

5.7 Staples High School

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5.7.1 Architectural Conditions Analysis

Existing Building The Staples High School is a sprawling structure consisting of multiple connected buildings and additions spread mainly across the First Floor. A Lower Level run under the Gymnasium and Field House and then a mezzanine level occurs in the Auditorium. Two additional stories rise above the First Floor in the more recent large L-shaped classroom wing and main entrance (which also has a partial Basement).



Currently one hundred and six (106)* classrooms serve approximately 1,890** students.

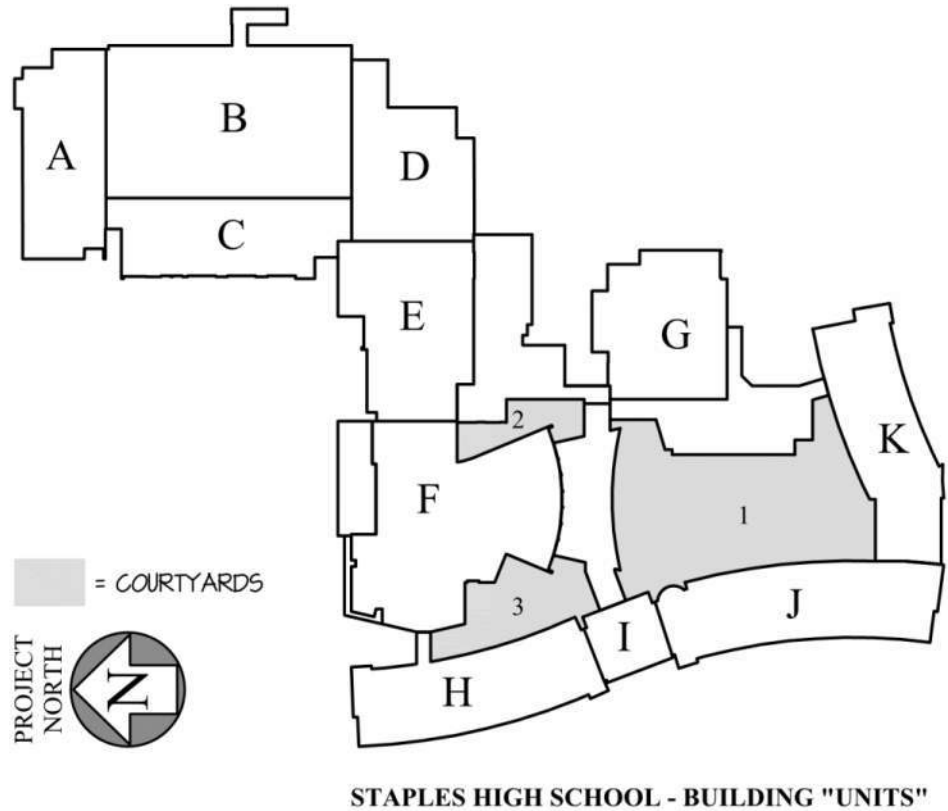
The current contiguous facility consists of approximately 461,382 gross square feet (per Town of Westport Assessor's Office – Online Assessment Database):

Lower Level & Basement:	54,167 GSF
First Floor:	263,467 GSF
Second & Third Floors:	143,748 GSF (including mezzanine)

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Based on the 2006 renovations and additions, the current facility is broken down into smaller “Units” to designate the various portions of the building. For example, Unit B is the Field House area, D is the Gym area, E is the Cafeteria area, F is the Auditorium area, and G is the Library area. These Unit designations are referenced in this Report.

