



**PURCHASING ITEM
FOR
COUNCIL AGENDA
MEMO NO. ST12-019**

1. Agenda Item Number:

20

2. Council Meeting Date:
April 12, 2012

TO: MAYOR & COUNCIL

3. Date Prepared: February 21, 2012

THROUGH: CITY MANAGER

4. Requesting Department:
Transportation & Development

5. SUBJECT: Approve sole source purchase with Stantec Consulting Services Inc for data collection and analysis services for the City's pavement management system, Stantec RoadMatrix, in an amount not to exceed \$139,200.00.

6. RECOMMENDATION: Staff recommends approving sole source purchase with Stantec Consulting Services Inc for data collection and analysis services for the City's pavement management system, Stantec RoadMatrix, in an amount not to exceed \$139,200.00.

7. BACKGROUND/DISCUSSION: The City of Chandler Street Division is requesting to use Stantec Consulting Services Inc to perform data collection on all City streets and to update the City's pavement management system, Stantec RoadMatrix.

Stantec RoadMatrix is a large computerized database information system that assists decision makers in the process of managing a network of roadway pavements. The Street Division has successfully worked with Stantec Consulting Services Inc and Stantec RoadMatrix for years. This system allows the Street Division to analyze the current condition, future condition, and expected budgetary needs of the City's roadway system as it relates to rehabilitation and maintenance projects.

However, as with any pavement management system, Stantec RoadMatrix analyses depend on up-to-date pavement condition information. The pavement data in Stantec RoadMatrix has to be updated every few years to maintain its accuracy in predicting pavement performance. This is accomplished through a pavement assessment survey and data collection. As part of this contract, Stantec Consulting Services Inc will also do a software upgrade that will improve overall software performance by refining decision trees and budget scenarios and by providing user training on the updated system. The last data collection and update was in February 2009.

As Stantec RoadMatrix is a Stantec Consulting Services Inc product, they are the only vendor that can work within this proprietary software.

8. EVALUATION PROCESS: The City of Chandler Street Division is requesting to use Stantec Consulting Services Inc for sole source data collection on all City streets and to update the pavement management software, Stantec RoadMatrix. Stantec RoadMatrix, a Stantec Consulting Services Inc product, is protected under a copyright patent. Only Stantec Consulting Services Inc can work within this software and they are the only vendor capable of training, software upgrade and technical support. If problems occur in the collection and upload of the data to City servers, Stantec Consulting Services Inc can assume all responsibility for problems incurred in the data collection and make the necessary corrections.

9. FINANCIAL IMPLICATIONS:

Cost: \$139,200.00

Savings: N/A

Long Term Savings: N/A

Fund Source:

<u>Acct No.:</u>	<u>Fund Name:</u>	<u>Program Name:</u>	<u>CIP:</u>	<u>Amount:</u>
215.3300.6513.0000	HURF	Street Maintenance	No	\$139,200.00

10. PROPOSED MOTION: Move to approve sole source purchase with Stantec Consulting Services Inc for data collection and analysis services for the City's pavement management system, Stantec RoadMatrix, in an amount not to exceed \$139,200.00.

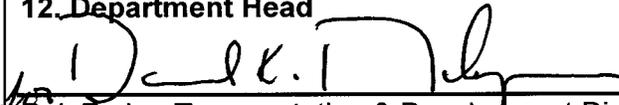
APPROVALS

11. Requesting Department



Daniel W. Cook, Transportation Manager

12. Department Head



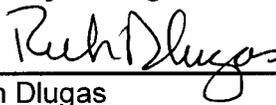
R.J. Zeder, Transportation & Development Director

13. Procurement Officer



Sharon Brause, CPPB, CPCP

14. City Manager



Rich Dlugas

**CITY OF CHANDLER
PROFESSIONAL SERVICES AGREEMENT**

Project No. **ST12-3041**

Project Name: **PAVEMENT MANAGEMENT SYSTEM**

THIS AGREEMENT is made and entered into this day of , 2012, by and between the City of Chandler, a Municipal Corporation of the State of Arizona, hereinafter referred to as "CITY", and **STANTEC CONSULTING SERVICES INC**, hereinafter referred to as "CONSULTANT".

WHEREAS, the Mayor and City Council of the City of Chandler is authorized and empowered by provisions of the City Charter to execute contracts for professional services; and

WHEREAS, CONSULTANT represents that CONSULTANT has the expertise and is qualified to perform the services described in the Agreement.

NOW THEREFORE, in consideration of the mutual promises and obligations set forth herein, the parties hereto agree as follows:

1. CONTRACT ADMINISTRATOR

1.1. To provide the professional services required by this Agreement CONSULTANT shall act under the authority and approval of Streets Superintendent or designee, (the Contract Administrator), who shall oversee the execution of this Agreement, assist the CONSULTANT with any necessary information, audit billings, and approve payments. The CONSULTANT shall channel reports and special requests through the Contract Administrator.

1.2. CITY reserves the right to review and approve any/all changes to CONSULTANT'S key staff assigned to the CITY project by the firm during the term of this Agreement.

