

**City of Columbus  
Department of Public Utilities  
Division of Power**

# **Street Lighting Design Guide**



**November, 2022**

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## 1. Introduction

The purpose of this Street Lighting Design Guide is to assist engineers in street lighting design for the City of Columbus by documenting illumination standards, describing certain design considerations, and offering insights from the Division of Power (DOP). This manual is intended to be used in conjunction with the latest version of the following documents: Division of Power's Material and Installation Specifications (MIS), the City of Columbus' Construction and Material Specification book, the American National Standards Institute/Illuminating Engineering Society Recommended Practice No. 8 (ANSI/IES RP-8), and the National Electric Safety Code (NESC).

The Design Guide does not attempt to cover all scenarios that engineers will encounter. The Engineer sealing the plans is responsible for all project details and should use good engineering judgment consistent with local practices.

The Division of Power will review this Design Guide periodically for conformance with best practices. Suggestions for improvements are welcome and will be considered for future updates.

Patricia A. Austin, P.E.  
Administrator, Division of Power

## 2. Illumination Requirements

**2.1 Recommended Illumination.** The street lighting system shall be designed to provide the average maintained horizontal illumination values as provided in the table below. Any deviation from these recommended values due to unique circumstances must be approved by the Division of Power. The horizontal illumination shall be measured at the roadway and sidewalk surfaces and be provided in foot-candles (fc). The intent of the sidewalk illumination is for sidewalks immediately adjacent to the roadway.

Roadway Classification	Pedestrian Area Classification	Roadway Illumination (fc)	Uniformity Ratio (Avg/Min)	Sidewalk Illumination (fc)	Uniformity Ratio (Avg/Min)
Arterial/Downtown/Major	High	1.7	3:1	1	4:1
	Medium	1.3	3:1	0.5	4:1
	Low	0.9	3:1	0.4	4:1
Collector	High	1.2	4:1	1	4:1
	Medium	0.9	4:1	0.5	4:1
	Low	0.6	4:1	0.3	6:1
Local	High	0.9	6:1	1	4:1
	Medium	0.7	6:1	0.5	4:1
	Low	0.4	6:1	0.3	6:1

**2.2 Photometrics.** Photometrics shall be calculated using Visual software or with a software package with a compatible output file. The engineer shall select the luminaire that provides the best lighting performance for the project and provide a design using this luminaire. The contractor may elect to use a different luminaire for construction, but will be required to provide photometrics that show the alternate luminaire meets the performance of the design luminaire. All luminaires shall meet the current Division of Power MIS specifications.

**2.3 Distribution Pattern.** IES Type II and Type III distributions are the preferred lighting distribution patterns for DOP projects. Type II is to be used for general roadway design. Type III is to be used for installations of Post Top lighting poles in either general roadway design, or in residential areas. Other types may be used where warranted to achieve desired illumination standards with prior approval from Division of Power.

**2.4 Roadway Classification.** The Department of Public Service’s Thoroughfare Plan provides roadway classifications, shall and be the basis of the street lighting design.

**2.5 Pedestrian Area Classification.** The pedestrian area classifications are generally described in ANSI/IES RP-8. General guidelines are as follows:

High	Over 100 pedestrians per hour
Medium	From 10 to 100 pedestrians per hour
Low	Fewer than 10 pedestrian per hour

The pedestrian volumes represent the total number of pedestrians walking in both directions in a typical block within the project area during the first hour of darkness. The pedestrian classifications will be decided on a project specific basis by the engineer, in consultation with the Division of Power, by approximating pedestrian volumes based on land use.

- 2.6 Intersection Illumination.** Intersections should be lit proportionally to the sum of the illumination values for each intersecting roadway classification. For example, it is recommended that the intersection of two arterial roadways with high pedestrian area classifications be lit to 3.4 foot-candles, given that each roadway has an average illumination of 1.7 foot-candles.
- 2.7 System Voltage.** The standard system voltage for Division of Power street lighting circuits is 480 volts. For safety and maintenance purposes, 480 volt underground street light circuits shall not be installed in combination with any other power source in any pole, pull box, controller, or conduit. It is permissible to install 480 volt overhead street light circuits on poles shared with power distribution facilities, subject to NESC clearance requirements.
- 2.8 Voltage Drop Calculations.** The voltage drop shall be calculated for each street light circuit. The maximum allowable drop per circuit is 5% from the nominal voltage.

### 3. Design Considerations

- 3.1 Power Supply.** The Division of Power shall be the service provider for the street light circuit whenever DOP service is available in the immediate vicinity. DOP may elect to extend power distribution facilities to serve street light circuits where there are future service plans.
- 3.2 Transformer.** The street light circuit may be served by a pole-mounted or pad-mounted transformer. The engineer shall determine the best application and location in consultation with the service provider and approval by Division of Power.
- 3.3 Controller.** Pole-mounted controllers shall only be installed on DOP owned wood poles. Installation on aluminum or fiberglass poles will not be permitted. Pad-mounted controllers shall be located within 5 feet of the transformer, power pole, or as directed by DOP. Pad mount controllers shall NOT be installed between the sidewalk and the curb.
- 3.4 Water lines.** Underground electric conduit/cable should be installed on the opposite side of the street from the water line when practical.
- 3.5 Circuit Loading.** When serving a large area, engineer should use all branches of the circuit originating from the controller and balance loads across all branches as evenly as practical. The total load should not exceed the controller's capacity.
- 3.6 State Plane Coordinates/Baseline Stationing.** All DOP poles, pull boxes, and other structures shall be labelled with State Plane coordinates and baseline stationing. State Plane coordinates should utilize the latest USGS datum and reference at least two Franklin County Engineers monuments. The baseline must be clearly shown on the plans.
- 3.7 Pull box locations.** Pull boxes should be located on both sides of a street crossing if there is no light pole near the crossing. Other locations selected should facilitate construction or maintenance activities.
- 3.8 Photoelectric control.** Each street light circuit will be controlled by one photoelectric control which shall be located on the first pole after the controller.
- 3.9 System Isolation.** Street lighting system shall be isolated from all other electrical systems. No other electrical systems shall be installed in street light controllers.
- 3.10 DOP Facility Placement.** All new or replaced Division of Power infrastructure should be located in the right-of-way with consideration given to aerial components. Any facilities placed outside the right-of-way will require approval from the Division of Power. If this approval is granted, an Ohio Registered Professional Surveyor will be required to prepare all legal descriptions and documents necessary to acquire easements or right-of-way.
- 3.11 Pole Placement.** Determination of street light pole placement shall be based on the following design considerations.
  - 3.11.1** Project photometrics shall be the primary factor in street light pole placement.

- 3.11.2** Poles should be placed at or near property lines wherever possible.
- 3.11.3** Poles may be placed in sidewalks provided that the proper Americans with Disabilities Act (ADA) accessible route clearances are maintained. The accessible route clearance should be dimensioned on the plan.
- 3.11.4** Poles should be placed on the inside of roadway curves where possible. Pole spacing may need to be closer than typical on curves to provide desired illumination levels.
- 3.11.5** Poles without a crash tested breakaway base shall be located in accordance with Section 600.2 (Clear Zone) of the Ohio Department of Transportation Location and Design Manual, Volume 1. Offsets shall be measured from the edge of the pole.
- 3.11.6** The ground elevation at the base of the pole should be taken into consideration as elevation differences between the roadway and pole base can affect the luminaire mounting height.
- 3.11.7** Poles shall be placed a minimum of 5' from a driveway or property entrance. Poles should not be placed in the middle island of a right-in-right out driveway.
- 3.12** **Bracket Arm Length/Orientation.** The bracket arm length shall be selected based on pole location and photometric requirements. Bracket arms should be positioned perpendicular to the street centerline. The length of the bracket arm should be long enough as to place the center of the luminaire over the center of the first lane of traffic.
- 3.13** **Clearance Requirements.** All underground street lighting facilities shall be located a minimum of 3 feet clear horizontally and 18 inches vertically from all other utilities. Clearances are measured outside diameter to outside diameter. Facilities may be located closer with both DOP and other utility owner approval.
- 3.14** **Code Governance.** The design and construction of all DOP street light systems shall be governed by the NESC.
- 3.15** **Adjacent Lighting.** The engineer should consider lighting from adjacent roadways when calculating the illumination levels of the roadway being designed.
- 3.16** **Combination Street Lighting/Traffic Signal Supports.** Combination lighting and signal supports shall only be used in the downtown business district or at the direction of the City of Columbus, City Engineer, or appointed designee.

When used, luminaires mounted on traffic signal supports shall be powered by the same power source used for the traffic signal installation. All traffic signal/combination lighting shall be routed through traffic signal conduits back to the traffic signal controller cabinet. Combination lighting cable shall not enter any adjacent street lighting conduit system. In addition, no adjacent street lighting circuits shall be installed in the traffic signal support, signal conduit system, or the traffic signal cabinet. Adjacent street lighting systems and all combination lighting/signal circuits shall remain separate at all times.

**3.17 3-wire underground lighting systems.** When designing new underground street lighting for the Division of Power, the circuit should be 480 volt, single phase, 3- wire (Hot, Neutral, Ground) as per the MIS specifications. Connecting a new 3-wire system to an EXISTING 2-wire circuit is **NOT PERMITTED**. New lighting being connected to an existing circuit must be the same electrical configuration as the existing circuit that it is being connected to.



