FHWA REGION NO.	STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
7	KANSAS	87N 0064-01	1997	84	130

x. **MATERIAL:** PROTECTOR MUST BE EPOXY-ENCAPSULATED IN A FLAME-RETARDANT MATERIAL.

xi. **CURRENT:** CONTINUOUS SERVICE CURRENT SHALL BE 10 AMPERES AT 120 VOLTS ALTERNATING CURRENT RMS.

B. SOLID-STATE PRETIMED TRAFFIC SIGNAL CONTROLLER

1. **DIMENSIONS:** THE CONTROLLER UNIT SHALL BE SHELF-MOUNTED. THE HEIGHT OF THE CONTROLLER UNIT SHALL NOT EXCEED 24 INCHES. THE DEPTH OF THE UNIT, INCLUDING CONNECTORS, HARNESSES, AND PROTRUSIONS, SHALL NOT EXCEED 15 INCHES.

2. **DESIGN:** THE CONTROLLER UNIT SHALL BE OF MODULAR DESIGN. CIRCUIT BOARDS SHALL BE READILY ACCESSIBLE FOR MAINTENANCE. TIMING SHALL BE ACCOMPLISHED BY DIGITAL METHODS AND SHALL UTILIZE THE POWER LINE FREQUENCY OR A FREQUENCY GENERATED BY A CRYSTAL-CONTROLLED OSCILLATOR AS A TIME BASE. ALL CONTROLLER UNIT CIRCUITS SHALL CONSIST OF SOLID-STATE ELECTRONIC CIRCUITRY.

3. **MATERIAL AND CONSTRUCTION OF RIGID PRINTED CIRCUIT ASSEMBLIES:** MATERIALS, CONDUCTORS, AND COMPONENT IDENTIFICATION FOR ALL PRINTED CIRCUIT BOARDS SHALL CONFORM TO THE REQUIREMENTS IN SECTION 14.2.3 'MATERIAL AND CONSTRUCTION OF RIGID PRINTED CIRCUIT ASSEMBLIES' OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION STANDARD TS-1.

4. **ENVIRONMENTAL STANDARDS AND TEST PROCEDURES:** THE CONTROLLER UNIT SHALL CONFORM TO THE REQUIREMENTS IN SECTION 2 'ENVIRONMENTAL STANDARDS AND TEST PROCEDURES' OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION STANDARD TS-1.

5. **FRONT PANEL DISPLAYS:** THE CONTROLLER UNIT SHALL DISPLAY THE FOLLOWING INFORMATION ON THE FRONT PANEL OF THE UNIT: CYCLE LENGTH OR DIAL IN EFFECT, OFFSET IN EFFECT AND ITS VALUE, SPLIT IN EFFECT, INTERVAL TIMING, AND DATA ENTRY ACCEPTANCE.

6. **PROGRAMMING:** THE FRONT PANEL OF THE CONTROLLER UNIT SHALL HAVE A KEYBOARD FOR ENTERING TIMING AND DATA BY THE OPERATOR.

7. **FUNCTIONAL REQUIREMENTS:** THE FOLLOWING FUNCTIONS, WITH ASSOCIATED MINIMUM TIMING RANGES AND MAXIMUM INCREMENTS, SHALL BE PROVIDED:

a. **CYCLES:** A MINIMUM OF THREE CYCLES SHALL BE PROVIDED. TOTAL CYCLE LENGTH IS THE SUM OF ALL INTERVAL TIMES. EACH CYCLE SHALL BE ADJUSTABLE OVER A RANGE OF 30 TO 250 SECONDS IN 1SECOND INTERVALS.

b. **SPLITS:** A MINIMUM OF TWO SPLITS PER CYCLE SHALL BE PROVIDED. EACH SPLIT SHALL PROVIDE AN ADJUSTABLE INTERVAL TIME FOR EACH INTERVAL IN THE SEQUENCE IN ACCORDANCE WITH SECTION 11.8.7.d 'INTERVALS'. EACH SPLIT SHALL BE ADJUSTABLE IN 1SECOND INCREMENTS OR IN 1PERCENT INCREMENTS OF THE CYCLE LENGTH.

c. **OFFSETS:** A MINIMUM OF THREE OFFSETS PER CYCLE SHALL BE PROVIDED. EACH OFFSET SHALL BE ADJUSTABLE OVER A RANGE OF ZERO TO 249 SECONDS IN 1SECOND INCREMENTS.

