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Partners in Progress

ASBO Maryland • District of Columbia

Project Stakeholder Integration in Off-Site Construction

May 24, 2016

Thomas W. Gilbert, AIA, REFP
President

- **Established in 1988**
- **Full-service architectural firm**
- **100% of our work is focused *exclusively on designing public K-12 educational facilities* in the Mid-Atlantic region**

Session Overview

- **Defining off-site construction**
- **Millmont Elementary School – A Case Study**
- **Opportunities & Project Integration**
- **West Reading Elementary Center – A Case Study**
- **Q & A**

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The Off-Site Construction Council (OSCC) of the National Institute of Building Sciences has this definition:

Off-site construction is the planning, design, fabrication and assembly of building elements at a location other than their final point of assembly onsite. An integrated planning and supply chain optimization strategy characterizes off-site delivery.

National Institute of BUILDING SCIENCES
An Authoritative Source of Innovative Solutions for the Built Environment

What is Permanent Offsite Construction? (POC)

- It is a permanent building.
- POC companies build 3D volumetric modules for the building off-site in a controlled environment.
- POC is a process rather than a product.
- May be an entire building, an addition to an existing building or part of a building.
- May be used for courtyard infill.

Millmont Elementary School
A Case Study

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Reading, Pennsylvania

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Reading School District
Existing Millmont Elementary School

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Reading School District – Millmont Elementary School

Reading School District – Millmont Elementary School

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Reading School District – Millmont Elementary School

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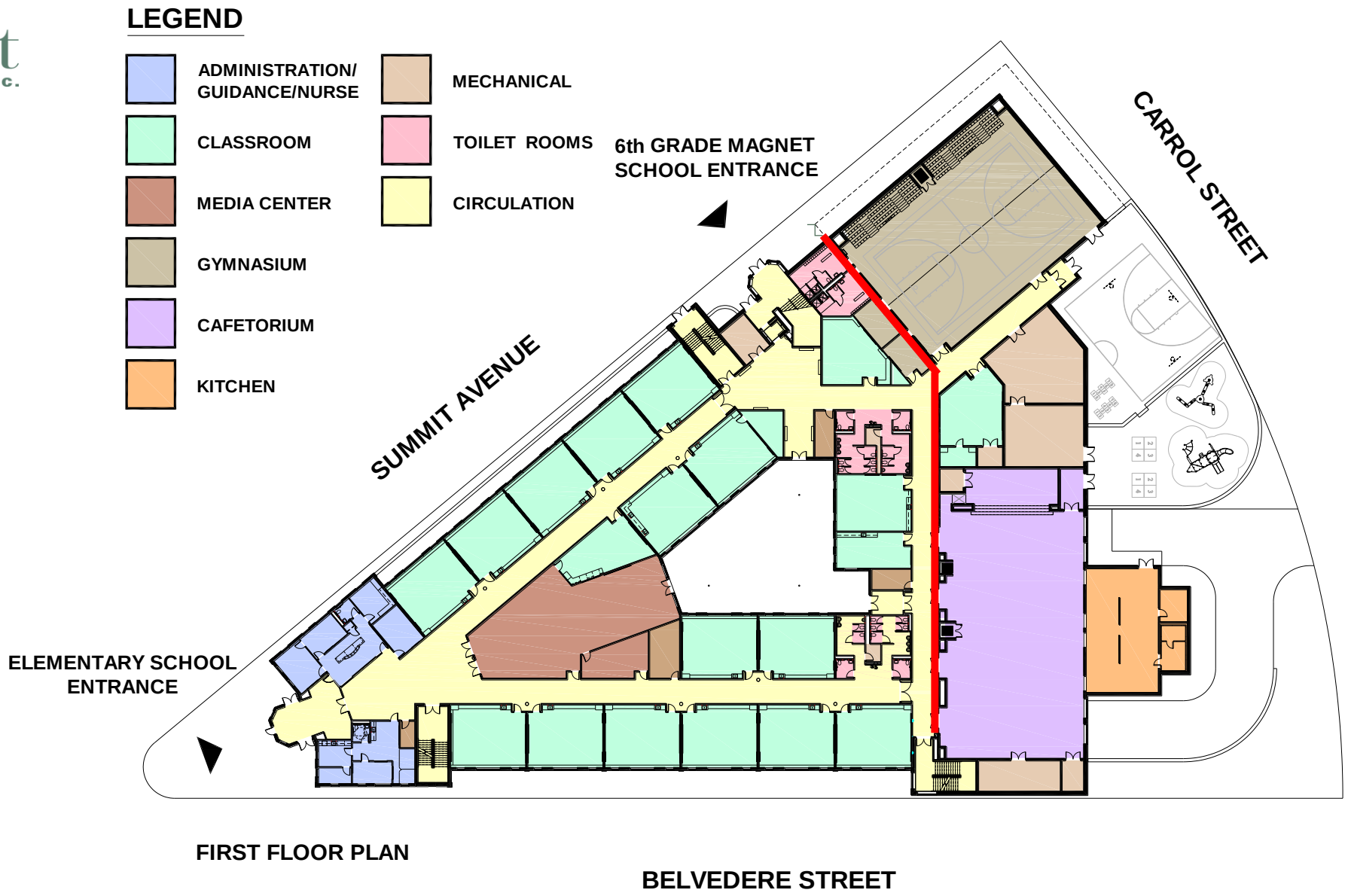

