

ATTACHMENT A
MODULE 3 – PRELIMINARY DESIGN PROGRAM REVIEW COMMENTS
PROJECT TEAM RESPONSE

District: City of Lowell
School: Lowell High School
Owner’s Project Manager: Skanska USA Building, Inc
Designer Firm: Perkins Eastman/ DPC
Submittal Due Date: February 24, 2017
Submittal Received Date: February 27, 2017 (Locals Actions Certificates received on March 10, 2017)
Review Date: February 28 - March 30, 2017
Reviewed by: C. Alles, J. Jumpe, K. Brown

MSBA REVIEW COMMENTS

The following comments¹ on the Preliminary Design Program (PDP) submittal are issued pursuant to a review of the project submittal document for the proposed project presented as a part of the Feasibility Study submission in accordance with the MSBA Module 3 Guidelines.

3.1 PRELIMINARY DESIGN PROGRAM

Overview of the Preliminary Design Program Submittal	Complete	Provided; <i>Refer to comments following each section</i>	Not Provided; <i>Refer to comments following each section</i>	Receipt of District’s Response; <i>To be filled out by MSBA Staff</i>
OPM Certification of Completeness and Conformity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Table of Contents	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.1 Introduction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.2 Educational Program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.3 Initial Space Summary	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.4 Evaluation of Existing Conditions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.5 Site Development Requirements	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.1.6 Preliminary Evaluation of Alternatives	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

¹ The written comments provided by the MSBA are solely for purposes of determining whether the submittal documents, analysis process, proposed planning concept and any other design documents submitted for MSBA review appear consistent with the MSBA’s guidelines and requirements, and are not for the purpose of determining whether the proposed design and its process may meet any legal requirements imposed by federal, state or local law, including, but not limited to, zoning ordinances and by-laws, environmental regulations, building codes, sanitary codes, safety codes and public procurement laws or for the purpose of determining whether the proposed design and process meet any applicable professional standard of care or any other standard of care. Project designers are obligated to implement detailed planning and technical review procedures to effect coordination of design criteria, buildability, and technical adequacy of project concepts. Each city, town and regional school district shall be solely responsible for ensuring that its project development concepts comply with all applicable provisions of federal, state, and local law. The MSBA recommends that each city, town and regional school district have its legal counsel review its development process and subsequent bid documents to ensure that it is in compliance with all provisions of federal, state and local law, prior to bidding. The MSBA shall not be responsible for any legal fees or costs of any kind that may be incurred by a city, town or regional school district in relation to MSBA requirements or the preparation and review of the project’s planning process or plans and specifications.

3.1.2 EDUCATIONAL PROGRAM

Provide a summary and description of the existing educational program, and the new or expanded educational vision, specifications, process, teaching philosophy statement, as well as the District's curriculum goals and objectives of the program. Include description of the following items:

Provide the following Items		Complete; <i>No response required</i>	Provided; <i>District's response required</i>	Not Provided; <i>District's response required</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
1	Grade and School Configuration Policies	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Class Size Policies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	School Scheduling Method	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Teaching Methodology and Structure				
	a) Administrative and Academic Organization/Structure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Curriculum Delivery Methods and Practices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) English Language Arts/Literacy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d) Mathematics	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	e) Science	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	f) Social Studies	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	g) World Languages	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	h) Academic Support Programming Spaces	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	i) Student Guidance and Support Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Teacher Planning and Professional Development	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Pre-kindergarten	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Kindergarten	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Lunch Programs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Technology Instruction Policies and Program Requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Media Center/Library	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Visual Arts Programs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Performing Arts Programs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Physical Education Programs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Special Education Programs	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Vocation and Technology Programs				
	a) Non-Chapter 74 Programming	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Chapter 74 Programming	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Transportation Policies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Functional and Spatial Relationships	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Security and Visual Access Requirements	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSBA Review Comments:

(Please provide the following information in the revised educational program provided in the Preferred Schematic Report):

1) Provide a more detailed narrative and clarification on how the house offices are utilized. Include advantage and disadvantages of the current and proposed spaces. What purpose do they serve?

District's Response:

House offices are a means to break down the large student body into smaller cohorts for the purpose of student support and guidance. Having physically separate office areas ensures a more manageable and personable experience.

The house office is the epicenter of student support. It is here that students are serviced for behavioral, social-emotional, or guidance needs. The house dean oversees their caseload of students with the support of two guidance counselors, one social worker and one office clerk and one clerk scheduler. The house staff works as a team to help address any issues a student might have whether it is attendance, discipline, social-emotional scheduling or college preparation. This house approach is very effective in helping to ensure students are receiving the services they require. The issue currently is that the house offices have had to conform to previously established space. This has left two house offices without the ability to have the social worker in the same space as the rest of the team. It has also led to various space configurations that are not optimum. The fact that the houses are spread out between two buildings also hinders collaboration between houses and the distance some houses are from the main entrance requires parents/guardians to walk quite a distance to meet with the house staff.

4c) Provide a more detailed narrative that explains what current practices are provided and the type of spaces needed in order to better provide for delivery of the English Language Arts/Literacy curriculum. Provide proposed changes and why, or statement that no changes are being proposed.

District's Response:

Proposed Change for All Departments: To help ensure the best learning opportunities for students, all academic department teaching spaces must include:

- Modern classrooms with interactive LCD projectors, adequate whiteboard space, adequate storage, maximum natural lighting with windows that open, ample outlets for device charging, FM systems for all classrooms and a streamlined, moveable teacher desk and podium.
- Classrooms that are clustered into inter-disciplinary configurations (adjacencies) to promote cross planning and discourse between academic teachers. While this will not have a direct impact on student scheduling (our school clusters students into multiple classes in grade 9 only), the adjacencies and common teacher planning

space will address the NEASC concern that teachers do not have enough time or space to plan collaboratively across departments.

- In terms of adjacencies, we propose that Math and Science teachers have this common planning space together (for STEM collaboration as mentioned in the last bullet) and that English and History teachers have this common space as well (for Humanities collaboration as mentioned in the last bullet).
- Multiple large, flexible group instruction spaces that can be used for combined classes, presentations, lectures, seminar, faculty meetings, and parent meetings. These could be various-sized spaces that can be split up or combined (with movable walls) to better suit the needs of the various users.
- Adequate book storage for all departments, but especially for the core departments (English, Foreign Language, History, Math and Science) where textbooks and trade books are used extensively in all classes. We would prefer to have a central storage location for many of the books but with smaller distributed book and supply storage for specific departments

4d) Provide a more detailed narrative that provides the proposed changes in the Mathematics program and why, or statement that no changes are being proposed.

District's Response: as noted above in response to 4c

4f) Provide a more detailed narrative that provides the proposed changes to the Social Studies program and why, or statement that no changes are being proposed.

District's Response: as noted above in response to 4c

11) Provide a more detailed narrative that includes how the current Visual Arts Programs curriculum is delivered, and number of periods per academic cycle. Additionally, include a description of advantages and disadvantages for the current and proposed spaces.

District's Response:

The visual arts curricula includes both traditional and digital arts classes. Visual arts courses include Introduction to Studio Art, Intermediate Studio Art and Studio Art Portfolio. Additional traditional arts courses include Drawing and Sculpture. Digital Media Arts include TV Production, Animation, Digital Photography, Graphic Design and Digital Audio Production. In all arts classes students engage in well-rounded curricula delivered through whole and small group instruction where engagement in the process produces product. The visual arts curricula consists of experiences in four interrelated kinds of artistic activity: creating, producing, responding and connecting. Students involved in these ways of learning gain knowledge about the arts, refine their perceptual and expressive skills, and exercise their powers of analysis in order to make and justify judgments about works of art. Multiple sections of Digital Photography, Introduction to Graphic Design, Introduction to TV Production, Drawing, Sculpture and Introduction to Studio Art along with Art Exploration, Animation, Studio Art Portfolio, Advanced Graphic Design, Advanced TV Production, and Film, Video and Society meet approximately 90 times for 50 minute class periods per

semester. Each of the 5 Visual Arts educators teaches 5 classes per day providing 25 arts offerings per week and approximately 500 periods of arts instruction per academic cycle.

