

Welcome to the

2018 Annual Conference Educational Sessions

Session: IAS Special Inspections

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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)

- **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**

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



Process for Code Development and IAS Accreditation Criteria Very Similar

- 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

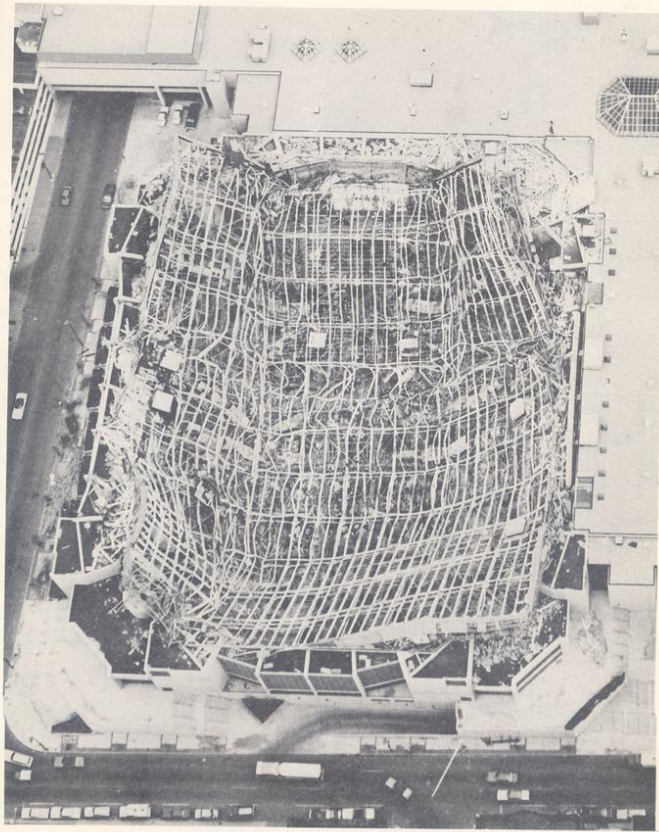
What is Special Inspection?

- 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 be 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

N ←



- 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.



Special Inspections are Mandatory

- 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



Pittsburgh Tribune - Review

- 1 Dead – 2 Injured
- Truss collapse – ***wrong nuts*** used at the connection, ½ 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”**



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



Dr. Lee Lowery, Jr., P.E.

- 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

FOR THE OWNER:

- ***Assurance*** that they are getting what they paid for
- Documents ***compliance***
- Provides a ***shield*** against liability

Special Inspection Failures

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



Special Inspection Failures

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.

Special Inspection Successes

THEN



NOW



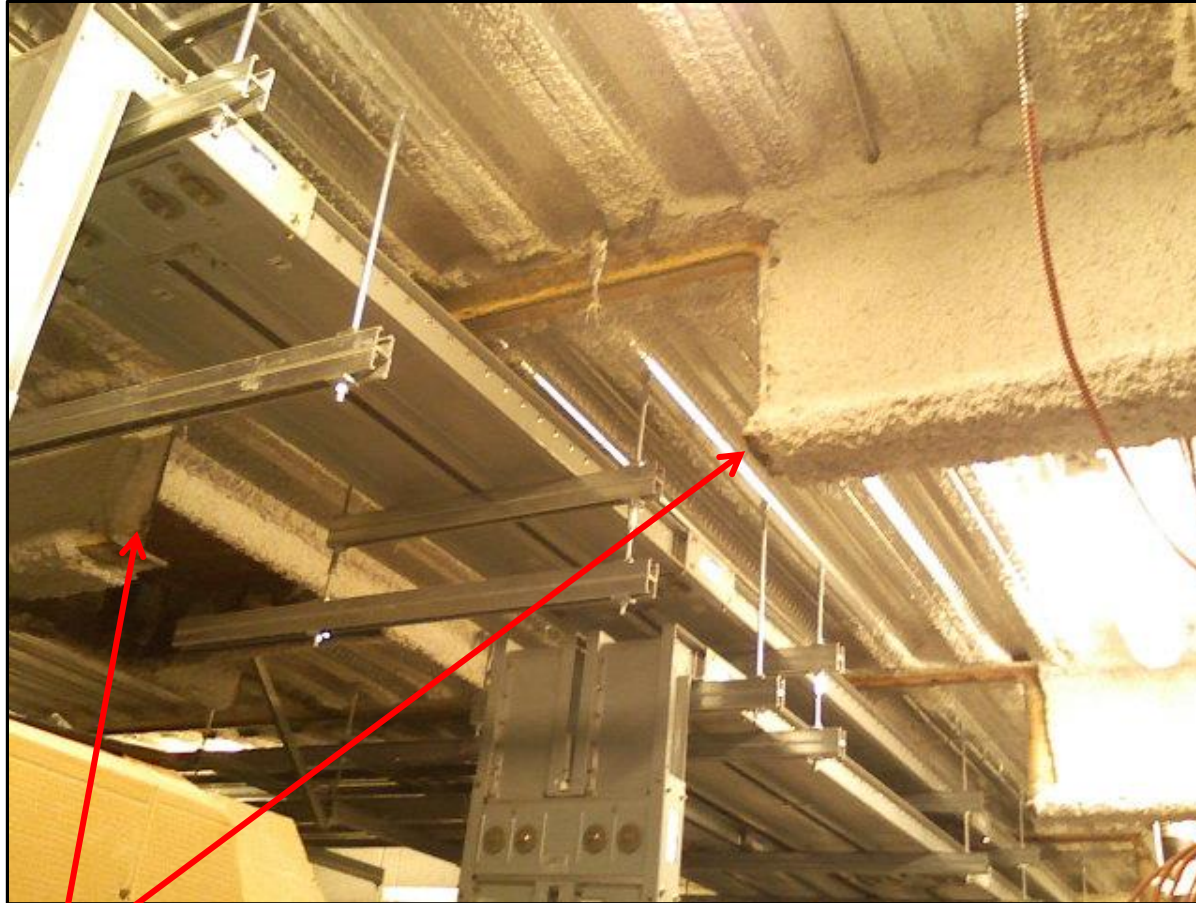
- Maxim Hotel - multistory hotel built in 1970
- Westin purchased it in 2003
- Special inspection after purchase, determined that **complete major rehabilitation** of structure was required
- Interior and exterior shear walls were added

Westin Remodel Las Vegas, NV circa 2003

Discontinuous shear wall



Cosmopolitan Hotel Las Vegas, NV circa 2007



Note steel girders cut out for cable tray.

