MESA COUNTY

DESIGN STANDARDS

Adopted December 14th, 2020

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CHAPTER 1: INTRODUCTORY PROVISIONS

SECTION 1.01 | TITLE

This Resolution shall be officially known and cited as the Mesa County Design Standards. It is also referred to throughout this Resolution as "these Standards" or "MCDS".

SECTION 1.02 | AUTHORITY

The MCDS are adopted under the powers and authority conferred by the laws of the State of Colorado, including, but not limited to, the following Sections of the Colorado Revised Statutes (CRS), as amended:

Article 28 of Title 30 (COUNTY PLANNING AND BUILDING CODES);

Article 4 of Title 42 (REGULATION OF VEHICLES AND TRAFFIC)

Article 2 of Title 43 (STATE, COUNTY, AND MUNICIPAL HIGHWAYS)

Article 5 of Title 43 (HIGHWAY SAFETY)

SECTION 1.03 | APPLICABILITY

These Standards apply to all new roadway facilities to be constructed within Mesa County except where other jurisdictions have direct authority (for example municipalities, state highway, etc.).

SECTION 1.04 | PURPOSE

This document provides the procedures and standards necessary for the planning, permitting, design, and construction of roadways and associated structures. This document provides for the administration of the County Road System consistent with State statutes and applicable County resolutions or ordinances.

The purpose of administering these procedures and standards to transportation systems is to:

A. Protect public health,

B. Ensure vehicular and pedestrian safety and welfare,

C. Maintain smooth and efficient traffic flow,

D. Maintain present and future road right-of-way drainage,

E. Balance the interests and liability of private property owners with public safety and public investments,

F. Balance the economy of construction and land use by designing to minimize maintenance costs,

G. Protect the capacity and intended functional level of the public roads and the public investment, and

H. Meet state, regional, local, and private transportation needs and interests.

SECTION 1.05 | ROLES AND RESPONSIBILITIES

A. Delegation of Authority

Whenever a provision appears requiring the head of a department or another officer or employee of the County to perform an act or duty, that provision shall be construed as authorizing that person to delegate that responsibility to others over whom they have authority: an "authorized representative".

B. Mesa County Road and Bridge Department and the Road Supervisor

The role of the Mesa County Road and Bridge Department (MC R&B) is to protect, preserve, and maintain the road and bridge system. The MC R&B Road Supervisor or authorized representative is hereby authorized to act on behalf of Mesa County and the Board of County Commissioners of Mesa County as set forth in these Standards.

C. Mesa County Engineering and the Engineering Division Director

Mesa County Engineering's role is to design, construct, and administer all public infrastructure projects in Mesa County. This includes development engineering, permitting, and transportation planning. The County Engineering Division Director or authorized representative has final decision-making power and delegation authority in administering these Standards.

D. Mesa County Community Development Department

The Mesa County Community Development Department's role is to provide guidance for planning and development services in Mesa County. The Community Development Director or authorized representative has final decision-making power and delegation authority in administering the Mesa County Land Development Code (MC LDC).

Mesa County Planning is a division within the Community Development Department and is responsible for the review and processing of land development applications for compliance. A land-use application is submitted to Mesa County Planning, and proposed development plans will be reviewed by Mesa County Engineering.

E. Other Mesa County Departments

Review and approvals may be required from other Mesa County Departments, Divisions, and Offices. These include but are not limited to other Divisions within Public Works, Stormwater, Solid Waste Management, the Transportation Department, and Regional Transportation Planning Office. The primary point of contact regarding the administration of these Standards is Mesa County Engineering.

F. Applicants

The Applicant is responsible for ensuring that proposals and applications comply with these Standards, or that Design Exception Requests are submitted accordingly.

SECTION 1.06 | AMENDMENTS

These Standards may be altered or amended by the County Commissioners at a public hearing which has been advertised for fifteen (15) days in a newspaper of general circulation within the County.

Technical standards within this policy pertaining to dimensional requirements, materials, access spacing, etc. may be amended by the Mesa County Engineering Division Director after a fifteen (15) day public notice period.

SECTION 1.07 | DESIGN REFERENCES

These Standards shall be used for both public and private sector projects within unincorporated Mesa County.

A. National, State, and Local Standards

Mesa County follows design policies and standards from AASHTO and CDOT. A complete list of references is included in MCDS Section 1.07.C. In the event of discrepancies, these Standards supersede those of CDOT, which supersede those of AASHTO. The Applicant and Mesa County shall abide by the most recently published versions of any policies or standards.

These Standards shall replace the following Mesa County documents:

- The Mesa County Standard Specifications for Road and Bridge Construction, except for Article V: Mesa County Standard Construction Specifications,
- The Mesa County Road Access Policy,
- The Mesa County Road and Right-of-Way Use Regulations.

Projects shall utilize the most recent versions of local design references when making design and land-use decisions in the County:

1. Mesa County Land Development Code (MC LDC),
2. Mesa County Standard Construction Specifications (MC Specs),
3. Mesa County Transportation Impact Fee (TIF) Regulation (MCDS Appendix 2.1),
4. Mesa County Functional Classification Maps (MCDS Appendix 6.1),
5. Grand Valley Air Shed Resolution and Map (MCDS Appendix 8.1),
6. Local Municipalities and Mesa County Circulation Plans.

B. Adopted Circulation Plans

Existing and future roads, including functional classifications, are shown on a series of maps called "Circulation Plans," which are to be considered a part of these Standards. Original copies of adopted Circulation Plans are maintained by the Mesa County Community Development Department. Adopted Circulation Plans are also available on-line at https://www.mesacounty.us/publicworks/engineering/transportation-planning/maps/.

Circulation Plans may be amended from time to time. The most current map for the subject property's location shall apply.

C. List of references

The following is a complete list of the documents referenced throughout these Standards. Any references are to the most current edition or version of the reference.

AASHTO - American Association of State Highway and Transportation Officials
FHWA - Federal Highway Administration
CDOT - Colorado Department of Transportation

AASHTO "A Guide for Erecting Mailboxes on Highways"
AASHTO 1993/1998 Design Manual
AASHTO Geometric Design of Very Low-Volume Roads
AASHTO Green Book
AASHTO Guide for Bicycle Facilities
AASHTO Guide for the Design of Pavement Structures
AASHTO Guide for the Development of Bicycle Facilities
AASHTO Load and Resistance Factor Design (LRFD) for Highway Bridge Superstructures
AASHTO Mechanistic-Empirical (M-E) Pavement Design Guide
AASHTO Roadside Design Guide
Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities
CDOT Bridge Design Manual
CDOT Bridge Rating Manual
CDOT M&S Standard Plans
CDOT Mechanistic-Empirical (M-E) Pavement Design Manual
CDOT Roadway Design Guide
CDOT Standard Specifications
CDOT State Highway Access Code
Colorado Revised Statutes
FHWA Achieving Multimodal Networks
FHWA Design Guide
FHWA Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)
Grand Junction Circulation Plan
Grand Junction Urban Trails Master Plan
Grand Valley Regional Transportation Plans, Grand Valley Metropolitan Planning Organization (MPO)
Institute of Transportation Engineers (ITE) Trip Generation Manual
International Fire Code (IFC)

Stormwater Management Manual (SWMM) in the City of Grand Junction Municipal Code
Transportation Research Board (TRB) National Cooperative Highway Research Program (NCHRP) Report 812: Signal Timing Manual
Transportation Research Board (TRB) Highway Capacity Manual
Mesa County Standard Construction Specifications (MC Specs)
Mesa County Land Development Code (MC LDC)
Mesa County Landscape Handbook
Mesa County Noxious Weed and Pest Management

SECTION 1.08 | DESIGN EXCEPTIONS

The intent of these Standards and the supplementary design references is to provide for a minimum acceptable level of performance. They shall be considered to be minimum standards.

If, after the above design references have been considered, existing conditions still necessitate a deviation from those policies, then a design exception may be considered by Mesa County Engineering per the process outlined in MCDS Appendix 1.1. The process to appeal a County decision is included in Appendix 1.1 as well.

SECTION 1.09 | IMPLEMENTATION

A. If the policy conflicts with State, Federal, or other County regulations or standards, Mesa County Engineering shall determine the final requirements.

B. It is not the intent of the policy to interfere with, abrogate, or annul any easement, covenant, deed restriction or other agreements between private parties. If the provisions of private agreement impose a greater restriction than specified in these Standards, then the private agreement will control. Mesa County will not be responsible for monitoring and enforcing private agreements.

SECTION 1.10 | OBSTRUCTIONS IN THE RIGHT-OF-WAY

In cases of unauthorized obstruction or use of a County road or right-of-way, the County shall present a written notice directing the property owner to remove any obstructions. If the owner has not done so within a reasonable time as determined by Mesa County Engineering, Mesa County shall take steps to have the obstruction removed. Mesa County may seek additional remedies, including fees, damages, injunctive relief, and may file criminal complaints, against the person or persons responsible or participating in the violation.

SECTION 1.11 | ENFORCEMENT

It is the responsibility of the Colorado State Patrol and the Mesa County Sheriff's Department to enforce applicable provisions of Colorado Traffic Laws on the Mesa County Road System. As much as possible, these agencies will cooperate with Mesa County Engineering, MC R&B, and other officials of Mesa County in administering the provisions in these Standards and in developing ways and means to improve traffic conditions.

SECTION 1.12 | DEFINITIONS AND TERMS

MEANINGS OF "SHALL", "SHOULD" AND "MAY"

The words "shall", "should" and "may" are used to describe specific conditions. To clarify the meanings intended by the use of these words, the following definitions apply:

SHALL

A mandatory condition. Where certain requirements are described with the "shall" stipulation, it is mandatory that these requirements be met.

SHOULD

An advisory condition. Where the word "should" is used, it is considered to be recommended, but not mandatory.

MAY

A permissive condition. No requirement for design or application is intended.

18K ESAL

18,000-pound Equivalent Single Axle Loads. The 18k ESAL shall be equivalent to the 20-year ADT adjusted by a factor of 110% to account for agricultural and construction traffic. Traffic analysis for the purpose of pavement design shall be as per MCDS Chapter 4: Traffic Studies of these Standards.

ACCESS, OR ACCESS POINT

A physical travel-way connection point to a roadway. Examples of an access include driveways, field accesses, service roads, and intersections.

ACCESS CONTROL

A set of physical features, signs, and pavement markings intended to control traffic movements and site access.

ACCESS OFFSETS

The distance between two opposing access points, as measured along the road and between the nearest straight sides of the access points. A four-leg intersection has zero offset.

ACCESS PERMIT

A letter authorizing construction of an approved road access.

ACCESS SPACING

Access design standards for the distance between signalized intersections, median openings and unsignalized access points. The standards vary according to the characteristics of the road and the surrounding area.

ACCESS WIDTH

The access width is measured at the edge of the right-of-way of the existing road.

ACCESS, DIRECT

A physical travel-way that connects a public County road to the adjacent property.

ACCESS, EXISTING

An access already in place as of the effective date of this Policy.

ACCESS, INDIRECT

A physical travel-way connecting a public County road to the adjacent property via another property, generally on an easement.

ACCESS, SHARED

An access serving more than one parcel or lot.

ACCESS, UNCONTROLLED ACCESS

The authority having jurisdiction over a highway, street or road, does not limit the number of points of ingress or egress except through the exercise of control over the placement and the geometrics of connections as necessary for the safety of the traveling public.

AGGREGATE BASE COURSE

The layer or layer of specified or selected material of designed thickness placed on a subbase or a subgrade to support a surface course.

ALLOWABLE HEAD

The highest headwater at a cross drainage structure which can be tolerated without damage to roadway structure or adjacent property.

APPLICANT

An entity applying for a Permit.

AVERAGE DAILY TRAFFIC (ADT)

The average 24-hour volume, being the total number during a stated period, divided by the number of days in that period. Unless otherwise stated, the period is a year. The term is commonly abbreviated as ADT.

AXLE LOAD

The total load transmitted by all wheels on a single axle extending across the full width of the vehicle. Tandem axles 40 inches or less apart shall be considered as a single axle.

BACKFILL

Material used to replace or the act of replacing material removed during construction; also, may denote material placed or the act of placing material adjacent to structures.

BACKGROUND TRAFFIC CONDITIONS (20-year projection)

Future buildout conditions without project traffic. The Travel Demand Model developed by the Regional Transportation Planning Office (RTPO) shall be used to identify the anticipated traffic conditions as defined as 20 years from the Baseline Conditions scenario fully built out. The analysis shall anticipate the increase in background traffic volumes and the generation of other related projects that are not present in the existing condition but would likely be completed and generating trips in this time period. The trip generation for the proposed project should not be included in this scenario.

BARRIER

Manmade features that are intended to impede, stop, or redirect a vehicular action or movement.

BARRIER CURB

A curb that is designed with a near vertical face to prevent or discourage vehicles from leaving the pavement.

BASELINE TRAFFIC CONDITIONS

Existing traffic conditions analysis. Baseline Traffic Conditions analysis should attempt to model traffic conditions at the time the traffic study is being prepared. Traffic counts that are older than the year the study is being prepared shall be factored up, adjusted to existing year volumes, or updated with current year counts at the expense of the Applicant. Additional traffic counts may be required at the request of Mesa County and paid for by the Applicant.

BERM

A raised and elongated area of soil intended to direct the flow of water, screen headlight glare, or redirect out-of-control vehicles.

BICYCLE FACILITIES

Common bicycle facilities found in Mesa County include bicycle routes, bicycle lanes, and shared use paths.

BICYCLE LANE

A portion of a road that has been designated for preferential use by bicyclists. Bicycle Lanes are often identified by use of paint stripe, pavement markings, or signage.

BICYCLE ROUTE

A road that is designated and signed as a bicycle route. The road is open to motor vehicle travel. A bike route does not necessarily designate the presence of a bicycle lane.

BOARD OF COUNTY COMMISSIONERS (BoCC)

Elected County officials responsible for development and implementation of policies and procedures to protect the interest of Mesa County citizens.

BRIDGE

A structure including walls or abutments erected over a depression or an obstruction, as water, highway or railway, and having a track or passageway for carrying traffic or other moving loads.

CEMENT TREATED BASE

A base consisting of a mixture of mineral aggregate (or soil) and Portland cement, mixed and spread on a prepared surface, to support a surface course.

CHANNELIZATION

The separation or regulation of conflicting traffic movements into definite paths of travel by use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movement of traffic, both vehicular and pedestrian.

CHANNELIZATION ISLAND

A defined area between traffic lanes for control of vehicle movements or for pedestrian refuge. Within an intersection, a median or an outer separation is considered an island.

CHANNELIZATION, MEDIAN

The portion of a divided highway separating the traveled ways for traffic in opposite directions.

CHANNELIZATION, MEDIAN OPENING

A gap in a median provided for crossing and turning traffic.

CHANNELIZED INTERSECTION

An at-grade intersection in which traffic is directed into definite paths by islands.

CHIPSEAL

Alternate layer of bituminous binder material and stone chips.

CLEARING

The removal of vegetation, structures or other objects as an item of highway construction.

COMMON PLAN OF DEVELOPMENT OR SALE

A "common plan of development or sale" is a contiguous area where multiple separate and distinct construction activities may be taking place at different times, on different schedules, but remain related by a common contract or plan. Contiguous means construction activities located in close proximity to each other (within 1⁄4 mile).

CRITICAL DEPTH

The depth of water flowing in an open channel or a conduit partially filled, for which the velocity head equals one-half the hydraulic mean depth.

CRITICAL FLOW

A condition which exists at the critical depth; under this condition, the sum of the velocity head and static head is a minimum.

CRITICAL SLOPE

The slope of a channel that sustains a given discharge at a uniform and critical depth. A slope less than critical is called a mild slope whereas a steeper than critical slope is called a steep slope.

CRITICAL VELOCITY

The velocity in an open channel or a conduit partially filled for which the velocity head equals one-half the hydraulic mean depth.

CROSS SLOPE (ROADWAY)

On divided highways each one-way pavement may be crowned separately as on 2-lane highways, or it may have a unidirectional slope across the entire width of pavement, almost always downward to the outer edge.

CUL-DE-SAC STREET

A local street open at one end only, and with special provisions for turning around (bulb, hammerhead, "T", etc.).

CULVERT

An open conduit, other than a bridge, which conveys water carried by a natural channel or waterway transversely under the roadway.

CURB RADII

Turn radii measured at flow line or edge of pavement. Requirements vary accordingly to the type of design vehicle.

DEBRIS

Scattered fragments, limbs, ruins, rubbish, mass of stones or fragments of rocks.

DELINEATORS

To define the roadbed edge and used as an aid to alert drivers of day and night hazard conditions.

DESIGN CAPACITY

The practical capacity or lesser value determined for use in designing the highway to accommodate the design volume.

DESIGN EXCEPTION

Written permission to implement a design that does not meet County standards for transportation and infrastructure when there is divergence between public needs and construction constraints imposed by County standards.

DESIGN HOUR VOLUME (DHV)

Design Hour Volume (DHV), also known as average peak hour volume or average peak hour trips, is an evaluation of the amount of traffic seen in the busiest hour. The DHV of the roadway shall be defined by ITE Trip Generation Manual, current edition, obtained from a traffic study, or estimated from the ADT (DHV= ADT * K) using a K factor of 12%.

DESIGN LOAD

The loads that shall be supported by a structure in terms of live and dead weight loads.

DESIGN PERIOD

Geometric design generally based on estimated traffic requirements 20 years after construction.

DESIGN SPEED

A speed determined for design and correlation of the physical features of a highway that influence vehicle operation. It is the maximum safe speed that can be maintained over a specific section of highway when conditions are so favorable that the design features of the highway govern.

DIVIDED HIGHWAY

A highway with separated roadways for traffic in opposite directions.

DIVISIBLE LOAD

A Vehicle or Load that can be divided into separate or different parts in less than eight work hours or does not compromise the intended purpose of the Vehicle or Load or render it unable to perform the functions for which it was intended.

DRIVABLE SURFACE

See Traveled Way.

DRIVER'S EYE HEIGHT

For cars, the height of the driver's eye is assumed to be 3.5 feet above the road surface, and 7.6 ft for trucks.

DRIVEWAY

An access to the public road system that connects to any private land use such as a residential, commercial, or industrial property.

DRIVEWAY - NON-RESIDENTIAL ACCESS

An access to the public road system that connects to a commercial, industrial, or any other non-residential property.

DRIVEWAY PULL-OUT

A widened section of the driveway with adequate width and length for two design vehicles going in opposite directions to safely pass.

DRIVEWAY TURN-AROUND

The area at the end of a driveway with enough space for the design vehicle (such as a passenger car or fire truck) to completely turn around.

DRIVEWAY, COMMON

Driveway serving two residential parcels or lots.

DRIVEWAY, LOOPED

A one-way single or common driveway with separate one-way ingress and egress lanes serving one or two parcels or lots.

DRIVEWAY, SHARED

A driveway serving three to six parcels or lots.

DRIVEWAY, SINGLE

Driveway serving one parcel or lot.

EASEMENT

A portion of a parcel that is legally reserved for a specific limited use by an entity other than or in addition to the owner, for example, irrigation, roadway, ingress/egress, utilities, emergency vehicle access corridor, or others.

EQUIVALANCE FACTOR

A numerical factor that expresses the relationship of a given axle load to another axle load in terms of their effect on the serviceability of a pavement structure. All axle loads are equated in terms of the equivalent number of repetitions of an 18,000-pound single axle.

EROSION

The wearing a way of a land surface by detachment and transporting of soil and rock particles by the action of water, wind, or other agents.

EXTRA-LEGAL VEHICLE OR LOAD

Any vehicle or load which exceeds the Legal Limits as defined in CRS Sections §42-4-502 through §42-4-509 and MCDS Section 3.09.D.

EXTRAORDINARY VEHICLE OR LOAD

A vehicle or load which exceeds the Maximum Limits as defined in MCDS Section 3.09.E.

FLARED INTERSECTION

An unchannelized intersection, or a divided highway intersection without islands other than medians, where the traveled way of any intersection leg is widened, or an auxiliary lane added.

FLEXIBLE PAVEMENT

A pavement structure which maintains intimate contact with and distributes loads to the subgrade and depends upon aggregate interlock, particle friction and cohesion for stability.

FLOOD FREQUENCY

The average interval of time (in years), based on the period of record, between floods equal to or greater than a specified discharge or height.

FUNCTIONAL CLASSIFICATION

The process by which roads are grouped into classes according to the character of the traffic service they provide. The function that a road serves is the controlling element for its classification, and this governs the width and geometry of the road. This information is shown on adopted circulation plans and functional classification maps.

GEOMETRIC DESIGN

The arrangement of the visible elements of a road, such as alignment, grades, sight distances, widths, slopes, etc.

GRADE

The rate expressed in terms of percent: vertical ascent or descent divided by the length of a design centerline

GRADE SEPARATION

A crossing of two highways, or a highway and a railroad, at different levels.

GRAND VALLEY AIR SHED

The Grand Valley Air Shed is the region surrounding and influencing the air quality over the populated regions within the Grand Valley where the potential for air pollution is greatest.

GRUBBING

The process of removing roots, stumps and low- growing vegetation.

GUARDRAIL

A protective device intended to make highways safer by reducing collision severity through redirection

HIGH VOLUME ROADS

High volume roads consist of Major Collectors and higher classifications. The minimum 18K ESAL will be 300,000. The required design life is 50 years.

HORIZONTAL ALIGNMENT

Horizontal geometries for safe and continuous operation at a uniform design speed for substantial lengths of highway, affording at least the minimum stopping distance for the design speed at all points on the highway.

HOT MIX ASPHALT (HMA)

A combination of mineral aggregates and bituminous material, mixed in a central plant, laid and compacted while hot.

INFILL DEVELOPMENT

A development of parcels that are bounded or surrounded by existing zoned development.

INTERSECTION

A type of access involving any public road connection to an existing public road.

INTERSECTIONS, THREE-LEG

A roadway intersection with three intersection legs. If one of these intersection legs is an approximate prolongation of the direction of approach of another, and if the third leg intersects this prolongation at an angle between 75 degrees and 105 degrees, the three-way intersection is classed as a T intersection. If one leg is an approximate prolongation of the approach of another, and the third leg intersects this prolongation at an angle less than 75 degrees or greater than 105 degrees, it is classed as a Y intersection.

INTERSECTION ANGLE

The angle between the centerlines of two intersection legs.

INTERSECTION LEG

That part of any one of the roadways radiating from an intersection which is outside the area of the intersection proper.

a. Approach - that portion of a leg which is used by traffic approaching the intersection.

b. Exit - that portion of a leg which is used by traffic leaving an intersection.

INVERT

The floor, bottom, or lowest portion of the internal cross-section of a closed conduit or improved channel.

JOINT, EXPANSION JOINT

A joint located to provide for expansion of a rigid slab, without damage to itself, adjacent slabs, or structures.

LEGAL LIMITS

The size and weight limits for a Vehicle or Load, as defined in CRS Sections §42-4-502 through §42-4-509 and MCDS Section 3.09.D.

LEVEL OF SERVICE

A qualitative measure of the effect of various factors, including speed, travel time, traffic interruptions, safety, operating costs, etc., on the ability of a roadway to accommodate various traffic volumes.

LONGER VEHICLE COMBINATION (LVC)

The Vehicle combinations defined in CRS Section §42-4-505.

LOOP LANE

A two-way shared driveway serving more than two parcels or lots with two access points to the public roadway.

LOW AND MEDIUM VOLUME ROADS

Low and Medium volume roads typically consist of Local, Minor Collectors, and Rural low-volume roads. The minimum 18K ESAL will be 50,000. The required design life is 30-years.

MAXIMUM LIMITS

The maximum size and weight limits that may be allowed for an Extra-legal Vehicle or Load, as established in MCDS Section 3.09.E.

MINIMUM COVER

The point of minimum cover shall be the edge of the paved shoulder giving the least cover over an underground drainage or utility structure.

MINIMUM TURNING PATH

The path of a designated point on a vehicle making its sharpest turn.

MINIMUM TURNING RADIUS

The radius of a minimum turning path of the outside of the outer front tire.

MOUNTABLE CURB

One that can be readily climbed by a moving vehicle.

MPO BOUNDARY

The limit of Grand Valley Metropolitan Planning Organization (MPO) jurisdiction. In Mesa County, the MPO Boundary includes the Cities of Grand Junction and Fruita, and the Town of Palisade.

MUTLIMODAL

Diverse transportation options, typically including walking, cycling, public transit and automobile, and considerations for land use, planning, and design factors that affect accessibility.

NON-MOTORIZED TRAIL

A gravel or paved trail suitable for bicycle and pedestrian travel.

NOTICE OF INTENT (NOI)

See Preliminary Access Location (PAL). All references to NOI in any other document shall be considered to mean Preliminary Access Location, as established in these Standards.

NOTICE TO PROCEED (NTP)

See Access Permit. All references to NTP in any other document shall be considered to mean Access Permit, as established in these Standards.

OBJECT HEIGHT

Obstructions are typically measured to be an object 2 feet above the road, and other drivers/vehicles are measured to be 3.5 feet above the road

PARENT TRACT

The original parcel of land under one ownership at the time of the implementation of these Standards and prior to subdivision into smaller parcels.

PARKING LANE

An auxiliary lane primarily for the parking of vehicles.

PAVEMENT STRUCTURE

The combination of subbase, base course and surface course placed on a prepared subgrade to support the traffic load and distribute it to the roadbed.

PERMEABILITY

The property of soils which permits the passage of any fluid. Permeability depends on grain size, void ratio, shape and arrangement of pores.

PERMISSIBLE VELOCITY

The greatest velocity that will not cause excessive erosion.

PERMIT OFFICER

The entity appointed by the Permit Authority who reviews, approves, or denies permits.

PERMITTEE

An applicant who has been granted a Permit by the Permit Authority.

PERPETUAL PAVEMENT DESIGN

Perpetual pavements are defined as asphalt pavements that are designed to last longer than 50 years without requiring major structural rehabilitation or reconstruction, needing only periodic surface renewal in response to surface distresses.

High volume roads shall be designed using the Perpetual Pavement concept.

PRE-DEVELOPMENT CONDITIONS

The conditions of the road study area prior to any intensified (non-agricultural) development occurred within the study area.

PRELIMINARY ACCESS LOCATION (PAL)

A document authorizing the type and location of access to the County road system.

QUAD AXLE

Any four consecutive axles whose extreme centers between any two axles within the grouping are not more than 96 inches apart and are individually attached to or articulated from, or both, a common attachment to the vehicle including a connecting mechanism designed to equalize the load between axles.

QUEUE

A group of vehicles traveling or waiting together, being sequentially serviced (first in, first out).

R VALUE

The resistance value of the soil while in a state of density and degree of saturation typical of the most adverse conditions to be expected on the road during the service life.

REGIONAL FACTOR

A numerical factor expressed as a summation of the values assigned for precipitation, elevation and drainage. This factor is used to adjust the structural number.

RIGHT-OF-WAY

A general term denoting lane, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

ROAD FLOW LINE

The location on a curb and gutter or roadside swale where water runoff flows, serving as a measuring point for curb radii requirements.

ROAD, ARTERIAL

A road intended to safely and efficiently move traffic while limiting the amount of direct public or private access.

ROAD, COLLECTOR

A road intended to safely and efficiently move traffic while providing some degree of direct public or private access.

ROAD, COUNTY

Any public highway incorporated in the Mesa County Highway User Trust Fund Report.

ROAD, LOCAL

A road intended to safely and efficiently provide direct private access while moving some traffic.

ROAD, MULTILANE

A road having two or more lanes for traffic in each direction, or four or more lanes for traffic in two directions. It may be one-way, or two-way, divided or undivided.

ROAD, PUBLIC

A road maintained by Mesa County as shown on the latest Mesa County Road Inventory.

ROAD, ROADWAY, HIGHWAY OR HIGHWAYS

The entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel or the entire width of every way declared to be a public road by any law of this state.

ROAD, STATE HIGHWAY

A highway on the State Highway System as specifically defined in Section 43-2-101, C.R.S., as amended.

ROAD, STUB

An existing or planned road that is or will be extended to the property line(s) of a development for the purpose of future extension onto adjacent property.

ROAD, TWO-WAY

A road on which traffic may move in opposing directions simultaneously. It may be either divided or undivided.

ROADBED

The graded portion of a highway, usually considered as the area between the intersections of top and side-slopes, upon which the subbase, base course, surface course and shoulders are constructed. Divided highways are generally considered to have two roadbeds.

ROADSIDE

A general term denoting the area adjoining the outer edge of the roadway. Extensive areas between the roadways of a divided highway may also be considered roadside.

ROADWAY

The portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.

ROADWAY PRISM

The area of a road bounded by the traveled surface, the shoulders and lines projecting downward and away from the outside edge of the shoulder and intersecting the ground surface at an angle of thirty (30) degrees to horizontal.

SERVICEABILITY INDEX

A number which is indicative of the pavements ability to serve traffic at any specific time.

SHARED USE PATH

A trail or path separated from motor vehicle traffic by an open space or barrier and either within the road right-of-way or within an independent right-of-way. Shared use paths may be used by all non-vehicular modes of transportation including pedestrians, wheelchair users, skaters, and cyclists.

SHOULDER

The portion of a roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of base and surface courses.

SIGHT DISTANCE

The distance visible to the driver of a passenger vehicle, measured along the normal travel path of a roadway, to the roadway surface or to a specified height above the roadway, when the view is unobstructed by traffic.

SIGHT DISTANCE, PASSING

The minimum sight distance on two and three lane highways that shall be available to enable the driver of one vehicle to pass another vehicle safely and comfortably without interfering with the speed of an oncoming vehicle traveling at the design speed should it come into view after the overtaking maneuver is started.

SIGHT DISTANCE, STOPPING

The distance required by a driver of a vehicle, traveling at a given speed, to bring his vehicle to a stop after an object on the roadway becomes visible. It includes the distance traveled during the perception and reaction times and the vehicle braking distance.

SIGHT LINE EASEMENT

An easement for maintaining or improving the sight distance.

SIGHT TRIANGLE

See Visibility Triangle.

SIGNALIZATION

An intersection controlled by an electronic traffic signal device.

SITE TOPOGRAPHY

May be obtained from aerial photographs, ground surveys or topographic maps, and shall include all improvements and physical controls within the area that may be affected by the design.

SLOPE EASEMENT

An easement for cuts or fill slopes.

SOIL STERILIZATION

Growth reduction of weeds that may emerge through surfaced medians, traffic islands and other areas. Soil sterilant may be applied.

SOIL SUPPORT VALUE

A number which expresses the relative ability of a soil aggregate mixture to support traffic loads through the pavement structure.

SPEED-CHANGE LANE

An auxiliary lane including tapered areas, primarily for acceleration or deceleration of vehicles entering or leaving the through traffic lanes.

SPEED-CHANGE LANE - ACCELERATION LANE

A speed-change lane, including tapered areas, for the purpose of enabling a vehicle entering a roadway to increase its speed to a rate at which it can more safely merge with through traffic. [§42-1-102(1), C.R.S.]

SPEED-CHANGE LANE - DECELERATION LANE

A speed-change lane, including tapered areas, for the purpose of enabling a vehicle that is to make an exit to turn from a roadway to slow to the safe speed on the ramp ahead after it has left the mainstream of faster-moving traffic. [§ 42-1-102(23), C.R.S.]

STABILIZATION

Modification of soils or aggregates by incorporating materials that will increase load bearing capacity, firmness and resistance to weathering or displacement.

STRENGTH COEFFICIENT

A factor used for expressing the relative strength, or substitution value of, layers, one to the other, for conversion purposes in a pavement structure.

STRUCTURAL NUMBER (PAVEMENT)

A number derived from an analysis of roadbed and traffic conditions. A Weighted Structural Number is a structural number which has been adjusted for environmental conditions. A weighted structural number may be converted to pavement structure thickness using suitable factors related to the type of material being used in the pavement structure.

SUBBASE

The layer or layers of specified or selected material of designed thickness placed on a subgrade to support a base course.

SUBGRADE

The top surface of a roadbed upon which the pavement structure and shoulders, including curbs, are constructed.

SUPERELEVATION

The vertical distance between the heights of inner and outer edges of highway pavement used to prevent a vehicle from sliding outward, or to counteract all the centrifugal force of a vehicle traveling at an assumed speed.

SURFACE COURSE

One or more layers of a pavement structure designed to accommodate the traffic load, the top layer of which resists skidding, traffic abrasion and the disintegrating effects of climate. The top layer sometimes called the "Wearing Course."

SUSTAINED GRADE

A continuous highway grade of appreciable length and consistent or nearly consistent gradient.

TERRAIN

The topography of the profile of a highway, road, or street. As used in these Standards, the term generally has one of three modifiers: level, rolling, or mountainous. These three modifiers represent combinations of geometric features in varying degrees which relate primarily to gradients and horizontal and vertical alignment. They reflect the effect on capacity of the operating characteristics of trucks in terms of their passenger car equivalent under the different geometric conditions.

THROAT LENGTH

The distance of an access facility measured between the road flow line and the nearest cross-aisle, road, or parking space in a parking lot.

TOTAL TRAFFIC PROJECTIONS

Future buildout conditions with project traffic. Assignments to the roadway network for the project traffic volumes are added into the Background Traffic Conditions for the 20-year projection.

TRAFFIC ANALYSIS PERIOD

A common analysis period (usually 20 years) used in geometric design.

TRAFFIC CONTROL DEVICE

Any sign, signal, marking, or installation placed or erected under public authority, for the purpose of regulating, warning, or guiding.

TRAFFIC STUDY

A Traffic Report or document required by the MCDS. The term Traffic Study is used to include both the Traffic Analysis and the Traffic Impact Study reports.

TRAFFIC STUDY - TRAFFIC ASSESSMENT (TA)

The first level and simpler traffic study that assesses the effects a particular development's traffic will have on the transportation network in the community. Also identifies improvements necessary to mitigate impacts.

TRAFFIC STUDY - TRAFFIC IMPACT STUDY (TIS)

The highest level and most involved traffic study that assesses the effects a particular development's traffic will have on the transportation network in the community. Also identifies improvements necessary to mitigate impacts.

TRAVELED WAY

The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

TRIP

A one-directional movement from a roadway into or out from a parcel by a single vehicle.

TRIP GENERATION

The number of one-directional vehicle movements to or from a specific location.

TRIP GENERATION LETTER

A letter that assesses the effects a particular development's traffic will have on the transportation network in the community.

TRIPLE AXLE

Any three consecutive axles whose extreme centers between any two axles within the grouping are not more than 96 inches apart and are individually attached to or articulated from, or both, a common attachment to the vehicle including a connecting mechanism designed to equalize the load between axles.

TRUCK COMBINATION

A truck tractor and a semi-trailer, either with or without full trailer, or a truck with one or more full trailers.

TURNING MOVEMENT

The ability of a vehicle to turn in one particular direction from a roadway lane.

TURNING PATH

The path of a designated point on a vehicle making a specified turn.

URBAN AREA

Areas defined in the Persigo Area and on a map entitled Persigo 201 Sewer Study Area. Also, in the Fruita Sewer Service Area as defined on the Fruita 201 Sewer Service Area (see section 4.1.2.A Mesa County Land Development Code); or Roads in commercial and · industrial developments and roads with adjacent residential development at a density of 1.0 dwelling units or more per acre. See Exhibit A. (4.2.5).

URBAN DEVELOPMENT BOUNDARY (UDB)

That area planned for urban land uses as depicted on the Future Land use map in the current Grand Junction Comprehensive Plan.

USE (OF BUILDING OR PARCEL)

The purpose for which land or the building is designed, arranged or intended, or for which is or may be occupied or maintained; also, any activity, occupation, business or operation which is carried on or in a structure or on a tract of land.

USE, CHANGE IN

A significant change made in the use of a building or property, including a change of more than 20% in volume, trip generation, or building size.