FIRST FLOOR PLAN

Reading School District – Millmont Elementary School

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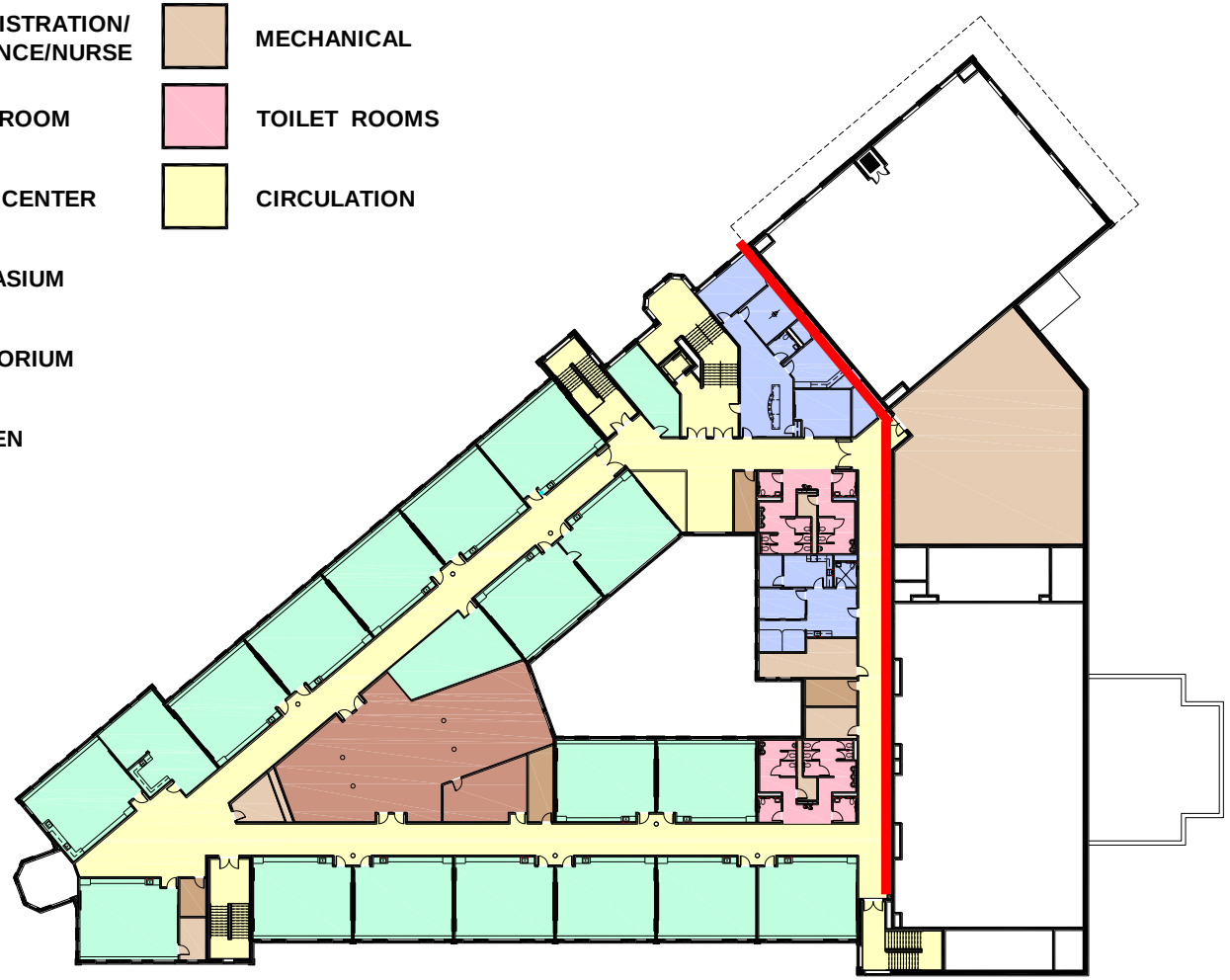
LEGEND

