

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

D03-LG-FY2019 (A)

DISTRICT 3

CRAWFORD, ERIE, LORAIN, MEDINA,  
OTTAWA, RICHLAND, & WAYNE COUNTY

PROJECT DESCRIPTION

LIGHTING MAINTENANCE TO UPGRADE AND/OR REPAIR  
VARIOUS HIGHWAY LIGHTING COMPONENTS THROUGHOUT  
THE DISTRICT.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: N/A ACRES  
(MAINTENANCE PROJECT)  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A ACRES  
(MAINTENANCE PROJECT)  
NOTICE OF INTENT EARTH DISTURBED AREA: N/A ACRES  
(MAINTENANCE PROJECT)

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.

2016 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 CONTRACT PLANS AND DECLARE  
THAT THE MAKING OF THIS PROPOSED IMPROVEMENT WILL  
NOT REQUIRE THE CLOSING TO TRAFFIC ON THE HIGHWAY  
AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY  
OF TRAFFIC WILL BE AS SET FORTH IN THE PLANS AND  
ESTIMATES.

APPROVED  
DATE 12/18/18 DISTRICT DEPUTY DIRECTOR

APPROVED  
DATE 1/3/19 DIRECTOR, DEPARTMENT OF TRANSPORTATION

PLANS PREPARED BY:  
OHIO DEPARTMENT OF  
TRANSPORTATION  
DISTRICT THREE  
PLANNING AND ENGINEERING

FOR LOCATION MAPS,  
SEE SHEET 2

LOCATION MAP

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DESIGN DESIGNATION

NONE

DESIGN EXCEPTIONS

NONE

UNDERGROUND UTILITIES

CONTACT BOTH SERVICES TWO WORKING DAYS  
BEFORE YOU DIG.

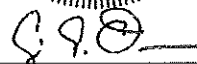


OHIO  
Utilities Protection  
SERVICE

Call Before You Dig  
1-800-362-2764

(Non-members must be called directly)

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

| ENGINEERS SEAL                                                                                                                                                                                             | STANDARD CONSTRUCTION DRAWINGS     | SUPPLEMENTAL SPECIFICATIONS |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------|
| <br>SIGNED: <br>DATE: 12-18-2018 | DM-4.3 1/15/16 MT-95.30 7/21/17    | 800 1/18/19                 |
|                                                                                                                                                                                                            | DM-4.4 1/15/16 MT-97.10 7/18/14    | 832 1/17/14                 |
|                                                                                                                                                                                                            | HL-10.11 1/19/18 MT-105.10 7/19/13 |                             |
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FEDERAL PROJECT NO.  
NON-FEDERAL

PID NO.  
105333

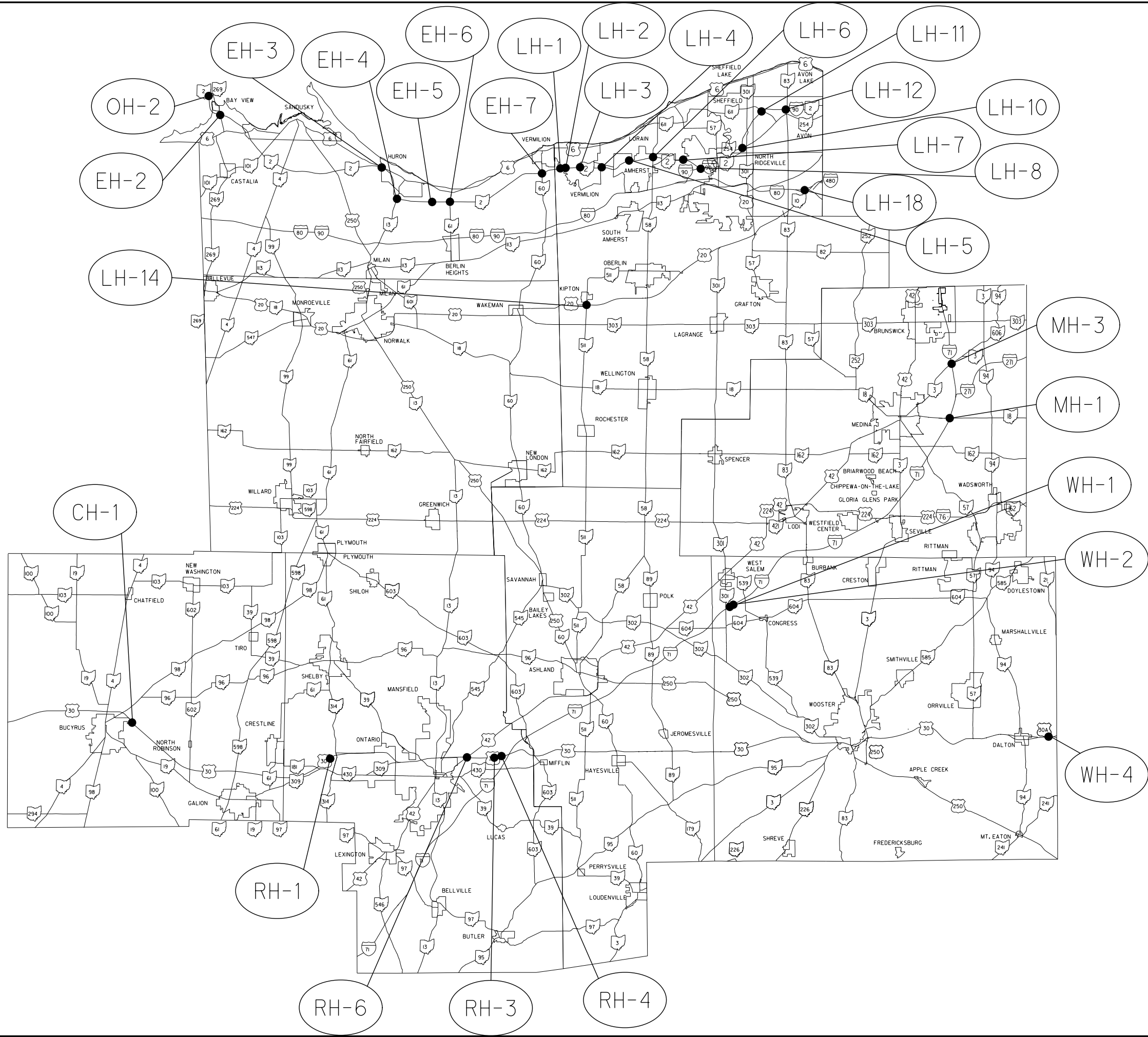
CONSTRUCTION PROJECT NO.

