29.32 PAVEMENTS & TRUCK ROUTES

29.32.010 Design Methods and Procedures

The following pavement design methods and procedures shall be followed to create a consistent pavement thickness design throughout the urban area.

This chapter references the Truck Route map developed for the urban area of the City and County (see Grand Junction GIS Transportation Map). The truck route map must be consulted prior to beginning pavement design to assure that the design will accommodate anticipated truck loading.

29.32.010 Pavement Types

Pavement types which may be used for construction of City and County streets include Hot Mix Asphalt (HMA) and Portland Cement Concrete (PCC) pavements. The City and/or County shall approve in advance the type of pavement.

29.32.020 Design Input Variables

Parameters that must be evaluated in order to design an adequate pavement structure include subgrade soil properties, surface and sub-surface drainage, materials properties, environmental factors and traffic loading over the analysis period.

The minimum traffic analysis period to be used for the design of pavements for City streets is 30 years. Traffic growth rates vary depending upon the street classification, zoning location and other variables. Growth rates for most major streets are available from the Mesa County Regional Transportation Planning Organization, phone (970) 244-1830.

Traffic distribution by vehicle type shall be determined from, actual traffic counts and projections based on land uses and future build-out of area serviced by the road. Classification of vehicles derived from traffic counts are available for most major streets from the City of Grand Junction, Transportation Engineering Division, phone (970) 256-4110.

All other pavement design parameters including 18 kip equivalency factors, lane distribution factors, Resilient Modulus (M_R) conversion equations, drainage coefficients, reliability factors and serviceability indices shall be determined in accordance with the

Guideline for the Design and Use of Asphalt Pavements for Colorado Roadways published by the Colorado Asphalt Pavement Association.

29.32.040 Pavement Design Procedures

(a) Flexible Pavement Design Procedure

Flexible pavement design includes asphalt concrete (AC) surfaces and surface treatments (ST). Flexible pavements shall be designed in accordance with the principles and procedures illustrated in the AASHTO Guide for Design of Pavement Structures (current edition). The computer software for the AASHTO guide is AASHTO Ware are DARWin in 3.1 Pavement Design and Analysis System. All use of flexible pavement should have a design life of at least 30 years. Perpetual pavements may be used where appropriate. Perpetual pavement design should follow the recommendations of CDOT M-E Pavement Design Manual 2021, 6.3.2.

(b) Rigid Pavement Design Procedure

Rigid pavement design includes plain jointed (JCP), jointed reinforced (JRCP) and continuously reinforced (CRCO) concrete pavements. Rigid pavements shall be designed in accordance with the principles and procedures illustrated in the AASHTO Guide for Design of Pavement Structures (latest edition). Approved software for design of rigid pavement includes AASHTOWare DARWin 3.1 and WinPAS developed by the American Concrete Pavement Association. All use of rigid payment should have a design life of at least 30 years.

29.32.050 Truck Routes

Primary and secondary trucks routes are shown on the Truck Route layer of the Grand Junction GIS Transportation Map, additional information on truck routes can be found here.