



Town of Concord

Concord Middle School

Design Development
28 April 2022

EWING
COLE | SMMA

Agenda

MEP project advancements:

- Mechanical
- Electrical
- Plumbing and Fire Protection

Floor plan refinements

Interior design direction within:

- Lobby
- Team Commons
- Cafeteria

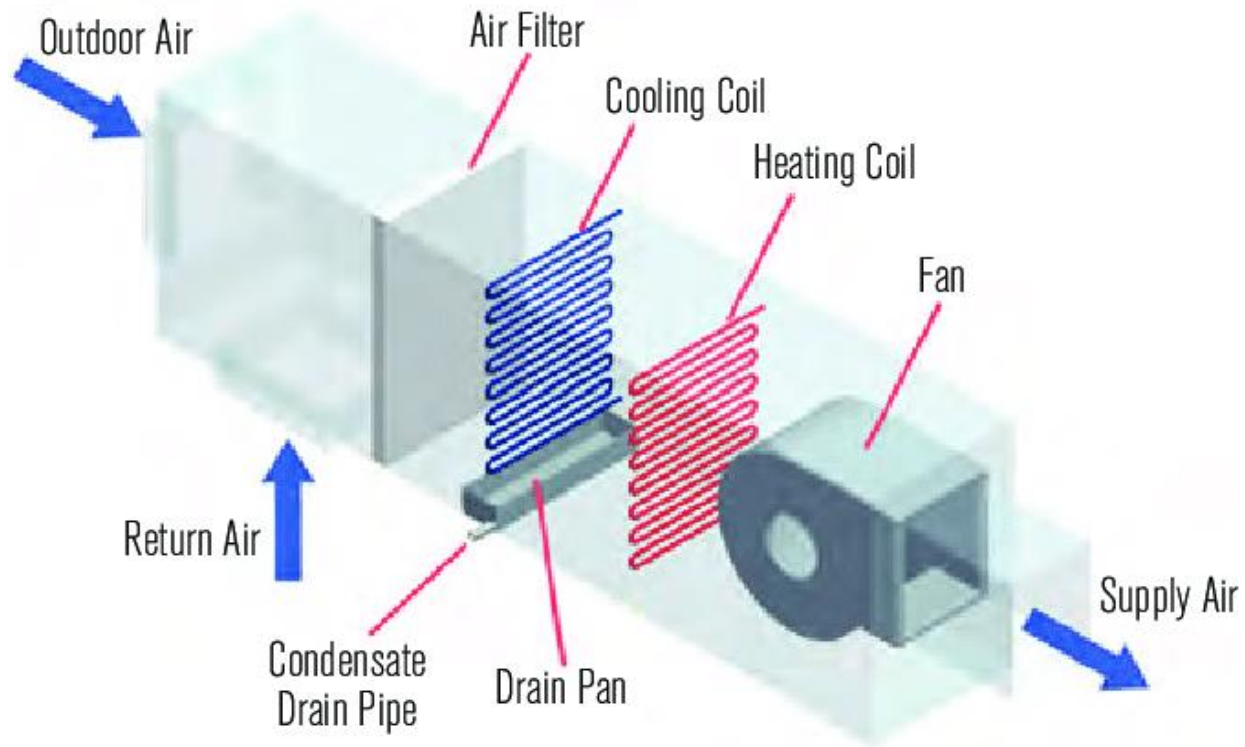
Site Plan refinements

Updates to Geotechnical Investigations and Traffic Impact Analysis

MEP Systems



Air Handling Units



Cafeteria, Auditorium, Gym

- DX heating and cooling
- Mix air as per ventilation load
- Emergency Power for heating

Energy Recovery Units



Classrooms, Admin, and other spaces Ventilation

- 100% outside air
- Superblock
 - 90% energy recovery
 - No defrost cycle
- Wheel
 - 75% energy recovery
 - Defrost cycle

VRF



Entire School

- Provides Heating and cooling
- All electric
- More efficient than electrical resistance heat
- Compressors outside
- Fan Coil Units inside

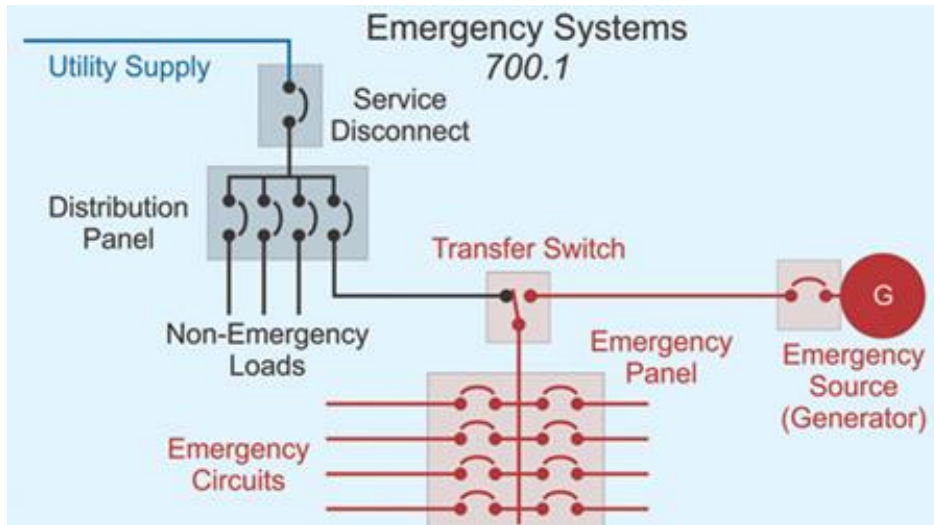
Fans & Fabric Duct



Gymnasium

- HVLS fans for air movement
- Fabric ductwork for uniform airflow

Electrical Systems



Pad-Mounted Generator

Emergency (Life Safety):

- Exit signs & Emergency lighting.
- Fire Pump
- Fire alarm system & Firefighter Bi-directional Antenna System

Code-Optional Standby (planned for this project):

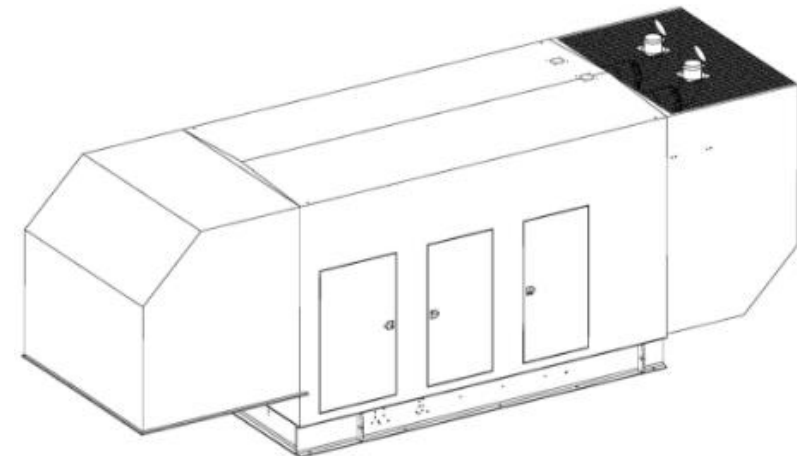
- HVAC electrical heating systems required for Freeze protection
- Tel/data, Building Management & Security System
- Public address & telephone systems
- Septic System
- Elevator
- Kitchen Refrigeration
- Nurse, Admin, and Custodian Receptacles

Electrical Systems

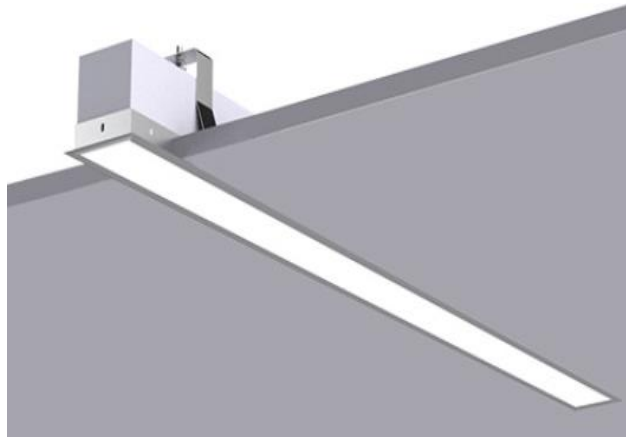
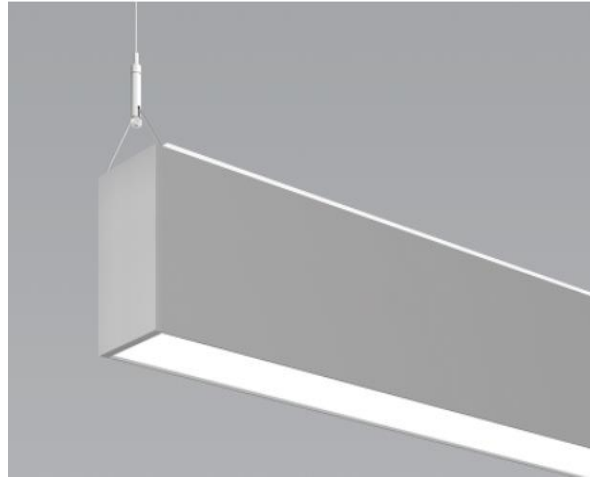
Generator Load Description	Preliminary Total Connected Loads
Life Safety Egress Lighting	25.2 kW
Fire Pump 30 HP	33.2 kW
Fire Alarm System / BDA	10 kW
General Building Heating System (VRF)	264.1 kW
Gymnasium Heating System	126.4 kW
Auditorium Heating System	127.2 kW
Cafeteria Heating System	143 kW
Security/Tel-data/Communication System	15 kW
Elevator 20 HP	22.4 kW
Domestic Booster Pump 2-15 HP	28.2 kW
Septic Pumps 2-20 HP, (N+1)	22.4 kW
Kitchen Freezers	15 kW
Misc Loads (admin area receptacles, flush valves, etc.)	5 kW
Split System AC Units	25 kW
Total Connected Load:	862.5 kW
Total Diversified Load:	416.8 kW

