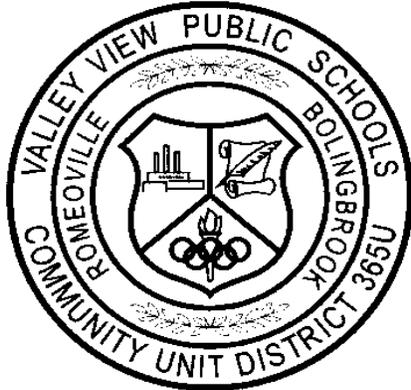


**VALLEY VIEW  
COMMUNITY UNIT  
SCHOOL DISTRICT 365U**



**REQUEST FOR PROPOSAL (RFP)  
FOR A  
GUARANTEED ENERGY SAVINGS CONTRACT  
  
BROOKS MIDDLE SCHOOL MECHANICAL  
PROJECT**

VALLEY VIEW CUSD 365U  
755 DALHART AVE  
ROMEOVILLE, IL 60446  
815-886-2700

*DECEMBER 26, 2013*

# VALLEY VIEW COMMUNITY UNIT SCHOOL DISTRICT 365U

## Guaranteed Energy Savings Contract RFP Brooks Middle School Mechanical Project

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**Request For Proposal  
For  
Guaranteed Savings Contract**

Notice is hereby given that Valley View CUSD 365U shall receive proposals for a Guaranteed Savings Contract – Brooks Middle School Mechanical Project until 10:00 a.m. (CST) on February 17, 2014 at the Administration Center located at 755 Dalhart Ave., Romeoville, IL 60446. The contract shall follow the requirements of Article 19b of the Illinois School Code – “School Energy Conservation Measures.” For more information contact Michael Lopez, Director of Facility Operations, at (815) 886-2700 x278.

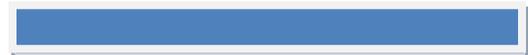
The Qualified Provider to whom the work is awarded shall conform to the local common wage rates as determined for this project. The District requests 3 copies of the proposal which must include a proposal with the content and in the format described within the RFP.

A mandatory pre-bid meeting for all Qualified Providers has been scheduled for 9:00 a.m. (CST) on January 10, 2013 at Brooks Middle School, Main Lobby, 350 Blair Lane, Bolingbrook, IL 60440. Any Provider intending to respond to the RFP **MUST** be present.

The District reserves the right to terminate this project prior to bids being received, to reject any and all proposals and to be the sole judge of the value and merit of the proposals offered. Upon review of the Proposals received in response to this RFP, the District may enter into a contract with the Provider that best meets the needs of the District. The District will only consider those companies who meet all requirements listed in the RFP.

In accordance with the Illinois School Code Article 19B-3, we disclose that Performance Services, Inc. participated in the preparation of the specifications.

## **SECTION 1**



## **REQUEST FOR PROPOSAL RESPONSE FORMAT**

**Submittal of Proposals Format:** Submit 3 copies of your entire packet. The responses should be double sided when appropriate, three hole punched, tabbed as noted below, and in a bound format.

**Title/Cover Page:** Indicate the name of your firm, local address, telephone number, email address & website information and date submitted.

### **TAB 1 – Table of Contents**

### **TAB 2 – Executive Summary**

Provide an executive summary of no more than 3 pages that highlights the key aspects of your proposal.

### **TAB 3 – Company Profile**

This section should include the following information on the Qualified Provider.

- A. Company Qualifications (include Statement of Qualifications provided in Section 1)
- B. Location of Northern Illinois Office and Corporate Headquarters
- C. Resumes of all key project personnel. Include the name of the engineer(s) or engineering firm providing the design engineering for the project including their PE numbers as well as the PE numbers of all full time employees of the Qualified Provider who are professional engineers registered in the State of Illinois and who will be working on this project.

### **TAB 4 – References**

- A. Describe recent experiences similar to the projects identified in Section 3 of this RFP.
  - 1. Describe 3 – 5 projects where your firm has assisted a school district with energy efficiency projects including primary reference and their contact information.
  - 2. Describe your firm's experience assisting school districts with performance contracting and other energy related services in conformance with the requirements under Illinois Statutes.
- B. List relevant school district projects that your firm has worked on in the past three years. Include contact names and telephone numbers.

### **TAB 5 – Litigation**

Please identify and provide a brief summary of any arbitrations, settlements and/or judgments resulting from any services provided by your firm in the past five years. Omission of any past litigation will result in disqualification.

## TAB 6 – Technical Approach

Provide a detailed summary of your firm’s technical approach to meeting the energy efficiency and operational cost reduction needs of Valley View School District. This section should include, but not be limited to the following:

- A. **Needs & Solutions:** Include a “Needs & Solutions” section explaining facility needs and solutions the Provider recommends for all proposed improvements.
- B. **Detailed Scope of Work:** Proposals may include any and all improvements that the Provider feels would be of benefit to the District as part of this RFP. Improvements should be listed where the Provider identifies needs and appropriate solutions and broken into specific and separate components.
- C. **Documentation:** For any work where the Provider will be providing pricing, provide the following documentation for the scope of the work being proposed:
  - 1. Detailed Engineering Drawings of Proposed Improvements Must Be Provided (Failure to provide drawings may result in evaluation point deductions)
  - 2. Equipment/Material Table providing: manufacturer, type, model, size, and quantity for all equipment provided. (Separate from the drawings provided).
- D. **Engineering Approach:** Describe your firm’s approach to the technical design of this project.
- E. **Energy Engineering:** Provide a detailed explanation of how the Provider intends to calculate energy savings and what types of guarantees will be offered (utility bill analysis, actual measurements and stipulated savings and the cost of each option). Show the actual energy savings calculations and an energy savings contract of the Provider’s recent project.
- F. **Contractor Selection:** Describe the process that the Provider utilizes to obtain their contractors and what criteria will be used to make the contractor selections.
- G. **Equipment Selection:** Describe the process that the Provider utilizes to obtain the equipment to be used on the project and specifically what criteria will be used to make equipment selections.
- H. **Implementation Plan:**
  - 1. Include in your proposal an implementation plan including dates describing how the qualified Provider intends to execute the project that meets the timelines set forth in these specifications.
  - 2. Describe in detail your approach to project management for this energy conservation program.
  - 3. Provide an implementation timetable as well as a staffing plan identifying key project management personnel.

