The College Street Corridor

Intersection of College Street and North Street

Intersection of College Street and Greene Street

Intersection of College Street and Ash Street

Intersection of College Street and High Street

Intersection of College Street and Water Street

College Street & North Street

Aerial Photo:

Existing Conditions Discussion

The intersection of College Street with North 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. Shrubbery in the southwest corner partially obstructs 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 to control traffic and pedestrian crossings associated with a school that used to be located near this intersection.

Photo: Looking North

Public Comments

- "There are low traffic volumes."
- "There used to be a school located near the intersection."

Analyses Results

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

Recommendations

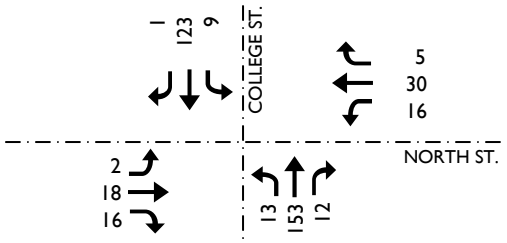
It is recommended that consideration be given to the removal of the traffic signal at this intersection. Since the traffic volumes on College Street are significantly higher than those on North Street, two-way stop control with stop signs on North Street is recommended. Because the North Street approaches are relatively wide, it is recommended that curb bump-outs and/or a median island be considered to shorten the pedestrian crossing distance and to provide a visual indication to motorists on North Street of the need to stop.

Intersection at a Glance

Existing Conditions

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

Counted Traffic Volumes (peak hour)



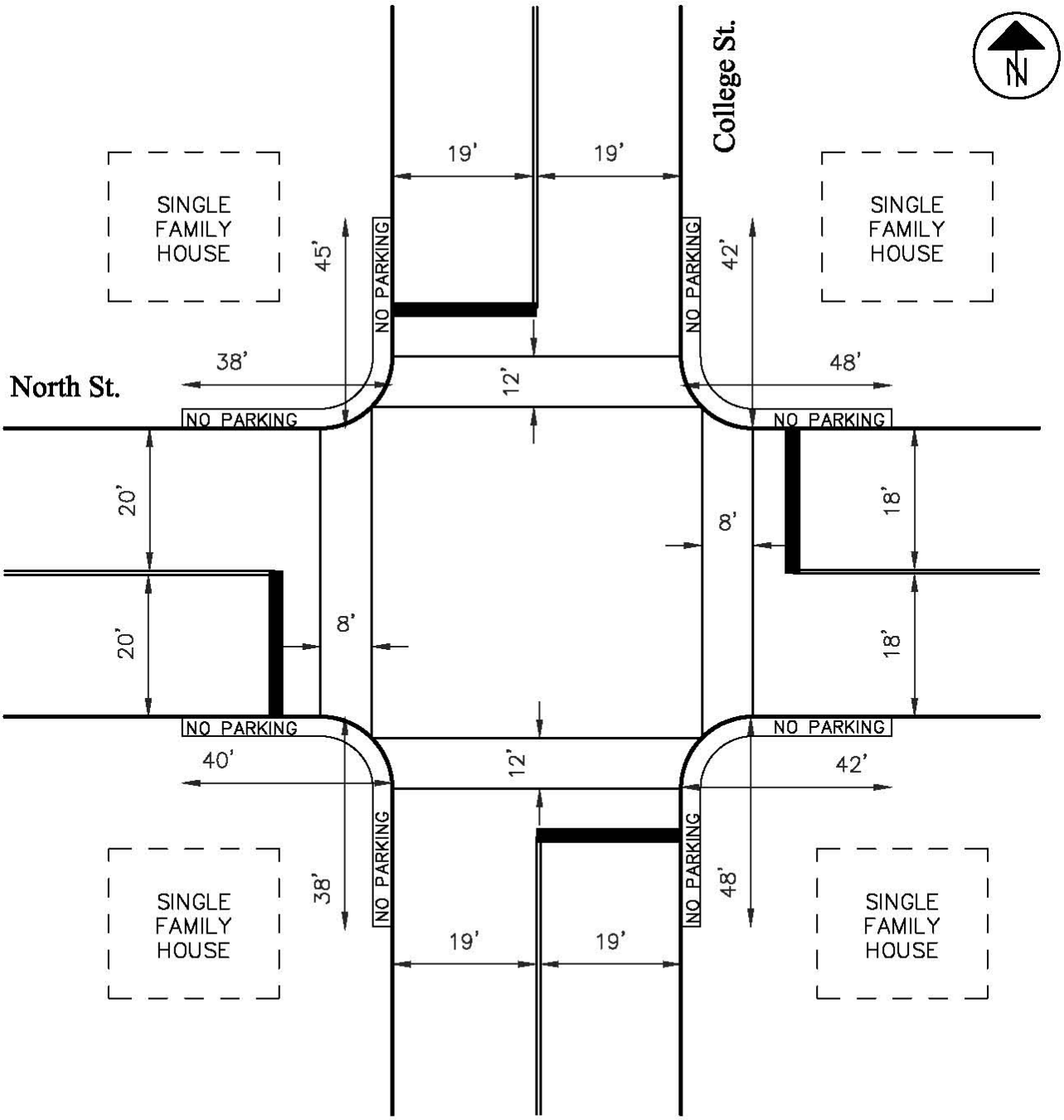
Crash History

- 2 reported crashes from 2005-2008
- Both crashes were angle-type

Recommendation

- Consider replacing traffic signal with two-way stop, with stop signs on North Street.

INTERSECTION DIAGRAM



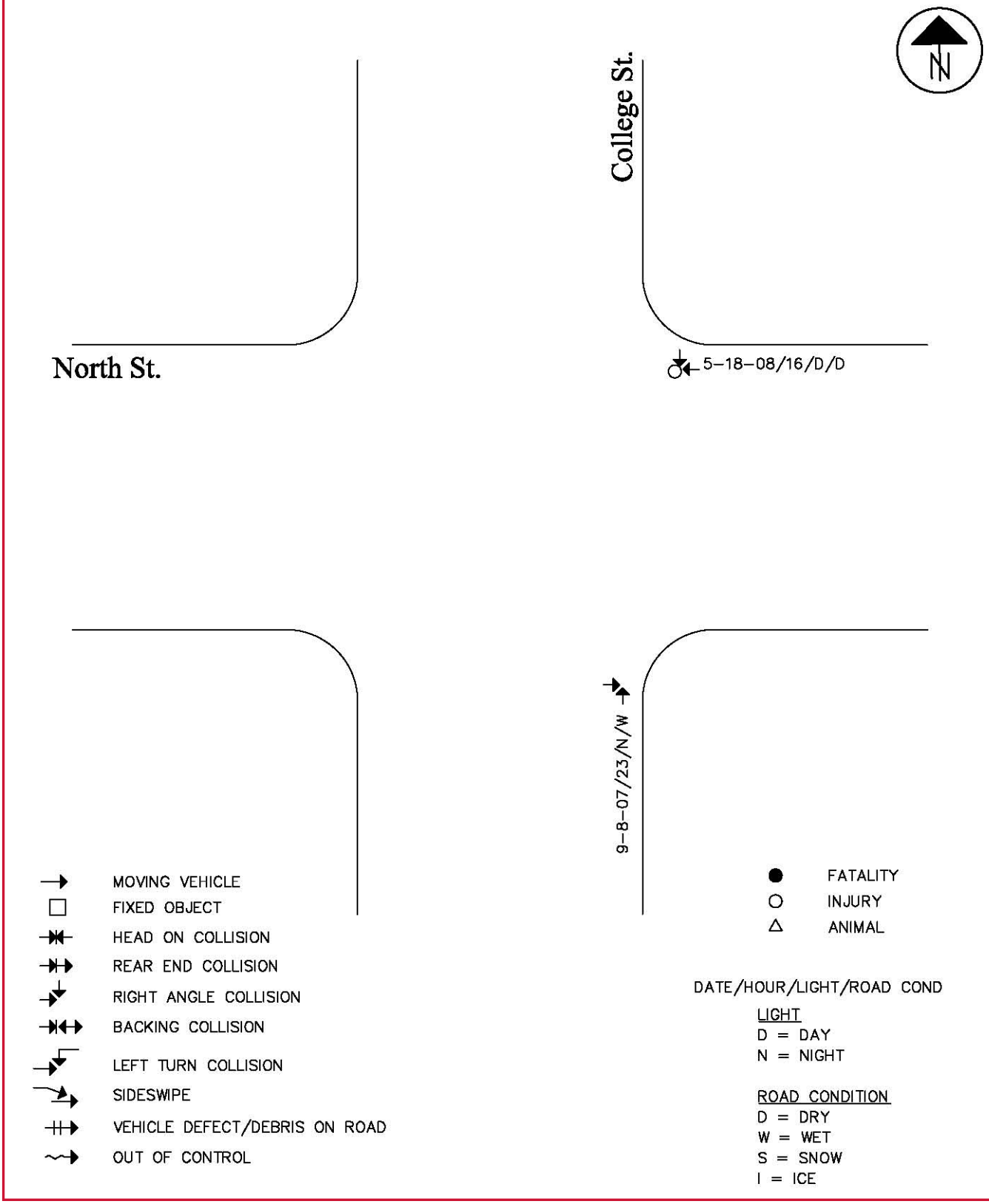
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

50 SEC N/S SPLIT

20 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: College Street at North Street

Date of Counts: Thursday 8/13/2008

	SB College St				WB North St				NB College St				EB North 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	19	1	2	0	3	0	0	0	5	2	0	2	3	1	0			
7:15 to 7:30 am	0	19	1	2	0	3	0	0	0	5	2	0	2	3	1	0			
7:30 to 7:45 am	0	19	1	0	2	3	2	0	2	14	4	0	0	2	4	0			
7:45 to 8:00 am	0	21	1	0	0	2	1	0	1	9	4	1	1	3	1	1			
Total	0	78	4	4	2	11	3	0	3	33	12	1	5	11	7	1	130	16	23
8:00 to 8:15 am	1	12	1	1	4	3	1	0	1	15	1	0	0	3	2	0			
8:15 to 8:30 am	0	8	0	0	0	1	0	0	0	17	4	0	0	2	2	0			
8:30 to 8:45 am	1	11	1	1	2	3	0	1	0	8	3	0	0	0	4	0			
8:45 to 9:00 am	0	21	1	1	2	2	0	0	2	17	0	0	0	3	2	1			
Total	2	52	3	3	8	9	1	1	3	57	8	0	0	8	10	1	125	18	18
4:00 to 4:15 pm	1	24	0	0	6	7	2	0	2	34	2	0	2	3	4	0			
4:15 to 4:30 pm	0	28	1	0	3	11	4	0	3	33	3	1	0	4	2	1			
4:30 to 4:45 pm	0	25	0	0	3	8	0	0	2	31	0	0	0	4	5	0			
4:45 to 5:00 pm	5	34	0	8	3	3	2	0	1	38	6	0	1	6	2	1			
Total	6	111	1	8	15	29	8	0	8	136	11	1	3	17	13	2	273	52	33
5:00 to 5:15 pm	5	34	0	8	3	3	2	0	1	38	6	0	1	6	2	1			
5:15 to 5:30 pm	1	31	0	0	4	9	0	0	4	40	2	0	0	3	5	0			
5:30 to 5:45 pm	1	31	0	0	4	9	0	0	4	40	2	0	0	3	5	0			
5:45 to 6:00 pm	2	27	1	1	5	9	3	1	4	35	2	0	1	6	4	0			
Total	9	123	1	9	16	30	5	1	13	153	12	0	2	18	16	1	311	51	36
Grand Total	17	364	9	24	41	79	17	2	27	379	43	2	10	54	46	5			

SIGNAL WARANT ANALYSIS SUMMARY

College Street / North 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 during 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 PM peak hour and 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	130	16	No	130	16	No	No
8 AM to 9 AM	125	18	No	125	18	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	273	52	No	273	52	No	No
5 PM to 6 PM	311	51	No	311	51	No	No

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

Counted volumes from four hours during the AM and PM peak were plotted on the Warrant 2 Table (attached). The plotted point is below 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 below 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. A school was once located adjacent to this intersection but has since been converted to an apartment building. 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. However, removal of the signal is not necessarily expected to impact progression along the College Street corridor.

