The SR 185 Corridor

Intersection of Park Avenue and College Street/Nicklin Avenue

Intersection of Park Avenue and Broadway Street

Intersection of Broadway Street and North Street

Intersection of Ash Street and Broadway Street

Intersection of Ash Street and Downing Street

Intersection of Ash Street and Main Street

Park Ave at College Street & Nicklin Ave

Aerial Photo:

Existing Conditions Discussion

The intersection of Park Avenue with College Street and Nicklin Avenue is a combination of two signalized "tee" type intersections controlled by one traffic signal controller. Nicklin Avenue is the north leg of the intersection and is located approximately 190 feet east of College Street, which is the south leg of the intersection. Each approach has a single lane. The actuated signal has a 70-second cycle length and has left turn signals on the westbound approach of Park Avenue at College Street and on the eastbound approach of Park Avenue at Nicklin Avenue. Parking restrictions vary near the intersection and are provided in detail on the existing conditions diagram. The Nicklin Learning Center is located just north of this 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 location between a school and a residential area and likely provided for school traffic capacity and pedestrian crossings.

Photo: Looking West

Public Comments

- "There has been pressure from parents to keep the traffic signal due to students walking to school."
- "School pedestrian traffic is no longer an issue."
- "Traffic signal should stay in place due to the Nicklin Learning Center unless pedestrian volumes are low."
- "There is confusion with the signal operation. It is difficult to determine if the opposing traffic has the green light."
- "The intersection worked well as a four-way stop when the traffic signal was temporarily out of service."
- "There was a hospital near this intersection that has since closed."

Analyses Results

- Traffic signal warrants are not met
- Three reported crashes at the intersection from Jan. 2005 to June 2008

Recommendations

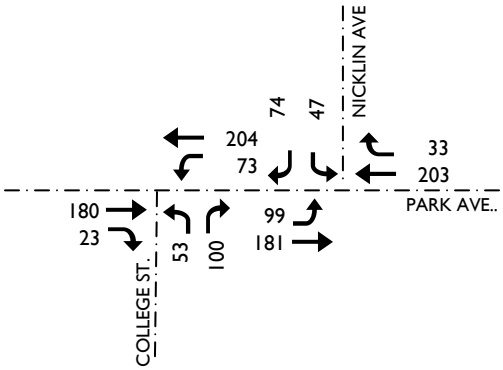
Due to the proximity of this intersection to the Nicklin Learning Center, the number of pedestrians observed during school times, and the unusual intersection configuration, it is recommended that this traffic signal be retained.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signals
- Offset "tee" type intersections
- Nicklin Learning Center located just north of this intersection

Counted Traffic Volumes (peak hour)



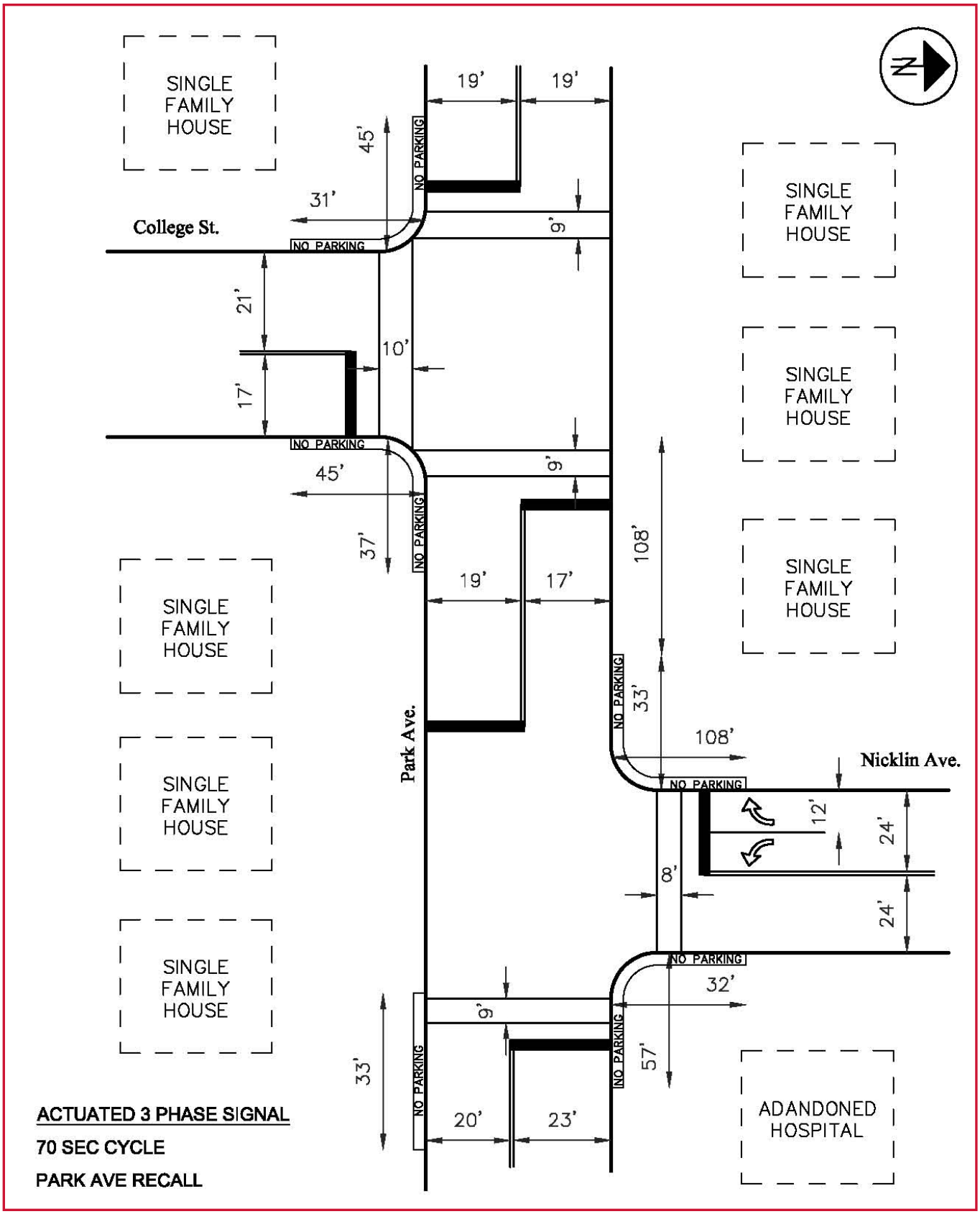
Crash History

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

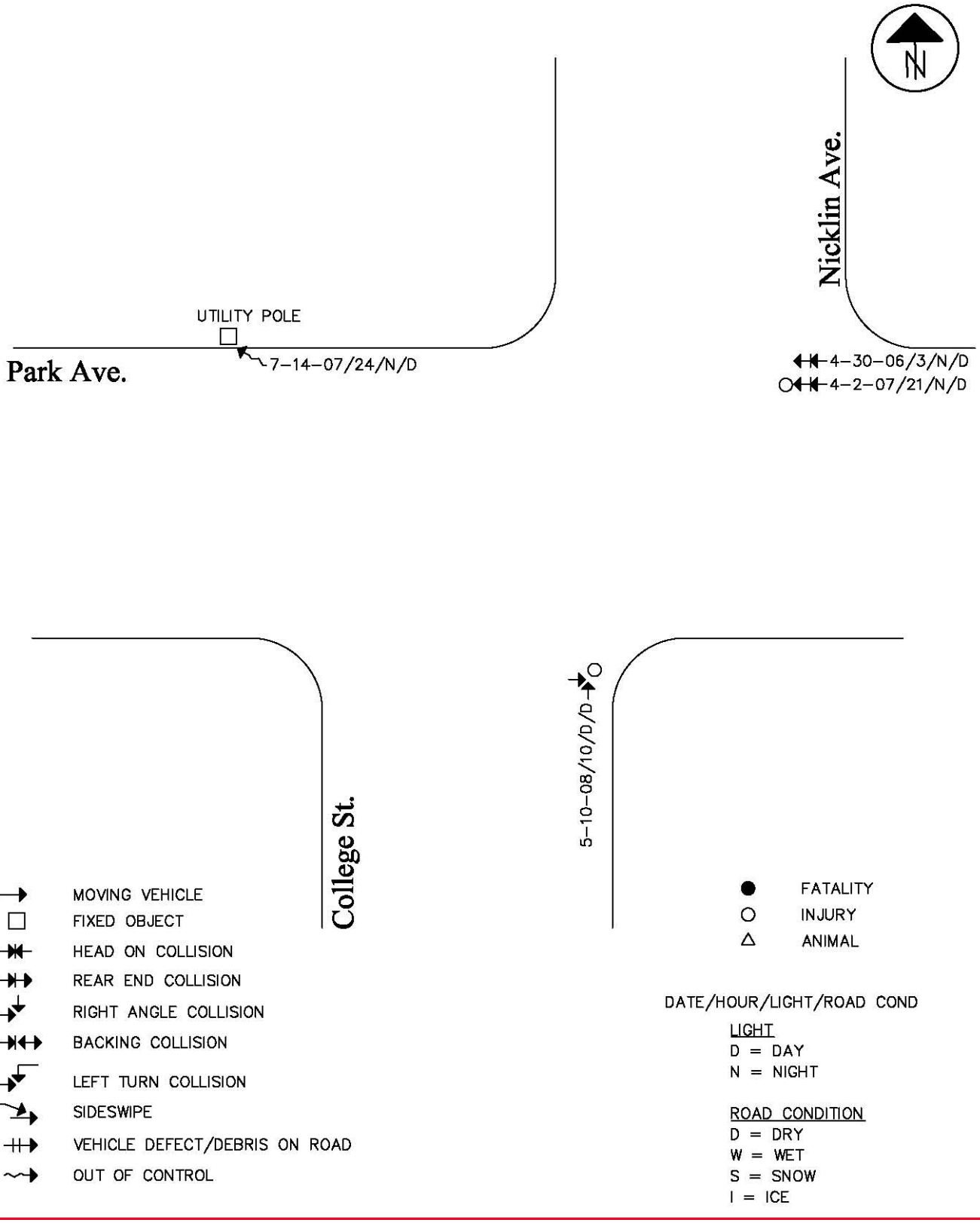
Recommendation

- Retain traffic signal

INTERSECTION DIAGRAM



CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: Park Avenue at College Street and Nicklin Avenue

Date of Counts: Thursday 10/9/2008

	SB Nicklin Ave				WB Park Ave				NB College St				EB Park Ave				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	6	3	5	0	2	23	0	0	3	5	3	2	1	69	3	0			
7:15 to 7:30 am	2	6	2	1	0	17	2	0	5	4	2	0	1	55	6	1			
7:30 to 7:45 am	3	6	1	0	3	34	9	0	3	7	1	0	3	49	7	1			
7:45 to 8:00 am	9	7	3	2	2	19	9	0	2	7	5	3	9	48	7	0			
Total	20	22	11	3	7	93	20	0	13	23	11	5	14	221	23	2	378	53	47
8:00 to 8:15 am	6	10	1	2	1	21	7	3	7	11	2	3	4	37	8	0			
8:15 to 8:30 am	13	17	3	5	0	14	9	0	6	22	0	0	10	36	5	0			
8:30 to 8:45 am	12	6	2	0	2	18	10	0	7	17	6	0	21	31	8	0			
8:45 to 9:00 am	9	5	3	0	0	13	9	0	2	6	2	0	8	31	7	0			
Total	40	38	9	7	3	66	35	3	22	56	10	3	43	135	28	0	310	87	88
2:00 to 2:15 pm	5	6	3	0	5	29	2	0	3	5	3	0	3	23	3	0			
2:15 to 2:30 pm	5	7	2	0	5	33	6	0	9	8	4	2	4	33	8	0			
2:30 to 2:45 pm	7	4	3	0	2	25	3	1	6	7	2	1	4	31	7	0			
2:45 to 3:00 pm	3	11	4	2	7	49	2	0	9	17	5	4	6	27	3	0			
Total	20	28	12	2	19	136	13	1	27	37	14	7	17	114	21	0	320	60	78
3:00 to 3:15 pm	10	8	7	1	2	49	8	0	9	20	11	1	10	29	9	0			
3:15 to 3:30 pm	12	22	3	3	6	41	9	1	19	14	8	12	9	38	5	0			
3:30 to 3:45 pm	11	14	9	0	8	32	7	0	9	11	7	5	4	34	5	1			
3:45 to 4:00 pm	14	6	5	0	7	58	9	1	16	21	8	6	10	46	4	0			
Total	47	50	24	4	23	180	33	2	53	66	34	24	33	147	23	1	439	121	153
4:00 to 4:15 pm	19	9	5	0	5	43	6	0	8	8	5	6	5	40	7	0			
4:15 to 4:30 pm	6	5	5	0	6	54	7	0	9	10	9	3	3	29	4	0			
4:30 to 4:45 pm	11	15	3	1	5	34	3	0	9	8	5	0	3	35	11	1			
4:45 to 5:00 pm	7	6	3	0	6	54	3	0	14	7	6	1	1	44	9	0			
Total	43	35	16	1	22	185	19	0	40	33	25	10	12	148	31	1	417	94	98
5:00 to 5:15 pm	8	13	7	0	11	53	2	0	21	11	8	0	6	45	10	0			
5:15 to 5:30 pm	12	13	0	2	2	37	2	0	24	14	9	2	3	45	6	1			
5:30 to 5:45 pm	3	7	10	2	6	53	5	0	10	13	12	0	5	36	16	0			
5:45 to 6:00 pm	9	6	5	1	4	41	6	1	14	9	2	0	2	42	6	2			
Total	32	39	22	5	23	184	15	1	69	47	31	2	16	168	38	3	444	93	147
Grand Total	202	212	94	22	97	844	135	7	224	262	125	51	135	933	164	7			

SIGNAL WARANT ANALYSIS SUMMARY

Park Avenue / College Street & Nicklin Avenue 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	378	53	No	378	53	No	No
8 AM to 9 AM	310	88	No	310	88	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	320	78	No	320	78	No	No
3 PM to 4 PM	439	153	No	439	153	No	No
4 PM to 5 PM	417	98	No	417	98	No	No
5 PM to 6 PM	444	147	No	444	147	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). 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 not located at a critical point along a coordinated signal system.

