

GENERAL NOTES

FED RD DIVISION	STATE	PROJECT	FISCAL YEAR
5	OHIO		

LAKE COUNTY
LAK - 306 - 4.74

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IN THE EVENT THAT NO SUPERVISORY INFORMATION IS BEING RECEIVED AT THE LOCAL COORDINATOR, WHETHER DUE TO EQUIPMENT FAILURE AT THE MASTER OR DISCONTINUITY IN THE INTERCONNECT CABLE, THE COORDINATOR SHALL REVERT TO A PRE-SELECTED MODE OF OPERATION. THIS MAY BE ACCOMPLISHED INTERNALLY IN THE COORDINATOR OR BY A SEPERATE UNIT DESIGNED TO MONITOR EACH LOCAL COORDINATOR.

THE COORDINATORS SHALL BE EQUIPPED WITH MEANS TO BE INTERCONNECTED VIA THE SIX (6) PAIR INTERCONNECT CABLE AND TO COMMUNICATE TO THE MASTER COORDINATION UNIT INCLUDING ALL SAMPLING DETECTORS. THIS SHALL BE ACCOMPLISHED BY EITHER THE PROPER NUMBER OF TONE ENCODE AND DECODE UNITS OR SELF CONTAINED TELEMETRY AND MODEM UNITS SO THAT NO ADDITIONAL INTERCONNECT PAIRS ARE NEEDED.

843-GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 30 DAYS FOLLOWING COMPLETION OF THE 10-DAY PERFORMANCE TEST. IN THE EVENT OF UNSATISFACTORY OPERATION, THE CONTRACTOR SHALL CORRECT FAULTY INSTALLATIONS, MAKE REPAIRS, AND REPLACE DEFECTIVE PARTS WITH NEW PARTS OF EQUAL OR BETTER QUALITY. EQUIPMENT, MATERIAL AND LABOR COSTS INCURRED IN CORRECTING AN UNSATISFACTORY OPERATION SHALL BE BORNE BY THE CONTRACTOR.

THE GUARANTEE SHALL COVER THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR AMPLIFIERS, INTERCONNECTION ITEMS AND MASTER CONTROL EQUIPMENT.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE STATE OR THE MAINTAINING AGENCY FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST OF GUARANTEEING THE TRAFFIC CONTROL SYSTEM WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

IN ADDITION, THE CONTRACTOR SHALL FURNISH ALL SOFTWARE OR AGREE, IN WRITING, TO CORRECT ANY SOFTWARE OR PROGRAMMING ERRORS WHICH MAY BE EVENTUALLY DISCOVERED DURING THE NORMAL OPERATION OF THE EQUIPMENT AND TO PROVIDE ANY UPDATES OR MODIFICATIONS OF THE SOFTWARE PROGRAMMING (BUT NOT INCLUDING ANY PARTS) WHICH THE MANUFACTURER MAY DEVELOP FOR GENERAL USE ON THE EQUIPMENT. THIS AGREEMENT SHALL EXTEND FOR AT LEAST 10 YEARS AFTER ACCEPTANCE OF THE SYSTEM AND SHALL ASSURE THAT, IN THE EVENT THE SYSTEMS MANUFACTURER SHOULD CEASE MANUFACTURING AND SERVICE OF THE SUBJECT EQUIPMENT, SOFTWARE MODIFICATIONS WILL BE AVAILABLE TO THE CITY THROUGH A SUCCESSOR COMPANY OR THE COMPLETE SOFTWARE DOCUMENTATION WILL BE TURNED OVER TO THE CITY OF WILLOUGHBY.

632-LOOP DETECTOR WIRE, AS PER PLAN

THIS ITEM SHALL CONFORM TO 632 AND 732 EXCEPT AS NOTED BELOW:

THE LOOP DETECTOR WIRE SHALL CONSIST OF A NO. 14AWG STRANDED COPPER CONDUCTOR WITH INSULATION CONFORMING TO UL 157, XHHW, THHN OR THWN INSERTED INTO A FLEXIBLE VINYL PLASTIC TUBING WITH A MINIMUM WALL THICKNESS OF 0.025 INCHES. THE TUBING SHALL HAVE A NOMINAL O.D. OF 1/4 INCH. THE TUBING SHALL EXTEND CONTINUOUSLY FROM THE SPLICE AT THE LOOP DETECTOR LEAD-IN CABLE, THROUGH THE ENTIRE LOOP AND BACK TO THE SPLICE. BOTH ENDS OF THE TUBING SHALL EXTEND INTO THE POURED EPOXY SPLICE AND BE SEALED THEREIN. IF THE SPLICE BETWEEN LOOP WIRE AND LOOP DETECTOR LEAD-IN CABLE IS NOT MADE IMMEDIATELY, THE ENDS OF THE TUBING SHALL BE SEALED AT THE TIME THE LOOP WIRE IS PLACED INTO THE SAWED SLOTS.