- 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)

Harmon Hotel

Las Vegas, NV circa 2009

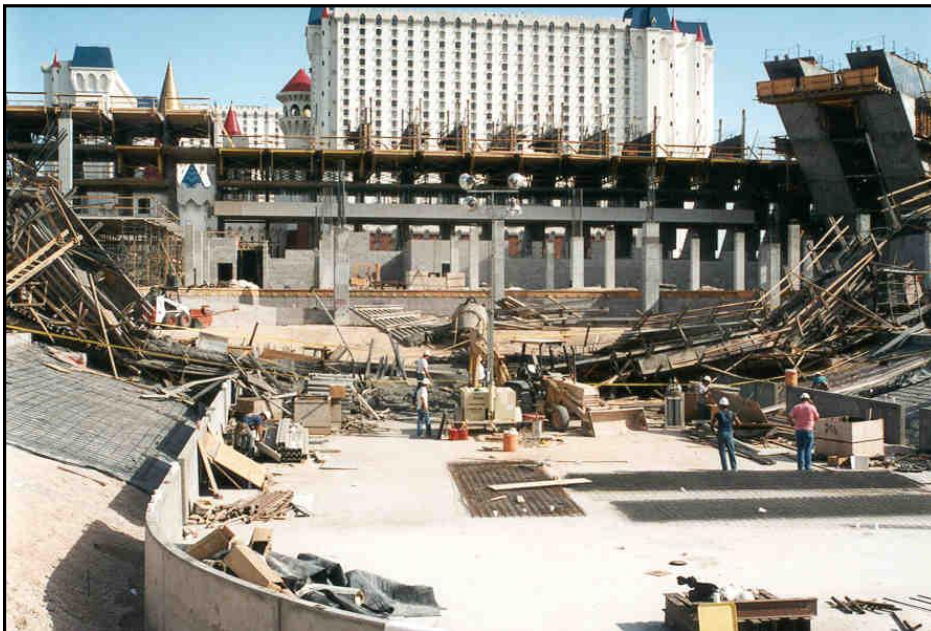


Harmon Hotel
in forefront
blue exterior
approximately
50 stories
located at the
corner of
Harmon and
Las Vegas
Boulevard



INTERNATIONAL
ACCREDITATION
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Luxor Hotel Las Vegas, NV circa 2000



- Construction & inspection personnel injured
- 1- Death
- Shoring failure during concrete placement
- Horse Arena
- Basement Level

