Wisconsin Department of Transportation (WisDOT)

Stand-alone Signals and ITS Program

FY17 Project Application Form

GENERAL INSTRUCTIONS

APPLICATIONS DUE: **FEBRUARY 16, 2016**
Please upload applications to the SharePoint site under your Region
(https://wisdot.sharepoint.com/sites/dtsd/bto/its-sig/2017/SitePages/Home.aspx).

Each Region requesting funds from the Stand-alone Signals and ITS Program must submit the following information:

- ☐ Stand-alone Signals and ITS Program Region Ranking Spreadsheet (one per Region)
- ☐ Completed Stand-alone Signals and ITS Program FY17 Project Application Forms (one for each project request)
- ☐ Any supporting materials deemed necessary by the Region

FY17 Project Application Form: Each FY17 Project Application Form shall be completed entirely to be considered:

Box 1 Fill in those areas that are applicable to your project. Provide a project name to be used consistently when referring to the proposed project. For 'Name of Road/Intersection,' use From-To (South-North or West-East) format for a road segment such as "6th St.-9th St." A proposed project may involve multiple improvement locations; if this is the case, indicate the corridor or the general area of the proposed project. More specific information should be provided in the project description.

Box 2 Identify and describe area of improvement needed.

Box 3 Describe the project in as much detail as possible. A good, detailed, description explaining how the project will address the identified need(s) is essential for application review and evaluation.

Box 4 If your project will be constructed in phases throughout multiple years, then provide the project costs in the appropriate year and describe each in your proposed improvement statement. List major construction items and associated estimates such as new traffic signal installation, intersection channelization. Project expense is considered during the evaluation of the projects. Therefore, **ALL COSTS** (including design, utilities and R/E) should be provided regardless of whether Program funds will be used for all elements of the project.

Box 5 Complete the various questions as they relate to the proposed project. This information will help determine need and may help with ranking of projects among regions.

Box 6 Provide contact information for application sponsor's primary contact person. Application must be signed by the regional operations chief to commit funds and certify as to the answers provided in the application.

Supporting Materials: Each completed application shall include the following, *if applicable*:

- Map of location
- General Sketch of Project Proposal or site photo(s). *An adequate sketch is the minimum requirement. Preliminary plan layout sheets or study reports should be provided if available.*
- Warrant Documentation, required **only** for proposals to install new traffic signals (example worksheet available upon request. Ref: Manual on Uniform Traffic Control Devices [MUTCD], Part IV, Sec C).
- Completed Traffic Control Signal Approval Request form DT1199 (Required for all proposals to install new traffic signals on the State Trunk Highway System, including Connecting Highways and ramp terminals).
- Systems Engineering Analysis. *A SEA may need to be completed for certain types of projects funded by this Program.*

Submittal Instructions & General Questions:

Questions on application process and Program contact:	Submit the application and materials to:
David Karnes David.Karnes@dot.wi.gov Bureau of Traffic Operations 433 W. St. Paul Ave, Suite 300, Milwaukee, WI 53203 (414) 220-6804	Upload all application materials to the SharePoint site under your Region (https://wisdot.sharepoint.com/sites/dtsd/bto/its-sig/2017/SitePages/Home.aspx).

Wisconsin Department of Transportation (WisDOT)

Stand-alone Signals and ITS Program

FY17 Project Application Form

1. Project Description

PROJECT NAME Replace Existing Signals	
FILE NAME (AA_BBBB_FY17 Standalone Program App_CCC.docx)* 04_Replace Existing Signals_FY17 Standalone Program App_20160211.Docx	04_Replace_Existing_Signals_FY17_Standalone_Program_App_20160211.docx
*File should be named consistently with the following nomenclature: AA=Project Regional Rank; BBBB=Project Name; CCC=Date.	

NAME OF ROAD/INTERSECTION *Various*		HWY NO. *Various*
COUNTY *MIL, OZA, WAU*	CITY/TOWN *Various*	REGION *SE Region*

2. Identification of Needs

Identify which area for improvement the need falls under:	
☐ 1. New Signal Installation	Procurement and installation of controllers, bases and signals
☒ 2. Signal Replacement	Replacement of signals including geometric improvements and upgrades for FY17 construction
☐ 3. Signal Rehabilitation	Upgrade, install or replace detection, controllers, battery backup, etc.
☐ 4. Signal Retrofit	Procure and install monotubes, procure and install flashing yellow arrows, safety improvements not requiring major construction and adaptive signal systems.
☐ 5. Signal Retiming	Data collection, evaluation, prepare signal timing plan, develop and implement corridor coordination plan to support 3 and 5 year timing schedule
☐ 6. LED Signal Replacement*	Procure and install all materials for annual LED signal 7 year replacement cycle
☐ 7. Intersection Communication	Design-build and integrate fiber optic links between existing fiber infrastructure and signal systems, or procure and install cellular Ethernet modems
☐ 8. ITS Device Lifecycle Replacement	Upgrade, install or replace detection, controllers, battery backup, etc.
☐ 9. Software	Upgrade, install or replace software
☐ 10. ITS Device Installation	Upgrade backbone fiber network equipment and switches, replace ramp meter LED's, update non standard CCTV's
☐ Other	

***A**nticipated improvements are understood for LED Signal Replacement projects. Therefore, it is only necessary to respond to the Project Description (3a) and Existing Conditions (3b) questions in section 3.

3. Proposed Improvements

3a. Project Description

In some detail, describe the proposed project and how it will address the identified need. If the project includes multiple proposed improvement locations, identify the locations.

These intersections have aging facilities with maintenance challenges, potentially resulting in operational consequences. The proposed project will replace all existing traffic signal equipment based on current standards/practices. A cell modem may also be installed at the intersections to provide remote communication.

The design includes 6 intersections.
S40-1072 STH 100 & National Ave, S40-1073 STH 100 & Oklahoma, S40-1088 STH 100 & Lincoln, S40-1104 STH 100 & Cleveland, S45-0412 STH 33 & CTH O (Mill St), and S67-0457 STH 16 NB Ramps & STH 67

3b. Existing Conditions

Describe the existing conditions of the existing infrastructure. For example, type and age of current infrastructure; what is its current condition?

The intersections' last full reconstruction date is listed below.

Signal Number	Reconstruction date
S40-1073	1982
S40-1072	1999
S40-1104	1999
S40-1088	1999
S45-0412	1990
S67-0457	1992

3c. Project Performance Goals and Objectives

Describe the proposed project performance goals and objectives. How will project success be determined?

This project has the following performance goals and objectives:

- Goal – Reduce the effort required for maintenance due to old intersection equipment.
- Objective – Eliminate 80% of maintenance tickets for failing infrastructure at these signalized intersections.

- Goal – Increase remote communication to signals in the SE Region.
- Objective – Install and achieve remote communication to signals.

3d. Mobility Improvements

In some detail, describe the anticipated mobility improvements of the proposed project and how they will be measured (i.e. detection will be used to determine before and after peak hour delay).

Although there is not a direct mobility benefit expected, the remote communication will lead to better monitoring of the intersection, allow modifying the signal operations remotely, and address minor maintenance concerns.

3e. Operations and Maintenance Impacts

In some detail, describe how this project will efficiently use or reduce operations and maintenance funds.

Maintenance needs will be reduced with the replacement of aged signal equipment. Signal operations and maintenance will also be improved with the enhanced monitoring due to the remote communication. This communication will assist in responses to concerns and complaints. The communication will provide the ability to collect intersection performance measures.

3f. Energy and Environmental Impacts

In some detail, describe the anticipated energy and environmental impacts of the proposed project.

Although there is not a direct environmental benefit expected, the remote communication will lead to better operational monitoring. This will reduce the number of trips to each intersection for minor timing revisions.

3g. Safety Improvements

In some detail, describe the anticipated safety improvements of the proposed project.

Monotube arms will allow a head per lane and enhance the visibility of the traffic signal. Head-per-lane indications are expected to reduce both angle and rear end collisions.

3h. Additional Justification

Provide additional detail that should be considered during the evaluation of this project. This may include the consequences of what would happen should the project not be implemented.

The design for these signal replacements will be under one contract. The construction will be divided into two projects.

4. Project Cost

Estimate project costs in today's dollars:	FY17	FY18	FY19	FY20*
Design:	$225,000			
Real Estate: (Note: real estate acquisition funds are NOT included in this appropriation, other funding sources need to be identified in the space below)				
Construction Items (Include Construction Engineering and Contingencies): (Note: up to 50% of the geometric improvements needed can be funded by this appropriation)				
Let construction			$1,400,000	
Installation via procurement contracts				$400,000
State furnished materials			$200,000	$100,000
Other Costs:				
****TOTAL COST =**	**$225,000**		**$1,600,000**	**$500,000**

* The program does not extend passed FY18, however for planning purposes please include potential projects for FY20 which could be funded through a reauthorization of this program or an alternate funding source.

** The project sponsors will be responsible for any project costs in excess of the approved appropriation funding amount. Appropriation funds must be encumbered during the FY identified.

5. Additional Project Information

Is this specific project addressed through PDS within the next 6 years?	☐ YES ☒ NO
Performance measures: does this project help with achieving WisDOT's performance goals? Refer to http://dotnet/mapss/index.htm – *Mobility*: Delivering transportation choices that result in efficient trips and no unexpected delays. – *Accountability*: The continuous effort to use public dollars in the most efficient and cost-effective way. – *Preservation*: Protecting, maintaining and operating Wisconsin's transportation system efficiently by making sound investments that preserve and extend the life of our infrastructure, while protecting our natural environment. – *Safety*: Moving toward minimizing the number of deaths, injuries and crashes on our roadways. – *Service*: High quality and accurate products and services delivered in a timely fashion by a professional and proactive workforce.	Select all that apply: ☒ Mobility ☒ Accountability ☒ Preservation ☒ Safety ☒ Service
Is this project listed as a strategic objective in the State Traffic Operations Program Plan (STOPP)? Refer to \\Mad00fph\n4public\BHO\meeting-minutes\bto\stopp\	☒ YES ☐ NO If yes, what section of the STOPP? Electrical & Communication System (6)

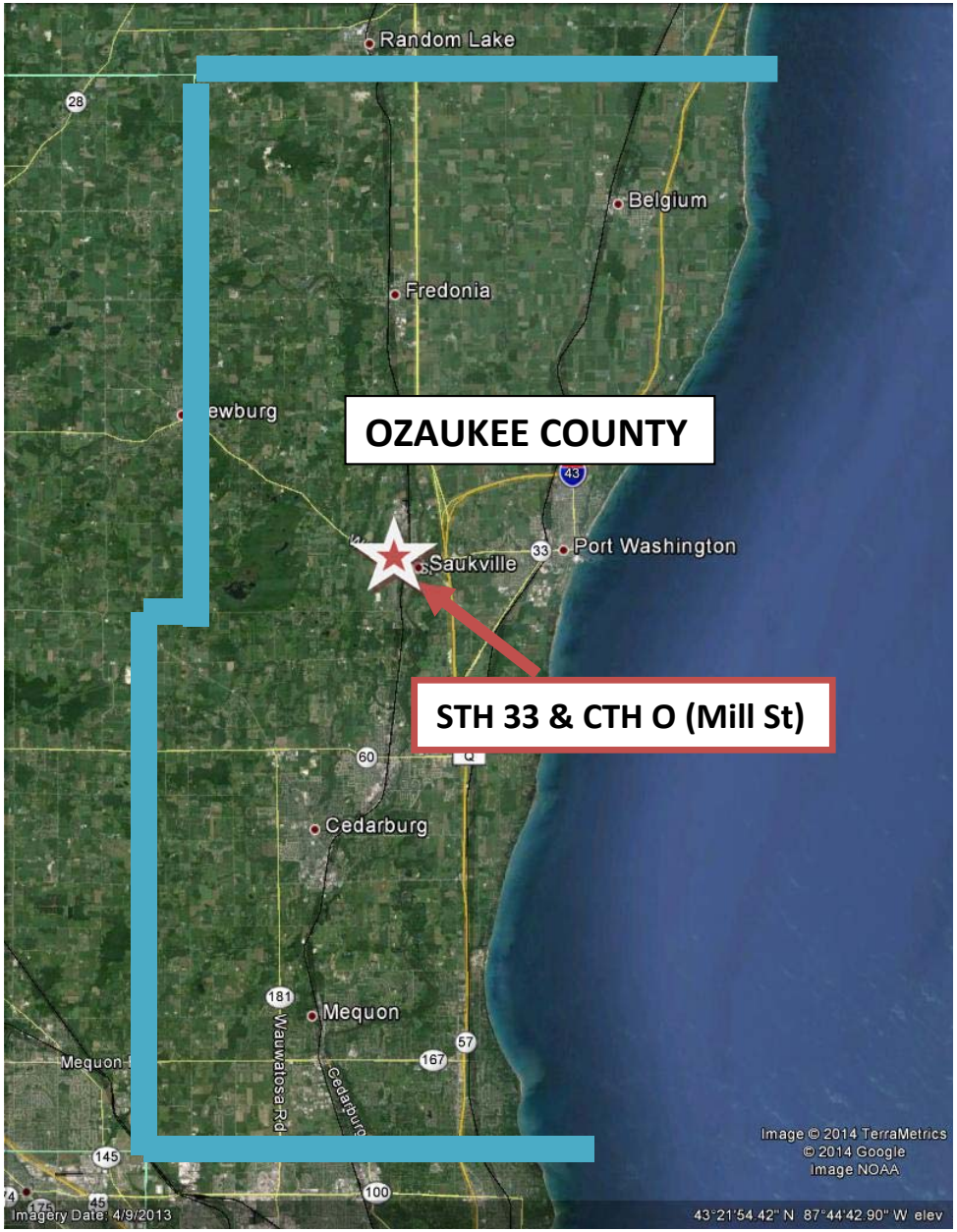
Timeline

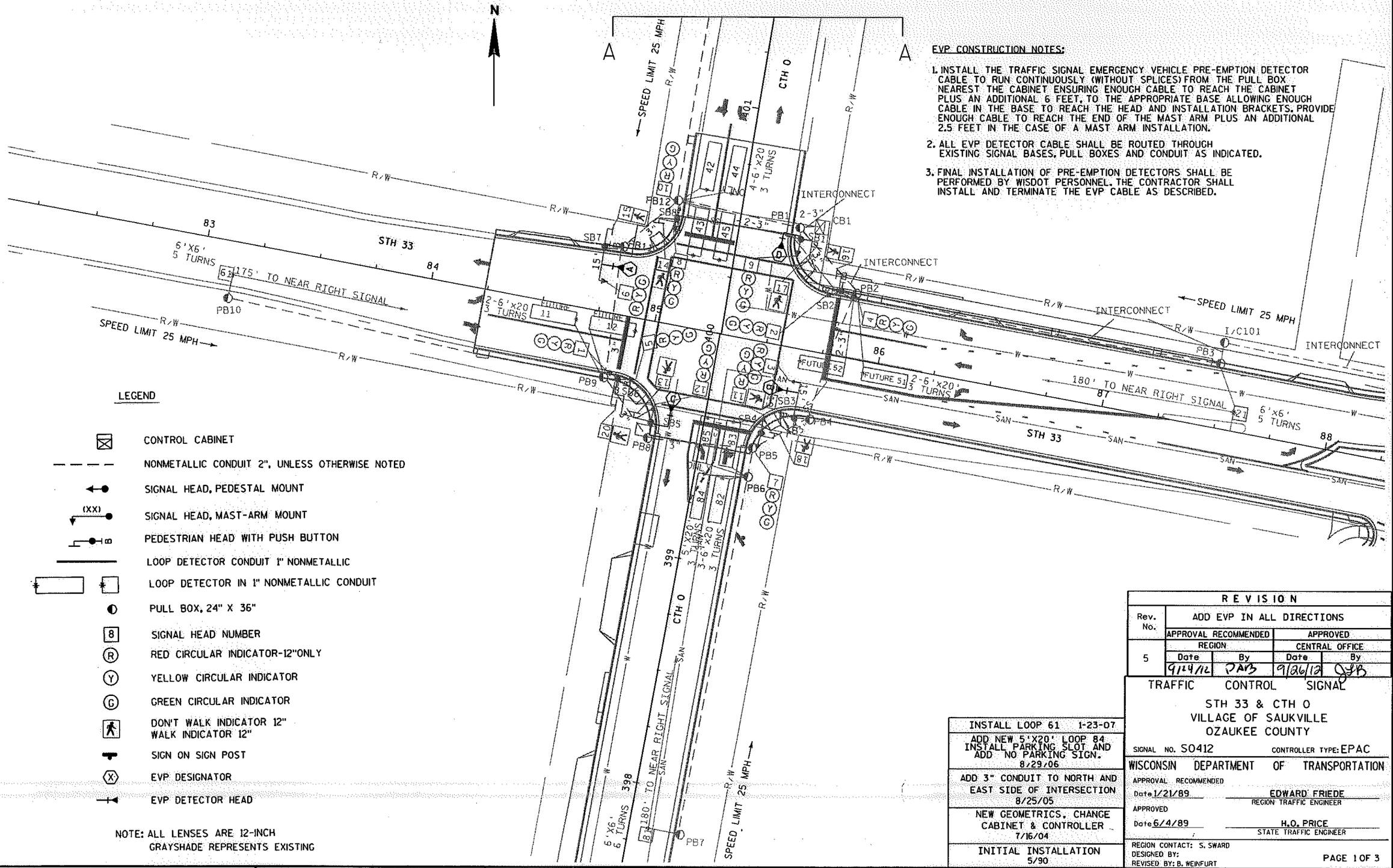
Steps in process	Months (MM/YY – MM/YY)	Anticipated Quarter of Encumbrance	Anticipated Required Resources (Reg PDS, Reg OPS (eng, electricians), consultant contract, electrical contractors, etc.)
1. Design	*07/16-06/17*	Q3	Consultant Contract
2. Real Estate Acquisition			
3. Procurement			
4. Construction			
5. Other			

6. Contact Information and Signature

PRIMARY CONTACT NAME *Elizabeth Lloyd-Weis*	TITLE *Signal Operations Engineer - Lead*
REGION *SE Region*	
EMAIL ADDRESS *elizabeth.lloydweis@dot.wi.gov*	TELEPHONE *262-521-4404*
SIGNATURE OF OPERATIONS SUPERVISOR *John A Haug*	DATE *2-9-16*
SIGNATURE OF OPERATIONS CHIEF *David Nguyen*	DATE *2/11/16*

REVISED DRAFT 10/31/2015


Random Lake
Belgium
Fredonia
OZAUKEE COUNTY
Saukville
Port Washington
STH 33 & CTH O (Mill St)
Cedarburg
Mequon
Image © 2014 TerraMetrics
© 2014 Google
Image NOAA
Imagery Date: 4/9/2013
43°21'54.42" N 87°44'42.90" W elev



EVP CONSTRUCTION NOTES:

1. INSTALL THE TRAFFIC SIGNAL EMERGENCY VEHICLE PRE-EMPTION DETECTOR CABLE TO RUN CONTINUOUSLY (WITHOUT SPLICES) FROM THE PULL BOX NEAREST THE CABINET ENSURING ENOUGH CABLE TO REACH THE CABINET PLUS AN ADDITIONAL 6 FEET, TO THE APPROPRIATE BASE ALLOWING ENOUGH CABLE IN THE BASE TO REACH THE HEAD AND INSTALLATION BRACKETS. PROVIDE ENOUGH CABLE TO REACH THE END OF THE MAST ARM PLUS AN ADDITIONAL 2.5 FEET IN THE CASE OF A MAST ARM INSTALLATION.
2. ALL EVP DETECTOR CABLE SHALL BE ROUTED THROUGH EXISTING SIGNAL BASES, PULL BOXES AND CONDUIT AS INDICATED.
3. FINAL INSTALLATION OF PRE-EMPTION DETECTORS SHALL BE PERFORMED BY WISDOT PERSONNEL. THE CONTRACTOR SHALL INSTALL AND TERMINATE THE EVP CABLE AS DESCRIBED.

