

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

MOT-IR 75-22.73

CITY OF VANDALIA
MONTGOMERY COUNTY

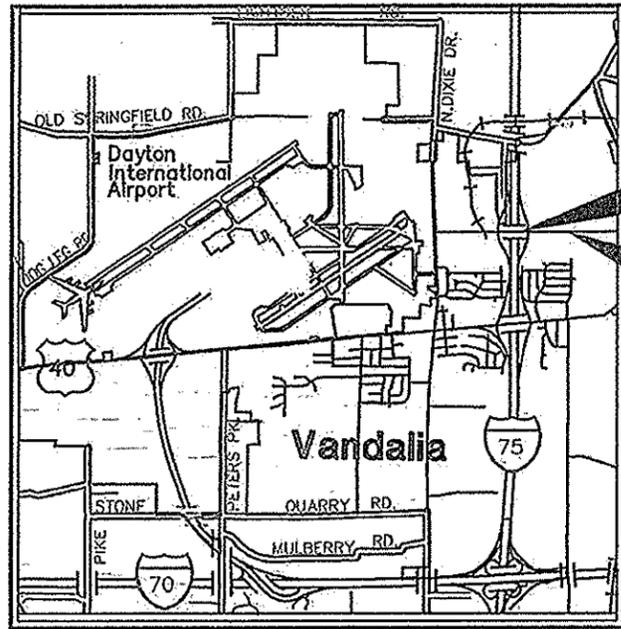
PROJECT DESCRIPTION
INSTALLING A NEW TRAFFIC SIGNAL AT THE RAMP INTERSECTION OF IR-75 NORTHBOUND AND NORTHWOODS BOULEVARD (CR 647), INCLUDING MINOR PAVEMENT MARKING MODIFICATIONS.

LIMITED ACCESS
THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED-ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

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 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.

EARTH DISTURBED AREAS
PROJECT EARTH DISTURBED AREA = 0.20 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA = 0.13 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA = 0.33 ACRES



LOCATION MAP

LATITUDE: N 39°-54'-04" LONGITUDE: W 84°-11'-13"

SCALE IN MILES



PORTION TO BE IMPROVED _____
STATE & FEDERAL ROUTES _____
OTHER ROADS _____

DESIGN DESIGNATION

CURRENT ADT (2015) _____ 28,580
DESIGN YEAR ADT (2035) _____ 31,420
DESIGN HOURLY VOLUME (2040) _____ 3,141
DIRECTIONAL DISTRIBUTION _____ 52%
TRUCKS (24 HOUR B&C) _____ 4%
DESIGN SPEED _____ 40 MPH
LEGAL SPEED _____ 35 MPH

DESIGN FUNCTIONAL CLASSIFICATION -
IR 75-INTERSTATE; NORTHWOODS-URBAN COLLECTOR

DESIGN EXCEPTIONS

NONE REQUIRED

INDEX OF SHEETS:

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FEBRUARY 6, 2015

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PLAN PREPARED BY:



440 E. HOCHSTETTER ROAD SONEY, OHIO 43135 (937) 497-0200
201 W. LOVELAND AVENUE LOVELAND, OHIO 43140 (614) 239-8154
www.choiceoneengineering.com

ENGINEERS SEAL:



SIGNED: *Mitchell Jay Thobe*
DATE: 2/16/2015

CITY OF VANDALIA STANDARD CONSTRUCTION DRAWINGS	ODOT STANDARD CONSTRUCTION DRAWINGS	SUPPLEMENTAL SPECIFICATIONS
	TC-12.30 10-18-13 HL-20.11 01-16-15	800 04-17-15
	TC-21.20 01-16-15 HL-30.11 01-16-15	809 07-18-14
	TC-22.10 10-18-13 HL-30.22 01-17-14	821 04-20-12
	TC-41.20 10-18-13 HL-40.10 01-17-14	832 01-17-14
	TC-42.20 10-18-13 HL-50.21 01-16-15	921 04-20-12
	TC-52.10 10-18-13 HL-60.11 01-17-14	
	TC-52.20 07-18-14 HL-60.12 01-17-14	
	TC-71.10 01-17-14	
	TC-81.21 01-16-15 MT-95.31 07-18-14	
	TC-82.10 10-18-13 MT-99.20 07-19-13	
	TC-83.10 01-17-14 MT-105.10 07-19-13	
	TC-83.20 01-16-15 MT-120.00 07-19-13	
	TC-85.10 10-18-13	
	TC-85.20 01-16-15	

APPROVED *Robert Cron*
DATE: 2/16/15 DIRECTOR OF PUBLIC SERVICES

APPROVED *Randy Chivalley*
DATE: 2/16/15 DISTRICT DEPUTY ENGINEER

APPROVED *Greg Wright*
DATE: 2/16/15 DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. NONE
PID NO. 99200
CONSTRUCTION PROJECT NO. NONE
RAILROAD INVOLVEMENT NONE
MOT-IR 75-22.73
1/14

MOT - IR 75-22.73
150363 PID - 99200
Dist 7 6/4/2015

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

UTILITIES

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

STORM, SEWER, WATER, STREETS, AND TRAFFIC SIGNALS

CITY OF VANDALIA
333 JAMES E. BOHANAN
MEMORIAL DRIVE
VANDALIA, OHIO 45377
ATTN: ROB CRON, P.S.
(937) 415-2323

ODOT DISTRICT 7
1001 ST. MARYS AVENUE
SIDNEY, OHIO 45365
ATTN: CRYSTAL WOLAVER
(937) 497-6716

GAS

VECTREN
6500 CLYO ROAD
CENTERVILLE, OHIO 45459
ATTN: DON SPECHT
(937) 312-2533

LIGHTING

DPL ENERGY RESOURCES
1065 WOODMAN DRIVE
DAYTON, OHIO 45432
ATTN: BEN JONES
(937) 510-5236

TELEPHONE

AT&T OHIO
3233 WOODMAN DRIVE
ROOM 225
DAYTON, OHIO 45420
ATTN: DAN KELLY
(937) 296-3650

ELECTRIC

DAYTON POWER AND LIGHT CO
1900 DRYDEN ROAD
DAYTON, OHIO 45439
ATTN: WILLIAM GOURLEY
(937) 331-4521

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

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM. THE BENCHMARKS FOR THIS PROJECT CAN BE FOUND ON THE RESPECTIVE PLAN SHEETS.

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NEITHER ORDER MATERIALS NOR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE CONSTRUCTION LIMITS. VEHICULAR AND PEDESTRIAN TRAFFIC IS TO BE MAINTAINED AT ALL TIMES.

DEWATERING

ANY NECESSARY DEWATERING OR PUMPING NECESSARY FOR THE CONSTRUCTION OF ANY ITEMS SHALL BE INCIDENTAL TO THOSE PARTICULAR CONSTRUCTION ITEMS.

EXISTING UTILITY CONFLICT NOTE

IT IS THE INTENT THAT ALL KNOWN CONFLICTING UTILITY POLES, AND UNDERGROUND TELEPHONE, GAS, ELECTRIC, AND CABLE SHALL BE RELOCATED BY OTHERS PRIOR TO CONSTRUCTION.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

PROPERTY POINTS AND SURVEY MONUMENTS

CARE SHALL BE TAKEN BY THE CONTRACTOR TO SAFEGUARD ANY PROPERTY POINTS OR OTHER SURVEY REFERENCE MARKS ENCOUNTERED DURING CONSTRUCTION OF THIS PROJECT. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AT HIS EXPENSE, TO RESET ANY PROPERTY POINT OR SURVEY MONUMENT WHICH IS DISTURBED AS A RESULT OF CONSTRUCTION OF THIS PROJECT.

ITEM 659 SEEDING AND MULCHING

QUANTITIES FOR SEEDING AND MULCHING ARE CALCULATED WITHIN THE CONSTRUCTION LIMITS SHOWN IN THE PLANS.

NOTIFICATION

THE CONTRACTOR SHALL NOTIFY THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 7 CONSTRUCTION ADMINISTRATOR TWO (2) WEEKS PRIOR TO BEGINNING WORK. PHONE: 937-497-6722

ITEM 614 MAINTAINING TRAFFIC

IT IS THE INTENTION TO PERFORM THE REQUIRED WORK WITHIN THESE PLANS WITH THE LEAST INCONVENIENCE TO, AND THE MAXIMUM SAFETY OF, THE CONTRACTOR, LOCAL MERCHANTS, PEDESTRIAN TRAFFIC AND THE TRAVELING PUBLIC.

REQUIREMENTS FOR MAINTAINING TRAFFIC AS SPECIFIED IN THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" (CURRENT EDITION, LATEST REVISION), PERTINENT PROVISIONS OF THE "OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS" (INCLUDING SUPPLEMENTAL SPECIFICATIONS) AND APPLICABLE STANDARD CONSTRUCTION DRAWINGS SHALL APPLY TO THIS PROJECT IN ADDITION TO THE FOLLOWING NOTES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFE AND EFFECTIVE VEHICULAR TRAFFIC CONTROL 24 HOURS A DAY FOR THE DURATION OF THIS PROJECT. THIS WILL INCLUDE PROVIDING, PLACING, MAINTAINING AND SUBSEQUENTLY REMOVING ALL NECESSARY TRAFFIC CONTROL DEVICES FOR ALL PROPOSED CONSTRUCTION OPERATIONS.

BEFORE THE WORK BEGINS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE NAME(S) AND TELEPHONE NUMBER(S) OF A PERSON OR PERSONS WHO CAN BE CONTACTED 24 HOURS A DAY BY THE ENGINEER, OR ANY OTHER INTERESTED POLICE AGENCY.

THIS PERSON OR PERSONS SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ALL TRAFFIC CONTROL DEVICES NEEDED TO MAINTAIN THE SAFETY OF THE TRAVELED PAVEMENT FOR THE DURATION OF THIS PROJECT. THIS PERSON SHALL HAVE AVAILABLE ALL MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO PERFORM THE REQUIRED REPAIRS WITHIN A REASONABLE PERIOD OF TIME AS PER C.M.S. 614.14.

THE CONTRACTOR SHALL ALSO SUBMIT A CONSTRUCTION SEQUENCING SCHEDULE PRIOR TO WORK BEGINNING FOR APPROVAL BY THE ENGINEER. THE CONSTRUCTION SEQUENCING SCHEDULE SHALL TAKE INTO CONSIDERATION ALL ASPECTS OF THE PROJECT, INCLUDING HOW LOCAL TRAFFIC TO BUSINESSES WILL BE MAINTAINED. THE CONSTRUCTION SEQUENCE WILL NEED TO BE APPROVED BY THE ENGINEER PRIOR TO ANY COMMENCEMENT OF WORK.

ACCESS FOR PROPERTY OWNER AND BUSINESS TRAFFIC SHALL BE MAINTAINED IN A UNIFORM PATTERN THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT AND SHALL NOT BE SUBJECT TO CONSTANT LANE SHIFTS. UTILIZE TEMPORARY PAVEMENT MARKINGS, TEMPORARY DRIVEWAYS, TEMPORARY WALKWAYS, ETC. TO ACCOMPLISH THIS.

ACCESS TO AND FROM ALL LOCAL RESIDENTIAL AND BUSINESS DRIVES WITHIN THE LIMITS OF THIS PROJECT SHALL BE MAINTAINED AT ALL TIMES (24 HOURS A DAY) BY USING THE EXISTING PAVEMENT, TEMPORARY PAVEMENT, AND THE PROPOSED PAVEMENT UNLESS OTHERWISE DIRECTED BY THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEQUENCE THE WORK TO HELP MINIMIZE THE NEED FOR TEMPORARY AGGREGATE PAVEMENT. TEMPORARY AGGREGATE PAVEMENT CAN BE ASPHALT GRINDINGS OR OTHER AGGREGATE APPROVED BY THE ENGINEER. THE COST OF INSTALLATION, MATERIAL, AND REMOVAL OF THE TEMPORARY AGGREGATE PAVEMENT IS TO BE PART OF THE ITEM 614 MAINTAINING TRAFFIC LUMP SUM.