Palms Hotel Las Vegas, NV circa 2001

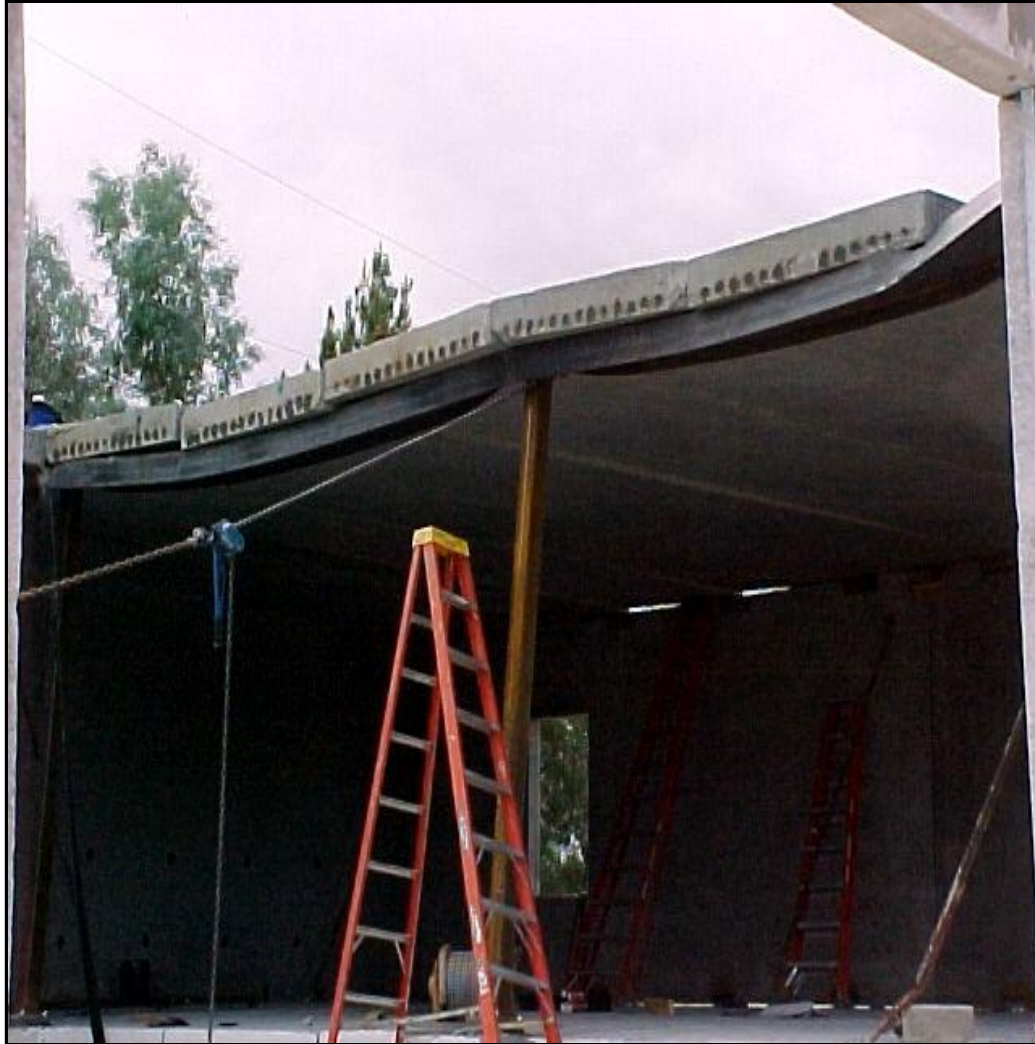


- What happens ***after*** special inspections are complete?
- Mechanical Floor



Residential Garage

Las Vegas, NV early 2000s



- 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.

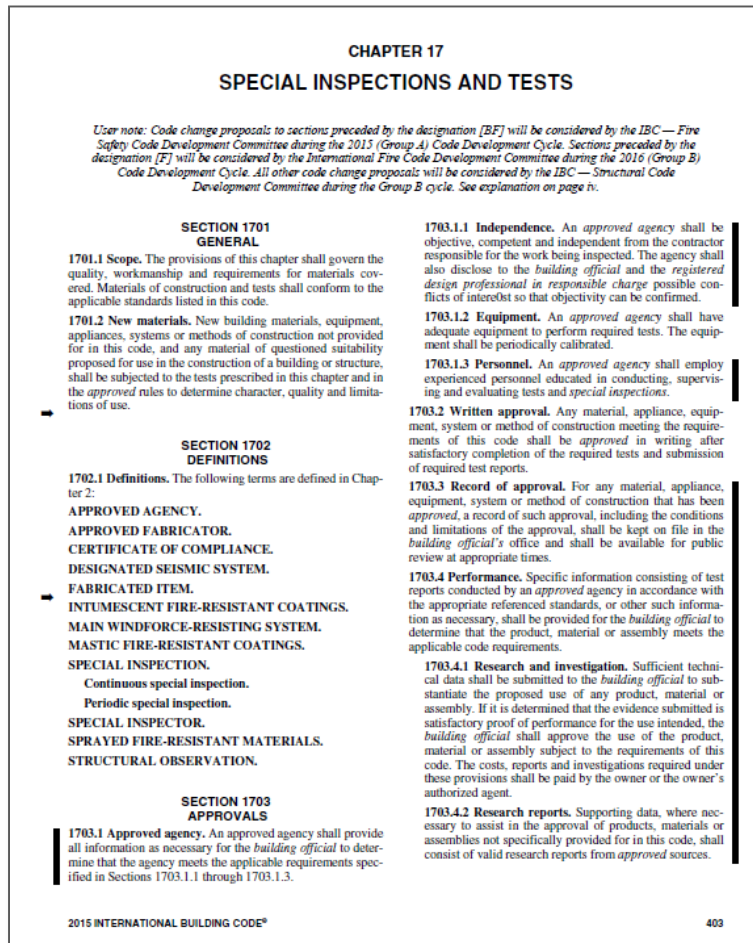
Who is Responsible for Special Inspection?

- **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



Approved Agency

- **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.”.

Approved Agency

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.



IBC, Table 1705.3 Concrete Construction

Continuous

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

SPECIAL INSPECTIONS AND TESTS

TABLE 1705.3
REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD ^a	IBC REFERENCE
1. Inspect reinforcement, including prestressing tendons, and verify placement.	—	X	ACI 318 Ch. 20, 25.2, 25.3, 26.3.1-26.5.3	1908.4
2. Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A 706; b. Inspect single-pass fillet welds, maximum $\frac{1}{16}$ ", and c. Inspect all other welds.	— X	X X	 AWS D1.4 ACI 318: 26.5.4	 —
3. Inspect anchors cast in concrete.	—	X	ACI 318: 17.8.2	—
4. Inspect anchors post-installed in hardened concrete members: ^b a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical anchors and adhesive anchors not defined in 4.a.	X —	 X	 ACI 318: 17.8.2.4 ACI 318: 17.8.2	 —
5. Verify use of required design mix.	—	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	—	ASTM C 172 ASTM C 31 ACI 318: 26.4.5, 26.12	1908.10
7. Inspect concrete and shotcrete placement for proper application techniques.	X	—	ACI 318: 26.4.5	1908.6, 1908.7, 1908.8
8. Verify maintenance of specified curing temperature and techniques.	—	X	ACI 318: 26.4.7-26.4.9	1908.9
9. Inspect prestressed concrete for: a. Application of prestressing forces; and b. Grouting of bonded prestressing tendons.	X X	— —	ACI 318: 26.9.2.1 ACI 318: 26.9.2.3	—
10. Inspect erection of precast concrete members.	—	X	ACI 318: Ch. 26.8	—
11. Verify 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.	—	X	ACI 318: 26.10.2	—
12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	—	X	ACI 318: 26.10.1(b)	—

For SI: 1 inch = 25.4 mm.

a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.

b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements 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.

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

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**

Seven Steps of a Special Inspection Program Step 1

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.

Seven Steps of a Special Inspection Program Step 2

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.

