Horace Mann Elementary School

Schematic Design Phase

DRC Meeting

February 14, 2024

Raymond Design Associates

NV5

Agenda

- Proposed DRC/SBC Meeting Schedule Agenda
- Design Updates
- Schematic Design / Site Plan Approval Recap
  - Parking and Traffic
  - Stormwater
  - Exterior Lighting
  - Massing
  - Building Envelope & Sustainability
  - Commissioning

Horace Mann Elementary School

Proposed Agenda

SD

Project Introduction, Site Plan, Floor Plans, Elevations & Renderings

Site Plan, Floor Plans, Elevations, Building Systems & Materials, Energy Model

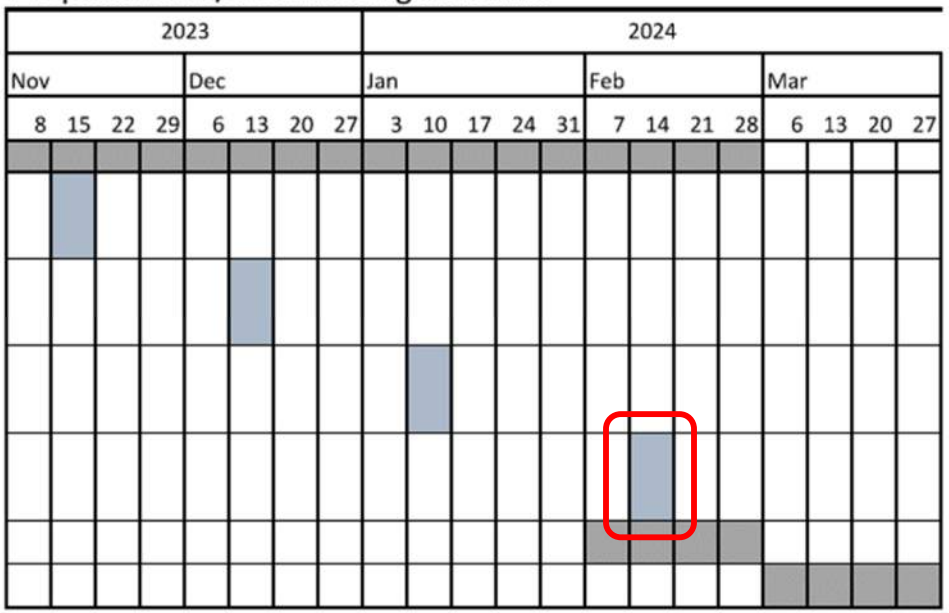
Building Systems & Materials, Energy Model, Sustainability, Building Envelope (Roof, Wall, Windows, etc.)