Currently, the arts classrooms and studios are on three floors and located in two buildings, a definite disadvantage. While the majority of the traditional arts classes take place in close proximity, the TV studio, graphic design lab, digital photography lab and digital audio piano lab are not on the same floors or within one building. The current size of the classrooms and labs are adequate and in some cases somewhat small due to the large numbers of students enrolled, but their lack of proximity makes it difficult to collaborate and share resources. The labs also lack appropriate updated technology, data storage and file sharing systems. For example, students creating audio files in the digital audio lab have no way of digitally sharing those files with students in TV Production who may need audio for a roll in at the start of a news segment. Students in TV production cannot digitally access artwork created in the graphic design lab for use. Cameras and other technology are not easily shared as the labs where they are housed are on different floors and in some cases different buildings. The furnishings in the labs currently do not allow for small, flexible groupings as the tables are long built in pieces of furniture and chairs do not have wheels. Large volume data storage specifically for the arts classes is essential.

12) Provide a more detailed narrative that includes how the current Performing Arts Programs curriculum is delivered. Additionally, provide a narrative that includes the justification of the proposed piano labs, practice rooms, dance rooms, and specialized rooms and how it would be used, integrated within the existing school schedule, staffed (etc. part-time), and maintained.

District's Response:

The performing arts curricula currently includes Concert Band, Marching Band, Jazz Band (After School), Concert Chorus, Show Choir, String Ensemble, Introduction to Theater Arts, Advanced Theater Arts, Dance I, II, III, IV, Advanced Dance and Senior Dance Project. In addition, we also offer Beginner Guitar, Advanced Guitar Beginner and Advanced Piano, World Drums, and Advanced Music Theory. Like the Visual Arts, the Performing Arts curricula consists of experiences in four interrelated kinds of artistic activity: creating, producing, responding and connecting. Arts education broadens students' thinking about ways of expression and communication, enabling them to create and perform, as well as to respond and connect to both historical and contemporary forms. Performing and visual arts studios, classrooms and digital labs are places where emerging intuitive and intellectual skills can be physically tested. They are places in which students can reflect upon, play with, and remake in their own voices that which they hear, see, and feel in their lives. As they learn to communicate through the arts, students understand why people need more than words alone for eloquent expression.

The space required to engage in these artistic endeavors need to be sizable enough to hold large classes such as band (currently 62 students) as well as the instruments. In particular, percussion instruments such as timpani, marimbas, and vibraphones have large footprints and require space to move around them. Accessible, secure storage for these instruments is needed in addition to secure storage for uniforms, music and additional equipment such as the drum major's conducting podium, portable sound system and the color guard flags, uniforms and gear. The furnishings for the band room should include chairs that allow

students to sit with the correct posture while playing an instrument. A sound system, appropriate technology – projector or flat screen TV monitors should also be included. Practice rooms and an office area are essential as the band performs outside of the school day throughout the year. A meeting area plus band office and restroom facilities to support both during the day and out of school use of the band area.

The piano /digital audio production lab serves dual purposes as it provides students instrumental instruction in piano as well as instruction in the creation of digital music.

The chorus room should have a flexible footprint. The current choral room has built in risers and carpeted floor. The room would be far more functional with portable platform and choral risers, hardwood floor, mirrored wall similar to dance studio and storage for choral equipment and show choir costumes. Technology should include a sound system, digital piano for the classroom teacher and flat screen monitors or projector. Appropriate furniture would include chairs designed specifically for sitting with good posture while singing.

The Dance classrooms/studio should be large enough for 2 simultaneous classes with ballet bars, mirrored walls, appropriate flooring, sound system and technology with adequate sound insulation so each class can play music at an appropriate volume without interrupting the other class. Currently, the dance program has almost 300 students participating and continues to grow each year.

Students are engaged in arts curriculum that enables them to communicate fluently and effectively in the arts, apply both imagination and rational thinking in the creation of art, understand the value of reflection and critical judgment in creative work while presenting art publicly with confidence, pride and distinction. In addition, students in the arts learn how world cultures have been historically shaped and influenced by the arts and understand the ways in which the arts contribute to everyday life.

13) Provide a narrative that explains how the current Physical Education curriculum is delivered. In addition, the submittal indicates the physical education facility at Lowell High School includes an existing swimming pool. The MSBA requests that the square footage for the pool and associated spaces be relocated to the 'Other' category of the space summary. Per 963 CMR 2.16(5), any work associated with renovating the existing space will be considered ineligible for reimbursement and costs associated with this work must be itemized in each cost estimate moving forward in the MSBA process. Based on current practice the MSBA would not support a project that includes a newly constructed swimming pool.

District's Response:

Students are required to take 4 years of Physical Education for 1 semester per year. Therefore, the Physical Education spaces are used by at least 9 classes each period.

The programming excerpt below shows a consolidated tally of all PE courses (9th-12th grade), prorated for the new design enrollment, with the necessary number of sections (53) to maintain class size averages (in this case 26). PE classes meet 5 times/cycle (totaling 265 sessions) that are divided by available periods/cycle (35) to tabulate the number of teaching stations needed (7.57 if 100% utilized).

PE Courses 9-12

Subject	Course Enrollments	Class Size Avg.	Number of Sections	Sessions per Cycle	Total Sessions in Cycle	Teaching Stations Needed
Physical Education	[Gym] 1359	26	53.0	5	265.0	
					265.0	7.571

Using the estimated number of teaching stations and applying an 85% utilization factor, these numbers increase to 8.9 spaces required. This is the justification for 9 fully utilized teaching stations. The 9 spaces are planned as 6 half-court stations in the Gym (18,000sf), 1 PE alternative space (strength/fitness) at 3,000sf, 1 open floor space (proportioned for flexible use as wrestling) at 3,500sf and 1 multi-purpose space at 3,000sf.

Physical Education classes do rotate into the natatorium multiple times per semester, it is used 5 periods per day, 25 periods per week the entire school year, it is considered a vital part of the educational and community needs given the ubiquitous waterways within the city and, the limited means by which many students and families can attain these skills and abilities.

Pool uses include;

- Water safety instruction for students in physical education classes.
- Opportunities for special education students to participate in aquatic activities
- Learning about and participation in lifetime fitness activities
- Adult education and senior programs

The pool and associated spaces will be moved to the 'Other' category of the Space Summary. **An updated Space Summary is included as an attachment to this document.**

Please note spaces associated with Physical Education programs will be further evaluated in subsequent submittals. The District may be required to adjust/square footage in spaces associated with the above.

15b) Note that an acknowledgement and review letter from the DESE regarding the Chapter 74 Programming is required for MSBA to forward a recommendation to its MSBA Board of Directors for approval to proceed into schematic design for those projects that include new programs or adjustments to current offerings, including expansions, contractions, or discontinuations.

District's Response:

The District understands that the DESE is a separate entity and an approval letter must be received by the MSBA in order to make recommendations to the Board.

17) Provide additional context regarding the decisions that have been made with regard to the various functional and spatial programmatic adjacencies.

District's Response:

- Classrooms that are clustered into inter-disciplinary configurations (adjacencies) to promote cross planning and discourse between academic teachers. While this will not have a direct impact on student scheduling (our school clusters students into multiple classes in grade 9 only), the adjacencies and common teacher planning space will address the NEASC concern that teachers do not have enough time or space to plan collaboratively across departments.
- In terms of adjacencies, we propose that Math and Science teachers have this common planning space together (for STEM collaboration as mentioned in the last bullet) and that English and History teachers have this common space as well (for Humanities collaboration as mentioned in the last bullet).
- Multiple large, flexible group instruction spaces that can be used for combined classes, presentations, lectures, seminar, faculty meetings, and parent meetings. These could be various-sized spaces that can be split up or combined (with movable walls) to better suit the needs of the various users.
- Adequate book storage for all departments, but especially for the core departments (English, Foreign Language, History, Math and Science) where textbooks and trade books are used extensively in all classes. We would prefer to have a central storage location for many of the books but with smaller distributed book and supply storage for specific departments.

