CHAPTER 2

QUALITY IN PROPERTY AND CONSTRUCTION INDUSTRY

2.1 Existing Quality System and The Characteristic of Property and Construction Industry

Construction is a complex process. It involves a wide variety of trades and professions and heavy demands are placed on the product. Due to the nature of the process, most of the construction works required very high level of customization and therefore demanded large amount of human resources. Unlike the manufacturing industry, new production techniques and advanced technology innovations have only limited application in construction industry. As a result, it is both labour intensive and time consuming. Consequently, quality control and quality assurance has never been an easy task in the construction industry. In Malaysia, the problem in construction is recognized by everybody but owned by nobody. Clients and developers are generally perceived as 'people in a hurry'. Professionals (architects, engineers, quantity surveyors) are under pressure to compete on fees from clients. Contractors and subcontractors have shortage
of craft skills, multi subcontracting, responded to clients' demand to cost and completion date rather than to quality.

No doubt, as we all know, there are plenty of standards and codes of practice used in specifying requirement on standards for construction projects; these standards and specifications were not always communicated clearly and effectively to the people actually involved in carrying out the projects. As a matter of fact, it is a well-known fact that a systematic and well planned quality system in construction industry is very much lacking. Normally, once the work gets assigned to the engineer from the client, there is no quality level until the designer sets it. He, and he alone, is responsible to make this decision so that the structure will perform and serve society as intended. He expresses his designs and the quality levels of the various parts of the project through drawings and specifications. However, these specifications and drawings only mentioned about what level of standards is required for certain types of works with no description on what should be done in order to achieve the desired quality or standards.

Some of the more important reasons for the failure of specifications to serve their purpose are:

1. A specification should say what it means and mean what it says, and this is rarely, if ever the case in practice.
2. The prevalent practice in specification writing is to copy from previous documents. In view of the fact that rarely does one find two projects exactly alike - at the same location, using the same materials, and implemented by the same owner and contractor organizations - the weakness of this practice is readily seen.

3. Current specifications mostly provide a sharp line of demarcation between passing and failing to pass for the various items. Unfortunately, this does not represent the facts of life realistically. In order to fulfil the requirement stated in the specifications, the contractor may sometimes have to twist his way to satisfy the engineer.

4. Most specifications are written in such a way as to keep the engineer in the driver's seat, so that he in effect does a lot of what should be the responsibility of the contractor. This upsets the normal legal relationships, and seriously affects the quality, as in effect the engineer becomes responsible for what he had intended the contractor to be responsible for, when at the same time he is not in a position to do the contractor's work.

5. Public works specifications in general, and many private construction specifications have become a collection of all the provisions that have been used to compensate for problems that have been encountered on past work - it is a question of always adding such provisions, and never taking any out, irrespective of their applicability to a particular job. This situation has become the millstone around the neck of
After the drawings and specifications have been prepared, the engineer will, on behalf of the client, advertise for bids. Contractors participating in the bids will then estimate the contract prices and submit to the engineer. After evaluation, the contract will be awarded to the most competitive contractor. The contractor shall then start organizing and mobilizing to carry out his responsibilities at the construction site. The contractor should normally select the most appropriate personnel to fill up the positions as shown in Figure 1. A typical model of the quality system in construction is shown in Figure 2.

Therefore, the quality of the project depends mainly on how the contractor carried out his works. If we look in detail the site organization chart used by most of the contractors, it is not difficult for us to have doubt if the construction projects produce any good quality products without having a well defined specifications and an effective quality system. From Figure 1, we notice that the actual works will be done by the general work and the tradesman. They will be supervised by the foreman who will be reporting to the site supervisor. Normally, before carrying their works, the people at these level will discuss amongst themselves about the method they will use for the part of works at a particular stage of the project. They might or might not communicate with the next level superior about the method they have decided to use. Although the site manager may sometimes discuss with the project engineer and superintendent about the construction methods, the
Figure 1: TYPICAL ORGANIZATION CHART FOR CONSTRUCTION PROJECT (SIMPLIFIED).
QUALITY SYSTEM IN CONSTRUCTION

DESIGNER
( Sets level of Quality )

( FEEDBACK )

( DEFINES IT IN )

CONSTRUCTION

CONTRACTOR ORGANIZATION

OWNER'S REPRESENTATIVE

PRODUCT INSPECTION ACCEPTANCE INSPECTION
CONTROL ( control ) TESTING ( acceptance )

( ORGANIZING AND TRAINING )

( ORGANIZING AND TRAINING )

( ADVERTISE FOR BIDS )

( SUBMITTAL OF BIDS )

AWARD OF CONTRACT

CONTRACTOR ESTIMATES PRICES

Figure 2

outcome of their discussion may not be communicated down effectively to the people at the lower levels.

For the clients and consultants, they usually carry out scheduled and unscheduled checking on the construction to see if the works were carried out according to the required specifications and standards. However, they normally do not have any idea how those works were being carried out. They will reject or ask for rectification if they found certain part of the works was not following the requirements. Anyway, this is not preventive measure where they can avoid unwanted works right from the beginning. In addition, since they do not have any knowledge on how the works were constructed, they do not know if the procedures and methods applied in the construction process will not have negative impact or long term effect on the constructed products. Therefore, there are undoubtedly examples of instances where the standard specified has not been achieved, with consequential shortfalls in anticipated performance. We have not escaped those kinds of misfortune in Malaysia. The problem has become even more acute during the current boom in the construction industry due to critical shortages in supervisory staff and some building material. In response, Ministry of Housing and Local Government together with SIRIM has started some quality assurance programmes which include ISO 9000 Registration. The establishment of the Construction Industry Development Board (CIDB) was also approved by the Cabinet in August 1993, about four months before the December Highlands Tower Collapse. The formation of CIDB, as gazetted by the Construction Industry Development Board Act 1994, is primarily to promote and
stimulate the development of quality system, improvement and expansion of the construction industry.

