REQUEST FOR LEGISLATIVE ACTION

EXECUTIVE OFFICE

AUG 07 2019

Version 6/10/19
Completed by County Counselor's Office:
Res/Ord No.: 20229
Sponsor(s): Ronald E. Finley
Date: August 19, 2019

SUBJECT	Action Requested ☐ Resolution ☐ Ordinance Project/Title: <u>Transferring $48,000 within the Special Road and Bridge Fund and Awarding a Contract for the furnishing of a Pavement Condition Assessment to IMS Infrastructure Management Services of Tempe, AZ for use by the Public Works Department under the terms and conditions of Request for Proposal 23-19 in an amount not to exceed $48,000.00. The term of this contract will be six months or until completion.</u>

BUDGET INFORMATION
To be completed By Requesting Department and Finance

Amount authorized by this legislation this fiscal year:	$48,000.00
Amount previously authorized this fiscal year:	$0.00
Total amount authorized after this legislative action:	$48,000.00
Amount budgeted for this item * (including transfers):	$48,000.00
Source of funding (name of fund) and account code number: FROM: 004-1506-57220 Special Road & Bridge Fund – Road & Bridge Maint – Garden & Agriculture Supplies	$28,000.00
004-1507-58040 Special Road & Bridge Fund – Special Projects in Public Works – Roads & Highways	$20,000.00
TO: 004-1506-56080 Special Road & Bridge Fund – Road & Bridge Maint – Other Professional Services	$48,000.00

* If account includes additional funds for other expenses, total budgeted in the account is: $

OTHER FINANCIAL INFORMATION:

☐ No budget impact (no fiscal note required)
☐ Term and Supply Contract (funds approved in the annual budget); estimated value and use of contract:
    Department: Estimated Use:

Prior Year Budget (if applicable):
Prior Year Actual Amount Spent (if applicable):

PRIOR LEGISLATION	Prior ordinances and (date): Prior resolutions and (date):
CONTACT INFORMATION	RLA drafted by (name, title, & phone): Katie Bartle, Senior Buyer, 816-881-3465
REQUEST SUMMARY	The Public Works Department requires a contract for a Pavement Condition Assessment with a Five-Year Plan to provide data regarding the condition of paved roads in Unincorporated Jackson County as well as determining the most effective way to repair and maintain said roads. The Purchasing Department issued Request for Proposal 23-19 in response to this requirement. A total of twenty-three notifications were distributed five responses were received and evaluated as follows:

NO	Respondent	Responsiveness to RFQ 10 Points	Experience in Providing Condition Assessments 40 Points	Pricing 50 Points	Total Score 100 Points
1.0	Anderson Engineering Kansas City, MO	8	15	1	24

	NO	Respondent	Responsiveness to RFQ	Experience in Providing Condition Assessments	Pricing	Total Score
			10 Points	40 Points	50 Points	100 Points
	2.0	IMS Infrastructure Management Services Tempe, AZ	10	40	50	100
	3.0	Dynatest Austin, TX	10	32	24	66
	4.0	ERI Engineering & Research International Savoy, IL	9	32	28	69
	5.0	MDS Technologies Park Ridge, IL	9	34	49	92

In addition to awarding the project outlined in the Request for Proposal at a cost of $39,367.00, Public Works also recommends purchasing ESA/GIS Autosync for $6,000.00 and GIS Clean-Up Services for $2,100.00.

Pursuant to Section 1054.6 of the Jackson County Code, the Purchasing Department recommends Awarding a Contract for the furnishing of a Pavement Condition Assessment to IMS Infrastructure Management Services of Tempe, AZ for use by the Public Works Department under the terms and conditions of Request for Proposal 23-19 in an amount not to exceed $48,000.00. The term of this contract will be six months or until completion.

The Purchasing Department requests the transfer of $48,000.00 within the Public Works budget as follows:

	FROM:	TO:

004-1506-57220 $28,000.00
Special Road & Bridge Fund – Road & Bridge Maint – Garden & Agriculture Supplies

004-1507-58040 $20,000.00
Special Road & Bridge Fund – Special Projects in Public Works – Roads & Highways

004-1506-56080 $48,000.00
Special Road & Bridge Fund – Road & Bridge Maint – Other Professional Services

CLEARANCE	
	☐ Tax Clearance Completed (Purchasing & Department) ☒ Business License Verified (Purchasing & Department) ☒ Chapter 6 Compliance - Affirmative Action/Prevailing Wage (County Auditor's Office)
COMPLIANCE	☐ MBE Goals ☐ WBE Goals Goals were waived because contract value is under $50,000.00. ☐ VBE Goals
ATTACHMENTS	Recommendation Memo from Public Works, Service Agreement from IMS, Pertinent pages from IMS' proposal, Evaluation Matrices from the Evaluation Committee, Abstract of Bids Received.
REVIEW	Department Director: Date: 8.6.19 Finance (Budget Approval): *If applicable* Date: 8/7/19 Division Manager: Date: 8-7-19 County Counselor's Office: Date: 8/9/19

Fiscal Information (to be verified by Budget Office in Finance Department)

☐   This expenditure was included in the annual budget.

☐   Funds for this were encumbered from the _____ Fund in ____.

☒   There is a balance otherwise unencumbered to the credit of the appropriation to which the expenditure is chargeable and there is a cash balance otherwise unencumbered in the treasury to the credit of the fund from which payment is to be made each sufficient to provide for the obligation herein authorized.

☐   Funds sufficient for this expenditure will be/were appropriated by Ordinance #

☐   Funds sufficient for this appropriation are available from the source indicated below.

Account Number:	Account Title:	Amount Not to Exceed:

☐   This award is made on a need basis and does not obligate Jackson County to pay any specific amount. The availability of funds for specific purchases will, of necessity, be determined as each using agency places its order.

☐   This legislative action does not impact the County financially and does not require Finance/Budget approval.

Fiscal Note:

Funds sufficient for this transfer are available from the sources indicated below.

PC# _____

Date: August 6, 2019

RES # 20229

Department / Division		Character/Description		From	To
004	**Special Road & Bridge Fund**				
1507	Special Projects in Public Works	58040	Roads & Highways	$ 20,000	$ -
1506	Road & Bridge Maintenance	57220	Garden & Agriculture Supplies	28,000	-
1506	Road & Bridge Maintenance	56080	Other Professional Services	-	48,000
				$ 48,000	$ 48,000

Budget Officer   2/6/19

CONSULTANT SERVICES AGREEMENT
REFERENCE ID: ___19

This AGREEMENT, effective this _____ day of _____ 2019, is by and between:

Jackson County, MO
415 E 12th St.
Kansas City, MO 64106

Hereinafter called CLIENT, and

IMS Infrastructure Management Services, L.L.C
1820 W. Drake Drive, Suite 104
Tempe, AZ 85283

Hereinafter called CONSULTANT, who agree as follows:

PART I - RECITALS

CLIENT desires to engage CONSULTANT to provide professional consulting services to complete a comprehensive pavement condition survey for the County of Jackson, MO as described in Section II – Scope of Services, and to render its services in the terms and conditions provided in this agreement.

Both CLIENT and CONSULTANT agree that execution of this AGREEMENT is a material element of the consideration to execute the Services. Additional terms and conditions may be added or changed only by written amendment to this AGREEMENT signed by both parties. In the event CLIENT uses a purchase order or other form of documentation to administer this AGREEMENT, the use of such form shall be for convenience purposes only and any additional or conflicting terms it contains are stricken. This AGREEMENT shall not be assigned by either party without prior written consent of the other party.

In consideration of the rights and obligations hereinafter specified, CLIENT and CONSULTANT agree as follows:

PART II - SCOPE OF SERVICES

The scope of CONSULTANT's services ("Services") and project deliverables are described in **Attachment A – Scope of Services,** the contents of which shall be incorporated into this AGREEMENT.

PART III - COMPENSATION

CLIENT shall pay compensation to CONSULTANT for the Services performed under this agreement according to the fee schedule, or unit rate table, presented in **Attachment A – Scope of Services**. If no fees are stated, fees will be according to CONSULTANT's current fee schedule. Fee schedules are valid for the calendar year in which they are issued.

CONSULTANT may invoice CLIENT not more frequently than monthly and payment is due within 30 days of receipt of invoice. The Invoice shall follow the fee schedule and be based on percentage complete. Documentation in the form of a project status spreadsheet shall be supplied in support of each invoice. No withholdings shall be made. CLIENT shall notify CONSULTANT in writing, at the address above, within 10 business days of the date of the invoice if CLIENT objects to any portion of the charges on the invoice, and shall promptly pay the undisputed portion.

CLIENT shall pay a finance fee/late fee of 1.5% per month, but not exceeding the maximum rate allowed by law, for all unpaid amounts 15 days or older. CLIENT agrees to pay all collection-related costs that CONSULTANT incurs, including attorney fees. CONSULTANT may suspend services for lack of timely payment.

PART IV - PROVISIONS

1. PERIOD OF SERVICE - Work shall be initiated upon written authorization from CLIENT or execution of this agreement, and receipt of Jackson County Purchase Order. The contract shall remain in force until the project is completed and notification of completion is submitted by CONSULTANT to CLIENT or December 31st, 2021 – whichever comes first.