2. **SCOPE OF WORK:** CONSULTANT shall provide those services described in Exhibit A attached hereto and made a part hereof by reference.

3. **ACCEPTANCE AND DOCUMENTATION:** Each task shall be reviewed and approved by CITY to determine acceptable completion. All documents, including but not limited to, data compilations, studies, and reports which are prepared in the performance of this Agreement, shall be and remain the property of CITY and shall be delivered to CITY before final payment is made to CONSULTANT.

4. **FEE SCHEDULE:** For the services described in paragraph 2 of this Agreement, CITY shall pay CONSULTANT a fee not to exceed the sum of **One Hundred Thirty Nine Thousand Two Hundred Dollars (\$139,200)** in accordance with the fee schedule attached hereto as Exhibit B and incorporated herein by reference.

5. **TERM:** Following execution of this Agreement by CITY, CONSULTANT shall immediately commence work and shall complete all services described herein within one hundred fifty (150) calendar days from the date hereof.

6. TERMINATION:

6.1. **Termination for Convenience:** CITY reserves the right to terminate this Contract or any part thereof for its sole convenience with thirty (30) days written notice. In the event of such termination,

CONTRACTOR shall immediately stop all work hereunder, and shall immediately cause any of its suppliers and subcontractors to cease such work. As compensation in full for services performed to the date of such termination, the CONTRACTOR shall receive a fee for the percentage of services actually performed. This fee shall be in the amount to be mutually agreed upon by the CONTRACTOR and CITY, based on the agreed Scope of Work. If there is no mutual agreement, the Management Services Director shall determine the percentage of work performed for each task detailed in the Scope of Work and the CONTRACTOR's compensation shall be based upon such determination and CONTRACTOR's fee scheduled included herein.

6.2 Termination for Cause: City may terminate this Contract for Cause upon the occurrence of any one or more of the following events:

- 1) If CONSULTANT fails to perform pursuant to the terms of this Agreement
- 2) If CONSULTANT is adjudged a bankrupt or insolvent;
- 3) If CONSULTANT makes a general assignment for the benefit of creditors;
- 4) - If a trustee or receiver is appointed for CONSULTANT or for any of CONSULTANT'S property;
- 5) If CONSULTANT files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws;
- 6) If CONSULTANT disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction;
- 7) Where Agreement has been so terminated by CITY, the termination shall not affect any rights of CITY against CONSULTANT then existing or which may thereafter accrue.

6.3. Availability of Funds for the next Fiscal Year. Funds may not presently be available under this agreement beyond the current fiscal year. No legal liability on the part of the CITY for services may arise under this agreement beyond the current fiscal year until funds are made available for performance of this agreement. The CITY may reduce services or terminate this agreement without further recourse, obligation, or penalty in the event that insufficient funds are appropriated. The City Manager shall have the sole and unfettered discretion in determining the availability of funds.

7. INDEMNIFICATION: The Consultant agrees to indemnify, defend, and save harmless the City of Chandler, its Mayor and Council, appointed boards and commissions, officials, officers, employees, individually and collectively; from all losses, claims, suits, actions, payments and judgments, demands, expenses, attorney's fees, defense costs, or actions of any kind and nature resulting from personal injury to any person, including employees of the Consultant or of any Sub Consultant employed by the Consultant (including bodily injury and death) or damages to any property, arising or alleged to have arisen out of the negligent performance of the Consultant for the work to be performed hereunder, except any such injury or damages arising out of the negligence of the City, its officers, agents or employees. IT IS THE INTENTION OF THE PARTIES to this contract that the City of Chandler, its Mayor and Council, appointed boards and commissions, officials, officers, employees, individually and collectively, are to be indemnified against their own negligence unless and except their negligence is found to be the cause of the injury to persons or damages to property.

The Consultant's liability with respect to any claims arising out of this Contract shall be absolutely limited to direct damages arising out of the services and the Consultant shall bear no liability whatsoever for any consequential loss, injury or damage incurred by the City, including but not limited to, claims for loss of use, loss of profits and loss of markets.

The amount and type of insurance coverage requirements set forth herein will in no way be construed as limiting the scope of the indemnity in this paragraph.

