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AASHTO Transportation Glossary

4th Edition—2009



American Association of State Highway
and Transportation Officials



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Preface

The 2009 *AASHTO Transportation Glossary* is an update and revision of the 1983 *Transportation Glossary* and the 1998 *Transportation Glossary*, which was unpublished. The greatest number of additions in terminology are related to bridge and drainage subjects. The new glossary also includes lists of organizational acronyms, abbreviations, and other glossary references.

Terms and definitions in this glossary were taken from an unpublished 1998 *AASHTO Glossary* and supplemented with definitions listed in AASHTO publications issued after 1998. Several additional sources were also referenced, including the *Highway Capacity Manual*, *Manual on Uniform Traffic Control Devices*, *Code of Federal Regulations—Title 23*, a Federal Highway Administration (FHWA) list of roundabout terminology, and the *Transportation Research Thesaurus*.

Glossary terms are listed in alphabetical order regardless of transportation mode. The glossary also includes two indexes—subject area and keyword—that provide cross references for the user.

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Transportation Glossary



Abandonment The relinquishment of the public interest in right-of-way or activity thereon with no intention to reclaim or use again for highway purposes.

Abrasion 1) Loss of section or coating of a culvert by the mechanical action of water conveying suspended bed load of sand, gravel, and cobble-size particles at high velocities with appreciable turbulence. 2) Removal of stream bank material due to entrained sediment, ice, or debris rubbing against the bank.

Absolute Block A block governed by the principle that no train shall enter the block while it is occupied by another train.

Absolute Permissive On a track that is signaled in both directions, the section between sidings that, for opposing movements, extends from siding to siding and may be occupied by only one train and that, for following movements, is divided into two or more blocks that are signaled as absolute blocks.

Absorption 1) The assimilation or taking up of water or other solutions by soil or other material, i.e., the entrance of water into the soil or rocks by all natural processes. It includes the infiltration of precipitation or snowmelt, gravity flow of streams into the valley alluvium, sinks, or other large openings, and the movement of atmospheric moisture. The process by which substances in gaseous, liquid, or solid

form dissolve or mix with other substances. 2) The increase in mass of concrete resulting from the penetration of water into the concrete.

Absorption Test A test made to determine the absorption of concrete.

Abstraction That portion of rainfall that does not become runoff. It includes interception, infiltration, and storage in depressions. It is affected by land use, land treatment and condition, and antecedent soil moisture.

Abstract of Title A document showing the condensed history of the title to property, containing portions of all conveyances or other pertinent instruments relating to the estate or interest in the property, and all liens, charges, encumbrances, and releases.

Abutment The earth-retaining structure that supports the superstructure at either end of a bridge. Considered part of the bridge substructure.

“A” Car A motive-powered unit so designed that it may be used as the controlling unit of a multiple-unit train and that has adequate visibility in a forward direction, as well as a cab and equipment, to permit full control and observation of the propulsion power and brake applications for the train.

Accelerate Stop Distance The distance required to accelerate an airplane to a specified speed and, assuming failure of the critical engine at the instant that speed (V) is attained, to bring the airplane to a stop.

Acceptance Sampling and testing, or inspection, to determine the degree of compliance with contract requirements.

Acceptance Constant (k) The minimum allowable quality index.

Acceptance Limit In variable acceptance plans, the limiting upper or lower value placed on a quality measure that will permit acceptance of a lot. (Unlike specification limits placed on a quality characteristic, an acceptance limit is placed on a quality measure. For example, in Percent Within Limits (PWL) acceptance plans, PWL refers to specification limits placed on the quality characteristic, and the minimum allowable PWL identifies the acceptance limit for the PWL quality measure).

Acceptance Number In attribute acceptance plans, the maximum number of defective or nonconforming units in the sample that will permit acceptance of the inspected lot or batch.

Acceptance Plan An acceptable method of taking samples and making measurements or observations on these samples for the purpose of evaluating the acceptability of a lot of material or construction.

Acceptance Sampling and Testing Sampling, testing, and the assessment of test results done to determine whether or not the quality of produced material or construction is acceptable in terms of the specifications.

Access Permission, liberty, or ability to enter, approach, or to make use of.

Accessibility 1) A measure of mobility. 2) Total travel time between areas weighted by the relative attractiveness of the destination. 3) A measure of the ability of public transportation users to access transit modes.

Accessible A site, building, facility, or portion thereof that can be approached, entered, and used by the physically impaired.

Accessible Pedestrian Signal (APS) A device that communicates information about pedestrian signal timing in a nonvisual format including audible tones, verbal messages, and/or vibrotactile information.

Access Point An intersection, driveway, or opening providing access to a roadway.

Access Time The time elapsed on a trip from the moment of leaving the point of origin to the moment of boarding a vehicle.

Accrual Method The accounting procedure that recognizes revenues and expenses when they occur regardless of when cash is received or paid.

Accuracy 1) The closeness or degree of agreement (within a stated tolerance and probability of conformity) between a quantity measured or estimated and an accepted reference value. 2) The degree to which a measurement, or the mean of a distribution of measurements, tends to coincide with the true population mean.

Acquisition or Taking The process of obtaining right-of-way.

Active Earth Pressure Lateral pressure resulting from the retention of the earth by a structure or component that is tending to move away from the soil mass.

Act of God In law, a direct, sudden, or irresistible action of natural forces that could not reasonably have been foreseen and prevented. Earthquake, tidal wave, tornado, hurricane, or any other cataclysmic phenomenon of nature beyond the contractor's control that causes loss, damage, or injury to the work.

Actual Cost Contractor's actual cost to provide labor, material, equipment owned or invoiced rental, and administrative overhead necessary for the work.

Addendum A contract revision developed between advertising and opening proposals.

Additive A substance or agent added in small amounts to a basic ingredient of a mixture prior to mixing.

Adjustment Factors Multiplicative factors that adjust a parameter for a base condition to represent a prevailing condition.

Admixture 1) A material other than water, aggregates, and cement used as an ingredient of concrete and added to the batch immediately before or during its mixture. 2) A substance or agent added in small amounts to the basic ingredients of a mixture during the mixing process.

Adsorption The adhesion in an extremely thin layer of molecules (such as gases, solutions, or liquids) to the surface of solid bodies or liquids with which they are in contact.

Advanced Public Transportation Systems (APTS) Application of intelligent transportation systems technologies to the needs of public transit, including fixed-route systems as well as route deviation and demand-responsive modes.

Advanced Rural Transportation Systems (ARTS) A collection of intelligent transportation systems technologies applied to the rural environment.

Advanced Traffic Management System (ATMS) Remotely operated traffic management system for monitoring and managing operations of a freeway system, including High-Occupancy Vehicles (HOV) lanes and arterial streets. Major elements of the system include surveillance, communications, and controls.

Advanced Traveler Information Systems (ATIS) The dissemination of real-time traffic information to the traveling public over a variety of distribution channels.

Advanced Vehicle Control and Safety Systems (AVCSS) Systems that focus on crash avoidance by enhancing driver performance. AVCSS include collision

avoidance systems and automated highway systems.

Advertisement A public announcement inviting bids for work to be performed or materials to be furnished.

Advisory Arbitration without a final and binding award.

Aeroelastic Vibration Periodic, elastic response of a structure to wind.

Aeronautical Information Publication A pilot's operational manual containing information needed for the planning and conduct of flight in the National Airspace System (conterminous U.S. only).

Aesthetics The science or philosophy concerned with quality of visual experience, pertaining primarily to desirable visual values and with judgments concerning appealing design.

Aesthetic Value The worth of an item of construction in terms of pleasing appearance or gratifying performance.

Afflux The backwater or height by which water levels are raised at a stated point, owing to the presence of a constriction or obstruction, such as a bridge.

Agency 1) The State Highway or Transportation Department, Commission, or other organization, constituted under state or commonwealth laws, that administers highway or transportation work. 2) A responsible business or service authorized to act on behalf of others, i.e., a governmental department, consulting engineering firm, or owner of the facility or feature.

Aggradation The general and progressive upbuilding of the longitudinal profile of a channel or within a drainage facility by the deposition of sediment.

Agonic Line A line along which no magnetic variation occurs.



Aircraft Classification Number (ACN) A number expressing the relative effect of a large aircraft on a pavement for a standard subgrade category.

Air Navigation Facility (NAVAID) Any facility used in, available for use in, or designed for use in aid of air navigation, including landing areas; lights; any apparatus or equipment for disseminating weather information, for signaling, for radio direction finding, or for radio or other electronic communication; any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing or takeoff of aircraft.

Airplane A power-driven fixed-wing aircraft, heavier than air, that is supported by the dynamic reaction of the air against its wings.

Airport A defined area on land or water, including any buildings and installations, normally used for the takeoff and landing of aircraft.

Airport Advisory Area The area within 10 statute miles (16 km) of an airport where a control tower is not operating but where a flight service station (FSS) is located. At such locations, the FSS provides advisory service to arriving and departing aircraft.

Airport Advisory Service A service provided by flight service stations at airports not served by a control tower. This service consists of providing information to landing and departing aircraft concerning wind direction and velocity, favored runway, altimeter setting, pertinent known traffic, pertinent known field conditions, airport taxi routes and traffic patterns, and authorized instrument approach procedures.

Airport Capacity The number of takeoffs and landings per hour that can be handled safely during good weather and during bad weather when radar is required to help air traffic controllers maintain safe separation

between aircraft. Also referred to as Runway Capacity.

Airport Layout Plan (ALP) Current and planned airport development portrayal, which may be part of an airport master plan.

Airport Surveillance Radar (ASR) A relatively short-range radar used by control tower personnel for arrival and departure control within a 30-mile (50-km) area or for radar instrument approaches. Only range and azimuth information are available.

Air Rights The property rights for the control or specific use of a designated airspace involving a highway.

Air Route Surveillance Radar (ARSR) A long-range radar, approximately 150 miles (240 km), used by Air Route Traffic Control Center personnel to control air traffic along the airways between terminals.

Air Route Traffic Control Center (ARTCC) A facility established to provide air traffic control service to Instrument Flight Rules (IFR) flights operating within controlled airspace and principally during the en route phase of flight.

Airship A mechanically propelled aircraft whose support is derived from lighter-than-air gas.

Airspeed The speed of an aircraft relative to the air.

Air Traffic Control (ATC) A service operated by an appropriate authority to promote the safe, orderly, and expeditious flow of air traffic.

Air Traffic Control Radar Beacon System (ATCRBS) Radar transponders, installed in the aircraft, used with secondary radar beacon ground equipment to provide a reinforced target pip for use by air traffic control at higher altitudes and in areas of high traffic density.

Airway An air corridor established for the control of traffic.

Airworthy The status of being in condition suitable for safe flight.

Alert Area The area depicted on aeronautical charts to inform nonparticipating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity.

Alight To get off a transit vehicle.

Alignment (also Alinement) 1) The fixing of points on the ground in correct linear form for setting out a road, railway, wall, transmission line, canal, etc. 2) A ground plan showing a route (as opposed to a profile section) including levels and elevations.

Alley A narrow right-of-way to provide access to the side or rear of individual land parcels.

Alligator Cracking Interconnected cracks forming a series of small polygons in the pavement surface that resemble an alligator's skin or chicken wire.

Allotment An action by an administrative authority making funds available for obligations and expenditures for specified purposes and for certain periods.

Allowable Headwater Depth The depth or elevation of the flow impoundment for a drainage facility above which damage or flooding of the roadway could occur.

Allowable Static Design

Stress Permissible value of stress for calculations involving components subjected to unfactored loading.

Allowance 1) Time for which an operator is paid in order to meet a guaranteed minimum even though the hours have not been worked; also referred to as Pad Time, Hold Time, or Dead Time. 2) Time for which an employee is paid for preparing a bus for service or street relief, obtaining working materials, and returning the bus to the garage at the end of the day.

Alluvial Deposits of silt, sand, gravel, or similar detrital material that have been transported by running water.

Alluvial Channel 1) A channel formed wholly in alluvium with no bedrock exposed in the channel at low flow or likely to be exposed by erosion. 2) A channel whose processes are controlled by the flow and boundary interactions.

Alluvial Fan A landform shaped like a fan in plan view and deposited where a stream issues from a narrow valley of high slope onto a plain or broad valley of low slope.

Alluvium Unconsolidated material such as clay, silt, sand, or gravel deposited by water in a channel or on a flood plain, alluvial, fan, or delta.

All-Weather Airport An airport with facilities to permit the landing of qualified aircraft and crew without regard to operational weather limits.

Alternate Bar An alluvial deposit of sand and gravel lacking permanent vegetal cover occurring in an alternating pattern from bank to bank in a relatively straight channel reach.

Alternate Depth For a given rate of flow and a given specific head, two depths of flow are possible. These two depths are alternate depth.

Altimeter An instrument that measures altitude using the change in air pressure with height, utilizing an aneroid as its sensitive element.

Altimeter Setting Local station pressure corrected to sea level; an altimeter set to local station pressure that provides the indicated height above sea level, whether airborne or on the ground (without such correction made for temperature as may be necessary; this is not a true altitude height).

Altitude Height expressed in units of distance above a reference plane, usually above mean sea level or above ground.

Amidships The middle section of a ship that is half of the length on the waterline.

Anchorage 1) That portion of a harbor (or designated areas outside of harbors) in which ships are permitted to lie at anchor. 2) The process of attaching a structural member or support to the concrete structure by means of an embedment, taking into consideration those factors that determine the load capacity of the anchorage system. 3) For concrete reinforcing bars, a length of reinforcement or a mechanical anchor or hook, or combination thereof, at the end of a bar needed to transfer the force carried by the bar into the concrete.

Anchorage Zone The portion of the structure in which the prestressing force is transferred from the anchorage device onto the local zone of the concrete and then distributed more widely into the general zone of the structure.

