



Traffic Signal Overview

Brent Schlack, P.E.
Director of Engineering

Mark Fenelon
Signal Maintenance Supervisor

February 3, 2026



  @Washtenawroads

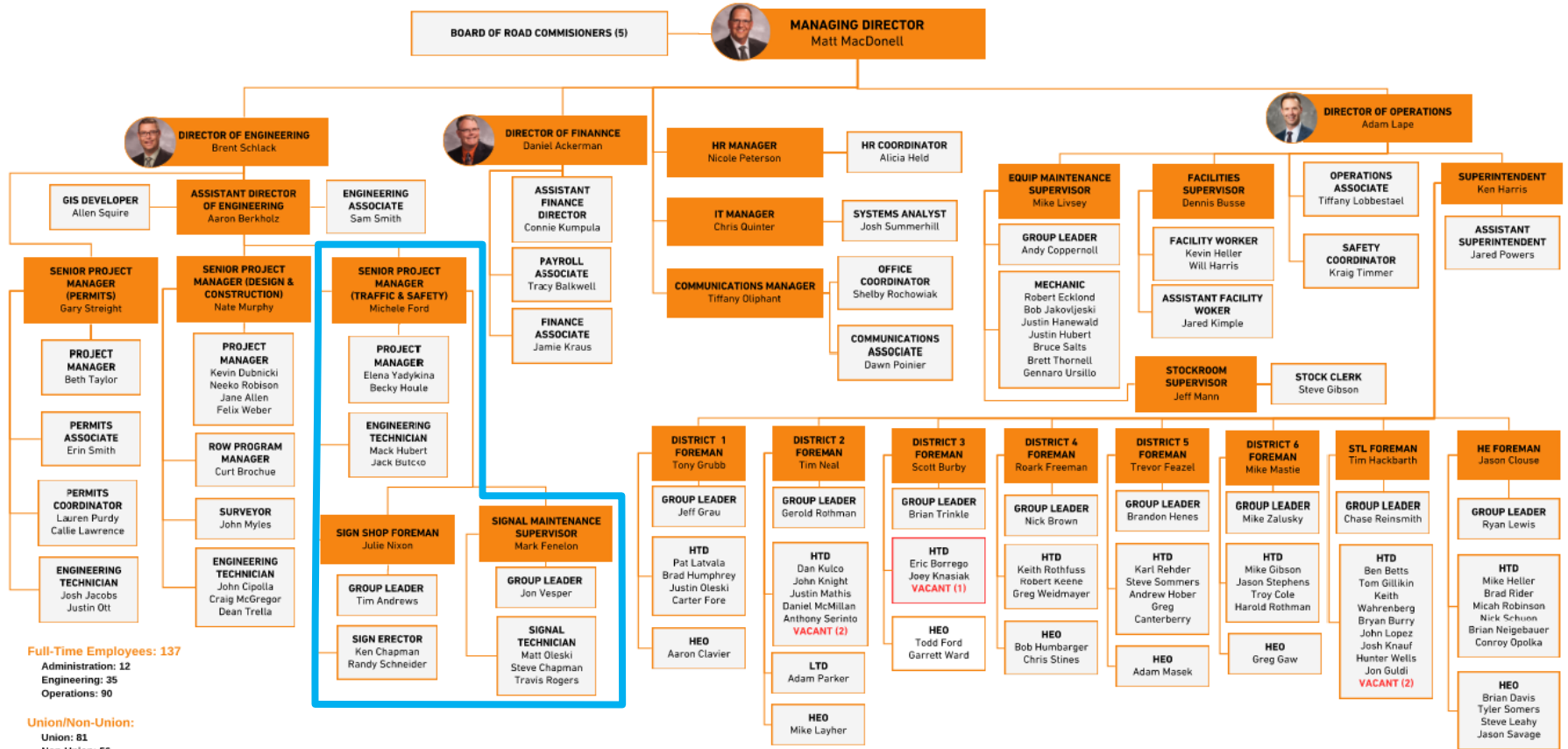


Agenda

- I. WCRC Signal Team
- II. Building a Network
- III. Communication
- IV. The Future

Washtenaw County Road Commission

Organizational Chart



Traffic Signal Team

**SENIOR PROJECT
MANAGER
(TRAFFIC & SAFETY)**
Michele Ford

**SIGNAL MAINTENANCE
SUPERVISOR**
Mark Fenelon

GROUP LEADER
Jon Vesper

**SIGNAL
TECHNICIAN**
Matt Oleski
Steve Chapman
Travis Rogers

- Senior Project Manager
- Signals
 - Signal Maintenance Supervisor
 - Group Leader
 - Signal Techs (3)
- Consultant Partners
- As-Needed Signal Services Contract

Core Responsibilities

Maintain traffic & pedestrian signals for safer travel!



