

EXHIBIT 1 - SPECIFICATIONS

OKLAHOMA DEPARTMENT OF TRANSPORTATION

TRAFFIC MONITORING SYSTEMS (TMS) ANNUAL DATA COLLECTION CONTRACT

Project #: SPRY-0010(083)PL JP: 01946(74)

Item #: 1302 CFDA#: 20.205

SUPPLIER (“CONTRACTOR”) will be expected to coordinate with contractor(s) as well as with ODOT personnel to facilitate installation and setup of connectivity equipment during mounting pole and radar unit installation efforts.

Hosted Server –

1. Cloud based, tier 1 (Amazon AWS, Microsoft Azure, or equivalent)
2. Running Houston Radar-supplied Tetryon software
3. Continuous connectivity to all operational radar units.
4. Hosted environment to be deployed and maintained per the requirements in section 4 of the contract.

Wireless Modems (Gateways)

1. Cellular based
2. Different geographic areas of the state may require different cellular providers in order to maintain best connectivity. CONTRACTOR will identify most suitable cellular provider for each site and set up the equipment accordingly. This will likely necessitate the CONTRACTOR maintains multiple cellular contracts to cover the entire state.
3. Equipment to be transitioned, installed, and maintained per the requirements in Section 4 of the contract.

SECTION 1: PURPOSE OF THE CONTRACT

11 Oklahoma Department of Transportation (ODOT) seeks a CONTRACTOR to establish and maintain a cloud-hosted Houston Radar Tetryon server, and to upgrade, repair, operate/maintain, or service remote connectivity hardware, software, and communication for traffic monitoring systems employed at up to 150 station locations across the state. The collection and validation of quality traffic count, and classification supported by technically competent expertise in the operation and maintenance of data recording and sensor equipment coupled with detailed knowledge and experience in the renovation of traffic monitoring station facilities are the key critical qualifications for a CONTRACTOR to be awarded this contract. The contract period shall be for a one year term. ODOT traffic monitoring stations currently consist of 94 Automatic Vehicle Classifier (AVC) stations. ODOT is in the process of converting all of the existing AVC sites to radar-based units as well as adding 56 new locations. with completion expected by December 31, 2021. This contract addresses the requirements for fiscal year 2020. The general scope of the contract is as follows:

Data Collection and Systems Validation. This encompasses the following:

- a. Hosting, installation, configuration, and maintenance of Houston Radar Tetrayon server environment
- b. Installation, configuration, and maintenance of all hardware, software, cellular connectivity, and other equipment necessary to ensure continuous communication with remote radar sites.
- c. Daily monitoring of up to 150 permanent traffic monitoring stations.
- d. Daily review of collected data for the purpose of assessing the data recording equipment, equipment operability, data completeness and validity of collected data.
- e. Provide timely submission of collected data extracted from the radar units as required for import into ODOT database and analysis by ODOT if required by ODOT staff.

The intent of this contract is for ODOT to associate with a CONTRACTOR that has sufficient experience and proven technical expertise in traffic monitoring systems servicing, wireless data transfer, hosted server environments, and web page support. Additionally, CONTRACTOR should have experience in operating and maintaining Houston Radar SpeedLane Pro or similar unit and Peek Brand/Model Automatic Data Recorder (ADR) AVC systems.

The scope of work performed will be determined by the ODOT Project Manager. ODOT seeks submission of a contract bid addressing, as a minimum, each individual unit item listed on the "Bid Page" in accordance with the "Scope of Contract Cost Requirements" (Section 4).

12 ODOT presently lists 94 sites (AVC) throughout the state where traffic monitoring devices are currently located in addition to 56 new sites where equipment will be installed. Site descriptions listing current status and conditions are detailed in attached appendices defined below. These lists are tentative and subject to change.

a. Appendix I - depicts cost items for which bids shall be submitted and expressed as unit cost and extended cost in the respective categories. All bid items are provisional and contingent on current ODOT needs. No bid item quantities shall constitute a promise or guarantee of work to be done.

b. Appendix II - describes the type, location, and number of lanes at all existing traffic monitoring sites and planned sites.

c. Appendix III – describes the format and structure of modified data to be submitted to ODOT for integration and analysis if required.