LEGEND

- CONTROL CABINET
- NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED
- SIGNAL HEAD, PEDESTAL MOUNT
- (XX) SIGNAL HEAD, MAST-ARM MOUNT
- PEDESTRIAN HEAD WITH PUSH BUTTON
- LOOP DETECTOR CONDUIT 1" NONMETALLIC
- LOOP DETECTOR IN 1" NONMETALLIC CONDUIT
- PULL BOX, 24" X 36"
- 8 SIGNAL HEAD NUMBER
- (R) RED CIRCULAR INDICATOR-12"ONLY
- (Y) YELLOW CIRCULAR INDICATOR
- (G) GREEN CIRCULAR INDICATOR
- DON'T WALK INDICATOR 12" WALK INDICATOR 12"
- SIGN ON SIGN POST
- (X) EVP DESIGNATOR
- EVP DETECTOR HEAD

NOTE: ALL LENSES ARE 12-INCH
GRAYSHADE REPRESENTS EXISTING

REVISION				
Rev. No.	ADD EVP IN ALL DIRECTIONS			
	APPROVAL RECOMMENDED		APPROVED	
	REGION		CENTRAL OFFICE	
5	Date	By	Date	By
	9/24/12	JAB	9/26/12	

INSTALL LOOP 61 1-23-07
ADD NEW 5'X20' LOOP 84 INSTALL PARKING SLOT AND ADD NO PARKING SIGN. 8/29/06
ADD 3" CONDUIT TO NORTH AND EAST SIDE OF INTERSECTION 8/25/05
NEW GEOMETRICS, CHANGE CABINET & CONTROLLER 7/16/04
INITIAL INSTALLATION 5/90

TRAFFIC CONTROL SIGNAL

STH 33 & CTH O
VILLAGE OF SAUKVILLE
OZAUKEE COUNTY

SIGNAL NO. S0412 CONTROLLER TYPE: EPAC

WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVAL RECOMMENDED
Date 1/21/89 EDWARD FRIEDE, REGION TRAFFIC ENGINEER

APPROVED
Date 6/4/89 H.O. PRICE, STATE TRAFFIC ENGINEER

REGION CONTACT: S. SWARD
DESIGNED BY:
REVISED BY: B. WEINFURT

PAGE 1 OF 3

SSS 9/24/12

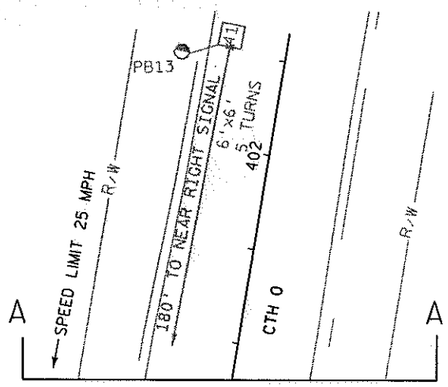
PROJECT NO: 4030-02-72	HWY: STH 33	COUNTY: OZAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

FILE NAME : J:\projects\d2_40300433\70\signal\S0412_e.dgn PLOT DATE : 24-SEP-2012 10:35 PLOT BY : dotbgw PLOT NAME : PLOT SCALE : 39.94331:1

WISDOT/CADDS SHEET 42

2

N



TRAFFIC CONTROL SIGNAL
STH 33 & CTH O
VILLAGE OF SAUKVILLE
OZAUKEE COUNTY

SIGNAL NO. S0412

REGION CONTACT: S. SWARD
DESIGNED BY:
REVISED BY: B. WEINFURT

PAGE 2 OF 3

PROJECT NO: 4030-02-72	HWY: STH 33	COUNTY: OZAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

SEQUENCE OF OPERATION

RING 1

	HEAD NUMBERS	Ø1 NOT USED	Ø2 ⇔	Ø3 NOT USED	Ø4 ⇕	FLASH
		R/W ** CLEAR TO	R/W ** CLEAR TO	R/W ** CLEAR TO	R/W ** CLEAR TO	
Ø1						
Ø2	4,5,6		G Y R		R R R	R
Ø3						
Ø4	10,11,12		R R R		G Y R	R
Ø5						
Ø6	1,2,3		R R R		R R R	R
Ø7						
Ø8	7,8,9		R R R		R R R	R
Ø2P	15,16		* DW DW		DW DW DW	
Ø4P	13,14		DW DW DW		* DW DW	
Ø6P	19,20		DW DW DW		DW DW DW	
Ø8P	17,18		DW DW DW		DW DW DW	

RING 2

	HEAD NUMBERS	Ø5 NOT USED	Ø6 ⇒	Ø7 NOT USED	Ø8 ⇑
		R/W ** CLEAR TO	R/W ** CLEAR TO	R/W ** CLEAR TO	R/W ** CLEAR TO
Ø1					
Ø2	4,5,6		R R R		R R R
Ø3					
Ø4	10,11,12		R R R		R R R
Ø5					
Ø6	1,2,3		G Y R		R R R
Ø7					
Ø8	7,8,9		R R R		G Y R
Ø2P	15,16		DW DW DW		DW DW DW
Ø4P	13,14		DW DW DW		DW DW DW
Ø6P	19,20		* DW DW		DW DW DW
Ø8P	17,18		DW DW DW		* DW DW

BARRIER

** CLEARANCE TO A PHASE IN CONFLICT WITH THIS PHASE ON (SEE CHART 1)

* WHEN CALLED, TIMED STEADY WALK, THEN FLASHING DON'T WALK, THEN GOES TO STEADY DON'T WALK

CHART 1

PHASE ON	NONCONFLICTING PHASE ALLOWED TO TIME CONCURRENTLY	PHASES IN CONFLICT WITH PHASE ON
Ø1		
Ø2	6	4,8
Ø3		
Ø4	8	2,6
Ø5		
Ø6	2	4,8
Ø7		
Ø8	4	2,6

N

DETECTOR LOGIC

DETECTOR NUMBER	AMPLIFIER CHANNEL NUMBER	DETECTOR OPERATION: CALLS AND EXTENDS	CALLS ONLY	EXTENDS ONLY	PHASE CALLED	PHASE EXTENDED	DETECTOR DISCONNECT PHASE	CALLING DELAY	EXTENSION STRETCH	SIZE	NUMBER OF TURNS
11	FUTURE									6'X20'	3
12	FUTURE									6'X20'	3
21	1	x			2	2				6'X6'	5
41	2			x		4			x	6'X6'	5
42	3	x			4	4		x		6'X20'	3
43	3	x			4	4		x		6'X20'	3
44	4	x			4	4		x		6'X20'	3
45	4	x			4	4		x		6'X20'	3
51	FUTURE									6'X20'	3
52	FUTURE									6'X20'	3
61	5	x			6	6				6'X6'	5
81	6			x		8			x	6'X6'	6
82	7	x			8	8		x		6'X20'	3
83	7	x			8	8		x		6'X20'	3
84	8	x			8	8		x		5'X20'	3
85	8	x			8	8		x		6'X20'	3

CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY W / Ø	PHASE RECALL	PHASE ACTIVE
1				
2	X	6	MIN.	X
3				
4		8		X
5				
6	X	2	MIN.	X
7				
8		4		X

OVERLAPS

O.L. "A" =
O.L. "B" =
O.L. "C" =
O.L. "D" =

NOTE: ORIGINAL LOOP 84 WAS PLACED IN THE BASE COURSE. THE REPLACEMENT FOR LOOP 84 WAS CUT INTO THE ASPHALTIC PAVEMENT. SEE PLAN.

TYPE OF INTERCONNECT COMMUNICATION	
NONE	
TBC	
CLOSED LOOP TWISTED PAIR*	
CLOSED LOOP FIBER OPTIC*	
FIBER OPTIC	X
RADIO	
*LOCATION OF MASTER CONTROLLER NO:	S- 1059
SIGNAL SYSTEM *:	SS-00-68

TYPE OF PRE-EMPT	
NONE	
RAILROAD	
EMERGENCY VEHICLE	X
GTT	X
TOMAR	
HARDWIRE	
OTHER	
LIFT BRIDGE	
QUEUE DETECTOR	

TYPE OF LIGHTING	
BY OTHER AGENCY	X
IN TRAFFIC SIGNAL CABINET	
IN SEPARATE DOT LIGHTING CABINET	

EMERGENCY VEHICLE PREEMPTION SEQUENCE

EMERGENCY VEHICLE PREEMPTOR	A	B	C	D
MOVEMENT	⇐	⇐	⇓⇑	⇓⇑
PHASE	2+6	2+6	4+8	4+8

AFTER PREEMPTION SEQUENCE 2+6, CONTROLLER SHALL RETURN TO PHASES 2+6.
AFTER PREEMPTION SEQUENCE 4+8, CONTROLLER SHALL RETURN TO PHASES 4+8.

GENERAL NOTES:

1. ANY ACTUATED PHASE FOR WHICH THERE IS NO CALL SHALL BE SKIPPED.
2. WHEN ONE PHASE IS ON ALONE, ANY NONCONFLICTING PHASE MAY START TIMING CONCURRENTLY WITHOUT A CLEARANCE INTERVAL. (SEE CHART 1 AT LEFT.)

STH 33 & CTH O
VILLAGE OF SAUKVILLE
OZAUKEE COUNTY

SIGNAL NO. S0412
CONTROLLER TYPE: EPAC
DATE 9/12 PAGE NO. 3 OF 3

SSS 9/24/12 DMS 9/24/12

PROJECT NO: 4030-02-72	HWY: STH 33	COUNTY: OZAUKEE	SEQUENCE OF OPERATIONS	SHEET NO:	E

DTSD – SE Region
Intersection Safety Evaluation

Intersection Description

Intersection: STH 33/E Green Bay Avenue/E Dekora Street & CTH O/Mill Street

County: Ozaukee **Municipality:** Saukville

Request for Evaluation

Reason for Request: Traffic Signal System Timing Review

Requested By: Signal Ops **Request Date:** Choose a date

Completed By: Alexandria Motl **Completion Date:** June 26, 2015

Crash Data

Avg. Crash Rate	Crashes by Year		Crashes by Severity				
	Year	Total Crashes	K	A	B	C	PDO
0.95	2010	3	0	0	0	2	1
	2011	9	0	0	2	1	6
(Crashes/ Million Entering Veh.)	2012	7	0	0	0	3	4
Fatal and Injury %	2013	5	0	0	0	3	2
	2014	5	0	0	0	2	3
44.8%	**Total**	**29**	**Entering ADT**			**16791**	
	Avg.	**5.8**	**Year of Count**			**2014**	

Average Crash Rate= (Avg. # of crashes*10^6) / (365*ADT)

History, Safety Issues and Actions Taken

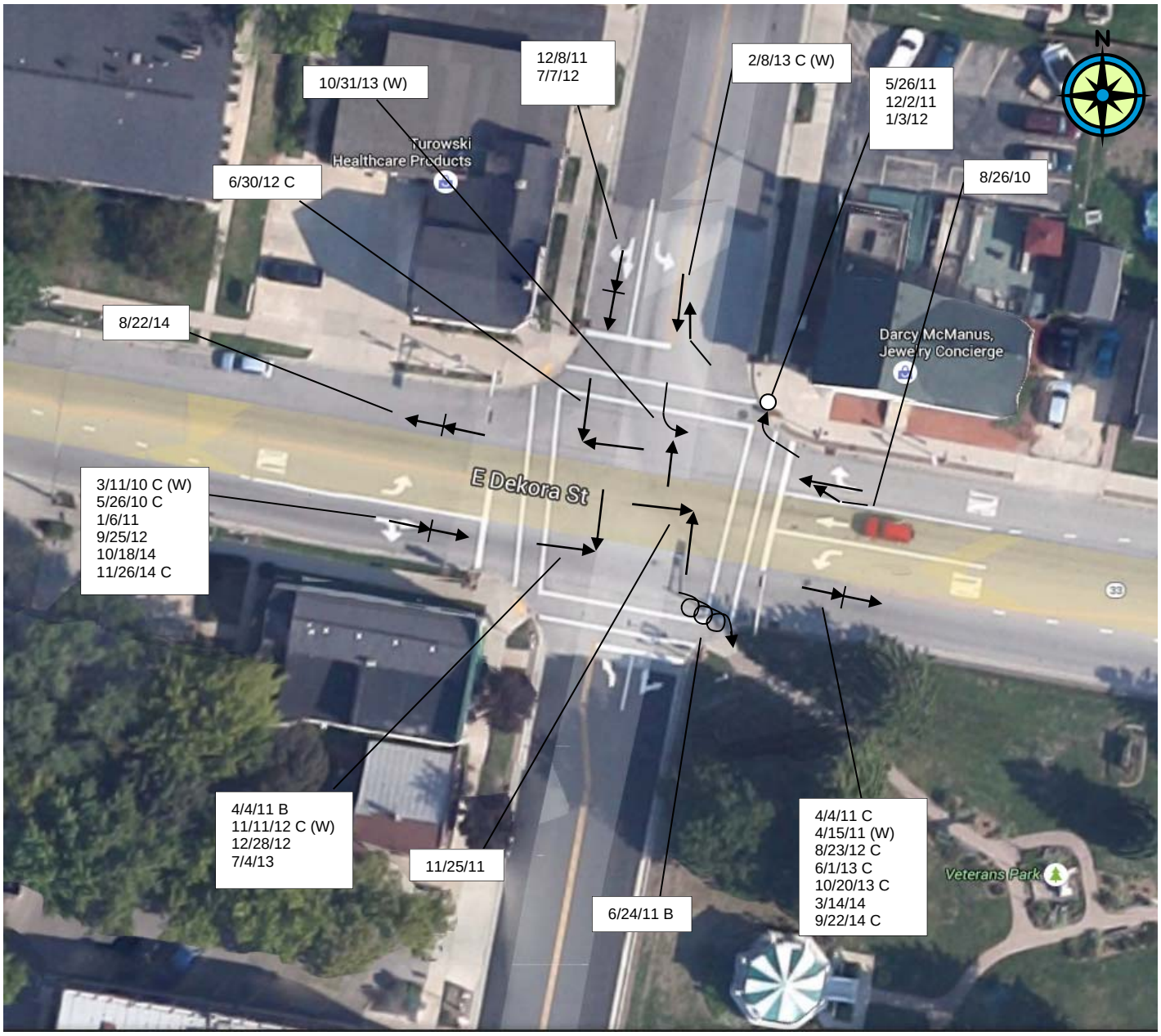
Changes During Study Period:	
Safety Issues:	High number of EB rear-end crashes, both entering and exiting the intersection, due to downstream signal queuing and congestion
Actions:	Coordinate Mill Street and Ulao signals to provide progression between them