Anchor Bolt A bolt used with its head embedded in masonry or concrete and its threaded part protruding to hold a structure or machinery in place.

Anchored Wall An earth-retaining system typically composed of the same elements as nongravity cantilevered walls and that derives additional lateral resistance from one or more tiers of anchors.

Anchors A rail-fastening device used to resist the longitudinal movement of rail under traffic and to maintain proper expansion allowance at joint gaps for temperature changes.

Angle of Attack The acute angle between the chord of an airfoil and a line representing the relative wind.

Angle of Flare The angle between direction of wingwall and the centerline of a culvert barrel.

Angle of Repose The maximum angle, as measured from the horizontal, at which granular particles can stand.

Angle of Turn A measure of the change in direction of a vehicle.

Angularity The acute angle between the plane of the highway centerline along the bridge and a line normal to the thread of the stream, i.e., the acute angle between the thread of the stream and a line normal to the centerline along the bridge. Angle of skew if abutments are parallel to the flow line.

Annual Average Daily Traffic

(AADT) The total annual volume of traffic passing a point or segment of a highway in both directions divided by the number of days in a year.

Annual Average Weekday Traffic

(AAWDT) The calendar year average of daily traffic considering only Monday through Friday.

Annual Capital The sum of the annual outlay for plant and equipment and the interest and taxes paid on capital items.

Annual Flood The maximum momentary peak discharge in each year of record.

Annualized Method A method that converts all present and future costs to a common base of an equivalent uniform annual cost through the use of a discount rate.

Annual Runoff The total natural discharge of a stream for a year, usually expressed in millimeters of depth.

Annual Vehicle Kilometers [Miles]

Traveled (AVkmT) [AVMT] Average annual traffic on a road segment, expressed as AADT, multiplied by the number of days in the year, multiplied by the length of the road segment.

Annular Space The space between the inner surface of the female end and the outer surface of the male end of an assembled pipe joint.

Apex The highest point; the vertex.

Apparent Specific Gravity The ratio of the weight in air to the unit volume of the impermeable portion of a solid material.

Apportionment An administrative assignment of funds based on a prescribed formula by a governmental unit to another governmental unit for specific purposes and for certain periods.

Approach 1) A set of lanes accommodating all left-turn, through, and right-turn movements arriving at an intersection from a given direction. 2) Section of the accessible route that flanks the landing of a curb ramp. The approach may be slightly graded if the landing level is below the elevation of the adjoining sidewalk.

Approach Channel The reach of a channel upstream from a dam, bridge constriction, culvert, or other drainage structure.

Approach Control A service established to control IFR flights arriving at, departing from, and operating in the vicinity of airports by means of direct and instantaneous communication between approach control personnel and all aircraft operating under their control. Available to VFR traffic on a workload-permitting basis.

Approach Light System (ALS) One of several systems designed to guide an aircraft to the runway threshold on final approach during darkness or IFR conditions.

Approach Section A cross section of the stream channel, normal to thread current and for the discharge of interest, located in the approach channel.

Approach Signal The signal preceding home signal.

Approach Slope Imaginary areas to be kept clear of obstructions extending out and away from the approach ends of runways at 20:1 (visual), 34:1 (nonprecision

instrument), or 50:1 (precision instrument), and at 7:1 along the side transition areas.

Appropriation An act of a legislative body that makes funds available for expenditures with specific limitations as to amount, purpose, and period.

Appurtenances Curbs, parapets, railings, barriers, dividers, and sign and lighting posts.

Apron 1) That portion of a wharf or pier lying between the waterfront edge and the transit shed. 2) Protective material laid on a stream bed to prevent scour commonly caused by some drainage facility.

Aquifer A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to a well or springs.

Arbitration A method of settling disputes between labor and management through recourse to an impartial third party whose decision is usually final and binding.

Arching Action A structural phenomenon where wheel loads are transmitted as a result of lateral confinement provided by the surrounding concrete slab.

Area-Capacity Curve A graph showing the relation between the surface area of the water in a reservoir and the corresponding volume.

Area Coverage The geographical area that a transit system is considered to serve, normally based on acceptable walking distances from loading points.

Area Curve When plotted against some other variable such as discharge or velocity, a graph of (a) the cross-sectional area of a stream at a gaging station or other section, (b) the surface area of a reservoir plotted against water-surface elevations, or (c) the flow area of a drainage structure.

Area Navigation (RNAV) A method of navigation that permits aircraft operations on any desired course.

Area of Concern An object or roadside condition that may warrant safety treatment.

Area Rainfall The average rainfall over an area, usually as derived from or discussed in contrast with point rainfall.

Area Sampling A statistical technique that divides a geographical region into smaller areas and uses random selection to determine specific areas or respondents to be interviewed.

Arm A cantilevered support, either horizontal or sloped.

Armor Artificial surfacing of channel beds, banks, or embankment slopes to resist stream bed scour and/or lateral bank erosion.

Armoring 1) A natural process whereby an erosion-resistant layer of relatively large particles is formed on a channel bank and/or channel bed due to the removal of finer particles by streamflow. 2) The placement of a covering on a channel bank and/or channel bed to prevent erosion.

Arrow Board/Panel A lighted board with moving or flashing arrows to direct traffic out of a lane or away from a hazard or work zone.

Arterial Highway A highway primarily for through traffic, usually on a continuous route.

Arterial Service Generally long bus routes that operate on surface arterial streets.

Artesian Groundwater that is under sufficient hydrostatic head to rise above the aquifer containing it. A flowing artesian condition occurs when water flows up to the surface through a drill hole.

Artesian Well A well tapping an aquifer that is bounded above and below by impermeable beds or beds of distinctly

lower permeability than the aquifer itself. The water will rise in the well above the point of initial penetration (above the bottom of the confining or impermeable layer overlying the aquifer). This term includes both flowing and nonflowing wells.

Articulated Bus A bus that has the rear portion flexible but permanently connected to the forward portion with no interior barrier to movement between the two parts; the passenger capacity is about 60 to 80 persons seated, with room for many standees, and length is from 18 to 21 meters (59 to 68.9 feet).

Articulated Car A rail car that consists of two or more full-sized units that are free to swivel and whose inner ends are carried on a common center truck and connected with a flexible joint.

Aspect Ratio The ratio of the length to the width of a rectangle.

Asset Management 1) A systematic process of operating, maintaining, and upgrading transportation assets cost-effectively by combining engineering practices and analysis with sound business practice and economic theory. 2) The management of the physical infrastructure such as pavements, bridges, and airports, as well as human resources (personnel and knowledge), equipment and materials, and other items of value such as financial capabilities, right-of-way, data, computer systems, methods, technologies, and partners.

Assignable Cause 1) A factor that contributes a sufficient variation, other than that due to chance, in the quality characteristics of a material, product, or process, to justify time and money required for its identification. 2) A relatively large source of variation, usually due to error or process change, that can be detected by statistical methods and corrected within economic limits.



Assignment Sheet In bus operations, a comprehensive list showing all regularly scheduled timetable runs and the operator for each.

At-Grade Intersection An intersection where all roadways join or cross at the same level.

At Jacking At the time of tensioning, the prestressing tendons.

Attachment The structural support external to the surfaces of the embedment that transmits loads to the embedment or the structure.

Attitude The position of an airplane, considering the inclination of its axes in relation to the horizon.

Attractions The number of daily trips to or from a zone generated by present or future land uses in that zone; it normally refers to the non-home ends of a trip.

At Transfer Immediately after the transfer of prestressing force to the concrete.

Attribute Acceptance Plan A statistical acceptance procedure where the acceptability of a lot of material or construction is evaluated by noting (a) the presence or absence of some characteristic or attribute in each of the units or samples in the group under consideration and (b) counting how many units do or do not possess this characteristic.

Attrition Arrangement In labor, the policy of relying on voluntary resignations, deaths, and retirements, rather than firings or layoffs, to reduce a company's labor force.

Augmented Flow The increased volume of water entering a channel or allowed to run overland as waste waters from the diversion of surface flow or as water from another stream or watershed, or from waters withdrawn or collected upstream and released after use.

Auto-Free Zone (AFZ) An area, usually within a densely developed corridor, where all autos or all motorized vehicles are banned.

Autogyro An airplane that derives lift from airfoils that rotate without engine power.

Automated Guideway Transit (AGT) A transportation system in which automated, driverless vehicles operate on fixed guideways with exclusive right-of-way.

Automatic Block Signal Control System A system in which signals are actuated automatically by a train, broken rail, open switch, car standing on a turnout that is fouling the main track, or some other shunting of the signal circuit.

Automatic Direction Finder (ADF) A radio device composed of a radio receiver, sense and directional (loop) antennas, and a bearing indicator that uses radio transmissions from ground stations to automatically indicate the bearing of an aircraft relative to the ground transmitter.

Automatic Fare Collection (AFC) The controls and equipment that automatically admit passengers on insertion of the correct fare in coins, tokens, tickets, or farecards; it may include special equipment for transporting and counting revenues.

Automatic Progression 1) A labor policy by which rates of pay of workers in jobs with estimated rate ranges are increased automatically at fixed intervals. 2) Automatic movement from a trainee pay rate to the pay rate of a job classification or to the minimum level of a rate range.

Automatic Terminal Information Service (ATIS) A continuous broadcast of recorded noncontrol information in selected areas of high terminal activity. It provides information such as ceiling, visibility, wind, altimeter, instrument approach, and runways in use. This data is broadcast over the voice feature of VOR, VOT, or

ILS located at or near the airport, or by a discrete VHF tower frequency.

Automatic Train Control (ATC) A system for automatically controlling train movement, enforcing train safety, and directing train operations by computer.

Automatic Vehicle Classification (AVC) The use of electronic technology to provide a readable electronic record of vehicle type and contents.

Automatic Vehicle Identification (AVI) The use of overhead or roadside detectors to read and identify vehicles equipped with a transponder or similar device. Used for electronic toll collection and traffic management.

Automatic Vehicle Location (AVL) The use of advanced technologies such as global positioning systems (GPS) to monitor the location and movement of vehicles.

Auxiliary Lane The portion of the roadway adjoining the through traveled way for parking, speed change, turning, storage for turning, weaving, truck climbing, or for other purposes supplementary to through traffic movement.

Average Daily Traffic (ADT) The total volume during a given time period, in whole days, greater than one day and less than one year, divided by the number of days in the time period.

Average Fare The arithmetic average of all fares paid by all passengers, including those who received special or reduced fares.

Average (Mean) Stress One half of the sum of the maximum and minimum stress.

Average Running Speed The sum of the distances traveled by vehicles on a highway section during a specific time period divided by the sum of their running times.

Average Spot Speed The arithmetic mean of the speeds of all traffic, or component thereof, at a specified point.

Average Travel Speed For all traffic, or a component thereof, the summation of distances divided by the summation of overall travel times.

Average Vehicle Occupancy (AVO) The number of people divided by the number of vehicles (including buses) traveling past a specific point over a given time period.

Average Velocity The velocity at a given cross section determined by dividing the total discharge at that point by the total cross-section area.

Avulsion A sudden change in channel course that occurs when a stream suddenly breaks through its banks, usually associated with a large flood or a catastrophic flood or event.

Award The acceptance by the contracting agency of a proposal.

Axle A supporting shaft or member on, or with which, a wheel or set of wheels revolves. The number of vehicle axles is commonly counted in pairs sharing the same axis. For example, a car is classified as having only two axles.

Axle Correction Factor An adjustment of vehicle axle sensor summarized base data for incidence of multiple-axle vehicles.

Axle Count The total number of a vehicle's axles having wheels that are in contact with the pavement.

Axle Group One or more adjacent axles, usually sharing a common connection to the body of a vehicle, that jointly support a portion of the vehicle's weight.

Axle-Group Load The sum of all tire loads on a group of adjacent axles; a portion of the gross-vehicle weight.

Axle Load 1) The total load transmitted by all wheels, the centers of which may be included between two parallel transverse vertical planes 1 m (3.3 ft) apart, extending across the full width of the vehicle. 2) The



sum of all tire loads on an axle. An axle is comprised of two or more wheel assemblies lying approximately on a common axis oriented transversely to the nominal direction of motion of the vehicle.

Axle Spacing For each axle, the horizontal distance between the center of that axle and that of the preceding axle; the axle spacing for the vehicle's front axle is assumed to be zero.

Axle Unit A single axle or tandem axle.

B

Backfill 1) Material used to replace, or the act of replacing, material removed during construction. 2) Material placed, or the act of placing material, adjacent to structures.

Back Haul To haul a shipment in a car that otherwise would return empty to be loaded for another trip.

Backwater The increase in water-surface elevation induced upstream from such things as a bridge, culvert, dike, dam, another stream at a higher stage, or other similar structures or conditions that obstruct or constrict a channel relative to the elevation occurring under natural channel and flood plain conditions.

Backwater Ratio The ratio of the amount of backwater created by a bridge constriction to the total drop through the constriction.

Baffle 1) A structure constructed on the bed of a stream or drainage facility to deflect or disturb the flow. 2) Vanes or guides, a grid, grating, or similar device placed in a conduit to check eddy currents below them, and effect a more uniform distribution of velocities. 3) A device used in a culvert or similar structure to facilitate fish passage.

Ballast 1) Material placed on a track bed to hold the track in line and elevation; it

consists of hard particles that are stable, easily tamped, permeable, and resistant to plant growth. 2) Water or other material deposited in the hold or tanks in a vessel to provide sufficient immersion in the water.

Bandwidth The range of frequencies a transmission line or channel can carry; the higher the frequency the higher the bandwidth and the greater the information-carrying capacity of a channel.

Bank The side slopes or margins of a channel between which the stream or river is normally confined. More formally, the lateral boundaries of a channel or stream, as indicated by a scarp, or on the inside of bends, by the streamward edge of permanent vegetative growth.