SECTION 2: TERMS OF THE CONTRACT

The initial term of the contract shall commence upon execution of this contract and continue to the end of the current federal fiscal year on September 30, 2020. Contract may be renewed for up to four additional one-year periods upon written consent by both parties and execution of a supplemental contract.

SECTION 3: SCOPE OF CONTRACT COST REQUIREMENTS

3.1 Data Collection and Systems Validation. This requirement encompasses all aspects of data collection, review of data for the purpose of validating the operability of data recording and sensor equipment, wireless site monitoring and data transfer. Contractor will diagnose and make

adjustments to data recorders to restore to functional operating capability and data submission. The collection of valid data is paramount to ODOT's goal of maintaining a site operational rate of 90% or better for each traffic monitoring station. The site operational rate shall be based on the percentage of days of valid data for the particular month for each traffic monitoring station. For example, if for the month of October (with 31 days), a station collects 30 days of valid data, the station's operational rate for the month of October is 96.8 %. A "valid day of data" shall be defined as 24 continuous hours of recorded data with no identified inaccuracies. Inaccuracies can include, but are not limited to, missing volume counts, abnormal zero counts, excessive class 15 counts, etc. The unit cost of "Data Collection and Systems Validation" (Appendix I) is expressed as the dollar amount paid for one (1) day of valid data for the specified traffic monitoring station (AVC or WIM). Contractor activities which comprise the cost of one (1) day of valid data are as follows:

a. Polling, Data Transfer, and Archiving. CONTRACTOR shall conduct polling of each traffic monitoring station on a daily basis. CONTRACTOR shall utilize hosted Houston Radar Tetryon server to conduct polling. Currently, all sites use wireless technology with solar DC power. If directed by ODOT, CONTRACTOR shall archive collected data in a database with the capability to export daily data files in CSV or other formats as dictated by radar and ADR unit capabilities and allowing for import to ODOT database. CONTRACTOR shall provide, install and maintain wireless communication interface device (Reece, Raven etc.), wireless service and associated software and servers to facilitate wireless communication to all Houston Radar-equipped and existing conventional AVC sites.

b. Data Review. CONTRACTOR shall conduct daily review of volume, classification, and speed data collected for each traffic monitoring station. Volume and class data will be examined by lane, by class, and by interval to ensure that the ODOT class schema continuity is maintained and misclassification malfunctions are identified. The previously stated data review focus is for the purpose of identifying data errors which potentially may have been caused by, but not limited to, the following: (1) faulty operation of the data recorder, (2) faulty inductive loops, (3) faulty piezoelectric sensors, (4) utility connection failures to power and communication services, and (5) problems with supporting, hardware, software, firmware.

c. Site Operational Notification. On a daily basis, Contractor will notify ODOT of the operational status of all Houston Radar-equipped and existing conventional AVC sites. CONTRACTOR will notify ODOT promptly of sites that are not functioning or otherwise not collecting valid data through the use of a site monitoring web page, email or phone. All costs to be included in bid item for Data Collection and Systems Validation.

d. Data Collection and Hosting Servers. CONTRACTOR to provide and maintain all necessary servers to deploy, configure, host, and allow ODOT personnel access to Houston Radar Tetryon server environment to complete and conduct ongoing ad hoc monitoring and collection of all sites and associated data and to provide for storage and access to the above mentioned raw or modified data to ODOT. CONTRACTOR shall assist ODOT personnel in establishing Tetryon server and desktop-based Houston Radar Stats Analyzer connections to all operating sites. The hosted environment shall be a Tier 1 commercial third-party cloud solution such as Amazon AWS, Google, Microsoft Azure, or similar. It is assumed that the hosted Tetryon environment will be accessible on a 24/7/365 basis to both internal (inside ODOT network) and external (outside ODOT network) logins. Cost is to be included in bid item for Data Collection and Systems Validation. All data obtained from the traffic monitoring devices as well as the hosted server environment is understood by the CONTRACTOR to be the sole property of ODOT with CONTRACTOR managing the environment and associated hardware and software during the term of this contract.

