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This document is a guideline to assist builders, special inspectors, code officials and owners and contractors in their efforts to secure compliance with Chapter 17 of the *International Building Code* (IBC).

The guideline provides a descriptive procedure for special inspection administration. It defines the duties and responsibilities of the special inspector, project owner, engineer or architect of record, contractor, and building official.

The manual is divided into three major sections and one appendix:

I. **Special Inspection - An Overview**
   Provides an overview of project quality assurance through special inspection.

II. **General Program Guidelines**
    Describes overall purposes of special inspection, and outlines the respective duties and responsibilities of special inspectors, project owners, designers, contractors, and building officials.

III. **Special-inspector Qualifications.**
    Lists competency and experience standards and references performance standards for special inspectors to aid building officials in determining special-inspector competence to perform specific tasks in accordance with IBC Section 1704.

**Appendix A - Special Inspection Forms & Schedules.**
    These forms can be photocopied and adapted for use by special inspectors, and special inspection agencies.

Special inspection Forms
- Daily Report Form
- Weekly Report Form
- Discrepancy Notice
- Final Report Form
The International Building Code (IBC) has set forth a number of situations in which the employment of special inspectors is mandatory. In accordance with the IBC, the owner or the registered design professional in responsible charge acting as the owner's agent is required to provide specially qualified inspectors for continuous or periodic inspections during construction (IBC 1704.1). These inspections are in addition to the inspections specified in IBC 109. Exceptions to special inspection are noted also.

A special inspector is a person who has been approved by the building official in accordance with the International Building Code and the local jurisdiction to perform certain types of inspection as detailed in IBC Section 1704. These generally include:

1. **Special cases** - Inspections that, in the opinion of the building official, are needed because of the use of alternate materials, unusual design, or use of materials not having building code approval that are necessary to meet special manufacturer requirements. See Section 1704.13.

2. **Inspection of fabricators** - where fabrication of structural load-bearing members and assemblies are being performed on the premises of the fabricator. Note exception for approved fabricators. See Section 1704.2.5

3. **Steel construction** - Major areas under steel construction (see Section 1705.2) are:
   - 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, and
   - Inspection of steel frame joint details for compliance with approved construction documents.

4. **Concrete construction** - See Table 1705.3 for detailed information regarding inspections. Major areas under concrete construction (see Section 1705.3) are:
   - Inspection of reinforcing steel, including prestressing tendons, and placement,
   - Reinforcing bar welding
   - Inspect anchors cast in concrete
   - Inspect anchors post-installed in hardened concrete members
   - Inspection of bolts to be installed in concrete prior to and during placement of concrete,
   - Verification of use of required design mix,
   - Sampling of fresh concrete and performing slump, air content and fresh concrete temperature at time of making specimens for strength tests,
   - Inspection of concrete and shotcrete placement for proper application techniques,
   - Inspection for maintenance of specified curing temperature and techniques,
   - Inspection of 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 from beams and structural slabs.

• Inspection of formwork for shape, location and dimensions of the concrete member being formed.

5. **Masonry construction** – Special inspections and tests of masonry construction shall be performed in accordance with the quality assurance program requirements of TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE6. Major areas under masonry construction are (see Section 1705.4):

• 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 that grout placement is in compliance with code and construction document provisions,

• Preparation of any grout specimens, mortar specimens, and / or prisms,

• Verification of compliance with required inspection provisions of the construction documents and the approved submittals.

6. **Wood construction** - Inspection of the fabrication of wood structural elements and assemblies. See Section 1705.5.

7. **Soils** - Inspection of site preparation prior to placement of prepared fill, verification of fill material and maximum lift thickness, and verification that in-place densities meet soils report, See Section 1705.6 and Table 1705.6.

8. **Driven deep foundations** - Inspection of installation and testing of driven deep foundations shall be in accordance with 1705.7

9. **Cast-in-place deep foundations** – Inspection of cast-in-place per 1705.8 and Table 1705.8.

10. **Helical Pile foundations** - Inspection of installation and testing of pile foundations, and recording of installation, load tests, equipment used, pile dimensions, final depth, final torque, tip elevation of each pile, and other pertinent information per section 1705.9

11. **Special Inspections for Wind Resistance** – Section 1705.11, structural wood, cold-formed light steel, and wind-resisting components.