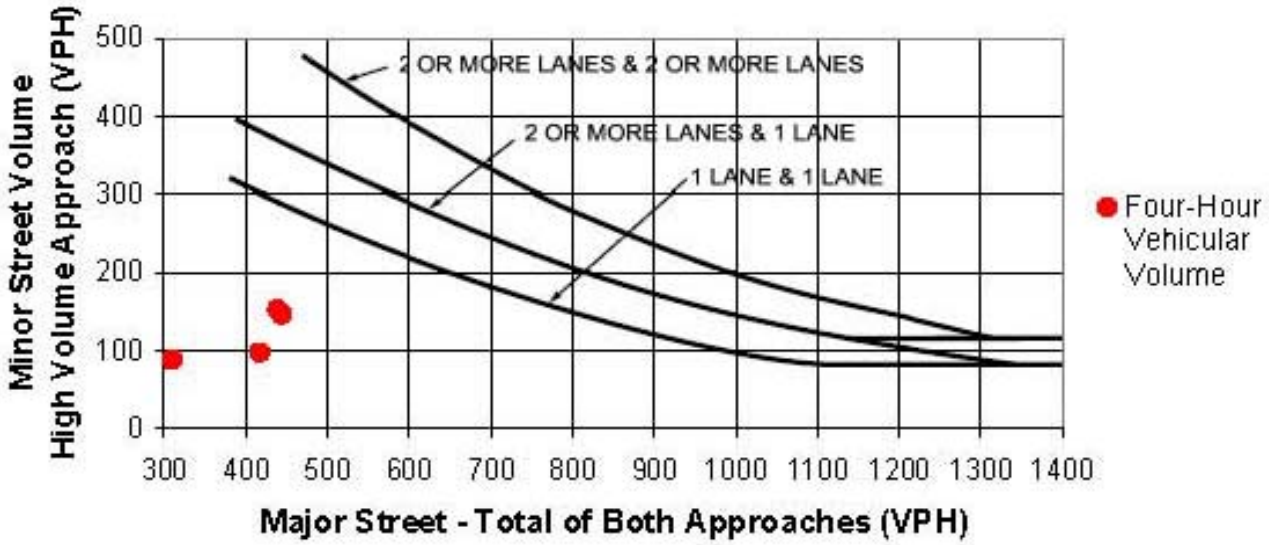
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

According to the crash data provided by the city of Piqua, one right-angle crash was 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.

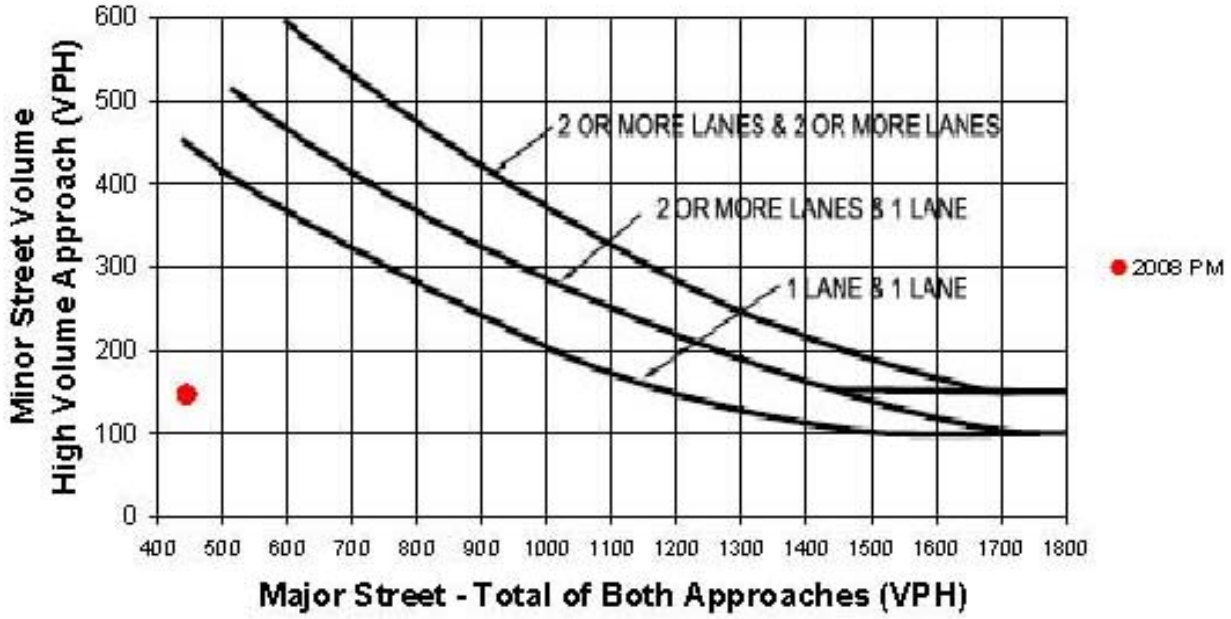
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (5-6 PM) has less than 700 total approaching trips. This is less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



Park Ave & Broadway Street

Aerial Photo:

Existing Conditions Discussion

The intersection of Park Avenue with Broadway 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. Ann Mira Das Park is located in the northeast corner of the intersection. 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 west and south legs of the intersection are designated as SR 185. 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 location on the State Route.

Photo: Looking South

Public Comments

- "There used to be a school on one corner of the intersection that is no longer there."
- "There is truck traffic on SR 185."
- "Consider re-routing SR 185 to a less residential area."
- "If SR 185 were to be re-routed, the traffic signal would not be needed at this intersection."

Analyses Results

- Traffic signal warrants are not met
- Three reported crashes at the intersection from Jan. 2005 to June 2008

Recommendations

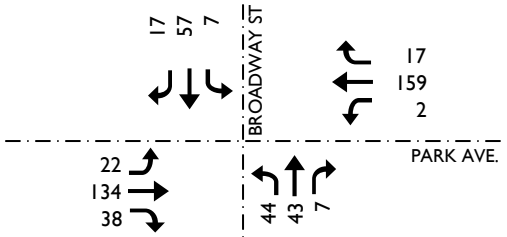
Due to the fact that SR 185 is routed through this intersection and that the existing traffic signals at the Broadway Street intersections with North Street and Ash Street are recommended to remain in operation, it is recommended that the traffic signal at this intersection remain in operation as well. Keeping this traffic signal in operation will provide consistency in the traffic control along Broadway Street. However, in order to reduce unnecessary stopping and delays, particularly for motorists on Park Avenue, it is recommended that the traffic signal be converted to actuated operation with pedestrian pushbuttons and pedestrian signal indications. The signal should rest in green on the Park Avenue phase.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- Single lane approaches
- SR 185 carried by west and south legs

Counted Traffic Volumes (peak hour)



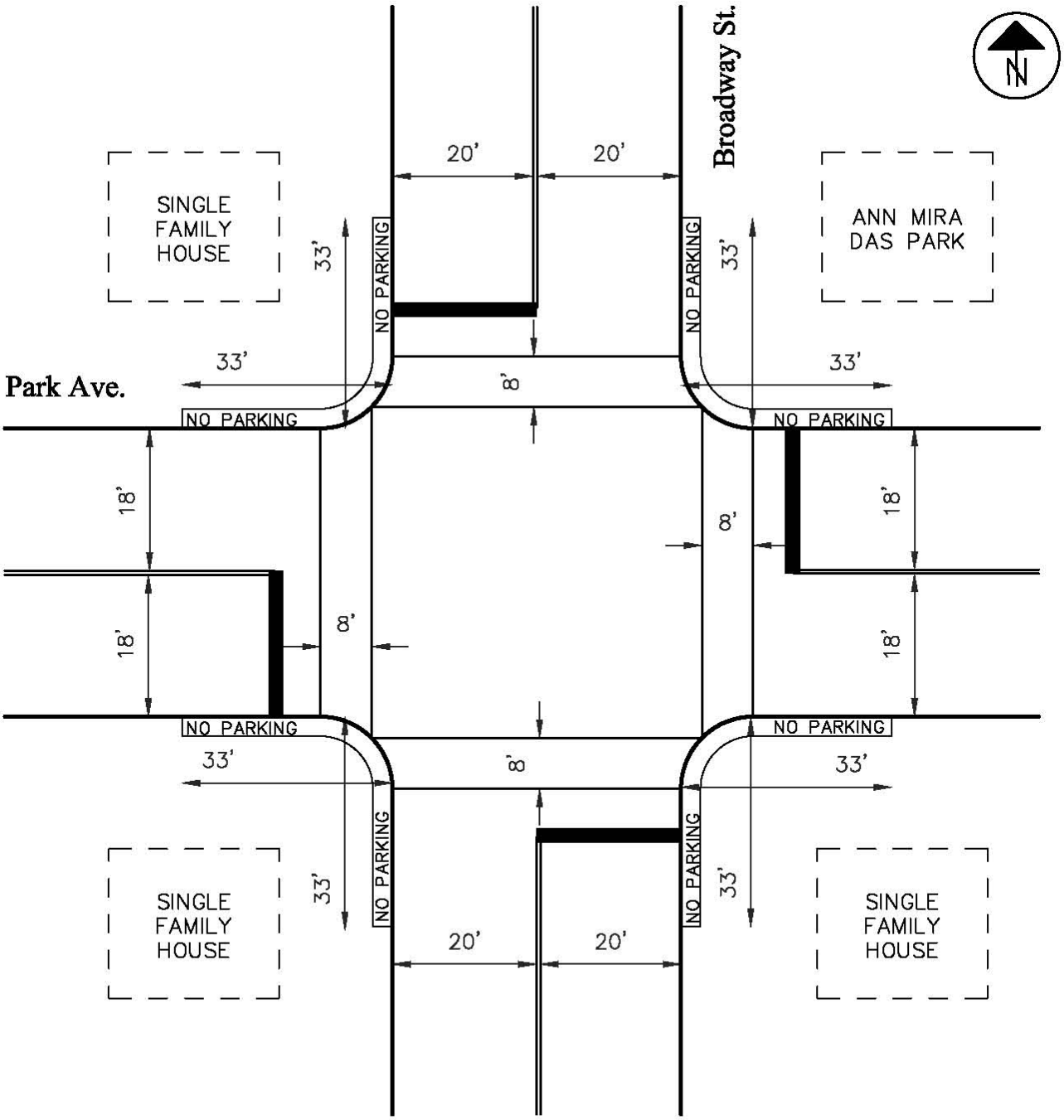
Crash History

- 3 reported crashes from 2005-2008
- Primarily angle type crashes

Recommendation

- Retain traffic signal

INTERSECTION DIAGRAM



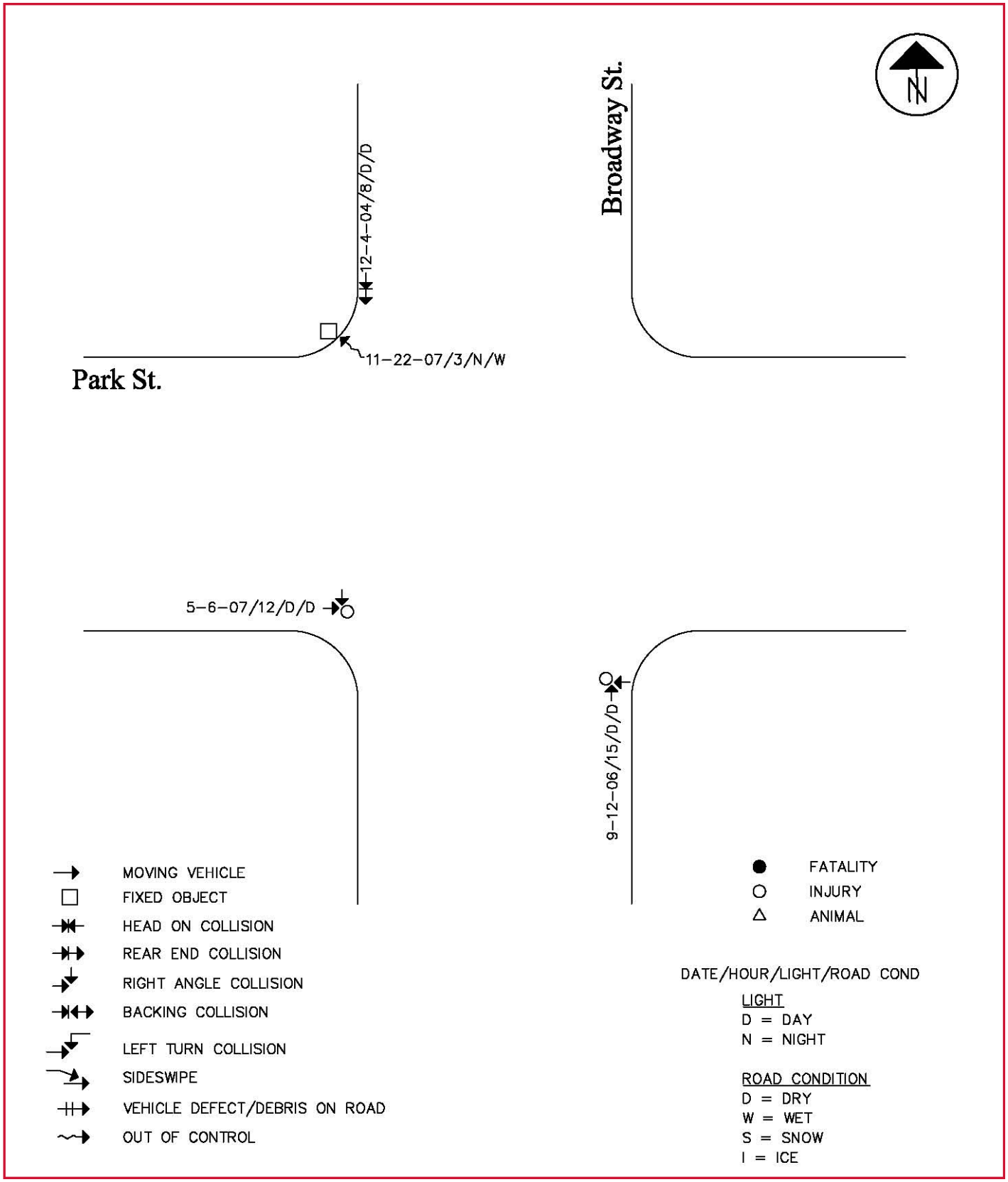
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