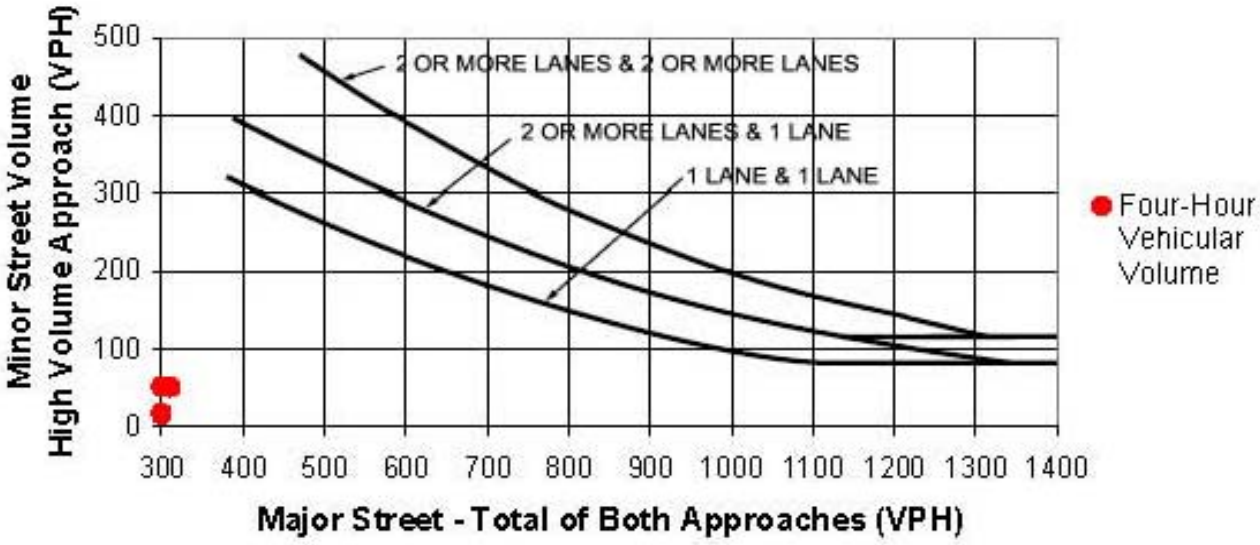
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

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 calendar year to meet the signal warrant thresholds.

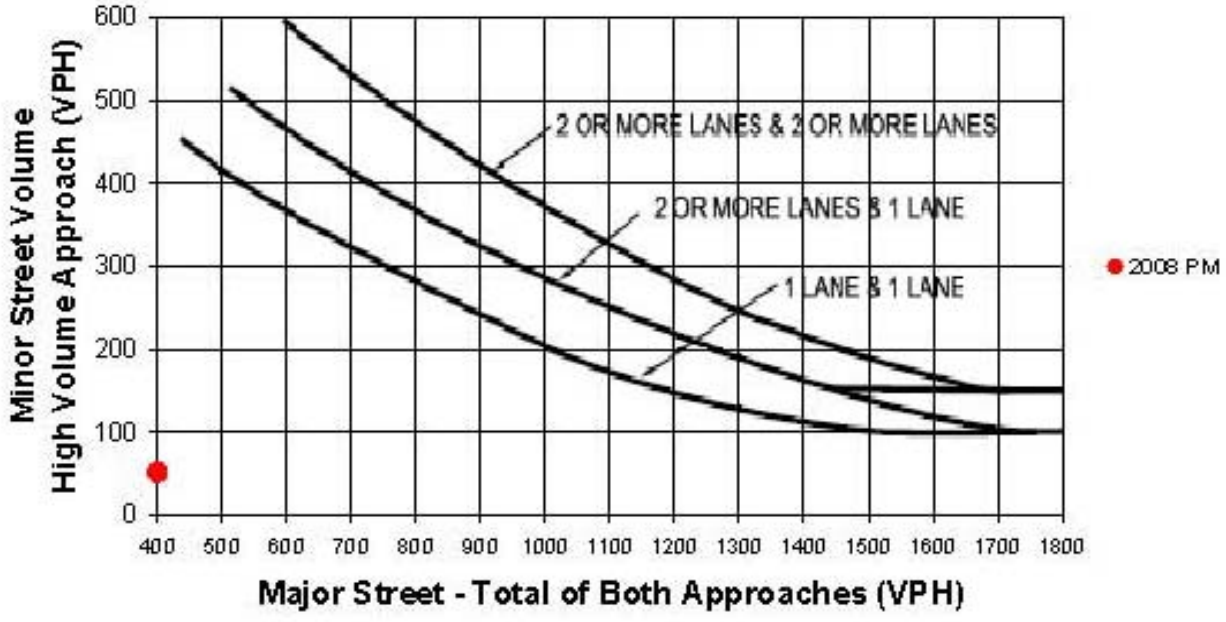
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (5-6 PM) has fewer than 400 total approaching trips. This is much less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*College at North*
Agency/Co.	*Kleingers & Associates*	Jurisdiction	*City of Piqua*
Date Performed	*11/13/2008*	Analysis Year	*2008*
Analysis Time Period	*PM Peak*		

Project Description

East/West Street: *North Street* | North/South Street: *College Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*13*	*153*	*12*	*9*	*123*	*1*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*14*	*170*	*13*	*10*	*136*	*1*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*1*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*2*	*18*	*16*	*16*	*30*	*5*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*2*	*20*	*17*	*17*	*33*	*5*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*12*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*14*	*10*		*55*			*39*	
C (m) (veh/h)	*1457*	*1402*		*570*			*666*	
v/c	*0.01*	*0.01*		*0.10*			*0.06*	
95% queue length	*0.03*	*0.02*		*0.32*			*0.19*	
Control Delay (s/veh)	*7.5*	*7.6*		*12.0*			*10.7*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay (s/veh)	--	--	*12.0*			*10.7*		
Approach LOS	--	--	*B*			*B*		

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Generated: 11/14/2008 9:15 AM

College Street & Greene Street

Aerial Photo:

Existing Conditions Discussion

The intersection of College Street with Greene 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. Shrubbery in the northeast corner partially obstructs 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 to control traffic and pedestrian crossings associated with a school that used to be located near this intersection.

Photo: Looking West

Public Comments

- "There are low traffic volumes."
- "There used to be a school located near the intersection."

Analyses Results

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

Recommendations

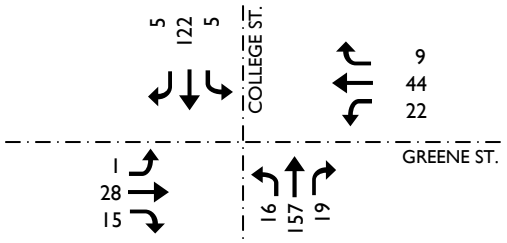
It is recommended that consideration be given to the removal of the traffic signal at this intersection. Since the traffic volumes on College Street are significantly higher than those on Greene Street, two-way stop control with stop signs on Greene Street is recommended. Because the Greene Street approaches are relatively wide, it is recommended that curb bump-outs and/or a median island be considered to shorten the pedestrian crossing distance and to provide a visual indication to motorists on Greene Street of the need to stop.

Intersection at a Glance

Existing Conditions

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

Counted Traffic Volumes (peak hour)



