

## Section 3 Schematic Design Documents

### 3.6 Schematic Design Documents

#### 3.6.1 Schematic Design Narrative - High School BASIS OF DESIGN

##### Building & Design Codes

The new 123,844 gsf Central Falls High School is designed in accordance with the 2015 International Building Code and the 2012 International Energy Conservation Code. The building is in compliance with the 2012 Rhode Island Fire Safety Code utilizing NFPA 1 and 101. The construction classification will be type 1B fully protected use group E. The building is four stories and fully sprinklered. The new school serves 751 students in grades 9-12.

##### Site Design Conditions

The site is located at the corner of Higginson Avenue and Lonsdale Avenue in Central Falls, Rhode Island. The site is approximately 13.1 acres. The site is served by Higginson Avenue along the north side and Lonsdale Avenue on the east side. The lower portion of the site is served by Moshassuck Ind. Highway on the west side. Commercial, retail, and residential properties abut the site to the north, west, and east, and wetlands and residential property abut the property to the south.

The site currently supports the existing Central Falls School District's stadium with track and field, along with a community baseball diamond, basketball courts, and concessions building. In addition, the site does include an existing building that contains programs to supplement the CTE programs offered by the District. The site steeply slopes upward toward the southeast corner where an existing retaining wall is used to level the topography from the higher residential area to the lower track and field. A wetland is established in the southwest corner of the site and will require a 200' setback protection area. The existing stadium with track and field will remain. In addition, the District is proposing the acquisition of the two parcels of 770 Lonsdale Avenue and 756 Lonsdale Avenue in order to extend the site to the intersection on Lonsdale Avenue and Higginson Avenue. These added parcels are roughly 6-7' above the grade of the existing entry onto the site along Higginson Avenue. To respect the grades of the existing streets and sidewalks, terracing and retaining walls will be used within the property lines.

Stormwater management provisions, including site swale, drainage

design, and water collection systems including rain gardens, are included in the project. Outdoor science labs and learning areas are incorporated into the site plan design. Natural landscape areas, including new rain gardens with water storage capacity, are provided on the site. Bicycle storage areas and electric vehicle charging stations are included in the site design.

**Building Design Conditions**

The building is four stories high and designed to meet a projected enrollment of 751 students in grades 9-12. The overall square footage is 123,844 square feet, which includes 19 general classrooms and 6 general science labs, a Learning Commons, Student Commons, Athletic Center including one full size gymnasium, Fitness Center, and a Performing Arts Center that will include a 375 seat Auditorium, band and choral classrooms, and fine arts classrooms. The new school will contain career technical pathways educational spaces including:

- Biomedical / Science
- Engineering / Robotics
- Community Health Clinic
- Community Law
- Computer Science
- Teaching Academy

The school contains a safe and secure main entry area flanked by administration, guidance, student support services, and Dean’s offices. Special Education classrooms and support rooms are evenly distributed throughout the new school building.

The school is designed to meet Northeast Collaborative for High Performance Schools version 4.0 green school standards. The school has the opportunity to receive an additional 2% to 4% in additional reimbursement funds by demonstrating 30% to 50% energy and water reduction beyond code (see chart below).

Additional Reimbursement Funds	Reduction from RI Code (Anchored to IECC 2009)	Reduction from NE-CHPS (Based upon IECC 2012)
2%	30%	18% (11 points)
3%	40%	30% (18 points)
4%	50%	42%(22 points)

The District and Design Team are currently establishing the Energy Performance level for the project. The project is eligible to receive 12 to 40 points within the NE-CHPS Reduction Requirement, based upon IECC 2012, which is equivalent to 20% up to 100% (see chart below).



Points	NE-CHPS Reduction Requirement (IECC 2012)	zEPI Equivalent	Reduction from RI Code (Anchored to IECC 2009)
Prerequisite	10% minimum reduction	51	23.5%
12 points	20% minimum reduction	46	32%
18 points	30% minimum reduction	40	40.5%
22 points	40% minimum reduction	34	49%
25 points	50% minimum reduction	29	57.5%
28 points	60% minimum reduction	23	66%
31 points	70% minimum reduction	17	74.5%
34 points	80% minimum reduction	11	83%
37 points	90% minimum reduction	6	91.5%
40 points	100% minimum reduction (zero net-energy school)	0	100%

**Thermal Insulation: Building Envelope**

**Window Systems**

Window systems will be energy enhanced, thermally broken, aluminum curtainwall and aluminum storefront windows with both fixed and operable frames. Special thermal break material is provided to meet the required thermal performance and other criteria:

Fixed Window Frames:

Air resistance: 6.24psf

Water resistance: 15.00psf

Uniform Structural Loading: 150psf

Condensation Resistance: 75 (frame) & 67 (Glass)

Operable Window Frames:

Air resistance: 6.24psf

Water resistance: 15.00psf

Uniform Structural Loading: 150psf

Condensation Resistance: 55

**Door Systems**

Door systems are thermally broken aluminum storefront and curtainwall systems with the performance requirements outlined above. These systems have insulated aluminum doors with weatherstripping. Interior vestibules are provided at main and secondary building entrances. Egress only door system are thermally broken hollow metal frames, insulated hollow metal doors (16ga.) complete with semi-rigid fiberglass insulation core, U Value .48.

**Glazing**

Exterior glazing is 1" Low-E clear glass outer layer consisting of 1/4" thick heat-strengthened glass with Low-E sputter coating on the number 2 surface equal to PPG Solarban 60. The inner glazing layer is 1/4" thick clear heat-strengthened glass with an air space of 1/2" thickness. The air space is filled with 90% argon gas and 10% air. The 1" glazing assembly

has the following performance characteristics:

- Visible Transmittance: 72%
- Solar Heat Gain Coefficient: 0.40
- Solar Blockage: 59%
- Reflectance (interior): 12%
- Reflectance (exterior): 11%
- U Value (winter): 0.30

### **Window Shades**

Window Shades will be provided in all educational classroom spaces. The shade system are roller shades made with aluminum alloy 6063-T5 alloy with a wall thickness of 0.065 inch. Shade fabric is 63% PVC coated fiberglass and 37% fiberglass yarn woven into a 2 inch by 2 inch non-directional basket weave with Micro-ban Protection. Shades will have a 5% openness factor.

### **Wall Insulation and Assembly**

Exterior wall assembly consists of simulated wood laminated rainscreen cladding anchored to a metal support system, which accounts for an air space in front of the air and vapor barrier adhered to a premanufactured "nail-base." The nail-base assembly consists of 5/8" plywood, laminated to 2 inches of rigid insulation. 1-1/2" spray foam insulation is placed on the inside of the exterior metal studs at 16 inches on center, and 5/8" interior gypsum wallboard. The overall U value is 0.055. Spray Foam Insulation is to have the following properties:

- Density: 2.2 lbs/cf
- Compressive Strength: 26lbs/square inch
- Water Absorption: 1.6% by volume
- Water Vapor Transmittance: (2 inch thickness): 0.70 perms

### **Roof System**

Overall roof assembly is 6.75 inches with 6 inches for an R-value of 36. The overall roof thermal performance is U0.026. Roofing system to provide coverage for maximum wind speed of 105 mph. Roofing manufacturer to provide a 25-year warranty for product quality, performance, and workmanship. Roofing system to be 60 Mil thick, PVC mechanically anchored sheet roofing system. System to obtain Fire Hazard "Class A" as described by the Underwriters Laboratory. Wind Loading shall conform to the 2012 IBC with State of Rhode Island amendments for wind speed and gust requirements.

Insulation will be polyisocyanurate foam insulation manufactured with HCFC-free blowing agent with LTTR R value of 5.6 per inch with minimum thickness of 6 inches and the following properties:

- Density: 2.0 pounds per cubic foot
- Compressive Strength: 20 psi
- Moisture Vapor Transmittance: Less than 1 perm
- Water Absorption: Less than 1 percent per volume

Overlayment recovery board is 5/8 inch thick, Class 1, non-structural glass mat faced, noncombustible water-resistant treated gypsum core panel. Vapor barrier is 10mil thick low-density polyethylene vapor

barrier/air barrier.

### Natural Daylighting and View

A two-story interconnected Student Commons space has been designed with full height glass and curtainwall on the west side, flooding the student commons space and the adjacent fitness center with natural light. Prominent views are provided from the exterior into the Learning Commons.

## STRUCTURAL SYSTEMS & EARTHQUAKE COMPLIANCE

### Building Description

The new building is intended to follow the following criteria:

- No basement spaces.
- The first-floor level may consist of interior grade beams spanning between pile caps supporting a two-way structural slab, or a robust, steel bar reinforced concrete slab to compensate for poor soils.
- The roofs will be constructed with metal deck and structural steel/ joists/trusses pitched to internal roof drains. Roof pitch shall not be less than ¼" per foot. Tapered insulation may be required in some locations.
- Second through Fourth floor levels will consist of steel beams and girders supporting a concrete slab-on-composite metal deck.
- Elevator shafts will be constructed with CMU. Stairwells will be constructed with gypsum board and/or glass.
- A large clear span will be required for the auditorium floor over the gym below.

### Building Codes and Standards

All structural design criteria for the building will be based on the latest building codes and standards listed below, and by criteria specified by the owner and architect.

- Rhode Island Building Code: 2018 International Building Code (IBC) with state amendments and referenced standards.
- American Institute of Steel Construction (AISC), Specifications and its Code of Standard Practice.
- American Concrete Institute Building Code Requirements for Reinforced Concrete, ACI 318.
- American Concrete Institute Building Code Requirements for Concrete Masonry Structures, ACI 530 and ACI 530.1.
- Steel Joist Institute (SJI) and Steel Deck Institute (SDI) design standards.
- AISC Design Guide 11 – Floor Vibrations for Human Activity.

### Construction Materials

#### Concrete\*:

Typical, U.N.O.: 4000 PSI ¾" aggregate 0.45 Max W/C Ratio

Slab-on-deck: 3000 PSI ¾" aggregate 0.48 Max W/C Ratio

Concrete shall be normal-weight except that slabs-on-metal-deck shall be lightweight.

Interior slabs-on-grade have a Moisture Vapor Reduction Admixture (Barrier One).

\*Exterior Concrete shall be air-entrained. Lightweight concrete used for slabs-on-metal deck shall also be air-entrained.

**Concrete Reinforcing:**

Deformed Bars	ASTM A615 or A706, GR. 60
Welded Wire Fabric	ASTM A185

**Masonry materials:**

Compressive strength (f'm)	1,900 psi
Mortar	ASTM C270 Type M or S (load-bearing) or N (non load-bearing)
Deformed bars	ASTM A615 or A706, Grade 60
Grout compressive strength	2,500 psi
Joint Reinforcement	ASTM A1064, Extra Heavy Duty Ladder Type, Hot-dipped galvanized, 3/16" side rods & 9 ga. cross rods

**Steel Members\*\*:**

Structural Steel	A572 or A992 GR. 50	FY=50KSI
Typical Plates and Angles	ASTM A36	FY=36KSI
Structural Tubing (rectangular)	ASTM A500, GR. B	FY=46KSI
High Strength Bolts	ASTM F3125 (GR. A325 Type I)	FY=92KSI
Drill & Epoxy Anchors	A449	FY=92KSI
Cast-In-Place Anchor Rods	F1554	FY=36KSI

\*\* All exterior steel framing, connections, and components shall be hot-dipped galvanized.

**Design Criteria**

**Building Risk Category (IBC Table 1604.5)**

Risk Category III (Group E occupancy with occupant load > 250). For the purposes of this narrative, the building was not considered an emergency or recovery shelter.

**Dead Load (DL)**

The dead load includes the weight of structure, structural components, equipment, machinery, conduits, piping, ducts, insulation and any item permanently attached to or supported by the structure. Self-weight of framing will be included in calculations/models and is not listed below.

**Uniform floor loads:**

Concrete on Deck (light-weight concrete), typical	42 psf (3.25" on 2" deck = 5.25")
18 ga. Composite Metal Floor Deck	2.5 psf
Concrete Ponding	5 psf
Floor Finishes, typical	5 psf

Floor Finishes – tiled areas	10 psf
Drop Ceiling	2 psf
MEP Allowance (typical)	5 psf

Additional floor loads (where applicable):

Elevated seating construction  
 Weight of CMU partitions and operable partitions shall be included.

Uniform roof loads:

Roof Deck	3 psf
Roof Membrane	1 psf
½" Recovery Board	3 psf
Polyiso Insulation (say 8" average)	3 psf
Drop Ceiling	2 psf
MEP Allowance (typical)	5 psf

Additional roof loads (if applicable):

Solar arrays 10 psf

Uniform roof terrace loads:

Concrete on Deck (light-weight concrete), typical	42 psf (3.25" on 2" deck = 5.25")
18 ga. Composite Metal Floor Deck	2.5 psf
Concrete Ponding	5 psf
Roof Membrane	1 psf
½" Recovery Board	3 psf
Polyiso Insulation (say 8" average)	3 psf
Drop Ceiling	2 psf
MEP Allowance (typical)	5 psf

**Live Load (LL)**

Live loads are loads produced by the use and occupancy of the building or other structure that may or may not exist at any given time. Live loads do not include wind, snow, or seismic loads.

Uniform Floor Live Loads:

Slab-on-grade*	250 psf
Classrooms/Offices (50 psf** + 15 psf partitions and library reading rooms)	65 psf
Corridors above 1st floor	80 psf
1st floor corridors, flexible spaces, open classrooms, labs, media center, auditorium seating, and stairs, roof terrace.	100 psf
Auditorium stage, mechanical rooms***, and storage	150 psf

\*\*Note that RI Building code lists 40 psf for classrooms, but use 50 psf for simplicity/flexibility between classroom and office/conference spaces.

\*\*\*Or weight of actual equipment, whichever is greater. See building code for minimum concentrated load requirements.

Live load reductions shall be used whenever possible in accordance with the building code.

**Snow Load (SL)**

Snow load shall be as specified in the International Building Code (IBC) per the following criteria:

Ground snow load (Pg)	30 psf
Minimum Flat Roof Snow Load (Pf)	30 psf (RIBC Table 1608.1)
Terrain category	B
Exposure category	Partially Exposed
Exposure factor (Ce)	1.0
Thermal factor (Ct)	1.0
Importance factor (I)	1.1

Drifting and sliding snow shall be considered in design per the IBC.

**Wind Load (WL)**

Wind load shall be as specified in the International Building Code (IBC) per the following criteria:

Basic (ultimate) wind speed (v):	137 mph
Exposure category	B
Basic Velocity pressure (q)	.00256*Kd*Kz*Kzt*I*V2
Pressure coefficient (Cp)	Refer to code

**Seismic Load (EQ)**

Seismic load shall be as specified in the International Building Code (IBC) per the following criteria:

Spectral response acceleration at .2 sec. (Ss)	0.178
Spectral response acceleration at 1 sec. (S1)	0.062
Importance factor (I)	1.25
Site Class	F (assumed)*
Site Coefficient	
Fa	TBD*
Fv	TBD*
Max considered spectral response acceleration	
Sms	TBD*
Sm1	TBD*
Design spectral response acceleration	
Sds	TBD*
Sd1	TBD*
Seismic Design Category	D (assumed)*

\*Based upon the preliminary geotechnical report prepared for the project, the soil conditions are poor and additional geotechnical investigations are required to identify a site class and site coefficients. The Seismic Design Category will be calculated once site class and site coefficients are known.

Structural systems shall be "Steel Special Concentrically Braced Frames" (R = 6.0).

**Movable/Operable Partitions**

Loading from movable/operable partitions shall be included in the structural design where applicable (see plans). Deflection criteria of

these component will be taken into account when designing supporting members.

### **Floor Vibrations**

All floor designs shall be checked for vibrations due to human activity per AISC Design Guide 11.

### **Design Methodology and Load Combinations**

Loads shall be combined per provisions of either 2018 IBC or ASCE 7-16 as applicable for allowable strength design (ASD) or load resistance factor design (LRFD). In general, ASD will be used for all systems except for reinforced concrete and reinforced masonry (slender wall systems). LRFD shall be used for reinforced concrete and reinforced masonry.

### **Foundations and First Floor Slab**

The Geotechnical report provides two possible alternatives for foundation systems:

#### **Alternative 1 – Ground Improvement:**

In this approach the soil supporting the building would be improved by displacement piles with diameters between 14–24 inches consisting of compacted aggregate columns, compacted concrete, or a combination of both (e.g. compacted aggregate columns constructed over compacted concrete columns). Soil improvements will allow for a more conventional-style shallow foundation and slab system to be constructed, with the distinction that this foundation and slab would need to be more robust and more heavily reinforced than their conventional counterpart. Additionally, this system would likely experience significant total settlement (1–4”), and differential settlement up to 2”. These anticipated settlement magnitudes are significantly higher than a “conventional” building on shallow foundations, which typically has total settlement of approximately 1” and differential settlement of approximately  $\frac{3}{4}$ ”. These higher settlement magnitudes may cause serviceability issues in the completed structure (e.g. gypsum wallboard cracks, doors and windows that are difficult to operate, etc.).

It also should be noted that these ground improvements are non-conventional and may be complex to implement effectively. Because of the complex nature, caveats, and potential performance issues associated with this system, it may not be acceptable to the owner.

#### **Alternative 2 – Deep Pile with Structural Base Slab:**

A deep pile foundation system with a structural first floor slab would appear to bypass most of the issues and the foundation risk associated with the poor soils below. The deep piles would be friction piles developing their resistance in a suitable soil stratum. According to the geotechnical report, displacement piles would likely be specified for this project and are anticipated to have a 30–60ton capacity and a length

of 100ft or more. Pile types available that may be considered are as follows:

- Prestressed precast concrete
- Closed end concrete filled steel pipe
- Stelcor drilled-in piles
- Ductile iron pipe piles
- Drilled displacement piles

With this system, a test program should be implemented due to the highly variable subsurface conditions. This test program would be prepared and executed by the project's geotechnical engineer.

If a deep pile foundation system is implemented, the foundation substructure would generally consist of reinforced concrete pile caps, grade beams, and a reinforced two-way ground level slab. Significant utilities or site appurtenances may also need to be supported by deep foundations.

#### **General Foundation Criteria**

For either system a continuous perimeter foundation wall or grade beam will be provided to protect the building from frost heave. Insulation shall be provided around the perimeter foundation wall as specified by the architect. Foundations and/or grade beams subject to frost shall extend to at least 4'-0" below lowest adjacent grade.

For both systems the internal spread footings or pile caps will need to be structurally interconnected with concrete struts.

From the presented information in the geotechnical report it appears that there is a performance advantage (relative to settlement and serviceability) in utilizing "Alternative 2 – Deep Pile with Structural Base Slab." However, further geotechnical investigation is required to finalize foundation types and alternatives and foundation type selection should be a decision made by the project team and owner, collectively.

#### **Floor Structure**

The floor framing will generally consist of steel beams, steel girders, and wide-flanged columns. Floor framing shall be composite with the floor slabs, unless non-composite is more economical in some locations (e.g. short spans, large openings each side of beam, etc.). Beam spacing will be 10'-0" on-center maximum, tighter beam spacings may be required where live loads exceed 100 psf. The deck will consist of a 5 1/4" (total thickness) of light-weight concrete on 18 gauge, 2" deep galvanized composite metal deck. The light-weight concrete shall be air-entrained 4%-7%. Structural elements will be fireproofed as needed to meet ratings required by code.



The concrete on metal deck shall be typically reinforced with welded wire fabric. Deformed bars will be provided where required to support heavy equipment, CMU partitions, etc.

Floor members shall be designed for minimum deflection requirements of L/360 (live load) and L/240 (total load), along with analysis for floor vibrations per AISC Design Guide 11. Tighter deflection requirements may be required at movable/operable partitions.

### **Roof Structure**

The roof framing will generally consist of steel joists, wide-flanged girders, and wide-flanged steel columns. Wide-flanged steel beams shall be used in lieu of joists at column grid lines and where needed for loading (such as at mechanical equipment screens and other areas with concrete on the roof).

Joist/beam spacing will typically be approximately 6'-0" on-center with tighter spacing adjacent to roof steps, around equipment, etc. due to snow drifts (if applicable). The roof framing will be sloped to internal roof drains to minimize tapered insulation with a roof slope of at least ¼" per foot. Tapered insulation may be required in some locations.

The roof deck will consist generally of 20 gauge 1-1/2" Type B galvanized metal deck. Thicker decking or 3" deep roof deck may be used where beam spacings larger than 6'-0" are used. Roof hatches (or similar) will be provided as required for the installation, access, and removal of equipment. Composite metal deck with lightweight concrete shall be provided below rooftop equipment where necessary for acoustics.

Roof members shall be designed for minimum deflection requirements of L/240 (live/snow load) and L/180 (total load). Tighter deflection requirements may be required at movable/operable partitions and will be coordinated with manufacturer's requirements.

At the third-floor roof terrace, the structural roof assembly will be similar to the floor assembly with a concrete topped composite metal deck supporting a stand-off walkable panel system above to maintain a level floor over a sloped roof deck.

For the roof terrace, members shall be designed for minimum deflection requirements of L/360 (live load) and L/240 (total load), along with analysis for floor vibrations per AISC Design Guide 11.

### **Lateral Force Resisting Systems**

The lateral load resisting system will generally consist of special braced frames comprised of hollow structural steel sections. Due to the relatively high Seismic Design Category that is anticipated for the project, the bracing and connections will require special detailing in accordance

with AISC 341. The concrete floor decks and metal roof decks will serve as horizontal diaphragms.

#### **Exterior Wall Construction**

Light-gauge metal framing (designed by others) or CMU will generally provide back-up to exterior walls systems, but utilization of the building columns (and installation of wall girts) may be required in some locations. These elements will be designed for component & cladding wind loads along with vertical loads. Wall girts, where needed, shall be HSS sections.

Wall members shall be designed for a minimum out-of-plane deflection requirement of  $L/240$ , unless more stringent criteria is provided by the wall system manufacturer.

### **MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION FIRE PROTECTION**

The following is the Fire Protection system narrative, which defines the scope of work and capacities of the Fire Protection system as well as the Basis of Design.

#### **A. Codes**

All work installed under Section 210000 shall comply with the MA Building Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

#### **B. Design Intent**

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Fire Protection work and all items incidental thereto, including commissioning and testing.

#### **C. General**

In accordance with the provisions of the Massachusetts Building Code, a school building of greater than 12,000 s.f. must be protected with an automatic sprinkler system.

#### **D. Description**

1. The building will be served by a new 8-inch fire service, Double check valve assembly, wet alarm valve complete with electric bell, and fire department connection meeting local thread standards.
2. System will be an automatic sprinkler system with control valve assemblies to limit the sprinkler area controlled to less than 52,000 s.f. as required by NFPA 13-2013.

3. Control valve assemblies shall consist of a supervised shutoff valve, check valve, flow switch and test connection with drain.

4. All areas of the building, including all finished and unfinished spaces and combustible concealed spaces will be sprinklered.

