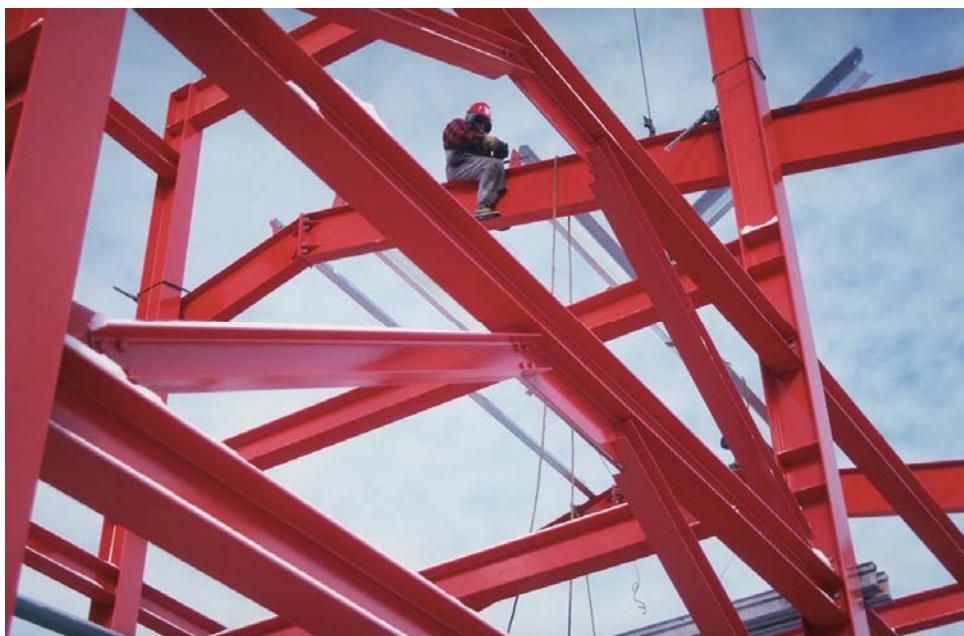




**CITY of BLOOMFIELD HILLS  
BUILDING DEPARTMENT**

**SPECIAL INSPECTION PROGRAM  
GUIDE (MBC-2009)**



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## INTRODUCTION

The special inspection requirements of the Michigan Building Code – 2009 are detailed and can be a challenge to work with. The City of Bloomfield Hills has developed this Guide to help all parties involved understand the requirements and provide an efficient process that will allow Building Code requirements to be satisfied without causing delays in the construction process.

The Special Inspection Program is a partnership between all the parties involved in the construction process. This Guide outline's each party's responsibilities in the process and encourages communication and cooperation to ensure that construction is completed in a safe and timely manner.

The Program is based on a model Special Inspections Program developed by the International Code Council (ICC). It has been prepared to help project Owners, Architects, Engineers, Special Inspection Agencies, Special Inspectors, and the City of Bloomfield Hills Building Department in the effective processing and completion of Special Inspections required by Section 1704 of the Michigan Building Code - 2009.

This Guide provides important information that will help you understand and comply with the Michigan Building Code and City of Bloomfield Hills Special Inspection Program requirements. It contains details of the Special Inspection requirements and other information that can save you valuable time in obtaining your Building Permit and constructing your building. Submitting all the necessary forms, information and documents required in the Special Inspection Program Guide will expedite the plan review process and help in completing your project on schedule. We urge you to use it as a resource throughout the building design and construction process.

We hope this guide is helpful and encourage you to provide us with any suggestions you may have as we continue to work to improve our Special Inspection Program.

# GENERAL GUIDELINES FOR THE SPECIAL INSPECTION PROGRAM

## **1. Purpose of Special Inspections:**

Special Inspections monitor materials and workmanship that are critical to the structural integrity of a building. Special Inspections are a review of the construction to assure that the approved plans and specifications are being followed and that relevant codes and referenced standards are being observed.

