(Last Amendment; September 1, 2010)

SECTION 15

OURAY COUNTY ROAD STANDARDS

15.1 POLICIES AND PROCEDURES:

A. PURPOSE

(1) This section sets forth the policies and procedures related to all public and private rights-of-way in Ouray County. The intent of this section is to provide for a uniform road and right-of-way development policy throughout the unincorporated portions of Ouray County, and to provide a clear statement of the procedures for road and right-of-way development.

B. APPLICATION OF STANDARDS:

(1) The requirements contained herein shall apply to all construction of new public roads, private rights-of-way and all other work affecting rights-of-way that are planned for or subject to present or anticipated public use within the jurisdiction of Ouray County, except roads used exclusively for mining, agriculture, farming, and ranching. In addition, roads for any other purpose constructed entirely within the boundaries of one parcel of property and that do not directly intersect a County Road shall be exempted from Section 15. The foregoing exceptions shall not apply to any road, right-of-way or driveway which leads to any residential structure.

(2) This section applies specifically to (a) new roads and driveways within new subdivisions, (involving lots of 35 plus acres,) and Planned Unit Developments (PUDs); (b) new roads and driveways providing access to new single family residences, c) existing County roads that provide access to new subdivisions and PUDs; and, (d) new county roads and new extensions and/or upgrades of existing county roads.

(3) Upgrades to existing county roads for purposes of improving safety and accessibility to the traveling public on such roads and that are not as a result of an anticipated increase in traffic volume from new development may be approved and completed based upon engineered designs approved by the Ouray County Engineer and the Ouray County Road Superintendent. Such upgrades need not bring the section of road to full compliance with the standards set herein.

(4) These requirements may be enforced by the County utilizing any legal and/or equitable remedy available under this Code, any Ouray County Code, Colorado State statute, or other Colorado law. These remedies include, but are not necessarily limited to, injunctive relief and/or suits for damages caused to County roads or rights-of-way.

(15.1)

C. GENERAL POLICIES:

(1) New Roads and Driveways within New Subdivisions and PUD's. The capital cost of new roads within new subdivisions and PUDs shall be paid for or bonded for by the developer of such subdivisions and PUDs. No such roads may be constructed except in conformance with the standards set out in Section 15.2 and pursuant to a County permit. Maintenance of such roads shall be performed by the developer, homeowners or homeowners' association until such time as said roads may be accepted for maintenance by the County.

The capital cost of new driveways within new subdivisions and PUDs shall be paid for by homeowners or by developers and shall be constructed pursuant to a County Building Permit and the standards set out in Section 15.2X.

(2) New Roads to New Single Family Residences. The capital cost of such roads shall be paid for by the owner of the residence, and shall be constructed pursuant to a County Building Permit and the standards set out in Section 15.2X.

(3) New Development Accessed by County Roads. When a new subdivision/PUD is to be serviced by a county road, the developer(s) of such new subdivision/PUD shall, as a condition of County approval of such new subdivision/PUD, be subject to any impact fee due in accordance with Section 15.5. Wherever, however, such developer proposes to reconstruct an existing county road or constructs a new county road in accordance with the standards contained in this Section, the County may, in consideration of such proposal, waive all or a portion of any such impact fee. Nothing in this Section shall be construed so as to prevent the County from denying or delaying development to insure that the timing of development coincides with provision of adequate access to County maintained County roads.

(4) New County Roads or Extensions to Existing County Roads. All County roads built or extended after the effective date of this Section shall meet all County standards, except the County shall in no case be obligated by this Section 15 to pave such roads and improvements/extensions.

(5) County Acceptance of Roads for Maintenance. The County will maintain only those roads specifically accepted for maintenance by the Board of County Commissioners. When accepted for maintenance by the County, the County will provide a rural level of maintenance as available funds, manpower, and equipment permit. A rural level of maintenance means snowplowing during the day, repair and cleaning of drainage structures, and general maintenance of the roadway in the condition it was in when accepted for maintenance. Twenty-four hour snow removal and road sanding are not included.

(15.1C)

(6) Safety and Efficiency. Safety and efficiency are primary concerns in roadway construction and improvements.

(7) Compatible and Incompatible Uses. Roads can and should be used to unite compatible uses and separate incompatible uses, to define neighborhoods, provide maximum mobility, and support development that is consistent with the County Master Plan.

(8) Attractive Travel Corridors. Design and planning of roadways which provide for attractive travel corridors and minimize terrain disturbance shall be encouraged. To the extent required by Section 9 of the Ouray County Land Use Code, all road/private right-of-way/driveway development shall comply with the County's Visual Impact Regulations.

(9) Federal and State Requirements. In addition to the costs of road improvements imposed by the County under this Code, the Developer(s) of a subdivision/PUD, as a condition of final subdivision/PUD approval, will be required to pay for the development, engineering, design and installation of any road or highway improvements which are imposed by governmental authorities other than the County. These improvements may include, but are not limited to, accel/decel lanes, new or improved intersections, traffic control devices and other items.

D. COUNTY ROAD SYSTEM:

(1) Administration. The State of Colorado, by statute, authorizes the Board of County Commissioners to administer the County road system including, but not limited to, maintenance, layout, alterations, deletions, additions, property acquisition, and traffic regulation.

The Ouray County Planning Commission advises the Board of County Commissioners in matters of route and circulation planning and development standards. It may conduct public hearings related to proposed road construction and changes. The County is responsible for planning for future County traffic circulation needs and establishing construction standards. In order to maintain a uniform road development policy throughout the unincorporated portions of Ouray County, the County Engineer and County Road Superintendent will review plans and conduct such inspections as may be necessary in order to ensure compliance with the provisions of this Section and the Land Use Code. Generally, costs of such inspections and reviews may be imposed on the applicant in accordance with a fee schedule adopted by resolution of the Board of County Commissioners.

(15.1D)

(2) Functional Road Classification. Roads in Ouray County are classified functionally as follows (examples as of the date of adoption of this Section):

(a) Principal Arterials. A principal arterial is a continuous access-controlled road which serves corridor movements having trip length and travel density characteristics indicative of statewide travel. All principal arterials in the County are administered by the Colorado Department of Transportation**:** e.g**.,** US Highway 550**,** Colorado State Highway 62.

(b) Minor Arterials. Minor arterials link cities and larger towns and other traffic generators such as major resort areas, providing intra-County service. Minor arterials should provide for relatively high overall travel speeds with minimum interference to through movement. There are no minor arterials in Ouray County.

(c) Collectors. A collector is a vicinity-wide continuous access road connecting local access roads to arterials: e.g., the portion of County Road 1 from Fairway Pines to County Road 24.

(d) Local Access Roads. A local access road provides direct access from abutting properties to other roads: e.g., County Road 24 and most other County Roads.

(e) Local Service Roads. Two-lane roadways serving isolated areas that have little or no potential for future development and serve a minimal number of parcels of land: e.g., County Road 7.

(f) Access Tracts. A two-lane roadway providing direct access from three or less single-family residences to other roads: e.g., County Road 7A.

(g) Primitive Roads. Historic roads of a typical narrow, rough and sometimes steep nature, which access public lands or which provide alternative seasonal access: e.g., jeep roads.

(3) Ouray County Road Administrative Classifications. For administrative purposes, Ouray County roads are divided into the following types:

(a) TYPE 1 - Type 1 roads are accepted for year-round maintenance by the County and provide all-weather routes for public traffic: e.g**.** County Road 1 and most other County Roads**.**

(b) TYPE 2 - Type 2 roads are roads that may be maintained in the summer or winter only as available funds, manpower and equipment permit: e.g., Government Springs Road.

(c) TYPE 8 - Type 8 roads are roads meeting minimum standards which are not maintained by the County: e.g. most subdivision roads.

(d) TYPE 9 - Type 9 roads are existing roads which do not meet current County standards and are not maintained by the County: e.g. County Road 22 extension**.**

(4) Design Capacities for Classes of Roadways. Table 1 presents the maximum allowable capacity for specific classes of roadways.

TABLE I

Classification of Roadways Based on Traffic Count	
Classification	ADT*
Principal Arterial	4401 - 10,000
Minor Arterial	1501 - 4,400
Collector	501 - 1,500
Local Access	101 - 500
Local Service	25 - 100
Access Tracts	Less Than 25
Primitive Roads	N/A

*Average Daily Traffic (Total number of vehicles passing a designated point in both directions during an average 24 hour period, from samples taken May - September)

(5) County Road Map. An official Ouray County road map showing all roads accepted for maintenance by the County together with their classification has been adopted by the Board of County Commissioners and is available at the Road Department Office.

E. NEW SUBDIVISION/PUD AND RESIDENTIAL ROAD DEVELOPMENT:

(1) General Procedures. Before commencement of construction of a subdivision/PUD or residential road or development of a private right-of-way which is subject to the requirements of this Section, the applicant shall submit an application for a Road Development Permit to the Road and Bridge Department with copies to the Planning Office and County Engineer. Said application shall comply with the submittal requirements and planning process as set forth in Section 15.1.E(2). No construction shall be permitted until issuance of a Road Development Permit.

(2) The Planning Process. In all applications for a Subdivision/PUD or residential Road Development Permit, the following submittals are required at the respective stages of the Permit review process:

(15.1E2)

(a) Sketch Plan. A review of conceptual plans for the proposed roadways, including but not limited to proof of legal access.

(b) Preliminary Design. Analysis of the density to be served, proposed classification and design speeds, preliminary alignments and road grades, a brief review of fiscal impact in relation to County road maintenance, and discussion of impacts to existing roadways and adjacent properties. See the Design Standards at Section 15.2 of these regulations for discussions of these requirements.

In the case of residential roads and subdivisions/PUD, involving no more than two residences, road_standards and requirements are set out in Section 15.2(X) involving driveways.

(3) Detailed Design. Following preliminary design approval, and in accordance with the approved preliminary design, all design work is to be prepared and signed by a Professional Engineer registered in the State of Colorado. Plans sufficiently detailed to facilitate review are to be submitted to the County Engineer for approval at least 60 days prior to anticipated construction; or, in the case of subdivisions or PUDs, in accordance with the submittal deadlines for consideration of, or recommendation for preliminary approval by, the Planning Commission. Plan approval is valid for one year. After one year, if construction is not started, the detailed design must be re-submitted and revisions in standards made in the interim shall apply. Alternately, a phasing schedule may be submitted for approval. Plans shall include the following:

(a) Profiles for all roads, existing and proposed sewer and water lines, showing the grades; lengths of vertical curves; stationing and elevations of Begin Vertical Curve (BVC's), End Vertical Curve (EVC's) and Point of Intersection Vertical Curve (PIVC's); existing grade or ground lines by dashed line; culverts, structures, and other controls. Preferably, all profile views shall be drawn to a scale of 1" = 50' horizontal and 1" = 5' vertical on 24"x36" sheets.

(b) A description of at least two usable bench marks within 1/2 mile. USGS or BLM are to be used when possible.

(c) Layout of road showing length of tangents and curves, widths of rights-of-way, slope lines to prove that right-of-way width is sufficient, stationing of end of curve's and beginning of curve's, curve radii, delta angles, bearings, distances, centerline stationing at 100-foot intervals, dimensions of all road elements, curbs, gutters, utilities easements, and other structures. Also to be shown are the limits and inclination of cut and fill slope with new and existing elevation contours, and the location and size of culverts designating the type and gauge or strength classification and the estimated flow (along with data assumed in estimating the flow.)

(d) North arrow, scale, street names, drainage patterns, and typical road cross-sections.

(e) Construction plans for all structures, bridges, box culverts, and guard rails, etc.

(f) A letter of intent stating the scope and time element of each stage of construction. A statement indicating the party or parties responsible for the construction.

(g) Letters from utility companies, ditch companies, fire departments, and other interested parties or agencies involved, stating their approval of any structure constructed within their right-of-way or which may influence their rights or interests.

(h) In the case of subdivisions/PUDs, a detailed cost estimate shall be submitted, if the construction is to be bonded or otherwise secured.

