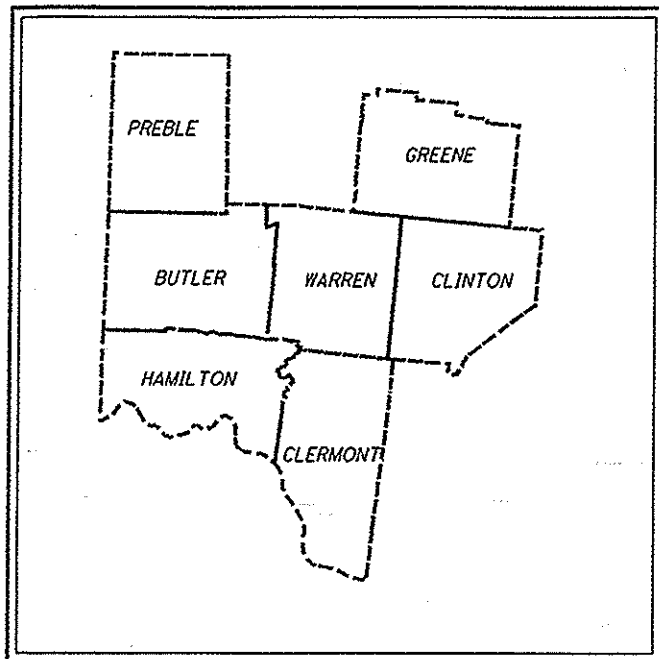


STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

D08-TSG-FY2015



LOCATION MAP

LATITUDE: N39°25'52" LONGITUDE: W84°17'03"
NOT TO SCALE



INDEX OF SHEETS:

TITLE SHEET	1
GENERAL NOTES	2-7, 7A
MAINTENANCE OF TRAFFIC	8-9
TRAFFIC SIGNAL SUBSUMMARY	10-12
GENERAL SUMMARY	13-14

PROJECT DESCRIPTION

INSTALL UP TO SIX (6) TRAFFIC SIGNALS, REPLACE LED LAMP UNITS, REPLACE POWER SUPPLY BATTERIES, REPLACE DAMAGED SIGNAL COMPONENTS, AND UPGRADES AT VARIOUS INTERSECTIONS LOCATED THROUGHOUT ODOT DISTRICT 8.

PROJECT EARTH DISTURBED AREA: NA ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: NA ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: NA ACRES

2013 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVED THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

D08 - TSG-FY2015
150296 PID - 87032
Dist 8 5/21/2015

Contract Proposal Available @ www.
Contracts.dot.state.oh.us/home

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG

CALL
1-800-362-2764
(TOLL FREE)

OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

OIL & GAS PRODUCERS UNDERGROUND
PROTECTION SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:
ODOT DISTRICT 8
TRAFFIC MAINTENANCE DEPARTMENT
505 SOUTH SR 741
LEBANON, OH 45036

ENGINEER'S SEAL:
STATE OF OHIO
REGISTERED PROFESSIONAL ENGINEER
TERIC C. SCANLON
E-68037
SIGNED: *Teric Scanlon*
DATE: 2-17-15

STANDARD CONSTRUCTION DRAWINGS				SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
BP-7.1	7/18/14	TC-41.20	10/18/13	800	1/21/15
		TC-41.40	10/18/13	815	1/19/07
HL-30.11	1/16/15	TC-41.41	10/18/13	832	1/17/14
		TC-42.20	10/18/13	906	10/15/10
MT-95.30	7/18/14	TC-52.20	7/18/14		
MT-95.31	7/18/14	TC-71.10	1/17/14		
MT-95.32	7/18/14	TC-81.10	10/18/13		
MT-95.50	7/19/13	TC-82.10	10/18/13		
MT-95.60	7/19/13	TC-83.10	1/17/14		
MT-95.61	7/19/13	TC-83.20	1/16/15		
MT-97.10	7/18/14	TC-84.20	10/18/13		
MT-105.10	7/19/13	TC-84.21	10/18/13		
MT-110.10	7/19/13	TC-85.10	10/18/13		
MT-120.00	7/19/13	TC-85.20	1/16/15		
		TC-85.21	1/16/15		
TC-21.20	1/16/15	TC-85.22	1/16/15		

APPROVED *[Signature]*
DATE 2-20-15 DISTRICT DEPUTY DIRECTOR

APPROVED *[Signature]*
DATE 3-2-15 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO.
E110833

PID NO.
87032

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT
NONE

D08-TSG-FY2015

1
14

SCOPE

THE PURPOSE OF THIS CONTRACT IS TO:

1. INSTALL UP TO SIX (6) TRAFFIC SIGNALS
2. REPLACE THE LED LAMP UNITS IN EXISTING SIGNAL HEADS
3. REPLACE THE BATTERIES IN UNINTERRUPTIBLE POWER SUPPLY UNITS FOR TRAFFIC SIGNAL INSTALLATIONS
4. REPLACE DAMAGED TRAFFIC SIGNAL ITEMS
5. ADDITIONAL UPGRADE WORK AT EXISTING SIGNAL INSTALLATIONS TO MAKE THEM COMPLIANT WITH CURRENT STANDARDS

LOCATIONS WILL BE AT VARIOUS INTERSECTIONS THROUGHOUT DISTRICT 8 OF THE OHIO DEPARTMENT OF TRANSPORTATION.

THE CONTRACTOR SHALL FURNISH ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL A MAXIMUM OF 6 TRAFFIC SIGNALS AND REPLACE OR UPGRADE ALL THE ITEMS OF WORK LISTED IN THE PLANS.

FOR THE PROPOSED TRAFFIC SIGNAL INSTALLATIONS, THE ENGINEER WILL PROVIDE THE CONTRACTOR WITH INDIVIDUAL INTERSECTION PLANS THAT WILL INCLUDE THE ESTIMATED QUANTITIES OF WORK FOR EACH SIGNAL. THE ENGINEER SHALL RECORD THE DATE THAT THE PLANS WERE RECEIVED BY THE CONTRACTOR. THIS DATE WILL BE USED TO ESTABLISH AN INTERIM COMPLETION DATE, PER INTERSECTION, SUBJECT TO LIQUIDATED DAMAGES OF \$1,000/CALENDAR DAY ACCORDING TO CMS 108.07. THE CONTRACTOR SHALL HAVE A PERIOD OF TEN (10) WEEKS TO CONSTRUCT THE SIGNAL AND HAVE IT READY FOR 'STOP AND GO' OPERATION PENDING POWER SERVICE HOOK UP FROM THE UTILITY COMPANY. 'STOP AND GO' OPERATION AND THE COMPLETION OF THE 10-DAY PERFORMANCE TEST DOES NOT ABSOLVE THE CONTRACTOR FROM THE LIQUIDATED DAMAGES IF THE WORK HAS NOT BEEN COMPLETED TO THE SATISFACTION OF THE ENGINEER.

THE TRAFFIC SIGNAL REPLACEMENTS/UPGRADES/ADDITIONS MAY INCLUDE REPLACING EXISTING VEHICULAR AND PEDESTRIAN LED LAMP UNITS, REPLACING BATTERIES FOR UNINTERRUPTIBLE TRAFFIC SIGNAL CABINET POWER SUPPLIES, ADDING SIGNALIZED PEDESTRIAN CROSSINGS (CURB RAMPS, PEDESTRIAN SIGNAL HEADS AND PUSHBUTTONS, CROSS WALK MARKINGS), REPLACING EXISTING DETECTION WITH NON-INTRUSIVE DETECTION SYSTEMS, AND REPLACING DAMAGED ITEMS SUCH AS CONDUITS AND WIRING AT THE LOCATIONS LISTED IN THE PLANS.

TERM OF THE CONTRACT

THE TERM OF THE CONTRACT SHALL BE FROM THE DATE OF AWARD FOR A PERIOD OF TWENTY-FOUR (24) MONTHS OR UNTIL ALL WORK DESCRIBED IN THE PLANS IS COMPLETED, WHICHEVER COMES FIRST.

GENERAL SUMMARY ESTIMATED QUANTITIES

QUANTITIES SHOWN IN THE GENERAL SUMMARY ARE ESTIMATED QUANTITIES BASED ON THE INSTALLATION OF 6 TRAFFIC SIGNALS, REPLACEMENT OF LED LAMP UNITS, UPS BATTERIES, DAMAGED SIGNAL ITEMS, AND INSTALLATION OF SIGNAL PEDESTRIAN CROSSINGS AND OTHER VARIOUS SIGNAL ITEMS. THE QUANTITIES ARE NOT TO BE CONSTRUED AS EXACT AND VARIANCE CAN BE EXPECTED IN THE ACTUAL QUANTITIES USED DURING THE LIFE OF THE CONTRACT. ALL PAY ITEMS LISTED IN THE PLANS ARE CONSIDERED CONTINGENCY QUANTITIES MEANING THAT THE CONTRACTOR WILL NOT RECEIVE PAYMENT FOR WORK THAT IS NOT PERFORMED OR MATERIALS THAT ARE NOT USED DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE SPECIFIED IN THE PLANS. THE PAY ITEMS WILL NOT BE SUBJECT TO CMS 104.02.

THE ENGINEER HAS THE DISCRETION TO USE ANY GENERAL SUMMARY ITEM IN LIEU OF ITEMS LISTED OR OMITTED FROM AN INDIVIDUAL PLAN.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL EQUIPMENT INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 90 DAYS FOLLOWING THE SUCCESSFUL 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 TRAFFIC CONTROL EQUIPMENT: CONTROLLERS AND ASSOCIATED EQUIPMENT, UNINTERRUPTIBLE POWER SUPPLIES, RADIO INTERCONNECT EQUIPMENT, DETECTOR UNITS, AND LED VEHICULAR AND PEDESTRIAN SIGNAL HEADS.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE STATE FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST TO GUARANTEE THE TRAFFIC CONTROL EQUIPMENT SHALL BE INCIDENTAL TO THE APPROPRIATE CONTRACT ITEMS.

INSPECTION

FOLLOWING THE COMPLETION OF A SIGNAL INSTALLATION, THE CONTRACTOR SHALL PLACE THE SIGNAL IN FLASH OPERATION FOR A PERIOD OF THREE (3) DAYS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. AT THIS TIME, THE ENGINEER WILL CONDUCT AND OPERATIONAL AND ELECTRICAL INSPECTION OF THE TRAFFIC SIGNAL. ANY DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR PRIOR TO PLACING THE SIGNAL IN 'STOP AND GO' OPERATION.

AFTER THE THREE (3) DAY FLASH OPERATION, AND WITH APPROVAL FROM THE ENGINEER, THE CONTRACTOR SHALL PLACE THE SIGNAL IN 'STOP AND GO' OPERATION. THE SIGNAL SHALL THEN BE SUBJECT TO A TEN (10) DAY PERFORMANCE TEST PER CMS 633.06.

RESTORATION AND CLEAN-UP IN WORK AREAS

THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO THAT WHICH EXISTED BEFORE THE WORK PER CMS 104.04.

ALL BROKEN CONCRETE AND SOIL SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR OFF THE RIGHT-OF-WAY. PAYMENT FOR RESTORATION WORK SHALL BE INCIDENTAL TO ALL CONTRACT ITEMS.

ALL RESTORATION AND CLEAN-UP WORK SHALL BE COMPLETED AT A LOCATION BEFORE THE CONTRACTOR STARTS WORK ON ANY OTHER INSTALLATION. FOR SIGNALS, THE ENGINEER WILL BEGIN THE TEN WEEK TIME FRAME TO COMPLETE THE NEXT SIGNAL ONCE THE CONTRACTOR RECEIVES THE PLANS, BUT NO WORK WILL BE PERFORMED ON THE NEXT SIGNAL UNTIL THE RESTORATION AND CLEAN-UP WORK HAS BEEN COMPLETED AT THE PREVIOUS LOCATION.

ITEM 623, CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN

FUNDS FOR CONSTRUCTION LAYOUT STAKES AND SURVEYING FOR THIS CONTRACT SHALL BE DIVIDED EVENLY BETWEEN THE 6 PROPOSED TRAFFIC SIGNAL LOCATIONS POSSIBLE IN THIS PLAN. IF SOME LOCATIONS ARE NON-PERFORMED, THE FUNDS SHALL BE PRO-RATED ACCORDINGLY. A MINIMUM OF 50% WILL BE PAID REGARDLESS OF THE AMOUNT OF WORK PERFORMED.

ALL OTHER PROVISIONS OF CMS 623 FOR CONSTRUCTION LAYOUT STAKES AND SURVEYING SHALL APPLY TO THIS CONTRACT.

ITEM 632, REMOVAL OF TRAFFIC SIGNAL INSTALLATION

TRAFFIC SIGNAL AND FLASHER INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN AND WOOD POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH CMS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE STORED ON THE PROJECT FOR SALVAGE IN ACCORDANCE WITH THE LISTING GIVEN HEREIN:

FOR ODOT MAINTAINED TRAFFIC SIGNALS, STORE 2070 CONTROLLER UNITS AND CABINETS, LED VEHICULAR AND PEDESTRIAN SIGNAL HEADS, UPS, INTERCONNECTION, EMERGENCY VEHICLE PREEMPTION, GPS AND DETECTION EQUIPMENT ON THE PROJECT FOR SALVAGE BY ODOT. STORE WITH CARE ANY ITEMS TO BE REUSED ON THE PROJECT UNDER SEPARATE PAY ITEMS AS DIRECTED BY THE ENGINEER. ANY STORED ITEMS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT NO ADDITIONAL COST TO THE PROJECT.

