

# Pocantico Hills Central School

SCHEMATIC DESIGN PROGRESS REPORT



INTEGRATED ENERGY CONCEPTS  
ENGINEERING, P.C.

Savin/JMOA



SCHEMATIC DESIGN  
REPORT

BOARD OF EDUCATION  
APRIL 29, 2008





April 29, 2008

Pocantico Hills Central School District  
599 Bedford Road  
Sleepy Hollow, NY 10591

Attn: Board of Education

RE: Schematic Design Progress Report, Project #: 06-2110

Since the successful voter authorization on January 23<sup>rd</sup> of this year, many different stakeholder groups have been active in gathering information and developing what will become the final capital project document set. The first phase in this process is Schematic Design, where we meet with stakeholders and begin to define the overall usage of space, the scale and relationship of project components to one another, and the general impact to the local area as well as to the overall building function and structure.

With that, several iterations of design have been generated, reviewed and developed further. Each area of impact has a distinct team of stakeholders brought together to review program in relation to space usage, generate ideas as to this usage, review design solutions and generate feedback as to those solutions to continue moving forward. The report notes the individual participants in each area and the discussion topics to date. Inclusive in all of the meetings has been the Superintendent and the Assistant to the Superintendent for Business. Other selective staff members have been brought in or asked to comment as necessary on specific issues.

The report provides you a good summary of decisions made and the progress thus far. As far as schedule, we are moving forward into the Design Development Phase of the project. Therefore, the attached documentation reflects a mark in time and quite often, what is included has changed slightly already. We will continue working with stakeholder groups to develop further detail in each of the areas of impacted, as well as with overall infrastructure items and look forward to providing you an update at the next phase.

Sincerely,

Brian E. Cieslinski  
Senior Principal

**SEI design group**



SCHEMATIC DESIGN  
REPORT

DATE: April 29, 2008  
TITLE: Pocantico Hills Central School District - Capital Project  
PROJECT NO.: 06-2110

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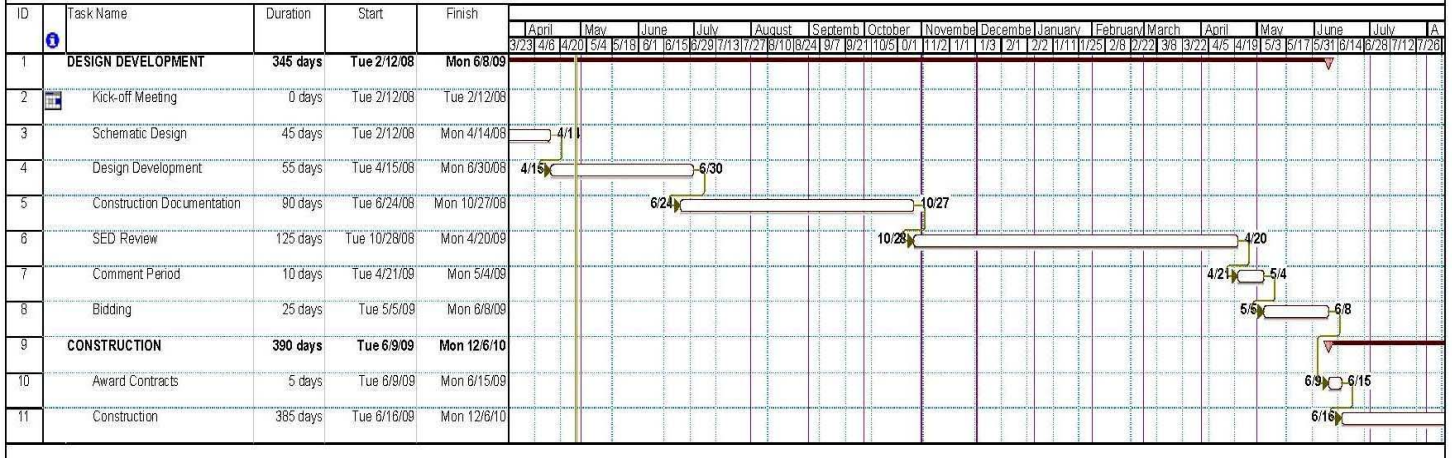
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# SCHEMATIC DESIGN REPORT

