



Town-Wide Public Schools  
Billerica, MA

## PUBLIC SCHOOL EVALUATION

Town of Billerica

January 2025

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# Section 1

## Introduction

The Town of Billerica, through the Town Manager's office and the Engineering Division of the Department of Public Works, has commissioned this Town-Wide Public School Evaluation for the eight public school facilities in Billerica, MA. The Town is interested in evaluating traffic characteristics at all public schools and their surrounding neighborhoods, with a specific focus on circulation and traffic management, observed traffic impact within the neighborhood roadways, pedestrian connectivity, and safety for all users.

The public schools included within this evaluation are illustrated in Figure 1 and listed below:

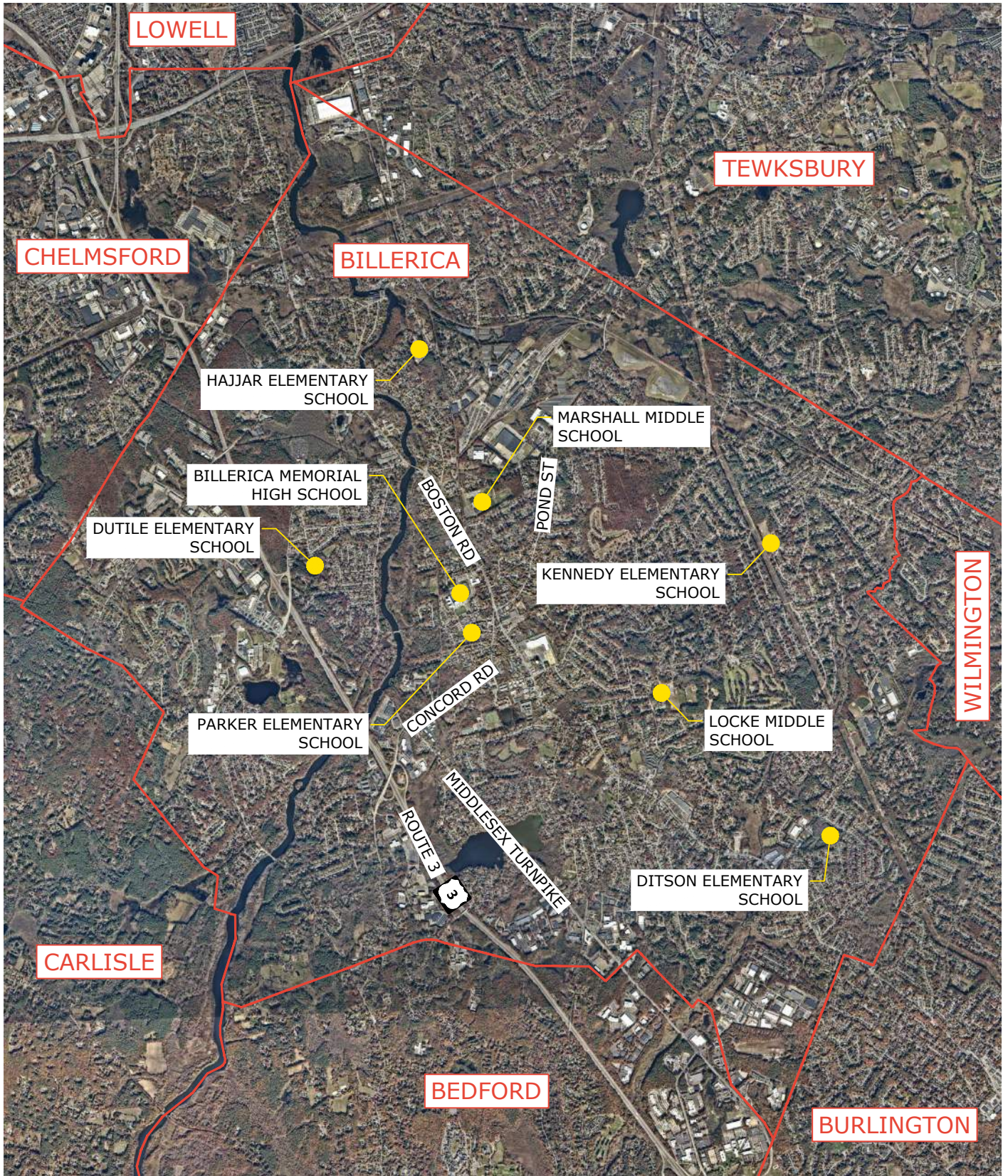
- Billerica Memorial High School
- Locke Middle School
- Marshall Middle School
- Ditson Elementary School
- Dutile Elementary School
- Hajjar Elementary School
- Kennedy Elementary School
- Parker Elementary School

Each school and its immediate surrounding neighborhood was observed during morning drop-off and afternoon pick-up periods for traffic circulation, vehicle queueing, traffic patterns, pick-up and drop-off operations, on-street parking and traffic operational violations.

Also included is an evaluation of sidewalk connectivity within each school study area. Existing sidewalk infrastructure was identified within approximately one (1) to one and a half (1.5) miles of each school study area. Existing sidewalk conditions, existing accommodation, and gaps in connectivity were noted at each school location.

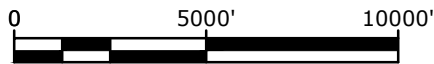
Potential improvement strategies for each school study area were developed for both short- and long-term measures that could be implemented based on available Town funding. These improvement strategies include input from Town officials, GIS data, and field reconnaissance.

Dec 17, 2024-12:09pm Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Billerica Locus Map.dwg



PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS

**SITE LOCATION MAP**



SCALE: 1" = 5000'



1" = 5000'

FIGURE 1



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## Section 2

### Existing Conditions

The Town of Billerica is located in Middlesex County and is bordered by the Towns of Chelmsford, Tewksbury, Wilmington, Burlington, Bedford, and Carlisle and the City of Lowell. Billerica has a population of approximately 42,000 residents and is served by important highways and arterials including US Route 3, Route 3A, and Route 129. Billerica has eight public schools: one high school, two middle schools, and five elementary schools serving approximately 4,900 students.

#### 2.1 Operations/Field Reconnaissance

The following sections provide details on each of the public schools within the Town of Billerica, including a summary of the school's operations during the morning and afternoon as well as a discussion of field observations.

##### 2.1.1 Billerica Memorial High School

Billerica Memorial High School, located at 35 River Street, has an enrollment of approximately 1,600 students in grades 8-12. The school day runs from 7:30 AM to 2:02 PM. The school offers several clubs and sports that meet after school, and the high school hosts a football field, track, soccer field, and ice rink. Billerica Memorial High School was recently reconstructed, opening to students for the 2019-2020 school year.

Project Support Preschool, a preschool that is part of the Billerica Public School system, is also located on the High School campus and has an enrollment of approximately 220 students. A school location plan for Billerica Memorial High School is shown in Figure 2.

##### School Operations

Billerica Memorial High School has six access driveways: two on Good Street, one on Tom Glavine Way, and three on River Street. The Good Street driveway closest to Boston Road is a one-way entrance, utilized primarily by students accessing the parking lot. The Good Street entrance further to the west allows two-way traffic and is used primarily by faculty, as well as for access to the Hallenborg Ice Rink. The Tom Glavine Way driveway is a full access driveway used by students, parents, and faculty, and also provides access to the front parking area to Town Hall. The eastern River Street driveway is a full access driveway. The middle River Street driveway forms a one-way loop with the western most River Street driveway as vehicles enter from the middle driveway and exit from the western driveway. The loop driveway is used by school buses for pick-up and drop-off.

During morning arrival, a total of six crossing guards are present at the High School: one at the Boston Road/Good Street intersection, one at the eastern Good Street driveway, one at the intersection of the eastern Good Street driveway and Tom Glavine Way, one between the two entrance driveways on River Street, one across from the New Colony Baptist Church on River Street, and one at the loop driveway exit on River Street.

Buses enter the middle River Street driveway, drop students off at the school's main entrance, and exit via the western River Street driveway. Students, faculty, and parents dropping off students can enter via either Good Street driveway, Tom Glavine Way, or

River Street. The main entrance loop is closed to non-school vehicles until all buses have arrived. Parents can then leave either from Tom Glavine Way or from the eastern River Street driveway.

During dismissal in the afternoon, there were five total crossing guards observed. The crossing guard located across from the New Colony Baptist Church is not present at dismissal. The buses have a staggered arrival and dismissal, arriving and queueing in the loop driveway at the main entrance.

A majority of parents picking up students arrive from Good Street or River Street and queue on school property. Exiting traffic uses the Tom Glavine Way or River Street driveways.

Project Support Preschool has reserved parking in front of the Hallenborg Ice Rink off Good Street. The school offers a morning session from 9:00 AM – 11:30 AM and an afternoon session from 12:30 PM – 3:00 PM on all weekdays except Wednesdays. A full day program is also offered from 9:00 AM – 2:00 PM on Monday, Tuesday, Thursday, and Friday and from 9:00 AM – 12:00 PM on Wednesday.

### **Field Reconnaissance/Observations**

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Two Tighe & Bond staff members were present from 6:45 AM to 7:30 AM and from 1:45 PM to 2:20 PM. On the day of observations, there was construction on Boston Road that closed the west side of the road and reduced traffic to single lane both northbound and southbound.

During morning arrivals, the first seven buses to arrive were observed in the loop driveway in front of the main entrance at 6:40 AM. Students did not offload from the buses until 6:45 AM when it appeared the school opened. Non-school vehicles were restricted from using the one-way driveway to drop off students until all buses had arrived (22 buses in total). A crossing guard prevented vehicles from accessing this driveway until about 7:10 AM, when the last bus dropped students off.

At 6:45 AM, all the crossing guards arrived. The crossing guards helped students cross at all River Street locations. Along River Street, a majority of the River Street pedestrian traffic came from the direction of the Billerica Housing Authority driveway – about 30 students overall. Students also came from both east and west on River Street and from the parking lot behind the Church, accounting for approximately another 50 students. Crossing guards also directed traffic, stopping traffic on River Street for both students crossing and to allow vehicles to exit both driveways. No students were observed arriving on foot from Tom Glavine Way and Good Street driveways. The crossing guards on Good Street and Tom Glavine Way also directed vehicle traffic.

When traffic on River Street is stopped by the crossing guards, it queued back to the Town Center to the east and past Colonial Drive to the west at the peak (around 7:15 AM). Operations are very clustered around the two entrance driveways with some vehicles yielding to left turning drivers and overall confusion about which driveway a vehicle is trying to turn into. A bus was observed traveling down River Street and narrowly missed a vehicle pulling out from the driveway. Both vehicles had to aggressively brake to avoid a collision – the vehicle likely thought the bus was pulling into her driveway because it had its turn signal on when it was actually destined for the one-way entrance driveway.

A steady flow of traffic was observed entering from Good Street to either park or drop students off. No traffic queue was observed during the arrival time.

Queues cleared from River Street at around 7:25 AM and overall school operations are cleared around 7:30 AM. The crossing guards left the site at 7:30 AM.

During the afternoon dismissal, the first parents start queuing for student pick-up at 1:45 PM. The queue formed along the right side of the one-way road on school property, which is marked as "NO PARKING." Some parents (2-3 vehicles) appeared to be waiting in the Church parking lot or behind the Church to pick students up. The crossing guards arrived at 1:55 PM.

Only buses and school vans used the one-way driveway in front of the school. The first bus arrived at 2:00 PM. The buses had a staggered arrival and dismissal, with a staff member announcing which buses were at the front of the bus queue from over a loudspeaker at the school. The first bus left at 2:07 PM and the last bus left at 2:18 PM.

At around 2:05 PM, vehicles begin to leave the student parking lot via Tom Glavine Way. At its peak, the queue extended back to Good Street.

As in the morning, the crossing guards both helped students cross River Street and helped the buses and vehicles leave the two River Street school driveways. The back-up on River Street was less significant than the morning drop-off period, extending only to Billerica Housing Authority entrance driveway to the east and Wedgewood Avenue to the west. A total of 50-70 students crossed near the loop entrance driveway and around 20 students crossed by the exit driveway. The crossing guard stopped traffic about once every minute to allow students to cross and vehicles to exit the River Street driveway. Most pedestrian traffic was done by 2:15 PM.

Minimal students were still leaving the school at 2:20 PM and some parents were still waiting in the pick-up zone. The staff parking lot was still full at this time. At 2:20 PM, the crossing guards went across the street to assist with Parker Elementary School dismissal operations.

During the observations, Tighe & Bond staff had the opportunity to speak with the crossing guards. One crossing guard mentioned that on early dismissal days, all the buses are at the school at the same time (instead of the staggered arrival and leaving on full days). As a result, all 22 buses do not fit in the one-way driveway and two buses must park on River Street. This creates an especially chaotic situation as traffic on River Street must contend with students and vehicles leaving the school but also must get around the parked buses. The buses create essentially a one-lane road.

The crossing guard also stated he has observed several near miss scenarios like the one described above with the bus and vehicle in the morning. Vehicles make incorrect assumptions about which driveway vehicles are turning into and will turn/pull out in front of a vehicle that was planning on driving through.

Observations were not conducted for Project Support Preschool.

### 2.1.2 Locke Middle School

Locke Middle School is located at 110 Allen Road and serves approximately 500 students in grades 5-7. The school day runs from 7:30 AM to 1:40 PM. A school location plan for Locke Middle School is shown in Figure 3.

#### School Operations

Locke Middle School has two access driveways, both serving two-way traffic. Buses enter and exit the school from the Allen Road driveway while parents enter and exit the school using Urban Street via Baldwin Road.

During morning arrival, buses enter from Allen Road, offload students at the driveway loop at the main entrance, and then depart via the Allen Road driveway. Parents enter from Baldwin Road onto Urban Street and use the parking lot on the east side of the school to drop-off. Parents then leave the school property the same way they entered.

During afternoon dismissal, the buses queue in the loop in front of the school while parent vehicles queue along Urban Street. The buses load with students upon dismissal and then depart via the Allen Road driveway. After the buses have departed, pick-up vehicles utilize the loop driveway as pick-up students are released.

