

**To:** Louis Agresta  
*Clark County-Springfield  
Transportation Coordinating Committee*

**June 12, 2024**  
**Appended: July 24, 2024**

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**Subject:** Urbana Signal Assessment

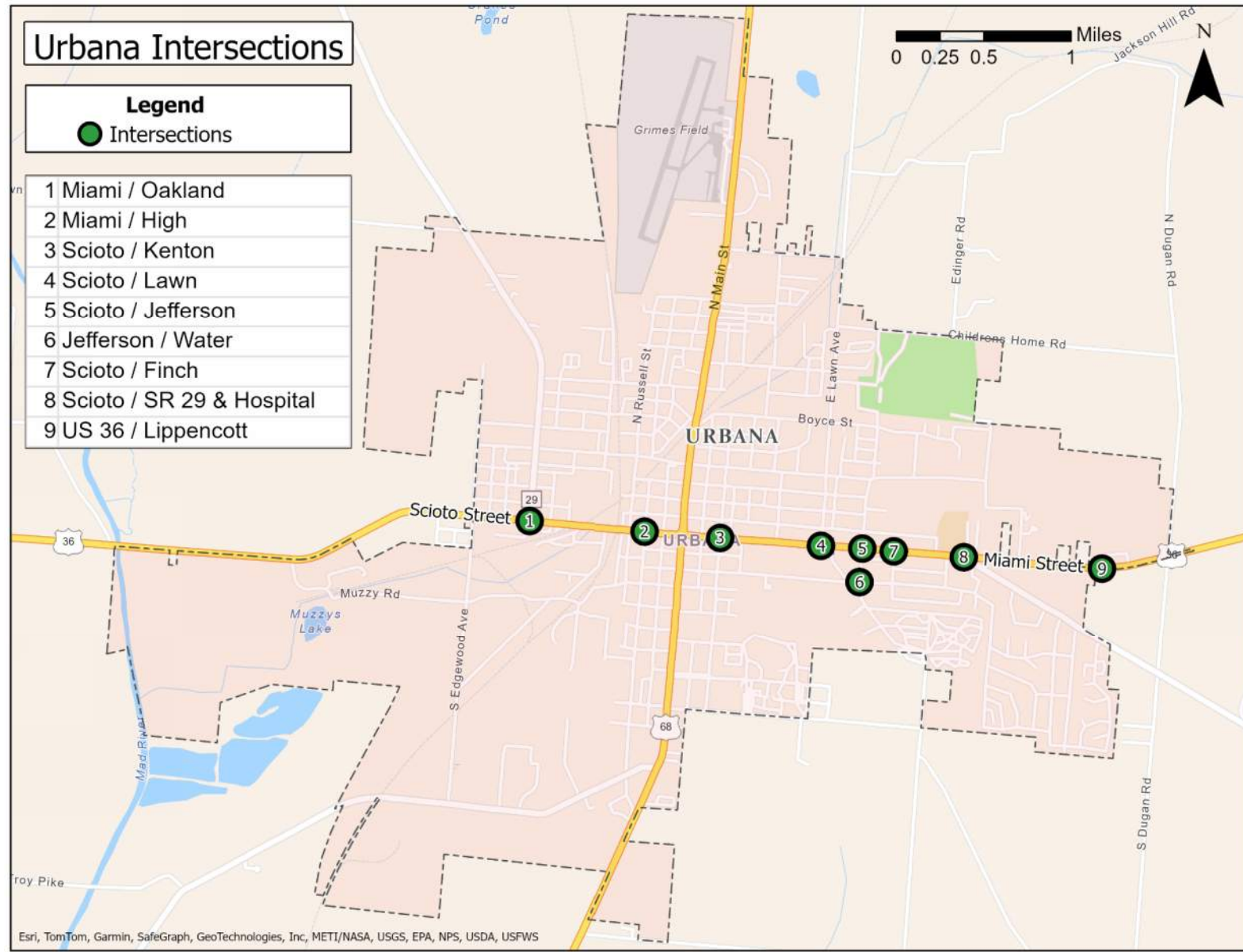
The City of Urbana partnered with Burgess & Niple (B&N) to conduct an analysis of the signals along the US 36/Scioto Street/Miami Street corridor (see **Figure 1**). The analysis encompassed nine signalized intersections and included a signal warrant analysis, field inspection of the existing signal supports and facilities, and a cost estimate of recommended improvements to the intersections.

### **Signal Warrant Analysis**

Nine intersections along the US 36/Scioto Street/Miami Street corridor were analyzed using the *Ohio Manual of Uniform Traffic Control Devices* (OMUTCD) requirements and ODOT *Traffic Engineering Manual* (TEM) Section 402-3.2 guidance. The TEM guidance allows 70 percent of the OMUTCD volume thresholds to be used in the warrant analysis when evaluating the retention of an existing signal. The ODOT Traffic Signal Warrant Spreadsheet was used for the analysis. Traffic counts were conducted on Tuesday September 26, 2023, Thursday September 28, 2023, and Friday December 1, 2023, for five intersections. Additional counts were provided for the remaining four intersections.