18) Indicate the date of the most recent Medical Emergency Response Plan that was submitted to DESE. In addition, please confirm that first responding emergency representatives will be consulted in the planning process and associated requirements will be incorporated into the preferred solution.

District's Response:

The Emergency Response Plans (ERPs) for the Freshman Academy and Main High School are dated September 17, 2015. The ERP's are included as an attachment to this document.

Additional Educational Program comments:

- *Provide additional description regarding the level of inclusion for the special education students, and how this will affect the design of the program and the building design.*

District's Response:

The co-taught inclusion classrooms have two teachers, one special education and one general education teacher teaching in the following areas: one English I, two English II, one English III, one Geometry, one Algebra, one Biology. The makeup is approximately 1/3 special education with sizes of approximately 26-28 students. This does not affect the design, these are regular sized classrooms. Every special education student is assigned a liaison who helps track progress and supports students as needed and ensures that IEP are being followed and maintained. All special education classrooms should be at general ed size with the exception of 9 Fundamental classrooms that are 1/2 size and the Instructional Support classroom that is larger than average with all the necessary supporting resources including every textbook and instructional material.

The special education classrooms will be dispersed throughout the school. The only exception is the intensive needs program (two classrooms) needs to be adjacent with a connecting door for toilet/toilet training purposes. The autistic classrooms (four classrooms) should be paired also for the same purpose and for teacher/student collaboration, though the pairs can be in separate sections of the school.

- *Provide additional description regarding the services or support provided for the higher functioning special education students.*

District's Response: as noted above

- *Special education classrooms should be equal in size to a general classroom; please verify.*

District's Response:

Special Education classrooms are proposed at the same size as general educational classrooms (900sf) + an additional 50sf where toilet rooms are needed and special education small group rooms (Sensory & Fundamentals) are the same size as general educational small group rooms (450sf).

- *Provide explanation regarding science labs, utilization and scheduling. Why are eight limited to 1,000 nsf? How will these be outfitted differently? Also, when referenced in the rest of the educational plan, is a standard sized science room 1,440 or 1,000 sf?*

District's Response:

Standard sized (1440sf) science labs are planned for 10th-12th grades. 9th Grade students participate in a more generalized science curriculum that utilizes classroom space rather than full-service labs. The 9th grade rooms are proposed as wet-classrooms (1,000sf) to be outfitted with perimeter counters, movable tables and sinks, but do not include fume hoods, gas service and prep or chemical rooms. The curriculum is introductory-based instruction, focused on theory and virtual tasks and is aligned with current and future objectives. Freshman also utilize a pull-out Maker Space for larger project work and STEM oriented activities.

The programming excerpts below show a consolidated tally of science courses (freshmen vs grades 10th-12th +ELL), prorated for the new design enrollment, with the necessary sections (34 for freshman, 99.5 +15 for grades 10th-12th +ELL) to maintain class size averages (approx. 24, with ELL at approx. 20). Science classes meet 5 times/cycle (totaling 170 for freshman, 572.5 for grades 10th-12th +ELL) that are divided by the available sessions/cycle to tabulate the teaching stations needed (4.86 freshman and 16.36 for 10th-12th +ELL if 100% utilized).

Freshman Science

Subject	Course	Enrollments	Class Size Avg.	Number of Sections	Sessions per Cycle	Total Sessions in Cycle	Teaching Stations Needed
C/H Integrated Science	[Sci Lab]	705	24	29.0	5	145.0	
Explor in Integrated Science	[Sci Lab]	68	14	5.0	5	25.0	
						170.0	4.857
Total		773	23	34			4.857

10th-12th Science

MCAS Bio Prep, Princ of Bio	[Sci Lab]	44	15	3.0	5	15.0	
C/H/A Bio, Expl in Bio Gen Bio	[Sci Lab]	809	26	31.0	5	155.0	
Anat/Physio/Forens/MicroBio	[Sci Lab]	462	26	18.0	5	90.0	
Genetics	[Sci Lab]	83	24	3.5	5	17.5	
						277.5	7.929
C/H Chemistry	[Sci Lab]	513	24	21.0	5	105.0	
A Chemistry	[Sci Lab]	34	17	2.0	5	10.0	
						115.0	3.286
H/A Physics	[Sci Lab]	236	24	10.0	5	50.0	
Partnership Experience	[Sci Lab]	9	9	1.0	5	5.0	
Geolo/Meteor/Ocean/Astron	[Sci Lab]	206	26	8.0	5	40.0	
Clean Energy Career Explor	[Sci Lab]	17	17	1.0	5	5.0	
Environmental Studies	[Sci Lab]	20	20	1.0	5	5.0	
						105.0	3.000
Total		2433	24	99.5			14.214

ELL Science

ELL Integrated Science	[Sci Lab]	91	18	5.0	5	25.0	
ELL Biology	[Sci Lab]	152	19	8.0	5	40.0	
ELL Chemistry	[Sci Lab]	41	20	2.0	5	10.0	
						75.0	2.143

Using the estimated number of teaching stations and applying an 85% utilization factor, these numbers increase to 5.7 freshman spaces and 19.8 labs for grades 10-12 +ELL. With freshman organized in teams of 8 (2 Eng, 2 Soc.S, 2 Math, 2 Sci.), and requiring 24 general classrooms, the number of freshman science rooms were rounded-up to complete 4 teams and result in 8 freshman science rooms and 20 grade 10-12 +ELL science labs with an overall utilization of 76%.

- *Provide more detail on language labs, how they are different from general classrooms, how they are scheduled and managed, and clarification regarding grouping as a department or semi dispersed by language.*

District's Response:

We are not looking for traditional language lab space with fixed listening booths, but rather flexible spaces within foreign language and ELL classrooms that can integrate technology to have “speaking and listening” centers taking place throughout the departments. These classrooms are the regular, classroom teaching spaces (not a

shared lab) for ELL and Foreign Languages and ELL and Foreign Languages classes will be scheduled there throughout the day.

- *Provide additional description regarding policies and facilities related to the proposed transgender equality and for students with physical and cognitive impairments.*

While a formal policy is still under review by the District, the proposed language matches some of the current thinking on the matter and suggests that modest accommodations will be provided in the form of supplemental single user toilet rooms dispersed into each building or substantially different wing.

Accessibility to Restrooms, Locker Rooms and Changing Facilities:

A student may access the restrooms, locker rooms and changing facilities that corresponds to the student's gender identity, with the understanding that he/she is subject to the same rules as all other students utilizing the facilities. Upon a student's request, any student who is uncomfortable using a shared facility, regardless of the reason, shall be provided with a safe and non-stigmatizing alternative. Based upon availability and the appropriateness to address privacy concerns, accommodations that may be offered to a student who desires increased privacy may include, but are not limited, to: (a) use of a nearby private area (such as a gender neutral restroom, gender neutral changing room, nurse's restroom, or a nurse's office); (b) a separate changing schedule, or (c) use of private area within a public area (such as, an area separated by a curtain, or a bathroom or changing stall with a door). Schools will consult with a student and the parents/guardians of the student if they are involved in the process or in the case of a younger student with the student's parents/guardians, to ensure accessibility and address any concerns that may arise.

- *Provide clarification and details regarding the Engineering labs and the clean energy and sustainable design lab spaces to confirm these spaces will be flexible enough to be reconfigured in the future. How are these spaces scheduled and used? Can this be integrated with the science instruction in terms of timing/length of class and the facilities used?*

District's Response:

The Engineering Lab and Clean Energy/Sustainable Design Lab are planned at the same size and configuration as MSBA's science lab standards, with fixed perimeter counters/storage and movable tables within. In each case the rooms will require different types of storage/prep and equipment, such as 3D printers, model making materials or robotics kits, but neither is anticipated to have fume hoods or gas service.