Prelim. Generator Calculations

- 500 kW Power Rating
- 28 Liter Engine
- Weather Protective and Sound Attenuated Steel Enclosure
- Sound Barrier Wall
- 10' Exhaust Stack



Electrical Systems

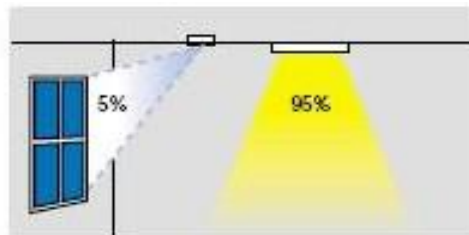
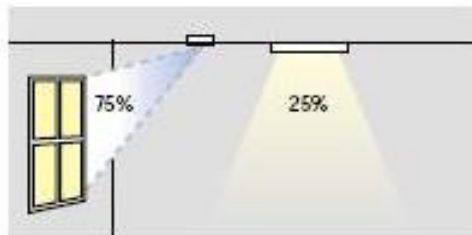
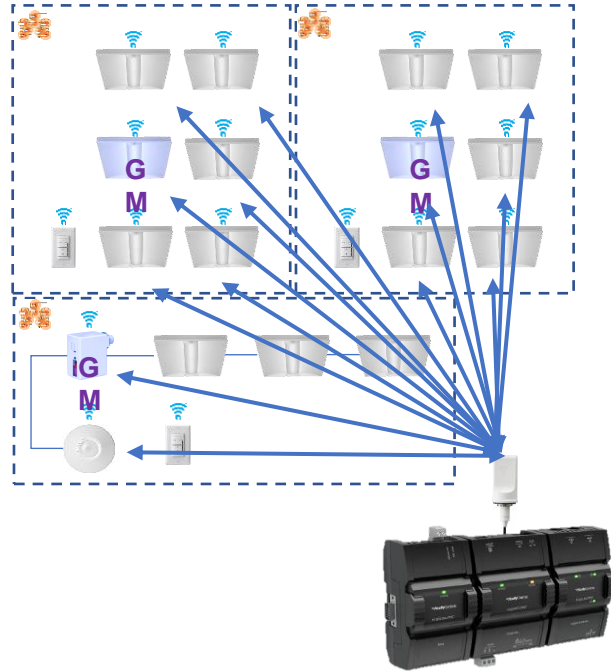


Lighting Design

- High-Efficient Interior and Exterior LED Lighting
- Indirect / Direct suspended pendants for classrooms
- Recessed linears and circular downlights to compliment architectural features
- High-bay fixtures in gymnasium



Electrical Systems



Lighting Control

- Fully Addressable
- Dimmable Fixtures and Pre-Set Scenes
- Astronomical Timeclock Control
- Occupancy Sensors
- Daylight Harvesting
- 3rd Party System Integration (Fire Alarm, AV, Demand Response, etc)
- Hybrid Wired & Wireless Components
- Software Interface for System Management

Plumbing & Fire Protection- Pumps

Water Service

- Domestic booster pump required
- Confirmed through Hydrant Flow Test



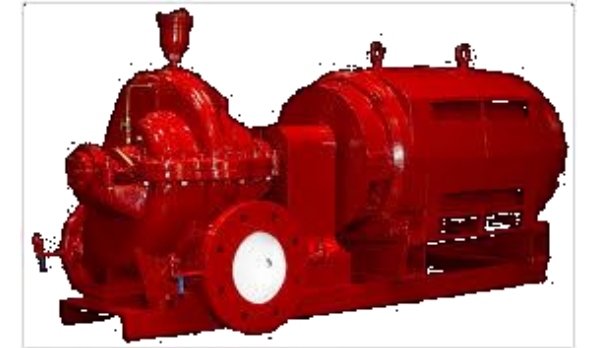
Fire Service

- Double Check Valve Assembly



Fire Service - Pump

- Fire Pump required.



Fire Service Room

- Wet sprinkler zones
- Dry sprinkler zones (roll up door areas, loading dock)



Plumbing - Faucets

- Lavatory Faucets

- 0.35 GPM – 0.5 GPM
- Electronic, Sensor Operated
- Regenerating Type/Battery Powered.

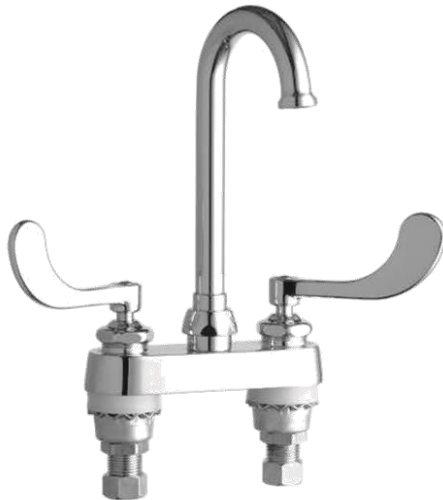


- **Easy Installation:** Simple integrated design; sensor, solenoid valve and electronics are enclosed in the spout. No control box below deck.

- **Above-Deck Mixing:** Allows user to manually adjust temperature. Leak-free ceramic disc valve. Hot limit safety stop to reduce the risk of accidental scalding. Installer can set temperature and remove handle to prevent user adjustment.

- Sink Faucets

- 1.5 GPM
- Manual



Plumbing- Low Flow fixtures

- Flush Valves/Water Closets
 - Automatic, Exposed, Sensor-Operated, Regenerating Type/Battery Powered
 - 1.28 GPF
- Flush Valves/Urinals
 - Automatic, Exposed, Sensor-Operated, Regenerating Type/Battery Powered
 - 0.125 GPF



GENERAL DESCRIPTION:

Exposed, sensor-operated Selectronic® Toilet Flush Valve for floor-mounted or wall-hung 1-1/2" top spud bowls. PWRX 10-Year Battery System.



BATTERY LIFE:
4 years

GENERAL DESCRIPTION:

Exposed, sensor-operated Selectronic® Urinal Flush Valve for 3/4" top spud urinals. CR-P2 lithium battery powered.

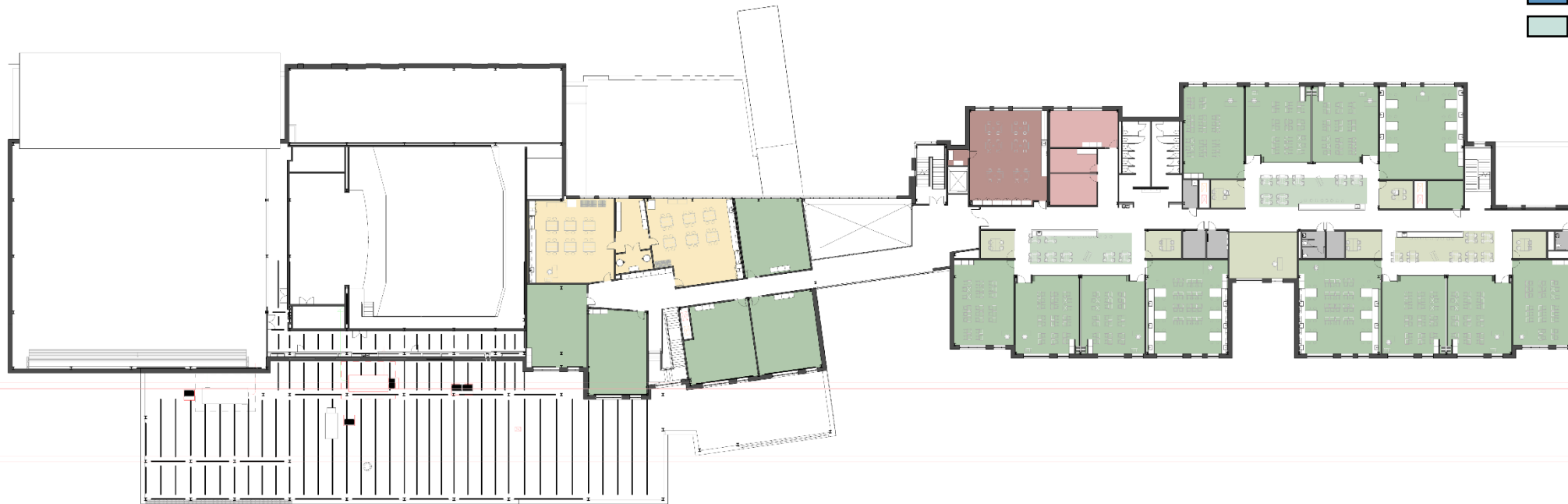


Floor Plan Refinements

- Classroom
- Team Commons
- Special Education
- Vocation/Tech Classroom
- Administration
- Guidance
- Nurse
- Media Center
- Auditorium
- Music
- Art
- Physical Education
- Cafeteria