From the OMUTCD, Warrant 1 requires the major street and minor street volumes to meet minimum thresholds for a minimum of 8 unique hours in the day. To meet the conditions of Warrant 2 the volumes must meet minimum thresholds for 4 unique hours in the day. From the analysis, five intersections met the 8-hour warrant and two met the 4-hour warrant. Two intersections did not meet the conditions of the signal warrants. Details of the signal warrants are provided in the **Appendix**.

Figure 1 – US 36/Scioto Street Analysis Intersections



Intersections that met the signal warrants

Five intersections met the 8-hour signal warrant thresholds for Condition A or Condition B. These intersections are:

- Miami Street & High Street (70% Volumes)
- Scioto Street & East Lawn Avenue (100% Volumes)
- Scioto Street & Jefferson Avenue (100% Volumes)
- Scioto Street & Finch Street (70% Volumes)
- Scioto Street/US 36 & Scioto Street/SR 29 (100% Volumes)

Two intersections did not meet the 8-hour warrants but did meet the 4-hour warrants. Traffic counts from 10am - 3pm were not available at these locations. Had counts been collected for these five hours, the intersections likely would have met the 8-hour warrant thresholds. These intersections are:

- Miami Street & North Oakland Street (70% Volumes)
- US 36 & Lippencott Lane (70% Volumes)

Intersections that did not meet the signal warrants

Two intersections did not meet either the 8-hour or 4-hour warrants. These two intersections are:

- Jefferson Avenue & Water Street – 7 of 8 hours were met for Warrant 1. The location was 15 vehicles on the major street short of meeting 8 hours.
- Scioto Street & Kenton Street – This intersection does not meet the minimal volume thresholds for the side street for any hour during the day.

Warrant Recommendations

The intersection of Jefferson Avenue and Water Street is one hour short of meeting the requirements for Warrant 1. Counting traffic on a different day may result in a traffic volume high enough to meet Warrant 1. Additionally, a 513-unit planned development is expected to break ground behind the Walmart Supercenter within the next few years. The predicted increase in traffic generated by the development may be enough to justify Jefferson Avenue and Water Street to meet Warrant 1.

Scioto Street and Kenton Street does not meet minimum volume thresholds nor number of crashes to meet any of the OMUTCD warrants. However, there is a sight distance obstruction caused by the building in the southwest corner that affects northbound traffic. Further conversation with ODOT may be needed to discuss the safety implications of removing the signal at the intersection.

**Structural Inspection Findings**

A field inspection of the signal supports at the nine intersections was conducted in February 2024. The following deficiencies were found. More details are provided in the **Appendix**.

- Miami Street & North Oakland Street – Near the base of the exterior face of the poles there are 3-inch diameter sections of 1/16-inch max deep pitting directly behind each anchor rod with surface corrosion.
- Miami Street & High Street – Near the base of the exterior face of the pole there are 3-inch diameter sections of 1/16-inch max deep pitting directly behind each anchor rod with surface corrosion. The signal support on the south side of US 36 has all four anchor rods tilted towards the north up to 6 degrees. The anchor rods of this signal support show no distress.
- Scioto Street & Kenton Street – The signal support at the northwest corner of the intersection, facing westbound US 36 traffic, has one missing fastener for the lower handhole cover.
- US 36 & Lippencott Lane – The signal support at the northeast corner of the intersection facing the businesses on the south side of US 36 exhibits an area of erosion measuring 1-foot long with 1-foot of lateral penetration under the square foundation. The drilled circular shaft could be reached when probed; however, it was not undermined or affected.
- Jefferson Avenue & Water Street – The poles inside the base and the base plates themselves all have minor to moderate corrosion. The signal support at the southwest corner of the intersection has the worst corrosion.

### Structural Inspection Recommendations

The field inspection did not find any deficiencies that require immediate repair. The recommended maintenance activities are as follows:

- Paint all signal supports with only green surface paint exposed on the exterior and inside the poles near the base to address any corrosion or further section loss at the following intersections:
  - Miami Street & North Oakland Street
  - Miami Street & High Street
  - Jefferson Avenue & Water Street.
- Replace the missing fastener for the lower handhole cover at the signal support at the northwest corner of the Scioto Street & Kenton Street intersection facing westbound US 36 traffic.
- Repair and backfill the erosion at the signal support at the northeast corner of US 36 & Lippencott Lane intersection.
- Consider painting unpainted portions of the anchor rods exposed to arrest and prevent corrosion.
- Monitor the bent anchor bolts for distress at the following intersections:
  - Miami Street & High Street
  - Scioto Street & Kenton Street
- Monitor section loss and pitting in the bases of the poles at the following intersections:
  - Miami Street & North Oakland Street
  - Miami Street & High Street
  - Jefferson Avenue & Water Street

- At the other intersections where a coat of black paint was added, the corrosion is hidden; however, it appears pitting did occur in the bases of the poles and the pits were filled in with excessive paint. Monitor intersection supports for additional corrosion.