DTSD – SE Region
Intersection Safety Evaluation

STH 33/E Green Bay Avenue/E Dekora Street & CTH O/Mill Street

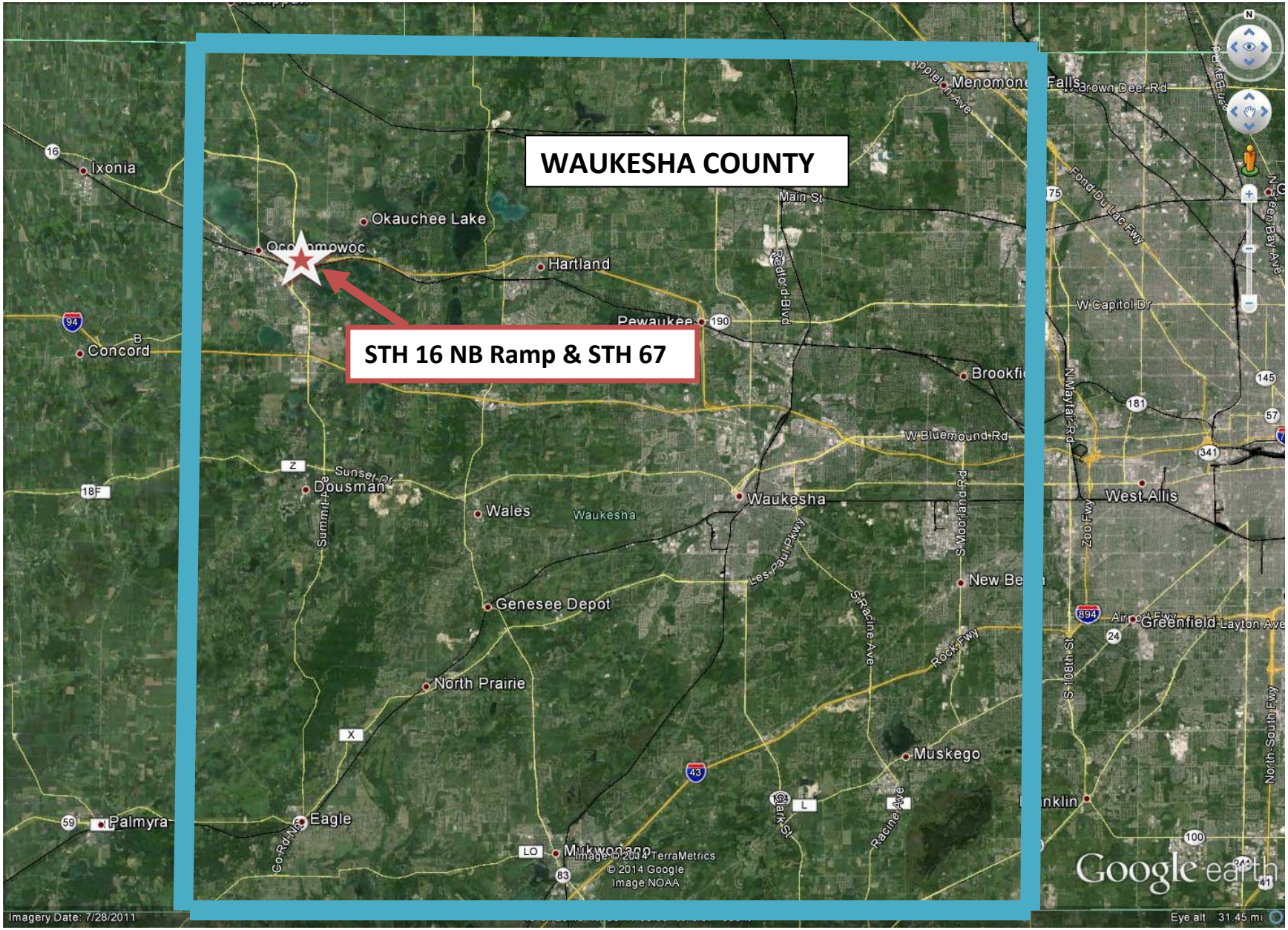
Ozaukee County

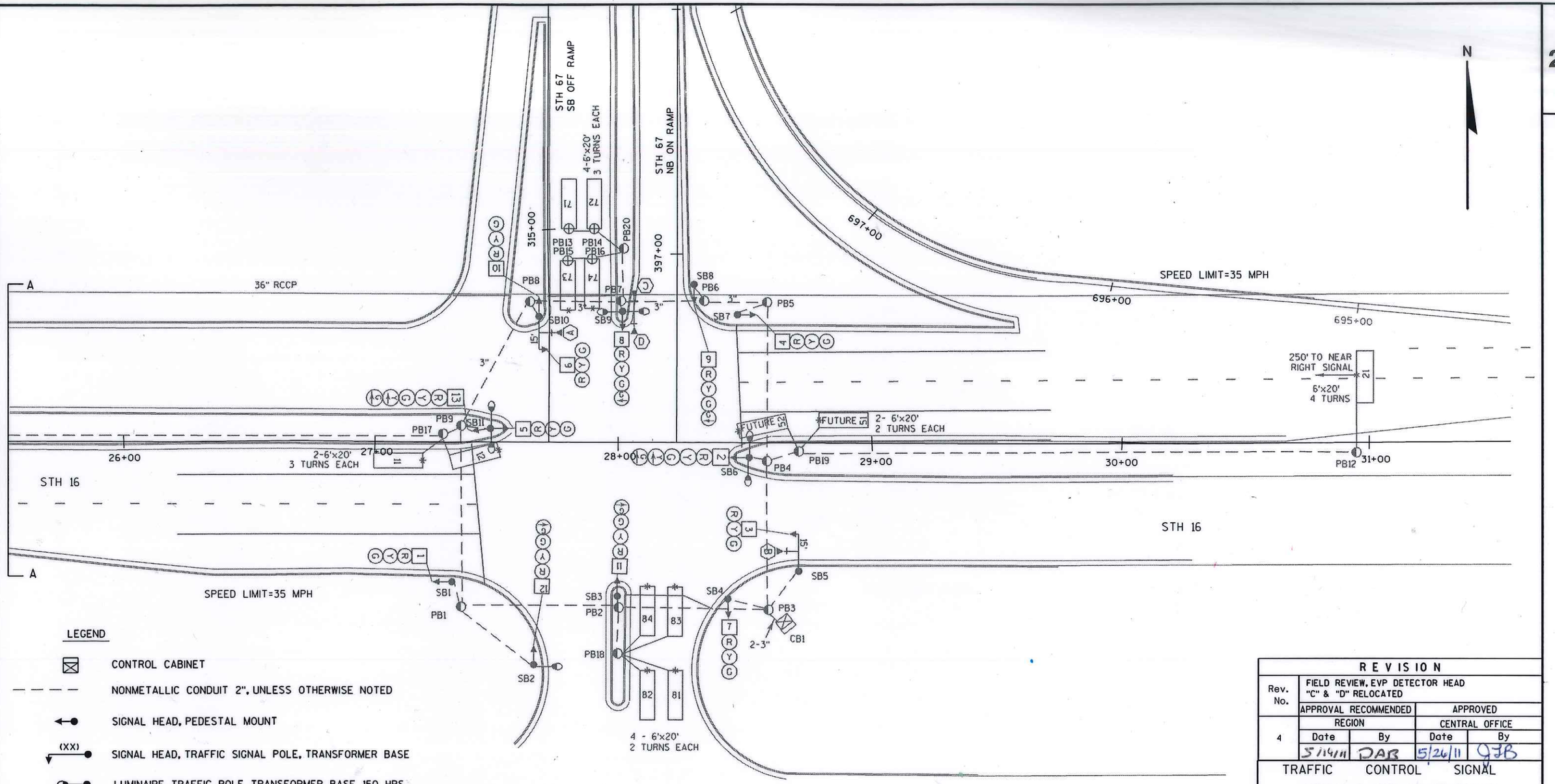
2010-2014



LEGEND

Signal/Sign Post	Bicycle	Right Angle	Out of Control	(S) = SNOW-ICE	K = FATAL
Tree/Utility Pole	Pedestrian	Left Turn	Rear-End	(W) = WET	A = INCAPACITATING
Non-Fixed Object	Non-Contact Vehicle	Right Turn	Head-On	(F) = FOG-MIST	B = NON-INCAP.
Fixed Object	Backing Vehicle	Sideswipe-Same	Overtake	(DUI) = ALCOHOL	C = POS. INJURY
Parked Vehicle	Moving Vehicle	Sideswipe-Opp.	Overturn	OR DRUG USE	BLANK = PDO


WAUKESHA COUNTY
STH 16 NB Ramp & STH 67
Okauchee Lake
Hartland
Pewaukee
Waukesha
Wales
Genesee Depot
North Prairie
Muskego
Eagle
Palmyra
Ixonia
Concord
Dousman
West Allis
Greenfield
Main St
W Capitol Dr
W Bluemound Rd
Sunset Dr
Summit Ave
Redford Blvd
Les Paul Pkwy
S Racine Ave
Rock Fwy
Fond Du Lac Fwy
Zoo Fwy
N Mayfair Rd
S 108th St
North-South Fwy
Layton Ave
Brown Deer Rd
Imagery Date: 7/28/2011
Image © 2014 TerraMetrics
© 2014 Google
Image NOAA
Google earth
Eye alt 31.45 mi



LEGEND

- CONTROL CABINET
- NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED
- SIGNAL HEAD, PEDESTAL MOUNT
- (XX) SIGNAL HEAD, TRAFFIC SIGNAL POLE, TRANSFORMER BASE
- LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE, 150 HPS
- LOOP DETECTOR IN 1" NONMETALLIC CONDUIT WITH 12" PULL BOX
- LOOP DETECTOR IN 1" NONMETALLIC CONDUIT
- PULL BOX, 24" X 36"
- PULL BOX, 12" X 24"
- SIGNAL HEAD NUMBER
- (R) RED CIRCULAR INDICATOR
- (Y) YELLOW CIRCULAR INDICATOR
- (G) GREEN CIRCULAR INDICATOR
- (Y) YELLOW ARROW
- (G) GREEN ARROW
- (X) EVP DESIGNATOR
- EVP DETECTOR HEAD

NOTE: ALL LENSES ARE 12-INCH
GRAY SHADE REPRESENTS EXISTING

REVISION				
Rev. No.	FIELD REVIEW, EVP DETECTOR HEAD "C" & "D" RELOCATED			
	APPROVAL RECOMMENDED		APPROVED	
	REGION		CENTRAL OFFICE	
4	Date	By	Date	By
	5/16/11	DAB	5/26/11	GJB

6/23/09 ADD EVP ALL APPROACHES	
ADD EB PROTECTED/PERMITTED LT TURN PHASE	10/03/08
CHANGE CONTROLLER TO EPAC	12/06
INITIAL INSTALLATION	1992

TRAFFIC CONTROL SIGNAL

STH 16 & STH 67 NB RAMPS
TOWN OF OCONOMOWOC
WAUKESHA COUNTY

SIGNAL NO. S0457 CONTROLLER TYPE: EPAC

WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVAL RECOMMENDED
Date 1/16/92 EDWARD J. FRIEDE, REGION TRAFFIC ENGINEER

APPROVED
Date 2/5/92 PETER F. RUSCH, STATE TRAFFIC ENGINEER

REGION CONTACT: DAVE BRANTNER
DESIGNED BY:
REVISED BY: JAJ

PAGE 1 OF 3

PROJECT NO:	HWY: STH 16	COUNTY: WAUKESHA	TRAFFIC SIGNAL PLAN	SHEET	E

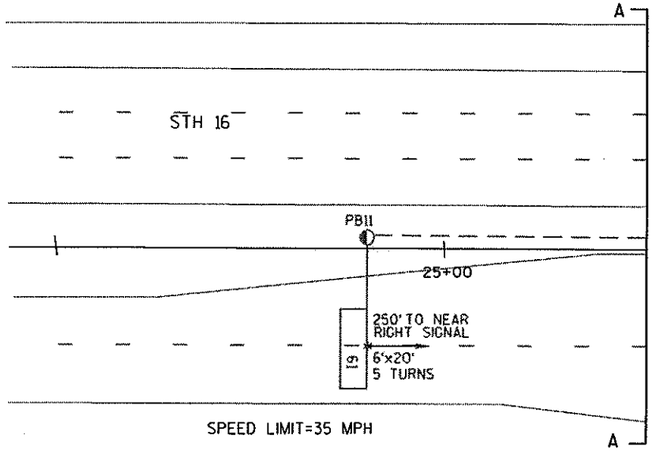
FILE NAME : J:\projects\d2_signals_com\S0457_D.dgn PLOT DATE : 18-MAY-2011 07:30 PLOT BY : dotjaj PLOT NAME : PLOT SCALE : 40:1

WISDOT/CADDS SHEET 42

5/19/11

2

N



TRAFFIC CONTROL SIGNAL
STH 16 & STH 67 NB RAMPS
TOWN OF OCONOMOWOC
WAUKESHA COUNTY

SIGNAL NO. S0457

REGION CONTACT: DAVE BRANTNER
DESIGNED BY:
REVISED BY: JAJ

PAGE 2 OF 3

PROJECT NO:	HWY: STH 16	COUNTY: WAUKESHA	TRAFFIC SIGNAL PLAN	SHEET	E

SEQUENCE OF OPERATION

RING 1

	HEAD NUMBERS	Ø1 R/W	Ø1 CLEAR TO **	Ø1	Ø1	Ø2 R/W	Ø2 CLEAR TO **	Ø2	Ø2
Ø1	2,13	G	Y	-		-	-	-	
Ø2	4,5,6	R	R	R		G	Y	R	
Ø3									
Ø4									
Ø5									
Ø6	1,2,3,13	R	R	R		R	R	R	
Ø7	10,11,12	R	R	R		R	R	R	
Ø8	7,8,9	R	R	R		R	R	R	
Ø2P									
Ø4P									
Ø6P									
Ø8P									

NOT USED

NOT USED

	Ø3 R/W	Ø3 CLEAR TO **	Ø3	Ø3	Ø4 R/W	Ø4 CLEAR TO **	Ø4	Ø4

FLASH

-
R
R
R
R

N

NOT USED

RING 2

	HEAD NUMBERS	Ø5 R/W	Ø5 CLEAR TO **	Ø5	Ø5	Ø6 R/W	Ø6 CLEAR TO **	Ø6	Ø6
Ø1	2,13					-	-	-	
Ø2	4,5,6					R	R	R	
Ø3									
Ø4									
Ø5									
Ø6	1,2,3,13					G	Y	R	
Ø7	10,11,12					R	R	R	
Ø8	7,8,9					R	R	R	
Ø2P									
Ø4P									
Ø6P									
Ø8P									

Ø7 R/W	Ø7 CLEAR TO **	Ø7	Ø7	Ø8 R/W	Ø8 CLEAR TO **	Ø8	Ø8
-	-	-		-	-	-	
R	R	R		R	R	R	
R	R	R		R	R	R	
G	Y	R		R	R	R	
R	R	R		G	Y	R	

BARRIER

** CLEARANCE TO A PHASE IN CONFLICT WITH THIS PHASE ON (SEE CHART 1)

CHART 1

PHASE ON	NONCONFLICTING PHASE ALLOWED TO TIME CONCURRENTLY	PHASES IN CONFLICT WITH PHASE ON
1	6	2,7,8
2	6	1,7,8
3		
4		
5		
6	1 OR 2	7,8
7	NONE	1,2,6,8
8	NONE	1,2,6,7

DETECTOR LOGIC

DETECTOR NUMBER	AMPLIFIER CHANNEL NUMBER	DETECTOR OPERATION: CALLS AND EXTENDS	DETECTOR OPERATION: CALLS ONLY	DETECTOR OPERATION: EXTENDS ONLY	PHASE CALLED	PHASE EXTENDED	DETECTOR DISCONNECT PHASE	CALLING DELAY	EXTENSION STRETCH	SIZE	NUMBER OF TURNS
11	7	X			1	1				6'x20'	3
12	7	X			1	1				6'x20'	3
21	1	X			2	2				6'x20'	4
51	FUTURE									6'x20'	2
52	FUTURE									6'x20'	2
61	4	X			6	6				6'x20'	5
71	2	X			7	7				6'x20'	3
72	2	X			7	7				6'x20'	3
73	3	X			7	7				6'x20'	3
74	3	X			7	7				6'x20'	3
81	5	X			8	8		X		6'x20'	2
82	6	X			8	8				6'x20'	2
83	5	X			8	8		X		6'x20'	2
84	6	X			8	8				6'x20'	2

CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY W / Ø	PHASE RECALL	PHASE ACTIVE
1		6		X
2	X	6	MIN.	X
3				
4				X
5				
6	X	2	MIN.	X
7				X
8				X

OVERLAPS

O.L. "A" =
O.L. "B" =
O.L. "C" =
O.L. "D" =

TYPE OF INTERCONNECT COMMUNICATION	
NONE	
TBC	X
CLOSED LOOP TWISTED PAIR*	
CLOSED LOOP FIBER OPTIC*	
RADIO	
*LOCATION OF MASTER CONTROLLER NO:	S-
SIGNAL SYSTEM #:	SS- -

TYPE OF PRE-EMPT	
NONE	
RAILROAD	
EMERGENCY VEHICLE	α
3M	X
TOMAR	
HARDWIRE	
OTHER	
LIFT BRIDGE	
QUEUE DETECTOR	

TYPE OF LIGHTING	
BY OTHER AGENCY	
IN TRAFFIC SIGNAL CABINET	X
IN SEPARATE DOT LIGHTING CABINET	

EMERGENCY VEHICLE PREEMPTION SEQUENCE

EMERGENCY VEHICLE DETECTOR	A	B	C	D
MOVEMENT	←	⇒	↓	↰↑
PHASE	2	1+6	7	8

AFTER PREEMPTION SEQUENCE 2 OR 1+6, CONTROLLER SHALL RETURN TO PHASES 2+6.
AFTER PREEMPTION SEQUENCE 7, CONTROLLER SHALL RETURN TO PHASE 7.
AFTER PREEMPTION SEQUENCE 8, CONTROLLER SHALL RETURN TO PHASE 8.

GENERAL NOTES:

1. ANY ACTUATED PHASE FOR WHICH THERE IS NO CALL SHALL BE SKIPPED.
2. WHEN ONE PHASE IS ON ALONE, ANY NONCONFLICTING PHASE MAY START TIMING CONCURRENTLY WITHOUT A CLEARANCE INTERVAL. (SEE CHART 1 AT LEFT.)
3. IF ANY OPPOSING THRU PHASES ARE TIMING CONCURRENTLY, THEY SHALL TERMINATE TOGETHER DUE TO PERMISSIVE LEFT TURN CONFLICT.

STH 16 & STH 67 NB RAMPS
TOWN OF OCONOMOWOC
WAUKESHA COUNTY

SIGNAL NO. S0457
CONTROLLER TYPE: EPAC
DATE 5/11 PAGE NO. 3 OF 3

5/19/11

PROJECT NO:	HWY: STH 16	COUNTY: WAUKESHA	SEQUENCE OF OPERATIONS	SHEET	E

DTSD – SE Region
Intersection Safety Evaluation

Intersection Description

Intersection: STH 16 NB & STH 67

County: Waukesha **Municipality:** Town of Oconomowoc

Request for Evaluation

Reason for Request: Click here to enter text. 5% list (include year), redesign, etc.

