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632 VEHICULAR SIGNAL HEAD, (LED), BY TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF C&MS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF YELLOW POLYCARBONATE PLASTIC WITH VISORS AS SPECIFIED AND MEET ITE SPECIFICATIONS.
2. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY THE USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
3. ALL UPPER SIGNAL SUPPORT HARDWARE AND PIPING UP TO AND INCLUDING THE WIRE INLET SHALL BE FERROUS MATERIAL.
4. THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.
5. ALL SIGNAL HEADS SHALL BE RIGIDLY MOUNTED TO THE MAST ARM WITH THE RED MODULE LOCATED IN FRONT OF THE MAST ARM.
6. ALUMINUM BACKPLATES SHALL BE IN ACCORDANCE WITH THE C&MS AND INCLUDE A FLUORESCENT YELLOW BORDER.
7. SIGNAL HEADS SHALL HAVE A MINIMUM THICKNESS OF 0.117 INCHES.
8. SIGNAL HEADS SHALL HAVE CUTAWAY TYPE VISORS UNLESS OTHERWISE SPECIFIED IN THE PLANS.
9. APPLY A BEAD OF SILCONE TO THE SIGNAL HEAD, WASHER, AND ENTRANCE ADAPTER SERRATIONS TO PREVENT WATER INTRUSION. ALSO FILL THE SPACE BETWEEN CONCENTRIC SERRATION RINGS ON THE TOP OF THE SIGNAL HEAD TO COMPLETELY EXCLUDE WATER FROM THE SPACE BETWEEN THE CONCENTRIC RINGS.

PAYMENT FOR ITEM 632 VEHICULAR SIGNAL HEAD, (LED), BY TYPE, AS PER PLAN SHALL BE MADE FOR THE COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS, AND NEW HARDWARE.

632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF C&MS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.
2. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY THE USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
3. PIPES, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
4. THE PEDESTRIAN SIGNAL HEAD SHALL BE OF THE LED COUNTDOWN TYPE.
5. NEW ATTACHMENT HARDWARE AND FITTINGS SHALL BE USED.
6. THE LIGHT EMITTING DIODE (LED) MODULES SHALL MEET THE REQUIREMENTS OF 732.04-C.

PAYMENT FOR ITEM 632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN SHALL BE MADE FOR THE COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS, AND NEW ATTACHMENT HARDWARE.

632 UNDERDRAINS FOR PULLBOXES

REFERENCE SCD HL-30.11 FOR DETAILS ABOUT DRAINING PULLBOXES. UNDERDRAINS FOR PULLBOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED 20 FEET. THE FOLLOWING ESTIMATED QUANTITY IS CARRIED TO THE SIGNAL SUB-SUMMARY FOR THIS PURPOSE:

ITEM 611 4" CONDUIT, TYPE E 200 FT

632 COVERING OF VEHICULAR SIGNAL HEAD, AS PER PLAN

COVER VEHICULAR SIGNAL HEADS IF ERECTED AT INTERSECTIONS WHERE TRAFFIC IS MAINTAINED BEFORE ENERGIZING SIGNALS. USE A STURDY OPAQUE COVERING MATERIAL SPECIFICALLY MADE FOR USE WITH TRAFFIC SIGNALS, AND ENSURE THE COLOR OF THE COVER IS DIFFERENT THAN THE SIGNAL HEAD (TAN OR BEIGE), SO THAT IT IS CLEAR TO DRIVERS THE HEADS ARE COVERED, NOT DARK. USE A METHOD OF COVERING TO COVER ATTACHMENT AND MATERIALS, INCLUDING BACKPLATES, AS APPROVED BY THE ENGINEER. COVERS ARE TO BE FREE OF TEXT, PICTURE, OR ANY TYPE OF ADVERTISING. MAINTAIN COVERS, AND REMOVE THEM WHEN DIRECTED BY THE ENGINEER.

632 COVERING OF PEDESTRIAN SIGNAL HEAD, AS PER PLAN

COVER PEDESTRIAN SIGNAL HEADS IF ERECTED AT INTERSECTIONS WHERE TRAFFIC IS MAINTAINED BEFORE ENERGIZING SIGNALS. USE A STURDY OPAQUE COVERING MATERIAL SPECIFICALLY MADE FOR USE WITH TRAFFIC SIGNALS, AND ENSURE THE COLOR OF THE COVER IS DIFFERENT THAN THE SIGNAL HEAD (TAN OR BEIGE), SO THAT IT IS CLEAR TO PEDESTRIANS THE HEADS ARE COVERED, NOT DARK. COVERS ARE TO BE FREE OF TEXT, PICTURE, OR ANY TYPE OF ADVERTISING. MAINTAIN COVERS, AND REMOVE THEM WHEN DIRECTED BY THE ENGINEER.

632 PEDESTRIAN PUSH BUTTON, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF C&MS 632 AND 732, PEDESTRIAN PUSHBUTTONS SHALL HAVE THE FOLLOWING FEATURES:

1. THE PUSH BUTTON SHALL BE A MINIMUM OF 2 INCHES AT ITS SMALLEST DIMENSION.
2. THE PUSHBUTTON SHALL HAVE A PRESSURE SENSITIVE ACTUATOR WITH A MAXIMUM ACTUATION FORCE REQUIRED OF 5 POUNDS PER SQUARE FOOT.
3. THE PUSHBUTTON SHALL HAVE ITS HOUSING SEALED TO THE SIGNAL SUPPORT OR PEDESTAL WITH A SILICONE SEALANT.
4. THE PUSHBUTTON SHALL BE CONSTRUCTED SUCH THAT IT CANNOT BE STUCK CLOSED OR IN CONSTANT CALL.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND OTHER INCIDENTALS NECESSARY FOR EACH PUSHBUTTON FURNISHED, IN PLACE, COMPLETE, AND ACCEPTED.

