Roadway Asset Management

Roadsoft®

Software Suite

GIS-based Asset Management System

Optimize Maintenance

Manage Signs

Analyze Safety

Roadsoft is a software suite designed for collecting, storing, and analyzing data associated with transportation assets. Built on an optimum combination of database engine and GIS mapping tools, Roadsoft provides a quick, smooth user experience and almost unlimited data-handling capabilities.

Roadsoft was developed and is supported by the Center for Technology & Training, which is located on the campus of Michigan Technological University.

Types of Data

Roadsoft manages a variety of data associated with transportation systems. Specific types of data include:

- Roads
- Signs
- Bridges (dependent on data source & format)
- Culverts
- Driveways
- Guardrails
- Drainage Structures
- Intersections
- Pavement Markings
- Sidewalks
- Traffic Counts
- Traffic Signals
- Crash Data (dependent on data source & format)

Features

GIS-Based Map Interface provides a clear visual representation of the roadway assets in the database. Using map layers, you can easily display or hide specific types of data and you can adjust colors, sizes, and shapes to customize the view.

Laptop Data Collection uses a GPS connected to a Windows laptop or tablet with the Laptop Data Collector utility to provide a convenient way to collect and maintain accurate data for your Roadsoft database while outside of the office.

Mobile Data Collection Application is an application for mobile Android and iOS devices. Mobile allows you to manage inventory information and activities such as work orders, maintenance, and inspections while on-site or on the go.

Inventory of Assets includes detailed data for not only pavements , but other roadway assets in your jurisdiction.

Asset Management Analysis Tools enable you to create and implement efficient and effective construction and maintenance strategies to maximize the return on your transportation investment.

Data Mining and Report Generation Capabilities provide summaries of specific data in the database, and enhance understanding for yourself and between you and the other transportation stakeholders in your jurisdiction.

Getting Started

Roadsoft software, technical support, and training is available to agencies worldwide under license agreement. For more information, visit our website at www.roadsoft.us, or call 906-487-2102.

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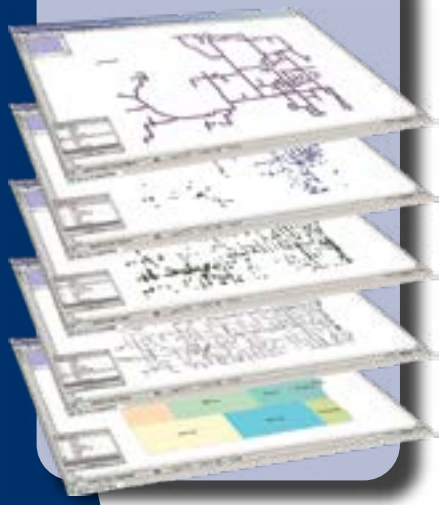
GIS-Based Map Interface

A *Geographic Information System* (GIS) is the technology used to organize, analyze, and view data from a spatial perspective. A GIS map organizes information into layers that allow you to display different types of data simultaneously. In Roadsoft, each layer of the map is connected to data in the database. When you select an item on a layer, the system makes available the database records associated with that item.

Roadsoft uses an integrated database, which means the data for all of the layers are interconnected between multiple tables. This integration of data establishes relationships between different types of data and aids in complex data analysis.

Data Layers

When you make a data layer visible in Roadsoft, items associated with that layer appear on the GIS map. Making multiple layers visible simultaneously provides a clear view of the physical relationship between different types of data on the map.



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Laptop Data Collector

Collecting Data

With the Laptop Data Collector (LDC) and a low-cost GPS, you can collect data from the passenger seat of a moving vehicle. As you travel along a road, the GPS communicates your position to the LDC, which grabs the asset nearest you, and then opens all associated database records. You enter the data you need and then move on. It all happens real-time at the pace you set for yourself.

The time required to collect and enter data is often the highest hurdle standing between you and a useful information management system. How can you get over this hurdle? The Roadsoft Laptop Data Collector (LDC) will give you a boost.

The LDC, a mobile data collection utility designed specifically for entering data into Roadsoft, enables you to enter asset information from the passenger seat of a moving vehicle. To get started, simply install it on a Windows laptop or tablet, load the appropriate map and data files, attach a low-cost GPS, and you're ready to go. It's easy to use, convenient and proven.

Easy to Use

The passenger seat of a moving vehicle is a difficult place to use software. The Roadsoft development team understood this fact, which is why they designed the LDC unlike other pieces of software. "Plug-and-play" communication with the GPS, fields that fill in automatically, and extensive use of keyboard shortcuts make the LDC amazingly easy to use in the office or on the road.

