TRAFFIC CONTROL NOTES

CALC. BY: DATE:	LAK-20/84-0.39/1.24	OHIO	6 / 46
CHKD. BY: DATE:		FHWA REGION 5	
		FEDERAL PROJECT	

9. THE CENTRAL OFFICE FACILITY SHALL BE SUPPLIED WITH THE OFF-LINE PROGRAMS PASSER II-90 AND TRANSYT 7F, AS DEVELOPED BY MCTRANS FOR TRAFFIC SIGNAL PROGRESSION ANALYSIS AND SIGNAL OPERATION OPTIMIZATION ANALYSIS FOR SINGLE INTERSECTIONS. ALL PROGRAMS SHALL OPERATE ON PC DOS OR MS DOS. ONE (1) COPY OF SOFTWARE AND DOCUMENTATION SHALL BE SUPPLIED. THE CENTRAL OFFICE MONITOR SHALL BE CAPABLE OF THE FOLLOWING:

   A. ALL OFF-LINE PROGRAMS AND "CLOSED LOOP" SYSTEM SOFTWARE SHALL BE IMPLEMENTED THROUGH A COLOR MENU DRIVEN SYSTEM.
   B. ALL OFF-LINE PROGRAMS AND "CLOSED LOOP" SOFTWARE SHALL BE STORED ON THE HARD DISK UNDER SEPARATE SUBDIRECTORIES. THERE SHALL ALSO BE SEPARATE SUBDIRECTORIES FOR DATA FILES FOR EACH OF OFF-LINE PROGRAMS AND "CLOSED LOOP" SOFTWARE.

10. THE CONTRACTOR SHALL SUPPLY TRAINING FOR CITY DESIGNATED PERSONAL. THE TRAINING SHALL INCLUDE OPERATION OF THE CENTRAL COMPUTER AND FIELD EQUIPMENT, MAINTENANCE OF ALL FIELD EQUIPMENT AND ASSISTANCE IN SYSTEM PARAMETER DEVELOPMENT. THE TRAINING PROGRAM SHALL BE AS FOLLOWS:

    LOCAL CONTROL EQUIPMENT PRECONSTRUCTION TRAINING SHALL CONSIST OF AT LEAST TWO DAYS OF INSTRUCTION FOR UP TO FIVE PERSONS. TRAINING SESSIONS WILL BE HELD IN CITY PROVIDED FACILITIES. TRAINING WILL INCLUDE THOROUGH FAMILIARIZATION WITH THE FOLLOWING FIELD EQUIPMENT:

    A. LOCAL CONTROLLERS
    B. INTERSECTION MULTIPLEX AND TELEMETRY AND MODEM UNITS
    C. CONTROLLER ACCESSORIES AND AUXILIARY EQUIPMENT

    THE COURSES SHALL ALSO COVER GENERAL FIELD MAINTENANCE AND TROUBLE-SHOOTING PROCEDURES AND TESTING PROCEDURES, AS WELL AS THE PROPER USE OF SYSTEM MAINTENANCE ACCESSORIES TO CHECK THE ABOVE LISTED COMPONENTS.

    TRAFFIC RESPONSIVE MASTER CONTROLLER TRAINING SHALL CONSIST OF AT LEAST EIGHT (8) HOURS OF INSTRUCTION FOR UP TO FIVE CITY DESIGNATED PERSONS. TRAINING SESSIONS SHALL BE HELD AT THE SYSTEM SUPPLIER'S FACILITIES AND SHALL BE HELD IN CONJUNCTION WITH THE BENCH MARK TEST.

    BENCH MARK TESTING WILL BE ACCOMPLISHED AT THE SYSTEM SUPPLIER'S FACILITIES IN CONJUNCTION WITH THE TRAINING COURSE. THE PURPOSE OF BENCH MARK TESTING IS TO DEMONSTRATE THE CAPABILITIES OF THE SYSTEM WHICH THE SUPPLIER INTENDS TO FURNISH. THE COMPUTER, PERIPHERAL DEVICES AND ELEMENTS UTILIZED FOR THE TESTS NEED NOT BE THE SPECIFIC ITEMS WHICH WILL BE INSTALLED IN THE CITY BUT SHALL BE OF THE SAME TYPE, MODEL AND CAPACITY. (USE OF THE ACTUAL EQUIPMENT TO BE INSTALLED IN THE CITY IS PREFERRED.) BENCH MARK TESTING SHALL INCLUDE THE FOLLOWING:

    A. LOAD AND OPERATE A BENCH MARK PROGRAM ON THE COMPUTER, UTILIZING ALL PERIPHERAL DEVICES AND AT LEAST TWO ACTUATED (FOUR PHASE MINIMUM) INTERSECTION CONTROLLERS. THE BENCH MARK PROGRAM SHALL CONTAIN PARAMETERS FOR AT LEAST 15 LOCAL INTERSECTIONS, AT LEAST 10 SENSOR INPUTS WITH THE ABILITY TO SIMULATE FIELD VOLUME AND OCCUPANCY DETECTOR DATA, AND SHALL OPERATE WITH AT LEAST 3 ZONES OF CONTROL.

    B. THE BENCH MARK TESTS SHALL EXERCISE ALL FEATURES OF THE HARDWARE, SOFTWARE, COMMUNICATIONS SYSTEMS AND LOCAL CONTROLLERS AND SHALL BE A MINIMUM OF 48 HOURS OF CONTINUOUS OPERATION.

    THE TESTING SHALL BE ARRANGED AT A TIME MUTUALLY AGREEABLE TO THE CITY AND CONTRACTOR. THE COURSE SHALL COVER FAMILIARIZATION AND OPERATIONAL TRAINING IN THE USE OF THE CENTRAL SOFTWARE TRAINING SHALL INCLUDE ALL ITEMS NECESSARY TO SET UP THE MONITORING OF INTERSECTION CONTROLLERS. THERE SHALL BE 24-HOURS OF TRAINING FOR UP TO FIVE (5) PERSONS. IT SHALL ALSO INCLUDE INSTRUCTION IN METHODS OF PREPARING TIMING SETTINGS, CHOOSING SYSTEM AND INTERSECTION PARAMETERS, LOADING TIMING PLANS AND OTHER PARAMETERS, INCLUDING TRAFFIC RESPONSIVE OPERATION, AND OTHER FUNCTIONS WHICH WILL BE NECESSARY TO IMPLEMENT AND FINE TUNE SYSTEM OPERATION. FINALLY, IT SHALL INCLUDE GENERAL MAINTENANCE AND TROUBLE SHOOTING PROCEDURES FOR THE MASTER CONTROL DEVICE.

    MAINTENANCE TRAINING (FIELD EQUIPMENT) SHALL CONSIST OF AT LEAST EIGHT (8) HOURS OF INSTRUCTION FOR UP TO FIVE PERSONS. TRAINING SESSIONS SHALL BE HELD IN CITY FACILITIES. IT SHALL COVER MAINTENANCE AND TROUBLE SHOOTING TECHNIQUES FOR ALL FIELD EQUIPMENT AND THE USE OF SYSTEM MAINTENANCE ACCESSORIES.

    MAINTENANCE TRAINING (COMPUTER AND PERIPHERALS) SHALL CONSIST OF AT LEAST EIGHT (8) HOURS OF INSTRUCTION AT A SITE SELECTED BY THE SYSTEM SUPPLIER FOR UP TO FIVE CITY DESIGNATED PERSONS. IT SHALL COVER DETAILED PROCEDURES FOR MAINTAINING AND TROUBLE SHOOTING THE MASTER CPU, MASTER COMMUNICATIONS DEVICES, AND MASTER PERIPHERAL EQUIPMENT. THE TRAINING SHALL COVER BOTH PRESENTATION OF RECOMMENDED PROCEDURES, AS WELL AS "HANDS ON" DEMONSTRATIONS OF METHODS TO ISOLATE, DETERMINE AND CORRECT EQUIPMENT MALFUNCTIONS.

    COMPUTER OPERATION TRAINING SHALL CONSIST OF AT LEAST EIGHT (8) HOURS OF TRAINING FOR UP TO FIVE CITY DESIGNATED PERSONS. TRAINING SESSIONS SHALL BE HELD IN CITY SUPPLIED FACILITIES. THE FIRST DAY SHALL INCORPORATE A MANAGERIAL OVERVIEW OF THE SYSTEM AND SUBSEQUENT SESSIONS SHALL PROGRESSIVELY PROVIDE MORE DETAIL CONCERNING SYSTEM OPERATION PROCEDURES TO FULLY FAMILIARIZE CITY PERSONAL WITH THE DAY-TO-DAY OPERATION OF THE SYSTEM.