- ADMINISTRATION/ GUIDANCE/NURSE
- CLASSROOM
- MEDIA CENTER
- GYMNASIUM
- CAFETORIUM
- KITCHEN
- MECHANICAL
- TOILET ROOMS
- CIRCULATION



NORTH

SECOND FLOOR PLAN

Reading School District – Millmont Elementary School

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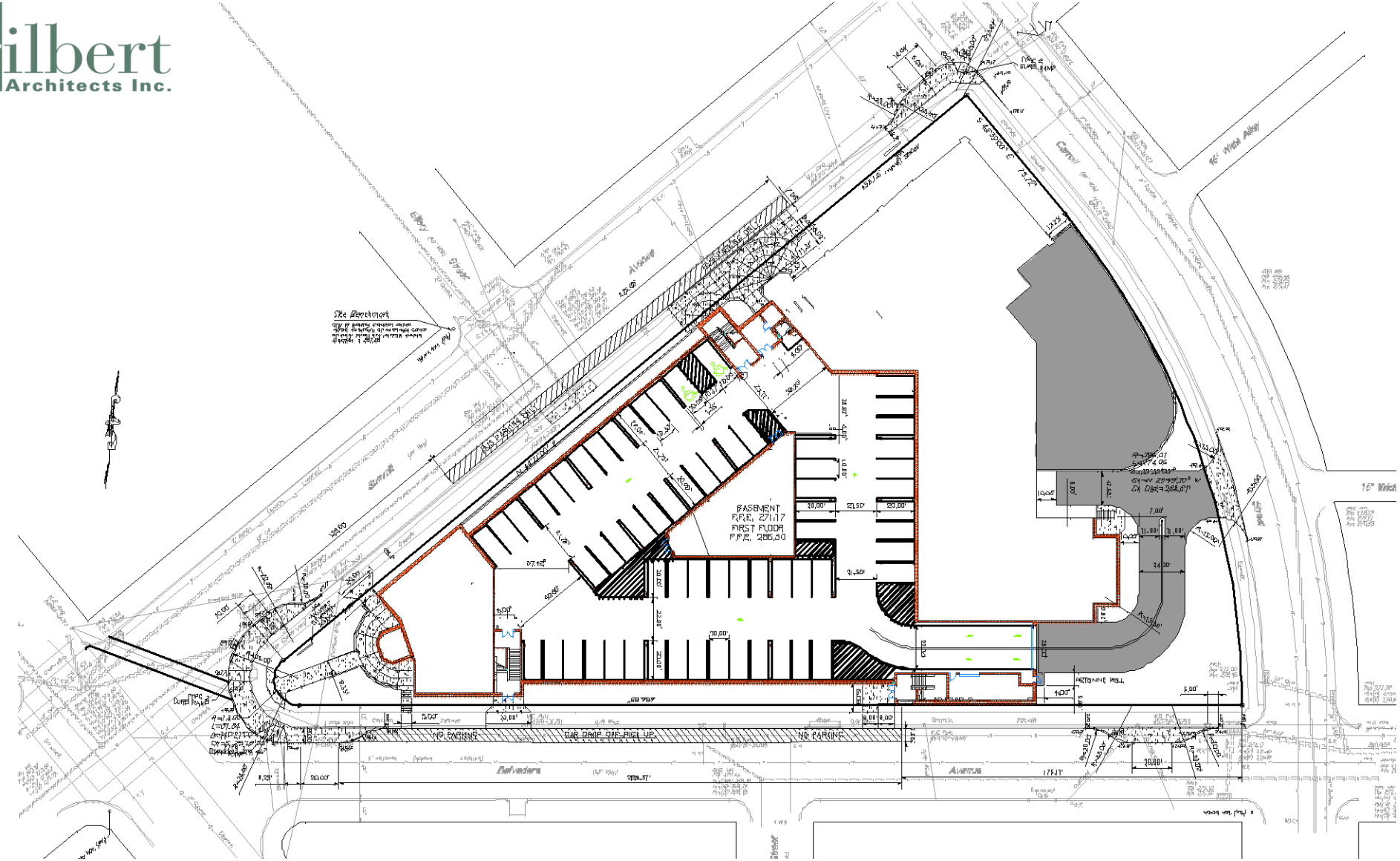

Reading School District – Millmont Elementary School

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Reading School District – Millmont Elementary School

