

|                    |  |  |  |
|--------------------|--|--|--|
| DATE               |  |  |  |
| BY                 |  |  |  |
| REFERENCES NOTED   |  |  |  |
| REFERENCES CHECKED |  |  |  |

| BILL OF MATERIALS (FOR INFORMATION ONLY)                      |      |             |
|---------------------------------------------------------------|------|-------------|
| ITEM                                                          | UNIT | QUANTITY    |
| TRAFFIC SIGNAL POLE STEEL W/MASTARM (JOINT USE)               | EACH | 1           |
| TRAFFIC SIGNAL POLE STEEL W/MASTARM (STD. POLE)               | EACH | 3           |
| CONCRETE CONTROLLER PAD                                       | EACH | 1           |
| CONCRETE FOOTING - POLE                                       | EACH | 4           |
|                                                               |      | 0           |
| SERVICE BOX - 915 mm DIA.                                     | EACH | 4           |
| JUNCTION BOX - 609 mm DIA. (INCLUDES INTERCONNECT)            | EACH | 1           |
| GROUND ROD & CLAMP                                            | EACH | 6           |
| CONDUIT CLAMP                                                 | EACH | AS REQUIRED |
| TRAFFIC SIGNAL LAMP 135 WATT                                  | EACH | 44          |
| PEDESTRIAN SIGNAL LAMP 105 WATT                               | EACH | 16          |
| RED LENS L.E.D. UNIT                                          | EACH | 20          |
|                                                               |      |             |
| ENTRANCE HEAD                                                 | EACH | 1           |
| CIRCUIT BREAKER & BOX                                         | EACH | 1           |
| TRAFFIC SIGNAL HEAD - 305 mm (TYPE A) W/MOUNTING BRACKET      | EACH | 14          |
| TRAFFIC SIGNAL HEAD - 305 mm (TYPE C) W/MOUNTING BRACKET      | EACH | 4           |
| TRAFFIC SIGNAL HEAD - 305 mm (TYPE I) W/MOUNTING BRACKET      | EACH | 2           |
| PEDESTRIAN SIGNAL - 305 mm (TYPE K) W/MOUNTING BRACKET        | EACH | 8           |
| PEDESTRIAN PUSHBUTTON W/SIGN                                  | EACH | 8           |
|                                                               |      |             |
| PAD MOUNTED CABINET & CONTROLLER SYSTEM-TYPE 170(SEE NOTE)    | EACH | 1           |
|                                                               |      |             |
| LEAD-IN WIRE NO. 6 AWG 1/c (TYPE THHN)                        | m    | 0           |
| MULTI-CONDUCTOR CABLE NO. 14 AWG 5/c                          | m    | 0           |
| MULTI-CONDUCTOR CABLE NO. 14 AWG 7/c                          | m    | 592.0       |
| SHIELDED DETECTOR LEAD-IN NO. 14 AWG 4/C                      | m    | 0           |
| SHIELDED DETECTOR LEAD-IN NO. 14 AWG 2/C                      | m    | 0           |
| 6 PR. #19 COMMUNICATION CABLE                                 | m    | 0           |
|                                                               |      |             |
| CONDUIT 18 mm                                                 | m    | 0           |
| CONDUIT 25 mm                                                 | m    | 0           |
| CONDUIT 31 mm                                                 | m    | 0           |
| CONDUIT 50 mm (INCLUDES INTERCONNECT)                         | m    | 0           |
| CONDUIT 50 mm PVC w/ PULL WIRE                                | m    | 0           |
| CONDUIT 75 mm                                                 | m    | 194.0       |
| STANDARD 1/c #8 (TYPE THHN)(GROUND)                           | m    | 0           |
|                                                               |      |             |
| STREET NAME SIGNS                                             | EACH | 4           |
| LEFT TURN YIELD ON GREEN W/MOUNTING HARDWARE (R10-12)         | EACH | 2           |
| LEFT TURN SIGNAL W/ MOUNTING HARDWARE (R10-10)                | EACH | 2           |
| WIND DAMPER                                                   | EACH | 4           |
|                                                               |      |             |
| CAMERA HOUSING                                                | EACH | 4           |
| VIDEO DETECTION CAMERA AND MOUNTING HARDWARE (RISER BRACKETS) | EACH | 4           |
| VIDEO DETECTION PROCESSOR UNIT                                | EACH | 4           |
| VIDEO POWER CABLE NO. 16 AWG 3/C                              | m    | 335         |
| VIDEO CABLE 75 OHM COAXIAL (BELDON #8281)                     | m    | 335         |
| TV MONITOR                                                    | EACH | 1           |
| CAMERA CHARGED COUPLING DEVICE                                | EACH | 4           |

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 W41KS (LATEST  
REVISION) TRAFFIC PROGRAM ON 27256 EPROM.