5. All sprinkler heads will be quick response, pendent in hung ceiling areas and upright in unfinished and spaces without ceilings.

#### **E. Basis of Design**

1. The mechanical rooms, kitchen, science classrooms, and storage rooms are considered Ordinary Hazard Group 1; stage is considered Ordinary Hazard Group 2; all other areas are considered light hazard.

#### 2. Required Design Densities:

Light Hazard Areas	0.10 GPM over 1,500 s.f.
Ordinary Hazard Group 1	0.15 GPM over 1,500 s.f.
Ordinary Hazard Group 2	0.20 GPM over 1,500 s.f.

#### 3. Sprinkler spacing (max.):

Light Hazard Areas:	225 s.f.
Ordinary Hazard Areas:	130 s.f.

#### **F. Piping**

Sprinkler piping 2 in. and smaller shall be ASTM A-53, Schedule 40 black steel pipe. Sprinkler/standpipe piping 3 in. and larger shall be ASTM A-135, Schedule 10 black steel pipe.

#### **G. Fittings**

Fittings on fire service piping, 2 1/2 in. and larger, shall be Victaulic Fire Lock Ductile Iron Fittings conforming to ASTM A-536 with integral grooved shoulder and back stop lugs and grooved ends for use with Style 009-EZ or Style 005 couplings. Branch line fittings shall be welded or shall be Victaulic 920/920N Mechanical Tees. Schedule 10 pipe shall be roll grooved. Schedule 40 pipe, where used with mechanical couplings, shall be roll grooved and shall be threaded where used with screwed fittings. Fittings for threaded piping shall be malleable iron screwed sprinkler fittings.

#### **H. Joints**

Threaded pipe joints shall have an approved thread compound applied on male threads only. Teflon tape shall be used for threads on sprinkler heads. Joints on piping, 2 1/2 in. and larger, shall be made up with Victaulic, or equal, Fire Lock Style 005, rigid coupling of ductile iron and pressure responsive gasket system for wet sprinkler system as recommended by manufacturer.

### **I. Double Check Valve Assembly**

1. Double check valve assembly shall be MA State approved, U.L./F.M. approved, with iron body bronze mounted construction complete with supervised OS & Y gate valves and test cocks. Furnish two spare sets of gaskets and repair kits.
2. Double check valve detector assembly shall be of one of the following:
  - a. Watts Series
  - b. Wilkins
  - c. Conbraco Series

### **PLUMBING**

The following is the Plumbing system narrative, which defines the scope of work and capacities of the Plumbing system as well as the Basis of Design.

#### **A. Codes**

All work installed under Section 220000 shall comply with the MA Building Code, MA Plumbing Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

#### **B. Design Intent**

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Plumbing work and all items incidental thereto, including commissioning and testing.

#### **C. General**

1. The Plumbing Systems that will serve the project are cold water, hot water, tepid water, sanitary waste and vent system, grease waste system and storm drain system.
2. The building will be serviced by Municipal water and Municipal sewer system.
3. All Plumbing in the building will conform to Accessibility codes and to water conserving sections of the Plumbing Code.

#### **D. Drainage System**

1. Soil, waste, and vent piping system is provided to connect to all fixtures and equipment. System runs from 10 feet outside building and terminates with stack vents through the roof.
2. A separate grease waste system starting with connection to an exterior grease interceptor running thru the Kitchen and Sery area fixtures and terminating with a vent terminal through the roof. Point of use grease interceptors are to be provided at grease laden kitchen fixtures per the plumbing code.

3. Storm drainage system is provided to drain all roofs with roof drains piped through the building to a point 10 feet outside the building.

4. Drainage system piping will be service weight cast iron piping; hub and spigot with gaskets for below grade; no hub with gaskets, bands and clamps for above grade 2 in. and larger. Waste and vent piping 1-1/2 in. and smaller will be type 'L' copper.

#### **E. Water System**

1. New 6-inch domestic water service from the municipal water system will be provided for the New Building. A meter and backflow preventer will be provided.

2. Cold water distribution main is provided. Non-freeze wall hydrants with integral back flow preventers are provided along the exterior of the building.

3. (2) Non-potable water systems will be provided for science classrooms, with a dedicated electric water heater, recirculation pump, & mixing valve.

4. A pump will re-circulate hot water from the piping system. Water temperature will be 120 deg. to serve general use fixtures. A 140 deg. F hot water will be supplied to the kitchen dishwashing equipment.

5. Water piping will be type 'L' copper with wrought copper sweat fittings, silver solder or press-fit system. All piping will be insulated with 1 in. thick high-density fiberglass.

#### **F. Fixtures**

1. Furnish and install all fixtures, including supports, connections, fittings, and any incidentals to make a complete installation.

2. Fixtures shall be the manufacturer's guaranteed label trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.

3. Vitreous china and acid resisting enameled fixtures, including stops, supplies and traps shall be of one manufacturer by Kohler, American Standard, or TOTO. Supports shall be Zurn, Smith or Watts. All fixtures shall be white. Faucets shall be American Standard, T&S or Chicago.

4. Fixtures shall be as scheduled on drawings.

Water Closet: High efficiency toilet, 1.1 gallon per flush, wall hung, vitreous china, siphon jet. Sensor operated 1.1 gallon per flush-flush valve.

Urinal: High efficiency 0.125 gallon per flush urinal, wall hung, vitreous china. Sensor operated 0.125 gallon per flush-flush valve.

Lavatory: Wall hung/countertop ADA lavatory with 0.35 GPM mixing faucet with sensor programmed for 10 second run-time cycle.

Shower: Tile shower by others. Shower head with 1.5 GPM flow rate, with Shower mixing valve, and Floor drain.

Sink: ADA stainless steel countertop sink 1.5 GPM faucet and aerator.

Drinking Fountain/ Bottle Filler: Hi-low wall mounted electric water cooler, stainless steel basin with bottle filling stations.

Janitor Sink: 30 x 30 Terrazzo mop receptor

#### **G. Drains**

Drains are cast iron, caulked outlets, nickaloy strainers, and in waterproofed areas and roofs shall have galvanized iron clamping rings with 6 lb. lead flashings to bond 9 in. in all directions. Drains shall be Smith, Zurn or Watts.

#### **H. Valves**

Locate all valves so as to isolate all parts of the system. Shutoff valves 3 in. and smaller shall be ball valves, solder end or screwed, Apollo, Watts or Milwaukee.

#### **I. Insulation**

All water piping shall be insulated with snap-on fiberglass insulation Type ASJ-SSL, equal to Johns Manville Micro-Lok HP.

#### **J. Cleanouts**

Cleanouts shall be full size up to 4 in. threaded bronze plugs located as indicated on the drawings and/or where required in soil and waste pipes.

Cleanouts for Special Waste System shall be Zurn #Z9A-C04 polypropylene cleanout plug with Zurn #ZANB-1463-VP nickel bronze scoriated floor access cover.

#### **K. Access Doors**

Furnish access doors for access to all concealed parts of the plumbing system that require accessibility. Coordinate types and locations with the Architect.

#### **L. Water Heaters**

1. Domestic water heating will be multiple electric storage type water heaters. System is to be equipped with thermostatically controlled mixing devices to control water temperature (120 F) to the fixtures, and 140 F to required Kitchen Equipment where required.

2. Dedicated water heating will be provided for Non-Potable water, (2) electric heat pump water heater per looped system. System is to be equipped with thermostatically controlled mixing devices to control water temperature (120 F) to the fixtures.

## **HVAC SYSTEM**

### **A. Design Criteria**

1. Interior environmental conditions will be based on Massachusetts Code 780 CMR 12 and ASHRAE Standard 55-2010.

2. Ventilation of spaces will be designed to meet or exceed the requirements of the latest edition of the Massachusetts State Building Code, the ICC International Mechanical Code and ASHRAE Standard 62, Ventilation for Acceptable Indoor Air Quality.

3. HVAC equipment will be selected to comply with the 2018 edition of the International Energy Conservation Code and ASHRAE 90.1-2013.

4. The HVAC systems will be designed to meet the acoustical requirements of ANSI S12.60-2002. The American National Standards Institute developed this standard specification and design guideline to help eliminate acoustical problems in the design stage of a project. Essentially, the steady background noise level in core learning areas should not exceed an NC of 35.

### **B. Heating and Cooling System**

1. Heating and cooling will be provided by an all-electric heat pump system. This system will be a hybrid of air source heat pumps and ground source heat pumps.

2. The air source heat pump systems will be comprised of Variable Refrigerant Flow (VRF) systems and Packaged Air Source Heat Pump Energy Recovery Units (ERU).

3. The air source and ground source VRF systems shall be made up of indoor evaporators, branch control boxes (BC) and roof or grade mounted air-cooled condensers. The system utilizes refrigerant as the heat/cooling medium. The refrigerant shall flow from the condensers to the branch control boxes. The branch control boxes are used as control devices directing the liquid refrigerant or gas refrigerant to the indoor

evaporators depending on the space heating or cooling needs. This type of VRF system is known as a heat-recovery system. The branch control boxes can take the heat recovered from the cooling zone and use it to warm up the room in heating mode. This way, the compressor cooling or heating requirements are reduced, which saves energy.

4. The air source and ground source heat pump ERUs shall be used to provide minimum outdoor air ventilation to all spaces utilizing a VRF system for heating and cooling. The ERU shall be comprised of supply fan, exhaust fan, desiccant wheel or fixed plate energy recover exchanger, and a DX heat pump w/hot gas reheat. The ERU will either preheat or precool/dehumidify the incoming ventilation air before being distributed to the spaces. The ventilation air will be distributed to the space via galvanized ductwork system. Exposed ductwork shall not be insulated. Ductwork enclosed in chases and above concealed ceilings shall be insulated with R-5 duct wrap.

### C. Air Conditioning System

1. As part of the base design the following spaces will be provided with air conditioning:

- Student Commons.
- Administration area including Principal's Office, Assistant Principal's Office, School Psychologist's Office, Counselor's Office, Adjustment Counselor's Office, Pre-school Coordinator's Office, Nurse's Office and conference rooms.
- Teacher's planning/work rooms.
- Multipurpose rooms.
- Sped PT/OT spaces.
- Library/Media center.
- Gymnasium.
- Classrooms.
- Music/performing arts areas.
- Cafeteria and Kitchen
- Auditorium

### D. Summary of HVAC Systems

1. Classrooms, Multipurpose Rooms, Music Rooms, and Teachers Workrooms.

a. VRF system with decoupled ventilation from packaged rooftop air source heat pump energy recovery units (ERUs). The energy recovery ventilation units will supply the classrooms with tempered air via a system of ductwork. Energy recovery rooftop units are an effective way of reducing the overall energy consumption of a building. Energy recovery rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.
- MERV 13 air filters for superior indoor air quality.
- Energy recovery wheel or fixed plate.



- DX heating/cooling coil.
- Hot gas reheat coil.
- Condensing unit.
- Pre-heat electric coil.
- Variable frequency drives.

b. Each classroom will be furnished with two (2) indoor evaporators. Small type spaces shall be furnished with one (1) indoor evaporator. The evaporators shall maintain space setpoint temperatures independently of the ERUs. This air circulates throughout the rooms and is drawn back up to the return grille of the evaporators. This air circulation produces even and consistent temperatures throughout the room.

c. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the ERU units. This energy of the exhaust air leaving the classrooms is recovered at the energy recovery rooftop units.

d. The room thermostats control the operation of the evaporators to maintain space temperature setpoints.

e. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space. CO<sub>2</sub> sensors shall modulate the position of the terminal boxes located in the ventilation supply ductwork prior to discharge in the space.

## 2. Administration Area.

a. Air source VRF system with decoupled ventilation from packaged rooftop air source heat pump energy recovery units (ERUs). The energy recovery ventilation units will supply the spaces with tempered air via a system of ductwork. Energy recovery rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.
- MERV 13 air filters for superior indoor air quality.
- Energy recovery wheel or fixed plate.
- DX heating/cooling coil.
- Hot gas reheat coil.
- Condensing unit.
- Pre-heat electric coil.
- Variable frequency drives.

b. Each space will be furnished with an indoor evaporator(s). Smaller spaces shall be furnished with one (1) indoor evaporator. The evaporators shall maintain space setpoint temperatures independently of the ERUs.

This air circulates throughout the rooms and is drawn back up to the return grille of the evaporators. This air circulation produces even and consistent temperatures throughout the room.

c. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the ERUs. This energy of the exhaust air leaving the classrooms is recovered at the energy recovery rooftop units.

d. The room thermostats control the operation of the evaporators to maintain space temperature setpoints.

e. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space. CO<sub>2</sub> sensors shall modulate the position of the terminal boxes located in the ventilation supply ductwork prior to discharge in the space.

### 3. Media Center and Cafeteria

a. Packaged rooftop air source heat pump units will supply these spaces with conditioned air. The conditioned air will be distributed via a system of ductwork and ceiling diffusers or sidewall high throw grilles. The rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.
- MERV 13 air filters for superior indoor air quality.
- DX heating/cooling coil.
- Condensing unit.
- Hot gas reheat.
- Pre-heat electric coil.
- Variable frequency drives.

b. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the indoor air handling units.

c. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space.

d. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

### 4. Gymnasium and Auditorium

a. Packaged rooftop air source heat pump units will supply these spaces with conditioned air. The conditioned air will be distributed via a system of ductwork and ceiling diffusers or sidewall high throw grilles. The rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.
- MERV 13 air filters for superior indoor air quality.
- DX heating/cooling coil.
- Condensing unit.
- Hot gas reheat.
- Pre-heat electric coil.
- Variable frequency drives.

b. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the indoor air handling units.

c. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space.

d. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

## 5. Kitchen

a. The kitchen areas will be handled by the cafeteria ERV, The ERV, thru controls, will provide tempered make-up air to the kitchen in order to offset the amount of air being exhausted through the kitchen hood.

b. The kitchen hood exhaust system shall be provided with a Mellink kitchen hood exhaust control system, which is designed to vary the speed of the kitchen hood exhaust fan in response to the intensity of the cooking operations taking place. Essentially, the fan will operate at higher speeds when higher heat and smoke producing cooking is taking place. The Mellink system will also modulate the outside air damper and fan speed of the make-up air unit.

## E. Controls

Griffith & Vary, Inc. recommends this facility be furnished with a Building Management System. This system will feature full Digital Direct Controls (DDC). This system will be capable of controlling the following:

- a. Space temperature set point.
- b. Start and stop of all energy recovery rooftop units and air-handling units.
- c. Schedule occupied/unoccupied times for various spaces.
- d. Optimization of plant efficiency.

e. Monitoring of mechanical equipment and indication of any alarms, which may result from equipment failures.

To save energy required to heat or cool outdoor air, carbon dioxide sensors will be employed in the gymnasium, auditorium, and Student Commons to allow a reduction of outdoor air during periods of low occupancy and motion sensors will also be utilized to allow closure of outdoor air dampers when assembly areas are unoccupied. Classrooms will also have occupancy sensors to modulate dampers in the supply air duct branches as a means of saving energy during periods when the classrooms are unoccupied.

## **ELECTRICAL SYSTEMS**

### **A. Electric Service:**

1. The building will be provided with an electric service via a pad mounted transformer located on the site as provided by the electric utility company. Primary service conduits in concrete duct bank will be provided from the electric utility pole to the transformer via electric utility company standard manholes. Secondary service feeders and conduits in concrete duct bank will be provided from the transformer to the switchboard. The electric utility company meter will be mounted on the transformer.

2. The building fire pump electric service will be provided via the pad mounted transformer located on site as provided by the electric utility company. Secondary service feeders and conduits in concrete duct bank will be provided from the transformer to the fire pump.

### **B. Telephone Service:**

Telephone service (2) 4" conduits will be provided from a utility pole to the building demarcation point (MDF Room).

### **C. Cable TV Service:**

Cable TV service (2) 4" conduits will be provided from a utility pole to the building demarcation point (MDF Room).

### **D. Power Distribution:**

Preliminary load calculations indicate that the switchboard will be rated at 3500 amperes at 277/480 volt, three phase, four wire. The switchboard will be provided with a surge protection device. Switchboard distribution sections will feed 277/480 volt panelboards and major Mechanical and Plumbing equipment. Dry-type transformers will be provided to distribute 120/208 volt power for branch circuit panelboards and the Kitchen panelboards. One of the kitchen panelboards will be provided with a shunt trip circuit breaker which will trip if fire suppression under hoods is initiated, shutting down all circuits under hoods. Panelboards with surge protection devices for computers will be provided, fed from computer grade K-rated transformers. Zero sequence harmonic

filters connected to the computer panelboards will be provided to reduce neutral currents. Shops with equipment will be provided with panelboards including shunt trip main circuit breakers and mushroom type shut off switches which can be pushed to shut down power to the panelboards in event of an emergency. Other shops will be provided with dedicated panelboards.

#### **E. Emergency Power System:**

1. A diesel fuel generator with a sound attenuated, weatherproof enclosure will be provided. Preliminary load calculations indicate that the generator will be rated at 700kW at 277/480 volt, three phase, four wire. Two automatic transfer switches (ATS's) will be provided to separate emergency from optional standby loads. The emergency ATS and associated emergency panelboards will be located in two hour rated closets with two hour rated feeders. The optional standby ATS and associated panelboards will be located in normal electric rooms. Emergency panelboards will be provided with surge protection devices as required by the National Electrical Code. The generator will supply loads as selected by the Owner, as follows:

##### a. Lighting:

- Exterior building mounted lighting
- Mechanical Room lighting
- Electrical rooms lighting
- Egress Corridors and Stairs lighting
- IDF and MDF lighting
- Administration lighting
- Principal Office lighting
- Nurse lighting
- Health Instructor's Office lighting
- Elevator Machine Room
- Gymnasium lighting
- Custodians Office lighting
- Custodians Receiving and General Supply lighting
- Interior windowless spaces lighting
- Elevator lighting and pit lighting
- Kitchen lighting
- Dining lighting
- Toilet rooms lighting
- Make Air Unit lighting

##### b. Power:

- Fire Alarm System
- Heating System including Roof Top Heat Pump Units for the Gymnasium, Dining, Kitchen, and associated receptacles and controls, and Electric Unit Heaters
- Entire Kitchen
- Bidirectional amplifier
- Toilet Room Flush Valves and Sink Sensors

- Custodians Office, a receptacle at work station
- Custodians Receiving and General Supply, a receptacle at work station
- Health Instructor's Office, a receptacle at work station
- P.O.S. at Dining
- Gymnasium receptacles
- Dining, two receptacles
- Administration, a receptacle at work station
- Principal Office, a receptacle at work station
- Nurse, a receptacle at work station
- One Elevator power, Machine Room receptacle, pit receptacles, and dampers
- Water Heaters and Circ pumps
- Generator block heater and battery charger
- Technology equipment including:
  - IDF's each with two technology racks, two 120 volt, 20 amp, single phase receptacles per rack, includes telephone system.
  - MDF with technology racks, two 120 volt, 20 amp, single phase receptacles per rack, includes telephone system.
  - VRF unit for MDF and IDF's with condensate pump receptacle
  - Security System including plywood backboard security circuits, electrified door power supplies, and CCTV cameras (powered by switches in MDF and IDF's)
  - Plywood backboard clock circuits
- Security Office receptacles
- Fire Pump

**F. Fire Alarm System:**

An addressable manual and automatic fire alarm system will be provided. The fire alarm system will call the Fire Department or a Central Station via master box and/or telephone dialer. The fire alarm control panel will be located in the Main Electric Room or an area as so directed by the Fire Department. A remote annunciator panel will be provided in the Vestibule at the Main Lobby and where required by the Fire Department. A map of the entire building will be framed and mounted adjacent to the annunciator. Keyed boxes will be provided outside the Fire Department entries. Manual pull stations will be located within five feet (5') of each egress door and at the entrance to each Stair. Additional pull stations will be provided as required by Code. Heat detectors will be provided at the top of the elevator shaft and any other areas not provided with protection by the fire suppression system. Smoke detectors will be provided in the Corridors, in Stairs at each floor level, in the Elevator Machine Room, and at all elevator landings for early detection of smoke for recall. All devices including tamper, flow, pressure switches, and PIV, associated with the fire suppression system will be connected to the fire alarm system. Audio/visual appliances will be provided in the Corridors, Classrooms and all large areas such as the Gymnasium, Media Center, Auditorium, and Dining. Visual devices will be provided in Toilet and Conference rooms. Mechanical equipment shall be shut down by the

fire alarm system as required by code.

### **G. Lighting:**

#### 1. Interior:

a. In general, highly efficient LED lighting fixtures will be provided throughout the building. Lighting levels will be in accordance with I.E.S. (Illuminating Engineering Society of North America) recommendations and the Massachusetts State Building Code energy requirements.

#### 2. Exterior:

a. Wall and pole mounted site lighting fixtures will be LED type.

### **H. Switching:**

Lighting fixtures will be controlled primarily by room occupancy sensors and local low voltage dimmers. Lighting fixtures within primary side lighted areas will be daylight harvested via dimming drivers and photosensors. Lighting control relay panels will be provided to control exterior lighting and control interior lighting where time of day control is required.

### **I. Devices:**

General convenience receptacles will be located throughout the building as required. Receptacles provided in Toilet rooms, near sinks, the Kitchen, and outdoors will be provided with ground fault protection. Circuiting will be provided to Kitchen, Mechanical, and Plumbing equipment, and miscellaneous loads as required.

### **J. Bi-directional Amplifier System**

A bi-directional amplifier with coaxial cabling above accessible ceilings will be provided to amplify Fire Department and Police frequencies to ensure that there are no "dead" spots in the building for communication within building.

### **K. Technology Systems Back Box and Conduit System**

A telephone/data/video/security/clock/speaker conduit system consisting of empty back boxes and conduit with pull strings to above accessible ceilings will be provided for technology. Cable tray will be provided in MDF and IDF rooms for low voltage wiring.

### **L. PV System Conduit System**

An empty conduit system with pull strings will be provided for the PV system consisting of photovoltaic panels and an inverter. Conduits will be provided from the switchboard to an exterior mounted disconnect switch for shutting down the PV system if need be. Conduits will also be provided from the exterior disconnect switch to the inverter and from the inverter to the roof.

### **M. Electric Vehicle Charging Stations**

Electric vehicle charging stations will be provided.

#### **N. Destratification Fans**

Destratification fans will be provided in the Gymnasium.

#### **O. Mass Notification System**

A mass notification system will be provided including control panel, info alarm graphic annunciation and control, addressable speakers, and amber lenses.

#### **P. Lightning Protection**

The building will be provided with a lightning protection system made up of air terminals on the roof with downlead conductors to ground.

### **INFORMATION TECHNOLOGY & SECURITY SYSTEMS**

#### **271000 Structured Cabling**

The new network design will support up to 10GHZ over Category 6A to the desktop.