UTILITY

Any facility for transmission/distribution of energy or materials subject to the jurisdiction of the Public Utilities Commission. Additionally, "utility" shall mean and include, but is not limited to, television cables, telephone lines, electric transmission lines, communication transmission lines, and gas, water and other material pipelines.

VEHICLE STORAGE

The space where vehicles can safely wait in line for turning movements or drive-through facilities.

VERTICAL ALIGNMENT

The vertical changes in a roadway alignment. If properly designed, it should provide adequate sight distance, safety, comfortable driving, good drainage, pleasing appearance. Minimum lengths of crest vertical curves are controlled by stopping sight distance requirements.

VISIBILITY TRIANGLE

Also known as sight triangle. A triangular section of land measured along the right-of-way lines and/or access edges. The minimum distance of the triangle legs shall vary based on the road's design speed and functional classification.

WATERS OF THE UNITED STATES

United States Army Corps of Engineers (USACE) wetland or drainageway designation, initiating the requirement for a USACE permit.

CHAPTER 2: ROAD SYSTEM ADMINISTRATION

SECTION 2.01 | ROAD SYSTEMS

The road system in Mesa County consists of state highways, County roads, city streets, other public roads, and private road systems.

A. The State Highway System

The state highway system in Mesa County is managed by the Colorado Department of Transportation under the direction of the Transportation Commission of Colorado.

The Colorado Department of Transportation has full responsibility for the construction and maintenance of all state highways within the unincorporated areas of Mesa County. Within incorporated areas, maintenance responsibilities may be assumed by a municipality under a maintenance agreement. Signing of County road approaches to state highways is also under the jurisdiction of the Colorado Department of Transportation.

Access to the state highway system in Mesa County is administered by the Colorado Department of Transportation through the State Highway Access Code.

Planning for state highways is conducted by the Colorado Department of Transportation in cooperation with the County, the Metropolitan Planning Organization, local municipalities and other agencies.

B. The County Road System

The State of Colorado, by statute, authorizes the Board of County Commissioners (BoCC) to administer the County Road System, including, but not limited to, planning, design, construction, acceptance, maintenance and traffic regulation. County jurisdiction extends to all public roads other than state or federal highways within unincorporated lands of Mesa County.

C. The County Road Map

The BoCC has adopted a Mesa County Road Map showing all roads that have been officially made a part of the County Road System. This map is updated periodically to reflect all additions, deletions and alterations to the County Road System. All open, used, maintained and non-maintained public roads in the unincorporated area of the County are shown. Copies of the County road map are available from Mesa County Engineering and online at https://gis.mesacounty.us/ or http://emap.mesacounty.us/CountyRoads/countyRoads.html.

D. County Road Administration

The BoCC, by statute, determines the general policies of the County as they pertain to road matters. The Mesa County Road and Bridge Department (MC R&B) is primarily responsible for the maintenance, repair and improvement of all existing County roads and bridges.

Mesa County Engineering is responsible for the development and enforcement of these Mesa County Design Standards for transportation; the design and construction of improvements to the County Road System; the inspection and regulation of construction of new County roads and bridges, and the regulation of traffic on the County Road System.

E. City of Grand Junction

Within the City of Grand Junction Urban Development Boundary (UDB), the design standards detailed in the Grand Junction Transportation Engineering Design Standards (TEDS) will apply. TEDS can be accessed at the City of Grand Junction Transportation Engineering website, http://gjcity.org/268/Transportation-Engineering.

F. Mesa County Rural Communities

Community Plans adopted by each Mesa County Rural Community govern layout of streets, highways, sidewalks and trails within that community. The boundaries of the Rural Communities are as shown on the Mesa County Future Land Use map which can be accessed in the Mesa County online GIS Database, https://gis.mesacounty.us/.

G. Colorado Department of Transportation (CDOT)

The Colorado Department of Transportation (CDOT) is responsible for maintenance, repair, and improvement of state and federal highways in Colorado. However, Mesa County Design Standards, including permitting and access, may impact these processes.

H. Multiple Jurisdictions

Situations arise in which both the County and a municipality have jurisdiction over portions of the same road. In these cases, the MC R&B Road Supervisor and Mesa County Engineering Division Director shall meet with the municipality Public Works Manager and/or other responsible officials to determine the responsibilities of each agency. This agreement shall be documented by letter and distributed to all concerned parties. To reduce jurisdictional problems, municipalities are encouraged to annex full width roads when annexing new areas instead of half widths.

I. Other Public Roads:

Colorado Revised Statutes (CRS) Section 43-2-201 declares the following to be public highways:

1. All roads over private lands dedicated to the public use by deed filed with the Mesa County Clerk and Recorder, when such dedication has been accepted by the BoCC. A certificate of the Mesa County Clerk and Recorder showing the date of the dedication and the lands so dedicated shall be filed with the Mesa County Assessor.
2. All roads over private or other lands dedicated to public uses by due process of law and not vacated by an order of the BoCC duly entered of record in the proceedings of the board;
3. All roads over private lands that have been used adversely without interruption or objection on the part of the owners of such lands for twenty consecutive years;
4. All toll roads which may be purchased by the BoCC of any county from the incorporators or charter holders and opened to the public;
5. All roads over the public domain, whether agricultural or mineral.

J. Private Roads

Private roads may be established by prescriptive use, a recorded easement, or plat dedication. Mesa County assumes no maintenance responsibility on private roads and does not regulate utilities on the private road. The construction of private roads will be to public road standards per MCDS Chapter 6: Road Design Standards, especially if future acceptance into the County road system is desired. The use of private roads for emergency services, postal delivery or school pickups must be arranged by the owner with the appropriate agency. Signing and maintenance of signs on private roads will be the responsibility of the owner(s). Refer to the Mesa County Land Development Code (MC LDC) Section 8.18.C for additional requirements.

K. Compliance with Adopted Transportation Plans

The layout of streets, highways, sidewalks and trails shall comply with all adopted transportation plans. Where proposed development adjoins other property, the dedicated right-of-way and improvements required to connect Local, Arterial or Collector streets within the proposed development shall extend to the adjacent property line in conformance with any adopted Transportation Plans.

SECTION 2.02 | REQUIRED ROAD IMPROVEMENTS

All improvements shall comply with these Standards, the MC LDC, specifically MC LDC Section 8.17, and shall follow the most current version of the Mesa County Transportation Impact Fee (TIF) Resolution, included as MCDS Appendix 2.1. The Transportation Impact Fee schedule is posted on the Mesa County Transportation Planning website, https://www.mesacounty.us/publicworks/engineering/transportation-planning/.

Improvements to County roads shall be required of all types of development:

A. Within a Municipality

Roadway improvements and all new roads within a UDB (such as the City of Fruita or Grand Junction) or within a Rural Community Plan shall be constructed in compliance with the community's roadway standards and the MC LDC.

B. Developer Responsibility

The Developer shall be responsible for:

1. All required improvements within the right-of-way on existing County roads that serve as the primary access for the development;
2. The design and construction of all features within the right-of-way that are required to access and circulate through the proposed development;
3. Road stubs to future parcels which are requested to be added by Mesa County;
4. Shared driveways, loop lanes, and private roads; and
5. Costs of all required improvements.

C. Rural Road Improvements

In rural zoning districts, if the Traffic Study from MCDS Chapter 4: Traffic Studies does not identify improvements needed along the County road used to access the development, Mesa County shall, at a minimum, require the following:

1. Gravel or Asphalt shoulders in accordance with the Road Functional Classification Maps (Appendix 6.1) and MCDS Chapter 6: Road Design Standards;
2. Ensure drainage swales or structures along the roads are not adversely affected by any road improvements installed or accesses constructed.

Projects that are proposed within unincorporated Mesa County Communities must construct improvements to follow any adopted Community Plan.

D. Warranty Period and Guarantee of Improvements

The Developer warrants that all improvements are installed in a good and workmanlike manner in accordance with the construction documents, and will be free from defects for a period of eighteen (18) months from the date of the County's acceptance of each particular Improvement, ("warranty period"). During the warranty period, the Developer shall make all needed repairs or replacements to any of the Improvements that are deemed defective by the County in its sole discretion. The Developer shall warrant the repair work as being installed in a good workmanlike manner for a period of eighteen (18) months from the date of the County acceptance of the repair work.

When an entity is required to build public or private improvements, a Warranty Guarantee shall be required as per MC LDC Section 4.05.D.

E. Excluded Projects

The following projects are excluded from road improvements:

1. Property Line Adjustments, and
2. Residential and Agricultural Site Plan Applications

SECTION 2.03 | ROAD SYSTEM ADDITIONS

The BoCC is authorized by CRS Section 43-2-112, to layout, widen, alter or change any County road and to acquire lands of private persons for County roads. No road or other public way shall be constructed or approved in the unincorporated territory of the County until and unless the proposed location and extent has been reviewed by the County Planning Commission in accordance with CRS Section 30-28-110 or approved as part of a platted subdivision.

Mesa County Engineering has staff responsibilities for the planning, design, right-of-way acquisition, construction and inspection of all improvements to the existing County Road System as defined in this Chapter. Roads constructed by others will ordinarily pass through seven review steps: planning, design, right-of-way dedication/acceptance, construction, inspection, acceptance, and warranty. These steps are described in more detail below.

A. Review Step 1: Planning

The planning or layout of a new road shall be in accordance with these Standards, the MC LDC, and the MC Specs. If the proposed road is in a subdivision that is exempt from the Land Development Code (35 acre splits), the proposed road shall be reviewed by the County Planning Commission in accordance with CRS Section 30-28-110.

The permitting process shall be started as part of the planning process. Required Permits shall be obtained according to MCDS Chapter 3: Permits.

B. Review Step 2: Design

The design of any new road shall be in accordance with these Standards. Road and bridge plans and specifications shall be prepared by a Professional Engineer in accordance with these Standards and the MC Specs and shall be approved by Mesa County Engineering prior to the beginning of construction. Approved plans expire after one year and shall be resubmitted for Mesa County Engineering approval. Any revisions in these Standards shall be taken into account during the resubmittal.

C. Review Step 3: Right-of-way Dedication/Acceptance

Acceptance of a subdivision plat by Mesa County constitutes acceptance of the rights-of-way as shown. The road, however, does not officially become part of the County Road Maintenance System until it is constructed according to these Standards, approved by the County Engineering Manager or authorized representative, and accepted by the BoCC. Other rights-of-way within the unincorporated areas of Mesa County may be accepted by the BoCC, but this does not constitute acceptance of the road for maintenance. When the County's authorized representative is acquiring right-of-way for a County-initiated project, the procedure outlined in MCDS Section 2.07 shall be used.

D. Review Step 4: Construction

Construction of new County roads shall conform to an approved design that follows the MCDS Chapter 6: Road Design Standards and the specifications in the MC Specs.

E. Review Step 5: Inspections and Testing

Adequate inspections and testing ensure compliance with these Standards and the MC Specs and are the basis for the Mesa County Engineering recommendation to the BoCC for maintenance acceptance and for release of the Development Improvements Agreement guarantee. Requirements for inspections and testing are found in MC Specs and are the sole responsibility of the Developer.

F. Review Step 6: Acceptance of Roads

Roads within the jurisdiction of Mesa County and offered for dedication to the public may be accepted for jurisdiction and maintenance by the BoCC by Resolution only after all the following requirements are met:

1. The roads have a usable traveled way of at least twenty (20) feet to provide for two lanes of traffic. Single-lane roads and alleys will generally not be accepted for maintenance by Mesa County.
2. The roads have a minimum right-of-way width determined by the functional classification as described in MCDS Chapter 6: Road Design Standards.
3. The roads are to be constructed with adequate drainage to ensure the integrity of the roadbed.
4. The roads connect to another maintained County road, state highway, or city street.
5. All required street signs and traffic control devices are to be installed and tested by the developer/applicant in accordance with these Standards.

6. All required subsurface utilities are to be installed and connected prior to finishing the subgrade. All laterals crossing the roadway are to be installed and approved by the utility prior to the road acceptance.
7. All survey monuments in roadways and rights-of-way as required in the Mesa County Land Development Code Section 8.12 are to be installed or re-established.
8. Trench compaction test results as required in the MC Specs are to be submitted to Mesa County Engineering for all trenches within the road right-of-way. These are to be submitted and approved before placement of any road base material.
9. Road base compaction test results as required in the MC Specs are to be submitted to Mesa County Engineering. These are to be submitted and approved prior to placement of any surface material. If the final surface material was placed over any base or sub-base component that had a failed test, the faulty base or sub-base and surface material must be removed and replaced at the contractor's expense.
10. Concrete and asphalt test results as required in the MC Specs are to be submitted to Mesa County Engineering. These are to be submitted and approved before final acceptance.
11. As-built drawings are to be submitted to Mesa County Engineering before the final inspection. The drawings shall accurately show all road construction details, utility and lateral locations, and other pertinent information as required.
12. After Mesa County completes the final inspection and approval of the roads in accordance with these Standards and MC Specs, Mesa County will complete the road petition and recommend acceptance for each road.

G. Review Step 7: Warranty Period and Guarantee

There is an eighteen (18) month warranty period on all public and private improvements with an accompanying warranty guarantee as described in MCDS Section 2.02.D. A concluding inspection shall be conducted at the end of the warranty period. Upon the completion of necessary repairs or modifications that may be required, Mesa County will sign off on the road, and the Developer's responsibility will be terminated.

H. Roadways through State- and Federal-owned Lands

It is recognized by these Standards that State and Federal agencies may have regulations which take precedence over these Standards. It is also understood and recognized that it may be to the benefit of the general public to accept roadways through State and Federal owned land which may not meet these Standards. Upon the receipt of the petition for acceptance of these roadways into the County Road System and upon favorable recommendation of the County Engineering Manager, roadways which fall into these classifications may be accepted into the County Road System by the Mesa County BoCC following a thorough investigation and evaluation of the benefit to the general public.

I. Rural Road Gravel Standard

Rural roads petitioned for acceptance into the Mesa County Road Maintenance System, which are located outside of the Grand Valley Air Shed, may be accepted with a gravel surface. These roads shall have a minimum right-of-way width determined by the functional classification as described in MCDS Chapter 6: Road Design Standards. The required depth of base shall be determined by a Professional Engineer registered in Colorado in accordance with MCDS Chapter 8: Surfacing Structural Design.

Applicable cross-section dimensions and compaction standards shall be determined by the design engineer per the requirements in MCDS Chapter 6: Road Design Standards. All other requirements for road acceptance shall be as stated in this Section.

SECTION 2.04 | PRIVATE ROAD CONSTRUCTION AND INSPECTION

The creation of a private road will follow the same process and procedures as a public road with the following provisions:

A. Certify Conformance

A registered Professional Engineer and Professional Land Surveyor shall certify that the road improvements are constructed within the legally documented access, either prescriptive or by recorded easement, conform to the County approved plans, and are constructed in accordance with applicable standards and specifications.

B. Inspection Required

No acceptance for maintenance is made, but the road shall pass a final inspection by the County Road Inspector in order to release the Development Improvement Agreement guarantee and/or Building Permits.

C. Clearly Defined

Private roads serving subdivisions shall be clearly noted on as-built drawings and the plat of the subdivision as "private road - not County maintained".

SECTION 2.05 | ROAD SYSTEM DELETIONS

A. Abandoned State Highway

When a portion of a State highway is relocated and a portion of the route as it existed before is no longer necessary as a State highway in the opinion of the State Transportation Commission, such portion shall be considered as abandoned. If it appears that the abandoned portion is necessary for use as a public highway, street or road, the abandoned portion shall become a County road, upon adoption of a resolution to that effect by the BoCC. Resolution will be made within ninety days after such abandonment. If the portion of the road is not needed as a public highway, title to it shall revert to the owners of the land through which the abandoned portion crosses.

B. Abandoned County Roads

When a portion of the County Road System is relocated and a portion of the route as it existed before is no longer necessary as part of the County Road System in the opinion of the BoCC, such portion shall be considered as abandoned, and title to it shall revert to the owners of the land through which such abandoned portion crosses, subject to the provisions of CRS Sections 43-2-302, -303.

C. Road and Easement Vacations

On occasion, vacation of County right-of-way or easements may become warranted. The BoCC may vacate any County right-of-way subject to the provisions of CRS Sections 43-2-301 to 303. A road, or part of a road, shall not be vacated if it leaves any adjoining parcel without an established connection to a public road.

The vacation of roads, rights-of-way, alleys, or easements shall be accomplished according to the Mesa County Land Development Code Section 4.20. In the event of a vacation being granted, easements shall be dedicated for all existing and proposed utilities at that location.

SECTION 2.06 | TEMPORARY CLOSURE OF COUNTY ROADS AND HIGHWAYS

A. Seasonal and Climatic Closure (Frost Law)

1. Authority

   Pursuant to the provisions of CRS Sections 42-4-507, 43-2-111, as amended, the MC R&B Road Supervisor is authorized by these Standards to prohibit the operation of vehicles upon any County road or highway or to restrict the weight of vehicles to be operated on any such County road or highway, subject to the limitations of CRS Section 42-4-106, as amended, and the provisions of these Standards.

2. Duration

   Any closure imposed shall not exceed ninety (90) days in any calendar year.

3. Basis of Closure

   Closure or restriction by the MC R&B Road Supervisor is authorized whenever the use of a County road during periods of snow, rain, frost, freeze, thaw, or other climatic conditions would seriously damage or destroy the road or right-of- way.

4. Extent of Limitation

   The closure or weight restrictions authorized by this MCDS Section 2.06.A shall not exceed the minimum necessary to prevent serious damage or destruction to the roadway, the road surface or road structures.

5. Posting

   The MC R&B Road Supervisor shall be responsible for installing and maintaining signs at locations where traffic has been prohibited or restricted, specifying the prohibition, and designating the weights of vehicles which are permitted to travel the specified portions of roadway, and the times of travel in which such travel will be permitted. The MC R&B Road Supervisor shall maintain a list, available to the public, specifying the road, County roads, bridges or highways on which vehicular traffic has been prohibited or restricted and the nature of all such restrictions.

6. Authorized Travel

   Travel on a restricted or closed roadway shall be allowed only if the vehicle has obtained the appropriate Extra-Legal Permit, as outlined in MCDS Section 3.09. No permit shall be issued by the MC R&B Road Supervisor authorizing travel on a temporarily closed or restricted County road or highway, unless the MC R&B Road Supervisor determines that such travel can be undertaken without causing serious damage or deterioration to the road, bridge or road structure in question.

B. Construction Closure

1. Authority

   Pursuant to the provisions of CRS Sections 42-4-106 and 43-2-111, as amended, the MC R&B Road Supervisor is authorized to temporarily close to through traffic or all vehicular traffic, all or any part of a County road, highway, bridge or portion thereof, for a period not to exceed a specified number of work days for the purpose of allowing completion of a construction project.

2. Alternate Routes

   For the purpose of facilitating traffic on a road closed pursuant to this MCDS Section 2.06.B, the MC R&B Road Supervisor may establish appropriate detours and provide alternative routing for affected traffic.

3. Signage

   A temporary road closure under this MCDS Section 2.06.B shall become effective upon the posting of official traffic devices and giving notice of all restriction, detours, or alternate routes. When such devices are in place, no driver shall disobey the instructions or directions.

C. Closure Protests

Any person or entity adversely affected by the closure of a County road pursuant to MCDS Section 2.06 may submit a protest of that closure to the MC R&B Road Supervisor. Such protest may be submitted either prior to or after the actual closure of the road. Such protests shall state the name of the person or entity submitting the protest, the basis of the protest, the extent of injury from the proposed or actual closure and the location of the property, if any, affected by the closure. The MC R&B Road Supervisor or authorized representative shall render a decision on the protest within five (5) business days of submittal. Should the protestant disagree with the decision, an appeal may be submitted according to MCDS Section 1.08.

SECTION 2.07 | RIGHT-OF-WAY ACQUISITION

This section outlines the requirements and procedure for right-of-way acquisition.

A. Right-of-Way Dedication

Right-of-way dedications shall be made in conformance with the Mesa County Road Map, http://emap.mesacounty.us/CountyRoads/countyRoads.html, and Standard Road Sections (MCDS Chapter 6: Road Design Standards, Appendix 6.1: Functional Classification Map, and Appendix 6.2: Mesa County Standard Details) for new developments and shall use the centerline of the existing right-of-way as a base. The County Road Map will serve as a guide for the location and design of new roadway systems. The Functional Classification Maps do not provide sufficient detail for the layout of local access systems or for detailed site planning and alignment studies.

B. Right-of-Way Acquisition Procedure

This procedure was modeled on the FHWA Right-of-Way acquisition procedure. This procedure would satisfy the legal requirements for federally funded projects but is followed mainly to ensure that right-of-way is acquired efficiently, legally, and protects the rights of both property owners and the County. The description assumes that proposed right-of-way requirements are well defined.

This procedure would be preliminarily followed if the condemnation of a property is required. If condemnation is required, the County Attorney's office will become actively involved, and condemnation will proceed only with the approval of the BoCC.

1. Document Research

    a. Title Commitments are obtained for each property noting all encumbrances (i.e. liens, loans, mortgages).

    b. Right-of-Way Base Map

        Mesa County Staff Surveyors review the provided title commitments and research County and public records at the County Clerk & Recorder's office that supports title findings and creates the Right-of-Way Base Map showing existing right-of-way encumbrances of record including respective recording IDs such as reception numbers, book and page and dates. The Base Map also includes details about existing survey control monuments in the affected project area. The Right-of-Way Base Maps are then provided to the design consultant engineer and surveyor.

    c. Existing and proposed right-of-way boundaries are located in the field. The project surveyor prepares a draft plat of taking, noting any potential damages, variances from property description, or items noted in Title Commitment.

    d. The Mesa County Right-of-Way Agent works with a reputable appraiser to determine an average fair market value for the affected landowners on the project.

    e. The Right-of-Way Agent then reviews the title commitments and then types up the respective documents (i.e. Petitioned, By Proclamation, Prescribed, Dedicated, or Deeded Right-of-Way Contract; Multiple Purpose Easements; Temporary Construction Easements).

2. Landowner Meeting Procedures

    The Right-of-Way Agent will meet with the landowners to discuss the details of the project, review the proposed changes to their property, and eventually collect signatures. This may take place in multiple meetings. The meetings include the following actions:

    a. The Project Engineer and Right-of-Way Agent will usually meet with the landowner the first time to discuss the project.

    b. The Right-of-Way Agent will present the findings of the Appraisal and discuss the fair market value of the land.

c. If the property owner requests improvements that can reasonably be included in the project without extensive redesign or additional work, these will be allowed, but the value of such improvements will be deducted from the right-of-way purchase price. Improvements that involve extensive redesign or additional work which cannot be reasonably included in the project, or for which the County would acquire unwarranted liability, will not be allowed.

d. The Right-of-Way Agent will review all documents with the landowners prior to signing, to review and ensure the landowners are signing as indicated in the title commitments.

e. The Right-of-Way Agent may need to meet multiple times to execute the needed contracts as described below.

f. Once appropriate releases and subordinations are obtained, documents are prepared, payment is scheduled, and a closing date is set by a County representative or a Title Office in coordination with the County Representative.

3. Document Execution Procedures

a. Easement Agreements

(1) Must be notarized and the Notary will need to verify the identity of the respective signor of the document.

(2) Utility Easements are recorded once signed.

(3) Temporary Construction Easements are not recorded once signed.

b. Right-of-Way Contracts

Right-of-Way Contracts require a signature and no notarization. The Right-of-Way Contract must be presented to the BoCC as a Resolution for review and approval of the acquisition of right-of-way at an upcoming public hearing. Once the BoCC approve the Resolution, the Right-of-Way Agent can create the appropriate deed(s) and present it to the landowner. The deed(s) requires notarization and will be recorded once fully executed.

c. Liened or Mortgaged Properties

If the landowner has a lien, loan, or a mortgage on the property then the Right-of-Way Agent must coordinate with the Lender for a Partial Release of the small strip of property as needed for the project. Generally speaking, the Lenders request an Opinion of Value or an Appraisal to ensure that the property being taken does not diminish the overall value of the remaining land.

CHAPTER 3: PERMITS

SECTION 3.01 | GENERAL

A. Purpose

Permits are designed to assist in the facilitation of safe and proper construction activities and the safe movement of oversize/overweight vehicles within public rights-of-way under the jurisdiction of Mesa County. Liabilities to the traveling public, the contractor/carrier, owner, and Mesa County are minimized through diligent adherence to the conditions of Permits issued by Mesa County.

This Chapter provides the requirements and procedures for each Permit that is administered by the County.

B. Authority

The authority listed in each permit section in this Chapter is the agency responsible for the review, approval/denial, and administration of the Permit. They are the point of contact for the Permit.

Any general permit questions shall be directed to the Mesa County Public Works Department: (970) 244-1765.

C. Definitions

1. Applicant

   An entity applying for a Permit.

2. Permittee

   An applicant who has been granted a Permit by the Permit Authority.

D. Permits Required

Permits are required for ANY construction activities within the Mesa County Right-of-Way. This includes all public drainage easements, rights-of-way, and roads, whether gravel or paved, under the control and jurisdiction of Mesa County. Permits are also required for the transportation of vehicles or loads which exceed the legal load limit for size or weight, as defined by The Colorado Department of Transportation.

E. List of Permits

The following Permits covered in this Chapter are related to development within the County road right-of-way. The need for any of the following permits must be assessed before initiating any work in the County right-of-way.

Permits under the authority of the Mesa County Public Works Department:

1. Preliminary Access Location (Sections 3.02, 3.03) and Road Access Permits (Sections 3.02, 3.04)
2. Driveway Construction Permit (Section 3.05)
3. Underground and Utility Permit (Section 3.06)
4. Surface Alteration Permit (Section 3.07)
5. Annual Aerial Maintenance Permit (Section 3.08)
6. Extra-legal Permits (Section 3.09)
7. Mesa County Construction Stormwater Permit (Section 3.10)
8. Floodplain Development Permit (Section 3.11)

Permits under external jurisdictions:

9. CDPHE Construction Stormwater Permit (Section 3.10)
10. USACE Permits (Section 3.12)

F. Application Process

Each Permit has specific application requirements and timelines. Many Permit applications can be completed online at the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

The County Public Works Department will make available to all Applicants and Permittees a copy of these Standards and any Permit-specific documentation.

G. Review Process and Requirements of Approved Permits

1. Review process

   Mesa County will review all Permit applications according to the requirements of each specific Permit as outlined in this Chapter. Mesa County has the discretion to grant or deny any Permit.

2. Approved Permits

   Approved Permits shall not be changed without the written consent of the Permit authority.

3. Permit Amendment or Alteration

   The terms and conditions of all Permits required by these Standards shall be subject to amendment, revision, or modification by Mesa County. Such Permits may be suspended or revoked because of an amendment to these rules, regulations, or orders issued by Mesa County or any alteration in State law.

4. Permittee Obligations

   Through acceptance of a Permit, in addition to all other requirements, the Permittee shall be responsible for compliance with all the following:

   a. All terms and conditions outlined in these Standards;

   b. All terms and conditions outlined in the Permit;

   c. All provisions of State law;

   d. All terms and conditions of all Mesa County Resolutions governing the use of County roads and rights-of-way as applicable;

   e. All other applicable legal requirements;

H. Appeal and Final County Decision Process

The appeal process is outlined in MCDS Appendix 1.1: Mesa County Design Exception Request Process. Refer to that procedure for any appeals of decisions by the permit authorities in this Chapter.

I. Violations and Penalties

In cases of non-compliance with Permit requirements or unauthorized obstruction or use of a County Road or right-of-way, the County or the Board of County Commissioners (BoCC) may seek additional remedies, including fees, damages, injunctive relief, and may file criminal complaints, against the person or persons responsible for or participating in the violation.

J. Permit Fees

All fees for the Permits named in this Chapter shall be set by the BoCC and are subject to change over time. For the most up to date fee schedules for each permit, refer to the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/. Specific Permit fee requirements are in each Permit section below, as applicable.

K. Bonds and Securities

Any bond or security required for issuance of a permit to assure performance and compliance shall be set by the BoCC and are subject to change over time. Bonds or securities shall be in addition to any Permit fee and shall not be considered as a Permit fee or cost of administration of a Permit.

SECTION 3.02 | ROAD ACCESS PROCESS

The Road Access Process includes the Preliminary Access Location and the Access Permit.

A. Authority

Mesa County Engineering is the authority for the Preliminary Access Location and Access Permit.

B. Definitions

1. Preliminary Access Location (PAL) / Notice of Intent (NOI)

   A document authorizing the type and location of access to the County road system. PAL was referred to as a Notice of Intent (NOI) in the past. The term NOI in other documents related to access shall mean Preliminary Access Location, as established in these Standards.

2. Access Permit / Notice to Proceed (NTP)

   A letter authorizing construction of an approved road access. Access Permit was referred to as a Notice to Proceed (NTP) in the past. The term NTP in other documents related to access shall mean Access Permit, as established in these Standards.

C. Road Access Process

Constructing an access consists of two distinct approval processes:

1. Preliminary Access Location (PAL)
2. Access Permit

The County approves the PAL based on maps and data provided by the Applicant prior to a full submittal of land development plans. Determining the PAL early in the development process allows the Applicant to proceed with detailed designs with a reasonable presumption that access will be granted, notwithstanding any issues or obstacles encountered during the development of the detailed design. Refer to MCDS Section 3.03 for PAL application information.

The Applicant shall prepare construction drawings and details for the proposed access, designed according to MCDS Chapter 5: Standards for Access. An Access Permit is issued after the Applicant has signed and agreed to all the terms and conditions of the PAL, and after Mesa County approves the construction drawings and details for the proposed access. Refer to MCDS Section 3.04 for Access Permit submission information. The Applicant may not start access construction without a valid Access Permit.

An Access Permit grants the Permittee the right to access the Mesa County Road System. If the access needs to cross other property, then an easement agreement giving the Applicant permission to cross the property must be provided to the County before approval of the Permit. In general, a Surface Alteration Permit is required with an Access Permit. Other Permits may also be required.

D. Access Permit Required

Pursuant to CRS Section 43-2-147, no person shall construct any access (driveway or intersection), public or private, providing vehicular access to or from any County Road from or across property adjoining a County Road without an Access Permit issued by Mesa County Engineering.

All Applicants shall adhere to the design standards for accesses as specified in MCDS Chapter 5: Standards for Access.

A few special cases which only require an Access Permit (no PAL) are outlined in MCDS Sections 3.02.D.5 and 3.02.D.6 below.

An Access Permit is required, and the Applicant shall follow the Road Access Process outlined in MCDS Section 3.02.C when any of the following apply:

1. A new or additional access point is proposed.
2. Modifications or improvements to an existing access are proposed, such as widening, modifying curvature or radii, or modifying grades.

3. There is a change to an existing land use that would increase traffic volume (average daily traffic – ADT) from the access point by twenty percent (20%) or more.
4. There is a change of use that constitutes property subdivision or land development that is under the purview of the MC LDC.
5. Special Case: Agricultural Accesses

   Agricultural accesses require only that an Access Permit be submitted to Mesa County Engineering, no PAL is required. Mesa County Engineering will review the access location to verify that it meets the Access design standards in MCDS Chapter 5: Standards for Access. If approved, Mesa County will issue the Access Permit.

   The issued Permit is only valid for agricultural uses. A change of use will require the Applicant to follow the Road Access Process in MCDS Section 3.02.C, and the location and design may need to change according to the provisions in MCDS Chapter 5: Standards for Access.
6. Special Case: Driveway Construction Permit for Single-Family Residential Driveway Accesses

   A single parcel single-family residential development requires that a Driveway Construction Permit be submitted instead of a PAL or Access Permit. The requirements for the Driveway Construction Permit are in MCDS Section 3.05.

SECTION 3.03 | PRELIMINARY ACCESS LOCATION

A. PAL Application Process

Visit the Mesa County Online Permit website, https://www.mesacounty.us/publicworks/permits/, or contact Mesa County Engineering to apply for the PAL.

1. Pre-application Meeting

   The Applicant may be asked to attend a meeting with County Staff before submitting any applications, to review proposed work and determine the levels of analyses that are required, including access permitting and traffic evaluations.

B. PAL Application Contents

It is the responsibility of the Applicant to provide adequate, detailed information for an effective analysis to occur. The application must include enough information for Staff to interpret the Applicant's access request and determine how it does or does not meet Mesa County requirements.

The Applicant may find it helpful to enlist the services of a Professional Engineer skilled in traffic analysis or plan preparation but is not required to do so at this stage. Plans will be accepted as sufficient to begin review when they include the required information presented in a clear and legible form.

The following items shall be included with a completed Preliminary Access Location Application form. They can also be found as a checklist in MCDS Appendix 3.1: PAL Application Checklist.

1. Project Information
   a. Project size and location
   b. Background of Property
   c. Locations of existing access
   d. Project Schedule

2. Narrative Describing the Type of Development Proposed:
    a. What are you building?
    b. Who is going to use it, and how often?
    c. What is the zoning of the property?
    d. Any new accesses proposed? How many?
    e. Any proposed changes to existing accesses?
3. Site Access Photos
    a. Photos of the proposed access location
    b. Photos showing views of the public road in both directions from the proposed access point.
4. Aerial Map

    An aerial map of the property and the surrounding area showing the proposed access location(s).
5. Access Plan

    An access plan showing the existing public road and initial conceptual access proposal showing:
    a. Width and surface of the existing roadway
    b. Width of dedicated right-of-way
    c. Number and location of proposed access points
    d. Existing or proposed easements that affect access
    e. Existing or proposed buildings
    f. Distance from proposed access to the limits of the subject property frontage
    g. Driveways and side roads within 1,000 feet of the property
    h. Distance from the proposed access to the nearest existing accesses on both sides of the Mesa County roadway.
6. Traffic Study required

    Any Commercial or Industrial project, or a development with a design hour volume (DHV) greater than 5, will require a Traffic Study. Requirements of Traffic Studies are listed in MCDS Chapter 4: Traffic Studies.

C. PAL Review and Approval Process

1. Administrative Completeness Review

    Within five (5) working days of receipt, Mesa County will review the application and supporting documents and notify the Applicant of any deficiencies.

    If the Applicant does not provide all required documents within sixty (60) calendar days of receiving notification of deficiency, the application will be considered withdrawn. Once all required documents are received, the review period will begin. Refer to MCDS Section 3.03.D for more information on PAL Application Denials.
2. Review Comments

    When the application is deemed complete, Mesa County will evaluate the request in accordance with these Standards within twenty (20) working days.

    If issues or safety concerns are identified, Mesa County will provide comments and require the Applicant to resolve them before approving the Preliminary Access Location Application.

3. Approval Notification

   Mesa County shall act upon the application within twenty (20) working days. In some cases, additional review time may be required. Mesa County will notify the Applicant if additional review time is needed.

   No later than the last day of the review period, Mesa County will issue the Preliminary Access Location for signature by the property owner and Applicant or will notify the Applicant that the application as submitted will be denied.

   The Approval will include conditions of approval which must be addressed as the project proceeds through the Land Development Application process.

4. PAL Issuance

   The Preliminary Access Location Application must be signed by the property owner and the Applicant and returned to Mesa County to complete the approval of the application.

   If the Applicant does not agree to all the terms and conditions or if the signed Preliminary Access Location is not received within twenty (20) working days of issuance by Mesa County, the Preliminary Access Location application shall be deemed denied.

5. Expiration & Extension of Approved PAL

   The preliminary access location (PAL) shall expire one (1) year after the issuance date unless the Access Permit is filed and construction is commenced within that time frame.

   If the Applicant does not receive approval of an Access Permit within one (1) year, the Applicant may request a one-year extension from Mesa County. No more than one (1) one-year extension may be granted under any circumstances. Any request for an extension must be in writing and submitted to Mesa County before the Preliminary Access Location expires. The request should state the reasons for the extension, when the project is anticipated to move forward, and include a copy of the approved Preliminary Access Location. Extension approvals or denials will be issued by Mesa County in writing within ten (10) working days of receipt of the request for an extension.