- I. **Commissioning - Four Season Optimization:** Describe in detail the commissioning processes that the Provider intends to utilize to commission the building for the learning environment and energy efficiency. Provide actual documents for past projects where this same approach was utilized.
- J. **Performance Assurance:** Describe in detail the performance assurance processes that the Provider intends to utilize to insure the building operates at peak performance both at the completion of the installation phase and throughout the contract term. Provide actual guaranteed savings reports from past projects where this same approach was utilized showing how both energy and operational savings were calculated.
- K. **Additional Information:** Any additional information about the Provider's technical approach to the project may be included in the proposal.

## **Tab 7 – Cost**

Provide a detailed response to the requirements listed in the Scope of Services portion of Section 2 of this RFP, and as identified below:

- A. **Pricing:** Describe in detail the process that the Provider intends to utilize to obtain the best prices for the District both initially and if additional work is required. Explain why this is the best approach.
  - 1. Include the firm cost and guaranteed energy savings amount for all proposed improvements for each component.
  - 2. Provide the pricing process for any future work including percentage markup for expected general conditions/internal costs, engineering labor, project management labor and profit markup.
- B. **Energy Savings:** Explain how the Provider intends to maximize energy savings and the advantage to the Provider's approach. Include in this proposal the Provider's actual Guaranteed Energy Savings Contract for the price improvements along with all corresponding calculations. Break out actual (real dollar) energy and operational savings in the RFP response.
- C. **Energy Savings Results**
  - 1. Provide an annual energy savings report (M&V) to the district. Detail how the report is generated. Include any information with regards to cost and timing of the report.
  - 2. Shortfalls - The Provider must include a summary of the reported annual savings for all completed projects. Any projects that did not meet the annual energy guarantee must be listed with an explanation for the shortfall.
- D. **Project Funding:** Project funding will be developed by the school after selection of the Provider.

**Tab 8 – Report**

Provide the detailed report as described in the Scope of Services portion of Section 2 of this RFP.

**Tab 9 – Contract Language**

It is the Districts desire to enter into a contract developed by The Building Owners and Managers Association (BOMA) International and the Clinton Climate Initiative (CCI). (The contract template can be downloaded from [www.boma.org](http://www.boma.org) website). This provides the framework for the contract that we would like to develop in conjunction with the selected Performance Contractor. Please provide alternative language and/or suggestions related to this document as part of your proposal.

**Tab 10 – Additional Information**

Please include any additional pertinent information here.

**STATEMENT OF QUALIFICATIONS**

(include under Tab 3 in submittal, pages 1 – 5 thru 1 – 8 herein)

The Undersigned certifies that the information provided is true and sufficiently complete so as not to be misleading.

**SUBMITTED TO:** Valley View School District 365U

**ADDRESS:** 755 Dalhart Ave.  
Romeoville, IL 60446

**SUBMITTED BY:**

**NAME:**

**ADDRESS:**

**PRINCIPAL OFFICE:**

- Corporation
- Partnership
- Individual
- Joint Venture
- Other

**NAME OF PROJECT:** VVSD Guaranteed Energy Savings Contract Project

**TYPE OF WORK** (check all that apply)

- General Construction
- HVAC
- Electrical
- Plumbing
- Other (please specify)

## **ORGANIZATION**

1. How many years has your organization been in business as a Performance Contractor?
2. How many years has your organization been in business under its present business name?
3. Under what other or former names has your organization operated?
4. If your organization is a corporation, answer the following:

Date of incorporation:

State of incorporation:

President's name:

Vice-president's name(s):

Secretary's name:

Treasurer's name:

5. If your organization is a partnership, answer the following:

Date of organization:

Type of partnership (if applicable):

Name(s) of general partner(s):

6. If your organization is individually owned, answer the following:

Date of organization:

Name of owner:

7. If the form of organization is other than those listed above, describe it and name the principals:

## **LICENSING**

1. List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registrations or license numbers, if applicable.
2. List jurisdictions in which your organization's partnership or trade name is filed.

## **EXPERIENCE**

1. List categories of work that your organization normally performs with its own forces.

**CLAIMS AND SUITS** (if the answer to any of the questions below is yes, please attach details)

1. Has your organization ever failed to complete any work awarded to it?
2. Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?
3. Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?
4. Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a contract? (if the answer is yes, please attach details.)

**REFERENCES**

Bank References:

Surety:

Name of bonding company:

Name and address of agent:

**FINANCING**

1. Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:
  - a. Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses).
  - b. Net Fixed Assets.
  - c. Other Assets.
  - d. Current liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes).
  - e. Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

2. Name and address of firm preparing attached financial statement, and date thereof.
  - a. Is the attached financial statement for the identical organization named on page one?
  - b. If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).
3. Will the organization whose financial statement is attached act as guarantor of the contract for construction?
4. State total worth of work in progress and under contract.