Twenty-four pair multi-mode OM4 fiber and twelve pair single mode OS2 fiber will be provided from the MDF to every IDF in the building. A 25 pair cat5e riser cable shall be provided from the MDF to every IDF in the building.

Cat 6A cabling will be provided for data, voice, CCTV, and wireless access points (four data drops at each wireless access point location). Wireless access point outlet placements are intended to provide the capability for complete wireless coverage throughout the school.

Each classroom will be wired with 2 data ports and a wall phone jack at the teacher location (category 6A cabling will be provided for the owner provided phone system (support for Voice over IP)). Classrooms will also have 2 data ports located at the back of the room.

The technology labs will be capable of accommodating an entire class of students (28). Network access in the technology labs will be wireless. Four ceiling data jacks for wireless access points shall be provided. In addition, the equipment specified below in 274000 for a typical classroom shall be included in each lab.

The MDF and IDFs shall have a shared ground and ground bus installed, bonding the rooms and all cable tray and racks.

#### **272100 Network Switches**

Network electronics (switches) and patch cords shall be provided by the Owner



**272133 Wireless Access Points**

Wireless access points, and a controller if applicable, will be provided by the Owner. The subcontractor in section 271000 shall install the wireless access points and shall furnish and install green cat6A patch cords from the WAP outlet above the ceiling to the WAP device.

**273000**

The phone system, programming and handsets shall be provided and installed by the Owner. The building shall be cabled to support a voice over IP phone system using Cat 6A.

**274000**

The PC/laptop in each classroom shall be provided by the Owner. A new voice lift system and ceiling speaker shall be furnished and installed in each classroom. The base unit shall be installed on the wall behind the footprint of each interactive display. A 75" Promethean Interactive Display shall be furnished and installed on the teaching wall of each classroom. The displays and voice lift shall be proprietary.

The gymnasium, student dining, fitness center and auditorium shall have a sound system. The auditorium shall have a large format projector and screen. All of the sound systems shall be furnished and installed by the Theater Section.

10 presentation cameras, Okiocam T Plus by Okiolabs shall be furnished and turned over to the owner.

**275000**

A new Atlas IED PA system with digital message clocks and call button shall be installed. Plastic call button covers shall be placed over every call button. Integration of the IED PA system to the owners VoIP phone system shall be furnished and installed. Any authorized phone shall be capable of paging the building or zones of the building. Clocks shall be in all offices, conference rooms, and classrooms and group spaces. Exterior PA speakers shall be included. The system shall be proprietary.

**277000**

Digital signage displays shall be provided and installed in the student dining area, at the main entry, and in 2 halls per floor. An IPTV system shall not be provided. Digital signage displays shall be furnished and installed by the 274000 subcontractor. Devices and software for the displays shall be furnished, programmed and installed by the owner.

## 280000

Identocard access control shall be furnished and installed in the school. All door contacts shall be double pole double throw contacts. The intrusion system and access control system shall each be wired to one set of contacts. With all door contacts being monitored by the access control system, a higher level of situational awareness is provided to the staff regarding entrances and exits of the building while the building is occupied. Traditionally, the intrusion detection system only monitored and reported door alarms during unoccupied times when the system is armed. Leveraging the access control system to also monitor the door contacts allows the staff to receive door alarms during occupied times when the intrusion detection system is typically disarmed. The access control system shall be proprietary. The main entry shall have a video entry system.

An intrusion detection system and related components shall be provided. Every first floor room with a window shall have a motion sensor. Motion sensors shall also be placed within the hallways and in vestibules and at strategic locations.

An indoor/outdoor CCTV system (IP based) will be provided. Coverage shall include entrances, hallways, stairwells, building perimeter, and parking (parking surveillance shall utilize both building mounted cameras as well as pole mounted cameras). Other areas, such as the gym, auditorium, café, and admin area shall be included.

## 260000

A Mass Notification System (MNS) shall be provided, to include alert and fire strobes in all spaces. Large group spaces shall also have a digital scrolling message board with MNS alert notifications.

## THEATER EQUIPMENT

### Stage Dimming and Lighting System

The Stage Dimming and Lighting system shall be comprised of a 48 dimmer rack and 24 - 120 volt relay cabinet. There shall be a low voltage CAT5e control network for both the house lights and the stage lighting with distributed network outlets allowing for DMX control at all stage lighting pipe locations and at stage level, left and right. Lighting control shall be by means of Element 40-500 control console with two monitors, an access point shall be included for Ipad control of cues. The Stage lighting fixture package will be all LED front lighting, LED par down lights and LED cyclorama lights. Stage lighting will be on Motorized hoists that raise and lower to allow for easy fixture movement for theatrical or dance productions. The Front light pipe shall lower on a motorized hoist with integrated circuits and DMX control.

### **Stage Video Wall**

Taking technology to the next level, this facility will incorporate a 20' by 40' - 3.91 mm video wall at the rear of the stage. This will replace the need for a cyclorama curtain and cyc lighting fixtures, it also eliminate the need for a video projector and screen. Control can be processed thru the Crestron system, or local switcher. Camera inputs allow for Image magnification, movies, and computer inputs will allow for presentations to be on the video wall.

### **Stage Audio Visual and Sound**

AV control shall be by a Crestron control system with the main control location at the center booth area. This area will be central hub and shall house the Audio control console, the Lighting control console, Crestron touch screen controller and house light touchscreen control station. A DVD player shall be included as a standard input to the video wall. Speakers shall be hung at a center cluster for voice support and left and right for stereo effects. These shall be amplified and run thru a drive rack to process the sound for the room. A 40 channel digital mixing console and wireless microphone package of 8 units shall be included along with a wireless assisted listening system. Additionally the audio system shall have a back stage communication system connecting the band, chorus, control booth and back stage areas on a clear-com communication system.

### **Stage Rigging and Curtains**

The stage shall have a set of curtains and tracks consisting of; a Main valence and Main bi-parting curtain in custom color IFR velour. Three layers of legs and border masking with a mid-stage traveler all in black velour or IFR fabric and rear black bi-parting velour. All stage curtains shall be on Dead hung line sets. In addition there will be two scenic battens on motorized hoists with a one-way walk-along track for pulling scenic drops on and off stage. There shall be a minimum of four stage lighting pipes on stage, two front side light torm ladders, one on each side of the stage apron and one front of house hoist that raises and lowers complete with dimmer circuits and DMX control for stage lighting fixtures.

### **Band Room**

The band room shall have a self-contained audio system with 12 channels of mixing capability, an assortment of microphones for band instruments, 2 – Direct boxes, a portable digital audio recorder, wall mounted speakers, monitors and amplifiers.

### **Chorus Room**

The Chorus room shall have a self-contained audio system with 12 channels of mixing capability, a pair of Wireless microphones with hand held mics, and 4 additional vocal microphones, 2 – Direct boxes, a portable digital audio recorder, wall mounted speakers, monitors and amplifiers.

## FOOD SERVICE EQUIPMENT

Crabtree McGrath Associates is a consulting firm specializing in food service facilities planning and design. We have worked with Ai3 Architects to study a framework for the design of the kitchen and serving space associated with a new school building. Additionally, Crabtree met with the schools current Food service Director to identify future goals and to seek guidance for the equipment needed in the new facility.

The school's food service operation will be organized into two parts. One part is the "back of house" consisting of food storage, preparation area, and cooking. The other part is what we call the "front of house" or serving area. The serving area is where students approach and are served meals.

### Kitchen and Food Preparation Area

The back of house shall include all the necessary components of a fully functional kitchen to include a receiving area to be used as a staging point for the breakdown and distribution of delivered goods. Refrigerated rooms for the bulk storage of refrigerated and frozen products, sized to accommodate the needs of the facility, shall be provided. Dry goods storage shall be made available for the keeping of canned, boxed, and other non-refrigerated food items. Food grade storage shelving and dunnage platforms shall be provided for dry goods storage and for storage of disposable items such as paper goods.

Food preparation shall take place on stainless steel tables of various sizes and configurations. Tables may be fashioned with sinks, drawers, shelves, and overhead pot storage hooks. Motorized food preparation equipment such as a food slicer, food cutter, and mixer shall be provided. Sizing of this equipment will be based on the scope of food preparation.

Cooking shall take place in a central location adjacent to both food storage and preparation. Equipment shall consist of standard pieces such as convection ovens, boiling kettles, braising pans, steamers, and open burner range tops. Adjustments shall be made to cooking equipment to suite the specific menu.

The facility will include the necessary ware washing equipment to process ware, pots, trays, pans and plastic trays returned from the cafeteria.

Other support facilities located in or adjacent to the kitchen will include a staff toilet, a dedicated kitchen janitor's mop sink with enough space for the storage of mops, buckets and detergents. A clothes washer and dryer will be provided for the washing of mop heads, aprons, and kitchen hand towels. Typically grouped with this equipment are employee locker accommodations for the storage of personal items like coats, handbags, or shoes and an office for the kitchen manager.

Itemized breakdown of equipment:

- Refrigerated Storage – The kitchen will require the following storage.
  - a. Walk-in cooler for refrigerated storage.
  - b. A walk-in freezer for frozen storage.

- c. A walk-in freezer for district wide commodity storage.
- d. Dry goods storage area for paper and food storage.

#### Serving Area

Serving will take place at multiple counters organized into a linear configuration allowing for orderly and secure serving of food products. Counters are grouped into cold and hot food serving lines that will serve the typical school lunch. These lines shall include the necessary equipment needed to provide the cold offerings such as fruit, salads, and beverages.

In addition, a grab and go station, deli sandwich line, grill station, and cold food bar will be utilized to enhance the meal offering and increase participation.

Each of the lines will funnel into a common area large enough to accommodate the flow of traffic where the transaction is to take place to account for meal type and quantity. Counters with tray slides will be provided to accept "Point of Sale" terminals where students can pay with cash or type in a code that is linked to a declining balance pre-paid system.

Within the seating area will be two condiments stands able to display napkins, forks, straws, and other utensils and condiments needed for the lunch period. These units will be mobile and able to be placed where needed. The base cabinet will be equipped with lockable storage.



A TETRA TECH COMPANY

**CODE & FIRE ENGINEERING GROUP**

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September 13, 2022

James Jordan  
Ai3 Architects, LLC  
526 Boston Post Road  
Wayland, MA 01778

Re: Central Falls High School – SD Code Compliance  
Central Falls, RI

Dear Mr. Jordan:

Cosentini Associates has reviewed the drawings for the proposed Central Falls High School project for compliance with the major fire protection and life safety criteria of the applicable codes and discussed with Ai3 Architects regarding the proposed designs. The proposed project involves the construction of a new high-school building, consisting of four stories above grade and a footprint of approximately 40,400 square feet. In our opinion, the project is in compliance with the major fire protection and life safety criteria of the Rhode Island Building Code.

Sincerely,  
COSENTINI ASSOCIATES, INC.  
Code Consulting and Fire Engineering Services

**Rockwood J. Edwards, PE** | Vice President  
**Code and Fire Engineering Group**  
Phone: 617-748-7800 | Fax: 617-748-7801 | Direct Dial: 617-748-0021  
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# CENTRAL FALLS HIGH SCHOOL

SEPT 15, 2022

**ARCHITECT**

Ai3 ARCHITECTS, LLC

526 Boston Post Road  
Weyland, MA 01778  
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**LANDSCAPE ARCHITECT**

TRAVERSE LANDSCAPE ARCHITECTS

150 Chestnut Street, 4th Floor  
Providence, RI 02903  
Tel: (401) 383-4959

**SPECIFICATIONS**

WIL-SPEC, LLC

375 Main Street  
Borford, MA 01921  
Tel: (781) 598-8769  
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**CODE CONSULTANT**

COSENTINI ASSOCIATES, INC.

101 Federal Street, 6th Floor  
Boston, MA 02210  
Tel: (617) 748-7800  
Fax: (617) 748-7801

**STRUCTURAL ENGINEER**

PARE CORPORATION

10 Lincoln Rd, Suite 210  
Foxboro, MA 02035  
Tel: (508) 543-1755  
Fax: (508) 543-1881

**OWNERS PROJECT MANAGER**

PEREGRINE GROUP, LLC

20 Newman Ave, Suite 1005  
Rumford, RI 02916  
Tel: (401) 270-9500

**CIVIL ENGINEER**

VERTEX

400 Libbey Parkway  
Weymouth, MA 02189  
Tel: (781) 962-6100

**MECH. / ELEC. / PLUMB. ENGINEERS**

GRIFFITH & VARY, INC.

12 Kendrick Road  
Wareham, MA 02571  
Tel: (508) 295-0050  
Fax: (508) 295-0003

**COST ESTIMATOR**

PROJECT MANAGEMENT & COST

20 Downer Ave., Suite 1C  
Hingham, MA 02043  
Tel: (781) 740-8007  
Fax: (781) 740-1012



**CIVIL**

- C1.0 EXISTING CONDITIONS AND DEMOLITION PLAN
- C2.0 UTILITY PLAN
- C3.0 DRAINAGE PLAN
- C4.0 DETAILS

**LANDSCAPE**

- L1.21 OVERALL HARDSCAPE PLAN
- L1.22 HARDSCAPE PLAN 1
- L1.23 HARDSCAPE PLAN 2
- LP1.21 OVERALL LANDSCAPE PLAN
- LP1.22 LANDSCAPE PLAN 1
- LP1.23 LANDSCAPE PLAN 2

**ARCHITECTURAL**

- A0.01 ABBREVIATIONS, SYMBOLS, NOTES & LEGENDS
- A0.11 FIRST FLOOR CODE APPROACH PLAN
- A0.12 SECOND FLOOR CODE APPROACH PLAN
- A0.13 THIRD FLOOR CODE APPROACH PLAN
- A0.14 FOURTH FLOOR CODE APPROACH PLAN
- A0.21 PARTITION TYPES
- A0.22 PARTITION TYPES
- A1.11 FIRST FLOOR PROGRAM PLAN
- A1.12 SECOND FLOOR PROGRAM PLAN
- A1.13 THIRD FLOOR PROGRAM PLAN
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- A2.12 OVERALL SECOND FLOOR PLAN
- A2.13 OVERALL THIRD FLOOR PLAN
- A2.14 OVERALL FOURTH FLOOR PLAN
- A2.15 OVERALL ROOF PLAN
- A2.21A FIRST FLOOR PLAN - ZONE A
- A2.21B FIRST FLOOR PLAN - ZONE B
- A2.22A SECOND FLOOR PLAN - ZONE A
- A2.22B SECOND FLOOR PLAN - ZONE B

**FIRE PROTECTION**

- A2.23A THIRD FLOOR PLAN - ZONE A
- A2.23B THIRD FLOOR PLAN - ZONE B
- A2.24A FOURTH FLOOR PLAN - ZONE A
- A2.24B FOURTH FLOOR PLAN - ZONE B
- A3.01 EXTERIOR ELEVATIONS
- A3.02 EXTERIOR ELEVATIONS
- A3.03 EXTERIOR ELEVATIONS
- A3.04 EXTERIOR ELEVATIONS
- A3.05 EXTERIOR ELEVATIONS
- A4.01 BUILDING SECTIONS
- A4.02 BUILDING SECTIONS
- A4.03 BUILDING SECTIONS
- A4.04 BUILDING SECTIONS
- A4.11 WALL SECTIONS
- A4.12 WALL SECTIONS
- A7.01 ROOM FINISH SCHEDULE

**FIRE PROTECTION**

- E2.0 FIRE PROTECTION RISER DIAGRAM

**PLUMBING**

- P1.0 PLUMBING RISER DIAGRAM

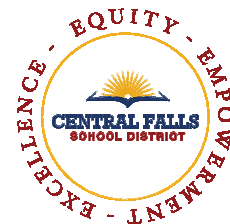
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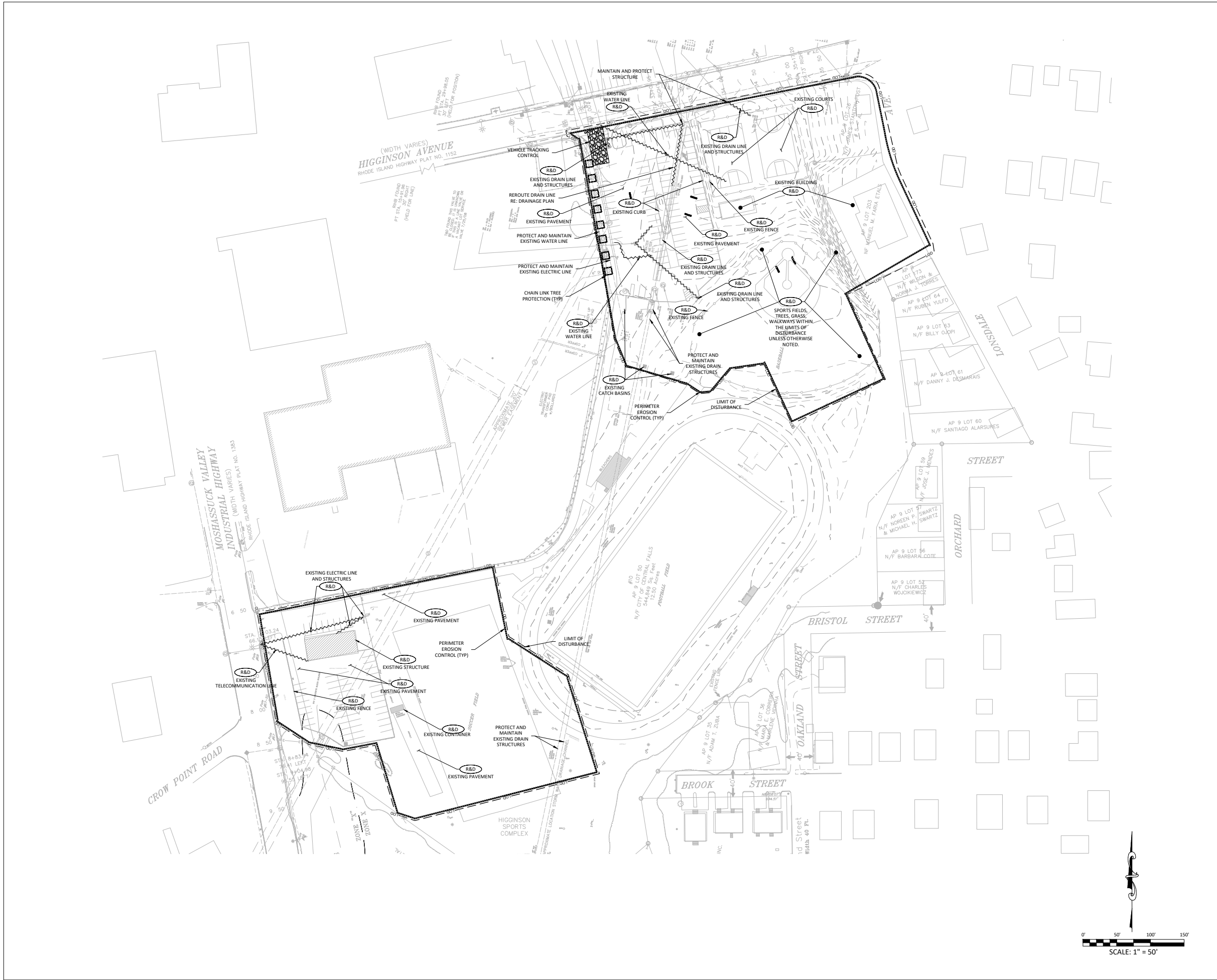
- M1.0 MECHANICAL CONTROL SEQUENCE
- M2.0 MECHANICAL CONTROL SEQUENCE

**ELECTRICAL**

- E1.0 ELECTRICAL RISER DIAGRAM
- E2 ELECTRICAL SCHEDULE

## SCHEMATIC DESIGN



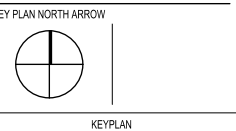


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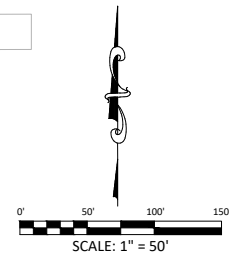
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DRAWING NAME:  
**EXISTING CONDITIONS AND DEMOLITION PLAN**

DRAWN BY: JLM  
REVIEWED BY: ABS

SCALE: AS INDICATED DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **C1.0**



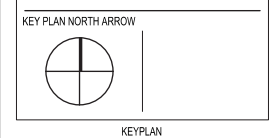




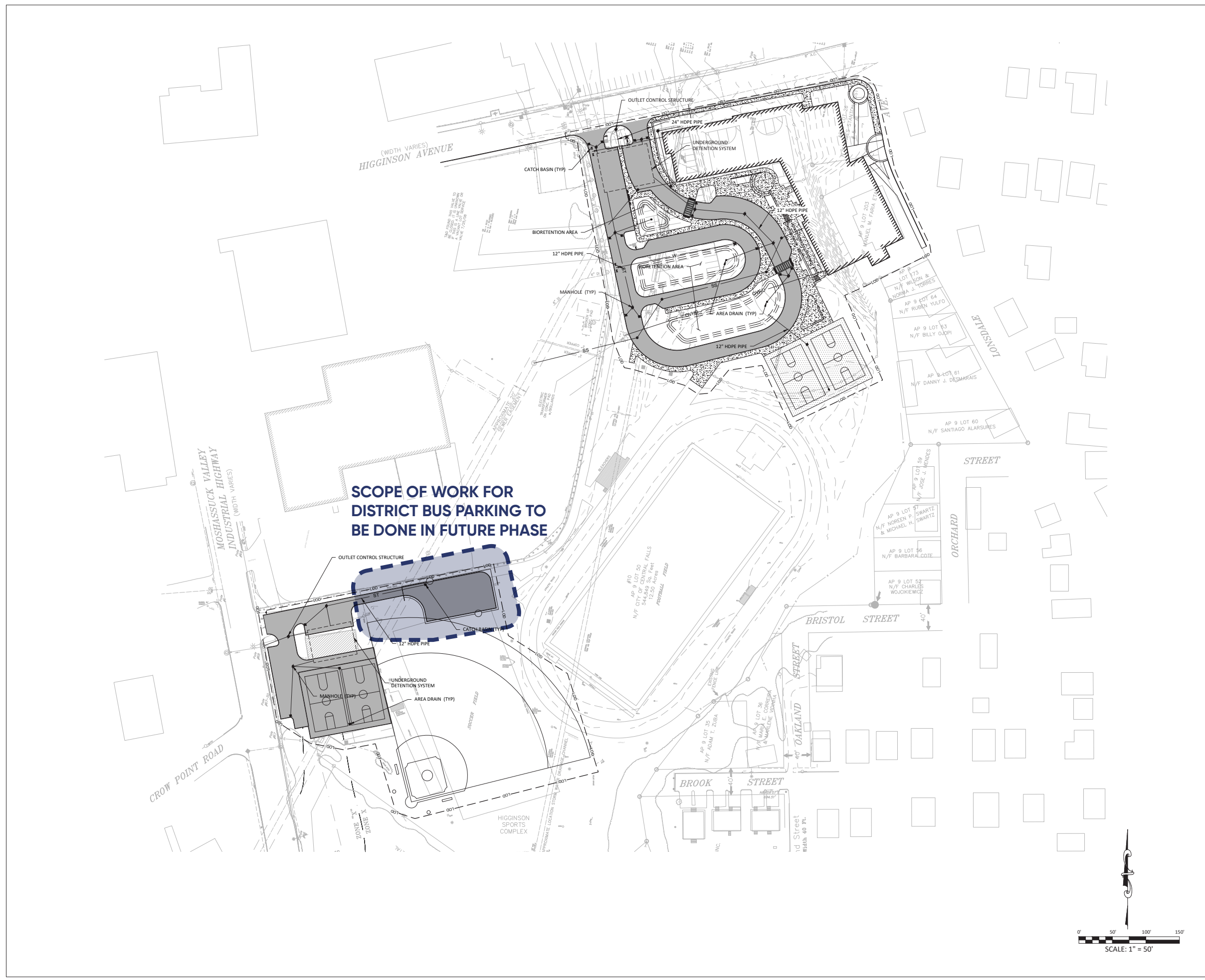


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10 HIGGINSON AVE, CENTRAL FALLS, RI 02863