System Maintenance

- Traffic signals
- Pedestrian signals
- Vehicle Detection
- Flashers
- CCTV
- Communication
 - 5G & 4G Cellular Modem
 - Wireless Interconnect
 - Fiber Optic
 - Ethernet Switch
- Battery Backup



WCRC Traffic Signals

- 201 Locations
 - 112 Traffic Signals
 - 60 with Battery Backup Units
 - 109 with Communication
 - 67 with Cameras
 - 55 Flashing Beacons
 - 34 RRFB's



Additional Maintenance Contracts

- MDOT Signals
 - 62 Traffic Signals
 - 10 Flashing Beacons
 - 3 Hawk Signals
- City of Milan
 - 6 Signals
 - 1 Flashing Beacon



Responding to the Public

- SeeClickFix for citizens to report issues
 - 675+ Signal-Related Requests in the Last 3 Years

Comments

All

Public Only

Internal Only



Washtenaw County Road Commission Neighbor | Guest

Opened

At Ellsworth and Maple the traffic light that governs the left turn lane for the people driving south on maple is flipped around so the people driving north see it. Depending on the wind you can also see it when driving west on Ellsworth

05/24/2025 9:52 AM



Washtenaw County Road Commission | Verified Official

Assignment

Washtenaw County Road Commission assigned this issue to T & S - Signal Supervisor - Mark

Flag • 05/24/2025 9:52 AM



T&S- Signal Supervisor- Mark | Verified Official

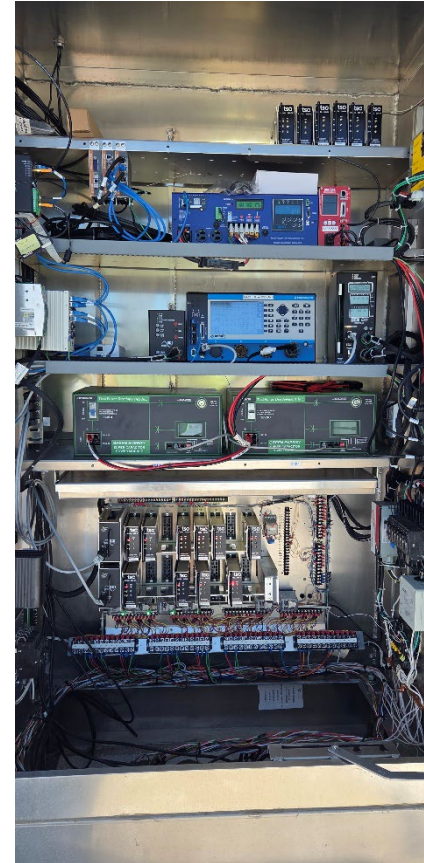
Closed

Thank you for contacting the Washtenaw County Road Commission. The signal department has repaired the signal. Should you have any questions or concerns, please feel free to contact us at (734)761-1500.