Good communication between the parties, including the Owner, the Registered Design Professional in responsible charge, Special Inspection Agencies, Special Inspectors, the Contractor, and the City of Bloomfield Hills Building Department is essential to the quality assurance of a building project.

## **2. City of Bloomfield Hills Special Inspection and Testing Agreement:**

This document outlines in detail each party's responsibility in the Special Inspection Program.

The City of Bloomfield Hills requires that the Owner, the Registered Design Professional in responsible charge, Special Inspection Agencies, Special Inspectors, and the Contractor read the Special Inspection and Testing Agreement and acknowledge their responsibilities by completing each of their designated sections at the end of the form (a copy of the Agreement is included at the end of this Guide).

## **3. Statement of Special Inspections:**

This form is used by the Registered Design Professional in responsible charge to identify what Special Inspections are required for a project. It also contains details of the required qualifications for Special Inspectors.

The City of Bloomfield Hills requires that the Registered Design Professional in responsible charge complete all related entries on the Statement of Special Inspections form and provide documentation indicating the qualifications of each Special Inspection Agency, Special Inspector, Testing Lab, Laboratory Technician, and Fabrication Shop (a copy of the Statement of Special Inspections is included at the end of this Guide).

## **4. Pre-construction Meeting:**

The City of Bloomfield Hills Building Department encourages the Contractor, Owner, and Registered Design Professional to attend a Pre-Construction meeting. This is an opportunity for all parties involved in the construction process to coordinate their efforts and develop lines of communication that will help in facilitating a smooth and efficient construction process.

This meeting can be scheduled at the time of the Building Permit issuance. The Building Department recommends the Special Inspection Agency involved in the construction project attend the Pre-Construction Meeting to discuss the Special Inspection process.

# AN OVERVIEW OF SPECIAL INSPECTIONS

Section 1704 of the Michigan Building Code - 2009 lists a number of conditions where the employment of Special Inspectors is mandatory. Section 1704.1 of the Code states:

*“The owner or the registered design professional in responsible charge acting as the owner’s agent shall employ one or more special inspectors to provide inspections during construction on the types of work listed under Section 1704. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspections of the particular types of construction or operation requiring special inspection. These inspections are in addition to the inspections specified in Section 109.”*

A Special Inspector is a person who has been approved by the Building Department to perform certain types of Special Inspections as detailed in Section 1704 of MBC-2009. A qualified Special Inspector generally has training in a specific area that is more specialized than that of Building Department Inspectors. A Building Inspector is required to have a general knowledge of a great number of Code requirements, whereas Special Inspectors focus mainly on specific areas of structural inspection, material testing, and fabrication. The inspections performed by the Special Inspector often require them to be on the job site for extended periods of time, something the Building Inspector would have difficulty doing with the multitude and variety of inspections they performed each day.

Areas requiring special inspections generally include:

- 1. Inspection of Fabricators** – Where fabrication of structural load-bearing members and assemblies are being performed on the premises of a fabricator. (See Section 1704.2)
- 2. Steel Construction** – Specific areas of Special Inspections and Testing are listed in Section 1704.3 and Table 1704.3. They include the following:
  - Material verification of high-strength bolts, nuts, and washers.
  - Inspection of high-strength bolting.
  - Material verification of structural steel.
  - Material verification of weld filler materials.
  - Inspection of welding for both structural steel and reinforcing steel.
  - Inspection of steel frame joint details for compliance with approved construction documents.
- 3. Concrete Construction** – Specific areas of Special Inspections and Testing are listed in Section 1704.4 and Table 1704.4. They include the following:
  - Inspection of reinforcing steel, including prestressing tendons, and placement.
  - Inspection of reinforcing steel welding.
  - Inspection of bolts to be installed in concrete prior to and during placement of concrete.
  - Verification that the required design mix is utilized.

- Sampling of fresh concrete, checking for air content and fresh concrete temperature at the time of making specimens for strength tests, and performing slump tests.
- Inspection of concrete and shotcrete placement for proper application techniques.
- Inspection of maintenance of specified curing temperature and techniques.
- Inspection for prestressed concrete including application of prestressing forces and grouting of bonded prestressing tendons.
- Erection of precast concrete members.
- Verification of in-situ concrete strength prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms for beams and structural slabs.
- Formwork for shape, location and dimensions of concrete members.

