LIGHTWEIGHT CONSTRUCTION / WOOD I-BEAMS

1. INTRODUCTION

1.1. The Fire Department has become aware of the increased use of lightweight construction building materials throughout the building industry. The cost savings and the speed of construction to the building industry are the two major factors driving the continued research and development of these lightweight building materials. The widespread use of these materials may be found in all types of buildings. One or more of these lightweight materials may be used in both new construction, as well as existing buildings presently undergoing renovations, enlargements and/or additions. However, fire resistance demonstration and a major building collapse under fire conditions have indicated the very real potential for early collapse when any of this type of construction is used.

2. LIGHTWEIGHT MATERIALS

2.1. The use of certain lightweight materials may impact the structural integrity of a building and should be considered when developing a tactical response. The Fire Department has identified 3 types of lightweight construction which are of particular concern to field units:

2.1.1. Laminated Wood "I" Beams

2.1.2. Metal Plate Connected (MPC-Gang Nails) Parallel-Chord Wood Floor or Roof Trusses

2.1.3. Light Gauge Cold-Formed Steel Structural Members (Metal "C" Joists)

3. FDNY STRUCTURAL INTEGRITY REPORT

3.1. Through partnership with the Department of Buildings (DOB), the FDNY will be notified anytime a contractor files the required notification of intent to use any of the lightweight building materials listed above in section 2. This information is required to be entered by the contractor on the DOB Technical Report (TR-1) form as part of the DOB application process necessary to receive a valid DOB Work Permit (PW-1). The information gained from the DOB TR-1 form will generate a DOB Structural Integrity Alert Location Report to the FDNY through a shared database identifying the addresses where the lightweight construction materials will be used. The Bureau of Fire Prevention will monitor this database and send a monthly Structural Integrity Report to the BISP Unit identifying these addresses.

3.2. The BISP Unit will contact units by telephone when addresses on the monthly Structural Integrity Report are found in the administrative districts of fire units. The BISP Unit will schedule structural integrity inspections in RBIS for units to complete, after a phone conference. BISP will also follow up with fire units to ensure the inspections were completed and if CIDS was necessary. All structural integrity inspections need to be completed within 14 business days from the date of notification.

4. FDNY FIELD UNIT RESPONSIBILITIES

4.1. The Administrative Company Fire Prevention Coordinator should review each location listed for his/her unit and take the following actions:

4.1.1. Schedule a BISP inspection in RBIS. Company Officers are to ensure that this inspection is listed as a structural integrity inspection in RBIS. It is imperative that company officers take the proper structural integrity mark when prompted to conduct an inspection via the monthly structural integrity report generated by Fire Prevention.

4.1.2. Create/update appropriate building profile in RBIS under the Buildings tab.

4.1.3. **Include in the CIDS program, the importance of this step cannot be overstressed**.

4.1.4. Follow guidelines of the CDA Program – (See Chapter 3, Addendum 2, CDA Guide) if upon inspection you find the building meets the criteria for CDA Risk Based Inspections. Note: if company officers feel that the building should be added to the CDA Program they should notify the BISP Unit.

4.1.5. **Units should follow the procedures in section 5.2 for all forms of lightweight construction found in section 2 of this document.**

5. LIGHTWEIGHT WOOD I-BEAMS

5.1 Any proposed use of lightweight wood "I" beams shall comply with the Department of Buildings Technical Policy and Procedure Notice (TPPN) 8/92. TPPN 8/92 is specific concerning the following requirements for this type of construction:

5.1.1. **Fire stopping.** "The space between the ceiling and the floor or roof above shall be divided into approximately equal areas **not greater than 500 square feet."**

5.1.2**. Construction.** "The cutting of openings for ducts, pipes, conduit, etc. in laminated wood "I" beams shall be considered fabrication and, therefore, subject to controlled inspection."

5.2. During the site inspection, **if the company officer determines** that an address reported on the FDNY Structural Integrity Report does not comply with the requirements of TPPN 8/92 and/or would present a unique fire problem, the company officer should initiate the following:

5.2.1 **Notify the Battalion Chief** on duty to respond to assess the situation. This situation may be found in a building under construction, or as a major alteration/addition in an occupied building. If appropriate, the Battalion Chief should initiate vacate procedures - **See Chapter 4, Addendum 4**

5.2.2**. Send a DOB Referral Report High Priority**, through the **chain of command** for necessary endorsements, to the Department of Buildings indicating such non-compliance.

5.2.3. If deemed necessary, forward a **Sprinkler Recommendation (A-244) See Chapter 5**. For existing construction, forward an A-244 recommending the modification of the Certificate of Occupancy for that building requiring the installation of **sprinklers throughout**.

5.3. If approved, the Bureau of Fire Prevention shall forward a Fire Department application to the Board of Standards and Appeals requesting modification of the Certificate of Occupancy in question, to require the installation of sprinklers throughout.

Note: The above procedures are also to be used if a unit discovers a building under construction and/or a major alteration in their administrative district using these lightweight building materials that does not appear on their Structural Integrity Report.

6. TECHNICAL POLICY PROCEDURE NOTICE 8/92 (TPPN 8/92)

6.1 PURPOSE To interpret the requirements of the 1968 Building Code, Sections 27-617 and 27-620, pertaining to fire stopping requirements per RS 10-8 and Inspection of Methods of Construction per Table 10-2 for laminated wood "I" beams used in fire resistance rated floor/roof-ceiling assemblies. To establish a new administrative procedure for applicant notification to the Fire Department of proposed use of laminated wood "I" beams.

6.2 SPECIFICS

6.2.1 **Fire stopping**

Reference Standard RS 10-8, Section 9.2.1 - General Requirements for Fire stopping states that, "the space between the ceiling and the floor or roof above shall be divided by providing fire stopping where ceilings are suspended **below solid joists** or **suspended from or attached directly to the bottom of open wood floor trusses** in buildings of combustible construction."

The Department now interprets the requirement to comply with the fire stopping provisions of Section 9.2.1 to include laminated wood "I" beam assemblies. Therefore, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet.

Fire stopping is subject to controlled inspection pursuant to Section 27-345.

6.2.2 **Inspection of Methods of Construction**

Table 10-2 - Operations on Structural Elements that shall be Subject to Controlled Inspection, lists the "Fabrication of glue-laminated assemblies and of plywood components."

The Department now interprets the requirement to comply with the controlled inspection provision of Table 10-2 to include laminated wood "I" beams. Therefore, the cutting of openings for ducts, pipes, conduit, etc. in laminated wood "I" beams shall be considered fabrication and, therefore, subject to **controlled inspection**

Controlled inspection.- Inspected and/or tested to verify compliance with code requirements. All required inspections and tests of materials designated for "controlled inspection" shall be made and witnessed by or under the direct supervision of an architect or engineer retained by or on behalf of the owner or lessee. **(BC 27-132)**

BY ORDER OF THE FIRE COMMISSIONER AND CHIEF OF DEPARTMENT