Mikros Systems (Pty)Ltd

TrafBase Product Specification

MS001-94009-40

25 August 2012

Issue 2

Contact: www.mikros.co.za e-mail: mikros@mikros.co.za

TrafBase Product Specification

Document Number	MS001-94009-40	Issue:	2

Revision History

Issue	Author	Date	Reason for Change	Authorised
1	RS	25 May 2006	Initial copy	CS
2	RS	25 Aug 2012	Revision page added	CS

Contact: www.mikros.co.za e-mail: mikros@mikros.co.za

Introduction

TrafBase is a software application developed by ProSoft and distributed by Mikros Systems for the traffic-engineering environment. The product was specifically designed to validate, store and manage large amounts of traffic information as collected by traffic logging equipment. Traffic information is made available to a user either in original or summarised form through data files, spreadsheet files and physical reports.

General Requirements

The TrafBase software requires Windows 95/98, Windows NT or Windows XP as its operating system. It was designed to run on a Pentium II 233MHz machine with a minimum of 64 MByte of memory. The amount of hard disk space required depends on the particular implementation of the system. For the operator that validates data, a high-resolution 20" screen is recommended. The system was designed for a minimum resolution of 800x600 pixels.

Trafbase Systems

As of version 1.70 the Trafbase system offers implementations on both Local Area Networks (LAN) and Wide Area Networks (WAN). The WAN implementation is aimed at users that seek information from the system, and does not support editing, modification or updating of the TrafBase system. The following software packages are available:

- **psTrafBase**
  This software package supports all features on the TrafBase system, but can only be used on a LAN. It is the only package that can be used to add raw data to the TrafBase system.

- **TBLocal**
  This software package is intended for users that need to access a TrafBase database as read-only users on a LAN or local computer. It supports adding of new data from other TrafBase systems from TrafBase Archive Files. It cannot be used to add raw data to the system. In addition, some releases support communication with Mikros System TEL Loggers ®.

- **TBAdministrator**
  This software package is used to upkeep a TrafBase database for which no **psTrafBase** package was purchased. It enables the system administrator to update information and user log-on tables, and to add new data to the system from TrafBase Archive Files generated by another psTrafBase system.

- **TBServer**
  This software package is the server application that provides information to client applications on a Wide Area Network (WAN). The current server implementation only allows the clients to read information. Data modification functions are not supported.

- **TBClient & TBOnLine**
  These packages are used in conjunction with the TrafBase Server (TBServer) to retrieve information on a Wide Area Network. All TrafBase data information features are supported with the exception of Detailed Data Views and Data File Outputs (Formatted and Spread Sheet Files). The TBOnLine package also supports communication with Mikros System TEL Loggers ® as an additional feature.

TrafBase Components

The TrafBase system consists of the following components:

- Site Information Database
- Traffic Information Database
- Data Addition/Verification
- Data Information
- Data Reporting
- Fixed Format File Output
- Spread-sheet compatible ASCII file output
- Mikros Systems Logger Communication Access (OPTIONAL)

Site Information Database

TrafBase uses a briefcase-type database to save site-specific information. The site information database manages data on the sites/location points at which traffic information is gathered. Site information such as the site identifier, the site location, number of lanes and the layout of the site are kept in a database. All traffic information must be linked to a site before it can be entered into the traffic data information system. Currently TrafBase only supports standard single/dual carriageway layouts. The site DB is shared with TelWin applications.

Traffic Information Database

TrafBase uses a stream-orientated data information system to save site-specific traffic information. The type of traffic information data that can be saved in the TrafBase database is limited to the RSA Data Format Specification Version 1.01. and the CTO P20 RAW data format. Data must first pass the data verification procedure before it can be added to the historical traffic information database and accessed by the user.

Data Addition/Verification Component

The data addition/verification component verifies the raw data as collected by the loggers. Data verification is limited to RSA Data Format files and CTO Prg 2.0 RAW data files. After the raw data has been verified and accepted the verification module adds the verified data to the historical traffic information database.

Data Information Component

The data information component enables the user to determine whether and what data is available for a specified site and period. It also enables the user to plot the traffic data or view the detailed information record by record.

Data Reporting Component

The data reporting component enables a user to generate reports and graphical output of the traffic information gathered by the system. The following reports are currently available per site if the relevant information is available. Reports can be viewed or printed on a Windows compatible printer. They are not available in ASCII file format.

The reporting capabilities of TrafBase are at this stage limited but new modules are continually added to enhance the product.

Volume.v.Time Report

This is a report and a plot of the traffic volumes at intervals and periods as given below. The user is able to generate such a report per lane, per direction and per road total.

Light/Heavy.v.Time Report

This is a report and a plot of the Light and Heavy vehicle volumes at intervals and periods as given below. The user is able to generate such a report per lane, per direction and per road total.

Vehicle Class.v.Time Report

This is a report and a plot of the vehicle class volumes at intervals and periods as given below. The user is able to generate such a report per lane, per direction and per road total. The following classification schemes, among other, are supported

RSA Light/Heavy
RSA Extended Light/Heavy
RSA Vehicle
FHWA 13 (Federal Highway Administration 13 Class)
AustRoad (Australia)

Speed.v.Time Report

This is a report and a plot of the vehicle speeds at intervals and periods as given below. The user is able to define, independently of the data set, up to 20 speed bins. The user is able to generate such a report per lane, per direction and per road total.

Gross Vehicle Mass.v.Time Report

This is a report and a plot of the vehicle masses at intervals and periods as given below. The user is able to define, independently of the data set, up to 20 mass bins. The user is able to generate such a report per lane, per direction and per road total.

Axle Mass .v. Time Report

This is a report and a plot of the vehicle axle masses at intervals and periods as given below. The user is able to define, independently of the data set, up to 20 axle mass bins. The user is able to generate such a report per lane, per direction and per road total.

For all above mentioned reports, the user can define the start of a day ie at what hour a day starts, and the start of a week ie at which day (Sun, Mon etc) a week starts and specify the following report periods and intervals :

Period	**Interval**
Daily	Minutes,Hours
Weekly	Hours, Daily
Monthly	Hours, Daily
Yearly	Minutes, Hours, Daily, Monthly

Traffic Highlights Report

This is a traffic highlights report. The user is able to generate such a report for **Daily**, **Weekly**, **Monthly** and **Yearly** intervals for any specified period and site.

Overload Report

This report provides information on overloading. The vehicle overloading is determined on axle, axle group, GVM and Bridge Formula (South African definition) overload violations. The user is able to generate a plot showing the total truck traffic and the part due to over loading. The user is able to generate such a report per lane, per direction and per road total for **Daily**, **Weekly**, **Monthly** and **Yearly** periods. The user is also able to define the start of a day ie at what hour a day starts, and the start of a week ie at which day (Sun, Mon etc) a week starts.