(i) Roadways affecting other governmental agencies such as the U.S. Forest Service, the Colorado Department of Transportation, or Towns, shall require written notice to the affected agency.

(4) Right-of-Way Dedication. As a condition of the final approval of any subdivision/PUD, the Board of County Commissioners shall require each developer to dedicate rights-of-way for public use on and along any and all existing roads that traverse the development, and those dedicated rights-of-way shall meet all standards in this Section 15. In all other cases, the procedure shall be as follows:

(a) The applicant shall submit a written request to the Planning Department consistent with Planning Department submittal deadlines for the next regularly scheduled Planning Commission meeting stating the reasons for the request and including a map showing the topography and land parcels involved along with a copy of the proposed deed.

(b) The Planning Commission shall review the request, form a recommendation, and submit it to the Board of County Commissioners for consideration.

(c) Upon approval of the request by the Board of County Commissioners, the deed shall be recorded with the County Clerk and Recorder, and a copy of the deed shall be submitted to the County Road Superintendent.

(15.1E4)

(5) Bonding Requirements. The term "bond" shall apply to any escrow account or uncancellable surety secured unto the County and in a form acceptable to the County Attorney. Bonds shall be in the amount of the estimated construction cost plus contingencies as recommended by the County Engineer. Bonds shall be forfeited if work is not completed in accordance with approved plans and specifications or if, in the opinion of the County, the work is not progressing in a satisfactory manner. As logical units of work are completed and approved by the County Engineer, application may be made for a partial release of the bond.

(6) Inspection of Work.: During construction of any road which will be dedicated to public use, the applicant's Design Engineer or its designated site representative and the County Road Superintendent, County Engineer or designated agents shall inspect the work of the contractor or contractors involved, The stages shall include, but not be limited to, each of the following:

(a) Staking

(b) Rough cut

(c) Sub-grade preparation and drainage

(d) Sub-base

(e) Course

(f) Paving

No work shall proceed on a subsequent stage until the County Road Superintendent or County Engineer has approved the previous stage. The applicant's Design Engineer shall notify the County at least 24 hours in advance that a stage is ready for County inspection. Such inspections shall include conformance with the requirements set out in Section 15.3.

(7) Reports, Certifications, and Testing**.** The applicant's Design Engineer shall:

(a) Review and certify work completed prior to any request for partial release of bonds.

(b) Certify that the road work is proceeding in conformity with the plans and specifications.

(c) Certify that the road has been completed in accordance with the County Standards.

During construction, the County Engineer or Road Superintendent shall review the work and request the necessary documents or testing to verify that construction is proceeding in accordance with the approved plans and specifications.

Upon satisfactory completion of the work, the County Road Superintendent shall issue a certificate of completion based on the applicant's Design Engineer's certification and the County Engineer's approval.

(8) Acceptance for Maintenance. The Board of County Commissioners shall have sole power and discretion to accept, or to deny acceptance of, any road's inclusion on the County Road System for maintenance purposes. Any petition for acceptance of maintenance shall be submitted to the County Planning Office with a copy to the County Road Superintendent. Such petition shall include, at a minimum, an analysis of the proposed annual cost of maintenance of the road, coupled with an analysis of all sources of revenue which would be made available to the County for maintenance of the road should the County place it on the County Road System. The Board, as a condition of acceptance of the road, may require a bonding or other agreement from the petitioner to ensure adequate funding of maintenance of the subject road where the above analysis indicates that there will be a shortfall of revenues available to the County for maintenance. No road will be accepted for maintenance which does not meet the minimum standards as set forth herein, unless otherwise determined by the Board of County Commissioners.

F. COUNTY ROADS:

(1) New Development Accessed by County Roads: Where new development is accessed by existing and/or proposed County roads, the preliminary submittal, as required by Section 6 of this Code, shall include an analysis of the projected traffic volume resulting from such development. Where the projected additional volume of traffic to result from such development (including subdivisions/PUDs, new residences, and new commercial development, (a) results in increased maintenance requirements or (b) is located in an area requiring construction and/or reconstruction of a County road or roads, the County shall, as a condition of final approval of such development, collect any impact fees due in accordance with Section 15.5. In lieu of such impact fees, the County may allow such developer, at its expense, to bring such county road(s) up to the standards set out in this Section, providing the location of such roads is approved by the Board of County Commissioners. Nothing in this Section shall be construed to prevent the County from denying or delaying development to insure that the timing of development coincides with the County's road improvement program.

(2) Road Encroachment Permits. Prior to performing any work within County Road rights-of-way, contractors, developers, utility companies, landowners or other governmental agencies shall be required to obtain a permit for such work from the County Road Superintendent. The County may require a bonding or other surety agreement as a condition of the issuance of the permit in order to ensure restoration of the right-of-way to its prior condition after completion of the work.

(3) Road Vacations. Anybody wishing the County to vacate an existing County or other public road must apply for such vacation to the County Planning Department with a copy to the County Road and Bridge Superintendent. Such application shall include, at a minimum, a complete and accurate legal description of the road to be vacated, a list of all property owners of land adjacent to the roadway, a list of all known road users, a list of any utilities affected by the proposed vacation, and substantial evidence that vacation of the road will not leave any land adjoining said road without an established public road access or private-access easement connecting said land with another established road. Upon receipt of a completed application, the Board of County Commissioners will follow the procedures for vacation of a road as set out in Colorado Revised Statutes, Section 43-2-303, (including notice to known road users). The Board may, in its discretion, hold a public hearing on the application prior to taking action on any application for vacation of a County Road. Upon vacation of a road, title to the vacated road shall vest in accordance with the provisions of Colorado Revised Statutes, Section 43-2-302.

15.2 ROAD DESIGN STANDARDS:

A. Purpose

This section sets forth specific standards for roadway design in Ouray County and is intended for use by design engineers. These standards establish a level of roadway design to assure (a) the health, safety, and welfare of all County residents and (b) that County residents will not later need to rectify inadequately designed and constructed facilities.

B. General Procedure

The design of a new road shall be based upon County projections of future development and densities and estimates of future traffic volumes, as well as the Road Design Standards set out below. The road classification and terrain category determine the geometric cross-section and maximum sustained grades, while the design speed determines minimum or maximum standards for elements of alignment such as stopping and passing sight distances, radii of curvature, tangent lengths, and super elevation transition lengths.

(15.2)

C. Basic Design Policies

(1) Projected Traffic Volumes. Table 2 presents traffic generated for various types of development. For example, residential property is stipulated to generate an Average Daily Traffic (ADT) count of seven (7) trips per living unit. These per unit ADT counts shall be applied to generate estimates of traffic volumes. When per unit ADT counts are not listed for a type of development, the design engineer shall propose a per unit ADT for approval.

TABLE 2
PER UNIT AVERAGE DAILY TRAFFIC (ADT)

Land Use	UNIT	ADT	ITE
1. Residential			
a. Single Family	Trips/D.U.	7 ADT/DU	210
b. Apartments	Trips/D.U.	6 ADT/DU	220
c. Condominiums	Trips/D.U.	7 ADT/DU	230
2. Commercial			
a. Retail Shop	Trips/1000 ft^2	60 ADT/1000 Ft^2	810
b. Eat and Drink	Trips/1000 ft^2	90 ADT/1000 Ft^2	831
c. Business Office	Trips/1000 ft^2	20 ADT/1000 $Ft.^2$	710
3. Schools	Trips/Student	1 ADT/Student	520
4. Ski Areas	Trips/Skier Per Hour of Ski Lift Capacity	.6 ADT/Skier Per Hour Of Capacity	
5. Other Public/Recreational		See ITE Manual	

ADT = Average Daily Traffic (number of trips)
D.U. = Dwelling Units
ITE = Category reference number, Institute of Transportation Engineer Trip Generation 5th Edition
Ft^2 = square feet

(2) Road Classification. The classification of a proposed road shall be based on the estimated design year traffic volumes and the functional characteristics of the road. Table 1 in Section 15.1D(4) specifies the maximum design capacities for the various classes of roadway.

(3) Surfacing Requirement. All roads dedicated for public use within new subdivisions and PUDs of 4 or more lots in Ouray County shall have paved surfaces. Other roads in such subdivisions or PUDs may have a gravel or paved surface. Surfacing requirements for roads other than those within such subdivisions or PUDs shall be based upon the recommendations of the Director of Planning, the County Engineer and the County Road Superintendent, after review of any County-wide transportation plan and the level of projected vehicle use.

(4) Rights-of-Way. The basic minimum right-of-way widths are specified in Section 15.2Q**,** Figures 1 through 6. Additional rights-of-way shall be provided for drainage improvements, cuts or fills, intersections, curb returns, snow storage, and other road appurtenances.

(5) Cul-de-Sacs. . Cul-de-sac streets shall be a maximum of one thousand three hundred twenty feet (1,320 feet) long, unless existing conditions justify a variation from this requirement, in which case the Board of County Commissioners may grant an exception thereto. Cul-de-sac turn-arounds shall be provided with a minimum road surface of ninety (90) feet in diameter and a minimum right-of-way of one hundred (100) feet in diameter, wherever the County considers the interest of public safety require them. Adequate snow storage shall be provided at turn-arounds.

(6) Hammerhead or Y-Turnaround. In areas where a circular cul-de-sac turnaround is impractical because of topographical constraints, a hammerhead or Y-turnaround may be used, provided it is approved by the County. The design of the turnaround shall allow for Wheelbase-50 feet vehicles to turn around by backing once.

(7) Frontage Roads. Where a subdivision abuts a street or highway of major importance, the County may require parallel frontage roads or may limit the right of access to said street or highway.

(8) Curbs and Gutters. Concrete curbs and gutters shall be required along all streets and highways in business areas and along all streets and highways in residential areas in subdivisions of three (3) or more lots per net acre. Curbs and gutters may be eliminated where the County finds them impractical or unnecessary.

(9) Sidewalks

(a) Sidewalks eight feet (8') in width may be required along all business streets.

(b) Sidewalks four feet (4') in width may be required (a) on both sides of all residential streets where population densities are projected to be equal to or exceed four (4) families per gross acre or where the lots or building sites in general have street frontages of sixty-five feet (65') or less, and (b) on any major street where population densities are projected to be equal to or exceed three (3) families per gross acre.

(c) Where required, sidewalks, curbs and gutters shall be constructed of Class B concrete, or other County approved materials. Curb treatment, suitable to meet disability access, shall be used on all returns at street intersections. Curb treatment shall be required at driveway entrances.

(d) Sidewalks of a width acceptable to the County may also be required through the center of long blocks, to connect cul-de-sac streets, and to provide access to school, park, playgrounds, river and/or lake areas.

(e) Sidewalks may be eliminated where the County finds them impractical or unnecessary.

D. Route Corridor and Terrain Factors

The entire route corridor of a road shall be considered when establishing the terrain factor. The Colorado Department of Transportation considers most county roads in Ouray County as being in mountainous terrain. Shorter roads, such as subdivision roads, may fall entirely in the level terrain category.

(1) Level terrain is that condition where road sight distances, as governed by both horizontal and vertical restrictions, are generally long or could be made to be so without construction difficulty or major expense.

(2) Rolling terrain is that condition where the natural slopes consistently rise above and fall below the road grade line and where occasional steep slopes offer restriction to normal horizontal and vertical alignment.

(3) Mountainous terrain is a condition where longitudinal and transverse changes in the elevation of the ground with respect to the road are abrupt and where the roadbed is obtained by frequent benching or side hill excavation.

(15.2)

E. Design Speed

The selection of design speed is influenced principally by the character of terrain, traffic volumes, and economic considerations. Table 3 recommends appropriate ranges of design speeds for various conditions.

TABLE 3
DESIGN SPEEDS MPH

ADT	0-25	25-100	25-250-500	500-1000-1500	1500-4000+
Level	30	30	30 to 40	50 to 55	55 to 65
Rolling	20	25	25 to 30	40 to 45	50 to 55
Mountainous	15	20	20 to 25	30 to 35	40 to 45
	Access Tract	Local Service	Local Access	Collector	Minor Prncl Arterial

F. Grades

Road grades shall not exceed the values shown in Table 4.

