

DRAFT

Table of Contents

Executive Summary	1
Introduction	2
Existing Conditions	3
Roadways.....	4
Signalized Intersections.....	5
Existing Traffic Volumes.....	6
Accidents.....	7
Project Generated Traffic	8
Capacity and Queuing Analyses	9
Capacity Analyses.....	9
Queuing Analyses.....	13
Site Access	13
Conclusions	15

List of Tables

Table 1 Trip Generation - 56,595 S.F. Police Headquarters and 33,323 S.F. Municipal Offices	9
Table 2 Signalized Intersection Capacity Analyses	11
Table 3 Unsignalized Intersection Capacity Analyses	11
Table 4 Summary of 95th Percentile Queues	13
Table 5 Comparison of Available and Required Intersection Sight Distances	14

DRAFT

EXECUTIVE SUMMARY

The Town of Hamden proposes to renovate and expand the existing Town Hall at the northwest corner of Dixwell Avenue and Whitney Avenue in Hamden to provide a new Police Headquarters and Municipal Offices. The 50,495 square foot expansion will increase the building from 39,423 square feet to 89,918 square feet. The entire expansion plus 6,100 square feet of the existing building (56,595 square feet) will be occupied by the Police Department and the remaining 33,323 square feet will be used for municipal offices. A total of 189 parking spaces will be provided in a structured parking facility with 98 spaces provided at the lower level for the Police Department and 91 spaces provided at the upper level for the municipal offices. Additional parking will be available along the north side of Dixwell Avenue along the site frontage. The site has approximately 580 feet of frontage along Dixwell Avenue and 215 feet of frontage along Whitney Avenue. Access to the site will be provided by full access drives along Dixwell Avenue at the west end of the site frontage and near the center of the frontage, and along Whitney Avenue at the north end of the site frontage. Access to the fire station will continue at the existing drive along Whitney Avenue just south of the new driveway.

The study assumed that the addition and renovations would be constructed over a period of two years. Capacity analyses were done for the signalized intersections of Dixwell Avenue at Whitney Avenue and Whitney Avenue at School Street, and at the unsignalized intersections of Dixwell Avenue at the site drives and Whitney Avenue at the site drives for 2008 Existing conditions, 2010 No-Build conditions and 2010 Build conditions.

The signalized intersection of Dixwell Avenue at Whitney Avenue presently operates at Level of Service (LOS) E during the morning peak hour and LOS F during the afternoon peak hour, and the signalized intersection of Whitney Avenue at School Street presently operates at LOS B during the morning and afternoon peak hours. Both intersections will continue to operate at the same Levels of Service during the morning and afternoon peak hours for the 2010 No-Build and 2010 Build conditions.

Left turns from Dixwell Avenue and Whitney Avenue onto the site driveways presently operate at Level of Service (LOS) A during the morning and afternoon peak hours with the exception of left turns from Dixwell Avenue onto the east driveway to the existing Town Hall building which operate at LOS B during the afternoon peak hour. There will be no changes in operating Levels of Service for the left turns onto the site driveways during the morning or afternoon peak hours for the 2010 No-Build conditions. With the addition of trips associated with the Police Headquarters and moving municipal offices back to the Town Hall, left turns from Dixwell Avenue onto the site driveways will operate at LOS A during the morning peak hour and LOS B during the afternoon peak hour. Left turns from Whitney Avenue onto the site driveway will operate at LOS A during both peak hours for the Build conditions. The driveway approaches to Dixwell Avenue presently operate at LOS C during the morning and afternoon peak hours with the exception of the east driveway which operates at LOS D during the afternoon peak hour.

DRAFT

The driveway approach to Whitney Avenue presently operates at LOS B during both peak hours. The only change in operating Level of Service for the 2010 No-Build conditions will occur at the driveway approach to Whitney Avenue which will become LOS C during the morning peak hour. With the addition of trips associated with the proposed addition and renovations, this driveway will operate at LOS C during the afternoon peak hour, also and the driveway approaches to Dixwell Avenue will operate at LOS D during the afternoon peak hour.

All sight distances available to drivers entering and leaving the Police Headquarters and Municipal Offices driveways are greater than the distances presented in the Connecticut DOT Highway Design Manual for the prevailing travel speeds on Dixwell Avenue and Whitney Avenue.