## POCANTICO HILLS CSD - CAPITAL PROJECT DRAFT - PROJECT MASTER SCHEDULE

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Mon 4/28/08





**SCHEMATIC DESIGN**  
**REPORT**

**Initial Project Scoping Document**

Pocantico Hills Central School District

66-08-02-04-0-001-000

<b>ALTERATIONS</b>
<b>General Building Items</b>
In the 1953 wing, correct window support above cubbies.
Add fire separation from storage areas to attic space.
<b>Windows</b>
Restoration of glass panels in the corridor doors.
Restoration of stain glass window panels on buildings exterior.
Refinish entrance doors in the 1931 building. Add electronic lock release device and camera on main entry door for enhanced security.
Replace 14 doors on the 1953 building.
Replace the pool pump room doors.
Replace seals on shop room exterior doors.
<b>Exterior Envelope</b>
The slate roof repair allowance.
Gutters and downspout repair/replacements on 1931 building.
Replace Roofing material over the 1953 and 1971 buildings. Appx. 77,000 SF.
<b>Accessibility</b>
Install an elevator in the 1953 wing, affecting room 216 or 217, and lowering into the lower lobby space. This will provide accessibility to the first and second floors of the 1953 addition.
Add a stair lift to the 1971 building outside of the kitchen area. Integrate with shop area renovations.
<b>Program</b>
Remodel of the library area, support spaces and storage rooms. Integrate of technology, services, and meeting spaces.
Integrated computer lab.
Integrate a separate server room.
Update window system.
Remodel of the shop, dark room, and art storage areas to accommodate an integrated design and implementation studio.
Remodel Home Economics space to provide updated equipment and lab components, as well as gaining better utilization of the adjacent functions.
Replace the skylight units to reduce heat gain into the space.
Replace the bleachers along the west wall with new electric operated units.
Refinish the gymnasium floor.
Replace lockers in Boys and Girls locker rooms.
Boys and Girls locker rooms; general repaint of entire room.
Add projection screen and associated computer equipment for large group instruction functions.
Add new stage lighting and control board.
Renovate front area of Nurses room for new accessible bathroom facilities and enhance ADA compliance.
Add fill in space at guidance area
Renovate space at guidance area



## SCHEMATIC DESIGN REPORT

<b>Mechanical Items</b>
Replace current steam boilers with new hot water units and pumping system. Unit ventilators would need to be done in conjunction with this option.
Replace current steam boilers with new hot water units and pumping system. Unit ventilators would need to be done in conjunction with this option.
Replace the H&V units serving the Music room, Media Center, Stage and Auditorium.
Replace unit ventilators in the 1931 building.
Replace unit ventilators in the 1971 building.
Replace outside air intake louvers in the 1931 building. OAI louvers should be installed in the 1971 addition. Relief air should be installed in both buildings.
Provide a new air handling system in the 1953 addition.
Replace the air conditioning units in the administrative offices.
Provide air conditioning with remote condensing units or heat pumps. Approximately: Media Center - 15 tons, Cafeteria - 15 tons, Auditorium - 12 tons, and the Music rooms - 7 1/2 tons.
Provide air conditioning to the offices located on the second floor of the 1953 wing with a 7 1/2 ton split system air conditioning unit.
Provide a dedicated ductless split system A/C unit to serve the file server in the Media Center. This unit would be approximately 2 tons.
Provide a DDC control system through out the building for energy management. The system could be designed to schedule HVAC equipment running hours and perform night set back control.
<b>Electrical/Communications</b>
Replace outdated panel and distribution boards in the 1931 building; approximate number of panel boards that would need to be replaced are 7 - 200A, 208Y/120V, 3 phase, 4 wire, 422 pole panel boards.
Replace the emergency generator in boiler room #1. Estimated size of a replacement generator is 30KW.
Install new emergency light units to bring the system up to code. Approximately 120 units would be needed to for a complete building replacement project. A minimum of approximately 70 units would be needed to cover areas not currently covered.
Replace the current building Public Address systems installed in 1971.
<b>Fire Protection</b>
Install a dry-type sprinkler system in the attic area.
Lighting Protection at Roof
<b>Interior Plumbing Distribution Piping</b>
Replace missing pipe insulation. (Allowance)
<b>Environmental Items</b>
There is notation as to pipe insulation and pipe fittings containing asbestos material. Additional survey will need to be done to quantify the material better prior to any heating system replacements. (Allowance value)

<b>SITWORK</b>
<b>Site Items</b>
Replace Pool Structure with updated one in same location, per Consultant
Repair/reset stones and re-grout retaining wall structures. Assume approximately 1000 SF.

### 1. ADA Toilet Rooms

Original scoping affected the staff toilet room adjacent to the Library. In moving this around, as well as looking to address a larger scale issue of accessibility in the building, it seems prudent to take advantage of the location due to water and sewer supply as well as being able to address ADA issues for the public.

- Existing locker room across from faculty room to be converted into two single handicap accessible water closets. Verified with Cafeteria staff that the lockers are not currently being used and can be eliminated.

### 2. Art - Rm#210 - Jolene Morotti

General changes to this area are part of the overall updates to program allowing for an integrated graphic design and implementation studio in the shop area.

- A new kiln room and art storage shall be provided in the location of the current dark room. The dark room is obsolete and will be eliminated.
- Kiln and accessories to be moved from storage area into a new room connected to the art classroom.
- An office space is not required. Provide space for (3) flat files in a storage area.
- The door from the corridor into the darkroom can be eliminated.
- Smart board needs to be located the wall adjacent to the new computer lab.

