Welcome to the 2018 Annual Conference Educational Sessions

Session: IAS Special Inspections
SPECIAL INSPECTIONS—Implementing and Managing IBC Chapter 17 Requirements for Building Departments

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Agenda

- **PART 1** - About IAS
- **PART 2** - Overview of Special Inspection
- **PART 3** - Special Inspection Agency Accreditation
- **PART 4** - Resources
PART 1 – About IAS
Who we are

• **Subsidiary** of the International Code Council
• **Nonprofit, internationally recognized accreditation body**
• Created to **assist** local government in ensuring public safety
• Prior to ICC, part of ICBO since **1975**

(Most members of the IAS Board and the Accreditation Committee are local government code officials)
Formal Recognition of IAS

• Governments from over 50 countries that make up the Asia Pacific Laboratory Accreditation Cooperation (APLAC) and the International Laboratory Accreditation Cooperation (ILAC)

• Numerous city, county and state building departments recognize accreditations granted by IAS
Formal Recognition of IAS

A SHORT LISTING OF FORMAL RECOGNITIONS:

• California Department of Transportation
• Chickasaw Nation
• U.S. Coast Guard
• U.S. Environmental Protection Agency (EPA)
• U.S. Federal Emergency Management Agency (FEMA)
• U.S. Federal Highway Administration (FHWA)
• United States Marines
• United States Navy
• Metal Building Manufacturers Association (MBMA)
• U.S. Nuclear Regulatory Commission
• International Code Council (ICC)
• ICC Evaluation Service (ICC-ES)
• Fire Stop Manufacturers Association (FSMA)
What is Accreditation?

• Formal third-party recognition that a *body or agency* fulfills specified requirements and is *competent* to carry out specific conformity assessment tasks.

• Accreditation has been used for over 50 years as the *definitive* means of evaluating organizations, and is now utilized by all the world’s major economies and many developing economies.

• It is becoming an important tool for **Building and Fire Prevention Departments**.

• All accreditation programs include on-site technical and management system verification.
IAS provides several accreditation programs to assist state and local government carry out their duties and obligations to ensure public safety and property protection.

- Fabricators
- Testing Laboratories
- Product Certification Agencies
- Special Inspection Agencies
- Metal Building Manufacturers
- Field Evaluation Bodies
- Building Departments
- Fire Prevention Departments
- Building Department Service Providers
What are Accreditation Criteria?

• A required accreditation criteria exists for every IAS accreditation program.
• All IAS accreditation criteria are on the IAS website.

Examples:
  – AC291  Special Inspection Agencies
  – AC354  Field Evaluation of Unlisted Electrical Equipment
  – AC370  Product Certification Agencies
  – AC402  Third-party Permitting, Plan Review and Inspection Providers
  – AC251  Building Departments/Code Enforcement
  – AC426  Fire Prevention and Life Safety Departments
  – AC474  Personnel Certification Bodies
• IAS criteria are developed with **input** from parties such as special inspection agencies, code officials, affected industries and the public.

• **Open, public** hearing process

• **Anyone** can participate

• Held annually (minimum)
PART 2 – Overview of Special Inspections
What is Special Inspection?

- The **monitoring** of materials, installation, fabrication, erection and placement of components and connections that require special expertise that are critical to the integrity of the building structure.

- Special inspections are **in addition** to the typical municipal inspections required by the building department specified in *International Building Code®* (IBC®) Section 110 or specific structural observations as may by required in IBC Section 1704.6.

- Code officials may require **other inspections** per IBC Section 110.3.8. Code officials may require “other” inspectors to qualify similarly to special inspectors per IBC Section 104.4.
Why do we need it?
Hartford Civic Center Coliseum – Hartford, CN - 1978

- 4:19am collapse
- No injuries or fatalities
- Interior members were insufficiently braced, exterior members were only braced at 30' rather than at 15' as specified in design. No midpoint braces were provided on the top layer members.
- Inadequate inspection and quality control.
- Welding of filler plates on trusses reduced the connection capacity.
- Diagonal members were misplaced and the wrong steel strength was used.
Why do we need Special Inspections?

• Special inspectors *monitor* the materials and workmanship critical to the *structural* and *fire-resistive integrity* of a building.

• *Required* to ensure compliance with the approved construction documents (plans) and standards referenced in the applicable codes.

• Special inspectors bring *technical expertise* to the job that isn’t typically available in local government.
• The IBC clearly specifies situations in which the employment of special inspectors or special inspection agencies is mandatory.

• The use of special inspectors and special inspection agencies is not discretionary.

• The use of special inspectors and special inspection agencies is ministerial.
Special Inspections are Mandatory

- Official immunity *does not necessarily apply* to the performance of ministerial duties.

- Duties *are considered ministerial* if they are prescribed and defined by statute, rule, or regulation with such certainty that there is nothing left to the public official's or employee's decision or judgment and he or she has no choice in the performance of such duties.

