

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

DEL - 36 - 4.97

SCIOTO TOWNSHIP
DELAWARE COUNTY

PROJECT DESCRIPTION

TRAFFIC SIGNAL IMPROVEMENT PROJECT AT THE
INTERSECTION OF U.S. 36 AND S.R. 257. CONVERTING
OVERHEAD FLASHER TO FULL SIGNALIZED
INTERSECTION WITH STOP-LINE AND ADVANCE RADAR
DETECTION AND APPLICABLE SIGNING UPGRADES.

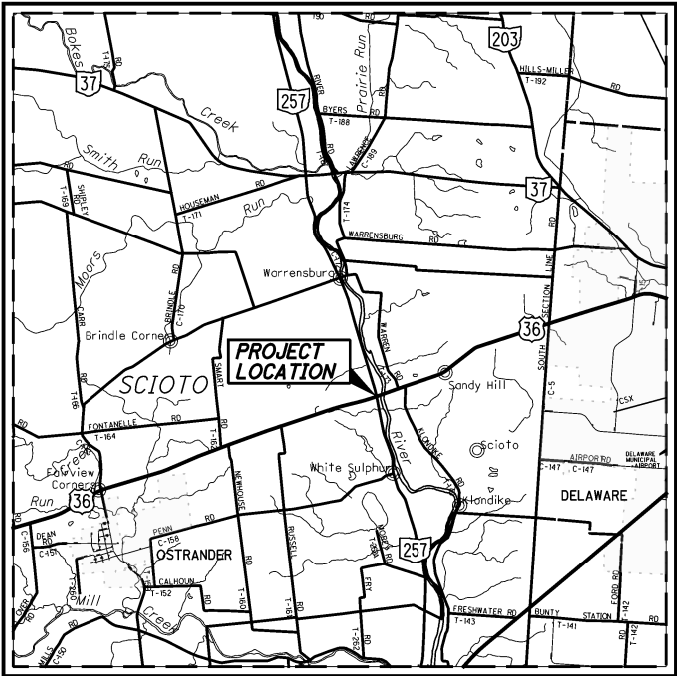
EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: 0.10 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.0 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: N/A
(NOI NOT REQUIRED)*
*ROUTINE MAINTENANCE PROJECT

2019 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF
OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING
SUPPLEMENTAL SPECIFICATIONS LISTED IN THE
PLANS AND CHANGES 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 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.



LOCATION MAP

LATITUDE: 40°17'18" LONGITUDE: 83°09'39"



PORTION TO BE IMPROVED	-----
INTERSTATE HIGHWAY	=====
FEDERAL ROUTES	=====
STATE ROUTES	=====
COUNTY & TOWNSHIP ROADS	=====
OTHER ROADS	-----

DESIGN DESIGNATION

	U.S. 36	S.R. 257
CURRENT ADT (2020)	7620	3700
DESIGN YEAR ADT (2041)	9220	4480
DESIGN HOURLY VOLUME (2041)	920	540
DIRECTIONAL DISTRIBUTION	55%	82%
TRUCKS (24 HOUR B&C)	12%	4%
DESIGN SPEED	55 MPH	55 MPH
LEGAL SPEED	55 MPH	55 MPH

DESIGN FUNCTIONAL CLASSIFICATION:

U.S. 36 - 04 MINOR ARTERIAL (RURAL)
S.R. 257 - 04 MINOR ARTERIAL (RURAL)
NHS PROJECT NO

DESIGN EXCEPTIONS

NONE

UNDERGROUND UTILITIES
Contact Two Working Days
Before You Dig

OHIO811, 8-1-1, or 1-800-362-2764
(Non-members must be called directly)

PLAN PREPARED BY:
HDR
HDR ENGINEERING, INC.
9999 CARVER ROAD, SUITE 210
CINCINNATI, OHIO 45242
513-984-7500

ENGINEERS SEAL:

SIGNED: *Nich Elliott*
DATE: 11/16/2020

STANDARD CONSTRUCTION DRAWINGS						SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
MT-97.10	4/19/19	TC-21.21	7/17/20			800 10/16/20	
MT-105.10	1/17/20	TC-41.20	10/18/13			809 10/16/20	
MT-120.00	1/19/18	TC-41.30	10/18/13			813 10/19/18	
		TC-41.40	10/18/13			816 10/18/19	
HL-10.11	4/17/20	TC-42.20	10/18/13			825 1/17/20	
HL-10.12	1/20/17	TC-52.10	10/18/13			832 10/19/18	
HL-30.11	7/17/20	TC-52.20	7/20/18				
HL-30.21	4/17/20	TC-81.11	7/17/20				
HL-30.22	4/17/20	TC-83.10	1/17/20				
HL-40.10	7/17/20	TC-83.20	7/21/17				
HL-60.11	7/21/17	TC-84.20	10/18/13				
HL-60.12	4/17/20	TC-84.21	10/18/13				
HL-60.31	1/17/20	TC-85.10	4/17/20				
		TC-85.20	7/20/18				
DM-4.2	7/20/12	TC-85.21	4/17/20				
DM-4.4	1/15/16	TC-85.22	1/19/18				

APPROVED *[Signature]*
DATE 11/27/2020 DISTRICT DEPUTY DIRECTOR

APPROVED _____
DATE _____ DIRECTOR, DEPARTMENT OF
TRANSPORTATION

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FEDERAL PROJECT NO.
E191(616)

PID NO.
110445

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT
NONE

DEL - 36 - 4.97

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UTILITIES

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

DEL-CO WATER COMPANY
6773 OLENTANGY RIVER RD
DELAWARE, OH 43015
CONTACT: MR. RUSTY GRIFFITH
PHONE: (740) 548-7746, EXT. 2403
EMAIL: RGRIFFITH@DELCOWATER.COM

AEP
700 MORRISON RD
GAHANNA, OH 43230
PETER JONES
OFFICE PHONE: (614) 552-1180
EMAIL: PGJONES@AEP.COM

CHARTER COMMUNICATIONS
3760 INTERCHANGE DR
COLUMBUS, OH 43204
CONTACT: MR. SAM LUTZ
OFFICE PHONE: (614) 481-5047
CELL PHONE: (614) 348-2994
EMAIL: SAMUEL.LUTZ@CHARTER.COM

ODOT DISTRICT 6 TRAFFIC
400 E WILLIAM ST
DELAWARE, OH 43015
CONTACT: MR. DAVID CARLIN
PHONE: (740) 833-8267
EMAIL: DAVID.CARLIN@DOT.OHIO.GOV

OHIO EDISON
420 SOUTH YORK ST
SPRINGFIELD, OH 45505
CONTACT: MR. CHRIS HARPER
PHONE: (937) 327-1283
EMAIL: HARPERC@FIRSTENERGYCORP.COM

FRONTIER COMMUNICATIONS
1300 COLUMBUS-SANDUSKY RD
MARION, OH 43302
CONTACT: MR. CHRIS AVERY
OFFICE PHONE: (740) 383-0551
CELL PHONE: (740) 360-8001
EMAIL: IRA.AVERY@FTR.COM

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

WORK INSPECTION

BEFORE ANY WORK IS STARTED ON THE TRAFFIC SIGNAL, THE DISTRICT SIX TRAFFIC ENGINEER (740-833-8198) AND THE CONTRACTORS REPRESENTATIVE SHALL REVIEW AND RESOLVE ANY POTENTIAL PROBLEMS AT THE LOCATION WHERE THE NEW SIGNAL WILL BE CONSTRUCTED.

THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER WITH 72 HOUR NOTICE OF ANY SIGNAL WORK TO BE PERFORMED AT THE INTERSECTION SITE(S) SO THAT INSPECTION SERVICES CAN BE SUPPLIED.

SURVEYING PARAMETERS

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. PRIMARY PROJECT CONTROL INFORMATION IS CONTAINED IN A TABLE AT THE BOTTOM OF THIS SHEET.

USE THE FOLLOWING PROJECT CONTROL, VERTICAL POSITIONING, AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

PROJECT CONTROL

POSITIONING METHOD: STATIC GNSS
MONUMENT TYPE: B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD88
GEOID: GEOID12B

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83(2011)(EPOCH:2010.0000)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLANE (NORTH) ZONE
COMBINED SCALE FACTOR:
ORIGIN OF COORDINATE
SYSTEM: 0,0

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

UNITS ARE IN U.S. SURVEY FEET.

NOTIFICATION OF CONSTRUCTION INITIATION

AT LEAST FOURTEEN DAYS PRIOR TO STARTING INITIAL CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL ADVISE THE DISTRICT OFFICE OF COMMUNICATIONS VIA EMAIL AT d06.pio@dot.ohio.gov, THE DISTRICT WORK ZONE TRAFFIC MANAGER VIA EMAIL AT d06.mot@dot.ohio.gov AND THE CENTRAL OFFICE SPECIAL HAUL PERMITS SECTION VIA EMAIL AT hauling.permits@dot.ohio.gov OF THE ANTICIPATED START DATE OF ANY CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO THE PLACING OF WORK ZONE SIGNS. THE NOTIFICATION SHALL ALSO INCLUDE THE PROJECT NUMBER, PID, NAME AND PHONE NUMBER OF THE CONTRACTOR, A POINT OF CONTACT AND THE ANTICIPATED IMPACT ON TRAFFIC. THE CONTRACTOR WILL IMMEDIATELY INFORM THE DISTRICT OFFICE OF COMMUNICATIONS AND THE DISTRICT WORK ZONE TRAFFIC MANAGER OF ANY AND ALL DELAYS AND/OR CHANGES REGARDING THE CONSTRUCTION INITIATION DATE.

NEW TRAFFIC SIGNAL INSTALLATION

THIS WORK CONSISTS OF FURNISHING AND INSTALLING TRAFFIC SIGNAL EQUIPMENT, COMPLETE AND READY FOR SERVICE. THIS WORK ALSO INCLUDES NECESSARY EXCAVATION AND BACKFILL, DISPOSAL OF DISCARDED MATERIALS, RESTORATION OF DISTURBED FACILITIES AND SURFACES TO A CONDITION EQUAL TO THAT EXISTING BEFORE THE WORK STARTED, AND ELECTRICAL TESTING AS SPECIFIED.

PULL BOXES, CONDUITS, GROUND RODS, AND CABLE SPLICING KITS REQUIRED FOR TRAFFIC SIGNAL EQUIPMENT INSTALLATIONS ARE SPECIFIED IN ITEM 625.

BEFORE ANY WORK IS STARTED ON THE TRAFFIC SIGNAL, THE DISTRICT SIX TRAFFIC ENGINEER (740-833-8267) AND THE CONTRACTORS REPRESENTATIVE SHALL REVIEW AND RESOLVE ANY POTENTIAL PROBLEMS AT THE LOCATION WHERE THE NEW SIGNAL WILL BE CONSTRUCTED.

ALL OF THE REQUIRED PERMANENT SIGNS SHALL BE ERECTED AND THE REQUIRED PERMANENT PAVEMENT MARKINGS SHALL BE IN PLACE PRIOR TO THE FINAL ACCEPTANCE OF THE TRAFFIC SIGNAL.

PRIOR TO THE FINAL ACCEPTANCE OF THE COMPLETED TRAFFIC SIGNAL, THE DISTRICT SIX ROADWAY SERVICES REPRESENTATIVE AND THE CONTRACTORS REPRESENTATIVE, SHALL INSPECT AND RESOLVE ANY EXISTING PROBLEMS PRIOR TO THE ACCEPTANCE OF EACH NEW SIGNAL BY THE OHIO DEPARTMENT OF TRANSPORTATION.