Seven Steps of a Special Inspection Program Step 3

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.**

Seven Steps of a Special Inspection Program Step 3

Samples of statement of special inspections:

[www.acec.org/case/news/publications/statement of si.doc](http://www.acec.org/case/news/publications/statement%20of%20si.doc)

[http://www.seari.org/files/SEARI_Suggested
Statement of Special Inspections.pdf](http://www.seari.org/files/SEARI_Suggested_Statement_of_Special_Inspections.pdf)

[https://www.auroragov.org/cs/groups/public
/documents/document/008745.pdf](https://www.auroragov.org/cs/groups/public/documents/document/008745.pdf)

Seven Steps of a Special Inspection Program Step 3

Example Special Inspection Agreement (Statement) Cont.

	SPECIAL INSPECTION AGREEMENT (SI-3) Effective April 9, 2009
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To permit applicants of projects requiring special inspection and/or testing per Chapter 17 of the 2006 International Building Code (IBC)

Project Name/Address: _____ Plan Ck. # _____

Application # _____

Name of City of Las Vegas Inspection Supervisor: _____ 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 2006 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. Itemized 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

Example Special Inspection Agreement (Statement) Cont.

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. An hourly fee shall be assessed 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 at 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 1708 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 1705 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 charge 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.

Seven Steps of a Special Inspection Program Step 3

Example Special Inspection Agreement (Statement) Cont.

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 1705.
3. If structural observation is required per section 1709, and if owner hires 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-8 to the Building Official prior to permit issuance
3. Obtain and fund structural observation by engineer of record as required by Section 1709.
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 on the attached addendum (SI-6) shall be inspected and/or tested in accordance with the provisions of Chapter 17 of the International Building Code.

F. Some items noted in the project's scope of work, SI-6, are to be inspected by 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 89128. 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-consultant: _____ Date: _____

(if any)
By: _____ Print Name: _____

☐ Engineer of Record: _____ Date: _____
(Signature required if box is checked)

By: _____ Print Name: _____



Seven Steps of a Special Inspection Program Step 4

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.**

Seven Steps of a Special Inspection Program Step 5

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.

Seven Steps of a Special Inspection Program Step 5

Types of Reports:

- Daily Report, Weekly Report, Discrepancy Notice, Final Report.

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.



Seven Steps of a Special Inspection Program Step 5

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.





Seven Steps of a Special Inspection Program Step 5

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:

[illegible]

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

Seven Steps of a Special Inspection Program Step 6

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.

Seven Steps of a Special Inspection Program Step 6

- 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.

General Responsibilities of a Special Inspector (Sample)

- 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.

General Responsibilities of a Special Inspector (Sample)

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.

General Responsibilities of a Special Inspector (Sample)

- 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.

Specific Responsibilities of a SIA for Concrete (Sample)

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.

Specific Responsibilities of a SIA for Concrete (Sample)

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.

Specific Responsibilities of a SIA for Concrete (Sample)

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.

IAS Special Inspection Agency Accreditation Program

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.

Comments from Building Department

**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

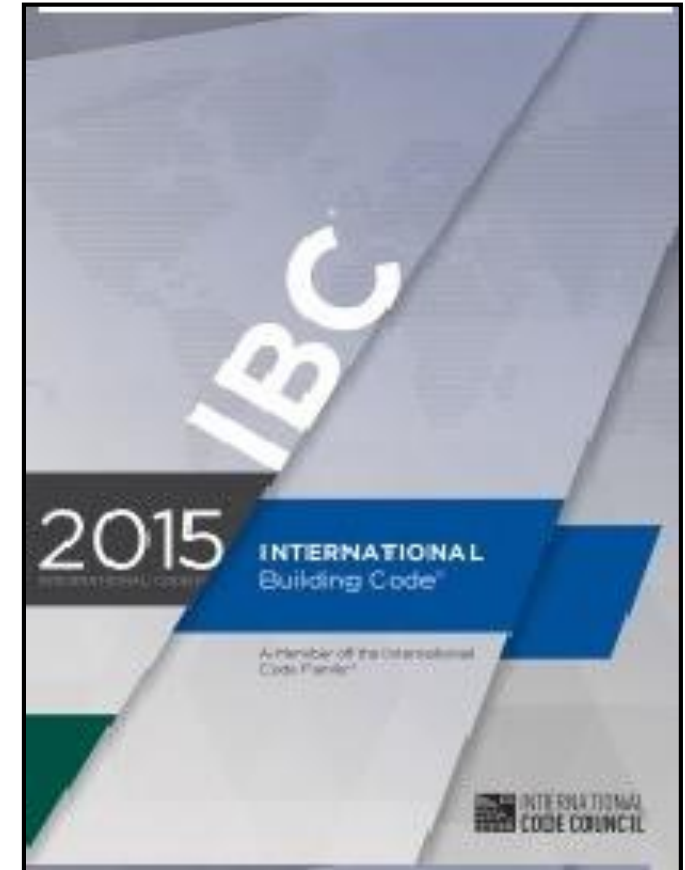
- **Stephen R. Johnson, Vice President and Materials Department Manager, GeoTek, Inc., Las Vegas, NV**

“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.”