ANY ITEMS NOT SALVAGED BY ODOT OR REUSED IN THE PROJECT SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.

ITEM 608, 4" CONCRETE WALK, AS PER PLAN

THIS ITEM SHALL CONSIST OF INSTALLING CONCRETE WALK IN ACCORDANCE WITH CMS 608.03 AT AN INTERSECTION(S) TO BE DETERMINED IN THE FUTURE.

PAYMENT FOR 4" CONCRETE WALK IS FULL COMPENSATION FOR REMOVAL OF ANY EXISTING CONCRETE WALK, EXCAVATION, BACKFILL, BASE COURSE MATERIAL, EXPANSION JOINT MATERIAL, AND INCIDENTALS NECESSARY TO COMPLETE THE WALK.

ITEM 608, WALKWAY, MISC.: CURB RAMP INSTALLATION

THIS ITEM WILL CONSIST OF INSTALLING A CURB RAMP(S) ON A CORNER AT AN INTERSECTION IN ACCORDANCE WITH CMS 608.07. INCLUDED IN THIS ITEM WILL BE THE REMOVAL OF EXISTING CURB, NON-COMPLIANT CURB RAMPS, OR WALK ACCORDING TO CMS 202.05 NECESSARY TO INSTALL THE CURB RAMP.

THE PROPOSED CURB RAMP SHALL CONFORM TO STANDARD CONSTRUCTION DRAWING BP-7.1 AND MAY BE A TYPE A1, A2, B1, B2, C1, C2 OR D CURB RAMP. ALSO INCLUDED IN THIS PAY ITEM SHALL BE NEW CURB NECESSARY TO REPLACE CURB REMOVED FOR INSTALLATION OF THE CURB RAMP.

ANY WALK NECESSARY TO INSTALL THE CURB RAMP WILL BE PAID UNDER A SEPARATE PAY ITEM.

PAYMENT FOR WALKWAY, MISC.: CURB RAMP INSTALLATION SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ANY EXISTING CURB OR CURB RAMPS, RESTORATION OF SURFACES, BASE COURSE MATERIAL, EXPANSION JOINT MATERIAL, GRADING, FORMING, FINISHING, TRUNCATED DOMES, MATERIALS, LABOR AND EQUIPMENT NECESSARY TO INSTALL A CURB RAMP(S) ON A CORNER AT AN INTERSECTION.

UNDERDRAINS FOR PULLBOXES

REFERENCE IS MADE TO STANDARD CONSTRUCTION DRAWING HL-30.11 FOR DETAILS ON 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. AN ESTIMATED QUANTITY OF ITEM 611, 4" CONDUIT, TYPE E IS INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE.

ITEM 630, SIGNING

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL GROUND AND SPAN WIRE MOUNTED SIGNS AS INDICATED ON THE PLAN. ALL SIGNS SHALL BE INSTALLED PRIOR TO PLACING A SIGNAL IN 'STOP AND GO' OPERATION.

PAYMENT FOR THIS ITEM WILL BE MADE AT THE CONTRACT UNIT PRICE.

PAVEMENT MARKINGS

ALL PAVEMENT MARKINGS SHALL BE IN PLACE PRIOR OT PLACING A SIGNAL IN 'STOP AND GO' OPERATION. PAYMENT FOR THIS ITEM WILL BE MADE AT THE CONTRACT UNIT PRICE FOR THE APPROPRIATE ITEM.

REMOVAL OF PAVEMENT MARKINGS

THE ESTIMATED QUANTITY OF FEET FOR REMOVAL OF PAVEMENT MARKINGS SHALL INCLUDE, BUT NOT BE LIMITED TO, CENTER LINE, EDGE LINE, LANE LINE, CHANNELIZING LINE, TRANSVERSE LINE, CROSSWALK LINE, AND STOP LINE.

THE ESTIMATED QUANTITY OF EACH FOR REMOVAL OF PAVEMENT MARKING SHALL INCLUDE, BUT NOT BE LIMITED TO, LANE ARROWS, WORD ON PAVEMENT, SYMBOL MARKINGS, AND ISLAND MARKINGS.

ITEM 632, REMOVAL OF MISCELLANEOUS TRAFFIC SIGNAL ITEM

THIS ITEM SHALL COVER THE REMOVAL OF A SIGNAL COMPONENT, SUCH AS A SIGNAL HEAD, UPS WITH CABINET, DETECTION EQUIPMENT AND CABLING, RADIO INTERCONNECT, EMERGENCY VEHICLE PREEMPTION, OR GPS EQUIPMENT AT AN EXISTING

TRAFFIC SIGNAL INSTALLATION. THE CONTRACTOR SHALL BE REQUIRED TO STORE THE ITEM FOR SALVAGE AS PART OF THIS PAY ITEM. THE CONTRACTOR SHALL BE COMPENSATED UNDER THIS PAY ITEM TO REMOVE AND STORE THE COMPONENT FROM THE SIGNAL AND RESTORE ANY DAMAGE CAUSED DURING THE REMOVAL AND STORAGE.

THE DEPARTMENT WILL MEASURE ITEM 632, SIGNALIZATION, MISC.: REMOVAL OF TRAFFIC CONTROL ITEM, VARIOUS SIGNAL COMPONENTS, BY THE NUMBER OF EACH COMPONENT REMOVED AND STORED FROM AN EXISTING TRAFFIC SIGNAL INSTALLATION AND WILL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS ITEM OF WORK.

ITEM 632, REUSE OF TRAFFIC CONTROL ITEM

THIS ITEM SHALL COVER THE REUSE OF A SIGNAL COMPONENT, SUCH AS A UPS WITH CABINET, DETECTION EQUIPMENT, RADIO INTERCONNECT, EMERGENCY VEHICLE PREEMPTION, OR GPS EQUIPMENT AT A PROPOSED TRAFFIC SIGNAL INSTALLATION. THE CONTRACTOR SHALL BE REQUIRED TO STORE THE ITEM AS PART OF THE REMOVAL OF TRAFFIC SIGNAL INSTALLATION PAY ITEM. THE CONTRACTOR SHALL BE COMPENSATED UNDER THIS PAY ITEM TO INSTALL THE COMPONENT ON THE PROPOSED SIGNAL AND PERFORM THE NECESSARY WORK TO RESTORE THE INTENDED OPERATION OF THE COMPONENT.

THE DEPARTMENT WILL MEASURE ITEM 632, SIGNALIZATION, MISC.: REUSE OF TRAFFIC CONTROL ITEM, VARIOUS SIGNAL COMPONENTS, BY THE NUMBER OF EACH COMPONENT REINSTALLED ON THE PROPOSED TRAFFIC SIGNAL AND WILL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THIS ITEM OF WORK.

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GENERAL NOTES

D08 - TSG - FY 2015

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ITEM 632, SIGNALIZATION, MISC.: SPAN WIRE ADJUSTMENT

THIS ITEM SHALL BE USED FOR THE MODIFICATION OF AN EXISTING TRAFFIC SIGNAL SPAN TO PROVIDE THE ADEQUATE CLEARANCE BETWEEN THE PAVEMENT AND THE BOTTOM OF THE LOWEST VEHICULAR SIGNAL HEAD TO ACCOMMODATE BACKPLATES WHEN REPLACING THE VEHICULAR SIGNAL HEAD. WITH THE PRIOR APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY DECREASE THE SAG IN THE SPAN AND/OR RAISE THE ATTACHMENT POINTS TO ACHIEVE THE CLEARANCES SHOWN IN PLAN INSERT SHEET 208522.

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

IN ADDITION TO THE REQUIREMENTS OF CMS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL ALSO APPLY:

LAMPS

THE CONTRACTOR SHALL SUPPLY 12INCH, LED (LIGHT EMITTING DIODE) LAMP UNITS THAT MEET THE REQUIREMENTS OF CMS 732.04-C FOR ALL SIGNAL LENS TYPES.

SIGNAL SECTIONS

1. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH POLYCARBONATE VEHICULAR SIGNAL HEADS WITH BACKPLATES THAT ARE HELD IN PLACE WITH TETHER WIRE, UNLESS THE ENGINEER SPECIFIES TO FURNISH ALUMINUM VEHICULAR SIGNAL HEADS.

2. PROVIDE BACKPLATES WITH A FLUORESCENT REFLECTIVE BORDER PRE-ASSEMBLED WITH THE SIGNAL HEADS AS DETAILED IN TC-85.20.

3. FOR POLYCARBONATE HEADS:

A. THE SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.

B. PIPE, SPACERS AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.

C. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL, RATHER THAN PAINTING.

MOUNTING HARDWARE

1. ALL UPPER SUPPORT HARDWARE AND PIPING, UP TO AND INCLUDING THE WIRE INLET FITTING, SHALL BE FERROUS METAL FOR SIGNAL DISPLAYS OF TWO OR MORE SECTIONS.

2. THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.

3. WHEN UNTETHERED HEADS ARE SUSPENDED FROM SPAN WIRES OR MAST ARMS AND NOT RIGIDLY MOUNTED, THEY SHALL BE PROVIDED WITH A PIVOT AND LOCK BALANCE ADJUSTER. ALL BALANCE ADJUSTERS SHALL HAVE A MINIMUM OF THREE-QUARTER INCH EYE BOLTS AND THREE-QUARTER INCH WIDE SLOT. EYE BOLTS ARE CAST FROM 316 STAINLESS STEEL AND PROVIDED WITH SATIN FINISH. THREE-QUARTER INCH BODY HALVES ARE CAST FROM A MINIMUM 65-45-12 DUCTILE IRON AND PROVIDED WITH A BRIGHT ZINC FINISH (ZNI). BALANCE ADJUSTERS SHALL ONLY BE USED WHERE NECESSARY. BALANCE ADJUSTERS SHALL BE USED ON ONE-WAY HEADS.

THE CONTRACTOR SHALL PROVIDE ODOT, IN WRITING, THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF THE LAMP AND DATE OF MANUFACTURE OF ALL LED UNITS TO BE USED IN THE TRAFFIC SIGNAL HEADS PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES. THE INFORMATION SHALL BE SENT TO THE FOLLOWING LOCATION:

ODOT DISTRICT 8
JIM JUDD
505 SOUTH SR 741
LEBANON, OH 45036
513-933-6692

THE DEPARTMENT WILL MEASURE ITEM 632, VEHICULAR SIGNAL HEAD (LED), BY TYPE, AS PER PLAN, BY THE NUMBER OF COMPLETE UNITS FURNISHED AND INSTALLED, AND WILL INCLUDE ALL SUPPORT AND MOUNTING HARDWARE, DISCONNECT HANGERS, CLOSURE CAPS, DIMMERS AND LAMPS AS SPECIFIED.

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

IN ADDITION TO THE REQUIREMENTS OF CMS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL ALSO APPLY:

1. THE LIGHT EMITTING DIODE, (LED), LAMP UNITS SHALL MEET THE REQUIREMENTS OF CMS 732.04-C.

2. THE LED LAMP UNIT SHALL DISPLAY THE SOLID SYMBOLS FOR THE UPRaised HAND OR THE WALKING PERSON.

THE CONTRACTOR SHALL PROVIDE ODOT, IN WRITING, THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF THE LAMP AND DATE OF MANUFACTURE OF ALL LED UNITS TO BE USED IN THE TRAFFIC SIGNAL HEADS PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES. THE INFORMATION SHALL BE SENT TO THE FOLLOWING LOCATION:

ODOT DISTRICT 8
JIM JUDD
505 SOUTH SR 741
LEBANON, OH 45036
513-933-6692

THE DEPARTMENT WILL MEASURE ITEM 632, PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), TYPE D2, AS PER PLAN, BY THE NUMBER OF COMPLETE UNITS FURNISHED AND INSTALLED AND WILL INCLUDE ALL SUPPORT AND MOUNTING HARDWARE, CLOSURE CAPS, AND LAMPS AS SPECIFIED

ITEM 631, SIGN FLASHER ASSEMBLY, AS PER PLAN

IN ADDITION TO CMS 631.09, THIS ITEM SHALL ALSO INCLUDE THE SUPPORT, FOUNDATION, AND ALL NECESSARY MATERIAL AND HARDWARE REQUIRED FOR A COMPLETE INSTALLATION. THE SUPPORT SHALL FOLLOW HL-10.11 FOR A 20-FOOT STEEL POLE WITH TRANSFORMER BASE.

ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR A COMPLETE INSTALLATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR EACH ITEM 631, SIGN FLASHER ASSEMBLY, AS PER PLAN.

ITEM 632, SIGNAL CABLE, BY TYPE, AS PER PLAN

IN ADDITION TO CMS 632.23, THIS ITEM SHALL ALSO CONSIST OF UNLASHING AND RELASHING OF THE SIGNAL SPAN TO ALLOW THE INSTALLATION OF THE CABLE AND ROUTING OF THE CABLE IN EXISTING POLES, CONDUITS, AND PULL BOXES THAT ALREADY CONTAIN OTHER CABLES.

THE QUANTITIES LISTED IN THE PLANS ARE ESTIMATES ONLY AND THE CONTRACTOR SHALL BE PAID FOR ACTUAL SIGNAL CABLE INSTALLED BASED ON FIELD MEASUREMENTS.