- A public official may be *personally liable* for damages that result from the failure to perform ministerial duties.
Benefits of Special Inspections

FOR THE CONTRACTOR:

• Special inspections can be **available** during times when the building department is not available, ensuring construction stays on schedule.

• Special inspections allow for **prompt replies** to questions from contractors.

• **Expedites** corrective measures to address errors.

• Facilitates team **communication** between designers, contractors, and the building department, minimizing misinterpretation of the intended structural design, building code or ordinance.

• Documents **compliance** …………. Provides a shield against liability.
David L. Lawrence Convention Center – Pittsburgh PA - 2002

- 1 Dead – 2 Injured

- Truss collapse – *wrong nuts* used at the connection, $\frac{1}{2}$ sized and not high strength

- Special inspector was a materials tester – He said no one had told him which nut was correct for the trusses and he “probably wouldn’t have noticed anyway”
Special Inspection Failures

Tropicana Casino Parking Garage
Atlantic City, NJ - 2003

- 4 Dead – 20 Injured
- Reinforcing steel was not properly installed to allow floors to be secured to columns and sheer wall
- Concrete not tested for strength
- Inspectors did not verify reinforcing steel was installed properly
FOR THE DESIGNER:

– Intended design is *what is* constructed

– Additional *knowledgeable review* of installations

– Documents *compliance*

– Provides a *shield* against liability
Hyatt Regency Hotel, Kansas City, MO - 1981

- 114 Dead – 200+ Injured
- During the construction phase, the design of the hanger rod connections *was changed* from a one-rod to a two-rod system
- The engineers stated that they requested on-site representation on numerous occasions, but were *turned down due to additional costs* for on-site inspection
- Poor workmanship, improper welding and connections, inadequate building materials, *failure* on the part of the hotel *to hire special inspectors*, as well as failure of the jurisdiction by allowing the building to be occupied despite its hazards, were also factors in the collapse
Benefits of Special Inspections

FOR THE OWNER:

– **Assurance** that they are getting what they paid for

– Documents **compliance**

– Provides a **shield** against liability
Blacksburg HS Gym
Montgomery Co, VA - 2010

- Built in 1974
- Investigation revealed *lower-than-specified yield strength* in the steel and *inferior welding* were contributing factors to the roof collapse
- Testing found *weak welds* at the truss seat which did not meet the AWS standards for structural welds
- 17 hours before, the gym had been *fully occupied* for a basketball game

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Shelbyville Central HS
Shelbyville, TN - 2014

• Three seriously injured from collapse of one wall of an unfinished football Fieldhouse at Shelbyville Central High School

• Construction experts who examined the remains of the structure said the walls were poorly constructed, noting a lack of rebar in the blocks. Earlier, the building's foundation failed at least one state inspection, records show.
• Maxim Hotel - multistory hotel built in 1970
• Westin purchased it in 2003
• Special inspection after purchase, determined that complete major rehabilitation of structure was required
• Interior and exterior shear walls were added
Westin Remodel
Las Vegas, NV  circa 2003

Discontinuous shear wall
Cosmopolitan Hotel
Las Vegas, NV circa 2007

- These pictures were taken within East Tower.
- Special Inspection revealed no additional action required.

(Apparently the beams were required for construction sequencing and not for the final structure)

Note steel girders cut out for cable tray.
Harmon Hotel
Las Vegas, NV    circa 2009

Harmon Hotel in forefront
blue exterior
approximately 50 stories
located at the
corner of
Harmon and
Las Vegas Boulevard
Luxor Hotel
Las Vegas, NV  circa 2000

- Construction & inspection personnel injured
- 1 Death
- Shoring failure during concrete placement
- Horse Arena
- Basement Level
• What happens after special inspections are complete?
• Mechanical Floor
• Gravity load failure during placement of precast panels

• Lack of compression flange bracing

• *Specified beam slightly smaller than calculated*
FOR THE JURISDICTION:

- *Saves jurisdiction money*, not having to conduct the inspections.

- Allows jurisdiction to have access to *highly specialized staff*.

- Allows critical work to be *continuously* inspected.

- Documents compliance ……. provides a *shield* against liability.

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Who is Responsible for Special Inspection?

- **Owner** or registered design professional acting as the owner’s agent - *Hires* special inspectors or agencies.

- **Permit applicant** - *Submits statement* of special inspections prepared by registered design professional in charge.

- **Building Official** - *Approves* special inspectors or agencies.

- **Special inspection agencies** or special inspectors – *Conduct and document* special inspections.
Where are special inspection requirements in the Code?

International Building Code, Chapter 17

CHAPTER 17
SPECIAL INSPECTIONS AND TESTS

User note: Code change proposals to sections preceded by the designation (IE) will be considered by the IBC—Fire Safety Code Development Committee during the 2017 Group B Code Development Cycle. Sections preceded by the designation (IP) will be considered by the International Fire Code Development Committee during the 2016 Group B Code Development Cycle. All other code change proposals will be considered by the IBC—Structural Code Development Committee during the Group B cycle. See explanation on page 37.