## 4. Submittal Requirements

### 4.1 Plan Set.

- 4.1.1 All plans shall be prepared under the direct supervision of an Ohio Registered Professional Engineer.
- 4.1.2 Proposed street lighting work shall be shown clearly using heavier line weights in a manner such that DOP facilities are the most prominent features on the lighting plan sheets.
- 4.1.3 Engineer shall notify the Ohio Utilities Protection Service of the project. All marked utilities shall be field surveyed and shown on the plans. Proposed street lighting facilities shall be designed in a manner to avoid marked locations of adjacent utilities.
- 4.1.4 Provide a legend clearly depicting all symbols and line types used on the project.
- 4.1.5 The minimum plan scale shall be 1"=40'. Other larger scales may be used to show greater detail in areas with higher existing utility density with prior DOP approval.
- 4.1.6 All applicable plan sheets shall have a north arrow clearly shown. The north arrow orientation should be the same for all applicable plan sheets.
- 4.1.7 Provide a list of all applicable MIS specifications on the project including non-payment items.
- 4.1.8 Plan set shall include a list of pay items on the project including the MIS number, pay item description, and estimated quantities.
- 4.1.9 The Engineer shall include a one-line diagram that provides the circuit routing details for the project. One-line diagrams shall include both proposed street lighting as well as modifications made to the existing lighting system.
- 4.1.10 Plan set shall include photometrics sheets showing the illumination levels throughout the project utilizing both iso-candela curves and numerical illumination values. This sheet shall also contain a summary schedule depicting the average illumination on each street with the corresponding uniformity ratio. The target illumination value should be noted in the summary schedule as well.
- 4.1.11 Engineer shall provide any specialty construction details or as per plan notes that are not covered by existing MIS specifications.
- 4.1.12 The Appendix in this document contains the DOP Plan Review Checklist and sample plan sheets. Refer to the checklist for a list of details that are required to be included in the plans. The sample plan sheets can be referenced for an illustrative example of the features required in each plan set.

**4.1.13** When street light facilities are proposed on a non-DOP plan set (e.g., Department of Public Service Drawer E plans), DOP requires that the street light facilities be shown on separate, dedicated street lighting sheets for clarity. The street light facilities should be shown in the darkest line weight on these sheets, with other plan elements in the background with lighter line weights. Items such as right-of-way, edge of pavement, and sidewalks must be shown clearly in relation to the street light facilities. Utility conflicts should be noted with any special construction requirements such as potholing or hand excavation.

**4.2 Technical Submittals.**

**4.2.1** Visual software output files, or compatible files from a similar software package, shall be provided for the project.

**4.2.2** Any other submittals as required by the project scope

## Appendix A: Plan Review Checklist

A	Plan Number:	Check One (v)			Date:
	Title Sheet	Yes	No	N/A	Comments
	MIS/TDMIS-Standard Specification numbers shown within drawing index				
	Project description with Design Designation Data including roadway classification (also incl. in Photometrics)				
B		Check One (v)			
	General Notes	Yes	No	N/A	Comments
	Current DOP General Note/s shown				
	Current version of CMSC noted				
	Special Notes as applicable (Distribution, Temp Lighting, contingency, etc)				
C		Check One (v)			
	Estimate of Quantities	Yes	No	N/A	Comments
	Estimated DOP quantities by CMSC number shown and correctly matching proposed work				
	DOP MIS# with matching description shown and units correct				
	(Sub-schedule of quantities included on lighting sheet if applicable)				
	Proposed circuit-feet correct				
	System removal specs shown, as needed				
	TDMIS specs number shown and correct				
D		Check One (v)			
	Plan View (or Lighting Plan Sheet)	Yes	No	N/A	Comments
	DOP Service to site shown correctly				
	All work area DOP circuits and poles distinctly labeled from non-DOP (with DOP circuit and pole id numbers, 2-wire, 3-wire)				
	Legend with distinct DOP linetypes and lineweights with matching MIS numbers				
	Linework matches legend				
	Single-line circuit diagram (matching legend, pole id#s, st names, controller symbol and location if applicable)				
	Show and label DOP circuits located on non-DOP poles				
	Proper stationing 100 ft with 50 ft dash				
	Proposed begin and end stations & offsets for DOP work labeled, dead end poles to annotate conduit stubbed/capped out thereof				
	Proposed poles and luminaires mounting compatibility and meet MIS# of approved materials and manufacturer specs				
	Acceptable layout and geometry of proposed conduits and pole connections (3 ft BOC labeled etc.)				
	Typical pole spacing expectations				
	Potential conflicts to be addressed (avoid pole locations in street radius/curves)				

	Sidewalk shown not conflicting and circuit layout 3' behind curb, avoid ADA ramp crossings adjust accordingly pull boxes may be required				
	Coordination notes for DOP affected work properly defined (lighting or distribution)				
	Proposed street trees dimensioned and label to comply with MIS-58				
	Streetlight pole mounting height shown and noted w/ pole symbol legend				
	Ex streetlight underground/overhead circuits shown and circuit #s correct				
	Proposed DOP easements needed and labeled and recorded by City Atty				
	Existing DOP easement info labeled				
	Existing and proposed r/w labeled				
	All pull boxes correctly located shown and labeled with station, splicing prohibited in poles				
	Upstream and downstream poles, id#, stations correctly shown for a pole relocation				
	New DOP Relocation Work Shown Correctly, adequately within right-of-way and not compromising photometry				
	Address for each affected property shown				
	Existing and distribution manholes, poles, equipment and vault numbers shown				
	Proposed and Ex streetlight luminaire and pole shown with light type, circuit number, wattage, and station & offset				
	Are potential grade change conflicts avoided with pole embedment, vaults and manholes				
	All existing utilities shown correctly				
<b>E</b>		Check One (v)			
	<b>Photometrics Plan</b>	Yes	No	N/A	Comments
	Photometric layout legible with full ISO curve shown and spot FC locations legible with primary layers being lighting, pavement/right-of-way limits, street names				
	Legend linework and symbols correct				
	Street Names Shown effectively				
	All Road Classifications shown and approved source document referenced				
	Photometric summary schedule (expectations, road class, luminaire breakdown by street, request sample plan if needed)				
	Existing area street lights shown incorporated into calculations and ISO curves				

	Ex street light luminaire type and wattage specified when applicable				
	Lighting Controller Schedule (controller, circuit legs, prop luminaires, load wattage/amp, future load, ckt fuse, cable size )				
	Target values meet design standards				
	Uniformity ratio meets design standards				
<b>F</b>		Check One (v)			
	<b>Other</b>	Yes	No	N/A	Comments
	Profile view DOP shown with ex or appropriate depths and no conflicts, meeting required clearances from other utilities				
	Cross sections DOP shown as not conflicting and properly labeled & dimensioned				
	Detail views with appropriate scales, linework, dimensions, stations, etc as applicable to proposed work (controller location, special work, conduit transitions, when potential for conflicts, etc)				

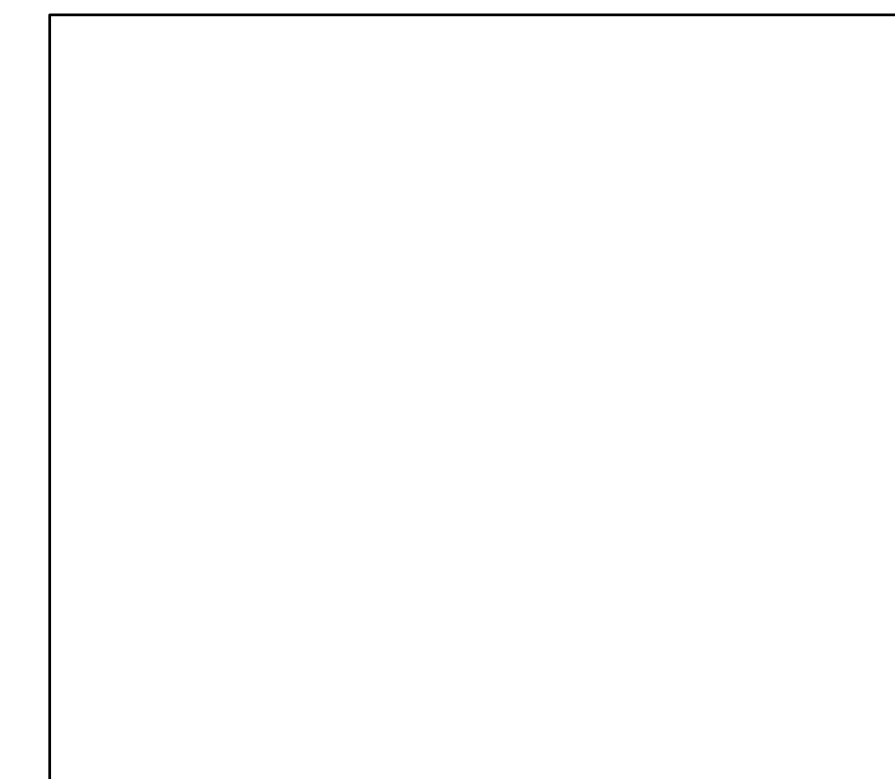
## Appendix B: Sample Plan Sheets

OUTSIDE EDGE OF SHEET

1/2"

INSIDE BORDER

**CITY OF COLUMBUS, OHIO**  
**DEPARTMENT OF PUBLIC UTILITIES**  
**DIVISION OF POWER**  
**STREET LIGHTING IMPROVEMENTS**  
**FOR**  
**PROJECT NAME**  
**PROJECT LOCATION**



**INDEX MAP**  
NOT TO SCALE

**CITY OF COLUMBUS APPROVALS**

"City of Columbus" signatures on this plan signify only concurrence with the purpose and general location of the project. All technical details remain the responsibility of the Engineer preparing the plans.