Because each of the site driveways will operate at Level of Service D or better during the peak hours and the signalized intersections Dixwell Avenue at Whitney Avenue and Whitney Avenue at School Street will experience no change in Level of Service from existing conditions, no off-site improvements are recommended as a result of the trips associated with the Police Headquarters and Municipal Offices. It should be noted that a large portion of the site trips are presently traveling the roadway system and signalized intersections surrounding the site as the Police Headquarters will replace the existing Police facilities that occupy the westerly portion of the site and the Municipal Offices will replace the office space being leased a short distance to the southwest on Dixwell Avenue.

INTRODUCTION

The Town of Hamden proposes to renovate and expand the existing Town Hall at the northwest corner of Dixwell Avenue and Whitney Avenue in Hamden to provide a new Police Headquarters and Municipal Offices. The 50,495 square foot expansion will increase the building from 39,423 square feet to 89,918 square feet. The entire expansion plus 6,100 square feet of the existing building (56,595 square feet) will be occupied by the Police Department and the remaining 33,323 square feet will be used for municipal offices. A total of 189 parking spaces will be provided in a structured parking facility with 98 spaces provided at the lower level for the Police Department and 91 spaces provided at the upper level for the municipal offices. Additional parking will be available along the north side of Dixwell Avenue along the site frontage. This report was prepared by Traffic Engineering Solutions to address the traffic impact on roadways surrounding this Senior Condominium development. The following scope of work was included in this study:

- Making turning movement counts during a morning (7:00 AM to 9:00AM) and afternoon (4:00 PM to 6:00 PM) peak periods at the following locations:
 - ◇ Dixwell Avenue at Whitney Avenue.
 - ◇ Dixwell Avenue at the two Town Hall driveways located between the Town Hall and Police Department buildings.

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- ◇ Dixwell Avenue at Old Dixwell Avenue and drive to the Police Department.
- ◇ Whitney Avenue at the Town Hall driveway.
- ◇ Whitney Avenue at School Street.
- Making 24-hour directional machine counts on Dixwell Avenue and Whitney Avenue in the vicinity of the site. The counts included directional speed studies to determine the 85th percentile speed of travel in each direction on both roads (85th percentile speeds were used to determine the intersection sight distances for vehicles entering and leaving the site).
- Obtaining from ConnDOT traffic accident data for the latest three year period for Dixwell Avenue and Whitney Avenue in the vicinity of the site.
- Obtaining from the Town of Hamden copies of the traffic signal plans for the signalized intersections included in the study.
- Making visual observations of roadways and land use conditions along Dixwell Avenue and Whitney Avenue in the vicinity of the Police Headquarters/Town Hall site. Also, measuring the intersection sight distances available to drivers entering and leaving the site at each site drive in accordance with the methods contained in the 2003 ConnDOT Highway Design Manual (revised December 2006) for sight distance measurements and comparing these distances with the distances presented in the ConnDOT reference for the 85th percentile speeds obtained for Dixwell Avenue and Whitney Avenue.
- Determining the number of trips expected to be added to the roadway system upon completion of the renovations and expansion to create the Police Headquarters/Town Hall (municipal offices) complex. It is expected that trips to the roadway system will remain relatively unchanged and the largest change in traffic flow will be at the site driveways.
- Completing morning and afternoon peak hour capacity analyses for the intersections included in this study to determine the existing operating Levels of Service (LOS) and anticipated LOS for the traffic volumes expected upon completion of the Police Headquarters/Town Hall Complex renovations and expansion. Also, completing capacity analyses for the intersections of Dixwell Avenue at the site drives and Whitney Avenue at the site drive for the traffic volumes expected upon completion of the Police Headquarters/Town Hall Complex renovations and expansion.