d. **INTERVALS:** THE CONTROLLER UNIT SHALL PROVIDE A MINIMUM OF 24 INTERVALS PER SEQUENCE. THE TIMING RANGE OF EACH INTERVAL SHALL BE ZERO TO 9.9 SECONDS IN 0.1SECOND INCREMENTS AND ZERO TO 99 SECONDS IN 1SECOND INCREMENTS.

e. **OUTPUT CIRCUITS:** THE CONTROLLER UNIT SHALL PROVIDE A MINIMUM OF 40 OUTPUT CIRCUITS FOR CONTROLLING SIGNAL INDICATIONS.

f. **FLASHING OPERATION:** THE CONTROLLER UNIT SHALL BE PROGRAMMABLE SO THAT A MINIMUM OF FOUR OUTPUT CIRCUITS MAY BE PROGRAMMED TO FLASH DURING PEDESTRIAN PROTECTION INTERVALS AND ANOTHER FOUR OUTPUT CIRCUITS SHALL BE PROGRAMMED TO FLASH DURING FLASHING OPERATION. A PROGRAMMABLE FLASH INTERVAL SHALL BE PROVIDED FOLLOWING A POWER ON. THE LENGTH OF THE FLASHING INTERVAL SHALL BE PROGRAMMABLE FROM ZERO TO 99 SECONDS IN 1SECOND INCREMENTS.

g. **PREEMPTION:** THE CONTROLLER UNIT SHALL PROVIDE FOR AT LEAST TWO PREEMPTION SEQUENCES.

h. **OFFSET CORRECTION:** THE CONTROLLER UNIT SHALL PROVIDE FOR OFFSET CORRECTION WHENEVER THE UNIT IS OUT-OF-STEP WITH THE SYSTEM MASTER.

C. VEHICLE ACTUATED SOLID-STATE TRAFFIC SIGNAL CONTROLLER

1. CONTROLLER

a. **GENERAL:** THE CONTROLLER SHALL PROVIDE TWO THROUGH EIGHT PHASE FULLY ACTUATED OPERATION AND MEET OR EXCEED THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION STANDARD TS-1. THE DESIGN LIFE OF ALL COMPONENTS SHALL BE NOT LESS THAN 5 YEARS, BASED ON 24 HOURS A DAY OPERATING CONDITIONS IN THEIR RESPECTIVE CIRCUIT APPLICATIONS.

b. **TIMING:** THE TIMING RANGE OF THE FOLLOWING INTERVALS SHALL BE ZERO TO 9.9 SECONDS IN 0.1SECOND INCREMENTS: PASSAGE, YELLOW, RED CLEAR, SECONDS PER ACTUATION, MINIMUM GAP, AND DETECTOR STRETCH. THE TIMING RANGE OF THE FOLLOWING INTERVALS SHALL BE ZERO TO 99 SECONDS IN 1SECOND INCREMENTS: MINIMUM GREEN, TWO MAXIMUM GREENS, WALK, PEDESTRIAN CLEARANCE (FLASHING DON'T WALK), MAXIMUM INITIAL, TIME BEFORE REDUCTION, TIME TO REDUCE, AND DETECTOR DELAY. THE TIMING OF ANY INTERVAL OR PORTION OF ANY INTERVAL SHALL NOT CHANGE BY MORE THAN 0.5 PERCENT OF ITS SET OPERATING VALUE DUE TO CHANGES IN THE AMBIENT TEMPERATURE BETWEEN THE LIMITS OF -30 DEGREES FAHRENHEIT AND +165 DEGREES FAHRENHEIT.

c. KEYBOARD ENTRY

I. **MENU-DRIVEN:** THE UNIT SHALL BE MODULAR IN CONSTRUCTION AND UTILIZE FRONT PANEL MENU-DRIVEN KEYBOARDS TO PROGRAM OR READ INFORMATION STORED IN MEMORY. THE UNIT SHALL HAVE A LIQUID CRYSTAL DISPLAY WITH A MINIMUM SIZE OF FOUR LINES WITH 40 CHARACTERS PER LINE AND A BACKLIGHT.