**SIGNATURE**

Dated at this \_\_\_\_\_ day of \_\_\_\_\_

Name of Organization:

By:

Title:

\_\_\_\_\_ being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

Notary Public:

My Commission Expires:

## **GENERAL TERMS AND CONDITIONS**

1. Valley View School District (VVSD) reserves the right to reject any or all proposals and to accept the proposals and to accept the proposal that appears to be in the best interest of the District.
2. VVSD reserves the right to negotiate any or all components of this RFP with any company after the bid opening has occurred. VVSD is not bound or in any way obligated to any bidder until both parties have executed a contract as a result of this bid process.
3. The RFP does not obligate VVSD to pay any costs incurred by respondents for the preparation and submission of information to VVSD.
4. All information provided to VVSD by respondents will be considered public record and can be subject to public review.
5. An individual authorized to bind the offer to be valid must sign the proposal. Proposals must be received by the time and date stated or they will not be considered. Proposals received after the announced time and date will be returned unopened.
6. Facsimile bids or E-mail bids will not be accepted. Verbal commitments will not be honored.
7. Written proposals must be submitted in a sealed envelope marked "Request for Proposal". They are to be submitted to Valley View School District, 755 Dalhart Ave., Romeoville, IL 60446, Attention: Michael Lopez, no later than 10:00 a.m. (CST) on February 17, 2014.
8. All questions regarding the proposal should be directed to Michael Lopez, Director of Facility Operations, at 815-886-2700 x278.

### **Access to Architectural and Mechanical Drawings**

VVSD has PDF architectural and mechanical drawings for examination and downloading. The PDF files are scanned copies of original construction documents and are not in the most legible condition and in some instances may be incomplete. VVSD will make the documents available to interested Providers, provided they call in advance to schedule a time to review and/or download the drawings at our Administration Center, Facility Operations Department office located at 755 Dalhart Ave., Romeoville, IL 60446. Please bring a thumb drive to download as necessary.

## **SECTION 2**



## **SCOPE OF SERVICES**

The Valley View School District is looking to hire a performance contracting firm to partner with our district in the implementation of a guaranteed energy savings contract project at Brooks Middle School as allowed by Illinois Statutes. It is our intent to leverage this partnership to get the best possible value on these projects for the taxpayers of our district. To that end, prospective bidders are encouraged to look for innovative and creative ways to accomplish the projects identified herein.

### **Open Book Pricing:**

One of the requirements in working with VVSD on these projects will be complete open book pricing for all phases of work associated with this RFP. One component of the open book pricing will include VVSD staff involvement in the bid selection of all consultant, contractor, and supplier bids. The selected Performance Contractor will be allowed to provide pricing/bid on activities outside of the base scope of services such as supplying mechanical, controls or lighting equipment, but will be subject to the same rules as all other bidders for the scope of work. In addition the open book pricing shall explicitly show any and all components of the cost of work associated with the RFP including, but not limited to: overhead, profit, detailed general conditions, etc.

### **Base Bid:**

The base scope of service for the Performance Contractor shall include the following:

- Preparation of a detailed report and drawings containing recommendations concerning the amount that VVSD should spend on energy conservation and/or facility improvement measures for Brooks Middle School mechanical systems in accordance with Illinois State Statute. The report shall contain estimates of all costs on installation, modifications or remodeling, including costs of design, engineering, maintenance, repairs, and financing. In addition, the report shall contain a guarantee specifying a minimum amount by which energy or operating costs of the VVSD will be reduced, if the installation, modification or remodeling is performed by the Performance Contractor.
- The Performance Contractor shall obtain and be responsible for performance and payment bonding equal to the amount of the cost of services outlined in the scope of work and the detailed report prepared by the Performance Contractor. The performance bond will be in effect for the life of the financing/bonds obtained by VVSD to fund the projects which is expected to be up to a 20 year period.
- During the course of the project the Performance Contractor shall have oversight of all work to the extent required to guarantee the savings estimates and the performance bond requirements including all energy savings related evaluations and calculations.

### **Other Services:**

As mentioned earlier the Performance Contractor will be allowed to provide any and all services associated with these projects but are not guaranteed any work outside of those listed in the Base Bid. These services could include other mechanical (HVAC) system design, detailed controls system design, controls system equipment and/or installation, mechanical contracting

services, lighting design and/or installation services, etc. It is the intent of VVSD to obtain the best value for all phases of the project and to use competitive bidding wherever practical in the implementation of the project.

**Rebates:**

It is expected that the Performance Contractor will work with VVSD to pursue and obtain any and all possible/practical rebates, grants or other funding for the project outlined in the Scope of Work and the detailed report prepared by the Performance Contractor in order to minimize the impact on the VVSD taxpayers wherever possible. These rebates may include, but not limited to, energy grants offered through the Illinois State Board of Education, and the Department of Commerce and Economic Opportunity.

## EVALUATION CRITERIA

The District will likely reject any proposal that does NOT meet the minimum criteria described in this RFP and may at their discretion deduct points from the scoring rubric if the RFP format is not followed. For proposals meeting or exceeding the minimum criteria, the District will rate each proposal based on the weighted scoring criteria shown below. The District intends to award a contract to the Provider offering the best value proposal. The best value proposal will be the proposal with the highest score based on 100 total points.

### **1. Qualifications and Capability (10 points)**

- a. Experience of Firm – General experience in energy-related and performance agreement services.
- b. Scope of Services – Comprehensiveness of engineering, project management, monitoring and verification services offered.
- c. Financial Soundness – Financial soundness and stability of ESCO. Completeness and strength (financial viability) of most recent annual financial statements.
- d. Experience – Reliability of equipment performance on past projects and quality and completeness of documentation of achieved energy savings from previous projects.
- e. Responsiveness to RFP – Did the ESCO provide all of the requested qualifications information?

### **2. Experience and Expertise (20 points)**

- a. Project History – Quality of past projects completed with respect to scope and documented savings.
- b. Personnel Information – Qualifications and relevant experience of the staff specifically assigned to the owner/operator in engineering, project management and the other areas of importance.
- c. School District Experience – Demonstrated experience in the educational market, and specifically K-12 energy savings projects.
- d. Reliability: Measurability of Prior Results – Reliability of equipment performance on past projects and quality and completeness of documentation of achieved energy savings from previous projects.

