

SIDRA GLOSSARY

OF ROAD TRAFFIC TERMS

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SIDRA GLOSSARY of ROAD TRAFFIC ANALYSIS TERMS

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ACKNOWLEDGEMENTS

Akcelik & Associates Pty Ltd acknowledges the contributions by numerous users from many countries around the world through their valuable comments towards the development of SIDRA SOLUTIONS software products.

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SIDRA GLOSSARY OF ROAD TRAFFIC ANALYSIS TERMS

This glossary has been prepared to include the terminology of the SIDRA INTERSECTION and SIDRA TRIP software.

The sources used in preparing this document are listed below.

This unique glossary includes many terms that are not included in the Australian AUSTROADS Glossary and the US Highway Capacity Manual (HCM) Glossary which have been used as relevant sources. An effort has been made to keep the definitions given in the AUSTROADS and HCM glossaries as much as possible, combine them together, modify as required and incorporate them into the definitions used in the SIDRA INTERSECTION software. The usage in SIDRA INTERSECTION takes precedence where there are discrepancies.

Thus, many of the key analysis terms in this glossary have significant differences from those in the AUSTROADS and HCM glossaries (mostly in the expression but sometimes in the meaning). It is hoped that they represent clearer and more general definitions, for example considering left-hand and right-hand traffic rules and different local traffic engineering practices.

REFERENCES to main sources used:

AKCELIK & ASSOCIATES (2020). SIDRA INTERSECTION 9 User Guide. Akcelik and Associates Pty Ltd, Melbourne, Australia.

AUSTROADS - AP-C87-15 (2015). Austroads Glossary of Terms (2015 Edition). Association of Australian State Road and Transport Authorities, Sydney.

TRB (2016). Highway Capacity Manual (HCM) Edition 6. Transportation Research Board, National Research Council, Washington, D.C., U.S.A.

TRB (2022). Highway Capacity Manual (HCM) Edition 7. Transportation Research Board, National Research Council, Washington, D.C., U.S.A.

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SIDRA Glossary of Road Traffic Analysis Terms

A

Acceleration Model

A model to estimate acceleration and deceleration distance and time values, as well as second-by-second speed and acceleration rate values during a vehicle speed change cycle, e.g. polynomial acceleration model, uniform model, and so on. See *Four-Mode Elemental Model*.

Actuated Signal Analysis

Method used in signal timing calculations corresponding to the way traditional Vehicle-Actuated signals operate. See *Fixed-Time (Pretimed) Signal Analysis*.

Actuated Signal Control (Vehicle-Actuated, Traffic-Actuated)

A signal control method that allows variable phase sequence and variable timings of signal displays depending on vehicle and pedestrian traffic demands identified by detector actuations subject to various signal controller settings. See *Fixed-Time (Pretimed) Signal Control*.

Actuated Signal Data

Parameters relevant to traditional actuated signal control and used in actuated signal analysis, including gap setting, minimum green time, maximum green time, and effective detection zone length. See *Actuated Signal Analysis, Actuated Signal Control, Detection Data*.

Actuated Signal Settings

See Actuated Signal Data.

All-Pedestrian Phase

See Exclusive Pedestrian Phase.

All-Red Interval (Red Clearance Interval)

The signal control interval for the clearance of conflicting movements within the controlled area when only red signal displays are shown following the yellow signal display. See *Intergreen Interval, Yellow Interval*.

All-Red Time

Duration of the All-Red Interval. See *Intergreen Time, Yellow Time*.

All-Way Stop Control (AWSC)

An intersection with stop signs on all approaches. The driver's decision to proceed is based on a consensus of right-of way governed by the traffic conditions of the other approaches and the rules of the road (e.g. the driver on the right has the right-of way if two vehicles arrive simultaneously).

Alternative Intersections and Interchanges

An intersection or interchange created by rerouting one or more movements (often turning movements) from their usual places to secondary junctions. These include Continuous Flow Intersections (CFI), Diverging Diamond Interchanges (DDI), also called Double Crossover Diamond (DCD), Displaced Left-Turn (DLT) intersections or interchanges, Median U-turn (MUT) intersections, Restricted Crossing U-turn (RCUT) intersections, and so on. See *At-Grade Intersection*, *Common Control Group*, *Grade-Separated Intersection*, *Interchange*, *Intersection*, *Paired Intersection*, *Site*.

Analysis Period

The time interval selected for the analysis of traffic demand flow conditions, e.g. AM 15-min or 30-min peak flow period. See *Flow Period*, *Off-Peak Period*, *Peak Flow Period*, *Peaking Parameters*, *Total Flow Period*.

Analytical Model

A model that use direct mathematical computations (with a theoretical and empirical basis) to determine system states, using algorithms and iterative approximation techniques for complex systems. Depending on the level of aggregation of model elements, an analytical model can be microscopic, mesoscopic or macroscopic. See *Simulation Model*.

Approach

A set of lanes at an intersection or a midblock location that accommodates all movements approaching from a given direction.

Approach Control

The type of control that applies to an approach at a Two-Way Sign Control intersection, namely Major Road, Giveaway/Yield or Stop. See *Two-Way Sign Control (TWSC)*, *Giveaway/Yield*, *Stop*.

Approach Distance

Midblock distance between two intersections in the approach travel direction on an intersection leg. See *Downstream Distance*, *Exit Distance*.

Approach Movement

A traffic stream identified by its origin (approach) and destination (exit) at an intersection. Also referred to as a *Turning Movement*. See *Movement (Traffic Movement)*, *Lane Movement*, *Movement Class*.

Approach Speed (Approach Cruise Speed)

See *Cruise Speed*.

Approach Travel Distance

See *Approach Distance*.

Area Type Factor

A general factor used to adjust the saturation flow rate at signals for the effect of environment (pedestrians, parking manoeuvres, buses and taxis, small radius turns and so on).

Arrival Flow Rate

The number of vehicles or pedestrians per unit time arriving at a reference point. The arrival flow rate at a downstream point may be less than the demand flow rate due to upstream capacity constraint, i.e. when the upstream departure flow rate is restricted to the capacity flow rate because the demand flow rate exceeds capacity (oversaturated conditions). See *Capacity Constraint, Demand Flow Rate, Departure Flow Rate, Volume*.

Arrival Type

Six assigned categories for the quality of progression for a given movement at a signalized intersection approach, either as an input parameter to determine coordination effects using a simple platoon model in single intersection analysis (as opposed to network analysis) where signal offset information is not available, or as an output parameter using the signal offset method for coordination effects in network analysis. See *Arrivals During Green, Coordination, Offset, Platoon, Platoon Ratio, Progression, Progression Factor*.

Arrivals During Green

A parameter used for the percentage of traffic arriving during the green period as a measure of progression quality for a movement at a signalised intersection, either as an input parameter to determine coordination effects using a simple platoon model in single intersection analysis (as opposed to network analysis) where signal offset information is not available, or as an output parameter using the signal offset method for coordination effects in network analysis.. See *Arrival Type, Coordination, Offset, Platoon, Platoon Ratio, Progression, Progression Factor*.

At-Grade Intersection

An intersection where roads with conflicting traffic movements meet at the same level. See *Alternative Intersections and Interchanges, Grade-Separated Intersection, Interchange, Intersection*.

Automated Vehicle

A vehicle which takes over all or a portion of the driving task by providing a range of driver-assist capabilities up to and including self-driving. See *Connected Vehicle, Connected and Automated Vehicle (CAV)*.

Average Travel Speed

The travel distance divided by the average travel time. See *Average Travel Time*.

Average Travel Time

The travel time including the effect of intersection delays and delays due to other causes of interruption as well as the traffic delay (uninterrupted flow delay) due to bunching in uninterrupted sections of travel. See *Bunching, Cruise Speed, Desired Speed, Free-Flow Speed, Interrupted Flow, Space-Mean Speed, Speed, Time-Mean Speed, Traffic Delay, Uninterrupted Flow*.

B

Back of Queue

The maximum backward extent of the queue in a lane at an intersection or a crossing relative to the stop line or give-way / yield line during a signal cycle or gap acceptance cycle. The last queued vehicle that joins the back of queue is the last vehicle that departs at the end of the saturated part of green interval or the available gap interval. See *Cycle, Queue at the Start of Green, Cycle-Average Queue, Gap Acceptance Cycle, Percentile Queue, Queue, Queue Distance, Queue Move-up*.

Basic Saturation Flow Rate

The saturation flow rate achievable under ideal conditions at signals with no effects that reduce the steady queue discharge rate during the green period. See *Basic Saturation Flow Rate, Movement, Movement Class, Passenger Car Equivalent, Saturation Flow Rate, Through Car Equivalent*.

Block and Unblock Periods

A gap acceptance cycle consisting of a block period and an unblock period, i.e. vehicles waiting due to lack of an acceptable gap, then departing when an acceptable gap occurs, similar to a signal cycle that consists of a red period and a green period. See *Cycle, Gap Acceptance Cycle*.

Blockage

A condition in road networks where the back of a queue from a downstream intersection lane extends beyond the available queue storage length (lane length) and blocks traffic movements at upstream intersection lanes, resulting in capacity losses at upstream intersection lanes. See *Blockage Calibration Factor, Blockage Tolerance, Probability of Blockage, Queue Spillback*.

Blockage Calibration Factor

A factor used to adjust the effect of the downstream lane blockage (queue spillback effect) on the upstream lane capacity. See *Blockage, Blockage Tolerance, Probability of Blockage, Queue Spillback*.

Blockage Tolerance

A value subtracted from the probability of blockage in reducing the capacity of the upstream lane to allow for the effect of downstream lane blockage (queue spillback effect). See *Blockage, Blockage Calibration Factor, Probability of Blockage, Queue Spillback*.

Bunching

A characteristic of uninterrupted traffic flow in which some vehicles travel together as moving queues at relatively small headways. Bunches in uninterrupted traffic are considered to be random in size and occurrence in the stream in undersaturated conditions. The proportion of bunched vehicles in the traffic stream determined as a function of the flow rate is used in the bunched exponential model of headway distributions. See *Extra Bunching, Platoon*.

Bus Priority

A method by which buses are given an advantage over other traffic, usually using bus priority lanes, special signal phases or signal preemption. See *Preemption*.

Buses Stopping

The number of buses stopping per hour (bus stopping rate) used to calculate a saturation flow reduction factor to allow for buses stopping and blocking traffic in a lane considering both the near-side and the far-side bus stops.

Bypass Lane

See Slip Lane.

C**Calibration**

The process by which the analyst selects the model parameters that result in the best reproduction of field-measured local traffic conditions by the model. See *Validation*.

Calibration Factors

Parameters provided for easy calibration of various models.

Calibration Parameters

Parameters included in a model to facilitate calibration of the model for local conditions.

Capacity

The maximum sustainable flow rate at which vehicles or persons can reasonably be expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, geometric, traffic, environmental, and control conditions; usually expressed as vehicles per hour, passenger cars per hour, or persons per hour. See *Gap Acceptance Capacity*.

Capacity Analysis

Quantitative techniques for measuring the effectiveness of existing transport facilities in moving traffic and people, and for determining the impacts of proposed system improvements such as additional traffic lanes, signal timing adjustments, or enhanced public transport services. Capacity analysis is not restricted to roads but includes concepts and methods for pedestrians and cyclists on footpaths and bicycle facilities.

Capacity Constraint

The process by which the departure flow rate from a lane is restricted to the capacity flow rate under *Oversaturated Conditions* where the demand flow rate exceeds the capacity. See *Capacity*, *Demand Flow Rate*, *Departure Flow Rate*.

Carriageway

That portion of a road or bridge devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes.

