

URBANA TRAFFIC SIGNAL ASSET MANAGEMENT PLAN

City of Urbana, Illinois

March 10, 2023





URBANA TRAFFIC SIGNAL ASSET MANAGEMENT PLAN

CITY OF URBANA, ILLINOIS

MARCH 10, 2023

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EXECUTIVE SUMMARY

Lochmueller Group has developed an asset management plan for the signalized intersections and pedestrian warning systems of the City of Urbana, Illinois. This process included the field inventory of 48 signalized intersection and 24 pedestrian warning systems to document the existing equipment, condition of the hardware, and operations of the programmed controllers. Pictures were taken of the intersections and existing equipment and documented in a GIS database. Following the inventory of the existing systems, recommendations for repair and improvements of the system were created to meet or exceed required standards, where applicable, based on the existing conditions.

The recommendations for repair and improvement were split into short-term and long-term recommendation categories. Short-term recommendations were deemed feasible to complete within a 5-year period. Many of these repairs include general maintenance or simple repairs that do not require extensive planning or coordination. The short-term recommendations included the following repairs and improvements and are documented for their applicability at the individual intersection level: clean cabinet, replace air filter, apply fresh permagum around conduit, place ant traps, trim vegetation, adjust pedestrian and vehicle clearance intervals, set up preemption (early coordination), replace missing bolt covers, check loop detectors and update loops that are not working, install retroreflective backplates, tighten loose bolts, replace damaged wire mesh, replace faded pedestrian crossing signs, replace street name signs, replace corroding battery, repaint or replace mast arms or post to prevent corrosion, update for pedestrian countdown feature, replace missing pedestrian signal head, replace pedestrian push buttons, install or upgrade uninterruptable power source, and add network connectivity (early coordination). Furthermore, each of the short-term recommendations were categorized into Low, Medium, and High priority categories for completion based upon risk mitigation. Repairs or improvements which are required to meet a standard or directly affect public safety were categorized into higher priorities for completion. Additionally, smaller, low priority repairs that should be evaluated and addressed on a regular basis were identified for inclusion in a preventative maintenance plan to be completed on an annual basis.

Repairs and improvements expected to take longer than 5 years, or require extensive planning and coordination, were categorized as long-term recommendations. The long-term recommendations included the following improvements and are documented for their applicability at the individual intersection level: add network capabilities, upgrade controller, update video detection, install/upgrade uninterruptable power source, set up preemption, sidewalk and ramp improvements, and install mast arms to align signal heads. The long-term recommendations were further documented with budgetary level cost estimates for implementation including quotes from vendors where available. In addition, a standard equipment list which includes multiple options for signal equipment was developed to aid in the long-term standardization of equipment in the network. A list of life cycle replacement and associated budgetary level costs was also developed to aid in the long-term planning of equipment replacement for the network.

INTRODUCTION

Lochmueller Group has completed the development of a signal asset management plan for the City of Urbana, Illinois. This report details the findings of the field investigation, short-term recommendations, and long-term recommendations for the City's signalized intersections. This report aims to document the presence and condition of existing signal hardware, signal timings, and equipment and create guidance for the repair, maintenance, and improvement of the City's system.

In total, 48 signalized intersection and 24 pedestrian crossings were inventoried by Lochmueller staff. Further information on ownership, detection, and condition is shown in **Appendix A**.

The following signalized intersections were inventoried:

- | | |
|---|--|
| 1. CUNNINGHAM AVE (US 45) & KERR AVE | 25. HIGH CROSS RD (IL 130) & TATMAN DR |
| 2. CUNNINGHAM AVE (US 45) & PERKINS RD | 26. HIGH CROSS RD (IL 130) & UNIVERSITY AVE (US 150) |
| 3. MCCULLOUGH ST & UNIVERSITY AVE (US 45/US 150) | 27. PHILO RD & WINDSOR RD |
| 4. CUNNINGHAM AVE (US 45) & AIRPORT RD | 28. BOULDER DR & WINDSOR RD |
| 5. CUNNINGHAM AVE (US 45) & NAPLETON WAY | 29. PHILO RD & SCOVILL ST |
| 6. CUNNINGHAM AVE (US 45) & KENYON RD | 30. LINCOLN AVE & FLORIDA AVE |
| 7. RACE ST & UNIVERSITY AVE (US 45/US 150) | 31. LINCOLN AVE & NEVADA ST |
| 8. COLER AVE & UNIVERSITY AVE (US 45/US 150) | 32. BROADWAY AVE & MAIN ST |
| 9. LINCOLN AVE & UNIVERSITY AVE (US 45/US 150) | 33. GOODWIN AVE & SPRINGFIELD AVE |
| 10. SMITH RD & UNIVERSITY AVE (US 150) | 34. MYRA RIDGE DR & WINDSOR RD |
| 11. LINCOLN AVE & KILLARNEY ST | 35. LINCOLN AVE & FAIRVIEW AVE |
| 12. BROADWAY AVE & UNIVERSITY AVE (US 45/US 150) | 36. LINCOLN AVE & CHURCH ST |
| 13. GOODWIN AVE & UNIVERSITY AVE (US 45/US 150) | 37. VINE ST & MAIN ST |
| 14. HIGH CROSS RD (IL 130) & WINDSOR RD | 38. LINCOLN AVE & PENNSYLVANIA ST |
| 15. ORCHARD ST & UNIVERSITY AVE (US 45/US 150) | 39. LINCOLN AVE & ILLINOIS ST |
| 16. CUNNINGHAM AVE (US 45) & UNIVERSITY AVE (US 45) | 40. VINE ST & ILLINOIS ST |
| 17. LINCOLN AVE & S (I-74 RAMP) | 41. ORCHARD ST & FLORIDA AVE |
| 18. LINCOLN AVE & N (I-74 RAMP) | 42. LINCOLN AVE & SPRINGFIELD AVE |
| 19. CUNNINGHAM AVE (US 45) & S (I-74 RAMP) | 43. PHILO RD & FIRE STATION NO. 2 |
| 20. CUNNINGHAM AVE (US 45) & N (I-74 RAMP) | 44. PHILO RD & FLORIDA AVE |
| 21. GUARDIAN DR & UNIVERSITY AVE (US 150) | 45. GOODWIN AVE & GREEN ST |
| 22. LINCOLN AVE & GREEN ST | 46. LINCOLN AVE & WINDSOR RD |
| 23. LINCOLN AVE & BRADLEY AVE | 47. LINCOLN AVE & FIRE STATION NO. 3 |
| 24. RACE ST & WINDSOR RD | 48. RACE ST & MAIN ST |

The following pedestrian crossings were also inventoried:

- | | |
|---|---|
| 1. WASHINGTON ST & W OF KINCH ST (EB LANES) | 14. RACE ST (SB LANES - NEAR RIGHT, FAR LEFT) & OREGON ST |
| 2. WASHINGTON ST & E OF KINCH ST (EB LANES) | 15. VINE ST (NB LANES - NEAR RIGHT, FAR LEFT) & OREGON ST |
| 3. WASHINGTON ST & E OF KINCH ST (WB LANES) | 16. VINE ST (SB LANES - NEAR RIGHT, FAR LEFT) & OREGON ST |
| 4. WASHINGTON ST & E OF DODSON DR (WB LANES) | 17. VINE ST (NB LANES) & PENNSYLVANIA AVE |
| 5. FLORIDA AVE & E OF ADAMS ST (EB LANES) | 18. VINE ST (NB LANES) & S OF FAIRLAWN DR |
| 6. FLORIDA AVE & W OF JAMES CHERRY DR (EB LANES) | 19. VINE ST (SB LANES) & N OF FAIRLAWN DR |
| 7. FLORIDA AVE & W OF LINCOLNWOOD DR (WB LANES) | 20. VINE ST (SB LANES) & S OF NEVADA ST |
| 8. FLORIDA AVE & W OF CURTISS DR (WB LANES) | 21. SPRINGFIELD AVE & E OF WRIGHT ST (Owned by UIUC) |
| 9. FLORIDA AVE & GROVE ST (EB LANES) | 22. SPRINGFIELD AVE & MATHEWS AVE (EB LANES - NEAR RIGHT, OVERHEAD LEFT) |
| 10. FLORIDA AVE & E OF ANDERSON ST (EB LANES) | 23. SPRINGFIELD AVE & MATHEWS AVE (WB LANES - NEAR RIGHT, OVERHEAD RIGHT) |
| 11. FLORIDA AVE & W OF WILEY DR (WB LANES) | 24. WINDSOR RD & VINE ST |
| 12. FLORIDA AVE & E OF WILEY DR (WB LANES) | |
| 13. RACE ST (NB LANES - NEAR RIGHT, FAR LEFT) & OREGON ST | |

FIELD INVENTORY FINDINGS

The first step in the development of the asset management plan was to complete a field inventory to document the presence and condition of the signal hardware, signal timings, and equipment at the study intersections.

TRAFFIC SIGNAL INTERSECTIONS

Lochmueller collected the following field inventory information in July of 2022 for all signals:

- Documented general condition of signal cabinet, hardware, signal posts, mast arms, signage, vehicle detection, pedestrian detection, and signal heads.
- Documented existing network communication media if it was present.
- Documented signal equipment which included: type, brand, model, serial #, firmware version, IP address, and age of each cabinet & controller.
- Documented running and cross slopes of pedestrian ramps
- Calculated expected yellow/all red/ped clearance intervals and checked these against the timings placed in the field.
- Took photos at each intersection/location to record existing conditions using ESRI, including:
 - All approaches, focusing on signal equipment
 - All quadrants, focusing on curb ramps and pedestrian facilities
 - Cabinet interior and equipment
 - Any other miscellaneous photos

Following the collection of information at the signalized intersections, summary sheets for each intersection were created which detail the intersection information, condition of the cabinet and hardware, condition of the signal equipment and signs, and recommendations for replacements and upgrades. These individual summary sheets for each intersection are in **Appendix B**.

To condense the recommendations for the signalized intersections into a more digestible format, a summary table of recommendations was created and shown in **Table 1**. The recommendations are categorized into maintenance needs and capital improvements. These improvement recommendations are categorized into short-term and long-term plans of improvement in subsequent sections of the report.

Table 1. Urbana Signal Inventory Summary of Repairs

Intersection #	Intersection Name	Maintenance Repairs															Capital Improvements												Total Repairs Needed
		Clean Cabinet	Replace Air Filter	Apply Fresh Permagum around Conduit	Place Ant Traps	Trim Vegetation	Adjust Clearance Intervals	Set Up Preemption	Replace Missing Bolt Covers	Check Loop Detectors	Retroreflective Backplates	Tighten Loose Bolts	Replace Damaged Wire Mesh	Replace Pedestrian Crossing Signs	Replace Street Name Signs	Replace Corroding Battery	Repaint Mast Arms	Reconstruct Curb Ramp and/or Relocate Push Buttons	Install Ped Countdown Feature	Install Pedestrian Signal head	Realign Crosswalk Landing Area	Replace Detectable Warnings	Replace Pedestrian Push Buttons	Replace Outdated Controller	Update Video Detection	Add Network Capabilities	Install/Upgrade UPS	Install Mast Arms to Align Signal Heads	
1	CUNNINGHAM AVE (US 45) & KERR AVE	x	x	x	x										x		x	x	x										8
2	CUNNINGHAM AVE (US 45) & PERKINS RD	x	x	x	x			x							x		x	x	x	x									10
3	MCCULLOUGH ST & UNIVERSITY AVE (US 45/US 150)	x	x				x	x							x			x											6
4	CUNNINGHAM AVE (US 45) & AIRPORT RD		x				x	x		x					x														5
5	CUNNINGHAM AVE (US 45) & NAPLETON WAY	x	x	x			x								x				x						x				7
6	CUNNINGHAM AVE (US 45) & KENYON RD	x	x	x			x		x						x		x	x	x		x								10
7	RACE ST & UNIVERSITY AVE (US 45/US 150)	x	x				x																						3
8	COLER AVE & UNIVERSITY AVE (US 45/US 150)	x	x				x	x							x			x											6
9	LINCOLN AVE & UNIVERSITY AVE (US 45/US 150)	x	x				x											x	x										5
10	SMITH RD & UNIVERSITY AVE (US 150)	x	x	x			x								x		x	x	x					x					9
11	LINCOLN AVE & KILLARNEY ST	x	x				x				x							x	x								x		7
12	BROADWAY AVE & UNIVERSITY AVE (US 45/US 150)	x	x				x								x			x	x										6
13	GOODWIN AVE & UNIVERSITY AVE (US 45/US 150)	x	x				x	x			x				x			x	x										8
14	HIGH CROSS RD (IL 130) & WINDSOR RD	x	x				x		x						x												x		6
15	ORCHARD ST & UNIVERSITY AVE (US 45/US 150)	x	x				x								x			x											5
16	CUNNINGHAM AVE (US 45) & UNIVERSITY AVE	x	x				x								x			x											5
17	LINCOLN AVE & S (I-74 RAMP)	x	x				x		x						x			x	x										7
18	LINCOLN AVE & N (I-74 RAMP)	x	x				x		x						x			x	x										7
19	CUNNINGHAM AVE (US 45) & S (I-74 RAMP)	x	x	x	x		x	x							x		x	x											9
20	CUNNINGHAM AVE (US 45) & N (I-74 RAMP)			x			x								x			x	x					x					6
21	GUARDIAN DR & UNIVERSITY AVE (US 150)	x	x	x			x	x							x			x											7
22	LINCOLN AVE & GREEN ST	x	x				x				x							x								x			5
23	LINCOLN AVE & BRADLEY AVE	x	x				x		x		x	x	x		x		x	x					x						11
24	RACE ST & WINDSOR RD	x	x				x				x							x						x		x	x		7
25	HIGH CROSS RD (IL 130) & TATMAN DR	x	x				x		x			x						x											6
26	HIGH CROSS RD (IL 130) & UNIVERSITY AVE (US 150)	x	x				x								x			x											5
27	PHILO RD & WINDSOR RD	x	x	x		x	x	x	x		x				x			x											10
28	BOULDER DR & WINDSOR RD	x	x				x			x	x		x	x	x		x	x				x							11
29	PHILO RD & SCOVILL ST	x	x	x			x	x					x	x	x			x				x							10
30	LINCOLN AVE & FLORIDA AVE	x	x				x	x		x	x		x	x	x		x	x	x			x							13
31	LINCOLN AVE & NEVADA ST	x	x	x			x				x				x			x					x			x			8
32	BROADWAY AVE & MAIN ST	x	x				x				x						x	x					x						7
33	GOODWIN AVE & SPRINGFIELD AVE	x	x				x		x		x				x		x	x								x	x		9
34	MYRA RIDGE DR & WINDSOR RD	x	x				x			x	x		x	x			x	x											9

Intersection #	Intersection Name	Maintenance Repairs															Capital Improvements												Total Repairs Needed
		Clean Cabinet	Replace Air Filter	Apply Fresh Permagem around Conduit	Place Ant Traps	Trim Vegetation	Adjust Clearance Intervals	Set Up Preemption	Replace Missing Bolt Covers	Check Loop Detectors	Retroreflective Backplates	Tighten Loose Bolts	Replace Damaged Wire Mesh	Replace Pedestrian Crossing Signs	Replace Street Name Signs	Replace Corroding Battery	Repaint Mast Arms	Reconstruct Curb Ramp and/or Relocate Push Buttons	Install Ped Countdown Feature	Install Pedestrian Signal head	Realign Crosswalk Landing Area	Replace Detectable Warnings	Replace Pedestrian Push Buttons	Replace Outdated Controller	Update Video Detection	Add Network Capabilities	Install/Upgrade UPS	Install Mast Arms to Align Signal Heads	
35	LINCOLN AVE & FAIRVIEW AVE	x	x	x			x	x	x		x		x	x	x			x											11
36	LINCOLN AVE & CHURCH ST	x	x	x			x	x	x	x	x				x			x											10
37	VINE ST & MAIN ST	x	x				x		x	x	x						x	x											8
38	LINCOLN AVE & PENNSYLVANIA ST	x	x				x				x				x			x				x							7
39	LINCOLN AVE & ILLINOIS ST	x	x	x			x				x				x			x				x		x		x	x		10
40	VINE ST & ILLINOIS ST	x	x	x			x				x			x			x	x				x		x		x	x		11
41	ORCHARD ST & FLORIDA AVE	x	x				x				x							x	x					x		x	x	x	9
42	LINCOLN AVE & SPRINGFIELD AVE	x	x				x			x					x			x						x		x	x		8
43	PHILO RD & FIRE STATION NO. 2	x	x								x															x			3
44	PHILO RD & FLORIDA AVE	x	x				x	x			x					x		x	x							x			8
45	GOODWIN AVE & GREEN ST	x	x				x										x	x								x	x		6
46	LINCOLN AVE & WINDSOR RD	x	x	x		x	x				x							x	x		x	x							10
47	LINCOLN AVE & FIRE STATION NO. 3	x	x								x			x										x		x			5
48	RACE ST & MAIN ST	x	x				x			x	x						x	x								x			7
	Total	46	47	16	3	2	44	13	11	8	24	2	6	7	31	1	15	42	16	1	2	7	3	8	1	13	9	1	366

During field investigations, several non-compliant signal elements were noted relative to current ADA requirements. The technical aspects tied to ADA rules have matured over time at both the federal and state levels since the 1970s. In 1973, the US Congress passed the Rehabilitation Act, followed by the American with Disabilities Act (ADA) in 1990. At the state level, Illinois passed the Environmental Barriers Act. Per federal requirements all agencies with greater than 50 employees must have a transition plan completed by January 1992, IDOT completed the initial ADA transition plan in 1992, with updates in 2015 and 2021. The US Access Board issued proposed final draft of the Public Right-of-Way Accessibility Guidelines (PROWAG) in 2011, which has been used by most agencies since that time to determine technical requirements when designing new or updated ADA-compliant facilities.

PEDESTRIAN WARNING SYSTEMS

Lochmueller collected the following field inventory information in October for all pedestrian warning systems:

- Warning system equipment in place
- Serial numbers of equipment as available
- Power source of warning systems
- Condition and functionality of equipment in place
- Photos at each intersection/location to record existing conditions using ESRI

Similar to the signalized intersection inventory, summary sheets for each pedestrian warning system location were created following the field inventory. The pedestrian summary sheets are attached in ***Appendix C.***

The pedestrian warning systems were in working condition. The largest maintenance issue identified by the field inventory and conversations with the electricians was the lack of a central system for programming the flashers remotely. As it currently stands, the warning systems must be programmed in person. The controllers at many of the locations allow only one or very few scheduled programs. As school schedules frequently change for various holidays and summer break, it is a time-consuming task to frequently program the controllers in person. Due to this issue, several of the locations are set to flashing beacons at all times of the year rather than the schedule of the relevant nearby school. Over time, this will decrease the safety benefits of the flashers as drivers will ignore the warning systems if they are on during non-school hours and seasons.

SHORT-TERM RECOMMENDATIONS

TRAFFIC SIGNAL INTERSECTIONS

Following the field inventory, the repairs and upgrades noted in Table 1 were categorized into short and long-term needs for implementation based on several criteria. Improvements which could feasibly be completed within 5 years were categorized as short-term improvements. Many of these repairs include general maintenance or simple repairs. Those which would likely take more than 5 years were categorized as long-term improvements. Many of the capital improvements fall under the long-term category as they require construction effort or significant planning, coordination, and procurement efforts for implementation.

The following improvements were identified as short-term recommendations for the applicable intersections listed in Table 1:

- Clean cabinet
- Replace air filter
- Apply fresh permagum around conduit
- Place ant traps
- Trim vegetation
- Adjust pedestrian and vehicle clearance intervals
- Set up preemption (early coordination)
- Replace missing bolt covers
- Check loop detectors & update/repair loops that are not working
- Install Retroreflective backplates
- Tighten loose bolts
- Replace damaged wire mesh
- Replace faded pedestrian crossing signs
- Replace street name signs
- Replace corroding battery
- Repaint or replace mast arms or posts to prevent corrosion
- Update for pedestrian countdown feature
- Replace missing pedestrian signal head
- Replace pedestrian push buttons
- Install/upgrade UPS
- Add Network Connectivity (early coordination)

Clean Cabinet – Intersections listed with this improvement require a cleaning of the signal control cabinet and equipment. This will keep the equipment in good working order and prevent corrosion of the cabinet internals. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Replace Air Filter – Intersections listed with this improvement require a replacement of the air filter on the signal control cabinet door. This reduces the amount of dirt which enters the cabinet over time and reduces corrosion risk of the internal equipment. It is recommended to replace the air filter on a yearly

basis to ensure proper operation. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Fresh Permagum Around Conduit – Intersections listed with this improvement require reapplication of Permagum around the conduit inside of the signal control cabinet. Permagum prevents rodents from entering into the conduit holes and chewing through wiring. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Place Ant Traps – Intersections listed with this improvement require application of ant traps inside of the signal control cabinet. These intersections were found to have excessive amounts of ants and other insects inside of the control cabinet. Application of ant traps will keep the cabinet clean and prevent corrosion of equipment or paper documents inside the cabinet due to insects. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Trim Vegetation – Intersections listed with this improvement require trimming of the vegetation surrounding the signal control cabinet, or within sidewalk joints near curb ramp landing areas. Excessive vegetation growth can prevent access to the cabinet doors for maintenance and operation of the equipment, and can also damage the paint of the exterior of the cabinet. Excessive vegetation within sidewalk joints near curb ramp landing areas can pose trip hazards for pedestrians. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Adjust Pedestrian and Vehicle Clearance Interval Adjustments – Intersections listed with this improvement require adjustment of one or more of the following intervals: red vehicle clearance, yellow vehicle clearance, and pedestrian walk clearance. Vehicle clearance intervals that are too short are a safety hazard as drivers may unexpectedly run red lights or cross-traffic may receive a green light while vehicles are still passing through the intersection. Pedestrian clearance intervals are very important to the safe passage of pedestrians across intersections. Appropriate pedestrian clearance intervals also ensure at-risk pedestrians such as the elderly, young children, or the physically impaired are given adequate time to safely cross the street in the given interval. As part of this task order, Lochmueller has computed the appropriate clearance intervals for all intersections and included them in the signal inventory timing sheets provided in the appendix. The intervals provided can be implemented by City staff or contracted to a consultant if the City of Urbana desires to outsource the task. Representatives from the City of Urbana indicated this task would likely be outsourced due to the time requirement and expertise needed at complex intersections.

Set Up Preemption (Early Coordination) – Intersections listed with this improvement require replacement of equipment or installation of new equipment to provide preemption capabilities in the signal control cabinet. Properly functioning preemption systems provide safe and efficient travel for emergency vehicles. Advanced preemption systems can also provide priority travel for transit vehicles. As it currently stands, many of the intersections owned by the City of Urbana do not have any preemption equipment or the existing equipment is non-functional. Intersections which do have functional equipment are largely outdated. A complete system overhaul should be implemented in the City to provide all the benefits of a fully functioning preemption system. The implementation of this system will require coordination across many agencies and stakeholders in the region including law

enforcement, emergency services, Champaign-Urbana MTD, the Illinois Department of Transportation, and others. The completion of a complete system overhaul is likely a long-term improvement, but coordination and planning with the regional agencies and stakeholders should occur in the next five years to ensure the improvements are completed in the near future. Further long-term details of a modern preemption system are detailed in the long-term recommendations section of the report.

Replace Missing Bolt Covers – Intersections listed with this improvement require replacement of missing bolt covers on the bases of traffic signal equipment. Bolt covers prevent corrosion of the bolts and increase the life span of the signal equipment. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Check Loop Detectors & Update/Repairs Loops that are not Working – Intersections listed with this improvement currently contain loop detectors which are non-functional and require replacement. A lack of functional detection for an approach greatly decreases the efficiency of an intersection as the phase will default to a max recall to ensure approaching vehicles are served. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Install Retroreflective Backplates – Intersections listed with this improvement will benefit from the addition of retroreflective backplates added to the signal heads. Retroreflective backplates greatly improve the visibility of the signal heads during both daytime and nighttime conditions. The addition of retroreflective backplates provides a crash modification factor of 0.85 according to the Federal Highway Administration's CMF Clearinghouse. This equates to a 15% reduction in vehicular crashes at intersections with the applied countermeasure. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Tighten Loose Bolts – Intersections listed with this improvement require the tightening of loose bolts on various signal equipment. This ensures all equipment is properly attached and in good condition. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Replace Damaged Wire Mesh – Intersections listed with this improvement require replacement of the protective wire mesh located around the base of signal poles. This wire mesh closes the gap between the bottom of the pole base and the ground. The wire mesh prevents rodents from entering the signal pole and chewing through the present wires, and is a preferred method as compared to grout used in past practices. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Replace Faded Pedestrian Crossing Signs – Intersections listed with this improvement require the replacement of faded pedestrian crossing signs. Faded signs decrease the effectiveness of the warning message to drivers to heed pedestrian activity. This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Replace Street Name Signs – Intersections listed with this improvement require the replacement of outdated street name signs. Per sections 2A.13 and 2D.05 of the MUTCD, street names shall be printed with an upper case first letter followed by lower case letters ("Example Street"). Many signs at the intersections in the City of Urbana use all uppercase letters and require replacement to meet standard.

This task can be completed by City staff or included in a preventative maintenance plan with a contractor if the City of Urbana desires to outsource the task.

Replace Corroding Battery – Intersections listed with this improvement require the replacement of corroding batteries in the signal control cabinet. Corroded batteries run the risk of failure when they are required during the interruption of the cabinet’s main power source or prevent the continuous charging of the battery cells. When this happens, the signal heads will go dark rather than flashing red which poses a significant safety hazard to drivers entering the intersection during a utility power outage.

Repaint or Replace Mast Arms or Posts to Prevent Corrosion – Intersections listed with this improvement require reapplication of paint or replacement of signal posts or mast arm to prevent corrosion. Several intersections showed signs of faded or flaking paint which will lead to corrosion over time. During field review, it was noted at several locations that corrosion was present near the connection of the mast arm and the signal vertical attachment plate. This is potentially related to different galvanizing methods between the two mating surfaces. This can be addressed with application of a zinc-based coating or complete replacement of the affected components.

Update for Pedestrian Countdown Feature – Intersections listed with this improvement do not currently contain a pedestrian countdown feature on one or several of the crossings at the intersection. A pedestrian countdown timer displays the programmed “Walk” interval to the pedestrian as they are crossing the street. This provides pedestrians with the amount of time left before the walk phase is over and dissuades pedestrians from entering the intersection late in the flashing “Don’t Walk” interval. According to the MUTCD, all pedestrian crossings where the pedestrian change interval is longer than 7 seconds shall include a pedestrian countdown display, which translates to crossing greater than 24 feet in length.

Replace Missing Pedestrian Signal Head – Intersections listed with this improvement contain a broken or missing pedestrian signal head that requires replacement. The lack of a pedestrian signal head is a potential safety concern as pedestrians looking to cross the intersection do not have an indication for when to walk and may cross at an inappropriate time.

Replace Pedestrian Push Buttons – Intersections listed with this improvement contain non-functional or non-compliant push button assemblies. This includes plunger system pedestrian push buttons which are non-compliant with ADA standards as physically impaired users may not be able to actuate the button and they are prone to freezing during the winter conditions. The lack of functioning or compliant push buttons at an intersection pose a safety concern to users who wish to cross the intersection. Upgraded pedestrian push buttons should include features and functions allowing for visual and hearing-impaired users to identify and actuate the appropriate push button to cross a desired leg of the intersection.

Install/Upgrade UPS – Intersections listed with this improvement either lack a UPS (uninterruptable power supply, also known as a battery backup) or contain a UPS without network functionality. Signal control cabinets without a UPS can pose a safety concern as the signal heads will go dark rather than red flash if the primary power source of the cabinet is interrupted. This eliminates all traffic control at the intersection which can cause driver confusion and risky driving behavior. UPS systems without network connection capabilities provide real time information to a central management system, such as utility power status, battery charge levels, and other UPS alarms. In the short-term, it is recommended to install a UPS at the intersections which lack any UPS unit to minimize the safety risks in the event of a

power interruption. In the long term, it is recommended that older UPS units be replaced over time with units with network functionality to increase the robustness of the signal maintenance system. A list of equipment specifications and current options are provided later in the long-term recommendations of the report to standardize the equipment in the City of Urbana system.

Network Connectivity (Early Coordination) – Intersections listed with this improvement lack network connectivity to the equipment in the signal control cabinet. The addition of network connectivity to a signal control cabinet offers many advantages to a signal network. Network connectivity allows for the addition of a central management system in which the equipment in the signal control cabinets can be monitored and adjusted remotely allowing for efficient use of time for management of timings and quick responses to timing issues. The addition of network connectivity requires significant planning, coordination, and construction efforts for full implementation. While the full implementation of all equipment will be a long-term recommendation detailed in the long-term recommendation section of the report, coordination efforts and planning of the network should be included as tasks to be completed in the short-term window.

PREVENTATIVE MAINTENANCE PLAN

The improvements and repairs that relate to general maintenance are recommended to be included in a preventative maintenance plan for the City to be completed by City staff or outsourced to a contractor if desired. The improvements and repairs that should be in this plan are as follows:

- Clean cabinet
- Replace air filter
- Apply fresh permagum around conduit
- Place Ant traps
- Trim vegetation
- Replace missing bolt covers
- Update/repair loops that are not working
- Install retroreflective backplates
- Tighten loose bolts
- Replace damaged wire mesh
- Replace faded pedestrian crossing signs
- Replace street name signs
- Replace corroded batteries

A comprehensive preventative maintenance check list is included in **Appendix D**. The tasks in the preventative maintenance plan should be evaluated at each signal location on an annual basis and repairs completed where needed to ensure the signalized intersections in the City of Urbana system are in good working condition. This comprehensive list also includes some equipment testing protocols such as testing the MMU and detection functionality. This will establish a record of equipment checks and inform City staff of equipment failures and malfunctions on a regular basis. These more advanced tests may require purchasing additional testing equipment to complete or outsourcing of the task to a specialized contractor like Champaign Signal and Lighting if desired.

PRIORITIZATION

To aid in the prioritization of the short-term recommendations, the improvements were categorized into High, Medium, and Low priority levels based on the risk factors associated with each improvement. Improvements which are associated with general maintenance and equipment upkeep such as cleaning the cabinets, replacing the air filters, and trimming vegetation were listed as low priority as they do not pose immediate operational issues of the intersection. Other improvements which mitigate operational and public safety concerns such as repairing pedestrian crossing equipment and adjusting clearance intervals were listed as higher priority. The improvements along with their prioritization levels and number of locations impacted are listed below in **Table 2**.

Table 2. Urbana Signalized Intersection Short-Term Improvement Prioritization

Improvement	Risk Mitigation	Prioritization	Locations Impacted
Ped and Vehicle Clearance Interval Adjustments	Safety	High	44
Set Up Preemption (Early Coordination)	Safety/Efficiency	High	13
Network Connectivity (Early Coordination)	Efficiency	High	13
Retroreflective Backplates	Safety	High	24
Replace Corroding Battery	Equipment Wear/Safety	High	1
Update for Ped Countdown Feature	Safety	High	16
Replace Missing Pedestrian Signal Head	Safety	High	1
Replace Pedestrian Push Buttons (reuse existing posts)	Safety	High	3
Replace Faded Pedestrian Crossing Signs	Safety	High	7
Check Loop Detectors & Update/Repair loops that are not working	Efficiency	Medium	8
Replace Street Name Signs	Efficiency	Medium	31
Repaint or Replace Mast Arms or Posts to Prevent Corrosion	Equipment Wear/Safety	Medium	15
Clean Cabinet	Equipment Wear	Low	46
Replace Air Filter	Equipment Wear	Low	47
Fresh Permagum around Conduit	Equipment Wear	Low	16
Ant Traps	Equipment Wear	Low	3
Trim Vegetation	Equipment Wear	Low	2
Replace Missing Bolt Covers	Equipment Wear	Low	11
Tighten Loose Bolts	Equipment Wear	Low	2
Replace Damaged Wire Mesh	Equipment Wear	Low	6

PEDESTRIAN WARNING SYSTEMS

Lochmueller collected the following field inventory information in October 2022 for all pedestrian warning systems:

- Warning system equipment in place
- Serial numbers of equipment as available
- Power source of warning systems
- Condition and functionality of equipment in place
- Photos at each intersection/location to record existing conditions using ESRI

The improvements noted in the pedestrian warning system summary sheets in *Appendix C* were related to general maintenance and upkeep and therefor are recommended as short-term improvements. The recommended short-term improvements are shown below in **Table 3**.

Table 3. Urbana Pedestrian Warning Systems Summary of Repairs

Intersection #	Clean Internals	Battery Corrosion Solution Reapplied	Replace Solar Panel	Trim Vegetation	Replace Batteries	Number of Repairs Needed
P1	x					1
P2						0
P3	x					1
P4	x					1
P5	x					1
P6	x					1
P7		x	x			2
P8	x					1
P9	x					1
P10	x					1
P11						0
P12	x			x		2
P13	x			x		2
P14	x			x		2
P15					x	2
P16	x					2
P17	x					1
P18						0
P19						0
P20	x					1
P21						0
P22						0
P23						0
P24						0
<i>Total</i>	<i>14</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>22</i>

LONG-TERM RECOMMENDATIONS

TRAFFIC SIGNAL INTERSECTIONS

The long-term recommendations detail improvements for the existing system which are estimated to take longer than 5 years or require extensive planning for complicated tasks. Many of the capital improvements fall under the long-term category as they require construction effort or significant planning, coordination, and procurement efforts for implementation.

The following improvements were identified as long-term recommendations for the applicable intersections listed in Table 1.

- Add network capabilities
- Upgrade controller
- Update video detection
- Install/upgrade UPS
- Set up preemption
- Sidewalk and ramp improvements
 - a. Reconstruct curb ramp and/or relocate push buttons
 - b. Realign crosswalk landing area
 - c. Replace detectable warnings
- Install mast arms to properly align signal heads overhead

Add Network Capability – A main long-term goal for the City of Urbana is to add network capabilities to the existing signal network. The addition of network connectivity to a signal control cabinet offers many advantages. Network connectivity allows for the addition of a central management system in which the equipment in the signal control cabinets can be monitored and adjusted remotely, allowing for efficient use of personnel resources when troubleshooting issues, as well as easier management of timings. Furthermore, other cabinet hardware with network functionality can be connected to new or existing Ethernet switches, such as UPS controllers, Pan-Tilt-Zoom (PTZ) cameras, detection systems, and IP-addressable power strips. The addition of network connectivity requires significant planning, coordination, and construction efforts for full implementation.

Lochmueller communicated with i3 for coordination on fiber network connections to the City of Urbana signalized intersections. Nearly all intersections in the system have an available fiber network on the location roadways or are very close to an existing fiber ring. The i3 fiber network rings along with the City of Urbana signalized intersections included in this study are shown below in **Figure 1**. IDOT is currently using state-owned fiber cables installed relatively recently along University Ave., Cunningham Ave., and I-74.