Bankfull Discharge The discharge that, on the average, fills a channel to the point of overflowing. Commonly considered as the mean annual discharge or two- to three-year discharge in a channel that has been relatively stable for a number of years without the occurrence of a large, bank-destroying flood. Sometimes used as the dominant discharge.

Bankfull Stage Stage at which a stream first overflows its natural banks.

Bar An elongated deposit of alluvium, not permanently vegetated, within or along the side of a channel.

Barge A nonmotorized flat-bottomed vessel used to haul bulk commodities on the inland waterway system and, to an extent, on the Great Lakes and domestic ocean routes.

Barrel Width Commonly, the inside, horizontal extent of a drainage facility.

Barricade A device that provides a visual indicator of a hazardous location or the desired path a motorist should take. It is not intended to contain or redirect an errant vehicle.

Bascule Bridge type that rotates in the vertical plane, and one end is counterbalanced by the other on the principle of a seesaw or by weights. Rotation is about a horizontal axis that may or may not be fixed.

Base Course The layer or layers of specified or selected material of designed thickness placed on a subbase or subgrade to support a surface course.

Base Flood A flood (or storm) or reservoir pool elevation having a one percent chance of being exceeded in a one-year period; commonly termed a 100-year event.

Base Flood Plain The surface area flooded by the base flood.

Base Flow In the U.S. Geological Survey's annual reports on surface water supply, the discharge above which peak discharge data are published.

Base Leg A flight path at right angles to the landing runway off its approach end and extending from the downwind leg to the intersection of the extended runway centerline.

Base Period (Off-Peak) The time of day during which vehicle requirements and schedules are not influenced by peak-period demands; transit riding is fairly constant and low to moderate in volume; and service is scheduled at constant intervals.

Base Period Fleet The number of buses required to maintain base period schedules.

Base Period Service The level of vehicle operations during the base period.

Base Rate The amount of pay for work performed during a unit of time exclusive of overtime or incentive earnings (under incentive systems, it may refer to the amount paid for an established task at normal work levels).

Base Resistance The resistance specified for wet use conditions and two-month load

duration for wood products treated with preservatives.

Base Run A regular transit run that has no unpaid breaks and is normally eight hours in duration. Also referred to as Straight Run.

Base Runoff Sustained or fair weather runoff. In most streams, base runoff is composed largely of groundwater effluent.

Base Time The scheduled time between transit vehicle trips during an off-peak (usually mid-day) period.

Basic Fare The one zone fare with no discounts, i.e., what it costs an adult paying a single cash fare to take a one-zone ride.

Basic Wind Speed (V) The three-second-gust wind speed at 10 m (32.8 ft) above the ground associated with a 50-year mean recurrence interval.

Batch Plant The major components of a batch plant are the cold-feed system, asphalt cement supply system, aggregate dryer, mixing tower, and emission-control system.

Batter The deformation of the surface of the head of the rail in the immediate vicinity of the end.

Batter Pile A pile driven at an angle inclined to the vertical to provide higher resistance to lateral loads.

“B” Car A motive-powered unit designed primarily for use in combination with an “A” unit for the purpose of increasing power, but not equipped for use as the leading unit for full observation of the propulsion power and brake applications for the train; it is normally equipped with a single control station to permit independent movement of the unit itself.

Beam 1) A structural member whose primary function is to transmit loads to the support primarily through flexure and shear. 2) The maximum width of a ship or barge.

Bearing A support element transferring loads from the superstructure to the



substructure while permitting limited movement capability.

Bearing Joint A deck joint provided at bearings and other deck supports to facilitate horizontal translation and rotation of abutting structural elements. It may or may not provide for differential vertical translation of these elements.

Bearing Pile A pile whose purpose is to carry axial load through friction or point bearing.

Bed 1) The bottom of a channel. 2) The part of a channel not permanently vegetated that is bounded by banks and over which water normally flows.

Bedding Composition and shaping of soil or other suitable material to support a pipe, conduit, casing, or utility tunnel.

Bed Layer A flow layer, several grain diameters thick (usually two) immediately above the bed.

Bed Load 1) Sediment that is transported in a stream by rolling, sliding, or skipping (saltating) along the bed or very close to it; considered to be within the bed layer. 2) The quantity of silt, sand, gravel, or other detritus rolled along the bed of a stream, often expressed as weight or volume per time.

Bedrock The scour-resistant material underlying erodible soils and overlying the mantle rock, ranging from surface exposure to depths of several hundred kilometers.

Bed Slope The longitudinal inclination of a channel bottom.

Belt Line Railroad A short railroad operating within or around a city, usually connecting several railroads to make interchange of cars easier and faster.

Bendway 1) A point of distinct curvature in a stream, river, or channel where the bankfull flow changes direction. 2) Reach of sharpest curvature in a sinuous channel.

Bendway Scour That component of natural scour consisting of the removal of material from the channel bed or banks that occurs along the concave (outside) bank in a channel bendway located, generally, across the channel from any point bar.

Benefit-Cost Ratio Comparison of the benefits generated by the project to the costs incurred in the project over the period of analysis.

Bent A type of pier consisting of two or more columns or column-like components connected at their top ends by a cap, strut, or other component holding them in their correct positions.

Berm 1) A narrow shelf or ledge; also a form of dike. A more detailed description might be (a) the space left between the upper edge of a cut and the toe of an embankment or (b) a horizontal strip or shelf built into an embankment to break the continuity of an otherwise long slope. Also may be the top surface or plane of a shoulder, ledge, or bank constructed in connection with the road. 2) A raised, elongated area of earth intended to direct the flow of water, to visually screen, to redirect out-of-control vehicles, or to reduce noise levels by shielding the highway; may also be a horizontal ledge in an earthbank to increase stability of a steep slope. 3) Earthwork used to redirect or slow down impinging vehicles or vessels and to stabilize fill, embankment, or soft ground and cut slopes.

Berth 1) The water area, at the waterfront edge of a wharf, reserved for a vessel. 2) A position for a bus to pick up and discharge passengers, including curb bus stops and other types of boarding and discharge facilities.

Best Angle-of-Climb Airspeed The airspeed that results in the greatest increase in altitude with respect to the distance traveled over the ground.



Best Management Practices

(BMP) Erosion and pollution control practices employed during construction to avoid or mitigate damage or potential damage from the contamination or pollution of surface waters or wetlands from a highway action.

Best Rate-of-Climb Airspeed The airspeed that results in the greatest increase in altitude in a unit of time.

Best-Value Selection A procurement process where price and qualitative factors are considered in the evaluation and selection process.

Beta Ratio A measure of the effectiveness of filters.

Betterment The improvements, adjustments, or additions to a highway that more than restore it to its former good condition and that result in better traffic serviceability without major changes in its original construction.

Bias 1) An error, constant in direction, that causes a measurement, or the mean of a distribution of measurements, to be offset from the true population mean. 2) An error, constant in direction, common to each of a set of values, that cannot be eliminated by any process of averaging.

Bicycle A vehicle propelled solely by human power upon which any person may ride, having two tandem wheels, except scooters and similar devices.

Bicycle Facilities Improvements and provisions made by public agencies to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically designated for bicycle use.

Bicycle Lane or Bike Lane A portion of a roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicycles.

Bicycle Route System A system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways.

Bidder An individual, partnership, firm, corporation, or any acceptable combination thereof, or joint venture, submitting a proposal.

Bid Documentation All writings, working papers, computer printouts, charts, and data compilations containing or reflecting bidder's information, data, or calculations used to determine the bid proposal.

Bid Documentation Escrow Preserving successful bid documents to be used in the event of a claim(s) or litigation between the bidder and the agency.

Bikeway Any road, street, path, or way that in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bi-Level Rail Car A rail car that is used principally as a commuter rail car and that contains two levels of seating throughout the length of the car.

Bill of Lading A document that serves as a receipt for goods shipped and provides the terms of the contract between the shipper and carrier for transportation of goods between stated points at a specified charge.

Binder Course A plant mix of graded aggregate (generally open graded) and bituminous material that constitutes the lower layer of the surface course.

Binding Arbitration Arbitration with a final and binding award.

Bituminous Bleeding Excess bitumen on the surface of the pavement, usually found in the wheel paths.

Bituminous Concrete A designed combination of dense graded mineral aggregate filler and bituminous cement mixed in a central plant, laid and compacted while hot.

Bituminous Macadam A macadam bound with bituminous material.

Bituminous Pavement A pavement comprising an upper layer or layers of aggregate mixed with a bituminous binder (such as asphalt, coal tars, and natural tars) and surface treatments such as chip seals, slurry seals, sand seals, and cape seals are also included.

Blanket 1) Material covering all or a portion of a channel bank to prevent erosion. 2) Stream bank surface covering, usually impermeable, designed to serve as protection against erosion.

Blast Fence A barrier that is used to direct or dissipate jet or propeller blast.

Bleeding The flow of asphalt cement to the top of the mix surface under the action of traffic loading.

Block 1) A length of track or defined limits on which the movement of trains is governed by block signals, cab signals, or both. 2) A group of cars classified for movement to the same yard or terminal. 3) The operating schedule of a transit vehicle (from garage to garage), including scheduled and deadhead service.

Block Cracking A pattern of cracks that divide the pavement into approximately rectangular pieces, ranging in size from approximately 0.1 to 10 m² (1 to 100 ft²).

Block Shear Rupture The failure of a bolted web connection of coped beams or any tension connection by the tearing out of a portion of a plate along the perimeter of the connecting bolts.

Block Signal A fixed signal at the entrance of a block to govern trains and engines entering and using that block.

Blowup Localized upward movement of the pavement surface at transverse joints or cracks, often accompanied by shattering of the concrete in that area.

Bolster A spacer between a metal deck and a beam.

Bolt Assembly The bolt, nut(s), and washer(s).

Bonded Tendon A tendon that is bonded to the concrete, either directly or by means of grouting.

Boring The operation by which large carriers or casings are jacked through oversize bores. The bores are carved progressively ahead of the leading edge of the advancing pipe as soil is mucked back through the pipe.

Borrow Suitable material from sources outside the roadway prism, used primarily for embankments.

Bottleneck A road element on which traffic demand exceeds capacity; specifically, interference that limits or reduces the roadway capacity in a single area.

Boundary Conditions Structural restraint characteristics regarding the support for and/or the continuity between structural models.

Bow The front end of a vessel.

Box A rail car with roof and enclosed sides with doors placed in sides or sides and end. Used for general service and especially for lading that must be protected from the weather.

Box Section A concrete pipe with a rectangular cross section.

Bracing Member A member intended to provide stability to another member or part thereof, against lateral force.



Brackish Water Water in which the total alkali chlorides calculated as sodium chloride are more than 0.10 percent based on total solids. Also referred to as Sea Water.

Brake Check Area A turnout or pull-off area designed to provide an opportunity for a driver to inspect equipment on the vehicle and to ensure that brakes are not overheated at the beginning of a descent.

Braking Torque The negatively directed wheel torque.

Branchline A line of track branching off from the main line to provide service to an area not served directly by the main line itself.

Breakaway A design feature that allows a device such as a sign, luminaire, or traffic-signal support to yield or separate upon impact. The release mechanism may be a slip plane, plastic hinges, fracture elements, or a combination of these.

Break Bulk Point A point at which a portion or all of the contents of a car are unloaded and distributed.

Breakdown Torque The maximum torque the motor will develop without an abrupt drop in speed. Applies only to AC induction-type motors.

Break-Even Analysis A comparison of different alternatives by allowing one factor to change until a point of equality is reached between alternatives.

Breakwater An engineering structure affording shelter from wave action. Also referred to as Mole or Jetty.

Bridge 1) A structure spanning and providing passage over a river, chasm, road, or railroad. 2) The superstructure above the deck of a ship that gives clear view from which the ship can be maneuvered and navigated.

Bridge Approach Railing A roadside guardrail system preceding the structure and attached to the bridge rail system that is intended to prevent a vehicle from impacting the end of the bridge railing or parapet.

Bridge Capacity The sum total of the various loads that a bridge can safely carry in its existing condition or state.

Bridge Length The greater dimension of a structure measured along the center of the roadway between backs of abutment backwalls or between ends of the bridge floor.

Bridge Maintenance Work performed to keep a facility in its current condition, including all activity in a facility's life that does not require a redesign and development project.

Bridge Opening The total cross-section area beneath a bridge superstructure that is available for the conveyance of water.

Bridge Railing A longitudinal barrier whose primary function is to prevent an errant vehicle from going over the side of the bridge structure.

Bridge Roadway Width The clear width of a structure measured at right angles to the center of the roadway between the bottom of curbs or, if curbs are not used, between the inner faces of the parapet or railing.

Bridge Traffic Revenue traffic, moving in line haul, received from a foreign carrier and delivered to a connecting carrier. Also referred to as Overhead Traffic or Intermediate Traffic.

Bridge Waterway The area of a bridge opening available for flow as measured below a specified stage and normal to the principal direction of flow.

Broad A rail track gauge that is more than 1.44 m (4 ft 8.5 in.) wide.

Broken Back Culvert A culvert having two or more longitudinal structure profile slopes.

Broken Base Any break in the base of a rail.

Brooming Roughing and cleaning the surface of as-shot material prior to application of additional layers.

Buffer Strip An area providing a degree of protection from certain highway or transportation effects for adjacent private property or protected natural resources.

Bulk 1) A commodity that can be poured, scooped, or shoveled, being of such size that it cannot be handled piece by piece, such as coal, ore, sand, and grain. 2) A loose mass that is loaded or unloaded without regard to order and is restrained during transportation solely by the bottom, sides, and bulkhead of the carrying vessel.

Bulkhead 1) A partition separating parts of a ship between decks. 2) A steep or vertical wall that supports a natural or artificial embankment and may also serve as a protective measure against bank erosion.

Bulking Increase in volume of sand in a moist condition over the same quantity dry.

Bunker The space in which fuel for the vessel is stored.