ITEM 632, POWER SERVICE, AS PER PLAN

IN ADDITION TO CMS 632.24, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING AT PROPOSED TRAFFIC SIGNAL AND FLASHER INSTALLATIONS:

1. THE CONTRACTOR SHALL REQUEST A POWER SERVICE AND AN ELECTRICAL INSPECTION FROM THE APPROPRIATE UTILITY COMPANY WITHIN 5 DAYS OF RECEIVING A SET OF TRAFFIC SIGNAL PLANS.

2. THE CONTRACTOR SHALL FURNISH AND INSTALL AN ADDRESS STICKER WITH 4-INCH LETTERING TO THE CABINET. THE ENGINEER WILL PROVIDE THE ADDRESS TO THE CONTRACTOR FOR EACH INSTALLATION.

3. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND THE UTILITY COMPANY TO MAKE CERTAIN THAT THE PROPOSED INSTALLATIONS ARE BILLED TO THE CORRECT UTILITY ACCOUNTS.

THE DEPARTMENT WILL MEASURE ITEM 632, POWER SERVICE, AS PER PLAN, BY THE NUMBER OF COMPLETE UNITS AND WILL INCLUDE: WEATHERHEAD, CONDUIT, FITTINGS, CLAMPS, AND OTHER NECESSARY HARDWARE, INSTALLATION OF METER BASE, GROUND WIRE CONNECTIONS, DISCONNECT SWITCH WITH ENCLOSURE, AND COORDINATION WORK WITH UTILITIES.

ANY ADDITIONAL CABLE OR WOOD POLES NECESSARY TO ESTABLISH A POWER SERVICE WITH THE UTILITY COMPANY SHALL BE COVERED UNDER THE PERTINENT PAY ITEMS.

ITEM 632, SIGNALIZATION, MISC.: REPLACEMENT OF PEDESTRIAN SIGNAL HEAD WITH PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), BY TYPE

THIS ITEM SHALL INCLUDE THE REPLACEMENT OF AN EXISTING PEDESTRIAN SIGNAL HEAD WITH A PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), BY TYPE. THIS WORK SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING PEDESTRIAN SIGNAL HEAD AND THE INSTALLATION OF THE PROPOSED PEDESTRIAN SIGNAL HEAD ON THE SAME SUPPORT. THIS WORK WILL ALSO INCLUDE ANY NECESSARY MOUNTING HARDWARE AND RESTORATION OF ANY DAMAGE CAUSED BY THE CONTRACTOR DURING REPLACEMENT.

IN ADDITION TO THE REQUIREMENTS OF CMS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL ALSO APPLY:

1. THE LIGHT EMITTING DIODE, (LED), LAMP UNITS SHALL MEET THE REQUIREMENTS OF CMS 732.04-C.

2. THE LED LAMP UNIT SHALL DISPLAY THE SOLID SYMBOLS FOR THE UPRaised HAND OR THE WALKING PERSON.

THE CONTRACTOR SHALL PROVIDE ODOT, IN WRITING, THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF THE LAMP AND DATE OF MANUFACTURE OF ALL LED UNITS TO BE USED IN THE TRAFFIC SIGNAL HEADS PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES. THE INFORMATION SHALL BE SENT TO THE FOLLOWING LOCATION:

ODOT DISTRICT 8
JIM JUDD
505 SOUTH SR 741
LEBANON, OH 45036
513-933-6692

THE DEPARTMENT WILL MEASURE ITEM 632, SIGNALIZATION, MISC.: REPLACEMENT OF PEDESTRIAN SIGNAL HEAD WITH PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), BY TYPE, BY THE NUMBER OF COMPLETE UNITS REPLACED AND WILL INCLUDE ALL SUPPORT AND MOUNTING HARDWARE, CLOSURE CAPS, LAMPS AND PROGRAMMING AS SPECIFIED.

ITEM 632, WOOD POLE, AS PER PLAN

THIS ITEM WILL CONSIST OF FURNISHING AND INSTALLING WOOD POLES, CLASS 2, THIRTY-FIVE (35) FEET, AS PER CMS 632.17. ALTERNATE HEIGHT AND CLASS POLES MAY BE USED WITH APPROVAL OF THE ENGINEER.

PAYMENT FOR THIS ITEM WILL BE MADE AT THE CONTRACT UNIT PRICE PER EACH.

ITEM 632, DOWN GUY, AS PER PLAN

IN ADDITION TO ITEMS REQUIRED FOR DOWN GUY ASSEMBLY, THE CONTRACTOR WILL BE REQUIRED TO FURNISH AND INSTALL A STAND-OFF ASSEMBLY.

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GENERAL NOTES

D08 - TSG - FY 2015

ITEM 632, STRAIN POLE, TYPE TC-81.10, DESIGN 12, BY LENGTH, AS PER PLAN

THE CONTRACTOR WILL BE REQUIRED TO PURCHASE DESIGN 12, 32-FOOT, SIGNAL STRAIN POLES WITH ANCHOR BOLTS FOR THIS CONTRACT. IN ADDITION TO CMS 732.12, ALL POLES WILL REQUIRE BOTH A 3-INCH BLIND COUPLING AT 1-FOOT DOWN FROM THE TOP OF THE POLE AT 180° FROM THE HANDHOLE, A 1.5 INCH BLIND COUPLING AT 1-FOOT ABOVE AND AT 90° FROM THE HANDHOLE, AND A 2-INCH BLIND HALF COUPLING AT 1-FOOT ABOVE THE BOTTOM OF THE POLE AT 270° FROM THE HANDHOLE.

THE CONTRACTOR SHALL INITIALLY PURCHASE EIGHT (8) OF THE STRAIN POLES UPON AWARD OF THE CONTRACT. THE REMAINDER QUANTITY SHALL BE PURCHASED AS NEEDED, AS DIRECTED BY THE ENGINEER.

ITEM 625, BRACKET ARM, AS PER PLAN

THIS ITEM CONSISTS OF FURNISHING AND INSTALLING A 10-FOOT BRACKET ARM ONTO AN EXISTING STRAIN POLE OR WOODEN POLE TO MOUNT A DETECTION UNIT AT AN INTERSECTION.

THE BRACKET ARM WILL BE USED AT THE ENGINEER'S DISCRETION FOR OPTIMAL DETECTION ON AN APPROACH.

THIS ITEM WILL ALSO INCLUDE FIELD DRILLING INTO AN EXISTING SUPPORT TO ATTACH THE BRACKET ARM AND PAINTING THE EXISTING SUPPORT WITH A ZINC-RICH PAINT WHERE NECESSARY.

PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, HARDWARE AND OTHER INCIDENTALS NECESSARY FOR EACH BRACKET ARM FURNISHED AND INSTALLED, COMPLETE AND IN PLACE. THIS ITEM WILL BE PAID AT THE CONTRACT UNIT PRICE PER EACH.

ITEM 632, LOOP DETECTOR TIE-IN, AS PER PLAN

THIS ITEM SHALL CONSIST OF THE WORK NECESSARY TO SPLICE NEW DETECTOR WIRE TO EXISTING LOOP LEAD-IN CABLE IN A PULLBOX AT A DETECTOR LOOP REPLACEMENT LOCATION. THE CONTRACTOR SHALL CAREFULLY REMOVE AN EXISTING EPOXY INSULATED SPLICE KIT TO MINIMIZE ANY DAMAGE AND TO PRESERVE THE AMOUNT OF SLACK IN THE EXISTING LOOP LEAD-IN CABLE. THE CONTRACTOR SHALL ALSO REMOVE THE EXISTING DETECTOR WIRE IN THE PULLBOX AND IN THE CONDUIT TO THE PAVEMENT EDGE. THIS ITEM SHALL ALSO INCLUDE THE SPLICING OF THE WIRE TOGETHER WITH THE CABLE AND INSTALLING A NEW EPOXY INSULATED SPLICE KIT AS SPECIFIED IN CMS 632.23.

THE DEPARTMENT WILL MEASURE ITEM 632, LOOP DETECTOR TIE-IN, AS PER PLAN, BY THE NUMBER OF EACH COMPLETE TIE-IN INSTALLED AND ACCEPTED AND WILL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THIS ITEM OF WORK.

ITEM 632, DETECTOR LOOP, AS PER PLAN

ALL STOP LINE INDUCTANCE DETECTOR LOOPS SHALL BE THE POWERHEAD CONFIGURATION SHOWN ON TC-82.10. THE STOP LINE DETECTOR LOOPS SHALL NOT BE WIRED TO ANY OTHER LOOPS AND SHALL HAVE ITS OWN DETECTOR CHANNEL. THE LOCATION OF THESE LOOPS SHALL BE SUCH THAT THE POWERHEAD IS LOCATED AT THE STOP LINE, NOT PAST IT.

ALL DILEMMA ZONE INDUCTANCE DETECTOR LOOPS SHALL BE THE ANGULAR DESIGN DETECTION (ADD) LOOP AS SHOWN ON TC-82.10. DIMENSIONS SHALL BE AS SHOWN ON TC-82.10.

ALL STOP LINE DETECTION SHALL BE TESTED FOR A BICYCLE TARGET AND ALL DILEMMA DETECTION ZONES SHALL BE TESTED FOR A MOTORCYCLE TARGET.

IN ADDITION TO CMS 632.11, THE CONTRACTOR MAY NOT HAVE TO INSTALL CONDUIT BETWEEN THE PAVEMENT EDGE AND AN EXISTING PULLBOX IF THE CONDUIT CAN BE REUSED AT THE LOCATION FOR ANY FUTURE DETECTOR LOOP REPLACEMENTS. IF THE EXISTING CONDUIT IS DAMAGED OR CANNOT BE FOUND, THEN THE CONTRACTOR SHALL INSTALL THE PROPOSED CONDUIT PER CMS 632.11. ALL OTHER REQUIREMENTS OF CMS 632 SHALL APPLY TO THIS ITEM.

ITEM 633, UNINTERRUPTIBLE POWER SUPPLY (UPS), BATTERY REPLACEMENT

IN ADDITION TO THE REQUIREMENTS OF CMS 733.09, PROVIDE FOUR (4) BATTERIES FOR EACH EXISTING UNINTERRUPTIBLE POWER SUPPLY (UPS) CABINET LOCATION LISTED IN THE PLAN. BATTERIES SHALL BE PROVIDED FROM THE DEPARTMENT'S QUALIFIED PRODUCTS LIST. FURNISH BATTERIES CERTIFIED BY THE MANUFACTURER TO OPERATE OVER A TEMPERATURE RANGE OF -13°F TO +165°F. PLACE ALL BATTERIES ON BATTERY HEATER MATS IN THE ENCLOSURE. BATTERIES SHALL BE WARRANTED FOR FULL REPLACEMENT FOR TWO (2) YEARS FROM THE DATE OF PURCHASE.

THE DEPARTMENT WILL PAY FOR ITEM 633, UNINTERRUPTIBLE POWER SUPPLY (UPS), BATTERY REPLACEMENT, AT THE CONTRACT UNIT PRICE BID FOR EACH UPS LOCATION WHERE FOUR (4) EXISTING BATTERIES ARE REPLACED. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, DISPOSAL AND OTHER INCIDENTALS NECESSARY TO REPLACE THE UPS BATTERIES, COMPLETE, IN PLACE, AND ACCEPTED.

ITEM 633, UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A BATTERY BACK UP, OR UPS SYSTEM, TO PROVIDE UNINTERRUPTIBLE, RELIABLE, EMERGENCY POWER TO A TRAFFIC SIGNAL INTERSECTION ACCORDING TO CMS 633.18. AS PART OF THIS PAY ITEM, AT EACH UPS INSTALLATION LOCATION, THE CONTRACTOR SHALL ALSO PROGRAM THE SIGNAL CONTROLLER TO RESTART IN ALL RED FLASHING MODE.

THE UPS SYSTEMS SHALL BE INSTALLED AT EACH OF THE 6 PROPOSED TRAFFIS SIGNAL LOCATIONS TO BE DETERMINED BY THE ENGINEER. FOR THE PROPOSED SIGNAL LOCATIONS, THE UPS SYSTEMS SHALL BE MOUNTED ON A PROPOSED CONTROLLER FOUNDATION. FOR THE EXISTING LOCATIONS, THE UPS SYSTEMS SHOULD BE MOUNTED DIRECTLY TO THE SIGNAL CABINET. WHERE THE ENGINEER DETERMINES THAT THE UPS ENCLOSURE MUST BE GROUND MOUNTED, THE CONTRACTOR WILL FURNISH AND INSTALL A CABINET FOUNDATION AND RISER FOR THE UPS UNDER SEPARATE PAY ITEMS.

PAYMENT FOR ITEM 633, UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN, SHALL BE MADE AT THE UNIT PRICE BID PER EACH. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TESTING, CERTIFICATIONS AND OTHER INCIDENTALS NECESSARY TO FURNISH THE UPS COMPLETE, IN PLACE, INCLUDING ALL CONNECTIONS MADE, WIRING COMPLETE, TESTED AND ACCEPTED.