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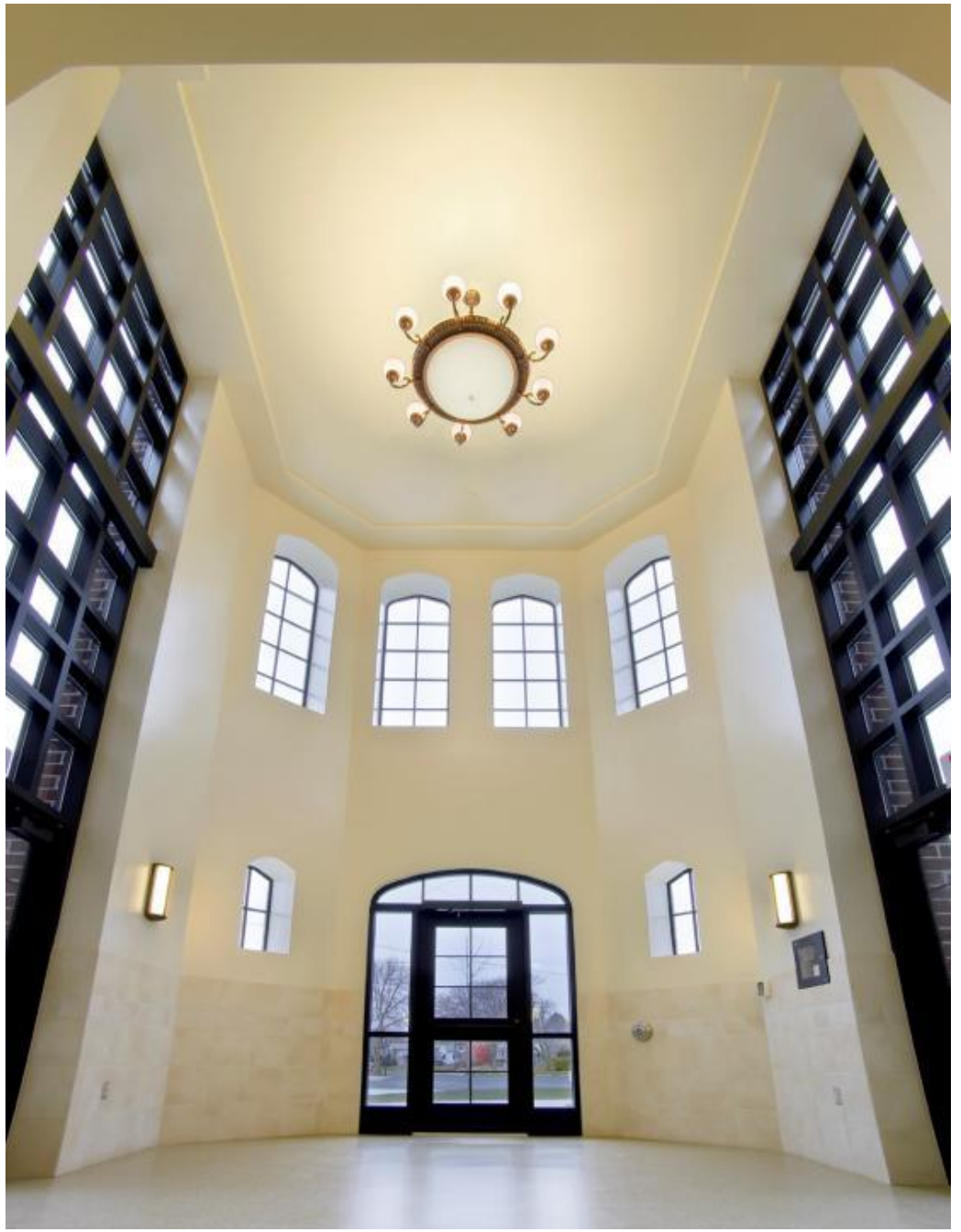
Reading School District – Millmont Elementary School



Built on site

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Built off site

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Reading School District – Millmont Elementary School

Off-Site Construction

Opportunities & Project Integration

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Opportunities – Will there be Value Added

Schedule

- Concurrent Work - Onsite and Offsite
  - Shorten Schedule
- Complex Site and Foundations
- Site Constraints

Budget

- Prevailing Wage Onsite
- Non-prevailing Wage Offsite
  - Must be weighed against transportation expense

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Opportunities – Will there be Value Added

Productivity

- Workforce availability
- Perhaps fewer Site Constraints
- Less Crane Time

Safety and Quality

- Will the work be safer for those doing it?
- Work preformed in a climate controlled environment
- Will quality be improved and reliable?
- Will contractors be providing their best staff?

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Project Integration - Success Requires

1. Collaborative thinking
2. Understanding the importance of the modules
3. Believing that timing is everything
4. A defined scope of work between parties.

