CHART A SIGNAL SUMMARY

BRACKET TYPE	NO. WAYS	NO. SECTIONS (per face)	SIGNAL FACE ARRANGEMENT	MOUNTING TYPE	QUANTITY
1	1	3	A	RIGID MAST ARM	8
				RIGID MAST ARM	
B	1	3	A	VERTICAL BRACKET	4
2	1	2	1	VERTICAL BRACKET	8

CHART B TRAFFIC SIGNAL POLES

	ARM SIZE	NO. OF SIGNALS ON ARM	SIGNAL SPACING
10+46, 78' R.	28	2	0-16-28
10+61, 2' R.	28	2	0-16-28
9+82, 1' R.	26	2	0-16-26
9+71, 78' R.	30	2	0-20-30

SERVICE BOX SUMMARY

STATION	DIST. - SIDE
10+44.61	62.00' RT.
10+48.46	6.78' RT.
9+68.15	69.74' LT.
9+78.36	2.43' LT.

JUNCTION BOX SUMMARY

STATION	DIST. - SIDE

CHART C

CONDUIT	TRENCHED	PUSHED
3/4"		
1"		
1 1/4"		
2"		
3"		

CHART D STREET NAME SIGN SUMMARY

LEGEND	SIZE
Broadway	(18" x 60")
Waterman	(18" x 60")

BILL OF MATERIALS

ITEM	UNIT	QUANT.
POLE MOUNTED CONTROLLER & CABINET	EACH	1
PEDESTAL MOUNTED CONTROLLER & CABINET	EACH	
PAD MOUNTED CONTROLLER & CABINET	EACH	
TRAFFIC SIGNAL HEAD (see chart A) w/MOUNTING HRDWRE.	EACH	12
TRAFFIC SIGNAL POLE (see chart B) STEEL	EACH	4
TRAFFIC SIGNAL POLE (see chart B) ALUMINUM	EACH	
TRAFFIC SIGNAL PEDESTAL - ALUMINUM 16'	EACH	
	EACH	
	EACH	
CONCRETE CONTROLLER PAD	EACH	
CONCRETE FOOTING - PEDESTAL	EACH	
CONCRETE FOOTING - POLE	EACH	4
CONDUIT ELBOW 90°	EACH	as req'd
CONDUIT ELBOW 90° 3"	EACH	as req'd
BACK PLATE 5" 3 SECTION	EACH	8
BACK PLATE 5" 4 SECTION	EACH	
BACK PLATE 5" 5 SECTION	EACH	
TERMINAL BLOCK	EACH	
SERVICE BOX	EACH	4
JUNCTION BOX	EACH	
GROUND ROD & CLAMP	EACH	6
CONDUIT CLAMP	EACH	as req'd
TRAFFIC SIGNAL LAMP 150 watt	EACH	52
TRAFFIC SIGNAL LAMP 67 watt	EACH	
CLASS 4, WOOD POLE	EACH	
ENTRANCE HEAD	EACH	1
CIRCUIT BREAKER & BOX 40 AMP	EACH	1
GUY WIRE GUARD	EACH	
GUY WIRE CLAMP	EACH	
THIMBLE EYE ANCHOR ROD	EACH	
	EACH	
	EACH	
	EACH	
	EACH	
PEDESTRIAN PUSHBUTTON W/SIGN	EACH	
PEDESTRIAN INDICATOR HEAD	EACH	8
	EACH	
	EACH	
COMMUNICATION CABLE 6 PAIR NO. 19 A.W.G.	LIN. FT.	150
DETECTOR LOOP WIRE NO. 14, AWG 1/c (TYPE THHN)	LIN. FT.	
LEAD-IN WIRE NO. 6 A.W.G. 1/c (TYPE THHN)	LIN. FT.	100
MULTI-CONDUCTOR CABLE NO. 14 A.W.G. 5/c	LIN. FT.	400
MULTI-CONDUCTOR CABLE NO. 14 A.W.G. 7/c	LIN. FT.	825
MULTI-CONDUCTOR CABLE NO. 14 A.W.G. 2/c	LIN. FT.	
SHIELDED DETECTOR LEAD-IN NO. 16 A.W.G. 2/c	LIN. FT.	
CONDUIT 3/4" SEE CHART C	LIN. FT.	
CONDUIT 1" SEE CHART C	LIN. FT.	40
CONDUIT 1 1/4" SEE CHART C	LIN. FT.	20
CONDUIT 2" SEE CHART C	LIN. FT.	45
CONDUIT 3" SEE CHART C	LIN. FT.	235
STANDARD 1C #8 (GROUND)	LIN. FT.	400
TETHER WIRE 1/4" ASTM A475 Siemens-Martin Grade Min	LIN. FT.	
REMOVAL OF EXISTING TRAFFIC SIGNAL EQUIPMENT **	L.S.	1
STREET NAME SIGNS - SEE CHART D (D3)	EACH	4
LEFT TURN YIELD ON GREEN W/ MOUNTING HARDWARE (R10-12)	EACH	
	LIN. FT.	