SIGNAL ACTIVATION

PRIOR TO ACTIVATING THE NEW TRAFFIC SIGNAL TO STOP-AND-GO MODE AND/OR REMOVING THE EXISTING TRAFFIC SIGNAL FROM SERVICE, ALL ITEMS IN THE PROPOSED SIGNAL PLAN SHALL BE FULLY COMPLETED, (I.E., VEHICLE DETECTION, PEDESTRIAN SIGNAL HEADS, ETC). IF THERE ARE CONSTRUCTABILITY ISSUES (I.E., ROADWAY WIDENING, ETC.) THAT PREVENT THE SIGNAL FROM BEING COMPLETED PRIOR TO ACTIVATION, IT SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER. THE DISTRICT TRAFFIC ENGINEER WILL THEN REVIEW, APPROVE OR REJECT PROPOSALS TO ACTIVATE THE TRAFFIC SIGNAL PRIOR TO COMPLETION.

THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER AT LEAST 10 WORKING DAYS PRIOR TO SCHEDULING THE FINAL INSPECTION OF THE SIGNAL INSTALLATION. FINAL INSPECTION IS NOT CONSIDERED COMPLETE UNTIL DESIGNATED DISTRICT TRAFFIC PERSONNEL INSPECT THE TRAFFIC SIGNAL AND ISSUE WRITTEN APPROVAL. IF ISSUES ARE FOUND DURING THE FINAL INSPECTION THAT EFFECT THE SAFETY OF THE TRAVELING PUBLIC AND/OR THE EFFICIENCY OF THE INTERSECTION, THE SIGNAL SHALL NOT BE ACTIVATED ON THE PROPOSED DATE. ANY PUNCH LIST ITEMS THAT ARE FOUND SHALL BE CORRECTED AND REINSPECTED BY DISTRICT TRAFFIC PERSONNEL PRIOR TO FINAL ACCEPTANCE. ODOT FORCES SHALL ONLY ASSUME DAY TO DAY MAINTENANCE OF THE TRAFFIC SIGNAL AFTER FINAL WRITTEN ACCEPTANCE HAS BEEN ISSUED.

STRAIN POLE AND PEDESTAL FOUNDATION ELEVATIONS

ELEVATIONS SHOWN IN THE PLANS FOR STRAIN POLE AND PEDESTAL FOUNDATIONS ARE FOR COMPUTATIONAL PURPOSES ONLY. THE ACTUAL ELEVATION OF THE FOUNDATION SHALL BE IN ACCORDANCE WITH TRAFFIC SCD TC-21.21 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-21.21 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.

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 NEW ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLER, CABINET, UNINTERRUPTIBLE POWER SUPPLY, VEHICLE DETECTION EQUIPMENT, LED LAMP UNITS, NETWORK AND COMMUNICATION/INTERCONNECT EQUIPMENT.

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

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

ENVIRONMENTAL

ANY AND ALL CONSTRUCTION DEBRIS, EARTHEN DEBRIS, EXCESS ASPHALT OR CONCRETE, WOOD DEBRIS FROM CLEARING, EXCESS FILL MATERIAL, AND TRASH SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED UPLAND SITE OR LAND FILL ABOVE FEMA 100-YEAR FLOOD ELEVATIONS.

NO TREE CLEARING IS REQUIRED OR PERMITTED ON THIS PROJECT.

CONTRACTOR SHALL AVOID WORKING BEYOND PROPOSED CONSTRUCTION LIMITS, BELOW THE ORDINARY HIGH WATER MARK OF STREAMS, WITHIN STREAM DITCHES UNLESS OTHERWISE APPROVED TO DO SO BY DISTRICT 6 ENVIRONMENTAL TEAM.

THE CONTRACTOR SHALL KEEP ALL IDLE EQUIPMENT, FUELS, LUBRICANTS, AND ANY STORAGE FOR/OF POTENTIALLY TOXIC OR HAZARDOUS MATERIALS OUT OF THE FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA.

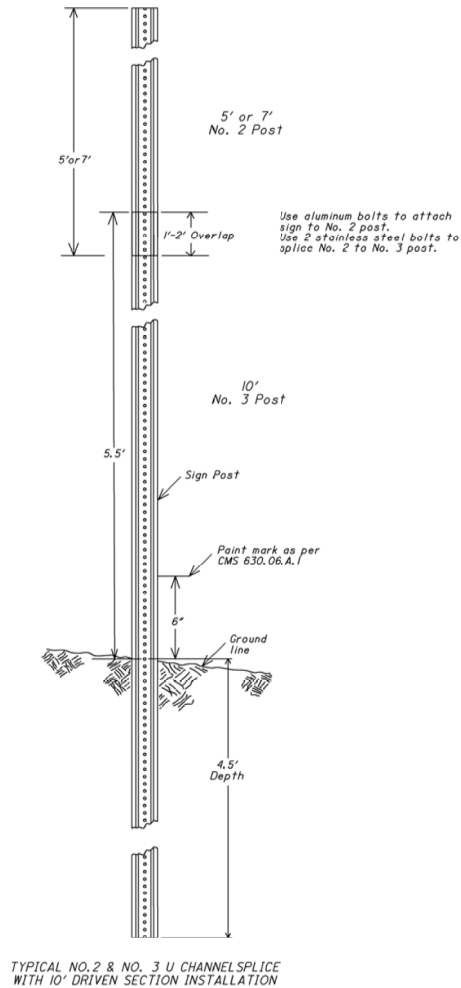
PRIMARY PROJECT CONTROL INFORMATION								
POINT NUMBER	STATION AND OFFSET @ SHARON ROAD		GRID COORDINATES U.S. SURVEY FEET		SCALED COORDINATES U.S. SURVEY FEET		ORTHOMETRIC HEIGHT	DESCRIPTION
	STATION	OFFSET	NORTHING	EASTING	NORTHING	EASTING	(ELEVATION)	
CP1	262+65.21	84.16’ LT	227258.8221	1784173.0088	-	-	883.97	IRON PIN CAPPED "BIGROUP"
CP2	259+78.70	35.59’ LT	227115.6034	1783920.1519	-	-	894.40	IRON PIN CAPPED "BIGROUP"

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630 - SIGNING, MISC.: SPLICED U-CHANNEL SIGN SUPPORT

IN ADDITION TO THE REQUIREMENTS OF CMS 630.06, THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING A SPLICED U-CHANNEL SIGN SUPPORT AS SHOWN IN THE DETAIL BELOW. SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH SCD TC-42.20.

PAYMENT FOR ITEM 630 SIGNING, MISC.: SPLICED U-CHANNEL SIGN SUPPORT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH SIGN SUPPORT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED HARDWARE NECESSARY FOR A COMPLETE INSTALLATION.



625 - LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), IES-II, LED, 15000-16300 LUMENS, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT'S CONSTRUCTION AND MATERIALS SPECIFICATIONS AND SUPPLEMENTAL SPECIFICATION 813 AND 913, LUMINAIRES FOR CONVENTIONAL LIGHTING SHALL BE AS FOLLOWS:

LUMINAIRES SHALL BE AMERICAN ELECTRIC LIGHTING (AEL) AUTOBAHN ATBM SERIES, 135W, (ATBM-P40-240-R2-3K-NL-XXX), COOPER EATON "VERDEON" SERIES, 123W, (VERD-G-C029-D-U-T2-7030-10K-IP66-4B-AP), OR EQUAL APPROVED BY THE ENGINEER.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH C&MS ITEM 625 "LUMINAIRE CONVENTIONAL, SOLID STATE (LED), IES-II, LED, 15000-16300 LUMENS, AS PER PLAN" FOR EACH LUMINAIRE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

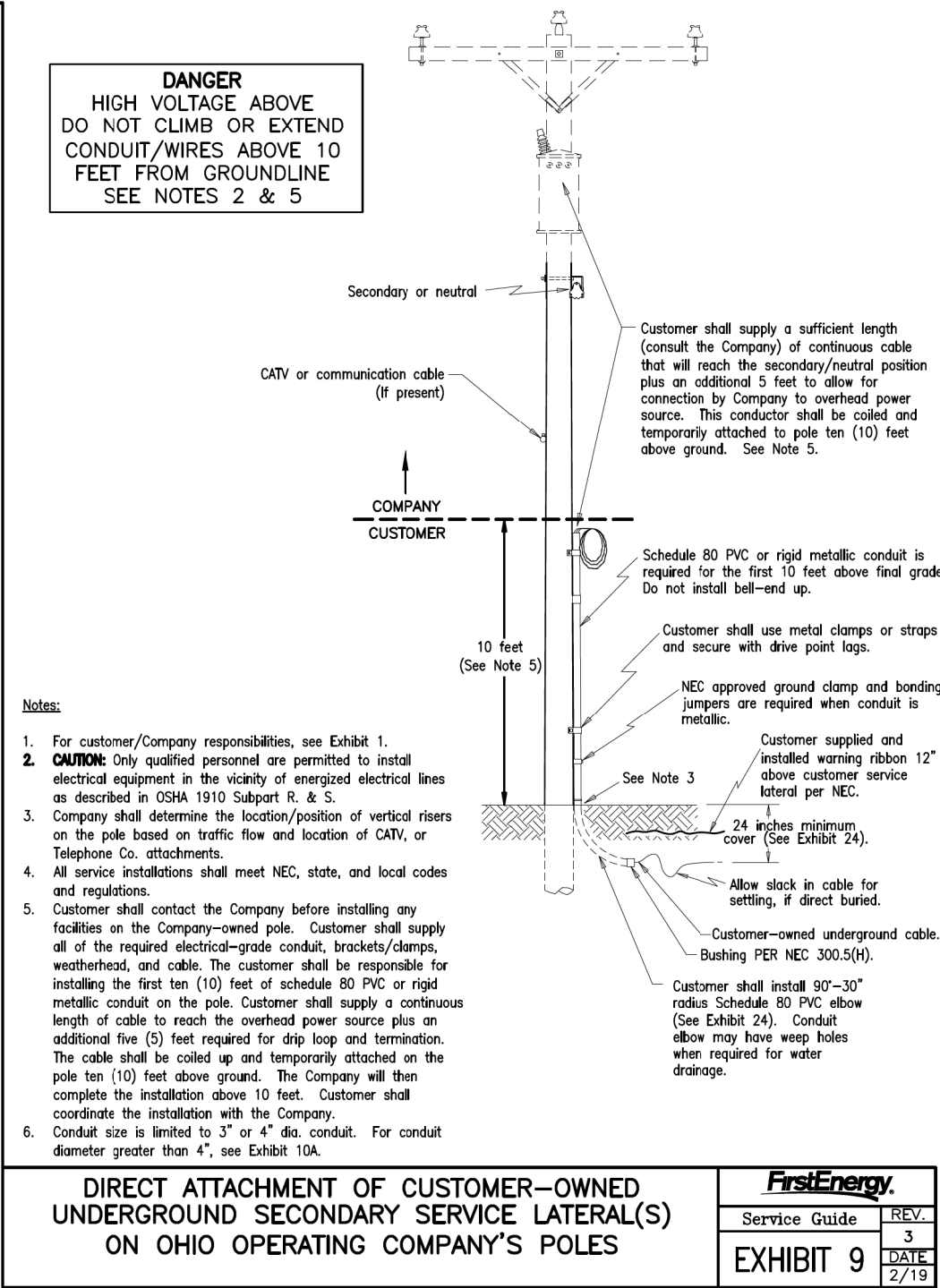
632 POWER SERVICE, AS PER PLAN

THE CONTRACTOR SHALL CONTACT THE CALL CENTER OF OHIO EDISON (FIRST ENERGY CORPORATION) AT 1-800-633-4766 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.

POWER SERVICE CONDUIT, BRACKETS/CLAMPS, AND CABLE SHALL BE INSTALLED IN ACCORDANCE WITH FIRST ENERGY SERVICE GUIDE EXHIBIT 9 SHOWN ON THIS SHEET. CONTRACTOR SHALL INSTALL ONLY THOSE ITEMS DESCRIBED UNDER THE "CUSTOMER" DESIGNATED RESPONSIBILITIES.

THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 120/240 VOLTS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND THE PAYING OF ALL FEES WITH THE EXCEPTION OF NORMAL MONTHLY ENERGY CHARGES. WHERE THERE IS AN EXISTING TRAFFIC SIGNAL THAT IS BEING REPLACED, THE CONTRACTOR SHALL COORDINATE WITH THE POWER COMPANY TO CONTINUE BILLING ON THE EXISTING DISTRICT 6 ACCOUNT. WHERE A NEW SIGNAL IS BEING INSTALLED, THE CONTRACTOR SHALL ESTABLISH THE ACCOUNT IN THE DISTRICT'S NAME FROM THE ONSET.

PAYMENT FOR ITEM 632 POWER SERVICE, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH AND INCLUDE ALL NECESSARY LABOR, MATERIALS, EQUIPMENT, AND COORDINATION FOR A COMPLETE INSTALLATION.



Notes:

1. For customer/Company responsibilities, see Exhibit 1.
2. **CAUTION:** Only qualified personnel are permitted to install electrical equipment in the vicinity of energized electrical lines as described in OSHA 1910 Subpart R. & S.
3. Company shall determine the location/position of vertical risers on the pole based on traffic flow and location of CATV, or Telephone Co. attachments.
4. All service installations shall meet NEC, state, and local codes and regulations.
5. Customer shall contact the Company before installing any facilities on the Company-owned pole. Customer shall supply all of the required electrical-grade conduit, brackets/clamps, weatherhead, and cable. The customer shall be responsible for installing the first ten (10) feet of schedule 80 PVC or rigid metallic conduit on the pole. Customer shall supply a continuous length of cable to reach the overhead power source plus an additional five (5) feet required for drip loop and termination. The cable shall be coiled up and temporarily attached on the pole ten (10) feet above ground. The Company will then complete the installation above 10 feet. Customer shall coordinate the installation with the Company.
6. Conduit size is limited to 3" or 4" dia. conduit. For conduit diameter greater than 4", see Exhibit 10A.

DIRECT ATTACHMENT OF CUSTOMER-OWNED UNDERGROUND SECONDARY SERVICE LATERAL(S) ON OHIO OPERATING COMPANY'S POLES

FirstEnergy	
Service Guide	REV.
EXHIBIT 9	3
	DATE 2/19

GENERAL NOTES

DEL - 36 - 4.97

CALCULATED
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CHECKED
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GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) AND THE TC SERIES OF STANDARD CONSTRUCT/ON 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.

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.

GROUNDING AND BONDING (CONTINUED)

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 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	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.

632 STRAIN POLE (STANDARD AND COMBINATION), TYPE TC-81.11, AS PER PLAN

IN ADDITION TO PROVISIONS OF THE ODOT C&MS, FURNISH AND INSTALL SIGNAL POLES AS SPECIFIED IN THE PLANS, INCLUDING POLE HEIGHTS WHICH DIFFER FROM THE POLE HEIGHTS SPECIFIED ON SCD TC-81.11. THE STRAIN POLE DESIGNER SHALL PROVIDE DRAWINGS OF A STRAIN POLE WITH STRUCTURAL ASPECTS OF THE DESIGN AND MATERIALS IN COMPLIANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS. THE STRAIN POLE SHALL BE ASTM A595 GRADE A OR APPROVED EQUAL WITH A MINIMUM YIELD STRENGTH OF 50 KSI. DESIGN PARAMETERS SHALL BE AS DESCRIBED ON SCD TC-81.11.

SUBMIT TO THE ENGINEER PRIOR TO INCORPORATION: TWO COPIES OF THE STRAIN POLE DRAWINGS AND SHOP DRAWINGS, WHICH IDENTIFY AND DESCRIBE EACH MANUFACTURED STRAIN POLE AND STRAIN POLE ITEM WHICH IS BEING INCORPORATED INTO THE CONSTRUCTION. THE STRAIN POLE DRAWINGS AND SHOP DRAWINGS SHALL EACH BE REVIEWED, SEALED, STAMPED, AND DATED BY TWO OHIO REGISTERED PROFESSIONAL ENGINEERS.

PAYMENT FOR ITEM 632 "STRAIN POLE, (BY TYPE), AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE PER EACH COMPLETE AND IN PLACE, AND SHALL INCLUDE ALL STRAIN POLE DESIGN, LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.

632 SIGNALIZATION, MISC. CDMA MODEM, FURNISH ONLY

FURNISH A CDMA MODEM, A 3-IN-1 SHARKFIN WIFI ANTENNA WITH CABLES, AND 2-6' AND 2-3' ETHERNET CABLE FOR REMOTE WIRELESS CELLULAR COMMUNICATION. FOR NETWORK CONSISTENCY CDMA MODEMS SHALL BE THE SIERRA WIRELESS AIRLINK MP70 MODEL CONFIGURED FOR THE AT&T NETWORK.

THIS ITEM SHALL INCLUDE THE FURNISHING OF A COMTROL ROCKETLINX ES8108 ETHERNET SWITCH WITH ALL POWER SUPPLIES NECESSARY TO FUNCTION.

THIS ITEM SHALL INCLUDE THE FURNISHING AND INSTALLATION OF A MOUTING BRACKET FOR THE ANTENNA WITH ALL NECESSARY HARDWARE INCLUDING BUT NOT LIMITED TO SPRING NUTS, WASHERS, AND BOLTS THAT INSTALLS TO THE MOUNTING CHANNEL ON THE SIDE OF THE SIGNAL CABINET.

THE CDMA MODEM EQUIPMENT SHALL BE DELIVERED TO ODOT DISTRICT 6 TRAFFIC FOR PROGRAMMING AND INSTALLATION.

ODOT DISTRICT 6 TRAFFIC
ATTN: DAVID CARLIN
400 EAST WILLIAM STREET
DELAWARE, OHIO 43015

THE CONTRACTOR SHALL PROVIDE THE MODEM SERIAL NUMBERS AND NECESSARY ESN NUMBERS FOR ODOT TO ESTABLISH WIRELESS SERVICE.

THE DEPARTMENT WILL MEASURE "SIGNALIZATION, MISC.: CDMA MODEM, FURNISH ONLY" BY THE NUMBER OF COMPLETE UNITS FURNISHED AND RECEIVED BY ODOT DISTRICT 6 TRAFFIC.

ITEM 809 - ATC V6.24 CONTROLLER, AS PER PLAN

THE CONTROLLER UNIT SHALL BE FURNISHED AND INSTALLED PER SS 809 AND BE LISTED ON THE TRAFFIC AUTHORIZED PRODUCTS (TAP) LIST.

THE CONTROLLER SHALL BE AN ECONOLITE COBALT AND COMPATIBLE WITH THE CABINET TYPE BEING INSTALLED.

633 UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS 633 AND 733, A CABINET RISER (8 INCH MINIMUM) AND ANCHOR BOLTS SHALL BE PROVIDED WITH THE BASE MOUNTED CABINET. BEFORE PERFORMING THE WORK, THE CONTRACTOR, THE DISTRICT TRAFFIC ENGINEER AND THE PROJECT ENGINEER WILL PERFORM A SITE INSPECTION TO ESTABLISH THE LOCATION OF THE UPS CABINET AND FOUNDATION.

THE UPS CABINET SHALL INCLUDE A GENERATOR POWER PANEL WITH A HEAVY DUTY POWER RELAY VERSUS THE LINE VOLTAGE GENERATOR SWITCH. THE GENERATOR INLET SHALL BE A RECESSED PANEL WITH A DOOR THAT IS FLUSH WITH THE EXTERNAL SIDE OF THE UPS CABINET. IT SHALL INCLUDE A RECESSED PLUG, AUTOMATIC TRANSFER SWITCH, A DOOR THAT SECURELY CLOSES OVER THE POWER CORD, AND AN LED LIGHT THAT INDICATES LINE POWER IS AVAILABLE.

THE UPS OUTPUT NOTIFICATIONS FOR ON BATTERY, BATTERY 2 HOUR TIMER, AND LOW BATTERY-NO LINE POWER SHALL BE WIRED INTO THE TRAFFIC SIGNAL CABINET BACK PANEL TO PROVIDE SPECIAL STATUS ALARMS FOR EACH OUTPUT INTO THE SIGNAL CONTROLLER. SPECIAL STATUS ALARMS SHALL BE PROGRAMMED INTO THE CONTROLLER.

THIS ITEM SHALL INCLUDE A RED LED STATUS INDICATOR LAMP TO ALLOW MAINTENANCE PERSONNEL AND LAW ENFORCEMENT TO QUICKLY ASSESS WHETHER A TRAFFIC SIGNAL CABINET IS BEING POWERED BY A UPS. THE LED HOUSING SHALL BE NEMA 4X, IP65 OR IP66, RATED FOR OUTDOOR USE AND BE TAMPER/SHATTER RESISTANT. IT SHALL BE A DOMED ENCLOSURE CONTAINING A RED LENS WITH LED THAT IS VISIBLE FROM 100 FEET MINIMUM. THE ENCLOSURE AND LED LAMP UNIT SHALL BE PLACED ON THE STREET-SIDE OF THE CABINET OR CENTERED ON THE TOP SURFACE OF THE UPS CABINET AND SEALED FROM WATER INTRUSION. IT SHOULD 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. THE RED LED SHALL ONLY ILLUMINATE TO INDICATE THE CABINET IS OPERATING UNDER UPS BACKUP POWER (THE "BACKUP" OPERATING CONDITION). THIS ITEM ALSO INCLUDES PROGRAMMING THE UPS STATUS RELAY OUTPUTS TO PRODUCE THE LAMP STATUS DISPLAYS. THESE STATUS DISPLAYS WILL BE SOLID 100% DUTY CYCLE (NOT FLASHING) DISPLAYS. THE OPERATING VOLTAGE OF THE LED LAMP SHALL BE 120V AC UNLESS OTHERWISE INDICATED.

A BATTERY BALANCER SHALL BE FURNISHED AND INSTALLED WITH THE SYSTEM.

THIS ITEM SHALL INCLUDE A 60 MONTH WARRANTY AS REQUIRED PER ODOT CMS AND SUPPLEMENTAL SPEC 800.

633 - CABINET, TYPE TS2, AS PER PLAN

THE CABINET SHALL BE FURNISHED AND INSTALLED ACCORDING TO CMS 633 AND 733, AND BE LISTED ON THE TRAFFIC AUTHORIZED PRODUCTS LIST (TAP).