SECTION 1701 GENERAL
1701.1 Scope. The provision of this chapter shall govern the quality, workmanship and requirements for materials covered. Materials of construction and tests shall conform to the applicable standards listed in this code.

1701.2 New materials. New building materials, equipment, appliances, systems or methods of construction not provided for in this code, and any material of questioned reliability proposed for use in the construction of a building or structure, shall be subjected to the tests prescribed in this chapter and in the approved tests to determine character, quality and limitations of use.

SECTION 1702 DEFINITIONS
1702.1 Definitions. The following terms are defined in Chapter 2:
APPROVED AGENCY, APPROVED FABRICATOR, CERTIFICATE OF COMPLIANCE, DESIGNATED SEISMIC SYSTEM, FABRICATED ITEM, INTERIM FIRE-RESISTANT COATINGS, MAIN WINDFORCE-RESISTING SYSTEM, MASTIC FIRE-RESISTANT COATINGS, SPECIAL INSPECTION, Continuous special inspection, Periodic special inspection, SPECIAL INSPECTOR, SPRAYED FIRE-RESISTANT MATERIALS, STRUCTURAL OBSERVATION.

SECTION 1703 APPROVALS
1703.1 Approved agency. An approved agency shall provide all information as necessary for the building official to determine that the agency meets the applicable requirements specified in Sections 1703.1.1 through 1703.1.3.

1703.1.1 Independence. An approved agency shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall also disclaim the building official and the registered design professional as responsible charge parties, conflicts of interest so that objectivity can be confirmed.

1703.1.2 Equipment. An approved agency shall have adequate equipment to perform required tests. The equipment shall be periodically calibrated.

1703.1.3 Personnel. An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests and special inspections.

1703.2 Written approval. Any material, appliance, equipment, system or method of construction meeting the requirements of this code shall be approved in writing after satisfactory completion of the required tests and submission of required test reports.

1703.3 Record of approval. For any material, appliance, equipment, system or method of construction that has been approved, a record of such approval, including the conditions and limitations of the approval, shall be kept on file in the building official’s office and shall be available for public review at appropriate times.

1703.4 Performance. Specific information concerning test reports conducted by an approved agency in accordance with the appropriate referenced standards, or other such information as necessary, shall be provided for the building official to determine that the product, material or assembly meets the applicable code requirements.

1703.5.1 Research and investigations. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material or assembly. If it is determined that the evidence submitted in conformity with performance for the code results, the building official shall approve the use of the product, material or assembly subject to the requirements of this code. The costs, scope and investigations required under these provisions shall be paid by the owner or the owner’s authorized agent.

1703.5.2 Research reports. Supporting data, where necessary to assist in the approval of products, materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.
• **Section 1702** - “Approved Agency” is defined as:

   “An established and recognized agency that is regularly engaged in conducting tests or furnishing inspection services, where such agency has been approved by the building official.”

• **Section 202** – “Approved” is defined as:

   “Acceptable to the building official.”
1703.1 - Approved agency to provide evidence of:

• Independence – no conflicts of interest (Critical).

• Equipment – adequate to perform required tests.

• Personnel – competent in conducting, supervising and evaluating tests and/or inspections in the appropriate discipline.
1704.2.1 “Special inspector qualifications:
The special inspector shall provide written documentation to the building official demonstrating his or her *competence* and *relevant experience* or *training*. Experience or training shall be considered relevant when the documented experience or training is related in *complexity* to the same type of special inspection activities for projects of similar complexity and material qualities. These qualifications are in addition to those specified in other sections of this code.”.
1704.2.1 “The registered design professional in responsible charge and engineers of record involved in the design of the project are permitted to act as the approved agency and their personnel are permitted to act as the special inspector for the work designed by them, provided they qualify as special inspectors.”
The IBC includes 16 major categories of special inspection that are critical to life-safety and structural-safety roles:

- Inspection of fabricators
- Concrete construction
- Masonry construction
- Steel construction
- Wood construction
- Soils
- Pile foundations
- Smoke control
- Wind requirements
- Pier foundations
- Vertical masonry elements
- Sprayed fire-resistant materials
- Mastic and intumescent fire-resistant coatings
- Exterior insulation and finish systems
- Special cases
- Seismic requirements
Two Types of Special Inspections

• **Continuous special inspections** involve *full-time* observation of work by an approved special inspection agency or special inspector while work is being performed.

• **Periodic special inspections** involve *part-time or intermittent* observation of work by an approved special inspection agency or special inspector while work is performed or completed.

• **Identified in IBC**, Chapter 17, Tables 1705.2.3, 1705.3, 1705.6, 1705.7, 1705.8.
Continuous

Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.

Periodic

Identification markings to conform to ASTM standards specified in the approved construction documents.

