Chapter : 6 Conclusions

6.1 Introduction

This chapter summarises the main findings from the literature review and its emulsion gathered through the field researches such as the questionnaire survey, secondary data collections, observations, justification of the hypothetical arguments and the like.

The construction industry contributes a significant part of the world's Gross Domestic Product (GDP) for economic development regardless of the current economic downturns that appear from time to time. Construction projects are generally considered as having high expenditure fixed assets and are complex in nature. Construction project operations may deal with fragmented project packages and diversified construction activities and usually involve many participants and a wide range of inter related industries that finally deliver the outcome (a procedure similar to the supply chain management process). These construction projects require a great deal of involvement by human resources' management relating to their physical production that is combined with advanced technologies. These unique scenarios within construction usually increase the construction costs and risks considerably. In Sri Lanka, the risk of managing the operational workforce is sublet in difference layers as discussed in Chapter 4 and depicted in Figure 5.3 (Cascade effect of Risk Multiplication) in this report.

Traditionally available pensions, retirement benefits or social security (PR/SS) systems such as the Employees Provident Fund (EPF), the Employees Trust Fund (ETF) and 5 years' service gratuity approaches are unable to satisfy the requirements demanded by the temporarily employed operational workforce in the construction industry. Since existing PR/SS, systems became unpopular in the construction sector, establishing a new viable system that can address the foundation layer of the construction industry has become essential.

To serve the purpose of providing a PR/SS system for the operational workforce, the research's myth was to collect the salvaged finances that can be salvaged by minimising the pre observed risk multiplication areas depicted in Figure 5.1. Project risks and cost multiplication areas with cascade effects relating to construction projects were identified and investigated via this research with a view to utilising them for the proposed concept of Building Forces for Sri Lanka (BFSL). During the application stage, the proposed PR/SS system was anticipated to work as a lubricant to reduce the friction between the wheels as described in Section 2.17 and depicted in Figure 2.8 (the Construction Six M Wheel) of this thesis.

The management of time, cost and quality in construction through managing a properly trained operational workforce was incorporated in the proposed framework of Building Forces. The BFSL framework depicted in Figure 5.1 of this thesis is anticipated to incorporate effective tools and techniques for the planning, programming, staffing, motivating and controlling of the iron triangle depicted in Figure 1.1 (the Three Dimensional Iron Triangle) of this thesis, with a view to improving stakeholder satisfaction. The BFSL framework is intended to help address current industry issues by motivating school leavers towards the construction industry and from there onwards providing training and a structured career development for them. The proposed framework is primarily addressing the contexts and principles of controlling human resources' practices that include fulfilling the hierarchies of human needs through a sustainable framework of social security.

This research identified the mechanisms available to provide and develop a sustainable framework of social security that will not increase the prevailing construction costs, primarily by utilising and simulating the cascade effect or multiplied risk allowances inherently allowed for in various construction projects in different procurement strategies within the current construction industry. See pink highlight below. Finally, the research findings were utilised for outlining a time, cost and quality orientated PR/SS framework for the operational workforce in the construction industry in Sri Lanka to provide greater stakeholder satisfaction, to be

documented for reference as a contribution to knowledge (academic milieu), and to provide guidance for maintaining future construction projects (project practice and organisational advantages).

6.2 Overview of the research aim and objectives

The construction industry can primarily be introduced as the means of setting up a built environment and the maintenance of the same. Each aspect of construction is unique and specialised. A construction project may be presented to a client as a complete single object after the performance of a range of coordinated activities by the execution team.

Sri Lanka is suffering from a shortage of required human resources for its physical operations. Despite all the other resources, the management of the operational workforce appears to determine the success or failure of construction projects.

Even though contractors are facing difficulties in satisfying their stakeholders due to the unavailability of a dependable operational work force in the construction industry, 4.7% of the male population of Sri Lanka, who are suitably educated, are among the unemployed category. From previous studies, it has been identified that the behavioural impositions of the operational workforce have reached a level where the industry needs to pay higher attention to resolve the issues relating to human behaviour that have developed due to the unavailability of a proper pensions, retirement benefits or a social security (PR/SS) system for construction operatives.

Therefore, it can be considered that the research findings and results have been satisfactorily matched against the research aim and objectives as described below.

6.2.1 Aim of the research

The aim of the research was to develop a framework that can provide a lifelong social security system for the operational workforce in the construction industry in Sri Lanka, based on the observations of the research problem described in the Section 1.6.1 of this research thesis. Accordingly, the BFSL provides a suitable concept of a PR/SS system that can be blended with the Sri Lanka Qualifications

Framework for the operational workforce, alongside a proper bridging arrangement for continued career development.

Through a sustainable framework of BFSL, it is anticipated to offer a time, cost and quality orientated operational workforce to the construction industry. Eventually, the BFSL will need to attain greater stakeholder satisfaction with a view to developing a dependable operational workforce that can fix the 'loose corners' within the construction industry in Sri Lanka.

6.2.2 Objectives of the research

Initially, five objectives were set up as described in Section 1.6.2 of this research thesis and the aforementioned aim (Section 1.6.1) of the research was to be achieved by fulfilling the following five objectives. How those objectives were achieved is described below.

6.2.2.1 First Objective

Identifying the behavioural factors of the operational workforce in the construction industry that affects the time, cost and quality of the construction outputs.

The first objective was initially achieved during the initial stage of this research. Further implications of the behavioural problems were then identified during the literature review of this study. As stated, the behavioural impositions of the operational workforce have developed to a level where the industry needs to pay higher attention in order to resolve the issues relating to human behaviour. According to the questionnaire survey administered during August to December 2009 among the operational workers, their immediate supervisors, project managers and company directors, poor retirement benefits were identified as the major reason that caused the current operational workforce to think of a different industry (rather than construction) as the future sector for their career.

According to the survey's findings, 6.25% of the operational workforce in the construction industry are above retirement age but are still working due to the absence of an effective and lifelong social security system. These 6.25% above

retirement age workers in the operational workforce in the construction industry should be on the level of the 'Self Actualisation level'.

6.2.2.2 Second Objective

Exploring the currently applicable social security systems available to the operational workforce in the construction industry.

At the commencement of this research, a study on the social security systems that are currently applicable to the operational workforce in the construction industry was carried out. The current EPF and ETF systems supported by ESB or the gratuity structure do not appear to be applicable to the construction operatives due to temporary nature of their employment. Neither the employees nor employers had any interest in adhering to this mechanism. Through the research it was identified that neither 82.6% of the main contractors nor the government's auditing authorities are giving due attention to the monitoring and controlling of the prevailing PR/SS systems when it comes to construction operatives. The findings of the research are depicted in Figure 4.6. According to the data obtained from the survey, only 17.4% are conducting due payroll auditing for the subcontracting operatives. For this reason, there is a requirement to identify a suitable recruiting framework for construction operatives because their modus operandi is mission oriented rather than routing work.

6.2.2.3 Third Objective

Carrying out investigations to discover the causes for the unavailability of a proper, sustainable and lifelong social security system for the operational workforce in the construction industry.

During the questionnaire survey, a separate matrix (Question 6: How does your organisation weigh the following behavioural problems of the workforce against time, cost and quality impacts for construction projects?) was incorporated into the research instrument to analyse the impacts. Such analyses are described in Section 4.2 (analysis of the questionnaire survey data) of this thesis. Therein, the highest renege on the range between 20% and 100% was left as an open ended question but the maximum value was pre determined as 22.5% when calculating

the RII. To find the reason behind this predetermination was the purpose of this research. One hypothesis of the research is the utilisation of salvaged finances to energise the PR/SS system as depicted in Section 5.4 and Figure 5.3. The gross value of the workforce contribution within construction is generally 20% as depicted in Table 5.1. Question Six of the questionnaire had three elements (namely time, cost and quality) where the maximum impact is 1/3rd of 20% or 6.67% of a single element. If the average between 20% and 100% is considered as 60%, then there was a possibility of having a 20% impact from a single item. To avoid receiving intolerable values, the maximum value was pre determined as depicted in Figure 4.1, Figure 4.2 and Figure 4.3 of this thesis. Therein, the maximum RII values received were 60%, 64% and 66% respectively for the statements of "poor, temporary or irregular attendance", "poor quality of workmanship" and "lack of trade knowledge and skills".

During the literature syntheses stage there was a great deal of study undertaken on the reasons why a proper PR/SS is unavailable, what the effects of PR/SS are, and the impact that the lack of a proper PR/SS has. Details on this were incorporated in Section 2.7 (the operational workforce of the construction industry), Section 2.8 (behavioural problems of the operational workforce) and Section 2.9 (social security and the associated risks in Sri Lanka) of this thesis.

6.2.2.4 Fourth Objective

Critically evaluating the current construction management process in order to identify the risk multiplications' areas to use as a fund raising mechanism.

Estimating the net value of salvaged finances had several options. These theoretical options are generally outlined in Chapter 3 (Research Methodology and Data Collection) of this thesis. Accordingly, Table 5.1 of this thesis (entitled 'Count of construction operatives and government daily cost per head') was developed to understand the impact of risk multiplication. As described in Chapter 1 of this thesis, financial support for the proposed framework will be provided through several sources such as salvaged finances derived from minimising risk,

taxes and overheads multiplication as expressed in the research objectives in Section 1.4.2 and Section 5.4 of this thesis.

Risk is considered as the driving force in any business. Basic project cost estimates are generally prepared based on work study records, the building schedule of rates (BSR), hypothetical mechanisms, etc. These estimates fundamentally have five cost headings (Brook, 2008), namely labour, machinery and equipment, materials, specialist subcontract works and other miscellaneous costs. Risk allowances are various depending on the step ups of the subcontracting or subletting entity. These step ups generate a cascade effect of risk multiplication depending on the modus operandi for construction procuring. The effects deriving from the reasons described in Section 1.5 and Section 2.9.7 of this thesis will deliver additional impacts on the risk distribution.

When looking into the rapid growth of many construction companies and insurance sector organisations and banks, it is apparent that a considerable amount of profits is being generated from the savings of the cascade effect of risk multiplication or risk retaining. The researcher's hypothesis is to justify the amounts of savings that can be recovered by minimising the multiplication and utilising such recovered finances as described in Section 3.7.4, Section 4.4 and as depicted in Figure 5.3 of this thesis. From the summarised data extracted from the financial statements, it is clear that contractors are applying various profit maximisation techniques. A company with an indexed profit of 100 in 2006 increased its average assets by four [4] times and by 25.6 times for its profits within 7 years. The researcher believes these unimaginable profits are generated via salvaged finances that should be reserved for the welfare of construction operatives and the cascade effects of risk multiplication described in Section 5.4 and Figure 5.3 of this thesis.

However, during the data analysis described below, it was identified that salvaged finances derived from minimising risk, taxes and overheads multiplication are themselves sufficient to support the required financial anatomy to provide lifelong PR/SS for construction operatives in Sri Lanka.

6.2.2.5 Fifth Objective

Developing a Framework for a sustainable lifelong social security system for the operational workforce in the construction industry in order to deliver greater stakeholder satisfaction.

Since the main channels of construction revenue are generated through national budget means, public sector finances are transferring to the private sector through the government sector. As depicted in Figure 4.10 and Table 4.1 of this thesis, it is apparent that the growth of contractors' fixed assets and profit percentages are at an extreme level when compared to other sectors. Since contractors are not capable of making any arrangements for long term planning due to uncertainty it becomes the government's responsibility to ensure a certain work percentage to the contractors on a 'Quota Basis' instead of competitive tendering

Through this framework, it is suggested that human resource providing organisations should be set up which can take on the burden of having single point responsibility for the physical production and the desired quality of a project. In this system, there will be no risk transfer from one to another. The researcher's aim was to calculate the impact of current risk multiplication and to search for the possibilities of implementing the proposed system without increasing (the prevailing construction costs self sustainable). By reducing the risk and managing the layers in the construction industry, the government can easily convert this to a full PR/SS. An outlined proposal is given in Section 5.5 of this thesis but the system cannot be implemented without strong intervention and support from the government.

6.3 Methodology Adopted

The research methodology commenced with a brief literature review and moved through paradigms, approaches to positivism and interpretivism and to the strategies of inquiries utilised for implementing the mixed research approach.

Since, research strategies vary according to the research aim and objectives, the research instruments (a questionnaire survey and secondary data requirements) for this research were investigated critically through to the method of data

collection and analysis. Since it is said that a questionnaire survey may be used to collect quantitative data from individuals or institutions without any controls, sanctions, and structured limitations, it was an important requirement procedure to cross match information from construction project professionals in the specified area of research.

The data collected for the research aimed at measuring the degree of impact relating to the behavioural constraints of the operational workforce in the construction industry in Sri Lanka. The research instrument was prepared to apply a combined approach since several questions on the behavioural problems were related to interpretivism. Questions for measuring the value of the behavioural impacts were related to positivism. Accordingly, both qualitative and quantitative data requirements were structured in order to collect data through utilising the existing construction industry grading system in Sri Lanka that has over 2000 registered construction organisations. The sample size was derived by using a standard 'T' table and 400 questionnaires were distributed.

The researcher has worked as an estimator in the construction industry for twenty (20) years with national and international contractors, as well as with the statutory organisations. The utilisation of his experiences, relationships, knowhow, awareness and tacit knowledge added to this research since tacit knowledge is very much centred upon, and used, in the construction industry (Pathirage, 2007, p. 21).

6.4 Contribution to knowledge

Regardless of Bismarck's unimpeachable credentials as a rightwing leader, he invited socialists to assist in introducing pensions, retirement and social security programmes to the public, which was somewhat similar to the actions taken some 70 years later by American President Roosevelt. During a parliamentary debate in 1881 on pensions, retirement benefits and the social security system (PR/SS) of Germany, Bismarck replied to the opposition saying, "Call it socialism or whatever you like but it is the same to me".

Since then, the concept of a PR/SS system has spread throughout the world. Almost all the Latin American countries have one single structure that is called the

Pay As You Go (PAYG) system. However, this concept has commenced facing major constraints as the aging population of the world has gradually increased and the system has come under pressure due to the pressure placed upon it as consequences of the baby boom era (i.e., 1946 to 1964) impacts. As of 2015, no steady solution has been developed to deal with the continuity of the current PR/SSs' functionality against the aging population. However, the Japanese PR/SS system (which is strengthened by an insurance backbone and blended with the Buddhist cultural traditions of respecting and supporting elderly people as voluntarily arrangements) does not demonstrate any severe impacts.

The underpinning philosophy of the Building Forces of Sri Lanka (BFSL) will primarily be a Government Intervention Structure that has several similarities to the current military services set up. The proposed framework will primarily be supported by the savings gained from the minimising of risk multiplication or the cascade effect. To reduce the effect, it is inherently required to minimise the transaction layers between the supply chain management. In the construction sector, it appears that no one would like to take on the responsibility of the direct labour productivity. This may be due to the behaviour problems explained in the Section 4.3 of this report or for some another reason so far not identified. Whatever the reason, the utilisation of multilayer risk transferring mechanism for human based physical production will increase the cost simultaneously. If a framework be could developed to minimise the current behavioural problems of the operational workforce, such recovered savings could be utilised for the betterment of the future of the operational workforce in the construction industry which will, in turn, gain better stakeholder satisfaction as an end result.

The concept and definition of the BFSL can be interpreted as a system that provides the relevant features of reliable PR/SS management, multiple career development channels, recreation facilities, social respect, job security etc. in order to develop a responsible and more disciplined operational workforce. These important aspects and relevant features were used to develop the BFSL framework in order to improve stakeholder satisfaction in the construction industry in Sri Lanka.

6.4.1 Contribution to academia

The majority of the construction projects in Sri Lanka are financed by the government. According to a survey conducted by the Department of Census and Statistics, 66.00% of the construction projects in Sri Lanka are funded by the government and 34.00 % belong to the private sector. Since the government is the key employer for the industry, it is recommendable for it to deploy its own supportive operational level human structure that can take on full responsibility for production and maintenance.

The BFSL can be regimented to fit in with the ICTAD classification structure that has the categories C1 to C7. In the current government PR/SS for military forces, all members become eligible to receive their PR/SS benefits on the completion of 22 years of continuous service. As a solution for the aging population, the minimum period of service can be reviewed depending on the respective life expectancy relating to the year of birth. If a group of young school leavers joined BFSL at the age of 20, then they will become eligible for the minimum PR/SS at the age of 42 years and would still be in working age. At this point, every individual would have the option to continue with the BFSL or to leave and join the private sector. Since the outgoing team is well trained, both behaviourally and technically, they may have the option of fulfilling the stakeholder requirements depending on the market situation (as at present, the military forces offer those who have served the 22 years the possibility of a rejoining option at officer grade, within one year out of service).

6.4.2 Contribution to the industry

In the current system of operational workforce management, contracting organisations are not capable of providing any required training to the operatives. The main reason is that if they invest in training, their return is not guaranteed. Even if an agreement is signed between the parties prior to sending operatives for training and educational programmes, enforcing such an agreement involves lengthy procedures and high overheads. When such a burden is absorbed by the statutory organisations, operatives will be responsible to return back as agreed in order to maintain their PR/SS eligibility. Therefore, such a training arrangement

will act as a natural binding agreement or a psychological contract as the case may be.

When it comes to critical Disaster Management situations, BFSL can immediately be deployed to the identified locations since the governing authority is the same. In this way, emergencies can easily be managed by providing essential requirements from the nearest current workstation and, when resources arrive in remote disaster locations immediate deployments can be released on a stage basis to recover the loss time impact. In the meantime, members under training and members working on routine maintenance can also be utilised temporarily to mitigate the delay impacts of ongoing construction.

6.5 Recommendations

How the aim of this research was achieved and concluded by means of five preset objectives is described in Chapter 6.2 of this thesis. Therein was expressed the major triangulation relationships between the PR/SS, BFSL and SLQF (i.e., pensions, retirement benefits or social security; Building Forces of Sri Lanka; the Sri Lanka Qualification Framework). The identification of stakeholder dissatisfaction areas was discussed in Section 1.5 (Rationale) of this thesis. During Chapter 2 (Literature Syntheses), it was highlighted that the due participation from the operational workforce is not receiving sufficient attention from the construction industry due to identified constraints discussed in Section 4.3 (Detailed review of behavioural problems). For this reason, the recommendations that can be made in the areas of greater stakeholder satisfaction and an efficient disaster management structure can extend the research within following concepts.

6.5.1 Education system of Sri Lanka

The education system of the country should be reviewed in depth because producing graduates without planning for future requirements will not give anything in return to the country other than unemployed graduates. For the year 2016, the University Grants Commission (UGC) of Sri Lanka admitted 27,603 undergraduate students to 97 various courses of study. Such course structures

should be revisited to assess their contribution to the Gross National Product (GDP).

6.5.2 Trade unions in Sri Lanka

Trade unions do not play any strong role in the construction industry except within the government corporations that have a permanently employed operational workforce. The reason for this is the temporary nature of the industry. Even if a worker is employed for 10 years on different worksites under the same employer, the worker is not considered as a permanent employee. The general aim of the trade unions is to fight for pay rises and other benefits. It is very unlikely to find a situation where they demand career development or industrial training programmes for their union members.

6.5.3 Gender balanced education

If a person studies in a boys' school and then enters into the construction field, then his probability of interacting with females is less. This could lead to an increase in criminal and terrorist activities due to a lack of confidence, embarrassment and desperate situations (because human nature has not changed).

6.5.4 Reducing university entrance age to 18 years

In the current education system, university students commence their education after the completion of 20 years of life. This should be reduced by two years. Free higher education in universities is usually limited to 8% to 10% of the total annual student catchment. This means nearly 90% will be forcedly directed towards other areas that may not be part of their ambitions. The government of Sri Lanka provides 13 years of free education. It is observed that some of the GCE (A Level) students some subject areas in Sri Lanka are beyond the GCE (A Level) in the international arena. If this over teaching can be lowered at least by one year, national education expenditure can be reduced by 8% and vocational education can commence two years earlier. This concept can provide considerable input into the production related industries.

Reducing one year from the upper age limit of secondary education cannot be undertaken as a sudden implementation. Therefore, the research's hypothetical outline is to increase the grade one intake of students to 13 months instead of 12 months or annually. In 12 years' time, the total intake can be reduced to 12 years without large complications. The syllabus can be adjusted gradually to suit that of the international educational arena.

6.6 Limitations

Although the research achieved its aim and all research questions were adequately met, there were some unavoidable limitations.

One limitation was that data collection could not be gained from the C8, C9 and C10 grade contracting organisations since the ICTAD does not have any evaluation criteria for those grades other than their financial capability. Furthermore, it was planned to carry out several structured interviews with selected senior managers in contracting organisations in order to obtain a general opinion on the hypothetical framework and to collect audited financial statements. This was not required as planned since NCASL agreed to provide support during data collection and public opinion was sought from participants as Q9 in the questionnaire survey (Appendix D).

The findings of this research may not be applicable to other industries that deploy temporarily employed operatives but it is possible to modify it to suit such industries followed by in depth studies and investigations. Future research may replicate the methodology used in this study to identify any additional knowledge enhancing factors in the context of the study. The research area of this thesis was limited to the Sri Lankan construction industry. Hence, the application of the proposed model may be limited to Sri Lanka since human behaviours do vary due to factors such as economic, social, political and religious aspects etc.

6.7 Final note

The Sri Lankan construction industry is suffering from a shortage of human resources for its physical operations even though the unemployment rate is about 5.2%. Construction organisations face difficulties in satisfying their stakeholders

due to the unavailability of a dependable operational workforce even though a suitably educated 4.7% of the male population are among the unemployed category. From previous studies, it was identified that the behavioural impositions of the operational workforce have reached a level where the industry needs to pay higher attention to resolve such issues. The unavailability of a suitable pensions, retirement benefits or a social security (PR/SS) system for construction operatives appears to be the reason for such behavioural impositions.

Private sector organisations in Sri Lanka do not provide any lifelong social security system for any of their employees (except for a few private banking establishments and a limited number of multinational companies in dairy products' manufacture). Hence, this research aimed to develop a framework to provide a lifelong social security system for the operational workforce in the construction industry in Sri Lanka to overcome stakeholder dissatisfaction with the construction industry.

The suggested collaboration arrangement is in line with Goal 8 (Develop a global partnership for development) of the Millennium Development Goals (UN Millennium Project, 2000). A national level planning and resources' management structure is an essential need to fulfill the requirements somewhat similar to the UN's Millennium Development Goals. Such requirements were further explained and discussed in Section 5.5.1 (Merging the Framework with Sri Lanka Qualifications Framework) of this thesis.

Through the research, the task was undertaken to identify the mechanisms available for providing and developing a sustainable framework for a social security system that will not increase the prevailing construction costs. Financing the framework will primarily be by utilising and simulating the multiplied risks allowances inherently allowed in various construction projects in different procurement strategies within the current construction industry in Sri Lanka.

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Appendices

Appendix A

Trades in construction

1. Boilermaker; works in nuclear and fossil power plants, shipyards, refineries and chemical plants, on boilers, pressure vessels, and similar equipment
2. Carpenter; a craftsman who performs carpentry, building mainly with wood. Among carpentry's subsidiary trades are those of cabinet maker, cladder, framer, joiner, roofer, and many others. Carpenters unions usually include drywall installer/lather, flooring installer, pile driver, millwright, diver, and diver tender
3. Carpet layer; one who specializes in laying carpet
4. Dredger; may include Lead Dredge-man, Operator, Lever-man, Licensed Tug Operator, Derrick Operator, Spider/Spill Barge Operator, Engineer, Electrician, Chief Welder, Chief Mate, Fill Placer, Operator II, Maintenance Engineer, Licensed Boat Operator, Certified Welder, Mate, Drag Barge Operator, Steward, Assistant Fill Placer, Welder, Boat Operator, Shore-man, Deckhand, Rodman, Scow-man, Cook, Mess-man, Porter/Janitor, and Oiler
5. Electrician; specializing in electrical wiring of buildings and related equipment. Electricians may be employed in the construction of new buildings or maintenance of existing electrical infrastructure. High voltage line and substation construction and maintenance trade titles under electrician include Lineman, Ground-man, Digging Machine Operator, Truck Driver, Cable Splicer, Material Man, Heavy Equipment Operator (line equipment only), Mechanic, Flagman, and Tree Trimmer
6. Elevator mechanic; installs vertical lift and transporting equipment
7. Fencer; a tradesman who builds fences
8. Glazier; installs glass. May be included with Painters
9. Hazardous Material Handler
10. Heavy equipment operator; a driver and operator of heavy equipment used in engineering and construction projects. There may be many special function titles, such as Bargeman, Brakeman, Compressor operator, Elevator operator, Engineer Oiler, Forklift operator, Generator, pump or compressor plant operator, Signalman, Switchman, Conveyor operator, Fireman, Skip-loader operator, Helicopter radioman, Boring machine operator, Box-man or mixer-man, Asphalt plant engineer, Batch plant operator, Bit sharpener, Micro tunnel system operator, Pavement breaker operator, Drill Doctor, Drilling machine operator, Rotary drill operator, Canal liner operator, Canal trimmer operator, etc.

Trades in construction

11. Insulation installer; Includes application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.
12. Ironworker (or steel erector); erects or dismantles structural steel frames. Structural steel installation is usually crane-assisted. Workers rely on mobile, elevated platforms or scissor lifts. Ironworkers bolt the steelwork together using various tools, power tools and manual tools. Metallic Lathers may be included in this category
13. Laborer; a skilled worker proficient with pneumatic tools, hand tools, blasting, smaller heavy equipment. Laborers may also assist other tradesmen
14. Landscaper; a tradesmen who specializes in landscaping
15. Mason; a tradesman skilled variously in brick and block laying, concrete finishing (the placement, finishing, protecting and repairing of concrete in construction projects). Also stonemason, marble setter and Polisher, tile setter and polisher, terrazzo worker and finisher. Hood-carrier is a subsidiary trade
16. Millwright; installs various industrial equipment
17. House painter and decorator; a tradesman responsible for the painting and decorating of buildings, and is also known as a decorator or house painter. Also includes Paper Hanger, and may include Glazier
18. Pile Driver; a tradesman who installs piles, drills shafts, and constructs certain foundation support elements
19. Plasterer; a tradesman who works with plaster, such as forming a layer of plaster on an interior wall or plaster decorative moldings on ceilings or walls.
20. Plumber; a tradesman who specialises in installing and maintaining systems used for plumbing, heating, drainage, potable (drinking) water or small-sized industrial process plant piping
21. Pipefitter (or steamfitter); a person who lays out, assembles, fabricates, maintains, and repairs large-sized piping systems capable of enabling high-pressure flow.
22. Sheet metal worker; installs HVAC ductwork and related work
23. Fire sprinkler installer; installs fire sprinkler systems. May be included with Plumber
24. Safety manager / Safety Officer
25. Site manager

Trades in construction

26. Steel fixer ("ironworker" USA, also "rod buster" USA/Australia); a tradesman who positions and secures reinforcing bars and mesh used to reinforce concrete on construction projects. This trade is usually included with Ironworkers.
27. Truck driver; or teamster, generally drives a truck or vehicle of some kind, but may also work on material handling and storage
28. Water-proofer
29. Welder; a tradesman who specialises in welding

(List of construction trades, 2014)[1]

[1] *List of construction trades*. (2014, Oct 10). Retrieved Feb 04, 2015, from Wikipedia, the free encyclopedia: http://en.wikipedia.org/wiki/List_of_construction_trades

Appendix B

Nr	GR	Name	Building	Line 1	Line 2	Line 3
1000	SP	Savisevana [Private] Limited	57	5th Lane	Nawala	Nugegoda
1001	C1	A M S K Constructions [Private] Limited	1/29	New Town	Madampe	
1002	C1	Access Engineering Plc	278	Union Place	Colombo 2	
1003	C1	Cml-Mtd Construction Limited	155	Dharmapala Mawatha	Colombo 7	
1004	C1	Consulting Engineers and Contractors [Private] Limited	157/A	Kynsey Road	Colombo 08	
1005	C1	Daya Constructions [Private] Limited	362	Colombo Road	Pepiliyana	Boralesgamuwa
1006	C1	Edward and Christie	64/10	Nawala Road	Nugegoda	
1007	C1	Euroville Engineers and Constructors [Private] Limited	45	Forest Office Lane	Jaffna	
1008	C1	Finite Lanka [Private] Limited	260/1/2	Kandy Road	Yakkala South	Gampaha
1009	C1	Hovael Construction [Private] Limited	245/47	Avissawella Road	Orugodawatte	
1010	C1	International Construction Consortium Limited	70	S D S Jayasinghe Mawatha	Kohuwala	Nugegoda
1011	C1	Isuru Engineering [Private] Limited	983	Pannipitiya Rioad	Battaramulla	
1012	C1	K D A Weerasinghe and Company [Private] Limited	8/16	Thalapathpitiya Road	Nugegoda	
1013	C1	K D Ebert and Sons Holdings [Private] Limited	200	Siriketha	Highlevel Road	Maharagama
1014	C1	Kanthi Construction [Private] Limited	"Kanthipaya"	Thambuttegama Road	Eppawala	
1015	C1	Komuthi Engineering Services [Private] Limited	595	Nawala Road	Rajagiriya	
1016	C1	L H Piyasena and Company [Private] Limited	151	Nawala Road	Narahenpita	
1017	C1	Link Engineering [Private] Limited	137/B	Rajagiriya Road	Rajagiriya	
1018	C1	Maga Engineering [Private] Limited	200	Nawala Road	Narahenpita	Colombo 05
1019	C1	Mega Construction and Suppliers [Private] Limited	20	Colombo Road	Thillayadi	Puttalam
1020	C1	N & A Engineering Services [Private] Limited	50/1/A	New Kandy Road	Kothalawala	Kaduwela
1021	C1	N E M Construction [Private] Limited	629	Baseline Road	Colombo 9	
1022	C1	Nawaloka Construction Company [Private] Limited	42	Negombo Road	Peliyagoda	
1023	C1	Nuwani Construction [Private] Limited	90	Hospital Road	Kiribathgoda	
1024	C1	Orient Construction Company	881/A	Isipathana Place	Hospital Junction	Polonnaruwa
1025	C1	P N D Constructions [Private] Limited	278	Moragahayata	Ratnapura	
1026	C1	R & J Engineering [Private] Limited	Silvery Gardens	Polmmaruwa	Tangalle	
1027	C1	R N Construction [Private] Limited	532/1	Kaduwela Road	Talahena	Battaramulla

