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|--------|--------------|------|-----------|--------------|
| STATE | PROJECT NO. | YEAR | SHEET NO. | TOTAL SHEETS |
| KANSAS | 87 N-0720-01 | 2023 | 354 | 517 |

GENERAL NOTES:

The following checklist is provided as a guide to the ITS/Project Inspector for critical points of inspection during the ITS construction process. This checklist does not include all requirements outlined in the plans and specifications and should not be used as a standalone reference to the requirements of this contract. Review all specifications and plan documents thoroughly and use this inspection checklist to verify correct and accurate construction and installation of critical ITS infrastructure. Work with the project Engineer to resolve any potential conflicts prior to final approval of any items on this checklist.

| CCTV SITES | | | | |
|-----------------|--|------|------|-----|
| Spec. No. | Item | Pass | Fail | N/A |
| 12.3.5 | CCTV pole grounded using a minimum #2 stranded copper grounding conductor. | | | |
| 12.3.5 | Galvanization at grounding lug cleaned away. | | | |
| 12.3.5 | Grounding wire welded to grounding rod. | | | |
| ITS-D13 | Grounding rod is 20' x 3/4" copper clad. | | | |
| Best Practices | Grounding rod drive below ground surface min. 6". | | | |
| 12.3.4, ITS-D13 | Air terminal is minimum 5 ft length above top of pole and 5ft length attached to pole (total length of 10ft). | | | |
| Per Plans | Extra conduit stubbed from CCTV pole to adjacent pull box. | | | |
| Per Plans | Pull boxes for power and communications located within 25' of CCTV, where site allows | | | |
| 10.3.1 | Wiring is labeled and labeled correctly. | | | |
| ITS-D13 | A maintenance pad is installed beneath pole mounted cabinet. | | | |
| GN 18 | CCTV pole face is minimum 7' from back of guardrail | | | |
| Per Plans | Radios and detectors mounted on CCTV pole oriented correctly. | | | |
| ITS-D13 | Wire mesh installed at base of poles to prevent rodent intrusion | | | |
| Per Plans | CCTV orientation correct as per plans | | | |
| ITS-D13 | CCTV not directly over cabinet or lowering device access point | | | |
| ITS-D14 | CCTV lowering will not interfere with radio or detectors | | | |
| Best Practices | Camera cable connected and tight to CCTV dome | | | |
| 8.5.2 | Surge protection devices installed in cabinet | | | |
| ITS-D20 | Folding poles have two winch operation placards in place as per standards | | | |
| ITS-D21 | Cables installed through folding pole hinge properly | | | |
| ITS-D22 | For folding poles, 2" Schedule 80 conduit used for FO pigtails in exposed portion. Conduit does not block access door. | | | |
| 20.3.1, 20.3.2 | CCTV acceptance testing has been conducted and acceptance checklist is completed. CCTV has been operated successfully for 60 days. | | | |

| CCTV LOWERING DEVICE | | | | |
|----------------------|--|------|------|-----|
| Spec. No. | Item | Pass | Fail | N/A |
| 12.2.2 | Verify lowering device is attached properly to pole using supplied hardware. | | | |
| 12.2.2 | Verify lowering device cable and wiring harness are routed through pole on separate paths so as not to interfere with each other. | | | |
| Best Practices | Verify that wiring harness is securely fastened to tie down loops inside pole. | | | |
| 12.2.2 | Very that lowering tool attaches properly to pole handhole using the provided tapped hole and bolt through lowering device. | | | |
| 12.2.2 | Verify operation of lowering drill forward and reverse. | | | |
| 12.2.2 | Verify clutch operation on clutch/socket assembly. | | | |
| 12.2.2 | Attach lowering tool to pole, connect lowering tool cable to lowering device cable using supplied screw links. | | | |
| 12.2.2 | Unlock camera using hand crank attached to lowering tool. | | | |
| 12.2.2 | Attach lowering drill to lowering tool and lower camera to full extent | | | |
| 12.2.2 | Verify camera stops lowering before contact with ground or other objects. | | | |
| 12.2.2 | Raise camera using drill to within 12" of camera mount. Use hand crank to raise camera final 12" and to lock in position. Verify camera is locked in place by releasing tension on lowering cable. | | | |
| GN 35 | Lowering device handhole is not on downhill side of pole nor underneath CCTV. | | | |
| 12.2.2 | Lowering device engages and disengages easily. | | | |
| Best Practices | Lowering device safety loop properly installed. | | | |
| 12.2.2 | Lowering device tools delivered to KDOT. | | | |