ONE (1) MODEL 332 CABINET COMPLETE WITH ALL ACCESSORIES INCLUDING  
FOUR (4) MODEL 430 TRANSFER RELAYS, TWO (2) MODEL 204 FLASHER  
UNITS AND ONE (1) MODEL 210PC CONFLICT MONITOR.

THREE (3) MODEL 242 TWO CHANNEL ISOLATORS.

TEN (10) MODEL 222 TWO CHANNEL LOOP DETECTOR SENSOR UNITS.

ELEVEN (11) MODEL 200 SWITCH PACKS.

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.

| TRAFFIC SIGNAL HEAD SUMMARY |      |         |                  |          |
|-----------------------------|------|---------|------------------|----------|
| SIGNAL NO.                  | TYPE | SIZE    | MOUNTING BRACKET | QUANTITY |
| 1                           | I    | 3-300mm | TYPE I           | 1        |
| 2                           | A    | 3-300mm | TYPE I           | 2        |
| 3                           | A    | 3-300mm | TYPE III         | 1        |
| 4                           | K    | 2-300mm | TYPE II          | 2        |
| 5                           | C    | 3-300mm | TYPE I           | 2        |
| 6                           | A    | 3-300mm | TYPE I           | 3        |
| 7                           | A    | 3-300mm | TYPE III         | 1        |
| 8                           | K    | 2-300mm | TYPE II          | 2        |
| 9                           | I    | 3-300mm | TYPE I           | 1        |
| 10                          | A    | 3-300mm | TYPE I           | 2        |
| 11                          | A    | 3-300mm | TYPE III         | 1        |
| 12                          | K    | 2-300mm | TYPE II          | 2        |
| 13                          | C    | 3-300mm | TYPE I           | 2        |
| 14                          | A    | 3-300mm | TYPE I           | 3        |
| 15                          | A    | 3-300mm | TYPE III         | 1        |
| 16                          | K    | 2-300mm | TYPE II          | 2        |

| RECAPITULATION OF TRAFFIC SIGNAL QUANTITIES  |          |      |
|----------------------------------------------|----------|------|
| BID ITEM                                     | QUANTITY | UNIT |
| TRAFFIC SIGNAL INSTALLATION (CENTRAL & ROCK) | LUMP SUM | L.S. |
|                                              |          |      |

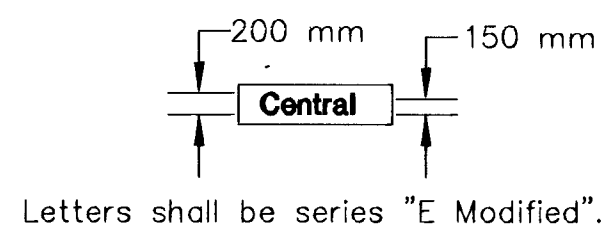
CX - VIDEO COAX CABLE (75 OHM)  
V3 - VIDEO POWER CABLE (#16 AWG, 3/C)

JOINT-USE POLE ON SW CORNER ONLY

| TRAFFIC SIGNAL POLE SUMMARY |      |            |                |      |      |                     |
|-----------------------------|------|------------|----------------|------|------|---------------------|
| STATION                     | TYPE | ARM LENGTH | SIGNALS ON ARM | X1   | X2   | OTHER EQUIP. ON ARM |
| 4+980.5, Lt.                | A    | 21.2 m     | 5-E            | 2.44 | 3.35 | C, G, H, I          |
| 4+984.9, Rt.                | B    | 12.7 m     | 4-E            | 2.44 | 3.35 | D, G, H, I          |
| 5+014.5, Lt.                | B    | 12.8 m     | 4-E            | 2.44 | 3.35 | D, G, H, I          |
| 5+016.8, Rt.                | B    | 19.5 m     | 5-E            | 2.44 | 3.35 | C, G, H, I          |

