ABSTRACT
The purpose of this thesis is to evaluate the use of Quality Function Deployment (QFD) as a management tool to benefit project managers. The United States building construction of Engineers is one of the largest construction management organizations in the world, annually performing over 3.5 billion dollars worth of work. The project manager has primary responsibility within the construction, to ensure the design both fulfills user's requirements and is prepared correctly, and that quality control/assurance procedures are correctly administered. QFD was developed and to improve quality and lower costs in industrial and business related fields, by assuring all of building construction operational decisions are driven by owner needs. It uses a set of matrices to relate owner wants and needs with project specifications and requirements. QFD assists project managers to clearly identify and prioritize owner and labour requirements in development of the conceptual and final design. It is best suited to projects involving repetition of units or when higher-than-average quality is demanded. Managers are able to make better informed decisions made during the delivery process, resulting in a better owner satisfaction. To testing of required building construction materials and to determine the quality and quantity of our required area of the building construction The CQAP details the systems and controls that GE has put in place so that the quality of the project will meet the requirements specified in the report. GE provides definition and overall management of the quality approach to be followed by its contractors and consultants. The quality of the RA implementation will be ensured through an integrated system of quality assurance performed by the Construction Manager and quality control provided by the contractors. GE's Construction Manager is responsible for the day-to-day Coordination of quality assurance and quality control measures in the field.

INTRODUCTION
GENERAL
The Construction industry of India is an important indicator of the development as it creates investment opportunities across various related sectors. The construction industry has contributed an estimated ₹ 6708 billion to the national GDP in 2011-12 (a share of around 8%). The industry is fragmented, with a handful of major companies involved in the construction activities across all segments; medium sized companies specializing in niche activities; and small and medium contractors who work on the subcontractor basis and carry out the work in the field. In 2011, there were slightly over 500 construction equipment manufacturing companies in all of India. The sector is labor-intensive and, including indirect jobs, provides employment to more than 35 million people.

1.2 CONSTRUCTION INDUSTRY AND QA&QC
Construction Industry plays a major role in the economic growth of a nation and occupies a pivotal position in the nation’s development plans. India’s construction industry employs a workforce of nearly 32 million and its market size is worth about Rs. 2, 48,000 crores. It is the second largest contributor to the GDP after the agricultural sector. Construction sector is viewed as a service industry. It generates substantial employment and provides growth impetus to other manufacturing sectors like cement, bitumen, iron and steel, chemicals, bricks, paints, tiles etc. whose combined value is Rs.1.92,000 crores annually. The construction equipment market is valued at Rs.1.05,000 crores. The Project owner, construction companies, consultants, bankers and financial institutions, vendors & suppliers and even the service providers, each has his own fears of following QCAO in the conduct of business. The magnitude of the quality is indeterminate at times. What needs to be determined is:

a. The proportion of real versus perceived quality and approval. This document is being submitted and to satisfy that requirement of quality.

b. The real import and the importance of quality control and assurance in small building construction.

1.2.1 QUALITY CONTROL
Monitoring specific project result to determine if they comply with relevant quality standards and identifying ways to eliminate cause of unsatisfy performance Contract documents comprise a clear, complete, and accurate description of the facility to be constructed, correctly conveying the intent of the owner regarding the characteristics of the facility needed to serve his or her purposes. The contract documents define a constructed facility considered acceptable under the applicable regulatory codes and standards of professional practice, in terms of its reliability, the ease with which maintenance and repairs can be performed, the durability of its materials and operating systems, and the life safety provided to its users. The facility is constructed in accordance with those documents.

1. INPUTS
Work results, quality management plan, Operational definitions, checklists
1.4 QUALITY ASSURANCE
Evaluating overall project performance on a regular basis to provide confidence that the project will satisfy the relevant quality standards

1. INPUTS
- Quality management plan
- Result of quality control measurements
- Operational definitions

2. TOOLS AND TECH.
- Quality planning tools and techniques
- Quality audits

3. OUTPUTS
- Quality improvement

1.3 PROJECT SETTING
The location of the site is at Arkkavadi in Villupuram district and it is having surrounding facility. Land mark of site such as west side of that building having big sugar mill at Moongilduraipattu, and east side of that building having Sri Ranganatha Temple at Thiruvarangam.