THE TUBING SHALL BE CAPABLE OF RESISTING DETERIORATION FROM OILS AND SOLVENTS. THE TUBING SHALL BE HIGHLY ABRASION RESISTANT AND HAVE A SMOOTH BORE. ALL LENGTHS OF LOOP WIRE WITH TUBING THAT IS NOT EMBEDDED IN THE PAVEMENT SHALL BE TWISTED WITH AT LEAST FIVE TURNS PER FOOT, INCLUDING LENGTHS IN CONDUITS AND PULLBOXES.

PRIOR TO POURING THE LOOP SEALANT, THE LOOP WIRES SHALL BE GENTLY WEDGED INTO THE SLOT AT INTERVALS OF NOT LESS THAN TWO FEET TO PREVENT THE LOOP WIRE FROM FLOATING TO THE TOP OF THE SEALANT. SEE DETAIL SHEET # 63.

632-REMOVAL OF EXISTING TRAFFIC SIGNAL INSTALLATION.

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH ITEM 632.25. AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE STORED ON THE PROJECT FOR SALVAGE BY THE LAKE COUNTY ENIGNEER (THOMAS P. GILLES, 352-6281). ALL SALVAGED ITEMS NOT REMOVED PRIOR TO

14 DAYS BEFORE COMPLETION OF PROJECT BY COUNTY FORCES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OUTSIDE THE CONTRACT LIMITS AT THE CONTRACTOR'S OWN EXPENSE.

632-LOOP DETECTOR PAVEMENT CUTTING, AS PER PLAN

LOOP DETECTOR PAVEMENT CUTTING AND SUBSEQUENT EMBEDMENT OF LOOP DETECTOR WIRES SHALL BE AS DESCRIBED IN 632,732 AND STANDARD DRAWING AS SHOWN ON PAGE 63.

632-LOOP DETECTOR AMPLIFIER, DELAY AND EXTENSION TYPE

THE AMPLIFIER SHALL BE AS SPECIFIED IN ITEMS 632 AND 732.08

630-SIGN HANGER ASSEMBLY, SPAN WIRE

THIS ITEM OF WORK SHALL CONSIST OF ALL PARTS NECESSARY TO ATTACH ONE INDIVIDUAL SIGN AS SHOWN AND SPECIFIED ON THE PLANS TO THE MESSENGER WIRE. PAYMENT FOR THIS ITEM SHALL BE FOR THE NUMBER OF HANGER ASSEMBLIES, INSTALLED IN PLACE, IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING TC 41.41 TYPE 2.

630-SIGN SUPPORT ASSEMBLY, POLE MOUNTED

THIS ITEM OF WORK SHALL CONSIST OF ALL PARTS NECESSARY TO ATTACH ONE INDIVIDUAL SIGN AS SHOWN AND SPECIFIED ON THE PLANS TO A STRAIN POLE. PAYMENT FOR THIS ITEM SHALL BE FOR THE NUMBER OF SUPPORT ASSEMBLIES, INSTALLED IN PLACE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING TC 41.40.

843 TESTING:

THE CONTRACTOR HAS THE RESPONSIBILITY TO TEST THE ENTIRE SYSTEM. THE CONTRACTOR SHALL FURNISH ALL PERSONNEL EQUIPMENT AND APPLIANCES REQUIRED TO SUCCESSFULLY TEST THE COMPLETED INSTALLATION. IF A FAULT IS DETECTED THE CONTRACTOR SHALL RECOMMEND A SOLUTION.

THE CONTRACTOR SHALL FURNISH THE NECESSARY DATA AND EQUIPMENT TO PERFORM A VALID TEST, AND THE CONTRACTOR SHALL PROVIDE A REPRESENTATIVE TO CHECK THE CITY'S TESTING.

THE COMPELTED SYSTEM SHALL BE TESTED IN ACCORDANCE WITH ODOT* SPECIFICATION 632. THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY OF CORRECTING MALFUNCTIONS OF THE SYSTEM. ANY EQUIPMENT WHICH IS FURNISHED BY THE CONTRACTOR, SHALL BE REPLACED BY THE CONTRACTOR IF IT IS FOUND TO BE DEFECTIVE.