ITEM 633, CONTROLLER UNIT, TYPE 2070L, AS PER PLAN

THE CONTROLLER UNIT SHALL BE EQUIPMENT MANUFACTURED IN CONFORMANCE WITH THE CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) SPECIFICATIONS TITLED "TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATIONS" (TEES). THE CONTROLLER UNIT, MODEL 2070L, SHALL BE MODEL AND BUILD VERSION LISTED ON THE ODOT QPL. THE 2070L CONTROLLER UNIT SHALL INCLUDE THE FOLLOWING:

1. UNIT CHASSIS
2. 2070-1B CPU MODULE
3. 2070-2A FIELD I/O MODULE
4. 2070-3B FRONT PANEL
5. 2070-4A POWER SUPPLY
6. 2070-7A SERIAL COMMUNICATION MODULE

THE CONTROLLER SHALL BE SUPPLIED WITHOUT TRAFFIC SIGNAL INTERSECTION CONTROL SOFTWARE. THE CONTROLLER SHALL BE SUPPLIED WITH MICROWARE EMBEDDED OS-9 RELEASE 1.3 OR LATER WITH KERNEL EDITION #376 OR LATER, AS REQUIRED BY CALTRANS TEES. FOR WARRANTY PURPOSES, A VENDOR-SPECIFIC DECAL, AS PER ODOT CMS 733.02, SHALL BE APPLIED TO ITEMS 1 THROUGH 4 OF THE LIST ABOVE AT TIME OF DELIVERY TO THE PROJECT.

THE CONTROLLER SHALL BE SHIPPED BY THE CONTRACTOR TO THE ODOT SIGNAL SHOP, 1606 WEST BROAD STREET, COLUMBUS, OH 43223, EITHER DIRECTLY OR VIA THE DISTRICT OFFICE, A MINIMUM OF 14 DAYS IN ADVANCE OF WHEN THE SOFTWARE IS NEEDED. ODOT WILL INSTALL THE LOCAL INTERSECTION CONTROL SOFTWARE. THE CONTROLLER WILL THEN BE PERFORMANCE TESTED BY THE ODOT SIGNAL SHOP. EVERY EFFORT SHALL BE MADE TO HAVE LOADING AND PERFORMANCE TESTING COMPLETED BY THE ODOT SIGNAL SHOP WITHIN 2 WEEKS OF RECEIPT OF AN INDIVIDUAL CONTROLLER. LARGER GROUPS OF CONTROLLERS SUBMITTED AT THE SAME TIME MAY TAKE LONGER. SHOULD ANY CONTROLLER FAIL THIS PERFORMANCE TEST AFTER BEING LOADED WITH ODOT-LICENSED SOFTWARE, THE SOFTWARE WILL BE REMOVED BY THE ODOT SIGNAL SHOP AND THE CONTROLLER REJECTED. REJECTED CONTROLLERS WILL BE RETURNED EITHER DIRECTLY TO THE CONTRACTOR OR TO THE ODOT DISTRICT OFFICE. CONTROLLERS PASSING THE PERFORMANCE TEST WILL BE LABELED BY THE ODOT SIGNAL SHOP WITH THE OS IMAGE NUMBER, CPU SERIAL NUMBER, SOFTWARE REVISION NUMBER, AND UPLOAD DATE. THIS LABEL IS NOT TO BE REMOVED BY THE CONTRACTOR AND SERVES AS PROOF THAT THE CONTROLLER HAS BEEN LOADED, TESTED AND APPROVED FOR INITIAL INSTALLATION ON THE PROJECT. SUCH PROOF DOES NOT ALTER THE REQUIRED 10-DAY PERFORMANCE TEST OUTLINED IN CMS SECTIONS 632 AND 633.

THE SIGNAL TIMING WILL BE PROVIDED ON THE TRAFFIC SIGNAL PLANS FOR THE PROPOSED TRAFFIC SIGNAL INSTALLATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO THEN PROGRAM THE SIGNAL TIMING PER THE PLANS.

ALL CONTROLLERS SHALL BE SET UP AND TESTED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE PLANS SUBMITTED BY ODOT AFTER THE SOFTWARE HAS BEEN INSTALLED. THE SET UP AND TESTING SHALL BE PERFORMED BY CONTRACTOR PERSONNEL WITH A MINIMUM OF AN IMSA LEVEL TWO CERTIFICATION IN THE CONTRACTOR'S SHOP. THE PROPER OPERATION SHALL BE DEMONSTRATED TO THE PROJECT ENGINEER BEFORE THE UNIT IS INSTALLED IN THE FIELD.

THE CONFLICT MONITOR TEST SHALL BE PERFORMED AT THE MAXIMUM OF SIX (6) MONTHS PRIOR TO INSTALLATION OF THE CONTROLLER IN THE FIELD. THE CURRENT CONFLICT MONITOR TEST AND TEST RESULT DOCUMENTATION SHALL BE STORED IN THE CABINET UPON INSTALLATION IN THE FIELD.

THE CONTRACTOR SHALL NOT REASSIGN THE CABINET DETECTOR INPUTS IN ORDER TO REDUCE THE NUMBER OF 2-CHANNEL DETECTOR UNITS SUPPLIED, BUT SHALL USE THE STANDARD CALTRANS INPUT FILE DESIGNATIONS.

ITEM 633, STOP BAR DETECTION RADAR UNIT

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR MATRIX DETECTION UNIT. THE DETECTION UNIT SHALL INCLUDE THE FOLLOWING:

1. POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
2. ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRANS, NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR CONTACT CLOSURE TO THE TRAFFIC CONTROLLER.
3. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S) SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER.
4. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
5. THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
6. A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MIN. 7 FEET)

7. THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.

PAYMENT FOR ITEM 633, STOP BAR DETECTION RADAR SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE, INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT AND CONNECTIONS TESTED AND ACCEPTED.

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ITEM 633, ADVANCE/DILEMMA ZONE RADAR UNIT

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR ADVANCE DETECTION UNIT (MODEL SS-200E). THE DETECTION UNIT SHALL INCLUDE THE FOLLOWING:

1. POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
2. ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRANS, NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR CONTACT CLOSURE TO THE TRAFFIC CONTROLLER.
3. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S) SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER.
4. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
5. THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
6. A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MIN. 7 FEET)
7. THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.

PAYMENT FOR ITEM 633, ADVANCE/ DILEMMA ZONE RADAR UNIT SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE, INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT, CONNECTIONS TESTED AND ACCEPTED, AND ANY OTHER NECESSARY HARDWARE TO ESTABLISH A FULLY FUNCTIONAL DETECTION SYSTEM. UNITS ARE TO BE PLACED FACING THE MAJOR STREET, I.E. THE STREET LISTED FIRST IN THE SUBSUMMARY.

ITEM 815, SPREAD SPECTRUM RADIO, AS PER PLAN

IN ADDITION TO SUPPLEMENTAL SPECIFICATION 815, THE FOLLOWING SHALL APPLY FOR FURNISHING AND INSTALLING A COMPLETE ETHERNET RADIO INTERCONNECT EQUIPMENT AT A SIGNAL TO BE DETERMINED BY THE ENGINEER.

FURNISH A RADIO THAT SHALL USE AN UNLICENSED FREQUENCY HOPPING SPREAD SPECTRUM IN ACCORDANCE WITH THE FOLLOWING:

FREQUENCY BAND: 902-928 MEGAHERTZ FCC PART 15 SPREAD SPECTRUM BAND. ALL RADIOS SHALL BE FCC APPROVED.

COMMUNICATION PROTOCOLS:

WIRELESS: CSMA/CA(COLLISION AVOIDANCE)
ETHERNET: IEEE 802.3, ETHERNETII, IEEE 802.1 Q, STP, IGMP
TCP/IP: DHCP, IMCP, UDP,TCP, ARP, MULTICAST, SNTP, TFTP

DATA RATE: 512 KBPS MINIMUM

DATA INTERFACE: RJ-45, 10BASE T MINIMUM

DATA ENCRYPTION: 128-BIT AES MINIMUM

MANAGEMENT: HTTP/HTTPS INTERFACES, LOCAL CONSOLE

RANGE: 8 MILES MINIMUM, LINE OF SIGHT

TRANSMITTING POWER OUTPUT: 1 WATT MAXIMUM, ADJUSTABLE

TRANSMITTING MAX VOLTAGE STANDING WAVE RADIO (VSWR) (NO DAMAGE): INFINITE, ALL PHASE ANGLES

RECEIVING SENSITIVITY: -110 DBM AT 10 BER AT 512 KBPS MINIMUM

OPERATING HUMIDITY: 0-95% RELATIVE HUMIDITY, NON-CONDENSING

OPERATING TEMPERATURE: -30° TO +165°F (-34° TO +74°C) WITH FULL PERFORMANCE

RADIOS SHALL HAVE THE CAPABILITY TO AVOID INTERFERENCE USING:

- A. CSMA/CD, CA
- B. CRC ERROR CHECKING WITH AUTOMATIC RETRANSMISSION (CRC WITH ARO)
- C. THE ABILITY TO ELIMINATE ZONES OF THE FREQUENCY BAND WHERE EXCESSIVE INTERFERENCE REDUCES COMMUNICATION RELIABILITY AND THRUPUT (A MINIMUM OF 8 ZONES IS REQUIRED).

RADIOS SHALL HAVE A MEDIA ACCESS CONTROL MECHANISM TO ENSURE THERE ARE NO DATA COLLISIONS WHEN MULTIPLE REMOTE RADIOS ATTEMPT TO COMMUNICATE AT THE SAME TIME (REPORT ON EXCEPTION).

SPREAD SPECTRUM RADIOS SHALL PROVIDE TRANSPARENT COMMUNICATIONS BETWEEN SIGNAL CONTROLLERS. ALL RADIO EQUIPMENT SHALL BE INSTALLED IN THE SIGNAL CONTROLLER CABINETS. RADIO POWER SUPPLIES SHALL MEET ALL REQUIREMENTS OF THE RADIO MANUFACTURER, INCLUDING POWER, TEMPERATURE AND HUMIDITY. ALL REQUIRED INTERFACE CABLES AND CONNECTORS SHALL BE PROVIDED WITH THE RADIOS.

THE RADIO SHALL HAVE THE CAPABILITY TO MONITOR RECEIVER SIGNAL STRENGTH AND BE PROGRAMMED THROUGH A DIAGNOSTIC/PROGRAMMING PORT. CONFIGURATION AND DIAGNOSTIC SOFTWARE SHALL BE PROVIDED. HARDWARE COMMUNICATION DEVICES SHALL BE PROVIDED.

ANTENNA SYSTEM: THE ANTENNA SYSTEM SHALL CONSIST OF THE OMNIDIRECTIONAL ANTENNA OR YAGI DIRECTIONAL ANTENNA, ANTENNA MOUNTS, COAXIAL CABLE AND SURGE AND LIGHTNING PROTECTION. ANTENNAS TO BE PROVIDED AS RECOMMENDED BY THE MANUFACTURER.

OMNIDIRECTIONAL ANTENNA: ALL OMNIDIRECTIONAL ANTENNAS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

GENERAL FREQUENCY RANGE: 896-960 MEGAHERTZ
GAIN: 8 DBI MINIMUM
BANDWIDTH AT RATED VSWR: 64 MEGAHERTZ MINIMUM.
VSWR: <2:1
POLARIZATION: VERTICAL
MAXIMUM POWER INPUT: 50 WATTS, MINIMUM
CONNECTOR: N FEMALE
ANTENNA HOUSING: FIBERGLASS RADOME
RADIATING ELEMENT: BRASS OR COPPER
SUPPORT PIPE: ASTM 6061-T6 ALUMINUM
LIGHTNING PROTECTION: DIRECT GROUND
RATED WIND VELOCITY: 100 MPH (160 KM/H), MINIMUM

YAGI DIRECTIONAL ANTENNA: ALL YAGI DIRECTIONAL ANTENNAS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

GENERAL FREQUENCY RANGE: 896-960 MEGAHERTZ
GAIN: 11 DBI MINIMUM
TILT ANGLE: 0°
BANDWIDTH RATED AT VSWR: 60 MEGAHERTZ, MINIMUM
VSWR: <2:1
POLARIZATION: VERTICAL OR HORIZONTAL
MAXIMUM POWER INPUT: 50 WATTS, MINIMUM
CONNECTOR: N FEMALE
RADIATING ELEMENTS: ANODIZED WELDED ALUMINUM ALLOY
LIGHTNING PROTECTION: DIRECT GROUND
RATED WIND VELOCITY: 100 MPH (160 KM/H), MINIMUM

ANTENNA MOUNTS: ANTENNA MOUNTS SHALL PROVIDE A RIGID MOUNTING OF THE SPECIFIED ANTENNA THAT WILL WITHSTAND WINDS OF UP TO 100 MPH (160 KM/H) MINIMUM. MOUNTS AND ASSOCIATED HARDWARE SHALL BE CONSTRUCTED OF GALVANIZED STEEL, ALUMINUM OR STAINLESS STEEL.

RG-8/U COAXIAL CABLE: ALL ANTENNA CABLE SHALL BE A LOW LOSS, RG-8/U, BELDEN 9913 OR EQUIVALENT COAXIAL CABLE IN ACCORDANCE WITH THE REQUIREMENTS LISTED BELOW. CONNECTORS FOR ANTENNA CABLE SHALL BE TYPE N MALE CONNECTORS CONSTRUCTED OF SILVER PLATED BRASS WITH A GOLD PLATED PIN AND SOLDERED CENTER CONNECTION. NOTE QUANTITY UNIT REQUIRED FOR BID.

