Torrington Public Schools

SUSAN M. LUBOMSKI
SUPERINTENDENT

SUSAN B. FERGUSSON
ASSISTANT SUPERINTENDENT

Building Committee Meeting
Thursday, September 23, 2021, 5:00 P.M.
Torringford School Library/Media Center
(Park: Torringford West Street parking – Entrance: Torringford West Street side)

Agenda

The meeting may be watched live via this link https://vimeo.com/event/480934 The link is also published in the Board of Education section of the website. If you are participating in public comment, please mute the live stream while you are speaking.

1. Call to Order
2. Roll Call
3. Approval of Agenda
4. Approval of Minutes
5. Public Participation: *Members of the public and staff may bring to the committee's attention information, ideas, or matters of concern related to all the duties and responsibilities of this committee. This committee will not allow comments regarding specific staff members or personal grievances. The time for individual remarks will be apportioned according to the number of speakers and will be limited to five minutes per speaker unless extended by the chair.*
6. Discussion/Next Steps:
    a. Architect Update:
        i. Recapping Meeting with State
        ii. Beginning Discussion Regarding Increased Enrollments
        iii. Environmental Sound Report
        iv. Traffic Impact Study
        v. Preliminary Layouts Accommodating Auto and Wood Shops
        vi. Confirm Authorizations for SLAM to Move into Construction Documents
    b. Analysis of Payments to Date
7. Comments for the Good of the Order
8. Future Meetings
9. Adjournment

September 15, 2021

Ms. Amy Samuelson
S/L/A/M Collaborative
80 Glastonbury Boulevard
Glastonbury, CT 06033

e-mail: asamuelson@slamcoll.com

SUBJECT: Torrington Middle-High School
Environmental Sound Report

Dear Amy,

We have completed a review of the existing exterior ambient sound levels at the proposed Torrington Middle/High School. This study was conducted to ensure that the building façade (and glazing in particular) will comply with ANSI S12.60-2002 school acoustics standard (as required by the State of Connecticut). This report presents findings relative to building exterior shell sound isolation requirements.

ANSI S12.60-2002

The ANSI school acoustics standard requires that interior background sound levels not exceed 35 dBA. Transient noise sources (such as traffic sound) are also governed by additional criteria within ANSI S12.60-2002 as summarized below

> *Unsteady background noise from transportation noise sources.*
>
> *School facilities should be sited and designed to limit the noise levels inside learning spaces from transportation noise sources, such as aircraft, road vehicles and trains.*
>
> *The limit of 35 dBA on A-weighted background noise levels shall be increased by 5 dB when the noisiest hour is dominated by transportation noise and the following conditions apply to the A-weighted SLOW time-weighted background noise level.*
>
> > *For core learning spaces with enclosed volumes less than 20,000 cubic feet, this level does not exceed 40 dB for more than 10% of this noisiest hour.*
> >
> > *Fore core learning spaces with enclosed volumes greater than 20,000 cubic feet, and for ancillary learning spaces, this level does not exceed 45 dB for more than 10% of this noisiest hour.*

Existing Ambient Levels

We installed two environmental sound level meters on site for approximately one week to document existing ambient sound levels. One meter (SM1) was installed high on a light post to represent traffic sound level exposure at the 2nd story facade of the new Middle-High School. The other meter (SM2) was installed at the far side of the project site to document community background sound for any future reviews of exterior rooftop equipment sound (to be completed once sound data for this equipment is available).

Sound level meters were programmed to measure several hourly A-weighted sound level descriptors including the 90th percentile sound level (LA_{90}), equivalent sound level (LA_{eq}), the 10th percentile (LA_{10}) and first percentile (LA_{01}) sound level.

- The 90th percentile sound level (LA_{90}) is the background or residual sound level in an area and is the lowest level of sound typically occurring. It is the A-weighted sound level exceeded 90% of each hour monitored.
- The equivalent sound level (LA_{eq}) is the energy average sound level for each hour monitored.
- The first percentile sound level (LA_{10}) is the sound level exceeded ten percent of each hour and is representative of the highest typical traffic sound levels reached in each hour.
- The first percentile sound level (LA_{01}) is the sound level exceeded one percent of each hour and is representative of the highest sound levels reached in each hour.

Image 1 - Site Aerial with Sound Monitor Locations

Exterior Building Shell

The maximum measured hourly L_{eq} and the LA_{10} during typical school hours was 71 dBA indicating that traffic sound levels were very consistent during the peak hour without significant variation between the loudest 10 percent of the hour and the average level during that same hour. We also measured the LA_{01} (representative of a very short duration sound level, most likely from a loud individual vehicle pass-by). The worst case (highest) measured LA_{01} was 75 dBA.

The exterior building shell is composed of building façade with opaque areas and glazing. The opaque areas are gypsum board framing and insulated panels at the exterior, while the glazing areas are typical insulated glass. We have evaluated the construction elements and estimate that the opaque facade will provide STC 50 / OITC 39 sound isolation while Standard 1-inch thermal units (¼ glass – ½ inch airspace – ¼ glass) are expected to provide STC 35 / OITC 28. Review of the floor plans and exterior elevations indicate that the room with the largest area of glazing facing the roadway is the 2nd Floor Earth Science Classroom in sector B. This room has windows accounting for approximately 35% of the wall area, and the resulting Composite Sound Isolation for the wall/window combination in this ratio is STC 39 / OITC 23.

Using this composite STC 39 / OITC 23 rating along with the measured traffic sound spectrum of 71 dBA at the building facade, we predict that the interior classroom sound level will be 32 dBA. This meets the project requirements for background traffic sound in classrooms. Based on this evaluation no improvements to the glazing are required.

Recommendation

We recommend specifying that the glazing systems at the exterior provide minimum STC 35 / OITC 28 so that a good quality window system is provided.

Thank you for asking Cavanaugh Tocci to assist with this project. If you have any questions, please call to discuss.