CAV

See Connected and Automated Vehicle.

Central Island

The circular or other specially shaped central island constructed or marked at a roundabout around which traffic circulates.

Circulating Flow Rate

The flow rate of vehicle traffic in all lanes of the circulating road in advance of each roundabout entry point, i.e. passing in front of each splitter island next to the subject entry, which is the opposing (conflicting) flow for the vehicles entering the roundabout. Circulating flow rates at a roundabout are determined using departures flow rates that are subject to capacity constraint as measured at entry (approach) points. See *Capacity Constraint, Circulating Road, Departures Flow Rate*.

Circulating Road

The carriageway surrounding the central island of a roundabout on which circulating vehicles travel.

Circulating Width

The width of the *Circulating Road* measured for each roundabout entry.

Clearance 1 Interval

The first part of the clearance (Flashing Don't Walk) interval for a pedestrian movement at signals which occurs before the *Terminating Intergreen Interval* (yellow and all-red intervals) for parallel vehicle movements. See *Clearance Time*.

Clearance 2 Interval (Clearance Time Overlap)

The second part of the clearance (Flashing Don't Walk) interval for a pedestrian movement at signals, which follows the *Clearance 1 Interval* and overlaps with part of the *Terminating Intergreen Interval* (yellow and all-red intervals) for parallel vehicle movements. See *Clearance Time*.

Clearance Time (Pedestrians)

The time given for pedestrians to travel the crossing distance (the controlled area) at crossing speed before the beginning of conflicting vehicle movements at a signalised intersection or a midblock signalised pedestrian crossing. See *Crossing Distance, Crossing Speed*.

Clearance Time Overlap

See Clearance 2 Interval.

Common Control Group (CCG)

A group of signalised intersections controlled by a single signal controller. This is relevant to signal-controlled facilities that can be modelled as a network including signalised paired (closely-spaced) intersections such as staggered T intersections, freeway interchanges, intersections with median controlled by signals, fully signalised roundabouts and *Alternative Intersections and Interchanges*. See *At-Grade Intersection, Grade-Separated Intersection, Interchange, Intersection, Paired Intersection, Site*.

Congestion (Traffic Congestion)

Road traffic conditions that arise under high demand flow conditions in interrupted and uninterrupted road traffic facilities where persistent queuing with high levels of overflow queues (signal cycle failures), capacity losses due to downstream queue blockages (queue spillback), long

delays and travel times, high stop rates, slow traffic speeds and high densities are observed. See *Blockage, Overflow Queue, Oversaturated Conditions, Queue Spillback*.

Congestion Coefficient

A simple network performance measure determined as the ratio of desired speed to average travel speed. See *Desired Speed, Average Travel Speed*.

Connected and Automated Vehicle (CAV)

A vehicle that combines self-driving and connectivity features, allowing safe operation in platoons at shorter headways than possible by human-driven vehicles or automated vehicles that use adaptive cruise control only. See *Automated Vehicle, Connected Vehicle*.

Connected Vehicle

A vehicle capable of transmitting data about its status to its surroundings (e.g. road infrastructure, other road users) and receiving information about its surroundings (e.g. traffic conditions, weather conditions, presence of potential conflicting vehicles, traffic control) that can be used to adjust driving behaviour in response to conditions present at a given time and location. See *Automated Vehicle, Connected and Automated Vehicle (CAV)*.

Continuous Flow

See Uninterrupted Flow.

Control Delay

The time lost during negotiation of an intersection including all stop-start and slow down (deceleration and acceleration) delays and stopping (idling) times. Control delay is the sum of stopline delay and geometric delay. See *Delay, Geometric Delay, Idling, Queuing Delay, Stopline Delay*.

Controlling Approach

The approach with the queue detector at a roundabout with metering signals. This is the approach helped by the metering signals. See *Metered Approach, Roundabout Metering Signals*.

Controller

See Signal Controller.

Coordinated Intersection

A signalised intersection which is part of a coordinated signal system. See *Coordination*.

Coordination

A system to coordinate (synchronize) signal phases at two or more signalised intersections or signalised pedestrian crossings to achieve good progression of vehicle platoons with less delay, queuing and stops due to arrival of more vehicles during green signals. See *Progression*.

Cost (Operating Cost)

A measure that includes the direct vehicle operating cost (the resource cost of fuel and additional running costs including tyre, oil, repair and maintenance as a factor of the cost of fuel) as well as the time cost of vehicle occupants.

Critical Gap (Critical Headway)

The minimum time (Headway) between successive vehicles in the opposing (major) traffic stream that is acceptable for entry by opposed (minor) stream vehicles. See *Headway*.

Critical Intersection

The intersection in a coordinated signal system that operates with the highest overall degree of saturation during a given period.

Critical Lane

The lane in a lane group or approach that has the highest degree of saturation and places the highest demand on green time.

Critical Movements

The set of vehicle and pedestrian movements that determine the capacity and timing requirements of a signalised intersection.

Crossing

A formal area set aside for specific modes of transport to cross the road; usually called pedestrian crossing, cycle (bicycle) crossing, railway (level) crossing, signalised crossing, pelican crossing, puffin crossing, zebra crossing, and so on. See *Pedestrian Crossing*, *Zebra Crossing*.

Crossing Distance

The kerb-to-kerb distance for pedestrians crossing the road. This is used in determining pedestrian clearance time settings at signalised intersections and midblock signalised pedestrian crossings. See *Clearance Time (Pedestrians)*, *Crossing Speed*, *Full Crossing*, *Staged Pedestrian Crossing*.

Crossing Speed

The speed of pedestrians crossing the road as measured at intersections and midblock pedestrian crossings (as distinct from off-road pedestrian walking speeds). The design speed for determining pedestrian clearance time settings at signalised intersections and midblock signalised pedestrian crossings is a percentile speed. See *Clearance Time (Pedestrians)*, *Walking Speed*.

Cruise Speed

The uninterrupted travel speed, i.e. the midblock speed of a vehicle on the approach or exit side of an intersection (between intersections) without the effect of intersection delays, that can be approximated by the speed limit adjusted for the effects of side friction, road geometry and traffic volume. See *Average Travel Speed*, *Desired Speed*, *Free-Flow Speed*, *Space-Mean Speed*, *Speed Time-Mean Speed*, *Traffic Delay*.

Curb

See *Kerb*.

Cycle

A complete sequence of signal phases.

Cycle-Average Queue

The average queue length that incorporates all queue states including zero queues as counted at regular intervals (e.g. every 5 seconds) in a lane at an intersection or a crossing. See *Back of Queue, Queue at the Start of Green, Percentile Queue, Queue, Queue Distance, Queue Move-up*.

Cycle Failure

A condition where one or more queued vehicles are not able to depart because of insufficient capacity during the signal cycle or gap acceptance cycle at an intersection. See *Cycle, Gap Acceptance Cycle, Overflow Queue, Queue Move-up*.

Cycle Time (Cycle Length)

The time required for one complete sequence of signal displays (sum of phase green and intergreen times). For a given movement, cycle time is the sum of the durations of red, yellow and green signal displays, or the sum of effective green and red times. In gap acceptance analysis, this is the equivalent average cycle time corresponding to the *block and unblock periods* in the opposing traffic stream. See *Cycle, Effective Green and Red Times, Gap Acceptance Cycle, Network Cycle Time*.

D

Degree of Saturation (V/C Ratio)

The ratio of arrival (demand) flow rate to capacity during a given flow period. Also known as the volume to capacity ratio (v/c ratio), utilisation ratio, utilisation factor and traffic intensity.

Delay

The additional (excess) travel time experienced by a vehicle or pedestrian relative to a base travel time, e.g. the free-flow travel time. Average delay considering all vehicles or pedestrians that are queued and not queued is a common performance measure used for intersection and network analysis. For vehicle traffic in oversaturated conditions, two distinct delay measurement methods are (i) delay to vehicles *arriving* during a given analysis period including the delay experienced after the end of the analysis period until the departure of the last vehicle arriving during the analysis period, measured using the *path-trace* (instrumented car) method, and (ii) delay experienced by vehicles in the queue during the analysis period only, measured using the *queue-sampling* method which involves counting the number of vehicles in the queue at regular intervals. See *Control Delay*, *Geometric Delay*, *Idling*, *Queuing Delay*, *Stopline Delay*, *Traffic Delay*.

Demand Flow Rate

The number of vehicles or pedestrians arriving during a given period as measured upstream of the back of queue (as distinct from departure flows measured in front of the queue). See *Arrival Flow Rate*, *Departure Flow Rate*, *Volume*.

Departure Flow Rate (Stopline Flow Rate)

The number of vehicles per unit time departing from the queue, or the number of unqueued vehicles passing, as measured at the stop line (or give-way / yield line). The average departure flow rate is the same as the demand flow rate for *Undersaturated Conditions*, and is limited to the capacity flow rate for *Oversaturated Conditions*. See *Arrival Flow Rate*, *Capacity Constraint*, *Demand Flow Rate*, *Departure Headway*, *Volume*.

Departure Headway (Stopline Headway)

As a general traffic parameter, this is the average headway value of vehicles departing from the queue, or the average headway value of unqueued vehicles passing, as measured at the stop line (or give-way / yield line). See *Departure Flow Rate*, *Departure Headway (AWSC)*.

Departure Headway (AWSC)

The average time between departures of successive vehicles on a given approach lane at an all-way STOP-controlled intersection. The corresponding lane capacity is $3600 / \text{Departure Headway (AWSC)}$.

Density

The number of vehicles per unit distance along a road segment as measured at an instant in time.

Design Life

The number of years into the future for which a traffic facility operates at a satisfactory level of performance considering increases in vehicle and pedestrian traffic demand volumes. See *Design Life Analysis*, *Growth Model*, *Growth Rate*, *Compound Growth*, *Uniform Growth*.

Design Life Analysis

A method to determine the design life of a facility by assessing changes in estimates of capacity and performance measures as a function of increases in vehicle and pedestrian traffic demand volumes using uniform or compound growth rates per movement and movement class during a number of years. See *Design Life, Growth Model, Growth Rate, Compound Growth, Uniform Growth*.

Desired Speed

A parameter used for determining various network and route performance and level of service measures. A value representing the midblock cruise speeds on a route or a network is appropriate. See *Congestion Coefficient, Cruise Speed, Traffic Delay, Free-Flow Speed, Speed Efficiency, Travel Time Index, Network (Route) Level of Service*.

Detection Data

Parameters relevant to vehicle detection in traditional actuated signal control and used in actuated signal analysis, including effective detection zone length. See *Actuated Signal Analysis, Actuated Signal Control, Actuated Signal Data*.

Detection Zone Length

See Effective Detection Zone Length.

Detector

A device by which the presence and/or passage of vehicles or pedestrians is registered. The most common detectors are inductive loop detectors for vehicles and push-button detectors for pedestrians.

Detector Loop

One or more loops of wire embedded in the road surface used to detect vehicles.

Diagonal Crossing

A method to specify an exclusive pedestrian phase at a signalised intersection. See *Exclusive Pedestrian Phase, Scramble-Crossing Phase*.

Diamond Interchange

An interchange form where one diagonal connection is made for each freeway entry and exit, with a single ramp (connection) in each quadrant.

Displayed Green and Red Times

The phase or movement green and red times that are displayed by the signal controller. See *Effective Green and Red Times, End Gain, Lost Time, Start Loss*.

Diverging Diamond interchange

A diamond interchange form where through traffic on the arterial switches sides of the road at each of the ramp terminals, allowing turning movements to the ramps to be made without conflict from opposing through traffic.

Downstream

In the direction of the movement of traffic.