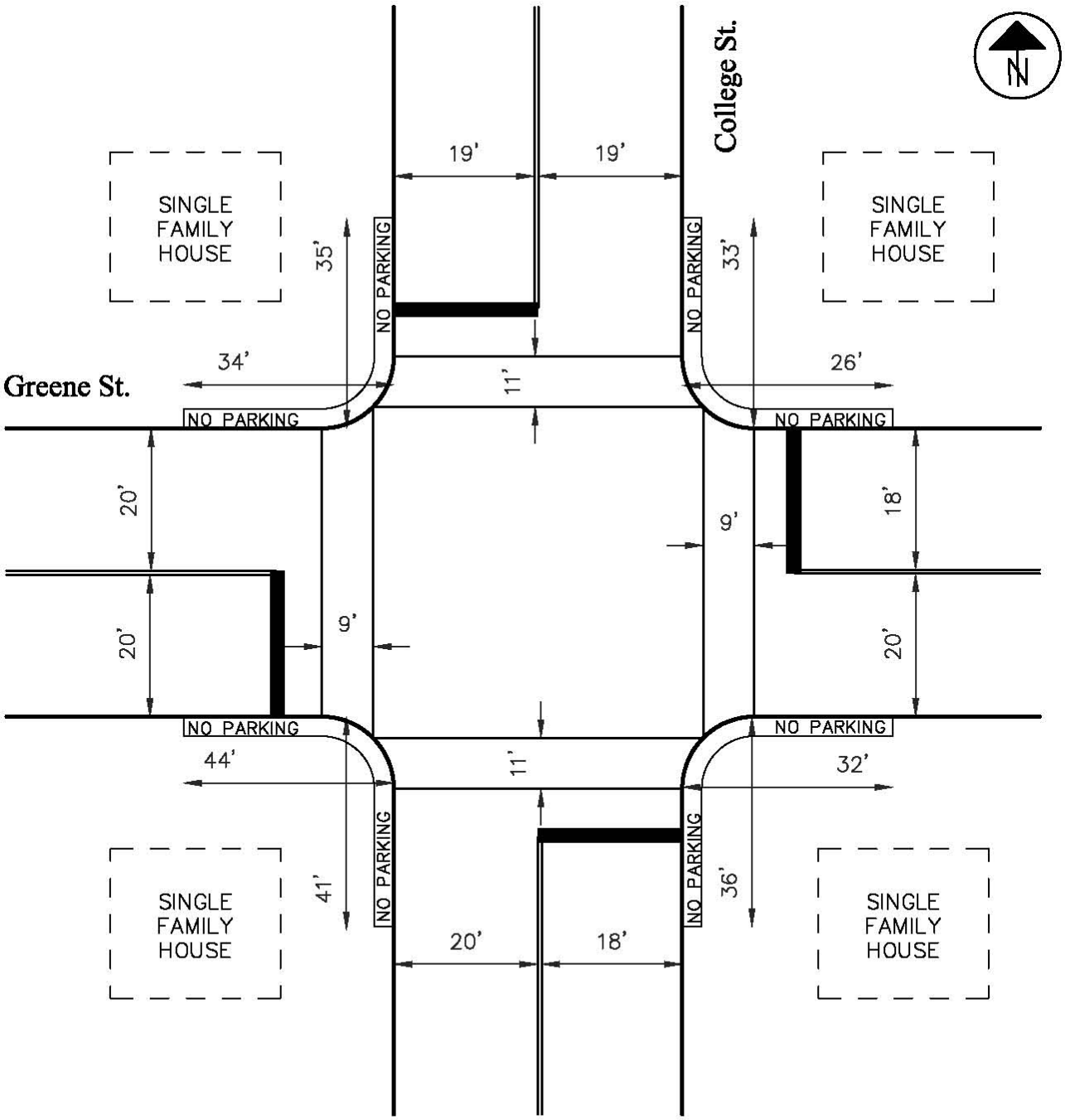
Crash History

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

Recommendation

- Consider replacing traffic signal with two-way stop, with stop signs on Greene Street.

INTERSECTION DIAGRAM



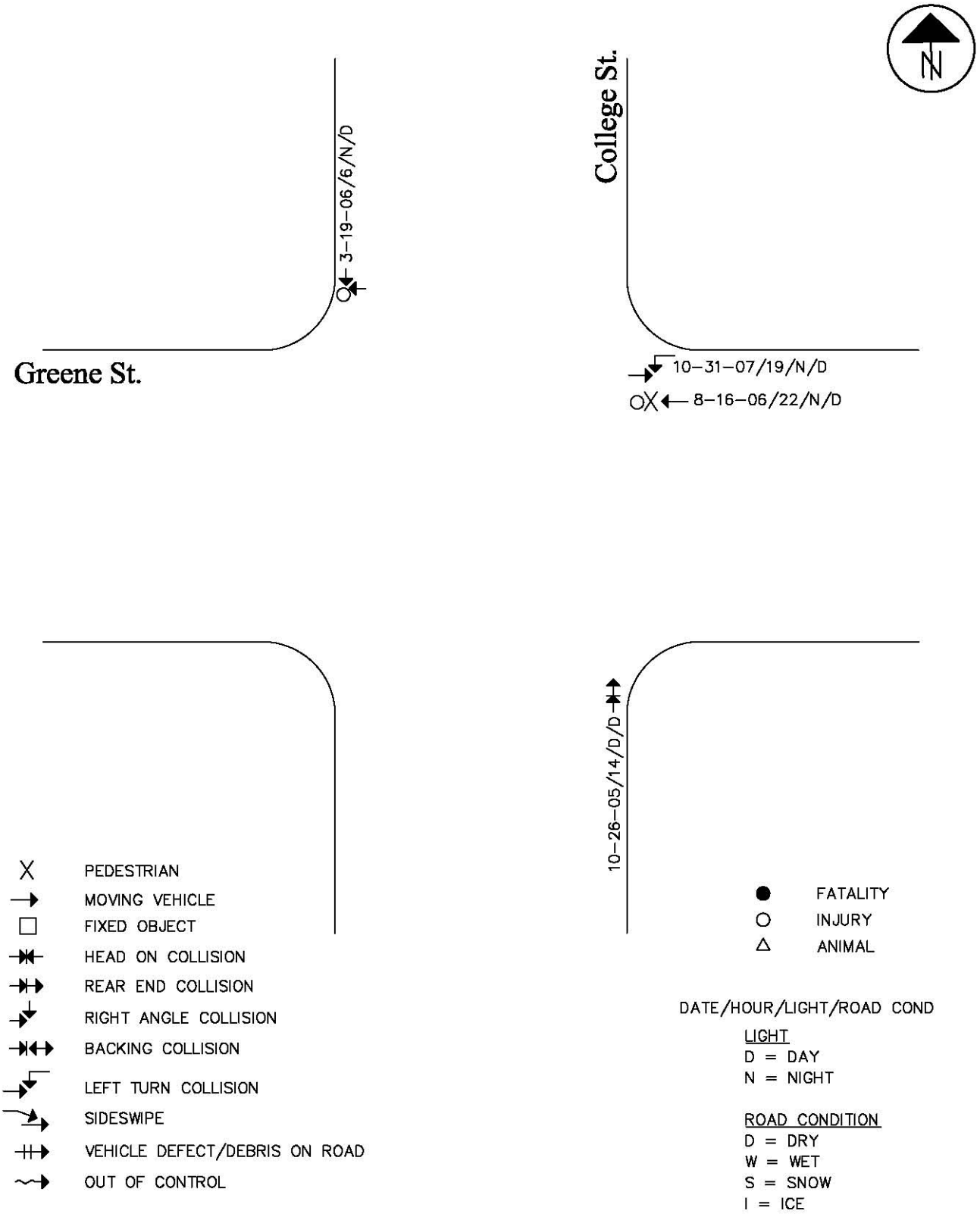
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

46 SEC N/S SPLIT

24 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: College Street at Greene Street

Date of Counts: Thursday 8/13/2008

	SB College St				WB Greene St				NB College 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	1	16	0	0	0	2	1	0	1	8	2	0	0	3	2	0			
7:15 to 7:30 am	1	19	0	0	1	2	0	0	1	13	2	1	0	7	3	0			
7:30 to 7:45 am	2	23	1	0	5	2	3	1	5	19	4	0	0	6	5	0			
7:45 to 8:00 am	0	28	0	2	2	4	1	0	1	8	5	0	0	13	5	0			
Total	4	86	1	2	8	10	5	1	8	48	13	1	0	29	15	0	160	23	44
8:00 to 8:15 am	2	39	0	0	1	5	0	0	2	11	2	2	0	4	2	0			
8:15 to 8:30 am	0	12	0	0	5	3	1	0	1	13	0	0	0	5	1	1			
8:30 to 8:45 am	1	28	2	1	2	5	1	0	0	12	2	1	0	7	3	1			
8:45 to 9:00 am	0	20	0	0	5	6	1	0	0	13	2	1	1	8	1	0			
Total	3	99	2	1	13	19	3	0	3	49	6	4	1	24	7	2	162	35	32
4:00 to 4:15 pm	1	33	2	0	8	9	2	0	3	41	4	1	0	7	5	0			
4:15 to 4:30 pm	0	26	2	2	2	6	1	1	4	40	4	0	0	6	3	3			
4:30 to 4:45 pm	2	34	0	1	7	14	2	1	6	39	6	3	1	8	4	1			
4:45 to 5:00 pm	2	29	1	1	5	15	4	0	3	37	5	0	0	7	3	0			
Total	5	122	5	4	22	44	9	2	16	157	19	4	1	28	15	4	324	75	44
5:00 to 5:15 pm	0	30	0	0	6	5	2	0	1	48	5	8	0	7	5	0			
5:15 to 5:30 pm	0	40	1	0	6	8	3	2	7	39	6	1	1	11	6	0			
5:30 to 5:45 pm	0	29	0	0	5	12	1	2	2	33	4	0	1	1	4	2			
5:45 to 6:00 pm	0	30	1	2	1	6	2	0	1	40	4	1	0	2	3	1			
Total	0	129	2	2	18	31	8	4	11	160	19	10	2	21	18	3	321	57	41
Grand Total	12	436	10	9	61	104	25	7	38	414	57	19	4	102	55	9			

SIGNAL WARANT ANALYSIS SUMMARY

College 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 during 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 PM peak hour and 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	160	23	No	160	23	No	No
8 AM to 9 AM	162	35	No	162	35	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	324	75	No	324	75	No	No
5 PM to 6 PM	321	57	No	321	57	No	No

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

Counted volumes from four hours during the AM and PM peak were plotted on the Warrant 2 Table (attached). The plotted point is below 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 below 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. A school was once located adjacent to this intersection but has since been converted to an apartment building. 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. However, removal of the signal is not necessarily expected to impact progression along the College Street corridor.

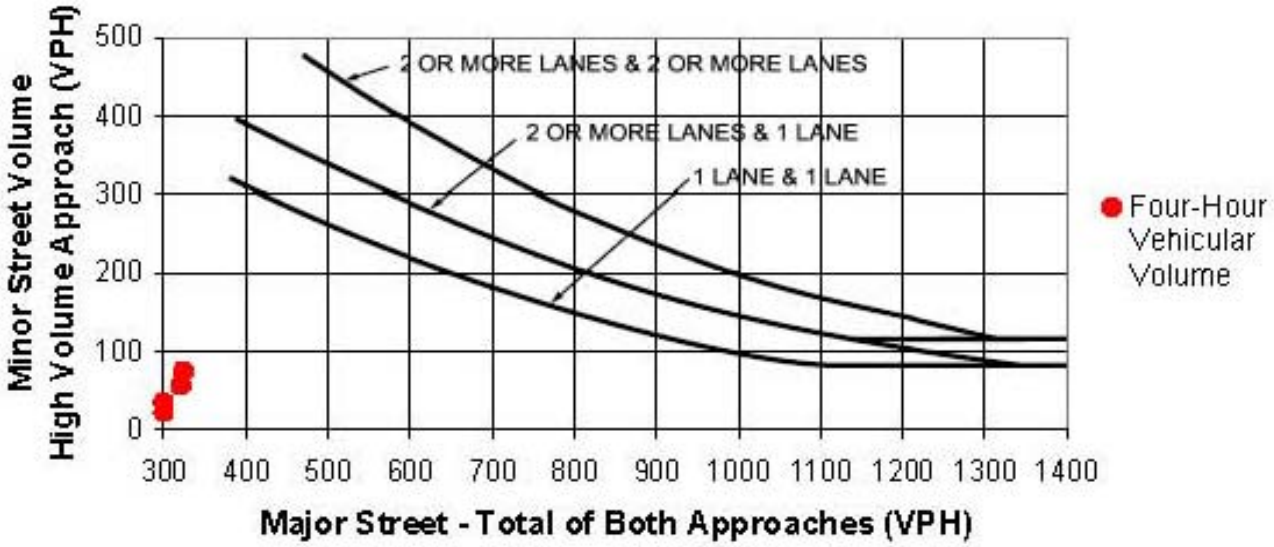
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

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.

