

4. ACCESS, INTERSECTIONS, AND DRIVEWAYS

4.1 Access Control

This chapter provides guidelines and standards for access, which are those facilities necessary for movement from private property to the public road system.

Vehicular access is provided by one of the following means:

- Public road.
- Private road – including trail access permit road.
- Driveway – including fire apparatus access road.
- Alley – residential or commercial, a secondary access.

Design specifications for each type of road classification are contained in Chapter 5, “Roadway Design Control.”

Access requirements for specific types of development are contained in the various development regulations of the DMMC.

Intersection and driveway location, spacing, and design are fundamental to the management of access and preservation of capacity provided for in the roadway design. The fundamental classification of each roadway addresses the appropriate level of access control for that roadway. The Public Works Director may require the applicant to furnish an access plan that will be used by the City to review what impact the proposed access will have on the city street system.

For proposed access approaches onto any road, the intersections created are classed into two types – roadways and driveways. Driveway design criteria are to be used for residential, minor, or major driveway approaches as outlined herein. Roadway intersection design criteria are to be used whenever an approach roadway intersects another road, or if traffic signalization is warranted as defined in the current edition of the MUTCD. All roadway intersections, public or private, will use roadway intersection design criteria.

When a three or more lane approach is requested, a traffic engineering study along with a signing, striping, and traffic channelization plan shall be completed by the design engineer.

The adequacy of all criteria given in this section to the particular situation in question should be checked by a proper engineering analysis. These criteria are minimum guidelines only and may be modified according to traffic volumes and mix, topography, design speed, design vehicle requirements, and other conditions.

4.1.1 General Access Requirements

The Public Works Director shall provide specific geometric design requirements for residential driveway approaches, minor driveway approaches, and major driveway approaches which are contained in Section 4.4. Roadway and driveway approaches, public or private, should be designed to provide adequate entering sight distance in both directions on the roadway being accessed, and so as to not interfere with drainage.

For both roadway and driveway intersections, the following general design criteria shall also apply:

- A) Intersections should not be located on or near sharp curves, (i.e., curves with radii close to the AASHTO Green Book minimums). Intersections should be located sufficient distance from all curves to provide proper sight distance for vehicles on the intersecting road or driveway and on the through road.
- B) In local road networks “T” and “L” intersections only are encouraged. For arterial access, four-leg intersections are encouraged.
- C) Whenever a potential feasible access exists to any property from two or more roads, the Public Works Director may refuse access to the higher classified road.
- D) New access locations internal to the platting of property shall be unified whenever possible to create the fewest number of access points onto a road if the access road is of a classification higher than a local road. Lots of record in existing formal plat subdivisions, short plats, and large lots not served by a minor or major driveway shall be permitted a minimum of one residential driveway.
- E) The intersection of two local roads should be designed to operate without any traffic control device (i.e., STOP or YIELD Signs) whenever possible and as determined by the licensed engineer.
- F) Access to corner lots should be from the lesser classified road, at a distance from the intersection as described in Section 4.3.1.
- G) The number of intersections should be minimized as much as possible, particularly as classification of affected roads increases. Intersection spacing should be maximized wherever possible.
- H) All gates shall meet the requirements contained in Section 8.10.
- I) The subdivision of land shall be such as to provide access to each lot from a public or private street.
- J) Single family residential driveways shall not access directly onto Principal, Minor, or Collector arterials unless approved by the Public Works Director.
- K) Driveways allowed for commercial, industrial, public facilities, and residential uses shall be combined whenever possible.
- L) Driveways shall be aligned across the roadway when possible.
- M) No part of any access point, including any flare or radius, may be located within 3 feet of a fire hydrant, no-parking zone, utility pole, traffic signal installation or light standard, mailbox cluster or similar appurtenance.
- N) Adjoining properties may be required to share an access through use of a joint access and circulation agreement.
- O) The second access requirement may cause the construction of an off-site road connecting the development to a suitable public street.

Notwithstanding the requirements of this section, the number and location of intersections may be more restrictive than described herein if deemed necessary by the Public Works Director. The Public Works Director shall base the determination on existing and projected traffic volumes, channelization

and signalization on the existing city road, traffic, and turning movements generated by the existing and/or proposed project(s), other applicable traffic design criteria, as well as other driveways in the vicinity of the proposed access approach, the amount of lot frontage along the road, and channelization/traffic control.

