

檢測和認證業誠信及專業發展研討會

Seminar on Integrity and Professional Development in Testing and Certification Industry

檢測和認證業審核員的培訓

Auditor Training for the Testing and Certification Industry

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Testing and Certification Industry

Brand “Tested in Hong Kong, Certificated in Hong Kong” to promote the reputation of Hong Kong to a very good standard throughout the world. It can be helpful to act as an independent party to provide services and attract more foreign enterprises invest to the Testing and Certification industry in Hong Kong.

Key elements for auditors

standard

independent

Key elements

standard

independent



Auditor for the Testing and Certification Industry
shall have:

- a very good technical knowledge
- Continue **Professional Development**
- act as an independent party to provide services (Ethics)

Table 1 — Example of levels of education, work experience, auditor training and audit experience for auditors conducting certification or similar audits

Parameter	Auditor	Auditor in both disciplines	Audit team leader
Education	Secondary education (see Note 1)	Same as for auditor	Same as for auditor
Total work experience	5 years (see Note 2)	Same as for auditor	Same as for auditor
Work experience in quality or environmental management field	At least 2 years of the total 5 years	2 years in the second discipline (see Note 3)	Same as for auditor
Auditor training	40 h of audit training	24 h of training in the second discipline (see Note 4)	Same as for auditor
Audit experience	Four complete audits for a total of at least 20 days of audit experience as an auditor-in-training under the direction and guidance of an auditor competent as an audit team leader (see Note 5). The audits should be completed within the last three consecutive years	Three complete audits for a total of at least 15 days of audit experience in the second discipline under the direction and guidance of an auditor competent as an audit team leader in the second discipline (see Note 5). The audits should be completed within the last two consecutive years	Three complete audits for a total of at least 15 days of audit experience acting in the role of an audit team leader under the direction and guidance of an auditor competent as an audit team leader (see Note 5). The audits should be completed within the last two consecutive years

NOTE 1 Secondary education is that part of the national educational system that comes after the primary or elementary stage, but that is completed prior to entrance to a university or similar educational institution.

NOTE 2 The number of years of work experience may be reduced by 1 year if the person has completed appropriate post-secondary education.

NOTE 3 The work experience in the second discipline may be concurrent with the work experience in the first discipline.

NOTE 4 The training in the second discipline is to acquire knowledge of the relevant standards, laws, regulations, principles, methods and techniques.

NOTE 5 A complete audit is an audit covering all of the steps described in 6.3 to 6.6. The overall audit experience should cover the entire management system standard.

ISO19011: Guidelines for Quality and/or Environmental Management Systems auditing (General System Auditing)

Status of auditor training course:

- System Certification Auditor: mostly are IRCA approved training course, very expensive
- Approval of organizations who provide training courses for auditor training of **ISO 9001**, **ISO 14001** and other equivalent certification standards.

Factors to be Consider for Product Certification Scheme

- stakeholders interest
- Balance between control and uncertainty, standard
- Balance between supply/implementation
- Balance between Quality/measures
- Reliability vs design assumption?
- Factors affecting core values, design margin
- Sustainability of testing standard
- Level of expertise
- Balance between specific objectives
- Key factors for safety
- resources
- training of technical staff / professional staff

Factors to be Consider by Auditor for Product Certification Scheme

- stakeholders interest
- Balance between control and uncertainty, standard
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- Reliability vs design assumption?
- Factors affecting core values, design margin
- Sustainability of testing standard
- Level of expertise (who carry out audit, implementation, testing)
- Balance between specific objectives
- Key factors for safety
- resources
- training of technical staff / professional staff

Demand of product certification technical auditor:

- There were currently about a dozen product certification schemes on construction materials and five accredited certification bodies (CB).
- The CBs were permitted to engage outside technical experts to assist them to conduct the technical audit for the schemes.