EXISTING CONDITIONS

The Town of Hamden proposes to renovate and expand the existing Town Hall at the northwest corner of Dixwell Avenue and Whitney Avenue in Hamden to provide a new Police Headquarters and Municipal Offices. The 50,495 square foot expansion will increase the building from 39,423 square feet to 89,918 square feet. The entire expansion plus 6,100 square feet of the existing building (56,595 square feet) will be occupied by the Police Department and the remaining 33,323 square feet will be used for municipal offices. A total of 189 parking spaces will be provided in a structured parking

DRAFT

facility with 98 spaces provided at the lower level for the Police Department and 91 spaces provided at the upper level for the municipal offices. The site has approximately 580 feet of frontage along Dixwell Avenue and 215 feet of frontage along Whitney Avenue. Access to the lower parking level (Police Department spaces) will be provided by full access drives along Dixwell Avenue at the west end of the site frontage and along Whitney Avenue at the north end of the site frontage. Access to the upper parking for the municipal offices will be provided by a full access drive located along Dixwell Avenue near the center of the site frontage and access to the fire station will continue to be provided by a full access drive along Whitney Avenue just south of the Police Department drive. Visual observations were made for Dixwell Avenue and Whitney Avenue, turning movement traffic counts were made at the intersections of Dixwell Avenue at Old Dixwell Avenue, Dixwell Avenue at Whitney Avenue and Whitney Avenue at School Street; and 24-hour traffic counts were made on Dixwell Avenue and Whitney Avenue. Additionally, traffic counts were made at the existing site driveways along Dixwell Avenue.

Roadways

Dixwell Avenue (Route 10 west of Whitney Avenue) begins in the City of New Haven, proceeds in the northerly direction into Hamden, passes under the Wilbur Cross Parkway, continues in the northerly direction, and curves to the northeast and east as it proceeds through the center of Hamden and into the Town of North Haven. In the vicinity of the site the road is 63 feet wide and varies in the number of lanes. There are two lanes of travel in each direction at the westerly portion of the site with a painted island separating the two directions of travel. As the road approaches Whitney Avenue at the east end of the site, there are three eastbound lanes (an exclusive left turn lane and two through lanes with right turns being made from the outside lane) and two westbound lanes. Double yellow lines identify the edges of the painted median and define the two directions of travel where there is no median, dashed white lines identify the lanes of travel in each direction and a solid white line delineates a narrow shoulder along the south side of the road. The posted speed limit on Dixwell Avenue is 35 miles per hour. When traveling toward the west, Dixwell Avenue curves to the left (toward the southwest) in the vicinity of the west end of the site. Old Dixwell Avenue diverges at the start of the curve and continues toward the west.

Development in the vicinity of the site is a mixture of commercial and residential uses. Along the north side of Dixwell Avenue going west from Whitney Avenue are the Town Hall (presently occupied by the Connex Credit Union), two buildings used by the Police Department, Webster Bank and Integrated Finance Services. Development along the south side of Dixwell Avenue going west from Whitney Avenue includes Kamp & Nielsen Realtors, Grace and St. Peter's Episcopal Church and house, the Damatteo Building, and the Miller Memorial Central Library & Senior Center. Development beyond the site along Old Dixwell Avenue includes a medical office building, single family homes and several homes that have been converted to professional office uses.

Whitney Avenue (S.R. 707 south of Dixwell Avenue and Route 10 north of Dixwell Avenue) north to south along the length of Hamden. Beginning

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at the Town Line with New Haven the road proceeds to the north to the Town Line with Cheshire. In the vicinity of the site the road is 43 feet wide with two lanes of travel in each direction. The two directions of travel are separated by a double yellow center line and dashed white lines define the travel lanes traveling in the same direction. There are no white edge lines along either side of Whitney Avenue to delineate shoulders in the vicinity of the site. The posted speed limit on Whitney Avenue is 30 miles per hour. Development in the vicinity of the site is a mixture of commercial and multi-family residential uses. Along the west side of Whitney Avenue north of Dixwell Avenue are the Town Hall, fire station, a building with retail on the first floor and residential on the second floor, Eli's on Whitney Café, School Street, and Eli's Brickoven Pizza and Market. Development along the east side of Whitney includes the Brownstone House, Hamden News & Cigar, Martial Arts, the future Cappies Apizza, French Twist Salon, Taco King, Coral-Jade Company, Ladonna Jewelers and Studio Elite. North of School Street is the Whitney Towers, a multi-family residential building.