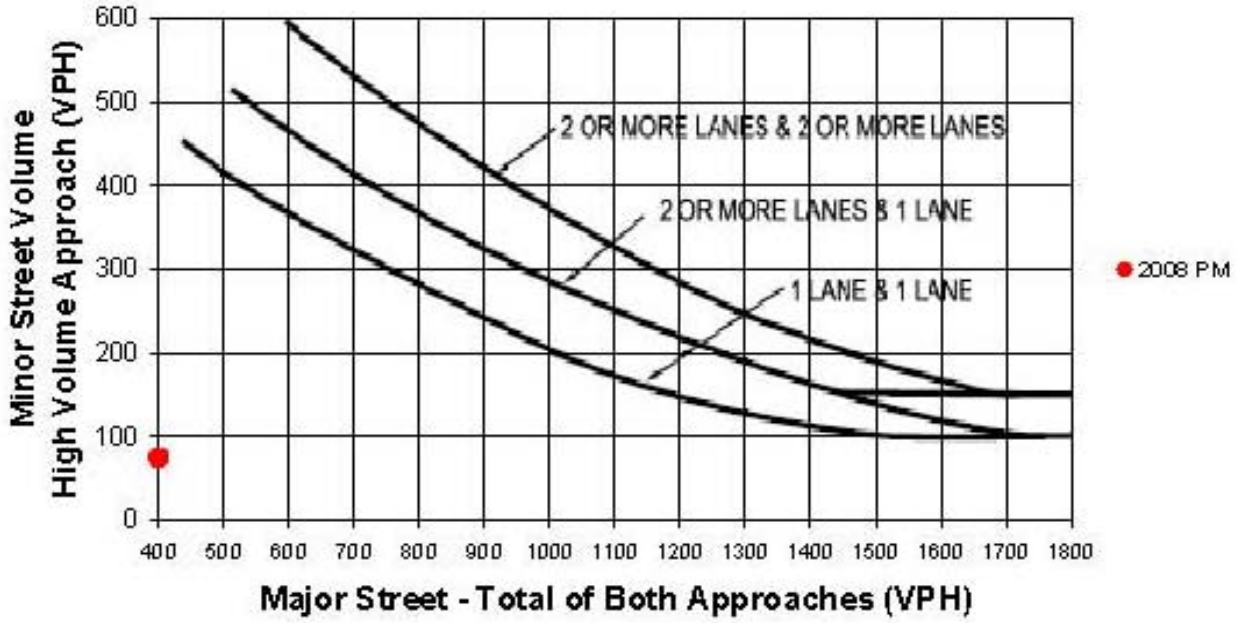
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (4-5 PM) has fewer than 450 total approaching trips. This is much less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



TWO-WAY STOP CONTROL SUMMARY

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

Project Description

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

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*16*	*157*	*19*	*5*	*122*	*5*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*17*	*174*	*21*	*5*	*135*	*5*
Percent Heavy Vehicles	*3*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*1*	*28*	*15*	*22*	*44*	*9*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*1*	*31*	*16*	*24*	*48*	*10*
Percent Heavy Vehicles	*0*	*0*	*2*	*2*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*17*	*5*		*82*			*48*	
C (m) (veh/h)	*1427*	*1386*		*563*			*622*	
v/c	*0.01*	*0.00*		*0.15*			*0.08*	
95% queue length	*0.04*	*0.01*		*0.51*			*0.25*	
Control Delay (s/veh)	*7.6*	*7.6*		*12.5*			*11.3*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay (s/veh)	--	--	*12.5*			*11.3*		
Approach LOS	--	--	*B*			*B*		

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College Street & Ash Street

Aerial Photo:

Photo: Looking South

Existing Conditions Discussion

The intersection of College Street with Ash 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. Church building on southeast corner restricts visibility due to its close proximity to the intersection. The primary concern at this intersection is the warrant status of the existing traffic signal. This signal may have been installed initially to control traffic and pedestrian crossings associated with a school that used to be located near this intersection.

Public Comments

- "There used to be a school adjacent to this intersection."
- "US Route 36 used to be routed through this intersection."
- "The nearby church has decreased in size."

Analyses Results

- Traffic signal warrants are not met
- Six reported crashes at the intersection from Jan. 2005 to June 2008
- Two-way stop control with stop signs on Ash Street provides adequate capacity

Recommendations

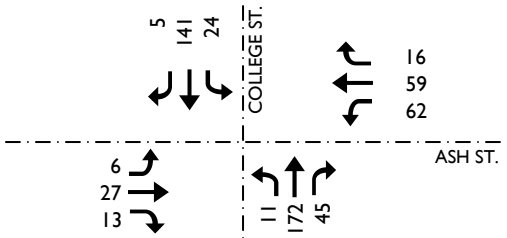
It is recommended that consideration be given to the removal of the traffic signal at this intersection. Since the traffic volumes on College Street are higher than those on Ash Street, two-way stop control with stop signs on Ash Street is recommended. Because the Ash Street approaches are relatively wide, it is recommended that curb bump-outs and/or a median island be considered to shorten the pedestrian crossing distance and to provide a visual indication to motorists on Ash Street of the need to stop. Also, it is recommended that the east crosswalk be narrowed and the adjacent stop bar be relocated closer to the intersection to improve the intersection sight distance.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- Single lane approaches
- Located in residential area
- Adjacent building restricts visibility

Counted Traffic Volumes (peak hour)



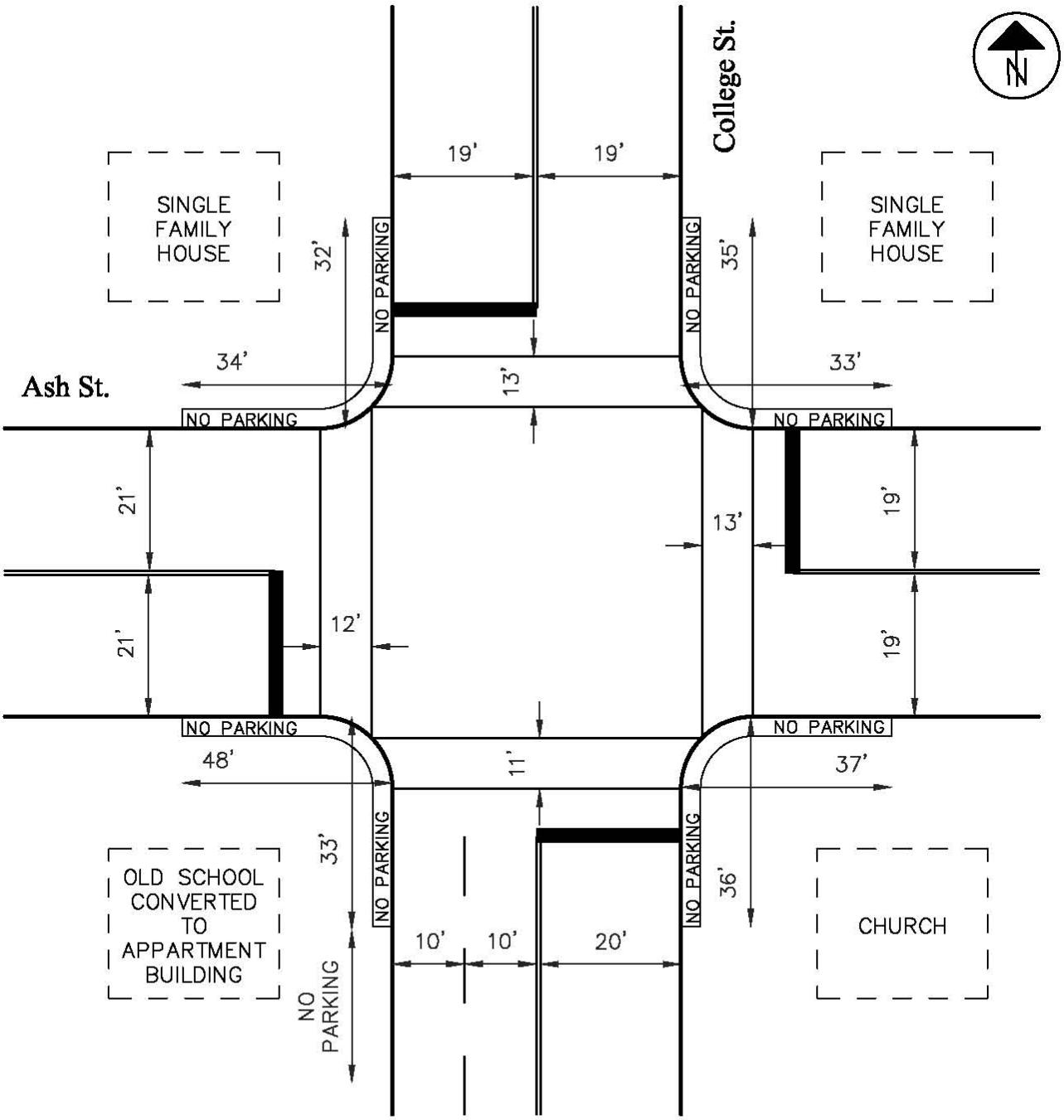
Crash History

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

Recommendation

- Consider replacing traffic signal with two-way stop, with stop signs on Ash Street.