_____ Administrator, Division of Power	_____ Date
_____ Administrator, Division of Sewerage and Drainage	_____ Date
_____ Administrator, Division of Water	_____ Date
_____ Director, Department of Public Utilities	_____ Date
_____ City Engineer / Administrator, Division of Design and Construction	_____ Date
_____ Director, Department of Public Service	_____ Date
_____ Director, Department of Recreation and Parks	_____ Date
_____ Fire Prevention Bureau, Division of Fire	_____ Date

**INDEX OF SHEETS**

TITLE SHEET . . . . .	X
SCHEMATIC PLAN . . . . .	X
NOTES AND DETAILS . . . . .	X
ESTIMATE OF QUANTITIES . . . . .	X
CIRCUIT SCHEMATIC . . . . .	X
STREET LIGHTING REMOVAL PLANS . . . . .	X
STREET LIGHTING PLANS . . . . .	X
PHOTOMETRIC PLANS . . . . .	X

**PROJECT DESCRIPTION**

**BASIS OF BEARINGS**

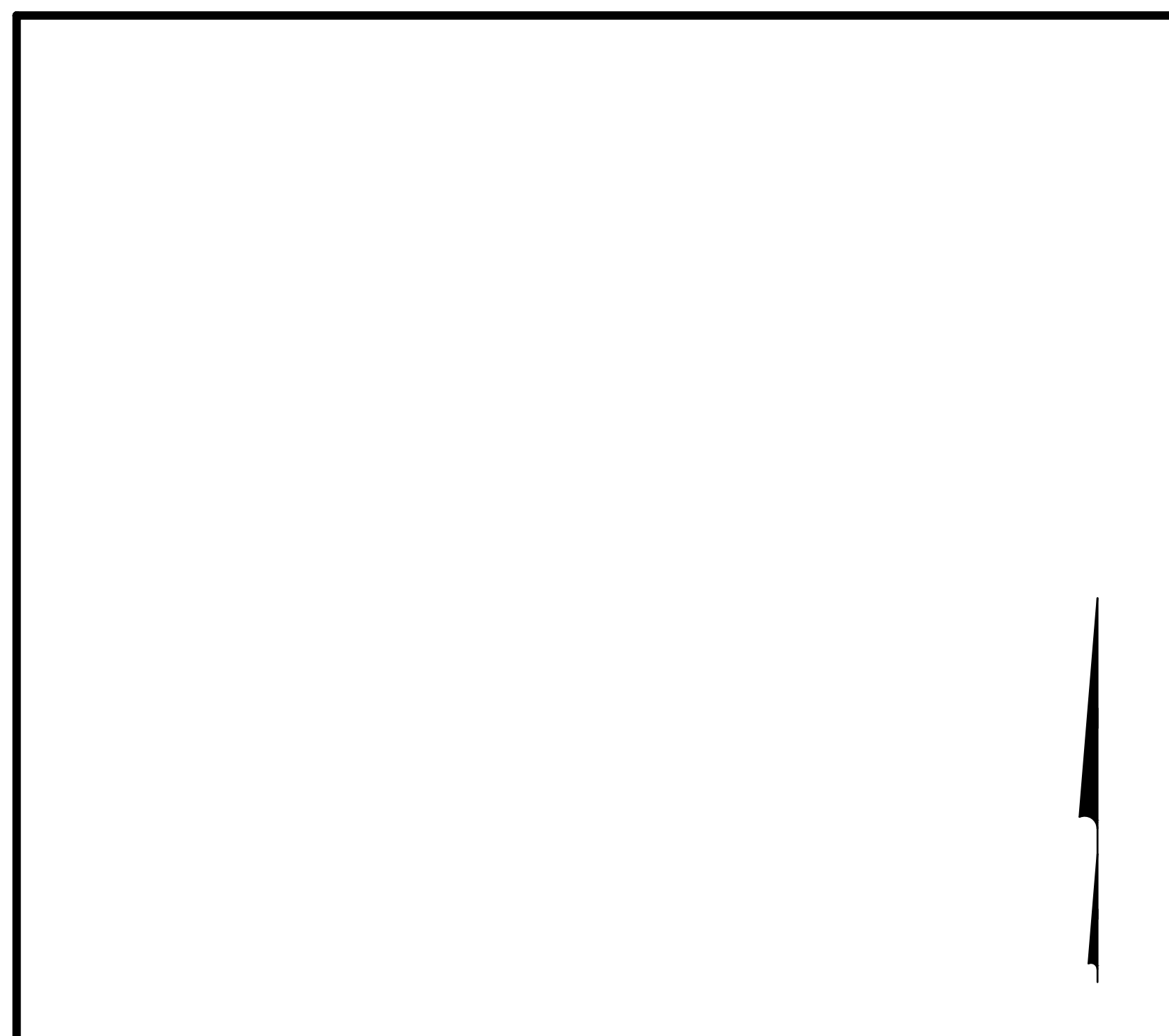
**BENCH MARKS**

**EARTH DISTURBED AREA**

Total Estimated Disturbed Area =  
Pre-Construction Impervious Area =  
Post-Construction Impervious Area =

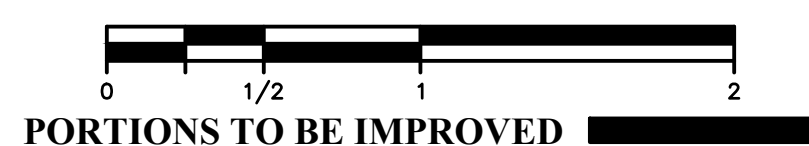
**2018 SPECIFICATIONS**

The Standard Specifications of the City of Columbus including all revisions and changes and supplemental specifications listed in the proposal shall govern this improvement.



**LOCATION MAP**

P.O.B. = LATITUDE: 40° 06' 54" N LONGITUDE: 82° 59' 34" W  
SCALE IN MILES



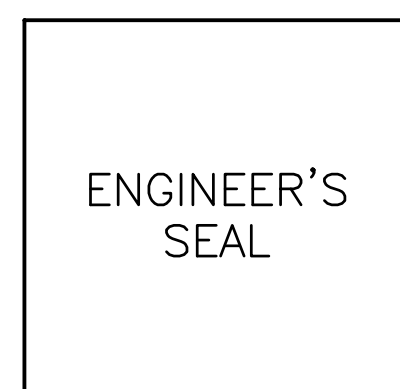
THE CITY OF COLUMBUS SAMPLE PLAN SHEETS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE INTENDED TO BE USED AS A GUIDE FOR PLAN SHEET LAYOUT AND FORMAT IN CONSTRUCTION PLANS FOR THE CITY OF COLUMBUS. THE SET OF SAMPLE PLAN SHEETS IS A COLLECTION OF INDIVIDUAL SHEET TYPES AND SHOULD NOT BE CONSIDERED, OR USED, AS A SINGLE, COORDINATED PLAN. THE EXAMPLES SHOWN DO NOT NECESSARILY REPRESENT A PREFERRED DESIGN.

IN CASES WHERE THE INFORMATION SHOWN ON SAMPLE PLANS IS IN CONFLICT WITH, OR CONTRADICTORY TO, POLICIES OR PRACTICES CONTAINED IN STANDARD CONSTRUCTION DRAWINGS OR MIS SPECIFICATIONS, THE STANDARDS AND SPECIFICATIONS WILL SUPERSEDE ANY CONFLICTING SAMPLE PLAN SHEET INFORMATION.



COLUMBUS STANDARD CONSTRUCTION DRAWINGS	ODOT STANDARD CONSTRUCTION DRAWINGS	COLUMBUS STANDARD MIS DRAWINGS	SUPPLEMENTAL SPECIFICATIONS

**PREPARED BY:**



Registered Engineer No. XXXXX \_\_\_\_\_ Date \_\_\_\_\_

<b>CITY OF COLUMBUS, OHIO</b> <b>DEPARTMENT OF PUBLIC UTILITIES</b> <b>DIVISION OF POWER</b>			
<b>Street Lighting Improvements for</b> <b>PROJECT NAME</b> <b>PROJECT LOCATION</b>			
REVISION DESCRIPTION	SHEET OR SHEETS	INITIAL	DATE
DRAWN BY:	DATE:		
APPROVED:			
SCALE:	SHEET:	DWG NO.	

REVISION DESCRIPTION	SHEET OR SHEETS	INITIAL	DATE

OUTSIDE EDGE OF SHEET

INSIDE BORDER

INSIDE BORDER

OUTSIDE EDGE OF SHEET

1/2"

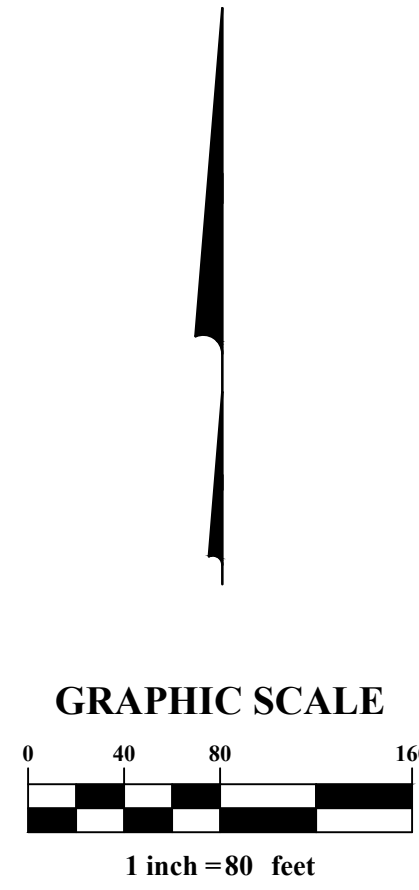
INSIDE BORDER

1/2"

