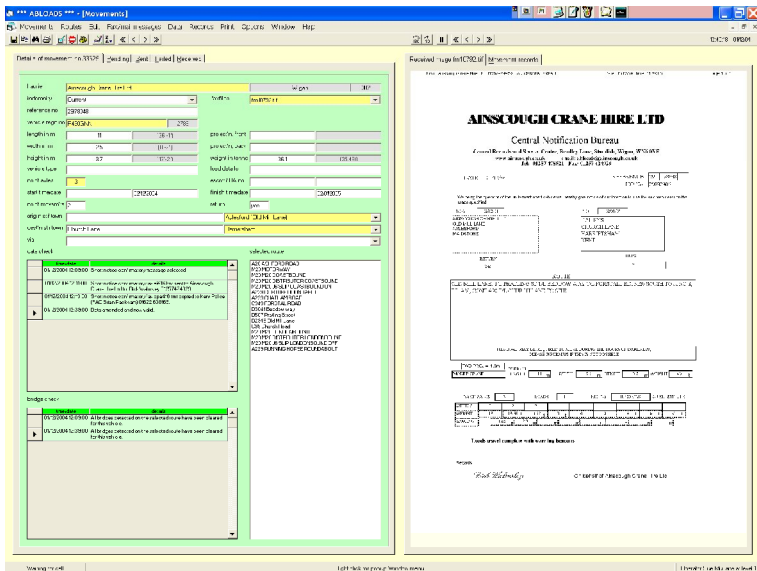


### \*\*\* ABLOADS \*\*\*

## Abnormal Loads Management and Checking Software for Highway Bridge Authorities and Highways Agency Managing Agents



## General Information and Background

**\*\*\* ABLOADS \*\*\*** was originally developed for Kent County Council in the mid 1990's.

**\*\*\* ABLOADS \*\*\*** is a comprehensive specialist software package written with the single purpose of providing Structure Owners with every facility they need to manage, check and reply to abnormal load notifications from hauliers and plant operators. It has no other function and, to Cascade's knowledge, no other competitor. It has been in operation for over ten years, updated monthly in response to the latest technical requirements and the suggestions and requests of its users. It is **not** a web service - it is installed in a Client's office on his own computer, set up with his own mapping and structure data, and directly under his control. Finally, it is **not** a competitor with or a substitute for the much delayed Highway Agency's **ESDAL** web-based facility, which it supports and supplements where appropriate.

With the addition of **\*\*\* ABLOADS Management \*\*\*** and **\*\*\* ABLOADS QuickCheck \*\*\*** for smaller bridge authorities, and **\*\*\* AbHaulier \*\*\*** for hauliers and plant operators, **\*\*\* ABLOADS \*\*\*** has developed in recent years into a complete software family.

For a new Client, Cascade fully prepares their new **\*\*\* ABLOADS \*\*\*** installation, provides staff training and ensures that the complete system is working correctly before delivery. The system is set up with the Client's own highways mapping and structure data, usually Ordnance Survey MasterMap ITN data, but the client's existing graphical information system (GIS) data can also be used.

The **\*\*\* ABLOADS \*\*\*** software license costs £9,000, and installation and training costs between £3,000 to £4,000 depending on the degree of data customisation required. **\*\*\* ABLOADS \*\*\*** may also be operated by directly by Cascade as an outsourced service.

## Principal Features

**\*\*\* ABLOADS \*\*\* provides full fax and email facilities**

Plug your existing dedicated abnormal loads fax line into the computer modem, enter your abnormal loads email client details in **\*\*\* ABLOADS \*\*\***, and then let the program run 24 hours a day, receiving fax and email notifications, printing them out if so required. If after processing a notification presents any problems, **\*\*\* ABLOADS \*\*\*** prepares a draft outgoing message to edit and send to the haulier, listing the problems requiring correction.

Some of the many other messaging features:-

- messages can be viewed page by page, rotated, enlarged and printed as required
- documents, such as annual indemnity reminder circulars, can be prepared in various formats and attached to your outgoing message
- messages can be sent, copied or forwarded to any police force, engineer, haulier or other recipient, either manually or automatically when threshold vehicle parameters are exceeded
- full message logs are maintained of received, pending, sent and failed messages
- message s are backed up automatically each night to a prescribed backup device

### \*\*\* ABLOADS \*\*\* maintains comprehensive records

The \*\*\* ABLOADS \*\*\* operator uses the on-screen display or the printed message to enter details of each movement notification – the program has many built-in shortcuts to speed the process. From the data entered \*\*\* ABLOADS \*\*\* maintains full records of each notification received, the complete vehicle and route details, checks made, messages received and sent, amendments made and action taken, all of which can be reviewed and updated. At the same time haulier and haulier vehicle records are saved, as are details of any bridge problems.

\*\*\* ABLOADS \*\*\* also maintains a Client database containing:-

- bridge information, including design and assessment details and applicable physical data and including overbridge height clearances
- mapping data and derived gazetteer road and place name information
- standard routes used by hauliers and compiled whilst using \*\*\* ABLOADS \*\*\*

\*\*\* ABLOADS \*\*\* provides many pre-prepared Reports to be used with specific parameters to extract and print critical or informatory statistical data from the program's source data. Industry standard reporting tools may also be used on the data for customised Client reporting.