Sincerely,
CAVANAUGH TOCCI

Kent F. McKelvie
Principal Consultant

21185-04r Torrington MHS Environmental Sound Report.docx

FIGURES

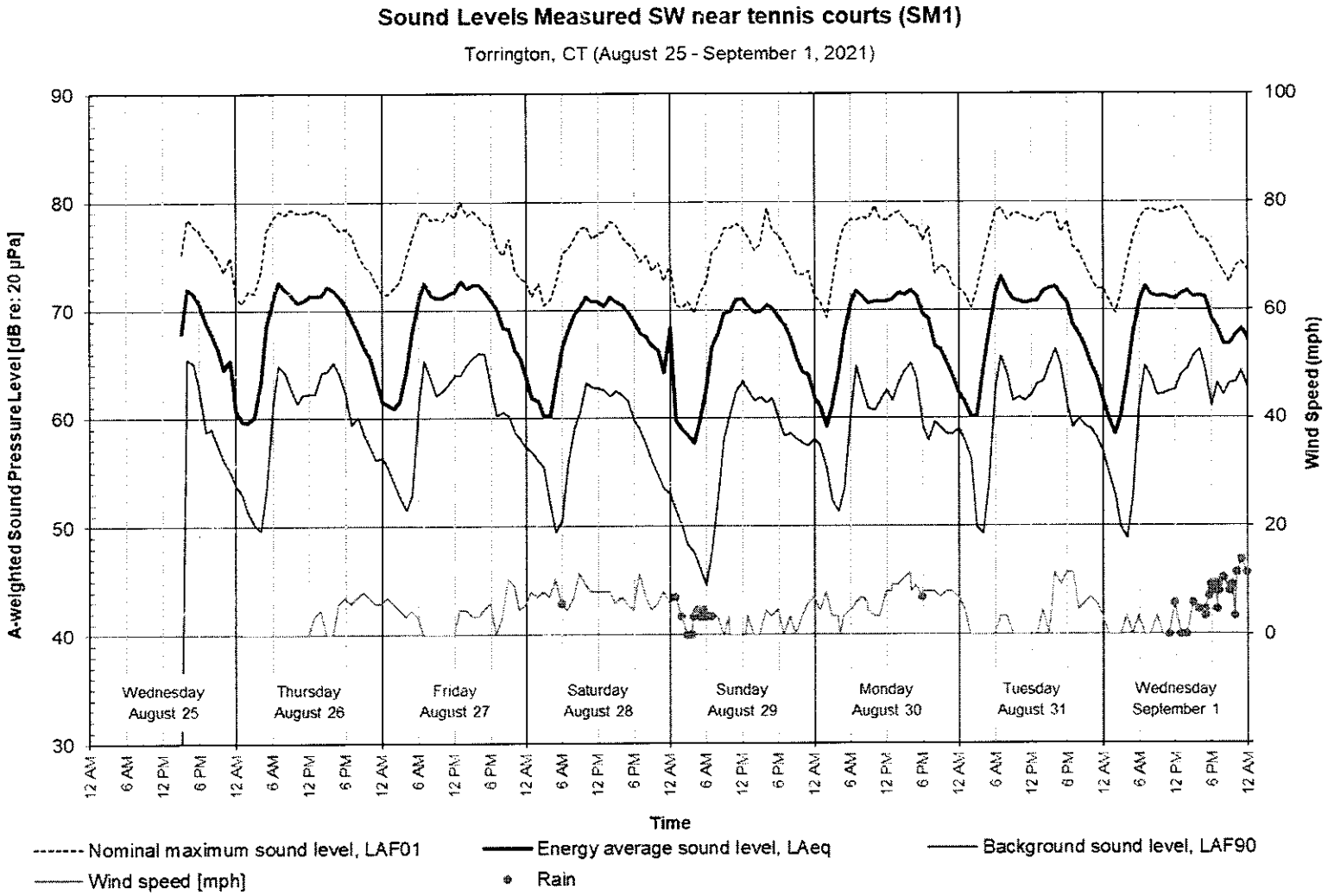


Figure 1

R10

CAVANAUGHTOCCI

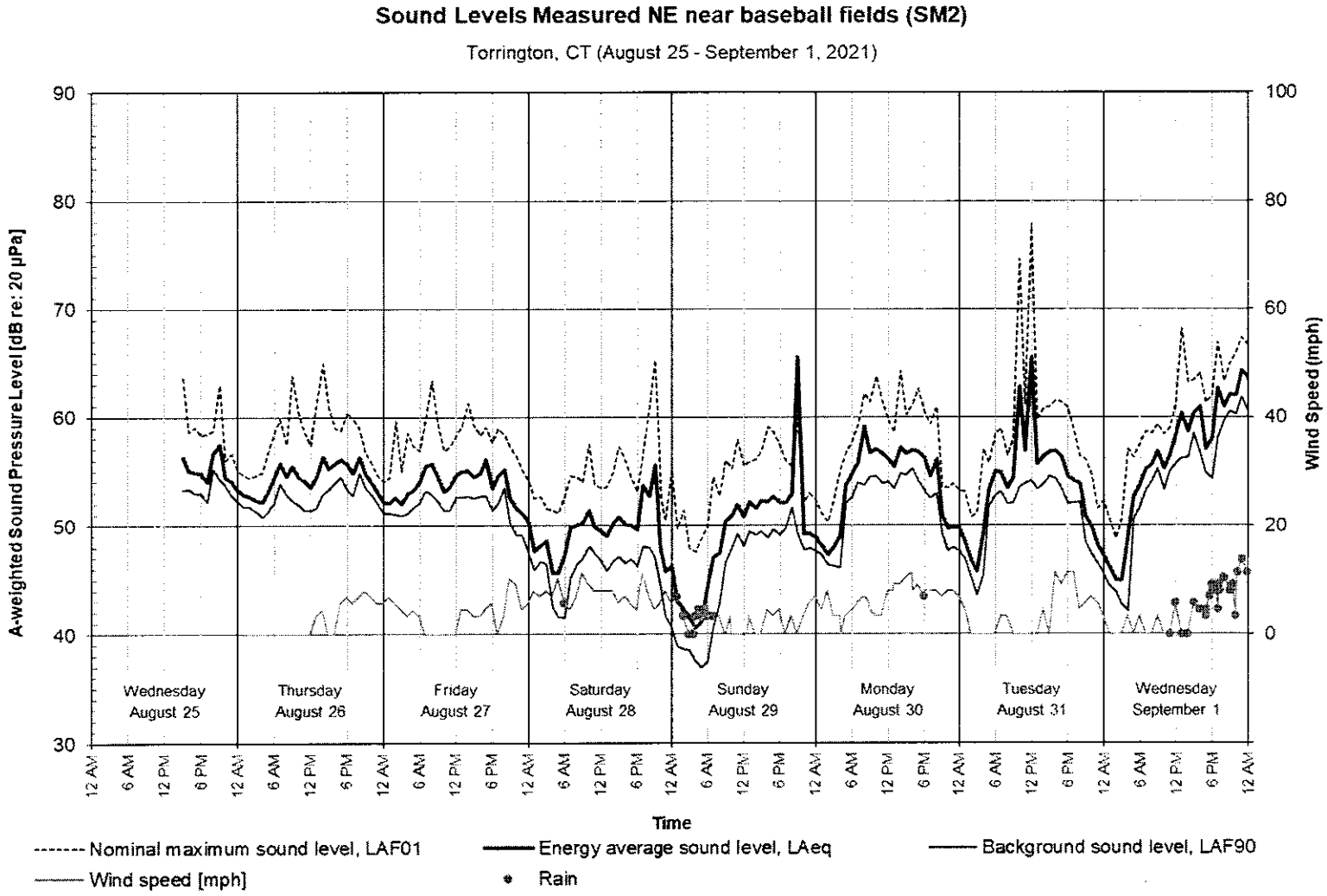


Figure 2

R11

CAVANAUGHTOCCI

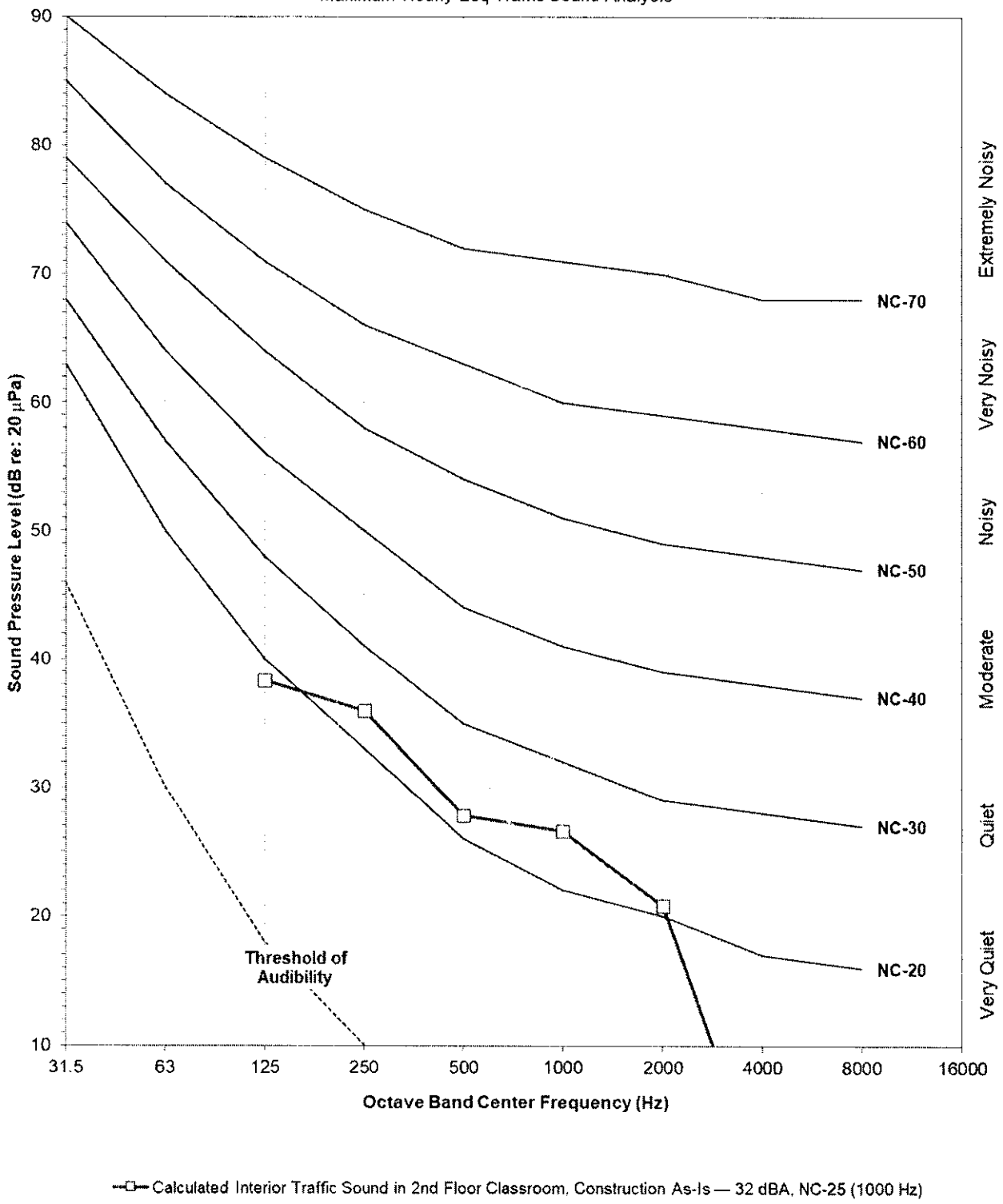

Torrington MHS
Maximum Hourly Leq Traffic Sound Analysis
Sound Pressure Level (dB re: 20 µPa)
90
80
70
60
50
40
30
20
10
31.5
63
125
250
500
1000
2000
4000
8000
16000
Octave Band Center Frequency (Hz)
NC-70
NC-60
NC-50
NC-40
NC-30
NC-20
Threshold of Audibility
Extremely Noisy
Very Noisy
Noisy
Moderate
Quiet
Very Quiet
Calculated Interior Traffic Sound in 2nd Floor Classroom, Construction As-Is — 32 dBA, NC-25 (1000 Hz)

Figure 3

Traffic Impact Study

Torrington Middle / High School & Administrative Offices

50 Major Besse Drive
Torrington, CT

Prepared for:
City of Torrington
50 Major Besse Drive
Torrington, CT 06790

September 2021

benesch

DRAFT

TABLE OF CONTENTS

TABLE OF EXHIBITS

I. INTRODUCTION

The purpose of this study is to evaluate the traffic impact of the proposed renovations and additions to the Torrington High School Campus which will include the incorporation of grades 7 and 8 to the existing high school (grades 9-12) and the Torrington Schools Administrative offices in the City of Torrington. It is anticipated that the combined school will accommodate 1,571 students, almost doubling the number of students on the campus. The 34.8-acre site is located to the north of Winthrop Street immediately to the east of Route 8. Primary access to the site will be via Major Besse Drive with an emergency access to Daley Drive at the north end of the campus. There will be a total of 305,055 square feet of building space on the school property consisting of 295,355 square feet for the school and 9,700 square feet for the Administrative Offices. A total of 412 parking spaces will be provided. It is intended that this report be responsive to the needs of the City of Torrington and the Connecticut Office of State Traffic Administration (OSTA) as they review the traffic impact of the proposed development on the surrounding roadways.

