



Nitsch Engineering

Winthrop
Elementary School
Ipswich, MA

Transportation Feasibility Assessment

March 2, 2016

Prepared for:

Perkins Eastman
50 Franklin Street, Suite 203
Boston, MA 02110

Prepared by:

Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

Nitsch Project #11251.0

INTRODUCTION

As part of the Feasibility Study for the existing Winthrop Elementary School in Ipswich, Massachusetts, Nitsch Engineering has been retained by Perkins Eastman to observe the existing traffic circulation and queue lengths on adjacent streets during the normal drop-off and pick-up periods at Winthrop Elementary School, located at 65 Central Street; the Paul F. Doyon Memorial School, located at 216 Linebrook Road; and evaluate site improvement options presented by Perkins Eastman at existing school sites and three potential alternate sites for the school.

The focus of this study was to evaluate the existing condition at the Winthrop Elementary School and Paul F. Doyon Memorial School and to provide opinions regarding the possibility of the following five options (See Appendix):

1. Making improvements to circulation as part of the Winthrop Elementary School reconstruction at its current site;
2. Renovate to add, or new construction at Paul F. Doyon Memorial School to include Winthrop Elementary School at the current site; and
3. Moving the Winthrop Elementary School operations to one of the following sites:
 - a. Bialek Park at 17 Linebrook Road;
 - b. Ipswich Town Hall at 25 Green Street; and
 - c. Veterans Memorial Field at Mile Lane.

Traffic operations are secondary to the goals of this report; therefore we did not collect Automatic Traffic Recorder (ATR) counts or Turning Movement Counts (TMC s), we did not analyze or evaluate roadway or intersection capacity, and traffic signal warrants were not performed. These tasks, if required will be performed as part of the Schematic Design Phase of the chosen alternative.

The Locus Map of the study area is shown in Figure 1. A map of the existing Winthrop Elementary School site is shown in Figure 2, and a map of the existing Paul F. Doyon Memorial School site is shown in Figure 3.



**Paul F. Doyon
Memorial School**

**Winthrop
Elementary
School**

PRESWAMP ROAD

CENTRAL STREET

COUNTRY ROAD

TOPSFIELD ROAD

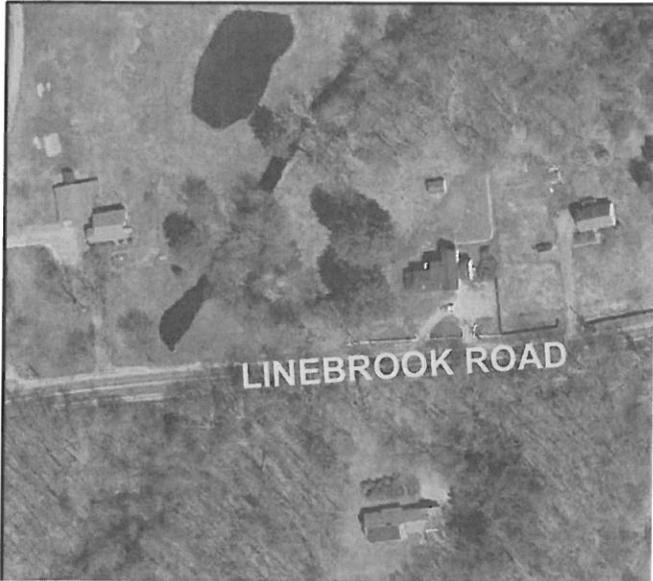


Winthrop
Elementary
School

CENTRAL STREET

LONEYS LANE

Figure 2: Winthrop Elementary School



Paul F. Doyon
Memorial School

Figure 3: Paul F. Doyon Memorial School

Site Visit

Nitsch Engineering conducted a site visit on Thursday February 3, 2016 to observe the site circulation associated with the weekday morning drop-off, weekday afternoon pick-up and general queue lengths around the Winthrop Elementary School and Paul F. Doyon Memorial School sites. The weekday morning drop-off observation occurred during cloudy conditions with a temperature of 21 degrees. The weekday afternoon pick-up activity occurred during rainy conditions with a temperature of 37 degrees.

1. Winthrop Elementary School

1.1. Site Access and Egress

Winthrop Elementary School is located at 65 Central Street (Route 1A) in Ipswich, on the north side of the road and to the west of Ipswich Fire Department. The School is mainly accessed from Central Street, and occasionally from Manning Street via a driveway to the north of the Fire Department. The main access and egress to the school (parental drop-off and pick-up, as well as the teachers and staff) occurs from two cur cuts on Central Street. Concrete sidewalks are present at both sides of Central Street.

1.2. Winthrop Elementary School Traffic Circulation and Pick-up/Drop-off

Existing Morning Drop-off Circulation via:

Central Street

The Winthrop Elementary School traffic arrives at Central Street from 7:15 AM through 9:00 AM. We observed that parents arrive and proceed to drop-off their children at the school's designated drop-off/pick-up loop driveway. A total of 135 parental drop-offs were observed during the morning. Buses arrive at Central Street from 8:30 AM through 8:45 AM. Buses enter and exit the site from Central Street, via the exclusive bus driveway. After dropping off students, buses leave the site. A total of 3 buses and 1 minibus drop off approximately 145 students at the school. At the time of the site visit we observed ten student walkers, and no bicyclists at this entrance. 62 vehicles exiting the site were observed travelling northbound on Central Street while 69 vehicles were observed traveling southbound.

Manning Street

The Winthrop Elementary School traffic arrives at Manning Street from 8:00 AM through 8:30 AM. We observed that some parents arrive and park at the parking lot and walk their children to the school. A total of 4 parental drop-offs were observed during the morning. At the time of the site visit we did not observe any student walkers and bicyclists at this entrance.

Existing Afternoon Pick-up Circulation via:

Central Street

The afternoon pick-up period occurs approximately from 2:00 PM to 3:30 PM. Parents start arriving around 2:00 PM and queue up at the school's parking lot to wait for their children. We observed a double stacked 12-car queue at the parking lot during the pick-up period. Once they have collected their children they leave via Central Street, and normal traffic returns around 3:30 PM. A total of 100 parental pick-up vehicles were observed during afternoon dismissal. Buses enter and exit the site from Central Street. A total of 3 buses and 1 minibus pick up students at the School's exclusive bus driveway. At the time of the site visit we didn't observe any students walkers or bicyclists. 48 vehicles accessing the site were travelling southbound on Central Street while 53 vehicles were traveling northbound.

