

Solicitation Amendment Summary

SOLICITATION NO.: BPM003033	AMENDMENT NO.: One (1)
DESCRIPTION: Road Weather Information Systems (RWIS) Equip. & Related Svs	

Pursuant to the Uniform Instructions to Offerors, Item B.6, Solicitation Amendments, the above referenced solicitation shall be amended as follows:

1. REVISIONS

Scope of Work, Atmospheric Sensors, paragraph 4.1.20.4. has been revised to read

Sensor	Sensor Measurement	Specification		
		Typical Range	Accuracy	Operating Range
Long range Visibility	Visibility	±10% from 1m to 8km + 20% from 8km to 80km		1m to 40km (3ft to 25mi)
Short range Visibility	Visibility	+/- 10% at 2000m (6500')		10m to 2000m (32' to 6500')
Air Temperature /Humidity	Air Temperature	+/- 0.25 °C (+/- 0.45 °F)		-51 to 60 °C (-60 to 140 °F)
	Relative Humidity	±3%		0-100%
Wind	Wind Speed	± 1 m/s (± 2.3mph for 0-77 mph) ± 1.80 m/s (± 3%mph 78-134mph)		0 to 60m/s (1 to 134mph)
	Wind Direction	± 5 deg. (At Speed > 0.2m/s)		0 to 360 deg.
Barometric Pressure	Barometric Pressure	± 1.0 millibar		800 to 1080 millibars
Precipitation	Precipitation Type	Yes/No (90%)		N/A
	Precipitation Rate Or Intensity	.05mm/hr (0.002in/hr)		0 to 200mm/hr (0 to 20in/hr)
	Precipitation Accumulation	0.05mm/hr (0.002in/hr)		0 to 200mm (0 to 20in/hr)

2. DELETIONS

Scope of Work, Atmospheric Sensors 4.1.22.8 Table 1 has been deleted in its entirety.

3. All other terms, conditions and provisions of this solicitation remain unchanged.

REQUEST FOR PROPOSAL

SOLICITATION NUMBER: BPM003033

DESCRIPTION: Road Weather Information Systems (RWIS) Equipment and Related Services

QUESTIONS: Inquiries regarding the solicitation are to be submitted online through the State's e-Procurement system, Arizona Procurement Portal (APP) (<https://app.az.gov/>) using the Discussion Forum tab.

OFFERORS ARE STRONGLY ENCOURAGED TO READ THE ENTIRE SOLICITATION.

Sharon L Tohtsoni
Procurement Officer
Phone: 602-712-8595
Email: stohtsoni@azdot.gov

This solicitation is issued in accordance with A.R.S. §41-2534 and A.A.C. R2-7-C301 et seq., Competitive Sealed Proposals.

"An Equal Opportunity Agency"

The Arizona Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252.42 U.S.C. §§ 2000d-4) and the Americans with Disabilities Act (ADA), hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin in consideration for an award.

Persons that require a reasonable accommodation based on language or disability should contact ADOT's Procurement Office by phone (602) 712-2089. Requests should be made as early as possible to ensure the State has an opportunity to address the accommodation.

Las personas que requieran asistencia (dentro de lo razonable) ya sea por el idioma o discapacidad deben ponerse en contacto con ADOT (602) 712-2089.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
Notice	1
Table of Contents	2
Scope of Work	3
Special Terms and Conditions	44
 <u>EXHIBITS</u>	
1 - Title VI/Non-Discrimination Assurances Appendix A	55
2 - Title VI/Non-Discrimination Assurances Appendix E	56
3 - Map of Existing and Proposed RWIS Locations	57
4 - Quarterly Usage Report	58

1. Statement of Need

- 1.1. Pursuant to the Arizona Procurement Code, A.R.S. §41-2501 et seq., the State of Arizona Department of Transportation (Department), has a requirement for Road Weather Information Systems (RWIS) Equipment and Related Services.

2. Introduction and Background

- 2.1. The Department currently has nineteen (19) existing RWIS sites that may need service, repairs or upgrades from time-to-time. The field hardware at three (3) of these locations is approximately ten years old.
- 2.2. Expansion of the system is planned, with eleven (11) full RWIS sites selected for full fixed Environmental Sensing Systems (ESS). The Department has the right to add any additional sites.
- 2.3. The Department may choose to deploy mobile RWIS systems during severe weather events and to monitor conditions during fire season and in areas where prescribed burns are active.
- 2.4. The RWIS network is the foundation of the Department Road Weather Management (RWM) program and is intended to enhance the ability of Department personnel to monitor and respond to adverse weather conditions in a cost-effective system. Specific goals of the system include:
 - 2.4.1. Identifying or predict adverse weather conditions.
 - 2.4.2. Providing a snapshot video image to document adverse weather conditions.
 - 2.4.3. Notification of adverse weather conditions to the Department staff, to more effectively deploy maintenance resources, evaluate need for roadway closures or dynamic message sign activation.
 - 2.4.4. Report road surface including temperature and grip.
 - 2.4.5. Reporting adverse weather conditions to the public through the existing Highway Condition Reporting System (HCRS) and the az511.gov traveler information resource.
 - 2.4.6. Providing weather observations to the National Weather Service to improve forecasting accuracy.
 - 2.4.7. Sharing weather observations through the USDOT's MADIS program and the University of Utah's MesoWest program for the purpose of improving timely access to automated observations for National Weather Service (NWS) forecasters in the western US.
- 2.5. Communication with these sites is via Verizon or AT&T cellular network.

3. General Requirements

- 3.1. The work falls into the following categories:
 - 3.1.1. Category A: RWIS Components
 - 3.1.2. Category B: Environmental Sensing Systems (ESS)
 - 3.1.3. Category C: RWIS Related Services
 - 3.1.4. Category D: RWIS Web Hosted Data Display/Data Access Requirements

- 3.2. All contract equipment procured under this project shall be new, state of the art and of current manufacture at the time of purchase.
- 3.3. All equipment procured under this contract must be suitable for use in an intelligent transportation system that is located outdoors in various locations throughout Arizona.
- 3.4. The Department seeks to improve the efficiency and safety of its roadways through the timely monitoring of roadway and weather conditions. The Department requires weather information at specific locations where weather related maintenance issues or reduced visibility tend to occur and in random locations from key maintenance vehicles traversing the roadways.
- 3.5. Expected benefits of the Department Road Weather Management (RWM) program include:
 - 3.5.1. Remote observation of roadway conditions to effectively deploy highway maintenance resources.
 - 3.5.2. Enhanced public safety, mobility, and throughput through early detection of inclement and potentially inclement roadway situations associated with adverse weather conditions.
 - 3.5.3. Maintain the operation of Arizona roadways to the maximum capacity possible during times of adverse weather conditions.
 - 3.5.4. Efficient and effective deployment of winter maintenance resources to include human resources, snow removal equipment, pre-treatment materials, and de-icing materials.
 - 3.5.5. Provide Road Weather Management and highway maintenance decision-makers with accurate, timely, actionable road weather and road surface condition information for the purpose of implementing effective, proactive Weather Responsive Traffic Management strategies leading up to and during adverse weather conditions.
 - 3.5.6. Provide accurate and timely weather information to the National Weather Service for use in meteorological models of Arizona to improve the accuracy and quality of forecasting.
- 3.6. The Department requires a combination of atmospheric and road surface condition data for the purpose of managing impacts to Arizona roadways during inclement weather. The Department's operations managers require information including:
 - 3.6.1. Remote Visual Inspection of the roadway (CCTV)
 - 3.6.2. Road surface temperature/temperature trend
 - 3.6.3. Road surface condition (e.g. wet/dry/slush/snow/ice)
 - 3.6.4. Precipitation type, intensity and accumulation
 - 3.6.5. Cause for reduced visibility. Pavement condition forecasts
 - 3.6.6. Pavement surface grip value that corresponds to changes in road surface friction caused by water, ice, deicing chemicals or combination of them
 - 3.6.7. Mobile sensors
- 3.7. High Wind and Low Visibility Detection Needs:
 - 3.7.1. The Department requires a combination of data from environmental sensor stations and CCTV images to detect low-visibility conditions. The Department's maintenance and operations managers require the following information:
 - 3.7.1.1. Remote visual inspection of the roadway (CCTV)
 - 3.7.1.2. Wind speed/wind direction in relation to the road surface
 - 3.7.1.3. Visibility value in miles
 - 3.7.1.4. Alerts for wind speeds maintained above a user-established threshold

3.8. Glossary of Terms

3.8.1. The following acronyms will be used in this document.

A.A.C	Arizona Administrative Code
A.R.S.	Arizona Revised Statutes
AASHTO	American Association of State Highway Transportation Officials
AC	Alternating Current
ADOT	Arizona Department of Transportation
AGM	Absorbed Glass Mat
ASCII	American Standard Code for Information Interchange
ASN	Abstract Syntax Notation
ASTM	American Society of Test and Materials
ATSSA	American Traffic Safety Services Association
AWG	American Wire Gauge
Bps	bits per second
CCTV	Closed Circuit Television
CIF	Compact Image Format
D & B	Dun & Bradstreet
dB	Decibel
DC	Direct Current
DHCP	Domain Host Control Protocol
DOD	Depth of Discharge
DVD	Digital Video Disc
EB	Eastbound
EIA	Electronic Industries Association
F	degrees Fahrenheit
FCC	Federal Communications Commission
FHWA	Federal Highway Administration
FTP	File Transfer Protocol
GB	Gigabyte
GFI	Ground Fault Interrupter
GHz	Giga Hertz
GPS	Global Positioning System
H.264	Video Compression Standard
HCRS	Highway Condition Reporting System
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
Hz	Hertz
ICMP	Internet Control Message Protocol
IP	Internet Protocol
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation System
jpg	joint photograph experts group
kb	Kilobytes
kHz	Kilohertz
LAN	Local Area Network
LCD	Liquid Crystal Display
MHz	Mega Hertz

SCOPE OF WORK

MIB	Management Information Base
MJPEG	Video Compression Standard
MP	Mile Post
MPEG4	Video Compression Standard
mph	miles per hour
MTBF	Mean Time Between Failures
MUTCD	Manual on Uniform Traffic Control Devices
NB	Northbound
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NIST	National Institute of Standards and Technology
NTCIP	National Transportation Communications for ITS Protocol
NTP	Network Time Protocol
OID	Object Identifier
ONVIF	Open Network Video Interface Forum
PC	Personal Computer
PDF	Portable Document Format
PMPP	Point to Multi-Point Protocol
PPP	Point to Point Protocol
PTZ	Pan Tilt Zoom
PV	Photo Voltaic
PWM	Pulse Width Modulation
RAM	Random Access Memory
RF	Radio Frequency
RFP	Request for Proposals
RJ	Registered Jack
RPU	Remote Processing Unit
RTCP	Real Time Transport Control Protocol
RTP	Reliable Transport Protocol
RTSP	Real Time Streaming Protocol
RW	Read Write
RWM	Road Weather Management program
RWIS	Road Weather Information System
SB	Southbound
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
UDP	Universal Datagram Protocol
UL	Underwriters Laboratories
UPnP	Universal Plug and Play
USB	Universal Serial Bus
UV	Ultraviolet
VAC	Volts Alternating Current
VDC	Volts Direct Current
VLAN	Virtual Local Area Network
WB	Westbound
XML	Extensible Markup Language

3.9. Work Locations

- 3.9.1. All work under this contract is located in the State of Arizona.
- 3.9.2. Server related and system integration work may be required at the following location:
Arizona Department of Transportation, Traffic Operations Center, 2302 West Durango Street, Phoenix, Arizona 85009.
- 3.9.3. Field work may be required at the existing RWIS sites and at new locations which the Department may, from time-to-time, designate.
- 3.9.4. Existing Interstate Highway RWIS Sites:
 - 3.9.4.1. I-40 L. Colorado River @ MP 257.0
 - 3.9.4.2. I-40 Jack Rabbit @ MP 270.0
 - 3.9.4.3. I-40 Painted Desert @ MP 312.0
 - 3.9.4.4. I-40 Lupton @ MP 359.0
 - 3.9.4.5. I-40 Fort Rock @ MP 91.5
 - 3.9.4.6. I-40 Crookton @ MP 132.2
 - 3.9.4.7. I-40 Ash Fork Hill @ MP 159.0
 - 3.9.4.8. I-40 Pine Springs @ MP 163.3
 - 3.9.4.9. I-40 Riordan @ MP 190.8
 - 3.9.4.10. I-40 Two Guns @ MP 230.0
 - 3.9.4.11. I-17 Scenic View @ MP 312.6
 - 3.9.4.12. I-10 Bowie @ MP 364.8
 - 3.9.4.13. I-10 San Simon @ MP 380.4
 - 3.9.4.14. SR260 @ Sunrise Mtn Salt Barn MP 379.4
 - 3.9.4.15. US 93 Kaiser Bridge @ MP 135.0
 - 3.9.4.16. SR-264 Window Rock @ MP 465.7
 - 3.9.4.17. SR77 14-Mile Hill @ MP 375.5
 - 3.9.4.18. SR260 Heber @ SR377 & SR277
 - 3.9.4.19. 17 SR87 Clint's Well @ MP 291.4
- 3.9.5. Proposed locations:
 - 3.9.5.1. I-17 @ Stoneman Lk Rd MP306
 - 3.9.5.2. I-40 @ Winona MP 212.1
 - 3.9.5.3. I-40 @ Willows MP 82
 - 3.9.5.4. I-40 @ Willows Crossover MP 88
- 3.9.6. Proposed New State Highway RWIS Sites:
 - 3.9.6.1. SR64 @ Tusayan (Grand Canyon S Rim) MP233
 - 3.9.6.2. SR260 @ 2 mi w SR87/SR260 Junction MP249.8
 - 3.9.6.3. SR260 @ Camp Shadow Pine MP300
 - 3.9.6.4. US180 @ Kendrick Park MP 232
 - 3.9.6.5. US180 @ Alpine Divide MP 422.7
 - 3.9.6.6. US60 @ Timber Camp MP 281.2
 - 3.9.6.7. US60 @ Cerro Montosa MP 368
- 3.9.7. Map of Existing and Proposed RWIS Locations (**Exhibit 3**)

4. Specific Requirements

4.1. CATEGORY A: RWIS COMPONENTS

- 4.1.1. This work shall consist of furnishing and delivering RWIS components to the Department.
- 4.1.2. Unless otherwise specifically noted, field equipment shall remain fully functional without any decrease in performance over an ambient temperature range of -40° F to + 168° F and an outdoor ambient humidity range of 5% to 95%, noncondensing.
- 4.1.3. All field equipment shall be designed to and shall withstand 90-mph winds with 30% gust factors. All field equipment enclosures shall be designed to and shall withstand the effects of sand, dust and hose-directed water. All connections shall be watertight.
- 4.1.4. Components and structures exposed to the elements shall be powder-coated, stainless steel, natural aluminum or galvanized steel.
- 4.1.5. Parts exposed to weather shall be made of corrosion resistant material, such as plastic, stainless steel, anodized aluminum or brass. Dissimilar metals shall be separated by an inert dielectric material.
- 4.1.6. Printed circuit boards shall be clearly silkscreened with component and connection identifiers. Connectors shall be keyed to preclude improper connection.
- 4.1.7. Equipment and component parts furnished shall be new, corrosion resistant, of the latest design and manufacture, and in an operable condition at time of delivery and installation. Parts shall be of high quality workmanship.
- 4.1.8. Design and installation shall be such as to prevent reversed assembly or improper installation of connectors, fasteners, etc. Use latest available installation machinery, cable pulling machinery (with appropriate tension monitors), splicing equipment, testing equipment, and other miscellaneous tools when installing cable, splicing it, attaching connectors, and mounting hardware in equipment enclosures.
- 4.1.9. Equipment shall be designed to protect personnel from exposure to high voltage during its operation, adjustments, and maintenance.
- 4.1.10. Equipment shall be designed such that failure of one component shall not cause failure of any other component. Design mean time between failures (MTBF) of system's electronic components, operating continuously, shall be five (5) years or longer.
- 4.1.11. Major component and subassemblies shall be clearly identified with name and model number and any other pertinent information required to facilitate equipment identification and maintenance. Each major assembly shall be serialized and clearly labeled.
- 4.1.12. All communications equipment, remote processing hardware, data loggers or similar equipment used on this contract must be new production equipment with a date of manufacture no earlier than **July 1, 2018**. Refurbished, repaired, or remanufactured materials will not be accepted.

4.1.13. Fold Down Tower

- 4.1.13.1. Fold down towers shall be corrosion resistant aluminum lattice structures. The tower shall be 30 feet tall.
- 4.1.13.2. The tower shall include anti-climbing panels. The tower shall be hinged 10 feet above grade to allow the upper portion of the tower to be lowered by one person using a lockable winch and leverage arm.
- 4.1.13.3. The tower shall be non-guyed.
- 4.1.13.4. The tower shall ship complete with all sensor mounting brackets and a grounding kit consisting of three 10 foot copper clad ground rods, #8 bare copper braid, acorn clamps and related hardware.
- 4.1.13.5. All hardware, screws, nuts and locking washers shall be stainless steel. No self-tapping screws shall be used on the tower (except anti-climb panels) unless specifically approved by the Department.

4.1.14. Solar Array Mounting Pole

- 4.1.14.1. The solar array mounting pole is a component of a solar powered RWIS site that requires multiple large photo voltaic panels for power.
- 4.1.14.2. The solar array mounting pole shall be a 6" diameter twenty-one foot long galvanized steel pipe.
- 4.1.14.3. The Contractor shall furnish a factory made bracket system with the pole to mount the solar array to the pole. The Contractor shall provide documentation from the bracketing system manufacturer to show that the proposed system is adequate for mounting the solar array based on the actual size and weight of the solar panels and a prevailing wind speed of 90 MPH with a 30% gust factor. If the bracketing system is deviated, it must be approved by an Arizona licensed engineer.

4.1.15. Sensor Mounting Pole

- 4.1.15.1. The purpose of the sensor mounting pole assembly is to attach the wireless roadway condition sensors to existing concrete bridge structures or foundations furnished and installed by the Department. The pole at each site shall be selected from the available pole sizes and mounting options to allow the sensor to measure from the concrete barrier the pavement condition in the right lane of the roadway. The Contractor shall verify the exact horizontal distance between the barrier and the right tire track in the right lane during the field inventory.
- 4.1.15.2. For bridge mounted poles, the Contractor shall submit a detailed shop drawing showing the total projected area and weight of the equipment to be supported, structural dimensions and mounting details for review and approval by the ADOT Bridge Group. The Contractor shall provide a detailed structural analysis prepared by an Arizona licensed engineer, if the length of the pole exceeds 10 feet or the project area of the equipment exceeds 16 square feet.

SCOPE OF WORK

- 4.1.15.3. The sensor mounting pole shall be available in 10 foot and 15 foot sizes for bridge attachment.
- 4.1.15.4. The sensor mounting pole shall be available for mounting on standalone cast in place drilled hole foundations in 15 foot, 30, 40 and 50 foot sizes. Base plate dimensions shall conform to the following ADOT Traffic Signal and Highway Lighting Standard Drawings:
<https://www.azdot.gov/business/engineering-and-construction/traffic/signals-and-lighting-standard-drawings>
- 4.1.15.5. Poles shall be supplied with anchor bolts, washers and nuts. Luminaire and signal mast arms are not required for this application.
- 4.1.15.6. The Contractor shall furnish the mounting pole complete with base plate, concrete barrier attachment bracket, equipment attachment brackets, pole cap, and anchoring hardware. Steel mounting hardware shall be galvanized.

4.1.16. Compact RWIS Cabinet

- 4.1.16.1. The Contractor shall furnish a small weatherproof, ultraviolet (UV) resistant, lockable equipment NEMA 3R equipment enclosure. NEMA enclosure standards may be referenced at: <https://www.nema.org/standards>
- 4.1.16.2. The cabinet shall be suitable for pole mounting and adequately sized to contain electronics for:
 - 4.1.16.2.1. Rural CCTV Systems
 - 4.1.16.2.2. Compact RWIS Sites
 - 4.1.16.2.3. Non-Invasive Pavement Condition Sensor System
 - 4.1.16.2.4. Wireless Repeater
 - 4.1.16.2.5. Batteries

4.1.17. RWIS Cabinet

- 4.1.17.1. The Contractor shall furnish a pole mount traffic signal style weatherproof, UV resistant, lockable equipment NEMA 3R equipment enclosure. The cabinet shall be suitable for pole mounting and adequately sized to contain electronics for full RWIS Sites.
- 4.1.17.2. The cabinet shall include a Corbin #2 lock. The Department will provide the lock.
- 4.1.17.3. The Contractor shall provide detail regarding the dimensions and features of the cabinet in their response.

