STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	87 N-0720-01	2023	353	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.

GENERAL: PRE-CONSTRUCTION				
Spec. No.	Item	Pass	Fail	N/A
4.0	Shop drawings have been submitted and approved.			
4.6	A construction schedule (in MS Project or similar format) outlining the proposed order of work has been submitted and approved by the engineer.			
GN 7, GN 8	All field locations for devices have been staked and approved by the engineer. Any proposed plan modifications have been approved by the engineer.			
KDOT Spec	All construction permits including KDOT Access Permit have been obtained.			

GENERAL: DURING CONSTRUCTION				
Spec. No.	Item	Pass	Fail	N/A
GN 2	Disturbed areas at sites are restored and reseeded.			
GN 2	Disturbed landscaping is restored and irrigation lines repaired.			
Best Practices	Extra concrete at site is cleaned up and removed.			
Best Practices	Materials and trash at sites are cleaned up and removed			
Best Practices	Brush has been trimmed around power sources and devices as needed			
Per Plans	Temporary detectors and their associated equipment noted as salvaged have been delivered to KDOT.			
Per Plans	All temporary cameras, poles, cabinets, and associated equipment have been salvaged and delievered to KDOT.			
Best Practices	A minimum clear zone for devices of 38' is maintained for slopes 4:1 or 5:1. For rural DMS, this is a 32' to edge of DMS face.			
Best Practices	A minimum clear zone for devices of 32' is maintained for slopes 6:1 or flatter. For rural DMS, this is 32' to edge of DMS face.			
Best Practices	Ground rods shall not be buried until connections are visually verified by the Engineer and test results are accepted.			

GENERAL: POST CONSTRUCTION				
Spec. No.	Item	Pass	Fail	N/A
14.2.2	All cabinets have been accepted and construction cores are replaced with KDOT lock cores.			
GN 36, 20.9.6	Contractor has taken a GPS reading accurate to within 3 feet at all splice vaults and pull boxes and recorded them electronic spreadsheet and provided to KDOT. Contractor has recorded three tie-point measurements for buried electrical pull boxes.			
20.9	Technical Reference Manuals have been delivered to KDOT at the end of job. TRM includes items as referenced in specifications.			
20.9.2	As-built plans have been provided to KDOT.			
20.9.2	Kansas OneCall utility locates have been confirmed by KDOT			
20.9.3, 20.9.4	Equipment warranties have been assigned to KDOT and documentation provided to KDOT. Contractor warranty of products and installation for 60 days test period, including on-site repair and/or replacement at no cost to KDOT provided.			
20.9.4	Equipment testing at each site has been performed, recorded in forms, signed by the Contractor, and a copy provided to KDOT.			
Best Practices	Inspector has provided contractor with final punch list.			
22.0	Engineer has accepted all work.			
22.0	All utilities have been located by Kansas One-Call and verified by KDOT.			