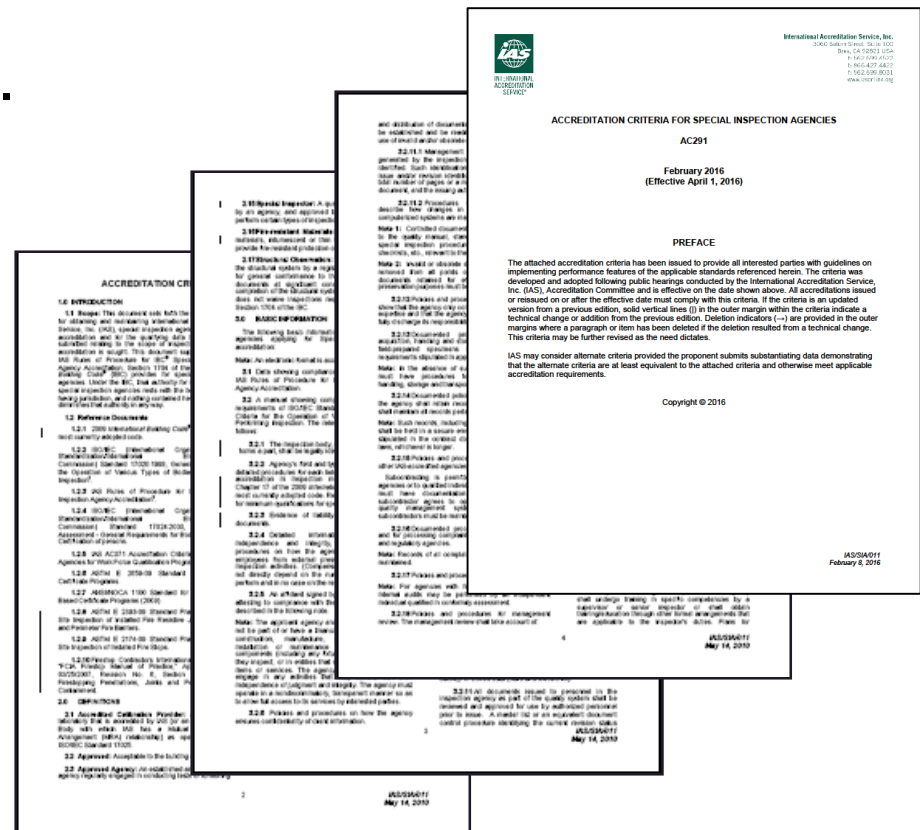
Basis for IAS Special Inspection Agency Accreditation

- 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)



Accreditation Criteria (AC291)

- Basis for the Special Inspection Agency Accreditation Program.
- Available on the IAS website.
- May be updated as needed.



Basis for Approving Agencies

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.

Accreditation Criteria (AC291)

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

Accreditation Criteria (AC291)

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

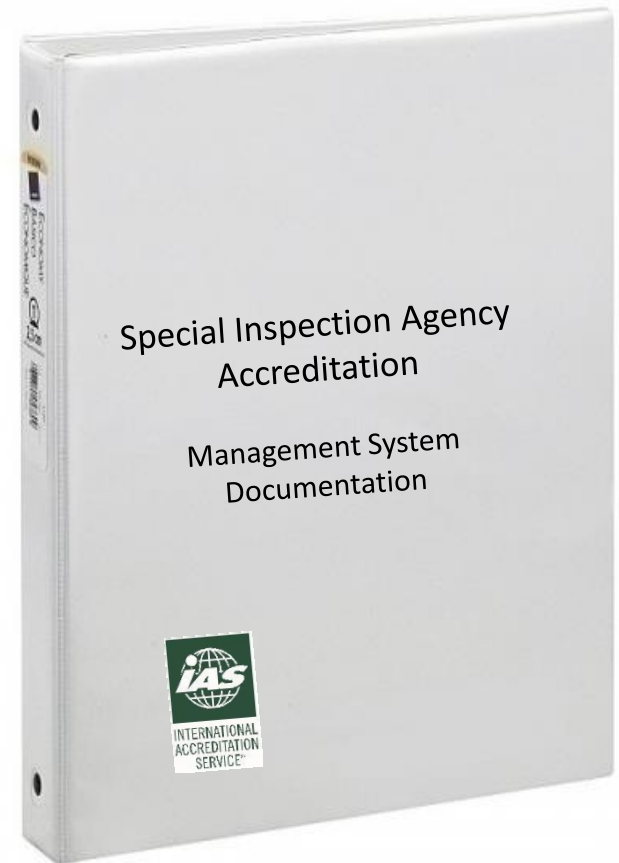
Section 6 – Training

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!





Management System Documentation – Sample Content

- ☐ **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**



Management System Documentation – Content (cont.)

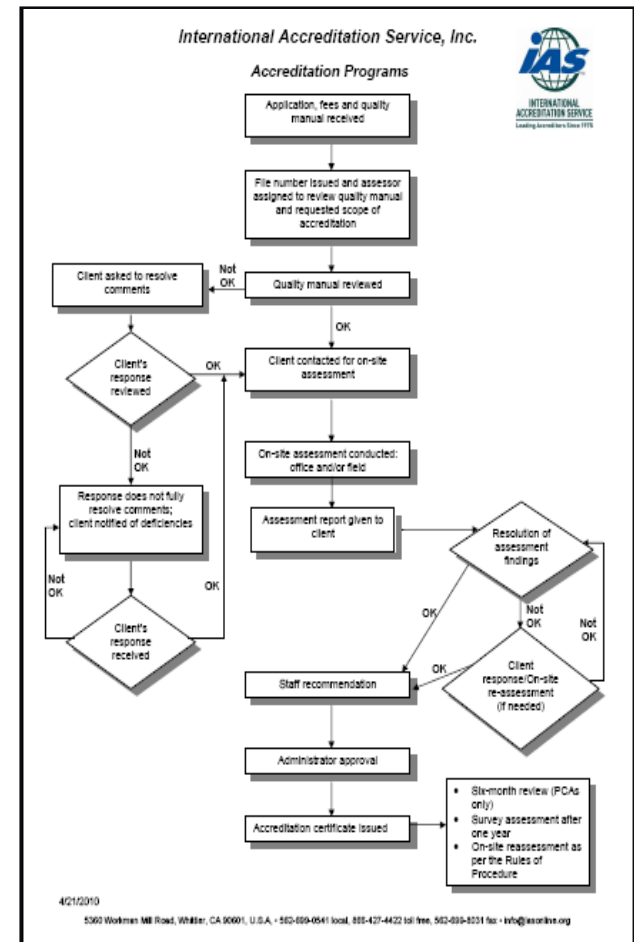
- ☐ **Staff Training and Qualification**
- ☐ **Continuous Improvement**
- ☐ **Operations Review**
- ☐ **Internal Audits**
- ☐ **Corrective and Preventive Action**
- ☐ **Client Feedback and Complaints**
- ☐ **Management Review**
- ☐ **Reporting Non-conforming Work**
- ☐ **Sub-contracting Special Inspection Work**
- ☐ **Sample Management**
- ☐ **Ethics Policy**
- ☐ **Technical Staff Matrix**