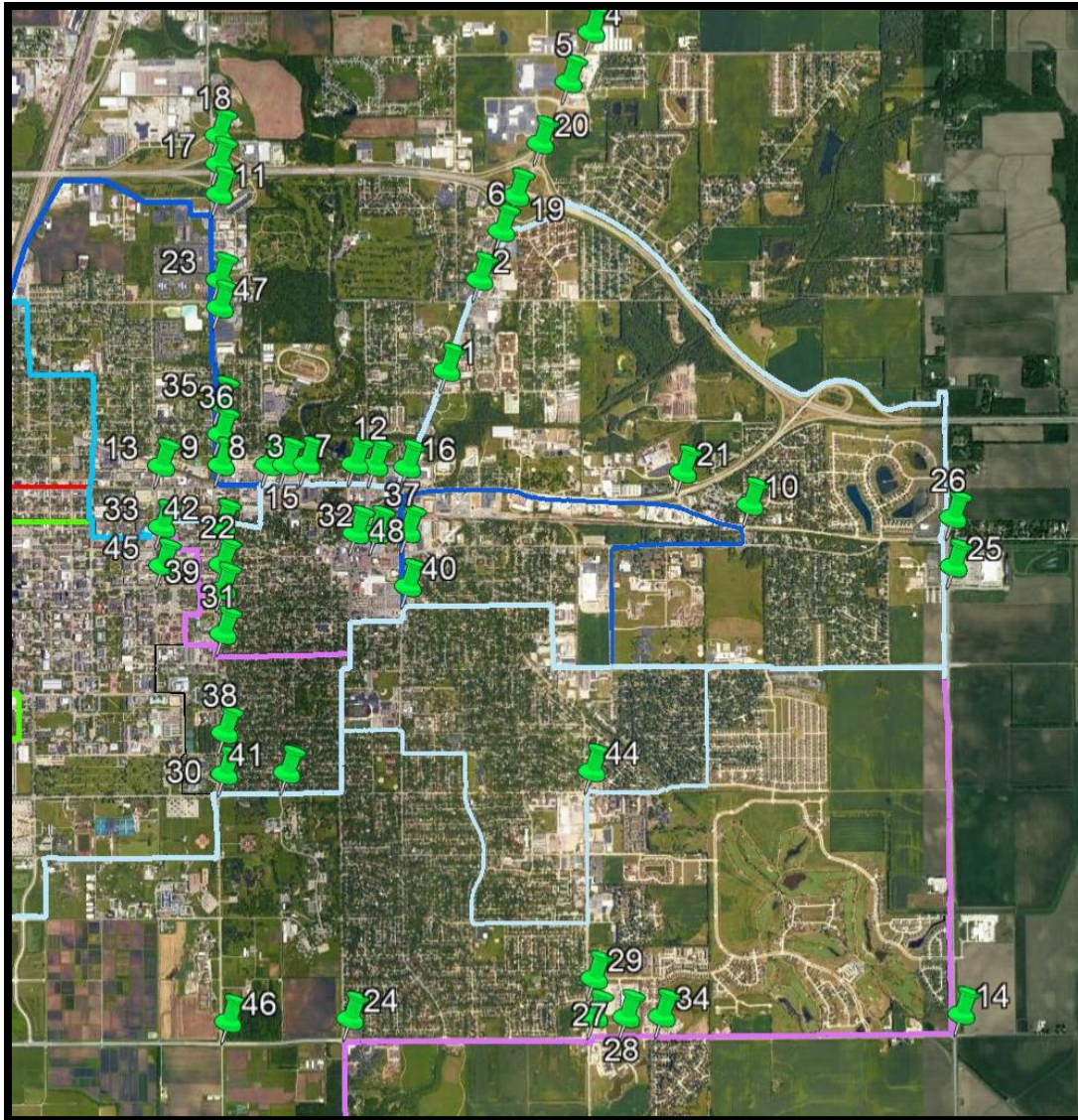


Figure 1. Existing i3 Fiber Network as of March, 2023 and City of Urbana Signalized Intersections

All intersections in the network were documented to determine if the signal cabinet is on or near an existing fiber ring, if the cabinet is currently connected to a fiber network, and what signal equipment upgrades would be necessary for network connection functionality. Furthermore, the cost of connecting each applicable intersection to a network was estimated based on the distance to an existing fiber ring, associated cost of splicing into the network, controller equipment upgrade costs, and cost of a central management software. Budgetary level quotes were procured from several vendors to give an order of magnitude cost estimate for the implementation of a connected signal network. Additionally, i3 was contacted for the estimated fiber splicing cost into their networks. The cost estimated for each line item is displayed below in **Table 4** with the intersection cost estimates located in **Table 5**. The subtotal by intersection owner and grand total costs include a 20% contingency cost factor.

Table 4. Associated Item Costs

Item	Cost
Network Fiber to Ring (per linear ft)	\$40.00
Intersection Internal Fiber (per linear ft)	\$30.00
Intermediate Fiber Pull Box (per 500' between runs)	\$2,000.00
Intersection Fiber Pull Boxes (per intersection)	\$6,500.00
Network Switch and Equipment (per intersection)	\$5,000.00
Controller Cost (per intersection)	\$5,500.00
New i3 Connection Splice Cost (per added intersection)	\$1,500.00

It should be noted Lochmueller investigated the feasibility of using cellular communication for network implementation but determined a fiber optic-based network better suits the needs of the City of Urbana. Cellular connections typically include fewer capital costs compared to new fiber optic connections, but require ongoing service costs, while also retaining several technical issues. Agency network security concerns will generally require network hardware in the field and/or the facility to reduce the potential for malicious access by outside parties. Furthermore, the reliability of cellular connection is significantly lower than that of buried fiber optic cable. Lastly, bandwidth of fiber optic networks is far higher than that of cellular connections, noting cellular bandwidth varies based on the number of users on a given telecommunication hub. If the City chooses to implement PTZ cameras or an Automated Traffic Signal Performance Measures (ATSPM) central management system in the future, a fiber connected network is better suited to handle the communication needs based on the security, reliability, and scalability issues noted above. Therefore, Lochmueller priced the network connectivity upgrade items for a fiber optic network setup. It should be noted that select locations in Table 5 could be linked to a fiber-connected intersection via high-bandwidth wireless radios where feasible to serve as a “last mile” connection if new fiber optic cable costs outweigh the returned value on the investment.

Table 5. Network Connectivity Cost Estimate

Int. No.	Intersection Name	Owner	Located on a Fiber Ring (i3 or IDOT)	Existing Fiber Connection in Cabinet	Requires Controller Upgrade	Distance to Nearest Fiber Ring	Intersection Internal Fiber Length	Total Fiber Cost	Pull Box Cost	Network Switch and Equipment Cost	Controller Cost	i3 Splicing Cost	Intersection Total
1	CUNNINGHAM AVE (US 45) & KERR AVE	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	CUNNINGHAM AVE (US 45) & PERKINS RD	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	MCCULLOUGH ST & UNIVERSITY AVE (US 45/US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	CUNNINGHAM AVE (US 45) & AIRPORT RD	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	CUNNINGHAM AVE (US 45) & NAPLETON WAY	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	CUNNINGHAM AVE (US 45) & KENYON RD	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	RACE ST & UNIVERSITY AVE (US 45/US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	COLER AVE & UNIVERSITY AVE (US 45/US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9	LINCOLN AVE & UNIVERSITY AVE (US 45/US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	SMITH RD & UNIVERSITY AVE (US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	LINCOLN AVE & KILLARNEY ST	URBANA	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	BROADWAY AVE & UNIVERSITY AVE (US 45/US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	GOODWIN AVE & UNIVERSITY AVE (US 45/US 150)	IDOT				1398	200	\$ 61,920.00	\$ 10,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 80,518.00
14	HIGH CROSS RD (IL 130) & WINDSOR RD	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	ORCHARD ST & UNIVERSITY AVE (US 45/US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	CUNNINGHAM AVE (US 45) & UNIVERSITY AVE	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	LINCOLN AVE & S (I-74 RAMP)	IDOT	x			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	LINCOLN AVE & N (I-74 RAMP)	IDOT	x			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	CUNNINGHAM AVE (US 45) & S (I-74 RAMP)	IDOT	x			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	CUNNINGHAM AVE (US 45) & N (I-74 RAMP)	IDOT	x		x	N/A	N/A	N/A	N/A	N/A	\$ 5,500.00	N/A	\$ 5,500.00
21	GUARDIAN DR & UNIVERSITY AVE (US 150)	IDOT				250	50	\$ 11,500.00	\$ 6,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 24,800.00
22	LINCOLN AVE & GREEN ST	URBANA	x			N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 17,650.00
23	LINCOLN AVE & BRADLEY AVE	URBANA	x			N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 17,650.00
24	RACE ST & WINDSOR RD	URBANA	x			N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 17,650.00
25	HIGH CROSS RD (IL 130) & TATMAN DR	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26	HIGH CROSS RD (IL 130) & UNIVERSITY AVE (US 150)	IDOT	x	x		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	PHILO RD & WINDSOR RD	URBANA	x		x	N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 23,150.00
28	BOULDER DR & WINDSOR RD	URBANA	x		x	N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 23,150.00
29	PHILO RD & SCOVILL ST	URBANA			x	820	50	\$ 34,300.00	\$ 8,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 55,670.00
30	LINCOLN AVE & FLORIDA AVE	URBANA	x		x	N/A	N/A	N/A	N/A	N/A	\$ 5,500.00	\$ 1,500.00	\$ 7,000.00
31	LINCOLN AVE & NEVADA ST	URBANA	x		x	N/A	N/A	N/A	N/A	N/A	\$ 5,500.00	\$ 1,500.00	\$ 7,000.00
32	BROADWAY AVE & MAIN ST	URBANA				800	175	\$ 37,250.00	\$ 8,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 53,225.00
33	GOODWIN AVE & SPRINGFIELD AVE	URBANA			x	300	150	\$ 16,500.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 35,450.00
34	MYRA RIDGE DR & WINDSOR RD	URBANA	x		x	N/A	N/A	N/A	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 18,500.00
35	LINCOLN AVE & FAIRVIEW AVE	URBANA	x		x	N/A	N/A	N/A	N/A	\$ 5,000.00	\$ 5,500.00	N/A	\$ 10,500.00
36	LINCOLN AVE & CHURCH ST	URBANA	x		x	N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 23,150.00
37	VINE ST & MAIN ST	URBANA	x			N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 17,650.00

Int. No.	Intersection Name	Owner	Located on a Fiber Ring (i3 or IDOT)	Existing Fiber Connection in Cabinet	Requires Controller Upgrade	Distance to Nearest Fiber Ring	Intersection Internal Fiber Length	Total Fiber Cost	Pull Box Cost	Network Switch and Equipment Cost	Controller Cost	i3 Splicing Cost	Intersection Total
38	LINCOLN AVE & PENNSYLVANIA ST	URBANA				820	50	\$ 34,300.00	\$ 8,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 50,170.00
39	LINCOLN AVE & ILLINOIS ST	URBANA			x	310	50	\$ 13,900.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 32,760.00
40	VINE ST & ILLINOIS ST	URBANA	x		x	N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 23,150.00
41	ORCHARD ST & FLORIDA AVE	UIUC	x		x	N/A	150	\$ 4,500.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 23,150.00
42	LINCOLN AVE & SPRINGFIELD AVE	URBANA			x	350	100	\$ 17,000.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 35,950.00
43	PHILO RD & FIRE STATION NO. 2	URBANA			x	165	50	\$ 8,100.00	\$ 6,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 26,815.00
44	PHILO RD & FLORIDA AVE	URBANA	x			N/A	N/A	N/A	\$ 6,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 13,000.00
45	GOODWIN AVE & GREEN ST	URBANA				890	50	\$ 37,100.00	\$ 8,500.00	\$ 5,000.00	N/A	\$ 1,500.00	\$ 53,040.00
46	LINCOLN AVE & WINDSOR RD	URBANA			x	2650	50	\$ 107,500.00	\$ 16,500.00	\$ 5,000.00	\$ 5,500.00	\$ 1,500.00	\$ 138,700.00
47	LINCOLN AVE & FIRE STATION NO. 3	URBANA	x		x	N/A	N/A	N/A	N/A	N/A	\$ 5,500.00	N/A	\$ 5,500.00
48	RACE ST & MAIN ST	URBANA				350	50	\$ 15,500.00	\$ 6,500.00	\$ 5,000.00	\$ -	N/A	\$ 27,400.00
IDOT Owned Subtotal*													\$ 132,981.00
UIUC Owned Subtotal*													\$ 27,780.00
Urbana Owned Subtotal*													\$ 880,656.00
Grand Total*													\$ 1,041,417.00

*Owner subtotals and grand total include 20% contingency cost factor

To capture the benefits of a connected network, a central management system for the network will need to be purchased and maintained. A central management system allows the user to monitor real time information of the connected intersections as well as upload and download the controller databases remotely. This is a significant advantage to the user as it eliminates the need for in-person visits to diagnose and troubleshoot signal timings and controller issues.

There are several central management system providers who offer software packages for agencies similar to Urbana, with varying levels of complexity and functionality depending on the budget, existing equipment, and staffing ability of the end user. Lochmueller recommends the City utilize a simpler central management system which allows for real time monitoring of signals and upload and download functionality of signal controller databases in a cloud-based format, as opposed to client-server configuration where server hardware would need to be installed and maintained by staff or the software vendor. There are more advanced central system modules available on the market that implement ATSPM, but these complicated systems require overhaul of all detection to high-end intersection and advanced cameras, as well as a high level of staffing requirements to utilize the advanced metrics. Lochmueller reached out to several vendors for budgetary level quotes for the implementation of their central management system software:

1. QFree offers the Kinetic Systems management system which provides the functions recommended in a cloud base format. A budgetary level quote from QFree came in at \$12,500 for a system with 25-49 signals. It should be noted QFree is most compatible with Intelight controllers. Many of the intersections on the Urbana system are Eagle controllers which are made by a different manufacturer. The Kinetic Signals system can work with other manufacturers, but the controllers must have SEPAC 5.0 or the newest NTCIP compliant software.
2. Yunex offers the TACTICS management system which also provides the functions recommended for the City's needs. A budgetary level quote from Yunex came in at approximately \$30,000 for up to 30 intersections. Quote documents from both QFree and Yunex are included in **Appendix E**.

Additionally, previous communication between the City of Urbana and IDOT indicated IDOT is open to a center-to-center fiber communication line between the future City of Urbana system and the existing IDOT system. This would provide the City of Urbana with the ability to remote access and monitor IDOT system signals and PTZ cameras, representing a substantial benefit as many IDOT signals are located on major roadways in Urbana. This connection can be completed through a new fiber link from Urbana Public works into an existing IDOT traffic cabinet or through extra fiber not currently utilized by the Public Works office into ITV3 Node 9 in the Siebel Center.

Upgrade Controller – Intersections which require this upgrade currently contain controllers that are outdated to the point where network capability is nonexistent. These intersections will require the purchase and installation of a new, modern controller. This upgrade ties into the network capabilities task as outdated controllers prevent an intersection from being added to a network due to a lack of ethernet ports and fiber compatibility. Two options for modern functionality controllers are included in the *Standard Equipment Recommendations* section later in the report.

Upgrade Video Detection – The intersection listed with outdated video detection should be upgraded to a modern video detection system or a detection technology with similar functionality. Induction loops, magnetometers, and older video detection systems are less reliable and offer less configurability than newer systems.

Install/Upgrade UPS – Lochmueller found 9 intersections in the network in need of installing an uninterruptable power supply (UPS) or upgrading to a system with network connection capability. It is important to have network capable UPS systems at all intersections prior to, or concurrent with, the implementation of a network connectivity, in order to provide the ability for City staff to monitor the UPS controllers and receive configurable alerts. Two options with the desired network functionality are included in the *Standard Equipment Recommendations* section later in the report.

Set Up Preemption –As it currently stands, many of the intersections owned by the City of Urbana do not have preemption equipment or the existing equipment is non-functional. A complete system overhaul should be implemented in the City to provide all the benefits of a fully functioning preemption system. The implementation of this system will require coordination across many agencies and stakeholders in the region including law enforcement, emergency services, Champaign-Urbana MTD, the Illinois Department of Transportation, and others. The regional coordination effort should aim to establish a set of system requirements to satisfy the needs of all stakeholders and identify funding sources. Lochmueller investigated several options for a preemption system outline in order to provide the City of Urbana with direction to begin the planning process:

1. The first option for a preemption system is based on vehicle-to-intersection communication. This typically comes in the form of infrared (IR) or radio communication. The emergency vehicle transmits an outward signal to the approaching intersection which in turn begins preemption functions at the intersection. The main downside to the vehicle-to-vehicle communication systems is a lack of reliability and foresight into the path of the emergency vehicle. Noting the emergency vehicle is only communicating with the individual intersection(s), a calculated end route is not captured, limiting the travel time and safety benefit of the preemption system.
2. The second option for a preemption system is a cloud-based communication system which utilizes GPS and geo-fencing to determine the location and route of the emergency vehicle. The advantage of this communication system is the foresight of a planned route for the emergency vehicle and the reliability of the cloud-based system which does not have the potential obstruction issues of vehicle-to-intersection communication. Cloud based systems can also outfit emergency vehicles and intersections with vehicle-to-intersection communication equipment as a means of redundancy.
3. An added third option for consideration is an outsourced preemption service rather than an internally owned and maintained system, known as Preemption as a Service (PaaS). Under this option, the preemption service provider installs, owns, and maintains the preemption system for the stakeholder group. This setup removes the need for any stakeholder capital costs in favor of a service fee-based agreement. This option is beneficial to stakeholder groups that would prefer an outside group maintains the system and coordinates with the various agencies involved.

Transit prioritization is an additional function the stakeholder group should consider when creating the list of system requirements. Preemption system providers such as Global Traffic Technologies (GTT) and Applied Information (AI) provide optional transit priority in addition to emergency vehicle preemption. Transit priority works in a similar way to emergency vehicle preemption in select scenarios. For example, the systems can be set to give green time priority to buses along their routes if they are running behind schedule.

An efficiency provided by the GPS-based or PaaS systems is tied to the automated tracking and documentation of emergency vehicle response and transit vehicle performance. These are important metrics for the emergency service and transit agencies to monitor on a continual basis, allowing for identification of issues in need of resolution. For emergency services, regulating agencies require this type of information for oversight purposes.

Another added benefit of an overhauled preemption system is the ability to integrate into a central management system, another long-term priority item for the City of Urbana. Depending on the chosen software and hardware product, the central management system could communicate with a cloud-based preemption source to place preemption calls into the signalized intersection and can integrate preemption system monitoring as well.

Due to the number of equipment and software providers along with the need for coordination of system requirements across multiple agencies, this report does not provide an estimated cost for a preemption system. The needs and area of service of the broader stakeholder group create a wide range of potential prices for a system of this size. Therefore, the cost of the system overhaul should be determined later when further coordination on system requirements and potential funding sources has occurred.

Sidewalk and Ramp Improvements – During the field inventories, each intersection quadrant was evaluated to determine if the curb ramp facility and pedestrian push button locations adhered to best design and construction practices, as outlined in current ADA/PROWAG guidelines and the MUTCD. In general, the following aspects of the curb ramp facilities and pedestrian push buttons were documented:

- If a continuous pedestrian access route (PAR) of no less than 4 ft in width was provided within the limits of the curb ramp facility
- If a minimum 4 ft x 4 ft level landing area (e.g., no slopes exceeding 2%) was provided adjacent to push button
- If a pedestrian sign related to each push button were present, and if so, what their conditions were
- If the push button was located within a maximum 10-inch side-reach from the adjacent level landing area
- If the push button was located within 10 ft of the curb ramp opening
- If the push button was located within 5 ft laterally of the crosswalk it was related to
- If detectable warning panels were present, and if so, what their conditions were
- If any evident vertical discrepancies greater than ¼ inch between sidewalk panels were present within the limits of the curb ramp facility

Based on the notes and measurements from the field inventory, Lochmueller analyzed the need for the following improvements: reconstruct curb ramp and/or relocate push buttons, realign crosswalk landing area, and replace detectable warnings. Lochmueller completed budgetary level estimates for the improvements needed at each intersection and categorized each quadrant based on the following criteria:

- **Cost Level 1: \$28,000**
 - Requires full reconstruction of the curb ramps and adjacent sidewalk panels to ensure full ADA/PROWAG compliance
 - Triggered if the ramp slopes next to the push button exceed 2%
 - Assumes the need to implement modifications to portions of signal related infrastructure within the respective quadrant, resulting from reconstruction of the curb ramp facility
- **Cost Level 2: \$14,000**
 - Requires partial reconstruction of the curb ramps to install new detectable warnings and/or the relocation of a push button post to a more optimal location as a result of the partial reconstruction of the curb ramps
 - Triggered if detectable warning is damaged, not present at all, or no longer level within the curb ramp landing. Also triggered if the existing push button reach exceeds 22", thereby requiring the push button to be relocated, as an extension bracket longer than 12" would be required to ensure 10" side-reach could be achieved.
- **Cost Level 3: \$1,000**
 - Requires the installation of a push button extension or other minor fix.
 - Triggered if the push button side-reach exceeds 10" but no longer than 22"

These budgetary level cost estimates were based upon assumed quantities for critical pay items that would be required to reconstruct typical curb ramp facilities with accompanying traffic/pedestrian signal infrastructure contained within an individual intersection quadrant, as well as unit pricing received from Contractors for the recent City of Urbana sidewalk project bid letting (December 2022). A list of the critical pay items, estimated unit pricing and overall cost breakdown (on a per intersection quadrant basis) is located the **Appendix F**.

It should be noted that, as with any construction project, the unit pricing received from interested Contractors is typically dependent upon anticipated quantities of the respective pay items included in the contract. In other words, higher quantities of a pay item tend to receive lower unit pricing bids from Contractors, and vice versa. Therefore, the more project locations that could be included within an individual contract, the greater the chance that overall costs could be lowered.

In addition, Lochmueller created a prioritization scale to aid in the selection of intersection improvements. A three-level system was created based on the following criteria:

- **Highest Priority**
 - Intersections with missing or damaged detectable warnings; no ped facilities at all; or curb ramp slopes exceeding 7.0%
- **Medium Priority**
 - Intersections with curb ramps slopes greater than 4.0% but not exceeding 7.0%
- **Lowest Priority**
 - Intersections with curb ramps slopes greater than 2.0% but not exceeding 4.0%, or requires only pedestrian push button locations fixes

The need for these improvements, cost level, and priority level is documented by quadrant of each intersection below in **Table 6**. While Table 6 denotes which improvements are needed, the actual measurements and notes for each of the quadrants of all intersections is detailed for reference in **Appendix G**.

Table 6. Pedestrian Ramp Repair Cost Level

Int. No.	Intersection Name	Intersection Quadrant Cost Level				Int. Priority Level
		NW	NE	SW	SE	
1	CUNNINGHAM AVE (US 45) & KERR AVE	OK	1	3	OK	<i>Lowest</i>
2	CUNNINGHAM AVE (US 45) & PERKINS RD	1	1	1	1	<i>Medium</i>
3	MCCULLOUGH ST & UNIVERSITY AVE (US 45/US 150)	OK	OK	3	OK	<i>Lowest</i>
4	CUNNINGHAM AVE (US 45) & AIRPORT RD	N/A	N/A	N/A	N/A	<i>N/A</i>
5	CUNNINGHAM AVE (US 45) & NAPLETON WAY	N/A	N/A	OK	OK	<i>OK</i>
6	CUNNINGHAM AVE (US 45) & KENYON RD	3	OK	1	1	<i>Lowest</i>
7	RACE ST & UNIVERSITY AVE (US 45/US 150)	3	OK	1	OK	<i>Lowest</i>
8	COLER AVE & UNIVERSITY AVE (US 45/US 150)	1	1	3	2	<i>Medium</i>
9	LINCOLN AVE & UNIVERSITY AVE (US 45/US 150)	1	1	1	1	<i>Medium</i>
10	SMITH RD & UNIVERSITY AVE (US 150)	1	1	N/A	N/A	<i>Medium</i>
11	LINCOLN AVE & KILLARNEY ST	1	1	OK	1	<i>Lowest</i>
12	BROADWAY AVE & UNIVERSITY AVE (US 45/US 150)	1	1	1	1	<i>Highest</i>
13	GOODWIN AVE & UNIVERSITY AVE (US 45/US 150)	1	3	1	3	<i>Highest</i>
14	HIGH CROSS RD (IL 130) & WINDSOR RD	N/A	N/A	N/A	N/A	<i>N/A</i>
15	ORCHARD ST & UNIVERSITY AVE (US 45/US 150)	1	1	1	1	<i>Medium</i>
16	CUNNINGHAM AVE (US 45) & UNIVERSITY AVE	1	1	1	1	<i>Medium</i>
17	LINCOLN AVE & S (I-74 RAMP)	1	N/A	1	N/A	<i>Medium</i>
18	LINCOLN AVE & N (I-74 RAMP)	1	N/A	1	N/A	<i>Highest</i>
19	CUNNINGHAM AVE (US 45) & S (I-74 RAMP)	N/A	1	N/A	1	<i>Medium</i>
20	CUNNINGHAM AVE (US 45) & N (I-74 RAMP)	N/A	1	N/A	1	<i>Medium</i>
21	GUARDIAN DR & UNIVERSITY AVE (US 150)	1	1	1	1	<i>Highest</i>

Int. No.	Intersection Name	Intersection Quadrant Cost Level				Int. Priority Level
		NW	NE	SW	SE	
22	LINCOLN AVE & GREEN ST	OK	1	3	1	<i>Lowest</i>
23	LINCOLN AVE & BRADLEY AVE	1	1	1	1	<i>Highest</i>
24	RACE ST & WINDSOR RD	1	1	1	1	<i>Highest</i>
25	HIGH CROSS RD (IL 130) & TATMAN DR	1	1	1	1	<i>Medium</i>
26	HIGH CROSS RD (IL 130) & UNIVERSITY AVE (US 150)	1	1	1	1	<i>Highest</i>
27	PHILO RD & WINDSOR RD	1	1	1	1	<i>Highest</i>
28	BOULDER DR & WINDSOR RD	1	1	1	2	<i>Highest</i>
29	PHILO RD & SCOVILL ST	1	1	1	1	<i>Highest</i>
30	LINCOLN AVE & FLORIDA AVE	1	1	1	1	<i>Highest</i>
31	LINCOLN AVE & NEVADA ST	1	1	1	1	<i>Highest</i>
32	BROADWAY AVE & MAIN ST	1	1	1	1	<i>Highest</i>
33	GOODWIN AVE & SPRINGFIELD AVE	1	1	1	1	<i>Highest</i>
34	MYRA RIDGE DR & WINDSOR RD	1	1	1	1	<i>Medium</i>
35	LINCOLN AVE & FAIRVIEW AVE	OK	1	1	1	<i>Medium</i>
36	LINCOLN AVE & CHURCH ST	1	1	1	1	<i>Highest</i>
37	VINE ST & MAIN ST	1	1	1	1	<i>Highest</i>
38	LINCOLN AVE & PENNSYLVANIA ST	1	1	1	1	<i>Highest</i>
39	LINCOLN AVE & ILLINOIS ST	1	1	3	1	<i>Medium</i>
40	VINE ST & ILLINOIS ST	1	1	1	1	<i>Highest</i>
41	ORCHARD ST & FLORIDA AVE	1	1	OK	1	<i>Highest</i>
42	LINCOLN AVE & SPRINGFIELD AVE	OK	1	1	OK	<i>Medium</i>
43	PHILO RD & FIRE STATION NO. 2	N/A	N/A	N/A	N/A	<i>Medium</i>
44	PHILO RD & FLORIDA AVE	1	1	1	1	<i>Medium</i>
45	GOODWIN AVE & GREEN ST	OK	OK	3	OK	<i>Lowest</i>
46	LINCOLN AVE & WINDSOR RD	1	1	1	N/A	<i>Highest</i>
47	LINCOLN AVE & FIRE STATION NO. 3	N/A	N/A	N/A	N/A	<i>N/A</i>
48	RACE ST & MAIN ST	1	1	1	1	<i>Highest</i>

In total, 132 intersection quadrants require a Level 1 cost of improvement, 2 intersection quadrants require a Level 2 cost of improvement, and 10 intersection quadrants require a Level 3 cost of improvement. If all improvements were completed, the total budgetary level cost would be approximately \$3,734,000.

Install Mast Arms to Properly Align Signal Heads Overhead – The intersection of Orchard Street and Florida Avenue currently does not have mast arms in place to align the 3-section signal heads over the travel lanes. This is illustrated below in **Figure 2**.

Given the relatively smaller footprint of the intersection, and the permissive only signal phasing (i.e., use of 3-section R-Y-G signal heads for all approach movements) that is in place, the current post-mounted signal configuration could be considered a compliant design; however, the visibility of the post-mounted signal heads for a motorist approaching the intersection in a passenger car is more easily obstructed by larger vehicles in front of the passenger car, thereby potentially increasing the risks crashes. It is also worth noting that each existing signal post is located very close to its adjacent curb, and some appear to be closer than 1.5 ft (IDOT's recommended lateral offset distance in urban areas) from edge of post to the face of curb. Signal posts being too close to the road are at an increased risk of being hit or damaged by errant vehicles, and consequently may cause the signal system to shut down or pose an electrocution risk if signal cables become exposed.

In addition to improving visibility of all signal heads at this intersection and ensuring signal posts get moved further away from the faces of curb, another benefit of installing mast arms would be to allow for future protected/permitted phasing (i.e., use of 4-section flashing yellow arrow signal heads or 5-section R-Y-G-YL-L signal heads) for left-turn movements along Florida Avenue. If the City ever desired to implement protected/permitted left-turn phasing at this intersection, mast arms would need to be present, to allow for the minimum number of signal heads that would be required (e.g., one signal head for the left-turn movement + two signal heads for the adjacent through movement) by the MUTCD. Should the City desire to implement City-wide preemption system in the future, having mast arms in place would also allow for optimal overhead placement of preemption related equipment.

If the City decides to install new mast arms at this intersection, it is recommended that all existing signal related equipment be replaced. For the associated signal related work to remove all existing equipment and implement new mast arms at this intersection, a budgetary level estimate of construction cost would be approximately \$175,000. This cost would not include any curb ramp and sidewalk related work. It would behoove the City, though, to also include the implementation of recommended curb ramp and sidewalk facility upgrades at this intersection along with any signal modification work, given that three of the four quadrants at this intersection do not have compliant curb ramp facilities. A budgetary level estimate of construction cost for reconstructing non-compliant curb ramps and sidewalk panels at this intersection would be approximately \$45,000.



Figure 2. Signal Heads at Florida Ave and Orchard St.

OTHER CONSIDERATIONS FOR LONG-TERM IMPROVEMENTS

Several other improvements to the City's network should be considered in the long-term timeline. These are improvements that are not critical to the functionality of the City's network, but rather provide added benefits to the network users and City maintenance of the system.

Bicycle Detection at Intersections – The City has a growing number of bicycle users that would benefit from bicycle detection at signalized intersections. This form of detection allows for the controller to accommodate bicyclists at a signalized intersection in the form of calling vehicle phases for crossing bicyclists without the need for a vehicle to be present to trigger the detection call. This provides both safety and operations efficiency benefits as bicyclists are less inclined to ride through red lights if detection is present.

There are several forms of bicycle detection that the City could consider for implementation:

- Modern detection cameras have the ability to detect both pedestrians and bicycles on top of normal vehicle detection functionality. These cameras are mounted on the existing signal equipment in the same fashion as typical video detection cameras.
- Puck detectors can be configured to detect bicycles in the roadway. Puck detectors are placed directly into the roadway either flush to the surface or buried below the overlay.
- Induction loop detectors can be calibrated to detect bicycles, but they are not as reliable a form of bicycle detection as many modern bicycles are not made from materials detectable by induction loops.

Controller Cabinet Protection – The City has experienced instances of controller cabinets destroyed by vehicle crashes. This results in disrupted operations and increased safety risk due to inattentive drivers

while the signal is non-operational. To better protect key intersections from vehicle crashes, the City can consider several forms of protection for signal controller cabinets:

- Guard rail can be implemented on the roadside next to the cabinet in non-urban areas. Guard rail would reliably protect the cabinet while also minimizing injury risk to high-speed vehicles in non-urban areas.
- Bollards can be implemented in low speed, urban areas. Bollards are a low-cost option which does not require a large amount of space for implementation. Bollards should only be used in low-speed areas as they are a high injury risk in high-speed vehicle crashes due to their non-break away structure.

Prior to implementation of cabinet protection, the City should prioritize their signalized intersections based on how critical the signal is to the operations of the intersection as well as the probability level of a vehicle crash occurring at that intersection. It is very important to note that roadway guidelines, geometry considerations, and ADA compliance to adjacent sidewalk must be taken into account prior to any implementation of controller cabinet protection.

While roadside safety measures can increase signal controller cabinet protection, it is vital that the City maintains a robust inventory of backup equipment for unexpected events like crashes or equipment failure regardless of any protection provided. A robust inventory allows for the quickest turnaround time for operations of the signal after a disruption event. It is typical in the industry to maintain a spare part inventory on the order of 5%-10% for each critical hardware element. Items prone to failure or require long procurement timelines should have a maintained inventory on the higher end of this range. This would include items such as controllers and MMUs. Items which are replaced less frequently or have a high volume of equipment in the field should have a maintained inventory on the lower end of the range. This would include items such as cabinets, detection cards, UPS equipment, network switches, load switches, and pedestrian buttons.

STANDARD EQUIPMENT RECOMMENDATIONS

Lochmueller researched and documented a list of standard equipment to ensure new equipment purchased in the future aligns with the goals of the asset management plan. The goal for this list is to provide the City of Urbana with a standardized list of minimum functionality requirements and specific equipment for reference when the City needs to replace broken equipment or funds become available to upgrade dated equipment. The list of standard equipment is listed below in **Table 7**. It should be noted there are other reputable manufacturers and product lines outside of the two options listed for each equipment type. The City of Urbana can use the listed minimum functionality column as a reference if another manufacturer is desired.

Table 7. Standard Equipment List

Equipment	Minimum Functionality	Option 1	Option 2	Notes
Controller	Network Connectivity, Central Management System Compatibility	Yunex m60	QFree Intelight ATC	Exact model may vary based on cabinet type available
MMU	Network Connectivity, Flashing Yellow Arrow Capabilities	EDI MMU2-16LE(ip) Smart Monitor	Reno MMU2-1600GE	
UPS Converter	Network Connectivity, Alarm Notifications	Alpha FXM 2000	ZincFive UPStealth 2	
UPS Entire Unit	Network Connectivity, Alarm Notifications	Alpha Traffic Mini BBS or Alpha SE48-1616	ZincFive UPStealth 2	Exact models may vary based upon cabinet size and desired run time length while in use
Network Switch	10/100/1000 mb/sec Port Configurability, Managed Switch, Industrial Environmental Standards	RocketLinx ES8510-XT	Moxa EDS-G509 Series	Other brands may be considered based on network hardware at City facilities

Additionally, Lochmueller generated a table of general use life cycles of common signalized intersection equipment replacements. This list can be used as a guide to determine the replacement cycles for aging intersections. The general life cycles are shown below in **Table 8** with budgetary level cost estimates:

Table 8. Signalized Intersection Life Cycle for Replacement List

Equipment	Life Cycle until Replacement	Estimated Cost for Replacement
Signal Structures (poles, mast arms, foundations)	30 Years	\$250,000 per intersection
Signal Heads	5-10 Years (for LED equipment)	\$1,000 per head
Signal Cabinet	15-20 Years	\$20,000
Street Signs (sign and mounting hardware)	10 Years	\$500 per leg

PRIORITIZATION

To aid in the prioritization of the long-term recommendations, the improvements were categorized into High, Medium, and Low priority levels based on the risk factors associated with each improvement. As all the long-term improvements deal with safety and/or efficiency concern mitigation, all improvements were listed with either Medium or High priority. The improvements along with their prioritization levels and number of locations impacted are listed below in **Table 9**.

Table 9. Urbana Signalized Intersection Long-Term Improvement Prioritization

Improvement	Risk Mitigation	Prioritization	Locations Impacted
Add Network Capabilities	Safety/Efficiency	High	13
Set Up Preemption	Safety/Efficiency	High	13
Reconstruct Curb Ramp and/or Relocate Push Buttons	Safety	High	42
Realign Crosswalk Landing Area	Safety	High	2
Replace Detectable Warnings	Safety	High	7
Upgrade Controller	Efficiency	High	17
Install/Upgrade UPS	Safety/Efficiency	High	9
Install Mast Arms to Properly Align 3-Section Signal Heads	Safety	Medium	1
Update Video Detection	Efficiency	Medium	1

PEDESTRIAN WARNING SYSTEMS

The long-term issue identified by the field inventory and conversations with the electricians was a lack of a central system for programming the flashers remotely. As it currently stands, the warning systems must be programmed in person. The controllers at many of the locations allow only one or very few scheduled programs. As school schedules frequently change for various holidays and summer break, it is a time-consuming task to frequently program the controllers in person. Due to this issue, several of the locations are set to flashing at all times of the year rather than the schedule of the relevant nearby school. Over time, this will decrease the safety benefits of the flashers as drivers will ignore the warning systems if they are on during non-school hours and seasons.

To mitigate this issue, the implementation of a central management system for the pedestrian crossing equipment could be implemented. There are several vendors who provide cloud-based management software for pedestrian crossing equipment. These software systems allow the user to remotely schedule when the equipment is actively running and when it is dark removing the need for in-person visits for schedule changes. They also provide real time status of the flashers on network allowing the

end user to monitor and respond to issues quickly. To access a central management system, each location would require the installation of cellular connection equipment, which is feasible given the relatively small amount of data needed to monitor the flasher units. Applied Information (AI) is one such vendor who provides both a cellular connection device and cloud-based central management system for pedestrian crossing equipment systems. Carmanah is another vendor which provides a cellular connection device and monitoring device for pedestrian systems. Carmanah utilizes Applied Information's Glance management software for management and monitoring of the connected locations.

IMPROVEMENT COST BENEFITS

Improvements made to the signalized intersections in this asset management plan will net significant cost benefits over the long term. The addition of network connections, up to date controllers, and a central management system for timing monitoring and adjustments saves both the City and citizens money in a number of ways. The ability to remotely adjust signal timings vastly increases the City's ability to optimize key corridors on a regular basis as well as implement coordinated signal timings to intersections which currently run free. Additionally, a central management system would save the City considerable staff hours by eliminating the need for field visits to adjust signal timings. Key corridors should be optimized on a regular basis, typically on a 3-year cycle, as traffic conditions change with developments and the built environment evolves over time. Intersections which currently run free greatly benefit from the implementation of coordinated timings on a central management system as uncoordinated free signals do not capture the travel time and vehicle delay reductions of coordinated systems.