INTERSECTION DIAGRAM



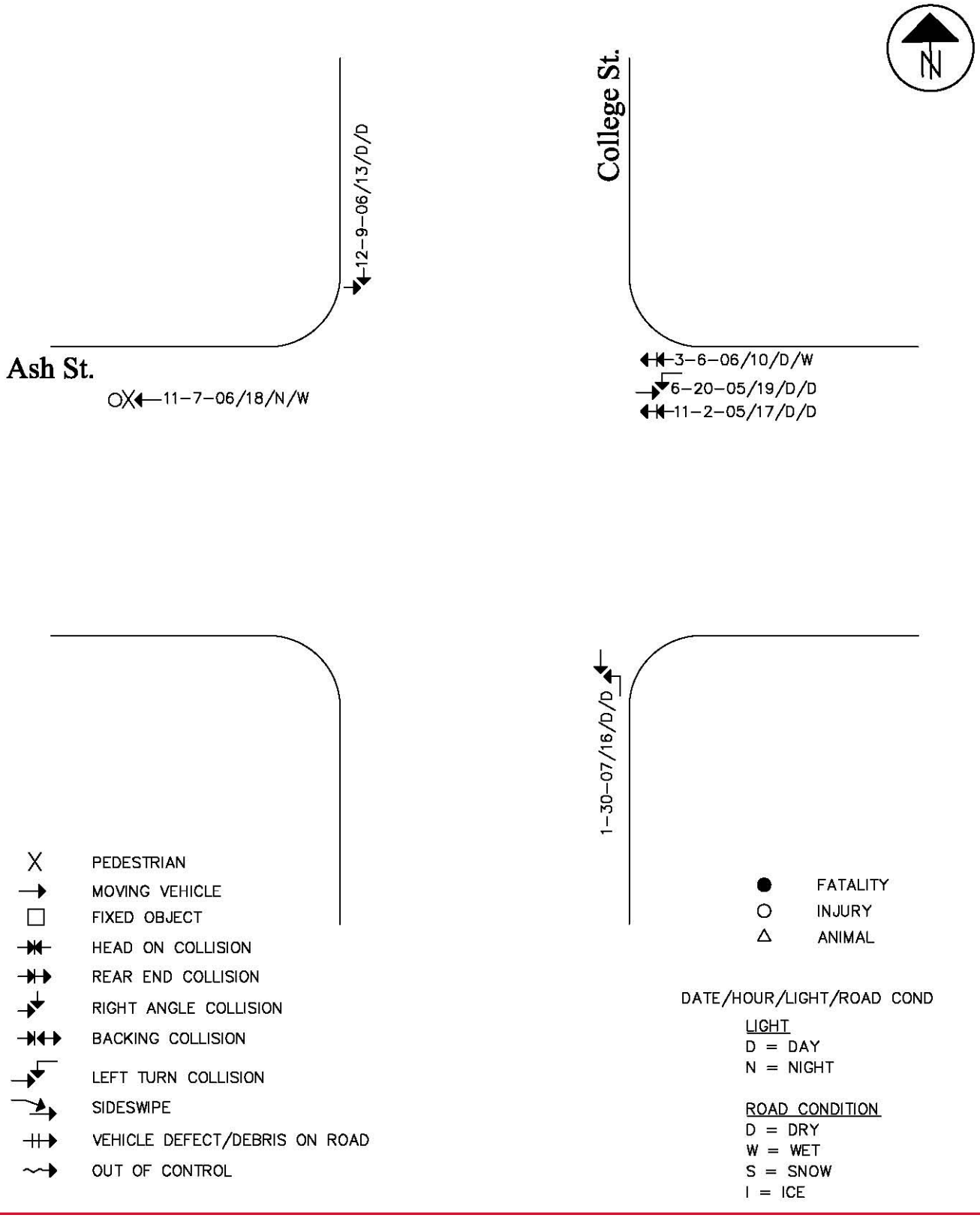
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

50 SEC N/S SPLIT

20 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: College Street at Ash Street

Date of Counts: Thursday 8/13/2008

	SB College St				WB Ash St				NB College St				EB Ash 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	4	16	0	0	1	1	0	0	0	10	4	0	1	5	0	0			
7:15 to 7:30 am	6	18	0	0	6	2	2	0	1	13	3	0	1	5	1	0			
7:30 to 7:45 am	8	25	0	0	6	5	3	0	0	24	8	1	2	13	0	0			
7:45 to 8:00 am	4	29	1	0	6	7	1	1	1	11	6	0	0	2	3	0			
Total	22	88	1	0	19	15	6	1	2	58	21	1	4	25	4	0	192	40	33
8:00 to 8:15 am	6	36	0	0	4	7	1	0	1	14	6	0	0	6	0	0			
8:15 to 8:30 am	2	15	1	0	6	7	1	0	1	12	4	0	0	5	4	1			
8:30 to 8:45 am	3	29	0	0	2	6	1	0	0	15	3	0	0	6	2	0			
8:45 to 9:00 am	4	19	1	0	4	11	0	1	1	15	5	1	0	6	2	0			
Total	15	99	2	0	16	31	3	1	3	56	18	1	0	23	8	1	193	50	31
4:00 to 4:15 pm	2	45	1	0	16	26	5	0	3	47	17	1	0	10	4	1			
4:15 to 4:30 pm	2	28	1	4	14	15	3	0	3	44	3	0	0	9	4	1			
4:30 to 4:45 pm	6	39	1	0	8	12	7	0	3	46	8	1	0	5	6	0			
4:45 to 5:00 pm	2	37	0	0	5	14	3	0	4	40	9	0	0	3	1	0			
Total	12	149	3	4	43	67	18	0	13	177	37	2	0	27	15	2	391	128	42
5:00 to 5:15 pm	8	33	2	1	19	17	5	0	2	53	11	8	1	5	2	0			
5:15 to 5:30 pm	6	45	1	0	13	13	1	0	4	45	8	0	1	3	4	0			
5:30 to 5:45 pm	6	27	1	0	14	16	2	0	2	35	16	0	3	6	2	0			
5:45 to 6:00 pm	4	36	1	4	16	13	8	0	3	39	10	0	1	13	5	0			
Total	24	141	5	5	62	59	16	0	11	172	45	8	6	27	13	0	398	137	46
Grand Total	73	477	11	9	140	172	43	2	29	463	121	12	10	102	40	3			

SIGNAL WARANT ANALYSIS SUMMARY

College Street /Ash 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 during 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 PM peak hour and not meet the thresholds.

Time Period	Condition A			Condition B			Combination of Conditions A & B
	Major St	Minor St		Major St	Minor St		
	Hourly Volume	Hourly Volume	Criteria Satisfied?	Hourly Volume	Hourly Volume	Criteria Satisfied?	(80% of Each) Criteria Satisfied?
Warrant Threashold	500	150		750	75		
7 AM to 8 AM	192	40	No	192	40	No	No
8 AM to 9 AM	193	50	No	193	50	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	391	128	No	391	128	No	No
5 PM to 6 PM	398	137	No	398	137	No	No

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

Counted volumes from four hours during the AM and PM peak were plotted on the Warrant 2 Table (attached). The plotted point is below 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 below 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. A school was once located adjacent to this intersection but has since been converted to an apartment building. 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. However, removal of the signal is not necessarily expected to impact progression along the College Street corridor.

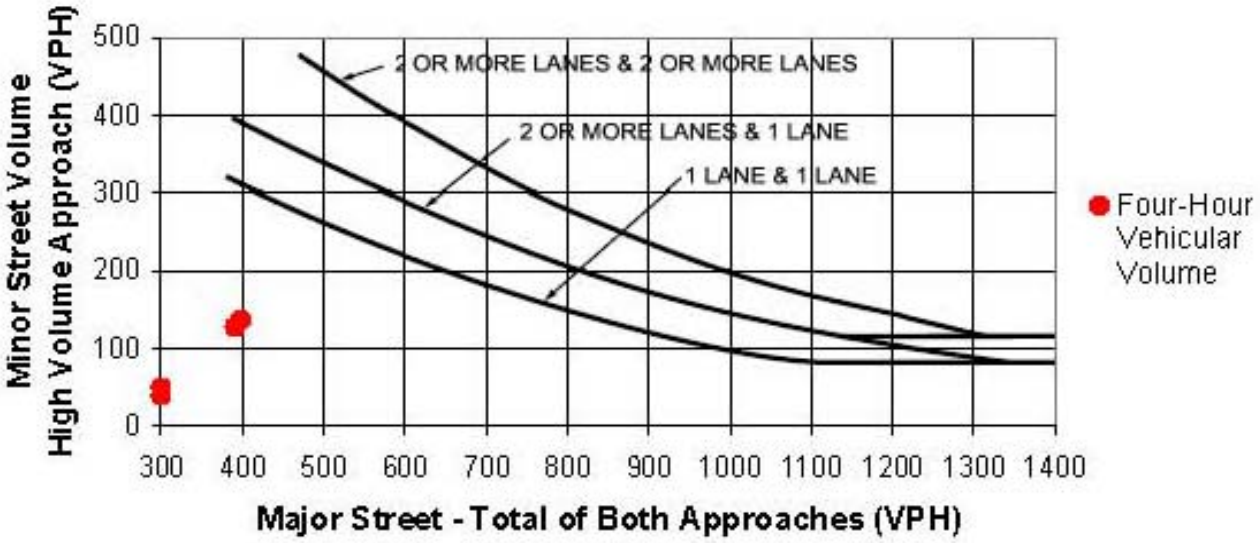
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

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 calendar year to meet the signal warrant thresholds.

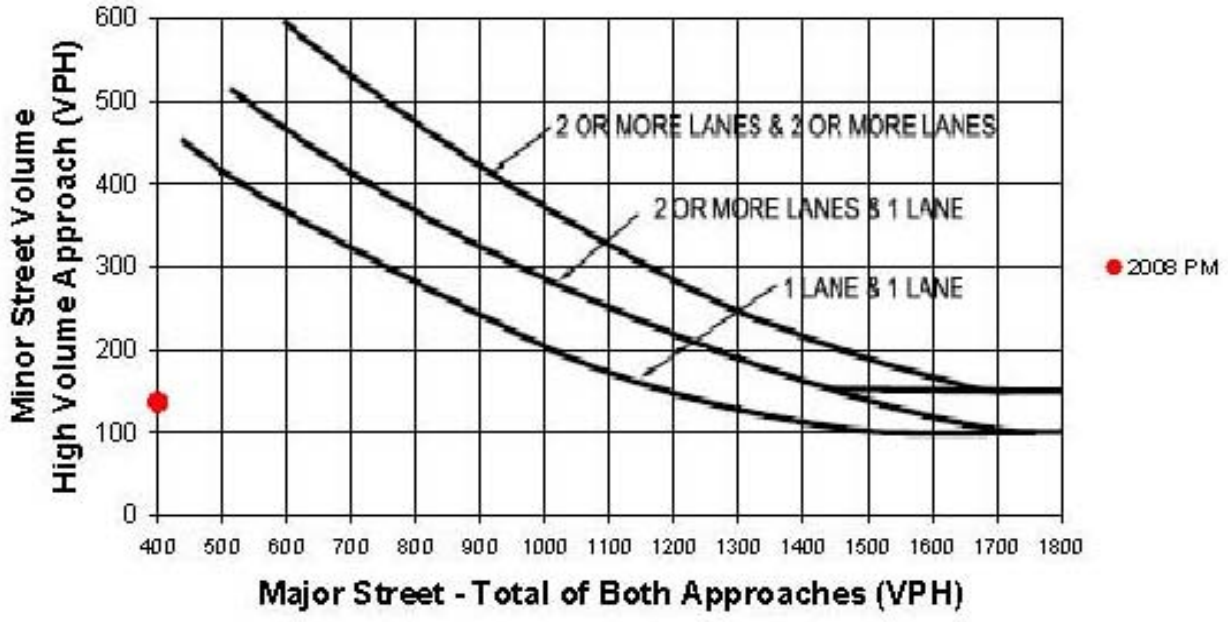
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (5-6 PM) has fewer than 600 total approaching trips. This is much less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*College at Ash*
Agency/Co.	*Kleingers & Associates*	Jurisdiction	*City of Piqua*
Date Performed	*11/13/2008*	Analysis Year	*2008*
Analysis Time Period	*PM Peak*		

Project Description

East/West Street: *Ash Street* | North/South Street: *College Street*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*11*	*172*	*45*	*24*	*141*	*5*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*12*	*191*	*50*	*26*	*156*	*5*
Percent Heavy Vehicles	*7*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*6*	*27*	*13*	*62*	*59*	*16*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*6*	*30*	*14*	*68*	*65*	*17*
Percent Heavy Vehicles	*0*	*0*	*8*	*1*	*2*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*12*	*26*		*150*			*50*	
C (m) (veh/h)	*1388*	*1337*		*492*			*533*	
v/c	*0.01*	*0.02*		*0.30*			*0.09*	
95% queue length	*0.03*	*0.06*		*1.28*			*0.31*	
Control Delay (s/veh)	*7.6*	*7.7*		*15.5*			*12.5*	
LOS	*A*	*A*		*C*			*B*	
Approach Delay (s/veh)	--	--	*15.5*			*12.5*		
Approach LOS	--	--	*C*			*B*		

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Generated: 11/13/2008 4:18 PM

College Street & High Street

Aerial Photo:

Existing Conditions Discussion

The intersection of High Street with College 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 four phases: (1) an 11-second east-west protected left turn phase, (2) a 24-second east-west permitted phase, (3) an 11-second north-south protected left-turn phase, and (4) a 24-second north-south permitted phase. Parking restrictions vary near the intersection and are provided in detail on the existing conditions diagram. The traffic signals along College Street between Water Street and North Street are currently time-base coordinated. The primary concern at this intersection is with the timing and/or operation of the existing traffic signal and whether the signal should be coordinated with adjacent traffic signals.