D03-LG-FY2019 (A)

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D03-LG-FY2019(A)  
190196 PID - 105333  
Dist 3 3/21/2019

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



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UTILITIES

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

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.

CABLE  
MASSILON CABLE TELEVISION  
P.O. BOX 917  
WOOSTER, OH 44691  
330.345.5110

GAS  
DOMINION  
320 SPRINGSIDE DRIVE, SUITE 320  
AKRON, OH 44333  
800.362.7557

COUNTY  
WAYNE COUNTY ENGINEER  
3151 WEST OLD LINCOLN WAY  
WOOSTER, OH 44691  
330.287.5500

TRAFFIC  
ODOT DISTRICT THREE  
906 CLARK AVENUE  
ASHLAND, OH 44805  
419.207.7045

ELECTRIC  
AEP OHIO  
500 MAPLE STREET  
WOOSTER, OH 44691  
330.202.3047

THE AFOREMENTIONED UTILITY COMPANIES AND AGENCIES HAVE VARIOUS FACILITIES IN THE AREA THAT WILL REMAIN IN PLACE DURING CONSTRUCTION.

EXTREME CAUTION SHOULD BE EXERCISED IN AREAS WITH UTILITIES. SECTIONS 105.07 AND 107.16 OF THE DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIALS SPECIFICATIONS REQUIRE, AMONG OTHER THINGS, THAT THE CONTRACTOR COOPERATE WITH ALL UTILITIES LOCATED WITHIN THE LIMITS OF THIS CONSTRUCTION PROJECT AND TAKE RESPONSIBILITY FOR THE PROTECTION OF THE UTILITY PROPERTY AND SERVICES.

UTILITIES NOTIFICATION

THE APPROXIMATE LOCATION OF UNDERGROUND UTILITIES IS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF UNDERGROUND UTILITIES AND CONTACTING THE OHIO UTILITIES PROTECTION SERVICE (OUPS) AND THE OIL AND GAS PROTECTIVE SERVICE A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO DIGGING. THE PHONE NUMBERS FOR BOTH AGENCIES CAN BE FOUND ON THE TITLE SHEET OF THIS PLAN.

PERSONNEL

IN ADDITION TO THE REQUIREMENTS OF CMS 632.02, THE CONTRACTOR SHALL AT ALL TIMES PROVIDE SUFFICIENT WORK FORCE OF PERSONNEL, QUALIFIED IN THE OPINION OF THE ENGINEER, TO PERFORM THE WORK REQUIRED UNDER THIS CONTRACT. THIS REQUIREMENT IS IN ADDITION TO SATISFYING THE REQUIREMENTS OF SECTION 108.05 OF THE CMS MANUAL.

THE FOREMAN'S UTILITY WORK TRUCK SHALL BE EQUIPPED WITH A CELLULAR PHONE. THE CELLULAR PHONE NUMBER SHALL BE PROVIDED TO THE PROJECT ENGINEER AND THE DISTRICT 3 TRAFFIC DEPARTMENT.

ITEM 625 - SERVICE TO UNDERPASS LIGHTING. AS PER PLAN

THIS ITEM SHALL CONSIST OF PROVIDING COMPLETE ELECTRICAL SERVICE, EXCEPT FOR LUMINAIRES, FOR AN UNDERPASS LIGHTING SYSTEM. BEGINNING AT THE PULLBOX THE WORK SHALL INCLUDE DISCONNECT SWITCH, CONDUITS, TRENCHING, JUNCTION BOXES, GROUND RODS, SPLICES, FITTINGS, WIRING AND ALL INCIDENTALS NECESSARY TO PROVIDE A COMPLETE UNDERPASS LIGHTING SYSTEM, IN PLACE, TESTED AND ACCEPTED. THE DISCONNECT SWITCH AND VERTICAL CONDUIT MOUNTED TO THE SURFACE SHALL BE LOCATED ON THE BACKSIDE OF THE PIER COLUMN, NOT FACING THE TRAFFIC.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE, UNDER CMS ITEM 625, "SERVICE TO UNDERPASS LIGHTING, AS PER PLAN" FOR EACH LIGHTED UNDERPASS, WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LIGHTING, MISC.: REMOVAL OF UNDERPASS LIGHTING

THIS ITEM SHALL CONSIST OF THE REMOVAL OF AN EXISTING UNDERPASS LIGHTING SYSTEM BEGINNING AT THE PULLBOXES. THE WORK SHALL INCLUDE REMOVAL OF THE DISCONNECT SWITCH, CONDUITS, FITTINGS, WIRING, FIXTURES AND ALL RELATED APPURTENANCES.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE, UNDER CMS ITEM 625, "LIGHTING, MISC.: REMOVAL OF UNDERPASS LIGHTING" FOR EACH UNDERPASS WITH LIGHTING REMOVED, WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LIGHT TOWER FOUNDATION, MISC.: REPAIR FOUNDATION

THIS ITEM SHALL CONSIST OF REPAIRING THE TOP 12" OF THE EXISTING LIGHT TOWER FOUNDATION AS SHOWN IN THE PLANS. ANY EXISTING STEEL SHALL REMAIN IN PLACE. THE REPAIR SHALL BE PERFORMED TO THE SATISFACTION OF THE ENGINEER.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE, ITEM 625, "LIGHT TOWER FOUNDATION, MISC.: REPAIR FOUNDATION" FOR EACH FOUNDATION REPAIRED, WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LUMINAIRE. UNDERPASS. AS PER PLAN: LED. TYPE III

IN ADDITION TO THE REQUIREMENTS OF ODOT'S CONSTRUCTION AND MATERIALS SPECIFICATIONS, LUMINAIRES FOR UNDERPASS LIGHTING SHALL BE AS FOLLOWS: LUMINAIRES SHALL BE GE EWNA, HOLOPHANE TNLED, OR ELECTRO-MATIC LE3T4S168G, OR EQUAL AS APPROVED BY THE ENGINEER.

IES DISTRIBUTION OF THE LUMINAIRE SHALL BE TYPE III. LUMINAIRES SHALL BE WALL -MOUNT, THE THRU-WIRING REQUIREMENT OF 725.11.F BEING WAIVED FOR THIS UNDERPASS APPLICATION; TOP-ENTRY SHALL BE THE WIRING METHOD USED, UNLESS SHOWN OTHERWISE IN THE PLAN DETAILS.

LUMINAIRE LED DRIVERS SHALL BE COMPATIBLE WITH 480VAC INPUT AS SHOWN IN THE PLANS, MODULAR, HAVE THE MANUFACTURER NAME AND PART NUMBER CLEARLY MARKED ON THE DRIVER ENCLOSURE, AND SHALL CARRY A MINIMUM 5-YEAR REPLACEMENT WARRANTY. EACH LUMINAIRE SHALL INCLUDE AN INTEGRAL LINE FUSE.