Signalized Intersections

Dixwell Avenue (Route 10) at Whitney Avenue (S.R. 707 and Route 10) is a 4-legged signalized intersection. Dixwell Avenue forms the east and west legs of the intersection and Whitney Avenue forms the north and south legs. There are three lanes approaching the intersection along both Dixwell Avenue legs. The eastbound leg has an exclusive left turn lane and two through lanes with right turns being made from the outside lane, and the westbound leg has an exclusive left turn lane, a through lane and an exclusive right turn lane. There are two lanes approaching the intersection on both Whitney Avenue legs with left turns being made from the inside lane and right turns being made from the outside lane. The traffic signal phasing at this location provides semi-quad operation which allows several combinations of non-conflicting traffic movements to flow at the same time along Dixwell Avenue. These combinations include east and westbound left turns when vehicles are present in both turn lanes; if the left turning volume in one direction is nonexistent or lower than the opposite direction, the heavier left turn is allowed to continue in combination with the through movement along the same approach; once the left turns have been served, the through movements in both directions are allowed to proceed. There is an advance northbound phase for Whitney Avenue where all movements are allowed to proceed with no conflicts from opposing traffic. This phase is followed by a north and southbound phase for Whitney Avenue when all traffic in both directions is allowed to proceed through the intersection. Finally, there is a lagging southbound phase that allows southbound traffic to proceed through the intersection with no conflicting traffic from the opposite direction. An exclusive pedestrian phase allows pedestrians to cross with traffic on all four approaches being stopped. This intersection is incorporated into the same Town of Hamden signal system for Dixwell Avenue and Whitney Avenue and is coordinated with other intersections in the area.

Whitney Avenue (Route 10) at School Street is a 4-legged signalized intersection. Whitney Avenue forms the north and south legs of the intersection, and School Street forms the east and west legs. There are two

DRAFT

lanes approaching the intersection along both Whitney Avenue legs and a single lane approaching the intersection on both School Street legs. The traffic signal phasing at this location provides three phases for vehicular movements and an exclusive pedestrian phase. The first phase allows traffic on both School Street approaches to proceed through the intersection, the second phase allows traffic on both Whitney Avenue approaches to enter the intersection, and the third phase is a lagging northbound phase that allows traffic on northbound Whitney Avenue to proceed through the intersection with no conflicting traffic flowing from the opposite direction. An exclusive pedestrian phase allows pedestrians to cross with traffic on all four approaches being stopped. This intersection is incorporated into the same Town of Hamden signal system for Dixwell Avenue and Whitney Avenue and is coordinated with other intersections in the area.

Existing Traffic Volumes

Twenty-four hour automatic traffic recorder (ATR) counts were obtained from the Connecticut DOT for Dixwell Avenue and Whitney Avenue in the vicinity of the site (along the site frontage on Dixwell Avenue and just north of School Street on Whitney Avenue). The ConnDOT counts, made during 2003, were supplemented by 24-hour machine counts made on Whitney Avenue on September 9, 2008 and on Dixwell Avenue on September 17, 2008; and by turning movement counts made at the intersections of Dixwell Avenue at Whitney Avenue and Whitney Avenue at School Street on September 4 and 5, 2008. According to the ConnDOT counts, the 2003 average daily traffic (ADT) on Dixwell Avenue was 18,600 vehicles per day (vpd) and the ADT on Whitney Avenue was 17,400 vpd. The 24-hour machine counts made for this study found that the daily traffic count on Dixwell Avenue on September 17, 2008 was 18,128 vehicles and the daily traffic count on Whitney Avenue on September 9, 2008 was 11,805 vehicles. The September 4 and 5, 2008 turning movement counts made at the intersections of Dixwell Avenue at Whitney Avenue and Whitney Avenue at School Street provide the morning and afternoon peak hour traffic counts on Dixwell Avenue and Whitney Avenue along the site frontage as shown below. Copies of the 2008 machine counts and turning movement counts are included in the Appendix to this report.

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	AM Peak	PM Peak
Eastbound Dixwell Avenue	701	682
Westbound Dixwell Avenue	616	905
Northbound Whitney Avenue	577	687
Southbound Whitney Avenue	658	771

Accidents

The Connecticut Department of Transportation (ConnDOT) Bureau of Planning and Research compiles records of accident data reported by investigating police authorities. Accidents which result in death, injury, or property damage in excess of \$1,000 are required to be reported. Accident data was obtained for Dixwell Avenue from Old Dixwell Avenue to Whitney Avenue and for Whitney Avenue from Dixwell Avenue to School Street. The accident data covered the latest three-year period for which records are available, January 1, 2005 to December 31, 2007. During the three years covered by the ConnDOT accident data a total of 48 accidents were reported along this section of Dixwell Avenue and 65 accidents were reported along the one block of Whitney Avenue from Dixwell Avenue to School Street. Below is a summary of the reported accidents along Dixwell Avenue and Whitney Avenue along the site frontage.

