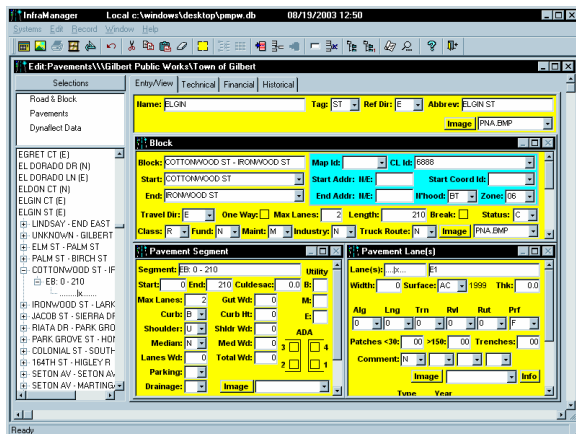


InfraManager

Pavement Management System

Pavement management systems have become a necessity in today's street maintenance world. Performing an inventory or condition assessment on your street network has never been more expensive or time consuming. Traditionally, pavement management systems have delivered a cut and dry "network level" summary of your rehabilitation needs. Wouldn't it be nice if all of that data could be used to produce useful designs to assist the

InfraManager (IManager) can help you meet your 'Best Management Practices' goals. Knowing what your network is worth is now just as important as knowing how much it is going to cost to maintain it. **GASB34** has mandated that agencies



InfraManager Data Entry Screen

engineering and planning staff? InfraManager does just that! By utilizing the actual defects present, InfraManager is able to prescribe the correct treatment for each road segment based on a user defined treatment matrix. Instead of using Pavement Condition Index (PCI) banding which can result in treatments that are not appropriate for the defects present, InfraManager can be set up to perform only the treatments used by your maintenance agencies and to prescribe those treatments under only the conditions which justify them.

Date: 8/19/03 12:06:2
Pavement Summary
 Town of Gilbert
 Gilbert Public Works

System Information

Number Of Roads: 1518
 Newest Lane Data: 7/14/2003
 Oldest Lane Data: 4/11/2000
 Replacement Cost of Road Network: \$358,615,197
 Current Network PCI: 89

	Maintained	Not Maintained	Total
Total Blocks	8625	489	9114
Total Segments	8831	236	9067
Total Lanes Rated	9056	232	9288

Miles by Class	Maintained		Not Maintained		Total CL Miles	Total Lane Miles
	Total CL Miles	Total Lane Miles	Total CL Miles	Total Lane Miles		
Blank	0.1	0.2			0.1	0.2
Collector	99.6	199.1	1.7	5.2	101.3	204.3
External Roadway	1.9	4.8	1.6	3.9	3.5	8.7
Local/Residential	499.3	1008.3	12.1	24.2	511.4	1032.4
Primary Arterial	200.4	460.8	8.2	15.2	208.7	476.0
Private			0.1	0.1	0.1	0.1
Total Miles	801.5	1673.3	23.8	48.7	825.2	1722.0

Network Summary Report

now maintain an accurate inventory of their assets. InfraManager can help you achieve this goal. With over three dozen standard reports that not only tell you the status of your network but also tell you exactly what your network consists of. InfraManager is a modular system that can handle pavements, sidewalks, parks, signs and signals as well as a dedicated Dynaflect analysis module.

InfraManager's companion program "IModel" is comprehensive prediction modeling software that allows the user to export information out of the InfraManager Pavement Management System and input such variables as future budgeting, inflation, varied

InfraManager

Pavement Management System

lifecycle information and much more. IModel then can predict up to 30 years into the future what will happen to each segment in your network

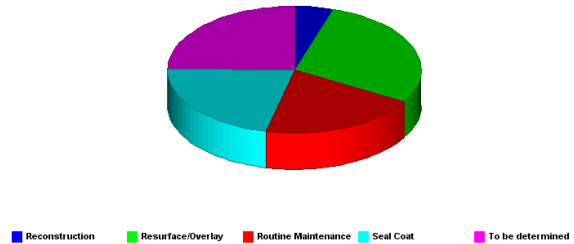
Managing pavements is the foundation of the InfraManager system. All data entry is based on the road, block, segment and lane system. Data is entered in plain English nomenclature and is assigned a unique identifier by the system. This eliminates the user having to memorize obscure codes and having to use a reference sheet to look up data entry items. An added benefit of this is that segments can easily be located on a map using the road and block descriptions. Along with the segment descriptions being easy to understand, all of the defect codes and other data items such as classification and funding source are located in easy to use pull down lists