THE LED EMITTER ASSEMBLY SHALL CARRY A MINIMUM 5-YEAR REPLACEMENT WARRANTY, 10-YEAR STANDARD MANUFACTURER LIMITED WARRANTY. THE LUMINAIRE ENCLOSURE SHALL BE RATED IP65, MINIMUM, AS PER IEC 60529, AND SHALL CARRY A MINIMUM 5-YEAR REPLACEMENT WARRANTY WITH 10-YEAR STANDARD MANUFACTURER LIMITED WARRANTY.

A WRITTEN WARRANTY STATEMENT, SPARE PARTS LIST, AND MANUAL FROM THE LED SUPPLIER SHALL BE SUPPLIED TO THE ENGINEER BEFORE LUMINAIRES SHALL BE ACCEPTED BY ODOT.

SURGE PROTECTION SHALL BE 10KV/5KA MINIMUM, PER ANSI C62.41.2, AND THE MODULAR PACKAGE SHALL BE CLEARLY MARKED WITH THE MANUFACTURER AND PART NUMBER. COLOR TEMPERATURE SHALL BE 4000K +/- 400K UNLESS APPROVED OTHERWISE BY THE ENGINEER.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE, UNDER CMS ITEM 625, "LUMINAIRE, UNDERPASS, AS PER PLAN: LED, TYPE III", (WITH TYPE III DISTRIBUTION) FOR EACH LUMINAIRE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

ITEM 625 - LIGHTING, MISC.: GROUP HPS LAMP REPLACEMENT. BY TYPE. AS PER PLAN

THIS ITEM SHALL CONSIST OF REPLACEMENT OF ALL HPS LAMPS.

THE CLEANING OF ALL FIXTURES SHALL ALSO BE INCLUDED IN THIS ITEM. LAMP REPLACEMENT AND CLEANING SHALL BE DONE SIMULTANEOUSLY. THE METHOD OF CLEANING IS DESCRIBED BELOW:

1) LUMINAIRES

THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DAMAGED OR MISSING LUMINAIRES FOUND DURING THE RELAMP OPERATIONS. ODOT CREWS WILL REPLACE DAMAGED OR MISSING LUMINAIRES.

2) GLASSWARE OR PLASTIC

A. ENCLOSED ASSEMBLIES WITH HINGED DOOR WITH GLASSWARE SHALL HAVE THE GLASSWARE REMOVED, WASHED, RINSED TWICE AND DRIED. THE INNER SURFACE OF ALUMINUM REFLECTORS SHALL BE WIPED WITH A CHAMOIS AND ANY GLASSWARE WITH FELT ON THE HOLDING RING SHALL BE SPONGED AND WIPED DRY WITH A DRY CLOTH KEEPING THE FELT DRY. ANY OTHER PROCESS THAT THE CONTRACTOR CHOOSES SHALL BE PRESENTED TO THE ENGINEER IN DETAIL. THE ENGINEER MUST APPROVE ANY PROCESS BEFORE THE CONTRACTOR BEGINS TO USE SAID PROCESS. THE CONTRACTOR SHALL NOT CHANGE HIS PROCESS FOR CLEANING WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.

WHILE GLASSWARE (OR PLASTIC) IS REMOVED FOR CLEANING BUGS AND DEBRIS SHALL BE BRUSHED FROM THAT PART OF THE FIXTURE HOLDING THE GLASS (OR PLASTIC) IN ADDITION TO THE AREA SURROUNDING THE REFLECTOR.

WITH A HINGED DOOR FIXTURE, THE SECOND PORTION OF THE FIXTURE SHALL BE UNFASTENED AND BRUSHED TO CLEAN AWAY BUGS AND DEBRIS THAT HAVE COLLECTED ALONG THE BALLAST AND TRANSFORMER. CARE SHALL BE TAKEN NOT TO DISTURB THE WIRES WHILE REMOVING THIS DEBRIS.

B. REPORT TO PROJECT ENGINEER ANY DEFICIENT COMPONENTS INCLUDING GLASS WARE, REFLECTORS, POLE HAND HOLE COVERS, AT BASE, ETC.

3) REFLECTORS

A. THE INNER SURFACE OF REFLECTORS SHALL BE CLEANED AND/OR POLISHED WITH A REMOVABLE POLISH RATHER THAN BY THE USE OF WATER.

B. IF A REFLECTOR IS BEYOND RESTORING ITS REFLECTIVE QUALITIES, IT SHALL BE REPLACED.

4) GASKETS

ALL GASKETS NOT IN GOOD CONDITION OR NOT FUNCTIONING PROPERLY SHALL BE REPLACED.

PAYMENT FOR THIS ITEM SHALL BE MADE AT THE CONTRACT UNIT PRICE PER EACH LAMP AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO PERFORM THIS ITEM OF WORK AS DESCRIBED ABOVE.

ITEM 625 - SPECIAL. MAINTAIN EXISTING LIGHTING

EXISTING ROADWAYS WHICH ARE TO REMAIN OPEN TO TRAFFIC DURING CONSTRUCTION OF THIS PROJECT AND WHICH ARE LIGHTED SHALL HAVE THE LIGHTING MAINTAINED AS DESCRIBED HEREIN.

BEFORE ANY WORK IS STARTED IN THE IMMEDIATE VICINITY OF THE EXISTING LIGHTING CIRCUITS, REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE EXISTING ROADWAY LIGHTING CIRCUITS TO BE MAINTAINED. DURING THIS INSPECTION, A WRITTEN RECORD OF THE CONDITION OF EXISTING LIGHTING SHALL BE MADE BY ODOT'S REPRESENTATIVE. THIS WRITTEN REPORT SHALL NOTE INDIVIDUAL LUMINAIRES WHICH ARE NOT IN WORKING ORDER, INDIVIDUAL POLES WHICH ARE NOT STANDING, AND INDIVIDUAL CIRCUITS WHICH ARE NOT IN WORKING ORDER. THE COMPLETED REPORT SHALL BE SIGNED BY THE REPRESENTATIVES OF ODOT, THE MAINTAINING AGENCY AND THE CONTRACTOR.