-



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.





INTERNATIONAL
ACCREDITATION
SERVICE®

Certificate of Accreditation – Page 1



INTERNATIONAL
ACCREDITATION
SERVICE®

CERTIFICATE OF ACCREDITATION

This is to attest that

ANGLE ENGINEERING

5995 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.

(see attached scope of accreditation for field(s) of inspection, including type, range, methods or procedures)

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



ACCREDITED

C.P. Ramani

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

Name of company
accredited

Accreditation
certificate number

Accreditation
criteria, beginning
date, valid period,
etc.

Certificate of Accreditation – Page 2



SCOPE OF ACCREDITATION

IAS Accreditation Number	SIA-106
Accredited Entity	Angle Engineering
Address	5995 Edmond Street Las Vegas, NV 89118
Contact Name	David W. Nathan Sr. Vice President
Telephone	(702) 382-6453
Effective Date of Scope	August 11, 2015

FIELD AND TYPES OF INSPECTION	INSPECTION PROCEDURES AND REFERENCE DOCUMENTS
Concrete Construction - Reinforced	2012 <i>International Building Code</i> , Section 1705.3 and Table 1705.3 (Except Item 3), and Angle Engineering, Inspection Procedure for Reinforced Concrete, Appendix E
Masonry Construction	2012 <i>International Building Code</i> , Section 1705.4 and Angle Engineering, Inspection Procedure for Structural Masonry, Appendix E
Soils	2012 <i>International Building Code</i> , Section 1705.6 and Table 1705.6, and Angle Engineering, Inspection Procedure for Special Grading, Excavation and Filling, Appendix E
Wood Construction	2012 <i>International Building Code</i> , Section 1705.5 and Section 5.8 of Angle Engineering Quality System Manual
Structural Steel - Welding - High Strength Bolting	2012 <i>International Building Code</i> , Section 1705.2 - Welding Inspection AWS D1.1, D1.3 and D1.4 Standard Specification for High-strength steel bolts per ASTM Standards A 325 and A 490

Page 2 of 2
SIA-106, Angle Engineering

10/10/15

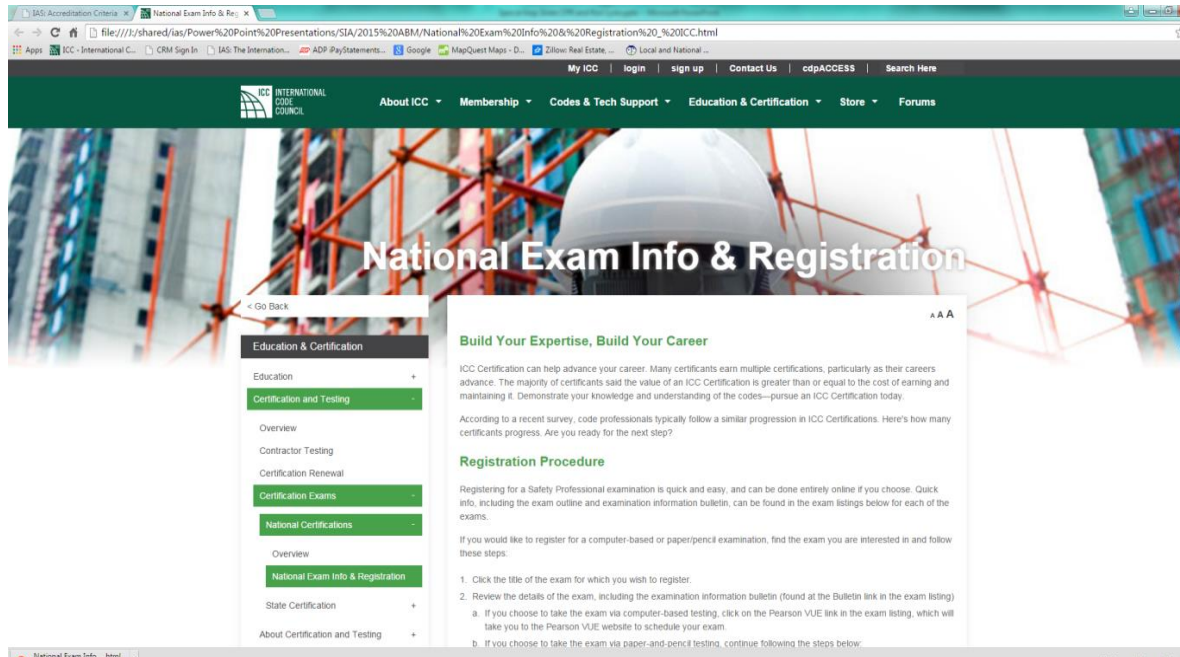
Scope covers specific types of inspection the company is qualified by accreditation to perform.