WHERE MORE THAN ONE ACCESS TO A BUSINESS OR RESIDENCE EXISTS, ONLY ONE ACCESS NEEDS TO BE MAINTAINED AT A TIME. WHERE ONLY ONE DRIVE EXISTS, ACCESS SHALL BE MAINTAINED AT ALL TIMES BY CONSTRUCTION OF ONE-HALF OF THE DRIVEWAY AT ONE TIME SUBJECT TO THE APPROVAL OF THE ENGINEER.

TEMPORARY ACCESS SHALL BE PROVIDED TO ALL DRIVEWAYS AND ALLEYS WITH A CHANGE IN ELEVATION FROM DRIVEWAY ACCESS TO TEMPORARY DRIVE RAMP NOT TO EXCEED 1-1/2".

NO DETOUR IS REQUIRED FOR THIS PROJECT.

THE CONTRACTOR SHALL GIVE THE CITY OF VANDALIA AND ODOT DISTRICT 7 ROADWAY SERVICE MANAGER A MINIMUM OF 21 CALENDAR DAYS NOTICE PRIOR TO CLOSING ANY ROAD OR MOVEMENT TO TRAFFIC.

CITY OF VANDALIA
333 JAMES E. BOHANAN MEMORIAL DRIVE
VANDALIA, OHIO 45377
(937) 415-2323

ODOT ROADWAY SERVICES MANAGER
1001 ST. MARYS AVE.
P.O. BOX 969
SIDNEY, OHIO 45365
(937) 497-6722

ANY DAMAGE TO MAINTENANCE OF TRAFFIC EQUIPMENT SUCH AS SIGNS, DRUMS, ETC. SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCLUDED IN THIS PAY ITEM.

THE CONTRACTOR WILL BE REQUIRED TO PROVIDE, ERECT, MAINTAIN (IN PROPER POSITION, CLEAN AND LEGIBLE, AND IN GOOD WORKING CONDITION) AND SUBSEQUENTLY REMOVE ALL LIGHTS, SIGNS, CONES, BARRICADES, EXISTING PAVEMENT MARKINGS, AND ANY OTHER TRAFFIC CONTROL DEVICES NECESSARY FOR THE MAINTENANCE OF TRAFFIC.

THE CONTRACTOR SHALL ADJUST THE LOCATION AND/OR SPACING OF ALL TRAFFIC CONTROL CHANNELING DEVICES AS DICTATED BY THE PROGRESS OF THE REQUIRED WORK TO ALLOW CONSTRUCTION ACCESS TO WORK AREAS WHILE MAINTAINING SAFE AND EFFECTIVE TRAFFIC CONTROL DURING ALL CONSTRUCTION OPERATIONS. THE ORIGINAL LOCATION, PLACEMENT, SPACING AND SUBSEQUENT RELOCATION OR REMOVAL OF ALL TRAFFIC CONTROL DEVICES SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.

IT IS INTENDED THAT THE LOCAL TRAFFIC NOT BE SUBJECTED TO ANY LANE CLOSURES UNLESS ACTIVE WORK IS BEING PERFORMED IN OR IMMEDIATELY ADJACENT TO THE CLOSED LANE. THE ROADWAY SHALL NOT BE RESTRICTED TO ANY LANE CLOSURE DURING PERIODS OF INTERMITTENT OR IRREGULAR WORK, NOR CLOSED SOLELY FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER SHALL MAKE THE FINAL DETERMINATION AS TO WHAT CONSTITUTES ACTIVE WORK AND WHETHER OR NOT THE LANE CLOSURE IS JUSTIFIED.

IF, IN THE OPINION OF THE ENGINEER, THE LANE CLOSURE IS NOT JUSTIFIED, THEY MAY ORDER ALL OR PART OF THE LANE CLOSURE REOPENED TO LOCAL TRAFFIC (UNTIL SUCH TIME THIS CONDITION IS CORRECTED.)

THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY INTENDED CHANGES TO ANY EXISTING OR TEMPORARY TRAFFIC CONTROL DEVICES AND SHALL OBTAIN THE ENGINEER'S APPROVAL PRIOR TO MAKING THE CHANGES. THE CONTRACTOR SHALL ALSO NOTIFY THE ENGINEER AND LOCAL NEWSPAPER 48 HOURS IN ADVANCE OF ANY INTENDED LANE CLOSURES.

PAYMENT FOR ITEM 614 MAINTAINING TRAFFIC, FOR OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT LUMP SUM BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

CALCULATED
MUT
CHECKED
MUT

GENERAL NOTES

MOT-IR 75-22.73

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14

ODOT STANDARD CONSTRUCTION DRAWINGS

DRAWINGS IN THESE PLANS SHALL BE CONSIDERED AS REFERENCE TO ITEMS 625, 631, 633, 725, 730, 731, AND 733 RESPECTIVELY.

ALL MATERIALS MUST BE IN COMPLIANCE WITH CONTRACT SPECIFICATIONS UNLESS OTHERWISE APPROVED BY THE ENGINEER. ALL WORK AND MATERIALS NOT SPECIFICALLY REFERENCED IN THE CONTRACT SHALL MEET OR EXCEED THE REQUIREMENTS OF:

OHIO DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS (2013)

THE LATEST EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (2012)

POWER SUPPLY FOR TRAFFIC SIGNAL

ELECTRIC POWER SHALL BE OBTAINED FROM DAYTON POWER AND LIGHT AT THE LOCATION INDICATED ON THE TRAFFIC PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEMS INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 120 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: RADAR SENSORS, LOOP DETECTORS, PREEMPTION DEVICES, CONTROLLERS AND ASSOCIATED EQUIPMENT.

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

QUALITY REQUIREMENTS

IN ADDITION TO THE REQUIREMENTS OF 632.28 AND 633.06, A 48-HOUR BENCH TEST OF THE CONTROLLER AND CABINET SHALL BE PERFORMED BEFORE INSTALLING IN THE FIELD.

THE PROPOSED SIGNAL TIMING SHALL BE PROGRAMMED IN THE CONTROLLER AND THE CONTROLLER TESTED THOROUGHLY WITH THIS TIMING. THOROUGH TESTING INCLUDES PROGRAMMING TIMING PLAN, PHASING SCHEMES, AND PRE-EMPTS. THE CONTRACTOR SHALL PERFORM AN ATSI CONFLICT MONITOR TEST AND SUPPLY THE RESULTS OF THE TEST INSIDE THE CONTROLLER CABINET.

NOTE CAREFULLY THAT THE CONTRACTOR SHALL DEMONSTRATE THESE TESTS AT THEIR FACILITY TO THE ENGINEER. THE FINDINGS OF THESE TESTS SHALL BE DOCUMENTED AND SUBMITTED IN A WRITTEN REPORT TO THE ENGINEER. ALL COSTS ASSOCIATED WITH THE 48 HOUR BENCH TEST SHALL BE INCIDENTAL TO THIS PROJECT.

VEHICLE DETECTION LOCATION

THE LOCATION OF THE RADAR UNITS SHOWN IN THE PLANS ARE FOR REPRESENTATIONAL PURPOSES ONLY. THE FINAL LOCATION OF THE VEHICLE DETECTION UNITS WILL BE DETERMINED IN THE FIELD BY THE MANUFACTURER, DISTRICT HMA TRAFFIC ENGINEER, AND CITY.

GROUNDING AND BONDING

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

1. ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.

A. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.

B. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.

C. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULL BOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND WILL NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.

GROUNDING AND BONDING (CONTINUED)

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.

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 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.

GROUNDING AND BONDING (CONTINUED)

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.

MAINTENANCE OF TRAFFIC SIGNAL

IN ADDITION TO ITEM 614, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

NEW SIGNAL 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 APPROVED, IN WRITING, BY THE ENGINEER AND FOR THE GUARANTEED PERIOD.

GENERAL

THE CONTRACTOR SHALL CORRECT WITHIN A 24 HOUR TIMEFRAME ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE 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.

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. 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, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

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 RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO, OR CANNOT RESPOND TO, AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, AT THESE LOCATIONS WITHIN HIS RESPONSIBILITY, ANY SUBSEQUENT BILLINGS TO THE ENGINEER FOR POLICE SERVICES AND MAINTENANCE SERVICES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE TO THE CONTRACTOR.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE REVISIONS TO THE SIGNAL. 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 TO 9 AM AND 4 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 THE INSTALLATION OF A TEMPORARY TRAFFIC SIGNAL.

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.

DOCUMENTATION

THE CONTRACTOR SHALL MAINTAIN COMPLETE RECORDS OF MALFUNCTIONS INCLUDING:

TIME OF NOTIFICATION OF MALFUNCTION;
TIME OF WORK CREWS ARRIVAL TO CORRECT THE MALFUNCTION;
ACTIONS TAKEN TO CORRECT THE MALFUNCTION AND PROBABILITY OF REOCCURRENCE;
A DIAGNOSIS OF REASON FOR THE MALFUNCTION AND PROBABILITY OF REOCCURRENCE;
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 THE COMPLETION OF EACH REPAIR.

PAYMENT FOR ALL LABOR, EQUIPMENT, AND MATERIAL NEEDED FOR MAINTAINING TRAFFIC THROUGH ALL STAGES OF CONSTRUCTION IN ACCORDANCE WITH ITEM 614 MAINTAINING TRAFFIC INCLUDING STIPULATIONS STATED ELSEWHERE ON THESE PLANS, SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

CALCULATED
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TRAFFIC SIGNAL GENERAL NOTES

MOT-IR 75-22.73

ITEM 625 CONDUIT, (DIAMETER), 725.051, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 625 CONDUIT, EXCEPT AS HEREIN MODIFIED.

THE COST OF ALL TRENCHING ASSOCIATED WITH THE INSTALLATION OF CONDUIT CALLED FOR IN THE TRAFFIC SIGNAL PLANS SHALL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE FOR ITEM 625 CONDUIT, AS PER PLAN.

PAYMENT FOR ITEM 625 CONDUIT, (DIAMETER), 725.051, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT FOOT BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 625 CONDUIT JACKED OR DRILLED, 725.052, (DIAMETER), AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE WORK AS DESCRIBED IN OHIO DEPARTMENT OF TRANSPORTATION ITEM 625 CONDUIT JACKED OR DRILLED, EXCEPT AS HEREIN MODIFIED.

ALL MATERIALS, PROCEDURES, AND TESTING USED SHALL CONFORM WITH THE ENCLOSED STANDARDS AND SPECIFICATIONS.

ALL CONDUIT CAPABLE OF HORIZONTAL DIRECTIONAL DRILLING SHALL BE EPEC-40-HDPE.

THE HORIZONTAL DIRECTIONAL DRILLING SHALL BE IN ACCORDANCE WITH ASTM F1962 AT THE LOCATIONS SHOWN ON THE PLANS.

THIS ITEM OF WORK SHALL INCLUDE FURNISHING AND INSTALLING ALL FITTINGS, BENDS, TEES, COUPLINGS, RESTRAINTS, TRACING WIRE, PULL STRING, ETC. AND SHALL INCLUDE THE COST FOR THE HORIZONTAL DIRECTIONAL DRILLING OF THE CONDUIT.

THIS ITEM OF WORK SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE HORIZONTAL DIRECTIONAL DRILLING OF THE CONDUIT. THIS INCLUDES ANY REQUIRED BORING PITS, DEWATERING, BACKFILLING OF PITS, COMPACTION, ASPHALT, GRAVEL AND CONCRETE REPAIR, SEEDING AND MULCHING, LANDSCAPING REPAIR, ETC. NECESSARY TO RESTORE THE AREA BACK TO EQUAL OR BETTER CONDITIONS.

PAYMENT FOR ITEM 625 CONDUIT JACKED OR DRILLED, 725.052, (DIAMETER), AS PER PLAN, FOR ALL OPERATIONS DESCRIBED (INCLUDING TESTING AND PURITIES) ABOVE SHALL BE AT THE CONTRACT FOOT BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 630 SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS ITEM 630 AND 730, THE CONTRACTOR SHALL RIGIDLY ATTACH A SIGN TO THE MAST ARM. THE SIGN HANGER ASSEMBLY SHALL HAVE A **BLACK** POWDER COAT FINISH AND BE DESIGNED WITHOUT SET SCREWS, PIPE THREADS, RETAINER RINGS, AND SCREW LOCK BUCKLES. THE SADDLE USED TO FASTEN THE SUPPORT MEMBER TO THE MAST ARM SHALL ALSO HAVE A MULTI-TOOTH MOUNTING SURFACE TO INHIBIT MOVEMENT OR ROTATION. THIS ITEM SHALL INCLUDE ALL NECESSARY HARDWARE, FASTENERS, AND ACCESSORIES. ALL NECESSARY HARDWARE, FASTENERS, AND ACCESSORIES SHALL BE STAINLESS STEEL.