RSA EAL Report (E80 report)

This report provides information on E80 loading as per dynamic axle masses. The user is able to generate such a report per lane, per direction and per road total for **Daily**, **Weekly**, **Monthly** and **Yearly** periods. The user is also able to define the start of a day ie at what hour a day starts, and the start of a week ie at which day (Sun, Mon etc) a week starts.

Formatted Data File Output

This TrafBase component enables the user to generate traffic data files from the information saved in the database. The user can generate these data files per site for any given period. The following data file formats are currently supported

RSA Data File Format Version 1.01 (all formats)

Spread-Sheet Format Files

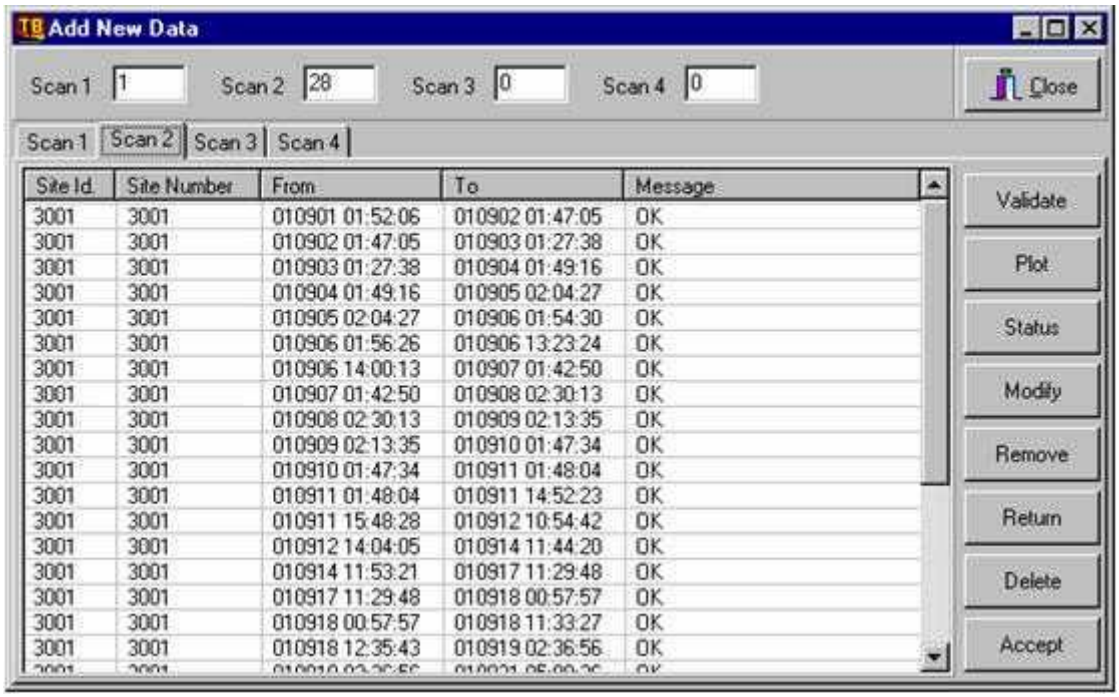
This component enables the user to generate ASCII data files that can be read by most spreadsheets. The user can setup the component to generate field information on the following per site :

Vehicle Volume,
Light Vehicle Volume,
Heavy Vehicle Volume,
Vehicle Class Volume,
Binned Speed Volumes,
Axle Count,
Axle Mass,
Gross Vehicle Mass,
Overloaded Heavy Vehicles (Axle,Group,Bridge and/or GVM)
RSA E80s for Heavy Vehicles (vehicle class, total)

Above information is available per lane, per direction or per road total for minute, hour, daily, weekly, monthly or yearly intervals.

Validation

TrafBase provides four levels of data validations referred to as “Scans”.



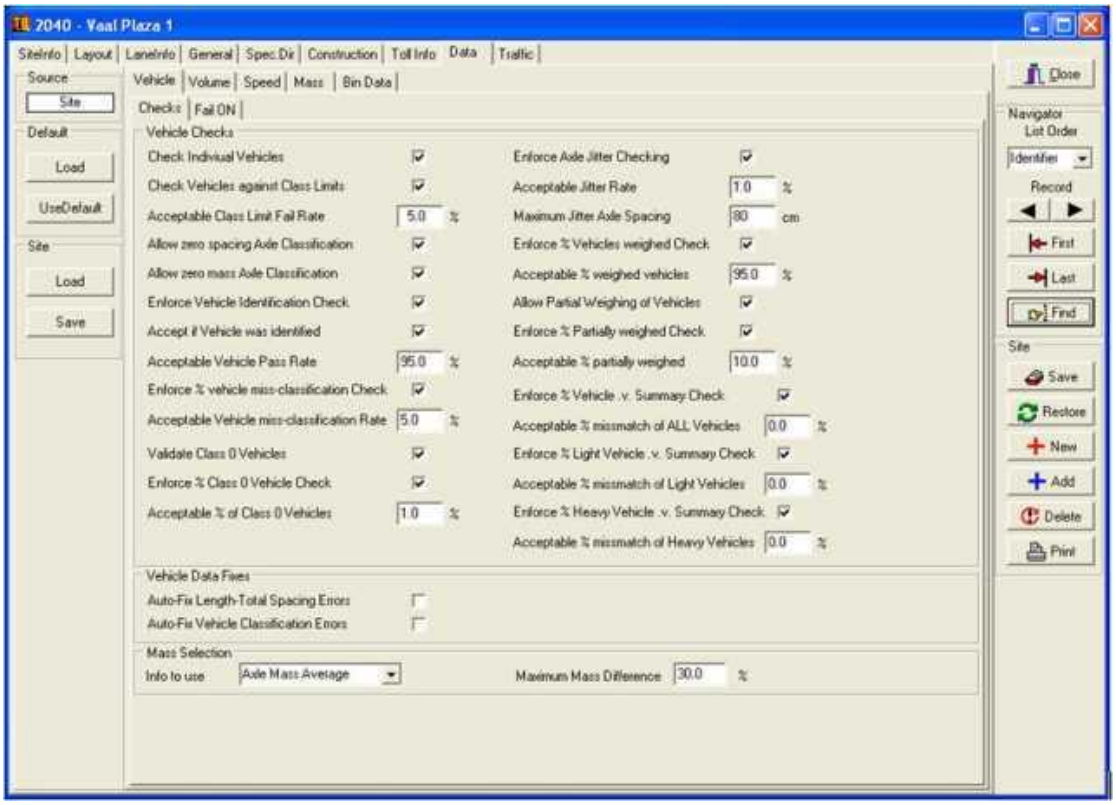
Scan 1: Checking the formal correctness of the data files (format and compatibility).

Scan 2: Checking the headers against the recorded data file. Check for duplicate data in the data base.

