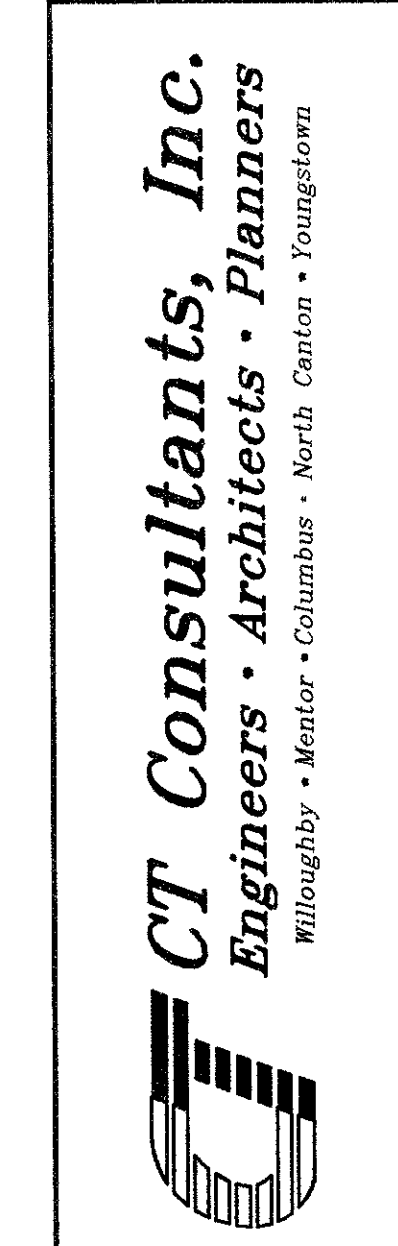


SUBMISSIONS / REVISIONS

**VINE STREET (S.R. 640) ROADWAY
WIDENING IMPROVEMENTS
CITIES OF WILLOWICK & EASTLAKE, LAKE COUNTY, OHIO**

**TRAFFIC SIGNAL GENERAL NOTES
VINE STREET / WAVERLY ROAD INTERSECTION**



DATE: JANUARY 2000

DRAWN BY: T.E.B.

CHECKED BY: A.E.P.

APPROVED BY: _____

SCALE: NONE

HOR: -

VERT: -

CONTRACT No. 9840624

SHEET NO. 46 OF 52

ITEM 632 - PEDESTRIAN SIGNAL HEAD, TYPE D2, AS PER PLAN

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

- A) PEDESTRIAN SIGNAL HOUSINGS MAY BE CONSTRUCTED OF U.V. STABILIZED POLYCARBONATE PLASTIC AND SHALL MEET I.T.E. SPECIFICATIONS.
- B) VISORS SHALL BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND MEET I.T.E. SPECIFICATIONS.
- C) PLASTIC LENSES SHALL BE USED.
- D) PIPE, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- E) SIGNALS SHALL BE ATTACHED TO POLES AS SHOWN ON TC-85.10, EXCEPT THAT THE USE OF THE OPTIONAL 2 PIECE HINGED BRACKET ("CLAM SHELL") WILL NOT BE PERMITTED.
- F) SIGNALS SHALL DISPLAY THE UPRaised PALM AND WALKING PERSON SYMBOLS, IN LIEU OF WORD MESSAGES.
- G) PROPER EXTERIOR COLORS FOR POLYCARBONATE PLASTIC SIGNAL HOUSING SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.