These spaces are scheduled in the same manner as general science or electives, with associated courses also being part of a pathway track option for students. The 2 Engineering Labs are calculated at 79% utilization, a sufficient use of spaces that are also different enough not to be combined bended with general science.

- *Provide additional description regarding the auditorium size and use, and the smaller performance spaces; where are they? How are they used and scheduled?*

District's Response:

The auditorium which is in the 1922 building contains seating for 1,200 is used daily five periods per day for a dance class. It is also used during the school day for any type of class or house level meeting, and for special events that come to the high school (i.e. plays, guest speakers). This venue is used after school for dance practice, dance band, show choir performances, plays and community meetings. The Little Theater in the 1980 building seats 125 and is used during the school day for a variety of purposes to include combining classes for presentations, testing, special events, and trainings. After school it is used for special events, parent meetings, and community meetings.

The Burgoyne Theater is located in the Freshman Academy and seats 300. This venue is used extensively by the Freshman Academy where they can hold cluster level meetings with students. It is also used for smaller productions both during the day and after school.

- *Consider the need and level of separation of the Freshman Academy. Other than existing space constraints, why does it exist educationally? Consider not blocking off the area too much in order to allow for future adaption.*

District's Response:

Established in 2005 the Freshman Academy was designed to forge greater articulation between grades 8 and 9. The Freshman Academy employs a team-based model similar to that seen in middle schools and offers programming and structure which promotes an effective and positive transition for students entering their first year at Lowell High School.

Upon entering, students from the 8 public middle schools and various private schools are placed into cluster teams. A cluster is a small team of content teachers that works extensively with a group of approximately 200 students. Cluster teams are placed on one floor to allow teachers close proximity to one another in order to minimize transitions and create a small school feel within the larger high school community. Through the offered academic and social supports, our vision is to insure that all students who enter as freshman successfully leave with the skills and knowledge necessary to be successful Lowell High School students

- *The Educational Program does not describe the educational need for a natatorium; please elaborate.*

District's Response: As noted in the response to question 13 previously

- *The life skills/intensive needs/autism classrooms must be incorporated into the design in a way that does not separate and/or stigmatize them. They also need to be of at least equivalent size to the general education classrooms. Please confirm.*

District's Response:

All Special Education spaces are dispersed throughout the school and integrated into academic, arts and vocational/tech areas within the proposed plans. The rooms are equal, or larger in size than general academic classrooms.

- *Clarify if hearing impaired students are supported in an inclusionary model and if so, how?*

District's Response:

The DHOH students follow a regular schedule with an interpreter in general education classes or special education classes. For one or two periods per day DHOH students are in a substantially separate classroom to work on sign language skills and other study skills.

- *Describe any potential regarding FM systems for all classrooms as part of the greater push toward ubiquitous technology.*

District's Response:

Ultimate decisions on project scope will be made during the schematic design phase, but the design intends to prioritize the fundamental qualities of teaching and learning spaces that improve learning, including daylight, thermal comfort/control, air quality and acoustics. Sound reinforcement within the room is a key component of a quality space and particularly important for students with varied needs and abilities.

No further review comments for this section.

3.1.3 INITIAL SPACE SUMMARY

Provide the following Items		Complete; <i>No response required</i>	Provided; <i>District's response required</i>	Not Provided; <i>District's response required</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
1	Space summary; one per approved design enrollment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Floor plans of the existing facility	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Narrative description of reasons for all variances (if any) between proposed net and gross areas as compared to MSBA guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSBA Review Comments:

1) The MSBA has performed an initial review of the space summary and offers the following:

Please note that this review is based on a new building option with a design enrollment of 3,520. Considerations will be taken for a renovation project if that is considered for a Preferred Schematic option.

MSBA notes that, as a general comment regarding the submitted space summary, that the total net area of proposed “capacity generating” educational spaces (core academic classrooms, science labs, vocational spaces, etc.) is significantly below MSBA guidelines, but the overall net area of the proposed building is well above MSBA standards. This is due, in part, to excessive non-educational spaces such as Administration / Guidance, ROTC spaces, Custodial & Maintenance, and the “Other” spaces listed below. In addition, many non-capacity generating spaces in Art & Music are above MSBA standards. The MSBA considers it critical that the District and its Designer aggressively pursue design strategies to achieve compliance with the MSBA guidelines for all proposed projects in the new program. The MSBA encourages the District and its consultants to focus on the educational needs of the students and continue to look for ways to efficiently provide the supports needed for the students in an educationally appropriate, flexible, and cost effective school.

- **Core Academic** – Per the information provided, the following spaces will be proposed in order for the District to deliver its educational program:

Anticipated Core Academic Spaces	MSBA Comments
<i>(112) General Classrooms (9-12)</i>	<i>Proposes 8 classrooms below guidelines</i>
<i>(8) 9th Grade Science Labs* (1,000 nsf)</i>	<i>Undersized per MSBA guidelines</i>
<i>(20) Science Labs*</i>	<i>Proposes 3 labs in number below guidelines, including 9th grade labs</i>
<i>(22) Science Prep Space</i>	<i>No preliminary comments</i>
<i>(6) Small Group Seminar Spaces</i>	<i>Proposes 2 spaces below guidelines</i>
<i>(17) 450 nsf Teacher Planning</i>	<i>Proposes 3,450 nsf below guidelines</i>
<i>Green House/Growing Room</i>	<i>Spaces unique to District**</i>

Teacher Development/ Training (Little Theatre)	Spaces unique to District**
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**Please provide proposed scheduling information specific to these spaces.*

***The MSBA will rely on the District’s Educational Program and additional information to understand how proposed spaces are required and will be utilized in the proposed project. These spaces may be considered ineligible for reimbursement.*

Proposed programmatic spaces are 11,540 nsf below MSBA guidelines, including a shortage of 8 general classrooms below standard (describe how the proposed number of classrooms meet the District’s educational program). To endure adequate space is provided for delivery of experiential science based curriculum that can be delivered safely, the MSBA will not accept science labs that are below the 1,440 nsf as required in the guidelines. There is a 3,600 nsf Teacher Development/ Training area that is also called a “Little Theatre and Control”. Please provide additional details that further describe this function. Include the advantages and disadvantages, the justification of the proposed space and how it would be used, scheduled, integrated within the existing school schedule. Please provide a more detailed narrative that includes the proposed greenhouse space and how it would be used, scheduled, integrated within the existing school schedule, staffed, and maintained. Additionally, please include the benefits the proposed greenhouse provides and how the space supports the educational program.

District/Designer Response:

A combination of factors have resulted in the proposed LHS Space Summary being below MSBA guidelines in some categories and over in others. A significant factor is class size averages; although seemingly modest at 1 student different than MSBA defaults, the difference between 23 and 24 students in a school of this size with so many classrooms, is 8 rooms (see thumbnail calculations below);

$$3520 \text{ students}/23 \text{ class size}/85\% \text{ utilization} = 180.1 \text{ places to be}$$

$$3520 \text{ students}/24 \text{ class size}/85\% \text{ utilization} = 172.5 \text{ places to be}$$

The larger class sizes show a significant difference in number of rooms where there are many of the same (8 less over 100 classrooms or 3 less over 30 science rooms), but do not show a significant difference in departments where there are fewer rooms, like Art with just 6 or Music, also with 6. What is noticeable, and highlighted in the MSBA review, is that the square footage is larger in some areas, like Art and Music. The larger areas associated with Art and Music are the result of needing to plan for more students per room.