Requested By: Stephanie Sward **Request Date:** January 6, 2016

Completed By: Mike Borck **Completion Date:** January 8, 2016

Crash Data

Avg. Crash Rate	Crashes by Year		Crashes by Severity				
	Year	Total Crashes	K	A	B	C	PDO
.65	2010	2		2			
	2011	10		1	1	3	5
(Crashes/ Million Entering Veh.)	2012	6			2	1	3
Fatal and Injury %	2013	4				1	3
	2014	4					4
42%	Total	26	0	3	3	5	15
	Avg.	5.2	ADT			21,844	
	Pre 2015	*2*	Year of Count			2013	

Average Crash Rate= (Avg. # of crashes*10^6) / (365*ADT) Preliminary 2015 crashes not included in calculations

HSM spreadsheet: N:\SPO\Operations\Safety\Intersection, Segment & Project Files\SER Signals.xlsx *(Add crash and volume statistics)*

History, Safety Issues and Actions Taken

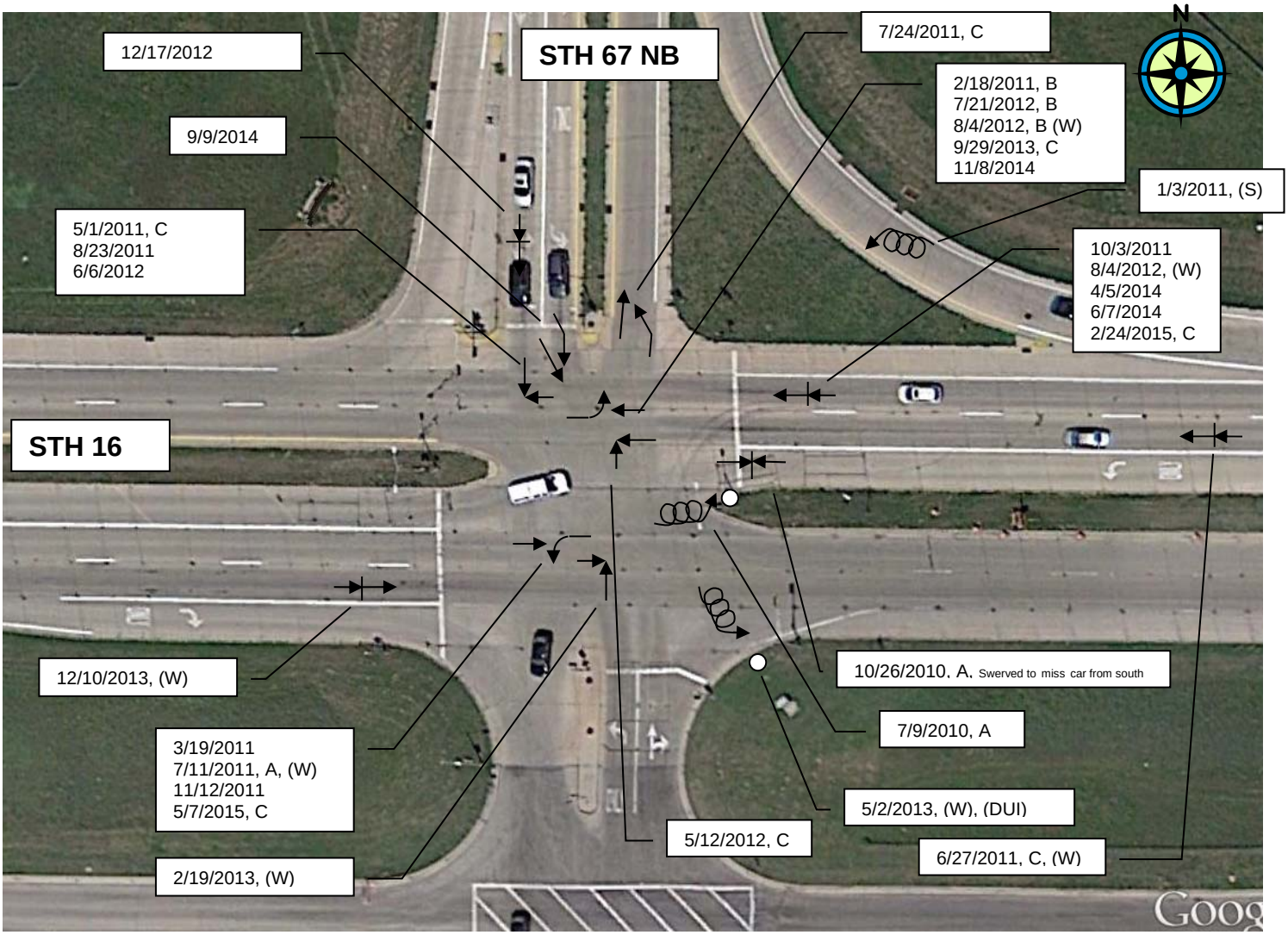
Changes During Study Period:	
Safety Issues:	
Actions:	

DTSD – SE Region
Intersection Safety Evaluation

STH 16 NB & STH 67

Waukesha County

January 2010- Pre. 2015



LEGEND

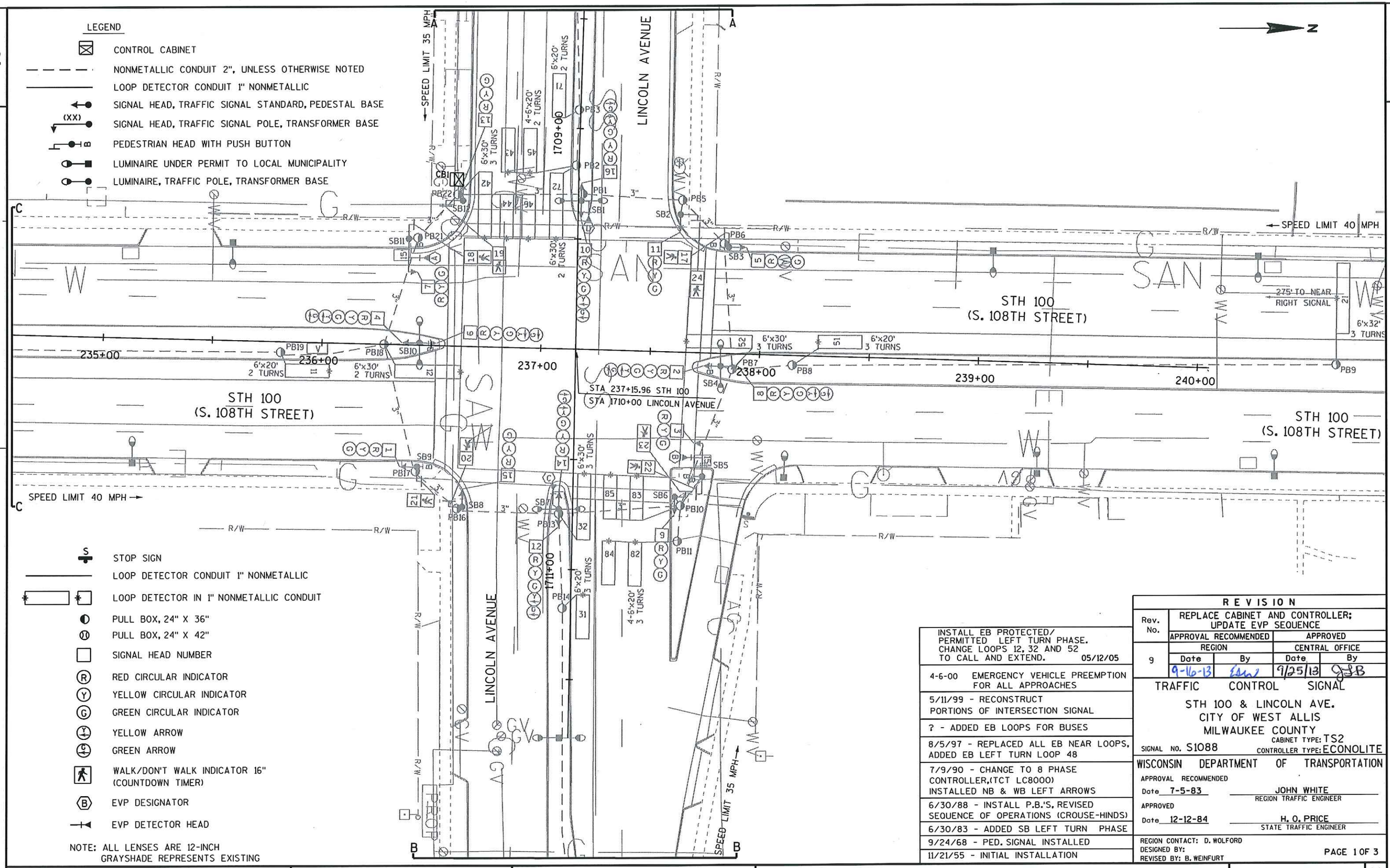
○	Signal/Sign Post	▪▪▪▪▪	Bicycle		Right Angle		Out of Control
●	Tree/Utility Pole	◆ - - -	Pedestrian		Left Turn		Rear-End
□	Non-Fixed Object	◄- - - -	Non-Contact Vehicle		Right Turn		Head-On
■	Fixed Object	◄►	Backing Vehicle		Sideswipe-Same		Overtake
▨	Parked Vehicle	◄	Moving Vehicle		Sideswipe-Opp.		Overturn

(S) = SNOW-ICE	**K = FATAL**
(W) = WET	**A = INCAPACITATING**
(F) = FOG-MIST	**B = NON-INCAP.**
(DUI) = ALCOHOL	**C = POS. INJURY**
OR DRUG USE	**BLANK = PDO**


MILWAUKEE COUNTY
STH 100 & Lincoln Ave
STH 100 & Cleveland Ave
STH 100 & National Ave
STH 100 & Oklahoma Ave
Menomonee Falls
W Brown Deer Rd
Glendale
Fond Du Lac Fwy
W Appleton Ave
Shorewood
Brookfield
N Mayfair Rd
Milwaukee
W National Ave
Lake Fwy
West Allis
S Moorland Rd
New Berlin
Greenfield
S 108th St
Waukesha
Muskego
Franklin
North-South
Oak Creek
S Howell Ave
Loomis Rd
Image © 2014 TerraMetrics
© 2014 Google
Image NOAA
Imagery Date: 7/28/2011
43°01'03.33" N 87°47'47.60" W elev 497 ft

LEGEND

- CONTROL CABINET
- NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED
- LOOP DETECTOR CONDUIT 1" NONMETALLIC
- SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE
- (XX) SIGNAL HEAD, TRAFFIC SIGNAL POLE, TRANSFORMER BASE
- B PEDESTRIAN HEAD WITH PUSH BUTTON
- LUMINAIRE UNDER PERMIT TO LOCAL MUNICIPALITY
- LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE



- STOP SIGN
- LOOP DETECTOR CONDUIT 1" NONMETALLIC
- LOOP DETECTOR IN 1" NONMETALLIC CONDUIT
- PULL BOX, 24" X 36"
- PULL BOX, 24" X 42"
- SIGNAL HEAD NUMBER
- (R) RED CIRCULAR INDICATOR
- (Y) YELLOW CIRCULAR INDICATOR
- (G) GREEN CIRCULAR INDICATOR
- YELLOW ARROW
- GREEN ARROW
- WALK/DON'T WALK INDICATOR 16" (COUNTDOWN TIMER)
- (B) EVP DESIGNATOR
- EVP DETECTOR HEAD

NOTE: ALL LENSES ARE 12-INCH
GRAYSHADE REPRESENTS EXISTING

REVISION	
INSTALL EB PROTECTED/ PERMITTED LEFT TURN PHASE. CHANGE LOOPS 12, 32 AND 52 TO CALL AND EXTEND. 05/12/05	
4-6-00 EMERGENCY VEHICLE PREEMPTION FOR ALL APPROACHES	
5/11/99 - RECONSTRUCT PORTIONS OF INTERSECTION SIGNAL	
? - ADDED EB LOOPS FOR BUSES	
8/5/97 - REPLACED ALL EB NEAR LOOPS, ADDED EB LEFT TURN LOOP 48	
7/9/90 - CHANGE TO 8 PHASE CONTROLLER,(TCT LC8000) INSTALLED NB & WB LEFT ARROWS	
6/30/88 - INSTALL P.B.'S, REVISED SEQUENCE OF OPERATIONS (CROUSE-HINDS)	
6/30/83 - ADDED SB LEFT TURN PHASE	
9/24/68 - PED. SIGNAL INSTALLED	
11/21/55 - INITIAL INSTALLATION	

Rev. No.	REVISION			
	REPLACE CABINET AND CONTROLLER; UPDATE EVP SEQUENCE			
	APPROVAL RECOMMENDED		APPROVED	
9	REGION		CENTRAL OFFICE	
	Date	By	Date	By
	9-16-13	[illegible]	9/25/13	[illegible]

TRAFFIC CONTROL SIGNAL

STH 100 & LINCOLN AVE.
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S1088
CABINET TYPE: TS2
CONTROLLER TYPE: ECONOLITE

WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVAL RECOMMENDED
Date 7-5-83 JOHN WHITE, REGION TRAFFIC ENGINEER

APPROVED
Date 12-12-84 H. O. PRICE, STATE TRAFFIC ENGINEER

REGION CONTACT: D. WOLFORD
DESIGNED BY:
REVISED BY: B. WEINFURT

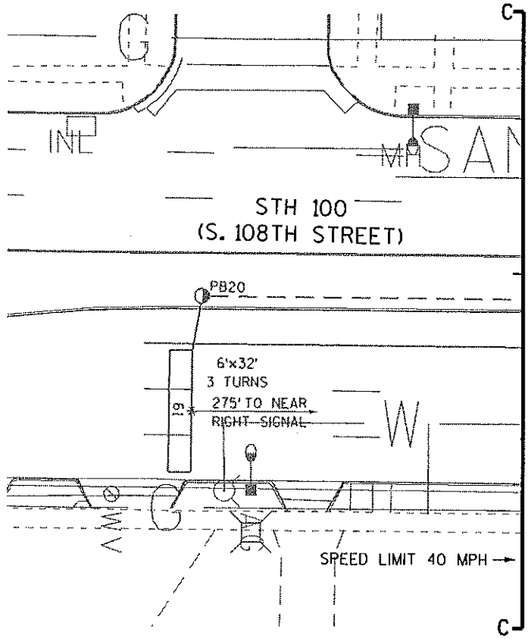
PAGE 1 OF 3

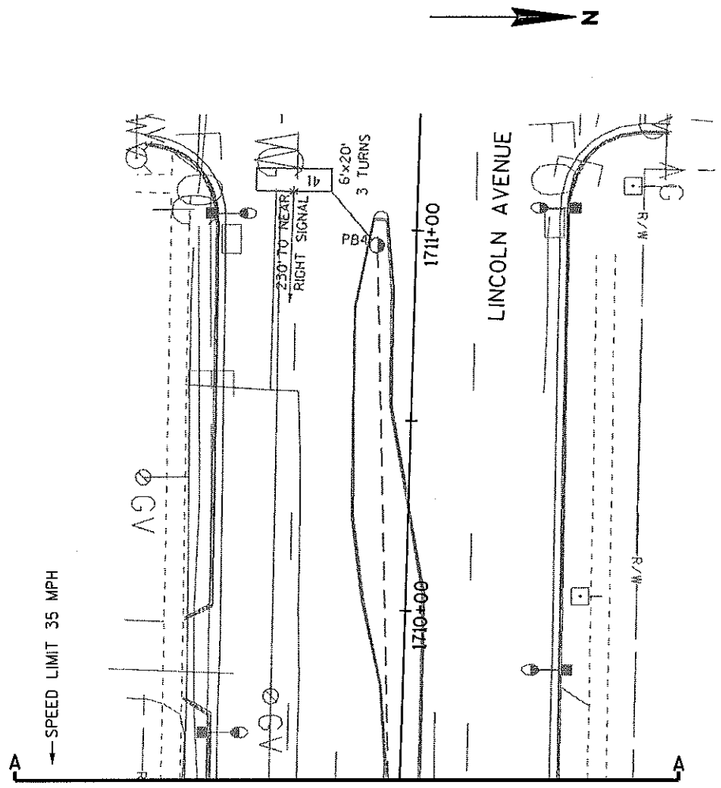
PROJECT NO: 0072-40-43	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET E

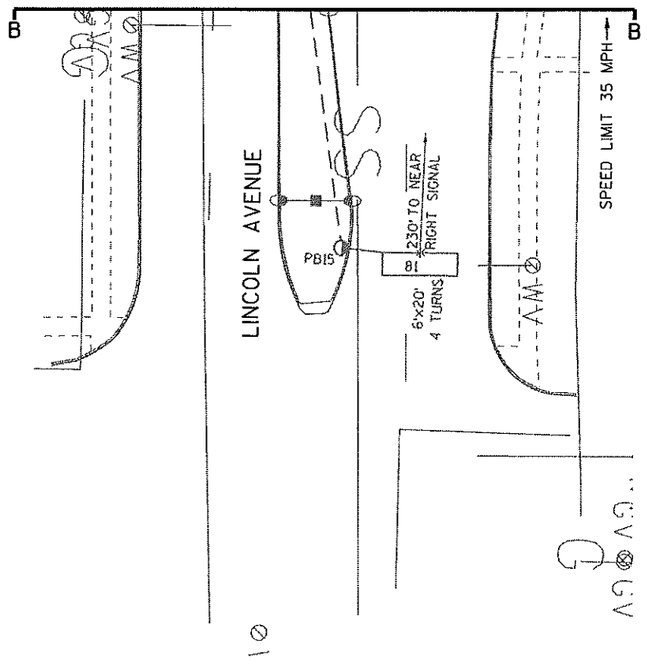
FILE NAME : J:\projects\d2_signals_com\S1088_J.dgn
PLOT DATE : 16-SEP-2013 14:12
PLOT BY : dotbgw
PLOT NAME :
PLOT SCALE : 40:1
WISDOT/CADDS SHEET 42

9-16-13 DJW

2







TRAFFIC CONTROL SIGNAL
STH 100 & LINCOLN AVE.
CITY OF WEST ALLIS
MILWAUKEE COUNTY

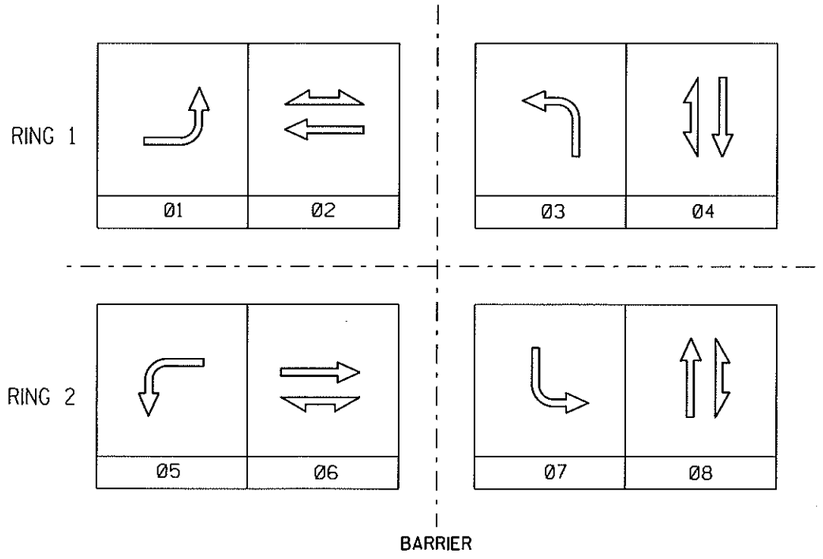
SIGNAL NO. S1088

REGION CONTACT: D. WOLFORD
DESIGNED BY:
REVISED BY: B. WEINFURT

PAGE 2 OF 3

PROJECT NO: 0072-40-43	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

	HEAD NUMBERS	FLASH
Ø1	2,4	-
Ø2	5,6,7,8	R
Ø3	10,12	-
Ø4	13,14,15,16	R
Ø5	6,8	-
Ø6	1,2,3,4	R
Ø7	14,16	-
Ø8	9,10,11,12	R
Ø2P	17,18	
Ø4P	19,20	
Ø6P	21,22	
Ø8P	23,24	
OLE		
OLF		
OLG		
OLH		



CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY W / Ø	PHASE RECALL	PHASE ACTIVE
1		6		X
2	X	6	MIN	X
3		8		X
4		8		X
5		2		X
6	X	2	MIN	X
7		4		X
8		4		X

TYPE OF INTERCONNECT/COMMUNICATION	
NONE	X
CLOSED LOOP	
TWISTED PAIR*	
FIBER OPTIC*	
FIBER OPTIC (ETHERNET)	
RADIO	

TYPE OF COORDINATION	
NONE	
TBC	X
TRAFFIC RESPONSIVE	
ADAPTIVE	
*LOCATION OF MASTER CONTROLLER NO:	S-
SIGNAL SYSTEM #:	SS-00-14

TYPE OF LIGHTING	
BY OTHER AGENCY	
IN TRAFFIC SIGNAL CABINET	X
IN SEPARATE DOT LIGHTING CABINET	

TYPE OF PRE-EMPT	
NONE	
RAILROAD	
EMERGENCY VEHICLE	X
GTT	X
TOMAR	
HARDWIRE	
OTHER	
LIFT BRIDGE	
QUEUE DETECTOR	

DETECTOR LOGIC

DETECTOR INPUT	3	1	7	5	11	9	15	13
PLAN LOOP DETECTOR #(S)	11/12	31/32	42	45/46	61	81	84/85	
CALLED PHASE	1	3	4	4	6	8	8	
CALL OPTION	X	X	X	X	X		X	
DELAY TIME			X					
EXTEND OPTION	X	X	X	X	X	X	X	
EXTEND TIME						X		
USE ADDED INITIAL					X			
CROSS SWITCH PHASE	6	8						

DETECTOR INPUT	19	17	23	21	27	25	31	29
PLAN LOOP DETECTOR #(S)								
CALLED PHASE								
CALL OPTION								
DELAY TIME								
EXTEND OPTION								
EXTEND TIME								
USE ADDED INITIAL								
CROSS SWITCH PHASE								

DETECTOR INPUT	4	2	8	6	12	10	16	14
PLAN LOOP DETECTOR #(S)	21	41	43/44	51/52	71/72	82/83		
CALLED PHASE	2	4	4	5	7	8		
CALL OPTION	X		X	X	X	X		
DELAY TIME								
EXTEND OPTION	X	X	X	X	X	X		
EXTEND TIME		X						
USE ADDED INITIAL	X							
CROSS SWITCH PHASE				7	4			

DETECTOR INPUT	20	18	24	22	28	26	32	30
PLAN LOOP DETECTOR #(S)								
CALLED PHASE								
CALL OPTION								
DELAY TIME								
EXTEND OPTION								
EXTEND TIME								
USE ADDED INITIAL								
CROSS SWITCH PHASE								

EMERGENCY VEHICLE PREEMPTION SEQUENCE

EMERGENCY VEHICLE PREEMPTOR	A	B	C	D
MOVEMENT	← →	← →	↓ ↑	↓ ↑
PHASE	2+6	6+2	4+8	8+4

AFTER PREEMPTION SEQUENCE 2+6 OR 6+2, CONTROLLER SHALL RETURN TO PHASES 2+6.