II. **FEATURES:** THE CONTROLLER SHALL BE PROGRAMMED BY EITHER SEQUENTIAL OR CONCURRENT TIMING FROM TWO THROUGH EIGHT PHASE OPERATION. THE CONTROLLER SHALL HAVE THE FOLLOWING FEATURES: CONCURRENT PEDESTRIAN TIMING, STEADY WALK INDICATIONS, LAST CAR PASSAGE OPTION, MINIMUM YELLOW, VOLUME DENSITY, AND REMOTE FLASH. THE CONTROLLER SHALL BE CAPABLE OF A MINIMUM OF FOUR INTERNALLY PROGRAMMED OVERLAPS.

III. **EXPANSION:** THE CONTROLLER SHALL BE CAPABLE OF EXPANSION (USING INTERNAL FEATURES) TO INCLUDE A COORDINATED SYSTEM, PREEMPTION, AND/OR AN INTERNAL TIME CLOCK.

2. POWER

a. **CONNECTIONS:** ELECTRICAL CONNECTIONS FROM THE CONTROLLER TO THE OUTGOING AND INCOMING CIRCUITS SHALL BE MADE BY INSERTING A MULTITERMINAL PLUG OR PLUGS (MS TYPE) INTO THE ASSOCIATED PLUG RECEPTACLE, INCORPORATED IN THE MOUNTING FRAME OR POWER SUPPLY PANEL. THE CONTROLLER SHALL BE REPLACEABLE WITH A SIMILAR UNIT WITHOUT THE NECESSITY OF DISCONNECTING AND RECONNECTING INDIVIDUAL WIRES.

b. **VOLTAGE:** THE CONTROLLER SYSTEM SHALL BE DESIGNED TO OPERATE WITHIN THE POWER RANGE OF 95 TO 135 VOLTS SINGLE-PHASE ALTERNATING CURRENT AT 60 HERTZ AND IN THE TEMPERATURE RANGE OF -30 DEGREES FAHRENHEIT TO +165 DEGREES FAHRENHEIT.

3. FLASHER

a. **FLASHER:** A SOLID-STATE, TWO-CIRCUIT, JACK-MOUNTED FLASHER WITH A RATED LOAD OF 15 AMPERES PER CIRCUIT SHALL BE SUPPLIED. WHERE ADDITIONAL LOAD IS REQUIRED, MORE THAN ONE FLASHER WILL BE PROVIDED. THE FLASHER SHALL FLASH AT THE RATE OF 50 TO 60 FLASHES PER MINUTE AND BE FILTERED, IF REQUIRED, TO PREVENT RADIO INTERFERENCE. THE TRANSFER FROM THE CONTROLLER TO THE FLASHER SHALL OCCUR AT THE BEGINNING OF THE MAJOR STREET GREEN INDICATION.

b. **RELAYS:** WHEN FLASHING RELAYS ARE DE-ENERGIZED, THE RELAYS SHALL TRANSFER SIGNAL LIGHT CIRCUITS FROM THE CONTROLLER UNIT TO THE FLASHER, PERMITTING FLASHING YELLOW ON THE MAJOR STREET OR HIGHWAY AND FLASHING RED TO BE DISPLAYED ON THE MINOR STREET AND AT ALL LEFT TURN LANE SIGNALS.

D. DETECTORS

1. GENERAL

a. **PHYSICAL:** DETECTOR UNITS SHALL BE CARD-RACK MOUNTED, PLUG-IN VERSIONS WITH A 24 VOLT DIRECT CURRENT EXTERNAL POWER SUPPLY REQUIREMENT.

b. **NEMA REQUIREMENTS:** DETECTOR UNITS SHALL BE IN FULL COMPLIANCE WITH THE ENVIRONMENTAL REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION STANDARD TS-1 SECTION 15 OVER A TEMPERATURE RANGE OF -30 DEGREES FAHRENHEIT TO +165 DEGREES FAHRENHEIT AND HUMIDITY RANGE OF ZERO TO 99 PERCENT AND MEET THE FUNCTIONAL, ELECTRICAL, AND PERFORMANCE REQUIREMENTS OF THIS SPECIFICATION.

c. **IDENTIFICATION:** ALL COMPONENT PARTS AND TEST POINTS SHALL BE CLEARLY IDENTIFIED BY PERMANENT MARKING OF CIRCUIT REFERENCES ON THE PRINTED CIRCUIT BOARD.

d. **SOCKET-MOUNTED:** INTEGRATED CIRCUIT DEVICES HAVING 16 OR MORE LEADS SHALL BE SOCKET-MOUNTED TO FACILITATE REPAIR AND MAINTENANCE OF UNITS.