The scope of work involved in the preparation of this report includes:

- Making Turning Movement Counts (TMC) at six intersections in the vicinity of the site.
- Making 24-hour automatic traffic recorder counts.
- Making visual observations of the surrounding area.
- Obtaining data pertaining to the physical characteristics of the roadways and intersections in the vicinity of the site.
- Review of the latest crash data from the State of Connecticut for the roadways in the vicinity of the site.

Throughout this report, many terms unique to traffic engineering are used. Below are definitions of many of these items.

Trip is a one-way movement to or from a site. One car entering and leaving site constitutes two trips.

Traffic Generation is the actual number of vehicle movements that may reasonably be expected to be attracted by a specific development. Usually traffic generation is expressed as a number of trips.

Average Weekday Trip Generation is the total traffic generation of a development on a typical working weekday.

Peak Hourly Generation is traffic generation that may be anticipated during the highest volume hour for the particular development. This analysis parameter may vary as to the time of day, depending on the type of facility being proposed.

Capacity and Level of Service are terms utilized to describe the ability of a roadway to handle its traffic assignment.

Capacity is defined as the maximum volume of vehicles that may be expected to be carried by a specific roadway or intersection at a given Level of Service. The usual unit of capacity is vehicles per hour.

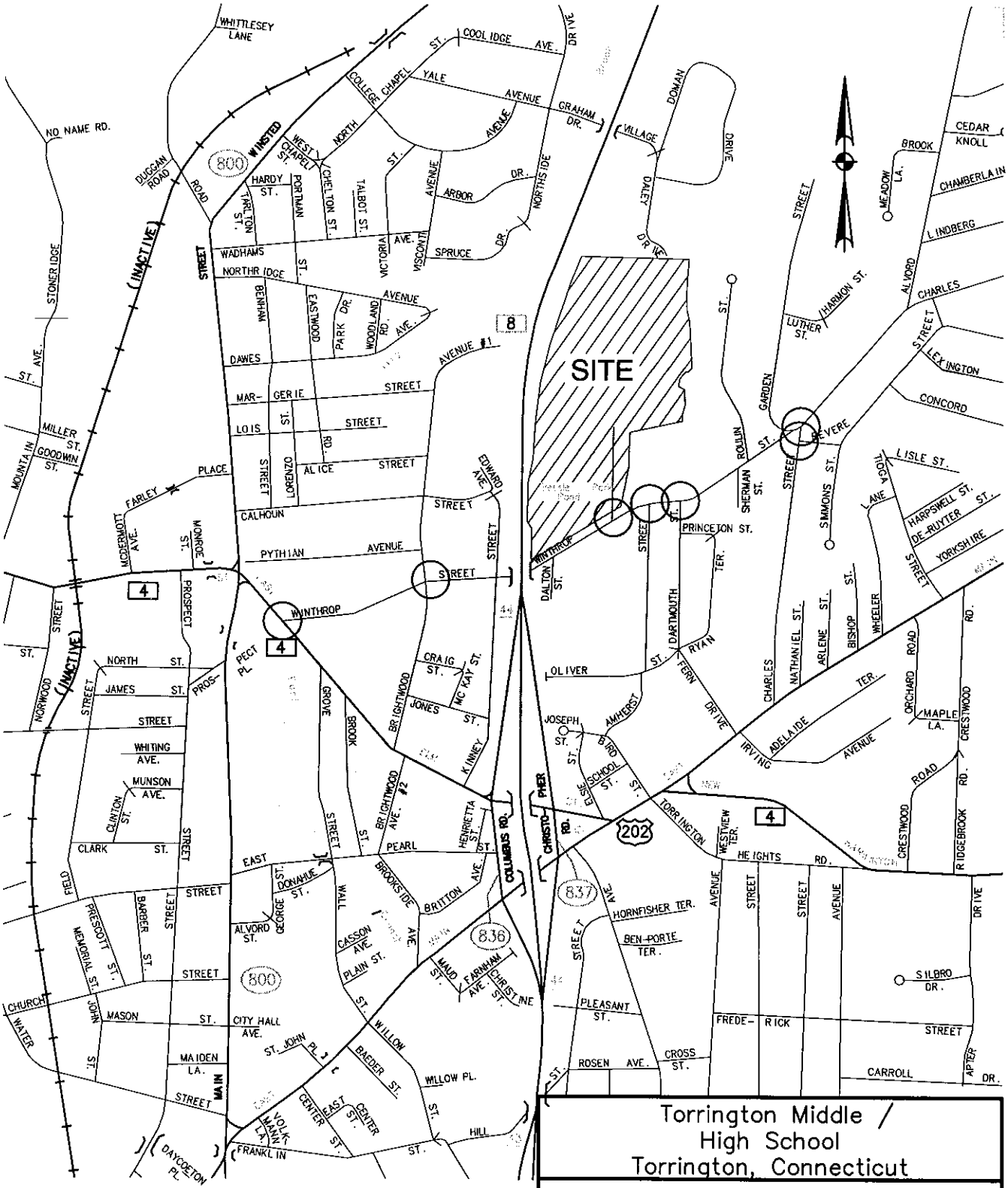
Level of Service is a measure of the quality of flow and overall congestion on a particular section of road or at a specific intersection.