CONDUITS & PULL BOXES				
Spec. No.	Item	Pass	Fail	N/A
5.3	Existing conduits have been proofed and cleaned before installation of cables.			
5.2.2	Non-metallic conduits are Schedule 80.			
GN 9	If site allows, conduit is routed parallel to ROW line and/or KDOT's fiber backbone and then perpendicular to ROW to device.			
GN 20, GN 22	When within 5 feet of KDOT lighting conduit or 10 feet of KDOT fiber or CenturyLink/Lumen fiber, conduit was hand dug or hydro-excavated			
Best Practices	Conduits and pull boxes are located at least 25' from edge of roadway and ramps where possible.			
5.2.2	Colors of conduit used are correct: KDOT area: green for communication, red for power, and black for spare. KC Scout area: blue for communication, yellow for power, and black for spare.			
5.4.1	Minimum bend radius of conduit is the greater of the following: 20 times the OD of fiber optic cable, 6 times the ID of the conduit for 2 inch or smaller, or 10 times the ID of the conduit for 3 inch or larger.			
5.4.8	Empty conduits have mechanical duct plugs installed, no duct tape or expandable foam seal			
5.4.17, 15.11.2	Conduits with cable have watertight duct seal at each end, no duct tape or expandable foam seal.			
5.4.6, 6.3.1	Conduit edges are square and smooth, free of burrs. 10 to 12 inches of conduit is exposed inside the box.			
5.4.4, 5.4.5	Conduits are cleaned, swabbed, and mandrel tested			
5.4.9, ITS-D10	Communication conduit has a minimum of 42 inches of cover. Electrical conduit has a minimum of 48 inches of cover. Utilities crossing under roadways have a minimum of 5 feet of over below crown grade or 3 feet below ditch grade.			
ITS-D10, 5.2.5, 5.4.11, GN 25	Trenches for conduit have 3 inch minimum reincorced warning tape installed 12 inches above the top of conduit. Tape is orange for conduit carrying communication and red for other conduits.			
ITS-D10, 5.4.12	Trenches for conduit are free of rock or items that may damage conduit when compacted.			
ITS-D10, 5.4.12	Trenches for conduit are filled and compacted.			
5.4.15	HDPE conduit on bridges has expansion devices installed.			
5.4.15	Rigid metal conduit attached to structures is anchored within 3 feet of each termination and every 5 feet with galvanized or stainless steel hardware.			
5.4.15	Rigid metal conduit attached to steel bridge members is clamped. No drilling, grinding, or welding is allowed.			
ITS-D10, 5.4.15	Rigid metal conduit that passes across an expansion joint has a conduit expansion device installed.			
5.2.1	Metal conduits have bushings on ends to protect cable from sharp edges.			
6.2.1	Metal conduits are grounded and bonded to one another.			
5.4.16	Conduit carrying electrical wire is grounded. Ground wire is the size of the largest current-carrying conductor, #6 minimum.			
5.2.4, 5.4.10	Tracer wire is orange, No. 23 strand THHN copper wire and is installed in or over conduits with fiber optics and spare conduits intended for future fiber optics (one tracer wire per conduit group).			
5.4.10	Tracer wire is isolated at terminals and labeled "Tracer" and not grounded.			
Best Practices	Do not allow truck traffic over pull boxes.			
Best Practices	Use a double pull box configuration when power and communications are present in same location.			
ITS-D06	Pull boxes are installed downhill of cabinets on slope so they do not rain into cabinet.			
6.2.2	Lids on pull boxes are labeled correctly for power, communications, and high voltage.			
6.3.1	Pull boxes and splice vaults have 24" of gravel underneath.			
6.3.1, ITS-D07, ITS-D08	Concrete around pull boxes and splice vaults is formed square with clean and neat edges.			
5.4.10, 6.2.4 ITS-D07, ITS-D08	Tracer wire test station is installed for communication pull boxes with tracer wire hooked up and proper grounding.			
6.2.2, ITS-D07, ITS-D08	Stainless steel bolts with pentaheads are installed in pull box lids after final punch list is approved.			
6.2.2	Lid bolt holes and lift anchors are free of concrete and debris.			
Best Practices	Extra concrete at pull boxes cleaned up.			
6.3.1	Pull boxes shoul be cleaned out of mud/debris before final acceptance.			

POWER/WIRING				
Spec. No.	Item	Pass	Fail	N/A
6.3.1	Power and communication cables are in separate conduits and pull boxes per plan requirements.			
8.7.1	Power meter assemblies have phenolic nameplate with "KDOT ITS", service address, and service voltage			
GN 19	Transformers are mounted adjacent to cabinet or near ROW line, always outside clear zone, on lightweight structure in weather-tight enclosure			
8.4.4	Transformers and service disconnect doors have metal plates with "DANGER HIGH VOLTAGE".			
8.4.4	Transformer are labeled as step-up or step-down and with all incoming and outgoing voltages.			
8.4.4	Transformers have padlocks and key is provided to KDOT.			
8.5.2	Surge protectors installed in cabinets.			
10.3.1.3	Power cables labeled correctly entering cabinets, pull boxes, transformers, or power meter assemblies.			
8.7.1	All circuits are labeled in power supply.			
8.3	Power at sites has been ordered in KDOT's or KC Scout's name. Contractor assumes all fees until KDOT or KC Scout assumes ownership.			
7.3.2	The minimum bend radius of power cable is 6 times the OD of the cable.			
ITS-D03	36 feet of power cable stored at Type 1 power supply assembly			
ITS-D03	8 feet of power cable stored at each Type 2 power supply assembly, load side			
ITS-D03	8 feet of power cable stored at each Type 2 power supply assembly, service side			
ITS-D03	36 feet of power cable stored at service pole and 8 feet at service pedestal			
ITS-D03	8 feet of power cable stored at transformers			
ITS-D03	8 feet of power cable stored at ITS cabinets			
ITS-D03	6 feet of power cable stored at pull boxes			
ITS-D03	50 feet of power cable at each overhead DMS			
ITS-D03	25 feet of power cable at each roadside DMS			
7.3.3	Power cable splice is in pull box or enclosure only and only if indicated on the plans. No splices allowed in conduit.			
7.3.3	Splices have connectors, 2 layers of electrical rubber tape, 4 layers of plastic electrical tape, 2 layers of friction tape, and 3 coats of waterproof compound. No soldered connections allowed.			
8.1	Ground rod attachments are exothermically welded. No clamps. Mechanical connections are permitted if ground rods are above ground and inside cabinet.			
8.2	Ground resistance testing is performed in the presence of the engineer or their approved representative and results provided to the Engineer.			
Best Practices	Ground rods shall not be buried until connections are visually verified by the Engineer and test results are accepted.			

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

ITS INSPECTION CHECKLIST
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ITS-S16 VERSION DATE: 02-12-21

APP'D CABLE, CONDUIT, AND			
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

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Plotted : 25-SEP-2023 18:45
Drawn By : lcvohs
File : ITS-S16.dgn