2. WARRANTY – CONSULTANT warrants to CLIENT that it will perform the services in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. CONSULTANT MAKES NO OTHER WARRANTIES OR GUARANTEES, EXPRESSED OR IMPLIED, RELATING TO CONSULTANT'S SERVICES OR SOFTWARE PROVIDED BY OTHERS, AND CONSULTANT DISCLAIMS ANY IMPLIED WARRANTIES OR WARRANTIES IMPOSED BY LAW, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

3. CONSEQUENTIAL DAMAGES – CONSULTANT SHALL NOT BE LIABLE TO CLIENT FOR LOSS OF PROFIT OR REVENUE, LOSS OF USE OR OPPORTUNITY; LOSS OF GOOD WILL; COST OF SUBSTITUTE FACILITIES, OR SERVICES; COST OF CAPITAL OR FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT, PUNITIVE, OR EXEMPLARY DAMAGES.

4. INSURANCE - CONSULTANT represents that it now carries, and will continue to carry the following minimum insurance applicable to the project.

Type of Insurance	Limits Of Liability
Commercial General Liability	$1,000,000 (per occurrence)
Automobile Liability	$1,000,000
Workers Compensation	As per applicable state law

6. GOVERNING LAW – The laws of the State of Missouri shall govern the interpretation and enforcement of this contract. Any litigation which arises between the parties shall be initiated and pursued in the Circuit Court in and for Jackson County, State of Missouri.

7. SEVERABILITY – Any provision of the AGREEMENT which may be rendered null and void shall not invalidate the remainder of this AGREEMENT to the extent the AGREEMENT is capable of execution.

8. TERMINATION - Either party may terminate this AGREEMENT or the Services without cause upon giving the other party ten (10) calendar days written notice. In such case, CONSULTANT shall be paid costs incurred and fees earned to the date of termination.

9. OWNERSHIP OF DOCUMENTS – Work product, such as field data, analyses, calculations, notes and other records relating to the project prepared by CONSULTANT shall remain CONSULTANT property. The CLIENT shall have use of the work product and software for the sole benefit of CLIENT with no third party beneficiaries intended. Reliance upon the Services and any work product is not intended for third parties. Files shall be maintained for a period of one (1) year by CONSULTANT.

10. SAFETY - Safe practices are to be considered a priority requirement in the performance of this AGREEMENT. CONSULTANT will comply with the provisions of Federal, State and local health and safety requirements.

11. NON-DISCRIMINATION IN EMPLOYMENT - CONSULTANT agrees and hereby certifies that in providing the services hereunder, it shall not discriminate against any employee or applicant because of race, color, religion, age, sex, or national origin. CONSULTANT shall abide by provisions of all applicable governmental regulations pertaining to non-discrimination.

12. NOTICES – All notices hereunder materially changing this AGREEMENT must be in writing to the designated CLIENT contact and CONSULTANT project manager.

13. FORCE MAJEURE – Neither CLIENT nor CONSULTANT shall be considered in default in the performance of its obligations hereunder if such obligations were prevented or delayed by any cause beyond the reasonable control of the party which include, but are not limited to acts of God, labor disputes or civil unrest.

14. ADDITIONAL TERMS - "Pursuant to §285.530.1, RSMo, Vendor assures that it does not knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the State of Missouri and/or Jackson County, and shall affirm, by sworn affidavit and provision of documentation, its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Further, Vendor shall sign an affidavit, attached hereto and incorporated herein as Exhibit B, affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

15. ENTIRE AGREEMENT - Entire Agreement" includes the RFP, the consultant's response to the RFP and this Agreement.

PART V - SIGNATURES

The parties have caused this AGREEMENT to be executed in duplicate counterparts, each of which shall be considered as an original by their duly authorized offices.

CLIENT: **Jackson County, MO**

By:

_____	_____
Signature	Title
_____	_____
Printed Name	Date

CONSULTANT: **IMS INFRASTRUCTURE MANAGEMENT SERVICES, LLC**

By:

_____	_____
Signature	Title
_____	_____
Printed Name	Date

Attachment A: Scope of Services

The detailed fee range presented below is based on the City's scope of services as defined in the request for proposal and the IMS work plan. The fee range represents a realistic budget to complete the work and will be refined further during scope discussions with City staff.

Jackson County Missouri

Task	Activity	Quant	Units	Unit Rate	Total
	Project Initiation				
1	Project Initiation & Project Setup	1	LS	$3,000.00	$3,000.00
2	Network Referencing, Mapping Services & GIS Linkage	260	T-Mi	$6.00	$1,560.00
	Field Surveys				
3	RST Mobilization/Calibration	1	LS	$3,000.00	$3,000.00
4	RST Field Data Collection	260	T-Mi	$70.00	$18,200.00
	Data Management				
5	PCI Data QA/QC, Processing & Format	260	T-Mi	$7.00	$1,820.00
6	Provision of HD Digital Imagery @ 20-25 foot Intervals (Per View)	260	T-MI	$14.00	$3,640.00
7	Pavement Analysis, ESA Spreadsheet & Final Pavement Management Report	1	LS	$7,000.00	$7,000.00
	a. Pavement Analysis, Budget Model Development, & 5-Year Rehab Plan			Included in Base Activities	
	b. Customizable Prioritization & Cost-Benefit Analysis Configuration			Included in Base Activities	
	c. Full Integration & ESA Spreadsheet Training			Included in Base Activities	
8	Project Management	1	LS	$1,147.00	$1,147.00
9	ESA/GIS Autosync	1	LS	$6,000.00	$6,000.00
10	GIS Clean-Up Services	12	HR	$175.00	$2,100.00
				Project Total (not to exceed):	**$47,467.00**

June 11th, 2019

Office of the Jackson County Purchasing Department

Room G-1, Ground Floor, Jackson County Courthouse

415 East 12th Street

Kansas City, Missouri 64106

Reference: "Pavement Condition Assessment and Five-Year Pavement Maintenance Program"

Dear Evaluation Committee Members:

IMS Infrastructure Management Services, LLC is pleased to submit our pricing proposal for the Jackson County project. The following pages document the requested tasks. The fee structure is presented with unit base costs where necessary along with mileage rates. All pricing is exclusive of any County, State or Federal taxes, levies or duties. These fees are based on the IMS work plan and deliverables as presented in our Technical Proposal.

We want to thank you for considering the IMS team as a viable solution for your pavement management program. Based on careful review of the intended Jackson County project scope, we are confident that we can exceed the County's expectations in a cost effective and time efficient manner that would provide a substantial savings to each agency. Thank you for your time and consideration.

Sincerely,
IMS Infrastructure Management Services

Jeff Myers
Client Services Manager

INTRODUCTORY LETTER

Office of the Jackson County Purchasing Department

Room G-1, Ground Floor, Jackson County Courthouse

415 East 12th Street

Kansas City, Missouri 64106

Reference: **"Pavement Condition Assessment and Five-Year Pavement Maintenance Program"**

Dear Evaluation Committee:

IMS Infrastructure Management Services is pleased to submit this proposal regarding the above referenced project to Jackson County. With over 30 years of pavement and asset management experience, we have become international leaders in the provision of automated data collection methodologies and software configuration. With our sole focus on pavement and asset management services, Jackson County Staff will acquire **quality** data, exemplary **service**, and **reliability** that define our commitment. This level of quality and commitment has resulted in IMS routinely traveling across the United States and Canada to complete projects. For this project, we will have a Project Manager in the State of Missouri. We believe that having a local Project Manager will be an asset to the County.

The official contact person authorized to negotiate or answer questions regarding the IMS proposal is a local resident of Springfield, Missouri:

Jeff Myers, M.S.A. – Manager of Client Services
IMS Infrastructure Management Services, LLC
2004 W Cantebury, Springfield, MO 65810
Office: (480) 839-4347, Direct: (417) 372-7021, Fax: (480) 839-4348
Email: jmyers@imsanalysis.com

We want to thank you for the opportunity to assist Jackson County with its pavement management needs. Based on careful review of the project scope, we are confident that we can provide the County with the requested services in a cost effective and time efficient manner that will provide a return of substantial savings. Thank you for your time and consideration.

Regards,
IMS Infrastructure Management Services

Jeff Myers
Client Services Manager

1.0 FIRM QUALIFICATIONS AND EXPERIENCE

1.1 EXECUTIVE SUMMARY

IMS Infrastructure Management Services is the premier pavement and right-of-way asset management firm in the Midwest. We have completed projects in Bridgeton, Branson, Springfield, Creve Coeur, Kirksville, St. Charles, MO; Leawood, Wyandotte County, KS; and many others listed throughout this proposal. With 50-60 pavement management assignments completed annually, we stand second to none in our ability to establish cost effective maintenance management programs using industry standard deliverable formats such as Interactive Excel Spreadsheets, GIS geodatabases, simple to use Google Earth KML mapping files, and even 3rd party pavement management systems such as CarteGraph, MicroPAVER, Lucity, and many others.

The primary objective of this project is to provide the County with the tools, skills, and information to manage their roadway network in the most cost effective manner. To accomplish this goal, IMS will conduct automated field surveys utilizing **ASTM D6433** protocols (U.S. Army Corps of Engineers) that will provide a solid understanding of the status and needs of the roadway network. The data can then be harnessed to develop comprehensive multiple-year street rehabilitation plans that optimize pavement quality and minimize annual expenditures.

While we understand the County has used Cartegraph in the past, we recognize that not all agencies may find value in utilizing a dedicated pavement management program that can be difficult to use. As such, the base scope of this proposal will focus on an easy to use, but highly engineered, Interactive Excel Spreadsheet (ESA – Easy Street Analysis) that utilizes the core metrics of any good pavement management system such as industry standard performance curves, **ASTM D6433** distress protocols (ASTM D6433), custom prioritization, and cost benefit optimization. There is no "one-size-fits-all" when it comes to pavement management programs and IMS can assist the County and participating agencies in the selection of an alternative software solution if desired. In addition, if the County and participating municipalities wish to retain the existing Cartegraph program, IMS can complete a full Cartegraph update that includes software update (if needed), data integration, and training.