Levels of Service (LOS) are defined in the Highway Capacity Manual (Special Report 209 of the Highway Research Board, 1994). LOS ratings are classified by letters from A to F, and are as follows:

Rating	Description	Traffic
A	Free Flow	Drivers feel no restrictions.
B	Stable Flow	Drivers feel some restrictions.
C	Stable Flow	Drivers somewhat restricted, but not objectionably so.
D	Approaching Unstable Flow	Increased restriction and congestion.
E	Capacity	Substantial restriction, serious delays.
F	Forced Flow	Stop and go conditions - extreme delays.

II. EXISTING CONDITIONS

The City of Torrington is proposing renovations and an addition to the existing Torrington High School campus located along the north side of Winthrop Street immediately to the east of Route 8. (See Exhibit 1) Access to the site will be via Major Besse Drive with an emergency access to Daley Drive at the north end of the campus.



○ = STUDY AREA INTERSECTIONS

Torrington Middle / High School
Torrington, Connecticut

PROJECT LOCATION MAP

SCALE: N.T.S.	DATE: Sept. 2021	EXHIBIT 1

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The primary access route to the school will be along Winthrop Street which is classified as an Urban Collector roadway traveling in the east-west direction. Winthrop Street begins at East Elm Street west of the site travels east past the site and changes to Charles Street and ends at Torringford Street. Winthrop Street has a single lane in each direction with side streets controlled by STOP signs. The intersection of Winthrop Street at Major Besse Drive is all-way stop controlled with a single lane approach for all roadways. The posted speed limit for Winthrop Avenue in the vicinity of the site is 25 mph.

Major Besse Drive acts as the main access roadway to the site and its location will remain unchanged providing access to the school for students, staff and busses. It also acts as access to parking for Elise Besse park. The parking for the park is within the parking field on the northeast corner of Winthrop Street and Major Besse Drive.

Turning movement counts were made during the weekday AM and PM school peak periods in March 2021 when school was in session at the following seven locations:

- Winthrop Street at Major Besse Drive
- Winthrop Street at Amherst Street
- Winthrop Street at Dartmouth Street
- Winthrop Street at Charles Street
- Charles Street at Revere Street
- Winthrop Street at Brightwood Avenue
- Winthrop Street at East Elm Street

The peak hour volumes are summarized in Exhibit 2.

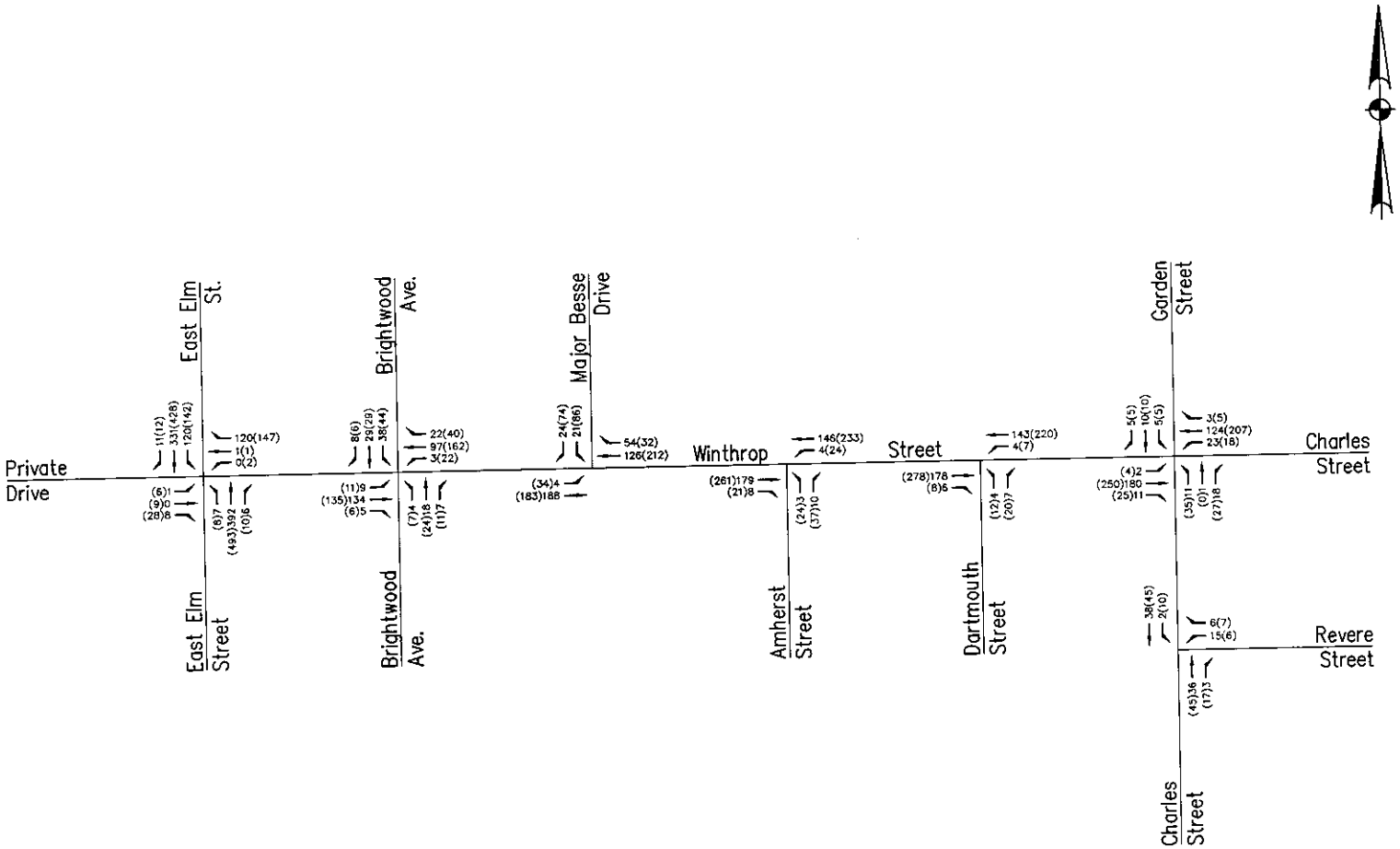
24-hour ATR counts were conducted along Winthrop Street to the east of Dalton Street.

The peak hour turning movement counts and ATR count data are presented in Appendix.