4.1.2 Access Design Requirements

Access points shall be designed and constructed:

- To minimize conflicts between vehicles, bicycles and pedestrians.
- To avoid impacts to wetlands, streams, fish and wildlife habitat areas, buffers and other critical areas, to the maximum extent possible.
- To conform to ADA design requirements.
- So that backing maneuvers from, or onto, a public right-of-way do not occur. This requirement does not apply to single family or duplex residential uses taking access from neighborhood collectors or local roads. Under no circumstances shall an access point be designed so that backing maneuvers occur into an intersection of one or more arterial roads.

Design features, such as medians, channelization or curbing, may be required by the Public Works Director for control of traffic movements. The Public Works Director may determine, or require analysis to determine, if an access point must be designed to regulate traffic movements.

If a proposed development will discontinue use of one or more existing access points, these access points shall be removed by the developer and replaced with appropriate frontage improvements as approved by the Public Works Director.

4.1.3 State Highway Access

Access to the State Highway system is regulated by WSDOT and by local jurisdictions for highways within City limits. Permits and approvals for access must be obtained from the City and WSDOT.

4.2 Roadway Intersections

Roadway intersection guidelines encourage the preservation of capacity and safe operation of roadways. The following subsections provide the guidelines for roadway intersection location and design.

4.2.1 Angle of Intersections

New road intersections shall be designed to intersect one another at 90 degree angles or as close to 90 degrees as topography permits. If 90 degrees is not possible, the skew angle of intersections shall not vary more than 15 degrees from right angles.

4.2.2 Return Radii

The minimum return radii to be provided at road intersections are specified in the table below:

Table 4-1. Minimum Intersection Return Radii

Road Type	Intersecting Road	Radius Return
Any Road	Principal Arterial	35 feet
Any Road (except Principal)	Minor and Collector Arterials	30 feet
Neighborhood Collectors and Local Roads	Neighborhood Collectors and Local Roads	25 feet

Larger corner radii should be considered if the anticipated composition of traffic warrants such a need. For instance, roads with truck or bus traffic may require larger radii at intersections. The WSDOT Design Manual shall be used as a guide in evaluating such designs.

4.2.3 Geometrics

When either of the centerline profile grades within 35 feet of an intersection have a gradient of 8 percent or more, an intersection detail drawn to scale of 1 inch = 20 feet must be included as a detail in the road construction plans. The detail will show spot elevations every 10 feet on the road centerline, around the curb return, and grate elevations for drainage structures in the intersection. The intersection plan must be clearly detailed to show flow line grades and how surface drainage will be controlled at the intersection. Curb return data for lesser gradients shall be shown on the road construction plans.

At the intersection of different classifications of roads (e.g., a principal arterial with a collector arterial), the centerline slope and typical cross section of the higher classified road should be carried through the intersection with the lower classified road matching in a manner which will not interfere with the smooth movement of traffic in the travel lanes of the higher classified road.

Where two roads of the same classification intersect, the centerline grade shall be matched at the center of the intersection with cross slopes varying through the intersection to allow drainage. All classes of local roads shall be treated as the same classification for purposes of this paragraph.

Profile grades for all roads (public and private) intersecting onto a City road (existing or proposed) shall be designed and constructed so that adequate sight distance is available at the intersection. Sight distance requirements are provided in Section 6.7.

4.2.4 Grades at Intersections

Road grade transitions at intersections shall be designed using vertical curves wherever the grade change exceeds 1 percent. This includes the transition from the slope of the intersecting road to the cross-slope of the road being intersected. Vertical curve standards are provided in Section 6.5.

For safety reasons, a landing or safe stopping area must be provided before the intersection. The landing may be part of the vertical curve transition between the slope of the intersecting road and the cross-slope of the road being intersected. The standard to be met for an acceptable landing is no more than one foot of elevation change for a distance of 30 feet from an arterial road or 20 feet from a neighborhood collector or local road, measured from the ultimate right-of-way line and intersected by an imaginary 2 percent grade extended from crowned road to right-of-way line of intersecting street. See Standard Drawings DM.C1.1 through DM.C3.1.

For low-volume roads (<400 ADT) approaching a stop sign controlled intersection, a 20 mph design speed with a minimum vertical curve length of 60 feet may be used for the final curve at the intersection.

4.2.5 Intersection Spacing

In order to minimize the number of conflicts between vehicles entering and exiting the roadway and vehicles traveling along a roadway, the design engineer should maximize the distances between intersections along the roadway.