Buoy A floating navigation aid anchored to the bottom to mark a channel or to point out the position of something beneath the surface of the water.

Bursting Force Tensile forces in the concrete in the vicinity of the transfer or anchorage of prestressing forces.

Bus A self-propelled rubber-tired vehicle designed to carry a substantial number of passengers, commonly operated on streets and highways. Also referred to as Motor Bus.

Bus Bay (1) An area designated for a bus to pull-out of the traffic lane for passengers unloading and loading; (2) A bus berthing

area in a facility such as a transit center or rail station.

Bus Lane A lane of roadway intended primarily for use by buses, either all day or during specified periods. Also known as Transit Priority Lane, Bus Priority Lane.

Buspool The chartering of commuter (subscription) buses by groups for transportation to work.

Bus Priority System Techniques and strategies to improve the movement of buses in heavily traveled and congested corridors, usually on arterial streets, which may include priority at traffic signals, phasing and coordinating traffic signals, and other treatments. Also referred to as Bus Preferential Treatment.

Bus Rapid Transit (BRT) Bus service operating on exclusive transitways, HOV lanes, expressways, or ordinary streets that combines intelligent transportation systems technology, priority for transit, cleaner and quieter vehicles, rapid and convenient fare collection, and integration with land use policy.

Bus Shelter Usually located at high loading points, shelters may provide seating and protection from the weather for patrons.

Bus Stop A waiting, boarding, and alighting area usually designated by distinctive signs and by curbs or pavement markings.

Busway A special roadway designed for exclusive use by buses. It may be constructed at, above, or below grade and may be located in separate rights-of-way or within highway corridors.

Buyer's Risk The probability of accepting poor or unsuitable material or construction as a result of using a particular acceptance plan. Also referred to as Risk of a Type II Error.

Bypass An arterial highway that permits traffic to avoid part or all of a congested

Bypass Flow Flow that bypasses an inlet on grade and is carried in the street or channel to the next inlet downstream, sometimes termed carryover.



Cab 1) The space in a locomotive or rail car that contains the operating controls and shelter and seats for the engine crew. 2) A taxicab.

Cable-Stayed Bridge A bridge in which the superstructure is directly supported by cables or stays, passing over or attached to towers located at the main piers.

Cabotage Laws Cabotage originates from the French *caboter* meaning to sail coastwise. These laws are common among most major trading nations. The laws respect trade or transportation in coastal waters or airspace between two points within the same country.

Cage An assembled unit of steel reinforcement consisting of circumferential and longitudinal bars or wires.

Caisson A chamber, usually sunk by excavating from within, for the purpose of gaining access to the subsurface geology selected to support a structure's substructure.

Calendar Day Any day shown on the calendar, beginning and ending at midnight.

Calibration The process of comparing model parameters with real-world data to ensure that the model realistically represents the traffic environment. The objective is to minimize the discrepancy between model results and measurements or observations.

Call Box A telephone device placed on the roadside to allow emergency calls by stranded motorists.

Camber The condition of the horizontal support being arched.

Camel Small floating structure at dockside to maintain space between the ship and pier.

Canal A constructed open conduit or channel for the conveyance of irrigation water that is distinguished from a ditch or lateral by its larger size.

Cant The inward inclination of a rail, effected by the use of inclined-surface tie plates, usually expressed as a rate of inclination, such as 1 in 40.

Cantilever A support, either horizontal or vertical, supported at one end only.

Cap 1) The topmost piece of a pier or a pile bent serving to distribute the loads upon the columns or piles and to hold them in their proper positions. 2) A rigid structural element surmounting a pipe, conduit, casing, or utility tunnel.

Captive A person limited by circumstance to use one mode of transportation.

Captive Transit Rider A person who does not have immediate access to private transportation or who otherwise must use public transportation in order to travel. Refers also to Transit Dependent.

Car Float A large flat-bottomed boat equipped with tracks on which railroad cars are moved on water.

Carload A rate that applies to a minimum quantity of freight designated as a carload.

Carpool Any vehicle (usually a private automobile) or arrangement in which two or more occupants, including the driver, share the use, cost, or both, of traveling between fixed points on a regular basis.

Carrier 1) Term usually applied to private for-profit operations of transportation services. 2) A pipe directly enclosing a transmitted fluid (liquid, gas, or slurry). 3) An electric or communication cable, wire, or line.

Car Hire A charge made by one transportation line against another for the



use of its cars. The charge is based on a fixed rate per hour plus exchange.

Cargo The goods, commodities, or lading transported in a vessel, railcar, truck, or airplane.

Cargo Crane A crane especially adapted to the transferring of cargo between a vessel's hold and a wharf.

Car Sharing A system designed to facilitate short-range urban trips at modest speed through the use of a fleet of small electric automobiles available at self-service stands every few blocks for rental by the trip to accredited drivers.

Casing A larger pipe, conduit, or duct enclosing a carrier.

Cast-in-Place Concrete Concrete placed in its final location in the structure while still in a plastic state.

Catch Basin A structure, sometimes with a sump, for inletting drainage from such places as a gutter or median and discharging the water through a conduit.

Catenary 1) The system that consists of the overhead conductor (trolley wire) that supplies electric power to vehicles through contact with a pantograph or trolley current-collecting device (trolley pole). 2) The conductor's supporting structure of wires suspended between poles and bridges. 3) The curve obtained by suspending a uniform rope or cable between two points.

Causeway 1) A bridge or raised way constructed over marshy land or water. It may be either an earth-fill or bridge-type structure. 2) Rock or earth embankment carrying a roadway across water.

“C” Car A self-propelled rail car that does not have a control cab (may also refer to a double-ended car).

Ceiling The height above the ground or water of the lowest layer of clouds or obscuring phenomena that is reported as

broken, overcast, or obscuration and not classified as thin or partial.

Ceilometer An electronic device that measures the height of cloud bases.

Centerline A line indicating the division of the roadway between traffic moving in opposite directions.

Centerline Turning Radius (CTR) The turning radius of the centerline of the front axle of a vehicle.

Central Island The area of the roundabout surrounded by the circulating roadway.

Centralized Traffic Control (CTC) A traffic-control system whereby train movements are directed through the remote operation of switches and signals from a central control point.

Changeable Message Sign A sign that is capable of displaying more than one message and changeable manually, by remote control, or by automatic control, referred to as Dynamic Message Sign in the National Intelligent Transportation System (ITS) Architecture and also commonly referred to as Variable Message Sign.

Change Order A written order to the contractor covering changes in the plans or quantities, or both, within the scope of the contract, and establishing the basis of payment and time adjustments for the work affected by the changes.

Channel 1) The bed and banks that confine the flow of surface water in a natural stream or artificial channel. 2) The course where a stream of water runs or the closed course or conduit through which water runs, such as a pipe. 3) An open conduit, either naturally or artificially created, that periodically or continuously contains moving water or that forms a connecting link between two bodies of water.

Channel Coefficient A roughness factor in the Kutter, Manning, Bazin, and other formulas expressing the channel's resistance to flow.

channel as it affects the friction slope of water flowing therein.

Channel Contraction The degree of contraction imposed by a bridge-type constriction on the river channel for a given discharge.

Channel Diversion 1) The taking of water from a stream or other body of water into a canal, pipe, or other conduit. 2) The removal of all or a portion of the flow from a natural or artificial (canal, ditch, field ditch, or lateral) channel.

Channelization 1) Straightening, deepening, or both, of a channel by such means as artificial cutoffs, flow-control measures, river training, or diversion of flow into an artificial channel. 2) The separation or regulation of conflicting traffic movements into definite paths of travel by traffic islands or pavement markings to facilitate the orderly movements of both vehicles and pedestrians.

Channelized Intersection An at-grade intersection in which traffic is directed into definite paths by islands.

Channel Migration A change in the position of a channel by lateral erosion of one bank and the simultaneous accretion of the opposite bank. Systematic channel shifting in the direction of flow.

Channel Pattern The aspect of a stream channel in plan view, with particular reference to such things as the degree of sinuosity, braiding, or anabranching.

Channel Process Behavior of a channel with respect to channel migration, erosion, and sedimentation.

Channel Routing The process whereby a peak flow, its associated streamflow hydrograph, or both, is mathematically transposed to another site downstream, taking into account the effect of channel storage.

Channel Slope The fall per unit length along the channel centerline.

Charpy V-Notch Test The generally accepted measure of notch ductility or the ability to resist crack propagation under tensile stress.

Charter Bus Public transportation service on an exclusive basis, rendered in a vehicle that is licensed to render that service and engaged at a single price for the trip or period of time agreed on by the operating licensee, its agent, or the chauffeur, and the chartering organization or person.

Charter Service Transportation provided on a contractual basis at a fixed charge.

Check Dam A low dam or weir built across a channel to control water flow velocity and prevent erosion of the streambed.

Check Flood for Bridge Scour The flood resulting from storm, storm surge, tide, or combination thereof, having a flow rate in excess of the design flood for scour, but in no case a flood with a recurrence interval exceeding the typically used 500 years.

Checking Short transverse cracks, usually 25 to 75 mm (1 to 3 in.) in length and 25 to 75 mm (1 to 3 in.) apart, that occur in the surface of the hot mix asphalt (HMA) mat at some time during the compaction process.

Chemical Gauging A process of measuring the flow of water by ascertaining the resulting degree of dilution of a chemical solution of known saturation introduced at a known rate into the stream.

Chezy Formula An empirical formula for uniform flow expressing the relations among velocity of water, hydraulic radius, and friction slope.

Chirp Test The progressive application of brake torque required to produce the maximum value of longitudinal braking force that will occur prior to when

with subsequent brake release to prevent any wheel lockup (tire slide).

Circumferential

Reinforcement Reinforcement that is approximately perpendicular to the longitudinal axis of the concrete pipe or column.

Civil Action Action presenting an issue to be resolved under civil law, as distinguished from criminal law, or brought to establish or recover private and civil rights, redress for damage, or both a tort action.

Civil Law The system of jurisprudence established by a nation, state, or commonwealth peculiarly for itself; the division of law regulating ordinary private matters, as distinct from laws regulating criminal, political, or military matters.

Civil Law Doctrine or Rule A rule of law pertaining to the disposal of drainage waters under which the owner of higher land has the right or easement to dispose of the surplus or excess waters from his lands to lower lands, unobstructed by the owners thereof.

Class I A railroad having gross operating revenues of more than \$50 million annually, according to Interstate Commerce Commission (ICC) rules.

Class II A railroad having gross operating revenues of less than \$50 million but greater than \$10 million annually, according to ICC rules.

Class III A railroad having gross operating revenues of less than \$10 million annually, according to ICC rules.

Class 1 through 6 “Minimum” Federal Railroad Administration (FRA) Safety Standards for track covering such matters as speed limits, roadbed, track geometry, track structure, and inspections. Six classes of track are defined.

Class A Airspace Generally, that airspace from 5.5 km (18,000 ft) mean sea level

(MSL) up to and including flight level (FL) 600, including the airspace overlying the waters within 19 km (12 nautical miles) of the coast of the 48 contiguous states and Alaska; and designated international airspace beyond 19 km (12 nautical miles) of the coast of the 48 contiguous states and Alaska within areas of domestic radio navigational signal or air traffic control (ATC) radar coverage, and within which domestic procedures are applied.

Class B Airspace Generally, that airspace from the surface to 3 km (10,000 ft) MSL, surrounding the nation’s busiest airports in terms of IFR operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspace areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is clear of clouds.

Class C Airspace Generally, that airspace from the surface to 1.2 km (4,000 ft) above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C airspace is individually tailored, the airspace usually consists of 9 km (5 nautical miles) radius core surface area that extends from the surface up to 1.2 km (4,000 ft) above the airport elevation, and a 19 km (10 nautical miles) radius shelf area that extends from 370 m (1,200 ft) to 1.2 km (4,000 ft) above the airport elevation.

Class D Airspace Generally, that airspace from the surface to 760 m (2,500 ft) above

the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored, and when instrument procedures are published, the airspace will normally be designed to contain the procedures.

Class E Airspace Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace.

Class G Airspace That portion of the airspace that has not been designated as Class A, B, C, D, or E airspace (uncontrolled).

Classification Yard A yard in which rail cars are classified or grouped in accordance with requirements.

Clear Air Turbulence (CAT) Turbulence that occurs in clear air and is not associated with cloud formation, such as that associated with winds at low altitudes and with the jet stream at high altitudes.

Clearance 1) An unobstructed horizontal or vertical space. 2) Authorization to follow a specified flight outline. Clearances are issued by the control agency appropriate for the controlled area within which the flight will operate and are used to prevent collisions between aircraft. 3) Lateral distance from the edge of the traveled way to a roadside object or feature.

Clearance Interval The all-red traffic signal interval.

Clearance Time The time loss at a transit stop not including passenger dwell times. This parameter can be the minimum time between one transit vehicle leaving a stop and the following vehicle entering and can include any delay waiting for a sufficient gap in traffic to allow the transit vehicle to re-enter the travel lane.

Clear Distance of Bolts The distance between edges of adjacent bolt holes.

Clear End Distance of Bolts The distance between the edge of a bolt hole and the end of a member.

Clearing Removal of vegetation, structures, or other objects as an item of highway or transportation facility construction.

Clear Runout Area The area at the toe of a nonrecoverable slope available for safe use by an errant vehicle.

Clear Span The face-to-face distance between supporting components.

Clearway An imaginary plane centrally located about the centerline of the runway and under the control of airport authorities. The plane has a slope of no more than 1.25 percent, above which no object or terrain protrudes. It is used in calculating turbojet aircraft takeoff planning.

Clear Zone The roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, recoverable slope, nonrecoverable slope, clear runout area, or combination thereof. Although it is desirable to maximize the available clear zone, minimum width requirements are dependent on the traffic volumes and speeds and on the roadside geometry.