IMPEDANCE: 50 OHMS, NOMINAL
ATTENUATION @ 900 MEGAHERTZ: 5.7 DECIBELS/100 FT (19.7 DECIBELS/100 M), MAXIMUM
OVERALL DIAMETER: 0.405 IN. (10.3MM), NOMINAL
SHIELD/OUTER CONDUCTOR: 100% FOIL TAPE/TINNED COPPER BRAID WITH 85% MINIMUM COVERAGE
INNER CONDUCTOR: 0.108 IN. (2.62 MM) COPPER
DIELECTRIC: FOAM POLYETHYLENE
OUTER JACKET: BLACK UV RESISTANT POLYETHYLENE

ANTENNA SURGE AND LIGHTNING PROTECTION: A LIGHTNING AND SURGE ARRESTOR SHALL BE PROVIDED FOR THE COAXIAL CABLE IN THE CONTROLLER CABINET. THE ARRESTOR SHALL BE BULKHEAD-MOUNTED OR FLANGE-MOUNTED AND SHALL BE SECURELY FASTENED TO A GROUNDED METAL SURFACE INSIDE THE CABINET. THE ARRESTOR SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

THROUGHPUT ENERGY: <250 MICRO JOULES FOR 3 KA, 8 X 20 S WAVEFORM
MAXIMUM SURGE CURRENT: > OR = TO 5000 A
TURN ON VOLTAGE: 300-600 VOLTS
TURN ON RESPONSE: <5 NANOSECONDS
CONNECTORS (BOTH ENDS): N FEMALE
HOUSING: ALUMINUM OR STAINLESS STEEL
HARDWARE: STAINLESS STEEL
VSWR: <1.2

GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) AND THE HL AND TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:

1. ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.
 - A. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.
 - B. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.
 - C. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULL BOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND WILL NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.
 - D. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.
 - E. IF AN EQUIPMENT GROUNDING CONDUCTOR IS NEEDED IN CONDUIT BETWEEN SIGNALIZED INTERSECTIONS FOR UNDERGROUND INTERCONNECT CABLE, THE GROUNDING SYSTEM FOR EACH SIGNALIZED INTERSECTION WILL BE SEPARATED ABOUT MIDWAY BETWEEN THE INTERSECTIONS.
 - F. THE MESSENGER WIRE AT SIGNALIZED INTERSECTIONS WILL BE USED AS THE CONDUCTIVE PATH FROM CORNER TO CORNER IF CONDUIT IS NOT PROVIDED UNDER THE ROADWAY. WHEN CONDUIT CONNECTS THE CORNERS OF AN INTERSECTION, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED IN THE CONDUIT.
 - G. METAL PULL BOX LIDS SHALL BE BONDED BY ATTACHMENT OF THE EQUIPMENT GROUNDING CONDUCTOR TO THE FRAME DIAGONAL AS PROVIDED IN HL-30.11.
2. CONDUITS.
 - A. THE 725.04 CONDUIT SHALL HAVE GROUNDING BUSHINGS INSTALLED AT ALL TERMINATION POINTS. THE BUSHING MATERIAL SHALL BE COMPATIBLE WITH GALVANIZED STEEL CONDUIT AND THE GROUNDING LUG MATERIAL SHALL BE COMPATIBLE FOR USE WITH COPPER WIRE. THREADED OR COMPRESSION TYPE BUSHINGS MAY BE USED.
 - B. THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DEBURRED AT ALL TERMINATION POINTS.
 - C. BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
 - D. METALLIC CONDUIT MAY BE BONDED TO METALLIC BOXES THROUGH THE USE OF CONDUIT FITTINGS UL APPROVED FOR THIS TYPE OF CONNECTION, WITH THE BOX BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
3. WIRE FOR GROUNDING AND BONDING.
 - A. USE INSULATED, COPPER WIRE FOR THE EQUIPMENT GROUNDING CONDUCTOR. BONDING JUMPERS IN BOXES AND ENCLOSURES MAY BE BARE OR INSULATED COPPER WIRE. WIRE SIZE SHALL BE AS FOLLOWS:
 - I. USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.
 - II. USE A MINIMUM 8 AWG BETWEEN LOOP DETECTOR PULL BOXES AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.
 - III. USE A MINIMUM 8 AWG BETWEEN THE "PREPARE TO STOP WHEN FLASHING" INSTALLATION (INCLUDING SUPPORT) AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.
 - IV. THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.

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GENERAL NOTES

D08 - TSG - FY 2015

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B. IN A HIGHWAY LIGHTING SYSTEM, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE THE SAME WIRE SIZE AS THE DUCT CABLE OR DISTRIBUTION CABLE CIRCUIT CONDUCTORS, WITH THE MINIMUM CONDUCTOR SIZE OF 4 AWG. BONDING JUMPERS WILL BE MINIMUM SIZE 4 AWG.

4. GROUND ROD.
A. 3/4 INCH SCHEDULE 40 PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.

B. THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.

5. THE GREEN CONDUCTOR IN SIGNAL CABLES (CONDUCTOR #4) SHALL NOT BE USED TO SUPPLY POWER TO A SIGNAL INDICATION. IT WILL BE CONNECTED TO THE SIGNAL BODY AS AN EQUIPMENT GROUND IN ALUMINUM HEADS AND IT WILL BE UNUSED IN PLASTIC HEADS. UNUSED CONDUCTORS SHALL BE GROUNDED IN THE CABINET. TYPICAL USE OF CONDUCTORS IS AS FOLLOWS:

COND. NO.	COLOR	VEHICLE SIGNAL	PEDESTRIAN SIGNAL
1	BLACK	GREEN BALL	#1 WALK
2	WHITE	AC NEUTRAL	AC NEUTRAL
3	RED	RED BALL	#1 DW/FDW
4	GREEN	EQUIPMENT GROUND	EQUIPMENT GROUND
5	ORANGE	YELLOW BALL	#2 DW/FDW
6	BLUE	GREEN ARROW	#2 WALK
7	WHITE/BLACK STRIPE	YELLOW ARROW	NOT USED

6. POWER SERVICE AND DISCONNECT SWITCH.
A. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UNSPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPLICE.

B. THE SERVICE NEUTRAL (AC-) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.

I. NEMA CONTROLLER CABINETS: IF A POWER SERVICE DISCONNECT SWITCH IS LOCATED BEFORE THE CONTROLLER CABINET, THE NEUTRAL (AC-) AND THE GROUNDING BARS IN THE CONTROLLER CABINET SHALL NOT BE CONNECTED TOGETHER AS SHOWN IN NEMA TS-2, FIGURE 5-4.

II. IF SECONDARY DISCONNECT SWITCHES ARE CONNECTED AFTER THE PRIMARY DISCONNECT SWITCH, THE NEUTRAL (AC-) SHALL ONLY BE GROUNDED AT THE PRIMARY SWITCH. EQUIPMENT GROUNDING CONDUCTORS SHALL BE BROUGHT TO THE PRIMARY SWITCH, BUT SHALL BE GROUNDED AT BOTH SECONDARY AND PRIMARY SWITCHES.

7. PAYMENT - ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

UTILITIES

AT LEAST FIVE (5) WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN AN AREA WHICH MAY INVOLVE UNDERGROUND UTILITIES, THE CONTRACTOR SHALL NOTIFY THE ENGINEER, THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY AFFECTED.

THE OWNER OF THE UNDERGROUND UTILITY SHALL, WITHIN FORTY-EIGHT (48) HOURS, EXCLUDING SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS, AFTER NOTICE IS RECEIVED, STAKE, MARK, OR OTHERWISE DESIGNATE THE LOCATION OF THE UNDERGROUND UTILITY IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING OF UTILITIES SHALL BE COORDINATED TO STAY APPROXIMATELY TWO DAYS AHEAD OF THE PLANNED CONSTRUCTION.

BELOW IS A LIST OF UTILITY COMPANIES AND OWNERS WHICH MAY HAVE UNDERGROUND INSTALLATIONS ALONG THE VARIOUS ROUTES AFFECTED BY THIS PROJECT. THIS IS NOT TO BE CONSIDERED A COMPLETE LIST, BUT RATHER AS A DIRECTORY OF THE MOST FREQUENTLY ENCOUNTERED UTILITIES.

AT&T LONG DISTANCE
HLG CONSULTING
5980-G WILCOX PLACE
DUBLIN, OH 43016
614-760-8320 (TONY LYLE)

AT&T OHIO
3233 WOODMAN DRIVE, ROOM 225
DAYTON, OH 45420
937-296-3894 (JESSE WEAD)

BP PIPELINES (NORTH AMERICA), INC.
150 WEST WARRENVILLE ROAD
BUILDING 600-3N
NAPERVILLE, IL 60563
630-536-2658 (SEAN MCDONALD (PERCHERON ACO))

BUTLER RURAL ELECTRIC COOPERATIVE, INC.
3888 STILLWELL BECKETT ROAD
OXFORD, OH 45056
513-867-4438 (BILL HUMBERT)

CINCINNATI BELL TELEPHONE
201 EAST 4TH STREET, BLDG. 343
CINCINNATI, OH 45202
513-565-7043 (MARK CONNER)

CINCINNATI METROPOLITAN SEWER DISTRICT
1600 GEST STREET
CINCINNATI, OH 45204
513-557-7188 (ROB FRANKLIN)

CINCINNATI WATER WORKS
4747 SPRING GROVE AVENUE
CINCINNATI, OH 45232
513-557-5799 (JON HUNSEDER)

CITY OF EATON WATER WORKS
P.O. BOX 27
EATON, OH 45320
937-456-7157 (SHAWN HOLLON)

CITY OF MASON WATER
6000 MASON MONTGOMERY ROAD
MASON, OH 45040
513-229-8520 (KURT SEILER)

CITY OF OXFORD WATER & SEWER
101 EAST HIGH STREET
OXFORD, OH 45056
513-524-5208 (VICTOR POPESCU)

CITY OF XENIA WATER
101 NORTH DETROIT STREET
XENIA, OH 45385
937-376-7264 (CHRIS BERGER)

CLERMONT COUNTY WATER & SEWER
440 HASKELL LANE
BATAVIA, OH 45103
513-479-4031 (TIM CHERRY)

COLUMBIA GAS OF OHIO
2101 WEST MAIN
SPRINGFIELD, OH 45504
937-327-7102 (DAVE GREENWELL)

DAYTON POWER & LIGHT
1900 DRYDEN ROAD
DAYTON, OH 45439
937-331-4132 (JOHN KENTON)

DUKE ELECTRIC
139 EAST 4TH STREET, ROOM 467A
CINCINNATI, OH 45202
513-287-3674 (AARON WRIGHT)

DUKE GAS
139 EAST 4TH STREET, ROOM 460A
CINCINNATI, OH 45202
513-287-2730 (RALPH PFISTER)

CENTURY LINK
20 NORTH MECHANIC STREET
LEBANON, OH 45036
513-933-3502 (VIC BATES)

GLENWOOD ENERGY OF OXFORD (GAS)
5181 COLLEGE CORNER PIKE
OXFORD, OH 45056
513-523-2555 (JOHN STENGER)

GREENE COUNTY WATER & SEWER
667 DAYTON-XENIA ROAD
XENIA, OH 45385
937-562-7462 (TIM GROW)

WINDSTREAM-KDL
65 EAST WINNERLINE ROAD
EATON, OH 45320
937-260-3062 (LOEN TAYLOR)

KNOX ENERGY (GAS)
5900 MAYFAIR NORTHWEST
NORTH CAONTON, OH 44720
888-863-0032 (FRANK STAUFFER)

LEVEL 3 COMMUNICATIONS
1025 ELDORADO BLVD.
BROOMFIELD, CO 80021
RELO@LEVEL3.COM

MCI/VERIZON - FIBER OPTIC
120 RAVINE STREET
AKRON, OH 44303
330-253-8267 (AL GUEST)

QWEST (SUBSIDIARY OF CENTURY LINK)
QWEST/CENTURY LINK NETWORKS
441 W. BROAD STREET
PATASKALA, OH 43062
303-886-1299 (CHRIS STRAYER)

SOUTHWESTERN OHIO WATER COMPANY
LOVELAND GATEWAY CENTER
600 W. LOVELAND AVENUE, SUITE 3A
LOVELAND, OH 45140
513-385-8919 (FRANK DIVO)

SPRINT FIBER OPTIC
11370 ENTERPRISE PARK DRIVE
SHARONVILLE, OH 45241
513-612-4204 (JOE THOMAS)

TATE-MONROE WATER ASSOCIATION
P.O. BOX 90
BETHEL, OH 45106
513-734-2236, EXT. 210 (JEFF SMITH)

TDS TELECOM
251 S. RUSSELL STREET
FAYETTEVILLE, OH 45118
513-875-1102 (DOUG FISCHER)

TEXAS EASTERN TRANSMISSION
1157 SR 122 WEST
LEBANON, OH 45036
513-933-6031 (GLEN INGRAM)

TIME WARNER CABLE - CINCINNATI
11525 CORNELL PARK DRIVE
CINCINNATI, OH 45242
513-386-5499 (KENT REIGER)

TIME WARNER CABLE - DAYTON
3691 TURNER ROAD
DAYTON, OH 45415
937-425-8850 (TIM KUSS)

VECTREN GAS
6500 CLYO ROAD
DAYTON, OH 45429
937-440-1965 (DON SPECHT)

FRONTIER COMMUNICATIONS
241 SOUTH NELSON AVENUE
WILMINGTON, OH 45177
937-283-5735 (DAVID LONGWORTH)

WESTERN WATER COMPANY
1775 SR 28
GOSHEN, OH 45122
513-899-3211, EXT. 22 (KURT MEEKER)

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ITEM 632, RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, BY LENS TYPE, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF REPLACING THE 12-INCH LENS AND INCANDESCENT OR LED LAMP IN AN EXISTING SIGNAL HEAD SECTION WITH A 12-INCH LED LAMP UNIT.

