CABLES SHALL BE INSULATED, JACKETED, RATED 600 VOLTS FOR USE IN UNDERGROUND CONDUIT OR CODED AND IN EVERY RESPECT FOLLOW THE INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION SPECIFICATION NUMBER 19-1-1967. WIRES MAY BE SOLID OR STRANDED.

ALL WIRES IN THE CONTROLLER CABINETS SHALL BE LABELED, NEATLY LASHED AND FASTENED TO THE CABINET WITH CLAMPS.

ALL CABLES SHALL BE MARKED OR TAGGED AT ALL PULL BOXES, SIGNAL SUPPORTS, AND CONTROLLERS WITH TAG, SO AS TO BE INDIVIDUALLY IDENTIFIED.

THE TAG SHALL BE NOT LESS THAN 0.031" THICK COPPER, BRASS OR PLASTIC, AND SHALL BE EMBOSSED OR ENGRAVED WITH LETTERS OR NUMBERS OF NOT LESS THAN 1/4" HIGH. IT SHALL BE SECURELY ATTACHED WITH AN AWG #14 COPPER WIRE. MARKINGS SHALL CONSIST OF THE FOLLOWING OR VARIATIONS THEREOF: GROUND, GRD.; PHASE A, Ø A; COMMON, COM; PHASE A DETECTOR, DET-A; POWER, AC+ OR AC-; ETC.

PAYMENT FOR ITEM 625 "TRAFFIC SIGNAL CABLE #14 AWG" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT BY TYPE, IN PLACE, COMPLETED AND ACCEPTED, INCLUDING WIRING, TERMINALS, CONNECTIONS, TESTING, AND ALL INCIDENTIALS NECESSARY.

816 MESSENGER WIRE WITH ACCESSORIES

MESSENGER WIRE SHALL BE UTILITY GRADE GALVANIZED STEEL AS PER ASTM A-363-65. IT SHALL CONSIST OF SEVEN STRAND 3/8" NOMINAL DIAMETER WITH A BREAKING LOAD OF 11,500 LBS. GALVANIZED STEEL LASHING RODS SHALL BE USED TO SUSPEND THE SIGNAL CABLE FROM THE MESSENGER WIRE, TIGHTLY SECURED. WET-PORCELAIN STRAIN INSULATORS (600 VOLT), GUY CLAMPS, AND GALVANIZED PERFORMED GUY GRIP DEAD ENDS, THIMBLES, AND BULL RINGS (WHEN REQUIRED) WITH A RATED LOADING STRENGTH EQUAL TO OR GREATER THAN THE BREAKING LOAD OF THE MESSENGER WIRE SHALL BE INSTALLED AS SHOWN ON THE PLANS AND/OR SPECIFIED BY THE ENGINEER. THE MESSENGER WIRE SHALL BE INSTALLED SO THAT THE ENTIRE LOAD OF THE SIGNAL EQUIPMENT WILL NOT CAUSE SAG TO EXCEED A MAXIMUM OF 5% OR A MINIMUM OF 3% OF THE SPAN.

PAYMENT FOR ITEM 625 "MESSENGER WIRE (BY SIZE) 7 STRAND WITH ACCESSORIES" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT (MEASURED TO CENTER OF POLE OR AERIAL CORNERS) COMPLETELY ASSEMBLED IN ACCORDANCE WITH THE TYPICAL SIGNAL INSTALLATION DETAILS AND SHALL INCLUDE MESSENGER WIRE, LASHING RODS, STRAIN INSULATORS, PREFORMED GUY GRIPS, THIMBLES, GUY CLAMPS, AND AERIAL CORNER BULL RINGS, AS DESCRIBED ABOVE AND SHOWN ON THE DETAIL SHEET.

625 POWER CABLE 3/C #8 AWG - RHW (OR THW TYPE) STRANDED

POWER CABLE SHALL BE WEATHERPROOF AND SHALL BE 3 CONDUCTOR AWG #8 RHW (OR RHW TYPE) STRANDED COPPER. POWER CABLE SHALL BE INSTALLED FROM THE CONTROLLER CABINET THROUGH THE APPROPRIATE CONDUIT, SIGNAL POLE, AND WEATHERHEAD. IT SHALL BE ATTACHED BY THE ILLUMINATING COMPANY TO THE SERVICE CABLE WITH PRESSURE CONNECTORS COVERED WITH MASTIC INSULATION. THREE SINGLE CONDUCTOR #8 RHW WIRES MAY BE SUBSTITUTED; HOWEVER, PAYMENTS WILL BE BASED UPON THE EQUIVALENT LENGTH OF 3' CONDUCTOR CABLE.

PAYMENT FOR ITEM 625 "POWER CABLE" WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAL FOOT, IN PLACE, COMPLETE AND ACCEPTED, INCLUDING WIRING, TERMINALS, CONNECTIONS, TESTING, AND ALL INCIDENTALS NECESSARY AND SHALL ALSO INCLUDE ANY COSTS INCURRED TO ARRANGE THE SERVICE INSTALLATION BY THE ILLUMINATING COMPANY IN CONFORMANCE WITH THE PLANS.