#### Field Reconnaissance/Observations

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Tighe & Bond staff was present from 7:00 AM to 7:45 AM and from 1:20 PM to 1:50 PM. On the day of observations, there was construction on Allen Road and Baldwin Road. The school parking lot was being used as a construction staging area and the excavator was parked on Urban Street, making the roadway narrower than typical in the morning. The excavator had been moved from the driveway by the time of afternoon dismissal.

During morning arrival, the Allen Road driveway is restricted to "Buses Only" from 7:00 AM – 7:45 AM. Very few vehicles ignored the signage and used Allen Road to enter or exit the school property. During drop-off, six vehicles were observed queuing onto Urban Street at 7:10 AM. At its peak, a total of seven buses were unloading and queued in front of the school at 7:20 AM. The vehicle and bus traffic did not overlap in the morning. The front of the school was clear by 7:30 AM.

Approximately 10 parents were observed dropping off at the end of Whittier Road and letting students walk to school from there. Pedestrians were observed coming from Whittier Road where a crossing guard and a Rectangular Rapid Flashing Beacon (RRFB) are present to assist with crossing Allen Road. About half the pedestrians came from Allen Road while the other half came from Baldwin Road. No bicyclists were observed.

While leaving after morning drop-off, about 80% of vehicles made a left turn onto Baldwin Road heading to Allen Road with the remaining 20% turning right.

During afternoon dismissal, the first bus arrived and began to queue in the loop at the main entrance at 1:09 PM. The first vehicle for pick-up arrived at 1:17 PM and vehicles began to queue across from the loop on Urban Street. Upon dismissal at 1:40 PM, 10 buses and 22 vehicles were queued at the school.

The buses departed at 1:44 PM, allowing for pick-up traffic to utilize the loop at the main entrance. At this time, 26 vehicles were queued at the school. Less than five parents

were observed picking up students on Whittier Road and the queue in front of the school had cleared by 1:49 PM.

An even split of pedestrians leaving via Allen Road and Baldwin Road was observed, mirroring the arrival patterns from the morning.

Tighe & Bond staff were able to speak to the school principal during observations. The principal stated that pick-up and drop-offs ran “pretty smoothly” but there was noticeably less parent traffic this year than compared to previous years.

### **2.1.3 Marshall Middle School**

Mashall Middle School is located at 15 Floyd Street. The school serves approximately 600 students in grades 5-7. The school day runs from 7:30 AM to 1:40 PM. A school location plan for Marshall Middle School is shown in Figure 4.

#### **School Operations**

Marshall Middle School has one full-access driveway onto Floyd Street (Route 129) that is utilized by buses, faculty, and parents. In addition to the driveway, there is a paved walking path leading to Heritage Road.

In both the morning and afternoon, there was a crossing guard present at the school driveway at Floyd Street. There were additional crossing guards and school staff present at the main entrance to assist with pick-up and drop-off operations.

During morning arrival, parent drop-off traffic enters from Floyd Street, circles around in the paved lot, and drop off in the lower pick-up/drop-off area. Buses also use the Floyd Street entrance and paved parking area to circle around except they drop-off in the driveway closer to the main entrance. Bus arrival and departure in the morning was staggered.

During afternoon dismissal, both buses and pick-up traffic entered via the Floyd Street driveway and used the parking lot to enter the pick-up zones, with the vehicles queued facing Floyd Street. The buses lined up in two rows in the driveway closest to the school’s main entrance. The parent pick-up vehicles lined up in three rows in the driveway between the buses and the parking lot. All exiting vehicles left via Floyd Street.

#### **Field Reconnaissance/Observations**

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Tighe & Bond staff members were present from 7:00 AM to 7:30 AM and from 1:10 PM to 1:50 PM. On the day of observations, there was construction along Heritage Road and at the Boston Road intersection.

During the morning arrival, both buses and other vehicles arrived and departed the school smoothly. Six buses were observed at the school. There were no significant queuing or congestion issues observed. Crossing guards were present at the Middle School and were primarily assisting with directing traffic from Floyd Street to properly queue for drop-off operations.

No pedestrians or bicyclists were observed arriving to Marshall Middle School from Floyd Street. There is a paved walking path from Heritage Road with a crosswalk from the sidewalk. Four parents were observed dropping their students off on Heritage Road in the morning, and an additional four students (three walkers and one cyclist) used the

pathway from the surrounding neighborhood. All were observed using the crosswalk to cross Heritage Road.

During the afternoon dismissal, crossing guards were again present and assisted parents with queuing in the pick-up location. In addition to the crossing guards, school staff also assisted with dismissal operations. Pick-up and dismissal operations ran smoothly, and no significant queues were noted.

Exiting traffic from the middle school driveway was observed heading both east and west on Floyd Street with a generally even distribution during both arrival and dismissal operations.

No parents were observed picking up students along Heritage Road in the afternoon. A couple families walking students were observed, and the same path users that were observed in the morning were observed using the path to leave the school. Some pedestrians did not use the crosswalk and jaywalked across Heritage Road.

### **2.1.4 Ditson Elementary School**

Ditson Elementary School is located at 39 Cook Street. It serves approximately 550 students in grades K-4. The school day runs from 8:35 AM to 2:45 PM. A school location plan for Ditson Elementary School is shown in Figure 5.

#### **School Operations**

Ditson Elementary has one full-access driveway (Bicentennial Road) that serves as the entry and exit point from Cook Street for all vehicles including buses.

During morning arrival, buses enter the school property via Bicentennial Road and drop students off at the main entrance at the front of the school. Parents use the driveway that loops around the school building and drop students off at the back of the school.

For afternoon dismissal, buses and vehicles enter the school property via Bicentennial Road. Parents queuing for pick-up use the loop around the back of the school and queue into the parking lot and down Bicentennial Road. Bus and parent pick-up traffic overlap in the queue along Bicentennial Road. Students are dismissed for pick-up and busing at the same time. All traffic leaving the school exits at the Bicentennial Road/Cook Street/ Bankside Drive intersection.

#### **Field Reconnaissance/Observations**

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Tighe & Bond staff were present from 8:10 AM to 8:35 AM and from 2:30 PM to 3:00 PM.

During morning arrival, the first bus arrived at 8:11 AM, with two more buses arriving at 8:16 AM, and another two buses arriving at 8:23 AM to drop-off students at the main entrance. A crossing guard was located at the Cook Street/Bankside Drive/Bicentennial Road intersection and assisted both in crossing pedestrians and directing traffic, mostly stopping traffic along Cook Street to allow vehicles to exit from Bicentennial Drive. As a result, queues formed on Cook Street, specifically in the southbound direction. A total of six vehicles were queued on Cook Street at 8:15 AM and ten vehicles were observed queued at 8:25 AM.

Vehicles started exiting the school driveway at 8:27 AM after dropping students off. At 8:28 AM, eight vehicles were queued along Bicentennial Road. There was approximately an even directional split in entering and exiting the driveway to and from Cook Street. Exiting the driveway without the crossing guard directing traffic would be challenging and likely result in longer queues along Bicentennial Drive.

Approximately 20 parents parked in the parking lot on Bicentennial Road near Cook Street and walked to Ditson Elementary to drop off their students. In addition to the pedestrians from the parking lot, about ten students walked to school with a majority coming from Bankside Drive. When crossing the southbound leg of Cook Street, pedestrians would cross at the street corner instead of crossing at the crosswalk set back about 25 feet from the intersection.

For afternoon dismissal, a total of six buses and over 50 vehicles were queued on school property. The pick-up queues extended around the school, through the parking lot, and along Bicentennial Road to the Cook Street parking lot. At its maximum length, there was approximately 250 feet of available storage remaining on Bicentennial Road, with entering buses stuck behind vehicles in the queue.

The first vehicles exited the school at 2:43 PM and by 2:49 PM, a queue of five vehicles had formed on Bicentennial Road. As in the morning, the crossing guard assisted vehicles in leaving the school. A queue of seven vehicles had formed on Cook Street southbound at 2:50 PM. The queue in the driveway cleared at 2:54 PM and the last three buses left the school at 2:56 PM.

Similar trends to the morning were observed with approximately 20 parents parking in the lot by Cook Street and walking to the school to pick up their students. About 10 walkers left the school heading down Bankside Drive.

Tighe & Bond staff had the opportunity to speak to the crossing guard about school operations. The crossing guard stated that he believed traffic was lighter during the day of observations than typical. He also covers Billerica Memorial High School and had the same observation about operations there as well. It should be noted that the weather on the day of observations was clear, sunny, and around 70°F.

### **2.1.5 Dutile Elementary School**

Dutile Elementary School is located at 10 Biagiotti Way. It serves approximately 300 students in grades K-4. The school day runs from 7:55 AM to 2:05 PM. A school location plan for Dutile Elementary School is shown in Figure 6.

#### **School Operations**

Dutile Elementary School is accessible via Biagiotti Way from Treble Cove Road for all vehicles including buses. A loop driveway is provided at the front entrance of the school with another driveway with a loop that leads to the parking lots. In addition to the roadway, there are two paved walking paths from nearby dead-end streets, Baniulus Road and Briarwood Avenue.

During morning arrival, the buses and vehicles dropping off students enter using Biagiotti Way. The buses use the circular loop driveway at the main entrance whereas parent drop-off is separated and directed to the other driveway.

For afternoon dismissal, the buses queued in the circular loop at the main entrance and the parents queued in the other driveway, where morning drop-off occurred.

**Field Reconnaissance/Observations**

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Tighe & Bond staff was present from 7:30 AM to 8:10 AM and from 1:55 PM to 2:20 PM.

During morning arrival, all buses and a majority of vehicles entered from Biagiotti Way. Arrivals and departures were split evenly between northbound and southbound traffic on Treble Cove Road. The drop-off queue remained on school property at its maximum length, extending up to Biagiotti Way and remaining in the driveway.

Students were observed using the walking paths from Baniulis Road and Briarwood Avenue, with no students observed using the sidewalk along Biagiotti Way. About 10-15 parents used Baniulis Road and Kazimer Drive to drop their students off and another three parents used Briarwood Avenue. In addition to students walking after being dropped off, pedestrians originated from the neighborhood. Most of the walkers did not utilize the sidewalks and crosswalks on school property and jaywalked to reach their destination.

During afternoon dismissal, similar trends were observed. Buses queued in front of the main entrance and parents queued in the other driveway that accessed the parking lots. There was minimal back-up onto Biagiotti Way from the pick-up queue. There was some queuing observed at the Biagiotti Way/ Treble Cove Road intersection when exiting vehicles were attempting to make a left turn.

Similar to the morning drop off, vehicles parked on Baniulis Road and Briarwood Avenue to utilize the walking paths to pick students up.

**2.1.6 Hajjar Elementary School**

Hajjar Elementary School is located at 59 Rogers Street. It serves approximately 400 students in grades K-4. The school day runs from 8:35 AM to 2:45 PM. A school location plan for Hajjar Elementary School is shown in Figure 7.

**School Operations**

Hajjar Elementary School has two full-access driveways. The Call Street driveway is intended for all visitors, parents, and faculty. The driveway provided on Rogers Street is restricted to buses only.

During morning arrival, buses enter the school from Rogers Street and queue in front of the school. The students unload once all the buses have arrived, and teachers are present to assist. Parents dropping off students use the Call Street entrance and queue in the parking lot up to the side entrance doors. Parents can also park in the parking lot and walk their students to the doors. After drop-off, parents leave the school via Call Street.

During afternoon dismissal, school buses enter the school property from both Call Street and Rogers Street and queue in front of the school. The pick-up queue for parents begins at the side entrance and extends through the parking lot, with vehicles entering and exiting via Call Street.

**Field Reconnaissance/Observations**

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Tighe & Bond staff were present from 8:10 AM to 8:45 AM and from 2:25 PM to 2:55 PM.

For both arrival and dismissal, there is typically one crossing guard located at the northwest corner of the school where the front of the pick-up and drop-off queue forms. During the day of observation, there were two crossing guards present as one guard was undergoing training. The crossing guards help organize the parent queue and help those crossing to and from the parking lot.

During morning arrival, the first parents arrived via Call Street at 8:10 AM and began to drop off their students. Despite signage at Rogers Street restricting the driveway to buses only, a few vehicles used that entrance to turn into the parking lot. At 8:16 AM, eight buses arrived from Rogers Street, with teachers arriving to help the students from the buses. At 8:25 AM, a queue began to form in the parking lot for the drop-off traffic, remaining in the parking lot and confined within school property. There was some crossover between parents trying to leave the parking lot and those walking their students to the main entrance. At 8:27 AM, the school buses began to depart via the Rogers Street driveway. At 8:35 AM, the teachers went inside, and the crossing guards left the school. There were still a couple students arriving late at 8:45 AM who were dropped off at the front door.

During afternoon dismissal, the school buses arrived, and the first parents began to queue at 2:30 PM. Three school buses arrived from Call Street and five buses arrived from Rogers Street. Some parents parked in the lot and waited for their students at the entrances. By 2:43 PM, the pick-up queue had filled the parking lot and extended into the driveway by one or two vehicles. At its maximum, the queue remained within the school property and did not extend onto Call Street.

At 2:50 PM, the first bus left and by 2:53, the pick-up queue had cleared from the parking lot. The last school bus left at 2:56 PM and the dismissal operations had ended.

**2.1.7 Kennedy Elementary School**

Kennedy Elementary School is located at 20 Kimbrough Road and serves approximately 330 students in grades K-4. The school day runs from 8:35 AM to 2:45 PM. A school location plan for Kennedy Elementary School is shown in Figure 8.

**School Operations**

Kennedy Elementary School is located on Kimbrough Road, which is a one-way roadway southbound. Vehicles enter along Carline Drive from Baldwin Road and exit onto Baldwin Road from Kimbrough Road. There is a one-way loop driveway at the school's main entrance.

Crossing guards are present in the morning and afternoon and are located near the main entrance where the buses queue.

During morning arrival, both vehicles are buses enter from Carline Drive. Vehicles drop-off students along the side of Carline Drive, north of the main entrance. The buses have a staggered arrival and pull into the looped driveway and drop students off at the main entrance. All vehicles exit the school to Kimbrough Road.

