



ST. CHARLES
SINCE 1834

AGENDA ITEM EXECUTIVE SUMMARY

Title:	Recommendation to Award Contract for Roadway Testing Services to Infrastructure Management Services (IMS)
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Presenter:	James Bernahl
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Please check appropriate box:

	Government Operations	X	Government Services 09.24.12
	Planning & Development		City Council

Estimated Cost:	\$54,417	Budgeted:	YES	X	NO	
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If NO, please explain how item will be funded:

Executive Summary:

In June 2009 the City Council approved the recommendation by staff to utilize the services of Infrastructure Management Systems (IMS) for a citywide street rating analysis and an update to the City's pavement management program. As part of this program roadway re-analysis is typically performed every four to five years to encompass any capital improvement pavement changes and deterioration of existing roadways. This analysis will be the second pavement management analysis for the City. The Program elements include:

- Surface Condition Analysis – This uses a laser road surface tester, which evaluates the current surface condition.
- Deflection Testing – Using a Dynaflect machine, the capabilities of the pavements, base and subgrade sections, and interaction between these sections will be evaluated.
- Pavement Management Software Program – This program will allow the City to manage and interpret the collected data in a variety of “what if” scenarios which will help to determine the best overall maintenance program. The program will also evaluate budgetary scenarios, providing useful information on upcoming fiscal requirements.
- Global Positioning System (GIS) and Pavement Management – Collected data can be used with our current GIS program to produce color maps based on existing pavement conditions or street rehabilitation plans. Queries can also be made of future infrastructure rehabilitation programs to better plan and manage resources.
- Additional Photo imaging of all existing roadways and parkways.

Attachments: *(please list)*

Copy of Proposal from IMS

Recommendation / Suggested Action *(briefly explain):*

Recommend approval to award contract for roadway testing services to Infrastructure Management Services for an amount not to exceed \$54,417.

For office use only:

Agenda Item Number: 6.f

September 4, 2012

City of St. Charles
2 E. Main Street
St. Charles, IL 60174-1984



IMS Infrastructure Management Services
1895-D Rohlwing Road, Rolling Meadows, IL 60008
Phone: (847) 506-1500 Fax: (847) 255-2938
www.ims-rst.com

Attention: Mr. James Bernahl – Public Works Engineering Division Manager
Reference: Pavement Management Update

Dear Mr. Bernahl:

IMS Infrastructure Management Services is pleased to submit our proposal to update the City's pavement management program. The project will include testing the City's entire street system. Network level testing using block-to-block referencing will be performed on approximately 136 test miles of pavement designated by the City. The field investigation will include a Laser RST surface condition survey, Dynaflect-based deflection testing, GPS referencing and a review of environmental and external factors. Digital images with four views will be provided at 25' intervals. IMS will install the current version of the PavePRO Manager pavement management software with the updated field data. The pavement management data will be linked to the City's GIS and City staff will be trained in software operation and data interpretation.

IMS will provide additional deflection testing to further define the condition of the base and subgrade throughout the individual test sections. Deflection testing will be performed at intervals of 2 tests per block. This approach will assist the City in developing rehabilitation strategies on streets with varying base thickness and/or conditions within a block.

The proposed update will ensure that the City's pavement management program is complete and accurately reflects current conditions. It can also provide information on the benefits of the rehabilitation strategies used by the City. This street information along with optional ROW data collected by IMS and/or City staff can be used to meet many of the reporting requirements of the GASB 34 "modified approach".

A description of the elements of the proposed program with corresponding fee schedule is set forth on the following pages. We have included the unit price fee schedule for both the pavements and ROW assets with a summary cost for the base pavement management update.

We look forward to our continued work with the City of St. Charles and appreciate your consideration of our proposal. Acceptance is constituted by signing and returning one copy to our office. If the City elects to use MFT funds for this project, IMS will prepare an appropriate IDOT Engineering Agreement for the MFT funded project. If you have any questions regarding the enclosed information or IMS services, please feel free to contact our office.

Very truly yours,

IMS INFRASTRUCTURE MANAGEMENT SERVICES

A handwritten signature in black ink, appearing to read "Donald L. Hardt".

