CFS ENGINEERS

Cook, Flatt & Strobel Engineers
1100 W. Cambridge Circle Drive, Suite 700
Kansas City, Kansas 66103
913.627.9040

January 23, 2025

David N. Olson
Oldham Investors, LLC
P.O. Box 24302
Overland Park, KS 66283

Re: Oldham Village Pavement Design
SW Jefferson Street and Oldham Parkway
Lee's Summit, Missouri
CFS Geotechnical Report # 24-5632

Mr. Olson,

Cook, Flatt & Strobel (CFS) Engineers, P.A. has been asked to provide a pavement design for the referenced streets in the proposed Oldham Village development. CFS performed the geotechnical exploration and recommendations for the project. Kimley-Horn provided the traffic impact study for the development and that information was utilized in the pavement design. Based on Kimley-Horn's traffic study of the planned streets, a future ADT of 16,000 cars is anticipated. Of this, 2% are anticipated to be trucks. Utilizing an equivalent single axle load (ESAL) for trucks of 3, the 35 year design, ESAL's for the proposed streets is estimated to be 12.264 million. The pavement section below exceeds this requirement.

Material	Lee's Summit Pavement (in)
KCMMB A1 Surface	2.0
KCMMB A2 Surface	2.0
KCMMB A3 Base	6.0
MODOT Type 5	6.0
Geogrid	Yes
Sub-Grade Material	Compacted Soil
Structural Number	6.074
ESAL's (millions)	**13.672**

Tensar Plus flexible pavement design program was used to develop the pavement section. A CBR value of 3.5 was utilized for the pavement sub-grade. A 95% Reliability and 2.5 Terminal Serviceability were utilized per the city of Lee's Summit requirements.

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Please contact CFS with further questions. 913-627-4090

Respectfully,
Cook, Flatt & Strobel Engineers, P.A.

STATE OF MISSOURI
ADAM M. McEACHRON
1.23.25
NUMBER
PE-2010005591
PROFESSIONAL ENGINEER

Adam M. McEachron, P.E
Senior Geotechnical Engineer

Attachments: Pavement Program Results

Asphalt Pavement
Design Analysis

Tensar
A Division of CMC

Design	
Project	
Customer	
Company	CFS Engineers

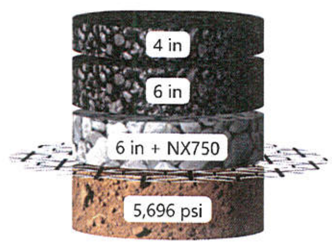
Reference	
Location	
Designer	Adam McEachron
Date	January 23, 2025

Method of analysis

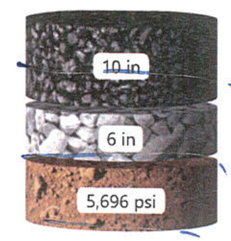
The calculation method used to create this Tensar software output is the design method for flexible pavements given in the AASHTO Guide for Design of Pavement Structures 1993. The enhancement of performance due to the inclusion of Tensar geogrids in the stabilised layer is derived empirically from full scale pavement tests and trafficking trials carried out by independent authorities.

Results

Stabilized
13,672,500 ESALs



~~Unstabilized~~
~~4,599,800 ESALs~~



	Thickness	Coeff.	SN
HMA layer 1	4 in	0.440	1.760
HMA layer 2	6 in	0.420	2.520
Aggregate base (NX750)	6 in	0.299	1.794
Structural number (SN)			6.074

	Thickness	Coeff.	SN
HMA layer 1	10 in	0.440	4.400
Aggregate base	6 in	0.140	0.840
Structural number (SN)			5.240

Parameters

Project Information

Target ESALs	Subgrade resilient modulus	Reliability	Standard deviation	Serviceability	
				Initial	Terminal
100,000	5,696 psi	95%	0.49	4.2	2.5

This report was prepared using Tensar+ (2.18.0)

Limitations of this Report
You undertake to only use the Tensar+ software tool and its output solely to evaluate the application of Tensar geogrids, and strictly according to the Terms of Use. The suitability of the software output and Tensar International's geogrids for any project is the sole responsibility of you, and your employees, contractors or other third parties who access the Tensar+ software tool and its output ("Your Associates"). The Tensar+ software output is merely illustrative and is not a detailed design. You will ensure that you and Your Associates have undergone all necessary training through Tensar International and/or have the necessary expertise and experience to use the Tensar+ software tool and its output correctly and safely. Copyright in the Tensar+ software output belongs to Tensar International. It may not be reproduced in whole or in part without the prior written permission of Tensar International except to Your Associates provided it is only disclosed for the purpose of evaluating the commercial application for the use of Tensar International's geogrids, and you are fully liable for Your Associates' acts or omissions. The Tensar+ software output does not form the whole or any part of a contract.