<table>
<thead>
<tr>
<th>Type</th>
<th>Continuous Special Inspection</th>
<th>Periodic Special Inspection</th>
<th>Required Special Inspection</th>
<th>IBC Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>-</td>
<td>X</td>
<td>ACI 318 Ch. 5, 23.2</td>
<td>1908.4</td>
</tr>
<tr>
<td>2.</td>
<td>Montage of casting</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
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<tr>
<td>6.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
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</tr>
<tr>
<td>7.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Impact of reinforcing bar</td>
<td>-</td>
<td>ACI 318 Ch. 7.2.4</td>
<td></td>
</tr>
</tbody>
</table>

For RI: 1 inch = 2.5 cm.

a. For applicable, see Section 17.8.12, Special inspections for seismic resistance.

b. Unless otherwise specified, special inspections shall be performed in accordance with IBC 17.8.7 and 17.8.12, or other inspection procedures. Where special inspections are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.
Seven Steps of a Special Inspection Program

**G = General  J = Job**

1. Establish qualifications for special inspectors and special inspection agencies. G

2. Communicate Chapter 17 requirements and building department expectations. G

3. Require submittal of statement of special inspections. J

4. Evaluate and approve special inspection agencies and special inspectors. J

5. Develop and implement report procedures to monitor special inspections. G & J

6. Practice site verification. J

7. Review, accept, and retain final report of special inspections. G & J
1. **Establish minimum qualifications for special inspectors and special inspection agencies.**

- Must have a criteria or standard for evaluating agencies and inspectors.

- Building code, standards, IAS Accreditation Criteria AC291.

- Criteria sets a level playing field for all evaluations.

- Covers individual qualifications, procedures and policies for performing and reporting special inspections, equipment used in inspections, storage of records, etc.
2. **Communicate Chapter 17 requirements and building department expectations.**

- Owner or registered design professional/agent to submit SIA for approval.
- Owner or registered design professional/agent to hire SIA.
- RDP prepares statement of special inspections (qualified person exception).
- Permit applicant to submit statement of special inspections.
- SIA reporting, including the final report.
3. **Require submittal of statement of special inspections (Section 1704). This statement shall identify:**

- Materials, systems, components, and work required to undergo special inspection by the building official, or by the RDP for each portion of the work.

- **Type and extent of each special inspection.**

- Type and extent of each test.

- Additional requirements for special inspection for seismic or wind resistance.

- For each type of special inspection, whether it will be **continuous or periodic.**
Samples of statement of special inspections:


http://www.seari.org/files/SEARI_Suggested_Statement_of_Special_Inspections.pdf

Example
Special Inspection Agreement
(Statement)
Cont.

SPECIAL INSPECTION AGREEMENT
(SI-3)
Effective April 9, 2009

To permit applicants of projects requiring special inspection and/or testing per Chapter 17 of the 2005 International Building Code (IBC)

Project Name/Address: ___________________________ Plan Ch. # ___________________________
Name of City of Las Vegas Inspection Supervisor: ___________________________ Application # ___________________________
Telephone #: ___________________________

BEFORE A PERMIT CAN BE ISSUED: The Owner or Owner’s agent shall obtain special inspection services from a special inspection agency accredited by the International Accreditation Service (IAS) and approved by the Building Official. The owner or owner’s agent shall complete two (2) copies of this agreement and the attached scope of work for special inspections.

APPROVAL OF SPECIAL INSPECTORS: Each special inspection agency shall be accredited by IAS and approved by the Building Official prior to permit issuance and prior to performing any duties. Special inspectors shall display approved identification, as stipulated by the Building Official, when performing the function of a special inspector.

Special inspection and testing shall meet the minimum requirements of IBC Chapter 17.

All sections and chapters are from the 2005 International Building Code.

A. Duties and Responsibilities of the Special Inspector and Special Inspection Agency:

1. Observe work
   The special inspector shall observe the work for conformance with the Building Department approved (stamped) design drawings and specifications and applicable workmanship provisions of the IBC.

2. Report non-conforming items
   The special inspector shall bring non-conforming items to the immediate attention of the contractor and note all such items on the daily report. If any item is not resolved in a timely manner or is about to be incorporated in the work, the special inspector shall immediately notify the Building Department by telephone or in person, notify the engineer or architect, and post a discrepancy notice.

3. Furnish Daily reports
   On request, each special inspector shall complete and sign both the special inspection record and the daily report form for each day’s inspections to remain at the job site with the contractor for review by the Building Department’s inspector.

