

# Educational Specifications



**Town of Woodbridge - Beecher Road School  
Alteration, Energy Conservation & Roofing Project  
State Project #: TMP-167-TJ VK**

## **Educational Specifications**

**August 15, 2014**



## **Table of Contents**

- I. General Building Information
- II. Eligible Systems
- III. Ineligible Systems
- IV. Appendix
  - 1. Key Plan
  - 2. Roofing Plan
  - 3. Window Wall Plan
  - 4. Casework And Sinks Plan
  - 5. Ceiling Work Plan

I. General Building Information

The Beecher Road School is a kindergarten through 6<sup>th</sup> grade facility located on a 6-acre site at 40 Beecher Road in Woodbridge, Connecticut. The building is a single-story, sprawling facility totaling 144,500 square feet, that was built in phases, beginning with the original building in 1960/64 with subsequent building additions in 1970, 1994 and 1997, as follows:

- A, B & C Wings Original Building: 1960/64
- E & S Wings South School: 1970
- D Wing: 1994
- K-Wing Kindergarten, Cafeteria, Library: 1997

The building includes classrooms, auditorium, gymnasiums, a pool, kitchen/cafeteria, music rooms, science rooms, administrative offices, mechanical equipment rooms, storage areas, corridors, and server rooms. The total occupancy is reported to be approximately 369 people. The south end of the building, including the pool, locker rooms and gymnasium is used by the School and also has a shared by the Town as a recreational facility. **(Refer Area Key Plan below and in Appendix)**



II. Eligible Systems:

A. Whole Building

1. New Air Conditioning System

The School currently has no building-wide, central air conditioning system. The only spaces currently with air conditioning in the building are: the administrative offices, the library, the media center, the IT closets; and the multi-purpose room and support spaces in the center “pod” area in the S-wing. Air conditioning was also cited as a recommendation in the School’s security risk assessment to eliminate the practice of keeping the classroom exterior doors open in the summertime.

A new central chilled water plant will be provided as a “new feature” for the building. The system shall consist of the following components:

- A new 275-ton, roof-mounted, air-cooler chiller; with structural support steel, and all associated equipment including:
- The building’s existing hot water piping distribution system shall be converted to a new chilled water/hot water, dual temperature piping distribution system. A dedicated HW only piping loop shall be added to serve the year-round heating only loads including pool water heating, domestic water heating, cabinet/unit heaters and perimeter radiation. Insulation shall be added to the existing water piping as necessary to meet requirements for a chilled water piping system; new chilled water and secondary distribution pumps and VFDs; new electrical circuits to provide power for the new equipment; a building management (BMS) automatic temperature control system to serve all new equipment.

2. New Security Features

The entire School building will receive security upgrade measures to improve the overall integrity of the School’s security system. The school is applying for funding for these security upgrades under the State grants funds allocated by Governor Malloy and the State Legislature. Security upgrade measures shall include:

- Clear anti-intrusion security window film on all exterior perimeter glazing of the building;
- New security doors at community shared portion of building and to separate Town shared portion of building from School portion of building;
- A “hardening” of the District office glazed walls.

- New Salley-port at main entrance to School to allow visitors to enter within a secure environment;
- An intrusion system consisting of sensors on all exterior doors and strategically placed motion sensors.
- Interior Classroom Door Locking System: for lockdown events.
- An access control system with access cards.
- A visitor management system with ID badge scanning capability for authorizing credentialed visitors.
- A Security Camera System and video management software for integration with the access control system.
- A visitor intercom system shall allow a visitor to page a master station location
- Duress Alarm triggers (panic button) to alert the Police Department of an emergency situation.

3. Canopies:

The School building will be provided with new canopies at the north and South entrances. The canopies were recommended as part of the security risk assessment report to create a safe haven from the rain and preventing parents and visitors from running into the School during downpours.

4. Lighting Controls:

The existing lighting throughout the building are manually controlled from wall mount switches or breakers in electric panels. New automatic lighting occupancy sensors controls shall be provided in the classrooms, gymnasiums, library, locker rooms and principal's office and conference room.