### 3. Auditorium Stage - Sheila Stanton

Updates in this area and are being pursued including replacement of the dimmer controls with updated system components based on ETC's Sensor + Series.

- Controls in the rear of the auditorium are desirable. At minimum a jack will be provided for a portable panel plug in.
- Need an additional light bar for the rear portion of the stage. Currently there are only shop fluorescent's provided.
- Sheila will be researching the needs for the stage lighting and provide additional information at a future meeting.

### 4. Computer Lab - Rm#261 - Jolene Morotti

General changes to this area are part of the overall updates to program allowing for an integrated graphic design and implementation studio in the shop area.

- A new computer lab will be provided where the current art office exists. The art office is not necessary and the art storage will be relocated to the existing dark room area.

### 5. Elevator & HC Lift

Both of these items will allow for ADA access to the first and second floors of the complex which contain the bulk of common area services and a large amount of classroom space. Aligning the elevator shaft location on the first and second floor was critical in making this work. We were also able to tuck the lift back from the general walking area by utilizing space that was part of the large vacuum system supplying the shop area. This unit will be scaled down.

- Elevator to be located in the location of the existing reading room and come down into the lobby below. The reading room shall be reduced in size and located behind the elevator next to the window wall. The new reading room shall accommodate one on one work sessions.
- The elevator and lift should be sized large enough to transport a ride on carpet sweeper (unit size to be determined).
- The handicap lift shall be located in the corridor outside the existing technology classroom. It will partially go in the location of the existing vacuum system. The vacuum will be eliminated and the remaining space will be converted to storage.

#### **6. Guidance Office - James McVeigh**

General changes to this area are part of the overall increase in area provided under the current roof.

- Need (1) conference table.
- (2) Couch
- (1) Desk
- (2) Guest chairs at desk
- (1) File Cabinet
- (2) Tables
- (1) Bookcase
- (1) Computer
- (1) Smartboard
- Place conference area near window and desk area near the door.

#### **7. Gymnasium & Locker Rooms - Bobby McCann, Daniel Linehan**

The alterations here are all part of original scope in handling items that have exceeded their useful life. Some requests have been made as additional to that scope and are noted for review at a later time.

- Skylights leak and need replacement
- Refinish gymnasium floor, teachers to provide new floor stripping requirements during DD.
- New plastic composite bleachers to be provided with electric operation integrated.
- New glass backboards on main court needed (not in original scope)
- Existing ceiling mounted gymnastics equipment can be removed (not in original scope)
- Sound system replacement/upgrades needed (not in original scope)
- Storage area needed in the boy's area for uniform storage.
- Lockers are old and too small, Need (90) boys & (90) girls full height lockers plus additional lockers for summer camp pool users.
- Existing rows and benches are desirable in new layout.
- See through lockers wanted in boy's locker room, but not in girls.

## **8. Home Economics - Rm#215 - Laura Garrido & Patty Palumbo**

Updating this area will allow for better utilization, by breaking it down into two spaces that can be used simultaneously. Review of this area prompted study of the neighboring science spaces and has provided a reconfiguring that ties these together as well.

- Classes taught three times per week with a maximum (24) student per class.
- The existing room will be totally renovated.
- (2) Cooking stations are satisfactory for the class needs.
  - i. (2) back to back stoves
  - ii. (1) refrigerator freezer
  - iii. (1) dishwasher
  - iv. (2) microwaves
  - v. (2) sinks
  - vi. (1) hand sink
- Power upgrades are need
- All new casework should be lockable
- Prep room casework needs replacement
- (8) sewing stations are desirable
- Possibly provide accordion wall between the resource room and Home Ec. room.

## **9. Media Center/Library - Anne Gordon**

This space gets a wide variety of usage from several different users. From multiple age groups to meeting functions, the Media center is a very challenging space to layout while still providing the required flexibility needed.

- Circulation Desk
  - i. Locate near entrance
  - ii. Should be able to monitor entire room from desk
  - iii. Book drop box/cart to be located at circulation desk
  - iv. Provide area for cart containing held books
  - v. (1) Computer for processing w/ printer
  - vi. Display area
- Computer Area
  - i. (9) Fixed computers needed
  - ii. Screens to be visible by librarian or assistant
  - iii. Provide space for existing student printer
- (2) Teaching Areas
  - i. (2) Smart Boards; (1) fixed and (1) portable
  - ii. Tables for (20) students in each area rectangular tables preferred