Based upon similar past signal optimization projects completed by Lochmueller, the City of Urbana could expect to see a reduction in travel time of 30%-50% for currently uncoordinated corridors and 15%-25% reduction for currently coordinated corridors. Reductions in travel time also mean a reduction in average vehicle delay which translates to less idle time, fewer stops, and increased average speed of travel. These benefits directly produce cost savings in the form of emissions reductions, fuel consumption, and travel time benefits. Reductions in travel time and fuel consumption offer cost savings to citizens in the form of money saved on fuel and maintenance costs to vehicles. This also helps the City and adjoining agencies as transit buses can stay on schedule as well as benefit from fuel consumption and maintenance cost savings. Emergency services and law enforcement services in the area are subject to these benefits as well. Emissions reductions translate to monetary benefits in the form of a reduction of costs on healthcare systems and environmental damage due to air pollutants.

While the cost to implement fiber connections, upgraded controllers, and a signal central management system is high at approximately \$880,000 for all Urbana owned signals, the system does not need to be completed at one time to capture these benefits. The network can instead be built out as funds and resources become available. Key corridors and intersections can be prioritized and implemented first with the remaining intersections added to the system at later dates. The City of Urbana can therefore apply the expected reduction in travel time of 30%-50% for currently uncoordinated signals and 15%-25% for currently coordinated signals and the subsequent cost savings to each network expansion project as it is completed.

The United States Department of Transportation’s *Benefit-Cost Guidance for Discretionary Grant Programs* provides dollar value equivalents for time saved and cost of emission reductions. These values reflect the monetary savings associated with reduction in delay, travel time, and emissions in a vehicle network. The reduction cost values can be applied to the calculated reductions in vehicle delay, travel time, and emissions over the course of a project’s lifetime to calculate the dollar value equivalent of the reduction benefits. The dollar equivalent values for time saved are shown below in **Table 10** with the dollar equivalent values for emissions reductions shown in **Table 11**.

Table 10. USDOT Value of Time Dollar Equivalents

Mode of Travel	Dollar Equivalent (USD/hour)
All Purposes	\$17.80
Walking, Cycling, Waiting, Standing, and Transferable Time	\$32.40
Truck Drivers	\$32.00

Table 11. 2023 USDOT Value of Emissions Reductions Dollar Equivalents

Mode of Travel	Dollar Equivalent (USD/Metric Ton)
Nitrogen Oxides (NO _x)	\$16,000
Particulate Matter (PM _{2.5})	\$748,600
Carbon Dioxide (CO ₂)	\$52
Sulfur Dioxide (SO ₂)	\$41,500

Lochmueller calculated an example of emission reduction benefits using Synchro files provided by the Champaign County Regional Planning Commission to provide a scale of the monetary benefits. The intersection of University Avenue and Lincoln Avenue was used as the example location for the calculation. At the intersection, vehicles travelling through emit an estimated 16 tons of carbon dioxide emissions and 3.1 tons of nitrogen oxide emissions per year. If a 20% reduction in travel time is achieved through optimization of the corridor, the emissions for CO and NO_x at this intersection would reduce by 3.2 tons and 0.6 tons respectively per year which equates to approximately \$10,000 a year in emissions reductions savings. When these reductions are further applied to the remainder of a corridor and extrapolated out over the lifetime of the equipment, the monetary benefits quickly accumulate.

CONCLUSIONS

Lochmueller Group has developed an asset management plan for the signalized intersections and pedestrian warning systems of the City of Urbana, Illinois. This process included the field inventory of 48 signalized intersection and 24 pedestrian warning systems to document the existing equipment, condition of the hardware, and operations of the programmed controllers. Pictures were taken of the intersections and existing equipment and documented in a GIS database. Following the inventory of the existing systems, recommendations for repair and improvements of the system were created to meet or exceed required standards, where applicable, based on the existing conditions.

The recommendations for repair and improvement were split into short-term and long-term recommendation categories. Short-term recommendations were deemed feasible to complete within a 5-year period. Many of these repairs include general maintenance or simple repairs that do not require extensive planning or coordination. The short-term recommendations included the following repairs and improvements and are documented for their applicability at the individual intersection level: clean cabinet, replace air filter, apply fresh permagum around conduit, place ant traps, trim vegetation, adjust pedestrian and vehicle clearance intervals, set up preemption (early coordination), replace missing bolt covers, check loop detectors and update loops that are not working, install retroreflective backplates, tighten loose bolts, replace damaged wire mesh, replace faded pedestrian crossing signs, replace street name signs, replace corroding battery, repaint or replace mast arms or post to prevent corrosion, update for pedestrian countdown feature, replace missing pedestrian signal head, replace pedestrian push buttons, install or upgrade uninterruptable power source, and add network connectivity (early coordination).

Furthermore, each of the short-term recommendations were categorized into Low, Medium, and High priority categories for completion based upon risk mitigation. Repairs or improvements which are required to meet a standard or directly affect public safety were categorized into higher priorities for completion. Smaller, low priority repairs that should be evaluated and addressed on a regular basis were identified for inclusion in a preventative maintenance plan to be completed on an annual basis.

Repairs and improvements expected to take longer than 5 years, or require extensive planning and coordination, were categorized as long-term recommendations. The long-term recommendations included the following improvements and are documented for their applicability at the individual intersection level: add network capabilities, upgrade controller, update video detection, install/upgrade uninterruptable power source, set up preemption, sidewalk and ramp improvements, and install mast arms to align signal heads. The long-term recommendations were further documented with budgetary level cost estimates for implementation including quotes from vendors where available.

The implementation of a full preemption system and network connectivity of the signal network were two large scale improvements identified in the management plan. The previous sections of the report identified several options for preemption systems and approaches as well as an outline for the coordination of relevant stakeholders for a preemption system. As the options for preemption are wide ranging and require significant input from several different stakeholders outside of City representatives,

a cost estimate was not provided and should be determined later when sufficient concurrence between stakeholders on a preemption system has occurred.

To spur the start of implementing network connectivity to the City's signals, Lochmueller coordinated with i3 to determine potential fiber routes and connections into existing i3 fiber network rings. Coordination with i3 also included discussion of splicing costs for the addition of signals to an existing fiber network. Based upon estimated costs for fiber connections, network equipment, controller upgrades, and associated construction costs, Lochmueller estimated the cost to implement fiber connectivity to all Urbana owned signals would be approximately \$880,000. When including other IDOT and UIUC owned signals in the network, this cost would be approximately \$1,040,000. As noted in the report, individual intersections or runs of intersections can be upgraded and connected into a fiber network as a series of smaller projects.

Lochmueller procured budgetary level cost estimates from vendors for a central management system for remote control and monitoring of connected signals. The cost estimates for these management systems ranged from \$12,500 to \$30,000 for a network of this size. The cost benefit of network connectivity paired with signal optimization was reviewed to provide a dollar value to the time saved and reduction in emissions with implementation of the projects. Based upon previously completed optimization projects by Lochmueller, the City of Urbana could expect to see a 30%-50% reduction in travel time for currently uncoordinated signals and a 15%-25% reduction for currently coordinated signals. A preliminary analysis shows an estimated \$10,000 in savings per year based on the cost of emissions reductions at a sample intersection (University Avenue and Lincoln Avenue). These cost savings quickly accumulate when applied to the remainder of a corridor and extrapolated out over the lifespan of the equipment. Additional monetary benefits include dollar equivalent savings in time for drivers as well as the time saved for City staff as they would no longer need to conduct a field visit to diagnose and fix some signal issue that arise.

Lochmueller completed cost estimates for the improvement of crosswalks and ramps at the study intersections to comply with ADA standards. Cost estimates for this work were based upon contractor bids for similar improvements in the City of Urbana. The quadrants of all study intersections were assessed, and three cost levels were determined for repairs. In total, the budgetary level estimate to repair and improve all crosswalks and ramps at the study intersections to comply with ADA standards is approximately \$3,750,000.

A standard equipment list which includes multiple options for signal equipment was developed to aid in the long-term standardization of equipment in the network. A list of life cycle replacement and associated budgetary level costs was also developed to aid in the long-term planning of equipment replacement for the network.

This signal asset management plan provides the City of Urbana with an up-to-date inventory of all equipment, including its condition; short-term and long-term recommendations for repairs and improvements; and guidance on the planning and maintenance of their systems. If there are any questions about the contents of this document, please contact Lochmueller Group at 217-673-7636.

APPENDIX

Appendix A: List of Intersections

Appendix B: Signal Inventory Sheets

Appendix C: Pedestrian Warning System Inventory Sheets

Appendix D: Preventative Maintenance Annual Checklist

Appendix E: Central Management System Quotes

Appendix F: Sidewalk Cost Estimates

Appendix G: Detailed Sidewalk Measurements

APPENDIX A

LIST OF INTERSECTIONS

**TRAFFIC SIGNALS
WITHIN THE CITY OF URBANA CORPORATE LIMITS**

Today's Date

2/2/2022

Lucity No.	INTERSECTION				OPERATIONAL DATE	DETECTION TYPE	AGE (YEARS)	ACCESSIBLE PEDESTRIAN SIGNALS ⁽¹⁾	REFERENCE NOTE
	OWNER	MAINTENANCE COSTS	N-S STREET	E-W STREET					
1	IDOT	50% IDOT / 50% URBANA	CUNNINGHAM AVE (US 45)	G KERR AVE		LOOP	UNKNOWN	N	
2	IDOT	50% IDOT / 50% URBANA	CUNNINGHAM AVE (US 45)	F PERKINS RD		LOOP	UNKNOWN	N	
3	IDOT	50% IDOT / 50% URBANA	MCCULLOUGH ST	A UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	Y	(4)
4	IDOT	50% IDOT / 50% URBANA	CUNNINGHAM AVE (US 45)	A AIRPORT RD		THERMAL/VIDEO	UNKNOWN	N	
5	IDOT	50% IDOT / 50% URBANA	CUNNINGHAM AVE (US 45)	B NAPLETON WAY		VIDEO	UNKNOWN	N	
6	IDOT	50% IDOT / 50% URBANA	CUNNINGHAM AVE (US 45)	E KENYON RD	3/1/1990	LOOP	31	N	(4)
7	IDOT	50% IDOT / 50% URBANA	RACE ST	A UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	Y	(4)
8	IDOT	50% IDOT / 50% URBANA	COLER AVE	A UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	Y	(4)
9	IDOT	50% IDOT / 50% URBANA	LINCOLN AVE	H UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	N	(4)
10	IDOT	50% IDOT / 25% URBANA	SMITH RD	A UNIVERSITY AVE (IL 130)		LOOP	UNKNOWN	N	
11	URBANA	URBANA	LINCOLN AVE	C KILLARNEY ST		LOOP	UNKNOWN	N	
12	IDOT	50% IDOT / 50% URBANA	BROADWAY AVE	A UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	N	(4)
13	IDOT	50% IDOT / 50% URBANA	GOODWIN AVE	A UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	N	(4)
14	IDOT	75% IDOT / 25% URBANA	HIGH CROSS RD (IL 130)	C WINDSOR RD		LOOP	UNKNOWN	N	
15	IDOT	CARLE	ORCHARD ST	A UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	Y	(4)
16	IDOT	IDOT	CUNNINGHAM AVE (US 45)	H UNIVERSITY AVE (US 45/IL 150)		VIDEO	UNKNOWN	Y	(4)
17	IDOT	IDOT	LINCOLN AVE	B S (I-74 RAMP)		LOOP	UNKNOWN	N	
18	IDOT	IDOT	LINCOLN AVE	A N (I-74 RAMP)		LOOP	UNKNOWN	N	
19	IDOT	IDOT	CUNNINGHAM AVE (US 45)	D S (I-74 RAMP)		LOOP	UNKNOWN	N	
20	IDOT	IDOT	CUNNINGHAM AVE (US 45)	C N (I-74 RAMP)		LOOP	UNKNOWN	N	
21	IDOT	IDOT	GUARDIAN DR	A UNIVERSITY AVE (IL 150 & 130)		LOOP	UNKNOWN	N	
22	URBANA	URBANA	LINCOLN AVE	J GREEN ST		MICROWAVE	UNKNOWN	Y	
23	URBANA	URBANA	LINCOLN AVE	D BRADLEY AVE		LOOP	UNKNOWN	N	(4)
24	URBANA	URBANA	RACE ST	B WINDSOR RD	12/14/2015	THERMAL	6	Y	
25	IDOT	URBANA	HIGH CROSS RD (IL 130)	B TATMAN DR		LOOP	UNKNOWN	N	
26	IDOT	IDOT	HIGH CROSS RD (IL 130)	A UNIVERSITY AVE (IL 130 & 150)		LOOP	UNKNOWN	N	
27	URBANA	URBANA	PHILO RD	D WINDSOR RD		THERMAL	UNKNOWN	Y	(3)
28	URBANA	URBANA	BOULDER DR	A WINDSOR RD		LOOP	UNKNOWN	N	(3)
29	URBANA	URBANA	PHILO RD	C SCOVILL ST		LOOP	UNKNOWN	N	(3)
30	URBANA	URBANA	LINCOLN AVE	N FLORIDA AVE		LOOP	UNKNOWN	N	
31	URBANA	URBANA	LINCOLN AVE	L NEVADA ST		LOOP	UNKNOWN	Y	
32	URBANA	URBANA	BROADWAY AVE	B MAIN ST		LOOP	UNKNOWN	Y	(2)
33	URBANA	URBANA	GOODWIN AVE	B SPRINGFIELD AVE		LOOP	UNKNOWN	Y	
34	URBANA	URBANA	MYRA RIDGE DR	A WINDSOR RD	11/11/2010	LOOP	11	N	(3)
35	URBANA	URBANA	LINCOLN AVE	F FAIRVIEW AVE		LOOP	UNKNOWN	N	
36	URBANA	URBANA	LINCOLN AVE	G CHURCH ST		LOOP	UNKNOWN	Y	
37	URBANA	URBANA	VINE ST	A MAIN ST		LOOP	UNKNOWN	Y	(2)
38	URBANA	URBANA	LINCOLN AVE	M PENNSYLVANIA ST		LOOP	UNKNOWN	Y	
39	URBANA	URBANA	LINCOLN AVE	K ILLINOIS ST		LOOP	UNKNOWN	Y	
40	URBANA	URBANA	VINE ST	B ILLINOIS ST		LOOP	UNKNOWN	Y	
41	UIUC	URBANA	ORCHARD ST	B FLORIDA AVE		LOOP	UNKNOWN	N	(4)
42	URBANA	URBANA	LINCOLN AVE	I SPRINGFIELD AVE		LOOP	UNKNOWN	Y	
43	URBANA	URBANA	PHILO RD	B FIRE STATION NO. 2	11/1/2007	LOOP	14	N	
44	URBANA	URBANA	PHILO RD	A FLORIDA AVE	9/25/2014	THERMAL	7	Y	
45	URBANA	URBANA	GOODWIN AVE	C GREEN ST	8/15/2014	LOOP	7	Y	
46	URBANA	URBANA	LINCOLN AVE	O WINDSOR RD		LOOP	UNKNOWN	N	
47	URBANA	URBANA	LINCOLN AVE	E FIRE STATION NO. 3	11/1/2007	LOOP	14	N	
48	URBANA	URBANA	RACE ST	B MAIN ST		LOOP	UNKNOWN	Y	(2)
N/A	CHAMPAIGN	CHAMPAIGN	WRIGHT ST	A GREEN ST		LOOP	UNKNOWN	Y	
N/A	IDOT	IDOT / CHAMPAIGN	WRIGHT ST (US 45 & IL 150)	B SPRINGFIELD AVE (US 45 & IL 150)		LOOP	UNKNOWN	Y	
N/A	IDOT	IDOT / CHAMPAIGN	WRIGHT ST (US 45 & IL 150)	A UNIVERSITY AVE (US 45/IL 150)		LOOP	UNKNOWN	N	

(1) According to the 2007 updated MUTCD standards, a signal is considered accessible if it "communicates information about pedestrian timing in a nonvisual format such as audible tones, verbal messages, and/or vibrating surfaces." The Accessible Pedestrian Signal system can also include pedestrian countdown heads and/or ADA accessible push buttons to actuate the crossing signal.

(2) Intersections are linked by "Inticom" radios.

(3) Intersections are linked by fiber optic cable.

(4) Traffic signals identified in 2019 as requiring "upgrade, modernization, or installation within 10 years".

EXHIBIT 2

PEDESTRIAN WARNING SYSTEMS
WITHIN THE CITY OF URBANA CORPORATE LIMITS

2/2/2022

	OWNER	INTERSECTION		ADJACENT SCHOOL OR SITE	OPERATIONAL DATE	PEDESTRIAN WARNING SYSTEM TYPE	AGE
		N-S STREET	E-W STREET				
1	URBANA	W OF KINCH ST	WASHINGTON ST (EB LANES)	WILLIAMS/UEC		BEACON	UNKNOWN
2	URBANA	E OF KINCH ST	WASHINGTON ST (EB LANES)	WILLIAMS/UEC		SPEED	UNKNOWN
3	URBANA	E OF KINCH ST	WASHINGTON ST (WB LANES)	WILLIAMS/UEC		SPEED	UNKNOWN
4	URBANA	E OF DODSON DR	WASHINGTON ST (WB LANES)	WILLIAMS/UEC		BEACON	UNKNOWN
5	URBANA	E OF ADAMS ST	FLORIDA AVE (EB LANES)	PAINE		BEACON	UNKNOWN
6	URBANA	W OF JAMES CHERRY DR	FLORIDA AVE (EB LANES)	PAINE		SPEED	UNKNOWN
7	URBANA	W OF LINCOLNWOOD DR	FLORIDA AVE (WB LANES)	PAINE		SPEED	UNKNOWN
8	URBANA	W OF CURTISS DR	FLORIDA AVE (WB LANES)	PAINE		BEACON	UNKNOWN
9	URBANA	GROVE ST	FLORIDA AVE (EB LANES)	WILEY		BEACON	UNKNOWN
10	URBANA	E OF ANDERSON ST	FLORIDA AVE (EB LANES)	WILEY		SPEED	UNKNOWN
11	URBANA	W OF WILEY DR	FLORIDA AVE (WB LANES)	WILEY		SPEED	UNKNOWN
12	URBANA	E OF WILEY DR	FLORIDA AVE (WB LANES)	WILEY		BEACON	UNKNOWN
13	URBANA	RACE ST (NB LANES - NEAR RIGHT, FAR LEFT)	OREGON ST	LEAL		BEACON	UNKNOWN
14	URBANA	RACE ST (SB LANES - NEAR RIGHT, FAR LEFT)	OREGON ST	LEAL		BEACON	UNKNOWN
15	URBANA	VINE ST (NB LANES - NEAR RIGHT, FAR LEFT)	OREGON ST	LEAL		BEACON	UNKNOWN
16	URBANA	VINE ST (SB LANES - NEAR RIGHT, FAR LEFT)	OREGON ST	LEAL		BEACON	UNKNOWN
17	URBANA	VINE ST (NB LANES)	PENNSYLVANIA AVE	MS		BEACON	UNKNOWN
18	URBANA	VINE ST (NB LANES)	S OF FAIRLAWN DR	MS		SPEED	UNKNOWN
19	URBANA	VINE ST (SB LANES)	N OF FAIRLAWN DR	MS		SPEED	UNKNOWN
20	URBANA	VINE ST (SB LANES)	S OF NEVADA ST	MS		BEACON	UNKNOWN
21	UNIVERSITY OF ILLINOIS	E OF WRIGHT ST	SPRINGFIELD AVE	GRAINGER LIBRARY		RRFB	UNKNOWN
22	URBANA	MATHEWS AVE	SPRINGFIELD AVE (EB LANES - NEAR RIGHT, OVERHEAD LEFT)	UNI HIGH		BEACON	UNKNOWN
23	URBANA	MATHEWS AVE	SPRINGFIELD AVE (WB LANES - NEAR RIGHT, OVERHEAD RIGHT)	UNI HIGH		BEACON	UNKNOWN
24	URBANA	VINE ST	WINDSOR RD	MEADOWBROOK PARK		RRFB	UNKNOWN

Note: There are no pedestrian warning systems at the following public schools: King Elementary School, Yankee Ridge Elementary School, Urbana High School, and Urbana Adult Education or at the following private schools: Canaan Academy and Circle Academy.

Schools

Williams/UEC = Dr. Preston L. Williams Jr. Elementary School (formerly known as Prairie Elementary School from 1965 to 2014) and Urbana Early Childhood Center
Paine = Thomas Paine Elementary School
Wiley = Wiley Elementary School
Leal = Leal Elementary School
MS = Urbana Middle School
Grainger = Grainger Engineering Library
UNI HIGH = University High School

Pedestrian Warning System Type

Beacon = School Zone Flashing Beacons
Speed = School Zone Speed Feedback Units
RRFB = Rectangular Rapid Flashing Beacons

APPENDIX B

SIGNAL INVENTORY SHEETS

Intersection Street:	01 – Cunningham at Kerr Rd																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Intelight X3L	Serial #:	X31803805																																			
IP Address:	10.5.34.109	Firmware Version:	2.5.2 MaxTime																																			
Date Installed:	2020																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection is available and is being used only for the controller. • Single Mode Fiber connection to Perkins to the north & Single Mode to University to the south. Multi-Mode patched at this cabinet from north and south (12SM/12MM Hybrid cables to north and south) • MMU Model No. SSM-12LE, Serial No. 100713229 • No UPS present on the cabinet • The load switch bay has 12 positions • Loop Detection is being used and appears to be working. Newer EDI Rack Model, LMD602T. 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Street signs do not meet MUTCD standards: Cunningham signs are all capital letters • SW quadrant mast arm missing bolt covers • Mast Arm connection plates are showing signs of corrosion • Left turn indications are a 5-section head • Tomar preemption equipment installed, tested to show PMT 1 through PMT 4, all activate in controller • Pedestrian push buttons are piezoelectric • SW corner button for south leg pedestrian crossing has a 12" reach adjacently • NE corner down slope for west leg push button sidewalk slope is 3.7% • No countdown function for pedestrians on south and east legs at intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cleaning the cabinet, a new filter, and placing ant traps is recommended • Applying fresh permagum to the cabinet's conduit is recommended • Updating the ped facilities to have countdown features is recommended • The pedestrian clearance intervals are too short, see table below for recommended values • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • Replace missing bolt covers • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness <table border="1" data-bbox="285 1533 1336 1743"> <thead> <tr> <th>Recommended</th><th>Φ1 SBL</th><th>Φ2 NBT</th><th>Φ4 EBT/LT</th><th>Φ5 NBL</th><th>Φ6 SBT</th><th>Φ8 WBT/LT</th></tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td><td>3.2</td><td>3.6</td><td>3.2</td><td>3.2</td><td>3.6</td><td>3.2</td></tr> <tr> <td>Vehicle Red Interval</td><td>2.0</td><td>1.9</td><td>2.5</td><td>2.0</td><td>1.9</td><td>2.5</td></tr> <tr> <td>Walk</td><td></td><td>7</td><td>7</td><td></td><td>7</td><td>7</td></tr> <tr> <td>Pedestrian Clear</td><td></td><td>19</td><td>24</td><td></td><td>19</td><td>25</td></tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>				Recommended	Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT	Vehicle Yellow Interval	3.2	3.6	3.2	3.2	3.6	3.2	Vehicle Red Interval	2.0	1.9	2.5	2.0	1.9	2.5	Walk		7	7		7	7	Pedestrian Clear		19	24		19	25
Recommended	Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT																																
Vehicle Yellow Interval	3.2	3.6	3.2	3.2	3.6	3.2																																
Vehicle Red Interval	2.0	1.9	2.5	2.0	1.9	2.5																																
Walk		7	7		7	7																																
Pedestrian Clear		19	24		19	25																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

01 - Cunningham at Kerr

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10	7	14		10
Passage (1/10 sec)	30	55		30	30	55		30
Max 1	12	35		21	12	35		21
Max 2								
Max 3	8	20		14	8	20		14
Yellow Clearance (1/10 sec)	32	36		32	32	36		32
Red Clearance (1/10 sec)	20	20		25	20	20		25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4		4		4		4
Pedestrian Clear		14		17		14		20
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
2	ALL	M-F

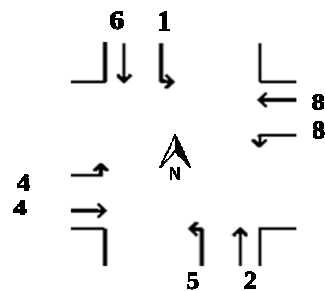
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	700	4	1			1		
2			2	830	20	2			2		
3			3	1530	5	3			3		
4			4	1730	20	4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
4	110	13		1	
5	110	5		1	



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3								
Pattern 4	13	75		22	13	75		22
Pattern 5	13	72		25	13	72		25

Intersection Street:	02 – Cunningham at Perkins Rd																																					
Inspection Year:	2022	Inspection Date:	6/30/22																																			
Controller Information:																																						
Model:	Intelight X3L	Serial #:	X31803805																																			
IP Address:	10.5.34.110	Firmware Version:	2.5.2 MaxTime																																			
Date Installed:	2020																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection is available and is being used only for the controller • Single Mode Fiber connections to Kenyon to the north & Single Mode to Kerr to the south. Multi-Mode patched through at this cabinet from north and south (12SM/12MM Hybrid cables to north and south) • MMU model No. EDI SSM-12LE, serial No. 120702892 • No UPS present on the cabinet • The load switch bay has 12 positions • Loop Detection is present and appears to be working. Loop cards are generally old models and loose on the shelf 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Street signs do not meet MUTCD standards: Cunningham signs are all capital letters, Perkins/Country Club legend is too small • Mast Arm plates showing signs of corrosion. • Yellow painted posts in NE/SE/SW corners showing rust • Left turn indications are a 5-section head • Older 3M Opticom M-262 rack unit preemption equipment is installed, tested to show PMT 1 activates in controller, no other PMT plans activate upon manual testing • Pedestrian push buttons are piezoelectric, approximated, not measured, to not be adjacent to a flat landing area • NE pedestrian push button is not compliant of having a flat landing area • SW ped heads missing (apparent knockdown, there are cones and barricades in place) • No countdown function present for pedestrians at intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cleaning the cabinet, a new filter, and placing ant traps is recommended • Applying fresh permagum to the cabinet's conduit is recommended • Updating the ped facilities to have countdown features is recommended • Replace the missing pedestrian signal head in the SW quadrant. • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness • Update the preemption PMT 2-4 to be turned on and activated. <table border="1" data-bbox="224 1600 1367 1810"> <thead> <tr> <th>Recommended</th><th>Φ1 SBL</th><th>Φ2 NBT</th><th>Φ4 EBT, LT</th><th>Φ5 NBL</th><th>Φ6 SBT</th><th>Φ8 WBT, LT</th></tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td><td>3.2</td><td>3.9</td><td>3.2</td><td>3.2</td><td>4.7</td><td>3.6</td></tr> <tr> <td>Vehicle Red Interval</td><td>2.0</td><td>2.2</td><td>2.5</td><td>2.0</td><td>2.0</td><td>2.5</td></tr> <tr> <td>Walk</td><td></td><td>8</td><td>8</td><td></td><td>8</td><td>8</td></tr> <tr> <td>Pedestrian Clear</td><td></td><td>24</td><td>32</td><td></td><td>26</td><td>28</td></tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>				Recommended	Φ1 SBL	Φ2 NBT	Φ4 EBT, LT	Φ5 NBL	Φ6 SBT	Φ8 WBT, LT	Vehicle Yellow Interval	3.2	3.9	3.2	3.2	4.7	3.6	Vehicle Red Interval	2.0	2.2	2.5	2.0	2.0	2.5	Walk		8	8		8	8	Pedestrian Clear		24	32		26	28
Recommended	Φ1 SBL	Φ2 NBT	Φ4 EBT, LT	Φ5 NBL	Φ6 SBT	Φ8 WBT, LT																																
Vehicle Yellow Interval	3.2	3.9	3.2	3.2	4.7	3.6																																
Vehicle Red Interval	2.0	2.2	2.5	2.0	2.0	2.5																																
Walk		8	8		8	8																																
Pedestrian Clear		24	32		26	28																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

02 - Cunningham at Perkins

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10	7	14		10
Passage (1/10 sec)	30	35		30	30	35		30
Max 1	12	35		20	12	35		20
Max 2								
Max 3	8	20		14	8	20		14
Yellow Clearance (1/10 sec)	32	39		32	32	39		32
Red Clearance (1/10 sec)	20	25		25	20	25		25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk	0	4		4	0	4		4
Pedestrian Clear	0	19		29	0	22		24
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Saturday

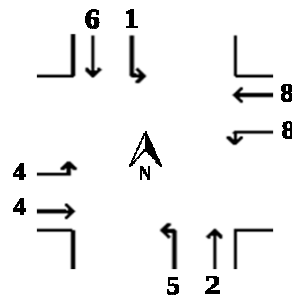
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1030	3	1	630	4	1	900	3	1		
2	1900	20 (Free)	2	900	3	2	2000	20 (Free)	2		
3			3	1500	5	3			3		
4			4	1800	4	4			4		
5			5	1900	20 (Free)	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
3	80	54		1	
4	110	71		1	
5	110	55		1	



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	13	45		22	13	45		22
Pattern 4	13	67		30	13	67		30
Pattern 5	15	65		30	15	65		30

Intersection Street:	03 – McCullough at University Ave																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Intelight X3L	Serial #:	X32006046																																			
IP Address:	10.5.34.101	Firmware Version:	2.5.2 MaxTime																																			
Date Installed:	2020																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection is available and is being used for the controller, MMU, video detection, and UPS • Single Mode Fiber connection to Race to the east & Single Mode to Orchard to the west. No Multi Mode terminated/present (12SM cable to east and 12SM west) • MMU model EDI MMU2-16LEip, serial No. E1962114 • There is a UPS present on the cabinet • The load switch bay has 16 positions • Video detection is being used and appears to be working. New cameras are installed and in use 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Street signs do not meet MUTCD standards. University Avenue font appears too small. • Left turn indications are a 3-section head or 4-section head (FYA) • Opticom 4664 phase selection preemption is present, but not plugged into the rack • Pedestrian Push buttons are piezoelectric with APS voice messages • Southwest quad pedestrian button to the west ped cross is slightly greater than 10" adjacently. • Southeast quad pedestrian button to the south ped cross is slightly greater than 10" adjacently. • There are countdown functions available for pedestrians at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended. • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Set up preemption in the cabinet to be turned on and active. • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="297 1360 1297 1572"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ4 SBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.9</td> <td>3.6</td> <td>3.2</td> <td>3.2</td> <td>3.2</td> <td>3.2</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.2</td> <td>2.3</td> <td>2.0</td> <td>2.4</td> <td>2.2</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td>7</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>19</td> <td>18</td> <td></td> <td>19</td> <td>17</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 WBL	Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 NBT	Vehicle Yellow Interval	3.9	3.6	3.2	3.2	3.2	3.2	Vehicle Red Interval	2.0	2.2	2.3	2.0	2.4	2.2	Walk		7	7		7	7	Pedestrian Clear		19	18		19	17
	Φ1 WBL	Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 NBT																																
Vehicle Yellow Interval	3.9	3.6	3.2	3.2	3.2	3.2																																
Vehicle Red Interval	2.0	2.2	2.3	2.0	2.4	2.2																																
Walk		7	7		7	7																																
Pedestrian Clear		19	18		19	17																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

03 - McCullough at University

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10	7	14		10
Passage (1/10 sec)	30	15		30	30	15		35
Max 1	12	36		20	12	36		20
Max 2								
Max 3	10	20		14	10	20		14
Yellow Clearance (1/10 sec)	32	36		32	32	36		32
Red Clearance (1/10 sec)	20	21		23	20	21		23
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk	0	4		4	0	4		4
Pedestrian Clear	0	17		18	0	19		17
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry				x				x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Saturday

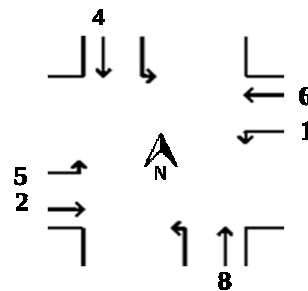
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1000	3	1	630	4	1	900	3	1		
2	1900	20	2	900	3	2	2100	20	2		
3			3	1500	5	3			3		
4			4	1800	4	4			4		
5			5	2100	20	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
3	100	46		1	
4	110	45		1	
5	110	60		1	



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	14	61		25	14	61		25
Pattern 4	14	71		25	14	71		25
Pattern 5	14	72		24	14	72		24

Intersection Street:	04 – Cunningham at Airport																							
Inspection Year:	2022	Inspection Date:	6/30/22																					
Controller Information:																								
Model:	Eagle M50 8130-0300-035	Serial #:	156924																					
IP Address:	NA	Firmware Version:	3.34g																					
Date Installed:	2010																							
Condition of Cabinet and Hardware:																								
<ul style="list-style-type: none"> Network connection is available and being used for the controller, MMU, detection, and UPS. Ethernet port is in use MMU serial No. 170601238, SSM-12LEip Cabinet has backup batteries, gel cell, and are in good condition The load switch bay has 12 positions Video and Loop detection are being used and appear to be working. Mainline utilizes the loop detection, which are sitting on the shelf, unsecured. Side street uses two different video detections. EB uses the Iteris Vantage One and WB uses the Thermal Autoscope Rackvision Terra. 																								
Condition of Signal Equipment and Signs:																								
<ul style="list-style-type: none"> Street signs do not meet MUTCD standards, legend height appears short Left turn indications are a 5-section head Tomar preemption rack unit is installed and appears to be working. Phase selector is actively monitoring, LS 9 in place for confirmation beacons, no programming appears to be in controller No pedestrian facilities present at the intersection 																								
Comments and Recommendations:																								
<ul style="list-style-type: none"> Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Resident noted SB not detected at times, loop is drawn to stop bar, could be extended into intersection but seems appropriate Additional through heads would be needed for SB/NB if FYA implemented for mainline A new filter is recommended The vehicle clearance intervals could be adjusted, see table below for recommended values. Program preemption into the controller Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) <table border="1"> <thead> <tr> <th></th> <th>Φ1 SBL</th> <th>Φ2 NBT</th> <th>Φ4 EBT/LT</th> <th>Φ5 NBL</th> <th>Φ6 SBT</th> <th>Φ8 WBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>4.7</td> <td>3.9</td> <td>3.2</td> <td>4.7</td> <td>3.9</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>1.7</td> <td>2.5</td> <td>2.0</td> <td>1.5</td> <td>2.5</td> </tr> </tbody> </table> <p>See existing timings on next page.</p>					Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT	Vehicle Yellow Interval	3.2	4.7	3.9	3.2	4.7	3.9	Vehicle Red Interval	2.0	1.7	2.5	2.0	1.5	2.5
	Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT																		
Vehicle Yellow Interval	3.2	4.7	3.9	3.2	4.7	3.9																		
Vehicle Red Interval	2.0	1.7	2.5	2.0	1.5	2.5																		
Reviewed By:	K. Swinford	Date:	10/14/2022																					
Approved By:	K. Evans	Date:	10/14/2022																					

SIGNAL TIMING INFORMATION

Intersection:

04 - Cunningham at Airport

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10	7	14		10
Passage (1/10 sec)	25	50		35	25	50		30
Max 1	12	35		20	12	35		20
Max 2								
Yellow Clearance (1/10 sec)	36	43		32	36	43		32
Red Clearance (1/10 sec)	20	17		25	20	17		25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk								
Pedestrian Clear								
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	MON-FRI
2	ALL	SAT - SUN

Note:

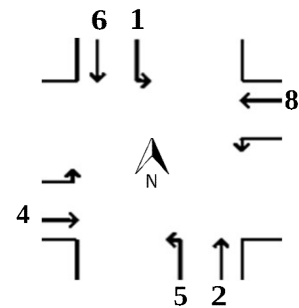
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	700	211	1	0 *004		1			1		
2	900	*004	2			2			2		
3	1500	311	3			3			3		
4	1800	*004	4			4			4		
5	1900	*004	5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
211	110	20		
311	110	17		

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 2/1/1	13	67*		30	13	67*		30
Pattern 3/1/1	14	66*		30	14	66*		30

Intersection Street:	05 – Cunningham at Napleton/O’Brien							
Inspection Year:	2022	Inspection Date:	6/30/22					
Controller Information:								
Model:	M50-8130-0300-05	Serial #:	140548					
IP Address:	10.5.34.113.24	Firmware Version:	3.34h					
Date Installed:	2014							
Condition of Cabinet and Hardware:								
<ul style="list-style-type: none"> • Network connection is available and being used for the controller and detection • Multi-Mode Fiber connection to airport and WB 74 ramps (12 MM cable each way) • MMU is available in the cabinet. EDI SSM-12LE • No UPS present on the cabinet • The load switch bay has 16 positions • Iteris Vantage PS 2420 video detection is installed and appears to be working • Phase 3 load switch is missing 								
Condition of Signal Equipment and Signs:								
<ul style="list-style-type: none"> • Street name signs do not meet MUTCD standards, Cunningham Ave is all capital letters • Mast arm connection plates are showing signs of corrosion • Left turn indications are a 5-section head • Tomar preemption equipment is installed, tested to show PMT 1 & 2 both operate • Pedestrian push buttons are piezoelectric with APS units only for south leg crossing • No countdown function for pedestrians on the only pedestrian facility, the south leg. 								
Comments and Recommendations:								
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Applying fresh permagum to the cabinet’s conduit. • Video detection, working, Iteris Vantage PS 2420, is an older model, could be replaced with newer version • Updating the ped facilities to have countdown features is recommended • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Phase 3 load switch is missing but listed with timings in coord plans. There is an extra load switch in the cabinet, the phase could potentially be getting used on OL E. 								
	Φ1 SBL	Φ2 NBT	Φ3 WBL	Φ4 EBT	Φ5 NBL	Φ6 SBT	Φ7 EBL	Φ8 WBT
Vehicle Yellow Interval	3.2	4.3	3.2	3.2	3.2	4.7	3.2	3.2
Vehicle Red Interval	2.0	2.0	2.5	3.2	2.5	1.9	2.0	2.5
Walk				10				
Pedestrian Clear				35				
See existing timings on next page.								
Reviewed By:	K. Swinford			Date:	10/14/2022			
Approved By:	K. Evans			Date:	10/14/2022			

