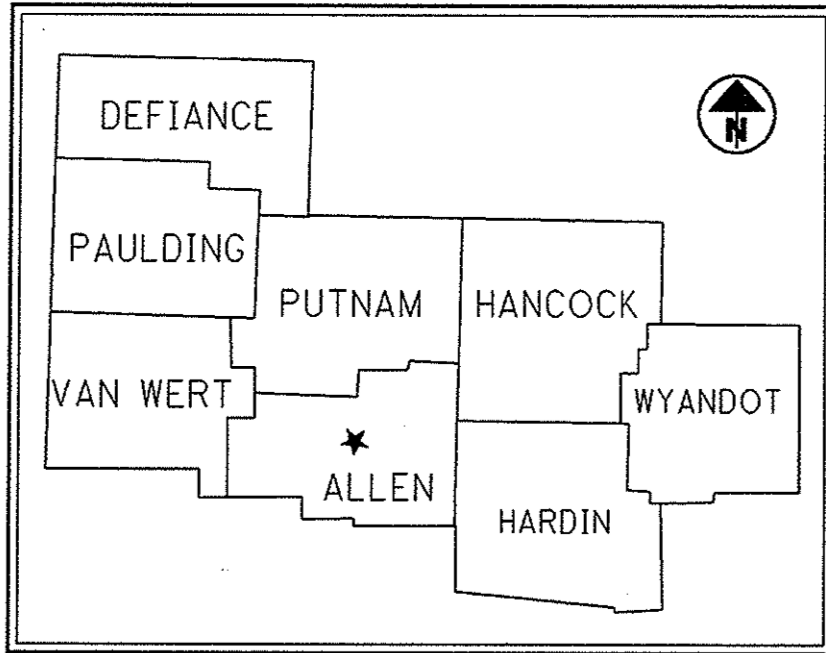


STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
**D01-SIGNALS-FY14**  
DISTRICT NO. ONE, IN THE COUNTIES  
OF ALLEN, HANCOCK, WYANDOT  
INTERSECTION TRAFFIC  
SIGNAL IMPROVEMENTS

PROJECT DESCRIPTION

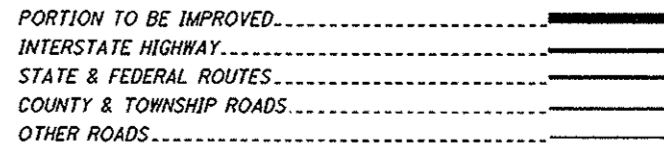
UPGRADE TRAFFIC SIGNALS AT 3 LOCATIONS:

1. ALL-SR65/BLUELICK RD.-TOTAL RECONSTRUCTION. PLACE NEW PULL BOXES, CONDUIT, WIRE AND DILEMMA LOOP EXTENSIONS ON THE WEST AND EAST APPROACHES. NEW CONTROL BOX, POLES, MAST ARMS AND SIGNAL HEADS. VIDEO DETECTION OR SINGLE LOOPS ON BLUELICK RD. APPROACHES.
2. WYA-US23/CR330-TOTAL RECONSTRUCTION. PLACE NEW PULL BOXES, CONDUIT, WIRE AND DILEMMA LOOP EXTENSIONS ON THE WEST AND EAST APPROACHES. NEW CONTROL BOX, POLES, MAST ARMS AND SIGNAL HEADS. EITHER VIDEO DETECTION OR LOOP DETECTORS WILL BE UTILIZED.
3. HAN-US224/CR140-PLACE NEW PULL BOXES, LEAD-IN CABLE AND DILEMMA LOOP EXTENSIONS.



LOCATION MAP

Latitude N 40°-42'-30" Longitude W 84°-05'-00"



DESIGN DESIGNATION

CURRENT ADT (20 ) .....  
DESIGN YEAR ADT (20 ) .....  
DESIGN HOURLY VOLUME (20 ) .....  
DIRECTIONAL DISTRIBUTION .....  
TRUCKS (24 HOUR B&C) .....  
DESIGN SPEED .....  
LEGAL SPEED .....  
DESIGN FUNCTIONAL CLASSIFICATION:

NHS PROJECT .....

DESIGN EXCEPTIONS

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 PROTECTIVE  
SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:  
District One  
Ohio Department  
of Transportation

INDEX OF SHEETS:

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PROJECT EARTH DISTURBED AREA: N/A (Maintenance Project)  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A (Maintenance Project)  
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (Maintenance Project)

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

STANDARD CONSTRUCTION DRAWINGS

STANDARD CONSTRUCTION DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	
HL-30.11	1/18/13	800	10-18-13
HL-30.21	10/21/11		
HL-30.22	1/18/13	816	1-20-12
HL-50.11	1/19/07		
MT-97.10	7/19/13	832	5-05-09
MT-105.10	7/19/13	907	1-20-12
TC-12.30	1/21/11		
TC-21.20	1/18/13		
TC-81.21	7/19/13		
TC-82.10	1/18/13		
TC-83.10	1/18/13		
TC-83.20	4/20/12		
TC-85.10	10/16/09		

ENGINEERS SEAL:



SIGNED: [Signature]  
DATE: 8-15-13

SPECIAL PROVISIONS

APPROVED: [Signature]  
DATE: 8/15/13 DISTRICT DEPUTY DIRECTOR

APPROVED: [Signature]  
DATE: 8-27-13 DIRECTOR, DEPARTMENT OF TRANSPORTATION

D01 - VA-SIGNALS-FY2014  
130588 PID - 90775  
Dist 1 11/21/2013

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

I:\pd\90775-signals\sheet\90775

FEDERAL PROJECT NO.  
E111(446)

PID NO.  
90775

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT

D01-SIGNALS-FY14

1/18

## COORDINATION OF ACTIVITIES

ALL WORK SHALL BE COORDINATED WITH THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) AND AMERICAN ELECTRIC POWER FOR ALL TRAFFIC CONTROL PRODUCTS AND ANY OTHER UTILITIES IMPACTED ON THE PROJECT. NOTIFICATION SHALL BE GIVEN TO ODOT AT LEAST 24 HOURS PRIOR TO ANY AND ALL SCHEDULED WORK AND TESTING ON THIS PROJECT REQUIRING THEIR INSPECTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE UNDERGROUND CONSTRUCTION ACTIVITIES ON A CONTINUING BASIS WITH EACH OF THE UTILITY AGENCIES THAT HAVE FACILITIES IN THE IMMEDIATE VICINITY OF THE PROJECT AREA. ODOT SHALL BE CONTACTED REGARDING COORDINATION OF EXISTING SIGNAL REMOVALS AND PROPOSED SIGNAL INSTALLATIONS.

## MISCELLANEOUS CONSTRUCTION NOTES

- 1) ALL PULL BOXES AND DRAINAGE CONDUIT SHALL DRAIN TOWARD THE ROADWAY DITCH, AS APPROPRIATE OR AS INDICATED IN THE PLANS.
- 2) CONTRACTOR SHALL HAVE AN IMSA LEVEL 2 CERTIFIED TRAFFIC SIGNAL TECHNICIAN ON THE JOB SITE DURING PERFORMANCE OF ANY SIGNAL RELATED CONSTRUCTION OPERATIONS.

## ALTERNATE BIDS

THE CONTRACTOR WILL IDENTIFY WHAT MANUFACTURE THE GENERIC BID REPRESENTS BEFORE THE ALTERNATE BID CAN BE ADWARDED.

## INSPECTION

THE SIGNALS SHALL BE INSPECTED JUST PRIOR TO THE START OF THE TEN (10) DAY PERFORMANCE TEST SPECIFIED IN CMS 632.28(G). ALL OTHER CONSTRUCTION PAY ITEMS SHALL BE COMPLETED INCLUDING THE ELECTRICAL TESTS SPECIFIED IN 632.28(A-E) AND FUNCTIONAL TEST SPECIFIED IN 632.28(F).

THE PROJECT ENGINEER SHALL NOTIFY THE APPROPRIATE ROADWAY SERVICES PERSONNEL AT ODOT DISTRICT ONE (1) OF THE COMPLETION OF SIGNAL CONSTRUCTION PRIOR TO THE TEN DAY (10) PERFORMANCE TEST. TWO (2) WEEKS NOTICE SHOULD BE GIVEN. THE DISTRICT ONE (1) CONSTRUCTION DEPARTMENT SHALL FOLLOW ALL PROCEDURES SET FORTH IN THE STANDARD OPERATING PROCEDURE OPS-211 SECTION D, PARAGRAPH 3 AND THE DIVISION OF CONSTRUCTION STANDARD OPERATING PROCEDURE PH-C-104. ALL DEFICIENCIES FOUND DURING THE FINAL INSPECTION SHALL BE CORRECTED BEFORE THE COMPLETION OF THE TEN DAY (10) BURN TEST. ANY MAJOR DEFICIENCIES WHICH MAY EFFECT THE OPERATION OF THE SYSTEM SHALL CONSTITUTE A RE-START OF THE TEN (10) DAY BURN TEST AFTER CORRECTIONS ARE COMPLETED. THE TEN (10) DAY BURN TEST MUST BE SUCCESSFULLY COMPLETED BEFORE THE SYSTEM WILL BE ACCEPTED.

## GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 180 DAYS FOLLOWING 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 THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS, INTERCONNECT ITEMS (RADIO COMMUNICATION), AND VIDEO DETECTORS AND THEIR SATISFACTORY OPERATION IN BOTH SUMMER AND WINTER MONTHS.

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

THE COST OF GUARANTEEING THE TRAFFIC CONTROL EQUIPMENT WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

## ITEM 632 SIGNAL SUPPORT LOCATIONS

PRIOR TO ORDERING THE SIGNAL SUPPORTS THE CONTRACTOR SHALL CONTACT OUPS TO HAVE ALL THE UTILITIES LOCATED IN THE FIELD THEN MEET WITH THE PROJECT ENGINEER TO LOCATE THE PROPOSED SUPPORT LOCATIONS TO INSURE THERE ARE NO CONFLICTS WITH UTILITIES. IF THERE ARE ISSUES THE PROJECT ENGINEER SHALL CONTACT THE DISTRICT ONE PLANNING AND ENGINEERING DEPARTMENT TO RELOCATE THE SUPPORT POLES.

## POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM THE AMERICAN ELECTRIC POWER CO. AT THE LOCATION INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

## ITEM 632 - SIGNAL SUPPORT, TYPES TC-12.30 & TC-81.21, (ALL DESIGNS)

IN ADDITION TO ODOT C&MS 632.15 AND 732.11, FURNISH AND INSTALL SIGNAL POLES AS SPECIFIED ON THE TRAFFIC SIGNAL PLAN AND DETAIL SHEETS.

THE SIGNAL POLE DESIGNER SHALL PROVIDE DRAWINGS OF A STEEL TAPERED TUBE SIGNAL POLE WITH STRUCTURAL ASPECTS OF THE DESIGN AND MATERIALS IN COMPLIANCE WITH THE 2001 AASHTO STANDARD SPECIFICATIONS, WITH 2006 INTERIM REVISIONS, FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. THE SIGNAL POLE SHALL BE ASTM A595 GRADE A WITH A MINIMUM YIELD STRENGTH OF 55 KSI. THE FOLLOWING DESIGN PARAMETERS SHALL BE USED:

1. BASIC WIND SPEED = 90 MPH
2. DESIGN LIFE = 25 YEARS
3. FATIGUE CATEGORY = III
4. GALLOPING: NO
5. TRUCK INDUCED GUST: NO

SUBMIT, TO THE ENGINEER PRIOR TO INCORPORATION: TWO COPIES OF THE SIGNAL POLE DRAWINGS AND SHOP DRAWINGS, WHICH IDENTIFY AND DESCRIBE EACH MANUFACTURED SIGNAL POLE AND SIGNAL POLE ITEM WHICH IS BEING INCORPORATED INTO THE CONSTRUCTION. THE SIGNAL POLE DRAWINGS AND SHOP DRAWINGS SHALL EACH BE REVIEWED, SEALED, STAMPED AND DATED BY TWO OHIO REGISTERED PROFESSIONAL ENGINEERS. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH OF ITEM 632, SIGNAL SUPPORT, TYPE TC-81.21, DESIGN (ALL), AS PER PLAN.

## ITEM 632 - SIGNAL SUPPORT, TYPE TC-81.21, DESIGNS 13, AS PER PLAN

ALL NEW POLES AND ARMS SHALL BE FACTORY PAINTED GLOSSY BLACK. ALL ATTACHMENTS ON NEW POLES SUCH AS MOUNTING BRACKETS, BANDING, WEATHERHEADS, AND RISERS ON POLES SHALL BE PAINTED GLOSSY BLACK TO MATCH POLES AND ARMS.

THIS SUPPORT SHALL CONSIST OF A TC-81.21 DESIGN MAST ARM AS SPECIFIED IN THE PLANS. ALL SIGNAL SUPPORT ITEMS REQUIRED BY CMS ITEM 632 SHALL BE INCLUDED AS PART OF THIS SUPPORT. SUPPORT POLES SHALL BE DESIGNED IN ACCORDANCE WITH ODOT STANDARD DRAWING TC-81.21. DESIGN CALCULATIONS AND SHOP DRAWINGS OF THE PROPOSED MAST ARMS SHALL BE STAMPED BY TWO ENGINEERS AND SUBMITTED TO ODOT FOR REVIEW PRIOR TO DESIGN ACCEPTANCE AND ORDERING.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR ITEM 632 - SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY FOR EACH SUPPORT FURNISHED, IN PLACE, COMPLETE & ACCEPTED.

## STRAIN POLE FOUNDATION ELEVATIONS

ELEVATIONS SHOWN IN THE PLANS FOR STRAIN POLE FOUNDATIONS ARE FOR COMPUTATIONAL PURPOSES ONLY. THE ACTUAL ELEVATION OF THE FOUNDATION SHALL BE IN ACCORDANCE WITH SCD TC-21.20 PROVIDED THE EXISTING SLOPE IS LESS THAN 6:1.

AT LOCATIONS WHERE THE EXISTING SLOPE IS 6:1 OR GREATER, THE BURIED DEPTH OF FOUNDATION, AS SHOWN IN SCD TC-21.20 SHALL APPLY TO THE LOW SIDE OF THE SLOPE. THE TOP OF THE FOUNDATION SHALL BE SET 2 INCHES ABOVE THE EXISTING SURFACE ON THE HIGH SIDE OF THE SLOPE. THE ADDITIONAL DEPTH OF FOUNDATION NECESSARY TO MEET THESE REQUIREMENTS SHALL BE ADDED TO THE FORMED TOP.

## ITEM 632 - SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 5 POLE, WITH MAST ARMS TC-81.21 DESIGN 12 AND DESIGN 3, AS PER PLAN

ALL NEW POLES AND ARMS SHALL BE FACTORY PAINTED GLOSSY BLACK. ALL ATTACHMENTS ON NEW POLES SUCH AS DAMPERS, MOUNTING BRACKETS, BANDING, WEATHERHEADS AND RISERS ON POLES SHALL BE PAINTED GLOSSY BLACK TO MATCH POLES AND ARMS. THIS SUPPORT SHALL CONSIST OF A TC-12.30 DESIGN 5 POLE WITH MAST ARMS TC-81.21 DESIGN 12 AND DESIGN 3, AS PER PLAN. ALL SIGNAL SUPPORT ITEMS REQUIRED BY CMS ITEM 632 SHALL BE INCLUDED AS PART OF THIS SUPPORT.

SUPPORT POLES WITH ARM SHALL BE DESIGNED IN ACCORDANCE WITH ODOT STANDARD DRAWINGS TC-12.30 AND TC-81.21. DESIGN CALCULATIONS AND SHOP DRAWINGS OF THE PROPOSED MAST ARMS SHALL BE STAMPED BY TWO ENGINEERS AND SUBMITTED TO ODOT FOR REVIEW AND PRIOR TO DESIGN ACCEPTANCE AND ORDERING.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR ITEM 632 - SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 5 POLE, WITH MAST ARMS TC-81.21 DESIGN 12 AND DESIGN 3, AS PER PLAN AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY FOR EACH SUPPORT FURNISHED, IN PLACE, COMPLETE & ACCEPTED.

## ITEM 632 - SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 8 POLE, WITH MAST ARMS TC-81.21 DESIGN 13 AND DESIGN 11, AS PER PLAN

ALL NEW POLES AND ARMS SHALL BE FACTORY PAINTED GLOSSY BLACK. ALL ATTACHMENTS ON NEW POLES SUCH AS DAMPERS, MOUNTING BRACKETS, BANDING, WEATHERHEADS AND RISERS ON POLES SHALL BE PAINTED GLOSSY BLACK TO MATCH POLES AND ARMS. THIS SUPPORT SHALL CONSIST OF A TC-12.30 DESIGN 8 POLE WITH MAST ARMS TC-81.21 DESIGN 13 AND DESIGN 11, AS PER PLAN. ALL SIGNAL SUPPORT ITEMS REQUIRED BY CMS ITEM 632 SHALL BE INCLUDED AS PART OF THIS SUPPORT.

SUPPORT POLES WITH ARM SHALL BE DESIGNED IN ACCORDANCE WITH ODOT STANDARD DRAWINGS TC-12.30 AND TC-81.21. DESIGN CALCULATIONS AND SHOP DRAWINGS OF THE PROPOSED MAST ARMS SHALL BE STAMPED BY TWO ENGINEERS AND SUBMITTED TO ODOT FOR REVIEW AND PRIOR TO DESIGN ACCEPTANCE AND ORDERING.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR ITEM 632 - SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 8 POLE, WITH MAST ARMS TC-81.21 DESIGN 13 AND DESIGN 11, AS PER PLAN AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY FOR EACH SUPPORT FURNISHED, IN PLACE, COMPLETE & ACCEPTED.

## CONTRACTOR'S USE OF ODOT RIGHT-OF-WAY

NO WORK SHALL OCCUR OUTSIDE EXISTING RIGHT OF WAY.

## TREE REMOVAL

NO TREES 8 INCHES IN DIAMETER OR GREATER SHALL BE CUT.

## UTILITIES

FOR A COMPLETE LIST OF UTILITIES SEE SHEET 7

## ITEM 632 - SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 9 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 3, AS PER PLAN

ALL NEW POLES AND ARMS SHALL BE FACTORY PAINTED GLOSSY BLACK. ALL ATTACHMENTS ON NEW POLES SUCH AS DAMPERS, MOUNTING BRACKETS, BANDING, WEATHERHEADS AND RISERS ON POLES SHALL BE PAINTED GLOSSY BLACK TO MATCH POLES AND ARMS. THIS SUPPORT SHALL CONSIST OF A TC-12.30 DESIGN 9 POLE WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 3, AS PER PLAN. ALL SIGNAL SUPPORT ITEMS REQUIRED BY CMS ITEM 632 SHALL BE INCLUDED AS PART OF THIS SUPPORT.

SUPPORT POLES WITH ARM SHALL BE DESIGNED IN ACCORDANCE WITH ODOT STANDARD DRAWINGS TC-12.30 AND TC-81.21. DESIGN CALCULATIONS AND SHOP DRAWINGS OF THE PROPOSED MAST ARMS SHALL BE STAMPED BY TWO ENGINEERS AND SUBMITTED TO ODOT FOR REVIEW AND PRIOR TO DESIGN ACCEPTANCE AND ORDERING.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR ITEM 632 - SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 9 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 3, AS PER PLAN AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY FOR EACH SUPPORT FURNISHED, IN PLACE, COMPLETE & ACCEPTED.

## ITEM 632 - VEHICULAR SIGNAL HEAD, (LED), BLACK, BY TYPE, WITH BACKPLATE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS 632 AND 732 FOR 3, 4, AND 5 SECTION SIGNAL HEADS, THE FOLLOWING REQUIREMENTS SHALL ALSO APPLY:

### LAMPS:

LED, LIGHT EMITTING DIODE, SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF CMS 732.04(C). ALL LAMP UNITS SHALL BE THE 12 INCH SIZE. LED SIGNAL LAMP UNITS SHALL BE PROVIDED FOR ALL SIGNAL LENS TYPES.