5. Solar Photovoltaic Panels:

A new 250-watt photovoltaic solar panel array will be added to the School on the roof above the A, B & C wing for on-site renewable energy power generation. The project is financed by the State of Connecticut's Clean Energy Finance Investment Authority (CEFIA) under a program in partnership with the local utility company, UI. The Town of Woodbridge applied for and was granted a ZREC credit grant with the State. The solar panel array will be owned, operated and maintained by CEFIA Beecher Road School will purchase the power generated at a reduced rate than currently offered by local utility company.

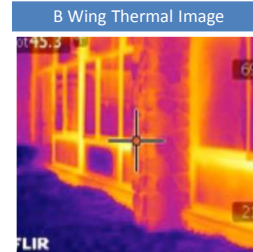
B. A, B, C, and B-K Wings

The A, B, C & B-K wings are the original section of the building dating back to the 1960's and houses the following educational components:

- The A-wing houses (5) 1<sup>st</sup> grade classrooms, (1) 2<sup>nd</sup> grade classroom, a music room, art room, speech therapist and classrooms for the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> grades, a gymnasium/commons area, and the central mechanical room.
- The B-wing contains (4) 2<sup>nd</sup> grade classrooms; (4) multi-age classrooms, a unique educational model consisting of a classroom for each 1<sup>st</sup> through 4<sup>th</sup> grades.
- The C-wing houses (5) 3<sup>rd</sup> grade classrooms; and a intermediate special education intensive resource room.
- The center B-K Wing contains the north gymnasium and commons area, where physical education takes place including before and after-school programs; a psychologist office, language arts center; teacher's lounge/lunch room; and a health education, special education classroom, math-lab classrooms and the general administration offices.

The eligible work being done in the A, B & C wings consist of the following scope of work:

- **Roofing Demolition and New Roofing Installation:** The roof in this section of the building (**Refer to Roofing Plan in Appendix**) is original to the 1960 construction making it 50 years old. The School has requested and received a waiver from the Commissioner's office to do an emergency roofing demolition and new roofing installation, in the A wing of the School, prior to this request for State plan approval. The reason for the emergency waiver was because the A-wing roof has had numerous leaks and the under-decking panels, that are exposed in the classrooms below this portion of the roof producing a mildew odor and it recently tested positive for mold.
- **Window Wall Demolition and New Window Wall System:** The window wall systems in these sections of the building (**Refer to Window Wall Plan in Appendix**) are original to the 1960 construction, and have failed. The caulking has failed, is crumbling and missing in sections, and has also tested positive for asbestos. The existing window and wall system does not meet the State's current energy code for thermal boundary performance standards with minimal insulation and single-paned glass. The following is an infrared scan of the building façade in the B-wing indicating substandard thermal boundary performance:



- **New Air Conditioning:** The A, B and C wings are currently provided with heating and ventilation only, however, no air conditioning, via a wall mounted unit ventilator in each classroom. These old heating-only unit ventilators will be demolished; and new unit ventilators with heating, as well as, a new air conditioning feature, will be installed. The building's new direct digital control system will be extended to the new unit ventilators.
- **Casework Demolition with New ADA Casework and Sinks:** Each classroom in the A, B, and C wings has sinks in a casework base that are not handicapped accessible. The sinks and casework will be demolished and new ADA compliant casework will be installed. **(Refer to Caseworks & Sinks Plan in Appendix)**

C. D-Wing:

The D-wing addition to the building was constructed in 1994 as a building addition. The D-wing houses the following educational components: four (4) 4<sup>th</sup> grade classrooms; a nurse's office; Spanish classroom; and a special education suite. The following are the scope of work items in the project for the D-wing:

- **New Air Conditioning:** The D-wing is currently provided with heating and ventilation only, however, no air conditioning, via a wall mounted unit ventilator in each classroom. These old heating-only unit ventilators will be demolished; and new unit ventilators with heating, as well as, a new air conditioning feature, will be installed. The building's new direct digital control system will be extended to the new unit ventilators.
- **Ceiling Work:** The ceiling tiles are being replaced in the corridors to accommodate the new work going in above them. The scope of work includes demolishing the existing 2'x4' ceiling grid and tiles, and installing a new 2'x2' grid and ceiling tiles in the main corridor along the entire length of this wing. **(Refer to Ceiling Work Plan in Appendix)**

D. K & C-K Wing:

The K wing and the C-K wings of the building are the newest section of the

building constructed in 1997 as a building addition. The K-Wing contains (6) kindergarten classrooms; a pre-school classroom; the primary special education intensive resource room; with an interior outdoor courtyard. The C-K Wing contains the kitchen, cafeteria serving all 780 students each day; library/media center and technology center.