Convenient

The LDC uses the same map files as Roadsoft, but requires only a small piece of the main database, which makes data transfer and synchronization simple, quick, and convenient. The LDC connects easily to any GPS that meets NMEA 0183 requirements. In fact, the less expensive GPS units work best because they don't include proprietary security features like many of the more expensive units.

Proven

Since 2003, over 300 local and regional agencies in Michigan and the Michigan Department of Transportation have used the LDC to collect Pavement Surface Evaluation Ratings (PASER) for pavements and the Inventory-based Rating System (IBR) for non-paved roads on the State's federal aid and local road networks, logging over 1 million miles of data collection travel.

"The Laptop Data Collector is efficient and easy to use; rating roads is a breeze. It's obviously designed with the end-user in mind."

Vince – GIS Coordinator and Transportation Planner

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Mobile Data Collection

On Site or On the Go

With Roadsoft Mobile and a smartphone or tablet, you can take Roadsoft with you anywhere. Roadsoft Mobile allows your work crews to look up asset conditions and scheduled work plans wherever they are, even when they're at the work site or traveling to or from the office.

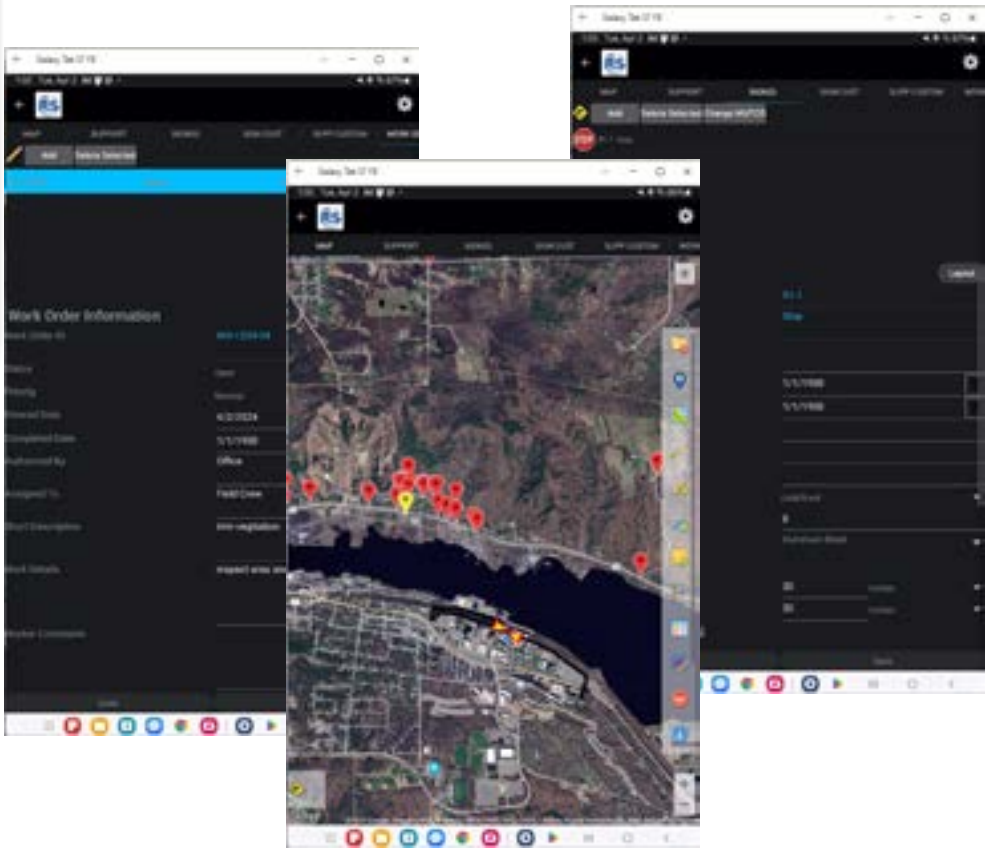
Roadsoft and Roadsoft Mobile exchange data through the Cloud, allowing everyone to keep up to date with the latest changes to the database.

Agency work crews need to be able to plan ahead when preparing for the day. Being able to check the latest condition of their assets is an important part of planning, because it allows crews to see what assets require work, what kind of work those assets need, and to gather the necessary materials for that work. The Roadsoft Mobile application is a useful tool that allows users to view and update asset information wherever they may be.

Roadsoft Mobile is an app available for both Android and iOS devices. It can be used on any mobile device with a functioning GPS. Roadsoft Mobile allows users to create and manage assets and asset activities such as work orders, inspections, and maintenance.