SIGNAL TIMING INFORMATION

Intersection:

05 - Cunningham at Napleton_Obrien

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14	7	10	7	14	7	10
Passage (1/10 sec)	25	50	25	25	25	50	25	25
Max 1	12	40	12	20	16	40	12	20
Max 2								
Yellow Clearance (1/10 sec)	36	43	32	32	36	43	32	32
Red Clearance (1/10 sec)	20	17	20	25	20	17	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk				4				
Pedestrian Clear				31				
Sec. Per Actuation								
Lock Detection								
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	MON-FRI
2	ALL	SUN & SAT

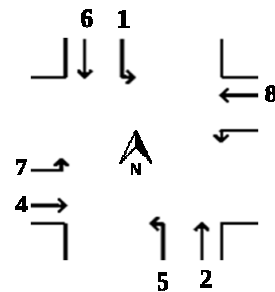
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	700	211	1	0 *004		1			1		
2	900	*004	2			2			2		
3	1500	311	3			3			3		
4	1800	*004	4			4			4		
5	1900	*004	5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
211	110	18			
311	110	28			



Split Timings

	1	2	3	4	5	6	7	8
Pattern 2/1/1	13	67*	14	16	20	60*	14	16
Pattern 3/1/1	13	66*	13	18	20	59*	13	18
Pattern 4								

NOTE: PHASE 3 LOAD SWITCH MISSING IN CABINET
OLA NBR, OLB EBR, OLC SBR, OLD WBR

Intersection Street:	06 – Cunningham at Kenyon Rd																																
Inspection Year:	2022	Inspection Date:	6/30/22																														
Controller Information:																																	
Model:	Intelight X3L	Serial #:	X31702860																														
IP Address:	10.5.34.111	Firmware Version:	2.5.2 MaxTime																														
Date Installed:	2020																																
Condition of Cabinet and Hardware:																																	
<ul style="list-style-type: none"> Serial/Ethernet Converter (MM signals from north) IP: 10.5.34.103 Single Mode Fiber connection to EB 74 ramps and Single Mode to south. Multi Mode fiber from north connects to Multi Mode star Modem and Control serial/ethernet converter to plug into RocketLinx switch (12SM/12MM Hybrid cables to north and south) MMU model EDI NSM-12, Serial No: 9113-537 No UPS present on the cabinet The load switch bay has 12 positions Loop detection is being used and appears to be working. Loop cards are generally new models with some older models mixed in (all loose on shelf) 																																	
Condition of Signal Equipment and Signs:																																	
<ul style="list-style-type: none"> There are no street name signs present at the intersection SW mast arm missing 3 out of the 4 bolt covers Yellow painted posts in the NE/SE/SW quads are showing rust. Mast Arm connection plates are showing signs of corrosion. Left turn indications are a 5-section head Tomar rack unit Preemption equipment is installed and tested to show PMT 1 activates in controller (no other PMT Plans activate upon manual testing) Pedestrian push buttons are piezoelectric and appear to be working NW quadrant pedestrian push button to west ped crossing is not within 10" adjacently N and W pedestrian legs have countdown, the East leg does not have countdown function. Landing area in North pedestrian leg from the W and E is not directly aligned with each other. Push button from SE quadrant to E pedestrian leg is piezoelectric, others are plunger 																																	
Comments and Recommendations:																																	
<ul style="list-style-type: none"> Cleaning the cabinet, a new filter and applying fresh permagum to the cabinet's conduit is recommended Updating the east leg ped facilities to have countdown features is recommended Realign the north pedestrian legs landing areas to accommodate for ADA compliance Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance Add street name signs to be compliant with MUTCD Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Replace the missing bolt covers The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="219 1617 1274 1827"> <thead> <tr> <th></th> <th>Φ1 SBL</th> <th>Φ2 NBT</th> <th>Φ5 NBL</th> <th>Φ6 SBT</th> <th>Φ8 WBT, LT, EBT, LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>3.8</td> <td>3.2</td> <td>4.7</td> <td>3.2</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.1</td> <td>2.0</td> <td>1.4</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>8</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>26</td> <td></td> <td>38</td> <td>26</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 SBL	Φ2 NBT	Φ5 NBL	Φ6 SBT	Φ8 WBT, LT, EBT, LT	Vehicle Yellow Interval	3.2	3.8	3.2	4.7	3.2	Vehicle Red Interval	2.0	2.1	2.0	1.4	2.5	Walk		8		7	7	Pedestrian Clear		26		38	26
	Φ1 SBL	Φ2 NBT	Φ5 NBL	Φ6 SBT	Φ8 WBT, LT, EBT, LT																												
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Vehicle Red Interval	2.0	2.1	2.0	1.4	2.5																												
Walk		8		7	7																												
Pedestrian Clear		26		38	26																												
Reviewed By:	K. Swinford	Date:	10/14/2022																														
Approved By:	K. Evans	Date:	10/14/2022																														

SIGNAL TIMING INFORMATION

Intersection:

06 - Cunningham at Kenyon

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10	7	14		10
Passage (1/10 sec)	30	35		30	30	35		30
Max 1	12	35		20	12	35		20
Max 2								
Max 3	8	20		14	8	20		14
Yellow Clearance (1/10 sec)	32	39		32	32	39		32
Red Clearance (1/10 sec)	20	20		25	20	20		25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4				4		4
Pedestrian Clear		23				30		20
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Saturday

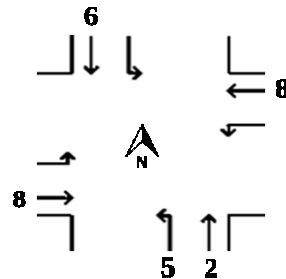
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1030	3	1	630	4	1	900	3	1		
2	1900	20 (Free)	2	900	3	2	2000	20 (Free)	2		
3			3	1500	5	3			3		
4			4	1800	4	4			4		
5			5	1900	20 (Free)	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
3	80	47		1	
4	110	75		1	
5	110	48		1	



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	13	42		25	13	42		25
Pattern 4	13	72		25	13	72		25
Pattern 5	13	69		28	13	69		28

NOTE: PHASE 4 HAS BEEN HARDWIRED TO RUN AS PHASE 8, NO PHASE 4 LOAD SWITCH OR PED LOAD SWITCH ANYMORE

Intersection Street:	07 – Race at University Ave																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Intelight X3L	Serial #:	X32006059																																			
IP Address:	10.5.34.106	Firmware Version:	2.5.2 MaxTime																																			
Date Installed:	2020																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection is available, being used on Controller, MMU, detection, UPS • UPS IP: 10.5.35.106 • Single Mode Fiber Connection to Broadway to the east & Single Mode fiber connected to McCollough to the west. No Multi Mode terminated/present (12SM cable to east and 12SM west) • MMU model EDI MMU2-16LEip, Serial No. E1819115 • The load switch bay has 16 positions • Video Detection is being used and appears to be working. New FLIR cameras are installed and in use 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Street signs meet MUTCD standards • Left turn indicators are a 3-section head and 4-section head (FYA) • Older 3M Opticom 252 rack unit preemption is available, tested to show PMT 1 activates in controller • SW quadrant cross slope is about 4% for pedestrians • Countdown function is shown for pedestrian facilities at intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="297 1266 1297 1478"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ4 SBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>3.6</td> <td>3.2</td> <td>3.2</td> <td>3.9</td> <td>3.2</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>1.6</td> <td>2.4</td> <td>1.9</td> <td>1.4</td> <td>2.4</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td>7</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>13</td> <td>19</td> <td></td> <td>13</td> <td>20</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 WBL	Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 NBT	Vehicle Yellow Interval	3.2	3.6	3.2	3.2	3.9	3.2	Vehicle Red Interval	2.0	1.6	2.4	1.9	1.4	2.4	Walk		7	7		7	7	Pedestrian Clear		13	19		13	20
	Φ1 WBL	Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 NBT																																
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Walk		7	7		7	7																																
Pedestrian Clear		13	19		13	20																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

07 - Race at University

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10	7	14		10
Passage (1/10 sec)	30	15		35	30	15		35
Max 1	12	36		24	12	36		24
Max 2								
Max 3	10	24		18	10	24		18
Yellow Clearance (1/10 sec)	32	36		32	32	36		32
Red Clearance (1/10 sec)	18	16		23	18	16		23
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4		4		4		4
Pedestrian Clear		14		21		14		21
Sec. Per Actuation								
Lock Detection	x	x				x	x	
Phase Recalls		min/max				min/max		
Dual Entry				x				x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Saturday

Note:

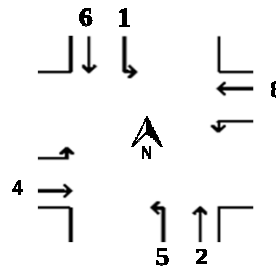
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1000	3	1	630	4	1	900	3	1		
2	1900	20	2	900	3	2	2100	20	2		
3			3	1500	5	3			3		
4			4	1800	3	4			4		
5			5	2100	20	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
3	100	2		1
4	110	12		1
5	110	95		1

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	14	54		32	14	54		32
Pattern 4	14	71		25	14	71		25
Pattern 5	14	62		34	14	62		34

Intersection Street:	08 – Coler at University Ave																																
Inspection Year:	2022	Inspection Date:	7/1/22																														
Controller Information:																																	
Model:	Intelight X3L	Serial #:	X32006052																														
IP Address:	10.5.35.104	Firmware Version:	2.5.2 MaxTime																														
Date Installed:	2020																																
Condition of Cabinet and Hardware:																																	
<ul style="list-style-type: none"> • Network connection is available, used on the controller, MMU, video detection, UPS • UPS – IP 10.5.35.104 • Single Mode Fiber connection to Orchard to the east & Single Mode fiber connected to Lincoln to the west. No Multimode terminated/present (12SM cable to east and 12SM west) • MMU model No. EDI MMU2-16LEip, Serial No. E1962100 • There is a UPS present on the controller • The load switch bay has 16 positions • Video detection is present and appears to be working. New FLIR cameras are installed and in use 																																	
Condition of Signal Equipment and Signs:																																	
<ul style="list-style-type: none"> • No street sign for University Ave facing NB approach, present street signs meet MUTCD standards • Left turn indications are a 3-section head, 4-section head (FYA) • Preemption is available, no Opticom phase selector plugged into rack • Pedestrian push buttons are piezoelectric APS with voice messages • SW quadrant to south pedestrian cross push buttons are adjacently slightly greater than 10" • SE quadrant to south and east pedestrian crosses adjacently slightly greater than 10" • NE quad to north pedestrian crossing ramp's down slope is 2.3% • Countdown function is shown for the pedestrian facilities at the intersection 																																	
Comments and Recommendations:																																	
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter are recommended • Set up preemption in the cabinet to be turned on and active. • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Add street name sign for University Avenue, following MUTCD standards. <table border="1" data-bbox="355 1436 1240 1680"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ8 NBT/SBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>3.6</td> <td>3.2</td> <td>3.9</td> <td>3.2</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>1.8</td> <td>2.0</td> <td>1.7</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>15</td> <td></td> <td>17</td> <td>21</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 WBL	Φ2 EBT	Φ5 EBL	Φ6 WBT	Φ8 NBT/SBT	Vehicle Yellow Interval	3.2	3.6	3.2	3.9	3.2	Vehicle Red Interval	2.0	1.8	2.0	1.7	2.5	Walk		7		7	7	Pedestrian Clear		15		17	21
	Φ1 WBL	Φ2 EBT	Φ5 EBL	Φ6 WBT	Φ8 NBT/SBT																												
Vehicle Yellow Interval	3.2	3.6	3.2	3.9	3.2																												
Vehicle Red Interval	2.0	1.8	2.0	1.7	2.5																												
Walk		7		7	7																												
Pedestrian Clear		15		17	21																												
Reviewed By:	K. Swinford	Date:	10/14/2022																														
Approved By:	K. Evans	Date:	10/14/2022																														

SIGNAL TIMING INFORMATION

Intersection:

08 - Coler at University

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14			7	14		10
Passage (1/10 sec)	30	51			53	51		30
Max 1	12	36			12	36		20
Max 2								
Max 3	10	24			10	24		14
Yellow Clearance (1/10 sec)	32	36		32	36	30		32
Red Clearance (1/10 sec)	20	18		10	20	18		24
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4		8		4		8
Pedestrian Clear		15		18		20		20
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry				x				x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Sun-Sat

Note:

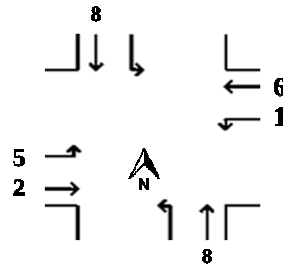
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1000	3	1	630	4	1	900	3	1		
2	1900	20	2	900	3	2	2100	20	2		
3			3	1500	5	3			3		
4			4	1800	3	4			4		
5			5	2100	20	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
3	100	51		1
4	110	50		1
5	110	66		1

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	14	56		30	14	56		30
Pattern 4	14	66		30	14	66		30
Pattern 5	14	66		30	14	66		30

NOTE: PHASE 4 (SB) LOAD SWITCH IS MISSING, DUE TO TIMINGS BEING IN CORD PLAN IT IS ASSUMED THE PHASE IS TIED INTO PHASE 8.

Intersection Street:	09 – Lincoln at University Ave							
Inspection Year:	2022			Inspection Date:	7/1/22			
Controller Information:								
Model:	Econolite Cobalt			Serial #:	G29527			
IP Address:	10.5.34.103			Firmware Version:	U-Boot 05.05.00 O/S 06.11.00 Application 32.67.20			
Date Installed:	2018							
Condition of Cabinet and Hardware:								
<ul style="list-style-type: none"> Network Connection is available and used on Controller, MMU, Video Detection, UPS, CCTV camera UPS IP 10.5.35.103 Single Mode Fiber connection to Coler to the east & Single Mode fiber connected to Goodwin to the west. NO MM terminated/present (12SM cable to east and 12 SM west) MMU model No. Reno MMU2-1600GE, serial No R1501534 There is a UPS present on the cabinet The load switch bay has 16 positions Video Detection is present and appears to be working. New FLIR cameras are installed and in use 								
Condition of Signal Equipment and Signs:								
<ul style="list-style-type: none"> Street signs do not meet the MUTCD standards, University Ave signs have all capital letters Left turn indications are a 4-section head (FYA) Opticom 3M 454 card in rack preemption is installed and tested. EVP PMT "A" successful. Did not test RR PMT with toggle switch in cabinet Pedestrian push buttons are piezoelectric NE quad to island crossing area pedestrian push buttons adjacent reach is slightly greater than 10" SW quad to S pedestrian crossing adjacent reach is slightly greater than 10" No countdown function available for the pedestrian facilities at this intersection 								
Comments and Recommendations:								
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Updating the ped facilities to have countdown features is recommended Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance 								
	Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT
Vehicle Yellow Interval	3.2	3.6	3.2	3.2	3.2	3.9	3.2	3.2
Vehicle Red Interval	2.0	2.3	2.0	2.5	2.0	2.5	2.0	2.5
Walk		7		7		7		9
Pedestrian Clear		26		30		23		32
See existing timings on next page.								
Reviewed By:	K. Swinford			Date:	10/14/2022			
Approved By:	K. Evans			Date:	10/14/2022			

SIGNAL TIMING INFORMATION

Intersection:

09 - Lincoln at University

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14	7	10	7	14	7	10
Passage (1/10 sec)	3	1.5	3	1.5	3	1.5	3	1.5
Max 1	15	35	15	35	15	35	15	35
Max 2	15	35	15	35	15	35	15	35
Max 3								
Yellow Clearance (1/10 sec)	3.2	3.6	3.2	3.2	3.2	3.6	3.2	3.2
Red Clearance (1/10 sec)	2	2.5	2	2.5	2	2.5	2	2.5
Max Initial		25				25		
Time Before Reduction		25				25		
Time To Reduce		20				20		
Minimum Gap		4				4		
Walk		4		4		4		4
Pedestrian Clear		19		23		17		24
Sec. Per Actuation								
Lock Detection								
Phase Recalls								
Dual Entry								

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Saturday

Note:

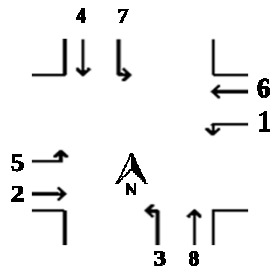
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1000	3	1	630	4	1	900	3	1		
2	1900	20	2	900	3	2	2100	20	2		
3			3	1500	5	3			3		
4			4	1800	3	4			4		
5			5	2100	20	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
3	100	27		1
4	110	49		1
5	110	57		1

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	13	45	14	28	13	45	14	28
Pattern 4	16	41	13	40	16	41	17	36
Pattern 5	14	48	14	34	15	47	13	35

Intersection Street:	10 – University Ave at Smith Rd																											
Inspection Year:	2022	Inspection Date:	7/1/22																									
Controller Information:																												
Model:	Siemens m50 81301200001	Serial #:	130254																									
IP Address:	10.5.34.117	Firmware Version:	3.34g																									
Date Installed:	Feb 2010 (Firmware date)																											
Condition of Cabinet and Hardware:																												
<ul style="list-style-type: none"> Network connection is available and used only on the controller. It is connected via Ubiquiti Powerbeam PBE-5AC-400 radio north toward I-74, no fiber. Switch Control RocketLinx ES8509, IP 10.5.32.117 MMU model No. EDI SSM-12LE, Serial No 2047766 No UPS is present on the cabinet The load switch bay has 12 positions An older EDI LM 301t amp cards loop detection is installed and all loose on the shelf Switch and radio POE plugged into the door GFCI outlet. 																												
Condition of Signal Equipment and Signs:																												
<ul style="list-style-type: none"> Intersection is missing street signs for University Avenue. The Smith Rd signs do not meet MUTCD standards. There is moderate corrosion present on plates at the mast arm joints Opticom 462 phase selector preemption is installed in the rack and tested PMT 1 (A) is successful Pedestrian push buttons are piezoelectric NW quadrant downslope is 6.6% and has an adjacent side reach of 27" to the pedestrian push button NE quad cross slope is 2.8% and has an adjacent side reach of 11" to the pedestrian push button No countdown function available for the pedestrian facilities at this intersection 																												
Comments and Recommendations:																												
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Applying fresh permagum to the cabinet's conduit. Controller is outdated and needs to be upgraded Updating the ped facilities to have countdown features is recommended Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Add street name sign for University Avenue, following MUTCD standards. The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="415 1537 1193 1749"> <thead> <tr> <th></th> <th>Φ2 EBT</th> <th>Φ4 SBT</th> <th>Φ6 WBT</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.9</td> <td>3.2</td> <td>3.9</td> <td>3.5</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>1.4</td> <td>2.0</td> <td>1.6</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td></td> <td>7</td> <td></td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td></td> <td>16</td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ2 EBT	Φ4 SBT	Φ6 WBT	Φ8 NBT	Vehicle Yellow Interval	3.9	3.2	3.9	3.5	Vehicle Red Interval	1.4	2.0	1.6	2.5	Walk			7		Pedestrian Clear			16	
	Φ2 EBT	Φ4 SBT	Φ6 WBT	Φ8 NBT																								
Vehicle Yellow Interval	3.9	3.2	3.9	3.5																								
Vehicle Red Interval	1.4	2.0	1.6	2.5																								
Walk			7																									
Pedestrian Clear			16																									
Reviewed By:	K. Swinford	Date:	10/14/2022																									
Approved By:	K. Evans	Date:	10/14/2022																									

SIGNAL TIMING INFORMATION

Intersection:

10 - University at Smith

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green		16		10		16		10
Passage (1/10 sec)		55		25		55		25
Max 1		40		20		40		20
Max 2		33		19		33		19
Max 3								
Yellow Clearance (1/10 sec)		39		32		39		32
Red Clearance (1/10 sec)		15		20		15		20
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk						12		
Pedestrian Clear						12		
Sec. Per Actuation								
Lock Detection				x				x
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	SUN-SAT

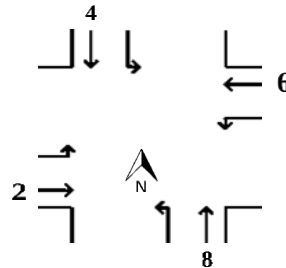
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	Free	99	1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
111	75	38		0	
112	75	30		0	
113	75	45		0	



Split Timings

	1	2	3	4	5	6	7	8
Pattern 111	18	18		13	18	18		26
Pattern 112	18	18		13	18	18		26
Pattern 113	18	18		13	18	18		26

Intersection Street:	11 – Lincoln Ave & Killarney St																																					
Inspection Year:	2022	Inspection Date:	7/14/22																																			
Controller Information:																																						
Model:	Siemens 8130-0300-035	Serial #:	143486																																			
IP Address:		Firmware Version:	3.34g Feb 10																																			
Date Installed:	12/19/95																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> Multi-mode fiber is connected to the South ramp at I-74. No UPS present on the cabinet The load switch bay has 12 positions Loop detection is being used and appears to be working MMU Model: EDI NSM-12, S/N: 602 968 6407 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates The SW pole is creased 24" above the base. The 3-section heads for N-S directions are not aligned properly. 1 head for 2 through lanes centered Left turn indications are a 5-section head Left turn indications are not partially over the left turn lane Preemption is available and appears to be working Pedestrian push buttons are piezoelectric NW quadrant push button to the North pedestrian crossing has an adjacent reach of 17" SE quadrant push button to the east pedestrian crossing has an adjacent reach of 15" No countdown function for pedestrian crossing is available at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Updating the ped facilities to have countdown features is recommended Installing retroreflective backplates to the signals is recommended Upgrade UPS to allow for Ethernet and remote monitoring/alerts Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="272 1549 1336 1759"> <thead> <tr> <th></th> <th>Φ2 EBT/LT</th> <th>Φ3 NBL</th> <th>Φ4 SBT</th> <th>Φ6 WBT/LT</th> <th>Φ7 SBL</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>3.1</td> <td>4.1</td> <td>3.3</td> <td>3.4</td> <td>3.8</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.5</td> <td>2.0</td> <td>1.7</td> <td>2.5</td> <td>2.0</td> <td>2.0</td> </tr> <tr> <td>Walk</td> <td></td> <td></td> <td>7</td> <td>7</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td></td> <td>22</td> <td>25</td> <td></td> <td>16</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ2 EBT/LT	Φ3 NBL	Φ4 SBT	Φ6 WBT/LT	Φ7 SBL	Φ8 NBT	Vehicle Yellow Interval	3.1	3.1	4.1	3.3	3.4	3.8	Vehicle Red Interval	2.5	2.0	1.7	2.5	2.0	2.0	Walk			7	7		7	Pedestrian Clear			22	25		16
	Φ2 EBT/LT	Φ3 NBL	Φ4 SBT	Φ6 WBT/LT	Φ7 SBL	Φ8 NBT																																
Vehicle Yellow Interval	3.1	3.1	4.1	3.3	3.4	3.8																																
Vehicle Red Interval	2.5	2.0	1.7	2.5	2.0	2.0																																
Walk			7	7		7																																
Pedestrian Clear			22	25		16																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

11 - Lincoln at Killarney

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green		10	7	25		10	7	25
Passage (1/10 sec)		25	25	20		25	25	20
Max 1		26	14	55		26	14	55
Max 2		50	30	50		50	30	50
Max 3								
Yellow Clearance (1/10 sec)		31	31	41		33	34	38
Red Clearance (1/10 sec)		25	20	17		25	20	20
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		19		22		25		16
Sec. Per Actuation								
Lock Detection			x				x	
Phase Recalls				min				min
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
3	ALL	Saturday

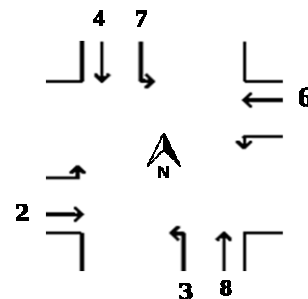
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	0:00	0/0/0	1	0:01	0/0/0	1	0:01	0/0/0	1		
2	11:00	1/1/1	2	6:30	2/1/1	2	9:30	1/1/1	2		
3	19:00	0/0/0	3	9:00	1/1/1	3	19:00	0/0/0	3		
4			4	15:00	3/1/1	4			4		
5			5	18:00	1/1/1	5			5		
6			6	20:00	0/0/0	6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
1/1/1	85	83		0	
2/1/1	110	11		0	
3/1/1	110	3		0	



Split Timings

	1	2	3	4	5	6	7	8
Pattern 1		24	13	48		24	13	48
Pattern 2		31	13	66		31	13	66
Pattern 3		30	13	67		30	13	67

Intersection Street:	12 – Broadway at University Ave																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Intelight X3L	Serial #:	X32006048																																			
IP Address:	10.5.34.107	Firmware Version:																																				
Date Installed:	2020																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection is available, used on controller, MMU, video detection and UPS • UPS IP 10.5.35.107 • Single Mode Fiber connection to Cunningham to the east & Single Mode fiber connection to Broadway to the west. No Multi Mode terminated/present (12SM cable to east and 12SM west). • MMU model EDI MMU2-16LEip, serial no. E1962106 • There is a UPS present on the cabinet • The load switch bay has 16 positions • Video Detection is present and appears to be working. New FLIR cameras are installed and in use 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Missing street signs for University Ave • Left turn indications are 3 section and 4 section (FYA) heads • Older 3M Opticom M-262 preemption rack units are installed and tested to show PMT 1 activates in controller • Pedestrian push buttons are piezoelectric • Pedestrian push buttons are not adjacent to a flat landing area • All quadrants, not the islands, pedestrian push buttons have a slightly greater than 10" adjacent reach • NW quadrant cross slope is about 4% • NE quadrant down slope is about 6.6% • Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Add street name sign for University Avenue, following MUTCD standards. • Updating the ped facilities to have countdown features is recommended • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. 																																						
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	Φ1 WBL	Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 NBT																																
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Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

12 - Broadway at University

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10	7	14		10
Passage (1/10 sec)	30	15		30	30	15		35
Max 1	12	36		36	12	36		36
Max 2								
Max 3	10	24		18	10	24		18
Yellow Clearance (1/10 sec)	32	36		32	32	36		32
Red Clearance (1/10 sec)	20	17		24	20	17		24
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4		4		4		4
Pedestrian Clear		28		24		24		24
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Saturday

Note:

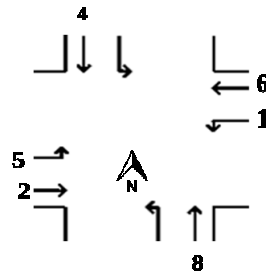
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1000	3	1	630	4	1	900	3	1		
2	1900	20	2	900	3	2	2100	20	2		
3			3	1500	5	3			3		
4			4	1800	3	4			4		
5			5	2100	20	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
3	100	0		1
4	110	12		1
5	110	96		1

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	15	52		33	18	49		33
Pattern 4	14	66		30	14	66		30
Pattern 5	14	62		34	16	60		34

Intersection Street:	13 – Goodwin Ave & University Ave																																															
Inspection Year:	2022	Inspection Date:	6/30/2022																																													
Controller Information:																																																
Model:	Intelight	Serial #:	X3-20-06049																																													
IP Address:	10.5.34.102	Firmware Version:	2.5.2																																													
Date Installed:	2020																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> Network connection is available in the cabinet and is adjacent to Lincoln and Wright MMU S/N:E1863770, MMU2-16LEIP There is a UPS present on the cabinet The load switch bay has 16 positions Video detection is installed and appears to be working 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> Signal heads have retroreflective backplates Street signs present at the intersection, but do not meet MUTCD standards Left turn indications are a 4 section head (FYA) Preemption is available in the plans, but not active. Does not work Pedestrian push buttons are piezoelectric SE quadrant to the south pedestrian crossing, NE quadrant to both pedestrian crossings, and NW quadrant to the north pedestrian crossing do not comply with ADA standards of a 10" adjacent reach The SW quadrant, NE quadrant, and NW quadrant do not comply with ADA standards of a flat landing area No countdown function for pedestrian crossing is available at the intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Updating the ped facilities to have countdown features is recommended Installing retroreflective backplates to the signals is recommended Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Set up preemption in the cabinet to be turned on and active. Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. 																																																
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Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

13 - Goodwin Ave & University Ave

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14	7	10	7	14	7	10
Passage (1/10 sec)	3	1.5	3	3	3	1.5	3	3
Max 1	12	36	12	24	12	36	12	24
Max 2								
Yellow Clearance (1/10 sec)	3.2	3.6	3.2	3.2	3.2	3.6	3.2	3.2
Red Clearance (1/10 sec)	2	2.3	2	2.5	2	2.3	2	2.5
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4		4		4		4
Pedestrian Clear		20		19		13		19
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN				MIN		
Dual Entry								

Schedule

Day Plan	Month	Day	Days of Week
1	ALL	ALL	SUN
2	ALL	ALL	MON - FRI
7	ALL	ALL	SAT

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

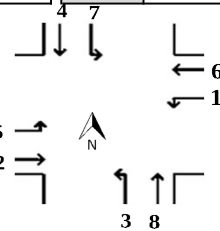
DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	10	3	1	630	4	1	900	3	1		
2	19	20	2	9	3	2	2100	20	2		
3			3	15	5	3			3		
4			4	1800	3	4			4		
5			5	2100	20	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
3	3	100	72	1
4	4	110	47	1
5	5	110	57	1
20	20	FREE	-	-

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 3	14	44	13	29	14	44	13	29
Pattern 4	14	54	13	29	14	54	13	29
Pattern 5	13	54	14	29	13	54	13	30
Pattern								
Pattern								

* Circle coord phases

Misc

Additional notes, could include overlaps (FYA or parent overlaps, with phase and trailing green info), left-turn treatments (FYA or 5-section), detector switching, etc:

OL A EBR TURN

OL D NBR TURN

Intersection Street:	14 – High Cross Rd & Windsor Rd																							
Inspection Year:	2022	Inspection Date:	7/14/22																					
Controller Information:																								
Model:	EPAC 3808 M52, 8130-1200-001	Serial #:	130250																					
IP Address:		Firmware Version:	3.34g Feb 10																					
Date Installed:																								
Condition of Cabinet and Hardware:																								
<ul style="list-style-type: none"> Cabinet has a network connection available for controller There is a UPS present on the cabinet The load switch bay has 12 positions Loop detection is installed and appears to be working MMU Model: EDI SSM-12LE 21194 010601022 0131 																								
Condition of Signal Equipment and Signs:																								
<ul style="list-style-type: none"> Street signs do not meet MUTCD standards, signs have capital letters NW and SW quadrant posts don't have all bolt covers Left Turn Indications are a 5 section head Preemption is available in the cabinet No pedestrian facilities present at this intersection 																								
Comments and Recommendations:																								
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Upgrade UPS to allow for Ethernet and remote monitoring/alerts Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Replace missing bolt covers The vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="165 1400 1243 1528"> <thead> <tr> <th></th> <th>Φ1 SBL</th> <th>Φ2 NBT</th> <th>Φ4 EBT/LT</th> <th>Φ5 NBL</th> <th>Φ6 SBT</th> <th>Φ8 WBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>4.3</td> <td>3.9</td> <td>3.2</td> <td>4.3</td> <td>3.9</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>1.4</td> <td>1.8</td> <td>2.0</td> <td>1.4</td> <td>2.0</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT	Vehicle Yellow Interval	3.2	4.3	3.9	3.2	4.3	3.9	Vehicle Red Interval	2.0	1.4	1.8	2.0	1.4	2.0
	Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT																		
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Vehicle Red Interval	2.0	1.4	1.8	2.0	1.4	2.0																		
Reviewed By:	K. Swinford	Date:	10/14/2022																					
Approved By:	K. Evans	Date:	10/14/2022																					

SIGNAL TIMING INFORMATION

Intersection:

14 - Windsor at High Cross

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	8	18	0	18	8	18	0	10
Passage (1/10 sec)	20	34	0	20	20	34	0	20
Max 1	14	32	0	20	14	32	0	20
Max 2	10	30	0	19	10	30	0	19
Max 3								
Yellow Clearance (1/10 sec)	30	50	40	35	30	50	40	35
Red Clearance (1/10 sec)	10	12	20	15	10	12	20	15
Max Initial	0							
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		8		8		8		8
Sec. Per Actuation								
Lock Detection	x			x	x			x
Phase Recalls								
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day

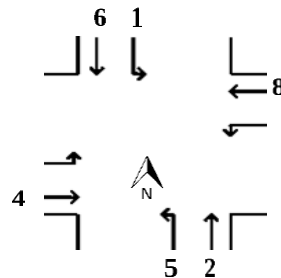
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Cycle	Offset	Sequence	*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3								
Pattern 4								
Pattern 5								

Intersection Street:	15 – Orchard St & University Ave																																
Inspection Year:	2022	Inspection Date:	7/1/22																														
Controller Information:																																	
Model:	Intelight X3L	Serial #:	X32006045																														
IP Address:	10.5.34.105	Firmware Version:	2.5.2 MaxTime																														
Date Installed:	2020																																
Condition of Cabinet and Hardware:																																	
<ul style="list-style-type: none"> • Network connection available, used on Controller, MMU, Video Detection, UPS • UPS – IP 10.5.35.105 • Single Mode Fiber connection to McCullough to the east & Single Mode fiber connection to Coler to the west. No Multi Mode terminated/present (12SM cable to east and 12SM west) • MMU model No EDI MMU2-16LEip, Serial No E1962107 • There is a UPS installed in the cabinet • The load switch bay has 16 positions • Video Detection is present and appears to be working. New FLIR cameras are installed and in use 																																	
Condition of Signal Equipment and Signs:																																	
<ul style="list-style-type: none"> • No sign for University Ave facing SB Approach (would need to mount to 15' post, no mast arms) • Left turn indications are a 4-section head (FYA) • Preemption is available, but does not work, No Opticom phase selector plugged into rack • Pedestrian push buttons are piezoelectric, APS with voice messages • SW quadrant pedestrian push buttons to the west pedestrian cross has an adjacent reach slightly greater than 10" • Countdown function is shown for the pedestrian facilities at the intersection 																																	
Comments and Recommendations:																																	
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Add street name signs that are MUTCD compliant <table border="1" data-bbox="279 1350 1180 1591"> <thead> <tr> <th></th> <th>Φ2 EBT</th> <th>Φ4 SBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ8 DUMMY</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.6</td> <td>3.2</td> <td>3.2</td> <td>3.9</td> <td></td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.1</td> <td>2.1</td> <td>2.0</td> <td>1.9</td> <td></td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td>7</td> <td>8</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>18</td> <td></td> <td>20</td> <td>19</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 DUMMY	Vehicle Yellow Interval	3.6	3.2	3.2	3.9		Vehicle Red Interval	2.1	2.1	2.0	1.9		Walk		7		7	8	Pedestrian Clear		18		20	19
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Reviewed By:	K. Swinford	Date:	10/14/2022																														
Approved By:	K. Evans	Date:	10/14/2022																														

Intersection Street:	16 – Cunningham & University Ave																																															
Inspection Year:	2022	Inspection Date:	7/1/22																																													
Controller Information:																																																
Model:	Intelight X3L	Serial #:	X32006051																																													
IP Address:	10.5.34.108	Firmware Version:	2.5.2 MaxTime																																													
Date Installed:	2020																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> • Network connection available and used on the controller, MMU, Video detection, UPS, CCTV camera • UPS – IP 10.5.35.108 • Single Mode Fiber connection to Kerr to the north & Single Mode fiber connection to Broadway to the west. Multi-Mode fiber patched through at this cabinet from north and south (12SM/12MM hybrid cable to north and 12SM west) • MMU model EDI MMU2-16LEip, serial No E1863782 • There is a UPS installed in the cabinet • Load switch bay has 16 positions available • Video Detection is present and appears to be working. New flir cameras are installed and in use 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> • Street name signs do not meet MUTCD standards. Cunningham/Vine legend is small • Left turn indications are a 3 section head and 4 section head (FYA) • Tomar rack unit preemption is installed and tested to show PMT 1 through PMT 2 activate in controller • Pedestrian push buttons are piezoelectric, APS with audible messages • NE quadrant pedestrian push button in the NE channelizer island has an adjacent reach greater than 10" • Countdown function is shown for the pedestrian facilities at the intersection 																																																
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	Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT																																								
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Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

