**Section 550.50 Driveway Design**

a) Location

1) A driveway or system of driveways must be located so as to provide:

A) The most favorable vision, grade, and alignment conditions for motorists using the proposed driveway and the highway;

B) No undue interference with the free and safe movement of highway traffic;

C) Maximum safety and convenience for pedestrians and other users of highway rights-of-way.

2) In the interest of public safety and convenience, the Department may restrict the placement of a driveway to a particular location along the owner's frontage. Driveways will not generally be permitted along acceleration or deceleration lanes or lane tapers. Proposed driveways near bridges must be critically reviewed to assure that adequate sight distance is available.

3) Driveways should be located so that sufficient sight distance is available to enable vehicles entering the highways to determine when gaps in the traffic stream are sufficient to permit the following maneuvers. Driveways should be located to enable vehicles entering the highway:

A) Upon turning left or right, to accelerate to the operating speed of the highway without causing approaching vehicles to reduce speed by more than approximately 10 miles per hour; and

B) Upon turning left, to clear the near half of the street without conflicting with vehicles approaching from the left.

4) Normally, only one driveway will be permitted for each residential property and two for an average commercial property. Where the single residential driveway is along a high-speed highway, the property owner is strongly urged to provide facilities on his property to permit cars to turn around and avoid backing onto the highway. Where the need for additional entrances can be substantiated operationally and adequate frontage exists, the Department may grant permission for additional driveways. A minimum distance of at least 440 feet, and preferably 660 feet, will be required between the center lines of entrances into shopping centers and similar developments that generate high traffic volumes. However, service drives into such centers not used by the general public may be closer than 440 feet as long as they will not encroach on turning lanes. This minimum distance does not apply to entrances into service stations where the entrance does not provide easy access to the abutting development. This minimum distance between major entrances is also desirable between such entrances and the nearest public road intersecting the State highway. Circulation between driveways servicing a single property must be accomplished within the property, on a frontage road, or by means of other facilities permitting circulation off the through lanes of the State highway.

5) Various minimum distances must be provided between driveways and property lines, intersecting public roads, and other driveways. Noncommercial, Commercial, and Industrial-Commercial-Recreational Driveways are contained in Sections 550.60, 550.70, and 550.80, respectively.

6) Existing or proposed highway features, such as median openings, turning lanes, intersections, drainage and traffic signals, should be considered in determining the locations of driveways. These items are discussed in Section 550.40.

b) Layout

1) The width, angle, radii of flares, and other geometric features of the driveways and islands should permit vehicles to enter and exit with a minimum of interference to through traffic. Interference caused by an access point can be measured by the delay incurred by motorists in the through lanes who are forced to reduce their speed due to the turning vehicles using the driveway.

2) The widths of driveways will be based primarily on the speeds and volumes of traffic on the highway and the types and volumes of vehicles using the driveway. The effective width will also vary with the angle of the driveway. The driveway width should be restrictive enough to discourage parallel entry into the traffic stream and other maneuvers that would cause visibility restrictions or other conflicts. Driveways of excessive width or with large open areas offer poor protection to pedestrians, as well as promote haphazard parking and circulation. On the other hand, entrances must be wide enough so that no vehicular conflicts occur in the driveway or on the roadway. Commercial driveways that are to provide for two way traffic must be wide enough to accommodate two lanes without conflict. The width of an entrance will be measured at right angles to the center line of the driveway and will be exclusive of the flare. The width will be considered edge to edge of pavement, except where a monolithic curb is used, in which case the width will be face to face of curbs.

3) Multiple driveway openings shall be separated by an island area. Where the island is less than 25 feet long or 10 feet wide, it should be outlined by curbing in a curbed section or by concrete curbs, masonry, or other devices between the edge of shoulder and right-of-way line in an uncurbed section.

4) The radii of the flares for a driveway shall be selected after considering the proposed volumes, the driveway angle, width of the drive, type of land use to be served, whether parking is allowed along the curb, and the volume and character of the through and driveway traffic. The radius provided must be compatible with the speeds acceptable to the drivers and the level of service desired on the through roadway. Radii in angles less than 90 degrees will generally be in the lower part (minimum) of the range given in this policy. Radii in angles over 90 degrees will be toward the upper (maximum) limit. Along a high-speed highway, the flare for traffic leaving the highway may need to be greater than for traffic entering onto the highway.

5) While the outside edge of a flare is generally curved around a radius point, a straight edge may be acceptable. Such triangular flares may be desired where the distance between the edge of the highway and the sidewalk or right-of-way is small and only the minimum radius could be used. Such flares may also be desirable to simplify construction. Flares will increase the surfaced area since they should start at the beginning of the normal curved flare along the highway to the point where the curve would end along the edge of the driveway.