4.1.18. Battery Enclosure

- 4.1.18.1. The Contractor shall furnish a corrosion resistant ventilated lockable battery box suitable for housing a minimum of eight (8) automotive sized rechargeable batteries. The box shall be suitable for mounting on a concrete pad furnished by the Department.

SCOPE OF WORK

- 4.1.18.2. The battery box shall be provided complete with concrete anchoring hardware, ground lug, conduit entry hardware and 25 LF of liquid tight flexible conduit. The battery enclosure shall have a NEMA 3R rating.

4.1.19. CCTV

- 4.1.19.1. CCTV shall be capable of providing still images, at configurable time intervals, which will be the main output from the CCTV. Currently all cameras in the field have stream video capability.
- 4.1.19.2. The CCTV Camera shall provide two frequently updated snapshots (e.g., Eastbound and Westbound or Northbound and Southbound) to observe highway conditions, weather conditions, congestion and roadway surface conditions that may impact travel on state highways and roadways. The camera views shall be aimed and focused at EB and WB traffic or NB and SB traffic.
- 4.1.19.3. The camera shall incorporate day/night viewing capabilities providing full color images during the day and black and white images during low light conditions.
- 4.1.19.4. Infrared illuminators may be used in conjunction with infrared cameras to provide the illumination needed to enable the infrared camera to capture high quality images when there is little or no ambient lighting. Infrared illuminators must function in a manner that is coupled to the cameras. This includes the focal point matching the distance to the road that the camera is imaging and functioning at all times when cameras capture images during dark conditions.
- 4.1.19.5. The CCTV system shall provide .jpg formatted image files suitable for display on the AZDOT.GOV website. Image size shall be approximately 1080p, or better.
- 4.1.19.6. Cameras shall be user configurable to provide snapshot images once every ten (10) minutes, or upon user request, when the camera is used with wireless communications media.
- 4.1.19.7. The camera shall have weather-proof and vandal-resistant aluminum enclosure, adapted for harsh environments. Cameras shall include outdoor cabling, mounting brackets and Ethernet connectivity as required for operation.
- 4.1.19.8. The camera shall operate in ambient temperatures ranging from -40° to 122° F and shall be equipped with a sunshield.
- 4.1.19.9. If fixed cameras are used, the Contractor shall carefully select appropriate focal length lenses for viewing roadways located anywhere from 50' to 250' away from the camera. The camera may incorporate optical or digital zoom features. The camera shall be equipped with an automatic iris and low light capabilities.
- 4.1.19.10. If PTZ cameras are used, the camera shall have a 12x minimum optical zoom.

SCOPE OF WORK

4.1.19.11. When connected to high bandwidth communications in the future, the cameras shall be user configurable to provide full motion 30 frame per second high resolution images that conform to the Compact Image Format (CIF). The camera shall be capable of producing multiple H.264, MPEG4, MJPEG streams simultaneously. The cameras shall be viewable using a standard web- browser and shall conform to the standards of the Open Network Video Interface Forum (ONVIF) available at <http://www.onvif.org/Documents/Specifications.aspx>. The ONVIF core specification standardizes the network interface to provide interoperability of network video products regardless of manufacturer. The following camera features shall be standardized in accordance with ONVIF:

- 4.1.19.11.1. IP configuration (Ethernet)
- 4.1.19.11.2. Device discovery
- 4.1.19.11.3. Device management
- 4.1.19.11.4. Media configuration
- 4.1.19.11.5. Real time viewing
- 4.1.19.11.6. Event handling

4.1.19.12. The network camera shall support the following network protocols as a minimum:

- 4.1.19.12.1. IPv4/v6
- 4.1.19.12.2. HTTP
- 4.1.19.12.3. HTTPS
- 4.1.19.12.4. FTP
- 4.1.19.12.5. SNMPv1/v2c/v3(MIB-II)
- 4.1.19.12.6. NTP
- 4.1.19.12.7. RTSP
- 4.1.19.12.8. RTP
- 4.1.19.12.9. TCP
- 4.1.19.12.10. UDP
- 4.1.19.12.11. RTCP
- 4.1.19.12.12. ICMP
- 4.1.19.12.13. DHCP
- 4.1.19.12.14. UPnP

4.1.19.13. Security shall include password protection, IP address filtering, user access log, IEEE 802.1X network access control, and HTTPS encryption.

4.1.20. Atmospheric Sensors

4.1.20.1. Procure and install atmospheric sensors providing the minimum meteorological measurements noted below. Provide all materials, workmanship, equipment, enclosures, cables, connectors, installation/mounting kits, covers, rodent/bird protection, heaters/fans, shields, etc. as required to ensure successful sensor installation, operation and accurate data measurement and reporting to the RPU and CPU. Test sensor for accuracy after installation and provide certification to the Department PM or inspector for verification and validation. Provide each type of the following sensors on the instrument structure at each RWIS site.

SCOPE OF WORK

- 4.1.20.2. All sensors in the system must have a minimal intrusion in the highway right-of-way. Saw cutting of pavement will not be acceptable for this project. In general, all out of road sensors shall be pole mountable to standard highway traffic poles, traffic sign structures or towers. If a temperature subprobe or in-pavement sensor is required by the Department, then saw cutting is required for installation of that sensor.
- 4.1.20.3. For new sensors, mounting, orientation and general siting shall be per Federal Highway Administration (FHWA) guidelines provided in Road Weather Information System Environmental Sensor Station Siting Guide Version 2.0, available at: <https://ops.fhwa.dot.gov/publications/ess05/index.htm>
- 4.1.20.4. The minimum range and accuracy requirements for each sensor element are listed below. The Department may conduct audits to determine compliance with the subject requirements.

Sensor	Sensor Measurement	Specification		
		Typical Range	Accuracy	Operating Range
Long range Visibility	Visibility	±10% from 1m to 8km + 20% from 8km to 80km		1m to 80Km (3' to 50 mi)
Short range Visibility	Visibility	+/- 10% at 2000m (6500')		10m to 2000m (32' to 6500')
Air Temperature /Humidity	Air Temperature	+/- 0.25 °C (+/- 0.45 °F)		-51 to 60 °C (-60 to 140 °F)
	Relative Humidity	±3%		0-100%
Wind	Wind Speed	± 1 m/s (± 2.3mph for 0-77 mph) ± 1.80 m/s (± 3%mph 78-134mph)		0 to 60m/s (1 to 134mph)
	Wind Direction	± 5 deg. (At Speed > 0.2m/s)		0 to 360 deg.
Barometric Pressure	Barometric Pressure	± 1.0 millibar		800 to 1080 millibars
Precipitation	Precipitation Type	Yes/No (90%)		N/A
	Precipitation Rate Or Intensity	.05mm/hr (0.02in/hr)		0 to 200mm/hr (0 to 20in/hr)
	Precipitation Accumulation	.05mm (0.02in)		0to200mm (0 to 20in/hr)

- 4.1.20.5. Offerors shall include additional state of the art atmospheric and roadway conditions sensors in proposal

4.1.21. General

- 4.1.21.1. These specifications list minimum requirements. Sensors that use alternate technologies or alternate methods to collect the required data are acceptable.
- 4.1.21.2. Sensors shall support at least one of following communication protocols in order to transmit data to the RPU:
 - 4.1.21.2.1. Serial (RS-232/RS-422/RS-485)
 - 4.1.21.2.2. Analog/Digital
 - 4.1.21.2.3. Ethernet
- 4.1.21.3. Sensors shall meet the minimum performance requirements identified in this special provision.
- 4.1.21.4. Systems shall be compliant with appropriate FCC regulations, appropriate UL laboratories, and CE Compliance.
- 4.1.21.5. If battery powered, provide sensors with an average life of three (3) years.

4.1.22. Visibility and Precipitation Sensor(s)

- 4.1.22.1. Visibility sensors shall provide visibility measurements in miles and shall determine the cause of reduced visibility by identifying precipitation type and intensity.
- 4.1.22.2. Visibility sensors are to provide the visibility in miles.
- 4.1.22.3. Sensor measurement algorithm shall measure the visibility of a sample volume between the optics hoods for two (2) minutes minimum and then report the average visibility over the sampling interval.
- 4.1.22.4. Visibility sensors shall have heated visibility receiver and transmitter hoods to allow continuous operation in winter or icing conditions.
- 4.1.22.5. Visibility sensors shall use "look down" geometry to reduce window contamination and clogging from blowing snow.
- 4.1.22.6. Visibility measurement sensors shall use the forward scatter principle for the determination of optical visibility in the ranges designated in **Table 1**.
- 4.1.22.7. Precipitation sensors shall detect visible precipitation in both liquid and frozen form. The device must provide a Yes/No indicator until a classification has been determined. The device must also have the capability to add classification of the following types of precipitation:
 - 4.1.22.7.1. Drizzle
 - 4.1.22.7.2. Rain
 - 4.1.22.7.3. Fog/haze
 - 4.1.22.7.4. Mixed rain/snow
 - 4.1.22.7.5. Snow
- 4.1.22.8. The sensor(s) shall have configurable alarms for reduced visibility and contact closure output to adjacent devices. All sensor alarms will be at the RPU level.

Table 1 - Visibility and Precipitation Sensor(s)

Scatter Measurement Uncertainty	±3%
Reporting Range	3.28 ft. up to 10 miles
Reporting Uncertainty	±10% or ± 3.28 ft. up to 6.2 miles ±20% 33 ft. up to 10 miles
Reporting Resolution	3.28 ft.

4.1.23. Air Temperature and Relative Humidity Sensor(s)

- 4.1.23.1. Air temperature shall be measured and obtained using a precise resistive platinum sensor. The relative humidity must be measured by a capacitive sensor.
- 4.1.23.2. Air temperature sensor shall send air temperature and relative humidity data to the RPU which will be used to calculate the dew point temperature and the minimum/maximum temperature recorded during the 24-hour period preceding the measurement. Dew point and minimum/maximum temperature shall be within ±0.45 degrees Fahrenheit (F) [±0.25 degrees Celsius (C)] over the operating range.
- 4.1.23.3. Relative Humidity sensor shall have a measuring range of 10 to 100% relative humidity.
- 4.1.23.4. Relative Humidity sensor shall have an accuracy of +/- 5% relative humidity at 70 degrees F.
- 4.1.23.5. The sensor shall have a response time of 60 seconds or less.

4.1.24. Barometric Pressure Sensor

- 4.1.24.1. Barometric pressure sensors shall obtain absolute atmospheric pressure.
- 4.1.24.2. Barometric pressure sensors shall enclosed in a weatherproof enclosure
- 4.1.24.3. Barometric pressure sensors shall provide results in ±0.5 millibar increments at 68 degrees F (20 degrees C) and linear to within ±1.0 millibars over the operating temperature range.
- 4.1.24.4. Sensors shall be calibrated for altitudes encountered within the state of Arizona.
- 4.1.24.5. The sensor shall have an operating range between 26 and 32 in. Hg., suitable for elevations from sea level to 10'000 ft.
- 4.1.24.6. The sensor shall be operable within -40 degrees F and + 140 degrees F with a temperature compensated range between 0 degrees F and + 140 degrees F.
- 4.1.24.7. The sensor shall be accurate within +/- 0.34 millibars at 68 Degrees F, with maximum error not to exceed +/- 1.35 millibars.
- 4.1.24.8. The sensor shall consume power of less than 11 mA at 12 VDC, typical.

4.1.25. Wind Speed and Direction Sensor

- 4.1.25.1. Wind sensor shall be capable of obtaining the average speed and direction of the wind. The wind speed should be obtained at an accuracy of ± 2.3 mph for range of 0 to 77 mph and maximum of 3 percent over 78 to 134 mph (1 m/s) and the direction should be accurate to 5 degrees.
- 4.1.25.2. The wind sensor must continuously send wind data to the RPU which will use this data to calculate the maximum wind gust recorded during the ten (10) minutes preceding the observation.

4.1.26. Road Surface Sensors

- 4.1.26.1. Surface Sensor Requirement: The system shall be specifically designed for monitoring and displaying pavement surface conditions including dry, moist, wet, slush, frost, snow, and ice surface friction and pavement temperature. The system shall include single or multiple sensor arrays working collectively to provide the required data elements.
- 4.1.26.2. The following measurements are required with no more than five (5) minutes of latency:
 - 4.1.26.2.1. Air temperature measure at the sensor location
 - 4.1.26.2.2. Roadway Surface temperature
 - 4.1.26.2.3. Surface Condition (e.g. dry, wet, icy, snow covered, slush, unknown)
 - 4.1.26.2.4. Surface Friction or Grip
 - 4.1.26.2.5. Sub Surface soil temperature below pavement
- 4.1.26.3. Non-invasive pavement sensors shall be able to integrate with data-loggers, remote processing units (RPUs) or direct connection to a suitable communications device. The sensor shall provide data communications in one or more of the following formats for remote telemetry:
 - 4.1.26.3.1. Ethernet - Provide for communications via a Transmission Control Protocol (TCP) and Internet Protocol (IP) output stream on a specified port. The road condition data string shall automatically be sent once the data values are calculated.
 - 4.1.26.3.2. EIA-485- Provide an EIA-485 (also known as RS-485) port for communication linked to photo). When configured as such, the port shall automatically send its road condition. Support an open protocol addressable multi-drop protocol for communications with up to eight (8) sensors on a single suitably terminated EIA-485 line.
 - 4.1.26.3.3. An EIA-232 (also known as RS-232) communications set-up port shall be provided for communications. The road condition data string shall automatically be sent once the data values are calculated.
- 4.1.26.4. Relay outputs shall be available for direct control of warning beacons and/or anti-icing devices via a dry contact relay output. The relay shall be configurable to

activate when a wet condition is detected with surface temperature below freezing.

- 4.1.26.5. The non-invasive sensors shall be suitable for solar powered applications. Power consumption inclusive of any necessary heating devices shall be less than 5.5 watts.

4.1.27. Non-Invasive Pavement Condition Sensor(s)

- 4.1.27.1. Sensors shall be pole or tower mounted and shall be capable of recording surface temperatures and conditions.
- 4.1.27.2. Sensors shall be able to provide stable operation over the temperature range indicated in **Table 2**.
- 4.1.27.3. Sensors shall measure the temperature using infrared technology.
- 4.1.27.4. Sensors shall provide the temperature reading in configurable increments not to exceed ten (10) minutes.
- 4.1.27.5. Sensor readings shall be accurate to ± 3 percent over the operating temperature range.
- 4.1.27.6. Sensors shall determine the condition of the pavement surface to include whether it is dry, moist, wet, and whether there is ice, slush, snow, or frost on the road surface.
- 4.1.27.7. Sensors shall output the surface condition data to the RPU which will be used to calculate a user defined alert for snow/ice warnings, snow/ice watches within the contractors GUI.
- 4.1.27.8. Sensors shall report a grip value corresponding to changes of friction caused by water, ice, and deicing chemicals, or a combination of them.
- 4.1.27.9. Sensors shall detect the onset of slippery conditions and shall detect ice layers as thin 10 μm .
- 4.1.27.10. Sensors shall be mounted such that the distance between the surface measurement location and the sensor is between 20 feet (6 meters) and 49 feet (15 meters).
- 4.1.27.11. Sensor mounting height and downward pitch angle shall be in accordance with the manufacturer recommendations for the roadway.
- 4.1.27.12. Non-invasive pavement sensor(s) shall provide road temperature and road condition data.

Table 2: Non-Invasive Pavement Condition Sensor Performance Specifications

SCOPE OF WORK

Sensor	Sensor Measurement	Specifications	
		Typical Range	Accuracy Operating Range
Surface Temperature	Surface Temperature	±0.8° C (1.44° F)	-40 to +60° C (-40 to + 140° F)
Surface Condition	Water Layer Thickness	±0.01mm/0in	0.00 to 2mm (0.00 to 0.06 in)
	Ice Layer Thickness	(±20% of measurement)	0.00 to 2mm (0.00 to 0.06 in)
	Snow Coverage Depth	(±20% of measurement)	0.00 to 10mm (0.00 to 0.40 in)
	Level Of Grip		.01 to 1.00

4.1.28. Pavement Temperature Sensor

- 4.1.28.1. Sensors shall be a single solid-state electronic passive device with no moving parts, capable of measuring and recording road surface temperature.
- 4.1.28.2. Sensors shall meet the requirements for surface temperature readings set forth in **Table 2**.
- 4.1.28.3. Sensors shall provide the temperature reading in configurable increments not to exceed ten (10) minutes.
- 4.1.28.4. Sensor readings shall be accurate to ±0.8°C through the operating temperature range.

4.1.29. Solar Power Sub-System for Pavement Sensor

- 4.1.29.1. The Contractor shall prepare a solar power system-sizing report based on the actual measured load for the sensor and associated wireless communications equipment. Two separate calculations may be required. One for the remote sensor equipment and a second for the increased load associated with the wireless base station at the RPU site.
- 4.1.29.2. The solar power system-sizing report shall include:
 - 4.1.29.2.1. The actual measured DC load of all equipment to be operated at the site.
 - 4.1.29.2.2. Sizing of the solar panel array based on an average of 5.5 hours per day of sunlight in Arizona.
 - 4.1.29.2.3. Sizing of the battery bank based on 5.8 days of autonomous operation without sunlight.
 - 4.1.29.2.4. An adequate allowance for system losses due to operation at high temperature, dirty solar panels and other typical field conditions.
 - 4.1.29.2.5. Sizing of the solar charge control system, overcurrent protection and surge arrestors required to complete the system.

4.1.29.3. The Contractor shall provide cut sheets for all equipment based on the solar sizing calculations. The Contractor shall clearly explain the methods that will be used to discourage theft of the solar panels. Acceptable methods include mounting the solar panels at heights above fifteen (15) feet, mounting the panels in nearly invisible locations, (such as a flat mount on top of a cabinet) or incorporating flexible thin film solar panels in the design of the mounting pole. The Contractor shall furnish and deliver:

- 4.1.29.3.1. Solar Panels
- 4.1.29.3.2. Solar Panel Mounting Hardware
- 4.1.29.3.3. Interconnecting Wiring
- 4.1.29.3.4. Charge Controllers
- 4.1.29.3.5. Batteries
- 4.1.29.3.6. Overcurrent protection devices
- 4.1.29.3.7. Surge Arrestors

4.1.30. Wireless Transmitter Sub-System for Pavement Sensor

4.1.30.1. The wireless transmitter shall be a low power unlicensed data transceiver suitable for transmission of the sensor data from the sensor to the RPU. The wireless transceiver shall comply with Part 15 of the FCC regulations, which may be referenced at

https://www.ecfr.gov/cgi-bin/text-idx?SID=c7be03a4f7b02514cea89421fc363794&mc=true&tpl=/ecfrbrowse/Title47/47cfr15_main_02.tpl

4.1.30.2. The transceiver shall be furnished and delivered complete with:

- 4.1.30.2.1. Directional Antenna
- 4.1.30.2.2. Antenna Cables
- 4.1.30.2.3. Surge Protection

4.1.30.3. Wireless Base Station Sub-System for Pavement Sensor

4.1.30.4. The wireless base station receiver shall be a low power unlicensed point to multipoint data transceiver suitable for receiving of the sensor data from the sensor to the RPU. The wireless transceiver shall comply with Part 15 of the FCC regulations. The transceiver shall be furnished and delivered complete with:

- 4.1.30.4.1. Omni Directional Antenna
- 4.1.30.4.2. Antenna Cables
- 4.1.30.4.3. Surge Protection

4.1.31. Remote Processing Units

4.1.31.1. The remote processing unit (RPU) shall gather data from all-weather sensors at the RWIS site, and transmit the collected data to the central processing unit (CPU) at the Contractor's facility. The RPU shall be compatible with existing ADOT systems and shall have sufficient computing power to perform all tasks without any performance degradation.