- iii. One area to have story telling tiered seating.
- o Copy/Workroom
  - i. Need counter area for checking in new books with adjacent book box stacking area
  - ii. Mailboxes for teachers copy orders accessible to children.
  - iii. Sorting area (shared with book check in area)
  - iv. Existing Laminating Machine (3'-6"W x 2'-6"D)
  - v. Existing Production Copier (7'-0"W x 3'-0"D)
  - vi. (1) sink required
  - vii. Should have visual connection to library
  - viii. Copy paper storage (1 pallet)
  - ix. Room to be directly accessed off corridor
  - x. Acoustically treat walls for sound
  - xi. Provide door into office.
- o Office
  - i. Separate from library with some privacy
  - ii. (2) Desks
- o Books
  - i. Currently have 19,000 volumes will grow 4,000 volumes
    - 1. 36"wx36"h (180 books)
    - 2. 36"x68"h (240 books)
  - ii. Currently have 30 magazine subscriptions
  - iii. Concerns about sun damage to books, look at film or tinted glass
- o Storage
  - i. Lockable closet to store laptop cart (6'x2')
  - ii. (2) TV carts
  - iii. (4) 3'-0" x 6'-8" shelves for supplies
- o Server Area / Tech Office
  - i. Conditioned room to house existing server rack
  - ii. Tech office to have two work stations and shelving area to hold 2-way radios for monitors
- o Furniture
  - i. Soft seating throughout
  - ii. Open seating near entry.

#### 10. Nurse - Debbie Calandrello

Reversing the usage of the Principals office and the nurse, allows for a much better flow and increased efficiencies for both users.

- (2) beds
- Hand washing sink
- Under counter refrigerator
- (2) existing (5) drawer file cabinets
- Shelving for resource material
- Wall mounted pamphlet holder
- Book shelf for students
- Lockable medicine cabinet (2'hx3'w)
- Instrument rack with magnifying mirror & light
- Rolling asthma cart with nebulizer
- Tile floor
- Curtain tracks
- (1) computer, (1) printer, (1) phone
- (4) waiting chairs
- Defibrillator mounted on wall outside office
- Cabinet area for storage
- Provide curtains around beds
- Double the amount of counter space.
- Nurses desk to be L-shaped
- Add mirror for viewing of bed area
- Add eye chart viewing location
- Provide wall mounted shelf in the bathroom for supplies.

#### 11. Phone Room

- Existing faculty restroom adjacent to library to be eliminated and replaced with a faculty phone room. New bathrooms will be provided across from the faculty lounge.

## 12. Principals Office - Stanley Steele

Reversing the usage of the Principals office and the nurse, allows for a much better flow and increased efficiencies for both users.

- Provide small conference area which may be later converted into secretary space.
- New desk
- (2) Chairs
- Meeting with up to four students at a time.
- Provide cable television hook up
- (4) four tier file cabinets
- Wardrobe for coat storage
- Work facing wall and turn to guests

## 13. Resource ES (12:1:1) - Rm#217 - Felicia Peterson

This is the resulting space gained as part of rearrangements to the current Home and Careers center.

- (12) Students typical, (15) max.
- (1) Teacher & (1) Aid
- Provide (12) individual desks that can be pushed together as tables.
- Provide (6) computer stations
- (1) Smart board
- Hand washing sink if possible
- Book shelving
- Tackable surfaces

## 14. Resource MS (12:1:1) - Rm#268 - Madeline McDougal

General changes to this room are part of the overall increase in area provided under the current roof.

- (1) Teacher & (1) Aid
- (12) students typical
- Room needs to have acoustic treatment for testing.
- Maximize tackable wall surfaces
- Provide space for (4) existing (4) drawer file cabinets
- Provide (1) new lockable file cabinet
- (1) wardrobe cabinet, (1) bookshelf
- (6) fixed computer stations
- Lockable cabinet to house (6) laptop computers
- ¼ round tables that can be grouped in a circle.

**15. Science - Rm#211 & 212 - Vince Cook, James Cioffi**

Updates to this area were derived when looking at better utilization of the Home economics area. By rearranging the one wall and relocating the storage area, both science rooms benefit in overall arrangement.

- o Use existing tables and desks.
  - i. (24) seats in general; (32) in Earth
- o Prep room to have (2) glass faced tall cabinets
  - i. (1) chemical
  - ii. (2) flammable
- o Fume hood in earth science (not in original scope)
- o (2) sinks required in general science
- o Lab table needed in general science
- o (3) computer stations in General science

**16. Technology - Rm#260 - David Rothstein**

The general area has changed overall program throughout the years and continues to do so. There is a desire to begin tying a computer design program with the art program to generate something similar to "Project Lead the Way" which integrates technology with the physical construction of an object. The program portion is still being worked on, as we move forward with design ideas that would be flexible in accommodating several scenarios.