Photo: Looking West

Public Comments

- No significant comments were discussed regarding this intersection.

Analyses Results

- The existing signalized intersection was analyzed for capacity. According to the results, the intersection currently operates at an acceptable level of service.
- Seven reported crashes at the intersection from Jan. 2005 to June 2008

Recommendations

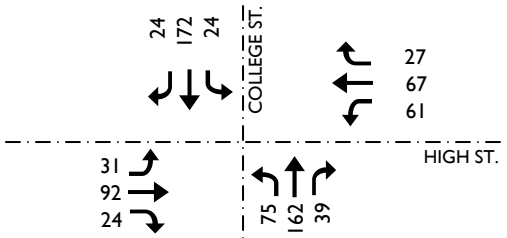
It is recommended that the operation of this signal be converted from pretimed to actuated. The ability to serve only those phases that have vehicular demand and to adjust the amount of green time based on the demand will reduce unnecessary delays at the intersection. It is also recommended that the traffic signals along College Street from Covington Avenue to High Street be designed as a coordinated system.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- Left-turn lanes on all approaches
- Left-turn signals on all approaches
- Coordinated signals along College

Counted Traffic Volumes (peak hour)



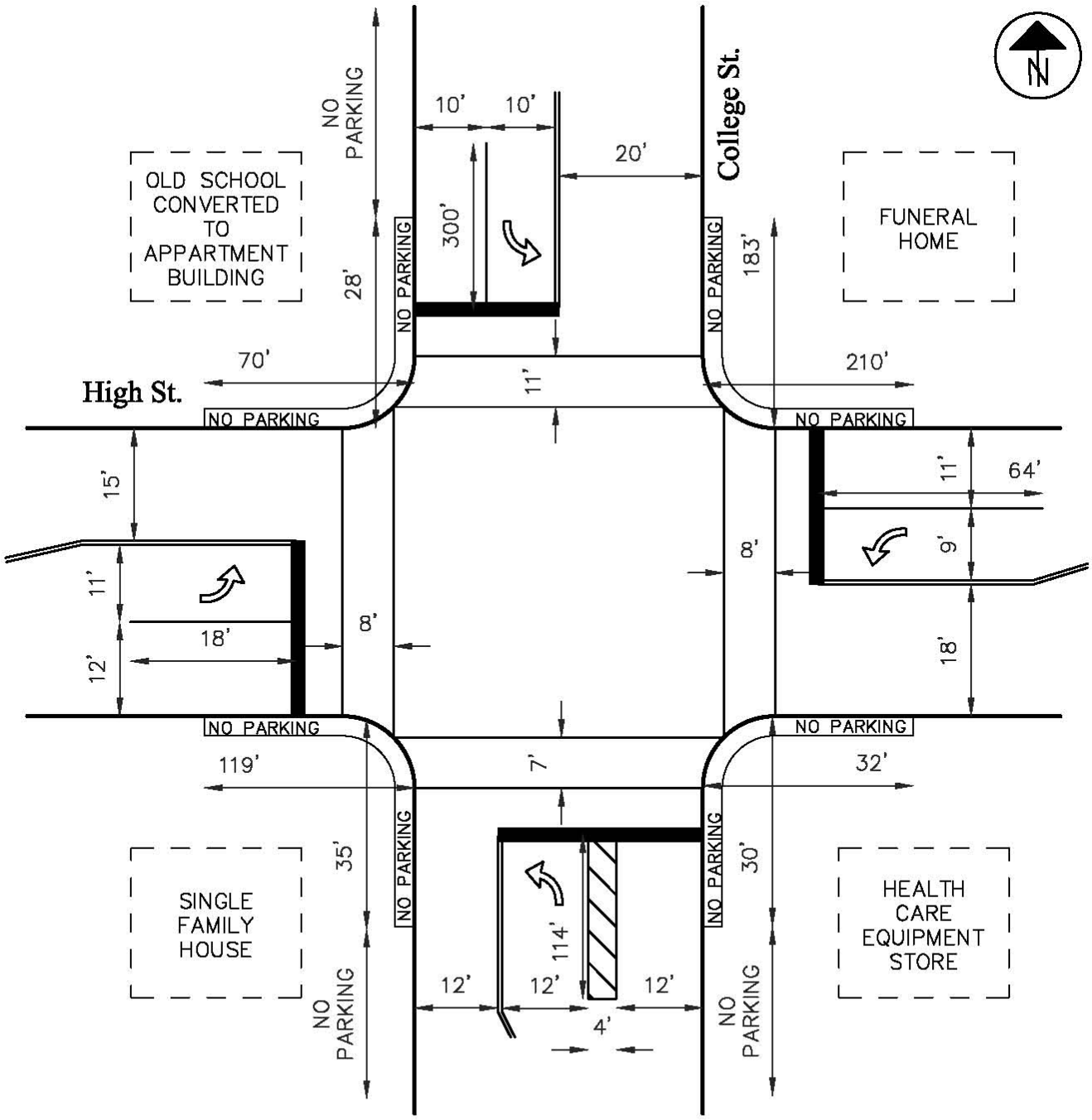
Crash History

- 7 reported crashes from 2005-2008
- Primarily rear-end type crashes

Recommendations

- Convert signal to actuated operation
- Coordinate College St. signals from Covington to High

INTERSECTION DIAGRAM



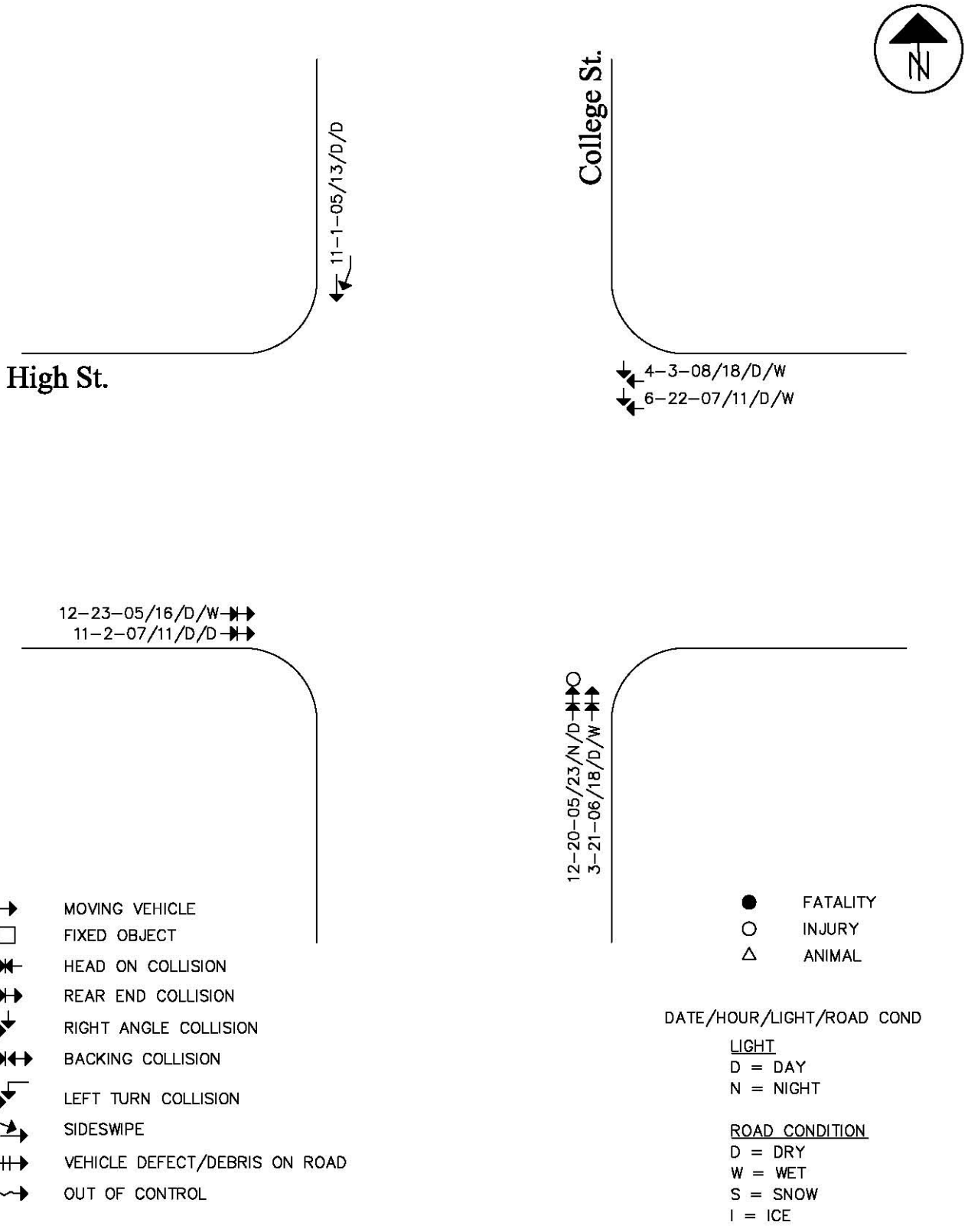
PRETIMED 4 PHASE SIGNAL

70 SEC CYCLE

35 SEC N/S SPLIT - 11 SEC LEFT (perm/protected)

35 SEC E/W SPLIT - 11 SEC LEFT (perm/protected)

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: College Street at High Street