“InfraManager can help you meet your ‘Best Management Practices’ goals”

which contain the code and definition. All of these lists are customizable by each agency. InfraManager needs only the classification data and the five visual ratings to develop a treatment for any given segment of roadway. This, however, is not the limit of IManager’s capabilities. Given structural section, local R-Value, Deflection data or other ‘real world’ data, InfraManager will incorporate that data into the final engineered design for Reconstruction or

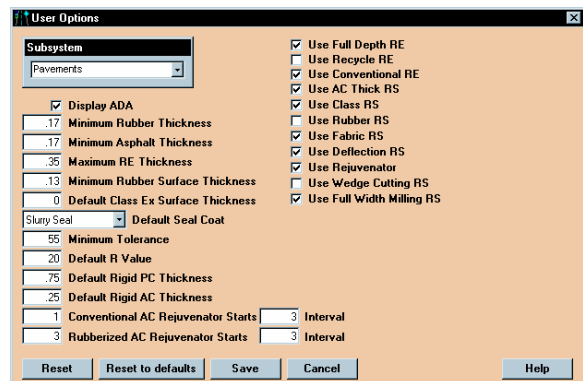
Asphalt Overlay. This results in a much more accurate budget analysis as well as assisting the design engineers by giving them an 80% design to start with.

Mileage by Project Candidate Action (Excluding Do Nothing)
Town of Gilbert
Gilbert Public Works



Graph (Mileage by Action w/o Do Nothing)

Available in either a stand alone or networked version, InfraManager can be used by multiple departments to not only prescribe the work to be done but to also keep track of work completed. By entering the work completed either as the projects are done or in bulk at the end of each construction season, the agency has a stored record of what was done and IManager will use that data in it’s



User Configuration Screen

InfraManager

Pavement Management System

next round of calculations eliminating the need to re-rate those segments during the next rating season. InfraManager will automatically regress the ratings to the appropriate levels for each treatment applied. Time based treatments can also be applied which will prevent any segment in your network from going too long without some preventative maintenance.

As with all InfraManager modules, the pavement module is fully GIS integrated allowing the mapping of any information down to the lane level into a GIS coverage. Along with Unique

Map Id: [] CL Id: 6888 []
 Start Addr: H/E: [] Start Coord Id: []
 End Addr: H/E: [] Hhood: BT [] Zone: 06 []

Pavement GIS Dialog Box

Identifiers in the road, block, segment and lane level, each of these may also contain a link to multiple photographs. These photos may be called up simply by pressing the Image ID button

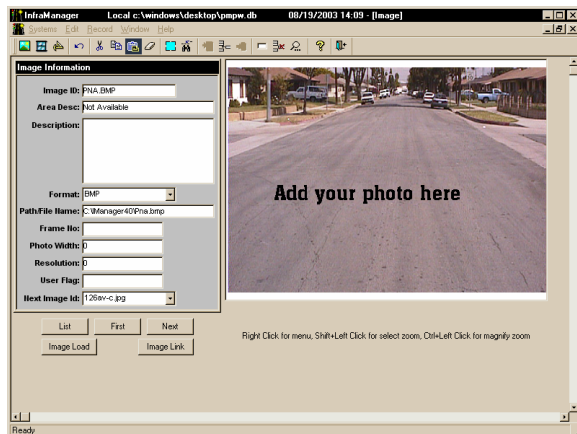


Image Display Screen

located on the main data entry screen. Once displayed the images can be panned, scanned and enlarged as well as printed for use in reports. Images can either be scanned in or

"This results in a much more accurate budget analysis as well as assisting the design engineers by giving them an 80% design to start with"

captured in digital form in any of a dozen different formats. In addition, each image may have a lengthy description as well as discrete location data.

InfraManager also has the ability to produce an optimized treatment schedule to assist agencies in getting the most service life from their networks for each maintenance dollar spent.