### SIGNAL SECTIONS:

- 1) SIGNAL HEADS & VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.
- 2) PIPE, SPACERS AND FITTINGS CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- 3) BLACK EXTERIOR COLOR SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
- 4) REFLECTIVE BACKPLATES PER CMS 732.22.

### MOUNTING HARDWARE:

- 1) ALL SIGNAL HEADS SHALL BE RIGIDLY MOUNTED TO THE MAST ARM WITH THE RED LENS CENTERED ON OR NEAR THE MAST ARM. THE BOTTOMS OF EACH SIGNAL HEAD SHALL BE LEVEL TO WITHIN 6 INCHES OF EACH OTHER WHILE MAINTAINING A CLEARANCE OF 16'-18' ABOVE THE PAVEMENT.
- 2) ALL UPPER SIGNAL SUPPORT HARDWARE AND PIPING UP TO AND INCLUDING THE WIRE INLET FITTING SHALL BE FERROUS METAL FOR SIGNAL DISPLAYS OF TWO OR MORE SECTIONS.
- 3) THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.

THE CONTRACTOR SHALL PROVIDE TO ODOT, IN WRITING, THE LED MANUFACTURER'S NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE FOR 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 OHIO DEPARTMENT OF TRANSPORTATION (ATTN: CURT SYBERT) AT 2000 N. WEST STREET, LIMA, OHIO 45801.

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

**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:

- I. 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. METAL PULL BOX LIDS SHALL BE BONDED BY ATTACHMENT OF THE EQUIPMENT GROUNDING CONDUCTOR TO THE FRAME DIAGONAL AS PROVIDED ON HL-30.11.
E. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.
F. 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.
G. 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.
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.

**GROUNDING AND BONDING (CONT'D)**

- 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.
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. A 3/4" 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. 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 EQUIP. GROUND EQUIP. 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) STRUCTURE GROUNDING: HL-50.21 SHOWS A 1/0 AWG STRANDED COPPER CABLE USED FOR STRUCTURE GROUNDING. ADDITIONALLY, THIS SAME CABLE SHALL BE INSULATED AND ANY CONNECTIONS AND BARE COPPER STRANDS EXPOSED TO CONCRETE SHALL BE COVERED WITH MASTIC TO PREVENT CONTACT WITH THE CONCRETE.
8) PAYMENT.
A. ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.
B. WORK ON BRIDGES MAY BE INCLUDED IN THE BID ITEM FOR "ITEM 625, STRUCTURE GROUNDING."
C. IN A 3-WIRE HIGHWAY LIGHTING SYSTEM, THE THIRD CONDUCTOR OF THE DUCT CABLE OR DISTRIBUTION CABLE WILL BE USED AS THE EQUIPMENT GROUNDING CONDUCTOR AND MAY AS SUCH BE PART OF THE CABLE BID ITEM.

**ITEM 633 - CONTROLLER UNIT. TYPE 2070L, WITH CABINET, TYPE 332, AS PER PLAN**

THE CONTROLLER UNIT SHALL BE EQUIPMENT MANUFACTURED IN CONFORMANCE TO THE CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) SPECIFICATIONS TITLES "TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATIONS (TEES)." THE CONTROLLER UNIT, MODEL 2070L, SHALL BE AN ECONOLITE MODEL 2070L, BUILD: 1.01.08.02B, SIEMENS MODEL 2070L, BUILD: 6.2.0.0.0.81, OR APPROVED EQUAL.

- 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 EACH CONTROLLER UNIT AT TIME OF DELIVERY TO THE PROJECT.

CONTROLLERS SHALL BE SHIPPED TO THE ODOT SIGNAL SHOP, 1606 WEST BROAD STREET, COLUMBUS, OHIO 43223, EITHER DIRECTLY OR VIA THE ODOT 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.

AFTER THE SOFTWARE IS INSTALLED AND TESTED BY ODOT, THE CONTRACTOR SHALL PICK UP THE CONTROLLER UNIT FROM THE ODOT SIGNAL SHOP. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROGRAM THE TYPE 2070L SIGNAL CONTROLLER AS PER THE PLANS.

CONTROLLERS PASSING THE PERFORMANCE TEST WILL BE LABELED BY THE ODOT SIGNAL SHOP WITH THE OS IMAGE NUMBER, CPU SERIAL NUMBER, SOFTWARE REVISION NUMBER, & 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 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 - CONTROLLER UNIT. TYPE 2070L- WITH CABINET TYPE 332. AS PER PLAN (EAGLE) - ALTERNATIVE BID**

THE CONTROLLER SHALL BE A MODEL AS MANUFACTURED BY EAGLE TRAFFIC CONTROL SYSTEMS, AND SHALL INCORPORATE OR BE FURNISHED WITH ALL THE DESIGN FEATURES, AUXILIARY EQUIPMENT, ACCESSORIES, AND PREWIRED CABINET FEATURES AS REQUIRED IN THE STANDARD BID ITEM.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH, IN PLACE. ALL CONNECTIONS MADE AND WIRING COMPLETED, TESTED AND ACCEPTED.

**ITEM 633 - CABINET RISER, AS PER PLAN (UPS)**

THIS ITEM OF WORK SHALL BE IN CONFORMANCE WITH ODOT SPECIFICATION 633.09 EXCEPT IT SHALL BE INSTALLED FOR THE UPS CABINET. USE A TYPE (SIZE AND SHAPE) OF CABINET RISER COMPATIBLE WITH THE TYPE OF UPS CABINET SPECIFIED FOR THE PROJECT. THE DEPARTMENT WILL MEASURE ITEM 633 - CABINET RISER, AS PER PLAN (UPS) BY THE NUMBER OF EACH UNIT AND WILL INCLUDE MATERIALS, MOUNTING HARDWARE AND INSTALLATION.

**PAINTING REQUIREMENTS**

ALL POLES, MAST ARMS, PEDESTALS AND ASSOCIATED ITEMS SPECIFIED IN THESE PLANS TO BE FACTORY PAINTED GLOSSY BLACK SHALL BE COATED IN CONCORDANCE WITH THE REQUIREMENTS SHOWN ON SHEET 5.

**ITEM 632 - POWER SERVICE, AS PER PLAN**

ELECTRIC POWER SHALL BE OBTAINED FROM THE AMERICAN ELECTRIC COMPANY (800-672-2231) AT THE LOCATIONS INDICATED IN THE PLANS. POWER SUPPLIED SHALL BE 120/240 VOLTS.

POWER SERVICE SHALL BE AS PER CMS ITEM 632 AND SCD TC-83.10 WITH THE FOLLOWING EXCEPTIONS:

- 1) THE METER BASE MOUNTING HEIGHT SHALL BE NO MORE THAN 5 FEET HIGH TO THE CENTER OF THE METER BASE FROM THE GROUND.
2) THE CONTRACTOR SHALL SUPPLY THE NECESSARY METER BASES.
3) ALL POWER SERVICES SHALL BE METERED. THE METER SHALL HAVE A LEVER OPERATED BYPASS.
4) ALL METER BASE HARDWARE (INCLUDING RISER AND BANDING) SHALL BE PAINTED GLOSSY BLACK TO MATCH POLES.
5) USE TWO SEPARATE DISCONNECTS, ONE FOR SIGNALS AND ONE FOR LIGHTING LABELLED ACCORDINGLY.

DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH CMS ITEM 632 - POWER SERVICE, AS PER PLAN, SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNON 660, WITH LOCK BODY OF BRONZE OR BRASS AND KEYING SHALL BE TO THE STATE MASTER.

THE CONTRACTOR SHALL CONTACT THE METER SECTION OF THE POWER COMPANY FOR INFORMATION REGARDING THE METER BASE INSTALLATION PRIOR TO ORDERING POLES. THE CONTRACTOR WILL BE RESPONSIBLE FOR REQUESTING AND SCHEDULING ANY INSPECTIONS THE POWER COMPANY MAY REQUIRE FOR THE POWER SERVICE HOOK UP. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT THE POWER COMPANY FOR THE ELECTRICAL SERVICE CONNECTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR SPLICE POWER CABLE INTO THE POWER COMPANY'S CIRCUITS. THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 120/240 VOLTS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND THE PAYING OF ALL FEES. THE CONTRACTOR SHALL PAY ALL POWER CHARGES UNTIL THE SIGNAL IS ACCEPTED BY THE MAINTAINING AGENCY.

**633 UNINTERRUPTIBLE POWER SUPPLY, AS PER PLAN**

IN ADDITION TO THE REQUIREMENTS OF CMS 633 AND 733, THE CONTRACTOR SHALL FURNISH, INSTALL AND TEST UNINTERRUPTIBLE POWER SUPPLY (UPS) STATUS INDICATOR LAMPS THAT ALLOW MAINTENANCE PERSONNEL AND LAW ENFORCEMENT TO QUICKLY ASSESS WHETHER A TRAFFIC SIGNAL CABINET IS BEING POWERED BY A UPS. A 1-INCH WATERPROOF NEMA 4X OR IP66 LAMP WITH A DOMED RED LENS SHALL BE USED TO INDICATE THE CABINET IS OPERATING UNDER UPS BACKUP POWER (THE "BACKUP" OPERATING CONDITION). THIS LAMP SHALL BE WIRED USING MINIMUM 20GA STRANDED, INSULATED HOOKUP WIRE TO THE STATUS RELAY OUTPUTS OF THE UPS. THE WIRES SHALL BE TERMINATED BY LUGS AT THE DISPLAY END AND PERMANENTLY LABELED "BACKUP POWER STATUS DISPLAY," WITH WIRE POLARITY INDICATED. THIS ITEM INCLUDES PROGRAMMING THE UPS STATUS RELAY OUTPUTS TO PRODUCE THE LAMP STATUS DISPLAYS. THE STATUS DISPLAY SHALL BE SOLID 100% DUTY CYCLE (NOT FLASHING). THE LAMP SHALL BE PLACED IN THE UPS CABINET WALL (NOT THE ROOF) IN SUCH A MANNER AS TO BE SEALED FROM WATER INTRUSION AND VISIBLE FROM A VEHICLE AT THE STOP LINE IN THE CLOSEST LANE OF AT LEAST ONE APPROACH TO THE SIGNALIZED INTERSECTION. THE OPERATING VOLTAGE OF THE LED LAMP SHALL BE 120V AC.