4.1.32. Provide RPU meeting or exceeding the following requirements:

- 4.1.32.1. Operate in a range of 12 or 24 volts DC.
- 4.1.32.2. Incorporate “watchdog” circuitry that monitors its own operation and resets itself, if the RPU software enters an indeterminate state.
- 4.1.32.3. Provide the capability to reset by a “user administrator” from the central processing unit.
- 4.1.32.4. Be capable of remote reset, reconfiguration and accepting downloads of update software from the central processing unit over the same communication link used to collect data from the remote processing unit.
- 4.1.32.5. Provide a remote processing unit having digital outputs to control on/off type functions when there is a significant change of its sensor data, including: onset of precipitation, occurrence of snow, ice, or frost on the pavement.
- 4.1.32.6. All circuitry of the remote processing unit, the voltage inputs, and all communications ports shall be designed and tested to provide transient and surge protection.
- 4.1.32.7. Provide stable operation over a temperature range of –40 degrees C to 70 degrees C and 0% to 90% relative humidity non-condensing.
- 4.1.32.8. Use a single processor as the RPU at each RWIS site unless otherwise authorized in writing by the Department PM.
- 4.1.32.9. Capable of controlling digital outputs based on weather data.
- 4.1.32.10. The RPU and related auxiliary hardware shall also provide serial EIA-232, EIA-485 and Ethernet 10/100BASE-T interfaces (in accordance with IEEE Standard 802.3) which may be referenced at: <https://standards.ieee.org/standard/index.html> as needed to perform the following functions:
 - 4.1.32.10.1. Interface with sensors
 - 4.1.32.10.2. Provide a remote telemetry interface using the NTCIP for RWIS protocol
 - 4.1.32.10.3. Provide a maintenance port for configuration and programming of the hardware
 - 4.1.32.10.4. Interoperate with the Department’s open source IRIS RWIS server
- 4.1.32.11. The system shall offer the NTCIP 1204 Environmental Sensing Station (i.e., RWIS) standard. The RPU shall comply with all mandatory sections of the following NTCIP/RWIS standards for data communication:
 - 4.1.32.11.1. NTCIP Document 1204V02.23B NTCIP RWIS Interface Standards

SCOPE OF WORK

- 4.1.32.11.2. NTCIP Document 1201V02.26 NTCIP Global Object Definitions, with Amendment
- 4.1.32.11.3. NTCIP Document TS 3.2-1996 NTCIP Simple Transportation Management Framework -Amendment 1
- 4.1.32.11.4. NTCIP Document NTCIP 2202:2001 Version V01.05, NTCIP TP-Internet (TCP/IP AND UDP/IP)
- 4.1.32.11.5. NTCIP Document 2104:2003 NTCIP Ethernet Sub-network Profile
- 4.1.32.11.6. Protocol Stacks: Data Objects–SNMP–Null–PMPP–Twisted Pair
- 4.1.32.12. All inputs, outputs and power circuits shall have surge protection.
- 4.1.32.13. Surge suppression shall be provided for all DC power input, sensor power outputs and sensor communications inputs. Surge suppression shall be housed within the NEMA enclosure.
- 4.1.32.14. For vehicular installation, the system shall be grounded to the vehicle chassis.
- 4.1.32.15. The RPU shall be mountable in the existing RWIS cabinets, and a variety of compact NEMA enclosures for compact weather stations or vehicular applications.
- 4.1.32.16. The RPU system shall be deployed in configurations that operate with a 12 VDC, 24 VDC or 120 VAC 50-60 Hz power supplies based on site conditions. The RPU shall have an average power consumption of less than 6 watts. Input power and sensor power outputs shall be fused.
- 4.1.32.17. Equipment operation shall not be affected by transient voltages, surges and sags normally experienced on commercial power lines.
- 4.1.32.18. The RPU and all core components of this system shall operate in the temperature range of -34 C to 73 C. (-29 F to 163 F).
- 4.1.33. Existing Communications Protocol
 - 4.1.33.1. The RWIS RPU shall have an internal web server accessible via a public internet address. Data and image files shall be accessible by accessing URL locations on the RPU.
 - 4.1.33.2. Camera images shall be published as a JPG file. The name of the JPG file shall uniquely identify each camera image. For example, the image from camera 2 shall be named image002.jpg.
- 4.1.34. Cellular Modem
 - 4.1.34.1. Provide cellular modem meeting or exceeding the following requirements:
 - 4.1.34.1.1. Security:
 - 4.1.34.1.1.1. IPsec VPN
 - 4.1.34.1.1.2. GRE Tunnel
 - 4.1.34.1.1.3. Friends List
 - 4.1.34.1.2. Operating Temperature:

SCOPE OF WORK

- 4.1.34.1.2.1. -22 to 158° F
- 4.1.34.1.3. Storage Temperature:
 - 4.1.34.1.3.1. -40 to 185° F
- 4.1.34.1.4. ROHS Compliant
- 4.1.34.1.5. Input Voltage (9-28V DC)
- 4.1.34.1.6. Maximum Device Dimensions
 - 4.1.34.1.6.1. Size: 5.6 in x 1.5 in x 1.4in
 - 4.1.34.1.6.2. Weight: 11.2 oz
- 4.1.34.1.7. FCC & CE Approved
- 4.1.34.1.8. PTCRB
- 4.1.34.1.9. Carrier Specific Approvals
- 4.1.34.1.10. Host Interfaces
 - 4.1.34.1.10.1. Ethernet: 10/100 Mbps RJ-45
 - 4.1.34.1.10.2. RS-232: DB9 DCE (300 – 230400 baud)
 - 4.1.34.1.10.3. Antenna Connection:
 - 4.1.34.1.10.3.1. Primary 50 Ohm SMA
 - 4.1.34.1.10.3.2. Rx Diversity 50 Ohm SMA
- 4.1.34.1.11. Application Interfaces
 - 4.1.34.1.11.1. TCP /IP
 - 4.1.34.1.11.2. UDP/IP
 - 4.1.34.1.11.3. DHCP
 - 4.1.34.1.11.4. HTTP
 - 4.1.34.1.11.5. SNMP
 - 4.1.34.1.11.6. SMTP
 - 4.1.34.1.11.7. SMS
 - 4.1.34.1.11.8. MSCI
 - 4.1.34.1.11.9. Modbus
 - 4.1.34.1.11.10. Binary
- 4.1.34.1.12. LED Indicators
 - 4.1.34.1.12.1. Network
 - 4.1.34.1.12.2. Signal
 - 4.1.34.1.12.3. Activity
 - 4.1.34.1.12.4. Service

4.1.35. 120 VAC Power

- 4.1.35.1. At selected locations, the RWIS equipment shall utilize existing 120 VAC 15 or 20 ampere circuits located in existing roadside cabinets. When existing enclosures are used the existing circuit breakers shall be reused.
- 4.1.35.2. When new enclosures are installed, the enclosure at 120 VAC sites shall include a 120 VAC circuit breaker, convenience outlet, or as specified by the Department.
- 4.1.35.3. Utility powered RWI sites shall be equipped with a surge protector conforming to the current industry standards.

4.1.36. Lighting Power System

4.1.36.1. At selected locations, Compact Weather Stations and CCTV systems will be installed on existing light poles and lighted signs. Power available at these sites ranges from 120 VAC to 480 VAC. Lighting power is only available during the hours of darkness.

4.1.36.2. The Contractor shall furnish and deliver:

- 4.1.36.2.1. A fused lockable cabinet mounted disconnect switch in a NEMA 3R Enclosure. A surge arrestor. The lamp rating shall be 10, 15, 20, 30, or 50, as specified by the Department.
- 4.1.36.2.2. A step-down transformer with multiple taps to step the lighting voltage down from 480 VAC or 240 VAC to 120 VAC.
- 4.1.36.2.3. A 120 VAC circuit breaker.
- 4.1.36.2.4. A GFI protected convenience outlet.
- 4.1.36.2.5. An extended temperature range industrial battery charger sized to fully charge the battery bank within ten (10) hours and maintain a trickle charge whenever electrical power is available.
- 4.1.36.2.6. A deep cycle absorbed glass mat (AGM) battery bank sized to sustain the load for 24 hours.
- 4.1.36.2.7. All equipment loads at sites powered by a lighting power system shall be DC loads.
- 4.1.36.2.8. AC power shall only be used for charging the battery bank.

4.1.37. Solar Power System Analysis

4.1.37.1. For new sites or existing sites where an increase in existing loads is anticipated, the Contractor shall prepare a solar power system-sizing report based on the actual measured load for the RPU, sensors, peripherals, and associated wireless communications equipment.

4.1.37.2. The system-sizing report shall detail the photovoltaic array, battery bank array-to-load ratio analysis, system availability analysis, battery state-of-charge report, battery depth of discharge (DOD), and monthly insolation information for the specified region, based on specific load profiles for the Contractor's equipment deployed in Northern Arizona.

4.1.37.3. The solar power system-sizing report shall include:

- 4.1.37.3.1. The actual measured DC load of all equipment to be operated at the site.
- 4.1.37.3.2. Sizing of the solar panel array based on an average of 5.5 hours per day of sunlight in Arizona.
- 4.1.37.3.3. Sizing of the battery bank, based on 5.8 days of autonomous operation without sunlight.
- 4.1.37.3.4. An adequate allowance for system losses due to operation at high temperature, dirty solar panels and other typical field conditions.

SCOPE OF WORK

- 4.1.37.3.5. Sizing of the solar charge control system, overcurrent protection and surge arrestors required to complete the system.
- 4.1.37.3.6. Demonstrate that the system solar generator has been sized to provide an array-to-load ratio of 1:1 or greater.
- 4.1.37.3.7. Demonstrate that the system average state of charge is 80% or greater throughout the entire year.
- 4.1.37.4. The Contractor shall provide cut sheets for all equipment based on the solar sizing calculations.
- 4.1.37.5. The Contractor shall furnish and deliver:
 - 4.1.37.5.1. Solar panels
 - 4.1.37.5.2. Solar panel mounting hardware
 - 4.1.37.5.3. Interconnecting wiring
 - 4.1.37.5.4. Charge controllers
 - 4.1.37.5.5. Batteries
- 4.1.38. Solar Panels
 - 4.1.38.1. Solar panel(s) shall be photovoltaic (PV) array type.
 - 4.1.38.2. Solar Panel shall be positioned for maximum direct exposure to sunlight.
 - 4.1.38.3. The Contractor shall supply industrial-grade, polycrystalline-type solar modules, incorporating bypass diodes in each solar module. The Contractor shall construct PV modules with a low-iron tempered glass surface and an industrial grade anodized aluminum frame that completely surrounds and seals module laminate. Provide an ultraviolet (UV) resistant, weatherproof junction box with wire termination for up to No. 8 AWG wiring with the PV module.
 - 4.1.38.4. The Contractor shall construct PV module mounting assemblies of galvanized steel or aluminum. The galvanized steel shall meet the requirements ASTM A-153 Class A.
 - 4.1.38.5. PV electrical harness shall not exceed 2% total voltage drop between the solar module and the charge control circuit.
 - 4.1.38.6. Solar panels shall feature a design-life of not less than twenty (20) years.
 - 4.1.38.7. Solar panel voltage shall be selected by the Contractor to match load requirements.
- 4.1.39. Solar Panel Mounting Bracket
 - 4.1.39.1. Mounting hardware shall be a commercial off-the-shelf product intended for mounting solar panels on poles and structures. The mounting systems shall be rated to withstand 90 mph winds with a 30% gust factor.

4.1.40. Solar Charge Controller

4.1.40.1. The solar charger controller shall be an extended temperature range industrial solar charge controller. The solar charge controller shall incorporate all solid-state, charge control circuits to facilitate proper charging of system batteries via a Pulse Width Modulation (PWM) charging algorithm. The solar charger shall optimize power delivered to the batteries by incorporating incorporate thermal compensation in charge control circuit to adjust battery charge rate to variances in temperature.

4.1.40.2. The solar charge controller shall feature:

- 4.1.40.2.1. Screw terminal inputs for the photovoltaic array, battery bank and load
- 4.1.40.2.2. 100% solid state construction
- 4.1.40.2.3. Pulse width modulation circuitry
- 4.1.40.2.4. Temperature compensation
- 4.1.40.2.5. Sealed or flooded battery selection switch or jumper
- 4.1.40.2.6. Low voltage battery disconnect
- 4.1.40.2.7. Green charging indicator
- 4.1.40.2.8. Red low voltage disconnect indicator

4.1.41. Batteries

- 4.1.41.1. Battery voltage shall be 12 VDC nominal. Use valve-regulated, lead-acid batteries rated for a minimum of 2000 cycles with 10% capacity withdraw.
- 4.1.41.2. Battery banks with a capacity of 30 more amp-hours shall be absorbed glass mat (AGM) batteries suitable for solar energy applications. The batteries shall be sealed and maintenance free deep cycle batteries. For small batteries, provide spill-proof gel cell battery to allow installation in any position. Gelled electrolyte shall contain sulfuric acid, fumed silica, pure de- mineralized and de-ionized water, and a phosphoric-acid additive.
- 4.1.41.3. Batteries may be mounted within the equipment enclosures, or optionally in a separate ground battery box.
- 4.1.41.4. Provide 7-ampere fuse on positive lead of each battery. Fuses shall be easily accessible and positioned so that rating markings are visible.
- 4.1.41.5. Initial work under this item is anticipated to include installation of new batteries at all sites.

4.1.42. Interconnecting Wiring

- 4.1.42.1. The Contractor shall furnish interconnecting wiring in accordance with the NEC. UV resistant insulation shall be used for short runs of exposed wiring. The Department shall install long runs of wiring in conduit. DC surge protection must be provided on all wiring entering the cabinets.

4.1.42.2. Wiring shall be industrial standard.

4.1.42.3. The surge arrestors shall be industrial standard.

4.1.43. Spare Parts

4.1.43.1. Spare parts shall be available to keep the system operational for ten (10) years after the last date of delivery for each weather station. The Department shall be able to purchase spare parts for future use in accordance with the Contractor's cost proposal.

4.1.43.2. Sensors and internal cabinet components shall be shipped within seven (7) days of the Department's request. The Contractor shall inform the Department, if delivery is expected to exceed this stated time immediately upon receipt of order.

4.1.43.3. The RWIS Contractor shall submit a current parts list with prices for all boards, modules and user replaceable parts supplied by Contractor. The list must be the most current, published list by the RWIS Contractor.

4.2. **CATEGORY B: ENVIRONMENTAL SENSING SYSTEM**

4.2.1. The RWIS Contractor shall coordinate with the Department and the Department's independent Contractors to successfully install and integrate the system.

4.2.2. Rural CCTV System

4.2.2.1. The objective of this specification is to acquire highly cost effective, reliable and simple systems that are economical for widespread deployment on Arizona State Highway System.

4.2.2.2. The function of these systems is to collect frequently updated snapshot images of roadway conditions.

4.2.2.3. The rural CCTV Systems shall be suitable for mounting on existing poles throughout the state. Specific mounting locations will be identified during the field site inventory.

4.2.2.4. Typical mounting locations may include:

4.2.2.4.1. Sign structures

4.2.2.4.2. Light poles

4.2.2.4.3. Traffic signal poles

4.2.2.4.4. A Rural CCTV system shall consist of:

4.2.2.4.4.1. Compact NEMA 3R enclosure

4.2.2.4.4.2. Remote processing unit

4.2.2.4.4.3. Communications option

4.2.2.4.4.4. Cellular modem

4.2.2.4.4.5. Data/Radio Transceiver

SCOPE OF WORK

- 4.2.2.4.5. Power system options:
 - 4.2.2.4.5.1. Solar
 - 4.2.2.4.5.2. Lighting circuit
 - 4.2.2.4.5.3. AC
 - 4.2.2.4.5.4. Heated Hoods
 - 4.2.2.4.6. CCTV camera
 - 4.2.2.4.7. Interconnecting cabling, mounting brackets, hardware and accessories to provide a complete and fully functional system
- 4.2.3. Compact Weather Station
- 4.2.3.1. The objective of this specification is to acquire highly cost effective, reliable and simple systems that are economical for widespread deployment on Arizona State Highway System.
 - 4.2.3.2. The function of these systems is to collect frequently updated snapshot images of roadway conditions and basic atmospheric weather data.
 - 4.2.3.3. Compact Weather Stations shall be suitable for mounting on existing poles throughout the state. Specific mounting locations will be identified during the field site inventory.
 - 4.2.3.4. Typical mounting locations may include:
 - 4.2.3.4.1. Sign structures
 - 4.2.3.4.2. Light poles
 - 4.2.3.4.3. Traffic signal poles
 - 4.2.3.4.4. A Compact Weather Station shall consist of:
 - 4.2.3.4.4.1. Compact NEMA 3R enclosure
 - 4.2.3.4.4.2. Remote processing unit
 - 4.2.3.4.4.3. Communications option:
 - 4.2.3.4.4.4. Cellular modem
 - 4.2.3.4.4.5. 2.4GHz range data radio
 - 4.2.3.4.5. Power system option:
 - 4.2.3.4.5.1. Solar
 - 4.2.3.4.5.2. Lighting circuit
 - 4.2.3.4.5.3. AC
 - 4.2.3.4.6. CCTV camera
 - 4.2.3.4.7. Basic Weather Sensor Package:
 - 4.2.3.4.7.1. Wind speed
 - 4.2.3.4.7.2. Wind direction
 - 4.2.3.4.7.3. Air temperature o Relative humidity
 - 4.2.3.4.7.4. Dew point
 - 4.2.3.4.8. Interconnecting cabling, mounting brackets, hardware and accessories to provide a complete and fully functional system
 - 4.2.3.4.9. The Compact Weather Station shall allow for connection of advanced sensors including visibility sensors and non-intrusive pavement condition sensors

4.2.4. Full RWIS Site

4.2.4.1. The objective of this specification is to acquire full featured RWIS systems for a small number of critical locations on Arizona State Highway System, where extensive weather related data is required. Present Weather and Visibility sensor is acceptable.

4.2.4.2. The function of these systems is to collect:

- 4.2.4.2.1. Frequently updated snapshot images of roadway conditions
- 4.2.4.2.2. Data on pavement surface conditions
- 4.2.4.2.3. A full set of atmospheric weather data. Full RWIS sites shall be installed on new fold down lattice towers.

4.2.4.3. A full RWIS Site shall consist of:

- 4.2.4.3.1. Fold down lattice tower
- 4.2.4.3.2. Full size NEMA 3R enclosure
- 4.2.4.3.3. Remote processing unit
- 4.2.4.3.4. Communications option:
 - 4.2.4.3.4.1. Cellular modem
- 4.2.4.3.5. Power system option: o Solar o Lighting circuit o AC
- 4.2.4.3.6. CCTV camera
- 4.2.4.3.7. Basic Weather Sensor Package:
 - 4.2.4.3.7.1. Wind speed
 - 4.2.4.3.7.2. Wind direction
 - 4.2.4.3.7.3. Air temperature
 - 4.2.4.3.7.4. Relative humidity
 - 4.2.4.3.7.5. Dew point
- 4.2.4.3.8. Two wireless non-invasive pavement condition complete with wireless base station
- 4.2.4.3.9. One sub-surface temperature sensor
- 4.2.4.3.10. A visibility sensor
- 4.2.4.3.11. Interconnecting cabling, mounting brackets, hardware and accessories to provide a complete and fully functional system

4.2.5. Non-Invasive Pavement Sensor Retrofit

4.2.5.1. The objective of this specification is to replace faulty in-pavement pucks at existing RWIS sites. The work shall consist of:

- 4.2.5.1.1. A site survey
- 4.2.5.1.2. Load calculations for solar powered sites
- 4.2.5.1.3. Solar power system upgrades (if needed)
- 4.2.5.1.4. A wireless base station
- 4.2.5.1.5. Two complete wireless non-invasive pavement condition sensor systems.

4.2.5.2. The function of these systems is to measure road surface temperature and level of friction or grip on the road surface, as well as road surface condition.

SCOPE OF WORK

4.2.5.3. If bridge mounting of non-invasive sensors, mounting shall not begin until the method of attachment has been approved by the ADOT Bridge Group. In the event of a delay in the approval process, the Contractor shall schedule this work to occur following approval at no additional cost to the Department.

4.2.6. In-Vehicle Weather Information System

4.2.6.1. The function of the in-vehicle weather information system should include:

- 4.2.6.1.1. Determine and record GPS coordinates of the vehicle once per minute
- 4.2.6.1.2. Sample air temperature once per minute
- 4.2.6.1.3. Sample pavement temperature once per minute
- 4.2.6.1.4. Measure atmospheric moisture
- 4.2.6.1.5. Measure road surface state, thickness of water or ice, and surface friction or level of grip on the road surface
- 4.2.6.1.6. Maintain an on-board data table for each equipped vehicle with capacity to record data for 30 days of continuous operation
- 4.2.6.1.7. Provide constantly-updated road and air temperature readings to the vehicle operator using the operator's smart phone and blue tooth or Wi-Fi pairing technology

4.2.6.2. When the operator's smart phone is within range of a commercially available cellular network provide telemetry service for real-time information.

4.2.6.3. The In-Vehicle Weather Information System electronics shall be housed in a compact, ruggedized case suitable for mounting in the cab or the engine compartment of the vehicle.

4.2.6.4. The system shall operate on fused and switched 12 VDC power. When the ignition is switched off, the system shall draw minimal or no current to avoid depleting the starting battery.