Downstream Distance

The travel distance associated with a traffic movement from the approach stop line (give-way / yield line) to a specified downstream point on the exit road. See *Approach Distance*, *Exit Distance*, *Negotiation Distance*.

Drag Parameters

Parameters used in fuel consumption and emission models, mainly related to rolling resistance and aerodynamic drag.

Dummy Movement

Imaginary movements used in traffic signal timing analysis.

E**Early Cut-Off**

The phase interval used at the end of a phase to terminate some movements earlier than other movements in the same phase. This is typically used at paired intersections operating under a single signal controller (*Common Control Group*) to clear movements in the internal (downstream) approach lanes by terminating upstream movement green periods sooner. See *Late Start*.

Effective Detection Zone Length

The effective length of the detection zone on a signalised intersection approach where a vehicle can be detected by the signal controller with use of in-pavement loops or other technology. The value of this parameter includes allowance for detector sensitivity. See *Actuated Signal Data*.

Effective Green and Red Times

The movement green and red times for capacity and performance analysis purposes, which are determined by adjusting the displayed green and red times for start loss and end gain effects. See *Displayed Green and Red Times*, *End Gain*, *Lost Time*, *Start Loss*.

Effective Intersection Capacity

An aggregate measure of intersection capacity determined as the ratio of total intersection demand flow to the intersection degree of saturation, where the intersection degree of saturation is the largest lane degree of saturation considering all lanes of the intersection.

Effective Stop Rate

The average number of stops per vehicle or pedestrian considering all vehicles or pedestrians queued and unqueued. For vehicles, this is expressed in equivalent stop values to normalise the stop values in relation to initial and final speeds during stop and slow-down manoeuvres including the major stops, queue move-ups, slow downs at the back of the queue and the slow-down and speed-up manoeuvre associated with geometric delay. Unlike proportion queued, the effective stop rate can be higher than 1.0. See *Major Stop*, *Proportion Queued*, *Queue Move-up*, *Slow Down*.

Efficiency Parameter

The parameter used in fuel consumption and emission models, which relates fuel consumption or emission to the total power provided by the engine.

Emission Model

A model to estimate emissions by vehicles using a traffic facility, including pollutant emissions that affect the air quality for people living near a road (hydrocarbon, carbon monoxide, nitrogen oxide, and so on) or greenhouse gas emissions that contribute to global warming (carbon dioxide). See *Four-Mode Elemental Model, Fuel Consumption Model, Instantaneous Model, Operating Cost Model, Vehicle Parameters*.

End Departures

The maximum number of opposed stream vehicles that can depart after the end of the displayed green interval at signalised intersections. Also referred to as sneakers. See *Minimum Departures*.

End Gain

Time between the end of the displayed green interval and the end of the effective green period for a movement, which is associated with additional departures after the end of green interval. See *Lost Time, Start Loss*.

Entry Angle

The angle of conflict between the entering and circulating streams measured for each roundabout entry (approach).

Entry / Circulating Flow Adjustment

Adjustment of the follow-up headway and critical gap values of a roundabout entry movement to calibrate the capacity values obtained under low circulating flow rates, especially when the ratio of entry flow to circulating flow is high. The adjustment (decrease in follow-up headways and critical gaps, therefore increase in capacity) is effective for low to medium circulating flow rates. See *Environment Factor*.

Entry Radius

The minimum radius of curvature of the outside kerb line at entry, i.e. at the give-way (yield) line measured for each roundabout entry (approach). See *Negotiation Radius, Turn Radius*,

Environment Factor

A parameter used to calibrate the roundabout capacity model to allow for less restricted (higher capacity) and more restricted (lower capacity) roundabout environments. Higher capacity conditions could be a result of factors such as good visibility, more aggressive and alert driver attitudes (smaller response times), smaller vehicles in the vehicle population, negligible pedestrian volumes, and insignificant parking and heavy vehicle activity (goods vehicles, buses, trams stopping on approach roads). Lower capacity (more restricted) conditions could be a result of factors such as compact roundabout design (perpendicular entries), low visibility, relaxed driver attitudes (slower response times), larger vehicles in the vehicle population, high pedestrian volumes, and significant parking and heavy vehicle activity (goods vehicles, buses, trams stopping on approach roads). See *Entry / Circulating Flow Adjustment*.

EQUISAT Method

The signal timing method using the equal degree of saturation (EQUISAT) principle for allocating green times to critical movements in signal control. See *Fixed-Time (Pretimed) Signal Analysis, Green Time, Green Split Priority, Phase Time, Practical Degree of Saturation*.

Equivalent Stop Value

The value of a deceleration-acceleration cycle in terms of a major stop-start cycle. See *Major Stop*.

Exclusive Lane

A lane allocated for use only by a particular OD movement or movement class, e.g. left-turn lane, through lane, right-turn lane, bus lane, as opposed to a shared lane. See *Lane Discipline, Movement, Movement Class, Shared Lane*.

Exclusive Pedestrian Phase (All-Pedestrian Phase)

A phase at a signalised intersection during which all pedestrian displays are green (Walk) and all vehicle displays are red, allowing all pedestrian movements to operate simultaneously while all vehicle movements are stopped. See *Diagonal Crossing, Scramble-Crossing Phase*.

Exit Distance

The midblock distance between two intersections in the exit travel direction on an intersection leg. See *Approach Distance, Downstream Distance*.

Exiting Flow Effect

A percentage of exiting traffic flow to be added to the opposing flow rate for an entry movement at a roundabout or a minor road movement at a two-way sign controlled intersection although the movement exiting to the road adjacent to the subject entry / minor road movement is not conflicting.

Exit Speed (Exit Cruise Speed)

See *Cruise Speed*.

Extension (Extension Interval)

See *Gap Setting*.

Extra Bunching

An increase applied to the proportion of bunched vehicles in the traffic stream according to the proximity of, and level of queuing at, upstream signalised intersections. See *Bunching*.

F**Filter Turn**

A turning movement that must give way to and find safe gaps in conflicting (opposing) vehicle or pedestrian traffic before proceeding, e.g. filter turn, slip (bypass) lane turn, turn on red. See *Opposed Movement*.

Fixed-Time (Pretimed) Signal Analysis

A method used in signal timing calculations corresponding to the way fixed-time (pre-timed) signals operate, or to the average cycle time and phase time values of control systems that use the equal degree of saturation (EQUISAT) principle, e.g. SCATS. See *Actuated Signal Analysis, Cycle Time, EQUISAT Method, Fixed-Time (Pretimed) Signal Control, Phase Time*.

Fixed-Time (Pretimed) Signal Control

A signal control method that allows for only a fixed sequence and fixed duration of displays. See *Actuated Signal Control*.

Flow Period

The time interval selected for vehicle and pedestrian traffic demand flow conditions. See *Analysis Period, Off-Peak Period, Peak Period, Total Flow Period*.

Flow Proportions

See Lane Movement Flow Proportions.

Flow Rate

The number of vehicles or pedestrians per unit time passing (arriving or departing) a given reference point. See *Arrival Flow Rate, Demand Flow Rate, Departure Flow Rate, Volume*.

Flow Ratio

The ratio of arrival flow rate to saturation flow rate for a movement at a signalised intersection.

Flow Scale

A factor used to increase or decrease the vehicle and pedestrian traffic demand flow rate in order to test changes in estimates of capacity and performance measures. See *Flow Scale Analysis*.

Flow Scale Analysis

A method to assess changes in estimates of capacity and performance measures as a function of increases or decreases in vehicle and pedestrian traffic demand volumes using flow scales (per movement and movement class for vehicles). See *Flow Scale*.

Follow-up Headway

The average headway between successive opposed (minor) stream vehicles entering a gap available in the opposing (major) traffic stream. The Follow-up Headway (seconds) is a saturation (queue discharge) headway, and the corresponding saturation flow rate (vehicles per hour) in gap acceptance analysis is $3600 / \text{Follow-up Headway}$. See *Critical Gap (Headway), Gap Acceptance, Saturation Flow Rate*.

Four-Mode Elemental Model

A model that estimates traffic fuel consumption or emission using vehicle path (drive cycle) data consisting of a series of cruise, acceleration, deceleration and idling (stopped) time elements for specific traffic conditions represented by intersection geometry, traffic control and demand flows. Also referred to as the *modal* model. The model uses speed, acceleration distance, acceleration time, acceleration rate and grade as traffic and road parameters. See *Acceleration Model, Emission Model, Fuel Consumption Model, Instantaneous Model, Operating Cost Model, Vehicle Parameters*.

Free-Flow Speed

The uninterrupted traffic speed when density is approximately zero, i.e. when only few vehicles are present in the traffic stream. See *Congestion Coefficient, Desired Speed, Space-Mean Speed, Speed, Speed Efficiency, Time-Mean Speed*.

Free Queue Distance

The distance representing the number of vehicles that can queue away from a shared lane without interrupting the flow of the other movements sharing the lane. This parameter is used to determine the capacity of shared lanes at signalised intersections where different movements in a shared lane can block each other at different times during the signal cycle because of different timing and movement characteristics.

Freeway

A divided highway with no access for traffic between interchanges and with grade separation at all intersections (interchanges).

Fuel Consumption Model

A model to estimate fuel consumption of vehicles using a traffic facility. See Emission Model, Four-Mode Elemental Model, Instantaneous Model, Operating Cost Model, Vehicle Parameters.

Fuel Resource Cost Factor

The ratio of the resource price of fuel (the wholesale price plus retail margin less taxes) to the pump price used to calculate the resource cost of fuel. See *Operating Cost*.

Full Control

Control of a turning movement using three-aspect (red, yellow, green) turn arrows on a six-aspect signal face, where the green arrow indicates that the vehicle can turn unopposed (with no opposing vehicle or pedestrian traffic) and the red arrow indicates that the vehicle is not permitted to turn (filter turns not permitted).

Full Crossing

1. A pedestrian crossing where pedestrians cross the road in a single stage. See Signalised Crossing, Pedestrian Crossing, Staged Pedestrian Crossing, Staged Signalised Pedestrian Crossing.
2. A gap acceptance process at a two-way sign-controlled (TWSC) intersection where for minor-street through and turning movements use gaps in the major road traffic stream in a single stage. See *Staged Crossing (Two-Way Sign Control)*, *Two-Way Sign-Control (TWSC)*.

G

Gap Acceptance

The process by which an opposed (minor) stream vehicle accepts an available gap in the opposing (major) stream for entering (departing from queue or merging). See *Critical Gap (Headway)*, *Follow-up Headway*.

Gap Acceptance Capacity

Capacity of a movement subject to a gap acceptance process (opposed movement). See *Capacity*, *Gap Acceptance*, *Critical Gap (Headway)*, *Follow-up Headway*, *Opposed Movement*.

Gap Acceptance Cycle

A cycle consisting of a block period with no acceptable gap and an unblock period with an acceptable gap during a gap acceptance process. See *Block and Unblock Periods*.

Gap Acceptance Factor

A factor used to adjust the critical gap and follow-up headway parameters of a movement subject to a gap acceptance process (opposed movement) to allow for the effect of its turning characteristics and movement class on gap acceptance capacity. See *Critical Gap (Headway)*, *Follow-up Headway*, *Gap Acceptance*, *Movement Class*, *Opposed Movement*, *Opposing Movement*, *Opposing Vehicle Factor*.

Gap Distance

See *Space Length*.

Gap Setting

An actuated signal controller setting equivalent to the maximum value of gap (space time measured by the detector between successive vehicles) that can extend the green interval subject to a maximum green time setting. The gap setting is a space time value (headway time less detector occupancy time). Also referred to as vehicle interval, extension interval, extension, or unit extension. See *Actuated Signal Data*, *Effective Detection Zone Length*, *Maximum Green Time*, *Minimum Green Time*, *Occupancy Time*, *Space Time*.

