STATE	PROJECT NO.	YEAR	SHEET NO.	SHEETS
KANSAS	87 N–0235–01	2006	72	120

BILL OF MATERIALS (for Information Only)

ITEM	UNIT	QUANTITY
Traffic Signal Pole Steel W/Mastarm (Std)	Each	2
Traffic Signal Pedestal (15')	Each	2
Concrete Footing – Pole	Each	2
Concrete Footing – Pedestal Pole	Each	2
Service Box – 36 In. Dia.	Each	2
Ground Rod & Clamp	Each	4
Conduit Clamp	Each	As Needed
Pedestrian Signal Lamp L.e.d. (12" Combination)	Each	2
12" L.E.D. Unit	Each	18
Back Plate For Signal Head (Type A)	Each	4
Entrance Head	Each	1
Circuit Breaker & Box	Each	1
Traffic Signal Head – 12" (Type A) W/Mounting Bracket	Each	6
Traffic Signal Head – 12" (Type A.W.F.) W/Mounting Bracket	Each	2
Pedestrian Signal – 12" (Type K) W/Mounting Bracket	Each	2
Pedestrian Pushbutton W/Sign	Each	2
Pole Mounted Cabinet & Controller System–Type 170 (See Note)	Each	1
Lead–In Wire No. 6 Awg 1/c (Type THHN)	Lin. Ft.	77
Multi–Conductor Cable No. 14 Awg 5/c	Lin. Ft.	8
Multi–Conductor Cable No. 14 Awg 3/c	Lin. Ft.	415
Multi–Conductor Cable No. 14 Awg 2/c	Lin. Ft.	455
Stranded No. 8 Awg 1/c (Type THHN)(Ground)	Lin. Ft.	549
6pr #19 IMSA 20–2, 600 V Shielded Communication Cable	Lin. Ft.	#
Pedestrian Signal Removal (Subsidiary)	Each	1
Conduit 1"	Lin. Ft.	40
conduit 1 ¼"	Lin. Ft.	285
Conduit 2"	Lin. Ft.	15
Conduit 3"	Lin. Ft.	100
School Crossing Sign (S2–1) W/Mounting Hardware	Each	2
School Speed Limit Sign (S5–1) W/Mounting Hardware	Each	2
End School Zone Sign (S5–2) W/Mounting Hardware	Each	2
Supplemental Warning Arrow (W16–7pL) W/Mounting Hardware	Each	2

Type 170 Traffic Controller System to include:

One (1) model 170 controller unit complete with 412b2 system memory module capable of supporting Wapiti Micro System W4IKS (56a or latest revision) traffic program on 27256 eprom.

One (1) model 336 cabinet complete with all accessories including four (4) model 430 transfer relays, two (2) model 204 flasher units and one (1) model 210pc (ecl or ms) conflict monitor.

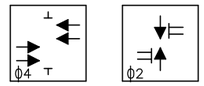
Two (2) model 242 two channel isolators.

Two (2) model 200 switch packs.

One (1) surge protector.

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

See Pawnee/Washington Intersection Wiring Plan.

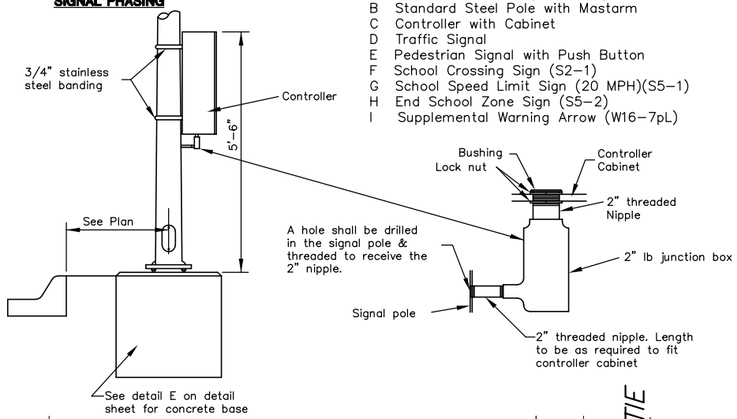


TRAFFIC SIGNAL POLE SUMMARY

STATION	TYPE	ARM LENGTH	SIGNALS ON ARM	SIGNALS/EQUIP. ON POLE	SIGNS ON POLE
45+90.0, Rt.	A	–	–	1–D	1–G, 1–H
47+55.8, Lt.	B	26'	2–D	1–D, 1–E	1–F, 1–I
47+65.0, Rt.	B	32'	2–D	1–C, 1–D, 1–E	1–F, 1–I
49+05.8, Lt.	A	–	–	1–D	1–G, 1–H

A Standard 15' Pole (Aluminum)
B Standard Steel Pole with Mastarm
C Controller with Cabinet
D Traffic Signal
E Pedestrian Signal with Push Button
F School Crossing Sign (S2–1)
G School Speed Limit Sign (20 MPH)(S5–1)
H End School Zone Sign (S5–2)
I Supplemental Warning Arrow (W16–7pL)