Network Optimization analyzes

Treatment Dollars by Year
 Town of Gilbert
 Gilbert Public Works

Plan Year	Reconstruction	Resurface/Overlay	Routine Maintenance	Seal Coat
0	0	0	0	0
1	0	344	0	0
2	138	735	0	0
3	0	925	0	0
4	307	528	0	0
5	311	548	0	0
6	89	727	0	0

Year	Priority	Class	Program	Road Name	Start Road	Offset	End Road	Offset	Cost \$	Accum Project \$	Network PCI
0	200300311	RHNN	Seal Coat	PARK	LA ARBOLETA	0	RIATA	0	9.0	9.0	70
0	200300436	RHNN	Seal Coat	CHAPALLA	15TH	0	15TH	0	1.9	10.9	87
0	200300335	RHNN	Seal Coat	PAGE	SERRA	0	SILVERADO	0	11.5	22.4	75
0	200304367	RHNN	Seal Coat	SHAMROCK	MARBLE	0	RED ROCK	0	1.3	23.7	93

Network Optimization Screen

each project list and then puts them in the most cost effective order of

InfraManager

Pavement Management System

treatment. Simply by entering your annual budget, InfraManager will allocate that budget over your entire project list to produce the most cost effective way to treat your network. Network Optimization even allows users to intentionally shift projects from one year to another to allow for those projects that must be completed during a specific year's construction season.

One of InfraManager's more interesting modules is Parks and Recreation. This module allows users to input items that would not fit into the road and block description scheme. In concert with an AutoCAD drawing or a map, objects are entered with a unique ID code to locate them on the concurrently displayed image. Parks, bike paths and other recreation

"InfraManager also has the ability to produce an optimized treatment schedule to assist agencies in getting the most service life from their networks"

areas are prime candidates for this module. Each area can be priority weighted and treatments can be customized for everything from gravel pathways to picnic tables and tennis courts. This module is also GIS capable and can be queried and displayed through most ODBC compliant GIS systems.

As with most items in InfraManager, reporting is as easy as point and click. Reports appear in tree view form and a user

simply selects the report from the list to have it display in the adjacent window. To help reduce the number of errors during data collection and input, InfraManager uses a number of front-end error trapping tests as well as a data groom function that may be run prior to data calculation to help catch and eliminate many typing and data

Date: 8/18/03 15:33:27 Page 1 of 3
Lane Error Trapping Report
Gilbert Public Works
Town of Gilbert

IDENTIFICATION				PHYSICAL DATA										PAVEMENT DEFECTS						COMMENT					
ROAD NAME	START DATE	START OFF	END OFF	START AN	END AN	BLOCK LN	CURB LG	CONCRIT	SHR DR	TYPE	WIDTH	DEPTH	LAIR	RE	WRITE	LENGTH	ALGATE	LIMITED	THROPS		RAVEL	CRACK	SPOTTS	IRREG	PATCH
PHOTO: PTA.EMP													SW	HE											
124TH ST	N	0.00	1.00	0.00	1.00	N	0	0	0	U	0	0	AC	HE	0	16	1.00	0	0	0	0	0	0	0	0
124TH ST	N	0.00	1.00	0.00	1.00	N	0	0	0	U	0	0	AC	HE	0	16	1.00	0	0	0	0	0	0	0	0
142TH ST	N	0.00	0.75	0.00	0.75	N	0	0	0	U	0	0	AC	HE	0	17.5	0	0	0	0	0	0	0	0	0
142TH ST	N	0.00	0.75	0.00	0.75	N	0	0	0	U	0	0	AC	HE	0	17.5	0	0	0	0	0	0	0	0	0
175.00(950.00)	N	0.00	0.00	0.00	0.00	N	0	0	0	U	0	0	AC	HE	0	0	0	0	0	0	0	0	0	0	0
175.00(950.00)	N	0.00	0.00	0.00	0.00	N	0	0	0	U	0	0	AC	HE	0	0	0	0	0	0	0	0	0	0	0
142TH ST	N	0.00	0.55	0.00	0.55	N	0	0	0	U	0	0	CR	HE	0	14	1.05	0	0	0	0	0	0	0	0
142TH ST	N	0.00	0.55	0.00	0.55	N	0	0	0	U	0	0	CR	HE	0	14	1.05	0	0	0	0	0	0	0	0
142TH ST	N	0.00	0.85	0.00	0.85	N	0	0	0	U	0	0	CS	HE	0	21	0.85	15	24	24	15	15	15	15	0
142TH ST	N	0.00	0.85	0.00	0.85	N	0	0	0	U	0	0	CS	HE	0	21	0.85	15	24	24	15	15	15	15	0
142TH ST	N	0.00	0.30	0.00	0.30	N	0	0	0	U	0	0	CS	HE	0	20	0.30	15	24	24	15	15	15	15	0
142TH ST	N	0.00	0.30	0.00	0.30	N	0	0	0	U	0	0	CS	HE	0	20	0.30	15	24	24	15	15	15	15	0
142TH ST	N	0.00	0.55	0.00	0.55	N	0	0	0	U	0	0	AC	HE	0	20	0.55	0	0	0	0	0	0	0	0
142TH ST	N	0.00	0.55	0.00	0.55	N	0	0	0	U	0	0	AC	HE	0	20	0.55	0	0	0	0	0	0	0	0