ITEM 633. CONTROLLER, ACTUATED, 8 PHASE, SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING AN ACTUATED, SOLID STATE DIGITAL MICROPROCESSOR TYPE CONTROLLER WITH SECONDARY COORDINATOR, MENU DRIVEN PROMPTS, INTERNAL TBC, TELEMETRY UNIT AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE CONTROLLER COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

THE CONTROLLER AND CABINET SHALL CONFORM TO ODOT SPECIFICATION 633 AND SHALL HAVE THE FOLLOWING FEATURES:

- A) THE LOAD SWITCHES SHALL PROVIDE INPUT AND OUTPUT INDICATIONS.
- B) THE CONFLICT MONITOR SHALL BE CAPABLE OF 12 CHANNEL OPERATION AS PER PLAN AND SHALL HAVE EXTENDED MONITORING, LCD DISPLAY, FAULT/EVENT STORAGE AND REPORTING.
- C) THE FOLLOWING SWITCHES SHALL BE ACCESSIBLE VIA THE POLICE PANEL DOOR:
 - 1) SIGNAL SHUTDOWN
 - 2) FLASH CONTROL
 - 3) MANUAL CONTROL JACK ACTIVATING MANUAL CONTROL WITH SEPARATE MANUAL PUSH BUTTON CORD.
- D) THE FOLLOWING SWITCHES SHALL BE MOUNTED ON THE SWITCH PANEL IN THE CABINET:
 - 1) RUN-STOP NORMAL
 - 2) CONTROLLER SHUTDOWN
 - 3) DETECTOR TEST
 - 4) SYSTEM, TIME OF DAY, FREE
- E) A FLUORESCENT SERVICE LAMP WITH DOOR ACTIVATED ON/OFF SWITCH.
- F) THE CABINET EXTERIOR SHALL BE ALUMINUM COLORED AND THE INTERIOR SHALL BE WHITE.
- G) THE CONTRACTOR SHALL FURNISH FOR APPROVAL A CABINET PLAN SHOWING COMPONENT PLACEMENT.
- H) THE SUPPLIER SHALL CONTACT THE CITY OF MENTOR FOR SYSTEM DETECTOR HOOK UP AND GRAPHICS DETECTOR HOOK-UP.
- I) BACK PANEL SHALL HAVE A MINIMUM OF 12 LOAD BAYS.
- J) ONE SPARE 2" CONDUIT TO THE CLOSEST PULLBOX.
- K) CONTROLLER CABINET SHALL HAVE A REAR ACCESS DOOR.

ITEM 632 DETECTOR LOOP, AS PER PLAN

THE SIGNAL CONTRACTOR SHALL CONTACT THE CITY OF EASTLAKE ENGINEERING DEPARTMENT BEFORE INSTALLATION OF VEHICLE DETECTION LOOPS FOR ASSISTANCE IN LOCATION MARKING.

INSTALLATION IN ASPHALT PAVEMENT:

VEHICLE LOOP DETECTORS SHALL BE INSTALLED IN LEVELING COURSE (WHENEVER APPLICABLE) BEFORE FINAL OVERLAY.

632 SIGNAL SUPPORT, TYPE TC-81.20, AS PER PLAN

SIGNAL POLES AND MAST ARMS SHALL BE OF THE HEIGHT, STRENGTH AND/OR LENGTH INDICATED ON THE PLANS. POLES AND MAST ARMS SHALL BE A TRUE ROUND CONTINUOUS TAPER.

SIGNAL POLES AND MAST ARMS ARE TO BE DELIVERED WITH ALL GALVANIZED EXTERIOR SURFACES COATED WITH A URETHANE OR TRIGLYCIDYLE ISOCYANURATE (TGIC) POLYESTER POWDER TO A MINIMUM FILM THICKNESS OF 0.002 INCH. PRIOR TO APPLICATION, THE SURFACES TO BE POWDER COATED SHALL BE MECHANICALLY ETCHED BY BRUSH BLASTING (REF.SSPC-SP7) AND THE ZINC COATED SUBSTRATE PREHEATED TO 450 DEGREES FAHRENHEIT FOR A MINIMUM OF ONE HOUR IN A GAS FIRED CONVECTION OVEN. THE COATING SHALL BE ELECTROSTATICALLY APPLIED AND CURED IN A GAS FIRED CONVECTION OVEN BY HEATING THE ZINC COATED SUBSTRATE TO A MINIMUM OF 350 DEGREES FAHRENHEIT AND A MAXIMUM OF 400 DEGREES FAHRENHEIT. THE THERMOSETTING POWDER RESINS SHALL PROVIDE BOTH INTERCOAT AS WELL AS SUBSTRATE FUSION ADHESION THAT MEETS 5A OR 5B CLASSIFICATIONS OF ASTM D3359.