PART 4 – Resources

ICC SPECIAL INSPECTOR CERTIFICATIONS:

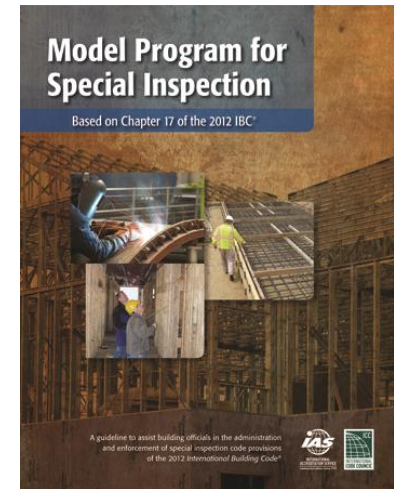
<http://www.iccsafe.org/education-certification/certifications-and-testing/national-exam-info-registration/>



The screenshot shows the ICC National Exam Info & Registration page. The header includes the ICC International Code Council logo and navigation links: About ICC, Membership, Codes & Tech Support, Education & Certification, Store, and Forums. The main content area features a large image of a construction site with a white hard hat in the foreground. Below the image, the text "National Exam Info & Registration" is prominently displayed. A sidebar on the left contains a "Go Back" button and a "Education & Certification" menu with options: Education, Certification and Testing (selected), Overview, Contractor Testing, Certification Renewal, Certification Exams, National Certifications, Overview, National Exam Info & Registration (selected), State Certification, and About Certification and Testing. The main content area has a heading "Build Your Expertise, Build Your Career" and text explaining that ICC Certification can help advance one's career. It also includes a "Registration Procedure" section with steps for registering for an exam.

Category: Special Inspector					
Reinforced Concrete Special Inspector-47	3:30	Bulletin CBT	Sample	Pearson VUE	Content
Structural Masonry Special Inspector-84	3:30	Bulletin CBT	Sample	Pearson VUE	Content
Spray-applied Fireproofing Special Inspector-86	1:30	Bulletin CBT	Sample	Pearson VUE	Content
Prestressed Concrete Special Inspector-92	3:30	Bulletin CBT	Sample	Pearson VUE	Content
Soils Special Inspector-EC	3:30	Bulletin CBT	Sample	Pearson VUE	Content
Structural Steel and Bolting Special Inspector-S1	3:30	Bulletin CBT	Sample	Pearson VUE	Content
Structural Welding Special Inspector-S2	3:30	Bulletin CBT	Sample	Pearson VUE	Content

- **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



The screenshot shows the IAS website with a blue header and a sidebar. The main content area features a 'News' section with several articles. A red arrow points from the 'Accreditation criteria' bullet point in the list to the 'Accreditation Search' link in the sidebar. Another red arrow points from the 'Meetings and events' bullet point to the 'Training Programs' link in the sidebar.

INTERNATIONAL ACCREDITATION SERVICE, INC.
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ACCREDITATION PROGRAMS

- Building Department Accreditation
- Building Department Service Providers
- Calibration Laboratories
- Commissioning Training and Certification Agencies
- Curriculum Development
- Fabricator Inspection
- Field Evaluation Bodies
- Fire Prevention and Life Safety Departments
- Inspection Agencies
- Management System Certification Bodies
- Metal Building Assemblers Inspection
- Metal Building Inspection
- Personnel Certification Bodies
- Product Certification Agencies
- Special Inspection Agencies
- Testing Laboratories
- Training Agencies

News

IAS eNews. Read about IAS in the latest issue of [IAS eNews](#).

Pacific Accreditation Cooperation Recognizes IAS Management System Certification Body Accreditation Program

IAS is now accepting [applications](#) for the Metal Building Assembler Inspection Accreditation Program.

IAS issues its **800th accreditation**.

IAS signs proclamation recognizing [World Accreditation Day](#), June 9.

Training offered on [Measurement Uncertainty requirements in ISO/IEC Standard 17025](#), August 3-4, in Brea, CA.

Register for [AC291 New York City Special Inspection Agency Accreditation Training](#), July 8-9, 2015, in New York, NY.

IAS seeking [technical assessors and experts](#) for IAS metal building (AC472) and structural steel accreditation programs (AC172).

The use of the ILAC COMBINED MRA Mark by accredited inspection bodies has been [delayed...read more](#).