Date of Counts: Thursday 8/13/2008

	SB College St				WB High St				NB College St				EB High 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	15	0	0	0	4	0	0	2	13	3	0	2	13	0	1			
7:15 to 7:30 am	1	20	2	0	1	2	0	1	4	14	3	0	2	7	3	0			
7:30 to 7:45 am	2	23	3	1	3	7	2	0	5	21	3	1	9	30	9	1			
7:45 to 8:00 am	4	36	2	0	4	9	0	0	4	11	8	0	6	21	3	0			
Total	9	94	7	1	8	22	2	1	15	59	17	1	19	71	15	2	201	32	105
8:00 to 8:15 am	4	34	4	0	6	10	1	0	6	20	2	0	1	17	2	1			
8:15 to 8:30 am	4	20	2	0	3	5	1	0	8	14	2	0	2	11	7	0			
8:30 to 8:45 am	1	30	1	1	7	6	1	0	8	16	5	0	2	17	4	0			
8:45 to 9:00 am	1	20	3	0	7	13	1	0	11	19	5	0	2	11	3	0			
Total	10	104	10	1	23	34	4	0	33	69	14	0	7	56	16	1	240	61	79
4:00 to 4:15 pm	6	52	8	1	13	16	4	2	16	48	10	1	11	23	8	0			
4:15 to 4:30 pm	5	42	2	0	11	12	5	1	21	42	12	0	4	22	7	0			
4:30 to 4:45 pm	5	42	4	0	13	12	4	1	23	42	7	0	7	28	14	2			
4:45 to 5:00 pm	2	39	1	0	20	20	4	0	19	41	11	0	3	30	6	0			
Total	18	175	15	1	57	60	17	4	79	173	40	1	25	103	35	2	500	134	163
5:00 to 5:15 pm	2	42	6	0	13	15	5	0	23	51	10	0	10	19	7	0			
5:15 to 5:30 pm	10	38	11	1	15	23	9	1	18	43	5	1	3	18	7	1			
5:30 to 5:45 pm	7	44	4	3	14	14	10	1	13	34	9	2	8	26	2	2			
5:45 to 6:00 pm	8	48	3	3	19	15	3	0	21	34	15	0	10	29	8	0			
Total	27	172	24	7	61	67	27	2	75	162	39	3	31	92	24	3	499	155	147
Grand Total	64	545	56	10	149	183	50	7	202	463	110	5	82	322	90	8			

SHORT REPORT

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*College at High*
Agency or Co.	*Kleingers & Associates*	Area Type	*All other areas*
Date Performed	*11/13/2008*	Jurisdiction	*City of Piqua*
Time Period	*PM Peak (Existing)*	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)	*31*	*92*	*24*	*61*	*67*	*27*	*75*	*162*	*39*	*27*	*172*	*24*
% Heavy Vehicles	*2*	*0*	*1*	*1*	*0*	*0*	*3*	*1*	*0*	*0*	*0*	*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	*3*	*0*	*0*	*2*	*0*	*0*	*3*	*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*			*3.2*			*3.2*	

Phasing	Excl. Left	EW Perm	03	04	Excl. Left	NS Perm	07	08
Timing	G = *8.0*	G = *15.0*	G =	G =	G = *8.0*	G = *15.0*	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y = *6*	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	*34*	*129*		*68*	*104*		*83*	*223*		*30*	*218*	
Lane Group Capacity	*526*	*394*		*508*	*390*		*420*	*392*		*428*	*400*	
v/c Ratio	*0.06*	*0.33*		*0.13*	*0.27*		*0.20*	*0.57*		*0.07*	*0.55*	
Green Ratio	*0.41*	*0.21*		*0.41*	*0.21*		*0.41*	*0.21*		*0.41*	*0.21*	
Uniform Delay d_1	*12.3*	*23.2*		*12.6*	*22.9*		*13.0*	*24.6*		*12.7*	*24.5*	
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*	*2.2*		*0.5*	*1.7*		*1.1*	*5.9*		*0.3*	*5.3*	
PF Factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control Delay	*12.6*	*25.4*		*13.2*	*24.6*		*14.1*	*30.5*		*13.0*	*29.7*	
Lane Group LOS	*B*	*C*		*B*	*C*		*B*	*C*		*B*	*C*	
Approach Delay	*22.8*			*20.1*			*26.0*			*27.7*		
Approach LOS	*C*			*C*			*C*			*C*		
Intersection Delay	*24.7*			Intersection LOS						*C*		

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Generated: 11/14/2008 9:08 AM

College Street & Water Street

Aerial Photo:

Photo: Looking South

Existing Conditions Discussion

The intersection of College Street with Water Street has four approaches intersecting at a 90-degree angle and is currently signal controlled. The eastbound and westbound approaches of Water Street are single lane approaches. The northbound approach of College Street has three lanes - one left-turn only lane, one through only lane, and one right-turn only lane. The southbound approach of College Street has two lanes - one left turn only lane and one through-right shared lane. The south and east legs of this intersection are designated as US Route 36. 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. The traffic signals along College Street between Water Street and North Street are currently time-base coordinated. The primary concern at this intersection is with the timing and/or operation of the existing traffic signal and whether the signal should be coordinated with adjacent traffic signals.

Public Comments

- No specific comments were discussed regarding this intersection.

Analyses Results

- The existing signalized intersection was analyzed for capacity. According to the results, the intersection currently operates at an acceptable level of service.
- Capacity was also checked with the addition of a westbound left-turn phase and a concurrent northbound right turn phase. Overall delay and level of service is improved compared to the existing phasing.
- Nine reported crashes at the intersection from Jan. 2005 to June 2008

Recommendations

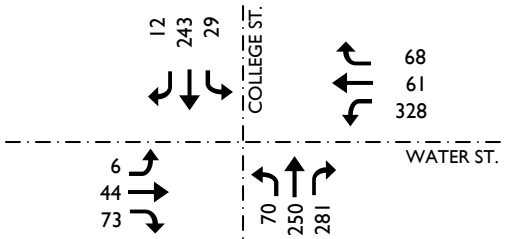
It is recommended that the operation of this signal be converted from pretimed to actuated and that a westbound left-turn phase and a concurrent northbound right turn phase be added. These additional phases will better serve the traffic patterns for vehicles following US Route 36. Also, the ability to serve only those phases that have vehicular demand and to adjust the amount of green time based on the demand will reduce unnecessary delays at the intersection. It is also recommended that the traffic signals along College Street from Covington Avenue to High Street be designed as a coordinated system. Finally, an electronically activated "No Turn on Red" is suggested for the eastbound approach to be activated when the westbound approach has a protected left-turn.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- US 36 carried by south and east legs
- Coordinated signals along College

Counted Traffic Volumes (peak hour)



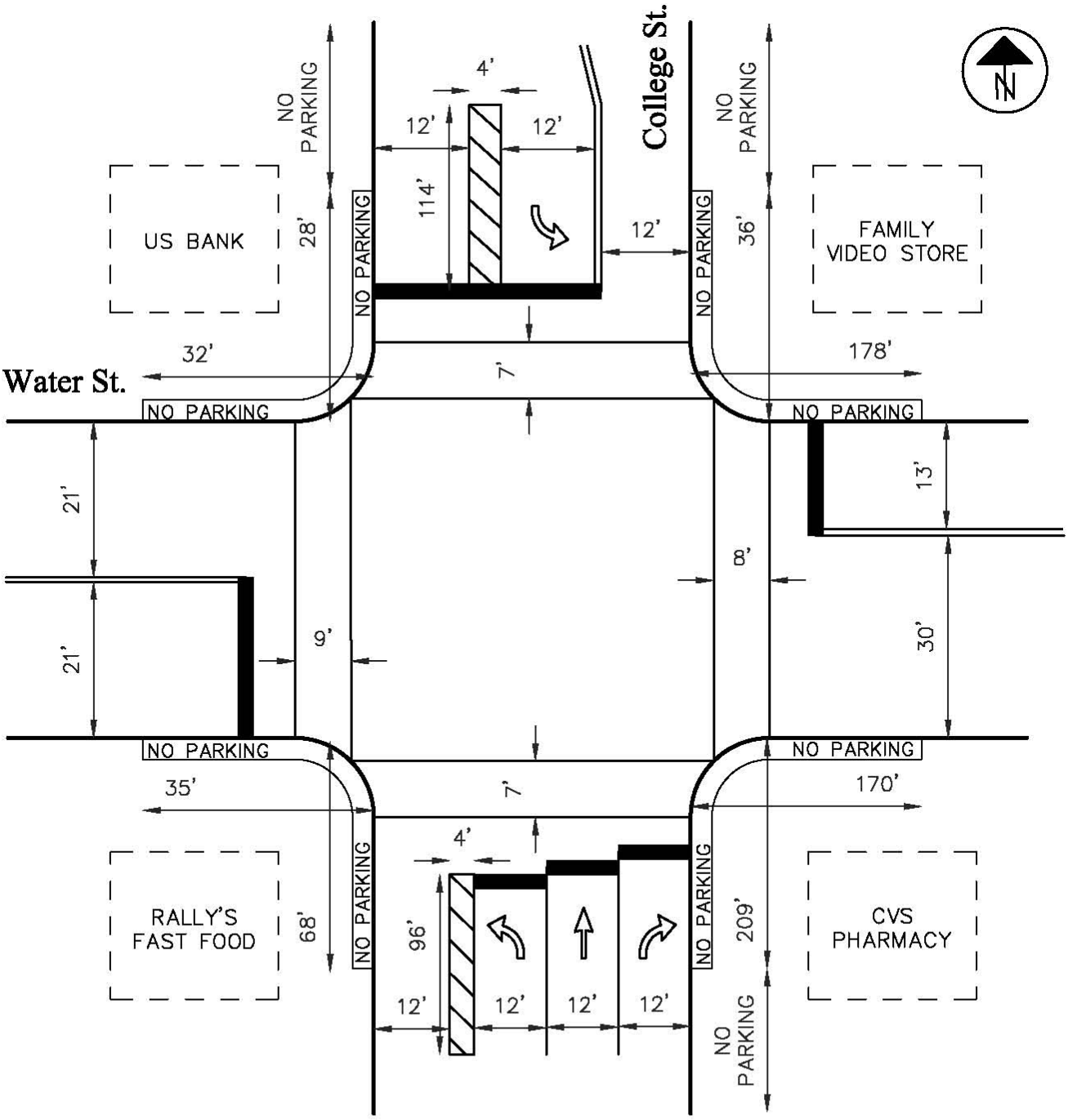
Crash History

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

Recommendations

- Convert signal to actuated operation
- Add westbound left-turn signal and northbound right-turn signal
- Coordinate College St. signals from Covington to High