Flag • 05/26/2025 3:23 PM

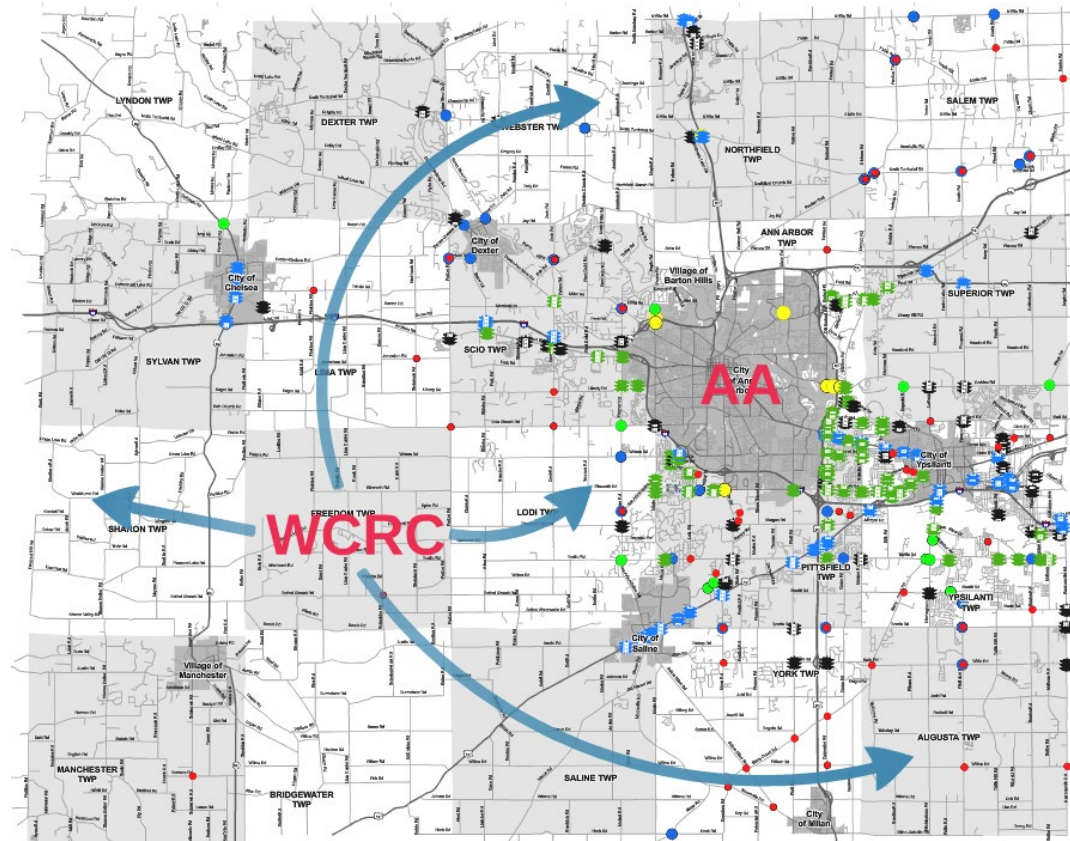
Equipment

- TS2 Type 1 and 2
- Econolite Controllers
- D4
- Detection
 - Wireless
 - Inductive Loops
 - Video
 - Radar



Communications

- Wireless Communications
- Licensed Radio System
- KITS – Advanced Traffic Management System



