

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	87 N-0673-01	2017	75	99

**CONSTRUCTION AND MATERIAL REQUIREMENTS FOR INTELLIGENT TRANSPORTATION SYSTEM (ITS) INSTALLATIONS**

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**1.0 DESCRIPTION**  
 These specifications describe the equipment, material, and construction requirements to complete the lump sum Intelligent Transportation System (ITS) bid item. Compliance by the Contractor with the Specifications, ITS Special Provision 07-08041, latest revision, and Plans does not relieve the Contractor of the responsibilities of furnishing equipment and materials of proper design and installation to meet operating warranties for all ITS related components.

**2.0 BID PREPARATION**  
 Confirm the existing conditions before preparing the bid. Topography as shown on the plans is derived from existing roadway plans. Visit the site of the work and make a determination of the amount of rock, unclassified, or other materials that might be encountered. No additional pay will be made for differences in material encountered. Review the locations of devices and conduits throughout the project area prior to submittal of bid to determine the types and extent of incidental installation, removal, relocation, and replacement items to include in the price.

**3.0 MATERIALS**  
 All materials shall conform to the requirements for individual components of the ITS identified in these Specifications and the ITS Special Provision 07-08041, latest revision. All materials shall be as specified in the Summary of Quantities on the Plans and shall meet the Buy America Act requirements outlined in Section 106 of KDOT's Standard Specifications.

**3.1 BASIS OF ACCEPTANCE**  
 Acceptance of material furnished under these specifications will be based on satisfactory submittals that meet the requirements of section 4.0 and on the Engineer's approval of submittals where "no exceptions taken" or "exceptions as noted" is indicated.

**3.2 KDOT SUPPLIED MATERIALS**  
 KDOT may provide equipment such as Cisco equipment, VDS, DMS, DMS cabinet, DMS multimode communication cable, and analog CCTV cameras for installation by the Contractor, as noted in the plans. Refer to the Summary of Quantities in the plans for specific KDOT supplied items. When using KDOT furnished equipment, the KDOT furnished equipment shall become the Contractor's responsibility upon delivery of this equipment to the Contractor.

**4.0 SUBMITTALS**  
 Submit one electronic copy of each submittal group to the Engineer for review and approval. At the same time, submit an electronic version to the KDOT ITS unit and others as directed by the KDOT ITS unit. Include in each submittal sufficient information and details to permit full evaluation of each item. Submittals, which in the judgment of the Engineer are insufficient to permit proper evaluation, will not be reviewed. Take care to address all the requirements of the Contract Documents in the submittal data. Leave nothing to assumption. Address the functional and technical interrelationships among the various items in detail.

In each submittal group, state all relevant information regarding materials and equipment in order to procure exact replacements of any or all items on the project. To be acceptable, provide a material list for each submittal group containing all items supplied by the Contractor for the group. The Engineer reserves the right to reject an incomplete or unclear submittal. Identify the materials on the list by the contract project number, item description, catalog part numbers, catalog cuts, shop drawings, trade names, and schedules or other pertinent information. Clearly indicate the materials from any catalog cuts. Note any material designation used in the Contract Documents on the materials list. Submit all manufacturer product sheets for review and approval.

For each item, include in the documents all information necessary to determine product specification compliance. Clearly indicate, on the documentation, the exact model number, accessories, and options that are being proposed for use. If standard manufacturer documentation does not specifically address all the product requirements, then obtain a letter from the manufacturer certifying compliance with each referenced requirement that is not indicated on the standard documentation. If reprinted literature, such as catalog cut sheets, is used to satisfy some or all of the submittal data requirements, do not include any statements on the literature which conflict with the requirements of the Contract Documents. Cross off and initial any such statements. Give an explanation of how specifications shall be met pertaining to items changed from the literature.

**4.1 SUBMITTAL SCHEDULE AND REVIEW PERIODS**  
 Submit product data submittals and shop drawings in a timely manner to allow for job completion within the contract working days. Submit testing and training procedures a minimum of thirty (30) calendar days prior to performing the test and training. Submit all owner's manuals, installation guides, parts list and other informational literature available from the manufacturer for the provided equipment a minimum of thirty (30) calendar days prior to system acceptance.

For each submittal, plan for any given package of submittal information to be in the hands of the Engineer for up to 15 business days. Obtain final approval, in writing from the Engineer, on all items within the submitted documentation. No time extensions will be granted as a result of having to resubmit items for review or having to make any modifications necessary to any submitted documentation. Review of the submittal data by the Engineer will not relieve the Contractor from obligation to furnish and install the work in accordance with Contract Documents.

**4.2 SUBMITTAL REQUIREMENTS**  
 Certify, by stamp or letter, that the material has been reviewed and approved and that it conforms to the requirements of the Contract Documents. If this certification is not included, the submittal will be returned without action.

Submit shop drawing submittals for structural items in Group 6 such as CCTV poles and DMS structures as 11" x 17" created documents or larger. The intent of this requirement is to provide a legible set of shop drawing submittals to allow for a thorough shop drawing review.

At the time of each submittal, define and delineate in writing, separate from the certification, any deviations from the Contract Documents. If the Engineer accepts this deviation, the deviation will be authorized by issuing a change order or if the deviation is minor, by endorsement to the letter.