### **3. Performance Contracting Approach – (10 points)**

- a. Approach – Overall approach to performance agreement and needed agreement adjustments.
- b. Other Services – Full range of services and flexibility in applying those services, including Retro-Commissioning, LEED, and Energy Star Certification.
- c. Construction Issues – Ways of handling environmental liabilities, warranties and equipment service.
- d. Standardized Contracts – Willingness to use industry standard form agreements.

### **4. Technical Approach (30 points)**

- a. Refer to Section 1 (under Tab 6) for criteria, in addition to that described herein.
- b. Design/Construction – Overall approach.
- c. Engineering Analysis – Reasonableness and transparency of methodologies to determine baseline and projected savings.

- d. Project Scope – Understanding of existing building conditions, systems and operations and maintenance projects. Ability to adapt control strategies, equipment and maintenance practices in response to changes in utility rates, technology, and building conditions in order to enhance project performance. Comprehensiveness and clarity of the technical approach based on improvements likely to be included.
- e. Relevant Experience to Apply to This Site – Relevance and documented savings of past projects completed that are similar in size scope, and building type.
- f. Project Management for This Project – Project management approach and relevant qualifications of key personnel assigned to the project involved in technical auditing and design, project management and construction, with respect to the size, scope and building type of this project.
- g. Technical and Construction Issues – Construction management, scheduling, operation and maintenance approach, approach to compatibility/openness/standardization of equipment, standards of comfort and provision of insurance.

**5. Cost and Pricing (30 points)**

This should involve a combination of “price analysis” and “cost analysis” such that the project evaluation team will use judgment, knowledge and experience to determine reasonableness and consistency, and to evaluate costs based on established catalog and market prices, historical prices, independent cost estimates, and negotiated pricing where applicable.

- a. Markup Costs – Consider reasonableness of markup costs. The markup costs are disclosed for two purposes: 1) to illustrate typical project costing approach for a project of similar scope and size and 2) to establish costs for use in the subsequent investment.
- b. Transparent Pricing – Willingness to provide Transparent Pricing in accordance with the criteria described in the RFP.

**RFP TIMELINE AND PROPOSED PROJECT SCHEDULE**

December 26, 2013	Issue Request for Proposal
January 10, 2014	Mandatory Pre-Bid meeting/building tour
February 17, 2014	RFP for Performance Contract Services Due
March 3, 2014	Notification of Recommended Performance Contractor
March 10, 2014	Board Approval/Sign Contract
March 17, 2014	Commence Final Project Engineering
April 2014 *	Procurement of Long Lead Time Equipment
Summer 2014 *	Construction Project Begins
*Definitive dates have not been established and are subject to coordination with the Performance Contractor	

## **SECTION 3**



## **SCOPE OF WORK**

### **MECHANICAL INFRASTRUCTURE PROJECT AT BROOKS MIDDLE SCHOOL**

Brooks Middle School has an outdated mechanical infrastructure, which struggles to maintain a comfortable learning environment for the staff and students in the building. The mechanical system consists of a boiler plant that is original to the building when it was built in 1974, which puts its operation at close to 40 years. The chiller plant consists of one chiller installed in 1995 and another in 2004; the older unit has been problematic and repair costs have been significant in recent years. The air handling equipment that is intended to distribute the appropriate quantities and temperature of air for comfort is also original to the building, except for a few areas. These older units are inefficient in their handling of air, and several of the connecting refrigerant coils, piping and condensing units have been in operation past their expected serviceable life.

The distribution of cooled or heated air is delivered through a network of ductwork systems that branch above the ceilings throughout the school. This ductwork too is inadequate: the sizing and branch configuration will not support a newer, more efficient distribution, and the existing ductwork would leak air when connected to a more efficient variable air volume controlled mechanical system. Lastly, the current mechanical plant has outdated, inoperable, and in some instances non-existent temperature controls. Temperature controls (also referred to as Building Automation System, or BAS) offer a uniform comfort control for individual spaces throughout the school, and can automatically and remotely be controlled and adjusted for comfort and energy efficiency.

The above summary is outlined in further detail within this section.

If project is phased in, the initial phase of the project would consist of replacing the air handling equipment and infrastructure, and the older chiller plant; these components have a more direct impact on improving the comfort and reliability in the classroom wings of the school.

## **EXISTING CONDITIONS**

### **Boiler Plant:**

Heat is provided to the building by a central hot water heating plant. This plant consists of two cast iron forced draft gas fired boilers. These are 50 psi water boilers fired at 8400 MBH gas input with an output of 6970 MBH. These boilers are original to the building installed in 1974. Boilers of this type typically last about 40 to 50 years.

The heating plant was expanded by adding an additional pump or pumps that pump water off of the combined header that pumps the water to the addition and then back. There is one for the North addition and one for the Gymnasium addition.

### **Chilled Water Plant:**

When the building was originally built there were water cooled chillers with a corresponding cooling tower. In 1995 the plant was replaced with two 280 nominal ton air cooled McQuay Screw chillers. This was done to reduce the maintenance required for the water treatment and cleaning of the condenser water system of the cooling tower.

The McQuay Screw chillers installed in 1995 were of the first vintage for that piece of equipment and have not performed well. In 2004 one of the chillers (CH-2) was replaced with a 275 ton Trane air cooled screw chiller.

Air cooled chillers have an expected useful life of 20-25 years.

### **Air Handling Systems:**

#### **S-1 – Step Program Air Handling System**

This air handling unit was a constant volume air handling unit that used to serve shop classes. In 2004 it was replaced with a double duct variable volume air handler. The air handling unit is similar to a multizone unit where there is a hot deck and a cold deck except two ducts, one for cold air and one for hot air, which was extended to the spaces. Each space has a dual duct variable air volume box that mixes hot and cold air as required by their temperature sensor for comfort.