### Signal Supports and Controller Cabinets Inspection

In addition to the field inspection, an inspection of the signal supports and controller cabinets was conducted in March 2024. The inspection checked signal phasing; presence and operation of vehicle detection and preemption; communications to other signals in the corridor; presence, operation, and ADA compliancy of pedestrian facilities; and type and operation of the controller cabinets. The inspection also evaluated if the existing signal supports could withstand the change from free-swinging signal heads to rigid-mounted signal heads with backplates in accordance with TEM Section 421-2 and the Office of Traffic Operations (OTO) mast arm calculation spreadsheet. A summary of the findings is in **Table 1**.

**Table 1 – Summary of Signal Supports and Equipment**

Location	Pole Number	Existing Design No.	Rigid Mounted Design No.	Pole Condition	Pushbutton	Pedestrian Signal	ADA Compliant	Controller Type	Vehicle Detection	Preemption	Communications	Other
Miami St & High St	Pole 1	3	6	Moderate corrosion at exterior base.	Yes	Yes	No	ASC2 Pole Mtd	Loop	Removed	No	Pedestal-mounted ped heads are countdown
	Pole 2	3	6	Moderate corrosion at exterior base. Anchor rods tilted.	Yes	Yes	No					
Scioto St & Kenton St	Pole 1	2	2	No significant deficiencies.	Yes	Yes	No	ASC2 Pole Mtd	Loop	Removed	No	Pushbuttons located off sidewalk Sight distance
	Pole 2	1	2	No significant deficiencies.	Yes	Yes	No					
	Pole 3	2	2	No significant deficiencies.	Yes	Yes	No					
	Pole 4	1	2	No significant deficiencies.	Yes	Yes	No					
Scioto St & E Lawn Ave	Pole 1	1	4	No significant deficiencies.	Yes	Yes	No	ASC2 Pole Mtd	Loop	Opticom	Wireless	Eastern crosswalk is some distance from intersection
	Pole 2	1	4	No significant deficiencies.	Yes	Yes	No					
Scioto St & Jefferson Ave	Pole 1	11	12	No significant deficiencies.	Yes	Yes	Half	Colbalt Ground Mtd	Loop	Opticom	Wireless	Only 1 ped head is countdown
	Pole 2	3	4	No significant deficiencies.	Yes	Yes	No					
	Pole 3	11	12	No significant deficiencies.	Yes	Yes	No					
	Pole 4	3	4	No significant deficiencies.	Yes	Yes	No					
Scioto St & Finch St	Pole 1	3	4	Foundation mostly buried.	Yes	Yes	No	ASC2 Pole Mtd	Loop	Opticom	Wireless	-
	Pole 2	3	2	No significant deficiencies.	Yes	Yes	No					
Scioto St & SR 29 & Mercy Hospital	Pole 1	2	2	No significant deficiencies.	No	No	-	ASC2 Pole Mtd	Loop	Disconnected	Wireless	No pedestrian facilities
	Pole 2	2	2	No significant deficiencies.	No	No	-					
	Pole 3	1	2	No significant deficiencies.	No	No	-					
US 36 & Lippencott Ln	Pole 1	Unknown	12	No significant deficiencies.	No	Yes	No	ASC2 Pole Mtd	Loop	No	No	Wires in bad condition – cabinet runs flash anytime is rains or is high humidity WB ped head not working
	Pole 2	Unknown	2	No significant deficiencies.	No	Yes	No					
	Pole 3	Unknown	2	Erosion along foundation.	No	Yes	No					
	Pole 4	Unknown	2	No significant deficiencies.	No	Yes	No					
Miami St & Oakland St	Pole 1	2	2	Moderate corrosion at exterior base.	Yes	Yes	No	ASC2 Pole Mtd	Loop	Removed	No	-
	Pole 2	1	2	Moderate corrosion at exterior base.	Yes	Yes	No					
	Pole 3	1	2	Moderate corrosion at exterior base.	Yes	Yes	No					

Location	Pole Number	Existing Design No.	Rigid Mounted Design No.	Pole Condition	Pushbutton	Pedestrian Signal	ADA Compliant	Controller Type	Vehicle Detection	Preemption	Communications	Other
Jefferson Ave & Water St	Pole 1	2	2	No significant deficiencies.	No	No	-	ASC2 Pole Mtd	None	Disconnected	No	No pedestrian facilities
	Pole 2	1	2	Moderate corrosion at interior base.	No	No	-					
	Pole 3	2	2	No significant deficiencies.	No	No	-					
	Pole 4	2	2	Moderate corrosion at exterior base.	No	No	-					

## Signal Supports and Controller Cabinets Recommendations

High priority:

- US 36 & Lippencott Lane – Repair wiring in controller cabinet and replace westbound pedestrian signal head.