Geometric Delay

Delay due to physical and basic traffic control factors as experienced by a vehicle that negotiates the intersection in the absence of any other vehicles (decelerates from the approach cruise speed down to an approach negotiation speed, travels at that speed, accelerates to an exit negotiation speed, and travels at exit negotiation speed until clearing the intersection negotiation area). See *Control Delay*, *Delay*.

Geometric Stop

The effective value of a slow-down and speed-up manoeuvre associated with *Geometric Delay*, which is measured in terms of equivalent *Major Stops*. See *Effective Stop Rate*.

Give Way (Yield)

An instruction to a road user to remain stationary until it is safe to proceed if road user is stopped, or to slow down and, if necessary, stop and give way (yield) to all *Opposing Movements*.

Give Way (Yield) Line

A broken or solid line marked across all or part of a road, behind which vehicles should slow down and give way (yield) to all *Opposing Movements*. See *Stop Line*.

Grade (Slope)

The rate of longitudinal rise or fall of a road with respect to the horizontal (tangent of the angle of road surface to the horizontal), expressed as a percentage.

Grade-Separated Intersection

An intersection where roads with conflicting traffic movements are separated vertically, e.g. using overpasses or underpasses. See *At-Grade Intersection*, *Interchange*.

Green Interval

The signal control interval when a green display is shown (starting after the all-red interval of the previous phase and finishing before the yellow interval of the subject phase). See *All-Red Interval, Displayed Green and Red Times, Effective Green and Red Times, Yellow Interval*.

Green Start Time

See Phase Start Time.

Green Time

Duration of the green interval for a phase or a movement. See *Displayed Green and Red Times, Effective Green and Red Times*.

Green Time Ratio

The ratio of the effective green time to the cycle time.

Green Split Priority

The signal timing method used for the allocation of longer green times to movements assigned high priority for green splits, usually coordinated movements (platoons) in networks with a coordination (network) cycle time, while keeping other movements at their practical (target) degree of saturation levels. See *Coordination, Practical Degree of Saturation, Progression, Platoon*.

Growth Model

The use of uniform or compound growth rates for vehicle and pedestrian demand volumes in design life analysis. See *Design Life Analysis*.

Growth Rate

The annual rate of increase in vehicle and pedestrian demand volumes. See *Design Life Analysis*.

H

Headway

The time between passage of the front ends of two successive vehicles in the same traffic lane. See *Spacing*.

High-Angle Lane

A slip (bypass) lane with a high-angle design likely to be used by a movement controlled by give way (yield) sign or stop sign. See *Low-Angle Lane, Lane Type, Slip (Bypass) Lane*.

Heavy Vehicle

Any vehicle with more than two axles or with dual tyres on the rear axle (buses, trucks, semi-trailers (articulated vehicles), cars towing trailers or caravans, tractors and other slow-moving vehicles). All other vehicles are defined as Light Vehicles (cars, vans, sport utility vehicles, small trucks, motorcycles, bicycles). See *Light Vehicle, Passenger Car*.

Hours per Year

A parameter used to convert the hourly values of performance statistics to Annual Values.

**Idling**

The stopped condition of a vehicle (at zero or near-zero speed).

Idling Rate

Rate of fuel consumption or emission while the vehicle is stopped (at zero or near-zero speed).

Inflow Rate

The rate of midblock flow entering the internal approach of a network determined as the difference between the upstream and downstream total demand flow rates. Inflow occurs when the upstream demand flow rate is lower than the downstream demand flow rate. See *Outflow Rate*.

Initial Running Time

See Minimum Green Time.

Inscribed Diameter

The diameter of the outer roundabout circle measured for each entry (approach) along a line drawn from the middle of the give-way (yield) line of the subject roundabout entry (approach) through the centre of the roundabout island to the give-way (yield) line of the entry (approach) on the opposite side of the roundabout.

Instantaneous Model

A model that estimates second-by-second values of traffic fuel consumption or emission. See Emission Model, Four-Mode Elemental Model, Fuel Consumption Model, Operating Cost Model, Vehicle Parameters.

Interchange

A system of interconnecting roads that provide for grade-separated traffic movements (a grade-separated). See *At-Grade Intersection*, *Grade-Separated Intersection*.

Intergreen interval

The signal control interval between the end of the green display for a phase (or a movement) and the start of the green display for the next phase (or a conflicting movement), consisting of the yellow interval and all-red interval. See *All-Red Interval*, *Starting Intergreen Interval*, *Terminating Intergreen Interval*, *Yellow Interval*.

Intergreen Time

The duration of the intergreen interval, which is the sum of the yellow time and the all-red time. See *All-Red Time*, *Yellow Time*.

Interrupted Flow

The condition of a traffic stream affected by traffic control devices including traffic signals, roundabouts, give-way (yield) or stop signs, or other causes of periodic delay or interruption including an intersecting traffic stream having priority, pedestrian crossings, trams, light rail and railway crossings. See *Uninterrupted Flow*.

Intersection

A place where two or more roadways cross or meet where right-of-way is typically regulated through the use of traffic control devices (traffic signals, give-way / yield and stop signs) or by grade separation. See *Alternative Intersections and Interchanges*, *At-Grade Intersection*, *Grade-Separated Intersection*, *Interchange*.

Intersection Negotiation Area

See Negotiation Area.

Intra-Bunch Headway

The average headway between vehicles in a moving queue. This is used as a minimum headway in defining moving queues (bunches) of vehicles for the purpose of modelling the headway distribution of vehicles.

Island

A raised or painted area between traffic lanes for control of vehicle movements (strip island, triangular island, and so on). See *Central Island*, *Splitter Island*.

Island Diameter

The diameter of the *Central Island* including the truck apron measured for each roundabout entry (approach).

J**Jam Spacing**

See Queue Space.

K**Kerb (Curb)**

A raised border of rigid material formed at the edge of a carriageway or pavement to separate elements of the road (carriageway, sidewalk, islands).

L

Lagging Right Turn / Left Turn

An arrow-controlled right turn / left turn movement that is started and terminated in the phase that immediately follows the phase in which the opposing through movement runs.

Lane

A portion of the carriageway allocated for the use of a single line of vehicles.

Lane-Based Model

A lane-by-lane mathematical model of a road (traffic) network as well as the intersections, pedestrian crossings, other points of interruption and the connecting roads that form the network, including lane-by-lane input and output. See *Link-Based Model, Network*.

Lane Blockage Calibration Factor

See Blockage Calibration Factor.

Lane Change

See Midblock Lane Change.

Lane Configuration

A term used to describe whether an approach or exit lane at an intersection is a full-length lane, short lane (turn bay or short lane due to parking) or two-segment lane. More generally, lane configuration data also include the lane type, lane control, lane length and width, grade, data for adjacent islands. For short lanes and two-segment lanes, the lane configuration data include the overflow or merging lane, short lane length and segment length. See *Short Lane, Two-Segment Lane*.

Lane Control

The type of traffic control (signals, give way / yield, stop, continuous /uninterrupted) that applies to an approach lane.

Lane Discipline

The OD movements and movement classes that are allocated to a lane. See *Exclusive Lane, Movement, Movement Class, Shared Lane*.

Lane Group

An organization of approach lanes at an intersection designated for separate analysis as required by *models that are not lane based* (e.g. the US Highway Capacity Manual method). A separate lane group is established for each set of lanes allocated to a vehicle movement exclusively and for each set of lanes with one or more lanes shared by several vehicle movements. See *Movement Group*.

Lane Length

The length of a lane between two intersections (excluding the intersection negotiation area) for a full-length lane, or the length of a short lane. See *Negotiation Area, Short Lane*.

Lane Movement

An organization of vehicle movements at an intersection used by lane-based models for network analysis purposes. For each movement on each approach (by origin - destination and by movement class), a separate lane movement is established for vehicles moving from each approach lane to each exit lane on each exit road. See *Approach Movement, Movement Class*.

Lane Movement Flow Proportions

Proportions of a lane movement flow from a given approach lane exiting to available exit lanes on a given exit road. Different flow proportions can be specified for different Movement Classes. See *Movement, Lane Movement, Movement Class*.

Lane Segment

See Segment.

Lane Type

A term used to describe whether an approach lane at an intersection is a normal lane or a slip / bypass lane. See *High-Angle Lane, Low-Angle Lane, Slip / Bypass Lane*.

Lane Utilisation

The distribution of vehicles among lanes when two or more lanes are available for a movement.

Lane Utilisation Ratio

Ratio of the lane degree of saturation to the highest (critical) lane degree of saturation in a set of lanes.

Late Start

The phase interval used at the start of a phase to delay the introduction of green interval for some movements in the same phase. See *Early Cut-Off*.

Leading Right Turn / Left Turn

An arrow-controlled right turn / left turn movement that is started and terminated in the phase that immediately precedes the phase in which the opposing through movement runs.

Leg Geometry

A term used to describe whether an intersection leg is a two-way road, a one-way approach or a one-way exit. See *Lane Configuration*.

Level of Service (LOS)

An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network, based on measures such as delay, degree of saturation, density, speed, congestion coefficient, speed efficiency or travel time index during a given flow period. This provides a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A to F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worst. See *Network Level of Service, Performance Measure, Route Level of Service*.

Light Vehicle

All vehicles that are not classified as a Heavy Vehicle including passenger cars, vans vehicles, minibuses, four-wheeled pickup trucks, and so on, as well as motorcycles and bicycles. See *Passenger Car, Heavy Vehicle*.

Limited Priority

See Priority Reversal.

Link-Based Model

A mathematical model of a road (traffic) network formed using *nodes* to describe intersections, pedestrian crossings and other points of interruption to traffic flows, and *links* to describe their connections. See *Lane-Based Model, Network*.

Lost Time

The amount of time in a signal cycle which is effectively lost to a traffic movement because of starting delays (starting intergreen time and start loss) less the end gain time due to additional departures after the end of green interval. See *End Gain, Intergreen Time, Start Loss, Starting Intergreen Time, Terminating Intergreen Time*.

Low-Angle Lane

A slip (bypass) lane with a low-angle design likely to be used by an uninterrupted (continuous) movement or a movement controlled by traffic signals. See *High-Angle Lane, Lane Type, Slip (Bypass) Lane*.

LTOR (Left Turn On Red)

See Turn On Red.

M

Major Road (Priority Road)

A road on which traffic takes precedence over all entering or crossing traffic at an unsignalised (sign controlled) intersection. See *Two-Way Sign Control (TWSC)*.

Major Stop

A drive cycle element that involves a deceleration from the approach cruise speed to zero speed and an acceleration from zero speed to the exit cruise speed. See *Effective Stop Rate, Proportion Queued*.

Mass (Vehicle Mass)

The average vehicle mass value per movement class used in fuel consumption, emission and vehicle operating cost calculations. Gross vehicle mass means the maximum loaded mass of a vehicle. Unloaded mass means the mass of a vehicle in running order, equipped with all standard equipment and with all fuel and other fluid reservoirs filled to nominal capacity, but unoccupied and without any other load. See *Maximum Power*.

Maximum Cycle time

The largest value of cycle time to be used in signal timing calculations or in signal control.

Maximum Green Time

The largest value of green time to be used in signal timing calculations or in signal control. Also referred to as the maximum running time. In actuated signal control, this is the sum of Minimum Green Time and Maximum Green Extension Time. See *Actuated Signal Data, Gap Setting, Minimum Green Time*.