PAYMENT FOR ITEM 630 SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS ITEM 630 AND 730, THE CONTRACTOR SHALL RIGIDLY ATTACH A SIGN TO THE TRAFFIC POLE. THE POLE MOUNTED SUPPORT ASSEMBLY SHALL HAVE A **BLACK** POWDER COAT FINISH. THIS ITEM SHALL INCLUDE ALL NECESSARY HARDWARE, FASTENERS, AND ACCESSORIES. ALL NECESSARY HARDWARE, FASTENERS, AND ACCESSORIES SHALL BE STAINLESS STEEL.

PAYMENT FOR ITEM 630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 630 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS ITEM 630 AND 730, THE CONTRACTOR SHALL ALSO REMOVE THE SIGN SUPPORT FOUNDATION TO AT LEAST 1' BELOW FINISHED GROUNDLINE.

PAYMENT FOR ITEM 630 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30, AS PER PLAN SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 VEHICULAR SIGNAL HEAD, LED, 3-SECTION, 12 INCH LENS, 1-WAY, WITH BACKPLATE AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. VEHICULAR SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.
2. PIPE, SPACERS AND FITTINGS SHOULD BE CONSTRUCTED OF GALVANIZED STEEL OR ALUMINUM AND HAVE A **BLACK** POWDER COAT FINISH, INCLUDING THE MAST ARM ATTACHMENT STEEL CABLES.
3. THE COLOR OF THE ENTIRE VEHICULAR SIGNAL HEAD SHALL BE **BLACK**. THIS INCLUDES THE VISORS, FACE PLATE, PIPE, SPACERS, AND FITTINGS.
4. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
5. EACH OPTICAL SECTION SHALL BE FITTED WITH A TUNNEL TYPE VISOR OPEN AT THE BOTTOM.
6. MAST ARM MOUNTED SIGNAL HEADS SHALL BE RIGID MOUNTED AS PER STANDARD DRAWING TC-85.20.
7. ALL SIGNAL HEADS SHALL BE FITTED WITH LOUVERED BLACK BACK PLATES WITH A YELLOW RETROREFLECTIVE BORDER.
8. CLEARANCE BETWEEN THE BOTTOM OF THE SIGNAL HEAD BACK PLATE AND PAVEMENT SHALL BE A MINIMUM OF 17'-0" AND MAXIMUM OF 18'-0".
9. THE CONTRACTOR SHALL PROVIDE THE ENGINEER, IN WRITING, THE LED MANUFACTURER 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.

PAYMENT FOR ITEM 632 VEHICULAR SIGNAL HEAD, LED, 3-SECTION, 12 INCH LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 VEHICULAR SIGNAL HEAD, LED, 5-SECTION, 12 INCH LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. VEHICULAR SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.
2. PIPE, SPACERS AND FITTINGS SHOULD BE CONSTRUCTED OF GALVANIZED STEEL AND HAVE A **BLACK** POWDER COAT FINISH, INCLUDING THE MAST ARM ATTACHMENT STEEL CABLES.
3. THE COLOR OF THE ENTIRE VEHICULAR SIGNAL HEAD SHALL BE **BLACK**. THIS INCLUDES THE VISORS, FACE PLATE, PIPE, SPACERS, AND FITTINGS.
4. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
5. EACH OPTICAL SECTION SHALL BE FITTED WITH A TUNNEL TYPE VISOR OPEN AT THE BOTTOM.
6. MAST ARM MOUNTED SIGNAL HEADS SHALL BE RIGID MOUNTED AS PER STANDARD DRAWING TC-85.20.
7. ALL SIGNAL HEADS SHALL BE FITTED WITH LOUVERED BLACK BACK PLATES WITH A YELLOW RETROREFLECTIVE BORDER.
8. CLEARANCE BETWEEN THE BOTTOM OF THE SIGNAL HEAD BACK PLATE AND PAVEMENT SHALL BE A MINIMUM OF 17'-0" AND MAXIMUM OF 18'-0".
9. THE CONTRACTOR SHALL PROVIDE THE ENGINEER, IN WRITING, THE LED MANUFACTURER 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.

PAYMENT FOR ITEM 632 VEHICULAR SIGNAL HEAD, LED, 5-SECTION, 12 INCH LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 DETECTOR LOOP, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 AND 732, THE FOLLOWING REQUIREMENT SHALL APPLY:

EACH LOOP WIRE SHALL BE ENCLOSED IN A SEPARATE 3/4" CONDUIT BETWEEN THE CURB OR EDGE OF PAVEMENT AND THE PULL BOX AS SHOWN ON THE PLANS.

LOOP DETECTOR SHALL BE INSTALLED 1-1/2" DEEPER THAN WHAT IS SHOWN IN THE SDC TC-82.10, INCLUDING THE END OF THE LOOP LEAD-IN CABLE CONDUIT INTO THE STREET.

PAYMENT FOR ITEM 632 DETECTOR LOOP, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 SIGNAL SUPPORT FOUNDATION, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

A 3" CONDUIT ELL IN LIEU OF A STANDARD 2" CONDUIT ELL SHALL BE INSTALLED IN EACH SIGNAL SUPPORT FOUNDATION AS REQUIRED BY ODOT SCD TC-21.20. SEE THE POLE ORIENTATION DIAGRAM ON THE RESPECTIVE TRAFFIC SIGNAL PLAN FOR FURTHER INFORMATION.

PAYMENT FOR ITEM 632 SIGNAL SUPPORT FOUNDATION, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 POWER SERVICE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 AND 732 AND SCD TC-83.10, THE FOLLOWING REQUIREMENTS SHALL APPLY:

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. THERE SHALL BE TWO (2) DISCONNECT SWITCHES. ONE SHALL BE CONNECTED TO THE EAST SIDE OF THE PROPOSED CONTROLLER CABINET AND THE SECOND ONE SHALL BE LOCATED IN THE LANDSCAPING BED APPROXIMATELY 15 FT. OFF OF THE BACK-OF-CURB AT STA. 121+15, 56' RT.
3. THE CONTRACTOR SHALL SUPPLY THE NECESSARY METER BASES.
4. ALL POWER SERVICES SHALL BE METERED. THE METER SHALL HAVE A LEVER OPERATED BYPASS.

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 AND CABINET. 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 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.

PAYMENT FOR ITEM 632 POWER SERVICE, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

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

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS ITEM 632 AND ITEM 732 AND SCD TC-81.21 AND TC-85.20, THE SIGNAL SUPPORTS SHALL BE FURNISHED INSTALLED AND MEET THE FOLLOWING ADDITIONAL REQUIREMENTS:

- A. A 3" CONDUIT ELL IN LIEU OF A STANDARD 2" CONDUIT ELL SHALL BE INSTALLED IN EACH SIGNAL SUPPORT FOUNDATION AS REQUIRED BY ODOT SCD TC-21.20. SEE THE POLE ORIENTATION DIAGRAM FOR THE RESPECTIVE TRAFFIC SIGNAL PLAN FOR FURTHER INFORMATION.
- B. THE SIGNAL SUPPORT FINISH SHALL CONSIST OF BLACK SEMI GLOSS POLYESTER, ANTI GASSING, POWDER COAT FINISH APPLIED DIRECTLY OVER HOT DIPPED GALVANIZING THAT CONFORMS TO ASTM A 123.
- C. THE SIGNAL SUPPORTS AND MAST ARMS SHALL BE WRAPPED TO PROTECT THE FINISH DURING SHIPPING, UNLOADING AND INSTALLATION. THE CONTRACTOR IS TOTALLY RESPONSIBLE TO PROVIDE ADEQUATE PROTECTION FOR THE FINISH OF THE POLES. IF THE FINISH IS DAMAGED DURING HANDLING, THE CONTRACTOR SHALL REPAIR THE FINISH PER THE POLE MANUFACTURER'S RECOMMENDATIONS.
- D. ALL HOLES ARE TO BE FIELD DRILLED AND NOT FACTORY DRILLED.

PAYMENT FOR ITEM 632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

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TRAFFIC SIGNAL GENERAL NOTES

MOT-IR 75-22.73

ITEM 632 COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 14, AS PER PLAN

IN ADDITION TO ITEM 632, THE CONTRACTOR SHALL REMOVE AND RELOCATE THE TWO EXISTING INTERSTATE 75 DIRECTIONAL SIGNS (8'x7') FROM THE EXISTING OVERHEAD SIGN SUPPORT IN THE NORTHWEST CORNER OF THE INTERSECTION AND RELOCATE TO POLE P2, AS SHOWN IN THE ELEVATION DETAIL SHEET OF THE RESPECTIVE TRAFFIC SIGNAL PLAN. THE REQUIRED HARDWARE SIGN ASSEMBLY, LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THE ABOVE MENTIONED WORK SHALL BE INCLUDED IN THIS PAY ITEM.

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS ITEM 632 AND ITEM 732 AND SCD TC-9.30, TC-12.30, TC-81.21, TC-85.10, TC-85.20, THE SIGNAL SUPPORTS SHALL BE FURNISHED, INSTALLED, AND MEET THE FOLLOWING ADDITIONAL REQUIREMENTS:

- A. A 3" CONDUIT ELL IN LIEU OF A STANDARD 2" CONDUIT ELL SHALL BE INSTALLED IN EACH SIGNAL SUPPORT FOUNDATION AS REQUIRED BY ODOT SCD TC-21.20. SEE THE POLE ORIENTATION DIAGRAM FOR THE RESPECTIVE TRAFFIC SIGNAL PLAN FOR FURTHER INFORMATION.
- B. THE SIGNAL SUPPORT FINISH SHALL CONSIST OF BLACK SEMI GLOSS POLYESTER, ANTI GASSING, POWDER COAT FINISH APPLIED DIRECTLY OVER HOT DIPPED GALVANIZING THAT CONFORMS TO ASTM A 123.
- C. THE SIGNAL SUPPORTS AND MAST ARMS SHALL BE WRAPPED TO PROTECT THE FINISH DURING SHIPPING, UNLOADING AND INSTALLATION. THE CONTRACTOR IS TOTALLY RESPONSIBLE TO PROVIDE ADEQUATE PROTECTION FOR THE FINISH OF THE POLES. IF THE FINISH IS DAMAGED DURING HANDLING, THE CONTRACTOR SHALL REPAIR THE FINISH PER THE POLE MANUFACTURER'S RECOMMENDATIONS.
- D. THE POLE MANUFACTURER SHALL PROVIDE DETAILED DRAWINGS OF THE COMBINATION SIGNAL AND SIGN SUPPORT THAT SHALL BE SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER WITH THE MANUFACTURER OR MANUFACTURER'S SUB-CONSULTANT.
- E. ALL HOLES ARE TO BE FIELD DRILLED AND NOT FACTORY DRILLED.

PAYMENT FOR ITEM 632 COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 14, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 633 AND 733, THE FOLLOWING REQUIREMENTS SHALL APPLY:

THE CONTROLLER UNIT SHALL BE A SIEMENS m50 CONTROLLER, WITH CABINET, TYPE TS2. IT SHALL INCORPORATE OR BE FURNISHED WITH ALL THE DESIGN FEATURES, AUXILIARY EQUIPMENT, ACCESSORIES, AND PRE-WIRED CABINET FEATURES AS REQUIRED IN THE STANDARD BID ITEM. THE CONTROLLER SHALL ALSO INCLUDE AN ETHERNET PORT AND ALL NECESSARY ACCESSORIES AND WIRING REQUIRED FOR ITS FUNCTION.

THE MALFUNCTION MANAGEMENT UNIT SHALL BE OF A RECORDING TYPE AND BE PRE-WIRED FOR A 16-POSITION BACK PANEL.