D. Denial of the PAL Application

If Mesa County notifies the Applicant that the Preliminary Access Location request has been denied, the Applicant has three options to continue pursuing approval:

a. The Applicant may revise the application within sixty (60) calendar days so that the requested access conforms to the requirements of these Standards. The County will determine if the revised application sufficiently addresses the reasons for the denial and if the Preliminary Access Location can be granted.

b. The Applicant may submit a request for a Design Exception in accordance with MCDS Appendix 1.1 within sixty (60) calendar days.

c. The Applicant may appeal the denial in accordance with the appeal procedures identified in MCDS Appendix 1.1.

If the Applicant does not act within the time frames noted, the application process will be closed, and any future request for access will need to start with a new Preliminary Access Location request.

SECTION 3.04 | ACCESS PERMIT

A. Access Permit Submission Process

Visit the Mesa County Online Permit website, https://www.mesacounty.us/publicworks/permits/, or contact Mesa County Engineering to submit the required documents for the Access Permit.

B. Access Permit Submittal Contents

1. Construction Drawings and Details

   Accesses that require a traffic study (see MCDS Chapter 4: Traffic Studies) also require that the construction drawings and details shall be prepared by a Professional Engineer licensed in the State of Colorado. Mesa County reserves the right to require a design prepared by a licensed Professional Engineer for any access. The construction drawings must include enough information for Mesa County Staff to properly evaluate the design of the access and shall include, at a minimum, the following information:

   a. Existing public road width and surface;

   b. Width of dedicated right-of-way;

   c. Proposed access width;

   d. Proposed access surface type and thicknesses;

   e. Proposed access pavement radii;

   f. Proposed curbing (if required);

   g. Proposed access slopes and associated grading;

   h. Proposed culverts (if required) and drainage improvements;

   i. Proposed signage (if required); and

   j. Additional relevant design information or construction details as may be deemed necessary by the Applicant or Mesa County

2. Horizontal Clearances and Visibility Triangles

   The Applicant shall provide adequate horizontal clearances and visibility triangles, as defined in MCDS Chapter 6: Road Design Standards and the MC LDC. The Access Permit may require that roadway hazards be removed, reconstructed, or shielded by a proper barrier.

3. Recorded Easement

   If the access must cross another property, the Applicant must provide to the County a recorded easement agreement giving the Applicant permission to cross the property before approval of the Access Permit. If access is shared between two or more properties, the easement agreement must include provisions describing maintenance responsibilities for the access and must be executed by all property owners utilizing the shared access.

4. Subdivisions

   An Access Permit issued for a new subdivision will permit access locations to existing county roads and generally permit future driveways within the subdivision. Any constraints on future driveway locations shall be noted on the Site Plan approved for recording.

C. Access Permit Review and Approval Process

1. Access Permit Issuance

   Mesa County Engineering will review the Traffic Study, construction drawings, and details. If they comply with the requirements of these Standards, Mesa County will issue an Access Permit.

2. Land Development Approval

   Mesa County Planning shall review the construction drawings and other documents as part of the Land Development Process. Refer to the MC LDC for details on the Development Approval Process following PAL application approval.

3. Expiration & Extension of Approved PAL

   The Access Permit shall expire and be invalid if the access is not under construction within one (1) year from the date of issuance. If construction does not begin within one (1) year, the Permittee may request a one-year extension from Mesa County. No more than one (1) one-year extension may be granted under any circumstances. Any request for an extension must be in writing and submitted to Mesa County before the Permit expires. The request should state the reasons for the extension, when the construction is anticipated to begin, and include a copy of the approved Access Permit. Extension approvals or denials will be issued by Mesa County in writing within ten (10) working days of receipt of the request for an extension.

D. Requirements of the Approved Permit

1. CDOT Access Permit Requirement

   If the proposed access is a local road to an existing State highway, a CDOT Access Permit and a Mesa County Access Permit are required.

   If the access provides direct vehicular movement to or from a State highway and the property is abutting or in close proximity to a State highway, a CDOT Access Permit may be required as well as a Mesa County Access Permit. The CDOT Access Permit is required if the project involves a change of land use that increases the proposed vehicle volume to or from the project site by 20 percent or more, or if the access is modified, relocated, closed or creates safety and operational issues. Consult the CDOT State Highway Access Code for complete requirements and information. Contact the CDOT Traffic and Safety unit with any questions.

2. Additional Mesa County Permits Required

   Before construction, the Permittee must obtain a Surface Alteration Permit, MCDS Section 3.07, and an Underground and Utility Permit (as applicable, MCDS Section 3.06) from the MC R&B Department.

3. Construction Responsibility

   The construction of the access and its appurtenances shall be completed at the sole expense of the Permittee.

   It is the responsibility of the Permittee to complete the construction of the access following the approved construction drawings and details and according to the terms and conditions of the Access Permit. Mesa County may order a halt to any unauthorized construction or use.

4. Traffic Control Plan and Construction Signing

   If construction of the access will obstruct traffic on any public roadway, the Permittee must submit a Traffic Control Plan to Mesa County Engineering, and this plan must be approved before construction. The Permittee must always provide adequate traffic control and signing during access construction. All detours, lane closures, signs, barricades, flashers, and other traffic control devices must comply with the MUTCD and the requirements in MCDS Chapter 11: Traffic Control Devices.

5. Inspection for Permit Compliance

   Mesa County and the Permittee or Permittee's representative or Engineer of Record on the project shall inspect the access during construction and upon completion of the access to ensure that the access is constructed following the approved construction drawings and details and that all terms and conditions of the Access Permit are met.

6. Hours of Work

   The hours of work on or immediately adjacent to the roadway may be restricted by Mesa County due to peak hour traffic demands and other pertinent roadway operating restrictions.

7. Permit Copy Onsite

   A copy of the Access Permit shall be available for review at the construction site.

8. Construction Conditions

   It is the Permittee's responsibility to notify Mesa County of any unforeseen site conditions that would prevent the construction of the access according to the approved Access Permit. If necessary, minor changes and additions may be required by Mesa County to meet unanticipated site conditions. Such changes and additions shall not constitute a departure from the conditions required in the Access Permit.

9. Use of Access

   It is the responsibility of the property owner to ensure that the use of the access to the property is not in violation of these Standards or the Access Permit terms and conditions. The terms and conditions of the Access Permit are binding upon all assigns, successors-in-interest, and heirs.

E. Permit Fees

The most current fees for the Access Permit shall be published on the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

SECTION 3.05 | DRIVEWAY CONSTRUCTION PERMIT

A. Authority

Mesa County Engineering is the authority for the Driveway Construction Permit.

B. Permit Required

A Driveway Construction Permit is required for the construction of any new single-family residential driveways which will access a Mesa County Right-of-Way.

C. Application Process

Visit the Mesa County Online Permit website, https://www.mesacounty.us/publicworks/permits/, or contact Mesa County Engineering to apply.

D. Application Contents

Requirements of the Driveway Construction permit are:

1. The driveway location shall meet the Access design standards in MCDS Chapter 5: Standards for Access.
2. The Applicant shall submit a Planning Clearance (issued from Mesa County Planning) with site plan showing the proposed driveway location, instead of a PAL.
3. The driveway location shall be flagged on the property.

E. Review and Approval process

Mesa County Engineering shall process the permit application within 15 working days after receiving the completed permit form.

F. Requirements of the Approved Permit

Any conditions of an approved permit may be determined on a case-by-case basis by Mesa County Engineering.

G. Permit Fees

The most current fees for the Driveway Construction permit shall be published on the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

SECTION 3.06 | UNDERGROUND AND UTILITY PERMIT

A. Authority

The Mesa County Road and Bridge Department (MC R&B) is the authority for the Underground and Utility Permit. Any reference to the MC R&B Road Supervisor shall mean the "MC R&B Road Supervisor or authorized representative".

B. Permit Required

Under CRS Section 42-4-1207, and 43-2-111 (6), no individual, company, corporation or public agency shall modify, install, or otherwise change any utility located within a County right-of-way without first obtaining an Underground and Utility Permit from MC R&B.

C. Application Process

To apply, visit the Mesa County Online Permit website, or contact MC R&B. Apply for the Permit at least 15 working days before starting your project. An approved Permit shall be obtained at least three working days before beginning work, except in emergency situations.

1. The Permit shall be secured by the owner or representative of the utility. Bonding may be required by the MC R&B Road Supervisor to ensure conformance with permit provisions.

D. Application Contents

1. Construction plans for the proposed work shall be required with the permit application.
2. A Traffic Control Plan prepared by a certified Traffic Control Supervisor may be required at the discretion of MC R&B.

E. Review and Approval process

Requests for utility installation may be reviewed in the field by representatives of MC R&B before the issuance of any permit. MC R&B will process applications within 15 business days of submittal.

F. Requirements of the Approved Permit

1. Utility Inspection and Testing

   At Mesa County's discretion, an inspector paid for by the permittee and furnished by Mesa County will be required. All costs relating to inspection of the installation are in addition to permit fees and the rate shall be set by MC R&B.

2. Trench and Road Base Compaction Tests

   Trench compaction tests as required in the Mesa County Standard Construction Specifications (MC Specs) shall be submitted to MC R&B for all trenches within the road right-of-way. Documentation shall be submitted and approved prior to the placement of any road base material.

   Road base compaction tests as required in the MC Specs shall be submitted to MC R&B. Documentation shall be submitted and approved prior to placement of any paving materials.

3. Temporary Traffic Control Plan

   All work performed within the county right-of-way shall provide a temporary traffic control plan and implementation according to MCDS Chapter 11: Traffic Control Devices and Part 6 in MUTCD. MC R&B will require a temporary traffic control plan and site plan prior to the granting of this Permit. If proper signs are not in place during the work, the MC R&B Road Supervisor shall immediately stop all work until proper signs are in place.

4. Road Closure Notification

   When a road closure due to utility installation becomes necessary the Permittee shall notify the local police, ambulance, fire department, public transit, and school district stating duration of all road closures. All road closures shall be approved by the MC R&B Road Supervisor in writing in advance of road closure.

5. Utility Installation Methods - Equipment

   If cleated or tracked equipment works on or moves over asphalt surfaces without mats and the road surface is damaged, the Permittee shall be required to mill and pave the entire width of roadway which has been damaged at no cost to Mesa County.

6. Soil Stockpile Management

   Overnight stockpiling of soil on the roadway shall not be permitted if road will remain open to traffic. All stockpiles shall be managed in accordance with Colorado Department of Public Health and Environment (CDPHE) best management practices. Washing of the road surface may be required by the MC R&B Road Supervisor.

7. Warranty Period and Guarantee

   There is an 18 month warranty period on all work done under the Underground and Utility Permit with an accompanying warranty guarantee as determined by MC R&B.

G. Violations and Penalties

Failure to obtain a Permit when working within the County road right-of-way will result in a fine of four (4) times the regular permit fee, and the original permit fee will have to be paid when the Permit is acquired. Inspection fees are not included in the penalty fee.

The utility owner is required to sign the Permit. In emergency situations, contact MC R&B immediately and then apply for the Permit as soon as practical.

H. Permit Fees

For the most up to date permit fee schedule, refer to the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

SECTION 3.07 | SURFACE ALTERATION PERMIT

A. Authority

The Mesa County Road and Bridge Department (MC R&B) is the authority for the Surface Alteration Permit.

B. Permit Required

A Surface Alteration Permit is required for all surface improvements located within the public rights-of-way, including improving existing driveways, driveway culverts, sidewalks, curb and gutter, and landscaping. If private bridges or low water crossings cross drainageways which are located within the public rights-of-way, this Permit is required.

C. Application Process

Visit the Mesa County Online Permit website, https://www.mesacounty.us/publicworks/permits/, or contact MC R&B to apply. Apply for the Surface Alteration Permit at least 15 working days prior to commencing construction.

D. Application Contents

1. A written schedule of the work including quantities of materials and length shall be required with the permit application.
2. Construction plans for the proposed work, prepared by a Professional Engineer in conformance with these Standards and approved by Mesa County Engineering, shall be required with the permit application.
3. A Traffic Control Plan prepared by a certified Traffic Control Supervisor are required at the discretion of MC R&B.

E. Review and Approval process

MC R&B shall process applications within 15 business days of submittal.

F. Requirements of the Approved Permit

In addition to the conditions listed below, any other conditions of an approved permit may be determined on a case-by-case basis by MC R&B.

1. There is an 18 month warranty period on all work done under a Surface Alteration Permit with an accompanying warranty guarantee as determined by MC R&B.

2. Use of roadway ditches on public right-of-way for irrigation/tailwater drainage will not be permitted.
3. Approved permits shall not be changed without the written consent of MC R&B.

G. Permit Fees

The most current fees for the Surface Alteration Permit shall be published on the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

SECTION 3.08 | ANNUAL AERIAL MAINTENANCE PERMIT

A. Authority

The Mesa County Road and Bridge Department (MC R&B) is the authority for the Annual Aerial Maintenance Permit.

B. Permit Required

The Annual Aerial Maintenance Permit is required to do work which will impact the aerial space of a Mesa County right-of-way, for example, work on overhead power lines, telephone lines, fiber optic lines, utility poles, or tree trimming.

C. Application Process

Visit the Mesa County Online Permit website, https://www.mesacounty.us/publicworks/permits/, or contact MC R&B to apply. Apply for the Annual Aerial Maintenance Permit at least 15 working days prior to commencing work.

D. Application Contents

1. A written narrative of the work shall be required with the permit application.
2. A Traffic Control Plan prepared by a certified Traffic Control Supervisor may be required at the discretion of MC R&B.

E. Review and Approval process

Mesa County MC R&B shall process applications within 15 business days of submittal.

F. Requirements of the Approved Permit

Any conditions of an approved permit may be determined on a case-by-case basis by MC R&B.

G. Permit Fees

The most current fees for the Annual Aerial Maintenance Permit shall be published on the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

SECTION 3.09 | EXTRA-LEGAL PERMITS

A. Authority

Extra-legal permits are authorized under the Mesa County Public Works Department. The Mesa County Road and Bridge (MC R&B) Road Supervisor is the final authority over the permittees with power to enforce and/or revoke any extra-legal permits. Any reference to the MC R&B Road Supervisor shall mean the "MC R&B Road Supervisor or authorized representative".

B. Definitions

1. Colorado Revised Statutes

   All of CRS Title 42, Article 4, Part 5, as amended, apply unless otherwise stated in these Standards.

2. Legal Limits

   The size and weight limits for a Vehicle or Load, as defined in CRS Sections §42-4-502 through §42-4-509 and MCDS Section 3.09.D.

3. Maximum Limits

   The maximum size and weight limits that may be allowed for an Extra-legal Vehicle or Load, as established in MCDS Section 3.09.E.

4. Extra-Legal Vehicle or Load

   Any vehicle or load which exceeds the Legal Limits as defined in MCDS Section 3.09.D and in MCDS Exhibit 3.1.

5. Extraordinary Vehicle or Load

   A vehicle or load which exceeds the Maximum Limits as defined in MCDS Section 3.09.E and in MCDS Exhibit 3.1.

6. Divisible Load

   A Vehicle or Load that can be divided into separate or different parts in less than eight work hours or does not compromise the intended purpose of the Vehicle or Load or render it unable to perform the functions for which it was intended.

7. Longer Vehicle Combination (LVC)

   The Vehicle combinations defined in CRS Section §42-4-505.

8. Triple Axle

   Any three consecutive axles whose extreme centers between any two axles within the grouping are not more than 96 inches apart and are individually attached to or articulated from, or both, a common attachment to the vehicle including a connecting mechanism designed to equalize the load between axles.

9. Quad Axle

   Any four consecutive axles whose extreme centers between any two axles within the grouping are not more than 96 inches apart and are individually attached to or articulated from, or both, a common attachment to the vehicle including a connecting mechanism designed to equalize the load between axles.

C. Permit Required

No oversize or overweight vehicle or other extra-legal vehicle or load, shall be operated or moved on any County Road except with an approved extra-legal permit as outlined in these Standards. Extra-legal Permits shall only be issued according to these Standards, or any other duly passed subsequent resolution adopting specific road weight limits, at the discretion of Mesa County Public Works.

1. Multiple Jurisdictions

   Oversize or overweight vehicle use standards may differ by municipality or rural communities within the County. For regions of overlapping jurisdiction, the more stringent standards shall apply.

D. Legal Limits

As stated in CRS Section 42-4-501, as amended, it is a traffic infraction for any person(s) to move or allow to be moved any vehicle(s) exceeding the limitations stated in CRS Sections 42-4-502 to 42-4-512, as amended, except where these Standards specify more strict limitations, then the terms of these Standards are not to be exceeded.

Vehicles with characteristics greater than any of these is defined as extra-legal.

1. Legal Size Limits

   Unless otherwise specified in these Standards or a separate Resolution of the BOCC adopting specific size limits, size limits to be enforced under these Standards shall be those specified in CRS Sections 42-4-502 through 42-4-506, as amended. The legal-size limits are detailed in MCDS Exhibit 3.1.

2. Legal Wheel and Axle Load Limits

   Unless otherwise specified in these Standards or a separate Resolution of the BOCC adopting specific road weight limits, wheel and axle load limits to be enforced under these Standards, and vehicle load and weight limits shall be those specified in CRS Section 42-4-507, as amended.

   Specific to Mesa County:

   a. Legal Maximum Weight on 2 axles 36,000 pounds

   b. Legal Maximum Weight on 3 axles 54,000 pounds

   c. Legal Maximum Weight on 5 axles 85,000 pounds

3. Legal Gross Weight of Vehicles and Load Limits

   Unless otherwise specified in these Standards, or a separate Resolution of the BOCC adopting specific road weight limits, the maximum gross weight of vehicles and loads shall be that specified in CRS Section 42-4-508, as amended. Under no circumstances shall the legal gross vehicle weight exceed 85,000 pounds.

E. Maximum Limits

The maximum size limits for an extra-legal vehicle or load as established in these Standards, or by separate resolution directed to specific County roads. The maximum size limits are detailed in MCDS Exhibit 3.1. Vehicles with characteristics greater than any of these is defined as extra-ordinary.

Exhibit 3.1 Extra-legal and Extraordinary Vehicle Size and Weight Limits

	Width	Length	Height	Weight
Legal	Up to 8'6" ft.	75 ft.	Up to 13'6"ft.	Up to 85,000 lbs.
Extra-Legal	Between 8'6" - 16'ft.	Between 75 - 110 ft.	Between 13'6" - 16 ft.	Between 85,000 and 130,000 lbs.
Extra-Ordinary	Over 16'ft.	Over 110'ft.	Over 16'ft.	Over 130,000 lbs.
Divisible Extra Length	Max 8'6" ft.	Max 70 ft. **	Max 13'6" ft.	Up to 110,000 lbs.
**Add No Length Limit when trailer is 57'4" ft or less.				

F. Load Limit and Pilot Escort Maps

1. Bridge Weight Limit Map and Pilot Escort Map

   The Mesa County Bridge Weight Limit Map and Pilot Escort Map are updated annually with the current Bridge Inspection Report. The map indicates the load-posted bridges and the allowable weights for such bridges within the County road system and Pilot Escort requirements for restricted roads. The map defines the maximum gross vehicle weights authorized for use of bridges under these Standards.

   These maps are available through the Mesa County online GIS Database, https://gis.mesacounty.us/.

2. Load Limit Map and Pilot Escort Map

   The Mesa County Load Limit Map and Pilot Escort Map are updated by Mesa County Engineering as required and adopted by resolution of the BOCC. The map indicates all County roads or rights-of-way that can accommodate oversize and overweight loads. The map also shows those roads/right-of-way where oversize/overweight vehicle use is restricted. Load limit maps shall include any map required by the BOCC as part of its land use approval process, designating routes of travel for vehicles associated with the approved land use.

   These maps are available through the Mesa County online GIS Database, https://gis.mesacounty.us/.

3. Specific County MC R&B Limits

   The BOCC has adopted weight limits for County roads and bridges. The BOCC may modify these limits by separate Resolution or by amendment to these Standards. When weight limits for any roads or bridges are changed by such measures, those weight limits shall supersede any limits in these Standards. Weight limits shall be set pursuant to CRS Section 42-4-106.

4. Posting of County-specific MC R&B limits: Posted Structures

   Upon adoption of County-specific weight limits, Mesa County Engineering shall post roads and bridges in conformity with State manuals and specifications. Posted structures are also identified in the County's bridge weight limit maps. Extra-legal vehicles, even with an approved extra-legal permit, shall not use posted bridges or other structures.

5. Designated Haul Routes

   An extra-legal or extra-ordinary permit may specify the specific route to be utilized by that vehicle. The route may be specified via the most current Load Limit Map, in which case a map shall be provided to the vehicle operator to be kept in the vehicle with the permit once issued.

G. Permit Categories

The following are the types of permits available from the Department for authorization of the use of County roads by extra-legal vehicles.

1. Single Trip Extra-Legal Permit

   A permit that is valid for a single trip for a specified number of days, as determined by Mesa County Public Works, not to exceed five (5) days. A single trip permit shall authorize a trip over specifically designated roadways for an extra-legal vehicle or load, when that vehicle or load does not exceed the specifications for an Extraordinary Use Permit as described in MCDS Exhibit 3.1.

2. Annual Extra-Legal Permit

   A permit that is valid for one year from the date of issuance for all roads designated on the permit, under the conditions set forth on the permit. This permit may be issued so long as the vehicle does not exceed the specifications for an Extraordinary Use Permit as described in MCDS Exhibit 3.1.

3. Single Trip Extraordinary Use Permit

   An Extraordinary Use Permit is valid for a single trip for a specified number of days for use by a single vehicle. An Extraordinary Use Permit shall be required if the vehicle exceeds the specifications for an Extraordinary Use Permit as described in MCDS Exhibit 3.1, or if any of the following conditions are applicable:

   a. The subject vehicle exceeds the maximum weight limits set forth on the Load Limit Map for the route that the vehicle must follow to reach its desired destination, including axle weights;

   b. The vehicle's rear overhang exceeds thirty-five (35) feet;

   c. The vehicle's front overhang exceeds twenty-five (25) feet.

4. Annual Divisible Load over Legal Weight

   Any divisible extra-legal vehicle is prohibited from travel on County roads or highways unless specifically permitted pursuant to these Standards. The CCR Chapter 3, Section 305: "Quad Axle Annual Overweight Permit for Divisible Vehicles or Loads" and Section 306: "Two/Three Axle Trailer Annual Overweight Permit for Divisible Vehicles or Loads" as described in the following sections apply in Mesa County.

   This permit is valid for one year from the date of issuance for all roads designated in the permit.

   The Maximum Limits for a Divisible Load over Legal Weight are described in MCDS Exhibit 3.1 and MCDS Sections 3.09.D and 3.09.E.

a. CDOT Section 305: Quad Axle Annual Overweight Permit for Divisible Vehicles or Loads

The Maximum Limits that may be authorized for an Extra-legal Vehicle or load operating under a Quad Axle Annual Overweight Permit for Divisible Vehicles or Loads are as follows:

(1) Height and width maximum limits are according to table 4.8.2.

(2) Length: Tractor/Trailer combination – Seventy feet in length for all highways. There is No Length limit when trailer is fifty seven feet, four inches or less in length.

(3) Length: Truck/Trailer combination – Truck shall not exceed forty-five feet in length. The overall truck/trailer combination shall not exceed seventy feet in length.

(4) Length: Single vehicle shall not exceed forty-five feet in length.

(5) Legal front and rear Overhangs not exceeding four feet in front and ten feet in rear.

(6) Weight: One hundred ten thousand pounds Gross Vehicle Weight, subject to the Maximum Limits for Axle weight designated on the Load Limit Map. Vehicle must Be Configured with a Quad Axle grouping.

(7) Under no circumstances are any loads allowed to exceed 25,000 lbs per axle.

b. CDOT Section 306: Two/Three Axle Trailer Annual Overweight Permit for Divisible Vehicles or Loads

The Maximum Limits that may be authorized for an Extra-legal Vehicle or load operating under a Two/Three Axle Trailer Annual Overweight Permit for Divisible Vehicles or Loads are as follows:

(1) Height and width maximum limits are according to table 4.8.2.

(2) Length: Tractor/Trailer combination – Seventy feet in length for all highways. There is No Length limit when trailer is fifty seven feet, four inches or less in length.

(3) Length: Truck/Trailer combination – Truck shall not exceed forty-five feet in length. The overall truck/trailer combination shall not exceed seventy feet in length.

(4) Length: A Semi-Trailer used with a converter dolly shall be considered a trailer.

(5) Legal front and rear Overhangs not exceeding four feet in front and ten feet in rear.

(6) Weight: Ninety Seven thousand pounds Gross Vehicle Weight, subject to the Maximum Limits for Axle weight designated on the Load Limit Map. Vehicle Configuration must consist of a power unit and a Trailer Configured with at least two but not more than three Axles on the trailer.

(7) Under no circumstances are any loads allowed to exceed 25,000 lbs per axle.

H. Exemptions

The following shall be exempt from the requirement to obtain an extra-legal permit.

1. State exemptions

All extra-legal vehicles identified in CRS Section 42-4-510(9), as amended, shall be exempt from any requirement to obtain a permit under this Section. This includes emergency vehicles, public transportation vehicles, and county road maintenance vehicles. Refer to the CRS Section 42-4-510 for the complete listing.

2. Military vehicles are exempt from the provisions of this Section.

3. Snow removal vehicles are exempt from the requirement to obtain an extra-legal permit provided that the following criteria are met:
    a. All weight, length, and height legal limits are met.
    b. The vehicle is less than 12 feet wide.
    c. When travelling on the roadway not plowing snow, the blade must be raised and turned parallel to the roadway as much as possible and shall not exceed 14 feet in width perpendicular to the highway.
4. Towing wreckers shall be exempt from the requirements to obtain a permit only when towing a disabled extra-legal vehicle or load from the highway to the nearest suitable location as determined by owner and tow wrecker driver on site. However, a towing wrecker must obtain a permit when towing the disabled extra-legal vehicle or load beyond the nearest suitable location, or from the nearest suitable location to another location.
5. County Road Crossings
    a. Extra-Legal

        An extra-legal vehicle or load entering a County road or right- of-way for the sole purpose of a perpendicular crossing of a County road or highway, on a one-time basis, is exempt from the requirement to obtain a permit under this Section so long as the extra-legal vehicle or load does not exceed the specifications for an Extraordinary Use Permit set forth in these Standards.

    b. Extra-Ordinary

        The owner/operator of an Extraordinary Vehicle or Load shall contact Mesa County Public Works prior to crossing the County road or right-of-way. Mesa County Public Works shall determine on a case-by-case basis whether they will require an Extra-Ordinary Use Permit or allow one-time crossing without one. The County will provide a written decision to the vehicle owner or operator.
6. Special Mobile Machinery Exemption
    a. Special mobile machinery exemptions shall be recognized in the County, and no additional County permit shall be required, provided that proof of an exemption certificate, issued by the State has been made for the specific vehicle and all other State required permits have been obtained. All equipment or machinery exemptions applicable to State highways or roads shall be applicable to any moves within the County and all County roads and rights-of-way, except for restrictions regarding bridge load limits. **There are no exemptions to the bridge load limits as designated in the Load Limit Map.**
    b. A copy of the State Exemption Certificate and all other State issued permits shall be carried in the subject vehicle and shall be open to inspection by any police officer or other authority granting such exemption. A copy of the Exemption Certificate shall be provided to the Permit Officer.
    c. Nothing in this Section shall be deemed to exempt "mobile machinery" or "self-propelled construction equipment," as defined in Section 42-1-102(54) C.R.S, as amended, from the provisions of these Standards, unless such machinery or equipment has obtained an Exemption Certificate from the State of Colorado.

I. Application Process

The permit application form, quick reference guide, load limit map, and escort map are available on the Mesa County Permits website, https://www.mesacounty.us/publicworks/permits/. Apply online, call (970) 244-1765, or submit the form to the Permit Officer at Mesa County Public Works at least 1 business day in advance of the desired travel day.

J. Application Contents: All Extra-Legal Permits

The following information must be included in the application for extra-legal permits:

1. Applicant's or Company's name, contact info, and billing address;
2. Vehicle operator's contact info;

3. Description of object or load to be moved;
4. Point of origin and destination of the movement;
5. Identification of State and County roadways to be traveled;
6. Inclusive dates required for movement;
7. Transport vehicle make, model, and year;
8. Vehicle VIN (last 8 characters);
9. Gross weight;
10. Maximum height of vehicle or load;
11. Maximum width of vehicle or load;
12. Overall length of vehicle or load;
13. Maximum Front and Rear overhang of vehicle or load;
14. Maximum number of axles of the complete unit;
15. Trailer Length;
16. Distance between first and last axle;
17. Axle weight or group axle weights and length distributions;
18. Land Use Permit or Approved Land Use Application, if applicable;
19. Copy of State-Issued Permit, if applicable.
20. Weight Tickets

    Applicants for any extra-legal permit may be required to furnish with application weight tickets from a certified scale for each axle or group of axles on the vehicle, in addition to all information in this Section.

21. Height restrictions

    Applicant is responsible for verification of all height restrictions.

K. Application Contents: Extraordinary Use Permit

In addition to the information required for the Extra-Legal Permit in MCDS Section 3.09.J, the Extra-Ordinary Use permit application shall include:

1. A certified scale ticket of the excessive weight of the vehicle;
2. Description of methods by which the County road, County bridges, and traveling public will be protected from injury or damage during use of the specified County road or right-of-way.

L. Application Contents: Divisible Load over Legal Weight

In addition to the information required for the Extra-Legal Permit in MCDS Section 3.09.J, the Applicant for the Divisible Load over Legal Weight permit shall:

1. Ensure that the vehicle has an adequate load rating to carry the load; and
2. Notify Mesa County if and which axles are liftable tag axles.

M. Review and Approval process

All extra-legal permits require a minimum of one full business day to process.

N. Requirements of All Extra-legal Permits

Through issuance of any extra-legal permit authorized by these Standards, the following conditions apply or may apply as determined by Mesa County Engineering.

1. Permittee Obligations

   Through acceptance of an extra-legal permit, the permittee shall be responsible for all safe movement of extra-legal vehicles or loads, and all liability for injury to any person using County roads or rights-of-way or damage to any County roads or rights-of-way.

2. Availability of Permit

   Approved permits must be in the possession of the vehicle driver.

3. Security/Bonding

   Mesa County may require bonding or other security as necessary to compensate for any damage to any roadway or structure.

   Any vehicle or load over 200,000 lbs requires a $150,000 Bond to operate on the Mesa County road system.

4. Posted Structures

   Extra-legal permits will not be issued for transport over posted structures.

5. Road and Bridge Weight Restrictions

   Extra-legal vehicles shall not exceed the maximum weight as posted or listed on the load limit map for bridges or portions of highways, even if the vehicle's weight is permissible on the connected roadways.

6. Road Condition Limitations

   Mesa County Engineering may limit or prescribe other conditions of operations when necessary to protect the safety of highway users, the efficient movement of traffic, or the County roads and structures from damage.

7. Travel Restrictions due to Hazardous Road Conditions

   An extra-legal vehicle is prohibited from travel on County roads when Mesa County Engineering or a law enforcement officer provides notice that a hazardous road condition exists for such a vehicle.

   Additionally, travel on any County road by an extra-legal vehicle is prohibited when the operator of that vehicle knows or should have known that the road conditions create a hazard for such a vehicle. Such hazards may include water, ice, snow, mud, wind, rocks, debris, or other emergency on the road or highway.

8. Seasonal or Other Time Constraints

   Mesa County Engineering may limit the number of trips or establish seasonal or other time limitations of operation.

9. Daylight Travel Restrictions for Extra-legal Vehicles

   An extra-legal vehicle traveling on a County road or highway during daylight hours shall comply with the following requirements:

   a. An extra-legal size vehicle in excess of eight feet six inches (8'6") but not more than eleven (11) feet in width requires one pilot car in front. Flashing lights are required on the front of all extra-legal vehicles.

   b. An extra-legal size vehicle more than eleven (11) feet in width but less than the extraordinary width requirements requires one pilot car in front with flashing yellow lights and one pilot car with flashing yellow lights in the rear. An extraordinary use legal vehicle requires a special permit and must comply with the terms of that permit.

10. Dark Hour Travel Restrictions

    An extra-legal size vehicle operating or moving during hours of darkness shall comply with the following requirements:

    a. All lighting requirements in compliance with State law.

b. All Extra-Legal size vehicles or loads must have one flashing light mounted on the front of the vehicle and at least two (2) but not more than three (3) flashing yellow lights mounted on the rear and one pilot vehicle in front.

c. Extra-legal size vehicles exceeding eleven (11) feet in width are not permitted to travel after dark.

d. An extra-legal size vehicle by length or that has an excessive overhang, for all travel during hours of darkness, shall have a flashing yellow light mounted on the front of the vehicle. Additionally, if the vehicle is overlength due to a front or rear overhang, (3) cluster lights shall be placed at or near the overhang at the front of the vehicle; or, three (3) red cluster lights shall be placed at or near the overhang at the rear of the vehicle, whichever is applicable.

11. Video documentation

Mesa County Engineering may require video-documentation of the road both immediately prior to, and following, vehicle passage on the road.

12. Haul Routes

Mesa County Engineering may require the use of designated haul routes.

13. Width Limitations

An extra-legal vehicle which is thirteen (13) feet or more in width shall travel only in the furthest right-hand lane or as close as practical to the right side of the roadway.

14. Required Signage

Any extra-legal vehicle shall display a sign in both the front and rear of the subject vehicle, specifically describing the nature of the extra-legal or extraordinary size. Such signs shall meet the minimum dimensions of five feet (5') in width, ten inches (10") in height, with one inch (1") wide black lettering on yellow background of at least eight inches (8") in height.

15. Minimum separation

A minimum distance of one-half mile shall always be maintained between extra-legal vehicles or loads, except when authorized by permit issued pursuant to these Standards. Passing may occur only when there is no other traffic in the immediate vicinity on the County road or highway.

O. Requirements Specific to Extraordinary Use Permits

The following conditions shall be required for all Extraordinary Use Vehicles (EOUV) in addition to all other conditions normally applied to any extra-legal permit issued.

1. Extraordinary by Length or Overhang

Any vehicle meeting the Extraordinary Use Permit requirements, based on the length of the vehicle or length of overhang, must comply with all special conditions of that Extraordinary Use Permit.

2. Speed Limit

A maximum speed limit of ten (10) miles per hour is required for any EOUV, unless otherwise determined by Mesa County Engineering.

3. Pilot Escort

A pilot car escort is required both in the front and rear of the EOUV.

4. Additional towing power

A standby pulling vehicle is required when traveling on County roads with ADT above 3,000.

5. Over-height EOUV

When a vehicle exceeds sixteen (16) feet in height, there must be adequate clearance on the route of travel for the vehicle and for such height, and there must be a pilot escort vehicle positioned in the front of the overheight vehicle with a height pole for the entire route. Verification of height restrictions is the sole responsibility of the permit holder.

6. Conditions set by Mesa County Engineering

   Any additional special conditions as deemed necessary by Mesa County Engineering shall be required, including, for example, the requirement to travel only when MC R&B officials are available to supervise the move.

7. Dark Hour Travel Restrictions

   Any Extraordinary Vehicle or Load shall be prohibited from travel during hours of darkness, unless otherwise stated in the terms of the approved permit.

P. Violations, Damages, and Enforcement

Violations of this Section shall be penalized as follows:

1. Violation

   With the adoption of these Standards by duly approved BOCC Resolution, the County road, right-of-way, and bridge restrictions shall be considered binding and applicable upon all vehicles using Mesa County roads. Any violation of the restrictions set forth in these Standards, including the adopted load limit and pilot escort maps, shall be considered a violation of these Standards.

2. Penalty

   A penalty shall be imposed upon any driver of a vehicle in violation of the provisions of these Standards, as well as the owner of the vehicle which is operated in violation of these Standards, pursuant to the provisions of CRS Section 42-4-510(12)(a), as amended. Both owner and driver are responsible for compliance with the terms and conditions of these Standards. The conviction of either the driver or owner of a violation of these Standards shall not bar the conviction of the other.