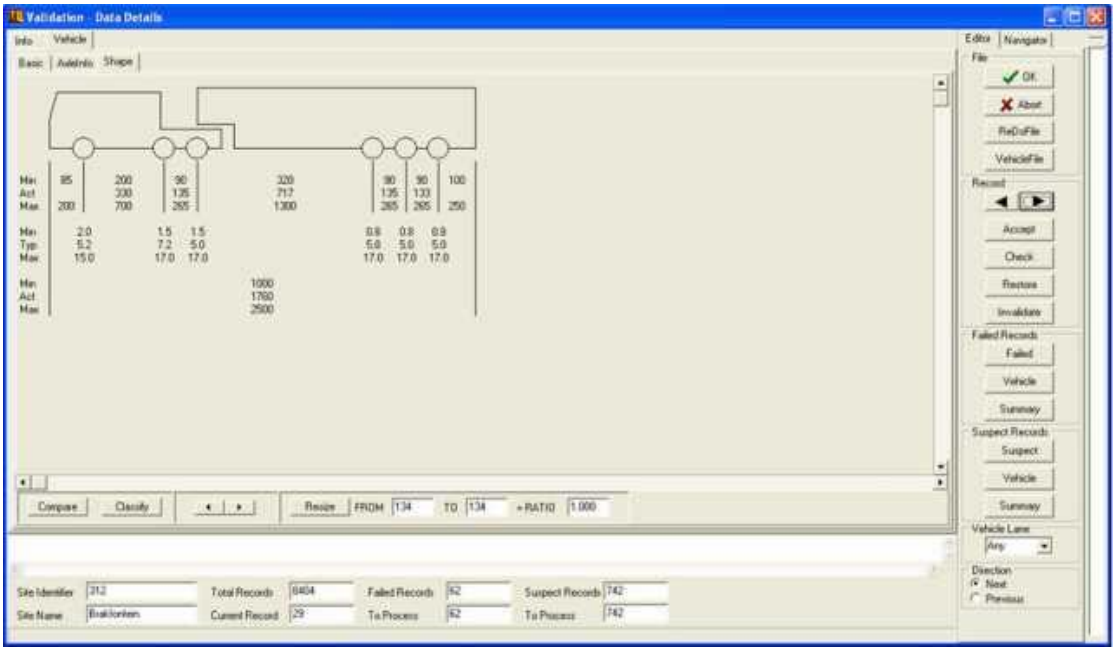
Scan 3: Validate the data against the applicable templates as setup for each site and data type (user definable).

Scan 4: Final stage before submitting the data the data base (archiving).

Validation of data is done on two levels. Individual vehicle information is validated against individual user definable vehicle templates. Aggregated (binned) data is validated against user definable traffic profiles (patterns).