2.2 The Importance of Quality in Property and Construction Industry

In order to elaborate the importance of quality in property and construction industry, we have to first ask "why should the industry be interested?" Of course, it is the benefits of adopting a good quality system that encouraged and motivated the companies to develop and implement a proper quality system.

Some of the benefits of effective quality management include:

* Increased assurance of safety and reliability;

* Reduced downtime and increased productivity;

* Reduced cost of error and communication difficulties;

* Reduction in bureaucracy;
* focused awareness on the key areas within the company;

* Improvement of quality and reliability of work undertaken by subcontractors and suppliers;

* Reduced exposure of the organization to liability suits;

* The establishment of effective auditing techniques;

* Improved reputation and public image;

* Consistency of operation and the establishment of a framework for improvement, and

* Effective systems for improvement of performance in terms of scrap, rework, complaints etc.

It is obvious that some of the benefits listed above are the key ingredients for being competitive in the business. The issue of quality is definitely an important aspect not to be overlooked by the property and construction industry. Moreover, since the quality in construction and building industry has become the subject of criticism, it will only be
wise that the industry start picking up an effective quality system in order to gain benefits from quality works.

The importance of quality in property and construction industry has also been recognized by our government. Speaking at the seminar on “Quality in the Building and Construction Industry through ISO 9000” in Kuala Lumpur on 15 January 1993, Datuk Law Hieng Ding, the Honourable Minister of Science, Technology and the Environment of Malaysia, said that “.........the present state of the construction industry still leaves much to be desired. Many criticisms have been directed to the construction industry for the generally shoddy workmanship, and it is not only the final product which is the subject of criticism. Recent cases of the collapse of buildings under construction with the loss of lives also does not augur well for the industry. Complaints have also been expressed about work site safety, noise and dust pollution of the environment around work sites, wastage, failure to meet deadlines, cost overruns, poor design, attitude of workers and subcontractors, disregard of public needs, and the list goes on......As the construction sector is one of the largest sectors of the Malaysian economy, the incidents quoted above in effect represent a loss to the nation’s economy. Cost overruns, compensation for loss of life and injuries, damage to properties in the environment and other forms of waste ultimately have to be paid out of the national wealth. These losses would have been channeled to more productive uses in promoting the growth of the nation’s economy.”
2.3 Current State of ISO 9000 in Property and Construction Industry

Since the first edition of ISO 9000 Standards Series were published in late 1987, many very large industrial companies, particularly those with operations in many countries, have initiated vigorous company programs to implement the ISO 9000 standards at their operation sites. The list we know include Du Pont, Kodak, Volkswagen, Renault, Sandoz, Corning, Exxon Chemicals, Phillips, Fujitsu, ICI, and many more. Numerous large governmental purchasers, including the Ministry of Defence in the UK and Singapore, and the Department of the Navy in the USA have made ISO 9000 registration a requirement for their large contract suppliers.

The list could go on and on, but it is unnecessary to illustrate further that the ISO 9000 standards have had a major worldwide impact. However, the adoption of ISO 9000 in property and construction has been slower than in manufacturing. In UK, since the first national management contractor, Bovis Construction has achieved ISO 9002 Registration for its Quality Management System (QMS) in April 1988, most of the largest UK construction companies have since obtained ISO 9000 certification and interest is picking up in the United States and other European countries.
In Asia, ISO 9000 Quality System in property and construction industry is just beginning to receive attention. ISO 9000 began to attract much attention and popularity in Hong Kong in April 1991 when the Hong Kong Housing Authority (largest developer in Hong Kong) made an announcement to all her main contractors requiring them to be registered to ISO 9000 Quality System with the Hong Kong Quality Assurance Agency by March 1993. This move has made a very significant impact to the promotion of ISO 9000 in Hong Kong. The first construction company, Shui On Construction Ltd., was registered in 1992 and by March 1993, most of the main contractors are registered. A similar move was made by the Architectural Office of the Hong Kong Government in 1992. As a result, most of the major property development and construction companies in Hong Kong are now registered firms.

In Malaysia, since the scheme for certification of ISO 9000 Quality System was launched in 1987, there are 752 companies registered under the scheme as at January 11, 1996. However, there are only two property developer and two construction companies achieved the certification. This figure contributed to only 0.53% of the total numbers of the certified companies.

As for Singapore, the Construction Industry Development Board (CIDB) has teamed up with the Singapore Institute of Standards and Industrial Research (SISIR) in 1991 to start on an ISO 9000 certification scheme for the construction industry. In the same year, CIDB and SISIR signed a Memorandum of Understanding with the British Standard
Institution (BSI) to mutually recognize quality audits done by either party for the purpose of certification. The first Singapore contractors was certified in end 1993.

In both Malaysia and Singapore, the larger firms will be encouraged to establish ISO 9000 Quality System first as they have more resources and should take the lead. It is predictable that in a few years time as more firms become registered, public sector procurement will start to make ISO 9000 certification a prerequisite for tendering for selected contracts.