The following are the scope of work items in the project for these areas:

- **New Air Conditioning:** The K-wing is currently provided with heating and ventilation only, however, no air conditioning, via a wall mounted unit ventilator in each classroom. These old heating-only unit ventilators will be demolished; and fan coil units, one per classroom with heating, as well as, a new air conditioning feature, will be installed. Ventilation will be provided by new roof mounted energy recovery ventilators (ERV's) with associated ductwork to each fan coil unit. The building's new direct digital control system will be extended to the new fan coil units and ERV's.
- **Ceiling Work:** The ceiling tiles are being replaced in the corridors to accommodate the new work going in above them. The scope of work includes demolishing the existing 2'x4' ceiling grid and tiles, and installing a new 2'x2' grid and ceiling tiles in the main corridor along the entire length of this wing. (**Refer to Ceiling Work Plan in Appendix**)
- **Painting:** The corridor walls in the K-wing will be painted (2) coats of a low VOC paint.

E. S-Wing:

The S-wing of the School was part of the 1970's building addition. This wing of the School contains six (6) 6<sup>th</sup> grade classrooms; six (6) 5<sup>th</sup> grade classrooms; a psychologists office; educational resource room; language arts instructional classroom; an intermediate math lab classroom; a computer lab; a speech center; art room; science lab; Spanish classroom; music classroom; the intermediate staff lunch room/lounge; copy room; and multi-purpose room for educational events that is used both daytimes for educational activities, and evenings for community events including girl scouts, Town recreation program, PTA meetings and professional development meetings.

The following are the scope of work items in the project for these areas:

- **New Air Conditioning:** The classrooms in the S-wing are currently provided with heating and ventilation only, however, no air conditioning. These old heating-only air handling units with all associated ductwork will be demolished; and fan coil units, one per classroom with heating, as well as, a new air conditioning feature, will be installed. Ventilation will be provided by new roof mounted energy recovery ventilators (ERV's) with



associated ductwork to each fan coil unit. The building's new direct digital control system will be extended to the new fan coil units and ERV's.

- **Ceiling Work:** The ceiling tiles in the corridors in the S-wing are being replaced to accommodate the new work going in above them. The scope of work includes demolishing the existing 2'x4' ceiling grid and tiles, and installing a new 2'x2' grid and ceiling tiles in the main corridor along the entire length of this wing. **(Refer to Ceiling Work Plan in Appendix)**
- **Painting:** The corridor walls in the S-wing will be painted (2) coats of a low VOC paint.

F. E Wing:

The E-Wing of the building is shared between School and Town recreational functions and is used daytimes, evenings and weekends. In the mornings during pre-school hours it is used for team practice and school programming; from 8:30 AM to 3 PM it is used by the School for gym classes; after school hours it is used for recreation and extended day programming; and evenings and Saturdays and Sundays it is used for Town recreation programming and leagues for both children and adults.

The spaces in this portion of the building contain: the district superintendent's offices; the south gymnasium; natatorium; Town recreation office; band recreation room; and a south assembly/multi-purpose room that is also used 7 days a week for School events; Town agency meetings; and weekends as a community center that Town residents can reserve.

The following are the scope of work items in the project for these areas:

- **New Air Conditioning:** The spaces in the E-wing are currently provided with heating and ventilation only, however, no air conditioning. They are served by three (3) air handling units: one serves the gymnasium, assembly/fitness center; locker room, respectively. These old heating-only air handling units will be demolished; and new air handling units, with heating, as well as, a new air conditioning feature, will be installed. Ventilation will be introduced to each air handling unit via outside air louvers as it currently is. The building's new direct digital control system will be extended to the new fan coil units and ERV's.
- **Ceiling Work:** The ceiling tiles in the corridors in the S-wing are being replaced to accommodate the new work going in above them. The scope of work includes demolishing the existing 2'x4' ceiling grid and tiles, and installing a new 2'x2' grid and ceiling tiles in the main corridor along the entire length of this wing. **(Refer to Ceiling Work Plan in Appendix)**

- Painting: The corridor walls in the S-wing will be painted (2) coats of a low VOC paint.