ALL EQUIPMENT AND MATERIALS ARE CONSIDERED TO BE THE PROPERTY OF THE CONTRACTOR UNTIL ACCEPTANCE OF THE ENTIRE PROJECT. ANY EQUIPMENT DAMAGE DUE TO ACCIDENT (BY OTHER THAN CITY FORCES) OR NATURAL CAUSES SHALL BE REPLACED BY THE CONTRACTOR AT HIS COST.

COSTS OF CONDUCTING TESTS BY THE CONTRACTOR SHALL BE INCLUDED IN THE BID PRICE FOR THE ITEM TESTED.

FOLLOWING THE COMPLETE SYSTEM START-UP, WITH ALL COMPONENTS FULLY OPERATIONAL THE CONTRACTOR SHALL DEMONSTRATE THE SYSTEM FOR FINAL ACCEPTANCE BY THE ENGINEER AS OUTLINED BELOW. THE CONTRACTOR WILL CONDUCT A PERFORMANCE TEST DEMONSTRATING THAT THE SYSTEM WILL OPERATE RELIABLY FOR TEN (10) DAYS. ALL TESTS ARE TO BE FULLY DOCUMENTED AND CERTIFIED AND SUBMITTED FOR APPROVAL BY THE ENGINEER. ANY FAILURES ATTRIBUTABLE TO SUPPLIER EQUIPMENT SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.

THE TESTING PROCEDURE SHALL BE AS FOLLOWS:

1. START OF TEST - THE SYSTEM SHALL BE PRESENTED TO THE PROJECT ENGINEER BY THE CONTRACTOR AS "READY FOR ACCEPTANCE TESTING." ONCE PRESENTED, THE PROJECT ENGINEER SHALL ORDER "START OF TEST" WITHIN THREE (3) DAYS. DURING THE TEST PERIOD, THE PROJECT ENGINEER, OR HIS REPRESENTATIVE, SHALL HAVE THE RIGHT TO EXERCISE THE SYSTEM IN ANY OF ITS OPERATING MODES. THESE SHALL INCLUDE, IN ADDITION TO THE NORMAL TRAFFIC CONTROL MODES, THE DROPPING OF THE SYSTEM TO STANDBY, SHUTTING IT DOWN AND BRINGING IT BACK UP, AND ANY OTHER OPERATION THAT IS NORMAL FOR AN OPERATIONAL TRAFFIC CONTROL SYSTEM. DURING THIS TEST, THE PROJECT ENGINEER SHALL LIST ANY SPECIFICATION DISCREPANCIES OR POSSIBLE DISCREPANCIES THAT ARE DETECTED.
2. TERMINATION OF TEST - THE TEST MAY BE TERMINATED AT THE DISCRETION OF THE PROJECT ENGINEER UNDER THE FOLLOWING CONDITIONS:
 - A. CATASTROPHIC SYSTEM FAILURE - A CATASTROPHIC FAILURE SHALL BE DEFINED AS A FAILURE THAT CAUSES TWO (2) OR MORE OF THE INTERSECTIONS TO BE DROPPED FROM COMPUTER CONTROL AND INDICATED AS FAILED.

B. REPEATED FIELD EQUIPMENT FAILURES - INDIVIDUAL FIELD EQUIPMENT THAT FAILS SHALL BE REPAIRED IMMEDIATELY. REPEATED FAILURES BY EQUIPMENT MODEL NUMBERS MAY CAUSE TERMINATION OF THE ACCEPTANCE TEST.

C. NON-COMPLIANCE WITH SPECIFICATION - IF, DURING TESTING, THE ENGINEER DISCOVERS THAT REQUIRED FEATURES ARE NOT IN EXISTENCE OR REQUIRED FEATURES DO NOT PERFORM AS SPECIFIED.

3. TESTING MAY BE TERMINATED BY THE CONTRACTOR AT ANY TIME AND THE SYSTEM RESUBMITTED FOR TEST AT A LATER DATE.

4. INTERRUPTION OF TEST - IF THE ACCEPTANCE TEST IS INTERRUPTED DUE TO INTERFERENCE OF ANY TYPE FROM SOURCES BEYOND THE CONTRACTOR'S CONTROL, THE TEST SHALL BE SUSPENDED UNTIL THE INTERFERENCE IS REMOVED AND THEN CONTINUED FROM THE POINT OF INTERRUPTION. EXAMPLES OF THIS TYPE OF INTERRUPTION ARE POWER FAILURES, VANDALISM, EQUIPMENT DAMAGE BY OTHER CONTRACTORS, ETC.

