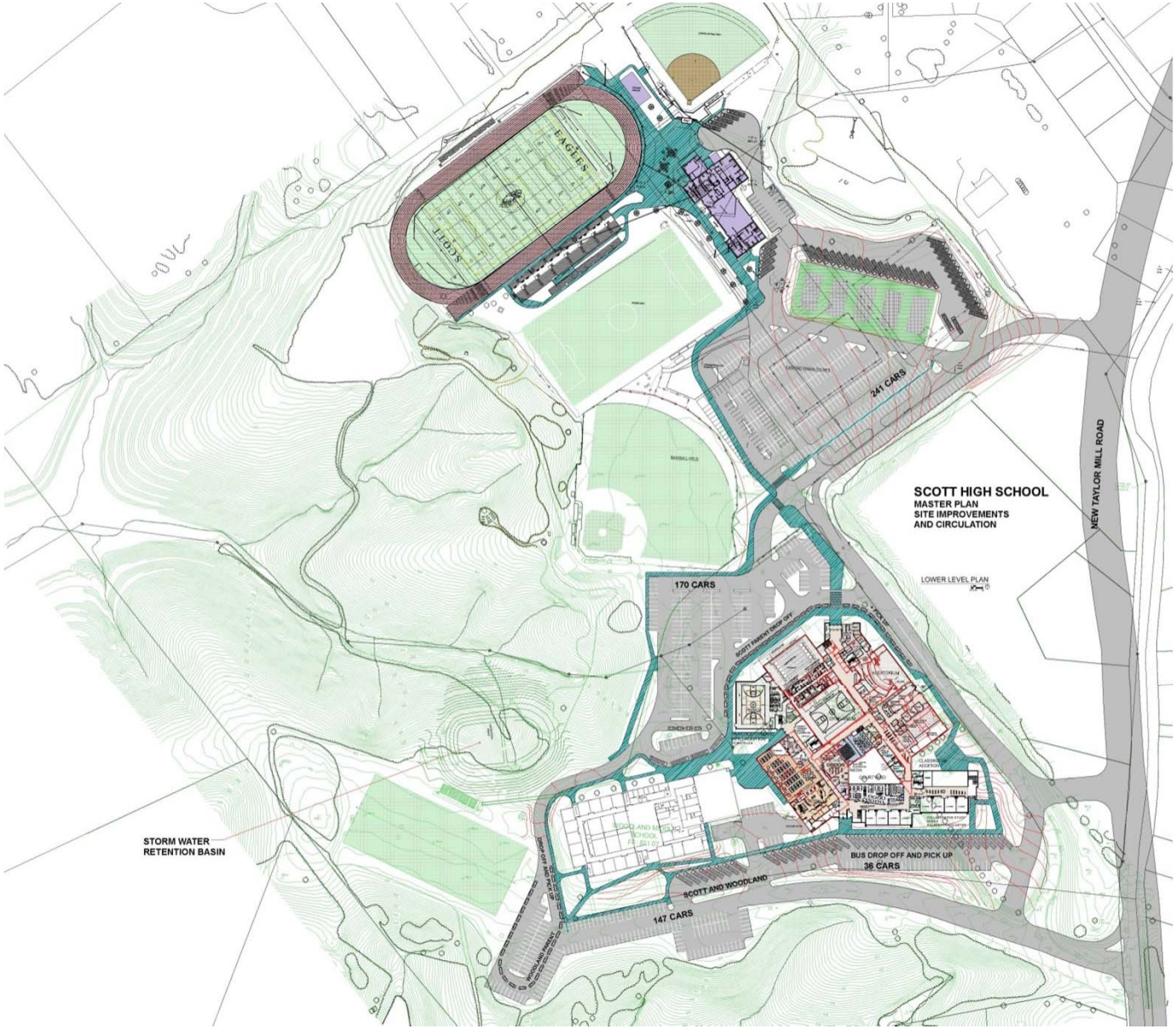
High Performance Renovation

Andrew Piaskowy, PCA Architects

Brian Baumgartle, CMTA Consulting Engineers



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UNIVERSITY OF ILLINOIS
DEPARTMENT OF ARCHITECTURE
DESIGN 235 and 236

A COMMUNICATION EXPERIMENT

PREMISE: That students of Architecture can communicate graphically the Ideas, Thoughts and Impressions of their first few weeks in Europe without the aid of a written language.

The purpose of this experiment is indeed to communicate to your fellow students (both French and American) the most vivid, or moving, or unusual, or unsettling, or especially memorable impressions that each of you individually have had since your arrival on the continent.

Any graphic techniques are acceptable with the main purpose being to communicate in the clearest possible fashion your "visual flash-backs" of the past few weeks.

As a matter of convenience, all exposes should be on flat sheets of paper, suitable for hanging as an exhibition.

All work must be accomplished in the design studio, so all students should find a place to work so that each design group can be identified. Attendance is expected during class hours.