As responded to the Educational Program comments, Science Labs are sized and will be configured to meet MSBA guidelines at 1,440sf. The freshman science program does not utilize labs, except for STEM related activities that occur in the proposed Maker Space. The 9th grade teams include science classrooms, proposed at 1,000sf and outfitted with perimeter counters, movable tables and sinks, but do not include fume hoods, gas service and prep or chemical rooms. The curriculum is introductory-based instruction, focused on theory and virtual tasks and is aligned with current and future objectives.

Additionally, students are spending their time in a variety of spaces that do not align as general classrooms. ROTC as an example, is a program with a cohort of students following a track of electives toward career opportunities in the military. These are capacity generating spaces in the same way the Arts or Tech spaces are assigned and scheduled. The 5 classrooms associated with ROTC are appropriately listed within the Vocations and Technology category of the Space Summary.

The **Teacher Development/Training Room** is proposed as part a comprehensive plan to provide a combination of dispersed planning rooms that are sized for both small, localized and large, centralized planning. The 12,000sf allocated for teacher planning in the MSBA Space Summary guidelines is proposed to include 17 smaller planning rooms, a medium sized department cluster and the large development and training room in question. The space is intended for larger and small planning activities, full departments and inter-department work, gatherings, professional development and training. This type of space exists, currently coined the Little Theater. It is one of the more highly utilized, flexible use spaces in the school and cited as a high priority to maintain.

The Lowell High **Greenhouse Space** will be used as any other hands on lab would be. All science teachers would have access, and the usage time would be built into the regular teaching schedule. The room would also be accessible to any after school STEM related activities such as the Environmental Club. The lab will be maintained by the Department Chair and Lead Teacher.

The connections for science knowledge utilizing a greenhouse space will have the biggest educational impact on the Life Science based courses at Lowell High School. These include courses such as Biology, Genetics, Environmental Studies and Microbiology. Additionally, science skills such as observation, inquiry, and problem solving are natural connections to every area of science.

Topics we currently cover in our Life Science based courses that would be enhanced by a greenhouse space include:

- Scientific method – a seed lab that we do as a common assessment would be greatly enhanced by more space and possibly more conditions to vary for the seeds in this beginning lab for 9th grade.
- Biochemistry - pH, temp/light regulation - following up on the seed lab is the topic of water, solutions, and acids and bases. All of these could be done in the context of the plants grown in the first lab, providing the students with real world applications surrounding issues such as clean water access and global availability, and acid rain
- Cell structure and function - plant/animal cells comparison - the students would have the ability to examine plant cells that they had grown themselves, and compare the structures to those of common animals cells.
- Genetics - Wisconsin Fast Plants activities - these plants are just as they're named, and grew very fast in order to allow students to pollinate them for several generations to see genetics in action through plants

- [Ecology](#) - the needs of plants and the role of producers in the ecosystem could be taught in a green room/greenhouse; native and invasive species could be discussed as well
 - [Bacteria and viruses](#) - the role of nitrogen fixing bacteria are extremely important as one of the cycles of matter on Earth, and plants play a big role in that cycle
 - [Human anatomy - digestive system](#) - the students love to discuss nutrition, and the topics of nutrient requirements, types of crop foods, sustainability, global food supply, and land use for agriculture would benefit from this type of space
- **Special Education** – *As noted the Special Education program is subject to approval by the Department of Elementary and Secondary Education (“DESE”). The District should provide the information required for this submittal with the Schematic Design Submittal. Formal approval of the District’s proposed Special Education program by the DESE is a prerequisite for executing a Project Funding Agreement with the MSBA.*

District/Designer Response:

The District understands that the DESE is a separate entity and their approval of the Special Education program is a prerequisite for the Project Funding Agreement.

- **Art & Music** – *Proposed programmatic spaces exceed the MSBA guidelines by 5,125 nsf. This overage is due to larger art, band, and chorus rooms to accommodate larger class sizes, which is offset by a lack of ensemble and smaller music practice spaces. There is provision of a 1,000 nsf Piano/ Digital lab, 425 nsf of office spaces, and 2,400 nsf of dance space. The MSBA encourages the District to try to find efficiencies in the program and building design, and will continue to evaluate these proposed spaces in future submittals (refer to item #12 on page 3 of this review related to additional information requested in Art & Music spaces). No further preliminary comments.*

District/Designer Response:

Please refer to the response provided for items 11 & 12 of the Educational Program.

- **Vocations & Technology** – *The overall proposed square footage is 2,185 nsf below the MSBA guidelines. This area includes 3,600 nsf dedicated to the Chapter 74 Marketing class as well as 10,400 nsf for ROTC. The MSBA requests that the 10,400 nsf associated with the “ROTC” spaces be relocated to the ‘Other’ category of the space summary in subsequent submittals. Please further describe the Banking/Credit Union space, and its anticipated utilization. Please relocate 400 nsf associated with Business (Bank/Credit Union) to the ‘Other’ category. No further preliminary comments.*

District/Designer Response:

The ROTC program is a pathway program with students assigned as they would be for any vocational/technical subject. We think it is most appropriate to keep these spaces categorized under the Vocations & Technology category and assume they are recognized as capacity generating by the MSBA.

The Banking/Credit Union is a pull-out space associated with the Business, Marketing courses. Students have direct assignments as part of their course work,

but are not assigned via the Master Schedule. This space is an integral part of the teaching and learning objectives for retail marketing program.

- **Health & Physical Education** – *Proposed programmatic spaces exceed the MSBA guidelines by 14,038 nsf.*
 - *The MSBA requests that the 8,250 nsf associated with the natatorium and associated spaces be relocated to the ‘Other’ category of the space summary. Costs associated with this work must be itemized in each cost estimate moving forward in the MSBA process. Per 963 CMR 2.16(5), any work associated with this renovated space will be considered ineligible for reimbursement, and, as noted above, MSBA would not support a project that includes a newly constructed swimming pool.*
 - *The District is proposing 49,950 nsf, of which 8,250 is associated with pool facilities. Exclusive of the pool facilities the program includes 9 teaching stations totaling 41,700 nsf which exceeds the area included in MSBA guidelines by 5,788. Prior to the MSBA accepting this variation to the guidelines provide scheduling and utilization calculations that demonstrate the need for the additional teaching stations to deliver the District’s health and physical education curriculum. Refer to the attached Memorandum which presents MSBA policy regarding auditorium and gym spaces beyond those included in the guidelines.*
 - *This category also includes excessive storage (2,900 nsf extra), additional Health Instructor’s Office space (250 nsf extra), a trainer’s room (600 nsf), and Athletic Director’s Secretary space (450 nsf). In subsequent phases of the study, MSBA will expect the design team to continue to look for ways to increase the efficiency of the building design.*
 - *These overages are partially offset by locker rooms that are 10,112 nsf smaller than guidelines.*

No further preliminary comments.

District/Designer Response:

Please refer to the response and scheduling excerpts for PE programs included with the Educational Program.

The District recognizes that the MSBA policies prohibit funds to be put toward this the pool and associated scopes, but notes that it intends to maintain or replicate the pool, and would like to make a case for keeping it as a critical asset to the school and community surrounded by significant waterways.

The District seeks clarification and would like to ensure that pursuing this tract does not jeopardize the agreement with the MSBA and Lowell High School project in total.

- **Media Center** – *Proposed programmatic spaces appear to align with the MSBA guidelines. No further preliminary comments.*
- **Auditorium/Drama** – *The proposed programmatic spaces for this category exceed the MSBA guidelines by 5,116 nsf. The MSBA will participate in the costs in this category up to 10,400 nsf. The District may choose to build an auditorium in excess of MSBA guidelines, but no more*

than 13,300 net square feet (based on an upper limit of 1,000 seats). The District has currently proposed 15,516 nsf for the category which exceeds the allowable MSBA guidelines by 2,216 nsf. Refer to the attached Memorandum which presents MSBA policy regarding auditorium and gym spaces beyond those included in the guidelines.

