

TRAFFIC CONTROL NOTES

CALC. BY: _____ DATE: _____	LAKE COUNTY LAK-91-4.56	OHIO FHWA REGION 5
CHKD. BY: _____ DATE: _____		FEDERAL PROJECT

4
56

INTERCONNECTION ITEMS AND MASTER CONTROL EQUIPMENT.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE CITY OF EASTLAKE.

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

625 PULL BOX, 713.08, BY SIZE, AS PER PLAN

THIS ITEM SHALL CONSIST OF 18" OR 24" PRE-CAST CONCRETE TYPE. THE COVER SHALL BE MARKED WITH THE WORD "TRAFFIC" ON A PLATE IN ACCORDANCE WITH 713.09.

632 LOOP DETECTOR UNITS, BY TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 632 AND 732.07 OR 732.08, LOOP DETECTOR UNITS SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES:

THE OUTPUT DEVICE SHALL BE A RELAY, AND ALL CONTACTS SHALL BE INCLUDED IN THE WIRING HARNESS.

THE LOOP DETECTOR UNITS FOR NON-SYSTEM LOOPS SHALL HAVE TWO (2) OUTPUTS. ONE OUTPUT TO BE PRESENCE AND THE OTHER TO BE PULSE TO ENABLE ACCURATE COUNTING OF VEHICLES ENTERING THE LOOP EVEN WHEN PRECEDING VEHICLES REMAIN PRESENT OVER THE LOOP. THE COUNT OUTPUT SHALL BE WIRED TO THE SYSTEM INPUT OF THE TRANSCIEVER MODULE. THE PRESENCE OUTPUT SHALL BE WIRED TO THE CONTROLLER'S DETECTOR INPUT AND THE TRANSCIEVER MODULE'S GRAPHICS DETECTOR INPUT.

THE UNIT SHALL BE SELF TUNING.

THE UNITS ELECTRICAL CONNECTION PLUGS OR WIRING HARNESS SHALL ALLOW READY REPLACEMENT WITH A SINGLE CHANNEL AMPLIFIER AS DESCRIBED IN THE FINAL PARAGRAPH OF 732.07.

EACH AMPLIFIER SHALL BE NUMBERED TO CORRESPOND WITH ITS LOOP NUMBER. THE LOOP NUMBERS ARE SHOWN ON EACH PLAN SHEET.

632 VEHICULAR SIGNAL HEAD, 3, 4 OR 5 SECTION, 12" LENS 1 OR 2-WAY, AS PER PLAN

SECTION 732.01 OF THE SPECIFICATIONS IS MODIFIED FOR THIS PROJECT AS FOLLOWS:

- SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF INJECTION MOLDED, UV STABILIZED, POLYCARBONATE PLASTIC AND MEET THE SPECIFICATIONS.
- PLASTIC LENSES SHALL BE USED.
- PIPE, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
- SIGNAL HEADS SHALL BE OF RIGID MOUNT TYPE.

630-SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN

THE CONTRACTOR SHALL MOUNT PROPOSED SIGNS ON MAST ARMS IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING TC-14.20 (RIGID MOUNT) IN LIEU OF THE METHOD SHOWN IN STANDARD CONSTRUCTION DRAWING TC-41.41.

632 INTERCONNECT CABLE, INTEGRAL MESSENGER WIRE TYPE, 6 PAIR NO. 19 AWG, SOLID, REA (PE-38), AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING INTERCONNECT CABLE AS FOLLOWS:

- INTEGRAL MESSENGER TYPE INTERCONNECT CABLE MEETING THE REQUIREMENTS OF 732.19 AND REA (PE-38). UNDER THIS METHOD ANY SECTION OF CABLE SHOWN IN THE PLANS TO BE CONTAINED IN CONTROLLERS, POLES, CONDUITS OR SUPPORTED ON MESSENGER WIRE INSTALLED FOR OTHER PURPOSES SHALL HAVE THE SUPPORTING MESSENGER AND JACKET WEB NEATLY REMOVED BY THE USE OF A TOOL SPECIFICALLY DESIGNED AND SIZED FOR THIS PURPOSE. DEVIATIONS FROM THE CABLE ROUTING SHOWN IN THE PLAN, FOR THE SOLE PURPOSE OF REDUCING THE AMOUNT OF MESSENGER TO BE REMOVED, WILL NOT BE PERMITTED. THE CABLE SHALL BE INSTALLED WITH APPROXIMATELY ONE TWIST FOR EACH 15 FEET OF SPAN LENGTH.

THE NUMBER OF SPLICE LOCATIONS SHALL BE KEPT TO A MINIMUM.

- PRUNING OF TREES IN ACCORDANCE WITH LA-1 TO PREVENT CONTACT WITH INTERCONNECT CABLE SHALL BE INCIDENTAL TO THE COST OF THE BID ITEM.

MEASUREMENT SHALL BE BASED UPON THE NUMBER OF LINEAR FEET "INTERCONNECT CABLE, INTEGRAL MESSENGER WIRE TYPE, 6 PAIR NO. 19 AWG, SOLID, REA (PE-38), AS PER PLAN" IN PLACE IN ACCORDANCE WITH THE METHOD DESCRIBED IN 632.28.