TABLE 4
MAXIMUM ROAD GRADES (%)

Design Speed MPH

Type of Terrain	15	20	25	30	35	40+	50+
Level	8	8	7	6	5	4	3
Rolling	8	8	8	7	6	5	4
Mountainous	10	10	9	8	8	7	6

(15.2)

G. Sight Distance

Minimum stopping sight distance and passing site distance shall be as shown in Table 5.

Criteria for measuring sight distance, both vertical and horizontal, are as follows: For stopping sight distance, height of eye, 3.75 feet, and height of object, 0.5 feet; for passing sight distance, height of eye, 3.75 feet, and height of object, 4.5 feet.

TABLE 5
MINIMUM SIGHT DISTANCES IN FEET

Design Speed, MPH	15-25	30	40	50
Stopping Sight Distance				
Minimum Stopping Sight Distance, feet	150	200	275	350
K value for*				
Crest vertical curve	16	28	55	85
Sag vertical curve	24	35	55	75
Desirable Stopping Sight Distance, feet	150	200	300	450
K value for				
Crest vertical curve	16	28	65	145
Sag vertical curve	24	35	60	200
Passing Sight Distance				
Passing distance, feet				
2-lane		1100	1500	1800
K-value for:				
Crest vertical curve		365	686	985

*NOTE: K value is a coefficient by which the algebraic difference in grade may be multiplied to determine the length in feet of the vertical curve which will provide minimum sight distance.

(15.2)

H. Alignment

Alignment between control points should be to as high a standard as is commensurate with topography, terrain, design traffic, and reasonably obtainable right-of-way. Sudden changes between curves of widely different radii or between long tangents and sharp curves should be avoided. Insofar as feasible, the design should embody frequent passing opportunities. Where crest vertical curves and horizontal curves occur at the same location, there should be above-minimum sight distance design to assure that the horizontal curve is visible as drivers approach.

Depending on the maximum superelevation value, the maximum curvature for different design speeds shall be as shown in Table 6.

TABLE 6
DEGREE OF CURVE AND RADIUS
FOR DIFFERENT VALUES OF SUPERELEVATION

Design Speed(MPH)	Maximum e*	Minimum Radius (Rounded) (Feet)	Maximum Degree Of Curve (Rounded) Degrees)
15	.06	100	53.5
20	.06	115	50.0
25	.06	175	35.0
30	.06	275	21.0
40	.06	510	11.5
50	.06	830	7.0
20	.08	100	53.5
30	.08	250	23.0
40	.08	460	12.5
50	.08	760	7.5

*NOTE: e = rate of roadway superelevation, foot per foot

I. Road Surface Classification

Road surfaces are classified as follows:

(1) Low. Low type surfaces are those with surface treated earth surfaces and those with loose surfaces such as gravel.

(2) Intermediate. Intermediate type pavements are those designed to retain smooth riding qualities and good non-skid properties in all weather under light and low traffic volumes.

(15.2I)

(3) High. High type pavements are those that retain smooth riding qualities and good non-skid properties in all weather under heavy traffic volumes and loadings with little maintenance.

J. Traveled Way Crown

Pavement or surfacing crown should be adequate to provide proper drainage. Normally, cross slopes should be as shown in Table 7.

TABLE 7
NORMAL PAVEMENT OR SURFACING CROSS SLOPES

	Range in Rate of Cross Slope	
Surface Type	Inch Per Foot	Foot Per Foot
High	3/16 - 1/4	.015 - .02
Intermediate	3/16 - 3/8	.015 - .03
Low	1/4 - 1/2	.02 - .04

K. Superelevation

(1) For roads where snow and ice conditions prevail, the superelevation should not be more than 0.08 feet per foot.

(2) Superelevation runoff is the length of highway needed to accomplish the change in cross slope from a normal crown section to a fully superelevated section.

(3) Minimum lengths of runoff are shown in Table 8. Adjustments in design runoff lengths may be necessary for smooth riding, surface drainage, and good appearance.

L. Number of Lanes

The number of lanes shall be sufficient to accommodate the design volume. The majority of roads in Ouray County will be two lanes. Where more than two lanes are warranted to accommodate design volumes, determinations of design are to be made as indicated in "Design Standards for Highways Other Than Freeways." The Planning Commission may recommend, with approval of the Board of County Commissioners, sections of one-lane road if the entire road falls under the Access Tract standard and special conditions exist. Roads with one-lane sections will not be

accepted by the County as rights-of-way or for maintenance and must meet the following conditions:

(15.2L)

(1) The section of road which is one lane must have its entire length visible from either end of the two-lane portion.

(2) All Access Tract standards for sight distance, curve radii, shoulder, ditch, etc., must be met.

(3) The driving surface must be at least 12-feet wide, with turnouts at 400-foot intervals. Turnouts will be 8-feet wide and 30-feet long.

(4) Guard rails may be required along the entire substandard section.

M. Width of Driving Surface, Shoulder and Roadway

The widths of driving surfaces and of graded usable shoulders for various traffic volumes and design speeds shall be at the minimums shown in Table 8. Graded shoulder width is measured from the edge of surfacing (pavement) to the point of intersection of shoulder slope and side slope. In mountainous terrain, with a minimum 2-foot shoulder, the graded width of shoulder in cuts may be decreased 2 feet if a guard rail is installed. (Note: A guard rail shall not be closer than 2-feet to the driving surface.)

TABLE 8
MINIMUM LENGTH FOR SUPERELEVATION
RUNOFF FOR TWO LAND PAVEMENTS

	Length of runoff in feet for design speed, MPH, for:			
Superelevation Rate	10	30	40	50
Foot per foot				
.02	50	100	125	150
.04	50	100	125	150
.06	50	110	125	150
.08	50	145	170	190

(15.2M)

The minimum roadway width is the direct sum of the surfacing and graded shoulder widths shown below. Desirable design widths include at least those shown in Table 9.

TABLE 9
WIDTH OF SURFACING AND GRADED SHOULDER

Width in Feet for Design Volume of:								
ADT Range	0-25	25-100	100-250	250-600	600-1000	1000-2500	2500-4400	Over 4400
Width of Driving Surface (Feet) Design Speed								
15 (MPH)	16	--	--	--	--	--	--	--
20	16	18	22	22	24	24	24	24
30	16	18	22	22	24	24	24	24
40	--		24	24	24	24	24	24
50	--		24	24	24	24	24	24
Width of Shoulder (Feet)								
All Speeds	2	2-4	2-4	2-6	4-6	6-8	6-8	8

N. Switchbacks

Switchbacks are not considered a good roadway design solution in gaining elevation. When used, no switchback shall have a tangent less than 1/4 mile from the last switchback. This is especially important on hillsides steeper than 20% where switchbacks create major visual impairments.

O. Vertical Clearance

Vertical clearance at underpasses, power lines, street lights, etc., shall be at least fifteen (15) feet over the entire roadway width.

P. Intersection Design

The location of intersections shall be carefully selected to avoid steep profile grades and to insure that there is adequate approach sight distance to the intersection. An intersection should normally not be located on a short crest vertical curve, just beyond a short crest vertical curve, or on a sharp horizontal curve. Where there is no practical alternative to such a location, the approach sight distance on each leg should be checked carefully. Where necessary, cut slopes should be flattened and horizontal or vertical curves lengthened to provide additional sight distance. There should be sufficient sight distance to permit a passenger vehicle on the minor leg of the intersection to cross the traveled way without requiring the through approaching traffic to slow down. As a general rule, there should be a minimum of 6 to 7 seconds

available to the driver crossing the through lanes. On this basis, the suggested corner sight distance for each design speed would be as follows:

(15.2P)

TABLE 10
SUGGESTED CORNER SIGHT DISTANCE AT INTERSECTIONS

Design Speed MPH	Minimum Corner Intersection Sight Distance, in Feet*
60	600
50	500
40	400
30	300
20	200

*NOTE: Corner sight distance is measured from a point on the minor road at least 15 feet from the edge of the major road pavement and measured from a height of eye to 3.75 feet on the minor road to a height of 4.5 feet on the major road. See Figure VIII-5, Page 398, "A Policy on Geometric Design of Rural Highways."

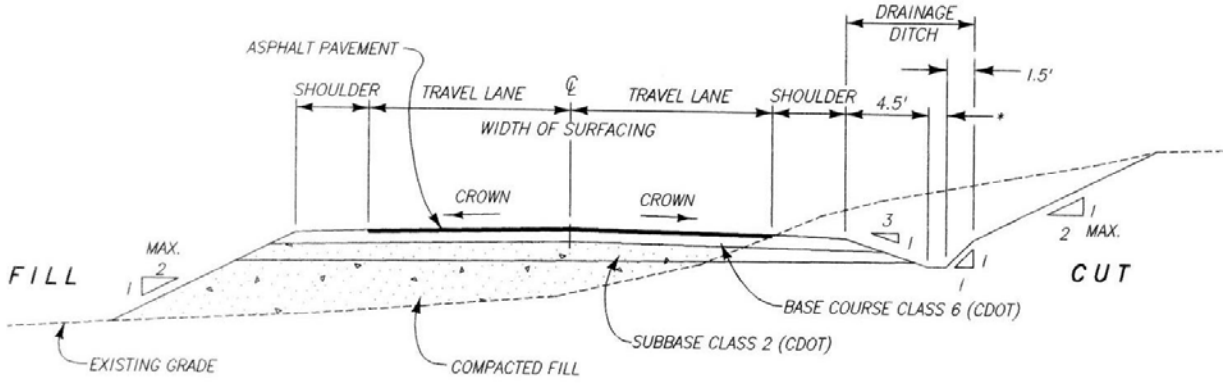
Intersections should be designed with a corner radius of the pavement or surfacing that is adequate for the larger vehicles anticipated; usually, a minimum edge radius of 40 feet is applicable. Where turning volumes are significant, consideration should be given to speed-change lanes and channelization.

Intersection legs that will operate under STOP control preferably should be at right angles.

Intersections shall be constructed at no more than 2% grades for at least 20 feet (plus or minus 2% for each 10 miles per hour of design speed of the road prior to the intersection for arterial and collection roads). In mountainous terrain, for local access, local service, and access tract roads, all grades shall flatten to 4% or less for at least 50 feet approaching intersections and 25 feet from cul-de-sacs.