Low priority:

- Scioto Street & High Street – Upgrade pedestrian signal heads and pushbuttons to audible and vibrotactile countdown. Install communications. Upgrade controller type to Cobalt.
- Scioto Street & Kenton Street – Upgrade pedestrian signal heads and pushbuttons to audible and vibrotactile countdown. Install communications. Upgrade controller type to Cobalt.
- Scioto Street & Lawn Avenue – Upgrade pedestrian signal heads and pushbuttons to audible and vibrotactile countdown. Evaluate eastern crosswalk to determine if additional pedestrian signal heads and pushbuttons should be installed or if crosswalk should be removed. Upgrade controller type to Cobalt.
- Scioto Street & Jefferson Avenue – Upgrade pedestrian signal heads and pushbuttons to audible and vibrotactile countdown.
- Scioto Street & Finch Street – Upgrade pedestrian signal heads and pushbuttons to audible and vibrotactile countdown. Upgrade controller type to Cobalt.
- Scioto Street & SR 29 & Mercy Hospital – Reestablish preemption detection. Upgrade controller type to Cobalt.
- Miami Street & Oakland Street – Upgrade pedestrian signal heads and pushbuttons to audible and vibrotactile countdown. Install communications. Upgrade controller type to Cobalt.
- Jefferson Avenue & Water Street – Upgrade pedestrian signal heads and pushbuttons to audible and vibrotactile countdown. Install communications. Upgrade controller type to Cobalt.

### Rigid-Mounted Signal Heads with Backplates

Based on the guidance in TEM Section 421-2 and the OTO mast arm calculation spreadsheet and as listed in **Table 1**, most of the existing mast arms and signal supports at the nine intersections will not be able to support rigid-mounted signal heads with backplates. The mast arms and signal supports would need to be replaced with poles meeting the larger calculated design numbers.

### Cost Estimate

Construction cost estimates were prepared for potential funding alternatives. These costs used a combination of ODOT and local historical project bid tabulations for unit costs to obtain a current year (2024) estimate. These estimates were inflated to an assumed construction year of 2027 and a 20% contingency was used based on the level of unknowns. An estimated 30%

of construction cost was included for design costs. The cost estimates do not include utility relocations or right of way acquisitions. More detailed cost estimates are included in the **Appendix**.

**Table 2** lists the cost estimate to update the pedestrian signal head, pushbuttons facilities, overhead signs, and sign hangers at the nine intersections. These improvements would bring the intersections to the current minimum standards defined by ODOT.

**Table 3** lists the cost estimate to do a complete upgrade of the nine intersections, including: installing new signal supports and mast arms; installing new pedestrian signal heads and pushbuttons; updating the controller cabinets; and replacing wiring and conduit. Curb ramp and sidewalk work is included at locations where a crossing does not exist but is needed, or where detectable warning plates need to be replaced. Communication systems are not included as part of the estimate as communications can be installed separately once construction is complete.

**Table 4** shows the cost estimate to install a cellular passthrough system to provide communication to the nine intersections. The cellular system cost estimate does not include Centrac software, since the cellular unit cost includes cost of software that would allow wireless remote access to the signal controllers.

**Table 2 - Cost Estimate for Minimum Recommended Improvements**

Item	Item Ext.	Unit	Description	Cost
625	25500	FT	CONDUIT, 2", 725.04	\$2,660.00
625	25500	FT	CONDUIT, 3", 725.04	\$3,800.00
625	29000	FT	TRENCH	\$1,530.00
625	30706	EACH	PULL BOX, 725.08, 24"	\$-
625	32000	EACH	GROUND ROD	\$980.00
630	79100	EACH	SIGN HANGER ASSEMBLY, MAST ARM	\$5,070.00
632	20731	EACH	PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), TYPE D2, AS PER PLAN	\$25,650.00
632	25010	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD	\$1,520.00
632	26001	EACH	PEDESTRIAN PUSHBUTTON, AS PER PLAN	\$8,200.00
632	26001	EACH	PEDESTRIAN PUSHBUTTON EXTENDER ASSEMBLY	\$400.00
632	40500	FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	\$2,275.00
632	64020	EACH	PEDESTAL FOUNDATION	\$1,500.00
632	65200	FT	LOOP DETECTOR LEAD-IN CABLE	\$1,625.00
632	89510	EACH	PEDESTAL, 5'	\$1,500.00
632	90000	EACH	PEDESTAL, 11', TRANSFORMER BASE	\$1,900.00
632	90101	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN	\$19,500.00
<b>CONSTRUCTION COST</b>				<b>\$78,100.00</b>
<b>DESIGN COST</b>				<b>\$38,300.00</b>
<b>CONTINGENCY (20%)</b>				<b>\$33,000.00</b>
<b>TOTAL (WITH INFLATION TO YEAR 2027)</b>				<b>\$233,600.00</b>