16 - Cunningham at University

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14	7	12	7	14	7	12
Passage (1/10 sec)	30	15	30	15	30	15	30	15
Max 1	12	35	12	35	14	35	12	35
Max 2								
Max 3	12	24	12	24	14	24	12	24
Yellow Clearance (1/10 sec)	36	36	32	36	36	36	32	36
Red Clearance (1/10 sec)	25	25	20	25	25	25	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk	0	4	0	4	0	4	0	4
Pedestrian Clear	0	36	0	37	0	39	0	35
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
7	ALL	Saturday

Note:

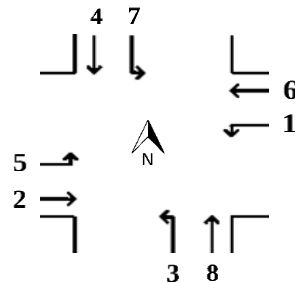
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1000	3	1	630	4	1	900	3	1		
2	1900	20	2	900	3	2	2100	20	2		
3			3	1500	5	3			3		
4			4	1800	3	4			4		
5			5	2100	20	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
3	100	0		1
4	110	0		1
5	110	0		1

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	16	29	18	37	23	22	17	38
Pattern 4	19	36	22	33	15	40	13	42
Pattern 5	17	38	21	34	25	30	16	39

Intersection Street:	17 – Lincoln & I-74 EB Ramps																											
Inspection Year:	2022	Inspection Date:	7/14/22																									
Controller Information:																												
Model:	8130-0300-035	Serial #:	147770																									
IP Address:		Firmware Version:	3.34h Jan 14																									
Date Installed:	5/8/06																											
Condition of Cabinet and Hardware:																												
<ul style="list-style-type: none"> • Network connection is available and being used for controller • There is no UPS present in the cabinet • The load switch bay has 12 positions • Loop detection is being used and appears to be working • MMU Model: EDI SSM-12LE/226332-1 060404375 Rev. 0135 																												
Condition of Signal Equipment and Signs:																												
<ul style="list-style-type: none"> • No street name signs present • Left turn indications are a 5-section head • Preemption is not available • Pedestrian push buttons are piezoelectric • NW quad ped push button is a 14" reach, down slope is a 6.8% • SW quad ped push button is a 17" reach, Cross slope is a 2.3% • No countdown function for pedestrian crossing is available at intersection 																												
Comments and Recommendations:																												
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Updating the ped facilities to have countdown features is recommended • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Add street name signs that are MUTCD compliant • Add bolt covers to poles <table border="1" data-bbox="428 1453 1180 1663"> <thead> <tr> <th></th> <th>Φ1 SBL</th> <th>Φ2 NBT</th> <th>Φ4 EBL</th> <th>Φ6 SBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>3.9</td> <td>3.9</td> <td>3.9</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>1.8</td> <td>2.0</td> <td>2.1</td> </tr> <tr> <td>Walk</td> <td></td> <td></td> <td></td> <td>8</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td></td> <td></td> <td>26</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 SBL	Φ2 NBT	Φ4 EBL	Φ6 SBT	Vehicle Yellow Interval	3.2	3.9	3.9	3.9	Vehicle Red Interval	2.0	1.8	2.0	2.1	Walk				8	Pedestrian Clear				26
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Vehicle Red Interval	2.0	1.8	2.0	2.1																								
Walk				8																								
Pedestrian Clear				26																								
Reviewed By:	K. Swinford	Date:	10/14/2022																									
Approved By:	K. Evans	Date:	10/14/2022																									

SIGNAL TIMING INFORMATION

Intersection:

17 - Lincoln at South I-74 Ramps

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10		14		
Passage (1/10 sec)	15	15		15		15		
Max 1	12	40		30		40		
Max 2		40		0		40		
Max 3								
Yellow Clearance (1/10 sec)	32	39		36		39		
Red Clearance (1/10 sec)	20	25		24		25		
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk						4		
Pedestrian Clear						15		
Sec. Per Actuation								
Lock Detection	x			x				
Phase Recalls		min				min		
Dual Entry		x				x		

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
3	ALL	Saturday

Note:

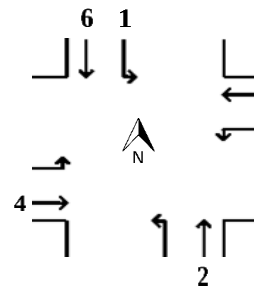
Day Plans

DAY PLAN 1			Saturday DAY PLAN 2			Sunday DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	0:00	0/0/0	1	0:01	0/0/0	1	0:01	0/0/0	1		
2	11:00	1/1/1	2	6:30	2/1/1	2	9:30	1/1/1	2		
3	19:00	0/0/0	3	9:00	1/1/1	3	19:00	0/0/0	3		
4			4	15:00	3/1/1	4			4		
5			5	18:00	1/1/1	5			5		
6			6	20:00	0/0/0	6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
	1/1/1	85	67	0
	2/1/1	110	92	0
	3/1/1	110	102	0

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 1	13	42		30		55		
Pattern 2	13	52		45		65		
Pattern 3	13	67		30		80		

Intersection Street:	18 – Lincoln & I-74 WB Ramps																											
Inspection Year:	2022	Inspection Date:	7/14/22																									
Controller Information:																												
Model:	8130-1200-001	Serial #:	14006011																									
IP Address:		Firmware Version:	3.34g Feb 10																									
Date Installed:	Cabinet 2/88																											
Condition of Cabinet and Hardware:																												
<ul style="list-style-type: none"> • Network connection is available in the cabinet for controller • There is no UPS present on the cabinet • The load switch bay has 12 positions • Loop detection is being used and appears to be working • MMU Model: EDI NSM-12, S/N: 9210-571 																												
Condition of Signal Equipment and Signs:																												
<ul style="list-style-type: none"> • There are no street name signs present • SW quadrant and NE quadrant signal posts do not have bolt covers • Left turn indications are a 3-section head • Signal Post is mounted in the median • Preemption is available and appears to be working • Pedestrian push buttons are piezoelectric • NW quadrant pedestrian push button has a 16" reach • SW quadrant downslope is 8.0% • No countdown function for pedestrian crossing is available at intersection 																												
Comments and Recommendations:																												
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Updating the ped facilities to have countdown features is recommended • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Add street name signs that are MUTCD compliant • Replace bolt covers 																												
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Pedestrian Clear		17																										
See existing timings on next page.																												
Reviewed By:	K. Swinford	Date:	10/14/2022																									
Approved By:	K. Evans	Date:	10/14/2022																									

SIGNAL TIMING INFORMATION

Intersection:

18 - Lincoln at North I-74 Ramps

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	15		10		14		
Passage (1/10 sec)	30	35		45		35		
Max 1	33	30		30		30		
Max 2	0							
Max 3								
Yellow Clearance (1/10 sec)	39	39		36		19		
Red Clearance (1/10 sec)	25	25		22		25		
Max Initial	0							
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4						
Pedestrian Clear		11						
Sec. Per Actuation								
Lock Detection				x				
Phase Recalls		min				min		
Dual Entry		x				x		

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
3	ALL	Saturday

Note:

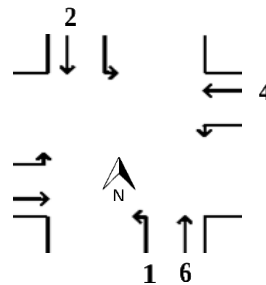
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	0:00	0/0/0	1	0:01	0/0/0	1	0:01	0/0/0	1		
2	11:00	1/1/1	2	6:30	2/1/1	2	9:30	1/1/1	2		
3	19:00	0/0/0	3	9:00	1/1/1	3	19:00	0/0/0	3		
4			4	15:00	3/1/1	4			4		
5			5	18:00	1/1/1	5			5		
6			6	20:00	0/0/0	6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
	1/1/1	85	17	0
	2/1/1	110	18	1
	3/1/1	110	22	0

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 1	35	26		24		61		
Pattern 2	35	37		38		72		
Pattern 3	58	26		26		84		

Intersection Street:	19 – Cunningham & I-74 EB Ramps																											
Inspection Year:	2022	Inspection Date:	6/30/22																									
Controller Information:																												
Model:	Intelight X3L	Serial #:	X31702865																									
IP Address:	10.5.34.99	Firmware Version:	2.5.2 MaxTime																									
Date Installed:	2020																											
Condition of Cabinet and Hardware:																												
<ul style="list-style-type: none"> • Network connection is available, and only being used for controller and PTZ • Multi-Mode Fiber connection to EB 74 ramps & Multi Mode fiber patched through this cabinet to south. Single Mode fiber goes south and to PTZ at I-74 bridge (12SM/12MM hybrid cables to north and south) • MMU 221027 SSMLE EDI • No UPS present in the controller • The load switch bay has 12 positions • Loop detection is available and working, loop cards are generally new models 																												
Condition of Signal Equipment and Signs:																												
<ul style="list-style-type: none"> • No street name signs available at the intersection • Arm connection plates showing signs of corrosion • Left turn indications are a 5-section head • Left turn indications are partially over left turn lane, Post mounted for off-ramp • 3M Opticom rack unit preemption is not energized, no tests performed. It is not working • Pedestrian push buttons are piezoelectric • Push buttons comply with ADA standards and have an adjacent reach within 10" • Countdown function is shown for the pedestrian facilities at the intersection 																												
Comments and Recommendations:																												
<ul style="list-style-type: none"> • Cleaning the cabinet, vacuuming, placing new filters and ant traps are recommended • Applying more permagum is recommended • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Add street name signs that are MUTCD compliant • Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness • Set up preemption in the cabinet to be turned on and active. <table border="1" data-bbox="334 1478 1094 1688"> <thead> <tr> <th></th> <th>Φ1 SBL</th> <th>Φ2 NBT</th> <th>Φ4 EBL</th> <th>Φ6 SBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>3.9</td> <td>3.2</td> <td>4.7</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>1.9</td> <td>2.0</td> <td>1.6</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td></td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>13</td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 SBL	Φ2 NBT	Φ4 EBL	Φ6 SBT	Vehicle Yellow Interval	3.2	3.9	3.2	4.7	Vehicle Red Interval	2.0	1.9	2.0	1.6	Walk		7			Pedestrian Clear		13		
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Vehicle Red Interval	2.0	1.9	2.0	1.6																								
Walk		7																										
Pedestrian Clear		13																										
Reviewed By:	K. Swinford	Date:	10/14/2022																									
Approved By:	K. Evans	Date:	10/14/2022																									

SIGNAL TIMING INFORMATION

Intersection:

19 - Cunningham at I-74 EB ramps

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14		10		14		
Passage (1/10 sec)	20	35		15		35		
Max 1	12	35		20		35		
Max 2								
Max 3	8	20		14		20		
Yellow Clearance (1/10 sec)	32	39		36		39		
Red Clearance (1/10 sec)	20	25		21		25		
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4						
Pedestrian Clear		10						
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x		x		x		

Schedule

Day Plan	Month	Day
1	ALL	Sunday
2	ALL	M-F
3	ALL	Saturday

Note:

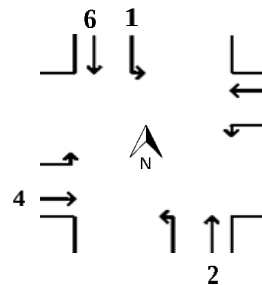
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	630	4	1	900	3	1	1030	3	1		
2	900	3	2	2000	20 (Free)	2	no AP to turn off AP 3		2		
3	1500	5	3			3			3		
4	1800	4	4			4			4		
5	1900	20 (Free)	5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
3	80	48		1
4	110	71		1
5	110	50		1

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 3	15	40*		25		55*		
Pattern 4	15	63*		32		78*		
Pattern 5	15	63*		32		78*		

Note: OLA NB RIGHT TURN

Intersection Street:	20 – Cunningham & WB I-74 Ramps																											
Inspection Year:	2022	Inspection Date:	6/30/22																									
Controller Information:																												
Model:	EPAC 300 – 3808M40	Serial #:	44983																									
IP Address:		Firmware Version:	3.13f																									
Date Installed:	2001 (firmware version update)																											
Condition of Cabinet and Hardware:																												
<ul style="list-style-type: none"> Network connection is available and only being used for the MMU and the controller, which is too old (no ethernet port) Multi Mode Fiber connection to Napleton/O'Brien and EB 74 ramps (12 MM cable to Napleton/Obrien, 12SM/12MM Hybrid to EB I-74 ramps) MMU SSMLEip EDI, SN: E1900420, No UPS present in the cabinet Loop detection is installed and appears to be working. Loop cards are a mix of new/old models 																												
Condition of Signal Equipment and Signs:																												
<ul style="list-style-type: none"> Street name signs do not meet MUTCD standards, Cunningham Ave is all capital letters Arm connection plates are showing signs of corrosion Left turn indications are a 3-section head Left turn indication are post mounted for off-ramp and NBL to WB I-74 Tomar rack unit preemption is installed and tested to show PMT 1 and 2 both operate in cabinet test Pedestrian push buttons are piezoelectric No countdown function for pedestrian crossing is available at intersection 																												
Comments and Recommendations:																												
<ul style="list-style-type: none"> Controller is outdated and needs to be upgraded East pedestrian crossing needs countdown heads Applying more permagum is recommended Updating the ped facilities to have countdown features is recommended Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) 																												
<table border="1"> <thead> <tr> <th></th> <th>Φ2 NBT</th> <th>Φ5 NBLT</th> <th>Φ6 SBT</th> <th>Φ8 WBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>4.3</td> <td>3.2</td> <td>4.7</td> <td>3.2</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.5</td> <td>1.8</td> <td>2.3</td> </tr> <tr> <td>Walk</td> <td>7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pedestrian Clear</td> <td>16</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Φ2 NBT	Φ5 NBLT	Φ6 SBT	Φ8 WBT	Vehicle Yellow Interval	4.3	3.2	4.7	3.2	Vehicle Red Interval	2.0	2.5	1.8	2.3	Walk	7				Pedestrian Clear	16			
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Pedestrian Clear	16																											
See existing timings on next page.																												
Reviewed By:	K. Swinford	Date:	10/14/2022																									
Approved By:	K. Evans	Date:	10/14/2022																									

SIGNAL TIMING INFORMATION

Intersection:

20 - Cunningham at I-74 WB ramps

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green		14			10	14		10
Passage (1/10 sec)		35			30	35		30
Max 1		35			15	35		25
Max 2								
Yellow Clearance (1/10 sec)		43			36	43		36
Red Clearance (1/10 sec)		20			20	20		23
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		4						
Pedestrian Clear		11						
Sec. Per Actuation								
Lock Detection		x				x		
Phase Recalls		min				min		
Dual Entry		x				x		

Schedule

Day Plan	Month	Day
1	ALL	SUN
2	ALL	M-F
7	ALL	SAT

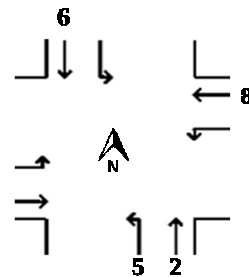
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 7			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	1030	111	1	630	211	1	900	111	1		
2	1900	*004	2	900	111	2	2000	*004	2		
3			3	1500	311	3			3		
4			4	1800	111	4			4		
5			5	1900	*004	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
111	80	77			
211	110	50		4	
311	110	50		4	



Split Timings

	1	2	3	4	5	6	7	8
1/1/2001	0	62*	0	18	30	32*	0	18
Pattern 2/1/1	0	92*	0	18	30	62*	0	18
Pattern 3/1/1	0	92*	0	18	30	62*	0	18
Pattern 4								

NOTE: OLC IS SBR

Intersection Street:	21 – Guardian & University Ave																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Siemens m50 81301200001	Serial #:	127004																																			
IP Address:	10.5.34.116	Firmware Version:	3.34g																																			
Date Installed:	Feb 2010 (Firmware Date)																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection is available, controller only, connected via Ubiquiti Powerbeam PBE-5AC-400 radio east toward I-74 (no fiber). • MMU EDI SSM-12LE, Serial No 231091 • No UPS in the cabinet • The load switch bay has 12 positions • Old ped buttons and heads are in partially, missing for south, west, and north crossings • A mix of old and new EDI LM 602t amp card loop detection is installed and appear to be working • Cabinet power is plugged into the csgi 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Street signs do not meet MUTCD standards. University/Guardian N/S signs are all capital letters • Left turn indications are a 5-section head • Tomar Card in rack preemption is installed, but not powered on • Pedestrian push buttons are very old plungers • No sidewalks leading to intersection, existing ped items are old but function (not close to ADA compliant otherwise) 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cabinet needs to be cleaned and a new filter • Needs Vacuumed, cable organization, sealant around cabinet base, and fresh permagum • Controller is outdated and needs to be upgraded • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Set up preemption in the cabinet to be turned on and active. 																																						
<table border="1"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ4 SBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.4</td> <td>4.1</td> <td>3.8</td> <td>3.1</td> <td>4.5</td> <td>3.9</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.5</td> <td>1.8</td> <td>2.0</td> <td>2.0</td> <td>1.9</td> </tr> <tr> <td>Walk</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>8</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>33</td> </tr> </tbody> </table>					Φ1 WBL	Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 NBT	Vehicle Yellow Interval	3.4	4.1	3.8	3.1	4.5	3.9	Vehicle Red Interval	2.0	2.5	1.8	2.0	2.0	1.9	Walk						8	Pedestrian Clear						33
	Φ1 WBL	Φ2 EBT	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ8 NBT																																
Vehicle Yellow Interval	3.4	4.1	3.8	3.1	4.5	3.9																																
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Walk						8																																
Pedestrian Clear						33																																
See existing timings on next page.																																						
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

21 - University at Guardian

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	6	10		8	6	10		8
Passage (1/10 sec)	20	36		40	20	36		40
Max 1	30	37		37	15	37		37
Max 2								
Max 3								
Yellow Clearance (1/10 sec)	30	39		30	30	39		40
Red Clearance (1/10 sec)	15	21		10	15	21		10
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk	0	5		5	0	5		5
Pedestrian Clear	0	32		32	0	32		32
Sec. Per Actuation								
Lock Detection		x		x		x		x
Phase Recalls		min				min		
Dual Entry		x				x		

Schedule

Day Plan	Month	Day
1	ALL	ALL

Note:

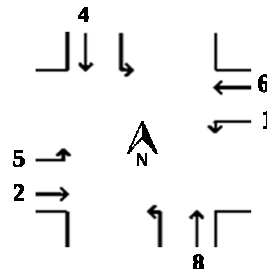
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	700	112	1			1			1		
2	900	111	2			2			2		
3	1600	113	3			3			3		
4	1800	*004	4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence
111	75	38		0
112	75	30		0
113	75	45		0

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 111	18	18		13	18	18		26
Pattern 112	18	18		13	18	18		26
Pattern 113	18	18		13	18	18		26

Intersection Street:	22 – Lincoln & Green St																																															
Inspection Year:	2022	Inspection Date:	6/30/22																																													
Controller Information:																																																
Model:	Siemens m50, 8130-0300-035	Serial #:	143468																																													
IP Address:		Firmware Version:	3.34h																																													
Date Installed:	2017																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> There is a UPS available in the cabinet The load switch bay has 12 positions Video detection is installed and appears to be working MMU EDI SSM-12 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> No retroreflective signal backplates on the signal heads at the intersection Left turn indications are a 5-section head Preemption is available and works Pedestrian push buttons are piezoelectric SE quadrant to south pedestrian crossing has a 14" adjacent reach and a 19" reach to the east pedestrian cross SW quadrant to the west pedestrian crossing has a 10.5" adjacent reach and a 24" adjacent reach to the south pedestrian cross NE quadrant to east pedestrian crossing has a 15.5" adjacent reach and a 11" adjacent reach to the north pedestrian crossing SW quadrant to the east crossing has a 17.5" adjacent reach and a 15" adjacent to the south pedestrian crossing Countdown function is shown for the pedestrian facilities at the intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Installing retroreflective backplates to the signals is recommended Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. Updating the ped facilities to have countdown features is recommended Add network capabilities 																																																
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	Φ1 SBL	Φ2 NBT	Φ3 WBL	Φ4 EBT	Φ5 NBL	Φ6 SBT	Φ7 EBL	Φ8 WBT																																								
Vehicle Yellow Interval	3.1	3.3	3.1	3.0	3.3	3.1	3.1	3.0																																								
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Walk		7		7		9		7																																								
Pedestrian Clear		16		18		17		18																																								
See existing timings on next page.																																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

22 - Green St & Lincoln Ave

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	15	7	10	7	15	7	10
Passage (1/10 sec)	30	30	30	30	30	30	30	30
Max 1	10	35	10	35	10	35	10	35
Max 2								
Yellow Clearance (1/10 sec)	31	33	31	30	33	31	31	30
Red Clearance (1/10 sec)	20	25	20	25	20	25	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		9		7
Pedestrian Clear		16		18		17		18
Sec. Per Actuation								
Lock Detection								
Phase Recalls								
Dual Entry								

Schedule

Day Plan	Month	Day	Days of Week
1	ALL	SUN	ALL
2	ALL	MON-FRI	ALL
3	ALL	SAT	ALL

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

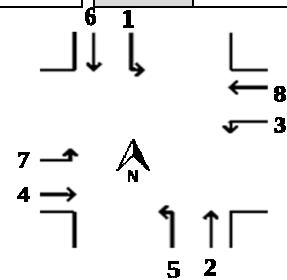
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	00/0/4		1	630 2/1/1		1	900 1/1/1		1		
2			2	900 1/1/1		2	1900 0/0/4		2		
3			3	1500 3/1/1		3			3		
4			4	1800 1/1/1		4			4		
5			5	1900 0/0/4		5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1		100	27	0
2/1/1		110	48	
3/1/1		110	63	

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 1/1/1	12	35	14	39	12	35	14	39
Pattern 2/1/1	14	35	18	43	14	35	18	43
Pattern 3/1/1	14	35	18	43	14	35	18	43
Pattern								
Pattern								

Intersection Street:	23 – Lincoln & Bradley Ave					
Inspection Year:	2022	Inspection Date:	7/1/22			
Controller Information:						
Model:	Siemens m50	Serial #:	142370			
IP Address:	None	Firmware Version:	3.34h			
Date Installed:	1988					
Condition of Cabinet and Hardware:						
<ul style="list-style-type: none"> • Network connection is available to the cabinet. Port 3 says it is active, but failed • MMU EDI SSM-12LE, S/N: 120203112 • No UPS present in the cabinet • Load switch bay has 12 positions • Cabinet has loop detection installed and appears to be working 						
Condition of Signal Equipment and Signs:						
<ul style="list-style-type: none"> • Signal heads do not have retroreflective backplates • Street signs do not meet MUTCD standards • SW, SE, NW quadrants wire mesh is damaged and the NW quadrant bolt cover screw is loose • Signal posts are showing signs of rust/corrosion, Intersection has Yellow 15' signal poles. Paint chipping is present • Left turn indications are a 3-section head • Preemption is not available in the cabinet • Pedestrian push buttons are piezoelectric, but not adjacent to a flat landing area • SW Quadrant has non-APS on mast arm, no detectable warnings, the cross-slope adj. is 4%, and no level landing area • SE quadrant has 2 non-APS push buttons on mast arm pole, no detectable warnings, and adjacent reaches are 12" for both buttons • NE quadrant has 2 non-APS push buttons on mast arm pole, no detectable warnings, 6.4% running slope and 24" adjacent reach for both • NW quadrant has rust at plate, no detectable warnings, 2.5% cross slope, and no true level landing area • No countdown function for pedestrian crossing is available at intersection • NE quadrant to the north pedestrian crossing button has to be pushed fairly hard to activate • No countdown function for pedestrian crossing is available at intersection 						
Comments and Recommendations:						
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • NE quadrant mast arm post is missing one bolt cover, needs to be fixed • Updating the ped facilities to have countdown features is recommended • Installing retroreflective backplates to the signals is recommended • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Tighten loose bolt cover screw, replace damaged wire mesh on mast arm bases 						
	Φ2 EBT/LT	Φ3 NBL	Φ4 SBT	Φ6 WBT/LT	Φ7 SBL	Φ8 NBT
Vehicle Yellow Interval	3.7	3.3	3.8	3.4	3.1	3.7
Vehicle Red Interval	2.5	2.0	2.1	2.5	2.0	2.2
Walk	7		7	7		7
Pedestrian Clear	24		23	25		22
See existing timings on next page.						
Reviewed By:	K. Swinford		Date:	10/14/2022		
Approved By:	K. Evans		Date:	10/14/2022		

SIGNAL TIMING INFORMATION

Intersection:

23 - Lincoln Ave & Bradley Ave

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green		12	7	16		12	7	16
Passage (1/10 sec)		25	25	35		25	25	35
Max 1		35	20	60		35	20	60
Max 2		30	30	35		30	30	35
Yellow Clearance (1/10 sec)		37	33	38		34	31	37
Red Clearance (1/10 sec)		25	20	21		25	20	22
Max Initial		25						
Time Before Reduction				10				10
Time To Reduce				10				10
Minimum Gap				24				24
Walk		7		7		7		7
Pedestrian Clear		24		23		25		22
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN		MAX		MIN		MAX
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

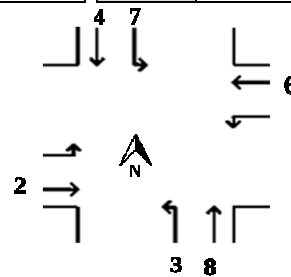
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	0/0/4		1			1		
2			2	700 2/1/1		2			2		
3			3	900 0/0/4		3			3		
4			4	1600 3/1/1		4			4		
5			5	1800 0/0/4		5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
2/1/1	20	110	80	0
3/1/1	30	110	15	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 20		37	15	58		37	15	58
Pattern 30		37	15	58		37	15	58
Pattern								
Pattern								
Pattern								

* Circle coord phases

Intersection Street:	24 – Race St & Windsor Rd																																															
Inspection Year:	2022	Inspection Date:	6/30/22																																													
Controller Information:																																																
Model:	Eagle M50 8130-0300-035	Serial #:	147763																																													
IP Address:	NA	Firmware Version:	3.34h																																													
Date Installed:	2014																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> • Network connection is not available. Ethernet port is available • MMU EDI NSM-12 • UPS present • Load switch bay has 12 positions • Thermal Video autoscope rackvision terra detection is installed and appears to be working 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> • The signals do not have retroreflective backplates • Left turn indications are a 5-section head • Opticom 464 Phase selector preemption is installed and appears to be working. Phase selector is actively monitoring programming in place • Pedestrian push buttons are piezoelectric with audible walk messages • All quadrants have a greater than 10" adjacent reach to pedestrian push buttons. They are generally 12"-16" each. 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Controller is outdated and needs to be upgraded • Installing retroreflective backplates to the signals is recommended • Upgrade UPS to allow for Ethernet and remote monitoring/alerts • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Add network capabilities 																																																
<table border="1"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EB</th> <th>Φ3 NBL</th> <th>Φ4 SB</th> <th>Φ5 EBL</th> <th>Φ6 WB</th> <th>Φ7 SBL</th> <th>Φ8 NB</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>4.2</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> <td>3.8</td> <td>3.1</td> <td>3.1.</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.4</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>20</td> <td></td> <td>24</td> <td></td> <td>19</td> <td></td> <td>27</td> </tr> </tbody> </table>					Φ1 WBL	Φ2 EB	Φ3 NBL	Φ4 SB	Φ5 EBL	Φ6 WB	Φ7 SBL	Φ8 NB	Vehicle Yellow Interval	3.1	4.2	3.1	3.1	3.1	3.8	3.1	3.1.	Vehicle Red Interval	2.0	2.0	2.0	2.5	2.0	2.4	2.0	2.5	Walk		7		7		7		7	Pedestrian Clear		20		24		19		27
	Φ1 WBL	Φ2 EB	Φ3 NBL	Φ4 SB	Φ5 EBL	Φ6 WB	Φ7 SBL	Φ8 NB																																								
Vehicle Yellow Interval	3.1	4.2	3.1	3.1	3.1	3.8	3.1	3.1.																																								
Vehicle Red Interval	2.0	2.0	2.0	2.5	2.0	2.4	2.0	2.5																																								
Walk		7		7		7		7																																								
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Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

24- Windsor St at Race Rd

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	7	5	7	5	7	5	7
Passage (1/10 sec)	30	30	30	30	30	30	30	30
Max 1	10	27	10	19	10	27	10	19
Max 2								
Yellow Clearance (1/10 sec)	31	42	31	31	31	38	31	31
Red Clearance (1/10 sec)	20	20	20	25	20	24	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		20		24		19		27
Sec. Per Actuation								
Lock Detection								
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day
5	ALL	ALL

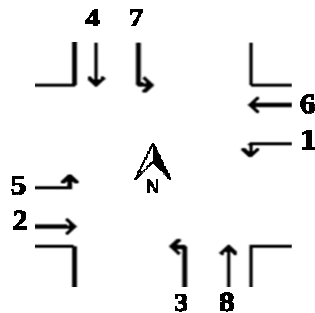
Note:

Day Plans

DAY PLAN 5			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	730	111	1			1			1		
2	900	*004	2			2			2		
3	1600	211	3			3			3		
4	1800	*004	4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Cycle	Offset	Pattern	Sequence	*Alt Sequence
111	90	0			
211	90	0			



Split Timings

	1	2	3	4	5	6	7	8
Pattern 1/1/1	12	36	12	30	12	36	12	30
Pattern 2/1/1	12	33	12	33	12	33	12	33
Pattern 4								

Intersection Street:	25 – High Cross Rd & Tatman Dr							
Inspection Year:	2022	Inspection Date:	7/14/22					
Controller Information:								
Model:	Siemens 8130-0300-035	Serial #:	141107					
IP Address:		Firmware Version:	3.34 Jan 14					
Date Installed:	6/12/14							
Condition of Cabinet and Hardware:								
<ul style="list-style-type: none"> • Network connection is available in the cabinet for controller and UPS • MMU SSM-12LE, 212722 010804339 Rev 136 • There is a UPS present in the cabinet • The load switch bay has 16 positions • Loop detection is being used and appears to be working. 								
Condition of Signal Equipment and Signs:								
<ul style="list-style-type: none"> • Street name signs are present and meet MUTCD standards • SW quadrant signal posts do not have bolt covers • Pedestrian pole in SW quadrant is loose • Left turn indications on Mainline is 3 section head, cross street is 5 section head • Preemption is not present in the cabinet • Pedestrian push buttons are piezoelectric, not APS equipped • SW quad South ped crossing button location not compliant, East ped button not accessible by wheelchair • No countdown function for pedestrian crossing is available at intersection 								
Comments and Recommendations:								
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Updating the ped facilities to have countdown features is recommended • Replace missing bolt covers • Tighten pedestrian post in the SW quadrant • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. 								
	Φ1 SBL	Φ2 NBT	Φ3 WBL	Φ4 EBT	Φ5 NBL	Φ6 SBT	Φ7 EBL	Φ8 WBT
Vehicle Yellow Interval	3.2	4.3	3.2	3.2	3.2	4.3	3.2	3.2
Vehicle Red Interval	2.5	1.8	2.0	2.5	2.0	2.5	2.0	2.5
Walk		9		7		12		
Pedestrian Clear		31		36		25		
See existing timings on next page.								
Reviewed By:	K. Swinford			Date:	10/14/2022			
Approved By:	K. Evans			Date:	10/14/2022			

SIGNAL TIMING INFORMATION

Intersection:

25 - High Cross at Tatman

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	14	7	10	7	14	7	18
Passage (1/10 sec)	35	15	30	30	25	15	30	30
Max 1	20	40	12	20	20	40	12	20
Max 2	0							
Max 3								
Yellow Clearance (1/10 sec)	36	43	32	32	36	43	32	32
Red Clearance (1/10 sec)	20	24	20	25	20	24	20	25
Max Initial	0							
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		
Pedestrian Clear		25		29		17		
Sec. Per Actuation								
Lock Detection	x	x	x	x	x	x	x	x
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day

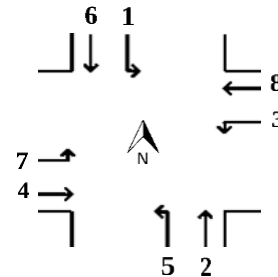
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence	*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 1								
Pattern 2								
Pattern 3								

Intersection Street:	26 – High Cross Rd & University Ave							
Inspection Year:	2022	Inspection Date:	7/14/22					
Controller Information:								
Model:	8130-0300-035	Serial #:	143434					
IP Address:		Firmware Version:	3.34h Jan 14					
Date Installed:								
Condition of Cabinet and Hardware:								
<ul style="list-style-type: none"> • Network connection is available and used for controller • MMU SSM-12LEip, Serial Number 140601177, 5010293 Rev 0168 • There is a UPS installed to the cabinet • The load switch bay has 16 positions • Loop detection is being used and appears to be working 								
Condition of Signal Equipment and Signs:								
<ul style="list-style-type: none"> • SE quadrant mast arm is missing bolt covers • Left turn indications are a 3-section head • Left turn indications are not at least partially over the left turn lane • Preemption is available and appears to be working • Pedestrian push buttons are piezoelectric and are within a 10" standing reach • In the SE quad, the Cross slope of the ramp connected to the south ped crossing is 3.8 • Countdown function is present at the intersection 								
Comments and Recommendations:								
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. 								
	Φ1 SBL	Φ2 NBT	Φ3 WBL	Φ4 EBT	Φ5 NBL	Φ6 SBT	Φ7 EBL	Φ8 WBT
Vehicle Yellow Interval	4.3	3.2	4.3	3.2	3.2	3.2	3.2	3.2
Vehicle Red Interval	1.8	2.5	2.0	2.5	2.0	2.5	2.0	2.5
Walk		7		10				8
Pedestrian Clear		24		34				34
See existing timings on next page.								
Reviewed By:	K. Swinford		Date:	10/14/2022				
Approved By:	K. Evans		Date:	10/14/2022				

SIGNAL TIMING INFORMATION

Intersection:

26 - High Cross at University

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	10	7	12	7	10	7	12
Passage (1/10 sec)	15	15	15	15	15	15	15	15
Max 1	10	25	15	40	20	16	20	40
Max 2	0							
Max 3								
Yellow Clearance (1/10 sec)	36	43	36	43	36	43	36	43
Red Clearance (1/10 sec)	20	23	20	21	21	23	20	21
Max Initial	0							
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7				7
Pedestrian Clear		19		28				28
Sec. Per Actuation								
Lock Detection	x	x	x	x	x	x		
Phase Recalls								
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day

Note:

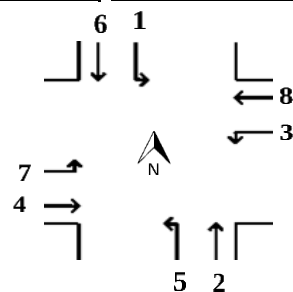
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 1								
Pattern 2								
Pattern 3								

Intersection Street:	27 – Philo Rd & Windsor Rd																																															
Inspection Year:	2022	Inspection Date:	7/01/22																																													
Controller Information:																																																
Model:	Eagle EPAC300	Serial #:	112034																																													
IP Address:	None	Firmware Version:	3.34g																																													
Date Installed:	2007																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> Cabinet has a network connection available, Port 2 is Offline and Active, Port 3 failed and is inactive MMU EDI SSM-12LE, S/N: 070609440 No UPS present in the cabinet Video detection is installed and appears to be working There is a secondary controller in cabinet that is hooked up, unsure what it is being used for. 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> Signals do not have retroreflective backplates Street name signs do not meet MUTCD standards NW quadrant bolt covers are missing Left turn indications are a 5-section head Preemption is available but doesn't work Pedestrian push buttons are piezoelectric SE quadrant to south pedestrian crossing's vegetation is overgrown into ramp area, and to the east pedestrian crossing has a 2.8% cross slope NE quadrant to east pedestrian crossing has a 2.6% cross slope, the vegetation is overgrown, and to the North pedestrian crossing vegetation is overgrown NW quadrant to the north pedestrian crossing has a 7.2% running slope, and to the West pedestrian crossing has a 3% cross slope, SW quadrant to the West pedestrian crossing has a 6.6% running slope and a 2.8% cross slope, Countdown function is shown for the pedestrian facilities at the intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Apply fresh permagum is recommended Installing retroreflective backplates to the signals is recommended Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Set up preemption in the cabinet to be turned on and active. Replace missing bolt covers Trim vegetation in pedestrian crossings The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="203 1545 1421 1755"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ3 NBL</th> <th>Φ4 SBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ7 SBL</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>4.0</td> <td>3.1</td> <td>3.7</td> <td>4.0</td> <td>3.8</td> <td>3.4</td> <td>3.4</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>8</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>24</td> <td></td> <td>22</td> <td></td> <td>22</td> <td></td> <td>26</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT	Vehicle Yellow Interval	3.1	4.0	3.1	3.7	4.0	3.8	3.4	3.4	Vehicle Red Interval	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5	Walk		7		7		7		8	Pedestrian Clear		24		22		22		26
	Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT																																								
Vehicle Yellow Interval	3.1	4.0	3.1	3.7	4.0	3.8	3.4	3.4																																								
Vehicle Red Interval	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5																																								
Walk		7		7		7		8																																								
Pedestrian Clear		24		22		22		26																																								
Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