2. FUNCTIONAL REQUIREMENTS

a. **GENERAL:** EACH DETECTOR UNIT SHALL INCLUDE TWO OR FOUR COMPLETE DETECTOR CHANNELS. EACH CHANNEL SHALL SEQUENTIALLY ENERGIZE ITS LOOP INPUTS TO ELIMINATE CROSSTALK (MUTUAL COUPLING) BETWEEN LOOPS.

b. **SELF-TUNING:** EACH CHANNEL OF THE SENSOR UNIT SHALL AUTOMATICALLY SELF TUNE TO ANY LOOP AND LEAD-IN INDUCTANCE FROM 20 TO 2000 MICROHENRIES WITHIN 10 SECONDS AFTER APPLICATION OR INTERRUPTION OF SUPPLY VOLTAGE. UNITS SHALL ALSO TRACK CHANGES IN LOOP/LEAD-IN ELECTRICAL CHARACTERISTICS, AS MIGHT REASONABLY BE EXPECTED TO OCCUR IN UNDAMAGED LOOPS, PROPERLY INSTALLED IN SOUND PAVEMENT, WITHOUT PRODUCING FALSE INDICATIONS OR CHANGES IN SENSITIVITY.

c. **OPEN LOOP OUTPUT:** EACH DETECTOR CHANNEL SHALL OUTPUT (FAILSAFE) CONTINUOUS, NON-RESETTABLE INDICATION AND OUTPUT IN THE EVENT OF A BROKEN (OPEN) LOOP/LEAD-IN SYSTEM. THE OPEN LOOP INDICATION SHALL NOT BE RESETTABLE AS LONG AS THE OPEN EXISTS, EXCEPT THAT IT SHALL BE DEFEATED WHEN THE CHANNEL 'OFF' POSITION IS SELECTED.

d. **OPEN LOOP RETUNING:** EACH CHANNEL SHALL RETUNE AND DETECT PROPERLY IMMEDIATELY FOLLOWING RECONNECTION OF THE BROKEN (OPEN) CIRCUIT. PREVIOUS 'OPEN' LOOP/LEAD-IN CONNECTIONS SHALL BE HELD IN MEMORY FOR RECALL AND VERIFICATION USING A FRONT PANEL 'OPEN LOOP TEST' SWITCH.

e. **OPEN LOOP TEST:** EACH DETECTOR UNIT SHALL BE PROVIDED WITH A LOOP TEST SWITCH POSITION TO VERIFY LOOP SYSTEM INTEGRITY AND REDUCE MAINTENANCE COSTS. THE 'OPEN LOOP TEST' POSITION SHALL INDICATE A PREVIOUS FAULT USING THE FRONT PANEL INDICATOR. THE MEMORY SHALL REMAIN INTACT AND SHALL BE ABLE TO BE QUERIED REPEATEDLY. EXISTING DETECTION SHALL NOT BE RESET AND THE MEMORY SHALL ONLY BE RESET BY POWER INTERRUPTION BY PRESSING THE CIRCUIT BREAKER/RESET BUTTON ON ALTERNATING POWERED UNITS, OR REMOVING AND REINSERTING THE PLUG-IN DETECTOR UNITS.

f. **SENSITIVITIES:** EACH CHANNEL SHALL INCLUDE A THUMBWHEEL SWITCH TO ALLOW SELECTION OF A MINIMUM OF EIGHT PULSE SENSITIVITIES, SEVEN PRESENCE LEVELS AND AN 'OFF' MODE. THE SENSITIVITY SETTING SHALL OFFER 21 STEPS OVER A RANGE OF 128:1 TO ENABLE SELECTION OF THE PROPER SENSITIVITY (THRESHOLD) TO INSURE DETECTION OF ALL LICENSED MOTOR VEHICLES (INCLUDING 70CC MOTORCYCLES) WITHOUT DETECTING AUTOMOBILES IN THE ADJACENT LANE, MOVING OR STOPPED, WITHIN 36 INCHES OF THE LOOP(S) DESCRIBED IN THE FOLLOWING CONFIGURATIONS, EACH WITH 50 FEET, 500 FEET, AND 1000 FEET OF LEAD-IN CABLE:

I. **THREE-TURN LOOPS:** ONE TO EIGHT 6 FOOT BY 6 FOOT LOOP(S)

II. **TWO-TURN LOOPS:** ONE OR TWO 6 FOOT BY 50 FOOT LOOP(S) INSTALLED BY THE QUADRAPOLE METHOD

g. **MODE SWITCH:** THE DETECTOR SHALL BE CAPABLE OF OPERATING EACH CHANNEL IN THE PRESENCE, PULSE, OR 'OFF' MODE. THE 'OFF' MODE SHALL DISABLE THE OUTPUT AND INDICATION OF THE CHANNEL WHEN SELECTED. IT MAY ALSO BE USED TO ASSIST IN DETERMINING THE OFFENDING CHANNEL WHEN CROSSTALK IS PRESENT.