The minimum centerline offset/spacing between parallel roads, on either the same or opposite sides of the primary street are indicated in the following table:

Table 4-2. Minimum Intersection Spacing (Feet)

PARALLEL ROAD TYPE	INTERSECTING ROAD TYPE		
	Principal Arterial	Minor Arterial and Collector Arterial	Neighborhood Collector and Local Road
Principal Arterial	330	200	165
Minor Arterial	200	150	150
Collector Arterial	250	150	150
Neighborhood Collector	165	125	125
Local Road	250	125	125

Where two parallel roads have different classifications, the higher classification shall be used to determine the centerline offset/spacing.

4.3 Driveway Approaches

This section provides driveway standards for connections to public and private roads. It is not the intent of these Standards to govern design or location of driveways on private property except where they connect to a roadway, or where the location of driveways on private property may impact traffic operations on the public street system. However, fire access requirements governed by the Uniform Fire Code and Chapter 14 of the DMMC, establish criteria for driveway widths. No new driveway connection shall be constructed which does not conform to this chapter and minimum sight distance criteria established in Section 6.7.

Driveways shall be paved with asphalt between the edge of the paved surface and the right-of-way line, except when on curb and gutter section roadways. Refer to Section 7.4.5 for further information.

No person, party, firm, corporation, or entity shall construct, repair, alter, maintain or use any approach from any abutting property to any public road located in the City of Des Moines, permanently or on a temporary basis, without first obtaining or having a Right-of-Way Permit from the City. A copy of each Right-of-Way Permit shall be available for inspection at the site during the life of the Permit. Any change of use or any improvement that increases the traffic volumes using an existing driveway approach, will require the obtaining of a new Right-of-Way Permit and must otherwise comply with all standards.

Driveway approaches are deceptively simple in appearance and often do not receive the design consideration that they merit. Commonly overlooked design issues include inadequate radii at the

intersection with the roadway, excessive grades and grade changes within the driveway approach area, inadequate width, and inadequate sight distance.

Driveway approach design needs to address the type of vehicle composition anticipated, traffic volume, and land use activities being accessed. Driveway approach placement needs to be carefully determined to minimize interference with normal roadway operation. Driveway approaches need to be constructed where entering sight distance in conjunction with driveway access would be adequate for safe traffic operations. Closely spaced driveway approaches are discouraged.

The design of the driveway approach is broken into two general classifications which are:

- Residential Driveway Approach
- Commercial Driveway Approach

A residential driveway approach is used to serve up to two single family residences or one duplex unit. A residential driveway approach may also be used for a single driveway approach which serves a shared access facility. A commercial driveway approach is used for all other uses.

All driveway approaches shall be constructed in accordance with the specific geometric requirements provided in these Standards. Grading and restoration of the driveway beyond the end of the driveway approach shall be done to provide a smooth, passible, and safe transition to the facility.

For driveways near stop or signalized intersections, the Public Works Director may require studies to determine if stopping queues will block the access point and if left turns should be prohibited into or out of the access point.

4.3.1 Residential Driveway Approach

Residential driveway approaches shall be constructed to maximize practical distance but in no event, less than thirty-five feet from an arterial or neighborhood collector intersection; or less than twenty-five feet from a local road intersection. The distance is measured along the property line from the edge of the intersecting road lane edge line to the nearest edge of the driveway width.

Where two or more access points serve adjacent residential property uses there shall be a minimum separation of 10 feet between the nearest edges of access points (not including ADA compliant approach flares or return radii), except where the lots are part of a zero lot line development in accordance with Chapter 18 of the DMMC or where approved by the Public Works Director.

Where curb exists, access to residential corner lots shall be located a minimum of 10 feet from the point of curvature (PC) or point of tangency (PT) of the curb line at the intersection. No portion of an access will be permitted within curb returns or curb ramps.

4.3.2 Commercial Driveway Approach

Commercial driveway approaches must be located a minimum of 125 feet from an intersection or other adjacent driveways. In cases where physical site conditions and spacing of existing driveway approaches may not allow for 125 feet, the Public Works Director may determine that a traffic study is required to incorporate the driveway design. The 125 feet is measured along the property line from the intersecting road right-of-way line to the edge of the driveway width. New driveway approaches that would create a four-legged intersection are undesirable except on roadways that have an arterial classification. Access to a corner lot with frontage less than 155 feet in width will be established on a case-by-case basis by

the Public Works Director and the driveway approach shall be placed at such a location to maximize safety.

Access points for commercial or industrial property uses shall be placed directly opposite each other wherever possible for driver awareness and safety. If opposite placement is not possible, then the separation requirements shall be met. If such spacing cannot be provided, the Public Works Director may require analysis to determine if left turns should be prohibited at the access points.