(15.2)

Q. Typical Drawings (Figures 1 through 9)

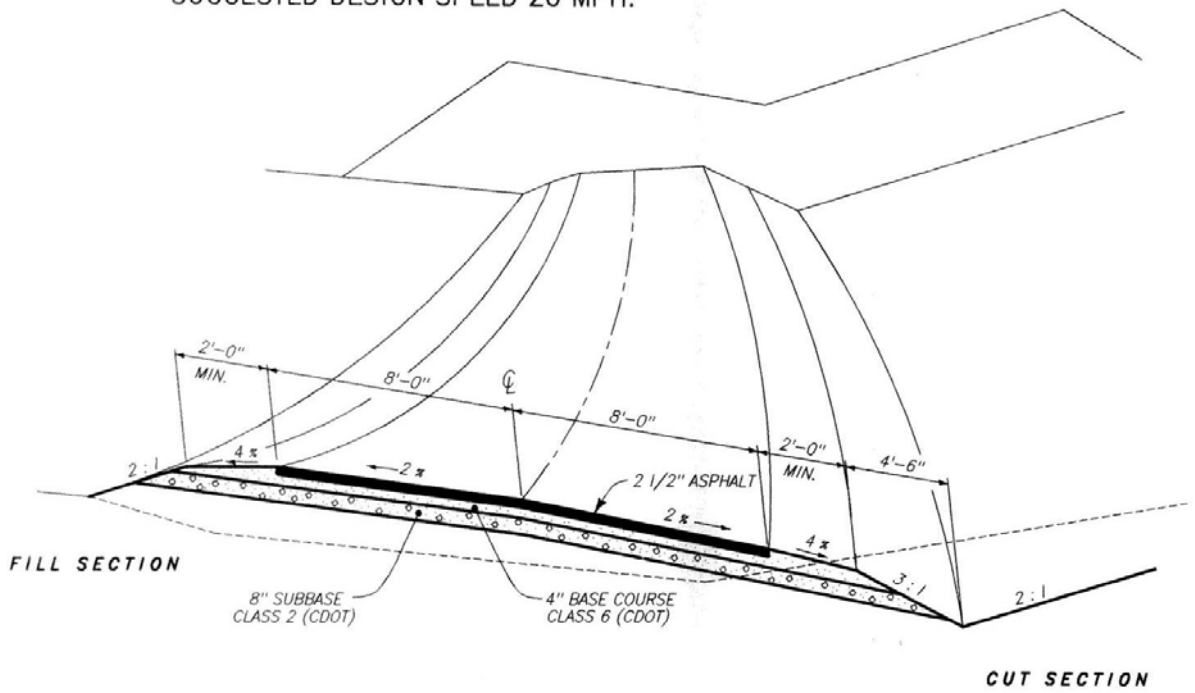


TYPICAL ROADWAY CROSS–SECTION

* – DIMENSION DEPENDENT UPON DRAINAGE CAPACITY

23.2Q FIGURE 1

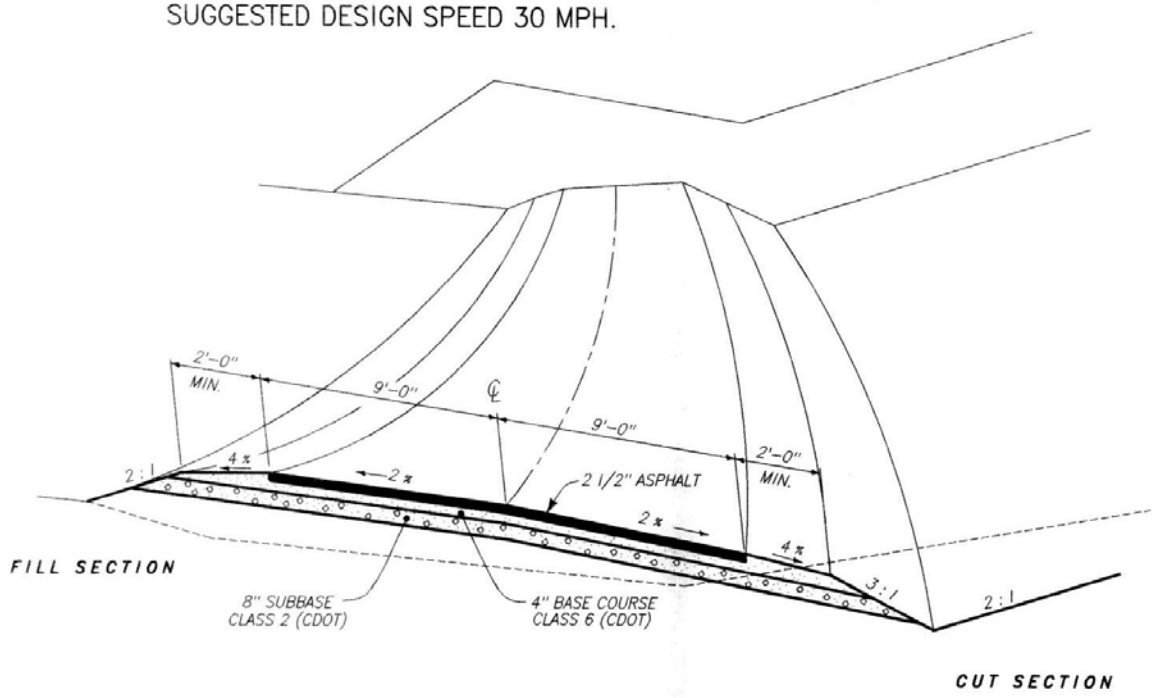
MINIMUM RIGHT–OF–WAY 30'
DESIGN CAPACITY LESS THAN 25 ADT.
SUGGESTED DESIGN SPEED 20 MPH.



ACCESS TRACT

23.2Q FIGURE 2

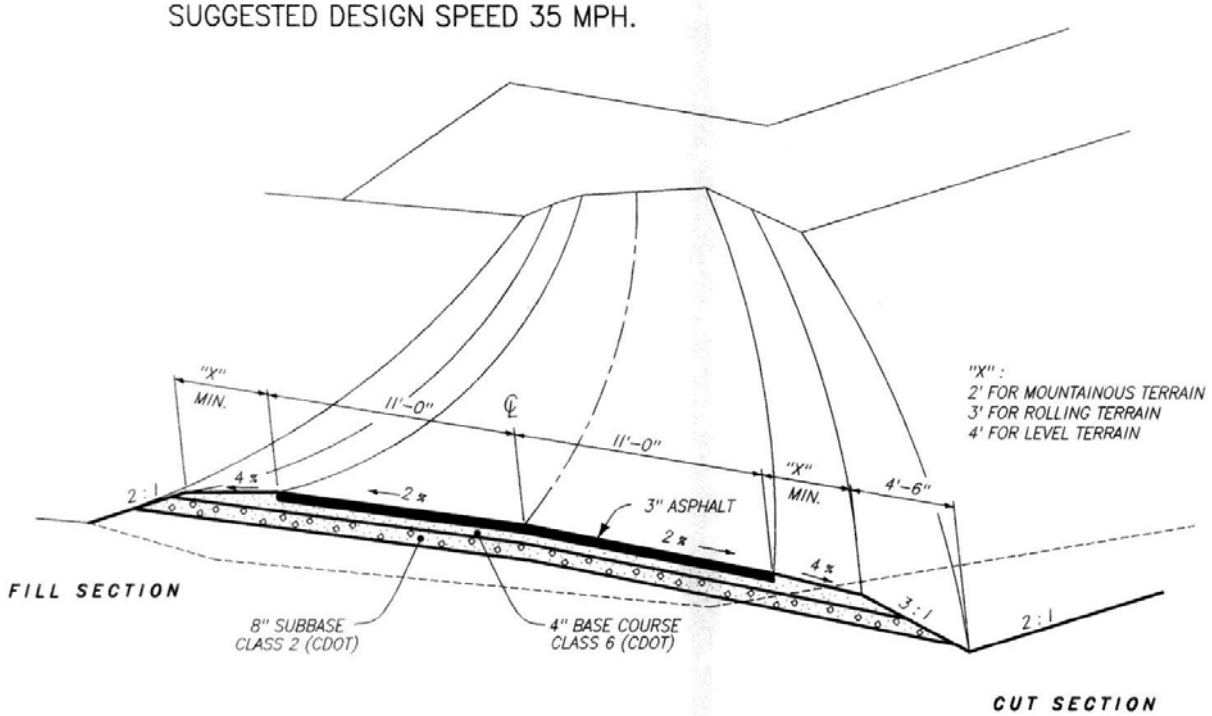
MINIMUM RIGHT–OF–WAY 60'
DESIGN CAPACITY 25 – 100 ADT.
SUGGESTED DESIGN SPEED 30 MPH.



LOCAL SERVICE

23.2Q FIGURE 3

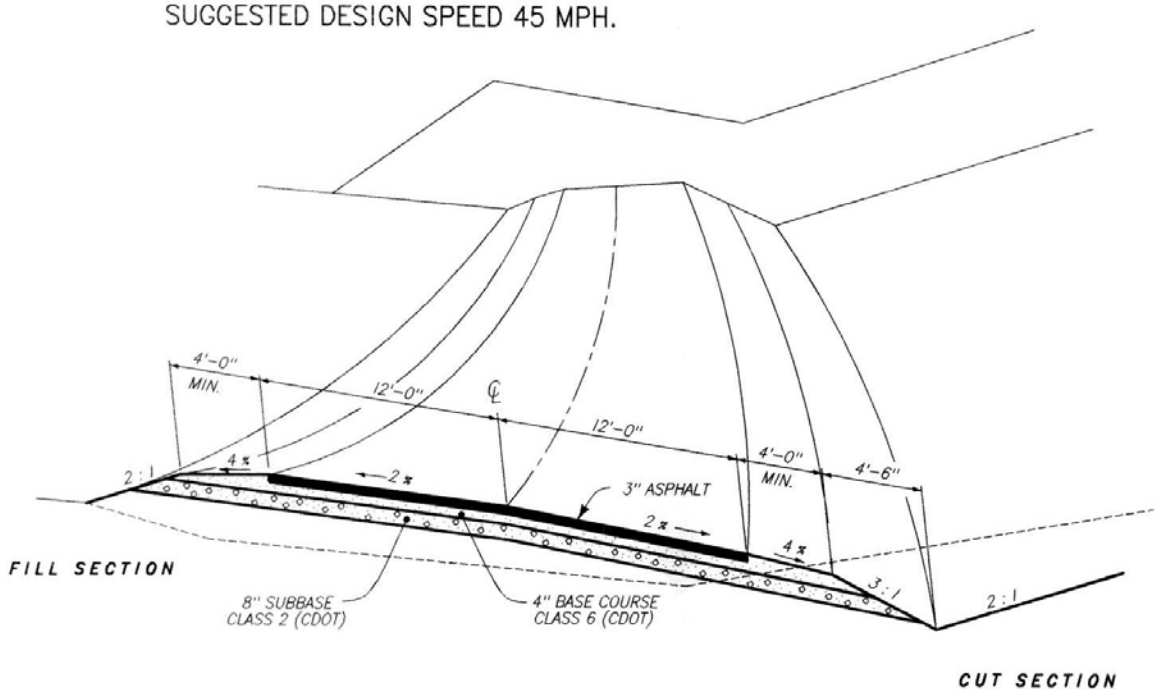
MINIMUM RIGHT–OF–WAY 60'
DESIGN CAPACITY 100 – 500 ADT.
SUGGESTED DESIGN SPEED 35 MPH.



LOCAL ACCESS

23.2Q FIGURE 4

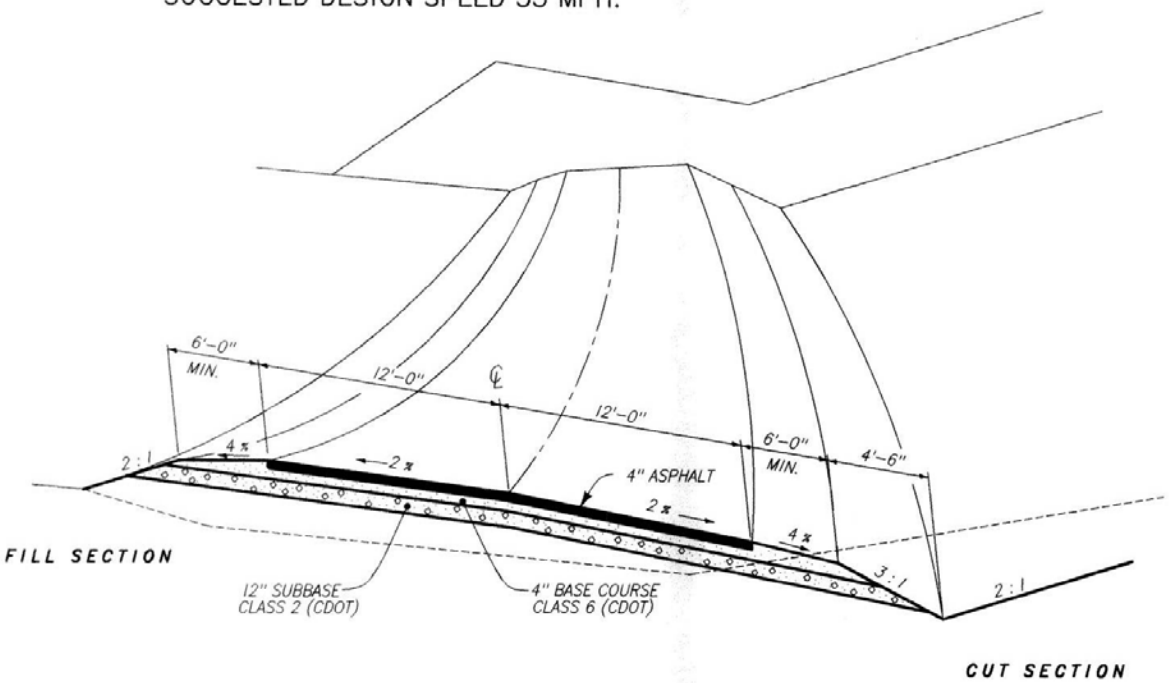
MINIMUM RIGHT–OF–WAY 60'
DESIGN CAPACITY 500 – 1500 ADT.
SUGGESTED DESIGN SPEED 45 MPH.