1.4 CQAP ORGANIZATION
This CQAP is organized into eleven sections.

i. Section 1 - Introduction: describes the project setting, the contracts and related RAWPs, and the CQAP quality program overview.

ii. Section 2 - Project QC/QA Organization: presents the organizations and key personnel involved in the construction of the RA, their responsibilities and authorities, the structure of the QC/QA organization and the minimum training and experience of the Construction Quality Assurance Officer (CQAO) and personnel.

iii. Section 3 - Submittals: presents the procedures for processing submittals from contractors and vendors.

iv. Section 4 - Performance Monitoring Requirements: addresses QC/QA for performance monitoring requirements applicable to FSWC and PEI.

v. Section 5 - Inspection and Verification Activities: provides procedures for tracking construction inspection and verification activities for the contract, construction acceptance criteria, and construction audits.

vi. Section 6 - Construction Deficiencies: describes the procedures for tracking construction deficiencies from identification through acceptable corrective action.

vii. Section 7 - Documentation: describes the procedures for the project documents that will be managed through a combination of a secure document filing and storage system and computerized Document Tracking System.

viii. Section 8 - EPA Approvals: describes EPA approvals applicable to the FSWC and PEI QC/QA.

ix. Section 9 - Field Changes: describes handling of quality plan changes to assure QC/QA objectives are met.

x. Section 10 - Final Reporting: describes the QC/QA documentation for FSWC and PEI to be submitted to EPA in the Construction Completion Report.

xi. Section 11 - References: provides bibliographic references to key documents referred to in the body of the plan.

1.5 BACKGROUND AND PROBLEM FORMULATION
The construction sector in Sweden has for some time suffered from poor performance and a lack of control in various steps of the process. Due to the sector’s problems with numerous faults and the increased costs for buildings, the Swedish government initiated the Building Commission, whose assignment was to focus on where the problems were and how to increase the effectiveness instead of the costs. They found, amongst other things, problems with cost and faults related to the construction. Risks and other uncertainties can cause losses that lead to increased costs, time delays and lack of quality during the progression of the projects and at their end. Quality and uncertainties appear in various shapes. In projects the objectives are most often related to time, cost, quality and function and client satisfaction. In organizations, depending on the risk management focus, different relations between the objectives and the definition of quality exist. The quality definition is therefore highly dependent on the choice of applied management focus in the organization. In the construction industry the management focus on site is closest related describe as project quality management and safety quality management. At other levels, apart from the project site, the focus is somewhat different. Quality management is generally a part of other management systems such as risk, environmental or work environmental management systems. Some core values are common in many environmental management systems viz. the commitment of all employees, customer focus, management commitment, focus on process, continuous improvement.

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and fact-based decisions. These core values are closely connected and could easily be found in the theoretical framework of quality management. The current focus on quality management should be regarded as a complement and a development of the already implemented management systems used by companies. Either way, quality management is a crucial part of the total project management system regardless of the focus on time, quality, environment or work environment.

LITERATURE REVIEW

2.1 GENERAL
Literature pertaining to similar studies conducted all over the world is collected from various sources to determine the feasibility and scope of the work. Similar studies undertaken are as follows:

2.2 SUMMARY OF LITERATURE REVIEW
1. To determine the quality of building materials like soil, stone, brick, sand, cement, sand, aggregate, concrete, steel etc.
2. To determine the Soil Classification, Grain- Size Distribution, Moisture Content, Compaction characteristics, physical and chemical requirements for cement.
3. To determine the Sieve analysis, organic impurities, soundness, abrasion, deleterious materials, finer, alkali reactivity for stone aggregate.
5. To determine tensile strength of steel and compressive strength of brick.

2.3 LITERATURES REVIEWED

Parsons has studied “construction quality control/quality assurance plan” in that Materials qualification testing will be done prior to construction to verify that the materials comply with requirements of the specifications. The contractor will obtain representative samples of the materials designated as the proposed source of the materials. Test samples will be sent by the contractor to the Testing Laboratory. The Testing Laboratory will report all test results for determination of material meeting the acceptance criteria. For soils, sampling and analysis will be performed by the contractor on the onsite borrow material source. The CQAO or designee will periodically inspect material being used. If determined that the characteristics of the material being used differ from the material initially tested, the CQAO designee will direct the contractor to repeat the qualification testing. If the new material qualification test results meet the criteria of the technical specification as determined by the Engineer of Record, the new materials may be used for the work; otherwise, previously approved materials must be used or other acceptable materials must be sampled and tested as noted above prior to incorporating into the work.

