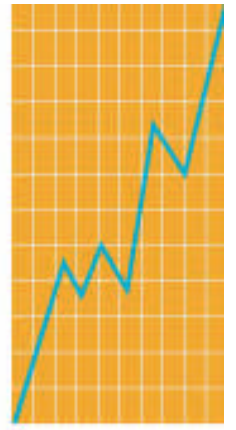


防貪錦囊
Guidelines for Corruption Prevention

best practices



Construction Quality Control Testing

Corruption Prevention Department

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CONSTRUCTION QUALITY CONTROL TESTING

Introduction Corruption within the construction industry resulting in substandard works may seriously threaten public safety and undermines the reputation of Hong Kong. Construction quality control is corruption prone because material cost is substantial in construction projects and any cover-up of substandard materials by compromised works supervisors will help in improving profits of the contractor.

Construction quality control involves testing and inspection of materials. Examples of malpractice include manipulation of sampling of materials for testing, substitution of test samples, falsification of test results, and false or selective reporting of in-situ and field tests. Suitable safeguards are therefore necessary to protect the integrity of the processes of sampling, testing and result reporting.

This Best Practice Module aims to provide a checklist of preferred practices for Quality Control Compliance Testing. The best practices recommended are by no means exhaustive and should be adapted to meet the specific needs of the industry participant.

Code of Conduct Corruption prevention is founded on good corporate governance underpinned by a strong commitment to an appropriate Code of Conduct. This Code should provide guidance to employees of the industry participants such as consultants, contractors and their employers (i.e. the client organizations) on ethical practices in dealings with the employers' business, including provisions on:

- commitment to high ethical and professional standards;
- prohibition on acceptance of advantages (including gifts, loans, favours, discounts etc.);
- declaration of conflict of interest;

- prohibition on acceptance of excessive entertainment from business partners; and
- prohibition on disclosure of information to other parties without the client's permission.

In engaging consultants, contractors and laboratories for material testing, the contracts should contain relevant clauses requiring them to commit to ethical practices, in particular the requirement to declare any actual or potential conflict of interest by all staff, agents and sub-contractors.

Procedural Guidelines

Comprehensive procedural guidelines help maintain consistency in practices and minimize abuse arising from unclear responsibilities and unspecified authorities. They should be easily accessible to all staff and include the following elements:-

- the authorization levels of staff and their corresponding responsibilities and accountabilities;
- the methods of quality testing, the frequency and documentation requirements;
- schedules of supervisory checks, surprise checks by more senior staff, and reporting of irregularities; and
- internal audit and procedural compliance checks.

Quality Policy

The client organization should have a quality policy reflecting its organizational goals. An appropriate senior person (a Quality Manager) at the corporate management level should be responsible for the establishment, implementation and maintenance of quality management systems in accordance with industry best practices.

Quality Audit and Review

The Quality Manager should have defined authority to assign internal and external Quality Auditors as necessary. Quality audit reports and recommendations should be incorporated in management reporting systems and be referred back to the Quality Manager who should ensure that they are acted upon in accordance with the organizational goals.

Quality Management System

A Quality Management System should be developed and documented. The purpose of this system is to ensure that effective quality control measures are in place and that any deviations from the requirements are detected and documented, with appropriate corrective action being taken to prevent re-occurrence.

The Quality Manager should be authorized by the management with full responsibility to implement and oversee the Quality Control System. The Quality Manager should also be responsible for the verification of corrective actions and making reports for management review.

Accreditation and Certification

An organization seeking to achieve best practice standards should ensure that its systems meet accepted International Standards of Quality Assurance e.g. ISO 9001, ISO 14000, ISO 25 etc. Compliance with these requirements should be confirmed through a third-party certification body accredited by the Hong Kong Certification Body Accreditation Scheme.

Wherever possible, business dealings and construction activities should be performed through the services of properly certified and accredited organizations e.g. ISO-certified contractors and suppliers, laboratories accredited under the Hong Kong Laboratory Accreditation Scheme. Third-party accreditation and certification systems help provide additional assurance of the reliability of performance and may be used to assist in the pre-qualification of laboratories appointed for quality testing.

Independence of Testing Functions

An independent body having a primary responsibility to the client organization should perform all compliance quality control sampling, testing and measurement tasks if any. Direct engagement of the testing laboratory by the client could remove any potential conflict of interest situation that may arise if the laboratory is hired by the contractor.