This proposal will highlight the following activities:

- The IMS team's objective and automated approach to **ASTM D6433** data collection.
- Implementation of the highly engineered and easy to use Easy Street Analysis (ESA) "interactive" software solution. The idea is to simplify pavement management for the end user.
- Collaboration with agency staff and an iterative analysis process designed to fine-tune the results to meet specific level of service needs for each participating agency.
- Development of a comprehensive 5-year rehabilitation plan that is flexible enough to accommodate innovative rehabilitation strategies and local priorities as they relate to level of service.

1.2   COMPANY PROFILE

IMS Infrastructure Management Services is a pavement management-consulting firm with over 30 years of direct experience in the industry and we are the premier automated pavement management firm in the United States. As a professional engineering firm that is 100% dedicated to pavement and asset management, our ability to perform the work goes hand-in-hand with our philosophy on project ownership. Every project is assigned a team of dedicated professionals, with the core group comprised of a Project Principal, Project Engineer, and Client Services Manager. We can ensure successful project ownership because each member of the IMS team understands who is accountable for each phase of the project.

Since our inception in 1985, IMS has progressively developed new technologies together with real-world software applications to become a recognized international leader in the field of pavement and infrastructure management. Our software solutions provide the tools required to meet the complex challenges within modern urban and rural environments.

IMS completes 50 to 60 pavement and asset management projects across the U.S. annually and has served as the pavement management firm for the nearby agencies of Bridgeton, Branson, Springfield, Creve Coeur, Kirksville, St. Charles, Missouri; Hutchinson, Hays, Bonner Springs, Leawood, Wyandotte County, Kansas; Broken Arrow, Edmond, Ada, and Stillwater, Oklahoma. IMS takes pride in performing quality work for each client to build long-term partnerships. Our team is comprised of 35 employees, broken down as follows: 12 Staff Professionals, 9 Support Personnel, and 14 Technicians.

A brief history of IMS is as follows:

•Road Surface Tester (RST) technology introduced to the North American market.	•IMS formed as a partnership between Novak Dempsey, Swedish National Roads Authority and Delcan, Ltd.	•RST capability is expanded with the addition of GPS and digital camera capabilities for asset data.	•Employee purchase of IMS, western United States and Canadian presence expanded.	•Data processing capability expanded through automated programs and routines.	•Introduction of the Sidewalk Surface Tester for more detailed sidewalk and ROW asset inventories.

Since 2004, IMS has completed more than 800 pavement management assignments for government agencies and private-sector companies throughout North America. IMS achievements include:

- Certified for **ASTM D6433** data collection and participation in *ASTM sub-committee E1741 and TRB subcommittee AFD20* on pavement monitoring and valuation.
- 800 City and County agencies plus 25 large-scale public works departments.
- Ten state agencies, DOT's, MPO's and COG's, and transportation authorities.
- Collected data for more than 15 different software platforms, ranging from our own proprietary systems, to 3rd party programs including Cartegraph, PAVER, Lucity, Cityworks, and others.
- Developed the data collection tools that set the standard for comprehensive automated and objective surveys.

1.3   IMS TEAM ORGANIZATION AND LEADERSHIP

The IMS team is built around a core group of key project members that stay with the project from inception through to delivery of the final results. It is where decisions are assessed, implemented, and follow-up completed. The project will be led by Project Principal, Stephen Smith, and includes multiple registered professional engineers. The core team, led by Stephen Smith, P.E. and Mark Kramer, P.E., Principals, also includes David Butler, P.E. as the Quality Assurance Manager, Zac Thomason as the Project Director, and Springfield, Missouri resident Jeff Myers as the Client

Jackson County, Missouri
Project Organization
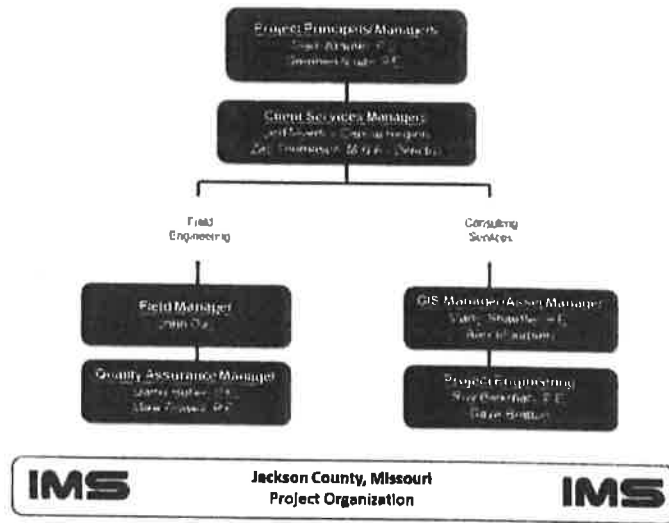
Services Manager. The project Principal will be available for real time communication, and in the chance that he cannot be reached, the Customer Services Manager will be available to assist wherever necessary. IMS frequently conducts training through WebEx or onsite for all user groups.

The team is structured into two streams that follow the logical work activities and flow of the project. Each work stream is headed by a specialist in their respective field of practice. For this assignment, activities relating to the acquisition and quality of field data are undertaken and managed by David Butler. David was selected for this role due to his 250,000 miles and over 30 years of technical data management experience. John Day will coordinate the RST field program and implement the initial data processing preparations. Marty Shaeffer will manage the GIS linkage and optional activities such as asset inventories and image deliverables. Roy Barkman, P.E. and David Butler, P.E. will manage the post-processing routines, pavement condition data formatting, and verification programs.

We purposefully separated the field surveys from the data management and consulting functions in order to ensure the continual flow of data from the field, through post processing, and then on to the client. We believe that the person who collects the data cannot be the same one who validates the data.

The entire team will operate under the direction of Principal Engineers Stephen Smith and Mark Kramer. This project organization has been intact at IMS for over 15 years, providing a team approach that is proven and effective in delivering customized pavement management programs. The IMS team is organized and based on a few mission critical items:

- Nearly 100 years of combined engineering and project management experience with a focus on pavement and right-of-way asset data collection projects. IMS staff has experience in roadway design, construction, municipal engineering and pavement analysis puts him in a strong position to develop real world solutions and budgets.

- IMS staff understands the need and constraints of the modern public agency. Our knowledge of industry software modules, their strengths and weaknesses, will provide the County with a unique perspective on the implementation of a Pavement Management System.

1.4 TECHNICAL STAFF QUALIFICATIONS

The project roles, qualifications, and responsibilities of the key team members are highlighted and summarized below.

Team Member	Project Role & Experience
Stephen Smith, P.E. Project Principal Summary: 18 Years with IMS Automated Data: Yes Pavement Management: Yes Software Evaluation: Yes ROW Assets: Yes Software Implementation: Yes P.E. in 3 States	Responsible for ensuring technical resources are available for the data collection and processing, and then directly involved with the pavement analysis and reporting. Stephen will be integral throughout the analysis and reporting phase. Stephen will also ensure that the project remains on time and that the final report is reviewed with County staff. • *B.S. in Civil Engineering, over 30 years engineering experience.* • *P.E. in Arizona, Delaware and P.Eng. in Alberta and Saskatchewan.* • *18 years specializing in pavement and right of way asset management for cities and counties.* • *In excess of 100 pavement and right of way asset management and implementation projects in the last 5 years. Most involve development of inventories, GIS integration, analysis and reporting, and asset management systems.* • *In excess of 300,000 miles of data collection and QA/QC using automated, manual and sampling technologies.* **Recent projects include:** Branson, Springfield, Kirksville, & Creve Coeur, MO; Bonner Springs, Leawood, Hutchinson, Manhattan, Wyandotte County & Hays KS; Oklahoma County, Broken Arrow, Norman, Bartlesville, Ada & Edmond, OK; Euless, Pearland, Huntsville, Flower Mound
David Butler, P.E. Sr. Engineer Quality Assurance Manager Summary: 32 Years with IMS Automated Data: Yes Pavement Management: Yes Software Evaluation: Yes ROW Assets: Yes Software Implementation: Yes P.E. In 7 States	David is responsible for ensuring the prepared inventory and processed pavement condition data meets IMS's rigorous QA standards. He works closely with the Project Engineer to ensure the data meets the deliverable requirements. Should the County select to perform sub-grade data collection, he will implement the QA/QC process for the surveys. • *B.S. in Civil Engineering, over 30 years engineering experience.* • *Over 25 years specializing in pavement and right of way asset condition surveys, software implementation, analysis, and training.* • *Data collection, inspection and QA/QC of well over 200,000 miles of roadways in all regions of the country.* • *Participation in ASTM sub-committee E1741, TRB sub-committee AFD20 on pavement monitoring, valuation.* **Recent projects include:** Branson, Springfield, Kirksville, & Creve Coeur, MO; Bonner Springs, Leawood, Hutchinson, Manhattan, Wyandotte County & Hays KS; Oklahoma County, Broken Arrow, Norman, Bartlesville, Ada & Edmond, OK; Pearland, Huntsville, Flower Mound, Denton & Weatherford, TX.

Marty Shaeffer, P.E.

GIS & ROW Manager
Summary:
12 Years with IMS
3rd Party Software: Yes
GIS: Yes
Software Evaluation: Yes
ROW Assets: Yes

Marty is a professional engineer who has spent the last 17 years dedicated to GIS technology. He is responsible for ensuring accurate linkage of the IMS data to the County's existing GIS and works closely with the Project Engineer. Marty also facilitates the processing of RST imagery and the development of image deliverables and ROW asset inventories.