Upload data from the desktop Roadsoft software to the Cloud, and then it can be downloaded into Roadsoft Mobile while out at a work site, worked with, and the updated data can be downloaded back to desktop Roadsoft.

Currently Mobile is available for the Culvert, Drainage Pipe, Drainage Structure, Guardrail, Point Pavement Marking, Road, Sidewalk, and Sign Modules. More modules are in development and will be added in the near future. Combined with Roadsoft desktop software, Roadsoft Mobile provides maintenance personnel with a powerful set of tools to enable asset management on the go.



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Inventory of Assets

Foundations

Establishing an inventory of assets for an asset management system is like pouring footings and laying block before building a house. It requires a significant investment of time, money, and effort, and most if it is buried and out of sight when you're finished.

Like a foundation for a beautiful house, an inventory of assets for an asset management system provides a solid base on which to build more visible, exciting, and valuable structures.

You're probably responsible for several different types of roads, thousands of signs and culverts, miles of guardrails, and many other valuable assets within your jurisdiction. Wouldn't it be nice to know that you're doing everything you can to manage and maintain these assets at an optimum level of effectiveness? Millions of dollars worth of transportation assets are wasted every year within roadway systems across the U.S. simply because people are overwhelmed by all the information.

How can you manage it all so it makes sense? Roadsoft can help.

Roadsoft enables you to build and maintain a complete, detailed inventory of transportation assets for your jurisdiction. With Roadsoft you never have to wonder or guess; you'll know exactly what you have, where it is, and what to do to maintain it and keep it working well. The bottom line: you'll enjoy a clearer view of your bottom line.

Roadsoft enables you to build and maintain an inventory of roads, signs, culverts, guardrails, pavement markings, drainage structures, traffic signals, and other assets. For each type of asset in the database, Roadsoft stores the following basic information:

- Location along a road using a linear reference or GPS coordinates
- Physical description
- Construction, maintenance, inspection, and rating information

In addition to the basic information, Roadsoft stores the following additional information for specific types of assets:

- Curb and gutter, shoulders, and traffic counts for roads
- Sign retroreflectivity
- Approaching and departing terminals for guardrails, along with individual records for beams, blocks, and posts
- Culvert inspection information, entrance and exit structures, depth of cover, skew angle, and many other attributes
- Much more – contact the Center for Technology & Training at (906) 487-2102 for more information.

"The more information I add, the more powerful and useful Roadsoft gets!"

Matt – Engineer Technician

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Pavement Management and Analysis Tools

A Mix of Fixes

Historically, our roads have been managed with a "worst first" strategy, and reconstruction has been the preferred maintenance activity. But experience has taught us that carefully administered preventive maintenance activities go a long way toward extending the life of our roads.

The Strategy Evaluation and Strategy Optimization features and Project Planning & Strategy Tool use pavement deterioration curves, statistical analysis functions, and other mathematical optimization tools to determine specific combinations of maintenance activities that provide the greatest return on your investment.

Different types of pavement deteriorate at different rates, and different maintenance activities affect the service life of the pavement differently. Everything costs money and everyone is being forced to do more with less. Plus, political pressures associated with managing roads are steadily increasing. The process of finding the perfect combination of maintenance activities is mind boggling in its complexity.

How can you figure it all out; and how can you possibly explain it to anyone?

Roadsoft's Strategy features cut through the confusion. The *Strategy Evaluation* and *Strategy Optimization* tools. To begin, you enter current pavement condition values using the Pavement Surface and Evaluation Rating (PASER) system and define the performance of different types of construction and maintenance activities. Then you enter the amount of money you have available in your budget and the construction and maintenance activities that you want to consider. With a few mouse clicks you can generate a plan that combines construction and maintenance activities to maximize service life across the network of roads being analyzed. The evaluation and optimization features help you to make the most of all your resources. Not only that, but the software creates a plan that is clear enough to explain to whomever else needs to know.

Then you use can the *Project Planning and Strategy Tool* to compare road segments in the selected network and identify ideal candidates for the construction and maintenance activities proscribed by the Strategy Evaluation and Strategy Optimization tools to. First, you select a group of roads from an existing Roadsoft strategy or filter. Next, you assign road segments to activities, and as you assign roads in recent years the Project Planning Tool will update the estimated PASER ratings of those roads later on in the plan, helping you to manage your road conditions long-term. Then you can export a plan into the Project Builder to finish creating a road maintenance plan.

"The strategy evaluation and optimization tools help us generate pavement management plans that our decision-makers understand. We're able to apply the right fix in the right place at the right time."