THE CABINETS SHALL BE UNPAINTED NATURAL ALUMINUM, COMMERCIALY SMOOTH AND FREE OF DEFECTS THAT WOULD IMPAIR SERVICEABILITY OR DETRACT FROM GENERAL APPEARANCE. THE ODOT EMBLEM STICKER SHALL BE PLACED ON THE BACK SIDE OF THE CABINET FACING NORTHWOODS BOULEVARD.

THE CABINET SHALL BE FURNISHED WITH LOAD SWITCHES FOR A 16-POSITION BACK PANEL TO ALLOW FOR MAXIMUM PHASE UTILIZATION FOR WHICH THE CABINET IS DESIGNED. ALL LOAD SWITCHES SHALL BE SUPPORTED BY A BRACKET EXTENDING AT LEAST HALF THE LENGTH OF THE LOAD SWITCH.

THE SIXTEEN (16) PHASE (16 POSITION) CABINET SHALL BE GROUND MOUNTED (AS SPECIFIED ON THE SIGNAL PLANS) AND FURNISHED WITH ALL NECESSARY CABINET MOUNTING HARDWARE.

CONTROLLER AND CABINET TESTING
THE CONTRACTOR SHALL PERFORM BENCH TESTING OF THE COMPONENTS OF THIS SECTION ON THE CONTROLLER CABINET. TESTING OF THE MALFUNCTION MANAGEMENT UNIT SHALL BE DONE BY THE CONTRACTOR BEFORE INSTALLING THE INTERSECTION CONTROLLER AND CABINET IN THE FIELD. SOFTWARE AND FIRMWARE SHALL BE LOADED ON THE CONTROLLER AND CHECKED FOR CORRECT OPERATION OF TIMING PLANS, PHASING SCHEMES, AND PRE-EMPTS.

TESTING OF COMPONENTS BY THE CONTRACTOR FOR PROPER OPERATION SHALL INCLUDE THE FOLLOWING MINIMUM REQUIREMENTS:

1. TERMINAL SCREWS TIGHTENED.
2. CORRECT TERMINAL JUMPERS.
3. FAN & THERMOSTAT OPERATION.
4. DOOR CLOSER SWITCH OPERATION.
5. MALFUNCTION MANAGEMENT UNIT TEST.
6. FORCE HARDWIRE CONFLICTS FOR ALL PHASE COMBINATIONS TO VERIFY STOP TIMING AND CONFLICT INDICATION.
7. GFI RECEPTACLE TEST.
8. POLICE PANEL OPERATION.
9. MAINTENANCE PANEL OPERATION.
10. DETECTORS.
11. TEST FOR PHASE OPERATION, SEQUENCE AND INTERVAL LENGTH ON MIN RECALL, MAX RECALL AND NO CALL.
12. SHELVES, MOUNTING.
13. ALL PANELS, MOUNTING.
14. ATSI MALFUNCTION MANAGEMENT UNIT TEST TO DOCUMENT THE MALFUNCTION MANAGEMENT UNIT OPERATION. THE TEST RESULTS ARE TO BE LOGGED AND FURNISHED TO THE CITY.
15. PROPER FLASH SEQUENCE.
16. AUXILIARY EQUIPMENT OPERATION.
17. CABINET LAMP.
18. SIGNAL OUTPUTS ARE TO BE TESTED WHILE CONNECTED TO A MIN 60 WATT LOAD ON EACH SIGNAL INDICATION.
19. PREEMPTION ACTUATION.

ITEM 633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN (CONTINUED)

A WRITTEN REPORT STATING THE CABINET INTERSECTION NUMBER, DATE AND TIME OF TEST, SIGNED OFF BY THE TECHNICIAN WHO PERFORMED THE TESTS, SHALL BE SUBMITTED TO THE ENGINEER UPON SUCCESSFUL COMPLETION OF THE ABOVE TESTS. THE SUCCESSFUL TESTING SHALL BE DEMONSTRATED TO THE ENGINEER PRIOR TO INSTALLATION IF REQUESTED. THE TEST AREA MAY BE ERECTED AT A LOCATION DETERMINED BY THE CONTRACTOR. ALL COSTS RELATED TO INSPECT AND OBSERVE THE BENCH TESTING SHALL BE INCLUDED IN THIS LINE ITEM.

THE CONTROLLER AND ALL RELATED COMPONENTS SHALL BE IN PERFECT WORKING ORDER AND READY FOR INSTALLATION/OPERATION AT THE SPECIFIED INTERSECTION AS A RESULT OF THE WORK DESCRIBED IN THIS ITEM. THE COST FOR THE CONTROLLER AND CABINET TESTING SHALL BE INCLUDED IN THE PRICE OF THE CONTROLLER FURNISHED COMPLETE.

DOCUMENTATION

- TWO (2) COMPLETE SETS OF WIRING DIAGRAMS AND PARTS LISTS SHALL BE PROVIDED BY THE CONTRACTOR.
- USER MANUALS.
- DEVICE PROGRAMMING MANUALS.
- INSTALLATION AND DIAGNOSTIC MANUALS.

SOFTWARE OR FIRMWARE UPDATES SHALL BE ACCOMPANIED BY COMPLETE DOCUMENTATION THAT REFERENCES AN UPGRADE VERSION, PROVIDES A LIST OF IMPROVED CAPABILITIES WITH THE UPGRADE, AND PROVIDES A LIST OF PROBLEMS RESOLVED WITH THE UPGRADE (IF APPLICABLE). ALL FUNCTIONS, FEATURES, AND CAPABILITIES NOT ADDRESSED SHALL OPERATE AS INTENDED BEFORE THE UPGRADE WAS IMPLEMENTED. ALL SOFTWARE AND FIRMWARE UPGRADES AND NEW RELEASES FOR FEATURES FURNISHED AS A PART OF THIS CONTRACT SHALL BE FREE OF CHARGE FOR TWO (2) YEARS AFTER THE COMPLETION OF THE 10-DAY PERFORMANCE TEST.

PAYMENT FOR ITEM 633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 633 CABINET FOUNDATION, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATION 633, THE FOLLOWING REQUIREMENTS SHALL APPLY:

ADDITIONAL AREA FOR THE CABINET FOUNDATION SHALL BE INSTALLED IN ORDER FOR THE UPS CABINET TO SET ON.

PAYMENT FOR ITEM 633 CABINET FOUNDATION, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 633 CONTROLLER WORK PAD, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATION 633, THE FOLLOWING REQUIREMENTS SHALL APPLY:

THE DIMENSIONS OF THE CONTROLLER WORK PAD SHALL BE 4' x 4' x 4".

THIS PAY ITEM SHALL ALSO INCLUDE A WORK PAD FOR THE UNINTERRUPTIBLE POWER SUPPLY (UPS) ATTACHED TO THE CONTROLLER CABINET. THE UPS WORK PAD SHALL BE 3' x 3' x 4".

PAYMENT FOR ITEM 633 CONTROLLER WORK PAD, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 633 PREEMPTION, AS PER PLAN

THE PREEMPTION SHALL CONFORM TO ODOT SPECIFICATION 633 AND SHALL UTILIZE COMMUNICATIONS TO IDENTIFY THE PRESENCE OF AN EMERGENCY PRIORITY VEHICLE. IT SHALL CAUSE THE TRAFFIC SIGNAL CONTROLLER TO SELECT A PRE-PROGRAMMED, PREEMPTION PLAN THAT WILL DISPLAY AND HOLD THE DESIRED SIGNAL PHASE FOR THE DIRECTION OF THE EMERGENCY VEHICLE.

THE COMMUNICATION MEDIUM SHALL EMPLOY SOUND DETECTION TECHNIQUES TO DETERMINE AND LOG THE PRESENCE OF THE EMERGENCY VEHICLE. THE SYSTEM SHALL DETECT THE PRESENCE OF THE VEHICLE THROUGH THE USE OF A SIREN ON THE EMERGENCY VEHICLE. THE SYSTEM SHALL ACTIVATE THE PREEMPTION SEQUENCE BY APPLYING A SIGNAL TO ONE OF THE CONTROLLER'S PREEMPT DISCRETE INPUTS. THE SYSTEM SHALL BE COMPLETELY COMPATIBLE WITH THE CONTROLLER. ALL EQUIPMENT SHALL BE A SONEM 2000 PRIORITY CONTROL EQUIPMENT, AS MANUFACTURED BY:

TRAFFIC SYSTEMS, LLC
18631 N. 19th AVENUE
SCOTTSDALE, AZ 85027-5800
866-600-0003

THE EQUIPMENT SHALL BE RACK-MOUNTED AND EASILY REMOVABLE AND REPLACEABLE WITHIN THE CABINET. THE EQUIPMENT SHALL BE SUPPLIED COMPLETELY WIRED IN THE CONTROLLER CABINET AND TESTED.

THE SYSTEM SHALL BE CAPABLE OF PREEMPTING AND RECEIVING PRIORITY FOR EACH APPROACH TO THE INTERSECTION. IT SHALL BE POSSIBLE TO DETECT THE EMERGENCY VEHICLE UP TO 1200 FEET FROM THE INTERSECTION.

EACH INTERSECTION SHOWN IN THE PLANS SHALL BE SUPPLIED WITH THE FOLLOWING COMPONENTS, EACH BID SEPARATELY:

1. PREEMPT RECEIVING UNIT.
2. PREEMPT DETECTOR CABLE.
3. PREEMPT PHASE SELECTOR ASSEMBLY AND INTERFACE WIRING PANEL.
4. CONFIRMATION LIGHT.

THE CITY SHALL BE SUPPLIED WITH SOFTWARE REQUIRED TO CALIBRATE, LOG, AND OPERATE THE SYSTEM. THE SOFTWARE SHALL BE CAPABLE OF OPERATING UNDER WINDOWS 7, 32-BIT OPERATING SYSTEM. TWO (2) OPERATING AND INSTRUCTION MANUALS SHALL BE SUPPLIED WITH THE SOFTWARE.

THE CONTRACTOR SHALL THOROUGHLY CHECK OUT THE INSTALLED SYSTEM. AS A MINIMUM, THE CONTRACTOR SHALL VERIFY THAT ALL CONNECTIONS ARE PROPERLY MADE TO THE CONTROLLER CABINET. THE CONTRACTOR SHALL CHECK THAT THE RANGE SETTING IS PROPER FOR THE INTERSECTION. THE CONTRACTOR SHALL DETERMINE THAT ALL PHASE SELECTORS ARE SELECTING THE PROPER PHASE AND TIMING ACCURATELY. THE CONTRACTOR SHALL VERIFY THAT ALL VEHICLE EMITTERS ARE BEING PROPERLY DETECTED.

THE CONTRACTOR AND MANUFACTURER'S REPRESENTATIVE SHALL PROGRAM THE PREEMPTION SYSTEM TO HAVE ALL PHASES USE THEIR CLEARANCE INTERVALS PRIOR TO THE PREEMPTED PHASE GOING TO GREEN. THIS WILL AVOID ANY YELLOW BALL TRAP SCENARIOS. THIS SHALL BE PROVEN IN THE FIELD TO THE ENGINEER.

ALL CABLES, CONNECTORS, TERMINALS, HARDWARE, AND INTERFACE RACKS NECESSARY TO PROVIDE A COMPLETE PRIORITY CONTROL SYSTEM SHALL BE INCIDENTAL TO THIS ITEM. PAYMENT FOR ITEM 633 PREEMPTION, AS PER PLAN, SHALL BE MADE AT THE CONTRACT EACH BID PRICE FOR EACH PREEMPTION IN PLACE AND FULLY OPERATIONAL AS SHOWN IN THE PLANS, EXCEPT FOR THOSE ITEMS BID SEPARATELY.

ITEM 633 PREEMPTION RECEIVING UNIT, AS PER PLAN

RECEIVING UNITS SHALL CONSIST OF A LIGHTWEIGHT, WEATHERPROOF AND DIRECTIONAL ASSEMBLY. EACH RECEIVING UNIT SHALL BE 360 DEGREES ADJUSTABLE. THE RECEIVING UNIT SHALL BE CAPABLE OF SENDING THE PROPER ELECTRICAL SIGNAL TO THE TRAFFIC SIGNAL CONTROLLER VIA THE PREEMPTION DETECTOR CABLE. RECEIVING UNITS SHALL BE SUPPLIED WITH THE MAST ARM MOUNTING HARDWARE.