30 SEC N/S SPLIT

40 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: Broadway Street at Park Avenue

Date of Counts: Thursday 8/7/2008

	SB Broadway St				WB Park Ave				NB Broadway St				EB Park Ave				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	3	3	1	0	15	3	0	2	4	0	0	1	25	3	0			
7:15 to 7:30 am	0	13	1	0	0	19	2	0	3	1	0	0	0	28	3	0			
7:30 to 7:45 am	2	11	3	0	0	9	3	0	6	2	3	1	3	46	13	0			
7:45 to 8:00 am	4	14	4	0	0	27	3	0	2	7	2	0	0	48	13	0			
Total	6	41	11	1	0	70	11	0	13	14	5	1	4	147	32	0	264	58	32
8:00 to 8:15 am	1	15	0	0	1	14	3	0	3	5	0	0	2	28	9	0			
8:15 to 8:30 am	1	11	2	0	0	18	2	0	0	0	0	0	1	45	12	0			
8:30 to 8:45 am	2	6	1	0	2	15	1	0	4	3	0	0	0	23	8	0			
8:45 to 9:00 am	0	4	0	0	0	8	0	0	5	7	1	0	4	38	5	0			
Total	4	36	3	0	3	55	6	0	12	15	1	0	7	134	34	0	239	43	28
4:00 to 4:15 pm	1	6	0	2	2	35	2	0	11	2	0	0	4	50	12	0			
4:15 to 4:30 pm	1	14	2	0	0	40	2	0	7	12	2	0	3	25	11	0			
4:30 to 4:45 pm	2	13	4	0	1	38	3	0	10	15	1	0	3	40	17	0			
4:45 to 5:00 pm	3	15	3	0	1	36	2	0	5	15	1	0	4	29	9	0			
Total	7	48	9	2	4	149	9	0	33	44	4	0	14	144	49	0	369	64	81
5:00 to 5:15 pm	2	15	3	0	0	34	5	0	9	12	0	0	7	34	11	0			
5:15 to 5:30 pm	0	11	9	0	0	49	5	1	6	16	2	0	5	30	7	1			
5:30 to 5:45 pm	2	10	2	0	2	34	3	0	18	8	3	0	3	34	13	0			
5:45 to 6:00 pm	3	21	3	0	0	42	4	0	11	7	2	0	7	36	7	0			
Total	7	57	17	0	2	159	17	1	44	43	7	0	22	134	38	1	372	81	94
Grand Total	24	182	40	3	9	433	43	1	102	116	17	1	47	559	153	1			

SIGNAL WARANT ANALYSIS SUMMARY

Broadway Street /Park Avenue 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	264	58	No	264	58	No	No
8 AM to 9 AM	239	43	No	239	43	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	369	81	No	369	81	No	No
5 PM to 6 PM	372	94	No	372	94	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. 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.

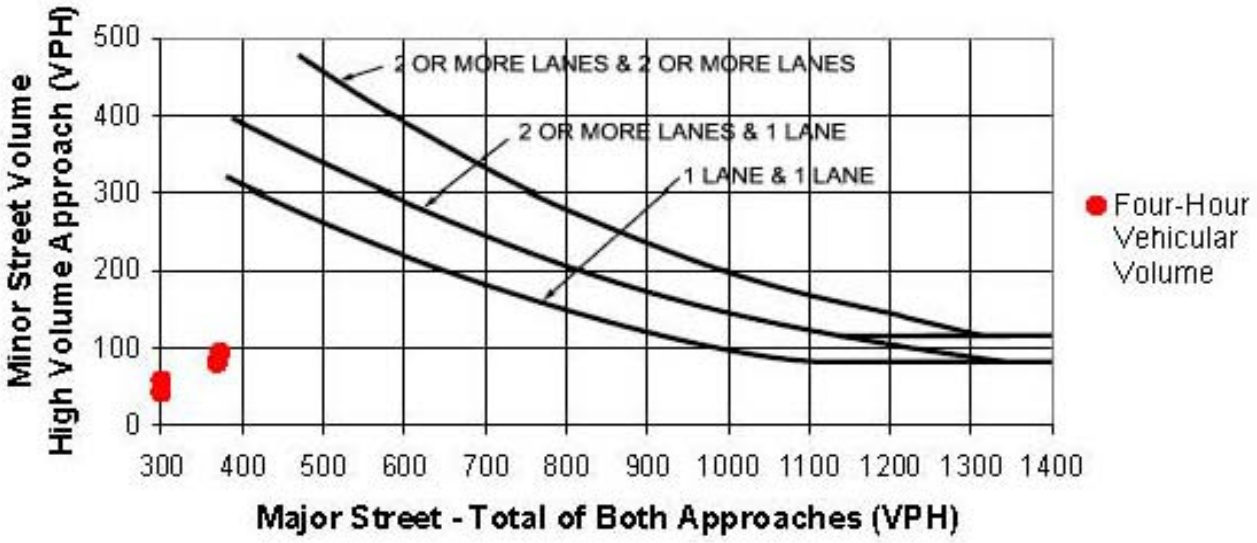
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

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 calendar year to meet the signal warrant thresholds.

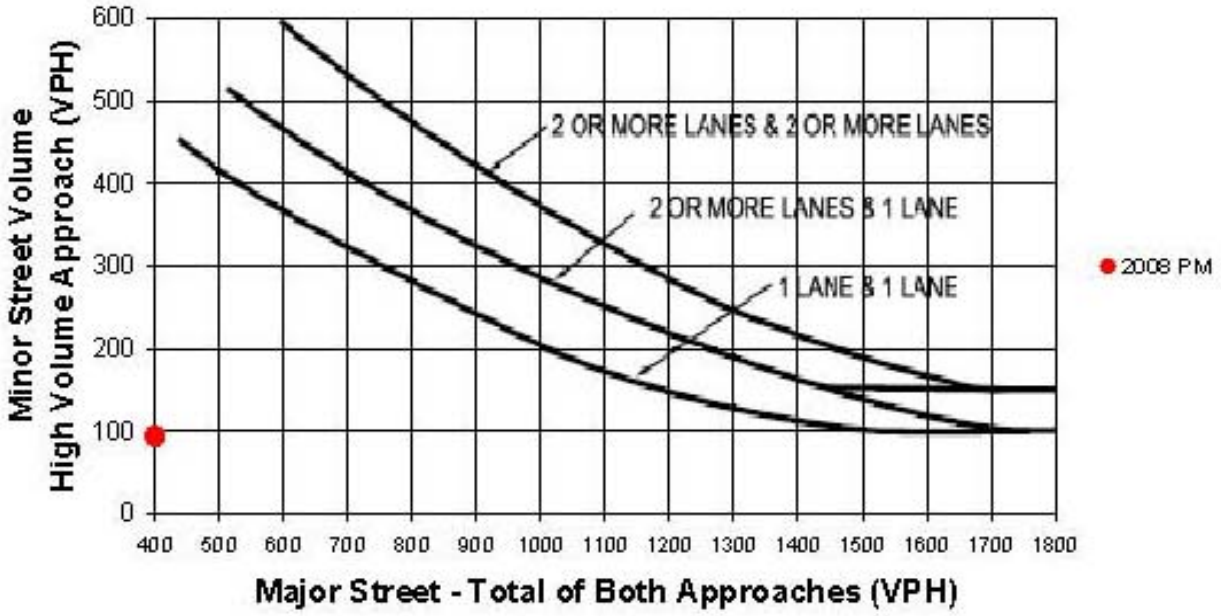
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (5-6 PM) has fewer than 550 total approaching trips. This is much less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



Broadway Street & North Street

Aerial Photo:

Existing Conditions Discussion

The intersection of Broadway 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. Broadway Street is designated as SR 185 through this intersection. Piqua Catholic School is located just west of this intersection. A number of pedestrians were observed crossing the roadway at this intersection during school arrival and dismissal periods. 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 location on the State Route.

Photo: Looking North

Public Comments

- No specific 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

Recommendations

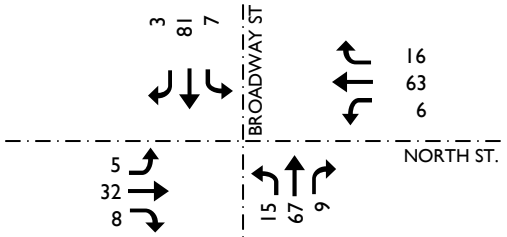
Due to the pedestrian crossings observed at this intersection during the school arrival and dismissal periods, it is recommended that the traffic signal at this intersection be retained. However, in order to reduce unnecessary stopping and delays, particularly for motorists on Broadway Street, it is recommended that the traffic signal be converted to actuated operation with pedestrian pushbuttons and pedestrian signal indications. The signal should rest in green on the Broadway Street phase.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- Single lane approaches
- Located near Piqua Catholic School

Counted Traffic Volumes (peak hour)