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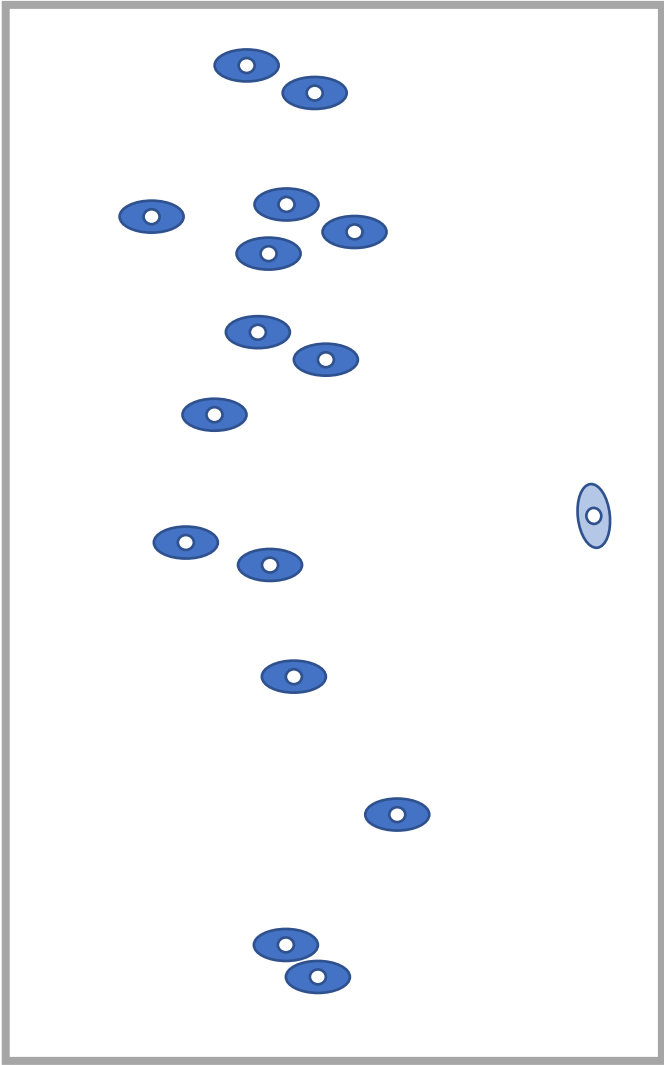
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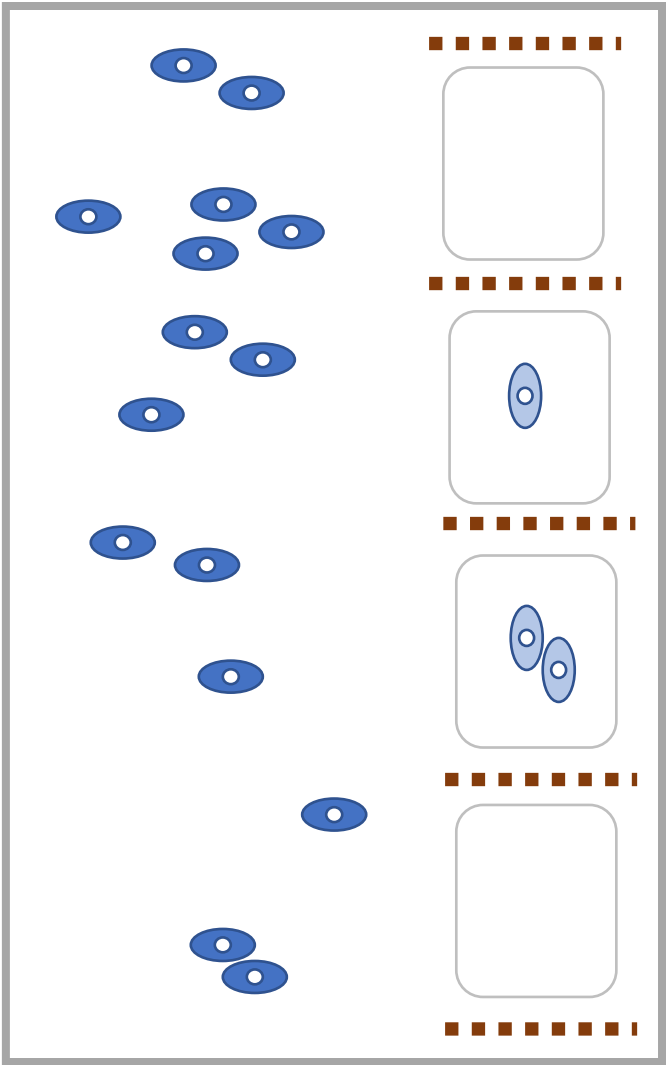


Interior Architecture Development

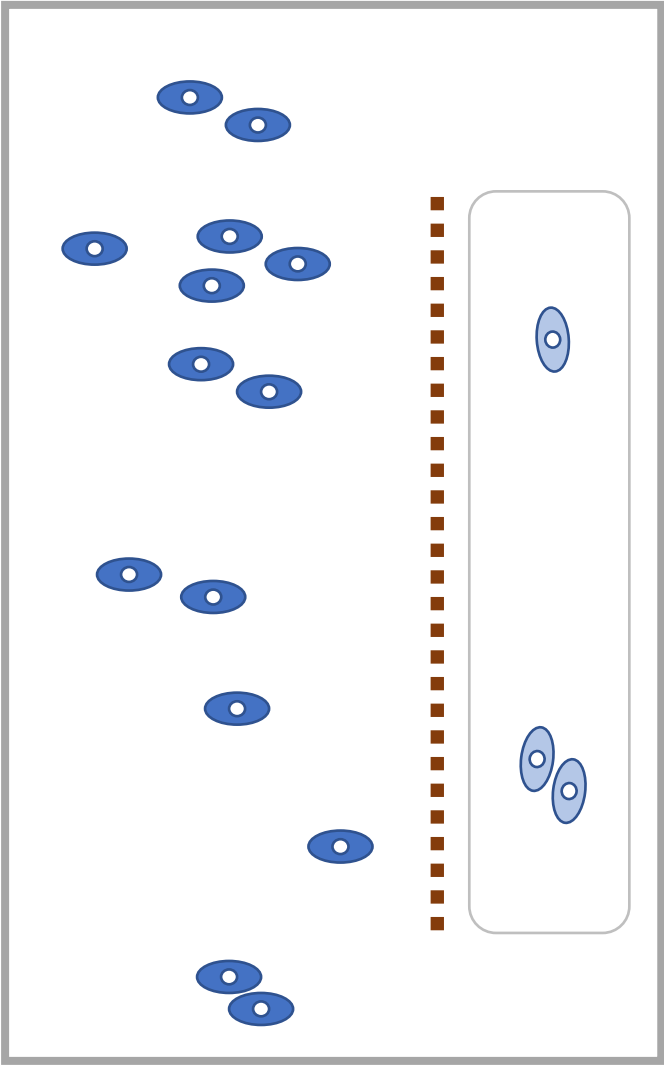
OPEN SPACE



EDDIE SPACES



SCREENED SPACES



STREAM

1. Soft Form
2. Connective Tissue
3. Allowing for an Intensity of Reading at the Key Circulation Path with Simple Universality Beyond



