The Greene Street Corridor

Intersection of Greene Street and Downing Street

Intersection of Greene Street and Wayne Street

Intersection of Greene Street and Main Street

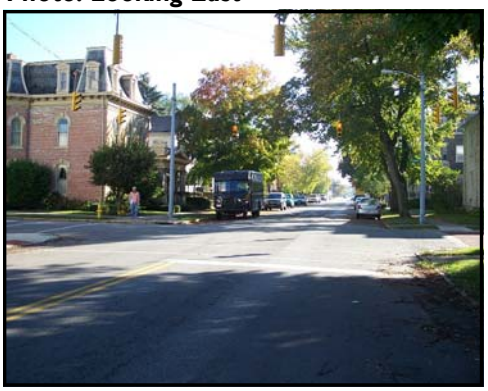
Greene Street & Downing Street

Aerial Photo:

Existing Conditions Discussion

The intersection of Greene Street with Downing Street is signal controlled and has four approaches intersecting at a 90-degree angle. There is a single lane on each approach. The intersection is located in a residential area. The pretimed signal has a 70-second cycle length with two phases. Parking restrictions vary near the intersection and are provided in detail on the existing conditions diagram. Vegetation, fencing, and a portion of a building partially obstruct sight distance at the intersection. The primary concern at this intersection is the warrant status of the existing traffic signal. This signal may have been installed initially due to its proximity to the central business district and may have been warranted when it was installed.

Photo: Looking East



Public Comments

- "Traffic signal obstructs traffic flow."
- "Maybe this should be a two-way stop."
- "There is a library nearby; however, it may move."
- "St. Paul's Church is nearby. Four-way stop may be appropriate."
- "There are low traffic volumes."
- "Traffic signal is not needed."

Analyses Results

- Traffic signal warrants are not met
- No reported crashes at the intersection from Jan. 2005 to June 2008
- All-way stop control provides adequate capacity

Recommendations

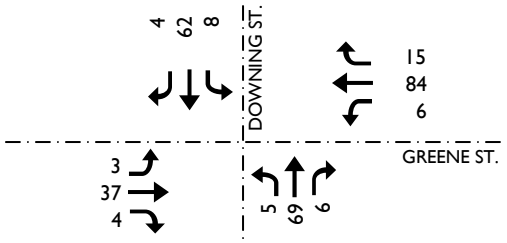
It is recommended that consideration be given to the removal of the traffic signal at this intersection. Based on the relatively balanced traffic volumes on the intersection approaches, four-way stop control is recommended. Also, curb bump-outs should be considered to provide adequate locations for stop sign visibility. Four-way stop control is consistent with the surrounding development and with traffic control at similar adjacent intersections.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- Single lane approaches
- Located in residential area

Counted Traffic Volumes (peak hour)



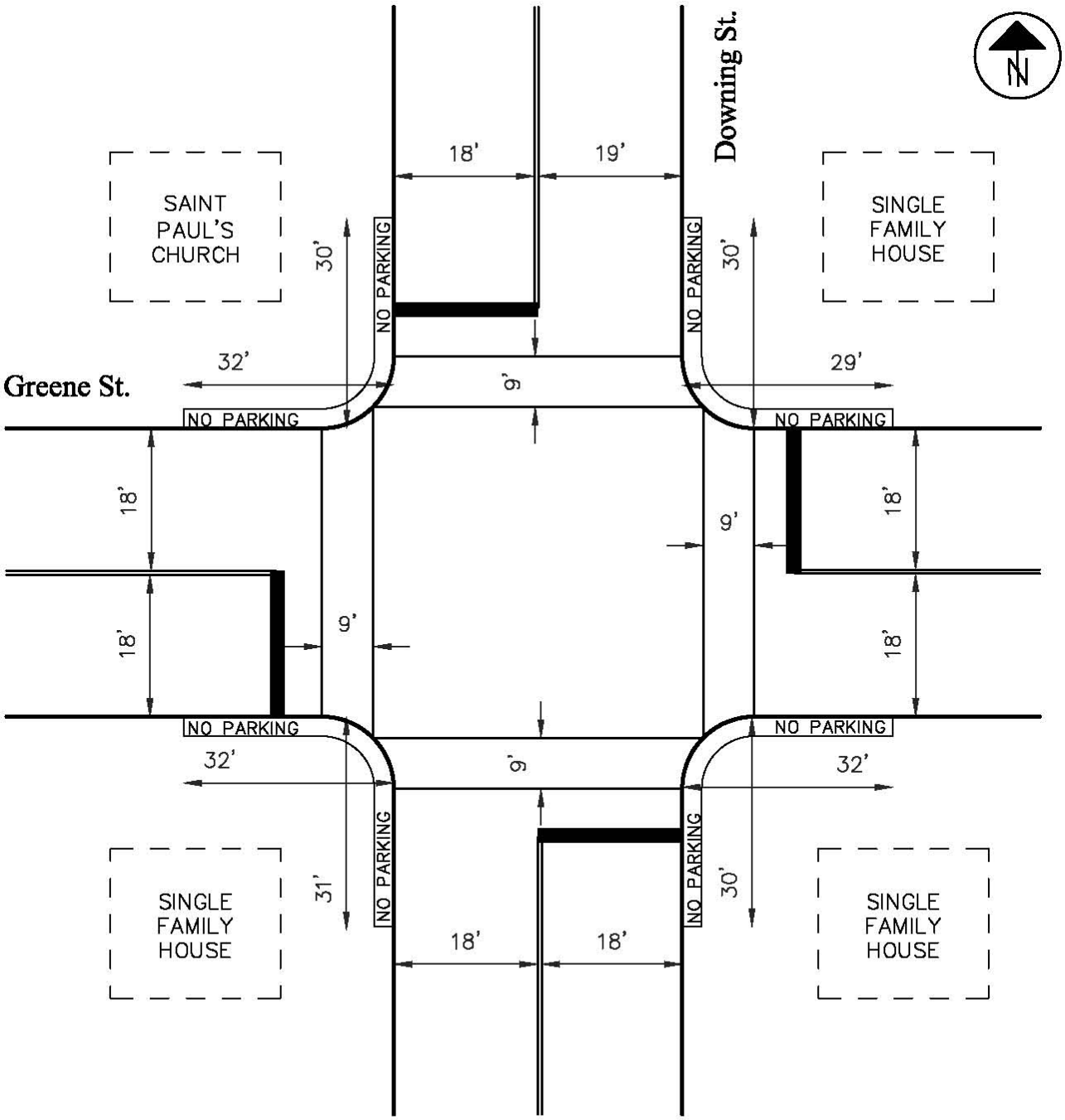
Crash History

- 0 reported crashes from 2005-2008

Recommendation

- Consider replacing traffic signal with four-way stop

INTERSECTION DIAGRAM



PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

35 SEC N/S SPLIT

35 SEC E/W SPLIT

Turning Movement Counts Summary Table

Location: Downing Street at Greene Street

Date of Counts: Thursday 8/7/2008

	SB Downing St				WB Greene St				NB Downing St				EB Greene St				Major	Minor St	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Street	#1	#2
7:00 to 7:15 am	2	7	1	0	1	2	0	0	0	6	1	1	0	7	0	0			
7:15 to 7:30 am	2	13	2	0	0	6	0	0	0	5	2	0	0	6	0	0			
7:30 to 7:45 am	2	7	0	0	1	6	0	1	0	7	4	0	2	6	1	0			
7:45 to 8:00 am	1	15	4	1	0	11	1	0	0	5	2	0	2	20	2	0			
Total	7	42	7	1	2	25	1	1	0	23	9	1	4	39	3	0	88	28	46
8:00 to 8:15 am	0	6	2	1	0	3	2	0	1	5	0	1	0	7	1	0			
8:15 to 8:30 am	1	15	1	0	2	9	0	0	0	4	0	0	0	6	2	0			
8:30 to 8:45 am	0	11	1	0	0	8	1	0	1	5	3	0	0	9	1	0			
8:45 to 9:00 am	1	9	1	0	1	10	1	2	0	4	0	1	0	8	1	0			
Total	2	41	5	1	3	30	4	2	2	18	3	2	0	30	5	0	71	37	35
4:00 to 4:15 pm	0	16	1	0	2	23	3	1	2	19	3	2	0	12	1	2			
4:15 to 4:30 pm	3	15	0	2	2	27	5	0	1	21	2	3	1	9	1	0			
4:30 to 4:45 pm	2	11	1	2	1	23	5	1	0	13	1	2	1	5	0	0			
4:45 to 5:00 pm	3	20	2	0	1	11	2	1	2	16	0	4	1	11	2	0			
Total	8	62	4	4	6	84	15	3	5	69	6	11	3	37	4	2	154	105	44
5:00 to 5:15 pm	3	20	2	0	1	11	2	1	2	16	0	4	1	11	2	0			
5:15 to 5:30 pm	1	12	0	0	0	22	5	0	1	14	1	0	0	9	0	0			
5:30 to 5:45 pm	1	12	0	0	0	22	5	0	1	14	1	0	0	9	0	0			
5:45 to 6:00 pm	2	9	0	0	1	13	6	2	2	15	0	1	1	9	1	0			
Total	7	53	2	0	2	68	18	3	6	59	2	5	2	38	3	0	129	88	43
Grand Total	24	198	18	6	13	207	38	9	13	169	20	19	9	144	15	2			