| DETECTOR SITES | | | | |
|------------------|---|------|------|-----|
| Spec. No. | Item | Pass | Fail | N/A |
| ITS-D19 | Detector pole bases are complete with covers. | | | |
| 13.2.6 | Detector pole base wires have breakaway cable connectors. | | | |
| 13.2.6 | Ground wire is a #4 bare copper wire or as shown on plans. | | | |
| ITS-D19 | Drip loop in detector cable before it enters pole. | | | |
| 13.2.6 | Cable grips installed inside pole to support cable weight. | | | |
| 13.4.1 | Detector is mounted at height specified by manufacturer for offset. | | | |
| ITS-D13, ITS-D19 | Detector is mounted securely to bracket and bracket securely strapped to pole. | | | |
| ITS-D19 | Attachment hardware is stainless steel or aluminum. | | | |
| 8.6.2 | Click! 200 surge protection device or equivalent is installed in cabinet. | | | |
| 13.2.4 | Click! 301 media converter device installed in cabinet. | | | |
| 8.6.2 | Click! 201 power converter installed in cabinet. | | | |
| 13.4.1 | Detector has been tested and verified in the field to provide coverage for all lanes and accuracy tested. | | | |
| 20.5 | Test report on detector provided to KDOT. | | | |

| CABINETS | | | | |
|------------------|---|------|------|-----|
| Spec. No. | Item | Pass | Fail | N/A |
| 14.3.1 | Cabinet heights are such that the top of the cabinet does not exceed 6 feet above ground. | | | |
| Best Practices | Cabinet attachment does not interfere with pole pull boxes. | | | |
| ITS-D21, ITS-D22 | Cabinet conduit to pole connections are watertight. | | | |
| 14.3.5 | Cabinet locate test station is installed. Tracer wire is connected, accessible from the exterior of the cabinet, and is isolated from cabinet and ground. | | | |
| 5.4.6 | Conduits edges are square and smooth and free of burrs. | | | |
| ITS-D05 | Cabinets are sealed between pad and cabinet bottom. | | | |
| 14.2.2 | Cabinet locks are Best 3L (KDOT) or Corbin Number 2 (KC Scout), keys given to KDOT or KC Scout. | | | |
| 14.2.2 | Cabinet has metal or phenolic name plate labeled KDOT ITS or KC SCOUT ITS and a phenolic name plate with device number. | | | |
| ITS-D16 | Ground mounted cabinets are installed minimum of 5 feet from ROW line (5'-10' preferred) or behind device pole (if in median or site dictates). | | | |
| ITS-D25 | DMS cabinets attached to pole with 4 stainless steel straps. | | | |
| 14.2.4 | Lights are installed in cabinet. | | | |
| 8.5.2 | Surge protection installed in cabinet. | | | |
| ITS-D04 | Power terminals and breakers are installed a minimum of 12" from bottom of cabinet for ground mounted cabinets. | | | |
| 5.4.10 | Tracer wire entering cabinet is labeled and NOT grounded. | | | |
| 5.4.17 | Conduits with wire are sealed with watertight duct seal. Conduits without wire are sealed with a mechanical duct plug. Expandable foam seal is not permitted. | | | |
| 14.2.13 | Rack mounted power strip is installed in cabinet. | | | |
| 14.3.2, 14.3.3 | Wires in cabinet are routed and bundled in a neat manner and wire tied so no loose cables are dangling in cabinet. | | | |
| 14.3.7 | Rack elevation drawing of finished cabinet provided to KDOT. | | | |
| Per Supplier | If UPS equipment is present, test the individual battery voltage to ensure they are fully charged/charging. Voltage should be at or near 12 volts. | | | |
| 14.2.7 | Filters installed in cabinet and fit tightly to door. | | | |
| 14.2.11 | Verify a single slide-out shelf is installed. | | | |
| 14.2.13 | Verify the presence of surge suppression devices. | | | |
| 7.3.2 | Fiber optic jumpers and cable do not exceed recommended bending radius. | | | |
| Best Practices | Cabinet is vacuumed and free of any dust or loose debris. | | | |
| 10.3.1.4 | Cabinet devices have IP addresses and subnet labeled, including sign controller, IE Network switch, modem, encoder, and boot bar. | | | |
| 14.3.6 | Cabinet documentation is in cabinet. | | | |
| 14.3.2 | Cabinet wiring is labeled. | | | |
| 14.3.7 | Verify cabinet documentation, including maintenance log, wiring schematic, rack elevation drawing, splice diagrams and test results. | | | |
| 14.2.2 | All cabinets have been accepted and construction cores are replaced with KDOT lock cores. | | | |