Current Status in Hong Kong

Number of T&CI persons engaged by occupation

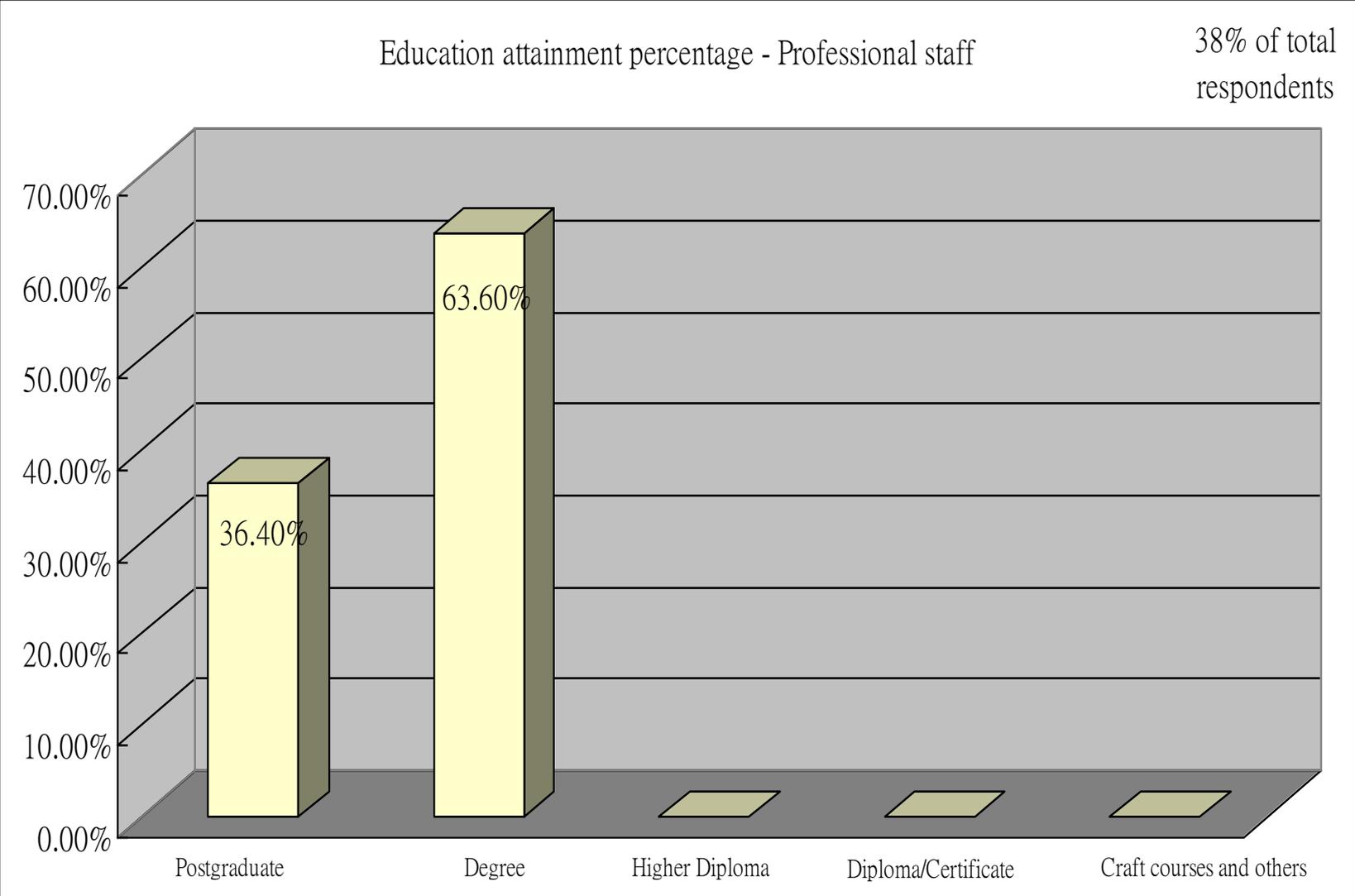
職業 Occupation	就業人數 Number of Persons Engaged	
	2008	2009
提供測試、檢驗及認證服務的專業人員 Professional staff providing testing, inspection and certification services	3 060 (24%)	3 030 (25%)
提供測試、檢驗及認證服務的輔助專業人員 Associate professional staff providing testing, inspection and certification services	3 190 (25%)	2 930 (24%)
其他人員* Other staff*	6 470 (51%)	6 170 (51%)
總數 Total	12 710 (100%)	12 120 (100%)

2010 Questionnaire survey on need of T&CI personnel on the Implementation and Management of Testing and Certification of Construction Products in Hong Kong -