**ITEM 633 - CONTROLLER ITEM, MISC.: REUSE OF UNINTERRUPTIBLE POWER SUPPLY (UPS)**

THIS ITEM SHALL CONSIST OF THE FOLLOWING : PRIOR TO REMOVAL CONTRACTOR AND ODOT DISTRICT 1 SIGNAL SHOP PERSONNEL SHALL VERIFY UPS OPERATION. CAREFULLY REMOVE EXISTING UPS AND CABINET FROM THE EXISTING CONTROLLER AND REMOUNT TO NEW CONTROLLER CABINET, INCLUDING ALL NECESSARY WIRING AND CONNECTIONS FOR AN OPERATIONAL SYSTEM. AFTER RE-INSTALLATION THE CONTRACTOR AND ODOT SIGNAL SHOP PERSONNEL SHALL AGAIN VERIFY UPS OPERATION. CONTROLLER AND CABINET SHALL BE WIRED INTO UPS OUTPUT ALARMS FOR SPECIAL STATUS ALARMS; ON BATTERY, LOW BATTERY & 2 HOUR TIMER.

**632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION**

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH CMS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE REUSED AS PART OF A NEW INSTALLATION ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY (NAME OF AGENCY RECEIVING STORED ITEMS) IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

ITEMS TO BE REUSED:  
UNINTERRUPTIBLE POWER SUPPLY AND CABINET (AT US-23 & CR-330 ONLY)

ITEMS TO BE STORED:  
CABINET & ACCESSORIES  
CONTROLLER UNIT  
UNINTERRUPTIBLE POWER SUPPLY AND CABINET (AT SR-65 & BLUELICK RD. ONLY)

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

**ITEM 816 - VIDEO DETECTION SYSTEM (ITERIS) - ALTERNATE BID**

THIS ITEM OF WORK SHALL BE IN CONFORMANCE WITH ODOT SPECIFICATION 816 EXCEPT THE DETECTION SYSTEM SHALL BE AN ITERIS "VANTAGE" MODEL AND SHALL BE THE MOST CURRENT VERSION MANUFACTURED, INCLUDING THE VANTAGE EDGE 2 PRO-CESOR AND RZ-4 ADVANCED CAMERA.

**ITEM 816 - VIDEO DETECTION SYSTEM**

THIS ITEM CONSISTS OF FURNISHING AND INSTALLING VIDEO DETECTION CAMERA(S) SYSTEM IN CONFORMANCE WITH SUPPLEMENTAL SPECIFICATION 816 & 907 FOR USE IN LIEU OF A CONVENTIONAL VEHICLE DETECTOR LOOP INSTALLATION. THE CAMERA SYSTEM SHALL INCLUDE THE CAMERA, ALL CABINET HARDWARE COMPONENTS, THE COMMUNICATION CABLES, CONNECTORS, MOUNTING HARDWARE, PC SOFTWARE AND ALL OTHER NECESSARY COMPONENTS TO INSTALL A VIDEO DETECTION CAMERA COMPLETE IN PLACE, THAT IS FULLY FUNCTIONAL WITH THE TRAFFIC SIGNAL CONTROLLER. THE VIDEO DETECTION CABINET HARDWARE SHALL BE CAPABLE OF RUNNING ALL THE DESIGNATED CAMERAS SHOWN IN THE PLANS AT THE INTERSECTION. THE CAMERAS SHALL BE CONFIGURED TO PERFORM VEHICLE COUNTS AND CLASSIFICATIONS AT EACH DETECTION LOCATION SPECIFIED IN THE PLANS.

TEN (10) BUSINESS DAYS PRIOR TO INSTALLATION OF THE VIDEO DETECTION CABINET SYSTEM, THE CONTRACTOR SHALL CONTACT ODOT IN THE EVENT THAT A REPRESENTATIVE WISHES TO BE PRESENT DURING THE INSTALLATION AND CONFIGURATION OF THE VIDEO DETECTION SYSTEM.

INSTALLATION OF THE VIDEO DETECTION SYSTEM SHALL INCLUDE TESTING AND VERIFICATION OF THE DETECTION FIELD TO ASSURE DETECTION NEEDS ARE MET. SHOULD THE DETECTION FIELD BE INADEQUATELY COVERED DUE TO OCCLUSION OR OTHER REASONS, AN ALTERNATIVE CAMERA MOUNTING ON THE MAST ARM OR LUMINAIRE BRACKET SHALL BE EMPLOYED. A MAST ARM ALTERNATE MOUNTING LOCATION SHOULD INCLUDE A FOUR (4) FOOT EXTENSION. THE FINAL CAMERA MOUNTING LOCATION SHALL BE APPROVED BY ODOT.

PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, CABINET AND MOUNTING HARDWARE, AND OTHER INCIDENTALS NECESSARY FOR EACH VIDEO DETECTION SYSTEM, COMPLETE IN PLACE, ALL CONNECTIONS MADE AND WIRING COMPLETED, TESTED, AND ACCEPTED.

**625, CONDUIT CLEANED AND CABLES REMOVED**

THIS ITEM SHALL CONSIST OF CLEANING AN EXISTING CONDUIT BY REMOVING EXISTING CABLES, MUD AND DEBRIS SO THAT NEW CABLE CAN BE INSTALLED. INCIDENTAL TO THE CLEANING IS THE INSTALLATION OF BUSHINGS AND/OR COUPLINGS ON THE ENDS OF EXISTING CONDUIT AS REQUIRED. MATERIALS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL OFF OF THE PROJECT SITE. DISTURBED AREAS SHALL BE PROPERLY RESTORED.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625, "CONDUIT CLEANED AND CABLES REMOVED" PER FOOT OF CONDUIT CLEANED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

**625, PULL BOX CLEANED**

THIS ITEM OF WORK SHALL CONSIST OF CLEANING AN EXISTING PULL BOX BY REMOVING ANY EXISTING CABLES NOT BEING RECONNECTED, AND DEBRIS SO THAT NEW CABLES CAN BE INSTALLED. ANY UNUSED OPENINGS SHALL BE CLOSED. DISTURBED AREAS NEAR THE PULL BOX SHALL BE CLEARED OF WEEDS OR DEBRIS AND SHALL BE FULLY RESTORED. MATERIAL REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF OF THE PROJECT SITE.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID UNDER CMS ITEM 625, "PULL BOX CLEANED" FOR EACH PULL BOX CLEANED WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ENVIRONMENTAL STUDIES HAVE SHOWN THAT THERE IS A POTENTIAL OF ENCOUNTERING PETROLEUM CONTAMINATED SOIL AND/OR OTHER REGULATED SUBSTANCES DURING EXCAVATIONS FOR CONSTRUCTION ACTIVITIES.

THE ENGINEER WILL INITIALLY DETERMINE IF THE EXCAVATED MATERIAL APPEARS TO BE PETROLEUM CONTAMINATED SOIL OR GROUNDWATER BASED ON THE MATERIAL'S APPEARANCE, ODOR, AND THE ENGINEER'S PAST EXPERIENCE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY TESTING NECESSARY TO DETERMINE IF THE MATERIAL IS IN FACT PETROLEUM CONTAMINATED. ANY POTENTIAL PETROLEUM CONTAMINATED MATERIALS SHALL BE TESTED FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE (BTEX) USING USEPA SW-846, METHOD 8060 AND TOTAL PETROLEUM HYDROCARBONS (TPH) USING USEPA SW-846, METHOD 8015, PER BUSTR GUIDELINES. ANY POTENTIAL PETROLEUM CONTAMINATED GROUND WATER SHALL BE TESTED FOR BTEX AND METHYL TERT-BUTYL ETHER (MTBE) USING USEPA SW-846, METHOD 8260. ONCE LAB ANALYSIS RESULTS ARE RECEIVED FOR THE MATERIAL(S), THE CONCENTRATIONS OF THE CHEMICALS OF CONCERN SHALL BE COMPARED TO BUSTR'S RE-USE ACTION LEVELS IN TABLE 1 UNDER PARAGRAPH (D)(I) OF OAC 1301:7-9-16 TO DETERMINE IF THE MATERIAL IS INDEED PETROLEUM CONTAMINATED SOIL. THIS FINAL DETERMINATION SHALL BE MADE BY THE ENGINEER.

IN THE EVENT PETROLEUM-CONTAMINATED SOIL AND/OR OTHER REGULATED SUBSTANCES ARE ENCOUNTERED, THE CONTRACTOR SHALL MANAGE THIS MATERIAL ACCORDING TO THE FOLLOWING GUIDELINES. THE ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THIS WORK. ALL EXCAVATIONS AT THE AFOREMENTIONED LOCATION SHALL BE PAID FOR UNDER THE ORIGINAL PLAN BID ITEMS. ALL MATERIAL EXCAVATED BY THE CONTRACTOR AT THIS LOCATION SHALL BE SUBJECT TO TESTING BY AN INSPECTOR PROVIDED BY THE ENGINEER.

ALL POTENTIAL PETROLEUM CONTAMINATED SOIL, WITHIN THE AFOREMENTIONED LIMITS, EXCAVATED BY THE CONTRACTOR AT THIS LOCATION MAY BE STOCKPILED IN AN AREA PROVIDED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE ENGINEER MAY PERMIT TEMPORARY STORAGE OF THE EXCAVATED MATERIAL IN A LINED AND COVERED ROLL-OFF BOX. THE ENGINEER MAY PERMIT TEMPORARY STORAGE OF THE EXCAVATED MATERIAL ON AN IMPERMEABLE MEMBRANE. THE MEMBRANE SHALL BE SURROUNDED BY BALES OF STRAW TO PREVENT THE SUSPECTED SOIL FROM COMING IN CONTACT WITH THE ORIGINAL SOIL. AN IMPERMEABLE MEMBRANE SHALL BE PLACED OVER THE STOCKPILE TO PREVENT CONTACT WITH PRECIPITATION AND/OR SURFACE RUN-OFF. THE ENGINEER MAY PERMIT THE CONTRACTOR TO DIRECT LOAD THE EXCAVATED CONTAMINATED MATERIAL INTO TRUCKS.