### \*\*\* ABLOADS \*\* is a route mapping tool

\*\*\* ABLOADS \*\*\* displays OS MasterMap or the Client's own GIS mapping of the roads in his area. The mapping may be enlarged, panned or selected at any scale. Depending on the scale, it displays road nos and names, places and topographical data. Aerial photos may optionally be toggled on or off behind the mapping – a great locational facility.

Routes are entered for checking the first time by clicking their component segments on screen. Subsequently, routes are usually entered by selecting *Standard route(s)* and adding start and/or end sections particular to the current movement. These *Standard routes* are only ever entered once – the first time – and then saved. They can then be selected as a unit, or several can be combined and parts deleted, and the start and/or end of the route added. \*\*\* ABLOADS \*\*\* will automatically find *Standard routes* based on origin and destination if requested.

If you can't find the origin or destination or a road or place, there is a *Find* facility to locate it. You can show or hide bridges and their assessed capacities. Right click to display road element or bridge details. Click on the *Location map* to move quickly to another part of your area. *Find* works on bridges and road numbers as well.

The new Restrictions facility allows advisory or mandatory time delimited roadworks, road closures and dimensional restrictions to be attached to road elements for checking.

### \*\*\* ABLOADS \*\*\* checks every bridge for every vehicle

\*\*\* ABLOADS \*\*\* includes runtime versions of Cascade's \*\*\* ANALYSE \*\*\* and \*\*\* ARCH \*\*\* bridge analysis programs. These are the core of the engine which the program uses to check bridges. Before each bridge can be subject to a 'true' check using this engine, rather than a default check, each bridge must have design or assessment capacity information, simple physical data, and be 'pre-assessed'.

Once a route has been selected, **\*\*\* ABLOADS \*\*\*** lists all the bridge on the route of the proposed movement which it needs to check, based on road classification and bridge owners. For underbridges, a legal or special weight limit takes priority. If there is no limit, if the data is complete and the bridge has been pre-assessed, a 'true' check' is carried out. Finally, if neither of the above applies, a default check is carried out, based either any entered HB assessment rating or on a default HB rating based on road classification. For overbridges, the program checks vehicle height against safe clearance. Restrictions are also checked at this stage.

If **\*\*\* ABLOADS \*\*\*** finds a problem with an underbridge, the magnitude of the problem will determine the action to be taken. The first response is for the operator to refuse the notification and require a reroute. If a reroute is not possible and the deficiency level is within a preset limit for the operator, the operator may agree to the particular movement. If the level is within a preset higher limit, then the operator's supervisory engineer may agree to it. If neither can accept the movement but it is essential and time allows, then the movement can be referred to the 'Design Office' for checking, otherwise the movement has to be refused.

All weight limits and overrule levels are prescribed by the Client in program setup, and are controlled by a series of passwords. If a problem movement is cleared, the password 'owner' is recorded as having provided the clearing authority. Unless all problem bridges on a route have been cleared, **\*\*\* ABLOADS \*\*\*** deters details of that route from being saved to the database until a message has been sent to the haulier in question.

## How **\*\*\* ABLOADS \*\*\*** Checks Bridges

**\*\*\* ABLOADS \*\*\*** undertakes a 'true' bridge check by a system of comparative assessment using runtime versions of Cascade's established bridge analysis programs, **\*\*\* ARCH \*\*\*** and **\*\*\* ANALYSE \*\*\***.

The system requires that a full assessment has been undertaken for the bridge in question and the results of that assessment in terms of Assessment Live Loading and desirably also HB rating are known. Alternatively, the known HA design loading for a bridge may be substituted. Using an approximate model of the bridge in the runtime components, the assessment loading, ALL tonnes and, if available, HB units, is applied to the bridge and the effects, in terms of Geometrical Factor of Safety for arch bridges and moments and shears for all other types, are recorded. Subsequently, each vehicle to be checked is applied as a load to the bridge and its effects compared to those of the pre-assessment. An optional safety factor, defined in program set up (password authority required), is included in the comparison to take account of inaccuracies due to the approximate nature of the models, loadings and vehicle details utilised.

When checking 'span', 'box', 'port'al and 'spec'ial bridges, using **\*\*\* ANALYSE \*\*\***, the loading is placed on each span of the complete bridge frame model in turn. In the pre-assessment phase, three load cases are evaluated for ALL loading, with the KEL in position for maximum bending and maximum shear at each end of the span and the UDL applied only to the appropriate length of the BMD. Three more similar load cases are evaluated for HB loading, with the adjacent lane(s) loaded with HA loading in accordance with the BD. For the comparative assessment using the actual haulier's vehicle, the load cases used are similar to those for the HB vehicle, but for each case the vehicle is reversed, giving six load cases in all. Adjacent HA lane loading may be included (the default) or omitted at will. The program contains a routine for ensuring that the configuration of axles is always positioned in the worst bending or shear location for each case.

When checking 'arch' bridges using **\*\*\* ARCH \*\*\*** and the Mechanism Method, in the pre-assessment phase ALL loading is applied as the appropriate single axle loading and HB loading as a multi-axle vehicle crossing the bridge. If the arch type is irregular, separate load cases are carried out with the load crossing the span in each direction. For the comparative assessment using the actual haulier's vehicle, the load cases used are similar to those for the HB vehicle.