    THE CONTRACTOR SHALL PROVIDE ALL COURSE MATERIALS FOR ALL TRAINING SESSIONS, INCLUDING OPERATION MANUALS, REPAIR MANUALS, TEST EQUIPMENT, DEMONSTRATION MATERIALS, AND OTHER MATERIALS FOR DEVICES TO ASSURE A USEFUL SESSION. INSTRUCTORS SHALL BE KNOWLEDGEABLE ON THE OPERATION OF THE SYSTEM PROVIDED AND BE CAPABLE OF EFFICIENTLY AND ACCURATELY PRESENTING THIS KNOWLEDGE TO THE TRAINEES.

    THE COSTS OF THE TRAINING, INCLUDING COURSE MATERIALS, TRAVEL OR SUBSISTENCE AND RELATED COSTS, SHALL BE ENTIRELY BORNE BY THE CONTRACTOR. COSTS SHALL BE INCIDENTAL TO THE UNIT PRICES BID FOR THE VARIOUS ITEMS OF EQUIPMENT UNDER THE CONTRACT.

11. ITEM 632.27 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS IS MODIFIED AS FOLLOWS:

    A. PART 5, FUNCTIONAL TEST, SHALL HAVE THE FOLLOWING REQUIREMENTS ADDED:

       1. ALL HARDWARE, SOFTWARE AND PERFORMANCE FUNCTIONS REQUIRED IN THE SPECIFICATIONS SHALL BE INDIVIDUALLY DEMONSTRATED TO THE ENGINEER BY THE CONTRACTOR TO ASSURE COMPLIANCE AND TO SHOW THAT THE SYSTEM IS COMPLETELY FUNCTIONAL AND READY FOR SERVICE.

       2. TRAINING SHALL HAVE BEEN PROVIDED TO CITY REPRESENTATIVES IN THE MANNER REQUIRED AND SHALL BE COMPLETED.

    B. PART 6, PERFORMANCE TEST (10 DAY TEST) SHALL BE MODIFIED ONLY AS FOLLOWS:

       1. THE LIST OF MAJOR MALFUNCTIONS IN 632.07-6 SHALL BE EXPANDED TO INCLUDE:

          A. FAILURE OF LOCAL CONTROLLER TO CONTROL TRAFFIC SAFELY AND IN CONFORMANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

          B. FAILURE OF THE MASTER CONTROLLER (WITH SYSTEM MONITOR) TO CORRECTLY SUPERVISE AND CONTROL THE SYSTEM, OR TO ACCEPT AND PROCESS TRAFFIC DATA FROM THE FIELD OR TO PROPERLY REPORT SYSTEM STATUS AND MALFUNCTIONS.

          C. FAILURE OF MORE THAN TWO INTERSECTIONS, IN ANY 24-HOUR PERIOD, TO FUNCTION COMPLETELY IN THE MANNER CALLED FOR IN THE SPECIFICATION WITHOUT LOSS OF COMMUNICATION OR REVERTING TO STANDBY OPERATION.

          D. FAILURE OF ANY SINGLE INTERSECTION MORE THAN 3 TIMES DURING A 5 DAY PERIOD TO FUNCTION COMPLETELY IN THE MANNER CALLED FOR IN THE SPECIFICATION WITHOUT LOSS OF COMMUNICATION OR REVERTING TO STANDBY OPERATION.

          E. A SOFTWARE ERROR WHICH CAUSES THE SYSTEM TO CEASE TO OPERATE THE TRAFFIC CONTROL SYSTEM OR CAUSES AN UNSAFE CONDITION ON THE STREET.

          F. THE APPEARANCE OF ANY PROBLEM WHICH, IN THE OPINION OF THE ENGINEER, HAS A SIGNIFICANT EFFECT UPON THE RELIABILITY, SAFETY OR OPERATION ON THE SYSTEM.

       2. DURING THE 10-DAY PERFORMANCE TEST THE ENGINEER OR THE TRAINED REPRESENTATIVES OF THE CITY, SHALL EXERCISE THE SYSTEM AND DOCUMENT THE PERFORMANCE OF ALL SPECIFIED FEATURES, AND ANY OTHER EVENTS WHICH COULD BE EXPECTED TO OCCUR IN AN OPERATIONAL TRAFFIC CONTROL SYSTEM INCLUDING THE SIMULATION OF FAILURES.

PAYMENT FOR SPECIAL: CENTRAL OFFICE MONITOR WILL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH CENTRAL OFFICE MONITOR IN PLACE AND FULLY OPERATIONAL AS SHOWN IN THE PLANS. A quantity of 1 has been carried to the General Summary.