THE EQUIPMENT PROVIDED AS PART OF THIS CONTRACT SHALL BE THE LATEST MODEL, CURRENTLY UNDER PRODUCTION AND NEW. THE CATALOG NUMBER FOR THE GROUND MOUNTED P CABINET SHALL BE EL 720 SIZE 7 (SIZE R) WITH A MINIMUM OF THREE SHELVES. THE CABINET SHALL BE ALUMINUM WITH THE NATURAL ALUMINUM FINISH INSIDE AND OUTSIDE. THE LOAD BAY SHALL BE THE TF5016 OR NEWER, WITH 16 LOAD SWITCH POSITIONS.PROVIDE ONLY THE EXACT NUMBER OF LOAD SWITCHES REQUIRED. EACH LOAD SWITCH SHALL HAVE LIGHT EMITTING DIODES (LEDS) FOR THE CONTROLLER OUTPUT AND LOAD SWITCH OUTPUT. ALSO PROVIDE 8 FLASH RELAY POSITIONS (BUT ONLY SUPPLY THE EXACT NUMBER OF RELAYS NEEDED FOR EACH SPECIFIC INTERSECTION), 1 NEMA 2-CIRCUIT FLASHER, AND AN MMU MONITOR. EACH CABINET SHALL COME EQUIPPED WITH TWO 16-CHANNEL CABINET DETECTOR RACKS (CDR) INCLUDING BUS INTERFACE UNITS (BIU). THE LOOP DETECTOR TERMINATION PANEL FOR THE SECOND DETECTOR RACK SHALL BE OMITTED. WHERE LOOP DETECTORS ARE SPECIFIED, THE CABINET SHALL INCLUDE THE EXACT NUMBER OF FOUR CHANNEL DETECTOR CARDS WITH SOFTWARE REQUIRED FOR EACH INTERSECTION. THE CABINET SHALL BE EQUIPPED WITH A CABINET POWER SUPPLY (CPS). THE CABINET SHALL BE WIRED TO ALLOW THE USE OF EVP CONFIRMATION LIGHTS. THE POLICE PANEL ON THE OUTSIDE OF THE CABINET DOOR SHALL HAVE A FLASH SWITCH, A SWITCH FOR AUTOMATIC/MANUAL OPERATION, SIGNAL ON/OFF SWITCH AND A MANUAL PUSHBUTTON WITH A MINIMUM CORD LENGTH OF 10 FEET. THE TECHNICIAN PANEL ON THE INSIDE OF THE CABINET DOOR SHALL INCLUDE A FLASH SWITCH, A STOP TIME SWITCH, AND AN EQUIPMENT ON/OFF SWITCH. A CABINET DOOR OPEN SWITCH AND A CABINET LIGHT ON / OFF SWITCH SHALL ALSO BE SUPPLIED.

THE CONTROLLER CABINET SHALL ALSO INCLUDE:

- A. SLIDE-OUT LAPTOP SHELF
- B. INTERIOR, UNDERSHELF LED CABINET LIGHTING, INCLUDING A MINIMUM OF 2 PANELS OF 6 HIGH-INTENSITY LED'S EACH AND A DOOR-ACTIVATED SWITCH. THE LED PANELS SHALL BE MOUNTED IN LOCATIONS TO MAXIMIZE LIGHT ON THE CABINET EQUIPMENT.
- C. A GOOSENECK/ADJUSTABLE LIGHT FIXTURE WITH AN LED LAMP. THE ADJUSTABLE LIGHT FIXTURE SHALL BE MOUNTED ON THE LOWER RIGHT SIDE OF THE CONTROLLER CABINET.
- D. A MINIMUM OF TWO (2) GFCI PROTECTED RECEPTACLES
- E. A MINIMUM OF SIX (6) SURGE PROTECTED (NON-GFCI)RECEPTACLES

CONTROLLER CABINET LABELING TO IDENTIFY THE WIRING AND FUNCTION DETECTOR LEAD-IN CABLE: PHASE NUMBER SERVICE, DIRECTION, MOVEMENT TYPE, AND LOOP PLAN NUMBER.

SIGNAL HEAD FIELD WIRING: PHASE NUMBER, DIRECTION, MOVEMENT TYPE, AND COLOR (RED, YELLOW, GREEN, YELLOW ARROW, GREEN ARROW) OR PEDESTRIAN MOVEMENT.

THE MALFUNCTION MANAGEMENT UNIT SHALL BE MANUFACTURED BY EDI AND HAVE A RJ-45 PORT FOR PC/NETWORK COMMUNICATIONS.

EACH CONDUIT ENTRANCE TO THE CABINET SHALL BE SEALED WITH A RUBBER PIPE/CONDUIT SEAL GASKET. THE SEAL SHALL BE OF A MATERIAL AND TYPE TIGHTLY FITTING AND ABLE TO SEAL OUT WATER, INSECTS, RODENTS, AND DIRT. THE SEAL SHALL BE EASILY REMOVED FOR SERVICE INSTALLATIONS OR CABLE REPLACEMENTS.

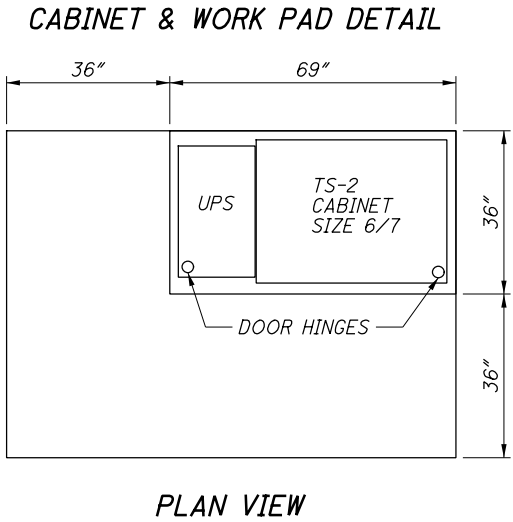
633 - CABINET, TYPE TS2, AS PER PLAN (CONTINUED)

PROVIDE A HAND/ON/AUTO SWITCH WITHIN SIGNAL CONTROLLER CABINET AND DEDICATED CIRCUIT BREAKER FOR HIGHWAY LIGHTING. DEDICATE ONE LEG OF THE 120 POWER SERVICE TO THE TRAFFIC SIGNAL AND ONE LEG TO THE HIGHWAY LIGHTING. DO NOT POWER LIGHTS THROUGH THE UPS.

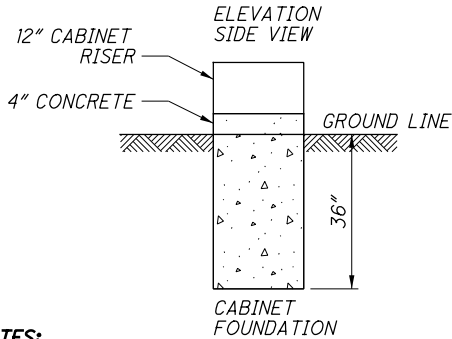
THE CONTRACTOR SHALL PROVIDE THE CABINET WIRING DIAGRAM/PLANS IN .PDF FORMAT TO ODOT DISTRICT 6 TRAFFIC.

PAYMENT FOR ITEM 633 CABINET, TYPE TS2, AS PER PLAN, WILL BE AT THE CONTRACT BID PRICE COMPLETE AND IN PLACE AND CONNECTIONS TESTED AND ACCEPTED.

TS-2 SIZE 6/7 CABINET DETAIL (TYP.)



CABINET FOUNDATION DETAIL



NOTES:

- 1) THE SIZE OF THE UPS FOUNDATION MAY VARY BASED ON THE CABINET SIZE PROVIDED.
- 2) UPS FOUNDATION ELEVATION SHOULD MATCH CABINET FOUNDATION ELEVATION.
- 3) THE UPS CABINET SHALL BE MOUNTED FLUSH UP AGAINST THE SIGNAL CABINET AND SEALED.
- 4) CONDUIT AND WIRING FROM THE SIGNAL CABINET TO THE UPS SHALL BE INSTALLED THROUGH THE CABINET RISER.

809 STOP LINE RADAR DETECTION, AS PER PLAN

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 (MINIMUM 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 809 STOP LINE RADAR DETECTION, AS PER PLAN 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.

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 C&MS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE REUSED AS PART OF A NEW INSTALLATION ON THE PROJECT OR DELIVERED TO 400 E WILLIAM ST. DELAWARE OHIO IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

ITEMS TO BE SALVAGED:
-CONTROLLER CABINET AND COMPONENTS

THE CONTRACTOR SHALL, WHEN DIRECTED BY THE ENGINEER IN WRITING, REMOVE AND DISPOSE OF THE ITEMS AT NO ADDITIONAL COST TO THE PROJECT.

809 ADVANCE RADAR DETECTION, AS PER PLAN

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 (MINIMUM 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 809 ADVANCE RADAR DETECTION, AS PER PLAN 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.

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ITEM 614 - MAINTAINING TRAFFIC

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (CURRENT EDITION). COPIES ARE AVAILABLE FROM,

THE OHIO DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC,
1980 WEST BROAD STREET
COLUMBUS, OHIO 43223

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER.

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

CONSTRUCTION OPERATIONS SHALL NOT BEGIN UNTIL ALL TRAFFIC CONTROL IS IN PLACE AND APPROVED BY ODOT PERSONNEL. THE CONSTRUCTION INSPECTOR SHALL APPROVE ALL TEMPORARY TRAFFIC CONTROL DEVICES FOR CONDITION AND LOCATION BEFORE THE CONTRACTOR WILL BE ALLOWED TO BEGIN WORK. IF THE CONTRACTOR DOES NOT COMPLY WITH THE STANDARDS, HIS PERMIT SHALL BE REVOKED AND ALL WORK SHALL BE TERMINATED.

NOTIFICATION OF TRAFFIC RESTRICTIONS

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR SHALL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW TO INFORM SPECIAL HAULING PERMITS SECTION (HAULING.PERMITS@DOT.OHIO.GOV) AND THE DISTRICT PUBLIC INFORMATION OFFICE PIO (D06.PIO@DOT.OHIO.GOV). THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

INFORMATION SHOULD INCLUDE BUT IS NOT LIMITED TO ALL CONSTRUCTION ACTIVITIES THAT IMPACT OR INTERFERE WITH TRAFFIC AND SHALL LIST THE SPECIFIC LOCATION, TYPE OF WORK, ROAD STATUS, DATE AND TIME OF RESTRICTION, DURATION OF RESTRICTION, NUMBER OF LANES MAINTAINED, NUMBER OF LANES CLOSED, MINIMUM VERTICAL CLEARANCE, MINIMUM WIDTH OF DRIVABLE PAVEMENT, DETOUR ROUTES IF APPLICABLE, AND ANY OTHER INFORMATION REQUESTED BY THE PROJECT ENGINEER.

ANY UNFORESEEN CONDITIONS NOT SPECIFIED IN THE PLANS REQUIRING TRAFFIC RESTRICTIONS SHALL ALSO BE REPORTED TO THE PROJECT ENGINEER USING THE NOTIFICATION TIME FRAME TABLE.

PERMITTED LANE CLOSURES

THE EXISTING NUMBER OF LANES IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES EXCEPT DURING PERIODS OF WORK AT WHICH TIME LANES MAY BE CLOSED IN ACCORDANCE WITH THE LANE VALUE CONTRACT TABLE FOR EACH LOCATION UNLESS OTHERWISE SHOWN IN THE PLANS.

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH CMS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITME 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

614 MAINTAINING TRAFFIC (LANES OPEN DURING HOLIDAYS OR SPECIAL EVENTS)

NO WORK SHALL BE PERFORMED AND THE SAME NUMBER OF LANES AS WERE AVAILABLE AT THE START OF THE PROJECT SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

HOLIDAYS:

CHRISTMAS	FOURTH OF JULY
NEW YEAR'S EVE	LABOR DAY
MEMORIAL DAY	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 THIS PERIOD:

DAY OF HOLIDAY OR EVENT	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00 PM FRIDAY THROUGH 6:00 AM MONDAY
MONDAY	12:00 PM FRIDAY THROUGH 6:00 AM TUESDAY
TUESDAY	12:00 PM MONDAY THROUGH 6:00 AM WEDNESDAY
WEDNESDAY	12:00 PM TUESDAY THROUGH 6:00 AM THURSDAY
THURSDAY	12:00 PM WEDNESDAY THROUGH 6:00 AM FRIDAY
THANKSGIVING	5:00 AM WEDNESDAY THROUGH 6:00 AM MONDAY
FRIDAY	12:00 PM THURSDAY THROUGH 6:00 AM MONDAY
SATURDAY	12:00 PM FRIDAY THROUGH 6:00 AM MONDAY

SPECIAL EVENTS:

DELAWARE COUNTY FAIR - LANE OR SHOULDER CLOSURES ARE NOT PERMITTED DURING THE DELAWARE COUNTY FAIR 6AM-10PM DAILY ON THE FOLLOWING ROUTES:

US 23 BETWEEN SR 750 AND SR 98
US 36 BETWEEN SR 257 AND I-71
SR 37 BETWEEN SR 257 AND I-71
US 42 BETWEEN SR 229 AND SR 745
SR 521 BETWEEN US 36 AND SR 61

NO EXTENSIONS OF TIME SHALL BE GRANTED FOR DELAYS IN MATERIAL DELIVERIES, UNLESS SUCH DELAYS ARE INDUSTRY WIDE, OR FOR LABOR STRIKES, UNLESS SUCH STRIKES ARE AREA WIDE.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF \$50 FOR EACH MINUTE THE ABOVE DESCRIBED LANE CLOSURE RESTRICTIONS ARE VIOLATED.