e. Wireless Interface Devices (Gateways). Wireless Interface Devices (Gateways) and

wireless service (ie. Sprint, Pioneer, etc.) will be provided, installed and maintained by CONTRACTOR. Gateways to remain the property of CONTRACTOR and to be maintained by CONTRACTOR. All repairs of such devices to be the responsibility of CONTRACTOR. All costs relating to such devices to be included in bid item for Data Collection and Systems Validation. Available data bandwidth must be sufficient to accommodate continuous live video streaming from each and every deployed unit at a quality equivalent to the maximum video resolution and framerate allowed per the current Houston Radar SpeedLane Pro specifications.

f. Transition of Gateway Devices: CONTRACTOR to facilitate a smooth transition from existing RAVEN devices to any new devices installed by CONTRACTOR (raven, LS300 etc.) at CONTRACTOR expense. Transition to be complete and the collection of valid data from all AVC and WIM sites to occur within 3 weeks of start of contract. A penalty of Five Hundred Dollars (\$500.00) per day will be charged to CONTRACTOR for each day past the allowed 3 week transition period until total transition of all sites is complete. Activation and collection of valid data with any newly installed Gateway device at any particular site to occur within 24 hours of existing Raven Gateway being disabled.

g. Equipment Repair.

1. CONTRACTOR will provide adjustment to or replacement of Gateways, service and/or power supplies within 48 hours.
2. ODOT will be responsible for replacement of data recorders, batteries, solar system, loops and piezos.
3. For utility failures (CONTRACTOR shall open work order with the appropriate utility provider within 48 hours).

h. Site and Data Integrity Report. CONTRACTOR shall submit a Monthly Site Summary which details causes of invalid or missing data and total site downtime on a site by site basis. Data elements shall include: photograph or videos obtained by the radar units at ODOT-specified intervals, traffic volume, vehicle classification, occupancy, and traffic speed. The monthly site operational rate and the amount paid to CONTRACTOR shall then be computed based on the remaining days of valid data. If the specific traffic monitoring station achieves a 90% or better operational rate for the month, the payment to CONTRACTOR shall be paid the amount equal to the actual operational rate for the month.

i. Payment Reduction.

1. Individual Operational Site. As a result of CONTRACTOR failure to identify equipment problems and take corrective action within the specified time frame, individual sites with operational rates lower than the 90% rate specified in section 4.1 will result in the following payment reductions. For site operational rates between 80-89%, full month payout is 75% of specified rate. For site operational rates between 70-79%, full month payout is 50% of specified rate. For site operational rates between 60-69%, full month payout is 25% of specified rate. For site operational rates below 60%, no payment will be made.

2. Overall Operational Sites. If data collected from AVC and WIM sites fail to meet an overall operational rate of 60% for the month, due to CONTRACTOR error in collecting, polling or transfer of data, the payment by ODOT to CONTRACTOR shall be zero (0%) for that month. Repeated occurrences of CONTRACTOR error resulting in loss of data will justify contract termination (Section 6).

SECTION 4: STATEMENT OF NEEDS

4.1 Technical Expertise

ODOT is seeking a CONTRACTOR with the technical expertise to operate, install and maintain IRD and Peek WIM systems and Peek ADR series AVC systems. WIM and AVC systems will be maintained in accordance with the standards and specifications of this contract. WIM systems will operate in the current configuration (Loop-Piezo-Piezo-Loop). AVC systems will operate in the Loop-Piezo-Loop configuration. CONTRACTOR shall have sufficient knowledge of and experience in the traffic data collection industry and operational flexibility to research and test new technologies and when approved by ODOT, work toward implementing those technologies that will improve ODOT's traffic monitoring program.

4.2. Turnkey

This contract is considered a "turnkey" contract. CONTRACTOR shall be responsible for all equipment, materials and labor, and the technical expertise to successfully install, repair, maintain and operate all WIM and AVC systems, in accordance with the requirements of this contract and manufacturer's specifications.

