

CHAPTER 5 ROADS/STREET DESIGN STANDARDS

3-5-100 Purpose - The purpose of these Standards is to set forth the requirements for developments and improvements that affect roadways, alleys, and access easements. The Standards are based on the State Statutes, and County Resolutions which authorize and enable the establishment of rules and regulations to guide and control transportation-related improvements and developments.

3-5-101 Waivers - If an applicant wishes to seek a waiver from the requirements of these Standards, the applicant shall submit a request to that effect as an attachment or addendum to the permit, site plan, or other application for project approval. When implementation of such innovations would violate mandatory provisions of these Standards, applicants shall visit the appropriate County officials to discuss the proposed waivers prior to formal submittal of applications.

The request for waiver shall state specific reasons why a waiver is necessary and appropriate and include documentation to support such reasons. The request shall address the waiver criteria of this section. Waivers will not be issued for procedural requirements. Separate waiver requests may be advisable where several waivers are necessary and where the waivers may be approved in whole or in part.

In considering a waiver request, the County shall determine whether the waiver would meet acceptable standards of practice for engineering, operation and safety. Waivers contrary to the public interest, or which violate local or state laws, shall not be approved.

When a waiver is approved, the County shall clearly state in writing the reasons for granting the waiver. The approval document shall be included in the permit. The approval may impose conditions on the permit. For example, the permittee may be required to improve, modify, eliminate, or correct the condition giving rise to the waiver when it becomes evident that the reason for the waiver no longer exists. If the waiver is approved and the remainder of the application is in order, and the design meets all other standards and design criteria, the requested action shall be approved.

If a waiver is granted to allow direct access where the access proposal cannot meet access code standards, or when the property would be without reasonable access without the waiver, the access permit may contain specific terms and conditions providing for its expiration at such time as the necessity for the waiver no longer exists.

If the waiver request is denied, the County shall state clearly in writing the reasons for denial, continue to process the application, and may approve the application if it can be approved without a waiver.

3-5-102 Innovation, New Technology and Non-Typical Design

These Standards are based on current practice and technology. New developments in materials and methods will provide better and more economical designs and practices. Applicants and designers are encouraged to include innovative procedures, new materials, and improved design methods in facility design. Proposals for innovations and new technology should be submitted as requests for waivers. Requests should include as much documentation as possible of the proposed innovations, including reports of tests, documentation of successful use in other jurisdictions, calculations, publications, and any other information that will assist the official to determine if the proposal should be adopted.

3-5-103 Roadway Functional Classification

Functional classification, developed for transportation planning purposes, is the grouping of streets by the character of service they provide. Functional classification has emerged as the primary method of grouping streets. These Standards utilize a functional classification system.

A working copy of the current functional classification map is available at the County Planning and Development Office. The functional classifications used are described in the remainder of this section. There are classification differences between urban and rural roads as shown in the table below.

Urban and Rural Roadway Classifications

Urban	Rural	Typical ADT
Principal Arterial - Expressway/Freeway	Principal Arterial – Interstate	15,000 +
Principal Arterial-Other	Principal Arterial-Other	15,000 +
Minor Arterial	Minor Arterial	7,000 – 15,000
Collector	Collector-Major	3,5000 – 7,000
	Collector-Minor	1,000 – 3,5000
Local	Local	1,000

In the following discussions of each of the road classifications, the average daily traffic (ADT) for each classification is a general description only. The official classifications for individual streets are provided on the functional classification map.

a. Principal Arterial Interstates, Freeways & Expressways

Arterials, including interstates, are the highest classification of streets. They provide the highest level of mobility at the highest speeds for the longest distances. Direct access onto these roads are limited to varying degrees depending on use and geographic setting. The freeways and expressways in the area are on the Interstate System. Freeways provide for the high-speed movement of large volumes of traffic with a minimum of interference. This is accomplished through the use of access control, divided roadways, and grade-separated interchanges. Freeways have the inherent characteristic of lower accident rates because of many built-in safety features such as comfortable alignment, easy grades, speed change lanes, adequate sight distance, and other geometric features that afford a continuous movement of traffic.

Expressways are generally considered an intermediate step between major arterial streets and freeway facilities. Expressways can be expected to accommodate somewhat lower volumes of traffic than are found on freeways, and are often used in corridors where anticipated volumes of traffic will need less than freeway requirements but more than conventional arterial facilities.

b. Principal Arterials

These facilities emphasize the through movement of traffic and have improved geometric design and traffic control measures. Principal arterials are designed with traffic volume ranges between 15,000 and 35,000 vehicles average daily traffic (ADT).

c. Minor Arterial Streets

These streets serve major traffic generators and link collector streets with the principal arterials. These streets have a design traffic volume of between 7,000 and 15,000 vehicles ADT.

d. Major Collectors

Collectors provide a lower level of mobility than arterials at lower speeds and are of shorter distance. These streets connect local roads to arterials and have more direct access dependent on use and geographic setting. The design volume for these streets, ranges from 3,500 to 7,500 ADT.

e. Minor Collector

The collector street system serves intermediate and short-distance travel. Traffic volumes on such facilities are usually lower than those found on arterial facilities. Although collectors provide access to residential, business, and commercial areas, they do not expedite the through movement of traffic. The design volume of these streets ranges from 1,000 to 3,500 ADT.

f. Local Streets

This is the lowest classification of streets. Local streets provide a high level of access to abutting land but limited mobility. Local streets function primarily to serve local traffic circulation and land access. These streets customarily accommodate shorter trips, have lower traffic volumes, and lower speeds than do collectors and arterials. Streets where traffic volumes will be between 500 and 2,500 vehicles per day are considered "low volume" local streets. In urban settings, narrow local streets (lanes) may be used where the volume will be less than 1,000 ADT. In rural settings, local streets (roads) are classified as either a) 500 ADT or greater, or b) less than 500 ADT.

For purposes of these Standards, local streets are further classified by adjacent land use for establishment of design criteria.

3-5-104 Official Maps

Roads and Highways accepted and, maintained by the County are shown on the official County Road Map.

3-5-105 Traffic Studies

Traffic studies are required to assess the potential impacts of a new development, change in land use, or an access modification will have on the existing and proposed transportation system, both at the immediate location and in the general area. A traffic impact analyses includes:

- The determination of the travel demand generated by a proposed development.
- The identification of deficiencies in the existing and proposed transportation systems.
- The identification of improvements necessary to maintain acceptable levels of service.

a. Requirements

A traffic study may be required for any site plan, subdivision permit, or access request for any development and shall be required for any project or development that will generate 100 or more trips during any hour or over 200 trips per day. Traffic studies shall be prepared by a qualified civil engineer licensed by the Wyoming State Board of Registration for Professional Engineers and Professional Land Surveyors to practice engineering in Wyoming. The applicant and the engineer shall meet with the County prior to preparation of the traffic study to discuss specific issues or concerns. The Director of Planning and Development may waive a traffic study based on estimated ADT, and peak hour trips, or existing road or site conditions, including adequate pedestrian access.

b. Standards

Traffic studies shall utilize the Institute of Transportation Engineers (ITE) trip generation rates unless better information is available.

Traffic studies shall address the following items in sufficient detail to adequately and accurately represent the traffic conditions and resultant impact of the proposed access request:

- i. Land Use, Site and Study Area Boundaries.
- ii. Existing and Proposed Site Uses.

- iii. Existing and Proposed Uses adjacent to the Site.
- iv. Existing and Proposed Streets and Intersections.
- v. Trip Generation for peak hours .
- vi. Trip Assignment, Modal splits.
- vii. Existing and Projected Traffic Volumes (Peak & Design Hour).
- viii. Equivalent Axle Loads for pavement design.
- ix. Capacity Analysis at major approaches and intersections.
- x. Warrants for traffic control devices.
- xi. Needed modifications of existing traffic control devices.
- xii. Reservoir space.
- xiii. Driveway design.
- xiv. Required lengths of left-turn bays, and speed change lanes.
- xv. Sight distances.
- xvi. Maximum possible use for total build out scenario.
- xvii. Existing and proposed pedestrian and bicycle amenities.
- xviii. Conclusions and Recommendations.

c. Responsibilities for Traffic Studies

Traffic studies may be required by the County in order to adequately assess the impacts of a development proposal on the existing and/or planned street system. The primary responsibility for assessing the traffic impacts associated with a proposed development will rest with the developer.

Unless waived by the County, a written study meeting County criteria shall be required for a development proposal when trip generation is expected to exceed 100 Vehicles as determined by the County.

The following submittals may require traffic studies:

- i. A Subdivision Permit.
- ii. A Site Plan.

Where access points are not defined or a site plan is not available at the time the traffic study is prepared, additional traffic work may be required when a site plan becomes available or the access points defined.

During the pre-application meeting the County and applicant will discuss the scope of the traffic study.

d. Traffic Study Format

In order to provide consistency and to facilitate staff review of traffic studies, the following format must be followed in the preparation of such studies by transportation consultants.

i. Introduction. The introduction portion of the report must contain the following:

A. Land Uses, Site and Study Area Boundaries

A brief description of the size of the land parcel, general terrain features, the location within the jurisdiction and the region must be included in this section. In addition, the roadways that afford access to the site, are included in the study area, must be identified.

The exact limits of the study area should be based on engineering judgment and an understanding of existing traffic conditions surrounding the site, but in no case shall the study area be less than ½ mile from the site limits. In all instances, however, the study area limits must be mutually agreed upon by the developer and the County. A vicinity map that shows the site and the surrounding transportation systems, including pedestrian and bicycle routes, must be included.

B. Existing and Proposed Site Uses

The existing and proposed uses of the site must be identified. The traffic study will address impacts of the most intense land use allowed on the property under County regulations.

C. Existing and Proposed Uses in Vicinity of Site

A complete description (including a map) of the existing land uses in the study area as well as their current zoning and use, must be included. In addition, all vacant land within the study area and its assumed future uses must be identified. This letter item is especially important where large tracts of undeveloped land are in the vicinity of the site, and within the prescribed study area.

D. Existing and Proposed Pedestrian and Bicycle Amenities

The applicant shall identify existing residential developments, schools, commercial areas, transit routes and stops, greenways, parks, houses of worship, or other similar amenities within one quarter mile of the proposed development. Existing pedestrian and bicycle routes to these amenities shall be identified. The applicant shall provide plans to provide pedestrian access within and adjacent to residential and commercial development and redevelopment in the zoned area of Laramie County.

E. Existing and Proposed Roadways and Intersections

Within the study area, the applicant must describe and provide volumes for existing roadways and intersections including geometrics and traffic signal control as well as improvements contemplated by government agencies. This would include the nature of the improvement project, its extent, implementation schedule, and the agency or funding source responsible. A map must be provided showing the location of such facilities.

- ii. Trip Generation and Design Hours Volumes.** A summary table listing each type of land use, the size involved, the average trip generation rates used (total daily traffic and a.m./p.m. peaks), and the resultant total trips generated must be provided.

Trip generation must be calculated for the most intense land uses allowed under County regulations for the proposed zoning and/or land use. based on the latest data contained within the Institute of Transportation Engineers' (ITE) Trip Generation Manual; in the event that data is not available for the proposed land use, the County must approve estimated rates prior to acceptance.

The calculation of design hour volumes uses to determine study area impacts must be based on:

- A.** Peak hours trip generation rates as published in the ITE Trip Generation Summary.
- B.** Traffic volume counts for similar existing uses, if no published rates are available.

C. Additional sources from other jurisdictions if acceptable to the County.

Uses of the following percentage rates to account for passerby traffic may be considered upon approval of the County. Internal trip reductions and modal split assumptions will require analytical support to demonstrate how the figures were derived and will require approval by the County.

Passerby factors may be used to reduce the estimated additional total daily traffic to street(s) serving a proposed development. They are not to be applied directly to reduce trip generation and turning movement volumes at driveways serving the proposed development. Passerby factors are to be determined using ITE Trip Generation.

iii. Trip Distribution

The estimates of percentage distribution of trips from the proposed development to destinations in the region must be clearly stated in the report using the north, south, east, west compass points. Market studies and information concerning origin of trip attractions to the proposed development may be used to support these assumptions where available. A map showing the percentage of site traffic on each street must be provided as part of the traffic study graphic material.

iv. Trip Assignment

The direction of approach of site generated traffic via the area's street system will be presented in this section. The technical analysis steps, basic methods, and assumptions used in this work must be clearly stated and agreed to by the County. The assumed trip distribution and assignment must represent the most logically traveled routes for drivers accessing the proposed development. These routes can be determined by observation of travel patterns to existing land uses in the study.

v. Existing and Project Traffic Volumes

Graphics must be provided which show the following traffic impacts for private access points, intersections and streets specified in the traffic study.