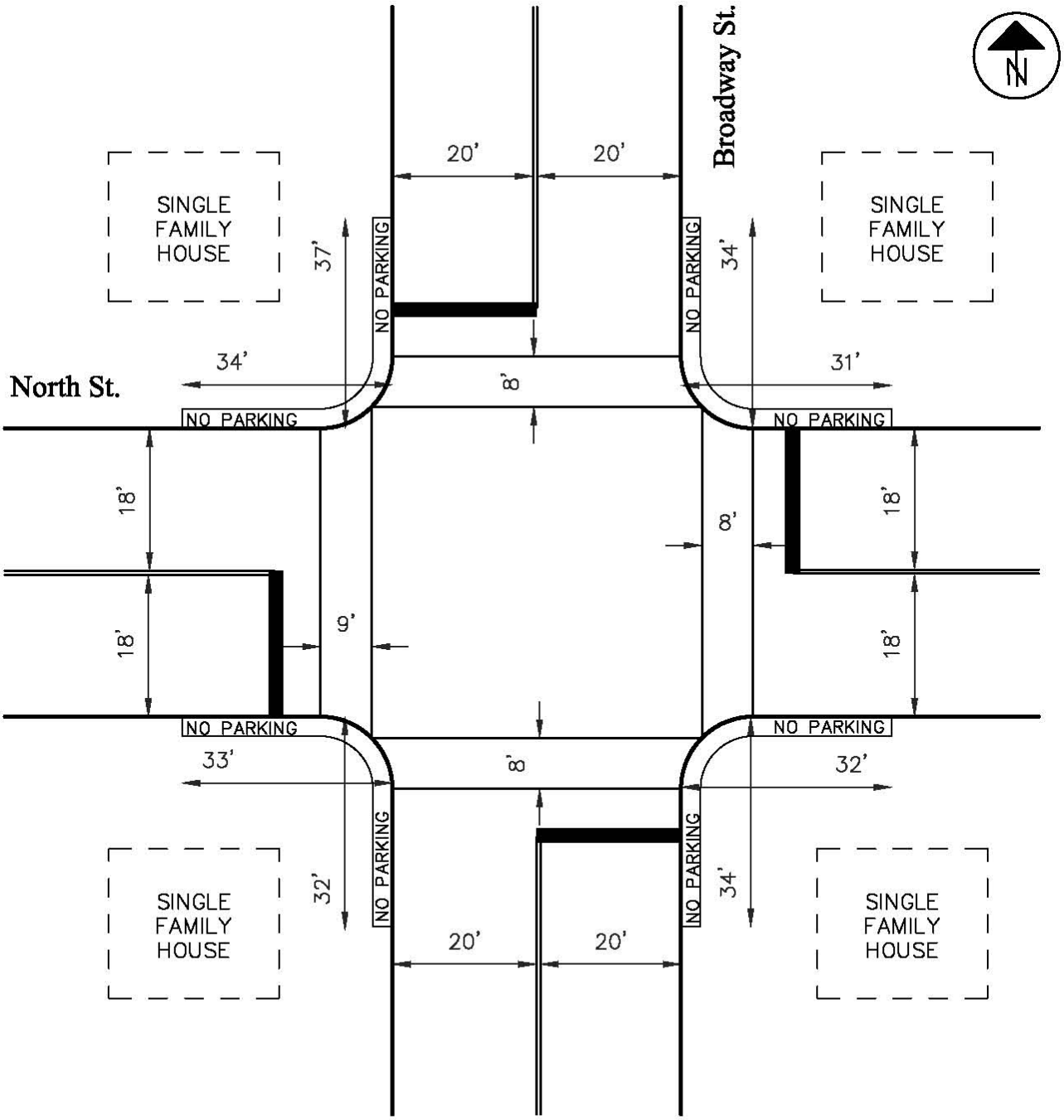
Crash History

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

Recommendation

- Retain traffic signal

INTERSECTION DIAGRAM



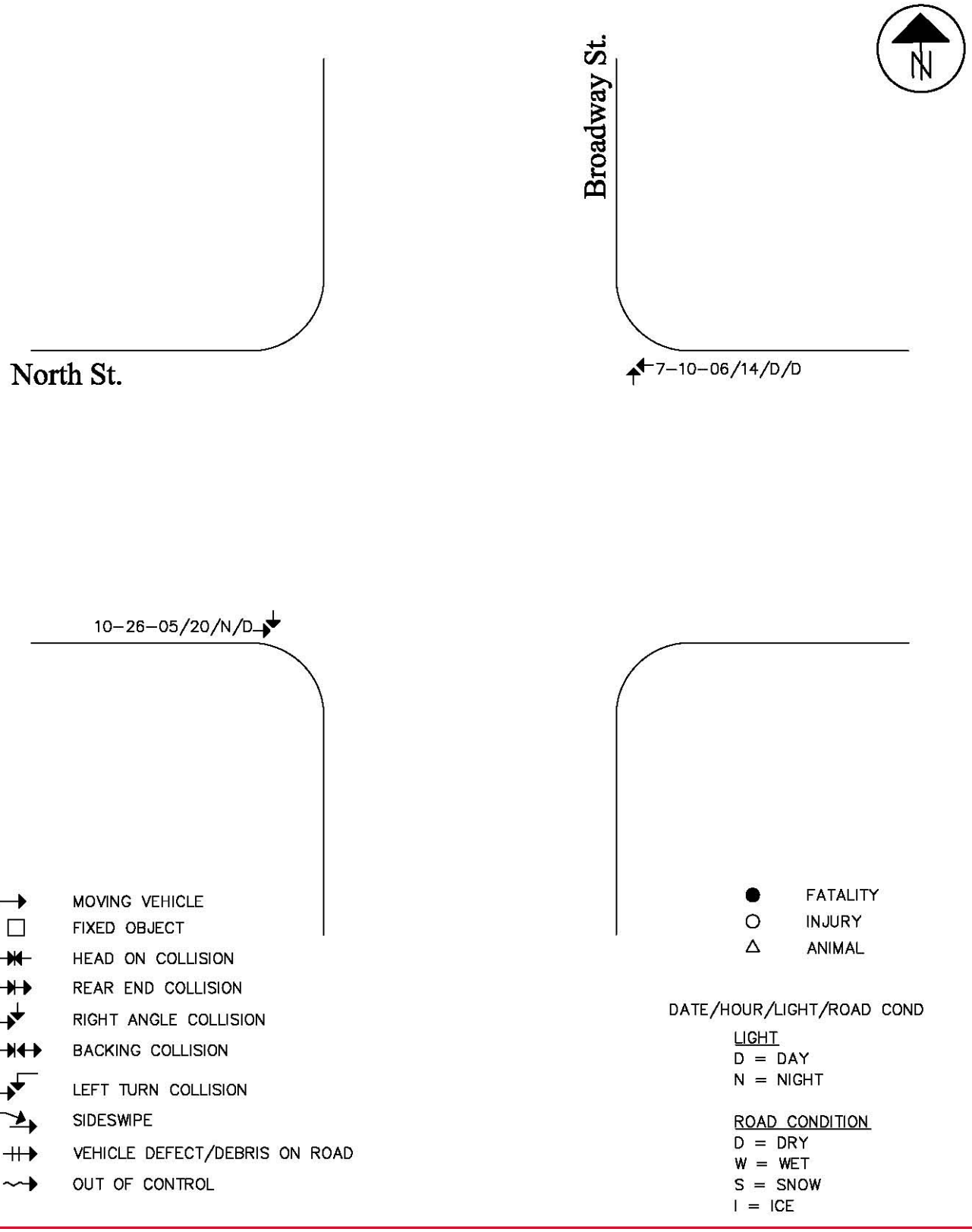
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

42 SEC N/S SPLIT

28 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: Broadway Street at North Street

Date of Counts: Thursday 10/9/2008

	SB Broadway St				WB North St				NB Broadway 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	6	18	2	2	3	7	1	1	0	1	5	1	1	7	2	1			
7:15 to 7:30 am	1	16	1	0	2	7	2	0	1	4	2	0	0	8	1	0			
7:30 to 7:45 am	2	28	2	0	2	1	4	0	1	5	1	0	0	10	1	0			
7:45 to 8:00 am	1	27	0	1	4	6	1	0	2	14	1	0	0	2	3	0			
Total	10	89	5	3	11	21	8	1	4	24	9	1	1	27	7	1	141	40	35
8:00 to 8:15 am	2	13	5	0	0	16	2	1	6	7	4	0	1	5	5	2			
8:15 to 8:30 am	2	27	3	0	0	3	2	0	4	7	2	2	0	1	4	0			
8:30 to 8:45 am	0	20	0	0	0	2	2	0	3	11	0	0	2	1	1	0			
8:45 to 9:00 am	1	19	1	0	0	1	0	0	2	7	0	0	0	2	1	0			
Total	5	79	9	0	0	22	6	1	15	32	6	2	3	9	11	2	146	28	23
2:00 to 2:15 pm	0	14	0	0	1	6	2	0	1	9	1	0	1	5	0	0			
2:15 to 2:30 pm	1	14	0	0	4	9	5	0	0	23	0	0	0	6	0	0			
2:30 to 2:45 pm	3	16	0	0	1	8	2	0	2	14	0	0	1	5	0	0			
2:45 to 3:00 pm	1	24	1	0	4	11	1	0	1	14	3	0	0	4	2	0			
Total	5	68	1	0	10	34	10	0	4	60	4	0	2	20	2	0	142	54	24
3:00 to 3:15 pm	1	16	2	0	2	13	4	0	6	21	1	2	2	7	2	4			
3:15 to 3:30 pm	3	24	1	2	2	23	3	3	4	13	2	7	2	8	2	10			
3:30 to 3:45 pm	1	20	0	1	1	11	5	1	3	14	3	0	1	9	2	1			
3:45 to 4:00 pm	2	21	0	1	1	16	4	0	2	19	3	1	0	8	2	2			
Total	7	81	3	4	6	63	16	4	15	67	9	10	5	32	8	17	182	85	45
Grand Total	27	317	18	7	27	140	40	6	38	183	28	13	11	88	28	20			

SIGNAL WARANT ANALYSIS SUMMARY

Broadway 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	141	40	No	141	40	No	No
8 AM to 9 AM	146	28	No	146	28	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	142	54	No	142	54	No	No
3 PM to 4 PM	182	85	No	182	85	No	No
4 PM to 5 PM			No			No	No
5 PM to 6 PM			No			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*

Piqua Catholic Elementary School is located near the intersection. The majority of pedestrian crossings during the traffic counts were school related; however, the total number of minor street crossings during the afternoon peak was 21 – only one more than the minimum required. Available crossing gaps were not measured, but due to the low volumes sufficient gaps are anticipated.

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

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

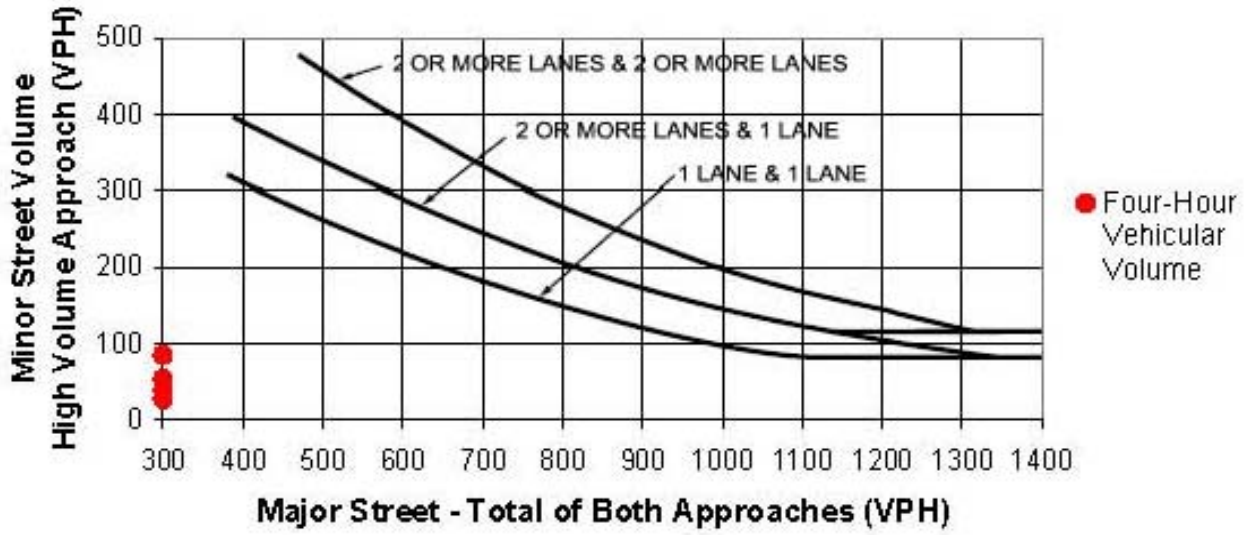
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

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 calendar year to meet the signal warrant thresholds.

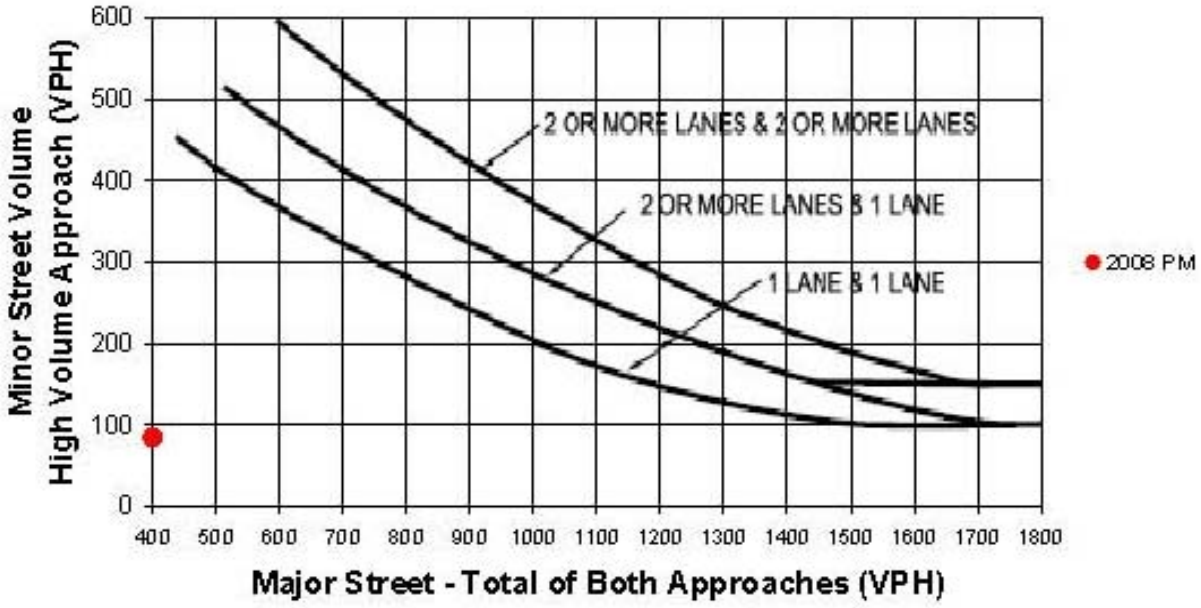
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (4-5 PM) has fewer than 315 total approaching trips. This is much less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



Ash Street & Broadway Street

Aerial Photo:

Existing Conditions Discussion

The intersection of Ash Street with Broadway 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 60-second cycle length with two phases. Parking restrictions vary near the intersection and are provided in detail on the existing conditions diagram. The north and east legs of the intersection are designated as SR 185. Shrubbery in the southwest corner and part of a home and a tree in the northeast corner partially restrict visibility 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 location on the State Route.

Photo: Looking South

Public Comments

- "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

Recommendations

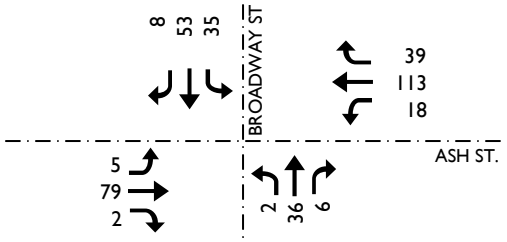
Due to the fact that SR 185 is routed through this intersection and that this intersection is conveniently located for motorists that want to divert from Ash Street to High Street and vice-versa, it is recommended that the traffic signal at this intersection remain in operation. However, in order to reduce unnecessary stopping and delays, particularly for motorists on Broadway Street, it is recommended that the traffic signal be converted to actuated operation with pedestrian pushbuttons and pedestrian signal indications. The signal should rest in green on the Ash Street phase.