**Table 3 - Cost Estimate for Complete Upgrade of Intersections**

Item	Item Ext.	Unit	Description	Cost
202	32500	FT	CURB AND GUTTER REMOVED	\$2,000.00
203	10000	CY	EXCAVATION	\$810.00
203	20000	CY	EMBANKMENT	\$1,750.00
608	10000	SF	4" CONCRETE WALK	\$1,875.00
608	52000	SF	CURB RAMP	\$14,580.00
608	53020	SF	DETECTABLE WARNING	\$2,160.00
614	11000	LS	MAINTAINING TRAFFIC	\$45,000.00
614	11300	EACH	SPECIAL - WORK ZONE TRAFFIC SIGNAL	\$180,000.00
625	25500	FT	CONDUIT, 3", 725.04	\$98,800.00
625	25600	FT	CONDUIT, 4", 725.04	\$30,250.00
625	25902	FT	CONDUIT, JACKED OR DRILLED, 725.04	\$-
625	29000	FT	TRENCH	\$4,500.00
625	29400	FT	TRENCH IN PAVED AREA	\$110,200.00
625	30706	EACH	PULL BOX, 725.08, 24"	\$45,000.00
625	32000	EACH	GROUND ROD	\$15,680.00
630	79100	EACH	SIGN HANGER ASSEMBLY, MAST ARM	\$7,020.00
630	80100	SF	SIGN, FLAT SHEET	\$2,160.00
632	05007	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	\$56,050.00
632	05087	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	\$7,750.00
632	20731	EACH	PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), TYPE D2, AS PER PLAN	\$32,400.00
632	25000	EACH	COVERING OF VEHICULAR SIGNAL HEAD	\$3,200.00
632	25010	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD	\$1,920.00
632	26001	EACH	PEDESTRIAN PUSHBUTTON, AS PER PLAN	\$10,660.00
632	40500	FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	\$39,550.00
632	40700	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	\$6,000.00
632	64010	EACH	SIGNAL SUPPORT FOUNDATION	\$189,100.00
632	64020	EACH	PEDESTAL FOUNDATION	\$20,000.00
632	65200	FT	LOOP DETECTOR LEAD-IN CABLE	\$24,000.00
632	68200	FT	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG	\$8,437.50
632	70001	EACH	POWER SERVICE, AS PER PLAN	\$31,950.00

Item	Item Ext.	Unit	Description	Cost
632	70400	EACH	CONDUIT RISER, 2" DIAMETER	\$7,875.00
632	72110	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2	\$180,000.00
632	80981	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2	\$26,000.00
632	72110	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 4	\$84,000.00
632	72110	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 4 POLE, WITH MAST ARM TC-81.21 DESIGN 3 AND DESIGN 3	\$15,000.00
632	72110	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 6 POLE, WITH MAST ARM TC-81.21 DESIGN 3 AND DESIGN 3	\$15,000.00
632	72110	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 6 POLE, WITH MAST ARM TC-81.21 DESIGN 3 AND DESIGN 3	\$16,000.00
632	72130	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 12	\$48,000.00
632	89900	EACH	PEDESTAL, 11', TRANSFORMER BASE	\$18,000.00
632	90101	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN	\$45,000.00
633	01580	EACH	CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1	\$90,000.00
633	01580	EACH	CONTROLLER MASTER, TRAFFIC RESPONSIVE	\$-
633	67100	EACH	CABINET FOUNDATION	\$24,750.00
633	67200	EACH	CONTROLLER WORK PAD	\$9,000.00
633	75001	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	\$7,500.00
644	00500	FT	STOP LINE	\$440.00
644	00600	FT	CROSSWALK LINE	\$600.00
644	30000	FT	REMOVAL OF PAVEMENT MARKING	\$330.00
809	69001	EACH	ADVANCE RADAR DETECTION, AS PER PLAN	\$-
809	69101	EACH	STOP-BAR RADAR DETECTION, AS PER PLAN	\$168,000.00
<b>CONSTRUCTION COST</b>				<b>\$1,748,300.00</b>
<b>DESIGN COST</b>				<b>\$524,500.00</b>
<b>CONTINGENCY (20%)</b>				<b>\$454,600.00</b>
<b>TOTAL (WITH INFLATION TO YEAR 2027)</b>				<b>\$3,204,700.00</b>

