

**ADDENDUM NO. 1**

**Sedgwick County Project: East 47<sup>th</sup> Street South and Oliver (R370)**

**The items contained herein now become a part of the referenced plans and specifications. Please read the following items and acknowledge receipt of this addendum on the Proposal Page Number P-1. NOTE: THIS ADDENDUM MUST BE ACKNOWLEDGED TO CONSTITUTE A VALID BID.**

***SPECS:***

- No changes

***PLANS:***

- Replace Sheet 2 with Sheet 2R. Specifies the length of luminaire arm and pole locations.
- Replace Sheet 9 with Sheet 9R. Revision to Wind Load on the Traffic Signal Pole.

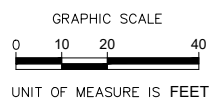
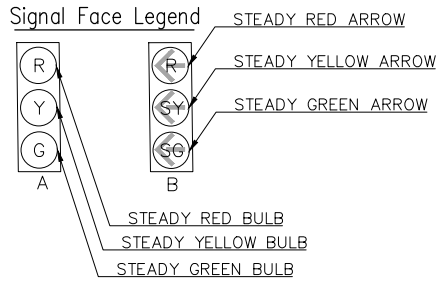
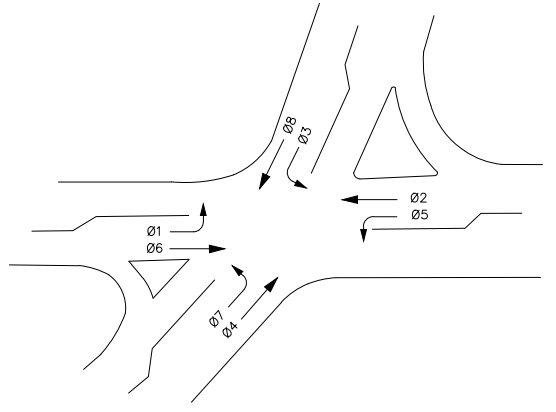
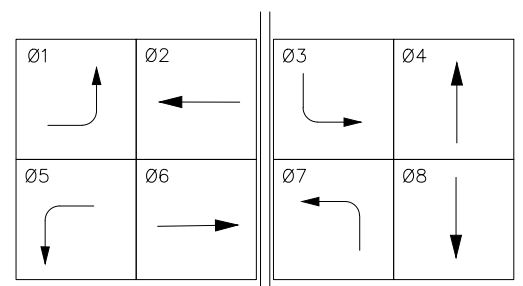
By: 

Lynn T. Packer, P.E.

Director of Public Works/County Engineer

**Date: February 13, 2024**

PHASE DIAGRAM



LEGEND

- MAST ARM MOUNTED TRAFFIC SIGNAL W/BACKPLATE
- TRAFFIC SIGNAL POLE
- ▶ TRAFFIC SIGNAL HEAD W/TYPE DESIGNATION
- ⊥ LUMINAIRE MAST ARM ONLY
- ⊠ PAD MOUNTED CONTROLLER
- SERVICE BOX
- EXISTING SERVICE BOX
- EXISTING SIGNAL POLE
- ▶ EXISTING TRAFFIC SIGNAL HEAD
- Ⓟ POLE NUMBER
- Ⓜ SERVICE BOX NUMBER
- Ⓢ VIDEO DETECTION ZONE NO.