Notification Time Frame Table			
Item	Duration of Closure	Notification due to District 6 Communications Office	Sign Displayed to Public
Ramp & Road Closures	>= 2 weeks	21 calendar days prior to closure	14 calendar days prior to closure
	> 12 hours & < 2 weeks	14 calendar days prior to closure	7 calendar days prior to closure
	< 12 hours	4 business days prior to closure	2 business days prior to closure
Lane Closures & Restrictions	>= 2 weeks	14 calendar days prior to closure	
	< 2 weeks	5 business days prior to closure	
Start of Construction & Traffic Pattern Changes	N/A	14 calendar days prior to implementation	

LANE VALUE CONTRACT TABLE						
Section (SLM)	Existing Number of Through Lanes per Direction	Lane closures are NOT permitted:				Disincentive Amounts per minute per lane
		Lane Reduction	Mon to Fri	Sat	Sun	
DEL-36						
Delaware County Line Road (0.00) to Section Line Road (6.94)	1	1 Shared Lane	No Restriction	No Restriction	No Restriction	\$0
Baker Rd/Sweeny Rd (13.10) to Africa Road (17.06)	2	2 to 1	6AM-9AM & 3PM-7PM	No Restriction	No Restriction	\$75
Africa Road (17.06) to Wilson Road (18.28)	2	2 to 1	6AM-9AM & 3PM-7PM	No Restriction	No Restriction	\$75
Wilson Road (18.28) to Domigan Rd/Caters Corner Rd (20.06)	1	1 Shared Lane	3PM-7PM	No Restriction	No Restriction	\$50
Short term shoulder closures are not permitted 6AM-9AM and 3PM-7PM Monday-Friday.						

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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 OMUTCD INTENDS THAT FLAGGERS BE USED.

IN ADDITION TO THE REQUIREMENTS OF C&MS 614 AND THE OMUTCD, 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:

-DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

-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 C&MS 614 AND THE OMUTCD, 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 AS APPROVED BY THE ENGINEER:

-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 IN ADVANCE OF AND ON THE SAME SIDE AS THE LANE RESTRICTION OR AT THE POINT OF ROAD CLOSURE, AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH SIGNALIZED INTERSECTIONS IN WORK ZONES.

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.

ENSURE PROVIDED LEOS HAVE BEEN TRAINED APPROPRIATE TO THE JOB DECISIONS THEY ARE REQUIRED TO MAKE WHILE ON THE PROJECT, IN ACCORDANCE WITH C&MS 614.03.

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.

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

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. 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.

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 40 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.

MAINTENANCE OF TRAFFIC SIGNAL/FLASHER INSTALLATION

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 MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK TO SERVICE WITHIN FOUR 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.

MAINTENANCE OF TRAFFIC SIGNAL/FLASHER INSTALLATION (CONTINUED)

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 BY STATE FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES OR HE MAY CHOOSE TO ENTER INTO A COOPERATIVE UNDERSTANDING WITH THE LOCAL MAINTAINING AGENCY TO PROVIDE THE MAINTENANCE. THE CONTRACTOR SHALL INFORM THE ENGINEER, IN WRITING, OF THE MAINTENANCE METHOD SELECTED.

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 7 AM TO 6 PM. 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 THE CONTRACTOR, BY OFF-DUTY STATE OF OHIO POLICE, 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.

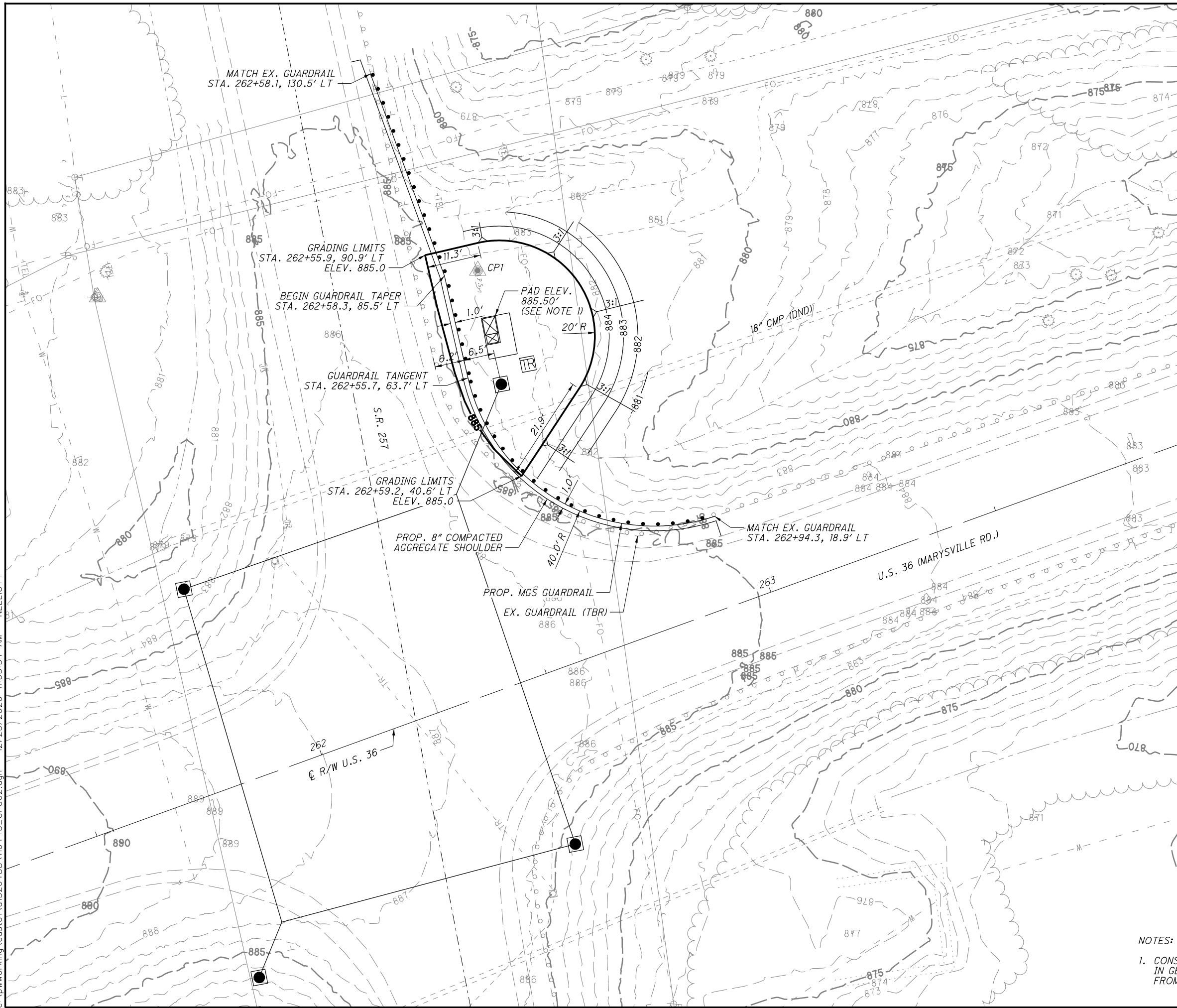
ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

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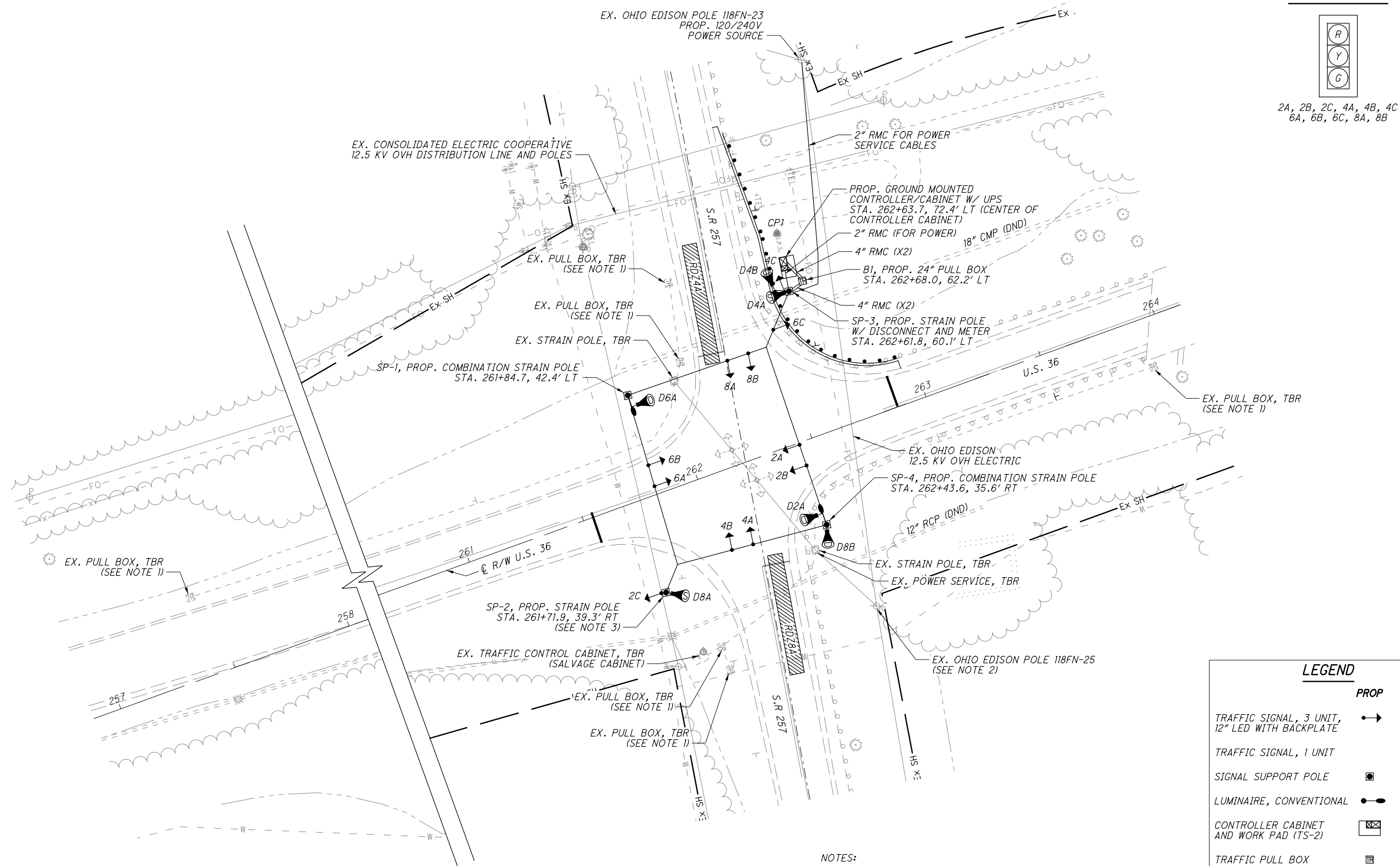
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NOTES:
1. CONSTRUCT PAD IN ACCORDANCE WITH DETAIL SHOWN
IN GENERAL NOTES. GRADE FOR PROPER DRAINAGE AWAY
FROM CABINET & WORK PAD.