M. Dudek-Burlowska*, D. Szwieczek “Quality estimation methods used in product life cycle” in that In Polish companies, quality of products is a result of many connected processes. Those processes are depended on the factors forming quality products requirements. At present time the organizations put “prevention strategy” which replaced “detecting strategy”. This approach has influence on optimisation of production process and reduction of costs and spoilage. According to Quality Management System and Quality Control organization should use quality methods in the whole product life cycle. Such activities make it possible to apply the proposed model in continuous quality improvement.

Dr. Ibtisam M. A. Al.Hamidi & Manaf A. Mohammed “quality control of cost estimation process in construction organizations” in that Quality has been emerged in the 1980s as the top strategic issue in industry. Statistical process control (SPC) is an important element of total quality management (TQM). Though SPC techniques were originally developed for manufacturing; they have been successfully applied to certain administrative and service functions. The objective of this research is to demonstrate the applicability of SPC techniques for quality control and improvement in engineering organizations involved in construction (implementing projects). One of the most important processes to be controlled in construction projects (cost estimation process) has been focused on. The technique of controlling such a process has been defined depending on reviewing the subject in the previous studies. Adopting individual measurement charts is reached as the technique used to control this process statistically. Practical data, represented as a list of projects implemented in 2002 by the State Company for Transportation Projects together with their estimated and actual costs, have been obtained and considered for this purpose (through applying individual measurement charts as a suitable technique for controlling processes statistically) showing the applicability of SPC techniques in engineering construction organizations which undertake projects along long period of time. The conclusions reached from this research are: The application of SPC in Iraqi construction engineering organizations is extremely disregarded. Change in culture of the organization is required before SPC technique can be effectively used. Management commitment and training are very important in bringing about the cultural change. Control chart technique can be used not only in industry but also in engineering organizations. This study has been dedicated to apply this technique in a construction engineering organization (on the
A qualitative research methodology, with multiple case studies, is applied in this research study. The results indicate that the organisations that participated in this research study did apply quality assurance methodologies during their system implementation projects. However, weaknesses existed that, if improved, could enhance the successful implementation of systems, the quality of the systems implemented, and the time frame in which systems are implemented. Based on the findings of the research study, the researcher has developed a quality assurance model that can be used during system implementation/development projects. This model is divided into the various system development life cycle phases, such as the planning phase, design phase, development phase, etc, indicating the quality assurance activities and deliverables required during each of these phases. This approach makes the model unique in the sense that some or all of these phases can be adopted to any company’s system development life cycle methodology to assist in identifying the activities and deliverables required for successful implementation/development of projects. The results from the research have indicated that weaknesses do exist within system implementation projects when looking at the QA activities performed to assist with the success of the project. Through the literature review conducted, it has been found that even though guidance for QA activities exists in the form of models, frameworks and standards, these are not specific enough to assist an organisation in identifying the specific QA activities needed during each phase of an SDLC.

Furthermore, the results that have been obtained from the case study indicate that the company whose business information system was implemented at the various organisations surveyed, does apply QA activities during their normal implementation projects. They also have not yet had an unsuccessful implementation, although a lot of rework had to be done. This might not be the case for other organisations that have not yet adopted QA activities in their implementation strategies. Finally, it is hoped that if a QA model (as suggested in Figure 6-1) can be implemented successfully, it will assist organisations in their system implementation projects and ensure that systems are implemented according to specifications, within budget and on time.

Adenuga, Olumide Afolarin has studied “Factors Affecting Quality in the Delivery of Public Housing Projects in Lagos State, Nigeria” in that the research work delves into the origin of public housing in Lagos, Nigeria and its development over the years. It identifies the challenges of public housing but focuses on appraising the quality assurance practices in the construction industry. The objectives are to examine the factors that hinder effective quality assurance practices; and to ascertain who should be largely responsible for ensuring/enforcing effective quality assurance practices in public housing projects. In achieving the objectives, a field survey involving a sample size of 73 respondents, mainly the professionals in the built environment working directly with Lagos State and those managing the housing projects awarded to different contractors using structured questionnaires. The study reveals that the aims and objectives of quality assurance are easily compromised and frequently lost since it relies heavily upon the individual contributions to implementation from each designer, contractor, supplier and sub-contractor. The study concludes that all have major roles to play in ensuring quality work in public housing projects; enforcement of quality standards by government agencies, setting up of quality assurance department in construction firms and enforcing statutory requirements as well as providing trainings and seminars on quality standard. Severe penalty for non compliance to quality standards be put in place by government and professional bodies. Clients must demand proof of contractors’ credentials for quality assurance capability.
before compiling their tender lists, and professionals on the project must try to work together in attaining desired quality.