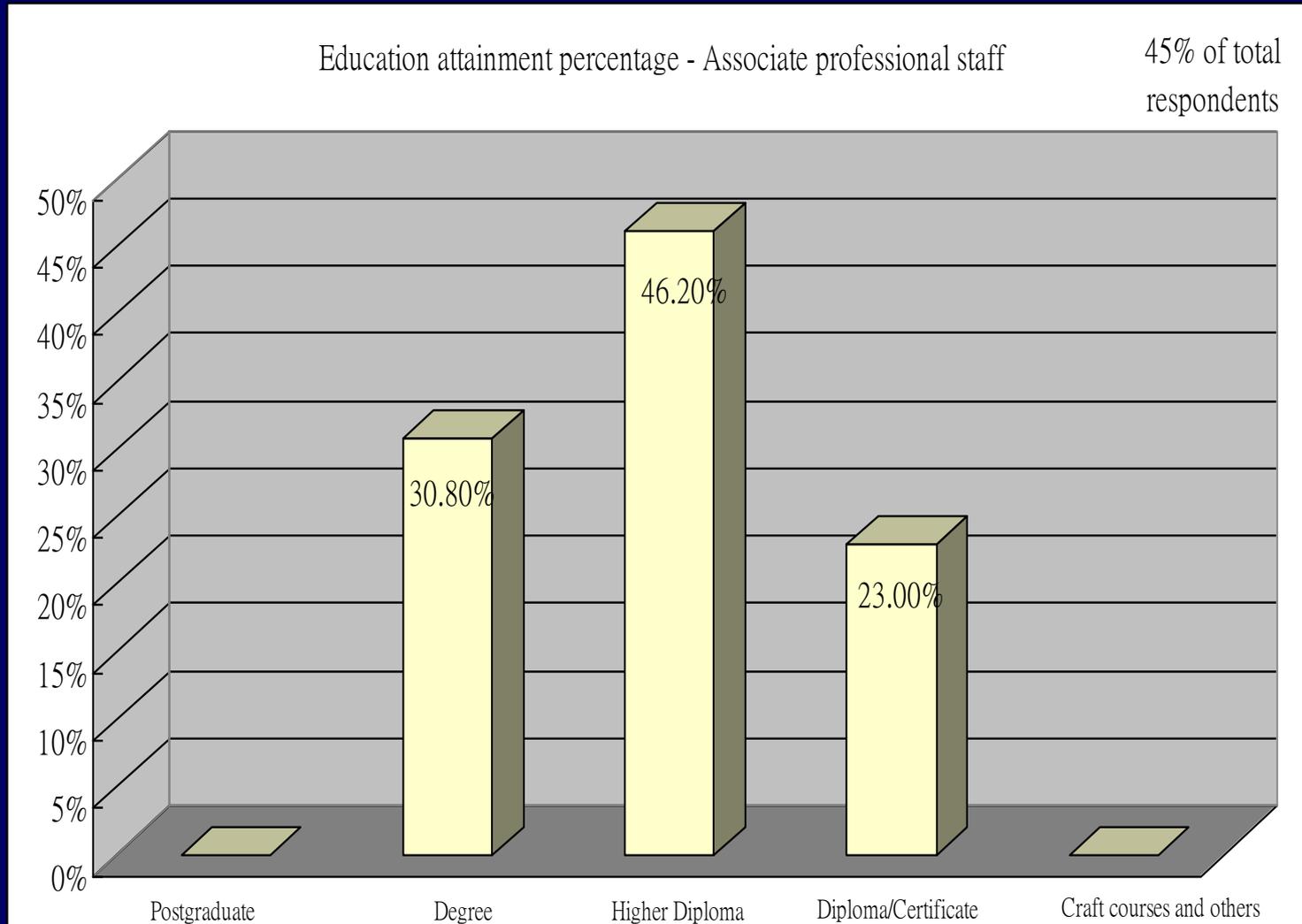
Survey aims to find out:

- The HR distribution – to predict the supply of T&C personnel and encourage more teenagers to enter this market
- The education background of respondents in the field to see whether it support the healthy development of T&CI
- The Continuing Professional Development potential for the T&CI
- The respondents' intention and prefaces to attend CPD
- Suggested measures to improve the competitiveness of the T&CI

Education attainment of professional staff (38% of total)



Education attainment of associate professional staff (45% of total)



Measures to improve the competitiveness of T&CI

Effective measures	Potential (%)	Nature
Ensure adequate supply of the quality assessors to prepare for an increasing demand of new types of testing	36.8	Personnel
Promote more internship opportunities by learned institutes	26.3	CPD
Provide ethic training for practitioners to have a reliable, consistent and impartial manner	21.1	Personnel
Seminars, workshops and career talks	10.5	CPD
Develop short courses to equip practitioners with necessary technical skills for changes in testing requirements	5.3	CPD

Ensuring adequate supply of the quality assessors to prepare for an increasing demand of new types of testing is of the most effective measures (36.8%) to improve the competitiveness of the testing and certification industry in Hong Kong. **(Need for Auditor Training)**

Auditor for Testing and Certification Industry

Laboratory Assessment : For assessment of the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for laboratories, proficiency testing providers and reference material producers (ISO 17025)

System Certification Assessment : the Hong Kong Certification Body Accreditation Scheme (HKCAS) for certification bodies (ISO 9001, 14001 etc)

Product Certification Technical Auditor (Product Knowledge)

For Product Certification

The depth and effectiveness of the audit of the production processes and quality system will be a major focus of assessments. They depend on the knowledge, training, and experience of auditors and the available time to carry out the audit.