THE LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 872. AN LED SIGNAL LAMP UNIT SHALL BE FURNISHED AND INSTALLED FOR THE TYPE OF SIGNAL LENS SPECIFIED IN THE BID ITEM DESCRIPTION.

THIS ITEM SHALL ALSO CONSIST OF REPLACING THE TERMINAL BLOCK, IF CORRODED, AS DETERMINED BY THE ENGINEER.

THE CONTRACTOR SHALL PROVIDE ODOT, IN WRITING, THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE OF ALL LED UNITS TO BE USED IN THE TRAFFIC SIGNAL HEADS PRIOR TO INSTALLATION FOR ACCEPTANCE AND WARRANTY PURPOSES. THIS INFORMATION SHALL BE SENT TO THE FOLLOWING LOCATION:

ODOT DISTRICT 8
ATTN: JIM JUDD
505 SOUTH SR 741
LEBANON, OH 45036

THE DEPARTMENT WILL MEASURE ITEM 632, RELAMP EXISTING SIGNAL HEAD WITH LED LAMP UNITS, BY LENS TYPE, AS PER PLAN, BY THE NUMBER OF COMPLETE UNITS FURNISHED AND INSTALLED, AND WILL INCLUDE ALL HARDWARE AND LAMPS, AS SPECIFIED.

ANY LED LAMP UNITS REMAINING UNUSED AT THE END OF THE CONTRACT WILL BE PURCHASED FROM THE CONTRACTOR BY THE STATE AT THE COST OF MATERIALS PLUS AND ADDITIONAL 15% MARK-UP ON THESE COSTS.

ITEM 632, RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, WALKING MAN/UPRAISED HAND SYMBOLS, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF REPLACING THE LENS AND INCANDESCENT OR LED LAMPS IN AN EXISTING PEDESTRIAN SIGNAL HEAD, TYPE D2, WITH LED LAMP UNITS. THE LED UNITS SUPPLIED SHALL DISPLAY A SOLID MAN OR HAND SYMBOL. AN OUTLINE DISPLAY OF THESE SYMBOLS WILL NOT BE PERMITTED.

THE LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 872. AN LED SIGNAL LAMP UNIT SHALL BE FURNISHED AND INSTALLED FOR THE TYPE OF SIGNAL LENS SPECIFIED IN THE BID ITEM DESCRIPTION.

THE CONTRACTOR SHALL PROVIDE ODOT, IN WRITING, THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE OF ALL LED UNITS TO BE USED IN THE TRAFFIC SIGNAL HEADS PRIOR TO INSTALLATION FOR ACCEPTANCE AND WARRANTY PURPOSES. THIS INFORMATION SHALL BE SENT TO THE FOLLOWING LOCATION:

ODOT DISTRICT 8
ATTN: JIM JUDD
505 SOUTH SR 741
LEBANON, OH 45036

THE DEPARTMENT WILL MEASURE ITEM 632, RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, WALKING MAN/UPRAISED HAND, AS PER PLAN, BY THE NUMBER OF COMPLETE UNITS FURNISHED AND INSTALLED, AND WILL INCLUDE ALL HARDWARE AND LAMPS AS SPECIFIED.

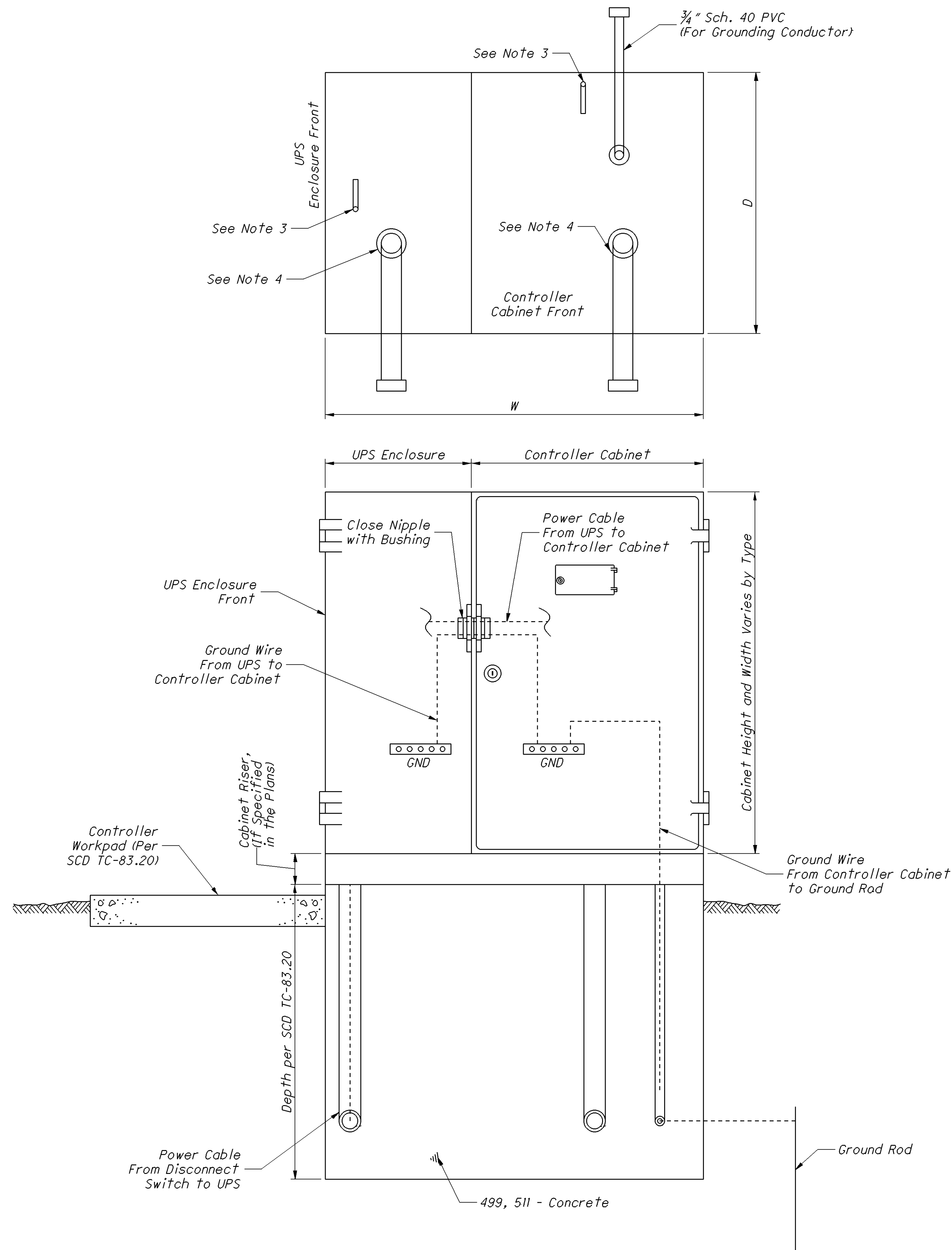
ANY LED LAMP UNITS REMAINING UNUSED AT THE END OF THE CONTRACT WILL BE PURCHASED FROM THE CONTRACTOR BY THE STATE AT THE COST OF MATERIALS PLUS AND ADDITIONAL 15% MARK-UP ON THESE COSTS.

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GENERAL NOTES

D08 - TSG - FY 2015



NOTES:

1. The Uninterruptible Power Supply (UPS) enclosure shall be mounted flush up against the traffic signal cabinet and sealed with silicone. The Contractor shall be responsible for providing the necessary power cable between the UPS unit and signal cabinet.
2. The UPS should be placed on the opposite side of the pull box on a 332/336 cabinet (per Standard Construction Drawing (SCD) TC-83.20). The UPS placement for a NEMA cabinet varies, placement should provide adequate access with respect to slope, guardrail spacing, etc.
3. The size, number, and location of anchor bolts shall be in accordance with the manufacturer's recommendations.
4. The size, number, and orientation of conduit ells shall be as shown in the plan, except that a 3/4" schedule 40 PVC shall be installed in each foundation.
5. 1/2" preformed joint filler as per CMS 705.03 shall be used between foundations and adjacent paved areas.
6. See SCD TC-83.20 for further details.

TYPE	W (IN.)	D (IN.)	FOUNDATION CONCRETE (CU. YD.)
TS-1	60	24	1.23
TS-2	70	36	2.16
2070/170	50	36	1.54

THIS DRAWING REPLACES PIS 208320 DATED 04-20-2012.

CONSTRUCTION NOTIFICATION

THE CONTRACTOR WILL ADVISE THE PROJECT ENGINEER A MINIMUM OF:

- FOURTEEN (14) DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES, AND/OR ROAD CLOSURES.
- SEVEN (7) DAYS PRIOR TO LANE CLOSURES AND/OR SHIFTS IN TRAFFIC PATTERNS.

THE PROJECT ENGINEER WILL FORWARD THIS INFORMATION TO THE FOLLOWING:

- DISTRICT PUBLIC INFORMATION OFFICER (PIO) BY FAX AT (513) 933-9472 OR EMAIL AT D08.PIO.FORM@DOT.STATE.OH.US
- DISTRICT PERMIT SECTION BY FAX AT (513) 933-9472 OR EMAIL AT TOM.MAKRIS@DOT.STATE.OH.US
- CENTRAL OFFICE SPECIAL HAUL PERMITS SECTION BY FAX AT (614)728-4099 OR EMAIL AT HAULING.PERMITS@DOT.STATE.OH.US

THE PIO WILL, IN TURN, NOTIFY THE PUBLIC, THE LOCAL EMERGENCY SERVICES, AFFECTED SCHOOLS AND BUSINESSES, AND ANY OTHER IMPACTED LOCAL PUBLIC AGENCY OF ANY OF THE ABOVE MENTIONED ITEMS, VIA MEDIA SOURCES.

ITEM 614, MAINTAINING TRAFFIC, MISC.: MAINTAINING TRAFFIC PER TRAFFIC SIGNAL INSTALLATION

IN ADDITION TO THE REQUIREMENTS OF ITEM 614, MAINTAINING TRAFFIC, THE FOLLOWING SHALL APPLY:

NO LANE CLOSURE SHALL BE IMPLEMENTED DURING THE HOURS OF 6:00 AM TO 9:00 AM, OR 3:00 PM TO 6:00 PM, WEEKDAYS. WHEN IT IS NECESSARY TO CLOSE ONE LANE OF TRAFFIC ADJACENT TO THE WORK, THE CLOSURE SHALL BE ACCOMPLISHED BY THE APPLICATION OF TRAFFIC CONTROL DEVICES AS SHOWN ON ODOT STANDARD CONSTRUCTION DRAWING MT-97.10. ALL ADVANCE WARNING SIGNS FOR ANY CONDITION WHICH RESTRICTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTION IS PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM THE VIEW OF TRAFFIC WHEN THEY ARE NOT APPLICABLE, AS DETERMINED BY THE ENGINEER. FOR WORK WHICH IS CONFINED TO THE SHOULDER, TRAFFIC CONTROL SHALL CONFORM TO FIGURE 6H-3 OF THE 2012 OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD).

TWO-WAY TRAFFIC ON A MINIMUM OF 12-FOOT LANES SHALL BE MAINTAINED BY USE OF THE EXISTING PAVEMENT. ONE-WAY TRAFFIC MAY BE PERMITTED DURING THE PLACEMENT OF LOOPS, SIGNAL SUPPORTS, OVERHEAD SIGNS, AND TRAFFIC SIGNAL HEADS, SUBJECT TO THE APPROVAL OF THE ENGINEER. SHORT DURATION CLOSURE (15 MINUTES) MAY BE PERMITTED UNDER THE DIRECTION OF FLAGGERS OR LAW ENFORCEMENT OFFICERS WITH THE PRIOR APPROVAL OF THE ENGINEER.

PRIOR TO ACTIVATION OF A NEW SIGNAL, THE REQUIREMENTS OF STANDARD CONSTRUCTION DRAWING MT-120.00 SHALL BE FOLLOWED.

IF THE CONTRACTOR FAILS TO COMPLY WITH THE PROVISIONS FOR TRAFFIC CONTROL AS SET FORTH IN THESE PLANS AND PROVISIONS OF THE OMUTCD AND THE FAILURE RESULTS IN A CONDITION AT THE WORK SITE WHICH IS UNSAFE FOR TRAFFIC, THE ENGINEER SHALL SUSPEND ALL WORK UNTIL THE CONTRACTOR COMPLIES WITH THE NECESSARY REQUIREMENTS.

PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE CONTRACT UNIT BID PRICE PER EACH FOR ITEM 614, MAINTAINING TRAFFIC, MISC.: MAINTAINING TRAFFIC PER TRAFFIC SIGNAL INSTALLATION.