COLLECTOR

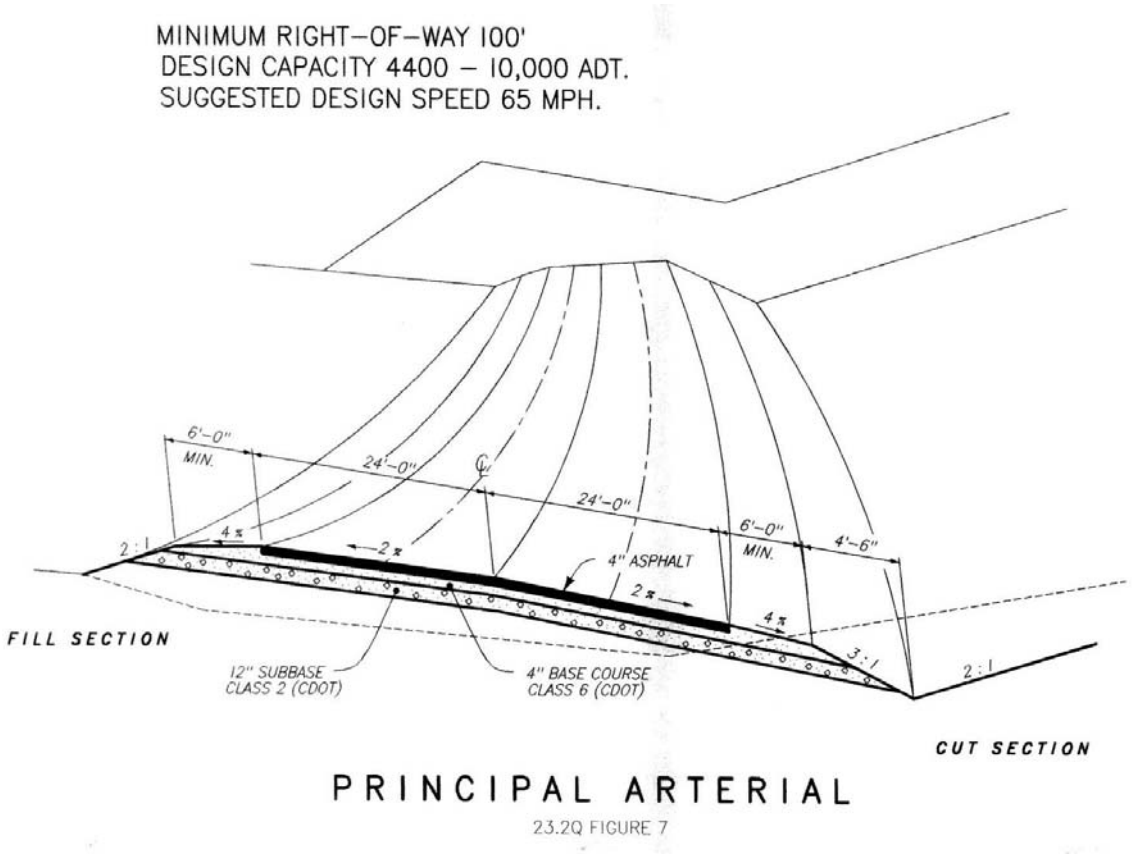
23.2Q FIGURE 5

MINIMUM RIGHT–OF–WAY 80'
DESIGN CAPACITY 1500 – 4400 ADT.
SUGGESTED DESIGN SPEED 55 MPH.



MINOR ARTERIAL

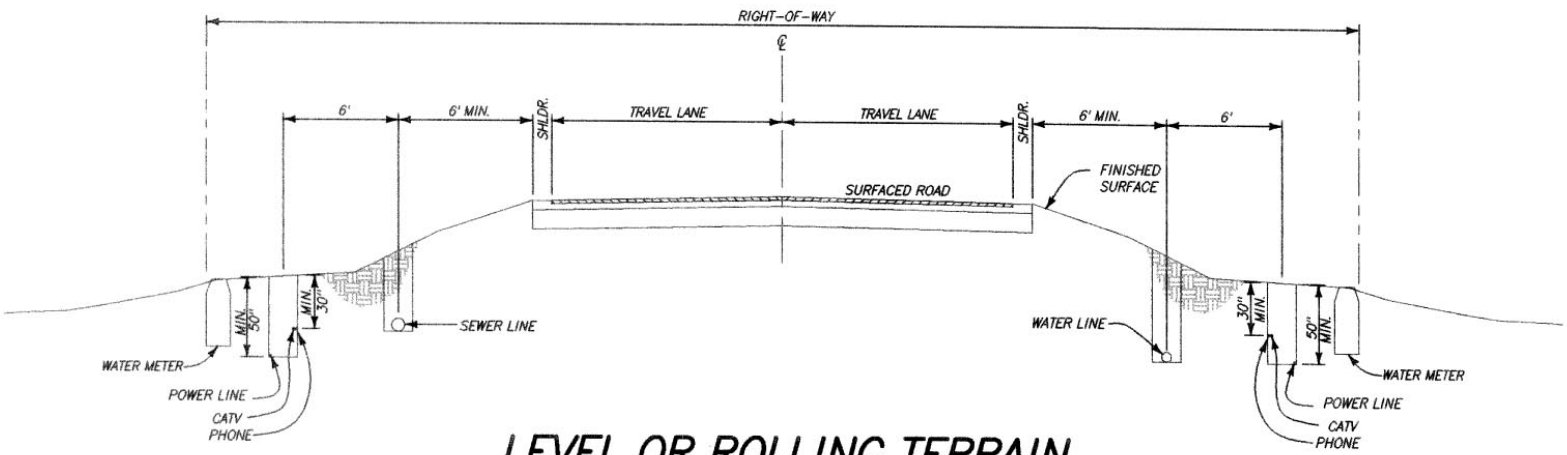
23.2Q FIGURE 6



PRINCIPAL ARTERIAL

23.2Q FIGURE 7

(Figure 8 on next page)



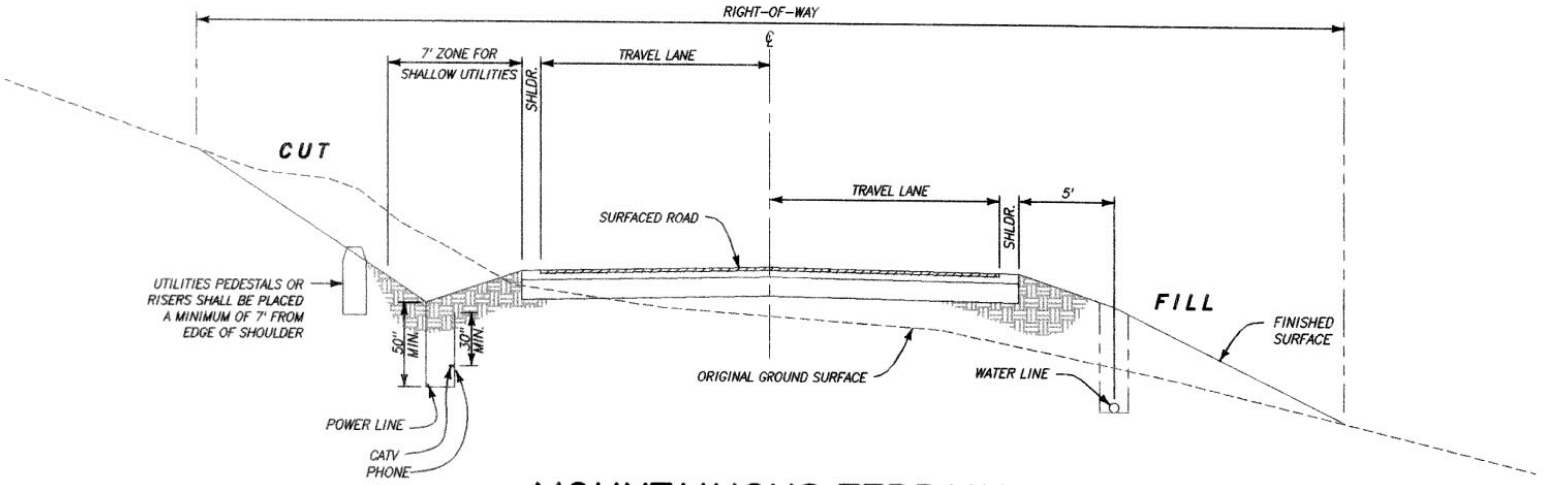
LEVEL OR ROLLING TERRAIN
TYPICAL UTILITIES PLACEMENT
NOT TO SCALE

1. TRENCH WIDTH IS TYPICALLY 18" BUT CAN VARY.
2. MINIMUM HORIZONTAL SEPARATION BETWEEN EACH UTILITY AND STRUCTURES SHALL BE FIVE (5) FEET.
3. SEWER MAIN SHALL BE CONSTRUCTED A MINIMUM OF TEN (10) FEET FROM WATER MAINS AND ENCASED WHERE CLEARANCE IS LESS THAN 10' AND AT CROSSINGS AS NECESSARY.
4. ALL UTILITIES ARE TO BE INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE STANDARDS, AND APPLICABLE CODES AND REGULATIONS.
5. IRRIGATION AND DRAINAGE LINES SHALL BE LOCATED IN A SEPARATE EASEMENT OUTSIDE OF THE ROAD RIGHT-OF-WAY.

OURAY COUNTY, COLORADO

UTILITIES LOCATION AND EASEMENT GUIDELINES
FOR LEVEL OR R[illegible]ING TERRAIN

FIGURE NUMBER **8**



MOUNTAINOUS TERRAIN

TYPICAL UTILITIES PLACEMENT

NOT TO SCALE

1. TRENCH WIDTH IS TYPICALLY 18" BUT CAN VARY.
2. MINIMUM HORIZONTAL SEPARATION BETWEEN EACH UTILITY AND STRUCTURES SHALL BE FIVE (5) FEET.
3. ALL UTILITIES ARE TO BE INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE STANDARDS, AND APPLICABLE CODES AND REGULATIONS.
4. IRRIGATION AND DRAINAGE LINES SHALL BE LOCATED IN A SEPARATE EASEMENT OUTSIDE OF THE ROAD RIGHT-OF-WAY.

OURAY COUNTY, COLORADO

UTILITIES LOCATION AND EASEMENT GUIDELINES FOR MOUNTAIN[illegible]S TERRAIN

FIGURE NUMBER **9**

(15.2)

R. Side Slopes

Cut and fill slopes shall be as shown on the typical sections in Figures 1 through 7. In unstable soils, flatter slopes may be required. Where heavy snowfall is expected, flatter slopes in cuts on the southern side of the roadway should be used to provide maximum exposure to the sun. Flatter slopes should be used wherever possible to reduce erosion, to decrease maintenance costs, to facilitate plant growth, and to provide for safer operation.

Transition slopes shall be provided between adjoining cuts and fills and should be designed for pleasing appearance. Where cut or fill slopes intersect the original ground surface, the cross-section shall be rounded to blend the slope into the natural ground surface. Any cut or fill slope steeper than 2:1 must be supported by an engineering report certifying the stability of the side slope. Any retaining structures used to stabilize cut or fill sections must be designed by a professional engineer.

Benching of side slopes should be used sparingly and only where they are justified by sound engineering reasons, including the following:

(1) To compensate for unstable material where benching is more economical than flattening;

(2) To intercept drainage in long and deep cuts;

(3) To intercept and store loose material.