FURNISH PREEMPTION RECEIVING UNITS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER'S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THAT THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

PAYMENT FOR ITEM 633 PREEMPTION RECEIVING UNIT, AS PER PLAN, SHALL BE AT THE CONTRACT EACH BID PRICE FOR EACH RECEIVING UNIT IN PLACE, COMPLETELY INSTALLED AT THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

ITEM 633 PREEMPTION DETECTOR CABLE, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION DETECTOR HOME RUN CABLE IN THE LOCATIONS SHOWN IN THE PLANS. IT SHALL CONNECT THE PREEMPT RECEIVING UNITS TO THE PHASE SELECTORS IN THE LOCAL CONTROLLER CABINET.

PREEMPTION DETECTOR CABLE SHALL CONFORM TO ODOT SPECIFICATION 632. ONLY ONE EXTERNAL SPLICE SHALL BE PERMITTED BETWEEN PREEMPTION RECEIVER UNIT AND CONTROLLER CABINET. THIS SPLICE SHALL MEET THE REQUIREMENTS OF C&MS 632.23 USING A WATERPROOF EPOXY SPLICE KIT. THE CABLE SHALL BE APPROVED FOR BOTH OVERHEAD AND UNDERGROUND USE. THE JACKET SHALL WITHSTAND EXPOSURE TO SUNLIGHT AND ATMOSPHERIC TEMPERATURES AND STRESSES REASONABLY EXPECTED IN NORMAL INSTALLATIONS.

PAYMENT FOR ITEM 633 PREEMPTION DETECTOR CABLE, AS PER PLAN, SHALL BE MADE AT THE CONTRACT FOOT BID PRICE FOR THE CABLE FURNISHED, IN PLACE, ALL CONNECTIONS MADE AND WIRING COMPLETED, TESTED AND ACCEPTED.

CALCULATED
MUT
CHECKED
MUT

TRAFFIC SIGNAL GENERAL NOTES

MOT-IR 75-22.73

6
14

ITEM 633 PREEMPTION PHASE SELECTOR, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION PHASE SELECTORS INCLUDING WIRING INTERFACE PANELS IN THE LOCAL CONTROLLER CABINET AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPTION PHASE SELECTORS COMPLETELY FUNCTIONAL AND OPERATIONAL. THIS ITEM SHALL INCLUDE THE EXTRA CABINET SPACE NECESSARY TO BE LOCATED IN THE LOCAL CONTROLLER CABINETS WHERE INDICATED IN THE PLANS.

THE PHASE SELECTORS SHALL CONSIST OF A MODULE OR MODULES THAT WILL PROVIDE THE NECESSARY INPUTS TO THE CONTROLLER. PHASE SELECTORS SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF CHANNELS TO PROVIDE PREEMPTION FOR ALL APPROACHES TO THE INTERSECTION SEPARATELY. POWER SHALL BE OBTAINED FROM THE PHASE SELECTOR OR PHASE SELECTOR POWER SUPPLY AND NOT FROM THE LOCAL CONTROLLER TIMER.

THE PHASE SELECTOR SHALL HAVE FRONT PANEL INDICATORS FOR ACTIVE PREEMPTION CHANNEL STATUS. IT SHALL HAVE TEST SWITCHES TO ACTIVATE ALL PREEMPT CHANNELS.

FURNISH PREEMPTION PHASE SELECTORS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER'S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THAT THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

PAYMENT FOR ITEM 633 PREEMPTION PHASE SELECTOR, AS PER PLAN, SHALL BE MADE AT THE CONTRACT EACH BID PRICE FOR EACH PHASE SELECTOR IN PLACE, COMPLETELY INSTALLED IN THE LOCAL CONTROLLER SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

ITEM 633 PREEMPTION CONFIRMATION LIGHT, LED, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION CONFIRMATION LIGHTS INCLUDING HARDWARE AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT CONFIRMATION LIGHT COMPLETELY FUNCTIONAL AND OPERATIONAL.

A CONFIRMATION LIGHT SHALL BE SUPPLIED FOR EACH INTERSECTION TO INDICATE THAT THE EMERGENCY VEHICLE HAS ACHIEVED CONTROL OF THE TRAFFIC SIGNAL.

FOLLOWING ARE THE LOCATIONS OF WHERE THE CONFIRMATION LIGHTS SHALL BE LOCATED FOR THE CORRESPONDING DIRECTION OF TRAVEL:

INTERSECTION OF NORTHBOUND IR-75 AND NORTHWOODS BOULEVARD:

- NORTHBOUND IR-75 - LOCATE IN BETWEEN SIGNAL HEADS N1 AND N2.
- EASTBOUND NORTHWOODS BLVD. - LOCATE IN BETWEEN SIGNAL HEAD E2 AND E3.
- WESTBOUND NORTHWOODS BLVD. - LOCATE IN BETWEEN SIGNAL HEADS W1 AND W2.

THE CONFIRMATION LIGHT SHALL BE A VAPOR TIGHT ALUMINUM LIGHTING FIXTURE. IT SHALL BE SUPPLIED WITH A **CLEAR** GLOBE, LED LAMP AND MOUNTING HARDWARE TO ATTACH TO THE TRAFFIC SIGNAL MAST ARM. THE CONFIRMATION LIGHT SHALL BE POWERED BY A LOAD SWITCH IN THE TRAFFIC SIGNAL CONTROLLER. SIGNAL CABLE CONFORMING TO 732.19 SHALL BE USED FOR CONFIRMATION LIGHTS. A MINIMUM 4-CONDUCTOR CABLE SHALL BE USED WITH THE GREEN WIRE SERVING AS THE SAFETY GROUND CONDUCTOR. ALL WIRING SHALL BE INCLUDED IN THIS PAY ITEM.

PAYMENT FOR ITEM 633 PREEMPTION CONFIRMATION LIGHT, LED, AS PER PLAN SHALL BE MADE AT THE CONTRACT EACH BID PRICE FOR EACH LIGHT IN PLACE, COMPLETELY INSTALLED IN THE LOCATION DESCRIBED ABOVE, WIRED, TESTED AND ACCEPTED.

ITEM 633 DILEMMA ZONE RADAR UNIT

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

- POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
- ALL REQUIRED INPUT 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.
- 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.
- 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.
- 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.
- A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MIN. 7 FEET)
- THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.

PAYMENT FOR ITEM 633 DILEMMA ZONE RADAR UNIT SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT, CONNECTIONS TESTED AND ACCEPTED, AND ANY OTHER NECESSARY HARDWARE TO ESTABLISH A FULLY FUNCTIONAL DETECTION SYSTEM.

ITEM 633 UNINTERRUPTIBLE POWER SUPPLY (UPS), 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 (25 MM) WATERPROOF NEMA 4X OR IP66 LAMP WITH A DOMED **BLUE** 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.

THE CABINET FOR THE UPS SHALL BE MOUNTED TO THE SIDE OF THE CONTROLLER CABINET. THE COST OF THE UPS CABINET AND INSTALLATION SHALL BE INCLUDED IN ITEM 633 UNINTERRUPTIBLE POWER SUPPLY, AS PER PLAN.

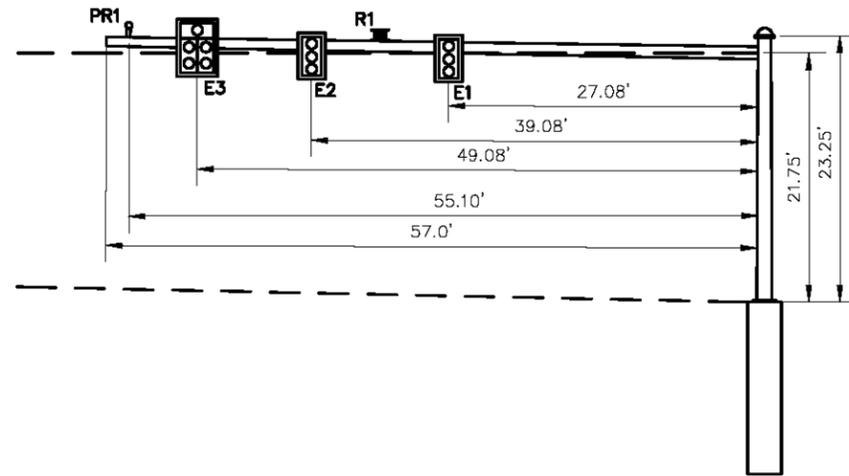
PAYMENT FOR ITEM 633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

CALCULATED
MUT
CHECKED
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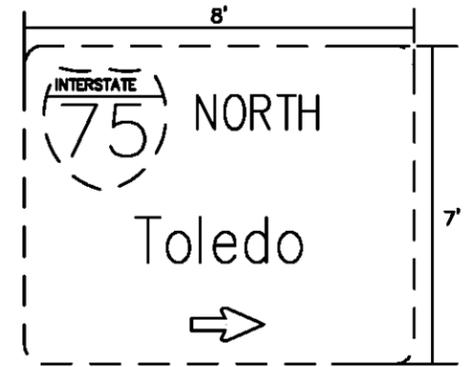
TRAFFIC SIGNAL GENERAL NOTES

MOT-IR 75-22.73

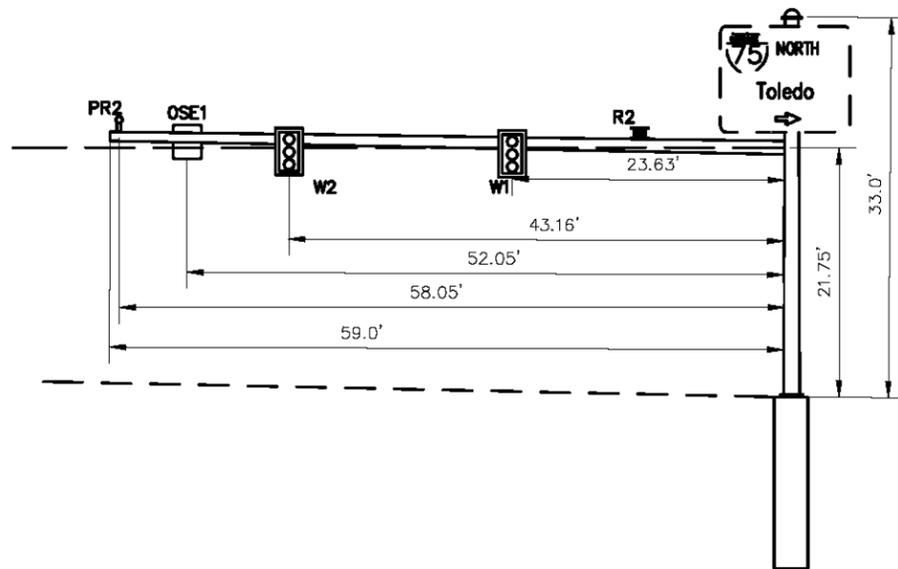
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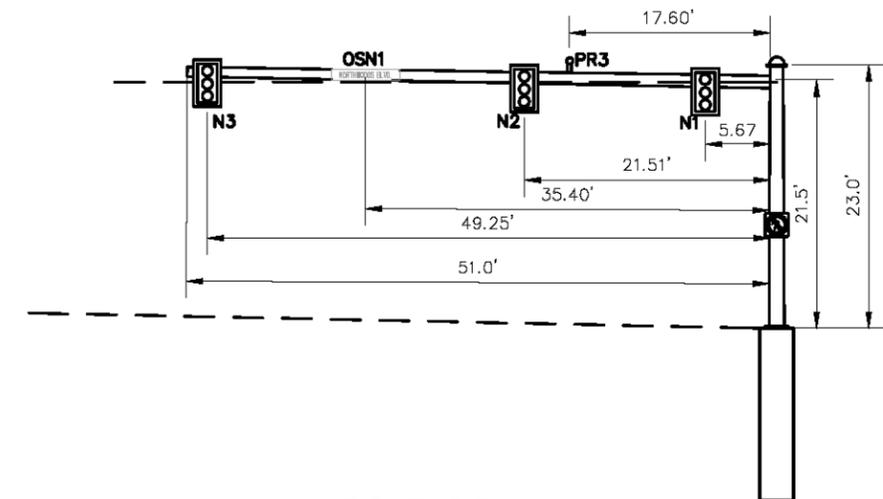
POLE P1
EASTBOUND ELEVATION
 SCALE: 1/8" = 1' (FOR FULL SIZE)
 1/16" = 1' (FOR HALF SIZE)



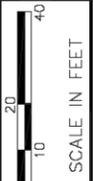
THE EXISTING SIGN SHALL BE REMOVED AND REERECTED. SEE NOTE ITEM 632 COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 14, AS PER PLAN.