SIGNAL WARRANT ANALYSIS SUMMARY

Downing Street / Greene Street Intersection

This signal warrant analysis is based on the guidelines in Chapter 4C of the 2003 Ohio MUTCD. The existing intersection has one approach lane from each direction and was analyzed with the counted traffic volumes.

Warrant 1, Eight-Hour Vehicular Warrant – *Warrant is NOT Satisfied*

Counted volumes from four hours in the AM and PM peak do not meet the eight-hour warrant thresholds. The remaining hours are expected to be lower in volume than the counted hours and will not meet the thresholds.

Time Period	Condition A			Condition B			Combination of Conditions A & B
	Major St Hourly Volume	Minor St Hourly Volume	Criteria Satisfied?	Major St Hourly Volume	Minor St Hourly Volume	Criteria Satisfied?	(80% of Each) Criteria Satisfied?
Warrant Threashold	500	150		750	75		
7 AM to 8 AM	88	46	No	88	46	No	No
8 AM to 9 AM	71	37	No	71	37	No	No
9 AM to 10 AM			No			No	No
10 AM to 11 AM			No			No	No
11 AM to 12 PM			No			No	No
12 PM to 1 PM			No			No	No
1 PM to 2 PM			No			No	No
2 PM to 3 PM			No			No	No
3 PM to 4 PM			No			No	No
4 PM to 5 PM	154	105	No	154	105	No	No
5 PM to 6 PM	129	88	No	129	88	No	No

Warrant 2, Four-Hour Vehicular Volume – *Warrant is NOT Satisfied*

Counted volumes from the four hours with the highest counted volumes were plotted on the Warrant 2 Table (attached). None of the four plotted points are above the warrant threshold line for "1 lane & 1 lane".

Warrant 3, Peak Hour Vehicular Volume – *Warrant is NOT Satisfied*

The counted PM peak hour volumes were plotted on the Warrant 3 Table (attached). The plotted point is not above the warrant threshold line for "1 lane & 1 lane".

Warrant 4, Pedestrian Volume – *Warrant is NOT Satisfied*

The pedestrian crossings in each of the counted hours do not meet the minimum requirement of 100 or more for each of four hours of the day. The available gaps were not measured.

Warrant 5, School Crossing – *Warrant is NOT Satisfied*

No schools are currently located or planned in the city blocks adjacent to this intersection. Therefore, this warrant is not expected to be satisfied.

Warrant 6, Coordinated Signal System – *Warrant is NOT Satisfied*

This intersection is not located at a critical point along a coordinated signal system.

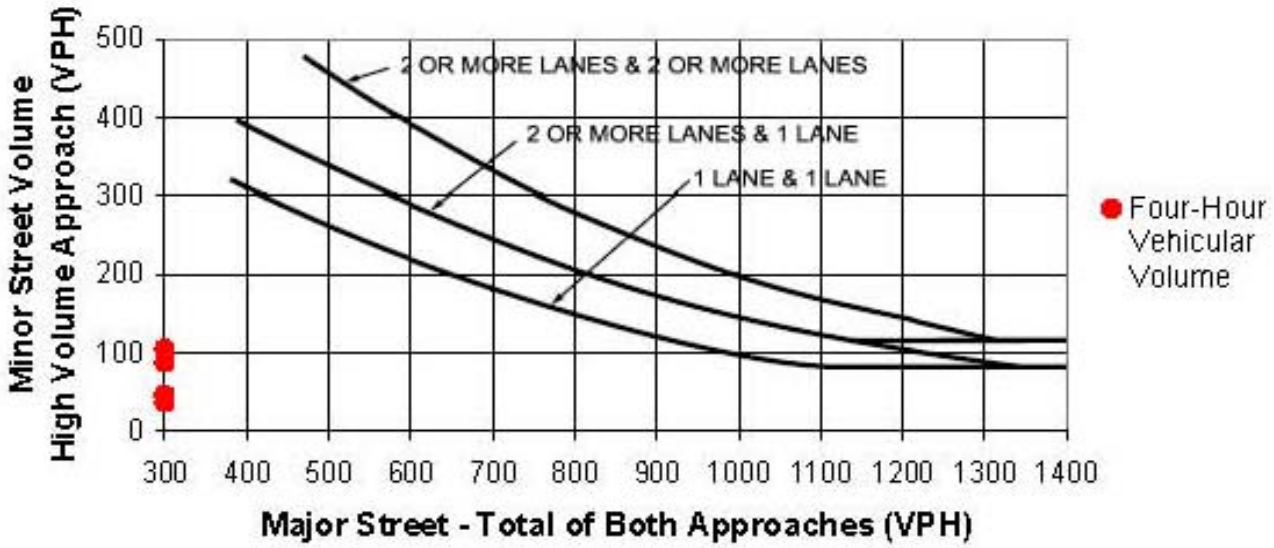
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

According to the crash data provided by the city of Piqua, no crashes were reported in the vicinity of this intersection within a three year period.

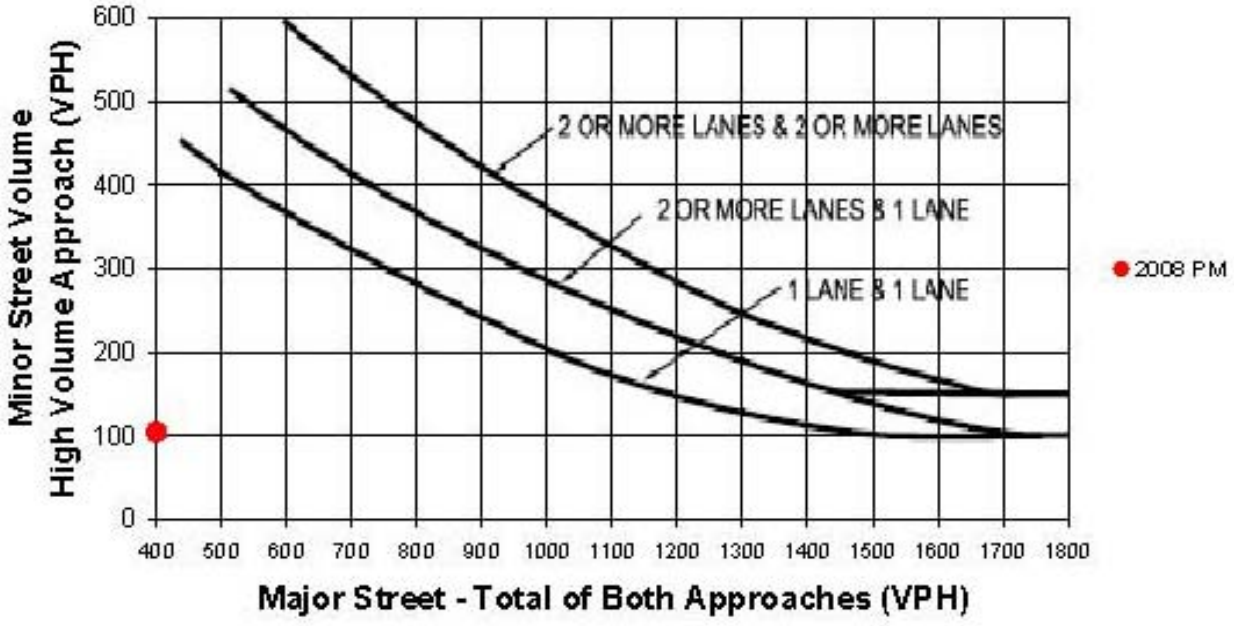
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (5-6 PM) approximately 300 total approaching trips. This is less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	M. Nolt
Agency/Co.	Kleingers & Associates
Date Performed	11/13/2008
Analysis Time Period	PM Peak

