

Acton Boxborough Regional School District School Facilities Assessment



Progress Presentation

19 November 2015



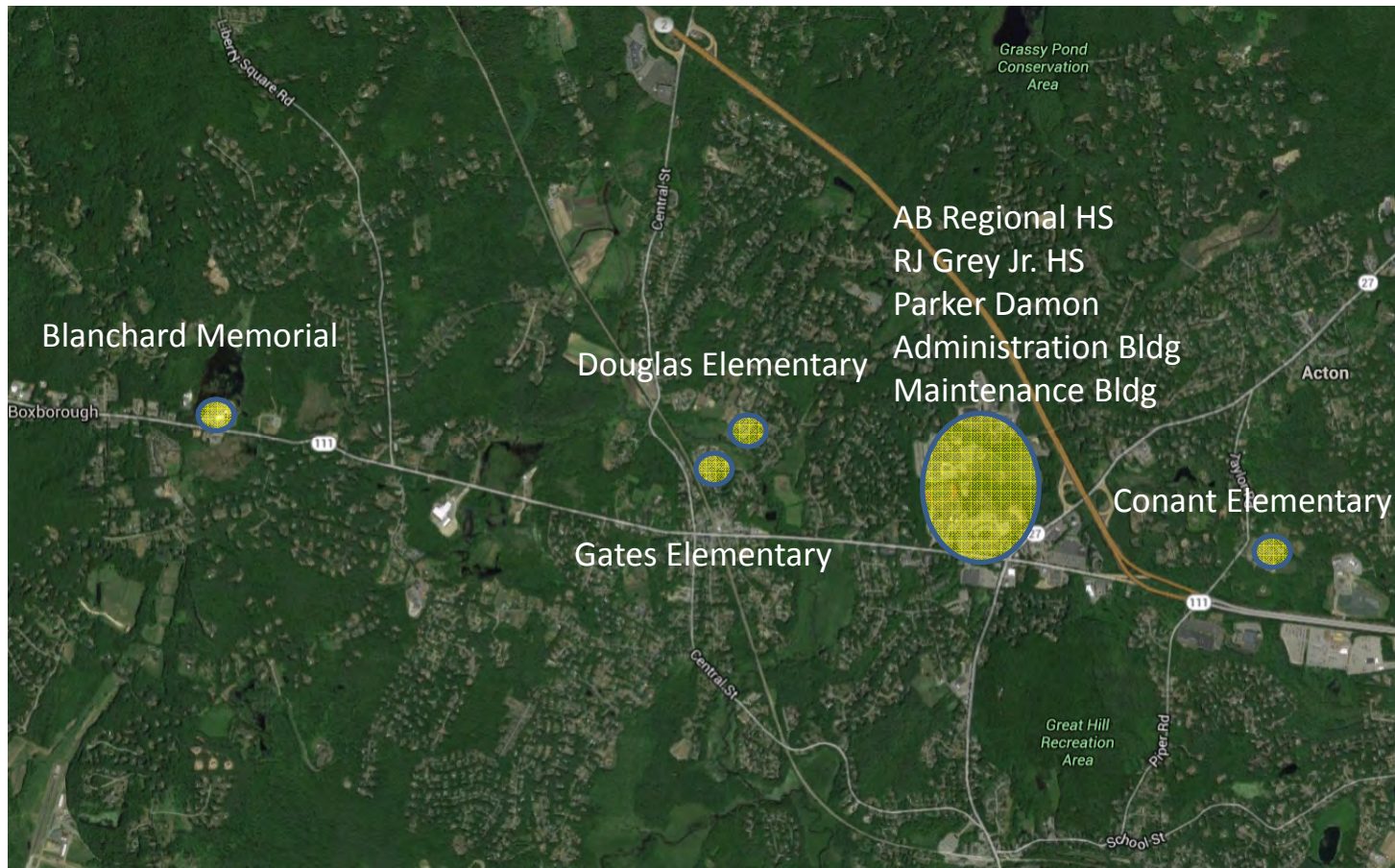
Agenda

- **Process and Schedule Overview**
- **Overview of District Capacity**
- **Findings to Date**
- **Next Steps**



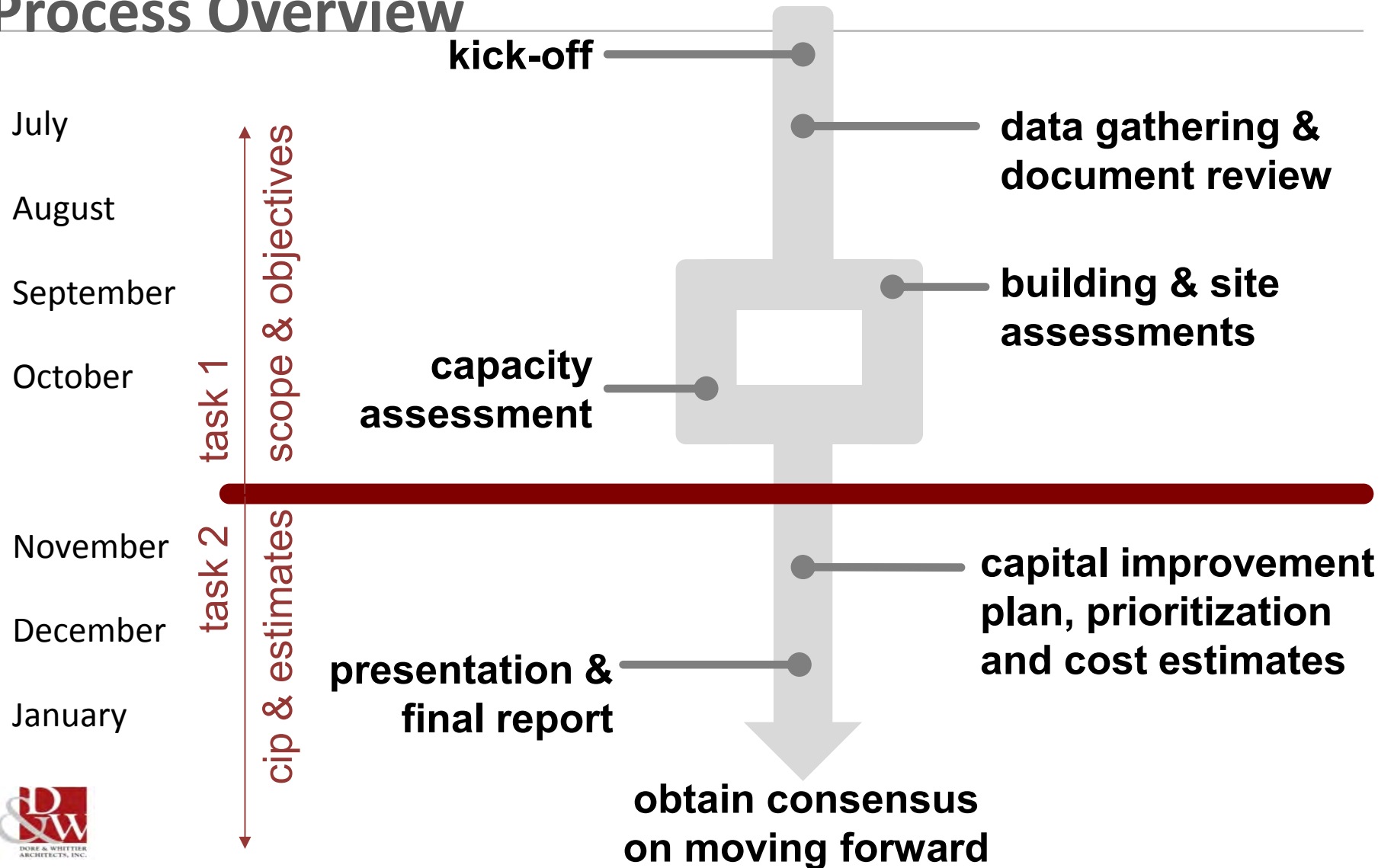
Acton Boxborough Regional School District
Site and Building Assessment