	Dixwell Avenue	Whitney Avenue
Turning-Same Direction	2	1
Turning-Opposite Direction	6	5
Turning-Intersecting Paths	7	8
Sideswipe-Same Direction	8	1
Sideswipe-Opposite Direction	0	1
Angle	2	7
Rear-End	16	15
Backing	3	1
Pedestrian	0	1
Parking	1	0
Fixed Object	3	2
Total	48	42
Injury	12	9
Property Damage Only	36	33

Six of the reported accidents along Dixwell Avenue occurred at the two legs of Old Dixwell Avenue, one occurred at the driveway to the Police Department and 22 occurred at the intersection of Dixwell Avenue and Whitney Avenue. Nine of the reported accidents along Whitney Avenue occurred between the intersections with Dixwell Avenue and School Street,

DRAFT

twenty-one occurred at the intersection with School Street and the remaining twelve accidents occurred just north of School Street.

PROJECT GENERATED TRAFFIC

New trips to the roadway system generated by the 33,323 square feet that will be used for municipal offices were determined from the Institute of Transportation Engineers (ITE) reference, Trip Generation¹. The ITE reference has established mathematical relationships based on studies of various land uses to determine their trip generation rates. These trip generation relationships have been standardized and published in the Trip Generation reference. The number of trips associated with the 56,595 square foot Police Headquarters was determined from an earlier study completed by Traffic Engineering Solutions, P.C. for the East Hartford Public Safety Complex.

The ITE reference provides trip generation information for several types of office buildings including "Government Office Building" which is defined as an individual building containing either the entire function or simply one agency of a city, county, state, federal or other government unit, and "Government Office Complex" which is defined as a related group of buildings where a variety of functions of a city, county, state, federal, other government unit, or municipal government units are carried out. Trip Generation estimates for the proposed 33,323 square feet of municipal office space were calculated based on ITE Land Use Code 733 – "Government Office Complex" because the information provided for the Government Office Building was based on a single study of a small government office building; whereas, the Government Office Complex was based on two studies of larger government offices. The trips rates for a Government Office Complex Land Use are greater than the trips rates for a general office building. Information relating to Police Department activities was not readily available as is the case for many police departments in the post 9/11 world. Trips associated with the Police Headquarters were determined from an earlier study completed by Traffic Engineering Solutions, P.C. for the Public Safety Complex in East Hartford. The East Hartford study was prepared for a Police Department having 172 sworn officers and 67 civilian employees. The East Hartford site provides a total of 244 parking spaces for Police Department and Fire Department use. The Hamden Police Department is believed to have a similar number of sworn officers and civilian employees but the site will have about half the number of parking spaces dedicated for Police Department use. The morning and afternoon peak hour trips associate with the Hamden Police Headquarters is expected to be similar to the peak hour trips associated with the East Hartford Police Department.

The following trip generation relationships were used to determine the number of daily, and morning and afternoon peak hour trips associated with the municipal offices. The trips associated with the Police Headquarters and municipal offices are summarized in Table 1.

Government Office Complex

¹ Trip Generation 7th Edition published by the Institute of Transportation Engineers, 2003

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Average Weekday Trips	27.92 Trips per 1,000 S.F.	
Morning Peak Hour	2.21 Trips per 1,000 S.F.	89/11
Afternoon Peak Hour	2.85 Trips per 1,000 S.F.	31/69

Table 1 - Trip Generation - 56,595 S.F. Police Headquarters and 33,323 S.F. Municipal Offices

	Trips Entering			Trips Leaving		
	Municipal Offices	Police Department	Total	Municipal Offices	Police Department	Total
Daily	465	--	465+	465	--	465+
AM Peak Hour	66	64	130	8	40	48
PM Peak Hour	29	49	78	66	71	137

Table 1 indicates that the Police Headquarters and Municipal Offices will generate 178 trips during the morning peak hour with 130 vehicles entering the site and 48 vehicles leaving the site. During the afternoon peak hour the Town facility will generate 215 trips with 78 vehicles entering the site and 137 leaving. The trips shown in Table 1 were used with the capacity analyses completed for this study. Because the Police Headquarters and Municipal offices will have separate parking areas with their own drive(s), the trips associated with each use were used with the analyses completed for the site driveways.