4. Furnish weekly reports
   The special inspector or inspection agency shall furnish weekly reports of tests and inspections directly to the Building Department, project engineer or architect, and others as designated. These reports must include the following:
   a. Description of daily inspections and tests made with applicable locations;
   b. Listing of all non-conforming items;
   c. Report on how non-conforming items were resolved or unresolved as applicable; and
   d. Identified changes authorized by the architect, engineer and building department if not included in non-conformance item.
Seven Steps of a Special Inspection Program Step 3

5. Furnish final report

The Special inspector or inspection agency 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 his/her knowledge, in conformance with the approved design drawings, specifications, approved change orders and the applicable workmanship provisions of the IBC. Items not in conformance, unresolved items or any discrepancies in inspection coverage (i.e., missed inspections, periodic inspections when continuous was required, etc.) shall be specifically itemized in his report. Final report shall be reviewed, signed and stamped by the principal of the special inspection agency who is a registered design professional (civil or structural engineer) in the State of Nevada.

6. The special inspection agency shall provide a complete and accurate final report based on the requirements of the City of Las Vegas SI-5 document. No modifications, additions or subtractions to the requirements of the SI-5 document shall be accepted in an hourly fee as no extra assigned for each final inspection report submitted as noted on the SI-3 (H). If a substandard report is submitted to the Building Department, the report will be rejected and assessed the full review fee. The same hourly fee will be assessed for each additional review of the same report.

B. Contractor's Responsibilities

1. Notify the special inspector

The contractor is responsible for notifying the special inspector or agency regarding individual inspections for items listed on the attached schedule and as noted on the Building Department approved plan. 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 access to approved plans at the job site.

3. Retain special inspection records

The contractor is also responsible for retaining all the job site all special inspection records submitted by the special inspector, and providing these records for review of the Building Department's inspector upon request.

4. Seismic force resisting systems, designated system or component

Contractor's Statement of Responsibility per Section 1706 of the 2006 International Building Code, where required:

To comply with the requirements of Section 1706, the contractor acknowledges the following:

- The company is aware of the special requirements contained in the statement of special inspections prepared by the engineer of record or the registered design professional per the requirements of Section 1706 of the 2006 IBC.
- Control will be exercised to obtain conformance with the construction documents approved by the Building Official.
- The company has procedures for exercising control within our organization, the method and frequency of reporting and the distribution of reports.
- The company has the qualified personnel to exercise such control.

5. The contractor shall not intimidate or try to influence Special Inspection Agencies or Special Inspectors. If reports of abuse are reported a special investigation by the City of Las Vegas Building Dept. shall ensue. If any change is substantiated the contractor will incur the cost of the investigation @ $100 per hour. Any action related to the outcome of the investigation will be at the discretion of the Building Official.
C. Engineer of Record’s responsibilities:

1. Specify on the project plans and specifications all items requiring special inspections, including periodic inspections in accordance with Chapter 17.

2. Prepare a statement of special inspections, including seismic requirements, in accordance with Section 1700.

3. If structural observation is required, prepare an observation report by the engineer of record. Conduct structural observations. All final reports to be submitted to the Building Official.

D. Owner’s responsibilities:

1. Obtain and fund special inspection services by contract with an agency approved by the City of Las Vegas.

2. Submit the signed SI-3 and SI-5 to the Building Official prior to permit issuance.

3. Obtain and fund structural observation by the engineer of record as required by Section 1700.

4. This Agreement shall be binding. Termination of this Agreement will require written notice as to why this agreement should be invalidated. All parties shall agree to the termination with the City of Las Vegas issuing the final approval.

E. Scope of Work:

All work falling within the categories identified in the attached Schedule (S1-6) shall be inspected and/or tested in accordance with the provisions of Chapter 17 of the International Building Code.

F. Items not included in the project’s scope of work, S1-6, are to be inspected by the City of Las Vegas inspectors. Call 229-5112 to schedule these inspections. An inspection hold will be in place until these inspections are scheduled. Special inspection fees apply. ($125 per hour, 2 hour minimum)

G. For masonry walls that require special inspections, all the wall footings and the reinforcing steel are to be included in the Special Inspection agency’s scope of work.

H. All Final Special Inspection reports are to be submitted to the City of Las Vegas Area Inspection Supervisor at the City of Las Vegas West Service Center, 7551 W. Sauer Dr., Las Vegas, NV 89126. The review fee is $150 per hour with a one hour minimum.

I have read and agree to comply with the terms and conditions of this agreement.

Owner: ___________________________ Date: ___________________________

By: ___________________________ Print Name: ___________________________

Special Inspection Agency: ___________________________ Date: ___________________________

By: ___________________________ Print Name: ___________________________

Contractor: ___________________________ Date: ___________________________

By: ___________________________ Print Name: ___________________________

Sub-contractor: ___________________________ Date: ___________________________

By: ___________________________ Print Name: ___________________________

☐ Engineer of Record: ___________________________ Date: ___________________________

(Signature required if box is checked)

By: ___________________________ Print Name: ___________________________

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4. **Evaluate and approve special inspection agencies and inspectors. Use criteria established in Step 1, such as:**

- Individual *professional* qualifications (certifications, licenses, education, experience, etc.).
- **Interviews** with individuals.
- **Field observations**.
- **IAS accreditation**.
5. Develop reporting requirements.