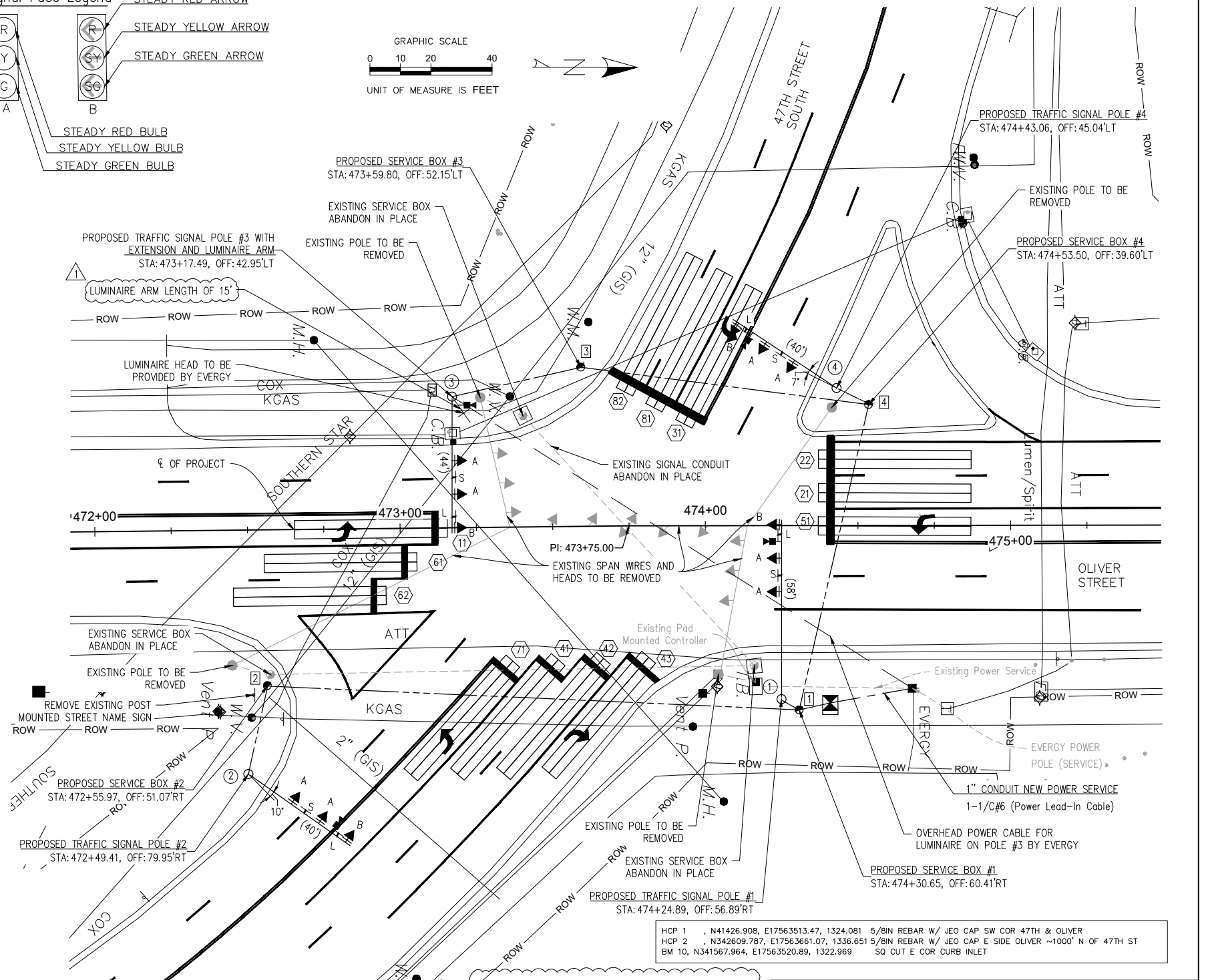
- ▭ 6 x 50 DETECTION ZONE
- ▭ 6 x 6 DETECTION ZONE
- 3" CONDUIT
- 2" CONDUIT
- 1" CONDUIT
- EXISTING CONDUIT
- ⊥ SIGN ON 1 POST
- ⊥ SIGN ON 2 POSTS
- ⊥ SIGN ON MAST ARM
- ⊥ VIDEO VEHICLE DETECTION

SUGGESTED TIMINGS (SEC)							
PHASE	MINIMUM INITIAL	MAXIMUM GREEN SPLIT	PEDESTRIAN			CLEARANCE	
			WALK	PDW	SDW	YELLOW	ALL RED
1	3.0	30.0	-	-	-	4.0	0.5
2	6.0	80.0	-	-	-	4.0	1.0
3	3.0	45.0	-	-	-	4.0	0.5
4	6.0	80.0	-	-	-	4.0	1.0
5	3.0	30.0	-	-	-	4.0	0.5
6	6.0	80.0	-	-	-	4.0	1.0
7	3.0	30.0	-	-	-	4.0	0.5
8	6.0	80.0	-	-	-	4.0	1.0

EMERGENCY FLASH	
PHASE	INDICATION
1	Red
2	Red
3	Red
4	Red
5	Red
6	Red
7	Red
8	Red

GENERAL NOTES:

- EXISTING SIGNAL WILL BE OPERATIONAL UNTIL NEW SIGNAL HAS BEEN CONSTRUCTED AND READY FOR OPERATION.
- ONCE NEW SIGNAL IS OPERATIONAL:
  - REMOVE ALL EXISTING SIGNAL POLES, SPAN WIRE, CONTROLLER CABINET, AND EXISTING CONDUCTOR.
  - REMOVE AND SALVAGE EXISTING HEADS AND SIGNAL CONTROLLER EQUIPMENT.
  - ABANDON EXISTING SIGNAL SERVICE BOXES AND CONDUIT.
  - RELOCATE EXISTING VIDEO DETECTION TO NEW MAST ARMS AND MOUNT PER SEDGWICK COUNTY STANDARDS.
- SERVICE BOX AND JUNCTION BOX LOCATIONS AND CONDUIT RUNS ARE TYPICAL ONLY AND MAY BE ADJUSTED DURING INSTALLATION TO CLEAR OBSTRUCTIONS AND FACILITATE WIRING AS APPROVED BY THE ENGINEER.
- EXACT VIDEO DETECTION LOCATIONS ARE TO BE AT THE DIRECTION OF THE MANUFACTURER'S REPRESENTATIVE. VIDEO CABLE TERMINATIONS, VIDEO FINE-TUNING, SYSTEM SET-UP, AND PROGRAMMING WILL BE PERFORMED BY THE SUPPLIER WITH THE ASSISTANCE OF THE CONTRACTOR.
- AREAS DAMAGED BY THE CONTRACTOR SHALL BE RESTORED TO A CONDITION EQUAL OR BETTER THAN THAT EXISTING BEFORE DAMAGE OCCURRED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL COORDINATE POWER CONNECTION WITH EVERGY (SEE UTILITY CONTACTS ON COVER SHEET. CONTRACTOR SHALL PROVIDE POWER SERVICE CONDUIT FROM CONTROLLER CABINET TO 7" FROM SERVICE POLE AND CONDUCTOR TO SERVICE METER. EVERGY WILL PROVIDE RISER AND CONNECTION FROM METER TO TRANSFORMER).
- CONDUIT RUNS FROM THE SERVICE BOXES TO ALL POLES SHALL BE MANUALLY TRENCHED, NOT BORED TO AVOID CORNER UTILITIES.
- POLES AND FOUNDATIONS FOR POLES 2, 3, 4 SHALL CONFORM TO SEDGWICK COUNTY STANDARDS (SEE SHEETS 6 AND 7). POLE AND FOUNDATION FOR POLE 1 SHALL CONFORM TO KDOT STANDARDS (SEE SHEETS 11, 12, AND 13).
- EVERGY TO INSTALL LUMINAIRES ON POLE 3 AND UTILITY POLE IN NORTHEAST CORNER AS WELL AS OVERHEAD CONDUCTOR AND POWER CONNECTIONS.



S\* Oliver St

47th St

STREET NAME SIGNS

L LEFT TURN SIGNAL

R10-10L 24"x30"

\* SEE SHEET 5 FOR STREET NAME SIGN DETAILS

POLE LOCATIONS		
	NORTHING	EASTING
Pole #1	341508.45	17563676.72
Pole #2	341333.79	17563701.23
Pole #3	341400.50	17563577.58
Pole #4	341526.48	17563574.76

ADDENDUM NO. 1  
ADDED " LENGTH OF 15' " TO LUMINAIRE ARM NOTE  
MOVED POLE LOCATIONS TABLE UP

SEDGWICK COUNTY TRAFFIC SIGNAL REPLACEMENT  
TRAFFIC SIGNAL PLANS  
E. 47TH ST. SOUTH & OLIVER ST.

PREPARED BY JEO CONSULTING GROUP, INC					SHEET NO. <b>2</b>
PAT BYRD, P.E.					
SCALE	DESIGNED	DRAWN	CHECKED		
1" = 20'	JRAM	JRAM	PSB		
DATE	4/2023	4/2023	4/2023		

COUNTY	STATE	PROJECT NUMBER	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
SEDGWICK	KANSAS	R370	2024	9	18

The cabinet shall contain a ventilating fan controlled by a thermostat and suitable dust filters for the capacity of the ventilating system. The filters shall be of the dry type and easily replaced.

In addition to the main doors of the controller cabinet, there shall be an auxiliary door provided on one side of the cabinet a lock and standardized police key. The panel behind the auxiliary door shall contain two (2) switches to accomplish signal on/off and flash/auto operations.

A convenience outlet and a fluorescent light with cold weather ballast shall be furnished in each cabinet.