CALCULATED NDE CHECKED ADL	 HORIZONTAL SCALE IN FEET 0 5 10 20
SITE PLAN U.S. 36 (MARYSVILLE RD.) & S.R. 257	
DEL-36-4.97	
10 17	

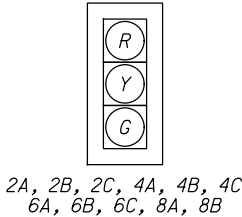
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NOTES:

1. CONTRACTOR SHALL COORDINATE WITH ODOT DISTRICT 6 ENGINEER ON THE PULL BOXES THAT ARE TO BE REMOVED.
2. CONTRACTOR TO CONTACT OHIO EDISON CALL CENTER AT 1-800-633-4766 TO REQUEST REMOVAL OF EXISTING POWER SERVICE.
3. CONTRACTOR SHALL HAND DIG TO LOCATE 4\"/>

SIGNAL HEADS



LEGEND		PROP	EXIST
TRAFFIC SIGNAL, 3 UNIT, 12\"/>		→	→
TRAFFIC SIGNAL, 1 UNIT			→
SIGNAL SUPPORT POLE		■	■
LUMINAIRE, CONVENTIONAL		●	●
CONTROLLER CABINET AND WORK PAD (TS-2)		☒	☒
TRAFFIC PULL BOX		☒	☒
DILEMMA ZONE RADAR DETECTION UNIT		→	
STOP-LINE RADAR DETECTION UNIT		→	
DETECTION ZONE		▨	

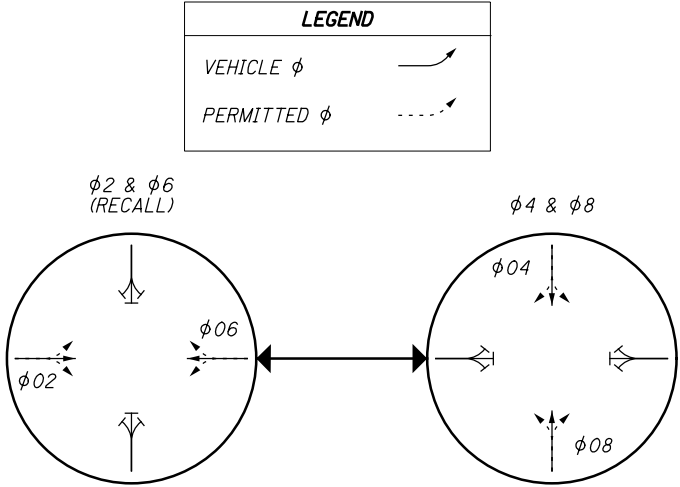
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SIGNAL TIMING CHART

INTERSECTION: U.S. 36 (MARYSVILLE RD.) & S.R. 257													
MAINTAINING AGENCY: ODOT													
START UP START IN: ALL-RED FLASH TIME FOR: FLASH , ALL RED (SEC.): 9, 6 FIRST PHASE(S): 2 & 6 COLOR DISPLAYED: GREEN		DUAL ENTRY: YES		PHASES: 2 & 6, 4 & 8									
		REST IN RED:		RING 1		NO		RING 2		NO			
		OVERLAP				A		B		C		D	
		PHASES				-		-		-		-	
INTERVAL OR FEATURE		CONTROLLER MOVEMENT NO.											
INTERSECTION MOVEMENT (PHASE)		1	2	3	4	5	6	7	8				
DIRECTION		-	EB	-	SB	-	WB	-	NB				
MINIMUM GREEN (INITIAL) (SEC.)		-	30	-	10	-	30	-	10				
PASSAGE TIME (PRESET GAP) (SEC.)		-	1	-	1	-	1	-	1				
MAXIMUM GREEN I (SEC.)		-	45	-	30	-	45	-	30				
MAXIMUM GREEN II (SEC.)		-	45	-	30	-	45	-	30				
YELLOW CHANGE (SEC.)		-	6	-	5.3	-	6	-	5.3				
ALL RED CLEARANCE (SEC.)		-	1	-	1	-	1	-	1				
WALK (SEC.)		-	-	-	-	-	-	-	-				
PEDESTRIAN CLEARANCE (SEC.)		-	-	-	-	-	-	-	-				
RECALL	MAXIMUM (ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF				
	MINIMUM (ON/OFF)	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF				
	PEDESTRIAN (ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF				
MEMORY (ON/OFF)		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF				

*VOLUME DENSITY CONTROLS

PHASING DIAGRAM



RADAR DETECTION CHART

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC.)	EXTENSION PROGRAMMED IN CONTROLLER (SEC.)	DELAY INHIBITED PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
RDZ4A	SB	PRESENCE	4	6.0	-	4	STOP-LINE	50
RDZ8A	NB	PRESENCE	8	6.0	-	8	STOP-LINE	50
-	EB	PRESENCE	2	-	-	-	ADVANCED DETECTION	*
-	SB	PRESENCE	4	-	-	-	ADVANCED DETECTION	*
-	WB	PRESENCE	6	-	-	-	ADVANCED DETECTION	*
-	NB	PRESENCE	8	-	-	-	ADVANCED DETECTION	*

NOTE: ADVANCED DILEMMA ZONE SPEED THRESHOLD >35 MPH

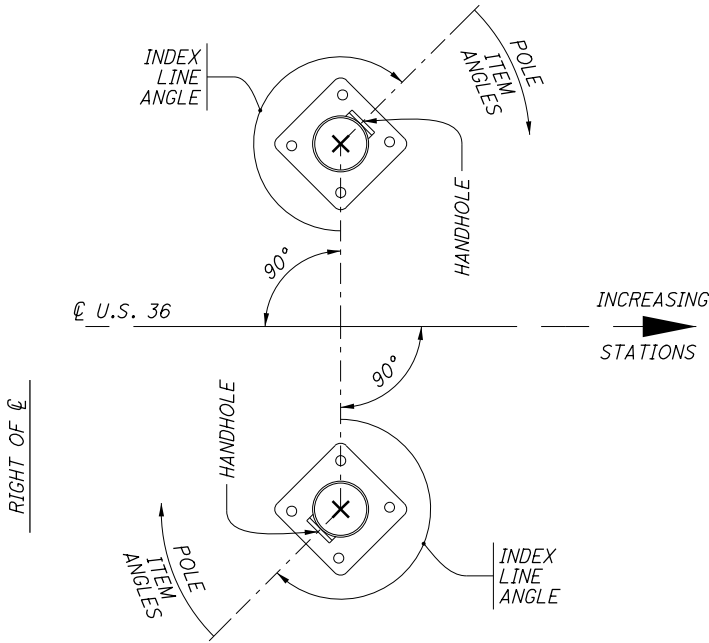
*ADVANCE DETECTION ZONE LENGTH SHALL BE AS LONG AS DETECTOR CAN RELIABLY DETECT WITHIN LANE.

NOTES:

- RADAR DETECTION UNITS FOR DILEMMA ZONE DETECTION SHALL PLACE A CONSTANT CALL TO THE CONTROLLER WHEN VEHICLES TRAVEL TIMES TO THE STOP BAR ARE BETWEEN 2.5 AND 6 SECONDS. SPEED TRIGGER SHALL BE SET FOR VEHICLES TRAVELING 35 MPH AND GREATER.
- RADAR SHALL HAVE QUEUE DETECTION CONFIGURED AND A ZONE PLACED AT 100-200 FEET FROM STOP BAR FOR SLOW MOVING VEHICLE EXTENSIONS. SPEED TRIGGER SHALL BE SET AT 1-35 MPH.
- ALL DETECTOR DELAYS SHALL BE PLACED IN THE CONTROLLER.
- FOR ANY ENTRY TO FLASHING OPERATION, PROGRAMMING SHALL RUN MINOR STREET GREEN ($\phi 4$ & $\phi 8$), ALL-RED CLEARANCE, AND THEN FLASHING OPERATION.

