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SIDRA SOLUTIONS

SIDRA INTERSECTION 6.1 UPDATE HISTORY

Version: 6.1.4. 5240
Release Date: 10 December 2015

Enhancements:

- Automatic *Phase Frequency* calculations are made by the program when small average Phase Time values are specified by the user because some phases are not called in all signal cycles. Such Phase Times reflect existing signal timings, e.g. as reported by the SCATS control system. In previous software versions, this had been treated as an error case when small Phase Times resulted in violation of movement minimum green time requirements. The program will now treat the user-specified Phase Times as "Average Phase Times per Cycle", i.e. average values of Phase Times in all cycles including the cycles when the phase is called and the cycles when the phase is not called. The Phase Frequency values are determined and the average values of the required minimum movement time, minimum green time and lost time are adjusted accordingly. This method is consistent with the Phase Actuation feature of SIDRA INTERSECTION.
- In signal timing calculations, the method for determining Green Split Priority for movements on external approaches in Network analysis has been improved.
- Phasing Summary and Graphs are now available under Print All.
- Approach Distance will now be set automatically if a user specifies all non-short lanes with the same length in the Lane Geometry dialog (previously, this was done only when the Quick Input was used).
- Site and Network IDs will be incremented automatically when new Sites and Networks are added. The use of different Site IDs is particularly useful in Network analysis.
- Parameter option names for Opposing Pedestrians in the Gap Acceptance dialog have been improved to assist understanding of the options.
- The method for calculating capacity and timings in shared lanes where several movements run in different phases has been improved.
- When the reference phase is deleted during SIDRA timing calculations, the next phase will be set as the reference phase.
- Improvements to Site and Network Layout pictures.
- Minor improvements to Detailed Output.

Bug Fixes

- Default emission parameters were not set correctly in templates. These now match the default values for a new Site.
- In Network analysis, a queue overflowing from a short lane into an adjacent full-length lane at a signalised Site and extending past a minor road at a sign-controlled Site was not reported as an "excess queue" on the major road at the sign-controlled Site.
- Incorrect display of some one-way links in Network Displays has been fixed.

- Some cases where clicking Cancel in a dialog did not discard all changes have been fixed.
- A scaling problem when pasting Network Layout pictures into other software (e.g. MS Word) has been resolved.
- The red dot to indicate Phase Transition was missing for Pedestrian movements in some displays.
- An error when using Quick Input in the Sequences tab in the Phasing & Timing dialog has been fixed.
- An unusual case of rounding in phase time calculations that led to a maximum green specification being exceeded has been fixed.

Version: 6.1.3.5207

Release Date: 7 September 2015

Enhancements:

- Further improvements to memory usage to reduce the likelihood of "out of memory" errors when processing large Networks of signalised Sites.
- Improvements to signal timing method in cases where there is very low saturation flow and high demand flow (high values of flow ratio).
- Upper limits on vehicle and pedestrian maximum green values have been removed.
- Links to websites opened from within the Help System now open in a separate browser window.
- In Design Life or Flow Scale analysis, flow scale values in Detailed Output report now include the effect of both the demand analysis and any user input flow scale values.
- The footnote related to Phase Actuation and Pedestrian Actuation parameters has been clarified in the Detailed Output report. Minor improvements have been made to the method in relation to the reduction of intergreen times.
- Various minor improvements to the user interface, output reports, User Guide and Help system.

Bug Fixes

- Lane Data dialog - Lane Blockage tab: Lane Blockage control parameter was not working (blockage was applied even if this was unchecked), and the column toggle button to check/uncheck all exit lanes for the movement did not work.
- A case where a negative phase time was reported in the Phasing Summary has been fixed.
- A case where a phase time was reported as equal to cycle time rather than as zero in both the Phasing Summary and Detailed Output has been fixed.
- An error in the calculated values of Percent Arriving During Green and delay in a shared lane with two green periods but where one green period effectively had zero time has been fixed.
- Unrealistic delay values were reported in an unusual case when the degree of saturation was between 0.98 - 1.0.
- Delay was not reported correctly for oversaturated continuous movements in the Movement Summary report.
- Gap acceptance values were not accessible for Turn on Red movements when the Main Model was set to one of the US HCM models.
- The Diagnostics table in the Detailed Output report showed a wrong message about User-Given Phase Times for an uncoordinated Site in a Network.

