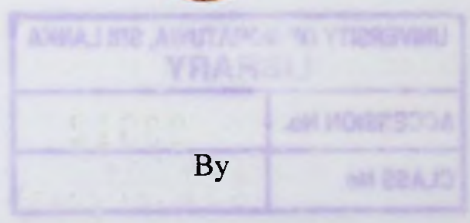


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STUDY ON STRUCTURAL ASPECTS OF UNDERPASSES IN SOUTHERN TRANSPORT DEVELOPMENT PROJECT

The thesis submitted to the Department of Civil Engineering of the University of Moratuwa in partial fulfillment of the requirements for the Degree of Master of Engineering in Structural Engineering Design.

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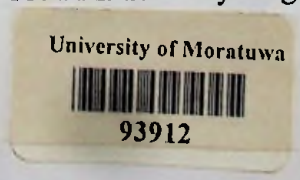


By

V.G. Liyanagamage

Research Supervised By

Prof. M. T. R. Jayasingha



DEPARTMENT OF CIVIL ENGINEERING
UNIVERSITY OF MORATUWA
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ABSTRACT

The Colombo-Matara express highway also known as the Southern Lanka Express Highways or simply the Southern Expressway is a highway currently under construction in Sri Lanka. The 126 km long highway will link the Sri Lankan Capital Colombo with Matara, a major city in the Southern Province of the Island. Construction of the highway began in 2006 and it is expected to be completed in 2010 at the cost of \$600 million. When completed, it will reduce the time taken to travel from Colombo to Matara to one and a half hours from the current four hours.

It is known fact that the Southern Highway and other subways linked with are normally supported by a wide range of different structures which require careful thought in selecting a suitable one for each location. In fact, these structures form a vital part of transport infrastructure and the smooth running of the network as designed. Even though, this study has been narrow down only to underpasses from the wide range of structures being used. Therefore, in this research work, it is mainly focused on to the underpasses such as metal and concrete underpasses used in and its significant impact on the cost initiatives, suitability and the environmental impacts and etc.

The technology used for the metal underpasses on this project is new to Sri Lanka. Traditionally in Sri Lanka, pre cast concrete structures are the preferred option, however, in this project, metal underpasses has also been used. The introduction of new technology requires knowledge of their structural behavior, particularly when used in combination with other materials, and their long-term durability. Over the last years, many structures have started to show signs of degradation and deterioration as a result of the high chlorate content in the air in southern Sri Lanka and some kind of crack failures due to bad workmanship as well as lack of adequate supervision. All these issues has been discussed and concluded in this report in a precise manner based on physical observation and on literature survey.

Finally, this research concludes that the use of concrete box underpasses in the southern highway is mostly substantiated with country like Sri Lanka due to its inherent characteristics and with the economy and the durability concerns.

In fact, this report is a part of a post contract analysis which describes important facts that had to be emphasized in selection of the structure underpasses for Southern highway project and concluded which type of underpasses would have been used with the great economic impact to Sri Lanka.

Acknowledgement

I would like to make this opportunity to forward my sincere thanks to the project supervisor, Prof. M.T.R. Jayasingha who helped me to make this project a success by giving advice and looking in to the problems encountered. His guidance and constructive criticism helped me to execute the project successfully.

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Finally, I gratefully acknowledge everybody who helped me in numerous way in completing my research study.

V.G. Liyanagamage.

August 2009.

DECLARATION

I, V.G. Liyanagamage, hereby declare that the content of the thesis is the output of the original research work carried out at the Department of Civil Engineering, University of Moratuwa. Whenever others' work is included in this thesis, it is appropriately acknowledged as a reference.

Signature : Liyanagamage

Name of the Student : V.G. Liyanagamage

Date : 06/10/2009

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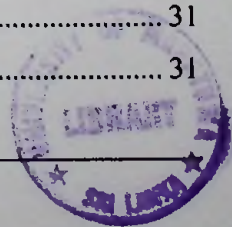
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Contents

	Pages
Abstract.....	i
Acknowledgement	iii
Declaration.....	iv
Contents.....	v
List of Figures.....	viii
List of Tables	ix
Chapter 1.....	1
1.0 Introduction.....	1
1.1 General.....	1
1.2 Main Objectives.....	6
1.3 Methodology.....	6
1.4 Main Findings.....	7
1.5 Arrangement of the Report	7
Chapter 2.....	8
2.0 Literature Review.....	8
2.1 Applications of Corrugated Steel Products.....	8
2.2 Description of Corrugations.....	9
2.3 Structural Properties of Conduit Wall	11
2.4 Pipe Seams.....	11
2.5. Minimum Cover Requirements	12
2.6. Normal Bedding.....	12
2.7. Camber.....	13
2.8. Selection of Structural Backfill.....	14
2.9. Vertical Deflection.....	15
2.10. End Protection.....	16
2.11 Failures in Metal structures.....	16

