

# TRAFFIC CONTROL GENERAL NOTES

## ITEM 632. PULL BOX, MISC.: (13"x24"), (17"x30")

SIZE: BOX - 13" X 24" X 26" DEEP (NOMINAL).  
SIZE: BOX - 17" X 30" 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 INFORCED 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 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 SHALL BE DONE WITH 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, UNDER DRAIN 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. ADDITIONAL 4" CONDUIT IN THE AMOUNT OF 200 L.F. HAS BEEN INCLUDED IN THE BID PROPOSAL FOR USE AS DIRECTED BY THE ENGINEER. FAILURE TO INSTALL DRAIN CONDUIT SHALL RESULT IN A PENALTY EQUAL TO THE PRICE BID FOR THE AFFECTED PULL BOXES. PAYMENT FOR PULL BOX ITEMS SHALL NOT BE MADE UNTIL PULL BOXES, INCLUDING UNDER DRAIN, HAVE BEEN COMPLETELY INSTALLED.

## ITEM 632 DETECTOR LOOP, AS PER PLAN, ALTERNATE BID

THE SIGNAL CONTRACTOR SHALL CONTACT THE CITY OF MENTOR ENGINEERING DEPARTMENT BEFORE INSTALLATION OF VEHICLE DETECTION LOOPS FOR ASSISTANCE IN LOCATION MARKING. THE CITY OF MENTOR CONTACT PERSON FOR LOOP INTALLATION IS:

ALLEN E. PENNINGTON  
ASSISTANT TO THE CITY ENGINEER - TRAFFIC  
(440) 255-1100

INSTALLATION IN CONCRETE PAVEMENT:

LOOP DETECTORS INSTALLED IN CONCRETE PAVEMENT SHALL BE PRE FORMED HEAVY DUTY RUBBER LOOP DETECTORS (MANUFACTURED BY DETECH). THE PRE FORMED LOOPS INSTALLED IN CONCRETE SHALL HAVE AN ADDITIONAL TURN OF WIRE OVER STANDARD LOOPS. THE LOOPS ARE TO BE TYE-WRAPPED TO THE REBAR OR DRAPED UNDER THE MESH. LOOPS SHOULD BE SECURED AT EVERY POINT THAT IT CROSSES REBAR OR EVERY FOOT MAXIMUM. LOOPS SHOULD NOT BE COVERED BY MORE THAN 6" OF CONCRETE. THE LOOPS SHALL BE CONSTRUCTED USING 3/8" SYNTHETIC CORD REINFORCED HYDRAULIC HOSE WITH A 250 PSI INTERNAL PRESSURE RATING. NO PAYMENT SHALL BE MADE FOR ANY LOOP NOT INSTALLED ACCORDING TO SPECIFICATIONS.

INSTALLATION IN ASPHALT PAVEMENT:

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

## ITEM 632 DETECTOR LOOP, AS PER PLAN

THE SIGNAL CONTRACTOR SHALL CONTACT THE CITY OF MENTOR ENGINEERING DEPARTMENT BEFORE INSTALLATION OF VEHICLE DETECTION LOOPS FOR ASSISTANCE IN LOCATION MARKING. THE CITY OF MENTOR CONTACT PERSON FOR LOOP INTALLATION IS:

ALLEN E. PENNINGTON  
ASSISTANT TO THE CITY ENGINEER - TRAFFIC  
(440) 255-1100

INSTALLATION IN CONCRETE PAVEMENT:

LOOP DETECTORS INSTALLED IN CONCRETE PAVEMENT SHALL BE PRE FORMED HEAVY DUTY RUBBER LOOP DETECTORS. THE PRE FORMED LOOPS INSTALLED IN CONCRETE SHALL HAVE AN ADDITIONAL TURN OF WIRE OVER STANDARD LOOPS. THE LOOPS ARE TO BE TYE-WRAPPED TO THE REBAR OR DRAPED UNDER THE MESH. LOOPS SHOULD BE SECURED AT EVERY POINT THAT IT CROSSES REBAR OR EVERY FOOT MAXIMUM. LOOPS SHOULD NOT BE COVERED BY MORE THAN 6" OF CONCRETE. THE LOOPS SHALL BE CONSTRUCTED USING 3/8" SYNTHETIC CORD REINFORCED HYDRAULIC HOSE WITH A 250 PSI INTERNAL PRESSURE RATING. NO PAYMENT SHALL BE MADE FOR ANY LOOP NOT INSTALLED ACCORDING TO SPECIFICATIONS.