12. **Sprayed fire-resistant materials** - Inspection of fire-resistant material applied to structural elements and decks in accordance with Sections 1705.14.1 through 1705.14.6

13. **Mastic and intumescent fire-resistant coatings** – Section 1705.15 specifies special inspections and tests shall be per AWCI 12-B.
14. **Exterior insulation and finish systems (EIFS).** See Section 1705.16 for exceptions to required inspections.

15. **Fire-resistant penetrations and joints.** Section 1705.17 requires special inspection of penetrations firestops and fire-resistant joint systems in high-rise buildings or buildings assigned to Risk Category III or IV. Testing shall be per ASTM E2174 for penetrations and ASTM E2393 fire-resistant joint systems.

16. **Smoke control** - See Section 1705.18 for details on testing and tester qualifications

The use of special inspectors is *not* discretionary. IBC Section 1704 clearly states the conditions under which they must be utilized, but there is a provision for the building official to waive special inspection for work of a minor nature, group U occupancies accessory to a residential occupancy, or the work is of conventional light-frame construction.

It is the responsibility of the building official in accordance with the State of Iowa Structural Engineering Board to determine the competency of special inspectors. The IBC does not make specific requirements for the determination of an inspector's qualifications, but that in no way lessens the importance of being selective in this crucial process.

A qualified special inspector usually has skills that are significantly more specialized than those of regular municipal inspectors. A municipal inspector is required to have a general knowledge of a great number of code requirements, whereas special inspectors focus on limited areas of structural inspection and materials testing.

II. GENERAL PROGRAM GUIDELINES

A. **Purpose of Special Inspection**

Special Inspection is the monitoring of the materials and workmanship that are critical to the integrity of the building structure. It is a review of the work of the contractors and their employees to assure that the approved plans and specifications are being followed and that relevant codes and ordinances are being observed. The special inspection process is in *addition* to those inspections conducted by the municipal building inspector and by the engineer or architect of record as part of periodic structural observation. The special inspectors furnish *continuous or periodic* inspection as prescribed by the International Building Code and the Registered Design Professional.

Good communication between the special inspector and the designers, contractor, and building department is essential to project quality assurance.

B. **Duties and Responsibilities of the Special Inspector**

Though not required by code, special inspectors and/or inspection agencies can document acceptance of their responsibilities and scope of work for a project by signing an agreement that includes a detailed schedule of services, commonly known as the Special inspection and Testing Agreement and the Special inspection and Testing Schedule. See City of Des Moines Building Department for the Special Inspection Agreement form. Duties of special inspectors and/or inspection agencies include the following:

1. **Signify presence at job site.** Special inspectors should notify contractor personnel of their presence and responsibilities at the job site. As required by the building official, they shall sign in on the appropriate form posted with the building permit. See City of Des Moines Building Department for the Special Inspection Agreement form for the sign in sheet.

2. **Observe assigned work.** [IBC Section 1704] Special inspectors shall inspect all work for which they are responsible for conformance with the building department approved (stamped) plans and specifications and applicable provisions of the IBC.

**Report nonconforming items.** Special inspectors shall bring all nonconforming items to the immediate attention of the contractor. If any such item is not resolved in a timely manner or is about to be incorporated into the work, the Engineer or Architect of record and the Building Official shall be notified immediately and the item noted in the special inspector's written report. [IBC Section 1704.2.4] A discrepancy notice form is included in Appendix A. All reporting shall
be submitted electronically at specialinspections@dmgov.org The special inspector shall write a separate report to be posted at the job site regarding noted discrepancies that should contain, as a minimum, the following information about each nonconforming item:

• Description and exact location
• Reference to applicable detail of approved plans/specifications
• Name and title of each individual notified and method of notification
• Resolution or corrective action taken.

