

CHAPTER-03



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DATA COLLECTION

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3.1 General.

One of the main objectives of this study was to observe the methods of quality assurance system practiced in Sri Lanka today. Construction contractors take attempts to achieve quality works by using several methods of quality management systems to satisfy the conditions given in their contract or to satisfy the needs of the clients. Since the collection of data is essential for finding the way of practices, it was decided to carry out a questionnaire survey using the construction sites. Questionnaire survey was conducted only for the suitable construction sites and the systematic series of questions were included in to the questionnaire in order to collect the essential data for the study.

3.2 Development of Questionnaire.

It was observed that all of the construction sites were being done under the construction contracts and the main contract documents used were,

- (a) ICTAD condition of contract.
- (b) ICTAD specification for building works.

With respect to the requirements described in the SLS ISO 9001:1994, construction contractors require to establish and maintain documented procedures for 20 requirements. Some important requirements given in the SLS ISO 9001:1994 were selected. The pilot survey showed that the data for the selected requirements could be satisfactorily collected from the existing quality management system.

Requirements selected.

- 1.Document and data control.
- 2.Purchasing.
- 3.Process control.
- 4.Product identification and traceability.
- 5.Inspection and testing.
- 6.Inspection and test status.
- 7.Control of non-conformity products.
- 8.Corrective and preventive action.
- 9.Handling, storage and delivery.

Requirements not selected.

- 1.Management responsibility.
- 2.Quality system.
- 3.Contract review.
- 4.Design control.
- 5.Control of customer-supplied product.
- 6.Control of inspection, measuring and test equipment.
- 7.Control of quality records.
- 8.Internal quality audits.
- 9.Training.
- 10.Servicing.
- 11.Statistical techniques.

Details involved in this questionnaire for the selected nine requirements of ISO 9001 are listed below.

(1) Document and data control.

Methods of practicing were obtained from the construction sites for the following five sections to cover the external documents of drawings, B.O.Q., specifications, bore hole data, work instructions and work procedures.

- 1). Use of proper system to control all documents and data.
- 2). Review and approval of documents by authorised personnel prior to issue.
- 3). Review and approval of changes by the same personnel.
- 4). Receiving correct documents and data when required from the consultant Engineer.
- 5). Maintaining the changes in the documents and data

(2) Purchasing.

(a).Material.

Method of practicing were obtained for,

- 1). Selection of suppliers.
- 2). Control exercised done over suppliers.
- 3). Evaluation of performance of the existing suppliers.
- 4). Maintaining the quality records of acceptable suppliers.
- 5). Use of purchasing data and purchasing order.
- 6). Approval for use of raw materials.
- 7). Review and approval of purchasing documents.
- 8). Verification of materials at supplier's premises.

(b) Services.

Methods of practicing were obtained for,

- 1). Selection of subcontractors.
- 2). Control exercised done over sub contractors.
- 3). Evaluation of the performance of the existing sub contractors.
- 4). Maintaining the quality records of acceptable sub contractors.
- 5). Use of specifications.
- 6). Qualification of sub contractors.
- 7). Approval of satisfaction of works.
- 8). Review and approval of sub contract agreement.

(3) Materials / works identification and traceability.

Methods of practicing were obtained for,

- (1).Use of documented procedure for identifying the work from receipt and during all stages of constructions.
- (2).Maintaining records for receiving materials.
- (3).Use of proper storing system for identifying the materials.
- (4).Maintaining the records for use of materials for each work items daily.
- (5).Maintaining the records for identifying the area of work done daily in the construction daily.

(4) Process control.

Methods of practicing were obtained for,

- 1). Use of quality plan and / or other codes.
- 2). Responsible site staff.
- 3). Use of work instructions.
- 4). Criteria for workmanship.
- 5). Approval from the consultant Engineer.
- 6). Qualification of associated personnel for process operation.
- 7). Maintaining the records of associated personnel.
- 8). Maintaining the records for the qualified processes.

(6).Inspection and testing.

Method of practicing were obtained for,

- 1). Use of documented procedure for inspection and testing.
- 2). Responsible site staff.
- 3). Use of check lists for inspection of work.
- 4). Way of receiving necessary inspection.
- 5). Maintaining records of inspection and testing.

(7) Inspection and test status.

Methods of practicing were obtained for,

- 1). Use of documented procedure for identifying the conformance and nonconformance of work with regards to the inspection and test performed.
- 2). Maintaining the records of materials received to the site.
- 3). Maintaining records of storing and issuing of materials from stores.
- 4). Maintaining the records for daily inspection and tests.
- 5). Maintaining the records for daily work done.

(8) Control of nonconforming work.

Methods of practicing were obtained for,

- 1). Use of documented procedure to prevent the nonconforming works from the construction.
- 2). Identification of nonconforming work.
- 3). Method of evaluating, segregating and disposition of nonconforming work.
- 4). Responsibility and authority to review and dispose of nonconforming works.
- 5). Maintaining of records for nonconforming works.

(9).Corrective and preventive action.

Methods of practicing were obtained for,

- 1). Use of documented procedure for implementing corrective and preventive action.
- 2). Method of receiving, handling, determining, and correcting the non-conformities.
- 3). Maintaining the records for results of investigation done for non-conformities.



(10) Handling, storage and delivery.

Methods of practicing were obtained for,

- 1). Use of documented procedure for handling, storage and delivery of materials at site.
- 2). Method of handling materials if (1) is not available.
- 3). Use of designated storage areas.
- 4). System for verifying condition of materials in stores.

3.3 Questionnaire Survey.

Data were collected from the construction sites in the Southern area and there were lot of construction projects were being carried out in this area during the survey period. Few sites in Sabaragamuwa area have also been included in order to increase the number of the samples. This was not a biased sample as the contractors were not limited to a particular area though they had sites in the Southern area. Thirty six sites were inspected and 36 questionnaires were filled by discussing with the 36 construction contractors or their representatives..

Answers collected against with the above areas of practicing systems are listed and presented in appendix – B.



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