

Massachusetts School Building Authority

Next Steps to Finalize Submission of your FY 2018 Statement of Interest

Thank you for submitting your FY 2018 Statement of Interest (SOI) to the MSBA electronically. **Please note, the District's submission is not yet complete.** The District is required to mail all required supporting documentation, which is described below.

VOTES: Each SOI must be submitted with the proper vote documentation. This means that (1) the required governing bodies have voted to submit each SOI, (2) the specific vote language required by the MSBA has been used, and (3) the District has submitted a record of the vote in the format required by the MSBA.

- i **School Committee Vote:** Submittal of all SOIs must be approved by a vote of the School Committee.
 - i For documentation of the vote of the School Committee, Minutes of the School Committee meeting at which the vote was taken must be submitted with the original signature of the Committee Chairperson. The Minutes must contain the actual text of the vote taken which should be substantially the same as the MSBA's SOI vote language.
- i **Municipal Body Vote:** SOIs that are submitted by cities and towns must be approved by a vote of the appropriate municipal body (e.g., City Council/ Aldermen/Board of Selectmen) in addition to a vote of the School Committee.
 - i Regional School Districts do not need to submit a vote of the municipal body.
 - i For the vote of the municipal governing body, a copy of the text of the vote, which shall be substantially the same as the MSBA's SOI vote language, must be submitted with a certification of the City/Town Clerk that the vote was taken and duly recorded, and the date of the vote must be provided.

ADDITIONAL DOCUMENTATION FOR SOI PRIORITIES #1 AND #3: If a District selects Priority #1 and/or Priority #3, the District is required to submit additional documentation with its SOI.

- i If a District selects Priority #1, Replacement or renovation of a building which is structurally unsound or otherwise in a condition seriously jeopardizing the health and safety of the school children, where no alternative exists, the MSBA requires a hard copy of the engineering or other report detailing the nature and severity of the problem and a written professional opinion of how imminent the system failure is likely to manifest itself. The District also must submit photographs of the problematic building area or system to the MSBA.
- i If a District selects Priority #3, Prevention of a loss of accreditation, the SOI will not be considered complete unless and until a summary of the accreditation report focused on the deficiency as stated in this SOI is provided.

ADDITIONAL INFORMATION: In addition to the information required above, the District may also provide any reports, pictures, or other information they feel will give the MSBA a better understanding of the issues identified at a facility.

If you have any questions about the SOI process please contact the MSBA at 617-720-4466 or SOI@massschoolbuildings.org.

Massachusetts School Building Authority

School District Andover

District Contact Paul Szymanski TEL: (978) 247-7070

Name of School Andover High

Submission Date 4/5/2018

SOI CERTIFICATION

To be eligible to submit a Statement of Interest (SOI), a district must certify the following:

- The district hereby acknowledges and agrees that this SOI is NOT an application for funding and that submission of this SOI in no way commits the MSBA to accept an application, approve an application, provide a grant or any other type of funding, or places any other obligation on the MSBA.
- The district hereby acknowledges that no district shall have any entitlement to funds from the MSBA, pursuant to M.G.L. c. 70B or the provisions of 963 CMR 2.00.
- The district hereby acknowledges that the provisions of 963 CMR 2.00 shall apply to the district and all projects for which the district is seeking and/or receiving funds for any portion of a municipally-owned or regionally-owned school facility from the MSBA pursuant to M.G.L. c. 70B.
- The district hereby acknowledges that this SOI is for one existing municipally-owned or regionally-owned public school facility in the district that is currently used or will be used to educate public PreK-12 students and that the facility for which the SOI is being submitted does not serve a solely early childhood or Pre-K student population.
- After the district completes and submits this SOI electronically, the district must mail hard copies of the required documentation described under the "Vote" tab, on or before the deadline.
- The district will schedule and hold a meeting at which the School Committee will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is required for cities, towns, and regional school districts.
- Prior to the submission of the SOI, the district will schedule and hold a meeting at which the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is not required for regional school districts.
- On or before the SOI deadline, the district will submit the minutes of the meeting at which the School Committee votes to authorize the Superintendent to submit this SOI. The District will use the MSBA's vote template and the vote will specifically reference the school and the priorities for which the SOI is being submitted. The minutes will be signed by the School Committee Chair. This is required for cities, towns, and regional school districts.
- The district has arranged with the City/Town Clerk to certify the vote of the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body to authorize the Superintendent to submit this SOI. The district will use the MSBA's vote template and submit the full text of this vote, which will specifically reference the school and the priorities for which the SOI is being submitted, to the MSBA on or before the SOI deadline. This is not required for regional school districts.
- The district hereby acknowledges that this SOI submission will not be complete until the MSBA has received all of the required vote documentation in a format acceptable to the MSBA. If Priority 1 is selected, your SOI will not be considered complete unless and until you provide the required engineering (or other) report, a professional opinion regarding the problem, and photographs of the problematic area or system. If Priority 3 is selected, your SOI will not be considered complete unless and until you provide a summary of the accreditation report focused on the deficiency as stated in this SOI.

**LOCAL CHIEF EXECUTIVE OFFICER/DISTRICT SUPERINTENDENT/SCHOOL COMMITTEE CHAIR
(E.g., Mayor, Town Manager, Board of Selectmen)**

Chief Executive Officer * School Committee Chair Superintendent of Schools

(signature) (signature) (signature)

Date Date Date

* Local chief executive officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice.

Massachusetts School Building Authority

School District Andover

District Contact Paul Szymanski TEL: (978) 247-7070

Name of School Andover High

Submission Date 4/5/2018

Note

The following Priorities have been included in the Statement of Interest:

1. [Ⓔ] Replacement or renovation of a building which is structurally unsound or otherwise in a condition seriously jeopardizing the health and safety of school children, where no alternative exists.
2. [Ⓑ] Elimination of existing severe overcrowding.
3. [Ⓔ] Prevention of the loss of accreditation.
4. [Ⓑ] Prevention of severe overcrowding expected to result from increased enrollments.
5. [Ⓑ] Replacement, renovation or modernization of school facility systems, such as roofs, windows, boilers, heating and ventilation systems, to increase energy conservation and decrease energy related costs in a school facility.
6. [Ⓔ] Short term enrollment growth.
7. [Ⓑ] Replacement of or addition to obsolete buildings in order to provide for a full range of programs consistent with state and approved local requirements.
8. [Ⓔ] Transition from court-ordered and approved racial balance school districts to walk-to, so-called, or other school districts.

SOI Vote Requirement

[Ⓑ] I acknowledge that I have reviewed the MSBA's vote requirements for submitting an SOI which are set forth in the Vote Tab of this SOI. I understand that the MSBA requires votes from specific parties/governing bodies, in a specific format using the language provided by the MSBA. Further, I understand that the MSBA requires certified and signed vote documentation to be submitted with the SOI. I acknowledge that my SOI will not be considered complete and, therefore, will not be reviewed by the MSBA unless the required accompanying vote documentation is submitted to the satisfaction of the MSBA.

Potential Project Scope: Renovation/ Addition

Is this SOI the District Priority SOI? YES

School name of the District Priority SOI: Andover High

Is this part of a larger facilities plan? YES

If "YES", please provide the following:

Facilities Plan Date: 6/20/2016

Planning Firm: MGT of America Consulting, LLC (MGT)

Please provide a brief summary of the plan including its goals and how the school facility that is the subject of this SOI fits into that plan:

In January 2016, the Town of Andover and the Andover Public Schools (APS) contracted with MGT of America Consulting, a firm with extensive national experience in school facility assessments and planning, to develop a plan to address the facility needs of the town and schools through 2026. The goal of the Town/School Facility Master Plan is to establish a long-range plan—based on community input and best-practice facility standards—that identifies and prioritizes the facility needs and presents an effective and efficient implementation of projects over the ten-year planning period. MGT’s Comprehensive Facility Plan for Andover, culminating a year-long process, resulted in Andover High School’s being identified as a top priority for a Statement of Interest. The final report—updated April 3, 2017—and appendices are attached. MGT’s work with Andover began in January 2016 with a meeting of key parties from MGT, the Andover Public School District (APS) and the Town of Andover. The group focused on developing strategies around educational/program review, facility assessments, enrollment projections, capacity and utilization, and community engagement. Over the next few months, the MGT team held meetings with district staff and community and conducted intensive on-site assessments of every facility. In mid-June, the team presented its findings in a series of meetings with District administrators and faculty, parents and community, and Town representatives. The School Committee’s task was to determine the top-priority facility based on its deficient impact on student outcomes. In October 2016, the District arranged tours of three schools being considered—Andover High School, Doherty Middle School, and West Elementary—and held forums for staff and community. District administrators met with architects to begin working on initial site studies that informed the School Committee’s final decision. The Committee also reviewed research on the relationship between the condition of school facilities and students’ academic performance. On December 8, 2016, the School Committee selected West Elementary as the school in most need of immediate attention. West Elementary was rated “poor” in most metrics, including educational suitability and building and site condition. In April 2017, the District submitted a Statement of Interest for West Elementary, and the school was later invited to enter the MSBA eligibility period. During that same December 2016 meeting, the School Committee moved to pursue a feasibility study for renovation of its other top priority—Andover High School. The School Committee convened the Andover High School Facility Study Committee (FSC)—its members representative of the community—with a mission to recommend potential renovations and/or additions to resolve the ongoing facility condition problems, relieve overcrowding, and improve instructional program capabilities. The FSC reviewed five prior studies (2012-16) about site improvements, facilities, and enrollment; toured peer high schools; conducted a faculty survey and focus groups with faculty, staff, and students; and contracted with a demographer to develop enrollment projections. In November 2017, the District hired HMFH Architects to lead the Andover High School Feasibility Study. The study reveals that the needs of Andover High School are greater and more pressing than the District and Town realized. It also highlights substantial code, safety, and accessibility deficiencies. Severe and persistent overcrowding, coupled with poor physical conditions, negatively affects the delivery of educational services. Faculty and student feedback consistently referred to crowded classrooms, insufficient teacher planning space, feeling extreme temperature swings, and uncomfortably hot temperatures in summer coupled with cold temperatures from late fall to early spring as detriments to teaching and learning. The wide range of facility issues related to security, life safety, interior environmental conditions, and aging building systems, cannot be resolved in the course of general maintenance or small-scale construction projects. Meanwhile, with enrollment currently at 1782 and projected to reach 1900 in a facility whose core classrooms are sized to accommodate 1400 by MSBA’s current standards, the high school is not only overcrowded but also severely constrained in the programs it can offer and the improvements necessary to sustain curricular currency. Based on the study, the School Committee has concluded that MSBA support is necessary to address the full scope of the changes needed at Andover High School. The overcrowding problem cannot be solved without additional academic space and, despite proactive maintenance, the building’s physical condition will continue to deteriorate with time. The partnership and funding assistance of MSBA are being sought to correct the major facility-related problems that hinder the education of Andover High School’s students.

Please provide the current student to teacher ratios at the school facility that is the subject of this SOI: 13 students per teacher

Please provide the originally planned student to teacher ratios at the school facility that is the subject of this SOI: 11 students per teacher

Does the District have a Master Educational Plan that includes facility goals for this building and all school buildings in District? YES**If "YES", please provide the author and date of the District's Master Educational Plan.**

APS Strategic Plan and Goals; Superintendent of Schools Sheldon Berman, Ed.D., and Assistant Superintendent of Schools Nancy Duclos, Ph.D., presented the plan to the Andover School Committee on June 9, 2016.

Is there overcrowding at the school facility? YES**If "YES", please describe in detail, including specific examples of the overcrowding.**

Andover High School was originally designed for three grades with an enrollment of 1200 students. The 1995 renovation added the 9th grade and provided space for 1600 students. However, the need to provide sufficient space for special education programs has decreased the overall functional capacity. The term "functional capacity" takes into account the types of programs and services that are actually provided in the various classroom spaces. According to the analysis by MGT, the functional capacity of AHS is 1517 students. MSBA's current square footage standards for academic areas place capacity at 1400. In the 2017-2018 school year, the actual population of AHS is 1782 students, including 18 in the program for ages 18-22 who must be housed offsite at the Central Office due to the lack of classroom space. Therefore, AHS is currently more than 350 students above its functional capacity. Both the Cropper GIS enrollment projections and MGT's projections anticipate that enrollment could exceed 1,900 students over the next twenty years, thereby exceeding functional capacity by 500 students.

The MGT analysis also looked at Andover High School's utilization rate, which is calculated by dividing the enrollment by the capacity. The utilization rate is used to determine if the facility has excess space or if it lacks sufficient space for the given enrollment. Andover High School's utilization rate now stands at 117% (meaning it lacks space) and is projected to reach 130% by 2025. The school's daily room usage exceeds 95%, and 75% of the faculty do not have an assigned classroom. High usage leads to scheduling difficulties, with some faculty members teaching in 3 or 4 different classrooms each day and spending time traveling across the building versus supporting students before or after classes. There are no departmental office spaces or workrooms to provide a home base for teachers traveling between classrooms. Because there are no empty classrooms to work in, they often have to use the library, cafeteria, or other public space for planning, grading, and one-on-one student meetings. Many spaces, such as closets and offices, have been converted into teaching spaces, creating an additional problem of insufficient storage space for instructional materials, spare furniture or student projects.

Spaces within the school are overcrowded as well. Because 80% of classrooms are smaller than MSBA-recommended sizes and almost half the classes have 25 or more students, the classroom space is crowded, limiting the kinds of engaging activities and projects that teachers can offer. The library is approximately half the size needed for a school with this enrollment, and the cafeteria's small size requires that the school hold four lunch periods, adding complexity and disruption to the school schedule. The students who choose to buy their lunch each period are served in a single-line arrangement, resulting in some students getting their lunch only a few minutes before the period ends. The corridors and stairways were designed for a smaller student population, causing excessive crowding during class changes and creating concerns for emergency egress. Space for special needs classrooms and support is only 53% of MSBA guidelines—far short of recommended standards. The school lacks sufficient or appropriate space to administer AP tests, so they are administered at the Old Town Hall in downtown Andover.

Limited space prevents AHS from adding or expanding career technology programs, and the CT programs that do exist are taught in classrooms, the library, former storage rooms, and otherwise ill-equipped spaces. Andover High School course offerings in all areas are capped because of space availability. AHS is limited in offering courses outside of the basic core curriculum and provides only introductory level courses in the arts, engineering, robotics, and computer programming. The dance program was eliminated, along with arts electives, because all available teaching space is needed for the foundational courses required for graduation.

The community uses the fieldhouse and Collins Center extensively. Students and teachers do not have access to these

facilities for significant portions of the day, making the effective amount of space available for the school program less than the square footage conveys. Plus, these two buildings are large and constitute a significant proportion of the square footage that the school appears to have for classrooms. The allocation and configuration of the school's campus do not support today's methods of delivering education.

All classrooms have unit ventilators that are aging and subject to frequent repairs. Because of the overcrowded conditions, when a room is overly hot or cold, there are no vacant classrooms that students and teachers can use until the repair is made, so instruction is forced to continue in uncomfortable conditions that distract from learning.

Has the district had any recent teacher layoffs or reductions? NO

If "YES", how many teaching positions were affected? 0

At which schools in the district?

Please describe the types of teacher positions that were eliminated (e.g., art, math, science, physical education, etc.).

Has the district had any recent staff layoffs or reductions? NO

If "YES", how many staff positions were affected? 0

At which schools in the district?

Please describe the types of staff positions that were eliminated (e.g., guidance, administrative, maintenance, etc.).

Please provide a description of the program modifications as a consequence of these teacher and/or staff reductions, including the impact on district class sizes and curriculum.

Not applicable

Please provide a description of the local budget approval process for a potential capital project with the MSBA. Include schedule information (i.e. Town Meeting dates, city council/town council meetings dates, regional school committee meeting dates). Provide, if applicable, the District's most recent budget approval process that resulted in a budget reduction and the impact of the reduction to the school district (staff reductions, discontinued programs, consolidation of facilities).

District administrators develop the budget to: align with School Committee priorities; meet all mandated program requirements, contractual obligations and high school accreditation standards; and implement the district's strategic plan. Each fall, the administrators review school and department budgets and present the needs to the School Committee. Meanwhile, the Town Manager recommends a district budget amount to align with expected revenues. The Town and School Department also formulate a capital improvement plan that addresses building maintenance, capital projects, and technology. Capital items are on the Town Meeting warrant and not part of the school budget. In the past 3 years, funds for these needs were limited, so the Town's Facilities Department focused its resources on preventive maintenance. After a March public hearing, a final recommendation goes to the Town Manager. The Board of Selectmen and Finance Committee submit their recommendations to Town Meeting, which adopts the operating and capital budgets. Rising health, retirement and OPEB costs have constrained resources for the Town and the schools. Over the past 9 years, the district has received modest budget increases averaging 3.55%. The district did not experience staff reductions in FY18, but the budget provided for only modest steps to implement a new high school schedule and address special education and ELL needs. A significant financial pressure in FY17 and FY18 has been out-of-district (OOD) placement costs for special education students, increasing by \$1.4 million over FY16. Students with significant private tuitions moved into the district and fewer students aged out or graduated from OOD placement. The district proposed a 3.5% increase for FY19 as well as \$2.96 million in capital and maintenance projects and received the unanimous support of the Town's Finance Committee in preparation for an April 30 Town Meeting.

General Description

BRIEF BUILDING HISTORY: Please provide a detailed description of when the original building was built, and the date(s) and project scopes(s) of any additions and renovations (maximum of 5000 characters).

Andover High School is composed of an original building and two major additions. The original 3-story main building was constructed in 1966 to accommodate 1200 students in grades 10-12. Section A includes the cafeteria and mechanical spaces on the first floor, with classrooms, administration, and library on the second and third floors. Section D is the Dunn Gymnasium, with locker, team rooms, and offices below the gym, and support spaces on a partial mezzanine above the gym.

In 1983 the Collins Center, Section C, was added to the north of the main building. It houses a 2-story auditorium and stage, flanked by a 1-story scene shop and dressing area on one side and a 1-story music suite on the other, plus offices. The auditorium and scene shop are used jointly by AHS and the Town for community meetings and provide rental income from unaffiliated groups.

The windows in Section A were replaced in 1991.