ITEM 614, MAINTAINING TRAFFIC, MISC.: MAINTAINING TRAFFIC PER TRAFFIC SIGNAL MODIFICATION/UPGRADE LOCATION

IN ADDITION TO THE REQUIREMENTS OF ITEM 614, MAINTAINING TRAFFIC, THE FOLLOWING SHALL APPLY:

NO LANE CLOSURE SHALL BE IMPLEMENTED DURING THE HOURS OF 6:00 AM TO 9:00 AM, OR 3:00 PM TO 6:00 PM, WEEKDAYS. WHEN IT IS NECESSARY TO CLOSE ONE LANE OF TRAFFIC ADJACENT TO THE WORK, THE CLOSURE SHALL BE ACCOMPLISHED BY THE APPLICATION OF TRAFFIC CONTROL DEVICES AS SHOWN ON ODOT STANDARD CONSTRUCTION DRAWING MT-97.10. ALL ADVANCE WARNING SIGNS FOR ANY CONDITION WHICH RESTRICTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTION IS PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM THE VIEW OF TRAFFIC WHEN THEY ARE NOT APPLICABLE, AS DETERMINED BY THE ENGINEER. FOR WORK WHICH IS CONFINED TO THE SHOULDER, TRAFFIC CONTROL SHALL CONFORM TO FIGURE 6H-3 OF THE 2012 OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD).

TWO-WAY TRAFFIC ON A MINIMUM OF TWO 12-FOOT LANES SHALL BE MAINTAINED BY USE OF THE EXISTING PAVEMENT.

WHEN A SIGNAL WILL BE OUT OF OPERATION (DARK) TO REPLACE THE CONTROLLER, POWER SERVICE OR INSTALLING A UNINTERRUPTIBLE POWER SUPPLY, TRAFFIC WILL BE MAINTAINED UNDER THE DIRECTION OF LAW ENFORCEMENT OFFICERS WITH PATROL CARS. THE TIME RESTRICTIONS FOR REPLACING A SIGNAL CONTROLLER WILL FOLLOW THE RESTRICTIONS LISTED ABOVE FOR A LANE CLOSURE. THE USE OF TEMPORARY STOP SIGNS WILL NOT BE PERMITTED ON THIS PROJECT.

IF THE CONTRACTOR FAILS TO COMPLY WITH THE PROVISIONS FOR TRAFFIC CONTROL AS SET FORTH IN THESE PLANS AND PROVISIONS OF THE OMUTCD AND THE FAILURE RESULTS IN A CONDITION AT THE WORK SITE WHICH IS UNSAFE FOR TRAFFIC, THE ENGINEER SHALL SUSPEND ALL WORK UNTIL THE CONTRACTOR COMPLIES WITH THE NECESSARY REQUIREMENTS.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER EACH ITEM 614, MAINTAINING TRAFFIC, MISC.: MAINTAINING TRAFFIC PER TRAFFIC SIGNAL MODIFICATION/UPGRADE LOCATION.

ITEM 614, MAINTAINING TRAFFIC (LANES OPEN DURING HOLIDAYS AND EVENTS)

NO WORK SHALL BE PERFORMED AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS AND EVENTS:

CHRISTMAS, FOURTH OF JULY, NEW YEARS, LABOR DAY, MEMORIAL DAY, AND THANKSGIVING

THE PERIOD OF TIME THAT THE LANES ARE TO BE OPEN DEPENDS ON THE DAY OF THE WEEK ON WHICH THE HOLIDAY OR EVENT FALLS. THE FOLLOWING SCHEDULE SHALL BE USED TO DETERMINE THE PERIOD:

DAY OF THE WEEK	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00N FRIDAY - 6:00AM MONDAY
MONDAY	12:00N FRIDAY - 6:00AM TUESDAY
TUESDAY	12:00N MONDAY - 6:00AM WEDNESDAY
WEDNESDAY	12:00N TUESDAY - 6:00AM THURSDAY
THURSDAY	12:00N WEDNESDAY - 6:00AM MONDAY
FRIDAY	12:00N THURSDAY - 6:00AM MONDAY
SATURDAY	12:00N FRIDAY - 6:00AM MONDAY

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES IN ACCORDANCE WITH CMS 108.07.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES IN ACCORDANCE WITH CMS 108.07.

ITEM 614, MAINTENANCE OF TRAFFIC SIGNAL/FLASHER INSTALLATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL/FLASHER INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

1. EXISTING SIGNAL/FLASHER INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR ACTUALLY ADJUSTS, MODIFIES OR OTHERWISE DISTURBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST DISTURB THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK ACCEPTED.
2. NEW OR REUSED SIGNAL/FLASHER INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE MAINTAINING AGENCY AND THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. 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 THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY 24 HOURS A DAY, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MIS-ALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK TO SERVICE WITHIN TWO HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE, ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE. THE CONTRACTOR SHALL ARRANGE FOR FULL TRAFFIC CONTROL UNTIL THE SIGNAL IS BACK IN OPERATION.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED 8-HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT, THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

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

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION OF POLES AND REVISIONS TO THE SIGNAL SYSTEM.

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 4 HOURS AND SHALL NOT INCLUDE THE HOURS OF 6 AM TO 9 AM AND 3 PM TO 6PM. ANY SIGNALIZED INTERSECTION, WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED BY A LAW ENFORCEMENT OFFICER, HIRED BY THE CONTRACTOR.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.25.

THE CONTRACTOR SHALL MAINTAIN COMPLETE RECORDS OF MALFUNCTIONS INCLUDING:

1. TIME OF NOTIFICATION OF MALFUNCTION;
2. TIME OF WORK CREWS ARRIVAL TO CORRECT THE MALFUNCTION;
3. ACTIONS TAKEN TO CORRECT THE MALFUNCTION, INCLUDING A LIST OF PARTS REPAIRED OR REPLACED;
4. A DIAGNOSIS OF REASON FOR THE MALFUNCTION AND PROBABILITY OF REOCCURRENCE;
5. TIME OF COMPLETION OF THE REPAIR AND SYSTEM RESTORED TO FULL SERVICE.

A COPY OF THESE RECORDS SHALL BE PROVIDED TO THE ENGINEER WITHIN THREE (3) WORKING DAYS FOLLOWING COMPLETION OF EACH REPAIR.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC, MISC.: MAINTAINING TRAFFIC PER LOCATION.

ITEM 614, WORK ZONE PAVEMENT MARKINGS

TEMPORARY PAVEMENT MARKING ITEM 614 MAY BE REQUIRED DUE TO WEATHER CONDITIONS AND SHALL BE REPLACED WITH PERMANENT PAVEMENT MARKING ITEM 642 OR 644 AS SOON AS WEATHER CONDITIONS PERMIT.

THE FOLLOWING ESTIMATED QUANTITIES OF WORK ZONE PAVEMENT MARKINGS HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR THIS PURPOSE:

- ITEM 614, WORK ZONE CENTERLINE, CLASS I, 642 PAINT - 0.25 MILE
- ITEM 614, WORK ZONE STOP LINE, CLASS I, 642 PAINT - 200 FT
- ITEM 614, WORK ZONE CROSS WALK LINE, CLASS I, 642 PAINT - 100 FT

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MAINTENANCE OF TRAFFIC GENERAL NOTES

D08 - TSG - FY 2015

ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS

USE OF LAW ENFORCEMENT OFFICERS (LEOS) BY CONTRACTORS OTHER THAN THE USES SPECIFIED BELOW WILL NOT BE PERMITTED AT PROJECT COST. LEOS SHOULD NOT BE USED WHERE THE OMTCD INTENDS THAT FLAGGERS BE USED.

IN ADDITION TO THE REQUIREMENTS OF CMS 614 AND THE OMTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHALL BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS:

1. DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.
2. DURING A TRAFFIC SIGNAL INSTALLATION WHEN IMPACTING THE NORMAL FUNCTION OF THE SIGNAL OR THE FLOW OF TRAFFIC OR WHEN TRAFFIC NEEDS TO BE DIRECTED THROUGH AN ENERGIZED TRAFFIC SIGNAL CONTRARY TO THE SIGNAL DISPLAY (E.G., DIRECTING MOTORISTS THROUGH A RED LIGHT).

IN ADDITION TO THE REQUIREMENT OF CMS 614 AND THE OMTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHOULD BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS:

1. FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED FOR LONG-TERM LANE CLOSURES/SHIFTS (FOR THE FIRST AND LAST DAY OF MAJOR CHANGES IN TRAFFIC CONTROL SETUP). IN GENERAL, LEOS SHOULD BE POSITIONED AT THE POINT OF LANE RESTRICTION OR ROAD CLOSURE AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH INTERSECTIONS IN WORK ZONES.
2. WHEN CONSTRUCTION VEHICLES ARE ENTERING/EXITING THE ZONE DIRECTLY FROM/INTO AN OPEN LANE OF TRAFFIC. IF A LANE HAS BEEN CLOSED TO PROVIDE AN ACCELERATION/ DECELERATION LANE FOR THE VEHICLE, THE LEO WILL NOT BE REQUIRED.

LEOS SHOULD NOT FORGO THEIR TRAFFIC CONTROL RESPONSIBILITIES TO APPREHEND MOTORISTS FOR ROUTINE TRAFFIC VIOLATIONS. HOWEVER, IF A MOTORIST'S ACTIONS ARE CONSIDERED TO BE RECKLESS, THEN PURSUIT OF THE MOTORIST IS APPROPRIATE.

THE LEOS WORK AT THE DIRECTION OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE SERVICES OF THE LEOS WITH THE APPROPRIATE AGENCIES AND COMMUNICATING THE INTENTIONS OF THE PLANS WITH RESPECT TO DUTIES OF THE LEOS. THE ENGINEER SHALL HAVE FINAL CONTROL OVER THE LEOS' DUTIES AND PLACEMENT, AND WILL RESOLVE ANY ISSUES THAT MAY ARISE BETWEEN THE TWO PARTIES.

THE LEO SHALL REPORT IN TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT, IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS DURING HIS/HER SHIFT. THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT. ONCE THE LEO HAS COMPLETED THE DUTIES DESCRIBED ABOVE AND STILL HAS TIME REMAINING ON HIS/HER SHIFT, THE LEO MAY BE ASKED TO PATROL THROUGH THE WORK ZONE (WITH FLASHING LIGHTS OFF) OR BE PLACED AT A LOCATION TO DETER MOTORISTS FROM SPEEDING. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATION DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH :

CLINTON CO. DISTRICT 8 HEADQUARTERS PATROL POST, WILMINGTON, OH, 513-382-2551
BUTLER CO. & WESTERN HAMILTON CO. PATROL POST, HAMILTON, OH, 513-863-4606
GREENE CO. PARTOL POST, 937-372-7671
WARREN CO. PATROL POST, 513-932-4444
HAMILTON CO. SHERIFF, 513-825-1500
CINCINNATI POLICE DEPT, 513-352-3920

LEOS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614, LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 100 HOURS

THE HOURS PAID SHALL INCLUDE ANY MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF AN LEO ARE INCLUDED WITH THE BID UNIT PRICE FOR ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE.

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MAINTENANCE OF TRAFFIC GENERAL NOTES

D08 - TSG - FY 2015

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COUNTY	LOCATION	632	632	632	632	632	632	632	632	632	633		633	633				INFO ONLY
		RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR RED, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW ARROW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN ARROW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, WALKING PERSON SYMBOL, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, UPRAISED HAND SYMBOL, AS PER PLAN		REMOVAL OF MISCELLANEOUS TRAFFIC SIGNAL ITEM	UNINTERRUPTIBLE POWER SUPPLY (UPS), BATTERY REPLACEMENT		STOP BAR DETECTION RADAR UNIT	ADVANCE/DILEMMA ZONE RADAR UNIT				
		EACH	EACH	EACH	EACH	EACH	EACH	EACH		EACH	EACH		EACH	EACH				
BUTLER	SR 4 @ CREEKSIDE/MILLIKIN													2				SAF
BUTLER	SR 4 @ SR 747													2				SAF
BUTLER	SR 4 @ KYLE'S STATION													2				SAF
BUTLER	SR 4 @ HORSESHOE BEND/LIBERTY SQUARE	10	8	8	2	2								2				NHS/SAF
BUTLER	SR 4 BYPASS @ SR 4 NORTH JCT	10	8	8	6	6								2				NHS/SAF
BUTLER	SR 4 BYPASS @ HAMILTON-MASON								1				8	6				NHS
BUTLER	SR 4 BYPASS @ PRINCETON	16	12	12	4	4												NHS
BUTLER	SR 4 BYPASS @ SR 129 EB	6	6	6	1	1												NHS
BUTLER	SR 4 BYPASS @ SR 129 WB	6	6	6	1	1												NHS
BUTLER	US 27 @ SR 128	6	6	6														NHS
BUTLER	US 27 @ SR 130	7	11	7														NHS
BUTLER	US 27 @ STILLWELL-BECKETT	8	8	8							1							NHS
BUTLER	SR 63 @ YANKEE	8	8	8														S>2
BUTLER	SR 73 @ SR 177	8	8	8										2				STR/SAF
BUTLER	SR 73 @ SR 503	4	4															STR
BUTLER	SR 73 @ JACKSONBURG	4	4															STR
BUTLER	SR 73 @ MAIN	8	8	8	2	2												S<2
BUTLER	SR 126 @ CHAPEL	4	4															STR
BUTLER	US 127 @ SOUTH	8	8	8				2	2									NHS
BUTLER	SR 129 EB @ SR 747	7	7	7	1	1												NHS
BUTLER	SR 129 WB @ SR 747	7	7	7	1	1												NHS
BUTLER	SR 129 @ BOYLE	10	10	10														S>2
BUTLER	SR 732 @ STILLWELL-BECKETT	4	4															STR
BUTLER	SR 747 @ DUFF	6	6	6	1	1												S>2
BUTLER	SR 747 @ MULHAUSER	8	6	6	2	2												S>2
BUTLER	SR 747 @ RIALTO	8	8	8														S>2
BUTLER	SR 747 @ PORT UNION	8	8	8	2	2												S>2
BUTLER	SR 747 @ TYLERSVILLE	8	8	8	4	4								2				S>2/SAF
BUTLER	SR 747 @ HAMILTON-MASON	8	8	8	2	2								2				S>2/SAF
BUTLER	SR 747 @ MILLIKIN	8	8	8	1	1												S>2
BUTLER	SR 747 @ BECKETT/HUTZELMAN	8	8	8	2	2			1			4	2					S>2
BUTLER	SR 747 @ PRINCETON												2					SAF
CLERMONT	US 50 @ SR 222													2				SAF
CLERMONT	US 52 @ SR 749/TEN MILE													2				SAF
CLERMONT	SR 125 @ WATERFORD PKWY									1		4	2					NHS
CLERMONT	SR 125 @ SR 222 NORTH JCT.												2					SAF
CLINTON	US 22 @ SR 72	4	4											2				STR/SAF
CLINTON	SR 72 @ SR 729	4	4															STR
CLINTON	SR 73 @ AIRPORT	6	6	6														NHS
CLINTON	I-71 SB @ US 68		6	6														IMS
CLINTON	I-71 NB @ SR 73	6	6	6	1	1												IMS
TOTALS CARRIED TO GENERAL SUMMARY		223	223	195	33	33	2	2		3	1		16	36				