IF, AS A RESULT OF THIS INSPECTION, IT IS DETERMINED THAT THE CONDITION OF THE EXISTING SYSTEM IS BELOW THAT REQUIRED FOR THE SAFETY OF THE TRAVELING PUBLIC, THEN THE MAINTAINING AGENCY SHALL MAKE THE REPAIRS NECESSARY TO RETURN THE SYSTEM TO AN ACCEPTABLE CONDITION. FOLLOWING THESE REPAIRS, THE SYSTEM SHALL AGAIN BE INSPECTED AND A REPORT SHALL BE MADE AND SIGNED AS OUTLINED HEREIN.

WHEN THE EXISTING SYSTEM IS IN AN ACCEPTABLE CONDITION, IT SHALL BE TURNED OVER TO THE CONTRACTOR WHO SHALL THEN BE REQUIRED TO MAINTAIN THE EXISTING LIGHTING TO THE CONDITION OUTLINED IN THIS REPORT WITH THE EXCEPTION OF KNOCKDOWNS DUE TO TRAFFIC ACCIDENTS.

REPLACEMENT OF KNOCKED DOWNED UNITS SHALL BE DONE ONLY WHEN THE ENGINEER HAS DETERMINED THAT THE REPLACEMENT OF THE KNOCKED DOWN UNIT IS NECESSARY AND SHALL BE PAID SEPARATELY ON A UNIT BASIS.

BETTERMENTS SHALL BE COVERED IN ITEMS OF WORK PERTAINING TO THE CONSTRUCTION OF PERMANENT IMPROVEMENT.

WHEN THE SEQUENCE OF CONSTRUCTION ACTIVITIES REQUIRES, OR SHOULD THE CONTRACTOR DESIRE, THE REMOVAL OF THE EXISTING LIGHTING BEFORE THE NEW LIGHTING IS OPERATIONAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY LIGHTING OF THIS PORTION OF THE ROADWAY.

PRIOR TO INSTALLING SUCH LIGHTING, THE CONTRACTOR SHALL PREPARE AND SUBMIT FOUR SETS OF THE TEMPORARY LIGHTING PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL.

THIS PLAN SHALL SHOW LOCATIONS OF POLES, LENGTHS OF BRACKET ARMS, STYLES OF LUMINAIRES, MOUNTING HEIGHTS, WIRING METHODS AND OTHER PERTINENT INFORMATION. THE TEMPORARY LIGHTING SHALL PROVIDE AN AVERAGE INITIAL INTENSITY OF 1.2 FOOTCANDLES (13 LUX) WITH AN AVERAGE TO MINIMUM UNIFORMITY NOT TO EXCEED 3:1. MOUNTING HEIGHT OF TEMPORARY LUMINAIRES SHALL NOT BE LESS THAN 30 FEET (9 METERS), AND THE MINIMUM OVERHEAD CONDUCTOR CLEARANCE SHALL BE 20 FEET (6 METERS).

TEMPORARY OVERHEAD CONSTRUCTION SHALL NOT BE LESS THAN GRADE 'A' FOR STRENGTH REQUIREMENTS AS DEFINED BY THE NATIONAL ELECTRIC SAFETY CODE. WOOD POLES WITH OVERHEAD WIRING MAY BE USED. HOWEVER, TEMPORARY LIGHTING SHALL MEET FEDERAL AND STATE SAFETY CRITERIA. IF BREAKAWAY POLES ARE USED TO MEET THESE CRITERIA, THEN UNDERGROUND WIRING SHALL BE USED. RECONDITIONED OR USED MATERIALS MAY BE FURNISHED FOR TEMPORARY LIGHTING.

ALL MATERIALS NECESSARY TO COMPLETE THE TEMPORARY LIGHTING SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. WHEN NO LONGER NEEDED, THE TEMPORARY LIGHTING INSTALLATION SHALL BE REMOVED AND PROPERLY DISPOSED OF BY THE CONTRACTOR.

THE MAINTAINING AGENCY WILL PAY FOR ELECTRICAL ENERGY CONSUMED BY EXISTING POWER SERVICES AND BY PROPOSED PERMANENT POWER SERVICES AFTER ACCEPTANCE OF THE LIGHTING WORK. THE CONTRACTOR WILL PAY FOR ELECTRICAL ENERGY, INSTALLATION, REMOVAL AND MAINTENANCE OF ANY TEMPORARY POWER SERVICES.

THE LUMP SUM PRICE BID FOR ITEM SPECIAL "MAINTAIN EXISTING LIGHTING" SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, MATERIAL AND INCIDENTALS NECESSARY TO MAINTAIN THE EXISTING LIGHTING AS SPECIFIED HEREIN.

ITEM 625 - LIGHT TOWER, BBBB110. AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS 625 THE FOLLOWING SHALL APPLY: THE LOWERING CABLES SHALL BE STAINLESS STEEL CABLES THAT MEET THE FOLLOWING SPECIFICATIONS: MI-1379-SS, 3/16" DIA. 7X19 STAINLESS STEEL AIRCRAFT TABLE. THE CABLE SHALL BE MANUFACTURED IN ACCORDANCE WITH FEDERAL SPECIFICATION RR-W-410 TO THE REVISION IN EFFECT AT THE TIME OF PURCHASE. THE CABLE SHALL MEET THE DIMENSIONAL AND STRENGTH REQUIREMENTS OF MIL SPECIFICATION MIL-DTL-83420 TO THE REVISION IN EFFECT AT THE TIME OF PURCHASE. ALL CABLE SUPPLIED SHALL HAVE AN IDENTIFYING COLOR TRACER FILAMENT.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE, UNDER CMS ITEM 625, "LIGHT TOWER, BBBB110, AS PER PLAN" FOR EACH TOWER, WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIAL AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

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GROUNDING AND BONDING

- THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) AND THE TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:
- 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.
    - PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.
    - 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.
    - 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.
    - IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.
    - 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.
    - 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.
  - CONDUITS.
    - 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.
    - THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DEBURRED AT ALL TERMINATION POINTS.
    - BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.
    - 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.
  - WIRE FOR GROUNDING AND BONDING.
    - 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:
      - USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.
      - 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.
      - USE A MINIMUM 8 AWG BETWEEN THE "PREPARE TO STOP WHEN FLASHING" INSTALLATION (INCLUDING SUPPORT) AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.