At the conclusion of the experiment, a bi-partisan group of faculty and students from UP3 will select three projects deemed worthy of an award.*

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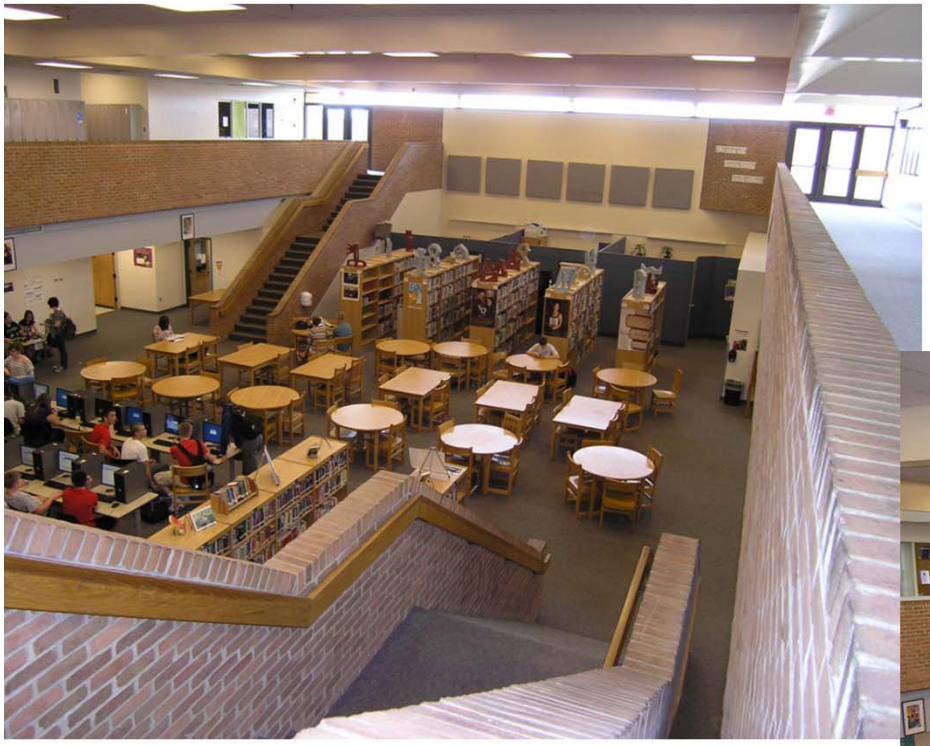
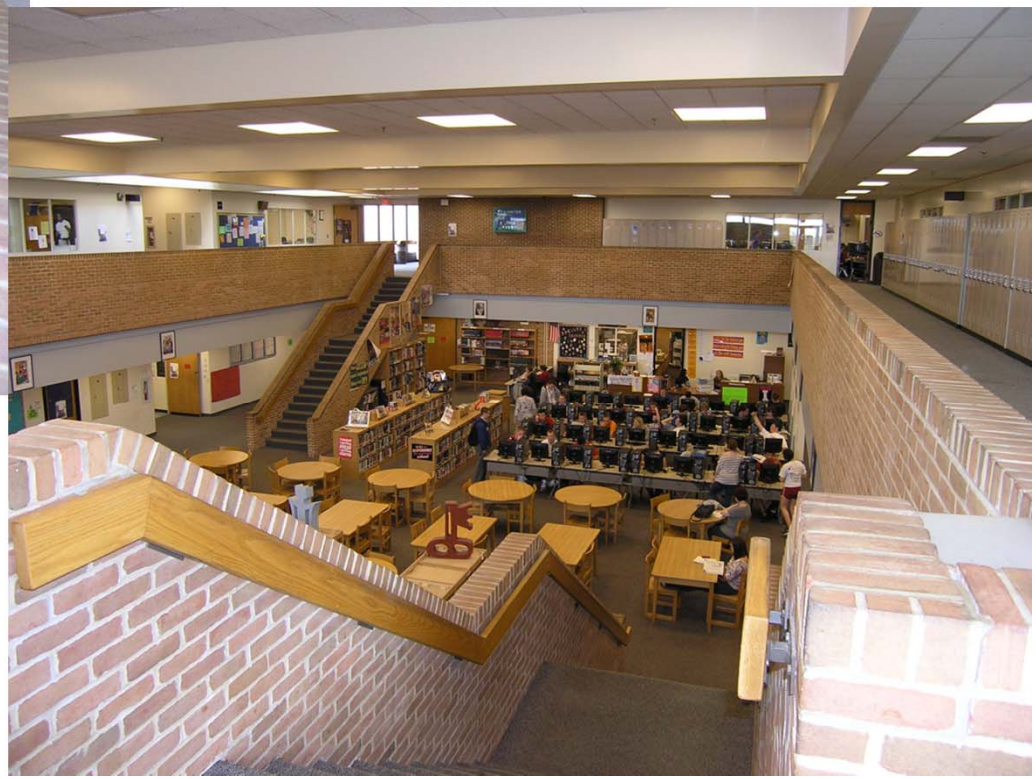
EXISTING COMMONS