- *B.S. in Civil Engineering, 27 years engineering experience.*
- *15+ years specializing in GIS mapping.*
- *P.E. in California, New Mexico, & Arizona.*
- *Registered AutoCAD Developer and member of the American Society of Civil Engineers.*

Recent projects include: Branson, Springfield, Kirksville, & Creve Coeur, MO; Bonner Springs, Hutchinson, Manhattan, Wyandotte County & Hays KS

Roy Barkman, P.E.

Project Engineer
Summary:
6 Years with IMS
3rd Party Software: Yes
Automated Data: Yes
Pavement Management: Yes
Software Evaluation: Yes
ROW Assets: Yes

Roy will be responsible for ensuring the facilitation of data throughout the entire project. His responsibilities begin with ensuring accurate network referencing and end with the processing of raw field data into meaningful results.

- *B.S. in Civil Engineering*
- *7+ years of municipal and private firm experience focused on asset management, roadway design, and land development*
- *P.E. in Arizona*

Recent projects include: Branson, Springfield, Kirksville, & Creve Coeur, MO; Bonner Springs, Hutchinson, Manhattan, Wyandotte County & Hays KS

Jeff Myers, M.S.A.

Client Services Manager
Summary:
3rd Party Software: Yes
Automated Data: Yes
Pavement Management: Yes
Software Evaluation: Yes

Jeff is responsible for overall project and client management activities. He develops the project scope, schedule, team, and ensures the scope is adhered to throughout the project. Jeff works very closely with the Project Principal and is considered a primary point of contact for our clients.

- *Master's Accounting, University of Phoenix, 2011 (Magna Cum Laude)*
- *BS Economics, Missouri State University*
- *CFM (Certified Financial Manager), Regan School of Business*

Recent projects include: Andover and Derby, KS. Celina, Denton, Denton County, Beaumont, TX; Lincoln County, SD; Fayetteville, AR;

Zac Thomason, M.B.A.

Client Services Manager
Summary:
12 Years with IMS
3rd Party Software: Yes
Automated Data: Yes
Pavement Management: Yes
ROW Assets: Yes

Zac is responsible for overall project and client management activities. He develops the project scope, schedule, team, and ensures the scope is adhered to throughout the project. Zac works very closely with the Project Principal and is considered a primary point of contact for our clients.

- *B.S. in Global Business from Arizona State University*
- *Master's in Business Administration*
- *12+ years of project management experience in the engineering industry.*
- *Has led over 150 successful pavement management assignments.*

Recent projects include: Branson, Springfield, Kirksville, & Creve Coeur, MO; Bonner Springs, Leawood, Hutchinson, KS;

1.5   PROJECT PROFILES AND REFERENCES

With over 30 years of dedicated pavement management experience, IMS as an organization has completed similar assignments all across the United States. Since 2004 alone, IMS has completed over 800 pavement management assignments. Some of our local focus in Missouri and Kansas has been with Kirksville, Creve Coeur, Bridgeton, St. Charles, Branson, Springfield, Wyandotte County, Bonner Springs, Hutchinson, Leawood, and many others. In addition, IMS was recently awarded a pavement management implementation assignment in Fayetteville, Arkansas.

Our philosophy is based on the provision of quality pavement condition data for the implementation of multiyear pavement management plans. IMS serves as the dedicated pavement and asset management firm for municipalities large (Atlanta, GA) and small (Bonner Springs, KS). Presented below are a few projects illustrating IMS' capabilities to implement and update comprehensive pavement management systems of a relative size.

City of Springfield, MO: In 2016, IMS and the City of Springfield teamed to complete a pavement management program update for the City's network. IMS performed a pavement condition analysis covering the City's 1040 miles of roadways. IMS mobilized the Laser RST to collect ASTM D6433 condition data to return to City staff for their analysis efforts. IMS teamed up with the City again in 2017, and is in the process of completing a full sidewalk condition assessment project for the entirety of the City's 700 mile network.

Wyandotte County, KS: Awarded to IMS in 2017, the Wyandotte County scope of services was developed to include data collection and the delivery into their Lucity application. In 2017, IMS mobilized the Laser RST to survey all of the County's roadways, approximately 1,902 linear miles. The IMS team performed a comprehensive pavement and asset management implementation program that includes pavement data collection, Lucity integration, GIS/Lucity clean up services, pavement analysis modeling, development of a 5-year pavement analysis, and substantial Right of Way asset development.

City and County of Denver, CO: In 2013, IMS teamed with our software partner, Deighton & Associates, for the completion of pavement condition ratings for the City's entire roadway network, consisting of 645 miles. IMS collected the data and delivered the results to Deighton for load into the City's pavement management module. Digital images were also delivered to the City. In 2107, IMS was selected to expand data collection for the County to 2,550 miles, again providing images as well as a final report detailing the findings of the survey.

Additional Regional projects recently performed by IMS include:

• Branson, MO	• Derby, KS	• Enid, OK
• Bridgeton, MO	• Johnson County, KS	• Stillwater, OK
• St. Charles, MO	• Fayetteville, AR	• Oklahoma County, OK
• Hutchinson, KS	• Edmond, OK	• Guymon, OK
• Wyandotte County, KS	• Ada, OK	• Shawnee, OK

References

City of Kirksville, MO (2016)

Contact: Ray Sandstrom, Street Supervisor
Email: rsandstrom@kirkisvillecity.com   **Phone:** (660) 988-4325

In 2015, IMS partnered with the City of Kirksville to perform a pavement data collection project. IMS surveyed approximately 129 test miles for the City using the Laser RST. In addition to the data collection, our team also provided them with a subsurface analysis of their pavement strength; this was completed using our Dynaflect Device. After completion of the data collection and subsurface analysis, IMS provided the city with a comprehensive and robust pavement management report and analysis. The project was completed and delivered into the Interactive Spreadsheet, ESA. IMS also integrated drainage into the 5-year rehabilitation plan using City input.

City of Branson, MO (2015)

Contact: Keith Francis, Public Works Director
Email: kfrancis@bransonmo.gov   **Phone:** (417) 243-2727

In 2015, the City of Branson selected IMS for a pavement distress survey of approximately 142 miles of roadway. IMS performed data collection with the laser RST as well as sub-grade testing with the deflectometer. Roadway geometrics, curb and gutter assessment, right-of-way asset data, an ADA ramp inventory, and forward view imagery at 25-foot intervals was delivered and fully integrated with their GIS upon completion of the data processing phase of the project. IMS has loaded all of the City's pavement data into their Easy Street Analysis spreadsheet.

City of Bridgeton, MO (2017)

Contact: Robert Gunn, P.E., Director of Public Works
Email: rgunn@bridgetonmo.com   **Phone:** (314) 739-3456

In 2017, Bridgeton selected IMS to implement a pavement management program. IMS surveyed the City's entire pavement network resulting in 75 test miles driven by the Laser RST, with 25 miles of deflection testing using their Dynaflect. In addition to developing the pavement condition inventory, they delivered HD digital images every 25', as well as developing an inventory of ADA ramps. IMS delivered an analysis and report, and gave a council presentation. After the field surveys were completed, the data was processed and formatted for loading into the IMS Easy Street Analysis application. The data was linked to the City's GIS and analyzed by IMS engineers. IMS staff then performed software training.

City of Creve Coeur, MO (2015)

Contact: Matt Wohlberg, PE.
Email: mwohlberg@ci.creve-coeur.mo.us   **Phone:** (314) 872-2505

In 2015, IMS was chosen to be Creve Coeur's dedicated pavement management firm. IMS mobilized our Laser RST to perform a pavement distress survey on approximately 98 miles of roadway. A Dynaflect detected deflection data for a pavement structure analysis on 17 miles of roadway. The pavement distress data was collected, processed, and formatted specifically for each City's existing Lucity pavement management software. Upon completion of the data processing, GIS linkage, and load to Lucity, IMS completed a detailed pavement management analysis, a report for the City staff to review, and also delivered a council presentation to the City.

2.0   IMS APPROACH AND METHODOLOGY

2.1   UNDERSTANDING THE SCOPE OF THIS ASSIGNMENT

Street Network Inventory & GIS Integration – The Jackson County street network consists of 218 centerline miles of roadway and IMS will perform a linear pavement distress survey on 100% of the paved roadway network length. For the Jackson County assignment, the Laser RST will survey all 2 lane roadways in a single pass test and two pass test any roadways greater than or equal to 4-lanes in an effort to capture adequate right of way imagery, resulting in 256 survey miles.

IMS will begin the project by adopting the County's existing pavement database (as available) and GIS in an effort to prepare the survey inventory for field data collection. New streets will be added and the County's pavement inventory will be reviewed to ensure it meets pavement management requirements. If needed, IMS can also develop the network wide segmentation on a logical intersection-to-intersection basis. The IMS surveys **are tightly coupled** with the County's existing GIS environment resulting in a seamless transition of data that is linked to a unique identifier in the County's GIS.

Objective Pavement Distress Survey – *IMS is unique to the industry, as an objective and repeatable ASTM D6433 pavement data collection effort will be completed.* Instead of using the subjective feet on ground or windshield sampling method, all data will be collected continuously and recorded in 100-foot intervals in the form of a detailed database complete with GPS coordinates. The detailed data will then be summarized at the segment level (intersection-to-intersection) to develop the pavement distress index for each roadway segment.