Maximum Power

The maximum vehicle power value per movement class used in fuel consumption, emission and vehicle operating cost calculations. See *Mass*.

Maximum Running Time

See Maximum Green Time.

Metered Approach

The approach with signals to control traffic at a roundabout with metering signals. This is the approach causing problems for a downstream approach without roundabout metering signals. See *Controlling Approach, Roundabout Metering Signals*.

Midblock

A section of road between intersections.

Midblock Inflow Rate

See Inflow Rate.

Midblock Lane Change

Lane changes made by vehicles between intersections that are related to differences between upstream and downstream lane flow rates.

Midblock Outflow Rate

See Outflow Rate.

Minimum Clearance Time

The minimum value of the *Clearance Time*.

Minimum Cycle time

The smallest value of cycle time to be used in signal timing calculations or in signal control.

Minimum Departures

The minimum number of departures per lane per minute representing minimum capacity for opposed turns at unsignalised intersections (roundabouts and two-way sign-controlled intersections), similar to the number of departures after the end of the displayed green interval at signalised intersections. See *End Departures*.

Minimum Green Time

The smallest value of green time to be used in signal timing calculations or in signal control. The duration of the interval in traffic-actuated signals during which the green display cannot be terminated. Also referred to as the initial running time. See *Actuated Signal Data, Gap Setting, Maximum Green Time*.

Minimum Walk Time

The minimum value of the duration of the walk display for pedestrians at a signalised intersection or a midblock signalised pedestrian crossing.

Movement (Traffic Movement)

A traffic stream identified by its origin (approach) and destination (exit) at an intersection or uninterrupted road location. See *Approach Movement, Lane Movement, Movement Class, Uninterrupted Flow (Continuous Flow)*.

Movement Class

A system used to group vehicles into aggregate movement groups including light vehicles, heavy vehicles, buses, bicycles, large trucks, light rail or trams). This is related to but not the same as vehicle classification. See *Lane Movement, Light Vehicle, Heavy Vehicle, Movement, Traffic Composition, User Class*.

Movement Group

An organization of vehicle movements at an intersection as required by models based on *lane groups*, i.e. *models that are not lane based* (e.g. the US Highway Capacity Manual method). A separate movement group is established for each movement allocated to one or more exclusive lanes and a set of movements allocated to one or more shared lanes. See *Lane Group, Movement, Movement Class*.

N

Negotiation Area (Intersection Negotiation Area)

The controlled area of the intersection outside the approach road and exit road areas where conflicting movements travel. See *Approach Distance, Downstream Distance, Exit Distance, Negotiation Distance*.

Negotiation Distance

The vehicle distance travelled from the approach stop line (give-way / yield line) to the end of the intersection negotiation area for a given OD (turning or through) movement by movement class. See *Approach Distance, Downstream Distance, Exit Distance, Negotiation Area, Negotiation Radius*.

Negotiation Radius

The radius of the vehicle path during travel in the intersection negotiation area for a given OD (turning or through) movement by movement class. See *Negotiation Area, Negotiation Distance, Negotiation Speed, Turn Radius*.

Negotiation Speed

The safe speed of a vehicle moving through the controlled area of the intersection (negotiation area) for a given OD (turning or through) movement by movement class. For turning vehicles, this can be determined as a function of the negotiation radius. See *Negotiation Area, Negotiation Distance, Negotiation Radius*.

Network (Road Network, Traffic Network)

A system of intersections, pedestrian crossings and other points (nodes) of interruption to traffic flows and the roads (links) that connect them. See *Network Model*.

Network Configuration

Setting up a network by defining its elements and their connections.

Network Cycle Time

The cycle time that is used as a common cycle time for signal coordination purposes to apply to all coordinated signalised intersections and pedestrian crossings in a network. See *Cycle Time, Network*.

Network Flows

A term used in relation to the consistency of upstream and downstream demand flow rates on internal approaches of a network as determined in relation to midblock inflow and outflow rates. See *Inflow Rate, Outflow Rates*.

Network Level of Service

An aggregate level of service measure used for assessing traffic conditions in a network as a whole, usually based on the speed efficiency parameter as a simple measure. See *Level of Service (LOS), Route Level of Service*.

Network Model

A lane-based or link-based mathematical model of a road (traffic) network for estimating its performance considering interactions of traffic among its elements including backward spread of congestion (queue spillback), capacity constraint to oversaturated upstream lanes limiting the flows entering downstream lanes, forward movement of signal platoons formed at signalised intersections midblock lane changes, and so on. See *Capacity Constraint, Lane-Based Model, LinkBased model, Network, Route, Performance Measure, Platoon, Queue Spillback*.

Network Model Variability

A measure of variations in performance measures during network model iterations indicating how well the results are settled when the iterations are stopped. This could be interpreted as an indicator of the certainty (or uncertainty) of the network analysis results. See *Percentage Stopping Condition*.

O

Occupancy Time

The time that starts when the front of a vehicle enters the detection zone and finishes when the back of the vehicle exits the detection zone, i.e. the duration of the period when the detection zone is occupied by a vehicle. See *Gap Setting, Space Occupancy Ratio, Space Time, Time Occupancy Ratio*.

OD (Origin - Destination) Movement

See Movement (Traffic Movement).

Off-Peak Period (Off-Peak Flow Period)

The time interval that has low vehicle and pedestrian traffic demand flows during the day (24-hour period). See *Analysis Period, Flow Period, Peak Period, Peaking Parameters, Total Flow Period*.

Offset (Signal Offset)

The time difference between the phase change time or green start time of the reference phase at the subject site or common control group (CCG) relative to the phase change time or green start time of the reference phase at the reference site or common control group (CCG). Thus, offsets at all sites or common control groups (CCGs) in a coordinated control system are relative to the reference Site or common control group (CCG). See *Phase Change Time, Green Start Time, Reference Phase, Relative Offset*.

Offset Method (Signal Offset Method)

The method used for determining signal offset, including start of green offset (leading offset, starting offset), end of green offset (trailing offset), middle of green, and simultaneous (zero offset). See *Offset, Relative Offset*.

Operating Cost

Traffic operation cost associated with vehicle and pedestrian movements, and consisting of vehicle operating cost and time cost components where time cost applies to vehicle occupants (persons) and pedestrians. See *Time Cost, Vehicle Operating Cost*.

Operating Cost Model

A model to estimate the operating cost that consists of vehicle operating cost and time cost of vehicle occupants (persons) and pedestrians. See *Fuel Consumption Model*.

Opposed Movement (Opposed Turn)

A movement (Filter Turn, Permitted Turn, Minor Movement) that gives way (yields) to one or more opposing traffic streams at a signalised or unsignalised intersection.

Opposing Movement

A movement that conflicts with, and has priority over, another (opposed) movement.

Opposing Pedestrian Factor

A factor to adjust the opposing pedestrian flow rate, for example to include the effect of some pedestrians giving way / yielding to vehicles in gap acceptance modelling of a vehicle movement opposed by pedestrian movement.

Opposing Vehicle Factor

A factor used to determine the opposing flow rate in pcu/h for a movement subject to gap acceptance process (opposed movement) to allow for the effect of each movement class in the opposing stream (circulating flow at roundabouts) on gap acceptance capacity of the opposed movement. See *Gap Acceptance, Gap Acceptance Factor, Movement Class, Opposed Movement, Opposing Movement*.

Optimum Cycle Time

A cycle time that optimises (minimises or maximises) a selected performance measure (e.g. minimises delay) for an intersection or network.

Optimum Maximum Green Settings

Maximum Green Settings that optimise (minimise or maximise) a selected performance measure (e.g. minimises delay) for an intersection controlled by vehicle-actuated signals.

Origin-Destination (OD) Movement

See Movement (Traffic Movement).

Outflow Rate

The rate of midblock flow leaving the internal approach of a network determined as the difference between the upstream and downstream total demand flow rates. Outflow occurs when the upstream demand flow rate is greater than the downstream demand flow rate. See *Inflow Rate*.

Overflow

An interrupted traffic condition when a number of queued vehicles are not able to depart due to insufficient capacity during a traffic signal or gap acceptance cycle (also known as cycle failure). See *Cycle, Gap Acceptance Cycle, Overflow Queue*.

Overflow Queue

The number of queued vehicles per cycle left over at the end of a green period at signals or at the end of acceptable gap (unblock) periods during a gap acceptance process. See *Cycle Failure*.

Overlap Movement

A movement that runs in several consecutive phases without stopping during the associated intergreen period(s). See *Phase Transition*.

Oversaturated Conditions

Traffic flow conditions where the *Demand Flow Rate* exceeds *Capacity* (*Degree of Saturation* is greater than 1.0).

P

Paired Intersection

A term used to refer to closely-spaced intersections and interchanges with limited queue storage space on internal approaches, including staggered T intersections, freeway signalised diamond interchanges, freeway roundabout interchanges, diverging diamond interchanges (signalised), fully-signalised roundabouts (including signalised circulating roads), large signalised intersections with wide median storage areas, staged crossings at sign-controlled intersections, pedestrian crossings near intersections, and various alternative intersection and interchange arrangements that can be modelled as a small network. Signalised paired intersections are likely to operate as a common control group (CCG), i.e. under a single signal controller. See *Common Control Group (CCG), Intersection, Pedestrian Crossing, Network*.

Parallel Pedestrian Movement

A signalised pedestrian movement that runs at the same time as the parallel vehicle movement (s) that are controlled by circular green displays.

Parking Manoeuvre Rate

The number of parking manoeuvres per hour used for calculating a saturation flow reduction factor to allow for friction due to parking manoeuvres in an adjacent parking lane at signalised intersections.

Passage Time

See Gap Setting.

Passenger Car

For the purpose of general traffic analysis requirements, this term refers to vehicles manufactured primarily for the purpose of carrying passengers including sedans, taxi cabs, station wagons, sports utility vehicles, and excludes other types of light vehicles such as bicycles, motor cycles, campers, motor homes, ambulances, minibuses and light commercial vehicles such as utility vehicles, panel vans and pickup trucks. See *Light Vehicle, Heavy Vehicle*.

Passenger Car Equivalent (PCE)

A factor used to determine the saturation flow rate of a movement at signals to allow for the effect of each movement class in the traffic stream (passenger cars per vehicle). This factor is determined using relative saturation (queue discharge) headway values of different movement classes under identical road, traffic and control conditions.. Also referred to as passenger car unit (PCU). See *Basic Saturation Flow Rate, Movement, Movement Class, Saturation Flow Rate, Saturation Headway, Through Car Equivalent*.

Passenger Car Unit (PCU)

See Passenger Car Equivalent (PCE).

Peak Flow Factor (PFF)

The ratio of the average flow rate during the total flow period to the average flow rate during the peak flow period (e.g. the 30-minute peak flow interval during the peak hour). The peak flow factor is equivalent to peak hour factor when the total flow period is 60 minutes. See *Peak Flow Period, Peak Hour, Peak Hour Factor, Total Flow Period*.

Peak Hour

The 60-minute interval that has the highest traffic demand flows. Usually AM peak hour and PM peak hour are considered for analysis because of the likelihood of significant differences in the directional flows during morning and evening hours. See *Analysis Period, Flow Period, Off-Peak Period, Peaking Parameters, Total Flow Period*.

Peak Hour Factor (PHF)

The ratio of the average flow rate during the peak hour to the average flow rate during the peak flow period (e.g. the 15-minute peak flow interval during the peak hour). The peak hour factor is a special case of peak flow factor for the total flow period of 60 minutes. See *Peak Flow Factor, Peak Flow Period, Peak Hour, Total Flow Period*.