Process Overview



Acton Boxborough Regional School District
Site and Building Assessment

Process Overview



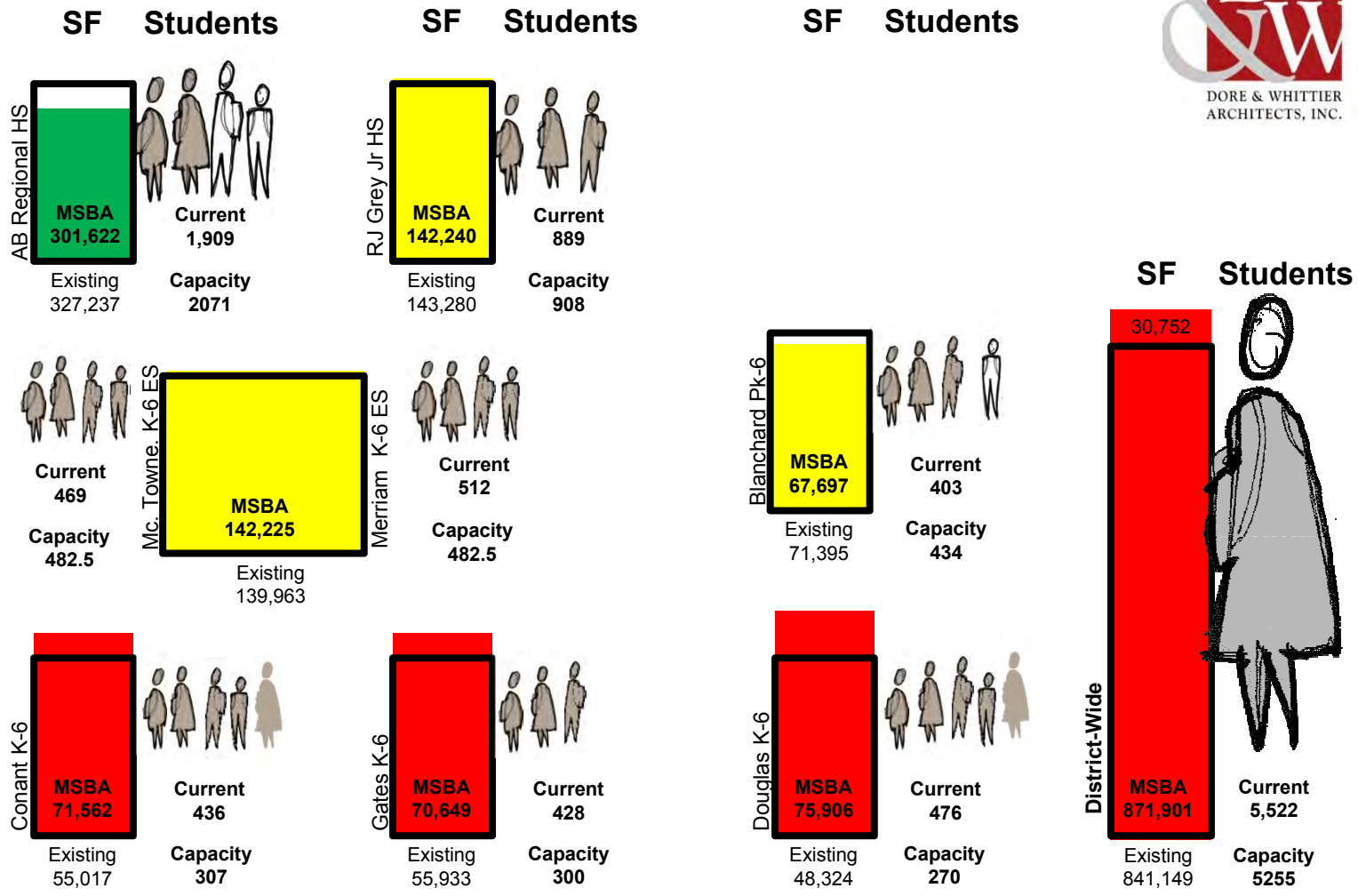
Study Schedule

- July – September 2015:** Site Visits: Site & Building Assessment
- September – October 2015:** Review Capacity Assessment / Draft Site & Building Assessment Report
- November 2015:** Report out Site & Building Assessment / Begin Capital Improvements Plan (CIP) and Prioritize Needs / Begin Cost Estimates
- December 2015:** Finalize CIP and prioritization / Finalize Cost Estimates
- January 2016:** Final Presentation and Report



Acton Boxborough Regional School District
Site and Building Assessment

Capacity Based on Gross Square Footage



*bld. sq. ft. and student enrollment per MSBA website

District Wide Overview

- Buildings visited in August and September
- Buildings are well maintained
- Attempts have been made to meet current codes and regulations for fire safety, handicap accessibility, ventilation, and energy efficiency
- District actively pursuing to reduce environmental impact:
 - District participates in NSTAR Energy Star Benchmarking Initiative and some of the buildings are eligible for the Energy Star Label.
 - Schools have been recognized by US Dept. of Education as Green Ribbon Schools
 - Solar Arrays



Acton Boxborough Regional School District
Site and Building Assessment

Technology – District Wide Overview

- Grey Jr. High School is the Hub of the district Network Infrastructure; there is a combination of multimode and single mode connections
- HS, JHS, Parker Damon: can support more wireless access points
- Conant, Gates, Douglas: may require more cable to support additional wireless
- The future involves more wireless density in all schools with greater deployment of chromebooks and other portable 1-to-1 devices
- District moving from 60%/40% PC to Mac ratio to 30% PC, 30% Mac, 30% Chromebook
- Moving toward cloud based storage
- K-12th grade all have Google email accounts; 3rd-8th grade internal email only
- Grades 1-6 have Smartboards with instruction laptops

Recommendations:

1. Increase wireless coverage to 100%
2. Connect MDF and IDFs to emergency backup power
3. Add additional surveillance cameras to security system and continue upgrading infrastructure



Acton Boxborough Regional High School



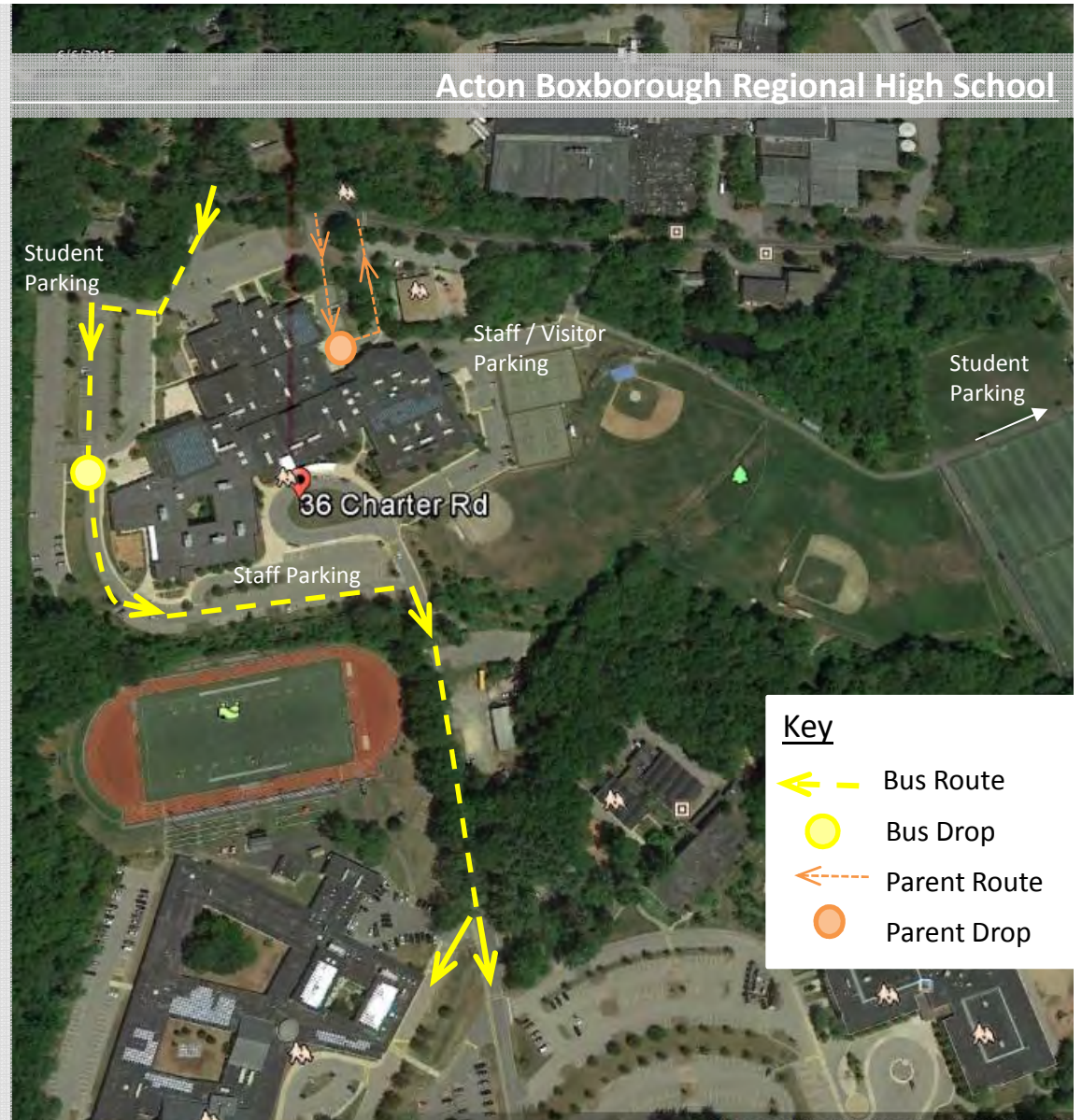
327,237 sf building
1964 Original Building
Reno/Add 1971, 2004
Grades 9-12
1909 Students
263 Staff



Acton Boxborough Regional School District
Site and Building Assessment

Landscape / Civil

- Failed, patched and uneven concrete sidewalks and steps
- Pavement aging and cracking
- Convoluted, circuitous vehicular pattern
- Lack of pedestrian walks at parking lots
- Lack of identification/signage
- Lack of access to Leary Field
- Field irrigation is reported to not function well
- Review parent drop-off
- Pedestrian access to school from Rte 111; difficult and not wide enough



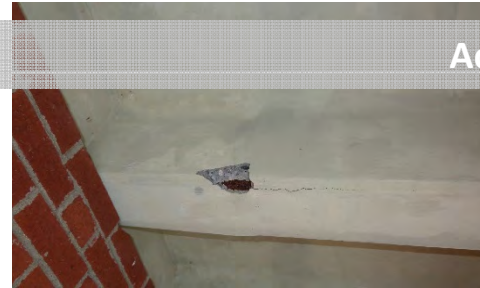
Structural

- Minor cracking was observed from outside the building at back of the gymnasium
- Minor deterioration of exterior fascia in multiple locations on the back of the building
- Corrosion in the finishes of structure within pool space as well as below

HVAC

- Rooftop units are beginning to show signs of failure and corrosion; cooling and compressor failures as well
- Insulation is failing on the outdoor ductwork
- Some exhaust fan corrosion
- Actuator valves and isolation valves are failing
- Pool Unit: significant corrosion and failure
- Software glitches with HVAC controls