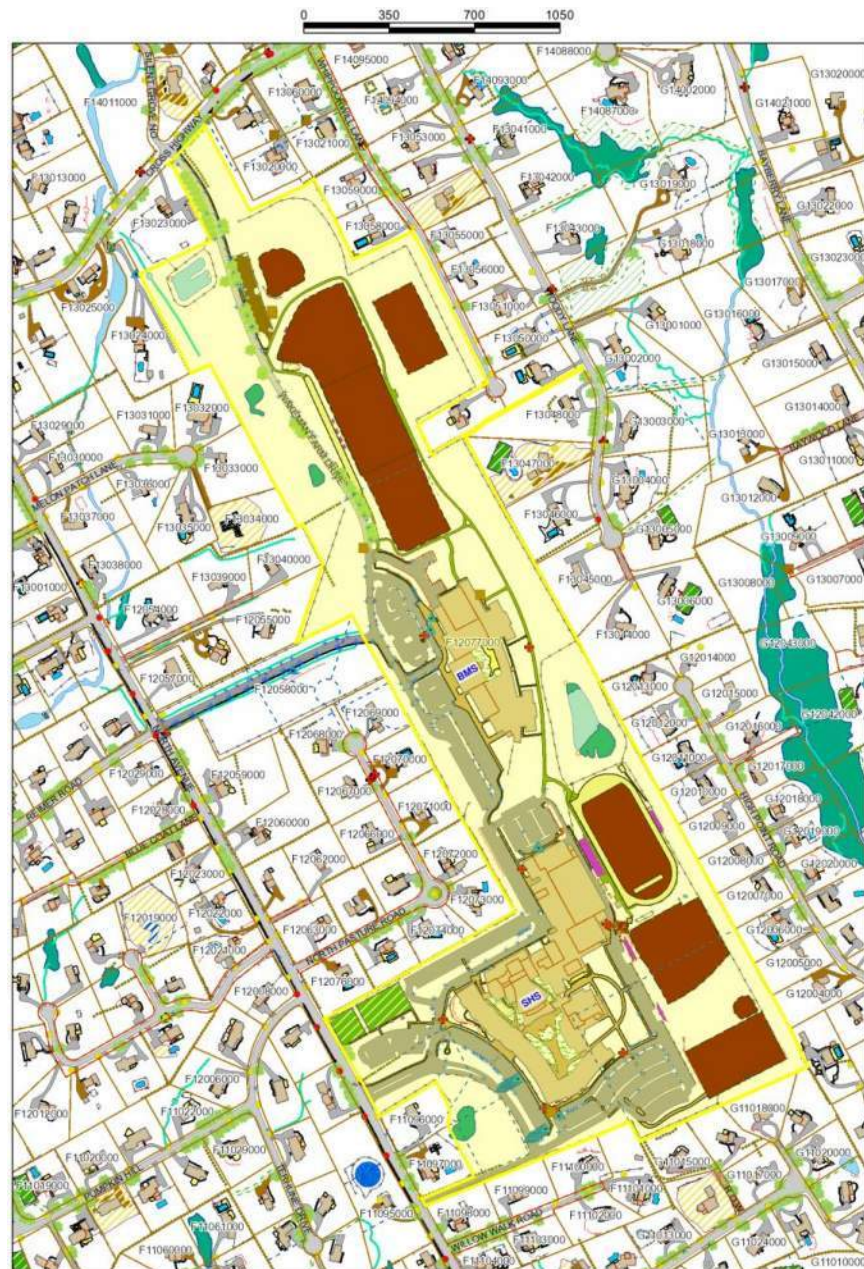


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The structure shares its site with Bedford Middle School to the north and sits on a relatively flat site. On the west side, the grade slopes down towards playing fields while the north side slopes up towards the middle school.

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Staples High School has football, baseball, soccer, and field hockey fields including two (2) dugouts. See site/Civil facility survey for more information.

This report includes descriptions of the various systems, the areas they serve, system capacities, existing conditions, areas of concern, and recommendations for each system. Existing Code-related items and issues are reviewed for conformance with building codes presently in effect at the time of this Study.

- * Represents physical room count. Actual classroom space uses may differ in practice.
- ** Data from Westport Public Schools Facility Summary dated 5-6-2019.

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5.7.1 Architectural Conditions Analysis

Building Profile	<p>Staples High School 70 North Avenue Westport, CT 06880</p>
Grades:	9th – 12th Grade
Original Construction:	1957 (8 separate buildings)
Renovation #1 / Addition:	1973**; 95,000 GSF** (connected)
Renovation #2 / Addition:	1979**; 129,952 GSF** (Field House, Pool, Shop Rooms)
Renovation #3:	1994 (Auditorium, Black Box Theater; accessibility upgrades)
Renovation #4 / Addition:	2006; 236,430 GSF** (Units H thru K, Library, Auditorium Lobby)
Lot Size:	100.12* acres (combined with BMS)
Zoning:	Zone AAA*
Number of Parking Spaces:	See site/Civil facility survey
Building Facade:	Brick veneer; precast concrete; corrugated metal panels
Roof Construction:	Flat Roofs – EPDM
Occupancy Classification:	E, Educational A-3, Assembly B, Business
Construction Type:	Varies (multiple additions)
Fire Protection System:	Sprinkler system throughout Four (4) sprinkler mains and two (2) FD connections distributed throughout the facility.
Emergency Generator:	Yes (3 generators located near Gym, Pool, and 2006 Addition)
Handicap Accessible:	Yes (2 elevators; 2 lifts; 3rd elevator only to Basement of 2006 Addition)
Number of floors:	3, + Basement (2 different areas)
Existing Total Floor Area:	Approx. 461,382* Gross Square Feet (includes a 5,966* GSF mezzanine)