MRA Signatory Testing, Calibration, Inspection



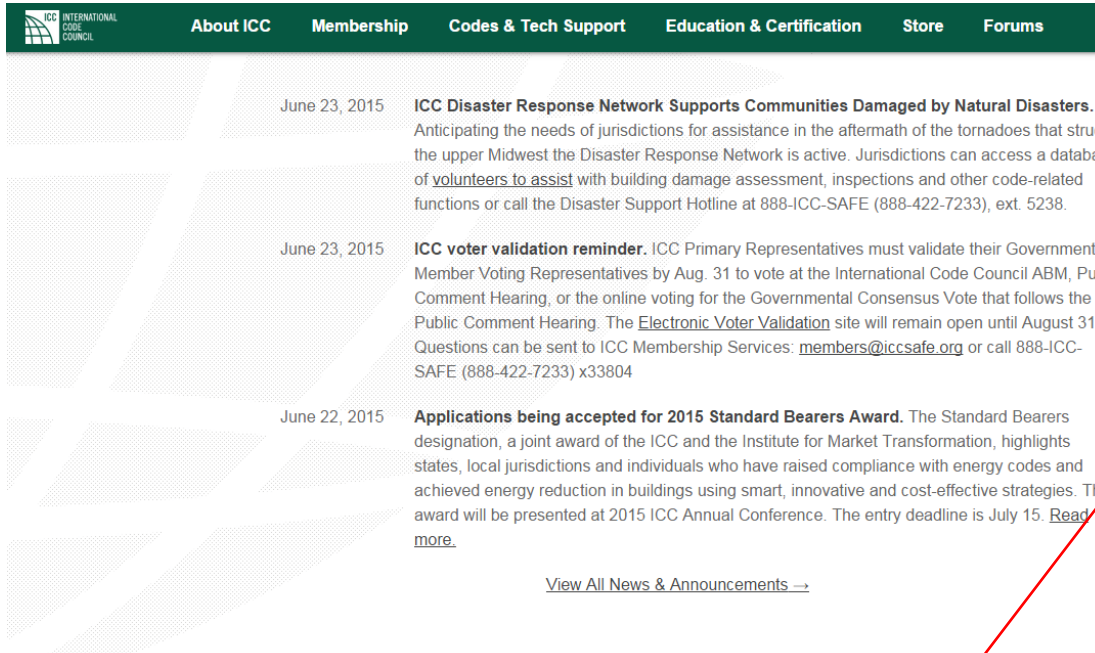
MLA Signatory Product Certification



[Building Department Accreditation](#) | [Building Department Service Providers](#) | [Calibration Laboratories](#) | [Curriculum Development](#)
[Fabricator Inspection](#) | [Field Evaluation Bodies](#) | [Fire Prevention and Life Safety Departments](#) | [Inspection Agencies](#)
[Management System for Certification Bodies](#) | [Metal Building Inspection](#) | [Personnel Certification Bodies](#)
[Product Certification Agencies](#) | [Special Inspection Agencies](#) | [Testing Laboratories](#) | [Training Agencies](#)

Getting to IAS from ICC Website

www.iccsafe.org



The screenshot shows the ICC website home page. At the top is a green navigation bar with the ICC logo and links: About ICC, Membership, Codes & Tech Support, Education & Certification, Store, and Forums. Below this is a large section with a light gray background featuring a stylized globe. It contains three news items, each with a date and a title. The first item is dated June 23, 2015, and is titled 'ICC Disaster Response Network Supports Communities Damaged by Natural Disasters.' The second item is also dated June 23, 2015, and is titled 'ICC voter validation reminder.' The third item is dated June 22, 2015, and is titled 'Applications being accepted for 2015 Standard Bearers Award.' Below these items is a link that says 'View All News & Announcements →'.

June 23, 2015 **ICC Disaster Response Network Supports Communities Damaged by Natural Disasters.** Anticipating the needs of jurisdictions for assistance in the aftermath of the tornadoes that struck the upper Midwest the Disaster Response Network is active. Jurisdictions can access a database of [volunteers to assist](#) with building damage assessment, inspections and other code-related functions or call the Disaster Support Hotline at 888-ICC-SAFE (888-422-7233), ext. 5238.

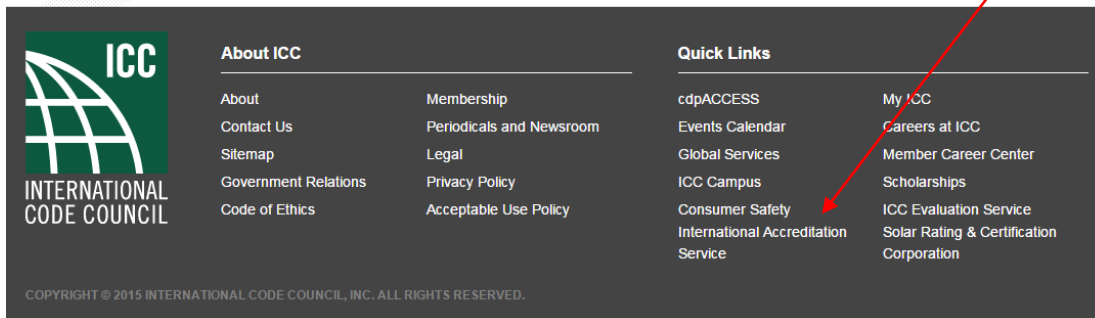
June 23, 2015 **ICC voter validation reminder.** ICC Primary Representatives must validate their Governmental Member Voting Representatives by Aug. 31 to vote at the International Code Council ABM, Public Comment Hearing, or the online voting for the Governmental Consensus Vote that follows the Public Comment Hearing. The [Electronic Voter Validation](#) site will remain open until August 31. Questions can be sent to ICC Membership Services: members@iccsafe.org or call 888-ICC-SAFE (888-422-7233) x33804

June 22, 2015 **Applications being accepted for 2015 Standard Bearers Award.** The Standard Bearers designation, a joint award of the ICC and the Institute for Market Transformation, highlights states, local jurisdictions and individuals who have raised compliance with energy codes and achieved energy reduction in buildings using smart, innovative and cost-effective strategies. The award will be presented at 2015 ICC Annual Conference. The entry deadline is July 15. [Read more.](#)

[View All News & Announcements →](#)

1. Bottom of ICC Home Page

2. Click on Link



The screenshot shows the footer of the ICC website. It has a dark gray background. On the left is the ICC logo. To the right of the logo are two columns of links. The first column is titled 'About ICC' and includes links for About, Contact Us, Sitemap, Government Relations, and Code of Ethics. The second column is titled 'Quick Links' and includes links for cdpACCESS, Events Calendar, Global Services, ICC Campus, Consumer Safety, International Accreditation Service, My ICC, Careers at ICC, Member Career Center, Scholarships, ICC Evaluation Service, and Solar Rating & Certification Corporation. A red arrow points from the text 'Click on Link' to the 'International Accreditation Service' link in the Quick Links column.

ICC
INTERNATIONAL
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- Government Relations
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QUESTIONS?





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