OUTSIDE EDGE OF SHEET

**STANDARD TITLE SHEET SIZE: 22" x 34"**

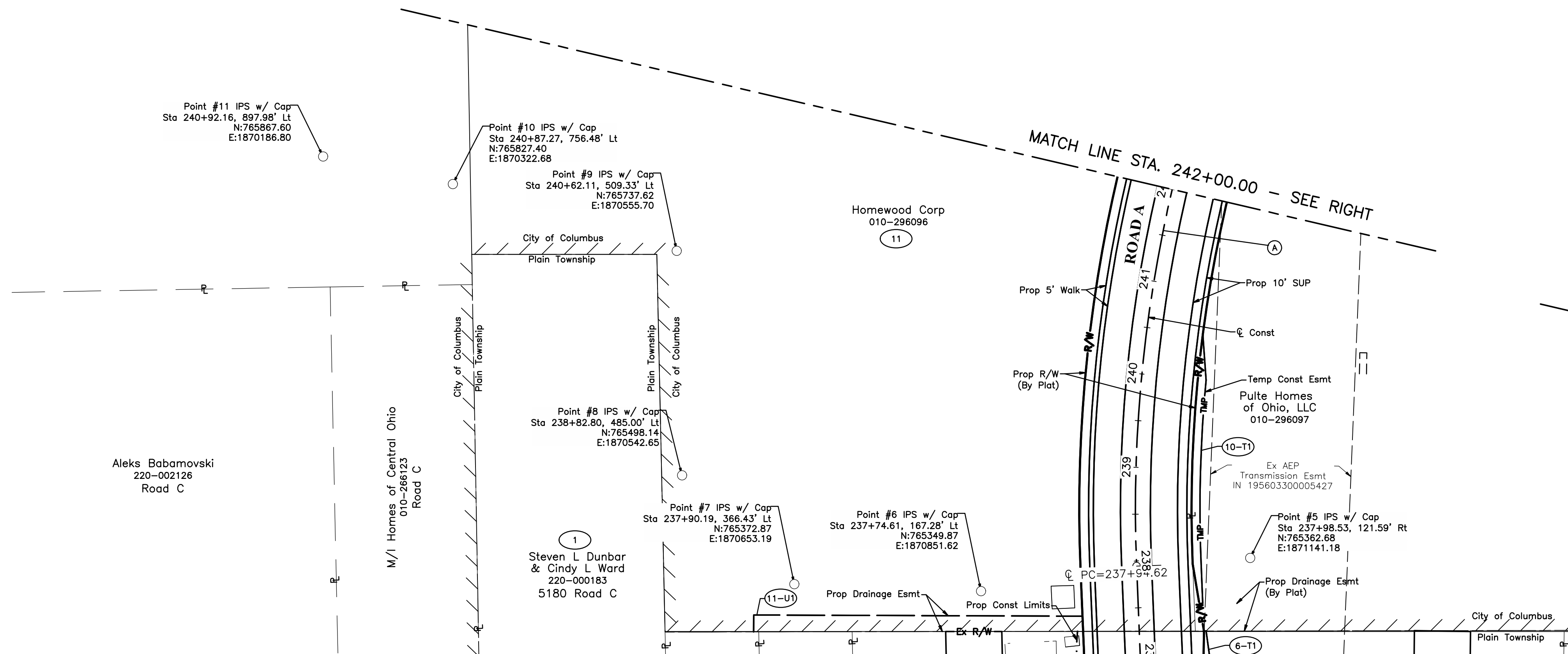
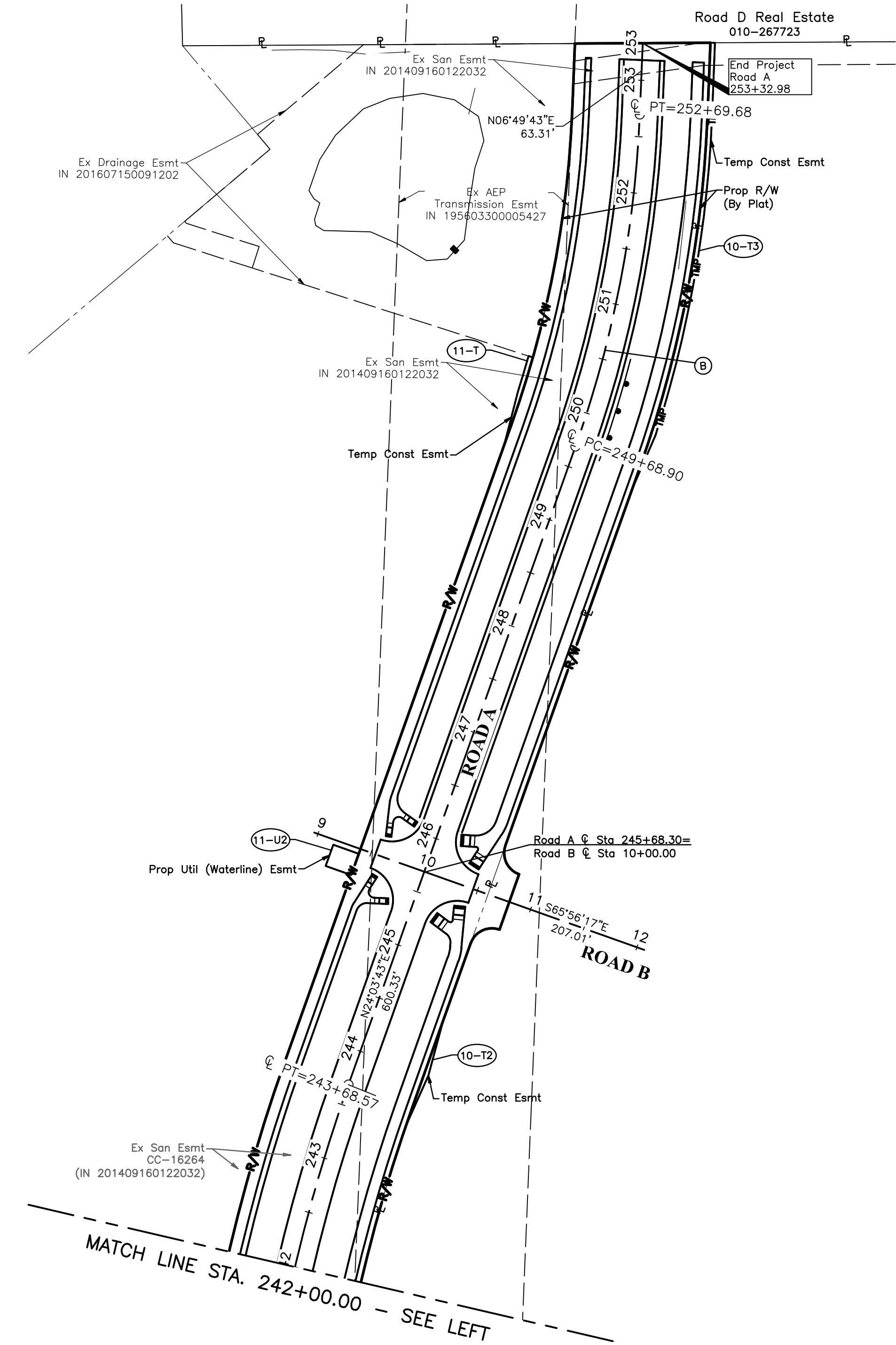




**Horizontal Control**

The coordinates shown on this map are based on the Ohio State Plane Coordinate System, South Zone, NAD 83 (NSRS2007). Said coordinates originated from a field traverse which was tied (referenced) to said coordinate system by GPS observations of Franklin County Engineering Department monuments FCGS 8825 RESET, FCGS 5212 RESET and D5 RESET. The grid to ground combined scale factor (1.00002509534862) was applied at the location of point #302.

POINTS	RAW DESCRIPTION	NORTHING (GROUND)	EASTING (GROUND)	STATION, OFFSET
4	IPS w/ Cap	765402.10	1871730.31	239+17.53, 706.18' Rt. Based on C of Road A
5	IPS w/ Cap	765362.68	1871141.18	237+98.53, 121.59' Rt. Based on C of Road A
6	IPS w/ Cap	765349.87	1870851.62	237+74.61, 167.28' Lt. Based on C of Road A
7	IPS w/ Cap	765372.87	1870653.19	237+90.19, 366.43' Lt. Based on C of Road A
8	IPS w/ Cap	765498.14	1870542.65	238+82.80, 485.00' Lt. Based on C of Road A
9	IPS w/ Cap	765737.62	1870555.70	240+62.11, 509.33' Lt. Based on C of Road A
10	IPS w/ Cap	765827.40	1870322.68	240+87.27, 756.48' Lt. Based on C of Road A
11	IPS w/ Cap	765867.60	1870168.80	240+92.16, 897.98' Lt. Based on C of Road A
13	IPS w/ Cap	765673.05	1871975.63	244+80.88, 855.33' Rt. Based on C of Road A



**CITY OF COLUMBUS, OHIO**  
**DEPARTMENT OF PUBLIC UTILITIES**  
**DIVISION OF POWER**

**Street Lighting Improvements for**  
**PROJECT NAME**  
**PROJECT LOCATION**

REVISION DESCRIPTION	SHEET OR SHEETS	INITIAL	DATE

DRAWN BY:	DATE:	
APPROVED:		
SCALE:	SHEET:	DWG NO.

**REFERENCE SPECIFICATIONS**

The City of Columbus Construction and Materials Specifications (CMSC), 2012 edition and all revisions, including all supplements thereto, shall govern all construction items that are a part of this plan, unless otherwise noted. The plan details shall be considered supplemental to City of Columbus MIS Specifications.