Climatic Year A continuous 12-month period during which a complete annual cycle occurs, arbitrarily selected for the presentation of data relative to hydrologic or meteorologic phenomena.

Closed-Circuit Television (CCTV) Video cameras that transmit signals to a defined, specific, limited set of monitors.

Closed Joint A deck joint intended to prevent the passage of debris through the joint and to safeguard pedestrian and cycle traffic.

Closed Loop A hydraulic circuit in which the pump output, after passing through an actuator, returns directly to the pump inlet.

Closed Rib A rib in an orthotropic deck consisting of a plate forming a trough, welded to the deck plate along both sides of the rib.

Closure A placement of cast-in-place concrete used to connect two or more previously cast portions of a structure.

Closure Joint A cast-in-place concrete fill between components to provide continuity.

Closure Rails The rails between the parts of any special trackwork layout, as the rails between the switch and the frog in a turnout; also the rails connecting the frogs of a crossing or of adjacent crossings, but not forming parts thereof.

Cloverleaf Interchange A four-leg interchange that employs loop ramps to accommodate left turns. A full cloverleaf has ramps for two turning movements in four quadrants; all other cloverleaves are referred to as Partial Cloverleaves.

Coefficient of Contraction The ratio of the smallest cross-section area of the flow after passing the constriction to the nominal cross-section area of the constriction.

Coefficient of Determination A measure of the linear relationship between a single dependent random variable or response and a known independent variable.

Coefficient of Discharge Ratio of observed-to-theoretical discharge. Also the coefficient used for orifice or other flow processes to estimate the discharge past a point or through a reach.

Coefficient of Skid Resistance The ratio of skid resistance to wheel load under stated conditions.

Coefficient of Variation The ratio of the variability of measurements about an average, expressed as the standard deviation

to the average about which the variation occurs, expressed as a percentage.

Cofferdam 1) A barrier built in the water so as to form an enclosure from which the water is pumped to permit free access to the area within. 2) A water-tight enclosure used for obtaining a dry foundation for bridges, piers, etc.; usually constructed of two rows of piles with clay packed between them, extending above the highwater mark, the water being pumped out so as to leave the enclosure dry.

Collapse Load That load that can be borne by a structural member or structure just before failure becomes apparent.

Collective Bargaining Negotiation between an employer and union representatives usually on wages, hours, and working conditions.

Collector A road of the intermediate functional category that serves a small town directly, connecting it to the arterial network.

Combination Point Bearing and Friction Pile Pile that derives its capacity from contributions of both point bearing developed at the pile tip and resistance mobilized along the embedded shaft.

Combination Railing A bicycle or pedestrian railing system added to a crashworthy bridge vehicular railing or barrier system.

Combined Footing A footing that supports more than one column.

Commercial Vehicle A vehicle with heavy-duty chassis and suspension designed for commercial freight or passenger haulage.

Commercial Vehicle Operations (CVO) The improvement of motor carrier safety and productivity by improving and targeting inspections, and reducing paperwork through electronic transactions,



weigh-in-motion, and automatic vehicle-location technologies.

Common Carrier A firm that holds itself out to the public to carry persons or property for hire.

Commonly Recognized Structural Elements (CoRe) Structural elements that are commonly used in highway bridge construction and encountered on bridge safety inspections.

Commuter A person who travels back and forth regularly between two points; often used in reference to a suburban resident who travels daily into the city to work. The term reverse commuting, on the other hand, is used to refer to someone who lives in the city but travels to a job in the suburbs.

Commuter Bus A bus that takes people from a place near their residences to a place near their work, usually in a trip with few or no stops, and usually traveling from a suburb to a city.

Commuter Rail Car A passenger-carrying rail car that is either self-propelled and equipped with a control cab or pulled by locomotive, and is designed to operate in multiple units or trains on railways that are part of a general railroad system.

Commuter Rail Service The portion of passenger railroad operations that carries passengers within urban areas but that differs from heavy (rapid) rail transit in that the passenger cars generally are heavier, the average trip lengths are usually longer, and the operations are generally run by railroad companies as part of their overall service.

Compaction The process by which the asphalt mix is compressed and reduced in volume.

Compact Section A section that is capable of developing the fully plastic stress distribution in flexure. The rotation capacity required to comply with analysis assumptions used in various articles of this

section is provided by satisfying various flange, web slenderness, and bracing requirements.

Compass Rose A circle graduated in degrees, marked on the ground at an airport. It is used in calibrating aircraft compass systems to magnetic north.

Compensable Interest A property right that, if acquired for highway purposes, would entitle the owner to receive just compensation.

Competitive Range A list of the most highly rated proposals based on the initial proposal rankings. It is based on the rating of each proposal against all evaluation criteria.

Completion Contractor completes all specified work satisfactorily and executes and delivers all required documents, certificates, and proofs of compliance.

Component 1) A constituent part of a structure. 2) Either a discrete element of a bridge or a combination of elements requiring individual design. 3) A structural element or combination of elements requiring individual design consideration.

Composite Action A condition in which two or more elements or components are made to act together by preventing relative movement at their interface.

Composite Beam A steel beam connected to a deck so that they respond to force effects as a unit.

Composite Column A column consisting of either structural shapes embedded in concrete or a steel tube filled with concrete designed to respond to force effects as a unit.

Composite Construction Concrete components or concrete and steel components interconnected to respond to force effects as a unit.

Composite Hydrograph A plot of mean daily discharges for a number of years of



record on a single-year time base for the purpose of showing the average occurrence of high and low flows.

Composite Pay Factor A multiplication factor, often expressed as a percentage, that considers two or more quality characteristics and is used to determine the contractor's final payment for a unit of work. Also referred to as Combined Pay Factor or Overall Pay Factor.

Compound Fissure A progressive fracture originating in a horizontal split head that runs up or down in the head of the rail and continues to grow until it turns at a right angle to the rail length.

Compressive Strength 1) The maximum resistance of a concrete specimen to axial compressive loading. 2) The specified resistance used in design calculations.

Compressive Test A test made on a concrete specimen to determine the compressive strength.

Compromise Joint (Bar) Joint bars designed to connect rails of different fishing height and section or rails of the same section but of different joint drillings.

Compromise Joint (Rail) A joint for uniting the abutting ends of contiguous rails of different sections or of rails of the same section but of different joint drillings.

Compromise Rail A relatively short rail, the two ends of which are of different sections, corresponding with the sections of the rails to which they are to be joined; it provides the transition from one section to a different rail section.

Concordant Flow Flows at different points in a river system that have the same recurrence interval or the same frequency of occurrence. It is most often applied to flood flows.

Concrete A homogeneous mixture of portland cement, aggregates, and water, and that may contain admixtures.

Concrete Barrier A railing system of reinforced concrete having a traffic face that usually, but not always, adopts some form of a safety shape.

Concrete Cover The specified minimum distance between the surface of the reinforcing bars, strands, post-tensioning ducts, anchorage, or other embedded items, and the surface of the concrete.

Concurrent Flow HOV Lane An HOV lane that is operated in the same direction as the adjacent mixed flow lanes, separated from the adjacent general-purpose freeway lanes by a standard lane stripe, painted buffer, or barrier.

Condemnation The process by which property is acquired for public purposes through legal proceedings under power of eminent domain.

Conductor 1) The operating employee who controls the doors on rail transit vehicles and who may have fare collecting duties. 2) The railroad employee in charge of a train and engine crew. 3) An energized wire that conducts electricity to a motor.

Conduit 1) An artificial or natural channel; usually a closed structure such as a pipe or culvert. A general term for any channel intended for the conveyance of water, whether open or closed; any container for flowing water. With highways, conduits are often considered as being a pipe, culvert, flume, channel, chute, or similar drainage facility. 2) An enclosed tubular casing, singular or multiple, for the protection of wires, cables, or lines, usually jacketed and often extended from manhole to manhole.

Confidence Interval An estimate of an interval in which the estimated parameter will lie with pre chosen probability (called the confidence level). The end points of a confidence interval are called confidence limits.

Confidence Level If a large number of confidence intervals are constructed,



the proportion of time that the estimated parameter will lie within the interval. (A confidence level is usually expressed as a percentage, typically ranging from 90 to 99 percent).

Confidence Limits Computed (statistical) values on both sides of an estimate of a parameter that show, for a specified probability, the range in which the true value of the parameter lies.

Confined Disposal Facility (CDF) A diked area to contain polluted materials dredged from waterways.

Confinement A condition where the disintegration of the concrete under compression is prevented by the development of lateral and/or circumferential forces such as may be provided by appropriate reinforcing, steel or composite tubes or similar devices.

Confluence The junction of two or more streams.

Conformal Index (CI) A measure of the dispersion of a series of results around a target or specified value, expressed as the square root of the quantity obtained by summing the squares of the deviations from the target value and dividing by the number of observations.

Congestion Pricing The policy of charging drivers a fee that varies with the level of traffic on a congested roadway. Congestion pricing is designed to allocate roadway space, a scarce resource, in a more economically feasible manner. Also referred to as congestion-relief tolling.

Conjugate Depth The alternate depth of flow involved with the hydraulic jump. Unlike the alternate depths for a given specific head, the conjugate depths for a hydraulic jump reflect the energy loss from the hydraulic jump.

Connectivity The ability of a transportation network to provide service

to the maximum number of origin-and-destination trip pairs through the optimal integration of routes, schedules, fare structures, information systems, and modal transfer facilities.

Consequence Assessment Study that identifies assets that, if attacked, produce the greatest risks for undesirable outcomes given a specific set of circumstances and conditions.

Consequential Damages Loss in value of a parcel, no portion of which is acquired, resulting from a highway improvement.

Consignee Persons or firm to whom shipment is destined.

Consignor Persons or firm in whose name cars are ordered or who furnishes forwarding directions, or both.

Consist The makeup or composition (number and specific identity) of a train of vehicles.

Consistent Estimator A statistic whose standard error becomes smaller as the sample size increases. [An unbiased estimator is not necessarily a consistent estimator, and a consistent estimator is not necessarily an unbiased estimator. For example, the sample root-mean-square variance (RMS^2) is a consistent estimator of the population variance, but it is not an unbiased estimator.]

Constant Amplitude Fatigue

Threshold The nominal stress range below which a particular detail can withstand an infinite number of repetitions without fatigue failure.

Constriction 1) A compressed or constricted section or reach of a channel that may be a natural condition or one produced by raising the bottom (as a sill or dam) or contracting the width (as a highway embankment on a flood plain), or both. 2) A control section, such as a bridge crossing, channel reach, sill, or dam, with



limited flow capacity in which the discharge is related to the upstream water surface elevation.

Construction The supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a highway, including locating, surveying, and mapping (including the establishment of temporary and permanent geodetic markers in accordance with specifications of the National Oceanic and Atmospheric Administration in the Department of Commerce). The term includes resurfacing, restoration, and rehabilitation, acquisition of rights-of-way, relocation assistance, elimination of hazards of railway grade crossing, elimination of roadside obstacles, acquisition of replacement housing sites, acquisition and rehabilitation, relocation and construction of replacement housing, and improvements that directly facilitate and control traffic flow, such as grade separation of intersections, widening of lanes, channelization of traffic, traffic control systems, and passenger loading and unloading areas. The term also includes capital improvements that directly facilitate an effective vehicle-weight enforcement program, such as scales (fixed and portable), scale pits, scale installation, and scale houses, and also includes costs incurred by the state in performing Federal-aid project-related audits that directly benefit the Federal-aid highway program.

Construction Capital A nonrecurring cost involved in the construction of a transportation system, including fixed facilities, roadways, yards, garages, power distribution and control facilities, stations and access facilities, station parking facilities, and the associated financing charges and administrative design costs.

Construction Joint 1) A joint made necessary by a prolonged interruption in the placing of concrete. 2) A temporary joint used to permit sequential construction. 3) A

boundary separating sections of a concrete deck and generally watertight because of the chemical bonding of the newer concrete section to the previous section when the concrete placement is resumed.

Construction Phase The activities associated with the administration of a contract for specified services and physical infrastructure. The construction phase includes change management, assurance that safety and associated impacts to the traveling public are mitigated, payment for work completed, documentation of physically constructed elements, and certification and documentation of quality.

Constructive A car consigned or ordered to a private track, an industrial interchange track, or other-than-public delivery track. It cannot be actually placed because of a condition attributable to the consignor or consignee. The car will be held at destination, or if it cannot reasonably be accommodated there, at an available hold point, and notice should be sent or given the consignor or consignee that the car is held and that this railroad is unable to effect placement.

Container A sealed metal box, generally measuring 2.4 m (8 ft) in width, 2.4 m (8 ft) in height, and with lengths varying from 6 to 16 m (20 to 53 ft), used interchangeably among modes for transporting cargoes.

Container Freight Station (CFS) A warehouse-type building constructed at a container terminal for the purpose of packing outbound containers, unpacking inbound containers, and for receipt and distribution of less-than-truckload cargoes.

Context Sensitive Design (CSD) or Context Sensitive Solutions (CSS) A collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources.

while maintaining safety and mobility. CSD/CSS is an approach that considers the total context within which a transportation improvement project will exist.

Contingency (also Allowance, Reserve) A markup applied to account for substantial uncertainties in quantities, unit costs, and the possibility of currently unforeseen risk events related to quantities, work elements, or other project requirements.

Continuity In bridge decks, both structural continuity and the ability to prevent water penetration without the assistance of nonstructural elements.

Continuous Inductive Train Control A locomotive or self-propelled car apparatus that is constantly in operative relation with the track circuit and is immediately responsive to a change in the character of the current flowing in the track circuit.

Continuously Reinforced Concrete Pavement (CRCP) Portland cement concrete pavement with sufficient longitudinal steel reinforcement to control transverse crack spacing and openings in lieu of transverse contraction joints for accommodating concrete volume changes and load transfer.