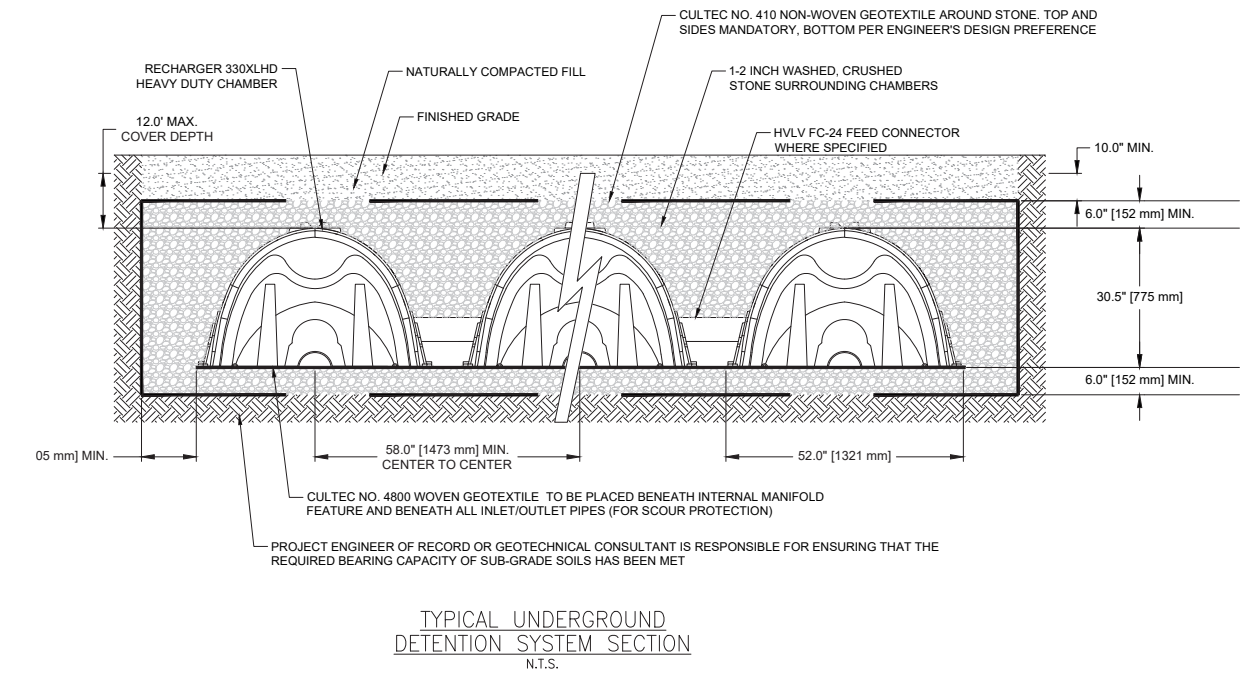
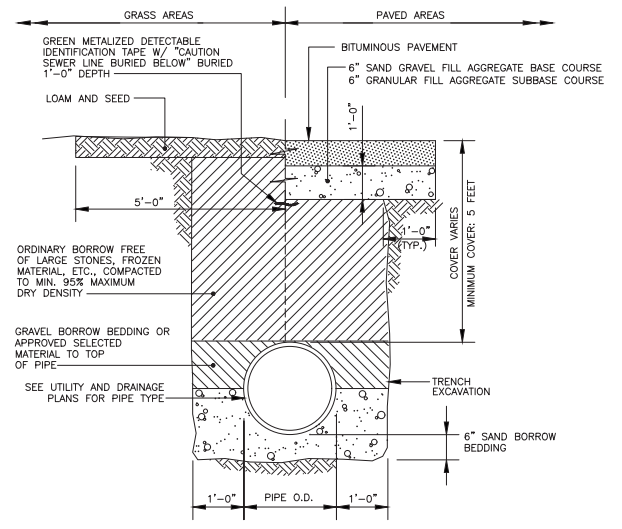
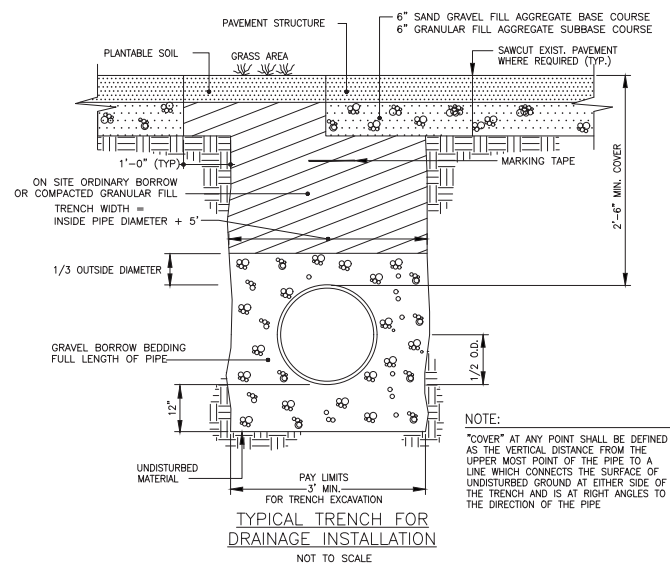
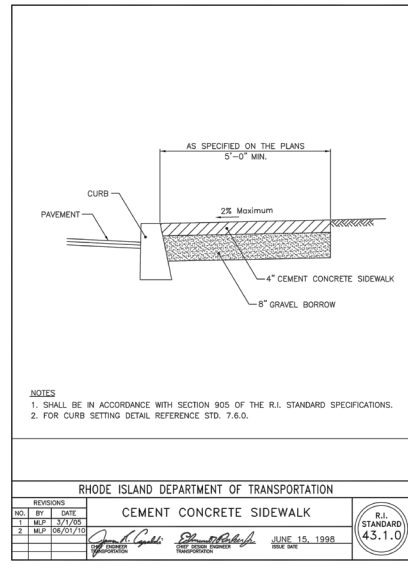
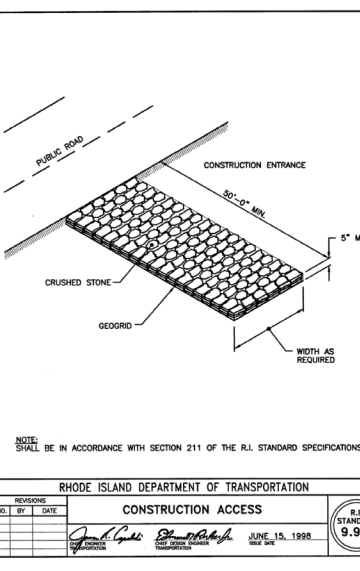
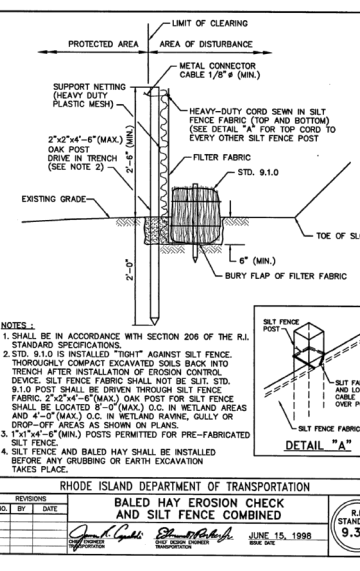
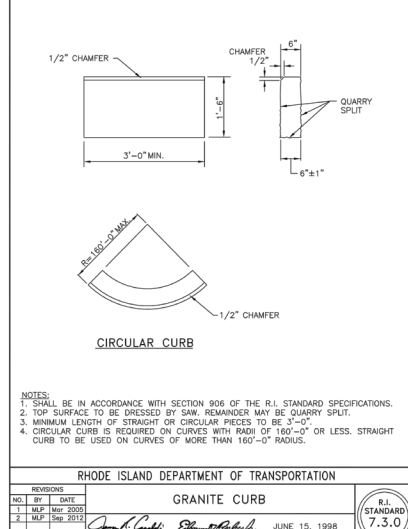
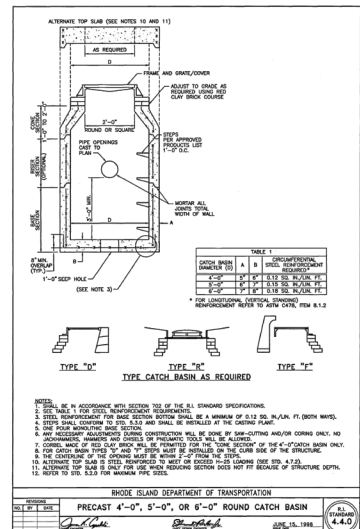
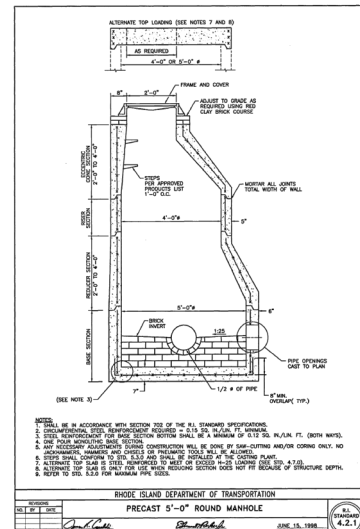
KEYNOTE LEGEND:



DRAWING NAME:	
<b>DRAINAGE PLAN</b>	
DRAWN BY:	JLM
REVIEWED BY:	ABS
SCALE:	AS INDICATED
JOB NO.:	2202.00
DATE:	SEPT 15, 2022
<b>C3.0</b>	







- NOTES:
- FOR PIPE INSTALLATION IN ROCK OR LEDGE MINIMUM TRENCH WIDTH SHOULD EQUAL THE DIAMETER OF THE PIPE PLUS 18 INCHES ON EACH SIDE.
  - MINIMUM WIDTH OF TRENCH SHOULD BE 3 FEET.
  - PLACE 6" OF DRAINAGE STONE FROM BASE OF TRENCH TO TOP OF PIPE IF PIPE IS INSTALLED BELOW SEASONAL HIGH GROUND WATER TABLE.

KEY PLAN NORTH ARROW

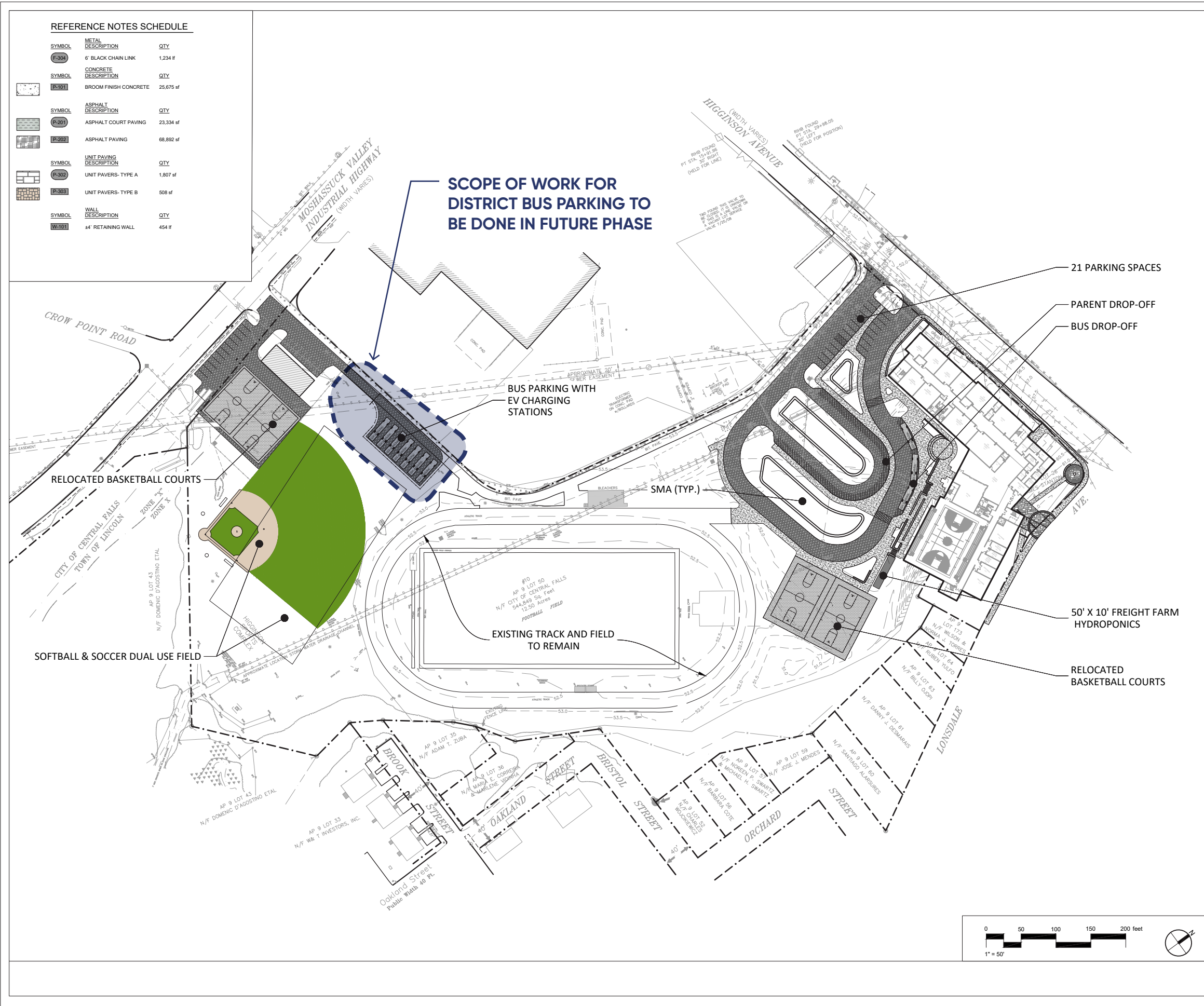


DRAWING NAME:  
**DETAILS**

DRAWN BY: JLM  
REVIEWED BY: ABS

SCALE: AS INDICATED  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

DRAWING NUMBER:  
**C4.0**

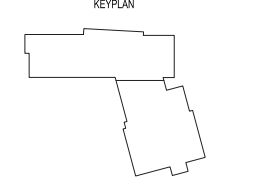
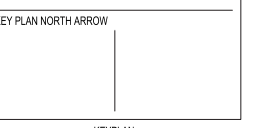


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KEYNOTE LEGEND:



DRAWING NAME:  
**OVERALL HARDSCAPE PLAN**

DRAWN BY: T.J.F.  
 REVIEWED BY: A.E.

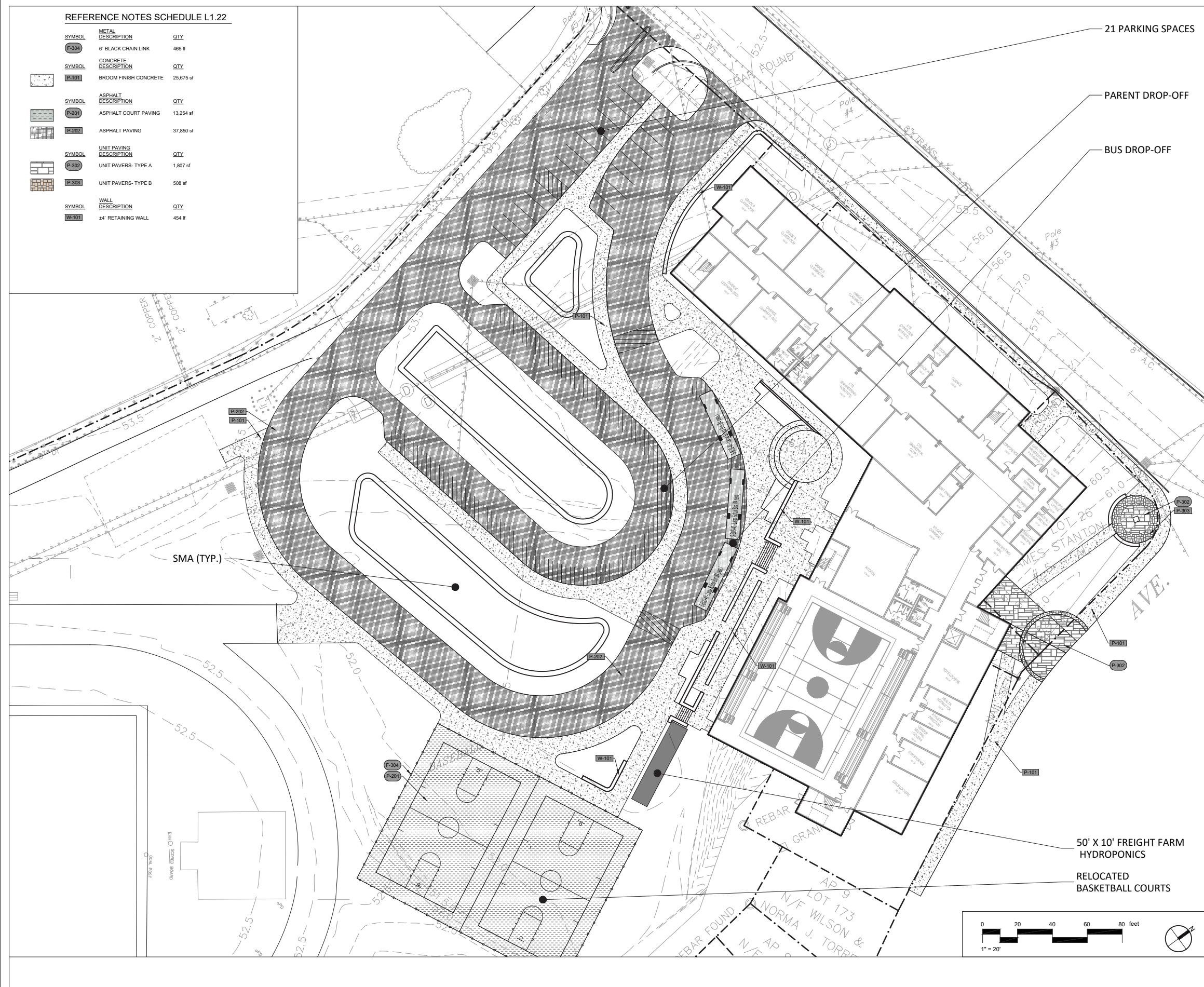
SCALE: 1" = 50'  
 JOB NO.: K1031  
 DATE: 9/15/2022

DRAWING NUMBER:  
**L1.21**

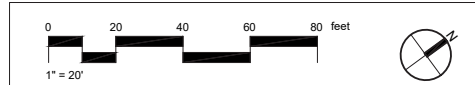


REFERENCE NOTES SCHEDULE L1.22

SYMBOL	METAL DESCRIPTION	QTY
(F-304)	6" BLACK CHAIN LINK	465 lf
SYMBOL	CONCRETE DESCRIPTION	QTY
(P-101)	BROOM FINISH CONCRETE	25,675 sf
SYMBOL	ASPHALT DESCRIPTION	QTY
(P-201)	ASPHALT COURT PAVING	13,254 sf
(P-202)	ASPHALT PAVING	37,850 sf
SYMBOL	UNIT PAVING DESCRIPTION	QTY
(P-301)	UNIT PAVERS- TYPE A	1,807 sf
(P-302)	UNIT PAVERS- TYPE B	508 sf
SYMBOL	WALL DESCRIPTION	QTY
(W-101)	24" RETAINING WALL	454 lf



21 PARKING SPACES  
 PARENT DROP-OFF  
 BUS DROP-OFF



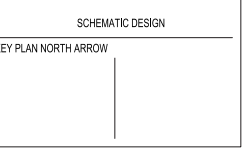
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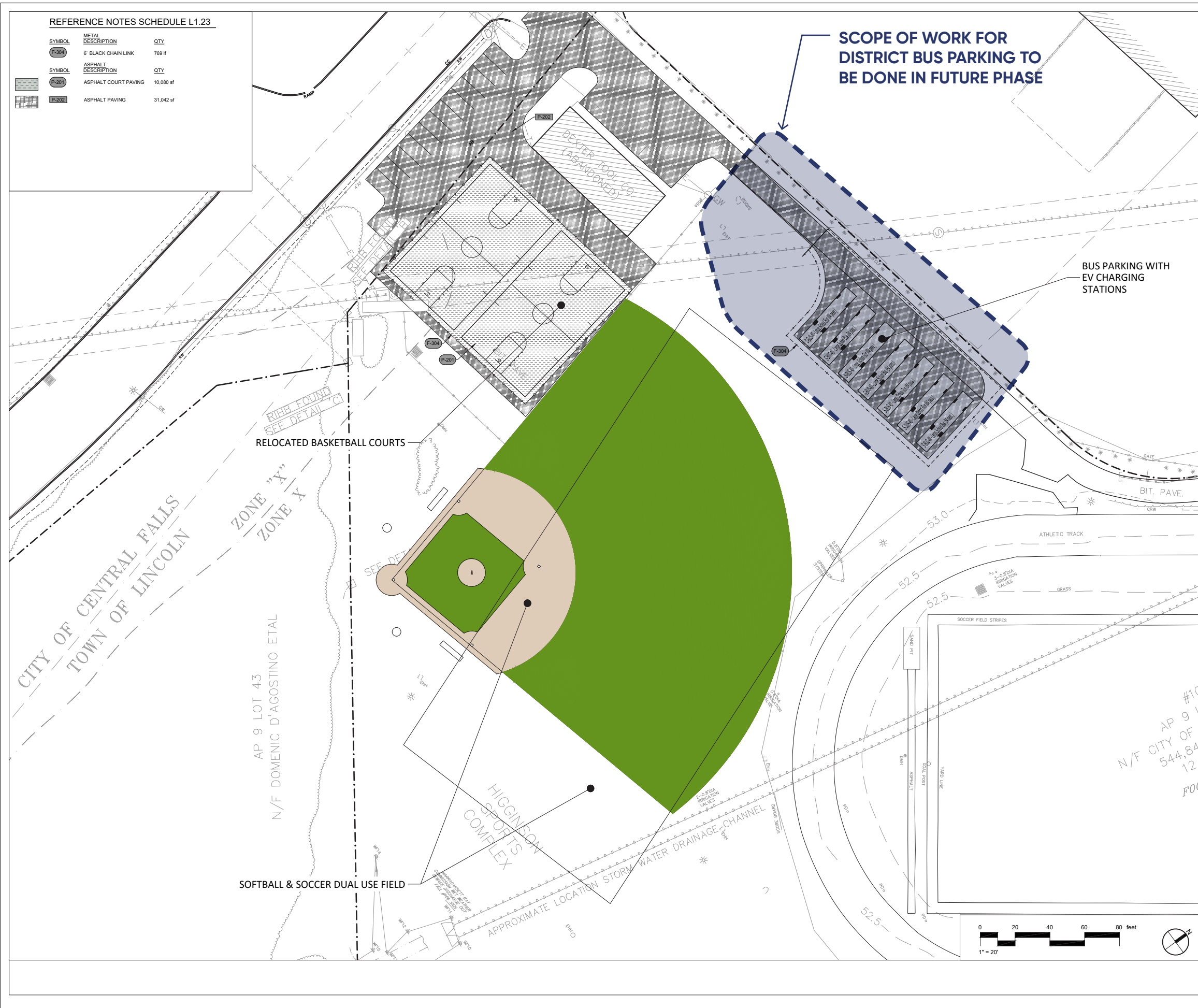
KEYNOTE LEGEND:



DRAWING NAME:  
**HARDSCAPE PLAN 1**

DRAWN BY: T.J.F.  
 REVIEWED BY: A.E.  
 SCALE: 1" = 20'  
 JOB NO.: K1031  
 DATE: 9/15/2022  
**L1.22**





REFERENCE NOTES SCHEDULE L1.23

SYMBOL	METAL DESCRIPTION	QTY
F-304	6" BLACK CHAIN LINK	789 lf
SYMBOL	ASPHALT DESCRIPTION	QTY
P-201	ASPHALT COURT PAVING	10,080 sf
P-202	ASPHALT PAVING	31,042 sf

SCOPE OF WORK FOR DISTRICT BUS PARKING TO BE DONE IN FUTURE PHASE

BUS PARKING WITH EV CHARGING STATIONS

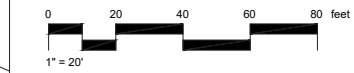
RELOCATED BASKETBALL COURTS

AP 9 LOT 43  
N/F DOMENIC D'AGOSTINO ETAL

HIGGINSON SPORTS COMPLEX

SOFTBALL & SOCCER DUAL USE FIELD

APPROXIMATE LOCATION STORM WATER DRAINAGE CHANNEL



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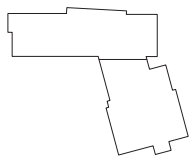
CF HIGH SCHOOL  
756 LONSDALE AVE, CENTRAL FALLS, RI 02863

KEYNOTE LEGEND:

SCHMATIC DESIGN

KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:

**HARDSCAPE PLAN 2**

DRAWN BY: T.J.F.