POLE P2
WESTBOUND ELEVATION
 SCALE: 1/8" = 1' (FOR FULL SIZE)
 1/16" = 1' (FOR HALF SIZE)



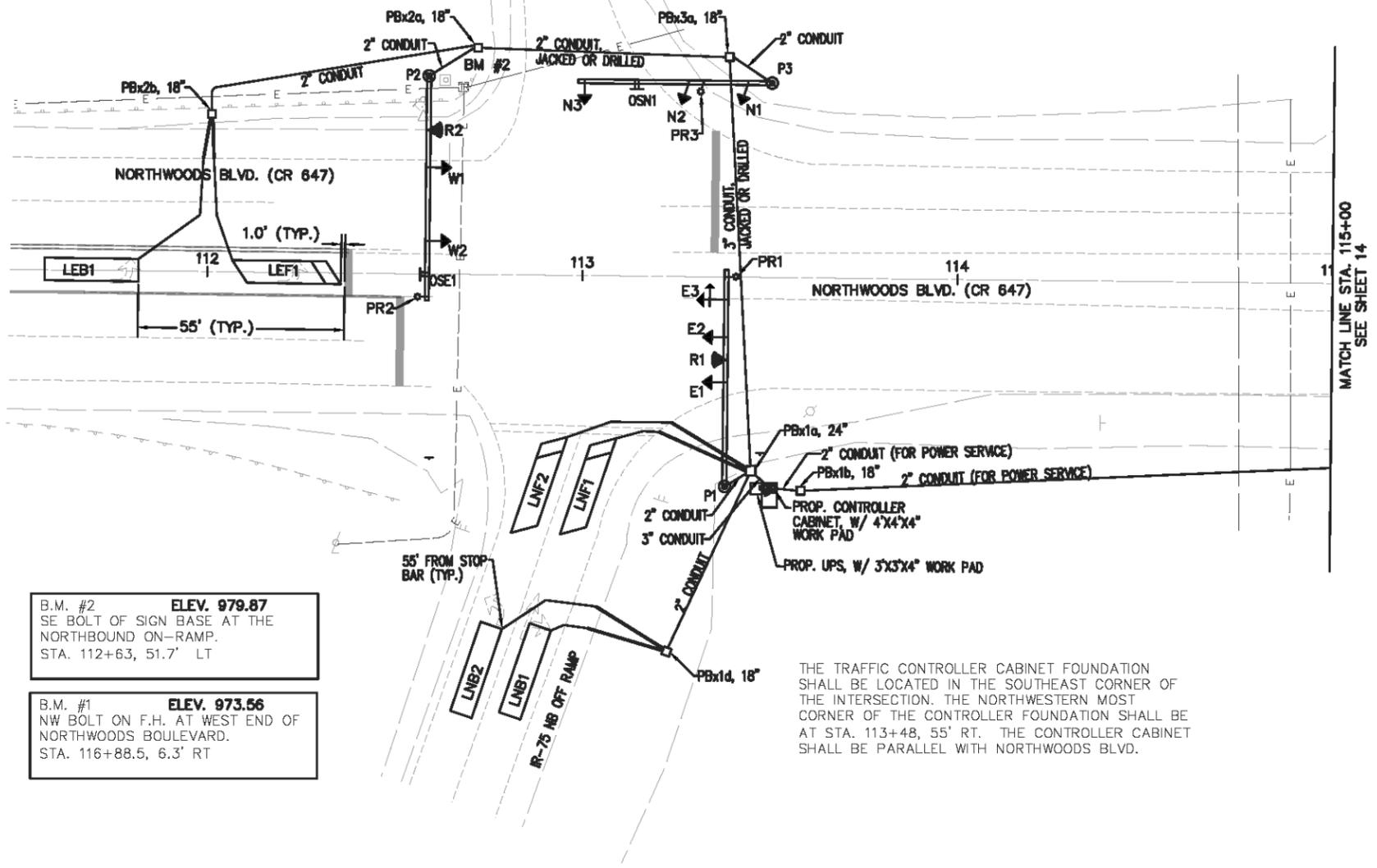
POLE P3
NORTHBOUND ELEVATION
 SCALE: 1/8" = 1' (FOR FULL SIZE)
 1/16" = 1' (FOR HALF SIZE)



CALCULATED	A/JH	CHECKED	MJT
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NB IR-75 AND NORTHWOODS BOULEVARD TRAFFIC SIGNAL PLAN

MOT-IR 75-22.73



POWER SERVICE SHALL BE RUN FROM THE PROP. ELECTRIC PEDESTAL (SUPPLIED AND INSTALLED BY DP&L) APPROX. STA. 121+03.8, 43' RT. TO THE PROPOSED TRAFFIC CONTROLLER.

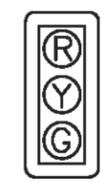
B.M. #2 **ELEV. 979.87**
SE BOLT OF SIGN BASE AT THE NORTHBOUND ON-RAMP.
STA. 112+63, 51.7' LT

B.M. #1 **ELEV. 973.66**
NW BOLT ON F.H. AT WEST END OF NORTHWOODS BOULEVARD.
STA. 116+88.5, 6.3' RT

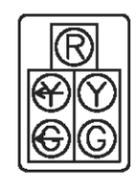
THE TRAFFIC CONTROLLER CABINET FOUNDATION SHALL BE LOCATED IN THE SOUTHEAST CORNER OF THE INTERSECTION. THE NORTHWESTERN MOST CORNER OF THE CONTROLLER FOUNDATION SHALL BE AT STA. 113+48, 55' RT. THE CONTROLLER CABINET SHALL BE PARALLEL WITH NORTHWOODS BLVD.

VEHICLE SIGNAL HEAD PLACEMENT:

- SIGNAL HEADS N1 AND N2 SHALL BE MOUNTED IN LINE WITH THE PROJECTION OF THE NB I-75 EXIT RAMP STRIPED CHANNELIZING LINE.
- SIGNAL HEAD N3 SHALL BE MOUNTED PERPENDICULAR TO NORTHWOODS BLVD. (CR 647).



SIGNAL E1, E2, N1, N2, N3, W1, W2
SIZE 12" LED



SIGNAL E3
SIZE 12" LED

- NOTE:**
- DISTANCES FROM ARM BUTT TO CENTER OF VEHICULAR SIGNAL HEADS AND MAST ARM SIGNS ARE FOR DESIGN PURPOSES ONLY. SIGNAL SUPPORT ARMS ARE NOT TO BE FACTORY PRE-DRILLED.
 - THE BOTTOM OF THE VEHICULAR SIGNAL HEAD BACK PLATES SHALL BE MINIMUM OF 17.0' AND A MAXIMUM OF 18.0' ABOVE THE ROADWAY PAVEMENT.

OVERHEAD SIGNAL SUPPORT DATA

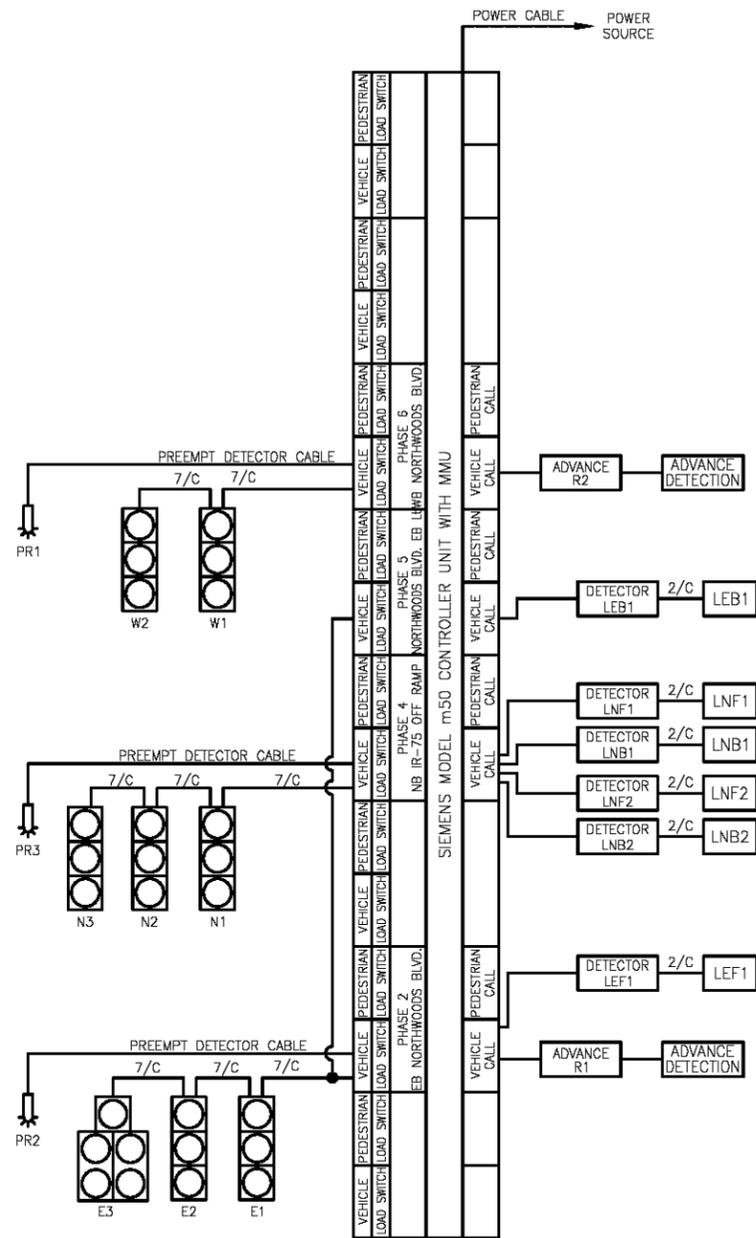
POLE NUMBER	STATION	OFFSET (FEET) AND SIDE	TC-81.21 DESIGN NO.	TOP OF FOUNDATION ELEVATION (FEET)	ARM ATTACHMENT HEIGHT (FEET)	POLE HEIGHT	MAST ARM DATA										ANGLES (DEG) FROM INDEX LINE (ALL ANGLES MEASURES CLOCKWISE C)									
							ARM LENGTH FROM ARM BUTT TO END OF ARM (FEET)	SIGNAL NO.	DISTANCE FROM ARM BUTT TO CENTER OF HEAD (FEET)	SIGN NO.	DISTANCE FROM ARM BUTT TO CENTER OF SIGN (FEET)	PREEMPTION No.	DISTANCE FROM ARM BUTT TO CENTER OF DETECTOR (FEET)	RADAR DETECTION No.	DISTANCE FROM ARM BUTT TO CENTER OF DETECTOR (FEET)	MAST ARM A / INDEX ANGLE (DEG)	MAST ARM B	PEDESTRIAN SIGNALS	PEDESTRIAN PUSHBUTTONS	POWER SERVICE	SIGNAL CONDUIT ELL	HANDHOLE				
P1	113+38.4	55.77' RT	13	978.30	21.75'	23.25'	57.0'	E1	27.08'	-	-	PR1	55.10'	R1	33.10'	0	-	-	-	-	58	180				
								E2	39.08'																	
								E3	49.08'																	
P2	112+58.6	52.69' LT	14	979.25	21.75'	33.0'	59.0'	W1	23.63'	OSE1	52.05'	PR2	58.05'	R2	13.69'	0	-	-	-	-	234	180				
								W2	43.16'																	
P3	113+50.0	51.69' LT	13	978.40	21.5'	23.0'	51.0'	N1	5.67'	OSN1	35.40'	PR3	17.60'			90	-	-	-	-	34	180				
								N2	21.51'																	
								N3	49.25'																	