4.3 Contractor Provided Materials, Labor and Equipment.

All materials, services and equipment (including tools and vehicles), must be provided by CONTRACTOR. This includes, but is not limited to, batteries, lightning arrestors/surge protection, wiring, etc. ODOT will not provide any equipment to CONTRACTOR. Any WIM or AVC equipment/hardware provided by this contract or purchased by ODOT outside of this contract can be installed by CONTRACTOR as part of this contract. All equipment/hardware installed shall be considered to be permanently installed property of ODOT with exception to those addressed in Section 4.1(e). However, CONTRACTOR will be responsible for contract maintenance for all equipment per the terms of this contract. All equipment purchased from CONTRACTOR by ODOT either through this contract or through other authorized procurement, will be covered by warranty administered through CONTRACTOR. All equipment and material used in conjunction with this contract must comply with the specifications as detailed in this contract. The manufacturer's data sheet for all equipment and materials intended for use during this contract shall be submitted to the ODOT Project Manager for approval prior to its use.

4.4 Vehicle Classification Table

CONTRACTOR shall provide the ODOT Project Manager with a description, printout, or listing which details how vehicles shall be classified using the ODOT defined scheme. Any software, provided by CONTRACTOR must support formatting data to this scheme. ODOT may require CONTRACTOR to provide custom design classification tables. Each approved classification table shall have a distinctive name that includes that month and year of approval for contract use. No changes to the classification table may be made without the approval of the ODOT Project Manager. CONTRACTOR shall certify annually that the approved table is being used in all traffic monitoring sites. Any filtering techniques for missed axles will require a written explanation to the ODOT Project Manager for approval before they are accepted for use.

4.5 Reporting Requirements

CONTRACTOR shall be required to submit reports to the ODOT Project Manager on activities concerning the operational status of the traffic monitoring stations, record of all diagnoses, repair, services & component replacements, as well as the results of all scheduled maintenance services, calibration, construction, renovation, and recommendations on identified problems areas requiring ODOT expenditures.

4.5.1 Monthly Data Submission. CONTRACTOR shall submit a site and data integrity report as outlined in 4.1 part H. The monthly data submission shall be available to ODOT within 72 hours after the last day of the month (cut off is at midnight on the last day of the month). The monthly submission shall be received at ODOT on CD (2 copies) and/or made available to ODOT on a secure website.

4.5.2 Weekly Site Service Report. CONTRACTOR shall submit a weekly report of any construction, renovation, maintenance, services, observations and recommendations performed at or pertaining to any of the traffic monitoring stations. The report will specify activities by site and identify dates of work, scope of work, problem areas and recommendations. The report will be submitted each Monday by 8:00 am, documenting activities of the previous week (Monday through Sunday), and sent via e-mail to the ODOT Project Manager.

4.5.3 Site Log Book. A site log book will be stored at each Traffic Monitoring Station as a chronological record of all work performed on site to date. Entries in the Site Log Book will be dated; work performed will be described in detail, and initialed by CONTRACTOR.

SECTION 5: CONTRACT PERSONNEL QUALIFICATIONS

CONTRACTOR personnel shall have experience and a working knowledge in the operation and maintenance of radar-based traffic monitoring devices, conventional Automatic Data Recorder devices, remote device connectivity, and hosted cloud-based servers. All personnel shall be knowledgeable in the requirements the contract and their individual **responsibilities and work functions necessary to satisfy those requirements. At least one full-time** staff member shall be knowledgeable in the electronics, telecommunications and software requirements of the contract. CONTRACTOR shall provide a list of personnel along with their job duties and qualifications to the ODOT Project Manager. Any changes in duties or additions of new personnel must be coordinated with the ODOT Project Manager. CONTRACTOR shall certify that all personnel are trained and able to perform tasks to meet the requirements of the contract. If the quality of work by any individual fails to meet the standards required by this contract, upon notification by the ODOT Project Manager, CONTRACTOR shall take appropriate action to retrain or remove that individual. ODOT may request that individuals without the appropriate skills be removed from tasks that are beyond their skill levels, as determined by ODOT inspection staff, and the ODOT Project Manager.