FIELD INSTALLATION OF WIRING HOLES FOR SIGNAL HEADS, PREEMPT DETECTORS, CONFIRMATION LIGHT, PEDESTRIAN SIGNALS AND BUTTONS WILL NOT BE PERMITTED.

DUE TO THE POSSIBILITY OF CONFLICT WITH EXISTING OR PROPOSED UNDERGROUND OBSTRUCTIONS (INCLUDING THE POSSIBILITY OF UNRECORDED OBSTRUCTIONS) WHICH COULD AFFECT THE LOCATION OF THE FOUNDATIONS FOR THESE ITEMS, AND CONSEQUENTLY, THE DESIGN OF THE VARIOUS SUPPORTS, AND/OR ARMS, THE CONTRACTOR SHALL NOT PLACE FINAL ORDERS FOR THESE ITEMS UNTIL THE FOUNDATIONS HAVE BEEN INSTALLED, AND HE HAS RECEIVED, FROM THE ENGINEER, WRITTEN NOTICE TO PROCEED WITH THE ORDERS FOR THESE ITEMS.

IF ANY FOUNDATION LOCATIONS MUST BE ADJUSTED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER, WHO WILL DETERMINE THE REVISED LOCATIONS AND IF ANY SUPPORT DESIGN CHANGES ARE NECESSARY, IN CONSULTATION WITH THE MAINTAINING AGENCY. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR DETERMINING THE REVISED DESIGN. THE ENGINEER WILL SUBSEQUENTLY INFORM THE CONTRACTOR OF ANY CHANGES NECESSARY, AND AUTHORIZE HIM TO ORDER THE SUPPORTS.

THE CONTRACTOR SHALL, WHEN DEVELOPING HIS PROGRESS SCHEDULE, AND THOSE OF HIS SUBCONTRACTORS, ENSURE THAT THE FOUNDATIONS ARE INSTALLED AT THE EARLIEST TIME AS IS FEASIBLE AND PRACTICAL, AND SHALL INCLUDE SUFFICIENT TIME IN THE PROGRESS SCHEDULE FOR THE ORDERING, MANUFACTURE, DELIVERY, AND INSTALLATION OF THESE ITEMS AFTER THE FOUNDATIONS ARE IN PLACE.

NO PAYMENTS FOR DELIVERED MATERIALS FOR THESE ITEMS WILL BE MADE UNTIL THE FOUNDATIONS ARE IN PLACE, AND IF CHANGES IN THE DESIGN OF THESE ITEMS ARE REQUIRED, NO PAYMENTS WILL BE MADE FOR ITEMS MANUFACTURED TO THE ORIGINAL DESIGNS.

THE CONTRACTOR SHALL PROTECT PEDESTRIANS AND VEHICLES FROM EXPOSED ANCHOR BOLTS AT ALL TIMES UNTIL THE ASSOCIATED SIGNAL SUPPORT IS ERECTED. THE METHOD OF COVERING THE ANCHOR BOLTS SHALL BE APPROVED BY THE ENGINEER.

ITEM 632 - REMOVAL OF TRAFFIC SIGNAL INSTALLATION

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, POLES, MAST ARMS, CABINET, CONTROLLER, PULL BOXES, ETC., SHALL BE REMOVED IN ACCORDANCE WITH 632.25 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF EASTLAKE, IN ACCORDANCE WITH THE LISTING GIVEN HEREIN. ANY ITEMS NOT DESIGNATED FOR SALVAGE, AND/OR ANY ITEMS NOT SALVAGED BY THE MUNICIPALITY BY THE COMPLETION DATE SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS EXPENSE.