(4) To mitigate visual impacts where road cuts and fills may create a significant impact (in this case the use of benches and cribbing may be required).

Where a cut or fill road slope is outside the normal right-of-way of a road, then a slope easement shall be provided of sufficient width to permit maintenance of the slopes.

S. Structural Section

The roadway structural section shall be designed on the basis of a qualified engineer's analysis approved by the County Engineer in accordance with the following section. At a minimum, the structural section elements shall include asphalt, road base, and subbase of the depths shown for the roadways classification illustrated in Section 15.2Q, Figures 2 through 6. All new subdivision and PUD roads with an ADT less than 25 need not be paved. All such roads with an ADT between 25 and 100 shall be paved with a minimum of 2.5 inches of asphalt, and all those with an ADT greater than 100 shall be paved with a minimum of 3.0 inches of asphalt. In the alternative, a qualified engineer may propose alternative structural section elements for consideration by the County Engineer, but in no event shall the thickness of asphalt be less than that specified in this Subsection S.

(15.2)

T. Flexible Pavement Design

The California Bearing Ratio Method (CBR) and the Hveem Stabilometer Method may be used. Supporting test data and calculations shall accompany all requests for approval of a designed structural section.

(1) Hveem Stabilometer Method. The stabilometer procedure of the California Department of Transportation or the method as outlined in the Colorado Department of Transportation's Roadway Design Manual, may be used.

The specific regional factors for Ouray County are as follows:

1. annual precipitation	.5
2. elevation - up to 9,500 feet	1.5
over 9,500 feet	1.0
3. local drainage - very poor	2.0
poor	1.0
fair	.5
good	.25

The required factor used shall be the sum of the three (3) factors selected.

(2) California Bearing Ratio Method. The California Bearing Ratio Test shall be performed in accordance with the procedures outlined under AASHTO Designation T193-721.

(3) Unusual Soil Conditions. Regardless of the method used for design of the pavement, special consideration shall be given to unusual conditions such as instability of fills and slopes, earth slumping, permeability, capillary and frost heave, elasticity, and permafrost.

U. Drainage

(1) General Policy. The primary objective of drainage design shall be the protection of County roads and property while minimizing possible flood damage to surrounding properties and structures. It should be emphasized that good drainage is one of the most important factors in road design. It preserves the appearance as well as the level of service of the road while minimizing maintenance costs.

(a) Culverts under all roads are to be designed to accommodate a 25-year frequency storm run-off utilizing the maximum head. The maximum available head shall be determined by the uppermost ponding elevation chosen to prevent flood damage to upstream properties.

(b) Inlets and other facilities draining the road surface shall be designed to accommodate the 10-year frequency storm run-off. All roads are to remain free of ponding.

(c) All drainage installations shall be designed to permit free, un-obstructed passage of debris and silt or provide for their deflection and/or collection at a point upstream in a manner that will not create an expensive maintenance problem. Settlement basins are to be provided when a silting problem may exist downstream.

(d) Modification of natural channels or transferring run-off from one basin to another is not permitted except where no reasonable alternative exists and where the proposal has been reviewed and approved by the County Engineer.

(2) Storm Run-Off Estimates. The following three methods may be used for estimating peak flows.

(a) Run-off from stream records.

(b) Natural Resource Conservation Service Method. This method is applicable to water sheds smaller than 1,000 acres, and expresses run-off in terms of geographical position, drainage areas and land use. See Colorado State Department of Highway Roadway Design Manual.

(c) Rational Method. Utilizes the formula: $Q = CiA_d$

where: Q = run-off, ft^3/sec

C = a "run-off" coefficient expressing the ratio of rate of run-off to rate of rainfall

i = intensity of rainfall, in/hr, for a duration equal to the time of concentration

A_d = drainage area, acres

Coefficients for the Rational Method Formula are given in Table 12. Rainfall intensity is obtained from records of nearby weather stations in the form of graphs showing rainfall intensity in relation to rainfall duration for various recurrence intervals. Selection of the value for rainfall intensity is based on estimates of the acceptable frequency of occurrence and on the time of concentration for the area. The latter is the time required for water to reach the outlet from the most remote point in the basin.

The application of this method should be confined to drainage areas of less than 200 acres.

TABLE 12
COEFFICIENTS OF RUN-OFF

Type Of Drainage Area	C
Concrete or Bituminous Pavement	.8 - .9
Gravel Roadways	.4 - .6
Bare Earth (high values for steep slope	.2 - .8
Turf Meadow	.1 - .4
Cultivated Fields	.2 - .4
Forest	.1 - .2

(3) Culverts. Culverts are to be located at each natural draw or water course as conditions warrant to prevent excessive accumulation of flow in roadside ditches or along the toe of slopes. Draws and water courses are to be cleared of debris for a distance of 100 feet upstream from all culvert inlets.

Inverts at the inlet should be slightly elevated above the normal flow line in steep or natural draws to avoid plugging by debris.

Inlets are not to be elevated in those instances where ponding or backwater curves would be objectionable (stagnation, irrigation ditches, etc.).

The culvert should slope downward in the direction of natural flow and be designed to be self-cleaning whenever possible. The outlet should be designed not to discharge on unprotected fills or unstable material or at adverse angles to streams or open channels. Headwall, riprap, or other means of protection are required at inlets or outlets where erosion might occur.

Velocities of flow in culverts shall be calculated using acceptable design charts or formulas. Where the Manning Equation is used, the following "n" values shall apply:

TABLE 13
MANNING EQUATION "n" VALUES

Material	"n"
Corrugated Steel Pipe	.027
Reinforced Concrete Pipe	.013
Concrete (smooth-rough)	.013 to .020
Asphalt	.016

(15.2U3)

Corrugated metal pipe as specified by the "Standard Specifications for Road and Bridge Construction", CDOT, shall be used. Steel pipe shall be asphalt coated or paved where soils are corrosive or other conditions exist that may attack the steel. Aluminum and other pipe materials are not permissible for road culverts that are to be maintained by the County.

The minimum diameter for round pipe shall be 18 inches. The minimum rise of arch pipes and box culverts shall be 12 inches.

When a battery of pipes is used, a clear spacing of 1/2 the pipe diameter (1 foot minimum, 4 foot maximum) must be provided between pipes. Minimum and maximum cover, pipe metal gauge, and strength classification shall be as specified in M 603-1 (CDOT) Metal Culvert Pipe.

(4) Open Channels and Ditches. Channels and ditches are to be designed to avoid roadside safety hazards. The minimum flow line slope shall be 2% if the channel is paved and 3% for channels of other materials. Maximum slopes shall be controlled by the maximum permissible velocities given in Table 14. Greater velocities of flow will require appropriate channel protection.

Mannings equation shall be used to estimate velocities.

$$v = \frac{1.486\ R^{2/3}\ S^{1/2}}{n}$$

Where: v = velocity of flow in channel in feet per second
n = roughness coefficient
R = hydraulic radius in feet
S = slope in feet per foot

TABLE 14
MAXIMUM PERMISSIBLE VELOCITIES

Channel Material	"n"	Velocity (ft/sec)
Silt	.025	2.0
Sand	.030	2.5
Smooth, Stiff Clay	.025	4.0
Fine Gravel	.035	3.5
Coarse Gravel	.040	4.5
Small, Sharp-edges Rocks	.070	6.0
Cobbles and Shingles	.060	6.0
Shales and Hardpans	.030	6.0

(5) Subsurface Drainage. Subgrades subject to poor drainage, underground seepage, or a high water table must be adequately drained for roadbed stabilization. Drains must be installed to prevent the high ground water level from coming within 4 feet of the roadway pavement. Perforated pipe should always be used to carry away collected water. French drains which contain no pipe are unsatisfactory.

V. Bridges

Bridges are to conform to Colorado Department of Transportation requirements and specifications. Plans are to be prepared by a qualified structural engineer and are to be submitted to the County Engineer for review and approval. Clear deck width must accommodate the full width of the traveled lanes and shoulders of approach roads.

Pedestrian walkways and railings shall be required as warranted. Flared approach railings are to be provided on the side opposing traffic flow.

The waterway area shall accommodate a 100-year frequency storm. Where flood studies from the U.S. Army Corps of Engineers are available, bridges shall be designed to accommodate the "Standard Project Flood". A minimum of one foot freeboard is required. Additional freeboard will be required when debris-laden flows are anticipated.

W. Traffic Control Devices

All signs, striping, markers, delineators, signals, and other traffic control devices are to conform to the requirements of the Manual on Uniform Traffic Control Devices published by the U.S. Department of Transportation's Federal Highway Administration. In new developments, all required street sign names, speed limit signs, stop signs and other traffic control devices are to be installed and paid for by the developer. Non-standard signs or other traffic control devices are subject to State control, and approval by the County Engineer must be obtained for their use. Requests for non-standard signs or other devices must be submitted to the County Engineer along with all data required to support the request.

X. Driveways

Prior to development of a driveway accessed directly from a County maintained road or any public road in a subdivision or PUD, or to access a residence outside a subdivision or PUD, land owners, contractors or others must obtain a Driveway Permit from the County Road Department and meet the following standards. The standards set forth in this Section 15.2X shall only apply to a driveway which serves no more than two (2) single family dwellings. Any driveway/road which serves more than two (2) single family dwellings shall comply with the applicable road standards as set forth in this Code.

(15.2X)

The standards for driveways are:

(1) Driving surface shall be at least twelve feet (12') wide.

(2) Interior radii shall be at least thirty-two feet (32').

(3) The driveway opening at least sixteen feet (16') wide;

(4) Grades shall not exceed twelve percent (12%) for all new subdivision lots.

(5) All entrances and exits must be located and constructed in such a way that vehicles approaching or using them will be able to obtain adequate sight distance in both directions along the roadway. (This is necessary to maneuver safely and not interfere with roadway traffic).

(6) Angle of approach from an adjacent roadway shall be between sixty (60) and ninety (90) degrees.

(7) A crown or cross-slope shall be provided to discourage runoff on to adjacent roads;

(8) No features shall be allowed that interfere with the drainage system of the adjacent street or roadway. The developer or owner of a residence shall provide, at his/her/its expense, drainage structures that will become integral parts of the existing street or roadway drainage system, and the dimensions of all drainage structures must be approved by the County Road Department prior to installation.

(9) When there are steep grades or other potentially hazardous or unusual geologic features, as a condition of preliminary approval of a subdivision/PUD, the County may require the developer to demonstrate that driveways to individual proposed lots will meet the standards contained in this Section.

Y. Revegetation and Erosion Control

(1) Revegetation and reforestation within a road right-of-way shall be required utilizing native or similar horticultural material and shall be completed during the first planting season after construction. All areas disturbed by construction operations and not otherwise covered by structures or pavement shall be topsoiled, seeded, fertilized, mulched, planted, and otherwise treated to provide an established stand of grass. Cut and fill slopes shall be treated to prevent erosion. Areas not disturbed by construction shall be left in their present vegetative state, except that thinning of trees may be required.

(15.2Y)

(2) The developer or landowner shall be responsible for the maintenance and restoration of such revegetation for a maximum of two planting seasons thereafter.

(3) Rights-of-way shall be cleared to the minimum width necessary to construct the roadway, to provide for drainage and to provide adequate snow storage.

Z. Guard Rails

(1) General. Guard rails may be required to prevent accidents by delineating the roadbed, to reduce accident severity by deflecting vehicles into safer paths, and to reduce the rate of deceleration in the case of impending collisions with fixed objects.

When guard rails are used in conjunction with roadside curbs, the face of the guard rail shall be flush with the face of the curb regardless of shoulder width. This is to prevent the take-off ramp effect which may turn a vehicle over. When no curb is present, the face of the guard rail shall be flush with the edge of the shoulder.

(a) On curves requiring a reduction in approach speeds, any one of the following conditions indicates that consideration should be given to the installation of a guard rail on the outside of the curves:

i. Height of embankment is more than 10 feet.

ii. Side slopes are steeper than 4:1.

iii. Shoulder or pavement widths are substandard.

iv. Roadside hazards are present.