Contract Requirements

In conjunction with the construction contracts, the contract for quality testing should clearly define the above independent responsibilities and outline the relationships among all parties involved in the project. The contract should also require the prompt and direct reporting of test results to the client organization's representative.

Suitable guidelines and model draft contracts can assist in developing the terms of engagement. These draft conditions should include references to certification and accreditation requirements.

The extent of compliance testing work should be stated explicitly in both the main contract and the quality testing contract, specifying the testing standards and acceptance criteria, the protection of the integrity of test samples, the methods of payment and performance assessment, as well as the resources, expertise and equipment required of the laboratory.

The contract details and documentation should be sufficient to enable a knowledgeable third party to assess the effectiveness of the quality assurance system for the project as well as the standard of laboratory performance.

Probity Clause

The quality testing contract should also include a probity clause with references to the Prevention of Bribery Ordinance and a Code of Conduct to be issued by the appointed laboratory for staff compliance.

Test Methods

Where feasible, test procedures should be based on recognised standards and the test method documented. As a minimum, the method should include:

- a description of the test outlining what is being measured or assessed, including mathematical descriptions and/or derivations e.g. statistical requirements;
- equipment requirements including type, range and calibration requirements;
- sampling methods;
- a checklist consisting of a sequential listing of the actions to be taken during a measurement and its data processing;
- preferred format of reporting and presentation of results; and
- monitoring and control procedures designed to ensure reliability and security of the samples and test information.

Appointment of Laboratories

Value for money normally is best pursued through fair and open competition, which facilitates regular testing of the market and enables new service providers to be considered. However, quality testing operations are specialized and subject to HOKLAS accreditation. It is therefore likely that only a limited number of independent laboratories are available to provide the required services.

On-going testing commitments may justify term contracts. These should be limited in time (normally 2-3 years). Any reappointment should be made under the standard conditions of selection and appointment.

Value Selection Since service quality is a primary consideration, value selection principles are recommended, using both technical standards (e.g. the requisite laboratory resources and accreditation requirements) and price as selection criteria. These criteria should be based on the project needs.

To ensure a level playing field, the scope of work and basic selection criteria and their weightings should be made known to all prospective bidders in advance. The criteria should not be varied unless all bidders are given an equal opportunity to revise their proposals.

Laboratory Search A short list of suitable laboratories should be identified through a pre-qualification exercise whereby potential bidders are invited to express interest through open calls, industry referrals and users' nominations. Organizations with a continuing demand for quality tests may develop and maintain an approved list of laboratories subject to periodic review and a formal system for addition and deletion.

The number of short-listed testing firms should be sufficient to ensure a competitive situation. Restricted or single-source tendering should be fully justified and documented and requires prior approval by authorized senior staff of the client organization.

Bidding Procedures All bidders should have access to the same information and should be given sufficient time to prepare a suitable proposal. There should be a common deadline for proposal submissions. Recommended bidding procedures consistent with World Trade Organization principles are covered in greater detail in another Best Practice module of the same series.

Performance Evaluation

There should be procedures for formal performance evaluation of quality test services with reporting to the senior management of the client organization at regular intervals using standard reporting formats. The appraisal system should provide for the identification of unsatisfactory performance and appropriate feedback to management. Consistently inadequate performance should lead to termination of the contract and be placed on record for future reference in appointment. Contract termination or any deductions of payments for performance reasons must be subject to a due process of review, supported by appropriate documentation, and approved by the appropriate level of staff.

The relevant project supervisor(s) should also prepare an overall appraisal report on the testing programme and laboratory performance at the completion or termination of a contract.

Job Instructions

Formal instructions should be issued for each task. The work orders should specify the tests required under the conditions of the contract. Variations of the method or scope of tests, especially those with cost implications, should be approved by the senior staff of the client organization and documented.

Test Management

Corruption opportunities in quality testing can be minimized by adopting prudent principles of testing management.

Sampling Procedures

In general, the sampling rate must yield a representative sample that is statistically significant for the purpose. In some cases, this may require 100% testing (e.g. radiography of critical welds) or 100% preparation with a lower percentage of sampling (e.g. sonic testing of large piles where only a proportion of log holes may be selected for test). The sampling should include a random element to prevent circumvention of quality test controls.

Integrity of Samples

The testing laboratory should be responsible for the sampling process which should be traceable and auditable until the stage of final testing and reporting. Sample taking, recording, storage, transportation and handling should not involve external persons such as contractors and sub-contractors, except under supervision in a supporting logistical role.