Advanced Technology – The laser camera array (LCA) contains 11 lasers capable of collecting automated pavement condition data in the form of roughness to International Roughness Index (IRI) standards, dual wheel path rutting, transverse cracking, block cracking, alligator cracking and texture. The Direct Digital Condition Rating System (DDCRS) is a touch screen tablet that allows the user to define what information (distresses, attributes, & asset information) will be collected and how it will be quantified.

HD Video – IMS can utilize up to seven GPS referenced HD camera views (1920x1080) for our QA/QC program, ROW asset inventory development, virtual drives, and/or other image deliverables. For the Jackson County project, IMS suggests a minimum of four HD cameras that will be proofed out prior to data collection. The views can include the Center Forward, Passenger Front, and Rear Adjacent ROW, and Rear Downward views that can be utilized by the Project Engineer during the IMS QA/QC program. At a minimum, these 4 views will be processed in 20 – 25 foot intervals and linked to GIS in the form of a Personal Geodatabase that will be delivered to the County. Additional views can be added at the discretion of County staff as well.

Data Processing, Formatting, and County Review – We will deliver the condition data to County staff into an easy to navigate Excel spreadsheet, complete with graphs and descriptive terms such as Good/Fair/Poor. The detailed PCI extent and severity distress data is also aggregated into an easy to understand 0-10 index to assist in County review. *The condition data is delivered as a Personal Geodatabase, a series of shape files, and KMZ files to ensure County staff comfort with the data outputs prior to the analysis.*

Pavement Analysis Configuration – While the parameters of the pavement analysis are largely driven by the County needs and survey data, the focus of this project is to develop a comprehensive multi-year rehabilitation plan that targets the County of Jackson maintained roadways, allowing County staff to prioritize roadways based on the need and priority. This function aids in allocating the correct funds to the streets that need rehabilitation the most.

A solid pavement management program will allow the rehabilitation plan to be prioritized based on County priorities as they relate to functional classification, pavement type, structural adequacy, and geography. The ability to also utilize deflection data and/or the sum of load associated surface defects (alligator, longitudinal, and edge cracking; rutting, distortions, and patching/potholes) for the development of the structural index (SI) is also beneficial. *In addition, the deterioration curves should be modeled for Jackson County with the integration of critical set points that catch roadways before they fall into a more expensive treatment category.* This is how we introduce cost of deferment into municipal optimization techniques. While the parameters described above can be completed by the IMS Interactive Spreadsheet (ESA) and select 3rd party applications, they cannot be adopted by applications such as MicroPAVER and/or StreetSaver which rely heavily on worst-first and scheduled activity prioritization.
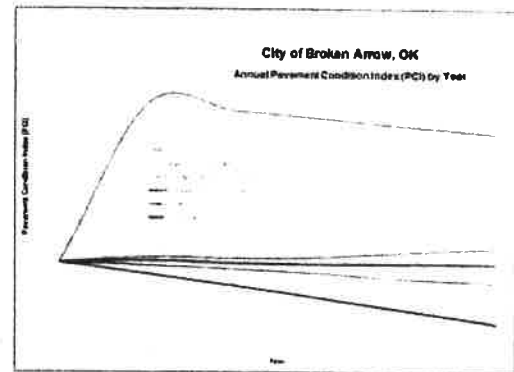
Each participating agency will receive their very own copy of the engineered ESA software solution and the rehabilitation strategy triggers will be customized for each agency as well. The ESA interactive spreadsheet is an open architecture solution that can evolve with agency priorities. The idea is to eliminate the rigid black box nature of many pavement management programs.

Optional Cartegraph Data Load/Integration – While IMS is proposing the detailed pavement condition data will be loaded to Easy Street Analysis for delivery to the City, IMS has the experience and capability to deliver the data into the County's Cartegraph application as well. IMS has the ability to enhance upon the typical Cartegraph analysis through the integration of roughness in the form of IRI, structural integrity (using deflection data or the presence of load associated distresses), and project development ranging from an Onstreet approach to a neighborhood plan based on spatial efficiency and geography.

Optional Report & Council Presentation – With the analysis complete and approved by County staff, IMS will aggregate the information into a bound report that reviews the concepts of pavement management, PCI calculations, condition results, network value, operating parameters of the analysis, budget scenarios, and multi-year pavement management reports. The analysis and report will go through several iterations of review before being finalized and presented to County staff.

IMS can also provide an onsite council presentation/ workshop to educate elected officials on the benefits of pavement management and preventative maintenance. In addition, an IMS presentation reviews the results of the survey in an easy to understand manner such that all attendees can follow the logic of the project without having to be an expert. The idea is to simplify pavement management, not make it needlessly complicated and difficult to understand.

2.2   OBJECTIVE ASTM D6433 PAVEMENT DISTRESS ACQUISTION

The IMS fleet of pavement performance equipment includes four Laser Road Surface Testers, two Dynaflect Devices, and three Sidewalk Surface Testers. For this survey, we propose to use one Laser Road Surface Tester (RST) enhanced with HD digital imagery and GPS capabilities. The RST, with its 11 laser sensors is capable of collecting a full array of pavement condition data complete with high accuracy GPS coordinates and multiple view digital images for both rigid
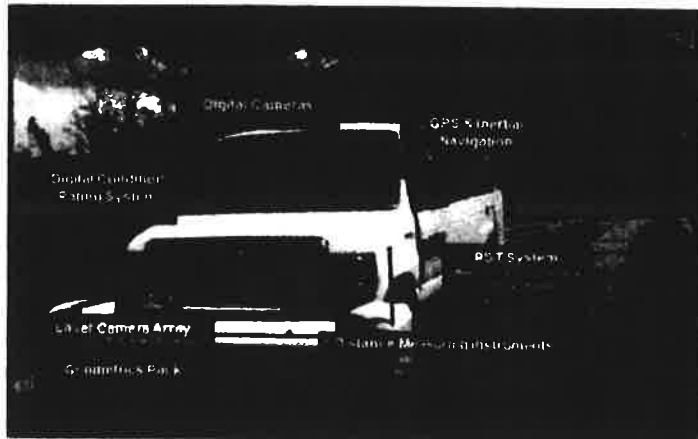
and flexible pavements (in real time), as it traverses the roadway. An integrated Digital Condition Rating Subsystem supplements the RST data for additional distress data elements, quality assurance and inventory information. Specialized data processing, using GIS as its backbone, allows the pavement data to be quickly checked for completeness and quality.

The main components of the enhanced RST are:

- A transducer bar with an array of 11 laser cameras, rate gyroscopes, inclinometers and accelerometers to measure pavement roughness, rutting, cracking, and geometrics.
- Touchscreen DDCRS that is customized to collect a variety of roadway attributes and extent-severity based pavement distresses through trained operator input.
- Up to 7 HD digital cameras can be mounted for forward, side, downward, and right-of-way views.
- Ability to collect dual wheel path roughness to International Roughness Index (IRI) standards.
- High accuracy Global Positioning System (GPS) receiver with inertial navigation for geo-locating of pavement and asset information with excellent accuracy.
- Dual distance measuring instruments to measure linear distances to within +/- 0.5%.
- Built-in software and on-board processors to develop roadway inventories, time code integration, and system monitors.

The Laser RST travels at the posted speed limit and thus does not affect the free flow of traffic. This is important as it allows IMS to:

- Collect data in a timely fashion without having to trade-off accuracy for production.
- Work from a safe, protected environment without risk to the data collectors.
- Eliminate the need to implement traffic control, close lanes or attempt to collect the data from the sidewalk or dodge traffic.
- Collect, validate, and safeguard large volumes of data without the need for transposing data from portable data collection units or paper.

The Laser Camera Array (LCA) also automatically collects transverse cracking, block cracking, alligator cracking, distortions, roughness, geometrics, and texture. The laser camera technology automatically detects cracks and minute variances in the pavement surface. Thus, the LCA greatly diminishes the subjective nature of PCI data collection performed by image-based surveys.

2.3 EASY STREET ANALYSIS (ESA) SOFTWARE ALTERNATIVE

For this assignment, it is imperative that County staff have access to the pavement condition and analysis results without having to become software experts. While IMS is a leading expert with most 3rd party pavement management applications (i.e. CarteGraph, PAVER, Lucity, & many others) as mentioned in previous sections, we have engineered a robust and easy to use interactive Excel spreadsheet that utilizes the core metrics of any great pavement management system such as the ability to prioritize and optimize the multi-year plans. While the IMS base scope includes the supply and training of the Easy Street Analysis (ESA) software, IMS is also well versed with Cartegraph software data collection projects should the County prefer the legacy application.

The ESA spreadsheet will be programmed to develop a multi-year maintenance and rehabilitation plan using "cost of deferral" as a rehabilitation candidate selection constraint in an effort to introduce cost-benefit techniques into the County's pavement management plan. In addition, the ESA spreadsheet will have referenced deterioration curves for each functional classification, pavement type, and even pavement strength rating. The power of having the data in such an open architecture fashion allows the County to utilize 3rd party software in the future if desired. The spreadsheet will also contain a full suite of maintenance and rehabilitation techniques, unit rates, and associated PCI resets. The parameters of the analysis (Priority Weighting Factors) can also be modified and reprioritized on the fly. This will allow the County's data to evolve with the priorities of elected officials and department staff. Programmed priority weighting factors include functional classification, pavement type, and pavement strength while actual candidate selection is based on the incremental cost of deferral.