A. A.M. peak hours site traffic (in and out) including turning movements.

B. P.M. peak hours site traffic (in and out) including turning movements.

- C. A.M. peak hours total traffic including site generated traffic (in and out). These volumes must include through and turning movement volume for current conditions and a separate set of numbers that also include 20 year projections or build out.
- D. P.M. peak hours traffic total including site generated traffic (in and out). These volumes must include through and turning movement volumes for current conditions and a separate set of numbers that also include 20 year projections or build out (whichever is specified by the County).
- E. Any other peak hour which may be critical to site traffic and the street system in the study area should be included in the graphics and show the same information as is provided for the A.M./P.M. peak hours.
- F. Actual counts of existing total daily traffic for the street system in the study area at the time the study is being prepared.
- G. Projected total daily traffic for the street system in the study area based on traffic from the proposed development and counts of existing daily traffic obtained in item f. The component of the existing daily traffic attributable to the existing uses must be identified and the increase in total daily traffic from the proposed uses.
- H. Projected total daily traffic for the system in the study area based on traffic from the proposed development, counts of existing daily traffic obtained in item f. above, and traffic projections based on build out of land use within the study area.

All raw traffic count data (including average daily volumes and peak hour turning movements) and analysis worksheets must be provided in the appendices of the report. Computer techniques, and the associated printouts, may be used as part of the report.

All total daily traffic counts should be actual machine where available. They may be based on factored peak hour sampling or the latest available machine counts from Wyoming Department of Highways, the County, and other agencies may be acceptable.

- vi. **Level of Services.** Level of service “C” will be the design objective for all movements and under no circumstances will less than level of service “D”

be accepted for site and non-site traffic including existing traffic at buildout of the study area. The design year will be approximately 20years following construction and include volumes generated by build-out of the study area or a 20 year projections in background traffic (Whichever is specified by the County).

vii. Capacity Analysis

A capacity analysis will be conducted for all public street intersections within the areas of the County impacted by the proposed development and for all private property access points to streets adjacent to the proposed development as specified in the traffic study requirements form and within the limits of the previously defined study area. The a.m., p.m., and any other possible peak period will be tested to determine which peak hours need to be analyzed. Capacity calculations should also include an analysis for 20th year projections or study area buildout conditions.

viii. Traffic Signals

The need for new traffic signals will be based on warrants contained in the Manual on Uniform Traffic Control Devices and any additional warrants established by the National Committee on Uniform Traffic Control Devices. In determining the location of a new signal, traffic progression is of paramount importance. Generally a spacing of one-half miles for all signalized intersections should be maintained. This spacing is usually desired to achieve good speed, capacity, and optimum signal progression. Pedestrian movements must be considered in the evaluation and adequate pedestrian clearance provided in the signal cycle split assumptions.

ix. Traffic Accidents

Traffic accident data for affected street corridors may be required for the study. The study period will normally be three years. Such locations will be specified by the County. Where this is necessary estimates of increased or decreased accident potential must be evaluated for the development, particularly if the proposed development might impact existing traffic safety problems in the study area, and safety improvement recommended where necessary.

x. Noise Attenuation

If a residential development is planned adjacent to a freeway or arterial roadway, the need for noise attenuation measures may be required as part of the impact analysis.

xi. Conclusions

This chapter of the study report must be a clear, concise description of the study findings. It is anticipated that this conclusion chapter will serve as an executive summary.

xii. Recommendations

In the event that analysis indicates unsatisfactory levels of service on study area roadway, a description of proposed improvements to remedy deficiencies must be included. These proposals would include projects by the County or the State Highway Department for which funds have been appropriated and obligated. The assumptions regarding all future roads and laneages in an analysis will require approval from the County. In general, the recommendation section should include:

- A. Proposed Recommended Improvements.** This section must describe the location, nature, and extent of proposed improvements to assure sufficient capacity. A sketch of each improvement should be provided showing the length, width and other pertinent geometric features of the proposed improvements.
- B. Volume/Capacity Analysis at Critical Points.** Another iteration of the volume/capacity analysis must be described, which demonstrates the anticipated level of service as a result of making these improvements.
- C. Traffic Volume Proportions.** Percentages based on the traffic impact analysis may be required by the County to determine the proportion of traffic using various public improvements (both existing and proposed) from several developments within the study area.

e. Revisions to Traffic Study

Revisions to the traffic study must be provided as required by the County.

3-5-106 Access

Access control regulations standardize, regulate, and control the location, size, type, construction, maintenance, and number of curb cuts, and driveway approaches. The regulations provide safe and efficient access between streets and adjacent property, safety of traffic in the streets, and safety of pedestrians on sidewalks and alongside rural roads. These Standards are intended to provide for consistency in design of new developments and to maintain a high level of service on roads and streets.

3-5-107 Permits

No person shall commence work on the construction, alteration, repair or removal of any driveway approach or the paving of any parking strip on any street, road, alley or other public place in the county without an official permit first having been obtained from Laramie County. The County shall issue permits upon approval of the application and payment by the applicant of all required fees.

A permit shall not be issued for access to parking or loading areas that require backing maneuvers in a public street right-of-way. Residential uses may be exempt from this provision.

a. Application.

To apply for a permit, the applicant shall file a written application with the County. The following information is required for a complete application:

i. A detailed plan showing the exact location of the abutting property and the exact dimensions and location of existing or proposed approaches and the relevant features adjacent to, across from, and within the limit of the frontage of such property; for example, fire hydrants, signs, sidewalks, poles, street light standards, and control boxes.

The plan shall also show locations of access approaches on adjacent properties and properties on opposite sides of streets and intersections.

ii. The location of buildings, loading platforms, or off street parking facilities being served or to be served by such approaches.

- iii. Existing and proposed traffic volumes for access points and adjacent access points and adjacent streets.

The County may require additional information when it is determined that such information is necessary to properly enforce the provisions of these regulations.

When access points are being revised as part of a project requiring approval of site plans, applications for the site plan and the access permit shall be submitted together.

Access onto state highways will be subject to the approval of both the Wyoming Department of Transportation and the County.

b. Access Requirements for all Functional Classifications

i. Driveway Approach Profiles. Profiles shall be designed to permit entrance and exit maneuvers at safe speeds and provide sufficient underbody clearance for typical passenger cars. Driveway approach profiles shall be designed with the fewest and least severe grade changes possible. Slope criteria of the Americans with Disabilities Act shall be incorporated in the design.

ii. Roadside Topography for Roads in Rural Areas. Access approaches in rural areas shall be designed in accordance with low volume criteria.

iii. Driveway Approach Construction.

A. Approaches in the County will be inspected prior to construction. The inspection will determine the proper size of the culvert, if applicable, and the approach grade.

B. Culverts shall have flared end sections at each end.

C. Any person performing work subject to the provisions of this section shall notify the County at least twenty-four hours in advance of the time when permitted work is to begin.

D. Access points shall not be constructed in such manner as to create a

hazard to any existing street lighting standard, utility pole, traffic regulation device or fire hydrant. The cost of relocating any such street structure, when necessary, shall be borne by the applicant. Relocation of any street structure shall be performed only by or through the person holding authority for the particular structure involved.

- E.** The driveway approach improvement shall extend at least 20 feet from the edge of the existing road or to the right of way line, whichever is greater. In the case of commercial and industrial driveway approaches, permanent pavement is required for at least 50 feet from the edge of the roadway pavement.
- F.** On County Roads, the distance from the right-of-way line to the near edge of service pumps, vendor stands, tanks, or private water hydrants shall meet the required set back distance but in no case should be less than 25 feet to permit free movement of large vehicles and to insure that they are entirely off the right-of-way when being serviced.
- G.** Fixed obstructions shall not be placed within county road right of way except for approved utility lines and markers, mailbox assemblies or fencing at the right-of-way line. Approach culvert headwalls are prohibited.
- H.** A driveway approach that will handle five hundred (500) or more vehicle trips per day shall be classified and constructed as a street intersection. A complete design of the intersection shall be submitted to the County before a permit is issued.
- I.** Driveway approach surfaces shall be paved. Exception: If the adjacent road is not paved, the driveway approach may consist of a minimum of six inches of crushed gravel of a gradation approved for road surfaces in lieu of paving.
- J.** Except as otherwise indicated, curb cuts and driveway approach aprons in the right of way shall be constructed of Portland cement concrete of a quality and type which is in accordance with the "*Wyoming Public Works Standard Specifications*" in effect at the time of such work. Curb cuts shall be permitted only with construction of adjoining Portland cement concrete aprons having a minimum depth of six inches.

- K.** Site development construction on rural roads shall not proceed prior to construction of the driveway approach.
- L.** The permittee or contractor shall maintain the driveway approach construction site in a safe manner, provide adequate barricades and lights at his own expense to protect the safety of the public using the adjacent streets or sidewalks, remove all debris, dirt, or other construction material immediately upon completion of work and shall hold the County harmless and indemnify the County from any damages incurred by permittee's operations. Such work shall be accomplished in conformance with the current editions of the "*Manual on Uniform Traffic Control Devices*" for Streets and Highways.
- M.** The permittee shall do all work and pay all costs in connection with the construction of access driveway approaches and their appurtenances on the right-of-way. This cost shall include the cost of any public property, including the roadway surface, damaged during construction.
- N.** Access points shall not be located so as to create a hazard to pedestrians or motorists or invite or compel illegal or unsafe movements.
- O.** Construction, alteration, or repair shall not be permitted for any driveway approach which can be used only as a parking space or which provides access only to the area between the street roadway and property lines. In such case the driveway approach shall be classified as an abandoned driveway.

iv. Maintenance of Driveway Approaches

Driveway approaches shall be well maintained to ensure that the original profile is retained, that operational speeds are not reduced by rough surfaces, and that no damage to or deterioration of the public pavement is caused by the condition of a driveway approach. Reconstruction of driveway approaches requires a permit as required in this chapter. Reconstructed driveway approaches shall conform to current regulations and the provisions of the Americans with Disabilities Act.

v. Sight Distance

Permits shall not be issued that include any design element or allow any turning movements where the sight distance is not adequate to allow the safe movement of a motorist using or passing the access. The permittee shall maintain adequate, unobstructed sight distance in both directions from the access. This sight distance shall be the distance necessary according to the posted speed of the adjacent road or street using the tables below. Any potentially obstructing objects such as but not limited to advertising signs, structures, trees, and bushes, shall be designed, placed and maintained at a height not to interfere with the sight distance needed by any vehicle using the access. Reconstruction of the horizontal and vertical curvature along the roadway and side slopes adjacent to the roadway may be necessary to increase sight distances to meet the requirements of this regulation.

A. Sight Distance along the Adjacent Road or Street. Table 106-1 shall be used to determine the required horizontal and vertical sight distance necessary as measured from the vehicle traveling on the adjacent road or street to the access. The design sight distance figures shall be used unless a design waiver is approved by the County. However, in no case shall the sight distance used be less than the minimum sight distance set forth in Table 106-1 and adjusted for grade as required by Table 106-4.

**Table 106-1
Sight Distance Along Adjacent Road or Street**

Posted Speed in MPH	20	25	30	35	40	45	50	55	60	65	70
Design Sight Distance (feet)	100	150	200	250	325	400	475	550	650	725	850
Minimum Sight Distance (feet)	100	150	200	225	275	325	400	450	525	550	625

For calculating sight distance at the proposed access location, a height of 3.5 feet shall be used for the driver's eyes of a vehicle on the adjacent road or street approaching the access location. The driver's eyes shall be assumed to be at the centerline of the inside lane (inside with respect to the curve) for measurement purposes. A height of 4.25 feet shall be used for a vehicle assumed to be on the centerline of the access five feet back from the edge of the roadway.

The sight distances shown in Table 106-1 shall be adjusted for any grade of three percent or greater using the figures set forth in Table 106-4. Grade is the ratio of the change in elevation to the length of slope. Multiply the length required in Table 106-1 by the appropriate factor in Table 106-4.

- B. Entering Sight Distance.** It is also necessary to provide the entering vehicle adequate sight distance in order to enter or cross the adjacent road or street. Table 106-2 shall be used to establish the minimum sight distance necessary for the entering vehicle. These lengths shall be adjusted for any grade of three percent or greater using Table 106-4. The vehicle used to determine the entering sight distance necessary is selected from Table 106-3. Note: The term “Entering” means entering the public right of way from the abutting property.

If there is no median or if the median is too narrow to safely store a left turning or crossing vehicle, a 20 foot minimum is necessary for passenger cars, both directions shall be considered from the access location. If the median can safely store the turning or crossing vehicle, then the sight distance shall be calculated assuming a two stop condition. The vehicle shall be assumed to stop once at the outside edge of the outside lane and again within the median. Each one-way roadway direction shall be considered separately.

