC Building Code 2008 and IBC have undergone many changes since 9-11 with regards to fire and smoke migration management. Recent directives, including 2010-020 have define specific areas of compliance and accountability for these issues and they are now included on the progress and special inspections list. Our programs are designed to offer you solutions for compliance in this area. I have included a short analysis of the NY Building Code, Fire Code, Mechanical and Electrical Codes as well as the IBC requirements for fire and smoke barriers.

LSE recommendations for compliance are simple:

1. Accurate Life Safety Drawings
2. Mark Rated Areas and Walls (electrical, mechanical, storage, etc.)
3. Create Contractor Accountability (permit and submittal)
4. Use CAM and Churn for Life Safety Compliance Funding
5. Maintain Documentation

Please contact us for more information about our Risk Management Solutions.