2.11.1. Buckling of the conduit wall.....	17
2.11.2. Bolt hole tears	17
2.11.3. Bearing failure at longitudinal seams	17
2.11.4. Excessive deformation of conduit cross section	17
2.11.5. Collapse of the structure	18
2.11.6 Remedial measures	18
Chapter 3.....	19
3.0 FIELD SURVEY	19
3.1 Introduction.....	19
3.2 Method and work Procedure.....	19
3.2.1 Metal Structures	19
3.2.1.1 Filling and Excavation	19
3.2.1.2. Foundation Preparation.....	20
3.2.1.3. Camber at Installation	20
3.2.1.4. Erection of Structures	20
3.2.1.5. Backfilling.....	20
3.2.1.6 Shape Control.....	21
3.2.1.7 End Treatment.....	21
3.2.2 Box Culvert.....	21
3.2.2.1 Filling and Excavation	21
3.2.2.2. Construction of Box Culverts	22
3.3. Failures in Metal Underpasses	22
3.4 Summary.....	24
Chapter 4.....	25
4.0 Analysis of Metal Structure & Results.....	25
4.1 Introduction.....	25
4.2 Description of Loads on the Metal Structure	25
4.2.1 Dead Load.....	25
4.2.2. Live Load HB Loading	26
4.3. Design Calculation as per AASHTO (For HPA 74N).....	26
4.3.1 Description of the Proposed Structure	26
4.3.2 Outline Drawing of the Proposed Structure.....	27
4.3.3. Design Pressure.....	27
Chapter 5.....	31
Analysis of Box Culvert, Results & Design.....	31
5.1 Introduction.....	31
5.2 Load Cases	31



5.3 Loads on the Box Culvert	32
5.3.1 Loads due to soil	32
5.3.2 Live Loads	32
5.3.3. Loads on the top slab.	33
5.3.4. Loads on the side walls	33
5.3.5. Loads on the bottom slab	33
5.3.6 Horizontal Live load due to traction	33
5.3.7. Hydrostatic Pressure	33
5.4 Modeling of Box Culvert	34
5.4.1 Load Calculation	34
5.4.1.1 Dead Load Calculation	34
5.4.1.2. Live load calculation	34
5.4.1.3. Super Imposed Dead Load	35
5.4.1.4. Reaction from Soil Calculation	36
5.4.1.5 Lateral earth pressure calculation	41
5.4.1.6. Traction force	42
5.4.1.7. Hydrostatic Pressure	42
5.5 Concrete Outline Drawing of Box Culvert	43
5.6. SAP2000 model of the Box Culvert	43
5.7 Load Combinations	44
5.8 Deformed Shape for Load Case 4.3	44
5.9 Results from the SAP2000 Modeling	45
Chapter 6	47
6.0 COST ANALYSIS	47
6.1 Introduction	47
6.2 Cost Estimating Process	47
6.3 Cost Analysis of Metal Structure	47
6.4. Cost Analysis of Box Culvert	49
6.5 Cost Saving	50
Chapter 7	51
7.0 CONCLUSIONS AND RECOMMENDATION	51
REFERENCES	52
APPENDIX -A	53

List of Figures

	Page
Figure 1.1 : View of a Metal Structure.....	2
Figure 1.2 : View of a Box Culvert.....	2
Figure 1.3 : Typical Details of Metal Structures.....	4
Figure 2.1 : (a) Longitudinal Stiffeners (b) Transverse Stiffeners.....	8
Figure 2.2: Types of Corrugations available.....	10
Figure 2.3: Sectional Properties of Selected Corrugation.....	11
Figure 2.4 : Typical Flat Bedding.....	13
Figure 2.5 : Typical Vee Shaped Bedding.....	13
Figure 2.6 : Cambered pipe.....	14
Figure 2.7 : Typical Vertical Deflection.....	15
Figure 3.1 : Husker walls are cracked.....	22
Figure 3.2 : Weeds comes through the plates of Metal Structure.....	23
Figure 3.3 : Plates are Corroded.....	23
Figure 4.1 : Concrete Outline of the HPA74N.....	27
Figure 5.1 : Loads on the Box Culvert.....	32
Figure 5.2 : HB Vehicle Wheel Arrangement.....	35
Figure 5.3 : Concrete Outline of Box Culvert.....	43
Figure 5.4 : Model of Box Culvert.....	43
Figure 5.5 : Deformed shape of Mode 1.....	44
Figure 5.6 : Deformed shape for Mode 2.....	45

List of Tables

	Page
Table 2.1 : Ultimate Seam Strength for MP152 Corrugated Structures.....	12
Table 4.1 : Description of the Proposed Structure.....	26
Table 5.1 : Results from the SAP2000 Modeling.....	46