During afternoon dismissal, vehicles and buses follow a similar pattern to morning arrival. Pick-up traffic queues along Carline Drive between the loop driveway entrance and Lantern Lane. Buses queue in the loop driveway in front of the school, with all exiting traffic leaving via Kimbrough Road.

**Field Reconnaissance/Observations**

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Tighe & Bond staff were present from 8:20 AM to 8:45 AM and from 2:30 PM to 2:55 PM.

The crossing guards on-site assisted primarily with helping students and parents cross the pick-up and drop-off queues in front of the school. School staff were also present and assisted students. Approximately a dozen students were observed walking to and from school, with a majority being accompanied by an adult.

No noticeable queues formed during either the school arrival or dismissal. Both vehicle pick-up and drop-up and bus loading and unloading occurred without issue. Six buses serve the school, with staggered arrivals.

**2.1.8 Parker Elementary School**

Parker Elementary School is located at 52 River Street and serves approximately 420 students in grades K-4. The school day runs from 8:35 AM to 2:45 PM. A school location plan for Parker Elementary School is shown in Figure 9.

A classroom for Project Support Preschool is also located on the Parker Elementary School Campus. The Preschool offers a morning session from 9:00 AM – 11:30 AM and an afternoon session from 12:30 PM – 3:00 PM on all weekdays except Wednesdays.

**School Operations**

Parker Elementary School has two full-access driveways: one located on Parker Street, and one located on River Street.

During morning arrival, buses and school vans enter via the River Street driveway and use the circular driveway at the school's main entrance to drop students off and turn around. Parents and staff enter via the Parker Street entrance. Parents drop their students off adjacent to the soccer field opposite the loop driveway from the main entrance, or park along the back of the parking lot to walk their students to the main entrance. Exiting traffic can use both the Parker Street and River Street driveways.

For afternoon dismissal, only the buses and school vans used the River Street entrance. Parents arriving for pick-up use the Parker Street entrance. Pick-up traffic queues in two rows along the internal roadway from Parker Street to the soccer field. Vehicles also queued along the center aisles in the parking lot. The vans load up early and leave the school before dismissal. At dismissal, the buses load up and leave first onto River Street. Once the buses leave, students are released for parent pick-up. Parents exiting the school can use either driveway.

**Field Reconnaissance/Observations**

Field observations of arrival and dismissal operations were conducted on Wednesday, November 6, 2024. Tighe & Bond staff were present from 7:55 AM to 8:45 AM and from 2:20 PM to 3:05 PM.

In both the morning and afternoon, five crossing guards were on site; one was located at the River Street driveway, one was assisting the school vans, two were helping students being dropped from vehicles, and one floating around assisting the other crossing guards and teachers as needed. The crossing guard at the River Street driveway was primarily helping vehicles leave as only one or two families used this crossing when walking to and from school.

During morning arrival, the crossing guards arrived at the school at 8:00 AM, and the first parents began to arrive around 8:05 AM. The first bus arrived at 8:10 AM. A total of five buses, 6 vans, and one school vehicle entered from the River Street driveway. The last bus arrived at 8:20 AM and after unloading, all buses left together at 8:30 AM.

Nearly all parents and staff entered using the Parker Street driveway. It appeared most entering vehicles originated from River Street, with an estimated 5-10% of vehicles originating from the south on Parker Street. Parents utilized the circular driveway for drop off after all buses unloaded students, starting around 8:30 AM. The parking lot was about half full around 8:10 AM. About two or three staff members were observed walking to school and around five to ten families walked their students from the surrounding area. The drop-off traffic peaked at approximately 8:25 AM, with the queue remaining within the school parking lot. By 8:40 AM, drop off operations were finished and the temporary cones that had designated van drop off zones were put away and the crossing guards left.

During afternoon dismissal, only the school buses and vans used the River Street entrance. All buses and vans had arrived by 2:35 PM and were queued in the circle in front of the main entrance. All parents were directed to the Parker Street entrance, with a majority of parents arriving via River Street and an estimated 10%-15% originating from the south on Parker Street.

The pick-up queue lined the driveway on both sides towards the entrance and queued in the parking lot aisles as directed by a crossing guard. The entirety of the queue was accommodated on school property.

The vans loaded up early and left the school by 2:45 PM. All buses loaded up and left at 2:49 PM. After the buses had left, students were released to parents at 2:50 PM, with most parents leaving using the River Street driveway. The crossing guard at this driveway was primarily stopping traffic to allow vehicles to leave. There was some observed queuing on River Street due to the stopped traffic which reached the Billerica Housing Authority entrance to the east and Parker Street to the west at its peak.

At 3:00 PM, the crossing guard left the River Street driveway. Some students and parents were still at the school playing and running around, but a majority were gone by 3:00 PM. By 3:05 PM traffic levels had returned to conditions prior to dismissal.

Tighe & Bond staff had the opportunity to speak to a crossing guard during observations. The crossing guard said the school sends out communications to parents instructing that they should use the Parker Street driveway via River Street to access the school for pick-up and drop-off. He said the first couple weeks of the school year can be confusing as parents get used to the operations, but by the day of observation, most parents are following this instruction. This aligns with observations.

## 2.2 Sidewalk Infrastructure

The following sections provide details on the sidewalks adjacent to Billerica's public schools. Students are ineligible for free bus transportation if they live within 1 mile of their school for grades K-4 and within 1.5 miles of their school for grades 5-12. Therefore, the sidewalk network within these zones are important as potential routes for students to get to and from school.

Tighe & Bond staff conducted an inventory of the existing sidewalk network within these zones on Wednesday, November 6, 2024. The inventory was collected via field observations and focused on three basic attributes: presence, material, and condition. The work identified where sidewalks were present and on which sides of the roadway, their material, and their current condition. The sidewalk condition was defined as new, good, fair, and poor. Sidewalks were designated as "new" if they appeared to have been constructed within the last six months. "Good" sidewalks were still in good condition, appeared well constructed, were easily traversable, and had no notable issues. "Fair" sidewalks appeared older with some cracking or other issues but were still functional and traversable. Sidewalks designated as "poor" were present but had some issues that may make them difficult to traverse including excessive cracking or vegetation overgrowth. Several sections of sidewalk were under construction at the time of observation and therefore could not be accurately assessed; these areas are marked as "under construction" in the inventory.

In addition to the sidewalks themselves, the field observation also looked at features that could impact the serviceability and connectivity of the sidewalk network including curb ramps, flashing beacons, obstacles, tree roots, sidewalk gaps, and pedestrian paths. These elements are discussed below relative to their respective schools.

### 2.2.1 Billerica Memorial High School

Figure 10 identifies the sidewalk network in the vicinity of Billerica Memorial High School.

The school property has an internal sidewalk network that connects the school to River Street, Boston Road, and Good Street. Paved walkways connect the student parking lot, football field and track, ice rink, faculty and visitor parking lots, soccer field, and the main school building.

The school has flashing 20 MPH School Zone Speed Feedback signs on River Street for both directions that also serve Parker Elementary School. School Zone crossing signage is also displayed in advance of the Billerica Memorial High School and Parker Elementary School driveways/River Street intersection. A pedestrian activated traffic signal is also located 275 feet east of the high school entrance on River Street.

Students originating from the southwest can use Concord Road and Middlesex Turnpike which provides a continuous sidewalk path from Route 3 to the high school. From the southeast, students can use Boston Road and Tower Farm Road. Pond Street, Boston Road, and River Street provide access from northeast, north, and west respectively.

When evaluating sidewalk infrastructure within the vicinity of Billerica Memorial High School, the lack of existing sidewalks on key roadways not classified as local roads were identified. Andover Road, an urban minor arterial, does not provide sidewalks east of Pond Street, while Pollard Street, also classified as an urban minor arterial, does not provide sidewalks north of Salem Road. A sidewalk gap exists along River Street from

Treble Cove Road to Bridle Road. Several local roads lacking sidewalks, including neighborhoods off Bridle Road and Concord Road/River Street. Missing sidewalk connections along Boston Road from the Commons development to Glad Valley Drive and Lexington Road create a gap for pedestrians for the surrounding neighborhoods.

Most local neighborhood roadways, classified as local roads, lack sidewalk accommodations altogether, and where sidewalk(s) are provided, they are in poor condition. This is specifically observed for neighborhoods along Bridle Road, River Street (west of Bridle Road), and Tower Farm Road.

Overall, existing sidewalk infrastructure, including curb ramps, crosswalks, and warning signage was found to be in good condition at locations where sidewalks traverse major intersections, shift from one side of the street to the other, and where sidewalks abruptly end.

### **2.2.2 Locke Middle School**

Figure 11 shows the sidewalk network in the vicinity of Locke Middle School.

The school property has a sidewalk along the driveway from Allen Road, along Urban Street, and connecting the site parking lots to the main entrance. Overall, these internal sidewalks are in poor condition. There is an RRFB located at the intersection of Whittier Road and Allen Road that is used by students.

The sidewalks along Allen Road provide connectivity to the north and south, Baldwin Road to the east, and Tower Farm Road to the west. There is a gap in the sidewalk network along Boston Road as there is no sidewalk provided between Tufts Lane and Theodore Court. There is also no sidewalk along a portion of Webb Brook Road. This gap limits the ability of students living west of Boston Road to walk to Locke Middle School. The gap in the sidewalk along Allen Road also limits the access of those living north of Tower Farm Road and along Andover Road.

Most local neighborhood roadways lack sidewalk accommodations altogether and where sidewalk(s) are provided, they are in poor condition. This is specifically observed for neighborhoods along Tower Farm Road, Allen Road, and Baldwin Road.

### **2.2.3 Marshall Middle School**

Figure 12 shows the sidewalk network in the vicinity of Marshall Middle School.

The school has a sidewalk leading from Floyd Street to the main entrance and parking lot and a paved walkway from Heritage Road. The sidewalks along the parking lot are in poor condition overall. The paved walkway leads to a sidewalk on the opposite side of Heritage Road. The crosswalk is currently marked by pedestrian crossing signs but it is understood that an RRFB will be installed at this location as part of the Boston Road improvements project currently under construction.

The school is accessible via Boston Road to the south, Floyd Street and Salem Road to the east, Pollard Street and Boston Road to the north, and Bridge Street to the west. Connectivity to the north is affected by a gap in sidewalk on Pollard Street between Salem Road and Call Street; as a result, local roads off Pollard Street, High Street, and Rogers Court do not have continuous sidewalk access to Marshall Middle School. There is ongoing construction along Boston Road to the south of the middle school that will

improve the sidewalk connection for walkers in that direction as the sidewalk on the east side of the roadway is in poor condition.

Some local neighborhood roadways lack sidewalk accommodations altogether and where sidewalk(s) are provided, they are in poor condition. This is specifically observed for neighborhoods along Pollard Street, Salem Road, and Pond Street. The exception to this statement is the neighborhood roadways off Heritage Road which appear to be either new or in good condition.

### **2.2.4 Ditson Elementary School**

Figure 13 shows the sidewalk network in the vicinity of Ditson Elementary School.

Bicentennial Road, leading from Cook Street to Ditson Elementary School, has a sidewalk on one side and is separated from the road by a railing; this sidewalk appears to be in fair condition. A paved pedestrian walkway also connects Ditson Elementary School to Clarence Street and the surrounding neighborhood. There is advanced pedestrian crossing signage for the crosswalk across Cook Street at the Bankside Drive/Bicentennial Road intersection as well as school zone signs in both directions along Cook Street.

Bicknell Road is the only non-local roadway in the vicinity of Ditson Elementary School that does not provide sidewalk on at least one side of the roadway. However, a majority of the local roadways do not have sidewalks on either side.

### **2.2.5 Dutile Elementary School**

Figure 14 shows the sidewalk network in the vicinity of Dutile Elementary School.

There is a paved sidewalk along Biagiotti Way and two paved walking paths from Baniulis Road and Briarwood Avenue. There are marked sidewalks and crosswalks on the school property connecting pedestrians from Biagiotti Way and the walking paths to the main entrance. These paths were observed to be in good condition.

Treble Cove Road, Bridge Street, Bridle Street, and River Street serve as the higher classification roadways in the vicinity of Dutile Elementary School. All these roads, with the exception of River Street, provide a sidewalk on at least one side of the roadway. River Street between Bridle Street and Treble Cove marks a gap in the network. Many of the neighborhood streets that would utilize the Baniulis Road walkway have a sidewalk provided, whereas the neighborhood streets served by the Briarwood Avenue walkway are all missing sidewalks.

### **2.2.6 Hajjar Elementary School**

Figure 15 shows the sidewalks network in the vicinity of Hajjar Elementary School.

Sidewalks are not provided along the school's driveways from Rogers Street and Call Street; however, walkways for pedestrians are designated with crosswalk-style pavement markings. There are sidewalks along the front of the school as well as a paved walkway from Mechanics Way that appears to be in poor condition. There are school zone speed limit signs on both Call Street approaches to the school and a 20 MPH School Zone flashing sign for northbound traffic on both Rogers Street and Call Street.

Call Street, Rogers Street, High Street, Pollard Street, and Mt. Pleasant Street connect many of the local roadways to Hajjar Elementary School. There are several sidewalk

gaps in the school's vicinity that may impact students' abilities to walk to school. Pollard Street is missing a sidewalk between Call Street and Salem Road. There is also no sidewalk along High Street between Rogers Street and Mt. Pleasant Street, with the exception of a small segment across a bridge by Potter Field. There is also no sidewalk on Letchworth Avenue which impacts several local roadways to the north of Hajjar Elementary School that are located within the one-mile perimeter.

### **2.2.7 Kennedy Elementary School**

Figure 16 shows the sidewalks in the vicinity of Kennedy Elementary School.

Sidewalks are provided along both driveways on the school property and in front of the school itself. However, there is no sidewalk along Carline Drive beyond the school property. The sidewalks and curb ramps along the driveways are in poor condition.

Baldwin Road has a sidewalk only south of the intersection with Salem Road. The local roadways south of this intersection are relatively well connected and a continuous path is available to Kennedy Elementary via Baldwin Road and Kimbrough Road. Despite a continuous sidewalk, there are limited marked crosswalks for those coming from local roadways who must cross Baldwin Road. Within the vicinity of Kennedy Elementary School, there are only two crossings – one by Ferren Drive and the other by Westminster Road. This can make safely getting to Kennedy Elementary from Little John Drive, Robinhood Lane, Castlewood Drive, and Kensington Drive difficult.