**PRE-CONSTRUCTION NOTIFICATIONS REQUIRED**

Contractor shall notify the following Divisions at least 24 hours before starting work.  
48 Hour Notice will be given to the:  
Division of Power (614) 645-7627  
Division of Design and Construction (614) 645-3182  
Division of Water (614) 645-7677  
Division of Sewerage and Drainage (614) 645-7102  
Department of Recreation and Parks (614) 645-7665

**PERMITS**

When excavating within Columbus Public Right of Way limits, the Contractor shall obtain an Excavation Permit from City of Columbus, Department of Public Service, Permit Office between the hours of 7:30 am and 4:00 pm Monday through Friday. Phone (614) 645-7497; Fax (614) 645-1876; Email: colspemits@columbus.gov.

**UTILITIES**

The identity and location of the existing underground utility facilities located in and around the construction area have been shown and labeled on the plans by using information provided by the respective utility owners. The City of Columbus or the Consulting Engineer will not assume responsibility for the accuracy of location or depth of existing underground utilities as shown on the plan.

Support and protection of all utilities and appurtenances shall be the responsibility of the Contractor. Costs for the repair and restoration of existing utilities damaged by the Contractor shall be the responsibility of the Contractor. The City of Columbus will only locate and mark main line facilities. The Contractor is responsible for locating all service laterals and lines. Costs associated with the above work and responsibilities shall be included in the price bid for the various items.

Prior to excavation, the Contractor shall give a 48-hour notice to the Ohio Utilities Protection Service (OUPS) by calling (800) 362-2764. A 48-hour notice shall be given to owners of underground utilities shown on the plans who are not members of a registered underground protection service.

Listed below are utility companies that have facilities located within the work limits of this project and subscribe to OUPS:

\*\*\*\*\*CONSULTANT: Please list the names, addresses, and phone numbers of the utility companies with facilities located within the work limits of this project and subscribe to OUPS.\*\*\*\*\*

City of Columbus  
Division of Water  
910 Dublin Road  
Columbus, Ohio 43215  
Phone: (614) 645-7788

City of Columbus  
Support Services Division-Communications  
4211 Groves Rd  
Columbus, OH, 43232  
Phone: (614) 724-7047  
Radio Room: (614) 724-4003

City of Columbus  
Division of Power  
3500 Indianola Ave.  
Columbus, Ohio 43214  
Phone: (614) 645-7627

City of Columbus  
Department of Public Service  
Traffic Management  
1820 East 17th Ave.  
Columbus, OH, 43219  
Office: (614) 645-7393

City of Columbus  
Division of Sewerage and Drainage  
1250 Fairwood Ave.  
Columbus, Ohio 43208  
Phone: (614) 645-7102

City of Columbus  
Department of Technology  
1355 McKinley Ave.  
Building C  
Columbus, OH, 43222  
Contractor Line: (614) 645-7756

The following utilities may be located within the work limits of this project and do not subscribe to a registered underground protection service:

Firm: XXXXXXXX  
Address: XXXXXXXX  
City, Zip Code  
Telephone: (XXX) XXX-XXXX

**UTILITY COORDINATION**

The Contractor is responsible to coordinate their construction activity along with the relocation of any utilities as required by the plan with the Owner of the affected utility. The Contractor shall coordinate construction operations and protect existing utility poles to remain. The utility company will provide equipment to support poles as required during construction.

Utility poles within the influence of storm line trenches or earthwork operations shall be reinforced by the utility company prior to these construction activities. Notification of the utility company prior to construction shall be the responsibility of the Contractor.

The Contractor shall perform any exploratory excavations necessary to locate underground utilities prior to digging or jacking and drilling. Where project work is located close to existing utility lines, excavation shall be accomplished via hand digging or vacuum excavation. The cost of the work shall be included in the various items bid.

**EMERGENCY PROVISIONS**

The Contractor shall provide to the City of Columbus project representative a list of 24 hour emergency telephone numbers (in writing) prior to the start of construction.

**SECURING EXCAVATIONS & TRENCHES FOR NON-WORKING HOURS**

Excavations and trenches over 24-inches deep shall be securely plated, or backfilled during non-working hours.

**MISCELLANEOUS WORK ITEMS**

The Contractor shall perform all items of work called for on the plans, for which no specific method of payment is provided. The cost of these items shall be included in the various unit prices bid for the project improvement.

**BENCHMARKS AND SURVEY MONUMENTS**

Do not disturb any Franklin County Certified Benchmarks (vertical and/or horizontal) located within the working limits of the project. Contractor shall contact the Franklin County Survey Department (614) 462-3026, prior to construction, to coordinate the proper procedures for resetting, relocation, or replacement of any Franklin County Certified Benchmark or Survey Monument.

**PRE-CONSTRUCTION CONFERENCE**

The Contractor is to notify the City of Columbus Division of Power – at (614) 645-6851 to arrange a date and time for pre-construction conference. No work shall start prior to this meeting. The Division Project Engineer shall authorize a start date.

**COLUMBIA GAS DAMAGE PREVENTION CENTER**

For information concerning Columbia Gas lines or equipment, or if damage occurs to gas lines or equipment the Contractor can call the Columbia Gas Damage Prevention Center at (614) 280-7372 or toll free at (866) 632-6243.

**TREE PRESERVATION – TREE PROTECTION DURING CONSTRUCTION**

The Contractor is required to coordinate a site walk both before and after construction activities with City Forester Staff at (614) 645-6640.

All trees shall be protected against injury or damage to branches, trunks or roots from construction and excavation. City of Columbus Forestry Section can be contacted @ 614-645-6640. Trees shall be protected in accordance with the requirements of the City of Columbus, Forestry Section, and by the following requirements:

All tree pruning must be done in accordance with ANSI A300 and ANSI Z133.1 standards. The Contractor performing the work must be a professional tree care company with a certified arborist on staff and available to direct the on-site crew.

Heavy equipment will not be allowed to compact the soil over the root zone of existing trees. Restricted equipment access routes will be established before work is begun. Temporary paving materials such as plywood, lumber or rubber matting spread over the root zone may be required to prevent compaction.

Installation of utilities under the drip line of existing trees must be directionally bored or drilled below the root zone. Open trenches within the root zone is prohibited.

Construction materials, excavation debris, chemicals, fuel, equipment or vehicles are not to be stockpiled, stored, dumped or parked within the dripline of any trees.

Interfering branches of trees may be removed when acceptable to the City Forester and shall be pruned in accordance with these standards.

Any trees damaged or destroyed due to Contractor negligence will be treated or removed at the Contractor's expense. If damaged beyond repair, the City will require reimbursement for the value of the tree as determined by the current edition of the "Guide for Plant Appraisal" published by the International Society of Arboriculture.

The Contractor is responsible for the protection of all trees. If tree trimming is required, a permit must be acquired from the City Forester at the Department of Recreation and Parks. No construction shall take place within ten (10) feet of a tree without prior approval of the City Forester at 614-645-6640.

Prior to to work on Street A, the Contractor shall notify Recreation and Parks no less than one week. Contact Kathy Spatz at (614) 645-0487 or kspatz@columbus.gov.

No tree shall be removed. All branches or growth from trees that are to be saved and which are interfering with the free construction of the improvements may be removed by the use of pruning tools. All pruning tools and methods employed shall meet with the approval of the City of Columbus. The branches shall be removed with a good clean cut made flush with the parent trunk or if having a good healthy lateral branch, the cut shall be a good clean slanting cut close to and beyond the healthy branch. All pruning cuts shall be painted with an approved pruning preservation. The cost of all work and expenses connected with the removal of branches shall be included in the bid price for clearing and grubbing. Root cutting may be necessary for the installation of proposed pole foundations. All costs shall be included within the cost of Item 201 – Clearing and Grubbing. No extra payment shall be made.

**STORAGE OF EQUIPMENT AND MATERIALS**

Materials, including pipe, shall not at any time (working or non-working hours) be stored within the right-of-way or within one hundred (100') feet of any intersecting street or driveway, without prior written approval from the City of Columbus. Compliance with this requirement along with additional provisions of the Contract Specifications shall not in any way relieve the Contractor of his legal responsibilities or liabilities for the safety of the public. The Contractor shall inform the City of Columbus on his plan for the storage of equipment and materials at the pre-construction meeting.

**NON-RUBBER-TIRED VEHICLES**

Non-rubber-tired vehicles shall not be moved on public streets. The City Engineer may grant exceptions when short distances and special circumstances are involved. Granting of exceptions must be in writing, and any damage must be repaired to the satisfaction of the City of Columbus acceptable representative.

**FOR THE DIVISION OF WATER**

For any emergencies involving the water distribution system, please contact the Division of Water Distribution Maintenance Office at 614-645-7788.

Where new conduit is proposed to cross an exiting or proposed water main or water service, a minimum of 12-inches of vertical clearance shall be maintained between the conduit and the water main or service. A minimum of 3-feet of horizontal clearance (out to out) is required at locations where the conduit is parallel to the water main and at locations of water line thrust blocks.

A minimum of 3 feet of horizontal clearance (out to out) shall be maintained between all existing water mains and foundations for poles, pull boxes, push button pedestals, and any other miscellaneous electrical structure.

All existing water mains and service lines may or may not be shown on this set of plans and should be located by the Contractor prior to commencing any work. Call 645-7788 if assistance is needed in locating these services. Location, support, protection and restoration of all water lines, services and appurtenances shall be the responsibility of the Contractor. If a facility is damaged by the Contractor all repairs shall be made by the Division of Water at the Contractor's expense.

Maintain a minimum of 3 ft. horizontal and 1 ft. vertical clearance from all water and sewer lines, unless approved by the Engineer.

All water line valve boxes, service boxes, test stations, pitometer tap structures, meter pit covers, and other surface utility structures within the disturbed area shall be adjusted to grade. Any of these structures located within pavement, driveways, or other traveled areas, whether existing or proposed, shall be equipped with a traffic rated, heavy duty valve box and/or cover in accordance with the Standard Drawings. Existing water service boxes to remain that are encountered within the project limits shall be cleaned out, centered above the curb stop, and adjusted to the proposed grade.

