

859 – INTELLIGENT TRANSPORTATION SYSTEM (ITS)

SECTION 859

INTELLIGENT TRANSPORTATION SYSTEM (ITS)

859.1 DESCRIPTION

Install Intelligent Transportation System (ITS) including KDOT supplied materials as shown in the Contract Documents.

BID ITEM

Intelligent Transportation System

UNITS

Lump Sum

859.2 MATERIALS

a. Provide the specified materials that comply with the materials' divisions (**SECTION 1000 – 2500**).

For concrete foundations, use Grade 3.0 concrete that complies with **SECTIONS 401, 402** and **1102**, and steel reinforcement that complies with **DIVISION 1600**, unless shown otherwise in the Contract Documents.

b. **ITS.** Provide and install all materials necessary for the complete and satisfactory operation of the ITS whether specifically mentioned or not. Provide material that is new, the best standard product of a manufacturer regularly engaged in the production of this type of material, the manufacturer's latest approved design and of best quality and workmanship.

859.3 CONSTRUCTION REQUIREMENTS

a. **Codes and Regulations.** Perform all ITS work according to:

- National Electric Code.
- National Electric Safety Code.
- Rural Utility Service (RUS).
- Illumination Engineers Society (IES).
- Standards of the American Society for Testing and Materials (ASTM).
- American Association of State Highway and Transportation Officials (AASHTO).
- Regulations of the National Board of Fire Underwriters.
- Local ordinances.
- KDOT Utility Accommodation Policy
- Details in the Contract Documents.

Whenever reference is made to any of the standards mentioned, the reference shall be considered to mean the code, ordinance, or standard that is in effect at the time of the bid advertisement.

b. **General.** Provide and install all incidental parts not shown in the Contract Documents which are necessary to complete the ITS system or modify existing systems as shown in the Contract Documents.

All utility hookups and utility transformers are subsidiary.

c. **Removals and Excavations.** Perform removals of existing structures and excavations to minimize damage to existing structures and right-of-way.

Limit the excavation for the conduits, foundations and other appliances to that necessary for the installation of the materials. Do not excavate until immediately before installing the materials.

Place excavated material where the least damage and obstruction to vehicles and pedestrian traffic will occur. Do not impede surface drainage.

Assume ownership and dispose of removed concrete and soil off of the right of way.

At the end of each day's work and at all times when construction operations are suspended, remove all equipment and other obstructions from the portion of the roadway open for use by public traffic.

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d. Backfill. Place the backfill material in uniform layers (maximum 6 inches compacted) evenly on all sides of the structure. Compact the backfill using pneumatic tampers, vibratory compactors or other equipment approved by the Engineer. Compact the backfill to comply with the Contract Documents. If backfill requirements are not specified, compact each layer until no further consolidation is observed.

Remove surplus excavated material, including concrete and soil from the project and dispose on sites approved by the Engineer or assume ownership and dispose of off of the right of way. Reseed and mulch the areas disturbed by the excavations. Hand seeding methods may be used.

Do not use cinders, broken concrete, broken rock or other hard or undesirable material for backfilling.

e. Replacing Damaged Improvements. Replace all sidewalks, curbs, gutters, pavements and other improvements removed or damaged during installations of the Intelligent Transportation System. Replace or reconstruct the removed or damaged improvements with the same type and quality of materials originally used. If part of an existing slab of concrete pavement or square of sidewalk is removed or damaged, replace the entire slab or square. Replace damaged improvements as soon as practicable.

Completely repair the ditch and replace the disturbed aggregate ditch liner if construction activities disturb any aggregate ditch. Do not let rocks or aggregate fall into the trench prior to backfill.

f. Foundations.

(1) Concrete Foundations. Form the foundations and place the concrete according to **DIVISION 700**. Hold conduit ends and anchor bolts securely in the proper position when the concrete is placed.

Cure the concrete foundations with wet burlap or polyethylene for a period of 72 hours. Prevent concrete temperatures from falling below 32°F.

Do not attach poles or cabinets until the concrete has cured for 14 days.

Construct foundations in one pour.

If a foundation cannot be constructed as shown in the Contract Documents because of an obstruction, Contractor will submit to the Engineer for approval, an alternate method to construct the foundation.

The top of the pole foundations shall be 2 inches above the finished grade if located in a non-paved area. Concrete work aprons around equipment cabinet foundations shall be 1 inch above the finished grade if located in a non-paved area.

(2) Screw-In Foundation Anchors. If screw-in foundations are required in the Contract Documents, pre-drilling holes for screw-in foundation anchors is prohibited. As the foundation anchors are screwed into the ground, make sure they are plumb. The pole base of the screw-in foundation anchor shall be level when the installation is complete.

Use the connectors to make minor leveling adjustments on poles with breakaway connectors. Use galvanized or cadmium plated shims or washers (maximum thickness ¼ inch) to make minor leveling adjustments on other types of poles. Only 1 shim or washer is allowed on any 1 anchor bolt, with a maximum of 2 shims or washers on any pole.

(3) Removal of Existing Foundations. Remove the designated existing foundations to the depth shown in the Contract Documents. Backfill the resulting holes according to **DIVISION 200**. Dispose of the removed foundations and anchor bolts.

g. Conduit. Install electric conduit as shown in the Contract Documents and **subsection 814.3g**.

h. Electric Service Boxes. Install electric service boxes as shown in the Contract Documents.

i. Pull Boxes. Install pull boxes as shown in the Contract Documents.

j. Expansion Fittings. If expansion fittings are required in the Contract Documents, install expansion fittings as shown in the Contract Documents, where conduit crosses an expansion joint in the structure. Provide each expansion fitting with a bonding jumper of No. 6 A.W.G. copper wire or equal.

k. Wiring. Neatly arrange and lace up wiring within junction boxes, transformer bases and on standards, etc.

Do not splice cable in conduit or outside of pull boxes, splice boxes or standards, unless shown in the Contract Documents. When not fastened to existing structure or carried through conduit, lay conductor cable to the depth shown in the Contract Documents.

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Use powdered soapstone, talc or other approved lubricant when inserting conductors in conduit. Pencil, trim to conical shape and roughen conductor insulation before applying splice insulation.

When conductors and cables are pulled into the conduit, tape all ends to exclude moisture until the splices are made or terminal appliances are attached.

l. Bonding and Grounding. When a closed system enclosed in conduit is used, bond metallic cable sheaths, conduit and metal standards to form a continuous system, and effectively ground. When an open system such as an overhead wiring or direct burial underground is used, effectively ground only standards and service points, except where conduit runs used under pavement cross a water system.

Install ground electrodes as shown in the Contract Documents.

m. Communication Link Tests. After all the connections have been completed, test communications as noted in Contract Documents.

n. Documentation. Provide documentation as noted in Contract Documents.

859.4 MEASUREMENT AND PAYMENT

The Engineer will measure the Intelligent Transportation System by the Lump Sum.

All utility hookups, utility transformers, excavation, backfilling, Grade 3.0 concrete and testing for the Intelligent Transportation System are subsidiary.

Payment for "Intelligent Transportation System" at the contract unit price is full compensation for the specified work.