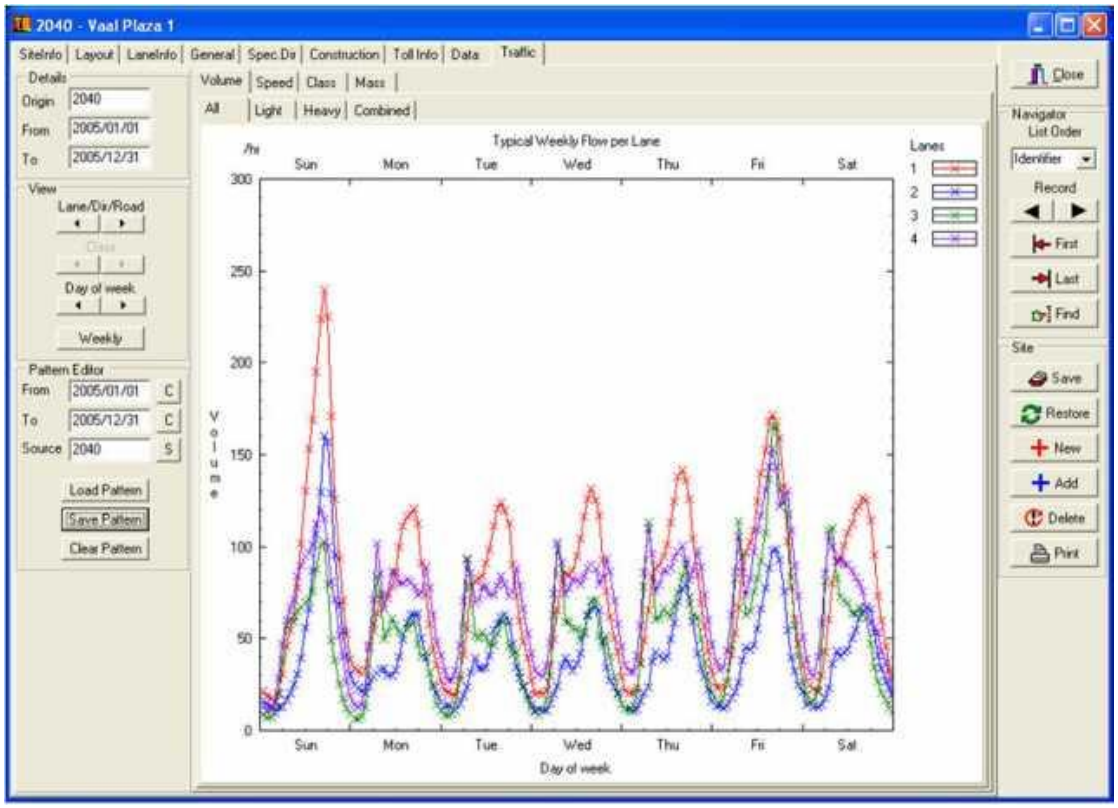


Validation Control Panel

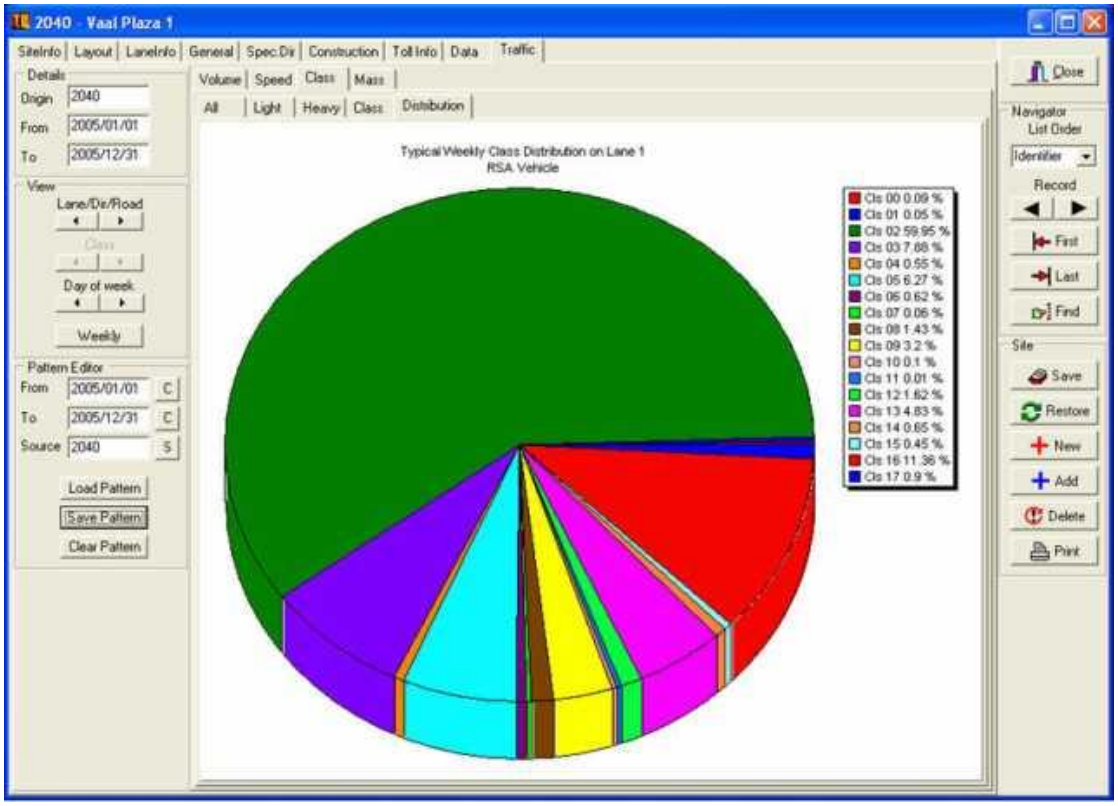


Individual Vehicle Parameters

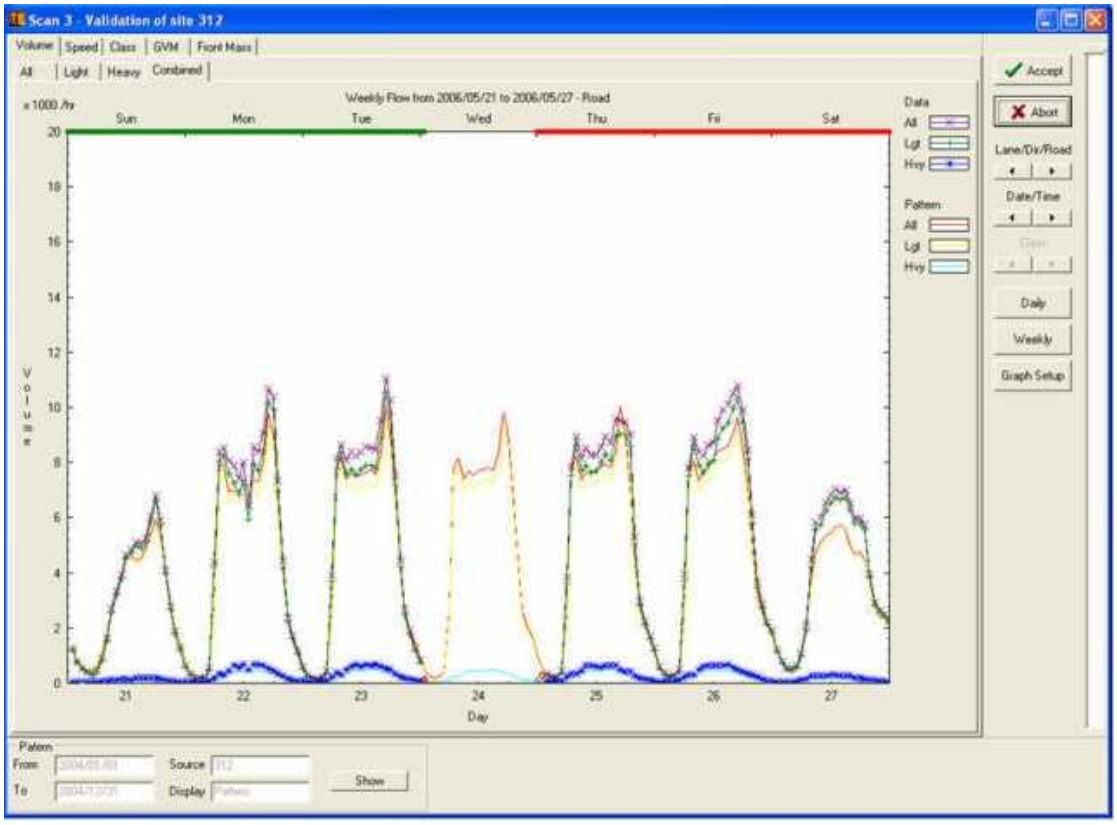
Upper lower and typical values for all parameters to be checked on a per vehicle basis.



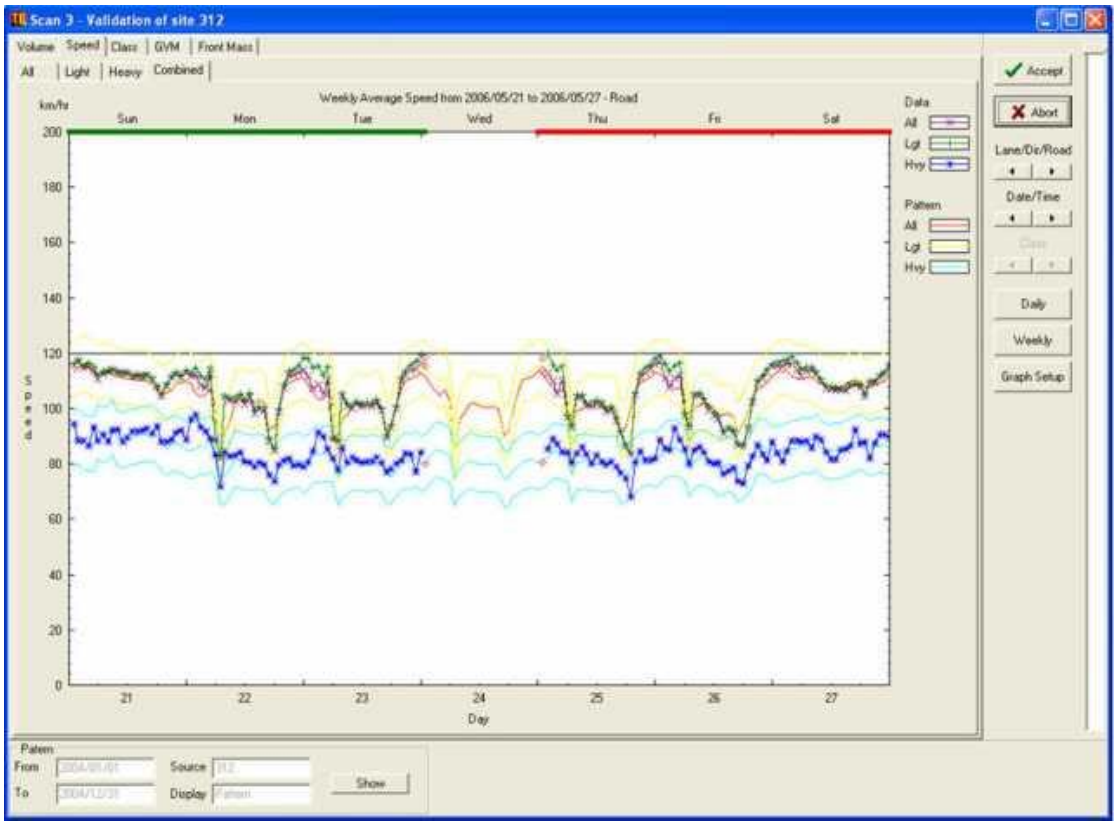
Selected Traffic Pattern (Template) For Validation