Nr	GR	Name	Building	Line 1	Line 2	Line 3
1028	C1	R R Construction [Private] Limited	626/C	Samurdhi Mawatha	Cheenagahawela	Heiyanthuduwa
1029	C1	S M A Construction	200/10	"Sethsiri"	Uthuwankanda Road	Talawathugoda
1030	C1	Sanken Construction [Private] Limited	295	Madampitiya Road	Colombo 14	
1031	C1	Sathuta Builders [Private] Limited	71	Negombo Road	Kurunegala	
1032	C1	Sierra Construction [Private] Limited	23	Havelock Road	Colombo 05	
1033	C1	Squire Mech Engineering [Private] Limited	135/1	Old Kottawa Road	Nawinna	Maharagama
1034	C1	Sripalie Contractors [Private] Limited	6	S H Dahanayake Mawatha	Kaluwella	Galle
1035	C1	State Development and Construction Corporation	7	Borupana Road	Ratmalana	
1036	C1	State Engineering Corporation Of Sri Lanka	130	W A D Ramanayake Mawatha	Colombo 02	
1037	C1	Subasinghe Contractors and Earthmovers	294/A	Kohobanwatte	Hapugala	Galle
1038	C1	Sunpower Constructions [Private] Limited	46/38	3rd Floor	Nawam Mawatha	Colombo 02
1039	C1	Tissa Builders and Contractors	Kandalama	Mirigama		
1040	C1	Tudawe Brothers [Private] Limited	505/2	Elvitigala Mawatha	Colombo 05	
1041	C1	V V Karunaratne and Company	579	Bulugaha Junction	Kandy Road	Kelaniya
2001	C2	Access Projects [Private] Limited	278	Union Place	Colombo 2	
2002	C2	Akila Engineering [Private] Limited	180/60	Jayawimanawatte	Siyambalagoda	Polgasowita
2003	C2	Antony Builders	Pannala Road	Diyakalamulla	Kuliyapitiya	
2004	C2	Anura Wijenayake Co [Private] Limited	465/1	Thalawathugoda Road	Madiwela	Kotte
2005	C2	Assalaarachchi Construction [Private] Limited	24/16	3rd Lane	Cancer Hospital Road	Maharagama
2006	C2	City Construction Developers [Private] Limited	100/5	Mirihana Road	Nugegoda	
2007	C2	Construction Managers and Planners [Private] Limited	3/A	Sunethra Lane	Colombo 5	
2008	C2	D M C Construction [Private] Limited	973	Stage II	Anuradhapura	
2009	C2	Darinton Construction [Private] Limited	854	Galle Road	Katukurunda	Kalutara
2010	C2	E L S Construction [Private] Limited	63/3	Neelammahara Road	Katuwawala	
2011	C2	George Steuart Engineering [Private] Limited	11/1	Arcadia Gardens	Rosmead Place	Colombo 07
2012	C2	Gunathilake Construction [Private] Limited	421	Rajagiriya Road	Rajagiriya	
2013	C2	Isuru Builders [Private] Limited	20	Wagolla Road	Lewella, Kandy	Kandy
2014	C2	K E S Engineering [Private] Limited	20/71	Fairfield Gardens	Colombo 08	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
2015	C2	K S J Construction [Private] Limited	92/43/2	1st Lane	Aluthgamawatte	Yakkala
2016	C2	Micro Constructions [Private] Limited	24/A	Negombo Road	Peliyagoda	
2017	C2	Padminie Construction [Private] Limited	37	Jayathilake Mawatha	Panadura	
2018	C2	Pre Fab Engineering Projects [Private] Limited	4	Dehiwala Road	Pepiliyana	
2019	C2	R H Steel Building Systems [Private] Limited	317/3	High Level Road	Colombo 05	
2020	C2	Ruhunu Development [Private] Limited	42/2	Main Street	Battaramulla	
2021	C2	Siridantha Construction Works	Opposite Temple	Wannithammannawa	Anuradhapura	
2022	C2	Sisira Builders [Private] Limited	160/1	Nawala Road	Nugegoda	
2023	C2	Sri Lanka Land Reclamation and Development Corporation	3	Sri Jayawardanapura Mawatha	Welikada	Rajagiriya
2024	C2	Sri Ram Construction	61	Angampitiya	Waikkala	
2025	C2	Star Construction and Engineers [Private] Limited	582	Liyanagemulla	Seeduwa	Katunayake
2026	C2	Sudesh Construction [Private] Limited	Ranasiri	Puttlam Road	Anamaduwa	
2027	C2	Sun Construction	Hungawila	Kalawewa	Vijithapura	
2028	C2	Trio Construction [Private] Limited	177	Galle Road	Walgama	Matara
2029	C2	V V Ramanathan and Company [Private] Limited	Hospital Circular Road	Vavuniya		
2030	C2	Vonlan Constructions [Private] Limited	45/B	Ambatale	Mulleriyawa - New Town	New Town
2031	C2	Wahid Construction	Kammandaluwa	Andigama		
3001	C3	A K K Engineering [Private] Limited	85/5	Rajamalwatte Road	Battaramulla	Sri Jayawardanapura - Kotte
3002	C3	A N M Furniture Centre and Construction Service	279	Main Street	Maruthamunai 02	
3003	C3	A S B Construction [Private] Limited	349	Puttalam Road	Kurunegala	
3004	C3	Abeywardhana Construction	122	Athumalpitiya	Polonnaruwa	
3005	C3	Abeywardhana Construction	122	Athumalpitiya	Polonnaruwa	
3006	C3	Access International [Private] Limited	278	Union Place	Colombo 2	
3007	C3	Amil Builders	955/5/C/1	Kotte Road	Rajagiriya	
3008	C3	Amila Enterprise	14	Ilukmodara	Gurudeniya	
3009	C3	Ancheneye Construction	38	Pioneer Road	Batticaloa	
3010	C3	Asiri Construction	Warapitiya	Darga Town	Kalutara	
3011	C3	Buddhika Construction Company	156/B	Egodawatte Road	Ukuwela	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
3012	C3	Business Promoters and Partners [Private] Limited	4/1	1st Lane	Dehiwala Road	Boralesgamuwa
3013	C3	Canola Construction and Engineering	Ihala Kalankuttiya	Kalankuttiya	Galnewa	
3014	C3	Central Engineering Consultancy Bureau	415	Bauddhaloka Mawatha	Colombo 7	
3015	C3	Central Suppliers [Private] Limited	132/A	Kalugalla Mawatha	Kegalle	
3016	C3	Dharmadasa Construction and Enterprises	40	Old Kesbewa Road	Gangodawila	Nugegoda
3017	C3	E D C Construction [Private] Limited	106	D S Senanayake Mawatha	Colombo 8	
3018	C3	East Lanka Engineering [Private] Limited	50	Wammiyadi Road	Addalai	Chenai 12
3019	C3	Farzan Building Construction	256	Mudaliyar Road	Akkaraipattu 04	
3020	C3	G G C International [Private] Limited	26 E	Old Kesbewa Road	Delkanda	Nugegoda
3021	C3	G V M Silva and Sons	380	A C B C Building	Bauddhaloka Mawatha	Colombo 7
3022	C3	Giga Engineering [Private] Limited	13/18	Avarihena Road	Polhengoda	Colombo 5
3023	C3	Hani Engineering Works	22	Ariyanayagam Road	Thirukkovil 02	
3024	C3	Industry Serv Engineers	35	Custom House Road	Negombo	
3025	C3	Kandy Constructions	Nelligalawatte Galwala	Sirimalwatte	Gunnepana	Kandy
3026	C3	Kasun Sandu Construction [Private] Limited	1st Km Post	Parasangaswewa Road	Anuradhapura	
3027	C3	Kemyo [Private] Limited	12	St Michale Garden II	Batakettara	Piliyandala
3028	C3	M2 Lanka Engineering [Private] Limited	137	Pereru Road	Kantale	
3029	C3	Master Builders Engineering Pvt	125/2/2/3	Common Road	Akkaraipattu 2	
3030	C3	N K S Construction	Panakaduwa	Rotumba		
3031	C3	Nazeeha Hardware Stores	Main Street	Eravur 3		
3032	C3	Newland Industries [Private] Limited	Aladeniya	Warellagama	Kandy	
3033	C3	Nimna Enterprises	"Hasanthi"	Pinnawala	Balangoda	
3034	C3	Nimsara Construction and Engineering	12	River Side Road	Badulla	
3035	C3	Nimsara Construction and Engineering [Private] Limited	No 12	Riverside Road	Badulla	
3036	C3	Nirupama Contractors	64	Buddagaya Mawatha	Anuradhapura	
3037	C3	Penthouse Engineers [Private] Limited	20	Colombo Road	Katunayake	
3038	C3	Priyankara Construction	22	Petiwatta	Wathugedara	
3039	C3	Ranasiha Lanka Construction [Private] Limited	12	Chruch Road	Gampaha	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
3040	C3	Ratnayake Construction	151	Arawe Gedara	Marassana	
3041	C3	Ruwan Trade Centre	7	Meda Mawatha	Siddamulla	Piliyandala
3042	C3	Sahan Engineering and Construction [Private] Limited	278/2	Hansagiri Road	Gampaha	
3043	C3	Sarath Construction Company	Temple Road	Gampaha		
3044	C3	Senkadagala Enterprises [Private] Limited	49	New Town	Katugasthota	
3045	C3	Siripala Builders [Private] Limited	"Sripali"	Arahena	Ratmalketiya	Beliatta
3046	C3	Southern Construction Engineering [Private] Limited	124/4	Mataragewatte	Bope Road	Galle
3047	C3	Suhada Enterprises	83	Tissa Road	Wellawaya	
3048	C3	Sumanasekara Construction [Private] Limited	8/1/3	Sunethradevi Road	Kohuwala	Nugegoda
3049	C3	Sunbeam Construction Company [Private] Limited	446/1	Pitipana South	Homagama	
3050	C3	Tritech Engineers [Private] Limited	87	Makola South	Makola	
3051	C3	UDAYA Constructions [Private] Limited	"Udaya Niwasa"	Sri Sunanda Road	Walgama	Matara
3052	C3	Unique Engineering [Private] Limited	385	Araliya Gardens	Rajagiriya	
3053	C3	Vijay Construction and Company	Thilai Vasa	Paddiruppu	Kaluwanchikudi	
3054	C3	Weerasooriya Builders [Private] Limited	367/58	Nawalapitiya Road	Jayamalpura	Gampola
3055	C3	Wemara Construction [Pvt] Limited	650/30	Dharshana Mawatha	Liyanagemulla	Seeduwa
4001	C4	Ananda Constructions	3/28/B	First Lane	Katuwawala Mawatha	Boralesgamuwa
4002	C4	Asahi Constructions [Private] Limited	469/2	Hill Street	Dehiwala	
4003	C4	Athulya Engineering [Private] Limited	504/D	Wadugoda	Boossa	
4004	C4	B K G Constructions [Private] Limited	109/4	Beliatta Road	Walasmulla	
4005	C4	Basnayake Constructions [Private] Limited	234/2/C	Kesel Pandura Junction	Makola South	Makola
4006	C4	Buddhika Builders [Private] Limited	56/7	Koswatte Road	Nawala	Rajagiriya,
4007	C4	C & C Engineering [Private] Limited	58b/2	Queen Mary's Road	Gampaha	
4008	C4	Chatura Construction Company [Private] Limited	36	Bazzar Street	Badulla	
4009	C4	Conmix [Private] Limited	536	Seible Place	Peradeniya Road	Kandy
4010	C4	Coral Property Developers [Private] Limited	03	1st Chapple Lane	Colombo 06	
4011	C4	D S Construction and Earth Movers	123/A	Kandy Road	Yakkala	
4012	C4	Denuwan Engineering [Private] Limited	102	Mahiyangana Road	Badulla	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
4013	C4	Dilini Builders [Private] Limited	59	South Gonawila	Dankotuwa	
4014	C4	Donhem Telecom Company [Private] Limited	24/C	Talahena	Malabe	
4015	C4	Ediriweera Construction	23/57/A	Gamunupura	Ampara	
4016	C4	Focus Marketing and Engineering Co[Private] Limited	276	Trinco Road	Batticaloa	
4017	C4	Gamini Builders	30	Mahinda Mawatha	Hawa Eliya	Nuwara Eliya
4018	C4	Gamini Construction	39/A	Ranala	Ranala	
4019	C4	Global Constructions Lanka [Private] Limited	111	Kimbulapitiya Road	Negombo	
4020	C4	Hanco Constructions [Private] Limited	258	Havelock Road	Colombo 05	
4021	C4	Independence Architectural Homes Private Ltd	07	1st Floor	Independenace Avenue	Colombo 7
4022	C4	International Building Systems [Private] Limited	182/1A	1st Floor	Castle Street	Colombo 8
4023	C4	Intervest Engineering and Construction [Private] Limited	181	Dharmapala Mawatha	Colombo 07	
4024	C4	Jayarathne Contract	Jayaratne Rice Mill	Kalankuttiya	Anuradhapura	
4025	C4	Jayasinghe Contractors	Udagama	Hettipola	Hettipola	
4026	C4	K D S Karunaratne and Sons	119/1	Kalapaluwawa Road	Koswatte	Battaramulla
4027	C4	Kondasinghe Constructions	123	4th Lane	Jayamalapura	Gampola
4028	C4	Kumarage Enterprises	Liyanagedara	Ihala Lelwala	Wanduramba	
4029	C4	L G Construction	B/343	Kandy Road	Ampara	
4030	C4	Lohitha Construction	1	Sinhagama	Pandulagama	Anuradhapura,
4031	C4	Lucky Construction	Jawa Street	Kinniya 6		
4032	C4	Luminex [Private] Limited	24	New Galle Road	Moratwa	
4033	C4	M C W Builders	4/342	Benwala Road	Indiketiya	Ambalangoda,
4034	C4	M F Construction Lanka [Private] Limited	1	Hijra Street	Kinniya 3	
4035	C4	Malalatunga Constructions [Private] Limited	Horana Road	Nebada		
4036	C4	Malwatte Contructors	1/22	Dharmawasa Mawatha	Ulapane	
4037	C4	Manamperi Engineering [Private] Limited	245	Old Tangalle Road	Matara	
4038	C4	Masakorala Construction [Private] Limited	274/7	Highlevel Road	Kottawa	Pannipitiya
4039	C4	Muruges and Work and Construction	Main Street	Chenkaladi		
4040	C4	Nayomi Builders	3 Ela	Siyambalagaswila	Ruhunu Ridiyagama	Ambalantota

Nr	GR	Name	Building	Line 1	Line 2	Line 3
4041	C4	Nesa Builders Pte Ltd	54	St Mary's Road	Mount Lavinia	
4042	C4	Node Engineering Consortium	19	Terace Street	Hambantota	
4043	C4	P Jayamanna and Sons	71	Keppetipola Mawatha	Kolonnawa	Wellampitiya,
4044	C4	P L P Constructions	14	Nuwara Eliya Road	Welimada	
4045	C4	P Suraweera Civil Construction Contractors	"Vijaya"	Oluwatte	Walgama	Matara
4046	C4	Panditharatne Construction	16/1	Dewala Lane	Nugegoda	
4047	C4	Panthila Civil Engineers	8/4/B	Joswella Place	Mirihana	Nugegoda,
4048	C4	Pasan Enterprises	17/2	Tarkat Road	Indiwinna	Hambantota,
4049	C4	Progressive Builders and Resorts [Private] Limited	104/11	Grand Pass Road	Colombo 14	
4050	C4	R C D C Constructions Company [Private] Limited	118	Jayanthipura	Battaramulla	
4051	C4	Rajakumari Construction	155	Buddagaya Mawatha	Anuradhapura	
4052	C4	Rajarata Construction and Development	247	Stage 2	Anuradhapura	
4053	C4	Ranmal Engineering and Developments	408/5B	Yatiwawala	Katugastota	
4054	C4	Red Cross Macinery Organization	307	T B Jayah Mawatha	Colombo 10	
4055	C4	Resources Development cnd Construction [Private] Limited	35/7	Noyes Road	Chilaw	
4056	C4	Ruhlins [Private] Limited	8	Vimalam Nallur Cross Road	Jaffna	
4057	C4	S D S Construction	64	Kirindiwita	Gampaha	
4058	C4	S M A Careem [Private] Limited	5	Amman Kovil Road Corner	Main Street	Kalmunai
4059	C4	S S P Engineers [Private] Limited	8/188	Koswatta	Kothalawala	Bandaragama
4060	C4	Sam Dam Construction Company	88	Kaltota Road	Balangoda	
4061	C4	Saman Traders	62	Puttlam Road	Nochchiyagama	
4062	C4	Samararathne Builders	13	Gangadara Mawatha	Mt Lavinia	
4063	C4	Samarasinghe Contractors [Private] Limited	Thalawa	Kariyamaditthta		
4064	C4	Sanhill Engineering Private Limited	Waratenna	Hall Oluwa	Kandy	
4065	C4	Saptara Engineering [Private] Limited	713/7	7th Lane	Romiyel Mawatha	Panagoda,
4066	C4	Satro Construction [Private] Limited	22/A	Dharmarama Road	Thanthirimulla	Panadura
4067	C4	Savin Builders	31	Welagedara	Badulla	
4068	C4	Senecta Technologies [Private] Limited	195/20	Welivita Road	Malabe	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
4069	C4	Senura Civil Engineering [Private] Limited	219/1/B	1st Lane	Kalapaluwawa	Rajagiriya
4070	C4	Shakthi Civil Construction [Private] Limited	C/2/4	Temple Road	Maradana	
4071	C4	Shanika Enterprises	113/D	Thelembugahamula Junction	Kadawala	Katana
4072	C4	Shyaam Builders	Sivan Road	Urumpirai		
4073	C4	Sinha Ruwan Costruction	65/A/1	New Lane 2	Dangedara	Galle
4074	C4	Sinthu Construction and Civil Engineering	Old DRO Lane	Chenkalady		
4075	C4	Sonakma Engineering [Private] Limited	22	Mavak Oya	Rathmalgoda	Poruwadanda
4076	C4	Subasinghe Constructions	"Dharshana"	Karandagolla	Ambakote	
4077	C4	Sunil Jayarathna Construction	Ihala Obadayagama	Kalankuttiya	Galnewa	
4078	C4	Suranga Builders	18/2	Major Gunarathne Mawatha	Temple Road	Mount Livania
4079	C4	T S D Construction and Engineering [Private] Limited	14/40	1st Lane	Hospital Road	Rambukkana
4080	C4	Tarmac Engineering [Private] Limited	244/1/A	St Frncis Mawatha	Dalugama	Kelaniya
4081	C4	Techno Build	46	Buthpitiya	Gampaha	
4082	C4	Theshan Engineering [Private] Limited	694	Negombo Road	Seeduwa	Katunayake
4083	C4	Threesinha Industries [Private] Limited	1564	Kotte Road	Rajagiriya	
4084	C4	U B Construction Prvate Limitedtd	112/21	Poorwarama Road	Colombo 5	
4085	C4	Udjitha Builders [Private] Limited	7/A	Malpana	Kengalla	Kandy
4086	C4	Uni-Eff [Private] Limited	61	Rodrigo Place	Colombo 15	
4087	C4	Vasiri Construction Company [Private] Limited	164	Kesbewa Road	Boralesgamuwa	
4088	C4	Waterman Engineering [Private] Limited	29	D H Perera Mawatha	Rattnapitiya	Boralesgamuwa
4089	C4	Wickrama Construction and Transport	Tholabowatta	4th Mile Post	Passara	
4090	C4	Wijaya Builders	1/4	Boruppa	Gunnepana	
4091	C4	Wijekamal Constructions [Private] Limited	E/52	Udukumbura	Nelundeniya	
5001	C5	2K Construction [Private] Limited	370/3	New Kandy Road	Weliweriya	
5002	C5	3M Engineering Private Limited	148/A	Udakanampella	Pugoda	
5003	C5	Al Safa Consultants and Constructions [Private] Limited	20	Al Hilal Road	Sainthamaruthu 11	
5004	C5	Arcyn Engineering [Private] Limited	120	Mulleriyawa North	Mulleriyawa New Town	
5005	C5	B M Constructions [Private] Limited	597/14/A	Pattinigodella Estate	Pore	Athurugiriya

Nr	GR	Name	Building	Line 1	Line 2	Line 3
5006	C5	Balkan Construction [Private] Limited	11/6/3	St Lawrance Road	Colombo 6	
5007	C5	Bright Builders [Private] Limited	29/4	Sarvodaya Mawatha	Kesbewa	Piliyandala
5008	C5	Ceyoka [Private] Limited	55	Negombo Road	Peliyagoda	
5009	C5	Chance Engineering [Private] Limited	55	Dharmapala Place	Rajagiriya	
5010	C5	Civitech Constructions [Private] Limited	153/2	Amunugoda	Imbulgoda	Gampaha
5011	C5	Dhanu Contractors [Private] Limited	46/62	Wattarantenna Road	Kandy	
5012	C5	Field Construction [Private] Limited	37/2	Hill Street	Dehiwala	
5013	C5	Gayathra Construction [Private] Limited	149/F	Hickgahawatte	Galthuda	Panadura
5014	C5	Illeperuma Builders [Private] Limited	161	Madampe Road	Kuliyapitiya	
5015	C5	Imalshi Contractors Pvtl Ltd	109/3	Kawdana Road	Dehiwala	
5016	C5	Industrial Engineering Enterprises Co [Private] Limited	650/14	Industrial Estate	Galle Road	Ratmalana
5017	C5	J N Construction Private Ltd	52/4	Manaveriya	Kochchikade	
5018	C5	J S M Construction [Private] Limited	173/3/4	Highway Paradise	Halpita	Polgasowita
5019	C5	Jayagi Construction [Private] Limited	24/1	3rd Lane	Cancer Hospital Road	Maharagama
5020	C5	Kalhari Builders [Private] Limited	34	Pepiliyana Road	Nugegoda	
5021	C5	Kent Engineers [Private] Limited	27	Malwatte Avenue	Kohuwala	
5022	C5	Keshara Engineering [Private] Limited	323	Colombo Road	Piliyandala	
5023	C5	Khan Engineering [Private] Limited	204	Perukkuwattan	Kottantivu	Puttlam
5024	C5	M K G Construction[Private] Limited	46/4	Thappawatta Road	Godigamuwa	Maharagama
5025	C5	Maganeguma [Private] Limited	81/4	Nawa Nuge Road	Peliyagoda	Kelaniya
5026	C5	Mavik Enterprises[Private] Limited	383	Mahawatta	Bokundara	Piliyandala
5027	C5	Nada Civil Engineering [Private] Limited	26/A	Upstair Road	Batticaloa	
5028	C5	Osma Engineeing Services [Private] Limited	7/B	Vidyala Mawatha	Avissawella	
5029	C5	Praka Construction [Private] Limited	40	Forest Office Lane	Chundikuli	Jaffna
5030	C5	R S Project [Private] Limited	13/A	Oruthota Road	Gampaha	
5031	C5	Ralic Engineering [Private] Limited	707/A	Ambillawatta Road	Boralesgamuwa	
5032	C5	Rohan Rodrigo and Co [Private] Limited	116	Reclamation Road	Colombo 11	
5033	C5	Rotel Constructions [Private] Limited	146/S/1	Pearl Park	Negombo Road	Wattala

Nr	GR	Name	Building	Line 1	Line 2	Line 3
5034	C5	S B L Construction [Private] Limited	"Sewwandi"	Nahakadiya	Lunuwatte	
5035	C5	S M I Engineering Company [Private] Limited	154	Vijayakumarathunga Mawatha	Colombo 5	
5036	C5	S M S Holdings [Private] Limited	71/A	Pagoda Road	Nugegoda	
5037	C5	S N K Enterprises [Private] Limited	122	Kithulampitiya Road	Kahaduwatte	Galle
5038	C5	Samod Construction[Private] Limited	361/7	Regal Park	Henry Pedris Mawatha	Galle
5039	C5	Smacs Consolidated Development [Private] Limited	5	Main Street	Kalmunai	
5040	C5	Soul Engineering [Private] Limited	8/B	Queens Terrace	Bauddhaloka Mawatha	Kurunegala
5041	C5	Task Engineering [Private] Limited	VC25	3rd Mile Post	Ampitiya	
5042	C5	Turbo Group Civil Engineering Construction	90/1	Church Lane	Thavasikulam	Kodikaram
5043	C5	V Lanka Construction [Private] Limited	195	Karishac Court	Baseline Road	Colombo 9
5044	C5	Vertex Scan Engineering Company	81/1	Kumara Kovil Road	Iruthayapuram	Batticaloa
5045	C5	Vinseth Engineering [Private] Limited	681/1	Jethawana Road	Colombo 14	
5046	C5	Walker Sons and Company Engineers [Private] Limited	18	St Michael's Road	Colombo 3	
5047	C5	Wijayarathne Constructions [Private] Limited	Randapola Junction	Meerigama		
5048	C5	World Scan [Private] Limited	81/1	Melbourn Avenue	Colombo 4	
6001	C6	A R Enterprises [Private] Limited	127/1	Fiscal Road	Akkaralpattu 3	
6002	C6	Agelta Construction [Private] Limited	471	Sarananda Pirivena Road	Peradeniya	
6003	C6	Arenco [Private] Limited	143	O P O Road	Sainthamaruthu 1	
6004	C6	Aruna Builders [Private] Limited	100/A	Kawdana Road	Dehiwala	
6005	C6	Chamma International Constructions [Private] Limited	59/2	Sooriyamal Mawatha	Divulapitiya	Boralesgamuwa
6006	C6	Construction and Development Company [Private] Limited	157	S D S Jayasinghe Mawatha	Nugegoda	
6007	C6	D C C Engineering [Private] Limited	21/3/125	Amity Shopping Complex	High Level Road	Maharagama
6008	C6	Hewa Construction [Private] Limited	146/B	Nagahawatte	Katuwawala	Boralesgamuwa
6009	C6	High Tech Creation [Private] Limited	88/2/A	Kandasamy Kovil Road	Vavuniya	
6010	C6	Indo Fab Engineering Lanka [Private] Limited	114	Main Street	Colombo 11	
6011	C6	Industrial Building Systems [Private] Limited	Noorani Industrial Estate	Waikkala	Kochchikade	
6012	C6	Lakjaya Associate [Private] Limited	378	Badulla Road	Dickarawa	Bandarawela
6013	C6	Meco Engineering [Private[Limited	Sri Sumanawansa Mawatha	Kabillawela South	Bandarawela	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
6014	C6	Navodha Engineering [Private] Limited	434	Galle Road	Panadura	
6015	C6	Omega Steels [Private] Limited	562/84	Jayanthi Road	Anuradhapura	
6016	C6	Pearl Lanka Engineering Services [Private] Limited	284/14	4th Cross Road	Gatambuwana Road	Piliyandala
6017	C6	Prasanga Enterprise [Private] Limited	72	Kannakipuram	Orr's Hill	Trincomalee
6018	C6	Primedare Maintenance House [Private] Limited	454	Nawala	Rajagiriya	
6019	C6	Sadhana Construction [Private] Limited	1006/A	Church Road	Thalangama South	Battaramulla
6020	C6	Sanasa Engineering and Development Company [Private] Limited	42	Sanasa Square	Courts Road	Gampaha
6021	C6	Saw Engineering [Private] Limited	94/2/1	2nd Floor	Udeshi City Complex	Kiribathgoda
6022	C6	Sisara Constructions [Private] Limited	42/2	Mangala Road	Meddawatte	Matara
6023	C6	Siyatha Constructions [Private] Limited	86	Ranpokuna	Medagoda	Matara
6024	C6	Solid Lanka Engineering [Private] Limited	46/9	Rock View Garden	Thenuekumbura	Kandy
6025	C6	Thiers Engineering [Private] Limited	453/1	Colombo Road	Mampe North	Piliyandala
6026	C6	Thilaka Engineering Enterprises [Private] Limited	05	Sandycroft Watta	Maithree Mawatha	Ekala
7002	C7	A D Senadeera and Company [Private] Limited	4	Bodhiya Road	Udahamulla	Nugegoda
7003	C7	Acorn Engineering [Private] Limited	12/5/A	Shanthi Mawatha	Homagama	
7004	C7	Aim Constructions and Engineering [Private] Limited	24	Douglas Watte	Yatiyana	Minuwangoda
7005	C7	Al-Zimmiz International [Private] Limited	21	Police Station Road	Police Station Road	Kalmunai
7006	C7	Anuradha Construction [Private] Limited	300	Thelangapatha	Wattala	
7007	C7	Asian Engineering Services [Private] Limited	6/A	Sri Sunandarama Road	Kalubowila	Dehiwala
7008	C7	Bell Constructions [Private] Limited	119/6	Rajamaha Vihara Mawatha	Kotte	
7009	C7	C & S Constructions [Private] Limited	426/7	Mankada Road	Pahala Biyanwila	Kadawatha
7010	C7	Cleantech [Private] Limited	498	Galle Road	Colombo 03	
7011	C7	D A S Trading Company [Private] Limited	59/9	Yakkala Road	Gampaha	
7012	C7	Dahamco Enterprises [Private] Limited	8/A	Ratnapura Road	Munagama	Horana
7013	C7	Dharshaka Enterprises [Private] Limited	A/63/1	Alupotha	Menikkadawara	Thuntota
7014	C7	Enginering Technocracy [Private] Limited	54/3	Madapatha	Piliyandala	
7015	C7	Finco [Private] Limited	49/16	Galle Road	Colombo 3	
7016	C7	G K Holdings Lanka (Private) Limited	Pahala Kanogama	Indigahawatta	Katupotha	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
7017	C7	Golden Homes and Constructions [Private] Limited	38/1/B	Kirigampamuhuwa	Polgasowita	
7018	C7	Hanney Construction [Private] Limited	44/80	Indrajothi Road	Rathmalana	
7019	C7	I P C Agro Engineering and Constructions [Private] Limited	165/27/3	Milcaste Estate	Negombo Road	Divulapitiya
7020	C7	Intergrated Farmers Company (Private) Ltd	17/10	Negombo Road	Wattala	
7021	C7	J S Constructions [Private] Limited	24	Buddhist Centre Road	Waragoda	Kelaniya
7022	C7	Jayavi Holdings [Private] Limited	3	Kirula Place	Colombo 5	
7023	C7	Jupiter Construction (Private) Limited	261/F	Shanthipura	Thalawathugoda	
7024	C7	K S B Constructions and Business [Private] Limited	Sivam Road	Urumbirai East	Kurumbirai	
7025	C7	Koala [Private] Limited	55	Negombo Road	Peliyagoda	
7026	C7	Lakvin Construction [Private] Limited	238	Stage 3	Anuradhapura	
7027	C7	Lex Duco [Private] Limited	66	Dutugemunu Street	Pamankada	Colombo 06
7028	C7	Macson Mesh Industries [Private] Limited	304	Deans Road	Colombo 10	
7029	C7	Maple Construction [Private] Limited	84	Vairavar Kovil Road	Vairavar Puliyankulam	Vavuniya
7030	C7	Meceta Engineering [Private] Limited	13/1	Old Quarry Road	Mount Lavinia	
7031	C7	Mora Engineering [Private] Limited	103/A	Mannar Road	Vavuniya	
7032	C7	Natio Engineering and Construction [Private] Limited	Bibila Junction	Dambulla Road	Naula	
7033	C7	Nest Creations [Private] Limited	274/1/2	Court Side	Anuradhapura	
7034	C7	Nihal Enterprises [Private] Limited	255/1	Makola North	Makola	
7035	C7	Ogelco Engineering [Private] Limited	16	Werala Road	Wadduwa	
7036	C7	R A Construction and Engineering [Private] Limited	238/6	Silva Place	Ratmalana	
7037	C7	S D B L North East Construction Company [Private] Limited	340/2/1	R A De Mel Mawatha	Colombo 3	
7038	C7	Sanet Lanka [Private] Limited	96	Saranankara Mawatha	Hidellana	Ratnapura
7039	C7	Sarvo - Tech [Private] Limited	98	"Dhamsak Mandiraya"	Rawathawatte Road	Moratuwa
7040	C7	Semdil Trading Company (Private) Limited	2/A	Polwatte Junction	Minuwangoda	
7041	C7	Senarath Engineering and Agro Business [Private] Limited	Maddumamulla Estate	Thalmmehera	Pannala	
7042	C7	Shasa Engineering [Private] Limited	68/12	Dibbedda Road	Nalluruwa	Panadura
7043	C7	Solanma Engineering (Private) Limited	432/1	Mathugama Road	Ganima	Dodangoda
7044	C7	Span Construction (Private) Limited	Chilaw Road	Major Chandrasena Street	Hettipola	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
7045	C7	Sumo Engineering [Private] Limited	419	Kand Road	Peliyagoda	Kelaniya
7046	C7	Tasma Civil Engineering [Private] Limited	163/4	Ambalama Junction	Samurdhi Mawatha	Siyambalape
7047	C7	Thadartha Engineering and Construction Company	9/1/C	1st Lane	Udawela New Town	Pollnnaruwa
7048	C7	Tithira Construction [Private] Limited	289	Thimbirigasyaya Road	Colombo 5	
7049	C7	Uni Mass Engineering [Private] Limited	6/A	Galagedara Lane	Katugastota	Kandy
7050	C7	V S Construction [Private] Limited	95/9	Girilenarama Mawatha	Morahenagama	Hatton
7051	C7	Vidun Construction [Private] Limited	42/F	Gemunupura	Kothalawala	Kaduwela
7052	C7	Volva Construction [Private] Limited	190	West Angampitiya	Waikkala	
7053	C7	Welagedara Heavy Construction [Private] Limited	69	Lorry Gedara	Walasmulla Road	Beliatta
7054	C7	Worldten Builders and Suppliers [Private] Limited	7/B/2	Udayar Road	Sammanthurai	
7055	C7	21st Century Property Development [Private] Limited	51	Madapatha	Piliyandala	
7056	C7	A I E Constructions [Private] Limited	312	Kithulampitiya Road	Galle	
7057	C7	Advanced Engineering and Research [Private] Limited	63	Station Road	Gampola	
7058	C7	Alumart Engineering [Private] Limited	875	Bluemendhall Road	Colombo 15	
7059	C7	Ambika Construction Company [Private] Limited	15	Kathirkamathamby	Selvanayagapuram	Trincomalee
7060	C7	Arham Zein Construction [Pvt]	Hijra Street	Kinniya 3		
7061	C7	Asset Engineering [Private] Limited	45/1	Alfred House Gardens	Colombo 3	
7062	C7	Bitumix Engineering (Private) Limited	23/40	Diyawanna Gardens	Pagoda Road	Nugegoda
7063	C7	Canmart Engineers [Private] Limited	52/3	Weerapuranappu Mawatha	Laxapathiya	Motaruwa
7064	C7	D A D Construction and Engineering [Pvt] Limited	E/77	Dematanpitiya	Hakahinna	
7065	C7	D S Ranasinghe Construction [Private] Limited	24/1/A	Kudabuthgamuwa	Mulleriyawa New Town	
7066	C7	Dhanushka Enterprises [Private] Limited	Durekkanda Mawatha Junction	Rathnapura		
7067	C7	Eim Construction and Consultant [Private] Limited	1/10	Soysapura Flats	Moratuwa	
7068	C7	Essential Maintenance (Private) Ltd	60/C	Gurugewatta	Kaduwela	
7069	C7	Foresee International [Private] Limited	42	Horana Road	Pililyandala	
7070	C7	G S M B Technical Services [Private] Limited	4	Senanayaka Building	Galle Road	Dehiwala
7071	C7	Gunarathne Group Of Companies (Private) Limited	Pinkanda	Dodanduwa		
7072	C7	Harindu Construction and Property Developers [Private] Limited	181/A	Highlevel Road	Maharagama	