Early Signal Communication

2007

Jackson Rd and Zeeb Rd

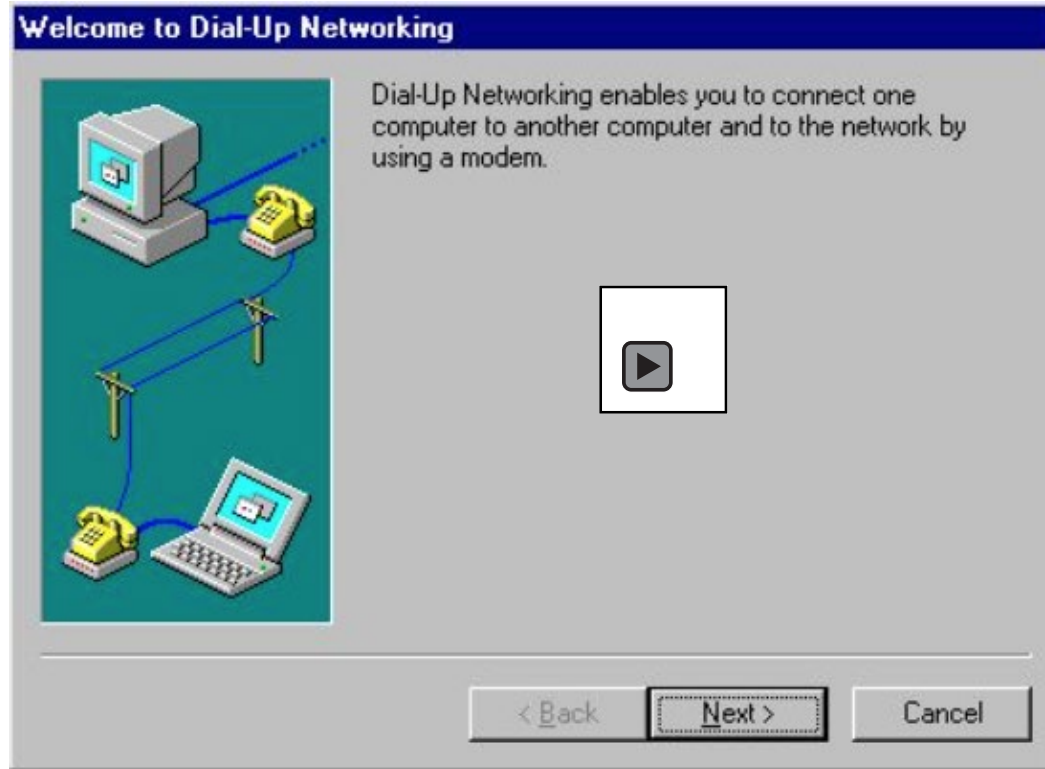


2011

Jackson Rd and Zeeb Rd



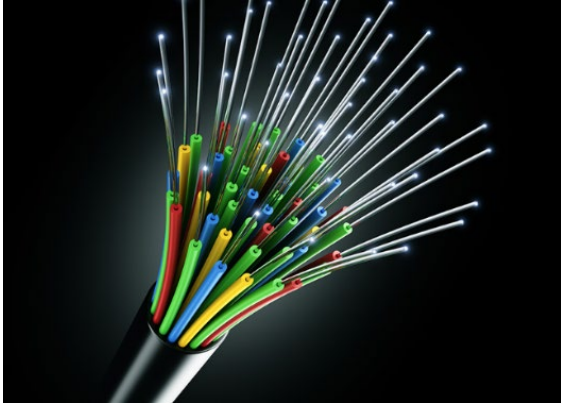
Early Signal Communication



Creating a Network



Strengthening the Network





Traffic Signal & Camera Map

- ▲ Traffic Cameras
- MDOT Signals
- WCRS Signals
- * WCRS Flasher
- * MDOT Flasher
- Traffic Towers
- Traffic Tower Paths

Consultant Partner – Integral Blue

- Configures Wireless Interconnects, Cellular Modems and Ethernet Switches
 - 100+ Broadband Radios
 - 43 4G & 5G Cellular Modems
 - Manages Broadband Radio Licensing
 - Ethernet Switches
- Assigns IP Addresses
 - Controllers
 - MMU
 - CCTV
 - Wireless Vehicle Detection
 - Battery Back Ups
- Maintains Signal Quality
- Provides Field Support



Communication - SolarWinds

SOLARWINDS MY DASHBOARDS ▾ ALERTS & ACTIVITY ▾ REPORTS ▾ SETTINGS ▾

WCRG-NMS\FENELONM 🔍 HELP

Left Panel: Alerts List

- [Unknown]
- Audible Pushbutton System (APS)
- Battery Backup System (BBS)
- Battery Sensor (BS)
- Cabinet Monitor (CM)
- Cellular Modem (CEMODEM)
- Closed Circuit Television System (CCTV)
- Closed Circuit Television System (CCTV)_360
- Closed Circuit Television System (CCTV)_PTZ
- Digital Video Encoder (DVE)
- Firewall (FW)
- Layer 2 Ethernet Switch (ESW)
- Layer 3 Router (RTR)
- Licensed Wireless Backhaul (LWB)
- Malfunction Management Unit (MMU)
- Network Attached Storage (NAS)
- Remote Processing Unit (RPU)
- Roadside Unit (RSU)
- Storage Area Network (SAN)
- Traffic Controller (TC)
- Uninterruptible Power Source (UPS)
- Video Management System (VMS)
- Virtual Machine (VM)
- Virtualization Host (VHOST)
- Wireless Detection System (WDS)
- Wireless Interconnect Master (WIM)
- Wireless Interconnect Remote (WIR)

All Alerts (25) EDIT

Severity	Count
Critical	23
Warning	2

↓ Severity ▾ Search... 🔍

Map View:

Map showing various townships and locations, including Ann Arbor, Plymouth Charter Township, Canton Charter Township, Van Buren Charter Township, Ypsilanti Charter Township, Augusta Charter Township, Sumpter Township, York Charter Township, Saline Township, Bridgewater Township, Manchester Township, Sharon Township, Freedom Township, Lodi Township, Pittsford Charter Township, Superior Charter Township, and Ann Arbor Charter Township.