The unit is not connected to the chilled water central plant for cooling. It has two separate condensing units located on the roof above. Although air handling units of the type typically last up to 40 years, refrigerant coils, piping and condensing units only last between 10 and 20 years depending on the care and experience of the mechanic who services the refrigerant circuit.

## **S-2 – Second Floor West Classroom, Kitchen and Associated Spaces Air Handling System**

This air handling unit is a constant volume reheat system that serves the kitchen and provides make up air to the kitchen exhaust. It provides 100% outside air to the spaces that it serves. This also means that whenever it is running it is heating or cooling 100% outside air. The unit provides cold or cool air and is reheated at the space level in order to provide proper comfort.

This unit also serves unrelated classrooms on the second floor. Since this is 100% outside air it is not recommended to run this unit when the kitchen is not in operation.

## **S-3 – Serving Line Air Handling System**

This unit is a constant volume air handling unit that has a hot water heating coil and refrigerant cooling coil with matching condensing unit located on the roof above. In 1989 it was relocated to its present location and ducted to serve the serving line. At that time the condensing unit was replaced with a new one. The air handling unit is original from 1974. Air handling units of this type can last 40 years. As noted above refrigerant coils, piping and condensing units only last between 10 and 20 years.

At the time of our visit this unit was operating at an unusually low temperature set point even though the serving line and kitchen has been closed for the summer. We recommend that this unit be shut off in the summer time when this space is not used. If there is concern about heat in the area it should be set to come on only when the space should happen to get over 80°F.

## **S-4 – Band, Choral, Commons, and Auditorium Air Handling System**

This is the first of three systems that are similar. The other systems are S-7 and S-8. We will describe them here only.

These systems are constant volume multizone systems. They consist of a hot deck, or warm air path and a cold deck or cold air path. There are mixing dampers that mix hot and cold air as required to satisfy the thermostat setting. In 1974 when these units were installed they were the most economical and best systems for comfort conditioning of classrooms.

Typically the mixing dampers are mounted on the face of the air handling system with a separate duct extended to each zone of control, in this case classroom or space. When multizone systems get very large it becomes impossible for all of the mixing dampers to be installed right on the unit. In cases like this separate cold and hot ducts are extended away from the unit and mixing occurs farther out in the system. The ceilings are used as return air plenums.

These units do not have return/exhaust economizer fans in order to provide proper building pressurization when the unit is in economizer mode. This is important as it may make it impossible for this unit to provide air that is cold enough during economizer operation to provide proper cooling to the interior spaces. It may also make the doors blow open when the unit is in economizer operation.

These air handling units are so large that they were built in the field. The parts and pieces of these air handling units would be expected to last up to 40 years.

In the case of this unit (S-4) the original fans were removed and replaced with a fan array. This is called fan wall technology. Some of the zones are mixed right at the unit and others are mixed away from the unit to provide room temperature control.

### **S-5 – Gymnasium Locker Rooms Air Handling System**

This system is original to the building and is a constant volume reheat system. A constant volume of air is provided to the spaces it serves and then is reheated as required to satisfy the thermostat. This unit provides 100% outside air to make up the air exhausted by corresponding exhaust fan E-5 that exhaust the locker rooms. It has a preheat coil in the unit that preheats the cold air to a reasonable temperature of 55°F when it is extremely cold outside. Heat for this coil is provided by a hot water-to-glycol hot water heat exchanger for freeze protection.

Systems like this typically have about a 40 year useful life.

### **S-6 – Gymnasium and Upper Balcony Air Handling System**

The gymnasium and upper balcony air handling system looks very similar to the big multizone systems except it is simply constant volume single zone air handling units.

This system consists of three fans operating in parallel in order to provide heated and cooled air to the space. Two of the fans serve the overhead ductwork. The third fan provides air to an under floor duct system with floor registers located around the main Gymnasium. This third fan system appears to be abandoned as the floor registers are clogged with the finish of the gymnasium floor and do not appear to be able to pass air.

As noted above fan systems such as this typically have a useful life of about 40 years.

### **S-7 – Western Y Portion of the Building Air Handling System**

This fan system is a constant volume multizone system. See discussion for S-4 above. This unit serves approximately half of the Y classroom part of the school with S-8 serving the other half.

In 1981 constant volume reheat boxes were installed on approximately all perimeter classrooms. A new hot water heat piping system was added to serve these coils. Each one has its own three way control valve so that the water can be distributed to these coils at a cooler temperature for better temperature control.

We cannot reverse engineer as to why this was done. We can only guess that there were problems providing heat to the exterior classrooms without overheating the interior spaces. This is a problem that would not be typical to a constant volume multizone system unless the mixing dampers don't work or the cold deck cannot get cold enough in economizer operation as mentioned in S-4 above.

In 1986 the single story classrooms at the tips of the Y were revised and variable air volume boxes were added in front of each reheat box. Additional variable volume boxes were added for those new classrooms that were created from larger spaces. It is not clear why this was only done for such a small portion of the spaces that these units serve.

### **S – 8 Eastern Y Portion of the Building Air Handling System**

See S – 7

### **S – 9 – Boiler Room Combustion Air and Ventilation System**

This is a single fan that provides make up air and ventilation air to the boiler/mechanical room. It provides 100% outside air and has no heating or cooling coil. It is original to the building.

### **S – 10 – Green House Air Handling System**

The green house has been taken out of service but this single zone constant volume air handling unit provides heating and cooling to the space that is now a storage room. This unit is original to the building.

### **AHU-1 and AHU-2 – Small Gymnasium Addition Air Handling System**

There are two constant volume single zone air handling units with glycol heating and glycol cooling coils. They operate together to heat and cool the small gymnasium. These are original to this addition and were installed in 1997.

Air handling units of this type typically last up to 40 years.

### **AHU-3 – Weight Room and PE Offices Air Handling System**

This air handling system is a variable air handling unit serving the weight room, PE offices and the adjoining corridor. It has a glycol preheat coil, a chilled water cooling coil and a return/exhaust fan economizer.

