

# TRAFFIC CONTROL GENERAL NOTES

CALC. BY \_\_\_\_\_  
DATE \_\_\_\_\_  
CHKD. BY \_\_\_\_\_  
DATE \_\_\_\_\_

LAKE COUNTY  
LAK-20-3.26

OHIO  
FHWA REGION 5

24  
36

## SCOPE

THESE NOTES AND SPECIFICATIONS SUPPLEMENT THE STATE OF OHIO'S CONSTRUCTION AND MATERIAL SPECIFICATIONS AND THE SUPPLEMENTAL SPECIFICATIONS NOTED ON THE TITLE SHEET. THE WORK TO BE PERFORMED BY THE CONTRACTOR IN CONNECTION OF FURNISHING LABOR, SUPPLIES, EQUIPMENT, MATERIALS, AND PERFORMING ALL OPERATIONS NECESSARY FOR THE ACCEPTABLE INSTALLATION OF THE TRAFFIC CONTROL DEVICES, IN STRICT ACCORDANCE WITH THESE PLANS, NOTES AND SPECIFICATIONS. THESE NOTES, SCHEDULES, AND DRAWINGS ARE INTENDED TO PROVIDE FOR ALL MATERIAL AND LABOR REQUIRED TO FURNISH AND INSTALL A COMPLETE TRAFFIC CONTROL SYSTEM. SEE SHEET 7A FOR TRAFFIC SIGNAL CONSTRUCTION SEQUENCE.

## 625 POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM THE CLEVELAND ELECTRIC ILLUMINATING COMPANY AT THE LOCATION INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

## ITEM 630 REMOVAL OF GROUND MOUNTED SIGNS AND STORAGE, AS PER PLAN

IN LIEU OF REQUIREMENTS OF 630.12 THE SIGNS SHALL BE STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF WILLOUGHBY. AFTER ALL SIGNS HAVE BEEN REMOVED THE CONTRACTOR SHALL NOTIFY THE CITY OF WILLOUGHBY.

## 632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN

THIS WORK SHALL CONSIST OF THE REMOVAL OF TRAFFIC SIGNAL EQUIPMENT THAT WILL NOT BE RE-USED AS PART OF THIS PROJECT. (SEE SHEETS 28 & 30)

THE CONTRACTOR SHALL STORE REMOVED EQUIPMENT AND MATERIALS ON SITE FOR PICK-UP BY THE CITY OF WILLOUGHBY.

WITH THE EXCEPTION OF ITEMS WHOSE REMOVAL IS NECESSARY TO PERMIT THE INSTALLATION OF THE NEW SIGNAL EQUIPMENT, NO ITEM SHALL BE REMOVED UNTIL THE NEW INSTALLATION IS IN FULL OPERATION, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE CITY OF WILLOUGHBY TO DISCONNECT THE EXISTING POWER SERVICE BEFORE THE EXISTING SIGNAL INSTALLATIONS ARE REMOVED.

## 632 INTERCONNECT CABLE, INTEGRAL MESSENGER WIRE TYPE, 12 CONDUCTOR #14AWG, AS PER PLAN

THE CONTRACTOR SHALL BE PERMITTED TO USE EITHER OF TWO TYPES OF INTERCONNECT CABLE CONSTRUCTION AND INSTALLATION UNDER THIS ITEM AS FOLLOWS:

1. INTEGRAL MESSENGER TYPE INTERCONNECT CABLE MEETING THE REQUIREMENTS OF 732.19. UNDER THIS METHOD ANY SECTIONS OF CABLE SHOWN IN THE PLANS TO BE CONTAINED IN CONTROLLERS, CABINETS, POLES, CONDUITS OR SUPPORTED ON MESSENGER WIRE INSTALLED FOR OTHER PURPOSE SHALL HAVE THE SUPPORTING MESSENGER AND JACKET WEB NEATLY REMOVED BY A 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.
2. SEPARATE INTERCONNECT CABLE MEETING THE REQUIREMENTS OF 732.19 PLUS A 1/4 INCH MESSENGER WIRE AND LASHING MEETING THE REQUIREMENTS OF 732.18. UNDER THIS METHOD THE CONTRACTOR WILL INSTALL A SEPARATE 1/4 INCH MESSENGER TO SUPPORT THE SPANS OF INTERCONNECT CABLES IN ALL LOCATIONS WHERE THE PLANS SHOW INTERCONNECT CABLE WHICH IS NOT OTHERWISE SUPPORTED BY A SIGNAL MESSENGER WIRE OR OTHER SUITABLE SUPPORT. UTILIZATION OF EXISTING MESSENGER WIRE, NOT PROVIDED BY THE PROJECT OR DESIGNATED THEREIN AS AVAILABLE FOR USE, IS PROHIBITED. DEVIATION FROM THE CABLE ROUTING SHOWN ON THE PLANS, FOR THE PURPOSE OF REDUCING THE NEED FOR SEPARATE MESSENGER WIRE, WILL NOT BE PERMITTED.