I. **PULSE:** PULSE MODE SHALL PROVIDE A SINGLE 100 MILLISECOND, PLUS OR MINUS 25 MILLISECONDS, OUTPUT PULSE IN RESPONSE TO VEHICLES TRAVELING OVER A 6 FOOT BY 6 FOOT LOOP AT ALL SPEEDS FROM ZERO TO 100 MILES PER HOUR WITH A MINIMUM 1SECOND HEADWAY. PULSE MODE SHALL INCLUDE A 2 SECOND REPHASE TO ALLOW DETECTION OF A LICENSED VEHICLE OVER UNOCCUPIED PORTIONS OF THE LOOP(S) WITHIN 3 SECONDS AFTER INITIATION OF THE OUTPUT WITH A VEHICLE STOPPED ON THE LOOP(S).

II. **RESET:** PULSE MODE SELECTION SHALL RESET (CLEAR) PRESENCE INDICATIONS ON INDIVIDUAL CHANNELS.

III. PRESENCE

HOLD TIME: PRESENCE HOLD TIME SHALL BE AT LEAST FOUR MINUTES FOR SMALL 70CC MOTORCYCLES OVER A 6 FOOT BY 6 FOOT LOOP WITH 1000 FEET OF LEAD-IN. HOLD TIME FOR A STANDARD AUTOMOBILE OVER A 6 FOOT BY 6 FOOT LOOP WITH 1000 FEET OF LEAD-IN SHALL BE AT LEAST 15 MINUTES.

STRETCH/DELAY: CHANNEL PRESENCE TIME SHALL BE MODIFIED IF DELAY OR STRETCH TIME IS SELECTED. THE TIMING SWITCH SHALL SELECT DELAY OR STRETCH, OR 'OFF' IF NO TIMING IS DESIRED. INTERNAL DIP SWITCHES SHALL PROVIDE FOR SELECTION OF 'DELAY' TIME OF ZERO TO 31 SECONDS IN 1SECOND INCREMENTS AND 'STRETCH' TIME OF ZERO TO 7.75 SECONDS IN 0.25 SECOND INCREMENTS.

INDICATORS: PRESENCE INDICATORS SHALL BE WIDE ANGLE, HIGH BRIGHTNESS TYPE LIGHT-EMITTING DEVICES SUITABLE FOR SUNLIGHT VISIBILITY. IF TIMING IS SELECTED, THE INDICATORS SHALL FLASH SLOW (4 PULSES PER SECOND) DURING DELAY AND FAST (16 PULSES PER SECOND) DURING STRETCH TO INDICATE TIMING IN PROCESS. EACH TIMER (DELAY OR STRETCH) SHALL BE PROVIDED WITH BUFFER CIRCUITRY TO ENABLE OR DISABLE THE TIMER BASED ON AN EXTERNAL SIGNAL INPUT.

3. **ELECTRICAL REQUIREMENTS:** ALL DETECTORS SHALL BE PLUG-IN CARD RACK MOUNTED. EACH UNIT SHALL OPERATE OVER A RANGE OF 22 TO 28 VOLTS DIRECT CURRENT. IT SHALL HAVE INTERNAL CURRENT-LIMITING AND THERMAL SHUTDOWN PROVISIONS. EACH DETECTOR SHALL CONSUME LESS THAN 200 MILLIAMPERES.

III. TYPE 170E TRAFFIC SIGNAL CONTROL SYSTEMS

THE ACTUATED CONTROLLER AND CABINET SHALL BE A TYPE 170E TRAFFIC SIGNAL CONTROLLER SYSTEM MEETING THE STATE OF CALIFORNIA TRAFFIC SIGNAL CONTROL EQUIPMENT SPECIFICATIONS (TSCES), DATED JANUARY 1989, AS MODIFIED BY TSCES ADDENDUM 8, DATED NOVEMBER 1993 WITH ADDITIONS OR MODIFICATIONS AS SHOWN IN THE SUBSECTIONS BELOW.