Building Envelope and Final SD Approval

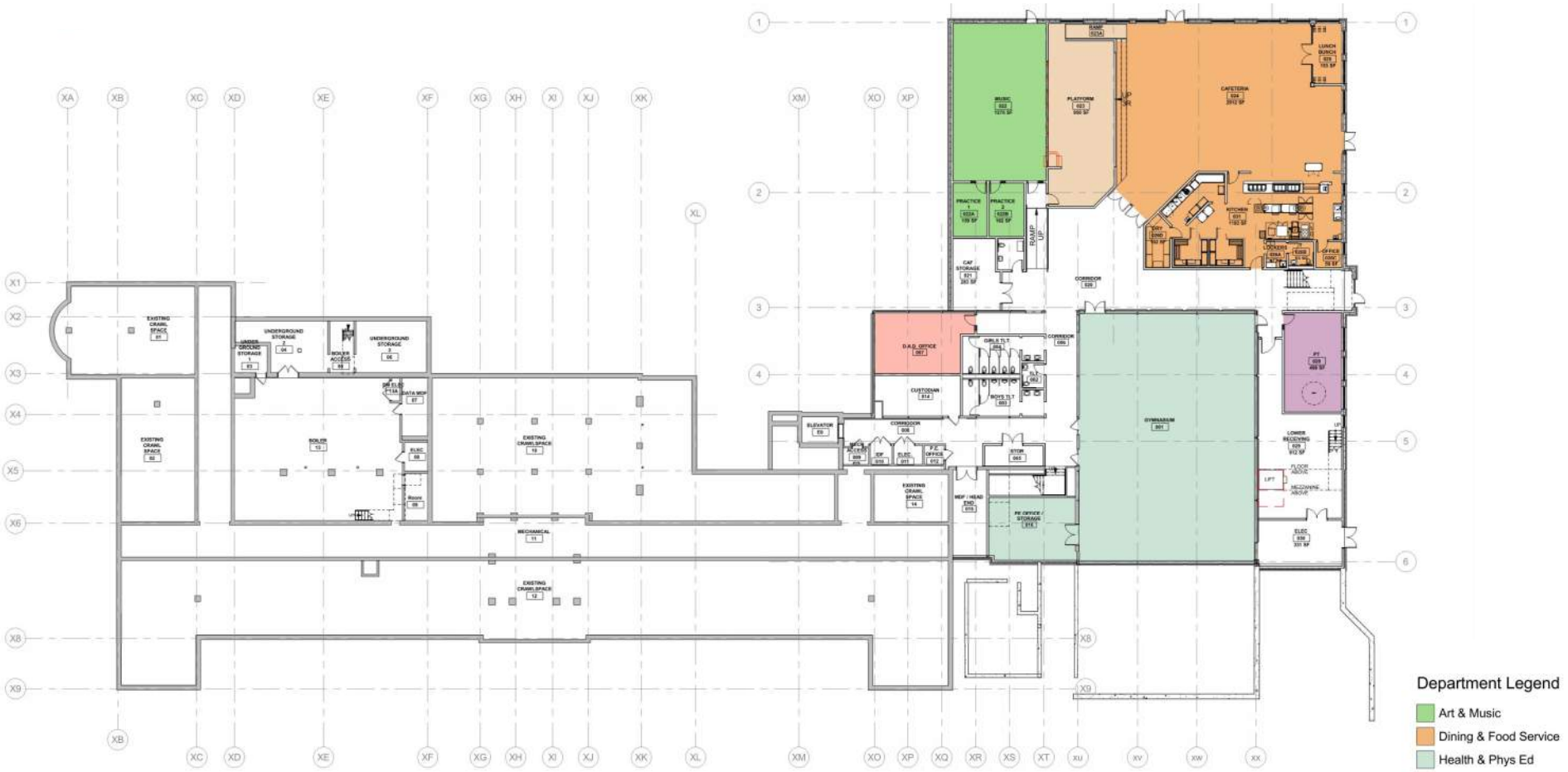
Site Plan Approval

DD

Proposed DRC/SBC Meeting Schedule

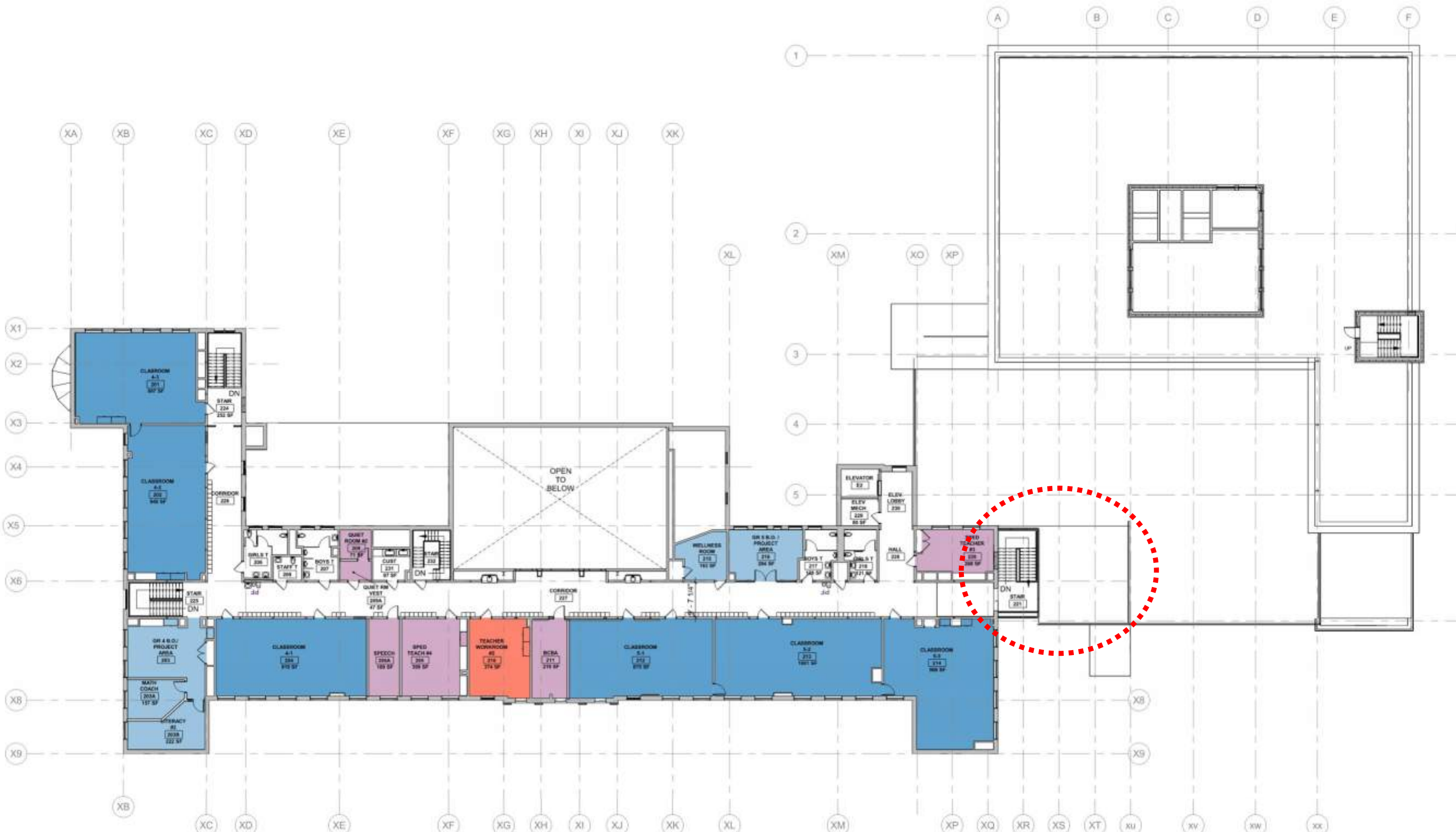


Design Updates



1 GROUND FLOOR PLAN - PROGRAMMING
1/16" = 1'-0"

1 FIRST FLOOR PLAN - PROGRAMMING
1/16" = 1'-0"



1 SECOND FLOOR PLAN - PROGRAMMING
1/16" = 1'-0"

Department Legend

- Admin & Guidance
- Art & Music
- Core Academic Spaces
- Dining & Food Service
- Media Center
- Medical
- Special Education
- Support Services

Rear Accessible Entrance to Addition
(previous)

Rear Entry Ramp

Cafeteria

Cafeteria

Front Accessible Entrance to Stair Addition (proposed design)

Front Accessible Entrance to Stair Addition (proposed design)