4.2.6.5. Each vehicular system shall be installed complete with Bluetooth smart phone link, cabling, vehicle equipment interfaces, GPS receiver, displays, hardware, enclosures, brackets and any additional items required to provide a fully functional system.

4.2.6.6. A separate cellular modem shall be available for vehicle operators who do not carry smart phones.

4.2.6.7. The Contractor shall furnish and install In-Vehicle Weather Information Systems, on existing vehicles, which may be located at Department facilities throughout the State. The Contractor shall coordinate equipment installation with the Department's Equipment Services group. All in-vehicle wiring and installation work shall be done in a neat and workmanlike manner. Vibration resistant automotive style connectors shall be used.

4.2.6.8. The central software for the In-Vehicle Weather Information System shall utilize a standard web browser, to display road surface condition, atmospheric data, and road surface grip.

SCOPE OF WORK

- 4.2.6.9. The central software shall also provide temperature profile maps of the plowed areas.
- 4.2.7. Testing & Calibration for Environmental Sensing Systems (ESS)
 - 4.2.7.1. The Contractor shall fully test and perform the initial calibration for the complete ESS installations provided by the Contractor, to ensure that the ESS system meets all operational requirements and that the system functions properly. The purpose of the test is to demonstrate that the equipment and the systems furnished under this contract are in full compliance with the requirements of the contract documents.
 - 4.2.7.2. All test results and test reports (whether satisfactory or otherwise) shall be available to the Department within twenty four (24) hours of testing.
 - 4.2.7.3. Satisfactory test results shall be accompanied by a written statement from the Contractor, or representative, stating that the system is performing in accordance with the contract requirements and has been properly calibrated. This testing is separate from any acceptance testing conducted by the Department.
 - 4.2.7.4. All testing shall be conducted in the presence of the Department PM and shall be conducted in the State of Arizona. The Contractor shall develop all of the required test procedures and data forms and shall submit them for the Department PM's approval at least twenty one (21) days prior to performing the associated tests.
 - 4.2.7.5. All testing shall be conducted Monday through Thursday between 8:00 a.m. and 3:00 p.m. unless otherwise approved by the Department PM.
 - 4.2.7.6. A Contractor's representative shall conduct all tests. The Department PM, or a Department representative, shall witness the tests. If the equipment or systems fail any part of the test, the entire test shall be repeated at the option of the Department.
 - 4.2.7.7. The Contractor shall furnish all test equipment and services. The Contractor shall notify the Department PM of the time, date and place of each test at least fourteen (14) days prior to the date on which the test is planned.
 - 4.2.7.8. Neither witnessing of the tests by the Department PM nor the waiving of the right to do so will relieve the Contractor of the responsibility to furnish and install the work in accordance with the contract documents.
 - 4.2.7.9. Actions by the Department PM, including approval of calibration test results, will not be deemed as acceptance of the equipment or systems tested until the successful completion of the System Acceptance Test.
 - 4.2.7.10. The contract period will not be extended for time loss or delays related to testing. The cost for testing shall be considered as part of the unit cost for the item tested and no direct payment will be made.

4.2.8. Test Procedures and Test Data Forms

4.2.8.1. The test procedures and data forms shall include the following:

- 4.2.8.1.1. A step-by-step outline of the test sequence to be followed, showing a test of every function of the equipment or system to be tested.
- 4.2.8.1.2. A description of the expected operation output and test results.
- 4.2.8.1.3. An estimate of the test duration and a proposed test schedule.
- 4.2.8.1.4. A data form to be used to record all data and quantitative results obtained during the test.
- 4.2.8.1.5. A description of any special equipment, setup, manpower, or conditions required for the test.

4.2.9. Record Drawings

- 4.2.9.1. Record drawings of each new or significantly modified site must be presented in 11" x 17" PDF format. The drawings must show site details as well as the latitude, longitude, and elevation of the site and shall include detailed wiring diagrams showing the origin and destination of each wire, conductor and cable. The Contractor shall submit record drawings only if the Contractor is installing new or significantly modified sites.

4.3. CATEGORY C: RWIS RELATED SERVICES

- 4.3.1. This section describes RWIS related services that the Department may require from time-to-time.

4.3.2. Pre-Installation Site Inventory

- 4.3.2.1. Upon request by the Department, the Contractor shall conduct a detailed field inventory and all necessary testing to document existing conditions at current RWIS sites scheduled for modification or service, or installation related site conditions at potential new sites.
- 4.3.2.2. For existing sites, the Contractor shall identify non-functional site equipment that must be replaced and determine how the existing functional sensors can be integrated with other hardware that may be upgraded.
- 4.3.2.3. The Contractor shall identify the size, type, age or condition and number of batteries as part of each site visit.
- 4.3.2.4. For potential new sites, the site inventory shall detail:
 - 4.3.2.4.1. State Route
 - 4.3.2.4.2. Milepost
 - 4.3.2.4.3. GPS coordinates
 - 4.3.2.4.4. Site photos
 - 4.3.2.4.5. AASHTO clear zone Considerations
 - 4.3.2.4.6. Available power
 - 4.3.2.4.7. Available mounting poles

SCOPE OF WORK

- 4.3.2.4.8. Site sketch
- 4.3.2.4.9. Installation recommendations

4.3.3. Work Zone Traffic Control Services

- 4.3.3.1. The Department shall be responsible for furnishing traffic control.

4.3.4. Repair and Preventative Maintenance

- 4.3.4.1. The table below identifies examples of RWIS equipment that may require repair or preventative maintenance services from time-to-time. The Contractor should detail its level of expertise working with this hardware. All sites currently have Vaisala /SSI RPU equipment. The Contractor must be able to utilize existing equipment at all RWIS sites.
- 4.3.4.2. In most instances it is the intent of the Department to replace failed in-pavement sensors with non-invasive pavement condition sensors.

	Sensor	Name Brand	Manufacturer	Model #
I-40 Lupton 522006	Visibility Sensor	Sentry	Enviro Tech	SVS1
	Precipitation Sensor	Hawkeye	SSI	SSI
	Subsurface Sensor	Sub Probe	SSI	Sub-Surface Probe
	Wind Sensor	RM Young WS/WD	RM Young	05103-15
	Air Sensor	RM Young AT/RH	RM Young	41382Vf
	Camera	Axis	Axis	210
	Barometer	Met One	Met One	92
I-17 Scenic View (MP312.7)	Visibility/Precip	Vaisala	Vaisala	PWD12
	Weather/Precip	Vaisala	Vaisala	DTS12G
	Subsurface Soil Temperature	Vaisala	Vaisala	WMT700
	Wind Speed/Direction	Vaisala	Vaisala	HMP155E
	Humidity/Temperature	Vaisala	Vaisala	M12
	Camera	Mobotix	Mobotix	PTB110
	Barometer	Vaisala	Vaisala	DSC211
	Road Surface State	Vaisala	Vaisala	DST111
	Road Surface Temperature	Vaisala	Vaisala	RWS200
	Data Collection & Processing	Vaisala	Vaisala	

- 4.3.4.3. The Contractor shall notify the Department PM and obtain concurrence prior to replacing any existing sensor or hardware. The Department will pay for duly authorized hardware replacements in accordance with the agreed upon contract pricing for that item.
- 4.3.4.4. The Contractor shall be available on a time and materials basis for any unscheduled maintenance that the Department elects to complete using outside forces. The

Contractor must be on-site within fifteen (15) working days of written or e-mailed request.

4.3.5. Technical Services

4.3.5.1. The Department may require RWIS related technical services from time-to-time. The following categories of service may be required:

- 4.3.5.1.1. Field Installer – requires familiarity with RWIS equipment and the ability to work safely outdoors in a highway environment in all weather conditions.
- 4.3.5.1.2. RWIS Technician – requires basic knowledge of electronics, familiarity with RWIS equipment, low voltage wiring skills, troubleshooting skills, knowledge of computers and the ability to work safely outdoors in a highway environment. Typical educational background would be a two year technical degree.
- 4.3.5.1.3. Engineer – requires skills in performing site assessments, preparing drawings, and knowledge of RWIS-related telecommunications, telemetry, IP-based communications, and serial communications. Typical background would include graduation from an accredited four year engineering program.

4.3.6. Performance Monitoring

- 4.3.6.1. Transportation agencies are increasingly dependent on data from Road Weather Information Systems (RWIS) for their Road Weather Management (RWM) and Weather Responsive Traffic Management (WRTM) operations. However, uncertainty in data accuracy of RWIS Environmental Sensor Station (ESS) sensors can make end users and key stakeholders question the value of the information. Limited quality checking impacts the real time value of the data and detracts from the acceptance of RWIS amongst the end users and stakeholders for whom the information is intended. The importance of assuring that the data be reliable and accurate is to assure reliable operation of ESS instrumentation and thus the desired level of data quality.
- 4.3.6.2. The Contractor must have the ability to monitor the accuracy of the data, move quickly to rectify deficiencies if internal to the contractors systems, or alert the Departments ITS Maintenance, Road Weather Management, and Traffic Operations groups.
- 4.3.6.3. The Department requires the Contractor to provide RWIS sensor performance and data quality monitoring services. Monitoring services shall have the following capabilities:
 - 4.3.6.3.1. Real time visibility of data quality from the Departments RWIS network
 - 4.3.6.3.2. Data sets shall be monitored to ensure that it falls within acceptable thresholds for that date and RWIS location

SCOPE OF WORK

- 4.3.6.3.3. Data sets not meeting acceptable thresholds shall be suppressed from displaying in the RWIS website or being ingested into any forecast model
- 4.3.6.3.4. Analyze and diagnose faults
- 4.3.6.3.5. Generate automated fault notifications via email and through the Contractors RWIS website
- 4.3.6.3.6. Generate automated fault reports via email and through the Contractors RWIS website

4.3.6.4. The Department requires the following automated reports:

- 4.3.6.4.1. Fault Notification reports shall include:
 - 4.3.6.4.1.1. Station name
 - 4.3.6.4.1.2. Fault description
 - 4.3.6.4.1.3. Fault start date/time
 - 4.3.6.4.1.4. Recommended corrective action
- 4.3.6.4.2. Corrective action reports shall include:
 - 4.3.6.4.2.1. Station name
 - 4.3.6.4.2.2. Fault description
 - 4.3.6.4.2.3. Fault start date/time
 - 4.3.6.4.2.4. Indicate whether the Contractor or the Department is responsible for resolution of identified fault
 - 4.3.6.4.2.5. Expected resolution date
- 4.3.6.4.3. RWIS network performance reports shall include:
 - 4.3.6.4.3.1. Provide a % figure on the performance of each RWIS and the network as a whole
- 4.3.6.4.4. RWIS network quality reports shall include:
 - 4.3.6.4.4.1. Analysis of the health of the RWIS network

4.3.7. Training

- 4.3.7.1. Training shall be available for purchase on an “as needed” basis by the Department. The Contractor shall include outlines of the proposed training program in its proposal. The proposed course materials for the Contractor training program shall be approved by the Department at least thirty (30) days prior to the start of any training course. Training courses may be scheduled at Department facilities, or may be held onsite at RWIS locations throughout the State of Arizona.
- 4.3.7.2. Instructors shall have previous classroom experience, and shall be proficient and knowledgeable in the subject being taught.
- 4.3.7.3. Each student shall receive a handout of lecture notes and a copy of each manual discussed in the training.
- 4.3.7.4. The Contractor shall post any training materials used in the courses on its website.
- 4.3.7.5. Operations training shall be geared towards individuals who utilize RWIS to schedule roadway maintenance crews. For training purposes, an overview of the system shall include discussion of the following elements:

SCOPE OF WORK

- 4.3.7.5.1. Use of RWIS for winter maintenance
- 4.3.7.5.2. Detection of dust storms with RWIS
- 4.3.7.5.3. RWIS system overview
- 4.3.7.5.4. The RWIS user interface
- 4.3.7.5.5. The web browser interface
- 4.3.7.5.6. Responding to alarms
- 4.3.7.5.7. Viewing images and archives
- 4.3.7.5.8. Viewing meteorological conditions
- 4.3.7.5.9. Calling up archived meteorological data
- 4.3.7.5.10. Performing routine testing of the system
- 4.3.7.5.11. Basic meteorology
- 4.3.7.5.12. Anatomy of weather events with emphasis on winter maintenance in Northern Arizona and emphasis on dust storms in Southern Arizona
- 4.3.7.6. These sessions are expected to be one to two hours in duration. Estimated participation is ten (10) students per session. The Department may elect to procure multiple sessions, so that training may be conducted in multiple district office locations or multiple times as refresher courses over the life of the contract.
- 4.3.7.7. Hands-on technical and classroom training shall be available to small groups of Department technicians. This training shall be geared towards individuals who are skilled in electronics and have responsibility for maintenance of the RWIS field sites and communications infrastructure. Every component of the RWIS system shall be addressed in this technical training. For training purposes, an overview of the system shall include discussion of each and every component including the following elements:
 - 4.3.7.7.1. Theory of operation
 - 4.3.7.7.2. Isolation of faults to board level
 - 4.3.7.7.3. Hands-on troubleshooting
 - 4.3.7.7.4. Calibration and use of calibration equipment
 - 4.3.7.7.5. Programming and configuration techniques
 - 4.3.7.7.6. Communications troubleshooting
 - 4.3.7.7.7. Performing routine testing of the system
 - 4.3.7.7.8. Analysis of logs and failure alarms
- 4.3.7.8. The estimated attendance is four (4) students per session, including Department electronic technicians, and construction inspectors. The course length shall be three (3) days (24 hours total training time) per session. The Department estimates that one session will be required.
- 4.3.7.9. The Contractor shall make its training courses available in webinar format with a computer based slide presentation and accompanying audio. The training courses shall be paid by the Department on a per-session basis. The Department may elect to purchase training courses with an initial order, with subsequent orders, annually, as needed, or not at all. Training payments shall include the cost of labor, training materials, travel, audio-visual equipment and incidentals utilized by the Contractor. Training for any updates or enhancements generated at the request of the Contractor shall be performed at no cost to the Department.

4.3.8. Manuals

- 4.3.8.1. In addition to the requirements of the Standard Specifications, documentation for the RWIS equipment shall include detailed manuals with complete and comprehensive information on all equipment components and accessories.
- 4.3.8.2. The Contractor shall provide block diagrams, schematics, line drawings and descriptive text sufficient to allow a technician of average skill to diagnose, repair, and maintain the equipment and its components.
- 4.3.8.3. Software documentation shall include explanations of how operations are related to remote and local commands, all custom developed program source-codes in both printed and machine readable form, detailed memory maps, and detailed communications protocol documentation.
- 4.3.8.4. If printed, computer-generated text shall be printed in a legible font using a laser-printer. Manuals and documentation shall also be made available in PDF format and a thumb drive containing the manuals shall be provided.
- 4.3.8.5. This work shall be considered incidental to the other items. No separate measurement or payment shall be made.

4.3.9. Warranty

- 4.3.9.1. The RWIS system, consisting of all new units, firmware, software and devices within the system, shall be warranted against all defects in materials and workmanship for a minimum of one year from the date of acceptance recorded by the Department.
- 4.3.9.2. The Contractor shall guarantee that the equipment performs in accordance with its published specifications.
- 4.3.9.3. The Contractor shall guarantee that the equipment is in full compliance with all applicable laws and regulations.
- 4.3.9.4. The warranty shall provide for advance replacement of any failed or defective component during the warranty period.
- 4.3.9.5. The warranty shall provide for software and firmware upgrades and bug fixes throughout the duration of the warranty period. The software upgrade process shall include software upgrades downloaded from the Internet. The Contractor shall be available via email, phone and remote access to the system to provide diagnostic and troubleshooting services.
- 4.3.9.6. The Contractor shall warrant that software development and system integration work have been performed in accordance with the highest professional standards using a standard of care that a professional would use in similar circumstances.

SCOPE OF WORK

- 4.3.9.7. The Department will conduct initial troubleshooting and testing to identify suspect components. The Contractor shall have a skilled technical support representative available from 7 AM to 4 PM Monday through Friday for telephone support.
- 4.3.9.8. It is the intention of the Department to receive under this contract an RWIS technology that is proven to be reliable, has low maintenance history, has low power consumption, and has been thoroughly tested at actual field installations in the U.S. over a reasonable period of time.
- 4.3.9.9. The Contractor shall clearly state all exclusions that may apply to the warranty coverage. Warranty service is incidental to the other items of work and will not be separately measured or paid.
- 4.3.9.10. Contractor's standard manufacturer's warranty, attached hereto, is incorporated into these terms. Should there be a conflict between the manufacturer's warranty and the terms contained herein, the standard manufacturer's warranty shall prevail. Issues in connection with third parties, such as electrical problems or communications issues are not covered under this warranty.

4.3.10. Extended Warranty

- 4.3.10.1. The extended warranty shall be purchased after the initial first year of contract award.
- 4.3.10.2. The Contractor shall make extended warranty coverage available for purchase on an annual basis.
- 4.3.10.3. The extended warranty shall include advance replacement of failed components, firmware updates, software updates, and assistance with integration of new devices, telephone support and all terms of the standard warranty.

4.4. CATEGORY D: RWIS SOFTWARE

- 4.4.1. The concept of the RWIS integration and communications design is that the Central Processing Unit (CPU) shall be the central repository and distribution hub for all reported data from all RWIS sites Statewide (existing and future), to include mobile RWIS data and traffic data from in pavement or roadside sensors. The CPU will be owned and maintained by the Contractor for the duration of the contract. The RWIS locations will be polled or report to the CPU on regular intervals as noted herein, and the CPU will host a web-based interactive map allowing for display of any and all information in a winter severity index format. The CPU will host data in a secure format (for AZ DOT access) and in a public format (for general public access) that provides select data based on AZ DOT preferences. The Department will import data from the Contractor's RWIS server to the AZ511 website to include camera images and basic atmospheric data.
 - 4.4.1.1. The system shall provide authorized users the ability to password-protect any and all data being received from specific RWIS field sites at the CPU. This would then require users accessing protected data sets via the CPU to enter a valid password prior to being able to view the data.

- 4.4.1.2. The system shall provide authorized users the ability to password-protect any and all configuration and control capabilities for specific RWIS field sites. This would then require users accessing protected control data via the CPU to enter a valid password prior to being able to modify any settings.
- 4.4.1.3. The Contractor shall be responsible for developing and implementing a method for backing up archived RWIS data and program files at least once per day and storing of no less than (2) years of historical data. The Contractor shall have camera images immediately accessible through the GUI software, for a period of four (4) months minimum. Data over four (4) months old may be stored offline and shall be provided upon the request of the Department PM. The Contractor shall demonstrate the successful operation of the backup process during acceptance of the system.
- 4.4.1.4. The system shall make data available and coordinate integration of such data with the Next Gen ATMS, Traffic Operations Centers, I-10 Dust Detection and Warning System, and the AZ 511 website through automated data feeds, including but not limited to: CSV or XML.
- 4.4.1.5. Future VMS project may include I-40 corridor from MP186 to MP206.
- 4.4.1.6. The Contractor shall provide an internet-based GUI to display data from each RWIS site. The system shall consist of a host web server and user-friendly graphical user interface with dynamic web mapping available through the internet and requiring three levels of password authentication for guests, system managers, and administrators. The web interface shall also be available through mobile device, either mobile website, or mobile application and can be fed in XML format.
- 4.4.1.7. The RWIS Website solution shall be capable of supporting all RWIS sites provided or retrofitted under this contract. In addition, the RWIS website solution shall be capable to be expanded
- 4.4.1.8. The system shall be capable of grouping RWIS locations and be user-configurable.
- 4.4.1.9. The system shall be capable of calculating a Winter Mobility Index using level of grip and displayed in numerical value, whereas a higher number indicates greater mobility, which is based on level of grip, and is derived using the percentage of time the road surface condition did not significantly impede mobility during a storm event.
- 4.4.1.10. The system shall include automated and configurable reports to indicate variances in values, trends over time, and spatial comparisons.
- 4.4.1.11. The system shall be capable of viewing past and present weather data, as well as prediction of near-term future weather data, and road surface condition forecasting.
- 4.4.1.12. The system shall be capable of displaying data in a mobile solution.