625 CONDUIT 713.04 TYPE III

SUPPLEMENTING 625.13 ALL EXPOSED CONDUIT ENDS SHALL BE SUPPLIED WITH INSULATED BUSHINGS.

625 RESTORATION OF DISTURBED AREAS

THE CONTRACTOR SHALL REPLACE ALL PAVEMENT, SODDED AREAS, SIDEWALKS AND ALL OTHER DISTURBED SURFACES TO A CONDITION EQUAL TO THAT EXISTING BEFORE THE WORK WAS STARTED. ALL REPLACEMENTS SHALL BE DONE IN ACCORDANCE WITH THE PERTINENT SPECIFICATION ITEMS AND AS DIRECTED BY THE ENGINEER. PAYMENT FOR ALL RESTORATION WORK, INCLUDING MATERIALS, EQUIPMENT, LABOR, INCIDENTALS AND DISPOSAL OF ALL SURPLUS MATERIALS, SHALL BE INCLUDED IN THE UNIT PRICES BID FOR VARIOUS 816 AND 625 ITEMS.

625 CABLE SUPPORT ASSEMBLY

A CABLE SUPPORT ASSEMBLY SHALL BE INSTALLED FOR EACH GROUP OF CABLES PASSING THROUGH EACH WIRE OUTLET NEAR THE TOP OF POLE, IT SHALL BE ATTACHED TO THE "J" HOOK AS SHOWN IN THE PLANS AND SHALL CONSIST OF THE FOLLOWING MAJOR ITEMS:

1. ONE PIECE OF THREE-STRAND COPPER-CLAD MESSENGER, LENGTH AS REQUIRED.
2. TWO HOT-DIPPED GALVANIZED THIMBLES.
3. TWO #6 SPLIT BOLT CONNECTORS.
4. ONE BRONZE OR STAINLESS STEEL CABLE GRIP WITH SINGLE "U" EYE BALE.
5. ALL OTHER MISCELLANEOUS ITEMS THAT MAY BE NECESSARY TO MAKE THE ASSEMBLY COMPLETE.

THE MESSENGER SHALL BE 0.164 INCHES IN DIAMETER CONSISTING OF THREE STRANDS OF 0.075 INCH COPPER-COVERED STEEL WIRES TWISTED IN THE FORM OF A CABLE. GUY THIMBLES SHALL BE GROOVED TO FIT THE GUY STRAND AND BENT TO THE PROPER RADIUS TO PREVENT THE STRAND FROM BEING SHARPLY BENT. THE CABLE GRIP SHALL HAVE A SINGLE "U" EYE BALE. THE GRIPS SHALL BE OF THE PROPER SIZE TO FIT THE CABLE AND SHALL HAVE A MINIMUM RATED BREAKING STRENGTH OF 250 LBS.

THE GRIP SHALL BE EITHER THE "CLOSED", OR "SPLIT WITH ROD" TYPE.

PAYMENT FOR ITEM 625 "CABLE SUPPORT ASSEMBLY" WILL BE MADE AT THE CONTRACT UNIT PRICE EACH, COMPLETELY ASSEMBLED IN PLACE AND ACCEPTED.

614 MAINTENANCE OF TRAFFIC

TRAFFIC SHALL BE MAINTAINED ON THE EXISTING PAVEMENT WITHOUT INTERRUPTION DURING THE PERFORMANCE OF THE WORK, EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO ENCROACH UPON THE TRAVELED WIDTH OF PAVEMENT TO A MINIMUM EXTENT.

THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL FLAGS AND INCIDENTALS RELATED HERETO. LANE RESTRICTIONS AS NEEDED SHALL OCCUR DURING HOURS OTHER THAN 7 A.M. TO 9 A.M. AND 4 P.M. TO 6 P.M. MONDAY THROUGH FRIDAY. PROPER SIGNS, CONES, BARRICADES AND FLAGMEN SHALL BE UTILIZED. THE LUMP SUM BID FOR MAINTAINING TRAFFIC SHALL INCLUDE CONES, BARRICADES, SIGNS, FLAGMENT AND ALL OTHER LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO MAINTAIN TRAFFIC IN CONFORMANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CONSTRUCTION AND MAINTENANCE OPERATIONS (PART VII).

625 METHOD OF MEASUREMENT

SUPPLEMENTING LINEAR MEASUREMENTS FOR PAYMENT OF VARIOUS TRAFFIC SIGNAL BID ITEMS SHALL BE MADE AS FOLLOWS:

1. SIGNAL CABLE, POWER CABLE, INTERCONNECT CABLE, LOOP DETECTOR LEAD IN CABLE, SERVICE CABLE. THE LENGTH MEASURED HORIZONTALLY FROM CENTER TO CENTER OF PULLBOXES, POLES, FOUNDATIONS, OR SIGNAL HEADS; PLUS THE FOLLOWING:
   A. FIVE FEET PER EACH PULLBOX, POLE, OR TERMINATION AT CONTROLLER OR SIGNAL HEAD TO ALLOW FOR SLACK AND SPLICING OF LEADS.
   B. THE LENGTH MEASURED VERTICALLY FROM TRENCH BOTTOM TO POLE OUTLET OR MAST ARM ATTACHMENT ON VERTICAL RUNS.