**dottorato di ricerca, akram ahmed elkalifa**

“The construction and building materials industries for sustainable development in developing countries” The construction industry (CI) in developing countries (DCs) faces multitude challenges. Confronting its improved performance and development. Similar to many developing countries, the Sudan faces severe problems in its construction sector which should be seriously addressed and eliminated. Problems related to building materials (BMs) production, supply and management tend to dominate the list of impediments to the development of the Sudanese Construction Industry (SCI). The main objective of this study is to conduct a comprehensive and elaborate review and analysis of the construction and building materials industries in the Sudan focusing on locally produced building materials and building technologies employed in the provision of housing. The research aimed to delineate the significance of the construction industry in the socioeconomic development in the Sudan and to assess the potentials of the country in self sufficiency of key building materials. It reviewed the status quo of the Sudanese Construction Industry (SCI) and the Sudanese Building Materials Industry (SBMI) by investigating the role of construction in the socio-economic development of the country. The study examined the causality relationship between construction and the economy as a whole and its subsectors employing statistical tests, namely the Granger causality test. Data pertaining to the performance of the Sudanese economy during 1982-2009 were employed for the analysis. The study explored the possibility of producing BMs locally in terms of raw materials availability and distribution.

The underlying research demonstrated the role that innovation and technology transfer (TT) could possibly play in the adoption of appropriate materials and technologies. It examined the role of globalization, innovation and technology transfer in the development of the CI in the Sudan and the extent of its effectiveness. Case studies were helpful in understanding the mechanisms through which innovative and appropriate technologies are transferred. These case studies covered projects - involving transfer of technology - developed by; research institutes, governmental authorities, national and international NGOs, private sector companies and individual practitioners. The study attempted to evaluate the application of appropriate building materials and technologies for housing in the Sudan by reviewing research efforts in the field and highlighting the potential role that technology transfer could play. A comparative analysis, based on cost effectiveness and environmental impact, was performed to assess the appropriateness of selected building materials and technologies applied or recently introduced in the Sudan. Based on available literature, a generic model was proposed for the categorization of problems facing the SCI. The underlying research scrutinized the challenges facing the SCI and the SBMI and the factors affecting the utilization of local building materials (LBMs). It measured the relative importance of the factors influencing the development of the construction and building materials industries in the country. Ranking these factors forms a reference for the formulation of strategies and policies for the development of the CI to take its due place in the socioeconomic development of the nation. Moreover, the research indicated the interrelationship between these factors, whereby scenarios could be developed for the improvement of the construction sector performance. The study also examined the importance of the factors affecting successful transference of technology for the adoption of appropriate building materials and technologies. A questionnaire was constructed and circulated to different stakeholders of the SCI for the purpose of collecting primary data about the impediments to the development of the SCI and the SBMI. The research proposed a causality model to demonstrate how the successfulness of technology transfer is influenced by the level of awareness of the benefits associated with technology transfer. The subject study provided a set of recommendations for the purpose of attaining sustained development in the construction and building materials industries in the Sudan. Most of these recommendations are expected to be handled by the government and the professional intuitions jointly with other stakeholders of the SCI. The study also identified areas where further research is required.

**N.C.D.C “Human Resource and Skill Requirements in the Construction Materials and Building Hardware Sector”** Construction investment accounts for nearly 52.4% of the Gross Fixed Capital Formation. Investments in construction have a positive domino effect on supplier industries, thereby contributing immensely to economic development. Construction materials and equipment sector accounts for approximately 8.6% of India’s GDP and accounts for nearly two-thirds of the total construction costs on an average. The share of construction materials in project costs ranges from 40-60% and the corresponding cost for construction equipment ranges from 5 to 25%. Construction component comprises nearly 60-80% of project cost of infrastructure projects like roads, housing etc. In projects like power plants, industrial plants, etc. the share, though lower, is critical. Construction materials and equipment sector comprises of various sub-industries such as:

1. Cement
2. Steel
3. Construction equipment
4. Paints & Chemicals
5. Petroleum products and resins
6. Fixtures and fittings (including electrical wiring)
7. Aggregates such as

Since most of the materials are either manufactured locally, in cottage or small-scale industry, data available for quantifying the exact nature of linkages with construction is not very accurate. On the other hand, linkages of products such as paints and petro-products would again be difficult due to their stronger linkages with other sectors. Whereas in case of cement and steel, almost 100% of cement production is consumed in construction and about 40-60% of steel production goes into construction. Thus in this report we will focus on only three major categories of construction material and equipment industry, i.e. cement, steel, and construction equipment.