3. Damages

   The MC R&B Road Supervisor may inspect the road immediately prior to, and immediately following, use of the road by the permittee; or the Road Supervisor may rely upon video-documentation or other reliable evidence, to determine damage to the road, if any. The Road Supervisor is authorized to assess the permittee the charge for reasonable repair of such damage. Such charges are in addition to permit fees and are necessary for compensation of damages which were caused by usage, which was over and above ordinary, permitted usage.

4. Enforcement

   The provisions of these Standards regarding excess load or weight of a vehicle may be enforced by any law enforcement officer pursuant to the provisions of CRS Section 42-4-509, as amended.

Q. Extra-Legal Vehicle and Load Permit Fees

The most current fees for any extra-legal permit shall be published on the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

Payment for permits is due upon issuance of the approved permit. The permit is automatically revoked if fees are not paid before the scheduled event. Notification of revocation will be sent to appropriate enforcement agencies.

R. Permit Appeals

Mesa County Engineering may deny a permit application or revoke, suspend, or refuse renewal of an existing permit. All appeals shall be conducted according to the Design Exception Process outlined in MCDS Appendix 1.1.

SECTION 3.10 | CONSTRUCTION STORMWATER PERMITS

A Colorado Department of Public Health and Environment (CDPHE) Construction Stormwater Permit and a Mesa County Municipal Separate Storm Sewer System (MS4) Construction Stormwater Permit are required for construction activities that meet the criteria described in this section.

A. Authority

CDPHE is the authority for the State of Colorado, and issues Construction Stormwater Permits.

The Mesa County Stormwater Division is the MS4 authority for Mesa County, and issues Mesa County (MC) MS4 Construction Stormwater Permits. The Mesa County Engineering Stormwater Coordinator or authorized representative is the authority for permit decisions.

The MC LDC Sections 4.17, 4.18, 4.19, and 8.22 cover more detailed information about the MC Construction Stormwater Permit and application requirements.

B. Definitions

1. Common plan of development or sale

   A "common plan of development or sale" is a contiguous area where multiple separate and distinct construction activities may be taking place at different times, on different schedules, but remain related by a common contract or plan. Contiguous means construction activities located near each other (within 1⁄4 mile).

C. CDPHE Construction Stormwater Permit Required

In Colorado, a Colorado Discharge Permit System (CDPS) General Discharge Permit (General Permit) from the CDPHE Water Quality Control Division (WQCD) for stormwater discharges is required if the construction activity:

1. Disturbs one acre or more (≥1), OR,
2. Is part of a larger common plan of development that will disturb one or more acres of land, where the discharge enters waters of the state.

D. CDPHE Application Process

Refer to the CDPHE permit application website, https://www.colorado.gov/pacific/cdphe/wq-construction-general-permits, for all information regarding the CDPHE construction stormwater permit. All permit applications, modifications, and terminations need to be completed in the CDPHE Colorado Environmental Online Services (CEOS) electronic system.

E. MC MS4 Construction Stormwater Permit Required

A MC MS4 Construction Stormwater Permit is required if the construction activity:

1. Is located within the Urban Development Boundary (UDB), and
2. Disturbs one acre or more (≥1), OR,
3. Disturbs less than one acre (<1) that is part of a larger common plan of development or sale.

Refer to the MC LDC Sections 4.17, 4.18, 4.19, and 8.22 for additional permit information.

F. MC MS4 Construction Stormwater Permit Application Process

To apply, visit the Mesa County Online Permit website, https://www.mesacounty.us/publicworks/permits/, or contact the Mesa County Engineering Stormwater Coordinator. The application process is outlined in the MC LDC Section 4.17.

G. MC MS4 Construction Stormwater Permit Application Contents

Mesa County MS4 Construction Stormwater Permit application requirements are listed on the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/, and are listed below:

1. Completed permit application with responsible party clearly identified as the permittee;

2. Site specific Stormwater Management Plan (SWMP). A checklist of SWMP requirements is available on the MC permit website;
3. Post-Construction Stormwater Control Measure Operation and Maintenance Agreement (if required);
4. A copy of the CDPHE-CDPS approved stormwater certification, as applicable.

H. MC MS4 Construction Stormwater Permit Review and Approval Process

Once the completed application is submitted online, fees will be assessed and must be paid before the review process begins. The review and approval process is completed within 5 business days. For applications that are incomplete, if the permit needs clarification, or modifications are needed, the review time may be prolonged.

Once the requirements in MCDS 3.10.G are completed, a stormwater pre-construction meeting is scheduled with the Applicant. This pre-construction meeting is required before construction begins to verify that all requirements are met, and any initial stormwater control measures are properly implemented.

I. MC MS4 Construction Stormwater Permit Requirements of the Approved Permit

Any additional requirements of an approved permit may be determined on a case-by-case basis by the Mesa County Engineering Stormwater Coordinator.

To close out the MC MS4 Construction Stormwater Permit, the Permittee shall schedule a final walkthrough of the project to ensure that final stabilization has been achieved per their SWMP. If Mesa County approves the final condition after all construction activities are complete, the Permittee can begin the "Notice of Termination" process for the CDPHE-CDPS permit. Once the Permittee receives confirmation from CDPHE that the CDPHE-CDPS permit has been terminated, the Permittee is to provide documentation of termination to the Mesa County Stormwater Division and complete an "Inactivation of Construction Stormwater Permit" form to complete the MC MS4 Construction Stormwater Permit close-out. If all the above is addressed, then the MC MS4 Construction Stormwater Permit is closed-out.

J. MC MS4 Construction Stormwater Permit Fees

The most current Mesa County Construction Stormwater permit fees shall be published on the Mesa County Permit website, https://www.mesacounty.us/publicworks/permits/.

SECTION 3.11 | FLOODPLAIN DEVELOPMENT PERMIT

A. Authority

The Mesa County Floodplain Administrator is the authority for the Floodplain Development Permit.

The MC LDC Sections 4.07, 4.08, and 8.14 cover more detailed information about the Floodplain Development Permit and application requirements.

B. Permit Required

This permit is required for all construction activities within any special flood hazard areas established in MC LDC Section 8.14. The permit requires that the applicant prove the structure and methods of construction will not have a detrimental effect on upstream or downstream people or properties.

C. Application Process

Refer to the MC LDC Sections 4.07.B for the permit application process. In summary, the MC Floodplain Development Permit application form shall be completed by the applicant and submitted to the MC Floodplain Administrator. A CO registered Professional Engineer (PE) or Professional Licensed Surveyor (PLS) with understanding of Federal Emergency management Agency (FEMA) - National Flood Insurance Program (NFIP) regulations shall complete the FEMA NFIP information required as outlined on the form, which may include hydraulic modeling of the effects of the proposed development on downstream conditions. The MC Floodplain Administrator will coordinate the review process with FEMA and other review agencies before providing a decision regarding approval or denial.

D. Application Contents

The Mesa County Floodplain Development Permit application form, available on the MC Floodplain Management website, https://www.mesacounty.us/publicworks/floodplain-management/forms/, includes:

1. Applicant contact information
2. Project Location
3. Parcel number
4. Description of proposed activity
5. Structure type
6. FEMA NFIP information and supporting documents, including hydraulic modeling results, completed by a CO registered Engineer (PE) or Professional Licensed Surveyor (PLS) with understanding of NFIP regulations.

E. Review and Approval process

The Floodplain Administrator shall process applications within 5 business days of submittal; however, if the application requires clarification or modifications, the review time may be prolonged.

F. Requirements of the Approved Permit

Conditions of approval are outlined in the MC LDC, Sections 4.07 and 8.14.

G. Permit Appeal Process

Appeals of decisions made by the Floodplain Administrator may be taken to the Floodplain Board of Appeals in accordance with the procedures of MC LDC Section 4.08.

H. Permit Fees

There currently is not a fee for the Floodplain Development Permit, though this is subject to change per Mesa County Engineering or the BoCC. Refer to the Mesa County Floodplain Management website for current permit fees, https://www.mesacounty.us/publicworks/floodplain-management/.

SECTION 3.12 | UNITED STATES ARMY CORPS OF ENGINEERS (USACE) PERMITS

Construction projects that propose to disturb, fill, excavate, or otherwise modify wetlands or drainageways on private and public land may require permits under the Clean Water Act. The need for a USACE permit and application requirements are determined by the US Army Corps of Engineers in accordance with the Clean Water Act.

A. Authority

The US Army Corps of Engineers (USACE) is the authority for all permits that affect designated waters of the United States.

B. Application Process

Refer to the USACE Permit website, https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit/, for all information regarding any USACE Permits.

CHAPTER 4: TRAFFIC STUDIES

SECTION 4.01 | GENERAL

A. Purpose

A Traffic Study must be performed to assess the effect of the proposed project on the existing and future road system.

The application of sound design principles for new roads, preserving road capacities in existing areas, ensuring smooth traffic flow, accommodating all transportation modes, and preserving or increasing safety are part of the goals of the Traffic Study process.

B. Applicability & Responsibility

The primary responsibility for assessing the transportation effects related to a proposed development rests with the developer. Mesa County will serve in a review and approval capacity.

1. Construction Responsibility

   The developer shall be responsible for design and construction of necessary improvements as identified in the Traffic Study. Alternatively, they shall be responsible to participate in a proportionate share of the cost to design and construct such improvements as determined appropriate by the Public Works Department.

2. Use of old Traffic Studies

   Any previous studies must be updated if the study is older than 2 years, or if the proposed land use intensity has been altered by 10%.

C. Preparation and Certification

All Traffic Studies shall be prepared by a Professional Engineer registered in the state of Colorado with adequate experience and expertise in transportation planning and engineering. The Engineer shall be identified in the Traffic Study and shall sign and seal the final report.

A statement of qualifications must be included with Traffic Impact Studies. Certification as a Professional Traffic Operations Engineer (PTOE) by the Institute of Traffic Engineers (ITE) is preferred.

D. Definitions

1. Average Daily Traffic (ADT)

   The average 24-hour volume, being the total number during a stated period, divided by the number of days in that period. Unless otherwise stated, the period is a year. The term is commonly abbreviated as ADT.

2. Background Traffic Conditions (20- year projection)

   Future buildout conditions without project traffic. The Travel Demand Model developed by the Regional Transportation Planning Office (RTPO) shall be used to identify the anticipated traffic conditions as defined as 20 years from the Baseline Conditions scenario fully built out. The analysis shall anticipate the increase in background traffic volumes and the generation of other related projects that are not present in the existing condition but would likely be completed and generating trips in this time period. The trip generation for the proposed project should not be included in this scenario.

3. Baseline Traffic Conditions

   Existing traffic conditions analysis. Baseline Traffic Conditions analysis should model traffic conditions at the time the traffic study is being prepared. Traffic counts that are older than the year the study is being prepared shall be factored up, adjusted to existing year volumes, or updated with current year counts at the expense of the Applicant. Additional traffic counts may be required at the request of Mesa County and paid for by the Applicant.

4. ITE

   Institute of Transportation Engineers

5. Design Hour Volume (DHV)

   Design Hour Volume, (DHV), also known as average peak hour trips, is an evaluation of the amount of traffic seen in the busiest hour. The DHV of the roadway shall be defined by ITE Trip Generation Manual, current edition, obtained from a traffic study, or estimated from the ADT (DHV= ADT * K) using a K factor of 12%.

6. Pre-Development Conditions

   The conditions of the road study area prior to any intensified (non-agricultural) development occurred within the study area.

7. Total traffic projections (Background + Project)

   Future buildout conditions with project traffic. Assignments to the roadway network for the project traffic volumes are added into the Background Traffic Conditions for the 20-year projection.

8. Traffic Study

   A Traffic Report or document required by the MCDS. The term Traffic Study is used to include both the Traffic Assessment and the Traffic Impact Study reports.

E. Autonomous Vehicle Considerations

In consideration of autonomous vehicle incorporation into the transportation system, NHTSA, US DOT, and CDOT has released guidance for Automated Driving Systems. Refer to this and/or any current federal and local codes and regulations when planning for autonomous vehicles.

SECTION 4.02 | TRAFFIC STUDY OVERVIEW

A. Road Access Process

A Traffic Study is a requirement of the Preliminary Access Location application (PAL) as part of the Road Access Process for qualifying projects.

The Road Access Process, outlined in MCDS Chapter 3: Permits, requires submission of a Preliminary Access Location application in the initial planning stages of a project, and then an Access Permit is required for construction.

Generally, some level of Traffic Study is required for PAL applications with more than 5 Design Hour Volume trips (DHV) and for all commercial or industrial developments. The appropriate level of analysis will be determined at the Traffic Analysis Conference as outlined below.

B. Levels of Traffic Studies and Criteria

Two levels of analysis are employed to assess transportation effects from a project:

1. A Traffic Assessment (TA) is the first level,
2. A Traffic Impact Study (TIS) is the more involved second level.

MCDS Section 4.03 contains the criteria used to determine the appropriate level of analysis. MCDS Section 4.04 contains the submittal requirements of each level.

C. Traffic Study Procedure

The Traffic Study process is outlined as follows:

1. An Applicant begins the process by submitting the PAL application items. If a need for a Traffic Assessment or Traffic Impact Study is identified, the applicant will be notified by Mesa County upon review of the application.
2. The applicant and their traffic engineer shall arrange with Mesa County Engineering, Traffic, and Planning to meet for a Traffic Analysis Conference to discuss the requirements of the necessary Study.

3. The Base Assumptions form is completed by the Applicant or Applicant's Engineer for review at the Traffic Analysis Conference or is collaborated upon at the Conference. The Base Assumptions Form is provided as Appendix 4.1.
4. The Traffic Analysis Conference is held. The county will review the base assumptions form and determine the level of evaluation. The Base Assumptions form will be approved by the County if all criteria have been agreed upon.
5. The Applicant's Engineer prepares and submits the TA or TIS for Initial review.
6. Mesa County reviews the study and provides any comments to the Applicant.
7. Once all comments have been addressed to the satisfaction of the County, the TA or TIS is approved by the County.

D. Base Assumptions Form Information

The Base Assumptions Form requires the following information:

1. Project description including the type of land use (single family, town homes, multifamily, office, retail, etc.) and size (number of dwelling units, square footage, etc.)
2. A site plan sketch or plan showing all proposed access locations and proposed land uses in relation to the accesses
3. Anticipated project completion date and project phasing
4. Project base assumptions
5. Trip adjustment factors (Pass by trips, directional distributions, captive market)
6. Other information necessary or required to evaluate the project.

At the Traffic Analysis Conference, Mesa County will provide comments regarding transportation issues including but not limited to, accesses (locations/type), impacts on adjacent neighborhoods, the size of the study area, the study methodology, and base assumptions. The comments will be discussed at the Transportation Analysis Conference. The Base Assumptions Form is provided as Appendix 4.1.

SECTION 4.03 | TRAFFIC STUDY LEVELS

A. Level 1: Traffic Assessment

The goal of the Traffic Assessment (TA) is to document the project's trip generation, trip distribution, and trip assignment calculations, identify if any mitigation measures, such as turn lanes, are warranted, and identify situations that trigger a larger Traffic Impact Study.

1. Traffic Assessment Criteria

   A Traffic Assessment is required for all commercial or industrial development, or for any development which will generate five (5) or greater DHV.

2. Criteria requiring expansion to a Traffic Impact Study

   A Traffic Assessment must be expanded into a Traffic Impact Study if the following conditions are identified:

   a. The project requires a Zoning Map Amendment (rezoning)
   b. The County determines the impact of the development may require the functional classification of the adjacent roads to be altered
   c. The proposed traffic volume (DHV) at the access results in a net increase of 20% on the County Road or access location from pre-development conditions
   d. The County determines the impact of the development may require functional changes to intersection control
   e. The results of the Traffic Assessment identify that further evaluation is required.

B. Level 2: Traffic Impact Study

The goal of a Traffic Impact Study (TIS) is to understand the full traffic impacts of the proposed development and identify all mitigation measures required to maintain an acceptable Level of Service (LOS).

1. Traffic Impact Study Criteria

   A Traffic Impact Study is required for all projects which expect to generate 100 design hour trips or more, or which qualify as identified by MCDS Section 4.03.A.2.

SECTION 4.04 | TRAFFIC STUDY CONTENTS

A summary of requirements for traffic studies is detailed below. Refer to the checklists found in Appendices 4.2 and 4.3 for the specific requirements of each report.

A. Introduction

The introduction shall provide an overview and specific discussion of the project or development proposal.

Information on the type of development proposed shall include the type of land use and size of the proposed project, generally known as density and intensity. Intensity may be described in terms of floor area ratio or square footage of proposed development.

If the project includes phasing, phasing plans shall be introduced, including the anticipated completion dates.

The proposed access plan shall be provided, and the access plan shall describe all proposed vehicular access locations, dimensions, movements and phasing.

B. Description of Existing & Proposed Transportation System Conditions

The description of the existing roadway network shall include posted speed limits, the number of travel lanes, traffic accident history, adjacent land use, and the presence (or lack of) pedestrian, public transit, and bicycle facilities.

Roadway and intersection traffic volumes shall be evaluated as required for each report. Traffic and intersection data compiled by Mesa County may be available, but data older than one year may not be applicable to the project area. Intersection peak hour traffic data shall be no older than one year. Additional data will be expected for TIS level reports, and it is the sole responsibility of the applicant to obtain current traffic data. All average daily and design hour traffic data shall be shown on a figure.

The report shall describe the existing bicycle and pedestrian facilities and shall include any facilities directly adjacent to the project site and within one-quarter mile. Special attention shall be given to the bicycle and pedestrian connections to specific uses including but not limited to schools, parks, employment centers, commercial areas, shopping, and adjacent land uses.

The project description shall include a description of how pedestrian and bicycle travel shall be accommodated. This shall include a discussion of types of sidewalks (attached/detached), pathways, and connections to local and perimeter destinations.

1. Traffic Crash History

   Traffic crash data for affected street corridors shall be obtained from Mesa County for the study area. Estimates of increased or decreased crash potential shall be evaluated for the development.

C. Traffic Growth Calculations

The background traffic growth within the study area shall be accounted for when determining future background traffic projections. Growth factors suggested by the consultant in the pre-application form will be reviewed by the appropriate agency prior to use in the TIS.

Horizon year traffic projections shall be obtained for collectors and above from the RTPO Travel Demand Model. The County and RTPO will determine the applicability of this data and determine the suitability of its use by the Applicant.

D. Traffic Operations Analysis, Capacity, and Level of Service

The report shall determine if the project creates any significant effects at study intersections and/or corridors within the study area boundaries.

1. Traffic Operations Analysis

   The traffic operations analysis procedures, as set forth in the latest edition of the Highway Capacity Manual (HCM), shall be used in analyzing the capacity and operational characteristics of vehicular, pedestrian and bicycle facilities. All worksheets and evaluation summaries shall be included in the appendices of the TIS report.

   A peak hour capacity analysis and LOS determination should be conducted for all study area roadways and intersections. The study area may include all adjacent arterial-arterial, arterial-collector, collector-collector intersections, and for all industrial and commercial driveways that intersect arterial or collector streets.

   The peak hour capacity analysis and LOS determination shall be evaluated for the following scenarios:

   a. Baseline traffic conditions for the current study year,

   b. Background traffic conditions (20-year projection) for future traffic growth,

   c. Total traffic conditions (Background + Project) for future and project growth.

   The capacity and level of service analysis for each traffic scenario described above needs to include directional distribution assumptions if any. The findings shall be shown in the report in tabular form and illustrated on figures.

   If the total traffic conditions reveal that a turn lane is warranted within the 20-year projections, the turn lane must be constructed during project construction.

   LOS "C" shall be the design objective and under no conditions will less than LOS "D" be accepted for site and non-site traffic.

   Multimodal and Pedestrian movements should also be considered in the analysis.

2. Calculations for Capacity and Level of Service

   Delays and queues shall be calculated for signalized intersections using the latest version of the Highway Capacity Manual (HCM) including the most current HCS or similar software approved by Mesa County. An appropriate 15-minute peak hour factor shall be used. The performance evaluation of signalized intersections shall include the following:

   a. Critical movements shall be identified and should meet the threshold requirement of 35 seconds of delay or less;

   b. No movements shall have an adverse effect on the coordinated progression of the road system as determined by an approved coordination model consistent with the methods of HCM;

   c. HCM 95th-percentile lane queues shall be calculated and shall not obstruct upstream intersections or major driveways;

   d. The analysis of a signalized corridor must show a reasonable progression band, identified as a usable (unblocked) band for major traffic movements.

   Unsignalized intersections shall be analyzed using the latest HCM methods, including the most current HCS or similar software approved by Mesa County. In the performance evaluation of stop-controlled intersections, measures of effectiveness to consider include the delay, volume/capacity ratios for individual movements, average and 95th-percentile queue lengths to make appropriate traffic control recommendations. The TIS should evaluate the results of the intersection capacity analysis in terms of all the measures of effectiveness.

   The highest directional peak hour volume shall be used to calculate the road segment LOS.

3. Total Traffic Conditions

   The total traffic conditions shall be determined for each of the study years identified in the base assumptions. The project-related traffic shall be added to the background and project peak hour traffic.

   The resulting total traffic projections shall be depicted on a table and figure in the report.

4. Background Traffic Projections

   For Traffic Impact Studies, 20-year background traffic projections shall consider the following additional elements:

   a. Existing and Committed (funded) Capital Improvement Projects

   b. Existing and Permitted Land Development Projects

   c. Adjacent and applicable planned transportation plans from sources described below

   d. Permitted development projects in the vicinity

   e. Background Traffic Growth

   A description of adjacent project-specific planned transportation system improvements (that would affect the system analysis with respect to this project) identified in municipal, County, or CDOT capital improvement plans, including those identified in the current Regional Transportation Plan (RTP) prepared by the Grand Valley MPO/RTPO shall be included in the TIS. This shall include, but not be limited to: signalization, intersection improvements, roadway widening, bicycle/ pedestrian projects, and transit capital and operating/service improvements.

   The background traffic analysis shall include permitted development projects that are within the study area and would affect the study area. Projects outside the study area currently being developed shall also be considered. Every project(s) and the cumulative effect shall be listed in the TIS and include location, size and proposed land use.

E. Project Traffic Assessment

The traffic impacts of the project shall be determined based upon the process described below.

1. Trip Generation

   The trip generation shall be determined for total build-out conditions and for any development phases. A summary table listing each type of land use, the number and characteristics of the units involved, the generation rates used, daily and AM/PM peaks, number and direction of average daily trips and peak hour trips, and the resultant trip generation shall be included.

   Trip generation shall be calculated from the latest data available from ITE. In the event data is not available from ITE for the proposed land use, the transportation engineer shall propose a rate of similar land use from ITE or independent study to be considered for approval by Mesa County.

   Total trip generation of the proposed project shall be factored to determine the number of new trips (accounts for internal site trips, pass-by trips, or other site/project specific characteristics of the proposed project). Mesa County must approve the use of trip reduction factors. In most cases, the TIS shall conform to guidelines set forth in documents such as the ITE Trip Generation Manual, ITE Trip Generation Handbook or NCHRP Report 684. The adjusted trip generation for the proposed project shall be provided in tabular form or illustrated on figures.

2. Trip Distribution

   The trip distribution for the proposed project shall be identified in the TIS. The distribution pattern shall be based upon:

   a. the project's location within the urban area,

   b. the traffic model maintained by the MPO,

   c. existing traffic volume data,

d. project marketing data, and

e. engineering judgment.

A figure showing the percentage of site traffic on each road shall be provided as part of the traffic study graphic material.

3. Trip Assignment

The project traffic shall be assigned to the roadway system according to the established trip distribution.

Mesa County shall approve the assignment percentages used in the analysis. Internal trips shall not exceed ten percent of total trips. Non-generated pass-by traffic reductions in generation volumes must be approved by Mesa County, if applicable.

The resulting project site generated traffic shall be depicted on figures for build-out conditions and any project phases. Specifically, daily and peak hour traffic volume information shall be included.

4. Transit / Mode Split

The study shall include an outline of transportation demand management (TDM) strategies to mitigate traffic impacts created by proposed development and implementable measures for promoting alternate modes of travel, including but not limited to the following:

a. Site Design: Incorporate design features that facilitate walking, biking, and use of transit services to access a proposed development, including features such as transit shelters and benches, site amenities, bike racks, site design layouts to increase convenience of alternate modes and reduce multiple trips to and from the site, and direct connections to existing offsite pedestrian, bicycle, and transit systems.

b. Programs and Education: Incorporate alternate modes programs, such as providing transit passes to employees and residents, van pooling to the site by a major employer, ride-sharing, parking pricing, and planned delivery services, and educational measures such, as promoting telecommuting, distributing transit schedules and trails maps, and providing an onsite transportation coordinator or plan to educate and assist residents, employees, and customers in using alternate modes.

F. Access Plan and Design and Traffic Progression and Circulation

Traffic progression is of paramount importance and should be considered in the location of all potential signalized intersections. The site design shall ensure existing adjacent facilities are maintained and not impaired by new development.

The project site plan shall be evaluated to determine if the proposed design and traffic circulation serves pedestrians, bicyclists, and vehicles in a safe and efficient manner. All required improvements, including roadway widening, channelization, signalized intersections shall be identified. The site design and facilities shall comply with Mesa County codes, policies, standards, and planning documents.

The project shall be evaluated to determine that traffic circulation paths are properly designed. Proper design shall minimize areas where motorists would tend to speed, minimize potential conflict areas between vehicles and pedestrians/bicyclists, and establish circulation patterns that avoid unnecessary traffic congestion, cut-through traffic and conflict points. The site design shall provide adequate throat lengths for on-site vehicle queuing at access points. At signalized driveways, the HCM "95th percentile lane queue" model shall determine the necessary vehicle storage.

G. Conclusions & Recommendations

The recommendations shall include the Engineer's recommended location, nature and extent of proposed transportation improvements associated with the project or development to ensure safe and efficient roadway operations and capacity, and compatibility with the County's transportation system and the goals of the RTP.

These recommendations are to be supported with appropriate documentation and discussion of the technical analyses, assumptions and evaluations used to make the determinations and findings applied in the Traffic Study. If any Traffic Study analyses, or recommendations indicate unsatisfactory levels of service at any study area intersections, a further description of proposed improvements or mitigation measures to remedy deficiencies shall be included.

These proposed improvements or mitigation measures may include projects by the County, RTPO, or other entities for which funds have been appropriated and obligated. These proposals may also include improvements to be funded and constructed by the applicant as part of project or development construction. Assumptions regarding future roads, widths and lane usages in any analyses are subject to the approval of Mesa County Engineering.

In general, the recommendation section shall include:

1. Proposed and Recommended Improvements: Provide a detailed description and sketch of all proposed and recommended improvements. Include basic design details showing the length, width and other pertinent geometric features of any proposed improvements. Discuss whether these improvements are necessary because of development traffic or whether they would be necessary due to background traffic. Specify the approximate timing necessary for each improvement.
2. Level of Service Analysis at Critical Points: Provide another iteration of the LOS analyses that demonstrates the anticipated results of making recommended improvements, such as movement LOS, operational and safety conditions and conformance with the County's transportation system goals and the RTP. In association with LOS analyses for recommended improvements, include a comparison of these results with the background LOS analyses without the proposed project or development. Where appropriate, this step is to be provided for both near term (year of project completion) and buildout scenarios.
3. Assessment of Site Access: Provide a detailed assessment of the site access point(s) at the intersection of the public road and along all proposed facilities to demonstrate adequate sight distance and accessibility requirements are provided for vehicles, bicyclists and pedestrians using the driveway and sidewalk facilities. Sight distance requirements are defined in MCDS Chapter 6: Road Design Standards.

Conclusions: Include a conclusion in the report that provides a clear and concise description of the study findings and recommendations and serves as an executive summary.

H. Traffic Study Figures & Tables

This section contains a description of some of the figures requested in the Traffic Study. See Appendices 4.2 and 4.3 for the checklists of specific figures for each Traffic Study.

1. Site Map

   A site map that shows the location within the site of each land use.

2. Access Plan

   The proposed access plan shall describe all proposed vehicular access locations, dimensions, movements and phasing. The plan should also include shows all existing and proposed road facilities, peripheral streets and features which may affect the project design.

3. Traffic Volume Map

   A traffic volume map that shows the most up-to-date Baseline, Background and Total traffic volumes, both daily and design hour, on the existing and proposed road system.

4. Trip generation

   A summary table of trip generation and adjusted trip generation (if applicable)

   The table is to include each type of land use, the number and characteristics of the units involved, the generation rates used, daily and AM/PM peaks, number and direction of average daily trips and peak hour trips, and the resultant trip generation.

5. Trip distribution

   A figure showing the percentage of site traffic on each road shall be provided as part of the traffic study graphic material.

6. Design Hour Capacity and Level of Service

   Tables and/or figures for Design Hour Capacity and LOS Determination for Baseline, Background, and Total Traffic conditions.

CHAPTER 5: STANDARDS FOR ACCESS

SECTION 5.01 | APPLICABILITY

This chapter describes general provisions, location, spacing, and design standards for accesses as defined below.

SECTION 5.02 | PURPOSE

These access requirements provide a framework to achieve proper access management. The goals of proper access management are to:

A. Reduce the number of vehicle and pedestrian conflict points, reducing both the number and severity of vehicle collisions.

B. Safely and adequately accommodate the type and volume of traffic, including emergency and firefighting equipment and vehicles, that currently uses the access, plus any increase in traffic that may be added by the permitted use.

C. Preserve the intended capacity and functional level of roadways.

D. Ensure that the owner of a lot has a lawfully established right of vehicular ingress and egress to that lot.

SECTION 5.03 | ROLES AND RESPONSIBILITIES

A. Mesa County Engineering

Mesa County Engineering shall determine the number, location, and surface treatment of all accesses consistent with the intent of these Standards.

B. Mesa County Planning, a Division within the Mesa County Community Development Department

Mesa County Planning is responsible for review and processing of land development applications for compliance. Prior to a land use application being submitted to Planning, proposed access points to the property will be reviewed by Mesa County Engineering.

C. City of Grand Junction

Within the City of Grand Junction Urban Development Boundary, the access standards detailed in the Grand Junction Transportation Engineering Design Standards (TEDS) will apply. The boundaries of the Rural Communities are as shown on the Mesa County Future Land Use map, also in the Mesa County online GIS Database, https://gis.mesacounty.us/.

D. Colorado Department of Transportation (CDOT)

CDOT has authority over any access requested to a state highway. Such accesses must adhere to the CDOT Design Standards and go through the CDOT permitting process.

SECTION 5.04 | DEFINITIONS

A. Access or Access Point

A physical traveled way connection point to a roadway. Examples of an access include driveways, field accesses, and service roads. Access is also used to describe the location of a proposed public or private road which will be created as part of a subdivision or development. The latter case is to be designed as a road with an intersection as per MCDS Chapter 6: Road Design Standards.

B. Direct Access

A physical traveled way that connects a public County road to the adjacent property.

C. Indirect Access

A physical traveled way connecting a public County road to the adjacent property via another property, generally on an easement.

D. Intersection

A type of access involving any public road connection to an existing public road. Refer to MCDS Chapter 6: Road Design Standards for design standards for intersections.

E. Driveway

An access from any land use such as a residential, commercial, or industrial property that connects to the public road system.

F. Single Driveway

Driveway serving one residential lot.

G. Common Driveway

Driveway serving two residential lots.

H. Looped driveway

A one-way single or common driveway with separate one-way ingress and egress lanes serving one or two lots. A looped driveway shall be considered one access point if the conditions outlined in MCDS Section 5.10.D.1 are met.

I. Shared Driveway

A driveway serving two to six lots.

J. Loop Lane

A two-way shared driveway serving two to six lots with two access points to the public roadway.

K. Non-residential Access

An access to the public road system that connects to a commercial, industrial, or any other non-residential property.

L. Driveway Turn-Around

The area at the end of a driveway with enough space for the design vehicle (such as a passenger car or fire truck) to completely turn around. Refer to MCDS Section 5.10.K and MCDS Appendix 6.2 for design of turnarounds.

M. Driveway Pull-Out

A widened section of the driveway with adequate width and length for two design vehicles going in opposite directions to safely pass. Refer to MCDS Section 5.10.K and MCDS Appendix 6.2 for design of pull-outs.

SECTION 5.05 | REQUIRED PERMITS

A. Access Permit

All new access points shall be constructed in accordance with an Access Permit issued by Mesa County. See MCDS Chapter 3: Permits for Access Permit requirements.

B. Surface Alteration Permit

A Surface Alteration permit is required for any improvements within public right-of-way. See MCDS Chapter 3: Permits for permit requirements.

C. CDOT permits

If accessing a state highway, CDOT permits are required. CDOT permits include Access Permit, Special Use Permits, and Utility Permits. Refer to the appropriate CDOT references for more information.

SECTION 5.06 | DESIGN VEHICLES

All accesses shall be designed to safely accommodate the turning characteristics of the largest vehicle that will typically utilize the proposed access. It is the responsibility of the Applicant to demonstrate that the access accommodates the vehicles expected to use the site.

A. Emergency Vehicles

All accesses shall be designed to accommodate emergency and fire department vehicles. Access design must follow the most current version of the International Fire Code (IFC) and local fire district criteria. Refer to MCDS Section 5.10.K and MCDS Appendix 6.2 for design guidelines of adequate turnarounds and pull-outs for emergency vehicles that comply with the IFC. For additional required fire protection design information, refer to the Mesa County Land Development Code (MC LDC) Section 8.10.

SECTION 5.07 | ACCESS REQUIREMENTS FOR LOTS

Access requirements vary based on the type of road it is connecting to public, private, or unimproved roads in public right-of-way. The following sections describe the conditions that must be met for an access to a lot to be accepted by the County.

A. Access to Public Roads

All lots are permitted direct or indirect access to a public right-of-way. If indirect access is proposed, then access easements shall be identified. Easements shall provide enough width for fire access, utility installation and drainage improvements.

B. Access to Private Roads

For private roads, the lot shall have the legal right, either prescriptive or by recorded easement, for access across private lands. Private roads are allowed in Mesa County if they are constructed per MCDS Chapter 6: Road Design Standards for structure and section per the appropriate functional classification. A maintenance waiver signed by the lot owner acknowledging that the County does not maintain the private road, access, or driveway is required. This will be recorded by the County.

C. Access to a Prescriptive Public Road not Maintained by a Public Agency

Roads that have been found by the Board of County Commissioners to be public roads in accordance with state statute, but which are not maintained by a public agency, are shown as not County maintained on the Mesa County Road Map. If not shown, a public road shall meet the state statutes for public roads and shall be declared a public road by resolution of the Board of County Commissioners. The access requirements for such roads shall be the same as those for a dedicated public road (non-prescriptive) not maintained by a public agency in MCDS Section 5.07.D.

D. Access to a Public Road not Maintained by a Public Agency

If a property abuts a public right-of-way which is presently not maintained by a public agency, the public right-of-way may be used as access to a maintained County road. The right-of-way will be subject to a level of improvement in accordance with this Chapter and subject to approval by Mesa County Engineering as part of the Access Permit process.

The access within the right-of-way can either be constructed to roadway or driveway (access) standards. Use of the right-of-way for access purposes shall not preclude future public use of the right-of-way. If the existing right-of-way width is less than 20 ft, an access or roadway will not be allowed without specific approval of Mesa County Engineering. Design criteria for all other right-of-way widths are outlined below:

1. If the access is to be constructed to roadway standards, it shall be constructed according to MCDS Chapter 6: Road Design Standards. The improved roadway shall be petitioned and adopted for maintenance by the County.
2. If the access is to be constructed as a driveway, it shall be constructed according to shared driveway standards in this Chapter. The improved access shall remain the responsibility of the property owner to maintain up to its connection with a maintained County Road. A maintenance waiver shall be signed by the lot owner and recorded by the County acknowledging that the County does not maintain the access. The county retains the right to alter the right-of-way as future needs dictate.