Crash data from the UCONN Crash repository was obtained for the six-year period from 1/1/2015 through 12/31/2020 for the intersections and roadways surrounding the site. Review of this data show that there are no crash patterns that would indicate geometric improvements should be made. The crash data is presented in the Appendix.

III. BACKGROUND CONDITIONS

Since the COVID-19 pandemic has reduced and altered peoples travel patterns, the traffic counts taken in March were low compared to normal. Review of their past count information for Winthrop Avenue taken by the Connecticut Department of Transportation in 2018 show the counts made this March need to be expanded by 7.2% to adjust the existing volumes to the 2018 volumes projected to 2021. The 2021 Adjusted Volumes are presented in Exhibit 3.

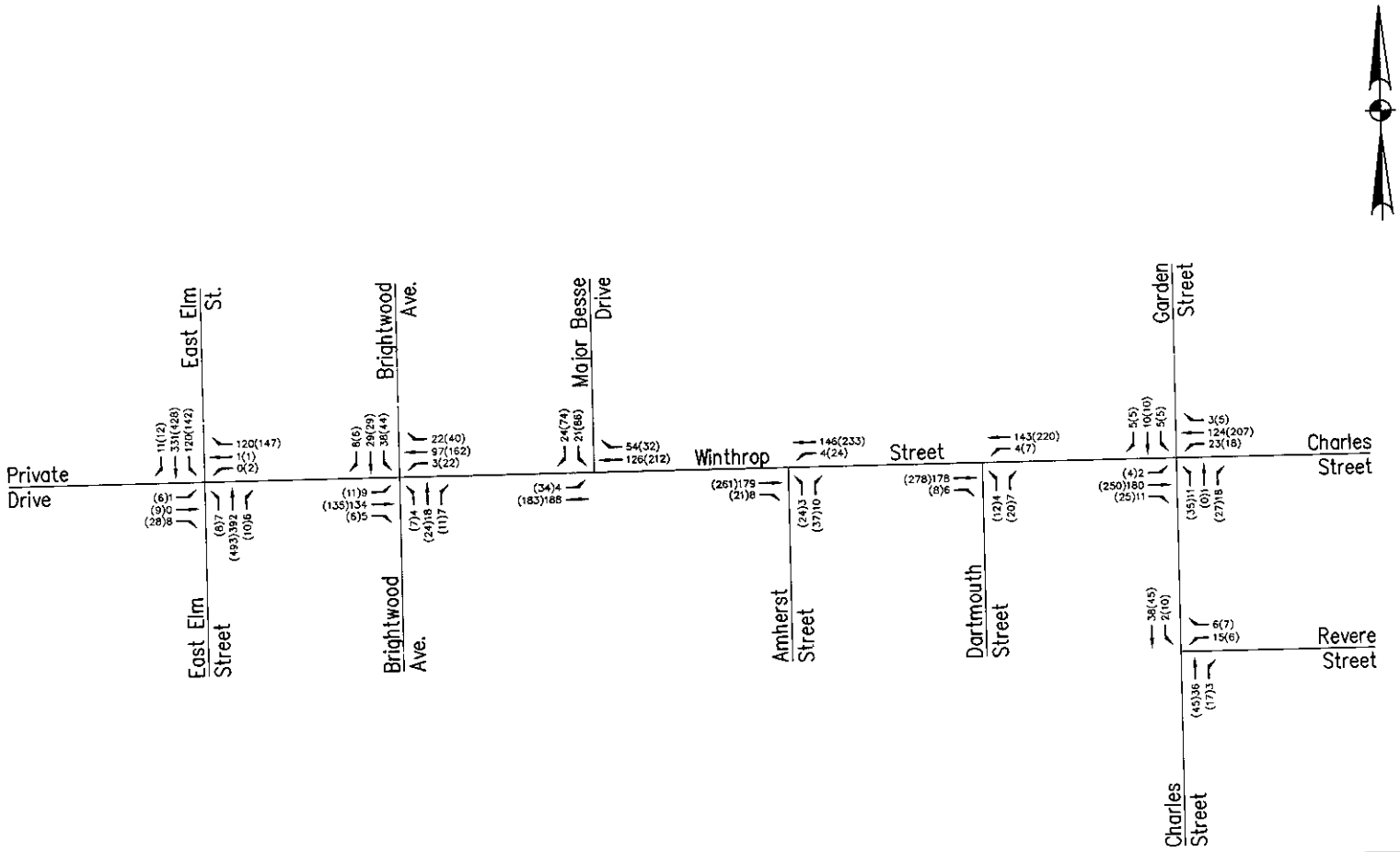


Legend
xx = AM Peak Hour
(xx) = PM Peak Hour

Torrington Middle / High School
Torrington, Connecticut

Traffic Flow Diagram
2021 Existing Volumes

SCALE: N.T.S. | DATE: Sept. 2021 | Exhibit 2



Torrington Middle / High School
Torrington, Connecticut

Traffic Flow Diagram
2021 Adjusted Volumes

SCALE: N.T.S. | DATE: Sept. 2021 | Exhibit 3

Legend
xx = AM Peak Hour
(xx) = PM Peak Hour

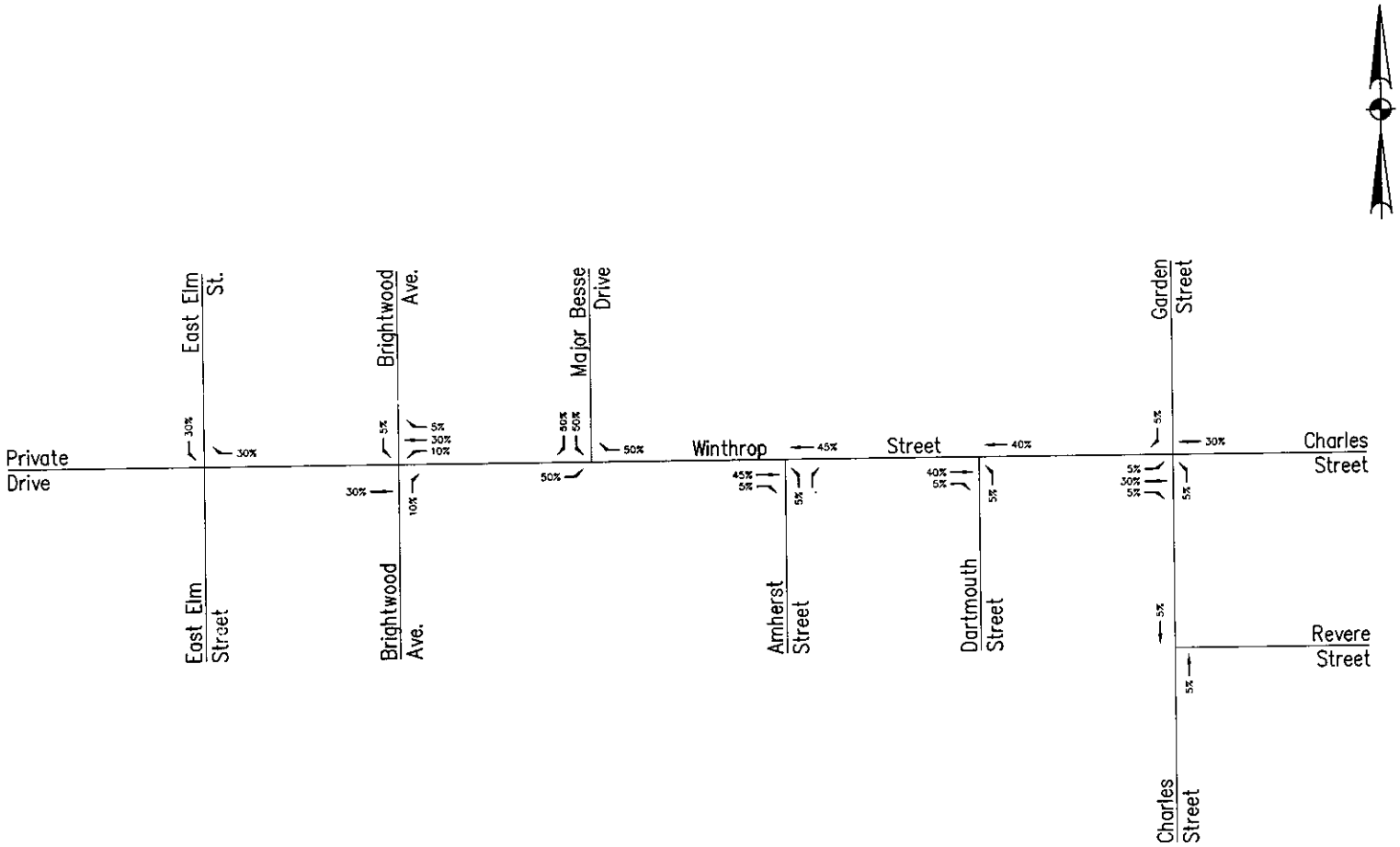
IV. IMPACT OF PROPOSED DEVELOPMENT

The traffic impact of the proposed development is determined by calculating the number of new trips that are expected to be generated by the development. The trip generation volumes represent the number of trips expected to be added to the roadway network during the peak hours of the proposed development. Traffic counts were taken at the existing Torrington Middle School to determine the number of vehicle trips that will be added to the high school when the two schools are combined. For the Board of Education offices data from the Institute of Transportation Engineers (ITE) publication Trip Generation, 10th edition, 2017, supplemented in 2020 was used to determine the number of new trips generated by the new offices. The anticipated increased number of new trips that will be generated by the proposed changes at the Torrington High School campus is calculated as follows:

Land Use Description	Middle School Existing Students	School District Office 538 9,700 SF	Total