**Table 4 - Cost Estimate Cellular Signal System**

Item	Item Ext.	Unit	Description	Cost
633	99000	EACH	CONTROLLER ITEM, MISC.: OFFICE MONITOR	\$2,000.00
633	68511	EACH	COMMUNICATIONS, CELLULAR UNIT, AS PER PLAN	\$58,500.00
<b>CONSTRUCTION COST</b>				<b>\$60,500.00</b>
<b>DESIGN COST</b>				<b>\$18,200.00</b>
<b>CONTINGENCY (20%)</b>				<b>\$15,700.00</b>
<b>TOTAL (WITH INFLATION TO YEAR 2027)</b>				<b>\$110,900.00</b>

Notes:

Assumed that controllers would already be replaced.

No removal of existing system; assumes all twisted pair would be abandoned in place.

Unit cost of the cellular unit includes monitoring software and training.

Unit cost of the cellular unit includes 10 years of hosting.

**Additional Improvements**

At the request of the City of Urbana, the intersections of Scioto Street and Kenton Street, and Scioto Street and US 36 and Mercy Health Urbana Hospital, were further evaluated for signal removal alternatives and pedestrian facility improvements, respectively.

Scioto Street & Kenton Street

Should the signal not be upgraded at the intersection, improvements would be required to provide adequate sight distance for the stop-controlled Kenton Street approaches. Improvements included curb extensions on the west side of the intersection. This improvement would allow the stop bars to be relocated closer to Scioto Street for improved sight distance around the adjacent buildings and parking areas. Parking will likely need to be removed in the vicinity of the intersection to provide adequate sight distance. The maximum impact to the parking occurs when the vehicle is sitting at the stop bar. If the vehicle stops and then proceeds to the crosswalk where traffic is more visible, the parking impacts would be less. The improvements are illustrated in **Figure 2**. The cost estimate is detailed in **Table 5**.

Scioto Street & US 36 & Mercy Health Urbana Hospital

To facilitate pedestrian travel throughout the corridor, improvements were proposed at the Scioto Street, US 36, and Mercy Health Urbana Hospital intersection. These improvements include constructing new sidewalks and curb ramps, installing a rectangular rapid flashing beacon (RRFB) crossing, and striping new crosswalk locations. New sidewalk and curb ramps would be constructed on the south side of Scioto Street from Ames Avenue to the northern driveway of Speedway, crossing the median islands with SR 29, bridging the gap in sidewalk connectivity. The RRFB would be constructed over the southbound slip lane from Scioto Street to SR 29, where traffic increases speed. Crosswalks will be striped over Ames Avenue, the SR 29 slip lane, the SR 29 left turn lane, the SR 29 right turn lane, and US 36 in front of Mercy Health Urbana Hospital. The improvements are illustrated in **Figure 3**. The cost estimate is detailed in **Table 6**.

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LEGEND	
	CURB FACE
	EXISTING STOP BAR
	SIGHT DISTANCE
	CROSSWALK
	SIDEWALK
	PROPOSED STOP BAR
	PROPOSED PIPE
	PROPOSED CURB RAMP
	REMOVE PARKING
	MAX PARKING IMPACTS