8. **INSURANCE REQUIREMENTS:** CONSULTANT shall provide and maintain the insurance as listed in Exhibit D attached hereto and made a part hereof by reference.
9. **ENTIRE AGREEMENT:** This Agreement constitutes the entire understanding of the parties and supersedes all previous representations, written or oral, with respect to the services specified herein. This Agreement may not be modified or amended except by a written document, signed by authorized representatives or each party.
10. **ARIZONA LAW:** This Agreement shall be governed and interpreted according to the laws of the State of Arizona.
- 10.1 Pursuant to the provisions of A.R.S. § 41-4401, the Contractor hereby warrants to the City that the Contractor and each of its subcontractors ("Subcontractors") will comply with all Federal Immigration laws and regulations that relate to the immigration status of their employees and the requirement to use E-Verify set forth in A.R.S. §23-214(A) (hereinafter "Contractor Immigration Warranty").
- 10.2 A breach of the Contractor Immigration Warranty (Exhibit A) shall constitute a material breach of this Contract that is subject to penalties up to and including termination of the contract.
- 10.3 The City retains the legal right to inspect the papers of any Contractor or Subcontractor employee who works on this Contract to ensure that the Contractor or Subcontractor is complying with the Contractor Immigration Warranty. The Contractor agrees to assist the City in the conduct of any such inspections.
- 10.4 The City may, at its sole discretion, conduct random verifications of the employment records of the Contractor and any Subcontractors to ensure compliance with Contractors Immigration Warranty. The Contractor agrees to assist the City in performing any such random verifications.
- 10.5 The provisions of this Article must be included in any contract the Contractor enters into with any and all of its subcontractors who provide services under this Contract or any subcontract. "Services" are defined as furnishing labor, time or effort in the State of Arizona by a contractor or subcontractor. Services include construction or maintenance of any structure, building or transportation facility or improvement to real property.
- 10.6 In accordance with A.R.S. §35-393.06, the Contractor hereby certifies that the offeror does not have scrutinized business operations in Iran.
- 10.7 In accordance with A.R.S. §35-391.06 the Contractor hereby certifies that the offeror does not have scrutinized business operations in Sudan.
11. **CONFLICT OF INTEREST:**
 - 11.1 **No Kickback.** CONTRACTOR warrants that no person has been employed or retained to solicit or secure the Agreement upon an agreement or understanding for a commission, percentage, brokerage or contingent fee; and that no member of the City Council or any employee of the CITY has any interest, financially or otherwise, in the firm unless this interest has been declared pursuant to the provisions of A.R.S. section 38-501. Any such interests were disclosed in CONTRACTOR'S proposal to the CITY.
 - 11.2 **Kickback Termination.** CITY may cancel any contract or agreement, without penalty or obligation, if any person significantly involved in initiating, negotiating, securing, drafting or creating the agreement on behalf of the CITY is, at any time while the Agreement or any extension of the

Agreement is in effect, an employee of any other party to the Agreement in any capacity or a CONTRACTOR to any other party to the Agreement with respect to the subject matter of the Agreement. The cancellation shall be effective when written notice for CITY is received by all other parties, unless the notice specifies a later time (A.R.S. 38-511).

- 11.3 No Conflict.** CONTRACTOR stipulates that its officers and employees do not now have a conflict of interest and it further agrees for itself, its officers and its employees that it will not contract for or accept employment for the performance of any work or services with any individual business, corporation or government unit that would create a conflict of interest in the performance of its obligations pursuant to this project.
- 11.4 Alternative Dispute Resolution.** The parties hereby agree that there shall be a sixty (60) day moratorium on litigation commencing on the day that a claim is filed by CONTRACTOR pursuant to A.R.S. § 12-821.01 during which time the parties will negotiate in good faith to resolve the dispute and evaluate the viability of pursuing alternative dispute resolution procedures such as mediation and arbitration.
- 11.5 Arizona Law.** This Agreement shall be governed and interpreted according to the laws of the State of Arizona.
- 11.6 Jurisdiction and Venue.** The parties agree that this Agreement is made in and shall be performed in Maricopa County. Any lawsuits between the Parties arising out of this Agreement shall be brought and concluded in the courts of Maricopa County in the State of Arizona, which shall have exclusive jurisdiction over such lawsuits.
- 11.7 Fees and Costs.** Except as otherwise agreed by the parties, the prevailing party in any adjudicated dispute relating to this Agreement is entitled to an award of reasonable attorney's fees, expert witness fees and costs including, as applicable, arbitrator fees; provided, however, that no award of attorney's fees shall exceed ten percent (10%) of the damages awarded the prevailing party unless the non-prevailing party has been determined to have acted in bad faith or in a frivolous manner during the adjudication.
- 12. NOTICES:** All notices or demands required to be given pursuant to the terms of this Agreement shall be given to the other party in writing, delivered by hand or registered or certified mail, at the addresses set forth below, or to such other address as the parties may substitute by written notice given in the manner prescribed in this paragraph.

In the case of City:
City of Chandler
Streets Division
P.O. Box 4008, Mail Stop 909
Chandler, AZ 85244-4008
480.782. 2400

In the case of CONSULTANT:
Stantec Consulting
8211 South 48th Street
Phoenix, AZ 85044
Attention: Agnieszka Bevan

Notices shall be deemed received on date delivered, if delivered by hand, and on the delivery date indicated on receipt if delivered by certified or registered mail.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names to this _____
day of _____, 2012.
CITY OF CHANDLER

MAYOR Date

CONSULTANT
By: Khalid Amir
Title: Khaled Helali, Ph.D., P.Eng. Amir Abd El Halim, Ph.D., P.Eng.
Managing Principal Senior Associate

APPROVE AS TO FORM

City Attorney [Signature]

ATTEST: If Corporation
[Signature]
Secretary

ATTEST:

City Clerk SEAL

EXHIBIT A

Contractor Immigration Warranty
To Be Completed by Contractor Prior to Execution of Contract

A.R.S. § 41-4401 requires as a condition of your contract verification of compliance by the contractor and subcontractors with the Federal Immigration and Nationality Act (FINA), all other Federal immigration laws and regulations, and A.R.S. § 23-214 related to the immigration status of its employees.