District/Designer Response:

The District recognizes the MSBA memorandum, but given the very unique size and scale of the school, would like to make the case for not only including an Auditorium that seats a modest 1/3 of the design enrollment, but hopes the State will see this as fully reimbursable. We would like to highlight that a District of similar size, might have several High Schools rather than one, and could be eligible for auditoriums in each that would meet (or approach) the 2/3 population standard set in the MSBA Space Summary formulas. The District feels that the cap unfairly punishes the largest school districts, particularly those seeking a single school community and efficiency.

The District seeks clarification and would like to ensure that pursuing this tract does not jeopardize the agreement with the MSBA and Lowell High School project in total.

- **Dining & Food Service** – *Proposed programmatic spaces appear to align with the MSBA guidelines. No further preliminary comments.*
- **Medical** – *Proposed programmatic spaces appear to align with the MSBA guidelines. No further preliminary comments.*
- **Administration & Guidance** – *Proposed programmatic spaces exceed the MSBA guidelines by 3,020 nsf. This is due to modifying to fit the space needs of a school this size, including house offices, additional assistant principals, Social Workers, and a Student Support Office. Eligibility of this excess space will continue to be evaluated in future submittals based on the educational plan. No further preliminary comments.*
- **Custodial & Maintenance** – *Proposed programmatic spaces exceed the MSBA guidelines by 2,175 nsf. The submittal notes that this is due to the guidelines not scaling with the size of the school except the storeroom and receiving and supply. The District notes that a school of this size will require multiple Network rooms, which accounts for 1,000 nsf of this overage. MSBA will continue to evaluate the need for spaces in this category in the subsequent Preferred Schematic Report. No further preliminary comments.*
- **Other** – *Proposed programmatic spaces exceed the MSBA guidelines by 7,700 nsf. This is made up of the following spaces:*
 - *Lowell Community Health Center- 1,500 nsf- It should be noted that MSBA would accept the inclusion of the Community Health Center into the project, however this square footage will be considered ineligible for reimbursement.*
 - *Catie's Closet- 700 nsf- Please further description how this space supports the educational plan. MSBA will continue to evaluate eligibility of this area in the subsequent Preferred Schematic Report.*
 - *Trio- 2,100 nsf- Provide further description how this space supports the Educational Plan. MSBA will continue to evaluate eligibility of this area in the subsequent Preferred Schematic Report.*

- *Various Offices (In School Suspension, Score Mediation, Latino Connection, Student Activities, Substitute Teacher Office, DARE Office/Security, SRO Office/Entry) that total 3,400 nsf. MSBA will continue to evaluate eligibility of this area in the subsequent Preferred Schematic Report. No further preliminary comments.*

The proposed Total Net Floor Area is 393,416 nsf, which exceeds the MSBA Guidelines by 27,709 nsf (refer to each space category above for MSBA review comments).

Please note that upon selection of a preferred solution, the District may be required to adjust spaces/square footage that exceeds the MSBA guidelines that is not supported by the Educational Program provided.

No further review comments for this section.

3.1.4 EVALUATION OF EXISTING CONDITIONS

Provide the following Items		Complete; <i>No response required</i>	Provided; <i>District's response required</i>	Not Provided; <i>District's response required</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
1	Confirmation of legal title to the property.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Determination that the property is available for development.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Existing historically significant features and any related effect on the project design and/or schedule.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Determination of any development restrictions that may apply.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Initial Evaluation of building code compliance for the existing facility.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Initial Evaluation of Architectural Access Board rules and regulations and their application to a potential project.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Preliminary evaluation of significant structural, environmental, geotechnical, or other physical conditions that may impact the cost and evaluations of alternatives.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Determination for need and schedule for soils exploration and geotechnical evaluation.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Environmental site assessments minimally consisting of a Phase I: Initial Site Investigation performed by a licensed site professional.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Assessment of the school for the presence of hazardous materials.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Previous existing building and/or site reports, studies, drawings, etc. provided by the district, if any.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSBA Review Comments:

1) The information provided indicates that an expanded existing site option is being considered for the project that will include the acquiring of an adjacent property located at 75 Arcand Drive. In the District's following submittal, please provide a timeline and course of action proposed for acquiring full access, control and use of the property.

District response: If the expanded site option is recommended by the City Council to be the Preferred Option and recommended solution for the District, the requested information will be provided in the Preferred Schematic Report submittal describing the timeline and course of action proposed for acquiring full access, control and use of the property.

2) The information provided indicates there is a right-of-way located on the existing site granted to the trolley and a utility easement to the Masonic Center that are not acknowledged in the narrative. Please elaborate in the District's response to this review.

District Response: Refer to attached letter from the City regarding the easement.

The Cawley site's deed also indicates there is a setback from Clark Road of 35', as well as a note that part of the site is to be maintained and used for "suitable practice field and play space for football and other athletic sports for Lowell High School students." In the following submittal, please provide any update on ongoing land use investigations including Article 97 park land.

District response: If the Cawley site option is recommended by the City Council to be the Preferred Option and recommended solution for the District, the requested information will be provided in the Preferred Schematic Report submittal describing the ongoing land use investigations including Article 97 park land.

In addition, the submittal also indicates that any alterations to the 1922 building that changes the exterior appearance or character are not likely to be approved by the Lowell Historic Board. In the PSR submittal please provide an updated narrative of all known development restrictions.

Response: Please refer to response to question 3 regarding Historic review. The PSR will include an updated narrative of all known development restrictions.

3) Please include the timeline associated with filing with the Massachusetts Historical Commission ("MHC") and obtaining MHC approval prior to construction bids in the schedule submitted with the Preferred Schematic Report submittal. The District should keep the MSBA

informed of any decisions and/or proposed actions and should confirm that the proposed project is in conformance with Massachusetts General Law 950, CRM 71.00.

Response: Project Notification Forms for all the design options contained in the PDP will be submitted to the MHC prior to the submission of the PSR. Review comments from the MHC on the proposed sites will be included in the PSR. A Project Notification Form for the Preferred Option selected in the PSR will be re-submitted to the MHC for review to determine whether the project constitutes an “adverse effect” on historic resources per CMR 71.05(a). If adverse effect is determined then the project team will consult with the MHC to avoid, minimize, or mitigate the adverse effect. At the end of the consultation process a Memorandum of Agreement (MOA) would be drafted between the MHC and the project proponent on agreed upon measures. The consultation process for the MOA, if required based on the results of the MHC review, will be completed during the Schematic Design module.

4) The submittal notes that the combined storm water and sewer system does not meet DEP 2008 Storm water Regulations. In the Preferred Schematic Report, please confirm that all applicable environmental and site permits are included in the schedule and that all requirements are being met. In addition, the submittal notes that the zoning on the Cawley site limits the building height to 35’ or 2.5 stories. However, the preliminary planning options presented are for a four story building. It is also noted that four acres of this option are in the Tewksbury jurisdiction. In response to this submittal, please confirm these development restrictions, provide a narrative that describes the local zoning approval process and if variances will be pursued, and clarifies the District’s ability to potentially incorporate Tewksbury land within the proposed Lowell project.

Response: The PSR will note that the proposed project will comply with the DEP 2008 Stormwater Regulations. There will be no illicit connections associated with the Proposed Project. All applicable permits for the Proposed Project will be obtained prior to any construction. The environmental and site permits will be included in the schedule in the PSR.

Response: The PSR will include a narrative that includes the local zoning approval process including any required variances, and clarified the District’s ability to potentially incorporate Tewksbury land within the proposed Lowell project as appropriate for the selected Preferred Option.

7) The submittal notes that the structure of all of the existing buildings appears to be in satisfactory condition with limited repairs. However, the submittal notes a need for further investigation and documentation associated with portions of the buildings, particularly the “1922” building addition and the Freshman Academy. In the following submittal please provide a timeline associated with these additional investigations and the preliminary cost impact this information could have on a potential project.