- o The design of the new space should be geared toward the changing role of technology in schools. Programs like "Project Lead the Way" will be considered.
- o Goals of the new program need to be defined further
- o Provide two areas of work including a "clean space" and a "dirty space"
- o Provide ceiling mounted electrical to work bench areas
- o Speaker in room for safety
- o Prefer open plan for safety, visual is key
- o New dust collection system
- o 18 -24 kids during a session
- o Recommend meeting with local high schools as to tie in program as kids move on
- o Accommodate existing tools as necessary
- o Equipment
  - i. 2 - drill presses
  - ii. 1 - Band saw
  - iii. 2 - disc/belt sanders
  - iv. 1 - 12" disc sander
  - v. 1 - Radial arm saw
  - vi. Hand sanders

- vii. 4 - scroll saws
- viii. 1 - band sander, table top
- ix. 1 - surface planner
- x. 1 - table saw, teacher use only
- xi. 6 - benches
- xii. Finishing bench
- xiii. S station sink
- xiv. Eye wash
- xv. Chemical cabinet

### **17. Swimming Pool - Michael Wisniewski**

- o Sand filters will be used for both pools
- o Dry tablet (calcium hypochlorite) will be used for disinfection for both pools.
- o Calcium hypochlorite storage requirements will be evaluated. A shed will be designed if necessary. A location for the shed will be determined to make transporting chemicals to the chemical room easier.
- o Acid will be used for pH adjustment.
- o Chemical feed equipment will be located in a separate room from the rest of the filtration equipment.
- o A stainless steel perimeter gutter will be used on the main pool. A flush wall option is preferred. Consideration will be given to requirements for depth markers as well as for competitive swimming clearances.
- o The existing pool depths are not suitable for competitive swimming.
- o If a new pool option is selected, it is desirable to make the shallow ends deeper.
- o D&B will look into the requirements for pool configuration per the Northern Westchester Swimming Conference.
- o The pool finish will be marcite with tile lane markers.
- o The pool will be covered in the winter and water kept in the pool to protect the marcite.
- o Alternative materials to tile depth markers will be evaluated.
- o The pool decks will be all concrete. A coloring will be included in the mix design.
- o A brick walkway will be designed leading to the pool entrance. Bricks will be sold to residents and their names engraved on the bricks.
- o New retaining walls will be made from the same material as the existing stone retaining walls.
- o Security fencing will be required. Alternatives will be evaluated for aesthetics and compliance with code.
- o Security lighting is required, but no lighting for night swimming will be included. Receptacles will be installed on all light poles where code allows.
- o A PA system is desired. Speakers will be mounted on the light poles. Access to the PA system is desired on the pool deck.

- Outdoor showers are desired. The location will be evaluated including along the entrance path or on the pool deck.
- Access from the pool deck to the existing picnic area to the north of the pool is desired. This will be evaluated.
- Backstroke flags are desired.
- The school already has two movable lifeguard chairs that can be reused. Fixed lifeguard chairs will be installed as required by code.
- Handicap pool access is required. This will include a handicap ramp to the pool deck as well as access to the pool.
- A ticket/access booth is desired.
- A permanent signage area will be included with an area that temporary event-related signage can be installed as required.
- Sun shelters are desired around the Wading Pool. Consideration will be given to sun shelters on the Main Pool deck.
- A water fountain is desired on the pool deck.
- There is an existing first aid office attached to the school building.
- A control booth will be evaluated. Features may include PA system access, receptacles, telephone and locking storage area for equipment.

#### **18. Roofing/Gutters**

- Reviewed overall roofing composition to be a modified bituminous product which will provide a non-slip surface and be a 2 layer sheet with cap.
- Cap sheet to be a grey version, not bright white
- Will base skylights on Kal-Wall system
- Testing will provide further review of existing insulation for re-use if possible. This will leave some lines on the roof noting areas of concern.
- Insulation will be increase to R-24
- Roof drains to be replaced as necessary
- Slate roof will be reviewed by same company providing tests of insulation, allowance was placed for this.
- Gutter replacement around original building as needed

#### **19. Windows/Doors**

- Restoration of leaded glass in corridors and perimeter windows and doors
- Replace 14 doors on 1953 building
- Add security camera and release at entrance door



## SCHEMATIC DESIGN REPORT

### 20. HVAC/Plumbing Scope of Work

#### General

- NYSED requires that all areas of school facilities that are occupied by students and/or teachers be ventilated at an outside air intake rate at or above that prescribed by the NYS Mechanical Code. Further, all corridors must be ventilated at a rate of 0.1 cfm/sq.ft. outside air. Thus, all offices, teacher rooms, corridors, and ancillary occupied rooms will require a method of ventilation. In single story sections of the facility this will be accomplished using direct penetration through the roof if no previous opening exists. In multistory applications, and in areas where historic issues apply, the ventilation of associated spaces will require duct shafting to the attic, and dedicated outside air units to meet the ventilation requirements.
- For each of the school areas, fin tube radiation and cabinet unit heaters which are existing will be replaced under this project scope, unless specifically identified as units to be abandoned. Exhaust fan systems will be replaced under this project scope, including but not limited to, toilet rooms, locker rooms, classroom relief, science hoods.
- Dedicated exhaust systems will be provided for the science and art areas of the facilities. Each of these systems will be independent in its ducting system.
- Wherever there are toilet room renovations scheduled, appropriate plumbing and HVAC work shall be included in the general scope of work.

