

Since 1937, the American Council of Independent Laboratories (ACIL) has provided the industry-recognized voice for the independent testing profession. This position paper provides a compilation of statements from ACIL's Construction Materials Engineering and Testing (CMET) Section regarding definitions, clarification, and positions the Construction Materials Engineering and Testing profession believes are necessary for the advancement of the profession and to help protect safety, health and welfare of the general public.

Inspections are professional services and, as such, shall be procured by Qualification-Based Selection (Brooks Act). This document was prepared to assist Building Officials, Owners, and Design Professionals in selecting and procuring inspection services on constructed related projects. What follows outlines the responsibilities and requirements for Inspection Agencies (IA) and Special Inspectors and the expectations for Building Officials, Owners, and Design Professionals, as interpreted by the CMET section, from the various industry-related standards.

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## DEFINITIONS

- **Accreditation:** Third party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks.
- **Accreditation Body (AB):** Recognized Authoritative Body, which performs accreditation.
- **Approved:** Acceptable to the building official or authorized representative of the local Authority Having Jurisdiction (AHJ).
- **Approved Agency:** An established and recognized agency that is regularly engaged in furnishing inspection services, where such agency is approved by the building official or a representative of the AHJ.
- **Building Official:** The officer or other designated authority charged with the administration and enforcement of the local building code or a duly authorized representative.
- **Inspection:** Visual observation of construction activities and materials testing to assess whether the specific items are in substantial conformance with the requirements of the approved contract documents.
- **Registered Design Professional (RDP):** An individual who is registered or licensed to practice their design profession, as defined by the statutory requirements of the state or jurisdiction in which a project is to be constructed.
- **Registered Design Professional in Responsible Charge:** An RDP engaged by the Owner or the Owner's authorized agent to review and coordinate certain aspects of the project, as determined by the building official, for compatibility with the design of the building or structure.
- **Special Inspection:** Inspection or monitoring of specific items of construction (materials, equipment, installation, fabrication, erection, or placement of components and connections) requiring the expertise of an approved Special Inspector to assess compliance with the applicable building code and the approved construction documents.
  - **Continuous Special Inspection:** Special Inspection by the special inspector who is present when and where the work to be inspected is performed.
    - There may be inspection items where the special inspector does not need to be present during the performance of every sequence of the work that requires special inspection.
  - **Periodic Special Inspection:** Special Inspection by the special inspector who is intermittently present where the work to be inspected has been or is being performed.
- **Special Inspector:** A qualified person employed or retained by an Approved Agency and approved by the Building Official as having the competence necessary to inspect the specific items of construction requiring Special Inspection.
- **Structural Observation:** The visual observation of the structural system by the RDP for general conformance to the approved construction documents.

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## ACCREDITATION

Although there is some attention to qualification and accreditation for Construction Materials Engineering and Testing (CMET) agencies, there is little attention given to qualification and accreditation for Inspection Agencies (IA).

Accreditation of IA's should be performed by recognized Accreditation Bodies (AB's), following the requirements of AASHTO R-18, ISO 17020 and/or ASTM E329. Examples of recognition may be by a signatory of the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), or by The National Cooperation for Laboratory Accreditation (NACLA) through a Memorandum of Understanding (MoU) with ACIL. ACIL encourages the use of recognized AB's for accreditation of IA's. This ensures minimum established criteria is met and could eliminate the need for duplicate accreditations.

Compliance with the requirements specified in any of the following documents would satisfy the requirements of sections 8 through 12 of ASTM E329 (quality system, responsibilities, inspections, records, and reporting): ASTM D3740, ASTM D3666, ASTM C1077, ASTM C1093, ASTM E543, ASTM A880, AASHTO R18, or ANSI/ISO/IEC 17025. These documents must be used in addition to ASTM E329 and/or ISO 17020, as applicable to the elements that are being evaluated in the accreditation.

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## ACCEPTANCE & PROCUREMENT OF INSPECTION AGENCY

The Inspection Agency shall be retained by the Owner or the Registered Design Professional. While some municipalities allow for the Contractor or Construction Manager to retain the inspection agency, we agree with the International Building Code (IBC), which requires the Owner or the Registered Design Professional (RDP), acting as an agent of the owner, to retain the services of the Inspection Agency (IBC 1704.2). The RDP shall prepare a statement of the required special inspections in accordance with Section 1704.3.1 of the IBC. This statement is then provided to the Building Official by the owner or applicant.

The Inspection Agency must be acceptable to the Building Official. The Building Official must determine that the Inspection Agency meets the requirements of Chapter 17 of the International Building Code. Per the building code, to accept the Inspection Agency, the Building Official must verify the independence, adequacy of equipment, and experience of personnel in conducting, supervising, and evaluating tests and special inspections (IBC 1703.1).