7. PERSONNEL

- 7.1 Personnel of the certification body responsible for the following work shall collectively have comprehensive knowledge of the design, supply, production and quality assurance of products for all certification schemes.:-
- a. Develop product specific criteria,
 - b. Review applications for certification,
 - c. Audit production processes including sample selection,
 - d. Audit applicant supplier's testing laboratory,
 - e. Review test, inspection and audit results,
 - f. Make decisions on certification.

Personnel only with knowledge on testing or inspecting the product are normally inadequate for auditing production processes.

7.5 Unless other specified in the certification scheme, personnel of the certification body involved in evaluation and decision making activities should be a holder of a higher diploma in an engineering, technology or science discipline issued by a recognized educational institution in Hong Kong, or equivalent, and at least five years of post qualification experience in a relevant industry. For persons holding a higher academic qualification, the required post qualification experience in a relevant industry may be shortened. HKAS Executive may accept alternative qualifications

7.7 A lead auditor shall have acquired additional audit experience to develop the knowledge and skills required for a team leader as described in Section 7 of ISO 19011. This additional experience should have been gained while acting in the role of a lead auditor under the direction and guidance of another competent lead auditor.

7.9 A technical expert provides technical support to an audit team. A technical expert need not be trained on auditing techniques but must have the required qualification, experience and technical knowledge for the evaluation activities to be carried out.

For example he/she should :-

- (a) have an appropriate knowledge and understanding of the specific industry relating to the product to be evaluated;
- (b) have adequate knowledge in the design and production of the product to be evaluated;
- (c) be familiar with the product standard, including statutory and regulatory requirements on the product to be evaluated;
- (d) have sufficient understanding of, and expertise in, the technical aspects of the product certification scheme; and be able to evaluate effectively the conformity of the product to specification and the supplier's conformity with the product certification scheme.

Section 8.9 A technical expert shall work under the direction and close supervision of an auditor or a lead auditor.”

A technical expert need not be trained on auditing techniques. Therefore he/she should work under the direction and close supervision of an auditor or lead auditor during an assessment.

Registration of product certification technical auditors as below:

1. It is the HKICA's view that the competence of technical auditors performing certification audits shall be evaluated through the appraisal system set up by the certification body. The CB is obliged to provide the required audit opportunity, factory visits for familiarization with manufacturing processes, resources for attending training courses necessary for updating product knowledge of their auditing personnel. Accordingly, HKICA will accept applicants for the provisional technical auditor registration in the relevant field(s) with the nomination support from their CBs.

2. The provisional technical auditor is deemed to have fulfilled the registration qualification requirement as required in the relevant PCCSs initially.

3. Currently FIVE product certification technical auditor registrations are available. Other categories of registration would be considered on a need basis in future.

- **Cementitious products**
- **Fire engineering products**
- **Tiles products**
- **Aluminum windows products**
- **Sanitary ware products**

4. Technical auditors with relevant academic backgrounds (e.g. Higher Diploma in relevant construction fields) shall have at least 1 year relevant audit experience of the product for certification. Technical Auditors without relevant academic backgrounds shall require at least 2 years relevant audit experience. Lead Auditors with the technical auditor qualification and experience can be the same person when performing a product certification audit.

5. Technical auditors with audit log records covering FIVE third-party audits completed within three consecutive years and with at least one successful evaluation by accreditation body can apply for full registration as a "Technical Product Certification Auditor".

New Challenges face by TIC Product Certification Auditor

- Competency Standards for Testing and Certification
- Integrity of Construction Testing and Certification
- Continuing Training (VTC) (CPD) of TIC Industry
- Certification Scheme for Auditor (Professional Ethics)

Indeed, the evaluation report would detail an auditor's weaknesses in the evaluation report and both auditor and CB could make improvements accordingly.

Relevant experience was very important to audit work and auditors needed to **gradually** acquire such hands-on experience (CPD).