IN EITHER CASE THE NUMBER OF SPLICE LOCATIONS WILL BE KEPT TO A MINIMUM.

MEASUREMENT WILL BE BASED UPON THE NUMBER OF LINEAR FEET OF "INTERCONNECT CABLE, INTEGRAL MESSENGER WIRE TYPE, 12 CONDUCTOR #14AWG, AS PER PLAN" IN PLACE IN ACCORDANCE WITH THE METHOD DESCRIBED IN 632.28 AND NO SEPARATE PAYMENT WILL BE PROVIDED FOR ANY SEPARATE MESSENGER WIRE USED TO SUPPORT INNERCONNECT CABLES.

## ITEM 630 REMOVAL OF GROUND MOUNTED POST SUPPORTS AND STORAGE, AS PER PLAN

IN LIEU OF REQUIREMENTS OF 630.12 THE GROUND MOUNTED POST SUPPORTS SHALL BE STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF WILLOUGHBY. AFTER ALL GROUND MOUNTED POST SUPPORTS HAVE BEEN REMOVED THE CONTRACTOR SHALL NOTIFY THE CITY OF WILLOUGHBY.

## 632 LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, AS PER PLAN

- A) EACH AMPLIFIER SHALL BE NUMBERED TO CORRESPOND TO ITS LOOP NUMBER. THE LOOP NUMBERS ARE SHOWN ON SHEETS 28, 30.
- B) THE AMPLIFIER SHALL BE AUTOMATICALLY SELF TUNING.
- C) THE UNITS ELECTRICAL CONNECTION PLUGS OR WIRING HARNESS SHALL ALLOW READY REPLACEMENTS WITH A SINGLE CHANNEL AMPLIFIER AS DESCRIBED IN 732.07.

## 632 VEHICULAR SIGNAL HEAD, 12" LENS, BY TYPE, AS PER PLAN

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

- A) SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND MEET ITC SPECIFICATIONS.
- B) PLASTIC LENSES SHALL BE USED.
- C) PIPE, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- D) PROPER EXTERIOR COLORS SHALL BE OBTAINED BY THE USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.

## 632 PEDESTRIAN SIGNAL HEADS, TYPE D-2, AS PER PLAN

SECTION 732.05 OF THE SPECIFICATIONS IS MODIFIED FOR THIS PROJECT AS FOLLOWS:

- A) SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF ALUMINUM AND MEET ITC SPECIFICATIONS.
- B) PLASTIC LENSES SHALL BE USED.
- C) PIPE, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- D) PROPER EXTERIOR COLORS SHALL BE OBTAINED BY THE USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.

## 633 CONTROLLER ACTUATED, BY PHASE, SOLID STATE DIGITAL, AS PER PLAN

THE CONTRACTOR SHALL FURNISH AND INSTALL A FULL ACTUATED, 3 OR 8 PHASE SOLID STATE, DIGITAL CONTROLLER WITH BASE MOUNTED CABINET AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE CONTROLLER COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

THE CONTROLLER SHALL BE CAPABLE OF PROVIDING THE SIGNAL DISPLAYS AND TIMING AS SHOWN ON THE SHEETS.