**FOR THE DIVISION OF SEWERAGE AND DRAINAGE**

Maintain a minimum of 3 ft. horizontal and 1 ft. vertical clearance from all sewers other than brick, and 10 ft. horizontal / 5 ft. vertical for brick sewers along the drill path.

The Contractor is responsible for locating all service laterals. Any damage to main sewer lines or service laterals is the responsibility of the Contractor. All repairs must be performed by a licensed sewer contractor, under a separate sewer permit.

The Contractor shall give a forty-eight (48) hour notice to Ohio Utilities Protection Service (OUPS) by calling 1-800-362-2764.

For emergency contact:

City of Columbus  
Division of Sewerage & Drainage  
910 Dublin Rd.  
Columbus, OH 43215  
Telephone: (614) 645-7102  
Fax: (614) 645-3242

Ohio Utilities Protection Services (OUPS)  
Telephone: (800) 362-2764

**FOR THE DIVISION OF POWER**

The Division of Power (DOP) may have underground and overhead primary, secondary, and street lighting at this work location. The Contractor is hereby REQUIRED to contact OUPS at 811 or 1-800-362-2764 FORTY-EIGHT hours prior to conducting any activity within the construction area.

Any required relocation, support, protection, or any other activity concerned with the City's electrical facilities in the construction area is to be performed by the Contractor under the direction of DOP personnel and at the expense of the project. The Contractor shall use material and make repairs to a City of Columbus street lighting system by following DOP's "Material and Installation Specifications" (MIS) and the City of Columbus "Construction and Material Specifications" (CMS). Any new or re-installed underground streetlight system shall require testing as referred to in section 1001.18 of the CMS manual. The Contractor shall conform to DOP's existing Conductor Safety Policy and Hold Card System, MIS-1, copies of which are available from DOP.

If any electric facility belonging to the DOP is damaged in any manner by the Contractor, its agents, servants, or employees, and requires emergency repairs, the DOP Dispatch Office should be contacted immediately at (614) 645-7627. DOP shall make all necessary repairs, and the expense of such repairs and other related costs shall be paid by the Contractor to the Division of Power, City of Columbus, Ohio.

**INSPECTION/ACCEPTANCE BY THE DIVISION OF POWER**

Upon completion of construction of the project, the Contractor will be required to follow the procedures for inspection and acceptance of a street lighting project by the Division of Power. For this project, the Contractor will be required to show the Division of Power that all luminaires are functioning properly. During the final inspection/acceptance process, the contractor will be required to cover the photocell of each luminaire, in order to verify operation of the luminaire to the Division of Power.

**CITY OF COLUMBUS, OHIO  
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF POWER**

**Street Lighting Improvements for  
PROJECT NAME  
PROJECT LOCATION**

REVISION DESCRIPTION	SHEET OR SHEETS	INITIAL	DATE

<b>DRAWN BY:</b>	<b>DATE:</b>	
<b>APPROVED:</b>		
<b>SCALE:</b>	<b>SHEET:</b>	<b>DWG NO.</b>





**STREET LIGHTING NOTES**

The street lighting shall be constructed in accordance with the current City of Columbus, Ohio "Construction and Material Specifications" (2018 Edition, Section 1001, titled "Street Lighting"), including all supplements thereto, in force on the date of the contract, shall govern all materials and workmanship involved in the improvements shown on these plans, except as such specifications are modified by the following specifications or by the construction details set forth herein.

Circuit voltage for all luminaires shall be 480 volt, unless otherwise noted.

Centerline of light pole foundation and conduit trench to be placed in accordance with the plan details.

All proposed luminaires shall be 3000K LED.

No splices shall be made to circuit cables except at noted locations when permitted.

Trench location shall be deflected around obstacles as noted in this plan.

Where the trench is offset from the centerline of the foundations, the conduit shall be directed toward the ell of the foundation at approximately 45 degree angle. The foundation ells may be aimed out of foundation at approximately 45 degree angles to facilitate connection to conduit with the least amount of bends.

The plan details shall be considered supplemental to MIS Specifications.

Light pole foundations shall be located approximately where shown on plans with exact locations to be determined in the field after consideration is given to the location of underground and overhead utilities, pavements and grades.

It shall be the Contractor's responsibility to provide the anchor bolts and ensure that the bolt size, anchor bolt circle and pattern match the light pole.

As Build Record – The Contractor shall maintain a set of project record documents. These documents shall include reviewed shop drawings, change orders, equipment operating instructions, field test records, and as built drawings. The as built drawing shall be marked legibly in red, the actual location of equipment and conduits as constructed. All equipment and underground conduits installed shall have locations marked in distances off a landmark at least every 25 feet and as necessary at bends for location at a later date.

All items of work called for on the plans, for which no specific method of payment is provided, shall be performed by the Contractor and the cost of these shall be included in the unit price bid for the various related items. This includes, but is not limited to, such incidental items as relocation of mail boxes, saw cutting and removal and/or relocation of signs, railroad ties, sprinklers, relocating roof or sump drains around light pole foundations, hand digging around underground utilities or other miscellaneous items.

Prior to any painting, the Contractor shall submit paint samples and shop drawings to the City of Columbus. Paint samples shall be representative of the color, type and manufacture that will be used for light pole.

SUB-SUMMARY OF LIGHTING ITEMS			
ITEM NO.	QTY	UNIT	ITEM DESCRIPTION
1001		EA	13 Inch x 24 Inch Pull Box (MIS-54)
1001		EA	Streetlight Circuit Riser (MIS-56)
1001		EA	6' Street Light Foundation (MIS-201)
1001		EA	Pole, Aluminum, 6' Bracket, T-Base, 31' Mounting Height, Green (Teardrop) (MIS-305)
1001		CKT FT	3-Wire Underground Circuit (MIS-404)
1001		EA	3-Wire Pole to be Wired (MIS-501)
1001		EA	3-Wire, 480V Pad Mounted Controller (MIS-603)
1001		LF	2-Inch Conduit, Concrete Encased (MIS-700)
1001		LF	2-Inch Conduit, Jacking, Drilling or Pushing (MIS-701)
1001		LF	3-Inch Rigid Steel with 2-Inch Conduit Insert (MIS-702)
1001		EA	Teardrop LED Luminaire, Green (MIS-801)
1001		EA	Foundation Removal (MIS-900)
1001		LUMP	Existing Underground System Removal (MIS-902)

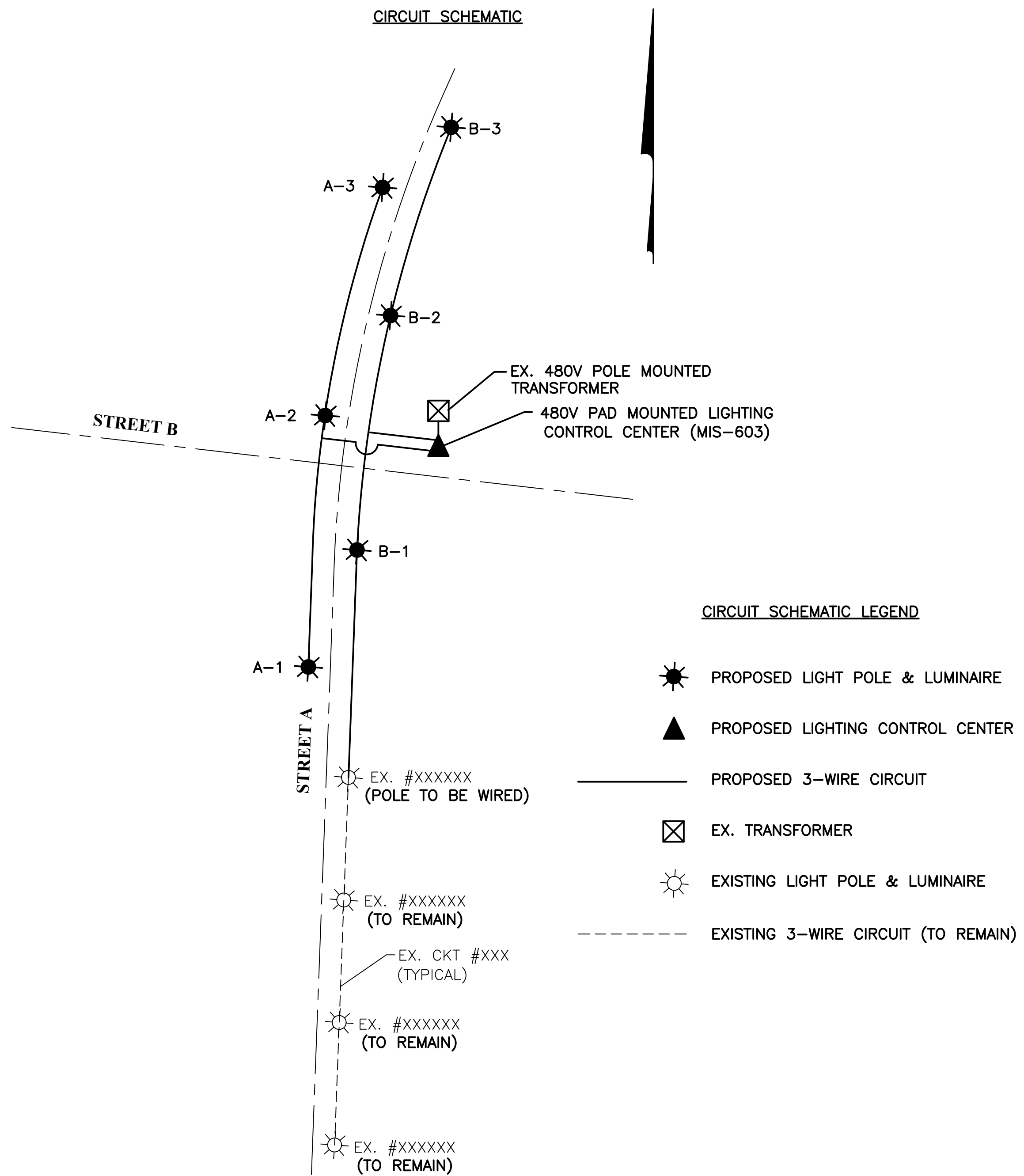
NON-PAYMENT MIS SPECIFICATIONS	
MIS	Item Description
1	Sreet Light Lockout/Tagout (LOTO)
2	Guidelines for Inspection & Acceptance of Street Lighting Systems
3	Guidelines for Street Lighting "Materials for Approval" Submittal Packages
4	Inspection Checklist
58	Minimum Tree Clearance for Downtown, Urban, & Rural Areas