The facility has tight zoning height restrictions because of the location of the facility within a contiguous federal area (former NIKE missile site) as well as a residential community.

* Data from Town of Westport Assessor's Office – Online Assessment Database

** Data from Westport Public Schools Facility Summary dated 5-6-2019

5.7.4 Mechanical, Electrical, Plumbing, and Fire Protection

Plumbing

Plumbing Utilities

- I. Domestic Water:
 - a. Existing Domestic Water Service: The building is currently served by two (2) domestic water mains fed from the Aquarion Water Company. One serves the original building and the second serves the 2004 addition. Both are 4" water services.
2. Natural Gas:
 - a. Existing Natural Gas Service: The building is equipped with three (3) natural gas meters from Southern Connecticut Gas. One service enters the building at Area A and serves the gas fired generator. The second service is located at Area E and serves the boilers, water heaters and kitchen equipment in this area. The third service is located at Area J and serves the boilers and water heaters in this area.

Plumbing Fixtures and Specialties

- I. Plumbing fixtures:
 - a. Original 1973 Building: Plumbing fixtures are generally vitreous china with manual and automatic flush valves. Fixtures in the area of the building are generally in poor to fair condition.
 - b. 2004 Building Addition: Plumbing fixtures are generally vitreous china with automatic flush valves. Fixtures in the area of the building are generally in good condition.
2. Specialties: At Area A, there are two (2) Marlow, 15 HP pool water pumps that are in fair condition.



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5.7.4 Mechanical, Electrical, Plumbing, and Fire Protection

3. Specialty Systems:
 - a. At Area A, there is an air compressor and air dryer which are in poor condition.
4. Specialty Pumping Systems: There are a number of sanitary pumps and storm water pumps serving the building.
 - a. At Area J, there is one (1) Duplex Sewage Ejector Sump Pump inside the mechanical room.
 - b. At Area J, there is one (1) Duplex Storm Sump Pump inside the mechanical room.



Domestic Hot Water Systems

1. Area E: Hot water is generated by three (3) A.O. Smith BT-120 gas fired water heaters which were installed in 2015 and 2018 and are in excellent condition. The three water heaters are served by one (1) Leonard domestic hot water tempering valve and two (2) Bell & Gossett pumps which are in fair to good condition.
2. Area J: Hot water is generated by two (2) A.O. Smith BT-120 gas fired water heaters which were installed in 2017 and are in excellent condition. The two (2) water heaters are served by one (1) Leonard domestic hot water tempering valve and one (1) Bell & Gossett pump which are in fair to good condition.

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Fire Protection

Fire Protection Service

1. The building is served by two (2) 6" fire protection services and is sprinklered throughout.
2. The fire protection service at Area E is served by two (2) alarm check valves.
3. The fire protection service at Area J is served by four (4) alarm check valves and one (1) dry valve at the floor above.
4. All service entrance equipment was observed to be in good condition.



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Mechanical

Boiler Plants / Chiller Plants

I. Boiler Plants:

- a. There are three boiler rooms as outlined below.
- b. Area A: In this boiler room there are two (2) dual fuel, hot water boilers. Both boilers are Weil McLain Series 94 with Power Flame burners. The boilers and burners were observed to be in good condition. The fuel oil pumps are in poor condition.
- c. Area E: In this boiler room there are two (2) dual fuel, hot water boilers. Both boilers are H.B. Smith 28A Series with Power Flame burners. The boilers and burners were installed in 2004 and observed to be in good condition. The fuel oil pumps are in fair condition.
- d. Area J: In this boiler room there are three (3) dual fuel, hot water boilers. All three boilers are H.B. Smith 28A Series with Power Flame burners. The boilers and burners were installed in 2004 and observed to be in good condition. The fuel oil pumps are in fair condition.