Additionally, outside of a small section by Belmont Road, there is no sidewalk along Salem Road nor on George Brown Street. This gap in the sidewalk limits the connectivity of the local roadways to the north and east of Kennedy Elementary.

### **2.2.8 Parker Elementary School**

Figure 17 shows the sidewalks in the vicinity of Parker Elementary School.

The school has sidewalks on one side of both driveways that provide a pathway to the school's main entrance. In addition to the sidewalks, there is a paved walking path from Pages Court that leads to the playground behind the school and is connected by a paved path to the main entrance.

The school has flashing 20 MPH School Zone Speed Feedback signs on River Street for both directions that also serve Billerica Memorial High School. School Zone crossing signage is also displayed in advance of the Billerica Memorial High School and Parker Elementary School driveways/ River Street intersection. Pages Court has 20 MPH School Zone speed limit signs from both Concord Road and Parker Street. South of the driveway onto Parker Street there is a speed hump. Parker Street also has 20 MPH school zone signs.

River Street, Concord Road, Boston Road, and Andover Road comprise the main roadways that connect Parker Elementary School to its students. With the exception of Andover Street east of its intersection with Pond Street, all roadways provide sidewalks on at least one side of the roadway. Several of the local roadways do not have sidewalks at all, with Whiting Street, Richardson Street, Pages Court, and Parker Street marking the largest continuous gap within the Parker Elementary School zone.

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## Section 3

# Potential Improvement Strategies

Based on the information gathered, improvement strategies for each school study area as well as the overall Town-wide Public School areas were developed. Improvement strategies include initial recommendations and input from Town personnel. These improvements have been separated into two varying measures: short-term and long-term.

Short-term measures will focus on low-cost improvements that can be readily implemented by the Town. Measures will include improvements focused on operational and/or safety improvements benefitting all users and may include pedestrian accommodation improvements, traffic calming measures such as speed humps, signage, pavement markings, enforcement by safety officers and crossing guards, and/or regulatory restrictions. Short-term improvements may also consist of more substantial modifications such as sidewalk construction or changes in traffic circulation.

Long-term measures would focus on measures such as reconfiguration of intersections or consideration of additional traffic control devices. Long-term measures may also require future additional, "focused" studies and/or additional traffic data collection (i.e. traffic counts, Origin-Destination data) to further identify existing issues and provide recommendations that are not included as part of this study.

The following sections detail the short and long-term improvements for each of the eight public schools as well as Town-wide improvement strategies. Tables 1, Table 2 and Table 3 in Section 4 prioritize these improvements into high, medium, and low priority, respectively. These tables also identify impacted schools and include the roadway functional classification, the viability of each improvement, an estimated opinion of probable construction cost, and potential funding sources for each improvement. Viability is defined as the relative constructability of the improvement, with a high viability project having a readiness to be completed with minimal impact, while a low viability improvement is expected to result in challenges, increased impact, and more detailed coordination before potential implementation. Estimated costs are for construction efforts only (construction materials and installation costs) with additional costs (design, permitting, traffic management, etc.) excluded at this time. Potential external funding sources include but are not limited to Chapter 90 funds (Town programmed funding), Safe Routes to School (SRTS) grant funding, Complete Streets grant funding, and State Transportation Improvement Program (STIP) funding.

### 3.1 Town-wide Improvement Strategies

#### Short-term Improvements

Install and/or reconstruct pedestrian curb ramps (including detectable warning panels) at crosswalks throughout Town, and specifically the following locations:

- Mid-block pedestrian crossing signal on River Street (between Concord Road and BMHS)
- All side street crosswalks along Bridle Road
- Intersection of Wedgewood Avenue at River Street
- Crosswalks across Pondover Road, Marlyn Road, and Celtic Avenue along Pond Street

- Intersection of Monticello Road at Heritage Road (currently under construction)
- Heritage Road crosswalk to Marshall Middle School (currently under construction)

Install missing segments of sidewalks to eliminate short, sidewalk network gaps:

- Skyline Drive (south side, Abbey Lane to Pond Street)
  - Sufficient layout width available (approximately 48 feet\*)
  - Potential landscaping impacts (trees, stone wall, mailboxes)
  - Crosswalk and curb ramp installation to sidewalk on Pond Street
- Marlyn Road (south side, east of Pond Street)
  - Sufficient layout width available (approximately 30 feet\*)
  - Potential right-of-way impacts as layout narrows in this stretch
  - Would require further evaluation for feasibility
- Hattie Lane (south side, west of Middlesex Turnpike)
  - Sufficient layout width available (approximately 50 feet\*)
  - Potential landscaping impacts (tree trimming, overgrown vegetation)
- Talbot Ave (west side, between Old Elm Street and the circle)
  - Sufficient layout width available (approximately 60-70 feet\*)
  - Potential right-of-way impacts as layout narrows closer to circle
  - Evaluate feasibility of east side of roadway with crosswalk south of circle; would result in utility pole relocations
- Chatham Road (north side, east of Montbatten Road)
  - Sufficient layout width available (approximately 48 feet\*)
  - Potential tree removal
  - Crosswalk and curb ramp installation across Montbatten Road
- Sidewalk improvements on Talbot Avenue are consistent with Billerica's Complete Streets Prioritization Plan accepted by MassDOT in 2024.

\* Based upon Town of Billerica GIS Maps

Ensure crossing guards receive the necessary training on traffic control if they are expected to direct traffic entering and exiting school property. Field observations revealed that several crossing guards were directing traffic on or adjacent to school property in addition to their responsibilities to crossing students. Ensuring these crossing guards receive appropriate training will improve safety for all users.

### **Long-term Improvements**

Continued implementation of the Town's ADA transition plan to ensure pedestrian curb ramps are replaced/installed at all crossing locations throughout the Town. Existing curb ramps were observed to be in need of repair and replacement with a portion of ramps lacking detectable warning panels, visible cracking, and in few instances, non-existent.

Develop sidewalk prioritization plan for all existing sidewalks identified as poor condition within school areas. Prioritization plan should include a scoring system to rank each sidewalk segment as well as budgetary cost estimates for capital planning assistance.

Install missing segments of sidewalks on at least one side of roadway to eliminate larger, sidewalk network gaps:

- French Street (Glad Valley Drive to Concord Road)
- Boston Road (Tufts Lane to Theodore Court)
- Andover Road (east of Pond Street)
- Allen Road (Andover Road to Tower Farm Road)
- Pollard Street (Salem Road to Call Street)

- River Street (Bridle Road to Treble Cove Road)
- Lois Lane (Putney Circle to Shane Lane)
- Webb Brook Road (Jennifer Circle to Boston Road)
- Salem Road (Patridge Hill Road to Strawberry Lane)
- High Street (Rogers Street to Burnham Road)
- Boston Road (Bridge Street to Treble Cove Plaza Driveway)
- Carline Drive (Baldwin Road to Lantern Lane)
- Salem Road (Belmont Road to Garnet Road)
- George Brown Street (Salem Road to Charme Road)
- Bicknell Road (south of Cook Street)
- Whiting Street (Richardson Street to Concord Road)
- Richardson Street (Whiting Street to Parker Street)
- Parker Street (Richardson Street to River Street)
- Pages Court (Concord Road to Parker Street)
- Sidewalk improvements on Allen Road, Andover Road, Webb Brook Road, French Street, High Street, River Street, and Salem Road are consistent with Billerica's Complete Streets Prioritization Plan accepted by MassDOT in 2024.

Further evaluation and conceptual design would be needed to ensure feasibility of installation of these sidewalk segments. Additional research, including topographic survey, would be needed to complete the sidewalk design and construction.

Consider installing sidewalks on at least one side of each roadway within the following adjacent neighborhoods for safer access to the existing sidewalk network:

- Bridle Road
- River Street
- Tower Farm Road
- Allen Road
- Baldwin Road

## **3.2 Billerica Memorial High School**

### **Short-term Improvements**

Install additional one-way signage for entrance loop driveway along River Street. Signage is currently provided for the exit driveway; however, none has been provided for the entrance. Also consider adding signage to restrict driveway to "buses only" during specific drop-off and pick-up periods.

The close proximity of the two driveways along River Street results in near-miss collisions for turning vehicles. Vehicles were observed yielding to left turning drivers and exhibiting confusion about which driveway a vehicle is trying to turn into. The addition of buses only signage can help to address driver confusion.

Identify additional bus storage areas during early release days as current conditions do not allow all 22 buses to fit within loop driveway. Overflow buses park on River Street and create additional traffic congestion issues. Work with school to identify potential storage locations or consider staggering bus releases, similar to full-day operations, to reduce impacts to River Street.

Further evaluate if Billerica public parking (behind library) lot is being used as parent drop-off/pick-up area or is being used as overflow school staff/student parking. If this parking lot is not intended for use by the school, work with school staff to educate staff and students to avoid the use of this parking lot.

### **3.3 Locke Middle School**

#### **Short-term Improvements**

Coordinate with contractor on-site to avoid parking excavator and other construction equipment along school driveway impeding pick-up/drop-off operations. Relocation of this equipment outside of the travel way will provide safe operation for vehicle circulation on school property.

#### **Long-term Improvements**

Reconstruct internal sidewalks in poor condition within school property and along Urban Street. These improvements will provide safe travel for pedestrians and bicyclists attending the school as well as the public field facilities.

### **3.4 Marshall Middle School**

#### **Long-term Improvements**

Reconstruct internal sidewalks in poor condition within school property. These improvements will provide safe travel for pedestrians and bicyclists attending the school as well as the public field facilities.

### **3.5 Ditson Elementary School**

#### **Short-term Improvements**

Consider relocation of crosswalk on north leg of Cook Street/Bicentennial Drove/Bankside Drive intersection to be closer to intersection. Pedestrians do not use the existing crosswalk as it is too far from the intersection and choose to jaywalk instead. Relocation of this crosswalk approximately 25 feet to the south would result in better utilization by pedestrians and increase the safety and visibility when crossing Cook Street.

### **3.6 Dutile Elementary School**

#### **Short-term Improvements**

Consider repairing the section of sidewalk along Diane Drive (#13) where tree roots have uprooted the sidewalk, making it impassable. Repairs to this section of sidewalk will reduce the need for pedestrians to use the roadway to traverse along Diane Drive.

### Long-term Improvements

Consider constructing internal sidewalks within school property to replace existing striped crosswalks/pedestrian paths. Currently pedestrians, bicycles, vehicles and buses must share the roadway without any physical separation. The addition of sidewalks will provide the necessary separation from vehicular traffic and increase safety for all users.

## 3.7 Hajjar Elementary School

### Short-term Improvements

Install "Do Not Enter" signage with "Buses Only" plaques to better restrict driveway to buses only for this driveway. Existing signage appears under-sized and difficult to see when approaching the driveway. Consider working with school staff to help educate vehicles to this restriction.

### Long-term Improvements

Consider constructing internal sidewalks within school property to replace existing striped crosswalks/pedestrian paths. Currently pedestrians, bicycles, vehicles and buses must share the roadway without any physical separation. The addition of sidewalks will provide the necessary separation from vehicular traffic and increase safety for all users.

## 3.8 Kennedy Elementary School

### Long-term Improvements

Consider reconstructing existing sidewalks approaching school with new curbing to provide increased separation between the parking lane and sidewalk. These improvements will provide safe travel for pedestrians and bicyclists attending the school as well as the public field facilities.

## 3.9 Parker Elementary School

### Long-term Improvements

Consider installing crosswalk and curb ramps across River Street at the intersection with Parker Street and construct a sidewalk along the east side of Parker Street between River Street and the school driveway for students to the west. An existing sidewalk exists on the south side of the school driveway located on Parker Street.

Consider installing the missing crosswalk and reconstructing existing curb ramps across Concord Crossing (#53 River Street). As this is a direct pedestrian route for both the High School and Parker Elementary School, the addition of this crossing would improve safety across this driveway.

## **Section 4**

### **Tables**

**TABLE 1**  
High Priority Potential Improvements

<b>Observed Issue</b>	<b>Potential Improvement</b>	<b>Applicable School(s)</b>	<b>Functional Classification</b>	<b>Viability</b>	<b>Estimated Cost<sup>1</sup></b>	<b>Potential Funding Source(s)</b>
Pedestrian Curb Ramps & Crosswalks	<b>Heritage Road at Marshall Middle School Pathway</b> - Install pedestrian curb ramps and crosswalk across Heritage Road	Marshall, Parker	Local	High	Currently Under Construction	N/A
Sidewalk Installation	<b>Boston Road</b> (Tufts Lane to Theodore Court)	BMHS, Locke	Arterial	Medium	\$2,100,000	Chapter 90, STIP
Sidewalk Installation	<b>Andover Road</b> (Pond Street to Allenhurst Road)	BMHS, Locke	Arterial	Medium	\$1,590,000	Chapter 90, STIP, Complete Streets
Sidewalk Installation	<b>Allen Road</b> (Andover Road to Tower Farm Road)	BMHS, Locke	Collector	Medium	\$975,000	Chapter 90, STIP, Complete Streets
Sidewalk Installation	<b>Pollard Street</b> (Salem Road to Call Street)	BMHS, Marshall, Hajjar	Arterial	Medium	\$1,590,000	Chapter 90, STIP
Sidewalk Installation	<b>River Street</b> (Bridle Road to Treble Cove Road)	BMHS, Dutile	Arterial	Medium/Low	\$1,125,000	Chapter 90, STIP, Complete Streets
Sidewalk Installation	<b>Boston Road</b> (Bridge Street to Treble Cove Plaza Driveway)	BMHS, Marshall	Arterial	High	\$960,000	Chapter 90, STIP
Sidewalk Installation	<b>Carline Drive</b> (Baldwin Road to Lantern Lane)	Kennedy	Local	High	\$450,000	Chapter 90, SRTS
Sidewalk Installation	<b>Dutile</b> - Construct internal sidewalks within school property, replacing existing striped pedestrian paths	Dutile	Local	High	\$45,000	SRTS
Sidewalk Installation	<b>Hajjar</b> - Construct internal sidewalks within school property, replacing existing striped pedestrian paths	Hajjar	Local	High	\$240,000	SRTS

<sup>1</sup> Estimated Costs limited to construction materials and installation costs; excludes design, permitting, traffic management, etc.