#### 1931 - Original Building

- The existing Steam Heating system is past its useful life and needs to be replaced. The district has the desire to move to a hot water heating system during this upgrade. Thus, the scope of work for this includes the removal of the entire existing steam heating system and to provide the new HVAC system (heating via hot water). New system to include following:
- New unit ventilators will be provided at all locations where unit vents exist today. Piping distribution to these unit ventilators will be bottom fed for the first floor and second floor. Primary piping distribution will be in the either in the basement space or the first floor hallway ceiling space. Unit ventilators which are located in the original building will be sized for 750 CFM, and will required a plenum back due to the shape of the existing openings for outside air. For this school area, each classroom requires convectors at the exterior walls of the classrooms in addition to the unit ventilators.
- All of the existing louvers on the exterior of the original building will be replaced with new louvers, and a cast "Reggio Register" quality cover plate to conceal the louver.
- Classroom ventilation relief will be provided as part of this project for the original multi-story construction. The design concept is to move vertically in the building, and having between two and four classrooms relieved on an individual vertical shaft. All shafting ductwork will be commonly collected in the attic space of the building and then power relieved to the outside.
- Cabinet unit heaters will be provided at entrances and areas where heat is required. These units will be selected to make use of the hot water that is part of the higher efficiency hot water heating plant. Security convectors will be provided for hallways and toilet rooms to provide a durable heat source for these areas.
- The offices located on the 2nd floor of the original building will be serviced via a new dedicated air handling system. The offices on the first floor are served by PTAC units. These units are operational, but should be replaced as they are beyond their useful life.
- The boiler room for this portion of the building will be decommissioned as part of this project. All boilers, equipment, piping etc. shall be removed as part of this scope of work.



## SCHEMATIC DESIGN REPORT

### 1953/1971 Addition (Auditorium/Cafeteria/Media/Classrooms)

- Addition Wide HVAC upgrades:
- The existing Hot Water Heating piping system is past its useful life and needs to be replaced. Thus, the scope of work for this includes the removal of the entire existing hot water heating system and to provide the new HVAC system (heating via hot water). New system to include following:
- The boiler plant currently consists of two boilers, both Cleaver Brooks Fire Tube Boilers. Each of these boilers is rated at 4,184 MBH input and 100 Boiler HP, which is approximately 3,300 MBH output. Both of these boilers and their entire boiler room infrastructure will be replaced as part of this project.
- Replacement project includes the installation of two (2) 150 Boiler Horsepower Fire Tube Boilers. These boilers will be configured to burn number 2 fuel oil, consistent with the existing infrastructure. The hydronic heating system will be set up as a primary secondary system, where the fire tube boiler return water temperature to the boiler is held above 150 degrees F. to prevent condensation in the boiler. The secondary system will be configured with a 3-way mixing valve for each of the pumped zones to allow for the scheduling of the water temperature being delivered to each of the zones. The original building will be serviced from this boiler room, with a set of dedicated 3" HWS/HWR pipes being run from this boiler room, through the 1931 building boiler room, and providing circulation to heating equipment in the 1931 building.
- Water service to the hydronic system will be protected by a RPZ BFP located at 5 feet above the finished floor of the boiler room.
- New unit ventilators will be provided at all locations where unit vents exist today. Piping distribution to these unit ventilators will be bottom fed for the first floor and bottom fed for the second floor. Primary piping distribution will be in the either in the crawl space or the first floor hallway ceiling space. For this area of the school, each classroom requires fin tube radiation at the exterior walls of the classrooms in addition to the unit ventilators. New outside air intakes shall be provided at each of the locations where unit ventilators have no existing intake. In many cases (especially science rooms) the unit ventilators have been modified to be incorporated into cabinetry which is not from a unit ventilator manufacturer. An allocation of cost should be applied for this condition to accommodate its construction impacts. There are also rooms in the 1953 addition which do not have outside air. These rooms will need to be equipped with a method of ventilation, which is either direct louver or dedicated outside air unit. Assume this to be by louver at this time.
- A dedicated air handler will be installed to service the Cafeteria Areas to meet the ventilation requirements of the NYS Education Department. Based on the area of the cafeteria, there is a need for approximately 4,000 cfm of outside air. Demand control ventilation is proposed for this space. It is also the intention to reuse the existing radiant floor system. This will require additional investigation as to whether it is suitable for re-use, but for the purpose of schematic design it will be assumed.
- Classroom ventilation relief will be provided as part of this project for all spaces. The design concept is to move vertically in the building, and having between two and four classrooms relieved on an individual vertical shaft. Where possible, horizontal ganging of vertical risers will be utilized.
- Cabinet unit heaters will be provided at entrances and areas where heat is required. These units will be selected to make use of the hot water that is part of the high efficiency heating plant. Security convectors will be provided for hallways and toilet rooms to provide a durable heat source for these areas.