EXISTING MEDIA CENTER

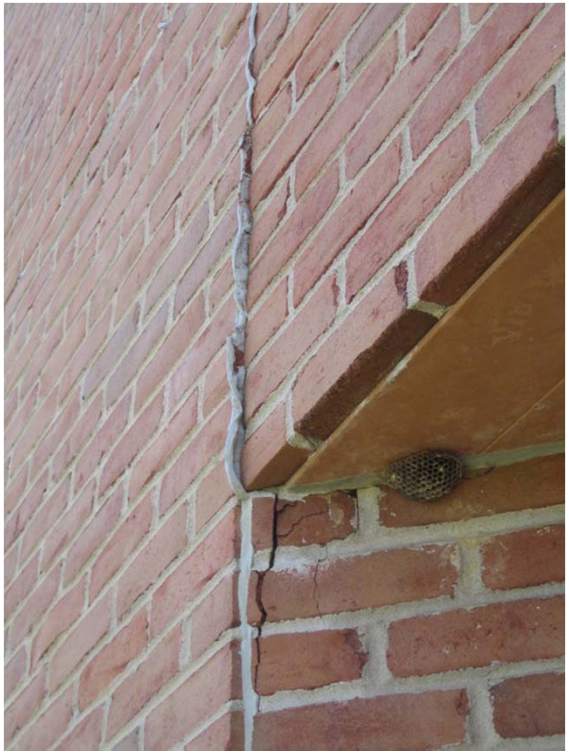




EXISTING CLASSROOM ‘POD’

MASONRY ISSUES

- EXPANSIVE BRICK
- INSUFFICIENT LATERAL BRACING OF STRUCTURAL FRAME
- UNBRACED 6” MASONRY VENEER BACKUP
- DETERIORATION OF THE PLASTIC FLASHING MATERIAL CAUSING FAILURE OF HE ENTIRE FLASHING SYSTEM
- EITHER IMPROPER INSTALLATION OR REPAIR OF THE CAULK SEALANTS AT STEEL SHELF ANGLES



NEXT GENERATION PROGRAMATIC ISSUES

We have an opportunity with the impending renovation plans to transform the entire school facility into the "Academy Model".

This design will allow collaboration on a small scale for every academic discipline in the school. The building will foster and promote individual learning spaces as well as areas for project based learning.

TEACHING AND LEARNING STRATEGIES

- Personalized learning plan
- Dual credits at post-secondary institutions
- Project based learning
- Collaborative learning environment
- Apprenticeships and job shadowing
- Research based learning model
- Intense career exploration

DESIGN ATTRIBUTES

- Learning Spaces that are flexible and promote collaboration
- Transparent learning space
- Project based learning opportunities
- Individual learning space
- Embrace technical personal learning device
- Spaces for post secondary collaboration and dual credit opportunities
- Spaces for collaboration with business and industry

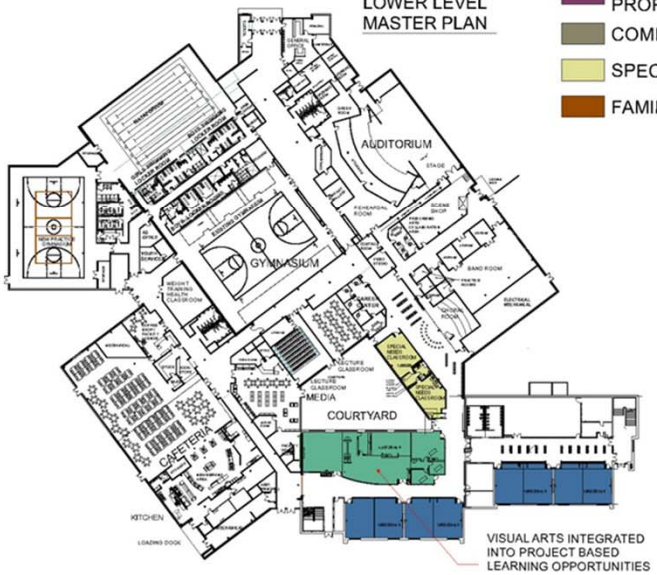
NEXT GENERATION CLASSROOM AND TEACHING SPACE

EXISTING LOWER LEVEL PLAN

EXISTING UPPER LEVEL PLAN

- CLASSROOM
- VISUAL ARTS
- SCIENCE LECTURE AND LAB
- EXISTING BUSINESS PROPOSED INFORMATICS
- COMPUTER LABS
- SPECIAL EDUCATION
- FAMILY LIVING

LOWER LEVEL MASTER PLAN



UPPER LEVEL MASTER PLAN

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MULTIMEDIA PRESENTATION CART

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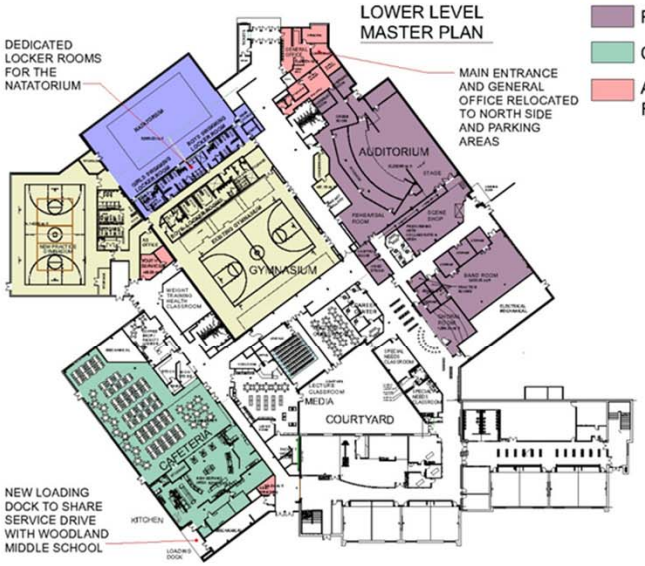
ACTIVITY AND SUPPORT SPACE ANALYSIS