STREAM

Embedded Solids Shelter
Eddies of Tranquility within
the Flowing Stream



LOOKING UPWARDS AT THE FOREST EDGE

1. Upward Gesture of Canopies Toward the Light
2. A Safe Edge from which to Survey the Field Beyond



LOOKING UPWARDS AT THE FOREST EDGE

1. The Comfort and
Privacy of Screening

















CAFETERIA STAIR

12 APRIL 2022

CONCORD MIDDLE SCHOOL

















Site and Landscape

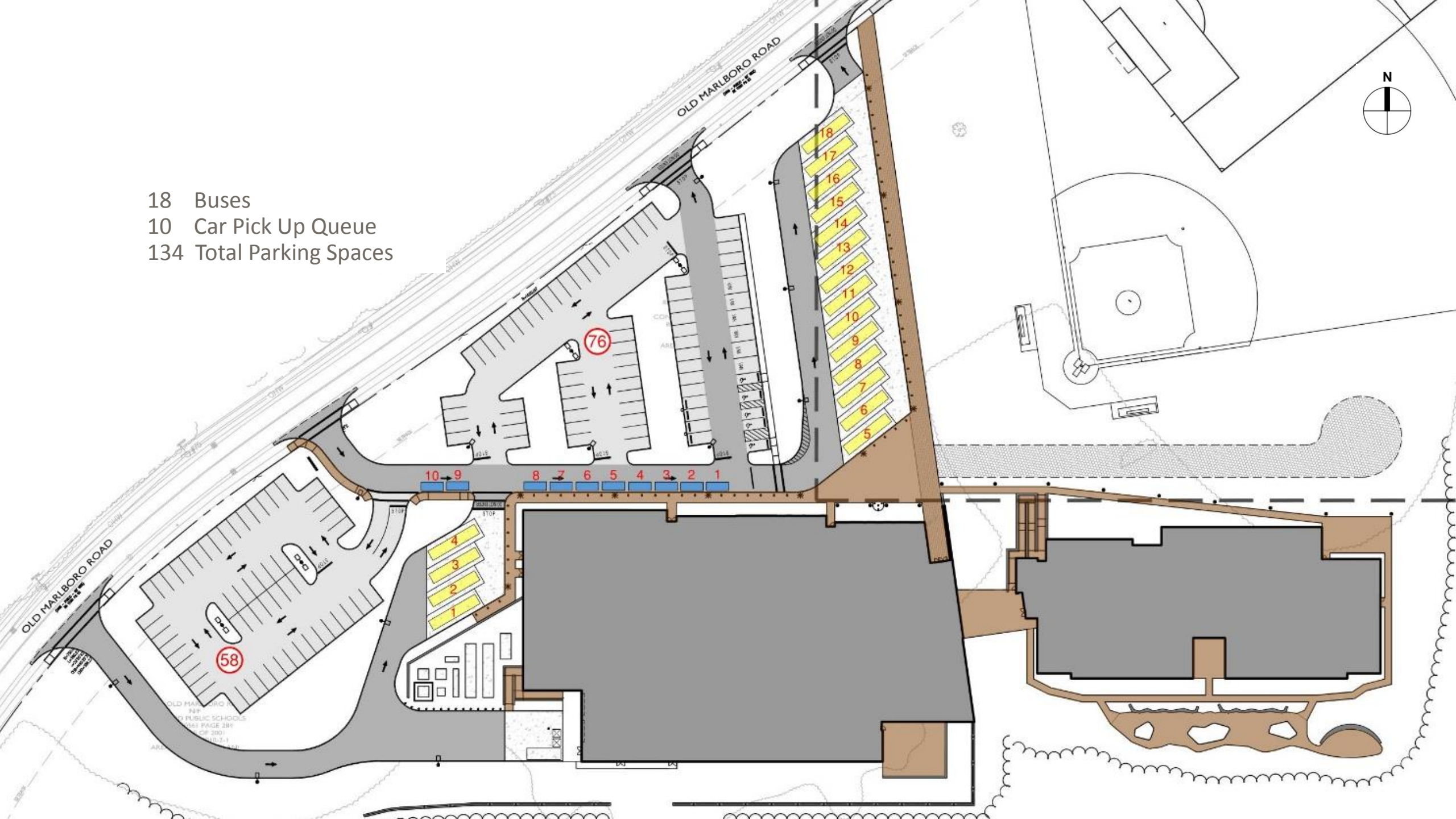


1. Vehicular Circulation
2. Bus Drop Off | Pick Up
3. Loading Dock Area
4. Athletic Fields
5. Outdoor Learning

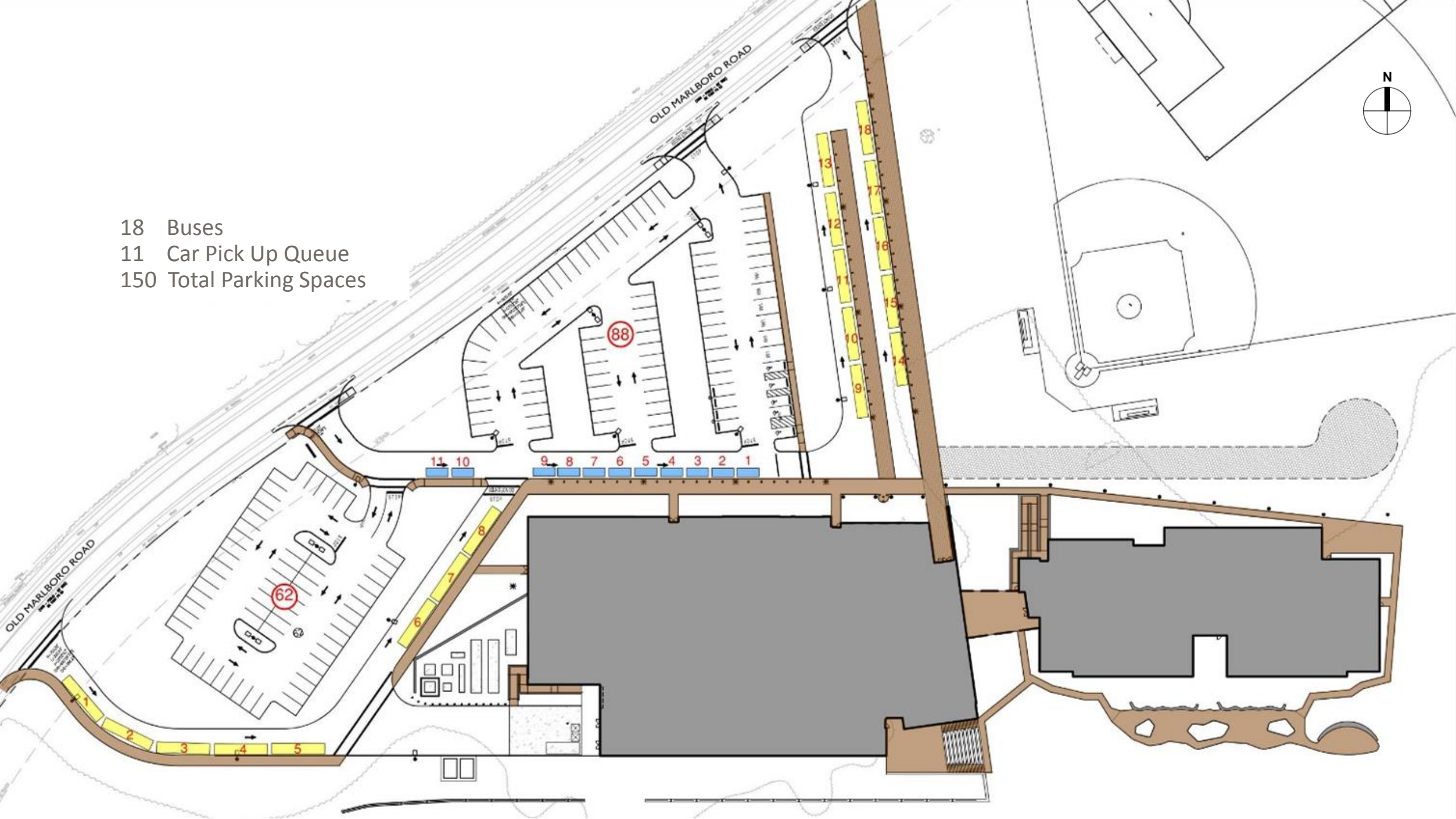




- 18 Buses
- 10 Car Pick Up Queue
- 134 Total Parking Spaces



18 Buses
11 Car Pick Up Queue
150 Total Parking Spaces



- Morning drop off and afternoon pick up utilize different one-way circulation patterns

- All buses utilize same entrance for morning drop-off - staggered arrivals

- Buses use assigned entrances for afternoon pick-up - queued arrivals

AM BUS DROP OFF

PM BUS PICK UP



- Morning drop off and afternoon pick up utilize same one-way circulation pattern

- Approximately 11 vehicle queue

- All cars/vans enter through dedicated curb cut and exit through dedicated curb cut

AM/PM PARENT DROP OFF | PICK UP

LOADING DOCK ACCESS



General update



Design Development – Kick-off Tasks

Educational Programming

- Complete

Traffic Study

- Draft study received - Traffic engineer confirms circulation patterns with no additional mitigation required.

Geotechnical Investigations

- Draft report received – Existing soils can be reused if managed appropriately on site
- SMMA to work with School Department to define stockpile locations

Geo-environmental

- Pending – may not be required based upon stockpile locations

Hydrant Flow

- Complete

Next Steps

Building Committee Meeting #4

Thursday, May 26

Comprehensive Update and Interior finish palette

DD Estimating Package

Friday, May 27

Thank You



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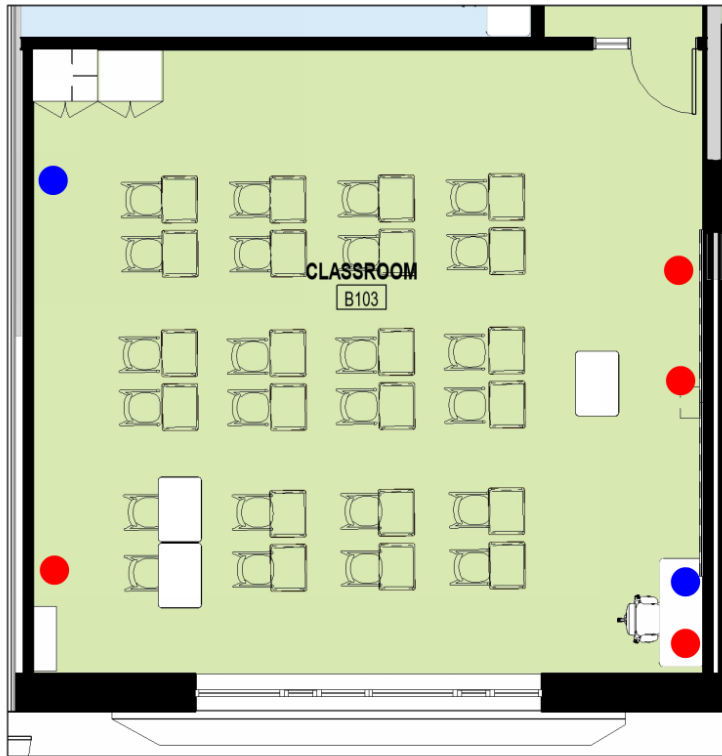
CONCORD MIDDLE SCHOOL