- The kitchen systems, including plumbing, fire protection and ventilation will need to be upgraded within the proposed guidelines of the renovation work.
- The Auditorium is currently serviced by an indoor air handler which provides heating and ventilation to the space. The air systems will be replaced with the capacity to provide ventilation air at 6500 cfm. The new air system will provide cooling, and will be approximately 30 tons, and will have sound attenuation to help minimize fan noise to the space. The air system will be equipped with variable frequency drives. The relief fans will be sized similarly.
- The main gymnasium air handlers are original equipment, and thus will be replaced as part of this project along with the locker room unit.
- The library and server rooms will be renovated substantially as part of this project. Included in this renovation is the need to provide air conditioning by dedicated unit to both of these areas. The computer room will be served by a split system DX unit. The library area proper will be serviced by a packaged rooftop system which will handle both space load and ventilation air.
- The entire facility will be on Direct Digital Controls for the entire HVAC system. This upgrade is part of the above work scope

#### **Geothermal Opportunities**

- There is a geothermal opportunity that can be utilized in lieu of the standard approaches listed above.
- Geothermal heating and cooling systems have a significant environmental benefit over conventional heating and cooling systems.
- In their heating mode, geothermal heatpumps have a COP (coefficient of performance) of 3.5 to 4.0. This translates into an energy arrangement where for every unit of energy input, you get 3.5 to 4.0 times that amount of energy output. There is conservation of energy in all systems, and this is no exception, with the additional energy that is delivered being supplied from the earth (via a refrigeration exchange process which occurs at the heatpump units).
- In the cooling mode, geothermal heatpumps perform with a SEER (Seasonal Energy Efficiency Ratio) of 17 to 21. The SEER is defined as the ratio of BTUH of cooling output per watt of input. Said differently, a geothermal heatpump with a SEER of 17 will give you 17,000 BTUH of cooling for every 1 kilowatt hour input. This is in comparison with standard equipment performances for refrigeration equipment of a similar size, where typical performance is 13 SEER. Thus, the geothermal heatpumps provide 30% more cooling per given input over standard systems.
- The proper selection and deployment of a geothermal heatpump system starts with the drilling of a test well. The test well provides information regarding the sub surface composition from the surface through as much as 600 feet down. This information is used to provide estimated cost for the construction of the well field. In addition, the test well is thermally tested for its performance in liberating energy. This information is used in the modeling of the well field, and allows the size of field to be determined.
- Because of the cost associated with the installation of geothermal heatpumps and their associated wells, this technology should be primarily applied to areas with high use hours. Examples of these would be the Library area, classrooms, offices, and lecture rooms. Areas such as gyms and auditoriums, due to the infrequency of their full load use, should be designed using more conventional systems. Additionally, geothermal heatpumps will require a secondary outside air ventilation system to be installed as part of the overall system package.
- The 1954 and 1971 addition area is potentially a candidate for the use of geothermal heating and cooling. We would need to locate the outside air unit and rely on the corridor ceiling for distribution. Additional ventilation units can be located on roof areas.

- More specific scoping will be developed once the results of the test wells are available.

## **21. Fire Protection**

- Identified in the Review and Analysis Report and part of the overall scope is a dry fire protection system for the attic space in the 1931 building in conjunction with a lightning protection system. We are awaiting final water pressure readings to determine the final scoping of this system.

## **22. Electrical Scope of Work**

### **Electrical Power Distribution System:**

- The existing electric service is fed from a utility owned transformer. The transformer feeds the Main Distribution Panel which is rated for 2000 amperes, 208Y/120 volts, 3-phase, 4-wire. The equipment installed in the 1971 addition, including the main switchboard, appear to be in satisfactory condition. Expected remaining useful life is approximately 20 years. Though there is spare capacity on the electric service, there are no spare distribution breakers or breaker space in this board. An additional switchboard section(s) would need to be added to the existing main switchboard to support a significant construction project in the building. Additional review of costs will be undertaken during design to determine if it may be more cost effective to replace entire switchboard at this time.

### **Interior electrical distribution.**

- The service enters the main switchboard located in boiler room #2. The main switchboard is rated for 2,000A, 208Y/120V, 3 phase, 4 wire and distributes power throughout the building. This includes older panel and distribution boards in the 1952 and 1931 additions.
- The equipment that is visible appears to be satisfactory condition. It was installed in 1971. Expected remaining useful life is approximately 20 years. The peak demand on the service in the last two years was approximately 530 amps. The spare capacity on the service is approximately 1,070 amps (= 2000 x 80% - 530 amps).
- The majority of branch panels are in good condition. It is proposed that these panels will remain. The original equipment installed in the 1953 section and partially in the 1931 section are generally in poor shape and beyond their life expectancy. Acquiring parts for this antiquated equipment would be difficult. These panel and distribution boards should be replaced when convenient to do so. The equipment that has already been replaced is generally in satisfactory condition. An approximate number of panel boards that would need to be replaced are 7 - 200A, 208Y/120V, 3 phase, 4 wire, 42 space panel boards.
- The following are new anticipated feeders and branch panels based on schematic design:
  - i. A new 100 Ampere 208Y/120 volt isolated ground computer only panel with Transient voltage surge suppression will be installed in the new computer lab.
  - ii. A new 225 Ampere 208Y/120 volt 3-phase, 4-wire panel will be installed in the renovated Home Economic classroom.
  - iii. A new feeder will be brought to new stage lighting controller.
  - iv. A new 60 ampere feeder and 60 ampere, 30 space, 208Y/120 volt 3 phase, 4-wire panel with contactor will be provided to feed bus block heater outlets.
  - v. A new feeder will be required for elevator machine.
  - vi. (2) new 225 Ampere 208Y/120 volt 3-phase, 4-wire panels will be installed in the renovated Shop areas. A 100 Ampere 208Y/120 volt isolated ground computer only