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2. Chiller Plants: There are two mechanical rooms with chillers as outlined below
 - a. Area E: In this mechanical room there is one (1) Trane Model CVHE500 chiller that is in good condition.
 - b. Area J: In this mechanical room there is two (2) Trane chillers: 1) Model CVHF410 and 2) Trane RTWA090. Both chillers are in good condition.



3. Cooling Towers: There are two (2) cooling towers on the roof of Area E which serve all three chillers
 - a. The Evapco tower Model AT29-321 was installed in 2004 and is in fair condition.
 - b. The BAC tower Model 15385 was installed in 1999 and is in fair condition.



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4. Cooling Tower Piping and Accessories:
 - a. The 10" cooling tower piping feeding the chillers in Area J mechanical room traverses buried below grade through the center courtyard. This piping was installed in 2004. It is possible this piping will start to develop leaks over the next 10 years.
 - b. Filters / separators (Area E): There is a PEP Model SMF-FG in the Penthouse of Area E that is in good condition.
 - c. Filters / separators (Area J): The Lakos Filtration System was installed in 2004 and is in good condition.
5. Heat Exchangers and Respective Circulating Pumps:
 - a. Area E: In the boiler room there is a shell and tube heat exchanger that was installed in 2004 to provide a separate hot water glycol piping loop. The heat exchanger and respective pumps are in good condition
 - b. Area J: In the chiller room there is a Xylem Model AP-62 plate and frame heat exchanger that was installed in 2017 to provide "free cooling" off the cooling towers. The heat exchanger and respective pumps are in excellent condition.
6. Hydronic Pumping Systems:
 - a. There are a variety of pumping systems throughout the building as noted below:
 - b. Area A: In the boiler room there are three (3) base mounted Taco pumps, one (1) base mounted Bell & Gossett pump and one (1) Taco in line pump that are all in poor to fair condition. In the adjacent pool equipment room, there are two (2) in-line Bell & Gossett pumps that are in fair condition.
 - c. Area E: In the boiler room / chiller room there are fourteen (14) base mounted pumps (Taco and Bell & Gossett) that are in fair to good condition.
 - d. Area E: In the Penthouse mechanical room there are two (2) Taco base mounted pumps that appear to have been abandoned in place.

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- e. Area J: In the boiler room / chiller room there are thirteen (13) base mounted Bell & Gossett pumps and five (5) in-line Bell & Gossett pumps that are all in good condition.



Air Systems

1. There are numerous air handling units and packaged rooftop units through the building. Many of the units were installed in 2004 and are not listed below unless noted otherwise.
2. There are five (5) Greenheck makeup air units installed in 2004 on the roof of Areas B and E. These units are gas fired and reaching the end of their useful life.
3. There are three (3) Trane packaged rooftop units installed in 2004 on the roof of Areas B and E. These units are gas fired and reaching the end of their useful life.

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4. At various locations in the building there are older Bohn units which are in poor condition. These units are at or near the end of their useful life. A listing of these units is as follows:
 - a. At Area A there are four (4) indoor air handling units.



- b. At Area B Field House, there are four (4) indoor air handling units.
 - c. At Area D Gymnasium, there are four (4) indoor air handling units. These units were not accessible during our site visit. They were not replaced in 2004 and are assumed to be the older style Bohn units.