PAWNEE
SIGNAL PHASING



GENERAL NOTES

1. Conduit shall be jacked or bored under existing pavement and under new pavement that has been placed prior to conduit installation.
2. Placement of Service/Junction Boxes, Conduit Runs and Controller are typical and may be adjusted as directed by the Engineer to facilitate installation.
3. The Contractor shall contact utility companies which may be affected by the installation of Traffic Signalization prior to any construction.
4. Westar Power Pole Baseline Sta. 47+85.5, 56.3' Rt. Install Meter and Power Disconnect. See Power Pole Details.
5. Contractor shall install a 1" rigid galvanized conduit from the pole located at Sta. 47+85.5, 56.3' Rt., to the traffic signal controller located at Sta. 47+65.0, 41.9' Rt., to carry the metered conductor from the meter to the traffic signal controller. Meter address is 1251 E. Pawnee.
6. See Signal Pole Details for additional Traffic Signal Structures requirement.

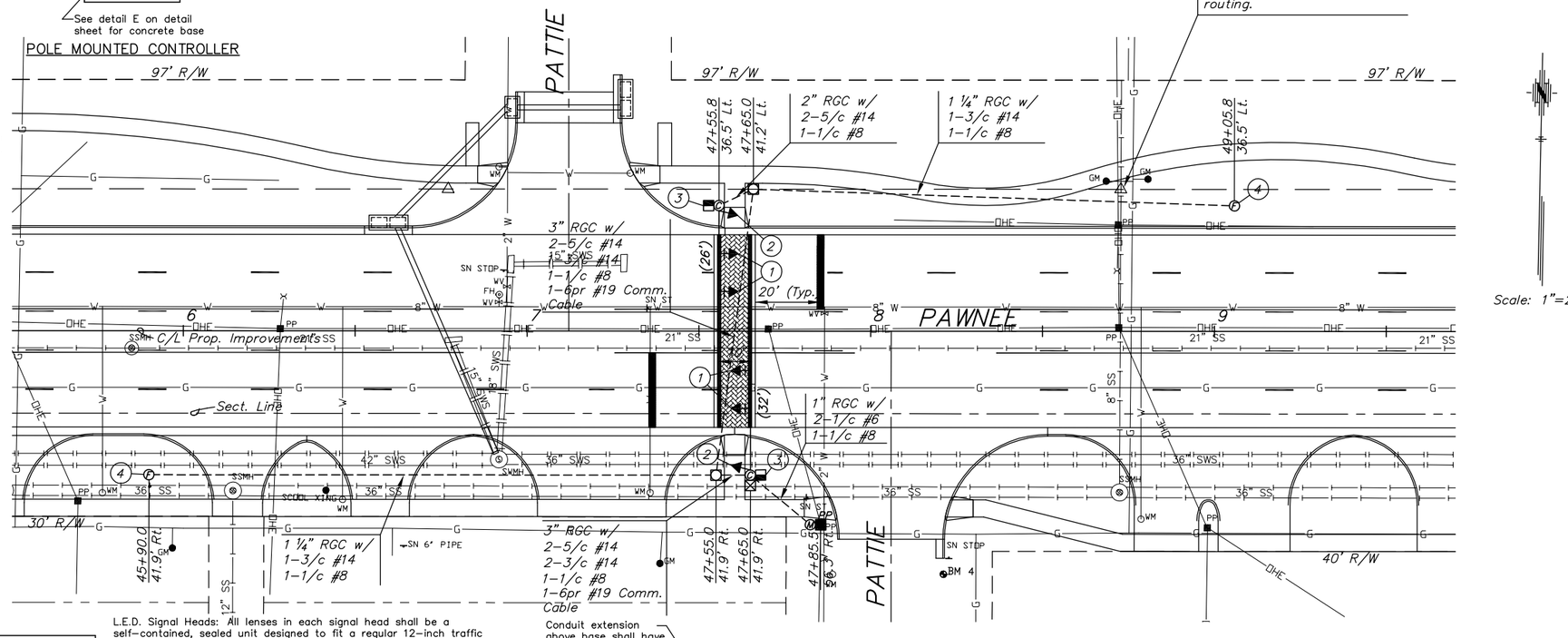
   See Pavement Marking Plan for pavement marking lay–out.
7. All poles, mastarms and cabinet shall be powder coated black.
8. Installation of signs called–out on this sheet shall be Subsidiary to Pedestrian Signal.
9. Contractor shall provide Temporary Signal at Crosswalk Location or provide Flag Persons during School Crossing Periods.

LEGEND

- Ⓟ Advance Warning Flasher on Signal Pedestal with Signs S5–1(24"x48") and S5–2(24"x30")
- Ⓒ Crosswalk Signal Pole, Mastarm and Sign S2–1 (36"x36") with W16–7pL (24"x12")
- Traffic Signal Indication w/Backplate
- Mast Arm Suspended Traffic Signal
- Service Box
- Controller
- Pedestrian Indication
- Junction Box
- Rigid Galvanized Conduit (RGC)
- Ⓜ Meter Box and Power Disconnect
- PP Power Pole

 # All Poles, Mastarms and Cabinet shall be Powder Coated Black.

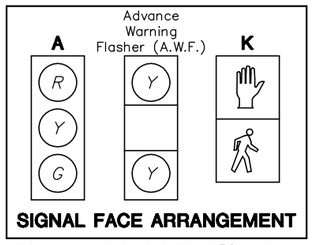
See Pavement Marking Plans for layout of Junction Boxes and Communication Cable routing.