- C. Sight Distance at Uncontrolled Intersections and Local Streets.** A triangular space (the “sight distance triangle”) shall be provided across corner lots for adequate sight visibility. The County may approve the location of light or sign poles 12 inches or less in diameter in the sight distance triangle if visibility is not obstructed.

The sight distance triangle shall be kept free from obstructions to vision between the heights of 2 ½ and 12 feet above the street grades. Landowners are responsible to maintain this visibility.

The sight distance triangle is to be determined by a diagonal line drawn across the lot 35 feet back along the face of curb or edge of pavement

from the point of intersection of the curb lines or edges of pavement. See Figure 106-F1.

**Table 106-2
Entering Sight Distance (in feet) for Controlled Intersections**

Vehicle expected to enter or cross highway as determined from Table 106-3	Posted Speed of Roadway in MPH										
	20	25	30	35	40	45	50	55	60	65	70
Two Lane Roadway											
Passenger Cars, Pickup Trucks	200	250	300	350	400	450	500	550	600	650	700
Single Unit Trucks Over 10,000 lb GVW	260	325	390	455	520	585	650	715	780	845	910
Multi-Unit Trucks	340	425	510	595	680	765	850	935	1020	1105	1190
Four Lane Roadway											
Passenger Cars, Pickup Trucks	240	300	360	420	480	540	600	660	720	780	840
Single Unit Trucks Over 10,000 lb GVW	300	375	450	525	600	675	750	825	900	975	1050
Multi-Unit Trucks	400	500	600	700	800	900	1000	1100	1200	1300	1400
Six Lane Roadway											
Passenger Cars, Pickup Trucks	260	325	390	455	520	585	650	715	780	845	910
Single Unit Trucks Over 10,000 lb GVW	340	425	510	595	680	765	850	935	1020	1105	1190
Multi-Unit Trucks	420	525	630	735	840	945	1050	1155	1260	1365	1470

For calculating Table 106-2 sight distance, a height of 3.5 feet shall be used for the driver's eyes at the access location and a height of 4.25 feet for the oncoming vehicle. The entering driver's eyes shall be assumed to be 15 feet back from the edge of the roadway.

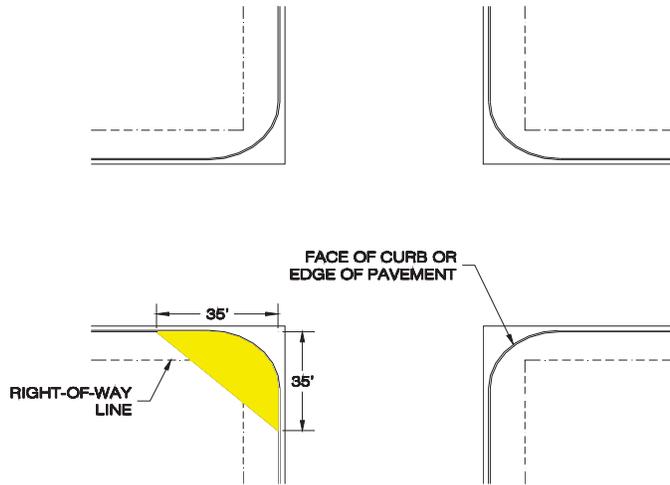
**Table 106-3
Design Vehicle Selection**

Land use(s) Served by Access	Design Vehicle(s) to be Used for Sight Distance Calculations for Table 106-2
Residential (access not part of a school bus route)	Passenger Cars, Pickup Trucks
Access part of any school bus route regardless of land use	No less than Single Unit Trucks
Office	Single Unit Trucks
Recreational	Single Unit Trucks
Commercial/Retail	Multi-Unit Trucks*
Industrial	Multi-Unit Trucks*
Public Streets & Roads	Multi-Unit Trucks*
* If less than 2 multi-unit truck trips per day (average), use single-unit truck	

**Table 106-4
Stopping and Deceleration Adjustment Factors for Highway Grade**

Grade	Adjustment Factor
3% to 4.9% Upgrade	0.9
5% to 7% Upgrade	0.8
3% to 4.9% Downgrade	1.2
5% to 7% Downgrade	1.35

106-F1.
Corner Sight
Distance for Yield or No
Control Intersections



c. Intersections and Access

i. Traffic Signals

If the traffic study determines that there is sufficient traffic (when the area is completely developed) to warrant installation of a traffic signal, traffic shall be consolidated to a single access which can be signalized.

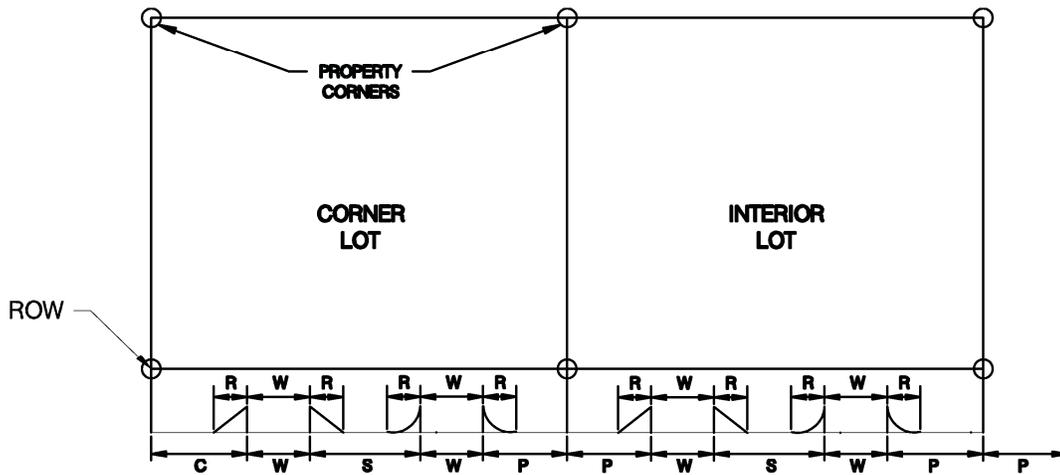
ii. Access Standards for Local Roads and Streets

The various dimensions and spacing of driveways on rural and urban local roads and streets are illustrated in 106-F2. Ranges of the permitted values of the various dimensions are shown in Table 106-5. In individual cases, the dimensions indicated in Table 106-5 may be adjusted by the approving authority to handle expected traffic conditions.

iii. Access Standards for Collectors and Arterials

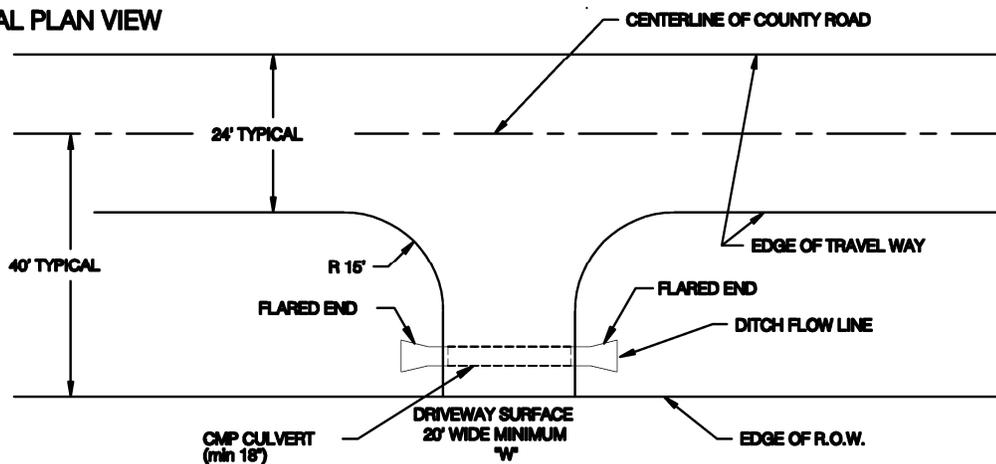
A. Provision of Access. If a property has frontage on one or more side streets intersecting the arterial, access shall be limited to such side street(s) unless a traffic study approved by the County demonstrates that direct access to the arterial would promote improved traffic operations and/or safety.

- B. Access Spacing for Collectors and Arterials.** When access is allowed from collectors or arterials, each access shall be separated at a minimum by a distance equal to the design sight distance values in Table 106-1. When speed change lanes are present, or will be needed in the future, the accesses shall be separated by a sufficient distance so that the speed change lanes including transition tapers do not overlap or an equivalent distance if speed change lanes are not yet built. Access shall not be permitted within a speed change lane, taper or ramp.
- C. Driveway Approach Width.** Driveway approach widths for collectors and arterials are determined from Table 106-5.
- D. Joint Access.** For adjacent developments within the designated urban areas, joint access shall be provided through joint driveway approaches, access easements, and/or frontage roads. The County may determine, on a case by case basis, that a joint access is not appropriate. All parties involved shall sign the Access Permit Application. A written mutual agreement signed by all parties involved shall be recorded in the public records of Laramie County, Wyoming. A copy of the recorded document shall be submitted with the application. All access requirements shall be met, except that the minimum distance from property line requirement shall not apply. In the event of a material breach or termination of the agreement, the access permit shall be cancelled, and the joint access shall be removed by the applicants or by the County at the expense of the applicants.

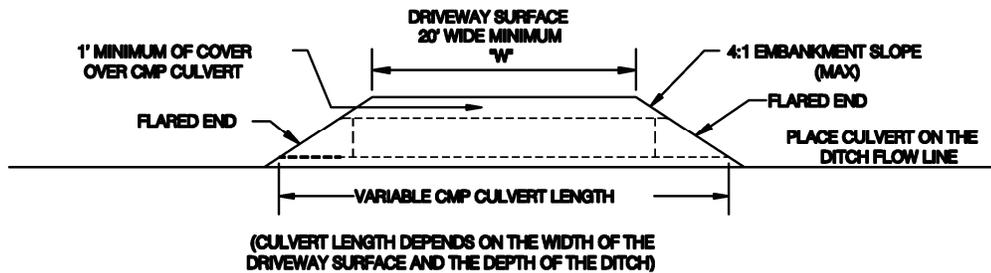


RURAL APPROACH DETAIL

TYPICAL PLAN VIEW



TYPICAL CROSS SECTION



**Table 106-5
Basic Driveway Approach Dimensions for Local Roads**

	Dimension Reference	Residential		Commercial		Industrial
		Urban	Rural	Urban	Rural	
Width	W					
Minimum		12'	20'	30'	24'	40'
Maximum		36'	36'	36'	40'	50'
Radii (Curved or Flared)	R					
Minimum		5'	15'	15'	15'	20'
Maximum		10'	25'	25'	50'	50'
Minimum Spacing*						
From Property Line	P	10'	25'	25'	50'	50'
From Street Corner	C	15'	50'	35'	100'	60'
Between Driveways**	S	23'	60'	53'	120'	130'

* Measured from extension of tangent. "R" is the width of the flare or curb return utilized at the location.

**If two adjacent driveways have different "R" values, the average should be used to determine the spacing.

Notes to Table 106-5

1. The driveway approach surface should be paved. However, if the adjacent road has a gravel surface, the driveway approach, if not paved, may have a minimum of 6" of crushed gravel.
2. The permittee shall do all work and pay all costs in connection with the construction of access driveway approaches and their appurtenances on the right-of-way. This cost shall include the cost of any public property, including the roadway surface, damaged during construction.
3. At driveways with high traffic volumes, such as fast food restaurants and car washes, provision must be made for car storage on the premises to prevent stacking of vehicles on the roadway.
4. Where needed and feasible at high traffic volume driveways, clearly visible acceleration and/or deceleration lanes should be provided. Except for the driveway served, no other driveway accesses shall be permitted within the limits of the auxiliary lanes.
5. All approaches in the County will be inspected prior to construction. The inspection will determine the size of the culvert and if a culvert is required.
6. On County Roads, the distance from the right-of-way line to the near edge of service pumps, vendor stands, tanks, or private water hydrants should be a minimum of 15' to permit free movement of large vehicles and to insure that they are entirely off the right-of-way when being services.
7. Waivers from these dimensions require County approval.
8. Driveway approaches shall comply with current ADA requirements.
9. Where properties have frontage on more than one street, the access will be granted only on the street with the lower functional classification.

E. Speed Change Lanes. This Section provides standards for speed change lanes at access points for arterials and major collectors.