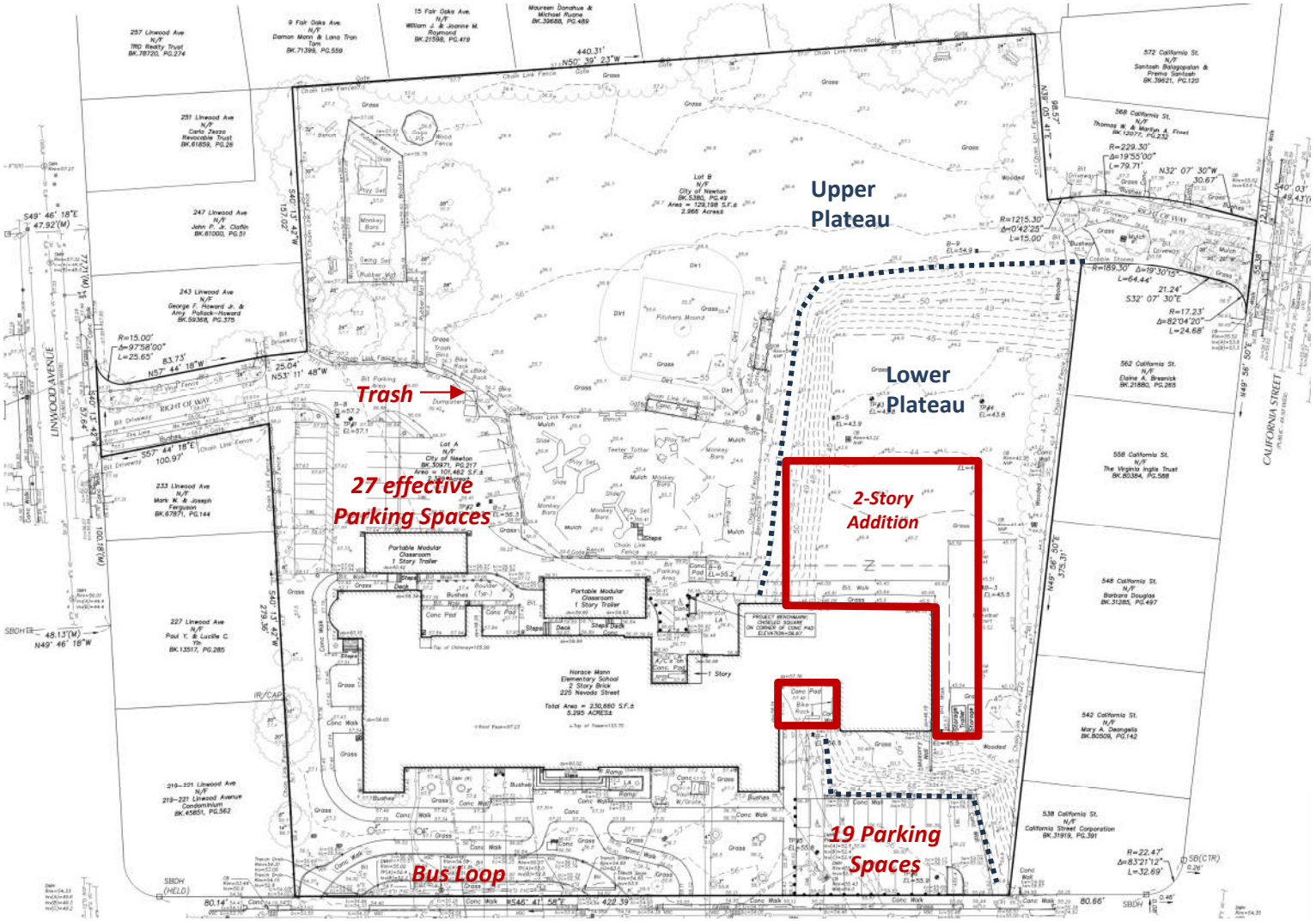
Front Accessible Entrance to Stair Addition (previous design)

Front Accessible Entrance to Stair Addition (proposed design)

Schematic Design / Site Plan Approval

Parking and Traffic
Stormwater
Exterior Lighting
Massing
Building Envelope & Sustainability
Commissioning