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1. Collaborative Approach

Understanding the dynamics of building off site

How is it the same as traditional project management

- **Owner/architect vision and final outcome.**

How is it different from traditional project management

- **Structural design, scheduling, sequencing, scope of work - roles and responsibilities.**
- **Design / Pre-construction – how and when to engage a modular company**
- **Communication, coordination and cooperation throughout the project**

2. Why does the module matter?

Design – The impact of the building layout

Deciding on the footprint and layout of a building can be done ahead to ensure that the owner's requirements for program, aesthetics and spacial adjacency is captured.

Then using simple tools such as "Bluebeam", a preliminary modular key plan can be overlaid quickly and effectively. Once this is done, a review should take place to see if any adjustments are needed or could be considered to make the modular layout the most cost effective.

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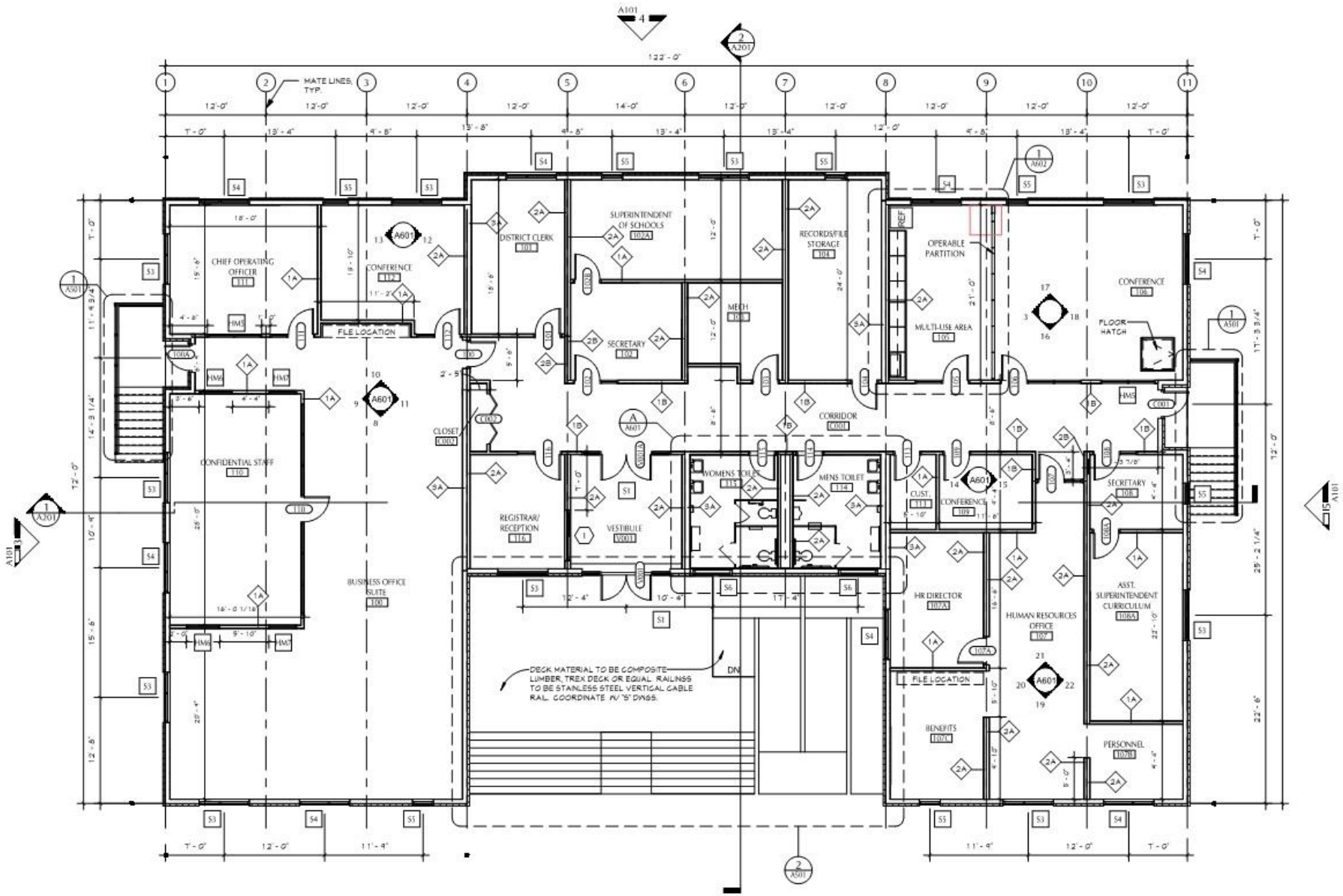