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panel with built-in transient voltage surge suppression will be installed in the new integrated design studio.

- vii. A new feeder will be brought to pool equipment room for pool renovations. All conduit in pool areas will be rigid aluminum.
- viii. (2) new 225 Ampere 208Y/120 volt 3-phase, 4-wire panels will be installed in the renovated Kitchen areas.

### **Emergency Electrical Distribution System:**

- o The existing natural gas emergency generator installed in boiler room #1 is in poor shape and in need of replacement. Separate transfer switches will be required to separate emergency from optional stand-by loads. It is proposed for a new 30kW generator and associated distribution and transfer switches will be installed as part of this project. Additional evaluation of this system will be required during design phase to determine if additional capacity will be required.

### **Branch Circuit Wiring:**

- o New circuits will be installed as required for nurse's office, guidance area, shop, science, and library renovations.
- o New branch circuits will be brought to power new electrically operated bleachers in the gymnasium. All required control cabling will be installed.

### **Lighting System:**

- o The existing lighting is accomplished through the use of fluorescent fixtures. Fixtures are a combination of prismatic troffers, surface wraparounds and pendant luminaries.
- o Additional emergency lighting will be installed through-out the building to provide coverage in areas not currently adequate per New York State Codes and SED regulations. New lighting will meet IES and SED standards for lighting levels and controls.
- o Additional exit and emergency lighting will be added to incorporate renovations. All new exit signs will be energy efficient LED type.
- o Additional exterior lighting will be added to building exterior to meet IES standards and provide some security lighting. New exterior lighting at doors will meet New York State Building Code to maintain lighting at egress paths. These fixtures will be on emergency power.

### **Fire Alarm System:**

- o As part of recent renovations the fire alarm system was replaced in its entirety. Modifications will be made to new system to accommodate building renovations. Devices will be installed to meet all required SED, NFPA, New York State Building Code and NEC requirements. All cabling will be plenum rated.

### **Data, Phone and Public Address Systems:**

- o A new Public Address system including headend classroom handsets and classroom and corridor speakers will be installed. A new wireless clock system will be reviewed and may be designed as an alternate to the project scope.
- o System is being developed around Rauland's, Telecenter Integrated Communication System for schools.

### **Security Systems:**

- o There is a security system for this school. Electronic release and security cameras will be installed at main entrance doors. A new Digital video recorder may be required.



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### Auditorium Lighting:

- Lighting system is currently controlled by and outdated dimmer rack with hand throws. The new system will include integrated ETC dimmer controls along with lighting enhancements.

### 23. Misc. Testing

The following tests are either complete or underway and will affect the overall scoping of the project based on the results.

- Roof infrared scan
- Asbestos testing
- Topographic/Utility survey of property
- Geothermal core
- Geotechnical core samples
- Water pressure

### 24. Specifications

Specifications will include a general front end document set including the following sections:

#### **Division 00 – Procurement and Contracting Requirements**

000110	Table of Contents – Project Manual	004340	Proposed Subcontractors Form
000115	List of Drawings	007000	General Conditions of the Contract for Construction (AIA Document A201-1997, with Amendments)
001110	Advertisement For Bids		
002110	Instructions to Bidders (AIA Document A701-1997, with Amendments)	007320	Health and Safety Requirements
004110	Bid Form	007340	Schedule of Prevailing Wages
004330	Comparable Product / Equivalent Request Form		

#### **Division 01 – General Requirements**

010150	Project Schedule	015000	Temporary Facilities and Controls
011200	Multiple Contract Summary	016000	Product Requirements
012100	Allowances	017300	Execution
012200	Unit Prices	017329	Cutting and Patching
012300	Alternates	017419	Construction Waste Management and Disposal
012600	Contract Modification Procedures		
012900	Payment Procedures	017700	Closeout Procedures
013100	Project Management and Coordination	017823	Operation and Maintenance Data
013200	Construction Progress Documentation	017839	Project Record Documents
013300	Submittal Procedures	017900	Demonstration and Training
014000	Quality Requirements		
014200	References		

Additional sections will be generated as the design develops further to cover products required to construct the project.