IF EXCAVATIONS WITHIN THE AFOREMENTIONED LIMITS REQUIRE DEWATERING FOR CONSTRUCTION PURPOSES, THE CONTRACTOR SHALL DEWATER, CONTAINERIZE, TEST THE WATER AND DISPOSE OF BY METHODS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS AND/OR AUTHORIZATIONS NEEDED TO STORE, TRANSPORT AND DISPOSE OF THE WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE OR FEDERAL REGULATIONS. DEPENDING UPON THE TEST RESULTS, THE ENGINEER WILL CLASSIFY THE WATER AS REGULATED OR NON-REGULATED WATER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF REGULATED WATER WITH A METHOD APPROVED BY THE ENGINEER. WORK INVOLVED WITH THIS ITEM SPECIAL INCLUDES COMPLYING WITH THE HANDLING, STORAGE, AND DISPOSAL OF REGULATED AND NON-REGULATED WATER.

THIS MATERIAL SHALL BE PROPERLY TESTED, TRANSPORTED, AND DISPOSED OF IN A LICENSED (BY THE LOCAL HEALTH DEPARTMENT) AND PERMITTED (BY THE OHIO ENVIRONMENTAL PROTECTION AGENCY) SOLID WASTE FACILITY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS AND TO TRANSPORT THE MATERIAL TO A LICENSED AND PERMITTED SOLID WASTE DISPOSAL FACILITY. THE CONTRACTOR SHALL CONTACT THE FACILITY TO DETERMINE IF ANY ADDITIONAL TESTING IS REQUIRED FOR DISPOSAL AND WILL BE RESPONSIBLE FOR CONDUCTING ANY ADDITIONAL SAMPLING AND ANALYSIS OF THIS MATERIAL.

THE CONTRACTOR SHALL FURNISH ALL THE LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO PROPERLY HANDLE, STORE (IF NECESSARY), TEST FOR DISPOSAL, TRANSPORT, AND DISPOSE OF REGULATED MATERIALS, INCLUDING ANY REQUIRED PERMITS, APPROVALS, OR FEES WITHIN THE LIMITS IDENTIFIED ABOVE. PAYMENT FOR THIS WORK SHALL BE MADE AT THE CONTRACT PRICE BID PER TON AND/OR GALLON. THE BASIS FOR CONVERSION FROM TONS TO CUBIC YARDS IS 1.5 TON/CUBIC YARD. ALL EXCAVATIONS WITHIN THE AFOREMENTIONED LIMITS SHALL BE PAID FOR UNDER THE ORIGINAL PLAN BID ITEMS. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

690E65010 ITEM SPECIAL - WORK INVOLVING SOLID WASTE 5 TON

690E65016 ITEM SPECIAL - WORK INVOLVING PETROLEUM CONTAMINATED SOIL 5 TON

690E65024 ITEM SPECIAL - WORK INVOLVING REGULATED WATER 50 GAL

690E65020 ITEM SPECIAL - WORK INVOLVING WATER 50 GAL

**614 Maintaining Traffic Misc.: Per Location**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC DURING THE INSTALLATION OF ALL INTERSECTION WORK ITEMS. ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR. THE FOLLOWING REQUIREMENTS APPLY:

- 1. LANE CLOSURES ON ANY STREET, RAMP OR BUSINESS ENTRANCE IN THE PROJECT WILL NOT OCCUR DURING THE PEAK VOLUME HOURS OF 7 AM TO 9 AM, AND 4 PM TO 7PM.
- 2. THE USE OF A LAW ENFORCEMENT OFFICER WITH PATROL CAR IS REQUIRED WHERE A COMPLETE BLOCKAGE OF APPROACH TRAFFIC IS REQUIRED.
- 3. THE USE OF A LAW ENFORCEMENT OFFICER WITH PATROL CAR IS REQUIRED IF THE CONTRACTOR TURNS THE INTERSECTION SIGNALS OFF OR PUTS THE INTERSECTION IN FLASHING OPERATION.

PAYMENT FOR ITEM 614 "MAINTAINING TRAFFIC MISC.: PER LOCATION" SHALL INCLUDE ALL THE ITEMS REQUIRED TO MAINTAIN TRAFFIC IN ACCORDANCE WITH THESE REQUIREMENTS. THE PAYMENT BID ITEM SHALL BE ON AN EACH BASIS FOR EACH OF THE SIGNALIZED INTERSECTIONS AT WHICH WORK SHALL BE PERFORMED.

**614 Law Enforcement Officer With Patrol Car For Assistance**

THE OFFICIAL PATROL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE. THE LAW ENFORCEMENT OFFICERS (LEOS) ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT. THE HOURS PAID SHALL INCLUDE MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

THE CONTRACTOR SHALL USE LEOS WHERE REQUIRED IN THE NOTE FOR "MAINTAINING TRAFFIC MISC.: PER LOCATION". USE OF LEOS FOR OTHER OPERATIONS WILL REQUIRE PRIOR APPROVAL FROM THE ENGINEER. LEOS SHOULD NOT BE USED WHERE THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD) INTENDS THAT FLAGGERS BE USED.

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. LEOS (WITH PATROL CAR) SHOULD BE STATE HIGHWAY PATROL FOR WORK ZONES ON STATE ROUTES.

PAYMENT FOR ITEM 614, "LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE" WILL BE ON A UNIT PRICE (HOURLY) BASIS. ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF A LEO ARE INCLUDED WITH THE BID UNIT PRICE.

614E1111 LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 40 HOURS

CALCULATED  
CHECKED

TRAFFIC SIGNAL GENERAL NOTES

D01-SIGNALS-FY14

## GENERAL

OVERHEAD SIGN SUPPORTS CAN BE SEPARATED INTO MAJOR SECTIONS SUCH AS END FRAMES, TRUSSES, VERTICAL POLES AND CANTILEVER ARMS. FOR THE IMPLEMENTATION OF THIS WORK ITEM IT WILL BE BENEFICIAL TO REFER TO THE MAJOR SECTIONS OF THE OVERHEAD SIGN SUPPORTS RATHER THAN THE WHOLE SUPPORT. MORE SPECIFIC INSTRUCTIONS AND FLEXIBILITY CAN BE GIVEN BASED UPON THE UNIT OF MEASURE AND PAYMENT PER MAJOR SUPPORT SECTION.

THE PROTECTIVE COATING OF OVERHEAD SIGN SUPPORT SECTIONS SHALL BE A FOUR PART PROCESS TO INCLUDE SURFACE PREPARATION FOLLOWED BY A THREE COAT PAINT SYSTEM. THIS THREE COAT SYSTEM SHALL CONSIST OF AN ORGANIC ZINC PRIME COAT, AN EPOXY INTERMEDIATE COAT AND A URETHANE FINISH COAT, WITH EACH COAT BEING A DIFFERENT COLOR. THE PURPOSE OF THIS COATING IS TO PROVIDE PROTECTION FOR NEW (UNWEATHERED) AND OLDER (WEATHERED) GALVANIZED STEEL SUPPORT SECTIONS FROM CORROSIVE ELEMENTS IN THE ATMOSPHERE. COATING AND SURFACE PREPARATION OF NEW GALVANIZED SUPPORT SECTIONS SHOULD BE DONE BY THE MANUFACTURER.

IN THE FIELD, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION LAWS, RULES OR REGULATIONS OF FEDERAL, STATE OR LOCAL AGENCIES. THE COATING MATERIALS SPECIFIED FOR THE WORK CAN BE HAZARDOUS TO THE HEALTH OF THE APPLICATOR IF NOT APPLIED AS PER MANUFACTURER'S INSTRUCTION. THE CONTRACTOR SHALL FOLLOW THE DATA SHEET AND THE LABEL ON THE PAINT CONTAINERS. THESE PRECAUTIONS SHALL INCLUDE THE USE OF RESPIRATORS AND EYE AND SKIN PROTECTION AS SPECIFIED. THE CONTRACTOR SHALL ALSO INSURE THAT HIS PAINTING OPERATIONS AND LOCATIONS WILL NOT ENDANGER OR ADVERSELY AFFECT THE PUBLIC IN GENERAL.

THE PROPOSED CLEANING AND COATING OPERATIONS SHALL BE PERFORMED ONLY WHEN THE AMBIENT TEMPERATURE IS 50 DEGREES F (10° C) OR ABOVE.

PAINT SHALL NOT BE APPLIED DURING RAIN, FOG OR MIST, OR WHEN THE STEEL SURFACE TEMPERATURE IS LESS THAN 5 DEGREES F (3° C) ABOVE THE DEW POINT. PAINT SHALL NOT BE APPLIED TO WET OR DAMP SURFACES OR ON FROSTED OR ICE-COATED SURFACES. PAINT SHALL NOT BE APPLIED WHEN THE RELATIVE HUMIDITY IS GREATER THAN 85%. ALL STEEL SURFACES OF TRUSSES AND END FRAMES INCLUDING THE WELDED AREAS, BALLAST ENCLOSURE MOUNTING BRACKET AND BASE PLATES ARE TO BE CLEANED AND COATED. BEFORE EACH COATING IS APPLIED, IT SHALL BE MIXED WITH AN APPROVED POWER MECHANICAL MIXER TO A UNIFORM CONSISTENCY WHICH SHALL BE MAINTAINED DURING ITS APPLICATION. EACH COAT SHALL BE APPLIED IN A WORKMANLIKE MANNER AS A CONTINUOUS FILM OF UNIFORM THICKNESS WHICH IS FREE OF HOLIDAYS, PORES, RUNS OR SAGS. ALL COATS SHALL BE APPLIED BY BRUSH OR ROLLER. THINNING OF PAINT IS STRICTLY PROHIBITED. PAINT NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED. THE COATING SHALL PENETRATE ALL JOINTS AND CONNECTIONS. THE ENGINEER SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY CLEANING OR COATING OPERATIONS SO THAT INSPECTION SERVICES CAN BE PROVIDED.