EXISTING
LOWER LEVEL PLAN

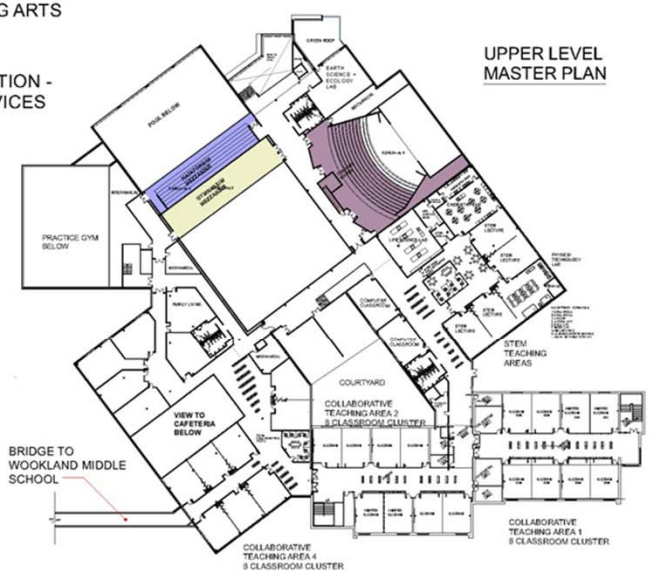
EXISTING
UPPER LEVEL PLAN

- ATHLETIC
- NATATORIUM
- PERFORMING ARTS
- CAFETERIA
- ADMINISTRATION - FAMILY SERVICES

LOWER LEVEL
MASTER PLAN



UPPER LEVEL
MASTER PLAN



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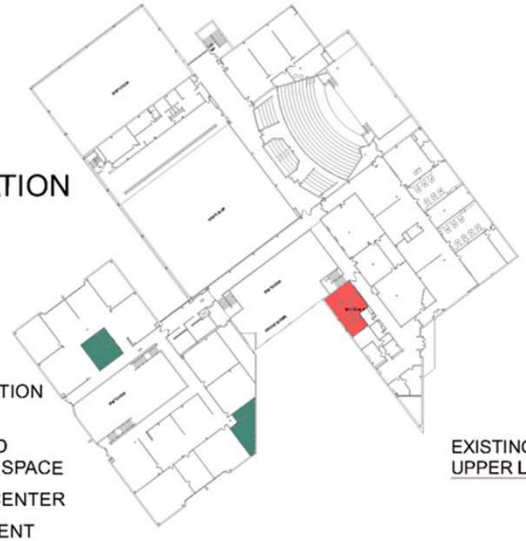
NEXT GENERATION FUNCTIONAL AREAS

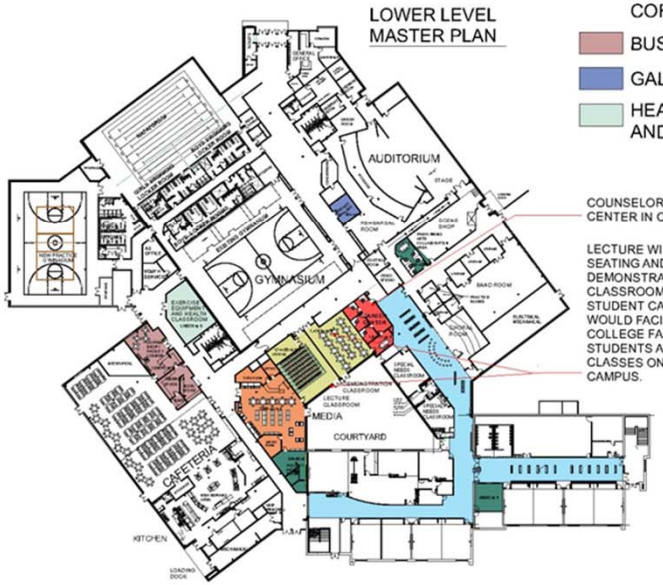
EXISTING
LOWER LEVEL PLAN



EXISTING
UPPER LEVEL PLAN

- CONSELOR - CAREER CENTER
- FACULTY COLABORATION AND WORK ROOMS
- LARGE LECTURE AND FLEXIBLE LEARNING SPACE
- MEDIA RESOURCE CENTER
- STUDENT ENGAGEMENT AND COLLABORATION CORRIDORS
- BUSINESS INNOVATION
- GALLERY SPACE
- HEALTHY LIFESTYLE AND FITNESS