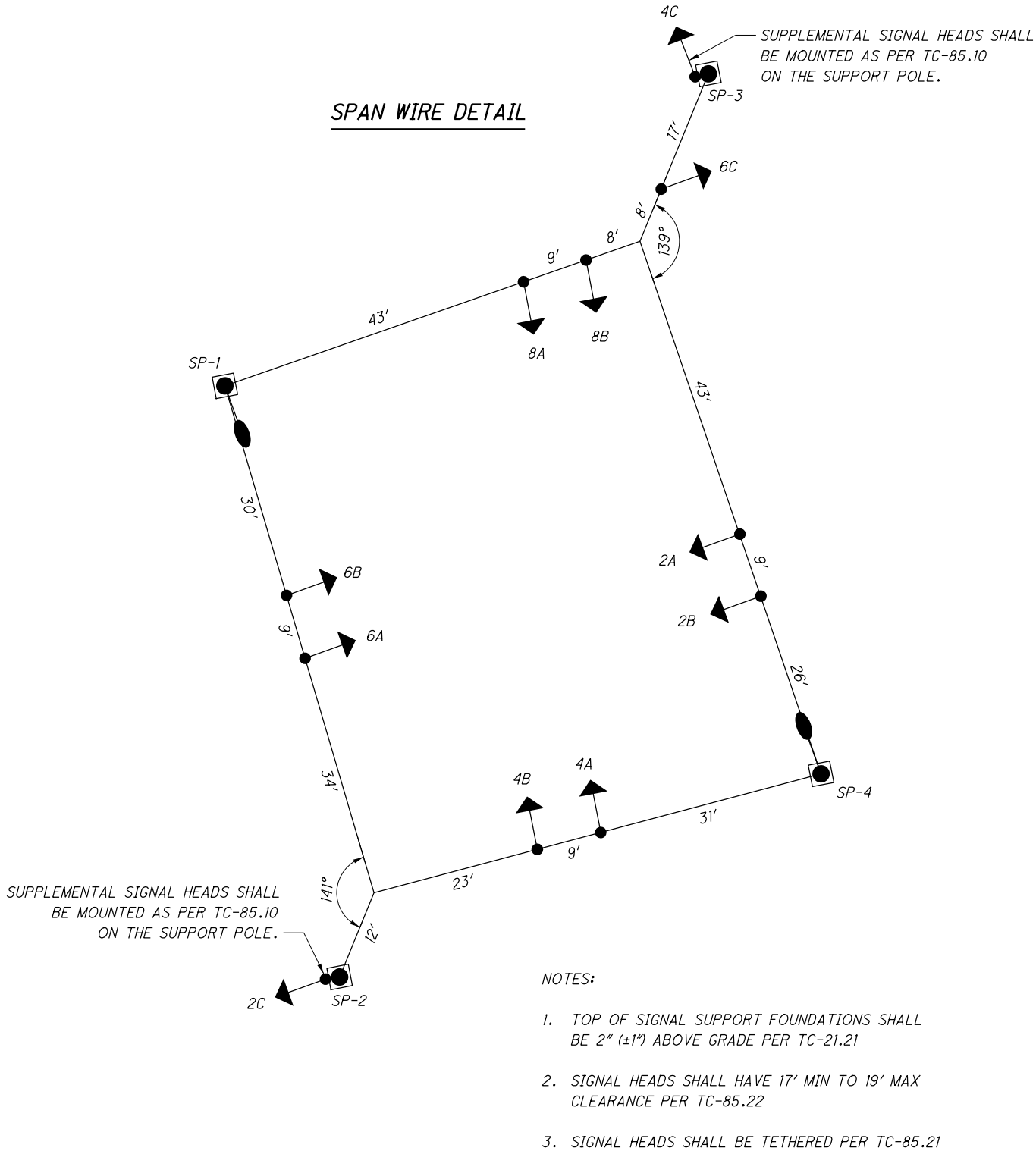
PLAN DETAILS FOR STRAIN POLES

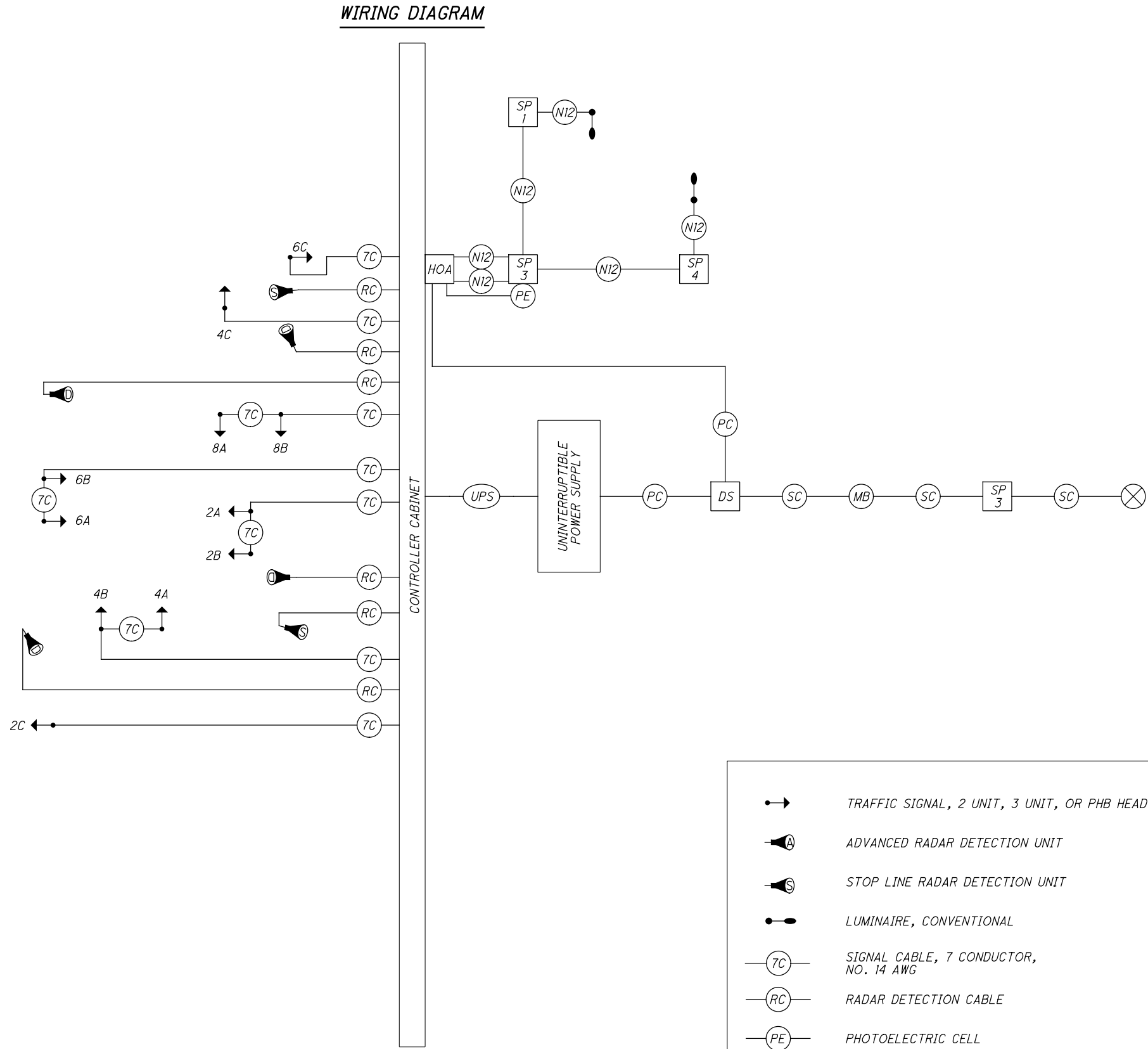
POLE NO.	DESIGN NO.	POLE HEIGHT (FT.)	FOUNDATION ELEV.	INDEX LINE ANGLE (DEG.)	ANGLES (DEG.) FROM INDEX LINE			
					METER & DISCONNECT	CABLE ENTRANCE	BRACKET ARM	SUPPLEMENTAL SIGNAL HEAD BRACKET ARM
SP-1	12	37	882.72	135	-	180	223	-
SP-2	12	34	884.07	220	-	180	-	53
SP-3	12	34	885.17	220	55	180	-	317
SP-4	12	34	884.57	140	-	180	222	-



- NOTES:
- ALL ANGLES ARE MEASURED CLOCKWISE.
 - THE INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

POLE DIAGRAM





FIELD WIRING HOOK-UP CHART

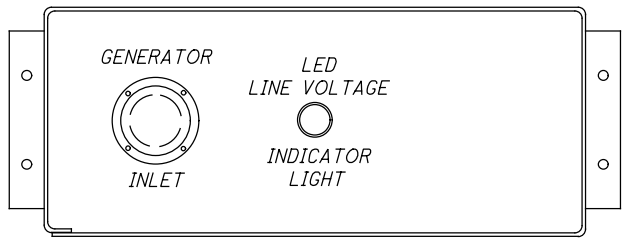
SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
2A, 2B, 2C (EB)	R	2 R	R
	Y	2 Y	
	G	2 G	
4A, 4B, 4C (SB)	R	4 R	R
	Y	4 Y	
	G	4 G	
6A, 6B, 6C (WB)	R	6 R	R
	Y	6 Y	
	G	6 G	
8A, 8B (NB)	R	8 R	R
	Y	8 Y	
	G	8 G	

LEGEND

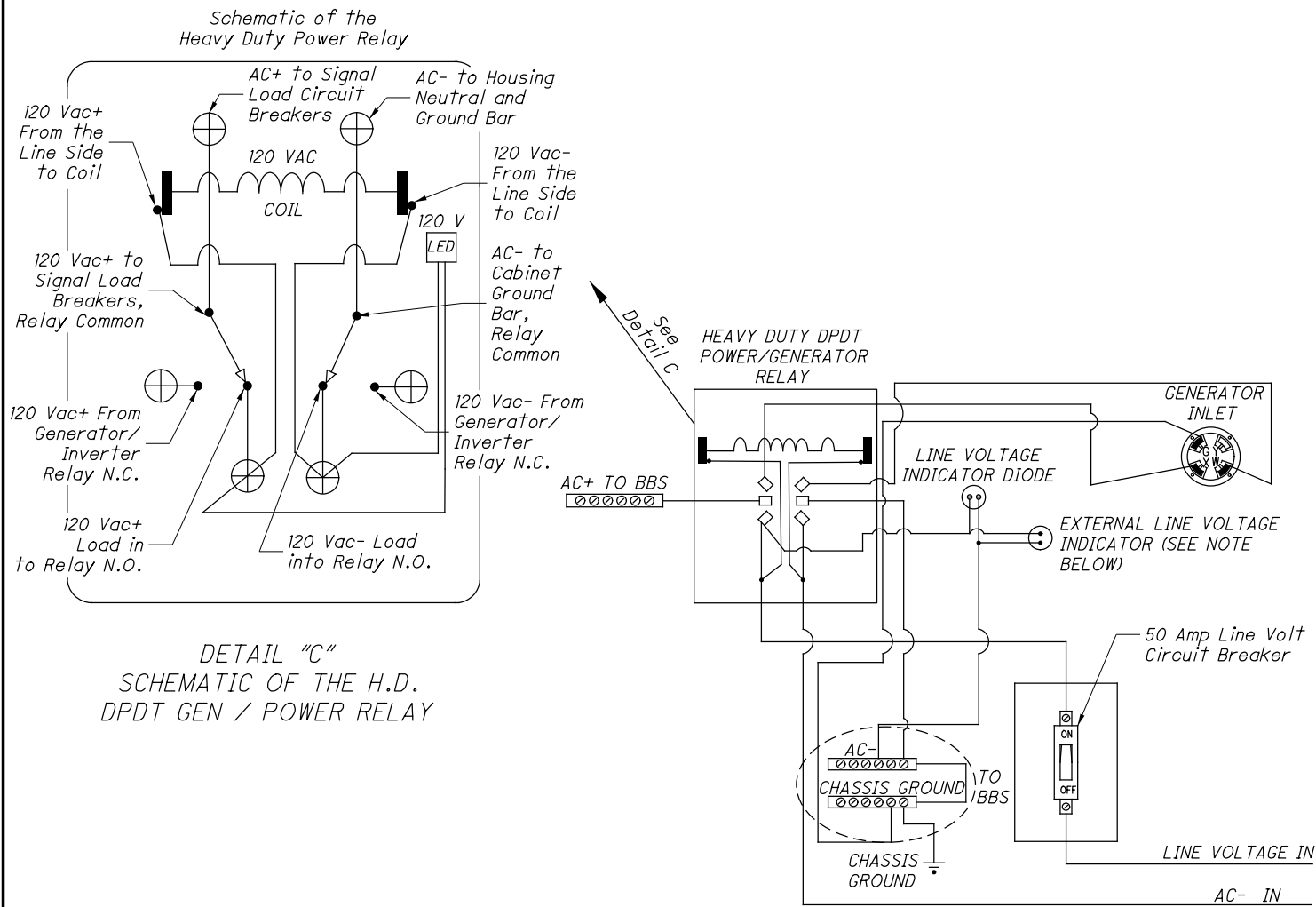
	TRAFFIC SIGNAL, 2 UNIT, 3 UNIT, OR PHB HEAD 12"		SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG
	ADVANCED RADAR DETECTION UNIT		POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
	STOP LINE RADAR DETECTION UNIT		SIGNAL SUPPORT POLE NO. --
	LUMINAIRE, CONVENTIONAL		METER BASE
	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG		SIGNAL CABLE, 3 CONDUCTOR, NO. 12 AWG
	RADAR DETECTION CABLE		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH
	PHOTOELECTRIC CELL		UNINTERRUPTIBLE POWER SUPPLY CABLE
	POWER SOURCE		HAND/ON/AUTO SWITCH

MATERIAL SPECIFICATIONS FOR BBS GENERATOR POWER PANEL EQUIPMENT

- GENERATOR INLET - The inlet shall be 30 amp, 125/250V, locking, four (4) wire grounding and meet the NEMA configuration number L14-30-P 30A 125/250V specification. The inlet shall be a Hubbell catalog #2715.
- LINE VOLTAGE GENERATOR SWITCH - The switch shall be 30 amp, 125/250V AC, two (2) pole, three (3) position (On, Off, On). The switch shall be a Hubbell catalog #1388.
- LINE VOLTAGE INDICATOR LIGHT - The indicator light shall be 125V AC light emitting diode with a red lens.
- LINE VOLTAGE CIRCUIT BREAKER - The circuit breaker shall be single pole single throw and a minimum of 30 amps. The amperage shall be increased to accomodate greater loads, if necessary. The gauge of the power cable shall be of proper size per N.E.C.
- EXTERNAL LINE VOLTAGE INDICATOR LIGHT - The indicator light shall be a 1" waterproof NEMA 4X or IP66 LED lamp with a green lens.



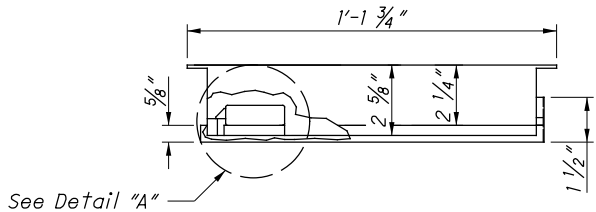
FRONT VIEW OF GENERATOR POWER PANEL



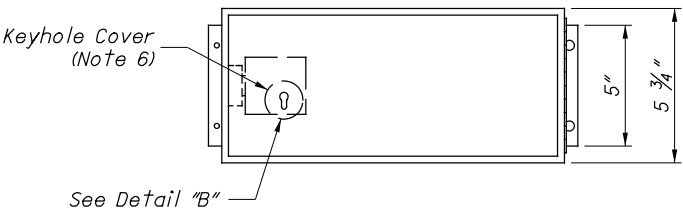
ELECTRICAL HOOKUP DETAIL FOR THE BBS GENERATOR POWER PANEL

NOTE: EXTERNAL LINE VOLTAGE INDICATOR LIGHT required when called for in the plans.
EXTERNAL LINE VOLTAGE INDICATOR LIGHT shall be located on the enclosure exterior for visibility from the adjacent roadway when all cabinet, and generator panel doors are closed.