CALCULATED  
JZM  
CHECKED  
KMS

0 40  
HORIZONTAL  
SCALE IN FEET

**Figure 2 - Scioto Street and Kenton Street  
Sight Distance Improvements**



**Table 5 – Cost Estimate for Scioto Street and Kenton Street Improvements**

Item	Description	Est QTY.	Unit	Unit Cost	Total
<b>ROADWAY</b>					
608	CONCRETE WALK	2200.000	SQ FT	\$ 9.00	\$ 19,800.00
202	PAVEMENT REMOVAL	162.889	SQ FT	\$ 12.00	\$ 1,954.67
202	WALK REMOVAL	1498.000	SQ FT	\$ 5.00	\$ 7,490.00
202	CURB REMOVAL	178.000	FT	\$ 9.00	\$ 1,602.00
202	FIRE HYDRANT REMOVED	1.000	EACH	\$ 750.00	\$ 750.00
632	SIGNAL REMOVAL	1.000	EACH	\$ 5,000.00	\$ 5,000.00
	CURB RAMP	4.000	EACH	\$ 1,500.00	\$ 6,000.00
	SUBGRADE COMPACTION	91.111	SQ YD	\$ 3.00	\$ 273.33
	FIRE HYDRANT	1.000	EACH	\$ 5,000.00	\$ 5,000.00
203	EXCAVATION	80.000	CU YD	\$ 20.00	\$ 1,600.00
203	EMBANKMENT	120.000	CU YD	\$ 20.00	\$ 2,400.00
<b>DRAINAGE</b>					
	CATCH BASIN	5.000	EACH	\$ 3,500.00	\$ 17,500.00
	UNDERDRAINS	205.000	FT	\$ 20.00	\$ 4,100.00
	INLET RECONSTRUCTED TO GRADE	2.000	EACH	\$ 4,500.00	\$ 9,000.00
	STORM SEWER PIPE	150.000	FT	\$ 90.00	\$ 13,500.00
<b>EROSION CONTROL &amp; BMP ELEMENTS</b>					
659	TOPSOIL	33.333	CU YD	\$ 24.00	\$ 800.00
659	SEEDING AND MULCHING	300.000	SQ YD	\$ 5.00	\$ 1,500.00
832	EROSION CONTROL	1.000	LUMP	\$ 15,000.00	\$ 15,000.00
<b>PAVEMENT</b>					
609	CURB AND GUTTER	205.000	FT	\$ 34.00	\$ 6,970.00
	AGGREGATE BASE	40.741	CU YD	\$ 60.00	\$ 2,444.44
	SURFACE COURSE	83.333	CU YD	\$ 150.00	\$ 12,500.00
	TACK COAT	120.000	GAL	\$ 4.75	\$ 570.00
	FULL DEPTH PAVEMENT	91.111	SQ YD	\$ 85.00	\$ 7,744.44
	PAVEMENT PLANING	1500.000	SQ YD	\$ 7.50	\$ 11,250.00
<b>MAINTENANCE OF TRAFFIC</b>					
614	MOT	1.000	LUMP	\$ 50,000.00	\$ 50,000.00
<b>TRAFFIC CONTROL</b>					
630	GROUND MOUNTED SUPPORT, NO. 2 POST	28	FT	\$ 11.00	\$ 308.00
630	SIGN, FLAT SHEET	13	SF	\$ 19.60	\$ 254.80
644	STOP LINE	24	FT	\$ 9.50	\$ 228.00
644	CROSSWALK LINE, 12"	92	FT	\$ 10.56	\$ 971.52
644	REMOVAL OF PAVEMENT MARKING	116	FT	\$ 5.00	\$ 580.00
<b>LIGHTING</b>					
625	CONNECTION, FUSED PULL APART	4	EACH	\$ 110.00	\$ 440.00
625	CONNECTION, UNFUSED PERMANENT	1	EACH	\$ 100.00	\$ 100.00
625	LIGHT POLE FOUNDATION, 24" X 6' DEEP	1	EACH	\$ 1,322.00	\$ 1,322.00
625	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE	100	FT	\$ 2.87	\$ 287.00
625	NO. 10 AWG POLE AND BRACKET CABLE	43	FT	\$ 1.60	\$ 68.80
625	1-1/2" DUCT CABLE WITH THREE NO. 4 AWG 2400 VOLT CA	35	FT	\$ 8.00	\$ 280.00
625	CONDUIT, 3", 725.04	100	FT	\$ 30.00	\$ 3,000.00
625	TRENCH, 24" DEEP	100	FT	\$ 9.60	\$ 960.00
625	PULL BOX, 725.08, 18"	1	EACH	\$ 750.00	\$ 750.00
625	GROUND ROD	1	EACH	\$ 290.00	\$ 290.00
<b>CONSTRUCTION MISC.</b>					
623	CONSTRUCTION LAYOUT STAKES	1.000	LUMP	2.50%	\$ 5,364.73
624	MOBILIZATION	1.000	LUMP	\$ 10,000.00	\$ 10,000.00
<b>TOTAL CONSTRUCTION COST, 2024 DOLLARS</b>					\$ 229,953.73
	RIGHT OF WAY	1.000	LUMP	\$ -	\$ -
	ENGINEERING	25.00%	LUMP	25.00%	\$ 57,488.43
	CONSTRUCTION CONTINGENCY	30.00%	LUMP	30.00%	\$ 68,986.12
	CONSTRUCTION COST INFLATION RATE (2024-2027)	17.30%	LUMP	17.30%	\$ 39,782.00
<b>CONSTRUCTION COST 2027 DOLLARS</b>					\$ 396,210.28