Donald L. Hardt
Manager of Client Services

PAVEMENT UPDATE & ASSET MANAGEMENT PROJECT APPROACH

Surface Condition Survey

Surveys are completed using the Road Surface Tester (RST). The City will receive a continuous, objective, and accurate survey of the surface condition of the street network. Retests will be performed using previous sectioning wherever possible. These network-level surveys with intersection-to-intersection test sections will be linked to the City's GIS. The RST provides a great deal of flexibility and can easily adjust test section lengths to meet previously established test sections and/or any revised City goals. Single-direction testing will be performed on the two-lane streets. Two-direction testing is recommended for use on divided streets and arterials and collectors with four or more lanes of traffic. The surface condition survey is conducted continuously over the entire length of the test section and is not based on sample sections. The information gathered in this survey includes inventory, roughness, rut depth, cracking, texture and distress. The effects of environmental conditions will be considered in conjunction with the surface condition survey.



To provide the City with a ROW asset data collection option, IMS will collect continuous digital video during the surface condition survey. The RST combines an inertial navigation guidance system with GPS to geolocate visible pavement and ROW features. The simultaneous pavement and ROW asset data collection capability of the RST is unique in the industry. It provides an efficient and cost-effective means to populate both pavement and asset management systems.

The presence of any failed or broken concrete slabs within a test section will be recorded for further detailed identification during the deflection survey. IMS crews will use the City-identified definition of failed/broken slabs as the basis for our rating. The number of failed slabs will be recorded during the deflection survey and used by *PavePRO* Manager software to give the City an option to address individual slab removal and replacement as a maintenance/rehabilitation strategy for concrete pavements.

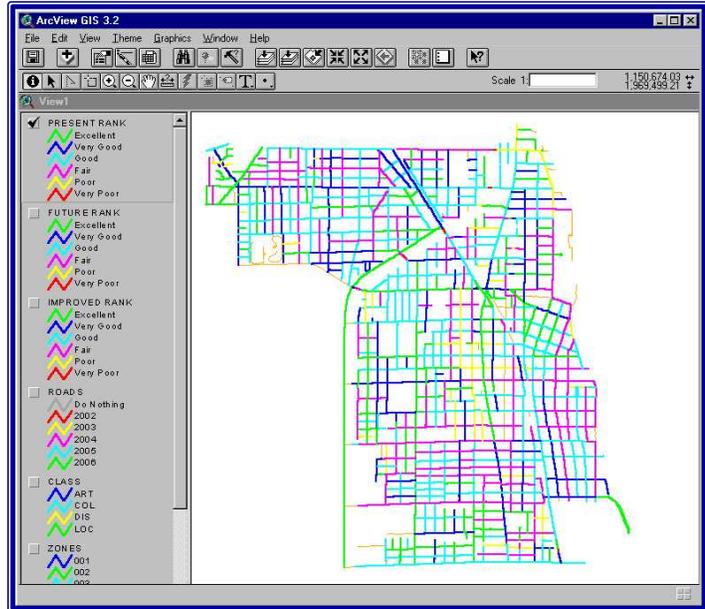
Deflection Testing

Each street test section surveyed by the Laser RST will receive two deflection tests. This testing will be performed using the Dynaflect device and the results of this testing will permit an analysis of the structural capabilities of the existing street section. IMS utilizes all five sensors of the Dynaflect in its structural analysis. This provides valuable information on the capabilities of the pavement, base and subgrade sections, and the interaction between these sections. Deflection testing was performed on previous survey for the City and will provide a solid basis for comparison to previous results.



GIS and Pavement Management

IMS will provide a link between the City's GIS program and the pavement management data to enable the City to display and generate color-coded maps based upon existing pavement conditions, street rehabilitation plans or most any of the data in the pavement management program. The City can use the query function of its mapping program to display the pavement management data. It may also be possible to use its mapping program to make queries of other infrastructure plans in conjunction with their street rehabilitation plans to determine if conflicts exist between plans. The future addition of ROW assets would also be geolocated on the GIS and entered in the asset management software. To most effectively maintain this link, IMS will require a copy of the City's current electronic centerline map prior to field data collection activities.



Digital Images

In conjunction with the surface condition survey, each test section is recorded on GPS referenced digital videotape with forward and rearward directed video cameras and used as part of IMS' Quality Control and Quality Assurance procedures. Additional cameras will be used to expand the left and right side viewing area and can include features of special interest to the City. IMS will provide the four (4) view digital images at 25' intervals for viewing in Pavement Manager and/or through the City's GIS. Many agencies find these images valuable as a "point-in-time" record of their roads and as a source of information for a variety of engineering, legal/investigative, and administrative uses. They can also be beneficial in assessing damage from a natural disaster or unforeseen event.