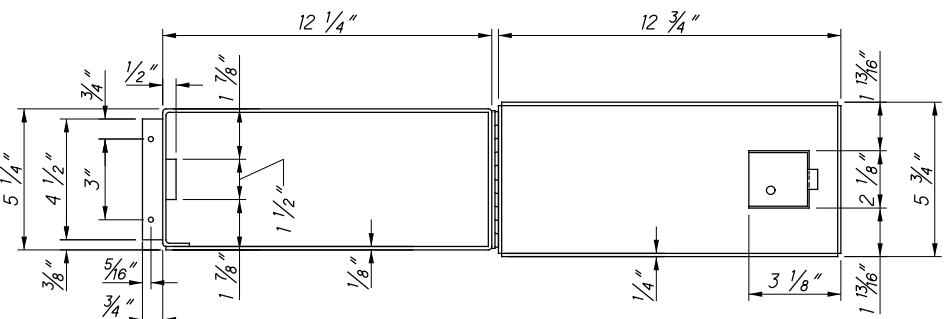
GENERATOR POWER PANEL ENCLOSURE



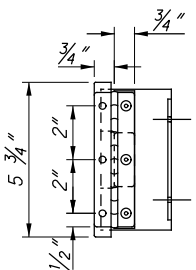
TOP VIEW



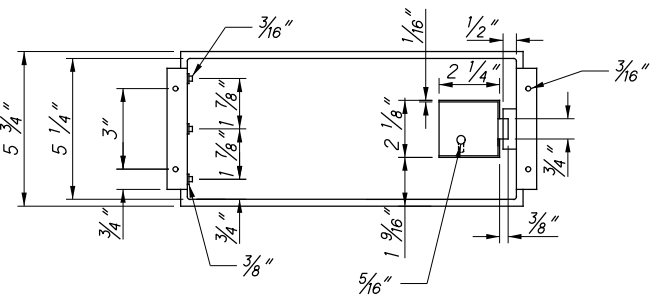
FRONT VIEW CLOSED DOOR



FRONT VIEW OPEN DOOR



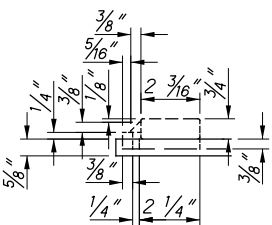
RIGHT SIDE VIEW
CLOSED DOOR



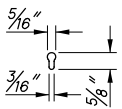
BACK VIEW CLOSED DOOR

NOTES:

1. The enclosure shall be constructed of 1/8" thick aluminum.
2. The lock shall be the standard police door type, keyed with the standard flasher door skeleton key.
3. The door shall be sealed with a foam rubber gasket to prevent moisture from entering the enclosure.
4. The enclosure shall be mounted onto the outside of the controller cabinet with non-accessible bolts and sealed with a high quality silicon caulk at all surfaces touching the cabinet.
5. The hinge shall be of stainless steel or equivalent corrosive-resistant material.
6. Keyhole shall be covered with a movable circular aluminum or brass cover with top pivot pin.

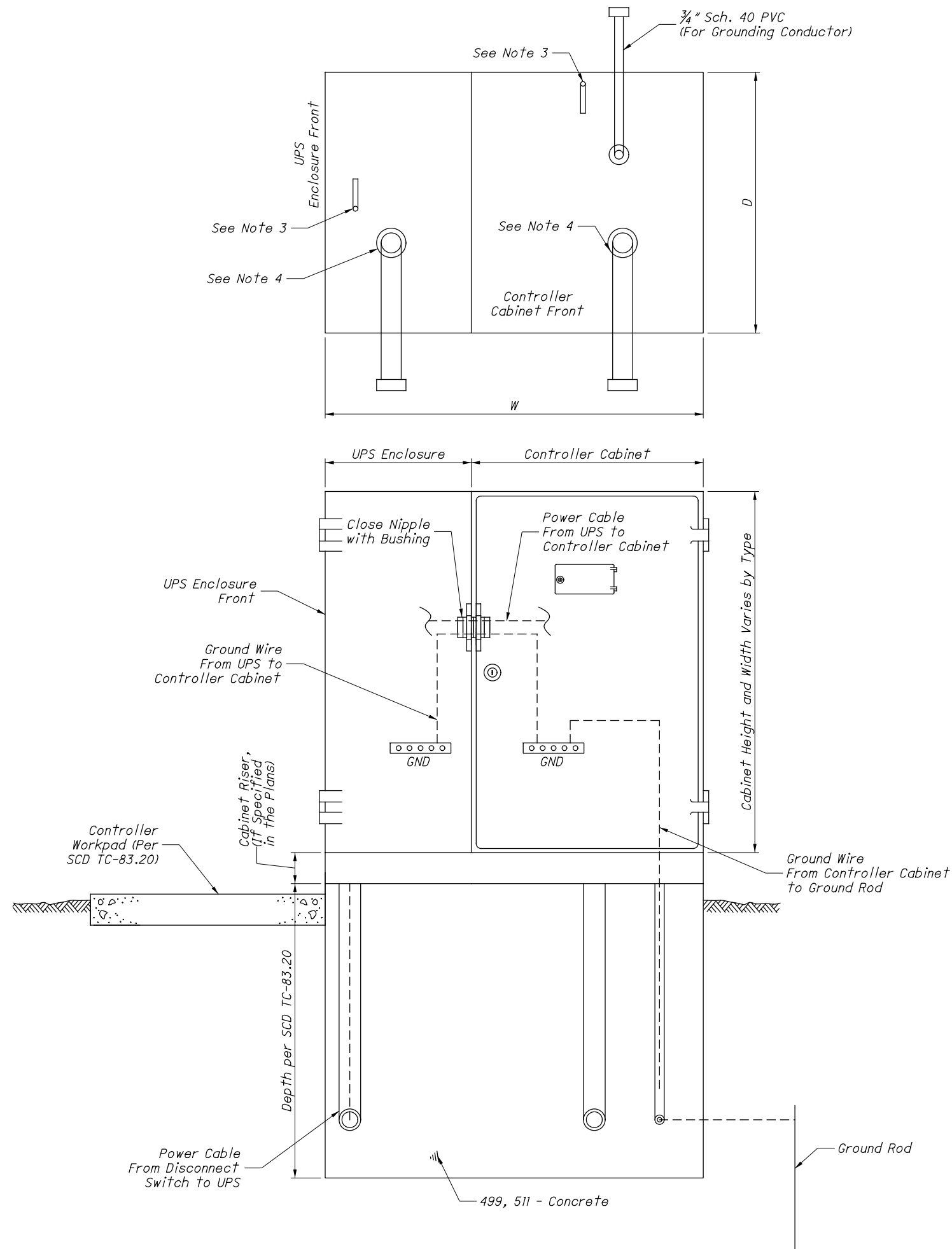


DETAIL "A"



DETAIL "B"

THIS DRAWING REPLACES PIS 203012 DATED 04-20-2012.

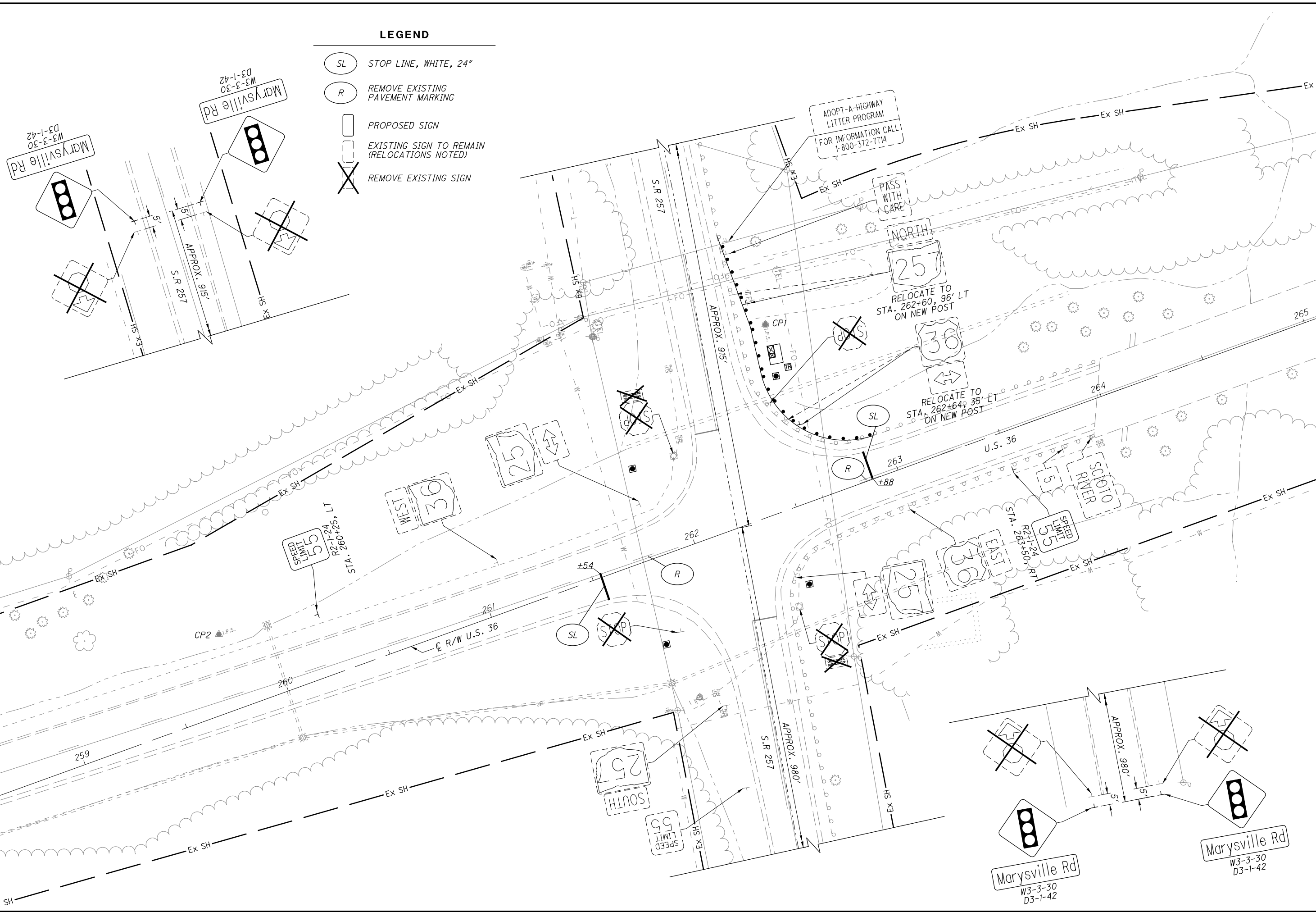


NOTES:

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

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LEGEND

- SL STOP LINE, WHITE, 24"
- R REMOVE EXISTING PAVEMENT MARKING
- PROPOSED SIGN
- EXISTING SIGN TO REMAIN (RELOCATIONS NOTED)
- REMOVE EXISTING SIGN

0

10

20

40

HORIZONTAL SCALE IN FEET

CALCULATED

NDE

CHECKED

ADL

TRAFFIC CONTROL PLAN

U.S. 36 (MARYSVILLE RD.) & S.R. 257

DEL-36-4.97

17

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