“Anmad Hassan Khan, Salman Azhar, Arshad Mahmood, Quality Assurance and Control in the Construction of Infrastructure Services in Developing Countries – A Case Study of Pakistan” in that Quality is one of the critical factors in the success of construction projects. Quality of construction projects, as well as project success, can be regarded as the fulfillment of expectations (i.e. the satisfaction) of the project participants. The construction industry in Pakistan has been struggling with quality issues for many years. The construction costs can be significantly reduced if the construction industry embraces the concept of quality assurance and control that has been used with great success by service and manufacturing industries in Pakistan. However, unlike manufacturing and service industries, where a standard product is regularly produced, most products of the construction industry are one-offs, specially designed for a specific purpose. Hence, attainment of a quality level is difficult both to specify and to monitor. In this paper, a case study of the quality assurance and control during the execution of Taunsa Barrage Emergency Rehabilitation and Modernization Project contract packages ICB-01 (Sub-weir, downstream floor of barrage, instrumentation) has been presented. The Taunsa Barrage Project has been considered as a success story in the construction of infrastructure development projects in developing countries. The major part of the civil works of the Taunsa Barrage Project has been completed. This paper is focused on the quality assurance and control using the concept of quality, quality management system (QMS) and quality management system standards in the civil construction works. In construction project due to the involvement of various stakeholders in quality control and assurance, issues of quality control arise in virtually all the functional areas of construction activities. Within the organizational structure of the stakeholders in the Taunsa Barrage construction project, a limited number of quality assurance/quality control (QA/QC) personnel were responsible for an increasingly large workload involving many more complex practices than found in traditional construction. To ensure the continued quality of rehabilitation of the barrage facilities, several approaches are being considered, including automation. The computer-aided technology in particular shows great promise in creating tools to assist QA/QC elements. Past development of QA/QC in Pakistan has shown that the stakeholders must become involved early in the process to ensure suitable performance. However, in developing some QA/QC systems, the stakeholder is not known and the system cannot be tailored for a particular level of domain knowledge. When this situation occurs, it is necessary to provide flexibility in the system to handle users with differing levels of knowledge about the domain. Incorporating this flexibility into a computer module is a major problem in current QA/QC development and different approaches have been tried to deal with the problem. The experience of quality control and assurance during the construction of Taunsa barrage can lead to following observations:

- The performance specifications for construction operations specifying the required construction process and specifying the required quality of finished facility remained absent in term of application and implementation in the project.
- The statistical sampling methods (variable and attributes) commonly used for the quality control has not been used in the project.
- Accurate and useful information collection during construction is an important part of maintaining quality performance.
- The capability of the contractors after the pre-qualification has been evaluated and PQMS are than developed for a specific project.
- In developing countries like Pakistan the quality awareness and consciousness limits is required to be communicated among the stakeholders through seminars, conferences, workshops etc.
- As in Pakistan, the PQMS as per ISO for the construction industry is relatively new in implementation and adaptation, thus project oriented PQMS are prerequisite before the commencement of the actual construction particularly on mega projects.

“Kenn Thun Kam, Ahmad Hilmy, Abdul Hamir, The relationship between motions and benefits on adopting Qlassics 7:2006 in Malaysia construction” in that this paper reviews on the building contractor motivating factor on adopting the newly imposed quality assurance initiative in malaysian construction industry. The quality assurance initiative named quality assessment system in construction (QLASSIC). The construction industry standards (CIS) CIS 7:2006, It is introduced by the construction industry development board of malaysian (CIDB). This QLASSIC system consist of a building construction standards where all the contractorsmust follow the specification of adapting this system in their construction project. The basic
conclusion from this survey shows that the contractors’ motives driving them to adopt QLASSIC system in their practice are particularly significant for both beneficial objectives. This study proves that both internal and external motives have influenced the contractors’ objectives for seeking the benefits in terms of organizational operational aspect and competitiveness aspect. The relationship between internal motives and operational benefits are respectively high in correlation which could be concluded that those contractors who focusing on internal motives aspect would be aiming to enhance their organizational and operational improvement. They focus mainly on true quality improvement for their internal operation. Meanwhile, the relationship between external motives and competitive benefits are respectively high in correlation too. This could be concluded that those contractors who focusing on external motives aspects are aiming to enhance their company image, reducing client complain, fulfilling the client requirement and penetrate to a new quality culture market. Though, according to this correlation testing result where the relationship between internal motives and operational benefits scores \( r = 0.713 \) and relationship between external motives and competitive benefits scores \( r = 0.528 \), we can conclude that the reason contractors adopting QLASSIC system are tended to aim and gain benefits from firm operational part more than external benefits in terms of competitiveness.