The controller must be furnished with an externally installed lightning arrestor inside the controller cabinet on the power supply side. The lightning arrestor shall be of the hybrid type rated at 20,000 amps and capable of clamping such a surge to a peak of not greater than 340 volts without regard for the rise time of the surge. The arrestor shall be totally of solid state design, with no gas tube type devices of any kind and shall be a two stage unit providing separate protection for the controller and monitor unit. A minimum 200 microhenry inductor shall be incorporated between the "equipment line in" and "equipment line out" terminals. The arrestor shall be epoxy encapsulated with a flame-retardant material.

**E. UNINTERRUPTIBLE POWER SUPPLY:**

The traffic signal installation shall include backup power provisions. Referred to as an uninterruptible power supply (UPS) to maintain traffic signal operations in the event the AC power is disrupted. The UPS supplied shall be the Novus 1000 TP system, or approved equal. The UPS shall include a controller unit with a 19" EIA rack mountable chassis, manual bypass switch, and four (4) 100AH batteries designed specifically for standby power in an outdoor environment.

All components except the batteries shall be housed in the traffic signal controller cabinet. The batteries shall be housed in a separate brushed aluminum cabinet designed for and sized to house the batteries that shall be attached to the side of the traffic signal cabinet. The battery cabinet shall be vented, include a traffic lock, and the connection with the traffic signal cabinet shall be made weatherproof.

The UPS shall be connected to the special events input on the traffic signal controller and both be programmed to log AC power disruption as an event on the controller log. The UPS shall maintain normal traffic signal operations until the batteries reach 40 percent of their normal capacity, at which time the traffic signals shall be transferred to flashing operation.

All materials and equipment necessary for a complete and operable UPS shall be provided and installed.

**2.0 LED TRAFFIC SIGNAL LENS:** The lens shall be a self-contained, sealed unit designed to fit in a regular 12 inch traffic signal housing. Each lens shall meet all requirements of the ITE standard for LED Lenses. The lens shall provide a light beam spread of 30 degrees on all sides of its center axis. The center axis shall be designed to provide a 7 degree downward angle.

The lens shall be made of UV stabilized acrylic or impact resistant polycarbonate. The housing shall be ABS or other approved material sealed to the lens to create a vandal-resistant and weather-tight enclosure.

The self-contained, regulated power supply shall allow the unit to operate over an input voltage range between 85 and 135 volts AC. The lens shall be driven at between 20 and 23 milliamps, and consume not more than 20 watts of power +/- 2 watts at 120 volts AC. The light output shall meet ITE specifications for a 12-inch lens illuminated by a 150-watt incandescent A21 clear traffic signal lamp. The operating temperature range shall be between -30 degrees Celsius and +85 degrees Celsius.

The unit shall be warranted against defects in workmanship and materials for a period of 5 years from date of receipt by Sedgwick County or installation by the Contractor.

**3.0 BACK PLATES:** Where shown on the plans, 5" back plates shall be furnished and attached to the signal faces to provide a dark background for signal indications. Back plates shall be constructed of durable plastic capable of withstanding a 100 M.P.H. wind.

Where a back plate consists of two or more sections, the sections shall be fastened with stainless steel allen-head machine screws with self locking stainless steel nuts to prevent loosening after assembly. A flat washer shall be between the back plate and each locking nut, and a flat washer shall be between the signal head housing and each screw head.

Three-section back plates shall be used for all 5-section "dog house" signal heads.

**4.0 ALUMINUM TRAFFIC SIGNAL PEDESTALS:** Unless otherwise specified on the plans, the following specifications shall govern the design of aluminum traffic signal pedestals.

**A. SHAFT:**

The shaft shall be a one-piece tube of 6063-T6 aluminum alloy with a minimum wall thickness of 0.237". The shaft shall be of uniform diameter throughout its length. The shaft outside diameter at the top shall be approximately 4.5". Overall height of the shaft and base shall be as indicated on the plans. The shaft shall have a satin brush finish. The shaft shall be threaded with a nominal 4" pipe thread and be threaded into the base. The base and shaft are to be taped and fitted with a 3/8" set screw.

**B. BASE:**

The base shall be equipped with a handhold and door for access to the interior of the base. The handhold shall have a minimum dimension of 7 3/4" by 8". The door shall be fastened in place by a single bolt, which shall have an allenhead to discourage unauthorized personnel from gaining access to the wiring compartment in the pedestal base. The pedestal base shall be mounted to a poured concrete pad by means of four anchor rods set in a bolt circle of 13 1/2" diameter. There shall be a provision in the base for the attachment of a ground rod.