PULL BOX DATA

PULL BOX NUMBER	STATION	OFFSET (FEET) AND SIDE	PULL BOX SIZE
PBx1a	113+45	51' RT	24"
PBx1b	113+59	57' RT	18"
PBx1c	117+31	40' RT	18"
PBx1d	113+15	123' RT	18"
PBx2a	112+72	60' LT	18"
PBx2b	112+00	42' LT	18"
PBx3a	113+39	59' LT	18"

LEGEND

- PROP. SIGNAL POLE
- PROP. 3-SECTION VEHICLE SIGNAL
- PROP. 5-SECTION VEHICLE SIGNAL
- PROP. OVERHEAD SIGN
- PROP. CONTROLLER
- PROP. PULL BOX
- PROP. CONDUIT
- PROP. RADAR DETECTOR
- PROP. PREEMPT RECEIVING UNIT

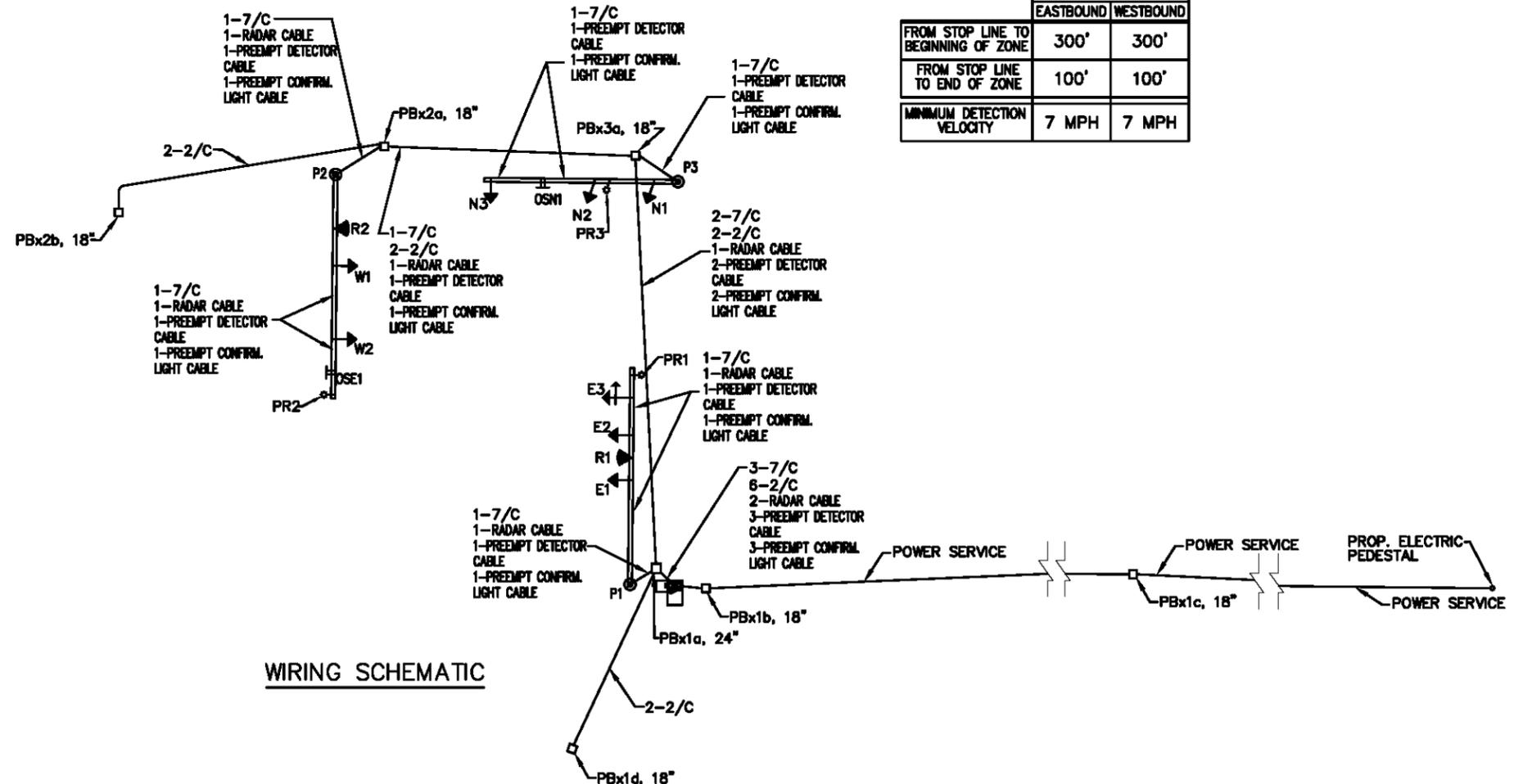


WIRING DIAGRAM

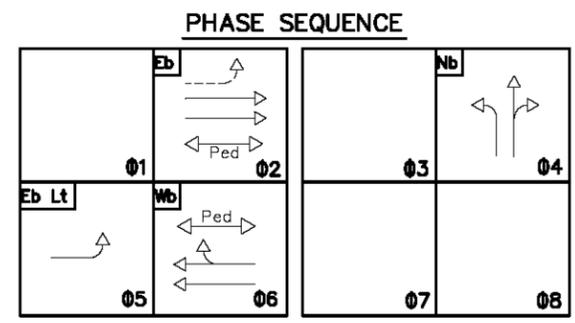
2/C = SHIELDED LOOP LEAD-IN CABLE
7/C = 7 CONDUCTOR SIGNAL CABLE

TIMING CHART		PHASE TIMING							
CPU	CONTROLLER 0	1	2	3	4	5	6	7	8
START IN	INTERSECTION 0	1	2	3	4	5	6	7	8
FLASH	X	RECALL	MAX.	OFF	OFF	OFF	OFF	OFF	OFF
ALL RED		MIN.	ON	OFF	OFF	OFF	OFF	OFF	OFF
FLASH/AR		PED.	OFF	OFF	OFF	OFF	OFF	OFF	OFF
TIME	10	NON ACT	1						
FIRST PHASES	2,6	NON-LOCK MEMORY	ON		ON	ON	ON		
GREEN	X	ADDED PER ACT							
YELLOW		INITIAL	MIN.	18	8	8	18		
EXCLUSIVE PHASES		PED	MAX.						
GENERAL		PROTECT							
DUAL ENTRY	ON	EXTENSION	PRESET	0.1	0.1	0.1	0.1		
G.P.T.		REDUCTION	BEFORE						
SIM. GAP	ON	TO MIN.							
MAX. EXT.		MAXIMUM	I	50.0	45.0	15.0	50.0		
RED 1-4		REST	5-8	II					
MIN. RED		CLEAR	YELLOW	3.6	3.0	3.0	3.6		
CON. SERV.		MANUAL FLASH	Y	Y	R	R	Y		
REST IN WALK		(YES/NO)		NO	NO	NO	NO		

NOTE:
- THE POWER CABLE, FOR POWER SERVICE, SHALL BE RAN IN ITS OWN SEPARATE 2" CONDUIT FROM THE CONTROLLER CABINET TO DP&L'S POWER PEDESTAL LOCATED IN THE SOUTHWEST QUADRANT OF THE NORTHWOODS/FALLS CREEK INTERSECTION, AS SHOWN IN THE PLANS.
- THE PREEMPTION AND RADAR CABLES SHALL BE PER THE MANUFACTURER'S SPECIFICATIONS.



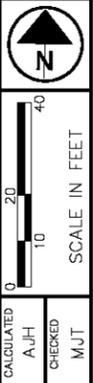
WIRING SCHEMATIC



NOTE: FOLLOWS DEFINITIONS IN NEMA TS-1-1994 INCLUDING ALL REVISIONS THERETO.

ADVANCE ZONE DETECTION SETTINGS

	DETECTION ZONE DISTANCE FOR	
	EASTBOUND	WESTBOUND
FROM STOP LINE TO BEGINNING OF ZONE	300'	300'
FROM STOP LINE TO END OF ZONE	100'	100'
MINIMUM DETECTION VELOCITY	7 MPH	7 MPH



ALL SIGNS ATTACHED TO A MAST ARM SHALL BE RIGID MOUNTED.

72" x 15"

Northwoods Blvd.

SIGN OSN1
SIZE D3-1

NOTE:
THE CITY OF VANDALIA WILL PROVIDE THE STREET NAME SIGN. THE CONTRACTOR WILL BE RESPONSIBLE FOR ATTACHING THE STREET NAME SIGN TO THE APPROPRIATE MAST ARM AS PER PLAN.

OVERHEAD SIGN PLACEMENT

CENTER LANE USE SIGNS OVER THEIR RESPECTIVE LANES.

30" x 36"



SIGN OSE1
SIZE R3-5L

ZONE DETECTION SUMMARY

ZONE	SIZE	DETECTION	PHASE	TYPE AMPLIFIER
ZE1	SEE GENERAL NOTE	RADAR (R1)	2	EXTEND
ZW1	SEE GENERAL NOTE	RADAR (R2)	6	EXTEND

NOTES: ALL DETECTION ZONES SHALL BE CENTERED IN THEIR RESPECTIVE LANES UNLESS OTHERWISE SHOWN.

LOOP DETECTOR SUMMARY

LOOP	TYPE	SIZE	No. OF TURNS	PHASE	DELAY OVERRIDE	EXT. (SEC)	DELAY (SEC)	
LEF1	POWERHEAD	6 X 25	3 + 3	2				ASSIGNED \emptyset
				5				CROSS SWITCH \emptyset
LEB1	RECTANGULAR	6 X 25	3	5	\emptyset 5 GRN	1.5	3.0	ASSIGNED \emptyset
				2		1.5		CROSS SWITCH \emptyset
LNF1	POWERHEAD	6 X 25	3 + 3	4	\emptyset 4 GRN		12.0	
LNB1	RECTANGULAR	6 X 25	3	4	\emptyset 4 GRN	1.5	12.0	
LNF2	POWERHEAD	6 X 25	3 + 3	4				
LNB2	RECTANGULAR	6 X 25	3	4		1.5		

NOTES: ALL LOOP DETECTORS SHALL BE CENTERED IN THEIR RESPECTIVE LANES UNLESS OTHERWISE SHOWN. ALL LOOPS ARE TO BE IN PRESENCE MODE.