Intersection at a Glance

Existing Conditions

- Span-wire traffic signal
- Single lane approaches
- SR 185 carried by north and east legs

Counted Traffic Volumes (peak hour)



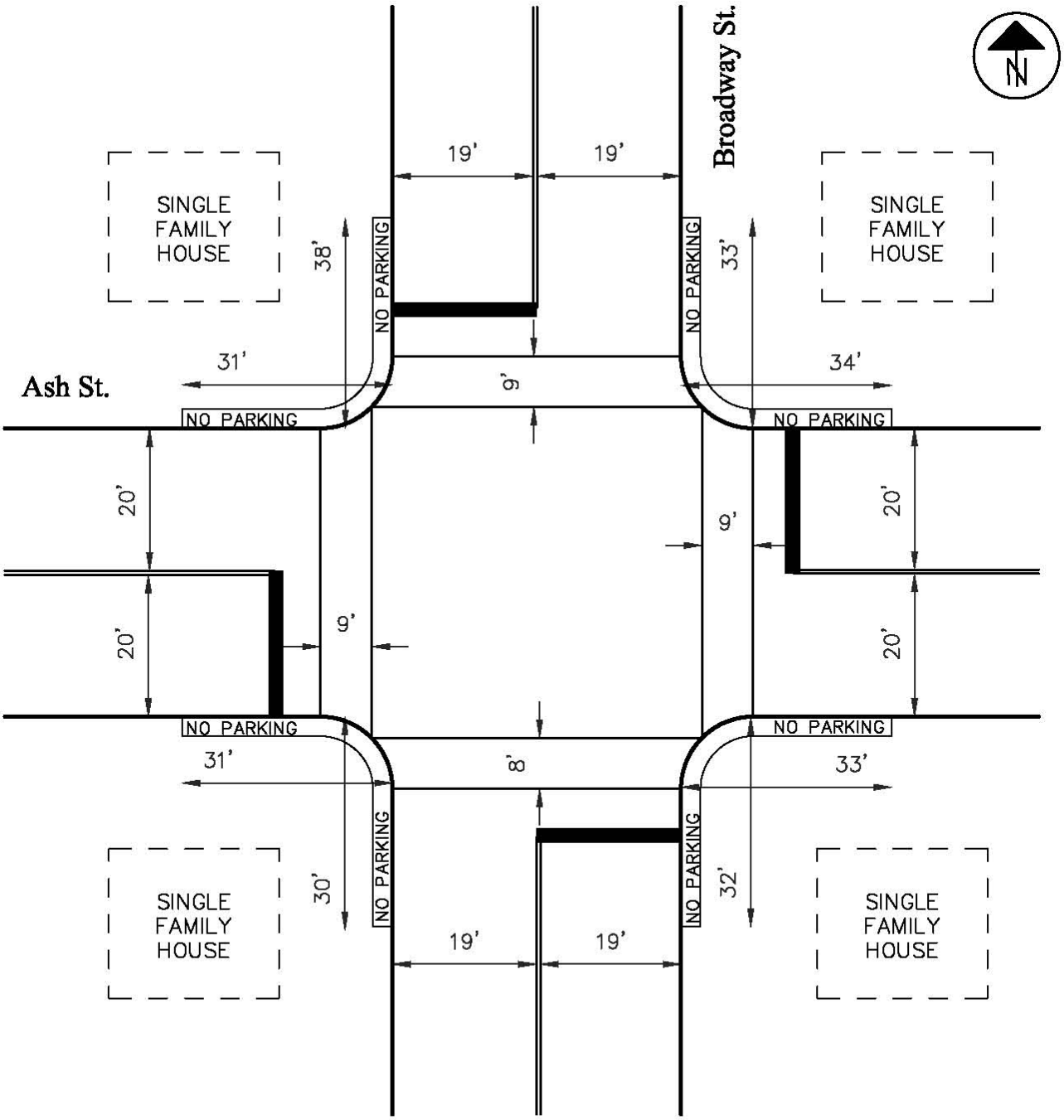
Crash History

- 0 reported crashes from 2005-2008

Recommendation

- Retain traffic signal

INTERSECTION DIAGRAM



PRETIMED 2 PHASE SIGNAL

60 SEC CYCLE

30 SEC N/S SPLIT

30 SEC E/W SPLIT

Turning Movement Counts Summary Table

Location: Broadway Street at Ash Street

Date of Counts: Thursday 8/7/2008

	SB Broadway St				WB Ash St				NB Broadway 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	5	3	0	0	1	10	4	0	0	2	1	0	0	10	0	0			
7:15 to 7:30 am	9	7	0	0	0	12	3	0	0	1	1	0	0	15	0	0			
7:30 to 7:45 am	9	15	1	1	4	10	4	0	0	4	3	2	1	23	0	0			
7:45 to 8:00 am	11	16	0	0	1	12	3	4	1	2	3	0	2	19	1	1			
Total	34	41	1	1	6	44	14	4	1	9	8	2	3	67	1	1	135	76	18
8:00 to 8:15 am	12	10	0	0	0	12	4	0	0	2	1	0	0	18	0	0			
8:15 to 8:30 am	18	9	1	0	0	12	0	0	2	1	3	0	0	26	0	0			
8:30 to 8:45 am	8	6	1	0	0	8	4	1	1	3	0	0	0	15	0	0			
8:45 to 9:00 am	6	4	0	0	1	13	5	1	0	5	2	0	0	17	1	0			
Total	44	29	2	0	1	45	13	2	3	11	6	0	0	76	1	0	136	75	20
4:00 to 4:15 pm	5	10	0	4	1	31	15	2	0	5	3	4	2	24	0	2			
4:15 to 4:30 pm	10	10	2	0	3	30	8	0	1	8	1	2	1	18	0	0			
4:30 to 4:45 pm	14	13	2	0	6	23	11	4	0	13	0	3	2	18	2	0			
4:45 to 5:00 pm	6	20	4	2	8	29	5	1	1	10	2	0	0	19	0	0			
Total	35	53	8	6	18	113	39	7	2	36	6	9	5	79	2	2	256	96	44
5:00 to 5:15 pm	6	20	4	2	8	29	5	1	1	10	2	0	0	19	0	0			
5:15 to 5:30 pm	10	12	2	4	2	25	14	0	0	10	1	0	0	21	1	3			
5:30 to 5:45 pm	10	12	2	4	2	25	14	0	0	10	1	0	0	21	1	3			
5:45 to 6:00 pm	8	13	1	0	0	23	14	4	0	3	2	0	0	19	0	0			
Total	34	57	9	10	12	102	47	5	1	33	6	0	0	80	2	6	243	100	40
Grand Total	147	180	20	17	37	304	113	18	7	89	26	11	8	302	6	9			

SIGNAL WARANT ANALYSIS SUMMARY

Broadway 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 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	135	76	No	135	76	No	No
8 AM to 9 AM	136	75	No	136	75	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	256	96	No	256	96	No	No
5 PM to 6 PM	243	100	No	243	100	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. 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.

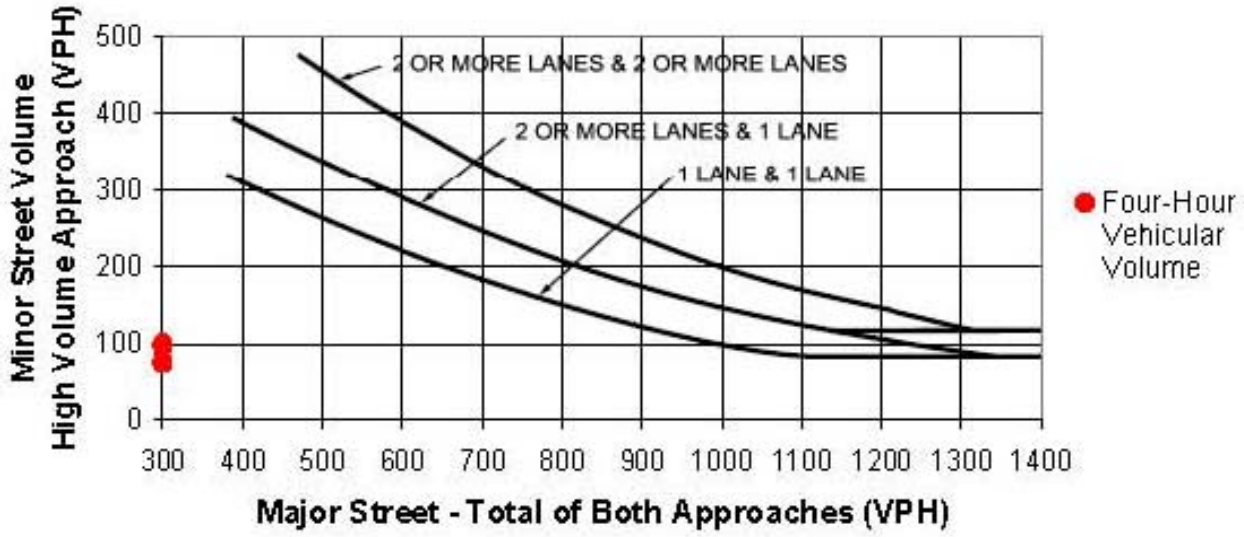
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

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.

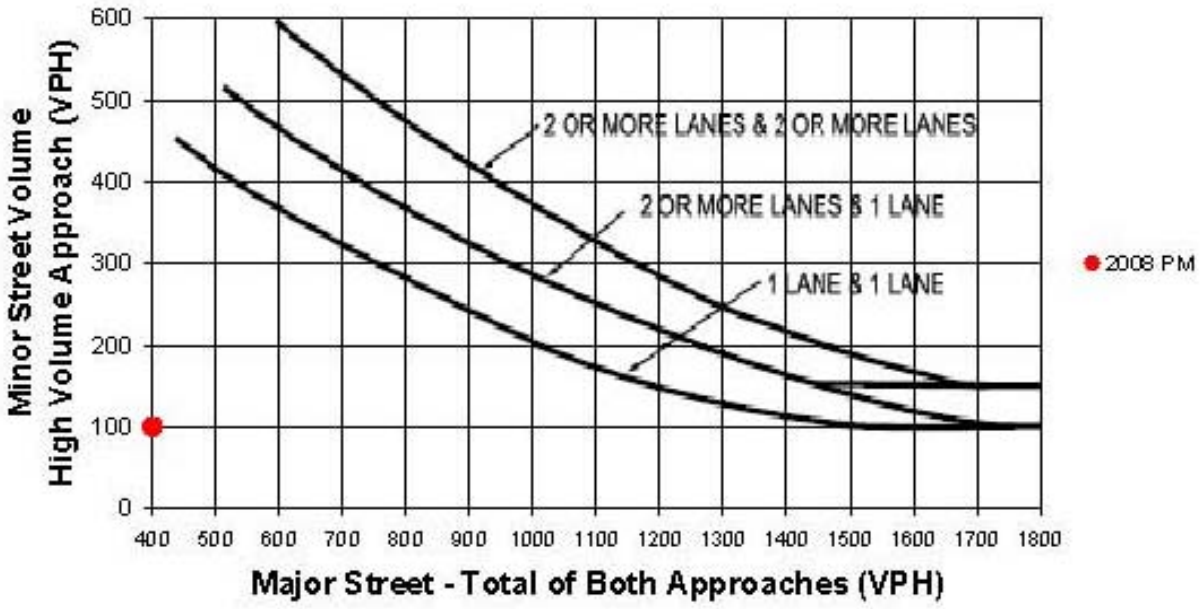
Warrant 8, Roadway Network – *Warrant is NOT Satisfied*

The hour with the largest traffic volumes (4-5 PM) has under 400 total approaching trips. This is much less than the required 1000 approaching trips.

Warrant 2, Four-Hour Vehiclar Volume



Warrant 3, Peak Hour



Ash Street & Downing Street

Aerial Photo:

Photo: Looking North

Existing Conditions Discussion

The intersection of Ash 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. Ash Street is designated as SR 185 through this intersection. A church building on the southeast corner of the intersection partially restricts sight distance at the intersection; however, visibility is adequate if motorists stop beyond the stop bar closer to the intersection. The primary concerns at this intersection are the warrant status of the existing traffic signal as well as the timing and/or operation of the existing traffic signal and whether the signal should be coordinated with adjacent traffic signals. This signal may have been installed initially due to its location on the State Route and its proximity to the central business district.

Public Comments

- "Traffic signal is not needed."
- "Two-way stop may be appropriate."

Analyses Results

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

Recommendations

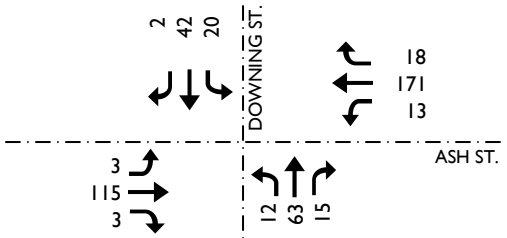
It is recommended that consideration be given to the removal of the traffic signal at this intersection. Based on the traffic volumes entering the intersection on each roadway, two-way stop control with stop signs on Downing Street is recommended. Also, curb bump-outs should be considered to provide adequate locations for stop sign visibility. These modifications could be performed in conjunction with the potential future re-routing of SR 185.