STIP: State Transportation Improvement Program  
SRTS: Safe Routes to School

**TABLE 2**  
Medium Priority Potential Improvements

<b>Observed Issue</b>	<b>Potential Improvement</b>	<b>Applicable School(s)</b>	<b>Functional Classification</b>	<b>Viability</b>	<b>Estimated Cost<sup>1</sup></b>	<b>Potential Funding Source(s)</b>
Bus Storage	<b>BMHS</b> - Identify additional bus storage areas during early release days	BMHS	Local	TBD	N/A	N/A
Pedestrian Curb Ramps	<b>River Street</b> Pedestrian Signal - Reconstruct existing pedestrian curb ramps	BMHS, Parker	Arterial	High	\$6,500	Chapter 90, SRTS
Pedestrian Curb Ramps	<b>Pondover Road, Marlyn Road, and Celtic Avenue</b> - Reconstruct existing pedestrian curb ramps along Pond Street	BMHS, Marshall	Collector	High	\$19,500	Chapter 90, SRTS
Pedestrian Curb Ramps	<b>Monticello Road at Heritage Road</b> - Reconstruct existing pedestrian curb ramps across Monticello Road	BMHS, Marshall	Local	High	Currently Under Construction	N/A
Pedestrian Curb Ramps & Crosswalks	<b>Bridle Road</b> - Install pedestrian curb ramps and crosswalks across all side streets along west side of Bridle Road	BMHS, Dutile	Collector	High	\$135,000	Chapter 90, SRTS
Pedestrian Curb Ramps & Crosswalks	<b>Wedgewood Avenue</b> - Reconstruct pedestrian curb ramps and crosswalk across Wedgewood Avenue	BMHS, Parker	Local	High	\$7,000	Chapter 90, SRTS
Pedestrian Curb Ramps & Crosswalks	<b>River Street at Parker Street</b> - Install pedestrian curb ramps and crosswalk across River Street	BMHS, Parker	Arterial	High	\$7,000	Chapter 90
Pedestrian Curb Ramps & Crosswalks	<b>Concord Crossing (#53 River Street)</b> - Install pedestrian curb ramps and crosswalk across driveway	BMHS, Parker	Local	High	\$7,000	Chapter 90
Sidewalk Gaps	<b>Skyline Drive</b> (south side) - Abbey Lane to Pond Street	BMHS, Marshall, Parker	Local	Medium	\$135,000	Chapter 90
Sidewalk Gaps	<b>Hattie Lane</b> (south side) - west of Middlesex Turnpike	BMHS	Local	High	\$60,000	Chapter 90
Sidewalk Gaps	<b>Talbot Avenue</b> (west side) - between Old Elm Street and the circle	Hajjar	Local	High	\$135,000	Chapter 90, Complete Streets
Sidewalk Gaps	<b>Chatham Road</b> (north side) - east of Montbatten Road	Kennedy	Local	High	\$67,500	Chapter 90

<b>Observed Issue</b>	<b>Potential Improvement</b>	<b>Applicable School(s)</b>	<b>Functional Classification</b>	<b>Viability</b>	<b>Estimated Cost<sup>1</sup></b>	<b>Potential Funding Source(s)</b>
Sidewalk Installation	<b>Salem Road</b> (Partridge Hill Road to Strawberry Lane)	Marshall	Arterial	Medium	\$570,000	Chapter 90, STIP, Complete Streets
Sidewalk Installation	<b>High Street</b> (Rogers Street to Burnham Road)	Marshall, Hajjar	Arterial	Medium	\$795,000	Chapter 90, STIP, Complete Streets
Sidewalk Installation	<b>Salem Road</b> (Belmont Road to Garnet Road)	Kennedy	Arterial	Medium	\$1,275,000	Chapter 90, STIP, Complete Streets
Sidewalk Installation	<b>Bicknell Road</b> (Cook Street to Allard Way)	Ditson	Collector	Low	\$540,000	Chapter 90, STIP
Sidewalk Installation	<b>Whiting Street</b> (Richardson Street to Concord Road)	BMHS, Parker	Local	Medium	\$225,000	Chapter 90, SRTS
Sidewalk Installation	<b>Richardson Street</b> (Whiting Street to Parker Street)	BMHS, Parker	Local	Medium	\$157,500	Chapter 90, SRTS
Sidewalk Installation	<b>Parker Street</b> (Richardson Street to River Street)	BMHS, Parker	Local	Medium	\$390,000	Chapter 90, SRTS
Sidewalk Installation	<b>Pages Court</b> (Concord Road to Parker Street)	BMHS, Parker	Local	Medium	\$450,000	Chapter 90, SRTS
Sidewalk Reconstruction	<b>Dutile</b> - Reconstruct section of sidewalk along Diane Drive (#13)	Dutile	Local	High	\$15,000	Chapter 90, SRTS
Sidewalk Reconstruction	<b>Kennedy</b> - Reconstruct existing sidewalks on Kimbrough Road	Kennedy	Local	High	\$142,500	Chapter 90, SRTS

<sup>1</sup> Estimated Costs limited to construction materials and installation costs; excludes design, permitting, traffic management, etc.

STIP: State Transportation Improvement Program  
SRTS: Safe Routes to School

**TABLE 3**  
Low Priority Potential Improvements

<b>Observed Issue</b>	<b>Potential Improvement</b>	<b>Applicable School(s)</b>	<b>Functional Classification</b>	<b>Viability</b>	<b>Estimated Cost<sup>1</sup></b>	<b>Potential Funding Source(s)</b>
Crosswalk Relocation	<b>Ditson</b> - Relocate crosswalk on north leg of Cook Street	Ditson	Collector	High	\$30,000	Chapter 90
Parking	<b>BMHS</b> - Evaluate if Billerica public parking lot is being used as overflow lot for school	BMHS	Local	High	N/A	N/A
Parking	<b>Locke</b> - Coordinate with contractor to avoid parking construction equipment along school driveway	Locke	Local	High	N/A	N/A
Sidewalk Gaps	<b>Marlyn Road</b> (south side) - east of Pond Street	BMHS, Marshall	Local	Low	\$52,500	Chapter 90
Sidewalk Installation	<b>French Street</b> (Glad Valley Drive to Concord Road)	BMHS	Local	Medium	\$375,000	Chapter 90, Complete Streets
Sidewalk Installation	<b>Lois Lane</b> (Putney Circle to Shane Lane)	Locke	Local	Medium	\$390,000	Chapter 90, STIP
Sidewalk Installation	<b>Webb Brook Road</b> (Jennifer Circle to Boston Road)	Locke	Collector	Low	\$480,000	Chapter 90, STIP, Complete Streets
Sidewalk Installation	<b>George Brown Street</b> (Salem Road to Charme Road)	Kennedy	Collector	Low	\$240,000	Chapter 90, STIP
Sidewalk Reconstruction	<b>Locke</b> - Reconstruct internal sidewalks within school property and along Urban Street	Locke	Local	High	\$450,000	SRTS
Sidewalk Reconstruction	<b>Marshall</b> - Reconstruct internal sidewalks within school property	Marshall	Local	High	\$510,000	SRTS
Signage	<b>BMHS</b> - Install additional one-way/ "Buses Only" signage for entrance loop driveway along River Street	BMHS	Local	High	\$200	Chapter 90
Signage	<b>Hajjar</b> - Install "Do Not Enter" and "Buses Only" signage to restrict driveway to buses only	Hajjar	Local	High	\$200	Chapter 90

<sup>1</sup> Estimated Costs limited to construction materials and installation costs; excludes design, permitting, traffic management, etc.

STIP: State Transportation Improvement Program  
SRTS: Safe Routes to School

## **Section 5**

### **Figures**

Dec 19, 2024-10:18am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



**LEGEND**

■ CROSSING GUARD LOCATION

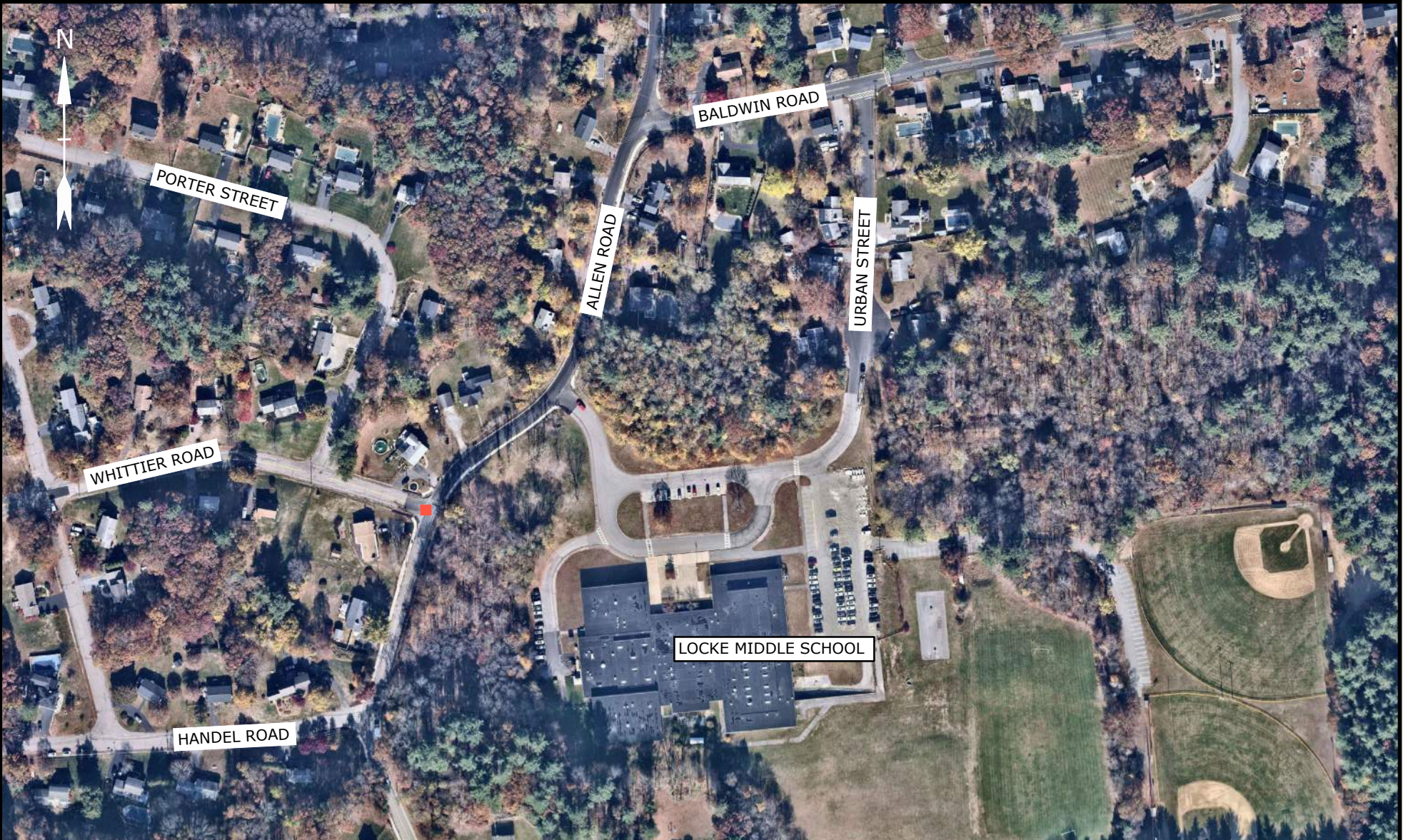
**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SCHOOL SITE MAP  
BILLERICA MEMORIAL HIGH SCHOOL**


DATE: 12/17/2024  
SCALE: 1" = 250'  
FIGURE: 2



Jan 14, 2025, 9:06am Plotted By: MMcDermet  
Tighe & Bond, Inc. J:\B\80874 - Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



**LEGEND**

 CROSSING GUARD LOCATION

**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SCHOOL SITE MAP  
LOCKE MIDDLE SCHOOL**


DATE: 12/19/2024  
SCALE: 1" = 250'  
FIGURE: 3



Dec 19, 2024 11:26am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 - Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