Acton Boxborough Regional High School



Electrical

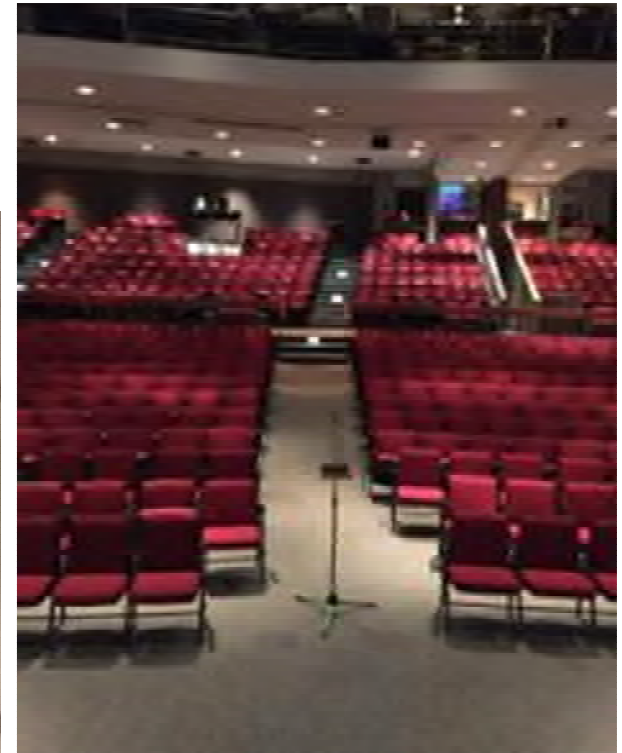
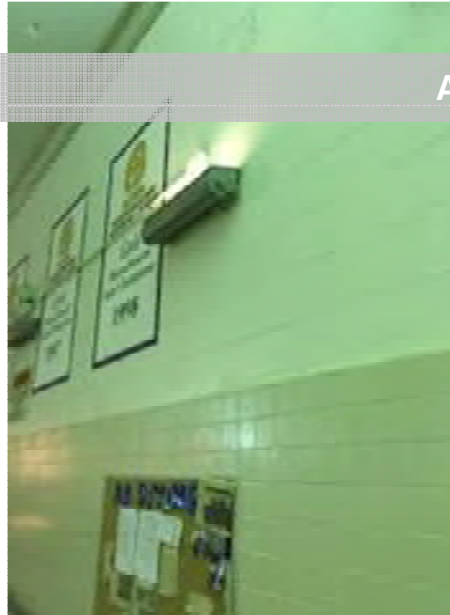
- Electric Room (PV inverter) is extremely hot
- Continue replacing fixtures with LED
- Upgrade lighting control system to an addressable type; energy savings.
- Add occupancy sensors and daylight dimming
- Replace pool lighting LED indirect fixtures for Natatorium use
- Replace Auditorium house lighting and step lighting

Plumbing

- Paint all elevated gas piping yellow and label to meet current plumbing code
- Provide gas valve on kitchen cooking equipment interlocked with CO

Fire Protection

- Building is fully sprinklered



Architectural

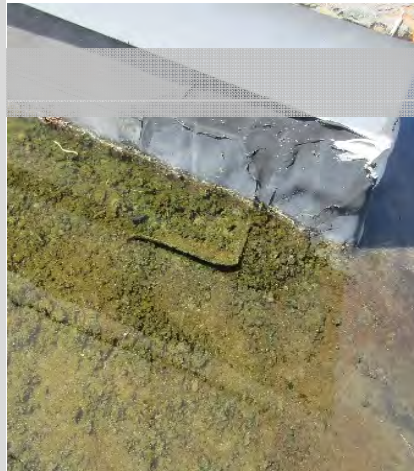
- Parging at foundation wall failing
- Exterior caulking failing
- Window leaks at Art rooms
- Roof seams failing, ponding, failing pitch pockets
- VCT Flooring: cracked and telegraphing through in areas
- Original wood floor (50 yrs) in small Gym
- Ceiling tile sagging- high humidity. Low ceiling in locker room areas
- Numerous door failures/damaged
- Ramp near school store problematic at doors
- Pool bleachers not accessible
- Auditorium stage not accessible

Food Service

- Kitchen is well-equipped; no need for upgrade

Hazardous Materials

- No concerns at this time



Acton Boxborough Regional High School



R. J Grey Junior High School



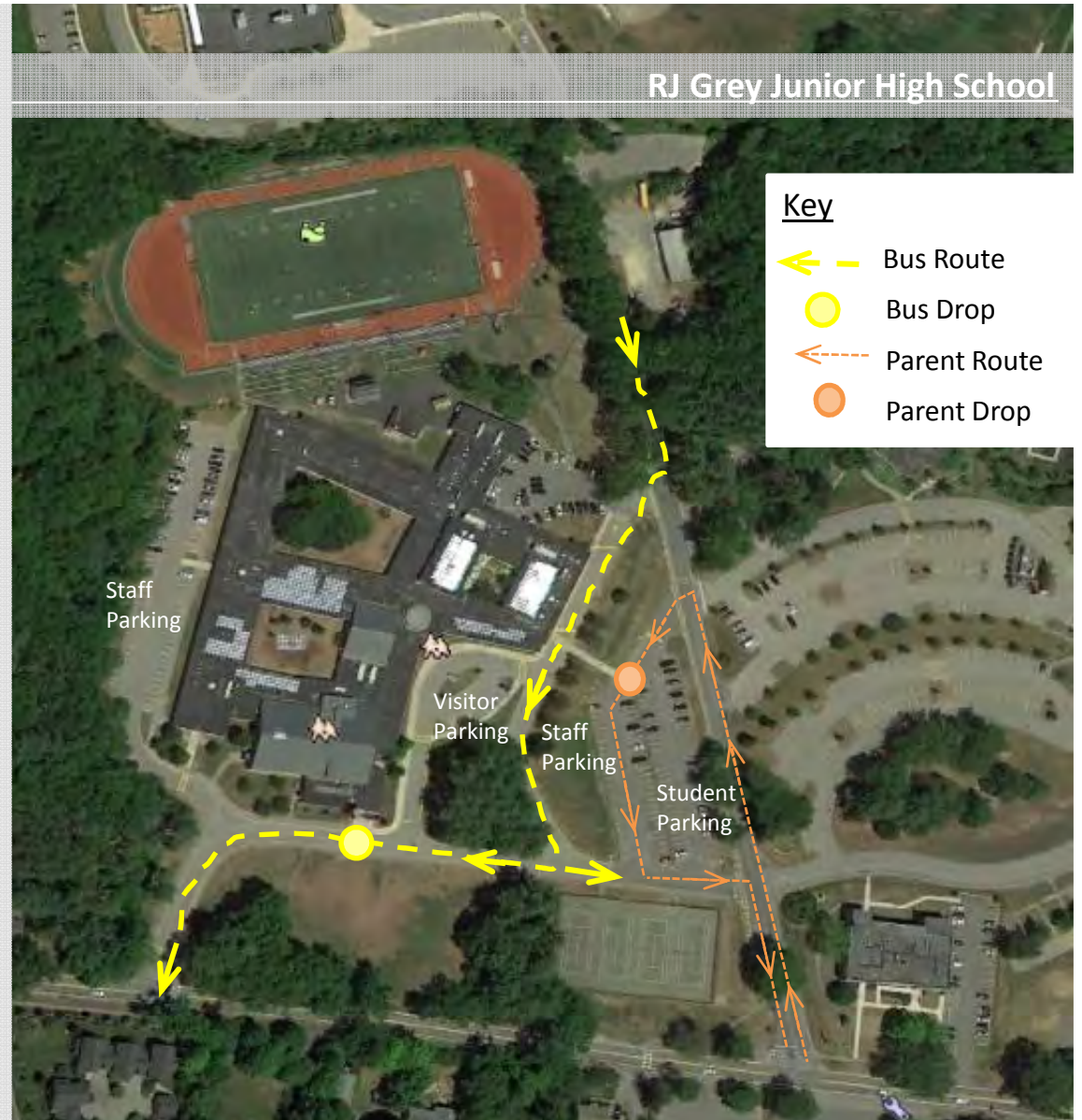
145,280 sf building
1955 Original Building
Reno/Add 1960, 2002
Grades 7-8
888 Students
161 Staff



Acton Boxborough Regional School District
Site and Building Assessment

Landscape / Civil

- Circulation is confusing - directional signage needed
- Pavement and sidewalks: overall fair condition
- Minor concrete curb replacement needed
- Cracking at drives and asphalt walkways; drainage issues/ponding; repave to resolve ponding
- HC pkg spaces – provide direct access to crosswalk/sidewalks
- No HC access to Leary Field
- No continuous path around building
- Parking -sufficient
- Parking during events - insufficient
- Lack of screening at service area



Structural

- Cracking at top of foundation walls
- Cracking at wall finishes, gym CMU

HVAC

- Replace the following at roof:
 - corroded exterior ductwork
 - damaged insulation on exposed rooftop ductwork
 - 50% of rooftop exhaust fans
 - Damaged fan over the boiler room
- Install snow guards on the edge of the gym roof to protect equipment.
- Integrate rooftop exhaust fan control into the DDC control system
- Relocate the fancoil in the kitchen away from food areas.
- Add CO2 demand control ventilation control to the gym units.