- A calculation error related to opposed movement saturation flow rates in unusual cases for lanes with two green periods has been fixed.
- An error message related to user-specified pedestrian minimum times that wrongly appeared when zero intergreen times were specified has been removed.
- Stopline Distance and Stopline Travel Time were wrongly calculated for networks created using the US Metric main model.
- User input values of Downstream Distance were not correctly used in Travel Distance calculations.
- Fixed some inconsistencies in Average Speed and Travel Time calculations.

Version: 6.1.2.5176

Release Date: 21 May 2015

Enhancements:

- Passing of Excess Back of Queue from downstream Sites to upstream Sites in Network analysis is now applied for all downstream Site types.
- Improvements to signal platoon pattern calculations and predicted lane changes.
- Adjustment of gap acceptance parameters for the circulating flow rate now applies to the Roundabout Gap-Acceptance Capacity Models ("M1" Models) that are not SIDRA Standard.
- For Sites that are part of a Network, any changes to leg geometry are blocked. These include addition and deletion of legs and changes between two-way and one-way.
- User can exit from the Lane Geometry dialog even if a Movement Class has not been allocated to any lane. This allows the option to remove the Movement Class in the Movement Definitions dialog.
- "Reset to Defaults" function has been added in dialogs where this was a more appropriate operation than Quick Input.
- Various minor improvements to some Input dialogs.
- Improvements to operation of multiple Site selection.
- Improvements to Print All function. Some extra reports and displays added. Graphs, Phasing Summary and Detailed Output are not included in Print All as technical limitations prevent these from printing correctly.
- Improvements to Site and Network Layout pictures.
- Flow Scales and Peak Flow Factor have now been added to the "Origin-Destination Flow Rates by Movement Class" table in the Detailed Output.
- Various improvements to reporting of movement coordination information in Detailed Output tables.
- Other minor improvements to Detailed Output and other output reports.
- Improvements to Network Summary report.
- Improvements to program memory usage.
- Enhancements to run-time error checking in relation to vehicle volumes, pedestrian volumes, gap-acceptance parameters, short lane lengths.
- Improved updating of display of error conditions in Network Configuration.
- When the Intersection dialog is opened, if the south leg does not exist, the first leg that exists will be selected rather than the south leg.

- The location of the User Settings database has been moved from "My Documents" to "ProgramData" to overcome installation difficulties in some cases where users' documents were stored on a network drive.
- Significant improvements and additions to User Guide and Help System.

Bug Fixes

- For staged pedestrian crossings at Sites where traffic drives on the right, the pedestrian movements were shown the wrong way around in the Pedestrian Demand Flows and Movement Displays and in the Detailed Output Roundabout Pedestrian Effects table.
- Signal coordination was not calculated correctly in some cases with one-way internal approaches.
- A problem that led to underestimation of opposed movement capacity in some unusual phasing cases was fixed.
- Some runtime errors related to movement timing calculations that occurred in unusual cases have been fixed.
- A timing calculation error that occurred in some cases with variable phasing has been fixed.
- A bug that prevented display of Optimum Cycle Time graphs and gave an incorrect error message in rare cases has been fixed.
- The SIDRA Model rather than the HCM Model delay was reported for some two-way sign control cases when the HCM Delay Model option was selected.
- When editing default values for a User Model, if the Model Designation (Light Vehicle/Heavy Vehicle) of a User Movement Class was changed, the underlying default values for the Movement Class were not updated.
- Fixed some minor inconsistencies in delay values reported for Lane, Movement and Intersection in cases where the geometric delay values differed between lanes.
- The movement with the highest degree of saturation was not correctly flagged in some Detailed Output tables in some cases.
- Reported pedestrian flow across a roundabout exit in the Detailed Output did not include the Opposing Pedestrian Factor.
- Some flow values reported in the Lane Changes for Platooned Arrivals table in the Detailed Output did not match values reported in other output tables.
- Program-calculated Extra Bunching values for two-way sign controlled intersections and roundabouts in a Network were not calculated correctly in some cases where variable phasing was used at the upstream signalised intersection.
- A problem with Volumes input after using Quick Input to assign Movement Classes to lanes at All Sites has been resolved.