27 - Philo Rd at Windsor Rd

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	4	4	4	4	4	4	4	4
Passage (1/10 sec)	30	30	30	30	30	30	30	30
Max 1	10	30	10	30	10	30	10	30
Max 2								
Yellow Clearance (1/10 sec)	31	40	31	37	40	38	34	34
Red Clearance (1/10 sec)	20	25	20	25	20	25	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		8
Pedestrian Clear		24		22		22		26
Sec. Per Actuation								
Lock Detection								
Phase Recalls		min, ped				min, ped		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

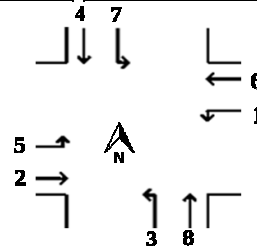
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	730	1/1/1	1			1		
2			2	810	0/0/4	2			2		
3			3	1600	1/1/1	3			3		
4			4	1800	0/0/4	4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1	10	94	90	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10	15	34	15	30	15	34	15	30
Pattern								
Pattern								
Pattern								
Pattern								

* Circle coord phases

Misc

OL C - PHASE 7 wbr

Intersection Street:	28 – Windsor & Boulder																																															
Inspection Year:	2022	Inspection Date:	7/1/22																																													
Controller Information:																																																
Model:	Eagle EPAC300	Serial #:	105897																																													
IP Address:	None	Firmware Version:	3.33e																																													
Date Installed:	2007																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> Cabinet has network connection available and is being used. Port 2 is active but offline and port 3 is inactive and failed MMU: EDI NSM-12, S/N 980908370 No UPS present in the cabinet Load switch bay has 16 positions available Loop detection installed in the cabinet, but not working. It is not picking up vehicles on phase 2 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates Street signs do not meet MUTCD standards There is damage to the NW quadrant mast arm wire mesh Left turn indications are a 5-section head Preemption is installed and appears to be working Pedestrian push buttons are piezoelectric SE quadrant is non-APS to the south pedestrian crossing. Old brick detectable warnings are broken, and the ped sign is faded. Non APS on mast arm to the east crossing has an adjacent reach of 16" NE quadrant has 2 on the same post and to the East pedestrian crossing has an adjacent reach of 18", and to the north pedestrian crossing has a 14" adjacent reach NW quadrant has non APS to the north pedestrian crossing, a 8.6% running slope, the ped sign is faded, and broken detectable warnings, and to the west crossing has a 17" adjacent reach SW quadrant has non APS to the west pedestrian crossing, the ped sign faded, and old broken detectable warnings. South crossing 2.4% running slope, corrosion on ped button, 14" side reach Pedestrian Push buttons showing signs of rust Countdown function is shown for the pedestrian facilities at the intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Installing retroreflective backplates to the signals is recommended Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Check the loop detection and update accordingly the phases that do not activate appropriately Replace the damaged wire mesh <table border="1" data-bbox="203 1570 1421 1780"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ3 NBL</th> <th>Φ4 SBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ7 SBL</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>4.0</td> <td>3.1</td> <td>3.5</td> <td>3.3</td> <td>3.8</td> <td>3.5</td> <td>3.1</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.1</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.1</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>16</td> <td></td> <td>20</td> <td></td> <td>19</td> <td></td> <td>24</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT	Vehicle Yellow Interval	3.1	4.0	3.1	3.5	3.3	3.8	3.5	3.1	Vehicle Red Interval	2.0	2.1	2.0	2.5	2.0	2.1	2.0	2.5	Walk		7		7		7		7	Pedestrian Clear		16		20		19		24
	Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT																																								
Vehicle Yellow Interval	3.1	4.0	3.1	3.5	3.3	3.8	3.5	3.1																																								
Vehicle Red Interval	2.0	2.1	2.0	2.5	2.0	2.1	2.0	2.5																																								
Walk		7		7		7		7																																								
Pedestrian Clear		16		20		19		24																																								
Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

28 - Windsor Rd at Boulder

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	20	5	15	7	20	7	15
Passage (1/10 sec)	20	30	20	30	20	30	20	30
Max 1	11	32	11	28	11	32	11	28
Max 2								
Yellow Clearance (1/10 sec)	31	40	31	35	33	38	35	31
Red Clearance (1/10 sec)	20	21	20	25	20	21	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap		30		30		30		30
Walk		7		7		7		7
Pedestrian Clear		16		20		19		24
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN				MIN		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

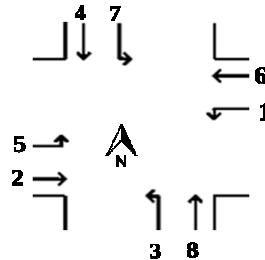
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	730 1/1/1		1			1		
2			2	810 0/0/4		2			2		
3			3	1600 1/1/1		3			3		
4			4	1800 0/0/4		4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1	10	94	0	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10	15	31	18	30	15	31	18	30
Pattern								
Pattern								
Pattern								
Pattern								

Misc

Intersection Street:	29 – Philo Rd. & Scovill St.																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Eagle EPAC300	Serial #:	28131																																			
IP Address:	None	Firmware Version:	3.12g																																			
Date Installed:	2007																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection is available, but not being used. Port 2 active but offline, Port 3 inactive and failed • MMU EDI SSM-12LE, S/N 070906956 • Load switch bay has 16 positions available • Loop detection is installed and working • Load switch #9 for OL A is available and plugged into bay but unused • No UPS present in cabinet 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Street name signs do not meet MUTCD standards, they are all capital letters • There is damage to the NW quad wire mesh • Left turn indications are a 3-section head, 5 section head • Preemption is available, but does not work • Pedestrian push buttons are piezoelectric, but not compliant • SE quadrant has non-APS on signal post for east pedestrian crossing, old brick detectable warnings that are broken, a 2.6% cross slope, and 24" adjacent reach. To the South pedestrian crossing has old brick detectable warnings, the ped sign is faded, and a 2.8% cross slope • SW quadrant to the South crossing has old brick detectable warnings, not level and the pedestrian sign is faded. • NW quadrant to the north pedestrian crossing has a 12" adjacent reach and old brick detectable warnings that aren't level • NE quadrant has old brick detectable warnings and is not level, 19" adjacent reach, and the pedestrian sign for east crossing is also faded • Pedestrian push buttons are showing signs of rust • Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Applying fresh permagum is recommended • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Set up preemption in the cabinet to be turned on and active. • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness • Replace brick detectable warnings to be ADA compliant • Replace faded pedestrian crossing signs <table border="1" data-bbox="280 1633 1341 1845"> <thead> <tr> <th></th> <th>Φ1 SBL</th> <th>Φ2 NBT</th> <th>Φ4 EBT/LT</th> <th>Φ5 NBL</th> <th>Φ6 SBT</th> <th>Φ8 WBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.2</td> <td>3.6</td> <td>3.2</td> <td>3.2</td> <td>3.6</td> <td>3.1</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td>7</td> <td></td> <td>7</td> <td></td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>20</td> <td>17</td> <td></td> <td>13</td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT	Vehicle Yellow Interval	3.2	3.6	3.2	3.2	3.6	3.1	Vehicle Red Interval	2.0	2.0	2.5	2.0	2.0	2.5	Walk		7	7		7		Pedestrian Clear		20	17		13	
	Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT																																
Vehicle Yellow Interval	3.2	3.6	3.2	3.2	3.6	3.1																																
Vehicle Red Interval	2.0	2.0	2.5	2.0	2.0	2.5																																
Walk		7	7		7																																	
Pedestrian Clear		20	17		13																																	
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

29 - Philo & Scovill St

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	20		10	7	20		10
Passage (1/10 sec)		30		30	20	30		30
Max 1	5	47		28	11	53		28
Max 2								
Yellow Clearance (1/10 sec)	32	36		32	32	36		31
Red Clearance (1/10 sec)	20	20		25	20	20		25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap		30		30		30		30
Walk		7		7		7		
Pedestrian Clear		20		17		13		
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN				MIN		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Signal runs free 24/7.

Day Plans

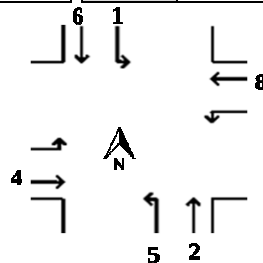
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern								
Pattern								
Pattern								
Pattern								
Pattern								

Misc

OLA for NBR

Intersection Street:	30 – Lincoln and Florida																																															
Inspection Year:	2022	Inspection Date:	7/1/22																																													
Controller Information:																																																
Model:	Eagle EPAC300	Serial #:	116741																																													
IP Address:	None	Firmware Version:	3.34c																																													
Date Installed:	2000																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> Network connection is being used, port 2 is offline and active, and port 3 is inactive and offline MMU EDI SSM-12LE, S/N 000101276 No UPS in the cabinet Load switch bay has 12 positions available Loop detection is installed and is not fully working. The through movements do not appear to be working 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> The signal heads do not have retroreflective backplates Street signs do not meet MUTCD standards. They are all capital letters The SE quadrant pole has damage to the wire mesh and showing signs of rust/corrosion Left turn indications are a 5-section head Preemption is available, but does not work Pedestrian push buttons are piezoelectric, but not compliant NW quadrant has 1 non-APS signal post to the north pedestrian crossing, no detectable warnings, pedestrian sign needs to be rotated some to make the direction clearer, and no actuation for the west pedestrian crossing NE quadrant has non-APS 6' post north pedestrian crossing, no detectable warnings, pedestrian sign does not have an arrow, 6% slope adjacent to button, and no actuation across east leg SE quadrant has non-APS mast arm to the south pedestrian crossing, rust, no detectable warnings, and to the east pedestrian crossing an 18" adjacent reach, detectable warning is sunken in (trip hazard), no arrow on ped sign, and no actuation across east leg SW quadrant has non-APS signal post south pedestrian crossing, no detectable warnings, no arrow on pedestrian sign, and no actuation across west side No countdown function for pedestrian crossing is available at intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Updating the ped facilities to have countdown features is recommended Installing retroreflective backplates to the signals is recommended Check the loop detection and update accordingly the phases that do not activate appropriately Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Set up preemption in the cabinet to be turned on and active. Update pedestrian push buttons to be ADA compliant Rotate and update the pedestrian crossing signs Replace sunken detectable warnings to be ADA compliant Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="203 1627 1421 1837"> <thead> <tr> <th></th> <th>Φ1 NBL</th> <th>Φ2 SBT</th> <th>Φ3 EBL</th> <th>Φ4 WBT</th> <th>Φ5 SBL</th> <th>Φ6 NBT</th> <th>Φ7 WBL</th> <th>Φ8 EBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>3.4</td> <td>3.1</td> <td>3.3</td> <td>3.4</td> <td>3.1</td> <td>3.3</td> <td>3.5</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>8</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>22</td> <td></td> <td>26</td> <td></td> <td>25</td> <td></td> <td>28</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 NBL	Φ2 SBT	Φ3 EBL	Φ4 WBT	Φ5 SBL	Φ6 NBT	Φ7 WBL	Φ8 EBT	Vehicle Yellow Interval	3.1	3.4	3.1	3.3	3.4	3.1	3.3	3.5	Vehicle Red Interval	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5	Walk		8		7		7		7	Pedestrian Clear		22		26		25		28
	Φ1 NBL	Φ2 SBT	Φ3 EBL	Φ4 WBT	Φ5 SBL	Φ6 NBT	Φ7 WBL	Φ8 EBT																																								
Vehicle Yellow Interval	3.1	3.4	3.1	3.3	3.4	3.1	3.3	3.5																																								
Vehicle Red Interval	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5																																								
Walk		8		7		7		7																																								
Pedestrian Clear		22		26		25		28																																								
Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

30 - Lincoln Av & Florida Av

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	6	15	6	15	6	15	6	15
Passage (1/10 sec)	25	30	25	30	25	30	25	30
Max 1	11	36	16	27	11	36	16	27
Max 2								
Yellow Clearance (1/10 sec)	31	34	31	33	34	31	33	35
Red Clearance (1/10 sec)	20	25	20	25	20	25	20	25
Max Initial		20		20		20		20
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		8		7		7		7
Pedestrian Clear		22		26		25		28
Sec. Per Actuation								
Lock Detection								
Phase Recalls				MIN				MIN
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

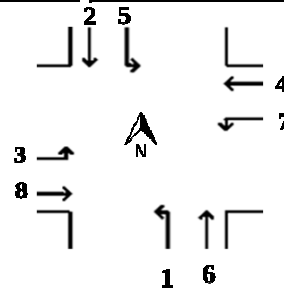
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	10/0/4		1			1		
2			2	700 2/1/1		2			2		
3			3	900 0/0/4		3			3		
4			4	1530 3/1/1		4			4		
5			5	1800 0/0/4		5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
2/1/1	20	110	82	0
3/1/1	30	110	16	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 20	15	36	23	36	15	36	23	36
Pattern 30	16	39	20	35	16	39	20	35
Pattern								
Pattern								
Pattern								

* Circle coord phases

Intersection Street:	31 – Lincoln Ave & Nevada St																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Eagle EPAC300	Serial #:	28955																																			
IP Address:	None	Firmware Version:	2.34k																																			
Date Installed:	2006																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> No network connection available in the cabinet MMU EDI SSM-12LE, S/N 000404058 No UPS present in the cabinet The load switch bay has 12 positions available Loop detection is working appropriately 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> No retroreflective backplates present on the signals Street name signs are present, but do not comply with MUTCD standards. They are all capital letters Left turn indications are a 3-section head, 5-section head Preemption is installed in the cabinet and appears to be working Pedestrian push buttons are piezoelectric, but do not comply NW quadrant to the North pedestrian crossing have portions of level landing area at a 2.6% cross slope with an adjacent reach of 28" NE quadrant to the North pedestrian crossing has an adjacent reach of 28" SE quadrant has an adjacent reach of 22" 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Applying fresh permagum is recommended Countdown function is recommended for the pedestrian facilities Installing retroreflective backplates to the signals is recommended Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Replace pedestrian push buttons to be compliant with ADA guidelines Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals are too short, and the vehicle clearance intervals could be adjusted, see table below for recommended values. Add network capabilities 																																						
<table border="1"> <thead> <tr> <th></th> <th>Φ2 NBT</th> <th>Φ4 EBL</th> <th>Φ5 NBL</th> <th>Φ6 SBT</th> <th>Φ7 EBL</th> <th>Φ8 DUMMY</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.0</td> <td>3.2</td> <td>3.0</td> <td>3.2</td> <td></td> <td>3.1</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.5</td> <td>1.8</td> <td>2.0</td> <td>1.7</td> <td></td> <td>1.5</td> </tr> <tr> <td>Walk</td> <td>7</td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td>18</td> <td>18</td> <td></td> <td>16</td> <td></td> <td>18</td> </tr> </tbody> </table>					Φ2 NBT	Φ4 EBL	Φ5 NBL	Φ6 SBT	Φ7 EBL	Φ8 DUMMY	Vehicle Yellow Interval	3.0	3.2	3.0	3.2		3.1	Vehicle Red Interval	2.5	1.8	2.0	1.7		1.5	Walk	7	7		7		7	Pedestrian Clear	18	18		16		18
	Φ2 NBT	Φ4 EBL	Φ5 NBL	Φ6 SBT	Φ7 EBL	Φ8 DUMMY																																
Vehicle Yellow Interval	3.0	3.2	3.0	3.2		3.1																																
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Walk	7	7		7		7																																
Pedestrian Clear	18	18		16		18																																
See existing timings on next page.																																						
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

31 - Lincoln Av & Nevada St

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	20		10	7	20		10
Passage (1/10 sec)	30	47		45	30	47		45
Max 1	20	60		25	20	60		25
Max 2								
Yellow Clearance (1/10 sec)	32	30	40	32	30	32	40	31
Red Clearance (1/10 sec)	20	25		18	20	17		15
Max Initial		31				31		
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		18		18		16		18
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN				MIN		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

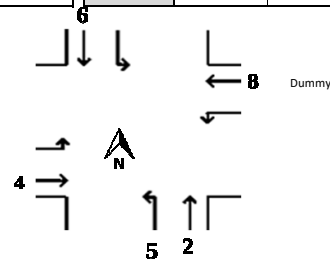
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	700	2/1/1	1			1		
2			2	900	0/0/4	2			2		
3			3	1530	3/1/1	3			3		
4			4	1800	0/0/4	4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
2/1/1	20	110	27	0
3/1/1	30	110	63	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8 Dummy
Pattern 20		59		33	18	59		33
Pattern		61		33	16	61		33
Pattern								
Pattern								
Pattern								

* Circle coord phases

Misc

Additional notes:

OL B, EBR, *on load switch 1*

OL C, SBR, *on load switch 3*

Intersection Street:	32 - Broadway Ave & Main St																																															
Inspection Year:	2022	Inspection Date:	6/30/22																																													
Controller Information:																																																
Model:	Siemens m50	Serial #:	137497																																													
IP Address:	None	Firmware Version:	3.34g																																													
Date Installed:	2013																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> • Network connection is available in the controller and being used • MMU EDI SSM-12LE, S/N 130609026 • UPS is installed in the controller • Load switch bay has 12 available positions • Loop detection is installed, but not working. Phases 2 and 6 do not pick up 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> • Signal heads do not have retroreflective backplates • Signal posts have paint chipping present • Left turn indications are a 5-section head • Preemption is available and appears to be working • Pedestrian push buttons are piezoelectric and do not comply • NW quadrant to north pedestrian cross and SE quadrant to east pedestrian cross have a greater than 10" adjacent reach • NW quadrant to the north pedestrian cross and NE quadrant to north pedestrian crossing are not compliant to flat landing guidelines • Pedestrian push buttons are showing signs of rust • Countdown function is shown for the pedestrian facilities at the intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Installing retroreflective backplates to the signals is recommended • Check the loop detection and update accordingly the phases that do not activate appropriately • Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness • Replace pedestrian push buttons to be compliant with ADA guidelines • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. 																																																
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	Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT																																								
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Pedestrian Clear		17		15		13		15																																								
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Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

32 - Broadway Av & Main St

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	15	7	15	7	15	7	15
Passage (1/10 sec)	30	45	30	45	30	45	30	45
Max 1	20	24	20	24	20	25	20	25
Max 2								
Yellow Clearance (1/10 sec)	31	31	33	31	31	31	31	33
Red Clearance (1/10 sec)	20	25	20	25	23	25	20	25
Max Initial		25				25		
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		17		15		13		15
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN				MIN		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-SAT

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

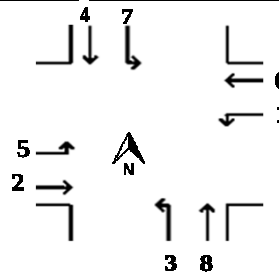
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	740 1/2/1		1			1		
2			2	805 0/0/4		2			2		
3			3	1600 1/2/1		3			3		
4			4	1800 0/0/4		4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/2/1	10	95	5	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10	13	46	13	23	13	46	13	23
Pattern								
Pattern								
Pattern								
Pattern								

Intersection Street:	33 – Goodwin & Springfield							
Inspection Year:	2022	Inspection Date:	7/14/22					
Controller Information:								
Model:	Eagle EPAC 3108 M40	Serial #:	91254					
IP Address:	None	Firmware Version:	3.32d Sept 00					
Date Installed:	8/14/09							
Condition of Cabinet and Hardware:								
<ul style="list-style-type: none"> Cabinet does not have a network connection available MMU EDI SSM-12LE, 238078-1, 090809605 0165 Controller is outdated and can be upgraded There is a UPS present on the cabinet The load switch bay has 16 positions Loop detection is present and appears to be working 								
Condition of Signal Equipment and Signs:								
<ul style="list-style-type: none"> Signal heads do not have retroreflective back plates The NW quad signal post has a hole in the bolt cover Powder coat is deteriorating at the base of pedestrian poles Left turn indications are a 5-section head Preemption is available Pedestrian push buttons are piezoelectric NW quadrant downslopes are greater than ADA standards 								
Comments and Recommendations:								
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended The UPS can be upgraded to provide an ethernet connection Installing retroreflective backplates to the signals is recommended Replace damaged bolt cover Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Add network capabilities 								
	Φ1 WBL	Φ2 EB	Φ3 NBL	Φ4 SB	Φ5 EBL	Φ6 WB	Φ7 SBL	Φ8 NB
Vehicle Yellow Interval	3.1	3.4	3.1	2.8	3.4	3.1	3.1	2.7
Vehicle Red Interval	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5
Walk		7		7		7		7
Pedestrian Clear		19		14		14		15
See existing timings on next page.								
Reviewed By:	K. Swinford			Date:	10/14/2022			
Approved By:	K. Evans			Date:	10/14/2022			

SIGNAL TIMING INFORMATION

Intersection:

33 - Goodwin at Springfield

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	6	26	6	21	6	26	6	21
Passage (1/10 sec)	30	30	30	30	30	30	30	30
Max 1	12	38	12	30	12	38	12	30
Max 2								
Max 3								
Yellow Clearance (1/10 sec)	31	34	31	30	34	31	31	30
Red Clearance (1/10 sec)	20	25	20	25	20	25	20	25
Max Initial	0							
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		19		14		14		15
Sec. Per Actuation								
Lock Detection	x		x		x		x	
Phase Recalls		min				min		
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Signal runs free 24/7.

Day Plans

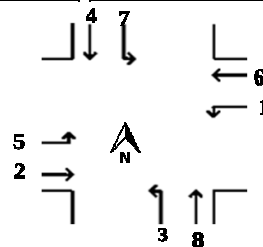
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern								
Pattern								
Pattern								
Pattern								
Pattern								

* Circle coord phases

Misc

OLA : EB FYA
 OLB: SB FYA
 OLC: WB FYA
 OLD: NB FYA

Intersection Street:	34 – Windsor & Myra Ridge																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Eagle EPAC300	Serial #:	59222																																			
IP Address:	None	Firmware Version:	3.32d																																			
Date Installed:	2009																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> Cabinet has a network connection available and is being used. Port 2 is offline and active; Port 3 is inactive and failed MMU EDI SSM-12LE No UPS present in the cabinet Load switch bay has 16 positions available Loop detection is installed and does not fully work. Phases 1&6 are not working 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates SE quadrant pole wire mesh is rusting, NW quadrant pole has no wire mesh Left turn indications are a 3-signal head, 5 signal head Preemption is available, works Pedestrian push buttons are piezoelectric SE quadrant is non-APS to the south pedestrian crossing bolts rusting, top of post rusting, and ped sign is fading. Non-APS to the east pedestrian crossing, pedestrian sign fading, and a 17" adjacent reach SW quadrant is non-APS to the south pedestrian crossing, the adjacent reach is 16", pedestrian sign fading. To the West pedestrian crossing has a 16" adjacent reach NW quadrant is non-APS to the west pedestrian crossing, has a 17" adjacent reach, pedestrian sign fading. Also, it has Non APS to the north pedestrian crossing, the bolts are rusting, has a 4% crossing slope, and the ped sign faded NE quadrant is non-APS to the north pedestrian crossing, the bolts are rusting, the pedestrian sign is faded. Non APS to the east pedestrian crossing has the bolts rusting and the ped sign fading Pedestrian push buttons show signs of rust Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Installing retroreflective backplates to the signals is recommended Check the loop detection and update accordingly the phases that do not activate appropriately Replace missing and damaged wire mesh Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Replace faded pedestrian crossing signs <table border="1" data-bbox="292 1617 1352 1810"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ4 SBT/LT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ8 NBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>4.0</td> <td>3.3</td> <td>3.3</td> <td>3.8</td> <td>3.1</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.1</td> <td>2.5</td> <td>2.0</td> <td>2.1</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td>7</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>15</td> <td>18</td> <td></td> <td>18</td> <td>19</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 WBL	Φ2 EBT	Φ4 SBT/LT	Φ5 EBL	Φ6 WBT	Φ8 NBT/LT	Vehicle Yellow Interval	3.1	4.0	3.3	3.3	3.8	3.1	Vehicle Red Interval	2.0	2.1	2.5	2.0	2.1	2.5	Walk		7	7		7	7	Pedestrian Clear		15	18		18	19
	Φ1 WBL	Φ2 EBT	Φ4 SBT/LT	Φ5 EBL	Φ6 WBT	Φ8 NBT/LT																																
Vehicle Yellow Interval	3.1	4.0	3.3	3.3	3.8	3.1																																
Vehicle Red Interval	2.0	2.1	2.5	2.0	2.1	2.5																																
Walk		7	7		7	7																																
Pedestrian Clear		15	18		18	19																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

34 - Windsor & Myra Ridge

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	25		15	5	25		15
Passage (1/10 sec)	20	30		30	20	30		30
Max 1	11	25		25	7	25		25
Max 2								
Yellow Clearance (1/10 sec)	31	40	40	33	33	38	40	31
Red Clearance (1/10 sec)	20	21		25	20	21		25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		15		18		18		19
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN				MIN		
Dual Entry		X		X		X		X

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

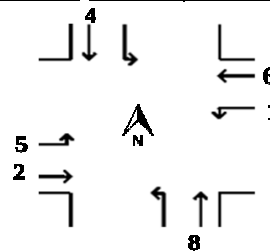
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	730	1/1/1	1			1		
2			2	810	0/0/4	2			2		
3			3	1600	1/1/1	3			3		
4			4	1800	0/0/4	4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1	10	94	0	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern	15	38		41	15	38		41
Pattern								
Pattern								
Pattern								
Pattern								

Misc

OL A Phase 8 SBR

Intersection Street:	35 – Lincoln & Fairview																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Eagle EPAC300	Serial #:	112033																																			
IP Address:	None	Firmware Version:	3.34g																																			
Date Installed:	1997																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> • Network connection available and used. Port 3 is inactive and failed, fiber is not plugged into the controller • MMU EDI SSM-12LE, S/N 971005909 • No UPS present in the controller • The load switch bay has 12 positions available • Loop detection is installed and appears to be working 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> • Signal heads do not have retroreflective backplates • Street signs do not meet MUTCD standards. They are all capital letters • NW quadrant has 2 bolt covers that are cracked and dented inward • NW quadrant foundation is cracked • SW and NW quadrant posts wire mesh is damaged • Left turn indicators are a 3 section head, and 5 section head • Preemption is available, but doesn't work • Pedestrian push buttons are piezoelectric • SW quadrant has 2 non-APS 5' post, the slopes above pedestrian push buttons are greater than 2%, there is no level landing area, EB pedestrian crossing bike button adjacent reach is 11" • SE quadrant to the East crossing is non-APS, there is no level landing. To the South pedestrian crossing has non-APS on mast arm and no level landing area • NE quadrant has 2 non-APS signal post, the sign above the east pedestrian crossing is faded, there is no level landing are. To the north pedestrian crossing button is not chirping when pushed, WB bike button has a 12" adjacent reach • NW quadrant has 2 non-APS on 5' post and the sign above west crossing is faded, • Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Applying fresh permagum is recommended • Replace faded pedestrian crossing signs • Installing retroreflective backplates to the signals is recommended • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Replace damaged bolt covers and wire mesh • Set up preemption in the cabinet to be turned on and active. • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="280 1604 1341 1814"> <thead> <tr> <th></th> <th>Φ1 NBL</th> <th>Φ2 SBT</th> <th>Φ4 WBT/LT</th> <th>Φ5 SBL</th> <th>Φ6 NBT</th> <th>Φ8 EBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> <td>3.3</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.2</td> <td>2.5</td> <td>2.0</td> <td>2.1</td> <td>2.4</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td>7</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>16</td> <td>20</td> <td></td> <td>14</td> <td>20</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 NBL	Φ2 SBT	Φ4 WBT/LT	Φ5 SBL	Φ6 NBT	Φ8 EBT/LT	Vehicle Yellow Interval	3.1	3.1	3.1	3.1	3.1	3.3	Vehicle Red Interval	2.0	2.2	2.5	2.0	2.1	2.4	Walk		7	7		7	7	Pedestrian Clear		16	20		14	20
	Φ1 NBL	Φ2 SBT	Φ4 WBT/LT	Φ5 SBL	Φ6 NBT	Φ8 EBT/LT																																
Vehicle Yellow Interval	3.1	3.1	3.1	3.1	3.1	3.3																																
Vehicle Red Interval	2.0	2.2	2.5	2.0	2.1	2.4																																
Walk		7	7		7	7																																
Pedestrian Clear		16	20		14	20																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

35 - Lincoln Ave & Fairview Ave

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	6	15		10	6	15		10
Passage (1/10 sec)	20	30		30	20	30		30
Max 1	8	30		30	20	30		30
Max 2								
Yellow Clearance (1/10 sec)	31	31	30	31	31	31	30	33
Red Clearance (1/10 sec)	20	22		25	20	21		24
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		16		20		14		20
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN				MIN		
Dual Entry								

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

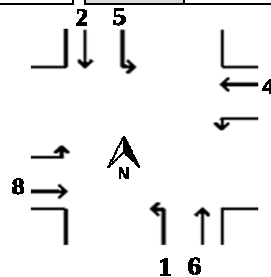
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	0001	0/0/4	1			1		
2			2	700	2/1/1	2			2		
3			3	900	1/1/1	3			3		
4			4	1600	3/1/1	4			4		
5			5	1800	0/0/4	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1	10	100	96	0
2/1/1	20	110	90	0
3/1/1	30	110	22	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10	14	49		37	14	49		37
Pattern 20	15	58		37	15	58		37
Pattern 30	15	58		37	15	58		37
Pattern								
Pattern								

Intersection Street:	36 – Lincoln & Church																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Eagle EPAC300	Serial #:	26832																																			
IP Address:	None	Firmware Version:	3.33e																																			
Date Installed:	2008																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> The cabinet has a network connection used, port 3 says inactive and failed MMU EDI SSM-12LE, S/N 233847 A UPS is present in the cabinet The load switch bay has 12 positions available Loop detection is installed but doesn't appear to be working 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates Street name signs do not meet MUTCD standards. They have all capital letters NE quadrant is missing 3 bolt covers Left turn indications are a 5-section head Preemption is available, but does not appear to be working Pedestrian push buttons are piezoelectric NW quadrant to the West pedestrian crossing has a 3% cross slope, no level landing, and a 31" adjacent reach SE quadrant to the South pedestrian crossing unit on signal post has no level landing and a 27" adjacent reach and to the East pedestrian crossing has a 44" adjacent reach SW quadrant to the West crossing has a 29" adjacent reach, and to the South crossing has a 38" adjacent reach Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter are recommended Applying more permagum is recommended Installing retroreflective backplates to the signals is recommended Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Check the loop detection and update accordingly the phases that do not activate appropriately Replace missing bolt covers Set up preemption in the cabinet to be turned on and active. Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="274 1554 1334 1764"> <thead> <tr> <th></th> <th>Φ1 SBL</th> <th>Φ2 NBT</th> <th>Φ4 EBT/LT</th> <th>Φ5 NBL</th> <th>Φ6 SBT</th> <th>Φ8 WBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.4</td> <td>3.1</td> <td>3.2</td> <td>3.1</td> <td>3.4</td> <td>3.3</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.3</td> <td>2.5</td> <td>2.0</td> <td>2.2</td> <td>2.4</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td>7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>17</td> <td>19</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT	Vehicle Yellow Interval	3.4	3.1	3.2	3.1	3.4	3.3	Vehicle Red Interval	2.0	2.3	2.5	2.0	2.2	2.4	Walk		7	7				Pedestrian Clear		17	19			
	Φ1 SBL	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT	Φ8 WBT/LT																																
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Walk		7	7																																			
Pedestrian Clear		17	19																																			
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

36 - Church St & Lincoln Ave

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	10		10	7	10		10
Passage (1/10 sec)	30	30		30	30	30		30
Max 1	15	30		30	15	30		30
Max 2								
Yellow Clearance (1/10 sec)	34	31	30	32	31	34	30	33
Red Clearance (1/10 sec)	20	23		25	20	22		24
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		6		
Pedestrian Clear		17		19		15		
Sec. Per Actuation								
Lock Detection								
Phase Recalls								
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI
3	ALL	ALL	SAT

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

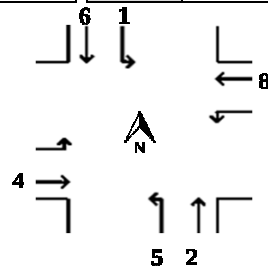
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	0	/0/0/4	1	0	0/0/4	1		
2			2	700	2/1/1	2	900	1/1/1	2		
3			3	900	1/1/1	3	1900	0/0/4	3		
4			4	1500	3/1/1	4			4		
5			5	1800	1/1/1	5			5		
6			6	1900	0/0/4	6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1		100	86	0
2/1/1		110	100	0
3/1/1		110	17	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern	15	55		30	15	55		30
Pattern	15	65		30	15	65		30
Pattern	15	65		30	15	65		30
Pattern								
Pattern								

Intersection Street:	37 – Main & Vine																																															
Inspection Year:	2022	Inspection Date:	6/30/22																																													
Controller Information:																																																
Model:	Siemens m50 8130-1200-001	Serial #:	137379																																													
IP Address:	None	Firmware Version:	3.34g																																													
Date Installed:	1996																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> Network connection is available and being used for the controller MMU EDI NSM-12, S/N 9409-4521 No UPS present in the controller Loop detection is present but does not fully work. Phase 4 detection is not working 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates Paint chipping on ped posts and SE signal post Left turn indications are a 5-section head Preemption is installed and appears to be working Pedestrian push buttons are piezoelectric NW quadrant to the north pedestrian crossing has a 17" adjacent reach, the NE quadrant to the north pedestrian crossing has a 23" adjacent reach, the NE quadrant to the East pedestrian crossing has a 42" adjacent reach, and the SE quadrant to the East crossing has a 20" adjacent reach NW quadrant to the West pedestrian crossing has a 2.3% cross slope and to the North pedestrian crossing has a 3% cross slope and the NE quadrant to the East pedestrian crossing has a 6% cross slope SW quadrant to the west pedestrian crossing, NW quadrant to the West and North pedestrian crossings push buttons are showing signs of rust Countdown function is shown for the pedestrian facilities at the intersection Voice using street names for ped crossing 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended SE quadrant posts do not have bolt covers and need to be fixed Installing retroreflective backplates to the signals is recommended Check the loop detection and update accordingly the phases that do not activate appropriately Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="203 1570 1421 1780"> <thead> <tr> <th></th> <th>Φ1 WBL</th> <th>Φ2 EBT</th> <th>Φ3 NBL</th> <th>Φ4 SBT</th> <th>Φ5 EBL</th> <th>Φ6 WBT</th> <th>Φ7 SBL</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>3.2</td> <td>3.3</td> <td>3.3</td> <td>3.2</td> <td>3.1</td> <td>3.0</td> <td>3.3</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.3</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>26</td> <td></td> <td>26</td> <td></td> <td>26</td> <td></td> <td>26</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT	Vehicle Yellow Interval	3.1	3.2	3.3	3.3	3.2	3.1	3.0	3.3	Vehicle Red Interval	2.0	2.5	2.0	2.3	2.0	2.5	2.0	2.5	Walk		7		7		7		7	Pedestrian Clear		26		26		26		26
	Φ1 WBL	Φ2 EBT	Φ3 NBL	Φ4 SBT	Φ5 EBL	Φ6 WBT	Φ7 SBL	Φ8 NBT																																								
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Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

37 - Main & Vine St

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	15	8	15	5	15	8	15
Passage (1/10 sec)	20	30	20	30	20	45	20	30
Max 1	8	30	11	30	8	30	11	30
Max 2	10	26	10	26	10	26	10	26
Yellow Clearance (1/10 sec)	31	32	33	33	32	31	30	33
Red Clearance (1/10 sec)	20	25	20	23	20	25	20	25
Max Initial		20				20		
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		26		26		26		26
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN		MAX		MIN		MAX
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

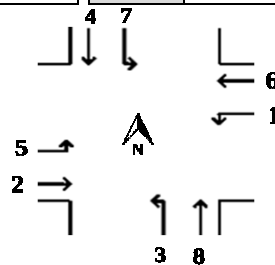
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	700	2/1/1	1			1		
2			2	900	1/1/1	2			2		
3			3	1500	3/1/1	3			3		
4			4	1800	0/0/4	4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1	10	100	60	0
2/1/1	20	110	65	0
3/1/1	30	110	60	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10	14	32	17	37	14	32	17	37
Pattern 20	15	33	18	44	15	33	18	44
Pattern	16	32	20	42	16	32	20	42
Pattern								
Pattern								