SECTION 5.08 | GENERAL PROVISIONS OF ACCESS

The following provisions shall be used to locate, and design proposed accesses. The final location will be subject to Mesa County Engineering review and approval as part of the Access Permit process.

A. Level of Access Design

If an access requires a Traffic Impact Study according to the criteria set out in MCDS Chapter 4: Traffic Studies, the access shall be designed based on the standards for intersections and channelization in MCDS Chapter 6: Road Design Standards. If not, the access design standards outlined in this Chapter shall be followed.

B. Priority of Access

If a property has frontage on more than one street, access will be permitted only on those street frontages where design and safety standards can be met. The primary access shall be on the street with the lowest functional classification.

C. Number of Access Points

The number and location of access points may be influenced by topographic, geologic, or infrastructure constraints. One access point per property ownership will be permitted, unless an approved site plan or Traffic Impact Study shows that additional access points are required to adequately handle driveway volumes and that the additional access points will not be detrimental to safety and traffic flow on adjacent public streets. The Applicant must establish that an additional access is justified.

D. Existing Access Points

Existing access shall not be modified without an Access Permit per MCDS Chapter 3: Permits. Examples of modifications include, but are not limited to relocation, alteration, or reconstruction.

All existing accesses (including field access) connecting to a property proposed for redevelopment or subdivision shall be considered closed unless applied for as a part of the approval process.

E. Temporary Access

Temporary access may be granted to accommodate phased development of a site, or for special events. Temporary accesses are subject to removal, relocation, redesign or reconstruction after an approved permanent access is constructed. Temporary access shall conform to the standards in this Chapter.

Existing access points serving portions of the parent tract may be allowed to remain until future subdivision or development of the specific lot in question. If allowed to remain, these access points must be recorded as "Temporary Access Points to be removed upon future subdivision or development."

F. Use of Access

It is the responsibility of the property owner to ensure that the use of the access to the property is not in violation of these Standards or the Access Permit terms and conditions. The terms and conditions of the Access Permit are binding upon all assigns, successors-in-interest, and heirs.

G. Non-conforming Accesses

Mesa County reserves the right to change the type and location of access points to bring non-conforming access into compliance or to remedy unsafe or inefficient conditions.

H. Legal Non-Conforming Access

Any access constructed before June 2006 that does not meet current standards will be considered legal non-conforming access. These accesses shall be brought into compliance with current standards when the property owner applies for a Preliminary Access Location and Access Permit.

I. Illegal Access

If any access is constructed to a Mesa County Road that does not have a valid Access Permit, Mesa County will send written notice to the property owner notifying of the illegal access location. The owner will have ten (10) days to notify Mesa County Engineering of pending actions or remedies. Mesa County Engineering will determine if remedies are acceptable.

1. If the remedies are acceptable, the property may apply for a Preliminary Access Location and Access Permit.
2. If remedies are not acceptable, the property owner shall remove the access and restore Mesa County right-of-way.

If in the opinion of Mesa County, the health, safety, and welfare of the public is endangered, Mesa County may act immediately and without notice to eliminate the safety hazards, including closing the access.

J. Restricted Accesses

In order to provide safe and efficient vehicular operation at the access and along the connecting roadway, some vehicle movements may need to be restricted. The need for a restricted access will be identified through coordination with Mesa County Engineering, or by a Traffic Study if required per MCDS Chapter 4: Traffic Studies.

K. Conformance of Subdivisions

In a subdivision in which internal roads are constructed, all newly created subdivision lots must access those internal roads and shall not access directly onto the existing County road system. This shall be noted on the subdivision site plan map.

SECTION 5.09 | ACCESS SPACING PROVISIONS

A. Proximity to Property Lines

Accesses shall be located at least 5 feet from the side property line to allow for maneuvering and maintenance to occur without trespass on adjacent property. In the case of flared driveways, the flared portion adjacent to the traveled way shall not encroach upon adjoining property.

B. Access Visibility Triangle and Sight Distance

Accesses shall be located to ensure that adequate sight distance is achieved. Items such as utility poles, electric boxes, and signs must not interfere with the ability to safely exit the access. Refer to Requirements in the MC Land Development Code Section 8.19 and Sight Distance standards in MCDS Section 6.04.

C. Adjacent accesses

Spacing is measured between access points only on the side of the road where new access is proposed. Agricultural, irrigation, and drainage accesses are not counted when measuring spacing between access points.

D. Opposite accesses

It is desirable for access driveways and intersections to be aligned when on the opposite side of the road. If accesses are not aligned, the accesses should be offset a minimum distance equal to 50% of the required access spacing, unless a design exception is approved.

E. Looped Access Spacing

The spacing of a looped access in relation to other access points shall be measured from the center point between the two access lanes.

F. Access Spacing in Urban Development Boundaries

Within an Urban Development Boundary (UDB) (such as the City of Fruita or Grand Junction), the access spacing requirements of the community's design standards shall apply.

G. Access Spacing in the Mesa County Rural Communities

Within a rural community, the access spacing requirements of that community's development plan shall apply. In the absence of specific guidance, the City of Grand Junction's Traffic Engineering Design Standards (TEDS) shall be followed.

H. Access Spacing on all other Mesa County Roads

For roadways not classified on the Grand Valley Circulation Plan (GVCP) or within the Mesa County Rural Communities, Mesa County requires that access be spaced based on the design speed of the roadway per Exhibit 5.1. Exceptions to spacing standards may be approved by Mesa County Engineering according to the Design Exception process in MCDS Appendix 1.1.

I. Access Spacing Standards by Design Speed

1. Design Speed

   Mesa County reserves the right to utilize the 85th percentile speed to restrict access spacing. In this case, Mesa County will provide the 85th percentile speed to the applicant if data is available for use in determining the access point. If this data is not available, the design speed shall be 10 mph over the posted speed limit.

2. Access Spacing: Design Speeds over 25 mph

   For existing roads with design speeds greater than 25 mph, access spacing is determined by Exhibit 5.1.

Exhibit 5.1 Access Spacing Standards Over 25 mph Design Speed

Design Speed (mph)	Minimum Distance Between Access Points (feet)
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

3. Access Spacing: Design Speeds of 25 mph or less

   On roads with design speeds of 25 mph or less, spacing between accesses is restricted according to the following conditions:

   a. The edge of the proposed access must be a minimum of five (5) feet from adjacent property lines, and

   b. The edge of the proposed access must be a minimum of 100 feet from the edge of the traveled way of a non-local road intersection.

SECTION 5.10 | ACCESS DESIGN STANDARDS

These are minimum requirements. Final design requirements will be determined by Mesa County Engineering during the access design and permit process.

Exhibit 5.2 gives an outline of the minimum requirements for access design.

Exhibit 5.2 Access Design Criteria

Reference Section	5.04	5.10.C	5.10.D	5.10.E	5.10.F	5.10.G	5.10.H
Access Type	**Definition**	**Angle**	**Width**	**Radii**	**Max Grade**	**Throat Length**	**Surface**
Single or Common Driveway	1 - 2 lots	90 deg preferred	min 12', max 33'	min 10'	10%	must be enough for use	all-weather surface, support fire truck
Looped driveway	1 - 2 lots	90 deg preferred	min 12', max 33'; 30' min between inside edges of lanes	min 10'	10%	must be enough for use	all-weather surface, support fire truck
Shared Driveway	2 - 6 lots MCDS Section 5.11	90 deg preferred	min 20', max 33'	Min 20'	10%	must be enough for use	all-weather surface, support fire truck
Loop Lane	2 - 6 lots MCDS Section 5.11	90 deg preferred	min 20', max 33' 30' min between inside edges of lanes	min 20'	10%	must be enough for use	all weather surface, support fire truck
Over 150' Long	All the above over 150' Long	90 deg preferred	Min 20'	min 20'	10%	must be enough for use	all-weather surface, support fire truck
Non-residential	Comm, Industrial, other	90 deg preferred	Min 24', per Intersection Design MCDS Chapter 6 and IFC	min 25' max 50'	8%	min 40'	all-weather surface, support fire truck

IFC = International Fire Code (latest edition)

A. Cross Section Geometry

Cross section geometries of the proposed access within the right-of-way will follow the standards of the designated functional classification of the existing road, not the existing condition. These are described in MCDS Chapter 6: Road Design Standards.

B. Accesses to Collector or Arterial Roads

All accesses to Collector or Arterial roads shall have a minimum width of twenty (20) feet that is maintained for a minimum distance of twenty-five (25) feet from the edge of the existing road, after which it may taper to a narrower width, the minimum to be determined by the type of access. A detail for accesses to Collector or Arterial roads is provided in MCDS Appendix 6.2 Sheet M02.

C. Access Angle

The horizontal axis of an approach to a roadway shall be ninety (90) degrees to the centerline of the existing roadway and extend a minimum of forty (40) feet from the edge of the roadway or from the right-of-way, whichever is greater. For accesses on horizontal curves the road centerline for the new access shall be radial to the centerline of the County Road. An angle between ninety (90) and seventy-five (75) degrees may be acceptable if approved by Mesa County Engineering.

D. Access Width

The access width is measured at the edge of the existing road and does not include the access radii.

1. Single and Common Driveways

   Single and Common driveways shall be a minimum width of twelve (12) feet to a maximum width of thirty-three (33) feet. A common driveway shall be located in an access easement at least sixteen (16) feet wide.

   A looped single or common driveway shall be a minimum width of thirty (30) feet between inside edges of the traveled lanes at the edge of the existing road and shall have separate one-way ingress and egress lanes.

2. Shared Access

   A shared access shall be a minimum width of twenty (20) feet to a maximum width of thirty-three (33) feet between edges of the traveled way. A shared driveway shall be located in an access easement at least twenty-four (24) feet wide.

   A loop lane access (type of shared driveway) shall be a minimum width of fifty-six (56) feet between inside edges of the access easement at the edge of the existing road. A loop lane detail is provided in MCDS Appendix 6.2 Sheet M03. Additional requirements specific to shared accesses and loop lanes are included in MCDS Section 5.11 below.

3. Driveways over 150 feet long

   Driveways over 150 feet long shall have a minimum width of twenty (20) feet per the IFC. Additional requirements for long driveways are in MCDS Sections 5.10.J and 5.10.K.

4. Non-residential Access

   Non-residential accesses shall have a minimum width of twenty-four feet (24'). Additional access width and lane requirements may be necessary and shall be determined by intersection design per MCDS Chapter 6: Road Design Standards that considers the findings of a traffic study (MCDS Chapter 4: Traffic Studies), design vehicles, land-use of the property, and any other relevant factors.

E. Access Radii at the Existing Road

1. If an access is installed without a curb cut/driveway ramp, the minimum curb radius shall be twenty (20) feet unless noted in conditions below.
2. Single and Common driveways shall have a minimum curb radius of ten feet (10').
3. Non-residential

   Accesses for industrial or commercial land uses shall be individually designed to meet the needs of the design vehicles identified for the project. The minimum curb radius shall be twenty-five feet (25') for non-residential accesses. The maximum permissible radius is fifty feet (50') feet. Number and width of lanes and other design criteria shall be determined using intersection design in MCDS Chapter 6: Road Design Standards.

F. Grades and Slopes

1. Field access

   Field access shall be limited to maximum grade of ten percent (10%). Transition from the roadway cross slope to the access slope shall prevent the center or overhang drag of a vehicle. Steeper grades outside of the right-of-way are permissible.

2. Transitions from road

   For accesses that do not have a curb cut, the access shall slope down and away at two percent (2%) grade for twenty feet (20') measured from the edge of the traveled way.

   For accesses that have a curb cut, or access to a road where roadway drainage is carried within the road section, the access must be constructed so that roadway drainage will not drain from the roadway onto private property. The access must meet the top of curb elevation without a depressed section.

   All approved designs must prevent driveway runoff from flowing onto the County roadway. A Grading and Drainage Plan showing adequate drainage control and existing and proposed contours must be submitted.

3. Horizontal or vertical curves

   Curves within the right-of-way must start after the above 20-foot transition area, and must not interfere with the future use, widening, reconstruction, or realignment of the road within the right-of-way.

4. Residential accesses

   Shall be limited to maximum grade of ten percent (10%).

5. All other accesses

   Shall be limited to a maximum grade of eight percent (8%) unless the applicant demonstrates that steeper grades are required due to topographic constraints.

6. Exceptions

   Exceptions may be allowed due to steep topography or superelevations upon review and approval by Mesa County Engineering. Follow the design exception process outlined in MCDS Appendix 1.1.

7. Turnaround grades

   Turnarounds for driveways over 150 ft long shall have less than 4% grade.

G. Throat Lengths and Vehicle Storage

For all accesses, adequate vehicle storage capacity shall be provided for both inbound and outbound vehicles. Inbound vehicle storage areas shall provide enough space to ensure that vehicles will not obstruct the adjacent road, sidewalk, or circulation within the facility. Outbound vehicle storage areas shall provide enough space and number of lanes for adequate storage of outbound vehicles without them interfering with on-site circulation.

The minimum throat length of all non-residential accesses shall be forty (40) feet. Conflicts with parking spaces or internal drive aisles are not permitted in this length. Additional throat length may be required depending on the type of vehicles typically using the access, the speed of vehicles approaching the access, and expected traffic volumes generated by the access use.

At signalized intersections adequate storage for the outbound movement must be provided to enable vehicles to exit efficiently on the green portion of a traffic signal cycle.

1. Gated Access Points

   An access approach that has a gate across it shall be designed so that the longest vehicle using it can completely clear the traveled way and/or roadside pedestrian features when the gate is closed. The gate must open swinging away from the County road.

H. Access Surfacing

Within the UDB all accesses shall be paved. Within the UDB where curb and gutter are not present, all accesses shall be surfaced within the right-of-way using the same materials and thicknesses of the existing road, up to a maximum of twenty-five feet (25') from the edge of the existing roadway. Outside of the UDB, accesses and driveways may be surfaced with gravel. If the connecting County road outside of the UDB is re-surfaced, it is not the responsibility of Mesa County to pave the surface between the edge of the traveled way of the County road and the driveway.

Access surfacing requirements are provided in Exhibit 5.3. All accesses within the right-of-way, regardless of surface material, shall be designed by a Professional Engineer (PE) licensed in the State of Colorado. Accesses to be dedicated as roads shall be designed per MCDS Chapter 8: Surfacing Structural Design.

Specific requirements for driveways on private property outside of the right-of-way are listed below:

1. Single and Common Driveway Design

   A single and common driveway does not require a PE design; however, gravel surfaces shall consist of a minimum of 6 inches aggregate base course on top of a minimum 6 inches depth of reconditioned subgrade, or otherwise as specified by the Geotechnical analysis. Minimum pavement thicknesses shall be approved by Mesa County.

2. Shared Driveway Design

   Shared driveways, regardless of surface material, shall be designed by a PE.

Exhibit 5.3 Minimum Access Structural Sections*

Access Surface Material	Pavement (inches)	Aggregate Base Course (inches)	Aggregate Subbase (inches)
Concrete access within right-of-way	6	6	-
CDOT HMA Grade SX access within right-of-way	3	6	-
Gravel access within right-of-way	-	6	12
Gravel Driveway**	-	6	-

* Section dimensions are minimums. Thicker sections may be required to meet the requirements of the Mesa County Standard Construction Specifications, the International Fire Code, or other applicable codes or regulations.

** Gravel driveways shall consist of a minimum of 6 inches aggregate base course on top of a minimum 6 inches depth of reconditioned subgrade, or otherwise as specified by the Geotechnical analysis.

I. Drainage

The roadway drainage system is for the protection of the Mesa County road right-of-way. It is not designed or intended to serve the drainage requirements of abutting properties beyond the levels that historically flowed to the County road right-of-way. Drainage to the County road right-of-way shall not exceed the undeveloped historical flow.

For design standards of drainage structures, refer to the Mesa County Stormwater Management Manual (SWMM) and MCDS Chapter 10: Bridges and Drainage Structures.

The access shall not cause water to enter the roadway or interfere with the existing drainage system in the right-of-way. Access design shall follow the grade standards described in this Chapter.

The access owner shall provide and maintain, at their own expense, drainage structures for their access, which will become an integral part of the existing drainage system. Drainage structures shall not restrict the existing drainage system and shall be in conformance with any adopted drainage plan. The type, design, and condition of these structures must meet the requirements of the standards in MCDS Chapter 10: Bridges and Drainage Structures.

Nothing shall be placed within the roadside drainage areas that would significantly block or hinder drainage in the ditches including, but not limited to mailboxes, bushes, railroad ties, berms, cobblestone, or other landscaping items (including ramps placed in concrete gutters). This does not apply to naturally occurring items not placed by the owner or previous owners such as existing bushes, ridges, rock outcroppings, etc. Any items blocking or hindering drainage may be removed by Mesa County at the landowner's expense with notice unless safety or health is threatened, in which case immediate action may be taken.

J. Design Standards for Driveways over 150 feet long

For driveways over 150 ft long, the IFC requires an unobstructed width of 20 ft, vertical clearance of 13 ft 6 in, grades less than 10%, an all-weather driving surface that can support the imposed loads of fire apparatus, and a turn-around area in compliance with Appendix D of the IFC. Pull-outs may be required along the driveway at spacing intervals determined by the local fire protection district. Fire Apparatus Access Details that comply with the IFC are included in the Mesa County Standard Details, MCDS Appendix 6.2.

Local fire departments or fire protection districts may allow variations from the IFC. Coordinate with the local fire department or fire protection district during the design process and follow their requirements for driveway width and pull-out spacing for the driveway design. They are the final authority for the design of driveways over 150 ft long.

K. Design Standards for Pull-outs and Turnarounds

Pull-outs shall be a minimum 35 ft long, a minimum total width of 40 ft (edge of road surface to edge of road surface, including the proposed driveway width), with 20 ft tapered transitions on each end. Design details for pull-outs and several turn-around layouts are provided in the Fire Apparatus Access Details in MCDS Appendix 6.2. Pull-outs and turn-arounds shall meet the grade, radii, angle, and surfacing requirements of MCDS Section 5.10.

SECTION 5.11 | SHARED ACCESSES

The purpose of shared driveways is to minimize access points, thus increasing the safety and efficiency of public streets and roads. Shared accesses are preferred wherever possible. Shared driveways are allowed provided that consideration of Public Right-of-way Dedication requirements in Section 8.17 does not require a public right-of-way to be dedicated and/or a public road to be built by the developer.

A. Shared Driveway

The shared driveway is designed to provide access to lots where a full public street is not practical or economical. Shared driveways shall comply with the above design standards for location, width, radii, grades, and surfacing. The following requirements shall also apply:

1. Engineering Design Requirement

   Shared driveways shall be designed by a licensed Professional Engineer (PE) in the State of Colorado.

2. Maximum Number of Lots

   Not more than six (6) single-family lots may access a shared driveway.

3. Parking

   Each residence shall provide and maintain four (4) off-street parking spaces. A maximum of two (2) tandem spaces per dwelling unit is allowed.

4. Easements

   Multi-purpose easements shall be dedicated contiguous to the shared driveway for utility service lines. Alternative provisions for utilities must be approved by the utility providers.

5. Maintenance of shared driveways

   A shared driveway shall be owned and maintained by the owners of the lots that are served by the shared driveway. The shared driveway shall be contained within a tract or an easement dedicated to the property owners of the lots that are served by the shared driveway. A maintenance waiver signed by the lot owners acknowledging that the County does not maintain the shared driveway is required. This will be recorded by the County.

B. Loop Lane

The loop lane is a type of shared driveway. All above design standards for shared driveways shall apply to loop lanes, as well as the following requirements. A diagram of the loop lane layout is shown in MCDS Standard Detail M03 in MCDS Appendix 6.2.

1. Total width

   The loop lane and the common area surrounded by the loop lane shall be at least one hundred and four (104) feet wide at outside edges of the tract or easement and shall be labeled as an outlot.

2. Minimum length of abutting driveways

   Individual driveways leading from the loop lane to each home shall be at least twenty-five (25) feet long, as measured between the front of the garage or carport and the closest edge of the loop lane.

3. Turning Requirements

   The design of the loop lane shall permit a passenger vehicle to back out of an individual driveway and turn 90 degrees in either direction. The AASHTO turning template for a "P" design vehicle shall be used to confirm that this standard is met.

4. Parking

   In addition to the off-street parking spaces described in MCDS Section 5.11.A.3, four (4) guest-parking spaces, located in the public right-of-way, are required at the end of the loop.

CHAPTER 6: ROAD DESIGN STANDARDS

SECTION 6.01 | GENERAL

A. Purpose

This Chapter describes design standards for the development of new roads and the modification of existing roads and applies to both public and private roads within the County's jurisdiction. General information pertinent to all cases is provided as well as design standards specific to either new or existing roadways. It is made clear where standards for new and existing roads differ.

B. Goals

The goal of these road design standards is to provide the road designer with guidance for common situations without needing to reference other design manuals. This Chapter offers County-level design criteria but closely follows CDOT and AASHTO guidance, most commonly the CDOT *Roadway Design Guide*, and AASHTO's *A Policy on Geometric Design of Highways and Streets* (PGDHS or "Green Book"), latest editions. All exhibits herein are quoted with their specific references. Should one of those references be updated with different design criteria, the more contemporary update shall govern.

C. Definition of Minimum Standards

The standards described herein generally represent minimum values. The word "minimum" implies the lowest acceptable limit in design.

D. Departure from Standards and Innovation in Design

Design standards are flexible. Higher standards may be used if maintenance and operational costs are not increased, and safety is not compromised. If an alternate design or material or procedure can be shown to provide performance equal to or better than the required design, material, or procedure, said alternate may be approved by Mesa County Engineering. Alternative design from recognized sources may be approved by Mesa County Engineering in accordance with the Design Exception procedure per Chapter 1 of these Standards. Approval from Mesa County Engineering shall be provided in writing before the alternate design, material, or procedure can be put into effect.

SECTION 6.02 | APPLICABILITY

A. Roads and Multimodal Accommodations

All roads and multimodal pedestrian/bicycle paths shall be designed as shown in any adopted Transportation or Circulation Plan, the current Functional Classification map, and per the requirements of this Code. All public roads shall be constructed in conformance with this Code.

B. Planned Unit Development (PUD) Road Sections

Proposed PUD road sections that differ from the standard County road sections shall be approved by both the Mesa County Community Development Director and the Engineering Manager before being presented to the Mesa County Planning Commission in a public hearing.

C. Private Roads

Private roads are allowed in Mesa County if they are constructed to meet the requirements of this Design Standard and are proposed in accordance with the requirements in the Land Development Code. A maintenance waiver signed by the lot owner acknowledging that the County does not maintain the private road is required. This will be recorded by the County.

SECTION 6.03 | ROADWAY DESIGN FACTORS

The following general road classification and design parameters need to be considered when designing road infrastructure additions or improvements. Specific design guidelines based on road classification are given in the following sections.

A. Road Functional Classification

Functional Classification is the process by which roads are grouped into classes according to the character of the traffic service that they are intended to provide. There are three general functional

classifications: arterial, collector, and local roads. Each of these classifications has sub-classifications with specific design requirements and typical cross-sections.

The Mesa County Functional Classification Map and adopted Circulation Plans present the existing and future functional classification of all County roads. Reference information for the most current Mesa County Functional Classification Map is provided in MCDS Appendix 6.1. Communities within Mesa County have authority to designate functional classification within their community, and design within those communities should be in accordance with the communities' functional classification maps.

Definitions of each classification are presented below, details of each cross-section are presented in MCDS Section 6.07, and drawings are presented in MCDS Appendix 6.2: Mesa County Standard Details.

Functional Classifications include:

- Local (Urban/Rural)
- Minor Collector (Urban)
- Major Collector (Urban/Rural)
- Arterial
- Arterial Highway

When not specified on the Road Classification Map, a functional classification shall be selected by Mesa County Engineering in accordance with the regional transportation needs and the functional use that the road serves. Function is the controlling element for classification and shall govern right-of-way width, road width, and road geometrics for the design classifications. Mesa County Engineering reserves the right to amend the classification of a road to accommodate increased traffic due to development. New roads will be classified by Mesa County Engineering.

1. Local

   Local roads provide access to individual residential units or rural properties. Parking is usually permitted on the road, with the majority and highest density of accesses being located on local roads.

   On new development, Urban Local function is designated for roads with building densities greater than 1 unit/ acre or which meet the requirements of Section 7.03 D. Rural Local roads are permitted for developments with building densities of less than 1 unit/acre.

2. Minor Collectors

   Minor collectors are roads which provide access to neighborhood cores and distribute vehicles to the major road system. They can aid in traffic circulation but see less traffic than major collectors. Minor collectors typically permit on-road parking and do not have a center turn lane. They have unique cross-sections which serve residential, commercial, and industrial areas. Minor collectors typically have a high number of accesses to properties.

3. Major Collectors

   Major Collectors in the County provide service for trips of moderate length, serve geographical areas that are smaller than their Arterial counterparts, and offer connectivity between the higher and lower classifications. In an urban setting, they may carry local bus routes and generally have a center turn lane. In a rural setting, major collectors carry high overall travel speeds and volumes to connect local roads to connecting arterials.

4. Arterial

   County Arterials augment the arterial highway system. They provide for mobility through the County and for connecting destinations within the County. Multiple urban arterials may serve the surrounding region, whereas a single arterial may serve a rural area of equal size. Arterials should be designed to provide relatively high travel speeds with minimum interference from through movements. The number of access points should be limited. The County has Minor and Major Arterials, depending on the specific needs for right-of-way width on individual roads.

5. Arterial Highways

   Arterial Highways provide for mobility through the County and connect the communities or activity centers. Although Arterial Highways provide access to commercial and residential properties where no other alternative is available, access is a secondary function.

   Arterial Highways within Mesa County are under the jurisdiction of the Colorado Department of Transportation (CDOT). Although CDOT criteria will govern the specifications for these arterial highways, County requirements for access and other criteria must also be considered.

B. Terrain Classification

The terrain in Mesa County is divided into two groups, as defined in Chapter 3 of AASHTO Green Book, Section 3.4.1, Terrain. This classification is used to define minimum design speeds and maximum grades on roads.

1. Level or Rolling Terrain

   The terrain has limited restriction to normal horizontal and vertical roadway alignment. Ridges and drainages are not well defined. The Grand Valley, De Beque, Plateau Creek, and other valley areas generally fall into this category.

2. Mountainous Terrain

   Longitudinal and transverse changes in the elevation of the ground are abrupt, and benching and sidehill excavation are frequently needed to obtain acceptable horizontal and vertical alignment of a road. Ridges and drainages are steep and well defined, and the average slope of the terrain greater than 15 percent.

C. Design Traffic Volume / Projected Traffic Volumes (ADT)

Roads should be designed for a specific traffic volume and a specified acceptable level of service. The average daily traffic (ADT, vehicles/day) for current and 20-year projections shall be used as a basis of design.

Obtaining adequate traffic count data and establishing an appropriate 20-year growth rate is the responsibility of the Applicant.

Mesa County Engineering archives traffic counts, which can be obtained by contacting them or searching Mesa County online GIS Database, https://gis.mesacounty.us/. This information may need to be supplemented by project-specific traffic counts or with the latest Trip Generation Report published by the Institute of Transportation Engineers. The applicant must contact Mesa County's Regional Transportation Planning Office (RTPO) to develop and confirm 20-year growth rates for the project area.

On development projects, a Preliminary Access Location review and Access Permit may be required. The process is described in MCDS Chapter 3: Permits. In addition, a traffic study may be required to assess the effect of the proposed project on the existing and future road system. Two levels of study are used to assess transportation effects. The first level is a Traffic Assessment (TA), and the second level is a more involved Traffic Impact Study (TIS). The criteria and requirements of each are described in Chapter 4: Traffic Studies.

D. Design Hour Volume / Average Peak Hour Volume (DHV)

Design Hourly Volume, (DHV), also known as average peak hour trips, is an evaluation of the amount of traffic seen on the busiest hour. The DHV of the roadway shall be defined by ITE Trip Generation Manual, current edition, or obtained from a traffic study or estimated from the ADT (DHV= ADT * K) using a K factor of 12%.

Design hourly volume (DHV) shall be considered for auxiliary lane evaluation. When applied to turning movements, it is the average peak hourly volumes for a 20-year projection.

E. Design Speed

Design speed shall be 10 miles per hour greater than the legally posted speed limit on existing roads.

On new roads, the design speed is influenced by the terrain classification, Functional Classification, volume, and economics. Acceptable ranges of minimum design speeds are as per the tables for each functional classification within the AASHTO Green Book. See AASHTO Green Book Chapter 5: Local Roads and Streets, Chapter 6: Collector Roads and Streets, and Chapter 7: Rural and Urban Arterials. The 85th percentile speed may also be used with approval from Mesa County Engineering.

F. Urban/Rural Classification

Roadways shall be classified as urban or rural on the functional classification map. In general, urban sections will be used on roads:

- Within urban development boundaries / 201 limits
- With commercial and industrial developments
- On roads with adjacent residential development at a density of less than 1.0 dwelling units or more per acre.

G. City of Grand Junction Urban Development Boundary

Within the Grand Junction Urban Development Boundary, Grand Junction's Transportation Engineering Design Standards (TEDS) shall govern for road design if there are discrepancies with MCDS.

H. Roads under 400 ADT

Low volume rural roads under 400 ADT may have situations which are nonconformant with the standards set forth in this Chapter. AASHTO's Geometric Design of Very Low-Volume Roads, latest edition, may be used with Mesa County Approval.

SECTION 6.04 | SIGHT DISTANCE

A critical element in assuring the safe and efficient operation of a vehicle is the ability to see approaching vehicles. Sight distance is the distance along a roadway throughout which an object of specified height is continuously visible to the driver. This distance is dependent on the height of the driver's eye above the road surface, the specified object height above the road surface, and the height and lateral position of sight obstructions such as cut slopes, guardrails, and retaining walls within the driver's line of sight. Sight distance of sufficient length must be provided to allow drivers to avoid striking unexpected objects in the traveled way, for the given speed they are travelling. Certain two-lane roadways should also provide sufficient sight distance to allow drivers to occupy the opposing lane for passing without hazard.

Sight Distance falls into three categories:

- Stopping
- Passing
- Intersection

A. Definitions

1. Driver's eye height

   For cars, the height of the driver's eye is assumed to be 3.5 feet above the road surface, and 7.6 ft for trucks.

2. Object Height

   Obstructions are typically measured to be an object 2 feet above the road, and other vehicles are measured to be 3.5 feet above the road

Stopping Sight Distance

The stopping sight distance is the distance required by the driver of the vehicle traveling at a given speed to bring the vehicle to a stop after an object on the road becomes visible and the brakes are applied.

Stopping sight distance is measured from the driver's eye height, which is assumed to be 3.5 feet above the road surface, to an object two feet high on the road. Distances greater than the minimum stopping sight distance provide an additional measure of safety and should be designed for where practical. The stopping sight distance for any roadway should never be less than the minimum for the design speed.

Exhibit 6.1 shows sight distances for level roadways and roadways with a grade for various design speeds. Roads with conditions in excess of these basic scenarios should reference the AASHTO Green book for design guidance.

Design Speed	Stopping Sight Distance (Design Values)									Passing Sight Distance (2-Lane Road)	
	No grade adjustment	% Down Grade			% Up Grade			Crest	Sag	Crest Vertical Curve	
(mph)	Dist. (ft)	3	6	9	3	6	9	K	K	Dist. (ft)	K
15	80	80	82	85	75	74	73	3	10	400	57
20	115	116	120	126	109	107	104	7	17		
25	155	158	165	173	147	143	140	12	26	450	72
30	200	205	215	227	200	184	179	19	37	500	89
35	250	257	271	287	237	229	222	29	49	550	108
40	305	315	333	354	289	278	269	44	64	600	129
45	360	378	400	427	344	331	320	61	79	700	175
50	425	446	474	507	405	388	375	84	96	800	229
55	495	520	553	593	469	450	433	114	115	900	289
60	570	598	638	686	538	515	495	151	136	1000	357
65	645	682	728	785	612	584	561	193	157	1100	432
70	730	771	825	891	690	658	631	247	181	1200	514
75	820	866	927	1003	772	736	704	312	206	1300	604
80	910	965	1035	1121	859	817	782	384	231	1400	700
AASHTO Table **(1)**	(3-1)	(3-2)						(3-34)	(3-36)	(3-4) (3-35)	(3-35)

Exhibit 6.1 Stopping Sight Distance
Reference: Table 3-1, Sight Distance; 2018 CDOT Roadway Design Guide

K value is calculated using the following equation:

$$K = L/A$$

Where:

L= length of curve, ft
A= Algebraic difference in intersecting grades, in percent

B. Sight Distance on Horizontal Curves

Where an object above the pavement restricts sight distance, such as a bridge pier, cut slope, or natural growth, the minimum radius curvature is determined by the stopping sight distance.

Stopping sight distance on horizontal curves is shown in Exhibit 6.2 and 6.3. It is assumed that the driver's eye and the object are centered in the inside lane, and the line of sight is assumed to intercept the obstruction at the midpoint of the sightline and 2 feet above the center of the inside lane. The offset distance (HSO) is measured from the center of the inside lane to the obstruction.

C. Sight Distance on Vertical Curves

Minimum lengths of crest vertical curves are controlled by stopping sight distance requirements, as shown in Exhibit 6.1. Refer to CDOT *Roadway Design Guide* for sag curve sight distance if that must be evaluated.

D. Passing Sight Distance

In some cases, passing sight distance may be required on collectors or Arterials. Passing sight distance shall be assessed per the guidance given in the CDOT *Roadway Design Guide*. Minimum passing sight distances are also given in Exhibit 6.1.

E. Intersection Sight Distance

Intersection sight distance must be provided where applicable. Section 6.08 C provides the standards for Intersection sight distance.

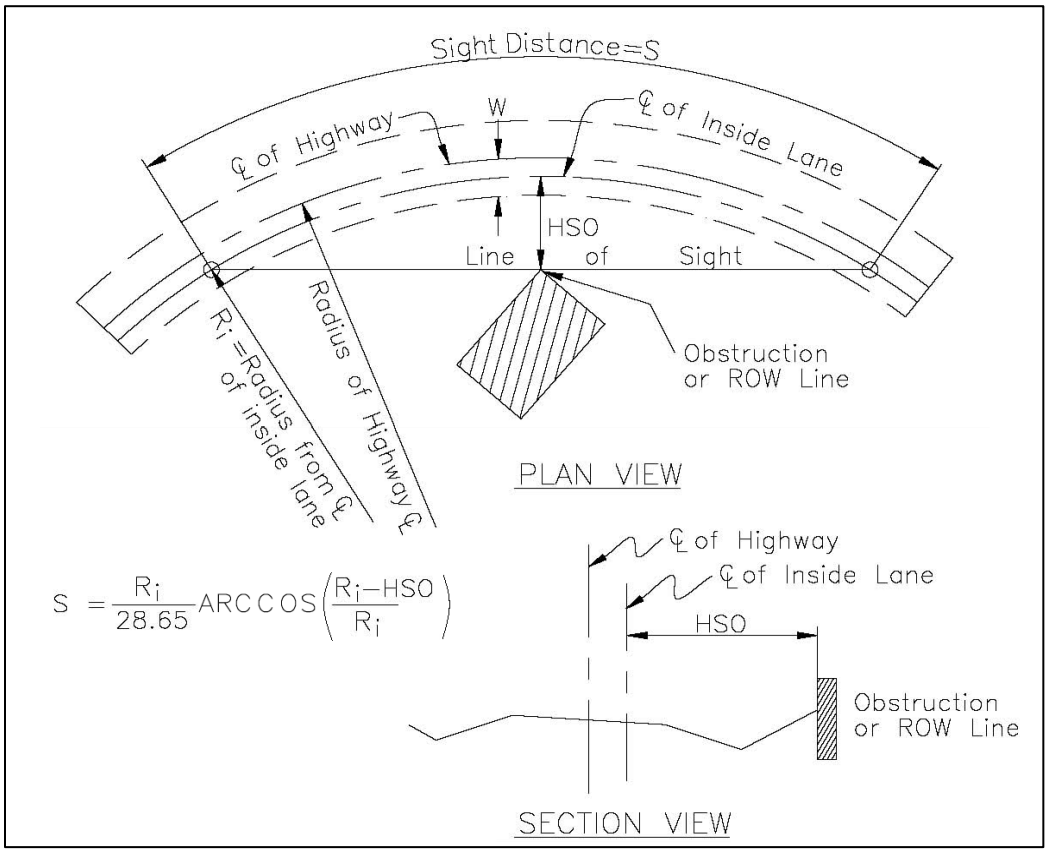


Exhibit 6.2 Stopping Sight Distance on Horizontal Curves

Reference: Figure 3-1, Stopping Sight Distance on Horizontal Curves; 2018 CDOT Roadway Design Guide

Where:

R_i = radius from centerline (C.L.) of inside lane (feet).