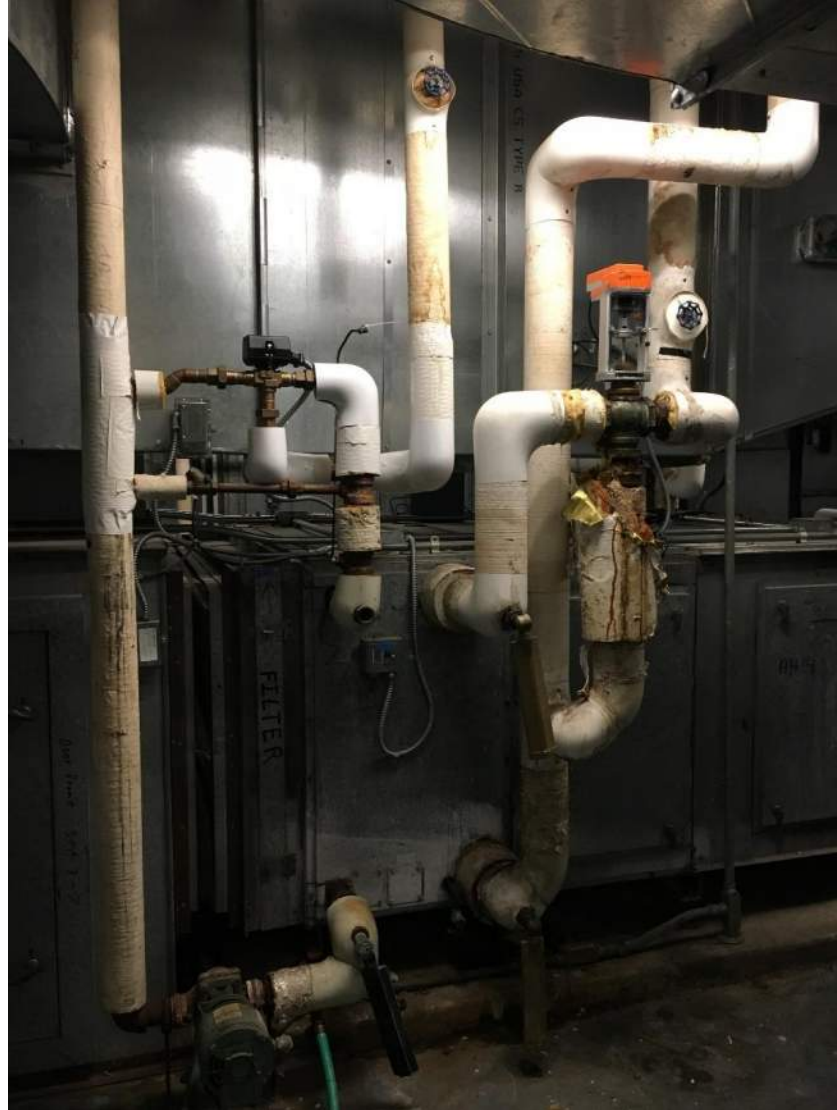
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- d. At Area E Penthouse there are two (2) indoor air handling units.



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Electrical

Existing Systems

- I. The building is served by two (2) electrical services; one in Area E and one in Area J. Each service is comprised of General Electric Spectra Series switchgear at the service entrance; each rated at 3000 amperes, 480Y/2770 volts, 3-phase, 4 wire.



2. There are three generators:
 - a. At Area A, there is a Cummins Model GGFB-336728I which is rated at 35 KW, 480Y/277V, 3-phase, 4 wire. This generator is located inside the building and is natural gas fired. It was installed prior to 2004 and was observed to be in excellent condition.
 - b. At Area E, there is a Cummins Model DFEC-5679154 which is rated at 450 KW, 480Y/277V, 3-phase, 4 wire. This generator is located inside the building and is diesel fired. It was installed in 2004 and was observed to be in excellent condition.
 - c. At Area J, there is a Cummins Model 350DFCC-3779 which is rated at 350 KW, 480Y/277V, 3-phase, 4 wire. This generator is located inside the building and is diesel fired; installed in 2004 and was observed to be in excellent condition



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3. There are a number of GE electrical panels located throughout the building. Most panelboards are fed from overhead conduits and are in excellent condition with the exception of the older distribution panel 'HDP-3'.
4. The fire alarm system is a Notifier zoned system and is in excellent condition.
5. The PA system is a Telecor II system. The head end equipment and speakers are in excellent condition.
6. The security system is a Sonitrol system and is in excellent condition.
7. The clock system is a Primex Wireless system and is in excellent condition.
8. The clock system for building lighting is an Acuity Brands (LC&D) and is in excellent condition.
9. Lighting at classrooms and offices is LED fixtures throughout many areas as replaced as part of NORESO's energy improvement programs. Overall, light fixtures are in good condition. There are still some fixtures will need to be updated and we recommend these be scheduled for replacement with LED fixtures
10. Lighting at classrooms is typically controlled with line voltage toggle switches and ceiling mounted occupancy/vacancy sensors.
11. Lighting at offices is typically controlled with line voltage toggle switches. Some offices have occupancy/vacancy sensor switches. .
12. Emergency lighting consists of fixtures throughout the building placed on central emergency inverters via generator backed ATS as well as battery backed emergency wall pack fixtures. The emergency lighting system was observed to be in fair to good condition.
13. Generally, exit signs are generator backed LED and are in good condition overall.