Nr	GR	Name	Building	Line 1	Line 2	Line 3
7073	C7	Imalshi Contractors (Pvt) Ltd	109/3	Kawdana Road	Dehiwala	
7074	C7	Island Contractors [Private] Limited	Akkaraichenai	Mutur 01		
7075	C7	Janathakshan (Guarantee) Ltd	5	Lionel Edirisinghe Mawatha	Colombo 5	
7076	C7	Junes Holdings (Private) Ltd	157/3/2	Dharmapala Mawatha	Colombo 7	
7077	C7	K & S Engineering [Private] Limited	68/15/A	Matale Road	Katugastota	
7078	C7	Keep On Track Engineering Services and Supplies [Private] Limited	68	Huda Lane	Kattankudy 3	
7079	C7	Lago Engineering and Construction [Private] Limited	Mallakele Estate	Naththandiya		
7080	C7	Lead Engineering Solutions [Private] Limited	574/5A	Kandy Road	Rammuthugala	Kadawatha
7081	C7	Lucky Homes [Private] Limited	145/1/A	High Level Road	Pannipitiya	
7082	C7	Makyas (Private) Limited	372/A	Highlevel Road	Pannipitiya	
7083	C7	Mathurata Engineering [Private] Limited	336/25	Siyambalape North	Siyambalape	
7084	C7	Meezan Engineering [Private] Limited	51	Anagarika Dharmapala Mawatha	Dehiwala	
7085	C7	Mufa Multi Business [Private] Limited	59/4	Temple Lane	Kalubowila	Dehiwala
7086	C7	Neco Group (Private) Limited	121/A	Aiyanayake Devala Road	Munneswarama	Chilaw
7087	C7	New Lanka Construction [Private] Limited	20	Periyamadu	Mannar	
7088	C7	Nipuna Enterprises [Private] Limited	272/B	Asiri Place	Sudharshana Mawatha	Malabe
7089	C7	Prashans Constructions [Private] Limited	23	Dhammadaja Mawatha	Horetuduwa	Moratuwa
7090	C7	Royat Engineering [Private] Limited	500/17	Ruwanpura	Aggona	Angoda
7091	C7	S D K Construction [Private] Limited	Colombo Road	Lansigama	Katuneriya	
7092	C7	Sanilco Homes and Constructions [Private] Limited	614	Negombo Road	Mabola	Wattala
7093	C7	Saviko Company (Private) Limited	Galwanguwa	Kuliyapitiya Road	Narammala	
7094	C7	Senaka Builders (Private) Limited	212/12	Nelum Place	Kalapaluwawa	Rajagiriya
7095	C7	Sethmi Holdings [Private] Limited	56	Highlevel Road	Maharagama	
7096	C7	Sivajini Constructions [Private] Limited	14	Trinco Road	Chenkalady	Batticaloa
7097	C7	Solid S C [Private] Limited	148	UC Quarters	Dharmapala Mawatha	Anuradhapura
7098	C7	Stride Engineering [Private] Limited	45	Sivan Kovil Road	Thonikkal	Vavuniya
7099	C7	Susanhinda [Private] Limited	Jaya Sevana	Akkara 500	Hingureara	Embilipitiya
7100	C7	Tele - Pix Technologies [Private] Limited	164	Peradeniya Road	Kandy	Kandy

Nr	GR	Name	Building	Line 1	Line 2	Line 3
7101	C7	Thilini Enterprise [Private] Limited	255/1	Balasooriyawatte	Mawathagama	
7102	C7	U D I Organisation [Private] Limited	77/A	Sampath Garden	Nelum Avenue	Kandy
7103	C7	Upul Builders and Enterprises [Private] Limited	40/2	Mulgampola Road	Kandy	
7104	C7	V S Enterprises [Private] Limited	360/A/1	Pannipitiya Road	Thalawathugoda	
7105	C7	Vista Engineering [Private] Limited	472	Lake Road	Boralesgamuwa	
7106	C7	W A P Fernando Construction Company [Private] Limited	125/D	Weehena	Mahawewa	
7107	C7	Welko [Private] Limited	35/9	Galle Road	Dehiwala	
7108	C7	Wuf and Innovators [Private] Limited	400/40/M	Bulugahawatta	Ihalabiyanvila	Kadawatha

Appendix C

Ministry of Construction and Engineering Services

Institute for Construction Training and Development (ICTAD)

Instructions for Registration as a Construction Contractor under National Registration and Grading System of ICTAD

For Grades From C10 to C6

November 2008

Institute for Construction Training and Development (ICTAD)
"Savsiripaya"
123, Wijerama Mawatha
Colombo 07.

Tel. : 2686236 / 2699801 / 2695965 / 2686092 / 2686856
Fax : 2699738
E-mail : ictad@sltnet.lk
Website : www.ictad.lk

How to obtain the ICTAD Registration

1. Your business has to be registered at the Registrar of Business or at the Divisional Secretary's Office and the registration certificate should be obtained. Nature of business should be mentioned as "Construction Work".

2. The application for the 'National Registration and Grading of Construction Contractors' could be purchased from the 'Information Centre' of ICTAD at a price of Rs. 310/= or can be received through post by sending a money order for Rs. 327/= to the Chairman – ICTAD, encashable from the Borella Post Office. The Guideline for Registration and Grading (ICTAD/ID/10) will be useful to complete the application form. The price of the Guideline is Rs. 470/=.

3. You are requested to submit the duly perfected application form together with the photo copies of the Business Registration Certificate & documents to prove the construction work experience to the Information Centre – ICTAD. All photo copies submitted must be authenticated by a Notary Public or an Attorney-at-law. Also, the applicant must complete the Affidavit attached to the Part II of the application form and the two copies of the summary sheet in Section v.

4. The highest value of the contract which can be obtained by you is decided by the grade received by you. The highest values of each grade is given below.

Grade C10	-	up to Rs. 1.0 million
Grade C9	-	up to Rs. 2.0 million
Grade C8	-	up to Rs. 5.0 million
Grade C7	-	up to Rs. 10.0 million
Grade C6	-	up to Rs. 25.0 million

5. The grading of the contractors are carried out as per the 'Guideline for Registration & Grading of Construction Contractors'. As such each grade is required to fulfil the minimum point requirement given in the guideline. Details of minimum point requirement is given below.

Table 1

Grade	Minimum Point Requirement				Total Points Required
	Financial Ability	Professional Staff	Technical Staff	Plant & Equipment	
C10	0.5	-	1.0	-	1.5
C9	1.0	-	1.0	-	2.0
C8	2.0	-	1.0	0.5	3.5
C7	5.0	2.0	1.0	1.5	10.0
C6	6.0	2.0	2.5	2.5	20.0

Those who expect to obtain the registration under grade C6 must fulfil the point requirement of 2.0 for the work done during last 5 years, points 1.5 for the work done during last year and points 1.5 for the largest job completed in each speciality.

6. You may submit following documents in order to obtain the points mentioned in the chart given before.

(a) Financial Ability

i. Audited Financial Statements (This is essential for grade C6)

ii. Permanent Over Drafts (P.O.D) granted to the contractor.

iii. Wealth Certificates issued by the Divisional Secretary are considered only for Grades C10 to C7. However, only a half of the financial requirement can be fulfilled from such wealth certificates. The balance half should be fulfilled from any other financial source. (Only 50% of the value of the wealth certificates are considered in allocating points)

Eg:-

Grade	Value of the Wealth Certificate in Rs.	Other Finances Rs.
C10	100,000/=	50,000/=
C9	200,000/=	100,000/=
C8	400,000/=	200,000/=
C7	1,000,000/=	500,000/=

iv. Savings Accounts – Average balance for last 3 (three) months is considered here. A copy of the savings account book to be submitted together with the application form.

v. Fixed Deposits - The minimum deposit period should be 6 (six) months. A copy of the certificate should be submitted.

vi. Current Account - As the average value of the highest and lowest balance to be calculated, the statements for last 6 (six) months to be submitted.

viii. The minimum financial ability required for each grade is given below.

C10 - Rs. 100,000/=
C9 - Rs. 200,000/=
C8 - Rs. 400,000/=
C7 - Rs. 1,000,000/=
C6 - Rs. 2,000,000/=

Additional points will be allowed for higher financial abilities.

(b) Details of Staff

i. Professional Staff

Points under professional staff is not essential for C10, C9 & C8 grades. But it is essential to obtain 2.0 points under professional staff for C7 and C6 grades. If any of the partners of the company are falling in to this category, you may prove it by submitting copies of educational certificates. If not you have to obtain the service from a consultant. If so such service agreement, qualifications, and the letter of consent from the consultant should be submitted. The maximum points which could be allocated to a consultant is limited to 2.0 and he should fall in to the category of Engineering Assistant or a higher category as given on Annexure I of (page 40 – 41) of the Guideline for Grading of Construction Contractors (ICTAD/ID/10).

Instead You may obtain the service of the Engineer attached to the branch NCASL office.

ii. Supervisory Staff

Contractor can obtain 1.0 point under this area, if he has work experience for a minimum of 5 years, or if he has successfully followed the special course for small scale contractors organized by ICTAD. For additional points contractor should have permanent supervisory staff working for him. Qualifications required for such supervisory staff is given in Annexure I of the Guideline (ICTAD/ID/10) under the Technical Assistant category and below.

Plant & Equipment

The minimum point requirement for plant & equipment under different grades are given on Table 1. The contractor must essentially own the plants under 'Concreting' in Annex II. The point requirement for C8 is 0.5 and C7 is 1.5.

Additional information on requirements for grade C6 is given on Para 2.3.2.3, charts 6A to 6F and on Annexure II of ICTAD/ID/10. Documents should be submitted to prove the ownership of plant and equipment, as per the Section 'F' of the application form.

Experience

(a) Contractor must submit the copies of the relevant pages of the ICTAD Record Book (from pg. 49 to pg. 82) with the endorsements from client organizations to prove the work experience. (This is essential for Grade C6 only)

Following information could be forwarded.

1. Details of registration from different state organizations
2. Contractor's record books issued by different state sector organizations
3. Agreements and work completion letters

(b) Information on Work Experience during last 5 years

Completion letters issued by the state organizations are considered for state sector works. Private sector work is considered only when the completion letters issued by project consultants and the certified BOQQ are submitted

(c) Information on Largest Job Completed

Details on the largest job completed in each speciality should be submitted for this.

Other Details

The owner of the company **must always be present to obtain the ICTAD Record Book**. The ICTAD Record Book can be obtained from the Development Division, on any week day before 3.00 p.m.

Appendix D

Founded 1981
Incorporated 1989

Major & Specialist Constructors
National Construction Association of Sri Lanka

'Idikireem Medura' 350A, Pannipitiya Road, Pelawatta, Battaramulla.
Tel: 2177045, Fax: 4209878, Email: ceo@mscsl.org, info@mscsl.org
Web: www.mscsl.org, Skype: majorspecialistconstructors 1989
Regular Member of the International Federation of Asian & Western Pacific Contractors' Associations

Date : 13 November 2013
Reference : SW/0000/A

Managing Director

Dear Sir,

Study to provide a Lifelong Social Security System [Pension Scheme] for Operational Workforce of Construction Industry in Sri Lanka

Achieving the desired time, cost and quality requirements of the clients are always at a challenge. A major difficulty is managing the behavioral problems of the operational workforce. This study carrying out by **Mr Sujeeva Wijewickreme [Chartered Builder and Chartered QS]** is focused towards developing a responsible operational workforce by eliminating their disturbing behavior.

The proposal will be on a platform reinforced with a lifelong social security system [Pension Scheme through the government] aims to remove the short term thinking pattern of the current workforce. Design is focused to motivate the school leavers towards construction industry as well and there onwards providing training and career development for them through fulfilling hierarchies of human needs [I.e. Physiological, Safety, Social, Esteem and Self Actualization].

Therefore, kindly support Mr Wijewickreme by fulfilling the following requirements;

- ✓ Complete, sign and stamp the attached study questionnaire and post within 21 days
- ✓ Provide copies of brief format "Audited Statements" for past five [5] years

Confidentiality requirements of the documents and data that you are providing to this study will be managed in accordance with the UK and Sri Lankan data protection standards.

Thank you.

Yours faithfully,

Major & Specialist Constructors
National Construction Association of Sri Lanka

Brig Madura Wijeyewickrema RSP USP MSc MAIR
(SL Army - Retd)
Chief Executive Officer

University of Salford MANCHESTER

Sujeeva P Wijewickreme
School of the Built Environment

Maxwell Building, University of Salford
Salford M5 4WT, United Kingdom

Date : 13 November 2013
Reference : SW/0000/B

Managing Director

Dear Sir,

Invitation to Participate for a Research Study towards providing a Lifelong Social Security System [Pension Scheme] for the Construction Workforce in Sri Lanka

You are cordially invited to complete the attached questionnaire and return the same together with the requested documents listed there in [Brief format audited statements for recent 5 years].

Information and data that you are requested to provide will be kept in strict confidentiality according to the Code of Practice guidelines issued by UK Research Integrity office (UKRIO, 2009) and other UK and Sri Lankan acts as described in the attachments. Obtained data will be used for this research related purposes only.

Selection of participating organisations was based on a primary evaluation of your performance for the past 5 years. **Only limited number of originations was short listed from your similar ICTAD Grading of contractors for this research and you are one of them.**

This research is focused towards eliminating the temporary employment mentality from the physical production workforce of the construction industry by bringing them to more secured employment footing with a partnering arrangement. By this mechanism, it is anticipated to develop more reliable and responsible construction workforce especially for physical production.

I strongly believe that your hands on experience strengthened with tacit knowledge will produce valuable data for the success of this research study and finally to the construction community at large.

If you have any questions or concerns regarding this study or require further particulars, kindly contact the undersigned.

Thank you in advance for your generous assistance with this research study.

Yours faithfully,

Sujeeva P Wijewickreme
PhD Candidate, Chartered QS and Chartered Builder

University of Salford MANCHESTER

Questionnaire Survey

Sujeeva P Wijewickreme
School of the Built Environment

Research Study towards providing a Lifelong Social Security System [Pension Scheme] for the Operational Workforce of the Construction Industry in Sri Lanka

1. **General Information of Organisation**

Name of Company : _____

Year established : _____

2. **How does your organisation procure manpower for physical production?**

	Recruiting Category	:	%
a.	Direct Labour - Permanent	:	
b.	Direct Labour - Casual	:	
c.	Indirect - Labour subcontractors - Output based	:	
d.	Indirect - Labor supply contractors	:	
e.	Other _____	:	

3. **Does your organisation monitor EPF /ETF and gratuity payments of indirectly sourced labour?**

[With reference to items "c." and "d." of question 2 above]

a. No ☐

b. Sometimes ☐

c. Most of the time ☐

d. Always ☐

Acronyms: EPF Employees Provident Fund
ETF Employers Trust Fund

4. **What was your organisation's annual turnover for last 5 years?**

a. 2012/2013 Rs. _____

b. 2011/2012 Rs. _____

c. 2010/2011 Rs. _____

d. 2009/2010 Rs. _____

e 2008/2009 Rs. _____

5. **What is your organisation's target turnover for next 3 years?**

a. 2013/2014 Rs. _____

b. 2014/2015 Rs. _____

c. 2015/2016 Rs. _____

Sujeeva P Wijewickreme
School of the Built Environment

6. *How does your organisation weigh the following behavioral problems of workforce against Time, Cost and Quality impacts for construction projects?*

		Degree of Time Impact					Degree of Cost Impact					Degree of Quality Impact				
	Behavioral Problem	0 to 5%	5 to 10%	10 to 15%	15 to 20%	Greater than 20%	0 to 5%	5 to 10%	10 to 15%	15 to 20%	Greater than 20%	0 to 5%	5 to 10%	10 to 15%	15 to 20%	Greater than 20%
a.	High labour turnover	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
b.	Poor quality of workmanship	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
c.	Poor, temporary or irregular attendance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
d.	Lack of trade knowledge and skill	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
e.	Lack of cost concerns	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
f.	Irresponsibility and lack of reliability	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
g.	Unfair demanding of wages / labour rates	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
h.	Adamant behavior and lack of loyalty	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
i.	Reluctant to learn / undergo training	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
j.	Carelessness and lack of safety concerns	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
k.	Unreasonable / unethical sudden demanding	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
l.	Migrating at the tail end of the project	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
m.	Other	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Sujeeva P Wijewickreme
School of the Built Environment

7. **What is the impact of material wastage due to mistakes and slipups by workforce?**

   a. Less than 5% ☐
   b. 5% to 10 % ☐
   c. 10% to 15% ☐
   d. 15% to 20% ☐
   e. Over 20% ☐

8. **In your assessment, what degree of impact could develop the scarcity of operational workforce?**

		Degree of impact				
	Behavioral Problem	**Nil**	**Low**	**Medium**	**High**	**Very high**
a.	Poor retirement benefits	☐	☐	☐	☐	☐
b.	Dissimilarities in salary scales	☐	☐	☐	☐	☐
c.	Gray areas in the career development	☐	☐	☐	☐	☐
d.	Temporary nature of the occupation	☐	☐	☐	☐	☐
e.	Lack of social recognition	☐	☐	☐	☐	☐
f.	Non availability of recreation facilities on site	☐	☐	☐	☐	☐
g.	Being away from family and relatives	☐	☐	☐	☐	☐
h.	Social and Political influences	☐	☐	☐	☐	☐
i.	Safety and sanitary facilities	☐	☐	☐	☐	☐
j.	Interpersonal relationships	☐	☐	☐	☐	☐
k.	Lack of trouble free communication	☐	☐	☐	☐	☐
l.	Influence from the dependents	☐	☐	☐	☐	☐
m.	Improper gender balance	☐	☐	☐	☐	☐
n.	Behaviors of the immediate supervisor	☐	☐	☐	☐	☐
o.	Other 1	☐	☐	☐	☐	☐
p.	Other 2	☐	☐	☐	☐	☐

Sujeeva P Wijewickreme
School of the Built Environment

9. **Do you believe that by providing a lifelong social security system [Pension Scheme] to the operational workforce, can we overcome from the aforementioned behavioral problems?**

a. No ☐ b. Sometimes ☐

c. Most of the time ☐ d. Definitely ☐

Participant's Confirmation:

- I confirm that I have read and understood the Participant Information Sheet [Appendix A] explaining the above research study and that I have had the opportunity to ask questions about the project. ☐
- I understand that my participation is voluntary and that I am free to withdraw at any time, without providing a reason. ☐
- I understand that, if I decide to participate in this study, then the results obtained from this study, may be kept for possible use in future studies. ☐
- I understand that my anonymity is assured and that only the researchers involved in this study at the University of Salford, UK, will use the data. I thus give permission for these individuals to use this information as they wish within academia. ☐

Participant

Name _____

Signature _____ _____ _____

Stamp **Date**

Position _____

Checklist

a. Sign and stamp this questionnaire

b. Attach copies of **"Brief format Audited Statements"** for past five [5] years

c. A Business Card [If any]

Returning Procedure

a. Please use the provided 'Addressed and Prepaid' envelope to return the documents within 21 days.

University of Salford MANCHESTER

Participant Information Sheet

Title of Study:

To Provide a Lifelong Social Security System for the Operational Workforce of the Construction Industry in Sri Lanka.

Study Subjects:

You are being invited to participate in this research which is a study on the current situation of the human resource difficulties experienced by the construction industry from the behavioural attitudes of the Operational Workforce in Sri Lanka.

Prior to taking part in this research, it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully. You may also wish to talk to others about this study. Kindly inquire for clarifications or further details and please take time to decide whether or not you wish to take part in this study.

Thank you for reading and understanding some of the basic requirements of this research.

What is the purpose of this study?

This research is focused on generating a sustainable model of a time, cost and quality orientated operational workforce for the construction industry to reap a greater stakeholder satisfaction. The task will be introduced on a platform developed through a lifelong social security system for the operational workforce of the construction industry in Sri Lanka.

The following aims are planned to be addressed during this research.

a. To identify the behavioral factors of the operational workforce of the construction industry that affects time, cost and quality of the construction outputs.
b. To review the social security systems currently available for the operational workforce of the construction industry.
c. To carryout investigations to earmark the causes for unavailability of a proper, sustainable and lifelong social security system for the operational workforce of the construction industry.
d. To critically evaluate the current construction management process to identify the risk multiplication areas to be used as a fund raising mechanism.
e. Developing a sustainable lifelong social security model for the operational workforce of the construction industry to achieve a greater stakeholder satisfaction and for the purpose of validating this research.

Is it compulsory to take part in this study?

No. Participating in this study is completely voluntary and you may withdraw at any time. Also, even after agreeing to participate in our study, you are still free to withdraw at any time without further reasoning.

University of Salford MANCHESTER

Participant Information Sheet

Will there be any future obligations?

No. After evaluating the questionnaire related submissions, we may request for a secondary interview with you if required to gather further details or for clarifications. This will be arranged at a location of your preference at a date and time feasible to you. The whole interview will take approximately 60 minutes. The transcribed data will be sent to you for confirmation. With your permission, the interview will be recorded. The recorded interview and information will only be used anonymously and for academic purposes. It will not be possible for any participants be personally identified. Information on individuals (such as name, gender, age, ethnicity, religion and so on) will not be revealed under any circumstances.

Meanwhile, we would like to indicate to you the following points for which your consent is required. This is completely at your discretion. We will only use the records in ways that you agree to:

- In any use of these records, your personal information will not be identified.
- The anonymous records may be studied, transcribed and analysed by the interviewer only according to the research aims.
- The anonymous records may be used for scientific publications and / or meetings.
- The anonymous records may be shown in presentations to scientific or non-scientific groups.

Please be assured that confidentiality is highly protected for this survey. The transcribed interviews will be kept with no identifying information. The personal information collected about you in the beginning of the interview is only for discerning patterns in the data collected and would not be used to identify you personally. All data collected will be kept and accessed only by the researcher and the supervisors of this research and will not be made available for other parties or be made public.

What do I need to do?

Upon invitation and you decide that you would like to take part in the secondary interview, please contact the researcher who will arrange a convenient appointment time for you to participate and for us to answer any questions you may have. If you consent to the information on this sheet, you need to sign a consent form. Please be ensured that you can withdraw at any time even after signing the consent form.

What are the potential benefits from taking part in this study?

Whilst there are no immediate benefits for those participating in this research project, it is hoped that this work will help to provide first hand evidence of the current situation. This study will also give us an opportunity to deepen our knowledge related to shortcomings in the current situation of the human resource difficulties experienced by the construction industry from the behavioural attitudes of the physical production workforce.

What are the potential risks, discomforts and inconveniences from taking part in this study?

There will be no possible disadvantages and risks of whatsoever for participating in this study. There are no risks of severe injury or discomfort that may occur. This is because the research

University of Salford MANCHESTER

Participant Information Sheet

study only deals with limited respondents and only deals with the technical issues. As participation is voluntary, you may wish to discontinue the interview at any time or choose not to answer any particular question or not to participate at all.

Will I be paid for taking part?

No. You will not be paid for your participation in this research, but you will receive a token of appreciation for your participation.

What will happen if I don't want to carry on with the study?

You are free to withdraw from the study at any time without reasoning.

What if there is a problem?

If you have any concerns about any aspect of this study, you may want to speak with the main researcher who will answer your questions. If you remain unhappy and wish to complain formally, you can do this by either contacting the supervisors or the universities involved with this study directly.

Will my participation in this study be kept confidential?

All information obtained in connection with this study will be treated as privileged and confidential. All information will be anonymous so that you cannot be identified, except by a single Participant Identification Form, which will be saved electronically on a password protected computer. The results obtained from this study will be kept for possible use in future studies, whereby all personal data will be deleted in three years from the completion of the research.

What will happen to the results of this study?

The findings will be published in the form of a report, which will be included in a thesis that forms part of a researcher's doctoral degree. Furthermore, it is also likely that the researcher will write a scientific paper based on the findings of this study, and this paper will be published in professional journals or at conferences.

Who is organising and funding this study?

This is a post-graduate research is for the fulfilling requirements of PhD in Management, Economic Research and Information Technology at The University of Salford. The research is organised by the School of the Built Environment at The University of Salford. There will be no funding or sponsoring organisation for this research project other than the voluntary supporters.

Who has reviewed the study?

The researcher's supervisors and The University of Salford Ethics Committee has reviewed all aspects of this study.

University of Salford MANCHESTER

Participant Information Sheet

Contact details for further information

1. **PhD Candidate**

Name : Sujeeva Wijewickreme
Postal Address :

Telephone :
Email : s.p.wijewickreme@edu.salford.ac.uk; wijewickreme@yhaoo.com

2. **Supervisor [University of Salford, UK]**

Name : Dr Chaminda Pathirage
Postal Address : School of the Built Environment
Maxwell Building
University of Salford
Salford - M5 4WT
United Kingdom

Telephone :
Email : c.p.pathirage@salford.ac.uk

3. **Local Supervisor [University of Moratuwa, Sri Lanka]**

Local Supervisor : Dr Lesly Ekanayake
Postal Address : Department of Civil Engineering
University of Moratuwa
Moratuwa - 10400
Sri Lanka

Telephone :
Email : lesly@civil.mrt.ac.lk; lesly711@gmail.com

Thank you,

Yours faithfully,

Sujeeva P Wijewickreme
PhD Candidate, Chartered QS and Chartered Builder

Appendix E

SRI LANKA

SURVEY OF CONSTRUCTION INDUSTRIES 2011

Department of Census & Statistics

SURVEY OF CONSTRUCTION INDUSTRIES 2011

Department of Census & Statistics

Appendix E

ISBN 978-955-577-820-6

Published in 2012.

PREFACE

The first Survey of Construction Industry was conducted in 1993 with the assistance of Institute for Construction Training and Development (ICTAD). Thereafter this Department continues to conduct the survey ones in two years cater to the needs of National Planners and other data users.

This publication provides the Survey results for the year 2011 in which the reference period was 2010. The frame for this survey was the list of contractors registered with ICTAD.

Any suggestions to improve this survey are most welcome.

D.C.A. Gunawardena,
Director General of Census & Statistics.

Department of Census & Statistics,
4 & 5 floors,
Rotunda Tower,
No 109, Galle road,
Colombo 03
07 December 2012.

ACKNOWLEDGEMENT

The planning, collection and processing of data were done by the staff of the Industry and Construction Division under the overall guidance Mrs.H.D.E.Somarathne the Director, and she was assisted by Mr.U.S. Wanapushpa, and Mrs.B.G.K.Premalatha Senior Statisticians.

B.G.K.Premalatha Senior Statistician performed a crucial role in planning and supervising of survey work. The Computer assisted data processing using the software package Visual Basic & Statistical Tables using the SPSS/PC+ were done by Ms. W.S.D. Jayasundara, Statistical Officer, Ms.W.T.K.T.P.Kularathne Statistical Assistant under the supervision of Mr.R.D.N.Premawansa, Statistician.

Data collection at the follow up stage was done by the Statistical Officers / Statistical Assistants attached to the Divisional Secretariat Division and the Industry, Construction, Trade & Services Division of the Department under the supervision of District, Deputy Directors/ Senior Statisticians/ Statisticians. As well as all staff officers of the Industry, Construction, Trade & Services Division

The co-operation given by the respondents is also much appreciated.

CONTENTS

Table No. :

Chart No. :

Survey of Construction Industries – Sri Lanka 2011

1. Introduction

Survey of Construction Industry was conducted in 1993 for the first time in Sri Lanka mainly to furnish data regarding input, output and their trends to the Institute for Construction Training and Development (ICTAD). The Department of Census and Statistics continues to conduct the survey ones in two years cater to the requirements of the data users along with the rapid development of the construction industry in Sri Lanka.

2. Scope and Coverage

In this survey, all construction activities undertaken by the private, government and semi-government contractors who were registered with ICTAD, were covered. Therefore, construction activities undertaken by the international organizations and the informal sector were not represented in this survey.

Information is collected relating to the following sectors of the construction industry.

i. Building construction
ii. Highway construction
iii. Bridge construction
iv. Water supply & drainage
v. Irrigation & land drainage
vi. Dredging & Reclamation
vii. Other constructions

All construction activities, except building construction, mentioned above are categorized under Civil Engineering activities.

3. Methodology

The Survey of Construction Industries was aimed to cover 975 sample units in all provinces during the reference year 2010. The department introduced a very simple questionnaire for the survey from the year 2000 considering the difficulties to obtain the information of construction activities. In order to collect information such as value of contract, value of work done, value of raw material used, salaries, other services and value of subcontract.

Field officers of the department were sent to the establishments directly to collect the information from contractors. For the non responding contractors, field officers had to visit quite a number of times to get the questionnaire completed. The collection of accurate

data from contractors is very tedious and time consuming. Sometimes officers had to visit them several times in order to get a good response.

4. Frame

List of contractors registered with the ICTAD and among those who were engaged in construction activities in the year 2010 have been used as the frame for this survey.

5. Sample Design

Stratified Systematic Sampling method was used for the survey and the list of contractors registered with the ICTAD was divided into 2 strata according to the grading system which the ICTAD has devised based on the financial terms. Contractors of all type of construction activities categorized under grade 1 to grade 5 and Contractors of all type of construction activities except building categorized under grade 6 to grade 10 were canvassed 100% and a probability sample was selected from other grades 6 to grade 10 in building construction as shown below.

Sample Frame	Strata	Sample Fraction	Sample size
List of contractors registered with ICTAD	grade 1-5	100%	339
	grade 6-10 (except building)	100%	312
	grade 6-10 (building)	15%	324
Total			**975**

6. Concepts & Definitions

(a) Reference Period

Data relating to construction activities carried out during the calendar year 2010 or financial year 2010 April to 2011March.

(b) Employment

This refers to the average number of persons engaged in construction activity during the reference period, including skilled labourers, unskilled labourers, technical, professional and other paid workers.

(c) Salaries & Wages

Amount paid as salaries, wages or subcontract on work done during the period.

(d) Output

Value of work done during the year 2010.

(e) Input

Expenditure on goods (raw materials), other services and subcontract

Input = Value of goods + Value of other services + Value of subcontract.

(f) Value Added

Value added is the increment addition to the value of raw materials and other expenditure that is contributed by the contractor. It is computed as follows.

Output – Input = Value added

7. Survey Results

The Survey of Construction Activities was not covered all construction activities carried out during the reference period in the island. The survey covers all the construction activities carried out by the contractors registered with ICTAD.

Therefore it is clear that;

a. The construction activities carried out other than by the ICTAD registered contractors such as construction of houses in the rural sector and urban sector;

b. Large scale construction activities carried out by foreign contractors are not covered by this survey.