Response: Additional structural investigations were conducted in the “1922” building addition and in the Freshman Academy during March 2017. Exploratory openings were made in ceilings at the exterior walls and corridor walls to gain a better understanding of the existing floor and roof construction in each building (as-built details and condition). No testing of structural materials was conducted. No conditions were observed that would impact structural costs identified in the Preliminary Design Program. These findings will be included in the updated existing conditions included the PSR. The information obtained from these investigations will be used by the Design Team to further evaluate the structural aspects of options presented in the Preferred Schematic Report.

Page 15 of the Evaluation of Existing conditions notes that any renovation option that results in a new mechanical system would likely no longer use the Steam Plant Building, which would be turned over to the City. In section 3.1.4 C, there are multiple references to the 1922 building and Freshman Academy building requiring replacement of steam systems associated with the new hot water heating boiler plant in the Steam Plant building with no mention of decommissioning the Steam Plant. Please clarify.

Response: Steam Plant Decommissioning Clarification:

Base Repair Option: Under this option, the Steam Plant building shall remain part of Lowell HS. The boiler plant equipment within the building will be replaced and upgraded to a high efficiency hot water plant to serve the Coburn/Sullivan/1922 building and Freshman Academy building. The Lord/Fieldhouse (1980) Building will be served by a new high efficiency boiler plant that will be installed within the Lord/Fieldhouse building.

Full Renovation Option: Under this option, a new high efficiency hot water boiler plant shall be installed within the Coburn/Sullivan/1922 building to serve these buildings. A new boiler plant will be installed within the roof penthouse mechanical room to serve the Freshman Academy building. The Lord/Fieldhouse (1980) building will be served by a new high efficiency boiler plant that will be installed within the Lord/Fieldhouse building. Existing Steam Plant building boiler plant use and decommissioning of the existing Steam Plant shall be coordinated to support the construction phasing of the Coburn/Sullivan/1922 and Freshman Academy buildings. When use of the existing Steam plant is no longer required for project phasing, the existing Steam plant shall be decommissioned and the Steam Plant building shall be turned over to the City of Lowell.

Addition/Renovations Option 2 & 3: Under these options, a new high efficiency hot water boiler plant shall be installed within the Coburn/Sullivan/1922 building to serve these buildings. The Lord/Fieldhouse (1980) building will be served by a new high efficiency boiler plant that will be installed within the Lord/Fieldhouse building. Considering that both the Steam Plant and Freshman Academy building will be turned over the City once use of the existing Steam Plant is no longer required to support the Lowell HS project construction phasing, the following is recommended:

- A new boiler plant is installed within the Freshman Academy building to serve the Freshman Academy
- Existing boiler plant is then decommissioned after the existing Steam boiler plant is no longer required for Temporary Heating/Phasing purposes.
- Two listed above would be performed as part of a separate project outside of the scope of the Lowell HS project.

Updated Full Renovation and Addition/Renovation Options 2 & 3 HVAC narratives will be updated in the PSR to indicate this scope of decommissioning the existing Steam Plant.

The submittal may include apparent contradictions regarding NFPA 13 compliance of existing sprinkler piping and heads in the 1922, Lord, and Freshman Academy buildings (the submittal notes that the Freshman Academy is protected by sprinklers and appears to be in compliance with NFPA 13. However, a recommendation to replace all existing sprinkler piping and heads in the 1922, Lord, and Freshman Academy buildings is required to bring up to NFPA 13). Please clarify.

Response: The proposed replacement of existing sprinkler piping and heads was related to the extent of renovations including, mechanical, electrical, plumbing, and ceiling replacement and not related to compliance with NFPA 13.

8) In the PSR submittal, please provide a schedule and timeline associated with completing the required soils geotechnical testing and the recommended Phase 2 testing at the existing high school site if this is the preferred site, or a Phase 1 and subsequent testing if the Crawley site is chosen as the preferred site.

Response: The Geotechnical borings at the Existing High School and Cawley sites have been performed, the draft report is under review by the design team and the final report will be included in the PSR.

Response: The Phase I ESA for the Cawley Site is in the process of being completed, and will be included in the PSR. The preliminary conclusions of the Phase I for the Cawley Site do not recommend Phase II investigations. The field investigation portion of the Phase II assessment at the current Lowell High School facility has been completed, and analytical results are being evaluated. The report will be included in the PSR.

9) The Phase 1 report for the existing high school site in the submittal notes the potential existence of a 12,600 gallon underground storage tank, and various potential soil contaminations from historical uses. MSBA notes that all costs associated with abatement of any contaminated soil, and abatement of fuel storage tanks must be itemized in the cost estimates in the Schematic Design submittal as ineligible for MSBA reimbursement. Please acknowledge.

Response: Comment acknowledged. It should be noted that the proposed alternatives for the existing high school site do not include demolition or construction activities in the vicinity of the Steam Plant, and therefore assessment or removal of this tank is beyond the scope of the project. However, subsurface environmental assessment was conducted in areas where potential future construction might occur under the alternatives being considered.

10) It should be noted that all costs associated with the removal of asbestos containing floor and ceiling tiles are categorically ineligible for MSBA reimbursement. Additionally, the project team should be aware of the current policies associated with MSBA's participation in the abatement and removal of hazardous materials. Please provide a timeline associated with completing a comprehensive survey according to the EPA NESHAP regulations if this existing site is selected in the Preferred Schematic Report.

UEC Response: It is acknowledged that the costs associated with the removal of asbestos containing floor and ceiling tiles are ineligible for MSBA reimbursement. In March 2017, destructive testing was performed at various locations in the school for the presence of Asbestos Containing Materials (ACM) as well as for structural observations. Exterior excavation was completed in April to determine if ACM dampproofing exists on foundation walls. Survey performed to date by UEC included all accessible ACM, hazardous materials and the assumption for hidden ACM and hazardous materials that might be found during renovations or demolitions. Once the project/scope has been determined by the selection of the Preferred Option, the hazardous materials consultant, UEC, will perform further investigations to ensure that suspect materials are addressed. UEC has already included the cost for known hazardous materials and an allowance for hidden hazardous materials in the PDP estimates. Updates for the investigations performed in March and April will be included in the PSR.

11) The information provided for the Cawley Stadium site was limited to the confirmation of legal title to the property. No further information was provided. Information related to the Wang Middle School site was not provided in this section despite being included in the preliminary alternatives list. In the following submittals, for options selected for further investigation, the District and design team should provide information pertaining to historical features noted in the site selection analysis matrix, development restrictions, code compliance, architectural access board regulations, existing conditions, and an evaluation of the presence of hazardous materials of any structures on the sites, as well as determination for the need of Phase I Site investigation and soil testing.

PE Response: Information for the existing Cawley and Wang buildings were not included in this section because none of the buildings were being reused as part of the High School program. The sites were analyzed in Section 3.1.5. The PSR will include pertinent information for the Preferred Option, including: historic significance, development restrictions, code compliance, architectural access board regulations, existing conditions, and an evaluation of hazardous materials of any structures, and soil testing. As stated above in Comment 8, the Phase I ESA for the Cawley Site is underway and the report will be included in the PSR.

No further review comments for this section.

3.1.5 SITE DEVELOPMENT REQUIREMENTS

Provide the following Items		Complete; No response required	Provided; District's response required	Not Provided; District's response required	Receipt of District's Response; To be filled out by MSBA Staff
1	A narrative describing project requirements related to site development to be considered during the preliminary and final evaluation of alternatives.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Existing site plan(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSBA Review Comments:

1) The information provided indicates that a matrix was used to evaluate the site options. However, the matrix did not include a comparative analysis such as a numerical scoring system. In order for the MSBA to further understand the District's site selection process, please provide a final evaluation of alternatives that further describes why each of the seven final sites were either eliminated from or advanced to final evaluations in the PSR report.

This submittal indicates that the existing utilities surrounding each site were evaluated. In response to these review comments, please verify if the capacity of the utilities are sufficient to meet the needs of a proposed project. In addition, please provide a timeline associated with testing for the need for a fire pump.

