Chapter 1

INTRODUCTION
1.1 Background & Problem Definition

The time duration of construction projects right from inception to completion is assumed great importance in the construction industry. Further, in many instances it is most cost-effective to complete a project within the shortest possible time.

One of the most important problems in the construction industry is delays. Delays occur in every construction project and the magnitude of these delays varies considerably from project to project. Some projects are only a few days behind schedule; some are delayed by over a year. So it is essential to define the actual causes of delay in order to minimize and avoid delays in any construction project. The successful execution of construction projects and keeping them within estimated cost and prescribed schedules depends on a methodology that requires sound engineering judgment (Al-Moumani, 2000).

Delay is a common source of dispute in construction projects cause severe losses to the parties of the construction contract. For employers, delays mean loss of revenues due to the inability to run the new facilities, and/or depending on the present inefficient facilities, in addition to the high cost of investment and interest during construction. For contractors, the losses due to delays are attributed to: (1) increasing overhead costs because of the longer construction period; (2) increasing material costs and labour wages due to escalation; and (3) applying liquidated damage or penalty clauses (Marzouk et al., 2008).

Further, completing projects on time is an indicator of efficiency, but the construction process is subject to many variables and unpredictable factors, which result from many sources. These sources include the performance of parties, resources availability, environmental conditions, involvement of other parties, and contractual relations. However, it is rarely happen that a project is completed within the specified time (Sadi A. Assaf et al., 2006).
Most of Road Construction Projects in Sri Lanka are experienced larger delays, and hence it’s badly affected to the economy in many ways. Further, this has been identified as a socio-economic problem, and therefore an urgent rectification is required.

This study will attempt to reveal the Factors Influencing the Duration of Road Construction Projects in Sri Lanka, and to identify how delays can be mitigated. Further, a prediction about the nature of the population (Road Projects in Sri Lanka) will be expected via sample analysis. The emphasis here is limited to study the Contractor’s point of view. As the data collection will be done via a questionnaire survey, the accuracy of the findings and as well as the analysis merely depend on the quality of the responses.

1.2 Research Objectives

The main objectives of the study are to be revealed the following with respect to the Road Construction Projects in Sri Lanka.

- Predict the nature of the Population using Statistical Inference - Identify the Confidence Interval for Population Mean of Percentage Delay via sample analysis
- Main Causes of Delay & Delay Diversification - Identify the Probable Reasons, which affect the Duration of Road Construction Projects, and Highlight the key / dominant factors of delay and identify how they are distributed
- Delay Mitigation - Identify how the effects of delays can be minimised

1.3 Conceptual Framework & Research Design / Methodology

The preliminary data for this research will be collected through a literature review and the use of a questionnaire survey targeted at local contractors of Road Construction.
The literature review will be conducted through books, conference proceedings, the internet, and construction management and engineering journals.

An unbiased random sample of Road Construction Delay Cases will be studied in order to predict the nature of the Population (General Circumstance) using Statistical Inference. Later the possible actions for Delay Mitigation will be discussed with the output revealed.

1.4 Main Findings

This study found that the local road construction projects are experienced 56% ~ 88% of average time overrun compared to the original (planned) project duration.

The findings further revealed that the financial problems of the Owner as well as of the Contractor, is the most influencing factor in causing delay in road construction projects in Sri Lanka. Poor site management by the Contractor, followed by poor weather conditions that is an External Factor, contract modifications by the Owner, incomplete documents, delayed and slow supervision in making decisions and giving instructions by both the Consultant and the Owner are appeared to be the next critical factors in causing delays in local road constructions. Further, the responsibilities of the Contractor such as, shortage of site labour and materials, lack of subcontractor’s skills, construction mistakes and defective work, poor skills and experience of labour, and finally delay in delivery of materials to site were revealed as the factors with significant probability of causing delays.

1.5 Guide to the Report

This section discusses the structure and the flow of the report. The report consists of following five chapters.

- Chapter 1 – Introduction
- Chapter 2 – Literature Review
Chapter 1 provides an introduction to the study. It describes *Background & Problem Definition, Research Objectives, Conceptual Framework & Research Design / Methodology, and Main Findings*. Further, it provides a *Guide to the Report* summarising each chapter to follow.

Chapter 2 illustrates the prevailing literature of the focused study area. Further, this chapter is to broaden the knowledge of reader on importance of *Time Delays in Construction, Delays of Road Construction Projects*. Further, this chapter gives a broad understanding about *Types and Causes of delay* highlighting the responsible parties for delays in road construction projects.

Chapter 3 rationalises the *Methodology of Study*. It discusses the parameter identification with regard to model the *Conceptual Framework, Sample Size Justification* including *Reliability of Collected Data, Development of Hypothesis and Statistical Inference* in order to obtain the *Confidence Interval for Population Mean*. Further, this chapter describes about the *Percentage Delay* parameter and the *Relative Significance Index (RSI)* model, which are the new concepts introduced by the author this study.

Chapter 4 describes the detailed analysis of the collected data for the research. The chapter aims to details the main objectives of data analysis namely, *Confidence Interval for Population Mean of Percentage Delay, Relative Significance Index (RSI), and Ranking of Delay Factors*. In addition to that, *Respondents' Background* is also broadly analysed in this chapter. Finally, the *Results* are discussed, and consequently highlighted the *Factors Influencing the Duration of Road Construction Projects in Sri Lanka*.

Chapter 5 explains and discusses the findings of the research in concise manner referring to the objectives defined in the first chapter. Moreover, the author attempts
to comprehend some guidelines and best practices in terms of *Recommendations* for mitigate the effects of delays in road construction projects in Sri Lanka. Finally, the author discusses some potential extensions of this study that can be incorporated for any further research activities.