Site Information

Intersection	Downing at Greene
Jurisdiction	City of Piqua
Analysis Year	2008

Project ID

East/West Street: Greene Street | North/South Street: Downing Street

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	3	37	4	6	84	15
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	5	69	6	8	62	4
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.90		0.90		0.90		0.90	
Flow Rate (veh/h)	48		115		87		80	
% Heavy Vehicles	1		0		1		1	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.1		0.1		0.1		0.1	
Prop. Right-Turns	0.1		0.1		0.1		0.1	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.0		-0.1		-0.0		0.0	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.04		0.10		0.08		0.07	
hd, final value (s)	4.39		4.27		4.35		4.38	
x, final value	0.06		0.14		0.11		0.10	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	2.4		2.3		2.3		2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	298		365		337		330	
Delay (s/veh)	7.66		7.94		7.86		7.85	
LOS	A		A		A		A	
Approach: Delay (s/veh)	7.66		7.94		7.86		7.85	
LOS	A		A		A		A	
Intersection Delay (s/veh)	7.85							
Intersection LOS	A							

HCS+™ Version 5.21 Generated: 11/14/2008 10:05 AM

Greene Street & Wayne Street

Aerial Photo:

Existing Conditions Discussion

The intersection of Greene Street with Wayne Street is signal controlled and has four approaches intersecting at a 90-degree angle. There is a single lane on each approach. The intersection is located in a residential area. The pretimed signal has a 70-second cycle length with two phases. Parking restrictions vary near the intersection and are provided in detail on the existing conditions diagram. A building on the southwest corner of the intersection restricts sight distance. The primary concern at this intersection is the warrant status of the existing traffic signal. This signal may have been installed initially due to its proximity to the central business district and may have been warranted when it was installed.

Photo: Looking North

Public Comments

- No significant comments were discussed regarding this intersection.

Analyses Results

- Traffic signal warrants are not met
- Two reported crashes at the intersection from Jan. 2005 to June 2008
- All-way stop control provides adequate capacity

Recommendations

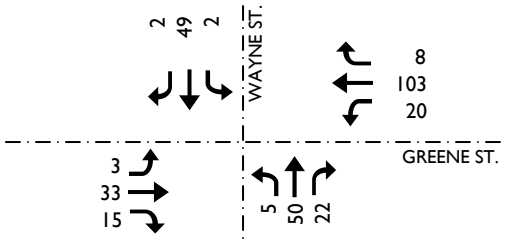
It is recommended that consideration be given to the removal of the traffic signal at this intersection. Based on the relatively balanced traffic volumes on the intersection approaches, four-way stop control is recommended. Also, curb bump-outs should be considered to provide adequate locations for stop sign visibility. Four-way stop control is consistent with the surrounding development and with traffic control at similar adjacent intersections.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- Single lane approaches
- Located in residential area

Counted Traffic Volumes (peak hour)