**LEGEND**

 CROSSING GUARD LOCATION

**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SCHOOL SITE MAP  
MARSHALL MIDDLE SCHOOL**


DATE: 12/19/2024  
SCALE: 1" = 300'  
FIGURE: 4



Dec 19, 2024 11:45am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



**LEGEND**

 CROSSING GUARD LOCATION

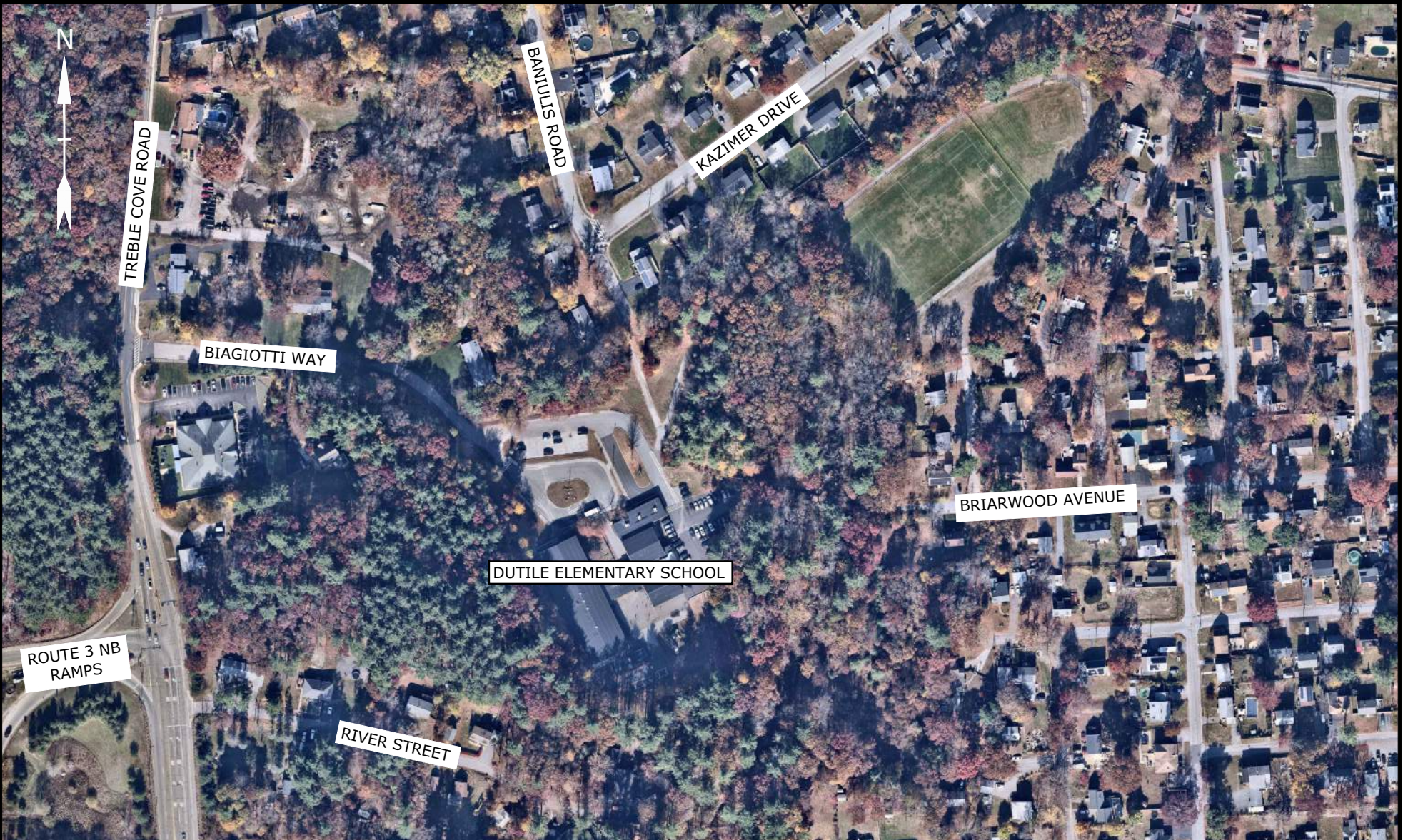
PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS

SCHOOL SITE MAP  
DITSON ELEMENTARY SCHOOL

DATE: 12/19/2024  
SCALE: 1" = 250'  
FIGURE: 5



Dec 19, 2024 11:58am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



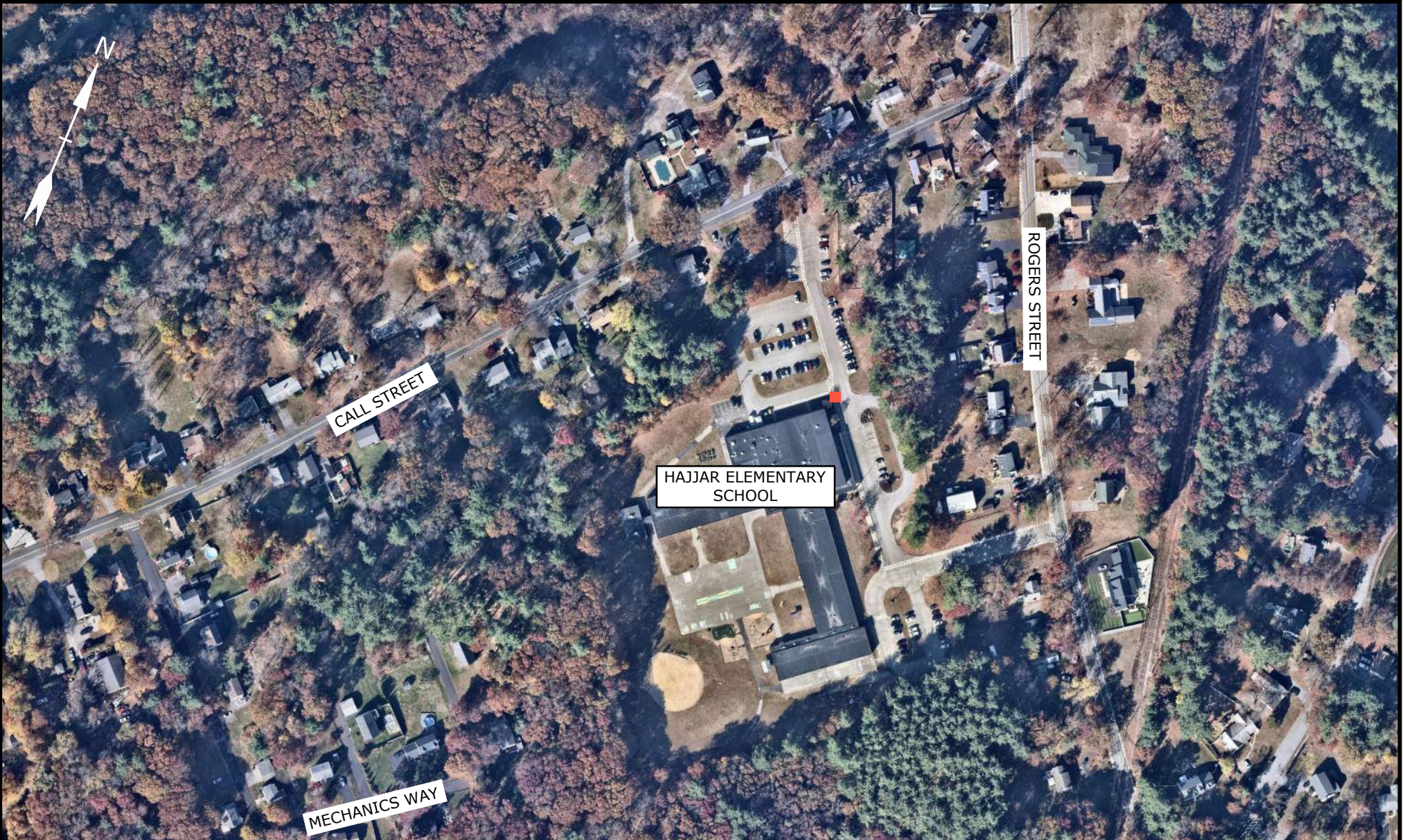
**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SCHOOL SITE MAP  
DUTILE ELEMENTARY SCHOOL**


DATE: 12/19/2024  
SCALE: 1" = 250'  
FIGURE: 6



Dec 19, 2024-12:08pm, Plotted By: MMcDermet  
Tighe & Bond, Inc. J:\B\B0874\_Town of Billerica MA Stormwater\025\_School Access\_Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



**LEGEND**

 CROSSING GUARD LOCATION

**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SCHOOL SITE MAP  
HAJJAR ELEMENTARY SCHOOL**


DATE: 12/19/2024  
SCALE: 1" = 250'  
FIGURE: 7



Dec 19, 2024 12:21pm Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



**LEGEND**

 CROSSING GUARD LOCATION

PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS

SCHOOL SITE MAP  
KENNEDY ELEMENTARY SCHOOL


DATE: 12/19/2024  
SCALE: 1" = 300'  
FIGURE: 8



Dec 19, 2024-12:30pm, Plotted By: MMcDermet  
Tighe & Bond, Inc. J:\B\B0874\_Town of Billerica MA Stormwater\025\_School Access\_Study\Drawings\AutoCAD\Figures\Crossing Guard Locations.dwg



**LEGEND**

 CROSSING GUARD LOCATION

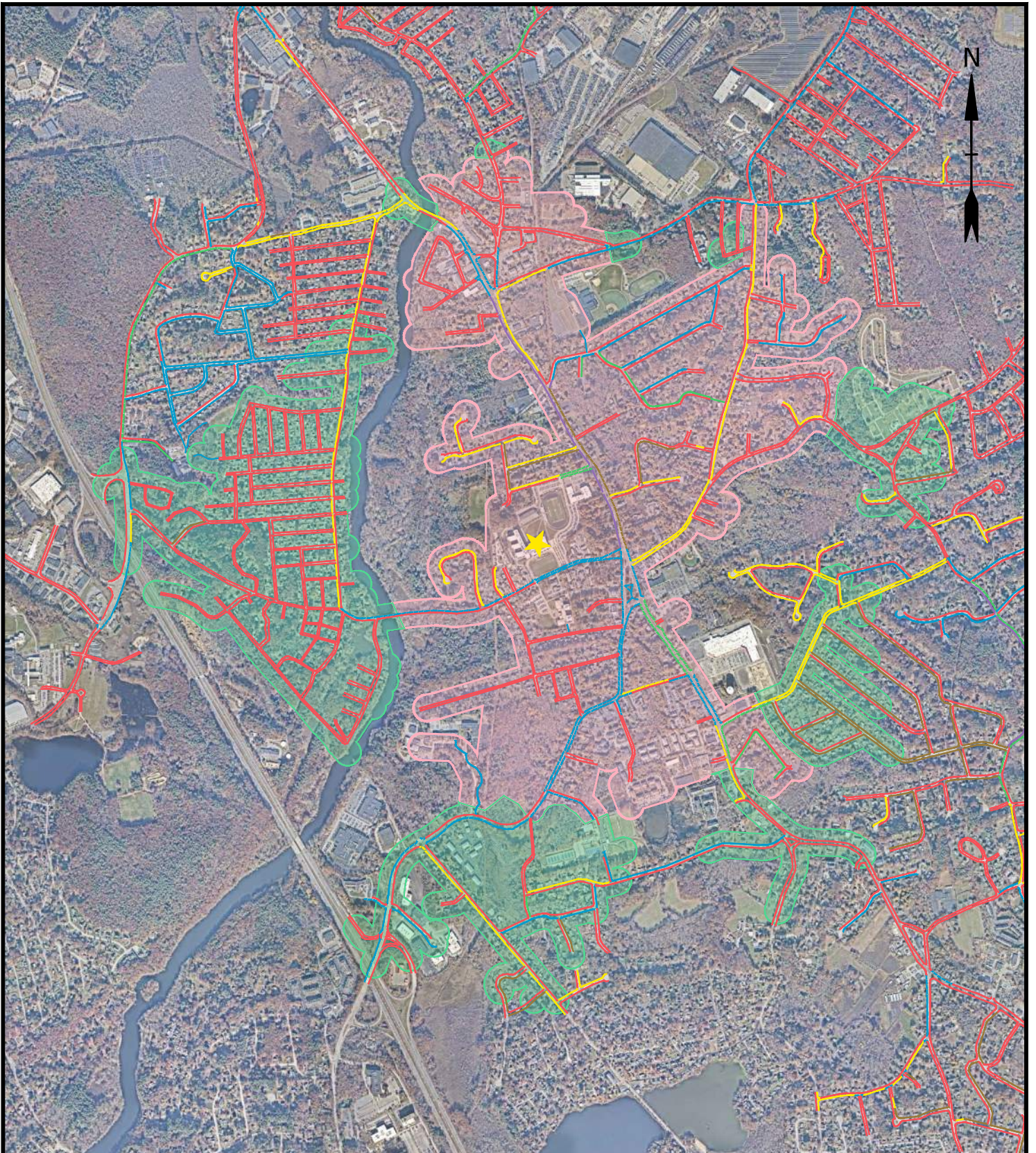
**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**CROSSING GUARDS  
PARKER ELEMENTARY SCHOOL**

DATE: 12/19/2024  
SCALE: 1" = 200'  
FIGURE: 9



Jan 14, 2025-8:40am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Sidewalk Infrastructure Figures.dwg



**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE

- ★ BILLERICA MEMORIAL HIGH SCHOOL
- 1.5 MILES FROM SCHOOL ENTRANCE
- INELIGIBLE FOR BUS TRANSPORTATION

**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SIDEWALK INFRASTRUCTURE  
BILLERICA MEMORIAL HIGH SCHOOL**

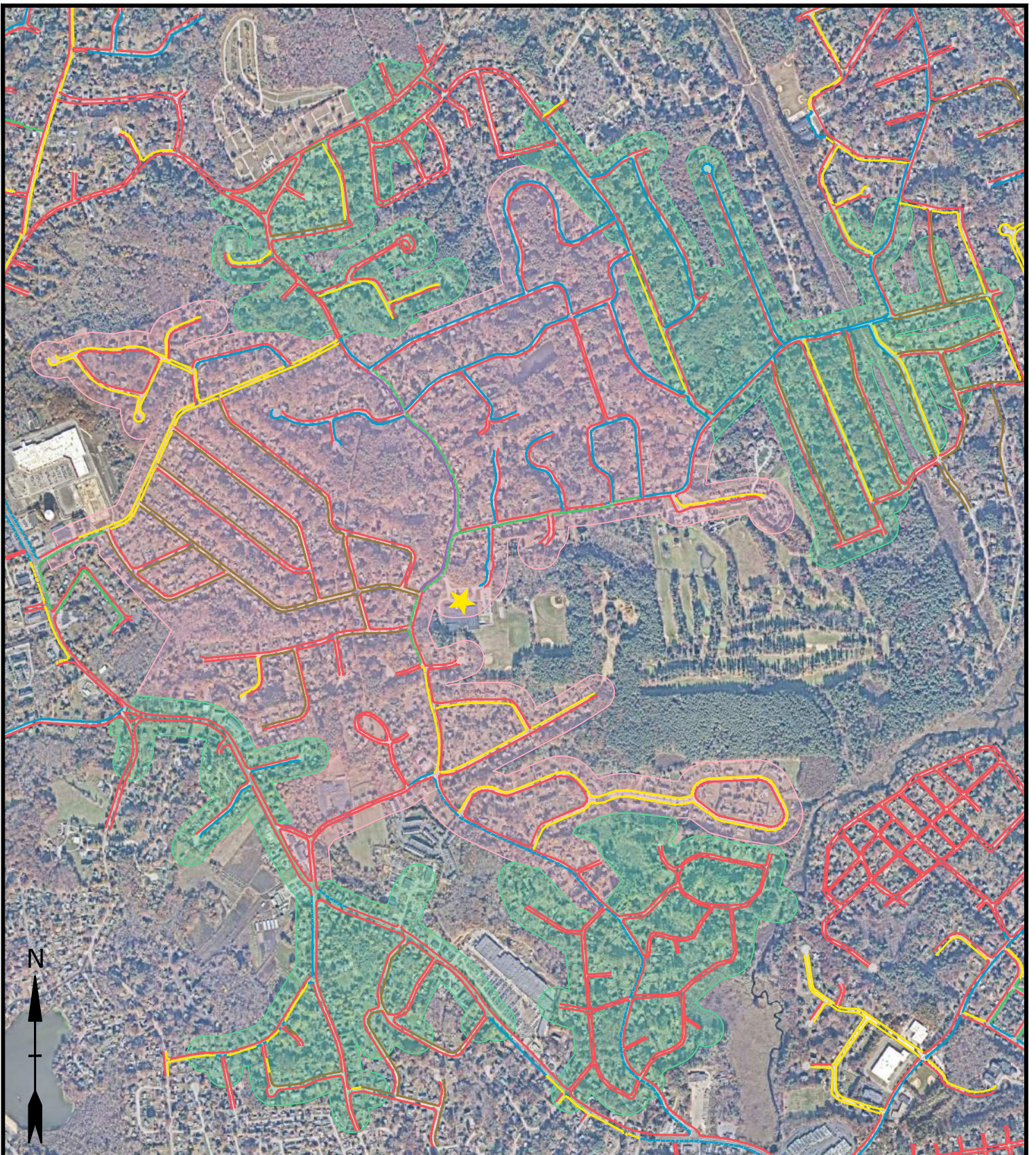
DATE: 01/14/2025

SCALE: 1" = 2000'

