

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	87 N-0684-01	2019	96	109

**20.8.4 CONFIGURATION FILES**

Save all configuration files for Contractor and KDOT-supplied electronic equipment and maintain an up-to-date detailed component inventory. Maintain both hard copy and electronic files (Word or Excel) and deliver up-to-date copies of these files to the Engineer periodically as work progresses, or as directed by the Engineer.

**20.8.5 TEST RESULTS**

Include in the section a copy of all the results for all the tests that have been conducted for the contract including but not limited to the ITS component test results. Include in this section as applicable to the Plans:

1. Ground resistance test results
2. ITS component test results including, but not limited to:
  - a. CCTV results (PTZ, video throughput, standalone, subsystem, and 60-day/final acceptance test results)
  - b. CCTV lowering device test results
  - c. DMS results (standalone, commissioning, and 60-day/final acceptance test results)
  - d. VDS results (volume, speed, and 60-day/final acceptance test results)
  - e. Ethernet Radio Systems (P2P, & P2PM) results (wireless data communication link test)
  - f. Fiber Optic test results (OTDR, power meter, and total fiber loss results)

**20.8.6 WARRANTIES**

Include in this section a complete copy of all warranty information for Contractor supplied equipment as specified in these specifications. Provide effective dates for all warranties. Warranty information will be verified by KDOT prior to final project acceptance. Provide a spreadsheet of all ITS equipment on a project including: purchase date, serial and model numbers, and effective warranty period. Include any warranty submittals within this section.

**20.8.7 CABLE AND CONDUCTOR CERTIFICATIONS**

Include in this section all cable and conductor certifications from the supplier indicating that the materials meet the requirements of these specifications; and that the cable furnished was from a lot manufactured by (manufacturer's name) whose test results indicate compliance with the specifications. Include packaging and shipping labels showing the manufacturer's name, the cable type, and actual length of cable on reel, contractor's name, contract number, and reel number. Also include the date of manufacture, cable characteristics (size, attenuation, bandwidth), factory test results, cable identification number and other pertinent information.

**20.8.8 SPLICE VAULT / PULL BOX DOCUMENTATION**

For each fiber optic splice vault and communications pull box installed throughout the project, include the following documentation: a photo of the inside of each vault or box, a location description, the vault or box identifier as labeled in the plans, a description of each cable in the vault, tie-point measurements, sequential fiber markings taken from within 3 feet of the conduit enter, and any other pertinent information that would be useful for future maintenance.

**20.8.9 GPS DOCUMENTATION AND TIE-POINT MEASUREMENTS**

Include in this section an electronic list of GPS readings in excel or .kmz format for all installed devices including but not limited to: DMS foundations, CCTV foundations, detection, cabinets, pullboxes, splices vaults, service poles, transformers, junction boxes, conduit runs, wireless towers, and power supplies. GPS points for conduit runs shall be taken a minimum of every 100 feet for trenched conduit and 20 feet for bored conduit. Coordinate with KDOT on the current GPS format for coordinates. The accuracy of the GPS reading shall be within 2 feet.

**20.8.10 IN-CABINET DOCUMENTATION**

Provide to the Engineer final in-cabinet documentation for review and acceptance. Provide documentation that is computer generated and use 8 1/2" by 11" paper size. Place approved documentation in each cabinet folder. Include, at a minimum, the following documentation in the cabinet: the maintenance log, cabinet elevation drawings, communication schematic drawings, patch panel diagrams, wiring diagrams and test results. If changes occur during construction, provide the revised documentation to the cabinets.

Include in this section an electronic PDF of in-cabinet documentation.

**21.0 TRAINING**

**21.1 DESCRIPTION**

Conduct training courses for KDOT operations and maintenance staff on operating components of the ITS system if requested by KDOT. Design training courses to ensure that KDOT staff achieves a full knowledge and appreciation of the design, operation and maintenance of equipment. Training may consist of field device operations and maintenance training, field communications operations and maintenance training, and system (outside plant) operations and maintenance training.

**21.2 MATERIALS**

Provide all training documentation, and coordination with vendors to provide teaching staff. Provide the training to consist of lectures and demonstrations that shall provide practical (hands-on) training and experience.

Provide 5 hard copies of the training manuals and 1 electronic copy of the training manuals.

Provide a detailed training plan and a syllabus for each course for the approval of the Engineer. Include in the information: tentative dates for courses, locations, and an outline of topics and names of instructors. Provide this information to the Engineer at least 30 days in advance of the training course.

**21.3 CONSTRUCTION REQUIREMENTS**

Provide up to a 2-day training class to train operations and field maintenance personnel at KDOT's request. Include in-field demonstrations.

**22.0 BASIS OF ACCEPTANCE FOR ITS SYSTEM**

The ITS system will be accepted when all test results, documentation including but not limited to the TRM and as-built plans are received and approved by the Engineer, all test periods are successfully completed, and all training is completed.

**23.0 MAINTENANCE AND WARRANTY**

**23.1 MAINTENANCE**

Maintain all equipment and cables installed in this project until the ITS system has passed all testing requirements specified herein and has been accepted by KDOT. Once the operational test period has successfully been completed, turn over the maintenance of the ITS system to KDOT.

**23.2 WARRANTY**

Equipment Warranty: Obtain, assign, and furnish to the Engineer written manufacturer's warranties for all Contractor-provided products and electronic equipment consistent with those provided as customary trade practice.

Contractor Warranty: Provide a Contractor's warranty providing for satisfactory in-service operation of the ITS during the 60 day test period for each ITS component. Comply with the following for Contractor provided equipment: If defects develop during this period, replace or repair the provided equipment, at the expense of the Contractor, including all labor, material and associated costs, as necessary to restore required performance. Comply with the following for KDOT provided equipment: If defects develop in KDOT provided equipment, KDOT will provide a replacement and Contractor shall replace equipment, at the expense of the Contractor, including all labor, material and associated costs, as necessary to restore required performance. KDOT labor costs resulting from equipment replacement will not be charged to the manufacturer or the Contractor.

Plotted : 23-JUL-2019 13:06

Drawn By : Road  
File : ITS-S14.dgn

NO.	DATE	REVISIONS	BY	APP'D

**KANSAS DEPARTMENT OF TRANSPORTATION**

**ITS EQUIPMENT SPECIFICATIONS**

**ITS-S14**                      **VERSION DATE: 05-29-17**

APP'D	DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	