SMMA

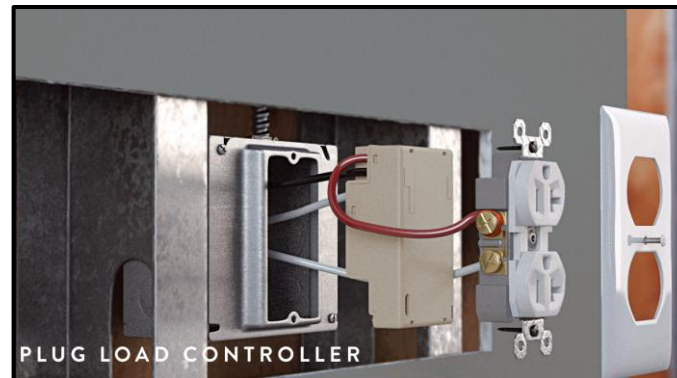
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Electrical Systems



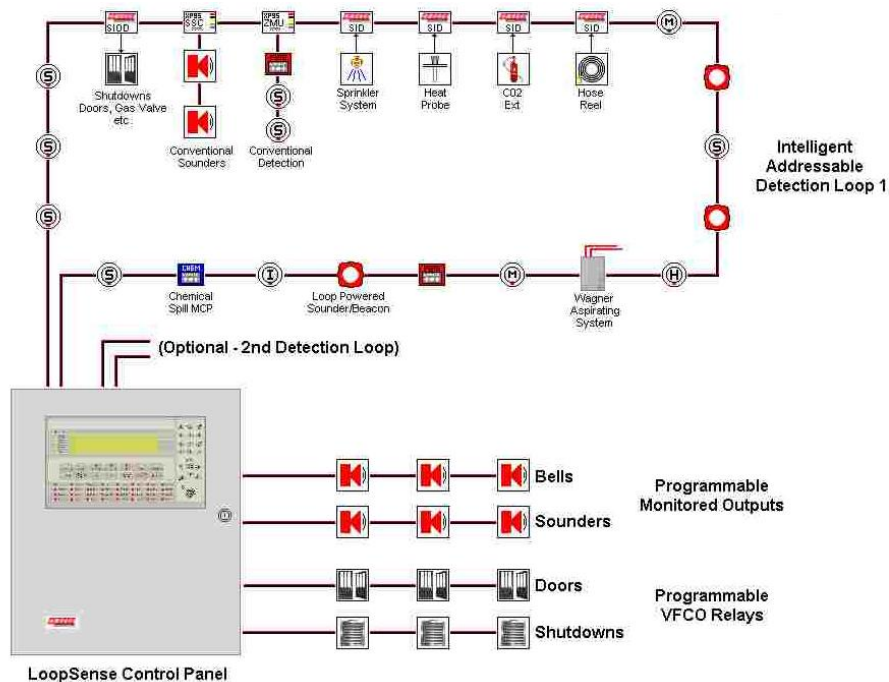
- NON-CONTROLLED OUTLET
- CONTROLLED OUTLET



Automatic Plug Load Control

- One Plug Load Controller controls individual receptacles or a group of devices on one common circuit
- Automatically controlled receptacles will be permanently marked with the universal power symbol per the NEC.
- 75%+ of all receptacles will be controlled. Non-controlled receptacles shall be coordinated with school program.

Electrical Systems



Fire Alarm System

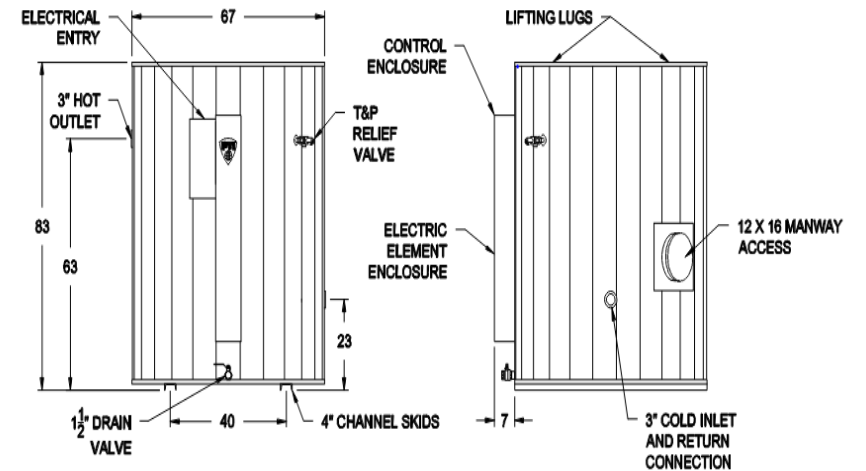
- Fully Addressable class A non-proprietary system with voice evacuation.
- Speaker/Strobes
- One Pull Station in Administration wing
- Smoke detectors
- Strategically located Carbon Monoxide detectors
- Heat Detectors
- Tamper and Flow Switches

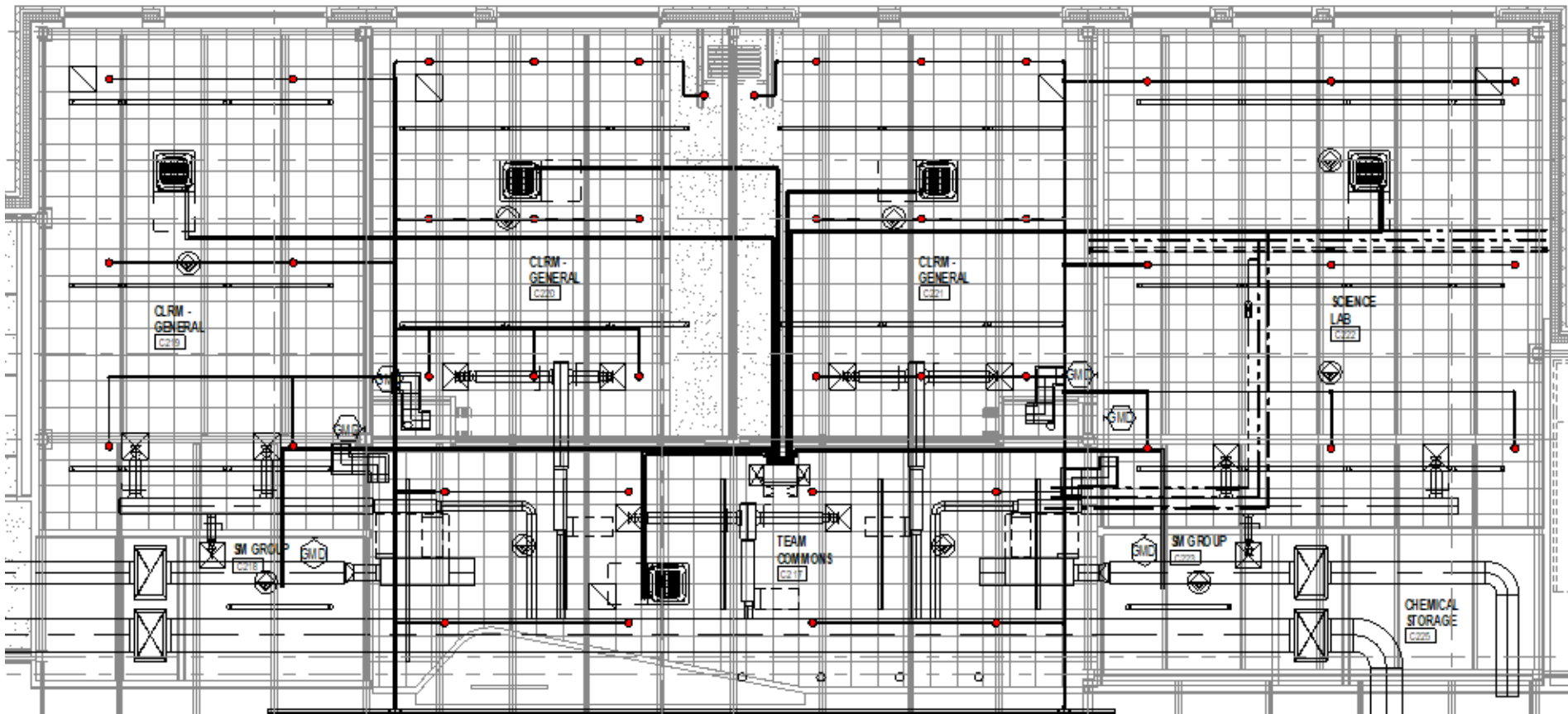
Plumbing- Water Heater

- Electric Water Heater(s)
 - Net Zero Ready - All electric
 - Centralized, Storage type.
 - 95-100% Efficient
 - Compliant with MA-EZ Code