| DYNAMIC MESSAGE SIGNS | | | | |
|-----------------------|---|------|------|-----|
| Spec. No. | Item | Pass | Fail | N/A |
| 11.2.3 | All lighting protection fittings except cable holders are heavy-duty and made from bronze castings. | | | |
| 11.2.3 | All terminal rods, bolts, screws, and hardware use coper clad steel, bronze, or brass. | | | |
| 11.2.3 | All cables and terminals bear UL Label. | | | |
| 11.2.3 | 150-foot radius rolling sphere zone of protection drawing with air terminal has been submitted to the engineer. | | | |
| 11.3.2 | Detailed erection plans have been sent to the field engineer. | | | |
| 11.3.5 | DMS face is oriented towards roadway and according to plans. | | | |
| 11.3.6 | DMS temporary password is unique and provided to KDOT. | | | |
| ITS-D24 | Exposed anchor rods are cleaned of debris and lubricated with an approved wax. | | | |
| ITS-D25 | All connections are liquid-tight. | | | |
| ITS-D25 | All exposed conduits are HDPE. | | | |

| FOUNDATIONS | | | | |
|---------------------------|---|------|------|-----|
| Spec. No. | Item | Pass | Fail | N/A |
| Best Practices | Depth of foundation excavation meets minimum depth on all sides, even on slope side. | | | |
| KDOT Spec | Welding of reinforcement and anchor bolt threads is prohibited in concrete foundations. | | | |
| 9.3.1 | Anchor bolts are protected from concrete fouling during foundation pour. | | | |
| 9.3.2 | Anchor bolts are placed in proper alignment with bolt pattern of pole. | | | |
| 9.3.2 | Steel pole leveling nuts are torqued as specified. | | | |
| 9.3.2 | Steel pole top nuts are torqued as specified. | | | |
| 9.3.2 | Rodent screens are installed between steel pole base and foundation and in a manner such that wiring and fiber are not exposed. | | | |
| ITS-D21, ITS-D22, ITS-D23 | Folding pole foundations are 6" to 8" above existing ground grade. | | | |
| ITS-D24 | Foundation has cured for at least 14 days. | | | |
| Best Practices | Concrete foundations and concrete pads are formed and neat in appearance. | | | |
| Best Practices | Excavation sites are protected with fencing or caution tape and covered. | | | |
| ITS-D24 | DMS foundation does not extend more than 6" above existing ground line. | | | |
| ITS-D13, ITS-D20 | Wire mesh installed at base of poles to prevent rodent intrusion. | | | |

