Kumar & Associates, Inc.®
Geotechnical and Materials Engineers
and Environmental Scientists

6735 Kumar Heights
Colorado Springs, CO 80918
phone: (719) 632-7009
fax: (719) 632-1049
email: kacolospgs@kumarusa.com
www.kumarusa.com

An Employee Owned Company

Office Locations: Denver (HQ), Parker, Colorado Springs, Fort Collins, Glenwood Springs, and Summit County, Colorado

August 19, 2022

Mayberry Community Authority
c/o Development Services Inc.
Attn: Mr. Al Watson
P.O. Box 50822
Colorado Springs, CO 80919

Subject: Supplemental Pavement Section Thickness Design - Cattlemen Run, Mayberry Development Filings 2 thru 4, El Paso County, Colorado.

Project No. 22-2-131

Reference: Geotechnical Engineering Report, Project No. 22-2-131, Dated 5/9/22.

Gentlemen:

As requested, this letter provides supplemental pavement section thickness design recommendations for the subject project. We previously prepared a geotechnical engineering study for Filings 2 thru 4, Project No. 22-2-131, dated May 9, 2022. As part of the May 2022 study, exploratory borings and laboratory testing were completed for the subject segment of Cattlemen Run; however, pavement section thickness recommendations were not included because traffic loading information for this roadway was not available at the time.

Design Traffic: We understand Cattlemen Run will have a roadway classification of "Urban Nonresidential Collector" in accordance with the El Paso County Engineering Criteria Manual (ECM). Referencing the default ESAL for this classification presented in the ECM, a design-life ESAL of 821,000 was assumed. If it is determined that the traffic volume or roadway designation is different from the assumed, we should be contacted to reevaluate the pavement thickness design presented.

Subgrade Materials: Borings 13, 20 and 24 were previously drilled within the subject segment of roadway, and encountered silty sand (SM) and poorly-graded sand with silt (SP-SM). AASHTO classifications reported for these soil types included A-1-b and A-2-4. Based on the subsurface conditions and laboratory testing presented in the May 2022 report, an R-value of 50 and a resilient modulus of 13,168 psi was assumed for design of flexible pavements. If imported fill is used, tests should be performed to confirm it meets or exceeds the design R-value.

Pavement Thickness Recommendations: The recommended section was determined using the AASHTO 1993 design method as outlined in the ECM. The design parameters used for the analysis are attached. Based on the assumed traffic volume, we recommend the roadway be constructed with a minimum 4 inches of asphalt over 8 inches of Class 6 aggregate base course.

The remainder of the recommendations contained in the referenced May 2022 report remain applicable for the proposed construction. If there are any questions or we may be of further assistance, do not hesitate to contact our office.

Sincerely,

KUMAR & ASSOCIATES, INC.

Duane P. Craft, P.E.
DPC:th
Rev. by: AFK
Attachment

COLORADO REGISTERED
DUANE P. CRAFT
37553
8/19/22
PROFESSIONAL ENGINEER

Please note full depth
asphalt is not allowed
per EPC criteria.

1993 AASHTO Pavement Design

DARWin Pavement Design and Analysis System

A Proprietary AASHTOWare
Computer Software Product

Kumar & Associates
6735 Kumar Heights
Colorado Springs, CO 80918
USA

Flexible Structural Design Module

22-2-131
Urban Nonresidential Collector
Composite HMA/ABC

Flexible Structural Design

18-kip ESALs Over Initial Performance Period	821,000
Initial Serviceability	4.5
Terminal Serviceability	2.5
Reliability Level	85 %
Overall Standard Deviation	0.45
Roadbed Soil Resilient Modulus	13,168 psi
Stage Construction	1
Calculated Design Structural Number	2.56 in

Specified Layer Design

Layer	Material Description	Struct Coef. (Ai)	Drain Coef. (Mi)	Thickness (Di)(in)	Width (ft)	Calculated SN (in)
1	HMA	0.44	1	4	-	1.76
2	ABC	0.12	1	8	-	0.96
Total	-	-	-	12.00	-	2.72

It is understood the structural coefficient should be 0.11. A revision is not required at this time due to no change in recommended thickness.