4. **Provide timely reports.** The special inspector shall complete written inspection reports for each inspection visit and provide the reports on a timely basis determined by the building official. The special inspector or inspection agency shall furnish these reports directly to the building official, engineer or architect of record, and others as designated. [IBC Section 1704.2.4] These reports should be organized on a daily format and may be submitted weekly at the option of the Building Official. Daily and weekly report forms are included in Appendix A. All reporting shall be submitted electronically at specialinspections@dmgov.org

In these reports, special inspectors should:

• Describe inspections and tests made, with applicable locations
• Indicate how nonconforming items were resolved
• List unresolved items, parties notified, time and method of notification
• Itemize changes authorized by the engineer or architect of record if not included in nonconforming items.

5. **Submit final report.** Special inspectors or inspection agencies shall submit a final signed report to the building department stating that all items requiring special inspection and testing were fulfilled and reported and, to the best of their knowledge, in conformance with the approved plans, specifications, and the applicable provisions of the IBC. [IBC Section 1704.2.4] Items not in conformance, unresolved items, or any discrepancies in inspection coverage (i.e., missed inspections, periodic inspection when continuous inspection was required, etc.) should be specifically itemized in this report. An final report form is included in Appendix A. All reporting shall be submitted electronically at specialinspections@dmgov.org

C. **Duties and Responsibilities of the Project Owner**

The project owner, the engineer or architect of record, or an agent of the owner is responsible for funding special inspection services. The special inspector/agency shall not be in the employ of the contractor, subcontractor, or material supplier. In the case of an owner/contractor, the special inspector/agency shall be employed as specified by the building official.

D. **Duties and Responsibilities of the Design Professional in Responsible Charge**

The design professional in responsible charge shall be a consenting party by written acknowledgment of special inspection and testing agreements. See City of Des Moines Building Department for the Special Inspection Agreement form. The design professional in responsible charge has many duties and responsibilities related to special inspection, including the following:

1. **Prepare special inspection program.** The design professional in responsible charge shall list the items for which special inspection is required; and shall indicate any items for which the IBC or the building official approves periodic inspection and the frequency of such inspection.

The design professional in responsible charge should coordinate with the project owner in the selection of special inspectors [IBC Sec. 1704.1] and is required to list special inspectors and their duties on the special inspection program. The choice of special inspectors should include the following considerations:

• Project size and complexity - experience with similar projects
• Inspection staffing - sufficient qualified inspectors
• Site location - proximity of inspection and testing facilities
• Off-site inspection - capabilities for inspection at remote locations.

2. **Respond to field discrepancies.** The Engineer or Architect of record shall respond to special
inspector reports of uncorrected non-complying items and shall approve remedial measures.

3. **Review shop drawings and submit revisions to approved plans.** The design professional in responsible charge shall acknowledge and approve shop drawings that may detail structural information, shall submit to the Building Official and to the special inspection agency written approval of any verbally approved deviations from the approved plans, and shall submit revised plans for Building Official approval as required.

E. **Duties and Responsibilities of the Contractor**

The contractor's duties include the following:

1. Notify the special inspector. The holder of the building permit or their duly authorized agent is responsible-for notifying the special inspector or agency regarding individual inspections required by the building department. Adequate notice shall be provided so that the special inspector has time to become familiar with the project.

2. Provide access to approved plans. The contractor is responsible for providing the special inspector with access to approved plans.

3. Retain special inspection records. As required by the Building Official, the contractor is responsible for retaining at the job site all special inspection records submitted by the special inspector, and providing these records for review by the building department's inspector upon request.

F. **Duties and Responsibilities of the Building Official**

Of all the team members involved in the construction process, the Building Official is the only one with the legal authority to enforce the special inspection provisions of the code. The employment of a special inspector or agency shall not relieve the Building Department of responsibility for progress or called inspections as required by the code, or of the obligation of the contractor to notify the Building Department when the work is ready for inspection. Building Department inspections of items also requiring special inspection should not be signed off without the concurrence of the special inspector.

The specific duties and responsibilities of the Building Official relating to special inspection include the following:

1. **Review submittal documents for compliance with special inspection requirements.** The Building Official is charged with the legal authority to review the plans, specifications, special inspection program, and other submittal documents for compliance with code requirements. [26-4 of the Des Moines Ordinance, IBC Sec. 106.3 through 106.5]

2. **Approve special inspection program.** The Building Official is responsible for approving the special inspection program submitted by the design professional in responsible charge and may require a pre-construction conference to review the program with all appropriate members of the construction team.

