

**McINTOSH • LALANI ENGINEERING LTD.**

---

**STRUCTURAL DESIGNS of ASPHALT PAVEMENT  
55 ACRE RESIDENTIAL DEVELOPMENT  
LAC ST. ANNE COUNTY, ALBERTA**

**May, 2008**

**M•L 3861**

**STRUCTURAL DESIGNS of ASPHALT PAVEMENT  
55 ACRE RESIDENTIAL DEVELOPMENT  
LAC ST. ANNE COUNT, ALBERTA**

**SUBMITTED TO:**

**AC Ltd.  
% Catalano Development Group  
Calgary, Alberta**

**PREPARED BY:**

**McIntosh•Lalani Engineering Ltd.  
Calgary, Alberta**

**May, 2008**

**M•L 3861**

**TABLE of CONTENTS**

	Page
1.0 INTRODUCTION .....	1
2.0 STRUCTURAL DESIGNS of ASPHALT PAVEMENTS .....	1
2.1 Recommended Flexible Pavement Structures .....	1
2.1.1 Rural Local Undivided .....	1
2.2 Subgrade Support .....	2
2.3 Traffic .....	2
2.4 Materials .....	2
3.0 SUBGRADE CONSTRUCTION .....	2
4.0 GRANULAR BASE CONSTRUCTION .....	3
5.0 DRAINAGE .....	3
6.0 LIMITATIONS .....	3
7.0 CLOSURE .....	4

## 1.0 INTRODUCTION

At the request of Mr. Kim Catalano of the Catalano Development Group, structural pavement designs have been developed for the 55 Acre Residential Development located southwest of Onoway, Alberta. The following sections provide the design structures, design parameters and construction guidelines.

## 2.0 STRUCTURAL DESIGNS of ASPHALT PAVEMENTS

### 2.1 Recommended Flexible Pavement Structures

The streets within this development have been classified as Rural Local Undivided Streets. These pavement structures have been designed to comply with the Lac St. Anne General Municipal Servicing Standards for Subdivisions (the Standards), as well as the City of Edmonton Design and Construction Standards. The recommended asphaltic pavement structure is presented below.

#### 2.1.1 Rural Local Undivided

Material	Design Pavement Structure (mm)
Designation 2 Class 20 Crushed Granular Base	250
ACR Asphalt Mix	100

If desired, the asphalt may be placed in two lifts with staged construction. In this scenario we recommend using a 65 mm/ 35 mm split, with the 65 mm lift placed immediately and the 35 mm lift placed after the passage of several seasons.

## **2.2 Subgrade Support**

For the purpose of design a soaked CBR value of 1.0 was used.

## **2.3 Traffic**

Structural design requirements were determined by assuming 2 percent truck traffic on the roadways over a 20 year service life. With an assumed AADT of approximately 405 for this subdivision, this equates to a total ESAL count of approximately 60,000 over 20 years.

## **2.4 Materials**

The material supplied and placed in base and pavement construction must comply with the minimum requirements identified in this report and in the City of Edmonton Design and Construction Standards.

## **3.0 SUBGRADE CONSTRUCTION**

The subgrade should be compacted to an average of 100 percent Standard Proctor Density. Prior to placement of the granular materials, the subgrade should be proof-rolled to detect soft areas. Subgrade areas which may be determined to be structurally deficient through proof-rolling should be strengthened by procedures to be evolved in the field.

#### **4.0 GRANULAR BASE CONSTRUCTION**

The granular base materials used in roadway construction should satisfy the current City of Edmonton Design and Construction Standards for gradation and quality. The granular base should be compacted to a minimum of 100 percent Standard Proctor Density.

#### **5.0 DRAINAGE**

The following recommendations are provided to prevent water from accessing the granular base materials and inducing service trench settlements.

- All shallow utility trenches underlying road sections should be backfilled and compacted to a minimum of 98 percent Standard Proctor Density.
- Ditches should be properly designed, constructed and maintained to allow for proper drainage away from pavement sections. Standing water should not be allowed to saturate either the subgrade or granular base materials.

#### **6.0 LIMITATIONS**

Structural pavement designs presented herein have been designed utilizing a 20 year design life. The subgrade soils on this project possess a frost heave potential and potential for settlement when exposed to water. The implementation of the drainage recommendations above can greatly reduce the potential for distress in the pavement.

## 7.0 CLOSURE

Construction monitoring should be coordinated to ensure that the minimum requirements contained in this report, as well as the Lac St. Anne General Municipal Servicing Standards, are achieved.

Respectfully submitted,

**McIntosh•Lalani Engineering Ltd.**

Lee R. Martin, E.I.T.

A.W. McIntosh, P.Eng.  
Senior Project Engineer

/bah