According to the Annual Survey of Construction Industries, the total estimated value of work done by all type of construction activities in Sri Lanka was Rs. 78,320 million in 2010. The highest contribution to this value has been made by the building construction sector which accounted for 48.0 % of the total value of work done.

The major share of the value of work done of building construction sector (which amounted Rs. 37,623 million) has come from the private and public sector. The type of high way construction was the second highest contributor to the value of work done, amounting to 32.6% of the total value.

Table 1 : Some Selected Indicators of Construction Activities Classified by Type of Construction Activity - 2010
(All Sectors)

Type of Construction Activity		No. of Activities	Total Value of Contract (Rs.)	Value of Work Done (Rs.)	Input (Rs.)	Value Added (Rs.)	Raw Materials Consumed (Rs.)	Value of Services (Rs.)	Value of Subcontract (Rs.)	Average No. of Employees	Salaries for Employees (Rs.)
Building	Housing Units	308	5,100,271,958	2,977,385,742	1,166,252,380	1,811,133,361	1,135,299,767	17,198,613	13,754,000	8,945	288,565,611
	Collective living quarters	66	2,723,376,771	763,087,163	242,317,300	520,769,865	231,247,776	10,351,924	717,600	1,227	55,634,379
	Office Building	380	17,530,247,319	7,934,617,642	3,391,875,964	4,542,741,678	2,540,681,980	285,062,373	566,131,611	8,084	699,787,805
	Market Complex	64	2,010,448,182	1,897,084,485	1,268,898,155	628,186,330	1,235,735,596	1,618,059	31,544,500	1,009	118,869,134
	Factories	30	4,075,884,259	4,002,510,320	1,068,644,687	2,933,865,632	845,443,460	95,627,310	127,573,917	686	90,597,022
	School Building	351	5,416,851,688	3,075,272,650	1,967,087,400	1,108,185,249	1,645,691,162	66,897,246	254,498,993	6,222	477,414,626
	Hospital Building	136	5,306,728,572	2,207,025,681	1,408,970,173	798,055,509	1,189,892,112	92,684,389	126,393,672	2,225	274,054,210
	Other Building	492	49,422,681,838	11,720,319,726	6,713,578,116	5,006,741,610	5,005,988,506	505,338,216	1,202,251,394	7,087	497,875,384
	Repair & Maintenance	953	3,768,199,937	3,045,203,254	2,204,412,762	840,790,492	1,685,100,823	37,553,270	481,758,669	8,418	503,025,589
	Group Total	**2,780**	**95,354,690,524**	**37,622,506,663**	**19,432,036,937**	**18,190,469,726**	**15,515,081,182**	**1,112,331,400**	**2,804,624,356**	**43,904**	**3,005,823,761**
Highway	Rehabilitation	193	12,127,703,513	8,520,984,897	5,803,034,363	2,717,950,533	5,045,093,663	703,431,275	54,509,425	7,657	983,673,153
	New work	88	31,868,342,343	14,341,186,234	12,141,270,461	2,199,915,773	11,762,829,977	250,545,851	127,894,634	3,074	460,716,954
	Repair & Maintenance	77	6,656,319,501	2,642,413,026	1,299,437,515	1,342,975,512	1,175,052,714	63,877,582	60,507,219	3,330	222,988,226
	Group Total	**358**	**50,652,365,357**	**25,504,584,157**	**19,243,742,339**	**6,260,841,818**	**17,982,976,354**	**1,017,854,708**	**242,911,278**	**14,061**	**1,667,378,333**
Bridge	Bridge	86	9,984,330,382	3,172,485,065	1,841,172,929	1,331,312,136	1,545,092,758	196,207,958	99,872,213	2,257	323,256,563
	Culvert	26	74,721,583	73,147,856	39,261,704	33,886,152	37,665,007	1,596,697	-	407	20,471,521
	Causeway	3	50,955,457	50,955,457	40,281,280	10,674,177	40,281,280	-	-	51	1,450,449
	Repair & Maintenance	3	7,519,016	4,778,020	4,081,351	696,670	3,931,850	149,500	-	15	336,375
	Group Total	**118**	**10,117,526,438**	**3,301,366,398**	**1,924,797,264**	**1,376,569,135**	**1,626,970,895**	**197,954,155**	**99,872,213**	**2,730**	**345,514,908**
Water supply & Drainage	Water Supply	59	14,471,808,480	6,247,898,345	2,999,408,925	3,248,489,420	1,687,407,528	387,522,935	924,478,462	2,030	230,040,455
	Drainage	25	826,532,993	820,881,893	629,708,829	191,173,064	587,504,141	42,204,687	-	708	72,063,339
	Pump house	16	291,913,791	145,463,591	82,568,614	62,894,977	75,600,614	6,758,000	210,000	240	38,678,714
	Repair & Maintenance	4	11,552,948	11,552,948	4,904,346	6,648,602	2,299,696	2,604,651	-	65	2,858,800
	Group Total	**104**	**15,601,808,212**	**7,225,796,777**	**3,716,590,714**	**3,509,206,063**	**2,352,811,979**	**439,090,273**	**924,688,462**	**3,043**	**343,641,308**
Irrigation & Land Drainage	Anicut	9	25,075,254	25,075,254	16,184,062	8,891,192	16,124,062	48,000	12,000	90	5,351,856
	Sluices	9	48,407,499	48,407,499	26,185,625	22,221,874	25,831,310	354,315	-	209	16,944,154
	Spill	3	3,997,624	3,997,624	2,530,497	1,467,127	2,530,497	-	-	45	1,285,700
	Dam	18	1,066,530,318	481,357,418	288,980,809	192,376,609	227,386,809	61,594,000	-	347	34,346,010
	Irrigation canal	60	1,096,326,786	349,586,631	236,970,974	112,615,657	191,190,496	43,705,728	2,074,750	1,171	63,389,950
	Repair & Maintenance	14	58,533,153	53,437,379	36,015,200	17,422,179	33,297,150	1,518,050	1,200,000	398	13,020,251
	Group Total	**113**	**2,298,870,634**	**961,861,805**	**606,867,167**	**354,994,638**	**496,360,324**	**107,220,093**	**3,286,750**	**2,260**	**134,337,921**
Dredging & Reclamation	Filling	3	28,643,575	28,643,575	19,799,218	8,844,357	14,070,503	-	5,728,714	93	2,435,056
	Retaining wall	3	15,847,000	15,847,000	7,729,150	8,117,850	4,664,400	523,250	2,541,500	60	4,485,000
	Group Total	**6**	**44,490,575**	**44,490,575**	**27,528,368**	**16,962,207**	**18,734,903**	**523,250**	**8,270,214**	**153**	**6,920,056**
Other	Other Construction	79	5,003,790,304	3,659,140,334	2,609,472,241	1,049,668,093	189,438,476	53,500,470	2,366,533,295	1,220	184,832,800
	Group Total	**79**	**5,003,790,304**	**3,659,140,334**	**2,609,472,241**	**1,049,668,093**	**189,438,476**	**53,500,470**	**2,366,533,295**	**1,220**	**184,832,800**
Total		**3,558**	**179,073,542,044**	**78,319,746,709**	**47,561,035,030**	**30,758,711,680**	**38,182,374,113**	**2,928,474,349**	**6,450,186,568**	**67,371**	**5,688,449,087**

Table 2 : Some Selected Indicators of Construction Activities Classified by Type of Construction Activity - 2010
(Private Sector)

Type of Construction Activity		No. of Activities	Total Value of Contract (Rs.)	Value of Work Done (Rs.)	Input (Rs.)	Value Added (Rs.)	Raw Materials Consumed (Rs.)	Value of Services (Rs.)	Value of Subcontract (Rs.)	Average No. of Employees	Salaries for Employees (Rs.)
Building	Housing Units	264	953,348,893	848,353,877	534,997,865	313,356,013	520,932,751	8,085,113	5,980,000	8,314	176,934,201
	Collective living quarters	3	146,629,600	22,425,000	18,384,015	4,040,985	17,364,425	1,019,590	-	36	1,940,510
	Office Building	30	5,126,983,456	3,117,298,341	736,922,427	2,380,375,915	542,078,930	51,581,587	143,261,909	496	87,044,067
	Market Complex	49	319,027,000	296,051,000	205,061,600	90,989,400	174,713,100	598,000	29,750,500	752	82,259,000
	Factories	18	3,617,722,798	3,576,820,258	808,172,428	2,768,647,830	596,200,295	84,398,216	127,573,917	173	24,858,860
	School Building	6	1,847,820,000	522,136,419	461,069,159	61,067,261	269,706,178	14,794,074	176,568,907	194	50,830,000
	Hospital Building	9	388,174,771	274,131,342	244,445,222	29,686,119	175,059,205	34,712,474	34,673,544	150	18,460,634
	Other Building	120	32,313,156,805	5,143,199,499	2,952,001,586	2,191,197,912	2,151,720,142	241,019,215	559,262,230	1,798	42,848,781
	Repair & Maintenance	253	400,188,276	400,188,276	254,657,909	145,530,367	231,130,409	14,016,000	9,511,500	2,458	59,413,870
	Group Total	**752**	**45,113,051,599**	**14,200,604,012**	**6,215,712,211**	**7,984,891,802**	**4,678,905,435**	**450,224,269**	**1,086,582,507**	**14,371**	**544,589,923**
Highway	Rehabilitation	16	168,444,819	159,540,016	112,562,332	46,977,684	92,907,226	19,057,106	598,000	287	26,889,920
	New work	6	787,247,897	273,989,768	267,760,357	6,229,411	267,760,357	-	-	57	2,360,677
	Repair & Maintenance	6	4,250,781	4,250,781	3,552,120	698,661	3,552,120	-	-	27	499,928
	Group Total	**28**	**959,943,497**	**437,780,565**	**383,874,809**	**53,905,756**	**364,219,703**	**19,057,106**	**598,000**	**371**	**29,750,525**
Bridge	Bridge	6	218,829,728	83,122,000	50,520,353	32,601,647	49,324,353	1,196,000	-	90	5,461,295
	Group Total	**6**	**218,829,728**	**83,122,000**	**50,520,353**	**32,601,647**	**49,324,353**	**1,196,000**	-	**90**	**5,461,295**
Water supply & Drainage	Water Supply	22	11,957,187,826	4,053,395,606	2,089,832,662	1,963,562,945	893,843,136	350,298,346	845,691,180	1,193	167,933,165
	Group Total	**22**	**11,957,187,826**	**4,053,395,606**	**2,089,832,662**	**1,963,562,945**	**893,843,136**	**350,298,346**	**845,691,180**	**1,193**	**167,933,165**
Other	Other Construction	17	2,273,987,706	1,927,147,706	1,369,257,830	557,889,876	8,653,260	154,570	1,360,450,000	291	68,672,668
	Group Total	**17**	**2,273,987,706**	**1,927,147,706**	**1,369,257,830**	**557,889,876**	**8,653,260**	**154,570**	**1,360,450,000**	**291**	**68,672,668**
Total		**825**	**60,523,000,356**	**20,702,049,889**	**10,109,197,865**	**10,592,852,026**	**5,994,945,887**	**820,930,291**	**3,293,321,687**	**16,316**	**816,407,576**

Table 3 : Some Selected Indicators of Construction Activities Classified by Type of Construction Activity - 2010
(Public Sector)

Type of Construction Activity		No. of Activities	Total Value of Contract (Rs.)	Value of Work Done (Rs.)	Input (Rs.)	Value Added (Rs.)	Raw Materials Consumed (Rs.)	Value of Services (Rs.)	Value of Subcontract (Rs.)	Average No. of Employees	Salaries for Employees (Rs.)
Building	Housing Units	44	4,146,923,064	2,129,031,864	631,254,515	1,497,777,349	614,367,015	9,113,500	7,774,000	631	111,631,410
	Collective living quarters	63	2,576,747,171	740,662,164	223,933,285	516,728,879	213,883,351	9,332,334	717,600	1,192	53,693,869
	Office Building	350	12,403,263,862	4,817,319,301	2,654,953,537	2,162,365,764	1,998,603,050	233,480,785	422,869,702	7,588	612,743,738
	Market Complex	15	1,691,421,185	1,601,033,485	1,063,836,555	537,196,930	1,061,022,496	1,020,059	1,794,000	257	36,610,134
	Factories	12	458,161,461	425,690,061	260,472,259	165,217,802	249,243,165	11,229,095	-	514	65,738,164
	School Building	345	3,569,031,688	2,553,136,230	1,506,018,242	1,047,117,989	1,375,984,984	52,103,171	77,930,086	6,028	426,584,626
	Hospital Building	127	4,918,553,601	1,932,894,340	1,164,524,950	768,369,389	1,014,832,907	57,971,915	91,720,128	2,075	255,593,576
	Other Building	373	17,109,525,032	6,577,120,228	3,761,576,530	2,815,543,698	2,854,268,365	264,319,002	642,989,164	5,289	455,026,603
	Repair & Maintenance	699	3,368,011,661	2,645,014,978	1,949,754,853	695,260,124	1,453,970,414	23,537,270	472,247,169	5,959	443,611,718
	Group Total	**2,028**	**50,241,638,925**	**23,421,902,651**	**13,216,324,726**	**10,205,577,924**	**10,836,175,747**	**662,107,131**	**1,718,041,849**	**29,633**	**2,461,233,638**
Highway	Rehabilitation	177	11,959,258,694	8,361,444,881	5,690,472,031	2,670,972,850	4,952,186,437	684,374,169	53,911,425	7,370	956,783,233
	New work	82	31,081,094,446	14,067,196,466	11,873,510,104	2,193,686,362	11,495,069,619	250,545,851	127,894,634	3,017	458,356,277
	Repair & Maintenance	71	6,652,068,720	2,638,162,245	1,295,885,395	1,342,276,850	1,171,500,595	63,877,582	60,507,219	3,303	222,488,298
	Group Total	**330**	**49,692,421,860**	**25,066,803,592**	**18,859,867,530**	**6,206,936,062**	**17,618,756,651**	**998,797,602**	**242,313,278**	**13,690**	**1,637,627,808**
Bridge	Bridge	80	9,765,500,654	3,089,363,065	1,790,652,577	1,298,710,489	1,495,768,405	195,011,958	99,872,213	2,167	317,795,268
	Culvert	26	74,721,563	73,147,856	39,261,704	33,886,152	37,665,007	1,596,697	-	407	20,471,521
	Causeway	3	50,955,457	50,955,457	40,281,280	10,674,177	40,281,280	-	-	51	1,450,449
	Repair & Maintenance	3	7,519,016	4,778,020	4,081,350	696,670	3,931,850	149,500	-	15	336,375
	Group Total	**112**	**9,898,696,710**	**3,218,244,398**	**1,874,276,911**	**1,343,967,488**	**1,577,646,542**	**196,758,155**	**99,872,213**	**2,640**	**340,053,613**
Water supply & Drainage	Water Supply	37	2,514,620,654	2,194,502,739	909,576,263	1,284,926,475	793,564,392	37,224,590	78,787,282	837	62,107,290
	Drainage	25	826,532,993	820,881,893	629,708,829	191,173,064	587,504,141	42,204,687	-	708	72,063,339
	Pump house	16	291,913,791	145,463,591	82,568,614	62,894,977	75,600,614	6,758,000	210,000	240	38,678,714
	Repair & Maintenance	4	11,552,948	11,552,948	4,904,346	6,648,602	2,299,696	2,604,650	-	65	2,858,800
	Group Total	**82**	**3,644,620,386**	**3,172,401,171**	**1,626,758,052**	**1,545,643,118**	**1,458,968,843**	**88,791,927**	**78,997,282**	**1,850**	**175,708,143**
Irrigation & Land Drainage	Anicut	9	25,075,254	25,075,254	16,184,062	8,891,192	16,124,062	48,000	12,000	90	5,351,856
	Sluices	9	48,407,499	48,407,499	26,185,625	22,221,874	25,831,310	354,315	-	209	16,944,154
	Spill	3	3,997,624	3,997,624	2,530,497	1,467,127	2,530,497	-	-	45	1,285,700
	Dam	18	1,066,530,318	481,357,418	288,980,809	192,376,609	227,386,809	61,594,000	-	347	34,346,010
	Irrigation canal	60	1,096,326,786	349,586,631	236,970,974	112,615,657	191,190,496	43,705,728	2,074,750	1,171	63,389,950
	Repair & Maintenance	14	58,533,153	53,437,379	36,015,200	17,422,179	33,297,150	1,518,050	1,200,000	398	13,020,251
	Group Total	**113**	**2,298,870,634**	**961,861,805**	**606,887,167**	**354,994,638**	**496,360,324**	**107,220,093**	**3,286,750**	**2,260**	**134,337,921**
Dredging & Reclamation	Filling	3	28,643,575	28,643,575	19,799,218	8,844,357	14,070,503	-	5,728,714	93	2,435,056
	Retaining wall	3	15,847,000	15,847,000	7,729,150	8,117,850	4,664,400	523,250	2,541,500	60	4,485,000
	Group Total	**6**	**44,490,575**	**44,490,575**	**27,528,368**	**16,962,207**	**18,734,903**	**523,250**	**8,270,214**	**153**	**6,920,056**
Other	Other Construction	62	2,729,802,598	1,731,992,628	1,240,214,411	491,778,217	180,785,216	53,345,900	1,006,083,295	929	116,160,132
	Group Total	**62**	**2,729,802,598**	**1,731,992,628**	**1,240,214,411**	**491,778,217**	**180,785,216**	**53,345,900**	**1,006,083,295**	**929**	**116,160,132**
Total		**2,733**	**118,550,541,688**	**57,617,696,820**	**37,451,837,165**	**20,165,859,654**	**32,187,428,226**	**2,107,544,058**	**3,156,864,881**	**51,055**	**4,872,041,511**

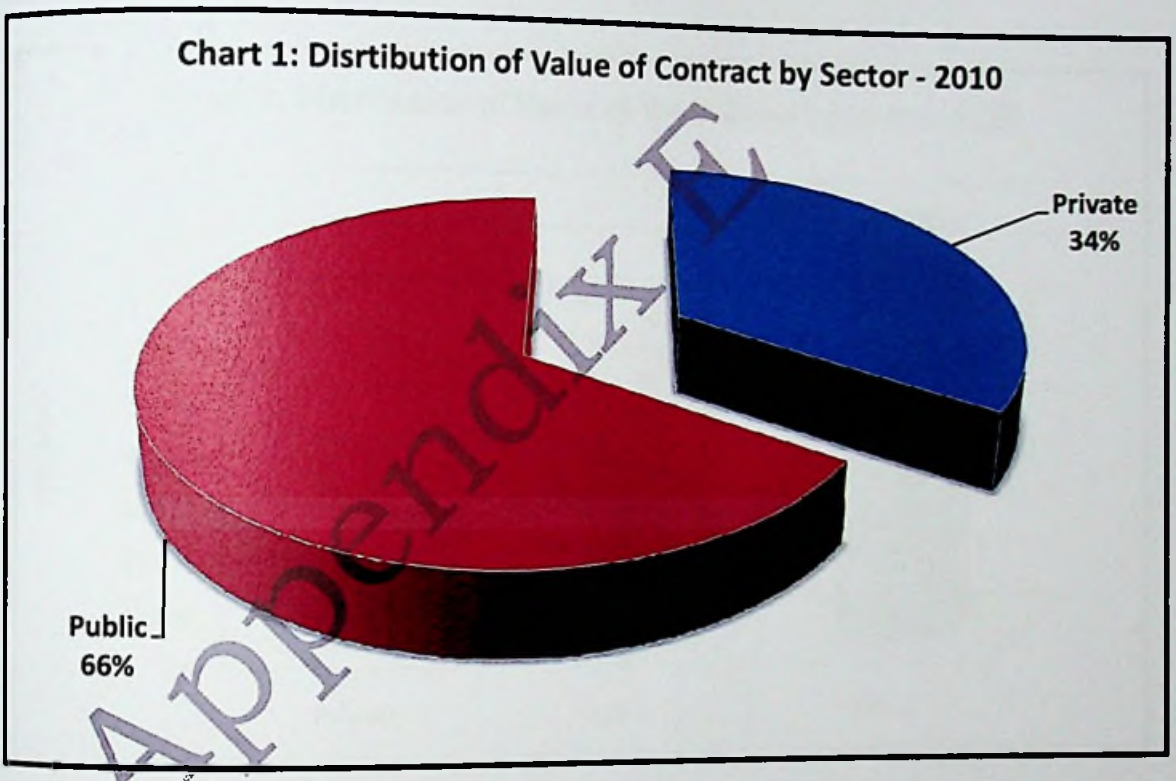
Chart 1: Disrtibution of Value of Contract by Sector - 2010
Private
34%
Public
66%

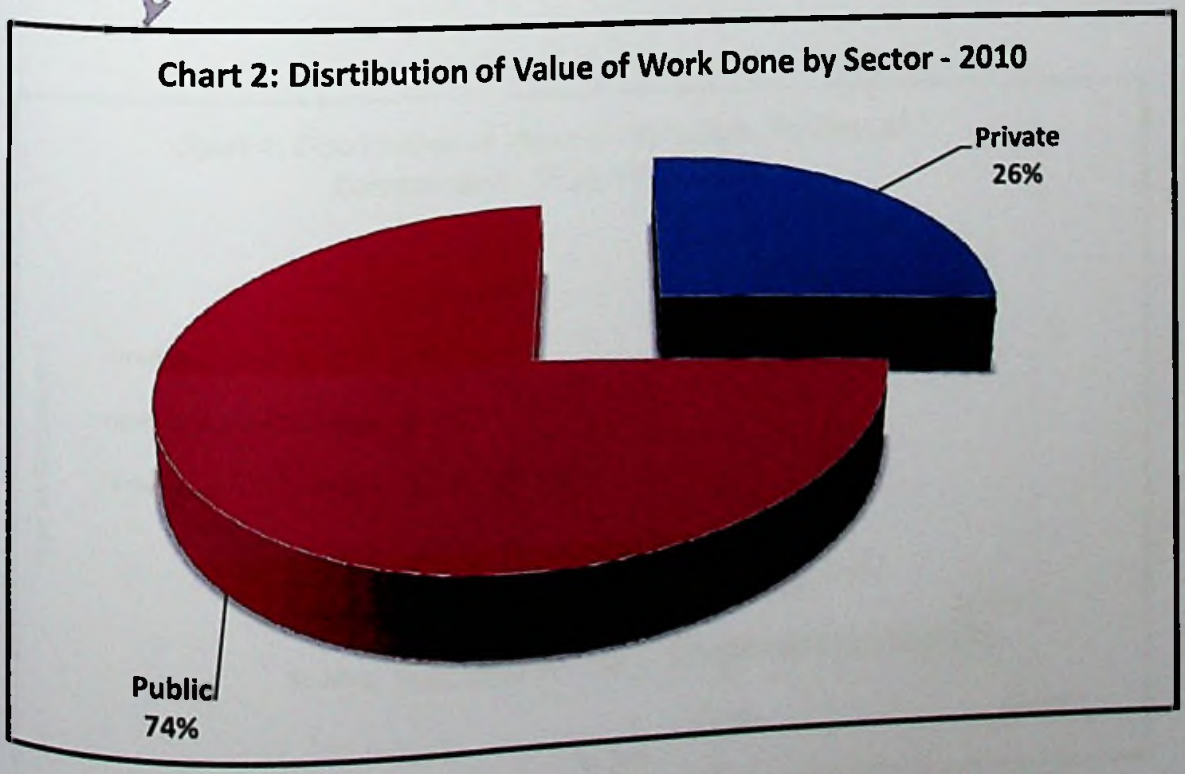
Chart 2: Disrtibution of Value of Work Done by Sector - 2010
Private
26%
Public
74%

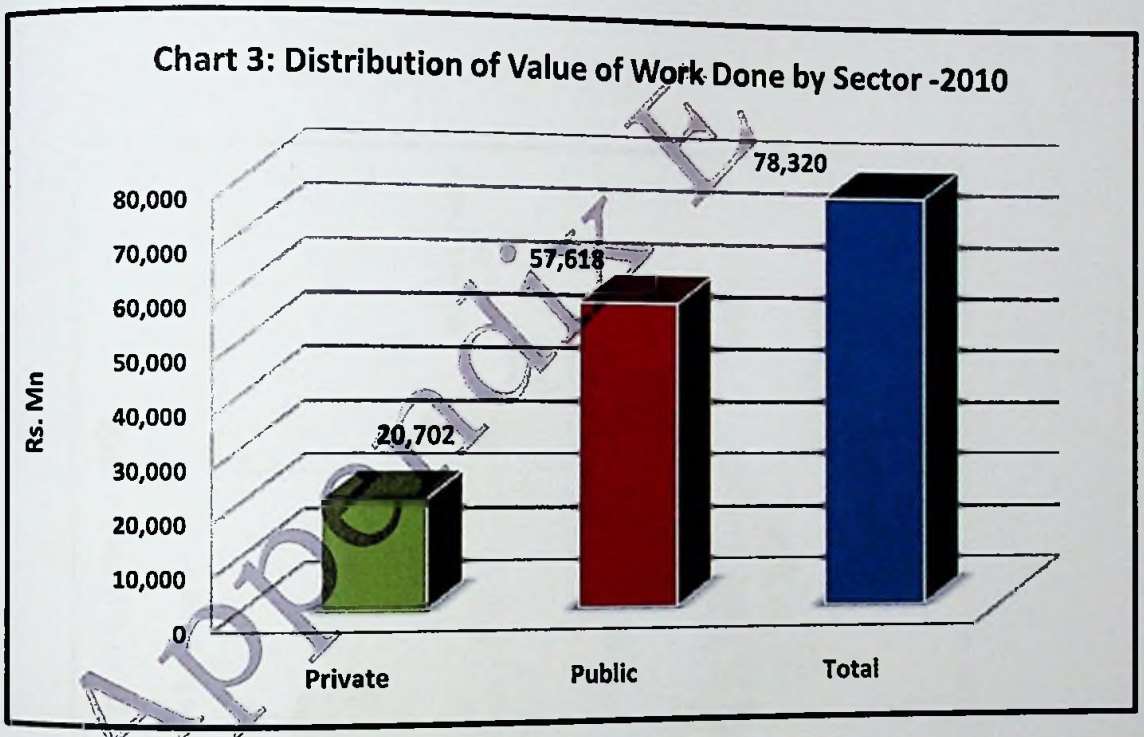
Chart 3: Distribution of Value of Work Done by Sector -2010
Rs. Mn
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
20,702
57,618
78,320
Private
Public
Total

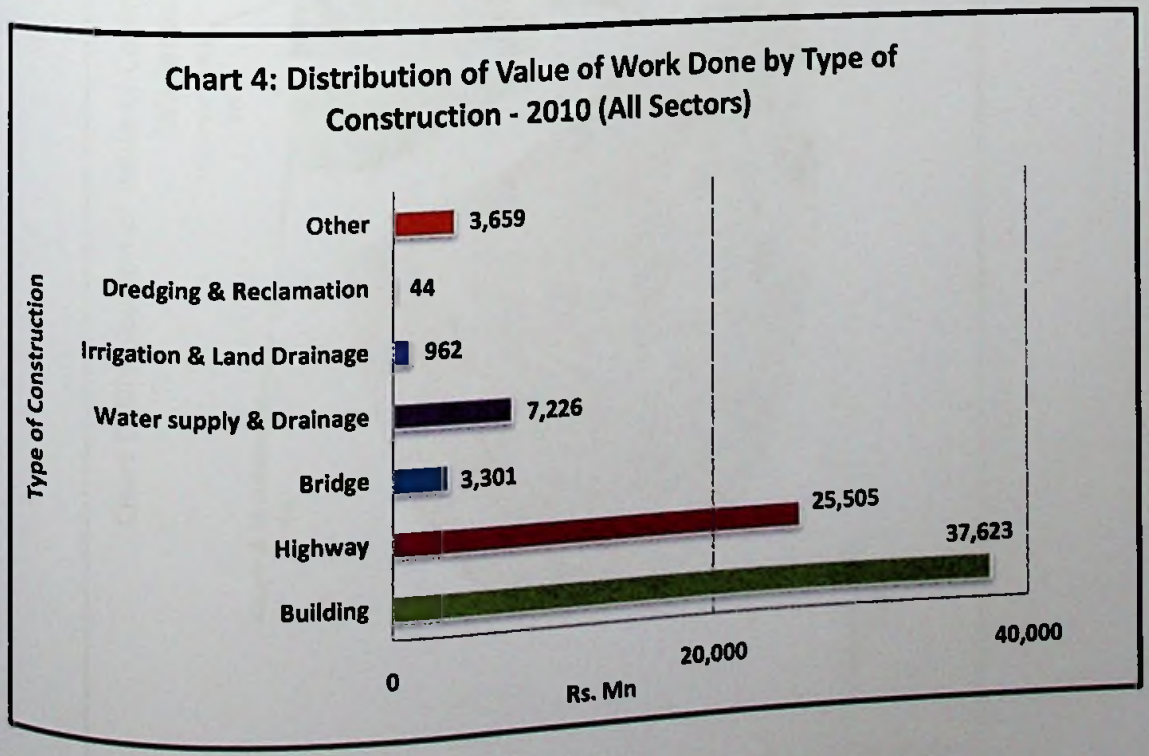
Chart 4: Distribution of Value of Work Done by Type of Construction - 2010 (All Sectors)
Type of Construction
Other
Dredging & Reclamation
Irrigation & Land Drainage
Water supply & Drainage
Bridge
Highway
Building
3,659
44
962
7,226
3,301
25,505
37,623
0
20,000
40,000
Rs. Mn

Chart 5: Disrtibution of Value of Contract by Type of Building - 2010
(All Sectors)
Housing Units
5%
Collective living quarters
3%
Office Building
18%
Market Complex
2%
Factories
4%
School Building
6%
Hospital Building
6%
*Other Building
52%
Repair & Maintenance
4%

Chart 6: Disrtibution of Value of Work Done by Type of Building - 2010
(All Sectors)
Housing Units
8%
Collective living quarters
2%
Office Building
21%
Market Complex
5%
Factories
11%
School Building
8%
Hospital Building
6%
*Other Building
31%
Repair & Maintenance
8%

Table 4 : Raw Materials Consumed Classified by Type of Construction Activity - 2010
(All Sectors)