Continuous Welded Rail (CWR) A track that has welded joints that provide a smoother running surface and ride than standard (unwelded) rail.

Contour Line A line (as on a map) connecting points of equal elevation on a land surface.

Contract The written agreement between the contracting agency and the contractor setting forth the obligations of the parties thereunder for the performance of the prescribed work.

Contract Bond The approved form of security, executed by the contractor and his surety or sureties, guaranteeing complete execution of the contract and

all supplemental agreements pertaining thereto and the payment of all legal debts pertaining to the construction of the project.

Contract Carrier A carrier transporting goods for one or more concerns under contract for compensation.

Contract Documents Plans, drawings, specifications, and estimates prepared for a specific project covering the required work.

Contracting Agency The corporation, association, partnership, individual, or public body or authority with whom the contractor enters into an agreement, and for whom the work is accomplished.

Contraction The effects of a channel constriction on flow.

Contraction Joint 1) A joint at the ends of a rigid slab to control the location of transverse cracks. 2) A joint that controls the cracking effect of concrete shrinking as it cures. It generally has a water stop incorporated into it and is typically found in wing walls and retaining walls where seeping water needs to be controlled.

Contraction Method of Flow

Measurement A method of indirect measurement of peak discharge following a flood by field survey of highwater marks and channel and bridge geometry at a constriction, such as at a bridge.

Contraction Scour The response of a river or drainage facility (such as a bridge) to the change in its bed load requirement as a result of a natural or constructed contraction of flow, i.e., the flow contraction is due to an encroachment of either the main channel or the flood plain by a natural constriction or the highway embankment.

Contract Item A specific unit of work for which a price is provided in the contract. Also known as Contract Pay Item.

Contractor The individual, partnership, firm, corporation, or any acceptable combination thereof, or joint venture,

contracting with whom an agency or owner enters into agreement for performance of prescribed work.

Contract Payment Bond The security furnished to the contracting agency to guarantee payment of prescribed debts of the contractor covered by the bond.

Contract Performance Bond The security furnished to the contracting agency to guarantee completion of the work in accordance with the contract.

Contract Time The number of working days or calendar days allowed for completion of the contract. If a calendar date of completion is shown in the proposal in lieu of a number of working or calendar days, the contract shall be completed by that date.

Contraflow Lane A lane on which, during certain hours of the day, high-occupancy vehicles (HOVs) operate in a direction opposite to that of the normal flow of traffic.

Control Flume An open conduit or artificial channel arranged for measuring the flow of water that generally includes a constricted section wherein critical depth exists.

Controlled Airspace Classifications of airspace (Class A, Class B, Class C, Class D, and Class E airspace) and the defined dimensions within which air traffic control service is provided to IFR and VFR flights in accordance with the airspace classification.

Controlled Process A production process in which the mean and variability of a series of tests on the product remain stable, with the variability due to chance only. Also referred to as Process under Statistical Control.

Controller Assembly A complete electrical device mounted in a cabinet for controlling the operation of a highway traffic signal.

Control Limits Boundaries established by statistical analysis for material production control using the control chart technique. When values of the material characteristic fall within these limits, the process is "under control." When values fall outside the limits, this indicates that there is some assignable cause for the process going "out of control." Also referred to as Action Limits.

Control of Access The condition where the right of owners or occupants of abutting land, or other persons, to access, light, air, or view in connection with a highway is fully or partially controlled by public authority. Also referred to as Access Management.

Control Section A control section, such as a bridge opening, reach of channel, or dam, with a definable flow capacity, in which the discharge is related to some measurable depth(s) such as the upstream water surface elevation, tailwater elevation, contracted flow depth, or some combination thereof.

Control Strip A short section of a pavement course that has been compacted to the highest density obtained with the equipment to be used for the rest of the construction of the course. The maximum density obtained is used as a reference when determining the relative compaction of the rest of the course.

Conveyance 1) A written instrument by which a title, estate, or interest in property is transferred. 2) A measure of the ability of a stream, channel, or conduit to convey water. A comparative measure of the water-carrying capacity of a channel; that portion of the Manning discharge formula that accounts for the physical elements of the channel.

Core A cylinder of concrete obtained from concrete by means of a core drill.

Core Depth The distance between the top of top reinforcement and the bottom of bottom reinforcement in a concrete slab.

Core Width The width of the superstructure of monolithic construction minus the deck overhangs.

Coring The operation by which a small casing is drilled into firm soil. As the pipe advances, the core material is removed by sluicing during or after the drilling.

Corner Breaks (JCP Only) A portion of the slab separated by a crack that intersects the adjacent transverse and longitudinal joints, describing approximately a 45-degree angle with the direction of traffic, where the length of the sides is from 0.3 m (1 ft) to one half the width of the slab.

Corridor 1) A strip of land between two termini within which traffic, topography, environment, and other characteristics are evaluated for transportation purposes. Also for transmission of a utility. 2) A broad geographical band that identifies a general directional flow of traffic. It may encompass streets, highways, and transit alignments.

Corrosion The deterioration of material, usually a metal, that results from a reaction with its environment.

Corrosion Resistant 1) Resistance to rain, sunlight, salt water, and the alkalinity of concrete without experiencing noticeable degradation. 2) Ability of a material, usually a metal, to withstand corrosion in a given system.

Corrugated Rail A rough condition on the rail tread of alternate ridges and grooves.

Corrugation Transverse undulations at regular intervals in the surface of the pavement consisting of alternate valleys and crests not more than 1 m (3 ft) apart.

Cost Benefit Analysis Comparison of costs associated with a specific action and benefits derived from that action.

Cost-Effective An item or action taken that is economical in terms of tangible benefits produced for the money spent.

Cost Engineering An area of engineering principles where engineering judgment and experience are used in the application of scientific principles and techniques to problems of cost estimation, cost control, business planning, and management science.

Cost Value The price of a collection of units of material or an item of construction having specified characteristics in terms of money, proportion of available manpower, or depletion of natural resources.

Coupler A device for connecting cars or locomotives together.

Course 1) The direction toward the destination as charted, described in degrees of deviation from north. True course is measured from true north; magnetic course is measured from magnetic north. All courses formed by VHF Omni-directional Radio-ranges (VORs) on sectional charts are magnetic. 2) In connection with an instrument landing system (ILS), the visually indicated beam that provides directional guidance to the runway.

Cover The vertical extent of soil above the crown of a pipe or culvert. [Depending on the context, may also be] the vegetation, or vegetational debris, such as mulch, that exists on the soil surface. In some classification schemes, fallow or bare soil is taken as the minimum cover class.

Cracking 1) A linear fracture in the concrete wearing surface that may extend only partway through the bridge deck, or it may occur as a failure plane running completely through the concrete structural element. 2) A fissure or open seam not necessarily extending through the body of a material.

Cracking Moment A bending moment that produces a tensile stress greater than

sum of induced compression plus the tensile strength of the concrete resulting in tensile cracks on the tension face of the pole.

Crane A machine for hoisting weights or cargo, moving them horizontally for limited distances, and lowering or raising them to new locations.

Crash Cushion A device that prevents an errant vehicle from impacting fixed objects by gradually decelerating the vehicle to a safe stop or by redirecting the vehicle away from the obstacle.

Crash Test Vehicular impact tests by which the structural and safety performance of roadside barriers and other highway appurtenances may be determined. Three evaluation criteria are considered, namely (a) structural adequacy, (b) impact severity, and (c) vehicular post-impact trajectory.

Crashworthy 1) A feature that has been proven acceptable for use under specified conditions either through crash testing or in-service performance. 2) A system that has been successfully crash tested to a currently acceptable crash test matrix and test level or one that can be geometrically and structurally evaluated as equal to a crash-tested system.

Creep 1) Lengthwise rail movement caused by temperature gradient. 2) Time-dependent deformation of concrete under permanent load.

Crest 1) The maximum elevation of a flood at a specific location. 2) The highest point of a structure or natural formation, such as a dam or water wave.

Crib 1) The space between two adjacent ties in a track structure. 2) A structure consisting of a foundation grillage and a framework providing compartments that are filled with gravel, stones, or other material satisfactory for supporting the structure to be placed thereon.

Crib Dam A barrier made of timber, forming bays or cells that are filled with stone or other suitable material.

Critical Depth When the energy head is a minimum and the velocity head equals one half the mean depth, the corresponding depth is Belanger's critical depth.

Critical Flow That flow in open channels at which the energy content of the fluid is at a minimum. Also, that flow that has a Froude number of unity.

Critical Impact Angle (CIA) For a given crash test and the attendant range of vehicular impact angles, the CIA is the angle within this range judged to have the greatest potential for causing a failure when the test is assessed by the recommended evaluation criteria.

Critical Impact Point (CIP) For a given crash test, the CIP is the initial point(s) of vehicular contact with a feature judged to have the greatest potential for causing a failure when the test is assessed by the recommended evaluation criteria.

Criticality The classification of various factors of specifications by the degree to which they affect safety, performance, or durability.

Criticality Assessment Study that evaluates and prioritizes assets and functions in terms of specific criteria such as their importance to public safety and the economy. The assessment provides a basis for identifying which structures or processes are relatively more important to protect from attack. It helps to determine operational requirements and to target resources to the highest priorities, while reducing the potential for targeting resources to lower priorities.

Critical Slope That particular slope of a given uniform conduit operating as an open channel at which normal depth equals critical depth for a given discharge (Q_c).

Critical Velocity Mean velocity of flow at critical depth; in open channels the velocity head equals one half the mean depth.

Cross Drainage 1) The runoff from contributing drainage areas both inside and outside the highway right of way. 2) The transmission thereof from the upstream side of the highway facility to the downstream side.

Cross-Frame A transverse truss framework connecting adjacent longitudinal flexural components.

Crossover 1) Two turnouts with track between, connecting two nearby and usually parallel tracks. 2) The relatively short and shallow reach of a stream between bends. The point where flows cross over from one low-flow channel bank to the other. Also referred to as Crossing.

Cross-Slope 1) The transverse slope and/or superelevation described by the roadway section geometry. 2) The slope measured perpendicular to the direction of travel.

Crosstalk 1) The undesired effect of force readings appearing on an unloaded axis of a transducer while applying force to another. 2) Undesired signals or sounds in electronic devices as a result of coupling between transmission circuits.

Crosswalk 1) A specified part of a road or street where pedestrians have right-of-way to cross. 2) That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or, in the absence of curbs, from the edges of the traversable roadway, and in the absence of sidewalk on one side of the roadway, the part of a roadway included in the extension of the lateral lines of the sidewalk at right angles to the centerline. 3) Any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Crosswind Component A wind component at a right angle to the longitudinal axis of the runway or the aircraft's flight path.

Crosswind Leg A flight path at a right angle to the landing runway off its upwind leg.

Crosswind Runway An additional runway built when the principal orientation of the runway cannot provide 95 percent wind coverage.

Crown 1) The top or highest point of the internal surface of the transverse cross section of a pipe. 2) The shape of a tangent roadway cross section with a high point in the middle and a cross slope downward toward both edges.

Crush Capacity The maximum passenger capacity of a vehicle in which the spacing between passengers is zero (i.e., the passengers are touching one another) and one more passenger cannot enter without causing serious discomfort to the others.

Cul-de-Sac A local street open at one end only and with special provision for turning around.

Culvert Any structure under the roadway with a clear opening of 6.1 m (20 ft) or less measured along the center of the roadway.

Culvert Method of Flow Measurement A method of indirect measurement of peak discharge, following a flood, by field survey of highwater marks and channel and culvert geometry where temporary upstream flood storage effects can be quantified or are not significant.

Cumulative Conveyance A tabulation or graphical plot of the accumulated measures of conveyance at various points across a cross section proceeding from the landward edge of one flood plain (or stream bank) to the landward edge of the other flood plain (or stream bank) so as to encompass the water surface width of a particular flood.

Curb Extension A section of sidewalk extending into the roadway at an intersection or midblock crossing that reduces the crossing width for pedestrians and may help reduce traffic speeds. Also known as a bulb-out or curb bulb.

Curb Ramp A combined ramp and landing to accomplish a change in level at a curb. This element provides street and sidewalk access to pedestrians using wheelchairs.

Current 1) Water flowing through a channel. 2) The generally downstream moving portion or vector of flowing water.

Current Meter An instrument for measuring the speed of flowing water.

Current Year Dollars Today's price; the estimated cost of the project if the project were built and completed in the analysis year in present-day dollars; equivalent to the economist's notion of constant or real dollars.

Curvature Friction Friction resulting from the tendon moving against the duct when tensioned due to the curvature of the duct.

Cushion Seal Joint A joint in which a reinforced neoprene pad is rigidly attached to each side of the joint. The neoprene pad has elastic characteristics that allow it to stretch when the joint opens and to shrink when the joint closes, while the reinforcing materials in the pad provide sufficient strength to span the joint gap in a durable manner.

Cushion Underframe The framework of a railway car that is designed to prevent shocks and impact stresses from damaging the car structure or its lading.

Cut Bank 1) The concave wall of a meandering stream. 2) The outside, eroding bank of a bendway.

Cutoff A natural or artificial channel that shortens the length of a stream; natural cutoffs may occur either across the neck of

a meander loop (neck cutoffs) or across a point bar (chute cutoffs).

Cutoff Height A specified distance of a high on the surface record from a chord representing 7.5 m (25 ft) on the longitudinal scale. The chord may represent less than 7.5 m (25 ft) if it is from the lows on each side of the high.

Cutoff Wall A wall, collar, or other structure intended to reduce percolation of water along otherwise smooth surfaces or through porous strata.

Cuts Sections of highway located below natural ground elevation, thereby requiring excavation of earthen material.

Cycle A complete sequence of traffic signal indications.

Cycle-Control Joint A transverse approach slab joint designed to permit longitudinal cycling of integral bridges and attached approach slabs.