ITEMS FOR DISPOSAL BY THE CONTRACTOR:

- 1) CABLE AND MESSENGER WIRE
- 2) WOODEN POLES BEING REMOVED
- 3) FLAT SHEET SIGNS BEING REMOVED
- 4) SIGN POSTS BEING REMOVED
- 5) HARDWARE
- 6) PULL BOXES

ITEMS TO BE STORED AND DELIVERED TO THE CITY OF EASTLAKE:

- 1) CONTROLLERS, COMPLETE INCLUDING CABINETS, CONFLICT MONITORS, BACK PANELS, LOAD RELAYS, AND TIMERS
- 2) DETECTOR AMPLIFIERS
- 3) PEDESTRIAN SIGNALS
- 4) VEHICULAR SIGNALS
- 5) EXISTING METAL MAST ARM, SIGNAL SUPPORT POLES AND METAL STRAIN POLES
- 6) PEDESTRIAN PUSH BUTTONS

ITEM 625. POWER SERVICE FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM THE CLEVELAND ELECTRIC ILLUMINATING COMPANY AT THE LOCATION INDICATED ON THE SIGNAL PLAN. POWER SUPPLIED SHALL BE 120 VOLTS. POWER SERVICE SHALL INCLUDE A 2" CONDUIT RISER AND A SEPARATE AND INDIVIDUAL CONDUIT TO THE CONTROLLER (2" MINIMUM).

ITEM 625. TRENCH, AS PER PLAN

THIS ITEM SHALL INCLUDE ANY TRENCH NECESSARY FOR THE INSTALLATION OF CONDUIT AND WIRE FOR THE TRAFFIC SIGNALS AND LOOP DETECTORS. TRENCH IN PAVEMENTS OF ANY THICKNESS SHALL ALSO BE INCLUDED IN THIS ITEM. REPLACEMENT OF DISTURBED PAVEMENT OR SIDEWALK SLABS SHALL BE INCLUDED IN THIS ITEM. ALL TRENCHING SHALL BE DONE AND CONDUIT INSTALLED PRIOR TO FINAL PAVEMENT AND/OR SIDEWALK BEING INSTALLED.

ITEM 625 - PULL BOX, MISC.: (13"x24")

SIZE: BOX - 13" X 24" X 26" DEEP (NOMINAL).

COVER AND BOX SHALL HAVE A MINIMUM VERTICAL TEST LOAD OF 10,000 LBS. OVER A 10" X 10" AREA PER ASTM C-857 AND SO BE IDENTIFIED ON THE SURFACE, ALL IN ACCORDANCE WITH THE WESTERN UNDERGROUND COMMITTEE - GUIDE 3.6 (W.U.C. 3.6). THE BOX MUST ALSO MEET THE STRUCTURAL REQUIREMENTS FOR LATERAL (SIDE) LOADING AS DEFINED IN W.U.C. GUIDE 3.6. THE PULL BOX SHALL BE SUITABLE FOR INSTALLATION AND USE THROUGH A TEMPERATURE RANGE OF -40° C TO +90° C.

THE PULL BOX COVER AND RING SHALL BE MADE OF HIGH DENSITY POLYMER CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 20,000 P.S.I. THE BODY OF THE BOX SHALL BE MADE OF FIBERGLASS REINFORCED POLYESTER (FRP). HIGH DENSITY POLYETHYLENE (HDPE), STRUCTURAL FOAM, OR STRUCTURAL THERMOPLASTIC SHALL NOT BE ACCEPTABLE.

THE COVER SHALL BE FASTENED TO THE BOX WITH TWO RECESSED STAINLESS STEEL HEX HEAD BOLTS. THE BOX SHALL HAVE A "SELF-LOCATING" OR "FLOATING" THREADED INSERT MADE OF STAINLESS STEEL AND SHALL BE REPLACEABLE. COVER SURFACE SHALL BE SKID RESISTANT AND SHALL HAVE A MINIMUM COEFFICIENT OF FRICTION OF 0.50.

IDENTIFICATION "TRAFFIC" SHALL BE PERMANENTLY MOLDED ON THE TOP SURFACE OF THE PULL BOX COVER.