SECTION 6: STANDARD CONSTRUCTION SPECIFICATIONS

It is understood that all references herein to Standard Specifications shall mean the Oklahoma Department of Transportation 2009 (or most current) Edition of Standard Specifications for Highway Construction.

6.1 CONTRACTOR shall be insured in accordance with the Standard Specifications, section 107. Prior to the issuance of the Work Order, CONTRACTOR shall provide proof of insurance.

6.2 CONTRACTOR work shall be inspected by a technician from ODOT. The technician's inspection responsibilities shall include compliance with Standard Specifications for Highway Construction and any other incidentals necessary for a completed job.

6.3 ODOT shall not be responsible for personal injury, damage to, or loss of property, equipment or materials in regard to these specifications.

6.4 Traffic Control shall be provided by CONTRACTOR in accordance with Standard Specifications, section 104.

6.4.1 All traffic control devices and placement shall meet the "Manual on Uniform Control Devices (MUTCD), 2009 Edition (or most current)" and as shown on "Traffic Control Devices for Construction Work Zones" Standards.

6.4.2 Existing roadway shall remain open during construction. At no time shall more than one lane in one direction of a four-lane roadway and one lane of a two-lane roadway be closed to traffic.

6.4.3 CONTRACTOR shall submit traffic control plans, for ODOT approval, minimum two business days prior to any on-site construction or site renovation projects involving work on or within 15 feet of the roadway, in accordance with the MUTCD. Traffic control plans shall be submitted in Computer Aided Design and Drafting (CADD) format and display location and positioning of all traffic control devices supplemented with any additional advisory information.

6.4.4 Traffic control requirements shall vary according to the functional class of each site as defined by ODOT. The functional class of each site shall be subject to change throughout the duration of the contract.

SECTION 7: MATERIALS AND EQUIPMENT

CONTRACTOR shall provide the necessary labor, materials, tooling, and installation equipment which are required to repair the systems, components and accessories as set forth in this Contract. All said systems, components, and accessories shall be deemed authorized by ODOT for repair or replacement.

7.1 All materials, devices, equipment, etc. shall be new and shall be installed, tested, and connected in strict compliance with the manufacturer's recommendations, and where required, under the direct supervision of a manufacturer's representative.

7.2 All apparatus and equipment furnished on this project shall be protected from damage by CONTRACTOR. All items marred or damaged shall be replaced or repaired to the complete satisfaction of the ODOT Project Manager solely at CONTRACTOR expense.

7.3 Conflicts between any piece of equipment, switches, devices, etc. which if installed as shown in relation to any previously installed equipment, may impair the proper operation of the equipment, shall be resolved by CONTRACTOR to the satisfaction of the ODOT Project Manager at CONTRACTOR expense.

Data Recorder Configuration Note: On East-West highways the northern most lane shall be identified as Lane No.1 and on North-South highways the western most lane shall be identified as Lane No.1. All lanes will be numbered consecutively across the full width of roadway.

SECTION 8: CONSTRUCTION

8.1 General: All construction methods and procedures not otherwise specified herein shall meet applicable sections of the Standard Specifications. The following codes shall be complied with in each and every respect as though fully written herein:

- a. OSHA Requirements, Latest Edition, thereof
- b. AASHTO Requirements, Latest Edition, thereof
- c. FHWA Requirements, Latest Edition, thereof

SECTION 9: MATERIAL AND WORKMANSHIP GUARANTY

It is the intent of this paragraph to obtain from CONTRACTOR a level of workmanship that will assure ODOT of an operational and maintainable system (as intended by the manufacturer).

Failure to perform as indicated shall require CONTRACTOR to replace in kind or repair any material or workmanship in question. All material and labor cost resulting from the replacement or repair of equipment or correction of poor workmanship shall be borne by CONTRACTOR. Final acceptance of the project will not be made until the warranty period expires. For material and workmanship, the warranty period is 12 months from date of sensor installation.