Electrical

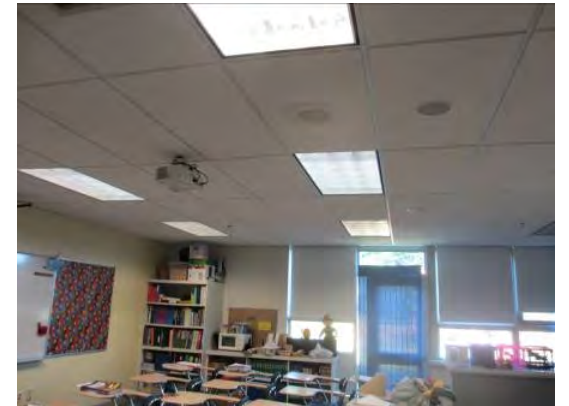
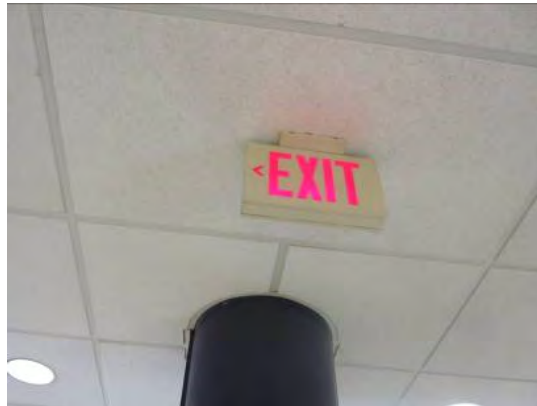
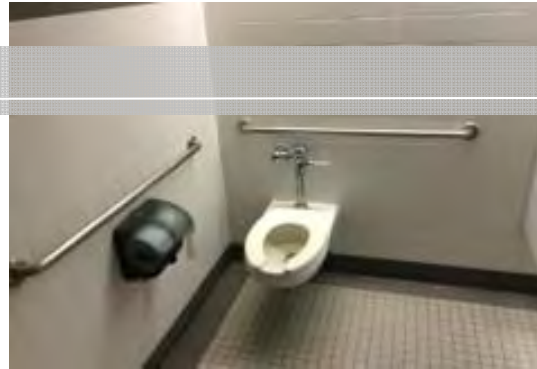
- Overall in good condition
- No occupancy sensors or daylight dimming in most spaces
- No generator
- No lightning protection system
- Fire alarm system is addressable with detection in egress paths only - OKAY
- No bi-directional antennae system for public safety radio communications

Plumbing

- Consider high efficiency low flow fixtures throughout

Fire Protection

- Building is fully sprinklered and in good condition



Architectural

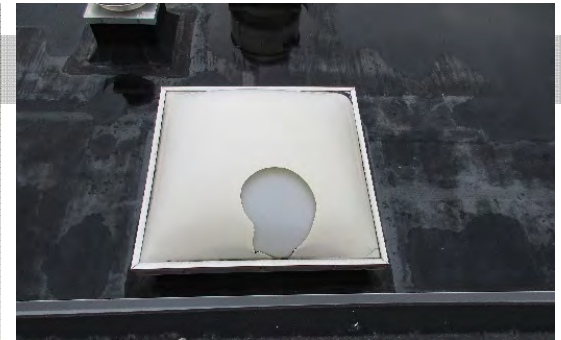
- SSMR sloped to flat EPDM roof - problematic
- Thermal loss at aluminum windows/ panel system; wood frames rotting
- Reverberation at main entry clerestory
- Finishes/built-ins range in condition
- HC accessibility concerns - toilet rooms; water fountains; casework; side clearances at doors

Food Service

- AHU leaking above serving counter
- Sneeze guards at serving line are outdated and non compliant anymore
- Milk coolers are not HC accessible

Hazardous Materials

- Majority removed during last renovation project



Parker Damon Building



139,963 sf building

2001 Original Building

Grades K-6

981 Students

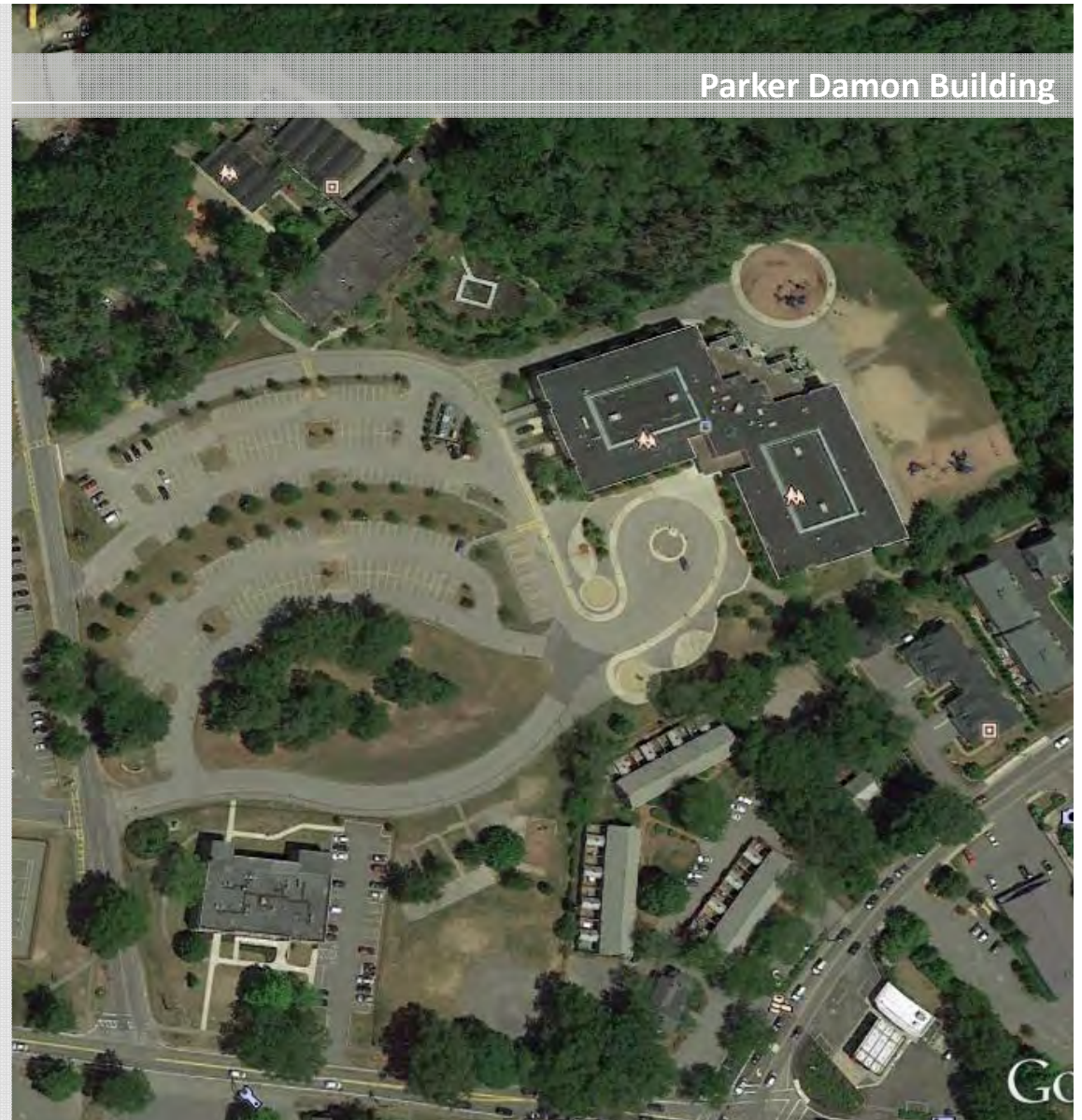
186 Staff



Acton Boxborough Regional School District
Site and Building Assessment

Landscape / Civil

- Provide better directional signage for circulation pattern
- Too much paving at building entrance, lack of greenery
- Concrete curb replacement needed at some locations
- Ponding in parking lots
- Drainage issues at large landscape island bordering Charter Road; repave to resolve ponding
- Accessible parking and travel route may not be compliant
- Play area lacking shade trees
- Lack of screening at service/delivery area
- Parking lot should have more pedestrian walks



Structural

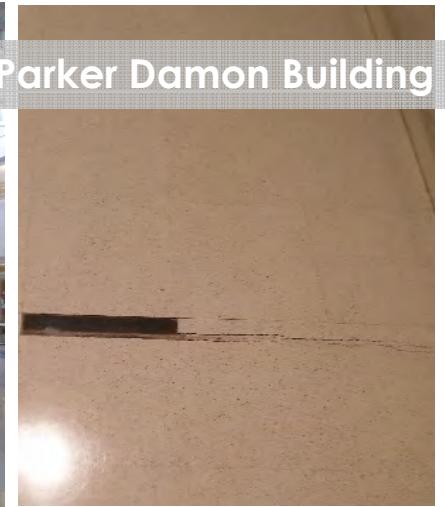
- Cracking in floor slab, lower level
- Stains and cracking of façade

HVAC

- Mixing of chilled water flow streams impacting efficiency
- Combustion air damper undersized for boiler plant
- Boiler B-1A is missing the actuator on its isolation valve, lowering supply temp
- Many hot water valves, runs of piping not insulated
- Over ventilation of large spaces wasting energy
- Kitchen hood unnecessarily runs at full speed wasting energy



Parker Damon Building



Electrical

- Overall in good condition
- Recommend upgrading of all Lighting with LED and lighting control system
- Configuration of emergency distribution does not meet current codes
- Fire alarm system in good condition, typical life expectancy of 20 years

Plumbing

- Video tape all buried drainage piping to determine pipe condition
- Remove existing thermostatic mixing valves and replace with new
- Remove all PVC waste piping and replace with copper piping

Fire Protection

- System is in good working order. Owner to continue to inspect/maintain system per NFPA 25 requirements



Architectural

- Brick sills failing, coming apart at mortar joints, high levels of water absorption, staining, moss growth
- Failure of thresholds at lower level allowing water to enter building, affecting floor tile
- Failure of sealants at metal wall panels
- Accessibility clearances impeded at some doors