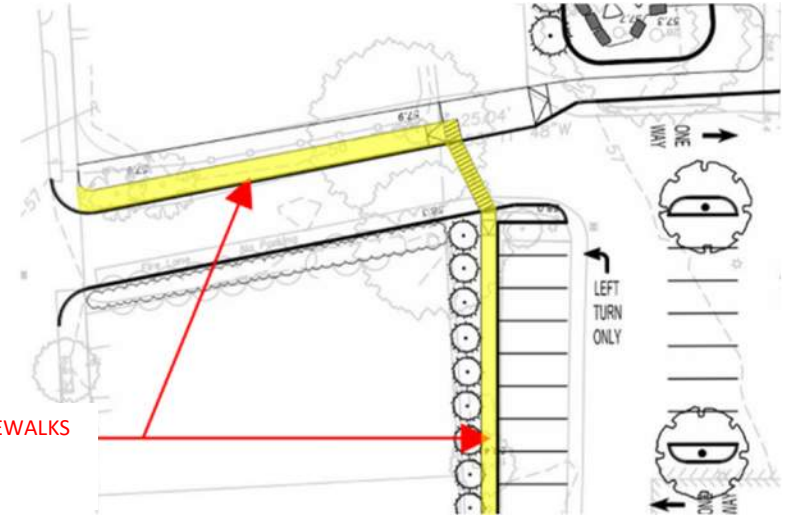
Existing Conditions



Site Improvements

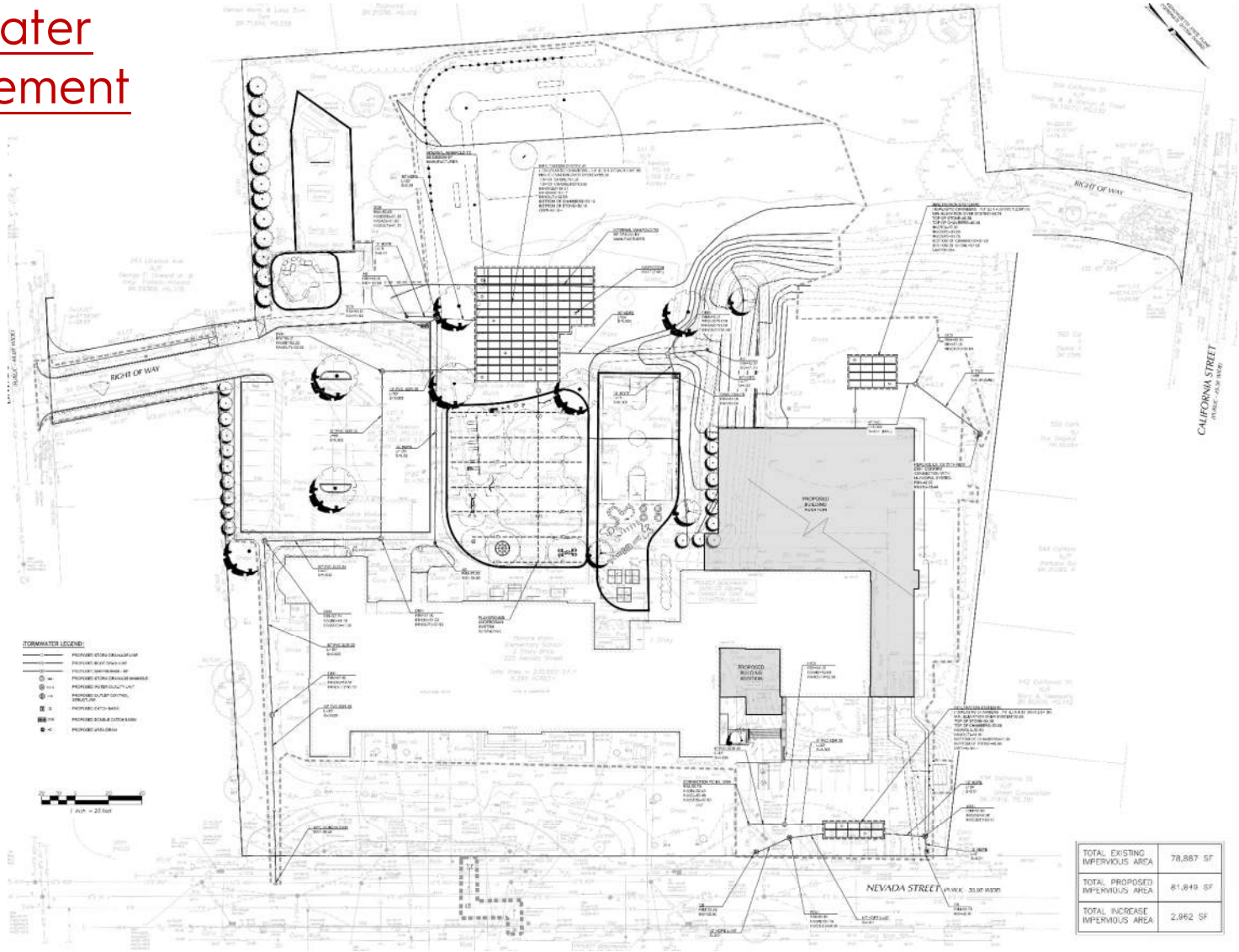
- Emergency Access
- On-Site Parking (no net loss)
- Exterior Lighting
- New PIP Playground
- Hardsurface Play
- Relocated BB Field
- Retained Sledding Hill
- Accessibility
- Parking & Access Drives