AFTER PREEMPTION SEQUENCE 4+8 OR 8+4, CONTROLLER SHALL RETURN TO PHASES 4+8.

STH 100 & LINCOLN AVE.
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S1088 CABINET TYPE: TS2

CONTROLLER TYPE: ECONOLITE

DATE 9/13 PAGE NO. 3 OF 3

9-16-13 DTW
9-16-13

PROJECT NO: 0072-40-43	HWY: STH 100	COUNTY: MILWAUKEE	SEQUENCE OF OPERATIONS	SHEET	E

DTSD – SE Region
Intersection Safety Evaluation

Intersection Description

Intersection: STH 100/S. 108th Street and Lincoln Avenue

County: Milwaukee **Municipality:** West Allis

Request for Evaluation

Reason for Request: Signal Review

Requested By: Signal Ops **Request Date:** December 28, 2015

Completed By: Brian Weinfurt **Completion Date:** January 14, 2016

Crash Data

Avg. Crash Rate	Crashes by Year		Crashes by Severity				
	Year	Total Crashes	K	A	B	C	PDO
.83	2010	12			2	1	9
	2011	26			1	8	17
(Crashes/ Million Entering Veh.)	2012	23			2	6	15
Fatal and Injury %	2013	25			5	8	12
	2014	28			4	13	11
42%	**Total**	114			13	35	64
	Avg.	**22.8**	**ADT**			**52156**	
	Pre 2015	**12**	**Year of Count**			**2012**	

Average Crash Rate= (Avg. # of crashes*10^6) / (365*ADT) Preliminary 2015 crashes not included in calculations

HSM spreadsheet: N:\SPO\Operations\Safety\Intersection, Segment & Project Files\SER Signals.xlsx (*Add crash and volume statistics)*

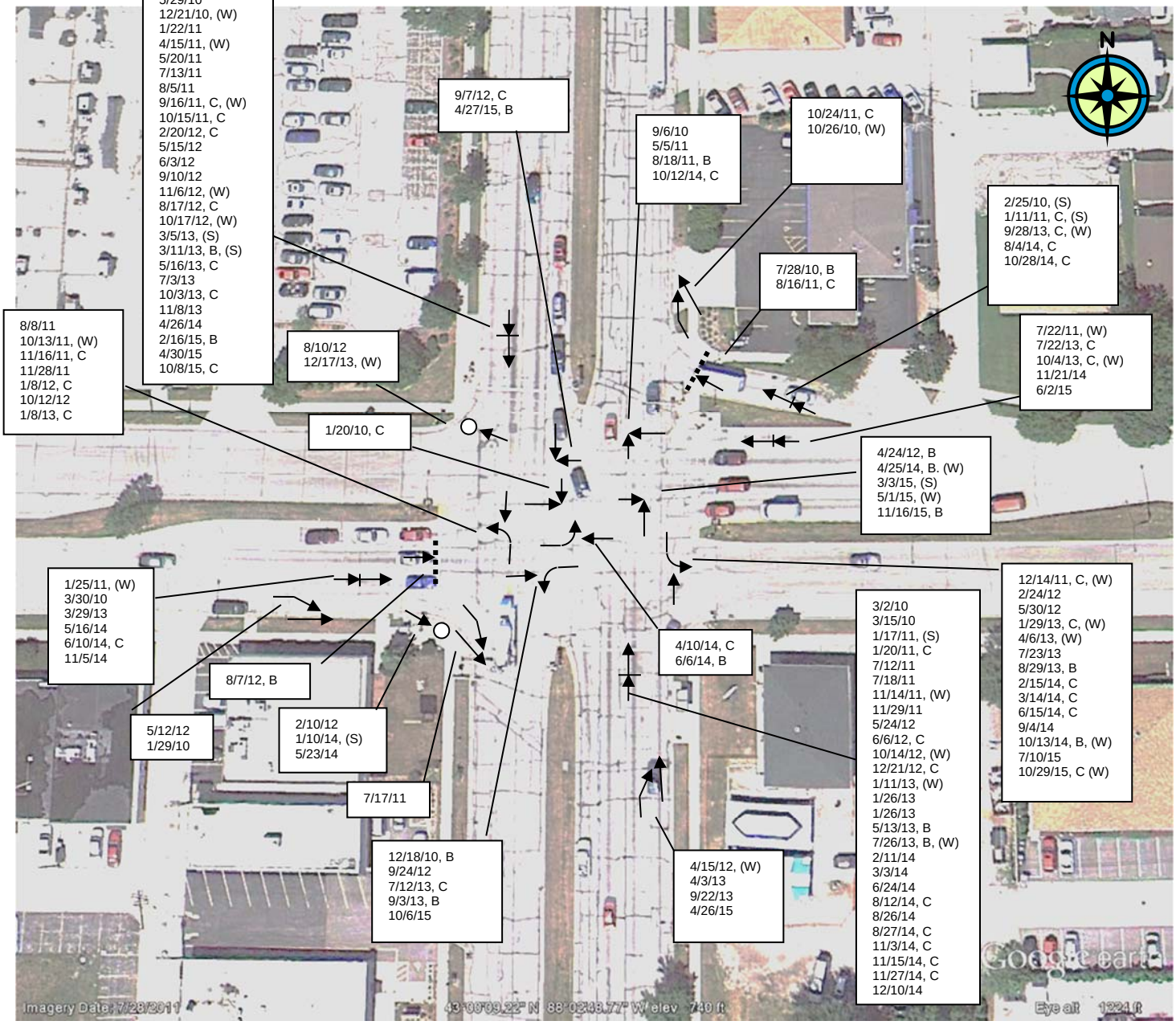
History, Safety Issues and Actions Taken

Changes During Study Period:	
Safety Issues:	
Actions:	

DTSD – SE Region
Intersection Safety Evaluation

STH 100/S. 108th Street and Lincoln Avenue

Milwaukee County **January 2010 to Pre-2015**



LEGEND

Signal/Sign Post	Bicycle	Right Angle	Out of Control	(S) = SNOW-ICE	K = FATAL
Tree/Utility Pole	Pedestrian	Left Turn	Rear-End	(W) = WET	A = INCAPACITATING
Non-Fixed Object	Non-Contact Vehicle	Right Turn	Head-On	(F) = FOG-MIST	B = NON-INCAP.
Fixed Object	Backing Vehicle	Sideswipe-Same	Overtake	(DUI) = ALCOHOL	C = POS. INJURY
Parked Vehicle	Moving Vehicle	Sideswipe-Opp.	Overturn	OR DRUG USE	BLANK = PDO

LEGEND

NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED

SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE

(XX) SIGNAL HEAD, TRAFFIC SIGNAL POLE, TRANSFORMER BASE

LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE

LUMINAIRE UNDER PERMIT TO LOCAL MUNICIPALITY

VIDEO DETECTION AREA

VX VIDEO DETECTION CAMERA

LEGEND (CON'T)

PULL BOX, 24" X 36"

PEDESTRIAN HEAD WITH PUSH BUTTON

PUSH BUTTON

EVP DESIGNATOR

EVP DETECTOR HEAD

CONTROL CABINET

TRAFFIC SIGNAL HEAD

SIGNAL HEAD NUMBER

WALK/DON'T WALK INDICATOR 16" (COUNTDOWN TIMER)

R RED CIRCULAR INDICATOR

Y YELLOW CIRCULAR INDICATOR

G GREEN CIRCULAR INDICATOR

YELLOW ARROW

GREEN ARROW

NOTE: ALL LENSES ARE 12 INCH
GRAYSHADE REPRESENTS EXISTING

N

W. CLEVELAND AVENUE

STH 100 (S. 108TH STREET)

POSTED SPEED LIMIT=25 MPH

POSTED SPEED LIMIT=40 MPH

R/W

FO I/C

FTMS FOC

MH

275' TO NEAR RIGHT SIGNAL

6'X32' 3 TURNS

6'X20' 2 TURNS EACH

6'X25' 3 TURNS

6'X20' 3 TURNS

CONSTRUCTION NOTES:

1. THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT WHICH ARE NOT SHOWN.
2. THE ENGINEER MAY ADJUST THE LOCATIONS OF ITEMS UNDER THIS CONTRACT TO AVOID CONFLICT WITH EXISTING UTILITY FACILITIES.

REVISION	
7-20-04	LOOPS 11 & 51 ON CALL AND EXTEND
4-6-00	EMERGENCY VEHICLE PREEMPTION INSTALLED FOR ALL APPROACHES
5-11-99	RECONSTRUCT PORTIONS OF INTERSECTION SIGNAL
5-23-88	REVISED SEQUENCE OF OPERATION
9-8-82	INSTALLED LEFT TURN SIGNALS
1-19-82	INSTALLED NEW CABINET AND CONTROLLER
12-17-81	ADDED PED SIGNALS EB, WB; LEFT TURN SIGNALS NB, SB
9-24-78	INSTALLED NEW CABINET & CONTROLLER, ALSO RECABLED
8-7-67	INSTALLED INTERCONNECT CABLE
9-3-65	DATE OF INITIAL INSTALLATION
02-14	ADDED WB VIDEO DETECTION
10-7-13	REPLACE CABINET AND CONTROLLER; UPDATED EVP SEQUENCE
11-13-07	FIELD REVIEW
8-29-05	ADD 5-SECTION HEADS TO SB2 & SB8, CHANGE HEADS 11 & 14 TO 3 SECTION HEADS, ADD TRANSFORMER BASES TO SB2 & SB8

REVISION				
Rev. No.	UPDATE DETECTION AND CABINET. ADD INSYNC ADAPTIVE CONTROL.			
	APPROVAL RECOMMENDED		APPROVED	
	REGION		CENTRAL OFFICE	
	Date	By	Date	By
14	2/19/2014	DAB	3/6/2014	GJB

TRAFFIC CONTROL SIGNAL
STH 100 (S. 108TH STREET) &
W. CLEVELAND AVENUE
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S40-1104

CABINET TYPE: TS-2

CONTROLLER TYPE: ECONOLITE

WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVAL RECOMMENDED

Date 2/4/64 HARVEY SHEBESTA, REGION TRAFFIC ENGINEER

APPROVED

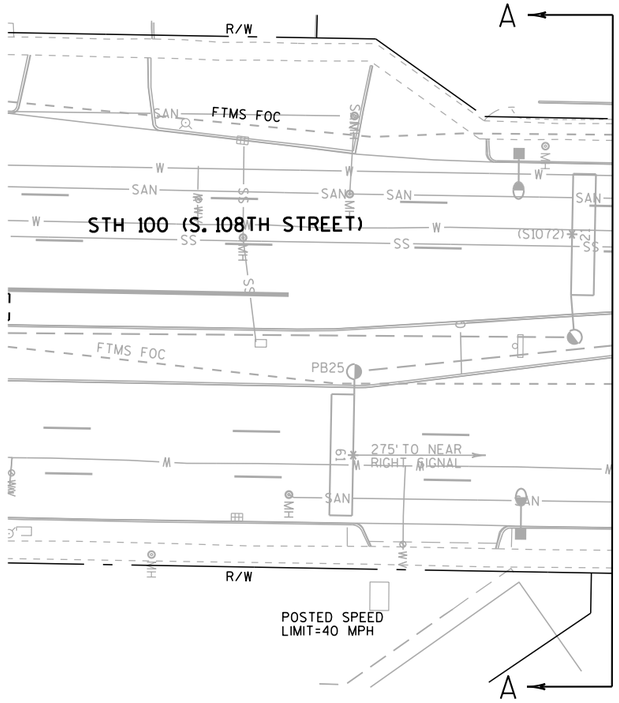
Date 2/16/65 WAYNE N. VOLK, STATE TRAFFIC ENGINEER

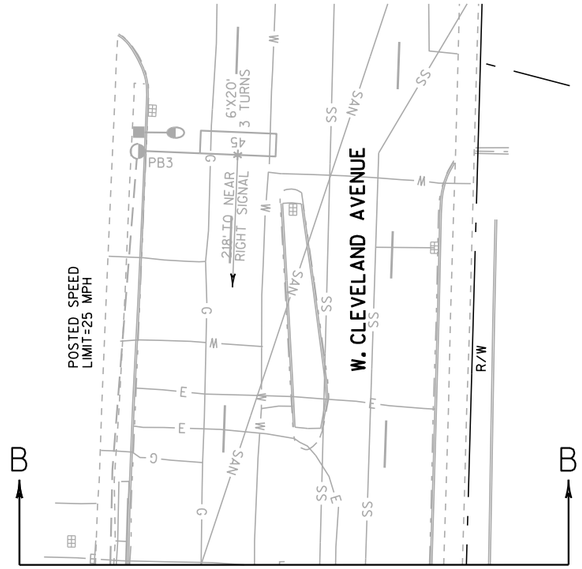
REGION CONTACT: JUSTIN EFFINGER
DESIGNED BY:
REVISED BY: FORWARD 45

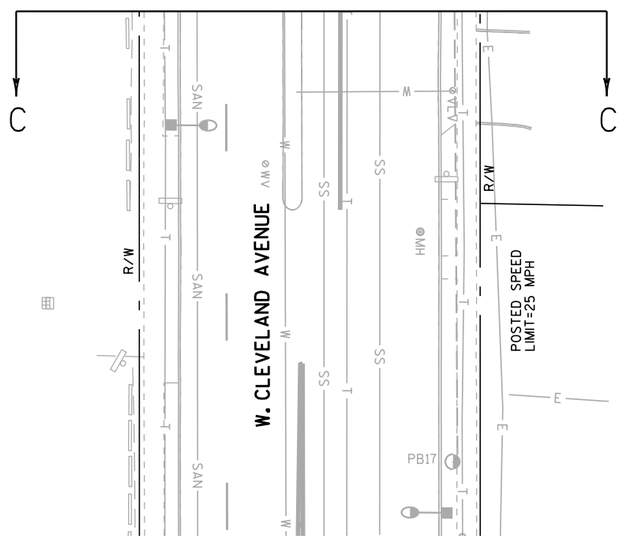
PROJECT NO: 1060-33-97	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

FILE NAME : J:\projects\d2_signals_com\S1104_N.dgn PLOT DATE : 18-NOV-2015 09:08 PLOT BY : dotcmv PLOT NAME : $FILE$ PLOT SCALE : 40:1

WISDOT/CADDS SHEET 42







TRAFFIC CONTROL SIGNAL
STH 100 (S. 108TH STREET) &
W. CLEVELAND AVENUE
CITY OF WEST ALLIS
MILWAUKEE COUNTY

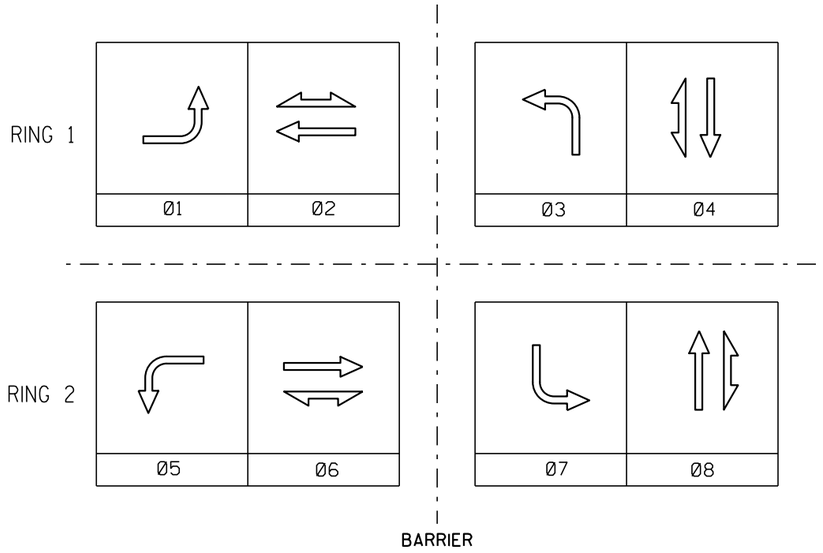
SIGNAL NO. S40-1104

REGION CONTACT: JUSTIN EFFINGER
DESIGNED BY:
REVISED BY: FORWARD 45

PROJECT NO: 1060-33-97	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

FILE NAME : J:\projects\d2_signals_com\S1104_N.dgn
PLOT DATE : 18-NOV-2015 09:08
PLOT BY : dotcmv
PLOT NAME : $FILE$
PLOT SCALE : 40:1
WISDOT/CADDS SHEET 42

	HEAD NUMBERS	FLASH
Ø1	2,4	-
Ø2	5,6,7,8	R
Ø3	10,12	-
Ø4	13,14,15,16	R
Ø5	6,8	-
Ø6	1,2,3,4	R
Ø7	14,16	-
Ø8	9,10,11,12	R
Ø2P	19,20	
Ø4P	23,24	
Ø6P	17,18	
Ø8P	21,22	
OLE		
OLF		
OLG		
OLH		



CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY W / Ø	PHASE RECALL	PHASE ACTIVE
1		6		x
2		6	MIN	x
3		8		x
4		8		x
5		2		x
6		2	MIN	x
7		4		x
8		4		x

N

TYPE OF INTERCONNECT/COMMUNICATION	
NONE	
CLOSED LOOP	
TWISTED PAIR*	
FIBER OPTIC*	
FIBER OPTIC (ETHERNET)	x
RADIO	

TYPE OF COORDINATION	
NONE	
TBC	
TRAFFIC RESPONSIVE	
ADAPTIVE	x
*LOCATION OF MASTER CONTROLLER NO:	S-
SIGNAL SYSTEM #:	SS-00-14

TYPE OF LIGHTING	
BY OTHER AGENCY	
IN TRAFFIC SIGNAL CABINET	x
IN SEPARATE DOT LIGHTING CABINET	

TYPE OF PRE-EMPT	
NONE	
RAILROAD	
EMERGENCY VEHICLE	x
OPTICOM	x
TOMAR	
HARDWIRE	
OTHER	
LIFT BRIDGE	
QUEUE DETECTOR	

DETECTOR LOGIC

DETECTOR INPUT	3	1	7	5	11	9	15	13
PLAN LOOP DETECTOR #(S)	11/12	41/43	45	51/52	71/72			
CALLED PHASE	1	4	4	5	7			
CALL OPTION	X	X		X	X			
DELAY TIME								
EXTEND OPTION	X	X	X	X	X			
EXTEND TIME			X					
USE ADDED INITIAL								
CROSS SWITCH PHASE	6			2	4			

								DETECTOR INPUT
110	220	310	420	510	620	710	820	PLAN LOOP DETECTOR #(S)
1	2	3	4	5	6	7	8	CALLED PHASE
X	X	X	X	X	X	X	X	CALL OPTION
								DELAY TIME
X	X	X	X	X	X	X	X	EXTEND OPTION
								EXTEND TIME
								USE ADDED INITIAL
								CROSS SWITCH PHASE

DETECTOR INPUT	4	2	8	6	12	10	16	14
PLAN LOOP DETECTOR #(S)	21	42/44	46	61				
CALLED PHASE	2	4	4	6				
CALL OPTION	X	X	X	X				
DELAY TIME			X					
EXTEND OPTION	X	X	X	X				
EXTEND TIME								
USE ADDED INITIAL	X			X				
CROSS SWITCH PHASE								

								DETECTOR INPUT
210	230	410	430	610	630	810		PLAN LOOP DETECTOR #(S)
2	2	4	4	6	6	8		CALLED PHASE
X	X	X	X	X	X	X		CALL OPTION
		X				X		DELAY TIME
X	X	X	X	X	X	X		EXTEND OPTION
								EXTEND TIME
								USE ADDED INITIAL
								CROSS SWITCH PHASE

EMERGENCY VEHICLE PREEMPTION SEQUENCE

EMERGENCY VEHICLE DETECTOR	A	B	C	D
MOVEMENT	← →	← →	↓ ↑	↓ ↑
PHASE	2+6	6+2	4+8	8+4

AFTER PREEMPTION SEQUENCE 2+6 OR 2+6, CONTROLLER SHALL RETURN TO PHASES 2+6.