5. COMPLETION OF PERFORMANCE TESTING - THE TEST SHALL BE COMPLETED AFTER 10 DAYS OF CONTINUOUS OR INTERRUPTED TESTING IN WHICH NEITHER PARTY REQUESTED TEST TERMINATION.

6. SYSTEM ACCEPTANCE - UPON SUCCESSFUL COMPLETION OF THE 10 DAY SYSTEM PERFORMANCE TEST, THE PROJECT ENGINEER SHALL NOTIFY ALL INTERESTED PARTIES THAT THE SYSTEM HAS BEEN SUCCESSFULLY TESTED AND IS READY FOR COMPLETE OR CONDITIONAL ACCEPTANCE. IF CONDITIONAL ACCEPTANCE IS RECOMMENDED, ALL CONDITIONS SHALL BE NOTED AT THIS TIME.

TRAINING

THE CONTRACTOR SHALL SUPPLY TRAINING FOR CITY OF WILLOUGHBY DESIGNATED PERSONNEL. TRAINING SHALL INCLUDE OPERATION OF THE OVERALL SYSTEM PLUS MAINTENANCE OF ALL FIELD EQUIPMENT. THE CONTRACTOR SHALL ARRANGE FOR TRAINING BY RESPECTIVE MANUFACTURERS' PERSONNEL. THE TRAINING PROGRAMS SHALL BE AS FOLLOWS:

A. SUPERVISORY AND OPERATING PERSONNEL - 20 HOURS

THE OBJECTIVE OF THIS TRAINING IS TO PROVIDE FAMILIARIZATION WITH SYSTEM OPERATION AND PROVIDE INFORMATION ON SYSTEM LIMITATIONS AND CAPABILITIES FOR FUTURE EXPANSION. INSTRUCTION SHALL CONTAIN A DESCRIPTION OF HOW THE SYSTEM IS CONFIGURED AND HOW IT RECEIVES, MANIPULATES AND REACTS TO DETECTOR INFORMATION.

THE FOLLOWING TOPICS SHALL BE INCLUDED AS A MINIMUM:

1. NORMAL SYSTEM OPERATION
2. TIME OF DAY
3. OPERATOR COMMANDS
4. FLASH FREE

THIS TRAINING SHALL BE CONDUCTED USING THE FURNISHED SYSTEM IN ACTUAL OPERATION. INSTRUCTION MAY BE GIVEN BEFORE ALL FIELD UNITS HAVE BEEN BROUGHT ON LINE. THIS TRAINING SHALL BE COMPLETED BEFORE THE OPERATIONAL SUPPORT PORTION OF THE CONTRACT BEGINS. CLASS ROOM SPACE SHALL BE PROVIDED BY THE CITY. CLASS SIZE SHALL BE LIMITED TO 10 PERSONS.

B. MAINTENANCE PERSONNEL - 20 HOURS

PART 1 - 12 HOURS: THE OBJECTIVE OF PART 1 IS TO PROVIDE SYSTEM COMPONENT DESIGN DATA AND DRAWINGS, OPERATIONAL DESCRIPTION, TROUBLE SHOOTING PROCEDURES, RECOMMENDED TEST EQUIPMENT USE AND REPAIR PROCEDURES FOR ALL COMPONENTS EXCEPT LOCAL CONTROLLERS.

PART 2 - 8 HOURS: THE OBJECTIVE OF PART 2 IS TO PROVIDE DESIGN DATA AND DRAWINGS, OPERATIONAL DESCRIPTION, TROUBLE SHOOTING PROCEDURES, RECOMMENDED TEST EQUIPMENT, TEST EQUIPMENT USE AND REPAIR PROCEDURES FOR LOCAL CONTROLLERS. THESE CLASSES SHALL BE INSTRUCTED BY MANUFACTURERS' PERSONNEL.

PARTS 1 AND 2 SHALL BE CONDUCTED IN CLASSROOM SPACE PROVIDED BY THE CITY AND BE LIMITED TO 10 PERSONS PER COURSE.

RECOMMENDED TEST EQUIPMENT INCLUDING DIAGNOSTIC PROM MODULE, LITERATURE AND DRAWINGS.