CAPACITY AND QUEUING ANALYSES

Capacity Analyses

Capacity Analyses were completed to determine the existing and anticipated quality of traffic operations at the signalized intersections of Dixwell Avenue at Whitney Avenue and Whitney Avenue at School Street, and at the unsignalized intersections of Dixwell Avenue at the site drives and Whitney avenue at the site drives. Letter designations from A to F are used to represent the Levels of Service (LOS) for the traffic operation at each intersection or roadway, with LOS A representing the best operating conditions and LOS F the worst.

The Level of Service is determined differently for signalized intersections, unsignalized intersections with multi-way STOP, and unsignalized intersections with STOP control on the minor street approaches. For signalized intersections and unsignalized intersections with multi-way STOP control, the analysis considers the operation of all traffic entering the intersection and the LOS is determined for the overall conditions at the intersection. For unsignalized intersections with STOP control on the minor street, the analysis assumes that through and right-turning traffic on the major street is not affected by traffic on the side streets. Hence, the LOS is determined for the movements on the side street and the left-turn movement

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from the major street onto the side street. Levels of Service are defined by the average delay per vehicle as indicated below.

Signalized Intersections

Level of Service	Avg. Delay/Vehicle (in Seconds)
LOS A	≤ 10.0
LOS B	> 10.0 and ≤ 20.0
LOS C	> 20.0 and ≤ 35.0
LOS D	> 35.0 and ≤ 55.0
LOS E	> 55.0 and ≤ 80.0
LOS F	> 80.0

Unsignalized Intersections

Level of Service	Avg. Delay/Vehicle (in Seconds)
LOS A	≤ 10.0
LOS B	> 10.0 and ≤ 15.0
LOS C	> 15.0 and ≤ 25.0
LOS D	> 25.0 and ≤ 35.0
LOS E	> 35.0 and ≤ 50.0
LOS F	> 50.0

Level-of-service capacity analyses were completed for the 2008 existing conditions, the 2010 No-Build conditions and the 2010 Build conditions for the signalized intersections of Dixwell Avenue at Whitney Avenue and Whitney Avenue at School Street, and at the unsignalized intersections of Dixwell Avenue at the site drives and Whitney Avenue at the site drives. The 2010 No-Build traffic volumes were determined by applying a two percent annual growth factor to the 2008 traffic volumes to account for growth that may occur in the area. Trips associated with the Police Headquarters and Municipal Offices were added to the 2010 No-Build traffic volumes as shown in the Traffic Flow Diagrams included in the Appendix to this report. The results of the capacity analyses are presented in Tables 2 and 3.

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Table 2: Signalized Intersection Capacity Analysis

Location	Peak Hour	<u>Existing Conditions</u>		<u>2010 No-Build</u>		<u>2010 Build</u>	
		Delay	LOS	Delay	LOS	Delay	LOS
Dixwell Avenue at Whitney Avenue	AM Peak	63.7	E	68.5	E	69.4	E
	PM Peak	121.2	F	140.2	F	145.9	F
Whitney Avenue at School Street	AM Peak	14.3	B	14.7	B	14.7	B
	PM Peak	14.5	B	15.1	B	15.1	B

NOTES:

Delay = Average stopped delay, in seconds, to all vehicles entering the intersection.
 LOS = Level of Service

Table 2 indicates that the signalized intersection of Dixwell Avenue at Whitney Avenue presently operates at Level of Service (LOS) E during the morning peak hour and LOS F during the afternoon peak hour, and the signalized intersection of Whitney Avenue at School Street presently operates at LOS B during the morning and afternoon peak hours. Both intersections will continue to operate at the same Levels of Service during the morning and afternoon peak hours for the 2010 No-Build and 2010 Build conditions.