- Describe the reports to be submitted and the criteria that determine whether a report is *acceptable and properly formatted*.

- All report forms for use in performing quality assurance inspection, engineering and/or testing *must be approved* by the building department.

- Report forms *can* be created by the building department to help streamline the reporting process.
Types of Reports:


Reporting Oversight:

- Building departments need to perform verification audits and review the reports submitted by special inspection agencies and special inspectors.

- Determine how audits will be performed, what evaluation criteria will be used, and what happens if the audited party is found to be performing in an unsatisfactory manner.
Example:

Daily Report
Special Inspection

SPECIAL INSPECTION DAILY REPORT

City/County of: Permit No.: Date:
Project Name/Address:
Inspection Type(s)/Coverage:

☐ Continuous ☐ Periodic; frequency:

Inspections made, including locations:

Tests performed:

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

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

Comments:

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 / Certificate Number:

* Building official may require the signature / stamp of agency engineer responsible for special inspection.
Seven Steps of a Special Inspection Program Step 5

Example:

Weekly Report Special Inspection

SPECIAL INSPECTION WEEKLY REPORT

City/County of: Permit No.: Date:
Project Name/Address:
Inspection Type(s)/Coverage:

☐ Continuous ☐ Periodic; frequency:

Total inspection time each day:

Dates
Hours
Inspector

Inspections made, including locations:

Tests performed:

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

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

Comments:

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 / Certificate Number:
cc: Building Department
   Engineer/Architect

* Building official may require the signature / stamp of agency engineer responsible for special inspection.
Example:

Discrepancy Notice
Special Inspection

SPECIAL INSPECTION DISCREPANCY NOTICE

City/County of: __________________________ 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:

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

Signed: ____________________________ Inspection Agency: ____________________________

Print full name: ____________________________ ID / Certificate Number: ____________________________

* Building official may require the signature / stamp of agency engineer responsible for special inspection.

DO NOT REMOVE THIS NOTICE
Post with building permit inspection record card
Example:

Final Report
Special Inspection

SPECIAL INSPECTION FINAL REPORT

City/County of: __________________________ Permit No.: __________ Date: __________

Attention: ________________________________

Project Name/Address: ____________________________

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

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

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 / Certificate Number: ________________________

* Building official may require the signature / stamp of agency engineer responsible for special inspection.

cc: Client/Project Owner

Engineer/Architect

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6. **Practice site verification.**

- Verify the special inspector is on site *for all continuous inspections*.

- Verify that the special inspectors on site *were the ones approved*.

- **Spot check** daily, weekly, and *review* discrepancy reports *in field* where the special inspector is readily questioned.
• Talk with the special inspectors, make sure you’re available to them, _verify that they’re comfortable with their authority_.

• Verify that all special inspection _steps are completed_ before ‘next-step’ building department inspections are conducted.
Seven Steps of a Special Inspection Program Step 7

7. **Review, accept and retain final report of special inspections.**

   • **Before** final approval of permit or issuance of C of O.

   • Review exceptions or discrepancies *and* corrections.

   • Accept when satisfied that **no unresolved issues** exist.

   • Retain records according to **written** policy and statutory requirements.
1. **Responsibilities and authority:** Apply special inspector responsibilities and authority and *comply* with requirements of enforcing jurisdiction.

2. **Notification:** Notify the local jurisdiction of the inspection job and specify the type of inspection for which the special inspector has been engaged, in accordance with enforcing jurisdiction requirements.

3. **Presence at job:** Be present for continuous inspection during execution of *all work* for which the special inspector has been engaged.
4. **Acceptable conditions:** Verify that the local jurisdiction inspector has approved the conditions at the site when required. Typically special inspectors **don’t** have the authority to **stop** work!

5. **Progress report:** Submit **timely**, periodic written and verbal progress reports to the local jurisdiction when required.

6. **Identify discrepancies:** Notify contractors when discrepancies occur. **Don’t design solutions!**

7. **Uncorrected discrepancies:** **Timely notify** the building official and designer when discrepancies are not corrected.
8. **Plan changes:** Verify that structural plan changes are properly documented and approved by the enforcing jurisdiction.

9. **Record keeping:** Maintain records of work inspected, including discrepancies and actions taken.

10. **Compliance report:** Submit *timely* final report of compliance.
Concrete Mix Verification:

1. **Mix design:** Verify concrete mix design based on water/cement ratio or laboratory mix design, that cement type is as specified, that aggregate type, weight and size are as specified and that admixtures are correct.

2. **Trip ticket:** Determine that mixer truck trip ticket specifies mix in truck is mix required.

3. **Mixing water:** Verify that total water added to mix does not exceed that allowed by concrete mix design and is of acceptable quality.
Concrete Mix Verification:

4. **Adequate equipment:** Verify that concrete mixing and placing equipment at site is adequate for the intended use.