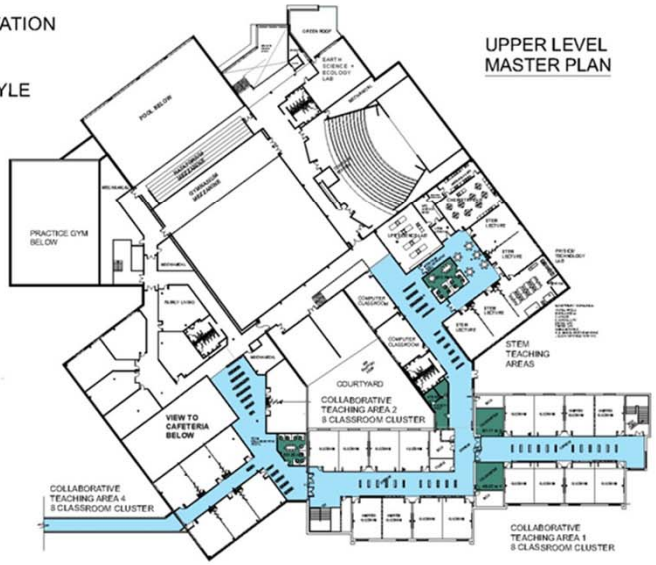
LOWER LEVEL
MASTER PLAN



COUNSELORS AND CAREER CENTER IN CENTRAL LOCATION

LECTURE WITH FIXED TIERED SEATING AND FLEXIBLE DEMONSTRATION / ACTIVITY CLASSROOM EACH WITH 90 STUDENT CAPACITY. SPACES WOULD FACILITATE GUEST COLLEGE FACULTY TO ENGAGE STUDENTS AND EVENING ADULT CLASSES ON THE SCOTT CAMPUS.

UPPER LEVEL
MASTER PLAN



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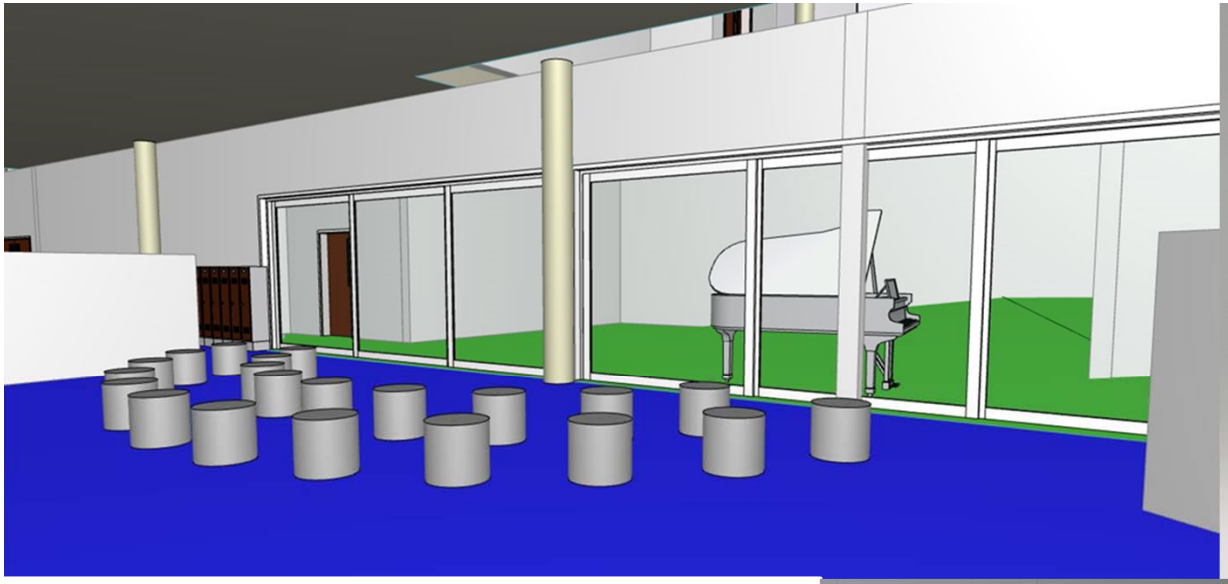

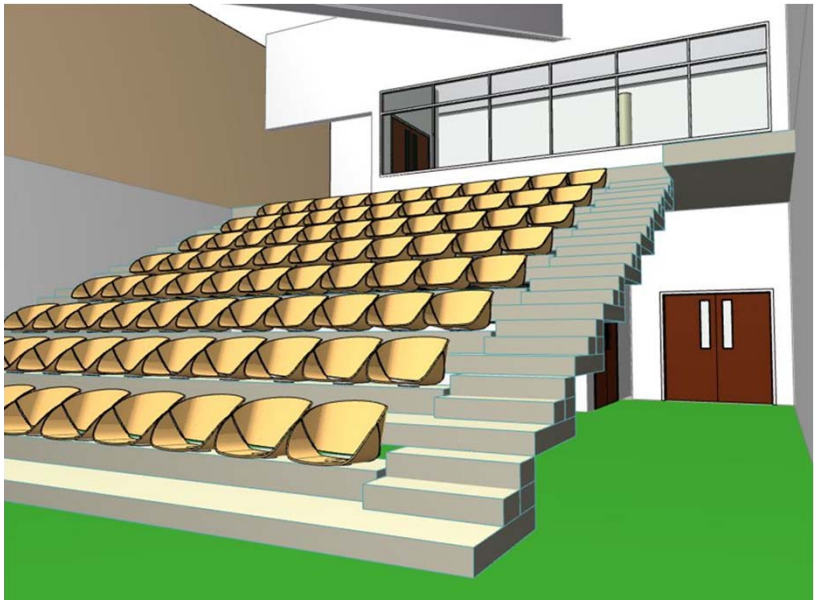

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SITE AND BUILDING RENOVATION ISSUES