Food Service

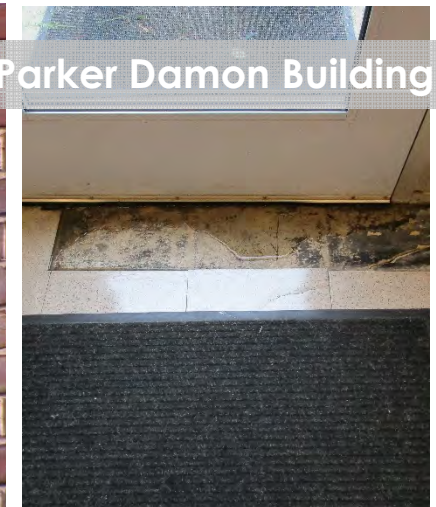
- Gaps between equipment and adjacent surfaces exceed food code
- Exhaust hood separating from wall, needs to be reviewed for structural soundness
- Heat trace at walk-in cooler vision panel failing

Hazardous Materials

- No issues noted



Parker Damon Building



CT Douglas Elementary School



48,324 sf building

1965 Original Building

Grades K-6

476 Students

94 Staff



Acton Boxborough Regional School District
Site and Building Assessment

Landscape / Civil

- Only one loop for parent drop-off, busses and parking; no separation – safety concern
- Significant congestion and traffic back-up on Elm St.
- Only 4 busses at a time; staggered arrivals
- Only one access into the site; site is constrained
- Asphalt and sidewalks are in fair to poor condition
- Inadequate parking
- 2 HC spaces; needs crosswalk



Structural

- Significant cracking at concrete slab at the second floor and roof
- Exposed reinforcing

HVAC

- No ventilation provided for interior offices or corridors
- Thru-window air conditioners
- Spaces sub-divided into several spaces with one thermostat
- Standalone electronic thermostats. Upgrade to a building-wide DDC
- Isolation valves within the hot water system are beginning to fail
- Piping insulation removed or damaged
- Constant issues with Cafeteria and Gym original units
- No makeup air in the Kitchen.
- Odor in modular classrooms

CT Douglas Elementary School



Electrical

- New service main is behind wood stud partition- no clear space- not code compliant
- Remainder of the electrical distribution is in poor condition and is beyond its serviceable life.
- Existing panelboards are original Federal Pacific. No spare capacity left
- Recommend upgrade to LED's occupancy and daylighting controls
- No emergency generator
- Fire Alarm: fair condition- does not meet current code

Plumbing

- Install grease interceptor for Kitchen
- Provide new domestic water distribution piping and mixing valves
- Install plaster traps at Art room sinks

Fire Protection

- No sprinkler system



Architectural

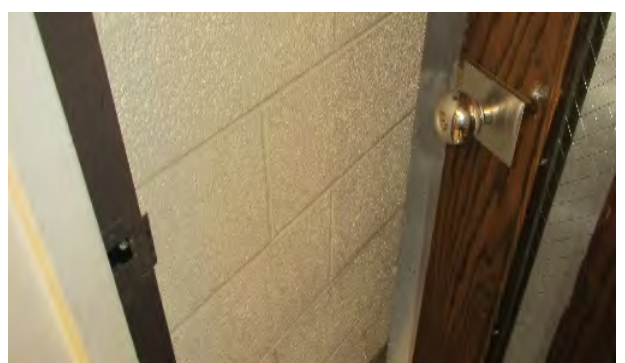
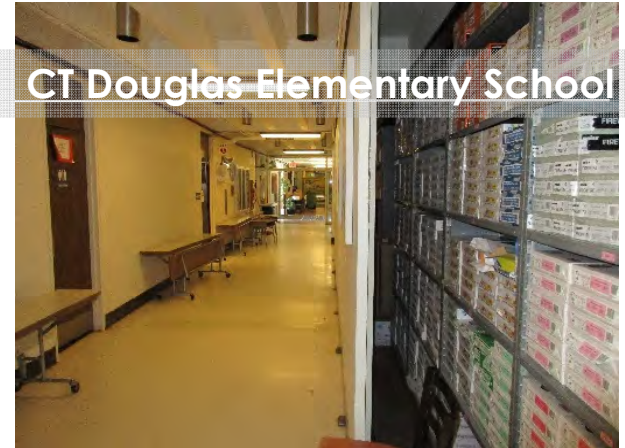
- Modularity: poor condition- fiberglass insulation failing
- No insulation in exterior walls
- Single pane windows
- Ice-damming and leaking at modularity
- Original wood floor in gym; failing
- Gym ceiling is low: 14'
- Lower classroom floor and platform not accessible
- Classrooms: not accessible due to lack of clearance at doors and knob handles
- Paper storage in corridors
- Waste line at 5' high in storage/pull-out space
- Dirt crawl space- adjacent to occupied space

Food Service

- Replace wood top table with stainless
- Range is outdated- inefficient
- Dry goods storage is undersized
- Serving counter is antiquated- cannot keep chilled food cold

Hazardous Materials

- Suspect materials are expected due to building age but are being maintained well



Gates Elementary School



53,933 sf building
1967 Construction
Grades K-6
428 Students
82 Staff



Acton Boxborough Regional School District
Site and Building Assessment

Landscape / Civil

- Pavement and sidewalks: overall worn and in need of overlay/replacement
- Some concrete curb replacement needed Rear paved court in poor condition
- Circulation – Bus and car traffic intersect; turning radius at Spruce street is insufficient
- Car loop is within parking lot – safety concern
- HC parking spaces – provide direct access to crosswalk/sidewalks
- Parking - insufficient
- Screening at service area
- No continuous path around building

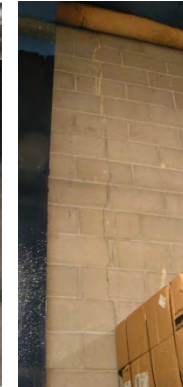
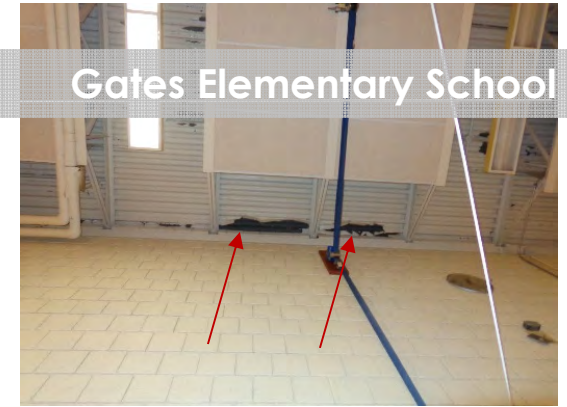


Structural

- Minor cracking and general damage to the exterior foundation and masonry walls
- The paint was observed to be peeling off of the underside of the metal deck in the gymnasium
- Water damage was observed in a few locations throughout the building

HVAC

- Honeywell Control System is not functioning properly
- Many isolation valves in hot water system are failing – water quality may be the issue. Consider DDC
- Original AHU at Café/kitchen are problematic and harder to fix
- Supplement heating in CRs with proper finned elements at fin tube
- No ventilation in corridors



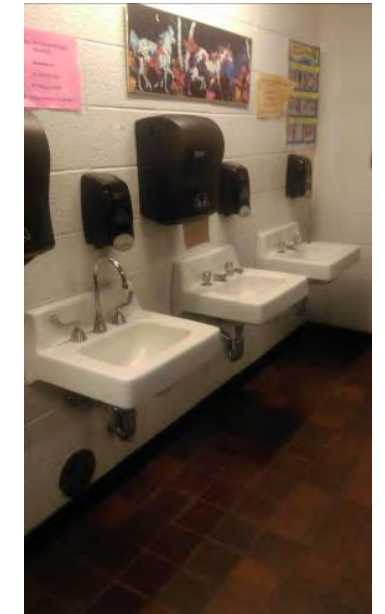
Electrical

- Original power and distribution system - overall in poor condition
- Upgrade lighting with LED and provide occupancy and dimming sensors
- Emergency standby system is no longer code compliant; provide emergency lighting in toilet and public spaces
- Fire alarm system to be updated and comply with ADA and battery back-up requirements
- Provide lightning protection system

Plumbing

- Consider high efficiency low flow fixtures throughout that meet ADA
- Provide new domestic water distribution piping and insulation
- The Kitchen drainage piping shall be directed to an exterior grease trap
- Roof drains in fair to poor condition

Gates Elementary School



Fire Protection

- Building is not sprinklered

Architectural

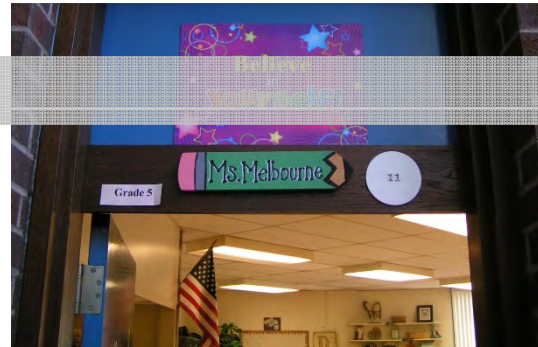
- Doors and windows with single pane glass are in fair to poor condition – replacement warranted
- Replace ballasted EPDM roof, increase insulation; add lightning protection
- Finishes/built-ins range in condition
- HC accessibility - toilet rooms; water fountains; casework; side clearances at doors; signage

Food Service

- Kitchen functions well but mostly original and somewhat antiquated

Hazardous Materials

- Suspect materials are expected due to building age but maintained well. Prior to any repairs, check AHERA reports and perform testing if needed.



