Presenters:

• **Sam Palmer, P.E., CBO**  
  Assistant Director  
  Department of Building & Fire Prevention  
  Clark County, Nevada

• **Chuck Ramani, P.E., CBO**  
  President  
  International Accreditation Service, Inc.  
  Brea, California  
  cramani@iasonline.org
Agenda

• About IAS

• Overview of Special Inspection

• Special Inspection Agency Accreditation

• 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

- 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?

- Requirements that must be fulfilled to become accredited.
- An 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?
Special Inspection Failures No Injuries or Fatalities – 4:19 am Collapse

Hartford Civic Center Coliseum 1978

- 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.
• 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.
Special Inspection Failures
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”

David L. Lawrence
Convention Center
Pittsburgh PA 2002
Special Inspection Failures
4 dead – 20 Injured

- Tropicana Casino Parking Garage
- Atlantic City, NJ 2003

- 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
Benefits of Special Inspections

For the Designer:

– Intended design is what is constructed

– Additional knowledgeable review of installations

– Documents compliance

– Provides a shield against liability
Special Inspection Failures
114 dead – 200+ Injured

Hyatt Regency Hotel, KC, MO 1981

• 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

Dr. Lee Lowery, Jr., P.E.
Benefits of Special Inspections

For the Owner:

– Assurance that they are getting what they paid for

– Documents compliance

– Provides a shield against liability
Special Inspection Failures

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 American Welding Society's standards for structural welds.

17 hours before, the gym had been fully occupied for a basketball game.
• 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.
• Strengthening Operation 2003 recognized and required compete interior and exterior rehabilitation of structure after purchase by new owner. Interior and exterior shear walls added which were not part of the original scope of the remodel permit.
Westin Remodel
Discontinuous shear wall
These pictures were taken at 4.5 Mezzanine Area C of the East Tower.

The issue is considered resolved with no additional action required. Apparently the beams were required for construction sequencing and are not required 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, Nevada

- Construction & inspection personnel injured
- 1 Death
- Shoring failure during concrete placement
- Horse Arena Basement Level
- 100 foot long post-tension concrete girder
Luxor Hotel
Las Vegas, Nevada

Construction & inspection personnel injured

1 Death

Shoring failure during concrete placement

Horse Arena
Basement Level
• Mechanical Floor
What happens after the special inspections are complete?
Gravity load failure during placement of precast panels

Lack of compression flange bracing

Specified beam slightly smaller than calculated
Benefits of Special Inspections

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
• 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.
- 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 qualifications 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.”
Focus of Special Inspections

International Building Code 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.
One Example

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.

### IBC, Table 1705.3

Concrete Construction

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**SPECIAL INSPECTIONS AND TESTS**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>CONTINUOUS SPECIAL INSPECTION</th>
<th>PERIODIC SPECIAL INSPECTION</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Inspect reinforcement, ensuring proper tension, and verify reinforcement.</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>2.</td>
<td>Determine if needed. a) Verify bond strengths or modified bond strengths. b) Inspect rebar size, location, or type.</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>4.</td>
<td>Inspect anchors post-installed in hardened concrete members. a) Adhesive anchors inserted with the anchors in a consistent orientation to resist sustained tension loads. b) Mechanical anchors and allowed to anchor the defined 6.4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Verify use of mixed design.</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>6.</td>
<td>Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td>7.</td>
<td>Inspect concrete and use it for placement of proper application techniques.</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td>8.</td>
<td>Verify maintenance of specified curing temperatures and techniques.</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td>9.</td>
<td>Inspect prestressed concrete. a) Application of prestressing forces; and b) Curing of bonded prestressing tendons.</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td>10.</td>
<td>Inspect tension of prestressed members.</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td>11.</td>
<td>Verify in-situ concrete strengths prior to removal of forms and forms and removal of forms and forms.</td>
<td>—</td>
<td>X</td>
</tr>
</tbody>
</table>

For N 11 inch = 28.4 mm

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Note: Where applicable, see Section 705.12, Special inspections for seismic resistance.