AFTER PREEMPTION SEQUENCE 4+8 OR 8+4, CONTROLLER SHALL RETURN TO PHASES 4+8.

STH 100 (S. 108TH STREET) &
W. CLEVELAND AVENUE
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S40-1104 CABINET TYPE: TS2

CONTROLLER TYPE: ECONOLITE

DATE 02/14 PAGE NO. 3 OF 3

PROJECT NO: 1060-33-97	HWY: STH 100	COUNTY: MILWAUKEE	SEQUENCE OF OPERATIONS	SHEET	E

DTSD – SE Region
Intersection Safety Evaluation

Intersection Description

Intersection: STH 100 & Cleveland Ave

County: Milwaukee **Municipality:** West Allis

Request for Evaluation

Reason for Request: Signal Review

Requested By: Signal Ops **Request Date:** December 28, 2015

Completed By: Brian Weinfurt **Completion Date:** January 13, 2016

Crash Data

Avg. Crash Rate	Crashes by Year		Crashes by Severity				
	Year	Total Crashes	K	A	B	C	PDO
1.36	2010	26			4	6	16
	2011	26				6	20
(Crashes/ Million Entering Veh.)	2012	22			1	7	14
Fatal and Injury %	2013	30			1	9	20
	2014	16				6	10
33%	**Total**	120			6	34	80
	Avg.	**24**	**ADT**			**48171**	
	Pre 2015	**16**	**Year of Count**			**2012**	

Average Crash Rate= (Avg. # of crashes*10^6) / (365*ADT) Preliminary 2015 crashes not included in calculations

HSM spreadsheet: N:\SPO\Operations\Safety\Intersection, Segment & Project Files\SER Signals.xlsx (*Add crash and volume statistics)*

History, Safety Issues and Actions Taken

Changes During Study Period:	
Safety Issues:	
Actions:	

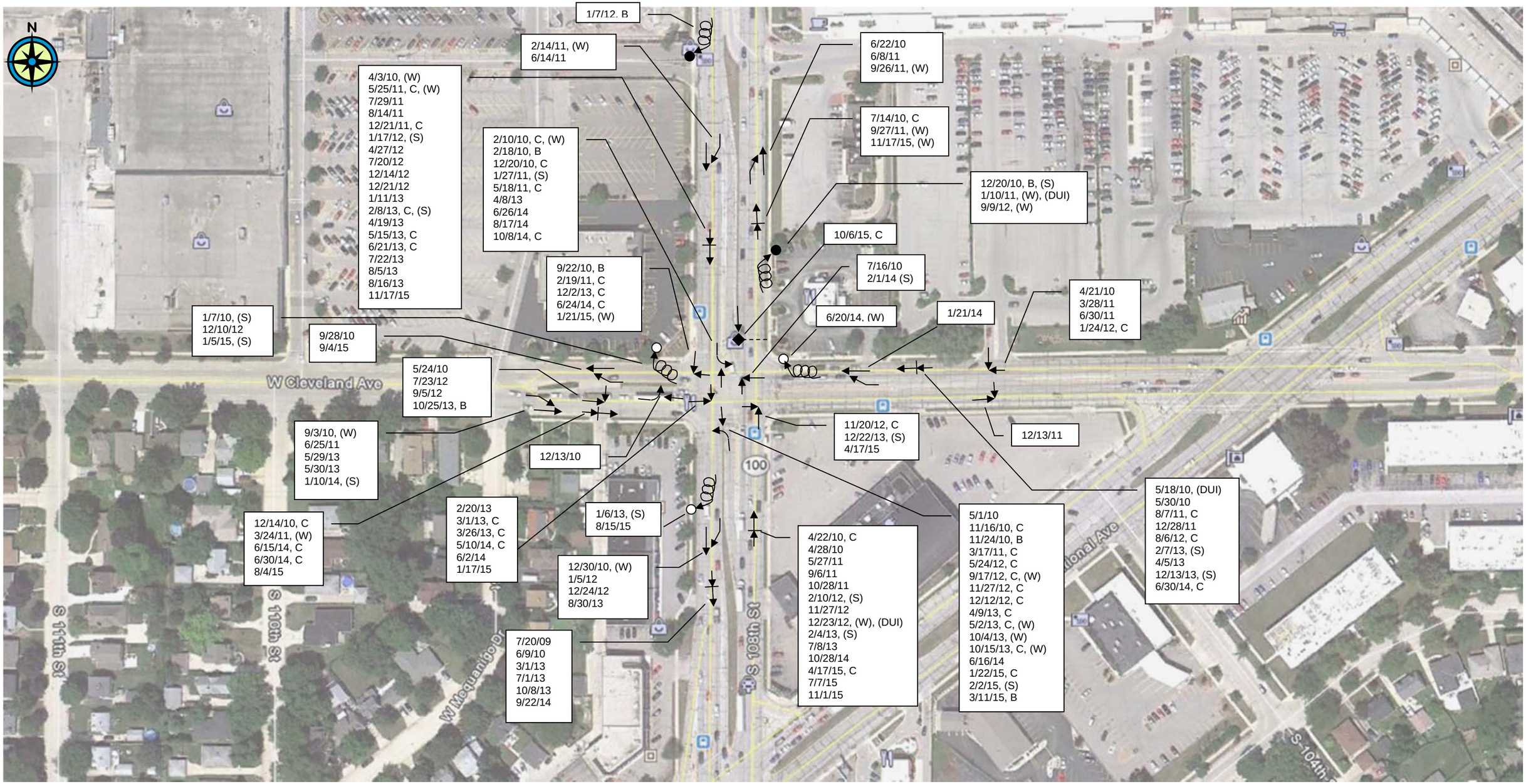
DTSD – SE Region
Intersection Safety Evaluation

STH 100 & Cleveland Ave

Milwaukee County

Jan 2010 to Pre- 2015

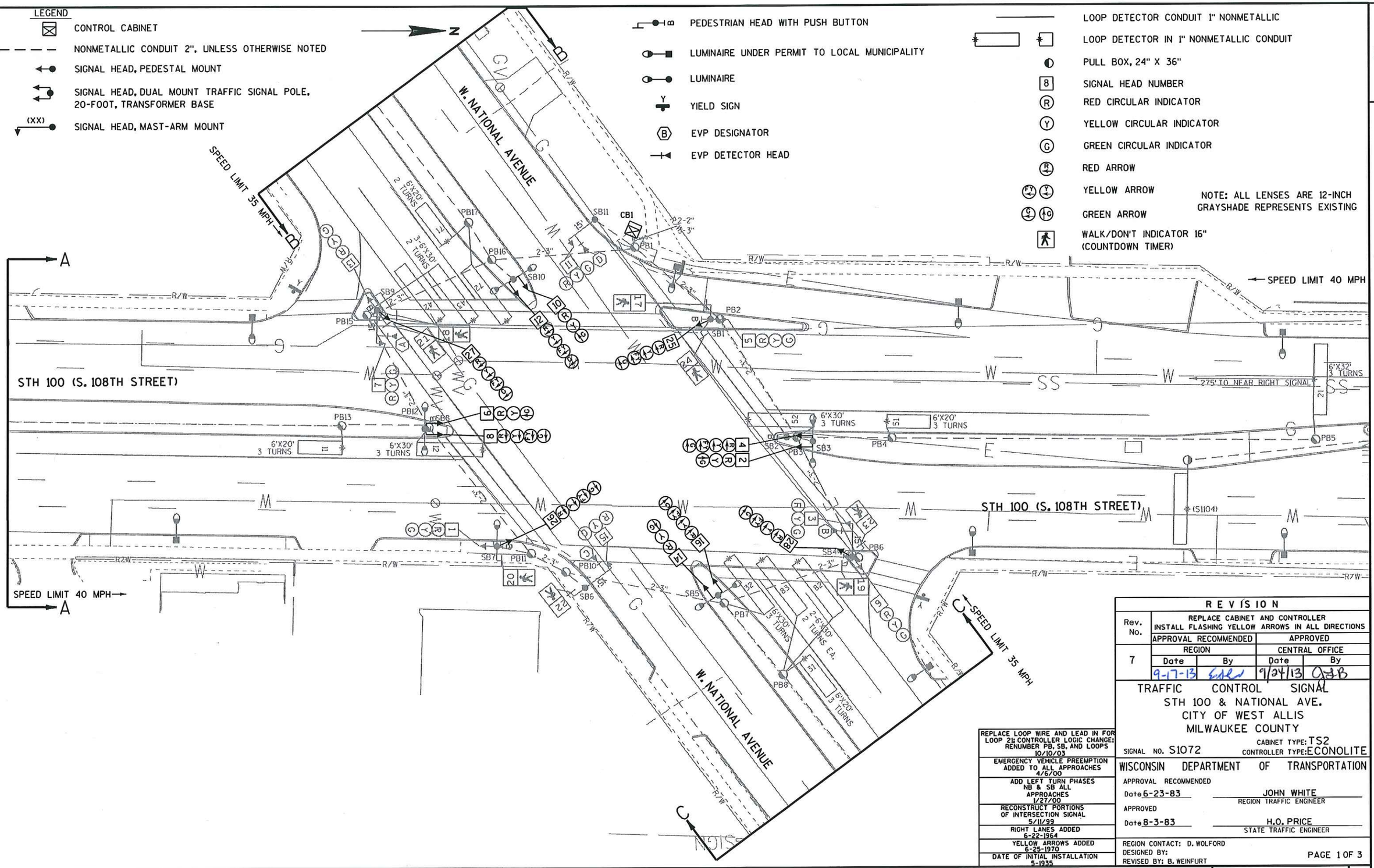
LEGEND					
Signal/Sign Post	Bicycle	Right Angle	Out of Control	(S) = SNOW-ICE	K = FATAL
Tree/Utility Pole	Pedestrian	Left Turn	Rear-End	(W) = WET	A = INCAPACITATING
Non-Fixed Object	Non-Contact Vehicle	Right Turn	Head-On	(F) = FOG-MIST	B = NON-INCAP.
Fixed Object	Backing Vehicle	Sideswipe-Same	Overtake	(DUI) = ALCOHOL	C = POS. INJURY
Parked Vehicle	Moving Vehicle	Sideswipe-Opp.	Overturn	OR DRUG USE	BLANK = PDO



LEGEND

- CONTROL CABINET
- NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED
- SIGNAL HEAD, PEDESTAL MOUNT
- SIGNAL HEAD, DUAL MOUNT TRAFFIC SIGNAL POLE, 20-FOOT, TRANSFORMER BASE
- (XX) SIGNAL HEAD, MAST-ARM MOUNT
- PEDESTRIAN HEAD WITH PUSH BUTTON
- LUMINAIRE UNDER PERMIT TO LOCAL MUNICIPALITY
- LUMINAIRE
- YIELD SIGN
- EVP DESIGNATOR
- EVP DETECTOR HEAD
- LOOP DETECTOR CONDUIT 1" NONMETALLIC
- LOOP DETECTOR IN 1" NONMETALLIC CONDUIT
- PULL BOX, 24" X 36"
- SIGNAL HEAD NUMBER
- RED CIRCULAR INDICATOR
- YELLOW CIRCULAR INDICATOR
- GREEN CIRCULAR INDICATOR
- RED ARROW
- YELLOW ARROW
- GREEN ARROW
- WALK/DON'T INDICATOR 16" (COUNTDOWN TIMER)

NOTE: ALL LENSES ARE 12-INCH
GRAYSHADE REPRESENTS EXISTING



REVISION				
Rev. No.	REPLACE CABINET AND CONTROLLER INSTALL FLASHING YELLOW ARROWS IN ALL DIRECTIONS			
	APPROVAL RECOMMENDED		APPROVED	
7	REGION		CENTRAL OFFICE	
	Date	By	Date	By
	9-17-13	EAH	9/24/13	GJB

TRAFFIC CONTROL SIGNAL
STH 100 & NATIONAL AVE.
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S1072
CABINET TYPE: TS2
CONTROLLER TYPE: ECONOLITE

WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVAL RECOMMENDED
Date 6-23-83 — JOHN WHITE, REGION TRAFFIC ENGINEER

APPROVED
Date 8-3-83 — H.O. PRICE, STATE TRAFFIC ENGINEER

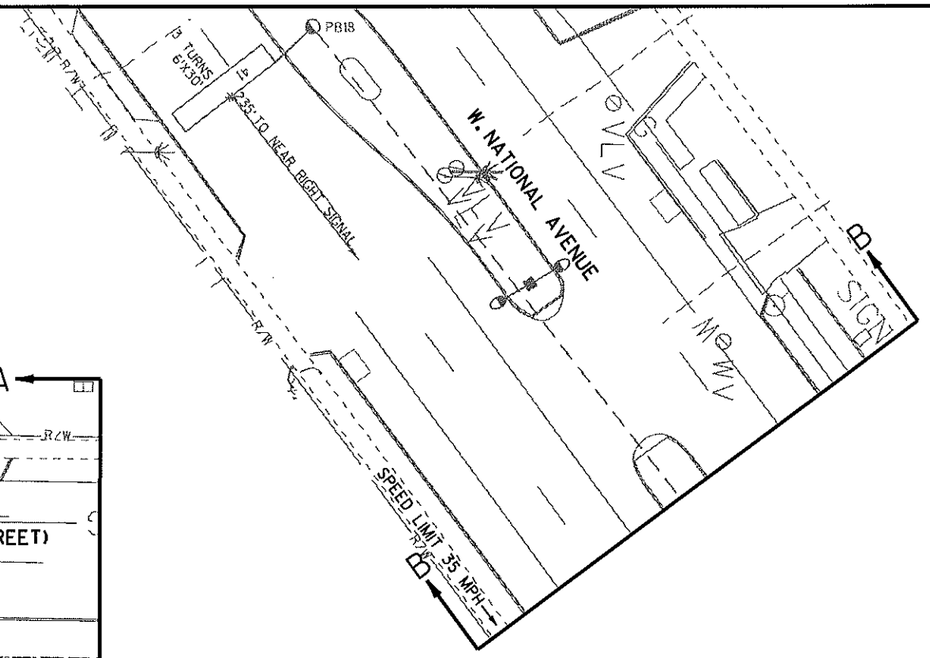
REGION CONTACT: D. WOLFORD
DESIGNED BY:
REVISED BY: B. WEINFURT

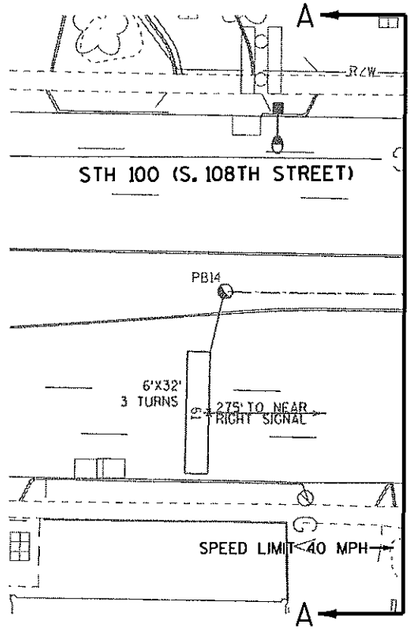
PAGE 1 OF 3

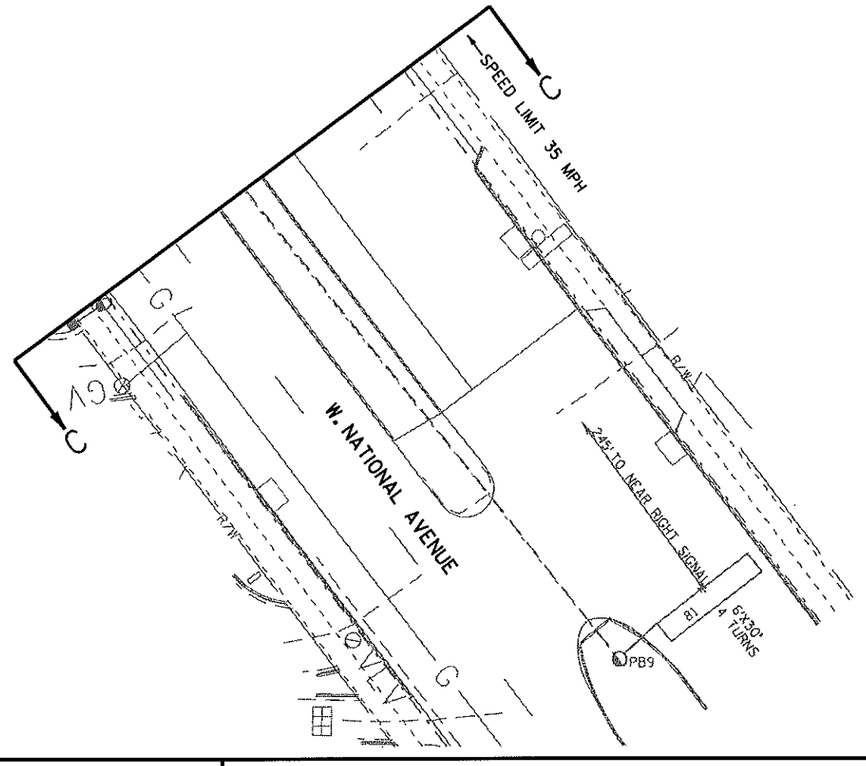
REPLACE LOOP WIRE AND LEAD IN FOR LOOP 21; CONTROLLER LOGIC CHANGE; RENUMBER PB, SB, AND LOOPS 10/10/03
EMERGENCY VEHICLE PREEMPTION ADDED TO ALL APPROACHES 4/6/00
ADD LEFT TURN PHASES NB & SB ALL APPROACHES 1/27/00
RECONSTRUCT PORTIONS OF INTERSECTION SIGNAL 5/11/99
RIGHT LANES ADDED 6-22-1964
YELLOW ARROWS ADDED 6-25-1970
DATE OF INITIAL INSTALLATION 5-1935