Intersection at a Glance

Existing Conditions

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

Counted Traffic Volumes (peak hour)



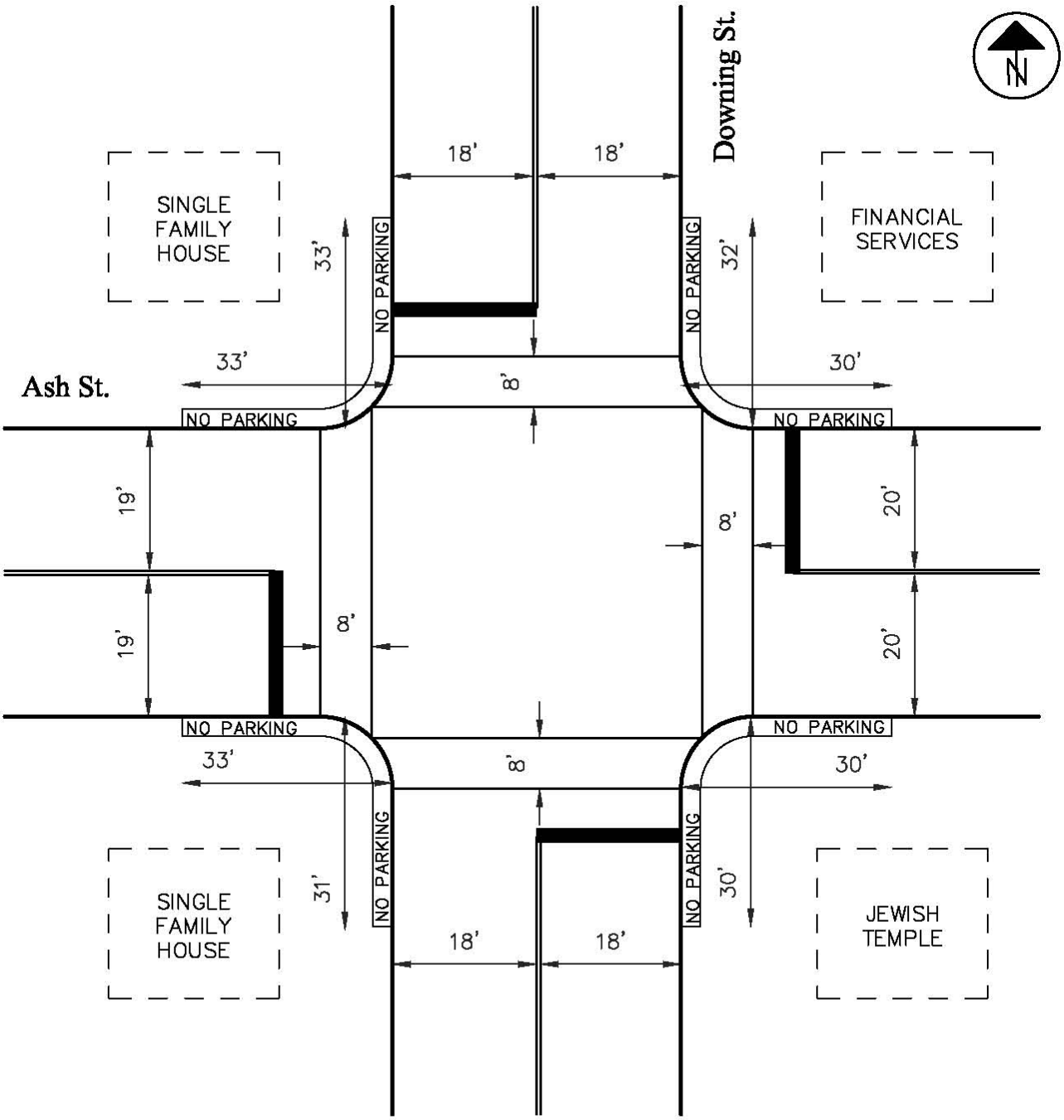
Crash History

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

Recommendation

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

INTERSECTION DIAGRAM



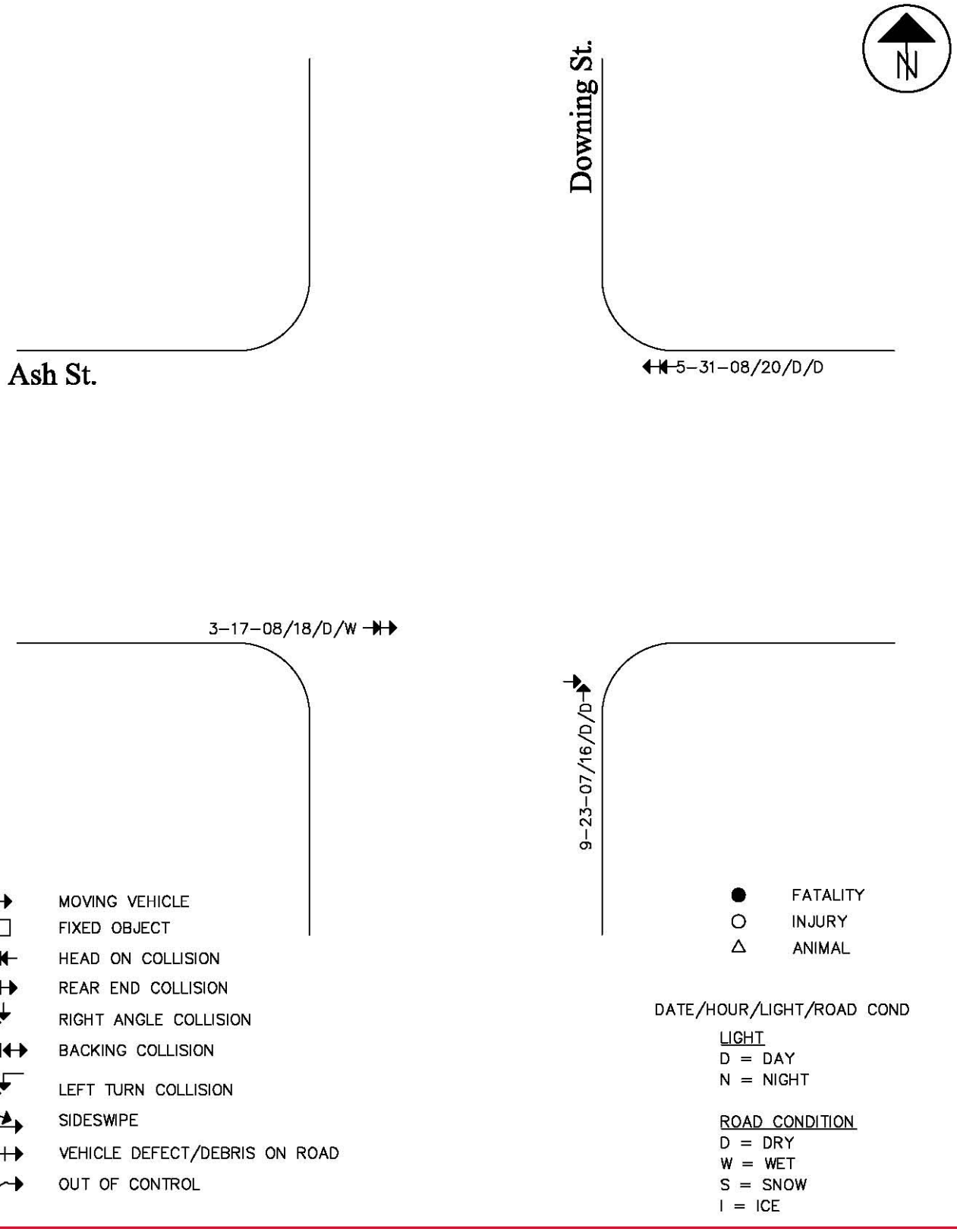
PRETIMED 2 PHASE SIGNAL

70 SEC CYCLE

35 SEC N/S SPLIT

35 SEC E/W SPLIT

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: Downing Street at Ash Street

Date of Counts: Thursday 8/13/2008

	SB Downing St				WB Ash St				NB Downing 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	3	8	1	0	0	9	1	1	1	5	2	0	1	25	0	0			
7:15 to 7:30 am	2	9	0	0	3	19	0	0	1	2	3	1	1	26	0	0			
7:30 to 7:45 am	12	5	2	0	0	13	1	0	0	3	4	0	1	51	2	1			
7:45 to 8:00 am	7	13	4	0	1	17	2	3	0	7	5	2	0	31	2	0			
Total	24	35	7	0	4	58	4	4	2	17	14	3	3	133	4	1	206	66	33
8:00 to 8:15 am	3	13	1	0	2	15	1	0	1	5	4	0	1	29	3	0			
8:15 to 8:30 am	6	13	2	0	4	20	2	0	0	3	3	0	0	31	1	0			
8:30 to 8:45 am	4	11	0	0	3	16	1	0	1	6	5	3	1	29	0	0			
8:45 to 9:00 am	3	6	0	0	3	13	0	0	1	9	6	0	0	27	0	0			
Total	16	43	3	0	12	64	4	0	3	23	18	3	2	116	4	0	202	62	44
4:00 to 4:15 pm	3	12	0	1	6	47	2	1	2	20	6	3	0	34	1	0			
4:15 to 4:30 pm	4	8	4	1	6	31	2	0	1	17	4	0	1	27	1	0			
4:30 to 4:45 pm	4	14	0	0	5	36	4	0	2	11	7	0	0	31	2	1			
4:45 to 5:00 pm	7	8	1	1	2	47	3	1	2	5	11	3	3	26	0	1			
Total	18	42	5	3	19	161	11	2	7	53	28	6	4	118	4	2	317	65	88
5:00 to 5:15 pm	4	15	1	0	4	64	6	0	5	18	6	1	1	33	1	0			
5:15 to 5:30 pm	5	10	0	3	3	33	4	0	3	22	3	1	0	24	1	0			
5:30 to 5:45 pm	6	10	1	0	4	38	3	1	2	12	4	0	1	28	0	2			
5:45 to 6:00 pm	5	7	0	0	2	36	5	0	2	11	2	0	1	30	1	0			
Total	20	42	2	3	13	171	18	1	12	63	15	2	3	115	3	2	323	64	90
Grand Total	78	162	17	6	48	454	37	7	24	156	75	14	12	482	15	5			

SIGNAL WARRANT ANALYSIS SUMMARY

Downing 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 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	206	66	No	206	66	No	No
8 AM to 9 AM	202	62	No	202	62	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	317	88	No	317	88	No	No
5 PM to 6 PM	323	90	No	323	90	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*

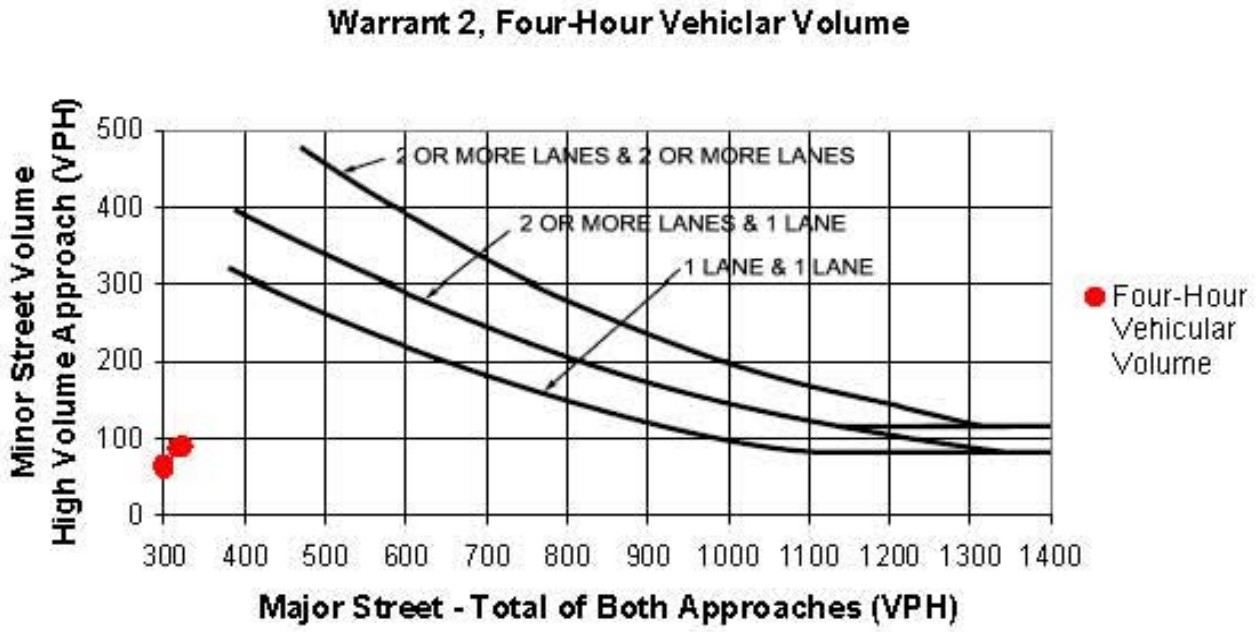
This intersection is not located at a critical point along a coordinated signal system.