Conant Elementary School



55,017 sf building

1970 Original Building

Grades K-6

436 Students

84 Staff



Acton Boxborough Regional School District
Site and Building Assessment

Landscape / Civil

- Pavement and sidewalks: overall worn and in need of overlay/replacement
- Repair curbing, provide curbing where it doesn't exist
- Lack of accessible travel path to building entry
- Lack of accessible path to new playground
- Circulation – Bus and car traffic share loop drive, consider separation
- Screening at service area
- Consider separating bus and parent drop offs
- Analyze congestion problems, possibly provide second access drive to site
- Consider new full depth pavement at receiving area and access
- No continuous path around building

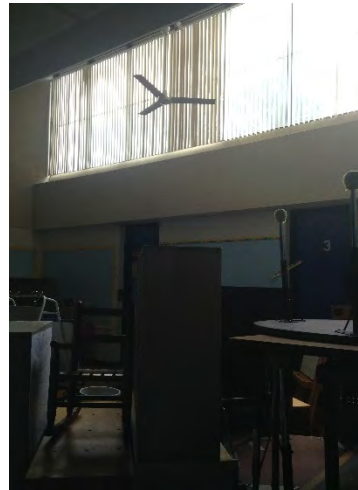
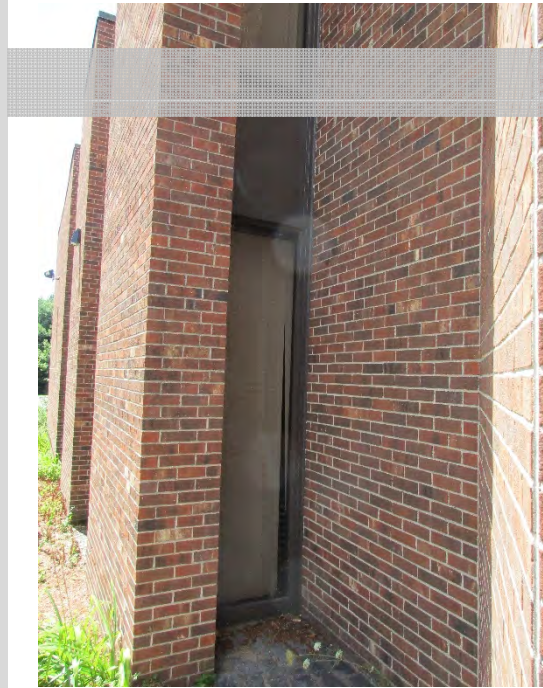


Structural

- Minor cracking in foundation walls throughout the structure
- Cracking in brick and concrete slab at several egress doors from classroom pods
- Severe cracking in two locations due to heaving of foundation walls

HVAC

- Combustion air damper undersized for boiler plant
- Piping insulation removed throughout building
- Problematic pneumatic control system
- Damaged time clock controlling rooftop exhaust fans
- No ventilation in admin area in winter
- Original AHU at Café/kitchen are problematic and harder to fix
- Kitchen hood runs at full speed, wasting energy



Conant Elementary School

Electrical

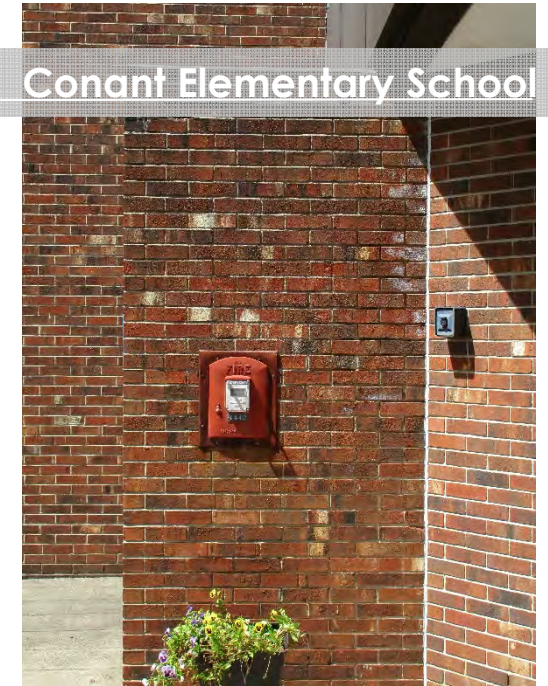
- Original power and distribution system - overall in fair condition
- Upgrade lighting with LED and provide occupancy and dimming sensors
- Emergency standby system is no longer code compliant; provide emergency lighting in toilet and public spaces
- Fire alarm system to be updated and comply with ADA and battery back-up requirements
- Provide lightning protection system

Plumbing

- Consider high efficiency low flow fixtures throughout that meet ADA
- Provide new domestic water distribution piping and insulation
- The Kitchen drainage piping shall be directed to an exterior grease trap



Conant Elementary School



Fire Protection

- Building is not sprinklered

Architectural

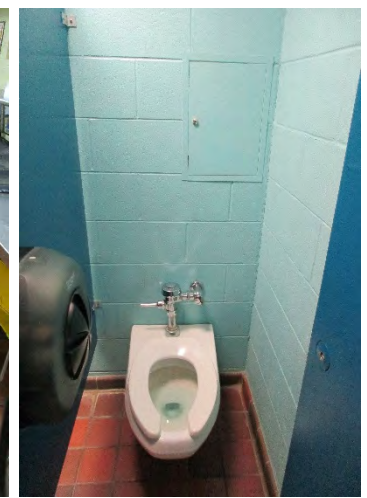
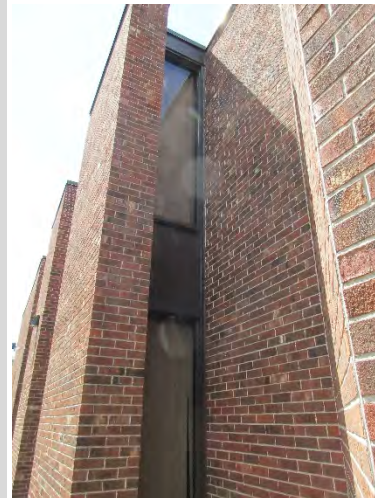
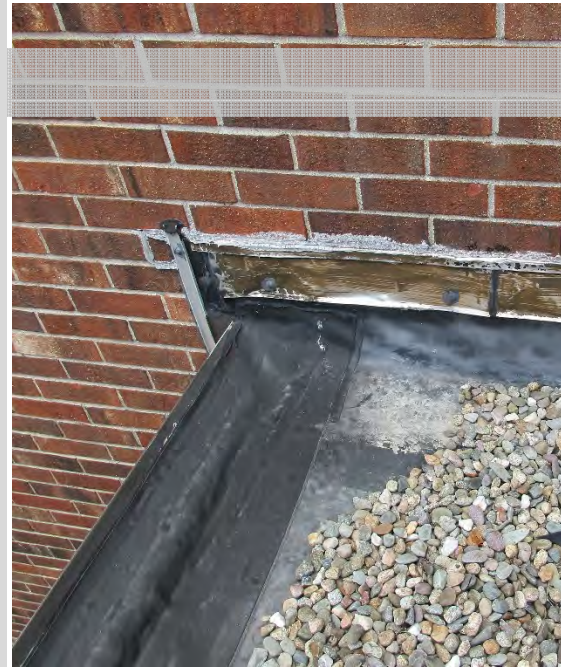
- Doors and windows with single pane glass are in fair to poor condition – replacement warranted
- Replace ballasted EPDM roof, increase insulation; add lightning protection
- Finishes/built-ins range in condition
- HC accessibility - toilet rooms; water fountains; casework; side clearances at doors; signage

Food Service

- Kitchen functions well but mostly original and somewhat antiquated

Hazardous Materials

- Suspect materials are expected due to building age but maintained well. Prior to any repairs, check AHERA reports and perform testing if needed.



Blanchard Memorial School



71,395 sf building

1949 Original Building

Reno/Add 1959, 1967,
1973, 1995

Grades PK-6

403 Students

34 PK Students

104 Staff



Acton Boxborough Regional School District
Site and Building Assessment

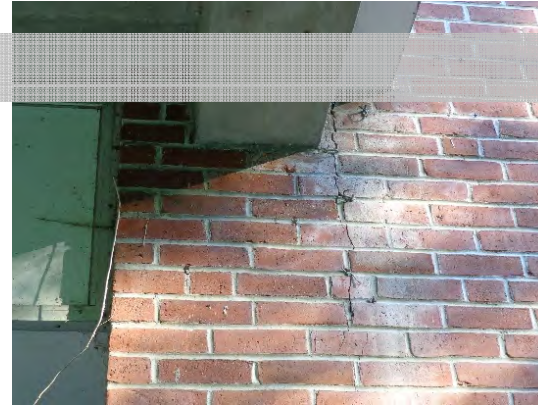
Landscape / Civil

- Provide new site signage
- Pavement and walkways: worn and cracked
- Ponding in parking lot and degraded areas
- Concrete curb replacement needed
- HC pkg spaces – provide direct access to crosswalk/sidewalks
- No continuous path around building
- Parking -sufficient
- Athletic field is worn
- Separate service area from play area
- Mounded dirt area is inhibiting natural flow into bioretention basin
- Catch basin and pipe leading to bioretention basin is in bad condition and has settled resulting in stagnant water



Structural

- Cracking at interior and exterior of building – typically minor but repair
- Canopy at back of building has cracked façade and concrete beam is cracking and corroded



Blanchard Memorial School



HVAC

- Corridors do not have ventilation
- Condensation issues in fire pump pit; dehumidification added.
- Replace cooling equipment that utilizes R-22 refrigerant
- Pipe and breeching insulation is damaged/failing/ missing and should be replaced
- Upgrade to DDC
- Add CO2 demand control ventilation control to high occupancy spaces