By completing and signing this form the contractor shall attest that it and all subcontractors performing work under the cited contract meet all conditions contained herein.

Contract Number: ST12-3041		
Name (as listed in the contract): STANTEC CONSULTING		
Street Name and Number: 8211 South 48th Street		
City: Phoenix	State: Arizona	Zip Code: 85044

I hereby attest that:

1. The contractor complies with the Federal Immigration and Nationality Act (FINA), all other Federal immigration laws and regulations, and A.R.S. § 23-214 related to the immigration status of those employees performing work under this contract;
2. All subcontractors performing work under this contract comply with the Federal Immigration and Nationality Act (FINA), all other Federal immigration laws and regulations, and A.R.S. § 23-214 related to the immigration status of their employees.

Signature of Contractor (Employer) or Authorized Designee:



Printed Name: Khaled Helali, Ph.D., P.Eng.

Managing Principal

Title: Infrastructure Management & Pavement Engineering

Date (month/day/year): _____

EXHIBIT B SCOPE OF WORK

CONTRACTOR shall provide for the collection of pavement condition data on the City's road network along with a detailed plan to update the software to the current version. The software upgrade tasks will convert the current RoadMatrix version 2.x to the new version 3.1x.

Pavement Management System Upgrade and Data Collection Methodologies

CONTRACTOR's pavement management systems shall be designed to provide consistent, repeatable and meaningful results. CONTRACTOR's systems shall provide ease of interface and communication with other software systems such as geographic information systems (GIS), maintenance management systems (MMS), and existing highway/roadway inventory databases.

RoadMatrix

CONTRACTOR's RoadMatrix V3.1x pavement management system shall be designed to develop comprehensive, cost effective pavement maintenance and rehabilitation plans and budgets and shall include the following features and enhancements:

1. Extended Programming Period

The analysis programming period has increased from 10 to 100 years. Users can now enter any programming analysis period from 0 to 100 years.

2. Individual Performance Index Prediction Models

Prediction models have been enhanced. You can now define an individual prediction model for the Surface Distress Index (SDI), Structural Adequacy Index (SAI) and Ride Comfort Index (RCI). The overall Pavement Quality Index (PQI) can then be calculated as a function of each "aged" SDI, SAI and RCI index.

3. Pavement Preservation Analysis

Pavement Preservation is a practice of investing in lower cost preventative maintenance activities in order to preserve or extend the life of road segments that are currently in good condition, as opposed to waiting for the pavement to fail and needing to spend higher cost rehabilitation or reconstruction projects to improve the road. The M&R analysis has been enhanced to incorporate pavement preservation analysis. Triggers can be set up to recommend either pavement preservation strategies, maintenance strategies or major rehabilitation strategies.

4. Enhanced Maintenance & Rehabilitation (M&R) Analysis

The M&R analysis has been enhanced to provide users with the ability to analyze sections based on two analysis methods:

Analysis Methods

PQI Trigger Levels In this mode a minimum acceptable PQI is defined for each functional class & pavement type combination (e.g. Collectors, Flexible -> min PQI=65). A pavement section will become a candidate for M&R **ONLY** when its PQI falls below the minimum acceptable PQI. (This mode is the default for V2.0 and earlier versions of RoadMatrix)

Always Analyze In this mode, RoadMatrix will **ALWAYS** analyze a section for M&R (regardless of its PQI). The section becomes a candidate for M&R only if it meets prescribed criteria defined in the decision trees. This analysis mode is suited for pavement preservation practices, whereby any criteria can be defined to trigger a maintenance activity that can extend the life of a pavement section, **BEFORE** the section reaches the end of its useful life (that would have been triggered by the PQI).

The M&R analysis has been enhanced to provide three treatment strategies in the Decision Tree analysis:

Section Strategies Single Implementation (Simple)

In this mode, RoadMatrix will run through the decision tree **ONCE** and determine a treatment strategy in the need year of the section.

Repeat Implementation (Advanced)

In this mode, RoadMatrix will run through the decision tree **ONCE** and determine a treatment strategy in the need year of the section. RoadMatrix will then recommend the **SAME** strategy, the next time that the section falls below the minimum trigger.

Multiple Tree Implementation (Complex)

In this mode, RoadMatrix will run through the decision trees for each year in the programming period to determine a strategy for the program year based on the decision tree criteria.

5. Introduction of "Predicted Values" for Decision Tree Nodes.

In the Decision Tree analysis, you can incorporate predicted values in your decision tree criteria. Predicted values include AADT, AADT Class, EGT, EGT Class, PQI, RCI SAI, SDI, Subgrade Strength, Subgrade Class, Previous Rehab and Previous Rehab Year. Using predicted values provide improved robust decision making for future years.