**4. Masonry Construction** – Specific areas of Special Inspections and Testing are listed in Section 1704.5, Tables 1705.1 and 1704.5.3. They include the following:

- Verification of site-prepared mortar, construction of mortar joints, and locations of reinforcement and connectors.
- Verification of size and location of structural elements; type, size, and location of anchors; including details of anchorage of masonry to structural members, frames, or other construction.
- Verification of specified size, grade, and type of reinforcement.
- Verification of welding of reinforcing bars.
- Verification of protection of masonry during cold or hot weather.
- Verification prior to grouting that grout space is clean and correct proportions of site-prepared grout are present.
- Verification grout placement is in compliance with code and construction document provisions.
- Inspecting the preparation of any grout specimens, mortar specimens, and/or prisms.
- Verifying the compliance with required inspection provisions of the construction documents and the approved submittals.

**5. Wood Construction** – Inspection of the fabrication of wood structural elements and assemblies for high-load diaphragms both prefabricated and field assembled or site-built (see Section 1704.6).

Specific areas requiring Special Inspection when high-load diaphragms are used are listed in Section 1704.6. They include the following:

- Verification of structural wood panel sheathing for grade and thickness.
- Verification of normal size of framing members.
- Verification of diameter and length of fasteners and spacing of fasteners in the line of structural members and at panel edges.

**6. Soils** – Inspection of site for existing conditions, verification of site preparation prior to placement of prepared fill, verification of fill material and maximum lift thickness, verification that in-place densities meet the requirements of the approved soils report, and verification that actual soils bearing capacity in compliance with the design (see Sections 1802.2 and 1704.7; and Table 1704.7).

7. **Pile Foundations** - Inspection of installation and testing of pile foundations and record installation of each pile (see Sections 1802.2 and 1704.8; and Table 1704.8).
8. **Pier Foundations** - Inspection of installation and testing of pier foundations (see Sections 1802.2 and 1704.9; and Table 1704.9).
9. **Sprayed Fire-Resistant Material (SFRM)** – Inspections of fire-resistant material applied to structural elements and decks (see Sections 1704.10.1 through 1704.10.5). Specific areas of inspection of SFRM are as follows:
  - Verification of structural member surface conditions.
  - Verifications of application of materials per manufacturer's instructions.
  - Verification of the thicknesses and density of applied materials.
  - Verification of the bond strength of applied materials.
10. **Mastic and Intumescent Fire-Resistant Coatings** – Inspections of mastic and intumescent for structural elements and decks (see Section 1704.11).
11. **Exterior Insulation and Finish Systems (EIFS)** – Section 1704.12 provides exceptions to Special Inspections when EIFS is applied over water-resistive barriers with a means for draining excess water, and EIFS installed on masonry or concrete. The ICC Evaluation Report for the selected EIFS system may require Special Inspections.
12. **Special Cases** - Inspections that, in the opinion of the Building Official, are needed because of the use of alternative materials, unusual design, or use of materials not having Building Official approval or needing to meet special manufacturer' requirements. See Section 1704.13 for examples where the Building Official has discretion to require Special Inspection.
13. **Smoke Control** – Specific areas requiring specific inspections are listed in Section 1704.14.1 of the MBC-2006. They include the following:
  - Inspection of ductwork for leaks and location of devices.
  - Pressure differential testing, flow measurements, detection and control verification.
14. **Special Inspection for Seismic Resistance** – Section 1705.3 describes special requirements for seismic resistance required in construction systems. In Michigan, this applies only to structures that are assigned to Seismic Design Category C.
15. **Special Inspection for Wind Requirements** - Section 1705.4 describes Special Inspection requirements for the main force-resisting systems in construction. In Michigan, this does not apply since the 3-second-gust basic wind speed is 90 mph.