## COATING SYSTEM

THE COATING SYSTEM SHALL BE A THREE COAT PAINT SYSTEM CONFORMING TO 708.02. SUPPLY THE PRIMER, INTERMEDIATE AND FINISH COATS FROM THE SAME MANUFACTURER.

## SURFACE PREPARATION, EXISTING SUPPORT SECTIONS

EXISTING, WEATHERED GALVANIZED SUPPORT SECTIONS SHOULD HAVE THEIR SURFACE PREPARATION AS WELL AS THEIR PROTECTIVE COATING DONE UNDER CONDITIONS OF TEMPERATURE AND HUMIDITY WITHIN THE SAME RANGE AS SPECIFIED BY THE MANUFACTURER OF THE ORGANIC ZINC PRIME COAT MATERIAL TO BE USED IMMEDIATELY AFTER THIS CLEANING OPERATION. THE SUPPORT SECTIONS SHALL BE PREPARED FOR COATING BY SSPC-SPI (SOLVENT CLEANING) FOLLOWED BY SSPC-SPI0 (NEAR WHITE BLAST CLEANING). BEFORE THE PREPARED SURFACE DEGRADES FROM THE PRESCRIBED STANDARDS, THE PRIME COAT SHALL BE APPLIED. IN EVERY CASE, THE SURFACE SHALL BE COATED WITH ORGANIC ZINC PRIME COAT ON THE SAME DAY AS THE SURFACE PREPARATION. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING, OR OTHER DAMAGE TO THE PREPARED SURFACE. PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING, TRANSPORTATION COSTS AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK PER MAJOR SUPPORT SECTION.

BASIS OF PAYMENT WILL BE AS FOLLOWS:

ITEM 630 SURFACE PREPARATION, EXISTING SUPPORT SECTION AT CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

## SURFACE PREPARATION, NEW SUPPORT SECTIONS

NEW, UNWEATHERED GALVANIZED SUPPORT SECTIONS SHOULD HAVE THEIR SURFACE PREPARATION AS WELL AS THEIR PROTECTIVE COATING DONE AT THE MANUFACTURER OF THE SUPPORT SECTIONS.

THE SUPPORT SECTIONS SHALL BE PREPARED FOR COATING BY SSPC-SPI (SOLVENT CLEANING) DO NOT USE ALKALINE CLEANERS FOLLOWED BY SSPC-SPT (100% BRUSH-OFF BLAST OF SURFACE).

BEFORE THE PREPARED SURFACE DEGRADES FROM THE PRESCRIBED STANDARDS, THE PRIME COAT SHALL BE APPLIED. IN EVERY CASE, THE SURFACE SHALL BE COATED WITH THE ORGANIC ZINC PRIME COAT ON THE SAME DAY OF SURFACE PREPARATION. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING, OR OTHER DAMAGE TO THE PREPARED SURFACE.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING, TRANSPORTATION COSTS AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK PER MAJOR SUPPORT SECTION. BASIS OF PAYMENT WILL BE AS FOLLOWS:

ITEM 630 SURFACE PREPARATION, NEW SUPPORT SECTION AT CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

## COATING, ORGANIC ZINC PRIME COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF AN ORGANIC ZINC PRIMER TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL BE BETWEEN 1.5 TO 2.0 MILS (38 TO 51 MICROMETERS). IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COST SHALL BE BORNE BY THE CONTRACTOR.

THE COLOR OF THIS COAT SHALL BE NOTICEABLY DIFFERENT FROM THE BASE MATERIAL AND OTHER PROPOSED COATS.

THIS COAT SHALL IN ALL CASES BE APPLIED OVER SURFACES THAT WERE PREPARED EARLIER THAT SAME DAY. THE THINNING OF THE MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED 1.5 TO 2.0 MILS (38 TO 51 MICROMETERS) BUT IS AT LEAST 1.25 MILS (32 MICROMETERS), THE CONTRACT BID PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 16-2/3%. IF THE DEFICIENCY OF COATING IS MORE THAN THAT 16-2/3% [I.E., THE AVERAGE DRY FILM THICKNESS IS LESS THAN 1.25 MILS (32 MICROMETERS)] THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

FOR NEW SUPPORT SECTIONS THE PRIME COAT SHOULD BE DONE AT THE MANUFACTURER OF THE SUPPORT SECTIONS. VERIFICATION BY THE MANUFACTURER OF THE COATING MATERIAL FOR THE PRIME COAT WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE PRIME COAT.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COSTS AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK. THIS PRIME COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE INTERMEDIATE AND TOP COATS. A PROPERLY CALIBRATED DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE AS FOLLOWS:

ITEM 630 COATING, ORGANIC ZINC PRIME COAT, SUPPORT SECTION AT CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

## COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF EPOXY TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL NOT BE LESS THAN SIX (6.0) MILS (152 MICROMETERS). IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COST SHALL BE BORNE BY THE CONTRACTOR. THINNING OF THE MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED 6.0 MILS (152 MICROMETERS), BUT IS AT LEAST 5.0 MILS (127 MICROMETERS), THE CONTRACT PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 16-2/3%. IF

THE DEFICIENCY OF COATING IS MORE THAN 16-2/3%, [I.E. THE AVERAGE DRY FILM THICKNESS IS LESS THAN 5.0 MILS (127 MICROMETERS)], THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

AT LEAST 24 HOURS BUT NO MORE THAN THREE (3) DAYS SHALL ELAPSE AFTER THE APPLICATION OF THE ORGANIC ZINC PRIME COAT AND BEFORE THE APPLICATION OF THE EPOXY INTERMEDIATE COAT. SURFACES SHALL IN ALL CASES BE CLEAN BEFORE THE INTERMEDIATE COAT IS APPLIED.

FOR NEW SUPPORT SECTIONS, THIS INTERMEDIATE COAT SHOULD BE DONE AT THE MANUFACTURER OF THE SUPPORT SECTIONS. VERIFICATION BY THE MANUFACTURER FOR THE INTERMEDIATE COAT WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE INTERMEDIATE COAT.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COST AND MATERIAL NECESSARY TO ACCOMPLISH THIS ITEM OF WORK. THIS INTERMEDIATE COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE PRIME AND TOP COATS. A PROPERLY CALIBRATED DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE AS FOLLOWS:

ITEM 630 COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTION AT CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

## COATING, URETHANE FINISH COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF URETHANE TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL NOT BE LESS THAN 1.5 MILS (38 MICROMETERS). IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COST SHALL BE BORNE BY THE CONTRACTOR. THINNING OF THE MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED. THE COLOR OF THIS COAT SHALL BE MEDIUM GREY.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED 1.5 MILS (38 MICROMETERS) BUT IS AT LEAST 1.0 MIL (25 MICROMETERS), THE CONTRACT PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 33-1/3%. IF THE DEFICIENCY OF COATING IS MORE THAN 33-1/3%, [I.E. THE AVERAGE DRY FILM THICKNESS IS LESS THAN 1.0 MIL (25 MICROMETERS)], THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

AT LEAST 24 HOURS BUT NO MORE THAN THREE (3) DAYS SHALL ELAPSE AFTER THE APPLICATION OF THE EPOXY INTERMEDIATE COAT AND BEFORE THE APPLICATION OF THE URETHANE FINISH COAT. SURFACES SHALL IN ALL CASES BE CLEAN BEFORE THE FINISH COAT IS APPLIED.

FOR NEW SUPPORT SECTIONS, THIS FINISH COAT SHOULD BE DONE BY THE MANUFACTURER OF THE SUPPORT SECTIONS. VERIFICATION BY THE MANUFACTURER FOR THE FINISH COAT WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE FINISH COAT.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COST AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK. THIS FINISH COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE PRIME AND INTERMEDIATE COATS. A PROPERLY CALIBRATED, DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE AS FOLLOWS:

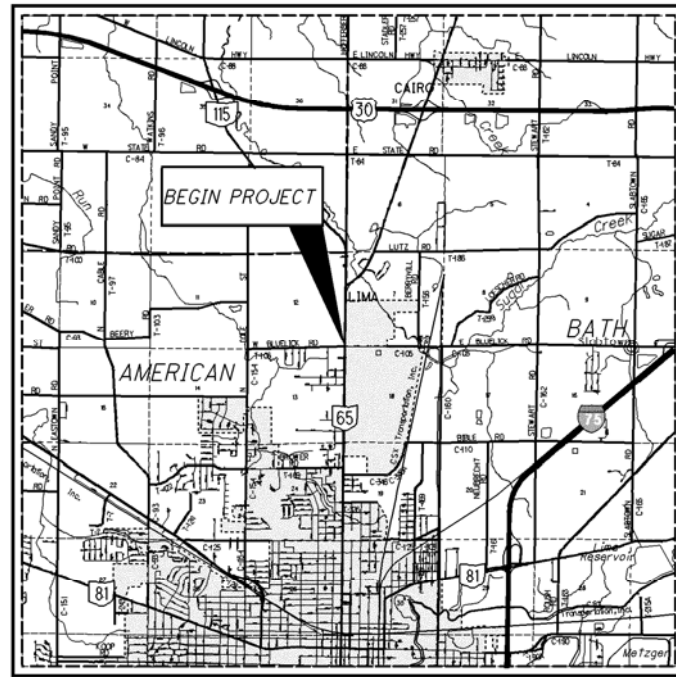
ITEM 630 COATING, URETHANE FINISH COAT, SUPPORT SECTION AT CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