A JOINT USE STEEL POLE WITH MAST ARM  
B STANDARD STEEL POLE WITH MAST ARM  
C LEFT TURN SIGNAL SIGN (R10-10L)  
D LEFT TURN YIELD ON GREEN SIGN (R10-12)  
E TRAFFIC SIGNAL  
F PEDESTRIAN SIGNAL WITH PUSH BUTTON  
G STREET NAME SIGN  
H WIND DAMPER  
I VIDEO DETECTION CAMERA

| STREET NAME SIGN SUMMARY |          |
|--------------------------|----------|
| LEGEND                   | QUANTITY |
| Central                  | 2        |
| Rock                     | 2        |
| TOTAL                    | 4        |

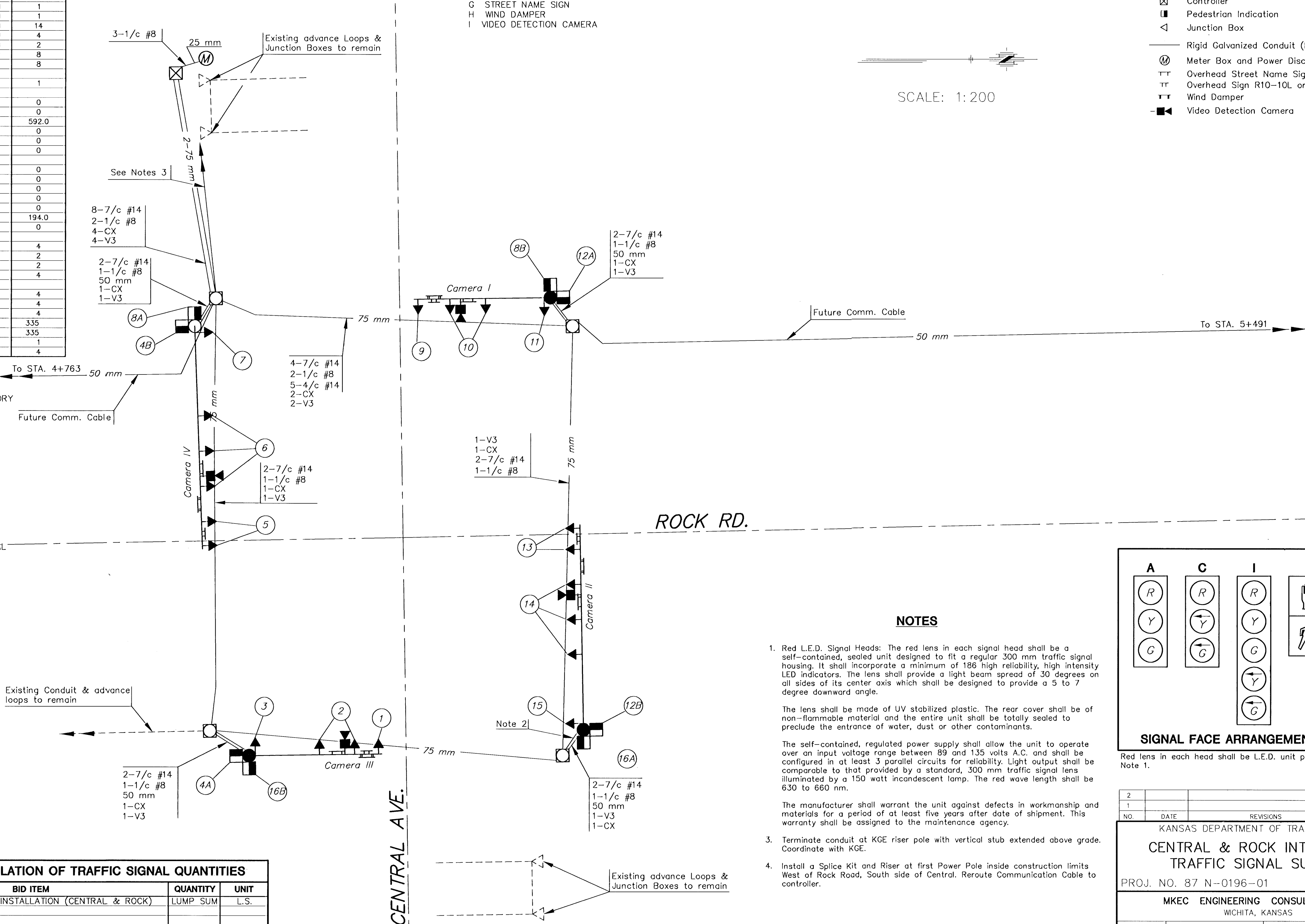


SCALE: 1:200

| FHWA REG NO. | STATE  | PROJECT NO.  | YEAR | SHEET NO. | TOTAL SHEETS |
|--------------|--------|--------------|------|-----------|--------------|
| 7            | KANSAS | 87 N-0196-01 | 2001 | 31        | 55           |