TRAFFIC SIGNAL SUBSUMMARY

D08 - TSG - FY2015

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COUNTY	LOCATION	632	632	632	632	632	632	632	632	632	633		633	633				INFO ONLY
		RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR RED, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW ARROW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN ARROW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, WALKING PERSON SYMBOL, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, UPRAISED HAND SYMBOL, AS PER PLAN		REMOVAL OF MISCELLANEOUS TRAFFIC SIGNAL ITEM	UNINTERRUPTIBLE POWER SUPPLY (UPS), BATTERY REPLACEMENT		STOP BAR DETECTION RADAR UNIT	ADVANCE/DILEMMA ZONE RADAR UNIT				
		EACH	EACH	EACH	EACH	EACH	EACH	EACH		EACH	EACH		EACH	EACH				
GREENE	US 35 @ ORCHARD	8	8	8							1							NHS
GREENE	US 35 @ VALLEY										1							NHS
GREENE	US 42 @ PAINTERSVILLE	4	4															STR
GREENE	US 42 @ BRUSH ROW	2	4															STR
GREENE	US 68 @ HYDE	4	4															STR
GREENE	SR 235 @ BYRON	4	4															STR
GREENE	SR 235 @ DAYTON YELLOW SPRINGS													2				SAF
GREENE	SR 235 @ GATE 26C/MEDWAY	8	8	8	1	1												NHS
GREENE	SR 444 @ GATE 12A/CHIDLAW	8	8	8	2	2												NHS/SAF
GREENE	I-675 @ SKYLINE (COL. GLENN ON RAMP)	6	6	6	1													IMS
GREENE	I-675 @ SKYLINE (COL. GLENN EXIT RAMP)	6	6	6	1													IMS
GREENE	I-675 NB @ DAYTON-YELLOW SPRINGS	6	6	6														IMS
GREENE	I-675 SB @ DAYTON-YELLOW SPRINGS	8	8	8	2	2												IMS
GREENE	SR 725 @ WILMINGTON	8	8	4	4	4	4	4										NHS
HAMILTON	US 22 @ FINDLAY	8	8	8				2	2									NHS
HAMILTON	US 22 @ MIAMI	2	4															NHS
HAMILTON	US 22 @ KENWOOD									1			4					NHS
HAMILTON	US 22 @ GARDEN									1			2					NHS
HAMILTON	US 22 @ ST. VINCENT									1			2					NHS
HAMILTON	US 22 @ VINTAGE CLUB									1			2					NHS
HAMILTON	US 27 @ STONE CREEK									1			4					NHS
HAMILTON	US 27 @ REDSKIN									1			3					NHS
HAMILTON	US 27 @ NORTHGATE	11	11	11														NHS
HAMILTON	US 27 @ WB CROSS COUNTY/SR 126	7	7	7	1	1												NHS
HAMILTON	US 27 @ SOVEREIGN	8	8	8														NHS
HAMILTON	US 27 @ KISSELL	9	9	9	3	3												NHS
HAMILTON	US 27 @ POOLE	6	6	6	1	1												NHS
HAMILTON	US 27 @ COMPTON	8	8	8	2	2												NHS
HAMILTON	US 27 @ STRUBLE	9	11	9	2	2												NHS
HAMILTON	SR 32 @ CLOUGH PIKE									1			3	2				S>2
HAMILTON	SR 125 @ NEW ENGLAND CLUB									1			4					NHS
HAMILTON	SR 126 EB/CROSS COUNTY @ RIDGE	6	6	6	1	1												NHS
HAMILTON	SR 126 @ LOVELAND MADEIRA									1			4	2				S>2
HAMILTON	US 127 @ SPRINGDALE	8	8	8														NHS
HAMILTON	US 127 @ STRUBLE	8	8	8														NHS
HAMILTON	US 127 @ ROOSEVELT						4	4										NHS
HAMILTON	SR 128 @ KROGER	8	8	8														S>2
HAMILTON	SR 128 @ NEW HAVEN													2				SAF
HAMILTON	SR 264 @ RACE									1			4	2				NHS
HAMILTON	I-71 NB EXIT @ MASON-MONTGOMERY	9	3	3	6	6												IMS
HAMILTON	I-71 SB ENTRANCE @ FIELDS ERTEL	8	6	6	3	3												IMS
HAMILTON	I-71 NB ENTRANCE @ FIELDS ERTEL	6	6	6	2	2												IMS
TOTALS CARRIED TO GENERAL SUMMARY		193	191	165	32	30	10	10		10	2		32	12				

TRAFFIC SIGNAL SUBSUMMARY

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COUNTY	LOCATION	632	632	632	632	632	632	632		632	633			633	633				INFO ONLY
		RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR RED, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW ARROW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN ARROW, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, WALKING PERSON SYMBOL, AS PER PLAN	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, UPRAISED HAND SYMBOL, AS PER PLAN		REMOVAL OF MISCELLANEOUS TRAFFIC SIGNAL ITEM	UNINTERRUPTIBLE POWER SUPPLY (UPS), BATTERY REPLACEMENT		STOP BAR DETECTION RADAR UNIT	ADVANCE/DILEMMA ZONE RADAR UNIT					
		EACH	EACH	EACH	EACH	EACH	EACH	EACH		EACH	EACH			EACH	EACH				
HAMILTON	I-74 WB @ NEW HAVEN	6	6	6						1				2					IMS
HAMILTON	I-74 EB @ NEW HAVEN	6	6	6	1	1				1				2					IMS
HAMILTON	I-74 EB EXIT @ RYBOLT	9	9	9															IMS
HAMILTON	I-74 EB ENTRANCE @ HARRISON/RYBOLT	8	8	8	3														IMS
HAMILTON	I-74 EB @ NORTH BEND	6	6	6						2	2								IMS
HAMILTON	I-74 WB @ NORTH BEND	6	6	6						2	2								IMS
HAMILTON	I-275 EB @ MOSTELLER													4					IMS
HAMILTON	I-275 WB @ MOSTELLER													4					IMS
PREBLE	US 40 @ PETRO	8	8	8	4	4													SK2
PREBLE	US 40 @ SR 320	4	4																SK2
PREBLE	US 40 @ SR 726	4	4																STR
PREBLE	US 40 @ US 127	8	8	8															STR
PREBLE	SR 177 @ SR 725	4	4																STR
WARREN	US 22 @ MORROW COZZADALE														2				SAF
WARREN	US 42 @ OLD 122	4	4																NHS
WARREN	SR 48 @ RIDGEVIEW	8	8	8						4	4								NHS
WARREN	SR 48 @ COZZADALE MURDOCK	4	4																STR
WARREN	SR 48 @ SR 122	8	8	8											2				NHS/SAF
WARREN	SR 48 @ STEPHENS																		SAF
WARREN	SR 63 @ SR 741														2				SAF
WARREN	SR 741 @ GREENTREE	8	8	8															STR
WARREN	I-75 SB @ SR 123	6	6	6	1	1													IMS
WARREN	I-75 SB @ SR 73	6	6	6	1	1													IMS
WARREN	I-75 @ SR 63									1				4					IMS
TOTALS CARRIED TO GENERAL SUMMARY		113	113	93	10	7	8	8		5				16	8				

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TRAFFIC SIGNAL SUBSUMMARY	
D08 - TSG - FY 2015	
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SHEET NUMBER							PARTICIPATION						ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	CALCULATED	TCS	CHECKED	MAG
	10	11	12				01/NHS /OT	02/IMS /OT	03/STR /OT	04/S>2 /OT	05/S<2 /OT	06/SAF /OT										
ROADWAY																						
600									300	300			608	10001	600	SQ FT	4" CONCRETE WALK, AS PER PLAN	2				
600									300	300			608	98000	600	SQ FT	WALKWAY, MISC.: CURB RAMP INSTALLATION	2				
DRAINAGE																						
100									50	50			611	00400	100	FT	4" CONDUIT, TYPE E	2				
TRAFFIC CONTROL																						
200									100	100			630	03100	200	FT	GROUND MOUNTED SUPPORT, NO. 3 POST					
200									100	100			630	80100	200	SQ FT	SIGN, FLAT SHEET					
20									10	10			630	84900	20	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL					
20									10	10			630	86002	20	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL					
0.25									0.125	0.125			642	00290	0.25	MILE	CENTER LINE					
250									125	125			644	00400	250	FT	CHANNELIZING LINE, 8"					
1500									750	750			644	00500	1500	FT	STOP LINE					
600									300	300			644	00600	600	FT	CROSSWALK LINE					
6									3	3			644	01300	6	EACH	LANE ARROW					
6									3	3			644	01410	6	EACH	WORD ON PAVEMENT, 96"					
500									250	250			644	30000	500	FT	REMOVAL OF PAVEMENT MARKING					
6									3	3			644	30020	6	EACH	REMOVAL OF PAVEMENT MARKING					
TRAFFIC SIGNALS																						
10									5	5			625	17901	10	EACH	BRACKET ARM, AS PER PLAN	4				
500									250	250			625	25400	500	FT	CONDUIT, 2", 725.04					
3000									1500	1500			625	25402	3000	FT	CONDUIT, 2", 725.05					
200									100	100			625	25600	200	FT	CONDUIT, 4", 725.04					
500									250	250			625	25602	500	FT	CONDUIT, 4", 725.05					
500									250	250			625	25902	500	FT	CONDUIT, JACKED OR DRILLED, 725.04, 4"					
6000									3000	3000			625	29002	6000	FT	TRENCH, 24" DEEP					
50									25	25			625	29500	50	FT	TRENCH IN PAVED AREA, TYPE A					
50									25	25			625	29600	50	FT	TRENCH IN PAVED AREA, TYPE B					
25									12	13			625	30700	25	EACH	PULL BOX, 725.08, 18"					
5									2	3			625	30706	5	EACH	PULL BOX, 725.08, 24"					
60									30	30			625	32000	60	EACH	GROUND ROD					
30									15	15			630	79000	30	EACH	SIGN HANGER ASSEMBLY, SPAN WIRE					
3									1	2			631	92001	3	EACH	SIGN FLASHER ASSEMBLY, AS PER PLAN	3				
50									25	25			632	04911	50	EACH	VEHICULAR SIGNAL HEAD, (LED) BLACK, 3-SECTION, 12" LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN	3				
10									5	5			632	04917	10	EACH	VEHICULAR SIGNAL HEAD, (LED) BLACK, 3-SECTION, 12" LENS, 2-WAY, WITH BACKPLATE, AS PER PLAN	3				
12									6	6			632	04921	12	EACH	VEHICULAR SIGNAL HEAD, (LED) BLACK, 5-SECTION, 12" LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN	3				
5									2	3			632	04925	5	EACH	VEHICULAR SIGNAL HEAD, (LED) BLACK, 4-SECTION, 12" LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN	3				
	223	193	113					239	108	74	88	20		632	10001	529	EACH	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR RED, AS PER PLAN	7			
	223	191	113					239	106	76	86	20		632	10011	527	EACH	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW, AS PER PLAN	7			
	195	165	93					221	106	24	86	16		632	10021	453	EACH	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN, AS PER PLAN	7			
	33	32	10					33	22		14	6		632	10031	75	EACH	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR YELLOW ARROW, AS PER PLAN	7			
	33	30	7					33	17		14	6		632	10041	70	EACH	RELAMP EXISTING SIGNAL SECTION WITH LED LAMP UNIT, CIRCULAR GREEN ARROW, AS PER PLAN	7			
6									3	3			632	90100	6	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	2				

GENERAL SUMMARY

D08-TSG-FY2015

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Main data table with columns: SHEET NUMBER (8, 10, 11, 12), PARTICIPATION (01/NHS/OT, 02/IMS/OT, 03/STR/OT, 04/S>2/OT, 05/S<2/OT, 06/SAF/OT), ITEM, ITEM EXT., GRAND TOTAL, UNIT, DESCRIPTION, SEE SHEET NO.

GENERAL SUMMARY table with columns: CALCULATED TCS, CHECKED, MAG, and a circled number 14 at the bottom.

GENERAL SUMMARY

D08 - TSG - FY 2015

14