The number, location, and size of commercial approaches shall be determined by the volume and type of traffic generated by the development, other driveway approaches in the vicinity of the proposed approach, the amount of lot frontage along the road, and channelization/traffic control on the road along the lot frontage. When multiple major driveway approaches to one parcel or development are permitted, they shall not be less than 125 feet apart, measured from centerline to centerline. A minimum of two driveway approaches (combination of minor and/or major) will be required for developments that will generate 3,000 ADT or more unless other mitigating measures are approved by the Public Works Director.

4.3.3 Number of Driveway Approaches

The number of access points allowed for a parcel or development depends on the intended land use.

- A) Residential parcels shall be allowed one access point per parcel, unless otherwise approved by the Public Works Director. A duplex parcel may be allowed two access points, provided the location, separation, spacing and corner clearance requirements are met.
- B) Commercial/Industrial parcels shall be allowed one two-way access point, or two one-way access points, exclusive of alleys, per 500 feet of total property frontage.
- C) Additional access points may be approved by the Public Works Director upon submittal of a circulation plan that shows additional access points are required for traffic flow and that adjacent roads will not be adversely affected.

Additional access points may be required by the Public Works Director to provide adequate road and pedestrian circulation or emergency vehicle access. The Fire Marshal shall determine emergency vehicle access requirements pursuant to Chapter 14 of the DMMC and the Uniform Fire Code.

A development that will generate or attract a large traffic volume may be required to consolidate traffic at specific access points. Signalization at intersections may be required where warranted by the MUTCD.

4.3.4 Driveway Approach Angles

New driveway approaches shall be designed to align at 90 degrees to the adjacent centerline, or along a radial line in a cul-de-sac, as close to 90 degrees as topography permits. If 90 degrees is not possible, the skew angle of driveways shall not vary more than 15 degrees from right angles.

4.3.5 Driveway Approach Widths

Driveway widths are provided in the table below.

Table 4-3. Driveway Width(s)

Type	Minimum Width	Maximum Width
Residential	12 feet	24 feet
Commercial	24 feet	35 feet

Wider major driveways approaches, where necessary to accommodate buses, trucks or other oversized vehicles, may be approved through a deviation request. Such access points shall be designed to meet the additional loading and turning radius requirements.

4.3.6 Storm Drainage for Driveways

For driveways crossing an open ditch section, culverts shall be adequately sized to carry anticipated storm water flows and in no case be less than 12 inches) in diameter, and at a minimum the culvert shall be equal to or larger than existing pipes within 500 feet upstream. Pipe should be long enough to allow for the minimum 3:1 beveled ends. The property owner making the installation shall be responsible for determining proper pipe size. The Public Works Director may require the owner to verify the adequacy of pipe size.

Storm drainage from driveway surfaces must be accounted for in the roadway drainage design. Direct discharge to roadway surfaces and sidewalks is not allowed.

For additional storm drainage requirements, refer to Chapter 11 of these Standards.

4.3.7 Construction Criteria

When cutting through or crossing vertical curbs, gutters and sidewalks, access approaches must extend from the curb to back of sidewalk and be of Portland cement concrete.

When an opening for a driveway or for any other purpose is to be constructed through an existing portland cement concrete vertical curb, the existing curb, or curb and gutter shall be removed to the nearest construction joint. The opening shall be reconstructed in accordance with the approved plans and these Standards.

The outer edge of a driveway shall not be constructed closer than 70 feet to a bridge, culvert, or other structure that may warrant end protection using guard-railing in accordance with the most current criteria adopted by the WSDOT.

All driveway approaches shall be paved to the right-of-way line, or 3 feet beyond the end of the radius, whichever is greater, with a minimum of 3 inches of compacted depth of asphalt concrete over 2 inches of compacted depth crushed surfacing top course.

The minimum distance between the paved edge of a driveway approach and the face of an obstruction, including existing utility appurtenances which may cause a traffic safety concern may be no less than 4 feet without curbing and 3 feet with curbing on the approach. Obstructions located closer than these distances which may cause a traffic safety concern must be relocated.

4.4 Sight Distance

For determination of sight distance at access points, see Section 6.7 of these Standards.

4.5 Panhandle Lots

A lot within a subdivision may be permitted with a panhandle access, provided the panhandle shall have a minimum width of 20 feet and a maximum length of 200 feet and shall serve no more than 1 lot. Panhandle accesses will not be allowed unless they are separated by at least one lot width (i.e., no back-to-back panhandles).

4.6 Access Easements

New access across an easement is not allowed.

Existing legal access easements may be allowed to remain. However, additional lots shall not be served by such existing easement.

