

APPROVED

By: *R. Alsty* Date: 3/23/18

MINIMUM PAVEMENT SECTION RECOMMENDATIONS									
Client:	Real Estate Equities Architecture, LLC	Project:	Village Cooperative of Fort Collins - N/E/C of Horsetooth and Stanford Roads	Project No.	1162088	<small>Date:</small> 	City of Fort Collins Engineering Department		
Roadways		Horsetooth Road - Widening							
Roadway Classification		4-Lane Arterial							
18-kip Equivalent Daily Load Axles (EDLA)		225							
20-Year 18-kip Equivalent Single Axle Loads (ESAL)		1,642,500							
Reliability (%)		95							
Standard Deviation		0.44							
Subgrade Resilient Modulus: Based on Subgrade R-Value of 10		3562							
PSI Loss (Initial Serviceability Index - Final Serviceability Index), psi		2.0							
AASHTO Design Structural Number - S _N		4.91							
Composite Pavement Section (Alternative A) - without Fly Ash Treatment Composite Pavement Section (Alternative B) - with Fly Ash Treatment		Minimum Pavement Thicknesses - Inches							
		Thickness, Inches	Calculated SN	Thickness, Inches	Calculated SN	Thickness, Inches	Calculated SN	Thickness, Inches	Calculated SN
Hot Bituminous Pavement (Grade S) - Structural Number S _N 0.44		8.0	3.52	6.0	2.64				
Aggregate Base Course (CDOT Class 5 or 6) - Structural No. S _N 0.1		13.0	1.43	12.0	1.32				
Stabilized Subgrade - Fly Ash Treated Subgrade 12% Class C 0.10				10.0	1.00				
Calculated Pavement Structural Number - S _N			4.95		4.96				
Portland Cement Concrete Pavement (PCCP) (Alternative C)				10 - inches with a minimum 4 inch ABC section					

Note: According to LCUASS Table 10-1, the minimum HMA over ABC pavement section for a 4-lane arterial is 8-inches of HMA over 15-inches of ABC. However based on the on-site R-Value material, in lieu of the default R-Value of 5 as suggested by LCUASS, and the footnote on Table 10-1, the accepted minimum HMA thickness is 6 inches for an arterial roadway. Using the AASHTO Pavement design program and applying the project-specific values, the calculated structural number (SN) is 4.91 and the thicknesses provided above for HMA and ABC with or without the necessity of a fly ash treated subgrade accommodate the SN of 4.91.