1. Requirements. Speed change lanes shall be installed according to the following criteria:

- a.** A left turn deceleration lane and taper with storage length is required for any access with a projected peak hour ingress turning volume greater than ten vehicles per hour. The taper length shall be included within the required deceleration length.
- b.** A right turn deceleration lane and taper is required for any access with a projected peak hour ingress turning volume greater than 25 vehicles per hour. The taper length shall be included within the required deceleration length.
- c.** A right turn acceleration lane and taper is required for any access with a projected peak hour right turning volume greater than 50 vehicles per hour when the posted speed on the adjacent road or street is greater than 40 mph. The taper length will be included within the required acceleration length. A right turn acceleration lane may also be required at signalized intersections if a free-right turn is needed to maintain an appropriate level of service.
- d.** Right turn deceleration and acceleration lanes are generally not required on roadways with three or more travel lanes in the direction of the right turn.
- e.** A left turn acceleration lane with taper may be required when unique location factors such as highway speed and traffic density, access volume, the volume of commercial trucks, the influence of nearby access, existing highway auxiliary lanes close to the access, nearby traffic control devices, available stopping sight distance, and where other topographic and highway design factors exist that determine the need. A left turn acceleration lane is generally not required where the posted speed is less than 45 mph, or the intersection is signalized, or the acceleration lane would interfere with the left turn ingress movements to any other access.

- 2. Speed Change Lane Design Criteria.** Where speed change lanes are required, they shall be constructed in accordance with the following:
- a.** Where two accesses have speed change lanes that overlap, or in close proximity, a continuous lane shall be established between the accesses to improve roadway consistency and safety and maintain edge continuity.
 - b.** Speed change lanes shall be 12 feet wide, exclusive of the gutter pan or shoulder. If the existing through travel lanes are less than 12 feet wide, the speed change lanes may be the width of the widest through lane, but shall in no case be less than 10 feet wide, exclusive of the gutter pan or shoulder.
 - c.** Table 106-6 shall be used to determine lengths of speed change lanes. The required length of taper is obtained by multiplying the full lane width by the appropriate ratio as shown in Table 106-6. "Stop Condition" means the vehicle comes to a complete stop or very slow speed prior to making the turn into the access or is stopped before exiting the access onto the street. For deceleration lanes, a 15 mph turn is normally assumed for a curb return radius only if the radius is 40 feet or greater. A stop condition must be assumed for a curb cut type access. For an acceleration lane, a stop condition shall normally be assumed at the start of the acceleration.
 - d.** Additional storage lengths are required for left turn deceleration lanes.

**Table 106-6
Speed Change Lane Lengths for Right and Left Turn Lanes¹**

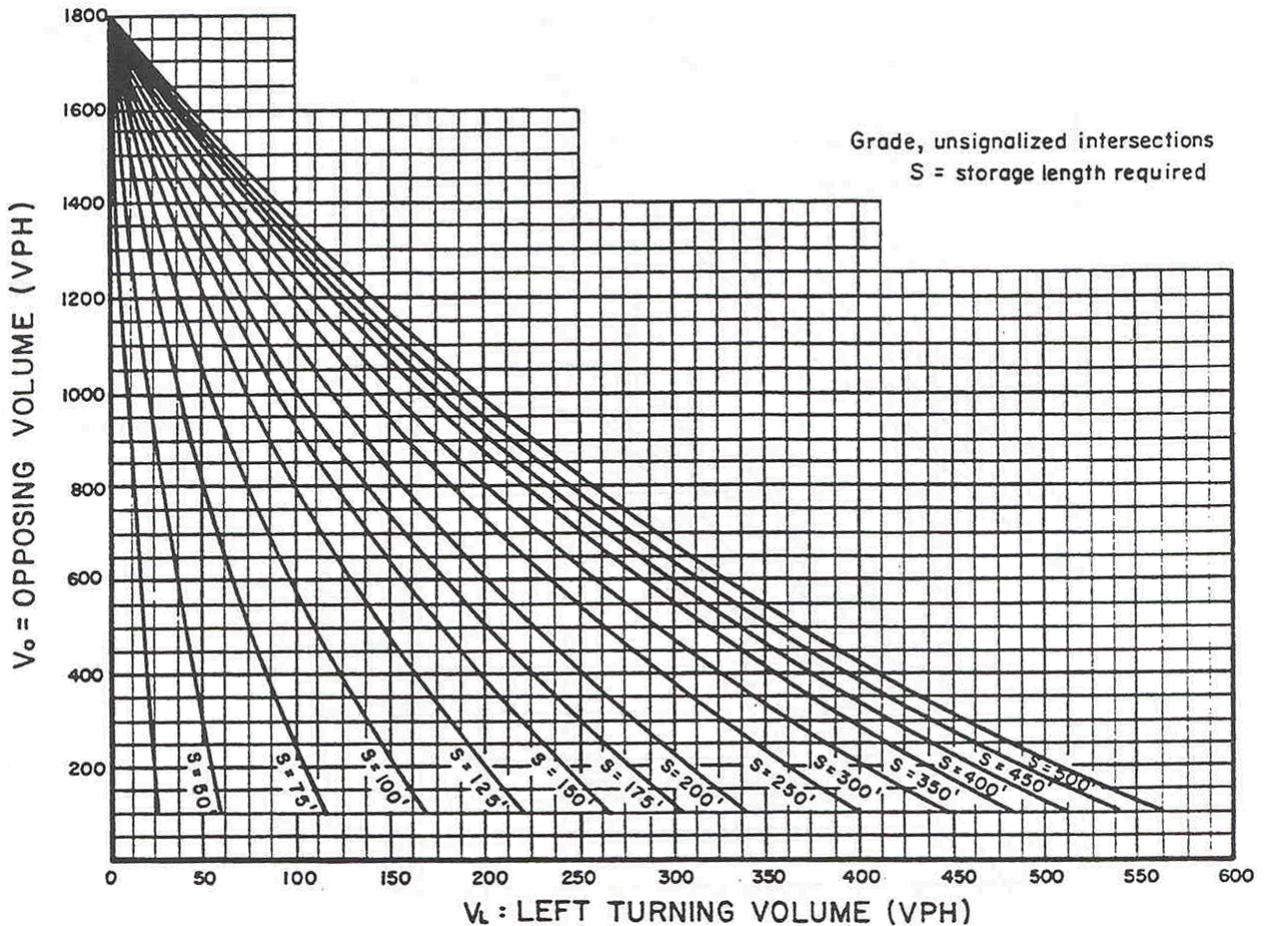
Design or Posted Speed (mph)	Stop Condition		15 mph Turn		Minimum Accel Lane Taper Ratio ²	Minimum Decel Lane Taper Ratio ²
	Accel	Decel	Accel	Decel		
25	100	200	90	150	7.5:1	7.5:1
30	190	235	190	185	10:1	8:1
35	270	275	240	235	12.5:1	10:1
40	380	315	320	295	15:1	11.5:1
45	550	375	480	350	15:1	13:1
50	760	435	700	405	20:1	15:1
55	960	485	910	450	22.5:1	18.5:1

¹Distances are in feet. These distances apply to both left and right turn acceleration and deceleration lanes.

²Ratio of length of taper to width of lane.

e. Left Turn Bays and Spacing. Driveways serving high generation users such as community and regional shopping centers, large industrial plants, major office building complexes, and high density apartment developments, shall provide for adequate left turn storage bays. The need for and length of left-turn storage bays shall be determined from 106-F3, and the highest predicted traffic volumes which will occur during the next 20 years. The provisions of this section will apply to any access location which requires left-turn storage bay of 50' or more as determined from 106-F3.

The requirement for left-turn bays will automatically establish a



minimum spacing of successive driveways or intersections which are projected to have left turn entry or exit.

Warrants for left-turn storage lanes on four-lane, at-grade unsignalized highways. The section of graph lying between “undivided” and divided ($V_L = 25$ to 55 vph for a V level of 200 vph) relates to a warrant for a one-space length as provided by an ordinary opening in a median about 20 feet ($6m$) wide.

Source: Harmclink, M. D., “Volume warrants for Left-Turn Storage Lanes at Unsignalized Grade Intersections”, Highway Research Record #211, 1967

106-F3 Left Turn Bays and Spacing

At driveways with high traffic volumes, for example, fast food restaurants and car washes, provision shall be made for vehicle storage on the premises to prevent stacking of vehicles on the roadway. The required stacking space shall be determined by a traffic analysis provided by the applicant.

Where needed and feasible at high traffic volume driveway approaches, clearly visible acceleration and/or deceleration lanes shall be provided. Except for the driveway served, no other driveway access shall be permitted within the limits of the auxiliary lanes.

Acceleration lanes shall not conflict with the beginning of a right turn lane. Acceleration lanes shall terminate before the end of the queue (as determined by the traffic study) at a signalized intersection. Acceleration lanes shall terminate not less than 50 feet ahead of an unsignalized intersection. If adequate length of acceleration lane cannot be provided subject to these constraints, the access will not be permitted.

The basic factors are the distance required for the median taper and the length of the storage bay. If a driveway on a major route is opposite a street, a left-turn bay for the street also should be incorporated. This will further increase the required distance between major driveway approaches, or intersections.

The distance of a major driveway, with left-turn channelization from a nearby major intersection which also has left-turn bays, will vary depending on whether the driveway is on the approach or departure side of the intersection with respect to the left-turn lane.

- f. Location Coordination. The location of access to properties on opposite sides of arterial and collector roadways shall be coordinated so that they do not interfere with each other. Driveway approaches directly

opposite each other are desirable. However, if this is not possible, the resulting "T" configurations shall be spaced a minimum of 100 feet apart on collectors, and 200 feet apart on arterials. This requirement may be modified by Laramie County Director of Public Works based on existing through traffic and the trip generation of the site.

iv. Changes in Land Use, Abandoned Driveway Approaches, and Street Reconstruction

A. Changes in Land Use. If any significant changes are made or will be made in the use of the property which will affect access operation, traffic volume, turning movements or vehicle type, the property owner shall contact the County to determine if a new access permit and modifications to the access are required. 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. The terms and conditions of any permit are binding upon all assigns, successors-in-interest, heirs and occupants.

If a parcel of land with direct access has been in a state of nonuse for more than four years, recommencement of access use will be considered a change in use. If the renewed use of the access exceeds its design limitations or is nonconforming with the present code, a new permit may be required.

The Laramie County may require an engineering study to establish whether a new permit is required.

B. Abandoned Driveways. A driveway approach which has become abandoned or unused through a change of the conditions of which it was originally intended or which for any reason has become unnecessary because of any change to site configuration shall be closed and the owner shall replace any such driveway approach upon the direction of Laramie County with standard curb, gutter and sidewalk or other methods approved by the County under the provisions of these regulations.

C. Street Reconstruction. When existing streets in built-up areas are reconstructed, access points shall be reconstructed to conform to the criteria set forth in these regulations, to the extent practical and feasible.

3-5-108 Street Design

a. Purpose

The criteria presented in this section are intended to regulate design of road construction and reconstruction. All roads and streets in Laramie County, except State highways, shall to be designed in accordance with the standards included or referred to in this Chapter. Principal Arterials shall be designed separately from this regulation.

b. Responsibilities

The property owner is responsible for preparing, designing, processing, submitting, and accomplishing the necessary improvements, as well as the associated paperwork.

The County is responsible for review of preliminary plans, construction plans and specifications, and inspection and acceptance of the constructed work.

Where a street design involves a State Highway in any manner, it is necessary to coordinate with the WYDOT.

Where a street design is adjacent with any road owned and maintained by any city or town, it is necessary to coordinate with the corresponding jurisdiction.

c. General Requirements

- i.** The location of arterial and collector streets shall be governed by the current Official Map on file at the offices of the Cheyenne MPO , and at the offices of the County Clerk. The location of local streets shall be as required to provide access to abutting property, and in accordance with the provisions of these Standards.
- ii.** Geometric and structural designs of roads and streets shall be performed by or under the direct supervision of a qualified civil engineer licensed by the Wyoming State Board of Registration for Professional Engineers and Professional Land Surveyors to practice engineering in Wyoming. All documents submitted for approval must bear the seal and signature of the responsible engineer.

- iii. Plans shall be submitted for all roads and streets. The geometric design of roads and streets, including the vertical and horizontal alignment, shall be in accordance with the provisions of these Standards, and done with the objective of providing a safe and efficient street system. The basis for geometric design is the current edition of "*A Policy on Geometric Design of Highways and Streets*", American Association of State Highway and Transportation Officials.
- iv. The property owner is responsible for observations and testing performed on the roadway during construction. The observation and testing shall be done under the supervision of a qualified civil engineer. The testing shall be performed in accordance with "*Wyoming Public Works Standard Specifications*".
- v. Upon completion and acceptance of construction in the public way, the owner shall provide record drawings as well as digital records to the county showing the as-constructed roads or streets. The county may require the record drawings as a condition for acceptance. The record drawings shall be signed and sealed by a professional civil engineer and contain a statement to the effect that, to the best of the knowledge and belief of the engineer, the record drawings accurately reflect the as constructed facility. If the specifications were materially altered during construction, the submittal of the record drawings shall include revisions to the specifications.
- vi. Submittal of record drawings or revised specifications does not relieve the developer from building the road or street in accordance with the approved plans. Deviations from the proposed plans and specifications should be approved in advance by the County, and the developer assumes the risk of the expense of correcting unauthorized changes.
- vii. Other topics related to street design, including traffic studies, drainage, curb and gutters, intersection design, bike lanes, access control, sidewalks, traffic control devices, street lighting, and parking are covered in other sections of these Standards.

d. Standards

i. **Geometric Design.** The standards to be used in geometric design of streets are shown in Appendix A to this Chapter. Alternative designs may be approved to allow for flexibility of cross sections and landscape needs. Such designs must be approved by the Planning and Development Director and the Director of Public Works.