TRAFFIC SIGNAL HEAD SUMMARY

SIGNAL NO.	TYPE	SIZE	MOUNTING BRACKET	QUANTITY
1	A	3–12"	TYPE I	4
2	A	3–12"	TYPE IV*	2
3	K	2–12"	TYPE IV*	2
4	A.W.F.	3–12"	TYPE V	4

* One Type IV Bracket will support 1 Type A and 1 Type K Signal Head.
All Signal Heads to be L.E.D.



SIGNAL FACE ARRANGEMENT

All lenses in each head shall be L.E.D. unit per note.

TYPE 170 CONTROLLER SETTINGS

INTERVAL		"WAPITI PROGRAM" PHASE 1 WBLT	2 EB	3 SBLT	4 NB	5 EBLT	6 WB	7 NBLT	8 SB	NORMAL DISPLAY TIME CLOCK	FEATURES	1	2	3	4	5	6	7	8
MAX	0		30		30					0 YEAR	VEH RECALL		X						
MAX 2	1		30		30					1 MONTH	PED RECALL								
WALK	2		0		8					2 DAY/MONTH	RED LOCK								
FL. DW.	3		0		20					3 DAY/WEEK	YEL LOCK		X		X				
MAX INIT.	4		30		28					4 HOUR	ø PERMIT		X		X				
MIN GREEN	5		30		28					5 MINUTE	PED PHASES				X				
TBR	6		10		0					6 SECOND	LEAD PHASES	X		X					
TTR	7		10		0					7	DBL ENTRY								
	8									8	SEQUENTIAL								
PASSAGE	9		0		0					9	START UP YEL								
MIN GAP	a		0		0					a	OVERLAP A								
ADD ACT	b		0		0					b	OVERLAP B								
YELLOW	c		4.0		3.0					c	OVERLAP C								
RED CLR.	d		1.5		0					d	OVERLAP D								
RED REV.	e		0		0					e	EXCLUSIVE								
WALK II	f		0		0					f	SIM GAP								

LTT–2

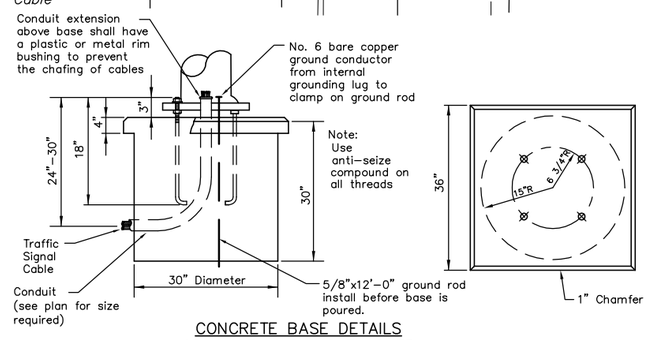
L.E.D. Signal Heads: All lenses in each signal head shall be a self–contained, sealed unit designed to fit a regular 12–inch traffic signal housing. It shall incorporate a minimum of 186 high reliability, high intensity LED indicators. The lens shall provide a light beam spread of 30 degrees on all sides of its center axis which shall be designed to provide a 5 to 7 degree downward angle.

The lens shall be made of UV stabilized plastic. The rear cover shall be of non–flammable material and the entire unit shall be totally sealed to preclude the entrance of water, dust or other contaminants.

The self–contained, regulated power supply shall allow the unit to operate over an input voltage range between 89 and 135 volts A.C. and shall be configured in at least 3 parallel circuits for reliability. Light output shall be comparable to that provided by a standard, 12 inch traffic signal lens illuminated by a 150 watt incandescent lamp. The red wave length shall be 630 to 660 nm.

The manufacturer shall warrant the unit against defects in workmanship and materials for a period of at least five years after date of shipment. This warranty shall be assigned to the maintenance agency.

All portions of the existing traffic signal at the intersection of Central and Edgemoor shall be removed including the traffic signal manholes along all approaches. Refer to the previous note on this page concerning salvaging of portions of the signal.



CONCRETE BASE DETAILS
ADVANCE WARNING FLASHER

RECAPITULATION OF CROSSWALK SIGNAL QUANTITIES

BID ITEM	QUANTITY	UNIT
PEDESTRIAN SIGNAL INSTALLATION	1	L.S.

KANSAS DEPARTMENT OF TRANSPORTATION
PAWNEE IMPROVEMENTS
SCHOOL CROSSING
SIGNAL PLAN
PROJECT NO. SEDGWICK CO.

M K E C ENGINEERING CONSULTANTS, INC.
WICHITA, KANSAS

DESIGNED BY:	JRA	CHECKED BY:	JRA	
DRAWN BY:	WNJ	DATE: JULY 2004	SHEET 72 OF 120	

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