6. Regional Environments

In V2.0, prediction models were based on pavement type only. With the introduction of Regional Environments, prediction models are now based on **both** Regional Environment AND Pavement Type. You can define unlimited regional environments and analyze your pavements differently based on environment. For example, asphalt pavements in the north may behave differently (due to weather, temperatures, etc.) from asphalt pavements in the south. Now, you can assign a prediction model the north, as well as the south.

7. New Staged Treatment Strategies

You can now add "staged" strategies. Staged strategies are a series of treatments that must be done in succession. When a staged strategy is chosen from the M&R analysis, all treatments will be done over the programming period in the defined timeframe.

8. Benefit Levels for Each Treatment

You can now define individual benefit levels for each treatment and "hold years". For example, a Crack Seal may have a SDI increase of 30, SAI increase of 0 and RCI increase of 35 and hold the after rehab SDI, RCI and SAI index for 2 years. The index benefits can be incremental index increases or absolute index values.

9. Enhancement to Budgeting Analysis

RoadMatrix budgeting scenarios were based on prioritizing projects based on cost-effectiveness. You can now select a prioritization method based on worst-first. That is, select the roads that are in worst condition first for your program.

10. Enhanced Triggers based on Functional Class/Pavement Type Combinations

Trigger levels for traffic, EGT & subgrade strength and minimum PQI can be set for each functional class/pavement type for finer deterioration curve modeling.

11. User Interface Enhancements

RoadMatrix read-only fields (i.e. expression fields) are color coded in the DataMatrix (data grid). Calculated fields (e.g. PQI, SDI, SAI, RCI, DTN, ESALS, etc) can also be color coded for information. You can customize ranges for the PQI chart and assign user defined labels such as "Good", "Fair", "Excellent" for the ranges.

12. New SQL Field

An "SQL Field" is a new data type that can be added to your DataMatrix views. For advanced users, you can create an SQL Field and use it in your Decision Tree nodes to set decision criteria. For example,

display the minimum stational SAI for the section; display the date of my last major reconstruction activity from work history; display the number of times a crack seal was done; etc.

13. Site Specific Modeling

Each section can use its own "site specific" prediction curve.

14. MPMA Compatible SAI analysis

SAI model incorporates Stantec MPMA compatible Traffic analysis for SAI calculation.

15. Improved Program Module

Multiple programs can now be created. Committed Projects tab to allow users to select committed projects for the program. Program Summaries can report the impacts of a program relative to a subset. This answers questions such as, "If I spend \$x on Maintenance District 5, what is the impact (improvement in condition) to my overall Maintenance District? What is the overall impact to the network?"

16. Right-of-Way (ROW) Assets

Support for related ROW assets (i.e: signs, supports, sidewalks, etc.). Users can create any related ROW asset and store its attributive data.

17. Related Data (for Assets) in the DataMatrix

The DataMatrix can now display related data. For example, show all supports related to pavement sections. Show all signs on supports, etc.

18. ArcView Program Module Integration (license sold separately)

ESRI ArcView is a desktop GIS (sold separately from RoadMatrix) that can integrate with RoadMatrix. The RoadMatrix GIS Program module (license sold separately) will allow users to graphically select pavement sections from the GIS for inclusion into a RoadMatrix program. The GIS Program module will color code all projects for a given year, identify the proposed treatment and interactively calculate the total cost of the program by year.

19. Improved Integration with MRF GISNet (license sold separately)

MRF GISNet is a web-based GIS (license sold separately) that integrates RoadMatrix data. GISNet can be used to define super-sections and load GIS based photographs.

Equipment and Methodology

Contractor's RT3000 data collection vehicle shall be used to complete both the surface condition and roughness data components of this project.

Contractor shall have the same project manager and survey crew throughout the duration of the project to ensure consistency in data collection and rating of various pavement distresses.

Surface Distress

Contractor shall utilize a semi-automatic process where visual distress evaluations are recorded real-time on an event keyboard while the RT3000 traverses the road network.

Contractor shall evaluate each surface distress on the basis of two components: severity and extent. Severity is defined as 'How bad is the defect?' in terms of the width or degree of wear associated with the condition. An example of a severity measurement includes the width of a crack. The second component evaluates the extent or 'How much is there?' in terms of the quantity of the surface the distress covers. Examples of measures used for extent would include the number or length of transverse cracks, length of longitudinal cracking or the pavement area affected by alligator cracking.

For this project, the integrated keyboards shall be used to log the various distresses in accordance with AASHTO guidelines. For flexible pavements this includes:

alligator cracking	map cracking
longitudinal cracking	transverse cracking
edge cracking	flushing and bleeding
excessive crown	rutting
rippling and shoving	raveling and streaking
Potholes	patching
distortion	

The location of each defect along the roadway or individual pavement section shall be logged automatically with a Distance Measuring Device (DMI), which is accurate to ± 3 ft per mile. The post-processing of the real time data shall calculate the quantities of the defects based on the location of the keyboard entries.

Contractor shall require raters to be evaluated and accredited on their abilities.

Longitudinal Profile (Roughness)

Contractor shall collect roughness data using a fully automated and certified Class I profilometer as per ASTM E950. The specialized profile measurement system, mounted on the front bumper of the RT 3000 survey vehicle, employs 3 different sensing devices;

A laser height sensor that measures the distance between the vehicle and the pavement surface while the vehicle is traveling at up to posted speed.