Type of Construction Activity		Raw Materials Used (Rs.)								
		Cement	Sand	Rubble & Metal	Bricks	Timber	Iron & Steel	Roofing Materials	Other	Total
Building	Housing Units	183,537,101	105,990,886	61,559,162	133,891,880	150,930,641	401,429,583	59,442,085	38,518,429	1,135,299,767
	Collective living quarters	61,905,603	19,019,121	14,536,914	27,380,001	26,834,095	45,301,772	20,203,262	16,067,003	231,247,776
	Office Building	475,036,887	213,331,747	209,596,404	178,442,588	278,303,987	553,465,049	143,159,421	489,345,898	2,540,681,980
	Market Complex	280,944,271	126,346,327	95,663,420	132,344,056	167,386,802	321,335,793	97,848,036	13,866,891	1,235,735,596
	Factories	108,404,423	35,210,593	23,929,912	33,977,660	49,736,988	181,319,326	298,594,969	114,269,586	845,443,460
	School Building	324,213,256	134,916,191	107,523,999	130,537,289	165,608,333	504,921,896	114,839,285	163,130,912	1,645,691,162
	Hospital Building	204,602,270	126,892,962	98,098,823	89,936,382	107,075,219	349,483,608	92,667,596	121,135,251	1,189,892,112
	Other Building	1,337,960,737	366,752,809	292,906,145	481,680,156	492,152,167	964,007,139	176,994,951	893,534,406	5,005,988,506
	Repair & Maintenance	215,274,277	127,164,616	117,147,586	82,086,593	224,509,540	268,269,528	163,833,829	486,814,856	1,685,100,823
	Group Total	**3,191,878,825**	**1,255,625,252**	**1,020,962,365**	**1,290,276,605**	**1,662,537,772**	**3,589,533,694**	**1,167,583,434**	**2,336,683,232**	**15,515,081,182**
Highway	Rehabilitation	1,198,085,787	741,557,928	1,506,858,590	104,324,900	31,915,350	367,472,007	452,208	1,094,426,893	5,045,093,663
	New work	50,387,282	2,480,818,540	5,069,895,941	38,182,970	4,650,132	35,567,390	119,600	4,083,208,124	11,762,829,977
	Repair & Maintenance	41,282,086	43,878,448	313,561,674	35,435,776	159,288	27,752,347	-	712,983,096	1,175,052,714
	Group Total	**1,289,755,155**	**3,266,254,916**	**6,890,316,205**	**177,943,646**	**36,724,770**	**430,791,744**	**571,808**	**5,890,618,113**	**17,982,976,354**
Bridge	Bridge	349,425,737	128,287,095	249,778,344	2,052,121	42,020,480	241,156,332	-	532,372,650	1,545,092,758
	Culvert	12,689,889	5,195,434	6,954,955	274,500	577,352	7,855,354	-	4,117,522	37,665,007
	Causeway	7,475,000	962,780	1,943,500	-	-	29,900,000	-	-	40,281,280
	Repair & Maintenance	777,400	254,150	598,000	-	-	1,554,800	-	747,500	3,931,850
	Group Total	**370,368,026**	**134,699,459**	**259,274,799**	**2,326,621**	**42,597,832**	**280,466,486**	**-**	**537,237,672**	**1,626,970,895**
Water supply & Drainage	Water Supply	166,563,954	98,015,794	100,365,283	18,292,624	31,002,682	362,784,200	5,240,591	905,142,398	1,687,407,528
	Drainage	109,674,856	76,854,556	65,497,176	35,485,398	17,005,640	130,684,899	149,500	152,152,117	587,504,141
	Pump house	9,863,790	4,865,061	8,790,065	388,252	2,307,220	40,221,876	4,230,850	4,933,500	75,600,614
	Repair & Maintenance	286,344	153,820	1,663,852	-	-	35,880	-	159,800	2,299,696
	Group Total	**286,388,944**	**179,889,231**	**176,316,376**	**54,166,274**	**50,315,543**	**533,726,855**	**9,620,941**	**1,062,387,815**	**2,352,811,979**
Irrigation & Land Drainage	Anicut	5,711,136	3,821,725	2,226,645	90,000	1,490,934	2,202,919	345,000	235,703	16,124,062
	Sluices	8,977,003	3,570,317	5,172,942	1,115,046	1,452,617	4,807,603	568,342	167,440	25,831,310
	Spill	986,891	657,929	328,966	-	227,745	328,966	-	-	2,530,497
	Dam	90,111,137	53,240,945	37,070,522	209,300	17,136,958	28,048,197	-	1,569,750	227,386,809
	Irrigation canal	48,858,220	28,174,674	45,300,306	1,836,120	6,527,957	33,949,660	1,644,500	24,899,058	191,190,496
	Repair & Maintenance	14,414,700	5,566,450	5,384,200	672,750	674,500	4,820,450	-	1,764,100	33,297,150
	Group Total	**169,059,087**	**95,032,040**	**95,483,581**	**3,923,216**	**27,510,711**	**74,157,795**	**2,557,842**	**28,636,051**	**496,360,324**
Dredging & Reclamation	Filling	-	-	-	-	-	-	-	14,070,503	14,070,503
	Retaining wall	1,495,000	523,250	448,500	299,000	299,000	897,000	254,150	448,500	4,664,400
	Group Total	**1,495,000**	**523,250**	**448,500**	**299,000**	**299,000**	**897,000**	**254,150**	**14,519,003**	**18,734,903**
Other	Other Construction	22,692,723	13,722,852	40,749,915	6,777,222	8,892,271	20,290,380	469,430	75,843,684	189,438,476
	Group Total	**22,692,723**	**13,722,852**	**40,749,915**	**6,777,222**	**8,892,271**	**20,290,380**	**469,430**	**75,843,684**	**189,438,476**
Total		5,331,637,760	4,945,747,000	8,483,551,741	1,535,712,584	1,818,877,899	4,929,863,954	1,181,057,605	9,945,925,570	38,182,374,113

Table 5 : Raw Materials Consumed Classified by Type of Construction Activity - 2010
(Private Sector)

Type of Construction Activity		Raw Materials Used (Rs.)								
		Cement	Sand	Rubble & Metal	Bricks	Timber	Iron & Steel	Roofing Materials	Other	Total
Building	Housing Units	97,739,528	82,823,405	47,820,236	115,402,246	104,693,453	26,927,238	29,372,716	16,153,929	520,932,751
	Collective living quarters	3,049,800	1,796,990	3,138,005	2,006,290	-	6,326,840	-	1,046,500	17,364,425
	Office Building	134,271,843	36,138,249	40,418,351	34,281,612	38,347,237	156,665,966	25,404,837	76,550,835	542,078,930
	Market Complex	21,032,400	9,350,100	9,170,700	15,402,600	29,387,200	65,416,700	12,152,100	12,801,300	174,713,100
	Factories	53,180,143	14,164,694	7,595,871	13,703,568	14,660,066	115,931,476	271,904,091	105,060,386	596,200,295
	School Building	63,367,133	10,962,461	16,408,677	23,886,380	11,330,461	116,237,613	2,819,127	24,694,323	269,706,178
	Hospital Building	14,506,643	5,121,123	9,877,465	-	13,582,371	75,175,130	6,323,850	50,472,623	175,059,205
	Other Building	653,610,535	134,545,814	119,334,420	185,771,278	222,121,346	363,372,709	34,071,754	438,892,285	2,151,720,142
	Repair & Maintenance	32,470,754	16,896,576	19,611,730	11,681,628	59,830,887	31,573,144	20,339,780	38,725,910	231,130,409
	Group Total	**1,073,228,779**	**311,799,412**	**273,375,455**	**402,135,602**	**493,953,021**	**957,626,816**	**402,388,255**	**764,398,091**	**4,678,905,435**
Highway	Rehabilitation	26,041,946	13,336,110	44,834,380	1,495,000	256,914	235,600	3,708	6,703,568	92,907,226
	New work	2,706,967	2,221,271	1,497,990	-	-	-	-	261,334,130	267,760,357
	Repair & Maintenance	29,900	14,950	-	89,700	-	-	-	3,417,570	3,552,120
	Group Total	**28,778,813**	**15,572,331**	**46,332,370**	**1,584,700**	**256,914**	**235,600**	**3,708**	**271,455,268**	**364,219,703**
Bridge	Bridge	1,046,500	2,603,112	29,478,410	-	-	897,000	-	15,299,331	49,324,353
	Group Total	**1,046,500**	**2,603,112**	**29,478,410**	**-**	**-**	**897,000**	**-**	**15,299,331**	**49,324,353**
Water supply & Drainage	Water Supply	71,464,094	52,104,638	43,563,944	2,863,583	22,368,070	206,818,417	3,474,326	491,186,063	893,843,136
	Group Total	**71,464,094**	**52,104,638**	**43,563,944**	**2,863,583**	**22,368,070**	**206,818,417**	**3,474,326**	**491,186,063**	**893,843,136**
Other	Other Construction	1,598,538	538,200	1,363,258	992,680	304,980	493,350	275,080	3,087,175	8,653,260
	Group Total	**1,598,538**	**538,200**	**1,363,258**	**992,680**	**304,980**	**493,350**	**275,080**	**3,087,175**	**8,653,260**
Total		**1,176,116,724**	**382,617,693**	**394,113,437**	**407,576,565**	**516,882,985**	**1,166,071,183**	**406,141,369**	**1,545,425,928**	**5,994,945,887**

Table 6 : Raw Materials Consumed Classified by Type of Construction Activity - 2010
(Public Sector)

Type of Construction Activity		Raw Materials Used (Rs.)								
		Cement	Sand	Rubble & Metal	Bricks	Timber	Iron & Steel	Roofing Materials	Other	Total
Building	Housing Units	85,797,572	23,167,481	13,738,926	18,489,634	46,237,189	374,502,345	30,069,368	22,364,500	614,367,015
	Collective living quarters	58,955,806	17,222,131	11,398,909	25,373,711	26,834,095	38,974,934	20,203,263	15,020,503	213,883,351
	Office Building	340,765,043	177,193,497	169,178,053	144,160,976	239,956,750	396,799,083	117,754,584	412,795,063	1,998,603,050
	Market Complex	259,911,871	116,996,227	86,492,720	116,941,456	137,999,602	255,919,093	85,695,936	1,085,591	1,061,022,496
	Factories	55,224,280	21,045,901	16,334,041	20,274,093	35,076,922	65,387,850	26,690,878	9,209,200	249,243,165
	School Building	260,846,123	123,953,729	91,115,322	106,650,909	154,277,872	388,684,282	112,020,158	138,436,589	1,375,984,984
	Hospital Building	190,095,627	121,771,839	88,221,358	89,936,382	93,492,848	274,308,478	86,343,746	70,662,628	1,014,832,907
	Other Building	684,350,201	232,206,995	173,571,725	295,908,877	270,030,820	600,634,429	142,923,197	454,642,121	2,854,268,365
	Repair & Maintenance	182,803,523	110,268,040	97,535,856	70,404,965	164,678,653	236,696,384	143,494,049	448,088,946	1,453,970,414
	Group Total	**2,118,650,046**	**943,825,840**	**747,586,910**	**888,141,003**	**1,168,584,751**	**2,631,906,878**	**765,195,179**	**1,572,285,141**	**10,836,175,747**
Highway	Rehabilitation	1,172,043,841	728,221,818	1,462,024,210	102,829,900	31,658,436	367,236,407	448,500	1,087,723,325	4,952,186,437
	New work	47,680,315	2,478,597,269	5,068,397,951	38,182,970	4,650,132	35,567,390	119,600	3,821,873,994	11,495,069,619
	Repair & Maintenance	41,252,186	43,863,498	313,561,674	35,346,076	159,288	27,752,347	-	709,565,526	1,171,500,595
	Group Total	**1,260,976,342**	**3,250,682,585**	**6,843,983,835**	**176,358,946**	**36,467,856**	**430,556,144**	**568,100**	**5,619,162,845**	**17,618,756,651**
Bridge	Bridge	348,379,237	125,683,983	220,299,934	2,052,121	42,020,480	240,259,332	-	517,073,319	1,495,768,405
	Culvert	12,689,889	5,195,434	6,954,955	274,500	577,352	7,855,354	-	4,117,522	37,665,007
	Causeway	7,475,000	962,780	1,943,500	-	-	29,900,000	-	-	40,281,280
	Repair & Maintenance	777,400	254,150	598,000	-	-	1,554,800	-	747,500	3,931,850
	Group Total	**369,321,526**	**132,096,347**	**229,796,389**	**2,326,621**	**42,597,832**	**279,569,486**	**-**	**521,938,341**	**1,577,646,542**
Water supply & Drainage	Water Supply	95,099,860	45,911,156	56,801,339	15,429,041	8,634,613	155,965,783	1,766,265	413,956,335	793,564,392
	Drainage	109,674,856	76,854,556	65,497,176	35,485,398	17,005,640	130,684,899	149,500	152,152,117	587,504,141
	Pump house	9,863,790	4,865,061	8,790,065	388,252	2,307,220	40,221,876	4,230,850	4,933,500	75,600,614
	Repair & Maintenance	286,344	153,820	1,663,852	-	-	35,880	-	159,800	2,299,696
	Group Total	**214,924,850**	**127,784,593**	**132,752,432**	**51,302,691**	**27,947,473**	**326,908,438**	**6,146,615**	**571,201,752**	**1,458,968,843**
Irrigation & Land Drainage	Anicut	5,711,136	3,821,725	2,226,645	90,000	1,490,934	2,202,919	345,000	235,703	16,124,062
	Sluices	8,977,003	3,570,317	5,172,942	1,115,046	1,452,617	4,807,603	568,342	167,440	25,831,310
	Spill	986,891	657,929	328,966	-	227,745	328,966	-	-	2,530,497
	Dam	90,111,137	53,240,945	37,070,522	209,300	17,136,958	28,048,197	-	1,569,750	227,386,809
	Irrigation canal	48,858,220	28,174,674	45,300,306	1,836,120	6,527,957	33,949,660	1,644,500	24,899,058	191,190,496
	Repair & Maintenance	14,414,700	5,566,450	5,384,200	672,750	674,500	4,820,450	-	1,764,100	33,297,150
	Group Total	**169,059,087**	**95,032,040**	**95,483,581**	**3,923,216**	**27,510,711**	**74,157,795**	**2,557,842**	**28,636,051**	**496,360,324**
Dredging & Reclamation	Filling	-	-	-	-	-	-	-	14,070,503	14,070,503
	Retaining wall	1,495,000	523,250	448,500	299,000	299,000	897,000	254,150	448,500	4,664,400
	Group Total	**1,495,000**	**523,250**	**448,500**	**299,000**	**299,000**	**897,000**	**254,150**	**14,519,003**	**18,734,903**
Other	Other Construction	21,094,185	13,184,652	39,386,657	5,784,542	8,587,291	19,797,030	194,350	72,756,509	180,785,216
	Group Total	**21,094,185**	**13,184,652**	**39,386,657**	**5,784,542**	**8,587,291**	**19,797,030**	**194,350**	**72,756,509**	**180,785,216**
Total		**4,155,521,036**	**4,563,129,307**	**8,089,438,304**	**1,128,136,019**	**1,311,994,914**	**3,763,792,771**	**774,916,236**	**8,400,499,642**	**32,187,428,226**

Chart 7: Disrtibution of Row Materials Consumed by Type of Building - 2010
(All Sectors)
Other 1%
Irrigation & Land Drainage 1%
Water supply & Drainage 6%
Bridge 4%
Building 41%
Highway 47%

Table 7 : Average No. of Employees and Salaries Classified by Type of Construction Activity - 2010 (All Sectors)

Type of Construction Activity		Male Employees (No.)	Salaries for Male Employees (Rs.)	Female Employees (No.)	Salaries for Female Employees (Rs.)
Building	Housing Units	8,533	281,921,302	413	6,644,309
	Collective living quarters	1,174	50,514,064	54	5,120,315
	Office Building	7,739	633,582,709	345	66,205,096
	Market Complex	997	116,439,484	12	2,429,650
	Factories	685	89,853,232	3	743,792
	School Building	6,060	462,249,027	163	15,165,599
	Hospital Building	2,078	238,915,047	147	35,139,163
	Other Building	6,982	482,497,805	105	15,377,579
	Repair & Maintenance	8,337	501,118,818	80	1,906,771
	Group Total	**42,585**	**2,857,091,488**	**1,322**	**148,732,274**
Highway	Rehabilitation	7,405	968,067,126	252	15,606,027
	New work	2,739	413,062,334	335	47,654,620
	Repair & Maintenance	1,866	123,686,038	1,464	99,302,188
	Group Total	**12,010**	**1,504,815,498**	**2,051**	**162,562,835**
Bridge	Bridge	2,171	308,333,207	86	14,923,356
	Culvert	407	20,471,521	-	-
	Causeway	39	1,116,765	12	333,684
	Repair & Maintenance	15	336,375	-	-
	Group Total	**2,632**	**330,257,868**	**98**	**15,257,040**
Water supply & Drainage	Water Supply	1,771	215,554,764	258	14,485,691
	Drainage	642	68,650,792	66	3,412,547
	Pump house	231	37,481,398	9	1,197,316
	Repair & Maintenance	65	2,858,800	-	-
	Group Total	**2,709**	**324,545,754**	**333**	**19,095,554**
Irrigation & Land Drainage	Anicut	90	5,351,856	-	-
	Sluices	164	14,585,044	45	2,359,110
	Spill	27	1,136,200	18	149,500
	Dam	323	32,997,819	24	1,348,191
	Irrigation canal	1,045	61,122,030	126	2,267,920
	Repair & Maintenance	293	10,962,234	105	2,058,017
	Group Total	**1,942**	**126,155,183**	**318**	**8,182,738**
Dredging & Reclamation	Filling	72	401,856	21	2,033,200
	Retaining wall	60	4,485,000	-	-
	Group Total	**132**	**4,886,856**	**21**	**2,033,200**
Other	Other Construction	1,155	172,429,907	65	12,402,892
	Group Total	**1,155**	**172,429,907**	**65**	**12,402,892**
Total		**63,165**	**5,320,182,554**	**4,208**	**368,266,533**

Table 8 : Average No. of Employees and Salaries Classified by Type of Construction Activity - 2010 (Private Sector)

Type of Construction Activity		Male Employees (No.)	Salaries for Male Employees (Rs.)	Female Employees (No.)	Salaries for Female Employees (Rs.)
Building	Housing Units	7,956	176,822,201	358	112,000
	Collective living quarters	30	1,611,610	6	328,900
	Office Building	440	70,267,108	57	16,776,959
	Market Complex	752	82,259,000	-	-
	Factories	173	24,858,860	-	-
	School Building	194	50,830,000	-	-
	Hospital Building	150	18,460,634	-	-
	Other Building	1,783	41,114,581	15	1,734,200
	Repair & Maintenance	2,458	59,413,870	-	-
	Group Total	**13,936**	**525,637,864**	**436**	**18,952,059**
Highway	Rehabilitation	287	26,889,920	-	-
	New work	57	2,360,677	-	-
	Repair & Maintenance	27	499,928	-	-
	Group Total	**371**	**29,750,525**	-	-
Bridge	Bridge	90	5,461,295	-	-
	Group Total	**90**	**5,461,295**	-	-
Water supply & Drainage	Water Supply	1,172	167,440,180	21	492,985
	Group Total	**1,172**	**167,440,180**	**21**	**492,985**
Other	Other Construction	261	62,513,268	30	6,159,400
	Group Total	**261**	**62,513,268**	**30**	**6,159,400**
Total		**15,830**	**790,803,132**	**487**	**25,604,444**

Table 9 : Average No. of Employees and Salaries Classified by Type of Construction Activity - 2010 (Public Sector)

Type of Construction Activity			Columns			
			Male Employees (No.)	Salaries for Male Employees (Rs.)	Female Employees (No.)	Salaries for Female Employees (Rs.)
Rows	**Building**	Housing Units	577	105,099,101	55	6,532,309
		Collective living quarters	1,144	48,902,454	48	4,791,415
		Office Building	7,300	563,315,601	288	49,428,137
		Market Complex	245	34,180,484	12	2,429,650
		Factories	511	64,994,372	3	743,792
		School Building	5,865	411,419,027	163	15,165,599
		Hospital Building	1,929	220,454,413	147	35,139,163
		Other Building	5,199	441,383,224	90	13,643,379
		Repair & Maintenance	5,879	441,704,948	80	1,906,771
		Group Total	**28,649**	**2,331,453,624**	**886**	**129,780,215**
	Highway	Rehabilitation	7,118	941,177,206	252	15,606,027
		New work	2,682	410,701,657	335	47,654,620
		Repair & Maintenance	1,839	123,186,110	1,464	99,302,188
		Group Total	**11,639**	**1,475,064,973**	**2,051**	**162,562,835**
	Bridge	Bridge	2,081	302,871,912	86	14,923,356
		Culvert	407	20,471,521	-	-
		Causeway	39	1,116,765	12	333,684
		Repair & Maintenance	15	336,375	-	-
		Group Total	**2,542**	**324,796,573**	**98**	**15,257,040**
	Water supply & Drainage	Water Supply	599	48,114,584	237	13,992,706
		Drainage	642	68,650,792	66	3,412,547
		Pump house	231	37,481,398	9	1,197,316
		Repair & Maintenance	65	2,858,800	-	-
		Group Total	**1,537**	**157,105,574**	**312**	**18,602,569**
	Irrigation & Land Drainage	Anicut	90	5,351,856	-	-
		Sluices	164	14,585,044	45	2,359,110
		Spill	27	1,136,200	18	149,500
		Dam	323	32,997,819	24	1,348,191
		Irrigation canal	1,045	61,122,030	126	2,267,920
		Repair & Maintenance	293	10,962,234	105	2,058,017
		Group Total	**1,942**	**126,155,183**	**318**	**8,182,738**
	Dredging & Reclamation	Filling	72	401,856	21	2,033,200
		Retaining wall	60	4,485,000	-	-
		Group Total	**132**	**4,886,856**	**21**	**2,033,200**
	Other	Other Construction	894	109,916,639	35	6,243,492
		Group Total	**894**	**109,916,639**	**35**	**6,243,492**
	Total		**47,335**	**4,529,379,422**	**3,721**	**342,662,089**

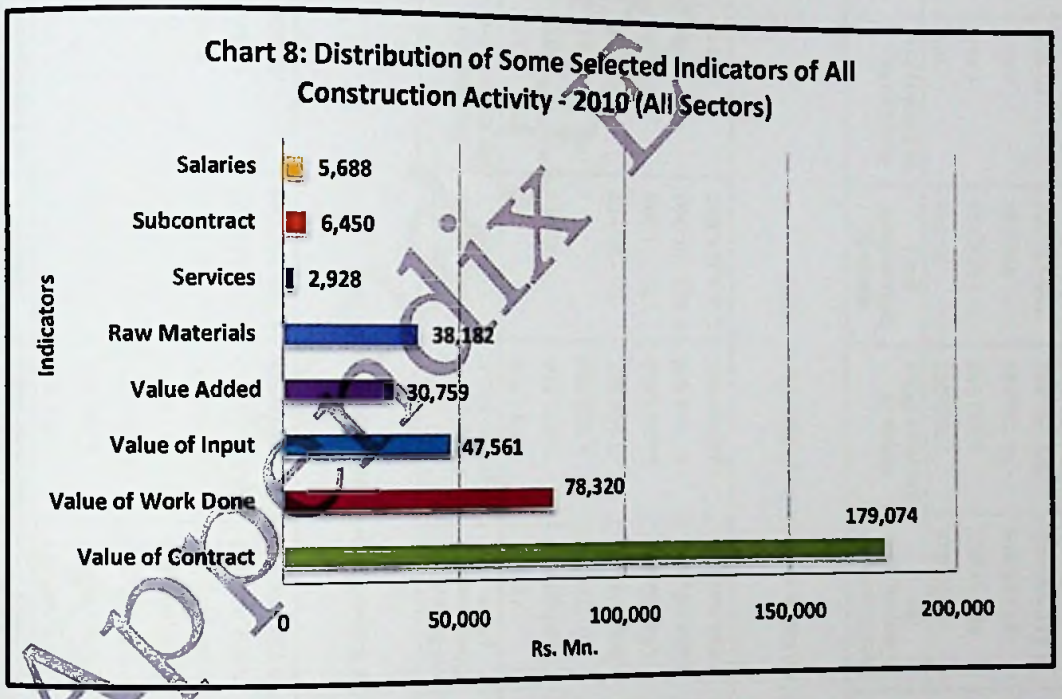
Chart 8: Distribution of Some Selected Indicators of All Construction Activity - 2010 (All Sectors)
Indicators
Salaries
Subcontract
Services
Raw Materials
Value Added
Value of Input
Value of Work Done
Value of Contract
5,688
6,450
2,928
38,182
30,759
47,561
78,320
179,074
0
50,000
100,000
150,000
200,000
Rs. Mn.

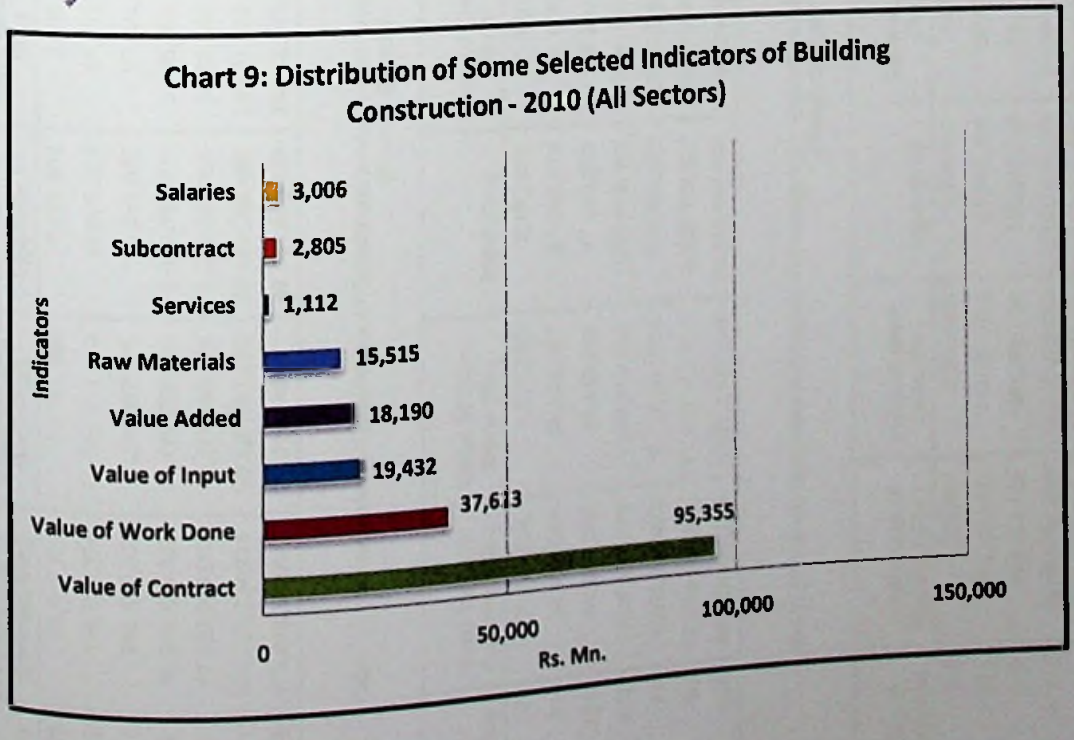
Chart 9: Distribution of Some Selected Indicators of Building Construction - 2010 (All Sectors)
Indicators
Salaries
Subcontract
Services
Raw Materials
Value Added
Value of Input
Value of Work Done
Value of Contract
3,006
2,805
1,112
15,515
18,190
19,432
37,613
95,355
0
50,000
100,000
150,000
Rs. Mn.

Table 10 : Some Selected Indicators of Construction Activities Classified by Value of Work Done Size Class - 2010
(All Sectors)

Value of Work Done Size Class (Rs.)	No. of Activities	Total Value of Contract (Rs.)	Value of Work Done (Rs.)	Input (Rs.)	Value Added (Rs.)	Raw Materials Consumed (Rs.)	Value of Services (Rs.)	Value of Subcontract (Rs.)	Average No. of Employees	Salaries for Employees (Rs.)
less than 250,000	96	31,417,923	10,647,189	7,177,802	3,469,386	3,248,071	3,864,490	65,240	317	1,580,679
250,000 - 499,999	359	146,027,224	145,819,419	94,808,209	51,011,210	84,757,007	8,106,452	1,944,750	2,033	35,745,246
500,000 - 999,999	361	252,575,303	236,687,025	153,263,562	83,423,464	131,413,648	21,036,273	813,640	2,957	51,597,559
1,000,000 - 14,999,999	2,188	16,269,319,323	9,428,758,040	6,072,388,703	3,356,369,337	5,333,964,417	373,159,025	365,265,261	35,622	1,857,538,486
15,000,000 - 49,999,999	333	17,583,868,058	8,377,183,249	5,043,828,085	3,333,355,164	3,661,946,230	455,004,899	926,876,956	8,993	1,134,360,600
50,000,000 & above	221	144,790,334,214	60,120,651,789	36,189,568,669	23,931,083,120	28,967,044,739	2,067,303,210	5,155,220,721	17,447	2,607,626,517
Total	**3,558**	**179,073,542,045**	**78,319,746,711**	**47,561,035,030**	**30,758,711,681**	**38,182,374,112**	**2,928,474,350**	**6,450,186,568**	**67,369**	**5,688,449,086**

Table 11 : Some Selected Indicators of Construction Activities Classified by Value of Work Done Size Class - 2010
(Private Sector)

Value of Work Done Size Class (Rs.)	No. of Activities	Total Value of Contract (Rs.)	Value of Work Done (Rs.)	Input (Rs.)	Value Added (Rs.)	Raw Materials Consumed (Rs.)	Value of Services (Rs.)	Value of Subcontract (Rs.)	Average No. of Employees	Salaries for Employees (Rs.)
less than 250,000	32	24,446,956	3,676,220	2,183,639	1,492,583	242,138	1,941,500	-	155	813,080
250,000 - 499,999	84	34,016,587	34,016,587	21,842,014	12,174,573	19,039,514	2,772,500	30,000	578	9,435,300
500,000 - 999,999	124	84,559,708	75,419,000	47,215,823	28,203,176	42,279,673	4,936,150	-	616	10,804,210
1,000,000 - 14,999,999	474	2,026,561,273	1,538,154,258	1,011,956,998	526,197,259	916,457,440	45,364,381	50,135,177	11,959	323,004,016
15,000,000 - 49,999,999	42	1,306,834,420	1,112,381,714	725,366,453	387,015,261	562,023,468	23,621,682	139,721,304	1,088	115,292,274
50,000,000 & above	69	57,046,581,412	17,938,402,111	8,300,632,937	9,637,769,174	4,454,903,653	742,294,078	3,103,435,206	1,920	357,058,695
Total	**825**	**60,523,000,356**	**20,702,049,890**	**10,109,197,864**	**10,592,852,026**	**5,994,945,886**	**820,930,291**	**3,293,321,687**	**16,316**	**816,407,575**

Table 12 : Some Selected Indicators of Construction Activities Classified by Value of Work Done Size Class - 2010
(Public Sector)

Value of Work Done Size Class (Rs.)	No. of Activities	Total Value of Contract (Rs.)	Value of Work Done (Rs.)	Input (Rs.)	Value Added (Rs.)	Raw Materials Consumed (Rs.)	Value of Services (Rs.)	Value of Subcontract (Rs.)	Average No. of Employees	Salaries for Employees (Rs.)
less than 250,000	64	6,970,967	6,970,968	4,994,163	1,976,805	3,005,933	1,922,991	65,240	162	767,599
250,000 - 499,999	275	112,010,637	111,802,832	72,966,195	38,836,637	65,717,493	5,333,952	1,914,750	1,455	26,309,946
500,000 - 999,999	237	168,015,595	161,268,026	106,047,738	55,220,287	89,133,975	16,100,123	813,640	2,341	40,793,349
1,000,000 - 14,999,999	1,714	14,242,758,050	7,890,603,783	5,060,431,705	2,830,172,077	4,417,506,977	327,794,644	315,130,084	23,663	1,534,534,470
15,000,000 - 49,999,999	291	16,277,033,637	7,264,801,535	4,318,461,632	2,946,339,903	3,099,922,762	431,383,217	787,155,653	7,905	1,019,068,325
50,000,000 & above	152	87,743,752,802	42,182,249,678	27,888,935,732	14,293,313,945	24,512,141,086	1,325,009,132	2,051,785,514	15,527	2,250,567,822
Total	**2,733**	**118,550,541,689**	**57,617,696,821**	**37,451,837,166**	**20,165,859,655**	**32,187,428,226**	**2,107,544,059**	**3,156,864,881**	**51,053**	**4,872,041,511**

Table 13 : Materials Used Classified by Value of Work Done Size Class - 2010
(All Sectors)

Value of Work Done Size Class (Rs.)	No. of Activities	Raw Materials Used (Rs.)								
		Cement	Sand	Rubble & Metal	Bricks	Timber	Iron & Steel	Roofing Materials	Other	Total
less than 250,000	96	657,335	335,339	301,532	280,234	335,258	97,052	214,226	1,027,094	3,248,072
250,000 - 499,999	359	11,760,614	8,993,867	8,444,683	9,584,477	10,309,787	11,529,081	8,881,988	15,252,510	84,757,007
500,000 - 999,999	361	20,361,792	10,982,947	16,755,449	11,040,410	29,228,957	12,898,522	14,568,400	15,577,170	131,413,648
1,000,000 - 14,999,999	2,188	942,918,232	543,915,220	563,879,482	456,294,747	559,165,309	997,659,764	379,775,047	890,356,616	5,333,964,417
15,000,000 - 49,999,999	333	595,156,842	340,142,938	535,613,667	290,198,771	265,700,032	713,549,246	220,046,069	701,538,664	3,661,946,230
50,000,000 & above	221	3,760,782,945	4,041,376,690	7,358,556,926	768,313,943	964,138,551	3,194,130,290	557,571,875	8,322,173,519	28,967,044,739
Total	**3,558**	**5,331,637,760**	**4,945,747,001**	**8,483,551,739**	**1,535,712,582**	**1,828,877,894**	**4,929,863,955**	**1,181,057,605**	**9,945,925,573**	**38,182,374,113**