GROUNDING AND BONDING (CONTINUED)

- 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.
- 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.
- GROUND ROD.
    - $3\frac{3}{4}$  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.
    - THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.
  - 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. | VEHICLE SIGNAL     | PEDESTRIAN SIGNAL |
|-----------|--------------------|-------------------|
| 1         | BLACK              | GREEN BALL        |
| 2         | WHITE              | AC NEUTRAL        |
| 3         | RED                | RED BALL          |
| 4         | GREEN              | EQUIPMENT GROUND  |
| 5         | ORANGE             | YELLOW BALL       |
| 6         | BLUE               | GREEN ARROW       |
| 7         | WHITE/BLACK STRIPE | YELLOW ARROW      |
  - POWER SERVICE AND DISCONNECT SWITCH.
    - 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, UN-SPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPLICE.
    - THE SERVICE NEUTRAL (AC-) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.
      - 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.
      - 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.
  - PAYMENT - ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

AIRWAY/HIGHWAY CLEARANCE FOR AIRPORTS AND HELIPORTS

THIS PROJECT HAS BEEN IDENTIFIED AS BEING WITHIN THE INFLUENCE AREA OF A PUBLIC USE AIRPORT OR HELIPORT. THE CONTRACTOR IS ADVISED THAT NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT AT MAXIMUM OPERATING HEIGHT SHALL EXCEED A HEIGHT OF 135 FEET. IF ANY TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT WILL EXCEED THIS HEIGHT, THE CONTRACTOR IS ADVISED THAT FURTHER COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA) WILL BE NECESSARY PRIOR TO ERECTING SUCH TEMPORARY STRUCTURES OR OPERATING SUCH EQUIPMENT ON THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO FILE A NEW FAA FORM 7460-1, ADVISING THE FAA THAT AERONAUTICAL STUDY IS BEING RESUBMITTED AND THAT AN ALTERATION TO THE ORIGINAL SUBMISSION IS REQUESTED. COPIES OF THE ALTERATION AND FORM 7460-1 SHALL BE FORWARDED TO THE ODOT OFFICE OF AVIATION. THE CONTRACTOR IS ADVISED THAT NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT SHALL EXCEED THE PERMISSIBLE HEIGHT UNTIL A COPY OF THE FAA APPROVAL AND ODOT OFFICE OF AVIATION PERMIT HAS BEEN FURNISHED TO THE PROJECT ENGINEER.

THE CONTRACTOR IS FURTHER ADVISED THAT THE FAA APPROVAL WILL TAKE A MINIMUM OF 45 DAYS. ALL SUBMISSIONS SHALL BE DIRECTED TO THESE OFFICES:

|                                                                                                                                                                                            |                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| EXPRESS PROCESSING CENTER<br>THE FEDERAL AVIATION ADMINISTRATION<br>SOUTHWEST REGIONAL OFFICE<br>OBSTRUCTION EVALUATION SERVICE, AJR-32<br>2601 MEACHAN BLVD.<br>FORT WORTH, TX 76137-0520 | ODOT<br>OFFICE OF AVIATION<br>2829 W DUBLIN-GRANVILLE RD.<br>COLUMBUS, OH 43235<br>614.793.5046 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|

ITEM 614 - MAINTAINING TRAFFIC LANE CLOSURE/REDUCTION REQUIRED

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.

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

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

|                                        |                                             |
|----------------------------------------|---------------------------------------------|
| CHRISTMAS<br>NEW YEARS<br>MEMORIAL DAY | FOURTH OF JULY<br>LABOR DAY<br>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 THE WEEK | TIME ALL LANES MUST BE OPEN TO TRAFFIC  |
|-----------------|-----------------------------------------|
| SUNDAY          | 12:00N FRIDAY THROUGH 6:00 AM MONDAY    |
| MONDAY          | 12:00N FRIDAY THROUGH 6:00 AM TUESDAY   |
| TUESDAY         | 12:00N MONDAY THROUGH 6:00 AM WEDNESDAY |
| WEDNESDAY       | 12:00N TUESDAY THROUGH 6:00 AM THURSDAY |
| THURSDAY        | 12:00N WEDNESDAY THROUGH 6:00 AM MONDAY |
| FRIDAY          | 12:00N THURSDAY THROUGH 6:00 AM MONDAY  |
| SATURDAY        | 12:00N FRIDAY THROUGH 6:00 AM MONDAY    |

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.

LANE CLOSURE DISINCENTIVE

A LANE CLOSURE IS DEFINED AS ANY RESTRICTION OF A LANE OF TRAFFIC INCLUDING, BUT NOT LIMITED TO, SET UP AND TEAR DOWN OF TRAFFIC CONTROL ZONES. THE CONTRACTOR WILL BE ASSESSED A DISINCENTIVE FEE IN THE AMOUNT OF \$50.00 PER MINUTE THAT LANES ARE CLOSED TO TRAFFIC DURING TIMES DESIGNATED AS 'LANE CLOSURE NOT PERMITTED' AS STATED IN THESE PLANS AND ON THE ODOT PLCM WEB SITE AT <http://plcm.dot.state.oh.us>.