A major construction project in 1995 included the addition of Section B, a 2-story science classroom wing to the west of the main building; Section E, which is between the main building and the original gym and includes the main entry lobby with art classrooms below; and Section F, the fieldhouse. Also, a field house was built to the south of the original gym, and a corridor and a staircase were built to connect the expanded Dunn Gymnasium and field house to the new entrance lobby.

Sections A and D were also substantially renovated as part of the 1995 project, including replacing components of the HVAC system and windows. At this time, AHS added ninth-grade students for a total projected enrollment of 1600.

In 2017, following a significant façade failure, the Collins Center exterior was renovated, including a new roof and metal panel siding.

TOTAL BUILDING SQUARE FOOTAGE: Please provide the original building square footage PLUS the square footage of any additions.

310635

SITE DESCRIPTION: Please provide a detailed description of the current site and any known existing conditions that would impact a potential project at the site. Please note whether there are any other buildings, public or private, that share this current site with the school facility. What is the use(s) of this building(s)? (maximum of 5000 characters).

SITE: AHS shares with West Middle School a site of ±87 acres, mostly developed with buildings, parking and athletic fields. The 23 undeveloped acres are wetlands and a large ledge outcrop. Labeled site plan is attached.

Wetland buffer zones limit site reconfiguration and new building development. Proximity to wetlands and a high water table contribute to poor site drainage with localized ponding that ices in the winter. The Collins Center is periodically flooded.

A ledge hill adjacent to the school is the high point in a mostly level campus. “The Hill” is the community’s winter sledding slope and would be a somewhat difficult site for construction.

CIRCULATION AND PARKING: There are 3 site entrances—1 from the east via Moraine St. and 2 from Shawsheen

Rd. Due to a crest, they are difficult to see from both east and west. Inadequate signage, complex circulation patterns, and poor visibility make site circulation and parking confusing. The exit from staff and visitor parking circulates along a one-way narrow emergency access road bounded by the rear wall of the school on one side and forested ledge on the other. Buses enter from all three access points, stacking in the loop and adjacent to the tennis courts during pick-up/drop-off. There is space for 10 of the 35 buses to stack, so other buses idle in the entrance drives until space clears. Some buses transport for both AHS and West MS. Drop-off for special education students is adjacent to the tennis courts, requiring students to be escorted across traffic.

Parents' cars queue beside West MS or circle AHS for pick-up on the other side. Lack of queuing space causes campus congestion and backups on Shawsheen. Parents must drive across campus to exit via Moraine. Staff and student drivers use the same access points as buses and parents, leading to bus/car/pedestrian conflict. Emergency vehicles use the same access points and are blocked by queued cars/buses if an emergency occurs during drop-off/pick-up hours. Two refuge areas for students during emergency evacuations are also congested with cars during pick-up hours, compounding any emergency.

The bus loop and an underutilized plaza define the school's main entry. Paved walks collect pedestrian movement from parking lots and parent drop-off areas. Students parking at the Moraine lot walk on the street because there is no continuous sidewalk. Many routes do not meet access requirements. Doors that are more convenient than the main entry are often propped open during drop-off, causing security issues.

Seven parking areas have assigned spaces for school staff and students. The lots are also for AHS and Town athletic events and Collins Center events. When simultaneous events are scheduled, overflow cars park along neighborhood streets.

The service core and a loading dock, located behind the building, accommodate deliveries to the cafeteria and school, plus trash/recycling. Movement of service vehicles conflicts with staff parking.

PLAYFIELDS AND COURTS: Some of AHS's 63 sports teams must use off-campus fields for practice. AHS athletic facilities are used extensively by the Town on weekends and in summer.

Lovely Field, southeast of AHS, has a synthetic-turf/multi-sport game field, running track, long-jump pit, stadium seating, and field house. Natural turf fields include a baseball field and 2 softball fields, mainly for practice. Plateau Field, with natural turf but not regulation size, is for field hockey and lacrosse practice. Aumais Field is a natural turf field for varsity baseball and JV soccer. A JV baseball field and softball field are shared with West MS; though regulation size, their orientation makes them unsuitable for competition. Aumais, Plateau, and the middle school fields are not handicap accessible; all are reached only by climbing embankments with >5% slopes.

Seven tennis courts were recently paved with a recycled bituminous concrete pavement; it has failed and needs to be replaced. A skate park, operated and maintained by Andover Youth Services, is a Town amenity. Four exterior basketball courts are primarily used by West MS.

COURTYARDS: A cafeteria courtyard is the campus's only exterior space available for social interactions. It is furnished with picnic tables, offers seating on amphitheater-like steps, and is only used during lunchtime, weather permitting.

An interior courtyard, accessed through two stairwells, is used by a few classes and contains beds with edible plants, a greenhouse, a shed and a few trees. It is also used by art classes for outdoor sculpture and sanctioned student paintings on the surrounding brick walls. The courtyard lacks visibility from the school building, and, due to security, is locked when not used by classes.

OVERALL: MGT of America updated its analysis of Andover Public Schools in April 2017. It rated the AHS grounds at 42 on a 100-point scale, which equates to "Unsatisfactory: The site and/or a majority of its systems should be renovated."

ADDRESS OF FACILITY: Please type address, including number, street name and city/town, if available, or describe the location of the site. (Maximum of 300 characters)

Andover High School 80 Shawsheen Road, Andover MA 01810

BUILDING ENVELOPE: Please provide a detailed description of the building envelope, types of construction materials used, and any known problems or existing conditions (maximum of 5000 characters).

Main section of the building is 52 years old with additions in 1983 and 1995. Condition varies by year of construction, with sections denoted as follows:

A – Main academic building (1966) – 135,552 sf

B – Science wing (1995) – 41,888 sf

C – Collins Center (1983) – 38,178 sf

D – Dunn gymnasium (1966 and 1995) – 41,641 sf

E – Entry lobby, art classrooms (1995) – 23,286 sf

F – Fieldhouse (1995) – 30,090 sf

Sections A and D are cast-in-place reinforced concrete with un-insulated or minimally insulated block and brick veneer exterior walls. Sections B, E, and F are steel frame with insulated lead-coated copper, pre-cast concrete, split-face CMU and brick veneer walls. Section C is steel frame with insulated brick veneer walls at the first floor. The upper level of section C, which encompasses the auditorium and stage, is insulated aluminum panel installed in 2017.

Windows in many sections were installed or replaced in 1995 with un-insulated aluminum frame and double-pane glass, with a mix of fixed and awning sashes. However, the Collins Center windows are original and date to 1983, and the Section A windows were replaced in 1991—also with un-insulated aluminum frame and double-pane glass. Window gaskets are aging and windows are beginning to fail, especially in the entry foyer.

Doors in all sections were installed or replaced in 1995 with hollow metal insulated steel. All 81 doors were primed and painted in the summer of 2017. Because of rust, this work has to be done every five or six years. Aluminum insulated doors would be preferable. Windows and doors from 1995 are nearing the end of their useful life. Replacing these systems would result in significant energy savings and increased occupant comfort.

Roofs are flat PVC membrane on rigid insulation, installed in sections over the summers of 2007 through 2011.

Un-insulated walls in section A, which includes most of the core and special education classrooms, contribute to the discomfort of the teachers and students as the walls transfer heat or cold to the classrooms' inhabitants. Additionally, the floor slabs and exterior row of columns are concrete that extends directly to the exterior with no thermal break. The concrete structure forms a "cold-bridge" that wicks heat out of the building in winter months, leaving the floors at the exterior of classrooms extremely cold. The heating system struggles to compensate for the lack of insulation and cold radiation. Unit vent dampers are old and drafty; when the unit is off, cold air leaks into the room. Issues with temperature control and excessive energy use cannot be resolved without creating a thermal break at the floors and insulating the walls.

Has there been a Major Repair or Replacement of the EXTERIOR WALLS? YES

Year of Last Major Repair or Replacement:(YYYY) 2017

Description of Last Major Repair or Replacement:

In May 2015, a 20' x 30' section of the 30-year-old Collins Center EIFS (external insulation and finish system) wall fell onto the Center's lower roof. Consultant Russo/Barr investigated the next day and determined the old wall system was a danger and had to be replaced as soon as possible. The primary reasons for the failure were the age of the material and penetrations by nesting birds that allowed the incursion of water—a maintenance issue that the Town repaired annually. Approximately 90% of the wall area—18,000 sf—needed to be replaced. Only the lower soffits remained untouched. To protect the public, temporary fiber mesh was installed around the affected area in June 2015, costing \$65,909. Once funds were appropriated by the Town, a new aluminum wall panel system was designed in

September 2016 and sent out for bid in March 2017. The low bidder, Calhess Restoration, began construction in June and finished on schedule in September 2017. The construction cost was \$1,589,928. The wall failure meant that the entire Collins Center was unable to be used during the roughly four months that the new wall system was under construction.

Roof Section A

Is the District seeking replacement of the Roof Section? NO

Area of Section (square feet) 55240

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Sarnafil white PVC, insulated

Age of Section (number of years since the Roof was installed or replaced) 11

Description of repairs, if applicable, in the last three years. Include year of repair:

Roof of main academic building was partially replaced (75,000 sf) in 2007.

Roof Section B

Is the District seeking replacement of the Roof Section? NO

Area of Section (square feet) 21313

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Sarnafil white PVC, insulated

Age of Section (number of years since the Roof was installed or replaced) 8

Description of repairs, if applicable, in the last three years. Include year of repair:

Science wing roof was replaced in 2010

Roof Section C

Is the District seeking replacement of the Roof Section? NO

Area of Section (square feet) 35968

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Sarnafil white PVC, insulated

Age of Section (number of years since the Roof was installed or replaced) 10

Description of repairs, if applicable, in the last three years. Include year of repair:

Age of Section (number of years since the Roof was installed or replaced) 1 and 10

Full replacement of Collins Center roof 2008; 2017—repair of section damaged by falling wall.

Roof Section D

Is the District seeking replacement of the Roof Section? NO

Area of Section (square feet) 16084

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Sarnafil white PVC, insulated

Age of Section (number of years since the Roof was installed or replaced) 10

Description of repairs, if applicable, in the last three years. Include year of repair:

Age of Section: 7 and 10.

Roof Section E

Is the District seeking replacement of the Roof Section? YES

Area of Section (square feet) 14274

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Architectural metal vault; includes 3200 sf of dark membrane

Age of Section (number of years since the Roof was installed or replaced) 23

Description of repairs, if applicable, in the last three years. Include year of repair:

Original roof still in place.

Roof Section F

Is the District seeking replacement of the Roof Section? NO

Area of Section (square feet) 30090

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Sarnafil white PVC, insulated

Age of Section (number of years since the Roof was installed or replaced) 10

Description of repairs, if applicable, in the last three years. Include year of repair:

Fieldhouse roof was replaced in 2008.

Roof Section G

Is the District seeking replacement of the Roof Section?

Area of Section (square feet)

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Age of Section (number of years since the Roof was installed or replaced)

Description of repairs, if applicable, in the last three years. Include year of repair:

Roof Section H

Is the District seeking replacement of the Roof Section?

Area of Section (square feet)

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Age of Section (number of years since the Roof was installed or replaced)

Description of repairs, if applicable, in the last three years. Include year of repair:

Roof Section I

Is the District seeking replacement of the Roof Section?

Area of Section (square feet)

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Age of Section (number of years since the Roof was installed or replaced)

Description of repairs, if applicable, in the last three years. Include year of repair:

Roof Section J

Is the District seeking replacement of the Roof Section?

Area of Section (square feet)

Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe))

Age of Section (number of years since the Roof was installed or replaced)

Description of repairs, if applicable, in the last three years. Include year of repair:

Window Section A

Is the District seeking replacement of the Windows Section? YES

Windows in Section (count) 172

Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))

Windows in Section (count) 165 windows (some ganged/mulled) and 7 curtain walls at the cafeteria.

Un-insulated aluminum frame with double-pane glass, with a mix of fixed and awning sashes

Age of Section (number of years since the Windows were installed or replaced) 27

Description of repairs, if applicable, in the last three years. Include year of repair:

Windows of main academic building were replaced in 1991.

Window Section B

Is the District seeking replacement of the Windows Section? YES

Windows in Section (count) 98

Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))

Windows in Section (count): 96 windows and two large curtain walls at the stairs.

Un-insulated aluminum frame with double-pane glass, with a mix of fixed and awning sashes.

Age of Section (number of years since the Windows were installed or replaced) 23
Description of repairs, if applicable, in the last three years. Include year of repair:
Not applicable

Window Section C

Is the District seeking replacement of the Windows Section? YES

Windows in Section (count) 9

Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))

Un-insulated aluminum frame with double-pane glass, with a mix of fixed and awning sashes.

Age of Section (number of years since the Windows were installed or replaced) 35

Description of repairs, if applicable, in the last three years. Include year of repair:

Not applicable

Window Section D

Is the District seeking replacement of the Windows Section? YES

Windows in Section (count) 2

Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))

Windows in Section (count): 2 curtain walls.

Un-insulated aluminum frame with double-pane glass, with a mix of fixed and awning sashes.

Age of Section (number of years since the Windows were installed or replaced) 23

Description of repairs, if applicable, in the last three years. Include year of repair:

Not applicable

Window Section E

Is the District seeking replacement of the Windows Section? YES

Windows in Section (count) 72

Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))

Windows in Section (count): 56 windows, 3 pyramidal skylights, and 13 curtain walls.

Un-insulated aluminum frame with double-pane glass, fixed.

Age of Section (number of years since the Windows were installed or replaced) 23

Description of repairs, if applicable, in the last three years. Include year of repair:

Not applicable

Window Section F

Is the District seeking replacement of the Windows Section? YES

Windows in Section (count) 30

Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))

Windows in Section (count): 18 windows and 12 curtain walls.

Un-insulated aluminum frame with double-pane glass, with a mix of fixed and awning sashes.

Age of Section (number of years since the Windows were installed or replaced) 23

Description of repairs, if applicable, in the last three years. Include year of repair:

Not applicable

Window Section G

Is the District seeking replacement of the Windows Section?

Windows in Section (count)

Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))

Age of Section (number of years since the Windows were installed or replaced)

Description of repairs, if applicable, in the last three years. Include year of repair:

Window Section H

Is the District seeking replacement of the Windows Section?

Windows in Section (count)**Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))****Age of Section (number of years since the Windows were installed or replaced)****Description of repairs, if applicable, in the last three years. Include year of repair:****Window Section I****Is the District seeking replacement of the Windows Section?****Windows in Section (count)****Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))****Age of Section (number of years since the Windows were installed or replaced)****Description of repairs, if applicable, in the last three years. Include year of repair:****Window Section J****Is the District seeking replacement of the Windows Section?****Windows in Section (count)****Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))****Age of Section (number of years since the Windows were installed or replaced)****Description of repairs, if applicable, in the last three years. Include year of repair:****MECHANICAL and ELECTRICAL SYSTEMS: Please provide a detailed description of the current mechanical and electrical systems and any known problems or existing conditions (maximum of 5000 characters).**

FIRE PROTECTION: Automatic fire suppression system covers the fieldhouse, lobby, science wing, shop wing in the Collins Center, and kitchen exhaust hoods. **PROBLEM:** Other areas not protected.

PLUMBING: Building has municipal sewer and water. Domestic water service is 6" with 3" meter and pressure-reducing valve. Main domestic cold-water distribution is 4", mostly distributed in pipe trenches for maintenance. Copper distribution piping: fair condition, mostly insulated. Domestic hot water is from gas-fired storage heater, with mixing valve to prevent scalding, and circulation pumps. Gas piping: black steel with screwed and welded joints, fair condition. Cast iron rain leaders and storm and sanitary drains: fair condition. Acid waste and vent piping: hub-less dur-iron with mechanical couplings.

Plumbing fixtures: fair condition, some replaced recently. Water closets and urinals have mix of manual and battery-operated sensor flush valves. Lavatories have hot and cold handle faucets with no mixing valves. **PROBLEM:** Some classroom sinks are non-accessible. **PROBLEM:** insufficient number of accessible toilet compartments. Drinking fountains: wall-hung stainless steel, some with bottle-filling stations. Janitor sinks: trap standard-mounted, enameled cast iron, and faucets with vacuum breakers. Kitchen fixtures: fair condition, grease interceptors at pot-washing sinks. Science classroom sinks: resin with potable cold and hot water faucets with vacuum breakers. **PROBLEM:** No central acid neutralization system. Emergency showers: cold water with floor drains. Classrooms have emergency gas shut-off.

HVAC: 3 gas-fired boilers provide hot water circulated to air handlers, unit vents, fin-tube, unit heaters, and convectors. Base-mounted end suction pumps are run with lead/lag alternating controllers with variable frequency drive. Inline boiler pumps create a primary/secondary heating system for better supply and return temperature control. Wall-mounted unit ventilators heat and ventilate classrooms. To control CO₂ levels in overcrowded classrooms, CO₂ sensors were installed. To provide air exchange to satisfy air-quality goals, unit vents blow constantly and bring in fresh air much of the day. Fresh air is delivered at a lower temperature than where the heat is set, so as to not overheat the rooms. **PROBLEM:** Incoming air feels cool, creating "wind-chill" for the rooms' inhabitants. **PROBLEM:** Old unit vents have only a single delivery point and an internal fan; units are loud and students nearest the units are distracted by noise. Cafeteria is heated and ventilated with unit vents. **PROBLEM:** AHS lacks energy recovery ventilators for preheating of ventilation air. **PROBLEM:** HVAC systems are controlled with pneumatic controls, with some components upgraded to Johnson Controls DDC; pneumatic air tubes crack frequently. Air handlers with full air conditioning serve administrative offices, media center, and 11 classrooms. Cooling of Collins Center is from rooftop condensing units with R-22 refrigerant, which will be phased out for

purchase in 2020. Air handlers provide heat and ventilation to kitchen, lobby, locker rooms, gymnasium, and mechanical room. Rooftop units provide heat and ventilation to fieldhouse and science wing, using 44% ethylene glycol to prevent freezing. Exhaust fans and intake/relief hoods on roof: fair condition. PROBLEM: Kitchen exhaust hoods are old and lack visible UL listings; hoods, ducts, and fans may not meet current code. Hoods have fire suppression system.