A. As used in these Standards, “urban section” means a paved section with curb and gutter and sidewalk. “Rural section” means a paved or unpaved section with drainage ditches, with or without sidewalk. Street sections will be urban or rural, depending on the density of development. In general, streets in subdivisions with urban-sized lots or tracts (i.e., those served by the South Cheyenne Water and Sewer District or private water and sewer systems) may be urban sections.

B. Minimum right-of-way widths are based on the required width of paving plus an additional width on each side of the paving to accommodate curbs, sidewalks, and utilities. Additional widths may be needed for through lanes, turn lanes, speed change lanes, and to accommodate slopes and drainage structures. If adequate right-of-way is not provided, the County may require dedication of additional right-of-way width.

C. The minimum centerline radius is based on the application of maximum superelevation for the indicated design speeds. The controlling factor is the design speed. Therefore, if less superelevation is used, the radius must be increased.

D. The angle of intersection of streets should be as close to 90 degrees as possible, and in no case should vary more than 10 degrees from a right angle.

E. Median design for both physical and painted medians shall be closely coordinated with the County.

F. Cross pans (valley gutters across intersections) shall be a minimum of 12' wide. A minimum transition of 30 ft. shall be made in the street preceding the cross pan to remove the crown. Design speeds shall be maintained across cross pans. In general, cross pans should not be used across arterial or collector streets.

ii. **Structural Design.** Structural design shall be in accordance with AASHTO

pavement design procedures (AASHTO "*Guide for Design of Pavement Structures*", Current Edition) and shall be based on geotechnical investigations and testing of the subgrade. The pavement design shall provide for a 20-year service life with an equivalent 18 kip axle loading based on projected traffic for the type and density of development proposed. Roadway construction plans submitted for approval shall be accompanied by a pavement design report. Roadway sections and compaction requirements shall not be less than those specified in the pavement design report. The pavement design report shall be prepared under the supervision of, and signed and sealed by a person licensed by the Wyoming State Board of Registration for Professional Engineers and Professional Land Surveyors to practice civil engineering in Wyoming. Any proposed modifications to the approved design shall be submitted for approval.

e. Rural Road Procedures and Standards

County rural roads and dedicated roads of rural subdivisions shall be constructed to these Standards. Upon completion, the owner shall request in writing that the road be inspected. This request shall include the surfacing material certification, tabulated record of surfacing material delivered to road and invoice of purchased surfacing material. This request shall be made to the County Director of Public Works. The County Director of Public Works will inspect the constructed road for compliance with these Standards.

- i. Roadbed and ditch sections shall be excavated and shaped in conformity with the typical sections shown in Appendix A to this Chapter. Unstable materials and other objectionable materials, such as trash, shall be removed and replaced with acceptable roadbed building materials. Placement of frozen soil in the construction area or placement of unfrozen materials on frozen ground is prohibited. The foundation area for embankments shall be plowed or scarified to a minimum depth of six inches.
- ii. Topsoil of sod and vegetable matter where used shall be placed in the bottom of embankments such that it will be at least six inches below the top of the roadbed.
- iii. Construction of the road shall be done with a motor grader, scraper or other heavy earthwork equipment, operated in such a manner as to get the maximum of compaction possible as the equipment works back and

forth over the embankment. Should the earth be too dry to compact satisfactorily, it shall be wetted with water as required to provide the specified compaction. The finished roadbed grade shall be bladed with a motor grader to a smooth surface having a uniform grade and to the lines shown on the typical section.

- iv.** Gravel surfacing shall be crushed stone or gravel. Gradation will be as called out in the approved plans and specifications. Hardness and index properties will be as called out for "Aggregate for Untreated Sub-base and Base" in Section 02190 of the current edition of the "*Wyoming Public Works Standard Specifications*".
- v.** The Director of Public Works may require that soil binder be added to the gravel to bind the surfacing together so that scatter of the aggregate under traffic will be minimized.
- vi.** A representative sample of the surfacing materials shall be submitted to a reputable testing laboratory for analysis and certificate of compliance.
- vii.** The truckloads of surfacing delivered to the road shall be accurately determined by weight or volume and spread the calculated distance to obtain the required thickness as shown on the typical section.
- viii.** A record of the truckloads of surfacing delivered to the road shall be kept. This record shall be in a tabulated form indicating the volume or tonnage of each load and the name of road where surfacing was placed. This record shall be signed by the party responsible for its correctness and shall be acknowledged by a notary public. A copy of the surfacing supplier's invoice shall also be made available for purchased surfacing material.
- ix.** Roadway ditches shall be graded so as to carry drainage water away from the road to natural drainages or to pipes in the case of cross drainage. Grading that will cause pockets where water will pond alongside the roadway should be avoided.
- x.** Drainage pipes made of steel, aluminum or reinforced concrete of adequate strength to take the road vehicular traffic shall be installed in the road embankments wherever natural drainages are crossed that will cause large overflows of water over the road without a pipe or will damage or inundate property upstream from the road. The pipe shall be of such size that it is capable of passing the flood waters of a storm of two-year

frequency without overtopping the road. The minimum acceptable pipe size is 18 inches.

- xi.** The earth around any pipe installation shall be tamped with mechanical equipment in layers not exceeding eight inches.
- xii.** To minimize snow drifting on the road, the roadbed embankment should be at least one foot above the natural terrain and cut backslopes should be no steeper than 3:1 slope.
- xiii.** Use of cattle guards is not encouraged. Cattle guards, when required, shall be of commercial manufacture having a capacity of 20 tons with the minimum dimensions of the steel frame being 7' 9" x 12' 0". The cattle guard shall be set on a reinforced concrete foundation and end wings shall be installed on each side. All plans for the cattle guard must be submitted to the County Director of Public Works for approval prior to construction.
- xiv.** All rural County roads not accepted for maintenance shall require a plan and funding source for public road maintenance.

f. Private Access Standards

- i.** In cases where there is no public right-of-way and no reasonable means of access to a public right-of-way, it may be necessary for property owners to provide access by means of easements or other agreements, and to construct the access road. Such private access will not be constructed, maintained, repaired, or replaced by the county. Private accesses shall meet the requirements of the county fire district for fire access.
- ii.** In the event the owners of a private access wish to convert the access to public use and public maintenance, the proposed road shall be dedicated to the public and accepted by the county as provided by law. The road shall be constructed at the applicant's expense in accordance with these Standards and any additional requirements imposed by the county, and the plans, specifications, and construction approved as described above for public streets.

g. Cul-De-Sacs

- i.** Cul-de-sacs shall be constructed in accordance with the requirements of

the County Fire District for dead-end fire apparatus access roads. Designers of subdivisions containing roads with cul-de-sacs or dead ends, and where public water supplies are provided, should consult with the water utility and the fire protection provider on the permitted length of dead end water mains.

h. Intersection Design

- i. Corner Radii. Corner radii at intersections should satisfy the requirements of the drivers using them to the extent practical and in consideration of the amount of right-of-way available, the angle of the intersection, numbers of pedestrians, width and number of lanes on the intersecting streets, and amounts of speed reduction. Minimum back-of-curb radii at intersections shall be as shown in Table 107-1.

**Table 107-1
Minimum Back of Curb Radii**

<u>Type of Intersection</u>	<u>Radii (ft)</u>	<u>Remarks</u>
Local - Local	15	See Note 1 below
Local - Collector	25	
Collector - Collector	30	See Note 2 below
Local - Arterial	30	
Collector - Arterial	30	See Note 2 below
Arterial - Arterial	30	See Note 2 below

Note 1. At the intersections of county roads at right angles, the minimum radius at the roadbed shoulder shall be 20 feet. Intersections at angles other than 90 degrees shall have minimum radii that are equally adequate for the turning of vehicles

Note 2. Radii of 40 ft. or more, and preferably three-centered compound curves or simple curves with tapers to fit the paths of appropriate design vehicles, should be provided where large truck combinations and buses turn frequently. Larger radii are also desirable where speed reductions would cause problems.

Note 3. The County Director of Public Works may require greater radii when there is no parking lane adjacent to the curb.

- ii. Speed Change Lanes and Intersection Sight Distance. The requirements for speed change lanes and intersections sight distance presented in these regulations shall apply to street design.

i. Street Lighting

Shall not be required except in urban areas and then only at high traffic intersections. To the extend practical, street lights shall be angled to direct all light downward from the fixture.

j. Curb and Gutter

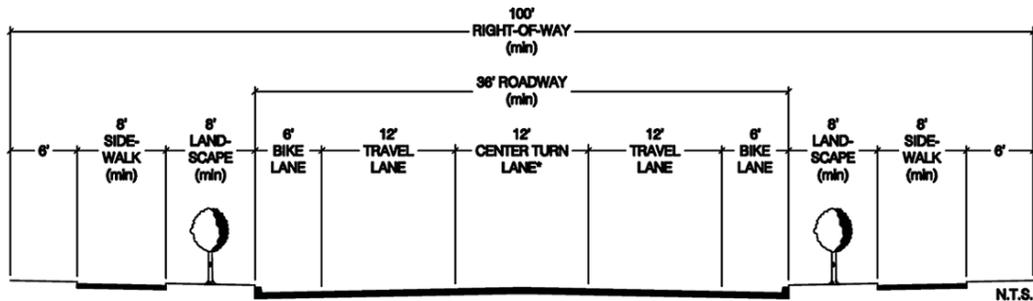
Curb and gutter is generally used for drainage control, but curb can be used for other purposes such as pavement edge delineation, delineation of pedestrian walkways, and aesthetics. Curb or curb and gutter are useful to assist in right-of-way reduction, reduction of maintenance operations, and assistance in orderly roadside development.

- i. Standards should be required only in Urban areas. The construction of curb and gutter is covered in the "*Wyoming Public Works Standard Specifications*". Standard drawings supplement the specifications.
- ii. Construction Sequence. Curbs, gutter crosspans and sidewalk (where attached) shall be constructed after installation of sanitary sewer and after storm sewer mains, laterals, and service lines have been installed and properly compacted. Water mains which cross curb, gutter, attached walks and driveway approaches shall also be installed and properly compacted prior to installation of concrete work. Water valve boxes and manholes shall be adjusted to final grade after installation of curb and gutter. Electrical services shall be installed after water services but prior to installation of curb radii except where previous arrangements for use of conduit have been made and approved.

3-5-109 Standards for Geometric Design of Roads and Streets (Appendix A)

Principal Arterials, Interstates, Freeways and Expressways shall be independently designed. Geometric designs for any road or street listed herein may be modified in accordance with these regulations.

Urban Minor Arterial Street



*Continuous left turn lane as determined by the Local Entity. Additional auxiliary lanes may be needed as determined by the Local Entity.

Roadway Width: 36' (min.)

Right-of-Way Width: 100' (min.).

Travel Lanes: 2 lanes, 12' wide. Additional auxiliary lanes may be provided for as determined by County.

Left Turn Lane: 12' wide at intersections. 12' Continuous left turn lane as determined by County.

Bike Lanes: 2 lanes, 6' wide.

Parking: None.

Parkway: 6' (min.) wide. Parkways shall be landscaped.

Sidewalk: 8' (min.) wide if detached by at least 8'. 8' (min.) attached for redevelopment. Sidewalks shall be in the public right of way.

Median: None

Maximum Grade: 6 percent

Minimum Grade: 0.3 percent

Maximum Superelevation: .04

Where Used: All Urban Minor Arterial streets shown on the Master Street Plan when the traffic volume on the street is anticipated to be 3,500 to 15,000 vpd.