PROJECT NO: 0653-31-80	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

9-17-13 EAH



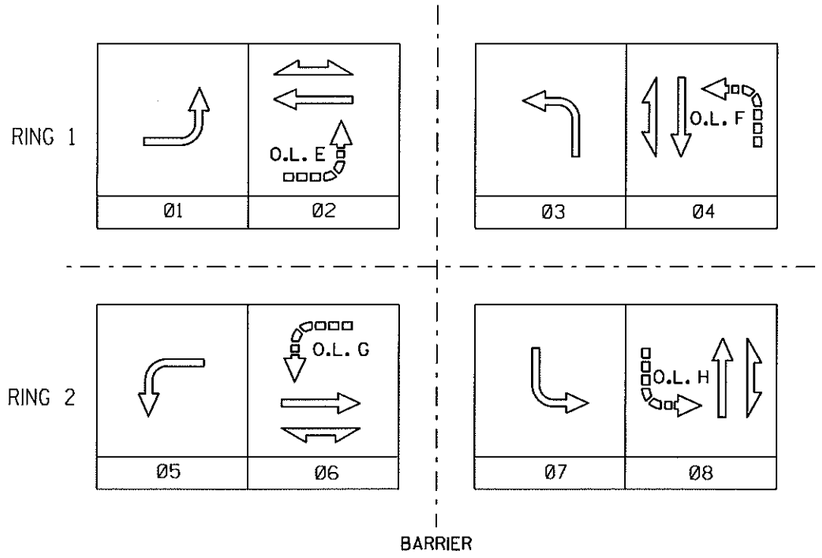




TRAFFIC CONTROL SIGNAL
STH 100 & NATIONAL AVE.
CITY OF WEST ALLIS
MILWAUKEE COUNTY
SIGNAL NO. S1072
REGION CONTACT: D. WOLFORD
DESIGNED BY:
REVISED BY: B. WEINFURT
PAGE 2 OF 3

PROJECT NO: 0653-31-80	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

	HEAD NUMBERS	FLASH
Ø1	4,25	-
Ø2	5,6,7	R
Ø3	12,27	-
Ø4	13,14,15	R
Ø5	8,26	-
Ø6	1,2,3	R
Ø7	16,28	-
Ø8	9,10,11	R
Ø2P	17,18	
Ø4P	21,22	
Ø6P	19,20	
Ø8P	23,24	
OLE	4,25	R
OLF	12,27	R
OLG	8,26	R
OLH	16,28	R



CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY W / Ø	PHASE RECALL	PHASE ACTIVE
1		6		X
2	X	6	MIN	X
3		8		X
4		8		X
5		2		X
6	X	2	MIN	X
7		4		X
8		4		X

TYPE OF INTERCONNECT/COMMUNICATION	
NONE	X
CLOSED LOOP	
TWISTED PAIR*	
FIBER OPTIC*	
FIBER OPTIC (ETHERNET)	
RADIO	

TYPE OF COORDINATION	
NONE	
TBC	X
TRAFFIC RESPONSIVE	
ADAPTIVE	
*LOCATION OF MASTER CONTROLLER NO:	S-
SIGNAL SYSTEM *:	SS-00 - 14

TYPE OF LIGHTING	
BY OTHER AGENCY	
IN TRAFFIC SIGNAL CABINET	X
IN SEPARATE DOT LIGHTING CABINET	

TYPE OF PRE-EMPT	
NONE	
RAILROAD	
EMERGENCY VEHICLE	X
GTT	X
TOMAR	
HARDWIRE	
OTHER	
LIFT BRIDGE	
QUEUE DETECTOR	

DETECTOR LOGIC

DETECTOR INPUT	3	1	7	5	11	9	15	13
PLAN LOOP DETECTOR *(S)	11	21	32	42	51	61	72	82
CALLED PHASE	1	2	3	4	5	6	7	8
CALL OPTION	X	X	X	X	X	X	X	X
DELAY TIME								
EXTEND OPTION	X	X	X	X	X	X	X	X
EXTEND TIME								
USE ADDED INITIAL		X				X		
CROSS SWITCH PHASE	6		8		2		4	

DETECTOR INPUT	19	17	23	21	27	25	31	29
PLAN LOOP DETECTOR *(S)								
CALLED PHASE								
CALL OPTION								
DELAY TIME								
EXTEND OPTION								
EXTEND TIME								
USE ADDED INITIAL								
CROSS SWITCH PHASE								

DETECTOR INPUT	4	2	8	6	12	10	16	14
PLAN LOOP DETECTOR *(S)	12	31	41	43	52	71	81	83
CALLED PHASE	1	3	4	4	5	7	8	8
CALL OPTION	X	X		X	X	X		X
DELAY TIME								
EXTEND OPTION	X	X	X	X	X	X	X	X
EXTEND TIME			X				X	
USE ADDED INITIAL								
CROSS SWITCH PHASE	6	8			2	4		

DETECTOR INPUT	20	18	24	22	28	26	32	30
PLAN LOOP DETECTOR *(S)								
CALLED PHASE								
CALL OPTION								
DELAY TIME								
EXTEND OPTION								
EXTEND TIME								
USE ADDED INITIAL								
CROSS SWITCH PHASE								

EMERGENCY VEHICLE PREEMPTION SEQUENCE

EMERGENCY VEHICLE PREEMPTOR	A	B	C	D
MOVEMENT				
PHASE	2+5	6+1	4+7	8+3

AFTER PREEMPTION SEQUENCE 2+5 OR 6+1,
CONTROLLER SHALL RETURN TO PHASES 2+6.

AFTER PREEMPTION SEQUENCE 4+7 OR 8+3,
CONTROLLER SHALL RETURN TO PHASES 4+8.

STH 100 & NATIONAL AVE.
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S1072 CABINET TYPE: TS2

CONTROLLER TYPE: ECONOLITE

DATE 9/13 PAGE NO. 3 OF 3

9-17-13 DTW
9-17-13 Chk

PROJECT NO: 0653-31-80	HWY: STH 100	COUNTY: MILWAUKEE	SEQUENCE OF OPERATIONS	SHEET	E

DTSD – SE Region
Intersection Safety Evaluation

Intersection Description

Intersection: STH 100/S. 108th Street and National Avenue/CTH ES

County: Milwaukee **Municipality:** West Allis

Request for Evaluation

Reason for Request: Signal Review

Requested By: Signal Ops **Request Date:** December 28, 2015

Completed By: Brian Weinfurt **Completion Date:** January 8, 2016

Crash Data

Avg. Crash Rate	Crashes by Year		Crashes by Severity				
	Year	Total Crashes	K	A	B	C	PDO
1.31	2010	28			3	5	20
	2011	25			1	7	17
(Crashes/ Million Entering Veh.)	2012	17			2	6	9
Fatal and Injury %	2013	34			3	8	23
	2014	24			1	9	14
35%	**Total**	128					
	Avg.	**25.6**	**ADT**			**53372**	
	Pre 2015	*18*	**Year of Count**			**2012**	

Average Crash Rate= (Avg. # of crashes*10^6) / (365*ADT) Preliminary 2015 crashes not included in calculations

HSM spreadsheet: \\dotwkefile1p\N3PUBLIC\SPO\Operations\Safety\Intersection, Segment & Project Files\SER Signal Safety.xlsx (*Add crash and volume statistics)*

History, Safety Issues and Actions Taken

Changes During Study Period:	
Safety Issues:	Rear-end crash pattern at all approaches
Actions:	

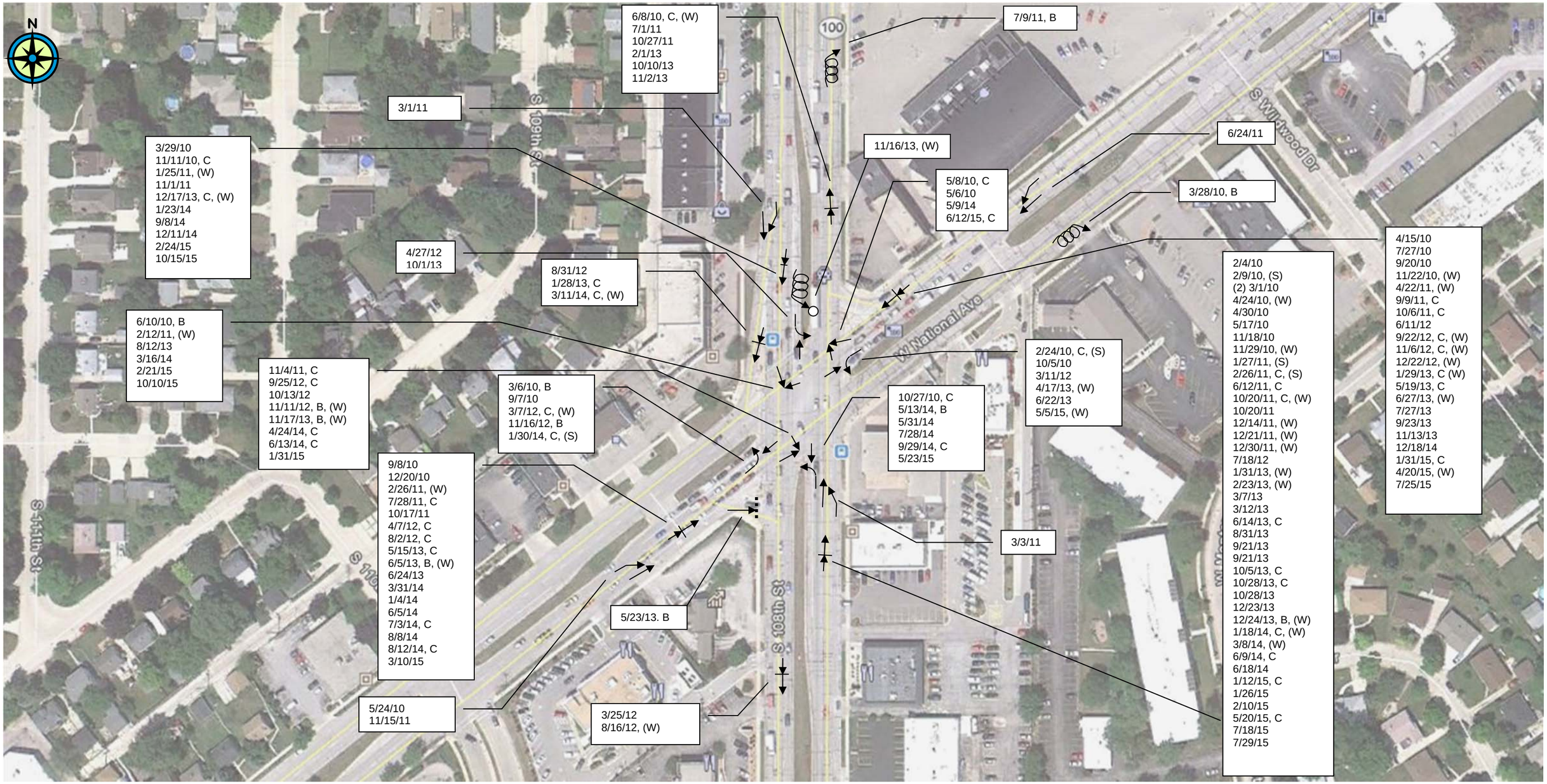
DTSD – SE Region
Intersection Safety Evaluation

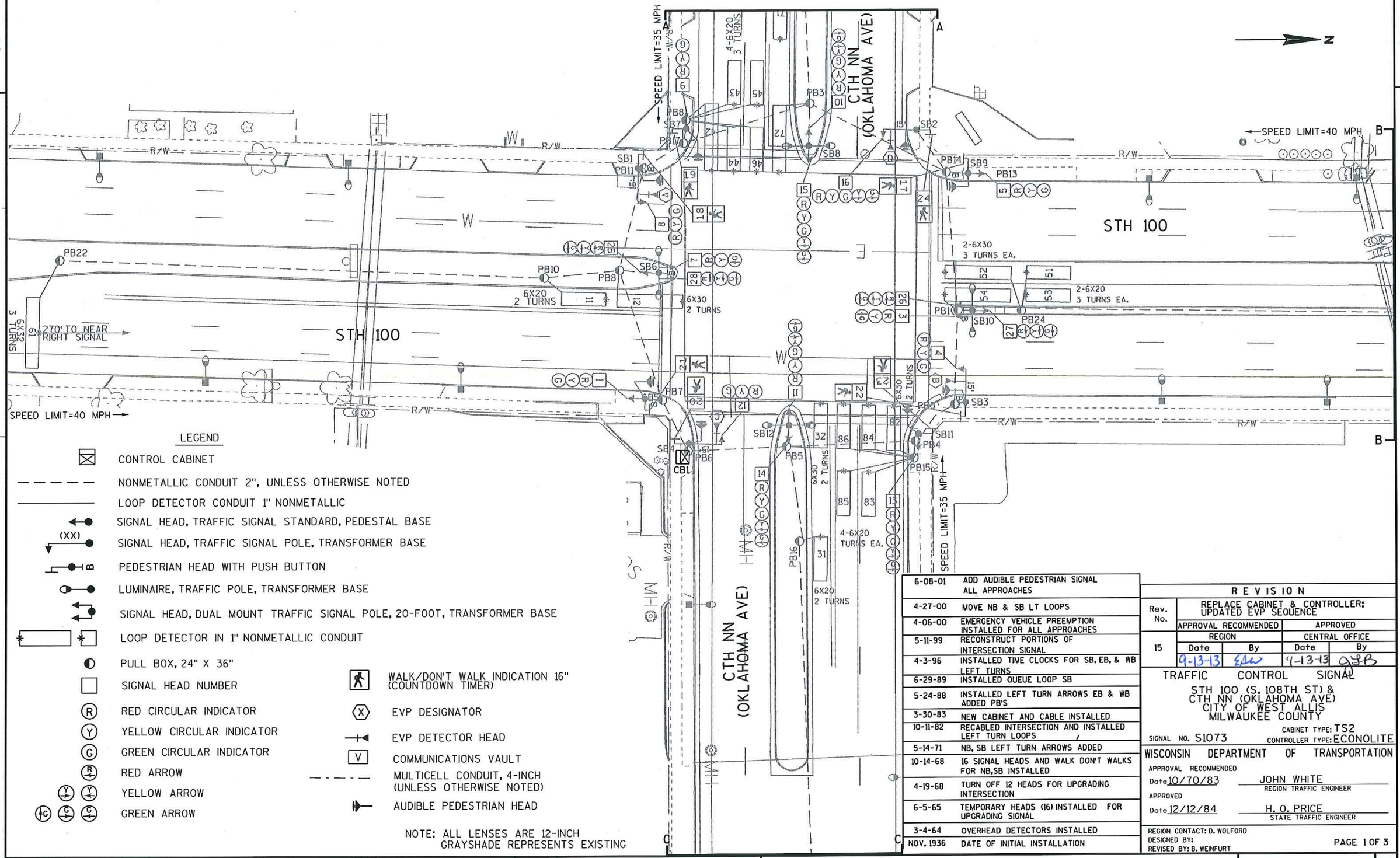
STH 100/S. 108th Street and National Avenue/CTH ES

Milwaukee County **2010 to Pre-2015**

LEGEND

Signal/Sign Post	Bicycle	Right Angle	Out of Control	(S) = SNOW-ICE	K = FATAL
Tree/Utility Pole	Pedestrian	Left Turn	Rear-End	(W) = WET	A = INCAPACITATING
Non-Fixed Object	Non-Contact Vehicle	Right Turn	Head-On	(F) = FOG-MIST	B = NON-INCAP.
Fixed Object	Backing Vehicle	Sideswipe-Same	Overtake	(DUI) = ALCOHOL	C = POS. INJURY
Parked Vehicle	Moving Vehicle	Sideswipe-Opp.	Overturn	OR DRUG USE	BLANK = PDO





LEGEND

- CONTROL CABINET
- NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED
- LOOP DETECTOR CONDUIT 1" NONMETALLIC
- SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE
- (XX) SIGNAL HEAD, TRAFFIC SIGNAL POLE, TRANSFORMER BASE
- PEDESTRIAN HEAD WITH PUSH BUTTON
- LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE
- SIGNAL HEAD, DUAL MOUNT TRAFFIC SIGNAL POLE, 20-FOOT, TRANSFORMER BASE
- LOOP DETECTOR IN 1" NONMETALLIC CONDUIT
- PULL BOX, 24" X 36"
- SIGNAL HEAD NUMBER
- (R) RED CIRCULAR INDICATOR
- (Y) YELLOW CIRCULAR INDICATOR
- (G) GREEN CIRCULAR INDICATOR
- (R) RED ARROW
- (Y) (Y) YELLOW ARROW
- (AG) (G) (G) GREEN ARROW
- WALK/DON'T WALK INDICATION 16" (COUNTDOWN TIMER)
- (X) EVP DESIGNATOR
- EVP DETECTOR HEAD
- [V] COMMUNICATIONS VAULT
- MULTICELL CONDUIT, 4-INCH (UNLESS OTHERWISE NOTED)
- AUDIBLE PEDESTRIAN HEAD