ELECTRICAL: Electrical service was upgraded in 1994 to 3,000 Amp, 277/480V, 3 Phase, 4 Wire. Main switchboard: good condition. Collins Center is on switchboard with 1200 Amp breaker, 3 sets of 4# 600 MCM, 3/0 ground. Electrical distribution equipment and branch circuits in 1995 addition: fair condition. PROBLEM: Distribution equipment in older parts of building: poor condition. Receptacles added in 1995 are in surface-mount wire mold, not conduit. PROBLEM: Too few receptacles in most classrooms, supplemented with plug strips and extension cords. PROBLEM: GFCI protection is not at all required locations.

Emergency power is 277/480 Volt, 3 Phase, 4 Wire service, 250 KW gas-fired diesel generator. Generator and 60-gallon diesel tanks are indoors. Generator serves a single automatic transfer switch. Emergency distribution panel serves emergency lighting via MI cable and optimal standby loads for elevator and mechanical equipment. PROBLEM: Life-safety lighting and optional standby loads are not separated per NEC Article 700. Supplemental emergency battery units exist throughout. Exit signs are operational: fair condition.

Fire alarm system was upgraded in 1995: fair condition. PROBLEM: Notification appliances do not meet current code for full voice evacuation. Control panels in school and Collins Center are networked via fiber. School and Collins Center are on separate fire alarm systems. Alarm transmission to fire department is via radio master box.

Boiler Section 1

Is the District seeking replacement of the Boiler? YES

Is there more than one boiler room in the School? NO

What percentage of the School is heated by the Boiler? 95

Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)

Primarily natural gas, plus supplemental electric baseboard heat in the perimeter of the Collins Center.

Age of Boiler (number of years since the Boiler was installed or replaced) 23

Description of repairs, if applicable, in the last three years. Include year of repair:

Three Weil Mclain boilers make up the boiler plant installed in 1995 and provide heat to the entire school. Each boiler uses natural gas and has an output of 5,520 MBH. Heating hot water is circulated to all air handlers, unit ventilators, fin-tube radiation, unit heaters, convectors, etc., using base-mounted end suction pumps. The pumps are controlled by lead/lag alternating controllers and each has an associated variable frequency drive (VFD). The three existing boilers are 23 years old and nearing the end of their expected useful life.

In 2013, inline boiler pumps were added to make the system a primary/secondary heating system and to achieve better supply and return water temperature control.

A full-time boiler mechanic circulates among Andover buildings and extends the life of the boiler plants.

Recent repairs:

Feb. 2015 – boiler #2 flame failure – replaced base and module control

May 2015 – boiler #2 flame failure – replaced programmer on primary control

Dec. 2015 – boiler #2 not working – replaced proving switch; unfroze primary control

Jan. 2016 – boiler #3 flame failure – replaced proving switch; reset control

Oct. 2016 – no hot water – programmed mixing valve

Andover has a robust preventive maintenance/work order/scheduling system for all mechanical systems. As part of Andover's standard and as need dictates and funds permit, Facilities Department is gradually replacing some schools' conventional boilers with high-efficiency condensing boilers.

Boiler Section 2

Is the District seeking replacement of the Boiler? NO

Is there more than one boiler room in the School? NO

What percentage of the School is heated by the Boiler? 0

Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)

NA

Age of Boiler (number of years since the Boiler was installed or replaced) 0

Description of repairs, if applicable, in the last three years. Include year of repair:

NA

Boiler Section 3

Is the District seeking replacement of the Boiler? NO

Is there more than one boiler room in the School? NO

What percentage of the School is heated by the Boiler? 0

Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)

NA

Age of Boiler (number of years since the Boiler was installed or replaced) 0

Description of repairs, if applicable, in the last three years. Include year of repair:

NA

Boiler Section 4

Is the District seeking replacement of the Boiler? NO

Is there more than one boiler room in the School? NO

What percentage of the School is heated by the Boiler? 0

Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)

NA

Age of Boiler (number of years since the Boiler was installed or replaced) 0

Description of repairs, if applicable, in the last three years. Include year of repair:

NA

Boiler Section 5

Is the District seeking replacement of the Boiler? NO

Is there more than one boiler room in the School? NO

What percentage of the School is heated by the Boiler? 0

Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)

NA

Age of Boiler (number of years since the Boiler was installed or replaced) 0

Description of repairs, if applicable, in the last three years. Include year of repair:

NA

Boiler Section 6

Is the District seeking replacement of the Boiler?

Is there more than one boiler room in the School?

What percentage of the School is heated by the Boiler?

Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)

Age of Boiler (number of years since the Boiler was installed or replaced)

Description of repairs, if applicable, in the last three years. Include year of repair:

Boiler Section 7

Is the District seeking replacement of the Boiler?

Is there more than one boiler room in the School?

What percentage of the School is heated by the Boiler?

Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)
Age of Boiler (number of years since the Boiler was installed or replaced)
Description of repairs, if applicable, in the last three years. Include year of repair:

Boiler Section 8

Is the District seeking replacement of the Boiler?
Is there more than one boiler room in the School?
What percentage of the School is heated by the Boiler?
Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)
Age of Boiler (number of years since the Boiler was installed or replaced)
Description of repairs, if applicable, in the last three years. Include year of repair:

Boiler Section 9

Is the District seeking replacement of the Boiler?
Is there more than one boiler room in the School?
What percentage of the School is heated by the Boiler?
Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)
Age of Boiler (number of years since the Boiler was installed or replaced)
Description of repairs, if applicable, in the last three years. Include year of repair:

Boiler Section 10

Is the District seeking replacement of the Boiler?
Is there more than one boiler room in the School?
What percentage of the School is heated by the Boiler?
Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)
Age of Boiler (number of years since the Boiler was installed or replaced)
Description of repairs, if applicable, in the last three years. Include year of repair:

Has there been a Major Repair or Replacement of the HVAC SYSTEM? YES

Year of Last Major Repair or Replacement:(YYYY) 1995

Description of Last Major Repair or Replacement:

The 1995 addition/renovation replaced: boilers; unit ventilators in classrooms and cafeteria; air handling units with cooling for offices, media center, and interior classrooms; air handling units without cooling for kitchen, lobby, locker rooms, gymnasiums, fieldhouse and mechanical spaces.

The school's heating medium is hot water provided by 3 oil and natural gas fired hot water boilers. Classrooms have individual unit ventilators. Air handler with DX and hot water coils provides the media center HVAC. Main office area's HVAC is provided by rooftop units with terminal reheat VAV boxes and hot water baseboard. Gym and fieldhouse have multiple air handlers with hot water coils. Collins Center auditorium's HVAC is provided by 6 rooftop units (11 years old) with electric cooling and gas heat. Several perimeter rooms in Collins Center (band and chorus rooms and associated offices) have electric baseboard heat.

Facilities Department receives a continuing stream of work orders for the AHS HVAC system. **PROBLEM:** Due to its age, the system requires more maintenance to keep temperatures at a comfortable level in every season. **PROBLEM:** Repairs cannot always be made the same day, making teaching-learning uncomfortable. **PROBLEM:** All classroom unit ventilators are controlled by an aging, high-maintenance, and very expensive pneumatic system. The pneumatic air tubes frequently crack, again making it difficult to maintain control of the system.

Has there been a Major Repair or Replacement of the ELECTRICAL SERVICES AND DISTRIBUTION SYSTEM? YES

Year of Last Major Repair or Replacement:(YYYY) 1996

Description of Last Major Repair or Replacement:

Main switchgear, generator, and panels were replaced in 1995; no major repairs since. Existing Cutler Hammer main switchboard: good condition; serves Collins Center with 1200 Amp breaker and three sets of 4# 600 MCM and 3/0 ground.

1995 building addition/renovation included electrical service upgrade to 3000 Amp, 277/480V, 3 Phase, 4 Wire service; installation of gas-fired diesel generator; and installation of distribution equipment and branch circuits for fieldhouse, lobby, and science wing. Branch circuitry in 1995 section: fair condition. Existing 250 KW natural gas fired generator: fair condition, but does not comply with current code. PROBLEM: Distribution equipment in pre-1995 building: poor condition.

Interior lighting varies from excellent LED to fair 2x4 troffers with fluorescent fixtures. Exterior lighting: fair condition, but is not LED.

PROBLEM: Main Electric Room door hardware does not comply with NEC and lacks panic hardware. NFPA 101 life safety code requires Exit signs both high and low when service equipment exceeds 1200 Amp. Electrical sub-panels are located throughout building—in closets and in exposed public areas. PROBLEM: Panels are circuit breaker type; however, all pre-1994 panels are obsolete and in poor condition. PROBLEM: Plug mold in laboratories is deteriorating. A number of extension cords and plug strips are in use and can create a safety issue. PROBLEM: Some kitchen receptacles lack GFCI protection.

BUILDING INTERIOR: Please provide a detailed description of the current building interior including a description of the flooring systems, finishes, ceilings, lighting, etc. (maximum of 5000 characters).

AHS interiors are clean and well maintained, but many materials are worn and beyond their useful life.

EXPOSED STRUCTURE: 1966 Sections A and D are concrete frame structures with exposed, unpainted concrete columns, sheer walls, stairs, beams, floors, and roof deck. The 1995 fieldhouse, art rooms, and lobby have exposed steel trusses, beams, and roof decks.

FLOORS: primarily VCT; carpet in the library, auditorium and some classrooms; quarry tile in entry lobby, lobby stairs and corridors, and kitchen; ceramic tile in bathrooms; poured epoxy in locker rooms; sprung wood in the gymnasium; rubber athletic flooring in the fieldhouse; exposed concrete in mechanical and storage rooms. In Section A, VCT and carpet are installed on top of asbestos floor tile. VCT is in varying condition, with evidence of water damage at lower levels and cracking above unstable substrates. Carpet is worn, except for recently installed carpet in the Collins Center.

PARTITIONS: Primarily painted CMU; unpainted brick in the library, entry and Collins Center lobby; GWB over metal studs in the administrative suite and where rooms have been added or subdivided; ceramic tile in toilet rooms. Walls are in good condition; however, areas with unpainted brick are dark.

DOORS & BORROWED LITES: Primarily hollow metal frames with flush wood doors in good but worn condition. There is minimal glass at classroom doors, so very little visibility into and out of rooms. Hardware is in good condition and generally compliant with access and life-safety codes.

CEILINGS: Primarily suspended acoustic tile ceilings, in varying conditions. The windowless library and gym have no ceilings, leading to poor acoustics and a perception that the spaces are dark because there is no surface to reflect light.

LIGHTING: Facilities is currently replacing T5 fluorescents with LED fixtures, and is replacing ceilings as part of this effort. Facilities has retrofit the Dunn Gym, fieldhouse, Collins Center stage lighting, some bathrooms, and all academic hallways with LED lighting over the past 5 years. There is currently a grant application in process to retrofit the Collins Center hallways, band, and choral rooms. If awarded, that work would be completed in 2018. The district hopes to move towards classroom retrofits as well, but no exact plans have been formulated.

CASEWORK: Core classrooms do not have storage units; at classrooms' current sizes, there is no space for casework. Science labs have worn and outdated fixed casework (storage cabinets, shelving) that can't accommodate varied classroom activities or be easily altered to support curricular changes.

CORRIDORS & STAIRS: Corridors and stairs in the 1966 building are narrow with no natural light. Corridors are lined with rarely used, full-height lockers set on masonry curbs. Borrowed lites provide views from the corridor into the library, but most rooms have minimal glazing and limited views, increasing the sense of confinement in this part of the building. New sections of the building have wider, brighter corridors and stairs; however, multiple levels and stairs cause navigational confusion for visitors. The 1995 entry has an excessively large lobby, corridors, and main stair that are not effective program space.

ELEVATOR: One elevator at the entry serves the whole building, providing access to all spaces except upper levels of the Collins Center. The elevator meets accessibility code requirements, but due to the length of the building and multiple non-aligned levels, the single elevator does not effectively support the needs of students or faculty with mobility issues. If a student is in class in the far corner of the science wing and the next class is in the far corner of the floor below, s/he would need to travel 600 feet to the elevator and another 600 feet to the next class—a distance that approaches one-quarter of a mile. In practice, AHS must schedule classes for mobility-challenged students in rooms near the elevator, preventing them from access to the full range of courses offered. Such scheduling may not be feasible for temporary issues, such as a broken ankle.

TOILET ROOMS: Facilities is in the process of updating toilet rooms, with a few renovated each year. Renovations include replacing floors and wall tiles, toilet partitions, accessories, plumbing fixtures and fittings, and light fixtures. Roughly 10% of the toilet rooms have been renovated, with the remaining scheduled for completion over the next 10 years.

PROGRAMS and OPERATIONS: Please provide a detailed description of the current grade structure and programs offered and indicate whether there are program components that cannot be offered due to facility constraints, operational constraints, etc. (maximum of 5000 characters).

Andover High School serves grades 9-12, plus special needs students in a program for ages 18-22.

AHS follows the MA Core requirements for high school program of studies. Students are expected to have 4 years of English and math, 3 years of lab sciences and history/social studies, 2 years of a world language, 1.5 credits in either the arts or digital learning, and follow state law for PE/health. Most students have an opportunity for 3.5 credits of elective offerings.

In addition to standard core requirements, AHS offers AP programs, dual enrollment, a global engagement endorsement, virtual and on-line learning, and the AVID support program. Virtual coursework is completed in the office of the director of guidance because no library, classroom, or alternative space is available. Each department is limited in what courses it can offer, based on enabling all students to meet graduation requirements. The school has a contract with VHS (Virtual High School) to assist in offering students additional course offerings, but lacks a dedicated distance learning space, which also hinders the school's ability to create its own virtual learning consortium.

Additional advanced or tangential courses, regardless of interest, cannot be offered because of space constraints. For example, AHS offers fewer sections of Psychology than requested because those classrooms and additional teaching sections must be used to fulfill graduation requirements. The same pattern exists in visual arts, dramatic arts, engineering, computer programming, English language arts, world language, physical education, health, and social studies.

AHS is unable to offer students in social studies courses a space to meet, debate, and discuss relevant issues. Students and classes are not able to combine to collaborate or to share the ideas presented in the courses. Social studies and English classes are a natural fit for interdisciplinary work and combined course work, but AHS has only one room large enough for this type of course.

Students learn science best through experimentation and hands-on applications. Science courses are taught in small lecture-style classrooms and separate labs. With the small size of the science classrooms and the large numbers of students that move through the classes, there is little opportunity for individual students to engage in those personalized activities. Any use of science labs must be scheduled in advance and cannot be easily integrated with lectures or non-lab group work. The lab arrangement is driving curriculum instead of the other way around.

There is no medium-sized space where 2 or 3 classes can come together to work, discuss, and collaborate. There are no opportunities for students to gather to hear any type of speaker in a smaller venue outside the Collins Center. There are no small-group rooms for student collaboration and project-based learning.

Art rooms are located in the basement, lack natural light and are too small to accommodate current class size and demand, especially in photography, ceramics, and digital design. Space limitations reduce the scope of any student art exploration. Space to store large art projects is virtually non-existent. The basement lacks visibility and there are no areas to display student work, so students are often unaware of the art curriculum. A dance program that was a physical education component is no longer offered due to lack of space.

The special education program for ages 18-22 had to be moved to the Central Office for lack of space at AHS. Other special education classes are housed in inadequate spaces and there is no space for a program for students with emotional disabilities. Several badly needed support services—another psychologist, drug and alcohol counseling, mental health clinic—are not available because of lack of office space.

AHS has a prototype space for applying current research in educational pedagogy, but it is grossly inadequate for the entire school community. Teachers are limited in promoting the design thinking process because of the lack of engineering and maker spaces or collaborative learning commons. Students can't see each other engaged in the creative process because spaces are tucked away in corners and remote sections of the school. The prototype space lacks electrical and mechanical capacity, and inhibits true building opportunities because of space and infrastructure. With only one dedicated available design space for students to engage in a design thinking process, teachers find it difficult to schedule time there because of high demand.

AHS hosts a robotics club but is unable to capitalize on this interest during the school day because there is space for only an introductory robotics course. Similarly, AHS can offer only two introductory courses in Engineering—one in Mechanical & Civil and the other in Electrical & Energy.

EDUCATIONAL SPACES: Please provide a detailed description of the Educational Spaces within the facility, a description of the number and sizes (in square feet) of classrooms, a description of science rooms/labs including ages and most recent updates, a description of the cafeteria, gym and/or auditorium and a description of the media center/library (maximum of 5000 characters).

Building Sections A and B have 50 core academic classrooms, 18 science classrooms/labs, and 13 special education spaces. The 50 core classrooms are used for all English, Math, Social Studies, and World Language classes. 41 of these rooms are less than 775 sf, with the smallest at 704 sf and the average at 743 sf. Four classrooms fall within the range recommended by the MSBA, averaging 923 sf. Four classrooms averaging 1038 sf accommodate larger-than-average classes but not combined classes. One 1468 sf classroom is regularly used for double-section classes. There are no small-group rooms available for core academics. Most rooms have tablet armchairs in a lecture-style arrangement and cannot be readily reconfigured to support group work or other forms of teaching. Classroom technology includes projectors, whiteboards and Wi-Fi.

Science is taught in separate classrooms and labs, with courses scheduled in each on different days. Twelve labs average 1155 sf; six classrooms average 863 sf. This arrangement complicates scheduling between teachers who share the spaces, requires teachers to set up labs multiple times if sections are not taught back-to-back, and precludes the integration of lecture, lab, and group work modes. Science labs have original 1995 equipment and fixed benches that inhibit

collaboration. AHS teaches advanced courses in anatomy and marine biology.

Special needs spaces include one self-contained special education classroom of 1012 sf, two academic support spaces of 923 sf and 1030 sf, and 13 small-group and resource rooms, averaging 378 sf. No special education spaces include toilet rooms. Most rooms were designed as offices, storage rooms, or other support spaces and are inadequately sized for current use. Several programs have two or more people—teachers, paraprofessionals, and peer mentors—assigned to one special needs student, adding to the congestion. Mobility equipment, specialized furniture, and other physical resources further crowd the rooms.