- Quantities For Information Only -

NOTE: The contractor shall supply and install all necessary materials and equipment for the complete installation and operation of the traffic signal system whether specifically mentioned or not.

A B* C D E* F G H I J L M

12" lenses - vehicular and pedestrian

* Subscript "P" indicates programmed signals.
Subscript "D" indicates dual-mode green/yellow arrow section.

** Removal of existing traffic signal equipment shall include removal of foundations, service boxes, and junction boxes. See construction traffic control regarding removal of existing signals.

10. COMMUNICATIONS CABLE

A. Splices General

Communications cable splices shall be made at the communications terminal block within the signal controller cabinet whenever possible. Other necessary cable splices shall be made only with approval of the project engineer in the manner dictated below.

B. Underground Splices

Underground communications cable splices shall be made only within service boxes or utility manholes using an approved waterproof, re-enterable splice kit with multiple port and caps if necessary. The splices shall be staggered heat shrinkable insulated butt splices. The splice kits shall be filled with an approved non-hardening, waterproof encapsulant.

The enclosure shall be transparent and capable of being racked in the service box or manhole immediately after filling with encapsulant. The contractor shall rack all splice kits after filling with encapsulant.

C. Aerial Splices

Aerial splices shall be made using a [illegible] closure kit with [illegible] terminal blocks.

D. Shield Grounding

Communications cable shielding shall be grounded at one point only - at the control center in City Hall for CBD zones and at the on-street master cabinet for non-CBD zones. Shielding at all splice points (aerial, underground or at the controller cabinet) shall be connected together using shield connectors and a #16 THHN stranded, white insulated wire with a ring tongue connector on each end as a bonding jumper between the shield connectors. Paper insulation shall be used on all bare parts of the bonding system to prevent contact with the messenger cable or other metal parts in the closure.

E. Testing

A continuity test and an insulation resistance test of each communications pair (including spares) will be conducted in the presence of the project engineer or his representative. During the tests, all transient suppression devices shall be disconnected. If any test fails, repairs shall be made by the contractor and the entire test for that cable circuit shall be repeated.

F. Continuity Test

The continuity test shall be made between a point upstream of where the new communications cable is spliced to the existing cable and each new field termination point. Each conductor in a pair shall show a resistance of not more than 10 ohms per 1,000 feet of AWG #19 conductors. The resistance shall be measured with a meter having a minimum resistance of 20,000 ohms/volt. Contractor to supply City of Wichita with a typed record of the resistance of each paired conductor.

G. Insulation Resistance Test

The insulation resistance test shall be measured with all other connections to the conductor under test removed, and all other conductors in the cable and the shield grounded. The measurement shall be made with a direct current potential of not less than 350 volts nor more than 550 volts applied for one minute. Insulation resistance shall exceed 5,000 megohm-mile. The contractor to supply City of Wichita with typed record of the resistance of each conductor.

FINISH COATING OF STEEL TRAFFIC SIGNAL POLE STANDARDS

ALL ACCESSIBLE INTERIOR SURFACES ARE COATED WITH A LEAD AND CHROMATE FREE RED OXIDE RUST INHIBITIVE ALKYD PRIMER TO MINIMUM DRY FILM THICKNESS OF 1.0 MILS. THE COATING IS CURED BY HEATING THE STEEL SUBSTRATE TO A MINIMUM OF 350 DEGREES FAHRENHEIT.