Legend:

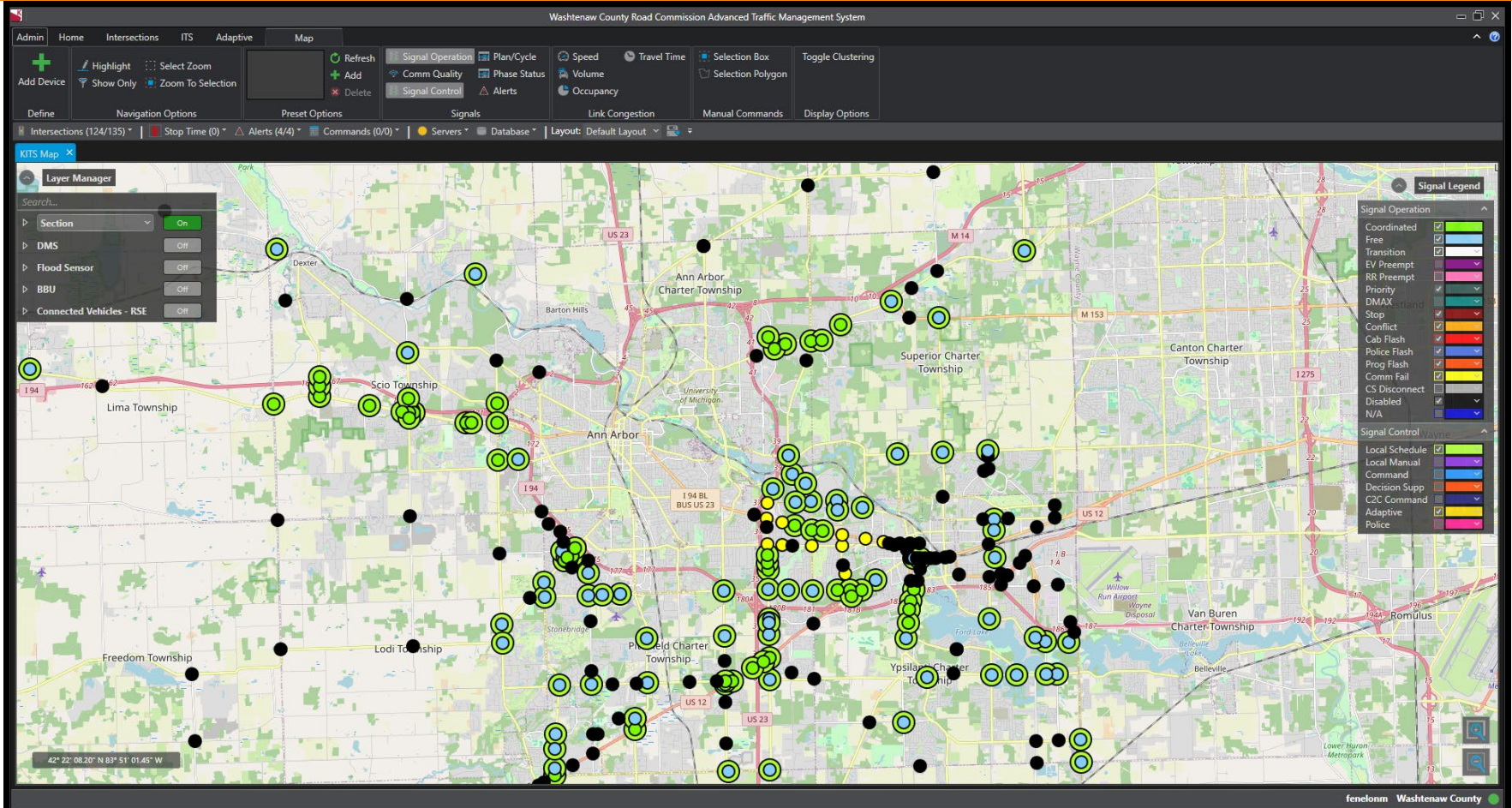
- Critical (9)
- Unmanaged (7)
- Warning (68)
- Down (4)
- Up (55)