An accelerometer that measures the vertical acceleration of the vehicle as it bounces in response to the pavement surface profile.

The DMI to provide a reference measurement of the vehicle as it traverses the road.

These three measurements shall be combined during post-processing to eliminate the effects of vertical vehicle motion and thereby defining the vertical profile of the pavement surface. The longitudinal roughness profile of each driven wheel track is obtained using an accelerometer and height sensor in each wheel track. Roughness data shall be computed from this profile and expressed in terms of the standard International Roughness Index (IRI) in units of in/mile.

Work Plan

The following work plan details the various tasks involved in executing the project to achieve the desired results and satisfy the City's objectives.

The following is a list of the Tasks involved in this project:

Project Management

This task provides for Project Initiation, Project Set-up and Mobilization in preparation for the fieldwork and Project Management throughout the project. Specifically these items include the following:

1. Project Initiation covers the administration of the contract and the provision of the insurance certificates;
2. Project Setup covers the preparation of the information the field survey crew requires prior to starting the field survey. This includes both electronic files, hard copy database listing and reference maps;

Project Management applies to the coordination and supervision of the entire project

	Description
Objective	Within two weeks of receipt of the notice to proceed, a project initiation meeting will be held with the City's project team.
Activities	Introduce key staff and their roles for the project. Establish primary lines of communication. Agree upon scheduling requirements and possible constraints. Review pavement inventory and condition rating criteria and formats. QA/QC requirements and procedures. Agree on all project deliverables.
Critical Issues	Availability of the network definition in digital format. Availability of City staff to gather data required for the field survey setup.
Deliverables	Mapping and related QA/QC field books that will be utilized during field surveys. Optimized routing for the survey vehicle.

Network Sectioning

Since the last Pavement Management condition update, the road network maintained by the City has likely grown as a result of development or jurisdiction revisions. As a result, the RoadMatrix database should be updated to include these new road segments in the analysis.

Contractor and the City would identify the most appropriate source of information, such as the GIS, to add the required street segments into RoadMatrix. In addition to identifying the road segments to be added, it is necessary to ensure that the appropriate attributes of each road segment are populated. This includes such attributes as location, widths, traffic, pavement structure, curb, and drainage. Where this information is not readily available, Contractor would consult with the City at identifying appropriate default values to allow these roads to be analyzed fully within RoadMatrix.

SDI and RCI Data Collection

This task involves the field survey conducted by the RT3000 survey vehicle and crew. This survey includes the collection of 13 different surface distress and ride or roughness condition data. From this data, RoadMatrix generates 3 indexes, Surface Distress Index (SDI), Ride Condition Index (RCI) and an overall Pavement Quality Index (PQI). 1,000 test miles of city streets has been estimated to accommodate new streets and any divided or multilane street sections that require return runs.

	Description
Objective	Collect pavement distress and roughness and video on the entire City road network.
Activities	Demonstrate to City's project team the capabilities and procedures used on the RT3000 to collect the surface condition and roughness data on a block by block basis. Surface Distress Evaluation Longitudinal Profile
Critical Issues	Lighting and weather conditions can adversely affect the quality of the road distress data collection; therefore, the following guidelines will be used to ensure the success of the fieldwork: Surveying will not commence within one hour of sunrise and one hour of sunset. Surveying will not commence during wet conditions. The roads must be completely dry before testing can commence. All major roads will be surveyed at a time when traffic volume is lower (mid-morning, early afternoon, or weekends). The crew will make note of any field instances that may disrupt the roughness sensors and cause erroneous results for IRI (e.g., Railway crossings, dirt/gravel on roadway). The crew will make note of all sections that are under construction. The crew will make note of any sections that only have the first lift (base lift) of asphalt down. Streets and sidewalks that exist in the field and not in the network definition files will be recorded and passed on to the Project Manager for discussion/resolution with the City.
Deliverables	Pavement condition and roughness data for analysis.

Data QA/QC, Edit & Upload

This task provides for the effort required to: (1) review the collected data, (2) apply any edits, as noted in the survey crew's RT field log book, and (3) and provide an upload file of the new condition data into the upgraded Pavement Management Application (RoadMatrix) software.

Database Validation and Health Check

This task provides for a review and validation of the current database. This will produce a report showing, if any, inventory and attribute data that is missing or is outside of certain criteria. This is a necessary step prior to database update into the new RoadMatrix V3.1x.