Selected Classification Breakdown Template

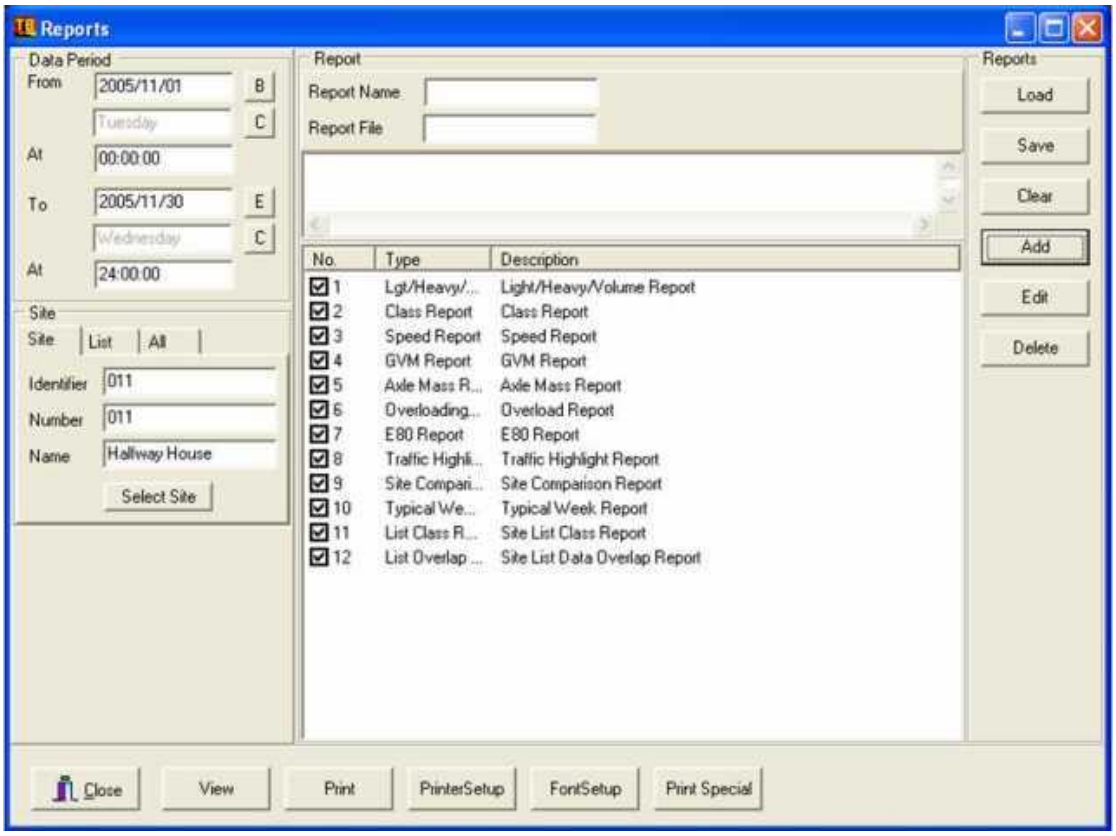


Validated Data Plotted Against Volume Template

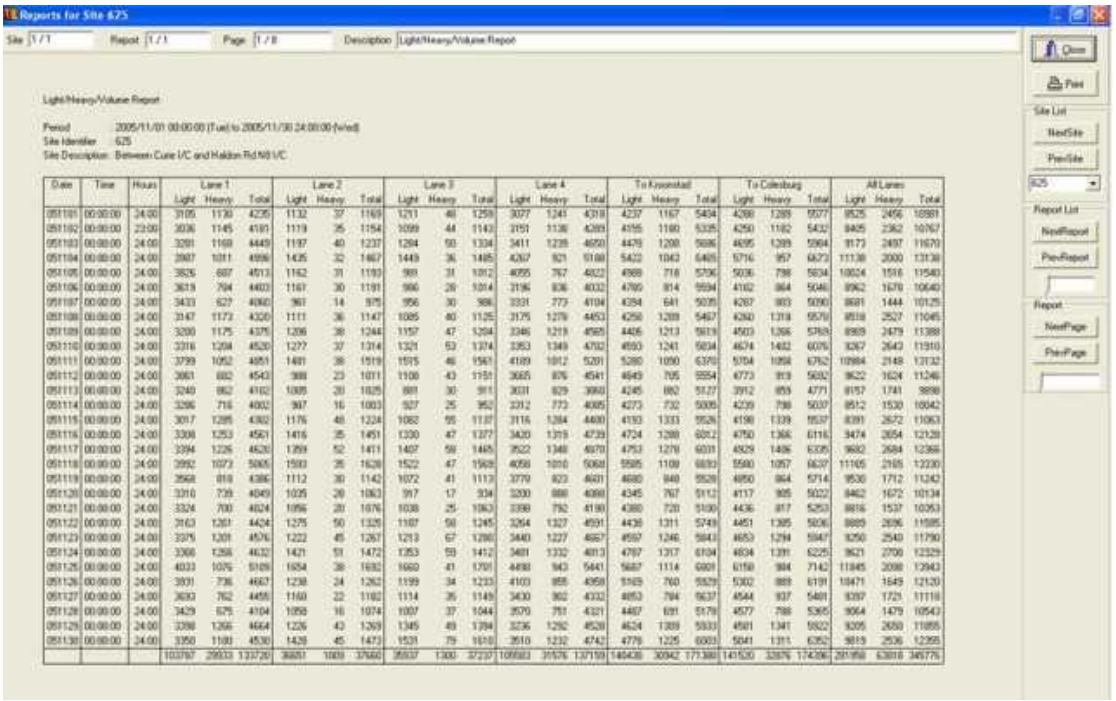


Validated Data Plotted Against Speed Profile

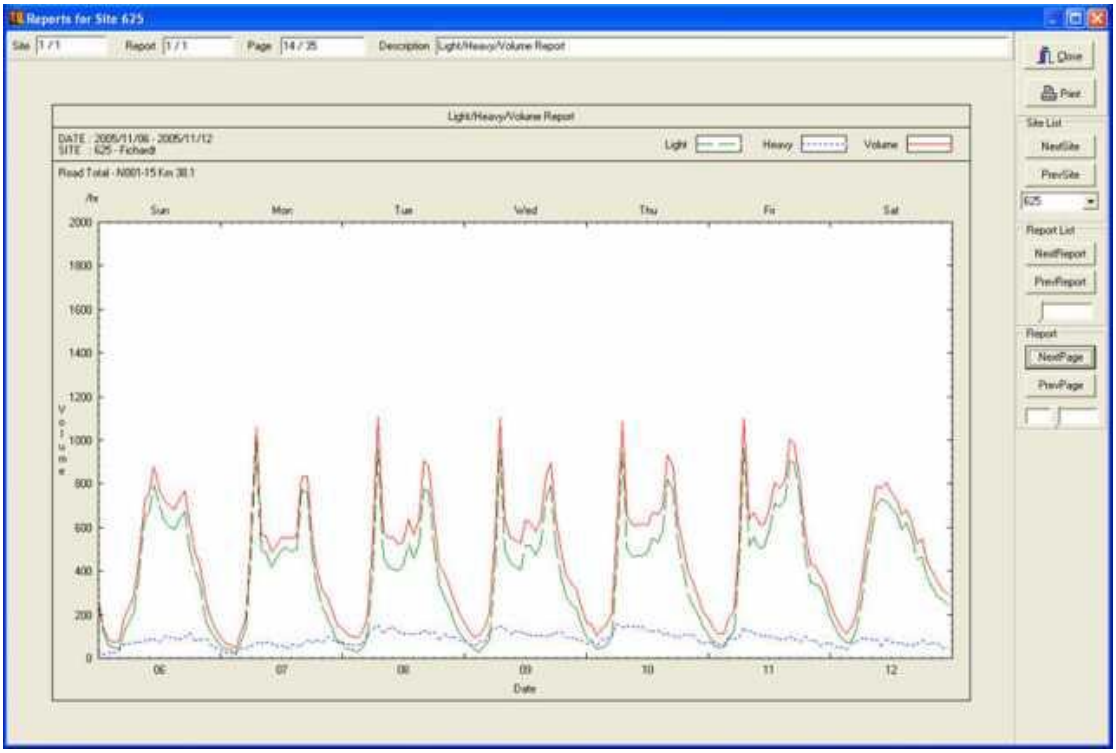
Reporting



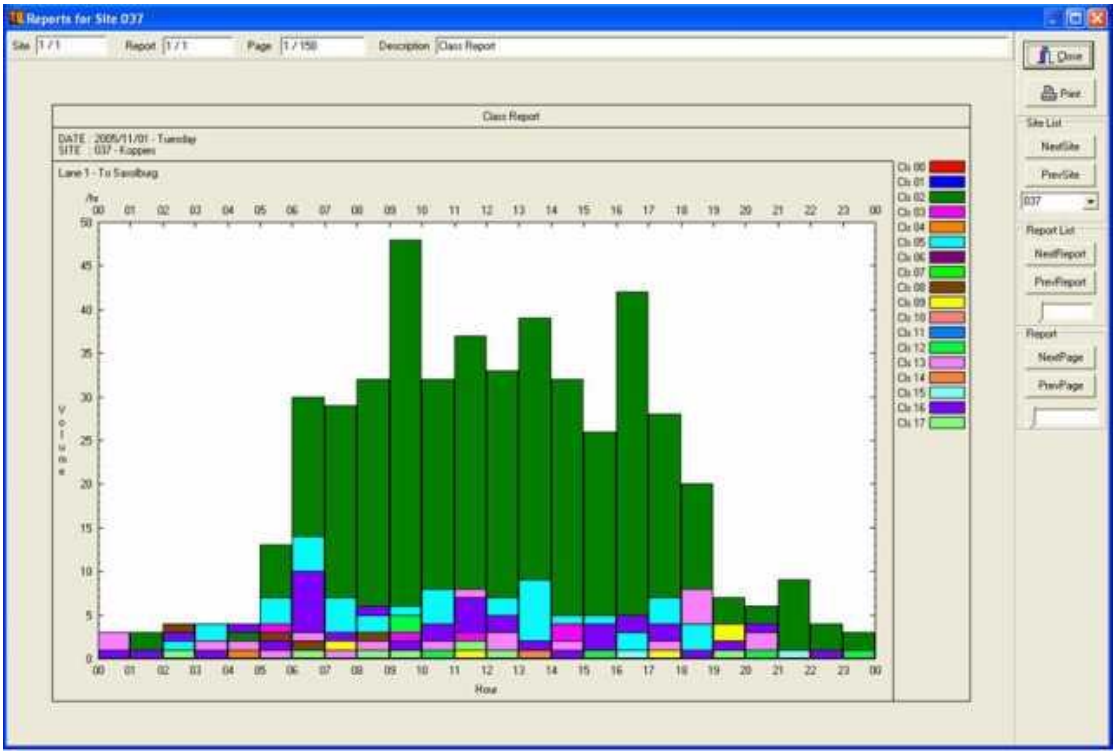
Reports that can be selected



Printout of a volume reports



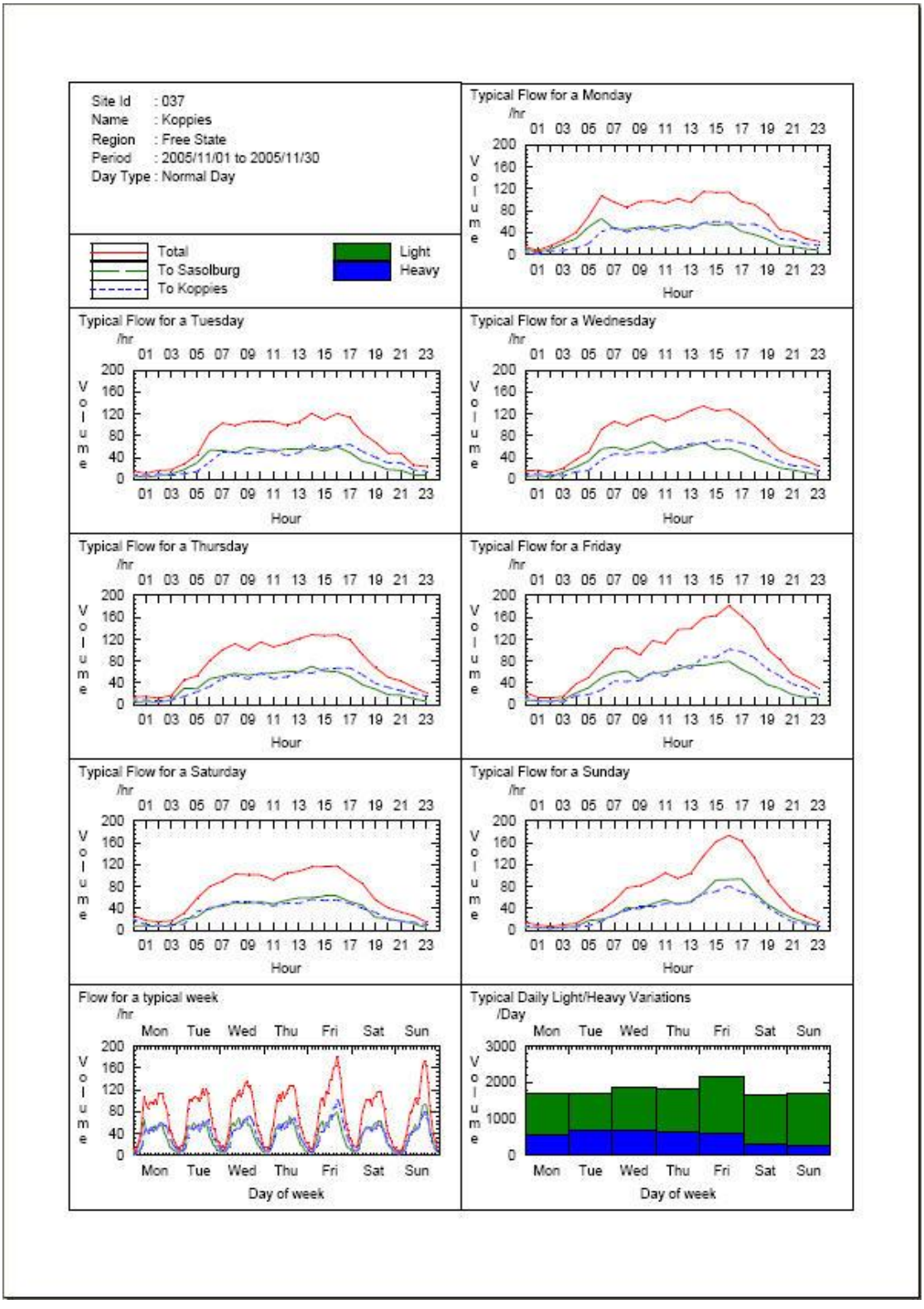
Volume Report Plot



Daily Classification Distribution Plot

TRAFFIC HIGHLIGHTS OF SITE 037				
1.1	Site Identifier			037
1.2	Site Name			Koppies
1.3	Site Description			Between Koppies and Sasolburg
1.4	Road Description	Route : R082	Road : P030	Section : 01 Distance : 4.0km
1.5	GPS Position			27.60028E 27.20181S
1.6	Number of Lanes			2
1.7	Station Type			Permanent Piezo
1.8	Requested Period			2005/01/01 - 2005/12/31
1.9	Length of record requested (hours)			8760
1.10	Actual First & Last Dates			2005/11/01 - 2005/11/30
1.11	Actual available data (hours)			720
1.12	Percentage data available for requested period			8.2
2.1	Total number of vehicles	26751	27186	53937