### III. Ineligible Systems:

#### A. Whole Building:

1. Lighting: The existing lighting throughout the School are fluorescent fixtures with 32-watt T-8 lamps. The fixtures will be retrofitted with new ballasts and the lamps will be replaced with new T-8 lamps of lower wattage as an energy efficiency measure. The classrooms new occupancy sensor lighting controls will be installed as a new feature.
2. Building Envelope Improvements: A general sealing of the building envelope will be performed to address the deficiencies identified in the infrared imaging report commissioned by the School. Scope of Work shall include the following (Refer to Exhibit A-2):
  - Weather-stripping (92) standard exterior doors and (1) garage door.
  - Sealing the roof/wall intersection of the of the building.
  - Caulking seams, joints and connections on the wood ceilings as directed by the blower door.
  - Insulating and sealing the wall between the pool and the pool ramp.
3. Domestic Hot Water Heater Upgrades: The building's existing fuel oil-fired and electric domestic water heaters will be replaced to provide the benefits of higher energy efficiency and cost savings from switching fuels to natural gas. New instantaneous water-to-water heat exchangers fed from the central gas-fired boiler plant will be provided including hot water and recirculation distribution piping, valves, fittings and controls for a complete system.
4. Electric Load Control Systems: A plug load control system will be installed on all building printers, copiers and overhead projectors enabling them to be turned off automatically during un-occupied hours. A commercial refrigeration energy economizer will be installed on the kitchen walk-in refrigerators and freezer, consisting of a refrigeration sensor and controller, to reduce the compressor cycles of these appliances.
5. Electric Transformer Replacement: The building's existing standard-efficiency will be replaced with new Energy-Star rated, high efficiency models meeting the NEMA Standard TP-1 requiring replacement of transformers of 600 volts or under. NEMA Standard TP-1 was originally developed to promote the use of higher efficiency transformers in support of the Department of Energy's

(DOE) guidelines for more efficient electrical devices that reduce energy consumption.. Transformers to be replaced shall include:

Location	Qty.	kVA
Electrical / Boiler Room	1	150
Electrical / Boiler Room	1	112.5
Kitchen Basement	1	150
Janitor's Closet	1	30
Custodian Office Closet	1	45
Custodian Office Closet	1	15
Gym Storage	1	45

6. Water Fixture Retrofit: The building's existing high-flow plumbing fixtures shall be replaced with new low flow fixtures for all restrooms throughout the School, including faucets, urinals, toilets and showerheads, as follows:

- The existing floor and wall-mounted, 3.5 gallon per flush flushometer toilets shall be replaced with new 1.28 gallon per flush toilets and new flush valve.
- The existing 1.5 gallon per flush urinal valves shall be retrofitted with ½ -gallon per flush retrofit kits.
- New ½ -gallon per minute moderators shall be installed on existing standard and infra-red lavatory faucets.

7. Micro-turbine: A new roof-mounted, on-site power generator micro-turbine shall be installed as an energy cost saving measure. The new micro-turbine shall utilize natural gas to generate 65 KW of electricity and 400 MBH of waste heat for pool water heating, domestic water heating, and building space heating in the wintertime.

8. Painting: The corridor walls throughout the School will be painted (2) coats of a low VOC paint. **(Refer to New Painting Plan in Appendix)**

B. A, B & C-wings

1. Painting: The classrooms in the A, B and C wings will be painted (2) coats of a low VOC paint. The classroom ceilings will be painted with (1) coat of flat paint. The exposed steel beams in the classrooms will be painted with (2) coats of DTM metal protective paint (as accent color). **(Refer to New Painting Plan in Appendix)**

C. S-Wing:

Air Conditioning Unit Replacement: The multi-purpose room and adjacent

interior support spaces in the S-wing are currently provided with heating, ventilation and air conditioning via an air handling unit with split roof-mounted condensing unit. This system will be replaced with a new indoor air handling unit (AHU) equipped with hot water/chilled water coils capable of being fed from the new central boiler and chiller plant. Ventilation will be provided by a new roof mounted energy recovery ventilators (ERV's) with associated ductwork to the AHU. The building's new direct digital control system will be extended to the new AHU and ERV's.