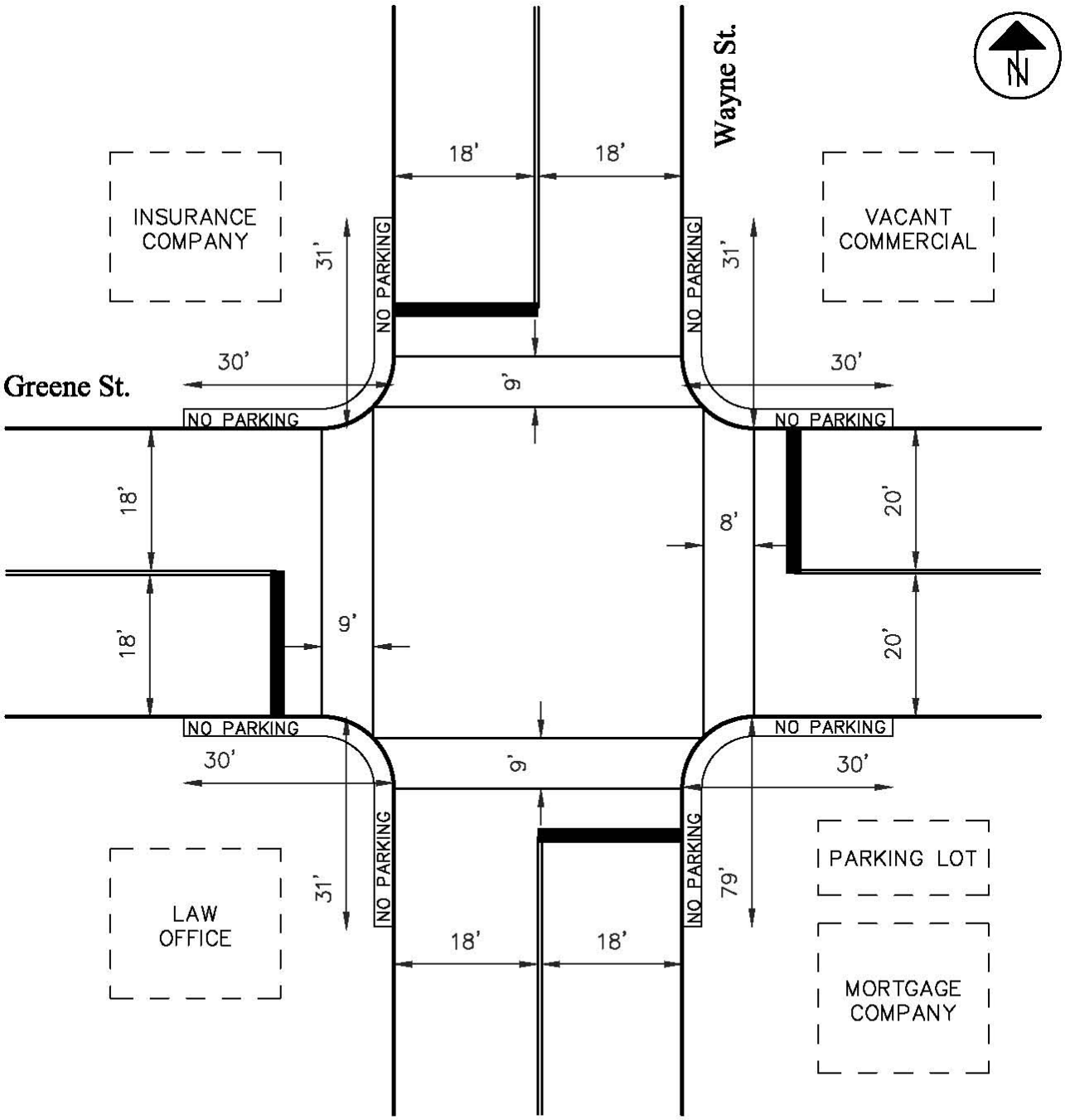
Crash History

- 2 reported crashes from 2005-2008
- Angle type crashes

Recommendation

- Consider replacing traffic signal with four-way stop

INTERSECTION DIAGRAM



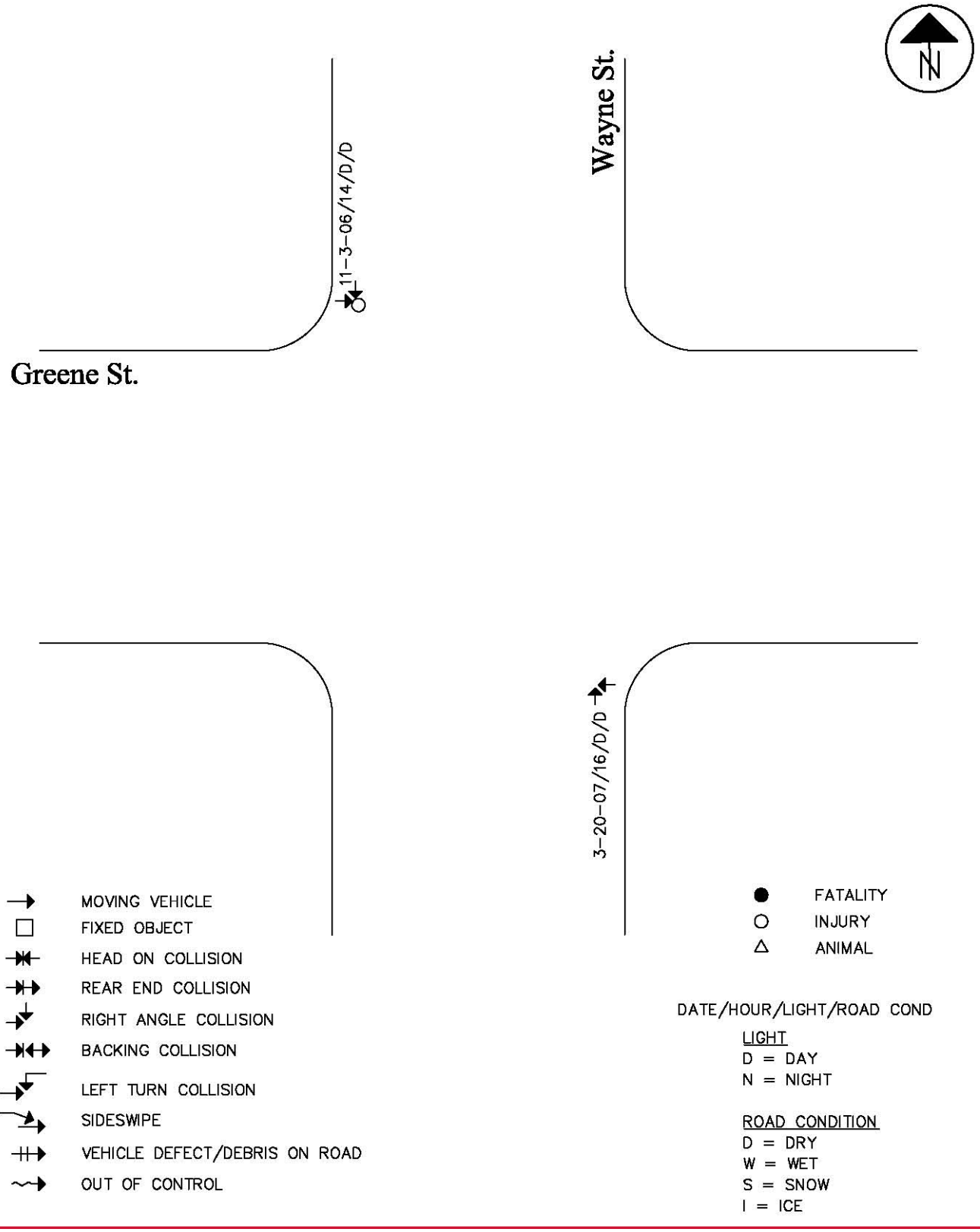
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

35 SEC N/S SPLIT

35 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: Wayne Street at Greene Street

Date of Counts: Thursday 8/7/2008

	SB Wayne St				WB Greene St				NB Wayne St				EB Greene St				Major	Minor St	
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Street	#1	#2
7:00 to 7:15 am	0	4	0	0	1	2	1	0	0	1	0	0	0	7	0	0			
7:15 to 7:30 am	0	6	2	0	2	7	0	0	0	3	1	0	0	10	2	0			
7:30 to 7:45 am	1	6	0	0	0	5	2	0	1	4	2	0	0	9	4	0			
7:45 to 8:00 am	1	8	0	0	0	12	0	0	1	2	1	0	2	17	0	0			
Total	2	24	2	0	3	26	3	0	2	10	4	0	2	43	6	0	83	28	16
8:00 to 8:15 am	0	7	1	0	1	4	1	0	0	5	2	1	0	5	0	1			
8:15 to 8:30 am	1	8	1	1	4	10	0	0	0	0	0	0	1	5	1	0			
8:30 to 8:45 am	2	6	0	0	5	10	2	0	0	2	0	5	1	9	1	1			
8:45 to 9:00 am	1	10	1	1	6	11	1	3	1	7	0	0	0	8	1	1			
Total	4	31	3	2	16	35	4	3	1	14	2	6	2	27	3	3	87	38	17
4:00 to 4:15 pm	1	14	1	1	9	29	0	4	2	13	3	0	1	10	2	0			
4:15 to 4:30 pm	1	14	1	0	3	25	2	1	2	13	7	2	1	13	2	2			
4:30 to 4:45 pm	0	10	0	1	4	26	2	0	1	15	7	3	0	4	5	0			
4:45 to 5:00 pm	0	11	0	0	4	23	4	2	0	9	5	0	1	6	6	0			
Total	2	49	2	2	20	103	8	7	5	50	22	5	3	33	15	2	182	53	77
5:00 to 5:15 pm	0	11	0	0	4	23	4	2	0	9	5	0	1	6	6	0			
5:15 to 5:30 pm	2	14	2	0	8	23	2	1	3	11	3	3	0	8	3	0			
5:30 to 5:45 pm	2	14	2	0	8	23	2	1	3	11	3	3	0	8	3	0			
5:45 to 6:00 pm	1	7	1	0	4	15	2	3	3	14	6	0	2	11	1	0			
Total	5	46	5	0	24	84	10	7	9	45	17	6	3	33	13	0	167	56	71
Grand Total	13	150	12	4	63	248	25	17	17	119	45	17	10	136	37	5			

SIGNAL WARRANT ANALYSIS SUMMARY

Wayne Street / Greene Street Intersection

This signal warrant analysis is based on the guidelines in Chapter 4C of the 2003 Ohio MUTCD. The existing intersection has one approach lane from each direction and was analyzed with the counted traffic volumes.

Warrant 1, Eight-Hour Vehicular Warrant – *Warrant is NOT Satisfied*

Counted volumes from four hours in the AM and PM peak do not meet the eight-hour warrant thresholds. The remaining hours are expected to be lower in volume than the counted hours and will not meet the thresholds.

Time Period	Condition A			Condition B			Combination of Conditions A & B
	Major St Hourly Volume	Minor St Hourly Volume	Criteria Satisfied?	Major St Hourly Volume	Minor St Hourly Volume	Criteria Satisfied?	(80% of Each) Criteria Satisfied?
Warrant Threashold	500	150		750	75		
7 AM to 8 AM	83	28	No	83	28	No	No
8 AM to 9 AM	87	38	No	87	38	No	No
9 AM to 10 AM			No			No	No
10 AM to 11 AM			No			No	No
11 AM to 12 PM			No			No	No
12 PM to 1 PM			No			No	No
1 PM to 2 PM			No			No	No
2 PM to 3 PM			No			No	No
3 PM to 4 PM			No			No	No
4 PM to 5 PM	182	77	No	182	77	No	No
5 PM to 6 PM	167	71	No	167	71	No	No

Warrant 2, Four-Hour Vehicular Volume – *Warrant is NOT Satisfied*

Counted volumes from the four hours with the highest counted volumes were plotted on the Warrant 2 Table (attached). None of the four plotted points are above the warrant threshold line for "1 lane & 1 lane".

Warrant 3, Peak Hour Vehicular Volume – *Warrant is NOT Satisfied*

The counted PM peak hour volumes were plotted on the Warrant 3 Table (attached). The plotted point is not above the warrant threshold line for "1 lane & 1 lane".

Warrant 4, Pedestrian Volume – *Warrant is NOT Satisfied*

The pedestrian crossings in each of the counted hours do not meet the minimum requirement of 100 or more for each of four hours of the day. The available gaps were not measured.

Warrant 5, School Crossing – *Warrant is NOT Satisfied*

No schools are currently located or planned in the city blocks adjacent to this intersection. Therefore, this warrant is not expected to be satisfied.

Warrant 6, Coordinated Signal System – *Warrant is NOT Satisfied*

This intersection is not located at a critical point along a coordinated signal system.