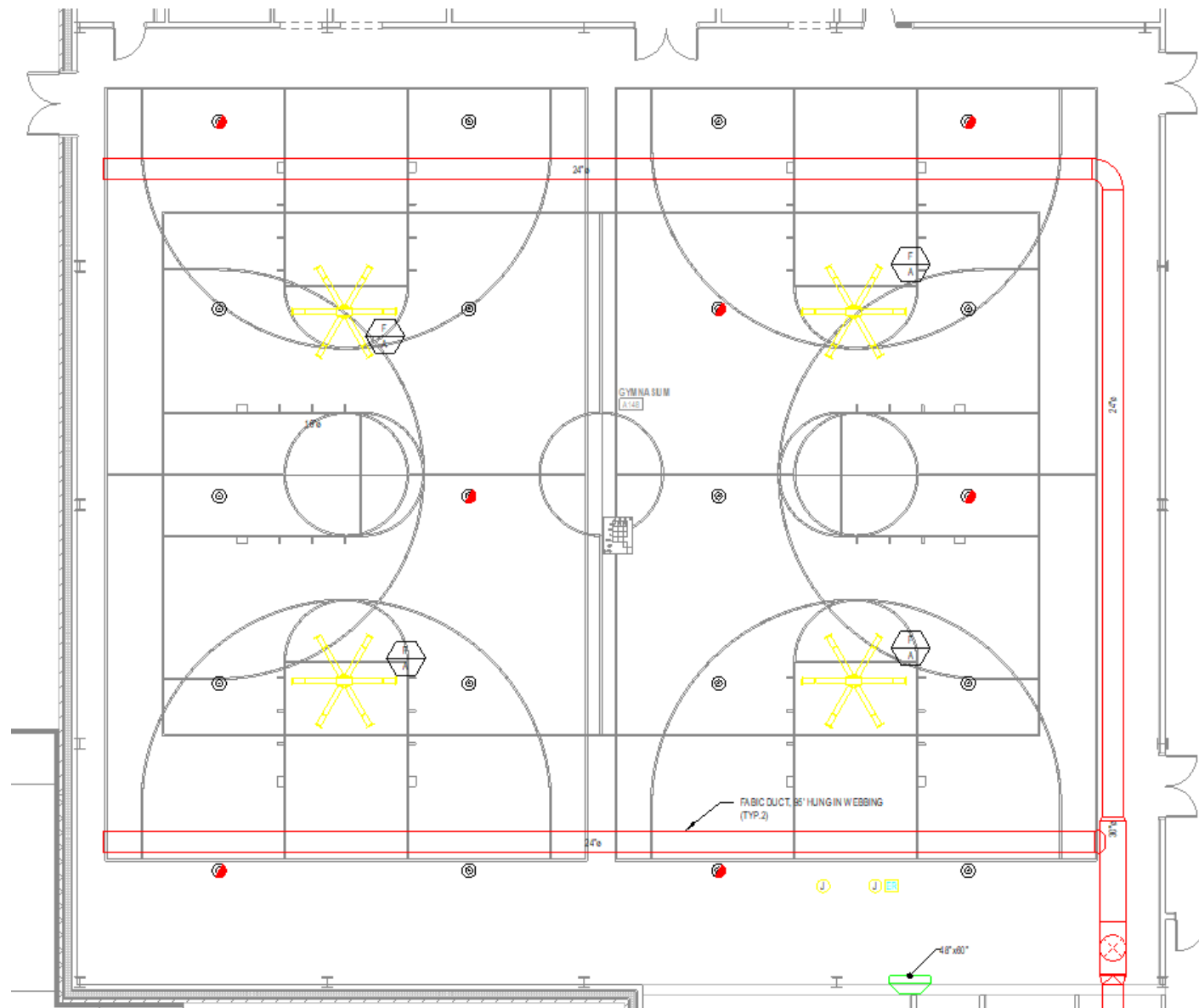


DURAWATT® ELECTRIC • PACKAGED WATER HEATER
AquaPLEX® - STORAGE TANK (UNLINED DUPLEX ALLOY)