A. GENERAL

1. **RESPONSIBLE PARTIES:** ANY REFERENCE TO THE STATE, STATE OF CALIFORNIA, OR AGENCY SHALL MEAN THE LOCAL AGENCY RESPONSIBLE FOR MAINTAINING THE TRAFFIC SIGNAL. ANY REFERENCE TO THE CONTRACTOR SHALL MEAN EQUIPMENT MANUFACTURER OR SUPPLIER.

2. **TESTING:** TWO MANUALS CONTAINING THE FLOW CHART, LISTING, AND INSTRUCTIONS OF THE TEST PROGRAM SHALL BE FURNISHED TO THE AGENCY RESPONSIBLE FOR MAINTAINING THE TRAFFIC SIGNAL WHEN THE CONTROLLER UNIT IS DELIVERED.

B. CONTROLLER CABINET:

1. **EQUIPMENT:** THE CONTROLLER CABINET SHALL BE OF THE MODEL SPECIFIED IN THE MAJOR ITEMS OF ELECTRONIC EQUIPMENT LIST SHOWN ON THE TRAFFIC SIGNAL QUANTITIES SHEET. THE CABINET SHALL, AT A MINIMUM, COME EQUIPPED WITH THE ELECTRONIC EQUIPMENT AS SHOWN IN THE SAME LIST. ALL ELECTRONIC EQUIPMENT SHALL MEET THE REQUIREMENTS OF THE TSCES AS MODIFIED BELOW.

2. **COLOR:** THE CABINET SHALL BE NATURAL ALUMINUM.

C. **LOAD SWITCHES:** THE MODEL 200 SOLID STATE SWITCH PACK SHALL BE A MODULAR PLUG-IN DEVICE CONTAINING 3 SOLID STATE CUBE MODULAR SWITCHES TO BE USED FOR OPENING AND CLOSING CONNECTIONS BETWEEN THE APPLIED POWER AND AN EXTERNAL LOAD.

D. FLASHER:
CONTAINING A FLASHER CONTROL CIRCUIT AND 2 SOLID STATE CUBE MODULAR SWITCHES.

E. **CONFLICT MONITOR:** THE CONTRACTOR SHALL PROVIDE A MODEL 210+ (PLUS) CONFLICT MONITOR. THIS UNIT SHALL CONTAIN THE FOLLOWING FUNCTIONS IN ADDITION TO THOSE SHOWN IN CHAPTER 4 OF THE TSCES: ABSENCE OF RED OR RED FAIL; SIMULTANEOUS MULTIPLE INDICATIONS; SWITCH FAILURE; PROGRAM CARD AJAR; POWER INTERRUPT AFTER FLASH; FULL SYSTEMS COMPATIBILITY WITH WAPITI MICROSYSTEMS TRAFFIC SYSTEMS SOFTWARE.

F. **DETECTORS:** THE DETECTOR SENSOR UNITS PROVIDED SHALL, AS A MINIMUM, MEET THE SPECIFICATIONS GIVEN IN CHAPTER 5 OF THE TSCES. IN ADDITION, THE FOLLOWING FEATURES SHALL BE INCLUDED: THUMBWHEEL CONTROLS WITH EIGHT SENSITIVITY SETTINGS PER CHANNEL; OPEN LOOP TEST SWITCH THAT DISPLAYS PREVIOUS FAULTS ON CHANNEL INDICATORS WHILE CONTINUING TO PROCESS AND OUTPUT VALID DETECTIONS; ELIMINATION OF CROSSTALK THROUGH MULTIPLE CHANNEL SEQUENTIAL SCANNING; AN INDUCTANCE RANGE OF 20-2000 MICROHENRIES.

BUREAU OF TRAFFIC ENGINEERING
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NO.	DATE	REVISIONS	BY	APP'D
3				
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KANSAS DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING

TRAFFIC SIGNAL SPECIFICATIONS

TE120B 03/17/95

FHWA APPROVAL			04/06/95	APP'D	
DESIGNED	G.J.M.	DETAILED	G.J.M.	QUANTITIES	
DESIGN CK.	L.G.V.	DETAIL CK.	L.G.V.	QUAN. CK.	DATE