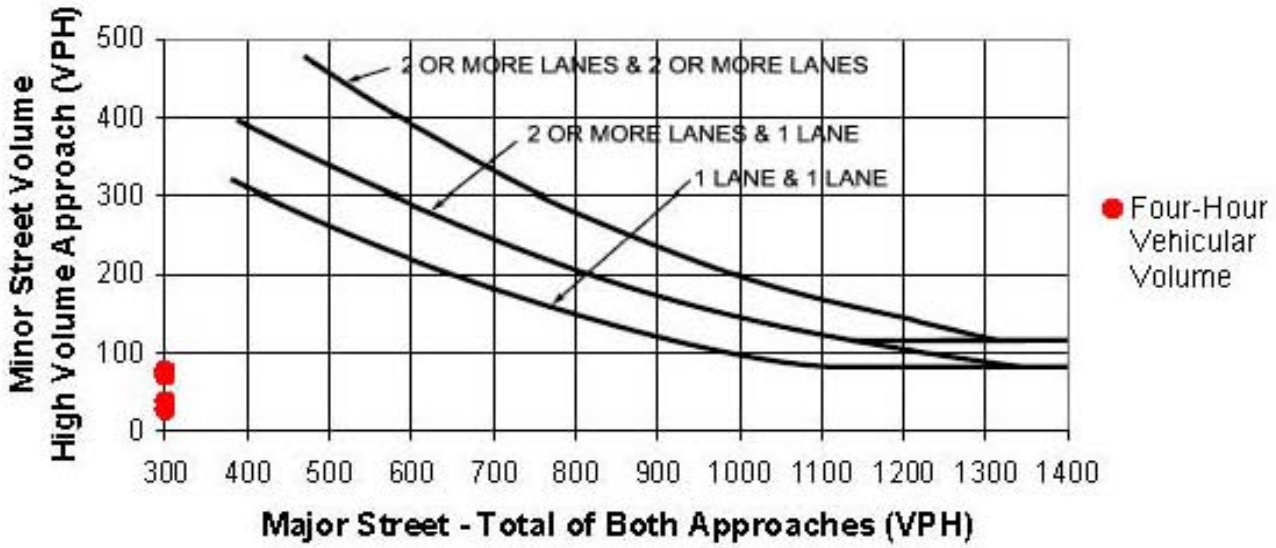
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

According to the crash data provided by the city of Piqua, two right-angle crashes were reported in the vicinity of this intersection within a three year period. Although signals can help with reducing right-angle crashes, it is not likely that removal of the signal will result in five or more crashes of that type in one 12-month period to meet the signal warrant thresholds.

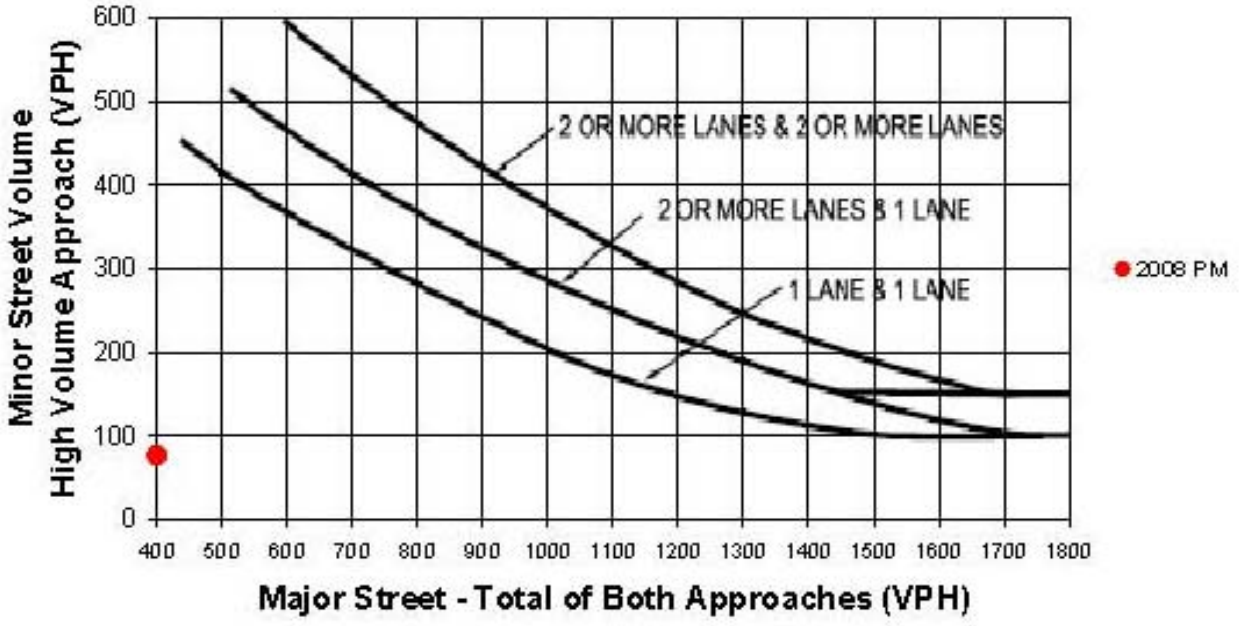
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (4-5 PM) has less than 320 total approaching trips. This is less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	M. Nolt
Agency/Co.	Kleingers & Associates
Date Performed	11/13/2008
Analysis Time Period	PM Peak

Site Information

Intersection	Wayne at Greene
Jurisdiction	City of Piqua
Analysis Year	2008

Project ID

East/West Street: *Greene Street* | North/South Street: *Wayne Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	3	33	15	20	103	8
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	5	50	22	2	49	2
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.90		0.90		0.90		0.90	
Flow Rate (veh/h)	55		144		84		58	
% Heavy Vehicles	2		1		1		1	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.1		0.2		0.1		0.0	
Prop. Right-Turns	0.3		0.1		0.3		0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	-0.1		0.0		-0.1		0.0	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value (s)	3.20		3.20		3.20		3.20	
x, initial	0.05		0.13		0.07		0.05	
hd, final value (s)	4.25		4.30		4.28		4.45	
x, final value	0.06		0.17		0.10		0.07	
Move-up time, m (s)	2.0		2.0		2.0		2.0	
Service Time, t_s (s)	2.3		2.3		2.3		2.4	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	305		394		334		308	
Delay (s/veh)	7.55		8.19		7.75		7.79	
LOS	A		A		A		A	
Approach: Delay (s/veh)	7.55		8.19		7.75		7.79	
LOS	A		A		A		A	
Intersection Delay (s/veh)	7.91							
Intersection LOS	A							

HCS+™ Version 5.21 Generated: 11/14/2008 11:12 AM

Greene Street & Main Street

Aerial Photo:

Existing Conditions Discussion

The intersection of Greene Street with Main Street has four approaches intersecting at a 90-degree angle and is currently signal controlled. Each approach has two lanes - one left-turn only lane and one through-right shared lane. The pretimed signal has a 70-second cycle length with two phases. Parking restrictions vary near the intersection and are provided in detail on the existing conditions diagram. This intersection is located in the central business district. The primary concerns at this intersection are whether or not the existing traffic signal is warranted, to determine if there is an appropriate balance between the use of turn lanes and on-street parking in the area of this intersection, and to determine if the on-street parking layout interferes with the operation of the intersection. This traffic signal was likely installed initially due to its location in the central business district.

Photo: Looking North

Public Comments

- "Need to balance the need for left-turn lanes with the need for downtown parking."
- "The left-turn lanes at this intersection cause all lanes to be narrow."

Analyses Results

- Traffic signal warrants are not met
- Two reported crashes at the intersection from Jan. 2005 to June 2008
- Capacity analysis indicates that the existing intersection is operating at an acceptable level of service
- Capacity analysis indicates that intersection operates at an acceptable level of service if left turn lanes are removed from Greene Street.

Recommendations

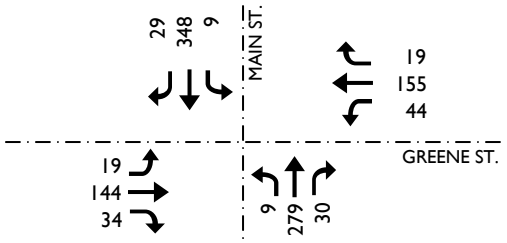
Due to the potential for future growth in traffic volumes and the intersection's location in the central business district, it is recommended that the traffic signal be retained. If additional on-street parking is desired along Greene Street, the left turn lanes on Greene Street may be removed to obtain the necessary road width. It is recommended that the left turn lanes on Main Street be retained to accommodate vehicles that would otherwise turn left at the intersection of Main Street and Ash Street, where left turns are currently prohibited.