Version: 6.1.1.5129

Release Date: 24 February 2015

This is the first release of SIDRA INTERSECTION 6.1. The enhancements and bug fixes implemented in this version since the last update of SIDRA INTERSECTION 6.0 (Version 6.0.24.4877 released on 7 Aug 2014) are listed below.

Major Features (Summary)

New and Improved Models

- New model for signal coordination effects using Signal Offsets and lane-based second-by-second platoon patterns including lane changes and platoon dispersion.
- New method for the program to calculate Extra Bunching values for roundabouts and two-way sign controlled intersections with upstream signalised intersections in Network analysis.
- In Network analysis, excess back of queue will be passed on to upstream continuous lanes to allow for queue blockage from a downstream intersection to apply to intersections further upstream.
- Pedestrian Actuation method for improved signal timing calculations when pedestrian volumes are low.
- Phase Actuation method for improved signal timing calculations when vehicle volumes are low.
- Improved delay calculations for movements in shared lanes at two-way sign controlled intersections and roundabouts including shared continuous and opposed movement lanes.
- New model introduced for the effect of opposed turns in Major Road short lanes at Two-Way Sign Control Sites on the capacity and performance of the adjacent through (continuous) movement when there is overflow from the back of the short lane.
- Significant enhancements to handling of two-segment lanes including cases when the two segment lane is treated as a short lane.
- Cost model parameters updated.

User Interface Improvements

- Network Layout display with detailed geometry as in Site Layout pictures.
- Improved Site Layout diagrams.
- Multiple Site and Network selections for opening or printing reports and displays, and for various user interface functions (Process, Clone, etc).
- New Staged Crossing and Merge templates.
- The processing time for Sites and Networks and program memory usage for large Networks improved significantly.
- User Guide and Help system finalised.

Enhancements since the Last Update of Version 6.0

The full list of enhancements and bug fixes introduced since the last version of SIDRA INTERSECTION 6.0 (Version 6.0.24) is given below.

Enhancements:

- Modelling of signal platooning has been introduced in network analysis. For connected sites in a network where Signal Coordination is set to "Program" in the Signals tab in the Vehicle Movement Data dialog, coordination data (Coordinated Site, Reference Site, Offset) specified in the Network Timing dialog will be used to calculate signal coordination effects. Modelling of platoon dispersion is included. A parameter for user control of the "Platoon Dispersion" model application has been introduced. Various changes have been made to the Phase & Sequence data tab in the Phasing & Timing dialog and the Network Timing dialog in relation to the introduction of this new feature.
- The program now has the capability to automatically estimate Extra Bunching for roundabouts and two-way sign controlled intersections with upstream signalised intersections in Network analysis.
- In Network analysis, excess back of queue will be passed on to upstream continuous lanes to allow for queue blockage from a downstream intersection to apply to intersections further upstream. Major Road approach lanes (continuous) at Two-Way Sign Control between two signals and continuous lanes of a signalised seagull intersection between two signals are common cases of this.
- Modelling of Pedestrian Actuation has been introduced to emulate the case when pedestrian demand does not exist in every signal cycle. When Pedestrian Actuation is specified as "Program" or "% Ped Call" in the Pedestrian Timing Data tab in the Pedestrians dialog, the minimum required time for the pedestrian movement will be reduced in cases where a pedestrian call does not occur in every signal cycle.
- Modelling of Phase Actuation has been introduced to emulate the effect of phase skipping when vehicle demand for a phase does not exist in every signal cycle. When Phase Actuation is specified as "Program" or "% Phase Call" in the Signals tab in the Vehicle Movement Data dialog, the minimum required time for the vehicle movement will be reduced in cases where a vehicle call does not occur in every signal cycle.
- Movement delay calculations for Minor Road shared lanes, Major Road (continuous) shared lanes with opposed turns (Major Road turns and opposed slip lane movements) at Two-Way Sign Control, and continuous slip lanes shared with Minor Road opposed turns at Two-Way Sign Control or Roundabout entry have been improved to take into account the characteristics of the individual movements in the lane.
- New model introduced for the effect of opposed turns in Major Road short lanes at Two-Way Sign Control Sites on the capacity and performance of the adjacent through (continuous) movement when there is overflow from the back of the short lane.
- New "Sign Control Basic Parameters" table and enhancement to the "Roundabout Basic Parameters" table in the Detailed Output report.
- The Gap Acceptance Parameters table in the Detailed Output now includes warning messages if the Two-Way Sign Control Calibration facility is not being used in the recommended manner. These cases include adjustment of user-given parameters, non-adjustment of default parameters or changes to the parameter adjustment values.
- Two-Way Sign Control Calibration improved for cases of opposed turns from a major road.
- Multiple selection of Sites and Networks is now allowed in the Site and Network lists for the purposes of processing, cloning, and for opening and printing displays and reports.
- Staged Crossing and Merge templates added to the Sign Control group of templates.