REVIEWED BY: A.E.

SCALE: 1" = 20' DRAWING NUMBER:

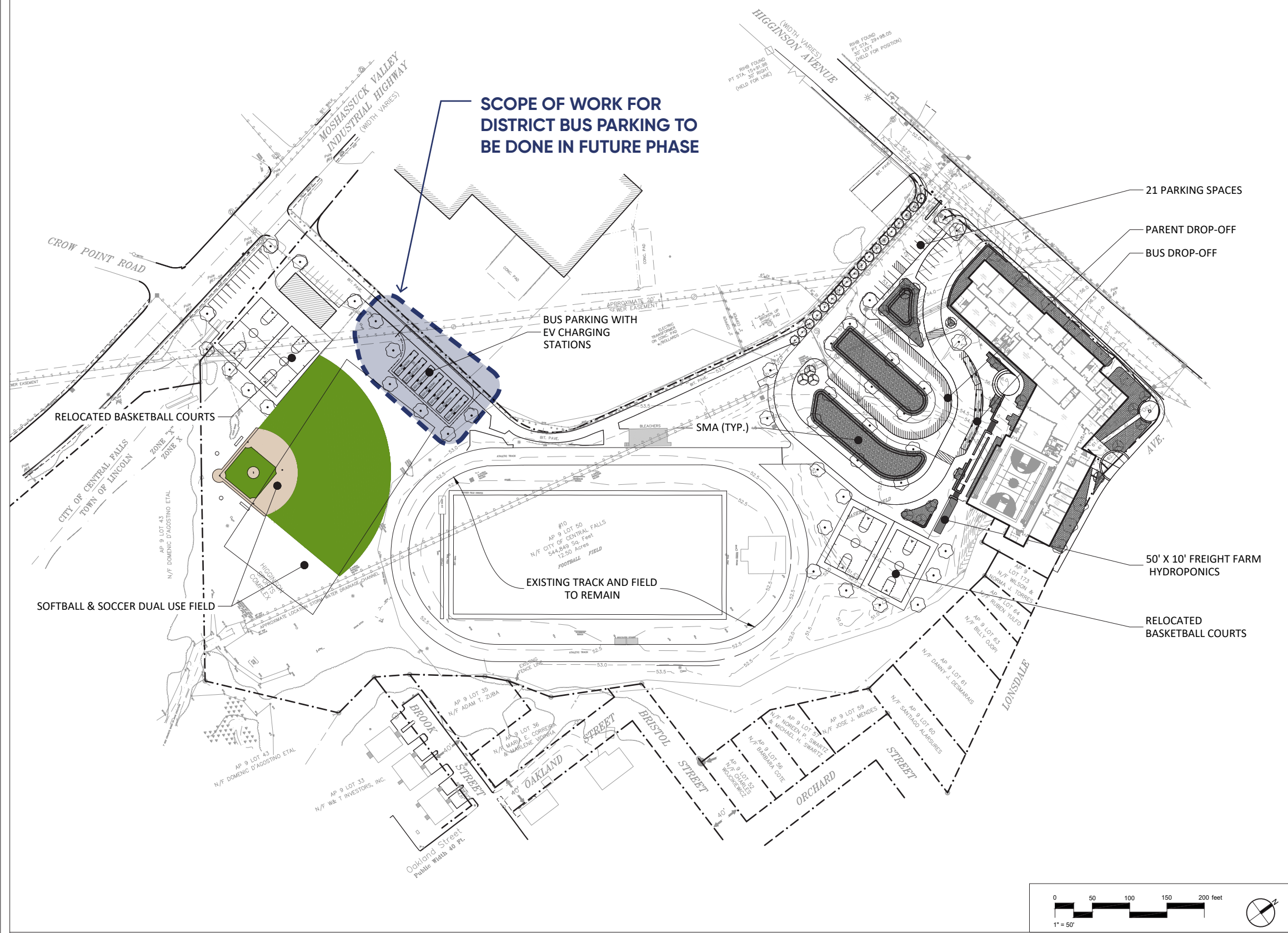
JOB NO.: K1031

DATE: 9/15/2022

**L1.23**

CONCEPT PLANT SCHEDULE

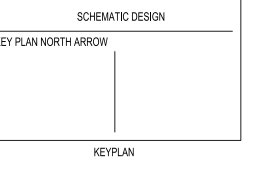
Symbol 1	Plant Type
Symbol 2	Plant Type
Symbol 3	Plant Type
Symbol 4	Plant Type
Symbol 5	Plant Type
Symbol 6	Plant Type
Symbol 7	Plant Type
Symbol 8	Plant Type
Symbol 9	Plant Type
Symbol 10	Plant Type



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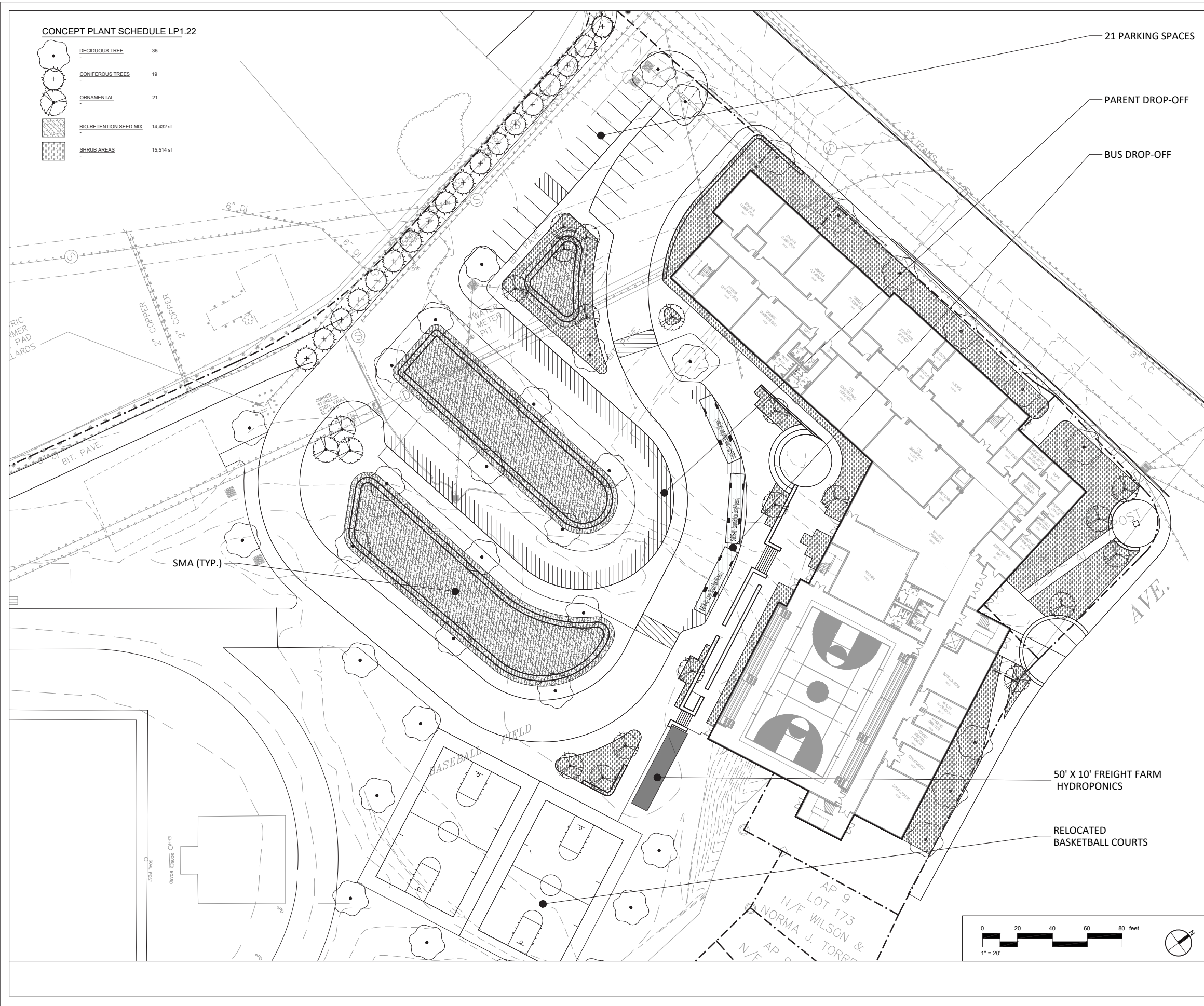
KEYNOTE LEGEND:



DRAWING NAME:  
**OVERALL LANDSCAPE PLAN**

DRAWN BY:	TJF
REVIEWED BY:	AE
SCALE:	1" = 50'
JOB NO.:	K1031
DATE:	9/15/2022
DRAWING NUMBER:	LP1.21



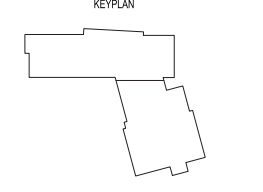
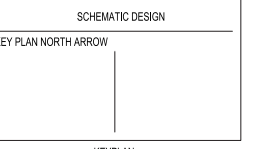


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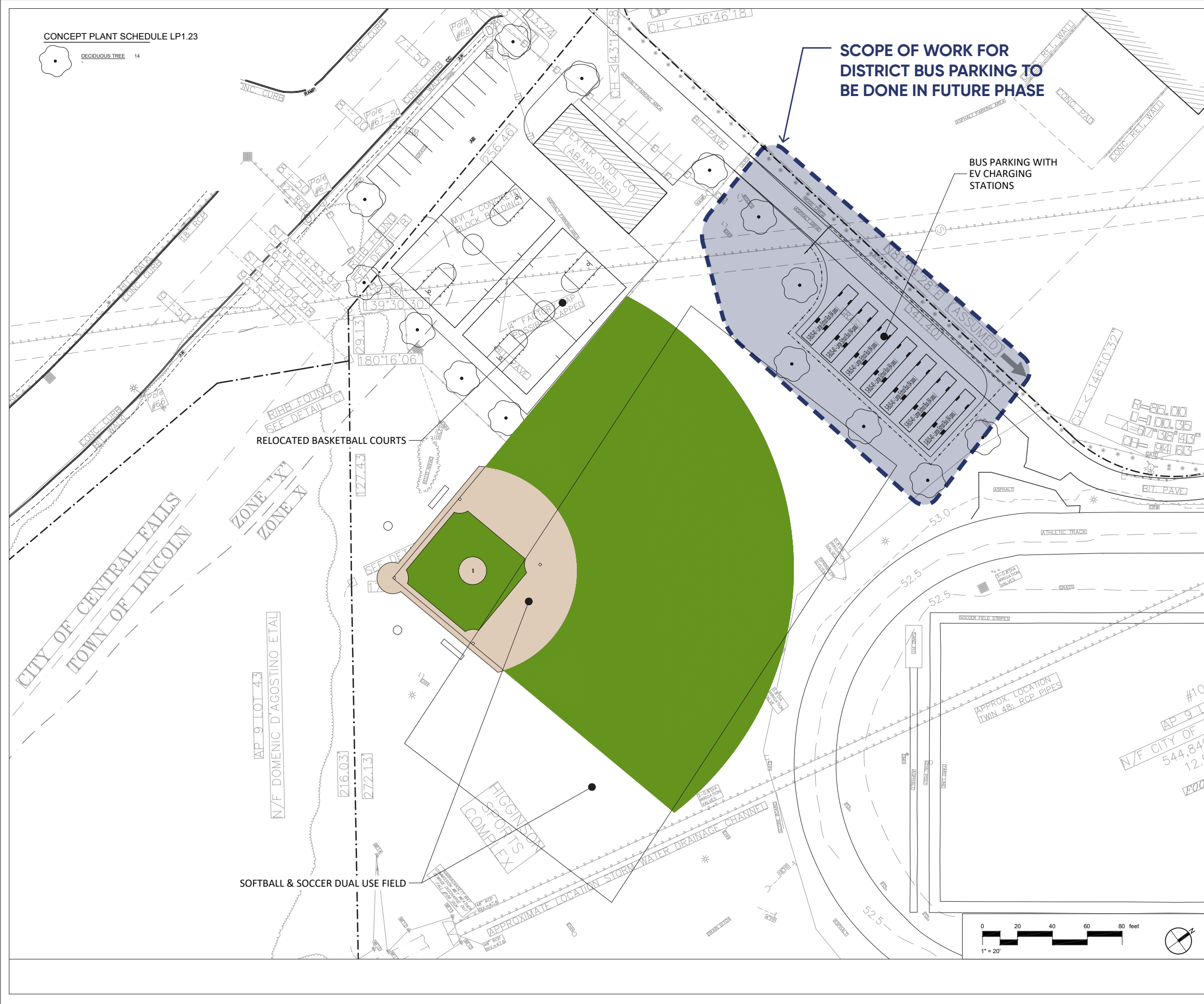
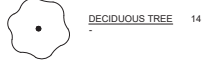


DRAWING NAME:  
**LANDSCAPE PLAN 1**

DRAWN BY: T.J.F.  
REVIEWED BY: A.E.  
SCALE: 1" = 20'  
JOB NO.: K1031  
DATE: 9/15/2022  
DRAWING NUMBER:  
**LP1.22**



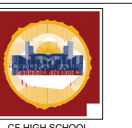
CONCEPT PLANT SCHEDULE LP1.23



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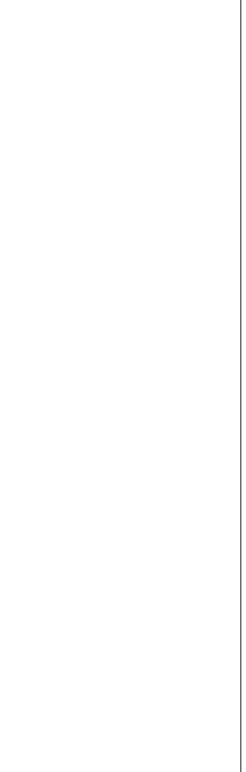


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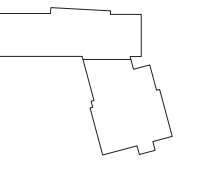
KEYNOTE LEGEND:



SCHEMATIC DESIGN

KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:  
**LANDSCAPE PLAN 2**

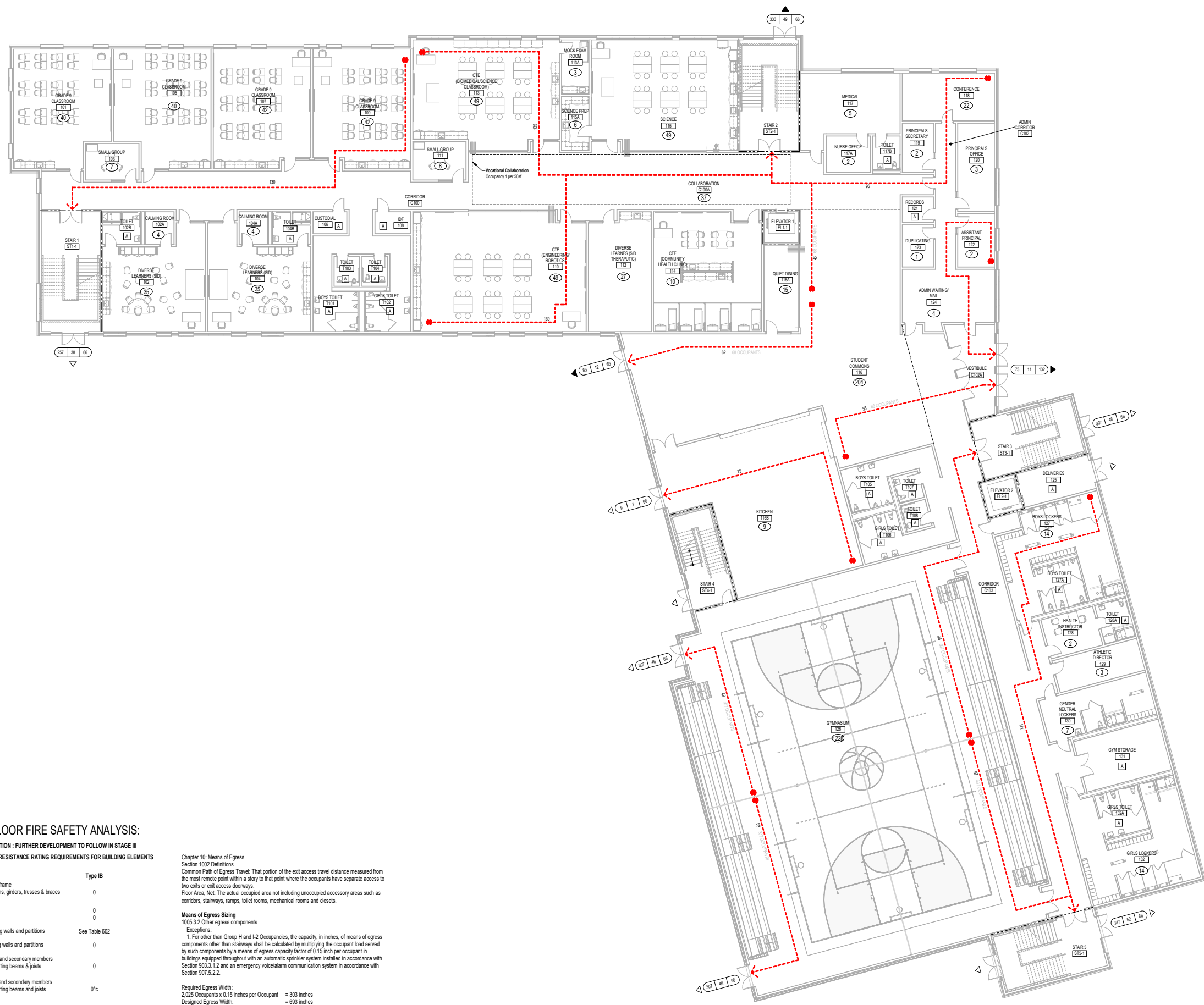
DRAWN BY: T.J.F.

REVIEWED BY: A.E.

SCALE: 1" = 20'  
JOB NO: K1031  
DATE: 9/15/2022

DRAWING NUMBER:  
**LP1.23**





**FIRST FLOOR FIRE SAFETY ANALYSIS:**

DRAFT INFORMATION : FURTHER DEVELOPMENT TO FOLLOW IN STAGE III

TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

Building Element	Type	IB
Primary structural frame Including columns, girders, trusses & braces	0	0
Bearing walls Exterior Interior	0	0
Exterior Nonbearing walls and partitions	See Table 602	
Interior Nonbearing walls and partitions	0	
Floor construction and secondary members Including supporting beams & joists	0	
Roof construction and secondary members Including supporting beams and joists	0 <sup>c</sup>	

c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.