Table 3: Unsignalized Intersection Capacity Analysis

Location	Peak Hour	<u>2008 Existing Conditions</u>		<u>2010 No-Build</u>		<u>2010 Build</u>	
		Delay	LOS	Delay	LOS	Delay	LOS
Dixwell Avenue at Police Headquarters Drive							
E-Bd Left Turn S-Bd Police Driveway	AM Peak	0.8	A	0.8	A	9.4	A
	PM Peak	15.2	C	15.8	C	19.2	C
E-Bd Left Turn S-Bd Police Driveway	AM Peak	0.2	A	0.2	A	11.0	B
	PM Peak	15.7	C	16.3	C	25.7	D
Dixwell Ave. at Municipal Offices West Drive ²							
E-Bd Left Turn S-Bd Mun. Office Drive	AM Peak	9.0	A	9.1	A	9.5	A
	PM Peak	17.7	C	18.5	C	20.1	C
E-Bd Left Turn S-Bd Mun. Office Drive	AM Peak	0.0	--	0.0	--	10.5	B
	PM Peak	21.0	C	22.2	C	34.0	D

² Future conditions will provide a single drive for the municipal offices.

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Table 3 Cont'd: Unsignalized Intersection Capacity Analysis

		<u>2008 Existing</u> Conditions		<u>2010</u> No-Build		<u>2010</u> Build	
Dixwell Ave. at Municipal Offices East Drive							
E-Bd Left Turn	AM	9.1	A	9.2	A	n/a	n/a
S-Bd Mun. Office Drive	Peak	16.4	C	17.1	C	n/a	n/a
E-Bd Left Turn	PM	10.1	B	10.2	B	n/a	n/a
S-Bd Mun. Office Drive	Peak	27.3	D	29.8	D	n/a	n/a
Whitney Avenue at Police & Fire Dept. Drive							
N-Bd Left Turn	AM	0.1	A	0.1	A	0.2	A
E-Bd Police/Fire Drive	Peak	14.1	B	14.5	C	15.9	C
N-Bd Left Turn	PM	0.1	A	0.1	A	0.2	A
E-Bd Police/Fire Drive	Peak	11.1	B	11.3	B	17.0	C

Delay = Average stopped delay, in seconds, to all vehicles entering the intersection or to vehicles making the specified turn.

Table 3 indicates that left turns from Dixwell Avenue and Whitney Avenue onto the site driveways presently operate at Level of Service (LOS) A during the morning and afternoon peak hours with the exception of left turns from Dixwell Avenue onto the east driveway to the existing Town Hall building which operate at LOS B during the afternoon peak hour. There will be no changes in operating Levels of Service for the left turns onto the site driveways during the morning or afternoon peak hours for the 2010 No-Build conditions. With the addition of trips associated with the Police Headquarters and moving municipal offices back to the Town Hall, left turns from Dixwell Avenue onto the site driveways will operate at LOS A during the morning peak hour and LOS B during the afternoon peak hour. Left turns from Whitney Avenue onto the site driveway will operate at LOS A during both peak hours for the Build conditions. The driveway approaches to Dixwell Avenue presently operate at LOS C during the morning and afternoon peak hours with the exception of the east driveway which operates at LOS D during the afternoon peak hour. The driveway approach to Whitney Avenue presently operates at LOS B during both peak hours. The only change in operating Level of Service for the 2010 No-Build conditions will occur at the driveway approach to Whitney Avenue which will become LOS C during the morning peak hour. With the addition of trips associated with the proposed addition and renovations, this driveway will operate at LOS C during the afternoon peak hour, also and the driveway approaches to Dixwell Avenue will operate at LOS D during the afternoon peak hour.

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Queuing Analyses

The signalized intersection capacity analyses also provide queue information for each movement at the intersection. Table 4 presents the 95th percentile queue information for the 2010 No-Build and 2010 Build Conditions.