This system should also last up to 40 years if properly maintained.

### **Chiller 3 – Serves AHU-1, AHU-2 and AHU-3**

Small chiller that provides chilled water to the three air handling units above. This chiller is installed on a small roof above an outside storage room. It is all but impossible to access this chiller for maintenance. Access can only occur by putting a ladder up outside.

Gymnasiums are typically occupied by people who are not in the classrooms. As such the cooling load of a gymnasium is usually free and can be handled by the main central chilled water plant without increasing the size of the central plant. This chiller is probably not necessary and these air handling units could be piped to the central chilled water plant.

### **RTU-1 – Western 1984 Addition Packaged Rooftop Unit**

This area is served by a variable air volume system with reheat coils. The packaged variable air volume units are Trane units installed in 2004. Temperature control for each classroom is provided by a variable air volume box with reheat coil.

Packaged roof top units of this type typically last up to 20 years with proper maintenance. This area also has digital controls wired to the Trane Building Management system. This system should be serviceable for some years to come.

### **RTU-2 – Eastern 1984 Addition Packaged Rooftop Unit**

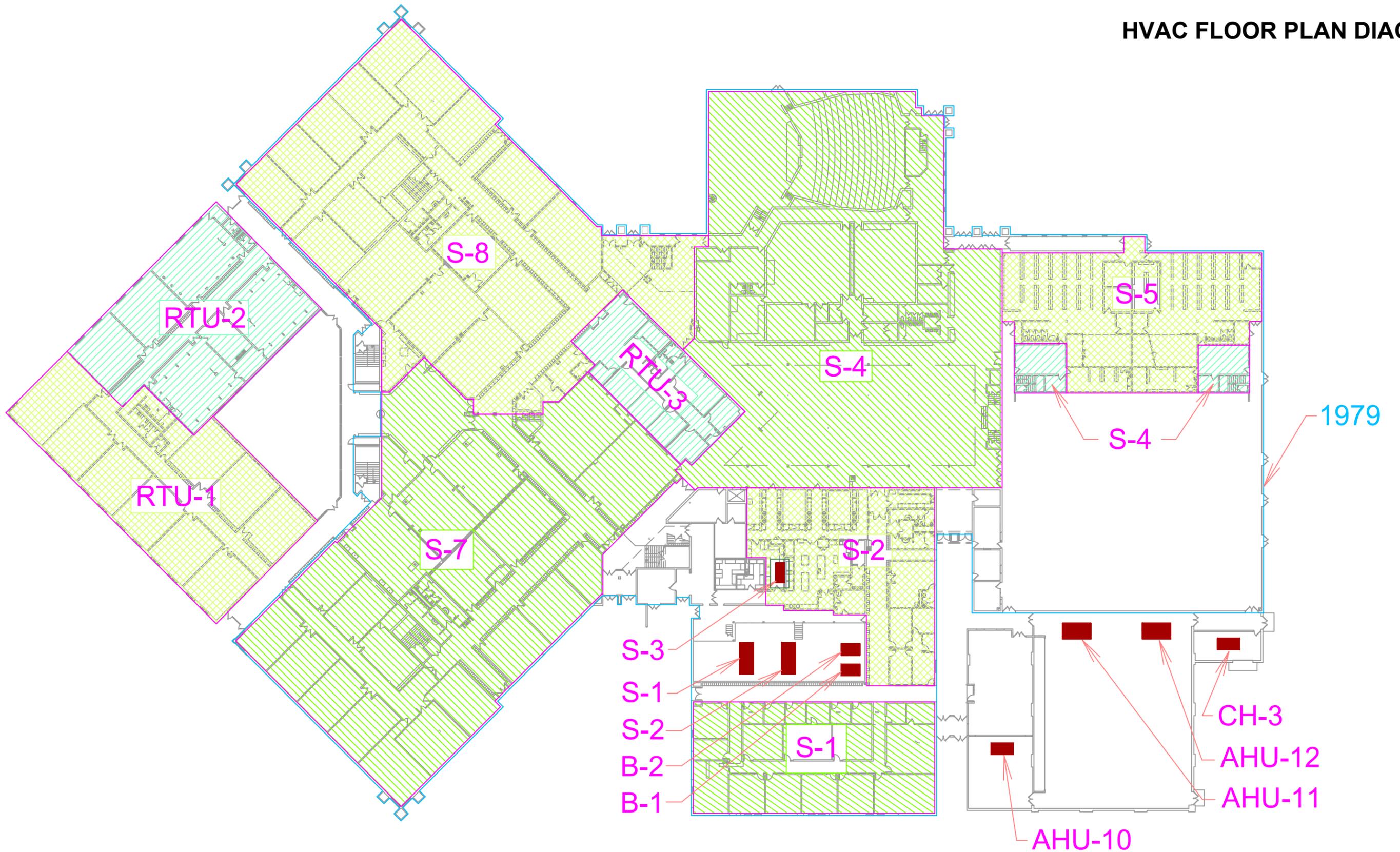
See RTU-1

### **RTU-3 – Main School Offices**

Single gas fired package rooftop unit located on the second floor roof serving the school offices on the first floor. This unit was installed in 2004.