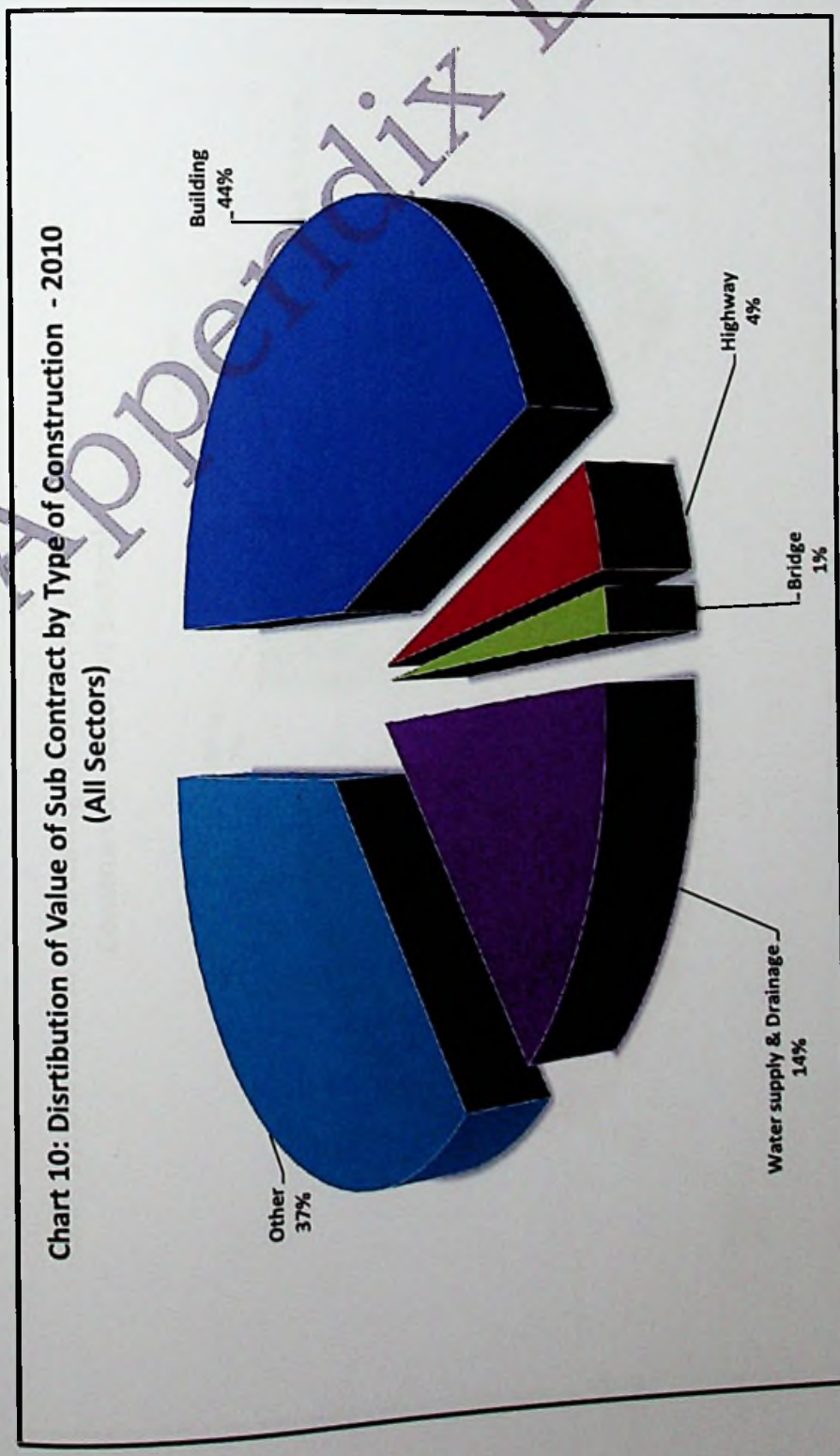
Chart 10: Disrtibution of Value of Sub Contract by Type of Construction - 2010
(All Sectors)
Building
44%
Highway
4%
Bridge
1%
Water supply & Drainage
14%
Other
37%

Chart 11: Disrtibution of Percentage of Sub Contract on Work Done by Type of Construction- 2010 (All Sectors)
Building 7%
Highway 1%
Bridge 3%
Water supply & Drainage 12%
Dredging & Reclamation 17%
Other 60%

Table 14 : Value of Contract for New Building by Floor Area of the Building - 2010 (All Sectors)

Floor Area Size Class (Sq. feet)	Floor Area of the Building (Sq. feet)	Value of Contract for New Building (Rs.)
less than 500	15,477	31,763,270
500 - 999	37,146	131,877,390
1000 - 1499	105,415	291,944,511
1500 - 1999	83,893	383,549,197
2000 & above	28,436,317	68,691,742,239
Total	28,678,248	69,530,876,607

Appendix F

Sri Lanka

Qualifications Framework

(SLQF)

Updated Version – February 2015

Ministry of Higher Education

TABLE OF CONTENTS

INTRODUCTION

There has been a significant increase in the mobility of learners and academics in the recent past across countries and regions of the world requiring national higher education systems to support and accommodate such developments. In that light, the Sri Lanka Qualifications Framework (SLQF) is an important element of systems development in the higher education sector, which at the end offers a transparent and coherent framework for the learner to optimize his/her objective of learning throughout life, while at the same time improving many vital aspects of learning and assessing the learning process. The establishment of the SLQF will help improve many aspects and processes in the learning and the methods of delivery. It will also enhance the quality of education at home while at the same time provide a clear system to develop links with the higher education institutions abroad.

The SLQF is a nationally consistent framework for all higher education qualifications offered in Sri Lanka. The SLQF applies to all higher education institutions (HEIs) both public and private, which provide post-secondary education. It recognizes the volume of learning of students and identifies the learning outcomes that are to be achieved by the qualification holders. The SLQF comprises twelve levels and the descriptors of each of these levels are comprehensively defined. Since the volume of learning is considered in the SLQF, the number of credits that should be earned by students for each qualification is also given. With the objective of having a uniform system in naming a qualification, the designators and qualifiers of each qualification have been identified in the SLQF. The abbreviations for each qualification were also identified to maintain uniformity. The purposes and scope, and attributes expected for the award of each qualification, as well as the minimum admission requirements along with possible progression opportunities are also stated in the SLQF.

The SLQF integrates the National Vocational Qualifications Framework (NVQF) developed by the Tertiary and Vocational Education Commission and the pathways of lateral mobility between the vocational education sector and the higher education sector have also been identified. The SLQF helps in the recognition of accredited prior learning in order to facilitate the vertical mobility within the higher education system.

With the globalization of higher education, national qualifications frameworks have been developed in many countries. These have not only helped to evaluate the higher educational qualifications obtained from different countries but also have facilitated the appropriate international interpretation of national qualification levels. The SLQF also contributes to the evaluation of qualifications obtained from cross border HEIs as the levels identified in this framework are based on the learning outcomes of the qualification holders. The SLQF will assist in the evaluation and recognition of qualifications offered by Sri Lankan HEIs and this will be useful to the qualification holders to identify the level of their qualifications. In addition, the SLQF will assist potential employers to know the level of learning and the attributes of a particular qualification holder.

The SLQF is useful to the HEIs, both in the state sector and non-state sector in designing courses as the minimum level of learning outcomes required for each qualification is indicated by the minimum number of credits that should be earned by a qualification holder. Thus, the SLQF will contribute towards strengthening the quality of higher education qualifications offered by universities and other HEIs in Sri Lanka.

The SLQF does not deal with the designing and offering of short term courses by any HEI that will meet specific learning outcomes. These courses may be of a few months duration and a certificate may be awarded on completion of such courses. Those certificates are not aligned with the qualifications identified in the SLQF. In addition, honorary degrees and certificates of attendance are not included in the SLQF. The honorary doctorate is differentiated from doctoral degrees in the SLQF.

This is an updated version of the SLQF published by the Ministry of Higher Education (First Edition in June 2012, Second Edition in October 2012 and Third Edition in January 2013) and this version supersedes all previous versions.

AIM AND OBJECTIVES OF SLQF

The aim of the SLQF is to create an integral national framework for learning achievements by recognizing and accrediting qualifications offered by different institutions engaged in higher education and vocational training in Sri Lanka.

The objectives of the SLQF are to;

i) enhance the quality of higher education and training at all levels;
ii) facilitate access to higher learning and thereby contribute to full personal development of learners and to social and economic development of the country;
iii) enhance equity in higher education, training and employment opportunities;
iv) assist employers to identify the levels of knowledge, skills and competencies of qualification holders;
v) develop positive attitudes in qualification holders;
vi) facilitate lateral and vertical mobility, and progression within higher education and career pathways;
vii) provide guidance in comparing qualifications offered by different institutions;
viii) help in developing higher education and vocational training programmes at appropriate levels;
ix) recognize prior learning; and
x) promote lifelong learning.

KEY BENEFITS

The SLQF will be useful to all stakeholders of higher education including students, parents, employers, as well as education and training providers.

- For learners, the SLQF will be useful to recognize and evaluate prior learning and identify the pathways of acquiring higher qualifications. This will enable learners to develop their full potential and thereby contribute to the social and economic development of the country at large.
- The level descriptors given in the SLQF will be useful for employers to identify the levels of competencies of qualification holders. It will also help in comparing the qualifications so that the supply and demand for knowledge, skills and competencies could be properly matched. Further, the SLQF will be useful in comparing the qualifications offered by different institutions. This will help the employers to find appropriate qualification holders for their business needs.
- The SLQF describes the credit requirements for each qualification level as well as intended learning outcomes. Therefore, for higher education providers, both in the state and private sectors, the SLQF will be useful in designing their academic programmes.
- The SLQF enables all stakeholders of post-secondary education to identify the full range of qualifications offered in the higher education system in Sri Lanka and comparable levels of vocational education and training. This helps to understand how qualifications are related to each other and how they contribute to the enhancement of knowledge and understanding, and improvement of intellectual abilities including analytical skills, evaluation skills, problem solving skills and soft skills.
- The SLQF will also be useful to the general public to have access to appropriate lifelong education and training, which helps them to fulfill their personal as well as social and economic potential.
- The SLQF will be useful to programme approving agencies to identify the appropriate levels of qualifications offered by different HEIs. Further, it helps in evaluating different qualifications offered by HEIs, both local and foreign, which will be useful when taking decisions in recruitment and promotion in the academic, technical and professional sectors.

Levels of Qualifications

- The SLQF consists of twelve levels. The demand for learning outcomes and complexity of learning increase with each level. The first two levels (levels 1-2) are senior secondary level education qualifications and the next four levels (levels 3-6) are undergraduate qualifications. The other six levels (levels 7-12) are postgraduate qualifications. The levels are not necessarily directly related to the years of study.
- The SLQF levels, the qualifications awarded at each level and the minimum credit requirement for each level are summarized in Table 1. The comparable levels of NVQF are also identified in the SLQF. Different levels of the SLQF with some examples and comparable NVQF levels are given in Table 2.

Naming of Qualifications

- **Qualification type** is the first name given to a qualification. The SLQF comprises the following qualification types:

  Senior Secondary Level: - Certificate, and Advanced Certificate

  Undergraduate Level: - Diploma, Higher Diploma, Bachelors, and Honours Bachelors

  Postgraduate Level: -Postgraduate Certificate, Postgraduate diploma, Masters, and Doctorate.
- In principle, irrespective of the length of the programme, all Bachelors Degrees and Bachelors Honours Degrees are placed respectively at level 5 and level 6 in the SLQF
- The **designator** is the second name given to a qualification. This indicates the broad area of study or discipline. All degrees, i.e., Bachelors, Masters and Doctoral degrees have designators. The examples are Bachelor of Arts, Bachelor of Science, Master of Commerce, Doctor of Philosophy and Doctor of Science. However, designators are not used for Diplomas and Certificates. The linking word between the qualification type and designator is 'of', which is omitted when abbreviating. E.g. BA, BSc, MCom.
- The **qualifier** is the third name given to a qualification. This is used to indicate the field of specialization of a qualification. The qualifier may be used in all qualification types, i.e. degrees, diplomas and certificates. The linking word between the qualifier and the qualification type or its designator, as the case may be, is 'in'. Some examples are Bachelor of Science Honours in Chemistry, Postgraduate Certificate in Library Science, and Master of Philosophy in Environmental Science. When abbreviating, the word 'in' is dropped and the qualifier is placed within brackets. E.g. PGCert (Lib Sc), MPhil (EnvSc), BScHons (Chemistry).
- Some qualifications may include a second qualifier too. This second qualifier qualifies the first qualifier. Examples are Bachelor of Science in

Engineering in Mechanical Engineering. When abbreviating both qualifiers are placed within brackets and the words 'in' are dropped. E.g. BSc (Eng) (MechEng).

When there is no designator, the qualifier may follow the qualification type. E.g. Postgraduate Diploma in Environmental Management. When abbreviating, the word 'in' is dropped and the qualifier is placed within brackets. E.g. PGDip (EnvMgmt). The qualification types that do not have a designator may include a second qualifier too; E.g. Postgraduate Certificate in Fine Arts in Drama. Such a qualification is abbreviated as PGCert (Fine Arts) (Drama).

In order to use a qualifier, at least 50% of the minimum total credits for the qualification and at least 50% of the minimum number of credits at the exit level of the qualification must be in the field of specialization denoted by the qualifier. The same applies to the second qualifier as well.

Volume of learning

The volume of learning at each level is described in terms of **credits.**

In the SLQF credit system, the student workload of study programme is defined as 1500 **notional learning hours** per academic year. The notional learning hours include direct contact hours with teachers and trainers, time spent in self-learning, preparation for assignments, carrying out assignments and assessments. The need to undertake any or all of these will be considered when a credit is being allocated to a course unit or a module, when the syllabus is designed. It is understood that the combination of learning activities may vary from one course unit or module to another.

In designing a particular course unit or a module, its workload should be computed based on the total amount of learning activities a student is expected to complete in order to achieve the foreseen learning outcomes and the workload expressed in time should match the number of credits available for the course unit or module.

The minimum number of credits per course unit or module is 1. The number of credits per course unit or module should be indicated by whole numbers. One credit is considered equivalent to 50 notional learning hours for a taught course, laboratory studies course or field studies/clinical work. In case of industrial training, including time allocated for assessments and in case of research, including time allocated for literature survey, one credit is considered equivalent to a minimum of 100 notional hours.

Learning outcomes must be assessed by valid and reliable methods of assessment. Credits have to be earned by students after successful completion of the work required and appropriate assessment of learning outcomes.

Every qualification type of Levels 1 - 12 on the SLQF has a credit value allocated to each of its component parts and to the whole qualification.

Minimum Volume of Learning for each Level of SLQF

SLQF Level	Qualification Awarded	Minimum Volume of Learning for the Award
12	Doctor of Philosophy / MD with Board Certification/Doctor of Letters/Doctor of Science	Minimum 3 years of fulltime or equivalent time of original research after SLQL 6 or above
11	Master of Philosophy / DM	Minimum 2 years of fulltime or equivalent time of original research after SLQL 5 or above
10	Masters with course work and a research component	60 credits after SLQL 5 or SLQL 6 which include a research component of minimum 15 credits
9	Masters with course work	30 credits after SLQL 5 or SLQL 6
8	Postgraduate Diploma	25 credits after SLQL 5 or SLQL 6
7	Postgraduate Certificate	20 credits after SLQL 5 or SLQL 6
6	Honours Bachelors	120 credits after SLQL 2 or 90 credits after SLQL 3 or 60 credits after SLQL 4 or 30 credits after SLQL 5
5	Bachelors, Bachelors Double Major	90 credits after SLQL 2 or 60 credits after SLQL 3 or 30 credits after SLQL 4
4	Higher Diploma	60 credits after SLQL 2 or 30 credits after SLQL 3
3	Diploma	30 credits after SLQL 2
2	Advanced Certificate (GCE A/L or equivalent)	
1	Certificate (GCE O/L or equivalent)	

Table 1

Different SLQF Levels with Higher Education Qualification Types and Comparable Levels of NVQF

The comparable NVQ and SLQF levels have been recognised on the basis of significant similarities in the learning outcomes stated under respective level descriptors in the two frameworks by a panel of experts. Degree level qualification (NVQ 7) is benchmarked to internationally accepted standard for a Bachelor degree (SLQF Level 5). Nonetheless, the proportion of cognitive outcomes and psychomotor outcomes may differ in the two qualifications, especially in qualifications below SLQF 2 (NVQ 4). Further, the attributes of two qualification holders, below the degree level, at comparable SLQF and NVQ levels may differ.

SLQF Level	Qualification awarded	Comparable NVQ Levels
12	Doctor of Philosophy / MD with Board Certification/Doctor of Letters/Doctor of Science	
11	Master of Philosophy / DM	
10	Masters with course work and a research component	
9	Masters with course work	
8	Postgraduate Diploma	
7	Postgraduate Certificate	
6	Honours Bachelors	
5	Bachelors, Bachelors Double Major	7
4	Higher Diploma	6
3	Diploma	5
2	Advanced Certificate (GCE A/L or equivalent)	4
		3
1	Certificate (GCE O/L or equivalent)	2

Table 2

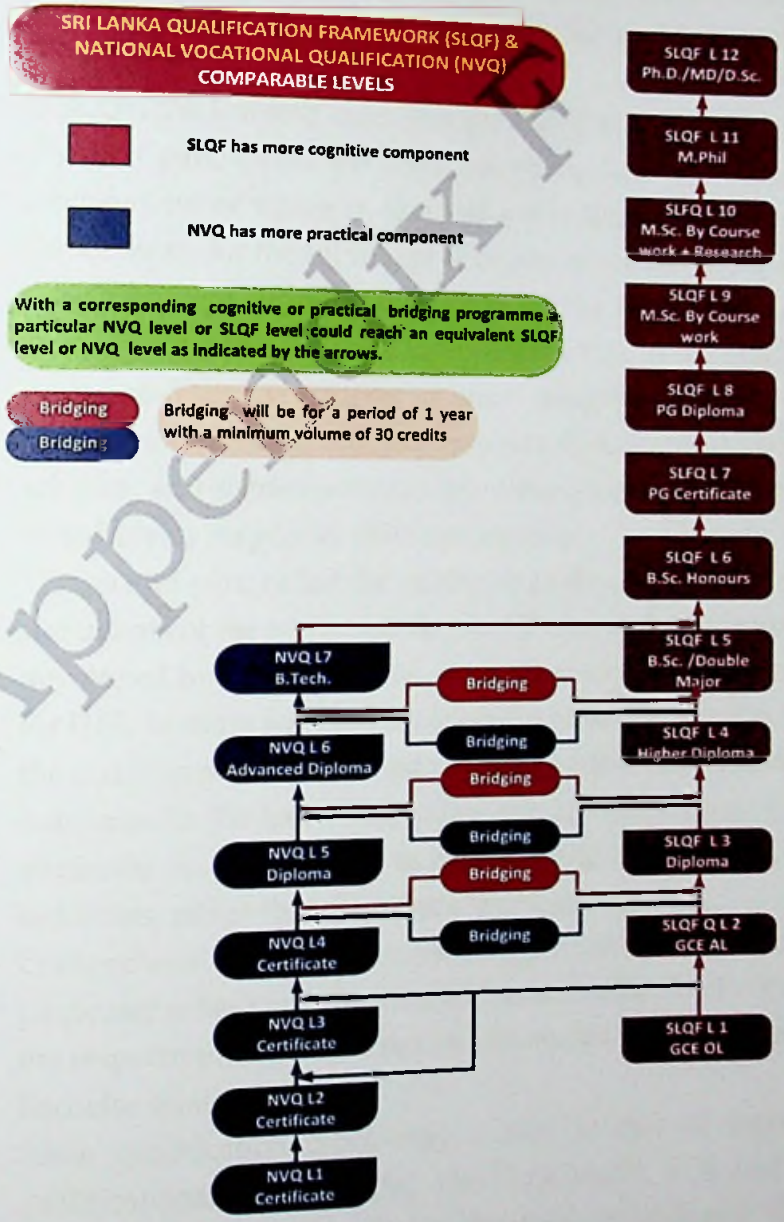
SRI LANKA QUALIFICATION FRAMEWORK (SLQF) & NATIONAL VOCATIONAL QUALIFICATION (NVQ) COMPARABLE LEVELS
SLQF has more cognitive component
NVQ has more practical component
With a corresponding cognitive or practical bridging programme a particular NVQ level or SLQF level could reach an equivalent SLQF level or NVQ level as indicated by the arrows.
Bridging
Bridging
Bridging will be for a period of 1 year with a minimum volume of 30 credits
SLQF L 12 Ph.D./MD/D.Sc.
SLQF L 11 M.Phil
SLFQ L 10 M.Sc. By Course work + Research
SLQF L 9 M.Sc. By Course work
SLQF L 8 PG Diploma
SLFQ L 7 PG Certificate
SLQF L 6 B.Sc. Honours
SLQF L 5 B.Sc. /Double Major
SLQF L 4 Higher Diploma
SLQF L 3 Diploma
SLQF Q L 2 GCE AL
SLQF L 1 GCE OL
NVQ L7 B.Tech.
NVQ L 6 Advanced Diploma
NVQ L 5 Diploma
NVQ L4 Certificate
NVQ L3 Certificate
NVQ L2 Certificate
NVQ L1 Certificate
Bridging
Bridging
Bridging
Bridging
Bridging
Bridging

Figure 1

- Learning outcomes are statements that describe what learners should know, understand and can demonstrate upon the completion of a course or study programme.
- In SLQF, the learning outcomes are stated in two parts.
- The first part, called the level descriptor, is a set of outcome statements, achievement of which is assessed and which a student should be able to demonstrate for the fulfilment of requirements of part-qualifications i.e. the course units or modules that make up the qualification, for award of the qualification. This part will be of significance to the HEIs to systematically design and review courses or study programmes. It is essential that the curriculum and assessments to provide all students with the opportunity to achieve, and to demonstrate the achievement of the intended outcomes stated under respective level descriptors.
- The second part, called the attributes of the qualification holders, is a set of statements of the wider abilities that the typical student is expected to have developed by the end of the course or study programme. It will be useful for HEIs to share with stakeholders the general capabilities of the holders of the qualification. It is by first considering these attributes that the learning outcomes in the level descriptors are defined. Hence, in this sense, these attributes could be termed as precursors to the study programme learning outcomes, rather than the actual learning outcomes.
- Comprehensive statements on the expected specific learning outcomes in particular subject areas are not addressed in the SLQF. They are available in the respective subject benchmark statements for the Bachelors and Honours Bachelor qualifications.
- Some qualification types may consist of one or more levels of part-qualifications. For example, the SLQ levels 3, 4 and 5 are normally corresponding sequentially to the first, second and third years of an undergraduate study programme leading to Bachelors qualification type. However, there is no expectation that, for example, the learners should necessarily follow all Level 3 course units or modules only during the first year of undergraduate study. The HEI has the freedom to determine the most appropriate structure and progression towards achieving the intended attributes for the award of the qualification.

Qualification descriptors

- The qualification descriptors stated in the SLQF for each level provide the specifications such as the SLQF exit level, the qualification type with designators and the qualifiers, the number of credits required at each level, the purpose and scope, and the generic outcomes and attributes expected for the award of each qualification, as well as the minimum admission requirements along with possible progression opportunities (Table 3). For each qualification, the generic outcomes and attributes signify the expected capabilities from qualification holders defined in terms of the four main domains of learning: knowledge; skills; attitudes; and mind-set and paradigm, characterised as the **K-SAM** model.

  Knowledge: *what the qualification holders know*

  Skills: *what the qualification holders can do*

  Attitudes, Values, Professionalism and Vision for life: *how the qualification holders think and behave*

  Mind-set and Paradigm: *how the qualification holders perceive the world*

- The K-SAM model is considered an integrated model. Thus, each learning outcome identified under the attributes of a particular level may not be confined to a single domain within the K-SAM model. For example, communication skills (i.e. a learning outcome) is not considered only as a skill (i.e. a single domain of the K-SAM model). The SLQF recognizes a given learning outcome as a blend of more than one domain (in most cases all the domains) in the K-SAM model.

Level Descriptors

- The level descriptors identify the learning outcomes at each level. In describing each level, the degree of intellectual abilities, cognitive skills and soft skills are considered.
- The purpose of the level descriptors for the SLQF levels 1 to 12 is to guarantee consistency across learning in achieving the expected attributes of qualifications through part-qualification levels, and to help a HEI to evaluate the comparability of qualifications and part-qualifications issued by another HEI (Table 4). The level descriptors may also be used as a guideline to develop course materials of a particular study programme having several course units or modules in order to make sure that the learners' could progressively meet the expected attributes of the relevant qualification type at the end of the course.
- The following twelve learning outcomes identified by the Ministry of Higher Education in Sri Lanka as of national importance have been customized as level descriptors to suit each level of qualification. The categorization of the learning outcomes according to the principal K-SAM components is as follows:

Categories of Learning Outcomes	Core Area
1. Subject / Theoretical Knowledge	Knowledge
2. Practical Knowledge and Application	
3. Communication	Skills
4. Teamwork and Leadership	
5. Creativity and Problem Solving	
6. Managerial and Entrepreneurship	
7. Information Usage and Management	
8. Networking and Social Skills	
9. Adaptability and Flexibility	Attitudes, Values, Professionalism and Vision for life
10. Attitudes, Values and Professionalism	
11. Vision for Life	
12. Updating Self / Lifelong Learning	Mind-set and Paradigm

- Some of the commonly used student-centred teaching and learning methods recommended for the respective learning outcomes are given below:

Categories of Learning outcomes	Student-centred teaching and learning methods
1. Subject / Theoretical Knowledge	Independent learning activities, interactive lectures, team-based learning, and other small group activities
2. Practical Knowledge and Application	Problem-based learning, team-based learning, inquiry-based learning, practical classes, laboratory sessions, role play
3. Communication	Student presentations, role play, debates, dramas
4. Teamwork and Leadership	Group projects, industrial training, small group learning; e.g. problem-based learning, games
5. Creativity and Problem Solving	Assignments, projects, small group learning activities; e.g. problem-based learning
6. Managerial and Entrepreneurship	Group projects, industrial training, small group learning; e.g. problem-based learning, games, simulated training, industrial (workplace-based) training
7. Information Usage and Management	Assignments, presentations, projects, case studies
8. Networking and Social Skills	Student presentations, role-play, debates, dramas
9. Adaptability and Flexibility	Group projects, industrial training, small group learning; e.g. problem-based learning, role plays, portfolios
10. Attitudes, Values and Professionalism	Group projects, industrial training, small group learning; e.g. problem-based learning, role play, portfolios
11. Vision for Life	Portfolios, reflective practice
12. Updating Self / Lifelong Learning	Portfolios, reflective practice

- The learner is expected to meet or demonstrate that certain learning outcomes have been achieved. Therefore, the assessment of the outcomes of learning by effective and appropriate assessment methods is essential in the process of the qualification framework.

Sri Lanka Qualifications Framework

Qualification Descriptors and Level Descriptors

Table 3

QUALIFICATION DESCRIPTORS – SLQ Levels 1 to 6

SLQF Exit level	SLQF Level 1	SLQF Level 2	SLQF Level 3	SLQF Level 4	SLQF Level 5	SLQF Level 6
Qualification Type	**Certificate**	**Advanced Certificate**	**DIPLOMA**	**HIGHER DIPLOMA**	**BACHELORS DEGREE**	**HONOURS BACHELORS DEGREE**
Purpose and Scope of Qualification			The purpose of this qualification is to produce a person with focused knowledge and skills in a particular field for the requirement of the labour market. This qualification is basically occupational or vocational specific. It combines in-depth knowledge in a particular field with practical experience aimed at acquiring required skills in a work place. These programmes usually include simulated work experience or work integrated learning.	The purpose of this qualification is to offer an intensive, focused education in a particular area of specialization to meet the requirements of the labour market.	The purpose of this qualification is to prepare a graduate with a broad knowledge on theory, practice and methodology of disciplines that enable them to bear responsibility in an academic or professional environment.	Purpose of this qualification is to provide a broad education in a particular discipline in order to equip graduates with knowledge, practice and methodology that enable them to obtain appropriate professional status/qualification or prepare them for research/practice based postgraduate studies. This qualification helps to consolidate and strengthen the student's knowledge in a particular discipline and to develop research capacity and skills in that discipline. This qualification demands a high level of theoretical engagement and intellectual independence. Further, these programmes must include a research component in the field of specialization carried out under the guidance and supervision of a qualification holder of level 10, 11 or 12 and reporting in a manner of a report/dissertation, which will be assessed. The research component should not be less than a total of at least 8 credits of SLQ level 6. In some areas, Bachelors Special degrees are recognized by an appropriate professional body.

Attributes of Qualification Holders				
K	***The qualification holders:*** Should have an understanding of theory, practice, relevant methodology and recent developments in a particular area of study. -Should be able to apply the concepts and principles in the area of study and suggest solutions to problems in an employment context.	**The qualification holders:** -Should have a deep understanding of theory, practice, relevant methodology and recent developments in a particular area of study. -Should be able to apply the concepts and principles in the area of study, analyze information and suggest solutions to problems in an employment context.	**The qualifications holders:** -Should know about the well-established principles and content in their fields of study. -should be information literate; what they can do with what they have acquired from wide learning, use appropriate techniques to initiate and undertake analysis of information, to identify problems and find solutions to them.	**The qualifications holders:** - Should be able to - construct and sustain arguments -- Should be able to solve problems using appropriate ideas and techniques in a professional context -- Should be able to demonstrate thorough and systematic understanding of core aspects of the subject of study. -- Should be able to accurately use the established techniques of analysis within that discipline
S	-Should be able to communicate successfully, the results to specialist and non-specialist audiences and exercise personal responsibilities and leadership in some tasks in the workplace.	-Should be able to communicate successfully, the results of analysis and arguments to specialist and non-specialist audiences and exercise personal responsibilities and leadership in some tasks in the workplace.	-Should display qualities and skills necessary for employment or further learning.	- - Should be able to clearly communicate information, ideas, issues, problems and solutions to specialist as well as non-specialist audiences
A	-Should be capable of carrying out further training and acquire new competencies which will help to enhance their capacity to bear responsibilities.	-Should be capable of carrying out further training and acquire new competencies which will help to enhance their capacity to bear responsibilities.	-Should be able to communicate information effectively to specialist and wider society.	- - Should be able to ready to exercise initiative, identify situations they need support from others
M	-Should display qualities and transferable skills as well as subject specific skills necessary for employment, carry out further training and manage their own learning.	-Should display qualities and transferable skills as well as subject specific skills necessary for employment, carry out further training and manage their own learning.	-Should be able to acquire additional competencies; pursue further learning; be a change agent; assume responsibility for decision making.	-- Should be able to prepared to carry out further training and manage own learning

SLQF Exit level	*SLQF Level 1*	*SLQF Level 2*	*SLQF Level 3*	*SLQF Level 4*	*SLQF Level 5*	*SLQF Level 6*
Qualification Type	**Certificate**	**Advanced Certificate**	**DIPLOMA**	**HIGHER DIPLOMA**	**BACHELORS DEGREE**	**HONOURS BACHELORS DEGREE**
Minimum admission requirement	1. Completion of junior secondary level, which is Grade 9 or an equivalent, or 2. Completion of primary education and certified work experience equivalent to a minimum period of two years in a particular field may also be considered as an equivalent qualification for admission to SLQF level 1 provided that the applicant is at least 16 years of age.	1. General Certificate of Education (Ordinary Level) or an equivalent qualification, or 2. Completion of NVQF level 3.	1. General Certificate of Education (Advanced level) or an equivalent qualification, or 2. A foundation course equivalent to SLQF level 2 followed by passing an aptitude test, or 3. Completion of NVQF level 4 or accredited work experience or accredited prior learning as determined by the academic authority of the HEI concerned may also be considered as equivalent qualification for admission to SLQF level 3 in a particular field of specialization.	1. General Certificate of Education (Advanced level) or an equivalent qualification and completion of a minimum of 30 credits at SLQF Level3, or 2. Completion of NVQF level 5 as determined by the academic authority of the HEI concerned may also be considered as an equivalent qualification in that field of specialization.	1. General Certificate of Education (Advanced level) or an equivalent qualification and completion of at least 60 credits of SLQF levels 3 and 4 with a minimum of 30 credits at SLQF Level 4 or equivalent, or 2. Completion of NVQF level 6 as determined by the academic authority of the HEI concerned may also be considered as an equivalent qualification for admission in that field of specialization.	1. General Certificate of Education (Advanced level) or an equivalent qualification, or 2. Completion of at least one academic year of study in a Bachelors degree programme and being selected, or 3. Completion of NVQF level 7 as determined by the academic authority of the HEI concerned may also be considered as an equivalent qualification for admission in that field of specialization.
Volume of Learning			30 credits after SLQL 2.	60 credits after SLQL 2 or 30 credits after SLQL 3.	90 credits after SLQL 2 or 60 credits after SLQL 3 or 30 credits after SLQL 4.	120 credits after SLQL 2 or 90 credits after SLQL 3 or 60 credits after SLQL 4 or 30 credits after SLQL 5.
Designators	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Bachelor's degree designators are limited to broad areas of study and disciplines. Some examples are Bachelor of Arts and Bachelor of Science.	Honours Bachelor's Degree designators are specific and are limited to broad generic areas of discipline or study. Some examples are Bachelor of Arts Honours, Bachelor of Commerce Honours, Bachelor of Business Administration Honours and Bachelor of Science Honours.