FIGURE: 10



Jan 14, 2025 9:05am Plotted By: MMcDermet  
 Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Sidewalk Infrastructure Figures.dwg



**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE
- LOCKE MIDDLE SCHOOL
- 1.5 MILES FROM SCHOOL ENTRANCE
- INELIGIBLE FOR BUS TRANSPORTATION

**PUBLIC SCHOOL EVALUATION  
 BILLERICA, MASSACHUSETTS**

**SIDEWALK INFRASTRUCTURE  
 LOCKE MIDDLE SCHOOL**

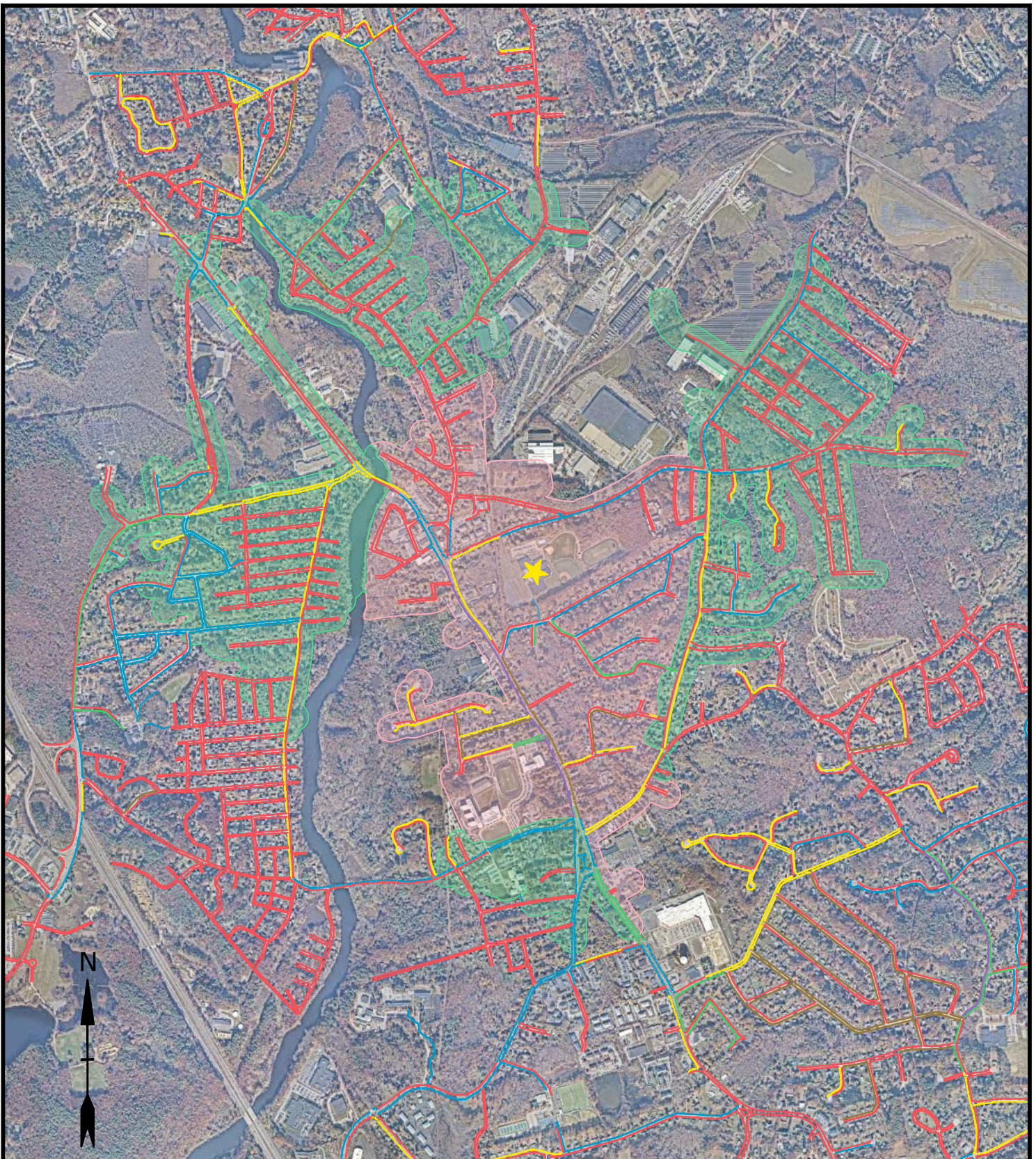
DATE: 01/14/2025

SCALE: 1" = 1500'

FIGURE: 11



Jan 14, 2025 8:44am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\80874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Sidewalk Infrastructure Figures.dwg



**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE

★ MARSHALL MIDDLE SCHOOL

1.5 MILES FROM SCHOOL ENTRANCE

INELIGIBLE FOR BUS TRANSPORTATION

**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

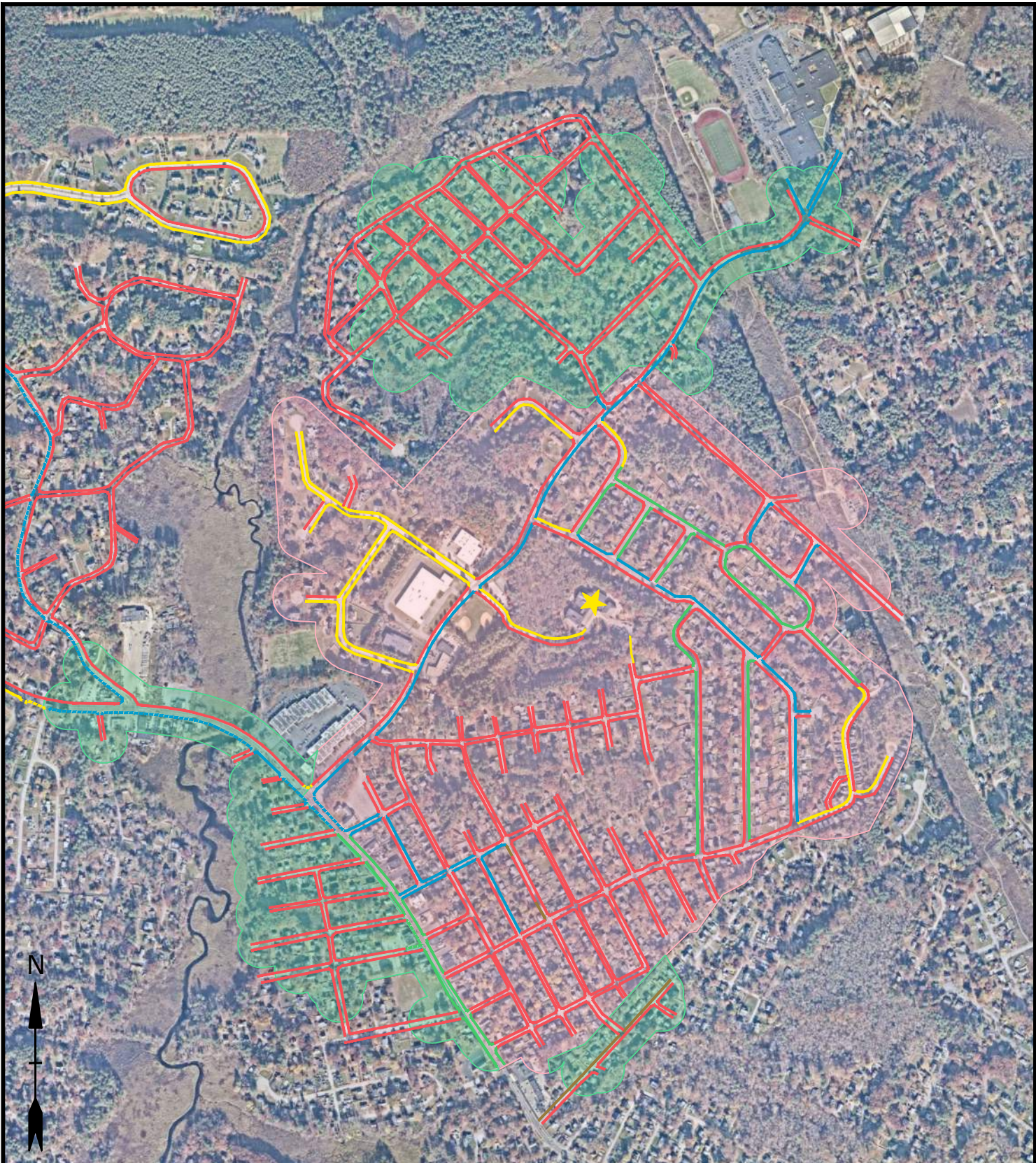
**SIDEWALK INFRASTRUCTURE  
MARSHALL MIDDLE SCHOOL**

DATE: 01/14/2025

SCALE: 1" = 2000'

FIGURE: 12





**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE

- ★ DITSON ELEMENTARY SCHOOL
- 1 MILE FROM SCHOOL ENTRANCE
- INELIGIBLE FOR BUS TRANSPORTATION

PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS

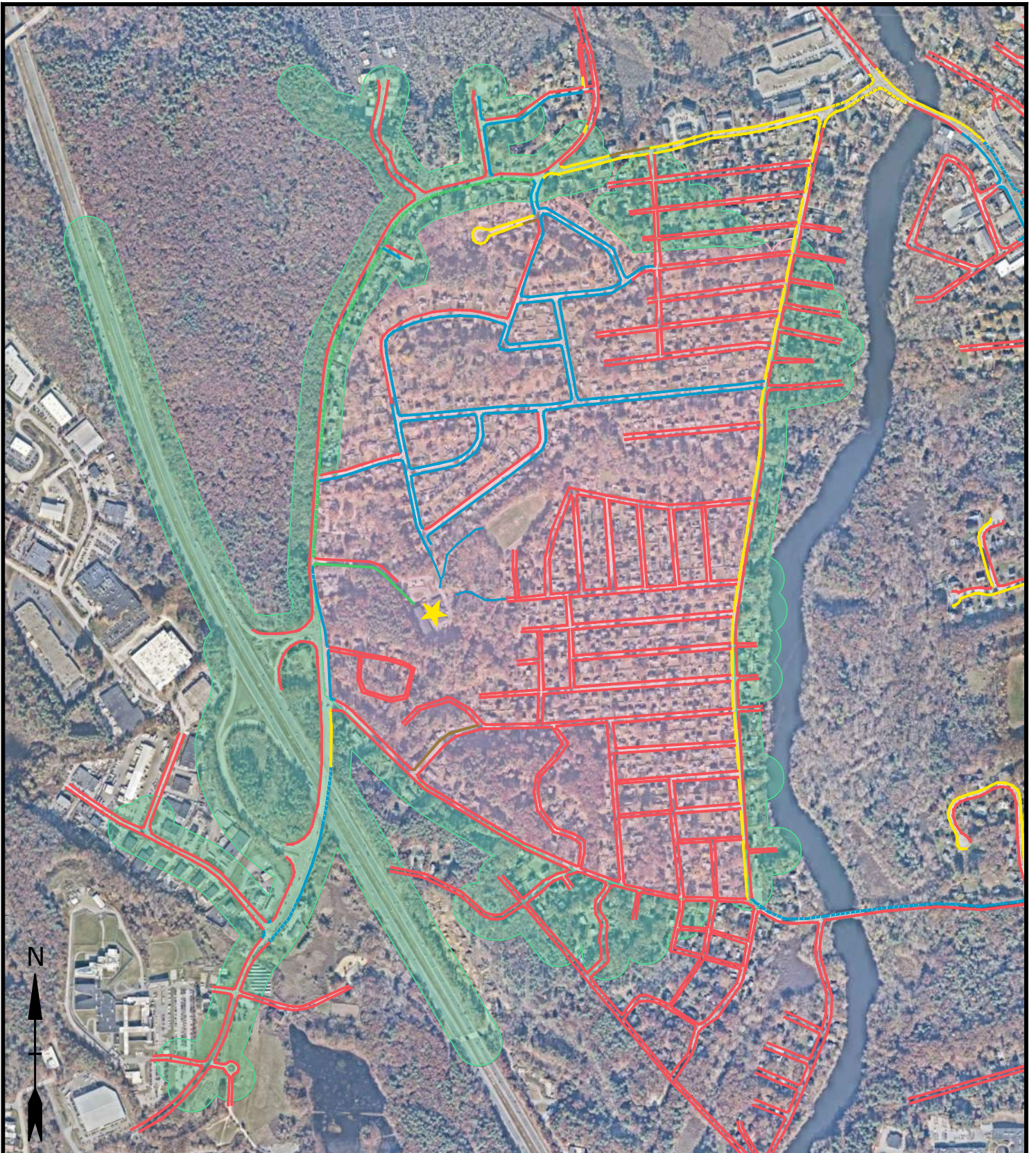
SIDEWALK INFRASTRUCTURE  
DITSON ELEMENTARY SCHOOL

DATE: 01/14/2025

SCALE: 1" = 1000'