**CITY OF COLUMBUS MIS**

- MIS-1
- MIS-2
- MIS-3
- MIS-4
- MIS-54
- MIS-56
- MIS-58
- MIS-201
- MIS-305
- MIS-404
- MIS-501
- MIS-603
- MIS-700
- MIS-701
- MIS-702
- MIS-801
- MIS-900
- MIS-902

<b>CITY OF COLUMBUS, OHIO DEPARTMENT OF PUBLIC UTILITIES DIVISION OF POWER</b>			
<b>Street Lighting Improvements for PROJECT NAME PROJECT LOCATION</b>			
	<b>DRAWN BY:</b>	<b>DATE:</b>	
<b>APPROVED:</b>			
	<b>SCALE:</b>	<b>SHEET:</b>	<b>DWG NO.</b>

REVISION DESCRIPTION	SHEET OR SHEETS	INITIAL	DATE



LIGHTING CONTROLLER SCHEDULE

CONTROL CENTER	CIRCUIT	LUMINAIRE QTY.	APPROX. LOAD		CIRCUIT FUSE	CIRCUIT CABLE SIZE (AWG)	MAINTAINING AGENCY
			APPROX. WATTS	APPROX. AMPS			
480V PAD MOUNTED LIGHTING CONTROL CENTER (MIS-603)	A	3	300	0.7	15 A	4	CITY OF COLUMBUS
	B	7	700	1.6	15 A	4	
TOTAL		10	1,000	2.3			

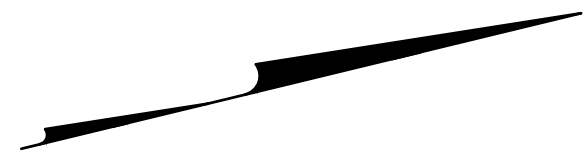
**\*\*NOTE TO DESIGNER:** THE INFORMATION LISTED IN THE TABLE ABOVE IS GIVEN FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE DESIGNER TO CALCULATE NEW VALUES FOR THE SPECIFIC LIGHTING DESIGN THAT IS PROPOSED BY A NEW PLAN.

**CITY OF COLUMBUS, OHIO  
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF POWER**

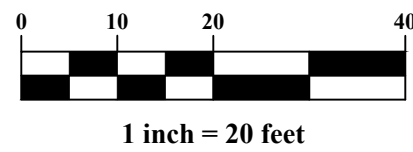
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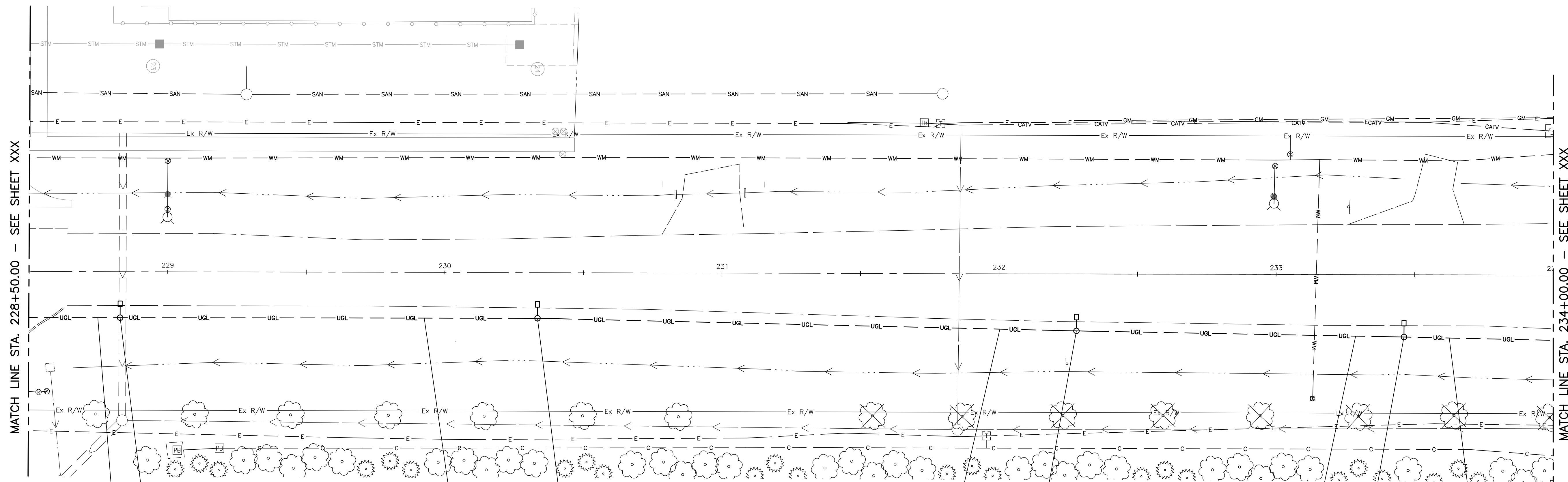


**GRAPHIC SCALE**



**STREET LIGHTING LEGEND**

- UGL — EXISTING LIGHTING CONDUIT (AS NOTED)  
W/ EX. 3 WIRE CIRCUIT CABLE (AS NOTED)
- □ EXISTING STREET LIGHT POLE (AS NOTED)



Existing Street Light Pole #XXXXXX (TO REMAIN)  
Sta. 228+82.8, 16.6' Rt.  
Existing Underground Conduit (TO REMAIN)  
w/ Ex. 3 Wire Ckt #XXX (TO REMAIN)

Existing Street Light Pole #XXXXXX (TO BE REMOVED)  
Existing Street Light Foundation (TO BE REMOVED)  
Sta. 230+33.5, 16.5' Rt.

Existing Underground Conduit (TO BE REMOVED)  
w/ Ex. 3 Wire Ckt #XXX (TO BE REMOVED)

Existing Underground Conduit (TO BE REMOVED)  
w/ Ex. 3 Wire Ckt #XXX (TO BE REMOVED)  
Existing Street Light Pole #XXXXXX (TO BE REMOVED)  
Existing Street Light Foundation (TO BE REMOVED)  
Sta. 233+46.2, 22.5' Rt.

Existing Underground Conduit (TO BE REMOVED)  
w/ Ex. 3 Wire Ckt #XXX (TO BE REMOVED)

Existing Underground Conduit (TO BE REMOVED)  
w/ Ex. 3 Wire Ckt #XXX (TO BE REMOVED)

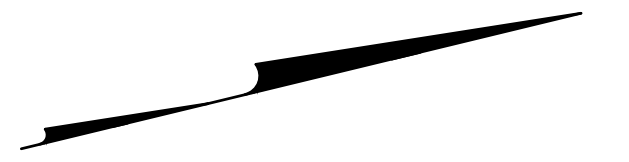
Existing Street Light Pole #XXXXXX (TO BE REMOVED)  
Existing Street Light Foundation (TO BE REMOVED)  
Sta. 232+28.0, 20.6' Rt.

**CITY OF COLUMBUS, OHIO  
DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF POWER**

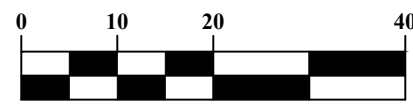
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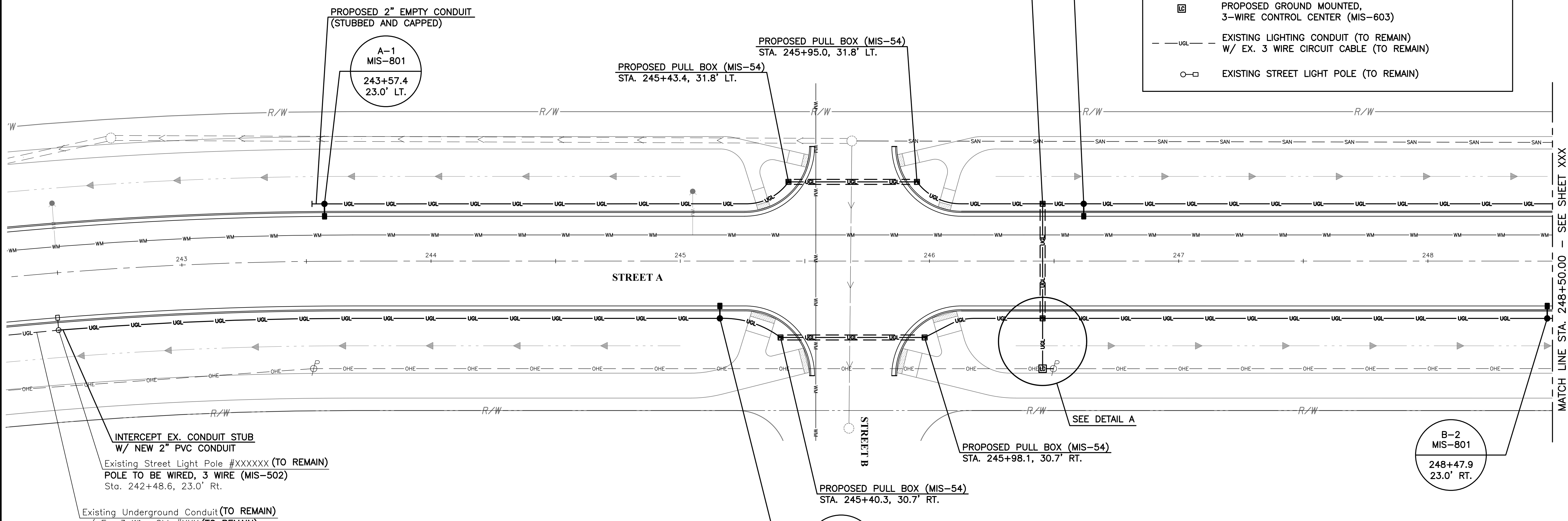
GRAPHIC SCALE