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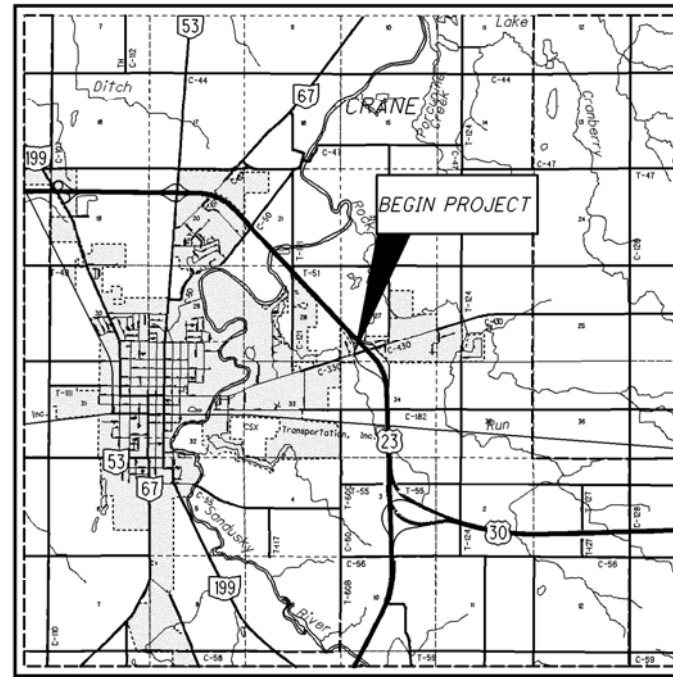
SHEET NUMBER													ITEM	ITEM EXT.	GRAND TOTAL 01/ SAE / OT	UNIT	DESCRIPTION	SEE SHEET NO.
3	4	8	9															
													201	11000	LUMP		CLEARING AND GRUBBING	
																	TRAFFIC SIGNALS	
		1483											625	25400	1483	FT	CONDUIT, 2", 725.04	
		103											625	25500	103	FT	CONDUIT, 3", 725.04	
		641											625	25902	641	FT	CONDUIT, JACKED OR DRILLED, 725.04, 2"	
		336											625	25902	336	FT	CONDUIT, JACKED OR DRILLED, 725.04, 3"	
		735											625	25910	735	FT	CONDUIT CLEANED AND CABLES REMOVED	4
		1566											625	29002	1566	FT	TRENCH, 24" DEEP	
		8											625	30700	8	EACH	PULL BOX, 725.08, 18"	
		6											625	30706	6	EACH	PULL BOX, 725.08, 24"	
		17											625	31510	17	EACH	PULL BOX REMOVED	
		6											625	32000	6	EACH	GROUND ROD	
		4											625	39520	4	EACH	PULL BOX CLEANED	4
			4										630	09102	4	EACH	SURFACE PREPARATION, NEW SUPPORT SECTION	5
			4										630	09106	4	EACH	COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTION	5
			4										630	09108	4	EACH	COATING, URETHANE TOP COAT, SUPPORT SECTION	5
			4										630	09120	4	EACH	COATING, ORGANIC ZINC PRIME COAT, SUPPORT SECTION	5
		12											632	05007	12	EACH	VEHICULAR SIGNAL HEAD, (LED), BLACK, 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, WITH BACKPLATE, AS PER PLAN	2
		2											632	05087	2	EACH	VEHICULAR SIGNAL HEAD, (LED), BLACK, 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, WITH BACKPLATE, AS PER PLAN	2
		14											632	25000	14	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
		506											632	40500	506	FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	
		1237											632	40700	1237	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
			4										632	64010	4	EACH	SIGNAL SUPPORT FOUNDATION	
		3793											632	65200	3793	FT	LOOP DETECTOR LEAD-IN CABLE	
		139											632	68300	139	FT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	
		154											632	69800	154	FT	SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG	
			2										632	70001	2	EACH	POWER SERVICE, AS PER PLAN	3
		2											632	70300	2	EACH	CONDUIT RISER, 1-1/2" DIAMETER	
			1										632	75163	1	EACH	SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 5 POLE, WITH MAST ARMS TC-81.21 DESIGN 12 AND DESIGN 3, AS PER PLAN	2
			1										632	75411	1	EACH	SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 8 POLE, WITH MAST ARMS TC-81.21 DESIGN 13 AND DESIGN 11, AS PER PLAN	2
			1										632	75464	1	EACH	SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 9 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 3	2
			3										632	77230	3	EACH	SIGNAL SUPPORT, MECHANICAL DAMPER FOR TC-81.21 MAST ARM (GREATER THAN 59' IN LENGTH)	10
			1										632	80621	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN	2
			2										632	90101	2	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN	4
			1										632	90104	1	EACH	REUSE OF TRAFFIC CONTROL ITEM, UNINTERRUPTIBLE POWER SUPPLY (UPS)	4
			2										633	01681	2	EACH	CONTROLLER UNIT, TYPE 2070L, WITH CABINET, TYPE 332, AS PER PLAN	3
			2										633	67000	2	EACH	CABINET RISER	
			2										633	67001	2	EACH	CABINET RISER, AS PER PLAN	3
			2										633	67100	2	EACH	CABINET FOUNDATION	
			2										633	67200	2	EACH	CONTROLLER WORK PAD	
			1										633	74001	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN	4
			2										816	30000	2	EACH	VIDEO DETECTION SYSTEM	4
																	ALTERNATE BID ITEMS	
2													633	01681	2	EACH	CONTROLLER UNIT, TYPE 2070L, WITH CABINET, TYPE 332, AS PER PLAN (EAGLE)	3
	2												816	30000	2	EACH	VIDEO DETECTION SYSTEM (ITERIS)	4
		5											SPECIAL	69065010	5	TON	WORK INVOLVING SOLID WASTE	4
		5											SPECIAL	69065016	5	TON	WORK INVOLVING PETROLEUM CONTAMINATED SOIL	4
		50											SPECIAL	69065020	50	GALLON	WORK INVOLVING WATER	4
		50											SPECIAL	69065024	50	GALLON	WORK INVOLVING REGULATED WATER	4
		40											614	11111	40	HR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE, AS PER PLAN	4
			2										614	18000	2	EACH	MAINTAINING TRAFFIC, MISC.: PER LOCATION	4
													624	10000	LUMP		MOBILIZATION	

SIGNALS GENERAL SUMMARY

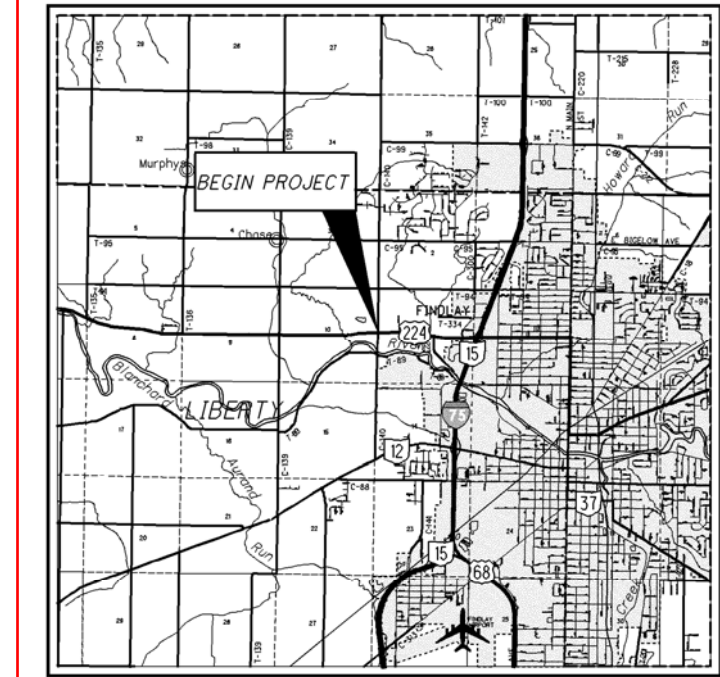
D01-SIGNALS-FY14



1. ALL-SR65/BLUELICK RD.-TOTAL RECONSTRUCTION. PLACE NEW PULL BOXES, CONDUIT, WIRE AND DILEMMA LOOP EXTENSIONS ON THE WEST AND EAST APPROACHES. NEW CONTROL BOX, POLES, MAST ARMS AND SIGNAL HEADS. VIDEO DETECTION OR SINGLE LOOPS ON BLUELICK RD. APPROACHES.



2. WYA-US23/CR330-TOTAL RECONSTRUCTION. PLACE NEW PULL BOXES, CONDUIT, WIRE AND DILEMMA LOOP EXTENSIONS ON THE WEST AND EAST APPROACHES. NEW CONTROL BOX, POLES, MAST ARMS AND SIGNAL HEADS. EITHER VIDEO DETECTION OR LOOP DETECTORS WILL BE UTILIZED.



3. HAN-US224/CR140-PLACE NEW PULL BOXES, LEAD-IN CABLE AND DILEMMA LOOP EXTENSIONS.

**UTILITIES**

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

SR-65 & BLUELICK ROAD	US-23 & CR-330
AEP 369 E O'CONNOR AVENUE LIMA, OHIO 45801 419-998-5103	AEP 2552 QUAKER ROAD BUCYRUS, OHIO 44820 419-563-1509
CENTURYLINK 122 S ELIZABETH STREET LIMA, OHIO 45801 419-226-6220	AT&T 130 NORTH ERIE STREET TOLEDO, OHIO 43624 419-245-7301
CITY OF LIMA (WATER) 1405 RESERVOIR ROAD LIMA, OHIO 45804 419-221-5175	CITY OF UPPER SANDUSKY WATER/SEWER 119 N 7TH STREET UPPER SANDUSKY, OHIO 43351
CITY OF LIMA (SANITARY) 50 TOWN SQUARE LIMA, OHIO 45801 419-221-5175	COLUMBIA GAS OF OHIO 1800 BROAD AVENUE FINDLAY, OHIO 45840 419-277-1349
ALLEN COUNTY SANITARY 3230 N COLE STREET LIMA, OHIO 45801 419-996-4670	