The Pavement Manager software includes an image module. This enhancement allows for the attachment of digital images to each test section. The City can then access all the pavement management data from a selected block and view multiple digital images for the identified section on his/her computer monitor. The digital images will be captured directly from the continuous video performed as part of the RST survey, but can be expanded to include images generated from a City-owned digital camera, and/or result from scanned photos or drawings.



IMS uses an automated image capture process that is cost effective and provides for a user-defined frequency for the number of pictures per section.

Pavement Management Software Implementation and Training

IMS will provide the current version of PavePRO Manager software fully loaded with IMS collected field data. Any City condition data and maintenance histories can be added following staff training. The software will be installed on the City's computer network. Since the software is provided with a site license, it can be used on laptops, field computers or by other departments at no additional charge. The software provides information on existing conditions, future performance, viable maintenance and rehabilitation strategies, optimization, schedules, budgets and multiyear programs. The program is kept current by City staff through input of rehabilitation activities.

Block ID	Street	From	To	Class	Zn A	Zn B	Zn C	Length	Width	Surf	Area (sq. ft.)
0001	55TH PL	ADAMS ST	CASS AV	RES	001			1066	22.0	AC	2605.8
0002	56TH PL	CASS AV	ADAMS ST	RES	001			1059	22.0	AC	2589.7
0003	56TH ST	ADAMS ST	CASS AV	RES	001			1063	22.0	AC	2588.4
0003	56TH ST	CASS AV	CITY LIMIT	RES	001			2436	22.0	AC	5354.7
0004	56TH ST	WESTERN AV	OAK AV	COL	001			1112	24.0	AC	2665.2
0005	57TH ST	CASS AV	WEST END	RES	001			578	18.0	AC	1158.0
0006	57TH ST	ADAMS ST	WEST END	RES	001			1211	31.2	AC	2852.6
0007	57TH ST	OAK AV	WILMETTE AV	RES	001			620	24.0	AC	1853.3
0008	58TH ST	DEER CREEK LN	FAIRVIEW AV	RES	001			1627	25.0	AC	4519.4
0009	58TH ST	JAMES DR	EAST END	RES	001			1192	22.0	AC	2813.8
0010	59TH ST	CITY LIMIT	HEATH LN	COL	001			1564	34.3	AC	5380.6

IMS will provide update training for City staff in the operation and interpretation of these programs. Update training is usually completed as two half day on-site sessions and can include actual operators, managers, and field staff.

Right-of-Way Asset Management System (Optional)

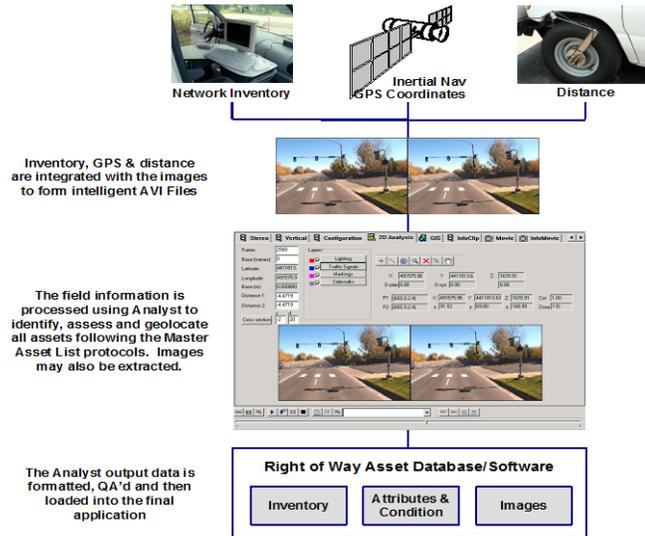
Although the pavement management software provides for pavement inventory, IMS can provide ROW asset inventory and management software for the acquisition of additional pavement and ROW features. Signs and supports, traffic signals, street lights, pavement striping, pavement markings, sidewalks, ADA ramps, curbs and gutters, inlets, manholes, trees, driveway aprons, medians, fences, pavement and ROW hardware can be provided to a level of detail determined by the City. Data collection

for the ROW asset inventory can be performed simultaneously with the surface condition survey using IMS's RST or through a variety of techniques using City and/or IMS staff.