Brian – County Highway Engineer

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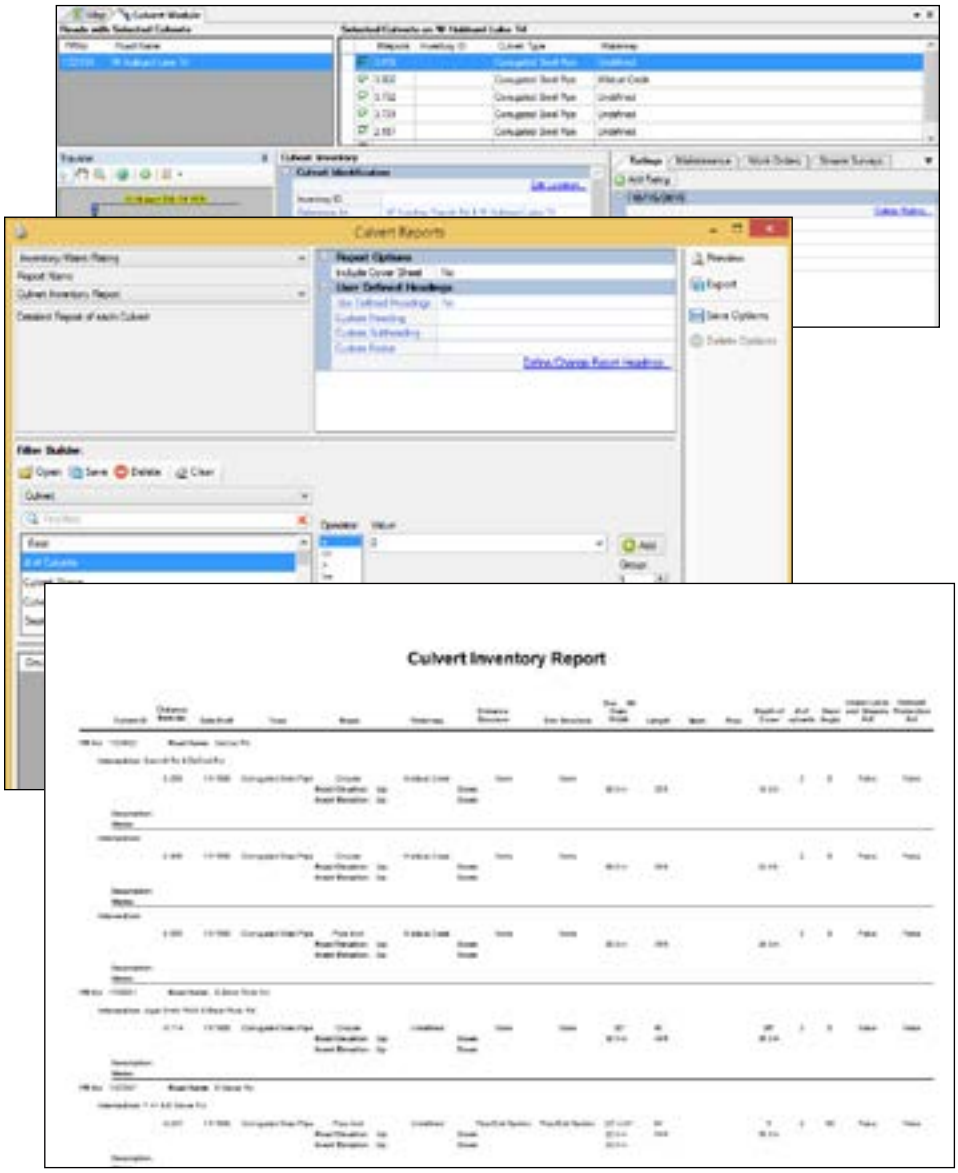
Detailed Reports, Data Mining, and Exports

Roadsoft reports provide a simple, clear summary of the status of specific information in the database. Roadsoft includes over 50 default reports, and allows an almost unlimited number of custom reports using the extensive data mining capabilities. You can also export the data from generated reports for use in other database programs and export the entire GIS file for use in other GIS applications.



Real-Time Results

It has been raining hard for hours and snow is melting fast this Spring day. Two major rivers in your jurisdiction are near flood stage. You know from experience that any bit of debris that restricts the flow of water under the roads that cross these rivers can cause serious flooding.

You open the Roadsoft report and filter tool. Within minutes you print a detailed report that lists every culvert along the two swollen rivers. With the report in hand, your maintenance crew heads out to inspect the river crossings. They clean two culverts that are nearly clogged with branches and debris. Together you avoid a minor disaster.

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