However, the contractors’ motives in adopting the QLASSIC system are revealed, and the results provide the understanding on the relationship between motives and benefits on adopting QLASSIC system in construction practice, there are still limitations on this study. Others factors that may contribute in influence the contractors’ motives on adopting the QLASSIC system could be adopted into the future study; organization financial status, project cost, regulation requirement and, etc. Further research that investigates this relationship

“abdulaziz a. bubshait,1 member, asce, and tawfiq h. al-atiq2, iso 9000 quality standards in construction” There is risk involved in any construction project. A contractor’s quality assurance system is essential in preventing problems and the reoccurrence of problems. This system ensures consistent quality for the contractor’s clients. An evaluation of the quality systems of 15 construction contractors in Saudi Arabia is discussed here. The evaluation was performed against the ISO 9000 standard. The contractors’ quality systems vary in complexity, ranging from an informal inspection and test system to a comprehensive system. The ISO 9000 clauses most often complied with are (1) inspection and test status; (2) inspection and testing; (3) control of non conformance product; and (4) handling, storage, and preservation. The clauses least complied with concern (1) design control; (2) internal auditing; (3) training; and (4) statistical techniques. Documentation of a quality system is scarce for the majority of the contractors. The quality systems of 15 construction contractors were evaluated. The quality system complexity varies from an informal inspection and test system to registered ISO 9002 quality system. The most appealing reasons for registration are top managements interest in improving project quality and current or expected demand from customers. The ISO 9000 clauses most often complied with are (1) inspection and test status; (2) inspection and testing; (3) control of non conformance product; and (4) handling, storage, and preservation. Misunderstandings were observed regarding the quality system documentation, method of implementation, and the difference between disposition of non conformances and corrective actions. Setting up priorities for improvement is another area that contractors are not performing.

alan michael dodd, “quality function deployment:of a method for improving contract specifications in the us corps of engineers” studied that The purpose of this thesis is to evaluate the use of Quality Function Deployment (QFD) as a management tool to benefit US Army Corps of Engineers’ project managers. The United States Army Corps of Engineers is one of the largest construction management organizations in the world, annually performing over 3.5 billion dollars worth of work. The project manager has primary responsibility within the Corps to ensure the design both fulfills user's requirements and is prepared correctly, and that quality control/assurance procedures are correctly administered. QFD was developed by the Japanese in 1972 to improve quality and lower costs in industrial and business related fields, by assuring all of a company's operational decisions are driven by customer needs. It uses a set of matrices to relate customers wants and needs with project specifications and requirements. Through this process, shortcomings, redundancies, or conflicts in specifications are identified and resolved. Critical material requirements and construction processes are identified, allowing the user to focus the project delivery system on fulfilling customer requirements. The scope of this research is limited to development of a procedure for integrating QFD into the Corps of Engineers’ design/construction delivery process. The procedure was applied to a Corps’ construction project to evaluate its feasibility for contributing to the delivery process. QFD assists project managers to clearly identify and prioritize customer requirements in development of the conceptual and final design. It is best suited to projects involving repetition of units or when higher-than-average quality is demanded. Managers are able to make better informed decisions made during the delivery
process, resulting in a better customer satisfaction. QFD is time consuming and requires very technological knowledge; the process must be streamlined and automated before it could be effectively integrated into the construction process. The biggest benefit of QFD analysis occurs when integrating it into the final design. During the QFD analysis, the most critical failure modes or failures to fulfill customer requirements are identified. As the final design is completed, critical construction specifications can be made more stringent to reduce or eliminate the failure modes. The analysis also allows the quality control and assurance plans to focus on eliminating failure modes during the construction process. Through the use of QFD analysis, the Corps should be able to improve the quality of its construction delivery process by focusing the design process on providing for customer requirements, and minimizing quality control problems and design changes.