5. **Quality of concrete:** Verify that the quality of the concrete is indicative of adequate mixing time, consistency and *relevant time limits*. 
Other concrete areas to be checked by Special Inspectors. Each includes multiple steps not included in this presentation:

• Concrete Reinforcement and Prestressing Steel
• Concrete Formwork and Embedded Items
• Concrete Preparation and Placement
• Samples and Tests
• Concrete Protection
• Prestressing and Grouting
PART 3 – IAS Special Inspection Agency Accreditation
What is the Program?

• A comprehensive program that helps building departments manage special inspections in the jurisdiction.

• IAS assesses and monitors the special inspection agencies to ensure they meet the requirements in Chapter 17 of the IBC.

• IAS helps building departments do everything from writing adoption language to use the program, to setting a timeline, providing training, evaluating the special inspection agencies, etc.
**Objective:**

- Provide building departments with **verification** that special inspection agencies are qualified to work in their jurisdiction.

- Helps building departments *to approve* special inspections.
Accreditation Benefits for Building Department

IAS SIA Program Benefits for Building Departments:

• **Ensures Code Compliance** – IAS provides a *stringent process* to determine if SIAs comply with Chapter 17 of the IBC.

• **Saves Time** – IAS takes the *burden off* the building department to make sure that SIAs are regularly assessed for quality and competence.

• **Standardizes Assessments** – All SIAs are evaluated using the same criteria and assessment process, creating a *level playing field* for everyone.
Accreditation Benefits for Building Department

More IAS SIA Program Benefits for Building Departments:

- **Limits Liability** – Typically requiring SIAs to be accredited by IAS provides evidence of due diligence to ensure the competence of such agencies.

- **Easy to Use** – Building departments can search by organization name, listing number or scope on the IAS website.

- **Economizes resources** – There is little to no cost for building departments that participate in the IAS SIA Accreditation Program.
Earl Russell, Building and Safety Department Inspections Manager, City of Las Vegas, NV (retired):

“Not long ago, we really struggled to keep our heads above water. Today, we’re confident that our special inspection agencies meet national requirements, assuring us that our infrastructure is built to the tightest code standard of the day.”
Accreditation Benefits for Special Inspection Agencies

• Helps SIAs get approved by building departments.

• Improves SIA’s existing program.

• Improves organization’s operational efficiency.

• Improves on delivery of inspection services.

• Increases qualifications of personnel.

• Creates a more level playing field when proposing on projects.
Comments from an Accredited Special Inspection Agency

• Stephen R. Johnson, Vice President and Materials Department Manager, GeoTek, Inc., Las Vegas, NV

“The best part about this process is that it allowed us to review our current program with an eye on improvement. In fact, we enacted several beneficial procedures to meet these requirements and help us provide better service to our clients.”

“We’ve had some unexpected benefits. Accreditation has also helped us qualify with a nationally-based client that typically requires agencies to follow a client-defined internal process for assessment. Because of the accreditation, we developed a relationship with this client and were able to stand out from our competitors.”
Basis for IAS Special Inspection Agency Accreditation

- International Building Code (IBC), Chapter 17
- IAS Accreditation Criteria – AC291
- ISO/IEC 17020, Conformity assessment – Requirements for the operation of various types of bodies performing inspection (applicable portions)
Basis for the Special Inspection Agency Accreditation Program.

Available on the IAS website.

May be updated as needed.
IAS accreditation provides building departments with information the code requires to approve SIAs:

**IBC 1703.1 – Approved Agencies:** An approved agency shall provide all information as necessary for the building official to determine that the agency meets the applicable requirements.

- **Independency.** . . .no conflicts of interest.
- **Equipment.** . . .adequate to perform required tests.
- **Personnel.** . . .shall employ experienced/knowledgeable in conducting, supervising, and evaluating tests and/or inspections.
A Few of the Items Covered in the Criteria:

• **Competence** of special inspectors (interviews, field observations)

• **Policies and procedures** (inspections, reporting, sample handling, subcontracting, complaints)

• **Tools** (code books, data sheets, inspection forms, equipment)

• **Records** (inspections, training, etc.)
1.0 INTRODUCTION

1.1 Scope [of Program]

1.2 Reference and Normative Documents

2.0 DEFINITIONS
3.0 DOCUMENTED INFORMATION SUBMISSION

Information that must be submitted by agencies applying for Special Inspection Agency Accreditation:

3.2 Management system documentation complying with ISO/IEC Standard 17020:2012 and other requirements

3.3 – 3.38 Additional required information
4.0 ASSESSMENTS

• Assessments are performed on-site prior to accreditation and once every two years after the initial accreditation

• Assessments are performed remotely after the first year of accreditation and in years when an on-site assessment is not due

• Supplementary on-site assessments may be conducted as shown in the Rules of Procedure
5.0 CONTENTS AND COVERAGE OF INSPECTION REPORTS