6) The selection of the return radius for a facility with a large percentage of truck traffic will require special consideration of the geometrics. The flare used to connect the driveway to the roadway should normally fall within the right-of-way. However, it may be permitted to go outside the right-of-way if raised curbing extends into the private property. The use of three centered curves or other compound curves and/or islands may be necessary to accommodate proposed truck movements. All flares used at commercial developments in urban areas should be defined with concrete curbs from the curb line to at least the right-of-way, except across sidewalks. Additional curb may be necessary as determined by the Department to provide adequate storage for the anticipated volumes. The layout of driveways to fire stations may be altered from these requirements as necessary to accommodate these special vehicles.

7) The specific requirements pertaining to the layout of Residential, Commercial, and Industrial-Commercial-Recreational Driveways are contained in Sections 550.60, 550.70, and 550.80, respectively.

c) Grades

1) All driveways constructed in rural locations shall have a grade that slopes away from the highway surface at a rate equal to the slope of the shoulder but not less than 3/16 inch nor greater than 1 inch per foot. This slope shall continue for a distance equal to the prevailing shoulder width. Beyond the shoulder, the grade of rural driveways within the right-of-way should not exceed 10 percent for commercial driveways and 12 percent for noncommercial. The slopes of all drives constructed in urban locations shall be compatible with the provisions for drainage of the existing designed cross section but should not exceed 6 and 8 percent, respectively, for commercial and noncommercial driveways. The grades used shall permit facilities that will accommodate the flow of the drainage in the vicinity of the driveway, and should be designed so that future widening would not require reconstruction of the intersection. Such facilities shall be the responsibility of the applicant and are discussed further in subsection (e) of this Section.

2) Where a sidewalk is located close to the curb line and the driveway opening is to be provided across a depressed or cut curb, the sidewalk should be removed and replaced with driveway pavement and be warped to conform to the driveway profile. One or both edges of the sidewalk may be depressed across the driveway, provided the resulting sidewalk cross slope does not exceed ½ inch per foot. In some cases, it may be necessary to discontinue the sidewalk across the driveway and to construct a curb along each driveway edge. However, curbed driveways must meet the necessary requirements established to allow for wheelchairs.

3) Where curbs are cut for the construction of driveways, the entire curb and gutter section must be removed. The removal of only the raised portion of the curb and paving over the broken section will not be allowed. Cut curb ends shall be tapered from full height to ground level in a distance of approximately 2 feet. Where drainage is carried along the curb, the driveway shall be constructed with a short upgrade to prevent runoff from spilling into private property and the flowline of the gutter through the driveway shall be restored.

d) Cross Section and Material

1) Driveways must be surfaced and well maintained to ensure that the original profile is retained, that operational speeds are not reduced by pot holes or rough surfaces, and that no damage to or deterioration of the highway pavement is caused by the condition of the driveway. All driveways shall be surfaced from the roadway edge to the right-of-way line. Unsuitable material must be removed and replaced with the proper base material. The type of material and thickness will be specified in the permit and will depend primarily on the intended use of the driveway, as well as the proposed volume and types of vehicles using the entrance.

2) Noncommercial rural driveways will be required, as a minimum, to be surfaced with a specified thickness of gravel or crushed stone. In some urban areas, a bituminous or concrete surface may be specified for noncommercial drives. Commercial driveways will generally be required to have a bituminous or portland cement concrete surface on an approved base material.

3) The shoulder area between driveways may also be required to be surfaced as outlined in Section 550.40(c).

e) Drainage

1) Driveways must be constructed so that they do not adversely affect the highway drainage of the adjacent property. The drainage and the stability of the highway subgrade must not be impaired by driveway construction or roadside development. In no case may the construction of a driveway cause water to flow across the highway pavement, or to pond on the shoulders or in the ditch, or result in erosion within the right-of-way.

2) Drainage collected by ditches, gutters, or pipes on private property shall not be discharged into the highway drainage system unless expressly approved by the Department. The permittee may be required to submit a drainage study to the Department justifying the drainage system proposed and the pipe or sewer sizes to be used. Natural drainage laws and practices must be observed.

3) Where the construction of a driveway necessitates crossing a highway ditch, a culvert pipe shall be installed in the ditch by the permittee. The low point of the driveway profile shall be at or close to the ditch line. Under no circumstances will existing ditches or gutters be filled without adequate alternate provisions for drainage being made.

4) Culvert pipe shall be of a size adequate to carry the anticipated flow in the ditch as determined by the Department and shall not be smaller than 15 inches inside diameter.

5) The structural material and gauge of the driveway culvert pipe shall be adequate to withstand the loads from the anticipated vehicular traffic across the driveway. The culvert shall meet the requirements of the Illinois Standard Specifications for Road and Bridge Construction. The length of the culvert may be determined as the sum of the width of the driveway (surfaced width and shoulder) at the ditch line and the length needed to accommodate a sideslope of at least 1 vertical to 2 horizontal from the driveway grade to the ditch, with a minimum length of 22 feet regardless of ditch depth. Along sections of highway on which some end treatment of entrance culverts was provided on original construction or by reconstruction, culverts installed under permit shall have the same or similar end treatment as specified by the Department. Permit applicants may install such end treatment on any road section at their option in lieu of equivalent culvert length.