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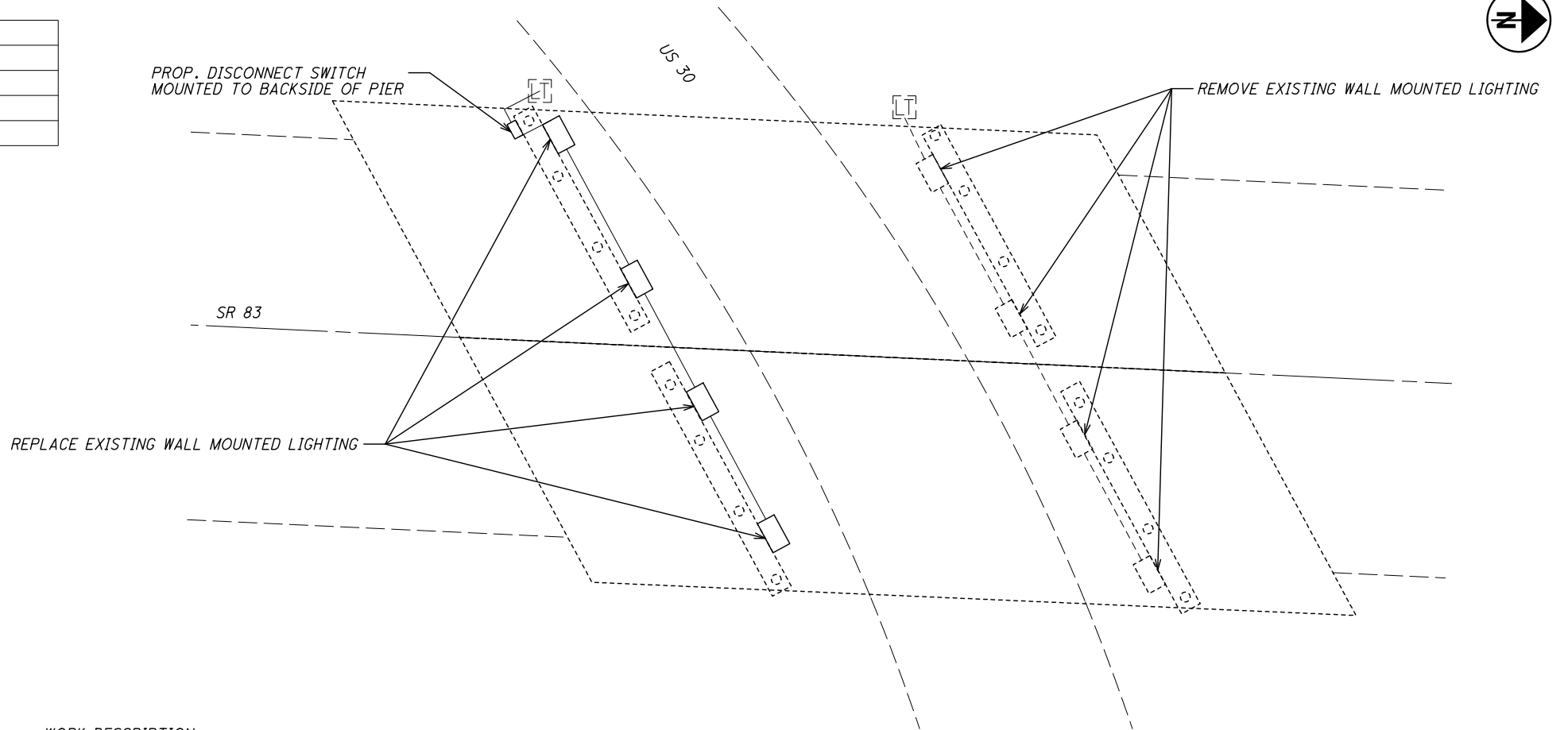
| Loc No. | County | Route | SLM   | Location                                           | No. Circuits | Voltage | HIGH PRESSURE SODIUM LAMPS |                 |                      |      |       |       |             |              | NAVIGATIONAL |         | TOTAL UNITS |
|---------|--------|-------|-------|----------------------------------------------------|--------------|---------|----------------------------|-----------------|----------------------|------|-------|-------|-------------|--------------|--------------|---------|-------------|
|         |        |       |       |                                                    |              |         | 150 W<br>POST TOP          | 100 W UNDERPASS | 100<br>W<br>POST TOP | 150W | 200 W | 310 W | 400 W TOWER | 1000 W TOWER | 360 GREEN    | 180 RED |             |
| CH1     | CRA    | US 30 | 10.1  | EAST END BUCYRUS BYPASS<br>(N)40.82957 (W)82.97383 | 1            | 480     |                            |                 |                      |      | 18    |       |             |              |              |         | 18          |
| EH2     | ERI    | SR 2  | 1.65  | SR 269<br>(N)41.46043 (W)82.81836                  | 1            | 480     |                            |                 |                      |      | 45    |       |             |              |              |         | 45          |
| EH3     | ERI    | SR 2  | 15.42 | RYE BEACH RD.<br>(N)41.40457 (W)82.59120           | 4            | 480     |                            |                 |                      |      | 25    |       |             |              |              |         | 25          |
| EH4     | ERI    | SR 2  | 18.33 | SR 13<br>(N)41.37145 (W)82.56900                   | 4            | 480     |                            |                 |                      |      | 18    |       |             |              |              |         | 18          |
| EH5     | ERI    | SR 2  | 20.82 | BERLIN RD.<br>(N)41.36810 (W)82.52109              | 4            | 480     |                            |                 |                      |      | 18    |       |             |              |              |         | 18          |
| EH6     | ERI    | SR 2  | 22.22 | SR 61<br>(N)41.36800 (W)82.49416                   | 4            | 480     |                            |                 |                      |      | 18    |       |             |              |              |         | 18          |
| EH7     | ERI    | SR 2  | 29.57 | SR 60<br>(N)41.39799 (W)82.36468                   | 2            | 480     |                            |                 |                      |      | 25    |       |             |              |              |         | 25          |
| LH1     | LOR    | SR 2  | 0.39  | REST AREA #43 EASTBOUND<br>(N)41.40295 (W)82.33637 | 2            | 480     |                            |                 | 1                    | 3    | 13    | 4     |             |              |              |         | 21          |
| LH2     | LOR    | SR 2  | 0.78  | REST AREA #44 WESTBOUND<br>(N)41.40295 (W)82.33637 | 2            | 480     |                            |                 | 1                    | 3    | 14    | 4     |             |              |              |         | 22          |
| LH3     | LOR    | SR 2  | 1.52  | VERMILION ROAD<br>(N)41.40363 (W)82.32652          | 2            | 480     |                            |                 |                      |      | 18    |       |             |              |              |         | 18          |
| LH4     | LOR    | SR 2  | 3.34  | BAUMHART ROAD<br>(N)41.40370 (W)82.28284           | 1            | 480     |                            |                 |                      |      | 18    |       |             |              |              |         | 18          |
| LH5     | LOR    | SR 2  | 5.86  | OAKPOINT ROAD<br>(N)41.41086 (W)82.23902           | 2            | 480     |                            |                 |                      |      | 19    |       |             |              |              |         | 19          |
| LH6     | LOR    | SR 2  | 7.43  | SR 58<br>(N)41.41411 (W)82.20905                   | 2            | 480     |                            |                 |                      |      | 18    |       |             |              |              |         | 18          |
| LH7     | LOR    | SR 2  | 9.68  | MIDDLE RIDGE ROAD<br>(N)41.41125 (W)82.16655       | 2            | 480     |                            |                 |                      |      | 20    |       |             |              |              |         | 20          |
| LH8     | LOR    | IR 90 | 11.97 | SR 2<br>(N)41.40351 (W)82.14352                    | 3            | 480     |                            |                 |                      |      | 6     | 10    |             |              |              |         | 16          |
| LH10    | LOR    | IR 90 | 15.66 | SR 254<br>(N)41.42438 (W)82.08301                  | 2            | 480     |                            |                 |                      |      | 20    |       |             |              |              |         | 20          |
|         |        |       |       | SHEET TOTAL                                        |              |         |                            |                 | 2                    | 6    | 313   | 18    |             |              |              |         | 339         |





| ITEM | QUANTITY | UNIT | DESCRIPTION                                      |
|------|----------|------|--------------------------------------------------|
| 625  | 4        | EACH | LUMINAIRE, UNDERPASS, AS PER PLAN: LED, TYPE III |
| 625  | 2        | EACH | SERVICE TO UNDERPASS LIGHTING, AS PER PLAN       |
| 625  | 2        | EACH | LIGHTING, MISC.: REMOVAL OF UNDERPASS LIGHTING   |