ACIL encourages the Owner, Registered Design Professional, and Building Official to rely on IA's accredited by recognized accreditation bodies or compare qualifications of inspection agencies to the requirements of ISO 17020 and E329 when evaluating an Inspection Agency to meet the minimum requirements for Special Inspections. Accreditations must be relevant to the areas in which testing and inspections are performed. The IA may be the same firm retained to perform construction materials engineering and testing services on a project. The construction materials engineering and testing firm should be selected in accordance with ACIL position paper for Procurement and Effective Practices of Construction Materials Engineering and Testing Services.

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## INDEPENDENCE

Many building codes require that IA's be independent. The independence of these agencies ensures performance of inspections without regard for source or cause of deficiencies.

ACIL defines independent engineering firms as commercial entities engaged in analysis, testing and inspection, materials engineering, sampling, and related consulting services for the public. They are not affiliated with any institution, company, or trade group that might affect their ability to conduct investigations, render reports, or give professional, objective, and unbiased counsel.

IBC section 1703.1.1 Independence states: “An approved agency shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall also disclose to the building official and the registered design professional in responsible charge possible conflicts of interest so that objectivity can be confirmed.”

ASTM E329 section 5.2 states: “The agency shall have arrangements to ensure that its personnel are free from any commercial, financial, and other pressures including trade organization rules that may adversely affect their independence, their judgment, and the integrity of their services.”

ISO 17020 section 4.1 Impartiality and Independence states: “Inspection activities shall be undertaken impartially. The inspection body shall identify risks to its impartiality on an ongoing basis. If a risk to impartiality is identified, the inspection body shall be able to demonstrate how it eliminates or minimizes such risk.” Appendix A, of this standard, provides independence requirements for inspection bodies.

ACIL supports the IBC, ASTM E 329, and ISO 17020, and encourages procurement of IA’s that exist as independent agencies.

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## ACCEPTANCE OF SPECIAL INSPECTORS

The Special Inspector (SI) must be employed or retained by the Inspection Agency. As with the Inspection Agency, the SI must be approved by the Building Official. IBC section 1704.2.1 states “the Approved Agency shall provide written documentation to the building official demonstrating the competence and relevant experience or training of the special inspectors in addition to qualifications specified in other sections of the code.”

ASTM E329 Section 6.2.6 provides further definition of this documentation stating “the Inspector shall have sufficient education and on-the job training or trade school training to properly perform the inspection assigned. This person must be able to demonstrate competence for the inspection that is being conducted, either by oral or written examination, or both. Certification, as appropriate for the services being performed, or certification by other qualified national authorities, as appropriate to the service, shall be considered as one means of documenting competency.”

ACIL encourages the Building Official to use documented certification of inspectors in the various service areas as the primary means of determining competency. Mutual, not duplicative, recognition of certification is encouraged. Where certification is not available, documented in-house evidence of training and education may be acceptable to the Building Official.

The RDP may be approved to provide special inspections if they meet all the requirements of an Inspection Agency and their personnel meet the requirements of a SI (i.e., competence, training and experience) (IBC1704.2.1). The IBC differentiates between “Structural Observation” by the RDP and “Special Inspection” by the IA as two distinct and separate functions (IBC1704.6). We support such distinction. The RDP does perform visual observation of the structural system for general conformance to the approved construction documents.

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## RESPONSIBILITIES OF SPECIAL INSPECTORS & INSPECTION AGENCIES

The Inspection Agency services shall be performed under the oversight (direction of a person charged with engineering managerial responsibility) of a registered professional engineer who is a full time employee of the agency (ASTM E329 section 6.2.2).

The SI and IA shall:

- Not be responsible for the means, methods, techniques, sequences, or procedures of construction selected by the Contractor, Construction Manager, and/or Subcontractor or safety precautions and programs incident to the work of the Contractor.

- Only perform inspections for which they are adequately equipped and staffed and that inspections are performed by adequately trained personnel. Perform inspections in accordance with appropriate standards, as referenced in their contractual agreement (ACEC CASE # 4).
- Assess, through inspection and/or monitoring the conformity of construction activities and materials used in construction with regulations, codes, standards, and approved project plans and specifications.
- Report identified discrepancies immediately to the contractor for correction. If not corrected the discrepancies shall be brought to the attention of the client, building official, and the RDP, prior to completion of that phase of work. The SI or IA shall not be responsible for the failure of the Contractor to perform the construction work in accordance with the Contract Documents nor shall the SI or IA have the authority to stop work on the project, unless specifically authorized by contract.
- Keep records of special inspections. As authorized by the client, reports of special inspections shall be submitted to the Owner, RDP, Contractor, and to the Building Official. Reports shall be accurate, clear, objective, unambiguous, and cite the inspections performed, results obtained, parts of the structure or project site involved, and any other similar pertinent data as identified in ASTM and other applicable standards. Reports shall indicate whether the specific items inspected are in conformance with the approved construction documents.