Linwood Ave Access Drive



NEW SIDEWALKS

Stormwater Management



Sustainability Goals & Requirements

1. **Massachusetts Stretch Code** and **Specialized Code Community**

2. **Newton's Approach to Sustainable School and Municipal Buildings**

3. **LEED for Schools**

Specialized Code

Municipalities must vote to opt in to the Specialized Code. The code takes effect 6-11 months after adoption.

IECC 2021
+ MA amendments
+ Stretch Code amendments
+Specialized Code appendices

Thornton Tomasetti

MA Energy Stretch and Specialized Code

1. **New Construction Addition:** **Stretch Code** and **Specialized Code**
    - Targeted Performance Compliance pathway or Passive House certification
        - ≈R-50 roof, ≈R-25 wall, minimize thermal bridging, triple glazing, low air leakage, ≈80% effective air-to-air energy recovery
    - Code minimum envelope via “Component Performance Alternative”
    - C406 Additional Efficiency Requirements – 15 credits
    - Specialized Code 3 pathways:
        - Zero Energy
        - All-Electric
        - Mixed Fuel
2. **Existing Building Renovation:** **Stretch Code only**
    - Code minimum prescriptive requirements for altered portions only

Thornton Tomasetti Memorandum

TO	Raymond Design Associates, Inc.
FROM	Thornton Tomasetti
DATE	August 7, 2023
RE	Horace Mann Elementary School MA Energy Stretch and Specialized Code Preliminary Assessment

New Construction Addition

To meet the energy efficiency requirements, the addition portion of the project will be required to comply with either the C401.2.1 Targeted Performance Compliance pathway or C401.2.2 Passive House Compliance pathway.