Peaking Parameters

The collective name given to the *Peak Flow Period, Peak Flow Factor (or Peak Hour Factor) and Total Flow Period* parameters that define a typical peaking pattern for the analysis period.

Peak Period (Peak Flow Period)

The time interval that has the highest traffic demand flows during the day (24-hour period), e.g. AM and PM peak periods, or peak hour period, peak 15-minute period, and so on. See *Analysis Period, Flow Period, Off-Peak Period, Peaking Parameters, Total Flow Period*.

Peak Time Factor

The duration of the peak flow period to the duration of the total flow period. See *Peak Flow Period, Total Flow Period*.

Pedestrian Actuation

The method used in signal timing, capacity and performance analysis to account for the effect of occasional pedestrian calls when pedestrian volumes are low, reducing the probability of pedestrian arrivals during the average signal cycle. See *Phase Actuation*.

Pedestrian Clearance Period

The Flashing Don't Walk period that immediately follows the termination of pedestrian walk display to enable pedestrians, who have just stepped off the kerb at the commencement of this period, to complete their crossing to the nearest kerb or refuge. See *Clearance 1 Interval, Clearance 2 Interval (Clearance Time Overlap), Pedestrian Minimum Time, Walk Time*.

Pedestrian Crossing

A specially marked area giving legal rights to pedestrians crossing the road (signalised crossing, zebra crossing, pelican crossing, puffin crossing, and so on). See *Crossing, Full Crossing, Zebra Crossing*.

Pedestrian Minimum Time

Minimum time required for both Walk and Flashing Don't Walk displays, but excluding any overlaps with terminating intergreen displays. See *Clearance 1 Interval, Clearance 2 Interval (Clearance Time Overlap), Pedestrian Clearance Period, Walk Time*.

Percentage Stopping Condition

A parameter used in iterative approximation methods to specify the maximum percentage variation allowed in selected performance measures before the iterations are stopped. See *Network Model Variability*.

Percent Arriving During Green

See Arrivals During Green.

Percentile Queue

A value below which a specified percentage of the queue length values observed for individual signal cycle or gap-acceptance cycles fall. For example, the 95th percentile queue length is the value below which 95 per cent of all observed queue lengths fall, or 5 per cent of all observed queue lengths exceed. See *Back of Queue, Queue at the Start of Green, Cycle-Average Queue, Queue, Queue Distance, Queue Move-up*.

Performance Index

A measure that combines several performance measures such as delay, number of stops and queue length.

Performance Measure

A quantitative or qualitative measure such as delay, queue length, stop rate, average travel time, speed efficiency, and so on used to evaluate the operational characteristics of a traffic facility at different levels of detail (lane, movement, approach, intersection, route, network). See *Level of Service*.

Permitted Turn

See Opposed Movement.

Phase

That part of a signal cycle during which one or more movements receive right of way subject to resolution of any vehicle or pedestrian conflicts by priority rules. A phase is identified by at least one movement gaining right of way at the start of it and at least one movement losing right of way at the end of it.

Phase Actuation

The method used in signal timing, capacity and performance analysis to account for the effect of phase skipping when vehicle demand volumes are low, resulting in a phase frequency less than 100%. See *Pedestrian Actuation, Phase Frequency*.

Phase Change Time

The time when the subject phase is initiated, which is the time when the displayed green interval ends (yellow interval starts) for the conflicting movement phase which precedes the subject phase. See *Displayed Green and End Times, Phase Start Time*.

Phase Frequency

The percentage of signal cycles when signal phase is called during an analysis (flow) period.

Phase Sequence

The order of phases in a signal cycle. See *Variable Phase Sequence*.

Phase Split

The duration of each phase (*Green Time* and *Intergreen Time*) within a signal cycle. It is normally expressed as a percentage of cycle length.

Phase Start Time (Green Start Time)

The time when the displayed green interval starts for the subject phase, which is the time when the all-red interval ends for the conflicting movement phase which precedes the subject phase. See *All-Red Interval, Displayed Green and End Times, Phase Change Time*.

Phase Time

The duration of the displayed green interval plus the terminating intergreen interval (sum of displayed phase green time, yellow time and all-red time). See *All-Red Time, Green Time, Terminating Intergreen Time, Yellow Time*.

Phase Transition

A term used in signal timing analysis to describe the condition when a turning movement is stopped at the end of the current signal phase before starting in the next phase, as opposed to an overlap movement that can run in two consecutive phases without stopping and starting. See *Overlap Movement*.

Platoon

A closely spaced group of vehicles or pedestrians travelling together as a moving queue (with small spacing and headways, and at substantially the same speed) because of signal control, geometric conditions or other factors. See *Arrivals During Green, Arrival Type, Bunching, Coordination, Offset, Platoon Ratio, Progression, Progression Factor*.

Platoon Dispersion

The degradation of a platoon, i.e. increasing spacing and headways with increasing distance travelled along an urban street after the platoon forms at a signalised intersection and departure during the green period, due to differing speeds of vehicles within the platoon.

Platoon Ratio

The ratio of the average arrival flow rate during the green period to the average arrival flow rate during the signal cycle, equivalent to the ratio of the proportion of traffic arriving during green (arrivals during green) to the green time ratio. For isolated signals (no signal coordination effects), the Platoon Ratio is 1.0. This corresponds to uniform arrivals during the red and green periods. Values of Platoon Ratio greater than 1.0 indicate good progression effects, and the values of Platoon Ratio smaller than 1.0 indicate poor progression effects. See *Arrivals During Green, Arrival Type, Coordination, Offset, Platoon, Progression, Progression Factor*.

Practical Capacity

The maximum flow rate at a target (practical) degree of saturation (usually 80% to 90%). See *Capacity, Degree of Saturation*.

Practical Cycle Time

A cycle time and the associated green times calculated to satisfy the practical (target) degrees of saturation (usually 90 per cent) for critical movements. This method results in equal degrees of saturation (EQUISAT method) for critical movements except those affected by minimum or maximum green time constraints (especially in the case of large pedestrian minimum times), by the use of unequal target degrees of saturation, or by application of the green split priority method for coordinated movements. See *EQUISAT Method*, *Green Time*, *Green Split Priority*, *Phase Time*, *Practical Degree of Saturation*.

Practical Degree of Saturation

A target, or maximum, degree of saturation that corresponds to an acceptable level of traffic performance.

Practical Spare Capacity

The amount of increase possible in the arrival flow rate to obtain a degree of saturation equal to the practical (target) degree of saturation.

Preemption

The interruption of normal traffic signal operations to serve a preferred vehicle. See *Bus Priority*.

Pretimed Signal Analysis

See *Fixed-Time Signal Analysis*.

Priorities

The priority rules determining *Opposed Movements* and *Opposing Movements* at an intersection.

Priority Reversal (Limited Priority)

A condition in a gap acceptance process (roundabout entry, minor road at sign control, filter turns at signals, merging) where the opposing (higher priority) movement adjusts, or is forced to adjust, its headways allowing opposed vehicles to enter or cross using smaller gaps in opposing traffic.

Priority Road

See *Major Road*.

Priority Rule

A traffic regulation which assigns priority to one stream of traffic over another. See *Filter Turn*, *Opposed Movement*, *Opposing Movement*.

Probability of Blockage

The probability of the back of a queue from a downstream intersection lane extending beyond the available queue storage length (lane length) and blocking traffic movements at upstream intersection lanes. See *Blockage*, *Blockage Tolerance*, *Blockage Calibration Factor*, *Queue Spillback*.

Progression

A time relationship between adjacent traffic signals which allows vehicle platoons to be given a green signal as they pass through the sequence of intersections. See *Arrivals During Green*, *Arrival Type*, *Coordination*, *Offset*, *Platoon*, *Platoon Ratio*, *Progression Factor*.

Progression Factor

A parameter used in determining signal coordination effect on delay, queue length, stop rate, and so on relative to isolated (non-coordinated) operation. See *Arrivals During Green, Arrival Type, Coordination, Offset, Platoon, Platoon Ratio, Progression*.

Proportion Queued

The proportion of traffic that is queued as related to the major stops or slow downs from the approach cruise speed due to the effects of traffic control and the existence of other vehicles. The highest value of proportion queued is 1.0 (all vehicles or pedestrians queued). See *Effective Stop Rate, Major Stop, Queue Move-up, Slow Down*.

Q

Queue

A line of vehicles or pedestrians waiting to proceed through an intersection, pedestrian crossing or other point of interruption, measured in vehicles or pedestrians, or as a queue distance in metres or feet. Slowly moving vehicles or pedestrians joining the back of the queue are usually considered part of the queue. The internal queue dynamics can involve starts and stops referred to as queue move-ups. A faster-moving line of vehicles is often referred to as a moving queue or a platoon. See *Back of Queue, Queue at the Start of Green, Cycle-Average Queue, Percentile Queue, Platoon, Queue Distance, Queue Move-up*.

Queue at the Start of Green

The extent of the queue of vehicles in a lane at a signalised intersection or crossing as measured at the start of the green period relative to the stop line.

Queue Constraint

A restriction applied to the upstream flow that can enter an internal approach lane in a network when the average back of queue equals the storage space so that any further vehicles queue within the upstream area. See *Queue Storage Distance*.

Queue Detector Setback Distance

The distance between the advanced queue detectors and the roundabout give-way /yield line on the controlling approach of a roundabout with metering signals. See *Controlling Approach, Metered Approach, Roundabout Metering Signals*.

Queue Discharge

The departure of vehicles from a queue.

Queue Distance

The queue length expressed as a distance value (metres or feet) rather than as the number of vehicles or pedestrians in the queue. See *Back of Queue, Queue at the Start of Green, Cycle-Average Queue, Percentile Queue, Queue Distance, Queue Move-up*.

Queue Move-up

A manoeuvre by a queued vehicle that accelerates towards the queue discharge speed, travels at that speed and decelerates to a stop because of insufficient capacity during the signal cycle or gap acceptance cycle at an intersection. See *Cycle, Gap Acceptance Cycle, Overflow Queue, Cycle Failure*.

Queue Space

The distance between the front ends of two successive queued vehicles in the same traffic lane. See *Spacing*.

Queue Spillback

A condition in road networks where the back of a queue from a downstream intersection lane extends beyond the available queue storage length (lane length), resulting in potential blockage of traffic movements at upstream intersection lanes and capacity losses at upstream intersection lanes. See *Blockage, Blockage Calibration Factor, Blockage Tolerance, Probability of Blockage*.

Queue Storage Distance

The length of the approach lane where vehicles can queue.

Queue Storage Ratio

The ratio of the back of queue distance to the available queue storage distance on the subject lane.

Queuing

The forming of a line of delayed vehicles.

Queuing Delay

The part of the *Stopline Delay* that includes the stopped delay (while vehicle is idling at near-zero speed) and the queue move-up delay (while a queued vehicle accelerates and travels towards the stop-line but stops again, e.g. because the signal display changes to red). See *Control Delay, Geometric Delay, Idling, Queue Move-up, Stop-Line Delay*.

R**Ratio of Running Cost to Fuel Cost**

A simple factor used to convert the cost of fuel to total vehicle running cost including tyre, oil, repair and maintenance. See *Operating Cost*.

Red Clearance Interval

See All-Red Interval.

Red Time

The duration of the red signal display for a phase or a movement.

Reference Phase

A signal phase in the phase sequence of a site or common control group (CCG) used as the reference point for assigning an offset value to the site or common control group (CCG) for signal coordination purposes. The signal offset applies to the reference phase and the phase change times of other phases in the sequence are determined relative to the change time of the reference phase. See *Common Control Group (CCG), Coordination, Offset, Network, Phase Change Time, Reference Site or CCG, Site*.