Software and Data Update

RoadMatrix Pavement Management Software License. This task provides for the RoadMatrix software license as per current user agreement

Assemble/Install Software

	Description
Objective	To expedite technology transfer on RoadMatrix functionality and Engineering Concepts
Activities	Install RoadMatrix software on site
Critical Issues	IT Coordination
Deliverables	RoadMatrix Installed on site at the City Provide User and Engineering Manuals

System and Data Update and Review

	Description
Objective	To ensure that the RoadMatrix software is fully operable with all required data elements and models converted from the existing version so as to provide representative and meaningful pavement management results
Activities	Contractor to test fully loaded RoadMatrix system and analyses Review with City final outputs for "reasonableness" Create Metadata document to finalize all data sources, engineering models and parameter setups
Critical Issues	Staff availability for review and "sign off" on RoadMatrix Metadata document and system installation.
Deliverables	Metadata document Fully loaded and functional RoadMatrix installed on site at the City

Final Installation and Training

	Description
Objective	To ensure that the City is self-sufficient in running and maintaining the RoadMatrix software City staff understand the concepts and results of the RoadMatrix outputs in order to generate programs and present the information to other City staff and Council
Activities	2-day on-site training and system review session with selected City staff Training to include RoadMatrix functionality, decision trees and engineering models and concepts
Critical Issues	Availability of staff for training Limit initial training to key City staff in order to maximize the benefit City staff required to read the manuals and "play" with the system, and develop questions after training to allow for better understanding of system prior to remaining tasks
Deliverables	Fully trained and self-sufficient staff equipped to maintain the RoadMatrix system

Project Schedule

The project schedule is presented in two parts: part one is the schedule for the data collection component and part two presents the schedule for the additional tasks. The schedule can be adjusted to meet the City's needs or if the contract award date is delayed for any reason. The duration will essentially remain the same, regardless of the start up date. It is our experience that many of the tasks can be initiated simultaneously and can be completed independently of others.

Contractor has the capacity and capability to meet the schedule. Contractor has extensive equipment and manpower resources to commit to the project to ensure successful on time and within budget completion of the work.

Task	Duration
Project initiation and setup	3 weeks
Data collection and survey	9 – 10 weeks
Data upload	4 weeks
System and data review	1 week
RoadMatrix upgrade	1 week
Set up decision trees / Analyses	1 week
Training / Work shop / Consulting	4 days
Final system update / Analyses / Assembly / Delivery	1 week
Total Duration	Approximately 5.5 months

**EXHIBIT C
PRICING**

All pricing is exclusive of any City, State or Federal taxes, levies or duties.

TASK		TOTAL
PROJECT KICKOFF AND MANAGEMENT		
1	Project setup and mobilization	\$ 4,000
2	Project Management & QA/QC	\$ 8,750
DATA COLLECTION		
3	Data Collection (1000 mi @ \$99/mi)	\$ 99,000
4	Data Processing and Delivery	\$ 8,000
SOFTWARE SUPPORT		
5	Annual Software Maintenance Agreement (ASMA) July 2011-June 2012	\$ 2,700
SOFTWARE UPGRADE/TRAINING (OPTIONAL)		
6a	RoadMatrix Software Upgrade to Version 3.X (No Charge with ASMA in good standing.)	\$ -
6b	Basic set up of decision tree and analysis models in RoadMatrix v3.X	\$ 2,000
6c	RoadMatrix training (2 days on site) - Mandatory with Task 6b	\$ 5,000
SOFTWARE ADVANCED SETUP (OPTIONAL)		
7a	On-site consulting (2 days on site) including adjustment of decision trees and analysis models	\$ 5,000
7b	System update, analysis, delivery	\$ 4,750
TOTAL PROJECT:		\$ 139,200

EXHIBIT D
INSURANCE REQUIREMENTS

1. CONSULTANT, at its own expense, shall purchase and maintain insurance of the types and amounts required in this section, with companies possessing a current A.M. Best, Inc. rating of B++6, or better and legally authorized to do business in the State of Arizona with policies and forms satisfactory to CITY.
2. Policies written on a "Claims made" basis are not acceptable without written permission from the City's Risk Manager.
3. All insurance required herein shall be maintained in full force and effect until all work or services required to be performed under the terms of this Agreement is satisfactorily completed and formally accepted. Failure to do so may, at the sole discretion of CITY, constitute a material breach of this Agreement and may result in termination of this contract.
4. If any of the insurance policies are not renewed prior to expiration, payments to the CONSULTANT may be withheld until these requirements have been met, or at the option of the City, the City may pay the Renewal Premium and withhold such payments from any monies due the CONSULTANT.
5. All insurance policies, except Workers' Compensation and Professional Liability required by this Agreement, and self-insured retention or deductible portions, shall name, to the fullest extent permitted by law for claims arising out of the performance of this contract, the City of Chandler, its agents, representatives, officers, directors, officials and employees as Additional Insureds.
6. CONSULTANT's insurance shall be primary insurance over any insurance available to the CITY and as to any claims resulting from this contract, it being the intention of the parties that the insurance policies so effected shall protect both parties and be primary coverage for any and all losses covered by the described insurance.
7. The insurance policies, except Workers' Compensation, shall contain a waiver of transfer rights of recovery (subrogation) against CITY, its agents, representatives, officers, directors, officials and employees for any claims arising out of CONSULTANT's acts, errors, mistakes, omissions, work or service.
8. The insurance policies may provide coverage, which contain deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall be assumed by and be for the account of, and at the sole risk of CONSULTANT. CONSULTANT shall be solely responsible for the deductible and/or self-insured retention. The amounts of any self-insured retentions shall be noted on the Certificate of Insurance.
9. All policies and certificates shall contain an endorsement providing that the coverage afforded under such policies shall not be reduced, canceled or allowed to expire until at least thirty (30) days prior written notice has been given to CITY.
10. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the CONSULTANT with reasonable promptness in accordance with the CONSULTANT's information and belief.
11. In the event that claims in excess of the insured amounts provided herein, are filed by reason of any operations under this contract, the amount of excess of such claims, or any portion thereof, may be withheld from payment due or to become due the CONSULTANT until such time as the CONSULTANT shall furnish such additional security covering such claims as may be determined by the CITY.