3.1 SCOPE
The scope of this research is to reduce the risk and to avoid the problem in construction. In this manner it can satisfy the conditions of green buildings. It is also carried out to find the what are the test to be conducted in building material and to improve the quality of building construction.

3.2 OBJECTIVE CQAP
- To find out the quality of building construction materials
- Describe the quality program and organization to be implemented so that the project is constructed in accordance with the contract requirements and industry standards
- Describe guidelines for inspection and documentation of construction activities
- Provide reasonable assurance that the completed work will meet or exceed the requirements of the construction drawings and specifications
- Describe how any unexpected changes or conditions that could affect the construction quality will be detected, documented, and addressed during construction.

METHODS AND MATERIALS

4.1 MATERIALS
The materials used for this study includes stone, brick, cement, fine aggregate, coarse aggregate, steel, concrete

4.1.1 Stone
The stone is always obtained from rock. The rock quarried from quarries is called stone. Quarryed stone may be in the form of stone blocks, stone aggregate, stone slabs, and stone lintels. Here to be used as impact test, water absorption test, hardness test and crushing strength. It is preferred according to SP27-1987

4.1.2 Brick
Brick is made up of soil and it is used to made the masonry structure. Absorption test, Shape and size test, Crushing strength test, Soundness test, Hardness test. The bricks be table-moulded, well burnt in kilns, copper-coloured, free from cracks and with sharp and square edges.

3.3 PLAN OF THE BUILDING

The colour should be uniform and bright. The brick should uniform in shape and should be of standard size. The bricks should give a clear metallic ringing sound when struck with each other. It is preferred according to SP27-1987

4.1.3 Cement
The most common cement used is Ordinary Portland Cement. The type I is preferred according to IS: 269-1976, which is used for general concrete structures. 53 Grade ordinary Portland cement is confirming to 12269. Out of the total production,
Ordinary Portland Cement accounts for about 80-90 percent.

- Fineness of cement = 8%
- Standard consistency of cement = 31%
- Initial setting time of cement = 36 min
- Specific gravity of cement = 3.46

4.1.4 Aggregate

Aggregates shall comply with the requirements of IS 383. As far as possible reference shall be given to natural aggregate. Aggregates are the important constituents in concrete. They give body to the concrete, reduce shrinkage and effect economy. One of the most important factors for producing workable concrete is good gradation of aggregates. Good grading implies that a sample fractions of aggregates in required proportion such that the sample contains minimum voids. Samples of the well graded aggregates containing minimum voids require minimum paste to fill up the voids in the aggregates. Minimum paste will mean less quantity of cement and Minimum paste will mean less quantity of cement and less water, which will further mean increased economy, higher strength, lower shrinkage and greater durability. Aggregate comprises about 55% of the volume of mortar and about 85% volume of mass concrete. Mortar consists size of 4.75mm and concrete contains aggregates up to a maximum size of 150mm. The fractions from 80 mm to 4.75 mm are termed as coarse aggregates. Those fractions from 4.75 mm to 150 microns are termed as fine aggregates. For most work, 20 mm aggregates are suitable.

- Specific gravity of fine aggregate = 2.38
- Specific gravity of coarse aggregate = 2.71

4.1.5 Water

Water is an important ingredient of concrete as it actually participates in the chemical reaction with cement. Since it helps to form the strength giving cement gel, the quantity and quality of water is required to be looked into very carefully. Water used for mixing and curing shall be clean and free from materials like oils, acids, alkalis, salts, sugar, organic materials or other materials that may be harmful to concrete or steel. pH value of the water used in concrete shall not be less than 6

4.1.6 Steel

Steel is important ingredient of qualify structure and it is used to carry out the load easily from the structure to column and it is having high tensile strength. It is preferred according IS 800-2007

5.1 WORK COMPLETED

- Selected the location of site
- Taken the survey of the land and drawn the plan by using auto cadd
- Collected the literature review
- Collected the requirement materials

5.2 WORK TO BE COMPLETED

- Testing to be our collected material
- To determine the quality of material such as soil, stone, brick, cement, aggregate, concrete and steel
- To estimate the cost of building
- Execute the quality control and assurance of building

REFERENCES:


RESULT AND DISCUSSION

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