D. E-Wing:

Pool Dehumidification Unit Replacement: The pool area in the E-wing is currently served by an indoor air handling unit that provides heating and ventilation to the space. The unit was also originally equipped with a dehumidification feature via a split outdoor roof mounted condensing unit, however, this unit failed shortly after it was installed and hasn't functioned in several years. This old heating-only air handling units will be demolished; and new air handling units, with heating, as well as, a new air conditioning feature, will be installed. Ventilation will be introduced to each air handling unit via outside air louvers as it currently is. The building's new direct digital control system will be extended to the new fan coil units and ERV's.

## **APPENDIX**

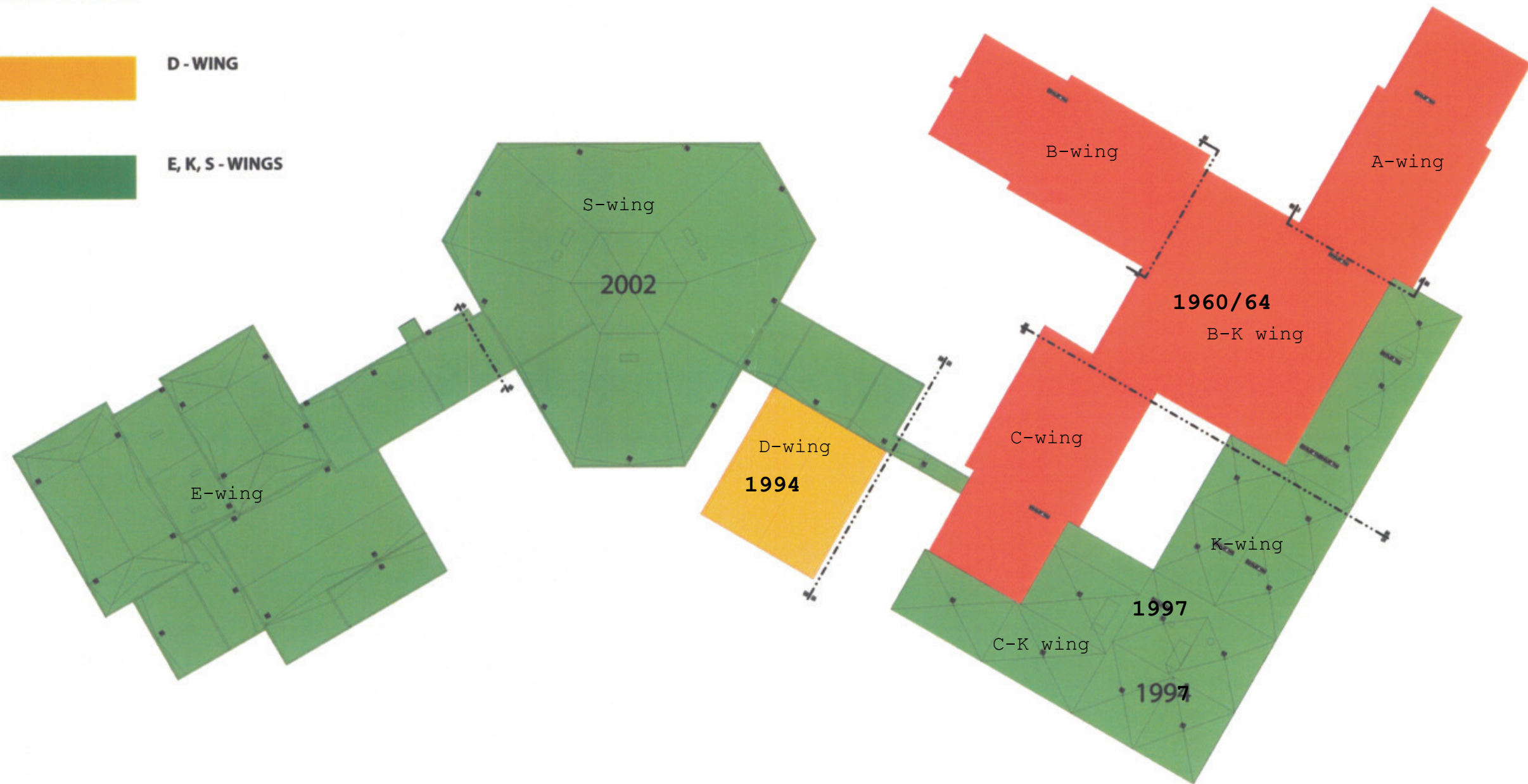
1. Key Plan
- 2 Roofing Plan
- 3 Window Wall Plan
- 4 Casework and Sinks Plan
- 5 Ceiling Work Plan



