

Design 101 – Engineering Terms and Definitions

Access Control:	The extent to which the state, by law, regulates where vehicles may enter or leave the highway
Alignment:	The vertical and horizontal location of a road
Alternate Routes:	The various general highway locations examined in corridor studies to determine the best alignment for a highway
Arterial:	A general term denoting a highway primarily for through traffic, usually on a continuous route
Braking distance:	The distance travelled from the instant that braking begins to the instant the vehicle comes to a stop
Channelization (of road):	The direction of the traffic flow into definite paths, by means of traffic markings, islands, or other means
Cross-section:	The transverse profile of a road
Cut and Fill:	An embankment is therefore in some sense the opposite of a cutting, and embankments are often constructed using material obtained from a cutting. Alternatively the term <i>fill</i> is used to denote an embankment. Embankments should be constructed using suitable materials to provide adequate support to the formation and long-term stability. A cutting or cut is where part of a hill or mountain is cut out to make way for a road or rail line
Design Speed:	A speed determined for design and correlation of the physical features of a highway which influence vehicle operation
Earth Excavation:	On a construction project that requires new or relocated roadway, the earth which must be moved from one place to another is called earth excavation
Easement:	A right to use or control the property of another for designated purposes. For example, drainage easement, planting easement, scenic easement,

sight line easement and slope easement are five types of easements in connection with highways. Easements may be either temporary or permanent

- Gradient (grade):** The rate of rise or fall with respect to the horizontal distance; usually expressed as a percentage
- Grade Separation:** A crossing of two highways, or a highway and a railroad, at different levels. The bridge that spans highways or railroad tracks (as in an overpass) is a grade separation structure
- Horizontal Alignment:** The configuration of a road or roadway as seen in plan, consisting of tangents, lengths of circular curve, and lengths of spiral or transition curves
- Horizontal Curve (of Highway):** Bend from a straight line or course along a roadway
- Intersection Sight Distance:** In general, ISD refers to the corner sight distance available in intersection quadrants that allows a driver approaching an intersection to observe the actions of vehicles on the crossing leg(s). ISD evaluations involve establishing the needed sight triangle in each quadrant by determining the legs of the triangle on the two crossing roadways
- Lateral Obstacle Clearance:** An area relatively flat and free of obstacles beyond the edge of the travel way for the recovery of out-of-control vehicles
- Median:** The portion of a divided highway separating the traveled ways for traffic in opposite directions
- Median Barrier:** A longitudinal barrier placed in the median to prevent a vehicle from crossing the median and colliding with oncoming traffic or to protect a vehicle from a fixed object in the median
- Median Lane:** A speed-change lane within the median to accommodate left-turning vehicles
- Raised Island:** That portion of the roadway which is raised above the travel-way by means of a curb to separate traffic

Reverse Curve:	A reverse curve is a section of the horizontal alignment of a route (highway or railroad) in which a curve to the left or right is followed immediately by a curve in the opposite direction
Right-of-Way:	Land acquired by purchase, gift or eminent domain in order to build and maintain a public road
Roadside Development:	Those items necessary to complete the highway which provide for the preservation of landscape materials and features; the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers, trees and shrubs, and such suitable planting and other improvements as may increase the effectiveness and enhance the appearance of the highway
Roadway Cuts:	Segments of roadway lower than the surrounding ground
Roadway Embankment:	A raised structure of soil, soil-aggregate, sand or rock
Shared Roadway:	Facilities officially designated and marked as bicycle routes but also open to motor vehicle travel with no provision for physical separation of the two types of vehicles
Shoulder:	The portion of the roadway adjacent to the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of the base and surface courses. On secondary roadways the shoulder usually consists of turf. On heavily traveled roads the shoulder is usually a bituminous mixture or concrete
Sight Distance:	The line of sight available to the driver to see another car for passing sight distance or to see a fixed object for stopping sight distance
Stopping Sight Distance:	The distance required by a vehicle traveling at a design speed to stop before reaching the stationary object that has suddenly appeared in its path

Storage Lane:	An auxiliary lane, primarily to allow those vehicles which turn to wait for through traffic to proceed across the intersection
Superelevation:	Tilting the roadway to help offset centripetal forces developed as the vehicle goes around a curve. Along with friction they are what keep a vehicle from going off the road
Transition Taper:	The length of roadway required for a traveling vehicle to adequately merge into another lane based on design speed. This occurs when a travel lane is being added or removed, or when the street is narrowing or widening
Terrain:	The physical features of a tract of land
Topography:	Representation on maps or charts depicting natural and man-made features of an area or region
Traffic Calming:	Traffic calming is the slowing or reduction of motor-vehicle traffic to improve safety for pedestrians and bicyclists and improve the environment for residents
Traffic Control Device:	Any sign, signal, marking or installation placed or erected under public authority, for the purpose of regulating, warning, informing or guiding traffic
Traffic Island:	An island provided in a roadway to separate or direct streams of traffic; includes both divisional and channelizing islands
Vertical Curve:	A smooth transition between two sloping grade lines; a hill or valley