Six visual arts classrooms and a darkroom support general art, ceramics, photography, and digital design/photography. Classrooms average 967 sf, limiting the scale and type of artwork students can work on as well as the number of students who can take specific courses. Art rooms are in the basement of sections A and E. Three of the rooms have skylights; 3 have no natural light.

Technology/Vocational space includes 3 technology/computer classrooms of 1050 sf, located in the library; 2215 sf of film/video production space shared with Andover Public TV; and a music production studio located in a former music storage room. Engineering is taught in a small science classroom. Entrepreneurship/marketing is taught in a former computer lab.

The 38,178 sf Collins Center houses 4608 sf of music space; a 10,331 sf auditorium with 1200 seats; 3497 sf stage; 3598 sf scene shop; 1081 sf in four dressing/green rooms; and several offices. Music rooms are used exclusively by AHS. Other Collins Center spaces are used jointly by AHS, Town, and community groups who rent the space in the evenings and weekends. Shared use of these spaces limits AHS performing arts program offerings.

The Library/Media Center is 7068 sf—about 63 percent of MSBA recommendation. A portion of the library has been converted to an innovation classroom that is not physically or acoustically separated from the library. Other library areas are often used by full classes that need a large open space; e.g., health classes teach CPR there because their classroom is too small. The physical nature of the library—a windowless concrete structure with unpainted brick walls—makes it dark and echoing. Generally, the space is not effective for individual, small group, or full class work.

The 13,007 sf Dunn Gym has an occupancy permit for 1200 people. The gym houses a basketball court with bleacher seating and supports PE as well as athletic teams. The 28,385 sf fieldhouse includes a running track and three basketball courts, and is used for PE, AHS athletic teams, Town sports teams, and Town recreational activities. Five additional spaces, totaling 4979 sf, are used for fitness, weight training, and yoga. A total of 8086 sf is dedicated to locker and team rooms. There are no classrooms nearby, so health is taught in the main academic building. There is sufficient space for PE and sports teams, but finishes are worn and equipment outdated. The 1966 Dunn Gym basketball court, fitness, weight, and yoga rooms have no windows or skylights.

The Cafeteria has about 7300 sf of usable area within a larger space that includes two stairs and a primary circulation route. The stairs and circulation separate dining area from kitchen and serving line, causing disruption for students getting their lunch as well as students just passing through. The serving line is traditional single-file and limits how quickly students can be served. AHS added a deli station in a separate area to relieve some of the congestion.

CAPACITY and UTILIZATION: Please provide the original design capacity and a detailed description of the current capacity and utilization of the school facility. If the school is overcrowded, please describe steps taken by the administration to address capacity issues. Please also describe in detail any spaces that have been converted from their intended use to be used as classroom space (maximum of 5000 characters).

Andover High School was designed in 1965 for 1200 students in grades ten through twelve. In 1995, the science wing, fieldhouse and lobby were added to accommodate the addition of a ninth grade, bringing the planned student body to 1600. At that point, the teaching-learning environment was adequate in terms of space. Enrollment has grown substantially since then and is now at 1782. Complicating the matter, the design of the original building and the addition did not plan for

growth in the special education and English language learner populations. Although the 1995 renovation was meant to accommodate 1600 students, by current MSBA space standards AHS's core academic space effectively accommodates an enrollment of only 1400 students. That means the school is currently 382 students—or 27%—above capacity. Enrollment has steadily climbed, averaging 1790 students for the past seven years and peaking at 1806 students in 2016-2017. Projections are for increases in coming years to an enrollment exceeding 1900. Undersized academic spaces compound the problem of overcrowding.

AHS has accommodated the lack of space by increasing the number of students per class, converting non-classroom space into classrooms, and scheduling teaching spaces to 95-100% utilization. However, with 95-100% of the classrooms occupied at all times throughout the day, scheduling is very time consuming and cannot accommodate students' class preferences.

The district and town engaged MGT of America to assess all school and town facilities. MGT released its updated analysis of Andover Public Schools in April 2017. Part of that study looked at "functional capacity," defined as the number of students the school can accommodate given the specific educational programs, the class schedules, and the student-teacher ratios. MGT found that AHS has a functional capacity of 1517 students. It also found that AHS has a current utilization rate of 117%, which is deemed "inadequate." The pressure for space is projected to rise to a utilization rate of 130% by the year 2025.

Based on MGT's findings, the district initiated a feasibility study process and contracted with HMFH Architects to examine space and facility needs at AHS and propose potential solutions. The analysis found that although the fieldhouse and Collins Center auditorium are large, the school's core academic space accommodates only 1400 students, based on current MSBA standards. Even more concerning, space for special needs classrooms and support is only 53% of MSBA guidelines.

About 25 rooms designed for other uses are now used as classrooms. Many of these spaces are too small, are not equipped with appropriate ventilation systems, are not acoustically separated from adjacent spaces, have no windows, or are otherwise substandard as teaching space. Examples include teacher dining space converted to a classroom; book storage rooms converted to small-group instruction spaces; one storage room converted to a small-group instruction space by cutting a doorway into a solid concrete pier; music storage room converted to a music production classroom; teacher planning rooms and offices converted to special needs small-group rooms or resource rooms; theatrical storage area converted to a multimedia lab classroom; sections of the library converted to classroom space; physical education storage rooms and athletic team rooms converted to fitness, yoga, and weight training rooms; section of the scene shop used as a drama classroom. To create a program for students with special needs, a special education teacher workspace was converted into a small classroom that can hold only 8 students. To make up for losing that workspace, a theater closet and small storage area were converted to office space that houses 4 special education teachers.

In addition to the inappropriate physical conditions for use as classrooms, the repurposing to classrooms has displaced the original uses of those rooms, adding pressure to other aspects of the school; e.g., the loss of offices and teacher dining space means there is not adequate teacher planning space; cafeteria and book storage areas are now teacher workrooms; and a career center is now office space.

Class sizes have been maximized based on student demand. Alternate means of attaining credits, such as virtual courses and dual-enrollment courses at area colleges, have been implemented to reduce pressure on class size and space constraints. Limits have been placed on students' use of the library. A fourth lunch period was worked into the schedule so that fewer students would be in the cafeteria at any one time and there would be enough seats for everyone. All Advanced Placement testing was moved to the Old Town Hall because there is no space to administer and proctor the exams at the school. The special education program for ages 18 to 22 was moved off site to the administrative building because there is no space at the high school.

MAINTENANCE and CAPITAL REPAIR: Please provide a detailed description of the district's current

maintenance practices, its capital repair program, and the maintenance program in place at the facility that is the subject of this SOI. Please include specific examples of capital repair projects undertaken in the past, including any override or debt exclusion votes that were necessary (maximum of 5000 characters).

Plant and Facilities is under the Department of Municipal Services and oversees the facilities management, maintenance and construction responsibilities for all Town and School buildings. Andover has a comprehensive program to perform daily preventive maintenance and repairs on all buildings. A computerized maintenance system has been in place for more than 20 years. Andover has in-house staff representing all trades who perform these services and respond to repair issues on a timely basis, with contractors and outside labor used as needed. The District and Facilities Department maintain a working list of deferred maintenance projects. Each year, a few projects are submitted to Town for consideration in the next year's budget. The current list for AHS includes \$7.5 million to correct deficiencies in the site, and another \$2.7 million for projects such as carpeting, painting, replacing window gaskets, putting rubber treads on stairs, etc. This list does not include repair or replacement of major facility systems (e.g., HVAC). District-wide improvements to all Andover schools in 2017 totaled over \$4 million.

Capital repair projects, large and small, are identified annually in a collaborative process between the superintendent and Plant and Facilities, with input from principals and Facilities staff. Projects are prioritized and capital projects are then put forth through the budget process to a vote at Town Meeting. The annual total for capital projects for all schools is roughly \$2,000,000. There have been no recent override or debt exclusion projects.

In recent years, Andover Facilities has spent the following amounts on maintenance tasks at Andover High School:

FY 2015 \$256,485

FY 2016 \$377,555

FY 2017 \$509,870

FY 2018 YTD \$272,384

Total \$1,416,294

Andover Facilities succeeds in keeping old systems running far past their intended useful life; e.g., 20-year boilers regularly last 30 years. Still, it is evident from the list above that maintenance costs are increasing as the AHS building and its components age. A Metasys energy management system enables remote control of building systems. AHS is also equipped with a Schneider Building Analytics diagnostic program to alert staff to system failures and predictions. Due to the age of the facility, small construction projects and renovations are often undertaken to improve the educational delivery at AHS. However, the energy efficiency is compromised by an aged and modified unit ventilator system and concrete floors that extend through the un-insulated façade, thereby allowing cold temperatures to infiltrate the building and cause erratic temperature swings and room-to-room inconsistencies.

In 2017, the Town spent \$1,483,153 on capital projects and maintenance repairs combined at Andover High School, including:

- AHS/School—Installed LED lighting in hallways and stairwells, a new freezer, and snack bar door; created an additional office space with heat and ventilation; installed sound absorbing ceiling panels in 23 classrooms to facilitate the education of students with hearing impairments; painted 30 classrooms and 81 exterior doors; repaired flooring and placed carpeting in several rooms, repaired the fence at Lovely Field; performed minor renovations in various classrooms and library areas.
- AHS/Collins Center—Replaced façade; replaced LED stage lighting and upgraded controls; retrofitted LED lighting in bathrooms and dressing rooms; installed new hallway ceiling tiles; steam cleaned auditorium carpeting; installed new carpeting in band and chorus rooms; renovated bathroom and dressing rooms; painted hallways, ticket booth and auditorium cloud panels.

Other recent projects at AHS have included:

- 2017 – Pulled cable throughout the building to overcome the effect of the building structure and enable two-way radio communication between fire and police personnel who are both inside and outside the building
- 2017 – Retrofitted exterior LED lighting for wall packs, street lighting, and parking lots
- 2016 – Pulled miles of new wire throughout the building for new telephone system and existing intercom/clock/speaker systems

- 2016 – Brought wiring up to fire code in the stage area of the Collins Center
 - 2016 – Replaced 7 pairs of outdated smoke doors with electronic doors
 - 2016 – Removed underground oil tank that was no longer in use and posed a hazard
 - 2016 – Installed door security blinds/shades in all rooms
 - 2015 – Installed new roadway lighting at Lovely Field
 - 2015 – Used grant funds to improve energy efficiency by sealing cracks and weather stripping doors
-

Priority 2***Question 1: Please describe the existing conditions that constitute severe overcrowding.***

Andover High School was originally designed for three grades (10-12) with an enrollment of 1200 students. The 1995 addition/renovation provided space for up to 1600 students and the ninth grade was added. However, the need to provide sufficient space for special education, English language learning and other special programs has decreased the overall functional capacity. The term “functional capacity” takes into account the types of programs and services that are actually provided in the various classroom spaces. According to the analysis by MGT, the functional capacity of Andover High School is 1517 students. However, based on MSBA’s square footage standards, HMFH Architects calculates that the core academic areas have a capacity of only 1400. In the 2017-2018 school year, the onsite population of AHS is 1764 students, with another 18 students served and housed offsite due to the lack of classroom availability. Therefore, AHS is currently more than 350 students above its functional capacity. Both the Cropper GIS enrollment projections and MGT’s projections anticipate that enrollment could exceed 1900 students over the next twenty years, thereby exceeding functional capacity by 500 students.

The MGT analysis also looked at Andover High School’s utilization rate, which is calculated by dividing the enrollment by the capacity. The utilization rate is used to determine if the facility has excess space or if it is lacking sufficient space for the given enrollment. Andover High School’s utilization rate now stands at 117% (meaning it lacks space) and is projected to reach 130% by 2025. The school’s daily room usage exceeds 95%, and 75% of the faculty do not have an assigned classroom. High usage leads to scheduling difficulties, with some faculty members teaching in three or four different classrooms each day and spending time traveling across the building when they want to be providing student support before or after classes. There are no departmental office spaces or workrooms to provide a home base for teachers traveling between classrooms. Because there are no empty classrooms to work in, they resort to using the library, cafeteria, hallways or other public spaces for planning, grading, and one-on-one student meetings. In addition, many spaces, such as closets and offices, have been converted into teaching spaces. This creates an additional problem of insufficient storage space for instructional materials, spare furniture or student projects.

The spaces within the school are overcrowded as well. Because 80% of classrooms are smaller than MSBA-recommended sizes and almost half the classes have 25 or more students, the classroom space is crowded, limiting the kind of engaging activities and projects that teachers can offer. The library is approximately half the size needed for a school with this enrollment, and the cafeteria’s small size requires that the school hold four lunch periods, adding complexity and disruption to the school schedule. The students who choose to buy their lunch each period are served in a single-line arrangement, resulting in some students getting their lunch only a few minutes before the period ends. The corridors and stairways in the original building were designed for a smaller student population and now cause excessive crowding during class changes, creating concerns for emergency egress. During routine fire drills, it is difficult to evacuate the building within the four-minute protocol. Space for special needs classrooms and support is only 53% of MSBA guidelines—far short of recommended standards. Four rooms previously used for regular education classrooms are now devoted to special education programs for students with autism, students with developmental delays, and students who are returning from hospitals or settings where they were treated for mental health issues. The school has no space to house the district’s special education program for ages 18 to 22, so it was moved to the Central Office building. Transitions—a short-term support for students returning from psychiatric hospitalization or other medical stays—also has to be located in the far side of the Collins Center, separated from academic resources and staff. There is a lack of sufficient or appropriate space at the high school to administer Advanced Placement tests, so the tests are administered at the Old Town Hall in downtown Andover. There are no classrooms in the fieldhouse or gym where teachers can offer instruction in health. There is no space for multiple classes to meet together to hear a speaker or engage in collaborative projects other than the auditorium or library media center.

Limited space prevents AHS from adding or expanding career technology programs, and the CT programs that do exist are taught in classrooms, the library, former storage rooms, and otherwise ill-equipped spaces. AHS course offerings in all areas are capped because of space availability. The school is limited in offering courses outside of the basic core curriculum. The priority is to meet every student’s graduation requirements, even if that means providing only introductory-level courses in the arts,

engineering, robotics, and computer programming. The dance program was eliminated, along with arts electives, because all available teaching space is needed for the foundational courses required for graduation.

The field house and Collins Center are used extensively by the community. Students and teachers do not have access to these facilities for significant portions of the day, making the effective amount of space available for the school program less than the square footage conveys. Plus, these two buildings are large and take up a significant proportion of the square footage that the school appears to have for classrooms. The allocation and configuration of the school's campus do not support today's methods of delivering education.

All classrooms have unit ventilators that are aging and subject to frequent repairs. Because of the overcrowded conditions, when a room is overly hot or cold, there are no vacant classrooms that students and teachers can use until the repair is made, so instruction is forced to continue in uncomfortable conditions that distract from learning.

Overcrowding has also compromised the administrative offices. Office areas intended for use as conference rooms are now used for small-group speech, counseling, and social services. To accommodate the additional service providers, the office staff closely monitors the scheduling of each room. The rooms have become unavailable to students, teachers, parents, therapists, teams, and departments. The rooms are also cramped, doubling as storage facilities for MCAS testing materials, a printing station, a lamination station, and substitute folders. The office had to be reconfigured, leaving two secretaries in the office hallway as there is not adequate space for them in the main office. This situation creates issues of confidentiality and hinders the workflow of these vital employees. The guidance department has consolidated two file rooms into one half room, converting the remainder of the space into an office for an additional social worker and a full-time registrar.

Space Analysis

The educational space analysis completed by HMFH used two methodologies to evaluate the adequacy of academic space—one using the MSBA Space Guidelines for a population of 1800 students and one using the current AHS curriculum to project classroom needs.

Comparing AHS current academic spaces with MSBA-recommended spaces for 1800 students indicates significant space shortfalls in the following categories: Core Academic, Special Education, Vocational & Technology, Media Center, and Dining & Food Service.

AHS has 68 core academic and science classrooms and no small-group rooms; MSBA recommends 82 total. Of AHS's 50 core classrooms, 80% are less than 775 sf—well below the MSBA-recommended 850 sf. AHS science classrooms average 1058 sf as compared to MSBA-recommended 1440 sf. The low quantity of classrooms and the small classroom sizes at AHS yield a total amount of core teaching space that is 76% of the areas recommended by MSBA (AHS–58,817 vs. MSBA–77,740). Looked at in another way, AHS has the amount of core academic classroom space appropriate for a student enrollment of 1400 (i.e., MSBA formula for 1400 students equates to 58,730 sf of core academic classroom space). Accounting for ALL educational spaces, AHS has the amount that MSBA would allocate to 1500.

AHS has 7795 sf allocated to special needs classrooms—just 53% of the MSBA-recommended Special Needs space total of 14,620 sf. AHS does have 16 rooms compared to the recommended 17, but the majority have far less than the recommended 950 sf for self-contained classrooms and none of the spaces include toilet areas.

The second method of evaluating space uses the current AHS master schedule to determine the total number of sections needed if classes average 24 students (12 for special needs classes). The total number of class sections is divided by the number of periods available to generate the number of classrooms needed at a given time. An 85% utilization factor is applied to produce the recommended number of classrooms by category. The advantage of this method is that it accounts for the district's unique curriculum and provides more detail about the type of room needed—for example, the number of labs needed for each type of science, not just total science labs. This method generated nearly identical classroom quantity recommendations, with variances in areas outside of core academics. For non-core subjects, AHS limits course offerings due to space constraints; therefore, it is

not possible to accurately project space needs for these curricular areas. For example, AHS must limit the addition or expansion of career technology programs due to space constraints. Courses such as Music Production or Digital Graphic Arts, which are consistently over-subscribed, cap classes at 12 and 16 students respectively due to small rooms. Basic Engineering is taught in a science classroom, a space ill-equipped for the topic, but advanced classes cannot be offered due to space limitations.

Priority 2***Question 2: Please describe the measures the School District has taken to mitigate the problem(s) described above.***

AHS has accommodated the lack of space by increasing the number of students per class, converting non-classroom space into classrooms, and scheduling teaching spaces to 95-100% utilization. However, with 95-100% of the classrooms occupied at all times throughout the day, scheduling is very time consuming and cannot accommodate the class preferences of many students.