INSTALLATION IN ASPHALT PAVEMENT:

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

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

- THE DETECTORS SHALL BE RACK MOUNTED, FOUR CHANNEL, SELF TUNING WITH SCANNING. A RACK MOUNTED POWER SUPPLY SHALL BE SUPPLIED WITH EACH RACK. THE RACK SHALL BE PLUG MOUNTED TO THE BACK PANEL FOR EASY REMOVAL.
- EACH AMPLIFIER SHALL BE NUMBERED AND LABELED TO CORRESPOND TO ITS LOOP NUMBER, DIRECTION/LANE (I.E., WBLL, WBRL, WBLT, ...) AND PHASE. THE LOOP NUMBERS AND PHASE ARE SHOWN ON THE INTERSECTION SIGNAL PLANS.
- 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.

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

- THE DETECTORS SHALL BE RACK MOUNTED, FOUR CHANNEL, SELF TUNING, SCANNING, AS MANUFACTURED BY EDI. A RACK MOUNTED POWER SUPPLY SHALL BE SUPPLIED WITH EACH RACK AND AN ADDITIONAL SLOT SHALL BE INCLUDED FOR 3M OPTICOM PHASE SELECTOR. THE RACK SHALL BE PLUG MOUNTED TO THE BACK PANEL FOR EASY REMOVAL.
- EACH AMPLIFIER SHALL BE NUMBERED AND LABELED TO CORRESPOND TO ITS LOOP NUMBER, DIRECTION/LANE (I.E., WBLL, WBRL, WBLT, ...) AND PHASE. THE LOOP NUMBERS AND PHASE ARE SHOWN ON THE INTERSECTION SIGNAL PLANS.
- 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.

## ITEM 633. CONTROLLER, ACTUATED, 4 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 CONTROLLER, 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 AND COMPATIBLE WITH THE CITY CLOSED LOOP SYSTEM.

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

- THE LOAD SWITCHES SHALL PROVIDE INPUT AND OUTPUT INDICATIONS.
- THE CONFLICT MONITOR MODEL EDI 12 LEC SUPPLIED WITH COMMUNICATION HARNESS SHALL BE CAPABLE OF 12 CHANNEL OPERATION AS PER PLAN AND SHALL HAVE EXTENDED MONITORING, LCD DISPLAY, FAULT/EVENT STORAGE AND REPORTING.
- THE FOLLOWING SWITCHES SHALL BE ACCESSIBLE VIA THE POLICE PANEL DOOR:
  - SIGNAL SHUTDOWN
  - FLASH CONTROL
  - MANUAL CONTROL JACK ACTIVATING MANUAL CONTROL WITH SEPARATE MANUAL PUSHBUTTON CORD
- THE FOLLOWING SWITCHES SHALL BE MOUNTED ON THE SWITCH PANEL IN THE CABINET:
  - RUN-STOP NORMAL
  - CONTROLLER SHUTDOWN
  - FLASH CONTROL
  - DETECTOR TEST
- AN INCANDESCENT LAMP IN A GOOSE NECK FIXTURE WITH MANUAL ON/OFF SWITCH.
- THE CABINET EXTERIOR SHALL BE ALUMINUM COLORED AND THE INTERIOR SHALL BE WHITE.
- THE CONTRACTOR SHALL FURNISH FOR APPROVAL A CABINET PLAN SHOWING COMPONENT PLACEMENT.
- THE SUPPLIER SHALL CONTACT THE CITY OF MENTOR FOR SYSTEM DETECTOR HOOK UP AND GRAPHICS DETECTOR HOOK UP.
- BACK PANEL SHALL BE A 16 POSITION CONTINUOUS BACK PANEL.
- ONE SPARE 2" CONDUIT TO THE CLOSEST PULLBOX.
- PROVIDE FACTORY INSTALLED CONFIRMATION LIGHT ISOLATION PANEL WITH LOAD SWITCH AND HARNESS, AS PER DETAIL DRAWINGS.
- INSTALL ONE SEPARATE 2" CONDUIT FOR POWER AND ONE SEPARATE 2" CONDUIT FOR INTERCONNECT CABLE FROM CONTROLLER FOUNDATION TO SOURCE OF POWER SERVICE.

## ITEM 633. CONTROLLER, ACTUATED, 4 PHASE, SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN, ALTERNATE BID

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING AN ACTUATED, SOLID STATE DIGITAL MICROPROCESSOR TYPE CONTROLLER, MODEL EPAC 300, WITH SECONDARY CONTROLLER, 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 AND COMPATIBLE WITH THE CITY OF MENTOR CLOSED LOOP SYSTEM.

THE CONTROLLER AND CABINET SHALL CONFORM TO ODOT SPECIFICATION 633 AND SHALL HAVE THE FEATURES AS NOTED IN "ITEM 633, CONTROLLER, ACTUATED, 4 PHASE, SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN".

DATE: 10-24-01 - H:\CT\97125\SDSK\TRAFFIC\97125TIN1.DWG - PLOT SCALE = 1 : 1 (PLOT 1)

CALCULATED  
T.J.F. & T.E.B.  
CHECKED  
L.M.H.

S.R. 615  
TRAFFIC CONTROL GENERAL NOTES

LAK-IR90/SR615-9.26/1.51

285  
393