Intersection at a Glance

Existing Conditions

- Mast arm traffic signal
- Left-turn lanes on all approaches
- Located in central business district

Counted Traffic Volumes (peak hour)



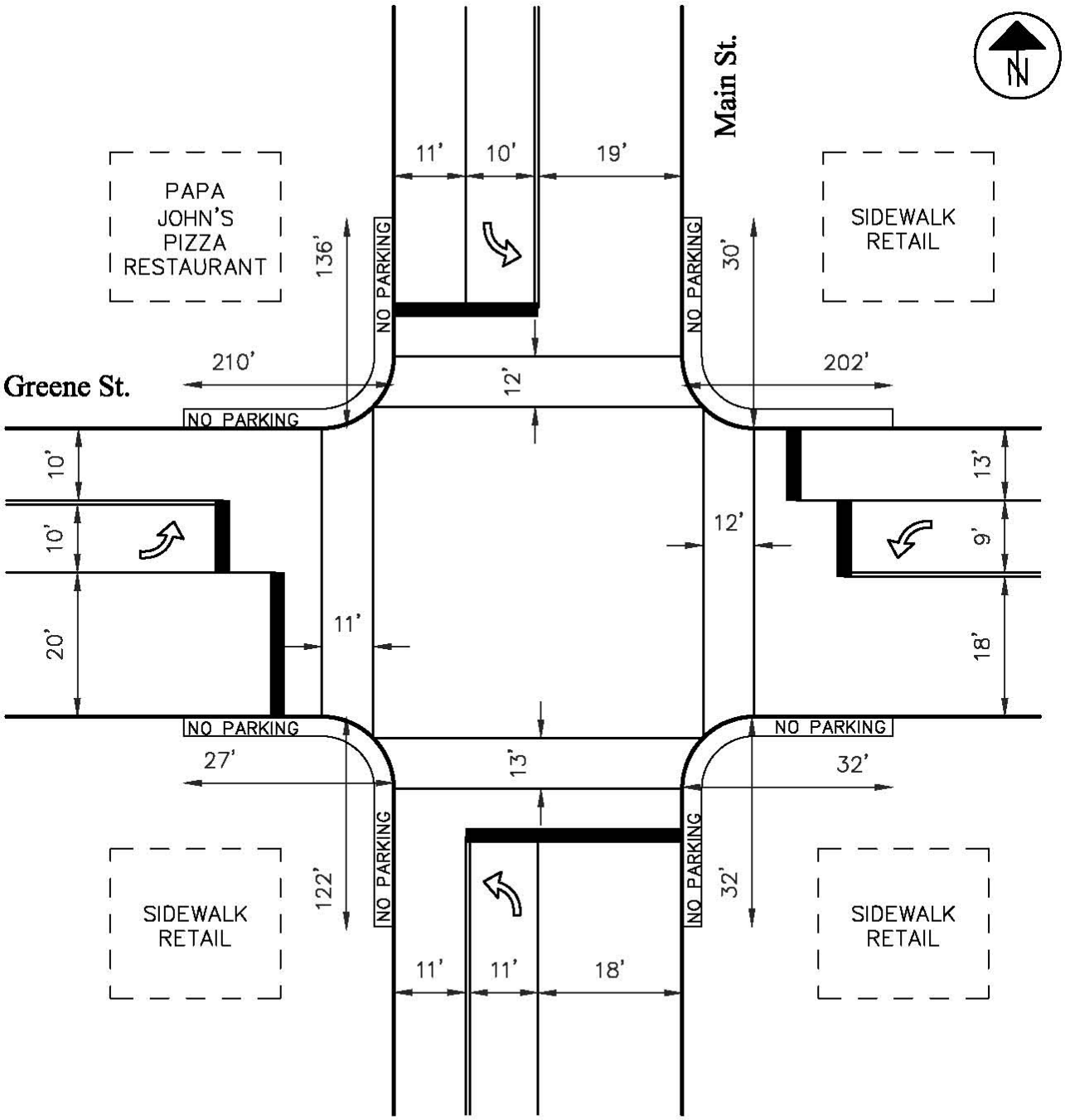
Crash History

- 2 reported crashes from 2005-2008
- No specific pattern

Recommendation

- Retain traffic signal
- Left-turn lanes on Greene Street may be removed if desired

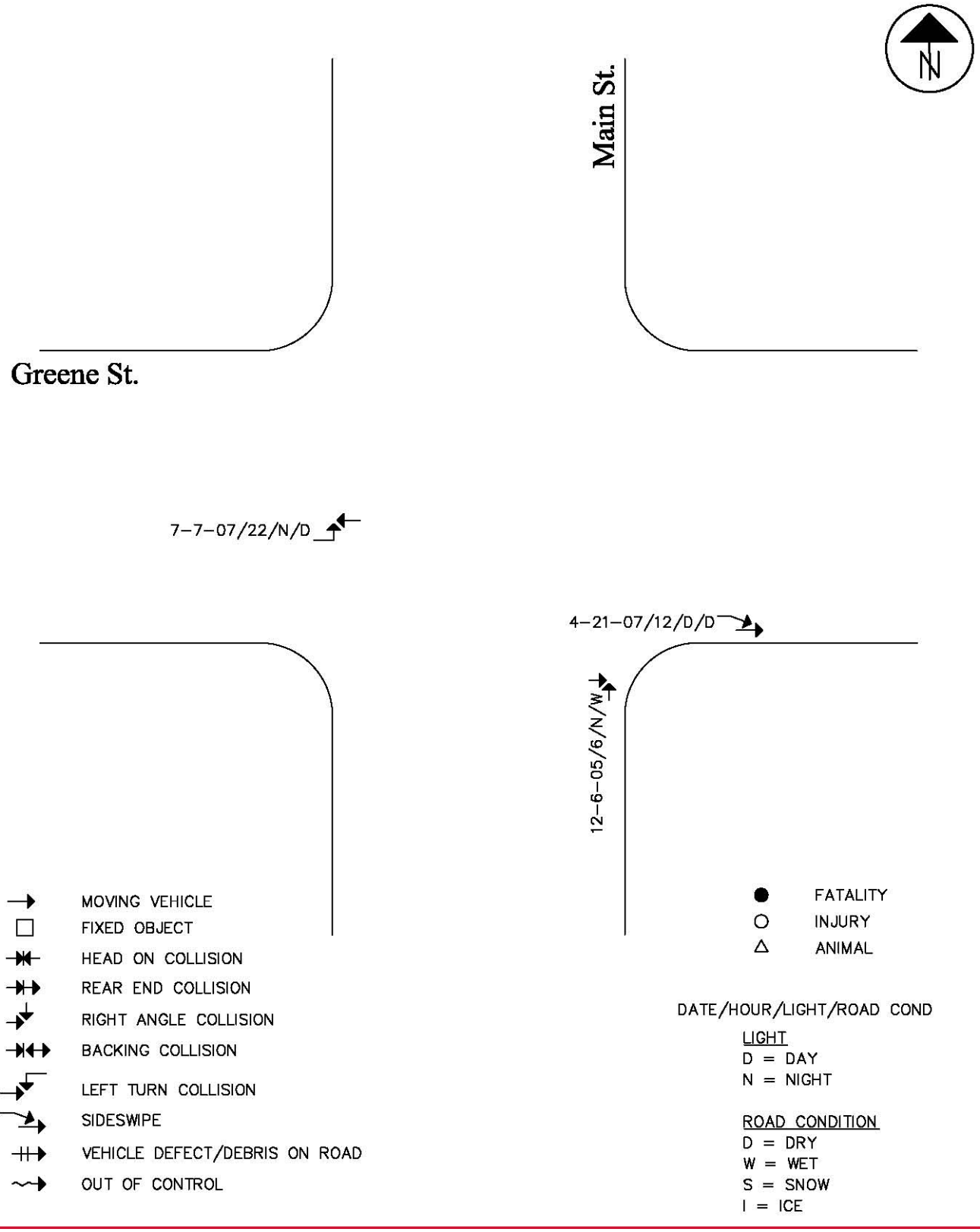
INTERSECTION DIAGRAM



ACTUATED SIGNAL

70 SEC CYCLE

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: Main Street at Greene Street

Date of Counts: Thursday 8/7/2008 (7-9am & 4-6pm) and Thursday 10/9/2008 (11am-4pm)