Reference Site or CCG

An individual site or common control group (CCG) used as the reference point for assigning signal offsets in a coordinated signal system. The offset value of the reference site or CCG is zero. See *Common Control Group (CCG), Coordination, Network, Offset, Site*.

Relative Offset

The time difference between the start time of a movement green period at the downstream site or common control group (CCG) relative to the start time of a movement green period at the upstream site or common control group (CCG). The green period in this definition could be the *displayed green period* or the *effective green period* depending on the purpose of use of this parameter. See *Effective Green and Red Times, Offset*.

Reliability

The degree to which the result of a measurement, calculation, or specification can be depended on to be accurate. See *Uncertainty*.

Road Network

See *Network*.

Roundabout

An intersection with a generally circular shape, characterized by give way (yield) on entry and circulation around a central island.

Roundabout Metering Signals

A signal control system used at roundabouts to create gaps in the circulating stream in order to help with the problem of excessive queuing and delays at approaches affected by highly directional (unbalanced) flows. Roundabout metering signals are installed on selected roundabout approaches and used on a part-time basis since they are usually required only when heavy demand conditions occur during peak periods. The term *metered approach* is used for the approach stopped by red signals (approach causing problems for a downstream approach), and the term *controlling approach* is used for the approach with the queue detector, which is the approach helped by the metering signals. See *Controlling Approach, Metered Approach*.

RTOR (Right Turn On Red)

See *Turn On Red*.

Route

A series of movements in one direction of travel in a network. See *Movement, Network*.

Route Configuration

The process of defining a route by selecting a series of movements in one direction of travel in a network. See *Movement, Network, Route*.

Route Level of Service

An aggregate level of service measure used for assessing traffic conditions for a route, usually based on the speed efficiency parameter as a simple measure. See *Level of Service (LOS), Network Level of Service*.

Running Speed

The average speed including the effect of delays due to interrupted conditions but not including any stopped (idling) times. See *Average Travel Speed, Cruise Speed, Free-Flow Speed, Negotiation Speed, Uninterrupted Travel Speed*.

S**Saturation Flow Rate**

The steady departure (queue discharge) flow rate achieved by vehicles departing from the queue during the green period at traffic signals as measured at the stopline. Saturation flow rate (vehicles per hour) is $3600 / \text{saturation flow headway (seconds)}$. See *Basic Saturation Flow Rate, Follow-up Headway, Movement, Movement Class, Passenger Car Equivalent, Saturation Headway, SCATS Maximum Flow (MF), Through Car Equivalent*.

Saturation Headway

The steady departure (queue discharge) headway achieved by vehicles departing from the queue during the green period at traffic signals as measured at the stopline. Saturation headway (seconds) is $3600 / \text{saturation flow rate (vehicles per hour)}$. The follow-up headway parameter used in gap acceptance analysis is a saturation headway. See *Follow-up Headway, Saturation Flow Rate, SCATS Maximum Flow (MF)*.

Saturation Period

The saturated part of the green period at signals. This is the initial part of the green period when the queue discharges at the saturation flow rate. See *Saturation Flow Rate*.

Saturation Speed

The steady departure (queue discharge) speed achieved by vehicles departing from the queue during the green period at traffic signals as measured at the stopline. See *Saturation Flow Rate, Saturation Headway*.

SCATS Control

A fully-adaptive wide area control system developed in Australia (*Sydney Coordinated Adaptive Traffic System*) and used in many cities around the world, incorporating coordinated and isolated signal control algorithms.

SCATS DS

The degree of saturation in the SCATS adaptive control method.

SCATS Master Isolated Control

The SCATS adaptive control method for a single (isolated) signalised intersection.

SCATS Masterlink

The fully-adaptive coordinated signal control mode of operation of the SCATS control system.

SCATS Maximum Flow (MF)

A maximum departure flow rate during a fully saturated green period averaged over the green and intergreen times as a special measure of saturation flow rate. See *Saturation Flow Rate*.

Scramble-Crossing Phase

An exclusive pedestrian phase at an intersection where pedestrians are allowed to cross in any direction including diagonally within the limits of the crosswalk lines. See *Diagonal Crossing*, *Exclusive Pedestrian Phase*.

Segment (Lane Segment, Road Segment)

The section of a lane, or a section of road, in the direction of travel with different traffic characteristics. See *Two-Segment Lane*.

Sensitivity Analysis

A method for assessing how model outputs change in response to changes in model inputs, implemented by varying one input at a time over its reasonable range while holding all other inputs constant. For example, this technique can be used to investigate changes in estimates of capacity and performance measures as a function of parameters representing driver behaviour and traffic characteristics (critical gap, follow-up headway, basic saturation flow, lane utilisation ratio, cruise speed, vehicle queue space), and geometry (lane width, and roundabout parameters including inscribed diameter, entry angle and entry radius).

Sequence

See Phase Sequence.

Shared Lane

A lane allocated for use by two or more OD movements or movement classes, e.g. shared through and right-turn lane, as opposed to an exclusive lane. See *Lane Discipline*, *Movement*, *Movement Class*, *Exclusive Lane*.

Short Lane

A lane of limited length relative to other lanes on the approach or exit side of an intersection, e.g. a turn bay or part of a lane available downstream of vehicles parked on an approach, or a lane terminated on the exit side of the intersection forcing vehicles to merge into the adjacent lane.

Signal Analysis Method

The method used in signal timing calculations corresponding to the particular signal control method directly or indirectly. See *Fixed-Time/Pretimed Signal Analysis*, *Actuated Signal Analysis*.

Signal Aspect

A single optical system (circular, arrow, or symbolic) on a signal face capable of being illuminated at a given time. Red, yellow, green and white signal aspects are used for vehicle movements, and walk and don't walk signal aspects are used for pedestrians. See *Traffic Signal, Traffic Signal Controller*.

Signal Controller

See Traffic Signal Controller.

Signal Coordination

See Coordination.

Signal Offset

See *Offset*.

Signal Offset Method

See Offset Method.

Signal Phasing

The sequential arrangement of separately controlled groups of vehicle and pedestrian movements within a signal cycle to allow all vehicle and pedestrian movements to proceed.

Signal Timing

The process of determining the durations of green, yellow and red displays, actuated signal control settings, as well as offsets for coordinated signals.

Signalised Crossing

An area of the road used by pedestrians when crossing the road with the guidance of pedestrian signals at a midblock or intersection location. It can be used by cyclists if bicycle signals are provided. See *Full Crossing, Staged Pedestrian Crossing, Staged Signalised Pedestrian Crossing*.

Signalised Intersection

An intersection where vehicle and pedestrian movements are controlled by traffic signals. See *Traffic Signal*.

Simulation Model

A model that use various rules (mostly in the form of mathematical equations) for movement of vehicles in a traffic system (individually or in platoons). Depending on the degree to which the movements of individual vehicles are aggregated, a simulation model can be microscopic, mesoscopic or macroscopic. See *Analytical Model*.

Site

A term used for an intersection, pedestrian crossing, or other interruption point modelled separately or as an element of a network, including elements of a paired intersection, common control group, or interchange. See *At-Grade Intersection, Common Control Group, Grade-Separated Intersection, Interchange, Intersection, Paired Intersection, Site*.

Slip Lane (Bypass Lane)

A slip (bypass) lane is a high-angle or low-angle turning (or through) movement lane separated from an adjacent lane by a triangular or strip island. See *Lane Type, High-Angle Lane, Low-Angle Lane*.

Slow Down

A drive cycle element that involves a deceleration from the approach cruise speed to a non-zero intermediate speed and an acceleration from the intermediate speed to the exit cruise speed. See *Effective Stop Rate, Major Stop, Proportion Queued, Queue Move-up*.

Sneakers

See End Departures.

Space Length (Gap Distance)

The following distance between two successive vehicles as measured between the rear end of one vehicle and the front end of the next vehicle in the same traffic lane (spacing less vehicle length).

Space-Mean Speed

Average speed of all vehicles that travel a given section of road during a specified period of time calculated using the average travel time and length for the road section. See *Average Travel Speed, Time-Mean Speed*.

Space Occupancy Ratio

The proportion of road space (length) covered by vehicles. See *Occupancy Time, Time Occupancy Ratio*.

Space Time

The time between the detection of two consecutive vehicles in the same lane when the presence detection zone is not occupied. Space time is equivalent to gap time less the time taken to travel the effective detection zone length. See *Gap Setting, Occupancy Time*.

Spacing

The distance between the front ends of two successive vehicles in the same traffic lane. See *Queue Space, Space Length*.

Speed

The distance travelled per unit time. In a time-distance diagram, the slope of the time-distance trace of a vehicle is its speed. See *Average Travel Speed, Cruise Speed, Free-Flow Speed, Negotiation Speed, Running Speed, Space-Mean Speed, Time-Mean Speed, Uninterrupted Travel Speed*.

Speed Efficiency (Speed Efficiency Ratio)

The ratio of average travel speed to average desired speed. See *Average Travel Speed, Desired Speed*.

Splitter Island

A raised or painted area on a roundabout approach used to separate entering and exiting traffic movements, deflect and slow entering traffic, and provide storage space for pedestrians crossing that intersection approach in two stages.

Staged Crossing (Two-Way Sign Control)

A two-stage gap acceptance process at a two-way sign-controlled (TWSC) intersection where a median (*Island*) refuge area is available for minor-street through and turning movements so that drivers sequentially evaluate and use gaps in the near-side major-road traffic stream, followed by gaps in the far-side major road traffic stream. See *Full Crossing, Two-Way Sign Control (TWSC)*.

Staged Pedestrian Crossing

A condition that arises when a raised median (*Island*) refuge area is available allowing pedestrians to cross one conflicting traffic stream at a time. See *Full Crossing, Signalised Crossing, Staged Signalised Pedestrian Crossing*.

Staged Signalised Pedestrian Crossing

A system by which a long signalised pedestrian crossing is divided or “staged” into several time-separated sections, each being controlled with separate Walk signals. See *Full Crossing, Signalised Crossing, Staged Pedestrian Crossing*.

Staggered T-intersection

An intersection in which the carriageway of one road is offset so as not to be continuous across the other road. Left-Right and Right-Left staggered T intersection configurations are possible.

Starting Intergreen Interval

The intergreen interval consisting of yellow and all-red intervals before the start of green display for a phase or a movement. See *All-Red Interval, Intergreen Interval, Terminating Intergreen Interval, Yellow Interval*.

Starting Intergreen Time

Duration of the Starting Intergreen Interval.

Start Loss

The time between the start of the displayed green period and the start of the effective green period for a movement, which is associated with queue discharge time losses at the start of the green period due to vehicles accelerating to saturation speed, or due to giving way to opposing vehicle or pedestrian movements. See *End Gain, Lost Time*.

Stop

An instruction to a road user to stop completely and remain stationary and give-way to all *Opposing Movements*.

Stop Line

A solid line marked across all or part of a road, behind which vehicles should stand when required to stop by traffic signals or regulatory signs. See *Give-Way (Yield) Line*.

Stop Line Setback Distance

The distance between the signal stop line and the roundabout give-way / yield line on the metered approach of a roundabout with metering signals. See *Controlling Approach, Metered Approach, Roundabout Metering Signals*.

Stopline Delay

Delay determined by projecting vehicle time-distance trajectories from the approach and exit negotiation speeds to the stop line (or give-way / yield line). This delay includes the queuing delay and the main stop-start delay associated with deceleration from the approach negotiation speed to zero speed and acceleration back to the exit negotiation speed. See *Control Delay, Delay, Geometric Delay, Idling, Queuing Delay*.