- EXISTING SITE CONDITIONS AND THE RE-CONSTRUCTION OF TAYLOR MILL ROAD
- BUILDING ENVELOPE MASONRY MATERIAL AND SYSTEM FAILURES
- EXISTING ENERGY INEFFICIENCIES
- NEXT GENERATION LEARNING IMPLEMENTATION

RETURN ON INVESTMENT APPROACH

THE EXISTING ALL ELECTRIC VAV (VARIABLE AIR VOLUMN) HVAC SYSTEM IS OPERATING AT 107-85 Kbtu/sf/yr COMPARED TO 73 Kbtu/sf/yr FOR THE AVERAGE SCHOOL BUILDING IN OUR CLIMATE ZONE.

WE BELIEVE AN ENERGY GOAL IN THE MID 30 Kbtu/sf/yr CAN BE ACHIEVED

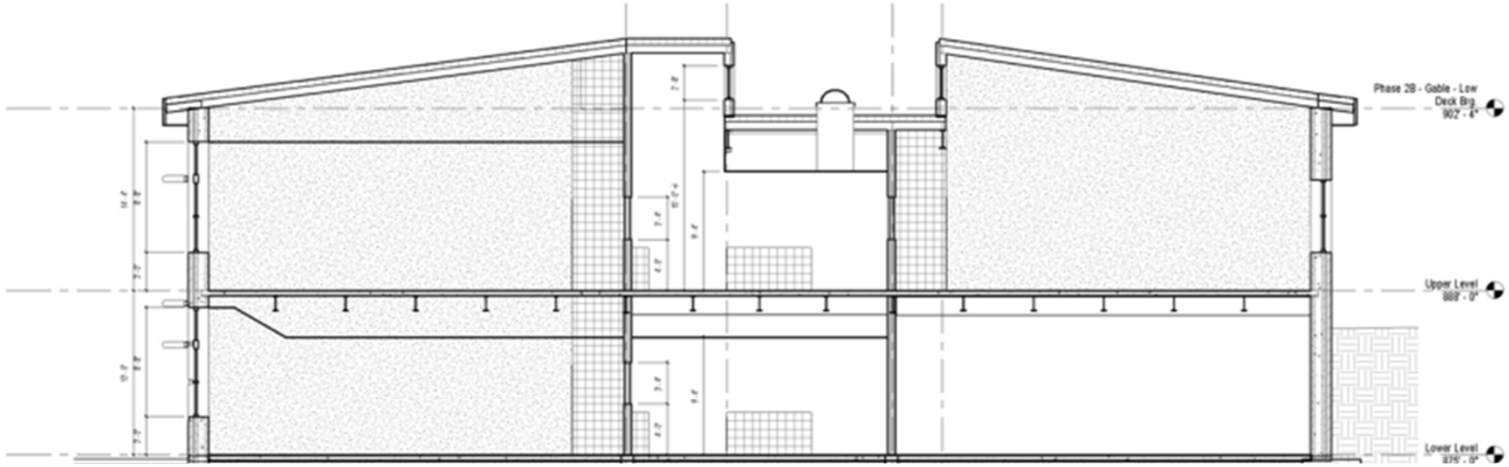
ENERGY STRATEGIES

- BALANCED APPROACH TO DAYLIGHTING OF NEW ADDITION PROGRAM SPACES WHEREVER PRACTICAL
- UTILIZE LED LIGHTING FIXTURES WITH SIMPLE CONTROLS IN LIEU OF FLUORESCENT FIXTURES CONTROLLED BY A MORE COMPLEX(EXPENSIVE) LIGHTING CONTROL SYSTEM.
- CONSTRUCTION OF A HIGH PERFORMANCE BUILDING ENVELOPE INCLUDING 'SUPER' INSULATION AND EXTERIOR JOINTS SEALED WITH FOAMED INSULATION AGAINST AIR INFILTRATION.
- UTILIZATION OF STAGED HIGH EFFICIENCY HEAT PUMPS CONNECTED BY GEOTHERMAL (HEAT SINK) LOOPED WELL FIELDS. GEOTHERMAL FIELDS WOULD BE SCATTERED AROUND THE BUILDING AND TIED TO INDIVIDUAL PHASES.