Cycle Length The total time for a traffic signal to complete one cycle.

Cycle Time The total time required for a transit vehicle to complete one round trip on its route, including all station dwell times and time for layover at terminals.

Cyclic Stress Stress due to repeated loading and unloading.

Cylinder (Test) A cast cylindrical specimen of concrete.



D16 The particle diameter at the 16 percentile point on a size-versus-weight distribution curve.

D50 Median size of riprap or granular material. The particle diameter at the 50 percentile point on a size-versus-weight distribution curve such that half of the



particles (by weight) are larger and half are smaller.

D85 The particle diameter at the 85 percentile point on a size-versus-weight distribution curve.

Daily Discharge Discharge averaged over one day.

Daily Vehicle Miles Traveled

(DVMT) Average daily traffic on a road segment, expressed as AADT, multiplied by the length of the road segment.

Dam A barrier to confine or raise water for storage or diversion, or to create a hydraulic head.

Dam-Break Analysis The use of a model to calculate the effects of a flood caused by the actual or hypothetical failure of a dam.

Dam Method of Flow Measurement A method of indirectly determining the peak discharge of a flood by using the field survey of highwater marks in the headwater and tailwater pools, and the dam or highway embankment geometry.

Datum Reference point for elevations of structures and water level.

Day Calendar day.

Daymark An aid to navigation, placed on the banks of a river, constructed with reflectors or reflective material to increase night-time visibility.

Dead-End Street A local street open at one end only without special provision for turning around.

Deadhead To move a revenue vehicle without passengers or cargo on board, e.g., on a regular route to and from a garage or from the end of one revenue trip to the beginning of another.

Dead Load 1) The load from the weight of the beams and deck and all of the structure above the piers and abutments upon which the vehicular and pedestrian traffic weight is supported.

2) The permanent loading on a structure, imposing definite fixed strains upon it; it consists of the weight of the structure itself and the fixed loading carried by it.

Deadman A buried block or heavy object to serve as an anchor to restrain a vessel from movement.

Deadman Control A pedal or handle or both (usually the brake-valve handle and a pedal) that must be kept in a depressed position while a locomotive or self-propelled rail car is operating; if pressure is released from both at the same time, the power is cut off and the brakes are applied.

Deadweight Tonnage (DWT) The number of long tons 1.016 Mg (2,240 lb) of cargo, stores, and bunker fuel that a vessel can transport.

Debris Basin A basin constructed in a channel to store debris such as sand, gravel, silt, and driftwood.

Debris Dam The barrier constructed across a channel to form a debris basin.

Deck A component, with or without wearing surface, that supports wheel loads or pedestrian loads directly and is supported by other components.

Deck Girder A precast girder with an integral deck. Deck girders placed side-by-side form a bridge superstructure.

Deck Joint A structural discontinuity between two elements, at least one of which is a deck element. It is designed to permit relative translation and/or rotation of abutting structural elements.

Deck Slab A surface resisting and distributing wheel loads or pedestrian loads to the supporting components.

Deck System A superstructure in which the deck is integral with its supporting components or in which the effects or deformation of supporting components on the behavior of the deck is significant.



Deck Truss A truss system in which the roadway is at or above the level of the top chord of the truss.

Dedicated Funds 1) Funds allocated to a given area, usually by some formula, and made available on an annual basis. 2) Funds collected for a specific program or purpose.

Dedication The setting apart by the owner and acceptance by the public of property for highway use in accordance with statute or common law.

Deed A written instrument conveying real property or interest therein, usually under seal.

Deep Draft Waterway A navigable waterway used by merchant ships with loaded drafts of 14–60+ ft.

Deep Foundation A foundation that derives its support by transferring loads to soil or rock at some depth below the structure by end bearing, adhesion, or friction, or some combination thereof.

Deep Water Water of such a depth that surface waves are little affected by bottom conditions; customarily, water deeper than half the wave length.

Defect A failure to meet a requirement with respect to a single quality characteristic.

Deflection 1) The vertical movement occurring between the supports of a bridge superstructure or its components (beams, girders, and slabs) that results from their own weight and from dead and live loads. Although all parts of a structure are subject to deflections, usually only those deflections that occur in the superstructure are of significance during construction. 2) The change in the path of a vehicle imposed by geometric features of a roundabout resulting in a slowing of vehicles.

Deformation A change in structural geometry due to force effects, including axial displacement, shear displacement, and rotations.

Degradation 1) General and progressive lowering of the longitudinal profile of the channel bed due to long-term erosion. 2) A progressive lowering of the channel bed due to scour.

Delay The increased travel time experienced by a person or vehicle due to circumstances that impede the desirable movement of traffic. It is measured as the time difference between actual travel time and free-flow travel time.

Delineators Reflective elements of reflective sheeting or paint with plastic or glass reflectors.

Demand The quantity of transportation desired.

Demand-Responsive A type of transportation service characterized by flexible routing and scheduling of relatively small vehicles to provide door-to-door or point-to-point transportation at the user's demand and that operates either on the street and highway system (e.g., taxicab) or on a guideway.

Demurrage A charge assessed on vessels, railroad cars, or trucks held for an excess period of time by or for the shipper or receiver for loading or unloading.

Dense-Graded Aggregate A continuously graded aggregate from a specified maximum size to dust, so as to have a low aggregate voidage.

Density 1) The weight of the material that occupies a certain volume of space. 2) The number of vehicles on a roadway segment averaged over space or the number of pedestrians per unit of area within a walkway or queuing areas. Also referred to as Traffic Density.

Density Altitude The altitude in the standard atmosphere at which the air has the same density as the air at the point in question. An aircraft will have the same performance characteristics as it would



have in a standard atmosphere at this altitude.

Dentated Sill A notched sill at the end of an apron or stilling basin to check the force of flowing water and thus reduce erosion downstream from the apron.

Departure Control A function of approach control providing service for departing IFR aircraft and, on occasion, VFR aircraft.

Deposition The settling of material from the streamflow onto the bed.

Depth of Scour The vertical distance a stream bed is lowered by scour below a reference elevation.

Derail A track structure for guiding a car off the rails at a selected spot in case of an emergency.

Design-Bid-Build The traditional project delivery method for building highways and making highway improvements where the agency sequentially designs the project, solicits bids, and awards the construction contract to the lowest responsive bidder (construction contractor) to build the project.

Design-Build The project delivery method that combines the design and construction phases of a project into a single contract.

Design-Builder The individual or legal entity contracting with the agency to perform the work included in the design-build contract.

Design Capacity 1) The maximum number of vehicles that can pass over a lane or a roadway during one hour without operating conditions falling below a preselected design level. 2) The hydraulic flow capability of a section or the structural capability of a structure.

Design Criteria Criteria, coupled with prudent judgmental factors, that are used in design.

Design Discharge Maximum flow of water a bridge is expected to accommodate without exceeding the adopted design constraints.

Design Displacement The lateral seismic displacement at the center of rigidity, required for design of the isolation system.

Design Fish A hypothetical fish embodying the predetermined size, swimming, and migration characteristics that are used in the design of drainage facilities to minimize adverse effects to the fishery.

Design Flood for Bridge Scour The flood flow equal to or less than the 100-year flood that creates the deepest scour at bridge foundations.

Design Flood for Waterway Opening The peak discharge, volume, stage, or wave-crest elevation and its associated probability of exceedence that are selected for the design of a highway or bridge over a watercourse or flood plain.

Design Flood Frequency The frequency (recurrence interval) for the selected design discharges (storms) that is expected to be accommodated without contravention of the adopted design criteria.

Design Force An equivalent static force that represents the dynamic force imparted to a railing system by a specified vehicle impacting a railing at a designated speed and angle.

Design Highwater Elevation 1) The maximum water levels that can occur through a reach and at a culvert, bridge opening, or other drainage facility without contravention of the adopted design criteria. 2) The usual term used to describe the estimated water surface elevation or profile in the stream (or other surface waters) at the project site for the selected design discharge.

Design Life The expected length of time of acceptable performance under specified conditions.

Design Phase The effort (budget/cost) of taking a project through the planning, scoping, and design phases. The terms Design or Design Phase are sometimes used interchangeably with Preliminary Engineering.

Design Span For decks, the center-to-center distance between the adjacent supporting components, taken in the primary direction.

Design Speed A selected speed used to determine the various geometric design features of the roadway. The assumed design speed should be a logical one with respect to the topography, anticipated operating speed, adjacent land use, and functional classification of the highway.

Design Storm Selected storm of a given frequency (recurrence interval) used for designing a design storm system.

Design Strength 1) The minimum acceptable 0.3 mm (0.01 in.) crack D-load. 2) Nominal strength of a member or cross section before application of any strength reduction factors.

Design Vehicle A vehicle, with representative weight, dimensions, and operating characteristics, used to establish highway design controls for accommodating vehicles of designated classes.

Design Volume A volume, determined for use in design, representing traffic expected to use the highway. Unless otherwise stated, it is an hourly volume.

Design Water Depth Depth of water at mean high water.

Design Wind Pressure, P_z The pressure exerted on a member or attachment by the effects of wind. The pressure is calculated

using appropriate design values for all variables in the wind pressure equation.

Desire Line A straight line on a map that connects the origin and destination of a trip and that shows by its width or density the volume of trips between that origin and destination pair.

Detail Category A grouping of components and details having essentially the same fatigue resistance.

Detailed Fracture A progressive break starting at or near the surface of the rail head.

Detectable Warning A standardized surface feature built in, or applied to, walking surfaces or other elements to warn pedestrians with vision impairments of hazards on a sidewalk and or loading platform, such as the curb line or dropoff.

Detention Basin A storm water management facility that impounds runoff and temporarily discharges it through a hydraulic outlet structure to a downstream conveyance system.

Deterministic Model A model that does not consider chance or probability. In a deterministic model, each independent variable is treated as a single value.

Detour A temporary change in the roadway alignment. It may be localized at a structure or may be located along an alternate route.

Detritus Loose fragments, particles, grains, grasses, twigs, or similar material comprising the smaller fraction of debris carried by flowing water.

Development Any constructed change to improved or unimproved real estate, including but not limited to buildings or other structures; mining, dredging, filling, grading, paving, excavation, or drilling operations; or storage of equipment or materials.

Development Length 1) The distance required to develop the specified strength of a reinforcing bar or prestressing strand or tendon. 2) The embedment necessary, under the specific surrounding conditions, to assure that a bar can be stressed to its yield point, with some reserve to ensure member toughness.

Diagonal Cracking Cracking that tends to run at an angle to the centerline of the roadway.

Diagonal Curb Ramp Curb ramp positioned at the apex of the curb radius at an intersection, bisecting the corner angle.

Diamond Interchange A four-leg interchange with a single one-way ramp in each quadrant. All left turns are made directly onto or off the minor highway.

Diaphragm A non-load-bearing member attached between stringers that acts to stiffen the primary members and help distribute vertical loads.

Differential Pricing (Variable Pricing) Time-of-day pricing and tolls that vary by other factors such as facility location, season, day of week, or air-quality impact.

Differing Site Conditions Subsurface or latent physical conditions at the site that (a) differ materially from those indicated in the contract; (b) differ materially from conditions normally encountered or from those conditions generally recognized as inherent in the nature of the work required; or (c) present unknown or unusual physical conditions.

Dike 1) An impermeable linear structure for the containment or control of overbank flow; such dikes trend parallel with a riverbank and differ from a levee only in that such dikes extend for a much shorter distance along the bank. Relatively short dikes are also placed to contain and redirect flow such as into a culvert or down some other path. 2) A structure used on flood

plains to control the flow of water that overflows the banks.

Direct Charges Costs that can be identified specifically with a product, service, or activity.

Direct Compensation Payment for land or interest in land and improvements actually acquired for highway purposes. Also referred to as Direct Damages.

Direct Connection A one-way turning roadway that does not deviate greatly from the intended direction of travel.

Directional Distribution The directional split of traffic during the peak or design hour, commonly expressed as a percentage in the peak and off-peak flow directions.

Directional Interchange An interchange, generally having more than one highway grade separation, with direct connections for the major left-turning movements.

Directional Split The distribution of traffic flows on a two-way facility.

Direct Runoff The runoff entering stream channels promptly after rainfall or snowmelt.

Discharge 1) Volume of water passing a point during a given time. 2) The rate a volume of flow passes a point per unit of time, usually expressed in cubic meters per second.

Discount Rate Accounting for the time value of money when different alternatives are being considered.

Discretionary Funds Funds granted at the discretion of the funding agency and in the amount it desires.

Disincentive Something that discourages people from acting in a certain way. For example, high parking fees is one disincentive to automobile use.

Dispatcher 1) The person responsible for having scheduled runs leave the yard or garage on time, and maintaining the

schedules, and matching the work force with the work load on a minute-by-minute basis. 2) In rail transit, the person who controls train movement or priority on a given segment (division) of track. 3) In demand-responsive transportation, the person who assigns the customers to vehicles and notifies the appropriate drivers.

Displaced Threshold A threshold located on the runway at a point other than at the end and/or beginning of the runway.

Dispute Resolution For quality assurance (QA) programs permitting contractor acceptance testing, procedure to resolve conflicts resulting from discrepancies between the agency's and contractor's results of sufficient magnitude to have an impact on payment. The procedure may, as an initial step, include the testing of independent samples and, as a final step, third-party arbitration. Also referred to as Conflict Resolution.

Distance Measuring Equipment (DME) An electronic interrogation-reply system that provides the pilot with a continuous presentation of distance in nautical miles to the DME site.

Distortion 1) Any change of the surface from its original shape. 2) A change in structural geometry.

Distortion-Induced Fatigue Fatigue effects due to secondary stresses not normally quantified in the typical analysis and design of a bridge.

Distribution Hydrograph A unit hydrograph of direct runoff modified to show the portions of the volume of runoff that occurs during successive equal units of time.