THE BOX SHALL BE WIDER AT THE BASE FOR STABILITY AND TAPERED INWARDS TOWARD THE TOP. THE BOX SHALL BE PROVIDED WITH A BOTTOM FLANGE AT LEAST 1-1/4" WIDE TO PREVENT SETTLING IN FIRM SOIL WHEN SUBJECTED TO SPECIFIED LOADS. TOP REGION OF THE BOX SHALL BE CONFIGURED TO PROVIDE "KEYING IN" TO LOCK THE BOX IN CONCRETE WHEN INSTALLED IN SIDEWALKS.

IF IT IS NECESSARY TO MAKE CONDUIT ENTRY HOLES IN THE FIELD, IT SHOULD BE POSSIBLE TO DO SO WITH A SIMPLE TOOL SUCH AS A WOOD HOLE CUTTING SAW.

NOTE: THE EXACT LOCATIONS OF PULL BOXES ARE TO BE STAKED AND CHECKED BY THE ENGINEER PRIOR TO PLACEMENT TO VERIFY CLEARANCE OF UNDERGROUND FACILITIES AND ANY ABOVE GROUND OBSTRUCTIONS. IF THERE ARE ANY CONFLICTS, THEY ARE TO BE ADJUSTED AS DIRECTED BY THE ENGINEER. PAYMENT FOR THIS IS INCIDENTAL TO ALL 625 ITEMS.

PULL BOXES ARE TO BE PROVIDED A 4" DRAIN TO THE NEAREST STORM INLET, UNDERDRAIN OR OTHER SUITABLE OUTLET FROM THE PULL BOX. TWENTY (20) FEET OF 4" PVC CONDUIT SHALL BE USED AND BE INCLUDED IN THE PRICE OF THE PULL BOX.

ITEM 632. VEHICULAR SIGNAL HEAD, 12" LENS, POLYCARBONATE, 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 I.T.E. SPECIFICATIONS.
- B) GLASS LENSES SHALL BE USED.
- C) PROPER EXTERIOR COLORS SHALL BE OBTAINED BY THE USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
- D) SIGNAL HEADS SHALL BE RIGIDLY MOUNTED ON THE MAST ARMS WITH THE RED LENSES CENTERED ON THE CENTERLINE OF THE MAST ARM.

ITEM 632 - PEDESTRIAN PUSHBUTTON, AS PER PLAN

PEDESTRIAN PUSHBUTTONS SHALL BE CAST ALUMINUM WITH ADA PUSHBUTTON AND SHALL INCLUDE PEDESTRIAN CROSSING SIGN.

ITEM 632. LOOP DETECTOR UNITS, DELAY AND EXTENSION TYPE, AS PER PLAN

- A) EACH AMPLIFIER SHALL BE NUMBERED AND LABELED TO CORRESPOND TO ITS LOOP NUMBER, DIRECTION/LANE (I.E., WBL, WBRL, WBLT, . . .) AND PHASE. THE LOOP NUMBERS AND PHASE ARE SHOWN ON THE INTERSECTION SIGNAL PLANS.
- B) THE AMPLIFIER SHALL BE AUTOMATICALLY SELF TUNING, RELAY TYPE AND ALL CONTACTS SHALL BE INCLUDED IN THE WIRING HARNESS.
- C) THE UNITS' ELECTRICAL CONNECTION PLUGS OR WIRING HARNESS SHALL ALLOW READY REPLACEMENTS WITH SIGNAL CHANNEL AMPLIFIERS AS DESCRIBED IN SECTION 732.07.
- D) EACH AMPLIFIER SHALL HAVE SYSTEM LOOP OUTPUT FEATURES FOR BOTH VOLUME AND OCCUPANCY. THE COUNT OUTPUT SHALL BE WIRED SO THAT COUNTS CAN BE OBTAINED THROUGH A LAPTOP MICROCOMPUTER OR A TELEPHONE MODEM DIALED UP BY A PERSONAL COMPUTER.