Chapter 10: Means of Egress  
Section 1002 Definitions  
Common Path of Egress Travel: That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.  
Floor Area, Net: The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

**Means of Egress Sizing**  
1005.3.2 Other egress components  
Exceptions:  
1. For other than Group H and I-2 Occupancies, the capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such components by a means of egress capacity factor of 0.15 inch per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

Required Egress Width:  
2,025 Occupants x 0.15 inches per Occupant = 303 inches  
Designed Egress Width: = 693 inches  
<sup>c</sup> 33 inch egress width used for 36 inch door



CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST., CENTRAL FALLS, RI

KEYNOTE LEGEND: EGRESS:

EGRESS WIDTH (DOOR):  
300 | 30 | 30  
— EGRESS WIDTH (INCHES) PROVIDED  
— EGRESS WIDTH (INCHES) REQUIRED  
— NUMBER OF PERSONS EXITING

EGRESS WIDTH (STAIR):  
220 | 20 | 45  
— EGRESS WIDTH (INCHES) PROVIDED  
— EGRESS WIDTH (INCHES) REQUIRED  
— NUMBER OF PERSONS EXITING

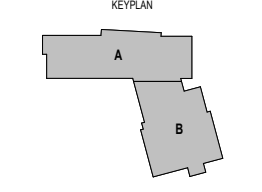
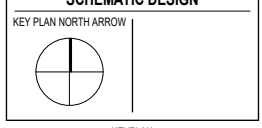
- ROOM TAG
- (O) OCCUPANCY
  - (FV) FIRE VALVE OR HOSE CABINET WITH EXTINGUISHER
  - (FE) FIRE EXTINGUISHER CABINET
  - (FM) WALL MOUNTED FIRE EXTINGUISHER
  - (A) ACCESSORY SPACE

- TRAVEL DISTANCE IN FEET
- 2 HR FIRE BARRIER
- 2 HR SHAFT WALL
- 1 HR FIRE BARRIER
- ▲ PRIMARY EXIT
- ▼ SECONDARY EXIT
- 2-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE AT TOP OF ELEVATOR SHAFTS, ELEVATOR MACHINE ROOM CEILING AND WHERE SHAFTS TO NOT EXTEND TO THE BOTTOM OF THE BUILDING.
- 1-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE

**GENERAL NOTES:**

- PROVIDE 2-A MINIMUM RATING SINGLE EXTINGUISHER THROUGHOUT PER NFPA-10:2007
- PROVIDE 20-S MINIMUM EXTINGUISHER RATING (ORDINARY HAZARD) PER NFPA-10:2007 AT THE FOLLOWING LOCATIONS:  
KITCHEN  
MECHANICAL  
ELEVATOR EQUIPMENT ROOMS  
CAFETERIA/DINING  
CUSTOMER RECEIVING AND SUPPLY  
CUSTOMER WORKSTORAGE
- PROVIDE FIRE RATED DOORS AND GLAZING IN WALLS DENOTED AS 1 AND 2 HOUR FIRE BARRIER ASSEMBLY ON G002

**SCHEMATIC DESIGN**



DRAWING NAME:

**FIRST FLOOR CODE APPROACH PLAN**

DRAWN BY: NSI/BFC  
REVIEWED BY: CHR/KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00 | **A0.11**  
DATE: SEPT 15, 2022

1 FIRST FLOOR - CODE COMPLIANCE PLAN



**EGRESS WIDTH (DOOR):**

300 | 30 | 30  
 —EGRESS WIDTH (INCHES) PROVIDED  
 —EGRESS WIDTH (INCHES) REQUIRED  
 —NUMBER OF PERSONS EXITING

**EGRESS WIDTH (STAIR):**

220 | 20 | 48  
 —EGRESS WIDTH (INCHES) PROVIDED  
 —EGRESS WIDTH (INCHES) REQUIRED  
 —NUMBER OF PERSONS EXITING

**ROOM TAG**

(O) OCCUPANCY  
 (FV) FIRE VALVE OR HOSE CABINET WITH EXTINGUISHER  
 (FE) FIRE EXTINGUISHER CABINET  
 (F) WALL MOUNTED FIRE EXTINGUISHER  
 (A) ACCESSORY SPACE

→ TRAVEL DISTANCE IN FEET  
 — 2 HR FIRE BARRIER  
 - - - 2 HR SHAFT WALL  
 - - - 1 HR FIRE BARRIER  
 ▽ PRIMARY EXIT  
 ▽ SECONDARY EXIT

■ 2-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE AT TOP OF ELEVATOR SHAFTS, ELEVATOR MACHINE ROOM CEILING AND WHERE SHAFTS DO NOT EXTEND TO THE BOTTOM OF THE BUILDING.  
 ■ 1-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE

**GENERAL NOTES:**

- PROVIDE 2-A MINIMUM RATING SINGLE EXTINGUISHER THROUGHOUT - PER NFPA-10: 2017
- PROVIDE 20-S MINIMUM EXTINGUISHER RATING (ORDINARY HAZARD) PER NFPA-10: 2017 AT THE FOLLOWING LOCATIONS:  
 KITCHEN  
 MECHANICAL  
 ELEVATOR EQUIPMENT ROOMS  
 CAFETERIA/DINING  
 CUSTOMER RECEIVING AND SUPPLY  
 CUSTOMER WORKSTORAGE
- PROVIDE FIRE RATED DOORS AND GLAZING IN WALLS DENOTED AS 1 AND 2 HOUR FIRE BARRIER ASSEMBLY ON G0.02

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW

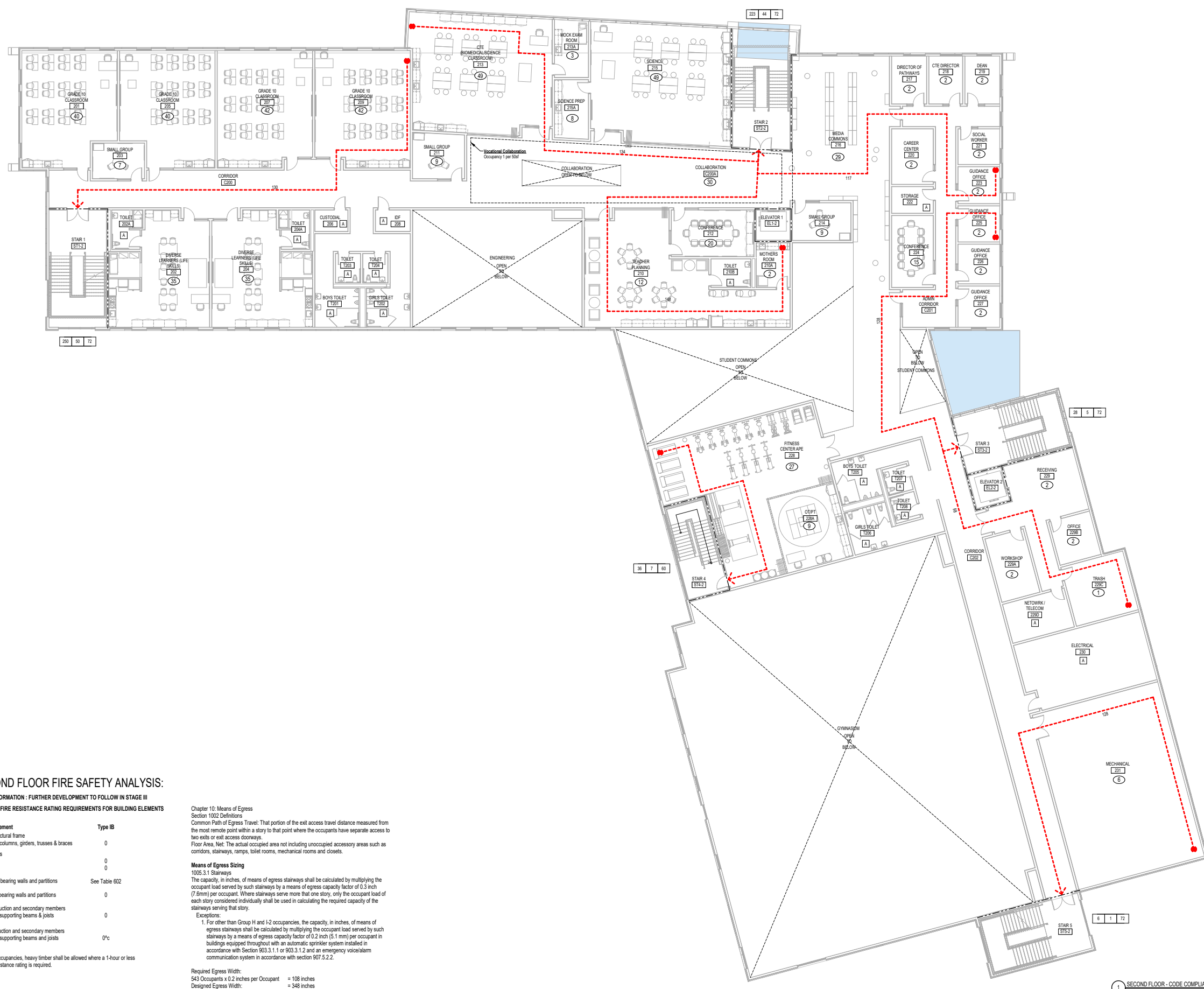
KEY PLAN

DRAWING NAME:  
**SECOND FLOOR CODE APPROACH PLAN**

DRAWN BY: NSI/BFC  
 REVIEWED BY: CHR/KK

SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00 | **A0.12**

DATE: SEPT 15, 2022



**SECOND FLOOR FIRE SAFETY ANALYSIS:**

DRAFT INFORMATION - FURTHER DEVELOPMENT TO FOLLOW IN STAGE III

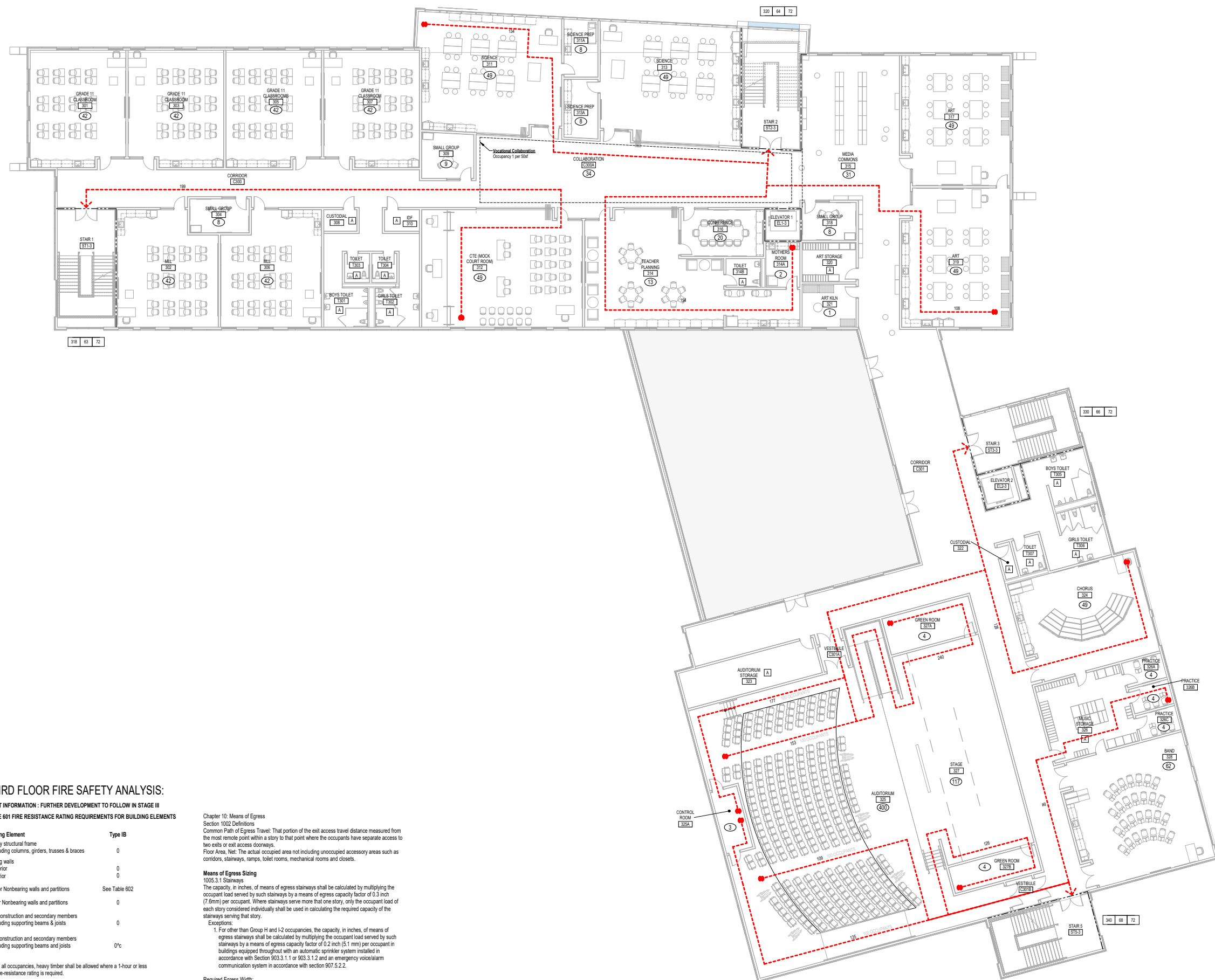
TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

Building Element	Type	IB
Primary structural frame		0
Including columns, girders, trusses & braces		0
Bearing walls		0
Exterior		0
Interior		0
Exterior Nonbearing walls and partitions	See Table 602	
Interior Nonbearing walls and partitions		0
Floor construction and secondary members		0
Including supporting beams & joists		0
Roof construction and secondary members		0*
Including supporting beams and joists		0*

Chapter 10: Means of Egress  
 Section 1002 Definitions  
 Common Path of Egress Travel: That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.  
 Floor Area, Net: The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

**Means of Egress Sizing**  
 1005.3.1 Stairways  
 The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.3 inch (7.6mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.  
 Exceptions:  
 1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with section 907.5.2.2.

Required Egress Width:  
 543 Occupants x 0.2 inches per Occupant = 108 inches  
 Designed Egress Width: = 348 inches



**FIRE SAFETY PLAN LEGEND:**

**EGRESS WIDTH (DOOR):**  
 (300 | 30 | 30) — EGRESS WIDTH (INCHES) PROVIDED  
 (300 | 30 | 30) — EGRESS WIDTH (INCHES) REQUIRED  
 30 — NUMBER OF PERSONS EXITING

**EGRESS WIDTH (STAIR):**  
 (220 | 22 | 45) — EGRESS WIDTH (INCHES) PROVIDED  
 (220 | 22 | 45) — EGRESS WIDTH (INCHES) REQUIRED  
 45 — NUMBER OF PERSONS EXITING

**ROOM TAG**

- (O) OCCUPANCY
- (FV) FIRE VALVE OR HOSE CABINET WITH EXTINGUISHER
- (FE) FIRE EXTINGUISHER CABINET
- (F) WALL MOUNTED FIRE EXTINGUISHER
- (A) ACCESSORY SPACE

**TRAVEL DISTANCE IN FEET**

- 100 — 2 HR FIRE BARRIER
- 150 — 2 HR SHAFT WALL
- 200 — 1 HR FIRE BARRIER
- ▲ — PRIMARY EXIT
- ▼ — SECONDARY EXIT

**FIRE RATING**

- 2-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE AT TOP OF ELEVATOR SHAFTS, ELEVATOR MACHINE ROOM CEILING AND WHERE SHAFTS DO NOT EXTEND TO THE BOTTOM OF THE BUILDING.
- 1-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE

**GENERAL NOTES:**

- PROVIDE 2-A MINIMUM RATING SINGLE EXTINGUISHER THROUGHOUT PER NFPA-10-2007
- PROVIDE 20-S MINIMUM EXTINGUISHER RATING (ORDINARY HAZARD) PER NFPA-10-2007 AT THE FOLLOWING LOCATIONS:  
 KITCHEN  
 MECHANICAL  
 ELEVATOR EQUIPMENT ROOMS  
 CAFETERIA/DINING  
 CUSTOMER RECEIVING AND SUPPLY  
 CUSTOMER WORKSTORAGE
- PROVIDE FIRE RATED DOORS AND GLAZING IN WALLS DENOTED AS 1 AND 2 HOUR FIRE BARRIER ASSEMBLY ON G0.02

**THIRD FLOOR FIRE SAFETY ANALYSIS:**

DRAFT INFORMATION : FURTHER DEVELOPMENT TO FOLLOW IN STAGE III

TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

Building Element	Type I/B
Primary structural frame including columns, girders, trusses & braces	0
Bearing walls	0
Exterior	0
Interior	0
Exterior Nonbearing walls and partitions	See Table 602
Interior Nonbearing walls and partitions	0
Floor construction and secondary members including supporting beams & joists	0
Roof construction and secondary members including supporting beams and joists	0 <sup>c</sup>

**Chapter 10: Means of Egress**  
 Section 1002 Definitions  
**Common Path of Egress Travel:** That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.  
**Floor Area, Net:** The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

**Means of Egress Sizing**  
 1005.3.1 Stairways  
 The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.3 inch (7.6mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.  
 Exceptions:  
 1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with section 907.5.2.2.

Required Egress Width:  
 1,308 Occupants x 0.2 inches per Occupant = 261 inches  
 Designed Egress Width: = 288 inches

c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.

**SCHEMATIC DESIGN**

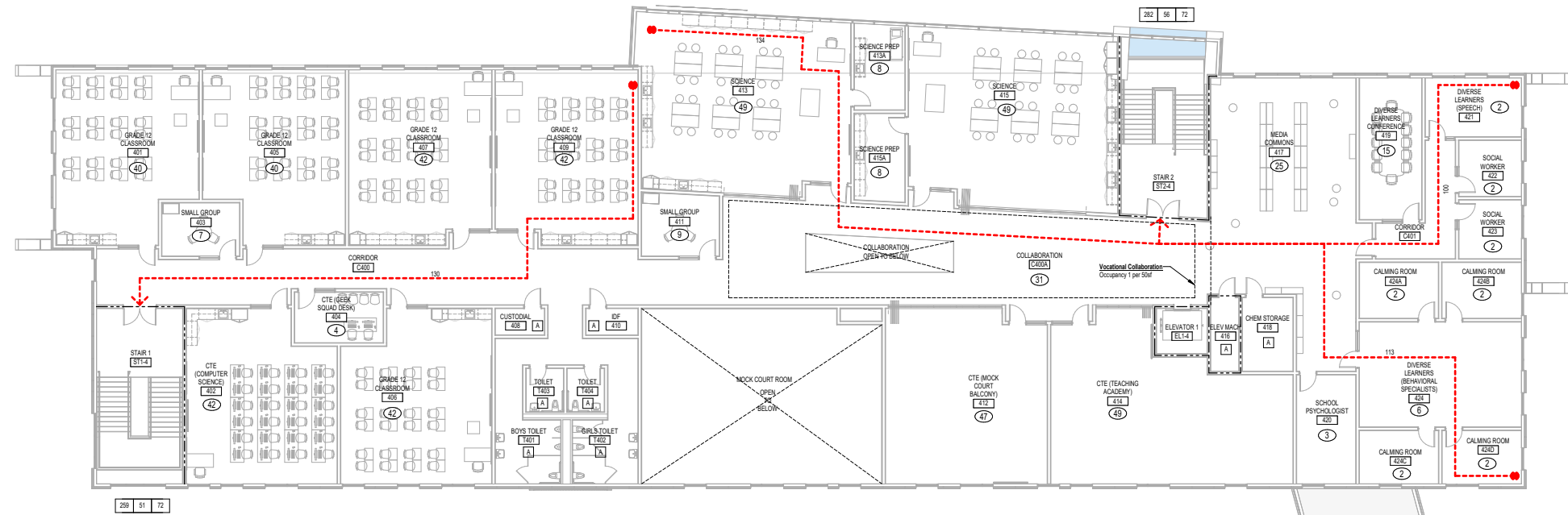
KEY PLAN NORTH ARROW

KEYPLAN

DRAWING NAME:

**THIRD FLOOR CODE APPROACH PLAN**

DRAWN BY: NSI/BFC  
 REVIEWED BY: CHR/KK  
 SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00  
 DATE: SEPT 15, 2022 **A0.13**



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KEYNOTE LEGEND: EGRESS:

EGRESS WIDTH (DOOR):  
 300 | 30 | 30  
 —EGRESS WIDTH (INCHES) PROVIDED  
 —EGRESS WIDTH (INCHES) REQUIRED  
 —NUMBER OF PERSONS EXITING

EGRESS WIDTH (STAIR):  
 220 | 20 | 48  
 —EGRESS WIDTH (INCHES) PROVIDED  
 —EGRESS WIDTH (INCHES) REQUIRED  
 —NUMBER OF PERSONS EXITING

- ROOM TAG
- (O) OCCUPANCY
  - (FV) FIRE VALVE OR HOSE CABINET WITH EXTINGUISHER
  - (FE) FIRE EXTINGUISHER CABINET
  - (FM) WALL MOUNTED FIRE EXTINGUISHER
  - (A) ACCESSORY SPACE

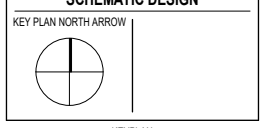
- TRAVEL DISTANCE IN FEET
- 2 HR FIRE BARRIER
- 2 HR SHAFT WALL
- - - 1 HR FIRE BARRIER
- ▽ PRIMARY EXIT
- ▽ SECONDARY EXIT

- 2-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE AT TOP OF ELEVATOR SHAFTS, ELEVATOR MACHINE ROOM CEILINGS AND WHERE SHAFTS DO NOT EXTEND TO THE BOTTOM OF THE BUILDING.
- 1-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE

GENERAL NOTES:

1. PROVIDE 2-A MINIMUM RATING SINGLE EXTINGUISHER THROUGHOUT PER NFPA-10 & 2017
2. PROVIDE 20-S MINIMUM EXTINGUISHER RATING (ORDINARY HAZARD) PER NFPA-10 & 2017 AT THE FOLLOWING LOCATIONS:  
 KITCHEN  
 MECHANICAL  
 ELEVATOR EQUIPMENT ROOMS  
 CAPTERENDING  
 CUSTOMER RECEIVING AND SUPPLY  
 CUSTOMER WORKSTORAGE
3. PROVIDE FIRE RATED DOORS AND GLAZING IN WALLS DENOTED AS 1 AND 2 HOUR FIRE BARRIER ASSEMBLY ON G0102

SCHEMATIC DESIGN



FOURTH FLOOR FIRE SAFETY ANALYSIS:

DRAFT INFORMATION - FURTHER DEVELOPMENT TO FOLLOW IN STAGE III  
 TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

Building Element	Type IB
Primary structural frame Including columns, girders, trusses & braces	0
Bearing walls Exterior Interior	0
Exterior Nonbearing walls and partitions	See Table 602
Interior Nonbearing walls and partitions	0
Floor construction and secondary members Including supporting beams & joists	0
Roof construction and secondary members Including supporting beams and joists	0 <sup>c</sup>

Chapter 10: Means of Egress  
 Section 1002 Definitions  
**Common Path of Egress Travel:** That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.  
**Floor Area, Net:** The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

**Means of Egress Sizing**  
 1005.3.1 Stairways  
 The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.3 inch (7.6mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.  
 Exceptions:  
 1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarms communication system in accordance with section 907.5.2.2.

Required Egress Width:  
 541 Occupants x 0.2 inches per Occupant = 108 inches  
 Designed Egress Width: = 144 inches

c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.