ALL EXTERIOR SURFACES ARE COATED WITH A ZINC RICH EPOXY POWDER TO A MINIMUM DRY FILM THICKNESS OF 2.0 MILS. THE COATING IS ELECTROSTATICALLY APPLIED AND PARTIALLY CURED IN A GAS FIRED CONVECTION OVEN BY HEATING THE STEEL SUBSTRATE TO A MINIMUM OF 250 DEGREES FAHRENHEIT.

THE POWDER PRIMED SURFACE IS COATED WITH AN INTERMEDIATE COAT OF POLYESTER POWDER TO A MINIMUM DRY FILM THICKNESS OF 2.0 MILS. THE COATING IS ELECTROSTATICALLY APPLIED AND CURED BY HEATING THE SUBSTRATE IN A CONVECTION OVEN TO A MINIMUM OF 350 DEGREES AND A MAXIMUM OF 400 DEGREES FAHRENHEIT.

THE INTERMEDIATE COAT IS TOP COATED WITH ONE COAT OF HIGH-BUILD ACRYLIC POLYURETHANE ENAMEL TO A MINIMUM DRY FILM THICKNESS OF 2.0 MILS. THE COATING IS ELECTROSTATICALLY APPLIED AND CURED BY HEATING THE SUBSTRATE IN A CONVECTION OVEN TO A MINIMUM OF 225 DEGREES FAHRENHEIT. COLOR IS TO MATCH CUSTOMER'S PAINT CHIP SAMPLE.

CONTROLLER CABINETS AND BRACKETS SHALL BE FINISHED IDENTICAL TO POLE EXTERIOR SURFACES.

STATE PROJECT NO.	STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
7	KANSAS	87 K-0067-04 (STP-CM-0067(04))		3	21

TEMPORARY SIGNAL GENERAL NOTES

1. Contractor to furnish, install and maintain a cabinet and controller. All other existing signal standards and equipment to be used for the temporary signal.
2. The contractor to notify Bill Bowland, 268-4693, 24 hours in advance to coordinate removal of existing cabinet and controller and installation of contractor's cabinet and controller.
3. All wiring installed shall conform to the National Electrical code as well as local ordinances and requirements.
4. The operation and maintenance of the signal systems shall be the responsibility of the contractor.
5. All signal indications, clearances, and sequences shall be in accordance with the current M.U.T.C.D.
6. The temporary traffic signals shall be included in the bid item "Traffic Control Temp Sys".
7. The temporary traffic signals shall by switched on during an off-peak hour. When switching signals, flagmen will be required.
8. The terminal blocks shall be in a weatherproof enclosure.
9. All necessary signal head, controller and pole relocations, whether specifically mentioned or not, shall be the contractor's responsibility.
10. Traffic signal heads which are in place and not in use during a specific step shall be removed, or covered with an opaque material.
11. Signal phasing and timing shall be set as directed and approved by the Engineer-in-Charge of construction.
12. Each intersection shall have a signal controller capable of a standard eight phase operation, with green intervals variable from 0 to 255 seconds.
13. The traffic signal controller must be capable of storing a minimum of three separate phasing/timing plans, which can be selected on a time-of-day basis.
14. In case of signal malfunction, the contractor must respond within one hour.
15. Existing pedestals, signal heads, cable, etc. shall become the property of the contractor.

Type 170 Traffic Controller System to include:

One (1) Model 170 Controller Unit complete with 512K System Memory Module capable of supporting WAPITI Micro System WORKS (latest revision) Traffic Program and one (1) Model 400 Modem.

One (1) Model 336 Cabinet complete with all accessories including four (4) Model 430 Transfer Relays, two (2) Model 205 Flasher Units and one (1) Model 210pc Conflict Monitor.

Three (3) Model 242 Two Channel Isolators

Eight (8) Model 200 Switch Packs

NO.	DATE	REVISION	BY	APP'D
3				
2				
1	1-95	Service Box Sts.	EM	
NO.	DATE	REVISION	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

SIGNAL QUANTITIES SHEET

SHEET NO.	OF	SCALE	APPT.	
DESIGNED		DETAILED	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.	QUANT. CK.	TRACE CK.