To prevent possible sample substitution or manipulation, all samples collected should be put under the safe custody of accountable persons throughout the process and sample transfers should be subject to proper hand-over procedures. Guidelines should be given outlining transportation requirements and the minimum level of staffing to ensure a uniformly high standard of security.

Sample Identification and Test Data

There must be unmistakable identification and traceability of test samples with their related test data. Where feasible, simultaneous recording of unique identifiers (e.g. numbers or codes) should become part of the test records. Depending on the type of test, the test method should require checking and verification of the sample by more than one laboratory technician.

Parallel Testing

Notwithstanding that HOKLAS accreditation and proficiency testing provide a high level of confidence in testing standards, selective parallel testing of materials may be carried out to deter and detect malpractice. The decision to undertake parallel testing depends on several factors, including the critical nature of the work, complexity of test, extent of test failures and past testing performance of the laboratory.

Supervision and Technical Support

Depending on the nature of the test, the client organization should engage site staff or representatives to provide direct supervision and support for compliance testing. The contractor's staff involvement should be limited to logistical support. On-site and field supervision requirements should be fulfilled by the laboratory in accordance with the contracts.

The client's staff or the independent Engineer representing the client should be responsible for direction on site for field tests.

Test Certificates and Reports

The results of each calibration or test must be reported accurately and objectively in a calibration certificate, test report or test certificate. To remove the likelihood of selective disclosure, unauthorized amendment, forgery or fraudulent representation, the report should be transmitted in a specified manner (e.g. sealed packet delivery) directly from the laboratory to the client's representative and not through intermediaries.

Adequate security and confidentiality should apply to the test reports and blank certificates during all stages of reporting regardless of the manner of production.

The format of reports should be designed to suit each type of test and standardized to the extent feasible to ensure that all necessary information is included for the proper interpretation of the test results according to the method specification. The report should incorporate the following key features:

- unique identification of the certificate or report with serially numbered pages and total page numbers quoted;
- the name, designation and role of independent witness(es) to the test (where relevant);
- description and precise identification of sample, component or item tested, together with any distinguishing characteristics;
- reference to sampling procedure adopted, if relevant;
- measurements and derived results supported by sketches, tables, graphs, and photographs as appropriate, together with the description of any recognized failure modes;

- the name, signature and title of the person(s) responsible for the test and content of the report; and
- a statement requiring that the test certificate or report should not be copied or reproduced, in part or in full, without the written permission of the issuing laboratory and client.

Report Amendments

Test reports and certificates should be rejected if altered or amended in any manner. Amendments to test reports and certificates should only be accepted if submitted in the form of a separate amendment document, clearly identified as a supplement to the previous report and meeting all requirements for identification and reporting.

Intellectual Property

Processes of testing or investigation must not violate or infringe legal property rights. These may cover such things as commercially privileged information, intellectual property, or proprietary techniques of the contractor or sub-contractors.

Staff Rotation

For staff development purposes and to reduce the possibility of syndicated corruption, company policy on staff rotation should be formulated. Staff deployment should be regularly monitored and staff members in sensitive jobs should be reallocated to other posts from time to time as far as feasible. As laboratory site staff have contacts with the contractor's site staff and they may be subject to corrupt influences, the contract should require the laboratory to have a staff rotation mechanism both on site and in the laboratory.

Audit

Effective audit of both financial and technical operations forms a vital part of the overall control system. Technical audit should review the adequacy and effectiveness of project management and quality control, including compliance with policies and procedures.

Technical audit for quality tests should include a programmed sampling of work done. To the extent feasible, the technical audit process should be extended beyond documentation checks to more random on-site and laboratory compliance checks. Non-conformances should be investigated with findings immediately reported to the senior management for appropriate action.

The management should ensure the following conditions are met in establishing the audit process:

- functional independence of any audit section with direct reporting to the company audit committee or chief executive; and
- the auditor should possess adequate knowledge and experience in the relevant field; independent external auditors should be appointed if no suitable staff are available internally.

Advisory Services Group

In addition to the series of Best Practice Modules, the ICAC maintains an **Advisory Services Group** to provide free and confidential corruption prevention advice to private organizations covering various aspects of their activities such as staff administration, stores management and administration of contracts. For further information, please contact the Advisory Services Group at telephone no. 2526 6363 or fax no. 2522 0505 or email address asg@cpd.icac.org.hk.



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