Manning Street

The afternoon pick-up period occurs approximately from 2:00 PM to 3:30 PM. Parents start arriving around 2:00 PM and queue up at the school's main parking lot to wait for their children. At the time of the observation 1 parental pick-up vehicle was observed during afternoon dismissal. At the time of the site visit we didn't observe any students walkers or bicyclists.

Table 1 quantifies the parent and bus drop-off/pick-up totals for the school.

Table 1 – Winthrop Pick-Up/Drop-Off Quantity

Location		Central Street				Manning Street			
Type		Parent		Bus		Parent		Bus	
Time		Drop-Off	Pick-Up	Drop-Off	Pick-Up	Drop-Off	Pick-Up	Drop-Off	Pick-Up
AM	7:15 - 7:30	3							
	7:30 - 7:45	2							
	7:45 - 8:00	1				1			
	8:00 - 8:15	2							
	8:15 - 8:30	26				2			
	8:30 - 8:45	68		3+1 MB		1			
	8:45 - 9:00	31							
PM	2:00 - 2:15		3				1		
	2:15 - 2:30		7						
	2:30 - 2:45		15						
	2:45 - 3:00		39						
	3:00 - 3:15		36		3+1 MB				
TOTAL		135	100	3+1MB	3+1 MB	4	1	0	0

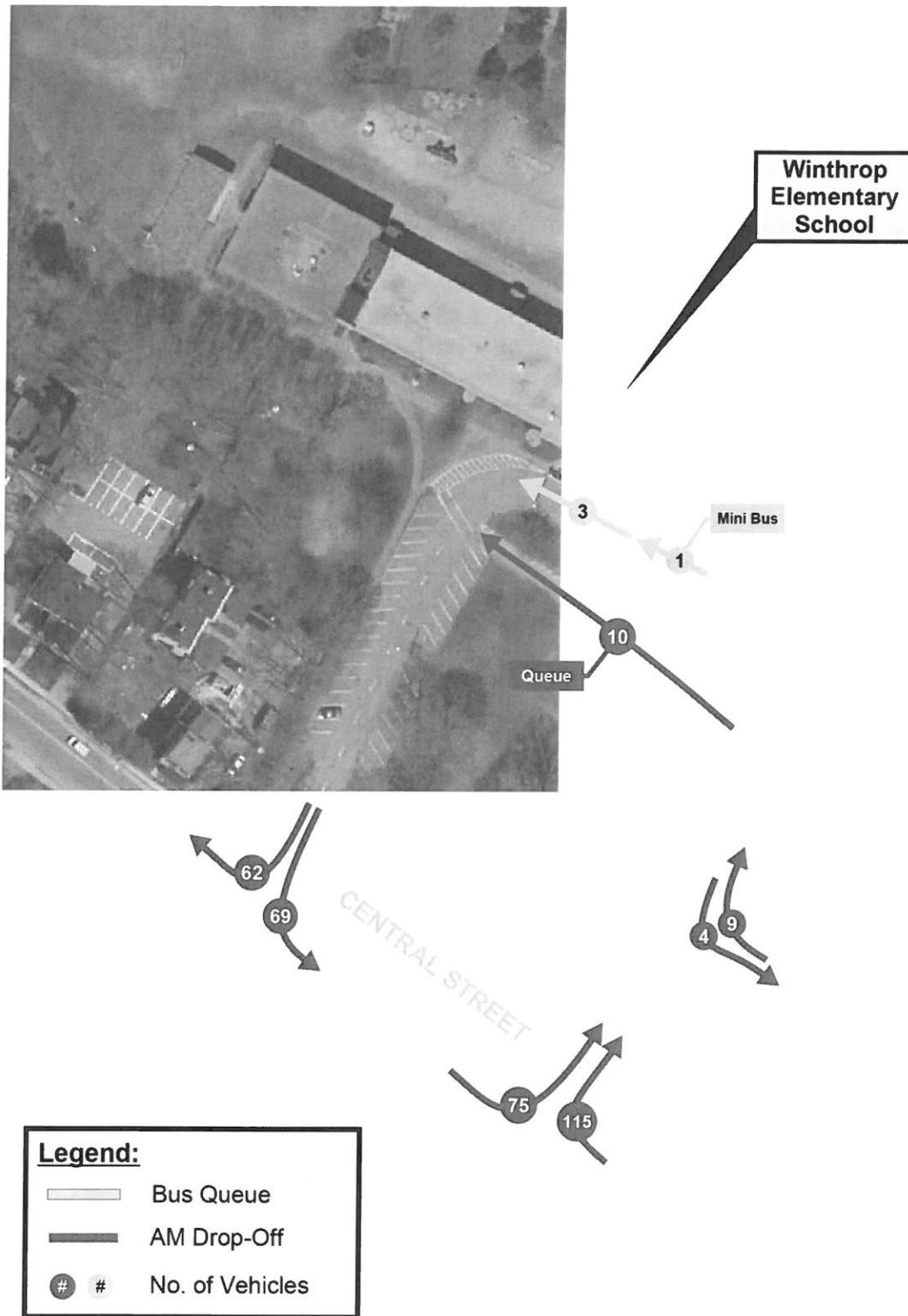
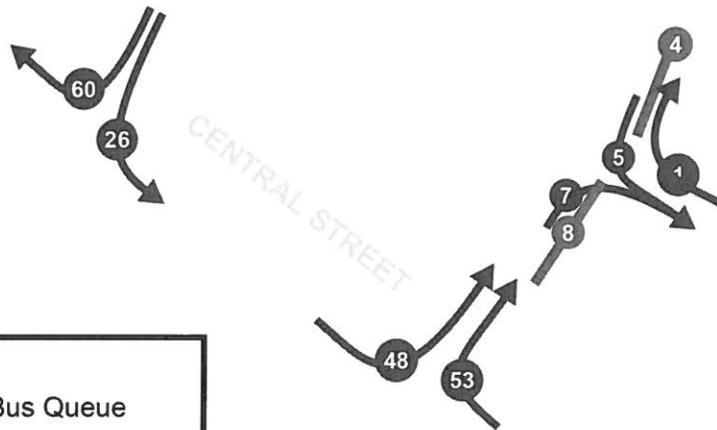
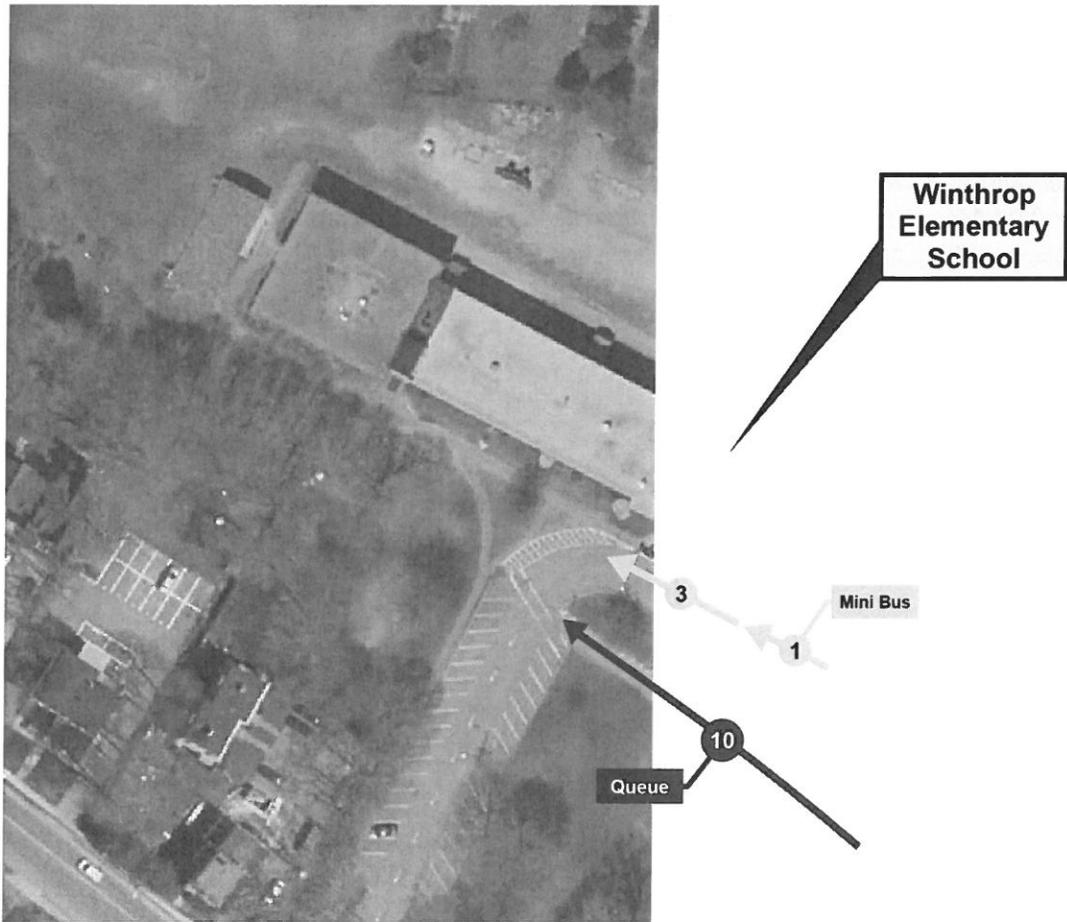