Consultant Partner – Kimley Horn

- KITS Traffic Management System
 - Allows for 24-hr intersection monitoring
 - Remote Timing Adjustments
 - Detection Monitoring
 - Real Time Data Capture
 - Alerts
- Traction(Workflow)
 - Work Orders

[illegible]

Communication - KITS



Communication - KITS

Washtenaw County Road Commission Advanced Traffic Management System

Admin Home Intersections ITS Adaptive Map

Refresh Add Delete Signal Operation Comm Quality Signal Control Plan/Cycle Phase Status Alerts Speed Volume Occupancy Travel Time Selection Box Selection Polygon Toggle Clustering

Define Navigation Options Preset Options Signals Link Congestion Manual Commands Display Options

Intersections (124/135) Stop Time (0) Alerts (4/4) Commands (0/0) Servers Database Layout: Default Layout

KITS Map Timing Values - \$12023: TEXTILE@Lohr

Graphics Graphs ID Status Command Batch Compare

Timing

Operation	Control	Plan	Database	Cycle Offset
Free	Sched	Free	Database	0 0
Master	Local	Time	Previous	33 0
0	0	12:21:48	Current	15

Ring 1

	1-WBL	2-EBT	3	4-SBT
Database	0	0	0	0
Previous	14	33	0	0
Current	0	0	0	1
Veh. Phases	Red Arrow	Red Arrow	Red Arrow	Green Arrow
Ped. Phases	Red Arrow	Red Arrow	Red Arrow	Red Arrow
Veh. Calls	Green Arrow	Green Arrow	Green Arrow	Green Arrow
Ped. Calls				

Ring 2

	5-EBL	6-WBT	7	8-NBT
Database	0	0	0	0
Previous	14	33	0	0
Current	0	0	0	1
Veh. Phases	Red Arrow	Red Arrow	Red Arrow	Green Arrow
Ped. Phases	Red Arrow	Red Arrow	Red Arrow	Red Arrow
Veh. Calls	Green Arrow	Green Arrow	Green Arrow	Green Arrow
Ped. Calls				

Overlaps

	A	B	C	D	E	F	G	H
Prev Green	0	0	0	0	0	0	0	0
Curr Green	0	0	0	0	0	0	0	0
Status	0	0	0	0	0	0	0	0
Calls	0	0	0	0	0	0	0	0

Priority

	1	2	3	4	5	6	7	8
Pending	0	0	0	0	0	0	0	0
Early	0	0	0	0	0	0	0	0
Extend	0	0	0	0	0	0	0	0
Resrv Inh	0	0	0	0	0	0	0	0
Defer Next	0	0	0	0	0	0	0	0

Editor

fenelonm Washtenaw County

Real Time Timing Values

Washtenaw County Road Commission Advanced Traffic Management System

Admin Home Intersections ITS Adaptive Map

Map Timing Values Corridor Timing Values System Status Connection Status List Time-Space Diagram Alert Viewer Alert Configuration Alert Config Alerts Log HIT Report (Classic) HIT Report Comm Quality Report Event Log User Activity Log System Detector Log Central Commands Manual Command Special Events Econolite EOS SEPAC Synchro Import/Export Cycle Summary Web Browser BSM List BSM Map

Real-Time Monitoring Alerts/Events Graphs/Reports Scheduling Controller Database Web Connected Vehicles

Intersections (135/135) Stop Time (0) Alerts (4/4) Commands (0/0) Servers Database Layout: Default Layout

KITS Map Timing Values - 512008: Ann Arbor-Saline@Waters/Lohr

Timing

Operation	Control	Plan	Database	Cycle	Offset
Coord	Sched	12	Database	120	114
Master	Local	Time	Previous	0	0
16	97	13:38:16	Current	24	