The Engineer review will be only for conformance with the design concept of the work and for compliance with the information contained in the Contract Documents. The review of a specified item, as such, will not indicate review of the assembly in which the item functions. Review by the Engineer will not relieve the Contractor from responsibility for any errors or omissions in the submittals nor from his responsibility for complying with the Contract Documents.

**4.3 SUBMITTAL GROUPS**  
 Submit the data for the items in each group together. In general, no items in any group will be accepted until all items in the group are accepted; however, the Engineer may accept some items in a group, at his or her discretion, prior to all items being approved. Submit all additional devices that are not specifically listed below with the appropriate group. Clearly label on each submittal the intended location and purpose for each submitted product. For submittal purposes, submit the data for the following items in groups defined as follows:

- |   |                         |
|---|-------------------------|
| Group 1 - Conduit, Pull Boxes, Wiring, and Electrical |                         |
| HDPE conduit  | Grounding equipment     |
| Rigid metallic conduit                                | Air terminal equipment  |
| Conduit couplings and/or reducers                     | Warning tape            |
| Pull boxes  | Tracer wire             |
| Splice vaults   | Pull rope               |
| Electrical conductors                                 | Duct plugs              |
| Power service equipment                               | Surge Protection Device |

- |  |                        |
|--|------------------------|
| Group 2 - Cabinet Assembly   |                        |
| Cabinet  | Load center            |
| Field traffic controller   | Locking system         |
| Fluorescent or LED cabinet lights and fixture                        | Filter                 |
| Fan and thermostat assembly  | Door plate label       |
| Power supply   | Alarm                  |
| Power strip  | Cabinet wiring diagram |
| Detector card  |                        |
| Surge Protection Device  |                        |
| Cabinet rack elevation drawings (See ITS-D04)                        |                        |
| All other cabinet equipment except CCTV and communications equipment |                        |

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| Group 3 - Communications Equipment |                                       |
| Encoder                            | Co-Ax cable                           |
| Cat 5E cable                       | Cellular equipment                    |
| Communication Switch               | Communication Surge Protection Device |

Ethernet/Data transceiver  
 Media converter  
 PoE Injector  
 Wireless point to multi-point IDU radio, ODU antenna, power supply, mounting equipment, and radio cabling  
 Wireless point to point IDU radio, ODU antenna, power supply, mounting equipment, and radio cabling  
 Other communications equipment or accessories

Group 4 - Fiber Optics  
 Fiber optic cable  
 Fiber optic patch cable  
 Fiber optic splice enclosure and trays  
 Fiber distribution assembly  
 Fiber optic patch panels  
 Fiber connectors  
 Cable labels  
 Closet connector housing assembly  
 Any other fiber optic equipment

Group 5 - ITS Device Equipment  
 Pavement sensor  
 Vehicle detector  
 Sensor mount  
 Bluetooth detection system  
 Shop drawings for CCTV camera lowering device, including composite cable for CCTV Shop drawings and specification for IP CCTV cameras including EPA and weight

CCTV camera and power supply  
 CCTV cable  
 CCTV mounting equipment  
 Detector cable

Group 6 - CCTV, Detector, and DMS Support Structures (Send electronic submittal).  
 Structural shop drawings to be reviewed by design Engineer (or consultant of record) with final approval by KDOT.  
 Shop drawings for DMS structures, foundations, and DMS mounting details  
 Shop drawings for CCTV pole (including handhole locations) and foundation  
 Shop drawings for detector pole and foundation

Group 7 - Testing  
 Ground resistance testing procedure and equipment  
 Example fiber optic test results sheet  
 Test procedures not provided by KDOT  
 KDOT may provide DMS and CCTV test procedures

Group 8 - Other  
 Cisco network and fiber optic splicing certifications  
 Fiber optic cable installation and splicing resume  
 Cabinet wiring diagram  
 Cabinet rack elevation drawings  
 Miscellaneous items that did not fall in any of the previous groups

To aid in control of the submittal data process, transmit each group of submittal data to the Engineer using a transmittal sheet. The Engineer will date-stamp these transmittal sheets with the date received and will return a copy of the stamped transmittal sheet when returning the submittal data. List on the transmittal sheet specifically each item or element included in the transmittal. An element is one part of several parts of information related to the same item. Each drawing shall be listed separately. Furthermore, each drawing shall have a unique drawing number that can be referenced. The same drawing number shall not be used on more than one sheet.

**4.4 STRUCTURAL AND FOUNDATION SHOP DRAWINGS**  
 For all non-catalog or custom made items including the support structures and foundations for VDS, CCTV and DMS, submit shop drawings for approval along with other data necessary to permit full evaluation of the proposed product and/or material. Obtain approved submittals prior to purchase or fabrication of any support structures for use on this project.

Structural and foundation shop drawings and calculations shall be sealed and signed by a Professional Engineer licensed in the State of Kansas.

No additional payment will be made for Contractor geotechnical work. Historical boring log data may be provided by the Engineer.

KANSAS DEPARTMENT OF TRANSPORTATION			
ITS EQUIPMENT SPECIFICATIONS			
ITS-S01		VERSION DATE: 05-29-17	
APP'D	DESIGNED	QUANTITIES	TRACED
	DETAILED	QUAN.	TRACE
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.