Figure 4: Winthrop Elementary School AM Circulation



Legend:			
			Bus Queue
			PM Pick-Up
			Vehicle Queue
	#		No. of Vehicles

Figure 5: Winthrop Elementary School PM Circulation

1.3. Winthrop Elementary School Parking Supply and Demand

Nitsch Engineering performed a parking supply and demand count on February 3, 2016. The utilization of the lot was taken at 10:00 AM. Figure 6 shows an overview of the Winthrop Elementary School parking lot, the total parking spaces, parking space type, and lot utilization.

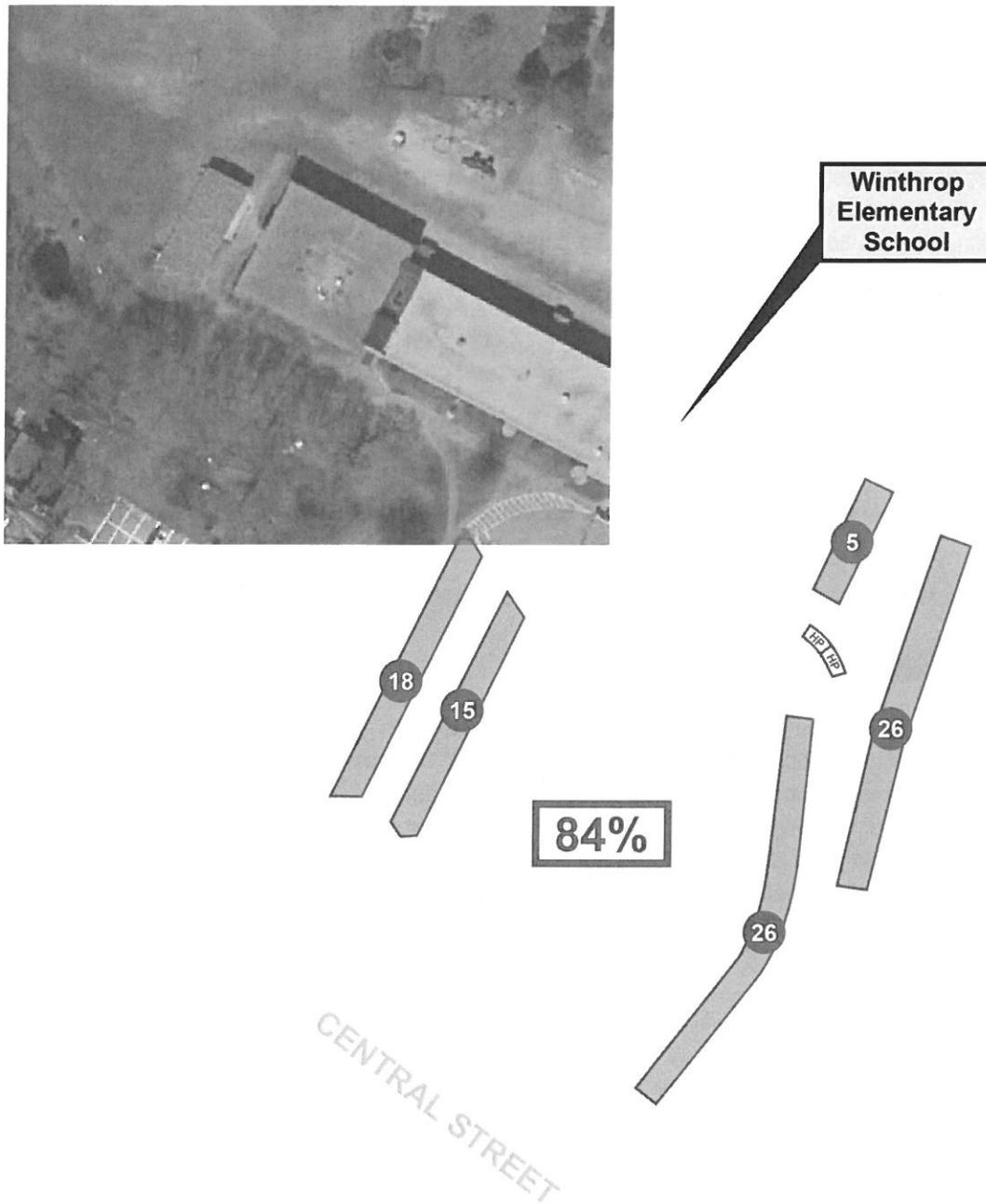


Figure 6: Winthrop Elementary Parking Lot Overview

As can be seen from Figure 6, a total of 92 parking spaces were counted within the parking lot at Winthrop Elementary School 2 of which are accessible spaces. This does not meet the Architectural Access Board (AAB) Code of Massachusetts Regulations (521 CMR) for the minimum required number of handicapped parking spaces of 4. The two accessible spaces were not utilized at the time of observation. The overall lot utilization at this parking lot was 84% at the time of observation.

2. Paul F. Doyon Memorial School

2.1. Site Access and Egress

Paul F. Doyon Memorial School is located at 216 Linebrook Road in Ipswich, on the south side of the road. The access and egress to the school (parental drop-off and pick-up, as well as the teachers and staff) occurs from two cur cuts on Linebrook Road. There are no sidewalks on either sides of Linebrook Road.

2.2. Paul F. Doyon Memorial School Traffic Circulation and Pick-up/Drop-off

Existing Morning Drop-off Circulation via:

The Paul F. Doyon Memorial School traffic arrives at Linebrook Road from 7:15 AM through 9:00 AM. We observed that parents arrive and proceed to drop-off their children at the school's front door. A total of 98 parental drop-offs were observed during the morning. Buses arrive at Linebrook Road from 8:30 AM through 8:45 AM. Buses enter and exit the site from Linebrook Road. After dropping off students, buses leave the site. A total of 5 buses and 1 minibus drop off approximately 301 students at the school. At the time of the site visit we did not observe any student walkers, nor bicyclists at the school. 64 vehicles exiting the site were observed travelling eastbound on Linebrook Road while 34 vehicles were observed traveling westbound.

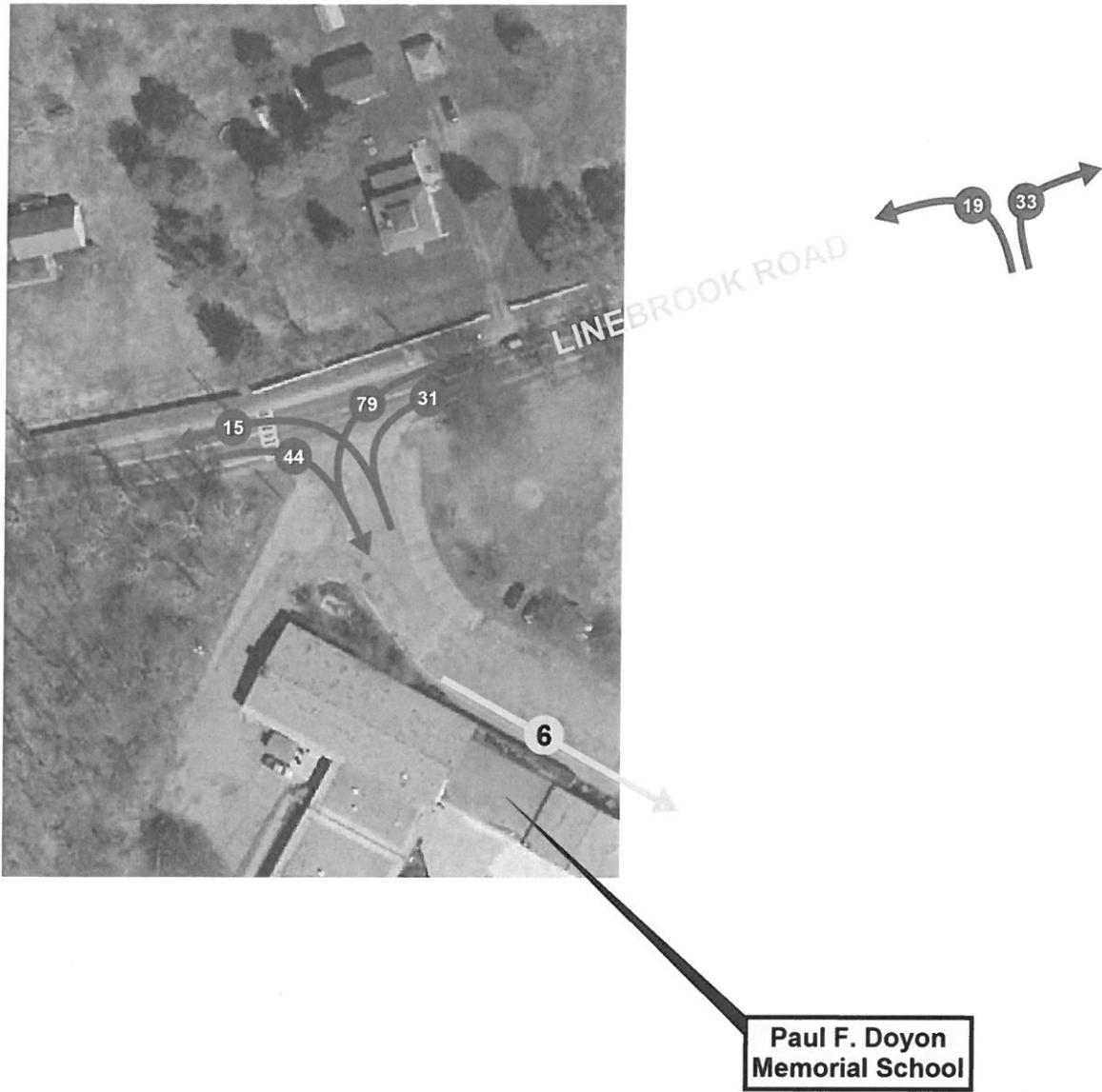
Existing Afternoon Pick-up Circulation via:

The afternoon pick-up period occurs approximately from 2:00 PM to 3:30 PM. Parents start arriving around 2:00 PM and proceed to the small lot/loading area to the west of the school, turn around and head back to queue up at the driveway before reentering the school's parking lot to wait for their children. We observed a 22-car queue at the parking lot during the pick-up period. Once they have collected their children they leave via Linebrook Road, and normal traffic returns around 3:30 PM. A total of 71 parental pick-up vehicles were observed during afternoon dismissal. Buses enter and exit the site from Linebrook Road. A total of 5 buses and 1 minibus pick up approximately 301 students at the School's exclusive bus area at the east portion of the parking lot. At the time of the site visit we did not observe any student walkers, nor bicyclists at the school. 41 vehicles accessing the School were travelling westbound on Linebrook while 30 vehicles were traveling eastbound.