2.2	Average daily traffic (ADT)	892	906	1798
2.3	Average daily truck traffic (ADTT)	255	261	517
2.4	Percentage of trucks	28.7	28.9	28.8
2.5	Truck split % (short:medium:long)	35 : 21 : 44	31 : 20 : 49	34 : 20 : 46
2.6	Percentage of night traffic (20:00 - 06:00)	15.8	17.1	16.5
3.1	Speed limit (km/hr)			120.0
3.2	Average speed (km/hr)	94.6	99.9	97.3
3.3	Average speed - light vehicles (km/hr)	99.8	106.0	102.9
3.4	Average speed - heavy vehicles (km/hr)	81.6	85.0	83.3
3.5	Average night speed (km/hr)	90.6	95.9	93.3
3.6	15th centile speed (km/hr)	73.7	77.8	75.7
3.7	85th centile speed (km/hr)	113.9	120.0	117.9
3.8	Percentage vehicles in excess of speed limit	9.5	16.6	13.1
4.1	Percentage vehicles in flows over 600 vehicles/hr			0.0
4.2	Highest volume on the road (vehicles/hr)		2005/11/06 18:00:00	201
4.3	Highest volume in the North (vehs/hr)		2005/11/06 18:00:00	115
4.4	Highest volume in the South (vehs/hr)		2005/11/18 18:00:00	117
4.5	Highest volume in a lane (vehicles/hr)		2005/11/18 18:00:00	117
4.6	15th highest volume on the road (vehicles/hr)		2005/11/06 17:00:00	165