HSO = horizontal sightline offset (feet) lateral distance from the centerline of an inside lane to the ROW line or obstruction.

S = available stopping sight distance (feet)

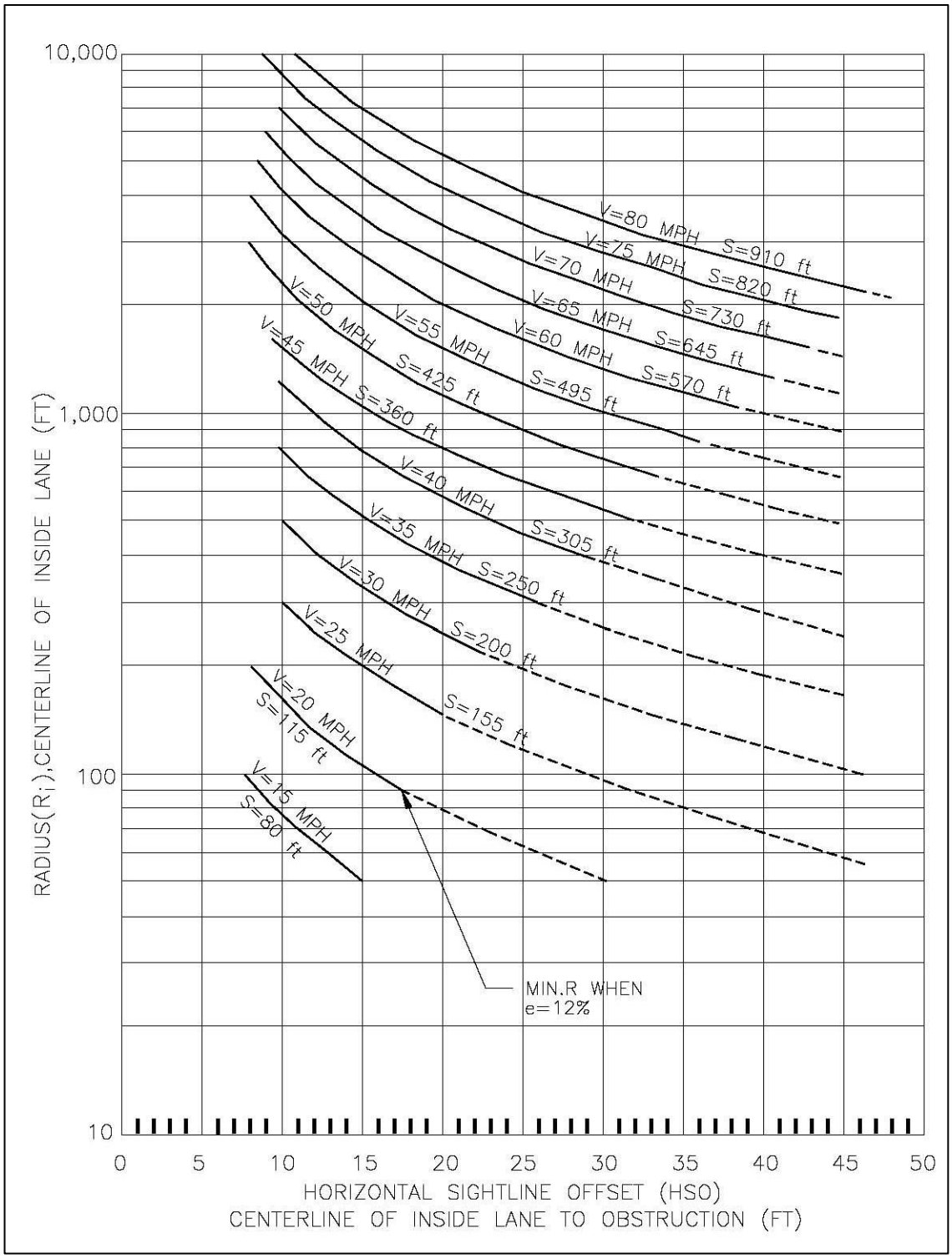


Exhibit 6.3 Design Controls for Stopping Sight Distance on Horizontal Curves
Reference: Figure 3-2, [Figure 3-22b of the Green Book (1)] Design Controls for Stopping Sight Distance on Horizontal Curves; 2018 CDOT Roadway Design Guide

SECTION 6.05 | HORIZONTAL ALIGNMENT

A. General Considerations

Horizontal alignment should provide for safe and continuous operation of vehicles at a uniform design speed for substantial lengths of the roadway.

The major considerations in horizontal alignment include topography, road classification, design speed, grade profile, subsurface conditions, safety, sight distance, and construction costs. All considerations must be balanced to produce an alignment that is safest, most economical, and adequate for the functional classification of the road.

B. Stopping Sight Distance

Horizontal alignment shall provide at least minimum stopping sight distance for the design speed at all points. This includes visibility at intersections as well as around curves and roadside appurtenances. Stopping sight distance is detailed in MCDS Section 6.04B.

Minimum curve radii should be used only when the cost of realizing a higher standard is not consistent with the benefits. The final considerations for the safety of any curve should be the combination of the factors of radius, sight distance, and superelevation.

C. Types of Horizontal Curves

The County permits simple curves as outlined in the AASHTO Green Book and the CDOT *Roadway Design Guide*, latest editions.

Reverse and spiral curves may be acceptable if applied within the guidance of the CDOT *Roadway Design Guide*. Compound curves will not be permitted.

Two curves in the same direction with a short tangent between them, known as a "broken-back" curve, are not permitted.

D. Standards for Curvature

Functional classifications without information presented below should be designed in accordance with the AASHTO Green Book, latest edition. Minimum radii should be used only when the cost of realizing the higher standard is inconsistent with the benefit. The County-specific minimum curve radii for local urban roads are provided in Exhibit 6.4.

Sudden reductions in standards introduce the element of surprise to the driver and should be avoided. Where physical restrictions cannot be overcome, and it becomes necessary to introduce curvature or a lower standard than the design speed for the project, the design speed between successive curves shall not change by more than ten mile-per-hour increments. Under no conditions shall a curve for a design speed lower than the design speed of the project be introduced at the end of a long tangent or at other locations where high approach speeds may be anticipated.

Angle points with less than one degree in change require no curve radius.

Exhibit 6.4 Minimum Curve Radius for Design Speed on Local Urban Roads Without Superelevation
Reference: Mesa County Design Standards, 2004 Grand Junction Transportation Engineering Design Standards

Design Speed (MPH)	Superelevation, e (%)	Radius (ft)
20	0	100
25	0	150
30	0	300

E. Superelevation

One of the most important factors to consider in highway safety is the centrifugal force generated when a vehicle traverses a horizontal curve. The centrifugal force increases as the velocity of the vehicle and/or degree of curvature increases.

The standard superelevation rates shown on Exhibit 6.5 are such as to hold the side friction factor within tolerable limits for those operating speeds expected for the range of curve radii given. The tables are based on design speed, friction factors, and superelevation and do not consider sight distance. Roads shall not exceed 8% superelevation, and bridge decks or surfaces prone to freezing shall not exceed 6%. Superelevation rotation and transitions shall be designed in accordance with AASHTO Green Book and CDOT Roadway Design Guide.

For undivided roads, the axis of rotation for superelevation is usually the centerline. Drainage pockets can be caused when the axis of rotation is from the centerline instead of the inside edge of the pavement. Where curves are preceded by long, relatively level tangents, however, the plane of superelevation may be rotated about the edge of pavement to improve the perception of the curve.

A superelevation transition is the distance provided to go from normal crown to full superelevation, and is variable in length, depending upon the amount of superelevation. In relation to the beginning and end points of the curve, two-thirds of the transition is in the tangent approach and one-third of the transition is within the beginning and end of the curve. The remainder of the curve is at full superelevation. Superelevation transition lengths can be found in Table 3.17b of the Green Book 2011. Where spiral curves are permitted, the transitions are to be designed using the CDOT Roadway Design Guide.

Superelevation profiles of the centerline and edges of pavements must be provided to Mesa County Engineering for review.

Exhibit 6.5 Maximum Superelevation Rates

Road Type	Rural	Urban
Major Arterial	.08	.06
Minor Arterial	.08	.06
Major Collector	.06	.06
Minor Collector	.06	.04
Local	.04	.02

F. Alignment on Bridges

Ending a curve on a bridge is undesirable and adds to the complication of design and construction. Likewise, curves beginning or ending near a bridge should be placed so that no part of the spiral or superelevation transitions extend onto the bridge. If the curvature is unavoidable, every effort should be made to keep the bridge within the limits of a simple curve.

G. Horizontal Clearances

Horizontal clearances are determined by the required clear zone of the road. The term "clear zone" is used to designate the unobstructed, relatively flat area to be provided beyond the edge of the traveled way for the recovery of errant vehicles. The traveled way does not include shoulders. The width of the clear zone is influenced by the traffic volume, speed, and embankment slopes, as discussed in the AASHTO Roadside Design Guide, latest edition. The Guide should be used as a reference for the determination of a clear zone for rural arterials and high-speed rural collectors. For low-speed, low volume rural collectors and local roads, a minimum of 10 feet should be provided.

Additional horizontal clearances may be required for sight distance or other project-specific challenges.

H. Coordination with Vertical Alignment

Coordination is required to avoid the possibility of introducing serious hazards between horizontal and vertical alignment. Care must be exercised to maintain proper sight distance. Where possible, vertical curves should be superimposed on horizontal curves. This reduces the number of sight distance restrictions on a given length of road and makes changes in profile less apparent, particularly in flat or rolling terrain. Sharp horizontal curves introduced at or near the top of pronounced crest or bottom of sag vertical curves should be avoided.

When vertical and horizontal curves are superimposed, the resulting superelevation may cause distortion in the outer pavement edges, particularly on multi-lane cross-sections. Where this is the case, the edge of pavement profiles should be plotted, and smooth vertical curves introduced to remove any irregularities.

SECTION 6.06 | VERTICAL ALIGNMENT

A. General Considerations

The Grade Line is a reference line by which the elevation of the pavement and other features of the roadway are established. It is controlled mainly by topography and structure clearances, but the factors of horizontal alignment, safety, sight distance, design speed, construction costs, and the performance of heavy vehicles on a grade must also be considered.

With respect to the cross-section, the Grade Line should be positioned as follows:

- It should coincide with the road centerline on two-lane and multi-lane undivided roads.
- On multi-lane divided roads, the Grade Lines should be placed at the edge of the travel lane nearest the median.

B. Vertical Clearances

The minimum vertical clearance for all overhead structures, including signs, cables, etc. shall be in accordance with those specified in the CDOT Roadway Design Guide.

Additional vertical clearances may be required for sight distance or other project-specific challenges.

C. Standards for Grades

Design grades measured along the Grade Line address drainage and safety concerns for road users.

The minimum grade on urban roads shall be 0.5 percent and 1 percent on rural roads. Flatter grades on rural roads may be permitted where conditions prohibit minimum grade and if adequate drainage is available. This design exception is subject to review by Mesa County Engineering.

Maximum sustained grades for new roads are related to design speed, as presented in Exhibit 6.6 below. Refer to section MCDS Chapter 6.02B for terrain classifications. Grades are referenced from CDOT *Roadway Design Guide* and per AASHTO Green Book.

The maximum design grade should be used infrequently, rather than as a value to be used in most cases. For short grades less than 200 feet, the maximum gradient may be increased by one percent.

In Level or Rolling Terrain, all grades shall flatten to four percent for at least 100 feet approaching intersections and for at least 50 feet entering and leaving turnarounds or cul-de-sacs. In Mountainous Terrain, all grades shall flatten to six percent or less for at least 50 feet approaching intersections and entering switchbacks or cul-de-sacs.

D. Vertical Curves

Properly designed vertical curves should provide adequate sight distance, safety, comfortable driving, good drainage, and have a pleasing appearance.

Vertical curves are parabolic. Exhibit 6.7 gives the mathematical relations for computing a vertical curve, either at crests or sags.

Exhibit 6.6 Relation of Maximum Grades to Design Speed
Reference: Table 3-4, Relation of Maximum Grades to Design Speed;
2018 CDOT Roadway Design Guide & Green Book

Type of Terrain	Maximum Grade (%) for Design Speed (mph)										
	20	**30**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**
	RURAL ARTERIALS [Table 7-2 (1)]										
LEVEL			5 [c]	5 [c]	4 [c]	4 [c]	3	3	3	3	3
ROLLING			6 [c]	6 [c]	5	5	4	4	4	4	4
MOUNTAINOUS			8	7	7	6	6	5	5	5	5
	URBAN ARTERIALS [Table 7-4 (1)]										
LEVEL		8	7	6	6	5	5				
ROLLING		9	8	7	7	6	6				
MOUNTAINOUS		11	10	9	9	8	8				
	RURAL COLLECTORS [b] [Table 6-2 (1)]										
LEVEL	7 [c]	7 [c]	7	7	6	6	5				
ROLLING	10 [c]	9	8	8	7	7	6				
MOUNTAINOUS	12	10	10	10	9	9	8				
	URBAN COLLECTORS [Table 6-8 (1)]										
LEVEL	9 [c]	9	9	8	7	7	6				
ROLLING	12 [c]	11	10	9	8	8	7				
MOUNTAINOUS	14 [c]	12	12	11	10	10	9				
	LOCAL RURAL ROADS [Table 5-2 (1)]										
LEVEL	8 [d]	7	7	7	6	6	5				
ROLLING	11	10	10	9	8	7	6				
MOUNTAINOUS	16	14	13	12	10	10	-				
	LOCAL URBAN ROADS										
LEVEL	8	8	8								
ROLLING	10	10	10								
MOUNTAINOUS	15	15	15								

[a] Grades one percent steeper than the value shown may be used in urban areas.
[b] Maximum grades shown for rural and urban collector conditions of short lengths (less than 500 feet) and on one-way down grades may be two percent steeper.
[c] Design speed shown not recommended (less than minimum).
[d] Use only on urban streets.

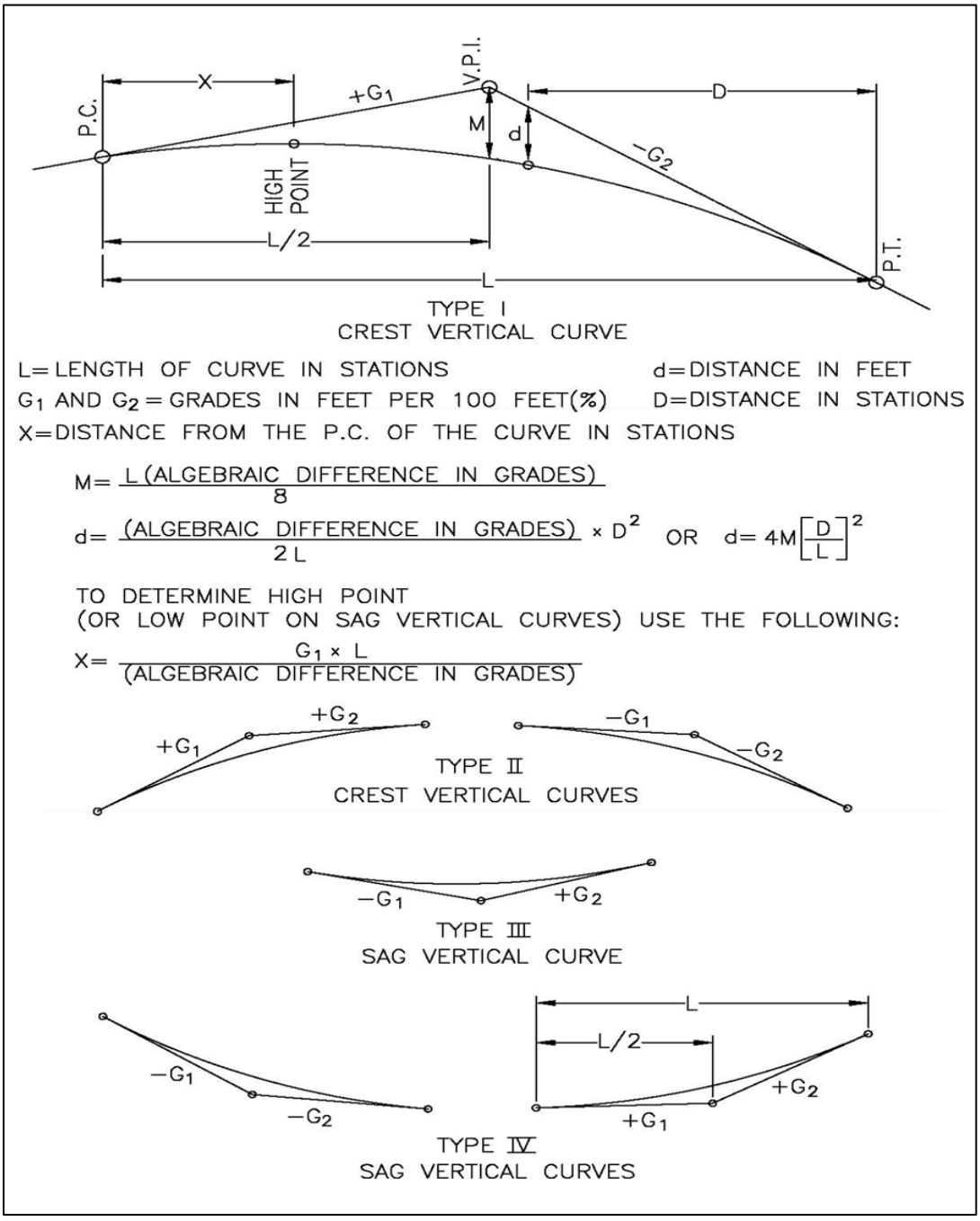


Exhibit 6.7 Types of Vertical Curves
Reference: Figure 3-14, Vertical Curves; 2018 CDOT Roadway Design Guide

Minimum lengths of crest vertical curves are controlled by stopping sight distance requirements, see MCDS Section 6.04 and Exhibit 6.1.

Minimum lengths of sag vertical curves are typically controlled by headlight sight distance that should be approximately the same as stopping sight distance. If the area is lit, adjustments to sag curvature may be made per the recommendations of the CDOT Roadway Design Guide, latest edition.

Asymmetrical vertical curves are permitted only in special circumstances as approved by Mesa County Engineering.

Vertical curves are not required where the algebraic difference is less than 0.20%. In rural applications, the minimum length of vertical curves, both crest, and sag is 300 feet.

Vertical curves that are long and flat may develop poor drainage at the level section. Vertical curves that have a level point and flat sections near their crest or sag should be evaluated for drainage where curbed pavements are used. Values of K = 167 or greater should be checked for adequate drainage.

SECTION 6.07 | CROSS SECTION STANDARDS

A. Typical Sections

Typical sections for each functional classification are given in MCDS Appendix 6.2. Exhibit 6.8 provides a summary of minimum design elements. Variations from these sections must be approved by Mesa County Engineering when there is sufficient evidence that certain design elements can be reduced or eliminated.

Exhibit 6.8: Typical Road Section Standards

	ADT (VPD)	MIN. ROW	Pavement Width	Lane 1 (outside)	Lane 2 (inside)	Turn Lane / Median	Paved Shoulder / MM Facilities	Gravel Shoulder	Curb/ Gutter	Sidewalk	Sidewalk Width	Streetscape Width	Curb Type	On-street parking?	Ditch Width, min., each side	Free Space in ROW, each side	MPE (outside ROW)	Notes
Local																		
Urban Local	0-1,000	44	28	14	-	-	-	-	Y	Y	5	-	Mount-able	Y	-	1	14	* 4-foot gravel shoulder permitted on new roads which serve less than ten (10) lots
Rural Local	0-800	60	32	12	-	-	4 *	-	N	N	-	-	-	N	10	4	-	
Collectors																		
Minor Collector - Urban	1,000-3,000	52	36	12	-	-	6	-	Y	Y	5	-	Vertical	Y*	-	1	14	* On-Street Parking permitted where a turn lane is not required. ** 5'Sidewalk is required in urban settings or where required by Mesa County Engineering.
Minor Collector - Industrial / Commercial	0-3,000	52	36	14	-	-	4	-	Y, 5' V-pans where approved	Y **	5**	-	Vertical	N	-	1	14	
Major Collector - Urban	3,000-8,000	60	44	12	-	12	4	-	Y	Y	5	-	Vertical	N	-	1	14	
Rural Collector	800-8,000	80	32	12	-	-	4	2	N	N	-	-	-	N	10	12	-	
Arterials																		
Minor Arterial	8,000-18,000	80	64	11	11	12	4	-	Y	Y	5	-	Vertical	N	-	1	14	
Arterial	18,000+	110	71	12	11	14	4	-	Y	Y, detached	6	10.5	Vertical	N		1	14	
Multimodal																		
Shared Use Path Off-Street		20					10' Min.	1	N	N					4	0		8' is permitted if there are sections with constraints. Ditches must be sized for 2-year storm capacity.

B. Right-of-Way Width

The minimum right-of-way width for each road section is listed in Exhibit 6.8. This width is sufficient only to accommodate the specific geometric cross-sectional elements that are required.

Additional right-of way may be required for curb returns, extra lanes, multimodal features, or drainage improvements. Cut and fill slopes or wall elements that extend outside the minimum right-of-way width may require slope easements or additional right-of-way. The minimum right-of-way clearances for cuts higher than 30-feet shall be one-third of the cut height but not to exceed 50-feet in width.

C. Crown Slopes

On undivided roads, the Grade Line, or high point of the crown, shall be at the centerline of the pavement, with the pavements sloped toward the edges of the road at a uniform grade.

On divided multi-lane standard roads, each pavement should have a uniform cross slope with the high point at the edge of the inside shoulder.

Standard crown slopes to be used on the traveled way shall be 1.5-2% for paved roads and 4-6% for unpaved roads.

In Mountainous Terrain, local roads may be sloped toward the cut side of the road at a three percent slope. Adequate drainage control on the inside of the road must be provided to control runoff and manage surface erosion.

At intersections, or in unusual situations, the crown position may vary depending upon drainage or other controls.

D. Curb and Gutter Requirements

All curbs and gutters shall be Class B Concrete in accordance with CDOT and Mesa County Construction Specifications (MC Specs). Details are provided in MCDS Appendix 6.2. Curb and gutters are required:

- On all roads within Urban Development Boundaries, or on roads with development densities that have greater than 1.0 dwelling units per acre.
- Where required by drainage, traffic, or public safety.

In general, mountable curbs are allowed on local roads. Vertical curbs are required on all greater functional classifications. Industrial collector sections can be constructed with curbs or using a 5-foot wide valley pan.

E. Roadway Ditches

Side ditches shall be used on all cut sections without curb and gutters, or where drainage must be managed. The slope from the edge of the shoulder to the bottom of the ditch shall not be steeper than 3:1.

F. Cut and Fill Slopes

Cut and fill slopes on road sections shall be designed for functional effectiveness, ease of maintenance, and to have a pleasing appearance.

1. Cut and Fill slope stability shall be evaluated by a Geotechnical Engineer and approved by Mesa County Engineering.

   The standard cut and fill slope should be 3:1. Steeper slopes up to 2:1 may be permitted in locations when stability is assessed, maintenance is considered, and adequate sight distance is provided. Flatter slopes shall be required in unstable soils.

2. The tops of all cut slopes should be rounded with a minimum of a 10-foot radius.

3. Drainage features at the bottom of a cut slope shall be constructed in a way that prevents erosion of the roadbed. If the drainage is maintained in ditches, this may require the ditch channel to be widened or armored.

4. In areas-where right-of-way width is constant, and a road is cut through an embankment, it is encouraged to keep the catch points for a given cut a fixed distance from the centerline. The benefits include:
    a. Provide a smooth transition from cut to fill.
    b. Allow smooth rounding at ends of cuts and fills.
    c. Permit the flattest possible slopes within the right-of-way limitations, thus encouraging better revegetation and erosion control.
    d. Provide a pleasing appearance
5. Slope Benches

    Benches should be used sparingly and only where they are justified by sound engineering principles. Generally, there are greater traffic benefits from widening a cut than from benching the slope. The necessity, width, and vertical spacing shall be established through a Geotechnical evaluation and are subject to Mesa County Engineering approval.
6. When benches are permitted, a 20-foot bench width is satisfactory for ease of maintenance. Access for maintenance equipment should be provided to the lowest bench and, if feasible, to the higher benches. Benches shall have a typical cross slope of 5% and shall be constructed in accordance with CDOT Guidance.
7. Revegetation Requirements

    All disturbed soil within project limits shall be reseeded per MCDS Chapter 13: Revegetation Standards.

G. Sidewalks, Shoulders, Bike Lanes, and Curb Ramps

All sidewalks shall be Class B Concrete in accordance with MC Specs. These features shall be constructed in accordance with the design standards and at the required locations provided in MCDS Chapter 7: Multimodal Features and the details found in MCDS Appendix 6.2.

SECTION 6.08 | INTERSECTIONS

The geometric design of intersections shall be given careful consideration to minimize conflicts and provide safe crossing and turning movements.

All intersection designs must bear consideration to the number of intersecting legs, topography, traffic pattern, and the desired type of operation.

Intersections occurring on horizontal or crest vertical curves are undesirable from the standpoint of sight distance and the application of superelevation. When there is latitude in the selection of intersection locations, vertical or horizontal curvature should be avoided; a line or grade change is frequently warranted when major intersections are involved.

At-grade intersections will follow AASHTO or CDOT design guidelines unless otherwise noted in the section below. Design of driveway accesses with a roadway is found in MCDS Chapter 5: Standards for Access.

A. Intersection Radii

1. Access Radii

    Design Guidance for radii for access is provided in Standards for Access, MCDS Section 5.10E.
2. Curb or Pavement Radii

    General guidelines are as provided in Exhibit 6.9 below. Adjustments based on design vehicles, intersection configuration, and project-specific challenges require review by Mesa County Engineering. An equivalent 3-centered compound curb or spiral curb may be designed by the applicant if warranted.

Exhibit 6.9 Standard Intersection Radii			
	Arterial	**Collector**	**Local**
Arterial	Project Specific	35	35
Collector	35	35	35
Local	35	35	25

B. Property Line Chamfer at Intersections

Property lines adjacent to intersections are required to have the following minimum property line chamfer based on the adjacent road classification. Intersections involving Arterial roads require individual design considerations.

Corners of properties must also have adequate intersection sight distance provided. Refer to Section 6.08B of this MCDS for the required intersection sight distance.

Exhibit 6.10 Corner Property Line Adjustments		
Classification of Intersection	**Rural Section**	**Urban Section**
Local - Local	10	20
Local - Collector	20	25
Collector - Collector	20	25

C. Intersection Sight Distance

Each vehicle approaching an intersection or turning onto the road must have an unobstructed sight distance along all legs of the crossroad and across its corners for a sufficient distance to allow the drivers to see each other in time to prevent a collision.

1. Sight Distance

Sight distance is measured between a point in the center of the approach lane of the proposed access, set back from the travel lane of the existing County roadway (the "decision point"), and a point in the center of the oncoming travel lane along the existing roadway at a required distance. Exhibits 6.11a and 6.11b provide diagrams of the intersection layout.

The decision point, as shown in Exhibit 6.11, is fifteen (15) feet from the road traveled way for new roadways or access points with greater than ten (10) DHV. For accesses with nine (9) or fewer DHV, the decision point is measured ten (10) feet from the travel lane. Trips shall be identified per MCDS Chapter 4: Traffic Studies.

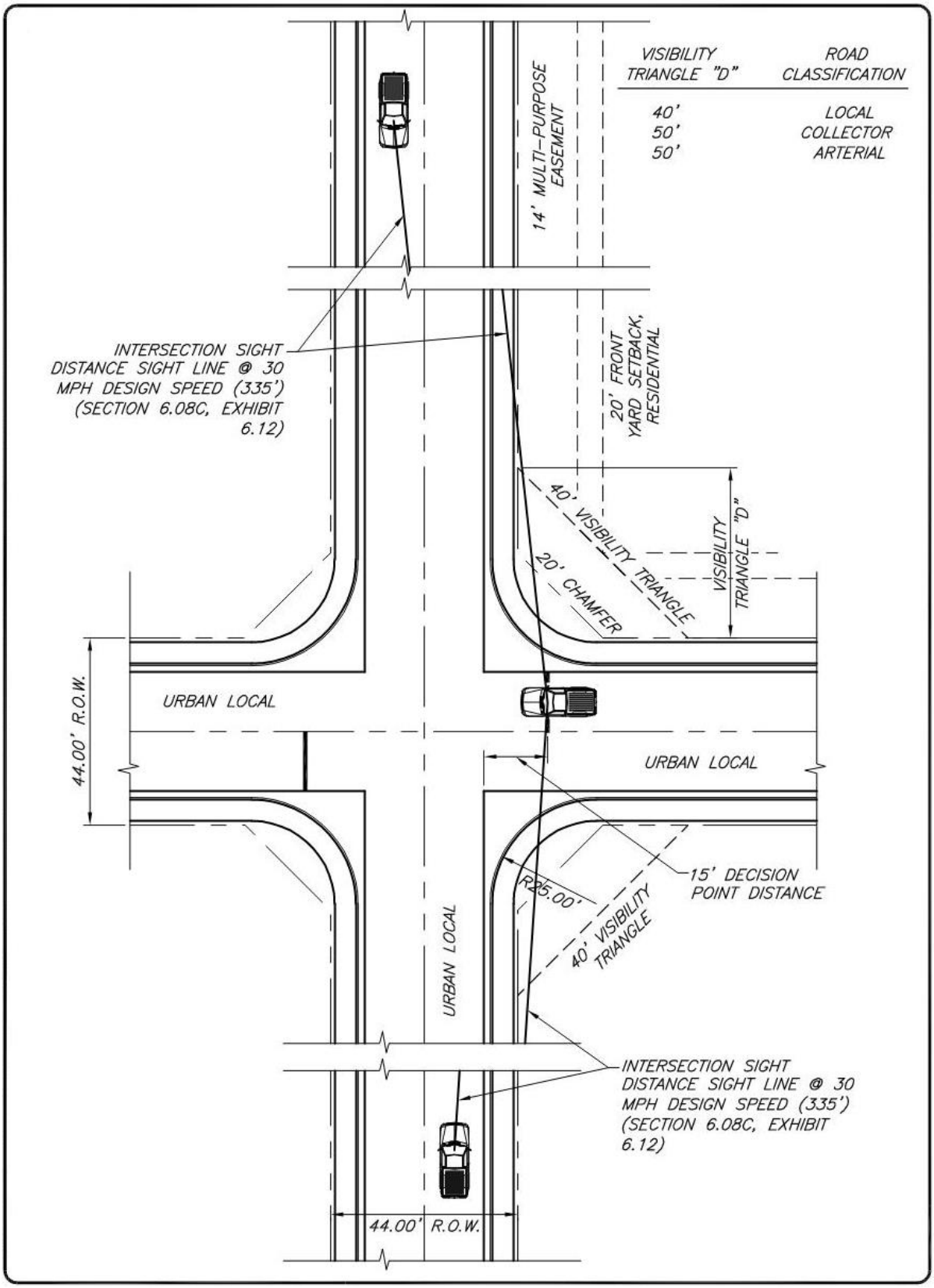


Exhibit 6.11a: Intersection Sight Distance, Visibility Triangles, Property Line Corners; Urban Local – Urban Local Intersection; 30 mph design speed

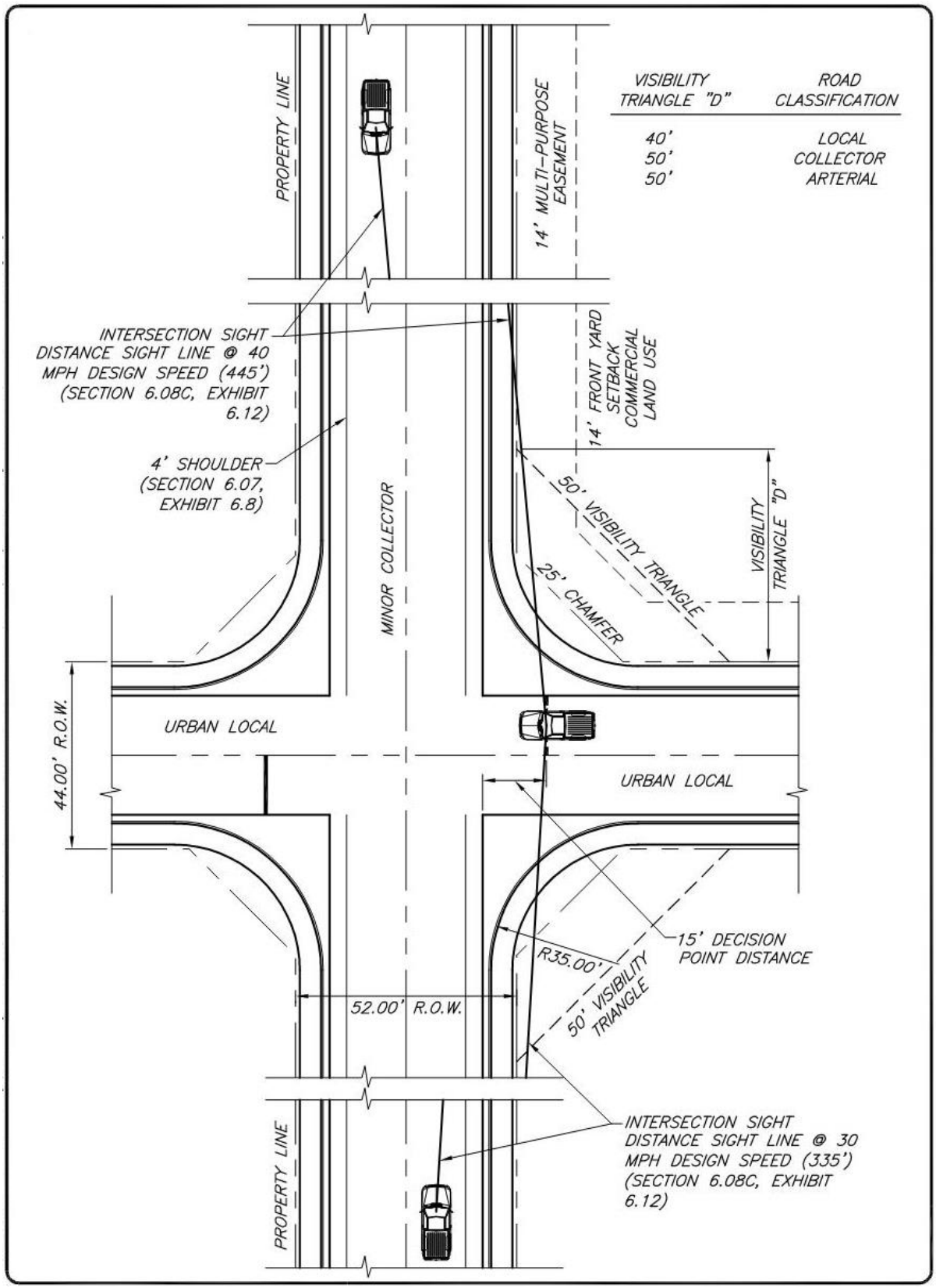


Exhibit 6.11b: Intersection Sight Distance, Visibility Triangles, Property Line Corners; Minor Collector – Urban Local Intersection; 40 mph design speed

Exhibit 6.12 Intersection Sight Distance
Reference: Table 9-5, Design Intersection Sight Distance - Case B1, Left turn from a stop; 2011 Green Book

Design Speed (mph)	Intersection Sight Distance (Feet)
20	225
25	280
30	335
35	390
40	445
45	500
50	555
55	610
60	665
65	720

The distances noted above are to allow a stopped passenger car to turn left onto a two-lane highway with no median and approach grades at the stopped vehicle location of 3 percent or less. For other conditions or vehicle types, the sight distance requirements shall be adjusted based on the guidance provided in the AASHTO A *Policy on Geometric Design of Highways and Streets.*

Exhibit 6.12 provides a reference of the intersection sight distance required at various design speeds. These distances enable vehicles to anticipate gaps in traffic to turn left, right, or cross the intersecting road or road from a stopped condition. Typical County roads are controlled by the left turn from stop movement.