As seen in the image below, the analysis data in the spreadsheet is supplemented with many cells highlighted in yellow. The yellow highlighted cells simply indicate that they are "HOT" and can be modified by the end user. Two of the yellow cells shown below represent the Annual Budget and the Project ID. The Annual Budget cell can be modified with a new budget and the 5-year plan will automatically re-prioritize on the fly. While IMS will have already aggregated the County's segments (intersection-to-intersection) into viable projects (multiple segments strung together to form a logical project), the user has the ability to aggregate additional segments into a project or even remove a segment from a project without having to become a software expert.
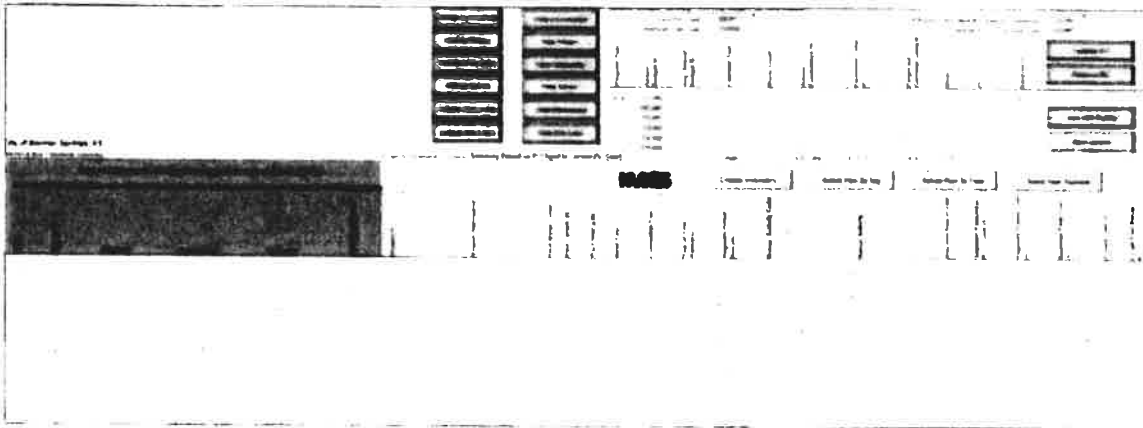
ESA Functionality: Project Completion and PCI Overrides

The spreadsheet also allows an agency to re-fresh the 5-year plan by entering the maintenance and rehabilitation work completed. As seen in the image below, the spreadsheet is supplemented with "PCI Override" functionality. When work is completed on a particular segment, the user simply inserts the override PCI value along with a date. The spreadsheet then removes the segment from the 5-year plan and updates all referenced network PCI averages.

Pavement Condition Summary

										Today:	3/30/2015
PCI:	76								Current Network PCI:		74
Surface Distress Index (SDI)	Roughness Index (RI)	Pavement Condition Index (PCI)	PCI Survey Date	Strength Rating	Condition Rating	Load Associated Deducts (LADD)	Non-Load Associated Deducts (NLAD)	PCI Override	PCI Override Date		Current PCI
74	53	67	6/1/2014	MOD	Good	0	0				66
55	63	57	6/1/2014	MOD	Fair	27	18				55
70	63	68	6/1/2014	MOD	Good	19	10				66

Other features of the IMS Easy Street Analysis spreadsheet are as follows:

- Red triangle tips that trigger a dialogue box explaining cell contents.
- Ability to add new road segments and attributes on the fly.
- Modifiable distress indices for County field inspections.
- Input work completed and override segment level PCI scores.
- Prioritize by neighborhoods, zones, or districts.
- Ability to modify project lengths – includes aggregating and splits.
- Commit projects and force "Must Do's" or "Must Never Do".
- Program varying annual budgets over a 5-year horizon.
- Commit a percentage of the budget to surface treatments if desired.
- Automated rehab plan prioritization and optimization.
- Macros that automatically sort and filter simple rehab and inventory lists.
- Ability to sync the spreadsheet with the Data Viewer though a .CSV file export.

While the spreadsheet is not meant to replace asset management systems, it is a comprehensive open architecture system, that is highly customizable pavement management program. However, if an enterprise asset management system is still desired, IMS can assess all other available 3rd party solutions and assist County staff with selection.

2.4 IMS PAVEMENT ANALYSIS & MULTI-YEAR REPORT

Immediately following the completion of the field surveys, IMS will begin processing the pavement distress severity and extent scores in an effort to develop the Pavement Condition Index (PCI) for each roadway segment. The condition results are analyzed by a team of IMS engineers, who then develop the County's 5-year pavement management rehabilitation plan. This section provides a brief summary of the functionality of an IMS enhanced analysis in order to emphasize our implementation expertise as well as the abilities and constraints within a pavement analysis.

The pavement analysis operating parameters described within this section will be delivered in an easy to understand Interactive Excel spreadsheet including the segment PCI data, pavement deterioration curves, triggers (priority weight factors), and the prioritized 5-year plan. The result is an optimized 5-year plan that is open sourced and can easily be managed by Jackson County staff. Select pavement management systems can also be configured using the analysis parameters described below and can be discussed as alternative options if desired by the County.

An unlimited number of pavement maintenance and rehabilitation strategies can be defined within the Easy Street Analysis (ESA) spreadsheet. An analysis is then run, incorporating the performance curves, set points, filter criteria, and rehab alternatives to identify the overall need in terms of rehab strategies and costs for the road network, for today as well as year on year for the next 5 years.

The IMS approach allows you to input any number of "what if" budget scenarios and produce prioritized yearly rehab programs based on those funding levels over a 5-year analysis period. Typical budget scenarios include Budget $/Year, Unlimited Budget $, "Do Nothing" Budget, and a Target PCI Budget. Jackson County can rest assured that the pavement analysis will not be created utilizing a "Black Box" software program that does not factor in local realities, priorities, and level of service policies.

What is included in an IMS analysis?

- *Present condition ranking* – detailed and summary condition data including; Good/Fair/Poor, Load Associated Distresses (LAD), Non-LAD, and Project reviews of each street in the network.
- *Fix all budget analysis* – this identifies the upper limit of spending by rehabilitating all streets assuming unlimited funding.
- *Do nothing analysis* – this identifies the effects of not performing roadway rehabilitation projects.
- *Steady state rehabilitation life cycle analysis* – this identifies the minimum amount of rehabilitation that must be completed in order to maintain the existing level of service over 3, 5, or 10 years.
- *PCI & funding levels* – what funding will be necessary to maintain a PCI of 65, 70, & 75.
- *Plus or minus 50% and other additional runs* – additional budget runs are completed at rates of +50% and -50% of the suggested steady state analysis. Up to 10 budget scenarios will be run.
- *Integration of capital projects and Master Plans* – ongoing and proposed projects that affect roadway rehabilitation planning will be incorporated into the analysis.
- *Draft 5-year rehabilitation and prioritized paving plans* – based on need, available budget and level of service constraints; a minimum of three budget runs will be completed.
- *Final prioritized paving plan* – incorporating feedback from stakeholder departments and utilities, complete with budget and level of service constraints.

2.5   QUALITY ASSURANCE THROUGHOUT THE PROJECT

The strength of the Laser RST platform is best demonstrated by its ability to collect and verify a wide array of HD digital images, GPS coordinates, and pavement distresses in a single pass. Through the integration of a Digital Condition Rating Subsystem (DCRS), the laser array, and the GPS system – the RST can collect the required data elements with one sensor, and then often check the validity of the data with another.   The QA/QC review phases below summarize how each data element is collected, quantified, and verified.

At the start of the survey:

- A Project Information Form (PIF) will be created that details the survey scope and data to be collected.
- The project protocols will be documented and approved.
- The PIF will be compared against the RST set up and the data collection protocols.
- Equipment is calibrated.
- Field crew meets with the client to review the maps and overall project.

On a daily basis:

- Equipment is calibrated and daily reports completed.
- All sensors are continually monitored to ensure they are receiving data in specification.
- The RST operator also manually monitors the digital images, GPS, DDCRS, and laser data.
- Production is tracked and records of coverage are taken – each street is noted on the inventory and map, as well as through GPS and assignment of the RST Number.
- A precision verification plan and corrective action plan is also followed as necessary.
- All data is backed up and sent for processing.

At the end of the survey:

- Field crew meets with the client again to review the maps and overall project.
- Data production and coverage is reviewed to ensure all streets have been captured.
- Up to 1% of the data is field verified.

After data collection:

- The data is scrubbed and processed for anomaly reduction.
- The data is verified by the Project Engineer using in-house QA/QC tools.
- The detailed 100-foot data is aggregated into the approved segmentation for client review.
- The data will be run through a "PCI Calculator" and "Index" aggregator for client review purposes.
- The final deliverable format is populated and QA'd by the Project Principal who reviews the textural data and compare it to the high definition imagery collected in the field.
- Final format is confirmed and delivered to the County for review.

Ensuring consistent quality of pavement and asset condition data is just as important as collecting the data. Each step in the data collection process has been designed to require the data to pass a certain standard or validation before moving on to the next stage, or be returned to the source for correction.

2.6   GIS INTEGRATION & MAPPING

The role of GIS in asset management cannot be overstated.   It is a powerful tool that provides the ability to handle and present vast amounts of data in an efficient manner. Not only does GIS allow an agency to visually plot textural data, it also establishes an easy access portal to the data through an efficient integration with many 3rd party asset management applications.

IMS kicks off every project by completing a review of the County's GIS environment to assess suitability for network referencing, survey map preparation, and pavement management purposes.   Our team will consume the County's existing GIS centerline files and pavement management inventory. While IMS will process all data on a block-to-block and/or intersection-to-intersection basis, the final data can be rolled up to match the existing segment limits or new projects can be developed.