(b) Whether on curves or tangents, consideration should be given to the installation of guard rails if there is a history of roadway accidents or if unusually high embankments or steep terrain give motorists a feeling of insecurity.

(c) In areas subject to dense fog or snow and ice conditions, or where traffic speed and volumes are high, a guard rail may be justified where its installation would otherwise be questionable under less adverse conditions.

(d) An obstruction or sudden constriction on width may require the installation of a guard rail.

(15.2Z1)

(e) An isolated sharp curve on a road otherwise built to higher standards may warrant a guard rail.

(f) Ordinarily, a guard rail is placed only on the outside of curves.

(g) Guard rails may be needed at approaches to bridge piers, abutments, trees, or other obstructions.

(2) Guard Rails at Bridge Approaches. A guard rail should be placed at the ends of all bridges on the right of approaching traffic. Where pedestrians are expected to use the shoulder, a walkway should be provided around the end of the guard rail outside the normal shoulder line.

AA. Utilities

(1) All utility work within Ouray County rights-of-way shall be performed in accordance with the requirements stated in these standards. The coordination and enforcement of these specifications will be exercised by the County Engineer or the County Road Supervisor under a permit procedure.

(2) There will be a minimum of 18 inches of cover over all underground utilities located in the paved portion of streets.

(3) Joint use of trenches and poles is encouraged wherever practical.

(4) Acquisition of such additional right-of-way is the obligation of the utility company or the developer.

(5) In new construction, in order to minimize conflicts, a sequence of installation from the deepest utility to the shallowest shall be attempted.

(6) Typical utilities location and easement guidelines are set out as follows;

BB. Street Names and Sign Locations

(1) Duplication of existing names will not be allowed unless the streets are obviously in alignment with existing streets and not so far removed as to be confusing.

(2) Street signs shall be placed at all street intersections and shall be in accordance with Section 8 of the Land Use Code.

(3) Street and Road signs shall be placed on all roads serving two or more residences. Roads names shall be approved by the County.

(15.2,BB)

(4) Named roads within new subdivisions or PUD's that exceed one mile in length shall require installation of mile post markers by the developer(s).

(5) Within subdivisions or PUDs, developer(s) will be required to install all traffic control devices, as required by the Uniform Traffic Code. Speed limits shall be established by the County and speed limit signs may be required within the PUD.

15.3 ROADWAY CONSTRUCTION SPECIFICATIONS:

A. Construction Testing

Test sampling for design and quality control testing frequency shall be proposed by the developer's engineer and approved by the County on the basis of professional judgment to suit both the advantages and limitations of the particular design method used and the peculiarities of the individual project. Quality control supervision of construction shall be done by the developer's engineer at no expense to Ouray County. The County shall be permitted access to the construction site at all times to make spot checks on quality control. Progress inspections may eliminate the possible need for extensive post-testing. Construction material testing, such as compaction and concrete testing, shall be performed by an independent testing laboratory approved by the County and paid for by the developer.

B. Construction Inspections

Upon completion of construction and prior to County acceptance of the work, copies of the as-built plans, pipeline leakage test reports, concrete cylinder test reports, compaction test reports, etc., and the developer's engineer's certification that construction has been completed in conformance with the approved lines, grades, specifications, and standards shall be delivered to the County before a request for acceptance will be completed.

At a minimum (but not necessarily limited to), the following in-process types of inspections are required by the developer's engineer.

(1) Culverts. Trenching, grade, bedding, installation of pipe, backfill, and compaction will be tested. The inspection is to be performed when backfill is completed to 1/2 the depth of the culvert.

(2) Structures. Finished excavation, grade, forming, reinforcing steel, concrete pour, finish, and test cylinders are to be inspected. Inspections are required prior to placing steel and prior to pouring concrete.

(3) Roadway. Subgrade, subbase, base course, prime and paving inspections are to be called for at each completed stage.

(15.3B)

(4) Final Inspection. A request for final inspection and acceptance for maintenance or release from bond must be made in writing to the County Engineer after all other inspections have been passed.

C. Construction Standards

All work shall be done in accordance to the applicable Construction and Material Details of the "Standard Specifications for Road and Bridge Construction," State of Colorado, latest edition. The CDOT manual shall be utilized unless supplemental specifications have been approved by the County prior to construction.

15.4 VARIANCES TO ROAD STANDARDS:

Appeals may be made to the Board of Adjustment pursuant to Section 13.15 & Section 12.5 of the Code. To seek a variance with respect to the administration or enforcement of any provision of these Road Standards. In addition to the criteria set out for granting variances under Section 13.15 & Section 12.5, the appellant must show that the granting of any variance will not materially diminish the public safety and life costing objectives that underpin this Section 15.

15.5 IMPACT FEES FOR ROADS:

A. Short Title. This regulation shall be known and cited as the Ouray County Road Impact Fee Regulation.

B. Findings. The Board of County Commissioners of Ouray County, Colorado, (hereinafter referred to as "Board" or "Board of Commissioners") hereby finds and declares that:

(1) The County is responsible for and committed to the provision of road and bridge maintenance and development at levels necessary to assure reasonable levels of public safety and to support basic residential and non-residential growth and development;

(2) Such facilities and service levels are provided by the County utilizing funds allocated via the County's Road and Bridge Budget and rely upon the funding sources indicated therein;

(3) Residential and non-residential development in the County causes and imposes increased requirements for road maintenance, construction and reconstruction, which, but for such development, would not otherwise be necessary;

(4) Planning and zoning projections indicate that such development will continue and will place ever increasing demands on the County road system;

(5) The development potential and property values of properties in the County are strongly influenced and encouraged by County policy as expressed in the Ouray County Master Plan and as implemented in the Ouray County Land Use Code;

(6) To the extent that such development in the County places demands upon Ouray County Roads in excess of the basic level of road maintenance, construction and reconstruction provided to current residents and property owners in Ouray County by the County, those demands should be satisfied by shifting the responsibility for financing the provision of such maintenance, construction and reconstruction from the public at large to the development or building actually creating the demands;

(7) The amount of the "impact fees" to be imposed hereunder shall be determined by the costs of additional road maintenance, construction and reconstruction of County Roads needed to support such development or building;

(8) The Board, after careful consideration of the matter, hereby finds and declares that "impact fees" imposed upon residential and non-residential development in order to finance County Road maintenance, construction and reconstruction, the demand for which is created by such development, is in the best interests of the general welfare of the County and its residents, is equitable, and does not impose an unfair burden on such development and building. Therefore, the Board deems it advisable to adopt this regulation as hereinafter set forth.

C. Intent. This regulation is intended to impose "impact fees" with respect to increased County Road maintenance required as a result of new single-family residences and/or accessory dwelling units or upon approval of a Special Use Permit for non-residential uses.

(1) County Road Maintenance Impact Fee. This regulation establishes a County Road Maintenance Impact Fee (hereinafter referred to as "Maintenance Impact Fee") to pay for the net increase in County-wide road maintenance attributable to new residential and non-residential development. This Maintenance Impact Fee shall be calculated on the basis of the annual incremental costs to the County, per parcel, of maintaining County Roads and shall be payable at the time of application of a building permit for a single-family residence and/or an accessory dwelling unit or upon approval of a Special Use Permit for a non-residential use.

(2) County Road Construction and Reconstruction Impact Fee. This regulation also establishes a County Road Construction and Reconstruction Impact Fee (hereinafter referred to as "Construction Impact Fee") based on the special construction and reconstruction needs of a segment or segments of County Roads as determined, from time to time, by the Board of County Commissioners. This Construction Impact Fee (1) shall be calculated on the basis of the proportion of the current estimated cost of County Road capital improvements for a specified road segment or set of road segments that is attributable, on a net basis, to the impact of new residential or non-residential development; (2) shall be assessable on subdivision and PUD applicants; and (3) shall be payable at the time of subdivision or final plat approval.

D. Applicability of Impact Fee. Maintenance Impact Fees shall apply uniformly to all single-family residences and/or accessory dwelling units or upon approval of a Special Use Permit for non-residential uses. Construction Impact Fees shall apply only in those portions of the unincorporated areas of the County where the Board of County Commissioners has, by resolution, pursuant to Section 15.5.H(1), established a Construction Impact Zone.

E. Imposition of Impact Fee. No building permit for new single-family residences and/or accessory dwelling units or approval of a Special Use Permit for non-residential uses may be issued until the County has received payment of any impact fees required by Section 15.5.C, subject only to any credits that may be applicable in accordance with Section 15.5.O.

F. Calculation of Impact Fees.

(1) Maintenance Impact Fee. The County may adjust the amount of the Maintenance Impact Fee every year based on the Denver/Boulder Consumer Price Index.

(2) Construction Impact Fee. The County shall determine the amount of the Construction Impact Fees in a Construction Impact Zone at the time of establishment of such Zone and adjust such fees annually thereafter (in accordance with Section 15.5.H(6). In making such determinations, the County shall, as set out below (1) determine the amount and nature of construction and/or reconstruction contemplated in such Zone and estimate the costs thereof; (2) determine the appropriate number and location of road segments within such Zone; (3) estimate the unadjusted construction impact fees payable per parcel and per building for each segment; (4) aggregate such per parcel fees so as to calculate for each parcel the cumulative unadjusted construction impact fee to be paid prior to final plat approval; and (5) adjust such cumulative fees so as to credit the present value (over 20 years) of those property taxes paid in support of road construction allocable to the Ouray County Road and Bridge Fund.

(15.5F2)

(a) Amount and Nature of Construction and/or Reconstruction. In making this determination, the County shall consider (a) current and projected traffic counts resulting from the development in question; (b) the existence and projection of unsafe conditions, including, but not limited to, basic access to the development, the condition of road structures and surfaces, bridges, drainage, and access for emergency vehicles; (c) the expressed wishes of the most

(b) affected members of the public; and (d) the estimated cost of such construction and/or reconstruction, including the cost of any land dedications, physical improvements, and/or financial contributions made within three years prior to establishment of the Construction Impact Zone in question, in relation to the capacity of impact fees and other financing to secure the improvements within 20 years.

(c) Number and Location of Road Segment(s). In making this determination, the County shall consider (a) current, future and optimal traffic flows to and from land within the Construction Impact Zone in question; (b) the nature of the construction and/or reconstruction needed in specific areas; (c) the nature of the impacts caused by particular projected density and the capacity of the applicant to undertake construction and/or reconstruction upfront; and (d) equitable allocation of construction impact fees in relation to net impacts caused by such proposed density.

(d) Per parcel Unadjusted Construction Impact Fees in Each Segment. In making this determination, the County shall, for each segment in the Construction Impact Zone, (a) estimate the incremental cost of road construction and/or reconstruction, using as the baseline current road conditions and any road construction or reconstruction that would otherwise be required under other provisions of the Ouray County Road Standards; and (b) divide such incremental cost by the number of parcels, both potential and existing, considered by the County to benefit from the road construction or reconstruction within that segment. The resulting value represents the Unadjusted Construction Impact Fee payable per new parcel for each segment in the Construction Impact Zone.

(e) Unadjusted Cumulative Construction Impact Fee. In making this determination, the County shall, for each segment in the Construction Impact Zone, aggregate the unadjusted per parcel impact fee, calculated in accordance with paragraph (3) above, for all segment(s) benefiting a new parcel, so as to arrive at the Unadjusted Cumulative Construction Impact Fee allocable to that new parcel.

(f) Adjusted Cumulative Construction Impact Fee. In making this determination, the County shall reduce the Unadjusted Cumulative Construction Impact Fee, calculated in accordance with paragraph (4) above, by an amount equal to the present value of property taxes per parcel allocable to road construction or reconstruction in the Ouray County Road and Bridge Fund, estimated over 20 years. This Adjusted Cumulative Construction Impact Fee is the Construction Impact Fee per parcel payable prior to final plat approval.

(3) Prior to making an application for preliminary plat approval, an applicant may request a non-binding impact fee estimate from the County. The County shall base such an estimate on the above-described methodology.