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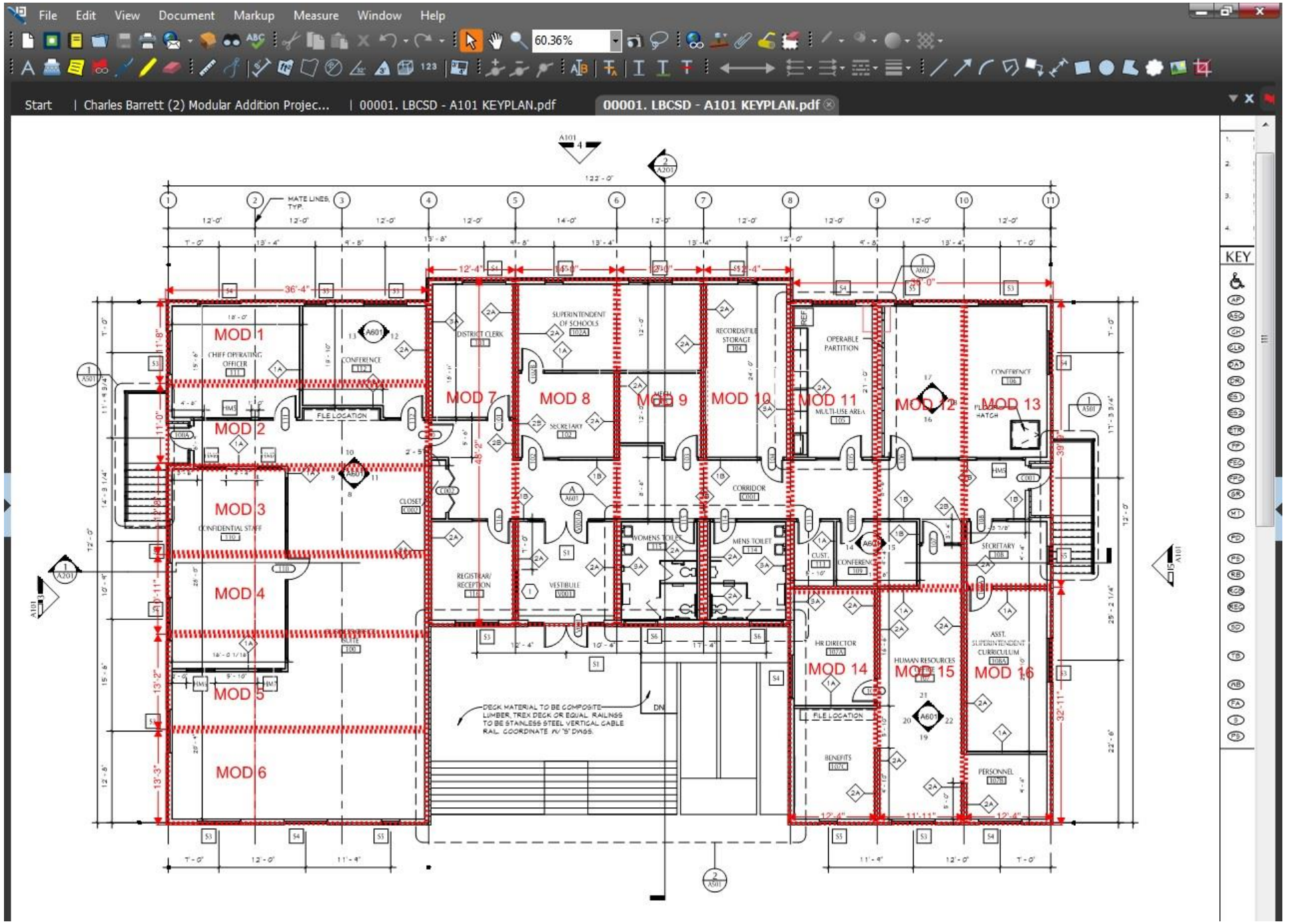

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Road transport and site access will influence module sizes

Module sizes may be governed by adjacency of existing buildings

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Modules may be designed around weight, cubic dimension, crane reach, connection to existing buildings.

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Module sizes and layout impact foundation design

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3. Timing is everything

Final Design and Approvals are more time sensitive.