	SB Main St				WB Greene St				NB Main St				EB Greene St				Major Street	Minor St #1	Minor St #2
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
7:00 to 7:15 am	17	38	1	0	2	2	1	0	1	21	1	0	2	5	1	0			
7:15 to 7:30 am	13	48	4	0	2	2	1	0	2	39	1	0	3	4	4	1			
7:30 to 7:45 am	12	69	2	0	2	1	2	1	0	47	4	1	4	2	2	0			
7:45 to 8:00 am	28	76	5	1	5	3	2	0	4	42	0	0	4	8	7	2			
Total	70	231	12	1	11	8	6	1	7	149	6	1	13	19	14	3	475	25	46
8:00 to 8:15 am	6	45	3	0	1	1	0	1	0	38	1	0	2	4	4	1			
8:15 to 8:30 am	13	50	4	1	0	4	2	0	5	42	3	0	1	4	1	1			
8:30 to 8:45 am	14	38	4	1	1	4	2	0	7	33	0	1	2	5	1	1			
8:45 to 9:00 am	14	59	3	0	4	3	2	1	7	34	7	0	5	0	3	2			
Total	47	192	14	2	6	12	6	2	19	147	11	1	10	13	9	5	430	24	32
11:00 to 11:15 am	4	37	4	3	2	4	4	1	7	36	0	0	3	5	7	3			
11:15 to 11:30 am	8	32	6	3	5	14	10	0	9	29	5	3	3	8	7	3			
11:30 to 11:45 am	6	37	4	0	1	7	9	1	11	34	4	2	3	3	7	1			
11:45 to 12:00 am	10	47	5	1	4	6	6	0	13	56	5	0	5	16	6	1			
Total	28	153	19	7	12	31	29	2	40	155	14	5	14	32	27	8	409	72	73
12:00 to 12:15 pm	17	49	1	2	4	13	9	1	7	26	10	1	5	19	8	1			
12:15 to 12:30 pm	8	44	6	3	5	9	6	0	11	58	12	2	5	9	3	2			
12:30 to 12:45 pm	8	40	6	3	6	14	6	0	7	54	6	0	6	13	9	6			
12:45 to 13:00 pm	10	52	4	1	2	10	9	1	6	56	2	1	10	9	9	1			
Total	43	185	17	9	17	46	30	2	31	194	30	4	26	50	29	10	500	93	105
2:00 to 2:15 pm	9	48	4	0	4	11	4	1	5	58	6	2	5	7	3	1			
2:15 to 2:30 pm	9	52	2	3	4	8	8	1	7	57	8	3	6	11	6	0			
2:30 to 2:45 pm	13	52	4	2	5	10	10	0	7	48	9	1	8	6	6	1			
2:45 to 3:00 pm	7	71	4	2	4	11	5	2	6	69	5	2	3	8	3	0			
Total	38	223	14	7	17	40	27	4	25	232	28	8	22	32	18	2	560	84	72
3:00 to 3:15 pm	14	68	7	1	4	18	11	2	20	49	4	0	8	8	4	3			
3:15 to 3:30 pm	5	76	9	1	5	10	6	0	10	94	2	2	5	12	10	0			
3:30 to 3:45 pm	4	57	1	1	5	14	11	3	5	73	1	3	10	15	4	2			
3:45 to 4:00 pm	13	77	6	0	4	11	5	1	20	102	10	0	5	9	7	1			
Total	36	278	23	3	18	53	33	6	55	318	17	5	28	44	25	6	727	104	97
4:00 to 4:15 pm	8	59	7	3	11	16	6	1	9	80	3	2	9	14	13	1			
4:15 to 4:30 pm	1	87	6	0	7	47	3	1	0	61	7	7	6	48	7	1			
4:30 to 4:45 pm	0	101	8	2	13	46	5	1	0	69	10	2	2	41	7	1			
4:45 to 5:00 pm	0	101	8	2	13	46	5	1	0	69	10	2	2	41	7	1			
Total	9	348	29	7	44	155	19	4	9	279	30	13	19	144	34	4	704	218	197
5:00 to 5:15 pm	0	101	8	2	13	46	5	1	0	69	10	2	2	41	7	1			
5:15 to 5:30 pm	0	74	4	0	12	45	4	0	1	75	4	1	5	48	7	1			
5:30 to 5:45 pm	0	74	4	0	12	45	4	0	1	75	4	1	5	48	7	1			
5:45 to 6:00 pm	0	74	3	0	6	45	1	0	1	54	9	1	3	41	5	0			
Total	0	323	19	2	43	181	14	1	3	273	27	5	15	178	26	3	645	238	219
Grand Total	271	1933	147	38	168	526	164	22	189	1747	163	42	147	512	182	41			

SIGNAL WARANT ANALYSIS SUMMARY

Main Street / Greene Street Intersection

This signal warrant analysis is based on the guidelines in Chapter 4C of the 2003 Ohio MUTCD. The existing intersection has one approach lane from each direction and was analyzed with the counted traffic volumes.

Warrant 1, Eight-Hour Vehicular Warrant – *Warrant is NOT Satisfied*

Counted volumes from four hours in the AM and PM peak do not meet the eight-hour warrant thresholds. The remaining hours are expected to be lower in volume than the counted hours and will not meet the thresholds.

Time Period	Condition A			Condition B			Combination of Conditions A & B
	Major St Hourly Volume	Minor St Hourly Volume	Criteria Satisfied?	Major St Hourly Volume	Minor St Hourly Volume	Criteria Satisfied?	(80% of Each) Criteria Satisfied?
Warrant Threashold	500	150		750	75		
7 AM to 8 AM	475	46	No	475	46	No	No
8 AM to 9 AM	430	32	No	430	32	No	No
9 AM to 10 AM			No			No	No
10 AM to 11 AM			No			No	No
11 AM to 12 PM	409	43	No	409	43	No	No
12 PM to 1 PM	500	105	No	500	105	No	No
1 PM to 2 PM			No			No	No
2 PM to 3 PM	560	84	No	560	84	No	No
3 PM to 4 PM	727	104	No	727	104	No	No
4 PM to 5 PM	704	218	Yes	704	218	No	Yes
5 PM to 6 PM	645	238	Yes	645	238	No	Yes

Warrant 2, Four-Hour Vehicular Volume – *Warrant is NOT Satisfied*

Counted volumes from the four hours with the highest counted volumes were plotted on the Warrant 2 Table (attached). Two of the four plotted points are above the warrant threshold line for "1 lane & 1 lane".

Warrant 3, Peak Hour Vehicular Volume – *Warrant is NOT Satisfied*

The counted PM peak hour volumes were plotted on the Warrant 3 Table (attached). The plotted point is not above the warrant threshold line for "1 lane & 1 lane".

Warrant 4, Pedestrian Volume – *Warrant is NOT Satisfied*

The pedestrian crossings in each of the counted hours do not meet the minimum requirement of 100 or more for each of four hours of the day. The available gaps were not measured.

Warrant 5, School Crossing – *Warrant is NOT Satisfied*

No schools are currently located or planned in the city blocks adjacent to this intersection. Therefore, this warrant is not expected to be satisfied.

Warrant 6, Coordinated Signal System – *Warrant is NOT Satisfied*

This intersection is located along a coordinated signal system (Main Street). It is not certain whether signalization at this intersection is critical to coordination.

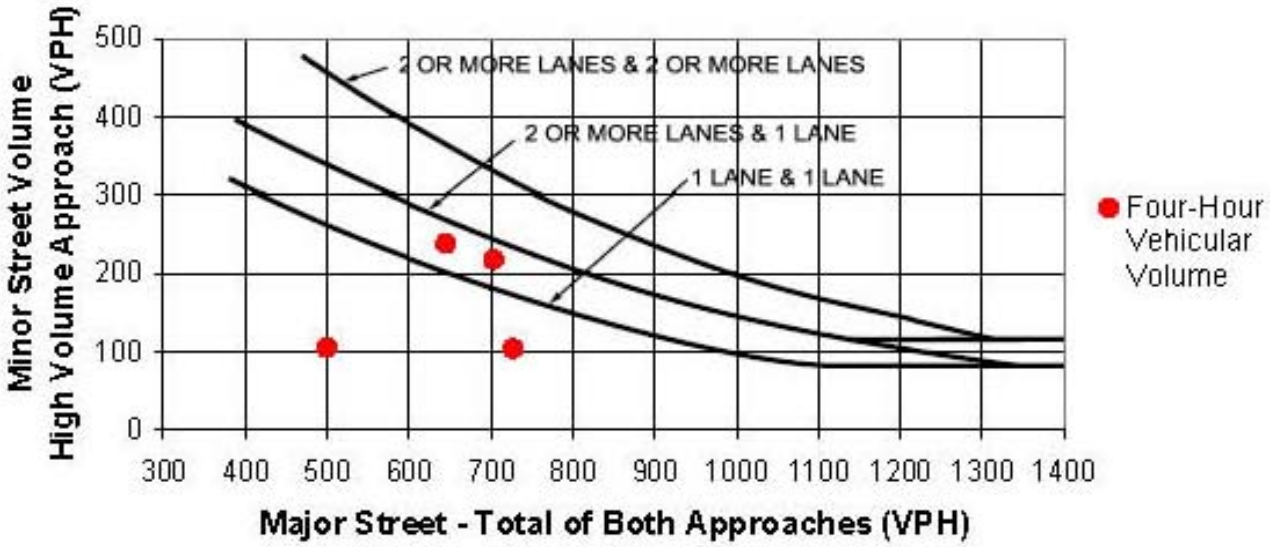
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

According to the crash data provided by the city of Piqua, one right-angle crash and one left-turn crash was reported in the vicinity of this intersection within a three year period. Although signals can help with reducing right-angle and left-turn crashes, it is not likely that removal of the signal will result in five or more crashes of that type in one 12-month period to meet the signal warrant thresholds.