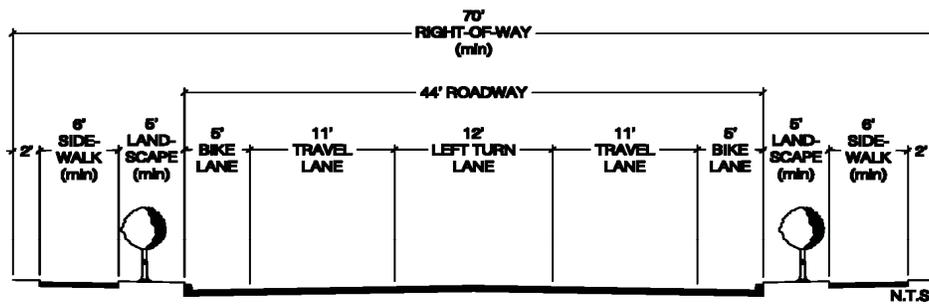
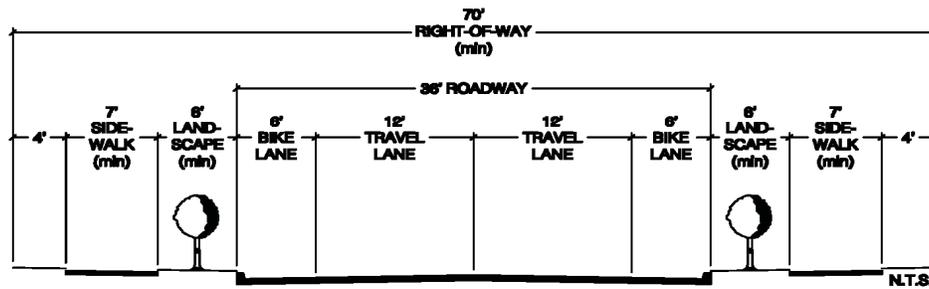
Speed Limit: 30-45 MPH

Access: Access will be limited.

Curb And Gutter: Vertical Curb and Gutter.

Utilities: Main lines for water, sewer, and storm drains shall be placed under the street with individual taps running to the property line.

Urban Collector Street Without Parking



At Intersections, where needed.

Roadway Width: 36'. 44' with left turn lane.

Right-of-Way Width: 70' (min.).

Travel Lanes: Two lanes, 12' wide.

Left Turn Lane: 12', at intersections where needed.

Bike Lanes: Two lanes, 6' wide. At intersections the bike lanes shall be 5' wide.

Parking: None

Parkway: 8' (min.) width. At intersections where a left turn lane is necessary, parkways shall be 6' (min.). Parkway shall be landscaped.

Sidewalk: 6' (min.) wide. Sidewalks shall be in the public right of way.

Median: None

Maximum Grade: 10 percent

Minimum Grade: 0.3 percent

Maximum Superelevation: .04

Where Used: All Urban Collector streets shown on the Master Street Plan when the traffic volume on the street is anticipated to be 3,500 to 5,000 vpd.

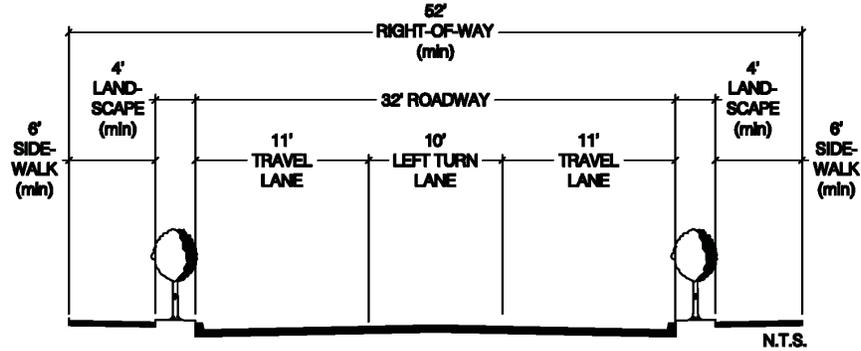
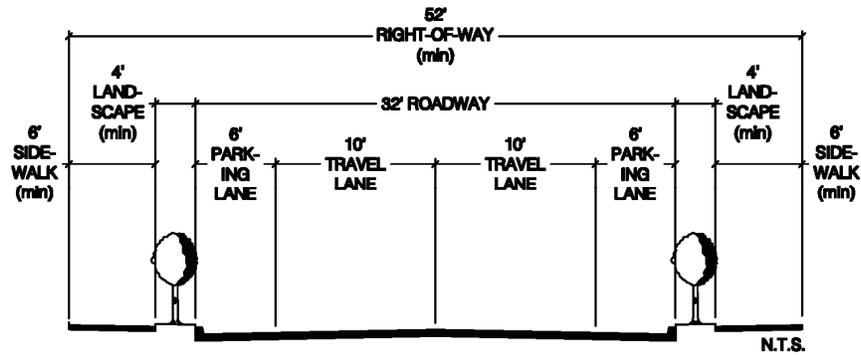
Speed Limit: 30-35 MPH

Access: Access will be limited.

Curb And Gutter: Vertical Curb and Gutter.

Utilities: Main lines for water, sewer, and storm drains shall be placed under the street with individual taps running to the property line.

Urban Local Street



At Intersections, where needed.

Roadway Width: 32'

Right-of-Way Width: 52' (min.)

Travel Lanes: 2 lanes 10' wide

Left Turn Lane: 10' wide, provided where necessary.

Bike Lanes: Bicyclists shall share the roadway with motor vehicles in the travel lanes. Additional street width may be required to the parking lanes to provide 11' wide combined parking + bike lanes to accommodate bike traffic within and leading to activity area.

Parking: 2 lanes, 6' wide, Intersections only none

Parkway: 4' (min.) wide. Parkways shall be landscaped.

Sidewalk: 6' (min.) wide. Sidewalks shall be in the public right of way.

Maximum Grade: 10 percent

Minimum Grade: 0.3 percent

Maximum Superelevation: .04

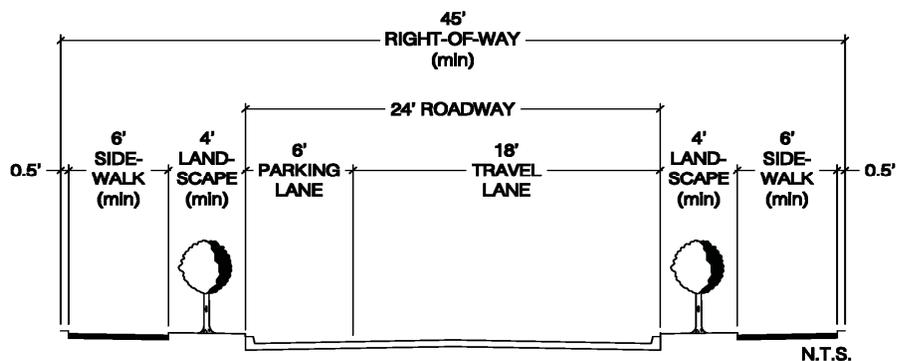
Where Used: All Urban Local streets shown on the Master Street Plan when the traffic volume on the street is anticipated to be 350 to 2,500 vpd.

Speed Limit: 25 MPH

Curb and Gutter: Vertical Curb and Gutter.

Utilities: Main lines for water, sewer, and storm drains shall be placed under the street with individual taps running to the property line.

Urban Narrow Local Street (Lane)



Roadway Width: 24'

Right-of-Way Width: 45' (min.)

Travel Lane: Two lane, 18'wide

Parking: One lane, 6'wide

Parkway: 4' (min.) wide. Parkways shall be landscaped.

Sidewalk: 6' (min.) wide. Sidewalks shall be in the public right of way.

Maximum Grade: 10 percent

Minimum Grade: 0.3 percent

Maximum Superelevation: .04

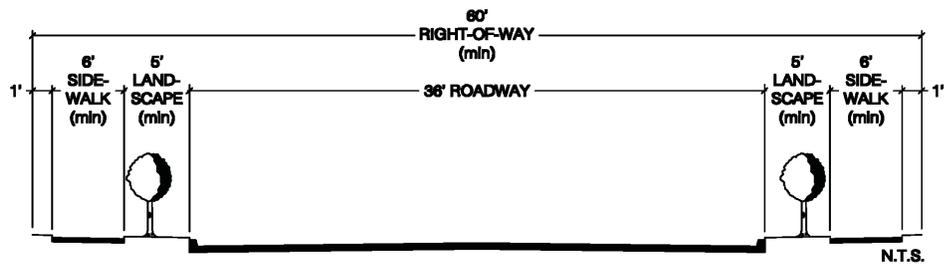
Where Used: Residential Urban Local streets where traffic volume on the street is anticipated to be 350vpd. or less

Speed Limit: 25 MPH

Curb And Gutter: Vertical Curb and Gutter.

Utilities: Main lines for water, sewer, and storm drains shall be placed under the street with individual taps running to the property line.

Urban Commercial/Industrial Local Street



Roadway Width: 36'

Right-of-Way Width: 60'(min.)

Bike Lanes: Share Street

Parking: Two lanes shared with bikes. None provided at intersections

Parkway: 6' (min.) width. Parkways shall be landscaped.

Sidewalk: 6' (min.) width. Sidewalks shall be in the public right of way.

Median: None

Maximum Grade: 10 percent

Minimum Grade: 0.3 percent

Maximum Superelevation: .04

Where Used: All Urban Local streets shown on the Master Street Plan when the traffic volume on the street is anticipated to be 1,000 to 3,500 vpd.

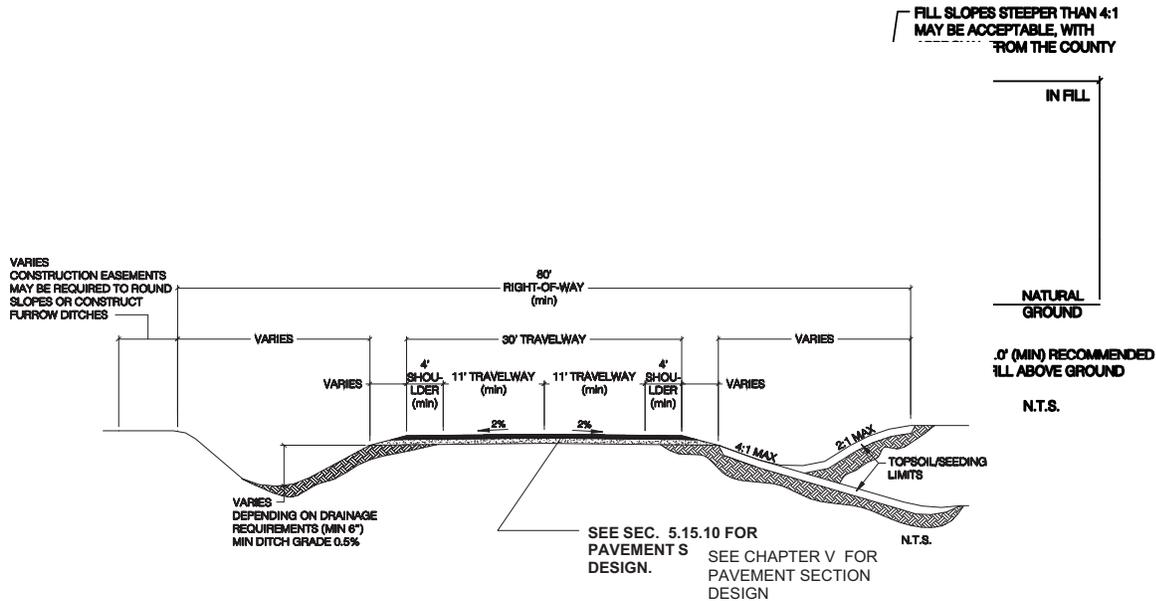
Speed Limit: 30-35 MPH.

Access: See Chapter 3-5-106.

Curb And Gutter: Vertical Curb and Gutter.

Utilities: Main lines for water, sewer, and storm drains shall be placed under the street with individual taps running to the property line.

RURAL COLLECTOR - LOW VOLUME (DESIGN VOLUME LESS THAN 500 ADT)



Roadway Width: 30' (min.)

Right-of-Way Width: 80' (min.)

Travel Lanes: 2 lanes, 11' wide (min.)

Shoulder: 4' (min.)

Bike Lanes: As required by the County Director of Public Works

Parking: Not permitted

Sidewalk: As required by the County Director of Public Works (if sidewalk is required). Sidewalks shall be in the public right of way.