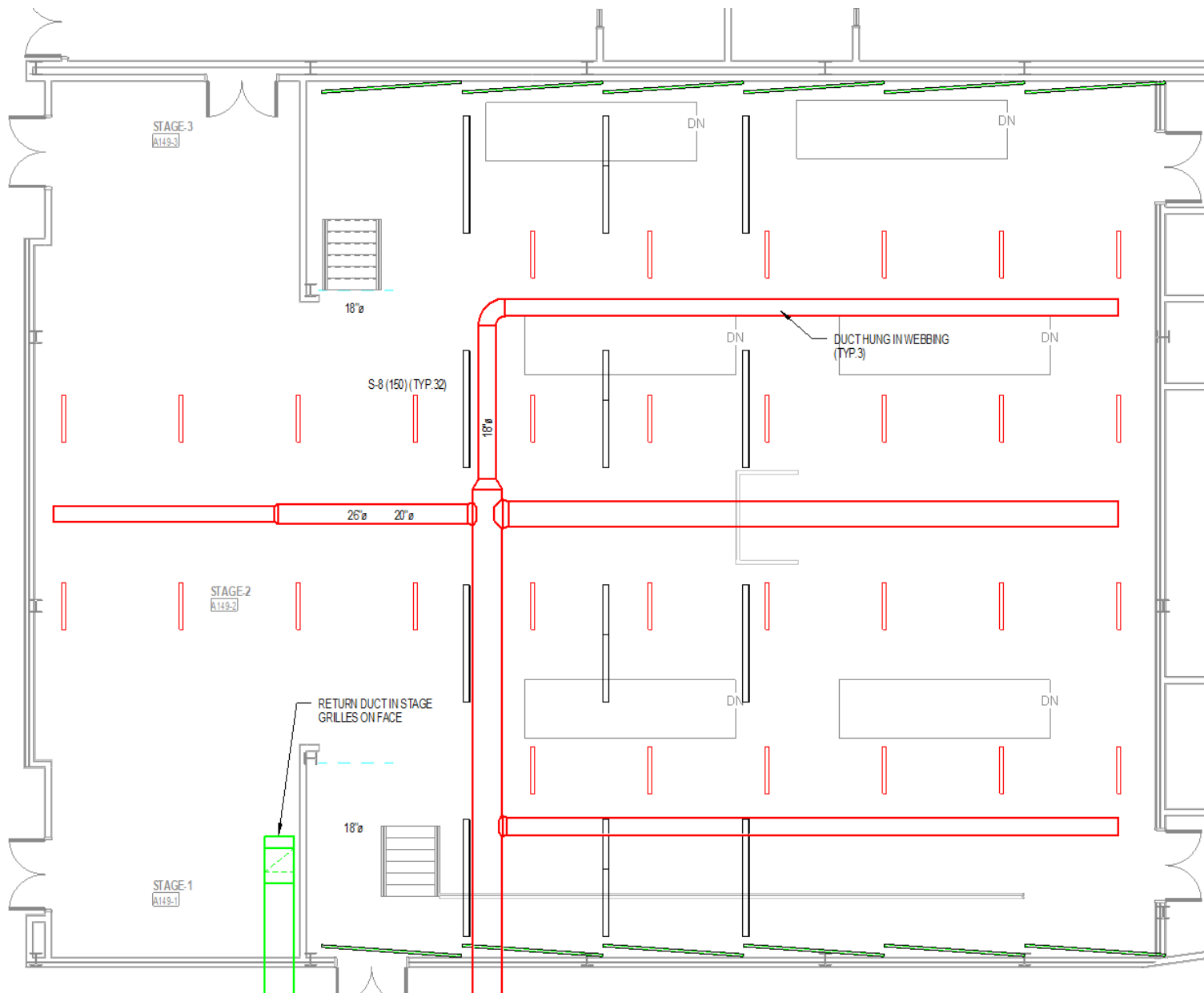




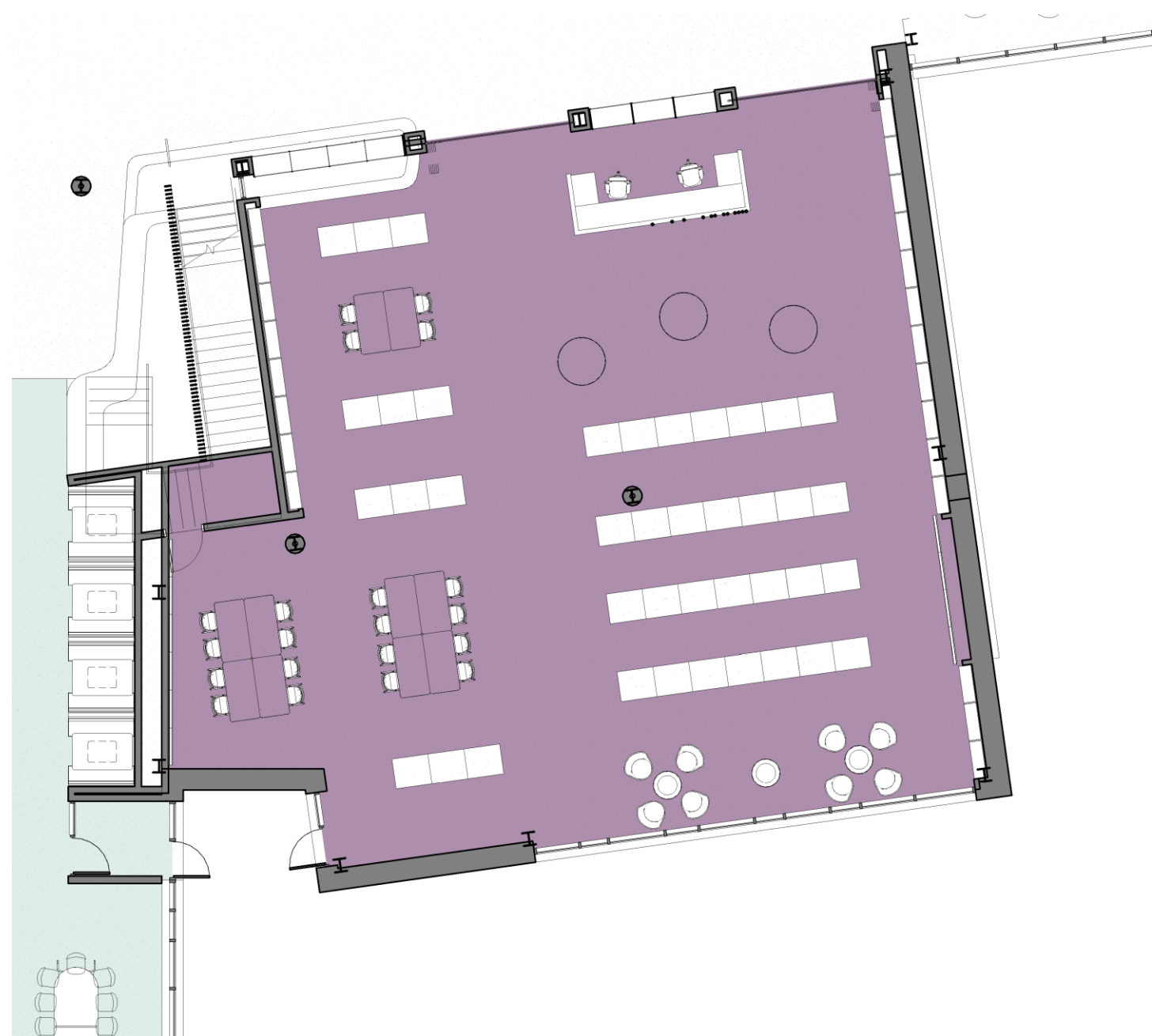
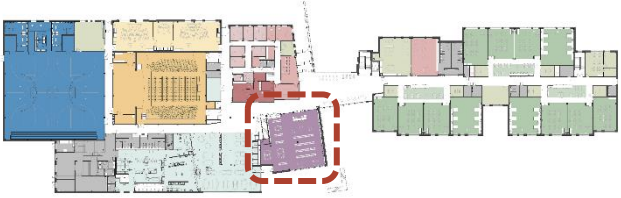
- Fully conditioned
- Cassette units
- Individual Control
- Decoupled Ventilation
- Fully Sprinklered
- Sinks in Science
- Direct/Indirect lighting

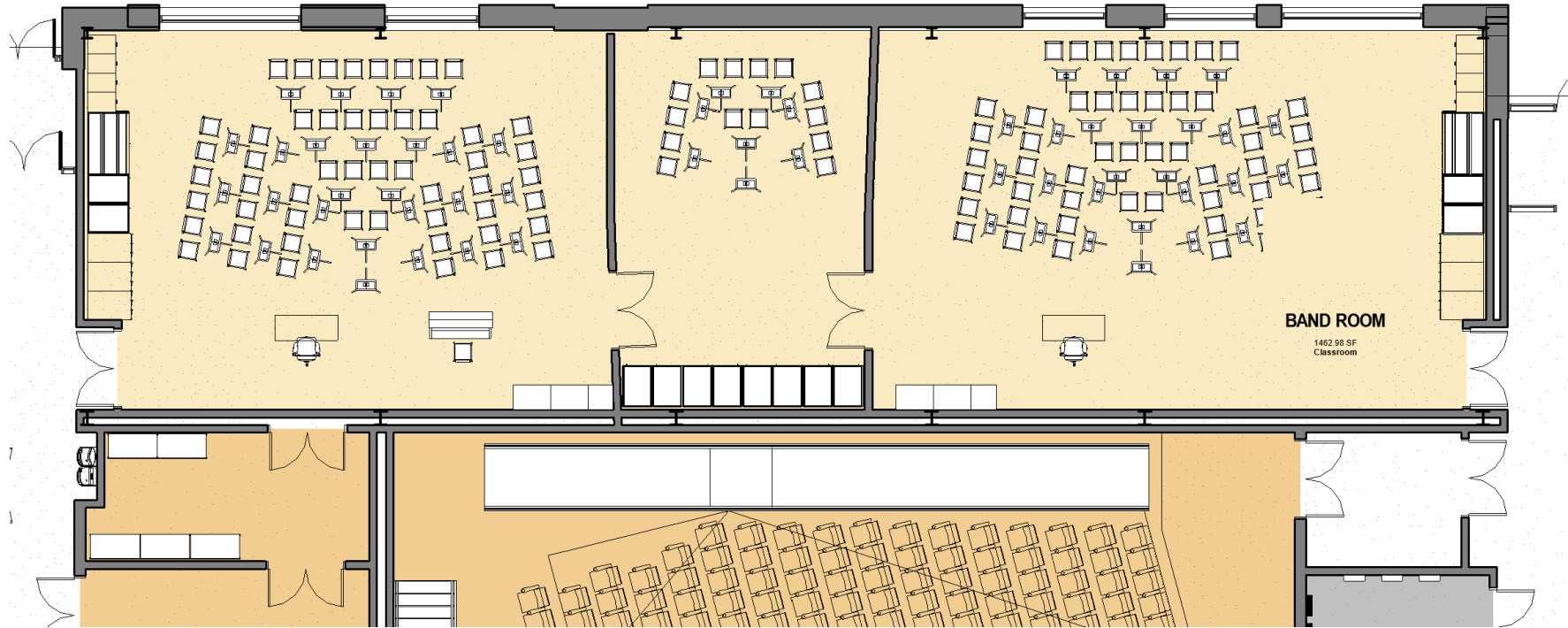


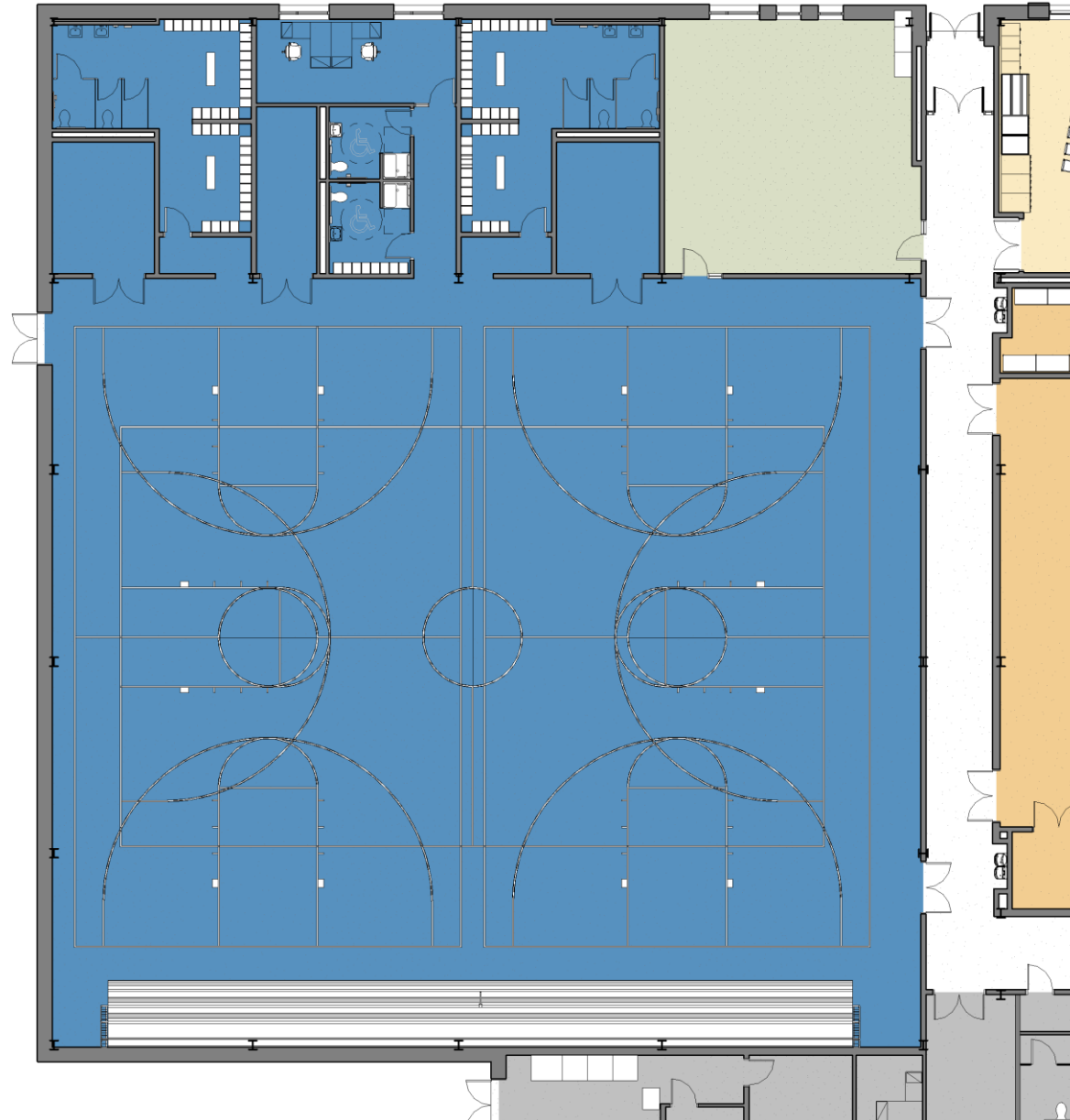
- Fully conditioned space
- Ceiling fans
- Fabric Ductwork
- Lower Return
- Fully Sprinklered
- High bay lighting
- Wired sensors