**C. HARDWARE:**

Anchor bolts shall be 3/4" diameter by 27" long plated, and they shall be supplied with nuts, lock washers and flat washers. The pedestal shaft shall be secured to the base by a collar at the top of the base to stabilize the pedestal shaft against torsion and moment forces.

**D. GENERAL:**

The pedestal and base shall be designed to support two one-way, three-section 12" polycarbonate traffic signal heads and two sets of 12" polycarbonate pedestrian signal heads. The shaft shall be wrapped with protective paper for shipment. Large scratches or gouges in the aluminum material shall be cause for rejection.

**5.0 AC SERVICE INPUT:** Each service disconnect must be furnished with an installed lightning arrestor on the AC service input.

The lightning arrestor shall be of the hybrid type rated at 20,000 amps and capable of clamping such a surge to a peak of not greater than 340 volts without regard for the rise time of the surge. The arrestor shall be totally of solid state design, with no gas tube type devices of any kind and shall be a two stage unit providing separate protection for the controller and monitor unit. A minimum 200 microhenry inductor shall be incorporated between the "equipment line in" and "equipment line out" terminals. The arrestor shall be epoxy encapsulated with a flame-retardant material.

**6.0 ELECTRICAL WIRE AND CABLE:** All wire and cable supplied under this specification shall be approved based upon catalog cuts submitted to the engineer. In addition, the Engineer shall visually inspect all wire and cable. Any apparent defect that may shorten the service life of the wire or cable shall be cause for rejection.

**A. MULTI-CONDUCTOR CABLE:** All conductor cable for intersection signalization and intersection interconnection shall be multi-conductor cable of the size specified on the plans for operation on a 600V maximum and suitable for use at conductor temperatures not exceeding 75 degrees Celsius. Material, construction and tests shall be in accordance with the applicable requirements of the Insulated Cable Engineers Association standard S-61-402 "Thermoplastic Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy."

Conductors shall be stranded, annealed, uncoated copper or annealed, coated copper. Copper wire before insulating or stranding shall meet the requirements of the latest edition of ASTM B-33 (for coated wire) or ASTM B-3 (for uncoated wire). Stranding shall be class B in accordance with the latest edition of ASTM B-8.

Insulation for the individual conductors shall consist of a 20 mil thickness of polyethylene, and an insulation covering of a polyvinyl chloride compound with a 10 mil thickness.

The polyethylene insulation shall meet the requirements of paragraph 3.9 of ICEA Standard S-61-402 before application to the conductor, and paragraph 3.9.1 after application to the conductor.

The polyvinyl chloride insulation covering shall meet the requirements of paragraph 4.3.1 of ICEA Standard S-61-402, and it shall be color coded in accordance with method 1, part 5 of ICEA Standard S-61-402.

The overall cable jacket shall consist of a polyvinyl chloride compound, which will provide a tough, heat, moisture, ozone, and flame resistant covering meeting the requirements of paragraph 4.3.1 of ICEA Standard S-61-402. The overall jacket thickness shall be in accordance with Table 18, Part 4, ICEA Standard S-61-402. Conductor cable used for the signal control circuits shall be #14 AWG multi-conductor cable meeting the above requirements. Conductor cable used for intersection interconnection shall be #12 AWG multi-conductor cable meeting the above requirements.

**B. POWER SUPPLY WIRE:** Intersection signalization power supply wire shall be single conductor wire for operation on a 600V maximum, and it shall be suitable for use at conductor temperatures not exceeding 75 degrees Celsius. Material, construction and tests shall be in accordance with the applicable requirements of the ICEA Standard S-66-524 "Cross-Linked-Thermosetting-Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy."

Conductors shall be stranded, annealed coated copper. Copper wire before insulating or stranding, shall meet the requirements of the latest edition of ASTM B-33 (for coated wire). Stranding shall be Class B, in accordance with the latest edition of ASTM B-8. Refer to drawings for size and type of wire required.

**7.0 STEEL MAST ARM TYPE TRAFFIC SIGNAL STANDARDS:** The following specification shall govern the design of steel mast arms with poles and bases unless otherwise specified on the plans. The manufacturer shall provide an information sheet showing design details of the mast arm, pole, anchor bolts, flange construction, orientation of anchor bolts to mast arm and pole, and any other pertinent installation instruction.