Seeding: As required by the County Director of Public Works

Maximum Grade: 8 percent

Minimum Grade: 0.3 percent

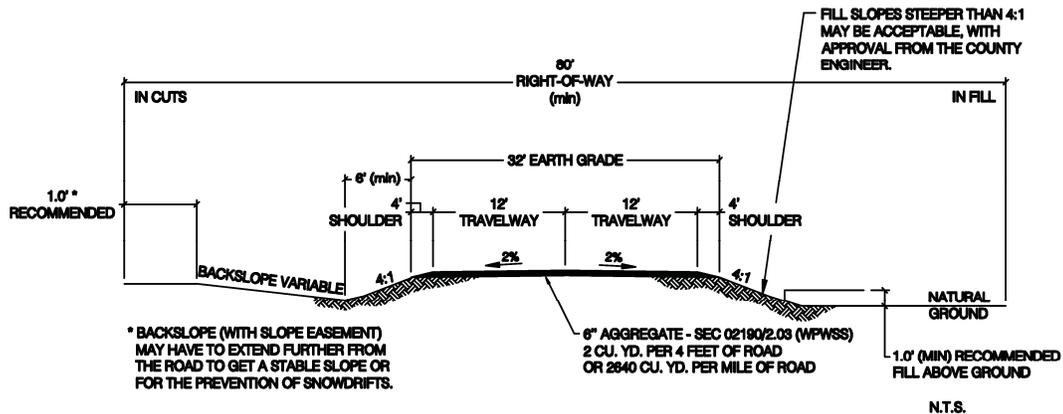
Maximum Superelevation: .08

Where Used: All Rural Collectors shown on the Master Street Plan when the traffic volume is anticipated to be 500 ADT or greater.

Speed Limit: As determined by the county

Access: Limited. See Chapter 3-5-106.

RURAL COLLECTOR (DESIGN VOLUME 500 ADT OR GREATER)



Roadway Width: 32" (min.) Earth Grade

Right-of-Way Width: 80' (min.)

Travel Lanes: 2 lanes, 12' wide (min.)

Shoulder: 4' (min.)

Bike Lanes: None

Parking: Not permitted

Sidewalk: As required by the County Director of Public Works (if sidewalk is required). Sidewalks shall be in the public right of way.

Seeding: As required by the County Director of Public Works

Maximum Grade: 8 percent

Minimum Grade: 0.3 percent

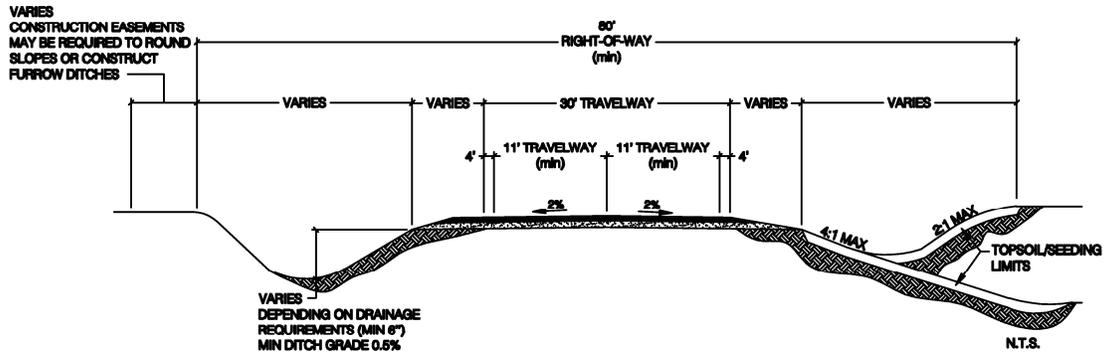
Maximum Superelevation: .08

Where Used: All Rural Collectors shown on the Master Street Plan when the traffic volume is anticipated to be less than 500 ADT

Speed Limit: As determined by the county

Access: Limited. See Chapter 3-5-106.

LOCAL COUNTY ROAD IN RURAL SUBDIVISION (WHERE BUILDOUT VOLUME IS 500 ADT OR LESS)



Roadway Width: 30' (min.)

Right-of-Way Width: 80' (min.)

Travel Lanes: 2 lanes, 11' wide (min.)

Shoulder: 4' (min.)

Bike Lanes: None

Parking: Not permitted

Sidewalk: As required by the County Director of Public Works (if sidewalk is required). Sidewalks shall be in the public right of way.

Seeding: As required by the County Director of Public Works

Maximum Grade: 10 percent

Minimum Grade: 0.3 percent

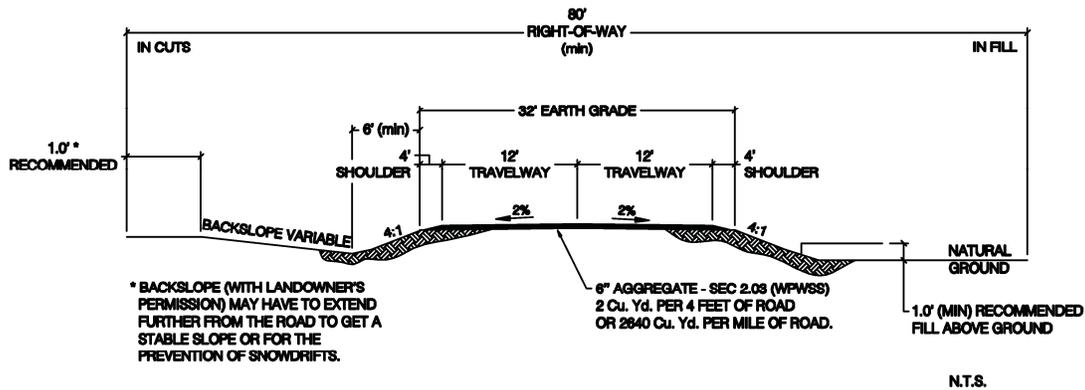
Maximum Superelevation: .06

Where Used: Rural Subdivisions where estimated ADT is 500 or greater at maximum buildout

Speed Limit: As determined by the county

Access: Limited. See Chapter 3-5-106.

LOCAL COUNTY ROAD IN RURAL SUBDIVISION (WHERE BUILDOUT VOLUME IS GREATER THAN 500 ADT)



Roadway Width: 32 '(min.) Earth Grade

Right-of-Way Width: 80' (min.)

Travel Lanes: 2 lanes, 12' wide (min.)

Shoulder: 4' (min.)

Bike Lanes: None

Parking: Not permitted

Sidewalk: As required by the County Director of Public Works (if sidewalk is required). Sidewalks shall be in the public right of way.

Seeding: As required by the County Director of Public Works

Maximum Grade: 11 percent

Minimum Grade: 0.3 percent

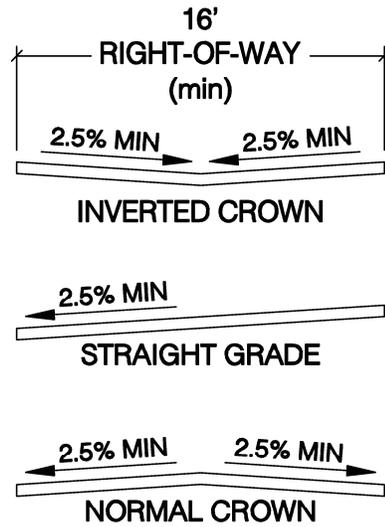
Maximum Superelevation: .06

Where Used: Rural Subdivisions where estimated ADT is less than 500 at maximum buildout

Speed Limit: As determined by the jurisdiction

Access: Limited. See Chapter 3-5-106.

ALLEYS



SURFACE:
PAVEMENT AS
RECOMMENDED IN PAVEMENT
DESIGN REPORT

Width: 16' minimum in residential areas; 24' in commercial and industrial areas

Parking: Not permitted

Maximum Grade: 10 percent

Minimum Grade: 0.3 percent. Grades should meet as closely as possible the existing grades of abutting land.

Construction: Where used, alleys in commercial and industrial areas shall be paved, with the structural section as recommended in the pavement design report. Alleys shall be designed to provide for adequate drainage. Alley cross sections may be V-shaped ("inverted crown") with transverse slopes of 2.5 percent toward a center V gutter, directing runoff to a catch basin in the alley or to connecting street gutters.

Alignment: Alleys shall be aligned parallel to or concentric with the street property lines. Both ends of the alley should be connected either to streets or to other alleys. Where two alleys intersect, a triangular corner cutoff of not less than ten feet along each alley property line shall be provided. Dead end alleys shall be provided with a turning area approved by the County Director of Public Works. Where an alley intersects the right of way for a street, 10' x 10' corner cuts shall be dedicated R.O.W. for visibility. These areas may be landscaped no higher than 12". No fences shall encroach into this area.

Where Used: Alleys are required to be used with the Narrow Residential Local Street for vehicular access to off-street parking and garages for all lots fronting the Narrow Residential Local Street. For all other streets an alley may be used to provide secondary vehicular access to the rear of property served by a street.

Speed Limit: 15 mph or as determined by the county

3-5-110 Construction Zones

a. Purpose

This Chapter establishes the minimum standards to be used for the protection of the public and of workers during periods when repair or construction necessitates the partial or complete closure of public streets and roads.

Control of traffic in construction areas shall utilize and be based on the MUTCD. Laramie County shall be consulted in advance of construction when situations of unusual difficulty are anticipated.

b. Responsibilities

It shall be the responsibility of the contractor or public agency doing the work to maintain the work area. This includes:

- i.** Obtain permits.
- ii.** Notify and coordinate the work with all affected agencies and adjacent property owners.
- iii.** Install, maintain and provide required traffic control devices.
- iv.** Remove or cover traffic control devices when they are not warranted.
- v.** Maintain existing traffic control devices in a safe and good condition.
- vi.** Schedule and expedite the work to cause the least inconvenience to adjacent property owners and the general public.
- vii.** Ensure that all employees working on the street wear clothing approved by the Federal Highway Administration. (Reflective garments should be used during nighttime conditions.)
- viii.** Patrol the work area to maintain a safe, efficient and neat project.

c. Applications and Permit

Contractors, public agencies, utility companies and other persons working in the right-of-way shall obtain a construction permit prior to restricting any traffic from any portion of a public street, alley or sidewalk. This permit is required for a partial or complete closure for a period of one hour or more.

Developers shall contact the County before any work commences on a public right of way.

d. Standards

Standards for traffic control in construction and maintenance areas are included in two publications:

- i. *"Manual on Uniform Traffic Control Devices for Streets and Highways"* (MUTCD), U. S. Department of Transportation, (current edition). Part VI deals with Traffic Controls for Street and Highway Construction and Maintenance Operations. Part VI includes information on fundamental principles as well as types of traffic control devices used in construction or maintenance areas.
- ii. Work in construction zones shall comply with the relevant provisions of these manuals. Part VI of the *"Traffic Control Devices Handbook"* (U. S. Department of Transportation, current edition) augments the provisions for work zone traffic control of the *"Manual on Uniform Traffic Control Devices."*

3-5-111 Bicycle Facilities

a. Responsibilities

Developers are encouraged to include bikeways in developments. Bikeways should be indicated on site plans and plats. It is the responsibility of the developer to conform to the standards in this Chapter and the requirements for traffic control devices in the *"Manual for Uniform Traffic Control Devices."*

b. Standards

Bicycle facilities shall be designed in accordance with Chapter 2 of the

AASHTO Guide. Traffic control shall be in accordance with the "*Manual on Uniform Traffic Control Devices*".

Unless alternate designs are approved by the County, pavements for bicycle facilities that are to be maintained by the County shall be Portland cement concrete.

3-5-112 Sidewalks

a. Purpose

Sidewalks are integral to the transportation system. As a minimum, sidewalks shall be provided in urban areas.

b. Responsibilities

The owner of a lot is responsible for sidewalk installation at the time of property improvement. Where sidewalks are not directly related to a lot, the installation of sidewalk is the responsibility of the developer.

c. Standards

In urban areas, sidewalks shall be provided for any portion of a site which abuts a roadway. In urban-rural interface areas, sidewalks may be required for any portion of a site which abuts a roadway. All sidewalks shall be in the public right of way. Maintenance of all sidewalks shall be private. Sidewalk width will shall meet cross section standards.

- i. Curb ramps shall be provided wherever an accessible route crosses a curb. ("*ADA Accessibility Guidelines*", Sec. 4.7.1) Driveways shall be constructed in accordance with "*ADA Accessibility Guidelines* " so that the sidewalk can be negotiated by a wheelchair.
- ii. All sidewalks should be detached and the area between the sidewalk and the back of the curb shall be appropriately landscaped.
- iii. Sidewalk construction and removal shall be in accordance with the "*Wyoming Public Works Standard Specifications*". Sidewalks shall be a minimum of 4 inches thick, except where traversed by driveways, in which case the driveway thickness shall govern.