* Circle coord phases

Intersection Street:	38 – Lincoln & Pennsylvania																																
Inspection Year:	2022	Inspection Date:	6/30/22																														
Controller Information:																																	
Model:	Siemens m50	Serial #:	142219																														
IP Address:	None	Firmware Version:	3.34h																														
Date Installed:	2006																																
Condition of Cabinet and Hardware:																																	
<ul style="list-style-type: none"> • Network connection is available, communication from port 3 status is failed • MMU EDI NSM-12, S/N 9112-543 • No UPS is present in the cabinet • The load switch bay has 12 available positions • Loop detection is installed and appears to be working 																																	
Condition of Signal Equipment and Signs:																																	
<ul style="list-style-type: none"> • Signal heads do not have retroreflective backplates • Street name signs do not comply with MUTCD standards, all caps • Left turn indications are a 3 section head, 5 section head • Preemption is available, does work • Piezoelectric push buttons, doesn't comply • SE Quad, East crossing 5' post, no rust, 4.3% running slope, no level landing area. South crossing 5' post, no rust, 3.3% running slope, no level landing area • NE quad, East crossing signal 8' post, no rust, level landing area but the detectable warning creates a dip, 14" side reach. North crossing 5' post • NW quad, West crossing signal post, right at 10' from curb. North crossing 5' post, 11.5' from curb. • SW quad, West crossing 5' post, 3.3% running slope adj. to button, no level landing area. South crossing 5' foot, 2.5% cross slope adjacent to button, no level landing area. • All have old brick detectable warnings that are broken and sunken in, trip hazard • Countdown function is shown for the pedestrian facilities at the intersection 																																	
Comments and Recommendations:																																	
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Installing retroreflective backplates to the signals is recommended • Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. • Replace deteriorated brick detectable warnings to be ADA compliant • Installing UPS with ethernet connection is recommended 																																	
<table border="1"> <thead> <tr> <th></th> <th>Φ2 NBT</th> <th>Φ4 EBT/LT</th> <th>Φ5 NBL</th> <th>Φ6 SBT/LT</th> <th>Φ8 WBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.4</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.3</td> </tr> <tr> <td>Walk</td> <td>7</td> <td>7</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td>14</td> <td>15</td> <td></td> <td>16</td> <td>15</td> </tr> </tbody> </table>					Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT/LT	Φ8 WBT/LT	Vehicle Yellow Interval	3.1	3.1	3.1	3.1	3.1	Vehicle Red Interval	2.4	2.5	2.0	2.5	2.3	Walk	7	7		7	7	Pedestrian Clear	14	15		16	15
	Φ2 NBT	Φ4 EBT/LT	Φ5 NBL	Φ6 SBT/LT	Φ8 WBT/LT																												
Vehicle Yellow Interval	3.1	3.1	3.1	3.1	3.1																												
Vehicle Red Interval	2.4	2.5	2.0	2.5	2.3																												
Walk	7	7		7	7																												
Pedestrian Clear	14	15		16	15																												
See existing timings on next page.																																	
Reviewed By:	K. Swinford	Date:	10/14/2022																														
Approved By:	K. Evans	Date:	10/14/2022																														

SIGNAL TIMING INFORMATION

Intersection:

38 - Lincoln Av & Pennsylvania St

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	20	5	10	7	20	5	10
Passage (1/10 sec)	30	47	30	30	30	47	30	30
Max 1	20	57	20	30	9	47	20	30
Max 2	30	35	30	35	30	35	30	35
Yellow Clearance (1/10 sec)	31	31	40	30	31	30	30	31
Red Clearance (1/10 sec)	0	24	0	25	20	25	0	23
Max Initial		38				13		
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		14		15		16		15
Sec. Per Actuation								
Lock Detection								
Phase Recalls								
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

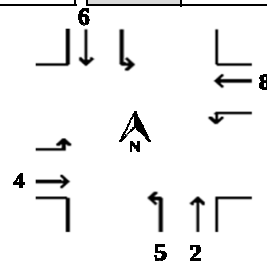
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	700	2/1/1	1			1		
2			2	900	0/0/4	2			2		
3			3	1530	3/1/1	3			3		
4			4	1800	0/0/4	4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
2/1/1	10	110	82	0
3/1/1	20	110	106	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10		54		29	14	40		29
Pattern 20		54		29	14	40		29
Pattern								
Pattern								
Pattern								

Intersection Street:	39 – Lincoln & Illinois																																					
Inspection Year:	2022	Inspection Date:	6/30/22																																			
Controller Information:																																						
Model:	Eagle EPAC300	Serial #:	98712																																			
IP Address:	None	Firmware Version:	3.33b																																			
Date Installed:	2001																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> No network connection is available in the cabinet MMU EDI SSM-12LE S/N 212562 No UPS present in the cabinet The load switch bay has 12 positions available Loop detection is installed and appears to be working 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> Signal heads do not have retroreflective back plates Street signs do not meet MUTCD standards. They are in all capital letters Left turn indications are a 5 section heads Preemption is installed and appears to be working Pedestrian push buttons are piezoelectric NE quadrant pedestrian push buttons are on the same post, have no detectable warnings, no level landing area anywhere, and the bike button reach is 18" horizontal SE quadrant pedestrian push buttons are on the same post, have no detectable warnings, and no level landing area anywhere SW quadrant pedestrian push buttons are on the signal post, have no detectable warnings, both are, pedestrian pushbutton to the west crossing is 12" from edge of crosswalk, bike button reach is 24" horizontal and vertical is 52" NE quadrant pedestrian push buttons are on the same post, have no detectable warnings no level landing areas anywhere Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Applying fresh permagum is recommended The controller is outdated and needs to be upgraded Installing retroreflective backplates to the signals is recommended Replace street name signs to be compliant with MUTCD (all lowercase except for first letter) Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Installing a UPS with ethernet connection is recommended Add network capabilities <table border="1"> <thead> <tr> <th></th> <th>Φ1 NBL</th> <th>Φ2 SBT</th> <th>Φ4 WBT/LT</th> <th>Φ5 SBL</th> <th>Φ6 NBT</th> <th>Φ8 EBT/LT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.3</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> <td>3.3</td> <td>3.2</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.3</td> <td>2.4</td> <td>2.0</td> <td>2.3</td> <td>2.4</td> </tr> <tr> <td>Walk</td> <td></td> <td>8</td> <td>7</td> <td></td> <td>7</td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>20</td> <td>18</td> <td></td> <td>20</td> <td>18</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 NBL	Φ2 SBT	Φ4 WBT/LT	Φ5 SBL	Φ6 NBT	Φ8 EBT/LT	Vehicle Yellow Interval	3.3	3.1	3.1	3.1	3.3	3.2	Vehicle Red Interval	2.0	2.3	2.4	2.0	2.3	2.4	Walk		8	7		7	7	Pedestrian Clear		20	18		20	18
	Φ1 NBL	Φ2 SBT	Φ4 WBT/LT	Φ5 SBL	Φ6 NBT	Φ8 EBT/LT																																
Vehicle Yellow Interval	3.3	3.1	3.1	3.1	3.3	3.2																																
Vehicle Red Interval	2.0	2.3	2.4	2.0	2.3	2.4																																
Walk		8	7		7	7																																
Pedestrian Clear		20	18		20	18																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

39 - Lincoln Av & Illinois St.

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	6	16		10	6	16		10
Passage (1/10 sec)	25	35		25	25	35		25
Max 1	9	30		30	9	30		30
Max 2								
Yellow Clearance (1/10 sec)	33	31	30	31	31	33	30	32
Red Clearance (1/10 sec)	20	23		24	20	23		24
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		8		7		7		7
Pedestrian Clear		20		18		20		18
Sec. Per Actuation								
Lock Detection								
Phase Recalls		MIN		PED		MIN		PED
Dual Entry		X		X		X		X

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

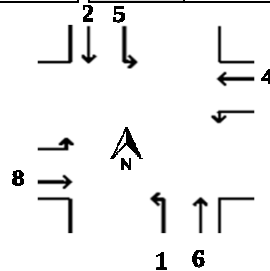
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	700	2/1/1	1			1		
2			2	900	1/1/1	2			2		
3			3	1600	3/1/1	3			3		
4			4	1800	0/0/4	4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1	10	100	27	0
2/1/1	20	110	48	0
3/1/1	30	110	59	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10	17	48		35	17	48		35
Pattern 20	20	51		39	20	51		39
Pattern 30	20	54		36	20	54		36
Pattern								
Pattern								

* Circle coord phases

PED RECALL

Intersection Street:	40 – Vine & Illinois																																					
Inspection Year:	2022	Inspection Date:	6/30/22																																			
Controller Information:																																						
Model:	Eagle EPAC300	Serial #:	31059																																			
IP Address:	None	Firmware Version:	2.32																																			
Date Installed:	1988																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> No network connection available in the cabinet MMU EDI SSM-12LE, S/N 206233 No UPS present in the cabinet Load switch bay has 12 positions available Loop detection is installed and appears to be working 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> Retroreflective backplates are not present on signal heads Paint chipping and fading paint present on the mast arms Left turn indications are a 5 section head Preemption is installed and appears to be working Pedestrian push buttons are piezoelectric No detectable warnings present at the curb ramps at the intersection SW quadrant has a 6% running slope adjacent to the push buttons and a 48" adjacent reach within a level landing area NW quadrant has a 32" adjacent reach within a level landing area NE quadrant has paint peeling on cover and pole SE quad, The South crossing sign is faded and can't tell what it is, 3.5% cross slope adjacent, no landing area near where you can reach them Pedestrian push buttons are showing signs of rust Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Applying fresh permagum is recommended Install UPS is recommended The controller is outdated and can be upgraded Installing retroreflective backplates to the signals is recommended Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Replace faded pedestrian crossing signs Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Add network capabilities <table border="1" data-bbox="175 1566 1255 1776"> <thead> <tr> <th></th> <th>Φ2 EBT/LT</th> <th>Φ3 NBL</th> <th>Φ4 SBT</th> <th>Φ6 WBT/LT</th> <th>Φ7 SBL</th> <th>Φ8 NBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>3.3</td> <td>3.7</td> <td>3.1</td> <td>3.3</td> <td>3.3</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.5</td> <td>2.0</td> <td>1.9</td> <td>2.5</td> <td>2.0</td> <td>2.2</td> </tr> <tr> <td>Walk</td> <td>7</td> <td></td> <td>7</td> <td>8</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td>17</td> <td></td> <td>22</td> <td>20</td> <td></td> <td>22</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ2 EBT/LT	Φ3 NBL	Φ4 SBT	Φ6 WBT/LT	Φ7 SBL	Φ8 NBT	Vehicle Yellow Interval	3.1	3.3	3.7	3.1	3.3	3.3	Vehicle Red Interval	2.5	2.0	1.9	2.5	2.0	2.2	Walk	7		7	8		7	Pedestrian Clear	17		22	20		22
	Φ2 EBT/LT	Φ3 NBL	Φ4 SBT	Φ6 WBT/LT	Φ7 SBL	Φ8 NBT																																
Vehicle Yellow Interval	3.1	3.3	3.7	3.1	3.3	3.3																																
Vehicle Red Interval	2.5	2.0	1.9	2.5	2.0	2.2																																
Walk	7		7	8		7																																
Pedestrian Clear	17		22	20		22																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

40 - Vine & Illinois

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green		10	7	15		10	7	15
Passage (1/10 sec)		30	30	40		30	30	40
Max 1		35	25	35		35	25	35
Max 2		50	30	50		50	30	50
Yellow Clearance (1/10 sec)		31	33	37		31	33	33
Red Clearance (1/10 sec)		25	20	19		25	20	22
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		17		22		20		22
Sec. Per Actuation								
Lock Detection								
Phase Recalls								
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:
Signal runs free at all times of the day.

Day Plans

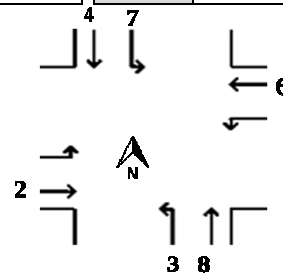
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern								
Pattern								
Pattern								
Pattern								
Pattern								

* Circle coord phases

Intersection Street:	41 – Orchard & Florida																																																			
Inspection Year:	2022			Inspection Date:	7/14/22																																															
Controller Information:																																																				
Model:	EPA 3608 M34			Serial #:	78468																																															
IP Address:	None			Firmware Version:	3.32h Oct 02																																															
Date Installed:																																																				
Condition of Cabinet and Hardware:																																																				
<ul style="list-style-type: none"> Cabinet does not have a network connection available No UPS present in the cabinet The load switch bay has 12 positions Detection is available and working MMU Model: EDI SSM-12LE, S/N: 602 968 6407 																																																				
Condition of Signal Equipment and Signs:																																																				
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates Street name signs do not meet MUTCD standards No mast arms present at the intersection The 3 section heads are not aligned for through movements properly, they are all pedestrian poles Pedestrian push buttons are plungers NE quadrant slopes do not comply with ADA standards There is no pedestrian countdown function present at the intersection 																																																				
Comments and Recommendations:																																																				
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter are recommended The controller is outdated and needs to be upgraded Updating the ped facilities to have countdown features is recommended Installing retroreflective backplates to the signals is recommended Install UPS is recommended Install mast arms to properly align 3-section signal heads Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Add network capabilities <table border="1" data-bbox="203 1486 1421 1696"> <thead> <tr> <th></th> <th>NB</th> <th>NBL</th> <th>SB</th> <th>SBL</th> <th>EB</th> <th>EBL</th> <th>WB</th> <th>WBL</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.3</td> <td>3.3</td> <td>3.3</td> <td>3.3</td> <td>3.1</td> <td>3.1</td> <td>3.4</td> <td>3.4</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>1.8</td> <td>1.7</td> <td>1.7</td> <td>1.9</td> <td>1.9</td> <td>1.7</td> <td>1.6</td> <td>1.5</td> </tr> <tr> <td>Walk</td> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7</td> <td></td> </tr> <tr> <td>Pedestrian Clear</td> <td>12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>9</td> <td></td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>									NB	NBL	SB	SBL	EB	EBL	WB	WBL	Vehicle Yellow Interval	3.3	3.3	3.3	3.3	3.1	3.1	3.4	3.4	Vehicle Red Interval	1.8	1.7	1.7	1.9	1.9	1.7	1.6	1.5	Walk	7						7		Pedestrian Clear	12						9	
	NB	NBL	SB	SBL	EB	EBL	WB	WBL																																												
Vehicle Yellow Interval	3.3	3.3	3.3	3.3	3.1	3.1	3.4	3.4																																												
Vehicle Red Interval	1.8	1.7	1.7	1.9	1.9	1.7	1.6	1.5																																												
Walk	7						7																																													
Pedestrian Clear	12						9																																													
Reviewed By:	K. Swinford			Date:	10/14/2022																																															
Approved By:	K. Evans			Date:	10/14/2022																																															

SIGNAL TIMING INFORMATION

Intersection:

41 - Florida at Orchard

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	25	5	10	5	10	5	10
Passage (1/10 sec)	30	25	30	30	30	45	30	45
Max 1	20	30	20	25	20	20	20	25
Max 2	30	35	30	35	20	30	30	35
Max 3								
Yellow Clearance (1/10 sec)	40	32	40	32	40	20	40	40
Red Clearance (1/10 sec)	0	16	0	16	0	20	0	20
Max Initial	0							
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		6		6		6		6
Pedestrian Clear		8		8		8		8
Sec. Per Actuation								
Lock Detection			x		x		x	
Phase Recalls		min						
Dual Entry								

Schedule

Day Plan	Month	Day
1	ALL	ALL

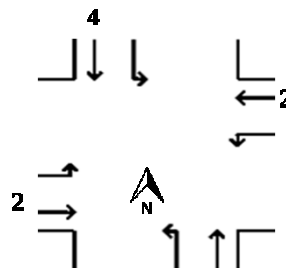
Note:

Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1	0:01	0	1			1			1		
2	7:00	2/1/1	2			2			2		
3	9:00	0	3			3			3		
4	16:00	3/1/1	4			4			4		
5	18:00	0	5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence	*Alt Sequence
	2/1/1	85	74		
	3/1/1	95	31		
	1/1/1	85	51		



Split Timings

	1	2	3	4	5	6	7	8
Pattern 2/1/1		60		25				
Pattern 3/1/1		67		28				
Pattern 4/1/1		55		30				

Intersection Street:	42 – Lincoln & Springfield																																															
Inspection Year:	2022	Inspection Date:	6/30/22																																													
Controller Information:																																																
Model:	Eagle EPAC300	Serial #:	83403																																													
IP Address:		Firmware Version:	3.32d																																													
Date Installed:	2005																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> No network connection is available in the cabinet MMU EDI SSM-12LE No UPS present in the cabinet Load switch bay has 12 positions available Loop detection is installed, but not working, possibly due to construction. No vehicle calls are being picked up 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> Left turn indications are a 5-section head Preemption is installed and appears to be working Pedestrian push buttons are piezoelectric SW quadrant is recently reconstructed, foundations are poured, but the slopes next to each of foundations are over 2% NE quadrant is not reconstructed, 39" adjacent reach from the curb line with a 3.9% landing slope SE quadrant has a 5' post, no detectable warnings, and a 3.9% landing slope Countdown function is shown for the pedestrian facilities at the intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended UPS can be upgraded to provide ethernet connection Controller is outdated and could be upgraded Intersection is under construction, the ped posts are being separated and poured new foundations in the SW quad, and the curb ramp is being reconstructed in the SE quad Check the loop detection and update accordingly the phases that do not activate appropriately once construction is complete Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Add network capabilities <table border="1"> <thead> <tr> <th></th> <th>Φ1 NBL</th> <th>Φ2 SBT</th> <th>Φ3 EBL</th> <th>Φ4 WBT</th> <th>Φ5 SBL</th> <th>Φ6 NBT</th> <th>Φ7 WBL</th> <th>Φ8 EBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.1</td> <td>3.3</td> <td>3.1</td> <td>3.1</td> <td>3.3</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> <td></td> <td>7</td> </tr> <tr> <td>Pedestrian Clear</td> <td></td> <td>23</td> <td></td> <td>20</td> <td></td> <td>23</td> <td></td> <td>25</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 NBL	Φ2 SBT	Φ3 EBL	Φ4 WBT	Φ5 SBL	Φ6 NBT	Φ7 WBL	Φ8 EBT	Vehicle Yellow Interval	3.1	3.3	3.1	3.1	3.3	3.1	3.1	3.1	Vehicle Red Interval	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5	Walk		7		7		7		7	Pedestrian Clear		23		20		23		25
	Φ1 NBL	Φ2 SBT	Φ3 EBL	Φ4 WBT	Φ5 SBL	Φ6 NBT	Φ7 WBL	Φ8 EBT																																								
Vehicle Yellow Interval	3.1	3.3	3.1	3.1	3.3	3.1	3.1	3.1																																								
Vehicle Red Interval	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5																																								
Walk		7		7		7		7																																								
Pedestrian Clear		23		20		23		25																																								
Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

42 -Lincoln Av & Springfield Av

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	15	5	15	5	15	5	15
Passage (1/10 sec)	30	30	30	30	30	30	30	30
Max 1	25	35	25	35	25	35	25	35
Max 2	30	50	30	50	30	50	30	50
Yellow Clearance (1/10 sec)	31	33	31	31	33	31	31	31
Red Clearance (1/10 sec)	20	25	20	25	20	25	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		23		20		23		25
Sec. Per Actuation								
Lock Detection								
Phase Recalls	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week
2	ALL	ALL	MON-FRI

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

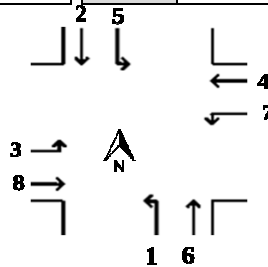
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1	0	0/0/4	1			1		
2			2	700	2/1/1	2			2		
3			3	900	1/1/1	3			3		
4			4	1600	3/1/1	4			4		
5			5	1800	0/0/4	5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence
1/1/1	10	100	27	0
2/1/1	20	110	48	0
3/1/1	30	110	59	0

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern 10	15	39	15	31	15	39	15	31
Pattern 20	15	48	15	32	15	48	15	32
Pattern 30	15	48	15	32	15	48	15	32
Pattern								
Pattern								

* Circle coord phases

Intersection Street:	43 – Philo Rd & Fire Station No 2											
Inspection Year:	2022	Inspection Date:	7/1/22									
Controller Information:												
Model:	Eagle EPAC300	Serial #:	6749									
IP Address:	None	Firmware Version:	2.29r									
Date Installed:	2007											
Condition of Cabinet and Hardware:												
<ul style="list-style-type: none"> No network connection is available in the cabinet MMU EDI NSM-3, S/N 061000252 No UPS present in the controller No detection present in the controller 												
Condition of Signal Equipment and Signs:												
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates No street name signs present No preemption installed in the cabinet No pedestrian facilities at the intersection Signal operates for when firetrucks are exiting facility 												
Comments and Recommendations:												
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Installing retroreflective backplates to the signals is recommended Add network capabilities Update Phase 1 clearance intervals with the values below: <table border="1" data-bbox="495 1621 1127 1747"> <tr> <td></td> <td>Φ1 NB/SB</td> <td>Φ2 DUMMY</td> </tr> <tr> <td>Vehicle Yellow Interval</td> <td>3.6</td> <td></td> </tr> <tr> <td>Vehicle Red Interval</td> <td>5.3</td> <td></td> </tr> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ1 NB/SB	Φ2 DUMMY	Vehicle Yellow Interval	3.6		Vehicle Red Interval	5.3	
	Φ1 NB/SB	Φ2 DUMMY										
Vehicle Yellow Interval	3.6											
Vehicle Red Interval	5.3											
Reviewed By:	K. Swinford	Date:	10/14/2022									
Approved By:	K. Evans	Date:	10/14/2022									

SIGNAL TIMING INFORMATION

Intersection:

43 - Philo at Fire Station NO. 2

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	5						
Passage (1/10 sec)	5	5						
Max 1	5	5						
Max 2	30	50						
Yellow Clearance (1/10 sec)	40	40						
Red Clearance (1/10 sec)	10	10						
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk								
Pedestrian Clear								
Sec. Per Actuation								
Lock Detection								
Phase Recalls	MIN							
Dual Entry								

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

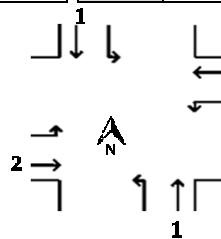
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern								
Pattern								
Pattern								
Pattern								
Pattern								

* Circle coord phases

Intersection Street:	44 - Philo & Florida																																					
Inspection Year:	2022	Inspection Date:	7/1/22																																			
Controller Information:																																						
Model:	Siemens m50	Serial #:	140667																																			
IP Address:	None	Firmware Version:	3.34h																																			
Date Installed:	2014																																					
Condition of Cabinet and Hardware:																																						
<ul style="list-style-type: none"> MMU EDI SSM-12LE, S/N 140200551 There is a UPS present in the cabinet, but they are beginning to corrode The load bay switch has 12 positions available Video detection is installed and appears to be working 																																						
Condition of Signal Equipment and Signs:																																						
<ul style="list-style-type: none"> Signal heads do not have retroreflective plates Left turn indications are a 3-section head and 5 section head Preemption Is installed, but does not work Pedestrian push buttons are piezoelectric SE quadrant has 1 APS 5' post to the east pedestrian crossing running slope is 6.6% and cross slope is 3.5% SW quadrant to the West pedestrian crossing has a cross slope of 2.4% NW quadrant to the West pedestrian crossing has a cross slope of 2.3% Countdown function is shown for the pedestrian facilities at the intersection 																																						
Comments and Recommendations:																																						
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Installing retroreflective backplates to the signals is recommended Set up preemption in the cabinet to be turned on and active. Replace UPSs that are corroding Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Add network capabilities <table border="1" data-bbox="279 1566 1330 1776"> <thead> <tr> <th></th> <th>Φ2 NBT/LT</th> <th>Φ3 WBL</th> <th>Φ4 EBT</th> <th>Φ6 SBT/LT</th> <th>Φ7 EBL</th> <th>Φ8 WBT</th> </tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td> <td>3.7</td> <td>3.0</td> <td>3.3</td> <td>3.5</td> <td>3.3</td> <td>3.0</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> <td>2.5</td> <td>2.0</td> <td>2.5</td> </tr> <tr> <td>Walk</td> <td>15</td> <td></td> <td>15</td> <td>15</td> <td></td> <td>15</td> </tr> <tr> <td>Pedestrian Clear</td> <td>20</td> <td></td> <td>20</td> <td>20</td> <td></td> <td>20</td> </tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					Φ2 NBT/LT	Φ3 WBL	Φ4 EBT	Φ6 SBT/LT	Φ7 EBL	Φ8 WBT	Vehicle Yellow Interval	3.7	3.0	3.3	3.5	3.3	3.0	Vehicle Red Interval	2.5	2.0	2.5	2.5	2.0	2.5	Walk	15		15	15		15	Pedestrian Clear	20		20	20		20
	Φ2 NBT/LT	Φ3 WBL	Φ4 EBT	Φ6 SBT/LT	Φ7 EBL	Φ8 WBT																																
Vehicle Yellow Interval	3.7	3.0	3.3	3.5	3.3	3.0																																
Vehicle Red Interval	2.5	2.0	2.5	2.5	2.0	2.5																																
Walk	15		15	15		15																																
Pedestrian Clear	20		20	20		20																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																			
Approved By:	K. Evans	Date:	10/14/2022																																			

SIGNAL TIMING INFORMATION

Intersection:

44 - Philo & Florida Av

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green		15	7	15		15	7	15
Passage (1/10 sec)		30	20	30		30	20	30
Max 1		38	9	35		38	9	35
Max 2								
Yellow Clearance (1/10 sec)		37	30	33		35	33	30
Red Clearance (1/10 sec)		25	20	25		25	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		15		15		15		15
Pedestrian Clear		20		20		20		20
Sec. Per Actuation								
Lock Detection								
Phase Recalls				MIN				MIN
Dual Entry		X		X		X		X

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:
Signal runs free 24/7

Day Plans

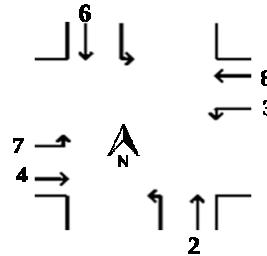
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern								
Pattern								
Pattern								
Pattern								
Pattern								

* Circle coord phases

Intersection Street:	45 – Goodwin & Green																																															
Inspection Year:	2022	Inspection Date:	7/14/22																																													
Controller Information:																																																
Model:	Eagle EPAC 8130-1200-001 M52	Serial #:	126999																																													
IP Address:		Firmware Version:	3.34g Feb 10																																													
Date Installed:	5/16/14																																															
Condition of Cabinet and Hardware:																																																
<ul style="list-style-type: none"> The cabinet does not have a network connection available MMU Model: EDI SSM-12LE, S/N: 140410183 Rev. 0168 There is a UPS present in the cabinet The load switch bay has 12 positions available Opticom video detection is present and appears to be working 																																																
Condition of Signal Equipment and Signs:																																																
<ul style="list-style-type: none"> The signal heads do not have retroreflective backplates Left turn indications are a 5-section head Preemption is available, but was not tested Pedestrian push buttons are piezoelectric Pedestrian pole powder coat is deteriorating at ground level Pedestrian push buttons are rusting SW quadrant pedestrian push button reach length is 15" Pedestrian countdown function is present at the intersection 																																																
Comments and Recommendations:																																																
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Installing retroreflective backplates to the signals is recommended Upgrade UPS to allow for Ethernet and remote monitoring/alerts Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. The UPS can be upgraded to provide an ethernet connection Add network capabilities <table border="1"> <thead> <tr> <th></th><th>NB</th><th>NBL</th><th>SB</th><th>SBL</th><th>EB</th><th>EBL</th><th>WB</th><th>WBL</th></tr> </thead> <tbody> <tr> <td>Vehicle Yellow Interval</td><td>3.0</td><td>3.4</td><td>2.8</td><td>3.2</td><td>2.9</td><td>3.3</td><td>2.9</td><td>3.3</td></tr> <tr> <td>Vehicle Red Interval</td><td>2.5</td><td>2.0</td><td>2.5</td><td>2.0</td><td>2.5</td><td>2.0</td><td>2.5</td><td>2.0</td></tr> <tr> <td>Walk</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>Pedestrian Clear</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <p style="text-align: center;">See existing timings on next page.</p>					NB	NBL	SB	SBL	EB	EBL	WB	WBL	Vehicle Yellow Interval	3.0	3.4	2.8	3.2	2.9	3.3	2.9	3.3	Vehicle Red Interval	2.5	2.0	2.5	2.0	2.5	2.0	2.5	2.0	Walk									Pedestrian Clear								
	NB	NBL	SB	SBL	EB	EBL	WB	WBL																																								
Vehicle Yellow Interval	3.0	3.4	2.8	3.2	2.9	3.3	2.9	3.3																																								
Vehicle Red Interval	2.5	2.0	2.5	2.0	2.5	2.0	2.5	2.0																																								
Walk																																																
Pedestrian Clear																																																
Reviewed By:	K. Swinford	Date:	10/14/2022																																													
Approved By:	K. Evans	Date:	10/14/2022																																													

SIGNAL TIMING INFORMATION

Intersection:

45 - Goodwin at Green

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	15	5	15	5	15	5	15
Passage (1/10 sec)	20	25	20	25	20	25	20	25
Max 1	11	20	11	24	11	20	11	24
Max 2	0	0	30	35	20	30	30	35
Max 3								
Yellow Clearance (1/10 sec)	33	29	34	28	33	29	32	30
Red Clearance (1/10 sec)	20	25	20	25	20	25	20	25
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk								
Pedestrian Clear								
Sec. Per Actuation								
Lock Detection	x		x		x		x	
Phase Recalls		min				min		
Dual Entry		x		x		x		x

9

1

1

7

24

Schedule

Day Plan	Month	Day

Note:

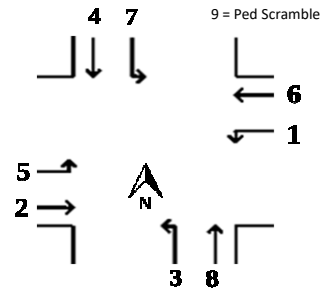
Day Plans

DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Alt Sequence



Split Timings

	1	2	3	4	5	6	7	8
Pattern 1								
Pattern 2								
Pattern 3								

Ped Scramble on Phase 9

Intersection Street:	46 – Lincoln & Windsor																																
Inspection Year:	2022	Inspection Date:	7/1/22																														
Controller Information:																																	
Model:	Eagle EPAC300	Serial #:	102723																														
IP Address:	None	Firmware Version:	3.34g																														
Date Installed:																																	
Condition of Cabinet and Hardware:																																	
<ul style="list-style-type: none"> • Network connection is available, but not being used. • MMU EDI NSM-12, S/N 980908365 • No UPS present on the cabinet • The load switch bay has 12 positions available • Loop detection is installed and appears to be working 																																	
Condition of Signal Equipment and Signs:																																	
<ul style="list-style-type: none"> • Signal heads do not have retroreflective backplates • Street name signs do not meet MUTCD standards; has all capital letters • Preemption is not available • Pedestrian push buttons are piezoelectric • NE quadrant, Ramp has deteriorated, 24" side reach and 22' from curb, non-APS for north crossing, no detectable warnings • NW quadrant, 2 non-APS on signal post, no detectable warnings, 16" side reach for west crossing and 24" for north crossing, buttons and signs are not orientated correctly • SW quadrant, non-APS on signal post, west crossing no detectable warnings, Asphalt, side reach is 30", button and sign are not orientated correctly • West crossing did not have the countdown function present, but the north crossing did have the countdown function present. 																																	
Comments and Recommendations:																																	
<ul style="list-style-type: none"> • Cleaning the cabinet and a new filter is recommended • Applying new permagum is recommended • Updating the ped facilities to have countdown features is recommended • Installing retroreflective backplates to the signals is recommended • Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance • The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. <table border="1" data-bbox="224 1541 1081 1753"> <tr> <td></td> <td>SB</td> <td>NB</td> <td>EB</td> <td>EBL</td> <td>WB</td> </tr> <tr> <td>Vehicle Yellow Interval</td> <td>3.5</td> <td>3.4</td> <td>4.2</td> <td>3.1</td> <td>4.4</td> </tr> <tr> <td>Vehicle Red Interval</td> <td>2.2</td> <td>2.1</td> <td>1.2</td> <td>2.0</td> <td>1.8</td> </tr> <tr> <td>Walk</td> <td>10</td> <td></td> <td></td> <td></td> <td>8</td> </tr> <tr> <td>Pedestrian Clear</td> <td>26</td> <td></td> <td></td> <td></td> <td>25</td> </tr> </table> <p style="text-align: center;">See existing timings on next page.</p>					SB	NB	EB	EBL	WB	Vehicle Yellow Interval	3.5	3.4	4.2	3.1	4.4	Vehicle Red Interval	2.2	2.1	1.2	2.0	1.8	Walk	10				8	Pedestrian Clear	26				25
	SB	NB	EB	EBL	WB																												
Vehicle Yellow Interval	3.5	3.4	4.2	3.1	4.4																												
Vehicle Red Interval	2.2	2.1	1.2	2.0	1.8																												
Walk	10				8																												
Pedestrian Clear	26				25																												
Reviewed By:	K. Swinford	Date:	10/14/2022																														
Approved By:	K. Evans	Date:	10/14/2022																														

SIGNAL TIMING INFORMATION

Intersection:

46 - Lincoln Av & Windsor

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green		16		5	9	16		5
Passage (1/10 sec)		25		24	30	25		25
Max 1		28		28	30	28		28
Max 2		20		50	30	50		50
Yellow Clearance (1/10 sec)		42		35	31	44		34
Red Clearance (1/10 sec)		12		22	20	18		21
Max Initial		21				21		
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk				10		8		
Pedestrian Clear				26		25		
Sec. Per Actuation								
Lock Detection								
Phase Recalls								
Dual Entry		x		x		x		x

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:
Signal runs free 24/7

Day Plans

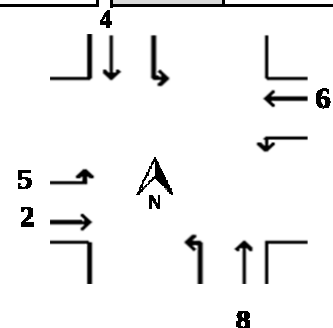
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

Intersection Street:	47 – Lincoln & Fire Station #3											
Inspection Year:	2022	Inspection Date:	7/1/22									
Controller Information:												
Model:	EPAC300	Serial #:	8038									
IP Address:	None	Firmware Version:	2.29s									
Date Installed:	2007											
Condition of Cabinet and Hardware:												
<ul style="list-style-type: none"> No network connection available in the cabinet MMU NSM-3, S/N 070905382 No UPS present in the controller Load switch bay has 4 positions available 												
Condition of Signal Equipment and Signs:												
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates, side mounts No street signs present at the intersection No ped crossings, no mast arms Fire signal is only used when trucks are exiting the station The controller buttons are hard to press, the controller does not respond well Northern most southbound signal post is missing the emergency signal ahead, stop here on red. The stop bar is 50% faded Southern most northbound signal post stop bar is faded 												
Comments and Recommendations:												
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Controller is outdated and needs to be upgraded Installing retroreflective backplates to the signals is recommended Repaint stop bars Add network capabilities Clearance intervals for Phase 1 can be updated to the below: 												
<table border="1"> <tr> <td></td> <td>Φ1 NB/SB</td> <td>Φ2 DUMMY</td> </tr> <tr> <td>Vehicle Yellow Interval</td> <td>3.6</td> <td></td> </tr> <tr> <td>Vehicle Red Interval</td> <td>6.8</td> <td></td> </tr> </table>					Φ1 NB/SB	Φ2 DUMMY	Vehicle Yellow Interval	3.6		Vehicle Red Interval	6.8	
	Φ1 NB/SB	Φ2 DUMMY										
Vehicle Yellow Interval	3.6											
Vehicle Red Interval	6.8											
See existing timings on next page.												
Reviewed By:	K. Swinford	Date:	10/14/2022									
Approved By:	K. Evans	Date:	10/14/2022									

SIGNAL TIMING INFORMATION

Intersection:

47 - Lincoln at Fire Station NO. 3

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	5	5						
Passage (1/10 sec)	1	1						
Max 1	1	1						
Max 2	5	5						
Yellow Clearance (1/10 sec)	40	30						
Red Clearance (1/10 sec)	10	10						
Max Initial								
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk								
Pedestrian Clear								
Sec. Per Actuation								
Lock Detection								
Phase Recalls	MIN							
Dual Entry								

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

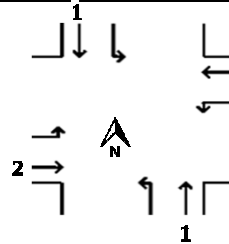
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern								
Pattern								
Pattern								
Pattern								
Pattern								

* Circle coord phases

Misc

Additional notes, could include overlaps (FYA or parent overlaps, with phase and trailing green info), left-turn treatments (FYA or 5-section), detector switching, etc:

Phase 2 is a dummy phase

Intersection Street:	48 – Race & Main							
Inspection Year:	2022	Inspection Date:	6/30/22					
Controller Information:								
Model:	Siemens m50, 8130-0300-035	Serial #:	155274					
IP Address:	None	Firmware Version:	3.34h					
Date Installed:	2013							
Condition of Cabinet and Hardware:								
<ul style="list-style-type: none"> MMU EDI SSM-12LE UPS present Load switch bay has 12 positions available Loop detection is installed and appears to not be working, phase 2 recall 								
Condition of Signal Equipment and Signs:								
<ul style="list-style-type: none"> Signal heads do not have retroreflective backplates Paint chipping on all ped posts along with rusting Signal posts are beginning to show signs of rust Left turn indications are a 5-section head Preemption is installed and appears to be working Pedestrian push buttons are piezoelectric, but not compliant to a 10" adjacent reach Pedestrian push button posts show signs of rust Countdown function is present at the intersection Pedestrian sounds to cross are clickers 								
Comments and Recommendations:								
<ul style="list-style-type: none"> Cleaning the cabinet and a new filter is recommended Installing retroreflective backplates to the signals is recommended Check the loop detection and update accordingly the phases that do not activate appropriately Utilize zinc-rich paint system to protect mast arm and post areas where galvanization appears to be reduced in effectiveness Move the pushbuttons to accommodate for ADA compliance or install short extension brackets to accommodate for ADA compliance The pedestrian clearance intervals and the vehicle clearance intervals could be adjusted, see table below for recommended values. Add network capabilities 								
	Φ1 WBL	Φ2 EB	Φ3 NBL	Φ4 SB	Φ5 EBL	Φ6 WB	Φ7 SBL	Φ8 NB
Vehicle Yellow Interval	3.3	3.0	3.1	3.1	3.0	3.3	3.1	3.1
Vehicle Red Interval	2.0	2.3	2.0	2.5	2.0	2.3	2.0	2.5
Walk		7		7		7		7
Pedestrian Clear		14		15		10		16
See existing timings on next page.								
Reviewed By:	K. Swinford			Date:	10/14/2022			
Approved By:	K. Evans			Date:	10/14/2022			

SIGNAL TIMING INFORMATION

Intersection:

48 - RACE ST & MAIN ST

Phase Data

	1	2	3	4	5	6	7	8
Minimum Green	7	15	7	15	7	15	7	15
Passage (1/10 sec)	20	30	20	30	20	30	20	30
Max 1	25	35	25	35	25	35	25	35
Max 2	30	50	30	50	30	50	30	50
Yellow Clearance (1/10 sec)	33	30	31	31	30	33	31	31
Red Clearance (1/10 sec)	20	23	20	25	20	23	20	25
Max Initial		25				25		
Time Before Reduction								
Time To Reduce								
Minimum Gap								
Walk		7		7		7		7
Pedestrian Clear		14		15		10		16
Sec. Per Actuation								
Lock Detection								
Phase Recalls		min				min		
Dual Entry								

Schedule

Day Plan	Month	Day	Days of Week

Notes, could include info on additional day plans, specific day plans for school/other events, seasonal day plans for school/other events:

Day Plans

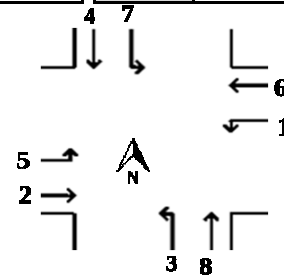
DAY PLAN 1			DAY PLAN 2			DAY PLAN 3			DAY PLAN 4		
Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action	Event	Start Time	Action
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		

Coord Patterns

Action Plan	Pattern	Cycle	Offset	Sequence

*Circle below if controller uses Alt Sequences. If yes, note if default ring is standard or another sequence.