Adjustments to the required intersection sight distance for large vehicles, curved intersections, or for grades shall be made in accordance with AASHTO Green book procedures. More complex intersections shall be designed in accordance with AASHTO, CDOT, and ITE Traffic Engineering Handbook best practices.

If the required intersection sight distance cannot be met for a site, then the County may require that the intersection or access be restricted to prohibit left turns onto the roadway or other countermeasures proposed by the applicant and designed by a Professional Engineer licensed in the State of Colorado. All restrictions are subject to Mesa County Engineering review.

2. Obstructions within the right-of-way

   No obstructions shall be permitted within the right-of-way which interfere with the required sight distance, including parked vehicles, trees, or utilities.

3. Visibility Triangle

   Neighboring properties must assist in providing the required unobstructed view for all accesses and intersections.

   An area identified as the Visibility Triangle must be provided within the adjacent property. This area may be required to be dedicated as an easement or as right-of-way as evaluated by Mesa County Engineering. New subdivisions may be required to dedicate this area as an easement or as right-of-way per Land Development Code Standards at the time of subdivision approval.

The Visibility Triangle is defined as a triangular section of land measured along the right-of-way lines and/or access edges. The minimum distance of the triangle legs shall vary based on the road's design speed and functional classification. The minimum required length, "D," is illustrated in Exhibits 6.11a/b and provided in Exhibit 6.13. Rounded or chamfered property corners shall be excluded from the measured length, as shown in the exhibit.

Exhibit 6.13 Visibility Triangle Dimensions

Road Type	Triangle Leg Distance "D"
Local	40
Collector	50
Arterial	60
Refer to Exhibit 6.11a and 6.11 b for illustration	

At residential access points, the Visibility Triangle shall be as detailed in Section 8.19 of the Land Development Code.

a. Restricted objects within Visibility Triangle

Within the area of the Visibility Triangle, no fence, wall, vegetation, sign, structure, or berm shall obstruct the clear view of the driver.

The clear view area is a zone between 3 feet and 11 feet measured vertical from the ground that must not have objects that obstruct the driver's view.

b. Permitted Objects from the Visibility Triangle

Objects that are permitted within the area of the Visibility Triangle are: fire hydrants, utility poles, utility junction boxes, and traffic control devices.

c. Visibility Triangles at Railroad Crossings

Visibility Triangles must also be provided at intersections of public roads and railroad right-of-way for railroad crossings not controlled by gates or flashing lights.

4. Enforcement

Upon official written notification of non-compliance with the above sight distance or visibility triangle requirements, the property owner shall remove any obstructions. If the owner has not done so within a reasonable time as determined by Mesa County Code Enforcement, Mesa County shall take steps to have the obstruction removed, at the property owners' expense.

SECTION 6.09 | CHANNELIZATION AND ISLANDS

Channelization is the separation or regulation of conflicting traffic movements into delineated paths of travel by traffic islands or pavement markings to facilitate the safe and orderly movements of vehicles, bicycles, and pedestrians. Separation of left-turn movements from through movements is a common example of channelization.

Channelized intersections should be provided where traffic volumes, the complexity of movements, or other considerations warrant expansion beyond the minimum standard intersection.

A. Design Guidance

The County's channelized intersections may include painted or curbed islands. These elements should be designed in accordance with guidance provided in CDOT Roadway Design Guide and AASHTO Green Book, latest editions. Turn lanes shall be designed in accordance with Section 6.10 of this Chapter.

B. Access Channelization

Channelizing islands may be incorporated into access design for purposes of limiting movements into or out of accesses. The use of medians to control turning movements is preferred and will be required where physical conditions allow. Channelizing islands shall not be used solely for ornamental purposes.

SECTION 6.10 | AUXILIARY / SPEED CHANGE LANES

A speed change lane is an auxiliary lane, including tapered areas, used for the acceleration or deceleration of vehicles entering or leaving through traffic areas. The terms "speed-change lane," "deceleration lane," and "acceleration lane" apply to this Chapter.

The primary purpose of auxiliary lanes at intersections is to provide storage and reduce driver conflicts for turning vehicles, both left and right. A secondary purpose is to provide space for turning vehicles to decelerate from the posted speed of traffic to a stopped position in advance of the intersection or to a safe speed for the turn in case a stop is unnecessary. Auxiliary speed change lanes may also be desirable after completing a right-turn movement to provide for acceleration.

Speed change lanes may be justified on high-speed and on high-volume roadways where a change in speed is necessary for vehicles entering or leaving the through traffic lanes.

A. Speed Change Lane Elements

When warranted, the length of the auxiliary lane for turning vehicles consists of three elements:

- Deceleration Length
- Storage Length
- Taper Length

When speed change lanes are required; they shall be designed, as shown in Exhibit 6.14:

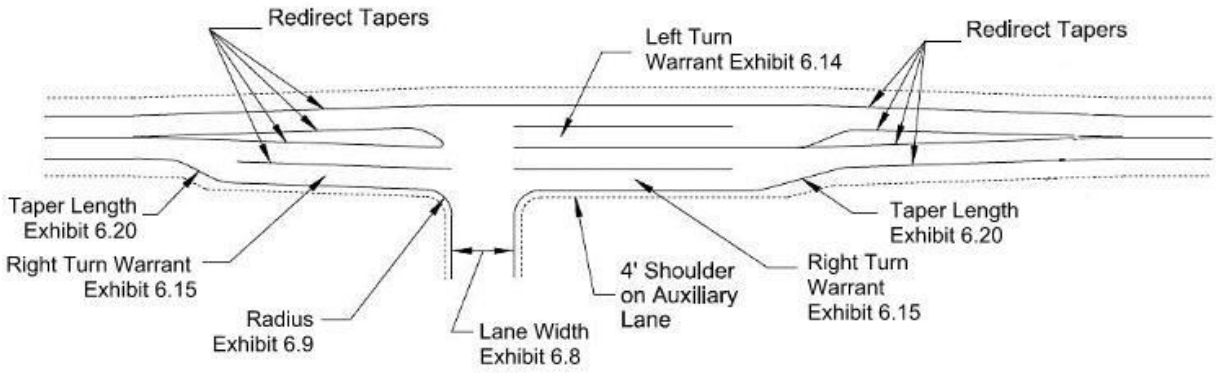


Exhibit 6.14 Speed Change Lanes
Reference: Figure 9-6, Information Guide to Basic Auxiliary Lane Elements;
2018 CDOT Roadway Design Guide

B. Turn Lane Warrants

Exhibits 6.15 and 6.16 define the relationship between posted speed and traffic volumes for Left and Right turn movements.

Turn lanes at intersections and for proposed accesses shall be required in accordance with the warrants below and as indicated by the Traffic Impact Analysis.

For highways with four travel lanes, DHV highway values listed apply only to the side being evaluated.

These exhibits apply for a normal mix of vehicle types. If the access approach or intersection has more than 2% of vehicles exceeding 30,000 pounds gross vehicle weight, values of one-half of the access approach values given in the table will be used to determine speed change lane requirements.

C. Left Turn Lane Warrants

Exhibit 6.15 Left Turn Lane Warrants					
	Posted speed of road in MPH				
	25	30 to 40	45 to 50	55	For a
Where DHV of road exceeds	500	400	200	150	2 lane road
	1000	900	500	400	4 or more lanes
	DHV/ADT	DHV/ADT	DHV/ADT	DHV/ADT	
and the left turning DHV **or** ADT into the access approach will exceed	30/250	20/175	15/125	12/100	2 lane road
	45/375	30/250	20/175	12/100	4 or more lanes

D. Left Turn Acceleration Lanes

Acceleration lanes for left turns are not required:

- When the posted speed is below 40 MPH
- When the intersection is signalized
- Where the acceleration lane would interfere with tum ingress movements to other driveways

E. Right Turn Lane Warrants

Exhibit 6.16 Right Turn Lane Warrants					
	Posted speed of road in MPH				
	25	30 to 40	45 to 50	55	For a
Where DHV of road exceeds	500	400	200	150	2 lane road
	1400	1200	800	600	4 or more lanes
	DHV/ADT	DHV/ADT	DHV/ADT	DHV/ADT	
and the DHV **or** ADT of the access approach will exceed	50/450	40/350	20/175	15/150	2 lane road
	70/625	60/550	40/350	25/225	4 or more lanes

F. Right Turn Acceleration Lanes

A right turn acceleration lane is typically not required when:

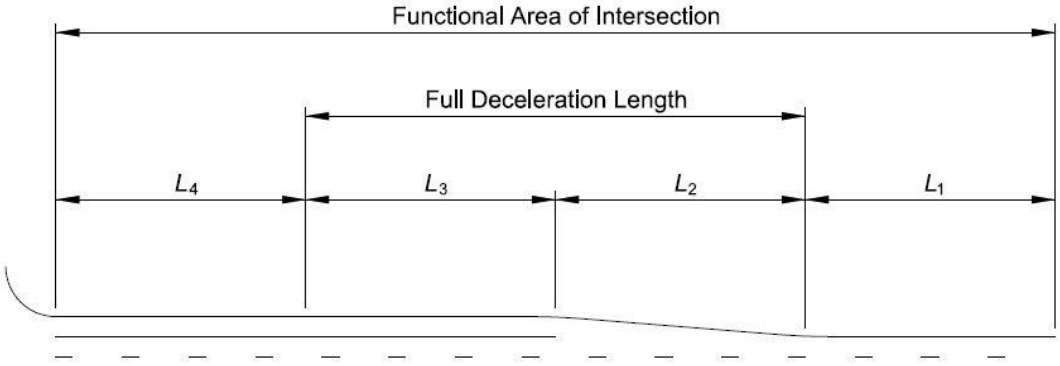
- The posted speed is 40 mph or less
- There is a signalized intersection

G. Deceleration Length

The functional area of an intersection with relation to the deceleration lane length is shown in Exhibit 6.17. This graphic illustrates the upstream functional area of an intersection with three components:

- Perception-reaction distance
- Deceleration lane length
- Storage length.

The physical length of the deceleration lane includes the taper length, the deceleration length, and the storage length.



Notes: L_1 = Distance traveled during perception-reaction time
L_2 = Taper distance to begin deceleration and complete lateral movement
L_3 = Distance traveled to complete deceleration to a stop
L_4 = Storage length

Exhibit 6.17 Deceleration Lane Components
Reference: Figure 9-7, Functional Area Upstream of an Intersection
Illustrating Components of Deceleration Lane Length, 2018 CDOT Roadway Design Guide

Exhibit 6.18 represents the estimated distances to maneuver from the through lane into a turn bay and brake to a stop. In locations where full deceleration length is not possible to provide within the auxiliary lane, part of the deceleration may begin within the through lane.

Exhibit 6.18 Deceleration Lane Length
Reference: Table 9-7, Desirable Full Deceleration Lengths,
2018 Roadway Design Guide

Speed (MPH)	20	30	40	50	60	70
Distance [a]	70	160	275	425	605	820
[a] Rounded to the nearest 5 feet						

H. Acceleration Length

Provision for acceleration clear of the through traffic lanes is desirable on arterial roads, roads with speed limits over 40 mph, and where warranted as determined in Section 6.10 C and D. The total length required is that needed for a safe and comfortable speed required to enter the through traffic lanes. Acceleration requirements are as determined in the AASHTO Green Book, latest edition.

Exhibit 6.19 Acceleration Lane Length
Reference: Table 9-9, Desirable Acceleration Length from Stop Condition;
2018 CDOT Roadway Design Guide

Design Speed (MPH)	30	35	40	45	50	55	60	65	70	75
Acceleration Length (Feet)	180	280	360	560	720	960	1200	1410	1620	1790
*These approximate lengths are based on grades less than 3 percent.										

I. Storage Length

The storage length for deceleration lanes should be sufficiently long so that the entrance to the auxiliary lane is not blocked by vehicles standing in the through lanes waiting for a signal change or for a gap in opposing traffic flow.

The required storage length of an unsignalized intersection is per Exhibit 6.20.

Exhibit 6.20 Storage Lengths for Auxiliary Lanes
Reference: Table 9-8, Storage Lengths for Auxiliary Lanes, 2018 CDOT Roadway Design Guide

Turning Vehicles Per Peak Hour	Below 30	30	60	100	200	300
Required Storage Length (ft)	25	*40	*50	100	200	300
*Minimum storage length is 100 ft when trucks equal or exceed 10 percent of turning vehicles.						

J. Taper Length

Taper transitions shall be designed per CDOT and AASHTO guidance, latest editions. Typical taper lengths and ratios for parallel-type entrances are provided in Exhibit 6.21.

Exhibit 6.21 Taper Length and Ratio for Parallel - Type Entrances
Reference: Table 9-10, Taper Length and Ratio for Parallel - Type Entrances; 2018 CDOT Roadway Design Guide

Posted Speed (MPH)	25	30	35	40	45	50	55	60 [a]	65 [a]	70 [a]
Taper Ratio [b]	7.5:1	8:1	10:1	12:1	13.5:1	15:1	18.5:1	25:1	25:1	25:1

[a] Uniform 50:1 to 70:1 tapers are recommended where lengths of acceleration lanes exceed 1300 feet.
[b] Taper Length equals taper ratio times lane width.

K. Lane Width / Shoulder Width

Speed change lanes shall be 12 feet wide exclusive of gutter pan or shoulder for roadways over 40 mph.

Ten-foot lanes may be considered where the posted speed limit is equal to or under 40 mph, and truck volumes are less than 10%.

A minimum four-foot shoulder is required for speed change lanes without curb and gutter.

L. Adjustment for Grades

Acceleration lanes may require changes in length in accordance with the roadway grades over 3%. Exhibit 6.22 below shows the acceleration lane adjustment factors base on up or down grades over 3%.

Deceleration lanes generally do not require changes in length.

Exhibit 6.22 Grade Adjustment Factors for Acceleration Lanes
Reference: Table 4-7, 1998 CDOT State Highway Access Code

Posted Speed MPH	25 to 45	50	55	60	65	70
3 to 4.9% Upgrade	1.3	1.4	1.5	1.5	1.7	1.8
5 to 7% Upgrade	1.5	1.8	2.0	2.3	2.5	3.0
3 to 4.9% Upgrade	0.7	0.65	0.65	0.6	0.6	0.6
5 to 7% Downgrade	0.6	0.55	0.55	0.5	0.5	0.5

CHAPTER 7: MULTIMODAL FACILITIES

SECTION 7.01 | GENERAL

A. Purpose

The intent of multimodal facilities is to provide:

1. Safety for all modes of travel.
2. Efficient access to abutting parcels.
3. Connectivity to the existing circulation system including urban areas, recreation corridors, and rural areas.

B. Multimodal Facilities within Mesa County

Various multimodal facilities are present within Mesa County. These facilities include:

1. Sidewalks
2. Paved Shoulders
3. Bicycle Facilities
4. Detached shared use paths.

Other facilities may exist within the transportation network and are presented in various design references. Alternative designs will be considered with approval from Mesa County Engineering.

C. Definitions

1. Bicycle Facilities

   Common bicycle facilities found in Mesa County include bicycle routes, bicycle lanes, and shared use paths.

2. Bicycle Route

   A road that is designated and signed as a bicycle route. The road is open to motor vehicle travel. A bike route does not necessarily designate the presence of a bicycle lane.

3. Bicycle Lane

   A portion of a road that has been designated for preferential use by bicyclists. Bicycle Lanes are often identified by use of paint stripe, pavement markings, or signage.

4. Shared Use Path

   A trail or path separated from motor vehicle traffic by an open space or barrier and either within the road right-of-way or within an independent right-of-way. Shared use paths may be used by all non-vehicular modes of transportation including pedestrians, wheelchair users, skaters, and cyclists.

SECTION 7.02 | DESIGN REFERENCES

A. Americans with Disabilities Act (ADA)

Applicable Americans with Disabilities Act (ADA) guidelines including Public Right-of Way Accessibility Guidelines (PROWAG) and Accessibility Guidelines for Buildings and Facilities shall be implemented in the design of multimodal facilities.

In cases of conflict between codes, ADA shall govern.

B. State and Federal Guidance

The most current revisions of the following documents should be primarily referenced as guidance documents:

1. CDOT Roadway Design Guide, Chapter 14 Bicycle and Pedestrian Facilities
2. AASHTO's Guide for the Development of Bicycle Facilities, 4th edition

3. FHWA Achieving Multimodal Networks
4. FHWA Small Town and Rural Multimodal Networks

Other relevant reference documents may be employed in the design of multimodal facilities, but their use should be reviewed by Mesa County Engineering.

C. Adopted Transportation Plans

Multimodal facilities other than curb/gutter/sidewalk shall be in accordance with all adopted transportation plans, including the most current editions of:

1. The Grand Valley Regional Transportation Plan (RTP)
2. The City of Grand Junction Circulation Plan and Active Transportation Corridor Map as adopted by Mesa County (GJ Circulation Plan).

D. Community Plans

Improvements shall follow any guidance provided in Mesa County Community Planning Area documents.

SECTION 7.03 | MULTIMODAL REQUIREMENTS FOR ROADS

A. New Roads

Multimodal transportation facilities shall be considered in the development of new roads that will be petitioned into the county system. The minimum required facilities shall be in accordance with the functional classification of the proposed road per MCDS Chapter 6: Road Design Standards. The level of improvements required are provided below.

B. Existing Roads

Improvements to existing roads adjacent to new developments will be included in the requirements set forth in this section and in MCDS Chapter 6: Road Design Standards.

Capital Improvement projects will strive to enhance these facilities when possible.

C. Safety Considerations for Access Design

Multimodal users are especially vulnerable to turning vehicles at access drives. Access design shall provide for the safe movement of all road right-of-way users. The consolidation of access points benefits multimodal users by reducing the number of conflict points along the roadway. For access and intersection design standards, refer to MCDS Chapter 5: Standards for Access and MCDS Chapter 6: Road Design Standards.

D. Criteria for Identifying Multimodal Facility Requirements

All classifications of road require some level of multimodal requirement per MCDS Chapter 6: Road Design Standards. Improved facilities above the functional classification may be required if a development meets the following requirements:

1. Multimodal facilities are required if the development is within an Urban Development Boundary
2. Multimodal facilities are required if the development is within 1/4 mile of any existing multimodal facilities
3. Multimodal facilities are required if the development is within a 2-mile radius of a school

In certain locations outside of an Urban Development Boundary, if the project is:

4. Within 200 ft of an existing sewer connection
5. Within a half mile of the Urban Development Boundary

Mesa County Planning and Engineering may require multimodal facilities to be included.

SECTION 7.04 | DESIGN STANDARDS

All Multimodal facilities shall be constructed, at a minimum, in accordance with the requirements of ADA and this Code, including MCDS Chapter 6: Road Design Standards, the Mesa County Standard Details in MCDS Appendix 6.2, and the Mesa County Standard Construction Specifications.

A. Alternate Designs

Developments which propose alternative or creative multimodal facilities may be considered for being able to reduce road widths as required in the typical minimum road sections identified in MCDS Chapter 6: Road Design Standards. Alternative designs could include the use of detached shared use paths or advisory shoulders, for example.

Alternative facilities shall meet the goals of adopted transportation plans and shall be approved by both Mesa County Planning and Mesa County Engineering through the design exception process outlined in MCDS Chapter 1: Introductory Provisions.

For layout, design, and construction guidance on facilities not included in these Standards, refer to the State and Federal design references provided in MCDS Section 7.02.

B. Sidewalks

Sidewalks shall be constructed at locations identified in MCDS Section 7.03, and per the design standards in MCDS Chapter 6: Road Design Standards, MCDS Appendix 6.2, and the MC LDC.

C. Curb Ramps / Blended Transitions

All sidewalks and other paths shall provide a blended transition at all intersections and all other crossings. These curb ramps shall meet ADA guidance.

D. End of sidewalk transitions

Ends of sidewalk improvements that do not connect to adjacent sidewalk facilities must include a blended transition into the adjacent road shoulder which meets ADA.

Developments occurring adjacent to these temporary blended transitions are required to remove any adjacent blended transitions create a continuous traversable surface.

E. Road shoulders

A paved shoulder of four feet or wider shall be provided to accommodate pedestrians, bicycles, or other transportation modes as per the Road Section Standards set forth in MCDS Chapter 6: Road Design Standards.

F. Bike Lanes

Bike lanes shall be provided and signed on roads identified in adopted transportation plans and maps including the GJ Circulation Plan. The minimum bike lane width is 4 ft.

G. Detached Shared Use Paths

Shared use paths shall be a minimum of 10 feet wide. The design of the pathway section shall be in accordance with the details provided in MCDS Appendix 6.2. The surfacing structural requirements of the path shall follow the general procedures set forth in MCDS Chapter 8: Surfacing Structural Requirements as evaluated and designed by an Engineer. Shared use paths should meet the requirements of ADA where possible.

Paved shared use paths shall be constructed of reinforced concrete having a minimum thickness of 6" and minimum subbase of 6 inches. Sustained grades for paved paths should not exceed five percent.

Unpaved shared use paths shall be constructed of consist of 4 inches minimum of 1/4" minus graded gravel, a layer of nonwoven geotextile fabric and 6 inches of subbase. Sustained grades for unpaved paths shall not exceed 3%.

Generally, the design speed shall be 20 mph and the minimum centerline radius shall be 60 feet.

CHAPTER 8: SURFACING STRUCTURAL DESIGN

SECTION 8.01 | PURPOSE

A. Summary

This section provides standards for the design of new asphalt and concrete pavement.

B. Goals

To design and construct pavements that provide strong, smooth, safe and economical roadway surfaces to the public.

SECTION 8.02 | APPLICABILITY

These standards are required on all new public and private projects which require pavement design for roads within the Mesa County Right-of-Way.

A. Grand Valley Air Shed

The Grand Valley Air Shed is the region surrounding and influencing the air quality over the populated regions within the Grand Valley where the potential for air pollution is greatest.

To protect the air quality of the Grand Valley, Mesa County requires dust-free construction of all new roads within the Air Shed boundary, as adopted by the Mesa County Board of County Commissioners Resolution in MCM 97-203. MCDS Appendix 8.1 contains this Resolution and the Air Shed Boundary Map. The map is also available to view in the Mesa County online GIS Database, https://gis.mesacounty.us/.

Farm service and canal/ditch/drainage maintenance roads are exempt from this paving requirement.

B. Oil & Gas Haul Roads

Oil and gas well accesses shall meet all criteria contained herein in addition to other requirements as determined by special review and/or other local and state requirements.

SECTION 8.03 | DEFINITIONS

A. 18K Equivalent Single Axle Loads (ESAL)

18,000-pound Equivalent Single Axle Loads (ESAL). The 18k ESAL shall be equivalent to the 20-year average daily traffic volumes (ADT) adjusted by a factor of 110% to account for agricultural and construction traffic. Traffic analysis for the purpose of pavement design shall be as per MCDS Chapter 4: Traffic Studies.

B. Low and Medium Volume Roads

Low and Medium volume roads typically consist of Local, Minor Collectors, and Rural low-volume roads. The minimum 18K ESAL will be 50,000. The required design life is 20-years.

C. High Volume Roads

High volume roads consist of Major Collectors and higher classifications. The minimum 18K ESAL will be 300,000. The required design life is 50 years.

D. Perpetual Pavement Design

Perpetual pavements are defined as asphalt pavements that are designed to last longer than 50 years without requiring major structural rehabilitation or reconstruction, needing only periodic surface renewal in response to surface distresses.

High volume roads shall be designed using the Perpetual Pavement Design concept.

SECTION 8.04 | PAVEMENT STRUCTURE DESIGN

A. Policy and Procedures

The policy and procedures for the design of pavement structural sections shall be based upon the following:

1. Low and Medium-Volume Roads

   AASHTO Guide for the Design of Pavement Structures, 1993/1998 (AASHTO 93/98)

2. High volume roads

   Colorado Department of Transportation's (CDOT) 2020 M-E Pavement Design Manual, which follows the AASHTO Mechanistic-Empirical (M-E) Pavement Design Guide using the Perpetual Pavement Design concept.

B. Acceptable Software

1. Low and Medium-Volume Roads

   Asphalt Pavement Alliance (APA) PerRoadXpress 1.0 or PaveXpress (web-based).

2. High volume roads

   APA PerRoad 4.4, or AASHTOWare Pavement M-E Design (CDOT 2020 method).

SECTION 8.05 | PAVEMENT STRUCTURE DESIGN REPORT

A pavement design report shall be prepared by a Professional Engineer registered in Colorado and shall be considered a requirement of road plan approval.

The pavement design report shall include the following minimum information:

A. Traffic analysis with a breakdown of vehicle types, background and future growth traffic for a twenty (20) year planning window.

B. Soil logs along the proposed roadway alignment at a minimum of 500-foot and maximum of 1000-foot intervals or at changes in soil type.

C. Each log shall have a continuous detailed soil profile below the proposed subgrade elevation. This shall be at least four (4) feet for Low and Medium volume roads and ten (10) feet for High volume roads. Foundation depth of subsurface structures such as pipes and manholes should be considered when identifying the proposed subgrade elevation.

D. Representative samples for pavement design from each log shall be within two feet below the proposed subgrade elevation.

E. Each representative sample shall be classified according to the AASHTO Unified Soil Classification Table, and shall be tested for soluble sulfates, swell and consolidation, sieve analysis, and Atterberg Limits.

F. The pavement design procedure shall be based on the resilient modulus (M_r) or R-value of the subgrade. The California Bearing Ratio test may also be used to determine design parameters. (Note: determination of M_r differs for the AASHTO 93/98 and CDOT 2020 methodologies).

G. Proposed ADT and 18K ESALs for each road.

H. Recommended structural sections based on the design considerations, proposed typical sections, and sections of the roadway which may require additional mechanical and chemical stabilization or treatment to achieve the calculated structural number.

SECTION 8.06 | FLEXIBLE PAVEMENT DESIGN CONSIDERATIONS

Evaluation of pavement structure materials shall follow the methods identified in MCDS Section 8.04.

The following elements are to be used in the flexible pavement design procedure:

A. The 18k ESAL.

B. Traffic growth, calculated with the following expression:

$$Tf=(1+r)^n$$

Where:
Tf=growth factor
r=rate of growth, expressed in years
n=number of years

The Mesa County Regional Transportation Planning Office should be contacted to obtain projected growth rates for each project.

C. The Serviceability Index (SI) for local roads and collectors will be 2.0. The SI for arterials will be 2.5.

D. The regional factor shall be summarized as per Exhibit 8.1. In no case will the regional factor be less than 2.00.

Exhibit 8.1 Pavement Design Regional Factors

Annual Precipitation	
Over 34"	1.00
24" - 34"	0.50
18" - 23"	0.00
14" - 17"	-0.25
Less than 14"	-0.50
Elevation	
Over 9500	1.50
8500-9500	1.00
7500-8500	0.50
Less than 6500	0.25
Drainage	
Very Poor *	1.00
Poor	0.50
Fair	0.25
Good	-0.25
*High groundwater table	
Frost	
Frost boils in area **	3.00
Frost susceptible soil, frost penetration over 28" ** Frost susceptible soil, frost penetration under 28" **	1.00
Moisture available when subject to frost action **	0.25
**Moisture available when subject to frost action	

Other conditions that may influence the choice of regional factors include:

1. Elevation of the grade line, especially in swampy areas where the roadbed soils may be saturated for long time periods
2. Number of freezing and thawing cycles during winter and early spring
3. Steep grades with a large volume of heavy trucks
4. Areas of concentrated turning and stopping movements, such as bus stops, cul-de-sacs, etc.

E. Layer Structural Coefficients shall be selected per Exhibit 8.2. Evaluation of subgrade soils shall be performed as per MCDS Section 8.05.

Exhibit 8.2 Pavement Design Structural Coefficients

Component	Limiting Test Criteria	Coefficient
Plant Mix Seal		0.25
Hot Mix Asphalt	$R_t \geq 95$	0.44
Hot Mix Asphalt	$R_t = 90\text{-}94$	0.40
Hot Mix Asphalt	$R_t = 87\text{-}89$	0.35
Hot Mix Asphalt	$R_t = 84\text{-}86$	0.30
Hot Mix Asphalt	$R_t \leq 83$	0.25
Road Mix Hot Mix Asphaltpitum		0.20
Existing Hot Mix Asphalt		0.20 to 0.44
Aggregate Base Course (A.B.C.)	"R" ≥ 84	0.14
Aggregate Base Course (A.B.C.)	"R" = 78-83	0.12
Aggregate Base Course (A.B.C.)	"R" = 70-77	0.11
Aggregate Base Course (A.B.C.)	"R" ≤ 69	0.10
Cement Treated A.B.C.	7-day test ≥ 650 psi	0.23
Cement Treated A.B.C.	7-day test ≥ 400-649 psi	0.20
Cement Treated A.B.C.	7-day test ≤ 399 psi	0.15
Hydrated Lime Treated A.B.C.	"R" = 84	0.14
Hydrated Lime Treated A.B.C.	"R" = 78-83	0.12
Borrow Material		0.10 *

F. An economic evaluation of three alternative structure sections shall be included in the design. Alternative treatments may also be evaluated, including:

1. Treated Base
2. Geofabrics
3. In-place recycling
4. Fiber Additives

Mesa County will make the final determination of the acceptable pavement based upon economics.

SECTION 8.07 | FLEXIBLE PAVEMENT DESIGN

A. Asphalt Road Design

The minimum compacted thickness of layers of Asphalt Paving Materials and Aggregate Base Course per road type are shown in MCDS Exhibit 8.3.

1. The use of alternative treatments as per MCDS Section 8.06 may alter the minimum required depth. In no case will substitute sections be any less than 3 inches in thickness.
2. Minimum compacted depths of Asphalt Paving Materials and Aggregate Base Course shall only be used when all design consideration requirements and pavement structure design report requirements have been fulfilled and show a section less than this minimum needed to support the design loads.

B. Gravel Road Design

Gravel roads shall be designed in a similar manner to Flexible pavement design in MCDS Section 8.06. Aggregate base course shall be the wearing surface and larger subbase material shall be used to create an adequate structural section. MCDS Exhibit 8.3 lists the minimum thicknesses of these sections.

Exhibit 8.3 Minimum Structural Sections			
	Pavement (inches)	Aggregate Base Course (inches)	Aggregate Subbase (inches)
Local Gravel Road	-	6	12
Local Roads	4	6	*
Collectors	*	*	*
Arterials	*	*	*
* As dictated by project design			

C. Access Surfacing Design

Access surfacing requirements are located in MCDS Section 5.10.H.

SECTION 8.08 | RIGID PAVEMENT DESIGN

The design of rigid pavements for roadway surfaces shall conform to the CDOT 2020 Pavement Design Manual. Thickness shall be dictated by the project design. In no case shall the pavement thickness be less than six (6) inches of concrete and six (6) inches of aggregate base course.

CHAPTER 9: UTILITY LOCATION AND INSTALLATION

SECTION 9.01 | UTILITY INSTALLATION WITHIN THE RIGHT-OF-WAY

A. Utility Installation and Procedures

All new utility corridors and connections to existing utilities must be reviewed and approved by Mesa County Road and Bridge (MC R&B) and have an approved Underground Utility Permit before the start of work. All utility construction shall conform to the requirements of the Underground Utility Permit (MCDS Chapter 3: Permits) and "Article V - Construction Specifications."

B. Utility Installation Specifications

All work within the right-of-way shall be performed in accordance with Mesa County Construction Specifications.

C. Utility Work Moratorium

In streets that are less than five (5) years old, the County reserves the right to deny any street excavation or require repairs that exceed the requirements outlined in these standards.

SECTION 9.02 | UTILITY LOCATION REQUIREMENTS

This Section describes the requirements of all underground utility installations.

A. Underground Utility Corridor Locations

Utilities located in road rights-of-way shall be placed as near as possible to the Utility Trenching Details found in MCDS Appendix 6.2. New utility corridors traveling parallel to the road surface shall be located inside the road right-of-way but outside of the paved section.

B. Aboveground Utility Structure Locations

All utilities requiring above ground risers or boxes at intersections shall locate them outside of the vehicular stopping sight lines as set forth in MCDS Chapter 5: Standards for Access, MCDS Chapter 6: Road Design Standards, and the MC LDC.

C. Trench Locations outside of Roadway

When utilities are to be located behind the curb, the trench or excavation shall be located at a distance away from the back of the curb or edge of asphalt equal to the depth of the trench or excavation.

D. Utility Crossings under Canals / Water Structures

Where utility installation within the road right-of-way crosses beneath any irrigation canals or water carrying structures, all utility installations must be sleeved through the crossing. In no case shall the flow of water be impaired or interrupted, unless approved in advance by the administering authority of the water carrying structure.

E. Underground Utility Investigations via Test Holes

For all investigations involving a need to cut the road surface to locate existing underground utilities physically, an Underground Utility Permit is required. All investigations shall be backfilled and sealed as follows:

At a minimum, holes in the road shoulder must be backfilled with class 6 road base and compacted in 6-inch lifts. Holes in the asphalt roadway must be backfilled with class 6 road base and compacted in 6-inch lifts with the final lift filled with high-strength, quick-setting concrete, or hot mix asphalt to grade.

The completed job shall be flush with the surrounding pavement and have no indentations, pockets, or recesses that may trap and hold water. The sealing of boreholes is the responsibility of the contractor or person making the bore.

SECTION 9.03 | UTILITY INSTALLATION METHODS

This Section describes the requirements of underground utility installation methods.

A. Trenching

Trenching with pavement cuts is permitted when:

a. An unsuccessful attempt has been made to bore or jack the installation directionally;

b. Conflicting utilities place constraints as to elevation or alignment on the proposed installation;

c. The new utility is connecting to an existing utility located beneath the paved portion of the roadway;

d. The work is approved in advance by the MC R&B Road Supervisor or authorized representative.

1. Temporary Road Repair

Cutting existing asphalt shall be accomplished to provide a neat even line perpendicular to the centerline of the roadway. When an open cut is allowed, the permittee is responsible for restoring the disturbed portion of the roadway to its original condition. The disturbed area shall be repaired within forty-eight (48) hours from the time of excavation or twenty-four (24) hours from completion of the project within the roadway.

2. Permanent Road Repair

Road cuts for utility installation or repair made parallel to the centerline of the road and causing damage to or requiring the removal of asphalt, in any traffic lane, requires the replacement of asphalt to the full lane width (or to the centerline of the roadway if the length of the cut is greater than 20 twenty feet) throughout the disturbed section unless a waiver is obtained from the MC R&B Road Supervisor or authorized representative. "T" top trench patching is required for all repairs at the joint between existing and new asphalt as per detail U04 in MCDS Appendix 6.2: Mesa County Standard Details.