About 25 rooms designed for other uses are now used as classrooms. Many of these spaces are too small, are not equipped with appropriate ventilation systems, are not acoustically separated from adjacent spaces, have no windows, or are otherwise sub-standard as teaching space. Some examples include teacher dining space converted to a classroom; book storage rooms converted to small-group instruction spaces; one storage room converted to a small-group instruction space by cutting a doorway into a solid concrete pier; music storage room converted to a music production classroom; teacher planning rooms and offices converted to special needs small-group rooms or resource rooms; theatrical storage area converted to a multimedia lab classroom; sections of the library converted to classroom space; physical education storage rooms and athletic team rooms converted to fitness, yoga, and weight training rooms; section of the scene shop used as a drama classroom. The area once used by the social studies program as a computer lab has been relocated to the library in order to provide an additional general classroom. In order to create a program for students with special needs, a small workspace for special education teachers was converted into a classroom that can serve only eight students. To accommodate for losing that workspace, a theater closet and small storage area were converted to office space that houses four special education teachers.

In addition to the inappropriate physical conditions of these spaces for use as classrooms, the repurposing to classrooms has displaced the original uses of the rooms, which adds pressure to other aspects of the school; e.g., the loss of offices and teacher dining space means there is not adequate teacher planning space; cafeteria storage area is now a teacher workroom; a library book storage area is now a faculty work space; and a career center has been transformed into an office space.

Class sizes have been maximized based on student demand. Alternate means of attaining credits, such as virtual courses and dual-enrollment courses at area colleges, have been implemented to mitigate pressure on class size and space constraints. Limits have been placed on students regarding use of the library. Due to the growth in enrollment and the limited size of the cafeteria, a fourth lunch period was worked into the schedule so that fewer students would be in the cafeteria at any one time and there would be enough seats for everyone. AHS added a deli station in a separate section of the cafeteria; it serves a limited number of students and relieves some of the serving congestion.

All Advanced Placement testing has been moved to the Old Town Hall because space is inadequate to administer and proctor the exams at the school. The special education program for ages 18 to 22 has been moved off site to the administrative building because there is no space to accommodate it in the high school.

Priority 2

Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.

The impact of overcrowding on teachers and instruction is significant. Because former teacher workrooms and teacher dining areas have been converted to meet the need for classroom space, the remaining teacher resource areas are crowded and poorly distributed. Teachers lack appropriate space to prepare lessons, grade work, or meet with students. They often must use the library, cafeteria and other public spaces where noise and other distractions limit the effective use of those times for preparation and communication with students. Even in the few teacher work areas that can accommodate several people, it is difficult for one teacher to do meaningful lesson planning while two other teachers are collaborating on a project and a fourth is juggling lunch while texting a parent.

Teachers have no space to collaboratively plan and to review student progress, which is a critical strategy for improving instruction and planning individualized support for students. When the school was originally designed, the content areas were housed in department neighborhoods, allowing for daily teacher collaboration. It also supported teachers having a home base, which made it easier to facilitate relationships with and provide support to students. Now, because of overcrowding and lack of sufficient classrooms, teachers are spread throughout the building in rooms that may or may not be appropriate for the content. For example, there should be a high level of collaboration between physical education and health. However, physical education classes are located in the fieldhouse, which is the most eastern part of the building, and health classes are located on the third floor in the most western part of the building. This separation limits teachers' face-to-face access to department meetings twice per month. Further complicating physical education instruction, there are no classrooms near the gym or fieldhouse and therefore no effective space for class discussion, assessments, or delivery of a modern physical education curriculum, including discussion of sensitive topics. The fitness center is located off the Dunn gym, but it lacks proper flow from the cardio space and the free-weight workout space. There is a lack of storage space for bulky athletic and PE equipment, so both programs must share a cramped storage area.

Another example is music and visual art classes. Visual arts are located in the lowest level of the main school with limited natural light, while the performing arts are located in the Collins Center, which is the most southwestern corner of the building. Once again, space constraints and locations limit daily access among members of the same department and hinder collaboration.

A high water table contributes to poor site drainage and the Collins Center is periodically flooded. For example, surface water repeatedly infiltrated the Collins Center during March 2018. Ground water seeped into the orchestra pit and pooled in front of and on both sides of the pit. Despite multiple efforts to vacuum up the water, the area in front of the first row of seats remained wet and the microphone had to be repositioned to prevent the chance of electrical shock. These conditions affect music students' opportunity to practice and perform in an auditorium setting.

There is also no space for multi-disciplinary special education teams to collaborate on student programs. The special education programs provide most of their services on the third floor, but the department's small teacher work area is in the basement. Travel time uses up so much of the planning period or lunch period that some special education teachers have given up trying to make use of the work area.

Because 75% of the faculty have to travel among multiple classrooms each day, with some utilizing three or four different classrooms, they are less able to meet with students between classes and provide the necessary support students require to perform well in class. Students are unable to find the teachers they need to see because teachers don't have a home base and work in multiple classrooms, closets, or nooks in the course of a day. Because teachers travel and share classrooms, they do not have enough wall space or floor space to call "their own" where they can display cultural artifacts, exemplars, grading rubrics, and other teaching tools that promote students' academic progress. As a result, classroom environments are more sterile and

less personal, depriving students of a sense of connection and place in the classroom and school. In addition, teachers need to carry learning aids and instructional materials from classroom to classroom and are less likely to do so if the learning aids are difficult to transport. Lacking storage space for instructional materials, teachers either try to cope with the clutter or they abandon the learning activities that require manipulatives, artifacts, and other concrete materials. They are also more apt to inadvertently leave some of their teaching materials in a room and either not have them for the next class or lose instructional time by going back to retrieve them.

Small classrooms packed with over two dozen bodies, plus coats and backpacks, essentially force most classes into standard rows of desks. Teachers cannot set up table displays without blocking aisles and violating fire codes.

English and world languages in particular should be discussion-oriented subjects. AHS classroom spaces are small; they lack the capacity for flexible seating arrangements that foster a wide variety of discussion protocols, group work, dramatizations and other collaborative processes that encourage students to see situations from different perspectives and to practice their conversational skills in a world language.

There is no space to gather a larger group from multiple classes, so such groups must meet in the cavernous Collins Center instead, where auditorium seating is not conducive to discussions. The use of the library for large gatherings is limited to afterschool hours; otherwise, the library would have to be closed to students, teachers, and academic inquiry. During the school day, the library accommodates multiple groups at the same time. The current footprint of the library doesn't allow for student groups to collaborate without disrupting each other. The library space is acoustically challenging due to its design, which incorporates a former exterior brick wall and large concrete joists. Given the poor acoustics, any group activity disturbs individual students who are attempting to focus or do quiet research. The facility lacks flexibility to help students work together on brainstorming activities. The space has limited white boards, projectors, unencumbered wall space, dividers, flexible furniture or soundproofing. When the library was designed, the space included three classroom spaces that could be monitored by the library staff and could be used by teachers on a rotating basis as a place to launch research-based projects or inquiries. These classroom areas have been siphoned off from the library's original footprint and converted into a small career technical area housing scheduled courses throughout the day, thereby losing their original flexibility.

Overcrowding has also compromised the administrative offices. These offices were once used for small-group speech, counseling and nursing services. To accommodate the additional personnel required for a larger student population, walls were constructed to create offices that are very small. The principal and the assistant principal each work in offices that measure about 10' by 13'. The principal and assistant principal can meet with only three to four other people at a time in their offices. The office suite provides very limited space for office staff and a small conference and teacher workroom.

The office of the Director of Special Education is so small that it can accommodate only one visitor at a time. At any given time, AHS has from 280 to 320 students with special needs. That means there are 300 IEP meetings per year, with many parents needing more than one. There are also over 100 evaluation meetings per year, several transition meetings, and a number of progress meetings about IEPs. Assuming about 600 meetings per year, with each meeting lasting at least an hour, an adequate meeting room is required for most of every school day. The high school does not have an adequate room for IEP meetings. Teachers have to "rotate" in and out of a small room so all can participate—but cannot meet simultaneously. This is a serious issue as special education programming gets its direction from IEP meetings and input shared with other teachers can change the content of the IEP.

The impact of overcrowding is significant for students and the learning environment in general. The undersized classrooms provide limited space to break classes into small work groups, to foster student collaboration, or to work on special short-term projects. The overcrowding of classrooms is further complicated by the heating and ventilation issues, which make classroom environments more uncomfortable. Many classrooms are not equipped with the acoustic paneling needed by students with hearing impairments, therefore necessitating that administrators move and reschedule classes when building the master schedule. The 95%+ utilization of space makes scheduling of classes even more difficult, limiting the options for individual students. Because corridors and stairways are severely congested during the brief time allotted for class transitions, students are more likely to feel pressured, to have negative social interactions in the hallways, and to arrive at their next class in a poor frame of

mind. Overcrowded lunch periods mean students at the back of the line are served late and have little or no time to eat. Other students opt to bring snacks they can consume quickly rather than wait in long lines for a hot, nutritious lunch. Having to distribute students across four lunch periods further disrupts classes, breaking up the continuity of learning in the classes that are split by lunch periods.

The overcrowding compromises the instructional program and the options available to enhance student learning. To make space for core classes, electives are limited. Limited space prevents AHS from adding or expanding career technology programs, and the CT programs that do exist are taught in classrooms, the library, former storage rooms, and otherwise ill-equipped spaces. Programs for engineering, robotics and programming are all in spaces previously dedicated to the library media center and inadequate to provide a rich curriculum in those areas. There is no project-based learning space or smaller collaboration space for students to work on projects. The school is limited in its use of the design-thinking process because of the lack of maker spaces or a collaborative learning commons. Art rooms lack natural light and are too small to accommodate current class size and demand. The dance program that satisfied a PE requirement was eliminated, along with other arts electives, because all available teaching space is needed for the foundational courses required for graduation. The school has provided alternative means of earning credit, such as virtual courses, in order to offset the pressure on classroom space. However, students taking these courses must do so in the office of the Director of Guidance due to the lack of a dedicated distance learning space. Because of the crowded nature of classrooms and halls, the noise level in most parts of the building distracts from both teaching and learning.

Special education students are served in converted spaces and classrooms that have been subdivided into smaller spaces, compromising the services to these students. Scheduling of students with special needs into team-taught classes and maintaining a reasonable number of students with special needs in such classes is also a challenge. Tutorial space is at a premium, and often results in the special education department utilizing conference rooms or other awkward spaces. A special education teacher workroom was converted to a classroom, pushing four teachers into what had been a closet for the theater program. Last year, half of a book closet was converted into a speech and language pathology office; the other half still houses social studies books and constitutes the only storage space for the social studies department.

The special education department is open to the hallway, which seriously compromises privacy/FERPA as the proximity is personally identifying. Parents and students with special needs wait in the hall for meetings and therapies, violating their privacy. Many upsetting and emotionally charged issues occur with children with special needs, and this all plays out in the hallway because there is no office or other area where parents and students can wait for meetings.

The overcrowding has complicated issues of security in the building. The main office suite is located on the second floor directly above the main entrance and the visitor entrance, with no direct observation of these entryways. The office has a view of the foyer but is so removed that it cannot be used to secure the entrances. The school has built a check-in desk to monitor visitors as they enter the building, but it is for information and convenience; it is not secure or capable of withstanding a hostile intruder.

Storage space for custodial and maintenance functions is inadequate. Narrow hallways and stairwells are not adequate given current enrollment, so maneuvering through the hallways and up and down stairs between classes is a challenge every day. These transitions are particularly difficult for students, staff, and visitors on crutches or with other mobility issues. The problem is magnified daily when a full quarter of the student population (450 students) is trying to leave the cafeteria while another quarter (450) is trying to enter the cafeteria.

The current overcrowding compromises instruction and learning and limits course opportunities and options for students. Enrollment projections show that enrollment will increase over the next twenty years by potentially more than another 100 students, significantly exacerbating all of the problems outlined above.

Please also provide the following:

Cafeteria Seating Capacity:	475
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Number of lunch seatings per day:	4
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Are modular units currently present on-site and being used for classroom space?:	NO
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If "YES", indicate the number of years that the modular units have been in use:

Number of Modular Units:

Classroom count in Modular Units:

Seating Capacity of Modular classrooms:

What was the original anticipated useful life in years of the modular units when they were installed?:

Have non-traditional classroom spaces been converted to be used for classroom space?:	YES
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If "YES", indicate the number of non-traditional classroom spaces in use: 25

Please provide a description of each non-traditional classroom space, its originally-intended use and how it is currently used (maximum of 1000 characters):

About 25 rooms designed for other uses are now used as classrooms. Many of these spaces are too small, are not equipped with appropriate ventilation, are not acoustically separated from adjacent spaces, have no windows, or are otherwise sub-standard as teaching space. Examples: teacher dining space converted to a classroom; book storage rooms converted to small-group instructional spaces; music storage room converted to a music production classroom; teacher planning rooms and offices converted to special needs small-group rooms; theatrical storage area converted to multimedia lab classroom; sections of library converted to classroom space; PE storage rooms and athletic team rooms converted to fitness and weight training rooms; section of scene shop used as drama classroom. In addition to the inappropriate physical conditions for use as classrooms, the repurposing to classrooms has displaced the original uses of those rooms, which adds pressure to other school spaces.

Please explain any recent changes to the district's educational program, school assignment policies, grade configurations, class size policy, school closures, changes in administrative space, or any other changes that impact the district's enrollment capacity (maximum of 5000 characters):

There are no recent changes to the district's school assignment policies, grade configurations, class size policy, school closures, or administrative space. In 2014, the district opened a new elementary school, Bancroft Elementary School, to replace a school that was structurally unsound. Although the new school enabled the district to shift elementary students in grades K through 2 from another elementary school that had been serving preK through grade 2, the new school did not significantly expand the overall enrollment capacity of the district. Currently, the district is pursuing the renovation/replacement of an aging and outdated elementary school to address both building conditions and enrollment at the elementary level. These changes have not impacted the enrollment capacity at the high school.

The district's educational program at the high school has changed over time in several ways. First, the district has significantly expanded its services to students with disabilities. Currently, the district has 101 students in out-of-district special education placements, with 56% being students of high school age, plus another 14% in the 18-22 age range. Over the past ten years, the district has continued to develop programs to serve students in a more inclusive environment through increased programming at Andover High School. Four rooms previously used for regular education classrooms are now devoted to special education programs for students with autism, students with developmental delays, and students who are returning from hospitals or settings where they were treated for mental health issues. To accommodate an increase in classrooms for the SAIL (Social Academic Independent Learner) program, the school recently converted a small workspace for special education teachers into a classroom for eight students. The school also increased the number of students in its Academic Support classes (making those classes very crowded) to free up other rooms for SAIL programming. Enhancing the programming for students with disabilities in inclusive settings is a significant initiative of the district and one that requires additional large and small classroom spaces as well as workspaces for teachers.

The second major educational program change that has impacted enrollment capacity is the improvement in programs that provide experiential and project-based learning. Although these program changes are limited by the current overcrowded conditions, the high school has carved space out of the library media center for a small innovation lab, engineering classroom, and coding classroom. None of these spaces are adequate for the programs, but the programs are necessary to accommodate significant student interest and curricular improvements and to match current program

offerings in other high schools. In addition, the high school has initiated career pathway and senior capstone programs to better support students. These programs, although of significant interest to students and highly beneficial to student learning, do not have adequate space for student collaboration, program coordination, or project design, construction and storage.

What are the district's current class size policies (maximum of 500 characters)?:

- Pre-K & K: at or below 20 students per class, if not feasible, to within a range of 16 to 24.
- Grades 1 & 2: at or below 23 students per class, if not feasible, to within a range of 19 to 27.
- Grades 3-5: at or below 25 students per class, if not feasible, to within a range of 21 to 29.
- Grades 6-8: at or below 25 students per class, if not feasible, to within a range of 21 to 29.
- Grades 9-12: at or below 25 students per class, if not feasible, to within a range of 21 to 29

Priority 4***Question 1: Please describe the conditions within the community and School District that are expected to result in increased enrollment.***

Over the past three years, the School Committee and administration of the Andover Public Schools have been deeply concerned about both current and future overcrowding of Andover High School as well as the condition of all of its buildings. In 2016, the district commissioned MGT of America to complete a comprehensive study of all Town and school buildings. In particular, this study focused on the building conditions, functionality or educational suitability to support the delivery of the educational program, site conditions, and technology readiness. The study involved a thorough analysis of demographic and enrollment trends. The study by MGT was released in June 2016 and updated in April 2017. It projected enrollment at AHS topping 1900 by 2025. An enrollment of 1900 would be 27% above the school's present design capacity. Based on this analysis, the School Committee convened an Andover High School Facility Study Committee to review the facility needs at Andover High School and recommend potential renovations to update building systems, relieve overcrowding, and improve instructional program capabilities. Because MGT projected an enrollment of 1916 in the 2025-26 school year, the study committee commissioned Cropper GIS to provide an even deeper examination of future enrollment trends.

The Cropper Demographic Study, dated October 2017 (see attachment), reviewed census data and trends; reviewed planned, platted, and approved housing developments; reviewed projections for future housing projects; and analyzed home sales and home turnover projections. The results of the Cropper study confirm MGT demographic findings of sustained enrollment of approximately 1800 students and predicted growth of potentially over 100 students in the next 20 years. According to the study, in 14 of the next 20 years, the enrollment of AHS will exceed 1800 students. In 2031-32, Cropper estimates that the enrollment at the high school will be 1854. With a 3% margin of error at the individual school level, enrollment could reach 1910. That means the current overcrowding is expected to continue and in many years will worsen considerably. Based on these studies, the AHS Facility Study Committee recommended, and the School Committee voted, to set a target that any renovation or addition enable AHS to accommodate 1900 students.

It is important to understand that schools across Andover are seeing increases in enrollment due to large-scale building projects, including new 40B housing. In the near term, Andover expects to enroll new students from three new or developing sites. The Slate just opened in 2016 with 224 apartments, Northfield Commons is currently under construction with 56 units, and Hanover at Andover court-approved construction of 248 apartments began in summer 2017.

Largely because of the trend toward in-migration over the past years, the district experiences growth during each school year. For example, between October 1, 2016 and April 1, 2017, elementary K through grade 5 enrollments grew by 46 students. Between October 1, 2017 and March 1, 2018, enrollment grew by 42 students. This in-migration of families with school-age children has been averaging between 40 and 50 students per year.