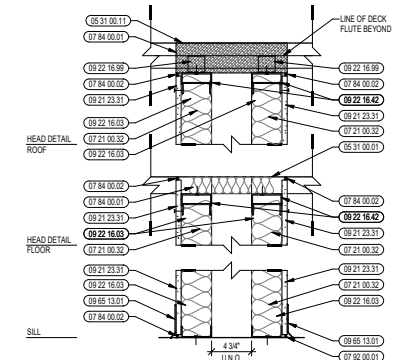
DRAWING NAME:

FOURTH FLOOR CODE APPROACH PLAN

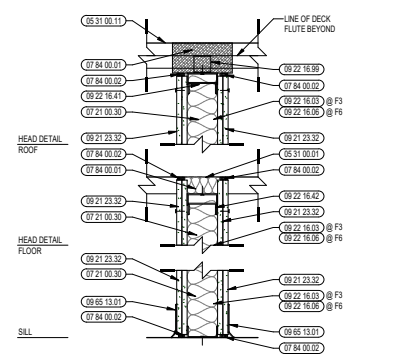
DRAWN BY: NSI/BFC  
 REVIEWED BY: CHR/KK  
 SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00 | A0.14  
 DATE: SEPT 15, 2022



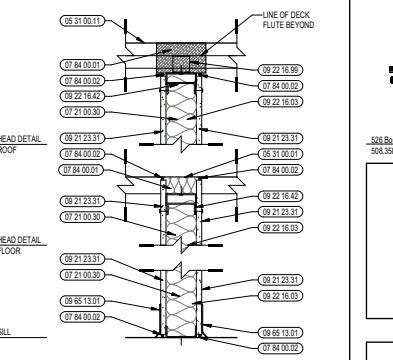
- KEYNOTE LEGEND:**
- 05 31 00.11 COMPOSITE STEEL DECK - SEE STRUCTURAL
  - 05 31 00.11 STEEL ROOF DECK - 3 INCH GALVANIZED - SEE STRUCTURAL
  - 07 21 00.20 GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
  - 07 21 00.22 GLASS FIBER ACOUSTICAL BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
  - 07 21 00.29 MINERAL FIBER INSULATION
  - 07 21 00.32 MINERAL FIBER ACOUSTICAL INSULATION - 3 1/2 INCH
  - 07 84 00.01 FIRE RATING MINERAL WOOL
  - 07 84 00.02 CALK - CALK AND PUTTY
  - 08 00 00.01 JOINT SEALANT - TYPE AS REQUIRED
  - 09 21 23.11 METAL SHAFTWALL C.H. STUD - 2 1/2 INCH - 24 INCHES O.C. MAX
  - 09 21 23.12 METAL SHAFTWALL J. RUNNER
  - 09 21 23.21 GYPSUM SHAFTWALL LINER PANEL - 1 INCH
  - 09 21 23.31 GYPSUM BOARD - 5/8 INCH TYPE X - 1 LAYER
  - 09 21 23.32 GYPSUM BOARD - 5/8 INCH TYPE X - 2 LAYERS
  - 09 22 16.03 METAL STUD 3-5/8 INCH - 16 INCHES O.C. MAX
  - 09 22 16.06 METAL STUD 6 INCH - 16 INCHES O.C. MAX
  - 09 22 16.11 METAL DEFLECTION TRACK ASSEMBLY
  - 09 22 16.42 METAL DEFLECTION TRACK ASSEMBLY - FIRE RATED
  - 09 22 16.99 METAL CLIP FOR WALL FRAMING - 1/8 GA. - 24 INCHES O.C. MAX
  - 09 29 00.01 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 1 LAYER
  - 09 29 00.02 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 2 LAYERS
  - 09 30 13.11 CERAMIC WALL TILE - TYPE CT-1
  - 09 30 13.12 CONTINUOUS BACKING BOARD
  - 09 65 13.01 RUBBER BASE - 4 INCH



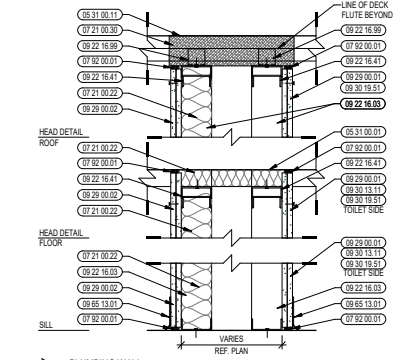
**F13** NONBEARING WALL - ACOUSTICAL - 1 HR RATED  
UL DESIGN NO. U493  
STC 45  
- EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE



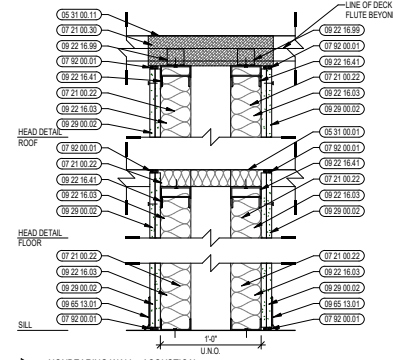
**F14** NONBEARING WALL - 2 HR RATED  
UL DESIGN NO. U419  
STC 50



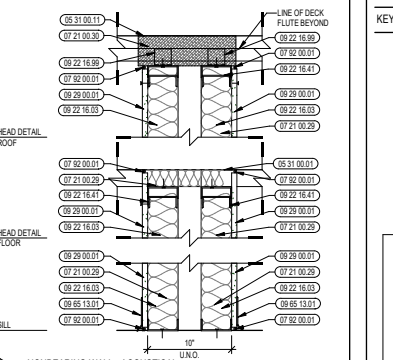
**F4** NONBEARING WALL - 1 HR RATED  
UL DESIGN NO. U419  
STC 48



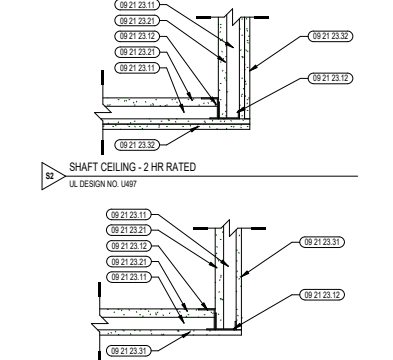
**GP** PLUMBING WALL  
STC 48  
ALL PLUMBING CONNECTIONS SHALL BE SECURED EXCLUSIVELY TO THE STUDS ON THE TOILET SIDE OF THE WALL TO PREVENT TRANSMISSION OF STRUCTURE-BORN NOISE TO ADJACENT SPACES  
- EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE



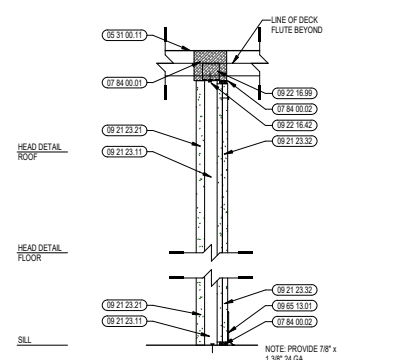
**GS** NONBEARING WALL - ACOUSTICAL  
STC 48  
- EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE  
NOTE: AT CLASSROOM CORRIDORS (CORRIDOR SIDE), ABUSE RESISTANT GYP. WILL BE USED FROM ABOVE THE TILE TO 9'-0" A.F.F.



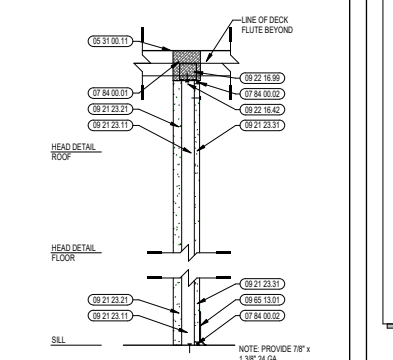
**GS** NONBEARING WALL - ACOUSTICAL  
STC 48  
- EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE  
NOTE: AT CLASSROOM CORRIDORS (CORRIDOR SIDE), ABUSE RESISTANT GYP. WILL BE USED FROM ABOVE THE TILE TO 9'-0" A.F.F.



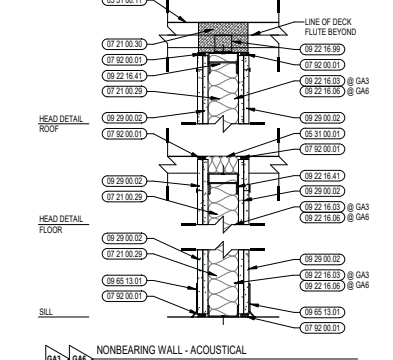
**S2** SHAFT CEILING - 2 HR RATED  
UL DESIGN NO. U487



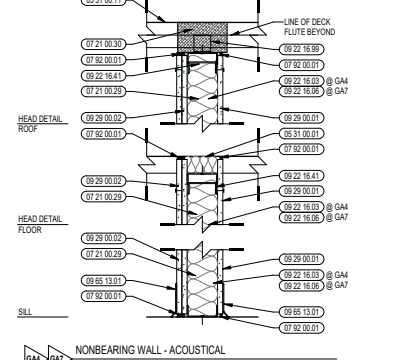
**S2** SHAFT WALL - 2 HR RATED  
UL DESIGN NO. U487  
NOTE: PROVIDE 7/8" x 1 3/8" 24 GA. GALVANIZED BRACING ANGLE @ 9'-0" MAX.



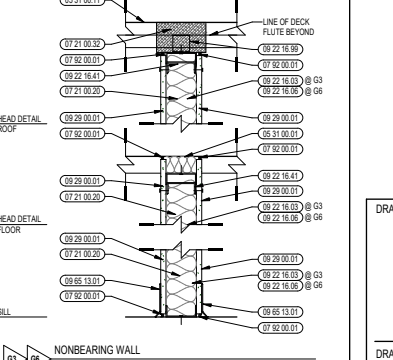
**S1** SHAFT WALL - 1 HR RATED  
UL DESIGN NO. U487  
NOTE: PROVIDE 7/8" x 1 3/8" 24 GA. GALVANIZED BRACING ANGLE @ 9'-0" MAX.



**G43** NONBEARING WALL - ACOUSTICAL  
STC 49  
NOTE 1: STUDS ARE INSTALLED MAXIMUM 12" O.C.  
NOTE 2: AT CLASSROOM CORRIDORS (CORRIDOR SIDE), ABUSE RESISTANT GYP. WILL BE USED FROM ABOVE THE TILE TO 9'-0" A.F.F.



**G44** NONBEARING WALL - ACOUSTICAL  
STC 46  
NOTE 1: STUDS ARE INSTALLED MAXIMUM 12" O.C.  
NOTE 2: AT CLASSROOM CORRIDORS (CORRIDOR SIDE), ABUSE RESISTANT GYP. WILL BE USED FROM ABOVE THE TILE TO 9'-0" A.F.F.



**G1** NONBEARING WALL  
STC 48



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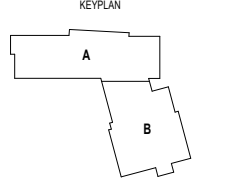


CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- GENERAL NOTES:**
1. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL SPRAY FIREPROOFING. PROVIDE PATCHING & TOUCH UP OF SPRAY FIREPROOFING AS REQUIRED. TYP. CLIP FOR WALL FRAMING AT STRUCTURAL STEEL CONDITIONS (ROOF DECK, COLUMNS & BRACING) KEYNOTED 09 22 16.99 IS REQUIRED TO PROVIDE CLEARANCE FOR SPRAY FIREPROOFING.
  2. SEE MECHANICAL DRAWINGS FOR CMU PARTITION PENETRATIONS BY DUCTS. PROVIDE STEEL LINTELS AS REQUIRED. SEE STRUCTURAL DRAWINGS FOR LINTEL SCHEDULE.
  3. PROVIDE DIAGONAL BRACING @ METAL STUD PARTITIONS ABOVE CEILING AS REQUIRED.
  4. ALL STEEL ANGLE RESTRAINERS & ASSOCIATED STEEL CHANNELS & ANGLES BETWEEN STRUCTURE ARE TO BE FURNISHED BY 05 50 00.
  5. SEE STRUCTURAL DRAWINGS FOR SIZES OF ALL STEEL ANGLE RESTRAINERS AND REQUIREMENTS OF FABRICATION METAL BETWEEN STRUCTURAL MEMBERS.
  6. ALL WALL PENETRATIONS INCLUDING, BUT NOT LIMITED TO, PIPING OR DUCTWORK SHOULD BE SEALED. REFER TO WALL PENETRATION DETAILS.
  7. SEE INTERIOR ELEVATIONS & ROOM FINISH SCHEDULE FOR WALL FINISHES OR WALL TILE APPLICATIONS.
  8. ALL INTERIOR WALLS SHALL EXTEND TO UNDERSIDE OF DECK, U.N.O.
  9. DIMENSIONS ARE TO FACE OF FOUNDATION (F.O.F.), FACE OF STUD (F.S.), OR FACE OF MASONRY (F.O.M.), UNLESS NOTED AS "HOLD", "CLEAN", "MINI", "MAX", OR OTHERWISE INDICATED. DIMENSION LINES INTERSECTING AT COLUMN LINES WITH TICK MARKS ARE TO BE TAKEN FROM COLUMN CENTER.
  10. ANY METAL STUD PARTITIONS EXCEEDING 14'-0" FLOOR TO FLOOR IN HEIGHT SHALL BE CONSTRUCTED BY COLD-FORMED METAL FRAMING, SECTION 05 40 00, UNLESS NOTED OTHERWISE.
  11. GYPSUM BOARD (LAYERS) IDENTIFIED ON WALL TYPES SHALL BE REPLACED AS NOTED:
    - A. ALL TOILET ROOM & LOCKER ROOM LOCATIONS SHALL HAVE MOISTURE RESISTANT GYPSUM BOARD (09 29 00.03)
    - B. ALL CORRIDORS, STAIRS, VESTIBULES, LOBBIES AND OTHER OPEN CIRCULATION AREAS SHALL HAVE ABUSE RESISTANT GYPSUM BOARD (09 29 00.02) FROM FLOOR LEVEL TO 9'-0" A.F.F.
    - C. ALL FIRE-RATED WALLS SHALL HAVE TYPE "X" GYPSUM BOARD (09 21 23.31 / 09 21 23.32)
    - D. ALL GYPSUM BOARD SURFACES WITHIN THE CYPHARIUM SHALL BE IMPACT RESISTANT GYPSUM BOARD (09 29 00.31) FROM FLOOR LEVEL TO 12'-0" A.F.F.

**SCHEMATIC DESIGN**

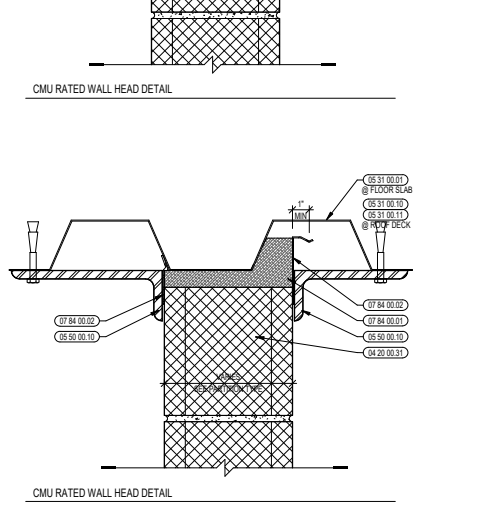
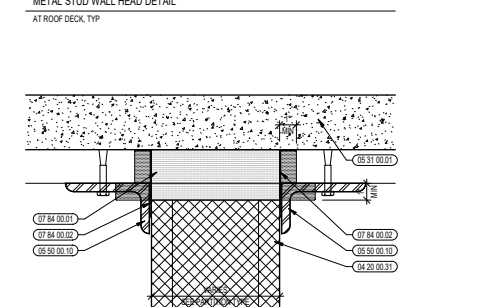
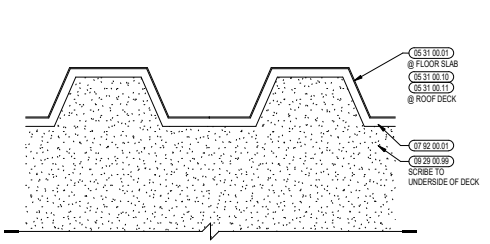
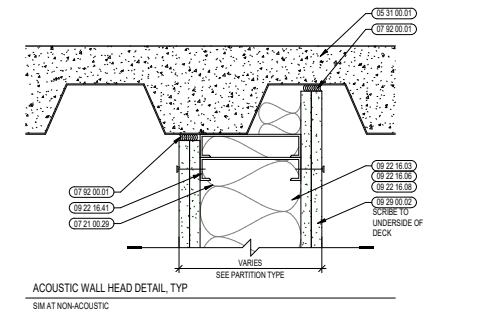
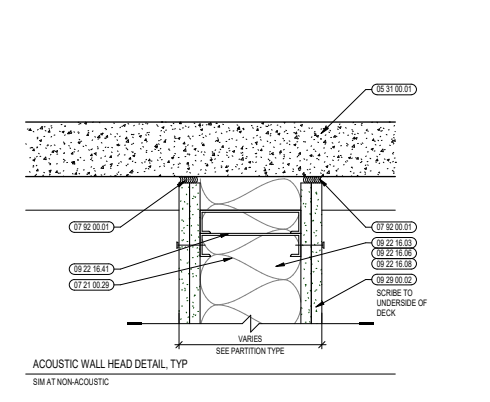
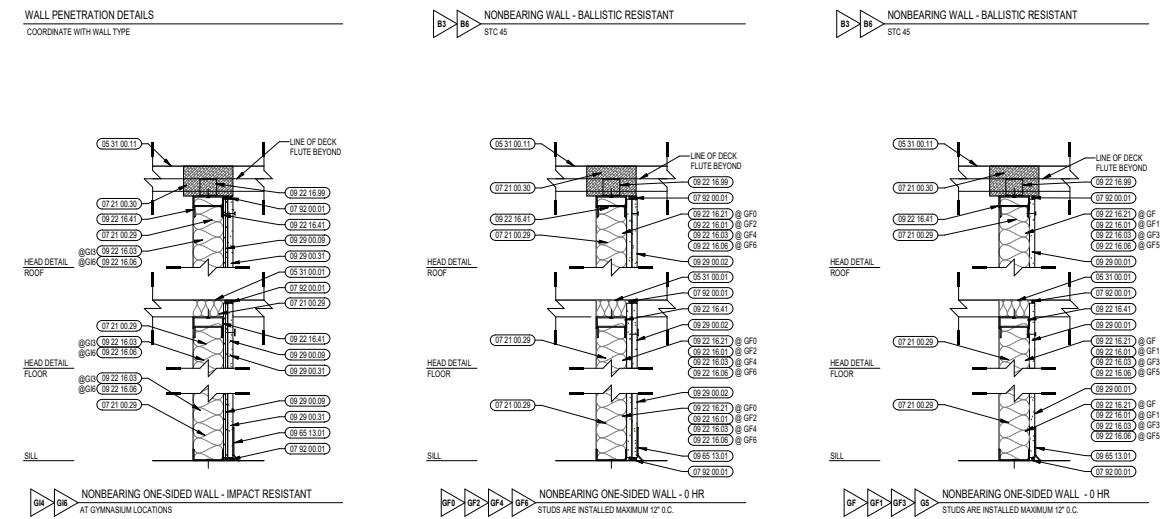
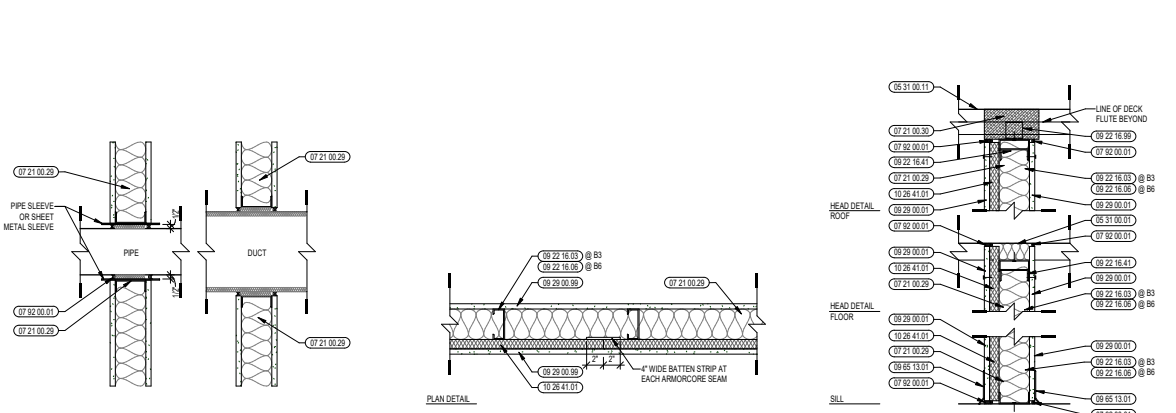
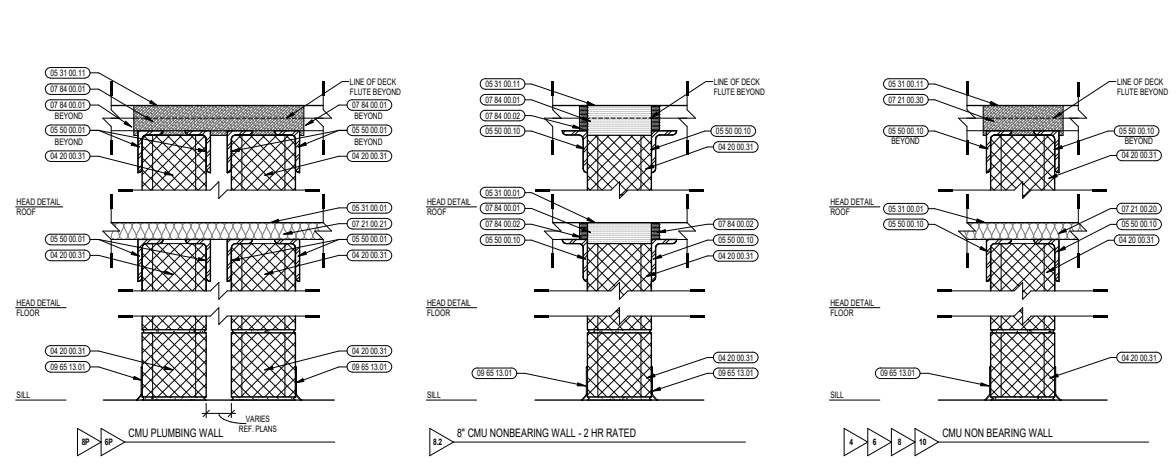
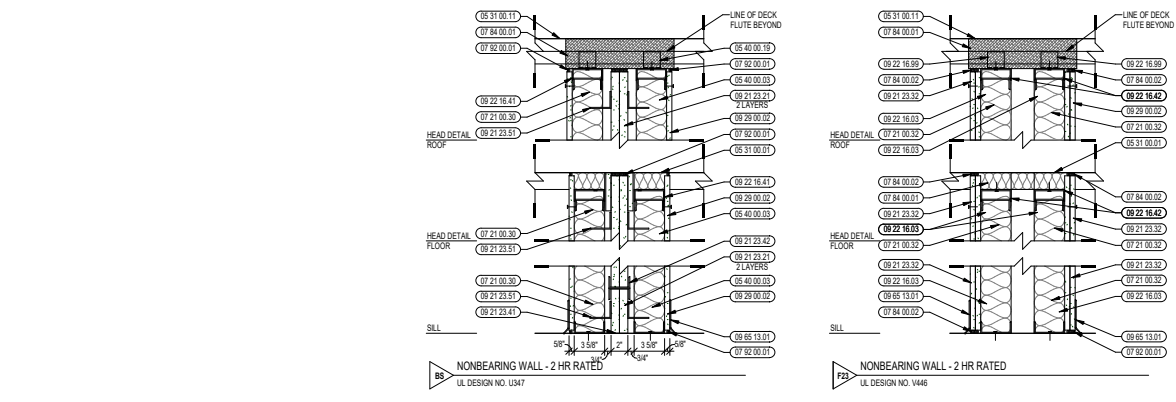