Qualifiers	*Maximum one* *Example: Certificate in catering*	*Maximum two* *Examples: Advanced Certificate in Hospitality Management* Advanced Certificate in Hospitality Management in Professional Cookery	*Maximum two* *Examples: Diploma in Hospitality Management* Diploma in Hospitality Management in Professional Cookery	*Specific, maximum one* *Example: Higher Diploma in Accountancy* Higher Diploma in Information Technology	Maximum two Examples: Bachelor of Arts in Peace and Conflict Resolution Bachelor of Science in Environmental Management	Maximum two Examples: Bachelor of Science Honours in Engineering in Mechanical Engineering Bachelor of Arts Honours in Sociology, Bachelor of Science Honours in Chemistry.
Abbreviation	Cert Example: Cert (Catering)	AdvCert Examples: AdvCert (Hospitality Management) AdvCert (Hospitality Management-Professional Cookery)	Dip Example: Dip (Hospitality Management), Dip (Hospitality Management-Professional Cookery) Dip (Hospitality Management), Dip (Hospitality Management-Professional Cookery)	HDip Example: HDip (A), HDip (IT).	Examples: BA, BSc, BA (Peace and Conflict Resolution), BSc (Env Mgmt).	Examples: BScHons (Eng) (Mech Eng), BScHons (Chemisty), BAHons (Archaeology), BAHons, BScHons, BComHons, BBAHons.
Progression	Completion of SLQF Level 1 meets the minimum entry requirement for a qualification in SLQF level 2, in a particular area of specialization.	Completion of SLQF level 2 meets the minimum entry requirement for a qualification in SLQF level 3 in that particular area of specialization.	Completion of SLQF level 3 meets the minimum entry requirement for a qualification in SLQF level 4 in that particular field of specialization.	Completion of Higher Diploma meets the minimum requirement for admission to SLQF level 5.	Completion of Bachelor's Degree meets the minimum entry requirement for admission to any SLQF level from 7 to10. If the qualification holder obtains a minimum GPA of 3.0 in the scale of 0-4, he/she may be considered for admission to SLQF level 11 on successful completion of an MPhil Qualifying examination which will be conducted after completion of 30 credits equivalent to those of SLQF level 6 in the same or a related subject. A qualification shall not be awarded for early exit from SLQF level 5. However, a Diploma or a Certificate may be awarded for those completing the requirements equivalent to SLQF Levels 4 or 3 respectively.	Completion of Honours Bachelor's Degree meets the minimum entry requirement for admission to any SLQF level from 7 to 10, or to SLQF level 11 or 12 after successful completion of a qualifying examination. If the qualification holder possesses a minimum GPA of 3.0 in a scale of 0-4, even without a qualifying examination he/she may be admitted to SLQF level 11 or 12. Bachelor's degree of level 5 may be awarded for early exit from Bachelors Honours Degree programme provided that the candidate has completed minimum of 30 credits in levels 5 and/or 6. However, in professional disciplines a qualifications may not be awarded for early exit.

QUALIFICATION DESCRIPTORS – SLQ Levels 7 to 12

SLQF Exit level:	SLQF Level 7	SLQF Level 8	SLQF Level 9	SLQF Level 10	SLQF Level 11	SLQF Level 12
Qualification Type	**POSTGRADUATE CERTIFICATE**	**POSTGRADUATE DIPLOMA**	**MASTERS DEGREE WITH COURSE WORK**	**MASTERS DEGREE**	**MASTER OF PHILOSOPHY DEGREE**	**DOCTORAL DEGREE**
Purpose and Scope of Qualification	**The purpose of this qualification** is to enhance the capacity of graduates / holders of professional qualifications to advance their knowledge in a particular field of study. This qualification demands a high level of theoretical engagement and does not involve conducting a research project or an independent study Any Bachelor's degree with a minimum of 150 credits and a minimum student workload of 7500 notional learning hours, encompassing professional practice spanning over several levels starting from SLQF level 3, and accredited by a recognized Accreditation Agency may be included in SLQF level 7, provided that the final outcome of the qualification meets the descriptors of SLQF level 7.	**The purpose of this qualification** is to enhance the capacity of graduates/holders of professional qualifications to advance their knowledge, and other abilities relevant to areas within a specific field of study or discipline enabling professional advancement. This qualification demands a high level of theoretical engagement. It may not require conducting a research project but require conducting some independent studies	**The purpose of this qualification** is to enhance the capacity of graduates/holders of professional qualifications to advance their knowledge and investigative skills, and other abilities relevant to areas within a specific field of study or discipline enabling conversion into a different discipline/profession, forming the basis for academic advancement or enhancing the managerial, administrative and technological capacity. This qualification demands a high level of theoretical engagement and guided independent study equivalent to a minimum of 5 credits.	**The purpose of this qualification** is to enhance the capacity of graduates/holders of professional qualifications to advance their knowledge and research skills, and other abilities relevant to areas within a specific field of study or discipline preparing graduates for higher degrees and specialized professional employment or enhancing the managerial, administrative and technological capacity. This qualification should be earned by completing course work aggregating to a minimum of 30 credits at SLQF levels 7 to 10 and a research project with notional learning hours totaling to a minimum of 30 credits. The research should be carried out under the guidance of a supervisor holding an equivalent or a higher qualification and should make an original academic contribution to a particular discipline. The candidate should submit a dissertation which is evaluated and accepted.	**The purpose of this qualification** is to develop the capacity of a graduate with an advanced knowledge in a specific field of study or discipline, • to conduct advanced research. • to further embark on higher degrees and specialized professional employment. • to enhance professional, managerial, administrative and technological capacities. For an M. Phil degree, a candidate is required to carry out high level research under guidance of a person holding equal or above qualifications and make a significant contribution to a particular discipline or field. The research may be pure discipline-based or multidisciplinary. The candidate should submit a thesis incorporating research findings, which is assessed and accepted. The research must satisfy peer review and should merit publication. The candidate may also be required to follow some course work as preparatory work or for value addition to research. However, this course work shall not contribute to the credit accumulated towards the qualification.	**The purpose of this qualification** is to develop the capacity of a graduate to generate substantive insights in a particular area of study through • high quality, original and independent research, and contribute to scholarship, i) or • enhancing professional, managerial, administrative, research and technological capacities to enable specialized professional employment at the highest level. For a doctoral degree, a candidate is required to carry out high level research under the guidance of a supervisor holding a qualification of this SLQF Level or equivalent (unless in exceptional circumstances that will have to be justified in writing before being appointed as a supervisor) and make a significant and original academic contribution creating new knowledge. The candidate should submit a thesis incorporating research findings which are assessed and accepted. The candidate may also be required to follow some course work as preparatory work or for value addition to research. However, this course work shall not contribute to the credits accumulated towards the qualifications. The research must satisfy peer review and should merit publication. The research may be purely discipline-based or multidisciplinary.

Attributes of Qualification Holders							
	K	***The qualification holders:*** *- should be able to* demonstrate clear understanding of theoretical knowledge	***The qualification holders:*** *- should be able to* demonstrate clear understanding of theoretical knowledge	**The qualification holders:** - should be able to demonstrate thorough understanding of theoretical knowledge.	**The qualification holders:** - should be able to demonstrate critical awareness of current issues in the subject area and be able to apply techniques relevant to profession/ area of specialization.	**The qualification holders:** - should also be able to demonstrate critical awareness of current issues in the subject area and be able to apply techniques relevant to professional practice.	**The qualification holders:** - should be able to provide evidence for generating new knowledge by publications in peer reviewed indexed journals.
	S	-should display critical awareness of current issues in the subject area.	-should display critical awareness of current issues in the subject area	-should display critical awareness of current issues in their subject area.	-should be able to deal with complex issues systematically and creatively and make sound judgments and communicate decisions clearly to specialist and non-specialist groups.	- should be able to carry out independent pure and/or applied research contributing significantly towards the development of knowledge and supervise and evaluate original research carried out by others in the field of specialization leading to qualifications of SLQF levels up to 9.	-should be able to design and carry out independent pure and/or applied research contributing significantly towards the development of new knowledge.
	A	- should also be able to deal with complex issues systematically and make sound judgments and communicate decisions clearly to others.	-should apply techniques relevant to their professional practice/ chosen field of study.	-should apply techniques relevant to their professional practice.	- should demonstrate self-direction and originality in tackling and solving problems and be able to plan and implement tasks at professional manner.	-should be able to make judgment on complex and controversial issues in the area of expertise and communicate his/her ideas and conclusions clearly to specialist and non-specialist audiences.	-should be able to train graduate students in research methodology, and to supervise and evaluate original research carried out by others in the field of specialization.
			-should also be able to deal with complex issues systematically and creatively, and make sound judgments and communicate decisions clearly to others.	-should also be able to deal with complex issues systematically and creatively and make sound judgments and communicate decisions clearly to others.		-should demonstrate self-direction and originality in tackling and solving problems and be able to plan and implement tasks at professional levels.	- should be able to demonstrate critical awareness of and analyse current, complex and controversial issues in the subject area and apply techniques relevant to professional practice
	M	- should demonstrate self-direction in tackling and solving problems and be able to plan and implement tasks in a professional manner.	-should demonstrate self-direction and originality in tackling and solving problems and be able to plan and implement tasks independently in a professional manner.	-should demonstrate self-direction and originality in tackling and solving problems and be able to plan and implement tasks at professional levels.			- should be able to make judgments on complex issues in specific fields (K) and communicate his/her ideas, views and conclusions clearly and effectively to specialist and non-specialist groups.
							- should also be able to exercise personal judgment and responsibility even in unpredictable situations in the professional environment.

SLQF Exit level:	*SLQF Level 7*	*SLQF Level 8*	SLQF Level 9	SLQF Level 10	SLQF Level 11	SLQF Level 12
Qualification Type	**POSTGRADUATE CERTIFICATE**	**POSTGRADUATE DIPLOMA**	**MASTERS DEGREE WITH COURSE WORK**	**MASTERS DEGREE**	**MASTER OF PHILOSOPHY DEGREE**	**DOCTORAL DEGREE**
Minimum admission requirement	1. A Bachelor's degree, (a) including 30 credits in the relevant subject area* or (b) prior learning/work experience equivalent to 30 credits in the relevant subject area, or 2. A qualification in the relevant subject area equivalent to 1(a) or 1(b), or 3. Completion of NVQ level 7, as determined by the academic authority of HEI, may be considered.	1. A Bachelor's degree, (a) including 30 credits in the relevant subject area* or (b) prior learning/work experience equivalent to 30 credits in the relevant subject area or 2. A qualification in the relevant subject area equivalent to 1(a) or 1(b), or 3. Completion of NVQ level 7, as determined by the academic authority of HEI, may be considered.	1. A Bachelor's degree, (a) including 30 credits in the relevant subject area* or (b) prior learning/work experience equivalent to 30 credits in the relevant subject area or 2. A qualification in the relevant subject area equivalent to 1(a) or 1(b), or 3. Completion of NVQ level 7, as determined by the academic authority of HEI, may be considered.	1. A Bachelor's degree including 30 credits in the relevant subject area*, or 2. A qualification of SLQF level 6 or above in the relevant area* of study, or 3. A professional qualification equivalent to SLQF level 6 or above, or 4. Completion of NVQ level 7 with a minimum GPA of 3.0 on a scale of 0-4, as determined by the academic authority of HEI, may be considered for admission in that field of specialization.	1. A Bachelor's degree of level 6 with a minimum of 30 credits in the relevant field or a related field and a qualifying examination, or 2. A Bachelor's degree of level 5 with a minimum GPA of 3 in the scale of 0-4 and successful completion of a qualifying examination which will be conducted after completion of 30 credits equivalent to SLQF 6 in the same or related field, or 3. A qualification of SLQF levels 7 or above in the relevant field, or 4. Completion of NVQ Level 7 with a minimum GPA of 3.0 in a scale of 0-4 and a qualifying examination equivalent to SLQF level 6 or 7, as determined by the academic authority of HEI, may also be considered for admission to SLQF level 11 in that field of specialization.	1. Master of Philosophy, or 2. Master's Degree, or 3. Honours Bachelor's Degree with a minimum GPA of 3.0 at a scale of 0-4, who has registered to follow MPhil degree may be upgraded to PhD level after a minimum period of one year provided that his/her research competencies are of exceptional merit, or 4. Bachelor's Degree of level 5 with a minimum GPA of 3 in the scale of 0-4 and successful completion of a qualifying examination which will be conducted after completion of 30 credits equivalent to SLQF 6 in the same or related field and register to follow an MPhil degree may be upgraded to PhD level after a minimum period of one year provided that his/her research competencies are of exceptional merit.
Volume of Learning	20 credits after SLQL 5 or SLQL 6	25 credits after SLQL 5 or SLQL 6	30 credits after SLQL 5 or SLQL 6.	60 credits after SLQL 5 or SLQL 6 which include a research component of minimum 15 credits	Minimum 2 years of fulltime or equivalent time of original research after SLQL 5 or above.	Minimum 3 years of fulltime or equivalent time of original research after SLQL 6 or above.

Designators	Not applicable.	Not applicable.	Master's degree designators are limited to specific areas of study. Examples include Master of Information Technology, Master of Linguistics, Master of Library Science etc.	Master's degree designators are specific and limited to broad generic areas of discipline or profession. The examples include Master of Science, Master of Arts, Master of Commerce, Master of Education, Master of Business Administration, etc.	The designator is Philosophy.	The typically used designator for doctoral degrees is Philosophy. Nevertheless, other designators may be used to denote the areas of study or the discipline. E.g. Doctor of Education.
Qualifiers	Maximum two Examples: Postgraduate Certificate in Natural Resources Management, Postgraduate Certificate in Fine Arts in Drama	Maximum two. Examples: Postgraduate Diploma in Education, Postgraduate Diploma in Environmental Science, Postgraduate Diploma in Crop Science, Postgraduate Diploma in Fine Arts in Drama	Not applicable.	Maximum one Examples: Master of Arts in Sinhala. Master of Science in Environmental Science.	Maximum one, if required. E.g.: Master of Philosophy in Environmental Science.	Maximum one E.g.: Doctor of Philosophy in Education.
Abbreviation	PGCert, PGCert (Natural Resources Management), PGCert (Fine Arts) (Drama)	PGDip (Education), PGDip (Env Sc), PGDip (Crop Sc) PGDip (Fine Arts)(Drama)	MIT, MLinguistics, MAgri, MLibSc	Examples: MA, MCom, MEd, MA (Sinhala), MSc, MSc (Environmental Science).	MPhil, MPhil (Env Sc).	PhD, DPhil, DEd, DLitt, DSc, PhD (Education).
Progression	Completion of Postgraduate Certificate meets the entry requirements to Postgraduate Diploma and/or Master's degree of SLQF levels 8 and 9 in the same field of specialization.	Completion of Postgraduate Diploma meets the entry requirements to SLQF level 10. A qualification shall not be awarded for early exit from this level. However, a postgraduate certificate may be awarded for those who are completing 20 credits of theoretical engagement at SLQF Level 7.	Completion of Master's Degree meets the entry requirement to SLQF level 10 or 11 in the same field of specialization. A Postgraduate Diploma or a Postgraduate Certificate may be awarded to those who exit early completing 25 credits or 20 credits respectively.	Completion of SLQF level 10 meets the entry requirement to an MPhil degree in the same field of specialization. Early exit from this level is possible provided that the candidate has completed 25 credits in course work. In such a situation, the qualification awarded shall be Postgraduate Diploma in the relevant field, which is at SLQF level 88.	Completion of an M. Phil degree meets the entry requirement to a Doctoral degree in the same field of specialization. A qualification shall not be awarded for early exit from an MPhil degree.	Doctoral degree is the highest qualification awarded within the SLQF. Early exit from a doctoral degree with research not reaching the standards required for a doctoral degree may be considered for the award of MPhil degree.

*The subject area to be determined by the relevant academic authority of HEI.

Table 4

LEVEL DESCRIPTORS for SLQF Levels 1 - 6

Categories of Learning Outcomes	Senior Secondary Education		Undergraduate Education			
	SLQF Level 1	SLQF Level 2	SLQF Level 3	SLQF Level 4	SLQF Level 5	SLQF Level 6
1. Subject / Theoretical Knowledge			Demonstrate knowledge and understanding of concepts and principles of the areas of study. Present and interpret qualitative and quantitative data.	Demonstrate knowledge and understanding of concepts and principles of the areas of study. Analyse and interpret qualitative and quantitative information.	Demonstrate knowledge and understanding of concepts and principles of the areas of study. Collect, Analyse and interpret quantitative and qualitative data.	Demonstrate an advanced knowledge and understanding of the core aspects of the area of study. Critically Analyse data, make judgments and propose solutions to problems.
2. Practical Knowledge and Application			Develop initial arguments and make some judgments in accordance with basic theories and concepts of the areas of study.	Develop appropriate arguments and make judgments in accordance with basic theories and concepts of the areas of study. Apply knowledge and understanding of concepts and principles of the areas of study.	Develop arguments and make sound judgments in accordance with basic theories and concepts of the areas of study. Apply knowledge and understanding of concepts and principles of the areas of study.	Construct and sustain arguments and use these arguments, ideas and techniques in problem solving. Use practical skills and enquiry efficiently and effectively within the area of study.
3. Communication			Communicate results of studies reliably.	Present information and ideas efficiently and effectively.	Present information, ideas, and concepts efficiently and effectively.	Communicate/present information, ideas, issues and solutions efficiently and effectively. Demonstrate awareness of the current developments in the area of study.
4. Teamwork and Leadership			Exercise personal responsibility and leadership in some tasks in the workplace.	Exercise personal responsibility and leadership in some tasks in the workplace.	Exercise personal/team responsibility, and leadership in the professional environment/work place.	Exercise personal/team responsibility, and leadership in the professional environment/work place.

5. Creativity and Problem Solving			Develop initial arguments and make judgments in accordance with basic theories and concepts of the areas of study.	Develop appropriate arguments and make relevant judgments in accordance with basic theories and concepts of the areas of study.	Develop arguments and make appropriate judgments in accordance with theories and concepts of the areas of study.	Construct and sustain arguments and use these arguments, ideas and techniques in problem solving for a given situation.
6. Managerial and Entrepreneurship			Exercise responsibility in the implementation of routine work and manage limited resources within the work place.	Exercise personal and managerial responsibilities in some tasks in the workplace.	Take initiative, assume personal responsibility and demonstrate accountability.	Take initiative, assume personal responsibility and demonstrate accountability and ability to instill entrepreneurship.
7. Information Usage and Management			Demonstrate transferable skills related to ICT.	Demonstrate application of transferable skills related to ICT.	Demonstrate specialized transferable skills related to ICT skills.	Thorough in transferable skills related to ICT and information literacy.
8. Networking and Social Skills			Develop awareness of positive attitudes and social responsibility.	Demonstrate positive attitudes and social responsibility.	Ability to work in teams and provide leadership.	Ability to work in teams, give leadership and promote social engagement.
9. Adaptability and Flexibility			Recognise the need for adapting to changing environments.	Identify the strategies for adapting to changing environments.	Develop appropriate strategies for adapting to changing environments.	Analyse and devise appropriate strategies for adapting to changing environments.
10. Attitudes, Values and Professionalism			Exercise personal responsibility in tasks performed. Develop positive attitudes.	Exercise personal responsibility in tasks performed. Demonstrate positive attitudes and recognize the need for social responsibility.	Exercise initiative, personal responsibility and accountability in tasks performed. Demonstrate positive attitudes and social responsibility.	Exercise initiative, personal responsibility and accountability in tasks performed. Demonstrate positive attitudes and social responsibility.
11. Vision for Life			Clearly identify where one wants to be and develop long term goals accordingly. Recognise competencies that help to assume predetermined responsibilities.	Clearly identify where one wants to be and develop long term goals accordingly. Acquire competencies that help to assume predetermined responsibilities.	Clearly identify where one wants to be and develop long term goals accordingly. Acquire new competencies that will enable them to assume major responsibilities.	Clearly identify where one wants to be and develop long term goals accordingly Exercise and further develop the new competencies and assume major responsibilities with confidence.
12. Updating Self / Lifelong Learning			Undertake further training and develop new skills within a managed environment. Identify the need to be aware of new developments in the area of study.	Undertake further training and develop new skills within a controlled environment. Identify the new developments in the area of study. Identify the need for independent learning and lifelong learning.	Undertake further training and develop additional skills that will enable them to make sound decisions. Identify ways of independent learning and lifelong learning.	Undertake further training and develop additional skills that will enable them to make sound decisions. Engage in independent learning using scholarly reviews and secondary sources of information.

LEVEL DESCRIPTORS for SLQF Levels 7-12

Categories of Learning Outcomes	Postgraduate Education					
	SLQF Level 7	SLQF Level 8	SLQF Level 9	SLQF Level 10	SLQF Level 11	SLQF Level 12
1. Subject / Theoretical Knowledge	Demonstrate appropriate knowledge and understanding in the specified area of study. Critically Analyse data, make judgments and propose solutions to problems.	Demonstrate an advanced level of knowledge and understanding in the area of study. Critically Analyse data, make judgments and propose solutions to problems.	Demonstrate a comprehensive & substantive level of knowledge and understanding in the area of study. Critically Analyse data, make judgments and propose solutions to problems.	Analyse and evaluate current research in the area of specialization. Demonstrate a critical awareness of current issues and recent developments in the area of specialization and/or area of professional practice.	Enhance knowledge through research of a quality that will satisfy peer review and merit publication. Evaluate and constructively criticize and improve methodologies in the area of specialization. Analyse and critically evaluate past and current research in the area of specialization.	Create new knowledge through original research of a quality that makes a significant contribution to development of the discipline and satisfy peer review and merit publication. Demonstrate critical reading and analytical skills by critically analyzing synthesizing and evaluating data, making judgments and identifying solutions to problems. Demonstrate a systematic acquisition and understanding of substantial amount of knowledge in the area of specialization and/or professional practice. Respond efficiently and effectively to the changing developmental needs of the discipline.
2. Practical Knowledge and Application	Use efficiently and effectively, practical skills and enquiry within the specified area of study.	Use efficiently and effectively, practical skills and enquiry within the area of study. Construct and sustain arguments and use these arguments, ideas and techniques in problem solving.	Use efficiently and effectively, practical skills and enquiry within the area of study. Construct and sustain arguments and use appropriately these arguments, ideas and techniques in problem solving.	Use efficiently and effectively, practical skills and enquiry within the area of study. Construct and sustain arguments and use appropriately these arguments, ideas and techniques in problem solving.	Use practical skills and enquiry efficiently and effectively within the area of study. Construct and sustain arguments and use these arguments, ideas and techniques comprehensively in problem solving.	Demonstrate an in-depth knowledge and understanding of applicable techniques for research and advanced academic enquiry/professional practice.

3. Communication	Demonstrate awareness of the current developments in the specified area of study through written and oral communication.	Demonstrate awareness of the current developments in the area of study through written and oral communication. Demonstrate awareness of the current developments in the area of study through written and oral communication.	Demonstrate awareness of the current developments in the area of study through written and oral communication. Demonstrate awareness of the current developments in the area of study through written and oral communication.	Communicate in oral and written format the findings/conclusions clearly to specialist as well as non-specialist groups.	Disseminate findings of scientific/intellectual enquiry through publication and/or presentation Communicate in oral and written format the findings, ideas and conclusions effectively to specialist and non-specialist audiences.	Disseminate findings of scientific/intellectual enquiry through publications and/or presentation at an internationally accepted level. Communicate in oral and written format the findings, ideas and conclusions effectively to specialist and non-specialist audiences. Communicate in oral and written format the findings/conclusions clearly to specialist as well as non-specialist groups.
4. Teamwork and Leadership	Demonstrate leadership in the professional environment/work place	Exercise leadership in the professional environment/work place	Exercise leadership in the professional environment/work place.	Plan and implement tasks efficiently and effectively in professional, technical and academic settings.	Exercise leadership and originality in tackling and solving problems in professional, technical and academic settings.	Exercise leadership and originality in tackling and solving problems in professional, technical and academic settings.
5. Creativity and Problem Solving	Deal with complex issues in a systematic manner Demonstrate self-direction and confidence in solving problems	Deal with complex issues in a systematic manner and make sound judgments Construct new hypotheses in the area of specialization and test them in a scientific manner. Demonstrate self-direction and confidence in solving problems.	Deal with complex issues in a systematic manner and make sound judgments. Construct new hypotheses in the area of specialization and test them in a scientific manner. Demonstrate self-direction and confidence in solving problems.	Deal with complex issues systematically and make sound judgments even without complete data. Construct new hypotheses in the area of specializations and test them in a scientific manner. Demonstrate self-direction and originality in solving problems Make decisions in complex and unpredictable contexts.	Construct new hypotheses and test them in a scientific manner. Demonstrate self-direction and originality in solving problems in the professional environment.	Conceptualize, design and implement new projects to generate new knowledge and applications. Make judgments on complex issues in the field of specialization even in the absence of complete data. Identify, conceptualize and provide creative insights into complex issues and problems, and demonstrate self-direction and confidence in solving problems.

6. Managerial and Entrepreneurship	*Plan and implement tasks at professional and managerial levels.*	Plan and implement tasks at professional and managerial levels. Take initiative, assume personal responsibility and demonstrate accountability and ability to instill entrepreneurship.	Plan and implement tasks at professional and managerial levels. Take initiative, assume personal responsibility and demonstrate accountability and ability to instill entrepreneurship.	Plan and implement tasks efficiently and effectively in professional, technical or academic settings. Take initiative, assume personal responsibility and demonstrate accountability and ability to instill entrepreneurship.	Supervise and guide research to generate new knowledge in the discipline. Plan and implement tasks efficiently and effectively in professional, technical or academic settings. Exercise initiative and personal responsibility and make decisions in complex and unpredictable contexts.	Supervise and guide original research to generate substantial insight in the discipline. Exercise high level of autonomy and initiative in professional, administrative and managerial activities. Exercise personal judgment and responsibility in complex and unpredictable situations in professional and/or managerial environments.
7. Information Usage and Management	Thorough in transferable skills including ICT skills and information literacy.	Thorough in transferable skills including ICT skills and information literacy.	Thorough in transferable skills including ICT skills and information literacy with the capability of organizing data.	Thorough in transferable skills including ICT skills and information literacy with the capability of organizing and processing data.	Thorough in transferable skills including ICT skills and information literacy with a higher capability for organizing and processing data.	Thorough in transferable skills including ICT skills and information literacy with a higher capability for organizing and processing data.
8. Networking and Social Skills	Ability to work in teams, give leadership and promote social engagement.	Ability to work in teams, give leadership and promote social engagement.	Ability to work in teams, give leadership, and promote social and professional engagement.	Ability to work in teams, give leadership, and promote social and professional engagement.	• Ability to work in teams, give leadership, promote social and professional engagement, and encourage collaborative research	Ability to work in teams, give leadership, promote social and professional engagement and establish collaborative research
9. Adaptability and Flexibility	Analyse and devise appropriate strategies for adapting to changing environments.	Analyse and devise appropriate strategies for adapting to changing environments.	Plan and execute appropriate strategies for adapting to changing environments.	Plan and execute appropriate strategies for adapting to changing environments. Make decisions in complex and unpredictable contexts.	Plan and execute appropriate strategies for adapting to changing environments. Exercise initiative and personal responsibility and make decisions in complex and unpredictable contexts.	Plan, execute and forecast appropriate strategies for adapting to changing environments. Exercise personal judgment and responsibility in complex and unpredictable situations in professional and/or managerial environments.

10. Attitudes, Values and Professionalism	*Exercise initiative, personal responsibility and accountability in tasks performed.* Demonstrate positive attitudes and social responsibility.	*Exercise initiative, personal responsibility and accountability in tasks performed.* Demonstrate positive attitudes and social responsibility.	*Exercise initiative, personal responsibility and accountability in tasks performed.* Demonstrate positive attitudes and social responsibility	Exercise initiative, personal responsibility and accountability in tasks performed. Demonstrate positive attitudes and social responsibility.	Exercise initiative, personal responsibility and accountability in tasks performed. Demonstrate positive attitudes and social responsibility. Exercise autonomy and initiative in professional, administrative and managerial activities.	Exercise initiative, personal responsibility and accountability in tasks performed. Demonstrate positive attitudes and social responsibility. Exercise high level of autonomy and initiative in professional, administrative and managerial activities.
11. Vision for Life	Clearly identify where one wants to be and develop long term goals accordingly.	Clearly identify where one wants to be and develop long term goals accordingly.	Clearly identify where one wants to be, where the society should be and develop long term goals accordingly.	Clearly identify where one wants to be, where the society should be and develop long term goals accordingly.	Clearly identify where one wants to be, where the society should be and develop long term goals accordingly.	Clearly identify where one wants to be, where the society should be and develop long term goals accordingly.
12. Updating Self / Lifelong Learning	Undertake further training and develop additional skills that will enable them to make sound decisions. Advance knowledge and develop additional skills. Engage in independent learning using scholarly reviews and secondary sources of information. Carry out independent studies for professional development.	Undertake further training and develop additional skills that will enable them to make sound decisions. Advance knowledge and develop additional skills. Engage in independent learning using scholarly reviews and secondary sources of information. Carry out independent studies for professional development.	Undertake further training and develop additional skills that will enable them to make sound decisions. Advance knowledge and develop additional skills. Engage in independent learning using scholarly reviews and secondary sources of information. Demonstrate skills in independent learning for continuous professional development.	Undertake further training and develop additional skills that will enable them to make sound decisions. Advance knowledge and understanding, and develop additional skills. Engage in independent learning using scholarly reviews and secondary sources of information. Demonstrate skills in independent learning for continuous professional development.	Undertake further training and develop additional skills using reflective practice that will enable them to make sound decisions. Advance knowledge and understanding, and develop additional skills. Engage in independent learning using scholarly reviews and secondary sources of information. Demonstrate skills in independent learning for continuous professional development.	Undertake further training and develop additional skills using reflective practice that will enable them to make sound decisions. Engage in independent learning using scholarly reviews and secondary sources of information. Continuously demonstrate skills in collective learning with originality for solving problems.

PROGRESSION PATHWAYS

One of the objectives of the SLQF is to show the pathways of obtaining different qualifications. The qualifications at different levels are identified considering the learning outcomes required to obtain that qualification and expected learning outcomes of the qualification holders. The vertical progression between qualifications is straight forward provided that the minimum stipulated requirements are met. Lateral progression is also possible at certain levels if the candidate meets the minimum requirements for admission to the target qualification. The possible routes of getting target qualifications that are stated under different qualification descriptors in Table 4 graphically shown in Figures 2 & 3.