| COMMUNICATIONS | | | | |
|---------------------|--|------|------|-----|
| Spec. No. | Item | Pass | Fail | N/A |
| 5.4.10 | Tracer wire is installed in or over conduits with fiber optics and spare conduits intended for future fiber optics (one tracer wire per conduit group). | | | |
| ITS-D10 | Fiber optic marker posts are installed at pull box, splice vaults, at sharp turns, and every 500' over conduit with fiber. | | | |
| ITS-D10 | Marker posts at pull box or splice vault with coiled fiber only shall have one orange band mark. | | | |
| ITS-D10 | Marker posts at pull box or splice vault with splice enclosure shall have two orange band marks. | | | |
| 15.3 | Fiber optic cable is single mode XX strand per plans and meets requirement of specifications. | | | |
| 15.11.2 | No end-of-day cable cuts done. Full reel, contiguous installations of cable utilized as situation permitted. | | | |
| 15.6 | New fiber cable on reel has ends that are sealed to prevent moisture intrusion. | | | |
| 15.6 | Each fiber reel has tag with specification information as required. | | | |
| 15.11.1 | At least one member of on-site fiber personnel have two years of experience in industry as required. | | | |
| 15.8.1, 15.8.2 | Pigtails and jumpers are all factory terminated. No field terminations allowed. | | | |
| 14.3.2, 14.3.3 | Fiber optic cables are not folded and are not wire tied tightly in any enclosure or cabinet. | | | |
| 15.11.2 | Bend radius of fiber optic cable is no less than 20 times the OD of the fiber optic cable in cabinets, pull boxes, and splice vaults. | | | |
| 15.11.2 | Lubricant is used when placing cabling in conduit. | | | |
| 15.11.2 | When fiber optic cable is pulled, a break-away swivel is used to prevent cable tension from exceeding 80% of recommended tension and swivel has ball bearings to prevent cable twisting. | | | |
| 15.11.2 | When fiber optic cable is pulled, cable ends are sealed to prevent ingress of dirt and moisture. | | | |
| 15.11.2 | No tension remains on fiber optic cable after installation. | | | |
| 15.11.2 | The first 10 feet of fiber optic cable pulled is discarded. | | | |
| ITS-D03 | 50' of slack trunkline fiber optic cable from each direction stored in splice vault with splices. | | | |
| ITS-D03 | 100' of slack trunkline fiber optic cable stored in splice vault without splices. | | | |
| ITS-D03 | 25' of slack trunkline fiber optic cable stored in pull boxes. | | | |
| ITS-D03 | 100' of slack branch fiber optic cable from each direction stored in pull boxes or splice vaults with splices. | | | |
| ITS-D03 | 25' of slack branch fiber optic cable stored in pull box or splice vaults without splices. | | | |
| ITS-D03 | 50' of slack branch fiber optic cable stored at each ITS cabinet location. 40' stored at nearest pull box or splice vault. 10' store at ITS cabinet. | | | |
| 15.7 | Splice closures are mounted to side of splice enclosure box, not laying on bottom. | | | |
| 15.11.5 | Splice closure is waterproof and has been sealed. | | | |
| 15.11.4 | Fiber splicing is by fusion method only. No mechanical splices allowed. | | | |
| 15.11.4 | All splices have thermal shrink sleeve protection. | | | |
| 15.11.6.4, 15.11.7 | Clean all connections to meet IEC61300-3-35 | | | |
| 10.3.1.1 | All fibers at splice locations and pull box locations are labeled. | | | |
| 15.11.6.3 | Individual fibers in a splice tray are looped at least one full turn. | | | |
| 10.3.1.4, 15.11.6.3 | Each closet connector housing with pin/port numbers is labeled and each patch panel with pin/port numbers is labeled. | | | |
| Best Practices | Patch panels are protected with plastic wrapping during construction. Post-construction, all unpatched terminals shall have dust covers intact. | | | |
| 10.3.1.4.7 | Each SFP port on Cisco switches is labeled with proper TX and RX port numbers. | | | |
| 15.11.7 | Unmated connectors have protective caps installed. | | | |
| 20.8 | Power meter tests and OTDR test have been performed per specs. Test results are provided to the Engineer. | | | |
| ITS-D13 | Cable connections on back of radio antennas are sealed and waterproofed. | | | |
| Best Practices | Radio antenna is mounted securely to brakcet and bracket securely strapped to pole. | | | |
| 17.3, 18.3 | Radio antenna attachment hardware is stainless steel or aluminum. | | | |
| ITS-D13, 17.3, 18.3 | Radios are oriented correctly to provide maximum signal strength. | | | |

Plotted : 25-SEP-2023 18:45

Drawn By : lovohs
File : ITS-S17.dgn

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|-------------------------------------|---------------------|---|-----------|-------|
| KANSAS DEPARTMENT OF TRANSPORTATION | | | | |
| ITS INSPECTION CHECKLIST | | | | |
| PAGE 2 OF 2 | | | | |
| ITS-S17 | | VERSION DATE: 02-12-21 | | |
| APP'D | CABLE, CONDUIT, AND | QUANTITIES | TRACED | |
| DESIGNED | DETAILED | QUAN. CK. | TRACE CK. | |
| NO. | DATE | REVISIONS | BY | APP'D |
| 1 | 6/22 | Cabinets- Changed IE 3000 with switch to "Network Switch" | CCB | |