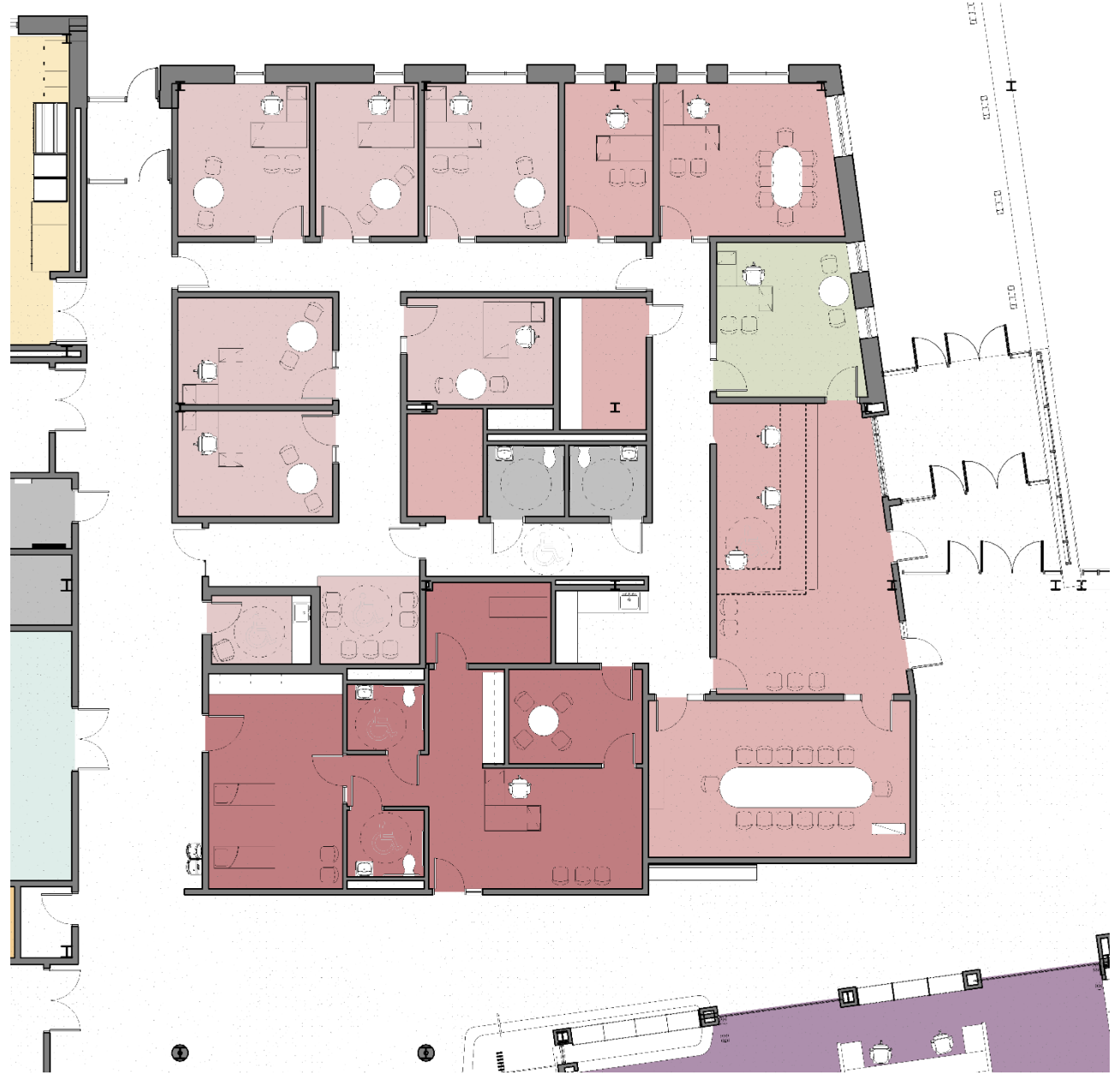


- Fully conditioned space
- Ductwork in webbing oversized
- Linear diffusers
- Low return in stage
- Fully Sprinklered
- Theater lighting by Consultant

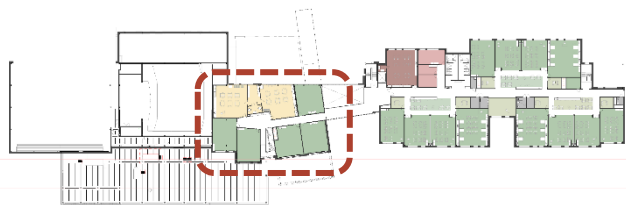


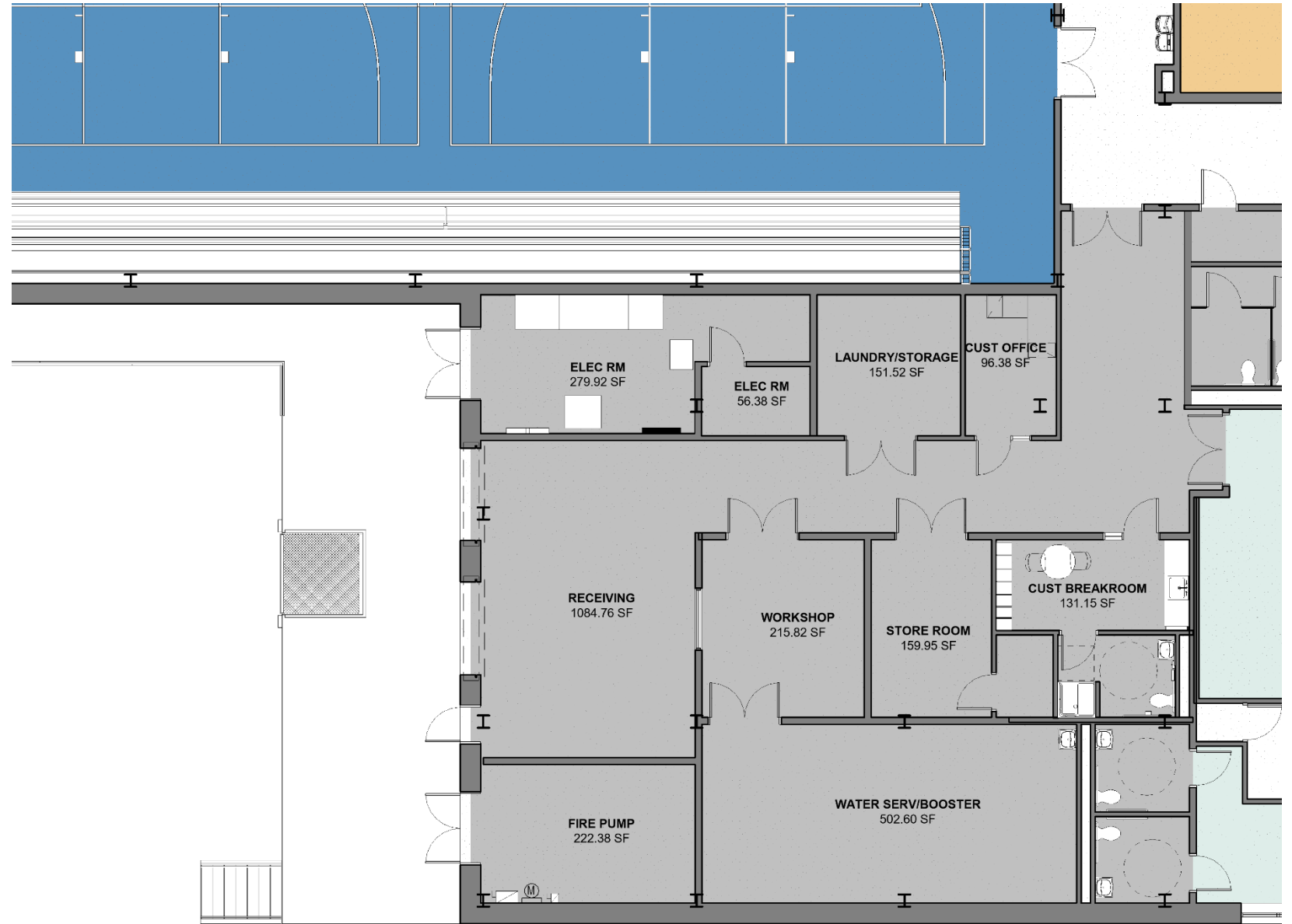












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