4.7	15th highest volume in the North direction (vehs/hr)		2005/11/18 15:00:00	84
4.8	15th highest volume in the South direction (vehs/hr)		2005/11/18 15:00:00	89
4.9	30th highest volume on the road (vehicles/hr)		2005/11/27 19:00:00	149
4.10	30th highest volume in the North direction (vehs/hr)		2005/11/18 17:00:00	75
4.11	30th highest volume in the South direction (vehs/hr)		2005/11/27 19:00:00	79
5.1	Percentage of vehicles less than 2s behind vehicle ahead	5.2	6.4	5.8
6.1	Total number of heavy vehicles	7679	7852	15531
6.2	Estimated average number of axles per truck			5
6.3	Estimated truck mass (Ton/truck)			24
6.4	Estimated average E80/truck			2
6.5	Estimated daily E80 on the road			1126
6.6	Estimated daily E80 in the North direction			540
6.7	Estimated daily E80 in the South direction			586
6.8	Estimated daily E80 in the worst North lane			540
6.9	Estimated daily E80 in the worst South lane			586
6.10	ASSUMPTION on Axles/Truck (Short:Medium:Long)			(2.2 : 4.3 : 6.5)
6.11	ASSUMPTION on Mass/Truck (Short:Medium:Long)			(7.9 : 22.1 : 37.3)
6.12	ASSUMPTION on E80s/Truck (Short:Medium:Long)			(0.5 : 1.9 : 3.5)