Digital video extraction to collect asset information is the most cost effective approach to develop and map comprehensive asset inventories. The asset survey can be performed as part of the initial pavement management program or deferred to a future program or budget period. The digital video can also be stored by IMS to allow for future extraction activities without having to re-drive the street network.

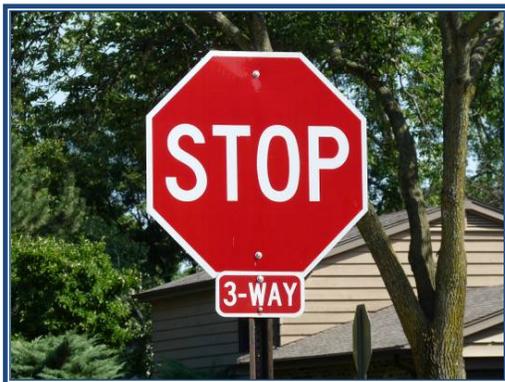
Prior to the start of any ROW asset survey, a Master Asset List is created to define the information that the City wants to know about each selected asset. It is the equivalent to a “data dictionary” and sets the rules for the asset extraction process.

The actual ROW asset survey uses the GPS referenced digital video from a minimum of 3 cameras on-board the RST. The images and GPS data are merged on a frame-by-frame basis with the street inventory. They are post processed using specialty Trident 3D Analyst software to record the location, attribute information, condition and picture of each requested asset. Extracted asset data is loaded into the selected asset management software and/or the City’s GIS.



Retroreflectivity (Optional)

IMS can perform retroreflectivity surveys using two methodologies. A subjective survey can be performed using one of three methodologies accepted by the MUTCD for its 2012 requirements. The subjective method is an automated night-time survey and is generally less costly than the measured approach. This methodology requires that each street be driven in both directions. The measured approach uses a retroreflectorimeter to measure the reflectivity as part of a manual or “feet on the ground” survey. This methodology can be used to measure the retroreflectivity of power failure folding stop signs at intersections



with traffic signals. Both approaches are usually performed as a phase II activity. Phase I is the sign inventory, that includes sign location, attributes and general condition using asset extraction techniques described above.

It should be noted that although “subjective” may sound less accurate or not as good as “measured”, it actually is an excellent approach and meets the MUTCD requirements. The goal is to determine whether our aging population can see a particular sign at night as well as they can during the daylight conditions.

Project Timing

The data collection phase of the proposed update program including the RST survey and deflection testing will be completed within a four week period. Data processing, GIS linkage, and digital images will immediately follow the fieldwork. The current version of PavePRO Manager software with updated test results will be delivered within 60 days of completion of the field testing. Software training and the presentations will be scheduled following data processing completion. Optional ROW asset extraction can also follow the data processing and image preparation. Optional retroreflectivity testing can be performed following the development of the sign inventory. The ROW asset deliverables require approximately 90 additional days. We would anticipate an early fall data collection program done in conjunction with other Metro area agencies.

FEE SCHEDULE

The cost summary is based on the following fee schedule. It is derived from the official schedule submitted by IMS to the Northeast Illinois Partnering Contract (a consortium for North and Northwest Chicago area municipalities) and provides discounted prices for several task activities. It is based on scheduling surveys in conjunction with other area projects to eliminate mobilization charges.