Distribution

Reinforcement Reinforcement, typically running 90 degrees to the main or circumferential reinforcement, intended to disperse concentrated loads to larger areas of a structural member.

Diversion Dam A barrier constructed for the purpose of diverting part or all the water from a channel into a different course.

Divided Highway A highway with separated roadways for traffic in opposite directions.

Divisional Island An island introduced on undivided highway intersections to alert drivers to the crossroad ahead, separate opposing traffic, and regulate traffic through the intersection.

D-Load The supporting strength of a pipe loaded under three-edge-bearing test conditions expressed in newtons per linear meter per millimeter of inside diameter or horizontal span (pounds per linear foot per foot of inside diameter or horizontal span).

D-Load Ultimate The maximum three-edge-bearing test load carried by a pipe, expressed as D-load.

Dock A structure located at or on the water for the purpose of securing vessels.

Dockage A charge for the use of a wharf by a vessel.

Dolphin 1) An isolated cluster of piles used as a support for mooring devices or marker lights. 2) A protective object that may have its own fender system and that is usually circular in plan and structurally independent from the bridge.

Dominant Discharge The channel forming (morphological sense) discharge in a specific channel for a specific channel feature. The dominant discharge for hydraulic geometry relationships is sometimes taken to be the bankfull discharge.

Do-Nothing Alternative A planning option of leaving the transportation system as it already exists.

Double or Multiple Track Two or more main tracks over which trains may travel in both directions.

Dowel A reinforcing bar embedded in two concrete sections, that transfers stresses and holds the sections together.

Down Time 1) A period during which workers are unable to perform their tasks while they wait for vehicle replacement, repair, etc. 2) A payment made to employees for such lost time. 3) A period during which a vehicle is inoperative because of repairs or maintenance.

Draft The distance from the water level to the lowest point of the vessel under water, measured when the vessel is completely stopped.

Drag Coefficient (C_d) A dimensionless coefficient that corrects the effective velocity pressure for the effects of the geometry of the element and the Reynolds number.

Drainage 1) The process of removing surplus groundwater or surface waters by artificial means. 2) The manner in which the waters of an area are removed. 3) The area from which waters are drained. 4) A drainage basin.

Drainage Area The catchment area for rainfall and other forms of precipitation that is delineated as the drainage area producing runoff, i.e., contributing drainage area. Usually it is assumed that base flow in a stream also comes from the same drainage area. The drainage area of a stream at a specified location is that area, measured in a horizontal plane, that is enclosed by a drainage divide.

Drainage Basin A part of the surface of the earth that is occupied by a drainage system, that consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Drainage Density The length of all channels above those of a specified stream order per unit of drainage area.

Drainage Easement An easement for directing the flow of water.

Drainage Systems A system designed to limit water damage to the roadway by controlling or directing the free flow of water over, under, or adjacent to the highway and to control the movement of water through the pavement's structural support where necessary.

Drawdown The difference in elevation between the water-surface elevation at a constriction in a stream or conduit and the elevation that would exist if the constriction were absent.

Drilled Shaft 1) A foundation, constructed by placing concrete in a drilled hole with or without steel reinforcement. 2) A deep foundation unit, wholly or partly embedded in the ground, constructed by placing fresh concrete in a drilled hole with or without steel reinforcement.

Driveway An access from a public way to adjacent property.

Drop 1) A vertical or inclined structure for dropping the water in a conduit or channel to a lower level and dissipating its surplus energy. An inclined drop in a channel is often termed a chute. 2) A fall in water-surface elevation between the upstream and downstream (as between headwater and tailwater) sides of a flow-contacting drainage facility such as at a bridge constriction or culvert or between two sections of a slope-area reach.

Drop Inlet A drainage inlet with a horizontal or nearly horizontal opening that is generally flush with the street or land surface.

Dual-Mode Vehicle A vehicle that operates both manually on public streets and automatically on an automated guideway.

Ductile 1) A component where failure is visible before fracture. 2) The opposite of brittle.

Ductile Connection A connection whose design strength is controlled by the strength of the steel anchorage rather than the strength of the concrete.

Ductile Failure A failure occurs when the anchor bolts are sufficiently embedded so that failure occurs by yielding of the steel anchor bolts.

Ductility The ability to withstand non elastic deformation without rupture.

Dwell Time The scheduled time a vehicle or train requires to discharge and take on passengers at a stop, including opening and closing doors and time spent standing.

Dynamic Envelope The clearance required for the train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure.

Dynamic Hydroplaning Hydroplaning of pneumatic tires with separation caused by a thick fluid film due principally to the generation of fluid inertial forces.

Dynamic Load Allowance An increase in the applied static force effects to account for the dynamic interaction between the bridge and moving vehicles.

Dynamic Pricing Tolls that vary in response to changing congestion levels, as opposed to variable pricing that follows a fixed schedule.

Dynamic Vehicle Tire Force The component of the time-varying force applied perpendicularly to the road surface by the tire of a moving vehicle.



Earth Pressure The soil pressure on abutments and other components of a bridge against which any significant depth of earthen fill rests.

Easement A right to use or control the property of another for designated purposes.

Eccentricity An expression descriptive of the position of a bridge constriction not centrally located in the flood plain. Eccentricity, if considerable, has an effect upon the discharge coefficient. High eccentricity tends to decrease the discharge coefficient and increase the backwater.

Edge Cracking 1) Crescent-shaped cracks or fairly continuous cracks, that are located within 0.6 m (2 ft) of the pavement edge. 2) Cracks that occur parallel to the pavements outer edge and usually a foot or two inside the shoulder. 3) Longitudinal cracks near the edge of the bridge deck.

Edgeline A line that indicates the edge of the traveled way.

Effective Damping The value of equivalent viscous damping corresponding to the energy dissipated during cyclic response at the design displacement of the isolated structure.

Effective Depth The depth of a component effective in resisting flexural or shear forces.

Effective Duration 1) The time in a storm during which the water supply for direct runoff is produced. 2) The duration of excess rain.

Effective Precipitation 1) That part of the precipitation that produces runoff. 2) A weighted average of current and antecedent precipitation that is effective in correlating with runoff.

Effective Prestress Stress remaining in prestressing tendons after all losses have occurred, excluding the effects of dead load and superimposed load.

Effective Rainfall Direct runoff. Usually not the same quantity on upland streams as on downstream rivers because of variability of seepage flows.

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Effective Stiffness The value of the maximum lateral force at instance of maximum lateral displacement in the isolation system, or an element thereof, divided by the maximum lateral displacement.

Effective Velocity Pressure (vpy) The pressure exerted by the effects of the wind, assuming that the Importance Factor (I), and the Drag Coefficient (C_d), are both equal to 1.0.

Efficient Estimator A statistic having a small standard error. If one considers all possible estimators of a given parameter, the one with the smallest standard error for the same sample size is called the most efficient estimator of the parameter.

Effluent Sewage, water, or other liquid, partially or completely treated or in its natural state as the case may be, flowing out of a reservoir, basin, or treatment plant.

Elasticity A structural response in which stress is directly proportional to strain and no deformation remains upon removal of loading.

Elastic Restraint System The collection of structural elements that provide restraint of the seismically isolated structure for non seismic lateral loads.

Electric Locomotive A locomotive in which the propulsion is effected by electric motors mounted on the vehicle; the electric power usually comes from an external source.

Electrification The installation of overhead wire or third-rail power distribution facilities to enable operation of electrically powered locomotives, cars, or both.

Electrified Track Rail track equipped for the operation of electrically propelled vehicles that receive electric power from a source external to the vehicle.

Electronic Credentialing Conducting transactions between carrier and

governments via electronic data interchange and/or the Internet. Part of the commercial vehicle operations component of intelligent transportation systems.

Electronic Screening Allowing trucks that have been tagged with transponders to bypass inspection stations. Also referred to as Electronic Clearance, Pre-clearance or Automated Clearance.

Electronic Toll Collection (ETC) Electronic systems that collect vehicle tolls, reducing or eliminating the need for tollbooths and for vehicles to stop.

Element A part of a component or member consisting of one material.

Elevation Head The elevation of a given point in a column of liquid above a datum.

Embankment A structure of soil, soil aggregate, or broken rock between the embankment foundation (supporting ground) and the subgrade.

Embankment Foundation The material below the original ground surface, the physical characteristics of which affect the support of the embankment.

Embedment The steel component embedded in the concrete used to transmit applied loads from the attachment to the concrete support or foundation.

Embedment Length The length of reinforcement or anchor provided beyond a critical section over which transfer of force between concrete and reinforcement may occur.

Emergency Action Plan Detailed description of the actions that must be taken to reduce losses and hazards and to disseminate information about an actual or expected natural disaster, terrorist attack, or act of war.

Emergency Escape Ramp A ramp, away from the main traffic stream, intended to slow and stop out-of-control vehicles.



Emergency Locator Transmitter

(ELT) An electronic device attached to the aircraft structure as far aft as practicable in the fuselage, or in the tail surface, in such a manner that damage to the beacon will be minimized in the event of crash impact.

Emergency Operation Center

(EOC) The center for decision making, information gathering and dissemination, initiating of emergency actions, and coordinating responses to emergencies. The center may be part of a public service or safety unit in the local government or may be activated only when emergencies arise.

Emergency Spillway A rock or vegetated earth waterway around a dam, built with its crest above the normally used principal spillway.

Emergency-Vehicle Traffic Control

Signal A special traffic control signal that assigns the right-of-way to an authorized emergency vehicle.

Eminent Domain The power to take private property for public use without the owner's consent, upon payment of just compensation.

Empirical Model A model developed from performance histories of pavements. An empirical model is usually accurate only for the exact conditions and ranges of independent variables under which it was developed.

Encroachment 1) Unauthorized use of highway right-of-way or easements for such items as signs, fences, buildings, utilities, parking, storage, etc. 2) An intrusion into prescribed, restrictive, or limited areas of a highway system, such as crossing a traffic lane or impacting a barrier system.

End Distance of Bolts The distance along the centerline of a bolt between the center of a hole and the end of the component.

End Panel The end section of a truss or girder.

End-Result Specifications Specifications that require the contractor to take the entire responsibility for supplying a product or an item of construction. The highway agency's responsibility is to either accept or reject the final product or to apply a price adjustment that is commensurate with the degree of compliance with the specifications.

End Treatment The designed modification of the end of a roadside or median barrier.

Endurance Limit Strength Stress level at which completely reversing cyclic stress (fatigue) causes failure in one million cycles; the ability to withstand fatigue loads.

End Zone 1) Region of structures where normal beam theory does not apply due to structural discontinuity and/or distribution of concentrated loads. 2) The area adjacent to any open joint in a concrete railing system that requires added reinforcement.

Energy Grade Line 1) A line joining the elevation of energy heads of a stream; a line drawn above the hydraulic grade line a distance equivalent to the velocity head of the flowing water at each cross section along a stream or channel reach or through a conduit. 2) An inclined line representing the total energy of a stream flowing from a higher to a lower elevation.

Energy Gradient The slope of the energy line with reference to any plane or, more simply, the slope of the energy grade line.

Energy Head 1) The elevation of the hydraulic grade line at any section plus the velocity head of the mean velocity of the flow in that section. The energy head may be referred to any datum or to an inclined plane, such as the bed of a conduit. 2) The total head above a datum at any cross section.

Engine Burn Fracture A progressive fracture originating in spots where driving wheels have slipped on top of the rail head and developed downward.



Engineer 1) The chief engineer of the department or commission, acting directly or through his or her duly authorized representatives, who is responsible for engineering supervision of the construction. 2) The accepting authority responsible for issuing the project specifications and administering work under the contract documents. 3) The engineer or engineering firm issuing project drawings and project specifications, or administering the work under the contract documents. 4) The driver, individual, or operator of a locomotive (also engineman).

Engineering Judgment The evaluation of available pertinent information, and the application of appropriate principles, standards, guidance, and practices as contained in recognized and prevailing documents, for the purpose of deciding upon the applicability, design, operation, or installation of a transportation feature or features. Engineering judgment shall be exercised by an engineer, or by an individual working under the supervision of an engineer, through the application of procedures and criteria established by the engineer.

Entrained Air Microscopic air bubbles intentionally incorporated in mortar or concrete during mixing, usually by the use of a surface-active agent, typically between 10 and 1,000 microns in diameter and spherical or nearly so.

Entrance Head The head required to cause flow into a conduit or other structure.

Entrance Loss The head lost in eddies and friction at the inlet to a conduit or structure.

Entrapped Air Air voids in shotcrete that are not purposely entrained and that are significantly larger and less useful than those of entrained air, 1 mm (0.039 in.) or larger in size.

Equalizer An opening, such as a culvert or bridge, placed where it is desirable to

equalize the water level on both sides of an embankment.

Equilibrium A state where the sums of forces and moments about any point in space are equal to zero.

Equipment All machinery and equipment, together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

Equivalent Cross Slope An imaginary, straight cross slope that provides conveyance equal to that of an actual or proposed compound cross slope. Common usage in highway drainage is to facilitate estimating the stormwater conveyance of a street gutter having a compound cross slope.

Equivalent Single-Axle Load (ESAL) A numerical factor that expresses the relation of a given axle load to another axle load in terms of their effect on serviceability of a pavement structure.

Equivalent Strip An artificial linear element, isolated from a deck for the purpose of analysis, in which extreme force effects calculated for a line of wheel loads, transverse or longitudinal, will approximate those actually taking place in the deck.

Erosion 1) Displacement of soil particles on the land surface due to such things as water or wind action. 2) The wearing away or eroding of material on the land surface or along channel banks by flowing water or wave action on shores.

Escalation The total annual rate of increase in cost of the work or its subelements. The escalation rate includes the effects of inflation plus market conditions and other similar factors. See also Inflation.

Escalation Clause 1) A provision in a labor agreement that stipulates that wages are to be automatically increased or reduced