In addition, the demographic makeup of the student body has changed and will continue to change based upon the building projects being undertaken in the community. The number of ELL students has tripled in the past five years with an average growth rate of 20% a year. In the past ten years, the percentage of economically disadvantaged students has nearly doubled and the number of special education students has increased by 17%. The impact of this growth is that district schools need additional small-group spaces to provide individual and small-group instruction, as well as larger classroom space to accommodate inclusion of students in the regular classroom along with the adults who provide their support services.

Housing growth in Andover is projected to continue. Several more large projects are in the planning stages, and three projects for senior housing—which may encourage Andover seniors to move from their homes—are currently under construction. Currently, the Town is moving its 3.7-acre public works facility from the center of Andover to a site on the outskirts of the town. When the downtown property is redeveloped, it is likely to include housing designed for senior citizens, which in turn will make those senior citizens' existing homes available for families moving to Andover.

A 2013 study of the demographics of Andover by Barry Bluestone, the Director of the Dukakis Center for Urban and Regional Policy at Northeastern University, revealed that Andover has a large concentration of older citizens (age 70 and over) in residential homes with no school-age children in the homes. A corroborating study conducted in 2017 by the Town of Andover, drawn from state census and assessor data, reveals that 1511 of Andover's 8610 single-family residences (i.e., 17.55%) have at least one occupant age 69 or older. Given their age, these individuals are likely to downsize and sell their homes to younger families moving into the community. An internal district study of home sales and census data over the past two years affirms that trend. In the 485 homes sold during this two-year period, nearly one-fifth were populated only by senior citizens. As a result of the sales, the population of residents age 70 and over in those houses declined from 171 to 75, while the population of residents under 18 increased from 267 to 473. The district anticipates this trend will accelerate due to additional senior housing under construction and planned for Andover, placing additional pressure on school capacity. The two studies referenced above are attached. They are: "Assessing Current and Future Needs of Residents Aging in the Town of Andover" Commissioned by the Town of Andover, Division of Elder Services & The Center at Punchard, April 2015, and "A New 'New Paradigm' for Housing in New England" by Barry Bluestone, December 13, 2012.

The district believes that these trends predict increased school enrollment across the district and particular enrollment pressures at the high school level, which is already overcrowded.

Priority 4

Question 2: Please describe the measures the School District has taken or is planning to take in the immediate future to mitigate the problem(s) described above.

The lack of space is a significant problem and reflects the overall high utilization of the schools in Andover. There are few measures the district could take to prevent the forecasted housing and demographic changes from coming to fruition. Andover is a community with many amenities and it is an easy and feasible commute to and from Andover to the ever-growing Boston hub. As the city of Boston continues to aggressively pursue major employers (e.g., Amazon), Andover can expect more people to view this community as an attractive place to settle their families. At the same time, the aging of Andover's current population and increase in senior housing will provide homes for families moving into Andover. The students are coming. The district's task is to be ready to provide them with a high-quality education.

In December 2016, the Andover School Committee voted to conduct a feasibility study to address the severe overcrowding, the aging facility systems, and the limitations in programming capabilities at Andover High School. In order to advance the high school project, the School Committee also voted to convene a committee to develop a proposed solution that will meet the needs of the high school and community. The mission of the Andover High School Facility Study Committee is to review the facility needs at Andover High School and recommend potential renovations to: address overcrowding; address necessary safety, system & code deficiencies; and improve instructional program capabilities. The stated goals of the Andover High School Facility Study Committee are being addressed in three phases and are on schedule.

Phase One: March–June 2017

- Review prior facility and enrollment studies completed by DRA and MGT of America.
- Identify a set of improvements that can potentially address the need areas of updating building systems, relieving overcrowding, and improving instructional program capabilities.
- Prepare a Request For Proposals (RFP) for a feasibility study to develop architectural design options and cost estimates for these improvements.

Phase Two: July–December 2017

- Work with the selected architectural firm (HMFH) on the feasibility study; review design options and cost estimates; weekly meetings began in November.
- Establish a Financial Impact Working Group to review the cost estimates in terms of their potential alignment with district and town budgets.
- Recommend to the School Committee a design solution for a renovation/addition that can best address the facility and enrollment needs within reasonable budget constraints.

Phase Three: January–May 2018

- Provide information and support to community decision-makers and stakeholders about the proposed high school renovation/addition in preparation for the 2018 Town Meeting and a possible debt-exclusion vote by the community.

The district has been making every effort to be transparent and to involve the community in the fact-finding, envisioning, and decision-making processes. To date, the following community meetings and presentations have been conducted.

- 3 Community Forums–May and December 2017, March 2018
- 2 Board of Selectmen Presentations–July 2017 and March 2018
- Finance Committee Presentation–July 2017
- 3 School Committee Presentations–September and December 2017, February 2018
- Tri-Board (includes Board of Selectmen, Finance Committee, and School Committee) Presentation on Enrollment–November 2017
- PTO Presentations at four elementary schools, especially targeting parents of children who might one day attend the renovated/expanded AHS
- Facility Study Committee Meetings–24 from March 2017 to March 2018

In addition, multiple steps have been taken to engage the high school faculty and students, including a faculty survey, two all-faculty visioning sessions, 14 focus group and departmental meetings, a student focus group, two all-faculty updates, and student and faculty liaisons to the Facility Study Committee.

The district decided to move ahead with a plan for AHS because it saw no alternative. Building systems continue to age past their useful life and maintenance issues are becoming more frequent and more costly. Problems with temperature control cannot be fixed without addressing the building envelope. In spite of an outstanding maintenance team, the district is putting very expensive band-aids on an aging facility, and in the end will only be treading water programmatically. The severe overcrowding and the negative impact on educational outcomes will persist, regardless of updates provided to the existing structure.

Although the initial intent of the School Committee was to propose a modest renovation and addition to address the enrollment and maintenance needs of the high school, the November 2017 analysis of existing conditions by the architectural firm of HMFH (included in the attached draft of “Andover High School Feasibility Study” and discussed more fully in later priority sections) revealed more significant problems than originally anticipated. In addition, the analysis revealed more challenging issues in addressing enrollment and space needs. Severe and persistent overcrowding, coupled with poor physical conditions, negatively affects the delivery of educational services. Faculty and student feedback consistently referred to crowded classrooms, insufficient teacher planning space, and uncomfortable classroom temperatures as detriments to teaching and learning. The wide range of facility issues related to security, life safety, interior environmental conditions, and aging building systems cannot be resolved in the course of general maintenance or small-scale construction projects.

Based on the study, the School Committee has concluded that MSBA support is necessary to address the full scope of the changes needed at Andover High School. The overcrowding problem cannot be solved without additional academic space and, despite proactive maintenance, the building’s physical condition will continue to deteriorate with time. Partnership with MSBA is being sought to correct the major facility-related problems that hinder the education of Andover High School’s students.

The projected increases in enrollment require the community to address the need for regular and specialized classroom space in the very near future so that student learning and student support services are not compromised. Understanding that the Town is committed to supporting the renovation or replacement of West Elementary School in collaboration with MSBA, the Town of Andover offers its strong support to this Statement of Interest in order that the district also meet its space and facility challenges at Andover High School in an educationally sound and fiscally responsible manner.

Priority 4

Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.

The earlier response to Priority 2–Question 3 described in detail the pressures that the current overcrowding is already placing on the facility, staff, and students at Andover High School. Those conditions will only be exacerbated as the enrollment at Andover High School increases and growing numbers of students with diverse needs must be served in a facility that was never designed for them. Without additional classroom capacity, the district will be forced either to purchase modular classrooms to add onto the school or to significantly increase high school class sizes—which would compromise the overall instructional program and the delivery of quality, personalized instruction.

Finding additional spaces to serve the growing special education and ELL populations will be particularly challenging. Without additional space, it will require placing more students than desired into spaces not intended as learning environments. Addressing the need to offer increased services to special needs and ELL students, teachers are already required to share spaces, resulting in overcrowded rooms where different lessons are being delivered simultaneously. Unfortunately for students, these multi-purpose classrooms tend to be distracting and negatively impact learning.

The general education classrooms are also affected by the growing student population. Not only do those classrooms become filled beyond their maximum functional capacity, but the student-teacher ratio also rises and students receive less of the individual attention they need to excel. The undersized nature of the general classrooms greatly limits the teachers' ability to group students for differentiated learning purposes, or even to rearrange seating for different types of learning experiences. With 95% of the classrooms occupied at all times throughout the day, some students can't be scheduled into classes they want or need. As enrollment increases, these problems will be exacerbated.

Moreover, students with special needs and their support staff will funnel into the general education classrooms for part of the day, placing even more demands upon room space and staff time. Given the space constraints and inadequate infrastructure at Andover High School, students will have decreased opportunities to incorporate current instructional problem-solving and critical-thinking strategies into their daily learning and to develop the technology-based skills needed for success in 21st-century careers. With the growth in enrollment and the need to provide basic graduation requirements, electives will gradually be eliminated in order to provide classrooms for these basic courses. At some point, parents will likely question whether their children are receiving the quality of education they need and deserve in order to be competitive in high school, college and beyond.

Please also provide the following:

Cafeteria Seating Capacity:	475
Number of lunch seatings per day:	4
Are modular units currently present on-site and being used for classroom space?:	NO
If "YES", indicate the number of years that the modular units have been in use:	
Number of Modular Units:	
Classroom count in Modular Units:	
Seating Capacity of Modular classrooms:	
What was the original anticipated useful life in years of the modular units when they were installed?:	
Have non-traditional classroom spaces been converted to be used for classroom space?:	YES
If "YES", indicate the number of non-traditional classroom spaces in use: 25	

Please provide a description of each non-traditional classroom space, its originally-intended use and how it is currently used (maximum of 1000 characters):

About 25 rooms designed for other uses are now used as classrooms. Many of these spaces are too small, are not equipped with appropriate ventilation, are not acoustically separated from adjacent spaces, have no windows, or are otherwise sub-standard as teaching space. Examples: teacher dining space converted to a classroom; book storage rooms converted to small-group instructional spaces; music storage room converted to a music production classroom; teacher planning rooms and offices converted to special needs small-group rooms; theatrical storage area converted to multimedia lab classroom; sections of library converted to classroom space; PE storage rooms and athletic team rooms converted to fitness and weight training rooms; section of scene shop used as drama classroom. In addition to the inappropriate physical conditions for use as classrooms, the repurposing to classrooms has displaced the original uses of those rooms, which adds pressure to other school spaces.

Please explain any recent changes to the district's educational program, school assignment policies, grade configurations, class size policy, school closures, changes in administrative space, or any other changes that impact the district's enrollment capacity (maximum of 5000 characters). :

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The district's educational program at the high school has changed over time in several ways. First, the district has significantly expanded its services to students with disabilities. Currently, the district has 101 students in out-of-district special education placements, with 56% being students of high school age, plus another 14% in the 18-22 age range. Over the past ten years, the district has continued to develop programs to serve students in a more inclusive environment through increased programming at Andover High School. Four rooms previously used for regular education classrooms are now devoted to special education programs for students with autism, students with developmental delays, and students who are returning from hospitals or settings where they were treated for mental health issues. To accommodate an increase in classrooms for the SAIL (Social Academic Independent Learner) program, the school recently converted a small workspace for special education teachers into a classroom for eight students. The school also increased the number of students in its Academic Support classes (making those classes very crowded) to free up other rooms for SAIL programming. Enhancing the programming for students with disabilities in inclusive settings is a significant initiative of the district and one that requires additional large and small classroom spaces as well as workspaces for teachers.

The second major educational program change that has impacted enrollment capacity is the improvement in programs that provide experiential and project-based learning. Although these program changes are limited by the current overcrowded conditions, the high school has carved space out of the library media center for a small innovation lab, engineering classroom, and coding classroom. None of these spaces are adequate for the programs, but the programs are necessary to accommodate significant student interest and curricular improvements and to match current program offerings in other high schools. In addition, the high school has initiated career pathway and senior capstone programs to better support students. These programs, although of significant interest to students and highly beneficial to student learning, do not have adequate space for student collaboration, program coordination, or project design, construction and storage.

What are the district's current class size policies (maximum of 500 characters)?:

Pre-K & K: at or below 20 students per class, if not feasible, to within a range of 16 to 24.
 Grades 1 & 2: at or below 23 students per class, if not feasible, to within a range of 19 to 27.
 Grades 3-5: at or below 25 students per class, if not feasible, to within a range of 21 to 29.
 Grades 6-8: at or below 25 students per class, if not feasible, to within a range of 21 to 29.
 Grades 9-12: at or below 25 students per class, if not feasible, to within a range of 21 to 29

Priority 5

Question 1: Please provide a detailed description of the issues surrounding the school facility systems (e.g., roof, windows, boilers, HVAC system, and/or electrical service and distribution system) that you are indicating require repair or replacement. Please describe all deficiencies to all systems in sufficient detail to explain the problem.

Many of the major building systems at Andover High School are approaching the end of their useful life. The boilers are over 20 years old and require replacement. The HVAC system air handlers, rooftop units, exhaust fans, and compressors for pneumatic controls are all over 20 years old. The Facilities Department has been repairing and replacing them as they break. In addition, the cooling equipment uses refrigerant that is being phased out and will not be available for purchase as of January 2020. AHS may be able to retrofit existing units to accommodate higher-pressure refrigerants. However, if the existing units begin to leak, it will be necessary to replace them entirely.

Plumbing-intensive areas such as the science wing and the kitchen experience leaks and require repairs often due to the age of the piping system. Facilities Department estimates that \$10 million worth of equipment will need to be replaced at Andover High School over the next 5 to 10 years.

The most significant physical issue at AHS is the lack of thermal comfort in academic spaces. The building's un-insulated masonry walls, outdated window systems, and concrete structure that connects directly to the outside produce interior thermal conditions that cannot be effectively controlled with through-wall unit ventilators. In interviews and surveys, teachers and students consistently note that cold classrooms in the winter and hot classrooms in warm months have a detrimental impact on teaching and learning. Students and teachers alike resort to wearing their coats in the winter and have no means of relief from the heat in warmer weather. Teachers sometimes bring their own fans, which move the warm air but usually add to the noise. Even when weather permits, there are no outdoor campus areas suitable for a class to escape the indoor heat and engage in structured learning activities.

Each standard classroom has a unit ventilator that controls the air temperature of the room. However, even if the air temperature is appropriate, other factors, such as cold concrete floors, poorly insulated walls, and the draft of air movement will make occupants feel cold. The unit vents are a continual source of complaint by the teachers and students. Unfortunately, thermal comfort has worsened due to the recent addition of CO2 sensors, which are necessary to maintain a healthy air quality. The unit vents are activated with minimal outside air when the room air temperature moves outside of the set point, or with maximum outside air when CO2 reaches a raised level. Although this incoming fresh air is preheated to some degree, discomfort arises from the draft caused by high-velocity, single-point supply of air that is insufficiently heated. In the winter, this means that fresh air is introduced to meet air quality goals even though the room already is cold to occupants. Even when not operating, the poorly sealed dampers can allow drafts of outside air. The classroom ventilation system includes the unit ventilator on the outside wall, plus an exhaust fan drawing from the opposite side of the room. The vents are air supply only; they deliver exhaust to the roof without any energy recovery. Modern systems usually include energy recovery to pre-heat fresh air. The unit vents are not equipped with cooling coils; in the summer, they introduce air at the temperature and humidity level of the outside, providing no relief for overheated classrooms. In addition to problems with thermal comfort, the fan noise of these old units forces teachers and students to strain their voices and speak loudly so they can be heard over the decibel level of the equipment.

The aluminum window frames are un-insulated. Without a thermal break, the frames transfer heat and cold into the room through the aluminum, which is a good conductor, adding to the uncomfortable temperatures in the room. By contrast, today's modern windows are built with thermal breaks so the encasement cannot act as a thermal bridge for the transfer of outside temperatures to the indoor areas. In addition, the school's windows are not glazed with today's more technically advanced glass, so are ineffective at preventing radiant heat gain or heat loss. Students sitting near the windows feel cold due to the radiation of cold surface temperatures from the exterior surfaces. Similarly, teachers on the south side of the building keep their blinds closed because of glare and because the old windows cannot prevent solar heat from entering and heating up the classrooms. Modern windows could resolve this set of problems.

Finally, the lack of a thermal break in the concrete classroom floor slabs allows heat and cold transfer between outside and inside. In winter, heat is lost and cold is transmitted through the concrete slabs, creating cold interior surfaces within the occupied spaces. The existing heating system, under control of the CO₂ system, cannot compensate for the heat loss generated by the building and for the CO₂ generated by the occupants. The ventilators operate on outdated, 23-year-old pneumatic controls, with air tubes that crack frequently and need costly repairs.

Rooftop condensing units are used to cool some portions of the buildings. Most of the units were part of the 1995 renovation project. These units rely upon R-22 refrigerant, which is extremely expensive and faces a regulatory phase-out. If a rooftop condensing unit develops a leak after January 1, 2020, this refrigerant can no longer be purchased. Newer cooling systems now on the market do not use R-22. Between 2011 and 2016, Facilities Department installed stand-alone air conditioners in six special education classrooms that required cooling; however, the units create noise and are energy-inefficient.

The conventional boiler plant that is the school's primary source of heat is 23 years old, nearing the end of its serviceable life, and should be replaced with a high-efficiency condensing boiler. The kitchen exhaust hoods and fans that remove stale air/smoke/cooking odors from the kitchen are outdated and may no longer be code-compliant.

In summary, the HVAC system is one of the major weak links that needs replacement. Due to its age, the system requires continual maintenance in an effort to maintain temperatures at a comfortable level in every season in the varied-size rooms in all sections of the school. Facilities staff have done what they can to upgrade existing systems and improve temperature control, but it is simply not possible to fix this issue without wholesale replacement of the HVAC systems with a modern system, such as a displacement air system (which is more comfortable and quieter than what AHS has now), combined with extensive reconstruction of the exterior façades. Simply put, there are now better ways to heat, cool and insulate buildings than were in place when this school was constructed 52 years ago.