Highlights Report



Highlights Report Plot

7.3 GVM OVERLOAD DETAILS (Relative to heavy vehicles weighed)

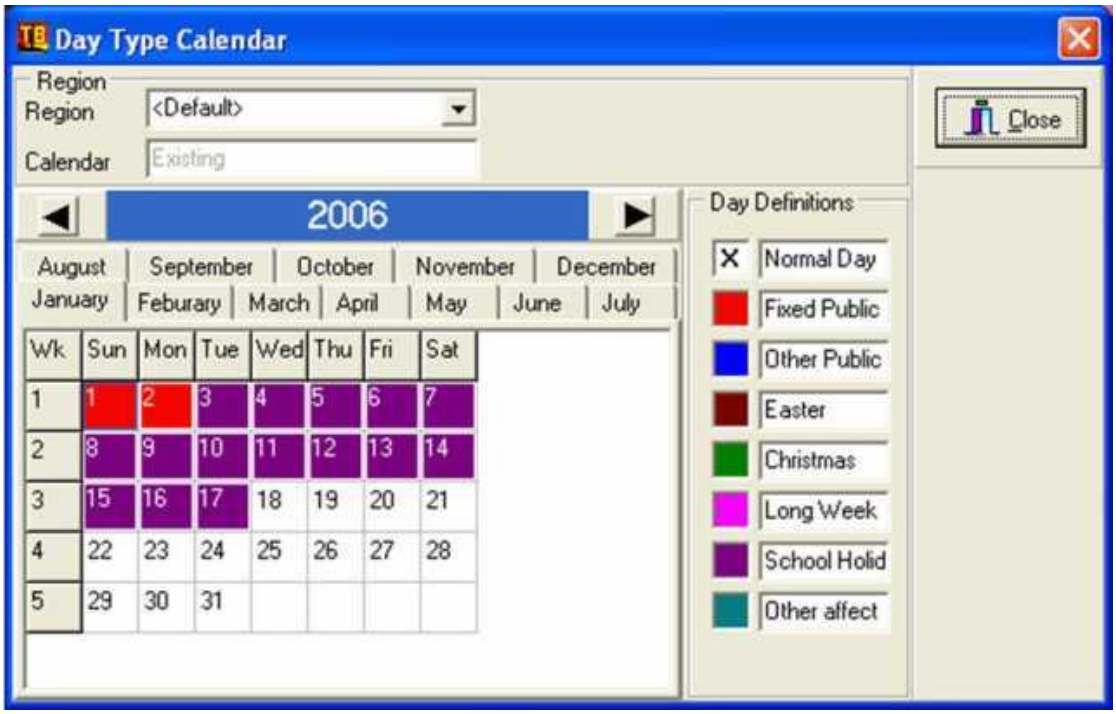
Class	Vehicles Weighed	Vehicles Overload	Percent Overload	Percentage Overloading					
				0.0 -5.0	5.0 -10.0	10.0 -15.0	15.0 -20.0	20.0 -25.0	> 25.0
Cls 04	3103	109	3.5	2.4	0.7	0.3	0.0	0.0	0.1
Cls 05	11734	169	1.4	0.9	0.3	0.1	0.1	0.0	0.1
Cls 06	832	7	0.8	0.8	0.0	0.0	0.0	0.0	0.0
Cls 07	25	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cls 08	2059	43	2.1	1.1	0.5	0.1	0.1	0.0	0.1
Cls 09	3718	38	1.0	0.4	0.2	0.1	0.0	0.1	0.2
Cls 10	158	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cls 11	9	1	11.1	0.0	0.0	0.0	0.0	0.0	11.1
Cls 12	2174	87	4.0	2.3	1.1	0.2	0.0	0.2	0.1
Cls 13	7157	1292	18.1	11.1	5.0	1.1	0.4	0.1	0.3
Cls 14	304	2	0.7	0.3	0.3	0.0	0.0	0.0	0.0
Cls 15	482	37	7.7	4.4	1.5	0.8	0.4	0.2	0.4
Cls 16	12909	5574	43.2	12.4	14.3	10.1	4.3	1.2	0.8
Cls 17	1500	751	50.1	15.7	16.7	11.5	4.0	0.9	1.3

Detail Overload Report

8.3 Road - E80 Totals (Heavy Vehicles only)

Class	Total Vehicles	Weighed Vehicles	%Truck Dist.	Daily Total	Total Axles	Ave. Axles	Total Mass	Ave. Mass	E80 per Vehicle	% E80 Dist.	Total E80
Cls 04	3103	3103	6.72	103	6206	2.0	43664	14.1	1.590	3.49	4934
Cls 05	11734	11734	25.42	391	23468	2.0	85769	7.3	0.429	3.56	5030
Cls 06	832	832	1.80	28	2720	3.3	15023	18.1	1.478	0.87	1230
Cls 07	25	25	0.05	1	75	3.0	79	3.2	0.019	0.00	0
Cls 08	2059	2059	4.46	69	6177	3.0	34084	16.6	1.309	1.91	2696
Cls 09	3718	3718	8.05	124	13162	3.5	55699	15.0	0.951	2.50	3534
Cls 10	158	158	0.34	5	790	5.0	3983	25.2	2.405	0.27	380
Cls 11	9	9	0.02	0	45	5.0	245	27.2	2.874	0.02	26
Cls 12	2174	2174	4.71	72	10870	5.0	56236	25.9	1.899	2.92	4127
Cls 13	7157	7157	15.50	239	42942	6.0	275875	38.5	4.314	21.82	30872
Cls 14	304	304	0.66	10	1520	5.0	8317	27.4	1.577	0.34	479
Cls 15	482	482	1.04	16	2892	6.0	15461	32.1	3.197	1.09	1541
Cls 16	12909	12909	27.96	430	90363	7.0	600153	46.5	6.119	55.84	78986
Cls 17	1500	1500	3.25	50	12037	8.0	74200	49.5	5.078	5.39	7618
Totals	46164	46164		1539	213267		1268787				141452

Detailed Equivalent 80 KN Report



Calendar Selection for Special Days

Summary of RAKTEL/TEL Communications Software

Program	Function Summary
TelWin	○ Basic logger communications. ○ Set-up loggers (configure and adjust parameters). ○ Real-time traffic monitoring. ○ Perform sensor and logger diagnostics. ○ Long term status monitoring. ○ Data extraction. ○ Data conversion to standard formats (that do not require SDB). ○ Viewing of extracted binary file information.
TelWinPlus	○ The same as TelWin and additionally: ○ Site Database support (SDB). ○ Setup of loggers from SDB. ○ Dynamic Run File view (direct access to saved traffic information). ○ Video frame grabbing. ○ Data conversion to formats requiring SDB. (US FHWA).
TelWinPro	○ The same a TelWinPlus and additionally: ○ Comprehensive automated dialer. ○ Full compressed video support. ○ Basic reports from raw data.
NetTel	○ Network logger communication. ○ Automated simultaneous data extraction and conversion. * ○ Monitor of traffic and system status (simultaneous mode). ○ Automatic updates of site data. ○ Scheduled data conversion. ○ Support for SQL DB.
TelNetDLL	○ DLL software interface for user logger network applications. ○ Windows DLL that enables users to link to the Mikros Loggers with their own software. ○ Enables protocol control.
MoniCar	○ Web based monitoring of online loggers. ○ Comprehensive graphical interface. ○ Comparison with historical traffic patterns.

Notes: * Limited to hardware performance from CPU and available bandwidth.

All programs require a Windows XP platform and Pentium IV 1500 MHz with 256 Kbyte RAM as a computer.