C.1 PROOF OF INSURANCE - CERTIFICATES OF INSURANCE

1. Prior to commencing work or services under this Agreement, CONSULTANT shall furnish to CITY Certificates of Insurance, issued by CONSULTANT's insurer(s), as evidence that policies providing the required coverages, conditions and limits required by this Agreement are in full force and effect and obtain from the City's Risk Management Division approval of such Certificates.
2. If a policy does expire during the life of this Agreement, a renewal certificate must be sent to the City of Chandler five (5) days prior to the expiration date.
3. All Certificates of Insurance shall identify the policies in effect on behalf of CONSULTANT, their policy period(s), and limits of liability. Each Certificate shall include the job site and project number and title. Coverage shown on the Certificate of Insurance must coincide with the requirements in the text of the contract documents. Information required to be on the certificate of Insurance may be typed on the reverse of the Certificate and countersigned by an authorized representative of the insurance company.
4. CITY reserves the right to request and to receive, within 10 working days, certified copies of any or all of the herein required insurance policies and/or endorsements. CITY shall not be obligated, however, to review same or to advise CONSULTANT of any deficiencies in such policies and endorsements, and such receipt shall not relieve CONSULTANT from, or be deemed a waiver of CITY's right to insist on, strict fulfillment of CONSULTANT's obligations under this Agreement.

C.2 REQUIRED COVERAGE

1. Such insurance shall protect CONSULTANT from claims set forth below which may arise out of or result from the operations of CONSULTANT under this Contract and for which CONSULTANT may be legally liable, whether such operations be by the CONSULTANT or by a Sub-consultant or subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Coverage under the policy will be at least as broad as Insurance Services Office, Inc., policy form CG00011093 or equivalent thereof, including but not limited to severability of interest and waiver of subrogation clauses.
2. Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
3. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
4. Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
5. Claims for damages insured by usual personal injury liability coverage;
6. Claims for damages, other than to Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
7. Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; Coverage will be at least as broad as Insurance Service Office, Inc., coverage Code "I" "any auto" policy form CA00011293 or equivalent thereof.
8. Claims for bodily injury or property damage arising out of completed operations;
9. Claims involving contractual liability insurance applicable to the Contractor's obligations under the Indemnification Agreement;
10. Claims for injury or damages in connection with one's professional services;

C.2.1 Commercial General Liability - Minimum Coverage Limits.

The Commercial General Liability insurance required herein shall be written for not less than \$1,000,000 limits of liability or ten percent (10%) of the Contract Price, whichever coverage is greater. Any combination between general liability and excess general liability alone amounting to a minimum of \$1,000,000 per occurrence (or 10% per occurrence) and an aggregate of \$2,000,000 (or 20% whichever is greater) in coverage will be acceptable. The Commercial General Liability additional insured endorsement shall be as broad as the Insurance Services, Inc's (ISO) Additional Insured, Form B, CG 20101001, and shall include coverage for CONSULTANT's operations and products, and completed operations.

C.2.2 General Liability - Minimum Coverage Limits

The General Liability insurance required herein, including, Comprehensive Form, Premises-Operations, Explosion and Collapse, Underground Hazard, Products/Completed Operations, Contractual Insurance, Broad Form Property Damage, Independent Contractors, and Personal Injury shall be written for Bodily Injury and Property Damage Combined shall be written for not less than \$1,000,000 or 10% of the contract cost and with a \$2,000,000 aggregate.

C.2.3 Automobile Liability

CONSULTANT shall maintain Commercial/Business Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence with respect to any owned, hired, and non-owned vehicles assigned to or used in performance of the CONSULTANT's work. Coverage shall be at least as broad as coverage code 1, "any auto", (Insurance Service Office, Inc. Policy Form CA 00011293, or any replacements thereof).

C.2.4 Worker's Compensation and Employer's Liability

CONSULTANT shall maintain Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction over CONSULTANT's employees engaged in the performance of the work or services; and, Employer's Liability insurance of not less than \$1,000,000 for each accident, \$1,000,000 disease coverage for each employee, and \$1,000,000 disease policy limit.

In case any work is subcontracted, CONSULTANT will require the Subcontractor to provide Workers' Compensation and Employer's Liability to at least the same extent as required of CONSULTANT.

C.2.5 Professional Liability

CONSULTANT shall maintain Professional Liability insurance covering negligent acts, errors, mistakes and omissions arising out of the work or services performed by DESIGN CONSULTANT, or any person employed by CONSULTANT, with a claims made policy limit of not less than \$1,000,000.