AM Peak	254	25	279
Entering	177	19	196
Exiting	77	6	83
PM Peak	185	22	207
Entering	66	4	70
Exiting	119	18	137

The total new site generated traffic anticipated by the additions to the Torrington High School is 279 vehicle trips during the weekday morning peak hour and 207 vehicle trips during the weekday afternoon peak hour. The additional traffic added to the roadway network is 196 vehicles entering, and 83 vehicles exiting the development during the morning peak hour and 70 vehicles will enter and 137 vehicles will exit the development during the afternoon peak hour.

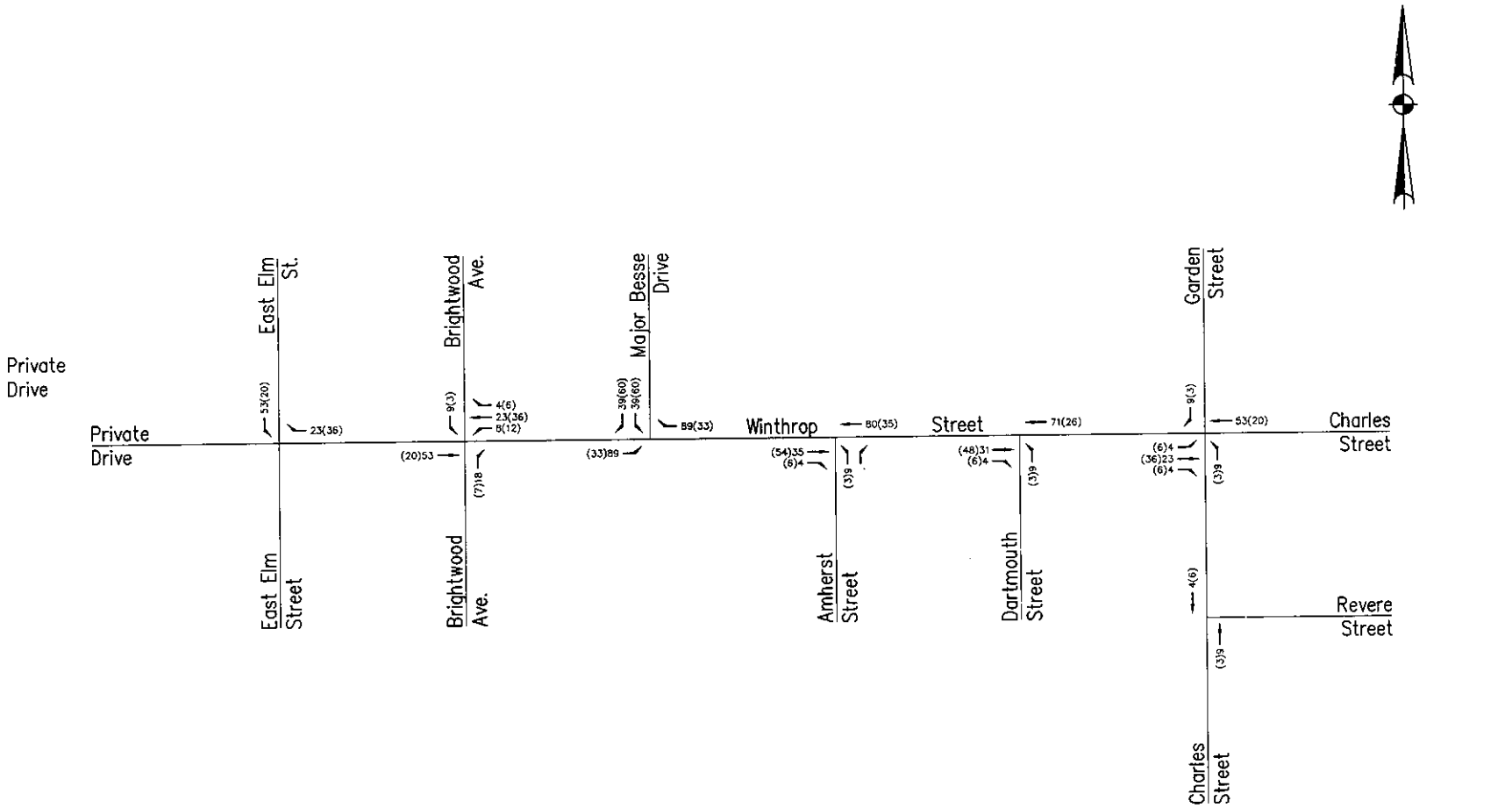
The direction from which vehicles are expected to arrive and depart the site is important in determining the impact that the generated traffic will have on the roadway system. The arrival and departure distribution were determined by a review of the approach routes to the school from the various parts of the city. The peak hour trip distribution percentages and site generated traffic volumes are presented in Exhibits 4 and 5 respectively.



Torrington Middle / High School
Torrington, Connecticut

Traffic Flow Diagram
Trip Distribution

SCALE: N.T.S. | DATE: Sept. 2021 | Exhibit 4



Torrington Middle / High School
Torrington, Connecticut

Traffic Flow Diagram
Trip Generation

SCALE: N.T.S.	DATE: Sept. 2021	Exhibit 5

Legend
xx = AM Peak Hour
(xx) = PM Peak Hour

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V. CAPACITY ANALYSIS OF SURROUNDING ROADWAYS

Capacity analyses were conducted for the intersections noted in Section II using the Synchro Professional Software, version 11.1 according to the methods described in the 2010 Highway Capacity Manual, published by the Transportation Research Board. Analyses were conducted for the 2023 No-Build and 2023 Build Conditions. The 2021 No-Build and 2021 Build volumes were calculated using the following methodology:

- 2023 No-Build Volumes were calculated by expanding the 2021 Adjusted Volumes by 1% for two years. This accounts for general background growth and other projects that may be developed in the vicinity of the school.
- 2023 Build Conditions: The site generated traffic volumes were then added to the 2023 No-Build volumes to yield the 2023 Build traffic volumes.