Response:

The project team utilized the Site Selection Analysis matrix included in Appendix Q of the PDP. This analysis utilized 15 different site selection criteria to evaluate each of the 7 sites under consideration. A color coded ranking system was utilized to rank each of the criteria (dark green for Most Favorable, light green for Favorable, pink for Less Favorable, and red for unfavorable). This system was used to narrow the sites to the 3 locations; Existing HS, Wang and Cawley. The team subsequently refined decisions in evaluating subsequent Design Options by comparing the Pros and Cons which are included in the Design Options Appendix R of the PDP.

New utility services resulting from the Proposed Project will connect to the existing utility mains in the surrounding streets. Improvements and connections to infrastructure will be reviewed with City of Lowell or Town of Tewksbury as appropriate, as part of the site plan review process for the project. This process will include a comprehensive design review of the proposed service connections, an assessment of Project demands and system capacity, and the establishment of service accounts, as required. The existing electrical services have the capacity to serve the existing site, there two (2) services each rated at 4,000 amperes. Utility company will be contacted at schematic design level.

The need for a fire pump will be determined after the Preferred Option is selected in SD and the costs will be included in the budget if required.

No further review comments for this section.

3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

Provide the following Items		Complete; <i>No response required</i>	Provided; <i>District's response required</i>	Not Provided; <i>District's response required</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
1	Analysis of school district student school assignment practices and available space in other schools in the district	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Tuition agreement with adjacent school districts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Rental or acquisition of existing buildings that could be made available for school use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Code Upgrade option that includes repair of systems and/or scope required for purposes of code compliance; with no modification of existing spaces or their function	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Renovation(s) and/or addition(s) of varying degrees to the existing building(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Construction of new building and the evaluation of potential locations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	List of 3 distinct alternatives (including at least 1 renovation and/or addition option) are recommended for further development and evaluation.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSBA Review Comments:

5) Based on the information provided in the submittal, the 1922 building has an inefficient layout that contains windowless labs and classrooms that do not relate to the educational program. Given this, please further describe the rationale for the 1922 building minimal renovation.

District/Designer Response:

All the existing buildings have inefficiencies that include things like inaccessible areas requiring additional ramps/elevators, buried/windowless zones that are not conducive to all uses, amount of space between fixed stairs (doesn't allow efficient reuse of every sf), inefficient circulation and very thick walls.

In the Full Renovation option, virtually all teaching/learning spaces in the 1922 building (except for Dance) have daylight; one Art room relies on skylights however. The 1980's (Lord) building has a centralized set of Science Labs that do not achieve daylight, although light tubes could be explored as a means to provide daylight. Regardless, the lack of views for these spaces is undesirable.

Because of these reasons, coupled with the remote Freshman Academy, the Full Renovation is not a preferred or desirable option. The District has maintained this Option for comparative purposes.

6) Other than the traffic issues noted, please further describe why a co-located high school on the Wang Middle school site is not being included for further consideration.

District/Designer Response:

Simply put, the Wang Site does not have enough acreage to support a new high school building, its associated parking, vehicular circulation and outdoor space. Furthermore, the location is undesirable in that it would consolidate the very large high school alongside the elementary and middle school. The concerns for doing this are both the magnitude of students and age spans, as well as the shear traffic and pedestrian volumes.

7) From the eleven options initially explored, the Preliminary Evaluation of Alternatives concludes with the selection of the following four options to be further evaluated:

- Full Renovation of existing; preliminary estimated project cost ~\$333.5m
- Addition/Renovation Option 2; preliminary estimated project cost ~\$334m
- Addition/Renovation Option 3; preliminary estimated project cost ~\$334m
- New Construction @ Cawley Site; preliminary estimated project cost ~\$332.5m

For clarity, please label or title the potential options as Option A, B, C, D, etc., in subsequent submittals. In addition, the MSBA requests that the District continue to carry estimated cost associated with a “Base Repair” (existing facility) option through the feasibility study for comparative purposes.

District/Designer Response:

Due to the already complex stakeholder group that has numerous City leaders, agencies, committees and community groups, and information which has been publicly disseminated using the current naming conventions over a long period, the Design Team respectfully requests maintaining the current naming conventions and keeping them consistent through the Feasibility Phase.

No further review comments for this section.

3.1.7 LOCAL ACTIONS AND APPROVAL

Provide the following Items		Complete; <i>No response required</i>	Provided; <i>District's response required</i>	Not Provided; <i>District's response required</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
1	Certified copies of the School Building Committee meeting notes showing specific submittal approval vote language and voting results, and a list of associated School Building Committee meeting dates, agenda, attendees and description of the presentation materials	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Signed Local Actions and Approvals Certification(s):				

	a) Submittal approval certificate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Grade reconfiguration and/or redistricting approval certificate (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Provide the following items to document approval and public notification of school configuration changes associated with the proposed project				
	a) A description of the local process required to authorize a change to the existing grade configuration or redistricting in the district	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) A list of associated public meeting dates, agenda, attendees and description of the presentation materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c) Certified copies of the governing body (e.g. School Building Committee) meeting notes showing specific grade reconfiguration and/or redistricting, vote language, and voting results if required locally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	d) A certification from the Superintendent stating the District's intent to implement a grade configuration or consolidate schools, as applicable. The certification must be signed by the Chief Executive Officer, Superintendent of Schools, and Chair of the School Committee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSBA Review Comments:

3.1.7) The MSBA cursory review email dated February 27, 2017 notes that per the OPM Certification Cover Letter, the District will submit all documentation related to Local Actions and Approvals, and its associated Certifications following its February 28, 2017 City Council Meeting. These documents were received March 10, 2017 with no further comments required.

Response: A copy of the final executed Appendix D Local Actions and Approvals Certification is attached to this response.

No further review comments for this section.

3.1.8 APPENDICES

	Provide the following Items	Complete; <i>No response required</i>	Provided; <i>District's response required</i>	Not Provided; <i>District's response required</i>	Receipt of District's Response; <i>To be filled out by MSBA Staff</i>
1	Current Statement of Interest	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	MSBA Board Action Letter including the invitation to conduct a Feasibility Study	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Design Enrollment Certification	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSBA Review Comments:

No further review comments for this section.

Response: A copy of the Capitol Budget, vote and Meeting Minutes which were not included in the PDP are attached to this response.

Regarding past projects:

Both the MSBA's enabling legislation, M.G.L. c. 70B, and the MSBA's regulations, 963 CMR 2.00 et seq. specifically address the issue of past projects. MSBA records show MSBA payment for the following projects:

- *\$28,407,855 for the Lowell High School Renovation and addition Project # CA 19963459 completed in 1998.*
District Response:
 - a. With a New School option at Cawley, the 20 year use period for the 1998 renovation expires in 2018 long before Lowell High School would take occupancy of the New School so therefore there is no cost recovery anticipated or applicable.
 - b. With a renovation option, the 20 year use period for the 1998 renovation expires in 2018 long before Lowell High School substantial completion of that project so therefore there is no cost recovery anticipated or applicable.

- *\$733,509 for the Lowell High School Roof Repair Project #201101600505G completed in Oct, 2012.*
District Response:
 - a. With a New School option at Cawley, the 20 year use period for the Roof Repair would be at 10 years in October, 2022. The MSBA's reimbursement was \$733,509. The MSBA will want to recover approximately 50% of the pro-rated value which is approximately \$367,000 depending on date of Substantial Completion or Occupancy, whichever comes first. If Occupancy in the new school occurred in 2022 it would be 50%.

Pursuant to these requirements and depending on the School District's ultimate plan for the School, the MSBA may recover a pro-rated portion of the financial assistance that the School District has received for previous renovation grants. The exact amount recovered will be established at the conclusion of the Schematic Design / Total Project Budget phase. Please see the MSBA website to view the MSBA's regulations, statute and closed school bulletin for additional information.

End