SCOPE OF WORK

- 4.4.1.13. The system shall not require any client licenses or client software installed on each machine to view the webpage when used with the current editions of Microsoft Internet Explorer.
- 4.4.1.14. The system shall be compatible with AZ DOT existing Operating Systems (Microsoft Windows 7) and major software suites such as Microsoft Office 2010.
- 4.4.1.15. The system shall validate all incoming data based on historical trends and other data sources to ensure the highest data quality.
- 4.4.1.16. The system shall support all System Alarms as noted and all communications options established herein.
- 4.4.1.17. The system shall support an interface with NOAA for the Meteorological Assimilation Data Ingest System (MADIS), through the use of an automated data feed.
- 4.4.2. The system shall be capable of downloading and displaying snow plow Automatic Vehicle Location (AVL) data when a snow plow comes within a range of up to a maximum of 1000 meters of a Department RWIS.
- 4.4.3. A plow truck icon shall be displayed on a timeline that corresponds to the RWIS sites road surface condition and atmospheric data at that time. The system shall provide the following plow truck location and spreader data in the form of a pop up menu:
 - 4.4.3.1. Truck location, Speed, Direction
 - 4.4.3.2. Ambient temperature
 - 4.4.3.3. Road surface temperature
 - 4.4.3.4. Plow position UP/Down
 - 4.4.3.5. Tow plow position UP/Down (if equipped)
 - 4.4.3.6. Spreader status – ON/OFF
 - 4.4.3.7. Granular deicer material selected
 - 4.4.3.8. Granular material application rate
 - 4.4.3.9. Granular pre-wet status – ON/OFF
 - 4.4.3.10. Granular pre-wet application rate
 - 4.4.3.11. Direct liquid status – ON/OFF
 - 4.4.3.12. Direct liquid material selected
 - 4.4.3.13. Direct liquid application rate
 - 4.4.3.14. Truck ID/Operator ID
- 4.4.4. The RWIS website shall be capable of displaying National Weather Service (NWS) forecast products to include NWS Chat, NWS radar overlay, NWS regional forecast discussions and regional text forecasts.
- 4.4.5. The system shall be capable of developing and displaying Winter Maintenance Performance Measures for the purpose of tracking progress to maintaining safe roads, track progress to maintain mobility, promoting economic opportunity by minimizing weather impacts on commerce, achieving greater uniformity in winter operations statewide, and to promote a cost-effective winter road maintenance program within available resources.

- 4.4.6. The system shall be capable of calculating a Storm Severity Index in a numerical value from 0 to 100, whereas larger values indicate more severe storms. The Storm Severity Index shall use data from Department RWIS sites. Data used for calculating the Storm Severity Index shall include wind speed, road surface temperature, and water/ice/snow thickness. The Storm Severity Index shall be calculated using empirical data as follows: $\text{severity} = \text{Wind} + \text{Snow} + (300/\text{Temperature})$.
- 4.4.7. The system shall be capable of calculating a Storm Performance Index in numerical value from 0 to 1.0, whereas a lower number indicates better performance. The Storm Performance Index shall use data from Department RWIS sites. Data used to calculate the storm performance index shall include level of grip, wind speed, pavement surface temperature, and water/ice/snow thickness.
- 4.4.8. The system shall be capable of calculating a Winter Mobility Index using level of grip and displayed in numerical value from 0-1.0, whereas a higher number indicates greater mobility, which is based on level of grip, and is derived using the percentage of time the road surface condition did not significantly impede mobility during a storm event.
- 4.4.9. Hosted Software Solutions - Sensor Monitoring per site - Managed data quality service, including automated fault identification based on present limits, human diagnosis, and remote resolution where feasible. Should a remote fix not be possible, pre-agreed paths of escalation to customer service to resolve the fault. Outputs include: Proactive Response; Automated Reports; Field Service Callouts; Customers informed of faults and actions to resolve the fault
- 4.4.10. Any mobile RWIS that are purchased by the Department will need to be integrated into the RWIS software.

5. Contractor's Responsibilities

- 5.1. To ensure proper service, support and logistics, U.S.-based RWIS service and support personnel are required.
- 5.2. The Contractor shall offer the NTCIP 1204 Environmental Sensing Station (i.e., RWIS) standard.
- 5.3. The Contractor shall certify that it has sufficient financial resources to continue to operate for the warranty period. The certification shall include:
 - 5.3.1. The firm has audited or reviewed financial statements prepared by a Certified Public Accountant showing a positive book value.
 - 5.3.2. The firm has a D&B number.
 - 5.3.3. The firm has a D&B rating of 1A3 or better.
 - 5.3.4. The firm has not filed a petition of any kind in the US bankruptcy court.
- 5.4. The Contractor shall carry on their operations in such a manner that damage is not inflicted to existing grounds, utilities, highway milepost markers, signs, delineators, or other structures. The Contractor shall repair or replace any highway property damaged by work operations at their own expense and as directed by the Department. If the damage has to be repaired or replaced by the Department, the cost of such work shall be deducted from the Contractor's final payment.

- 5.5. Damage to stop signs, yield signs, railroad crossing or other Manual on Uniform Traffic Control Devices (MUTCD) type signs shall be reported to the Department and the District Regional Signing and Striping Supervisor immediately. Immediate is considered to be within one (1) hour of occurrence. Damage to delineators shall be repaired within forty eight (48) hours of occurrence. No payment will be made to the Contractor until all damage has been repaired or replaced.
- 5.6. The Contractor shall be responsible for verifying quantities prior to the start of any project. All changes must be approved by the Department prior to the start of work. Any changes to the quantities and/or scope encountered once the project begins shall be immediately brought to the attention of the Department. The changes must be reviewed and approved before any additional and/or new work commences. Any extra or new work, not previously approved, that is done beyond the approved Contract Purchase Order will not be eligible for payment.
- 5.7. The Contractor shall suspend operations if weather or road and traffic conditions are such that work operations cannot be carried out in a safe and effective manner, or will pose an environmental hazard. If such suspension occurs, the Contractor shall immediately notify the Department.
- 5.8. Employees are required to comply with A.R.S. § 28-731, which prohibits driving over, across, or within a highway median.
- 5.9. Employees are prohibited from having firearms or weapons in their possession while on duty.
- 5.10. Parking of employee personal vehicles within the Right-of-Way shall not be permitted.
- 5.11. The Contractor shall possess a means of communicating with the Department and with the Contractor's employee(s) in advance of and while performing any work under this contract. The Contractor or contractor employee(s) on duty shall be equipped with a mobile (cellular) telephone with hands free capabilities that will allow communication while on the job site to facilitate coordination with the Department.
- 5.12. The Contractor shall provide key personnel that are responsible to provide customer service to handle questions and resolve any problems that may arise. Key personnel should be available to the Department during normal business hours, Monday – Friday, 6:00 am -4:00 pm. And after hours, weekends and holidays for technical support. Contractor shall provide after hour emergency contact information.
- 5.13. The Contractor shall replace all defective equipment within seven (7) days. Contractor shall notify the Department if replacement equipment will exceed the seven (7) days.
- 5.14. The Contractor (or subcontractors) at times, may be required to install and provide electrical work.
- 5.15. The Contractor shall comply with the Social Security Act, Workers' Compensation laws, and Unemployment laws of the State of Arizona as well as all OSHA, State, Local, and Federal legislation, rules and regulations associated with maintenance and construction relevant to the Contractor's business.

SCOPE OF WORK

- 5.16. The Contractor shall provide mentally alert, physically fit, adequately trained, and qualified employees to ensure contracted services progress in a safe, orderly and timely manner.
- 5.17. The Contractor shall provide an adequate number of qualified, experienced employees, sufficient materials, equipment and resources to complete necessary project(s).
- 5.18. All Contractor employees and subcontractors shall wear identification badges on uniforms at all times. All Contractor employees shall be neat, clean and appropriately dressed in a uniform with an identification badge or patch which contains the Contractor's name and employees name, at all times, while on duty. The identification badge shall be worn on the outer garment.
- 5.19. All persons engaged in performance of work under this contract shall be, unless otherwise approved by the Department, direct bona fide employees of the Contractor or authorized subcontractors. Direct bona fide employee is defined as an actual employee of the Contractor that is not a leased or subcontracted employee.
- 5.20. No visitors, spouses, or children of the Contractor's employees will be allowed in the work locations during working hours unless they are bona fide employees of the Contractor.
- 5.21. All Contractors' employees shall take all necessary operational and safety precautions during the performance of services to prevent accidents from occurring. Contractor shall ensure all of its employees are properly licensed to operate Contractor's equipment and are properly trained in their use.
- 5.22. The Contractor and Contractor's employees are strictly prohibited from the operation of, or advertising of any commercial enterprise or activity on any premises that are subject of this contract; except as may be provided under other contracts to which the Department is a signatory. Refer to A.R.S. § 28-7053.
- 5.23. Work shall be completed in a responsible and professional manner and in accordance with the specifications, schedules, test plans or performance and operating standards, which are incorporated in the work assignment.
- 5.24. All Contractors' employees shall be literate and fluent in the English language. This is not meant to require that all Contractor personnel speak, read and write English. This requirement is necessary due to the following reasons that include, but are not limited to:
 - 5.24.1. • Warnings of emergencies and hazards
 - 5.24.2. • Response to law enforcement authorities, ambulance and other emergencies
 - 5.24.3. • Preparation of reports
 - 5.24.4. • Communication with Department personnel
- 5.25. Due to the significance of the above listed reasons, the English requirement is being made with the intent that communications between the Contractor and the Department will be understood.

6. Department's Responsibilities

- 6.1. The Department is responsible for all damages caused by anything other than the Contractor (i.e. vandalism, third parties, etc.). If the damage is so severe that extended closure is necessary, the Contractor's duties and compensation may be suspended for the closure period.

SCOPE OF WORK

-
- 6.2. The Department may suspend operations at any time, when in their judgement, present or impending weather conditions are such that operations cannot be carried out in a safe, effective manner.
 - 6.3. The Department shall immediately suspend operations when work performance is observed in violation of safety rules, regulations, or practices. Violation of safety rules, regulations, or practices may be considered grounds for termination of the contract.
 - 6.4. The Department shall perform periodic inspections to ascertain the Contractor's compliance with the contract requirements. The Department reserves the right to inspect equipment at any time and require the replacement of any equipment that does not meet the minimum serviceability and safety standards.
 - 6.5. The Department will provide final acceptance and approval of any services delivered.

1. CONTRACT TERM

The term of any resultant contract shall commence on the effective day of award and shall continue for a period of twelve months (12) thereafter, unless terminated, cancelled or extended as otherwise provided herein.

2. CONTRACT EXTENSION

By mutual written contract amendment, any resultant contract may be extended for supplemental periods of up to a maximum of forty-eight (48) months.

3. ELIGIBLE AGENCIES

This contract shall be for the exclusive use of the Arizona Department of Transportation.

4. NON-EXCLUSIVE CONTRACT

This contract shall be for the sole convenience of the Department. The Department reserves the right to obtain like goods or services from another source when necessary. The Off-Contract Purchase Authorization and subsequent procurement shall be consistent with the Arizona Procurement Code.

5. ORDERING PROCESS

The Department shall issue a purchase order to the Contractor. Each purchase order must cite the contract number. This purchase order shall be the only document required for the Department to order and the Contractor to deliver the material and/or service.

Any attempts to represent any material and/or service not specifically awarded as being under contract is a breach of the contract and a violation of the Arizona Procurement Code. Any such action is subject to the legal and contractual remedies available to the State inclusive of but not limited to contract cancellation, suspension and/or debarment of the Contractor.

6. SHIPPING TERMS

Delivery shall be F.O.B. Destination to the location designated herein. Contractor shall retain title and control of all goods until they are delivered. All risk of transportation and related charges shall be the responsibility of the Contractor. All claims for visible or concealed damage shall be filed by the Contractor. The Department will notify the Contractor promptly of any damaged goods and shall assist the Contractor in arranging for inspection.

7. DELIVERY

Deliveries shall be completed in accordance with the requirements of the contract.

Delivery of the product does not constitute acceptance.

8. INSPECTION AND ACCEPTANCE

Each item delivered shall be subject to a complete inspection by the Department. Inspection criteria shall include, but not be limited to, conformity to the specifications, workmanship, quality and materials.

If the delivered product is not accepted and returned for corrective action, an additional fifteen (15) calendar days shall be allowed for inspection of the corrected or replacement product.

The Contractor shall be responsible for the transport of the material to and from the Department for the correction of items or workmanship not in compliance with the specifications.

Product returned for corrective action may delay payment. Invoices will be processed for payment only after the product is accepted.

9. INVOICING and PAYMENT

Separate invoices are required for each shipment of product or delivery of service and shall include at a minimum:

- Department Location's Name and Address
- Vendor Name, Remit to Address and Contact Information
- Contract Number
- Purchase Order Number
- Invoice Number and Date
- Date the items were shipped to the Department
- Contract Line Item Number
- Line Item Description or Item or Service
- Quantity Purchased
- Line Item Unit of Measure
- Price per Unit and Total per Unit
- Catalog or Other Discount (if applicable)
- Net Unit Price and Total per Unit (if applicable)
- Applicable taxes
- Applicable Shipping/Freight Charges
- Total Invoice Amount Due

Invoices not sent to the proper address, or not containing the necessary and required information may delay payment. A Contractor whose payments are delayed due to improper invoicing shall make no claim against the Department or the State for late or finance charges.

The Department will make every effort to process payment for the purchase of product within thirty (30) calendar days after the Department has conducted the necessary reviews, inspections and acceptance as described herein.

The department acceptance date will be the valid date for starting the thirty (30) calendar day payment period.

Payment due dates, including discount periods, will be computed from the date of acceptance or date of correct invoice (whichever is later) to the date the Department's warrant is mailed.

10. ESTIMATED USAGE

The Department anticipates considerable usage under this contract. The Department reserves the right to increase or decrease actual quantities ordered as circumstances may require. No guarantees are made concerning actual purchases under this contract.

11. PRICE REDUCTION

A price reduction adjustment may be offered at any time during the term of a contract and shall become effective upon notice through a written contract amendment.

12. PRICE INCREASE

The Department will review fully documented requests for price increases for any contract which will or has been in effect for twelve (12) months. The request shall be submitted no less than 60 days prior to the contract renewal date. The Contractor shall provide fully documented information which supports the price increase request. Fully documented means that the request shall present detailed information and calculations that make it clear how the claimed increase has an impact on the contract unit prices. All assumptions regarding cost factors that have an impact on the requested increase shall also be clearly identified and justified. The requested price increase must be based upon a cost increase that was clearly unpredictable at the time of the offer and can be shown to directly affect the price of the item concerned. Any price increase adjustment request prior to the time of contract extension will be a factor in the extension review process. The Department will determine whether the requested price increase or an alternate option, is in the best interest of the State.

13. SAFETY STANDARDS

Items supplied under this contract shall comply with all current applicable safety standards and regulations including the Occupational Safety and Health Standards of the State of Arizona Industrial Commission, the National Electric Code and the National Fire Protection Association Standards.

14. WARRANTY

The Contractor warrants:

1. That all services performed hereunder shall conform to the requirements of this contract and shall be performed by qualified personnel in accordance with the highest professional standards.
2. That all items furnished hereunder shall conform to the requirements of this contract and shall be free from defects in design materials and workmanship. Any defects of design, workmanship or materials shall be fully corrected by the Contractor (including parts and labor) without cost to the Department.
3. The warranty period on workmanship and materials shall be based on a minimum of twelve (12) months from the time of acceptance by the Department.

15. CURRENT PRODUCTS

All products supplied under this contract shall be in current and ongoing production; shall have been formally announced for general marketing purposes; shall be a model or type currently functioning in a user (paying customer) environment and capable of meeting or exceeding all specifications and requirements set forth in the contract.

16. PRODUCT DISCONTINUANCE

In the event that a product or model is discontinued by the manufacturer, the Department at its sole discretion may allow the Contractor to provide a substitute for the discontinued item. The Contractor shall request authorization to substitute a new product or model and provide the following:

SPECIAL TERMS AND CONDITIONS

1. A formal announcement from the manufacturer that the product or model has been discontinued.
2. Documentation from the manufacturer that names the replacement product or model.
3. Documentation that provides clear and convincing evidence that the replacement meets or exceeds all specifications required by the original solicitation.
4. Documentation that provides clear and convincing evidence that the replacement will be compatible with all the functions or uses of the discontinued product or model.
5. Documentation confirming that the price for the replacement is the same as or less than the discontinued product or model.

17. CONTRACT ADMINISTRATION

The Contractor shall contact the assigned Procurement Officer for guidance or direction in matters of contract interpretation or questions regarding the terms, conditions or scope of the contract.

18. NOTICES

All notices, requests, demands, consents, approvals, and other communications which may or are required to be served or given hereunder (for the purposes of this provisions collectively called "Notices"), shall be in writing and shall be sent by certified United States mail, return receipt requested, or by any other method that provides evidence of receipt, addressed to the party or parties to receive such notice as follows:

- a. If intended for the State, to:

Arizona Department of Transportation, Procurement Group
1739 W. Jackson Street, MD 100P
Phoenix, Arizona 85007-3276

- b. If intended for the Contractor, to the address as identified in the Contractor's electronic vendor profile.

Or to such other address as either party may from time to time furnish in writing to the other by notice hereunder. Any notice so mailed shall be deemed to have been given as of the date such notice is received as shown on the return receipt. Furthermore, such notice may be given by delivering personally such notice, if intended for the State, to the Arizona Department of Transportation, Procurement Officer and, if intended for the Contractor, to the person named on the Offer & Contract Award of this contract, or to such other person as either party may from time to time furnish in writing to the other by notice hereunder. Any notice so delivered shall be deemed to have been given as of the date such notice is personally delivered to the other party.

19. CANCELLATION FOR POSSESSION OF WEAPONS ON ADOT PROPERTY

This contract may be cancelled if Contractor or any subcontractors or others in the employ or under the supervision of the Contractor or subcontractors is found to be in possession of weapons.

Possession of weapons (firearms, explosive device, knife or blade of more than three inches, or any other instrument designed for lethal or disabling use) is prohibited on ADOT property.

Further, if the Contractor or any subcontractors or others in the employ or under the supervision of the Contractors or subcontractors are asked by an ADOT official to leave the ADOT property, they are advised that failure to comply with such a request shall result in cancellation of the contract and anyone who refuses, whether armed or not, is subject to prosecution under A.R.S. § 13-1502, "Criminal trespass in the third degree; classification."

20. INDEMNIFICATION CLAUSE

To the fullest extent permitted by law, Contractor shall defend, indemnify, and hold harmless the State of Arizona, and its departments, agencies, boards, commissions, universities, and any jurisdiction or agency issuing permits for any work included in the project, and their respective directors, officers, officials, agents and employees (hereinafter referred to as "Indemnitee") from and against any and all claims, actions, liabilities, costs, losses, or expenses, (including reasonable attorney's fees), (hereinafter collectively referred to as "Claims") arising out of actual or alleged bodily injury or personal injury of any person (including death) or loss or damage to tangible or intangible property caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Contractor or any of Contractor's directors, officers, agents, employees, volunteers or subcontractors. This indemnity includes any claim or amount arising or recovered under the Workers' Compensation Law or arising out of the failure of Contractor to conform to any federal, state or local law, statute, ordinance, rule, regulation or court decree. It is the specific intention of the parties that the Indemnitee shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the Indemnitee, be indemnified by Contractor from and against any and all Claims. It is agreed that Contractor will be responsible for primary loss investigation, defense and judgment costs where this indemnification is applicable. This indemnification will survive the termination of the above listed contract with the Contractor.

This indemnity shall not apply if the contractor or sub-contractor(s) is/are an agency, board, commission or university of the State of Arizona.

21. INSURANCE

The Contractor shall furnish Certificate(s) of Insurance inclusive of the following requirements to the Department. Certificate(s) shall be received within **ten (10)** calendar days of notification of contract award by the Procurement Officer.

Contractor and subcontractors shall procure and maintain, until all of their obligations have been discharged, including any warranty periods under this Contract, insurance against claims for injury to persons or damage to property arising from, or in connection with, the performance of the work hereunder by the Contractor, its agents, representatives, employees or subcontractors.

The Insurance Requirements herein are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract. The State of Arizona in no way warrants that the minimum limits contained herein are sufficient to protect the Contractor from liabilities that arise out of the performance of the work under this Contract by the Contractor, its agents, representatives, employees or subcontractors, and the Contractor is free to purchase additional insurance.

A. Minimum Scope and Limits of Insurance

Contractor shall provide coverage with limits of liability not less than those stated below.

1. Commercial General Liability (CGL) – Occurrence Form
Policy shall include bodily injury, property damage, and broad form contractual liability coverage.