Electrical

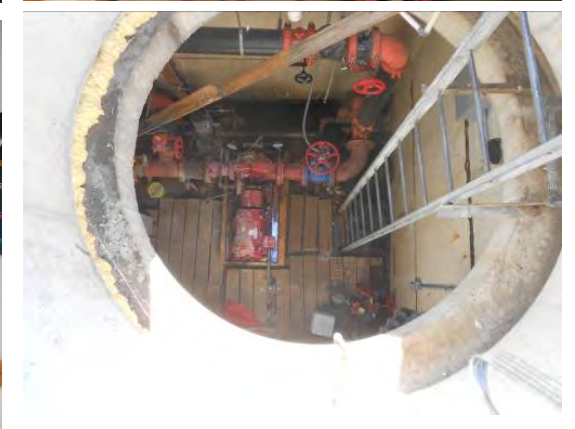
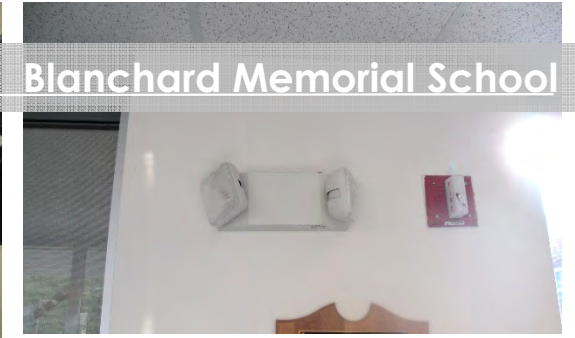
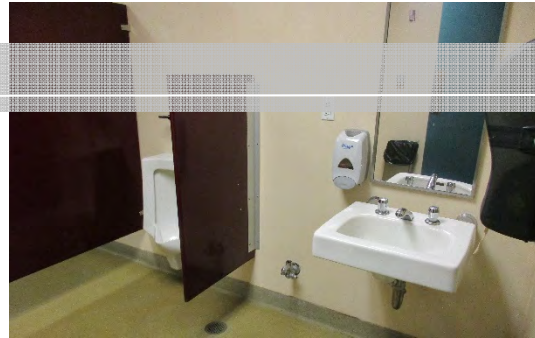
- Overall in good condition
- Install LED wall packs with integral emergency backup at egress doors
- No occupancy sensors or daylight dimming in most spaces; consider LED
- Fire alarm system is outdated
- No bi-directional antennae system for public safety radio communications

Plumbing

- Consider high efficiency low flow fixtures throughout
- Domestic water was deemed unsafe for consumption previously

Fire Protection

- Building is fully sprinklered and in good condition
- Fire Pump pit is a confined space and does not meet code



Blanchard Memorial School

Architectural

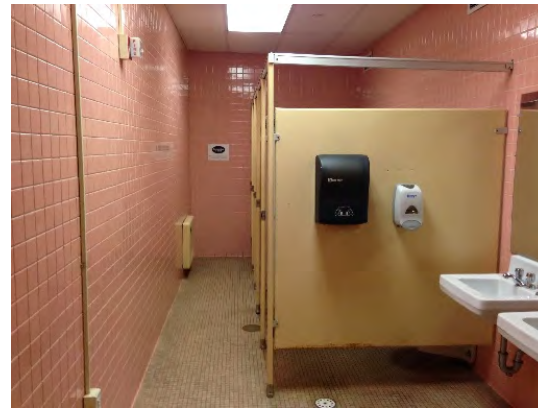
- Exterior in good condition overall
- Rusted posts at ramps
- Weep holes filled in with caulk
- Finishes/built-ins vary in condition
- HC accessibility issues - toilet rooms; water fountains; casework; side clearances at doors

Food Service

- Floor and ceiling should be replaced
- Well equipped but in need of modern range, freezer, additional fridge, and stainless steel worktables

Hazardous Materials

- Suspect materials are expected due to building age but maintained well.



Administration Building



36,203 sf building

1957 Original Building

Grades PK and
Colebrook HS

Students 92 (PK)

62 Staff



Acton Boxborough Regional School District
Site and Building Assessment

Landscape / Civil

- Asphalt and concrete sidewalks are in poor condition
- PK playground in the middle of drive-loop; safety concern
- Drive-loop is inadequate; too small
- HC access is poor
- Parking is shared with Parker Damon;
- Confusing where to park, enter

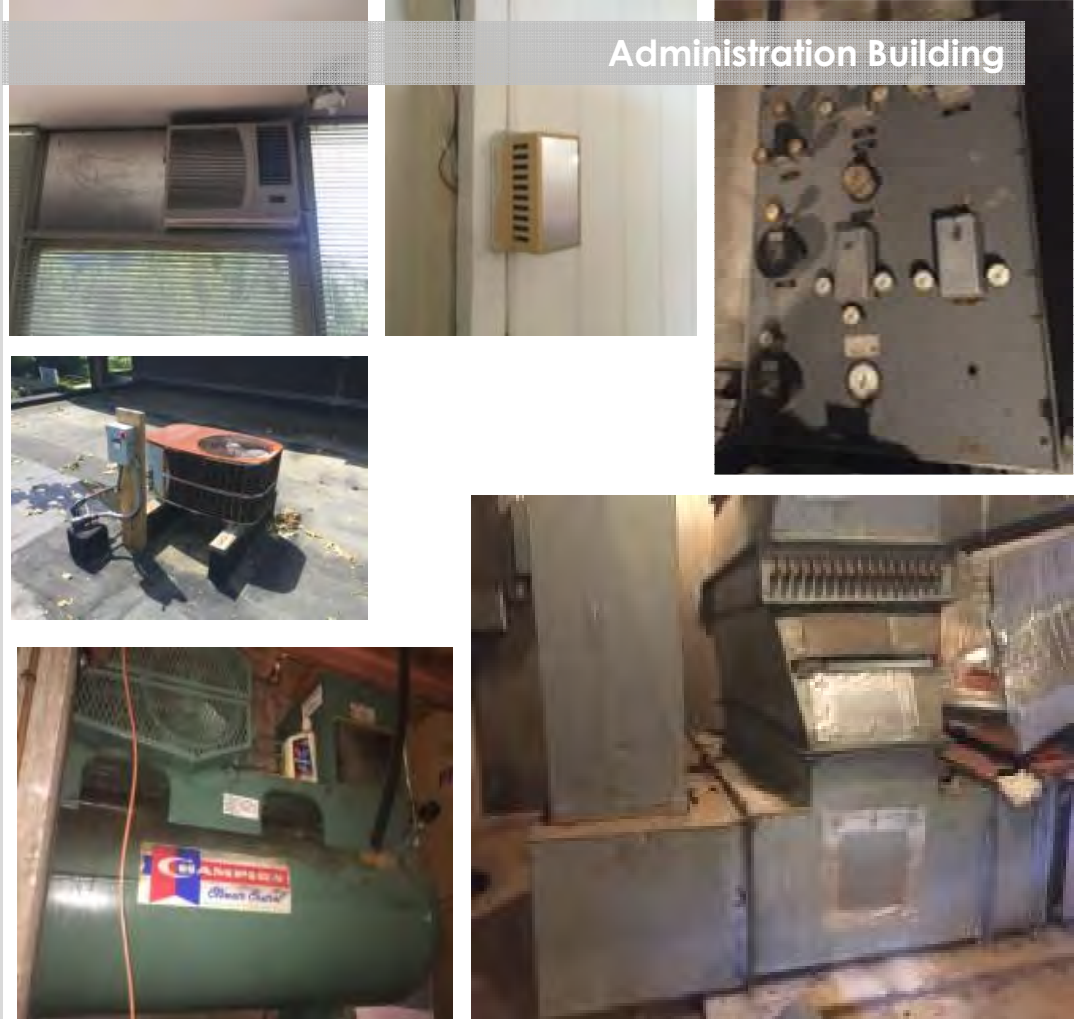


Structural

- Minor cracking visible

HVAC

- New condensing boiler
- Majority of remaining systems have reached end of serviceable life
- Window Air Conditioners
- Many spaces changed but heating/ventilation systems have not changed with them
- Ventilation does not meet current code
- Boiler plant is in separate building; piping underground; heat loss and potential deterioration of piping



Electrical

- Original Power distribution; poor condition
- Interior lighting; poor condition and not energy efficient
- Fire Alarm is antiquated; fair condition
- Electrical service to building is in need of upgrade to meet power consumption demands; additional outlets are needed
- Recommend new pad-mounted transformer with primary and secondary service
- Modular classrooms have electric heat and electric hot water

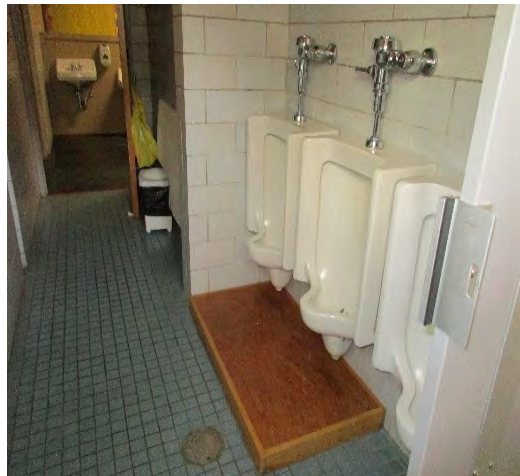
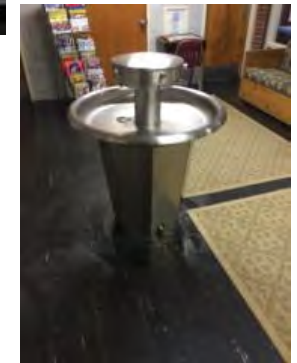
Plumbing

- Original plumbing systems and piping
- Recommend new low-flow fixtures, high efficiency gas-fired water heater, and domestic water distribution system