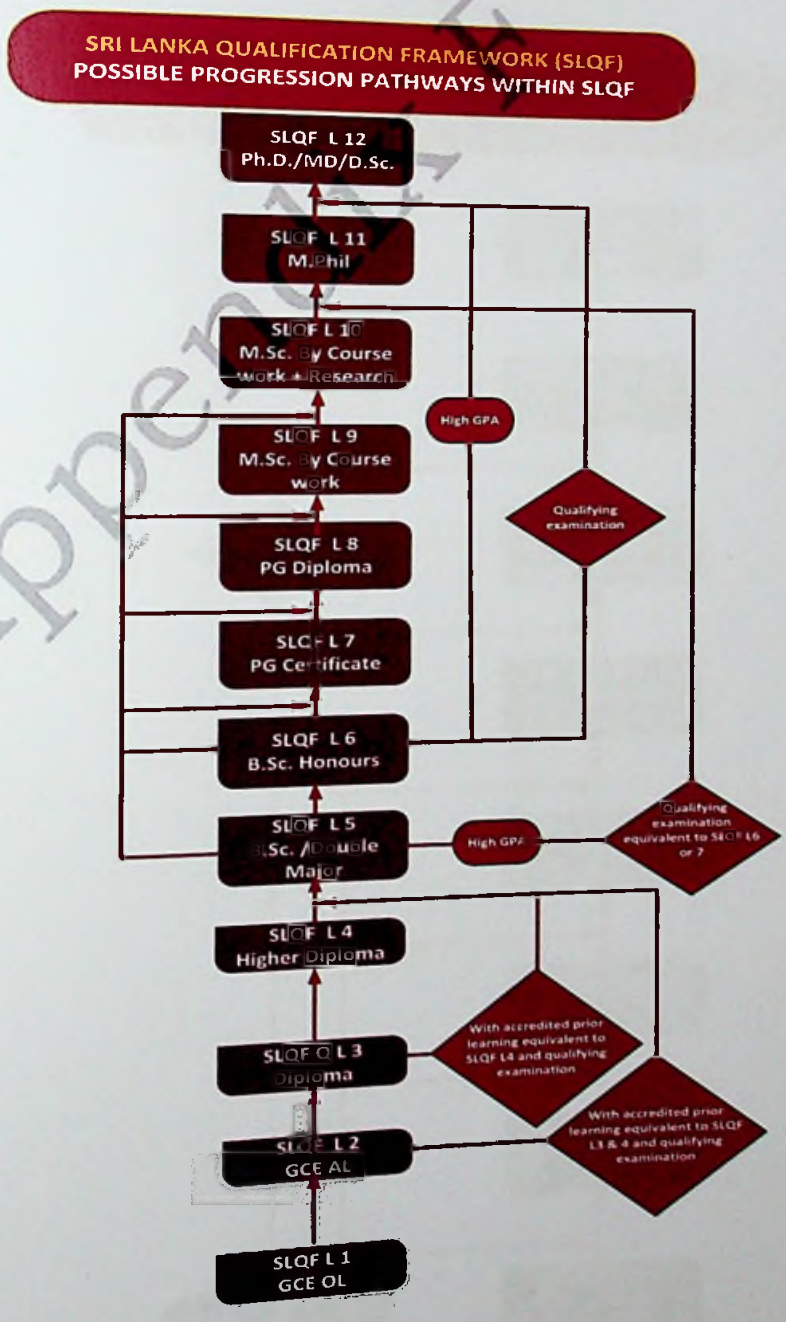
SRI LANKA QUALIFICATION FRAMEWORK (SLQF)
POSSIBLE PROGRESSION PATHWAYS WITHIN SLQF
SLQF L 12
Ph.D./MD/D.Sc.
SLQF L 11
M.Phil
SLQF L 10
M.Sc. By Course work + Research
SLQF L 9
M.Sc. By Course work
SLQF L 8
PG Diploma
SLQF L 7
PG Certificate
SLQF L 6
B.Sc. Honours
SLQF L 5
B.Sc. /Double Major
SLQF L 4
Higher Diploma
SLQF O L 3
Diploma
SLQF L 2
GCE AL
SLQF L 1
GCE OL
High GPA
Qualifying examination
High GPA
Qualifying examination equivalent to SLQF L6 or 7
With accredited prior learning equivalent to SLQF L4 and qualifying examination
With accredited prior learning equivalent to SLQF L3 & 4 and qualifying examination

Figure 2

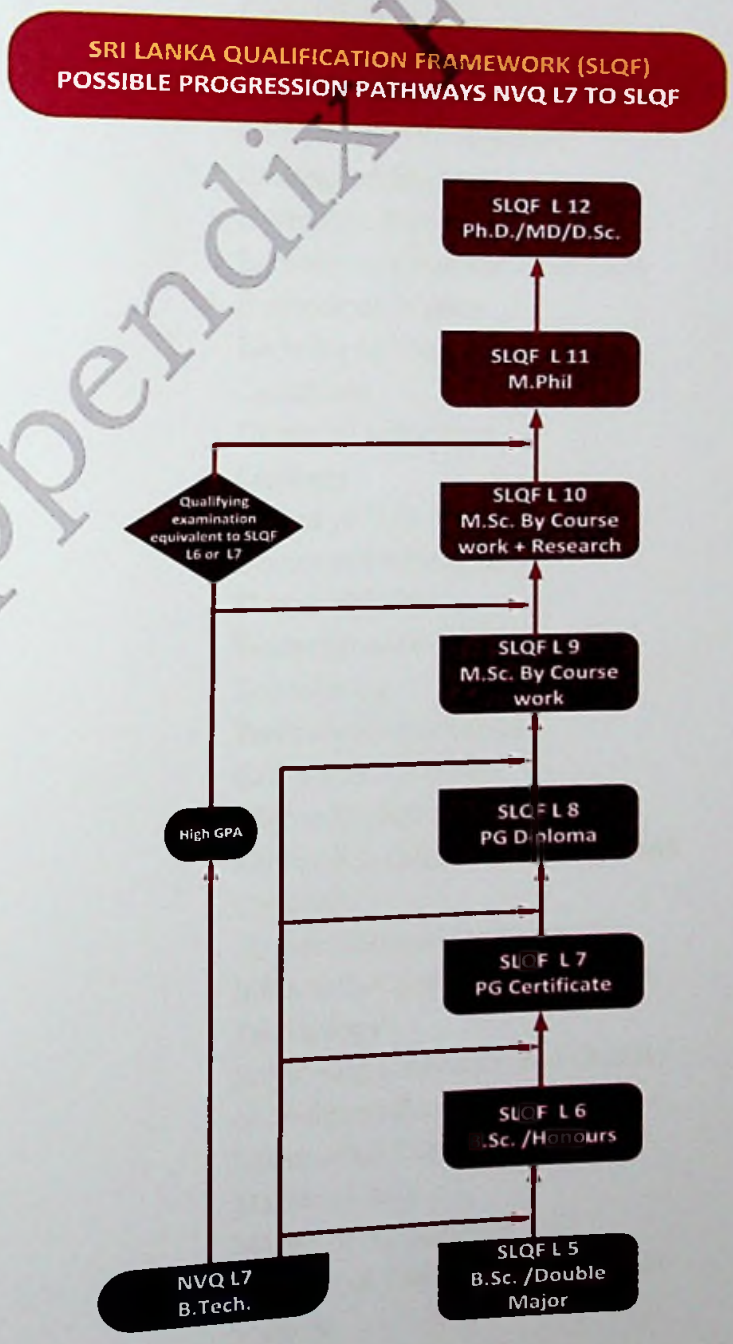

Figure 3

ABBREVIATIONS AND ACRONYMS

A	Accountancy
Agri	Agriculture
AdvCert	Advanced Certificate
BA	Bachelor of Arts
BAHons	Bachelor of Arts Honours
BBAHons	Bachelor of Business Administration Honours
BComHons	Bachelor of Commerce Honours
BSc	Bachelor of Science
BScHons	Bachelor of Science Honours
Cert	Certificate
DEd	Doctor of Education
Dip	Diploma
DLitt	Doctor of Letters
DPhil	Doctor of Philosophy
DSc	Doctor of Science
EnvMgmt	Environmental Management
Eng	Engineering
EnvSc	Environmental Science
GPA	Grade Point Average
HDip	Higher Diploma
HETC	Higher Education for Twenty First Century
HND	Higher National Diploma
ICT	Information and Communication Technology
IRQUE	Improving Relevance and Quality of Undergraduate Education
IT	Information Technology
MA	Master of Arts
MAgri	Master of Agriculture
MBBS	Bachelor of Medicine/ Bachelor of Surgery
MCom	Master of Commerce
MechEng	Mechanical Engineering
Med	Master of Education
MIT	Master of Information Technology
MLibSc	Master of Library Science
MPhil	Master of Philosophy
MSc	Master of Science
NQF	National Qualifications Framework
NVQF	National Vocational Qualifications Framework

NVQL	National Vocational Qualifications Framework Level
PGCert	Postgraduate Certificate
PGDip	Postgraduate Diploma
PhD	Doctor of Philosophy
QA	Quality Assurance
QAA	Quality Assurance and Accreditation
QAAC	Quality Assurance and Accreditation Council
Sc	Science
SLIATE	Sri Lanka Institute of Advanced Technological Education
SLQF	Sri Lanka Qualifications Framework
SLQL	Sri Lanka Qualifications Framework Level
SWOC	Strengths, Weaknesses, Opportunities and Challenges
TVEC	Tertiary and Vocational Education Commission of Sri Lanka
UGC	University Grants Commission

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Appendix G

International Council
for Research and Innovation
in Building and Construction

August 2014

New CIB Publication

Proceedings of the International Conference on Construction in a Changing World, in Kandalana, Sri Lanka

ISBN 978-1-907842-54-2

In association with
CIB Working Commissions W055, W065, W089, W092, W096, W102 and W117
CIB Task Groups TG72, TG74, TG81 and TG83

Editors: Prof Dilanthi Amaratunga, Prof Richard Haigh, Prof Les Ruddock
Dr Kaushal Keraminiyage, Dr Udayangani Kulatunga and Dr Chaminda Pathirage

With its focus of "Construction in a Changing World", the Conference provided a forum for researchers worldwide to debate and exchange ideas and experiences on a broad range of issues. Driven by technology innovation, demographic growth, environmental change, a new economic order and a strong undercurrent of social and political desire for change, the world is changing quickly. Construction doesn't exist in isolation and, in a fast-changing world, the sector has the vital role of providing the requisite built environment to meet the challenges presented by these changes. In order to deliver value, maintain competitiveness and address the needs of society, the construction industry will need to develop its capabilities for managing innovation and technical change.

The Conference brought together resources and knowledge across different fields, technologies and disciplines to deal with the major challenges that construction professionals will be confronted with in the coming years.

All of the papers to be presented at the Conference were selected on the basis of double blind peer review by the scientific committee members and paper reviewers to ensure a good quality standard. This book was intended for both navigation tool for delegates at the Conference and as a summary record of the papers.

Availability

Copies may be ordered by contacting:
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An electronic version is available in the near future from ICONDA®CIBlibrary.

Additional Information

You can find more information on the activities of CIB W055 here, W065 here, W089 here, W092 here, W096 here, W102 here, W117 here.

For CIB TG72 see here, TG74 here, TG81 here and TG83 here.

Requirement of a Lifelong Social Security System for Operational Workforce of Construction Industry in Sri Lanka

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Abstract

Behaviors of Operational Workforce have been one of the challenges in the construction industry and construction sector is suffering from shortage of required human resources for its physical operations even though unemployment rate in Sri Lanka is about 4.2%. Despite all the other resources, management of Operational Workforce still determines the success or failure of construction projects. Operational workers represent a member of the working class who in generally performs manual labour and earns an hourly or output based remuneration. The main focus of this study was to explore what would happen to the industry, if it keeps neglecting the people who bring the desires of employers, blended with innovativeness of architects, strengthened by engineers, enumerated by quantity surveyors, documented by contract administrators into reality according to the sequence of planning engineers by builders and contractors, if no proper Operational Workforce is available. This paper is aimed towards identifying the barriers to attract workforce to construction industry and underline the steps to be taken for developing a responsible Operational Workforce.

Key words

Operational Workforce, Construction Industry, Behavior, Retirement Benefits, Sri Lanka

1 Background

Construction is a project initiative industry. Project Management approach means having a temporary and systematic framework from inception to completion to procure 'a unique product, service or a result which has defined start and end date' (PMBOK, 2008). In the recent past many construction projects faced time and cost overruns due to unavailability of operational workforce. Many researchers identified scarcity of labour (Operational Workforce) as one of the key factors of project delays (Gaminiratne, 2004; Pathirage, 2008; Samarakoon, 2009 and Chandradasa & Ekanayake, 2011). Delay is one corner of the iron triangle as depicted in Figure 1, i.e. time. Another corner is 'quality', which again has considerable impact from workmanship (Atkinson, 1999). Therefore, it is obvious that the third corner 'cost' is affected by the performance of operational workforce.

Figure 1: Iron Triangle

If cost overruns could be minimised and the salvaged finances could be reinvested to improve the operational workforce, then more productive and efficient workforce can be expected.

The Rethinking Construction report produced by Sir John Egan (Egan, 1998) to the Prime Minister of United Kingdom identified seven areas where attention should be given in the construction industry during the 21st century. Following recommendations were made therein by Sir John Egan:

A. Capital cost to be reduced by 10%
B. Construction time to be reduced by 10%
C. Predictability to be increased by 20%
D. Defects to be reduced by 20%
E. Accidents to be reduced by 20%
F. Productivity to be increased by 10%
G. Turnover and profits to be increased by 10%

Four of the seven significant areas identified through Sir Egan's report (B, D, E and F) have direct correlations to the behavior of the operational workforce in the construction industry. Thereby, this paper attempts to explore and identify barriers to attract construction operational workforce with the intention of addressing any perceived issues. In doing so, this research focuses on the Sri Lankan construction industry due to apparent behavioral challenges (Wijewickreme and Ekanayake, 2010). Next section defines and introduces operational workforce.

2 Operational Workforce

General labour, skilled worker, physical production worker, blue collar worker, artesian, craftsperson, tradesman, operational level worker and the like are used to identify the Operational Workforce in construction industry. According to the findings of Equality and Human Rights Commission through their researches, 8% of the total workforce in UK or three million people are belongs to the construction sector (EHRC, 2010). Researches related to construction labour productivity are of at great interests to the academics and professional practitioners (Kadir, et al., 2005). Construction can be considered as a human driven industry. There are 300,000 firms working in construction industry as Small and Medium Scale Enterprises (SME) in UK itself. Sri Lankan Construction sector employs 8.2% of the total workforce or 682,000 people inclusive of Mining, Quarrying, Electricity, Gas and Water supply according to the reports produced by Central Bank of Sri Lanka (CBSL, 2012). There are over 2,000 registered contractors (ICTAD, 2013) in Sri Lanka as at present.

Construction is a male dominant industry. In USA, female contribution for construction sector is 4.3% (Swinney, 2005). The same is 3% in Sri Lankan context (Pathirage, 2008). Males generally enjoy responsibilities, which includes sourcing the requirements of their dependents. Majority of the Operational Workforce in construction industry of Sri Lanka is local migrants moved from villages to urban areas. They often work at remote locations and usually meet their dependents once a month. There are around 30 various trades directly related to construction activities excluding the trades of other major supportive trades such as; communication, mechatronics, electromechanical, building management and air conditioning. Having discussed operational workforce, next section briefs challenges within Sri Lankan industry context.

3 Challenges of Operational Workforce

Total unemployment in Sri Lanka is accounted around 4.2% (CBSL, 2012). According to the recent statistics, it appears that construction is not among the popular industries for the youths of Sri Lanka. Suitably educated but unemployed male population (up to GCE A/L) in Sri Lanka is about 4.7%, but it appears they are reluctant to join the construction industry (DCSL, 2012, p. 20; Table 5.4).

Youngsters prefer joining armed forces than construction industry after the school education even to scarify their lives at frontline operations and prepare the living path for their dependents even if they are not in existence. If lucky to survive, then they will become eligible for a lifelong pension scheme after completing 22 years of military services. If not their dependents will receive the benefit of the government pension scheme. Hence, military operatives are free from mental stress of their dependents as soon as he or she joined.

Physiological Contract (Chandradasa & Ekanayake, 2011) is a study that introduced an "Iceberg" model. According to the model, most of the human problems cannot be seen from the surface view. In many cases what is possible to see is "Work" and "Pay" only. Hidden part of the iceberg contains many other negative effects as depicted in Figure 2, which may larger, heavier and danger to the construction industry and to the general society at large.

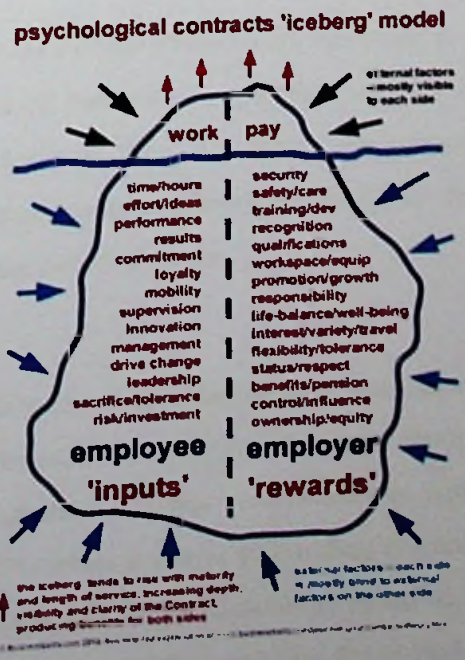

Figure 2: Iceberg model of physiological contracts (Businessballs, 2013)

A study carried out by Wijewickreme & Ekanayake (2010), identified a number of behavioral problems of Operational Workforce in Sri Lanka as illustrated in Table 1 below.

Table 1: Ranking of Behavioral Problems of Operational Workforce

Rank	Description	%	RII
1	High labour turnover	11.43%	0.63
2	Poor quality of workmanship	11.34%	0.62
3	Temporary or irregular attendance	11.29%	0.62
4	Lack of trade knowledge and skill	11.24%	0.62
5	Lack of cost concerns	10.34%	0.57
6	Irresponsibility & lack of reliability	10.29%	0.56
7	Unfair demanding of wages or rates	9.96%	0.55
8	Adamant behavior & lack of loyalty	9.58%	0.52
9	Reluctant to learning & training	9.20%	0.50
10	Carelessness & safety concerns	9.06%	0.50
11	Unethical sudden demanding	7.59%	0.42

From the results, it was apparent that almost all the identified negative effects were giving considerable impact to the construction industry in relation to the requirements of managing the iron triangle (Atkinson, 1999). According to the recent growth of construction industry, demand for labour has risen while the supply seems to be insufficient. This situation is highlighted in the following statement.

> *"It is observed that the Labour Productivity has come down in almost all the sectors as a result of increased number of employees engaged, without a substantial or no increase in Value Addition. This may have been caused by the volatile nature of employment in the construction industry, where labour migration and shifting takes place, especially in the informal sector."*
>
> (Pathirage, 2008, p. 11)

Due to the insufficiency of labour, prices of labour have commenced increasing over the time, which ultimately increases the cost of overall construction. Labour costs itself captures almost 12% of total construction cost when it comes to infrastructure projects and the same becomes almost double or 20% to 25% when it comes to building projects depending on the quality and complexity of finishes according to the calculations based on Building Schedule of Rates (BSR) issued by ICTAD. Following statement explains the current status.

> *"The national working poverty incidence (13.7%) has been exceeded by the production industries of Agricultural, Construction and Mining workers who hold 21.1%, 18.1 % and 21.8% poor workers in respective categories when studying the poverty across the main industry categories of the workers occupied".*
>
> (Rasseedin, 2011a, p. 67).

It is said that tacit knowledge is much centered to the construction industry, developed through generations in Sri Lanka (Pathirage, 2007, p. 21) and at a risk of diluting it strengths whereas de Silva, et al., (2010) argued behavioral complications has become usual to the construction industry in Sri Lanka according to the recent studies. The situation is not necessarily limited to the construction industry, but there are many other industries which indicate similar negative effects as per the following statement.

> *"Conventional solutions for improving labour productivity concentrated on giving wage incentive to motivate the workers to work harder. But these alone are not expected to address, the root causes of low labour productivity, relating to health, worker attitudes, education, and the like".*
>
> (Rasseedin, 2011a, p. 93).

Victoroff (2005) argued that unavailability of a functioning social security system could lead to an increase in the criminal and terrorist activities due to lack of confidence because human nature has not changed. In Sri Lanka, a former Journalist of '*Agence France Presse*' (AFP) was murdered in February 2014 by a Paint bass that did pre charismas renovations to her residence (The Island, 2014). This murder is an only a single example of many similar situations of burglary related murders by a casual operational workers of floating nature whom do not have any secured source of regular income.

4 Research Methodology

The research was primarily based on inductive approach which moved from specific observations to a broader generalisations and theories. Research means different things to different people (Amaratunga, et al., 2002). Research is an organised process of combining and exploring range of approaches, strategies, techniques and procedures building towards the aim and objectives (Kumar, 2011). Researches are commencing from two types of approaches called deductive and inductive. When using the deductive approach, the researcher narrow

downs a broad picture (more general) of an object towards a more specific focal point. Inductive researching is the opposite path of deductive approach (Saunders, et al., 2012).

This paper presents the results of a research that was carried out to find the barriers for attracting Operational Workforce in to the construction industry. A questionnaire was administered (Please refer to the copy of questionnaire at the end) among a sample of the Operational Workforce of the Sri Lankan construction industry, their immediate supervisors, project managers and directors of construction contractors. Following section provides more details on the questionnaire, analysis and its outcomes.

5 Questionnaire Survey and Research Outcomes

A questionnaire was prepared with two-point perspective format (Wijewickreme & Ekanayake, 2010) to obtain different viewpoints of both Operational Workforce and their Managers on the same objectives. Managerial team was selected from directors, site managers and immediate supervisors through a structured cross section containing 55 members as given in Table 2. The team representing the managerial perspective was requested to assess negative impacts of the Operational Workers from the management point of view according to a Degree of Importance from 1 to 7 Likert scale (Likert, 1932). Relative Importance Index (RII) (Enshassi, et al., 2012) was used to help further analysis. The questionnaire designed for management had two separate sections that assessed the negative behavioral affect they experienced from the operational workforce.

Table 2: Questionnaire Distribution

A.	Company Directors	5	Managerial Team (Total 55)
B.	Site Managers	10	
C.	Middle Managers - Technical	40	
D.	Operational Workers	400	
	Total	455	

All the questions in the questionnaire were based on the findings of pilot survey carried out with selected industry professionals. Additional spaces were provided within the questionnaire to add new negative affects based on their personal experiences. Operational Workforce represented randomly selected 400 participants from different independent projects. The questionnaires for the Operational Workforce were available in all 3 recognised languages (Sinhala, Tamil and English) in Sri Lanka.

5.1 Data Analysis

To determine the relative ranking of the assessment methods, the scores entered in the survey were transformed to RII values using the following equation where '*w*' is the weighting given to each factor by the respondents, ranging from 1 to 7.

$$RII = \frac{\sum w}{AN}$$

In the formula, '*A*' is considered as the highest weight (i.e. 7 for this research) and '*N*' is the total number of samples. Accordingly, RII is the relative important index, where the answer is between '0' and '1'.

5.1.1 Recruitment modes of Operational Workforce

Five different modes of recruiting were identified and analysed according to the relative importance of findings. Most common mode of fulfilling the required number of Operational Workforce has been the 'output based subcontracting' as indicated in Figure 3.

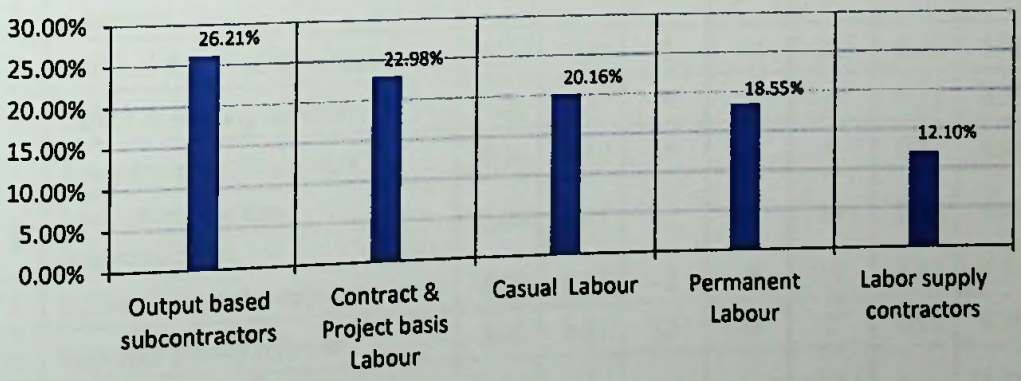

Figure 3: Recruitment Modes of Operational Workforce (Wijewickreme & Ekanayake, 2010)

5.1.2 Difficulties Experienced by Operational Workforce

Data received from both Managerial team and Operational Workforce were analysed with the use of RII. Relative and comparative importances of the identified negative effects are presented in Table 3 below. Ranking of relationships between the findings from the viewpoint of Operational Workforce was compared against the viewpoint of Managers. From both viewpoints, most important reason was identified as 'Poor Retirement Benefits'. There wasn't any significant difference between management and operational workforce viewpoints on the 'Top 6' negative effects.

Table 3: Comparative analysis of the negative effects of Operational Workforce

	Description	%	RII of Operational Workforce	Ranking (By Workmen)	Variance	Ranking (By Management)	RII of Management Team	%
a	Poor retirement benefits	9.60	0.91	1	0	1	0.91	10.5
b	Dissimilarities in salary scales	9.50	0.90	2	+3	5	0.80	9.20
c	Gray areas in the career development	9.10	0.87	3	+1	4	0.82	9.50
d	Temporary nature of the occupation	8.90	0.84	4	+2	2	0.87	10.10
e	Lack of social recognition	8.80	0.83	5	-2	3	0.82	9.50
f	Non availability of recreation facilities	7.00	0.67	6	0	6	0.60	6.90
g	Being away from family and relatives	6.30	0.60	7	+5	12	0.46	5.30
h	Political & social influences	6.20	0.59	8	+2	10	0.48	5.60
i	Safety & sanitary facilities	6.20	0.59	9	-1	8	0.55	6.30
j	Interpersonal relationships	6.20	0.59	10	-1	9	0.52	6.00
k	Lack of trouble free communication	6.00	0.57	11	+3	14	0.38	4.40
l	Influence from the dependents	5.50	0.52	12	-1	11	0.48	5.50
m	Improper gender balance	5.40	0.51	13	-6	7	0.55	6.30
n	Behaviors of the immediate supervisor	5.30	0.50	14	-1	13	0.41	4.80

Poor retirement benefit is considered as the most significant barrier for attracting Operational Workforce in to the construction industry, particularly within the Sri Lankan context. Thereby, introducing a social security system for operational workforce of Sri Lankan construction industry is considered as critical for attracting and maintain efficient, and productive construction workforce. Succeeding section discusses about social security system.

6 Social Security

Social security is a fundamental right according to the Article 22 of the Universal Declaration of Human Rights (United Nations, 1948, p. 5).

'Everyone as a member of the society has a right for a social security and is entitled to realisation, through national effort and international cooperation in accordance with the organisation and resources of each State, of the economic, social and cultural rights indispensable for people's dignity and the free development of the personality'.

International labour Organisation (ILO) considers social security as a universal need. Social security is recognised as a basic human right by the ILO Conventions and United Nations charters such as International Covenant on Economic, Social and Cultural Rights as well (Ginneken, 2003). The objective of a social security is to protect the poor and vulnerable and to ensure that they have an acceptable standard of living. Social security may also involve smoothing consumption and reducing risk or spreading income over the life cycle. Often there is a redistribution of income among groups with differing needs (Ahmad, 1991). Majority of the public consider social security as the most important form of household wealth (Fedlstein, 1974). Neither the theoretical nor the empirical analyses were given due consideration or adequate attention to the existence and growth of social security.

6.1 Social Security in Construction Industry in Sri Lanka

Poor retirement benefits could be considered as the major barrier to attract the current youth as their future sector of careers as illustrated in Table 3. According to the findings of Wijewickreme & Ekanayake (2010), 6.25% of the operational workforces in construction industry are above their retirement age but still working due to absence of an effective and lifelong social security system. As per the 'A Theory of Human Motivation' (Marslow, 1943), 6.25% of the over aged Operational Workforce in construction industry should be in the level of Self Actualisation. However, in Sri Lankan construction industry context, the same is still fighting for their basic 'Physiological Needs' such as Air, Water, Food and Sleep. Sometime they were forced to work to fulfill their day-to-day requirements including their dependents such as grand children or their parents.

As stated in the iceberg model in Figure 2, what could be observable were 'Pay' and 'Work'. Based on the findings in Table 3, there were 14 other negative effects which could not resolve only with a 'Pay' to the Operational Workforce. Their requirements of workforces needed more and broad attention from the Management perspective. Demands of the Operational Workforce were not merely limited to a settlement through payment. Similarly, in the reverse version 'Just Work' for the 'Pay' could not settle the requirements of the Employee. Some of

the requirements of operational workforce cannot be resolved without the intervention from the statutory organisations.

Professionals such as Client Advisors, Architects, Engineers, Quantity Surveyors, Planning Engineers, Contract Administrators, Builders, Contractors, etc. are working towards the future of the industry. Series of professional bodies are supporting them to develop their career status with CPD's, Seminars, Exhibitions, Award Ceremonies, AGMs, and Conferences but haven't seen an event organised for the Operational Workforce of the construction industry.

7 Conclusion

According to the findings of the research, it can be concluded that Operational Workforce will not be a commodity anymore. Human resources shall not be treated similar to the other commodities which can mobilise and demobilise similar to a Just in Time (JIT) activity sequencing of Supply Chain Management process.

They have to be considered as partners of the industry. As partners of the industry, they will become eligible to share profits. Suggested partnership arrangement is in line with the Goal 8 (Develop a global partnership for development) of the Millennium Development Goals (UN Millennium Project, 2000). The best profit that Operational Workforce looking for at present as partners of the construction industry is a retirement benefit. National level planning and resources management structure is an essential need to fulfill their requirements. Hence, industry needs to pay more attention to resolve the issues related to operational workforce in construction industry.

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9 Appendix A

Research Project on
Motivating Blue Collar Workforce Towards Construction Industry
Conducted By

Master of Science in Construction Project Management
Department of Civil Engineering, University of Moratuwa, Sri Lanka

Questionnaire Form 'D'

1. General Information

Name
Age Years Experience Years
Trade Mobile
Address

2. What are the difficulties that you are experiencing as at present as a construction worker? (Weigh the range by giving **"1 for low"** importance and **"7 for high"** importance)

		Degree of importance						
		Low			Mid			High
		1	2	3	4	5	6	7
a.	Lack of social recognition	☐	☐	☐	☐	☐	☐	☐
b.	Temporary nature of the occupation	☐	☐	☐	☐	☐	☐	☐
c.	Behaviors of the immediate supervisor	☐	☐	☐	☐	☐	☐	☐
d.	Gray areas in the career development	☐	☐	☐	☐	☐	☐	☐
e.	Interpersonal relationships	☐	☐	☐	☐	☐	☐	☐
f.	Insufficient income	☐	☐	☐	☐	☐	☐	☐
g.	Dissimilarities in salary scales	☐	☐	☐	☐	☐	☐	☐
h.	Political & social influences	☐	☐	☐	☐	☐	☐	☐
i.	Influence from the dependents	☐	☐	☐	☐	☐	☐	☐
j.	Improper gender balance	☐	☐	☐	☐	☐	☐	☐
k.	Safety & sanitary facilities	☐	☐	☐	☐	☐	☐	☐
l.	Poor retirement benefits	☐	☐	☐	☐	☐	☐	☐
m.	Non availability of recreation facilities	☐	☐	☐	☐	☐	☐	☐
n.	Being away from family and relatives	☐	☐	☐	☐	☐	☐	☐
o.	Lack of troublefree communication	☐	☐	☐	☐	☐	☐	☐
p.	Other 1	☐	☐	☐	☐	☐	☐	☐
q.	Other 2	☐	☐	☐	☐	☐	☐	☐

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August 2009

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