Table 2 quantifies the parent and bus drop-off/pick-up totals for the school.

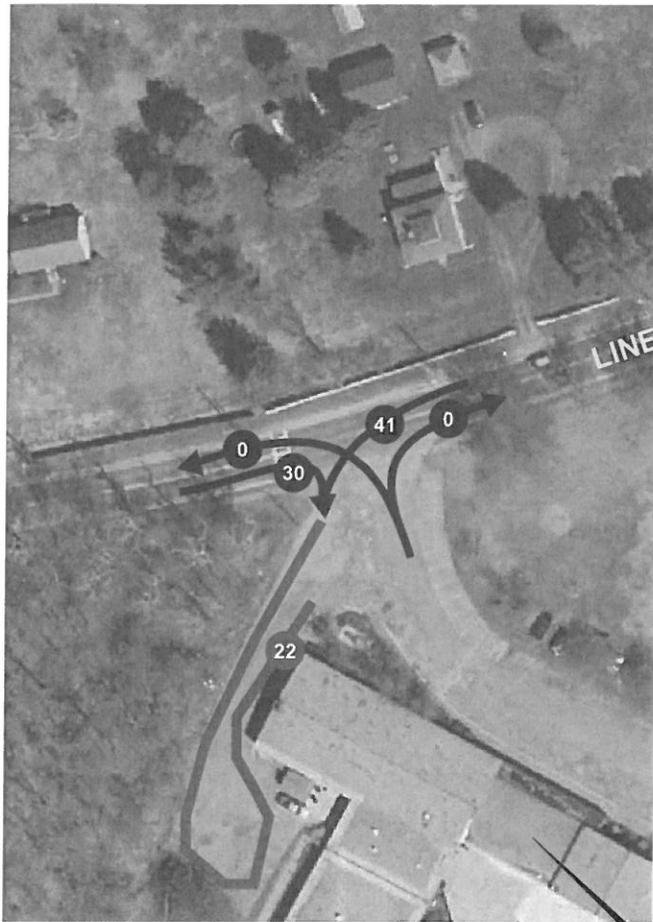
Table 2 – Doyon Pick-Up/Drop-Off Quantity

Location		Central Street			
Type		Parent		Bus	
Time		Drop-Off	Pick-Up	Drop-Off	Pick-Up
AM	7:15 - 7:30	1			
	7:30 - 7:45	2			
	7:45 - 8:00	1			
	8:00 - 8:15	2			
	8:15 - 8:30	10			
	8:30 - 8:45	49		5+1 MB	
	8:45 - 9:00	33			
PM	2:00 - 2:15		3		
	2:15 - 2:30		4		
	2:30 - 2:45		18		
	2:45 - 3:00		32		5
	3:00 - 3:15		10		
	3:15- 3:30		4		
TOTAL		98	71	5+1MB	5+1MB



Legend:	
	Bus Queue
	AM Drop-Off
 #	No. of Vehicles

Figure 7: Doyon Memorial School AM Circulation



**Paul F. Doyon
Memorial School**

Legend:

-  Bus Queue
-  PM Pick-Up
-  Vehicle Queue
-  Number of Vehicles

Figure 8: Doyon Memorial School PM Circulation

Paul F. Doyon Memorial School Parking Supply and Demand

Nitsch Engineering performed a parking supply and demand count on February 3, 2016. The utilization of the lot was taken at 10:00 AM. Figure 6 shows an overview of the Paul F. Doyon Memorial School parking lot, the total parking spaces, parking space type, and lot utilization.