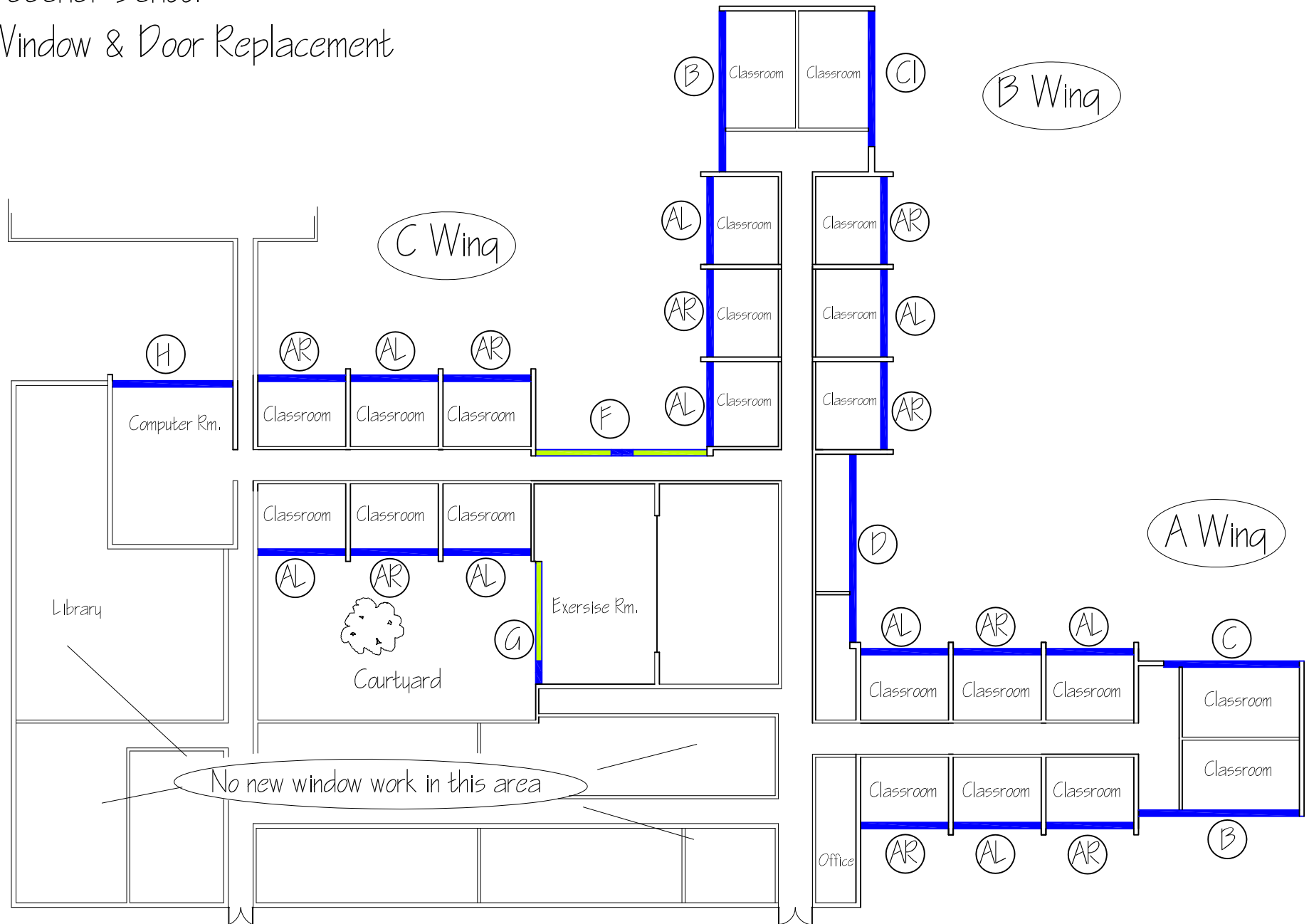
**KEY PLAN**

# Existing Conditions: Roofing Systems

- A, B, C - WINGS
- D - WING