3-5-113 Traffic Control Devices

a. Purpose

The purpose of traffic control devices is to help ensure highway safety by providing for the orderly movement of traffic, both motorized and non-motorized; and to provide such guidance and warnings as are needed to insure the safe and informed operation of individual elements of the traffic stream.

b. Responsibilities

- i. In a subdivision, the developer shall be responsible for the construction of the streets, including the traffic control devices. The developer is also responsible for the installation of street signs.
- ii. When a development impacts a street or streets to the extent that a traffic signal or other traffic control devices are necessary, the developer shall pay all or a proportionate share of the installation. Failure by the developer to pay his share may result in the County limiting turning movements at the location to prevent unsafe movements from occurring, or taking other actions to provide for safety at the location.
- iii. To facilitate striping of new streets or restriping of existing streets necessitated by a development, striping plans shall be submitted as part of the construction plans for approval. The striping plans shall utilize the lane widths and other requirements set forth in the other Chapters of these Standards.
- iv. The responsibility for traffic control devices on State Highways is indicated in the policies of the Wyoming Highway Department, cited below.

c. Standards

- i. Traffic control devices, including sign and pavement markings, which are intended for the purpose of traffic control shall conform to the specifications of the *"Manual on Uniform Traffic Control Devices"*.
- ii. Prohibition of Similar Signs. No sign which in any way resembles or

contains parts which resemble any traffic control device shall be erected, altered, or maintained in any way for any purpose other than traffic control.

- iii. Installation of Signs; Marking of Hazardous Pipe Ends. Stop or yield signs, warning signs, and advisory signs (as required by traffic volume) shall be installed as warranted in the "*Manual of Uniform Traffic Control Devices*". Hazardous pipe ends shall be marked with a reflectorized vertical steel post.
- iv. Sign Construction Criteria. Street name signs shall be furnished and installed at all street intersections of the subdivision. All such street name signs shall be designed and installed in compliance with the MUTCD.
- v. Duplicate and Confusing Street Names Prohibited. Street and road names are subject to the approval of the Laramie County Planning Department, and meet the following standards:
 - A. Road names shall be unique when compared to names of existing roads recognized by Laramie County, including private roads and those in the incorporated areas of Laramie County and Warren Air Force Base. Consideration of uniqueness does not include the type of road, i.e. Avenue, Lane, Street, Road, etc.
 - B. Similar sounding road names shall be avoided.
 - C. Each road shall have the same name throughout its entire length, if appropriate. Names shall not change at intersections.
 - D. Typically, roads are named within subdivisions throughout the County and numbered along section lines outside County Map and Address Area "D".
 - E. Directions shall not be part of the road name. North, South, East and West are intended to be directional features of the addressing system according to the baseline roads.
 - F. Names that are numbers must be expressed numerically, for example, 2nd Street, not Second Street.
 - G. Road names must not contain any punctuation or symbols. Only

letters of the English alphabet, numbers from 0-9 and blank spaces may be included in road names.

- H. Abbreviations of the road name are not to be used, i.e., Mt. Meeker Road should be Mount Meeker Road.
- I. Where a road makes a directional change of approximately ninety degrees the name shall change. Exceptions are loop drives and cul-de-sacs.

d. Emergency Access Lanes

Emergency access lanes are required for most large commercial and industrial land uses, and other facilities such as hospitals, schools, and large apartment buildings. Requirements for emergency access lanes are established by the County Fire Districts. When such lanes are provided, the developer is responsible for the installation and maintenance of the necessary signs and markings to delineate the lanes and prevent parking in them. Signs, at spacings not more than 25', indicating "No Parking, Fire Lane", and a similar message on the pavement within the lane are required.

3-5-114 Mailbox Installation Policy

a. Unauthorized Encroachment Prohibited

No mailbox or newspaper delivery box (hereafter referred to as a mailbox) will be allowed to exist on the County rights-of-way if it interferes with the safety of the traveling public or the function, maintenance, or operation of the County Road System. A mailbox installation that does not conform to the provisions of this Policy will be considered an unauthorized encroachment on the public right-of-way.

b Permit Required

The location and construction of mailboxes shall conform to the rules and regulations of the U.S. Postal Service as well as to these standards. A permit is required from Laramie County to install a mailbox adjacent to a County Road. The application forms for a permit are available from the Laramie County Planning and Development Office.

c. Installation Criteria

A mailbox installation that conforms to the following criteria will be considered acceptable unless the County Determines that the installation interferes with the safety of the traveling public or the function, maintenance, or operation of the highway system.

d. Location

- i.** No mailbox will be permitted where access is obtained from the lanes of a freeway or where access is otherwise prohibited by law or regulation. Mailboxes shall be located on the right-hand side of the roadway in the direction of the delivery route except on one-way roads where they may be placed on the left-hand side. The bottom of the box shall be set at an elevation established by the U. S. Postal Service, usually between 39" and 47" above the roadway surface. The roadside face of the box shall be offset from the edge of the traveled way a minimum distance of the greater of the following: 8' (where no paved shoulder exists and shoulder cross-slope is 13% or flatter), the width of the all-weather shoulder present plus 8" to 12", or the width of an all-weather turnout specified by the County plus 8" to 12". See 113-F2
- ii.** Exceptions to the lateral placement criteria may apply on residential streets and on certain designated rural roads where the County determines that it is in the public interest to permit lesser clearances or to require greater clearances. On curbed streets, the roadside face of the mailbox shall be set back from the face of curb a distance between 6" and 12". On residential streets without curbs or all-weather shoulders and that carry low-traffic volumes operating at low speeds, the roadside face of a mailbox shall be offset between 8" to 12" behind the edge of the pavement. On very low-volume rural roads with low operating speeds, the County may determine that it is acceptable to offset mailboxes a minimum of 6.5' from the traveled ways and under some low-volume, low-speed conditions the County may determine that clearances as low as 2.6' are acceptable.
- iii.** Where a mailbox is located at a driveway entrance, it shall be placed on the far side of the driveway in the direction of the delivery route.
- iv.** Where a mailbox is located at an intersecting road, it shall be located a minimum of 100' beyond the center of the intersecting road in the direction of the delivery route. This distance shall be increased to 200' when the

average daily traffic on the intersecting road exceeds 400 vehicles per day.

- v. Where a mailbox is installed in the vicinity of an existing guardrail, it should, whenever practical, be placed behind the guardrail.

e. Structure

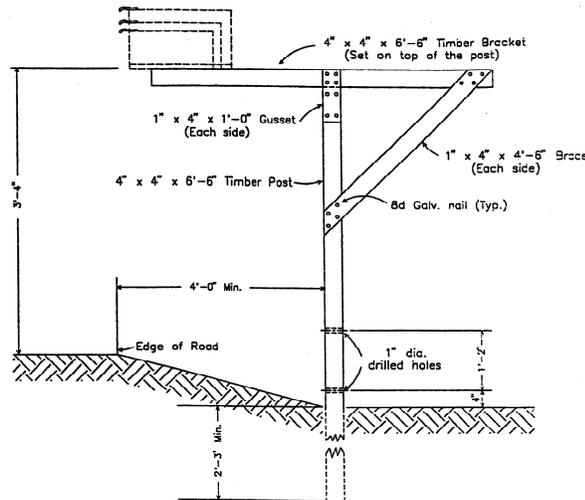
- i. Mailboxes shall be of light sheet metal or plastic construction conforming to the requirements of the U.S. Postal Service. Newspaper delivery boxes shall be of light sheet metal or plastic construction of minimum dimensions suitable for holding a newspaper.
- ii. No more than two mailboxes may be mounted on a support structure unless the support structure and mailbox arrangement have been shown to be safe by crash testing. However, lightweight newspaper boxes may be mounted below the mailbox on the side of the mailbox support.
- iii. Mailbox supports shall not be set in concrete unless the support design has been shown to be safe by crash tests when so installed.
- iv. A single 4" x 4", or 4" diameter wooden post, or a metal post with a strength no greater than a 2" diameter standard strength steel pipe and embedded no more than 2' into the ground will be acceptable as a mailbox support. 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" below the ground surface.
- v. The post-to-box attachment details should be of sufficient strength to prevent the box from separating from the post top if the installation is struck by a vehicle. Figure 12-1 shows an acceptable mailbox support assembly. The exact support hardware dimensions and design may vary, such as having a two-piece platform bracket, or alternative slot and hole locations. The product shall result in a satisfactory attachment of the mailbox to the post, and all components must fit together properly.
- vi. The minimum spacing between the centers of support posts shall be three-fourths the height of the posts above the ground line.
- vii. Mailbox support designs not described in this Policy will be acceptable if approved by the County.

f. Shoulder and Parking Area Construction

It will be the responsibility of the postal patron to inform the Department of Public Works of any new or existing mailbox installation where shoulder construction is inadequate to permit all-weather vehicular access to the mailbox.

g. Removal of Nonconforming or Unsafe Mailboxes

Any mailbox that is found to violate the intent of this Policy shall be removed by the postal patron upon notification by the County. The patron will be granted not less than 24 hours nor more than 30 days to remove an unacceptable mailbox. After the specified removal period has expired, the unacceptable mailbox will be removed by the County at the postal patron's expense.

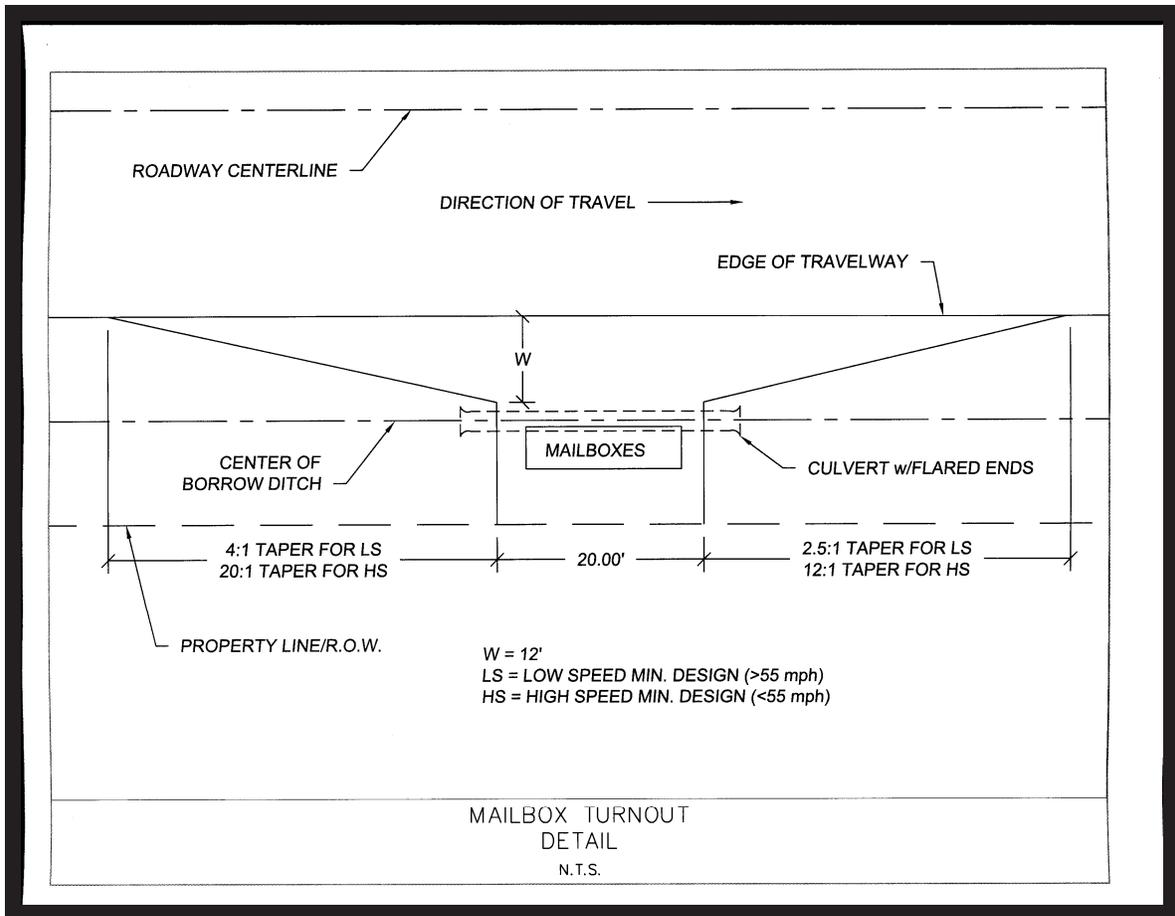


NOTES:

1. Wyoming DOT standard mailbox support (Std #202-01C or other approved equal may be used in lieu of this standard.
2. No fixed objects or structures of significant mass shall be placed with 10' of road edge in urbanized areas and 30' in rural areas.
3. Laramie County will remove any non-standard objects or structures not in compliance with this standard or deemed a hazard.
4. U.S. Postal Service approved mailbox sizes:

19"L x 6.5"W x 8.5" H
21"L x 8" W x 10.5" H
23.5"L x 11.5"W x 13.5"H
5. Please Call 772-6530 for information on placement of mailbox.

Figure 113-F1



113-F2