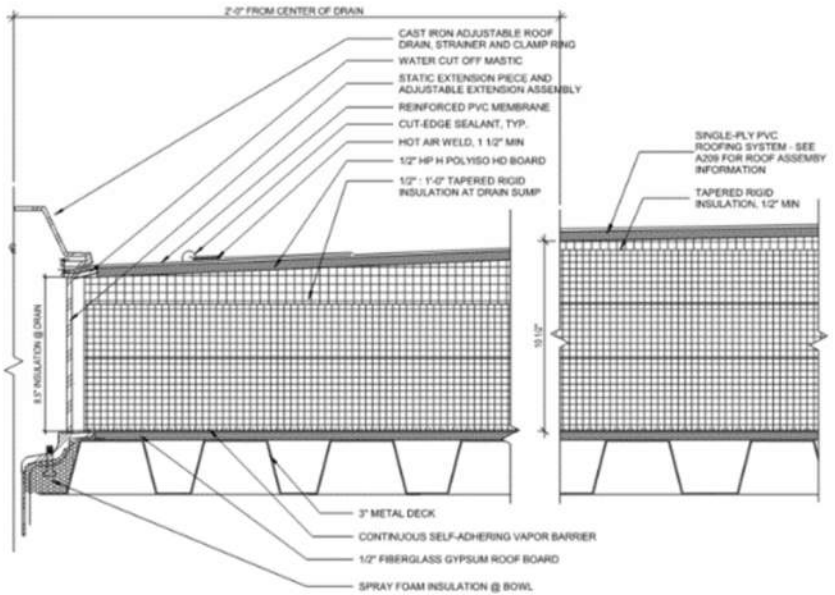
C401.2.1 Targeted Performance Compliance pathway: This pathway is required for schools larger than 20,000 ft^2 and have an average ventilation at full occupancy of 0.5 cfm/ft^2 or less. The heating thermal energy demand intensity (TEDI) target is 2.4 $kBtu/ft^2/yr$ and the cooling TEDI target is 20 $kBtu/ft^2/yr$. To meet these stringent performance targets, we recommend the design team to target the following design parameters:

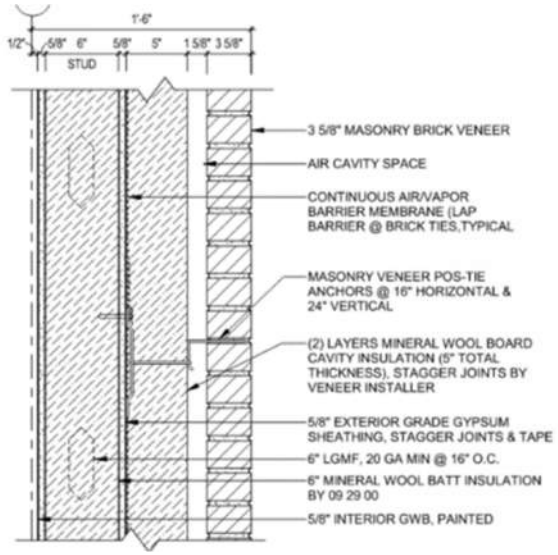
- ≈R-50 roof – this will mean a roof thickness of not less than 10 inches. Additional roof thickness may be required to provide slope to drain.
- ≈R-25 wall – This will result in approximately 6 inches of continuous mineral wool insulation in the wall cavity.
- Triple glazing windows – The project should also consider a double low-e coating on the triple glazing.
- Energy recovery ventilator (≈80% effectiveness) providing ventilation for all spaces
- Heat recovery for kitchen exhaust (≈50% effectiveness)
- Building envelope infiltration (air leakage) of 0.10 cfm/ft^2 at 75 Pa – This will require close attention to details between adjacent systems both in the design and construction process.

Please note the above parameters are not prescriptive for compliance; they are suggested preliminary recommendations to guide early design decisions in the feasibility phase. An energy model is required to confirm the actual performance required for compliance.

Existing Building Renovation

For the renovation portion of the project, the Stretch Code requires altered portions of an existing building to comply with requirements of Section 503 (of 2021 IECC) and the prescriptive sections C402 (envelope), C403 (mechanical), C404 (water heating) and C405 (electrical) without requiring unaltered portions of an existing building to comply. The renovation does not require an energy model.





Questions
&
Comments

Raymond
Design Associates