633 CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A SOLID-STATE DIGITAL MICROPROCESSOR TYPE TRAFFIC RESPONSIVE MASTER CONTROLLER WITH MENU DRIVEN PROMPTS, INTERNAL TBC, TELEMETRY UNIT, IN THE LOCAL CONTROLLER CABINET, AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE MASTER COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS. THIS ITEM SHALL ALSO INCLUDE THE EXTRA CABINET SPACE NECESSARY TO BE LOCATED IN THE LOCAL CONTROLLER CABINETS WHERE INDICATED IN THE PLANS.

THE MASTER CONTROLLER SHALL CONFORM TO O.D.O.T. SPECIFICATION 633 AND SHALL HAVE THE FOLLOWING FEATURES:

- IT SHALL GENERATE SYSTEM PATTERN COMMANDS TO LOCAL INTERSECTION CONTROLLERS WITHIN ITS CONTROL AREA IN RESPONSE TO PREVAILING TRAFFIC CONDITIONS AS INDICATED BY SAMPLING SENSORS STRATEGICALLY PLACED IN THE CONTROL AREA. THE MASTER SHALL ALSO ALLOW PRE-PROGRAMMED TIME OF DAY SELECTION OF PATTERNS.
- IT SHALL MONITOR THE OPERATION OF THE LOCAL INTERSECTION CONTROLLERS AND SHALL INITIATE FAILURE REPORTS IF MALFUNCTIONS ARE DETECTED. THE MASTER SHALL GENERATE SYSTEM OPERATION STATUS REPORTS FOR PRINTING AT THE CENTRAL OFFICE MONITOR.
- IT SHALL BE CAPABLE OF OPERATING IN ANY OF THE FOLLOWING MODES:

- TRAFFIC RESPONSIVE WHEREBY PATTERN SELECTION IS BASED ON DYNAMIC TRAFFIC CONDITIONS AS MEASURED BY SYSTEM SENSORS LOCATED IN THE CONTROL AREA.
- TIME OF DAY/DAY OF WEEK WHEREBY PATTERN SELECTION IS BASED ON A PRE-PROGRAMMED BASIS WITH AUTOMATIC ADJUSTMENTS FOR SEASONAL CHANGES.
- MANUAL OVERRIDE WHEREBY PATTERN SELECTION IS BASED ON OPERATOR COMMAND AT THE CENTRAL OFFICE MONITOR OR TRAFFIC RESPONSIVE MASTER CONTROLLER SITE.

THE MASTER CONTROLLER SHALL HAVE THE FOLLOWING CAPACITIES:

- TOTAL LOCAL INTERSECTION CONTROLLERS: 30
- SYSTEM SENSOR DETECTOR UNITS: 48
- THERE SHALL BE A MINIMUM OF 30 SELECTABLE PATTERNS INCLUDING AN ADDITIONAL 4 SPECIAL PATTERNS. EACH PATTERN SHALL CONSIST OF A COMBINATION OF CYCLE, OFFSET AND SPLIT NUMBERS FOR EACH INTERSECTION IN THE SYSTEM. THE MASTER SHALL BE CAPABLE OF DIRECTING THE SYSTEM INTO FREE OPERATION. PATTERNS SELECTABLE FROM THE FOLLOWING MINIMUM PARAMETER RANGES:
 - CYCLES: SIX (6)
 - OFFSETS: FIVE (5)
 - SPLITS: SIXTEEN (16)
- SYSTEM SENSORS SHALL BE DISTRIBUTED TO A MAXIMUM CAPACITY OF EIGHT (8) PER INTERSECTION, BUT NOT TO EXCEED THE TOTAL SENSOR CAPACITY.

THE MASTER CONTROLLER SHALL HAVE THE FOLLOWING FUNCTIONAL REQUIREMENTS:

- PATTERN SELECTION DURING NORMAL TRAFFIC RESPONSIVE OPERATION SHALL BE BASED ON THE FOLLOWING QUANTITATIVE TRAFFIC FLOW PARAMETERS:
 - VOLUME LEVEL OF ARTERIAL TRAFFIC FLOW
 - DIRECTIONALITY OF ARTERIAL TRAFFIC FLOW
 - RATIO OF ARTERIAL TRAFFIC FLOW TO NON-ARTERIAL TRAFFIC
- PATTERN SELECTION DURING SPECIAL TRAFFIC RESPONSIVE OPERATION SHALL BE BASED ON THE FOLLOWING PARAMETERS:
 - NORMAL RESPONSIVE OPERATION OVERRIDE BY DETECTION OF HIGH OCCUPANCY ON SELECTED SYSTEM SENSORS.
 - NORMAL RESPONSIVE OPERATION OVERRIDE BY DETECTION OF QUEUE LENGTH OR DURATION ON SELECTED SYSTEM SENSORS.
- PREFERENTIAL TRANSFER OF PATTERNS SHALL BE ACCOMPLISHED BY PROGRAMMABLE THRESHOLD VALUES. PROGRAMMABLE THRESHOLD VALUES SHALL ALSO BE PROVIDED FOR SPECIAL PATTERNS.
- THE FOLLOWING SYSTEM SENSOR DATA SHALL FORM THE BASIS FOR ALL RESPONSIVE PATTERNS INITIATED BY THE MASTER:
 - VOLUME, OCCUPANCY AND QUEUE DATA.
 - EACH SYSTEM SENSOR SHALL BE CAPABLE OF SELECTIVE