Reports should be signed by the IA's appropriate licensed Professional Engineer, or designated representative, in accordance with State licensing board requirements or local building code requirements. Disclosures in a report shall not make the IA responsible in any way for any failure by any Contractor (or subcontractor) to carry out work and to provide material in accordance with the project plans, specifications and contract documents.

None of the services performed by the IA shall cause it to be inferred that the IA has or will assume, abridge or abrogate any duties, responsibilities or authority customarily vested in (or imposed by Contract upon) the Design Professionals or other cognizant design authorities or agencies.

The IA shall not be authorized to accept, revoke, alter, relax, enlarge or release any requirements of the project specifications or other related contract documents.

Items are inspected and monitored by the IA, as the project progresses. However, failure to detect any deficient items shall not, in any way, prevent later effective rejection of items when a deficiency is discovered.

In no event shall the IA be liable or responsible for the acts or errors or omissions of any other Party involved in the design, construction, monitoring or inspection of the Project.

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## RESPONSIBILITIES OF OTHER STAKEHOLDERS

Contractor is fully responsible for the construction work in accordance with the contract documents. IA is not held liable for work performed by Contractor, Subcontractors, and Construction Manager.

Contractor is responsible for tracking discrepancies identified by the IA, and for the corrective action performed to resolve the discrepancy. Resolution of discrepancies requiring modification must be approved by the registered design professional.

Appropriate schedule notification shall be given to the IA for special inspection items identified in the construction documents and coordination of full access to work areas to be inspected. At a minimum, 24-hour notice shall be provided, but, it is expressly acknowledged that there will be situations where inspections or observations require more notice.

ACIL recommends that pre-construction conferences be held, during various stages of the work (i.e. Sitework, Foundations, Concrete, Masonry, Structural Steel, Fireproofing, etc.), with the IA, owner's representative, construction manager, contractors, and designer(s) of record, as applicable, to review the inspection requirements, frequencies of inspections, notification requirements, and responsibilities of applicable parties.

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## REFERENCE STANDARDS

<b>AASHTO R18:</b>	Standard Recommended Practice for Establishing and Implementing a Quality System for Construction Materials Testing Laboratories
<b>ANSI/ISO/IEC 17020:</b>	Conformity assessment - Requirements for the operation of various types of bodies performing inspection
<b>ANSI/ISO/IEC 17025:</b>	General requirements for the competence of testing and calibration laboratories
<b>ASTM A880:</b>	Standard Criteria for Use in Evaluation of Testing Laboratories and Organizations for Examination and Inspection of Steel
<b>ASTM C1077:</b>	Standard practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
<b>ASTM C1093:</b>	Standard Practice for Accreditation of Testing Agencies for Masonry
<b>ASTM D3666:</b>	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
<b>ASTM D3740:</b>	Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
<b>ASTM E329:</b>	Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
<b>ASTM E543:</b>	Standard Specification for Agencies Performing Nondestructive Testing
<b>IBC:</b>	International Building Code
<b>ACEC CASE # 4:</b>	American Council of Engineering Companies An Agreement between Owner and Structural Engineer for Special Inspection Services

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## ABOUT ACIL & MEMBER FIRMS

ACIL is the trade association representing independent, commercial scientific and engineering firms. ACIL members are professional service firms engaged in testing, product certification, consulting, and research and development. The association was founded in 1937.

Each member of the Association agrees it is their policy to abide by the following code of ethics: To cooperate in elevating and maintaining the professional status of independent scientific, engineering and testing firms and in securing recognition of the value of services rendered by them.

- To assert competency only in work for which adequate equipment and personnel are available or adequate preparation has been made.
- To have a clear understanding with the client as to the extent and kind of services to be rendered, especially in fields where different grades or characters of services are offered.
- To endeavor in reports to make clear the significance and limitations of findings reported.
- To safeguard reports as far as possible against misinterpretation or misuse, and to contend against such misinterpretation or misuse.

- To oppose and to refrain from incompetent and fraudulent inspection, sampling, analysis, testing, consultation, development and research work.
- To deal honestly and fairly in all business and financial matters with employees, clients and the public.

ACIL's Mission is to enhance members' success by:

- Providing advocacy, education, service and mutual support
- Promoting quality, ethics, objectivity and free enterprise.

ACIL's core values include:

- Ethical, Objective and Quality Business Practices
- Spirit of Community and Sharing
- Growth of Individuals and Their Businesses
- Advocacy for Our Industry

ACIL is committed to promoting and protecting the interests of independent scientific, engineering and testing firms. Its goal is a business environment where independence is valued and competition is fair.

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