- Project schedules should establish a reasonable but finite time for final design development and decision making
- Decisions must be made early and modular footprint frozen
- Turnaround time for approvals is shorter
- Collaboration between stakeholders prevents changes during fabrication.
- Color choices may be needed before foundations are in

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4. Scope of Work

Define and Delineate the Project Scope of Work

- During pre-bid/pre-construction phases, establish a scope of work document that best suits the requirements of the stakeholders

- Clearly communicate to avoid scope creep/overlap or scope gaps

West Reading Elementary School

A Case Study

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Reading, Pennsylvania

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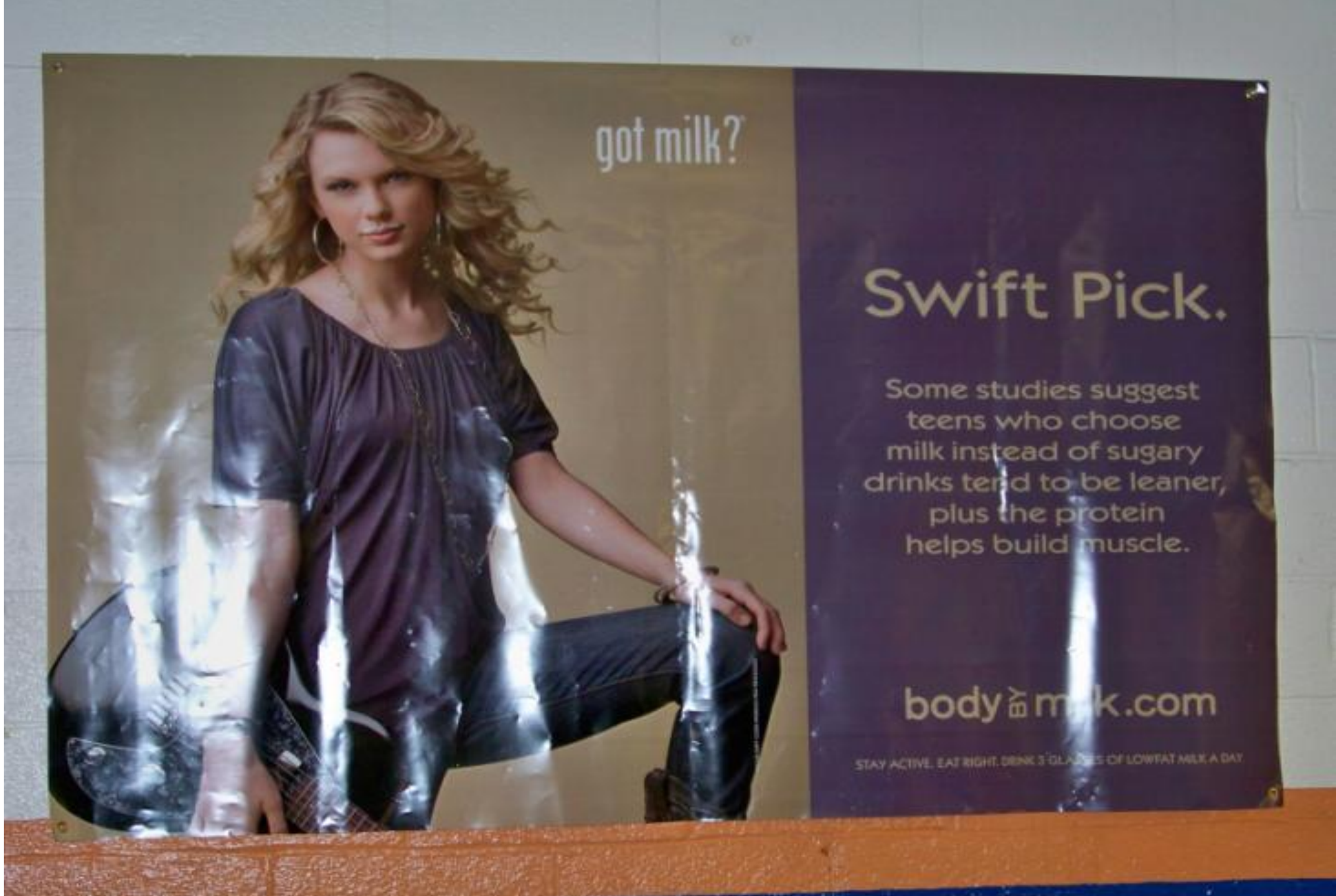
Original
Main
Entrance

Wyomissing Area School District
West Reading Elementary School

Famous singer who attended this elementary school



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Original Main Entrance

Wyomissing School District
West Reading Elementary School

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Modular Addition

COLOR LEGEND

- ADMIN
- ART
- CIRCULATION
- CLASSROOM
- FOOD SERVICE
- MAINTENANCE
- MEDIA CENTER
- MUSIC
- TECHNOLOGY EDUCATION
- TOILETS