The data collected by IMS is linked to the existing GIS environment and is supplied as a personal geodatabase, spatial database engine, Auto CAD files, or a series of shape files. IMS collects XY coordinates for all data elements using GPS technology coupled with inertial navigation and integrates with most third party GIS applications, including ESRI.

At a minimum, the GIS supplied by the participating agencies should have an ownership attribute, Segment ID's, functional classifications, contiguous line work, and be in a digital format such as shape files and/or personal/file geodatabases. As a supplemental task, IMS also offers full service "GIS Clean-Up" and "Functional Class Review" activities for agencies that require additional GIS development above and beyond standard network referencing activities.

For this assignment, GIS will be used in four key areas of work:

1.   GIS will be used to verify the streets to be surveyed and to create the routing maps for use during the field surveys.

2.   The survey productivity will be tracked through the plotting of the GPS data collected during the field surveys. This will allow IMS to review all streets that have been covered, identify anomalies in the referencing, and spot missed streets.

3.   GIS will be used in processing the distress and inventory data. By plotting the data, we can QA the data and identify data exceptions in addition to proofing out the GIS.

4.   Personal geodatabases, spatial database engines, shape and/or KML files, can be created for the visual presentation of condition data and analysis results.

2.7   OPTIONAL RIGHT-OF-WAY ASSET INVENTORIES

The IMS Laser RST uses high-end GPS coordinate data and HD digital cameras positioned so that all assets/attributes requiring data capture are visible with the front, side, and rear cameras. For Jackson County, IMS can collect information for traffic signs, sidewalks, ADA ramps, curb & gutter/ditches, pavement markings, signals, inlets, guardrails, and many other ROW assets. *ROW asset inventories are supplemented with air photos and GIS to ensure positional accuracy.* The IMS technology is an open architecture system that allows virtually any type of asset to be defined for collection of location, attribute, and condition data. Once an asset is observed, the operator toggles to the individual record input screen and proceeds to input the appropriate attribute and associated information. Wherever possible, "pick lists" are employed to streamline the data entry function and provide uniform, high quality data. IMS confirms the feature attributes to be collected with the client prior to data collection.

The images and GPS data are merged on a frame-by-frame basis. The images are then post-processed using a specialty piece of GIS and image viewing software. Using RST imagery, the existing centerline GIS, and aerial photography, IMS spatially plots each right-of-way asset in its real world location. It is important to note that all ROW asset data will be processed by IMS and will not be subcontracted overseas for processing

Prior to commencing the optional ROW asset inventories, a document called the **Master Asset List** (MAL) will be developed, using each applicable exhibit as a starting point. The MAL defines what assets or inventory items are to be logged and what attributes will be extracted. The MAL also defines the methodology for condition rating each asset. The image below depicts an IMS asset inventory of sidewalks, ADA ramps, pavement striping and markings, traffic signs, and crosswalks.
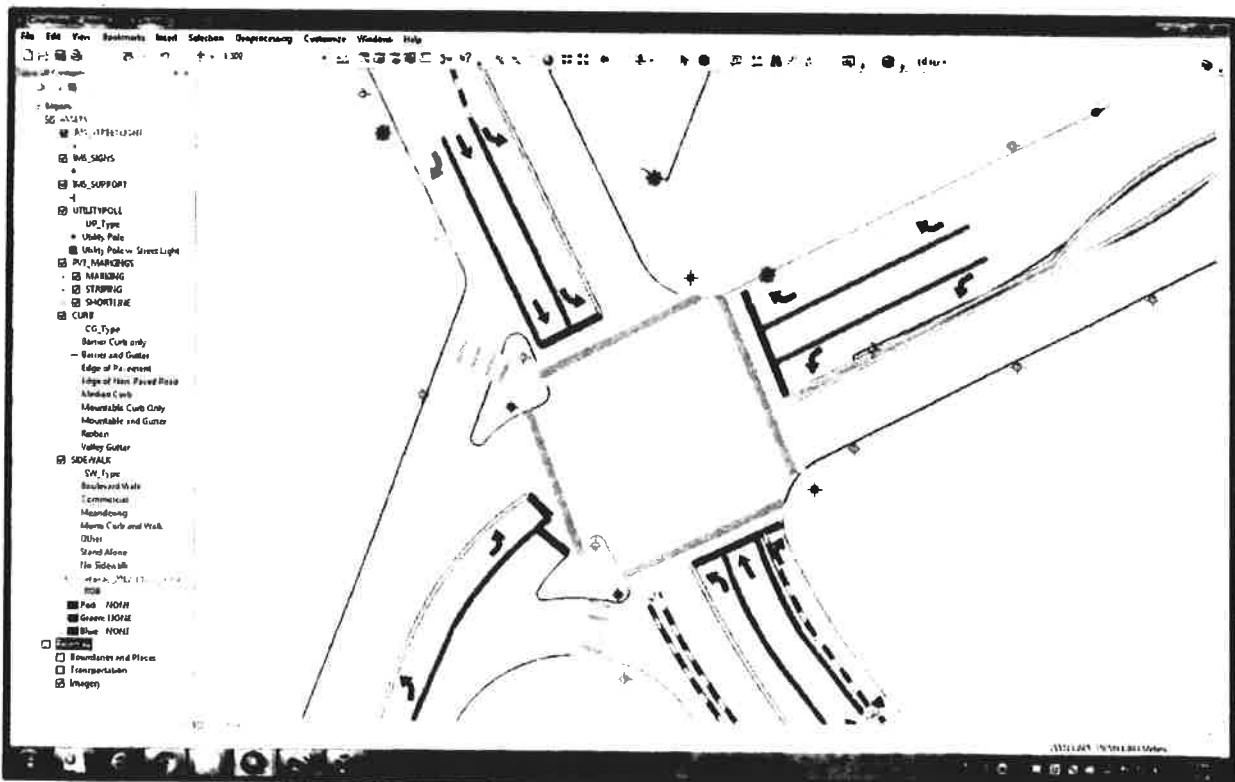
3.0   IMS WORK PLAN AND SCHEDULE

3.1   IMS WORK PLAN

Over the course of implementing and collecting roadway and asset data for well over 800 transportation and municipal agencies, IMS has developed a logical sequence of activities to effectively obtain the greatest efficiency for each project. IMS will use a series of **Task Activities** to define a work plan and then assign appropriate resources to fulfill the contractual requirements, schedule, and budget. The tasks are used to monitor performance and productivity, and link them directly to a contract unit of measure.

For this assignment, we have developed three tasks, each with numerous activities and deliverables within them. The three tasks are:

Project Initiation – this task will set the tone for the overall assignment, as well as document the scope, deliverables and formats. Project initiation will also include the software evaluation in an effort to establish the correct data collection protocols prior to mobilization.

Field Surveys – this task is the heart of the project and encompasses all activities relating to the Laser RST surveys. Starting with the equipment calibration, the field surveys have been designed to collect the most data in the most efficient manner possible. Field surveys will also be used to undertake quality assurance activities that relate to network coverage, and image quality validation.

Data Management – this is the task that takes the raw information collected in the field, and processes it into a series of deliverables. This task will also complete the quality assurance and quality control, data processing, formatting, data loading, image deliverable processing, software integration, completion of the pavement analysis and report, and delivery of the final council presentation.
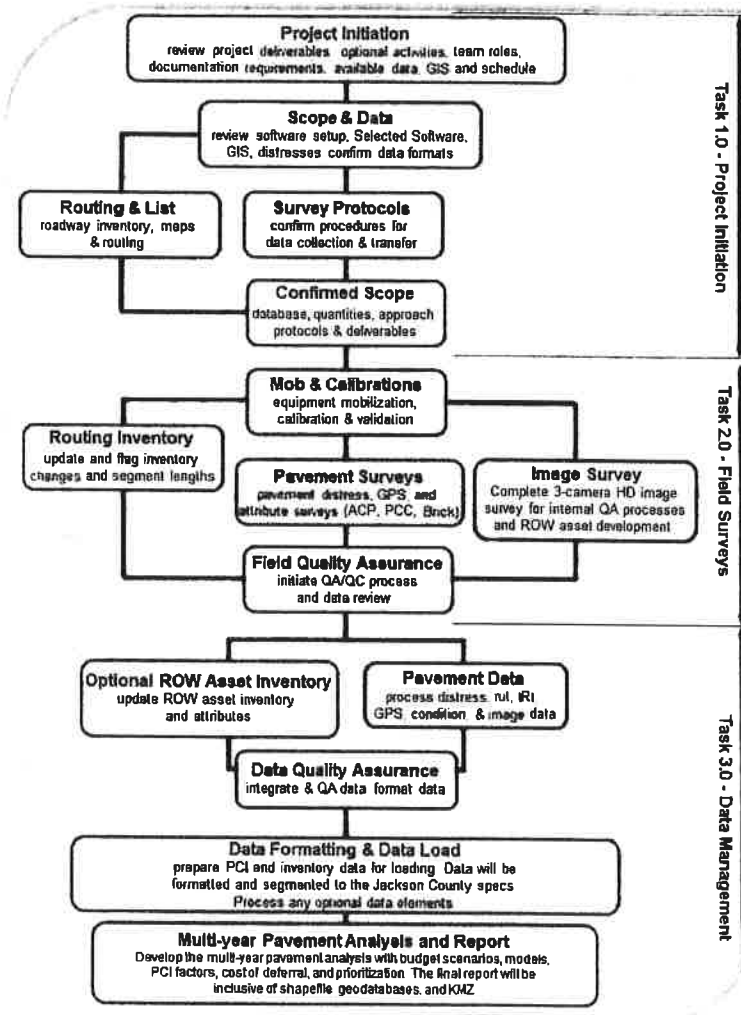
Task 1 - Project Initiation

This task will be used to set the working environment for the project and finalize the project scope and schedule. The task will also be used to allow the Jackson County team members to become more familiar with the IMS approach, data collection, QA process, and proposed analysis.