All permanent pavement patches and repairs shall be made with "in-kind" materials and depths. For example, concrete patches in concrete surfaces, asphalt patches in asphalt surfaces, concrete pavement with asphalt overlay patches will be expected in permanent "overlaid" concrete streets, etc. Any repair not meeting these requirements will be removed and replaced by the contractor at his or her expense.

3. Unprotected Excavations

No unprotected excavations shall be allowed overnight.

B. Directional Boring / Jacking

For new utilities that are crossing a paved road, the installation shall be made by horizontal directional drilling or jacking beneath the road surface. Open cutting shall be allowed to the edge of the shoulder portion of the road. No water shall be used in boring, and no tunneling shall be permitted. All Boreholes shall comply with subsurface utility engineering requirements to Quality Level B per ASCE-38.

C. Plowing

Utility installation by plowing shall be allowed only with the approval of the MC R&B Road Supervisor or authorized representative. Plowing is not permitted across paved streets. Where plowing operations occur across the roadway prism, full depth road repair and compaction of subbase will be required at least 2 feet beyond the limits of the disturbed area on each side of the plowing trench.

Static plowing will not be allowed closer than 10 feet from the edge of the improved road surface; vibratory plowing will not be allowed closer than 5 feet from the edge of the improved road surface.

SECTION 9.04 | SUBSURFACE UTILITY ENGINEERING

All utility work shall comply with the most current Colorado Revised Statutes (CRS) Title 9, Article 1.5, Sections 102 through 108, and the most recent standard of ASCE-38 as defined by 9-1.5-102(1). These statutes are provided below.

A. New Utility Installations within Right-Of-Way

All utilities installed within the County right-of-ways must be electronically locatable. As a minimum, a 12g single-wire grounded tracer wire with 40 mil min coating is required, or per utility providers specifications. All laterals, services, and stubs must be electronically locatable within the rights-of-way.

B. SUE plans required for permits

Subsurface engineering (SUE) plans must be submitted for all permit applications for all projects with excavations within the County Right-Of-Way. The utilities within the project area shown on the subsurface utility engineering plan must achieve Quality Level B as defined per ASCE-38 and CRS 9-1.5-102 and 103. Plans shall be signed and sealed by a Professional Engineer. Quality Level A information must be shown for all proposed horizontal directional drilling pathways and for all gravity-fed utility installations.

C. Subsurface Utility Engineering Required Projects

Per C.R.S. Title 9-1.5-102, A "Subsurface utility engineering-required project" means a project meets all of the following conditions:

1. The project involves a construction contract with a public entity;
2. The project involves primarily horizontal construction and does not involve primarily the construction of buildings;
3. The project has an anticipated excavation footprint that exceeds two feet in depth and that is a contiguous one thousand square feet; or involves utility boring; and
4. The project requires the design services of a licensed Professional Engineer.

D. Responsibilities of Professional Engineer on subsurface utility engineering-required projects

Per C.R.S. Title 9-1.5-103, At the property owner's expense, a licensed Professional Engineer designing for a subsurface utility engineering-required project shall:

1. Notify the notification association with a subsurface utility engineering notification;
2. Meet or exceed the ASCE 38 standard for defining the underground facility location in the stamped plans for all underground facilities within the proposed excavation area; OR document the reasons why any underground facilities depicted in the stamped plans do not meet or exceed ASCE 38 utility Quality Level B or its successor quality level;
3. Attempt to achieve ASCE 38 utility Quality Level B or its successor utility quality level on all utilities within the proposed excavation area unless a reasonable rationale by a licensed Professional Engineer is given for not doing so; and
4. Document the reasons why any underground facilities depicted in the stamped plans do not meet or exceed ASCE 38 utility Quality Level A or its successor quality level for underground facilities at the point of a potential conflict with the installation of a gravity-fed system.

CHAPTER 10: BRIDGES AND DRAINAGE STRUCTURES

SECTION 10.01 | GENERAL

A. Applicability

This section applies to new bridge and drainage structures in the public right-of-way and private bridge and drainage structures.

B. Purpose

The purpose of following bridge design practices is to:

1. Provide a safe crossing with adequate load carrying capacity, hydraulic capacity, and horizontal and vertical clearances.
2. Provide an aesthetic structure which meets the requirements of its specific location.

The purpose of following design practices for drainage structures is to:

1. Protect human life and property from damage due to stormwater runoff.
2. Maintain road right-of-way drainage, both present, and future.

C. Required Design Documents

The design and supporting calculations for all bridges, low water crossings, and other drainage structures shall be prepared and certified by a Colorado licensed Professional Engineer. Certified as-built drawings must be submitted by the Engineer of Record to the County prior to project close-out.

D. Drainage Criteria

All bridges and drainage structures shall be designed and installed per the latest version of the Stormwater Management Manual (SWMM) and the Mesa Country Specifications.

SECTION 10.02 | REQUIRED PERMITS

The following permits may be required for bridges, low water crossings, and other structures. It is the responsibility of the owner or project manager to identify which permits are required for a specific project. Refer to MCDS Chapter 3: Permits for permit details, application, and adherence requirements.

1. Surface Alteration Permit
2. Floodplain Development Permit
3. Colorado Department of Public Health & Environment (CDPHE): Construction Stormwater Permits
4. Mesa County Stormwater
5. US Army Corps of Engineers Permits

SECTION 10.03 | BRIDGE RATING & INSPECTION

A. Bridge Rating Criteria

All bridge ratings shall be performed by a Colorado licensed Professional Engineer according to the CDOT Bridge Rating Manual.

B. Bridge Structure Classification

CDOT designates bridges and culverts as either Major or Minor Structures. The requirements of this Chapter shall apply to both classifications unless otherwise noted.

1. Major Structures are those which are greater than 20 feet in length.
2. Minor Structures are those which are greater than or equal to 4 feet and less than or equal to 20 feet in length.

3. The structure length is measured along the centerline of the roadway. This measurement is taken between the inside faces of abutments, inside faces of the outermost walls of culverts, or spring lines of arches. For culverts with multiple pipes, this measurement is taken to be the clear distance between the centerlines of the exterior pipes plus the radius of each exterior pipe.

C. Bridge Inspection Responsibility

All publicly owned Major and Minor bridge structures are subject to regular rating and inspection by CDOT or Mesa County. Structures on private roads and driveways are the responsibility of the landowner to inspect and maintain.

SECTION 10.04 | BRIDGE EVALUATION & ACCEPTANCE

Mesa County will consider accepting bridges into the County road system when the bridge demonstrates a benefit to the general public.

Pursuant to CRS 1973 43-5-305, 37-84-103, the following policies have been developed for the acceptance of bridges into the Mesa County Road System.

A. Existing Bridges

All existing structures shall be evaluated by a Colorado licensed Professional Engineer at the owner's expense. The evaluation shall be performed per the requirements of the CDOT Bridge Rating Manual using the Load and Resistance Factor Rating (LRFR) methodology.

Included in the evaluation shall be a comprehensive inspection report performed by properly qualified individuals, which accurately describes all physical features which may influence the structure performance and carrying capacity. Plans, specifications, and drainage calculations shall be submitted to Mesa County Engineering for review.

Only structures with an operating rating greater than or equal to HL93 (without impact) and a sufficiency rating of not less than 80 shall be considered for acceptance onto the County Road System and be determined to be sufficient to support further development loading without rehabilitation. All rehabilitation efforts or corrective actions recommended in the evaluation or inspection report shall have been satisfactorily performed before acceptance.

The bridge may be considered for acceptance subject to a final field inspection by Mesa County Engineering. Mesa County Engineering shall have the final authority in recommending acceptance to the Board of County Commissioners.

B. New Bridges

All new bridges shall be designed per MCDS Section 10.5 and have a sufficiency rating greater than eighty (80). New bridges shall be evaluated by a Colorado licensed Professional Engineer per the requirements of the CDOT Bridge Rating Manual and shall be neither structurally deficient nor functionally obsolete.

SECTION 10.05 | DESIGN STANDARDS FOR BRIDGES

All new structures shall be designed by a Colorado Licensed Professional Engineer per the current AASHTO LRFD Bridge Design Specifications and CDOT Bridge Design Manual. Designs for the structures, including plans, specifications, and calculations, shall be reviewed by Mesa County Engineering before issuance of permits and commencement of construction.

All costs of construction, including quality assurance costs, shall be the responsibility of the owner.

Additional information may be required from the Engineer of Record for bridges that are included or will be included in the National Bridge Inventory. Refer to CDOT for additional information.

A. Width

The clear width of the bridge should be the same or greater than the approach roadway width or current functional classification width. Widths for new structures shall conform to AASHTO standards.

The required minimum width for acceptance of an existing structure shall be the width of the traveled way (pavement width if paved) plus twelve feet (12') for a two (2) lane roadway and, plus six feet (6') for a one (1) lane roadway.

B. Grade

Bridges shall be designed to have adequate drainage to a protected outfall that complies with Clean Water Act and Local drainage criteria and is protected from erosion. Grade along the centerline profile of the bridge shall not exceed 4.0% for private bridges.

C. Loading

All new vehicular structures shall be designed for an HL-93 live load in accordance with the current version of the AASHTO LRFD Bridge Design Specifications.

All new pedestrian structures shall be designed for the greater of a pedestrian and maintenance vehicle live load. These loads need not be applied simultaneously. These live loads shall be in accordance with the AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges. The pedestrian loading shall be 90 pounds per square foot. The maintenance vehicle shall be an H-5 for structures with a clear deck width of greater than or equal to 7 feet and less than or equal to 10 feet and an H-10 for structures with a clear deck width greater than 10 feet.

Some pedestrian bridges may have special requirements for maintenance or emergency vehicle access. Guidance shall be obtained from Mesa County Engineering for dimensional and loading requirements to accommodate these vehicles on a pedestrian bridge.

D. Bridge Rail

Crashworthy railing systems shall be used adjacent to vehicle traffic. Mesa County adheres to railing types required in the CDOT Bridge Design Manual Section 2.4: Railing and Fencing and Section 13: Railings.

For roads with a design speed under 45 mph, such as Minor Collectors or Major Collectors, AASHTO TL-2 rating or higher bridge railing is required.

For roads with a design speed over 45 mph, such as Arterials and Highways, a minimum AASHTO TL-4 rating bridge railing is required.

All bridge rails shall be designed and installed according to CDOT standard details.

E. Bridge Sidewalks and Bikeways

All public bridges shall meet FHWA Design Guidance and Policy Statement recommendations. The FHWA Design Guidance and Policy Statement states: "A bridge that is likely to remain in place for 50 years should be built with sufficient width for safe bicycle and pedestrian use (sidewalks and shoulders) in anticipation that facilities will be available at either end of the bridge even if that is not currently the case. Design bridges with sidewalks and shoulders or bike lanes on both sides of the structure."

The clear walkway shall meet current ADA Accessibility Guidelines for Public Right of Ways (ADA PROWAG) standards. Additional width (up to 12 feet) may be required in a commercial area or near a school or for a shared pedestrian-bikeway facility.

For Arterials or Highways, an approved traffic barrier shall be placed between the traveled way and the sidewalk or bikeway, subject to review and approval by Mesa County Engineering. See Chapters 12 and 14 of the CDOT Roadway Design Guide and Section 2 of the CDOT Bridge Design Manual for more information.

F. Utilities

Utilities attached to bridges shall not impair a structure's load-carrying capacities, obstruct flows within the stream channel, or obstruct sight distance to drivers using the structure. Utilities shall be installed so that they do not interfere with bridge inspection, painting, or other structural maintenance.

G. Signage

For all privately owned bridges, the bridge load limit and bridge ownership should be properly posted by the permit applicant. All postings shall comply with MUTCD Standards, and the signs shall be owned and maintained by the applicant or property owner.

H. Pedestrian Bridges

New pedestrian bridges shall be designed by a Professional Engineer per the CDOT Bridge Design Manual, AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, and AASHTO LRFD Bridge Design Specifications. They shall follow the loading requirements of MCDS 10.05.C.

SECTION 10.06 | DESIGN STANDARDS FOR OTHER DRAINAGE STRUCTURES

Mesa County adopts the City of Grand Junction Stormwater Management Manual (SWMM) to govern drainage criteria and structure design. The most current edition can be found in the City of Grand Junction Municipal Code.

The design and supporting calculations for all drainage structures shall be prepared and certified by a Colorado licensed Professional Engineer.

A. Low Water Crossings

Low water vehicular crossings may be allowed by the County Division of Engineering on a case by case basis. Low water crossings may be allowed on low use rural or primitive roads that provide access to agricultural lands, public lands, isolated existing dwellings, private property, and private inholdings within public lands.

The County discourages the installation of low water crossings and assumes no responsibility for the maintenance or repair of private low water crossings. Users of low water crossings assume all risks.

Low water crossings shall be designed and constructed in such a fashion as to preclude the crossing from being washed out by high water and to prevent the crossing from becoming impassible due to mud during low flow periods.

Downstream channel stabilization will generally be required to ensure the crossing will survive high water conditions. Calculations in support of channel stabilization shall be approved and authorized by Mesa County Engineering and the Army Corps of Engineers for all jurisdictional crossings.

A durable hard surface of stone or concrete will be required in the crossing. The travel surface must remain stable and retain its load-carrying capacity when wet.

The travel surface of the crossing parallel to stream flow shall slope sufficiently to ensure the crossing is self-cleaning and does not routinely accumulate mud and debris. Approaches to the crossing shall be on shallow grades to accommodate vehicular passage when wet or icy. The width of the crossing shall be a minimum clear roadway width sufficient to provide service for the proposed use.

Warning signs may be required at the discretion of the County Division of Engineering.

B. Culverts and Roadside Ditches

Refer to Stormwater Management Manual (SWMM) for the design of culverts and roadside ditches. See MCDS Chapter 6: Road Design Standards, for cross-sectional elements of roadside ditches.

C. Intersections with Irrigation Canals

All construction in the vicinity of Irrigation canals must comply with the standards and requirements of the responsible drainage company or irrigation district.

No new construction shall be permitted to encroach in, under, upon, or interfere with the recorded or apparent easements or Rights-of-way of irrigation canals, laterals, or irrigation drainage channels without the written consent of the property owner and the responsible irrigation or drainage company, or district or lateral association.

CHAPTER 11: TRAFFIC CONTROL DEVICES

SECTION 11.01 | GENERAL

A. Applicability

Design standards for traffic control devices, traffic calming devices, signals, and signage are outlined herein. In general, refer to the Federal Highway Administration's Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) unless otherwise stated in this document.

The following are traffic control requirements specific to Mesa County.

B. Design References

All traffic control devices installed on Mesa County Roads shall conform to the most recent edition of the MUTCD and any manual or supplement approved and distributed by the Colorado Department of Transportation (CDOT).

The Mesa County Engineering shall be responsible for conducting any accident studies, traffic analysis, traffic control studies, or any other engineering studies required by state law or by the MUTCD, which are prerequisites for installing traffic control devices on County Roads. Mesa County Engineering shall keep records of all roads or parts of roads where traffic regulations have been authorized by the Board of County Commissioners.

C. Responsibility for Temporary and Permanent Traffic Control

The developer is responsible for supplying and installing all necessary permanent traffic control devices such as but not limited to, street name signs, stop signs, speed limit signs, channelization, striping, warning/advisory signs, and traffic signals.

Temporary traffic control to ensure public safety during construction activities must be provided. Temporary traffic control includes, but is not limited to, signs, striping, beacons, barriers, barricades, flaggers, and temporary signals.

When a traffic analysis indicates that a traffic signal is warranted, the developer shall be responsible for the installation. The developer shall bear all expenses for the fabrication and installation of all traffic control devices used to implement the approved project design.

SECTION 11.02 | TRAFFIC CONTROL PLANS

A. Plan Preparation and Implementation

Temporary and Permanent Traffic Control Plans can be prepared by a Licensed Professional Engineer in the State of Colorado or a Traffic Control Supervisor (TCS) certified by the American Traffic Safety Services Association (ATSSA). Implementation of the Temporary Traffic Control Plan shall be implemented by a Traffic Control Supervisor. This includes the setup and removal of detours, lane closures, message boards, and other traffic control devices identified on the plan.

B. Temporary Traffic Control Plan

Construction work in the right-of-way requires a temporary traffic control plan as part of the Surface Alteration Permit. The traffic control plan must be approved by Mesa County Engineering and meet the requirements of the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD), Part VI, Temporary Traffic Control.

C. Permanent Traffic Control Plan

During the normal design and review phase for all developments, a detailed traffic control plan shall be prepared which shows the locations of all permanent traffic control devices. This plan shall be submitted to Mesa County Engineering for review and approval. The traffic control plan must meet the requirements of the MUTCD. The traffic control plan shall be consistent with the recommendations of the traffic impact study.

Construction of all approved traffic control devices will be included in the project's Development Improvements Agreement (DIA) requirements. Installation of these features shall be done in accordance with a Surface Alteration Permit. Final inspection will be performed in conjunction with the release from the DIA and road petition process.

SECTION 11.03 | DESIGN & INSTALLATION STANDARDS FOR TRAFFIC CONTROL DEVICES

Refer to CDOT Standard Specifications and all revisions presented in the Mesa County Standard Construction Specifications (MC Specs) for material and installation requirements for traffic control devices.

All traffic control signs and devices shall conform to the latest edition of the MUTCD and any CDOT supplement.

A. Traffic Signals

Signals shall be installed per the requirements set forth herein. This work shall be the furnishing and installing of a complete and functional traffic control system consisting of controllers, signals, and appurtenances as required by Mesa County Engineering.

Signal systems shall be designed per Transportation Research Board National Cooperative Highway Research Program (NCHRP) Report 812: Signal Timing Manual. Materials and placement shall be per Section 614 in the CDOT M&S Standard Plans unless otherwise authorized by Mesa County Engineering.

All public signal design shall be prepared by an engineering firm experienced in performing such work. The engineer shall be a Colorado Licensed Professional Engineer.

1. Vehicle Detection for Traffic Signals

   Loop detection is the preferred equipment of new signal installations at traffic actuated signals. When allowed by Mesa County Engineering, video detection shall be designed per the NCHRP Report 812, Signal Timing Manual. Materials and placement shall be per Section 614-43 in the CDOT M&S Standard Plans. Whenever possible, detector loops shall be pre-formed in a crushed surfacing top course before paving. Loop detectors shall be sensitive enough to detect all licensed vehicles.

2. Testing Traffic Signals

   a. All traffic signals shall be subject to any necessary electrical inspections as well as requirements as set forth in the most recent edition of the NCHRP Report 812, Signal Timing Manual, and the CDOT Specifications.

   b. A traffic signal system shall not be approved or accepted by Mesa County until the signal has performed correctly to the County's satisfaction for a 30-day "check-out" period as outlined below.

   c. Controller and cabinet testing are required by Mesa County. All specifications and material samples shall be submitted to the County for review and approval prior to installation.

3. Check-Out Procedure

   a. The contractor shall call the Mesa County Traffic Department for an intersection check-out after completing the controller cabinet installation along with all other signal equipment complete with wiring connections. All parts and workmanship shall be warranted for one (1) year from the date of acceptance. A performance bond shall be obtained by the applicant for the warranty guarantee.

   b. New signals shall operate without any failure for a period of 30 days. The contractor shall have personnel available to respond to system failure within 24 hours during this 30-day period.

   c. Failure of any control equipment or hardware within the "check-out" period shall restart the 30-day period.

B. Physical Traffic Calming Devices

Traffic calming devices are used to reduce vehicle speeds and cut-through traffic. Implementation of these devices will be determined by Mesa County based on traffic speed, volumes, and pedestrian safety factors and will be permitted with the approval of Mesa County Engineering.

C. Signage Installation and Location

Traffic sign installations shall conform to mounting height and lateral clearance restrictions illustrated in the MUTCD, Part IIA.

Refer to MCDS Appendix 6.2 for a detail showing installation location at street intersections.

Refer to CDOT Standard Specifications and all revisions presented in the MC Specs for specifications and installation requirements of all signage. County-specific requirements include information for Street Names, Road End Markers, Mounts, and Fasteners.

D. Pavement Marking

Refer to CDOT Standard Specifications and all revisions presented in the MC Specs for material and installation standards for temporary and permanent pavement markings.

1. Street pavement marking shall be provided on all Arterial and Collector Streets and at the intersections of all Local Residential Streets with Arterial and Collector Streets.
2. The work shall be accomplished per the MUTCD, CDOT's Colorado Supplement to the MUTCD Standard Highway Signs, and Section 627 of the MC Specs.

CHAPTER 12: ROADWAY FEATURES

SECTION 12.01 | GENERAL

A. Purpose

This section includes design standards for miscellaneous roadway features in Mesa County. The purpose of these standards is to encourage the uniform development and use of roadside features wherever possible.

SECTION 12.02 | SURVEY MONUMENTS

All existing survey control monuments which are disturbed, lost, or destroyed shall be replaced with the proper monument by a Professional Land Surveyor registered in the State of Colorado following the procedure outlined below. Monumentation for plats and development shall also meet the requirements of MC LDC Section 8.12. All such work shall be at the expense of the responsible builder or developer and in accordance with State Law.

A. Monument Locations

Survey monuments shall be set in accordance with Colorado Revised Statutes - C.R.S. 38-51 (and updates, as appropriate).

B. Monument Removal

Any permanent survey monuments marking aliquot section corners requiring removal for any reason shall be referenced by a Professional Land Surveyor and those references shall be submitted to the County Surveyor for review and recorded with the Recording Division of the Mesa County Clerk and Recorders Office before removal of the monument. All efforts shall be made to preserve the old monument and monument box.

SECTION 12.03 | MAILBOXES

Mailboxes erected on public right-of-way shall conform to the requirements of the U.S. Postal Service. Construction of supports and details shall be in accordance with AASHTO "A Guide For Erecting Mailboxes on Highways".

A. Mailbox Location Standards

1. Mailboxes may be located within road rights-of-way but must not obstruct vehicular or pedestrian traffic.
2. In no case shall a mailbox obstruct the traveled way of a roadway, the road shoulder, or impede maintenance activities associated with the facility.
3. Mailboxes shall not be permitted within sidewalks, paths, or maintained roadside ditches.
4. On roads without a curb, the mailbox face shall be located at least eight feet from the traveled way and adequate shoulder areas shall be provided for mailbox access. Variations to this are subject to the approval of Mesa County Engineering.
5. The mailbox shall be positioned in the direction of the carrier's route of travel.
6. A mailbox near an intersection cannot be closer than 100 feet to the intersecting road.
7. In high density areas and on roads with curb and sidewalks, cluster mailboxes may be required. Streets with a curb and detached sidewalk: the mailbox face shall be located a minimum of one foot behind the curb face. The mailbox should have a rear-facing door to facilitate mail removal without stepping into the street. Streets with attached sidewalk: the mailbox face shall be located a minimum of one foot behind back of walk.
8. Cluster mailboxes or neighborhood box units shall not be placed in the area designated for sight distance or sight zone.
9. Neighborhood mailboxes shall be considered a commercial location and must maintain the required driveway setback from intersections.
10. Neighborhood mailboxes shall be shown on the development site plans.

Mailbox Support Standards

1. Mailboxes and newspaper delivery boxes shall be of light sheet metal or plastic construction. The mailbox standard height is 41 to 45 inches above the road surface.
2. A mailbox support can be a single 4-inch x 4-inch square or 4½ inch diameter wooden post, or a 2-inch diameter schedule 40 steel pipe (two-and-three-eighths inch O.D.). The post must be embedded no more than 24 inches into the ground will be acceptable as a mailbox support.
3. A metal post shall not be fitted with an anchor plate, but it may have an anti-twist device that extends no more than 10 inches below the ground surface. Mailbox supports shall not be set in concrete unless the support design has been shown to be safe by crash tests when so installed.
4. The post-to-box attachment details should be of enough strength to prevent the box from separating from the post top if the installation is struck by a vehicle.
5. No more than two mailboxes may be mounted on a support structure unless the support structure and mailbox arrangement have been shown to be safe by crash testing, or meet the requirements set forth in the above AASHTO guidelines.
6. Light weight newspaper boxes may be mounted below the mailbox on the side of the mailbox support.
7. Mailbox support designs that differ from the AASHTO guidelines may be acceptable if approved by Mesa County Engineering and are subject to the exception process outlined in MCDS Chapter 1: Introductory Provisions.

SECTION 12.04 | GUARDRAIL

Guardrail reduces accident severity by deflecting vehicles into safer paths or by reducing the rate of deceleration in the case of pending collisions with fixed objects. Guardrail should be considered to protect a fixed object, at locations of high accident rates, in areas of steep terrain or high embankments, on isolated sharp curves where a speed reduction is necessary, or other locations as directed by Mesa County Traffic Engineer.

A. Guardrail Location

1. Need and placement of guardrails shall be in accordance with AASHTO Roadside Design Guide as supplemented by CDOT Roadway Design Guide.
2. The proposed location of guardrail shall be reviewed and approved by the Mesa County Traffic Engineer.

B. Guardrail Design and Materials

1. For guardrail design details, see CDOT Construction Specifications and CDOT M Standards.
2. Guardrail material and design shall be approved by the Mesa County Traffic Engineer.

SECTION 12.05 | BUS STOPS

Grand Valley Transit (GVT) determines location and design of transit bus stops. Mesa County Valley School Districts determines the location and design of school bus stops. Plans shall be approved by the respective entities.

A. Transit Stop Design

Where applicable, accesses shall be designed to accommodate buses or other transit vehicles in accordance with the current GVT design standards. These accommodations shall occur at high-intensity land uses that may be served by transit.

SECTION 12.06 | RETAINING WALLS

A. Design Requirements

Rock walls, segmental block walls and concrete retaining walls in the public right-of-way over 4 feet high shall be designed by a Professional Engineer and shall conform to AASHTO Roadside Design Guide and the requirements of clear zone width and sight visibility set forth in MCDS Chapter 6: Road Design Standards. Structure designs shall be submitted to Mesa County Engineering for approval prior to construction.

B. Permit Requirements

All retaining walls in the right-of-way shall require a Surface Alteration Permit for construction.

C. Field Observation

Geotechnical or structural inspections will be required to be performed during construction at the cost of the applicant.

SECTION 12.07 | STREET LIGHTING

All lighting shall conform with the requirements set forth in the MC LDC, including Section 8.07F. To enhance the safety of motorists and pedestrians, new streets created through the subdivision process within the Urban Development Boundary shall follow the current City of Grand Junction street lighting standards.

Outside the Urban Development Boundary, installation of street lighting will be at the discretion of the County Traffic Engineer.

Street lighting plans must be approved by the local electric service provider and Mesa County. Streetlight locations must be shown on the utility composite plan.

In no case will Mesa County assume responsibility for installation, maintenance, and operation costs of any street lighting required by this provision.

For design standards, details, and installation guidelines, adhere to CDOT Lighting Design Guide and CDOT M&S Standards.

SECTION 12.08 | SIGNS

The developer is responsible for providing all temporary construction traffic control signs, devices and flagging. The developer is also responsible for permanent traffic control devices, street signs and any other required signs. For design standards for traffic control devices, refer to MCDS Chapter 11: Traffic Control Devices.

CHAPTER 13: REVEGETATION STANDARDS

SECTION 13.01 | GENERAL

A. Purpose

Revegetation is important to limit erosion in order to protect land, water quality, and air quality.

Revegetation is challenging because of Mesa County's semi-arid and arid climate, introduced weeds, poor soils, and difficult growing conditions. Successful revegetation requires proper planning, installation, and maintenance.

This Chapter provides guidance to achieve successful revegetation of disturbed soils and to help meet the requirements of the Clean Water Act, MS4 Regulations, CDPHE Construction Stormwater criteria, and the Mesa County Stormwater Division.

B. Goals

The goal of this Chapter is to provide landowners and construction/design professionals with information and a minimum standard of revegetation which can be implemented to revegetate all bare or disturbed land, as well as assist in the reduction of unwanted weeds.

C. Applicability

These standards shall apply for all land disturbed by construction activities of any size for which final stabilization is not being provided by more intensive landscaping or surfacing requirements.

The revegetation mixes contained in this Chapter are provided as a County-wide resource but can be replaced or amended by project-specific mixes. The revegetation mixes may supplement the requirements of the Mesa County Land Development Code (MC LDC) and can be utilized in spaces identified for low-water consumption grasses, native/adapted species, and low-maintenance stormwater facilities such as swales and detention ponds.

D. Definitions

1. Final Stabilization

   The condition reached when all ground surface disturbing activities at the site have been completed, and for all areas of ground surface disturbing activities a uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.

SECTION 13.02 | REVEGETATION REQUIREMENTS

All disturbed land left bare by construction activities, no matter the size of the disturbance shall be reseeded with an appropriate dryland native/adapted grass mix upon completion of the phase of work.

A. Right-of-Way and Utility Installations

Right-of-way shoulder restoration, utility corridor revegetation, or other capital improvement projects shall use, at a minimum, the seed mixes and methods described in MCDS Section 13.03.

B. Landscaping Requirements for New Development and Roads

If the project involves landscaping requirements set forth in the MC LDC, those standards shall govern.

The revegetation mixes contained within this Chapter may be utilized in spaces identified for low-water consumption grasses, native/adapted species, and low-maintenance stormwater facilities such as stormwater swales and detention facilities.

A landscape plan is required for all development projects:

1. within Urban Zoning Districts
2. within Rural communities
3. along new street frontages

4. on non-residential development along State highways or arterial roads

These projects shall adhere to the standards set forth within the MC LDC, which includes MC LDC Section 8.02.

C. Subdivisions

Final stabilization is required by CDPHE and Mesa County on disturbed areas of subdivision lots at the time of substantial completion review during the Developers Improvement Agreement (DIA) process. The establishment of vegetation must be shown throughout the warranty period and is a requirement of DIA Closeout.

D. Revegetation by Intersections - Visibility Triangles

Per the standards of MCDS Chapter 6: Road Design Standards, all plant materials shall be no taller than three (3) feet within all Visibility Triangles.

SECTION 13.03 | REVEGETATION STANDARDS

Mesa County has worked with the local Colorado State University Extension Office (CSU Extension) and the local National Resources Conservation Service (NRCS) to develop general native and adapted seed mixes which are commonly available at seed suppliers and are applicable for regions within the County based on elevation, soil type, and geographic features.

A. Soil Test & Salinity Test Recommendations

Mesa County has soils with high alkalinity and/or salinity content in various regions. Only select vegetation can handle these harsh growing conditions.

A minimum of one salinity test is recommended per project to identify if the site contains high salinity soils. The supplied mix for Shaly and Alkaline soils can be applied in these conditions. More in-depth testing is available which would provide suggestions for amendments and identify other conditions.

The CSU Extension office is one facility that provides general salinity testing at low or no cost. Contact the CSU Extension Tri-River Area office for more information, and to obtain a list of soil labs that can perform more in-depth testing.

Colorado State University Extension - Tri River Area

2775 Highway 50 Grand Junction 81503

(970) 244-1834

tra.extension.colostate.edu

B. Noxious Weeds

All seed mixes proposed to be used within Mesa County must be certified weed-free and must be free of all noxious weeds.

Lists of Noxious weeds are provided by Mesa County Weeds and Pest Management.

C. Seed Mixes

Basic seed mixes have been prepared for the following zones and are provided in tables and as an active spreadsheet in Appendix 13.1. The spreadsheet can be used to calculate the pounds of seed required for the project area. The seed mix zone can be identified based on the project's location on the Revegetation Index Map provided in Appendix 13.1 and as provided on Mesa County online GIS Database, https://gis.mesacounty.us/.

These mixes can be amended to include native flower and shrub species as noted in the spreadsheets.

1. Shaly and Alkaline Plains

   Saline soils are often identified as having a white salt crust on the soil surface. Upon analysis, they are characterized by: Electroconductivity (EC) > 4 mmhos or desa siemens, Exchangeable Sodium Percentage (ESP) <15, and pH < 8.5

2. Agricultural Vegetation, Introduced & Semi-Natural Vegetation

   These areas generally include lands developed for agricultural use including the Grand Valley, Plateau Valley, and DeBeque.

3. Semi-Desert Scrub & Grassland

   These areas include low-elevation sagebrush and grasslands generally found below 6000 feet.

4. Cliff, Scree & Rock Vegetation

   These areas include rocky outcroppings, scree slopes, and cliff areas encountered at elevations below 9000 feet.

5. Woodland & Shrubland

   These areas generally are found between elevations of 6000 and 9000 feet and native vegetation includes Gambel Oak and Pinyon-Juniper forest.

6. Shrubland, Forb Meadow & Grassland

   These high elevation meadows are found above 7500/8000 feet on the Uncompahgre Plateau, Grand Mesa, and Battlements.

7. High Elevation Forest

   These montane areas generally include pine and aspen forests above 7500/8000 feet

D. Application of Seed Mixes

1. Planting Specifications

   Seed should be drill broadcast or hand broadcast as described in the native seeding methods per Section 212 of Colorado Department of Transportation (CDOT) Standard Specifications as adopted by Mesa County.

   The least amount of seed per acre is required when drill seeding on non-irrigated land; irrigated areas and areas re-seeded by broadcast methods should be doubled per spreadsheet recommendations.

2. Soil Preparation

   Soil should be prepared as described in the Section 207, Topsoil, per CDOT Standard Specifications as adopted by Mesa County. Soil prepared for seeding shall be ripped to a minimum depth of 14 inches. Underground utilities shall be located prior to soil preparation.

3. Soil Amendments and Mulch

   Soil amendments or compost are not required for these seed mixes, but their use is encouraged for certain soil types and seed mixes. Mulching with weed-free hay or straw for purposes of erosion control prior to establishment is encouraged. If a project is considering using amendments, an in-depth soil test per 13.03A should be performed to identify the appropriate amendments to apply.

4. Planting Dates

   Planting dates should be per CDOT Standard Specifications as adopted by Mesa County. Seeding seasons generally are as follows:

Exhibit 13.1 Western Slope Seeding Seasons
Reference: Section 212.03, Seeding Seasons; 2019 CDOT Standard Specifications for Road and Bridge Construction

Zone	Spring Seeding	Fall Seeding
Western Slope		
Below 6000'	Spring thaw to May 1	August 1 until consistent ground freeze
6000' to 7000'	Spring thaw to June 1	September 1 until consistent ground freeze
Above 7000'	Spring thaw to consistent ground freeze	

(1) "Spring thaw" shall be defined as the earliest date in a new calendar year in which seed can be buried ½ inch into the surface soil (topsoil) thru normal drill seeding methods.
(2) "Consistent ground freeze" shall be defined as that time during the fall months in which the surface soil (topsoil), due to freeze conditions, prevents burying the seed ½ inch thru normal drill seeding operations. Seed shall not be sown, drilled, or planted when the surface soil or topsoil is in a frozen or crusted state.

5. Establishment

   All reseeded areas must receive regular water to establish. Recommendations are once a week for the first month, then twice a month for two months, or per seed house recommendations.

   Once established, these mixes should endure on natural rainfall.

6. Warranty Period

   All final stabilization is required to have a 12-month warranty period included as part of the Warranty period set forth in MCDS Section 2.02.D. If vegetation fails, it is the responsibility of the owner to re-establish. Management of weeds during this period shall also be required per MCDS Section 13.04.

7. Disclaimer

   Mesa County does not provide any guarantee or warranty that these mixes will grow or establish as is intended.

SECTION 13.04 | WEED CONTROL REQUIREMENTS

Each property owner is responsible for managing the vegetation on their property and is encouraged to work together with neighboring parcels to help reduce the population of unwanted weeds & noxious weeds.

Mesa County Noxious Weed and Pest Management is responsible for noxious weed management in the unincorporated areas of the County as mandated by the Colorado Noxious Weed Act and outlined in the Mesa County Noxious Weed Management Plan.

A. Weed Management Plan

All projects must include and implement a weed management plan. Following construction activities, general and noxious weeds shall be controlled by the contractor during the warranty period for twelve (12) months to permit successful revegetation efforts.

Best management practices that may be included in the weed management plan may include:

1. Cleaning of equipment prior to and after delivery to site
2. Application of pre-emergent herbicide treatments