Stopline Flow Rate

See Departure Flow Rate.

Stopline Travel Distance

The travel distance from the upstream stop line to the downstream stop line used to determine the stopline travel time in modelling signal coordination effects as a function of signal offsets in network analysis. See *Coordination, Offset, Stoline Travel Time*.

Stopline Travel Time

The average time to travel from the upstream stop line to the downstream stop line as a parameter used in modelling signal coordination effects as a function of signal offsets in network analysis. See *Coordination, Offset, Stoline Travel Distance*.

Stop Rate

The average number of all acceleration-deceleration manoeuvres including queue move-ups, partial stops and geometric stops, expressed in terms of equivalent *Major Stops*.

Strip Island

A long island between traffic lanes where the front and back widths may vary.

Synchronisation

See Coordination.

T**Terminating Intergreen Interval**

The intergreen interval consisting of yellow and all-red intervals following the end of of green display for a phase or a movement. See *All-Red Interval, Intergreen Interval, Starting Intergreen Interval, Yellow Interval*.

Terminating Intergreen Time

Duration of the Terminating Intergreen Interval.

Through Car Equivalent (TCE)

A factor used for estimating the saturation flow rate in vehicles per hour by converting the basic saturation flow rate which is in through car units per hour of an OD movement at signals allowing for its turning characteristics and movement class (through car units per vehicle). This factor is obtained as a product of the passenger car equivalent for a movement class and the turning vehicle factor for an OD movement. See *Basic Saturation Flow Rate, Movement, Movement Class, Passenger Car Equivalent, Saturation Flow Rate, Saturation Headway, Through Car Equivalent*.

Time Cost

The component of operating cost representing time cost of vehicle occupants (persons) and pedestrians determined using a time value based on the average income per person. See *Operating Cost*.

Time Occupancy Ratio

The proportion of time in an analysis period when the detector at a given point along the road is occupied by vehicles. See *Occupancy Time, Space Occupancy Ratio*.

Time-Mean Speed

Arithmetic average speed of all vehicles as measured at a point along the road for a specified period of time. See *Space-Mean Speed*.

Time Value Factor

A factor that converts the average income to a time value per person. See *Operating Cost*.

Timing Plan

A plan that defines the cycle time, green splits and offsets for each intersection in a coordinated signal system. See *Signal Timing*.

T-Intersection

An intersection where two roads meet (whether or not at right angles) and one of the roads ends.

Total Delay

The sum of the delays experienced by all vehicles or pedestrians (vehicle-hours per hour or pedestrian-hours per hour), obtained as the product of average delay per vehicle or pedestrian and the flow rate. The *total intersection delay* (including delay experienced by pedestrians and persons in vehicles determined using the vehicle occupancy per vehicle) is given in terms of *total person delay* (person-hours per hour). The *average intersection delay* based for all *persons* is determined by dividing the total intersection delay by the total flow in persons per hour. See *Delay, Vehicle Occupancy*.

Total Flow Period

The time interval with known traffic demand volumes with or without information about the peaking pattern. The value of the total flow period should be equal to or larger than the peak flow period. See *Analysis Period, Flow Period, Off-Peak Period, Peaking Parameters, Peak Period, Unit Time for Volumes*.

Total Travel Distance

The sum of the distances travelled by all vehicles (vehicle-kilometres per hour or vehicle-miles per hour). Obtained as the product of travel distance per vehicle and the flow rate.

Traffic-Actuated Control

A control method that allows a variable sequence and variable duration of signal displays depending on vehicle and pedestrian traffic demands.

Traffic Composition

An aggregate measure of percentages of different vehicle classes in traffic. See *Light Vehicle, Heavy Vehicle, Movement Class*.

Traffic Delay (Uninterrupted Flow Delay)

The delay due to bunching in uninterrupted (continuous) flow, resulting from bunching, i.e. interactions between vehicles (moving queues) that cause drivers to reduce speed below the free-flow (desired) speed. See *Average Travel Speed, Bunching, Cruise Speed, Desired Speed, Free-Flow Speed, Space-Mean Speed, Speed, Time-Mean Speed, Uninterrupted Flow*.

Traffic Lane

See *Lane*.

Traffic Movement

See *Movement*.

Traffic Network

See *Network*.

Traffic Signal

A signal that controls vehicle and pedestrian traffic at an intersection or on a road by means of red, yellow, green or white light displays, and includes circular and arrow signals, pedestrian signals, bicycle crossing signals, bus signals, light rail or tram signals and overhead lane control signals. See *Signal Aspect, Traffic Signal Controller*.

Traffic Signal Controller

An automatic device that regulates the sequence and duration of the illumination of red, yellow, green and white vehicle signal aspects and pedestrian walk and don't walk signal aspects. See *Signal Aspect, Traffic Signal*.

Traffic Simulation

See *Simulation Model*.

Travel Speed

See *Average Travel Speed*.

Traffic Volume

See *Volume*.

Travel Time Index

A traffic performance measure defined as a function of the *Speed Efficiency* parameter.

Turning Movement

See *Movement (Traffic Movement)*.

Turning Vehicle Factor

A factor used to determine the saturation flow rate of a turning movement at signals in vehicles per hour allowing for its turning characteristics and movement class (through car units per vehicle).

This factor is determined using relative saturation (queue discharge) headway values of turning movements and through movements under identical road, traffic and control conditions.. See *Basic Saturation Flow Rate, Movement, Movement Class, Saturation Flow Rate, Saturation Headway, Through Car Equivalent*.

Turn On Red (LTOR, RTOR)

The ability to make a left turn or right turn at a signalized intersection during red signal display, after stopping and only when no conflicting vehicle or pedestrian traffic is present.

Turn Radius

The radius of the turning vehicle path. See *Entry Radius, Negotiation Radius*.

Two-Segment Lane

A lane with two segments (sections in the direction of traffic flow) that can be used by different movement classes. See *Lane Configuration, Movement Class, Short Lane*.

Two-Way Sign Control (TWSC)

The type of traffic control at an intersection where drivers on the minor road controlled by a give-way (yield) or stop sign, or drivers turning from the major road, wait for a gap in the major road traffic to complete a manoeuvre. See *Give-Way (Yield), Stop*.

U

Uncertainty

The range within which a model's estimate of a value is statistically likely to vary from the actual value. See *Reliability*.

Undersaturated Conditions

Traffic flow conditions where the *Demand Flow Rate* is below *Capacity* (*Degree of Saturation* is smaller than 1.0).

Undetected Movement

A movement that exists at a signalised intersection but is not included in signal timing analysis because the signal control system does not detect the movement. Typically, this applies to slip (bypass) lane movements that do not cross over stop-line detectors in the SCATS control system. The undetected movement specification is not appropriate for control systems where turning vehicles crossing over advanced detector loops, or for fixed-time control systems that use signal plans designed to accommodate all turning vehicles.

Uninterrupted Flow (Continuous Flow)

A condition in which vehicles travelling in a traffic stream do not have to stop or slow down for reasons other than those caused by the presence of other vehicles in that stream. See *Bunching, Interrupted Flow*.

Uninterrupted Travel Speed

Average speed without the effect of intersection delays and delays due to other causes of interruption but including the effect of traffic delay (uninterrupted flow delay) due to bunching in uninterrupted flows. See *Average Travel Speed, Desired Speed, Free-Flow Speed, Speed, Traffic Delay, Uninterrupted Flow*.

Unit Extension

See Gap Setting.

Unit Time for Volumes

The time interval for specifying volume counts to be used in analysis, e.g. 15 minutes, 30 minutes, 60 minutes. See *Total Flow Period*.

Unopposed Turn

A left-turn or right-turn movement at a signalised intersection that is made with no opposing or conflicting vehicular or pedestrian flow allowed.

Unsignalised Crossing

See Crossing, Pedestrian Crossing, Zebra Crossing

Upstream

In the direction opposite to the movement of traffic.

User Class

A movement class with a set of parameters specified by the model user. See *Movement Class*.

V

Validation

The process by which the analyst checks the overall model-predicted traffic performance for a street-road system against field measurements of traffic performance, on the basis of field data not used in the calibration process. See *Calibration*.

Variable Phase

A phase that can be skipped (included or not included) in a phase sequence. See *Variable Phase Sequence*.

Variable Phase Sequence

A phase sequence that contains variable phases. Other phases in the sequence are called compulsory phases. In timing analysis for a variable phase sequence, all possible phase sequences are analysed with variable phases included and not included. For example, for the variable phase sequence A, B1, B2, C, D where B1, B2 are variable phases and A, C, D are compulsory phases, the possible phase sequences are (A, B1, C, D), (A, B2, C, D) and (A, C, D). See *Phase Sequence*.

V/C Ratio

See Degree of Saturation.

Vehicle Interval

See Gap Setting.

Vehicle Length

The average vehicle length for a movement class.

Vehicle Mass

See *Mass*.

Vehicle Occupancy

The number of persons per vehicle including the driver that can be specified as an average value for each OD movement and movement class. This parameter is used for calculating various performance statistics in terms of persons rather than vehicles, and is important in determining the operating cost per vehicle allowing for the number of persons per vehicle in calculating time cost per vehicle. See *Operating Cost*, *Time Cost*.

Vehicle Operating Cost

The component of operating cost representing vehicle running costs including the resource cost of fuel, as well as tyre, oil, repair and maintenance costs. See *Operating Cost*.

Vehicle Parameters

Parameters used in fuel consumption and emission models that are derived considering fleet composition, and include idling fuel and emission rates, efficiency rates, vehicle mass, maximum engine power, power to weight ratio, number of wheels and tyre diameter, rolling resistance factor, frontal area and the aerodynamic drag coefficient. See *Drag Parameters*, *Efficiency Parameter*, *Mass*.

Volume (Traffic Volume)

The number of vehicles or pedestrians passing (arriving or departing) a given point on a lane or carriageway during a specified period of time. See *Arrival Flow Rate*, *Demand Flow Rate*, *Departure Flow Rate*.

Volume Data Method

The method for specifying traffic volume data in the form of (i) separate volumes for individual movement classes, (ii) total volume and per cent value for movement classes, or (iii) total volume and volumes for movement classes.

W

Walking Speed

The off-road speed of pedestrians walking between intersections (as distinct from pedestrian crossing speeds at intersections and midblock pedestrian crossings). The appropriate value of this parameter is the average walking speed. See *Crossing Speed*.

Walk Time

The duration of the walk display for pedestrians at a signalised intersection or a midblock signalised pedestrian crossing.

Weaving

The crossing of two or more traffic streams traveling in the same direction along a significant length of highway, without the aid of traffic control devices. On freeways, crossing of paths of a movement from on-ramp to mainline and a movement from mainline to off-ramp while traversing a segment of freeway.

X

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Y

Yellow Interval (Yellow Change Interval)

The signal control interval when yellow signal displays are shown following the green signal display for warning drivers about the impending red signal display. See *All-Red Interval*, *Intergreen Time*.

Yellow Time

The duration of the Yellow Interval. See *All-Red Time*, *Intergreen Time*.

Yellow Trap

A situation where a driver executing a filter turn manoeuvre at the start of the yellow interval thinks that the signals change to yellow for the opposing traffic at the same time, and therefore proceeds and runs into an opposing through vehicle for which the signal display would still be green. Also known as *Lagging Right-Turn / Left-Turn Problem*.

Yield

See Give Way.

Z

Zebra Crossing

A series of short wide lines marked side-by-side across a carriageway (midblock or at intersections) and the associated regulatory signs to indicate a location where pedestrians may cross a road and have right-of-way over the vehicular traffic. See *Crossing, Pedestrian Crossing*.