- Memory usage during Network processing has been improved. "Out of Memory" errors are much less likely to occur when processing large Networks.
- Further improvements to Site Layout pictures.
- Changes made in Lane Geometry dialog to make specification of some short lane cases easier.
- Improved input error checking and messages related to short lanes.
- Improved reporting of short lane cases in output.
- Improvements in the Lane Geometry dialog in cases when lanes are added related to automatic setting of lane disciplines and lane selection.
- Improved input error checking of timing parameters when cycle time optimisation is used for Roundabout Metering Sites. This also overcomes a problem that could lead to reporting of an optimum cycle time outside the range specified at a Roundabout Metering Site.
- Fuel and Emission default values can now be set in User Models under the Options tab.
- Improved input error checking and messages related to movement phasing specification.
- The calculation of Saturated Part of Green / Queue Clearance Time for signals is now consistent for both fixed time and actuated cases. The time is now reported in Detailed Output tables.
- In addition to Coordinated Movements determined by the program, High Green Split Priority will be allocated to movements starting in the Reference Phase of a Site with Coordinated = Yes specified in the Network Timing dialog in Network analysis even if they are Isolated Movements.
- Minor improvements to some input dialogs including Network Data, Gap-Acceptance, Roundabouts and Vehicle Movement Data.
- Minor improvements to various output reports including Detailed Output, Network Summary, Network Flows, Network Displays, Movement Timing and Timing Analysis.
- Improved reporting of the Coordinated / Isolated Site status in output headers.
- Minor improvements to Input Comparison and Input Report.
- A warning message will appear if the Output was generated by a different SIDRA INTERSECTION 6 version using a Project file with sip6 extension. Reprocessing is recommended in this case to ensure that outputs reflect the latest improvements to the program.
- In Network Analysis, the probability of blockage for a full lane that is set on the basis of an adjacent short lane queue had been noted to exceed 50% in some cases. This occurred because the short lane queue on which the probability of blockage was based was not restricted to the available queue storage space to the upstream intersection. A restriction on the short lane queue value has been introduced in these cases.
- Significant improvements introduced to the modelling of two-segment lanes including cases when a two-segment lane is treated as a short lane. Movement Class usage of upstream and downstream segments is better accounted for when estimating overflow into adjacent lane and upstream lane blockage for two-segment lanes.
- Improvements to movement timing saturation flow value calculations for some cases of shared lanes with two green periods.
- The length of the Most Recently Used (MRU) project files list in the File tab has been increased. Some operational problems with the list have also been improved.
- Some new parameters have been added to the API interface.
- Minor improvements to installation and computer setup.
- User Guide and Help system finalised.

Bug Fixes

- Some incorrect flow values and wrong arrow orientations were shown in the Approach & Exit Arrival Flows display in Network Output.
- A problem that caused the Network Flows report to spread over three pages when printed has been fixed.
- A calculation problem that could lead to a negative geometric delay value in some unusual cases has been fixed.
- A problem that caused some output values not to be reported for some Roundabout Metering Sites with slip lanes has been fixed.