FIGURE: 13





**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE

- DUTILLE ELEMENTARY SCHOOL
- 1 MILE FROM SCHOOL ENTRANCE
- INELIGIBLE FOR BUS TRANSPORTATION

**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SIDEWALK INFRASTRUCTURE  
DUTILLE ELEMENTARY SCHOOL**

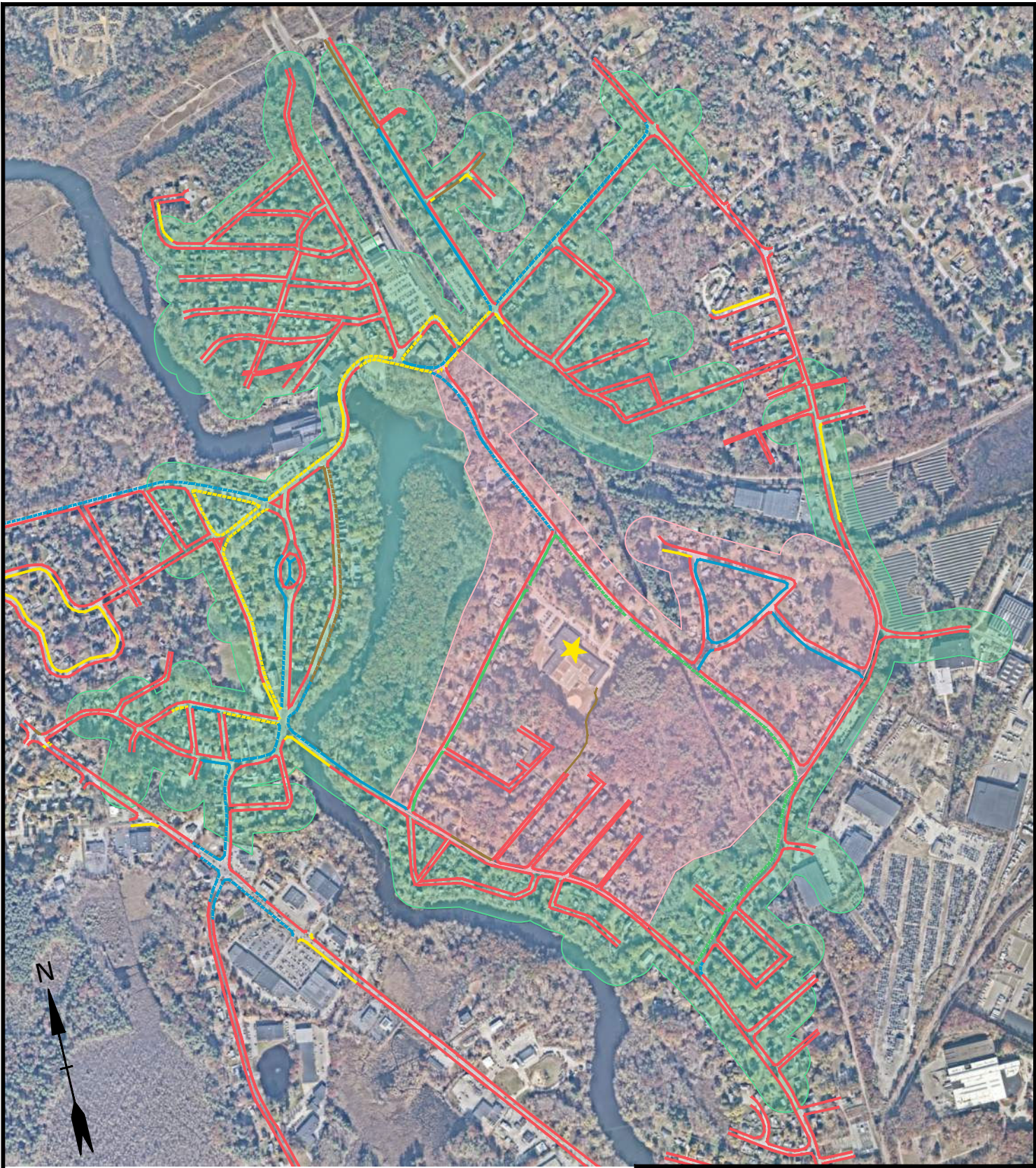
DATE: 01/14/2025

SCALE: 1" = 1000'

FIGURE: 14



Jan 14, 2025-8:55am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\B0874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Sidewalk Infrastructure Figures.dwg



**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE

- ★ HAJJAR ELEMENTARY SCHOOL
- 1 MILE FROM SCHOOL ENTRANCE
- INELIGIBLE FOR BUS TRANSPORTATION

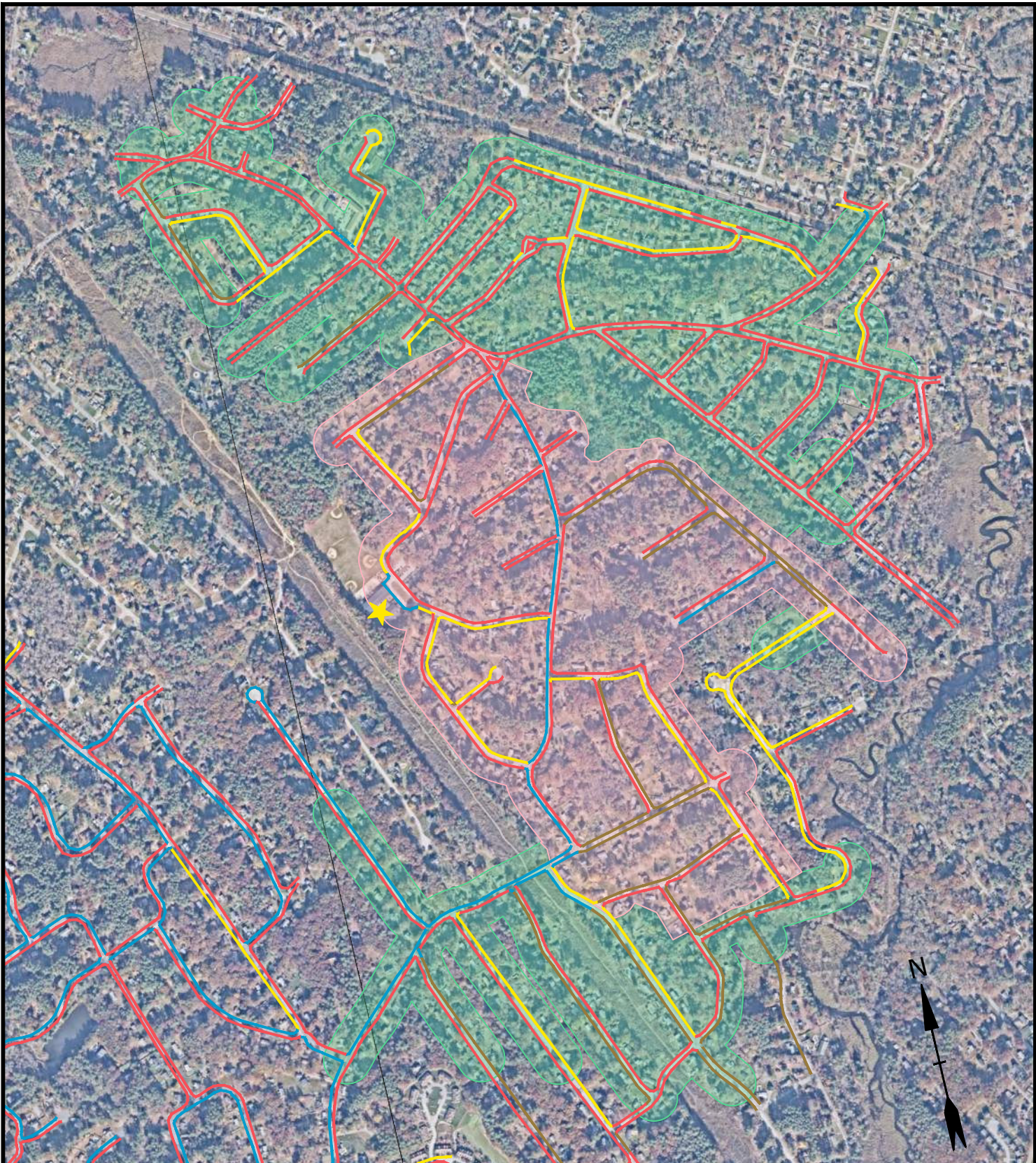
**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SIDEWALK INFRASTRUCTURE  
HAJJAR ELEMENTARY SCHOOL**

DATE: 01/14/2025  
SCALE: 1" = 1000'  
FIGURE: 15



Jan 14, 2025 8:59am Plotted By: MMcDermet Tighe & Bond, Inc. J:\B\80874 Town of Billerica MA Stormwater\025 School Access Study\Drawings\AutoCAD\Figures\Sidewalk Infrastructure Figures.dwg



**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE

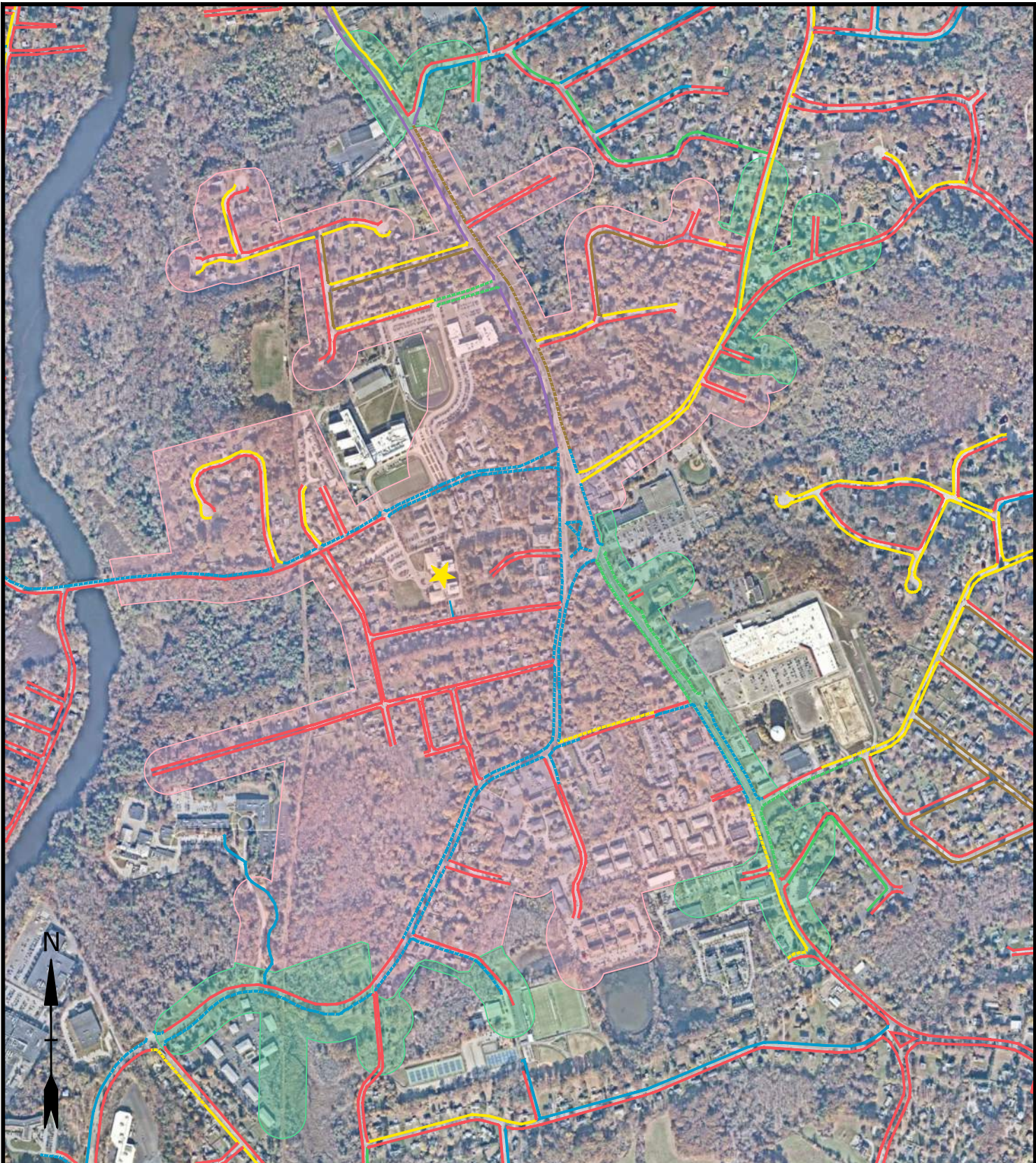
- ★ KENNEDY ELEMENTARY SCHOOL
- 1 MILE FROM SCHOOL ENTRANCE
- INELIGIBLE FOR BUS TRANSPORTATION

PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS

SIDEWALK INFRASTRUCTURE  
KENNEDY ELEMENTARY SCHOOL

DATE: 01/14/2025  
SCALE: 1" = 1000'  
FIGURE: 16





**SIDEWALK LEGEND:**

- NONE
- NEW
- GOOD
- FAIR
- POOR
- UNDER CONSTRUCTION
- HOT MIX ASPHALT (HMA)
- CEMENT CONCRETE

- ★ PARKER ELEMENTARY SCHOOL
- 1 MILE FROM SCHOOL ENTRANCE
- INELIGIBLE FOR BUS TRANSPORTATION

**PUBLIC SCHOOL EVALUATION  
BILLERICA, MASSACHUSETTS**

**SIDEWALK INFRASTRUCTURE  
PARKER ELEMENTARY SCHOOL**

DATE: 01/14/2025  
SCALE: 1" = 1000'  
FIGURE: 17