#### LEGEND

- Steel Traffic Signal Pole (Joint use)
- Steel Traffic Signal Pole (Std. Pole)
- Traffic Signal Indication (Type A)
- ↘ Mast Arm Suspended Traffic Signal
- Service Box
- ⊠ Controller
- ▣ Pedestrian Indication
- ◁ Junction Box
- Rigid Galvanized Conduit (RGC)
- ⊗ Meter Box and Power Disconnect
- TT Overhead Street Name Sign
- TT Overhead Sign R10-10L or R10-12
- TT Wind Damper
- ◀ Video Detection Camera



#### NOTES

1. Red L.E.D. Signal Heads: The red lens in each signal head shall be a self-contained, sealed unit designed to fit a regular 300 mm 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.

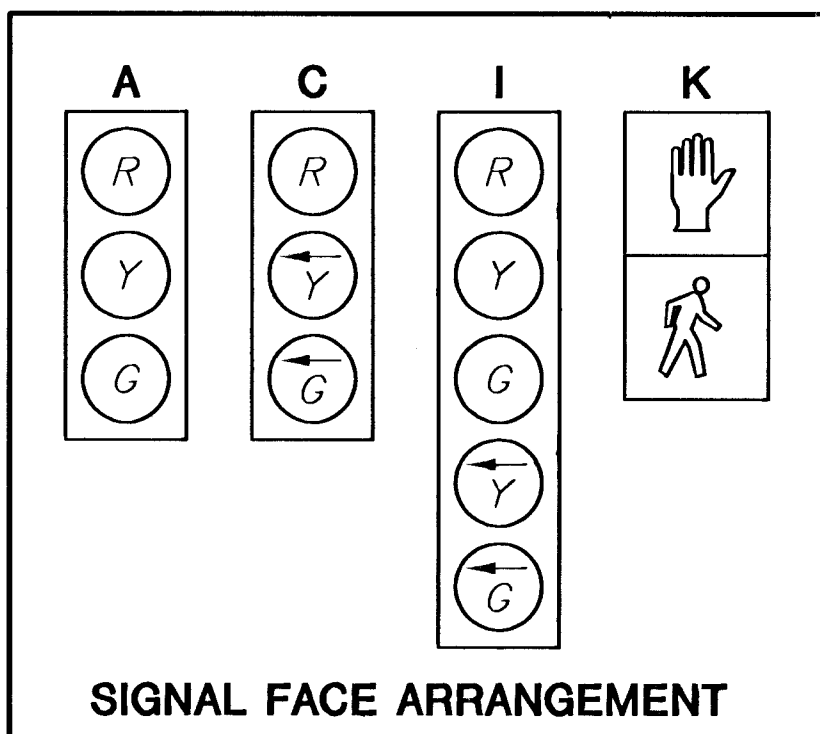
The lens shall be made of UV stabilized plastic. The rear cover shall be of non-flammable material and the entire unit shall be totally sealed to preclude the entrance of water, dust or other contaminants.

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, 300 mm 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.

3. Terminate conduit at KGE riser pole with vertical stub extended above grade. Coordinate with KGE.

4. Install a Splice Kit and Riser at first Power Pole inside construction limits West of Rock Road, South side of Central. Reroute Communication Cable to controller.



Red lens in each head shall be L.E.D. unit per Note 1.

| 2                                   |      |                 |              |          |
|-------------------------------------|------|-----------------|--------------|----------|
| 1                                   |      |                 |              |          |
| NO.                                 | DATE | REVISIONS       | BY           | APP'D    |
| KANSAS DEPARTMENT OF TRANSPORTATION |      |                 |              |          |
| CENTRAL & ROCK INTERSECTION         |      |                 |              |          |
| TRAFFIC SIGNAL SUMMARY              |      |                 |              |          |
| PROJ. NO. 87 N-0196-01              |      |                 | SEDGWICK CO. |          |
| MKEC ENGINEERING CONSULTANTS, INC.  |      |                 |              |          |
| WICHITA, KANSAS                     |      |                 |              |          |
| DESIGNED BY:                        | DCH  | CHECKED BY:     | DCH          |          |
| DRAWN BY:                           | DAG  | DATE: OCT. 2000 | SHEET        | 31 OF 55 |