NOTE: ALL LENSES ARE 12-INCH
GRAYSHADE REPRESENTS EXISTING

6-08-01	ADD AUDIBLE PEDESTRIAN SIGNAL ALL APPROACHES
4-27-00	MOVE NB & SB LT LOOPS
4-06-00	EMERGENCY VEHICLE PREEMPTION INSTALLED FOR ALL APPROACHES
5-11-99	RECONSTRUCT PORTIONS OF INTERSECTION SIGNAL
4-3-96	INSTALLED TIME CLOCKS FOR SB, EB, & WB LEFT TURNS
6-29-89	INSTALLED QUEUE LOOP SB
5-24-88	INSTALLED LEFT TURN ARROWS EB & WB ADDED PB'S
3-30-83	NEW CABINET AND CABLE INSTALLED
10-11-82	RECABLED INTERSECTION AND INSTALLED LEFT TURN LOOPS
5-14-71	NB, SB LEFT TURN ARROWS ADDED
10-14-68	16 SIGNAL HEADS AND WALK DON'T WALKS FOR NB,SB INSTALLED
4-19-68	TURN OFF 12 HEADS FOR UPGRADING INTERSECTION
6-5-65	TEMPORARY HEADS (16) INSTALLED FOR UPGRADING SIGNAL
3-4-64	OVERHEAD DETECTORS INSTALLED
NOV. 1936	DATE OF INITIAL INSTALLATION

REVISION

Rev. No.	REPLACE CABINET & CONTROLLER; UPDATED EVP SEQUENCE			
	APPROVAL RECOMMENDED		APPROVED	
	REGION		CENTRAL OFFICE	
15	Date	By	Date	By
	9-13-13	EMW	9-13-13	GJB

TRAFFIC CONTROL SIGNAL

STH 100 (S. 108TH ST) &
CTH NN (OKLAHOMA AVE)
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S1073
CABINET TYPE: TS2
CONTROLLER TYPE: ECONOLITE

WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVAL RECOMMENDED
Date 10/70/83 — JOHN WHITE, REGION TRAFFIC ENGINEER

APPROVED
Date 12/12/84 — H. O. PRICE, STATE TRAFFIC ENGINEER

REGION CONTACT: D. WOLFORD
DESIGNED BY:
REVISED BY: B. WEINFURT

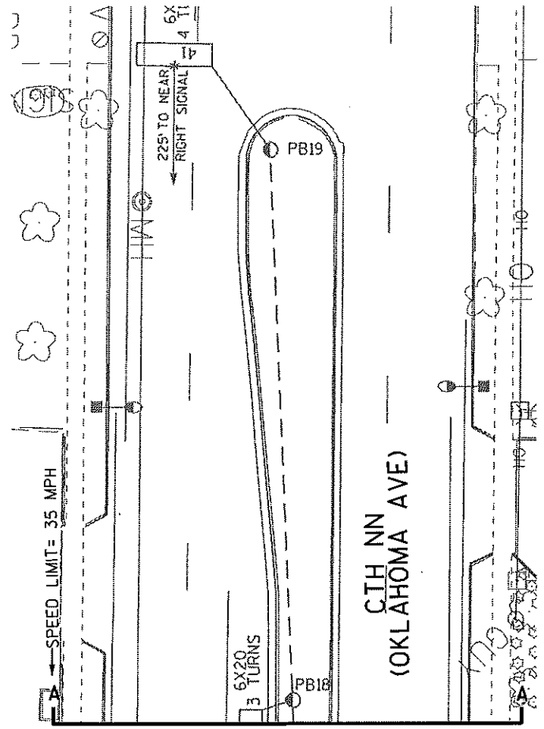
PAGE 1 OF 3

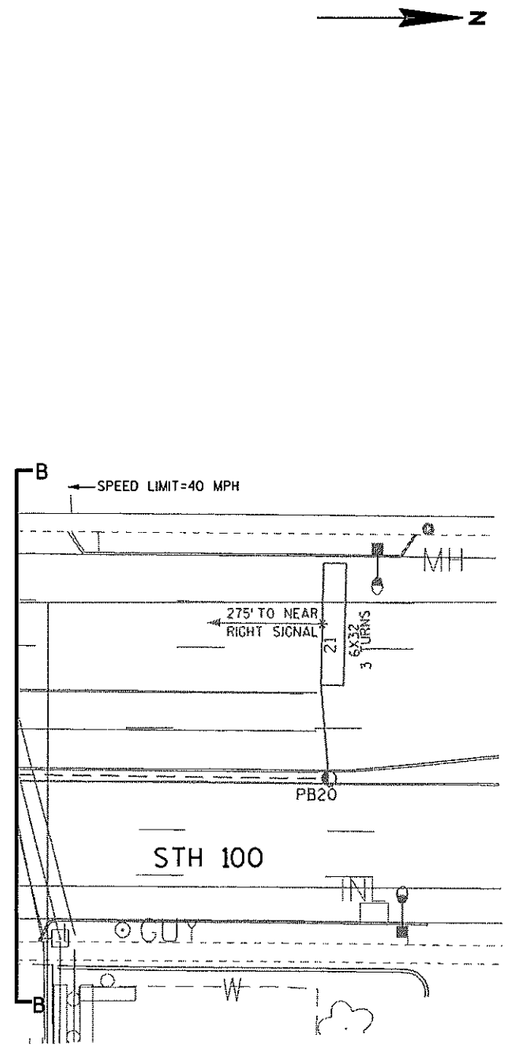
PROJECT NO: 0072-40-43	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

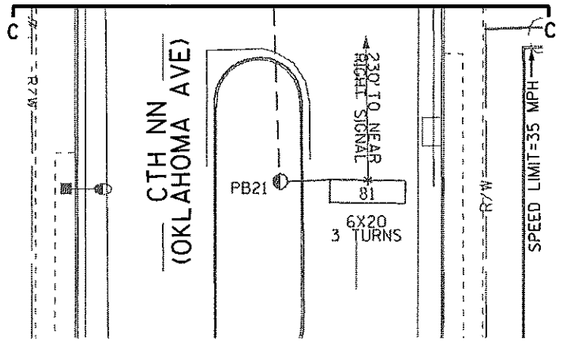
FILE NAME : J:\projects\d2_signals_com\S1073_N.dgn PLOT DATE : 13-SEP-2013 13:55 PLOT BY : dotbgw PLOT NAME : PLOT SCALE : 40:1 WISDOT/CADDS SHEET 42

9-13-13 DTW

2







TRAFFIC CONTROL SIGNAL

STH 100 (S. 108TH ST) &
CTH NN (OKLAHOMA AVE)
CITY OF WEST ALLIS
MILWAUKEE COUNTY

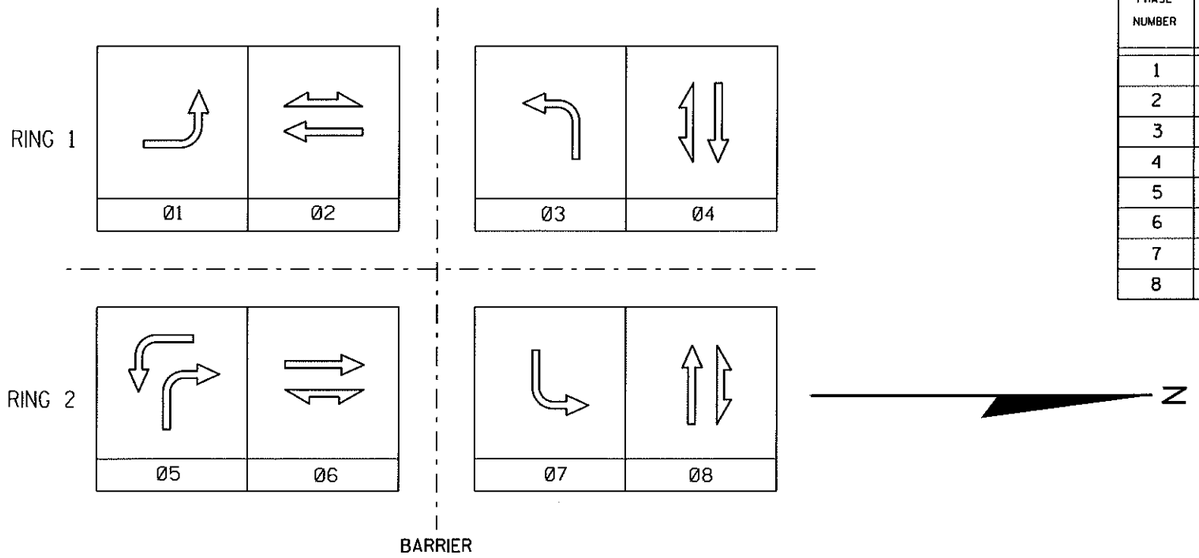
SIGNAL NO. S1073

REGION CONTACT: D. WOLFORD
DESIGNED BY:
REVISED BY: B. WEINFURT

PAGE 2 OF 3

PROJECT NO: 0072-40-43	HWY: STH 100	COUNTY: MILWAUKEE	TRAFFIC SIGNAL PLAN	SHEET	E

	HEAD NUMBERS	FLASH
Ø1	25,26	R
Ø2	5,7,8	R
Ø3	14,15	-
Ø4	9,10,11,12	R
Ø5	13,16,27,28	R
Ø6	1,3,4	R
Ø7	10,11	-
Ø8	13,14,15,16	R
Ø2P	17,18	
Ø4P	19,20	
Ø6P	21,22	
Ø8P	23,24	
OLE		
OLF		
OLG		
OLH		



CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY W / Ø	PHASE RECALL	PHASE ACTIVE
1		6		X
2	X	6	MIN	X
3		8		X
4		8		X
5		2		X
6	X	2	MIN	X
7		4		X
8		4		X

TYPE OF INTERCONNECT/COMMUNICATION	
NONE	X
CLOSED LOOP	
TWISTED PAIR*	
FIBER OPTIC*	
FIBER OPTIC (ETHERNET)	
RADIO	

TYPE OF COORDINATION	
NONE	
TBC	X
TRAFFIC RESPONSIVE	
ADAPTIVE	
*LOCATION OF MASTER CONTROLLER NO:	S-
SIGNAL SYSTEM #:	SS-00-14

TYPE OF LIGHTING	
BY OTHER AGENCY	
IN TRAFFIC SIGNAL CABINET	X
IN SEPARATE DOT LIGHTING CABINET	X

TYPE OF PRE-EMPT	
NONE	
RAILROAD	
EMERGENCY VEHICLE	X
GTT	X
TOMAR	
HARDWIRE	
OTHER	
LIFT BRIDGE	
QUEUE DETECTOR	

DETECTOR LOGIC

DETECTOR INPUT	3	1	7	5	11	9	15	13
PLAN LOOP DETECTOR #(S)	11/12	31/32	42	45/46	53/54	71/72	82	85/86
CALLED PHASE	1	3	4	4	5	7	8	8
CALL OPTION	X	X	X	X	X	X	X	X
DELAY TIME			X				X	
EXTEND OPTION	X	X	X	X	X	X	X	X
EXTEND TIME								
USE ADDED INITIAL								
CROSS SWITCH PHASE		8				4		

DETECTOR INPUT	19	17	23	21	27	25	31	29
PLAN LOOP DETECTOR #(S)								
CALLED PHASE								
CALL OPTION								
DELAY TIME								
EXTEND OPTION								
EXTEND TIME								
USE ADDED INITIAL								
CROSS SWITCH PHASE								

DETECTOR INPUT	4	2	8	6	12	10	16	14
PLAN LOOP DETECTOR #(S)	21	41	43/44	51/52	61	81	83/84	
CALLED PHASE	2	4	4	5	6	8	8	
CALL OPTION	X		X	X	X		X	
DELAY TIME								
EXTEND OPTION	X	X	X	X	X	X	X	
EXTEND TIME		X				X		
USE ADDED INITIAL	X				X			
CROSS SWITCH PHASE								

DETECTOR INPUT	20	18	24	22	28	26	32	30
PLAN LOOP DETECTOR #(S)								
CALLED PHASE								
CALL OPTION								
DELAY TIME								
EXTEND OPTION								
EXTEND TIME								
USE ADDED INITIAL								
CROSS SWITCH PHASE								

EMERGENCY VEHICLE PREEMPTION SEQUENCE

EMERGENCY VEHICLE PREEMPTOR	A	B	C	D
MOVEMENT	← ↙	→ ↗	↓ ↑	↓ ↑
PHASE	2+5	6+1	4+8	8+4

AFTER PREEMPTION SEQUENCE 2+5 OR 6+1,
CONTROLLER SHALL RETURN TO PHASES 2+6.

AFTER PREEMPTION SEQUENCE 4+8 OR 8+4,
CONTROLLER SHALL RETURN TO PHASES 4+8.

STH 100 (S. 108TH ST) &
CTH NN (OKLAHOMA AVE)
CITY OF WEST ALLIS
MILWAUKEE COUNTY

SIGNAL NO. S1073 — CABINET TYPE: TS2

CONTROLLER TYPE: ECONOLITE

DATE 9/13 — PAGE NO. 3 OF 3

9-13-13 DSW
9-13-13 SAM 9-13-13

PROJECT NO: 0072-40-43	HWY: STH 100	COUNTY: MILWAUKEE	SEQUENCE OF OPERATIONS	SHEET	E

DTSD – SE Region
Intersection Safety Evaluation

Intersection Description

Intersection: STH 100 & Oklahoma Avenue

County: Milwaukee **Municipality:** City of Milwaukee & West Allis

Request for Evaluation

Reason for Request: Click here to enter text. 5% list (include year), redesign, etc.

Requested By: Stephanie Sward **Request Date:** January 6, 2016

Completed By: Mike Borck **Completion Date:** January 15, 2016

Crash Data

Avg. Crash Rate	Crashes by Year		Crashes by Severity				
	Year	Total Crashes	K	A	B	C	PDO
.73	2010	15				3	12
	2011	12			1	4	7
(Crashes/ Million Entering Veh.)	2012	13				1	12
Fatal and Injury %	2013	14			2	2	10
	2014	13		1	1	3	8
19%	Total	67		1	4	13	49
	Avg.	13.4	ADT			49,963	
	Pre 2015	*11*	Year of Count			2012	

Average Crash Rate= (Avg. # of crashes*10^6) / (365*ADT) Preliminary 2015 crashes not included in calculations

HSM spreadsheet: N:\SPO\Operations\Safety\Intersection, Segment & Project Files\SER Signals.xlsx (*Add crash and volume statistics)*

History, Safety Issues and Actions Taken

Changes During Study Period:	
Safety Issues:	
Actions:	

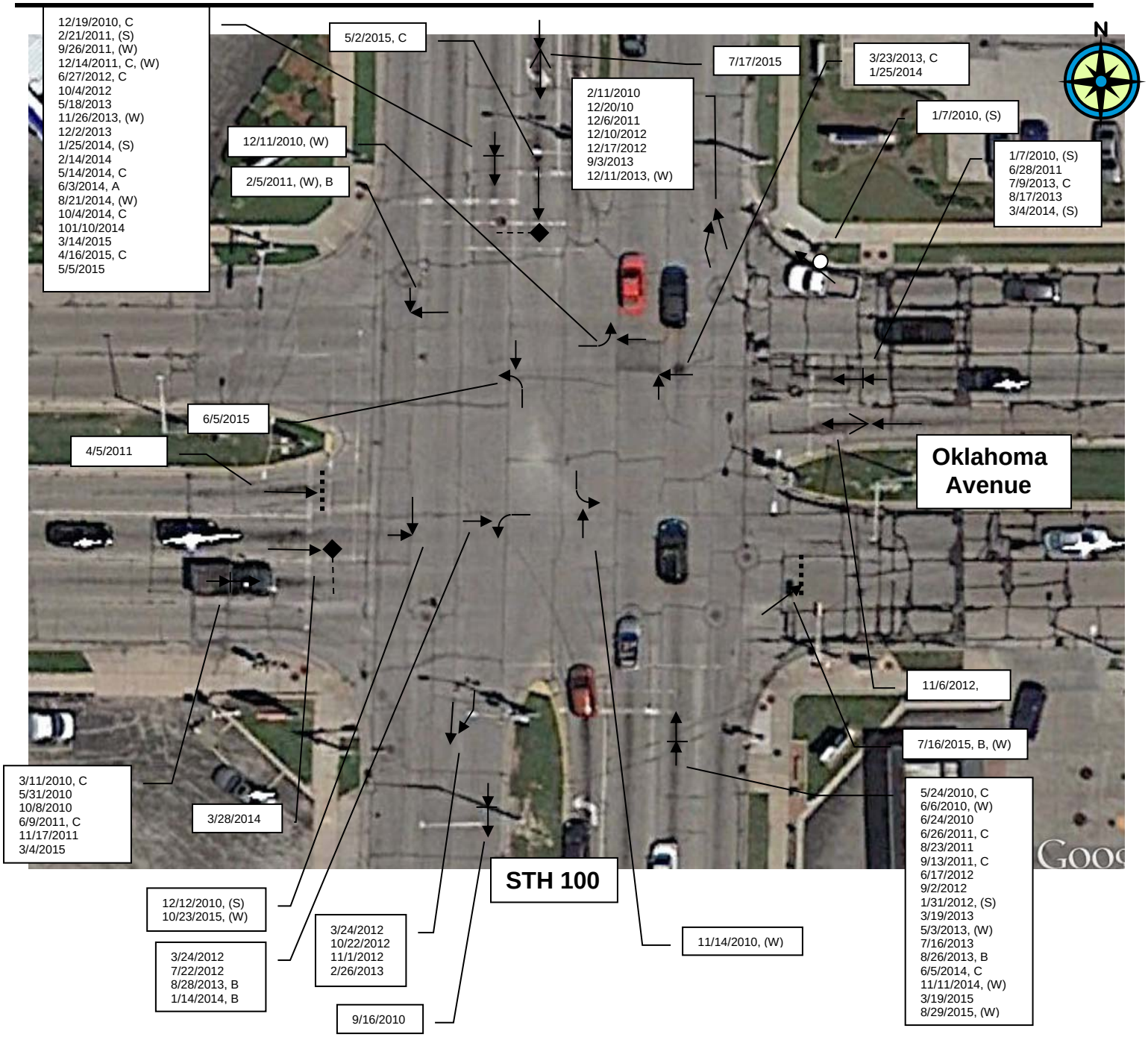
DTSD – SE Region

Intersection Safety Evaluation

STH 100 & Oklahoma Avenue

Milwaukee County

January 2010-Pre 2015



LEGEND

Signal/Sign Post	Bicycle	Right Angle	Out of Control	(S) = SNOW-ICE	K = FATAL
Tree/Utility Pole	Pedestrian	Left Turn	Rear-End	(W) = WET	A = INCAPACITATING
Non-Fixed Object	Non-Contact Vehicle	Right Turn	Head-On	(F) = FOG-MIST	B = NON-INCAP.
Fixed Object	Backing Vehicle	Sideswipe-Same	Overtake	(DUI) = ALCOHOL	C = POS. INJURY
Parked Vehicle	Moving Vehicle	Sideswipe-Opp.	Overturn	OR DRUG USE	BLANK = PDO