Ring 1

	1-SBL	2-NBT	4-EBT	8-WBT
Database	30	40	25	25
Previous	0	0	0	0
Current	7	0	0	0
Veh. Phases	Yellow Arrow	Red Arrow	Red Arrow	Red Arrow
Ped. Phases	Red Arrow	Red Arrow	Red Arrow	Red Arrow
Veh. Calls	Green Arrow	Green Arrow	Green Arrow	Green Arrow
Ped. Calls				

Ring 2

	6-SBT	5-NBL
Database	43	17
Previous	0	0
Current	7	0
Veh. Phases	Green Arrow	Red Arrow
Ped. Phases	Red Arrow	Red Arrow
Veh. Calls	Green Arrow	Green Arrow
Ped. Calls		

Overlaps

	A	B	C	D	E	F	G	H
Prev Green	0	0	0	0	0	0	0	0
Curr Green	5	0	0	0	0	0	0	0
Status	Yellow							
Calls	Red	Red	Red	Red	Red	Red	Red	Red

Priority

	1	2	3	4	5	6	7	8
Pending								
Early								
Extend								
Resrv Inh								
Defer Next								

Graphics Graphics IO Status Command Batch Compare



Editor

Update Available! fenelonm Washtenaw County


KITS Alert Log

Email Alert Configuration for fenelonm

Saved Configurations:

Configurations	
▶ Notifications	
upsconflict	

User Email:

Area/Zone	Event
All Signals	Stop Time Start
All Signals	Stop Time End
All Signals	Conflict Start
All Signals	Conflict End
All Signals	Manual Start
All Signals	Manual End
All Signals	BBU: Battery Power Start
All Signals	BBU: Battery Power End
	

+ Add

✗ Delete

+ Add

✗ Delete


Exit

Save

▼ Copy configuration to

KITS Alert Log

508026: LIBERTY@SCIO RIDGE: Stop Time Start at 06:37:58:230

 Summarize



Signals

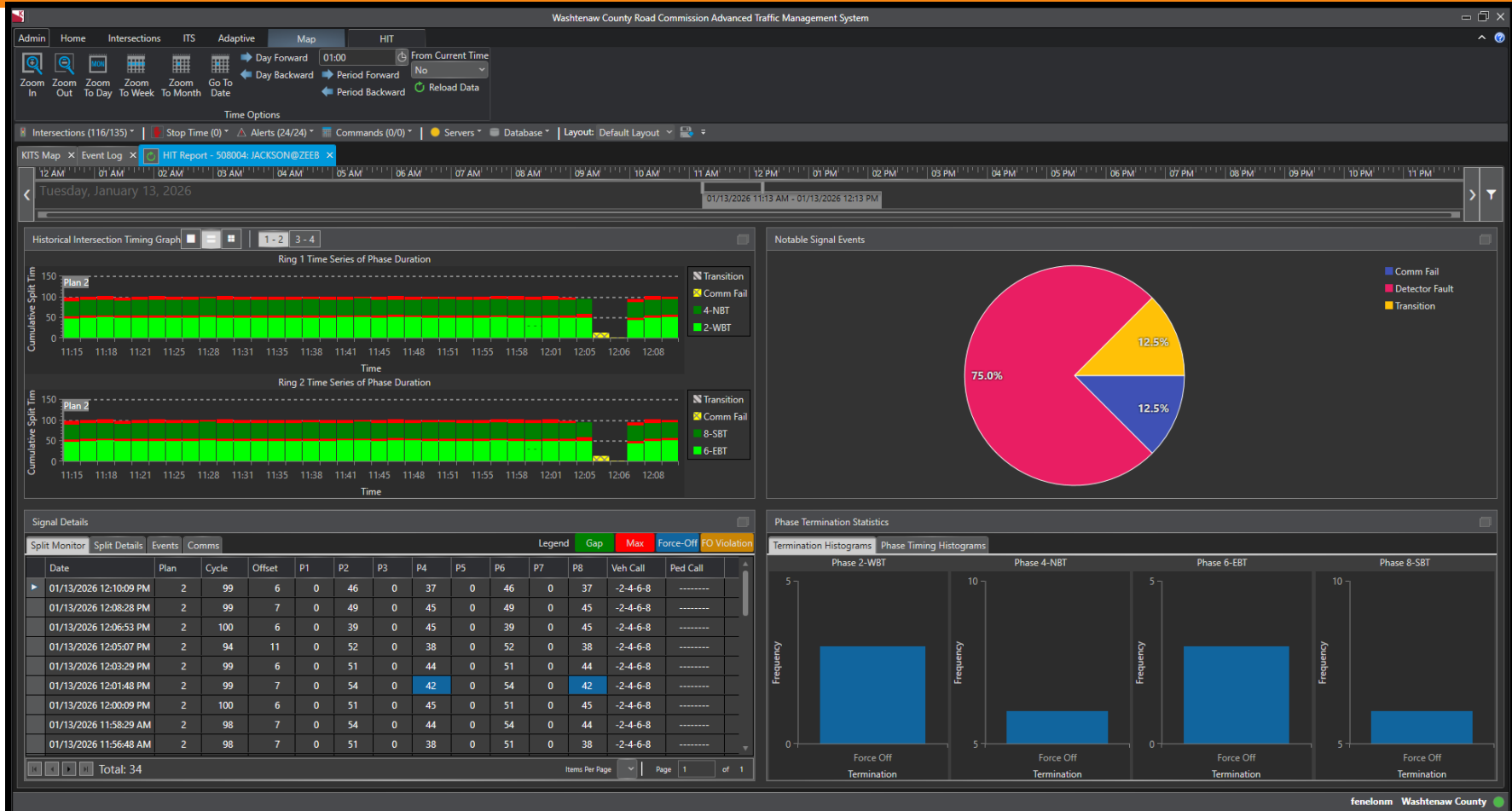
To  7348451897@vtext.com;  Fenelon, Mark;  Ford, Michele;  Berkholz, Aaron;  Vesper, Jon