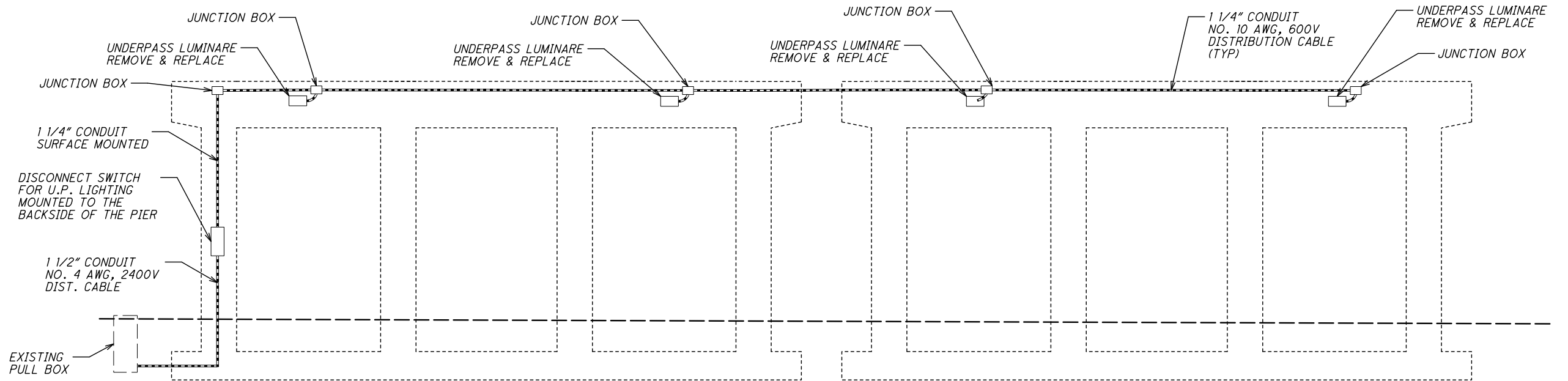
ALL QUANTITIES CARRIED TO GENERAL SUMMARY.



WORK DESCRIPTION

REMOVE AND REPLACE THE EXISTING UNDERPASS LIGHTING, CONDUIT AND DISCONNECT SWITCH ON SOUTH SIDE OF THE STRUCTURE.  
REMOVE THE EXISTING UNDERPASS LIGHTING, CONDUIT AND DISCONNECT SWITCH ON NORTH SIDE OF STRUCTURE.

UNDERPASS LIGHTING PLAN VIEW



UNDERPASS LIGHTING VIEW

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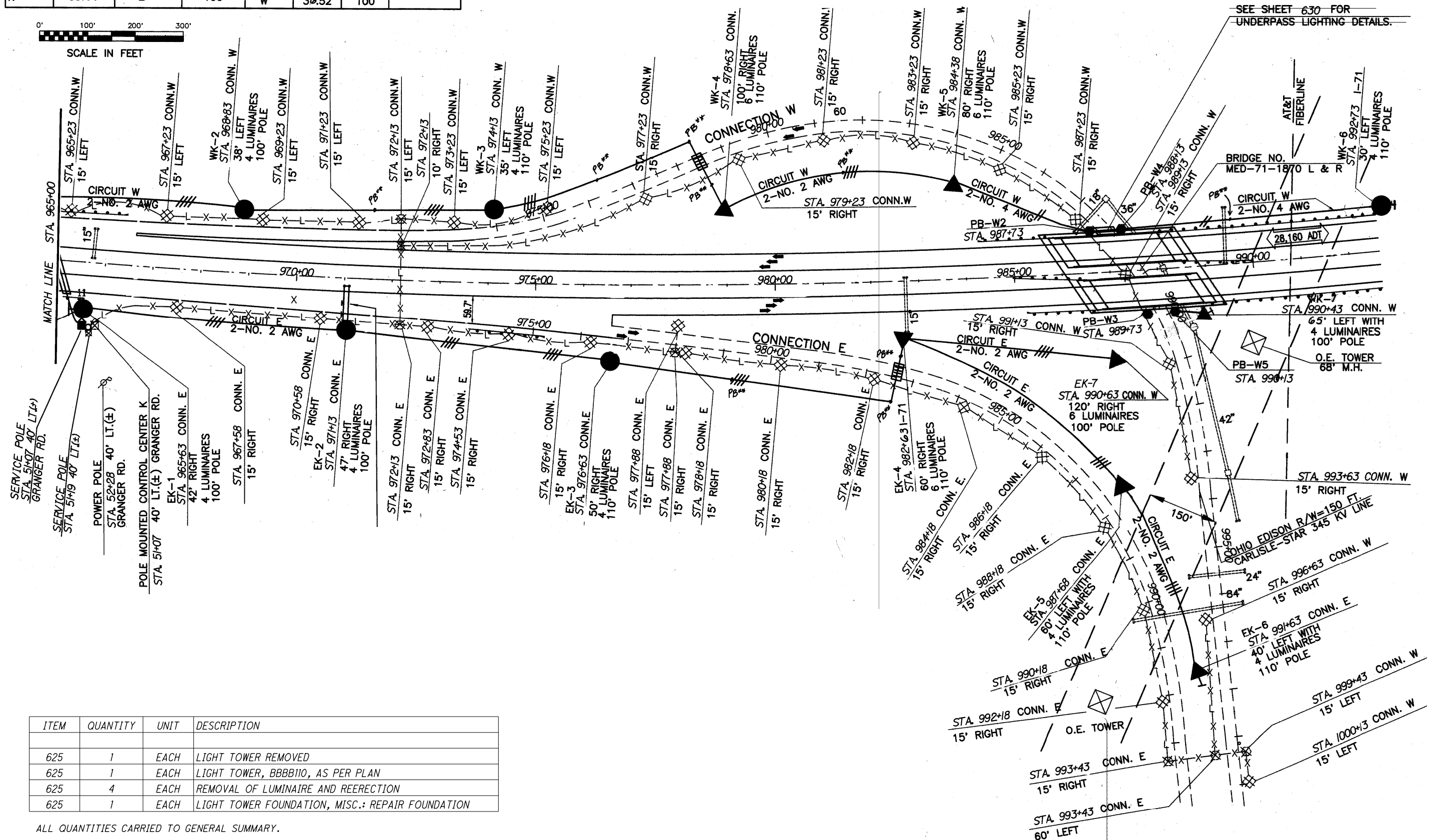