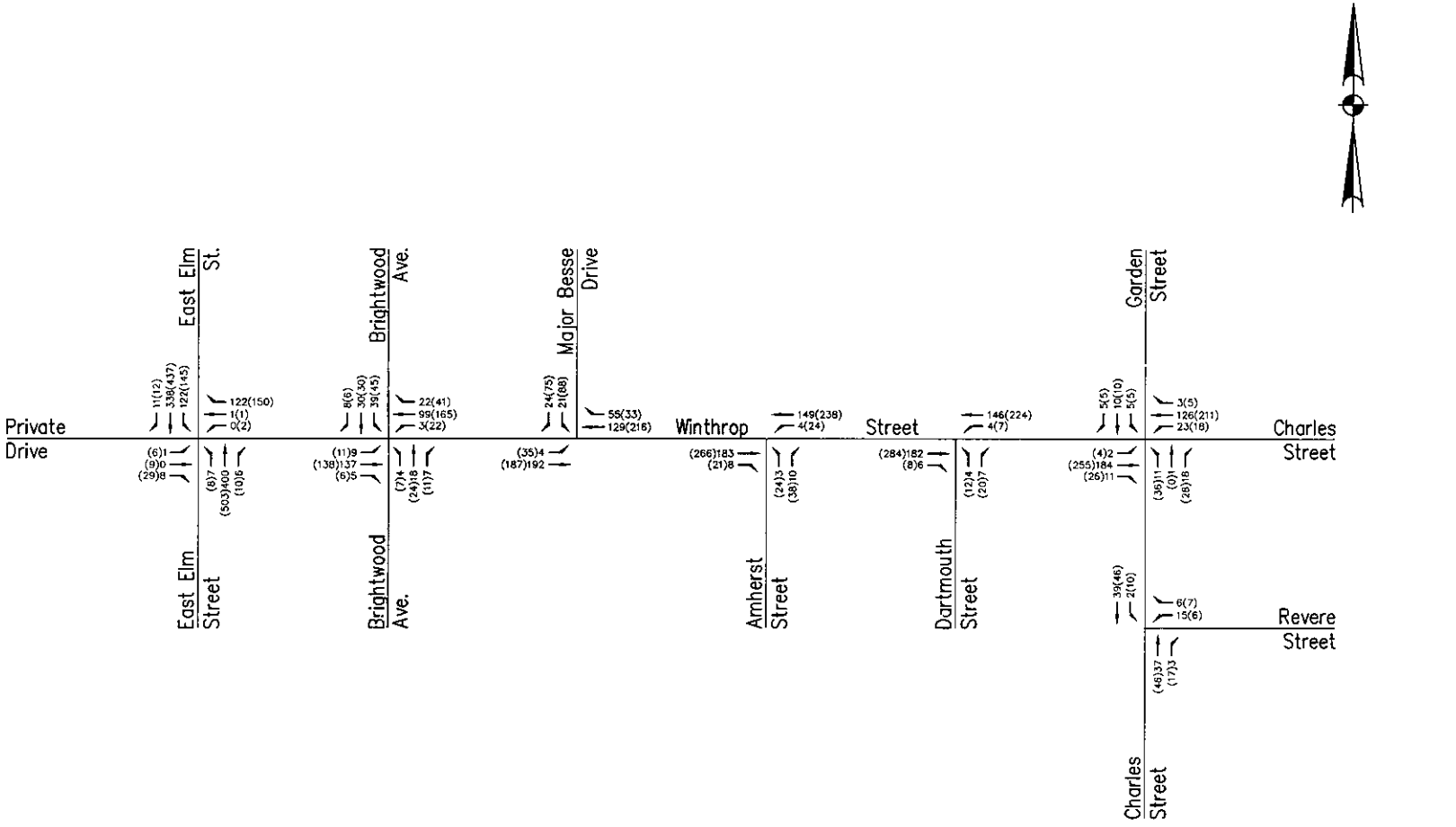
Traffic Flow Diagrams for the 2021 Adjusted Volumes, Trip Distribution, Generated Trips, 2023 No-Build Volumes and 2023 Build Volumes are presented in Exhibits 3, 3, 4, 5, 6, and 7.

Exhibit 8 presents the results of the capacity analyses for the 2023 No-Build and 2023 Build Traffic Volumes. The analyses for the intersection of Winthrop Street at Major Besse Drive will retain the existing ALL-WAY STOP condition with single lane approaches. The results of the capacity analyses show that all of the intersections studied will operate at an LOC C or better with all intersection approaches operating at an LOS D or better once the new Torrington Middle School / High School and Central Administration Building is completed. No off-site improvements are anticipated as a result of this project. The analyses also show that none of the anticipated queues along any of the intersection approaches will encroach on adjacent intersections.

VI. CONCLUSIONS

The City of Torrington is proposing a new Middle School / High School and Central Administration Building on the existing Torrington School campus. The site is located on the north side of Winthrop Street immediately to the east of Route 8. Primary access to the site will be via Major Besse Drive with an emergency access to Daley Drive at the north end of the campus. There will be a total of 305,055 square feet of building space on the school property consisting of 295,355 square feet for the school and 9,700 square feet for the Administrative Offices. A total of 412 parking spaces will be provided.

196 vehicles will enter, and 83 vehicles will exit the development during the morning peak hour and 70 vehicles will enter and 137 vehicles



Torrington Middle / High School
Torrington, Connecticut

Traffic Flow Diagram
2023 No-Build Volumes

SCALE: N.T.S.	DATE: Sept. 2021	Exhibit 6

Legend
xx = AM Peak Hour
(xx) = PM Peak Hour

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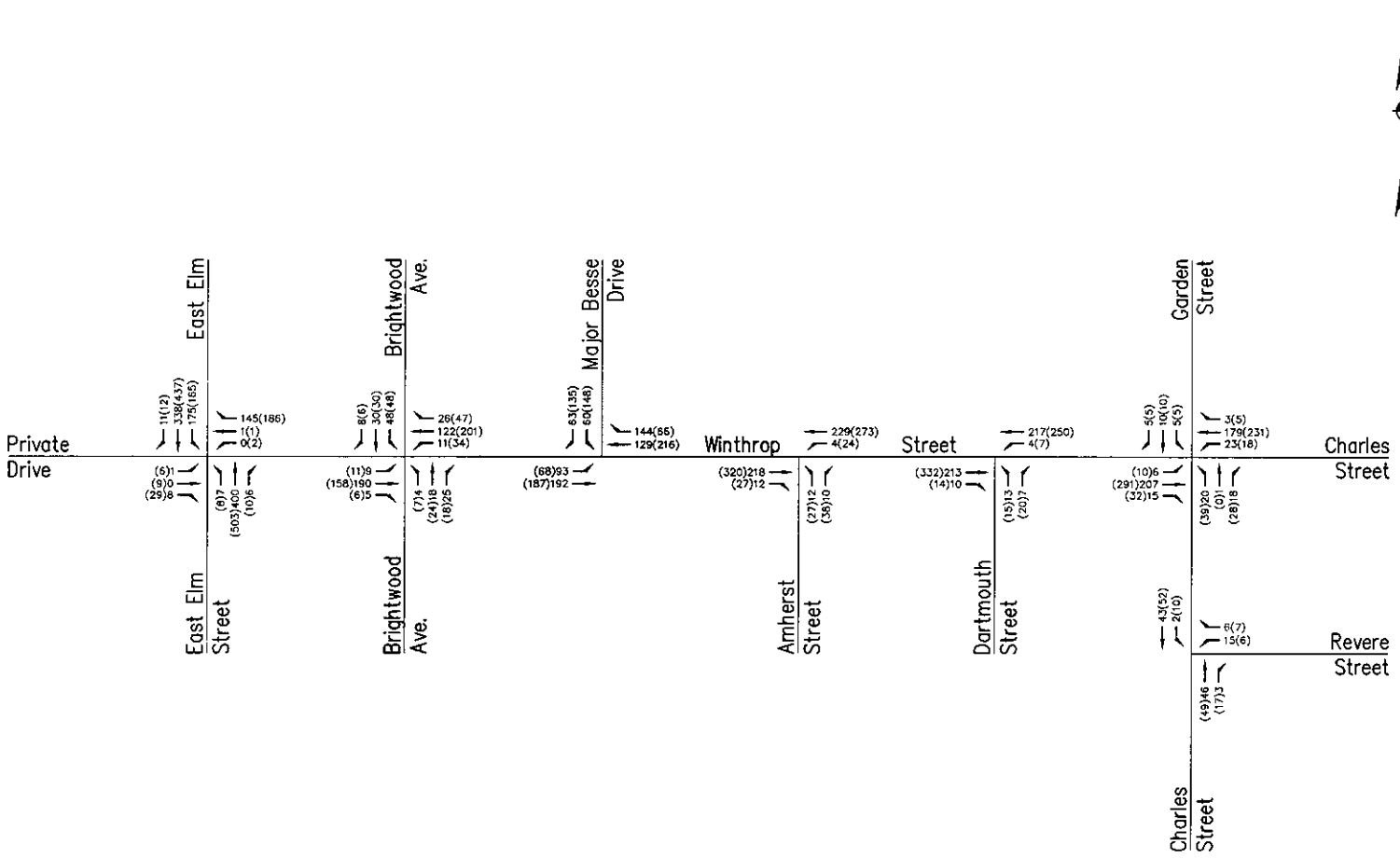