G. Administration of Maintenance Impact Fee.

(1) Collection of Maintenance Impact Fees. Maintenance Impact Fees due pursuant to this regulation shall be collected at the time a building permit for new single-family residence and/or accessory dwelling unit is issued or upon approval of a Special Use Permit for non-residential uses.

(2) Transfer of Funds. Upon receipt of Maintenance Impact Fees, the County shall place such funds into the Ouray County Road and Bridge Impact Fee Fund, to be used for maintenance and improvements of County maintained roads on a County-wide basis.

H. Administration of Construction Impact Fee.

(1) Establishment of Construction Impact Zone. The Board of County Commissioners may, from time to time, establish by resolution one or more Construction Impact Zones where it considers that public safety, access to new development, projected traffic counts, and/or the amount of new development justify such establishment. Construction Impact Zones may be established to assist any road construction or reconstruction project, including, but not limited to, the creation of paved roads. Prior to such establishment, the Board of County Commissioners may seek the advice of the Planning Commission and/or any Road Committee that it may have created. The Board shall, in all cases prior to the establishment of such a Zone, hold at least one public hearing regarding such establishment, upon 14 day notice, published in a newspaper of general circulation in the County.

(2) Collection of Construction Impact Fees. Construction Impact Fees due pursuant to this regulation shall be collected by the County Land Use Office at the time of final plat approval and prior to sale of lots in subject subdivisions and PUDs.

(15.5H)

(3) Transfer of Funds. Upon receipt of Construction Impact Fees, the County Treasurer shall place such funds into separate accounts as hereinafter specified. All such funds shall be deposited in interest bearing accounts in a bank, banks, or other financial institution(s) authorized to receive deposits of County funds. Interest earned by each such account shall be credited to that account and shall be used solely for the purposes specified for funds of such account.

(4) Establishment and Maintenance of Accounts. The County Treasurer shall establish separate accounts (pursuant to the resolutions of the Board of County Commissioners) and/or maintain records, whereby Construction Impact Fees collected will be applied to road segments for which such impact fees are collected.

(5) Maintenance of Records. The County Treasurer shall maintain and keep adequate financial records for each such account which shall show the source and disbursement of all revenues; which shall account for all moneys received; and which shall insure that the disbursement of funds from each account shall be solely and exclusively for the provision of projects rendered necessary as a result of the contributing subdivision or PUD.

(6) Annual Review and Adjustment of Construction Impact Fee Amounts. The Board of County Commissioners shall, prior to December 31st of each year, beginning by December 31, 1998, adjust Construction Impact Fees for the succeeding calendar year in all Construction Impact Zones established by the County at least one calendar year prior to such adjustment. Such adjustment shall provide for any inflation over the prior year in road construction or reconstruction costs in Ouray County.

(7) Five Year Reviews and Modification. The County shall, every five years following establishment of a Construction Impact Zone, in conjunction with development and/or modifications of its annual capital budget and improvement plan, review the development potential of the County and its capital improvement plans and make such modifications as are deemed necessary in any Construction Impact Zone. Such modifications shall be the result of: (a) development occurring within the Construction Impact Zone in the prior five years; (b) County Roads actually constructed or reconstructed in such Zone; (c) changing County Road needs; (d) changes in availability of other funding sources applicable to County Roads; and (e) such other factors as may be relevant. The County shall also, based on this review, determine whether or not sufficient impact fees have been collected to warrant consideration of undertaking contemplated construction and/or reconstruction of any segment(s) in a Construction Impact Zone. The financing of any such undertaking could include establishment of a special road improvement district, County direct financing (including debt financing), or other available means.

I. Bonding of Excess Facility Projects. The County may issue bonds, revenue certificates and other obligations of indebtedness in such a manner and subject to such limitations as may be provided by law, in furtherance of the construction and reconstruction of County Roads. Funds pledged toward retirement of bonds, revenue certificates and other obligations of indebtedness for such projects may include impact fees and other County revenues as may be allocated by the Board of County Commissioners. Construction Impact Fees paid pursuant to this regulation, however, shall be restricted to use solely and exclusively for financing directly, or as a pledge against bonds, revenue certificates and other obligations of indebtedness for the costs of construction and reconstruction of County Roads as specified herein. This Section 15.5.I shall in no way restrict the County from issuing bonds, revenue certificates and other obligations of indebtedness for any purpose as authorized by law (including road maintenance, construction and reconstruction) where impact fees are not at issue.

J. Refunds of Construction Impact Fees.

(1) The current owner of property on which a Construction Impact Fee has been paid may apply for a refund of such fee if: (a) the County has failed to spend such fee on County Roads serving such property within twenty years of the date of imposition of the impact fee; or (b) the project for which a final plat has been approved has been altered or amended resulting in a decrease in the amount of the impact fee due.

(2) Only the current owner of the property may petition for a refund. The petition for refund must be filed within one year of the event giving rise to the right to claim a refund.

(3) The petition for refunds must be submitted to the Board of County Commissioners or its duly designated agent on a form provided by the County for such purpose.

(4) Within one month of the date of receipt of the petition of refund, the Board of County Commissioners or its duly designated agent must provide the petitioner, in writing, with a decision on the refund request, including the reasons for the decision. If a refund is due, the Board of County Commissioners or its duly designated agent shall notify the Ouray County Treasurer and request that a refund payment be made to the petitioner.

K. Appeals. After determination of the applicability and amount of any impact fee imposed by this Section 15.5 or any refund due, an applicant for a building permit or Special Use Permit, or an adversely affected property owner may appeal to the Board of County Commissioners. The applicant must file a notice of appeal with the Board of County Commissioners within thirty (30) days following the determination of the applicability of the impact fee regulation, the amount of the impact fee, or the refund due. If the notice of appeal is accompanied by a cash bond, surety bond, or other sufficient surety satisfactory to the County in an amount equal to the impact fee due, as calculated by the County, the County may approve the building permit or Special Use Permit or take other action as it may deem appropriate. The filing of an appeal shall not stay the collection of the impact fee due unless a bond or other sufficient surety has been filed therewith and accepted by the County.

L. Effect of Impact Fee on Other Land Use Code Provisions. This regulation shall not affect, in any manner, the permissible use of property, density of development, design and improvement standards and requirements or any other aspect of the development of land or provision of public improvements subject to the zoning and other regulations of the County, which shall be operative and remain in full force and effect without limitation with respect to all such development.

M. Impact Fee as Additional or Supplemental Requirement. Any impact fee required by this regulation is additional and supplemental to, and not in substitution of, any other requirements imposed by the County on the development of land or the issuance of Special Use Permits or building permits. It is intended to be consistent with and to further the objectives and policies of the Ouray County Master Plan, the Ouray County Land Use Code and other County policies, ordinances or resolutions by which the County seeks to insure the provision of County Roads in conjunction with the development of land.

N. Variances and Exceptions. Petitions for variances and exceptions to the application of this regulation shall be made to the County in accordance with procedures established in Sections 12 & 13 in this Code.

O. Developer Improvements to County Roads and Related Credits.

(1) A property owner may elect to apply to the County for an agreement whereby the property owner may be authorized by the County at the property owner's whole or partial expense, to improve or relocate a portion of an existing County Road or construct a new County Road. No such improvements may be undertaken in the absence of such an agreement. Prior to approval of any such agreement, the County shall consider (i) the location of the improvements; (ii) their estimated incremental cost over and above what is otherwise required by County Road Standards; (iii) a schedule for initiation and completion of the improvements; (iv) a requirement that such improvements are to be in accordance with County Road Standards applicable to County Roads; and (v) such other terms and conditions deemed appropriate and necessary by the County.

(2) Prior to entering into any such agreement, the County shall (i) review the improvement plan; (ii) verify costs and time schedules; (iii) determine if the improvements are in accordance with applicable County Road Standards and appropriate in relation to County Road priorities and any Transportation Plan adopted by the County that may be in effect; and (iv) determine the amount of any credit for any Construction Impact Fees that might be due or become due.

(3) Any such credit shall include, on a present value basis, past and future monetary and non-monetary contributions by the property owner to the construction and/or reconstruction of County Roads. Such contributions shall include the present value of any land acquisitions and dedications, physical improvements, and/or financial contributions made within three years prior to the establishment of the Construction Impact Zone in question.

(4) Where an entire segment or portion of a segment in a Construction Impact Zone is constructed and/or reconstructed by a property owner in accordance with Section 15.5.O(1), said property owner may apply for an immediate credit applicable at the time of subdivision/PUD final plat approval. Such credit shall be calculated by aggregating the applicable Unadjusted Construction Impact Fees, as calculated in accordance with Section 15.5.F(2)(c), for all potential parcels being developed by the applicant within the segment(s) being improved by the applicant. Such credit shall be reduced by an amount equal to the present value of property taxes per parcel allocable to road construction or reconstruction in the Ouray County Road and Bridge Fund, estimated over 20 years.

(5) Said property owner may also apply for a refund equal to the applicable Unadjusted Construction Impact Fee, as calculated in accordance with Section 15.5.6(B)(3), for all other parcels that are deemed by the County to benefit from the said construction or reconstruction of the road segment(s) by the applicant. Such refund shall include only that portion of the Unadjusted Construction Impact Fee directly allocable to the segment(s) being constructed or reconstructed by said applicant. Such refund shall be distributed annually and shall not exceed funds actually collected from subdivision/PUD final plans approved during the previous year.

(6) The aggregate of said credit and said refund shall be no greater than the potential Construction Impact Fees to be collected for the entire segment(s) being improved by the applicant, divided by the cost of constructing or reconstructing the entire segment(s), multiplied by the estimated incremental cost incurred by the applicant in constructing or reconstructing the segment(s), or portion of segment thereof. Such incremental costs shall be estimated by the County and shall reflect only those costs over and above costs otherwise required by other County Road Standards.

(7) No credit shall be given for the construction or reconstruction of County Roads required by any other provision of Section 15 of the Land Use Code.

(8) Nothing in this Section shall prohibit or limit the right of the County in appropriate situations to enter into a co-venture or other similar arrangement with an applicant or property owner for the purpose of constructing or reconstructing a County Road.

P. Liberal Construction. The provisions of this regulation shall be liberally construed to carry out effectively its purposes which are hereby found and declared to be in furtherance of the public health, safety, welfare and convenience.

Q. Definitions. As used in this regulation, the following words and terms shall have the following meaning, unless another meaning is plainly intended:

(1) "Building Permit" shall mean the permit required for new construction and mobile/modular home installations pursuant to provisions of this Code or the County Building Code. The term "building permit," as used herein, shall not be deemed to include permits required for remodeling, rehabilitation or other improvements to an existing structure or rebuilding a damaged or destroyed structure, provided there is no increase in the number of residential or non-residential units resulting therefrom. Multi-unit housing shall be deemed to include one building permit for each unit. The Board of County Commissioners shall determine on a case by case basis the number of building permits to be ascribed to commercial and industrial developments based on estimated road impacts.

(2) "County Road Maintenance" shall mean any and all activity undertaken by the County in order to provide that the County Road System shall be kept up and reserved to the level of utility as exists as of the date of this enactment. Examples of County Road Maintenance activity include, but are not limited to, grading, graveling, repair of damage to the road, plowing, treating with dust control substances, and weed control and fence repair within County Road right-of-way. County Road Maintenance does not include County Road Construction or Reconstruction as hereinafter defined.

(3) "County Road Constriction or Reconstruction" shall mean any or all of the following: Acquisition of land for right-of-way purposes, construction, building, paving, grading, graveling, improving, equipping, and installing of road or bridge improvements and all other work auxiliary thereto, including, without limitation, administrative, engineering, architectural and legal work performed in connection with a County Road project, which is necessary to support and is attributable to designated subdivision or PUD proposals within a Construction Impact Zone and is to be financed, in whole or in part, by the imposition and collection of a Construction Impact Fee. Such County Road Construction and Reconstruction shall include streets, roads, bridges, sidewalks, street lighting, curbs, gutters, signalization, signage and landscaping.

(4) "County Road" shall mean any road shown on a County Road map where Highway User Tax Funds are received.