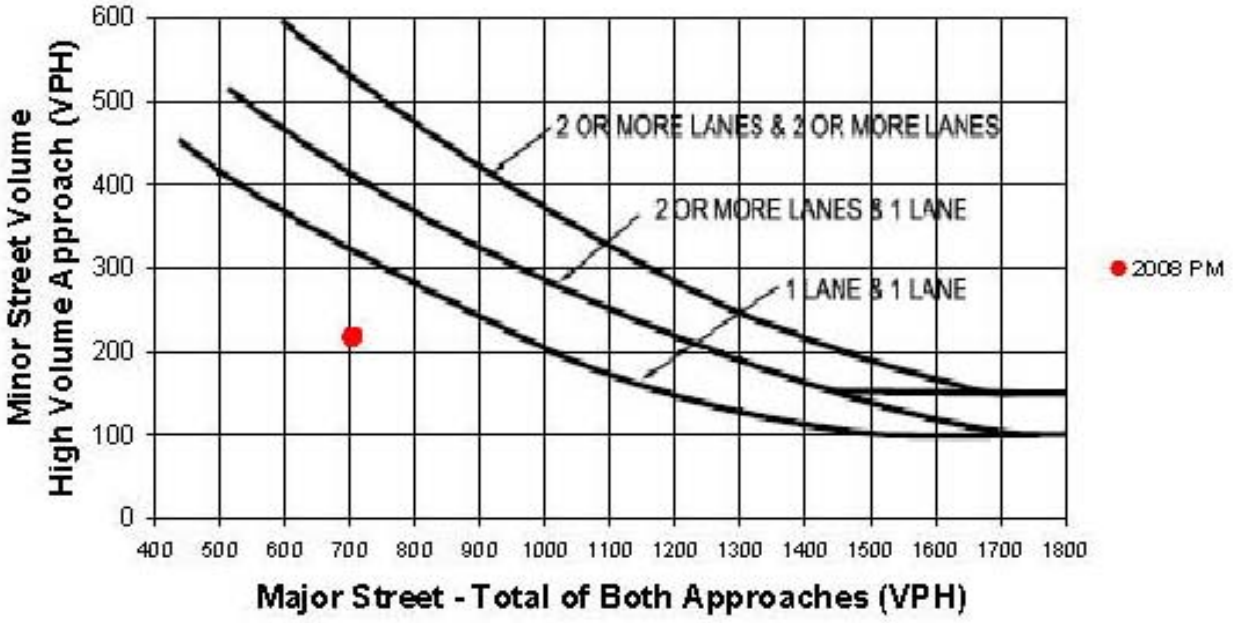
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

At least two hours have more than the required 1000 approaching trips. Main Street qualifies as a major Piqua city route.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



SHORT REPORT

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*Main at Greene*
Agency or Co.	*Kleingers & Associates*	Area Type	*CBD or Similar*
Date Performed	*11/13/2008*	Jurisdiction	*City of Piqua*
Time Period	*PM Peak*	Analysis Year	*2008*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*19*	*144*	*34*	*44*	*155*	*19*	*9*	*279*	*30*	*9*	*348*	*29*
% Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*4*	*0*	*2*	*4*	*0*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Pretimed/Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup Lost Time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Extension of Effective Green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival Type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*4*	*0*	*0*	*4*	*0*	*0*	*13*	*0*	*0*	*7*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/Hour												
Bus Stops/Hour	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.3*			*3.2*	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = *26.0*	G =	G =	G =	G = *32.0*	G =	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*						Cycle Length C = *70.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate	*21*	*198*		*49*	*193*		*10*	*343*		*10*	*419*	
Lane Group Capacity	*404*	*617*		*402*	*625*		*325*	*744*		*386*	*745*	
v/c Ratio	*0.05*	*0.32*		*0.12*	*0.31*		*0.03*	*0.46*		*0.03*	*0.56*	
Green Ratio	*0.37*	*0.37*		*0.37*	*0.37*		*0.46*	*0.46*		*0.46*	*0.46*	
Uniform Delay d_1	*14.1*	*15.7*		*14.5*	*15.6*		*10.5*	*13.1*		*10.4*	*13.9*	
Delay Factor k	*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*		*0.50*	*0.50*	
Incremental Delay d_2	*0.2*	*1.4*		*0.6*	*1.3*		*0.2*	*2.1*		*0.1*	*3.1*	
PF Factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control Delay	*14.3*	*17.1*		*15.1*	*16.9*		*10.6*	*15.1*		*10.6*	*16.9*	
Lane Group LOS	*B*	*B*		*B*	*B*		*B*	*B*		*B*	*B*	
Approach Delay	*16.8*			*16.5*			*15.0*			*16.8*		
Approach LOS	*B*			*B*			*B*			*B*		
Intersection Delay	*16.2*			Intersection LOS						*B*		

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SHORT REPORT

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*Main at Greene*
Agency or Co.	*Kleingers & Associates*	Area Type	*CBD or Similar*
Date Performed	*11/13/2008*	Jurisdiction	*City of Piqua*
Time Period	*PM Peak (No LT lanes on Green)*	Analysis Year	*2008*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	*0*	*1*	*0*	*0*	*1*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane Group		*LTR*			*LTR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*19*	*144*	*34*	*44*	*155*	*19*	*9*	*279*	*30*	*9*	*348*	*29*
% Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*	*3*	*4*	*0*	*2*	*4*	*0*
PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Pretimed/Actuated (P/A)	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
Startup Lost Time		*2.0*			*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Extension of Effective Green		*2.0*			*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival Type		*3*			*3*		*3*	*3*		*3*	*3*	
Unit Extension		*3.0*			*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*4*	*0*	*0*	*4*	*0*	*0*	*13*	*0*	*0*	*7*	*0*	*0*
Lane Width		*12.0*			*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/Hour												
Bus Stops/Hour		*0*			*0*		*0*	*0*		*0*	*0*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.3*			*3.2*	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = *26.0*	G =	G =	G =	G = *32.0*	G =	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*						Cycle Length C = *70.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*219*			*242*		*10*	*343*		*10*	*419*	
Lane Group Capacity		*594*			*563*		*325*	*744*		*386*	*745*	
v/c Ratio		*0.37*			*0.43*		*0.03*	*0.46*		*0.03*	*0.56*	
Green Ratio		*0.37*			*0.37*		*0.46*	*0.46*		*0.46*	*0.46*	
Uniform Delay d_1		*16.0*			*16.5*		*10.5*	*13.1*		*10.4*	*13.9*	
Delay Factor k		*0.50*			*0.50*		*0.50*	*0.50*		*0.50*	*0.50*	
Incremental Delay d_2		*1.8*			*2.4*		*0.2*	*2.1*		*0.1*	*3.1*	
PF Factor		*1.000*			*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control Delay		*17.8*			*18.8*		*10.6*	*15.1*		*10.6*	*16.9*	
Lane Group LOS		*B*			*B*		*B*	*B*		*B*	*B*	
Approach Delay	*17.8*			*18.8*			*15.0*			*16.8*		
Approach LOS	*B*			*B*			*B*			*B*		
Intersection Delay	*16.9*			Intersection LOS						*B*		

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