1 inch = 20 feet

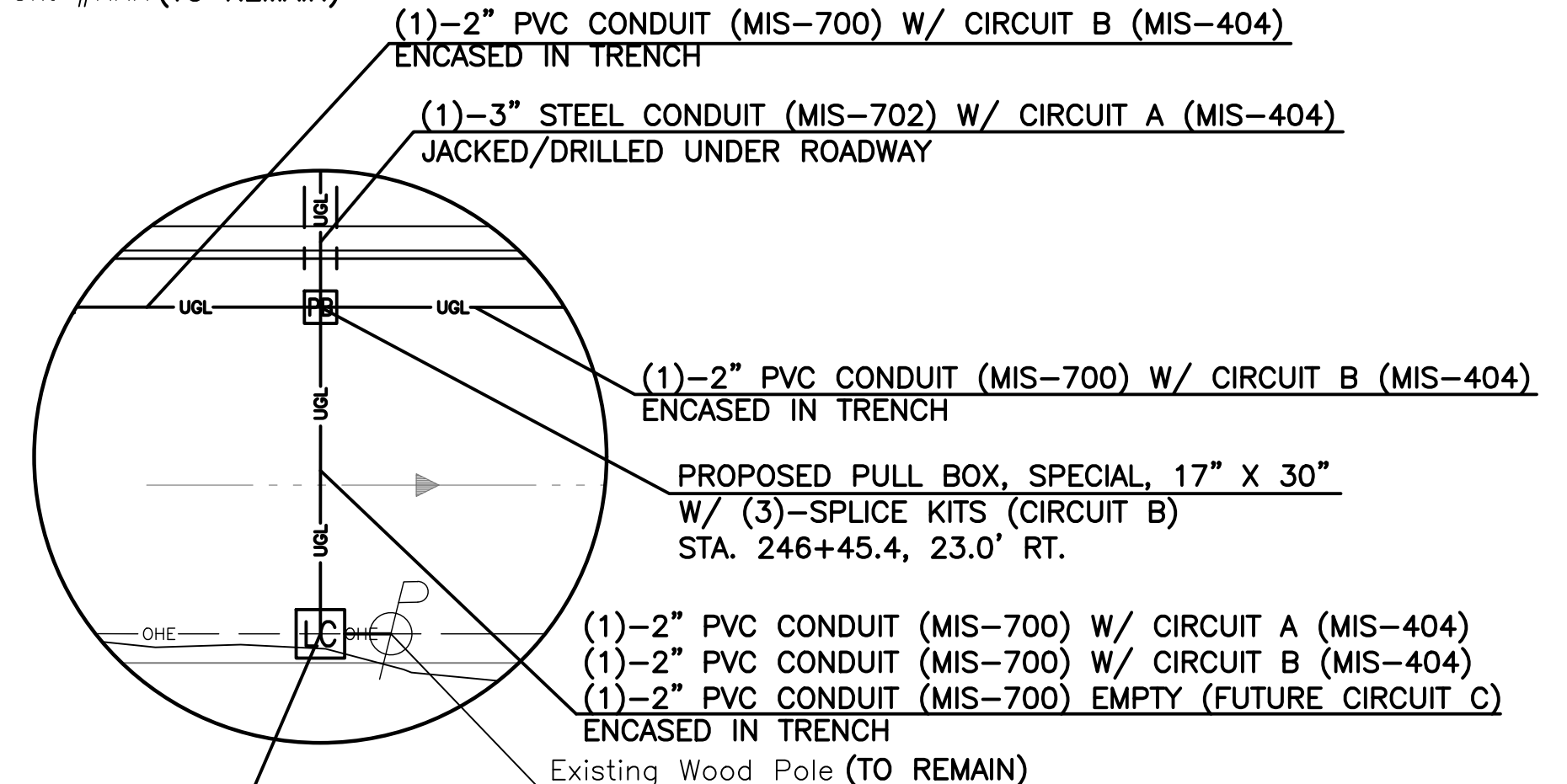
**STREET LIGHTING LEGEND**

- PROPOSED LIGHT POLE, GREEN (MIS-305)  
W/ LED TEARDROP LUMINAIRE, GREEN (MIS-801)
- PROPOSED PULL BOX (MIS-54, UNLESS OTHERWISE NOTED)
- UGL — PROPOSED 2" PVC CONDUIT IN TRENCH (MIS-700)  
W/ 3 WIRE CIRCUIT CABLE (MIS-404)
- ≡≡≡ PROPOSED 3" STEEL CONDUIT JACKED/DRILLED (MIS-702)  
W/ 3 WIRE CIRCUIT CABLE (MIS-404)
- ⊠ PROPOSED GROUND MOUNTED,  
3-WIRE CONTROL CENTER (MIS-603)
- - - UGL - - - EXISTING LIGHTING CONDUIT (TO REMAIN)  
W/ EX. 3 WIRE CIRCUIT CABLE (TO REMAIN)
- □ EXISTING STREET LIGHT POLE (TO REMAIN)



**INTERCEPT EX. CONDUIT STUB  
W/ NEW 2" PVC CONDUIT**  
Existing Street Light Pole #XXXXXX (TO REMAIN)  
POLE TO BE WIRED, 3 WIRE (MIS-502)  
Sta. 242+48.6, 23.0' Rt.

Existing Underground Conduit (TO REMAIN)  
w/ Ex. 3 Wire Ckt #XXX (TO REMAIN)



**DETAIL A**  
SCALE: 1"=10'

**CITY OF COLUMBUS, OHIO  
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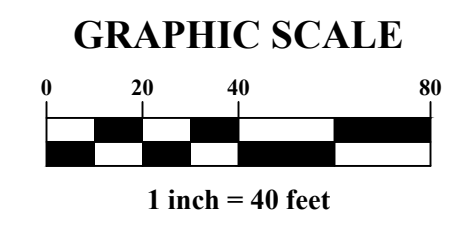
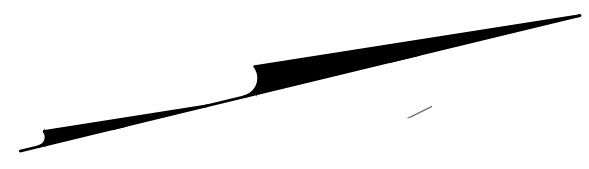
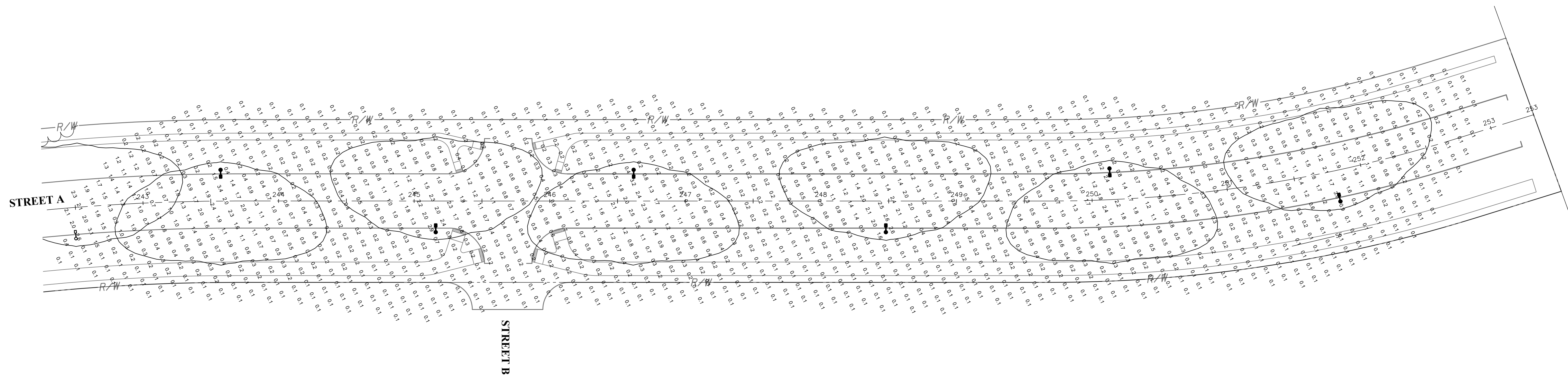
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MATCH LINE STA. 248+50.00 - SEE SHEET XXX

LUMINAIRE SCHEDULE						
Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
Varies (Select from MIS)	Varies	Varies	Varies	Varies	Varies (From Manufacturer)	Varies

STATISTICS						
Description	Roadway Classification	Avg	Max	Min	Max/Min	Avg/Min
Target	Arterial, Local	0.9 fc	-	-	-	3.0:1
Street A	Arterial, Local	0.9 fc	3.4 fc	0.3 fc	11.3:1	3.0:1



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