- E, K, S - WINGS



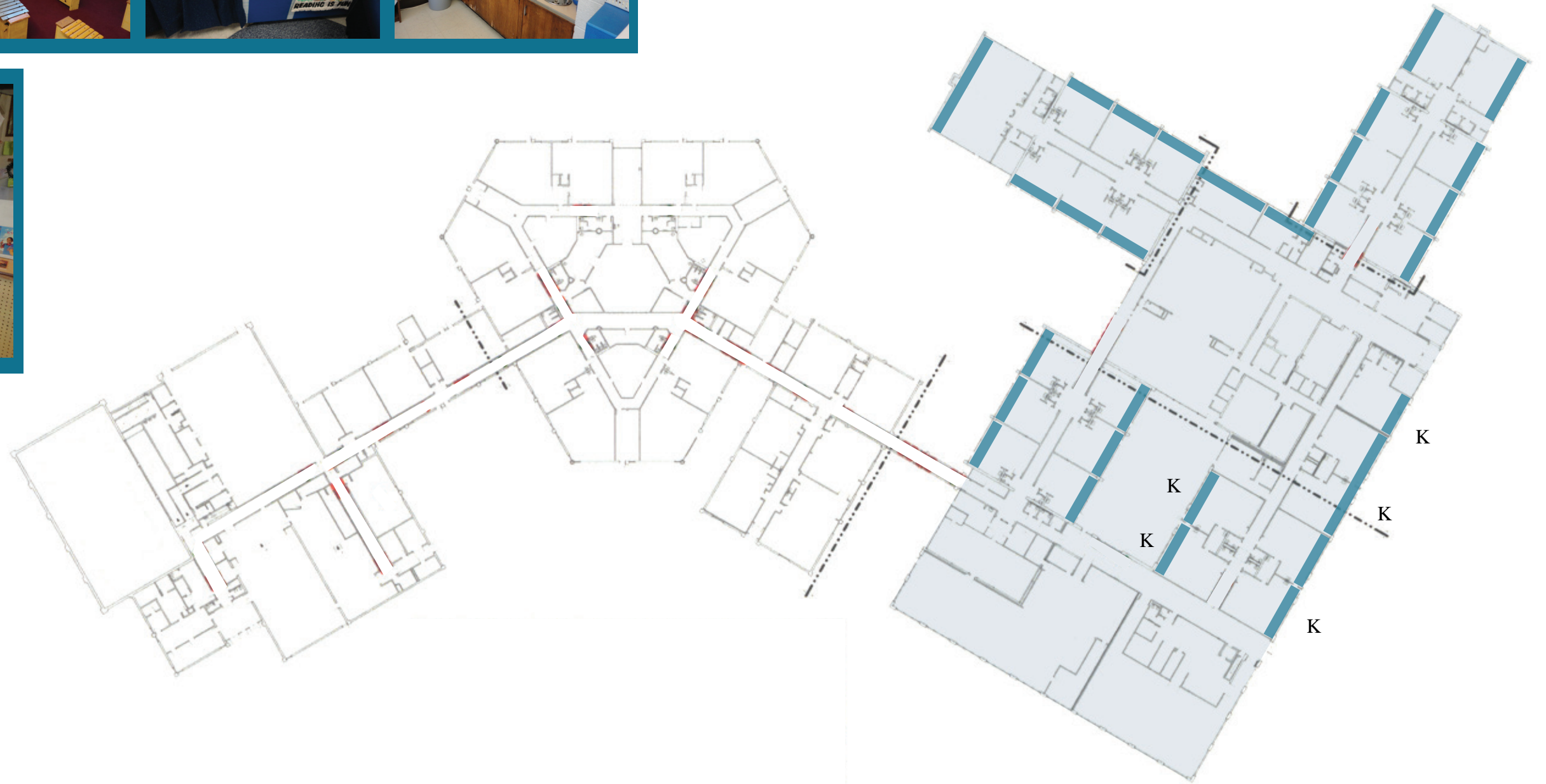
A & A Window Products  
Beecher School  
Window & Door Replacement