Table 4: Summary of 95th Percentile Queues

	No-Build Conditions		Build Conditions	
	AM Peak left / thru / right	PM Peak left / thru / right	AM Peak left / thru / right	PM Peak left / thru / right
Dixwell Avenue at Whitney Avenue				
Eastbound	163 / 224 /	204 / 195 /	165 / 232 /	212 / 218 /
Westbound	204 / 428 / 28	201 / 742 / 30	204 / 490 / 28	201 / 774 / 31
Northbound	/ 362 /	/ 482 /	/ 366 /	/ 487 /
Southbound	/ 258 /	/ 310 /	/ 267 /	/ 317 /
Whitney Avenue at School Street				
Eastbound	/ 192 /	/ 149 /	/ 192 /	/ 149 /
Westbound	/ 59 /	/ 111 /	/ 59 /	/ 111 /
Northbound	/ 138 /	/ 218 /	/ 139 /	/ 227 /
Southbound	/ 114 /	/ 142 /	/ 116 /	/ 145 /

SITE ACCESS

Access to the Police Headquarters and Municipal Offices will be provided by two full access drives along Dixwell Avenue and a full access drive along Whitney Avenue. Additionally, the existing driveway serving the fire station will continue to serve that facility. The Dixwell Avenue drives will be located at the west end of the site (serving the Police Headquarters parking area) and at the center of the Dixwell Avenue site frontage (serving the Municipal Office parking area). The Whitney Avenue drive will be located at the north end of the site frontage and will serve the Police Headquarters. The existing fire station driveway is located immediately south of the new Whitney Avenue driveway. Visual observations and sight distance measurements were made in accordance with ConnDOT standards for measuring Intersection Sight Distances and for Stopped Vehicle Turning Left Across Oncoming Traffic. Intersection Sight Distances from the site drives were measured at a distance of 15 feet off the edge of road with a 3.5 foot height of eye and height of object.

The Connecticut DOT presents intersection sight distances (ISD) in their December 2003 Highway Design Manual (revised through December 2006). Figure 11-2D of the ConnDOT Guidelines presents ISD information for each 5 mph increment for speeds between 20 and 70 mph for four lane roads. The posted speed limit on Dixwell Avenue is 35 miles per hour (mph) and the posted speed limit on Whitney Avenue is 30 mph. The speed study done for

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Dixwell Avenue indicates that the 85th percentile speeds (the speed at which 85 percent of drivers travel at or less than) are 39 mph in the eastbound direction and 40 mph in the westbound direction, and the speed study done for Whitney Avenue indicates that the 85th percentile speeds are 29 mph in the northbound direction and 29 mph in the southbound direction. A summary of available intersection sight distances and distances required by ConnDOT in their Highway Design Manual is presented in Table 4.

Table 4 – Comparison of Available and Required Intersection Sight Distances

	Available Intersection Sight Distance	Required Intersection Sight Distance per ConnDOT 2003 Highway Design Manual
Looking Left from Police Dept. Drive onto Dixwell Avenue	> 900 Feet	475 Feet
Looking Right from Police Dept. Drive onto Dixwell Ave.	> 950 Feet	463 Feet
Looking Left from Mun. Office Drive onto Dixwell Avenue	> 700 Feet	475 Feet
Looking Right from Mun. Office Drive onto Dixwell Ave.	650 Feet	463 Feet
Looking Left from Police Dept. Drive onto Whitney Avenue	900 Feet	343 Feet
Looking Right from Police Dept. Drive onto Whitney Ave.	> 800 Feet	343 Feet
Looking Left from Fire Station Drive onto Whitney Avenue	900 Feet	343 Feet
Looking Right from Fire Sta. Drive onto Whitney Ave.	> 800 Feet	343 Feet

Table 4 shows that the Intersection Sight Distances (ISD) available to drivers looking left and right from each of the site access drives onto Dixwell Avenue and Whitney Avenue are greater than the intersection sight distances provided in the ConnDOT reference for vehicles traveling the two roadways at the 85th percentile speeds.

A second sight distance measured for this study is for Stopped Vehicle Turning Left Across Oncoming Traffic. According to Figure 11-2J of the ConnDOT Guidelines, vehicles turning left from Dixwell Avenue onto the site access drives should be able to see 355 feet and from Whitney avenue onto the site access drive should be able to see 257 feet. Drivers entering each of the site drives will be able to see at least 500 feet meaning the distance available to drivers making the left turn is greater than the distance required by the ConnDOT reference for vehicles approaching from the opposite direction at the 85th percentile speed.

DRAFT

All sight distances available to drivers entering and leaving the Police Headquarters and Municipal Offices driveways are greater than the distances presented in the Connecticut DOT Highway Design Manual for the prevailing travel speeds on Dixwell Avenue and Whitney Avenue.

CONCLUSIONS

Same as Executive Summary