IMS will schedule a meeting with County staff to discuss the following task activities:

- Introduction of the project team, roles, and relationships. Confirm goals and objectives.
- Review project documentation including insurance requirements, permits, safety, Project Information Form, and any other client documentation.
- Conduct an introductory information seminar with key project participants.
- Review existing pavement data, level of implementation, current configuration, and user skill set.
- Evaluate software options and compare them against County needs.
- Review quality assurance plan with County staff.
- Identify and confirm existing database quality.
- Confirm preferred delivery methodology for Jackson County and deliverable format.
- Confirm roadways to be surveyed, as well as referencing, length and directional issues.
- Work with County staff so they are comfortable with the overall project and data collection.

Deliverables: *Optional Kick-off meeting & scope confirmation*
                  Roads list and roadway inventory maps.

Task 2 - Field Surveys

The object of this task is to complete a field data collection program for acquiring representative pavement condition, inventory and attribute data, imagery, and initiate the QA/QC process.

Roadway Attributes

- Route name, from – to description, test section length (and any variation from published values), direction & survey lane.
- Update the road inventory – include attributes such as pavement type, width, & length.
- Surface type (and any changes within a section) and date.
- Length – collect and confirm length via distance measurements and GPS coordinates.
- GPS Survey – collect and distribute GPS data (used for data processing and QA/QC).

Roadway Distresses

- All distresses are rated as per ASTM protocols.
- Cracking – identify alligator, map, longitudinal, transverse, and edge cracking; divided/shattered slab, corner break, and joint spalling. Quantify them by extent & severity through the LCA.
- Rutting – continuously measure the depth of wheel path rutting.
- Roughness Survey – collect and calculate International Roughness Index at defined intervals.
- Pavement distresses – distresses such as raveling, patching & potholes, bleeding, faulting, polished aggregate, scaling, and distortions. Each will be quantified by severity and extent.
- Cross slope, radius of curvature and grade are measured.

Deliverables: *Completion of network data collection effort.*

Task 3 - Data Management

The main components to this task are assembly, processing, and verification of the network segmentation and pavement condition data for the development of the final analysis and report.

Quality Control, Data Processing, and Delivery – the following data management functions will be completed:

- Completion of the project QA/QC program.
- Update the roads inventory to add new roads. Ensure the link between all roads and GIS is correct. Provide an exceptions report of roads that do not link up.
- Take the electronic, digital and inventory data outputs from the RST and make them ready for processing (remove skips, repeats, invalid data etc. – we do not delete any data in the field).
- Process the detailed and aggregated data to develop the condition scores on a section-by-section basis following the existing and updated road network definition.
- Make the data ready for delivery and uploading; complete the uploading and systems tests.
- Finalize PCI report and supply electronic files in Excel, PDF, KMZ, and DWG file format.

Optional Software Implementation & Training – Upon completion of the data processing activities, begin implementation of the pavement management solution selected by the County. While we believe that the Easy Street Analysis Spreadsheet will surpass the needs of Jackson County, a dedicated software application can be utilized as well. If a software application is selected, said software will be supplied, installed, and configured prior to onsite training. Onsite training will consist of 1 – 2 days of training to review the operational requirements of the software application. Configuration activities vary greatly depending on the software selected as each application has different analysis constraints that will be discussed with County staff during the evaluation.

Pavement Analysis, Reporting, & 5 Year Plan - After calculating the segment level PCI score's, begin a comprehensive analysis that will also incorporate roadway roughness (IRI), and potentially roadway strength if added to the scope of services. Develop logical projects by aggregating multiple like-segments throughout the network and perform an optimized prioritization that assesses the cost of deferral for each identified project. The end deliverable is a prioritized 5-year plan that identifies appropriate roadway rehabilitation candidates.

- Develop pavement analysis operating parameters and performance curves.
- Develop homogenous projects by aggregating multiple blocks of similar condition.
- Develop prioritization, critical set points, and begin running analysis routines.
- Run multiple budget scenarios and deliver results of analysis to County staff.
- Optimize the 5-year plan through "cost of deferral" analysis routines.
- After selecting a target annual budget, develop the 5-year maintenance and rehabilitation plan.
- Summarize the analysis in a draft report for County review.
- Make modifications to draft reports based on client review.
- Finalize report and supply electronic files in PDF, KMZ, and shape file format.

*Deliverables – **Quantified surface distresses, rut, and roughness data delivered to County in Excel spreadsheets, geodatabases, shape files, and KML.**
Draft & final pavement analysis and the 10-year plan
Council Presentation*

3.2   SCHEDULE & CAPACITY

Currently, IMS has the survey capacity for approximately 2,500 miles/month, so completing the Jackson County surveys in a timely fashion is not an issue. Field surveys are expected to progress at a rate of 25 to 35 miles per day in urban environments and 50 to 75 miles to day in rural environments. Field surveys are expected to proceed at 5 to 6 days per week depending on weather and statutory holidays. IMS has the available staff, equipment, and resources to manage a timely project for the County. IMS surveys only when the roads are free of debris, freestanding water, and only with ample light conditions. IMS estimates that the RST field survey will take approximately **1-2 weeks** barring any weather delays.

On all projects three rate-determining functions rise to the top as being critical in maintaining the proposed project schedule. In general, it is not the surveys that take the longest time, but rather handling the data that cause project schedules to slide. The three steps we wish to highlight, so they can be addressed by the County are:

- Finalizing the inventory and maps to be used for the field surveys. The delay in this step usually occurs in obtaining the maps or GIS topology, confirming the streets list and then validating the limits of the surveys.

- Review of the field data and exceptions reports delivered to the client. As part of the QA/QC process, only quality data can pass through to the analysis. It is critical that once the data passes through the QA/QC process, it be accepted and signed off by the County.

- Obtaining feedback and acceptance of the final format and load. No matter how much planning work goes into a schedule, the bottom line is Council's operate on their own timetable and the project must be able to conform to their schedule.

Task Activity	July				August				September				October					November			
		8	15	22	29	5	12	19	26	3	10	17	24	1	8	15	22	29	5	12	19	26
Project Initiation																						
Scope Confirmation & Contract Execution																						
Notice to Proceed & Project Initiation																						
GIS Review & Validation																						
Survey Routing & Mapping																						
Field Surveys																						
RST Mobilization & Calibration																						
RST Field Data Collection																						
Data Management																						
Data QA/QC, Processing, & Format																						
Data Supply & Client Review																						
Pavement & Asset Data Load into Easy Street Analysis																						
Pavement Analysis & Reporting																						
Optional Onsite Results Presentation																						

REQUEST FOR QUALIFICATIONS 23-19

RFP NAME: Pavement Condition Assessment

DEPARTMENT NAME: Public Works

No	Respondent	Responsiveness to RFQ	Experience in Providing Condition Assessments	Pricing		Total Score
		10 Points	40 Points	50 Points	Ranking	100 points
1	Anderson Engineering	8	15	1	5	24
2	IMS	10	40	50	1	100
3	Dynatest	10	32	24	4	66
4	ERI	9	32	28	3	69
5	MDS Technologies	9	34	49	2	92

COMMENTS: Composite Score

Instructions:

Assign score according to point value (1 is lowest) for each criterion for each vendor.

ABSTRACT OF BIDS

RFP No: 23-19
Date: 6/11/19
COMMODITY: Pavement Condition Assessment

NO	DESCRIPTION	Colin Rowe IMS-SP AMOUNT	Stantec Consulting AMOUNT	Dynatest AMOUNT	Engineering & Research Intl AMOUNT	MDS Technologies AMOUNT	Anderson Engineering AMOUNT
1.0	Pavement Condition Assessment, per RFP 23-19	See bid	No bid	See bid	See bid	See bid	See bid

CERTIFICATION OF BID OPENING
BIDS WERE PUBLICLY
OPENED AND RECORDED

ON: June 11, 2019 BY

CLERK OF THE LEGISLATURE

PURCHASING

Memorandum

To: Barbara Casamento, Purchasing Supervisor   *Earl Newill*
From: Earl Newill P.E., Chief Engineer
Date: July 10, 2019
Re: RFP 23-19 Committee Evaluation and Recommendation
        Pavement Condition Assessment and 5 Year Pavement Maintenance Program

On June 11, 2019, Jackson County Finance and Purchasing Department received five qualified responses to the Request for Proposals 23-19. The Committee review, discussed, evaluated, and scored the proposals.

Based on the qualifications/experience and pricing, per the evaluation criteria, the committee recommends Infrastructure Management Services (IMS) be awarded a contract to accomplish the work.

The committee really liked that IMS delivered the 5 year plan is an excel spreadsheet format as opposed to the Paver or microPaver programs which would have an annual fee and a learning curve.

The Public Works Department would like to award the contract with the following items from the IMS fee schedule:

Total Project Fee	$39,367.00
Optional Item 11	$6,000.00
Optional Item 12	$2,100.00
Total Contract Fee	$47,467.00

Funding Transfers:
004-1506-57220 to 004-1506-56080 $28,000
004-1507-58040 to 004-1506-56080 $20,000

Attached for your use is the composite scoring sheet from the committee.

Let me know if you have any questions.

Frank White, Jr., County Executive