INTERSECTION DIAGRAM



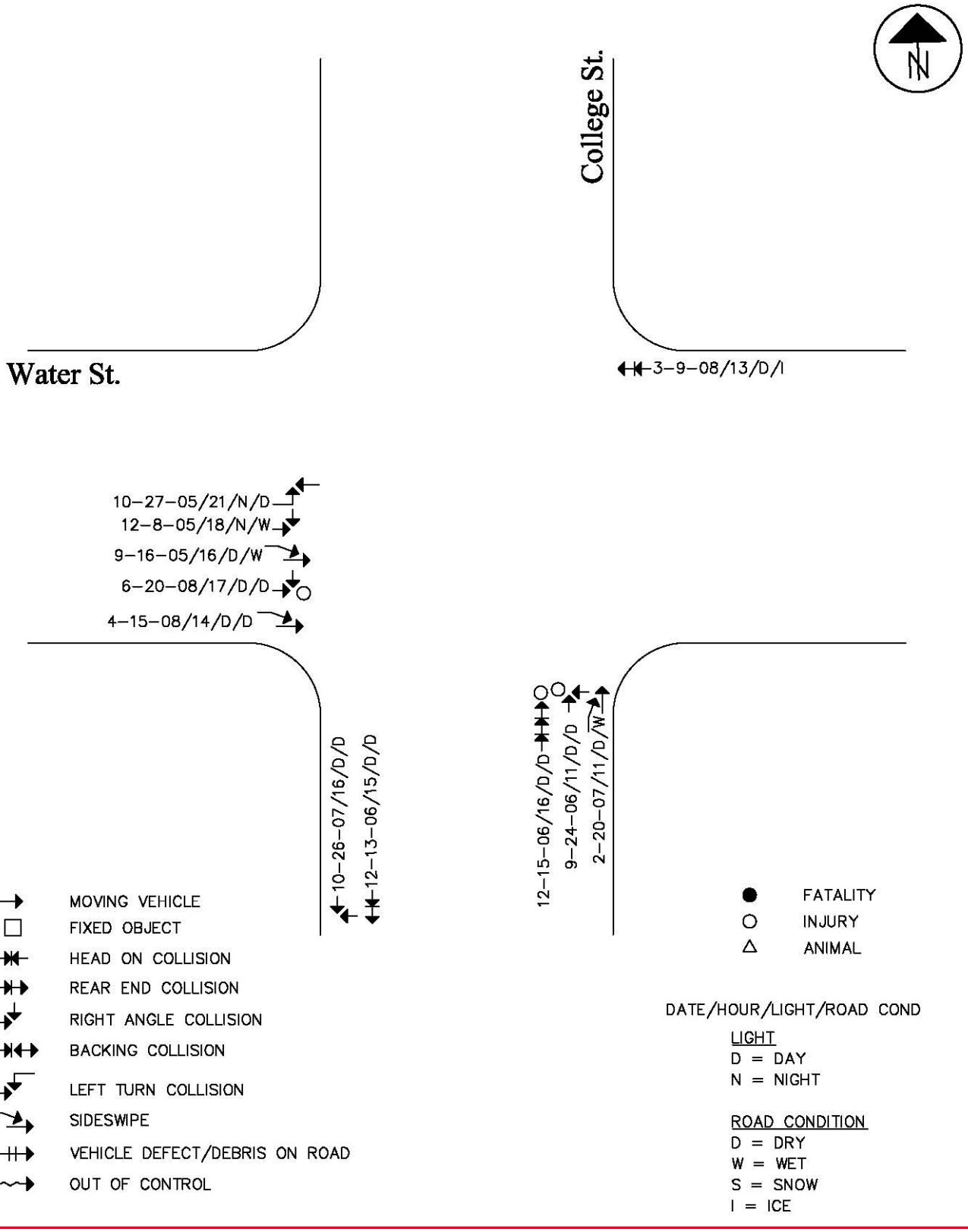
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

30 SEC N/S SPLIT

40 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: College Street at Water Street

Date of Counts: Thursday 8/13/2008

	SB College St				WB Water St				NB College St				EB Water 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	5	12	1	0	36	3	2	0	4	18	41	0	0	11	13	0			
7:15 to 7:30 am	1	25	0	1	30	4	4	0	5	20	54	0	0	16	19	0			
7:30 to 7:45 am	8	24	2	0	41	2	4	0	4	28	59	1	0	19	21	0			
7:45 to 8:00 am	8	32	1	0	47	4	1	0	5	19	64	0	0	22	24	0			
Total	22	93	4	1	154	13	11	0	18	85	218	1	0	68	77	0	440	178	145
8:00 to 8:15 am	11	29	0	0	32	5	6	0	4	23	54	0	0	10	13	1			
8:15 to 8:30 am	4	25	0	2	35	4	4	1	3	17	61	0	0	12	14	0			
8:30 to 8:45 am	3	41	0	2	36	15	6	0	4	27	69	0	0	9	18	0			
8:45 to 9:00 am	8	24	0	1	37	10	6	1	6	30	49	1	0	13	12	0			
Total	26	119	0	5	140	34	22	2	17	97	233	1	0	44	57	1	492	196	101
4:00 to 4:15 pm	8	64	5	4	85	9	11	0	16	70	60	3	1	12	16	1			
4:15 to 4:30 pm	5	60	6	1	75	16	17	0	17	64	79	0	2	8	16	0			
4:30 to 4:45 pm	4	65	0	0	79	27	20	1	20	61	87	2	3	13	27	0			
4:45 to 5:00 pm	12	54	1	0	89	9	20	0	17	55	55	1	0	11	14	0			
Total	29	243	12	5	328	61	68	1	70	250	281	6	6	44	73	1	885	457	123
5:00 to 5:15 pm	4	56	0	0	88	17	20	0	15	60	62	9	1	19	27	3			
5:15 to 5:30 pm	4	52	6	3	85	13	11	1	18	60	56	3	1	9	29	3			
5:30 to 5:45 pm	4	56	2	1	68	12	13	1	19	56	60	0	0	15	20	0			
5:45 to 6:00 pm	6	66	4	0	82	18	14	0	19	61	63	3	2	10	27	0			
Total	18	230	12	4	323	60	58	2	71	237	241	15	4	53	103	6	809	441	160
Grand Total	95	685	28	15	945	168	159	5	176	669	973	23	10	209	310	8			

SHORT REPORT

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*College at Water*
Agency or Co.	*Kleingers & Associates*	Area Type	*All other areas*
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	*0*	*1*	*0*	*0*	*1*	*0*	*1*	*1*	*1*	*1*	*1*	*0*
Lane Group		*LTR*			*LTR*		*L*	*T*	*R*	*L*	*TR*	
Volume (vph)	*6*	*44*	*73*	*328*	*61*	*68*	*70*	*250*	*281*	*29*	*243*	*12*
% Heavy Vehicles	*0*	*1*	*2*	*8*	*1*	*3*	*2*	*2*	*7*	*2*	*1*	*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*	
Extension of Effective Green		*2.0*			*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival Type		*3*			*3*		*3*	*3*	*3*	*3*	*3*	
Unit Extension		*3.0*			*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*1*	*0*	*0*	*1*	*0*	*0*	*6*	*0*	*0*	*5*	*0*	*0*
Lane Width		*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*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*			*3.2*	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = *34.0*	G =	G =	G =	G = *24.0*	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		*137*			*508*		*78*	*278*	*312*	*32*	*283*	
Lane Group Capacity		*816*			*597*		*334*	*639*	*517*	*338*	*641*	
v/c Ratio		*0.17*			*0.85*		*0.23*	*0.44*	*0.60*	*0.09*	*0.44*	
Green Ratio		*0.49*			*0.49*		*0.34*	*0.34*	*0.34*	*0.34*	*0.34*	
Uniform Delay d_1		*10.1*			*15.8*		*16.4*	*17.8*	*19.1*	*15.6*	*17.8*	
Delay Factor k		*0.50*			*0.50*		*0.50*	*0.50*	*0.50*	*0.50*	*0.50*	
Incremental Delay d_2		*0.4*			*14.2*		*1.6*	*2.2*	*5.2*	*0.6*	*2.2*	
PF Factor		*1.000*			*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control Delay		*10.5*			*30.0*		*18.1*	*19.9*	*24.2*	*16.2*	*20.0*	
Lane Group LOS		*B*			*C*		*B*	*B*	*C*	*B*	*C*	
Approach Delay	*10.5*			*30.0*			*21.7*			*19.6*		
Approach LOS	*B*			*C*			*C*			*B*		
Intersection Delay	*22.9*			Intersection LOS			*C*					

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SHORT REPORT

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*College at Water*
Agency or Co.	*Kleingers & Associates*	Area Type	*All other areas*
Date Performed	*11/13/2008*	Jurisdiction	*City of Piqua*
Time Period	*PM Peak (Leading Left)*	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*	*1*	*1*	*1*	*0*
Lane Group		*LTR*			*LTR*		*L*	*T*	*R*	*L*	*TR*	
Volume (vph)	*6*	*44*	*73*	*328*	*61*	*68*	*70*	*250*	*281*	*29*	*243*	*12*
% Heavy Vehicles	*0*	*1*	*2*	*8*	*1*	*3*	*2*	*2*	*7*	*2*	*1*	*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)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup Lost Time		*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*	
Arrival Type		*3*			*3*		*3*	*3*	*3*	*3*	*3*	
Unit Extension		*3.0*			*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*1*	*0*	*0*	*1*	*0*	*0*	*6*	*0*	*0*	*5*	*0*	*0*
Lane Width		*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*	
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*			*3.2*	

Phasing	WB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = *12.0*	G = *19.0*	G =	G =	G = *21.0*	G =	G =	G =
	Y = *6*	Y = *6*	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		*137*			*508*		*78*	*278*	*312*	*32*	*283*	
Lane Group Capacity		*452*			*666*		*278*	*559*	*841*	*283*	*561*	
v/c Ratio		*0.30*			*0.76*		*0.28*	*0.50*	*0.37*	*0.11*	*0.50*	
Green Ratio		*0.27*			*0.53*		*0.30*	*0.30*	*0.56*	*0.30*	*0.30*	
Uniform Delay d_1		*20.2*			*13.0*		*18.7*	*20.2*	*8.7*	*17.8*	*20.2*	
Delay Factor k		*0.11*			*0.31*		*0.11*	*0.11*	*0.11*	*0.11*	*0.11*	
Incremental Delay d_2		*0.4*			*5.2*		*0.6*	*0.7*	*0.3*	*0.2*	*0.7*	
PF Factor		*1.000*			*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control Delay		*20.6*			*18.3*		*19.3*	*20.9*	*8.9*	*17.9*	*20.9*	
Lane Group LOS		*C*			*B*		*B*	*C*	*A*	*B*	*C*	
Approach Delay	*20.6*			*18.3*			*15.1*			*20.6*		
Approach LOS	*C*			*B*			*B*			*C*		
Intersection Delay	*17.6*			Intersection LOS			*B*					

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