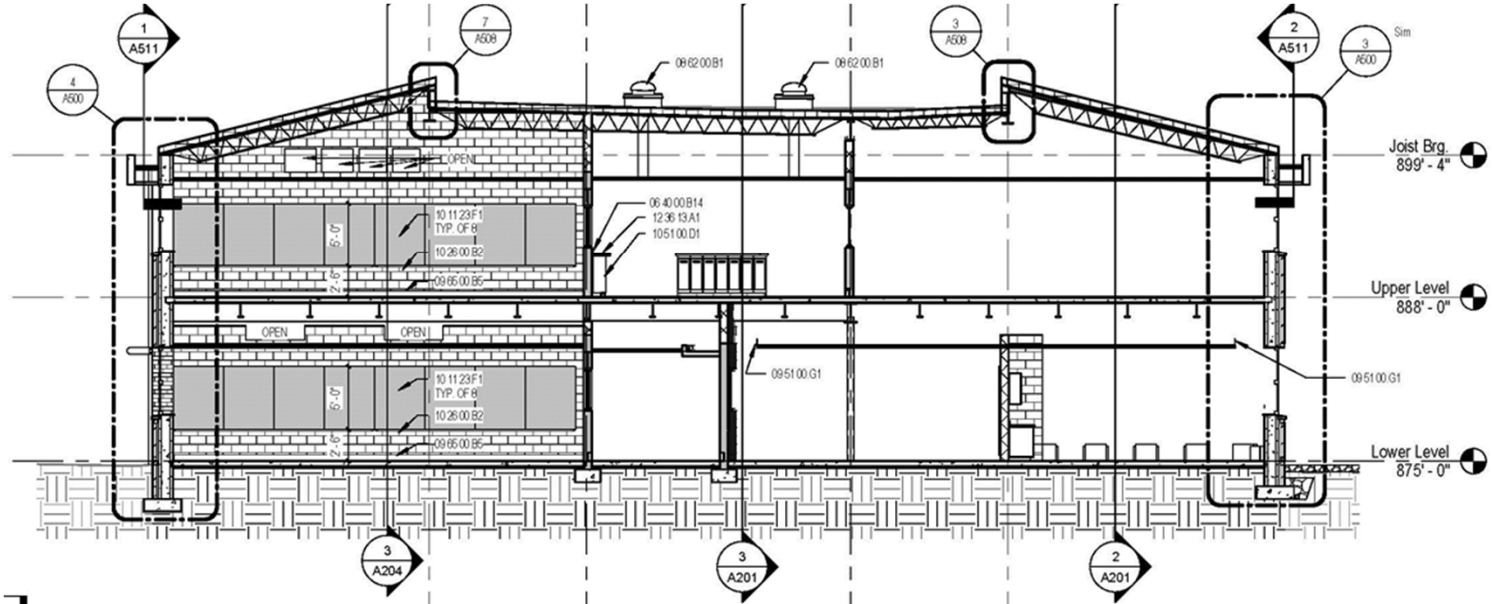
SUSTAINABLE LIFE CYCLE COST STRATEGIES

MATERIAL AND FINISH SELECTIONS

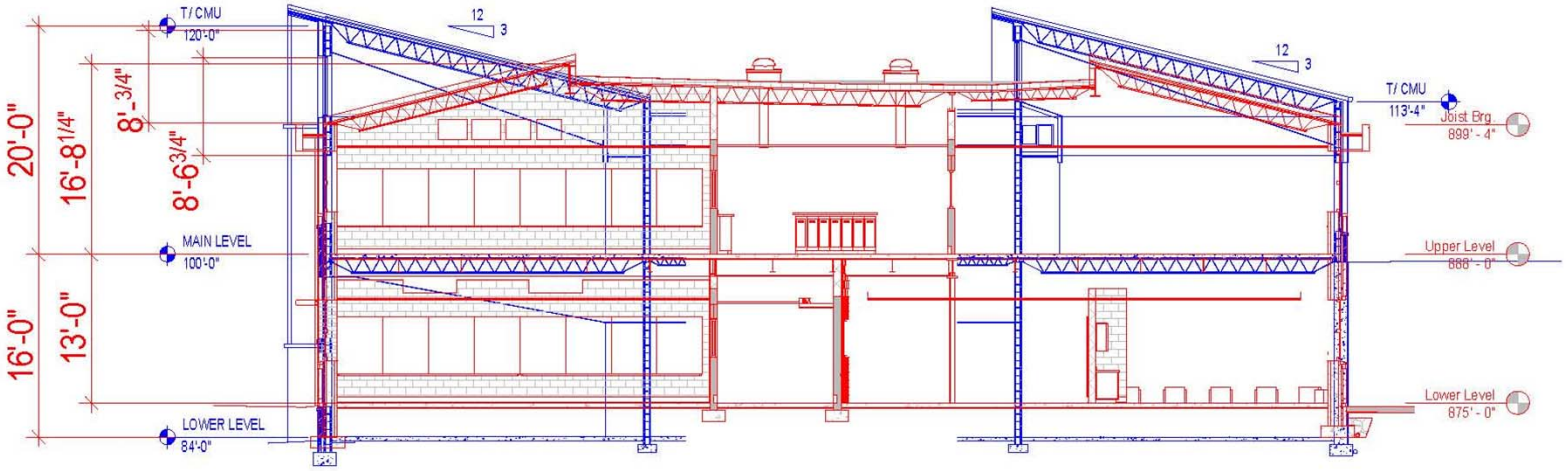
- GROUND FACE CONCRETE BLOCK – NO PAINTING MORE INTERESTING
- LINOLUEM FLOORING IN CORRIDORS AND CLASSROOMS – REDUCED MAINTENANCE REQUIREMENTS (NO WAXING)