Andover is experiencing an increased frequency of unusually warm temperatures in autumn, spring, and early summer. The district is also facing an extension of the school year into summer and an earlier opening in the fall due to the major storms happening throughout the year requiring school to be closed due to power outages in the community. These factors will increase the demand for air conditioning that the district cannot provide currently.

In terms of the building envelope, virtually all of the windows need replacement. Gaskets are aging and windows are beginning to fail. They range from 23 to 27 years old and are drafty and un-insulated, adding to the uncomfortable temperatures in the classrooms. Similarly, the exterior masonry walls are un-insulated and contribute to thermal leakage and energy waste. The doors are in fair condition, dating from 1995. However, they are poorly insulated steel and tend to rust, requiring repainting about every five years; replacement with insulated aluminum doors would save on labor and energy costs. The roof is in good condition, with the possible exception of the metal vaulted section over the main entrance, which is 23 years old.

As with many high schools, the building has dozens of entry/exit points. The system for monitoring these doors is inadequate, especially given the societal dangers that have afflicted schools in recent years. Numerous places in the schools (stairwells, doorways) are hidden from view. Of particular concern is the main entrance to the school, which has only one set of doors between the outdoors and a large interior lobby that leads to many sections of the building. The administrative offices are located on the second floor with limited views of the entry as well as limited access to ensure effective security. A top priority for the district and community is to increase the security of access through this vestibule.

In terms of the electrical systems, the main switchboard is in good condition and the distribution equipment in the 1995 addition is in fair condition. However, the distribution equipment in the rest of the building—which includes the main academic building—is in poor condition. The exterior lighting (wall packs or sconces at egress doors and perimeter) is in fair condition. The number of receptacles in the classrooms and offices is insufficient for today's methods of delivering education. Extension cords are in wide use and some areas lack GFCI protection. Life-safety lighting does not meet code, nor does the notification system for full voice evacuation. Clock and intercom systems are obsolete. Fire alarms and intercom are not audible in all areas. The lighting levels in the gymnasium are poor. The school's current generator is for life-safety purposes only. There is a central CCTV video management system and a new IP paging system. Data cables are CAT5, 5e, and 6. All areas have wireless coverage.

The main academic building—which houses most of the classrooms, offices, and special education department—plus the Dunn gymnasium and most of the Collins Center (auditorium, stage, music wing) are not protected by an automatic fire suppression system.

Water and sewer pipes as well as plumbing fixtures are in fair condition, but some updating is needed in the science classrooms. Plumbing-intensive areas such as the science wing and the kitchen often experience leaks and require repairs due to the age of the piping system. There is no central acid neutralization tank for science labs.

In addition to the problems with the facility itself, there are serious issues with the site. The biggest problems are traffic congestion, circulation, and parking—all of which have safety factors. The school site has three entrances. The main Shawsheen entrance is at the crest of a hill, making it difficult to see from both directions. A large ledge outcrop blocks the view of the school from the road. Site circulation and parking are complicated and confusing, especially for visitors. There is inadequate driving and parking space for the daily mix of 35 buses, parent and student cars, staff cars, service vehicles, delivery trucks, and occasional emergency vehicles. Pedestrian walkways are limited and some students/staff must walk in the street or cross through the onsite traffic as they are dropped off or approach from parking lots. The playfields are not handicap accessible for students or families. The fields are insufficient to serve the large number of AHS athletes and some are not appropriately sized. The pavement on the seven tennis courts has failed and needs to be replaced. There is limited outdoor space where students can gather and either socialize or work in small groups in an area that is amenable to spring and fall weather conditions.

In December 2017, the Institute for Human Centered Design released its report “Town of Andover ADA Transition Plan.” The section pertaining to the high school is attached and details the accessibility of the facility and site. Key accessibility issues relate to insufficient parking spaces, lack of accessible routes to sports fields and facilities, lack of assistive listening devices in the auditorium, doors that lack maneuvering clearance, missing and noncompliant signage, non-accessible classroom sinks and cooking equipment, lack of an accessible science lab, lack of accessible lockers, insufficient number of accessible and compliant toilet compartments, excessive slopes on curb ramps, modifications needed to stairway handrails and drinking fountains, lack of automatic door openers, etc. The estimated cost of making AHS accessible is \$800,000.

Substantial maintenance costs will be incurred if no renovation or addition is done, including replacing boilers, replacing heating and ventilation units as they fail, upgrades for ADA compliance, etc. Significant energy and comfort improvements are only possible if both the mechanical system and the building exterior are replaced. At an estimated cost in the tens of millions of dollars, the district would not be able to do an extensive renovation of the school without MSBA help. The district may be able to chip away at some of the problems piece by piece, but the needed overhaul of the entire system is beyond the district’s capacity.

Priority 5***Question 2: Please describe the measures the district has already taken to mitigate the problem/issues described in Question 1 above.***

Andover has a robust system of preventive maintenance, work order processing, and labor scheduling for all mechanical systems. As part of Andover's standard of maintenance and as need dictates and funds permit, Facilities Department is gradually replacing some schools' conventional boilers with high-efficiency condensing boilers; however, the district is still trying to stretch the life of the three-boiler plant now at AHS. In 2013, inline boiler pumps were added to make the system a primary/secondary heating system and to achieve better supply and return water temperature control.

CO2 sensors have been added to approximately 80 classrooms allowing for demand control ventilation. If no one is in the classroom and the CO2 level is low, the outside air will close, providing energy savings. Each classroom has had an occupancy sensor installed to turn lights off when the room is not occupied.

The Facilities Department is also collecting trend data on temperatures in all AHS classrooms in an attempt to identify unit ventilator issues more quickly; students and an adult volunteer are studying the HVAC trend data at AHS to identify anomalies. The Facilities Department installed building analytics software that takes data points throughout the school and remotely diagnoses problems faster. The department is upgrading the energy management system to a more user-friendly system that the tradesmen can use onsite on their phones to serve schools better. The Facilities Department is also trying to retrofit one HVAC unit to accept new refrigerant in order to determine whether that solution could work as a stopgap measure once the old refrigerant is phased out as of January 2020.

Sound-absorbing ceiling panels were installed in 23 classrooms in order to help students with hearing impairments be able to hear voices over the noise coming from the unit ventilators and other sources. These ceiling panels benefit all students. Security shades have been installed on the windows of classroom doors to prevent potential intruders from being able to peer into classrooms.

In the interest of safety, a team is working to have a secure double-door vestibule designed and constructed this summer at the main entrance to the school. The work will be done in-house to save money. The team includes Facilities construction staff, the school principal, the building inspector, and the police and fire departments. (See attached two drawings of security vestibule planned for AHS.) However, this is a stopgap measure that does not address security at other entrances. In 2017-2018, the Information Technology Department installed classroom telephones to enable teachers to contact the office or 911.

Facilities Department is currently replacing T5 fluorescents with LED fixtures, and is replacing ceilings as part of this effort. Facilities has retrofitted the Dunn Gym, fieldhouse, Collins Center stage lighting, some bathrooms, and all academic hallways with LED lighting over the past five years.

Facilities Department is in the process of updating toilet rooms, with a few renovated each year. Renovations include replacing floors and wall tiles, toilet partitions, accessories, plumbing fixtures and fittings, and light fixtures. Approximately 10% of the toilet rooms have been renovated, with the remaining scheduled for completion over the next ten years.

The District and Facilities Department maintain a working list of deferred maintenance projects. Each year, a few projects are submitted to Town for consideration in the next year's budget. The current list for AHS includes \$7.5 million to correct deficiencies in the site, and another \$2.7 million for projects such as carpeting, painting, replacing gaskets on windows, putting rubber treads on stairs, etc. This list does not include repair or replacement of major facility systems (e.g., HVAC).

Priority 5

Question 3: Please provide a detailed explanation of the impact of the problem/issues described in Question 1 above on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.

The current physical condition of Andover High School presents significant problems for instruction due to the often uncomfortable and uncontrollable temperatures in rooms; the overcrowded nature of classrooms, hallways and common areas; the lack of electrical capability to adequately charge technology equipment; and the outdated nature of the current classroom and commons space. Due to its age, the AHS HVAC system requires extensive maintenance on a regular basis to maintain reasonable temperatures in every season in the varied-size rooms in all sections of the school, with only limited effectiveness in accomplishing that goal. The age of the equipment often delays repairs that require replacement parts, meaning the uncomfortable teaching-learning conditions persist. Overcrowding means there are no vacant rooms available for use when a classroom or office has faulty HVAC—either to escape the cold or heat or to escape the repair noise.

The persistent problems with the building envelope and the mechanical systems have a detrimental impact on teaching and learning, as well as on the health of students and staff. Students who are too hot or too cold have difficulty concentrating. Noisy unit vents force teachers to raise their voices, placing a strain on their vocal cords and general health. Students with hearing problems especially struggle to hear teachers, classmates, and audio content over the noise of the ventilators. The school's only loading dock, which is used multiple times throughout the school day, is a loud and unwelcome intrusion into nearly a dozen classrooms. In addition, diesel fumes from truck engines left running in the loading dock area are drawn into the nearby classrooms through the unit ventilators. Students with visual impairments are affected by the highly contrasting light from solar glare. Uncomfortable physical settings contribute to higher absenteeism among students and staff alike.

The antiquated HVAC systems, coupled with the un-insulated exterior envelope, place a substantial burden on the annual operating energy costs and maintenance costs for this school. These funds would be far better invested in tangible educational benefits for students.

Students today do much of their classroom work digitally and need electrical outlets to work or to recharge their computers. Most AHS classrooms lack sufficient electrical outlets to serve a class of 25-29 students. Extension cords and power strips snake across floors and are strung across desks and tables. Some classroom wiring is in surface-mount wire mold rather than conduit, and some of that wire mold is deteriorating and pulling away from the walls. These situations are less than ideal from a safety standpoint.

Particular curricular areas are impacted more significantly. For example, water temperature and color have been persistent issues in the science labs. It sometimes takes up to 10 minutes of running the faucet before warm water arrives (if it arrives at all) and the water is regularly discolored—a pale brown color. This discoloration can be problematic for lab activities involving water because students are unable to conduct experiments and observe reactions with validity or reliability. All of the water purification units that were installed in the prep rooms when the science wing was built are no longer functional and are too expensive to replace. Paralleling the impact of water issues, science teachers report that in the beginning and ending months of each school year, high temperatures and high humidity in the labs are affecting the results of students' experiments.

Lighting in the photography dark room is insufficient to perform darkroom work, so students are unable to gain a proper learning experience in this setting. This problem applies to students who are taking a photography class for credit as well as to students who are developing photos for school publications or other extracurricular activities.

Double-loaded corridors and egg crate design no longer are the way students learn best nor the way that AHS wants to deliver instruction. The very structure of the school provides no collaboration space or flexible space for project-based learning. The undersized nature of 80% of the classrooms compromises the ability of teachers to engage students in experiential or

cooperative activities in class. Creating spaces for 25 or more students to engage in collaborative or project-based learning in a 740 sq. ft. room filled with desks is challenging and time-consuming, which discourages teachers from using group activities or rearranging the room during the class. Since teachers share rooms, the desks have to be returned to their usual positions at the end of each class; rearranging them twice in one period for student collaboration reduces the time left for teaching and learning. These issues cannot be addressed through maintenance of building systems, but rather require significant renovation of existing spaces.

Given the continuing violent incidents in schools nationwide, staff and students today are highly attuned to issues of physical safety while at school. They look around AHS and understand that some doors can't be monitored, that the school's front entrance gives easy access to the entire building, that the school may not be a safe place. This knowledge affects their attitude about coming to school each day and can distract them from being fully engaged in teaching and learning.

Priority 5

Question 4: Please describe how addressing the school facility systems you identified in Question 1 above will extend the useful life of the facility that is the subject of this SOI and how it will improve your district's educational program.

Addressing the school's envelope and HVAC systems will extend the life of the building because structurally the building has been deemed sound. Taking care of the façade will protect the interior spaces from further degradation and aging. Foremost is the learning environment. Facilities must support the learning environment, and at the very least not be an impediment to uninterrupted learning. The sort of overhaul the district is seeking will result in an old building made modern by current technology, nearly silent heat and ventilation delivery, and comfortably controlled air temperature throughout the lengthening school year. Addressing the façade issues through the construction of a new exterior wall that provides a thermal break will also enlarge classrooms in the core academic section of the building, thereby addressing some of the overcrowding issues as well as the instructional compromises currently made because of the limited space.

Andover High School is also in high demand for educational programs in the summer. Currently, with the exception of a few special education programs, classes cannot be regularly scheduled in the summer due to the lack of air conditioning.

A cooler, better controlled building will be less subject to high humidity. Much of the building repair/small project work and deep cleaning take place in summer, and workers must endure very high temperatures while performing this work. Opening windows during hotter periods brings in fresh air, but also introduces allergens and dust, unfiltered. The more the building's internal air passes through filters, the better the air quality. Andover has many at-risk students who need filtered air because of asthma, allergies, and other medical issues. Eliminating the need to open windows to obtain fresh air will result in all air being properly filtered.

It is prudent to correct building envelope issues while updating HVAC. The district believes strongly that the two elements should be addressed in tandem, otherwise the effectiveness of even a new HVAC system will be reduced by problems inherent to the building envelope.

Please also provide the following:

Have the systems identified above been examined by an engineer or other trained building professional?:
YES

If "YES", please provide the name of the individual and his/her professional affiliation (maximum of 250 characters):

HMFH Architects
Foley Buhl Roberts, Structural Engr.
Garcia Galuska Desousa, MEP/FP Engr.
Samiotes Consultants, Civil Engr.
CRJA/IBI Group, Landscape Architect
Kevin Hastings, Code Consultant
Colburn & Guyette, Food Serv Consultant

The date of the inspection: 11/30/2017

A summary of the findings (maximum of 5000 characters):

HMFH Architects and its consultants completed a comprehensive existing conditions evaluation of the Andover High School facilities, including the building's structure, envelope, interiors, mechanical, electrical, plumbing, fire protection, technology, security, food service, and code compliance. The team also assessed campus systems, including car, bus, and emergency vehicle circulation, parking, pedestrian access, signage, sports fields and courts, utilities, topography, geology, drainage, wetlands, and permitting requirements. The Existing Conditions Report was issued in draft form in

December 2017 and the final report is underway.

Given that AHS was built in three phases (1966, 1983, and 1995) and has undergone renovations to specific systems at various points in time, the condition of the building varies by section and by system. However, most of the building's major systems are nearing the end of their useful life and should be repaired or replaced within the next several years. Significant issues include:

ENVELOPE – Exterior walls in the 1966 section are un-insulated and the structural slabs extend to the exterior with no thermal break. Other sections of the building are under-insulated by today's standards. Windows throughout are nearing the end of their usable life and lack modern technology that can combat radiant heat loss or heat gain.

INTERIORS – Corridors and stairs in the 1966 section are narrow and crowded. Classrooms are too small for the number of occupants. Finishes throughout are worn and, in some areas, damaged. Casework is aging and insufficient. Science labs have outdated equipment. 90% of the lighting is older technology and should be replaced with LED. Acoustics are poor in classrooms, library/media center, and cafeteria. 90% of toilet rooms and the locker rooms have original finishes and accessories.

ELEVATOR – One elevator serves the building. Travel distances to the elevator are as much as 600 feet. Upper level of the auditorium is not accessible. The elevator is aging, slow, and has required contractor repairs over the past several years.

FOOD SERVICE – Elements of the kitchen are obsolete and may not meet current codes. The serving line is too small, outdated, and cannot adequately serve the number of students buying lunch in the time allotted. Cafeteria is too small for the enrollment.

HVAC – The HVAC system requires full replacement to address ongoing issues with thermal comfort, noise, air quality, and energy use. Air handlers use a refrigerant with a pending regulatory phase-out and need to be replaced. Boilers are 23 years old and need to be replaced. Pneumatic controls are aging and should be replaced with a DDC system.

PLUMBING – Supply and sanitary systems in the 1966 section are original and at the end of their useful life. 90% of plumbing fixtures do have automatic controls for water conservation. There is no acid neutralization tank for science labs. Some sections of copper water pipes in the ceiling leaked and required replacement.

FIRE PROTECTION – 69% of the building is not protected by automatic fire suppression systems, including classrooms in original academic building.

ELECTRICAL – Distribution equipment in the 1966 section is original and should be replaced. Quantity of outlets is low, leading to use of extension cords and power strips. Wire mold is insufficiently fixed to walls. GFCI protection is missing in some required locations. Life-safety lighting and optional standby loads are not separated as required by NEC Article 700.

FIRE ALARMS – Notification appliances don't meet current code for full voice evacuation. The Collins Center and the main classroom building are on separate fire alarm systems.

TECHNOLOGY – Clock and intercom systems are obsolete. Classrooms have telephones for contacting the office or 911.

CIRCULATION & PARKING – Enrollment increases have led to additional cars and buses during drop-off and pick-up hours. Complex traffic patterns and the increase in vehicles have led to confusing and, in some areas,

dangerous campus intersections. Emergency vehicle access is blocked during drop-off and pick-up. Parking is not sufficient for demand. Sections of the campus have no sidewalks for safe or accessible routes to the school.

COURTS AND FIELDS – Existing facilities do not accommodate the range of high school sports, so some teams practice elsewhere. Some fields are not regulation, so cannot be used for competition. Several fields are inaccessible. Tennis court pavement is failing.

PHYSICAL SITE – Adjacent wetlands, ledge, and a high water table lead to poor site drainage.

Priority 7

Question 1: Please provide a detailed description of the programs not currently available due to facility constraints, the state or local requirement for such programs, and the facility limitations precluding the programs from being offered.

The primary facility limitation that prevents Andover High School from offering programs is the lack of space that results from severe overcrowding. AHS could essentially provide the staff and the instructional materials for these programs, but has no rooms in which to put them. Every conceivable, even remotely inhabitable space in Andover High School is being used.

Andover High School course offerings in all areas are capped because of space availability. AHS is limited in offering important educational programs and opportunities outside of the basic core curriculum and provides only introductory level courses in the arts, engineering, robotics, and computer programming.