Specific requirements for special inspections shall be included in the design report for the structure in accordance with Section 17.3 in ACI 318, or other qualifying procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the design engineer 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). The 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)

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 2009 International Building Code (IBC)

Project Name/Address: ___________________________ Plan Ch. # _______________________

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 2009 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 accordance 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 all the job site all special inspection records submitted by the special inspector, and providing those 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 2008 International Building Code, where required:

To comply with the requirements of Section 1708, 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 1708 of the 2008 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. No action related to the outcome of the investigation will be at the discretion of the Building Official.
Example Special Inspection Agreement (Statement)

C. Engineer of Record’s responsibilities:

1. Complete 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 1700, and if owner hires the engineer of record, conduct structural observation. 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-9 to the Building Official prior to permit issuance.
3. Obtain and fund structural observation by 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 on the attached addendum (SI-3) 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 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, 7561 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 any) ___________________________ Print Name: ___________________________

Engineer of Record: ___________________________ Date: ___________________________

(by any) ___________________________ Print Name: ___________________________

Signature required if box is checked

By: ___________________________ Print Name: ___________________________
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
Seven Steps of a Special Inspection Program Step 5

Example Weekly Report Special Inspection
Seven Steps of a Special Inspection Program Step 5

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.
Seven Steps of a Special Inspection Program Step 5

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
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.
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 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:** 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.

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.
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 *International Building Code*.

• 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.
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.
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, Nevada (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 level playing field when bidding on projects.
“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.
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 BASIC INFORMATION

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

3.2 A manual showing compliance with the relevant requirements of ISO/IEC Standard 17020:2012

3.2.2 Agency’s fields and types of inspection, including detailed procedures for each field of inspection…..

3.2.7.5 A matrix matching inspector certifications against the fields of inspections…..
4.0 INSPECTION REPORTS

Inspection reports issued by the agency shall accurately and clearly outline the results of special inspections.

Inspection reports shall comply with Section 1704.2.4 of the IBC and contain the following information as applicable:

4.1 Inspection date, and arrival and departure times of the inspector.

4.2 Information pertaining to review of material records.

4.3 Structure/item inspected, including applicable codes, standards, approved construction documents, etc.
5.0 TRAINING AND SUPERVISION/MONITORING OF INSPECTORS (IBC 1703.1.3 Personnel)

5.1 Inspector Training: All inspectors of the agency shall undergo training in specific competencies....

5.2 Supervision/Monitoring of Inspectors: The inspection agency management shall conduct a review of each inspector at least once every six months, and in the field at a minimum of once every three years.
6.0 MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTORS

• See Table 1
6.0 MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTORS

Includes qualifications for the following Special Inspectors:

- Prestressed/Pre cast 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
6.0 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
Accreditation Criteria (AC291)

6.0 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 – Basic Information (Management System Manual)

Section 4 – Inspection Reports

Section 5 – Training and Supervision/Monitoring of Inspectors

Section 6 – Minimum Qualifications for Special Inspectors
Management System Manual – What is it?

- **AC291, Section 3.2** Requires a manual 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 Proposal Requests
Procurement of Materials, Supplies and Equipment
Materials Management
Oversight and Quality Control of Field Operations
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, 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.
International Accreditation Service

CERTIFICATE OF ACCREDITATION

This is to signify that:

APPLIED TESTING & GEOSCIENCES, LLC

401 EAST FOURTH STREET, BUILDING 12B
BRIDGEPORT, PENNSYLVANIA 15405

has demonstrated compliance with the IAS Accreditation Criteria for Special Inspection Agencies (AC291) and has been accredited commencing July 13, 2014, 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.

Patrick V. McCullen
Vice President

C. P. Ramani, P.E.
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.
### SCOPE OF ACCREDITATION

**FIELD AND TYPES OF INSPECTION**

<table>
<thead>
<tr>
<th>Structural Materials and Construction Operations (continued)</th>
<th>INSPECTION PROCEDURES AND REFERENCE DOCUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete – Cast-in-place and Precast</td>
<td>QMS 7/8/14 &amp; ATG Concrete SI HB and 2006 IBC</td>
</tr>
<tr>
<td>Masonry</td>
<td>QMS 7/8/14 &amp; 1704.4 ATG Masonry SI HB and 2006 IBC</td>
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<tr>
<td>Soils - Site Preparation</td>
<td>QMC 7/8/14 &amp; Section 1704.5 ATG Soil SI HB and 2009 IC</td>
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<td>Soils</td>
<td>Section 1704.7</td>
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<tr>
<td>Fill Placement</td>
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<tr>
<td>In-place Density</td>
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</tbody>
</table>

**Commencement Date:**

- **July 11, 2014**

**Accredited by:**

- **International Accreditation Service**

**President:**

- **C. P. Ramani, P.E.**

**Print Date:** 6/13/2014

**Certificate of Accreditation – Page 3**

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*The accreditation certificate is provided by IAS accreditation service. The certificate is used as a verification of proof of completion of the stated procedures.*
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?

Contact:
Akshay Mishra
Program Manager, New York SIAs
amishra@iasonline.org
John Pakianadan
Manager Accreditation, IBC SIAs
jpakianadan@iasonline.org
International Accreditation Service
or by phone at 866-427-4422 x3309