Torrington Middle / High School
Torrington, Connecticut

Traffic Flow Diagram
2023 Build Volumes

SCALE: N.T.S.	DATE: Sept. 2021	Exhibit 7

Legend
xx = AM Peak Hour
(xx) = PM Peak Hour

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Exhibit 8
2023 Anticipated Levels of Service

	2023 No-Build						2023 Build					
	AM Peak			PM Peak			AM Peak			PM Peak		
	LOS	Delay	95% Queue (Veh)	LOS	Delay	95% Queue (Veh)	LOS	Delay	95% Queue (Veh)	LOS	Delay	95% Queue (Veh)
Winthrop Street at Major Besse Drive (AWS)	A	9.3		B	11.2		B	12.9		C	15.6	
Southbound (Major Besse Drive)	A	8.4	0.3	B	10.6	1.3	B	10.8	1.1	C	16.3	3.8
Eastbound	A	9.7	1.5	B	11.3	1.9	B	14.4	3.6	B	15.0	3.1
Westbound	A	9.1	1.3	B	11.5	2.5	B	12.4	2.9	C	15.3	3.5
Winthrop Street at Amherst Street	N/A			N/A			N/A			N/A		
Westbound Left	A	7.7	0.0	A	8.0	0.1	A	7.8	0.0	A	8.2	0.1
Northbound (Amherst St.)	A	9.9	0.1	B	11.1	0.1	B	11.3	0.1	B	13.9	0.6
Winthrop Street at Dartmouth Street	N/A			N/A			N/A			N/A		
Westbound Left	A	7.7	0.0	A	7.9	0.0	A	7.7	0.0	A	8.1	0.0
Northbound (Dartmouth St)	B	10.0	0.1	B	11.4	0.2	B	11.4	0.1	B	12.4	0.2
Winthrop Street at Charles Street	A	9.1		A	15.2		A	9.0		B	15.2	
Eastbound Left	A	10.0	1.7	B	11.2	2.4	A	8.2	1.5	B	13.3	3.4
Westbound	A	7.9	0.7	A	8.8	1.4	A	8.3	1.1	A	8.6	0.1
Northbound	A	8.0	0.1	A	8.4	0.2	A	8.2	0.2	A	9.3	0.4
Southbound	A	7.8	0.1	A	8.2	0.1	A	7.9	0.1	A	9.7	1.7
Charles Street at Revere Street	N/A			N/A			N/A			N/A		
Southbound Left	A	7.3	0.0	A	7.4	0.0	A	7.3	0.0	A	7.4	0.0
Westbound	A	9.0	0.1	A	8.9	0.0	A	9.1	0.1	A	8.9	0.0
Winthrop Street at Brightwood Avenue (AWS)	A	8.7		AA	9.1		A	9.6		A	9.9	
Eastbound	A	9.0	1.0	A	8.9	0.1	B	10.1	1.6	A	9.4	1.0
Westbound	A	8.5	0.8	A	9.5	1.4	A	9.4	1.1	B	10.6	2.0
Northbound	A	8.1	0.2	A	8.3	0.2	A	8.4	0.3	A	8.6	0.3
Southbound	A	8.7	0.5	A	8.9	0.4	A	9.3	0.6	A	9.2	0.5
Winthrop Street at East Elm Street	N/A			N/A			N/A			N/A		
Northbound	A	8.1	0.0	A	8.5	0.0	A	8.1	0.0	A	8.5	0.0
Southbound	A	8.7	0.4	A	9.4	0.6	A	8.9	0.6	A	9.6	0.7
Eastbound (Private Drive)	B	13.6	0.1	D	27.4	0.7	C	15.0	0.1	D	34.0	0.9
Westbound (Winthrop Street)	B	12.8	0.9	C	17.8	1.8	B	13.3	1.1	C	19.7	2.5

It is anticipated that the traffic impact of the proposed new Middle School / High School and Central Administration Building campus is 196 vehicles entering and 83 vehicles exiting the development during the morning peak hour and 90 vehicles entering and 137 vehicles exiting the development during the afternoon peak hour.

Capacity analyses were conducted for the 2023 No-Build and 2023 Build Traffic Volumes with the analyses indicating that all of the intersections studied will operate at a Level of Service C or better during both the morning and afternoon peak periods.

Based on the findings of this report it is the professional opinion of Alfred Benesch & Company that the construction of the proposed Middle School / High School and Central Administration Building on the existing High School campus in the City of Torrington will not impede or adversely affect traffic operations on the adjacent roadway network.

Stephen R. Ulman, P.E, PTOE
Senior Project Engineer

HS/MS/CENTAL OFFICE CONSTRUCTION
Analysis of Payments

Company	Payment Date	Invoice Number	Check Number	Amount	Total
Architect:					
SLAM	6/28/2021	1022760	120417	835,100.00	2,055,050.00
	7/15/2021	1022947	120638	349,300.00	
	9/10/2021	1023190	121432	395,750.00	
	9/16/2021	1023424	121537	474,900.00	
Owner's Represenative:					
Construction Solutions	5/7/2021	1005	119750	58,603.20	156,275.20
	6/4/2021	1016	120047	19,534.40	
	6/28/2021	1018	120413	19,534.40	
	7/22/2021	1058	120701	19,534.40	
	9/10/2021	1064	121368	19,534.40	
	9/16/2021	1075	121504	19,534.40	
Construction Manager:					
O&G Industrices, Inc.	9/10/2021	483560	121411	103,476.90	137,969.20
	9/10/2021	494583	121411	17,246.15	
	9/16/2021	500646	121527	17,246.15	

	A	B	C	D	E	F	G	H	I
34									
35									
36	**Bond Council:**								
37	**Pullman & Comley**		12/4/2020		371434	118104	9,709.31		9,709.31
38									
39									
40									
41									
42									
43	**Commission Agent Services:**								
44	**Innovative Engineering**		9/10/2021		15868	121389	960.00		960.00
45									
46									
47									
48									
49									
50	**TOTAL**								2,359,963.71