TRAFFIC SIGNALS		625											632																
SHEET	LOCATION	CONDUIT, 725.04, 2"	CONDUIT, 725.04, 3"	CONDUIT, JACKED OR DRILLED, 725.04, 2"	CONDUIT, JACKED OR DRILLED, 725.04, 3"	CONDUIT CLEANED AND CABLES REMOVED	TRENCH, 24" DEEP	PULL BOX, 725.08, 18"	PULL BOX, 725.08, 24"	PULL BOX REMOVED	GROUND ROD	PULL BOX CLEANED	CONDUIT RISER, 1-1/2" DIAMETER		SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	LOOP DETECTOR LEAD-IN CABLE	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG		VEHICULAR SIGNAL HEAD, (LED), BLACK, 3 SEC., 12" LENS, 1-WAY, POLY., WITH BACKPLATE, APP	VEHICULAR SIGNAL HEAD, (LED), BLACK, 5 SEC., 12" LENS, 1-WAY, POLY., WITH BACKPLATE, APP	COVERING OF VEHICULAR SIGNAL HEAD						
NO.	LOCATION TO LOCATION	FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	FT	FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	FT
	S.R. 65/BLUELICK RD.									8																			
11	SP1	792	38	290			820	2			1		1		61	83	883												
	SP2	343	7		151		350	2	3		1						961												
	CCI										1																		
12	SP1																	37	227		3	1	4						
	SP2																	38	563		3	1	4						
	U.S. 224/C.R. 140									7																			
14	SP1		15				5				1				93	56													
	SP2	348	43	351	185		391	2	3		1		1				1122												
	CCI										1																		
15	SP1																	18	116		3		3						
	SP2																	413	331		3		3						
	U.S. 23/C.R. 330																												
17						735		2		2		4					827												
TOTALS CARRIED TO GENERAL SUMMARY		1483	103	641	336	735	1566	8	6	17	6	4	2	0	154	139	3793	506	1237	0	12	2	14	0	0	0	0		

CALCULATED  
MLF  
CHECKED

TRAFFIC SIGNAL SUBSUMMARY

D01 - SIGNALS - FY14



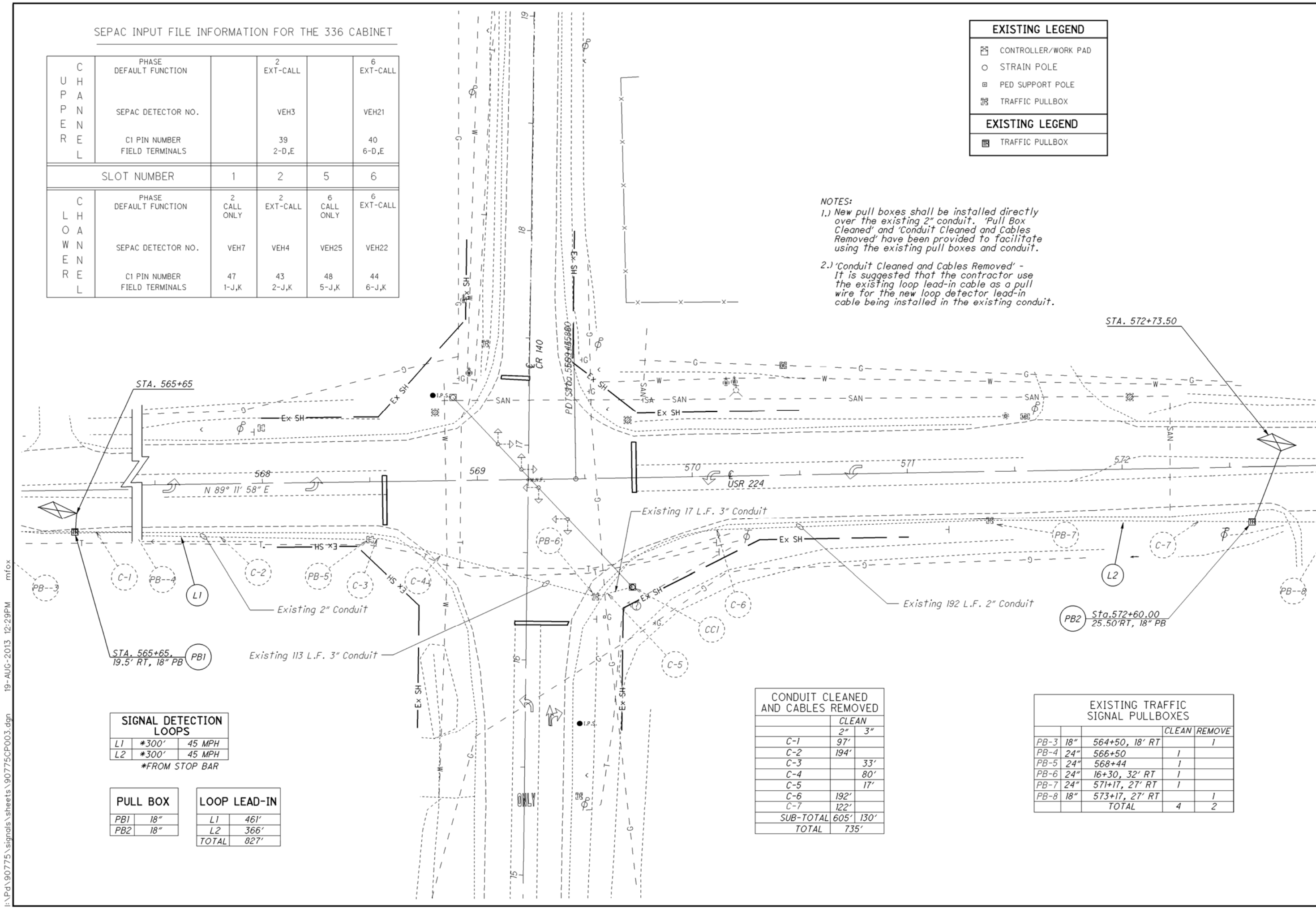
TRAFFIC SIGNALS		632													633						614	816			
SHEET	LOCATION	SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 5 POLE, WITH MAST ARMS TYPE TC-81.21 DESIGN 12 AND DESIGN 3, APP	SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 8 POLE, WITH MAST ARMS TYPE TC-81.21 DESIGN 13 AND DESIGN 11, APP	SIGNAL SUPPORT, TYPE TC-12.30, DESIGN 9 POLE, WITH MAST ARMS TYPE TC-81.21 DESIGN 14 AND DESIGN 3, APP	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, APP	EACH	SIGNAL SUPPOERT FOUNDATION	SIGNAL SUPPORT, MECHANICAL DAMPER FOR TC-81.21 MAST ARM (GREATER THAN 59' IN LENGTH)	EACH	SURFACE PREPARATION, NEW SUPPORT SECTION	COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTION	COATING, URETHANE TOP COAT, SUPPORT SECTION	COATING, ORGANIC ZINC PRIME COAT, SUPPORT SECTION	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN	POWER SERVICE, AS PER PLAN	CONTROLLER UNIT, TYPE 2070L, WITH CABINET, TYPE 332, AS PER PLAN	CABINET RISER	CABINET RISER, AS PER PLAN	CABINET FOUNDATION	CONTROLLER WORK PAD	UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN	REUSE OF UNINTERRUPTIBLE POWER SUPPLY (UPS)	614 MAINTAINING TRAFFIC MISC.: PER LOCATION	VIDEO DETECTION SYSTEM
NO.	LOCATION TO LOCATION	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
S.R. 65/BLUELICK RD.																									
5	SPI									1	1	1	1												
	SP2									1	1	1	1												
11	CC1													1	1	1	1	1	1	1	1		1	1	
12	SPI		1				1	1																	
	SP2	1					1																		
U.S. 224/C.R. 140																									
5	SPI									1	1	1	1												
	SP2									1	1	1	1												
14	CC1													1	1	1	1	1	1	1		1	1	1	
15	SPI				1		1	1																	
	SP2						1	1																	
U.S. 23/C.R. 330																									
TOTALS CARRIED TO GENERAL SUMMARY		1	1	1	1	0	4	3	0	4	4	4	4	0	2	2	2	2	2	2	2	1	1	2	2

SEPAc INPUT FILE INFORMATION FOR THE 336 CABINET

C H A P P E N E R E L	PHASE	2		6	
	DEFAULT FUNCTION	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL
	SEPAc DETECTOR NO.	VEH3	VEH3	VEH21	VEH21
	C1 PIN NUMBER	39	39	40	40
	FIELD TERMINALS	2-D,E	2-D,E	6-D,E	6-D,E
SLOT NUMBER		1	2	5	6
C L O A W N E R E L	PHASE	2	2	6	6
	DEFAULT FUNCTION	CALL ONLY	EXT-CALL	CALL ONLY	EXT-CALL
	SEPAc DETECTOR NO.	VEH7	VEH4	VEH25	VEH22
	C1 PIN NUMBER	47	43	48	44
	FIELD TERMINALS	1-J,K	2-J,K	5-J,K	6-J,K

EXISTING LEGEND	
	CONTROLLER/WORK PAD
	STRAIN POLE
	PED SUPPORT POLE
	TRAFFIC PULLBOX
EXISTING LEGEND	
	TRAFFIC PULLBOX

NOTES:  
 1.) New pull boxes shall be installed directly over the existing 2" conduit. 'Pull Box Cleaned' and 'Conduit Cleaned and Cables Removed' have been provided to facilitate using the existing pull boxes and conduit.  
 2.) 'Conduit Cleaned and Cables Removed' - It is suggested that the contractor use the existing loop lead-in cable as a pull wire for the new loop detector lead-in cable being installed in the existing conduit.



SIGNAL DETECTION LOOPS		
L1	*300'	45 MPH
L2	*300'	45 MPH
*FROM STOP BAR		

PULL BOX		LOOP LEAD-IN	
PB1	18"	L1	461'
PB2	18"	L2	366'
		TOTAL	827'

	CONDUIT CLEANED AND CABLES REMOVED	
	CLEAN 2"	3"
C-1	97'	
C-2	194'	
C-3		33'
C-4		80'
C-5		17'
C-6	192'	
C-7	122'	
SUB-TOTAL		605' 130'
TOTAL		735'

EXISTING TRAFFIC SIGNAL PULLBOXES			
		CLEAN	REMOVE
PB-3	18" 564+50, 18' RT		1
PB-4	24" 566+50	1	1
PB-5	24" 568+44	1	
PB-6	24" 16+30, 32' RT	1	
PB-7	24" 571+17, 27' RT	1	
PB-8	18" 573+17, 27' RT		1
TOTAL		4	2



TRAFFIC SIGNAL PLAN  
 HAN-U.S. 224/ C.R. 140

D01-SIGNALS-FY14

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