Auditor Training

Collaboration between HKICA/VTC's on providing training courses for potential product certification auditors

Level 1 Awareness and Audit knowledge

Level 2 Audit knowledge, skill and **Product Certification**

Level 3 Product Certification Skill and Practice

Potential Applicant

System Auditor - lacking professional knowledge and factory experience

Professional (e.g. Professional Engineer, develop auditing as 2nd professional) – lacking auditor knowledge and experience

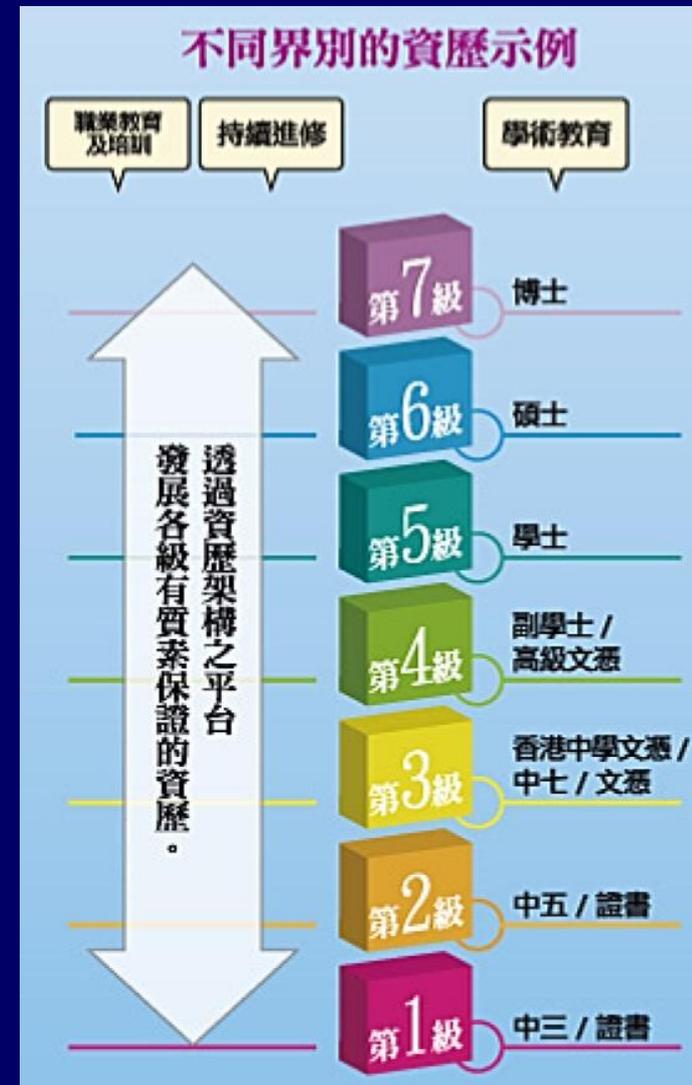
Opportunity for Engineers ?

Difficulty for Product Cert Auditor Training :

- What's our target participant
- More publicity on the market need for trained auditors might help to boost enrolment
- For product certification, demand for auditor depends on demand for specific product
- There might not be any trainer available to provide the technical training
- It would be a challenge as most factories were not prepared to open up in this manner.

Professional Development Continuous improvement

- Auditor Training: QF Competency Approach
- Whether the TIC SCS could be counted in evaluating the competency of a conformity assessment body.



Evaluate competence and performance of personnel involved in audits and certification activities (Performance Requirement)

Possess knowledge of competence criteria with regard to the requirements of management system standard or specification and evaluation methods

Define competence criteria for personnel involved in the management and performance of audits and certification with regard to different certification functions, e.g.:

conducting the application review,
reviewing audit reports and making certification decisions,
auditing,
leading the audit team.

Interpret the requirements of management system / product certification in relevant international standards.

Explain evaluation methods for assessing the competency and performance of audit and certification personnel, e.g.:

review of records,
feedback from past employers, by peers, from the client / market,
interviews,
observations,
examinations,
post-audit review.

Evaluate competence and performance of personnel involved in certification audits

Select two or more appropriate evaluation methods for initial competence evaluation, and on-going monitoring of competence and performance of personnel.

Apply relevant competence criteria according to the technical area and the function in the certification activity.

Critically evaluate competence and performance of personnel involved in the audits and certification according to the requirements of management system / product standard or specification.

Review the evaluation results to identify training needs of the personnel in the light of their performance.

Document the evaluation processes and findings according to the standard operating procedures of the certification body.

Exhibit professionalism

Demonstrate that the evaluation methods are effective.

Ensure the satisfactory performance of all personnel involved in the audit and certification activities.

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Thank You

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Association of Construction
Materials Laboratories