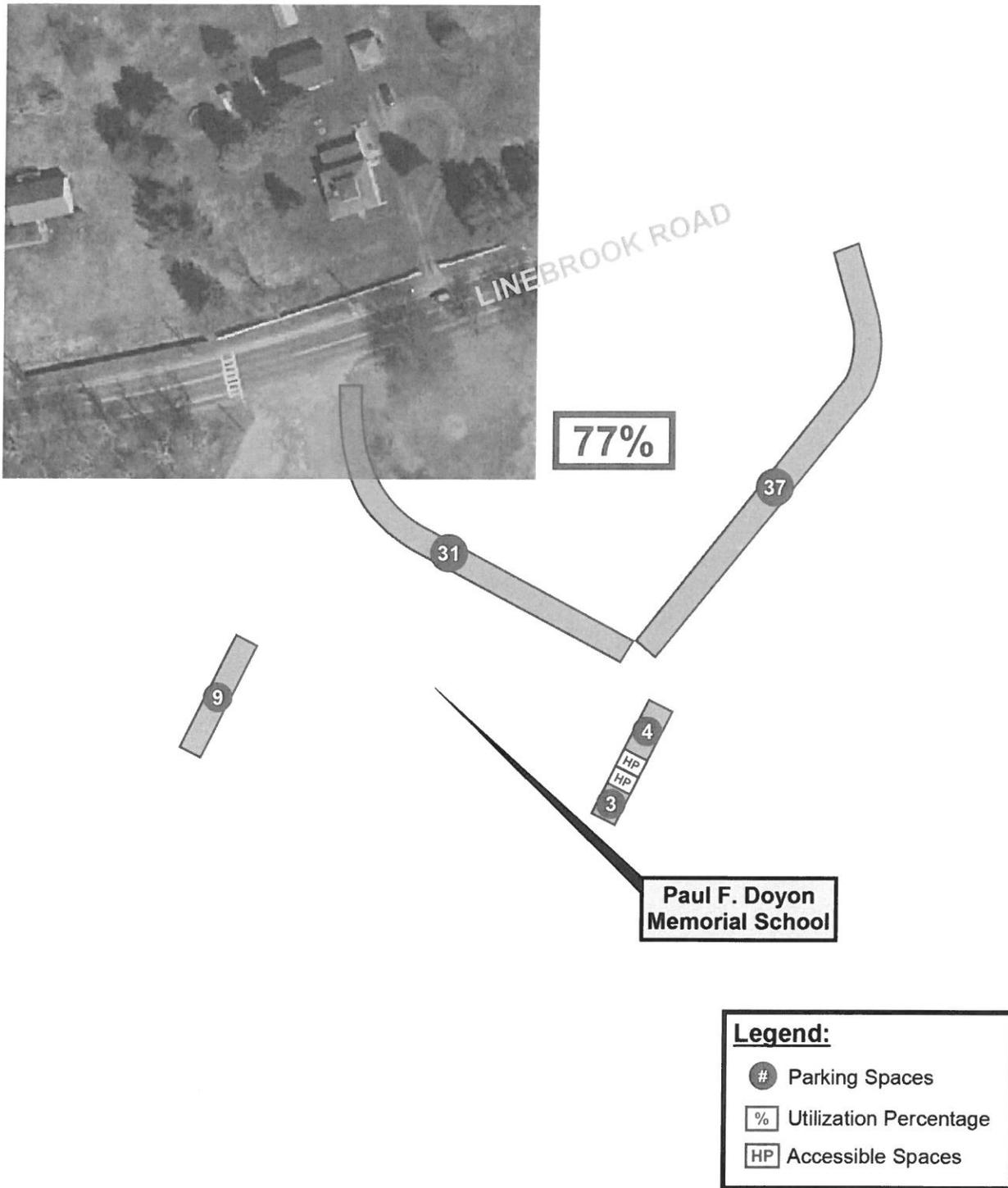


Figure 9: Doyon Memorial School Parking Lot Overview

As can be seen from Figure 9, a total of 86 parking spaces were counted within the parking lot at Paul F. Doyon Memorial School 2 of which are accessible spaces. This does not meet the Architectural Access Board (AAB) Code of Massachusetts Regulations (521 CMR) for the minimum required number of handicapped parking spaces of 4. The two accessible spaces were not utilized at the time of observation. The overall lot utilization at this parking lot was 77% at the time of observation.

1.1 Assessment

1.2 Nitsch Engineering has developed the following evaluation matrix based on the above observations and the concepts provided by WLA

Site	Improvement	Pros	Cons
Winthrop Elementary school	Renovate all existing, build addition, or new construction	<ul style="list-style-type: none"> • On street traffic will not change much from the existing. • Opportunity for improved condition for pick-up and drop-off • More convenient drop-off on the site. • Improved onsite flow • Additional Parking. 	<ul style="list-style-type: none"> • Construction Activity, • Construction Period Traffic, • Worker Parking, Temporary classrooms • Students Safety during construction, • Impact to Central Street. • Impact to neighbors;
Paul F. Doyon Memorial School	Renovate all existing, build addition, or new construction	<ul style="list-style-type: none"> • Safer condition for pick-up and drop-off • Opportunity for improved condition for pick-up and drop-off 	<ul style="list-style-type: none"> • No sidewalks, • Safe road to school? • Construction Activity, • Construction Period Traffic, • Worker Parking, additional off-site traffic, • may require turning lanes, • site distance may be challenging, • Additional on street traffic, • Parking?
Bialek Park Site	New detached school.	<ul style="list-style-type: none"> • Opportunity for improved condition for pick-up and drop-off, • Improved onsite flow, • Additional Parking, • Closer to the Town Center 	<ul style="list-style-type: none"> • Sidewalks only on one side of the street, • Safe road to school? • Proximity to a rail road, • Construction Activity, • Construction Period Traffic, • Worker Parking, additional off-site traffic, • May require turning lanes, • Site distance may be challenging, • Impact to neighbors;

Ipswich Town Hall Site	New detached school.	<ul style="list-style-type: none"> • Opportunity for improved condition for pick-up and drop-off, • Improved onsite flow, • Additional Parking, • Safe Roads to School, • More centralized location. 	<ul style="list-style-type: none"> • Construction Activity, • Construction Period Traffic, Worker Parking, • Additional off-site traffic, • Impact to neighbors;
Veterans Memorial Field Site	New detached school.	<ul style="list-style-type: none"> • Opportunity for improved condition for pick-up and drop-off, • Improved onsite flow • Additional Parking. 	<ul style="list-style-type: none"> • No sidewalks, • Safe road to school? • Construction Activity, • Construction Period Traffic, Worker Parking, • may require turning lanes, • site distance may be challenging, • Additional off-site traffic, • May require geometric changes to the intersection, may require signal timing changes



Nitsch Engineering

Appendix

Winthrop
Elementary School
Ipswich, MA

Transportation Feasibility Assessment

March 2, 2016

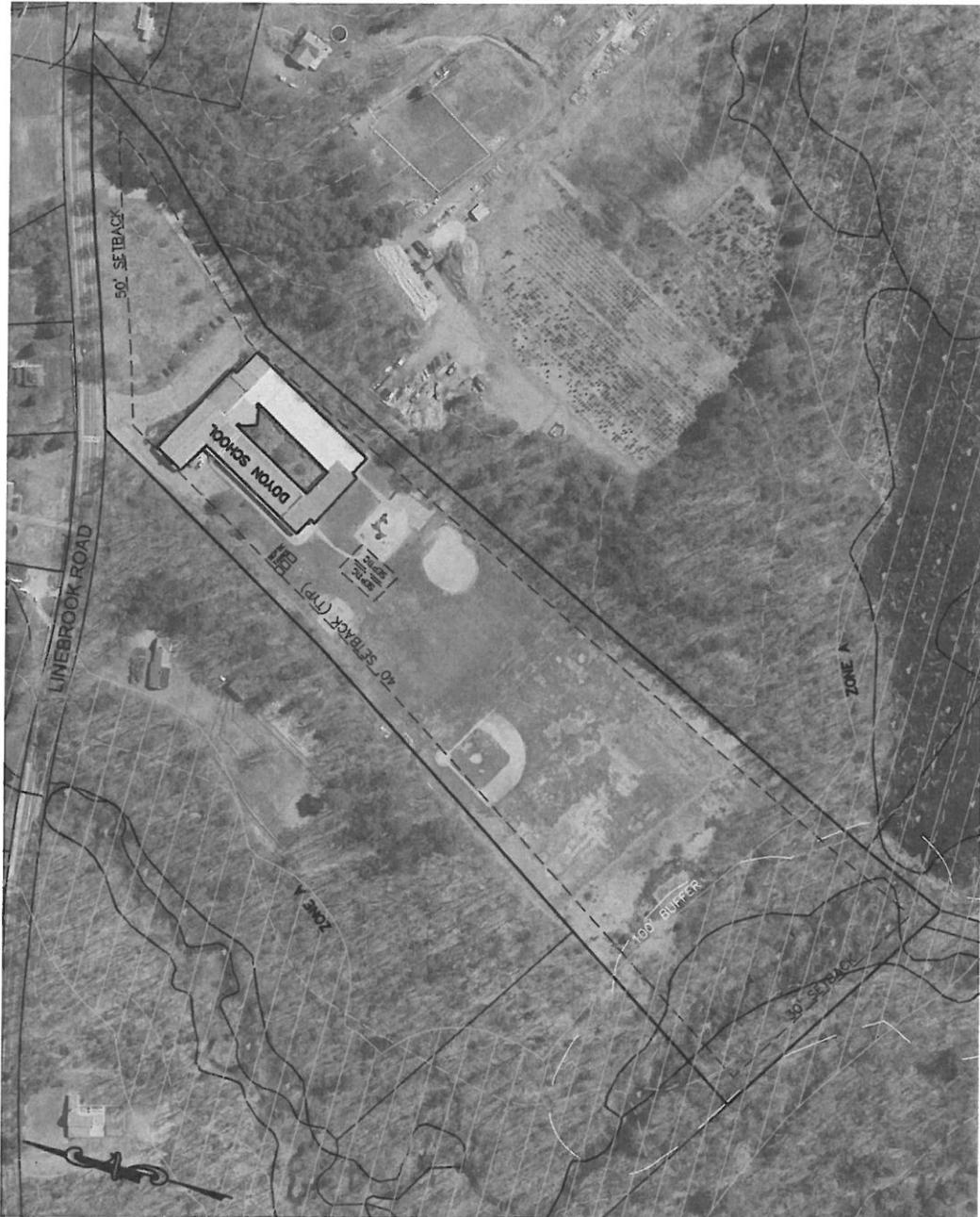
Prepared for:

Perkins Eastman
50 Franklin Street, Suite 203
Boston, MA 02110

Prepared by:

Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

Nitsch Project #11251.0



ZONING REQUIREMENTS
 ZONE: RRA
 MIN. AREA: 87,120 S.F.
 MIN. WIDTH: 175 FT.
 MIN. FRONTAGE: 175 FT.
 MIN. BUILDING SETBACKS:
 FRONT: 50 FT
 SIDE: 40 FT
 REAR: 30 FT
 MAX. BLDG AREA: 20%
 MAX. FLR AREA: N/A
 MIN. OPEN SPACE: 50%
 ASSESSORS MAP
 MAP 29C, PARCEL 31

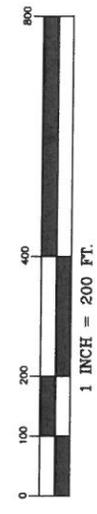
EXISTING CONDITIONS
 PROPOSED USE: EDUCATIONAL (PERMITTED)
 AREA: 17.2 AC
 WIDTH: 600± FT
 FRONTAGE: 650± FT
 BLDG. WIDTH: 102,415 SQ.FT (149,846 TOTAL SQ.FT.)
 OPEN SPACE REQ'D: 374,616 SQ.FT.

ZONING OVERLAY DISTRICTS:
 SURFACEWATER PROTECTION AREA: ZONE A (REAR OF SITE)
 GROUNDWATER PROTECTION AREA: ZONE II

UTILITIES
 WATER: PRESENT ALONG MILE LANE
 ELEC/TELE: PRESENT ALONG MILE LANE
 SEWER: N/A (EXISTING SEPTIC SYSTEM)
 GAS: N/A (8,000 GAL OIL TANK FOR HEATING)
 (3,000 GAL PROPANE TANK FOR KITCHEN SYSTEM)

SEPTIC SYSTEM (EXISTING):
 DESIGNED FOR 485 PEOPLE AT 10 GAL A DAY = 4,850 GPD

SOIL CLASSIFICATION:
 HYDROLOGICAL GROUP A (LOAMY SAND)