ESTIMATES DO NOT INCLUDE COST FOR RIGHT OF WAY ACQUISITIONS OR UTILITY RELOCATIONS

**Table 6 – Cost Estimate for Scioto Street & US 36 & Mercy Health Urbana Hospital Improvements**

Item	Description	Est QTY.	Unit	Unit Cost	Total
<b>ROADWAY</b>					
608	CONCRETE WALK	4000.000	SQ FT	\$ 9.00	\$ 36,000.00
202	PAVEMENT REMOVAL	33.333	SQ YD	\$ 12.00	\$ 400.00
202	WALK REMOVAL	130.000	SQ FT	\$ 5.00	\$ 650.00
	SUBGRADE COMPACTION	444.444	SQ YD	\$ 3.00	\$ 1,333.33
	CURB RAMP	10.000	EACH	\$ 1,500.00	\$ 15,000.00
203	EXCAVATION	95.000	CU YD	\$ 20.00	\$ 1,900.00
203	EMBANKMENT	125.000	CU YD	\$ 20.00	\$ 2,500.00
<b>EROSION CONTROL &amp; BMP ELEMENTS</b>					
659	TOPSOIL	197.531	CU YD	\$ 24.00	\$ 4,740.74
659	SEEDING AND MULCHING	1777.778	SQ YD	\$ 5.00	\$ 8,888.89
832	EROSION CONTROL	1.000	LUMP	\$ 10,000.00	\$ 10,000.00
<b>PAVEMENT</b>					
609	CURB AND GUTTER	100.000	FT	\$ 30.00	\$ 3,000.00
	AGGREGATE BASE	74.074	CU YD	\$ 60.00	\$ 4,444.44
	FULL DEPTH PAVEMENT	33.333	SQ YD	\$ 90.00	\$ 3,000.00
<b>MAINTENANCE OF TRAFFIC</b>					
614	MOT	1.000	LUMP	\$ 20,000.00	\$ 20,000.00
<b>TRAFFIC CONTROL</b>					
630	GROUND MOUNTED SUPPORT, NO. 2 POST	14	FT	\$ 11.00	\$ 154.00
630	SIGN, FLAT SHEET	19	SF	\$ 19.60	\$ 367.50
630	SIGNING, MISC.: SOLAR POWERED RECTANGULAR RAPID F	1	EACH	\$ 20,000.00	\$ 20,000.00
644	STOP LINE	58	FT	\$ 9.50	\$ 551.00
644	CROSSWALK LINE, 24"	280	FT	\$ 10.56	\$ 2,956.80
644	REMOVAL OF PAVEMENT MARKING	82	FT	\$ 5.00	\$ 410.00
<b>TRAFFIC SIGNALS</b>					
625	CONDUIT, 3", 725.04	430	FT	\$ 38.00	\$ 16,340.00
625	CONDUIT, 4", 725.04	100	FT	\$ 55.00	\$ 5,500.00
625	CONDUIT, JACKED OR DRILLED, 725.04	150	FT	\$ 61.00	\$ 9,150.00
625	TRENCH	430	FT	\$ 9.00	\$ 3,870.00
625	TRENCH IN PAVED AREA	100	FT	\$ 38.00	\$ 3,800.00
625	PULL BOX, 725.08, 24"	6	EACH	\$ 1,250.00	\$ 7,500.00
625	GROUND ROD	6	EACH	\$ 245.00	\$ 1,470.00
632	PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), TYPE D2, AS PER PLAN	4	EACH	\$ 675.00	\$ 2,700.00
632	COVERING OF PEDESTRIAN SIGNAL HEAD	4	EACH	\$ 40.00	\$ 160.00
632	PEDESTRIAN PUSHBUTTON, AS PER PLAN	6	EACH	\$ 410.00	\$ 2,460.00
632	PEDESTAL FOUNDATION	6	EACH	\$ 1,250.00	\$ 7,500.00
632	LOOP DETECTOR LEAD-IN CABLE	400	FT	\$ 2.50	\$ 1,000.00
632	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	300	FT	\$ 3.50	\$ 1,050.00
632	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG	530	FT	\$ 6.75	\$ 3,577.50
632	POWER SERVICE, AS PER PLAN	1	EACH	\$ 3,550.00	\$ 3,550.00
632	PEDESTAL, 12', TRANSFORMER BASE	4	EACH	\$ 1,800.00	\$ 7,200.00
632	PEDESTAL, 15', TRANSFORMER BASE	2	EACH	\$ 2,000.00	\$ 4,000.00
<b>CONSTRUCTION MISC.</b>					
623	CONSTRUCTION LAYOUT STAKES	1.000	LUMP	2.50%	\$ 5,428.11
624	MOBILIZATION	1.000	LUMP	\$ 10,000.00	\$ 10,000.00
<b>TOTAL CONSTRUCTION COST, 2024 DOLLARS</b>					<b>\$ 232,552.31</b>
	RIGHT OF WAY	1.000	LUMP	\$ 50,000.00	\$ 50,000.00
	ENGINEERING	25.00%	LUMP	25.00%	\$ 58,138.08
	CONSTRUCTION CONTINGENCY	30.00%	LUMP	30.00%	\$ 69,765.69
	CONSTRUCTION COST INFLATION RATE (2024-2027)	17.30%	LUMP	17.30%	\$ 40,231.55
<b>CONSTRUCTION COST 2027 DOLLARS</b>					<b>\$ 450,687.63</b>
ESTIMATES DO NOT INCLUDE COST FOR UTILITY RELOCATIONS					