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| CONTROL CENTER DATA |                    |                                     |                       |                |                    |                         |                    |
|---------------------|--------------------|-------------------------------------|-----------------------|----------------|--------------------|-------------------------|--------------------|
| CONTROL CENTER      | CONNECTED LOAD KVA | SERVICE ENTRANCE CONDUCTOR SIZE-AWG | ENCLOSURE RATING AMPS | CIRCUIT NUMBER | CIRCUIT LOAD AMPS. | CIRCUIT FUSE SIZE AMPS. | MAINTENANCE AGENCY |
| I-271               |                    |                                     |                       |                |                    |                         |                    |
| K                   | 33.66              | 2                                   | 100                   | E<br>W         | 33.60<br>36.52     | 100<br>100              | ODOT               |

NOTES:

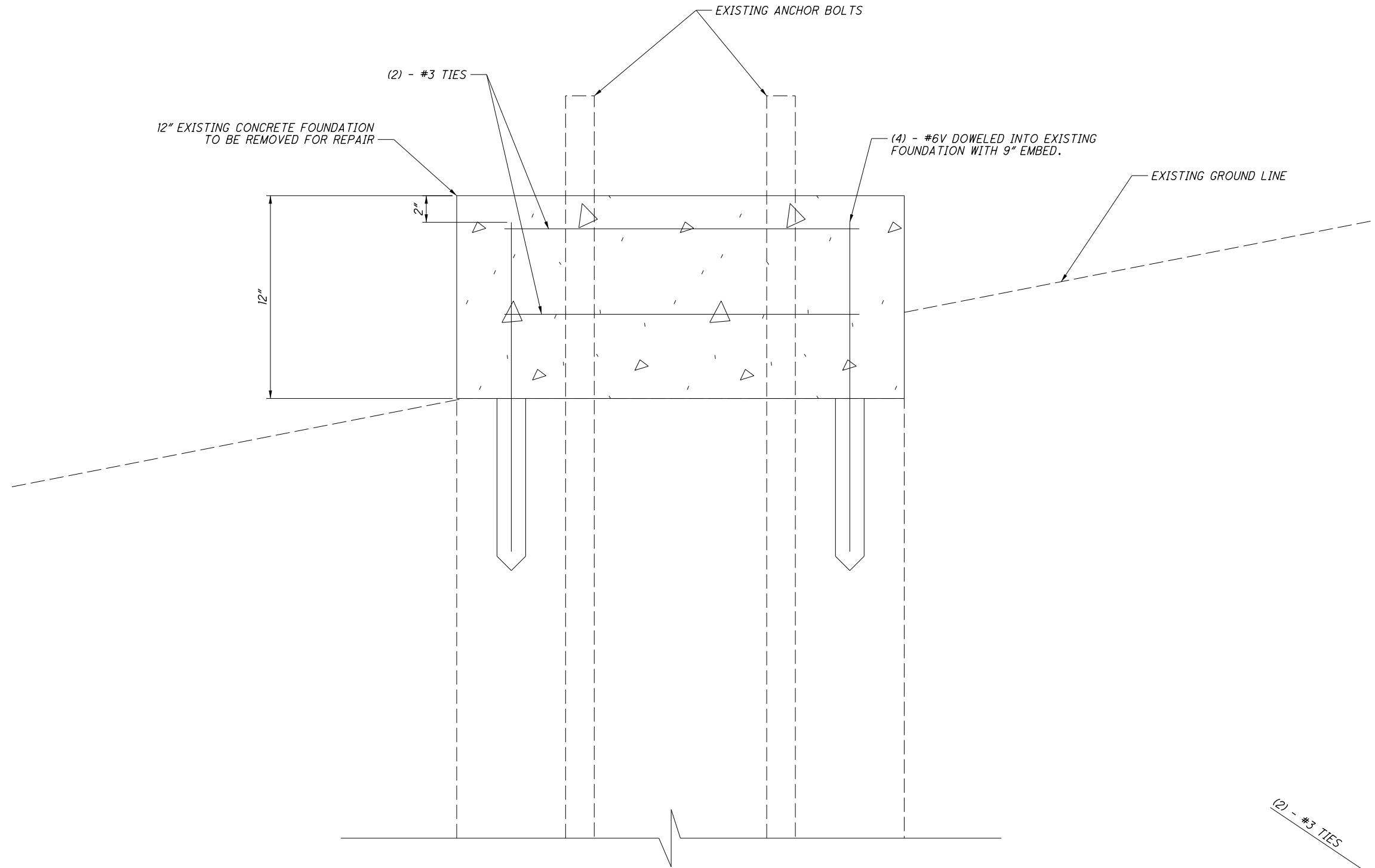
- REMOVE AND REPLACE LIGHT TOWER EK-6 AT STA. 991+63.
- EXISTING LUMINAIRES WITH GLARE SHIELDS SHALL BE REMOVED AND INSTALLED ON NEW RING.
- REPAIR LIGHT TOWER EK-6 FOUNDATION, SEE SHEET 10/10.



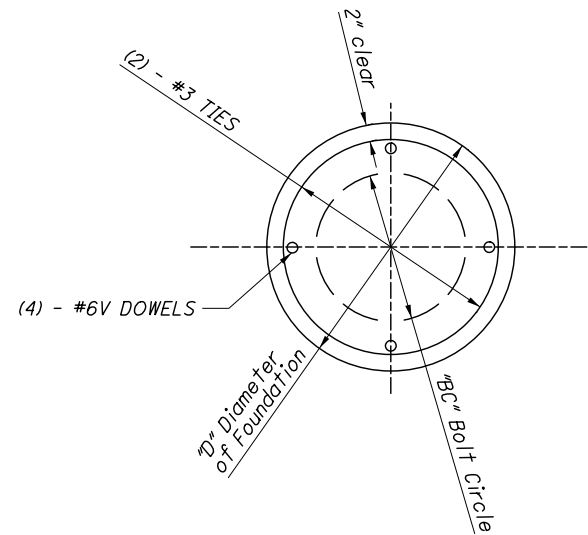
| ITEM | QUANTITY | UNIT | DESCRIPTION                                      |
|------|----------|------|--------------------------------------------------|
| 625  | 1        | EACH | LIGHT TOWER REMOVED                              |
| 625  | 1        | EACH | LIGHT TOWER, BBB110, AS PER PLAN                 |
| 625  | 4        | EACH | REMOVAL OF LUMINAIRE AND REERECTION              |
| 625  | 1        | EACH | LIGHT TOWER FOUNDATION, MISC.: REPAIR FOUNDATION |

ALL QUANTITIES CARRIED TO GENERAL SUMMARY.

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TOWER FOUNDATION REPAIR DETAIL



FOUNDATION CROSS SECTION