Even in core academic curricular areas, AHS lacks the facilities that would allow the school to expand its curriculum to engage in electives that add depth to the curriculum. For example, in the social studies, AHS would like to offer electives focusing on geography, philosophy, and diverse cultures, rather than only core social studies required content. However, fully utilized classrooms leave no space in which to expand elective offerings. AHS has two spaces large enough to accommodate interdisciplinary humanities courses; both spaces are fully subscribed, preventing the school from expanding its interdisciplinary program to meet student demand.

Additional advanced or enrichment courses, regardless of interest, cannot be offered because of space constraints. An example is that the school offers fewer sections of psychology or engineering than requested because those classrooms and additional teaching sections must be used to fulfill graduation requirements. The same pattern exists in visual arts, dramatic arts, computer programming, English language arts, world languages, physical education, health, and social studies. For lack of space, AHS had to eliminate a dance class that fulfilled a PE requirement. There is also no space for credit recovery classes that are needed to keep students on target to meet their graduation requirements.

In addition to the constraints on the variety of courses that can be offered, the limited size of classrooms and the lack of available common spaces constrain the kinds of instructional strategies that teachers can use. There is inadequate space for maker studios or innovation labs, as well as a lack of ample electrical outlets and ventilation in these spaces. The engineering course is taught in a makeshift space carved out of the library. There is no access to outdoor testing of robotic products. In many courses, there isn't sufficient space to comfortably engage in experiential, collaborative or project-based learning. There is no space to store projects that require continued work over time. These constraints limit the opportunities that students have to deepen their learning and that teachers have to diversify their instructional strategies.

In order to enrich the curriculum, AHS provides students with the opportunity to take a variety of virtual courses from a number of consortia. However, the school does not have an adequate space to expand this program. Students participate in their virtual coursework in the office of the director of guidance because no library, classroom, or alternative space is available. Each department is limited in what courses it can offer, based on the need to ensure that all students are able to meet their graduation requirements. This lack of space also hinders the school's abilities to create its own virtual learning consortium.

The district operates a PreK program serving about 100 students. The program is now housed in an obsolete 1923 building. The district wishes to move that program to the AHS campus where it would add a career component to the high school curriculum. AHS students could take coursework in child development and participate in practicum experiences in the PreK setting. Space constraints at the current facility prevent the district from enacting this change that would benefit students at both ends of the educational spectrum.

Beyond the limitations on the school's core academic program, the next greatest constraint is on AHS programs for students with special needs, as well as services for anyone in the student body who needs a special service that is not academic.

In terms of services that would be available for all students, AHS want to open a clinic-in-the-schools program to assist students who, for whatever reason, are not accessing the mental health therapy they need. The district is negotiating with the Lahey Clinic, a local mental health clinic, to operate in the school. The service is family therapy, so just like any other family therapy it is private pay or insurance-funded. The district could fund an on-site person to coordinate the program, but AHS doesn't have a space to locate the clinic.

AHS needs the services of a Licensed Alcohol and Drug Counselor (LADC), but lacks private office space for this person to work with students. If the space were available, staffing funds would be requested through the normal budget process.

The district wants to continue its affiliation with local universities and colleges as training grounds for disciplines such as School Social Workers and School Psychologists; however, AHS has no space for student interns and fellows to work directly and confidentially with students.

In terms of students with special needs, the district does not offer any programs for high school students with social-emotional/mental health disabilities. A continuum of services is required by the IDEA, but AHS does not have any programs for high school students identified with emotional handicaps because the school has no space. If the district were to add a special education program for students with emotional handicaps, which is desperately needed, the district would pay for it by returning some of its students from out-of-district placements. The district currently has 27 high school students with emotional handicaps in out-of-district placements. The money saved on these returning placements would cover the cost of the teacher. The fact that the district does not have any special education program for high school students with emotional disabilities is a serious gap in its programming. Such a program would require at least three classrooms to adequately accommodate the diverse needs of this population (e.g., separating anxious students from acting-out students, private spaces for processing and counseling). The special education program for ages 18 to 22 is operating but had to be moved off site to the administrative building because there is no space to accommodate it in the high school.

The district cannot create new programs and reduce the unusual number of students placed out of district, even though the last two Walker Reports and DESE have made this recommendation, largely because there is no space to do so. In other words, the District is unable to follow the IDEA principles of Least Restrictive Environment due to space limitations.

One of the district's goals is to increase inclusion and access for special education students to the general curriculum through classes co-taught by regular and special education teachers. However, the classroom spaces are small, making it difficult for two teachers to work effectively; they also don't have a space to co-plan and evaluate the lessons.

Transitions is a program at AHS for at-risk students who may or may not have an IEP. It is designed to provide temporary therapeutic supports for students in transition from medical issues, psychiatric hospitalizations, etc. Because Transitions is designed to be temporary, more permanent options are needed for students who require therapeutic support on an ongoing basis. There is no adequate space for this desperately needed service.

Using existing staff, the district plans to pilot RENEW, which is a structured school-to-career transition planning and individualized wraparound process for youth with emotional and behavioral challenges. Developed in 1996 by staff at the University of New Hampshire's Institute on Disability (IOD), RENEW is being provided elsewhere by schools, community mental health centers, community-based providers. The model focuses on supporting each youth to design and pursue a plan for the transition from school to adult life. RENEW has substantially increased the high school completion, employment, and post-secondary education participation rates among vulnerable youth. Training of Andover staff began last month. However, the district has no answers yet as to where this program could be operated and, if it proves to be effective, there clearly is no space to expand it to more students.

Programs such as RENEW, in-school mental health clinic, and an LADC are technically "optional," but when the lack of support programming for at-risk students is coupled with the fact that there are literally no programs for students with emotional/behavioral handicaps (despite the fact that IDEA requires a continuum), there exists a real problem that leads to out-

of-district placements. Removal of students from the general curriculum and their neighborhood schools is contrary to the basic principles of IDEA.

Priority 7

Question 2: Please describe the measures the district has taken or is planning to take in the immediate future to mitigate the problem(s) described above.

Andover High School has captured every available nook and cranny for the purpose of providing student programs, including converting teacher workspaces and areas that were formerly used as offices. Beyond that, AHS is not so much mitigating the problem as it is adapting and coping with it as best it can.

AHS currently offers all of its AP testing at the Old Town Hall because it lacks adequate and appropriate space within the school. The district houses its special education program for ages 18 to 22 offsite in the administrative building because there is no space in the high school.

AHS uses the Andover Youth Services building as a presentation and exhibition space for its student projects and project-based learning programs, including Senior Showcase, Senior Capstone, Senior Exhibition, Environmental Science Internship Course (ESIC), and Global Summit.

AHS has created a prototype area that serves as a model for what could be possible if adequate space were available. This prototype area serves students' digital learning pursuits including web development, entrepreneurship, computer science programming, engineering, robotics, innovation lab, senior capstone and robotics. AHS has also expanded the opportunity for students to take virtual courses so as to offset overcrowding in classrooms.

This year AHS changed students' daily schedule to a 7+H schedule to incorporate personalization and improve student-teacher relationships by having full-year courses instead of semester-long courses. This schedule change is allowing students to have more continuity in their learning and to have consistency in the content areas. It also provides scheduled time (the H block) in which students can receive support from teachers. This time is especially important since space constraints require that 75% of the AHS faculty move from classroom to classroom, leaving little time between classes for students to talk with teachers about make-up work or to address a question about an assignment. Due to the limited number of spaces available for H block (the personalization period) and the small size of some of those spaces, some teachers must severely restrict the number of students who sign up to meet with them—which undermines the purpose of the H-block period.

Priority 7

Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.

Overcrowding impacts space and learning opportunities. The school's space dictates the type and extent of program it offers versus being able to offer the latest educational program that research and best practice suggest. The school's lack of space inhibits its ability to create and offer authentic learning experiences for students that personalize the access, personalize the environment, and promote student engagement. Teachers don't have a consistent space where they can engage students outside of regular class time or effectively plan with their colleagues.

The building was designed in the 1960s without regard for electricity use, the applications of instructional technology, wireless communication, energy efficiency, or flexible learning spaces. Most classrooms are undersized for the discussion-oriented, seminar-based, or hands-on curricula so important to today's learners. The lack of space prevents AHS from making best use of collaborative learning. Project-based learning is severely constrained and finding space to support student collaboration on projects is challenging. The current space situation requires students to meet in the halls on the floor.

AHS has created a prototype area that serves students' digital learning pursuits including web development, entrepreneurship, computer science programming, engineering, robotics, innovation lab, senior capstone and robotics. This prototype space, while minimally supporting the school's programming, robotics and engineering courses, is inadequate in terms of square footage and storage for these project-based activities, and lacks electrical and mechanical amenities.

AHS implemented a new 7+H schedule for students' daily instruction. One of the reasons teachers supported the new schedule was that it incorporates teacher-to-teacher collaboration time within the school day. It provides time for: common planning within a department or content strand to discuss curriculum, instruction, and assessment; collaborative data analysis of student work; and planning interdisciplinary teaching, project-based units, and other district initiatives. Unfortunately, while the new schedule does provide the time for these important activities, it does not increase the amount of space that teachers have to carry out this collaboration. Lack of a common dining area forces teachers to scatter throughout the building rather than take advantage of their lunch time for collegial planning. The design of the plant further limits the ability of the school's departments and content areas to collaborate. For example, the school's performing arts departments are isolated from other students and staff due to their being in a separate building. The absence of teacher collaboration and planning space provides many challenges to cross-disciplinary instruction and limits the amount of time for discussion of specific student needs.

Space limitations of the school prohibit having any kind of medium-sized space where two or three classes can come together to work, discuss, and collaborate. There are no opportunities for students to gather to hear any type of speaker in a smaller venue outside the Collins Center. AHS is unable to offer students in social studies courses a larger commons or multi-classroom space to meet, debate, and discuss relevant issues. Students and classes are not able to combine to collaborate or to share the ideas presented in the courses. Social studies and English classes are a natural fit for interdisciplinary work and combined course work, but the high school is limited due to not being able to accommodate a larger classroom for this type of course offering.

Science is a subject area in which students learn best through experimentation and hands-on applications. With the small size of AHS science classrooms and the large numbers of students that move through the classes, there is limited opportunity for individual students to engage in those personalized activities.

While physical education coursework typically depends on active engagement, these classes also rely on being able to teach in a classroom. The physical education department lacks a classroom space for instruction. Accordingly, this type of instruction is sometimes done in the gymnasium or fieldhouse, impeding students from having meaningful dialogue around sensitive subjects.

AHS hosts a robotics club but is unable to capitalize on this interest during the school day because the building lacks the space to offer anything beyond an introductory robotics course. Similarly, AHS is able to offer only two introductory courses in engineering—one in mechanical and civil engineering and the other in electrical and energy engineering. The space available for these courses is in the interior of the high school with no access to move robotic constructions or other projects outside for testing.

Art classrooms are too small to accommodate student demand and current class size. There is no room to create and store large or three-dimensional projects over a period of time. Located in the lowest level of the building, the art rooms lack the natural light needed for work that involves subtle hues.

The facility constraints on student services and on special needs programming are numerous and serious. The school needs at least one more psychologist, but lacks appropriate office space where that person could administer psychometric tests and other instruments. The Transitions program for at-risk students is located in an annex of the Collins Center. Some of these students have returned from psychiatric hospitalization. Staff members are isolated from the rest of the school while working with young adults who could present with challenging behaviors. This annex is also vulnerable to unauthorized people entering from other parts of the campus.

The district has an excellent program for ages 18 to 22, but must house the program at Central Office because the high school has no space for it any longer. The Central Office is also running out of space, with limited room for the program to expand. This program has only two classrooms, but is adding about 15 students next year alone. The district is looking into costly alternatives such as renting space at a local college. There is a small kitchenette in the Central Office space that these students can use, but the setting lacks the capacity to foster the level of work the students need related to activities of daily living.

Many of the high school's current therapy offices open onto a busy hallway; there is no suite or outer office. Therefore, this area is very public and students' privacy is jeopardized when they access services, attend evaluation sessions, etc. Some students choose to avoid the services altogether, rather than risk being noticed by their peers.

The special education office area has no lobby, no reception area, no waiting room, no place to store student records and other important documents—such as program standards and compliance guidelines—and ensure their confidentiality. Many of the spaces do not have windows or any access to the outside. The spaces seem to be unwelcoming, not private, not parent- or community-friendly, and not professional. The department head's office is so tiny that the door barely clears the desk when someone enters the room. Many of the special education offices have only one door and look out over the school library. In an emergency, staff's attempted egress would be visible to anyone below who might present a danger. More office or testing room space is needed for the Transitional/Vocational Coordinator, who must regularly conduct transitional assessments for students in substantially separate special education programs—Excel, Applied Behavioral Analysis, and Social Academic Independent Learner programs. The coordinator also needs to make many phone calls and have private meetings pertaining to vocational placements, scheduling and other student matters. Currently, the coordinator's desk is located within the very small career classroom, where students are present.

The school social worker offices are spread out in the building. Two are located in the guidance department hallway, and two are located off large hallways with high levels of student traffic and no way to protect students' privacy when they enter or exit.

The conference room for the special education meetings is completely inadequate. The school ranges from 280 to 320 students with IEPs, which translates into about 600 meetings per year, and the space does not accommodate a complete IEP team. Again, there is no suite or outer office, leaving parents to wait in the hall. There is no private venue for people who become upset or volatile—not an unusual occurrence in these situations—and the family drama spills into the hallway.

There is no place for the special education teachers to meet for any kind of common planning time. The district's goal is to provide students with a co-teaching model (regular and special education), yet there is no place for teachers to plan curricular strategies. Most special education teachers squeeze individual desks into classroom corners and undertake their planning there even as other teachers are conducting classes.

The school does not have adequate spaces for special education summer programs. Many students with autism have difficulty regulating their response to room temperature. It is hard for them to work when the room is uncomfortably warm, and the classrooms can become exceptionally warm in the summer.

Larger and more specialized rooms are needed for the Excel and Career Programs. Excel is a self-contained program that focuses on functional academics and hands-on learning experiences that promote independence. The existing area does not support the teaching of activities of daily living and pre-vocational work.

Additional academic support space is needed to serve larger or combined groups of students. The Student Services Department currently has only one regular-sized classroom to house these larger groups. The current crowded room prevents teachers from separating students and working individually with fewer distractions. Further, the temperature in this classroom is uncomfortably cold on a routine basis.

All special education classrooms need to be larger. Currently, any class with more than six students becomes cramped. The rooms offer no flexibility for grouping students. Bookshelves and windowsills are stacked with materials because there is no storage space in the classrooms. Not only does this appear unprofessional to visitors, it does not model the organizational skills that students are encouraged to develop.

The nursing space is not physically connected in any way with other departments. Nurses must go down the hallway for assistance. This isolation could be dangerous if there is a volatile situation or a need for immediate help in a medical emergency. Private space for consultation would be desirable. Students on eating programs come to the clinic, but there is no semi-private space for them to use. In addition, the nursing space is on the second floor, making it difficult in emergencies to transport students to a hospital privately.

Given the lack of space, school-based clinicians are limited in being able to offer small-group counseling opportunities and to take full advantage of the new H-block advisory schedule to address students' needs around mindfulness practices, development of positive coping strategies for stress and anxiety, grief management, substance-related supports, etc.

Students, and the community in general, have reported a lack of pride in the existing facility due to its age, layout, and spatial deficiencies. The persistently crowded conditions have a negative impact on the morale of teachers, who feel the building conditions are preventing from doing their best work. These findings were also cited in the attached 2011 report of the NEASC Visiting Committee. The District believes a renovated or new facility would offer the opportunity to significantly improve the size and fit of all educational spaces, to correct spatial relationships, and to increase students' pride in their high school and their engagement in the learning process. A new or renovated building would also affirm to staff and students that they are valued and that the work they do is important and respected by the community. Educational space limitations include a lack of large and small group learning areas, maker space opportunities, and availability of new programming. The district believes it is imperative to have the ability to create effective learning and teaching spaces so that students can meet new state standards. Renovated or new space would create new programming opportunities and allow for multimodal teaching, thereby enabling AHS students to be both locally and globally competitive.

REQUIRED FORM OF VOTE TO SUBMIT AN SOI

REQUIRED VOTES

If the SOI is being submitted by a City or Town, a vote in the following form is required from both the City Council/Board of Aldermen **OR** the Board of Selectmen/equivalent governing body **AND** the School Committee.

If the SOI is being submitted by a regional school district, a vote in the following form is required from the Regional School Committee only. FORM OF VOTE Please use the text below to prepare your City's, Town's or District's required vote(s).

FORM OF VOTE

Please use the text below to prepare your City's, Town's or District's required vote(s).

Resolved: Having convened in an open meeting on _____, prior to the closing date, the _____ *[City Council/Board of Aldermen, Board of Selectmen/Equivalent Governing Body/School Committee]* of _____ *[City/Town]*, in accordance with its charter, by-laws, and ordinances, has voted to authorize the Superintendent to submit to the Massachusetts School Building Authority the Statement of Interest dated _____ for the _____ *[Name of School]* located at _____ *[Address]* which describes and explains the following deficiencies and the priority category(s) for which an application may be submitted to the Massachusetts School Building Authority in the future

_____ ; *[Insert a description of the priority(s) checked off on the Statement of Interest Form and a brief description of the deficiency described therein for each priority];* and hereby further specifically acknowledges that by submitting this Statement of Interest Form, the Massachusetts School Building Authority in no way guarantees the acceptance or the approval of an application, the awarding of a grant or any other funding commitment from the Massachusetts School Building Authority, or commits the City/Town/Regional School District to filing an application for funding with the Massachusetts School Building Authority.

CERTIFICATIONS

The undersigned hereby certifies that, to the best of his/her knowledge, information and belief, the statements and information contained in this statement of Interest and attached hereto are true and accurate and that this Statement of Interest has been prepared under the direction of the district school committee and the undersigned is duly authorized to submit this Statement of Interest to the Massachusetts School Building Authority. The undersigned also hereby acknowledges and agrees to provide the Massachusetts School Building Authority, upon request by the Authority, any additional information relating to this Statement of Interest that may be required by the Authority.

Chief Executive Officer *

School Committee Chair

Superintendent of Schools

(signature)

(signature)

(signature)

Date

Date

Date

* Local Chief Executive Officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice.