LEE'S SUMMIT
MISSOURI

DESIGN AND CONSTRUCTION MANUAL DESIGN MODIFICATION REQUEST

PROJECT NAME: Streets of West Pryor - Lot 10

PREMISE ADDRESS: 920 NW Pryor Road Lee's Summit, MO 64081

PERMIT NUMBER: PRCOM20192670

OWNER'S NAME: SWP-X, LLC

TO: The City Engineer

In accordance with the Lee's Summit Design and Construction Manual (DCM) Section 1002.A, I wish to apply for a modification to one or more specification (s). The following articulates my request for your review and action. (NOTE: Cite specific code sections and engineering justification and drawings.)

CFS requests to alter the parking lot improvement for the project in accordance with the attached letter. The original section to be revised in the Lee's Summit specification is Table 8-5, "Parking Lot Pavement", Section 8.620.f.1a(1).

SUBMITTED BY:

NAME: Adam McEachron, P.E. ( ) OWNER (X) OWNER'S AGENT

ADDRESS: 1100 W. Cambridge Cir. Dr. #700 Tel.# 913.627.9041

CITY, STATE, ZIP: Kansas City, KS 66103

Email: adamm@cfse.com SIGNATURE:

FORWARDING MANAGER: Kent Monter RECOMMENDATION (X) APPROVAL ( ) DENIAL

SIGNATURE: KMonter DATE: 17 Mar 20

GEORGE BINGER III, P.E. – CITY ENGINEER: (X) APPROVED ( ) DENIED

SIGNATURE: George M Binger III DATE: 3/18/2020

COMMENTS Minimum lift thickness for MWA Type 1 asphalt is 3 inches. Adjust pavement section by either a) Change base to MWA type 2 or b) 3" MWA Type 3 with revised pavement design analysis

A COPY MUST BE ATTACHED TO THE APPROVED PLANS

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

March 18, 2020

David N. Olson
Monarch Acquisitions, LLC
P.O. Box 24302
Overland Park, KS 66283

Re: The Streets of West Pryor Pavement Sections
Lee's Summit, Missouri
CFS # 19-1066

Cook, Flatt & Strobel (CFS) Engineers, P.A. has reviewed the pavement section for the reference project. The current proposed pavement section is Lee's Summit's standard section for private roads (see below). It is understood that this pavement section is designed to be supported by a compacted soil sub-grade.

During excavation, it has been discovered that the pavement in some areas will be supported by limestone bedrock. Due to this increased strength of the sub-grade material, the pavement section can be reduced while increasing the pavements Equivalent Single Axel Loads (EASL's). See the attached evaluation performed using the SpectraPave software. Below is a breakdown of the current Lee's Summit requirements compared with the proposed pavement sections.

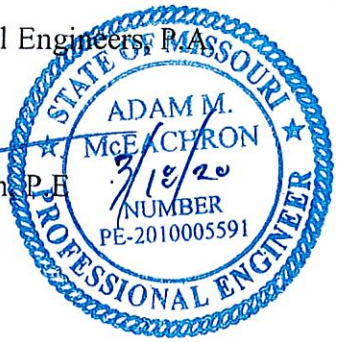
Material	Lee's Summit Light Duty Pavement (in)	Lee's Summit Heavy Duty Pavement (in)	Proposed Pavement (in)
Surface Asphalt APWA Type III	1.5	1.5	1.5
Base Asphalt APWA Type I	4.0	5.0	3.0
MoDOT Type 5 Base Rock	6.0	6.0	6.0
Geogrid	Yes	Yes	No
Sub-Grade Material	Compacted Soil	Compacted Soil	Bedrock
ESAL's (millions)	0.976	1.946	4.153

A CBR value of 3 was utilized for the current pavement sections that would typically bear on compacted clay. A CBR of 40 was utilized for the proposed pavement section that will be bearing on shale or limestone bedrock. A CBR of solid bedrock cannot be re-created in the laboratory to the ASTM requirements. This value should be conservative as well graded crushed stone CBR values range from 15 to 40, solid bedrock should be significantly higher than this. For drainage purposes, weep holes will be added to the adjacent storm sewer inlets below the asphalt pavement.

The new pavement section using a limestone bedrock subgrade increases the EASL's for the pavement section. Where pavements are to be constructed on compacted soils, or sub-grade materials other than limestone bedrock, the pavement section will not be altered.

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

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



Adam M. McEachron, P.E.
Senior Engineer

SpectraPave™
Pavement Optimization Design Analysis

Design Parameters for AASHTO (1993) Equation

Reliability (%)	= 90	Initial Serviceability	= 4.2
Standard Normal Deviate	= -1.282	Terminal Serviceability	= 2.0
Standard Deviation	= 0.49	Change in Serviceability	= 2.2

Aggregate fill shall conform to following requirement:

D50 <= 27mm (Base course)

Unstabilized Section Material Properties

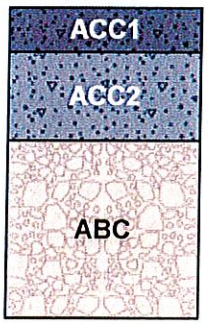
Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70.00	0.420	N/A
ACC2	Dense-graded Asphalt Course	70.00	0.400	N/A
ABC	Aggregate Base Course	20.00	0.140	1.0

Stabilized Section Material Properties

Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70.00	0.420	N/A
MSL	Mechanically Stabilized Base Course	20.00	0.238	1.0
SBC	Subbase Course	16.00	0.080	1.0

RECOMMENDED SECTION

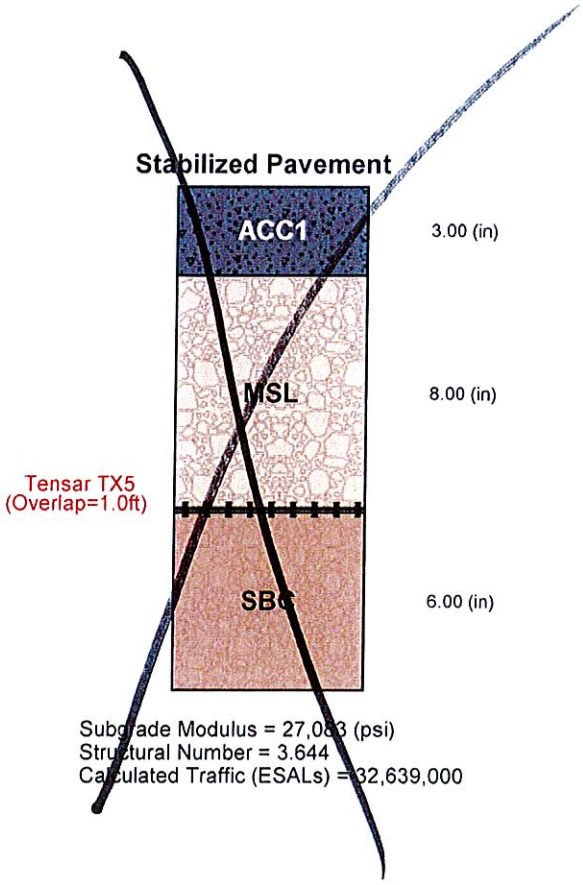
Unstabilized Pavement



1.50 (in)
3.00 (in)
6.00 (in)

Subgrade Modulus = 27,083 (psi)
Structural Number = 2.670
Calculated Traffic (ESALs) = 4,153,000

Stabilized Pavement



3.00 (in)
8.00 (in)
6.00 (in)

Subgrade Modulus = 27,083 (psi)
Structural Number = 3.644
Calculated Traffic (ESALs) = 32,639,000

LIMITATIONS OF THE REPORT

The designs, illustrations, information and other content included in this report are necessarily general and conceptual in nature, and do not constitute engineering advice or any design intended for actual construction. Specific design recommendations can be provided as the project develops.

Project Name	N/A		
Company Name	Tensar		
Designer	N/A	Date	N/A

Tensar

SpectraPave™
Pavement Optimization Design Analysis

Standard Asphalt Pavement - TWI Edition - 20191003

Printed on 03-13-2020 C:\Tensar International Corporation\SpectraPave\Untitled.sp

Design Parameters for AASHTO (1993) Equation

Reliability (%)	= 90	Initial Serviceability	= 4.2
Standard Normal Deviate	= -1.282	Terminal Serviceability	= 2.0
Standard Deviation	= 0.49	Change in Serviceability	= 2.2

Aggregate fill shall conform to following requirement:

D50 <= 27mm (Base course)

Unstabilized Section Material Properties

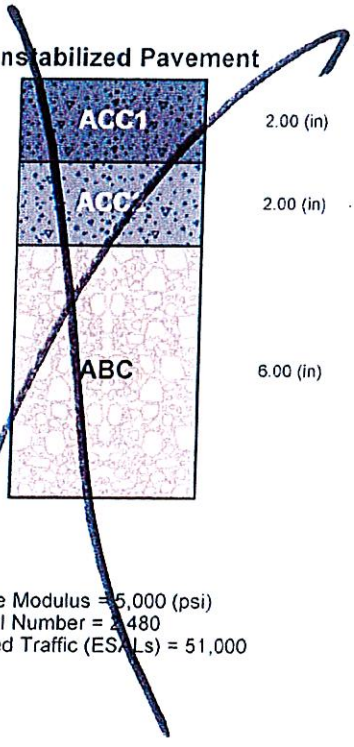
Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70.00	0.420	N/A
ACC2	Dense-graded Asphalt Course	70.00	0.400	N/A
ABC	Aggregate Base Course	20.00	0.140	1.0