SCHEMATIC BUILDING SECTION



BUILDING SECTION



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SCOTT HIGH SCHOOL CONSTRUCTION + RENOVATION PHASING

COMPLETED AUGUST 2010 — PHASE 1 NEW STADIUM

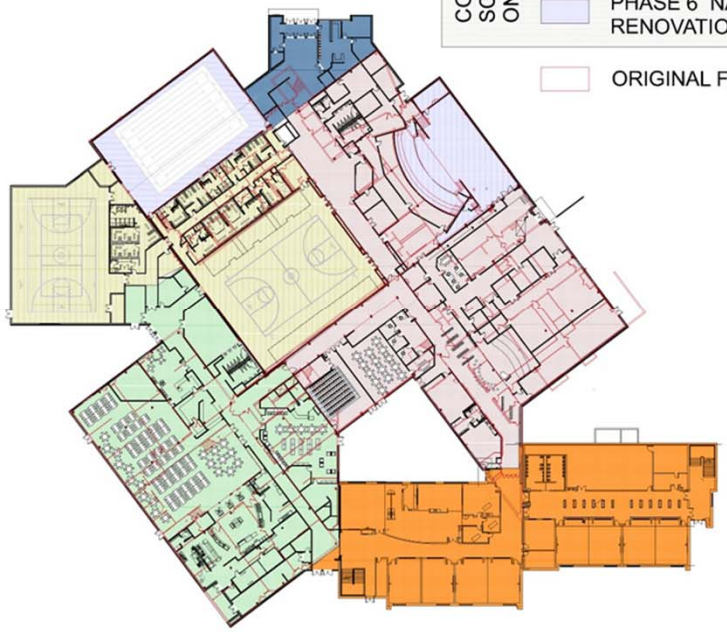
COMPLETED MARCH 2012 — PHASE 2A MULTIPURPOSE BUILDING AND NEW ENTRY / ADMINISTRATION ADDITION

PROPOSED AUGUST 2013 COMPLETION — PHASE 2B CLASSROOM ADDITION

CONSTRUCTION SCHEDULE CONTINGENT ON AVAILABLE FUNDING

- PHASE 3 EXSITING WEST CLASSROM RENOVATION INCLUDING NEW CAFETERIA
- PHASE 4 RENOVATION OF EXISTING EAST CLASSROOM STEM AND PERFORMING ARTS AREAS AND LARGE CLASSROOMS
- PHASE 5 NEW PARTICE GYMNASIUM LOCKER ROOM RENOVATIONS
- PHASE 6 NATATORIUM AND AUDITORIUM RENOVATION

ORIGINAL FLOOR PLANS



LOWER LEVEL
MASTER PLAN

UPPER LEVEL
MASTER PLAN

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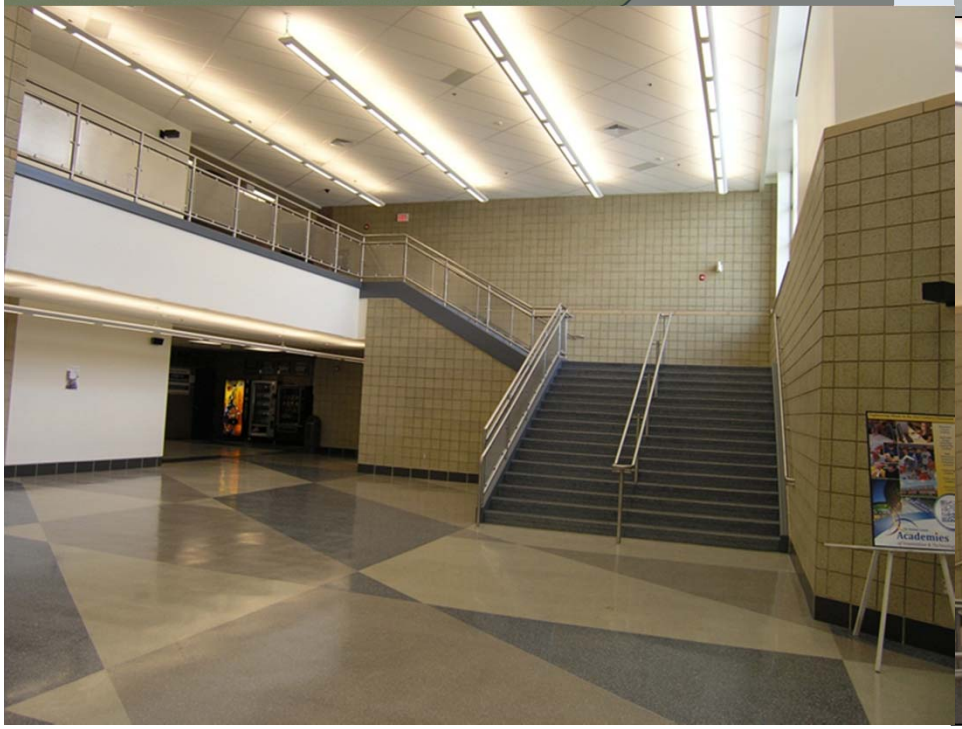
PHASE 2A



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PHASE 2B

BIDS WERE RECEIVED ON MARCH 8, 2013
THE APPARENT LOW BIDDER RESULTS IN A CONSTRUCTION COST OF $193.28 PER SQ FT