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Ground Level

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New Main Entrance

Modular Addition

COLOR LEGEND

- ADMIN
- CIRCULATION
- CLASSROOM
- MAINTENANCE
- PHYSICAL EDUCATION
- TOILETS

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Main Level

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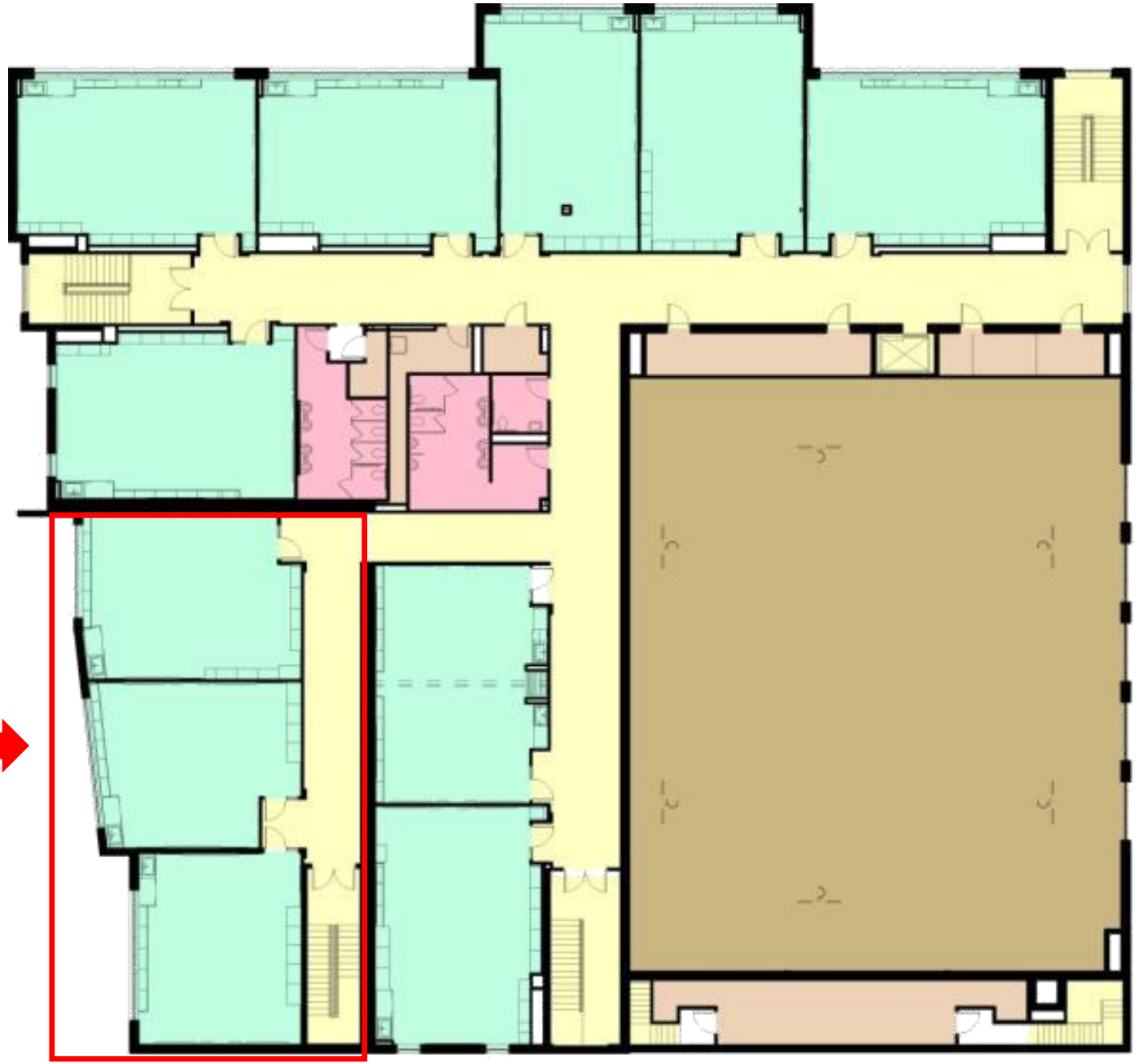

COLOR LEGEND

- CIRCULATION
- CLASSROOM
- MAINTENANCE
- PHYSICAL EDUCATION
- TOILETS

Modular Addition

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Second Level

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New Main Entrance

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Project Costs

Budget: $13,000,000

Actual construction cost including asbestos abatement: $ 9,031,419

50,150 s.f. renovations

8,698 s.f. new

Schedule

Hired: January 2010

Bid opening: October 2010

School opened: August 2011 – **10 months**

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Thank you for the opportunity to speak with you today!

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For more information, visit our Blog at gilbertarchitects.com