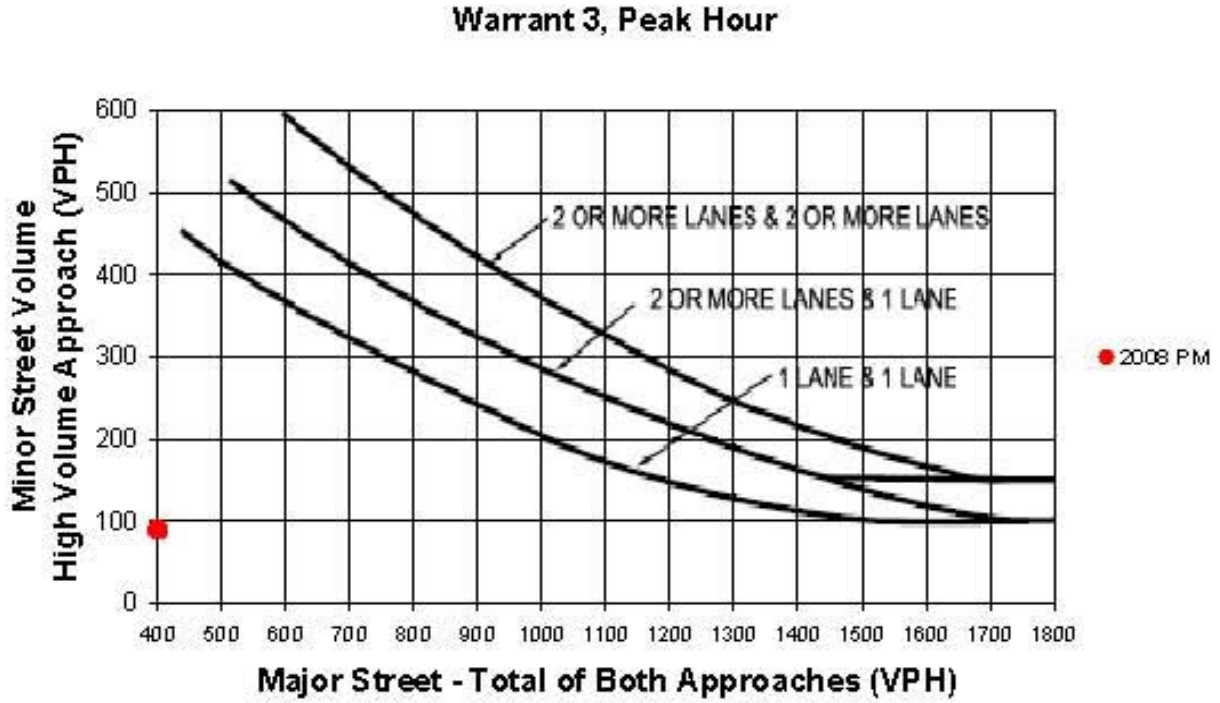
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

According to the crash data provided by the city of Piqua, one right-angle crash was 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 500 total approaching trips. This is less than the required 1000 approaching trips.


Warrant 2, Four-Hour Vehiclar Volume
Minor Street Volume
High Volume Approach (VPH)
500
400
300
200
100
0
2 OR MORE LANES & 2 OR MORE LANES
2 OR MORE LANES & 1 LANE
1 LANE & 1 LANE
300 400 500 600 700 800 900 1000 1100 1200 1300 1400
Major Street - Total of Both Approaches (VPH)
Four-Hour Vehicular Volume


Warrant 3, Peak Hour
Minor Street Volume
High Volume Approach (VPH)
600
500
400
300
200
100
0
2 OR MORE LANES & 2 OR MORE LANES
2 OR MORE LANES & 1 LANE
1 LANE & 1 LANE
400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800
Major Street - Total of Both Approaches (VPH)
2008 PM

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*Downing 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: *Downing Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*3*	*115*	*3*	*13*	*171*	*18*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*3*	*127*	*3*	*14*	*190*	*20*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*12*	*63*	*15*	*20*	*42*	*2*
Peak-Hour Factor, PHF	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*	*0.90*
Hourly Flow Rate, HFR (veh/h)	*13*	*70*	*16*	*22*	*46*	*2*
Percent Heavy Vehicles	*0*	*1*	*0*	*0*	*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	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (veh/h)	*3*	*14*		*99*			*70*	
C (m) (veh/h)	*1366*	*1451*		*581*			*535*	
v/c	*0.00*	*0.01*		*0.17*			*0.13*	
95% queue length	*0.01*	*0.03*		*0.61*			*0.45*	
Control Delay (s/veh)	*7.6*	*7.5*		*12.5*			*12.7*	
LOS	*A*	*A*		*B*			*B*	
Approach Delay (s/veh)	--	--	*12.5*			*12.7*		
Approach LOS	--	--	*B*			*B*		

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Ash Street & Main Street

Aerial Photo:

Photo: Looking North

Existing Conditions Discussion

The intersection of Ash Street with Main Street has four approaches intersecting at a 90-degree angle and is currently signal controlled. The Ash Street approaches each have two lanes - one left-turn only lane and one through-right shared lane. Both directions of Main Street have single lane approaches. Left-turns from Main Street are prohibited at this intersection. The actuated 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. Ash Street is designated as SR 185 through this intersection. 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.

Public Comments

- "Need to determine if left turn lanes are needed."
- "There is a significant number of left turns made from Ash Street."

Analyses Results

- Traffic Signal Warrant 8 is met
- Two reported crashes at the intersection from Jan. 2005 to June 2008
- Adequate capacity is provided with and without left-turn lanes on Ash Street

Recommendations

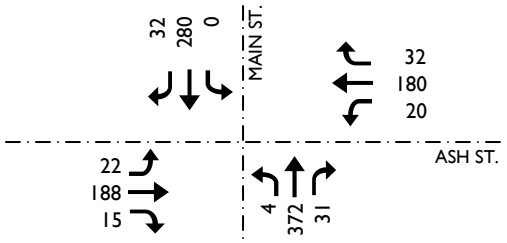
Due to the potential for future growth in traffic volumes, the fact that Signal Warrant 8 is met, and the intersection's location along SR 185 in the central business district, it is recommended that the traffic signal and the existing lane configuration be retained.

Intersection at a Glance

Existing Conditions

- Mast arm traffic signal
- Left-turn lanes Ash Street
- Left turns prohibited from Main Street
- Located in central business district

Counted Traffic Volumes (peak hour)



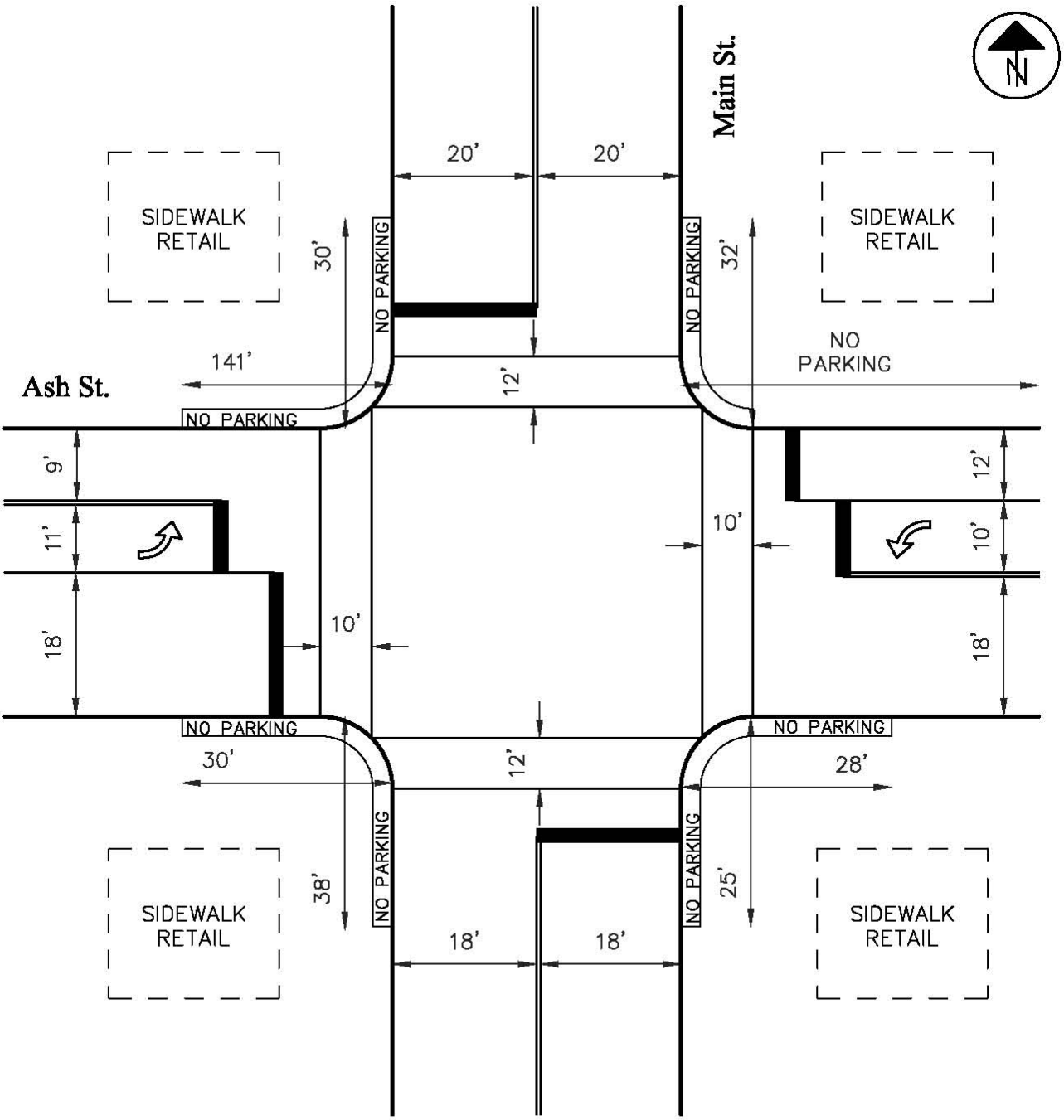
Crash History

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

Recommendation

- Retain traffic signal and existing lane configuration.