SPECIAL TERMS AND CONDITIONS

-
- General Aggregate \$2,000,000
 - Products – Completed Operations Aggregate \$1,000,000
 - Personal and Advertising Injury \$1,000,000
 - Damage to Rented Premises \$50,000
 - Each Occurrence \$1,000,000
- a. The policy shall be endorsed, as required by this written agreement, to include the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees as additional insureds with respect to liability arising out of the activities performed by or on behalf of the Contractor.
 - b. Policy shall contain a waiver of subrogation endorsement, as required by this written agreement, in favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Contractor.
2. Business Automobile Liability
- Bodily Injury and Property Damage for any owned, hired, and/or non-owned automobiles used in the performance of this Contract.
- Combined Single Limit (CSL) \$1,000,000
- a. Policy shall be endorsed, as required by this written agreement, to include the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees as additional insureds with respect to liability arising out of the activities performed by, or on behalf of, the Contractor involving automobiles owned, hired and/or non-owned by the Contractor.
 - b. Policy shall contain a waiver of subrogation endorsement as required by this written agreement in favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Contractor.
3. Workers' Compensation and Employers' Liability
- Workers' Compensation Statutory
 - Employers' Liability
 - Each Accident \$1,000,000
 - Disease – Each Employee \$1,000,000
 - Disease – Policy Limit \$1,000,000
- a. Policy shall contain a waiver of subrogation endorsement, as required by this written agreement, in favor of the State of Arizona, and its departments, agencies, boards, commissions, universities, officers, officials, agents, and employees for losses arising from work performed by or on behalf of the Contractor.
 - b. This requirement shall not apply to each Contractor or subcontractor that is exempt under A.R.S. § 23-901, and when such Contractor or subcontractor executes the appropriate waiver form (Sole Proprietor or Independent Contractor).
4. Technology Errors & Omissions Insurance
- Each Claim \$2,000,000
 - Annual Aggregate \$2,000,000
- a. Such insurance shall cover any, and all errors, omissions, or negligent acts in the delivery of products, services, and/or licensed programs under this contract.

SPECIAL TERMS AND CONDITIONS

- b. Coverage shall include copyright infringement, infringement of trade dress, domain name, title or slogan.
- c. In the event that the Tech E&O insurance required by this Contract is written on a claims-made basis, Contractor warrants that any retroactive date under the policy shall precede the effective date of this Contract and, either continuous coverage will be maintained or an extended discovery period will be exercised for a period of two (2) years, beginning at the time work under this Contract is completed.

B. Additional Insurance Requirements

The policies shall include, or be endorsed to include, as required by this written agreement, the following provisions:

- 1. The Contractor's policies, as applicable, shall stipulate that the insurance afforded the Contractor shall be primary and that any insurance carried by the Department, its agents, officials, employees or the State of Arizona shall be excess and not contributory insurance, as provided by A.R.S. § 41-621 (E).
- 2. Insurance provided by the Contractor shall not limit the Contractor's liability assumed under the indemnification provisions of this Contract.

C. Notice of Cancellation

Applicable to all insurance policies required within the Insurance Requirements of this Contract, Contractor's insurance shall not be permitted to expire, be suspended, be canceled, or be materially changed for any reason without thirty (30) days prior written notice to the State of Arizona. Within two (2) business days of receipt, Contractor must provide notice to the State of Arizona if they receive notice of a policy that has been or will be suspended, canceled, materially changed for any reason, has expired, or will be expiring. Such notice shall be sent directly to the Department and shall be mailed, emailed, hand delivered or sent by facsimile transmission to the Procurement Officer.

D. Acceptability of Insurers

Contractor's insurance shall be placed with companies licensed in the State of Arizona or hold approved non-admitted status on the Arizona Department of Insurance List of Qualified Unauthorized Insurers. Insurers shall have an "A.M. Best" rating of not less than A- VII. The State of Arizona in no way warrants that the above-required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

E. Verification of Coverage

Contractor shall furnish the State of Arizona with certificates of insurance (valid ACORD form or equivalent approved by the State of Arizona) evidencing that Contractor has the insurance as required by this Contract. An authorized representative of the insurer shall sign the certificates.

- 1. All such certificates of insurance and policy endorsements must be received by the State before work commences. The State's receipt of any certificates of insurance or policy endorsements that do not comply with this written agreement shall not waive or otherwise affect the requirements of this agreement.
- 2. Each insurance policy required by this Contract must be in effect at, or prior to, commencement of work under this Contract. Failure to maintain the insurance policies as required by this Contract, or to provide evidence of renewal, is a material breach of contract.
- 3. All certificates required by this Contract shall be sent directly to the Department. The State of Arizona project/contract number and project description shall be noted on the certificate of insurance. The State of Arizona reserves the right to require complete copies of all insurance policies required by this Contract at any time.

F. Subcontractors

Contractor's certificate(s) shall include all subcontractors as insureds under its policies or Contractor shall be responsible for ensuring and/or verifying that all subcontractors have valid and collectable insurance as evidenced by the certificates of insurance and endorsements for each subcontractor. All coverages for subcontractors shall be subject to the minimum Insurance Requirements identified above. The Department reserves the right to require, at any time throughout the life of this contract, proof from the Contractor that its subcontractors have the required coverage.

G. Approval and Modifications

The Contracting Agency, in consultation with State Risk, reserves the right to review or make modifications to the insurance limits, required coverages, or endorsements throughout the life of this contract, as deemed necessary. Such action will not require a formal Contract amendment but may be made by administrative action.

H. Exceptions

In the event the Contractor or subcontractor(s) is/are a public entity, then the Insurance Requirements shall not apply. Such public entity shall provide a certificate of self-insurance. If the Contractor or subcontractor(s) is/are a State of Arizona agency, board, commission, or university, none of the above shall apply.

22. USAGE REPORT

The Contractor shall furnish the Department a quarterly report showing purchasing activity under this contract. This usage report shall be provided in a form substantially equivalent to **Exhibit 4**. Usage reports shall be submitted to the Procurement Officer no later than 30 days after the end of each quarter.

Usage report quarters shall be defined as follows:

- January through March – Report due April 30
- April through June – Report due July 30
- July through September – Report due October 30
- October through December – Report due January 30

23. KEY PERSONNEL

It is essential that the Contractor provides adequate experienced personnel, capable of and devoted to the successful accomplishment of work to be performed under this contract. The Contractor must agree to assign specific individuals to the key positions.

The Contractor agrees that, once assigned to work under this contract, key personnel shall not be removed or replaced without written notice to the Procurement Officer. The Contractor shall immediately notify the Procurement Officer of key personnel changes. Replacement personnel shall be of substantially equal ability and qualifications. All key personnel changes are subject to the written concurrence of the Procurement Officer prior to any billable work being performed.

24. REVIEW OF CONTRACTOR'S WORK

Work performed by the Contractor shall be subject to periodic reviews and partial acceptance at various stages. The Department reserves the right to make such reviews and pass upon the acceptability of the Contractor's work. No partial acceptance shall relieve the Contractor's obligation to correct, without charge, any errors in the work on this contract.

25. ACCURACY OF WORK

The Contractor shall be responsible for the accuracy of the work and shall promptly make all the necessary revisions or corrections resulting from errors and omissions on the part of the Contractor without additional compensation. Acceptance of the work by the Department will not relieve the Contractor of the responsibility for subsequent correction of any such errors and clarification of ambiguities.

26. WORK ACCEPTANCE

The Department will decide all questions that may arise as to the quality and acceptability of any work performed under the contract. Work shall be completed in a responsible and professional manner and in accordance with the specifications, schedules, test plans or performance and operating standards that are incorporated in the work assignment. The Department will address all questions which may arise pertaining to quality and acceptability and shall provide the final determination.

27. WARRANTY

The successful bidder will be the sole point of contact on any problems with the equipment or systems provided during the warranty period. The contractor shall be responsible for all work put in under these specifications. The contractor shall make good, repair and replace, at the contractor's own expense, as may be necessary, any defective work if, in the opinion of the Department, said defect is due to imperfection in material, design, or workmanship for the warranty period specified.

28. SOFTWARE ERRORS

A software error is defined as any failure of the contractor's software to perform according to prescribed business requirements and/or design specifications. Following the Department's written acceptance of the contractor's solution or subsequent enhancements, the contractor shall correct any software error at no charge to the Department.

29. SOFTWARE ENHANCEMENTS

As the Department's business and technology needs evolve or are modified by legislative mandate, the Contractor will provide required software enhancements as requested by the Department.

All such enhancements will be authorized via committed fixed price contract release orders. Seventy-five percent of the committed fixed price amount will be paid the Contractor upon delivery and after successful acceptance testing by the Department. The remaining twenty-five percent will be paid after one month of the enhancement's successful operation.

The Contractor should also specify where the enhancement work will be performed and who will be performing the work.

The Department will require a positive acknowledgment for all enhancement requests within one business day of receipt by the Contractor. Within ten business days of enhancement request receipt, the Contractor must provide a committed fixed price offer for performing the requested enhancement, including a detailed work completion schedule, and cost and pricing information for all labor and/or materials involved.

If the service-levels for enhancement request acknowledgment and offer receipt are not met, liquidated damages of five percent of the normal monthly or work unit charges shall be assessed.

The Department reserves the right to have others perform the aforementioned work, at the Contractor's expense, should any aspect of the Contractor's offer be deemed unacceptable.

30. PRODUCT UPGRADABILITY

In the event that a product or model is upgraded or a newer model with features that exceed the original specifications by the manufacturer, the Department at its sole discretion may allow the Contractor to provide a substitute for the upgraded item. The Contractor shall request permission to substitute a new product or model and provide the following:

Documentation that provides clear and convincing evidence that the replacement meets or exceeds all specifications required by the original solicitation.

Documentation that provides clear and convincing evidence that the replacement will be compatible with all the functions or uses of the previously submitted products or models.

31. OWNERSHIP OF DATA

All RWIS data, Metadata, images, other data and compilations or aggregations thereof shall be owned by the Department.

The Contractor shall not have any rights to data of any type collected from any sensor stations (whether owned by the Contractor or not) or other sources during the term of this contract or thereafter. All works including but not limited to sensor data, compilations of sensor data and contributions to collective works shall be deemed works made for hire. The Arizona Department of Transportation shall own all of the rights comprised by the copyright of the works prepared by the Contractor during the course of performance of this contract or any mutually agreed extension to the contract.

32. OWNERSHIP

All deliverables and/or other products of the contract (including but not limited to all software documentation, reports, records, summaries and other matter and materials prepared or developed by the contractor in performance of the contract) shall be the sole, absolute and exclusive property of the State of Arizona, free from any claim or retention of right on the part of the contractor, its agents, sub-contractors, officers or employees.

33. EPA ENERGY STAR PRODUCTS

HB 2324, Chapter 114, A.R.S. 34-451 requires that the State of Arizona purchase Energy Star products or products certified by the Federal Energy Management Program as energy efficient for all product classifications available. If an Energy Star product or certified product is available, documentation of the Energy Star status or certification must be submitted with the offer. Failure to submit the required documentation may deem the offer as non-responsive.

Additional information pertaining to the ENERGY STAR program can be found at:
http://energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing

34. CONFIDENTIALITY OF RECORDS

The contractor shall establish and maintain procedures and controls acceptable to the Department for the purpose of assuring that information or data in its possession is not mishandled, misused, released, disclosed, or used in an inappropriate manner by it, its agents, officers, or employees. This includes information contained in its records obtained from the Department or others, necessary for contract performance. The contractor shall take all reasonable steps and precautions to safeguard this information

and data and shall not divulge the information or data to parties other than those needed for the performance of duties under the contract.

35. ACCESS CONSTRAINTS AND AUTHORIZATION REQUIREMENTS

Contractor access to the Department's information technology environment and resources shall be properly authorized, based on business need and will be restricted to least possible privilege. Upon approval of access privileges, the Contractor shall maintain strict adherence to all prescribed security policies, standards and procedures.

Failure of the Contractor, its agents or subcontractors to comply with prescribed security policies, standards and procedures including any person who commits an unlawful breach of computer security or harmful access will be subject to prosecution under appropriate state and/or federal law.

Any and all recovery or reconstruction costs or other liabilities associated with an unlawful breach of computer security or harmful access shall be paid by the Contractor.

36. REMOVAL OF CONTRACTOR'S EMPLOYEES

The Contractor agrees to utilize only experienced, responsible and capable personnel in the performance of the work. The Department may require that the Contractor remove from the job covered by this contract, employees who endanger persons or property or whose continued employment under the contract is inconsistent with the interest of the Department.

37. TRAVEL

Travel expenses authorized in advance and incurred at off-site assignments will be reimbursed at cost, in accordance with the State of Arizona Travel Policy and the ADOT Travel Authorization Policy and Procedure hereby incorporated herein. State travel policy includes the travel reimbursement schedules. Actual receipt for travel must be submitted for reimbursement of allowable direct costs (lodging, automobile, meals, etc.). The travel policies may be accessed via the internet at the State of Arizona, General Accounting Office's website (<http://www.gao.state.az.us/travel.html>) and State of Arizona, Department of Transportation's website ([http://www.azdot.gov/Inside ADOT/Procurement/TravelPP.asp](http://www.azdot.gov/Inside_ADOT/Procurement/TravelPP.asp)).

38. POST AWARD MEETING

At the discretion of the Department, the Contractor, at their expense, shall attend and participate in post award meetings as scheduled by the Procurement Officer.

EXHIBIT 1

Title VI/Non-Discrimination Assurances

Appendix A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the *Federal Highway Administration*, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performance by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the *Federal Highway Administration* to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the *Federal Highway Administration*, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the *Federal Highway Administration* ,may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with request to any subcontract or procurement as the Recipient or the *Federal Highway Administration* may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that **if** the contractor becomes involved in, or is threatened with litigation by a subcontractor or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

EXHIBIT 2

TITLE VI/NON-DISCRIMINATION ASSURANCES

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et. seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et. seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et. seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et. seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low- Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1687 *et. seq.*).

EXHIBIT 3 Map of Existing and Proposed RWIS Locations

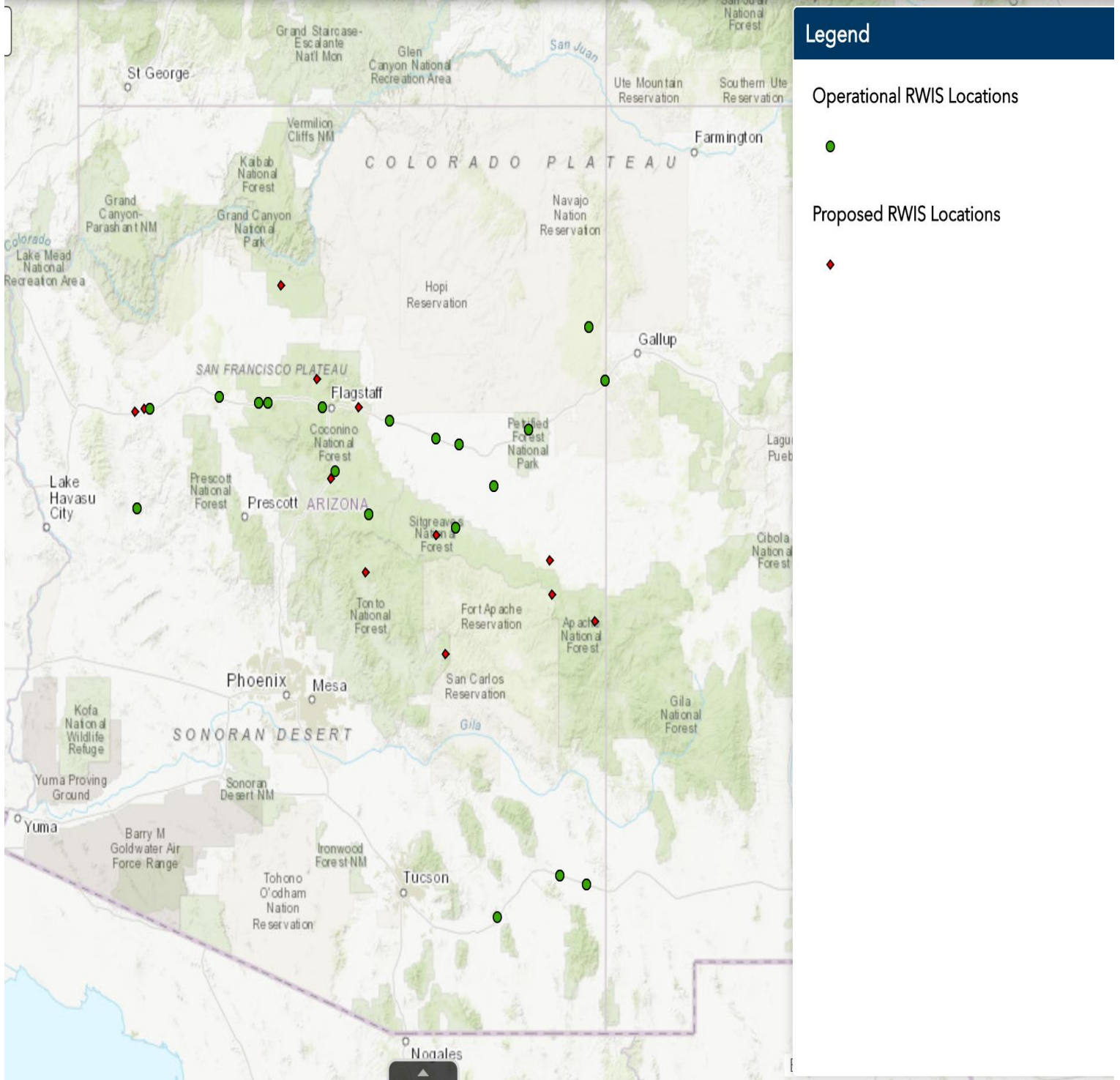


EXHIBIT NO. 4

Quarterly Usage Report

This exhibit outlines the content required for the quarterly usage report. Usage reports will be submitted to the appropriate Procurement Officer in accordance with the requirements specified in Special Terms and Conditions. The Department reserves the right to make additions, deletions and changes as deemed necessary.

Reporting Period:

Contract ID/Code:		Contact Name:		Alternate Contact Name:	
Contract Label/Description:		Contact Phone Number:		Alternate Contact Phone Number:	
Contractor:		Contact Email:		Alternate Contact Email:	
Contractor Address:					

Agency/Org /Unit	Customer Name	Delivery Address	PO Number or Identify as “P-Card”	Order Date	Contract Item Number	Contract Item Description	Part/Product Code	Quantity	Unit of Measure	Contract Unit Price	Contract Extended Price	Invoice Number

UNIFORM TERMS AND CONDITIONS

Version 9

1. Definition of Terms

As used in this Solicitation and any resulting Contract, the terms listed below are defined as follows:

- 1.1. *"Attachment"* means any item the Solicitation requires the Offeror to submit as part of the Offer.
- 1.2. *"Contract"* means the combination of the Solicitation, including the Uniform and Special Instructions to Offerors, the Uniform and Special Terms and Conditions, and the Specifications and Statement or Scope of Work; the Offer and any Best and Final Offers; and any Solicitation Amendments or Contract Amendments.
- 1.3. *"Contract Amendment"* means a written document signed by the Procurement Officer that is issued for the purpose of making changes in the Contract.
- 1.4. *"Contractor"* means any person who has a Contract with the State.
- 1.5. *"Days"* means calendar days unless otherwise specified.
- 1.6. *"Exhibit"* means any item labeled as an Exhibit in the Solicitation or placed in the Exhibits section of the Solicitation.
- 1.7. *"Gratuity"* means a payment, loan, subscription, advance, deposit of money, services, or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value is received.
- 1.8. *"Materials"* means all property, including equipment, supplies, printing, insurance and leases of property but does not include land, a permanent interest in land or real property or leasing space.
- 1.9. *"Procurement Officer"* means the person, or his or her designee, duly authorized by the State to enter into and administer Contracts and make written determinations with respect to the Contract.
- 1.10. *"Services"* means the furnishing of labor, time or effort by a contractor or subcontractor which does not involve the delivery of a specific end product other than required reports and performance, but does not include employment agreements or collective bargaining agreements.
- 1.11. *"Subcontract"* means any Contract, express or implied, between the Contractor and another party or between a subcontractor and another party delegating or assigning, in whole or in part, the making or furnishing of any material or any service required for the performance of the Contract.
- 1.12. *"State"* means the State of Arizona and Department or Agency of the State that executes the Contract.
- 1.13. *"State Fiscal Year"* means the period beginning with July 1 and ending June 30.

2. Contract Interpretation

- 2.1. Arizona Law. The Arizona law applies to this Contract including, where applicable, the Uniform Commercial Code as adopted by the State of Arizona and the Arizona Procurement Code, Arizona Revised Statutes (A.R.S.) Title 41, Chapter 23, and its implementing rules, Arizona Administrative Code (A.A.C.) Title 2, Chapter 7.
- 2.2. Implied Contract Terms. Each provision of law and any terms required by law to be in this Contract are a part of this Contract as if fully stated in it.
- 2.3. Contract Order of Precedence. In the event of a conflict in the provisions of the Contract, as accepted by the State and as they may be amended, the following shall prevail in the order set forth below:
 - 2.3.1. Special Terms and Conditions;
 - 2.3.2. Uniform Terms and Conditions;
 - 2.3.3. Statement or Scope of Work;
 - 2.3.4. Specifications;
 - 2.3.5. Attachments;
 - 2.3.6. Exhibits;
 - 2.3.7. Documents referenced or included in the Solicitation.
- 2.4. Relationship of Parties. The Contractor under this Contract is an independent Contractor. Neither party to this Contract shall be deemed to be the employee or agent of the other party to the Contract.
- 2.5. Severability. The provisions of this Contract are severable. Any term or condition deemed illegal or invalid shall not affect any other term or condition of the Contract.
- 2.6. No Parole Evidence. This Contract is intended by the parties as a final and complete expression of their agreement. No course of prior dealings between the parties and no usage of the trade shall supplement or explain any terms used in this document and no other understanding either oral or in writing shall be binding.
- 2.7. No Waiver. Either party's failure to insist on strict performance of any term or condition of the Contract shall not be deemed a waiver of that term or condition even if the party accepting or acquiescing in the nonconforming performance knows of the nature of the performance and fails to object to it.

3. Contract Administration and Operation

- 3.1. Records. Under A.R.S. § 35-214 and § 35-215, the Contractor shall retain and shall contractually require each subcontractor to retain all data and other "records" relating to the acquisition and performance of the Contract for a period of five years after the completion of the Contract. All records shall be subject to inspection and audit by the State at reasonable times. Upon request, the Contractor shall produce a legible copy of any or all such records.

- 3.2. Non-Discrimination. The Contractor shall comply with State Executive Order No. 2009-09 and all other applicable Federal and State laws, rules and regulations, including the Americans with Disabilities Act.
- 3.3. Audit. Pursuant to ARS § 35-214, at any time during the term of this Contract and five (5) years thereafter, the Contractor's or any subcontractor's books and records shall be subject to audit by the State and, where applicable, the Federal Government, to the extent that the books and records relate to the performance of the Contract or Subcontract.
- 3.4. Facilities Inspection and Materials Testing. The Contractor agrees to permit access to its facilities, subcontractor facilities and the Contractor's processes or services, at reasonable times for inspection of the facilities or materials covered under this Contract. The State shall also have the right to test, at its own cost, the materials to be supplied under this Contract. Neither inspection of the Contractor's facilities nor materials testing shall constitute final acceptance of the materials or services. If the State determines non-compliance of the materials, the Contractor shall be responsible for the payment of all costs incurred by the State for testing and inspection.
- 3.5. Notices. Notices to the Contractor required by this Contract shall be made by the State to the person indicated on the Offer and Acceptance form submitted by the Contractor unless otherwise stated in the Contract. Notices to the State required by the Contract shall be made by the Contractor to the Solicitation Contact Person indicated on the Solicitation cover sheet, unless otherwise stated in the Contract. An authorized Procurement Officer and an authorized Contractor representative may change their respective person to whom notice shall be given by written notice to the other and an amendment to the Contract shall not be necessary.
- 3.6. Advertising, Publishing and Promotion of Contract. The Contractor shall not use, advertise or promote information for commercial benefit concerning this Contract without the prior written approval of the Procurement Officer.
- 3.7. Property of the State. Any materials, including reports, computer programs and other deliverables, created under this Contract are the sole property of the State. The Contractor is not entitled to a patent or copyright on those materials and may not transfer the patent or copyright to anyone else. The Contractor shall not use or release these materials without the prior written consent of the State.
- 3.8. Ownership of Intellectual Property. Any and all intellectual property, including but not limited to copyright, invention, trademark, trade name, service mark, and/or trade secrets created or conceived pursuant to or as a result of this contract and any related subcontract ("Intellectual Property"), shall be work made for hire and the State shall be considered the creator of such Intellectual Property. The agency, department, division, board or commission of the State of Arizona requesting the issuance of this contract shall own (for and on behalf of the State) the entire right, title and interest to the Intellectual Property throughout the world. Contractor shall notify the State, within thirty (30) days, of the creation of any Intellectual Property by it or its subcontractor(s). Contractor, on behalf of itself and any subcontractor(s), agrees to execute any and all document(s) necessary to assure ownership of the Intellectual Property vests in the State and shall take no affirmative actions that might have the effect of vesting all or part of the Intellectual Property in any entity other than the State. The Intellectual Property shall not be disclosed by contractor or its subcontractor(s) to any entity not the

State without the express written authorization of the agency, department, division, board or commission of the State of Arizona requesting the issuance of this contract.

- 3.9. Federal Immigration and Nationality Act. The contractor shall comply with all federal, state and local immigration laws and regulations relating to the immigration status of their employees during the term of the contract. Further, the contractor shall flow down this requirement to all subcontractors utilized during the term of the contract. The State shall retain the right to perform random audits of contractor and subcontractor records or to inspect papers of any employee thereof to ensure compliance. Should the State determine that the contractor and/or any subcontractors be found noncompliant, the State may pursue all remedies allowed by law, including, but not limited to; suspension of work, termination of the contract for default and suspension and/or debarment of the contractor.
- 3.10 E-Verify Requirements. In accordance with A.R.S. § 41-4401, Contractor warrants compliance with all Federal immigration laws and regulations relating to employees and warrants its compliance with Section A.R.S. § 23-214, Subsection A.
- 3.11 Offshore Performance of Work Prohibited.
Any services that are described in the specifications or scope of work that directly serve the State of Arizona or its clients and involve access to secure or sensitive data or personal client data shall be performed within the defined territories of the United States. Unless specifically stated otherwise in the specifications, this paragraph does not apply to indirect or 'overhead' services, redundant back-up services or services that are incidental to the performance of the contract. This provision applies to work performed by subcontractors at all tiers.

4. Costs and Payments

- 4.1. Payments. Payments shall comply with the requirements of A.R.S. Titles 35 and 41, Net 30 days. Upon receipt and acceptance of goods or services, the Contractor shall submit a complete and accurate invoice for payment from the State within thirty (30) days.
- 4.2. Delivery. Unless stated otherwise in the Contract, all prices shall be F.O.B. Destination and shall include all freight delivery and unloading at the destination.
- 4.3. Applicable Taxes.
 - 4.3.1. Payment of Taxes. The Contractor shall be responsible for paying all applicable taxes.
 - 4.3.2. State and Local Transaction Privilege Taxes. The State of Arizona is subject to all applicable state and local transaction privilege taxes. Transaction privilege taxes apply to the sale and are the responsibility of the seller to remit. Failure to collect such taxes from the buyer does not relieve the seller from its obligation to remit taxes.
 - 4.3.3. Tax Indemnification. Contractor and all subcontractors shall pay all Federal, state and local taxes applicable to its operation and any persons employed by the Contractor. Contractor shall, and require all subcontractors to hold the State harmless from any responsibility for taxes, damages and interest, if applicable, contributions required under Federal, and/or state and local laws and

regulations and any other costs including transaction privilege taxes, unemployment compensation insurance, Social Security and Worker's Compensation.

4.3.4. IRS W9 Form. In order to receive payment the Contractor shall have a current I.R.S. W9 Form on file with the State of Arizona, unless not required by law.

4.4. Availability of Funds for the Next State fiscal year. Funds may not presently be available for performance under this Contract beyond the current state fiscal year. No legal liability on the part of the State for any payment may arise under this Contract beyond the current state fiscal year until funds are made available for performance of this Contract.

4.5. Availability of Funds for the current State fiscal year. Should the State Legislature enter back into session and reduce the appropriations or for any reason and these goods or services are not funded, the State may take any of the following actions:

4.5.1. Accept a decrease in price offered by the contractor;

4.5.2. Cancel the Contract; or

4.5.3. Cancel the contract and re-solicit the requirements.

5. Contract Changes

5.1. Amendments. This Contract is issued under the authority of the Procurement Officer who signed this Contract. The Contract may be modified only through a Contract Amendment within the scope of the Contract. Changes to the Contract, including the addition of work or materials, the revision of payment terms, or the substitution of work or materials, directed by a person who is not specifically authorized by the procurement officer in writing or made unilaterally by the Contractor are violations of the Contract and of applicable law. Such changes, including unauthorized written Contract Amendments shall be void and without effect, and the Contractor shall not be entitled to any claim under this Contract based on those changes.

5.2. Subcontracts. The Contractor shall not enter into any Subcontract under this Contract for the performance of this contract without the advance written approval of the Procurement Officer. The Contractor shall clearly list any proposed subcontractors and the subcontractor's proposed responsibilities. The Subcontract shall incorporate by reference the terms and conditions of this Contract.

5.3. Assignment and Delegation. The Contractor shall not assign any right nor delegate any duty under this Contract without the prior written approval of the Procurement Officer. The State shall not unreasonably withhold approval.

6. Risk and Liability

6.1. Risk of Loss: The Contractor shall bear all loss of conforming material covered under this Contract until received by authorized personnel at the location designated in the purchase order or Contract. Mere receipt does not constitute final acceptance. The risk of loss for nonconforming materials shall remain with the Contractor regardless of receipt.

6.2. Indemnification

6.2.1. Contractor/Vendor Indemnification (Not Public Agency) The parties to this contract agree that the State of Arizona, its departments, agencies, boards and commissions shall be indemnified and held harmless by the contractor for the vicarious liability of the State as a result of entering into this contract. However, the parties further agree that the State of Arizona, its departments, agencies, boards and commissions shall be responsible for its own negligence. Each party to this contract is responsible for its own negligence.

6.2.2. Public Agency Language Only Each party (as 'indemnitor') agrees to indemnify, defend, and hold harmless the other party (as 'indemnitee') from and against any and all claims, losses, liability, costs, or expenses (including reasonable attorney's fees) (hereinafter collectively referred to as 'claims') arising out of bodily injury of any person (including death) or property damage but only to the extent that such claims which result in vicarious/derivative liability to the indemnitee, are caused by the act, omission, negligence, misconduct, or other fault of the indemnitor, its officers, officials, agents, employees, or volunteers."

6.3. Indemnification - Patent and Copyright. The Contractor shall indemnify and hold harmless the State against any liability, including costs and expenses, for infringement of any patent, trademark or copyright arising out of Contract performance or use by the State of materials furnished or work performed under this Contract. The State shall reasonably notify the Contractor of any claim for which it may be liable under this paragraph. If the contractor is insured pursuant to A.R.S. § 41-621 and § 35-154, this section shall not apply.

6.4. Force Majeure.

6.4.1 Except for payment of sums due, neither party shall be liable to the other nor deemed in default under this Contract if and to the extent that such party's performance of this Contract is prevented by reason of force majeure. The term "*force majeure*" means an occurrence that is beyond the control of the party affected and occurs without its fault or negligence. Without limiting the foregoing, force majeure includes acts of God; acts of the public enemy; war; riots; strikes; mobilization; labor disputes; civil disorders; fire; flood; lockouts; injunctions-intervention-acts; or failures or refusals to act by government authority; and other similar occurrences beyond the control of the party declaring force majeure which such party is unable to prevent by exercising reasonable diligence.

6.4.2. Force Majeure shall not include the following occurrences:

6.4.2.1. Late delivery of equipment or materials caused by congestion at a manufacturer's plant or elsewhere, or an oversold condition of the market;

6.4.2.2. Late performance by a subcontractor unless the delay arises out of a force majeure occurrence in accordance with this force majeure term and condition; or

6.4.2.3. Inability of either the Contractor or any subcontractor to acquire or

maintain any required insurance, bonds, licenses or permits.

6.4.3. If either party is delayed at any time in the progress of the work by force majeure, the delayed party shall notify the other party in writing of such delay, as soon as is practicable and no later than the following working day, of the commencement thereof and shall specify the causes of such delay in such notice. Such notice shall be delivered or mailed certified-return receipt and shall make a specific reference to this article, thereby invoking its provisions. The delayed party shall cause such delay to cease as soon as practicable and shall notify the other party in writing when it has done so. The time of completion shall be extended by Contract Amendment for a period of time equal to the time that results or effects of such delay prevent the delayed party from performing in accordance with this Contract.

6.4.4. Any delay or failure in performance by either party hereto shall not constitute default hereunder or give rise to any claim for damages or loss of anticipated profits if, and to the extent that such delay or failure is caused by force majeure.

6.5. Third Party Antitrust Violations. The Contractor assigns to the State any claim for overcharges resulting from antitrust violations to the extent that those violations concern materials or services supplied by third parties to the Contractor, toward fulfillment of this Contract.

7. Warranties

7.1. Liens. The Contractor warrants that the materials supplied under this Contract are free of liens and shall remain free of liens.

7.2. Quality. Unless otherwise modified elsewhere in these terms and conditions, the Contractor warrants that, for one year after acceptance by the State of the materials, they shall be:

7.2.1. Of a quality to pass without objection in the trade under the Contract description;

7.2.2. Fit for the intended purposes for which the materials are used;

7.2.3. Within the variations permitted by the Contract and are of even kind, quantity, and quality within each unit and among all units;

7.2.4. Adequately contained, packaged and marked as the Contract may require; and

7.2.5. Conform to the written promises or affirmations of fact made by the Contractor.

7.3. Fitness. The Contractor warrants that any material supplied to the State shall fully conform to all requirements of the Contract and all representations of the Contractor, and shall be fit for all purposes and uses required by the Contract.

7.4. Inspection/Testing. The warranties set forth in subparagraphs 7.1 through 7.3 of this paragraph are not affected by inspection or testing of or payment for the materials by the State.

7.5. Compliance With Applicable Laws. The materials and services supplied under this

Contract shall comply with all applicable Federal, state and local laws, and the Contractor shall maintain all applicable license and permit requirements.

7.6. Survival of Rights and Obligations after Contract Expiration or Termination.

7.6.1. Contractor's Representations and Warranties. All representations and warranties made by the Contractor under this Contract shall survive the expiration or termination hereof. In addition, the parties hereto acknowledge that pursuant to A.R.S. § 12-510, except as provided in A.R.S. § 12-529, the State is not subject to or barred by any limitations of actions prescribed in A.R.S., Title 12, Chapter 5.

7.6.2. Purchase Orders. The Contractor shall, in accordance with all terms and conditions of the Contract, fully perform and shall be obligated to comply with all purchase orders received by the Contractor prior to the expiration or termination hereof, unless otherwise directed in writing by the Procurement Officer, including, without limitation, all purchase orders received prior to but not fully performed and satisfied at the expiration or termination of this Contract.

8. State's Contractual Remedies

8.1. Right to Assurance. If the State in good faith has reason to believe that the Contractor does not intend to, or is unable to perform or continue performing under this Contract, the Procurement Officer may demand in writing that the Contractor give a written assurance of intent to perform. Failure by the Contractor to provide written assurance within the number of Days specified in the demand may, at the State's option, be the basis for terminating the Contract under the Uniform Terms and Conditions or other rights and remedies available by law or provided by the contract.

8.2. Stop Work Order.

8.2.1. The State may, at any time, by written order to the Contractor, require the Contractor to stop all or any part, of the work called for by this Contract for period(s) of days indicated by the State after the order is delivered to the Contractor. The order shall be specifically identified as a stop work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage.

8.2.2. If a stop work order issued under this clause is canceled or the period of the order or any extension expires, the Contractor shall resume work. The Procurement Officer shall make an equitable adjustment in the delivery schedule or Contract price, or both, and the Contract shall be amended in writing accordingly.

8.3. Non-exclusive Remedies. The rights and the remedies of the State under this Contract are not exclusive.

8.4. Nonconforming Tender. Materials or services supplied under this Contract shall fully comply with the Contract. The delivery of materials or services or a portion of the materials or services that do not fully comply constitutes a breach of contract. On

delivery of nonconforming materials or services, the State may terminate the Contract for default under applicable termination clauses in the Contract, exercise any of its rights and remedies under the Uniform Commercial Code, or pursue any other right or remedy available to it.

- 8.5. Right of Offset. The State shall be entitled to offset against any sums due the Contractor, any expenses or costs incurred by the State, or damages assessed by the State concerning the Contractor's non-conforming performance or failure to perform the Contract, including expenses, costs and damages described in the Uniform Terms and Conditions.

9. Contract Termination

- 9.1. Cancellation for Conflict of Interest. Pursuant to A.R.S. § 38-511, the State may cancel this Contract within three (3) years after Contract execution without penalty or further obligation if any person significantly involved in initiating, negotiating, securing, drafting or creating the Contract on behalf of the State is or becomes at any time while the Contract or an extension of the Contract is in effect an employee of or a consultant to any other party to this Contract with respect to the subject matter of the Contract. The cancellation shall be effective when the Contractor receives written notice of the cancellation unless the notice specifies a later time. If the Contractor is a political subdivision of the State, it may also cancel this Contract as provided in A.R.S. § 38-511.
- 9.2. Gratuities. The State may, by written notice, terminate this Contract, in whole or in part, if the State determines that employment or a Gratuity was offered or made by the Contractor or a representative of the Contractor to any officer or employee of the State for the purpose of influencing the outcome of the procurement or securing the Contract, an amendment to the Contract, or favorable treatment concerning the Contract, including the making of any determination or decision about contract performance. The State, in addition to any other rights or remedies, shall be entitled to recover exemplary damages in the amount of three times the value of the Gratuity offered by the Contractor.
- 9.3. Suspension or Debarment. The State may, by written notice to the Contractor, immediately terminate this Contract if the State determines that the Contractor has been debarred, suspended or otherwise lawfully prohibited from participating in any public procurement activity, including but not limited to, being disapproved as a subcontractor of any public procurement unit or other governmental body. Submittal of an offer or execution of a contract shall attest that the contractor is not currently suspended or debarred. If the contractor becomes suspended or debarred, the contractor shall immediately notify the State.
- 9.4. Termination for Convenience. The State reserves the right to terminate the Contract, in whole or in part at any time when in the best interest of the State, without penalty or recourse. Upon receipt of the written notice, the Contractor shall stop all work, as directed in the notice, notify all subcontractors of the effective date of the termination and minimize all further costs to the State. In the event of termination under this paragraph, all documents, data and reports prepared by the Contractor under the Contract shall become the property of and be delivered to the State upon demand. The Contractor shall be entitled to receive just and equitable compensation for work in progress, work completed and materials accepted before the effective date of the termination. The cost principles and procedures provided in A.A.C. R2-7-701 shall apply.

9.5. Termination for Default.

9.5.1. In addition to the rights reserved in the contract, the State may terminate the Contract in whole or in part due to the failure of the Contractor to comply with any term or condition of the Contract, to acquire and maintain all required insurance policies, bonds, licenses and permits, or to make satisfactory progress in performing the Contract. The Procurement Officer shall provide written notice of the termination and the reasons for it to the Contractor.

9.5.2. Upon termination under this paragraph, all goods, materials, documents, data and reports prepared by the Contractor under the Contract shall become the property of and be delivered to the State on demand.

9.5.3. The State may, upon termination of this Contract, procure, on terms and in the manner that it deems appropriate, materials or services to replace those under this Contract. The Contractor shall be liable to the State for any excess costs incurred by the State in procuring materials or services in substitution for those due from the Contractor.

9.6. Continuation of Performance Through Termination. The Contractor shall continue to perform, in accordance with the requirements of the Contract, up to the date of termination, as directed in the termination notice.

10. **Contract Claims**

All contract claims or controversies under this Contract shall be resolved according to A.R.S. Title 41, Chapter 23, Article 9, and rules adopted thereunder.

11. **Arbitration**

The parties to this Contract agree to resolve all disputes arising out of or relating to this contract through arbitration, after exhausting applicable administrative review, to the extent required by A.R.S. § 12-1518, except as may be required by other applicable statutes (Title 41).

12. **Comments Welcome**

The State Procurement Office periodically reviews the Uniform Terms and Conditions and welcomes any comments you may have. Please submit your comments to: State Procurement Administrator, State Procurement Office, 100 North 15th Avenue, Suite 201, Phoenix, Arizona, 85007.

SPECIAL INSTRUCTIONS TO OFFERORS

1. Inquiries

- 1.1. All questions related to this solicitation must be submitted through the State's e-Procurement System, Arizona Procurement Portal (APP) (<https://app.az.gov/>) using the Discussion Forum tab. All inquiries must be marked as Q&A and addressed to the Procurement Officer identified as the solicitation's owner. Any other contact shall be directed to the Procurement Officer listed in APP. Questions should reference the applicable page and paragraph number.
- 1.2. Pre-Offer Conference
 - 1.2.1. A Pre-Offer Conference will be held at the time and place indicated in the solicitation's Process field as found within APP. Attendance is not mandatory but is highly recommended.
 - 1.2.2. The purpose of the conference is to clarify the contents of the solicitation in order to prevent any misunderstanding of ADOT's position. Any doubt as to the requirements of the solicitation or any apparent omission or discrepancy should be presented to ADOT at the conference. ADOT will then determine any appropriate action necessary. If required, a written amendment to the solicitation will be issued. Oral statements or instructions will not constitute an amendment to the solicitation. Only official solicitation amendments issued by the ADOT Procurement Office through APP shall constitute a change to the solicitation.