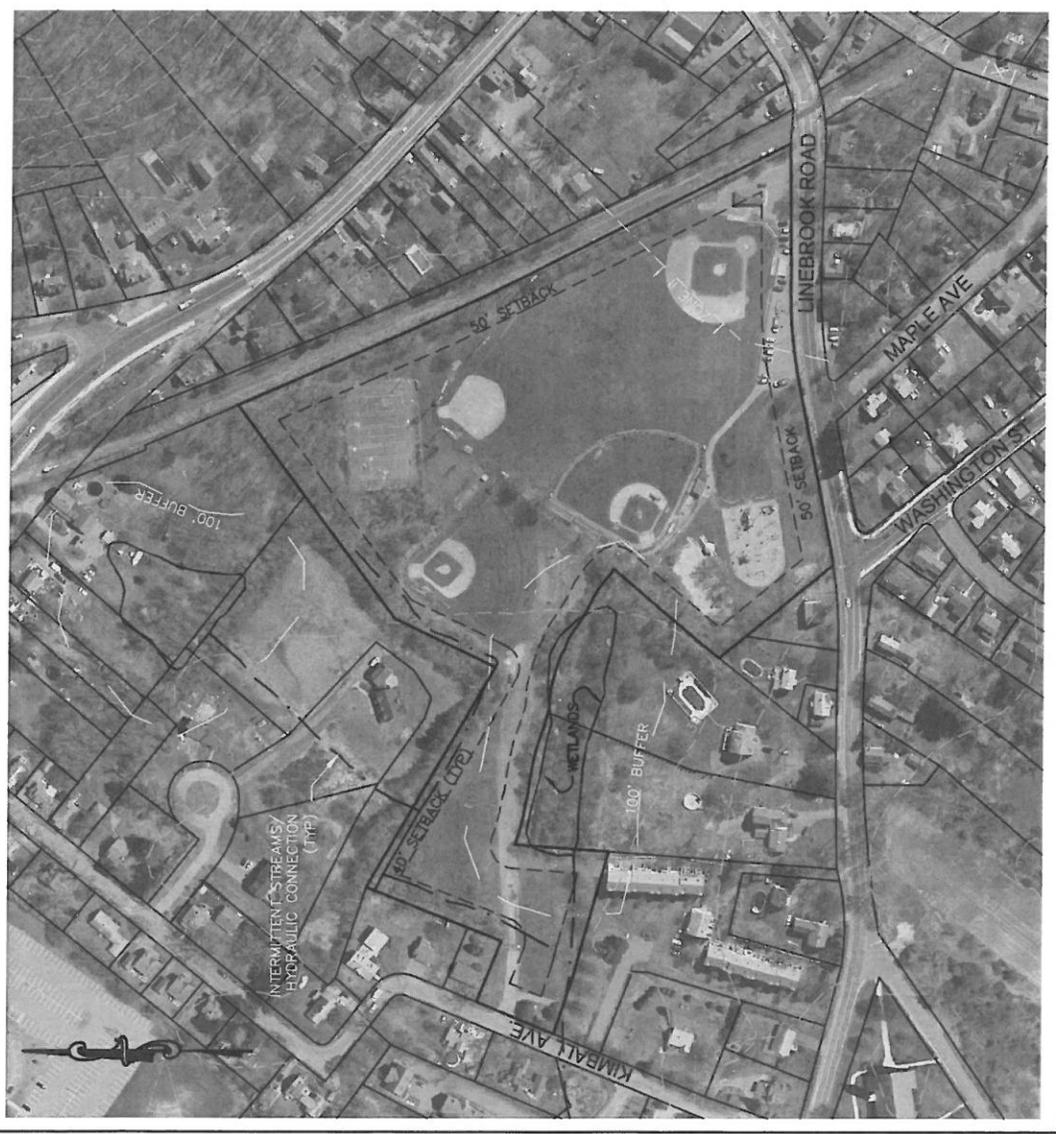


NO	DATE	REVISIONS

CDW
 CDW CONSULTANTS, INC.
 CIVIL & ENVIRONMENTAL ENGINEERS
 40 SPEEN STREET
 SUITE 301
 FRAMINGHAM, MA 01701
 TEL. (908) 875-2657 FAX. (908) 875-8617
 www.cdwwconsultants.com

DOYON SCHOOL
 216 LINEBROOK ROAD, IPSWICH, MA
 PERKINS EASTMAN
 50 FRANKLIN STREET, SUITE 203
 BOSTON, MA 02110

SITE SKETCH
C-2.0
 SHEET NO. 1
1505.1
DRAWN BY: JEM SCALE: 3/16



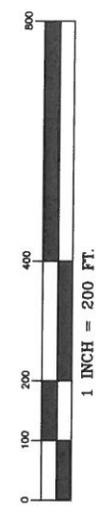
ZONING REQUIREMENTS
 ZONE: RRA
 MIN. AREA: 87,120 S.F.
 MIN. WIDTH: 175 FT
 MIN. FRONTAGE: 175 FT
 MIN. BUILDING SETBACKS:
 FRONT: 50 FT
 SIDE: 40 FT
 REAR: 30 FT
 MAX. BLDG AREA: 20%
 MAX. FLR AREA: N/A
 MIN. OPEN SPACE: 50%
 ASSESSORS MAP
 MAP 300, PARCEL 143

EXISTING CONDITIONS
 PROPOSED USE: EDUCATIONAL (PERMITTED)
 AREA: 14.2 AC
 WIDTH: 710± FT
 FRONTAGE: 710± FT
 BLDG LIMIT: 123,710 SQ.FT.
 OPEN SPACE REQ'D: 309,276 SQ.FT.

OVERLAY DISTRICTS:
 GROUNDWATER PROTECTION AREA: ZONE II

UTILITIES:
 WATER: PRESENT ALONG LINEBROOK ROAD
 ELEC/TELE: PRESENT ALONG LINEBROOK ROAD
 SEWER: PRESENT ALONG LINEBROOK ROAD
 GAS: PRESENT ALONG LINEBROOK ROAD

SOIL CLASSIFICATION:
 HYDROLOGICAL GROUP B (FINE SANDY LOAM/ LOAMY SAND) EASTERN
 PORTION OF MAIN SITE, C/D ELSEWHERE



BIALEK PARK
17 LINEBROOK ROAD, IPSWICH, MA
 PERKINS EASTMAN
 50 FRANKLIN STREET, SUITE 203
 BOSTON, MA 02110

CDW CONSULTANTS, INC.
 CIVIL & ENVIRONMENTAL ENGINEERS
 40 SPEEN STREET
 SUITE 301
 FRAMINGHAM, MA 01701
 TEL. (508) 875-2657 FAX. (508) 875-6617
 www.cdwconsultants.com



NO	DATE	REVISIONS

SITE SKETCH
C-3.0
 REVISION
1505.1
 DRAWN BY: ESK DATE: 03/12



ZONING REQUIREMENTS
 ZONE: RRA
 MIN. AREA: 87,120 S.F.
 MIN. WIDTH: 175 FT
 MIN. FRONTAGE: 150 FT
 MIN. BUILDING SETBACKS:
 FRONT: 50 FT
 SIDE: 40 FT
 REAR: 30 FT
 MAX. BLDG AREA: 20%
 MAX. FLR AREA: N/A
 MIN. OPEN SPACE: 50%
 ASSESSORS MAP
 MAP 29A, PARCEL 5

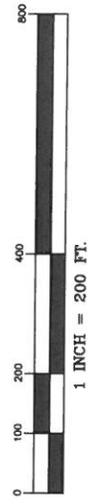
EXISTING CONDITIONS
 PROPOSED USE: EDUCATIONAL (PERMITTED)
 AREA: 27.3 AC
 WIDTH: 1200± FT
 FRONTAGE: 1200± FT
 BLDG LIMIT: 237,837 SQ.FT.
 OPEN SPACE REQ'D: 594,594 SQ.FT.

ZONING OVERLAY DISTRICTS:
 SURFACE WATER PROTECTION AREA: ZONE A
 GROUNDWATER PROTECTION AREA: ZONE II

UTILITIES:
 WATER: PRESENT ALONG MILE LANE
 ELEC/TELE: PRESENT ALONG MILE LANE
 SEWER: N/A
 GAS: N/A

SEPTIC ISSUES:
 NO VARIANCES ALLOWED FOR NEW CONSTRUCTION
 20 MIN/IN MAX PERCOLATION RATE ALLOWED
 ZONE II: IS A NITROGEN SENSITIVE AREA, LIMITING THE
 MAXIMUM DISCHARGE TO 440GPD PER ACRE FOR 12,000 GPD.
 (GREATER FLOWS CAN BE ALLOWED WITH NITROGEN TREATMENT)

SOIL CLASSIFICATION:
 HYDROLOGICAL GROUP A (FINE SANDY LOAM/ LOAMY SAND)



CDW
 CDW CONSULTANTS, INC.
 CIVIL & ENVIRONMENTAL ENGINEERS
 40 SPEEN STREET
 SUITE 301
 FRAMINGHAM, MA 01701
 TEL: (508) 875-2657 FAX: (508) 875-6817
 www.cdwconsultants.com

VETERANS MEMORIAL FIELD
MILE LANE, IPSWICH, MA
 PERKINS EASTMAN
 50 FRANKLIN STREET, SUITE 203
 BOSTON, MA 02110

SITE SKETCH
C-5.0
 REVISED
1505.1
 DRAWN BY: [] DATE: 2011

NO.	DATE	REVISIONS