Stabilized Section Material Properties

Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70.00	0.420	N/A
ACC2	Dense-graded Asphalt Course	70.00	0.400	N/A
MSL	Mechanically Stabilized Base Course	20.00	0.273	1.0

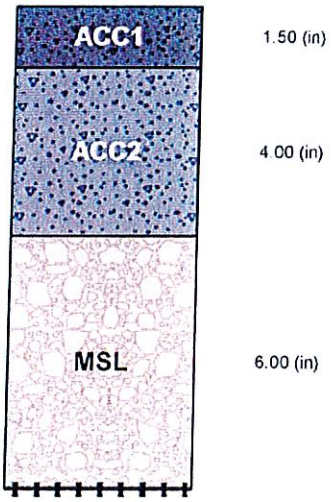
LIGHT DUTY

Unstabilized Pavement



Subgrade Modulus = 5,000 (psi)
Structural Number = 2.480
Calculated Traffic (ESALs) = 51,000

Stabilized Pavement



Tensar TX5
(Overlap=1.0ft)

Subgrade Modulus = 5,000 (psi)
Structural Number = 3.868
Calculated Traffic (ESALs) = 976,000

LIMITATIONS OF THE REPORT

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Project Name	N/A		
Company Name	Tensar		
Designer	N/A	Date	N/A

Tensar

SpectraPave™
Pavement Optimization Design Analysis

Thick Asphalt Pavement - TWH Edition - 20191003

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Design Parameters for AASHTO (1993) Equation

Reliability (%)	= 90	Initial Serviceability	= 4.2
Standard Normal Deviate	= -1.282	Terminal Serviceability	= 2.0
Standard Deviation	= 0.49	Change in Serviceability	= 2.2

Aggregate fill shall conform to following requirement:

D50 <= 27mm (Base course)

Unstabilized Section Material Properties

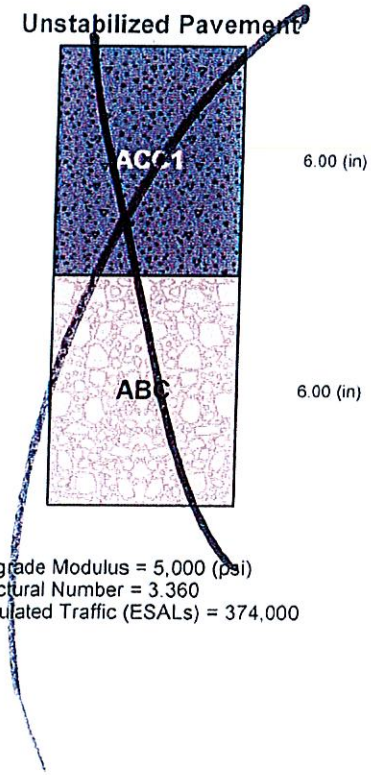
Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70.00	0.420	N/A
ABC	Aggregate Base Course	20.00	0.140	1.0

Stabilized Section Material Properties

Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70.00	0.420	N/A
ACC2	Dense-graded Asphalt Course	70.00	0.400	N/A
MSL	Mechanically Stabilized Base Course	20.00	0.273	1.0

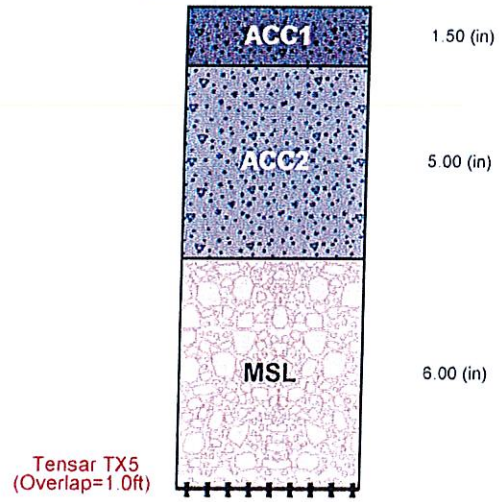
HEAVY DUTY

Unstabilized Pavement



Subgrade Modulus = 5,000 (psi)
Structural Number = 3.360
Calculated Traffic (ESALs) = 374,000

Stabilized Pavement



Subgrade Modulus = 5,000 (psi)
Structural Number = 4.268
Calculated Traffic (ESALs) = 1,946,000

LIMITATIONS OF THE REPORT

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Project Name	N/A		
Company Name	Tensar		
Designer	N/A	Date	N/A