Fire Protection

- No sprinkler system

Administration Building



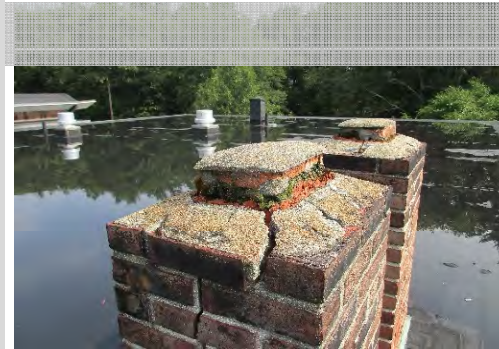
Architectural

- Modular Classrooms and connecting corridor; significant deterioration
- Roof is in very poor condition; significant and excessive ponding, cracks in membrane; over 30 years old
- Single-pane windows
- Classroom wing is not accessible
- Many barriers to accessibility throughout
- Missing exit signs or signs not lit
- Many aspects and components do not meet current fire safety code
- Flooring in lower level is uneven and lifting

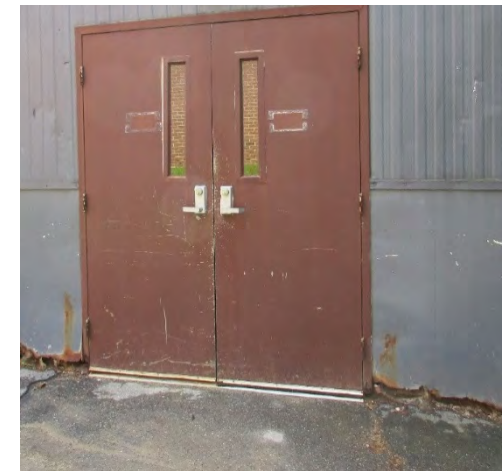
Food Service

- No food service at this building

Hazardous Materials



Administration Building



Maintenance Building



2,560 sf building

1980's Original Building

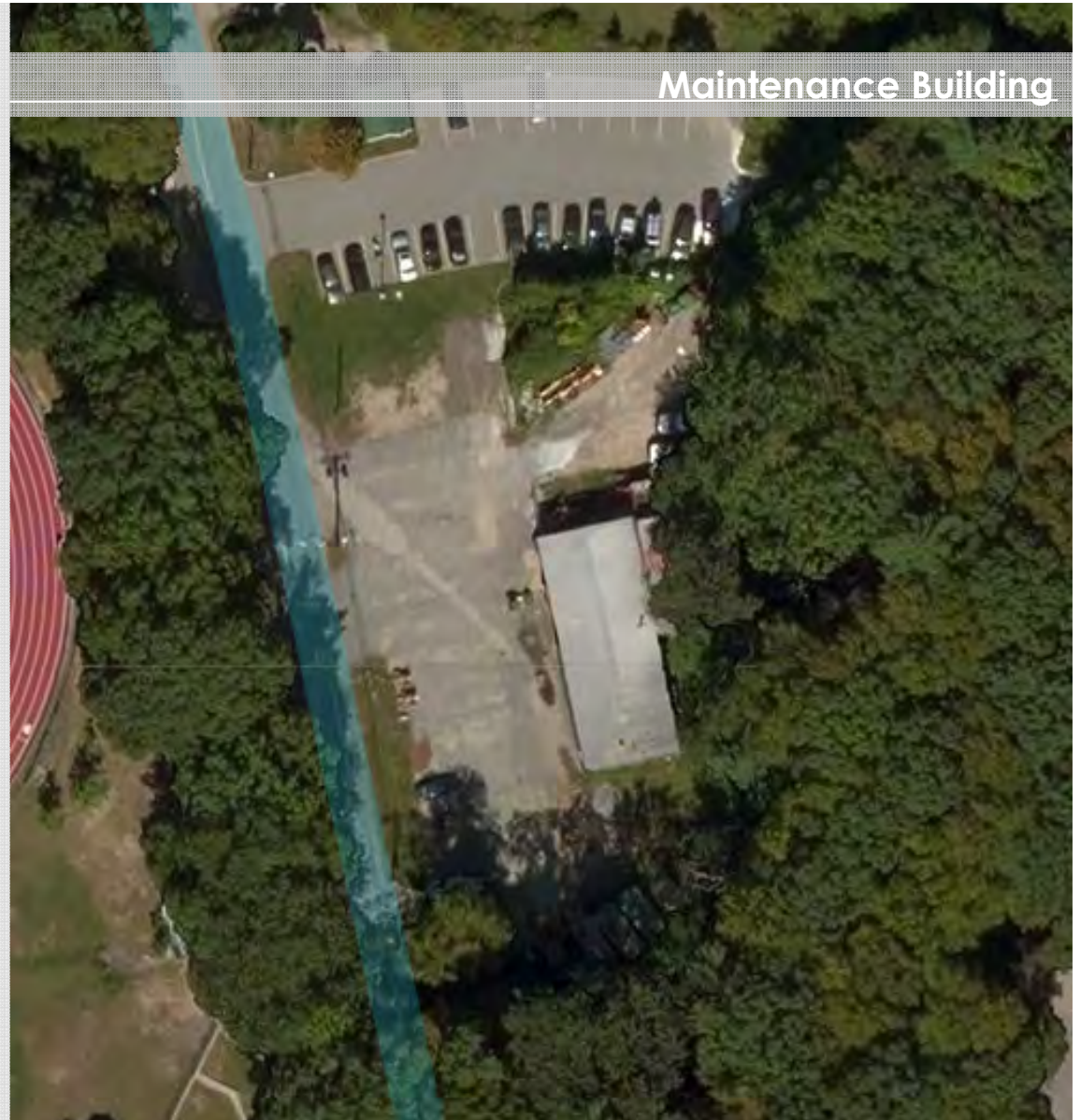
5 Staff



Acton Boxborough Regional School District
Site and Building Assessment

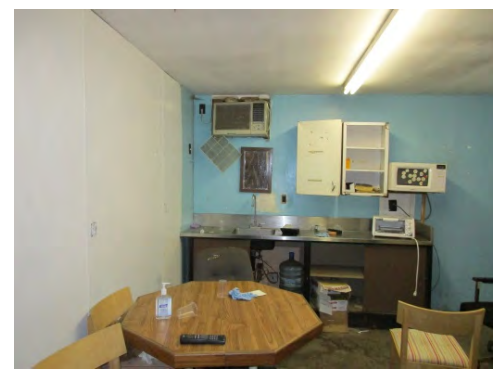
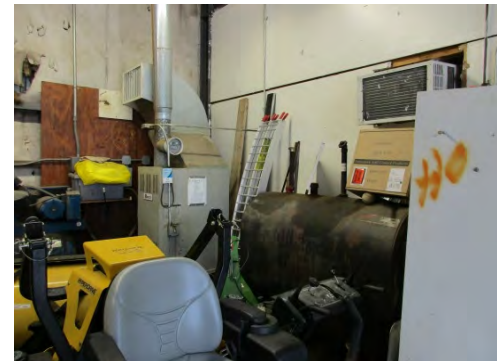
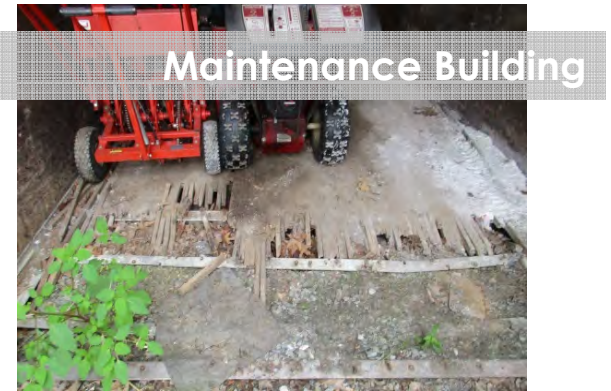
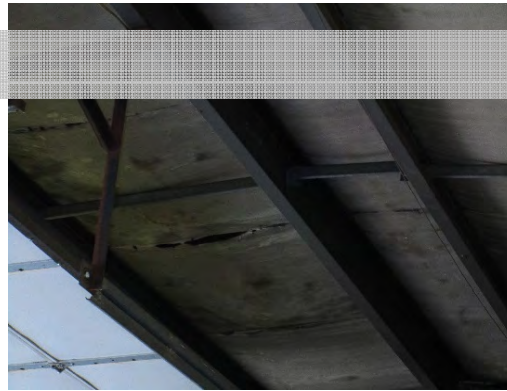
Landscape / Civil

- Poor drainage: low point in front of building
- Pavement in poor condition
- Provide curbing to direct drainage and maintain pavement
- Site appears small
- Lack of vegetative screening



Primary Issues

- Leaking Roof; exposed fasteners - rusting
- Poor insulation in walls and roof
- Lack of separation – welding, oil tank, heating furnace, vehicle repair
- Lack of separation – staff room, office area vs. vehicle bays
- No toilet room
- No wasteline serving the building; waste from sinks exits to daylight
- No hot water
- Busses cannot fit inside vehicle bay; problem in winter
- No parts storage; trailers are in poor condition
- 36 Busses maintained here
- No Fire Alarm
- Original Electrical Systems – Poor condition



In Summary

- Buildings overall are solidly constructed and are maintained well
- Buildings that have not had any additions or significant renovations since original construction are in the most need of improvements:
 - Administration Building: 1957
 - Douglas: 1965
 - Gates: 1967
 - Conant: 1970
- Codes and regulations for fire safety, handicap accessibility, ventilation, and energy efficiency, have changed significantly over the past 45 to 68 years
- Building infrastructure systems and components can be expected to last 25 to 35 years before needing replacement.
- This Capital Improvement Plan is a great first step in identifying issues at a district-wide level, providing recommendations and prioritizing work for cost-effective decision making



Next Steps

November 2015

- Receive Comments/Feedback on Draft Report
- Begin Capital Improvement Plan
 - a. Review and provide final edits to existing conditions reports
 - b. Categorize and prioritize recommendations
 - c. Place information into capital improvement plan spreadsheets
 - d. Review with school district for input and feedback
- Begin Cost Estimating

December 2015

- Review and Finalize Capital Improvement Plan
- Finalize Cost Estimate

January 2016

- Final Report and Presentation