Lane Error Trapping Report

collection mistakes. A comprehensive list of data error trapping reports also help system users cull out improper data. After completion of data collection and error correction, calculation is as easy as clicking on a single button on the calculations screen. While producing reports users have the ability to filter and sort data as well as save the data in over a dozen different formats such as Excel®, dbf and comma separated values as well as the 'Powersoft Report' format which will allow users to filter, sort and export the data to other users with the included IMreport report viewer.

Security is a major concern of most agencies when it comes to protecting their data on computer

InfraManager

Pavement Management System

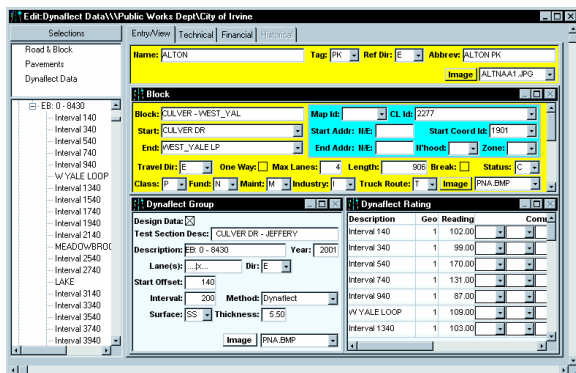
networks. InfraManager has its own built in security tables which will allow an agency to limit who can access the system and just how much information they will be able to see or modify.

Although InfraManager comes standard with over three dozen standard reports, additional reports can be created on demand and inserted into the system by

“A comprehensive list of data error trapping reports also help system users cull out improper data”

both CHEC Management Systems, Inc. or by agency personnel. InfraManager currently runs using a Sybase SQL database and will soon be ported to MSSQL® and DB2®.

InfraManager comes standard with a Dynaflect analysis module. This module can either be used in a



Dynaflect Input Screen

stand alone state or the data can be mapped into the pavements module for

use in calculation of your pavement treatments. Like Dynaflect analysis InfraManager is also capable of Structural Adequacy analysis to help those agencies that have masked much of their visual defect data with an aggressive seal program.

For more information or to arrange an onsite demonstration of InfraManager please contact James Curtis or Bryan Frerichs at the numbers listed below.

CHEC

MANAGEMENT SYSTEMS INC.

Specifications:

Environment:

- 32bit Windows

Memory:

- 128 Mb

Processor:

- 200 MHz +

Disk Space:

- < 100 Mb

Maximum Database Size:

- Unlimited

Maximum Record Number:

- Unlimited

CHEC Management Systems, Inc.

20202 Charlanne Drive, Redding, CA 96002
(530) 222-3116 (800) 523-2124

www.cmsicorp.com

InfraManager

Pavement Management System

Other Products and Services Offered By CHEC Management Systems Inc.

Online Commercial Facilities Management System

- *Manage any facet of your facilities from anywhere*
- *Online system, you only need a browser and internet connection to use*
- *Unlimited entries into the database*
- *Completely user configurable*

IModel Prediction Modeling Software

- *Predict the future of your road network*
- *Uses actual life-cycle data from your roads*
- *Allows users to account for inflation and annual budget modification*
- *Can be mapped into a GIS system*

Visual Condition Rating (actual survey as well as training)

- *Our crews help save you money by rating more miles in less time*
- *Quality Control assures all raters produce the same results*
- *Eliminate having to maintain year round staff for a seasonal job*
- *Helps to maintain an accurate inventory of your growing network*

Pavement Management Training

- *Onsite training for your engineers and technicians*
- *Pavement Management theory of operation as well as technical skills*
- *Rater training available by our rating crews on your site*
- *Refresher training for InfraManager and other Pavement Management systems*

Dynaflect Testing

- *Structural Adequacy Testing*
- *Dynaflect Testing*

CHEC Management Systems, Inc.

20202 Charlanne Drive, Redding, CA 96002
(530) 222-3116 (800) 523-2124

www.cmsicorp.com