632 SIGNAL SUPPORT FOUNDATION

PRIOR TO ORDERING THE SIGNAL SUPPORTS, THE CONTRACTOR SHALL CONTACT OUPS TO HAVE ALL THE UTILITIES LOCATED IN THE FIELD THEN MEET WITH THE PROJECT ENGINEER TO LOCATE THE PROPOSED SUPPORT LOCATIONS TO INSURE THERE ARE NO CONFLICTS WITH UTILITIES. IF THERE ARE ISSUES, THE PROJECT ENGINEER SHALL PROVIDE GUIDANCE AS TO THE RELOCATION OF THE SUPPORT POLES.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND OTHER INCIDENTALS NECESSARY FOR EACH SIGNAL SUPPORT FOUNDATION FURNISHED, IN PLACE, COMPLETE, AND ACCEPTED.

632 SIGNAL SUPPORT, TYPE TC-12.31, AS PER PLAN  
632 SIGNAL SUPPORT, TYPE TC-81.22, AS PER PLAN

FURNISH SIGNAL POLES AND MAST ARMS IN ACCORDANCE WITH 732.11, BUT DO NOT FURNISH POLES OR MAST ARMS THAT CONSIST OF STRAIGHT SECTIONS WITH A TAPERED EFFECT ACCOMPLISHED BY THE USE OF REDUCERS. FURNISH POLES THAT ARE CONSTRUCTED OF SINGLE SECTION TRUE CONTINUOUS TAPERED TUBES, AND MAST ARMS THAT ARE CONSTRUCTED OF ONE OR TWO SECTION TRUE CONTINUOUS TAPERED TUBES, AS SHOWN ON STANDARD CONSTRUCTION DRAWING TC-81.22.

FURNISH POLES AND MAST ARMS THAT HAVE AN OCTAGONAL CROSS SECTION.

ATTACH PEDESTRIAN SIGNAL HEAD BRACKET ARMS TO THE POLES BY UTILIZING 1-1/2" BLIND HALF COUPLINGS WELDED INTO THE POLE PRIOR TO GALVANIZING. DO NOT FIELD INSTALL WIRING HOLES FOR PEDESTRIAN SIGNALS.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND OTHER INCIDENTALS NECESSARY FOR EACH SIGNAL SUPPORT FURNISHED, IN PLACE, COMPLETE, AND ACCEPTED.

632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH C&MS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE REUSED AS PART OF THE A NEW INSTALLATION ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF EUCLID IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

ITEMS TO BE REUSED:  
NONE

ITEMS TO BE STORED FOR SALVAGE:  
SIGNAL SUPPORTS  
PEDESTALS  
VEHICULAR SIGNAL HEADS  
PEDESTRIAN SIGNAL HEADS  
CABINETS  
CONTROLLERS  
CONTROLLER EQUIPMENT

IN THE EVENT THE ITEMS STORED ON THE PROJECT FOR SALVAGE BY THE LOCAL AGENCY ARE NOT REMOVED, THE CONTRACTOR SHALL, WHEN DIRECTED BY THE ENGINEER IN WRITING, REMOVE AND DISPOSE OF THE ITEMS AT NO ADDITIONAL COST TO THE PROJECT.

632 DETECTOR LOOP, AS PER PLAN

LOOP DETECTORS SHALL BE INSTALLED IN COMPLIANCE WITH THE TRAFFIC ENGINEERING MANUAL, STANDARD CONSTRUCTION DRAWINGS AND C&MS. IN ADDITION, THE FOLLOWING REQUIREMENTS SHALL BE MET:

- A. ALL DETECTOR LOOPS SHALL BE CUT INTO THE PROPOSED INTERMEDIATE COURSE AFTER THE PAVING OPERATION, AT A DEPTH SO AS NOT TO BE DISTURBED.
- B. ALL DETECTOR LOOPS SHALL BE CENTERED IN THE LANE.
- C. EACH LOOP DETECTOR SHALL BE CONNECTED TO ITS OWN DETECTOR UNIT.
- D. POWERHEAD LOOPS SHALL BE CONFIGURED TO DETECT A SIMULATED BICYCLE USING THE METHOD DESCRIBED IN THE TRAFFIC ENGINEERING MANUAL.
- E. ALL LOCATIONS, SIZES AND ORIENTATIONS SHALL BE FIELD VERIFIED BEFORE CONSTRUCTION.

632 LOOP DETECTOR UNITS, BY TYPE AS PER PLAN

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

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

THE UNIT SHALL BE SELF TUNING.

THE UNIT SHALL BE 2 CHANNEL, RACK MOUNTED UNITS.

THE UNIT'S ELECTRICAL CONNECTION PLUGS OR WIRING SHALL ALLOW READY REPLACEMENT WITH A SIGNAL CHANNEL AMPLIFIER AS DESCRIBED IN C&MS 732.07.

EACH UNIT SHALL BE LABELED TO CORRESPOND TO ITS PHASE AND DIRECTION.

DELAY INHIBIT SHALL BE CONNECTED ON ALL DETECTOR HARNESSES FOR THEIR RESPECTIVE PHASE GREENS.

THE LOOP DETECTOR UNIT SHALL BE INCIDENTAL TO THE COST OF THE CONTROLLER.

CALCULATED  
RAW  
CHECKED  
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TRAFFIC SIGNAL  
NOTES

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