THE CONTROLLER AND CABINET SHALL CONFORM TO ODOT SPECIFICATIONS AND SHALL HAVE THE FOLLOWING FEATURES:

1. THE LOAD SWITCHES SHALL PROVIDE INPUT AND OUTPUT INDICATORS.
2. THE CONFLICT MONITOR CAPABLE OF 4 OR 8 PHASE OPERATION SHALL MONITOR GREENS, AMBERS, WALKS, AND ABSENCE OF RED.
3. THE FOLLOWING SWITCHES SHALL BE ACCESSIBLE VIA THE POLICE PANEL DOOR:
  - A. SIGNAL SHUTDOWN
  - B. FLASH CONTROL
  - C. AUTOMATIC/MANUAL TRANSFER
4. THE FOLLOWING SWITCHES SHALL BE MOUNTED ON THE SWITCH PANEL IN THE CABINET:
  - A. RUN/STOP TIME
  - B. CONTROLLER SHUTDOWN
  - C. DETECTOR TEST
5. FLUORESCENT SERVICE LAMP WITH DOOR ACTIVATED ON/OFF SWITCH.
6. THE BASE MOUNTED CABINET EXTERIOR SHALL BE ALUMINUM COLORED.
7. THE CONTRACTOR SHALL FURNISH FOR APPROVAL A CABINET PLAN SHOWING COMPONENT PLACEMENT PRIOR TO INSTALLATION.

8. THE 8 PHASE CONTROLLER SHALL BE CAPABLE OF OPERATING IN A PRETIMED MODE, PROVIDING A MINIMUM OF THREE CYCLE LENGTH AND THREE TIMING SPLITS PER CYCLE. COORDINATION DURING PRETIMED OPERATION WILL BE TIME BASED.
9. THE 8 PHASE CONTROLLER SHALL INCLUDE AN INTERNAL CLOCK CAPABLE OF PROVIDING PROGRAMMED CONTROL OF CYCLE LENGTHS AND SPLITS.
10. THE 8 PHASE CONTROLLER SHALL HAVE PREEMPTION CAPABILITIES. THE WILLOUGHBY FIRE DEPARTMENT ENGAGES THE PREEMPT. ONCE THE SIGNAL IS RECEIVED BY THE CONTROLLER, THE PHASE IN OPERATION IS CLEARED TO GO TO SOUTHBOUND GREEN FOR S.R. 91 (7+4) AT U.S. 20. THIS PHASE REMAINS FOR 40 SECONDS. THE PHASE SEQUENCE RESUMES WITH THE LEFT TURN GREEN ARROWS FOR U.S. 20 (1+5).

PAYMENT FOR ITEM 633 CONTROLLER ACTUATED 3 OR 8 PHASE, SOLID STATE DIGITAL, AS PER PLAN WILL BE MADE AT THE CONTRACT PRICE FOR EACH CONTROLLER IN PLACE INCLUDING PREWIRED CABINET COMPLETELY INSTALLED, WIRE TESTED AND ACCEPTED.

## MAINTENANCE OF NEW TRAFFIC SIGNAL

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF EACH TRAFFIC SIGNAL HE HAS IN PART OR FULLY CONSTRUCTED UNTIL SUCH TIME AS TESTING REQUIREMENTS ARE SATISFIED, AND THE SIGNAL INSTALLATION IS COMPLETE AND ACCEPTED BY THE ENGINEER.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE CITY AND THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES ARE LOCATED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO TROUBLE CALLS. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAULTS, EQUIPMENT MALFUNCTIONS, AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR IS NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE, ALL DAMAGED EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. THE SIGNAL SHALL BE BACK IN SERVICE WITHIN EIGHT HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE OR MALFUNCTION.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR MALFUNCTION OF SIGNAL EQUIPMENT AT LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF ITEM 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE FROM THE CITY OF WILLOUGHBY FOR POLICE SERVICES AND MAINTENANCE BY CITY FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF ITEM 105.15.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE CONSTRUCTION OF AND/OR REVISIONS TO THE SIGNAL SYSTEMS.

THIS ITEM SHALL BE CONSIDERED A SUBSIDIARY WORK ITEM AND THE COST SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE VARIOUS ITEMS MAKING UP THE SIGNAL SYSTEM.

## GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 90 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 AND DETECTOR AMPLIFIERS.

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

## CERTIFICATION AND APPROVAL OF TRAFFIC CONTROL ITEMS

SUBMISSIONS BY THE CONTRACTOR FOR APPROVAL SHALL CONFORM WITH 632.02 AND 633.02 AS APPROPRIATE EXCEPT THAT THREE ADDITIONAL SETS OF INFORMATION SHALL BE REQUIRED TO BE FORWARDED BY THE ENGINEER TO THE CITY OF WILLOUGHBY FOR THEIR INFORMATION AND COMMENTS