   MULTIPLIERS AS CONTAINED IN 625.24 PARAGRAPH (C) AND (E) SHALL NOT BE USED FOR MULTI CONDUCTOR CABLES COVERED IN THIS NOTE.
2. LOOP DETECTOR WIRE
   MEASURED HORIZONTALLY FROM CENTERLINE OF PULLBOX TO PAVEMENT EDGE, TO LOOP THROUGH LOOP SAWSLOTS FOR THE NUMBER OF TURNS REQUIRED AND THENCE RETURNING TO THE PULLBOX, PLUS FIVE FEET AT EACH END TO ALLOW FOR SLACK AND SPLICES.
3. LOOP DETECTOR PAVEMENT CUTTING
   MEASURED ALONG THE SAWCUT FROM OUTSIDE EDGE OF PAVEMENT OR CURB, TO LOOP AND AROUND THE LOOP, USING THE RECTANGULAR PERIMETER DIMENSIONS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER BUT NOT INCLUDING CHAMFER CUTS AT LOOP CORNERS.
4. MESSENGER WIRE WITH ACCESSORIES
   MEASURED HORIZONTALLY FROM CENTER TO CENTER OF POLE TO POLE; OR BULLRING (AERIAL CORNER) TO POLE; OR BULLRING TO BULLRING, BUT NOT INCLUDING ANY ADDITIONAL MESSENGER REQUIRED FOR ATTACHMENT OF MESSENGER TO POLES, BULLRINGS OR STRAIN INSULATORS BY WRAPPING OR BENDING.

SEQUENCE OF CONSTRUCTION

THE GROUPING OF ITEMS OR WORK INTO PAY ITEMS AS INDICATED ABOVE IS NOT INTENDED TO ESTABLISH THE SEQUENCE IN WHICH CONSTRUCTION IS TO BE PERFORMED. THE CONTRACTOR MAY AND IS ENCOURAGED TO REGROUP THE VARIOUS ITEMS OF WORK IN ANY MANNER WHICH WILL ADD TO THE EFFICIENCY, ECONOMY, AND SAFETY OF OPERATIONS IN SECURING A COMPLETE WORKABLE INSTALLATION.

COOPERATION WITH UTILITY COMPANIES

THE CONTRACTOR IS ADVISED THAT THROUGHOUT THESE PLANS THE UTILITY COMPANIES HAVE BEEN CALLED UPON TO PERFORM NECESSARY FUNCTIONS. THE CONTRACTOR SHALL COOPERATE WITH AND ARRANGE SUITABLE WORK SCHEDULES, SUBJECT TO THE APPROVAL OF THE ENGINEER, TO PERMIT THE UTILITY COMPANIES TO WORK AND OPERATE EQUIPMENT NECESSARY TO CARRYING OUT THESE FUNCTIONS.

COMPENSATION FOR THE ABOVE COOPERATION SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS INCLUDED WITHIN THIS CONSTRUCTION PROJECT.

UNDERGROUND UTILITIES

EXTREME CAUTION SHOULD BE EXERCISED IN AREAS WITH UNDERGROUND ELECTRICAL CONDUIT OR CABLE, SEWERS, DRAINS, WATER LINES, OR OTHER UNDERGROUND UTILITIES.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ALL DAMAGE INFLICTED ON (UNDERGROUND) UTILITIES IN THE EXCAVATION AND PLACEMENT OF SIGN SUPPORT FOUNDATIONS, PROTECTIVE GUARDRAIL, DELINEATORS AND THE LIKE.

PAVEMENT MARKING

GENERAL

THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING ALL PAVEMENT MARKINGS SUCH AS SHOWN ON THE PLANS AND SPECIFICATIONS HEREIN SET FORTH.

THIS WORK SHALL ALSO INCLUDE ALL SERVICE, LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY FOR THE REQUIRED SURFACE CLEANING, PREPARATION AND CONSTRUCTION OF THERMO-PLASTIC PAVEMENT MARKINGS UNDER TRAFFIC-MAINTAINED-BY-CONTRACTOR OPERATION CONDITIONS.

A. MAINTENANCE OF TRAFFIC
   IN THE EVENT OF AN EMERGENCY, THE ENGINEER RESERVES THE RIGHT TO STOP WORK IN ORDER TO RELIEVE TRAFFIC CONGESTION. NO WORK SHALL BE DONE DURING THE RUSH HOURS AS DETERMINED BY THE ENGINEER. ANY MARKING MAY BE