Alternate Sequences



Notes:

	1	2	3	4	5	6	7	8
Pattern								
Pattern								
Pattern								
Pattern								
Pattern								

* Circle coord phases

APPENDIX C

PEDESTRIAN WARNING SYSTEM INVENTORY SHEETS

Intersection Street:	01 - W of Kinch St & Washington St (EB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Single school zone flashing beacon on the eastbound lanes (JSF S/N: 6376) • Beacon runs off solar panel power • Master/slave configuration, slave location 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals are heavily covered in dirt 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	2 - E of Kinch St & Washington St (EB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Individual radars – Houston Radar LLC Doppler Radar DR500. SN: 0805767 • Display for radar speed – SPEEDsentry 12. SN: 1246080121 • Solar panel for power • Programmable by keypad in display radar/box 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals are fairly clean 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	3 – E of Kinch St & Washington St (WB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Radars – Houston Radar LLC Doppler Radar DR500. SN: 0806815 • Display for radar speed – SPEEDsentry 12. SN: 1246080115 • Solar panel for power • Programmable by keypad in cabinet 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals are fairly dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	4 – E of Dodson Dr & Washington St (WB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Single school zone flashing beacon on the westbound lanes (JSF S/N : 136531) • Solar panel for power • Must be physically brought in to program in office, entire head assembly detaches • Master/slave configuration, master location 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals are dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	5 – E of Adams St & Florida Ave (EB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for eastbound lanes – JSF SN: 6364, Controller S/N: 137320 Beacon runs off of solar panel power Master/slave configuration 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Internals are dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	6 – W of James Cherry Dr & Florida Ave (EB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Radars – Houston Radar LLC Doppler Radar DR500. SN: 0805749 • Display for radar speed – SPEEDsentry 12. SN: 1246080118 • Solar panel for power 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals are fairly dirty • Battery has corrosion protection on it 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Recently taken down and re-installed for new sidewalk installation, no new equipment • Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	7 – W of Lincolnwood Dr & Florida Ave (EB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Radars – Houston Radar LLC Doppler Radar DR500. SN: 0805724 • Display for radar speed – SPEEDsentry 12. SN: 1246080114 • Solar panel for power • Programmable by keypad in unit 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Electricians noted the solar panel is bad at this location but still puts out enough voltage to function. Replacement solar panel already shipped, will be replaced when existing solar panel totally fails. • Fairly Clean 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Battery corrosion solution on back of battery should be reapplied • Replace solar panel 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	8 – W of Curtis Dr & Florida Ave (WB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for eastbound lanes – JSF Beacon runs off of solar panel power Master/slave configuration, Slave location 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Internals very dirty Solar panel very dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	9 – Grove St & Florida Ave (EB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for eastbound lanes – JSF SN: 206173 Beacon runs off of solar panel power Master/slave configuration, slave location 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Internals fairly dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	10 – E of Anderson St & Florida Ave (EB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Radars – Houston Radar LLC Doppler Radar DR500. SN: 0805693 • Display for radar speed – SPEEDsentry 12. SN: 1246080120 • School zone flashing beacon for eastbound lanes – JSF SN: 6380 • Beacon runs off of solar panel power • Programmable by keypad in unit 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals very dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	11 – W of Wiley Dr & Florida Ave (WB Lane)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Radars – Houston Radar LLC Doppler Radar DR500. SN: 0805735 • Display for radar speed – SPEEDsentry 12. SN: 1246080117 • Solar panel for power • Attached to a lighting pole 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals fairly clean 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	12 – E of Wiley Dr & Florida Ave (WB Lanes)		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for eastbound lanes – JSF SN: 6380 Beacon runs off of solar panel power Master/slave configuration, master location 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Electricians noted solar power can be obscured by the many trees at this location Internals fairly dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> Cleaning Consider vegetation trimming or alternate power source 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	13 – Race St (NB Lanes) & Oregon St		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	Pedestrian Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Pedestrian flashing beacon • Controller - Intermatic • Beacon runs off electric line. Overhead box from back of 605 Race Alley, underground to flasher. Master box controls both beacons (site 13 and site 14) 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals fairly clean 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Cleaning • Consider vegetation trimming or alternate power source if solar issue persists 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	14 – Race St (SB Lanes) & Oregon St		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	Pedestrian Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Pedestrian flashing beacon • Controller - Intermatic • Beacon runs off electric line. Overhead box from back of 605 Race Alley, underground to flasher. Master box controls both beacons (site 13 and site 14) 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals fairly clean 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Cleaning • Consider vegetation trimming or alternate power source if solar issue persists 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	15 – Vine St (NB Lanes – Near Right, Far Left) & Oregon St		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • School zone flashing beacon • Green box on pole is leftover from old electrical feed • Runs off of solar panel power 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Internals fairly clean • Electricians noted battery issues at this location • Programming cannot be done on location, must be brought in 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • Replace batteries • Replace controller 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	16 – Vine St (SB Lanes) & Oregon St		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for southbound lanes for Leal Elementary – Model: R247, S/N: 1360011091 Beacon runs off of solar panel power Used to be electrically configured with another nearby location Must be field programmed with a laptop & bucket truck 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Internals dirty Solar panel is fairly dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> Cleaning Upgrade controller 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	17 – Vine St (Northbound Lanes)& Pennsylvania Ave		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for northbound lanes– JSF S/N: 137372 Beacon runs off of solar panel power Master/slave configuration 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Internals very dirty Solar panel dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	18 – Vine St (Northbound Lanes) & S of Fairlawn Dr		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Radars – Houston Radar LLC Doppler Radar DR500. S/N: 0805762 • Display for radar speed – SPEEDsentry 12. SN: 1246080119 • Solar panel for power • Programmable by keypad in unit. Note on keypad says “Programmed: New UMS Sched” 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Battery is in good health • Cabinet internals and solar panel are clean 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	19 – Vine St (SB Lanes) & North of Fairlawn Dr		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Speed Feedback Unit		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Radars – Houston Radar LLC Doppler Radar DR500. S/N: 0806803 • Display for radar speed – SPEEDsentry 12. SN: 1246080116 • Solar panel for power Programmable by keypad in unit. Note on keypad says “Programmed: New UMS Sched” 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning • Battery is in good health • Cabinet internals and solar panel are clean 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	20 – Vine St (SB Lanes) & South of Nevada St		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for northbound lanes– JSF S/N: 137372 Beacon runs off of solar panel power Master/slave configuration, slave location 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Internals very dirty Solar panel dirty 			
Comments and Recommendations:			
<ul style="list-style-type: none"> Cleaning 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	21 – E of Wright st on Springfield Ave		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	RRFB – Rectangular Rapid Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> Signal cabinet at Goodwin & Springfield controls the overhead flashers Flashers run at all times during the week Power runs down Parkway in the traffic signal handholes 			
Condition of Equipment:			
<ul style="list-style-type: none"> Flashers are in good condition Functioning 			
Comments and Recommendations:			
<ul style="list-style-type: none"> None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	22 – Springfield Ave (EB Lanes) & Matthews Ave		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> School zone flashing beacon for eastbound lanes Beacon runs off of solar panel power Programmable by keypad in unit. 			
Condition of Equipment:			
<ul style="list-style-type: none"> Functioning Battery is new, replaced by city every 4-5 years Clean Cabinet & Panel 			
Comments and Recommendations:			
<ul style="list-style-type: none"> None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	23 –Springfield Ave (WB Lanes) & Matthews Ave		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	School Zone Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • Signal cabinet at Goodwin & Springfield controls the flasher with the RRFB (#21) • Flashers run at all times during the week • Power runs down Parkway in the traffic signal handholes 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

Intersection Street:	24 –Vine St & Windsor		
Inspection Year:	2022	Inspection Date:	10/05/22
Equipment Type	RRFB – Rectangular Rapid Flashing Beacon		
Date Installed:			
Equipment In Place:			
<ul style="list-style-type: none"> • All 4 beacons are solar powered and communicate with each other via frequency • Carmanah Solar Panels • Communicate through frequency • Must be programmed from a bucket 			
Condition of Equipment:			
<ul style="list-style-type: none"> • Functioning 			
Comments and Recommendations:			
<ul style="list-style-type: none"> • All 4 beacons installed around the same time when Windsor Rd was redone • None 			
Reviewed By:	K. Swinford	Date:	10/14/2022
Approved By:	K. Evans	Date:	10/14/2022

APPENDIX D

PREVENTATIVE MAINTENANCE ANNUAL CHECKLIST

Intersection Street:				
Checklist:	Inspection Date			
Controller Information:				
Model:				
Serial Number:				
Firmware Version:				
MMU/CMU Information:				
Model:				
Serial Number:				
Download Controller Database				
Check Controller Time / Date				
Test MMU/CMU				
Check Detection Functionality				
Check Flash Rate (13-15 per 15 sec)				
Size of Air Filter				
Change Air Filter				
Vacuum Cabinet				
Place Ant Traps				
Check Caulk / Duct Seal / Permagum				
Lube Lock & Hinges				
Trim Vegetation Around Cabinet				
Check Grounding				
Voltage Running				
Amp Running Hot / Neutral				
Voltage Flash				
Amp Flash Hot / Neutral				
Check Power Supply and Breakers				
Inspect Suppression Devices				
Test Inverter				
Check UPS Battery Voltages				
Inspect UPS Batteries for Corrosion				
Check Photocell for Lights				
Test Receptacles				
Check Wire Termination Connections				
Check Ped Buttons and Ped Heads				
Clean Cameras				
Check Span Wire Connections				
Check Signal Head Brackets				
Check Lenses on Heads				
Check All Indications				
Check Mast Arm Street Lights				
Check Anchor Bolts and Covers				
Check Ped and Street Signs for Fading				
Check Wire Mesh around Bases				

APPENDIX E

CENTRAL MANAGEMENT SYSTEM QUOTES

Date: 12/07/2022

Expire Date: 12/31/2022

Prepared By: Millar, Nicole D.

Customer: LOCH

Sokolis, Nick
Lochmueller Group
411 N 10th St Ste 200
Saint Louis MO 63101-1335
United States

Contact: Sokolis, Nick

Phone: 314-446-3787

Description: TACTICS Central for City of Urbana, Up to 30 Intersections

Part #	Description	Quantity	Price	Extended
TACTICS Central- Option 1	TACTICS Central with 1 Year Yunex 360 Support	1	\$30,031.00	\$30,031.00
TACTICS Central - Option 2	TACTICS Central with 3 Years Yunex 360 Support	1	\$35,094.00	\$35,094.00

Sale Amount:	\$65,125.00
Sales Tax:	0.00
Misc Charges:	0.00
Total Amount:	\$65,125.00

Terms:

THIS QUOTE IS BASED ON THE ENTIRE VALUE AND VOLUME OF ALL LINE ITEMS - Prices listed on this quote are valid only in the event of purchase of all line items in the quantities listed, in their entirety. Purchases of individual line items will require a new quote prior to acceptance of any purchase orders.

Shipment of the material will be approximately 90 days after receipt of both an acceptable purchase order and approved submittal data if required. PAYMENT TERMS ARE NET 30 DAYS with prior approved credit. MoboTrex, Inc. retains title to material until paid in full. A service charge of 1.5% per month (18% annual rate) will be assessed against all past due accounts. Prices and delivery quoted are firm for 30 days from the data of bid. The above quote does not include installation of the products quoted. On-Site technical assistance is available and will be quoted upon request.

Quotation does not include sales tax. Sales tax will be added at time of invoice unless a valid Sales Tax Exempt certificate has been provided. Sales tax exempt certificate should accompany customer Purchase Order.

Limited Warranty: MoboTrex, Inc. only obligations shall be to replace such quantity of the product proven to be defective.

Warranty Period: The length of warranty manufacturers have conveyed to the seller and which can be passed on to the buyer.

Additional terms and conditions apply - See MoboTrex, Inc. Terms & Conditions document at our website: www.mobotrex.com.

Thank you for the opportunity to provide this quote.



Company Mailing Address 1420 Kristina Way
Ste. 102
Chesapeake, VA 23320

Federal Tax ID 45-4337530

Prepared By Alison Boan

Company Address 4660 La Jolla Village Drive
Ste. 100
San Diego, CA 92122
US

Quote Number 00000494

Opportunity Name City of Urbana, IL

Created Date 11/30/2022

Date of Expiration 12/30/2022

Terms Net 30

FOB Origin

Billing Address City of Urbana, IL

Urbana, IL
United States

Ship To Name City of Urbana, IL
Ship To Urbana, IL

Product	Product Description	Quantity	Sales Price	Total Price
Kinetic Signals 0025-0049	Kinetic Signals (UNIT price for 25-49 Devices - License Only)	1.00	\$1,280.00	\$1,280.00
Kinetic Signals Configuration - Q-Free Cloud	Kinetic Signals Configuration with Q-Free Cloud	1.00	\$7,500.00	\$7,500.00
Training - Day 1	One-Day Training Only	1.00	\$3,500.00	\$3,500.00

Totals				
		Subtotal	\$12,280.00	
		Grand Total	\$12,280.00	

Please send all Purchase Order requests to sales.urban@q-free.com and include this quote.

Shipping and/or taxes not included if not shown above. Q-Free shall not be held liable or responsible for quoted prices or associated contract terms as a result of events occurring outside Q-Free's control, causing increased costs or availability of electrical components used to manufacture and supply Q-Free products. Q-Free shall provide the other party with prompt written notice of any delay or inability to honor its quoted prices and contract terms, and maintains the right to cancel all partial or complete orders not yet shipped and reject any future purchase orders associated with this quote.

APPENDIX F

SIDEWALK COST ESTIMATES

Cost Estimates for Sidewalk Assessment

	Unit	Per Quad Qty	Unit Price	Extended Price
<u>Key Roadway Items</u>				
Agg Base Cse B, 4"	SY	13	\$ 50.00	\$ 650.00
PCC Sidewalk, 6"	SF	315	\$ 19.00	\$ 5,985.00
Detectable Warnings	SF	30	\$ 28.00	\$ 840.00
Concrete Curb Removal	LF	35	\$ 28.00	\$ 980.00
Sidewalk Removal	SF	315	\$ 4.00	\$ 1,260.00
Concrete Curb	LF	35	\$ 75.00	\$ 2,625.00
				<hr/> \$ 12,340.00
<u>Key Signal Items</u>				
Handhole	EA	1	\$ 2,000.00	\$ 2,000.00
Conduit	LF	50	\$ 40.00	\$ 2,000.00
Signal Post	EA	1	\$ 1,500.00	\$ 1,500.00
Drill Ex. HH	EA	2	\$ 250.00	\$ 500.00
Conc. Fdn.	EA	1	\$ 500.00	\$ 500.00
Signal Cable	LF	250	\$ 4.00	\$ 1,000.00
Relocate Equip.	LS	1	\$ 500.00	\$ 500.00
Remove HH	EA	1	\$ 300.00	\$ 300.00
Cabint & Cont. Mod.	LS	1	\$ 1,000.00	\$ 1,000.00
				<hr/> \$ 9,300.00
Key Roadway + Signal Items				\$ 21,640.00
Assumed Contingency 25%				\$ 5,410.00
TOTAL Estimated Cost Per Quadrant				<hr/> \$ 27,050.00

APPENDIX G

DETAILED SIDEWALK MEASUREMENTS

Sidewalk Assessment - Slopes									
Intersection Name	Int. No.	Running Slope Adjacent to Push Button				Cross Slope Adjacent to Push Button			
		Quadrant				Quadrant			
		NW	NE	SW	SE	NW	NE	SW	SE
CUNNINGHAM AVE (US 45) & KERR AVE	1	OK	3.7% (east x-ing)	OK	OK	OK	OK	OK	OK
CUNNINGHAM AVE (US 45) & PERKINS RD	2	2.60%	2.60%	6.8% (West X-ing) 5.6% (South X-ing)	6.5% (South x-ing) 3.5% (East x-ing)	OK	3.7%	OK	OK
MCCULLOUGH ST & UNIVERSITY AVE (US 45/US 150)	3	OK	OK	OK	OK	OK	OK	OK	OK
CUNNINGHAM AVE (US 45) & AIRPORT RD	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CUNNINGHAM AVE (US 45) & NAPLETON WAY	5	N/A	N/A	OK	OK	N/A	N/A	OK	OK
CUNNINGHAM AVE (US 45) & KENYON RD	6	OK	OK	4%	3.30%	OK	OK	OK	OK
RACE ST & UNIVERSITY AVE (US 45/US 150)	7	OK	OK	OK	OK	OK	OK	4%	OK
COLER AVE & UNIVERSITY AVE (US 45/US 150)	8	5.8% (west x-ing)	3.3% (north x-ing)	OK	OK	OK	OK	OK	OK
LINCOLN AVE & UNIVERSITY AVE (US 45/US 150)	9	3.0% (West x-ing)	5.8% (north x-ing)	5.4%	5.4%	OK	OK	OK	OK
SMITH RD & UNIVERSITY AVE (US 150)	10	6.6% (north x-ing)	OK	N/A	N/A	OK	2.8% (north x-ing)	N/A	N/A
LINCOLN AVE & KILLARNEY ST	11	2.4%	2.1% (north x-ing)	OK	2.8% (east x-ing)	OK	OK	OK	OK
BROADWAY AVE & UNIVERSITY AVE (US 45/US 150)	12	OK	7.5%	OK	OK	4.5%	OK	4.2% (West X-ing) 7% (South X-ing)	3.1% (South X-ing) 6.8% (East X-ing)
GOODWIN AVE & UNIVERSITY AVE (US 45/US 150)	13	6%	OK	8%	OK	OK	OK	OK	OK
HIGH CROSS RD (IL 130) & WINDSOR RD	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ORCHARD ST & UNIVERSITY AVE (US 45/US 150)	15	OK	4.20%	6.50%	6.10%	2.6%	OK	OK	OK
CUNNINGHAM AVE (US 45) & UNIVERSITY AVE	16	6.3% (North x-ing) 4.4% (West X-ing)	6.6%	6.30%	6.6%	OK	OK	OK	OK
LINCOLN AVE & S (I-74 RAMP)	17	6.8%	N/A	OK	N/A	OK	N/A	2.3% (west x-ing)	N/A
LINCOLN AVE & N (I-74 RAMP)	18	3.3%	N/A	8%	N/A	OK	N/A	OK	N/A
CUNNINGHAM AVE (US 45) & S (I-74 RAMP)	19	N/A	4	N/A	4.5	N/A	OK	N/A	OK
CUNNINGHAM AVE (US 45) & N (I-74 RAMP)	20	N/A	6.3	N/A	5.2	N/A	OK	N/A	OK
GUARDIAN DR & UNIVERSITY AVE (US 150)	21	All need update, not ADA compliant by any means.							
LINCOLN AVE & GREEN ST	22	OK	2.3% (south x-ing)	OK	2.3% (east x-ing)	OK	OK	OK	OK
LINCOLN AVE & BRADLEY AVE	23	3.5%	11.9%	9.8%	2.6%	3.5%	OK	9.1%	OK
RACE ST & WINDSOR RD	24	7.5 (West) 2.4 (North)	6.5 (North) 3.8 (East)	1 (South) 0.7 (West)	3.7 (East) 3.8 (South)	3.5% (west x-ing)	3.8% (east x-ing)	2.1% (south x-ing)	OK
HIGH CROSS RD (IL 130) & TATMAN DR	25	4.9% (west x-ing)	2.80%	4.9% (west x-ing) 5.4% (south x-ing)	3.80%	OK	OK	2.1% (west x-ing)	OK
HIGH CROSS RD (IL 130) & UNIVERSITY AVE (US 150)	26	NO SIDEWALK	10.2% (North x-ing)	5.20%	4.9% (east x-ing) 4.7% (south x-ing)	NO SIDEWALK	OK	OK	3.8% (South x-ing)
PHILO RD & WINDSOR RD	27	6.6% (north x-ing)	7.2% (east x-ing) 3.3% (north x-ing)	5.2% (south x-ing)	3.7% (south x-ing)	2.8% (north x-ing)	3% (north x-ing)	2.8% (south x-ing)	2.6% (south x-ing)
BOULDER DR & WINDSOR RD	28	8.6% (north x-ing) 5.2% (west x-ing)	4.7%	2.4% (south x-ing)	OK	OK	OK	OK	OK
PHILO RD & SCOVILL ST	29	4.5% (west x-ing)	2.6% (east x-ing)	3.5% (south x-ing) 4.9% (west x-ing)	5.9%	OK	OK	2.6% (south x-ing) 2.8% (west x-ing)	OK

Sidewalk Assessment - Slopes									
Intersection Name	Int. No.	Running Slope Adjacent to Push Button				Cross Slope Adjacent to Push Button			
		Quadrant				Quadrant			
		NW	NE	SW	SE	NW	NE	SW	SE
LINCOLN AVE & FLORIDA AVE	30	6.5%	10.2%	3.1%	4.5%	OK	OK	3.0%	2.3%
LINCOLN AVE & NEVADA ST	31	3.8% (west x-ing) 9.1% (north x-ing)	5.1% (north x-ing)	2.6% (west x-ing) 3.1% (south x-ing)	3.0% (south x-ing)	4.4% (north x-ing)	OK	3.1% (west x-ing) 3.8 (south x-ing)	OK
BROADWAY AVE & MAIN ST	32	4.9% (west x-ing) 8.9% (north x-ing)	2.6% (east x-ing) 3.1% (north x-ing)	5.6% (west x-ing) 7.9% (south x-ing)	4.9% (south x-ing)	OK	OK	2.6% (south x-ing)	OK
GOODWIN AVE & SPRINGFIELD AVE	33	8.6% (West x-ing) 6.1% (north x-ing)	5.8% (north x-ing) 5.6% (east x-ing)	OK	OK	3.3% (west x-ing) 2.1% (north x-ing)	2.6% (north x-ing)	4.9%	3%
MYRA RIDGE DR & WINDSOR RD	34	3.3% (west x-ing) 4.9% (north x-ing)	2.4% (east x-ing)	2.6% (west x-ing)	3.3% (east x-ing)	4.0% (north x-ing)	OK	OK	OK
LINCOLN AVE & FAIRVIEW AVE	35	OK	4.7% (north x-ing) 4.7% (east x-ing)	5.0%	5.4% (east x-ing) 4.5% (south x-ing)	OK	OK	5.0%	3.3% (south x-ing)
LINCOLN AVE & CHURCH ST	36	6.5% (west x-ing)	6.5% (east x-ing)	2.8%	10.3% (south x-ing) 10.3% (east x-ing)	3.1% (west x-ing)	OK	2.6%	OK
VINE ST & MAIN ST	37	6.8% (west x-ing) 2.4% (north x-ing)	8.4% (north x-ing) 10.2% (east x-ing)	OK	2.4% (east x-ing) 3.0% (south x-ing)	4.4% (north x-ing)	OK	2.6% (west x-ing)	2.3% (east x-ing) 3.5% (south x-ing)
LINCOLN AVE & PENNSYLVANIA ST	38	3.5% (west x-ing) 3.1% (north x-ing)	3.1% (east x-ing)	2.3% (west x-ing)	7.5% (east x-ing) 3.8% (south x-ing)	OK	OK	3.1% (west xing) 4.0% (south x-ing)	2.8% (east x-ing) 4.9% (south x-ing)
LINCOLN AVE & ILLINOIS ST	39	5.9% (both)	4.0%	OK	6.5%	OK	OK	OK	OK
VINE ST & ILLINOIS ST	40	7.9%	OK	13.0%	9.5%	2.4%	2.3%	4.5%	7.0%
ORCHARD ST & FLORIDA AVE	41	6.3% (north x-ing)	9.1% (north x-ing) 8.4% (east x-ing)	OK	6.6% (east x-ing)	4.4% (north x-ing)	3.5% (north x-ing) 5.1% (east x-ing)	OK	6.8% (east x-ing)
LINCOLN AVE & SPRINGFIELD AVE	42	OK	3.5% (north x-ing)	3.0% (south x-ing) 4.9% (west x-ing)	OK	OK	3.6% (north x-ing) 2.6% (east x-ing)	2.4% (south x-ing) 3.5% (west x-ing)	OK
PHILO RD & FIRE STATION NO. 2	43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PHILO RD & FLORIDA AVE	44	3% (north x-ing)	3.0% (east x-ing)	6.6% (south x-ing)	5.2% (east x-ing)	2.4% (north x-ing)	2.3% (north x-ing)	3.5% (south x-ing)	OK
GOODWIN AVE & GREEN ST	45	OK	OK	OK	OK	OK	OK	OK	OK
LINCOLN AVE & WINDSOR RD	46	4.4% (north x-ing)	HMA Surface	HMA Surface	N/A	4.0% (north x-ing) 2.3% (west x-ing)	HMA Surface	HMA Surface	N/A
LINCOLN AVE & FIRE STATION NO. 3	47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RACE ST & MAIN ST	48	3.0% (west x-ing) 3.0% (north x-ing)	No 4'x4' landing for north x-ing	3.3% (west x-ing)	7.7% (east x-ing) 8.7% (south x-ing)	OK	2.3% (east x-ing)	2.1% (west x-ing)	3.5% (east x-ing) 4.5% (south x-ing)
		48	47	47	47	47	47	47	47

Sidewalk Assessment - Detectable Warnings and Push Button Reach									
Intersection Name	Int. No.	Detectable Warning				Push Button Reach			
		Quadrant				Quadrant			
		NW	NE	SW	SE	NW	NE	SW	SE
CUNNINGHAM AVE (US 45) & KERR AVE	1	Y	Y	Y	Y	OK	OK	12" reach (south x-ing)	OK
CUNNINGHAM AVE (US 45) & PERKINS RD	2	Y	Y	Y	Y	OK	13' from curb (north x-ing) 15' from curb (east x-ing)	OK	OK
MCCULLOUGH ST & UNIVERSITY AVE (US 45/US 150)	3	Y	Y	Y	Y	OK	OK	11" reach (west x-ing) 11" reach (south x-ing)	OK
CUNNINGHAM AVE (US 45) & AIRPORT RD	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CUNNINGHAM AVE (US 45) & NAPLETON WAY	5	N/A	N/A	Y	Y	N/A	N/A	OK	OK
CUNNINGHAM AVE (US 45) & KENYON RD	6	Y	Y	Y	Y	11" reach (west x-ing)	OK	OK	OK
RACE ST & UNIVERSITY AVE (US 45/US 150)	7	Y	Y	Y	Y	14' from curb (north x-ing)	OK	OK	OK
COLER AVE & UNIVERSITY AVE (US 45/US 150)	8	N	N	Y	N	OK	OK	11" reach (south x-ing)	11" reach (East x-ing)
LINCOLN AVE & UNIVERSITY AVE (US 45/US 150)	9	Y	Y	Y	Y	13" reach (north x-ing)	11" reach (East x-ing)	11" reach (south x-ing)	12" reach (south x-ing)
SMITH RD & UNIVERSITY AVE (US 150)	10	Y	Y	N/A	N/A	27" reach (north x-ing)	11" reach (north x-ing)	N/A	N/A
LINCOLN AVE & KILLARNEY ST	11	Y	Y	Y	Y	OK	17" reach (north x-ing)	OK	15" reach (east x-ing)
BROADWAY AVE & UNIVERSITY AVE (US 45/US 150)	12	Y	Y	Y	Y	26" reach (from quad to island) 14" reach (island west x-ing) 20" reach (north x-ing) 16" reach (from island to quad)	18" reach (north leg) 18" reach (east x-ing)	26" (to island from quad) 15" reach (west x-ing) 25" (island northeast leg) 12" (island southeast leg)	>10" reach (east x-ing)
GOODWIN AVE & UNIVERSITY AVE (US 45/US 150)	13	Y	Y	Y	Y	11" reach (north x-ing)	11" reach (both buttons)	OK	11" reach (south x-ing)
HIGH CROSS RD (IL 130) & WINDSOR RD	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ORCHARD ST & UNIVERSITY AVE (US 45/US 150)	15	Y	Y	Y	Y	OK	OK	11" reach (west x-ing) 13' from curb	13' from curb
CUNNINGHAM AVE (US 45) & UNIVERSITY AVE	16	Y	Y	Y	Y	13" reach (north x-ing)	14" reach (to island x-ing) 14" (island north x-ing) 13" (island northeast x-ing) 11" (island southeast x-ing)	12" reach (to island x-ing)	16" reach (south x-ing) 11" reach (island southwest x-ing) 15" (island southeast x-ing)

Sidewalk Assessment - Detectable Warnings and Push Button Reach									
Intersection Name	Int. No.	Detectable Warning				Push Button Reach			
		Quadrant				Quadrant			
		NW	NE	SW	SE	NW	NE	SW	SE
LINCOLN AVE & S (I-74 RAMP)	17	Y	N/A	Y	N/A	OK	N/A	17" reach 14' from curb	N/A
LINCOLN AVE & N (I-74 RAMP)	18	Y	N/A	Y	N/A	16" reach, 47" height	N/A	OK	N/A
CUNNINGHAM AVE (US 45) & S (I-74 RAMP)	19	N/A	Y	N/A	Y	N/A	OK	N/A	OK
CUNNINGHAM AVE (US 45) & N (I-74 RAMP)	20	N/A	Y	N/A	Y	N/A	OK	N/A	OK
GUARDIAN DR & UNIVERSITY AVE (US 150)	21								
LINCOLN AVE & GREEN ST	22	Y	Y	Y	Y	OK	15' from curb (east x-ing) 11' from curb (north x-ing)	10.5" reach (west x-ing) 17.5' from curb (west x-ing) 24" reach (south x-ing) 15' from curb (south x-ing)	14" reach (south x-ing) 19" reach (east x-ing)
LINCOLN AVE & BRADLEY AVE	23	N	N	N	N	OK	24" reach (both buttons)	OK	12" reach (both buttons)
RACE ST & WINDSOR RD	24	Y	Y	Y	Y	>10" reach	>10" reach	>10" reach	>10" reach
HIGH CROSS RD (IL 130) & TATMAN DR	25	Y	Y	Y	Y	Not accessible by wheelchair 15' from curb	OK	20' from curb (west x-ing) 12' from curb (south x-ing)	OK
HIGH CROSS RD (IL 130) & UNIVERSITY AVE (US 150)	26	N	Y	Y	Y	No sidewalk/ramp (a pushbutton exists)	18' from curb (north x-ing)	OK	OK
PHILO RD & WINDSOR RD	27	Y	Y	Y	Y	OK	OK	OK	OK
BOULDER DR & WINDSOR RD	28	Damaged	Damaged	Damaged	Damaged	17" reach (west x-ing)	14" reach (north x-ing) 18" reach (east x-ing)	14" reach (south x-ing)	16" reach (east x-ing)
PHILO RD & SCOVILL ST	29	Damaged	Damaged	Damaged	Damaged	OK	12" reach (east x-ing)	24" reach (south x-ing)	19' from curb (both) 13' from x-walk (south x-ing)
LINCOLN AVE & FLORIDA AVE	30	N	N	N	N	OK	OK	18" reach (south x-ing)	OK
LINCOLN AVE & NEVADA ST	31	Y	Y	Y	Y	28" reach (north x-ing)	14" reach (north x-ing)	OK	22" reach (south x-ing)
BROADWAY AVE & MAIN ST	32	Y	Y	Y	Y	OK	OK	14' from curb (west x-ing)	16" reach (south x-ing)

Sidewalk Assessment - Detectable Warnings and Push Button Reach									
Intersection Name	Int. No.	Detectable Warning				Push Button Reach			
		Quadrant				Quadrant			
		NW	NE	SW	SE	NW	NE	SW	SE
GOODWIN AVE & SPRINGFIELD AVE	33	Y	Y	Y	Y	12' from curb (north x-ing)	11' from curb (east x-ing)	OK	OK
MYRA RIDGE DR & WINDSOR RD	34	Y	Y	Y	Y	17" reach (west x-ing)	OK	16" reach (south x-ing) 16" reach (west x-ing)	17" reach (east x-ing)
LINCOLN AVE & FAIRVIEW AVE	35	Y	Y	Y	Y	OK	12" reach (EB bike button)	11" reach (EB bike button)	OK
LINCOLN AVE & CHURCH ST	36	Y	Y	Y	Y	31" reach (west x-ing)	OK	29" reach (west crossing) 38" reach (south x-ing)	27" reach (south x-ing) 44" reach (east x-ing)
VINE ST & MAIN ST	37	Y	Y	Y	Y	17" reach (west x-ing) 17" reach (north x-ing)	23" reach (north x-ing)	46" PAR	20" reach (east x-ing)
LINCOLN AVE & PENNSYLVANIA ST	38	Damaged	Damaged	Damaged	Damaged	11.5' from curb (north x-ing)	14" reach (east x-ing)	OK	14" reach (south x-ing)
LINCOLN AVE & ILLINOIS ST	39	N	N	Y	N	OK	18" reach (WB bike button)	16' from curb (both) 12' from x-walk (west x-ing) 24" side reach & 52" vert reach (EB bike button)	
VINE ST & ILLINOIS ST	40	N	N	N	N	OK	OK	OK	OK
ORCHARD ST & FLORIDA AVE	41	N	N	Y	N	OK	OK	OK	12' from curb (east x-ing) 18" reach (NB bike button)
LINCOLN AVE & SPRINGFIELD AVE	42	Y	Y	Y	Y	OK	33" PAR (north x-ing) 36" PAR (east x-ing)	OK	OK
PHILO RD & FIRE STATION NO. 2	43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PHILO RD & FLORIDA AVE	44	Y	Y	Y	Y	OK	OK	OK	OK
GOODWIN AVE & GREEN ST	45	Y	Y	Y	Y	OK	OK	15" reach (south x-ing) 18" reach (west x-ing)	OK
LINCOLN AVE & WINDSOR RD	46	N	N	N	N/A	24" reach (north x-ing) 16" reach (west x-ing)	24" reach (north x-ing) 22' from curb (north x-ing)	30" reach (west x-ing)	N/A
LINCOLN AVE & FIRE STATION NO. 3	47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RACE ST & MAIN ST	48	Y	Damaged	Y	Y	20" reach (north x-ing)	36" PAR (north x-ing) 13" reach (east x-ing)	14" reach (south x-ing)	OK
						47	47	47	46



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