# HVAC FLOOR PLAN DIAGRAM

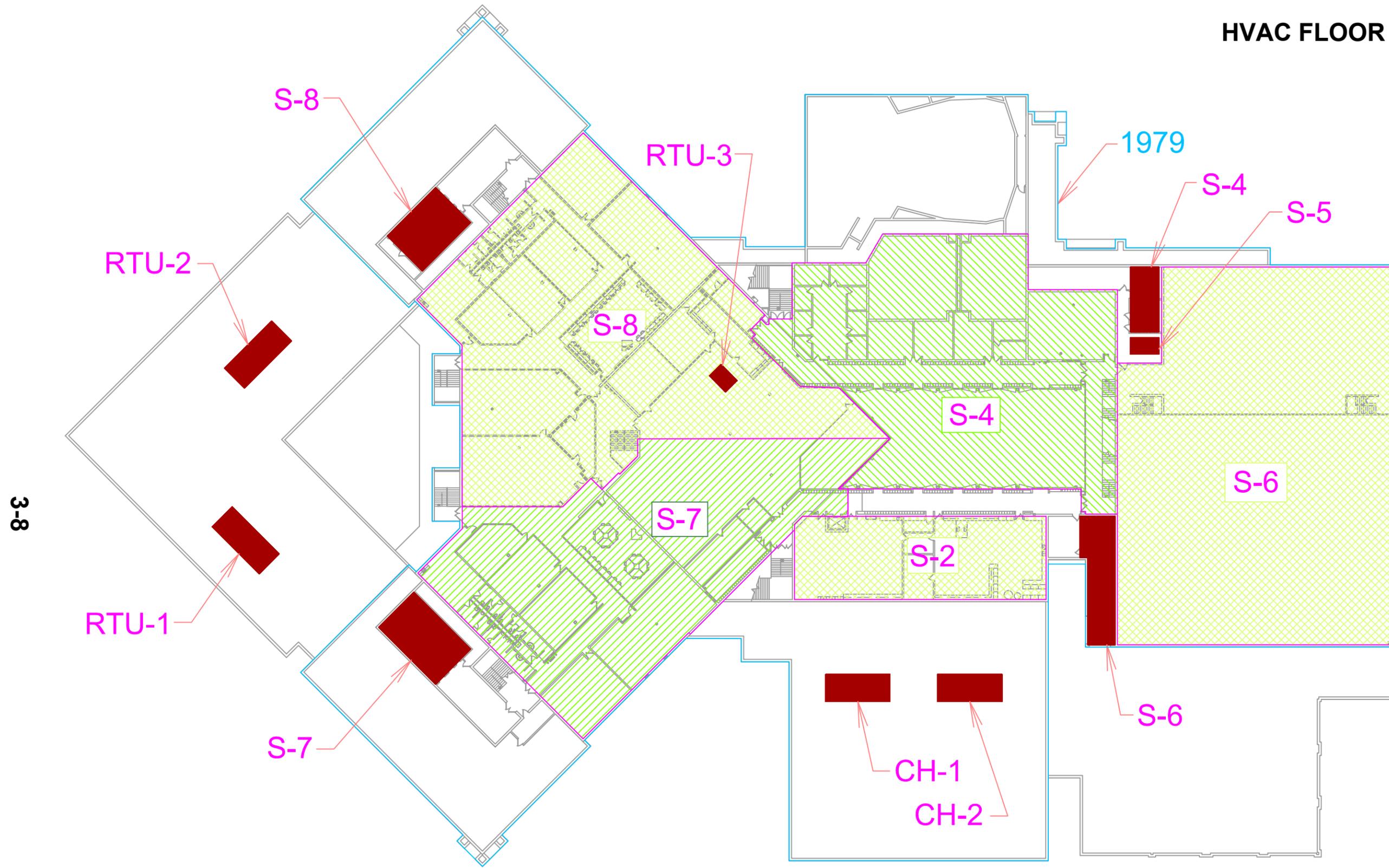
3-7



FIRST FLOOR PLAN

BROOKS MIDDLE SCHOOL  
VALLEYVIEW SCHOOL DISTRICT 365  
07/02/2013

# HVAC FLOOR PLAN DIAGRAM

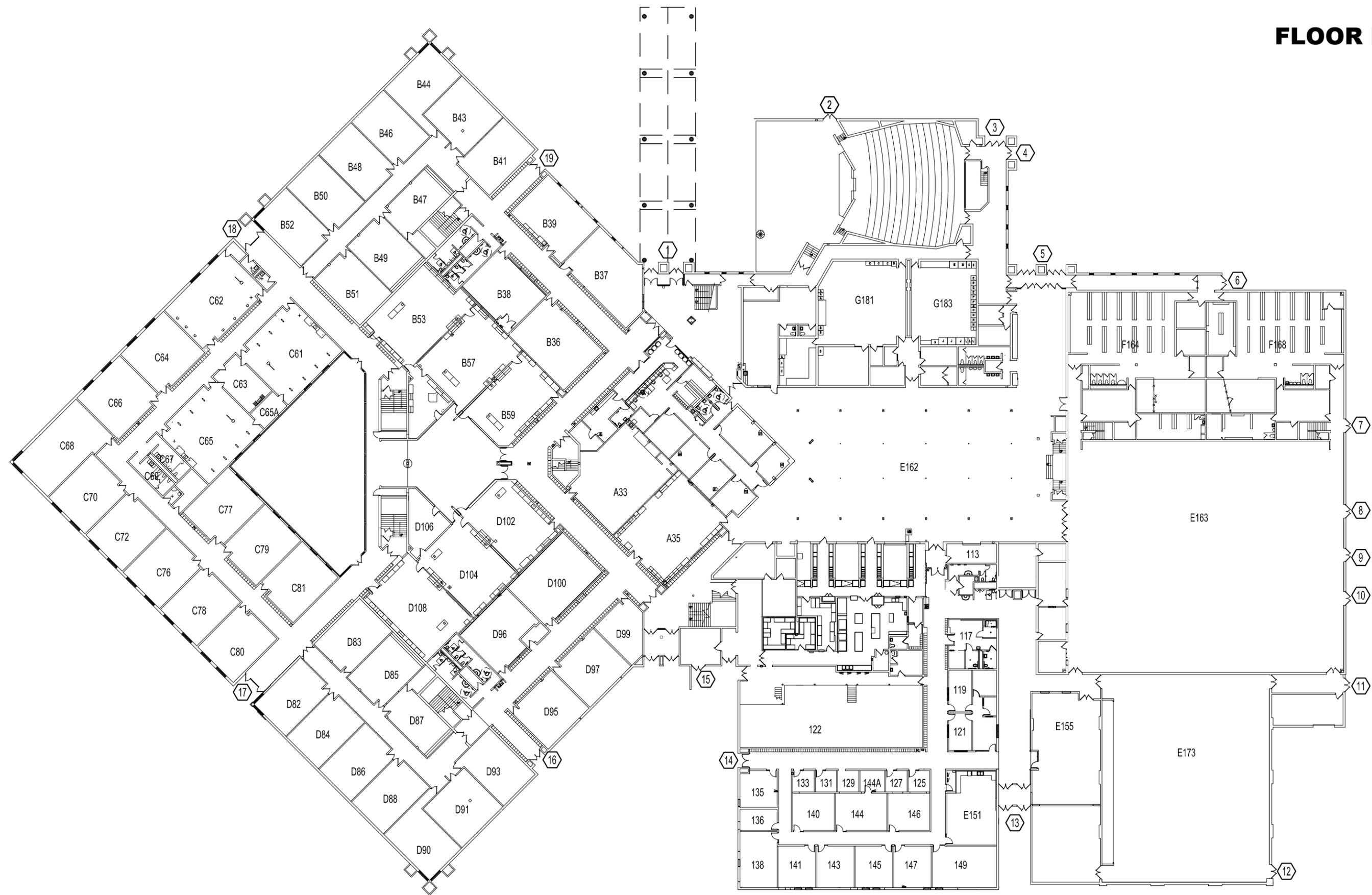