3. **Approve special inspectors/inspection agencies.** The Building Official is responsible for determining the competence of special inspectors for the types of work they will be inspecting. [IBC Sec. 1704]

4. **Monitor special inspection activities.** The Building Official should monitor the special inspection activities at the job site to assure that qualified special inspectors are performing their duties when work requiring special inspection is in progress.

5. **Review inspection reports.** The Building Official receives and reviews special inspection progress reports and final reports for conformance with the approved plans, specifications, and workmanship provisions of the code.

6. **Perform final inspection.** The Building Official should not perform the final inspection and approval of a project until the final special inspection report has been reviewed and approved.
Appendix A

Special inspection Forms & Schedules

Special inspection Forms

- Daily Report Form
- Weekly Report Form
- Discrepancy Notice
- Final Report Form

(THOSE FORMS MAY BE PHOTOCOPIED)
SPECIAL INSPECTION DAILY REPORT

City of Des Moines Permit & Development Center

Permit No. _________________________ Date _________________

Project Name/Address: ________________________________________________________________

"Inspection Type(s)/Coverage: ___________________________________________________________

[ ] Continuous [ ] Periodic; frequency: ___________________________

Inspections made, including locations: ___________________________________________________

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Tests performed: _________________________________________________________________

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Items requiring 1) Correction, 2) Correction of previously listed items, and 3) Previously listed uncorrected items:

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Changes to approved plans authorized by engineer or architect of record: _________________________

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Comments: _________________________________________________________________

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To the best of my knowledge, work inspected was in accordance with the building department-approved plans, specifications, and applicable workmanship provisions of the IBC except as noted above.

Signed: ____________________________________ Inspection Agency: ______________________

Print full name: ______________________________ ID Number: ____________________________
SPECIAL INSPECTION WEEKLY REPORT

City of Des Moines Permit & Development Center

Permit No. _________________________ Date _________________

Project Name/Address: ____________________________________________________________

_______________________________________________________

Inspection Type(s)/Coverage: _______________________________________________________

  i  Continuous  i  Periodic; frequency: __________________________

Total inspection time each day:

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Inspections made, including locations: _______________________________________________________

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Tests performed: ________________________________________________________________

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Items requiring 1)Correction, 2)Correction of previously listed items, and 3)Previously listed uncorrected items:

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Changes to approved plans authorized by engineer or architect of record: __________________________

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Comments: ________________________________________________________________

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To the best of my knowledge, work inspected was in accordance with the building department-approved plans, specifications, and applicable workmanship provisions of the IBC except as noted above.

cc: Building Department
    Engineer/Architect
SPECIAL INSPECTION DISCREPANCY NOTICE

City of Des Moines Permit & Development Center

Permit No. ____________________ Date _________________

Project Name/Address: ________________________________________________________

Inspection Type(s)/Coverage: __________________________________________________

  □ Continuous  □ Periodic; frequency: __________________

Notice delivered to:  □ Contractor  □ Engineer/Architect  □ Building Department

The following discrepancies require correction and inspection approval prior to proceeding with this phase of the work:

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Signed: ________________________________  Inspection Agency: ______________________________

Print full name: __________________________  ID Number: ________________________________

DO NOT REMOVE THIS NOTICE

Post with building permit inspection record card
SPECIAL INSPECTION FINAL REPORT

City of Des Moines Permit & Development Center

Permit No. ___________________________ Date ______________________

Attention: _______________________________________________________

Project Name/Address: __________________________________________________________________________

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In accordance with Section 1704 of the International Building Code, special inspection has been provided for the following items:

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Based upon inspections performed and our (my) substantiating reports, it is our ("my) professional judgment that, to the best of our (my) knowledge, the inspected work was performed in accordance with the approved plans, specifications, and applicable workmanship provisions of the International Building Code.

Signed: ____________________________________ Inspection Agency: ___________________________

Print full name: ____________________________ ID Number: ____________________________

or Agency Responsible Engineer’s stamp:

cc: Client/Project Owner
Engineer/Architect