**A. COMPLETE ASSEMBLY:**

All items for complete assembly shall be furnished including, but not limited to:

- (1) Arm with support shaft and base
- (2) Flange plates and bolts for attachment of mast arm to shaft
- (3) Anchor bolts with nuts and washers and covers
- (4) Cap for top of pole

**B. DESIGN:**

The complete assembly shall be designed to support standard one-way, multi-section signals rigidly mounted in the specified locations. All traffic Signal Poles shall conform to AASHTO 1994 "Standard Specification for Structural Support for Highway Signs, Luminaries and Traffic Signals" Handbook with a wind load of 80 MPH and 1.3 gust factor.

The shaft and mast arm shall each be made of only one length of best grade hot rolled, basic open hearth steel of not less than #7 manufacturer's steel gauge. Only one longitudinal weld, and no transverse welds shall be permitted in the fabrication of the shaft and mast arms. After being formed and welded, the shaft shall then be longitudinally cold rolled under sufficient pressure to flatten the weld, form a round tapered tube and increase its physical characteristics so the metal will have a guaranteed minimum yield strength of 50,000 psi. The shaft and arms shall have a uniform taper of 0.14 inches of diameter change per foot of length. As an alternate, mast arms in excess of 38 feet in length may be made in two pieces, which shall assemble by the outer piece telescoping over the inner piece with a firm tapered fit. The joint shall be secured against movement with a through bolt or stud and lock nuts.

**C. ANCHOR BOLTS:**

Four high-strength steel anchor bolts, each fitted with two nuts and two washers shall be furnished with each pole. Each anchor bolt shall have an "L" bend at the bottom end and shall be threaded at the top end. Only the top ten inches on the threaded ends of the anchor bolts need be galvanized. The manufacturer shall properly machine or otherwise ensure that the nuts and washers shall easily fit the anchor bolts after the galvanizing process. The bolts, nuts and washers shall be delivered soon after receipt of order.

**D. ANCHOR BASE:**

A one-piece steel anchor base with 16" bolt circle except where otherwise noted of adequate strength, shape and size shall be inserted and centered into the rebar cage and shall be suspended by methods approved by the Engineer to assure proper alignment during pole base construction.

**E. POLE SHAFT:**

A hand hole with a minimum area of 25 square inches shall be cut into the shaft. The bottom of the hand hole shall be two feet above the pole base plate. The terminal block shall be mounted outside and above the hand hole as shown in the plans. The entire hand hole/terminal facility area shall be encompassed by a raised flange welded to the pole shaft. A cover shall completely cover the handhold and the terminal facility area and be sealed with an appropriate rubber gasket supplied by the pole manufacturer.

Pole top caps shall be provided and shall be secured in place with set screws or other suitable fasteners. A "J-hook" wire support shall be provided in each pole shaft.

Provision shall be made for a grounding attachment.

**F. MAST ARM:**

The mast arm shall have a horizontal length as called for on the plans. A 1 1/2" hole shall be drilled in the bottom of the arm at the location of each signal head or other required fixture. The hole shall be well reamed and fitted with a wiring grommet to prevent the chafing of cables.

**G. MAST ARM ATTACHMENT:**

Arm and pole mounting plates shall be provided. The mast arm plate shall telescope the mast arm and be circumferentially welded inside and out. The pole plates shall be attached to the shaft by welded gusset plate to bottom and sides. Four fully threaded high-strength bolts meeting ASTM A-325 shall be furnished to attach the arm to the shaft. The bolts shall be of sufficient length to pass through the matching face plates on the arm and front of the pole as well as through a saddle plate on the back side of the pole to provide for adequate tightening. Smooth holes shall be provided in the two plates to allow the signal cable to go from the shaft to the arm without exposure to the outside weather.

**H. IDENTIFICATION:**

The manufacturer shall permanently mark each mast arm and bolt to identify them with their corresponding Traffic Signal Pole Summary item number.

ADDENDUM NO. 1  
REPLACED "LATEST EDITION OF AASHTO" WITH "AASHTO 1994" ON DESIGN.

SEDGWICK COUNTY TRAFFIC SIGNAL REPLACEMENT

## TRAFFIC SIGNAL SPECIFICATIONS

REVISED 2-23-2006

TS 5-0

PREPARED BY  
SEDGWICK COUNTY PUBLIC WORKS  
HIGHWAY DEPARTMENT

LYNN T. PACKER, P.E. DIRECTOR/COUNTY ENGINEER

SCALE	DESIGNED	DRAWN	CHECKED	SHEET NO.
NONE	M.R.B.	D.R.S.	M.R.B.	9
DATE	2/2006	2/2006	2/2006	

DWG: R370tss-TS 6-0