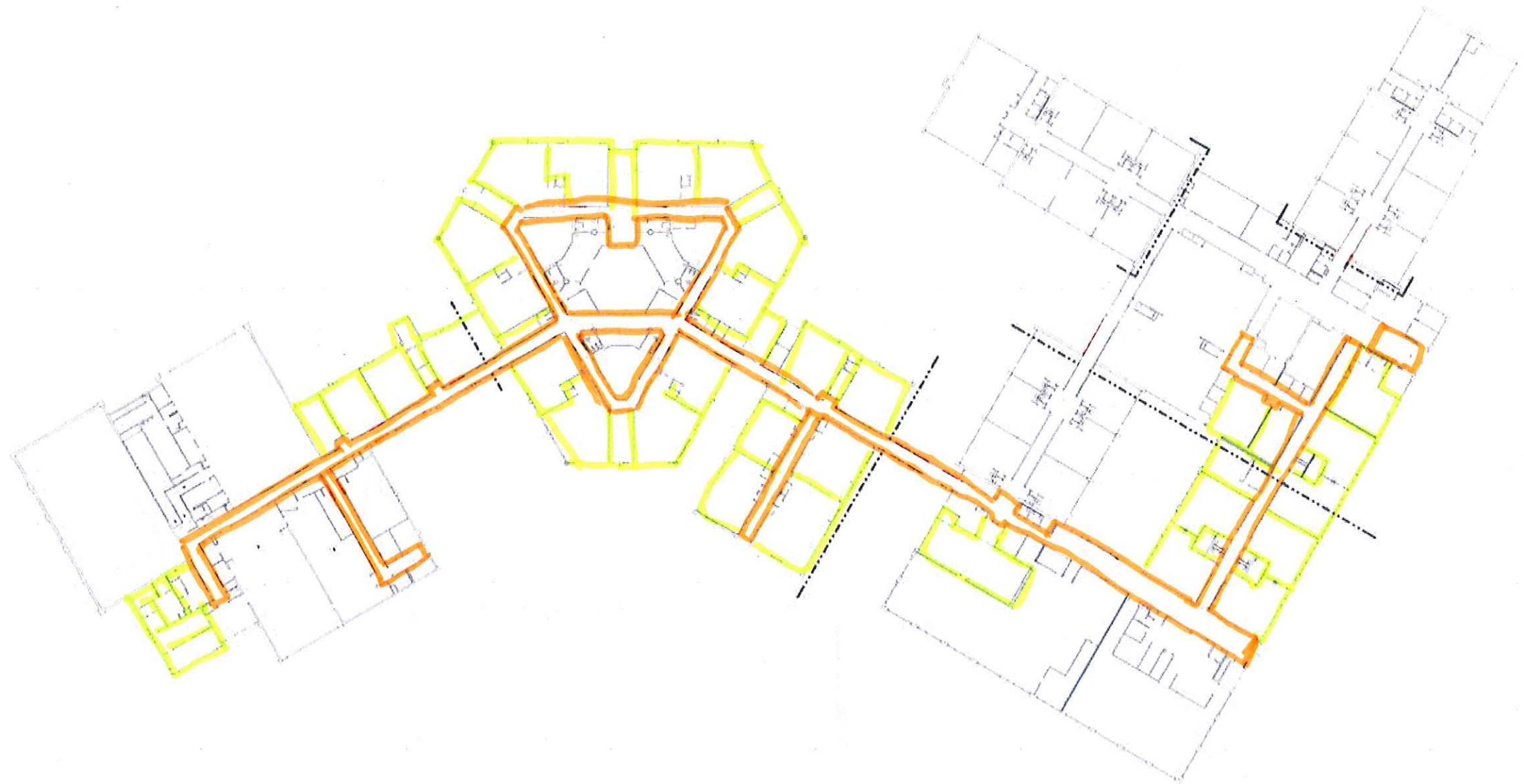
# Proposed Caseworks & Sinks

TO MATCH EXISTING CASEWORKS



Note: K wing mill work to replace 7-foot unit ventilators being removed

■ NEW CASEWORK & SINKS



- New Tile and Grid
- Existing Tile