2. Evaluation Criteria

- 2.1. In accordance with the A.R.S. § 41-2534, awards shall be made to the responsible Offeror(s) whose proposal is determined in writing to be the most advantageous to the State based upon the evaluation criteria listed below. The evaluation factors are listed in their relative order of importance.
 - 2.1.1. Evaluation Criteria One (1) Method of Approach
 - 2.1.2. Evaluation Criteria Two (2) Organization Capacity and Experience
 - 2.1.3. Evaluation Criteria Three (3) Price
- 2.2. Exceptions to the Terms and Conditions, as stated in the Uniform Instructions Section C.3, may impact an Offeror's susceptibility for award.

3. Submitting Offers in APP

- 3.1. APP Support: To assist in the submission of an offer, Offerors are encouraged to attend the courses offered by the State Procurement Office and utilize the Quick Reference Guides available. This information can be found at <https://spo.az.gov/app/supplier/training>. Additional assistance is available through the APP Help Desk. The Help Desk can be contacted via email at app@azdoa.gov or via telephone support at (602) 542-7600. Offerors are encouraged to submit any requests for assistance in a timely manner in order to meet the bid due date and time identified in APP.
- 3.2. Downloading and Uploading Attachments: APP will not save information entered directly on an Attachment. For all attachments found in the Questionnaire, offerors must download, save, complete and re-attach the modified Attachments to APP.

SPECIAL INSTRUCTIONS TO OFFERORS

- 3.3. Solicitation Amendments: Solicitation amendments will be issued via APP as a new round. Offerors must acknowledge receipt of the amendment. If an offer was submitted prior to the issuance of the amendment, offeror must re-submit their offer in APP. Any offer submitted in a previous round, prior to the amendment being issued, shall not be accepted.
- 3.4. APP Questionnaire and Item Tab: All required information found in the Questionnaire and Item tabs must be completed before an offer can be submitted.

4. Evaluation Process

- 4.1. Clarifications: In accordance with A.A.C. R2-7-C313, upon receipt and opening of offers submitted in response to this solicitation, ADOT may request oral or written clarifications, including demonstrations or questions and answers, for the sole purpose of information gathering or eliminating minor informalities or correcting nonjudgmental mistakes in offers. Clarifications shall not otherwise afford the Offerors the opportunity to alter or make a material change in its proposal.
- 4.2. Responsibility, Responsiveness and Susceptibility: In accordance with A.R.S. 41-2534(G), and A.A.C. R2-7-C311, A.A.C. R2-7-C312 and R2-7-C316, the State shall consider at a minimum, the following criteria in determining Offerors' responsibility as well as the proposal's responsiveness and susceptibility for Contract award.
 - 4.2.1. Whether the Offeror has had a contract within the last five (5) years that was terminated for cause due to breach or similar failure to comply with the terms of the contract;
 - 4.2.2. Whether the Offeror's record of performance includes factual evidence of failure to satisfy the terms of the Offeror's agreements with any party to a contract. Factual evidence may consist of documented vendor performance reports, customer complaints and/or negative references;
 - 4.2.3. Whether the Offeror is legally qualified to contract with the State and the Offeror's financial, business, personnel, or other resources, including subcontractors;
 - 4.2.3.1. Legally qualified includes if the vendor or if key personnel have been debarred, suspended or otherwise lawfully prohibited from participating in any public procurement activity, including but not limited to, being disapproved as a subcontractor of any public procurement unit or other governmental body;
 - 4.2.4. Whether the Offeror promptly supplied all requested information concerning its responsibility;
 - 4.2.5. Whether the Offer was sufficient to permit evaluation by the State, in accordance with the evaluation criteria identified in the solicitation or other necessary offer components. Necessary offer components include: attachments, documents or forms to be submitted with the offer, an indication of the intent to be bound, reasonable or acceptable approach to perform the Scope of Work, acknowledged Solicitation Amendments, references to include experience verification, adequacy of financial/business/personal or other resources to include a performance bond and stability including subcontractors and any other data specifically requested in the Solicitation;

SPECIAL INSTRUCTIONS TO OFFERORS

- 4.2.6. Whether the Offer was in conformance with the requirements contained in the Scope of Work, Terms and Conditions, and Instructions for the Solicitation including its Amendments and all documents incorporated by reference;
 - 4.2.7. Whether the Offer limits the rights of the State;
 - 4.2.8. Whether the Offer includes or is subject to unreasonable conditions, to include conditions upon the State necessary for successful Contract performance. The State shall be the sole determiner as to the reasonableness of a condition;
 - 4.2.9. Whether the Offer materially changes the contents set forth in the Solicitation, which includes the Scope of Work, Terms and Conditions, or Instructions; and,
 - 4.2.10. Whether the Offeror provides misleading or inaccurate information.
- 4.3. Negotiations: In accordance with A.A.C. R2-7-C314, negotiations may be conducted with Offerors who submit offers determined to be reasonably susceptible of being selected for award. If negotiations are conducted, the Offeror(s) may revise their offer in writing during negotiations. Award may be made without negotiations, therefore, offers shall be submitted complete and on most favorable terms.
- 4.4. Offer Revisions and Best and Final Offers: In accordance with A.A.C. R2-7-C315, if negotiations are conducted, ADOT may request written revisions to an offer. If negotiations are conducted, ADOT shall request best and final offers (BAFO). Any request for revision or BAFO shall set forth the date, time and place for the submission.
- 4.5. Contract Award: In accordance with the A.R.S. §41-2534, Competitive Sealed Proposals, award(s) shall be made to the responsible offeror(s) whose offer is determined in writing to be most advantageous to the State based upon the evaluation factors listed above.

5. Definition of Key Words

- 5.1. Shall, Must: Indicates a mandatory requirement. Failure to meet these mandatory requirements may result in the rejection of a proposal as non-responsive.
- 5.2. Should: Indicates something that is recommended but not mandatory. If the offeror fails to provide recommended information, the State may, at its sole option, ask the offeror to provide the information or evaluate the proposal without the information.
- 5.3. May: Indicates something that is not mandatory but permissible.

UNIFORM INSTRUCTIONS TO OFFERORS

A. Definition of Terms

As used in these Instructions, the terms listed below are defined as follows:

1. “*Attachment*” means any item the Solicitation requires an Offeror to submit as part of the Offer.
2. “*Best and Final Offer*” means a revision to an Offer submitted after negotiations are completed that contains the Offeror’s most favorable terms for price, service, and products to be delivered. Sometimes referred to as a Final Proposal Revision.
3. “*Contract*” means the combination of the Solicitation, including the Uniform and Special Terms and Conditions, and the Specifications and Statement or Scope of Work; the Offer, any Clarifications, and any Best and Final Offers; and any Solicitation Amendments or Contract Amendments.
4. “*Contract Amendment*” means a written document signed by the Procurement Officer issued for the purpose of making changes in the Contract.
5. “*Contractor*” means any person who has a Contract with a state governmental unit.
6. “*Day*” means calendar days unless otherwise specified.
7. “*eProcurement (Electronic Procurement)*” means conducting all or some of the procurement function over the Internet. Point, click, buy and ship Internet technology is replacing paper-based procurement and supply management business processes. Elements of eProcurement also include Invitation for Bids, Request for Proposals, and Request for Quotations.
8. “*Exhibit*” means any document or object labeled as an Exhibit in the Solicitation or placed in the Exhibits section of the Solicitation.
9. “*Offer*” means a response to a solicitation.
10. “*Offeror*” means a person who responds to a Solicitation.
11. “*Person*” means any corporation, business, individual, union, committee, club, or other organization or group of individuals.
12. “*Procurement Officer*” means the person, or his or her designee, duly authorized by the State to enter into and administer Contracts and make written determinations with respect to the Contract.
13. “*Solicitation*” means an Invitation for Bids (“IFB”), a Request for Technical Offers, a Request for Proposals (“RFP”), a Request for Quotations (“RFQ”), or any other invitation or request issued by the purchasing agency to invite a person to submit an offer.
14. “*Solicitation Amendment*” means a change to the Solicitation issued by the Procurement Officer.
15. “*Subcontract*” means any Contract, express or implied, between the Contractor and another party or between a subcontractor and another party delegating or assigning, in whole or in part, the making or furnishing of any material or any service required for the performance of the Contract.

16. "State" means the State of Arizona and Department or Agency of the State that executes the Contract.

B. Inquiries

1. Duty to Examine. It is the responsibility of each Offeror to examine the entire Solicitation, seek clarification in writing (inquiries), and examine its Offer for accuracy before submitting an Offer. Lack of care in preparing an Offer shall not be grounds for modifying or withdrawing the Offer after the Offer due date and time.
2. Solicitation Contact Person. Any inquiry related to a Solicitation, including any requests for or inquiries regarding standards referenced in the Solicitation shall be directed solely to the Procurement Officer.
3. Submission of Inquiries. All inquiries related to the Solicitation are required to be submitted in the State's eProcurement system. All responses to inquiries will be answered in the State's eProcurement system. Any inquiry related to the Solicitation should reference the appropriate solicitation page and paragraph number. Offerors are prohibited from contacting any State employee other than the Procurement Officer concerning the procurement while the solicitation and evaluation are in process.
4. Timeliness. Any inquiry or exception to the Solicitation shall be submitted as soon as possible and should be submitted at least seven days before the Offer due date and time for review and determination by the State. Failure to do so may result in the inquiry not being considered for a Solicitation Amendment.
5. No Right to Rely on Verbal or Electronic Mail Responses. An Offeror shall not rely on verbal or electronic mail responses to inquiries. A verbal or electronic mail reply to an inquiry does not constitute a modification of the solicitation.
6. Solicitation Amendments. The Solicitation shall only be modified by a Solicitation Amendment.
7. Pre-Offer Conference. If a pre-Offer conference has been scheduled under the Solicitation, the date, time and location shall appear in the State's eProcurement system. Offerors should raise any questions about the Solicitation at that time. An Offeror may not rely on any verbal responses to questions at the conference. Material issues raised at the conference that result in changes to the Solicitation shall be answered solely through a Solicitation Amendment.
8. Persons With Disabilities. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the Procurement Officer. Requests shall be made as early as possible to allow time to arrange the accommodation.

C. Offer Preparation

1. Electronic Documents. The Solicitation is provided in an electronic format. Offerors are responsible for clearly identifying any and all changes or modifications to any Solicitation documents upon submission to the State's eProcurement system. Any unidentified alteration or modification to any Solicitation, attachments, exhibits, forms, charts or illustrations contained herein shall be null and void. Offeror's electronic files shall be submitted in a format acceptable to the State. Acceptable formats include .doc and .docx (Microsoft Word), .xls and .xlsx (Microsoft Excel), .ppt and .pptx (Microsoft PowerPoint) and .pdf (Adobe Acrobat). Offerors wishing to submit files in any other format shall submit an inquiry to the Procurement Officer.
2. Evidence of Intent to be Bound. The Offer and Acceptance form within the Solicitation shall be submitted with the Offer in the State's eProcurement system and shall include a

signature by a person authorized to sign the Offer. The signature shall signify the Offeror's intent to be bound by the Offer and the terms of the Solicitation and that the information provided is true, accurate and complete. Failure to submit verifiable evidence of an intent to be bound, such as a signature, shall result in rejection of the Offer.

3. Exceptions to Terms and Conditions. All exceptions included with the Offer shall be submitted in the State's eProcurement system in a clearly identified separate section of the Offer in which the Offeror clearly identifies the specific paragraphs of the Solicitation where the exceptions occur. Any exceptions not included in such a section shall be without force and effect in any resulting Contract unless such exception is specifically accepted by the Procurement Officer in a written statement. The Offeror's preprinted or standard terms will not be considered by the State as a part of any resulting Contract.
 - 3.1. Invitation for Bids. An Offer that takes exception to a material requirement of any part of the Solicitation, including terms and conditions, shall be rejected.
 - 3.2. Request for Proposals. All exceptions that are contained in the Offer may negatively impact an Offeror's susceptibility for award. An Offer that takes exception to any material requirement of the solicitation may be rejected.
4. Subcontracts. Offeror shall clearly list any proposed subcontractors and the subcontractor's proposed responsibilities in the Offer.
5. Cost of Offer Preparation. The State will not reimburse any Offeror the cost of responding to a Solicitation.
6. Federal Excise Tax. The State is exempt from certain Federal Excise Tax on manufactured goods. Exemption Certificates will be provided by the State.
7. Provision of Tax Identification Numbers. Offerors are required to provide their Arizona Transaction Privilege Tax Number and/or Federal Tax Identification number as part of the Offer.
 - 7.1 Employee Identification. Offeror agrees to provide an employee identification number or social security number to the State for the purposes of reporting to appropriate taxing authorities, monies paid by the State under this Contract. If the federal identifier of the Offeror is a social security number, this number is being requested solely for tax reporting purposes and will be shared only with appropriate state and federal officials. This submission is mandatory under 26 U.S.C. § 6041A.
8. Identification of Taxes in Offer. The State is subject to all applicable state and local transaction privilege taxes. All applicable taxes shall be identified as a separate item offered in the Solicitation. When applicable, the tax rate and amount shall be identified on the price sheet.
9. Disclosure. If the person submitting this Offer has been debarred, suspended or otherwise lawfully precluded from participating in any public procurement activity, including being disapproved as a subcontractor with any federal, state or local government, or if any such preclusion from participation from any public procurement activity is currently pending, the Offeror shall fully explain the circumstances relating to the preclusion or proposed preclusion in the Offer. The Offeror shall set forth the name and address of the governmental unit, the effective date of the suspension or debarment, the duration of the suspension or debarment, and the relevant circumstances relating to the suspension or debarment. If suspension or debarment is currently pending, a detailed description of all relevant circumstances including the details enumerated above shall be provided.
10. Delivery. Unless stated otherwise in the Solicitation, all prices shall be F.O.B. Destination and shall include all freight, delivery and unloading at the destination(s).

11. Federal Immigration and Nationality Act. By signing of the Offer, the Offeror warrants that both it and all proposed subcontractors are in compliance with federal immigration laws and regulations (FINA) relating to the immigration status of their employees. The State may, at its sole discretion require evidence of compliance during the evaluation process. Should the State request evidence of compliance, the Offeror shall have five days from receipt of the request to supply adequate information. Failure to comply with this instruction or failure to supply requested information within the timeframe specified shall result in the Offer not being considered for contract award.
12. Offshore Performance of Work Prohibited. Any services that are described in the specifications or scope of work that directly serve the State or its clients and involve access to secure or sensitive data or personal client data shall be performed within the defined territories of the United States. Unless specifically stated otherwise in the specifications, this paragraph does not apply to indirect or 'overhead' services, redundant back-up services or services that are incidental to the performance of the contract. This provision applies to work performed by subcontractors at all tiers. Offerors shall declare all anticipated offshore services in the Offer.

D. Submission of Offer

1. Offer Submission, Due Date and Time. Offerors responding to a Solicitation must submit the Offer electronically through the State's eProcurement system. Offers shall be received before the due date and time stated in the solicitation. Offers submitted outside of the State's eProcurement system or those that are received after the due date and time shall be rejected.
2. Offer and Acceptance. Offers shall include a signed Offer and Acceptance form. The Offer and Acceptance form shall be signed with a signature by the person authorized to sign the Offer, and shall be submitted in the State's eProcurement system with the Offer no later than the Solicitation due date and time. Failure to return an Offer and Acceptance form may result in rejection of the Offer.
3. Solicitation Amendments. A Solicitation Amendment shall be acknowledged in the State's eProcurement system no later than the Offer due date and time. Failure to acknowledge a Solicitation Amendment may result in rejection of the Offer.
4. Offer Amendment or Withdrawal. An Offer may not be amended or withdrawn after the Offer due date and time except as otherwise provided under applicable law.
5. Confidential Information. If an Offeror believes that any portion of an Offer, protest, or correspondence contains a trade secret or other proprietary information, the Offeror shall clearly designate the trade secret and other proprietary information, using the term "confidential." An Offeror shall provide a statement detailing the reasons why the information should not be disclosed including the specific harm or prejudice that may arise upon disclosure. The Procurement Officer shall review all requests for confidentiality and provide a written determination. Until a written determination is made, a Procurement Officer shall not disclose information designated as confidential except to those individuals deemed to have a legitimate State interest. In the event the Procurement Officer denies the request for confidentiality, the Offeror may appeal the determination to the State Procurement Administrator within the time specified in the written determination. Contract terms and conditions, pricing, and information generally available to the public are not considered confidential information.
6. Public Record. All Offers submitted and opened are public records and must be retained by the State for six years. Offers shall be open and available to public inspection through the State's eProcurement system after Contract award, except for such Offers deemed to be confidential by the State.
7. Non-collusion, Employment, and Services. By signing the Offer and Acceptance form or

other official contract form, the Offeror certifies that:

- 7.1. The Offeror did not engage in collusion or other anti-competitive practices in connection with the preparation or submission of its Offer; and
- 7.2. The Offeror does not discriminate against any employee or applicant for employment or person to whom it provides services because of race, color, religion, sex, national origin, or disability, and that it complies with an applicable federal, state and local laws and executive orders regarding employment.

E. Evaluation

1. Unit Price Prevails. In the case of discrepancy between the unit price or rate and the extension of that unit price or rate, the unit price or rate shall govern.
2. Taxes. If the products and/or services specified require transaction privilege or use taxes, they shall be described and itemized separately on the Offer. Arizona transaction privilege and use taxes shall not be considered for evaluation.
3. Prompt Payment Discount. Prompt payment discounts of thirty (30) days or more set forth in an Offer shall be deducted from the Offer for the purpose of evaluating that price.
4. Late Offers. An Offer submitted after the exact Offer due date and time shall be rejected.
5. Disqualifications. An Offeror (including each of its principals) who is currently debarred, suspended or otherwise lawfully prohibited from any public procurement activity shall have its Offer rejected.
6. Offer Acceptance Period. An Offeror submitting an Offer under the Solicitation shall hold its Offer open for the number of days from the Offer due date that is stated in the Solicitation. If the Solicitation does not specifically state a number of days for Offer acceptance, the number of days shall be one hundred twenty (120). If a Best and Final Offer is requested pursuant to a Request for Proposals, an Offeror shall hold its Offer open for one hundred twenty (120) days from the Best and Final Offer due date.
7. Waiver and Rejection Rights. Notwithstanding any other provision of the Solicitation, the State reserves the right to:
 - 7.1 Waive any minor informality;
 - 7.2. Reject any and all Offers or portions thereof; or
 - 7.3 Cancel the Solicitation.

F. Award

1. Number of Types of Awards. The State reserves the right to make multiple awards or to award a Contract by individual line items or alternatives, by group of line items or alternatives, or to make an aggregate award, or regional awards, whichever is most advantageous to the State.
2. Contract Inception. An Offer does not constitute a Contract nor does it confer any rights on the Offeror to the award of a Contract. A Contract is not created until the Offer is accepted in writing by the Procurement Officer's signature on the Offer and Acceptance form. A notice of award or of the intent to award shall not constitute acceptance of the Offer.
3. Effective Date. The effective date of the Contract shall be the date that the Procurement Officer signs the Offer and Acceptance form or other official contract form, unless another date is specifically stated in the Contract.

G. Protests

A protest shall comply with and be resolved according to Arizona Revised Statutes Title 41, Chapter 23, Article 9 and rules adopted thereunder. Protests shall be in writing and be filed with both the Procurement Officer of the purchasing agency and with the State Procurement Administrator. A protest of the Solicitation shall be received by the Procurement Officer before the Offer due date. A protest of a proposed award or of an award shall be filed within ten (10) days after the Procurement Officer makes the procurement file available for public inspection. A protest shall include:

1. The name, address, email address and telephone number of the interested party;
2. The signature of the interested party or its representative;
3. Identification of the purchasing agency and the Solicitation or Contract number;
4. A detailed statement of the legal and factual grounds of the protest including copies of relevant documents; and
5. The form of relief requested.

H. Comments Welcome

The State Procurement Office periodically reviews the Uniform Instructions to Offerors and welcomes any comments you may have. Please submit your comments to: State Procurement Administrator, State Procurement Office, 100 North 15th Avenue, Suite 201, Phoenix, Arizona, 85007.