6.0 TRAINING

7.0 SUPERVISION/MONITORING OF INSPECTORS
8.0 MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTORS

• See Table 1
8.0 MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTORS

Includes qualifications for the following Special Inspectors:

- Prestressed/Precast Concrete
- Reinforced Concrete
- Nondestructive Testing
- Pier and Pile Foundations
- Post-installed Structural Anchors in Concrete
- Soils
- Spray-applied Fire-resistant Materials
- Steel (High-strength Bolting and Welding)
- Masonry Construction
- Wood Construction
8.0 MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTORS

Includes qualifications for the following Special Inspectors:

- Exterior Insulation and Finish Systems
- Firestop Systems
- Wall Panels, Curtain Walls, and Veneers
- Smoke Control Systems
- Mechanical Systems
- Fuel-oil Storage and Piping Systems
- Structural Cold-formed Steel
- Excavation – Sheeting, Shoring and Bracing
- High-pressure Steam Piping (Welding)
- Structural Safety – Stability and Mechanical Demolition
- Site Storm Drainage Disposal and Detention
- Sprinkler Systems
8.0 MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTORS

Includes qualifications for the following Special Inspectors:

- Standpipe Systems
- Heating Systems
- Chimneys
- Seismic Isolation Systems
- Special Cases
Summary of AC291:

Section 1 – Introduction

Section 2 – Definitions

Section 3 – Documented Information Submission *(Management System Documentation)*

Section 4 – Assessments

Section 5 – Contents and Coverage of Inspection Reports

Section 6 – Training

Section 7 – Supervision/Monitoring of Inspectors

Section 8 – Minimum Qualifications for Special Inspectors
Management System Documentation – What is it?

- **AC291, Section 3.2** Requires documentation showing compliance with the relevant requirements.

- This Management System documentation is designed to ensure that special inspections meet the relevant regulatory and contractual requirements for each project undertaken.

- A company’s resume for quality!
Quality Policy and Objectives
Quality Program
Organization and Management
Organization Chart
Communication
Inspection, Measuring and Test Equipment
Records and Reports Management
Document Control
Review & Approval of Contracts, Bids and Proposals
Procurement of Materials, Supplies and Equipment
Materials Management
Oversight and Quality Control of Field Operation
Staff Training and Qualification
Continuous Improvement
Operations Review
Internal Audits
Corrective and Preventive Action
Client Feedback and Complaints
Management Review
Reporting Non-conforming Work
Sub-contracting Special Inspection Work
Sample Management
Ethics Policy
Technical Staff Matrix
IAS Assessors – People who Assess the Inspection Agencies

- **Experienced** in special inspections, engineering, construction, certifications, accreditations.
- **Knowledgeable** about welding, high-strength bolting, structural steel, concrete, soils, sampling and other special inspection duties.
Accreditation Process for Assessing Special Inspection Agencies

- **Submittal** of application, fees, quality manual.
- File number issued and **assessor assigned** to review quality manual and requested scope of accreditation.
- Quality manual **reviewed**.
- Client contacted for on-site assessment.
- **On-site assessment** conducted: office and/or field.
- Assessment report given to client.
- **Resolution** of assessment findings.
- **Accreditation** certificate issued.
CERTIFICATE OF ACCREDITATION

This is to attest that

ANGLE ENGINEERING
5905 EDMOND STREET
LAS VEGAS, NEVADA 89118
Special Inspection Agency SIA-106

has demonstrated compliance with the IAS Accreditation Criteria for Special Inspection Agencies (AC291) and has been accredited commencing August 11, 2015, for a one-year period, to provide inspection services within the approved scope of accreditation. Accreditation covers inspections conducted under the International Building Code® (IBC) Chapter 17, Section 1704 Special Inspections. The agency identified in this certificate has demonstrated that it has the competence to provide inspections during construction for the types of inspections identified in the Scope of Accreditation.

This accreditation certificate supersedes any IAS accreditation bearing an earlier effective date. The certificate becomes invalid upon suspension, cancelation or revocation of accreditation. See http://iasonline.org/More/search.html for current accreditation information, or contact IAS at 562-364-8201.

C.P. Ramani, P.E., C.B.O
President

Name of company accredited
Accreditation certificate number
Accreditation criteria, beginning date, valid period, etc.
Scope covers specific types of inspection the company is qualified by accreditation to perform.
PART 4 – Resources
Resources/Services

ICC SPECIAL INSPECTOR CERTIFICATIONS:

Resources/Services

• **IAS Training** on special inspection agency accreditation criteria

• **ICC** classroom and **online** training

• **Publications** on special inspection

• Articles, brochures, newsletters
• Program information
• Accreditation criteria
• Accreditation process
• Rules and procedures
• Applications
• News
• Meetings and events

www.iasonline.org
Getting to IAS from ICC Website

www.iccsafe.org

1. Bottom of ICC Home Page
2. Click on Link
QUESTIONS?
THANK YOU!

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Thank You For Attending