• Project Initiation	\$1,500.00
• Network Referencing	\$1,000.00
• RST Surface Condition Survey	\$130.00/ test mile
• Deflection Testing	\$120.00/ test mile
• Data Processing	\$20.00/ test mile
• Development of Structural Indices (3 rd Party Software)	\$15.00/ test mile
• PCC Slab Survey (for streets with no deflection testing)	\$20.00/ test mile
• Pavement Width Measurements (for streets with no deflection testing)	\$10.00/ test mile
• PavePRO Manager Software	\$3,000.00
• 3 rd Party Software	Special Quote
• Data Configuration & Data Load (3 rd Party Software)	Special Quote
• Parking Lot Survey, Software/Report	\$0.25/sq.yd. - Special Review
• Software Training (on site)	\$1,000.00/day - \$600/ half day
• Engineering Interpretation, Analysis, Special Reports	\$125.00/hour
• Transfer of Historical Data to a New Program	\$85.00/hour
• PavePRO Software Maintenance and Support	\$1,000.00/year
• GIS Linkage	\$20.00/ test mile
• Digital Images @ 25' intervals (single view)	\$13.00/ test mile
• Digital Images @ 25' intervals (additional views)	\$10.00/mile/view
• Digital Video Storage for Future ROW Asset Extraction	\$10.00/ test mile
• GPS/Camera Extraction Set-up & AVI Conversion	\$10.00/ test mile
• ROWMan Software	\$2,000.00
• Master Asset List Development	\$300.00 - \$1,500.00
• Project Management	7.5% of Task Activities
• Asset Extraction Services (Fee/Asset Pricing)*	
• Signs and Supports	\$2.50/sign
• Traffic Signals and Supports	\$2.25/signal and/or support
• Light Poles	\$1.75/pole
• Curb and Gutter	\$1.75/curb block
• Storm sewer Inlets	\$1.75/inlet
• Manholes	\$1.75/manhole
• Sidewalks	\$1.75-\$2.25/sidewalk block
• ADA Ramps	\$1.75/ramp
• Driveway Aprons (point asset)	\$1.75/apron
• Driveway Aprons (linear asset)	\$2.25/apron
• Railroad Crossings	\$2.25/crossing
• Hydrants	\$2.25/hydrant
• Trees	\$2.50/tree
• Pavement Markings (point assets)	\$1.75/markings
• Pavement Striping (linear assets)	\$1.75/block
• Guard Rails	\$2.50/guard rail
• Medians	\$2.50/median
• Fences	\$2.50/fence
• Ditches	\$2.25/ditch
• Misc. Road and ROW Hardware	\$2.25/asset

* Unit price per mile estimates for ROW assets are more difficult to develop because of unlimited scenarios and unknown quantities. Having performed sign surveys for a number of different agencies, we find that the number of signs ranged from 30 to 109 per mile. Other assets (e.g. sidewalks, light poles, pavement markings, inlets, trees, etc.) vary dramatically from agency to agency and district to district within the agency depending on age, terrain, etc. Since there are some advantages to extracting multiple assets during the extraction activity, IMS has offered a cost per mile alternative in addition to or in lieu of the cost per asset previously referenced. We believe that this alternative can assist the City in the budget process and eliminate surprises. If the City has a good estimate of the quantity of some of their assets, the original unit price per asset offer may be the best approach.

COST SUMMARY

IMS has developed the following pavement management update cost summary for your consideration. The estimate is based on the 2009 street network of 136 test miles plus 4 miles for new streets added since the last survey or those that may have been under construction at that time.

Activity	Quantity	Units	Unit Rate	Total
Project Initiation				
Project Initiation	1	LS	\$1,500.00	\$1,500.00
Network Referencing	1	LS	\$1,000.00	\$1,000.00
Field Surveys				
RST Surface Condition Survey	140	MI	\$130.00	\$18,200.00
Deflection Testing	140	MI	\$120.00	\$16,800.00
Data Management				
Data Processing	140	MI	\$20.00	\$2,800.00
PavePRO Manager Software	1	LS	\$0.00	\$0.00
PavePRO Software Maintenance and Support	1	LS	\$1,000.00	\$1,000.00
GIS Linkage	140	MI	\$15.00	\$2,100.00
Digital Images (Forward view @ 25' intervals)	140	MI	\$13.00	\$1,820.00
Digital Images (Additional left, right and rear views @ 25' intervals)	140	MI	\$30.00	\$4,200.00
PavePRO Software Training (2 half days)	2	EA	\$600.00	\$1,200.00
Project Management	1	LS	\$3,797.00	\$3,797.00
Pavement Management Update				\$54,417.00

Services are provided on a unit-price basis and the City will be charged only for the actual number of miles tested and included in the database. The fee schedule is submitted with the assumption that the City will provide or assist IMS with the following information and services:

- Street list and GIS centerline file of roads to be surveyed complete with functional classifications.
- Optional asset attributes and condition assessments for the Master Asset List.
- Safety vehicle to trail deflection-testing equipment on arterials and collectors, if requested.
- Notification and coordination with other departments or agencies, if necessary.

PROJECT APPROVAL

This proposal is submitted in duplicate with each copy being considered as an original. Acceptance is constituted by signing and returning one copy to our office.

Approved Services

Pavement Management Update: 140 miles - \$54,417.00

ACCEPTED:

City of St. Charles, IL

By: _____

Title: _____

Date: _____