Sat 01/24/2026 6:38 AM



508026: LIBERTY@SCIO RIDGE: Stop Time Start at 06:37:58:230

KITS HIT Report



Additional Partner – Carrier & Gable

- Supplier
- Field Support
- Training



Security is key

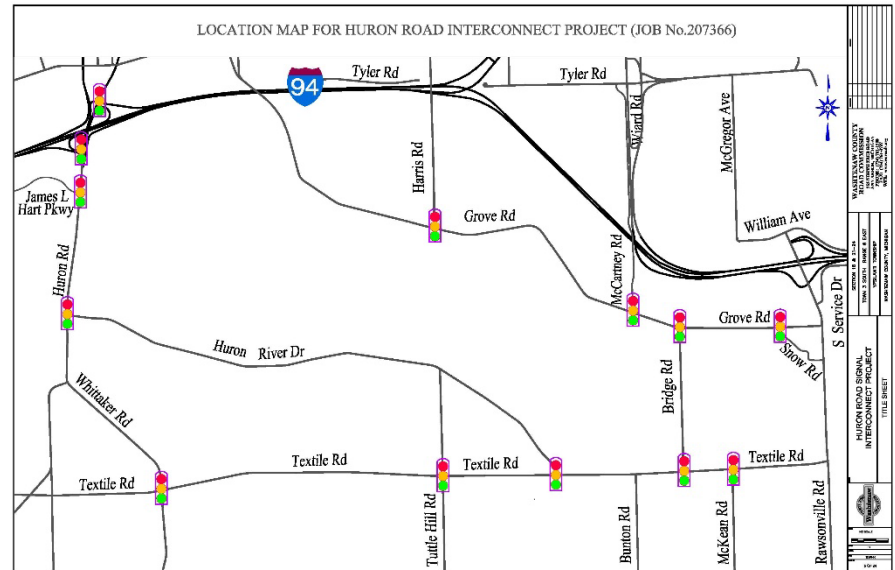
A stable system is a secure system

- Network Security
 - Switches
 - Firewalls
- Infrastructure Security
 - Network
 - Equipment



The Future – Grants

- Congestion Mitigation & Air Quality (CMAQ)
- Carbon Reduction
- Safety



In the past 8 years, the T&S team has brought more than **\$28 million** in grant projects to Washtenaw County

The Future – Continuing to Build

- More modems!
- More weather stations
- Preemption for emergency vehicles
- Connected vehicles?
- Better detection





QUESTIONS?