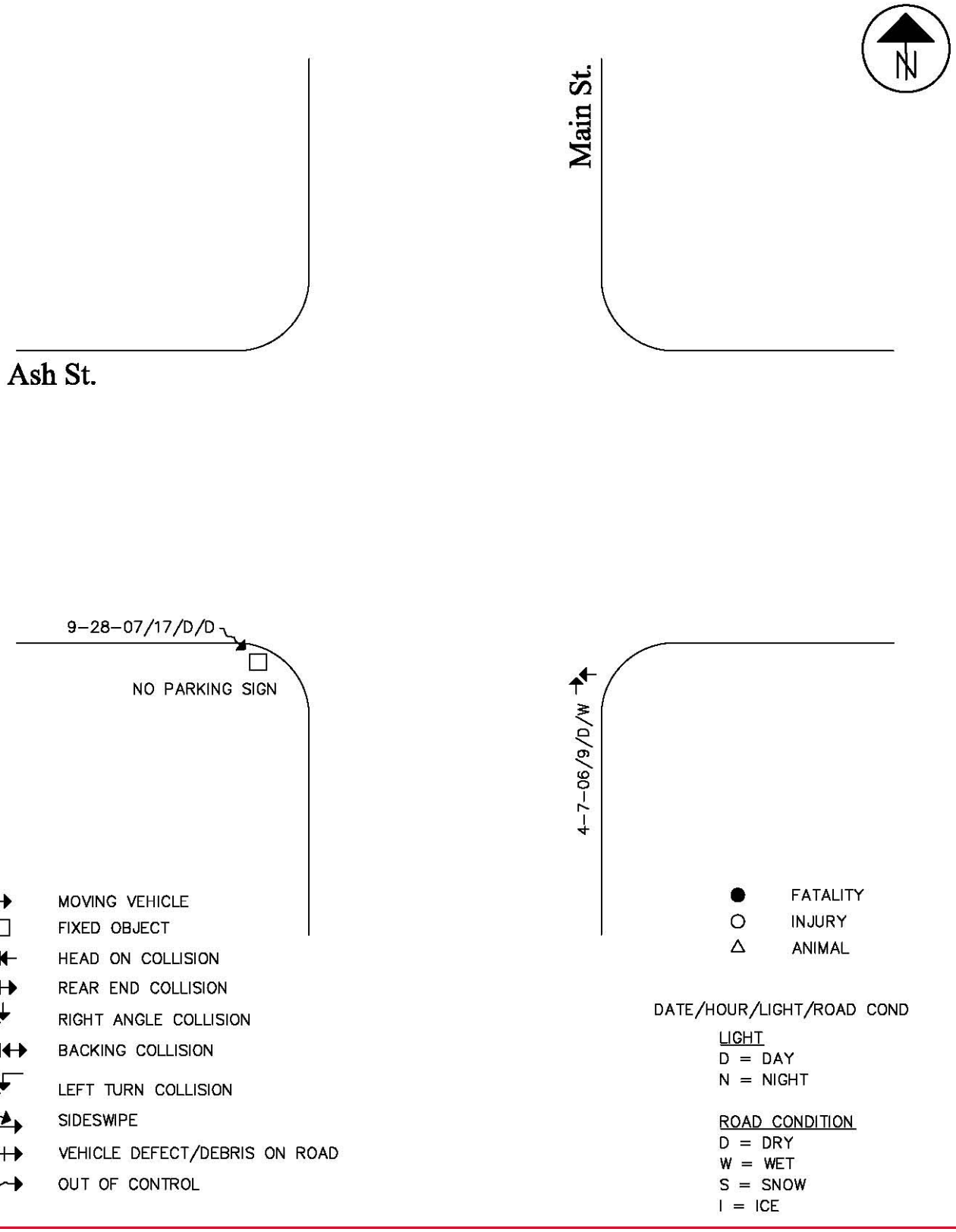
INTERSECTION DIAGRAM



ACTUATED SIGNAL

70 SEC CYCLE

CRASH DIAGRAM



Turning Movement Counts Summary Table

Location: Main Street at Ash Street

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

	SB Main St				WB Ash St				NB Main St				EB Ash 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	0	19	2	0	4	18	4	0	0	40	4	0	0	14	0	0			
7:15 to 7:30 am	1	39	2	1	3	36	4	0	1	45	7	4	4	17	2	3			
7:30 to 7:45 am	0	45	0	2	6	29	6	0	0	69	6	1	3	20	3	1			
7:45 to 8:00 am	0	41	3	0	6	46	5	0	1	82	4	2	1	20	2	0			
Total	1	144	7	3	19	129	19	0	2	236	21	7	8	71	7	4	411	167	86
8:00 to 8:15 am	0	31	2	1	5	46	1	1	0	42	8	0	0	17	4	0			
8:15 to 8:30 am	1	44	3	1	10	44	2	0	0	52	1	3	1	19	1	0			
8:30 to 8:45 am	1	41	2	1	5	42	5	0	0	36	2	2	1	15	2	2			
8:45 to 9:00 am	0	44	7	5	4	38	0	4	0	59	4	6	5	25	2	1			
Total	2	160	14	8	24	170	8	5	0	189	15	11	7	76	9	3	380	202	92
11:00 to 11:15 am	0	35	7	2	7	29	5	0	0	36	10	3	5	39	6	0			
11:15 to 11:30 am	0	42	3	2	2	42	5	1	0	41	8	4	5	24	1	0			
11:30 to 11:45 am	1	48	7	4	3	29	5	0	0	56	12	1	9	48	3	1			
11:45 to 12:00 am	0	51	4	3	10	43	7	0	0	38	6	3	1	49	6	1			
Total	1	176	21	11	22	143	22	1	0	171	36	11	20	160	16	2	405	187	196
12:00 to 12:15 pm	1	43	4	6	6	45	10	1	0	60	9	1	9	39	6	2			
12:15 to 12:30 pm	1	54	3	2	6	38	10	0	0	51	8	1	4	32	6	1			
12:30 to 12:45 pm	0	49	10	2	7	38	4	1	0	53	12	3	9	55	6	3			
12:45 to 13:00 pm	0	45	3	4	3	40	11	0	0	52	12	2	6	51	11	6			
Total	2	191	20	14	22	161	35	2	0	216	41	7	28	177	29	12	470	218	234
2:00 to 2:15 pm	0	52	5	0	7	43	5	1	0	70	14	3	1	31	4	3			
2:15 to 2:30 pm	0	57	7	1	10	62	8	4	0	50	9	2	7	28	6	0			
2:30 to 2:45 pm	0	65	8	5	5	39	7	0	1	79	8	2	8	47	5	0			
2:45 to 3:00 pm	0	67	8	4	7	46	4	2	2	60	11	5	7	42	9	1			
Total	0	241	28	10	29	190	24	7	3	259	42	12	23	148	24	4	573	243	195
3:00 to 3:15 pm	0	74	9	6	2	44	7	3	1	90	9	4	9	50	6	0			
3:15 to 3:30 pm	0	64	5	0	3	37	11	0	1	80	5	2	4	39	6	0			
3:30 to 3:45 pm	0	77	7	3	7	57	6	1	1	117	9	3	7	48	0	3			
3:45 to 4:00 pm	0	65	11	4	8	42	8	1	1	85	8	5	2	51	3	4			
Total	0	280	32	13	20	180	32	5	4	372	31	14	22	188	15	7	719	232	225
4:00 to 4:15 pm	10	64	5	2	4	13	9	0	15	90	2	0	7	6	6	1			
4:15 to 4:30 pm	9	62	5	1	3	15	7	0	12	75	6	0	7	4	6	1			
4:30 to 4:45 pm	9	60	3	2	8	14	6	0	9	99	3	1	5	9	7	2			
4:45 to 5:00 pm	11	74	2	2	3	12	13	1	9	67	1	0	3	8	8	0			
Total	39	260	15	7	18	54	35	1	45	331	12	1	22	27	27	4	702	107	76
5:00 to 5:15 pm	11	74	2	2	3	12	13	1	9	67	1	0	3	8	8	0			
5:15 to 5:30 pm	12	61	4	0	3	11	7	0	9	79	3	0	4	8	5	0			
5:30 to 5:45 pm	12	61	4	0	3	11	7	0	9	79	3	0	4	8	5	0			
5:45 to 6:00 pm	15	56	3	0	2	4	11	1	17	62	6	0	5	7	2	0			
Total	50	252	13	2	11	38	38	2	44	287	13	0	16	31	20	0	659	87	67
Grand Total	95	1704	150	68	165	1065	213	23	98	2061	211	63	146	878	147	36			

SIGNAL WARANT ANALYSIS SUMMARY

Main 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 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	411	167	No	411	167	No	No
8 AM to 9 AM	380	202	No	380	202	No	No
9 AM to 10 AM			No			No	No
10 AM to 11 AM			No			No	No
11 AM to 12 PM	405	196	No	405	196	No	No
12 PM to 1 PM	470	234	No	470	234	No	No
1 PM to 2 PM			No			No	No
2 PM to 3 PM	573	243	Yes	573	243	No	No
3 PM to 4 PM	719	232	Yes	719	232	No	Yes
4 PM to 5 PM	702	107	No	702	107	No	No
5 PM to 6 PM	659	87	No	659	87	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). 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.

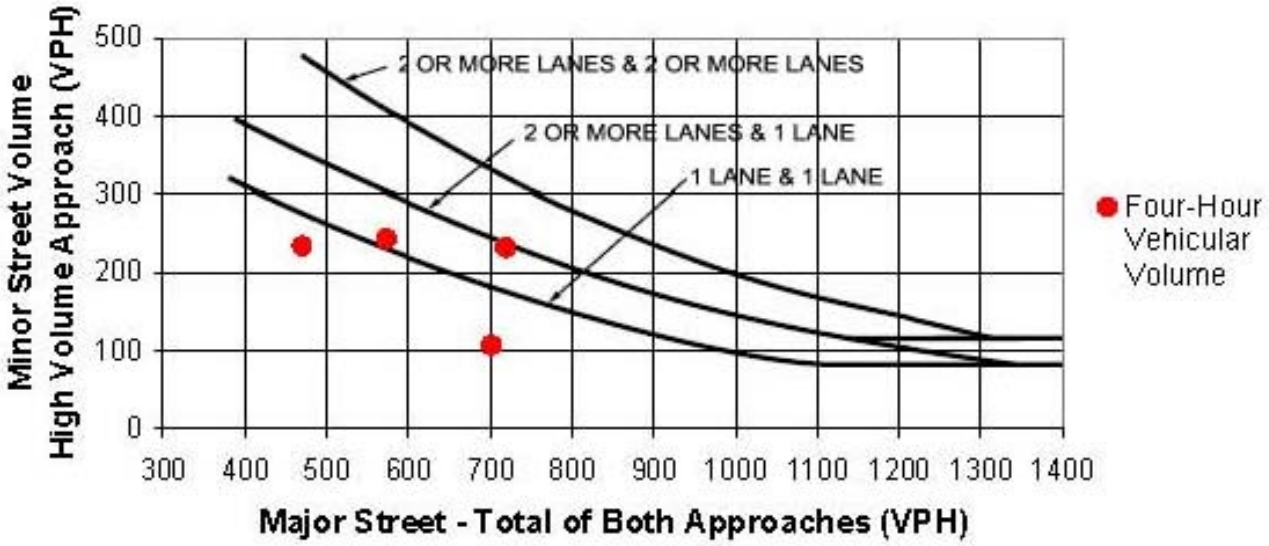
Warrant 7, Crash Experience – *Warrant is NOT Satisfied*

According to the crash data provided by the city of Piqua, one right-angle crash was 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.

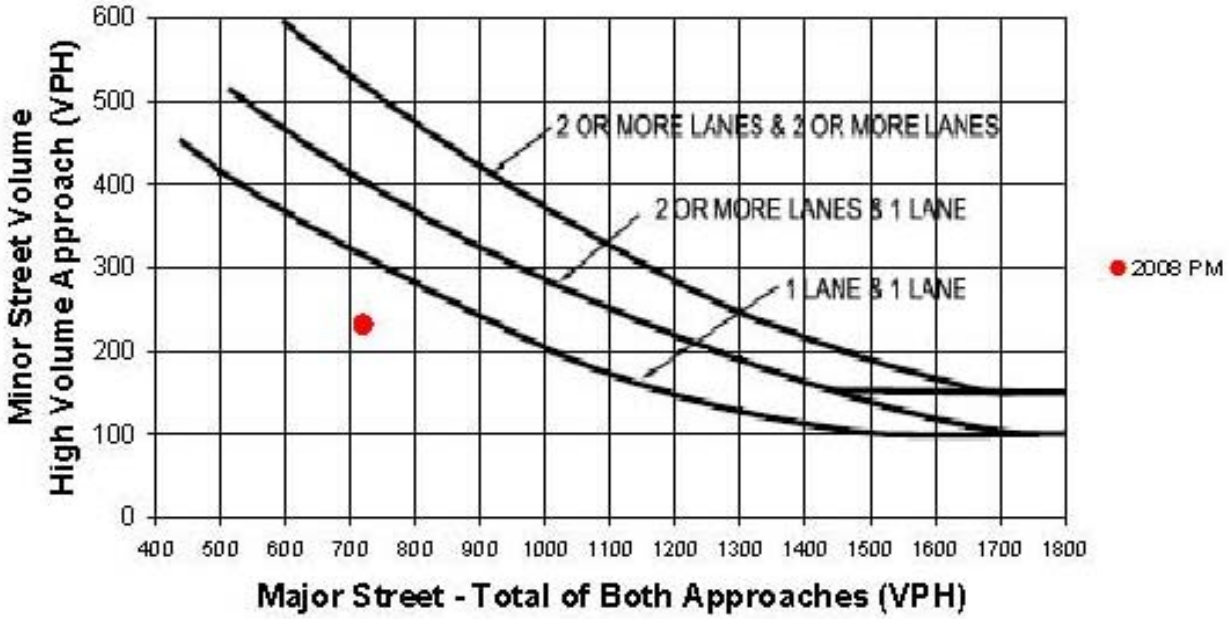
Warrant 8, Roadway Network – *Warrant IS Satisfied*

At least two hours have more than the required 1000 approaching trips. SR 185 approaches from the east and the west and qualifies as a major route. Main Street also 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 Ash*
Agency or Co.	*Kleingers & Associates*	Area Type	*CBD or Similar*
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*	*0*	*1*	*0*	*0*	*1*	*0*
Lane Group	*L*	*TR*		*L*	*TR*			*LTR*			*LTR*	
Volume (vph)	*22*	*188*	*15*	*20*	*180*	*32*	*4*	*372*	*31*	*0*	*280*	*32*
% Heavy Vehicles	*2*	*2*	*0*	*1*	*1*	*0*	*0*	*5*	*0*	*0*	*5*	*2*
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	*7*	*0*	*0*	*5*	*0*	*0*	*14*	*0*	*0*	*13*	*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*			*3.3*	

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	*24*	*226*		*22*	*236*			*451*			*347*	
Lane Group Capacity	*371*	*617*		*384*	*615*			*738*			*736*	
v/c Ratio	*0.06*	*0.37*		*0.06*	*0.38*			*0.61*			*0.47*	
Green Ratio	*0.37*	*0.37*		*0.37*	*0.37*			*0.46*			*0.46*	
Uniform Delay d_1	*14.2*	*16.0*		*14.1*	*16.1*			*14.3*			*13.1*	
Delay Factor k	*0.50*	*0.50*		*0.50*	*0.50*			*0.50*			*0.50*	
Incremental Delay d_2	*0.3*	*1.7*		*0.3*	*1.8*			*3.8*			*2.2*	
PF Factor	*1.000*	*1.000*		*1.000*	*1.000*			*1.000*			*1.000*	
Control Delay	*14.5*	*17.7*		*14.4*	*17.9*			*18.1*			*15.3*	
Lane Group LOS	*B*	*B*		*B*	*B*			*B*			*B*	
Approach Delay	*17.4*			*17.6*			*18.1*			*15.3*		
Approach LOS	*B*			*B*			*B*			*B*		
Intersection Delay	*17.1*			Intersection LOS						*B*		

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SHORT REPORT

General Information		Site Information	
Analyst	*M. Nolt*	Intersection	*Main at Ash*
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 Lane on Ash*	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	0	1	0	0	1	0
Lane Group		LTR			LTR			LTR			LTR	
Volume (vph)	22	188	15	20	180	32	4	372	31	0	280	32
% Heavy Vehicles	2	2	0	1	1	0	0	5	0	0	5	2
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	
Extension of Effective Green		2.0			2.0			2.0			2.0	
Arrival Type		3			3			3			3	
Unit Extension		3.0			3.0			3.0			3.0	
Ped/Bike/RTOR Volume	7	0	0	5	0	0	14	0	0	13	0	0
Lane Width		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	
Minimum Pedestrian Time		3.2			3.2			3.3			3.3	

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		250			258			451			347	
Lane Group Capacity		589			594			738			736	
v/c Ratio		0.42			0.43			0.61			0.47	
Green Ratio		0.37			0.37			0.46			0.46	
Uniform Delay d_1		16.4			16.5			14.3			13.1	
Delay Factor k		0.50			0.50			0.50			0.50	
Incremental Delay d_2		2.2			2.3			3.8			2.2	
PF Factor		1.000			1.000			1.000			1.000	
Control Delay		18.7			18.8			18.1			15.3	
Lane Group LOS		B			B			B			B	
Approach Delay		18.7			18.8			18.1			15.3	
Approach LOS		B			B			B			B	
Intersection Delay		17.6			Intersection LOS						B	

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