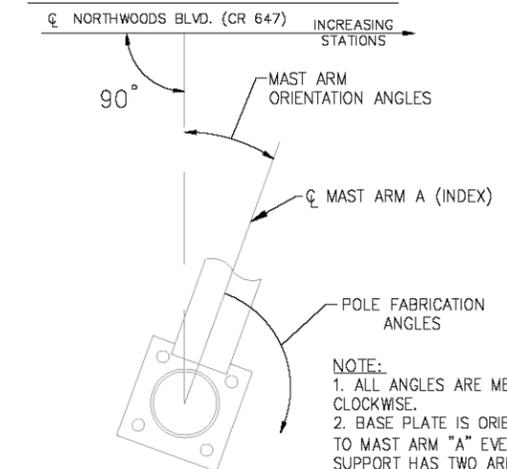
NB IR-75 AND NORTHWOODS BLVD. (CR 647) TRAFFIC SIGNAL SUB-SUMMARY

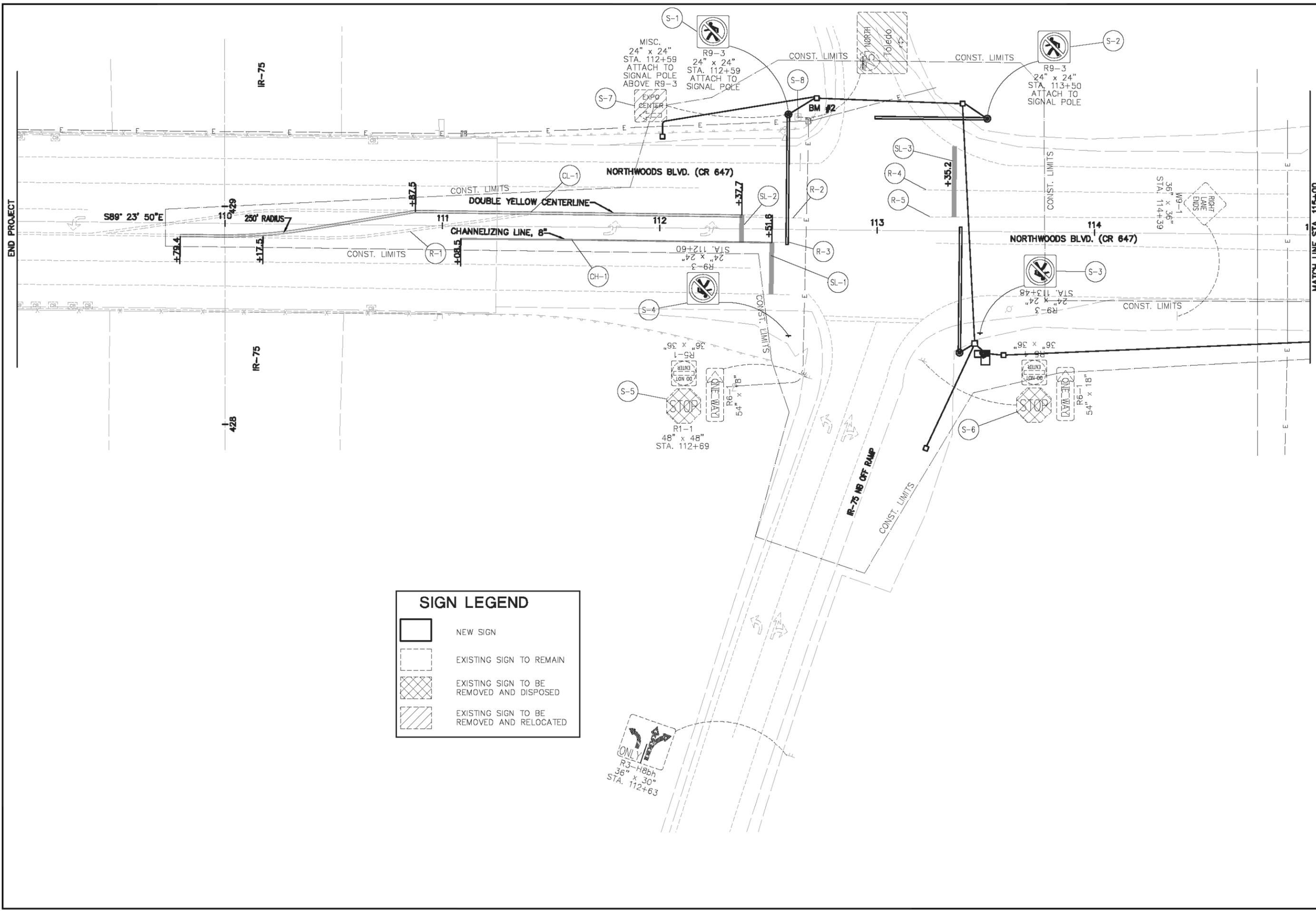
ITEM	QUAN.	UNIT	DESCRIPTION
625	838	FT.	CONDUIT, 2", 725.051, AS PER PLAN
625	8	FT.	CONDUIT, 3", 725.051, AS PER PLAN
625	168	FT.	CONDUIT, 2", JACK OR DRILLED, 725.052, AS PER PLAN
625	112	FT.	CONDUIT, 3", JACK OR DRILLED, 725.052, AS PER PLAN
625	810	FT.	TRENCH
625	6	EACH	PULL BOX, 725.08, 18"
625	1	EACH	PULL BOX, 725.08, 24"
625	4	EACH	GROUND ROD
630	2	EACH	SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN
630	7.5	S.F.	SIGN, FLAT SHEET
632	7	EACH	VEHICULAR SIGNAL HEAD, LED, 3-SECTION, 12 INCH LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN
632	1	EACH	VEHICULAR SIGNAL HEAD, LED, 5-SECTION, 12 INCH LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN
632	8	EACH	COVERING OF VEHICULAR SIGNAL HEAD
632	6	EACH	DETECTOR LOOP, AS PER PLAN
632	735	FT.	SIGNAL CABLE, 7-CONDUCTOR, NO. 14 AWG.
632	3	EACH	SIGNAL SUPPORT FOUNDATION, AS PER PLAN
632	834	FT.	LOOP DETECTOR LEAD-IN CABLE
632	784	FT.	POWER CABLE, 2-CONDUCTOR, NO. 6 AWG.
632	50	FT.	SERVICE CABLE, 2-CONDUCTOR, NO. 6 AWG.
632	1	EACH	POWER SERVICE, AS PER PLAN
632	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21 DESIGN 13, AS PER PLAN
632	1	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 14, AS PER PLAN
633	1	EACH	CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN
633	1	EACH	CABINET RISER
633	1	EACH	CABINET FOUNDATION, AS PER PLAN
633	1	EACH	CONTROLLER WORK PAD, AS PER PLAN
633	1	EACH	PREEMPTION, AS PER PLAN
633	3	EACH	PREEMPTION RECEIVING UNIT, AS PER PLAN
633	796	FT.	PREEMPTION DETECTOR CABLE, AS PER PLAN
633	1	EACH	PREEMPTION PHASE SELECTOR, AS PER PLAN
633	3	EACH	PREEMPTION CONFIRMATION LIGHT, LED, AS PER PLAN
633	2	EACH	DILEMMA ZONE RADAR UNIT
633	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN

NB IR-75 AND NORTHWOODS BOULEVARD TRAFFIC SIGNAL PLAN

MOT-IR 75-22.73

MAST ARM POLE ORIENTATION DETAIL





SIGN LEGEND	
	NEW SIGN
	EXISTING SIGN TO REMAIN
	EXISTING SIGN TO BE REMOVED AND DISPOSED
	EXISTING SIGN TO BE REMOVED AND RELOCATED

ONLY
R3-H08h
36" x 30"
STA. 112+63

MOT-IR 75-22.73

13
14

PAVEMENT MARKING AND SIGNING PLAN
STA. 109+00 TO STA. 115+00

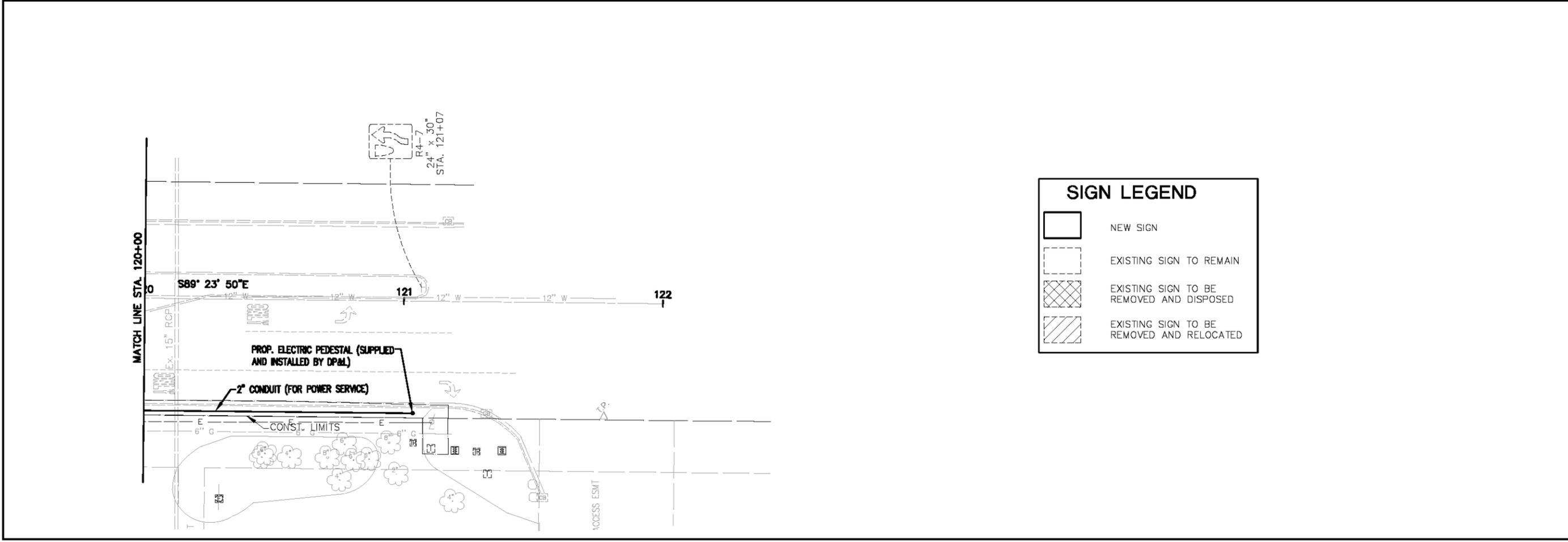
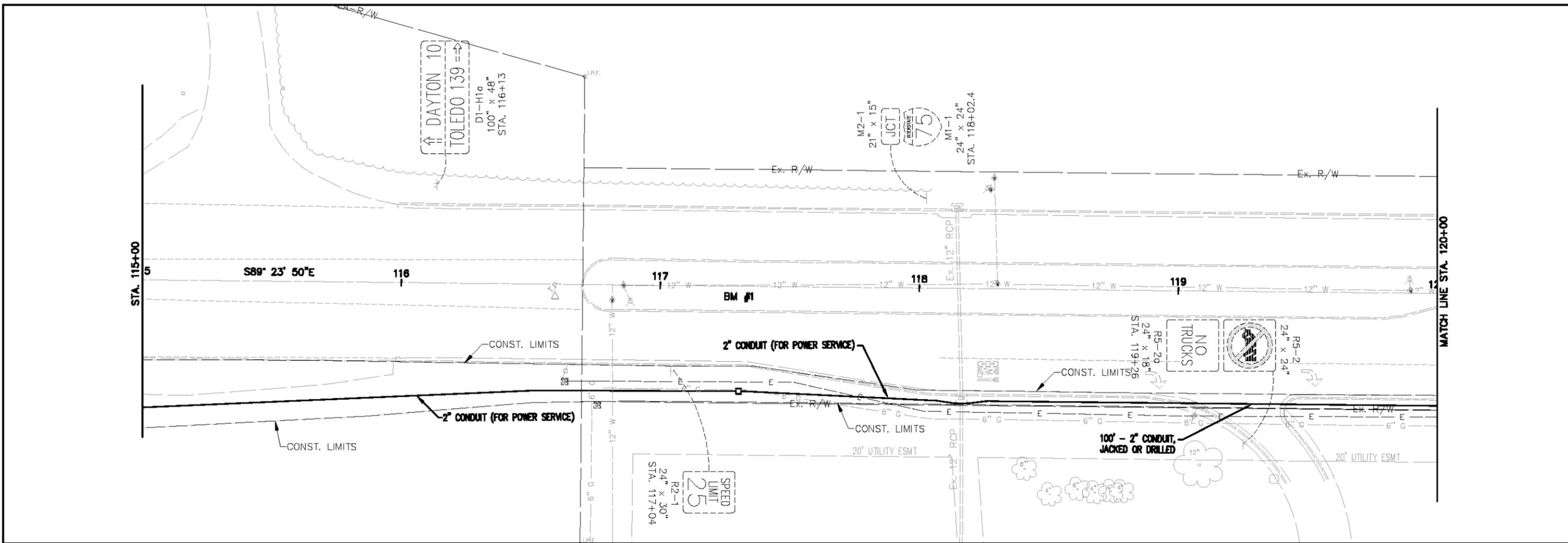
IR-75 NB OFF RAMP

13
14

SCALE IN FEET

0 10 20 40

CALCULATED A.J.H. CHECKED M.J.T.



SIGN LEGEND	
	NEW SIGN
	EXISTING SIGN TO REMAIN
	EXISTING SIGN TO BE REMOVED AND DISPOSED
	EXISTING SIGN TO BE REMOVED AND RELOCATED

CALCULATED A.J.H.
 CHECKED M.J.T.

PAVEMENT MARKING AND SIGNING PLAN
STA. 115+00 TO STA. 122+00

MOT-IR 75-22.73

14 / 14