SECOND FLOOR PLAN

BROOKS MIDDLE SCHOOL  
VALLEYVIEW SCHOOL DISTRICT 365  
07/02/2013

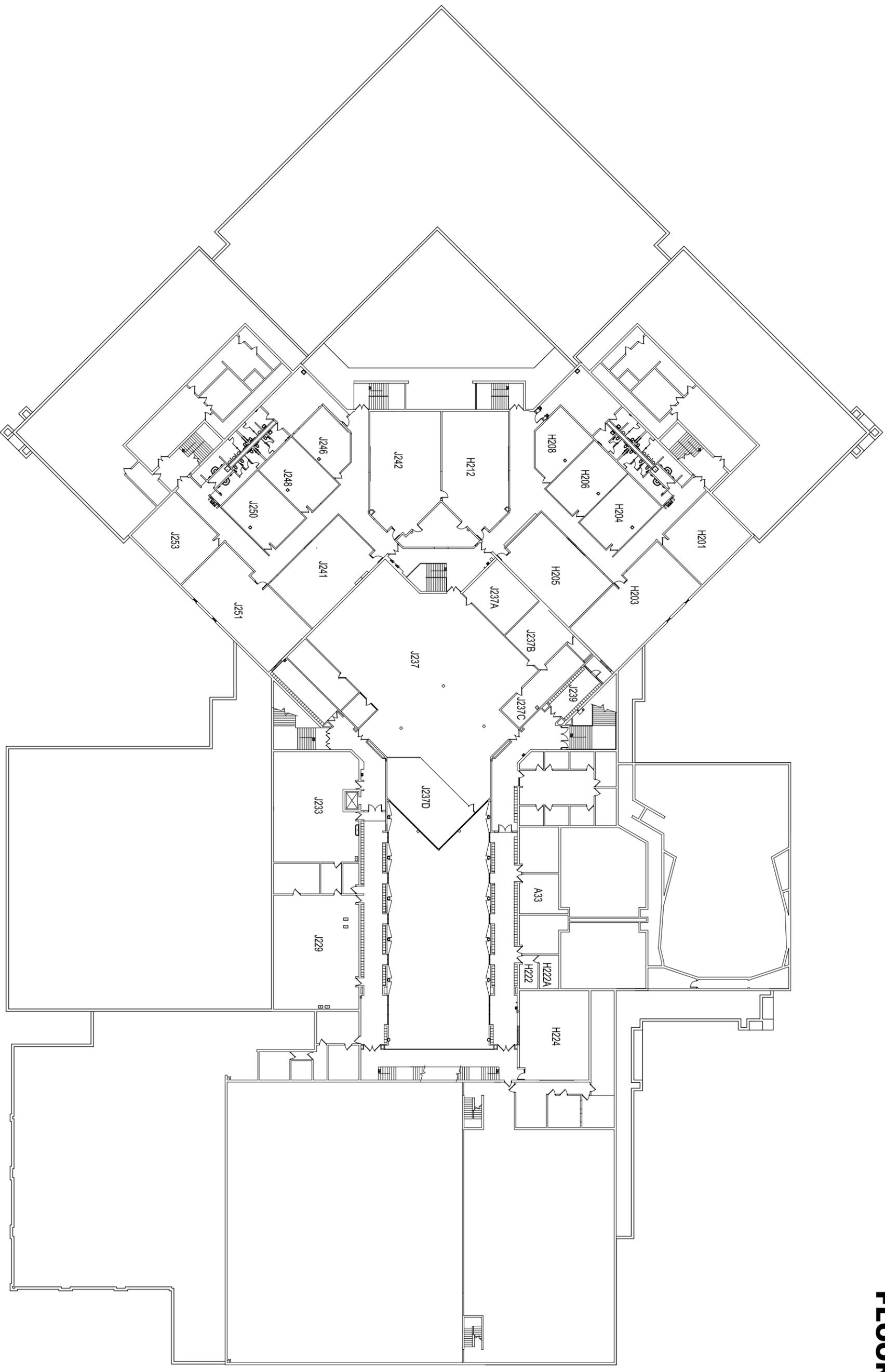
# FLOOR PLAN

6-3



FIRST FLOOR





3-10

**SECOND FLOOR**