DRAWING NAME:

**PARTITION TYPES**

DRAWN BY: BFC  
REVIEWED BY: CHR / KX  
SCALE: AS INDICATED DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 16, 2022  
**A0.21**

- KEYNOTE LEGEND:**
- 04.20.00.31 CMU - STANDARD - NORMAL WEIGHT - REFERENCE DRAWINGS FOR DEPTH, SIZE AND FINISH
  - 05.31.00.01 COMPOSITE STEEL DECK - SEE STRUCTURAL
  - 05.31.00.10 STEEL ROOF DECK - 1 1/2 INCH GALVANIZED - SEE STRUCTURAL
  - 05.31.00.11 STEEL ROOF DECK - 3 INCH GALVANIZED - SEE STRUCTURAL
  - 05.40.00.03 STEEL STUDS - 3/8 INCH - 16 INCHES O.C. MAX
  - 05.40.00.19 STEEL Z-CIP - 16 GAUGE INCH - 1 INCH MINIMUM DEPTH - 16 INCHES O.C. MAX
  - 05.50.00.01 STEEL ANGLE - X x X x LVLV - CONTINUOUS - 1/2 INCH DIA. SLOTTED - 10.25 @ VERTICAL SIZES STRAGGLED - HOLES @ 32 INCHES O.C.
  - 05.50.00.10 STEEL ANGLE - SERVIC CLIP - SEE STRUCTURAL
  - 07.21.00.02 GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - UNFAZED
  - 07.21.00.21 GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - FAZED
  - 07.21.00.29 MINERAL FIBER INSULATION
  - 07.21.00.32 MINERAL FIBER ACUSTICAL INSULATION - 3 1/2 INCH
  - 07.84.00.01 FIRE SAFING MINERAL WOOL
  - 07.84.00.02 CALK - CALK AND PUTTY
  - 07.90.00.01 JOINT SEALANT - TYPE AS REQUIRED
  - 09.21.23.21 GYPSUM SHAFT WALL LINER PANEL - 1 INCH
  - 09.21.23.32 GYPSUM BOARD - 5/8 INCH TYPE X - 2 LAYERS
  - 09.21.23.41 METAL SHAFT WALL STUD TRACK - 2 INCH
  - 09.21.23.42 METAL SHAFT WALL STUD - 2 INCH
  - 09.21.23.51 ALUMINUM 2042-1/2 INCH BREAKAWAY CLIP - MAX 10 FEET O.C. VERTICALLY
  - 09.22.16.01 METAL STUD - 1/8 INCH - 16 INCHES O.C. MAX
  - 09.22.16.03 METAL STUD - 3/8 INCH - 16 INCHES O.C. MAX
  - 09.22.16.06 METAL STUD - 1/2 INCH - 16 INCHES O.C. MAX
  - 09.22.16.08 METAL STUD - 3/4 INCH - 16 INCHES O.C. MAX
  - 09.22.16.21 METAL FURRING CHANNEL - 7/8 INCH - 16 INCHES O.C. MAX
  - 09.22.16.41 METAL DEFLECTION TRACK ASSEMBLY
  - 09.22.16.42 METAL DEFLECTION TRACK ASSEMBLY - FIRE RATED
  - 09.22.16.99 METAL CLIP FOR WALL FRAMING - 16 GA - 24 INCHES O.C. MAX
  - 09.29.00.02 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 1 LAYER
  - 09.29.00.03 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 2 LAYERS
  - 09.29.00.09 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - IMPACT RESISTANT
  - 09.29.00.99 GYPSUM BOARD SYSTEM - LEVEL 4 FINISH - REFER TO FLOOR PLANS AND WALL TYPES FOR COMPONENTS
  - 09.85.10.01 RUBBER BASE - 1 INCH
  - 10.26.41.01 BULLET RESISTANT PANEL - LEVEL 4 - UL 752



WALL PENETRATION DETAILS  
COORDINATE WITH WALL TYPE

NONBEARING ONE-SIDED WALL - IMPACT RESISTANT  
AT GYMNASIUM LOCATIONS

NONBEARING ONE-SIDED WALL - 0 HR  
STUDS ARE INSTALLED MAXIMUM 12' O.C.

2 PARTITION TYPES  
1/2" = 1'-0"

1 A0.0 PARTITION TYPE HEAD DETAILS  
1/2" = 1'-0"



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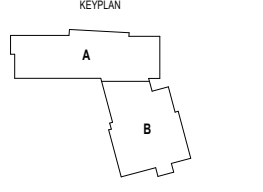
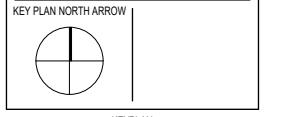
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KEYNOTE LEGEND:

**GENERAL NOTES:**

1. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL SPRAY FIREPROOFING. PROVIDE PATCHING & TOUCH UP OF SPRAY FIREPROOFING AS REQUIRED. TYP. CONDITIONS: ROOF DECK, COLUMNS & BRACING. KEYNOTED 09.22.16.99 IS REQUIRED TO PROVIDE CLEARANCE FOR SPRAY FIREPROOFING.
2. SEE MECHANICAL DRAWINGS FOR CMU PARTITION PENETRATIONS BY DUCTS. PROVIDE STEEL LINTELS AS REQUIRED. SEE STRUCTURAL DRAWINGS FOR LINTEL SCHEDULE.
3. PROVIDE DIAGONAL BRACING @ METAL STUD PARTITIONS ABOVE CEILING AS REQUIRED.
4. ALL STEEL ANGLE RESTRAINERS & ASSOCIATED STEEL CHANNELS & ANGLES BETWEEN STRUCTURE ARE TO BE FURNISHED BY 05.50.00.
5. SEE STRUCTURAL DRAWINGS FOR SIZES OF ALL STEEL ANGLE RESTRAINERS AND REQUIREMENTS OF FABRICATION METAL BETWEEN STRUCTURAL MEMBERS.
6. ALL WALL PENETRATIONS INCLUDING, BUT NOT LIMITED TO, PIPING OR DUCTWORK SHOULD BE SEALED. REFER TO WALL PENETRATION DETAILS.
7. SEE INTERIOR ELEVATIONS & ROOM FINISH SCHEDULE FOR WALL FINISHES OR WALL TILE APPLICATIONS.
8. ALL INTERIOR WALLS SHALL EXTEND TO UNDERSIDE OF DECK, U.N.O.
9. DIMENSIONS ARE TO FACE OF FOUNDATION (F.O.F.), FACE OF STUD (F.O.S.) OR FACE OF MASONRY (F.O.M.), UNLESS NOTED AS "HOLD", "CLEAR", "MIN", "MAX", OR OTHERWISE INDICATED. DIMENSION LINES INTERSECTING AT COLUMN LINES WITH TICK MARKS ARE TO BE TAKEN FROM COLUMN CENTER.
10. ANY METAL STUD PARTITIONS EXCEEDING 14'-0" FLOOR TO FLOOR IN HEIGHT SHALL BE CONSTRUCTED BY COLD-FORMED METAL FRAMING, SECTION 04.20.00.10, UNLESS NOTED OTHERWISE.
11. GYPSUM BOARD LAYERS IDENTIFIED ON WALL TYPES SHALL BE REPLACED AS NOTED:
  - A. ALL TOILET ROOM & LOCKER ROOM LOCATIONS SHALL HAVE MOISTURE RESISTANT GYPSUM BOARD (09.29.00.33)
  - B. ALL CORRIDORS, STAIRS, VESTIBULES, LOBBIES AND OTHER OPEN CIRCULATION AREAS SHALL HAVE ABUSE RESISTANT GYPSUM BOARD (09.29.00.09) FROM FLOOR LEVEL TO 0'-0" A.F.F.
  - C. ALL FIRE-RATED WALLS SHALL HAVE TYPE "X" GYPSUM BOARD (09.21.00.31) (09.21.00.32)
  - D. ALL GYPSUM BOARD SURFACES WITHIN THE GYMNASIUM SHALL BE IMPACT RESISTANT GYPSUM BOARD (09.29.00.09) FROM FLOOR LEVEL TO 12'-0" A.F.F.

**SCHEMATIC DESIGN**



DRAWING NAME:

**PARTITION TYPES**

DRAWN BY: BFC  
 REVIEWED BY: CHR / KX  
 SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00 | A0.22  
 DATE: SEPT 15, 2022





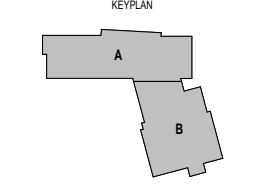
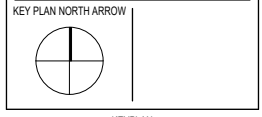
CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- ROOM LEGEND
- ADMINISTRATION & GUIDANCE
  - ART & MUSIC
  - AUDITORIUM/Drama
  - CIRCULATION
  - COLLABORATION
  - CORE ACADEMIC SPACES
  - CUSTODIAL & MAINTENANCE
  - DINING & FOOD SERVICES
  - HEALTH & PHYSICAL EDUCATION
  - MEDIA COMMONS
  - MEDICAL
  - STORAGE AND MEP/FP SPACES
  - SEOC
  - SWD / DIVERSE LEARNERS
  - TOILET ROOMS
  - CTE

GENERAL NOTES:  
1. FIRST FLOOR ELEVATION = 102' - 0"  
FINISH FLOOR ELEVATION OF 101' - 0" CORRESPONDS TO ELEVATION XXX'-X" ON THE CIVIL DRAWINGS

SCHEMATIC DESIGN



DRAWING NAME:

FIRST FLOOR PROGRAM PLAN

DRAWN BY: BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A1.11**



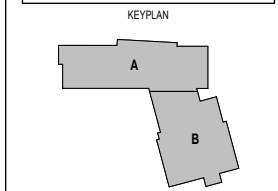
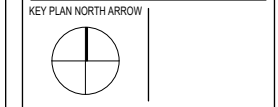
1 FIRST FLOOR PROGRAM PLAN  
1/8" = 1'-0"

**ROOM LEGEND**

Administration & Guidance
Art & Music
Auditorium/Drama
Circulation
Collaboration
Core Academic Spaces
Customal & Maintenance
Dining & Food Services
Health & Physical Education
Media Commons
Medical
Storage and MEP/FP Spaces
SEOC
SWD / DIVERSE LEARNERS
Toilet Rooms
CTE

**GENERAL NOTES:**  
1. FIRST FLOOR ELEVATION = 107'-0"  
FINISH FLOOR ELEVATION OF 101'-0" CORRESPONDS TO ELEVATION 'XXX'-X" ON THE CIVIL DRAWINGS

**SCHEMATIC DESIGN**



DRAWING NAME:

**SECOND FLOOR PROGRAM PLAN**

DRAWN BY: BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022  
**A1.12**



1 SECOND FLOOR PROGRAM PLAN  
1/8" = 1'-0"



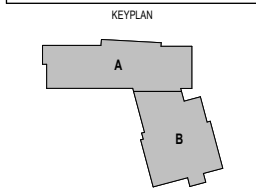
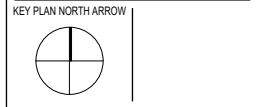
CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- ROOM LEGEND**
- ADMINISTRATION & GUIDANCE
  - ART & MUSIC
  - AUDITORIUM/DRAWING
  - CIRCULATION
  - COLLABORATION
  - CORE ACADEMIC SPACES
  - CUSTOMER & MAINTENANCE
  - DINING & FOOD SERVICES
  - HEALTH & PHYSICAL EDUCATION
  - MEDIA COMMONS
  - MEDICAL
  - STORAGE AND MEP/FP SPACES
  - STAIR
  - SWD / DIVERSE LEARNERS
  - TOILET ROOMS
  - CTE

**GENERAL NOTES:**  
1. FIRST FLOOR ELEVATION = 102'-0"  
FINISH FLOOR ELEVATION OF 101'-0" CORRESPONDS TO ELEVATION XXX'-X" ON THE CIVIL DRAWINGS

**SCHEMATIC DESIGN**



DRAWING NAME:

**THIRD FLOOR PROGRAM PLAN**

DRAWN BY: BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00 | **A1.13**  
DATE: SEPT 15, 2022

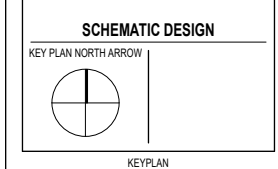


1 THIRD FLOOR PROGRAM PLAN  
1/16" = 1'-0"

ROOM LEGEND

Administration & Guidance
Art & Music
Auditorium/Drama
Circulation
Collaboration
Core Academic Spaces
Customs & Maintenance
Dining & Food Services
Health & Physical Education
Media Commons
Medical
Storage and MEP/FP Spaces
SEC
SMD / DIVERSE LEARNERS
Toilet Rooms
CTE

**GENERAL NOTES:**  
1. FIRST FLOOR ELEVATION = 102'-0"  
FINISH FLOOR ELEVATION OF 100'-0" CORRESPONDS TO ELEVATION XXX'-X" ON THE CIVIL DRAWINGS



DRAWING NAME:

**FOURTH FLOOR PROGRAM PLAN**

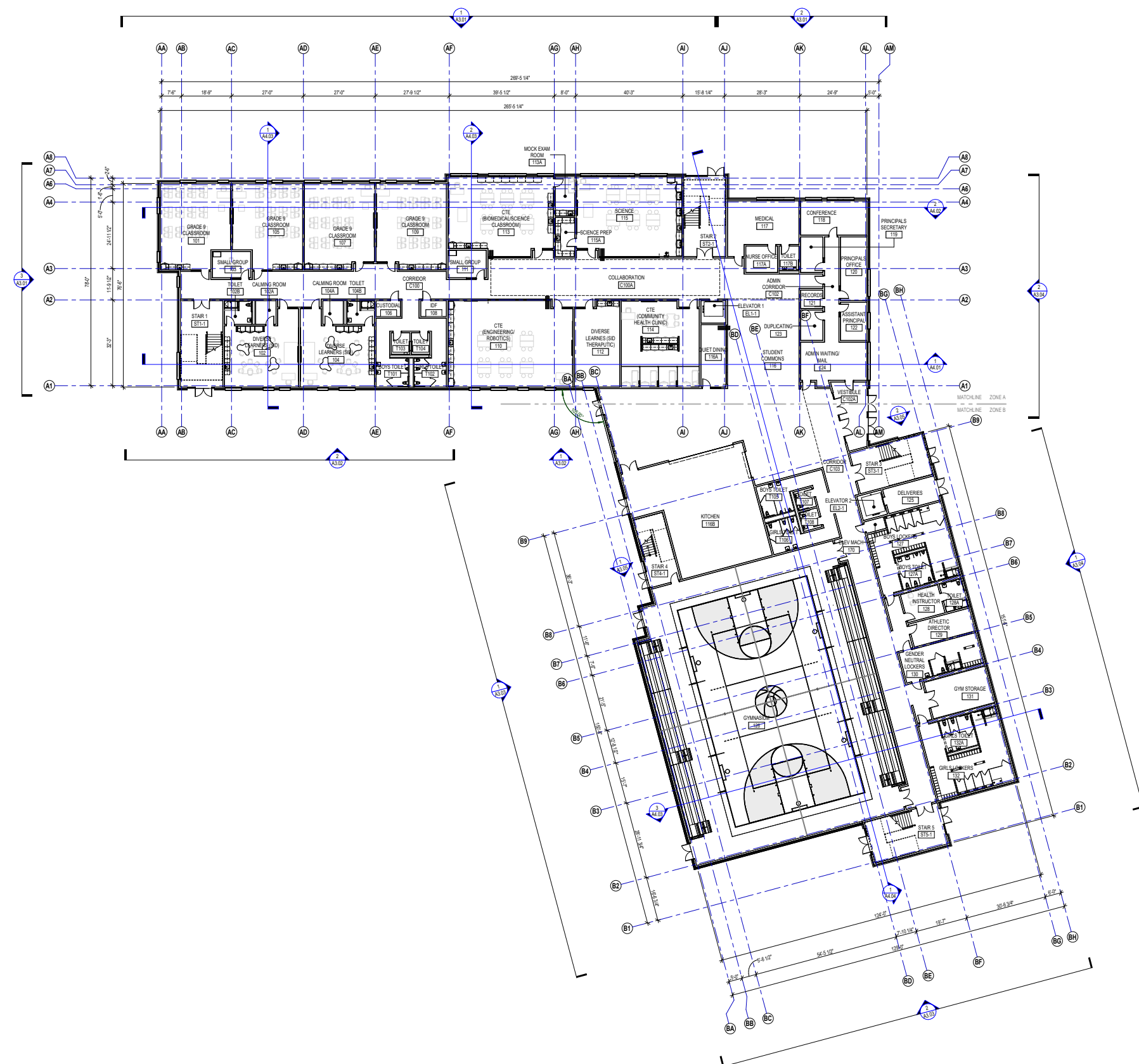
DRAWN BY: NS / BFC  
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00 | DATE: SEPT 15, 2022

**A1.14**

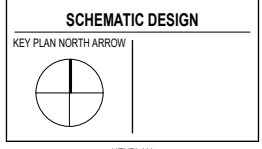


1 FOURTH FLOOR PROGRAM PLAN  
TRF - 1/2"



KEYNOTE LEGEND:

**GENERAL NOTES:**  
1. FIRST FLOOR ELEVATION = 102'-0"  
FINISH FLOOR ELEVATION OF 101'-0" CORRESPONDS TO ELEVATION 'XXX'-X" ON THE CIVIL DRAWINGS



DRAWING NAME:

**OVERALL FIRST FLOOR PLAN**

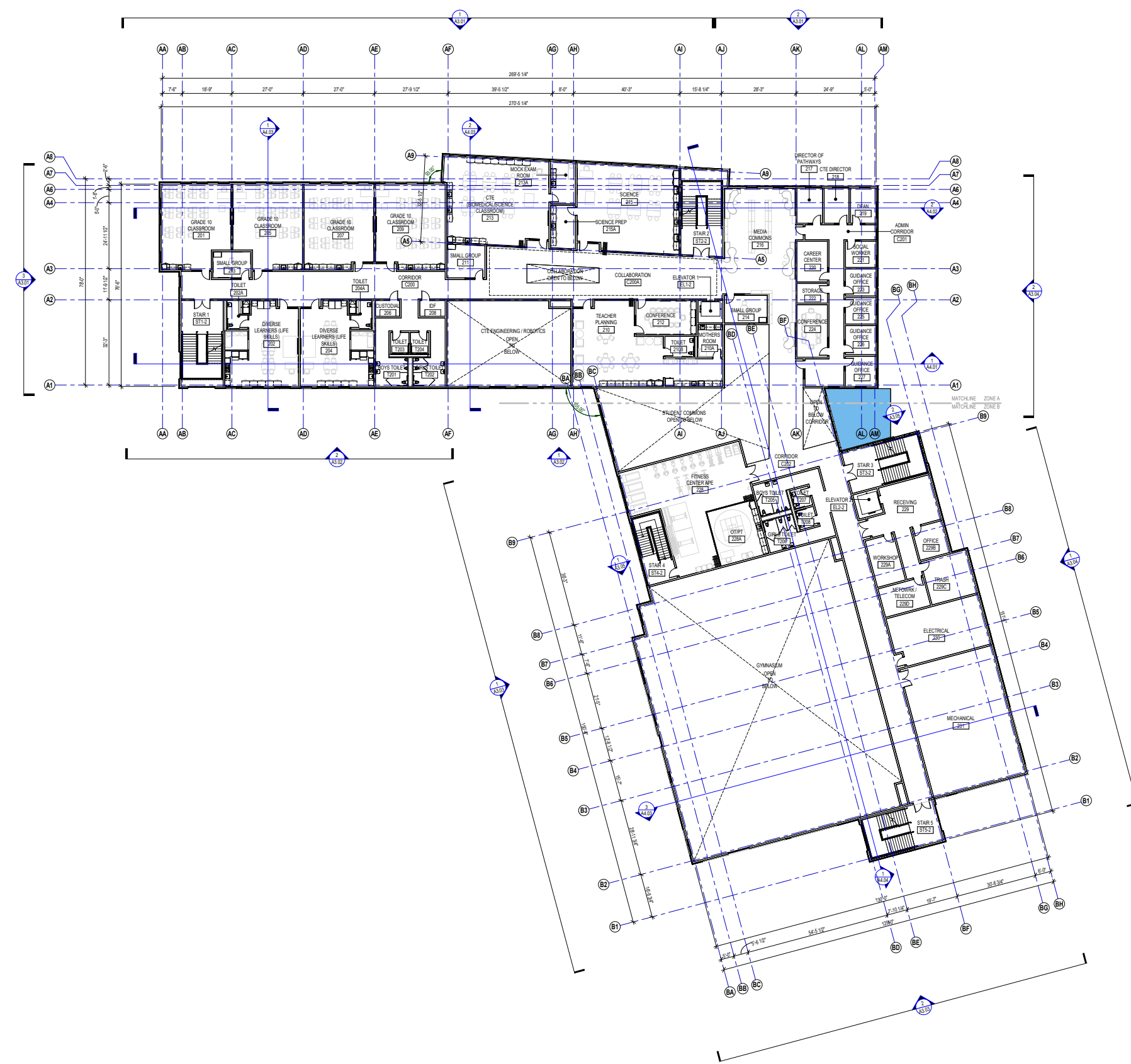
DRAWN BY: BFC  
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

**A2.11**

1 FIRST FLOOR: OVERALL FLOOR PLAN  
1/8" = 1'-0"

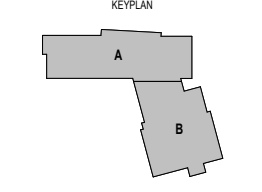
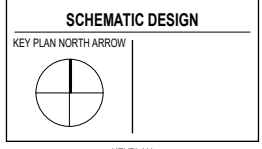




CENTRAL FALLS HIGH SCHOOL  
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KEYNOTE LEGEND:

**GENERAL NOTES:**  
1. SECOND FLOOR ELEVATION = 114' - 0"



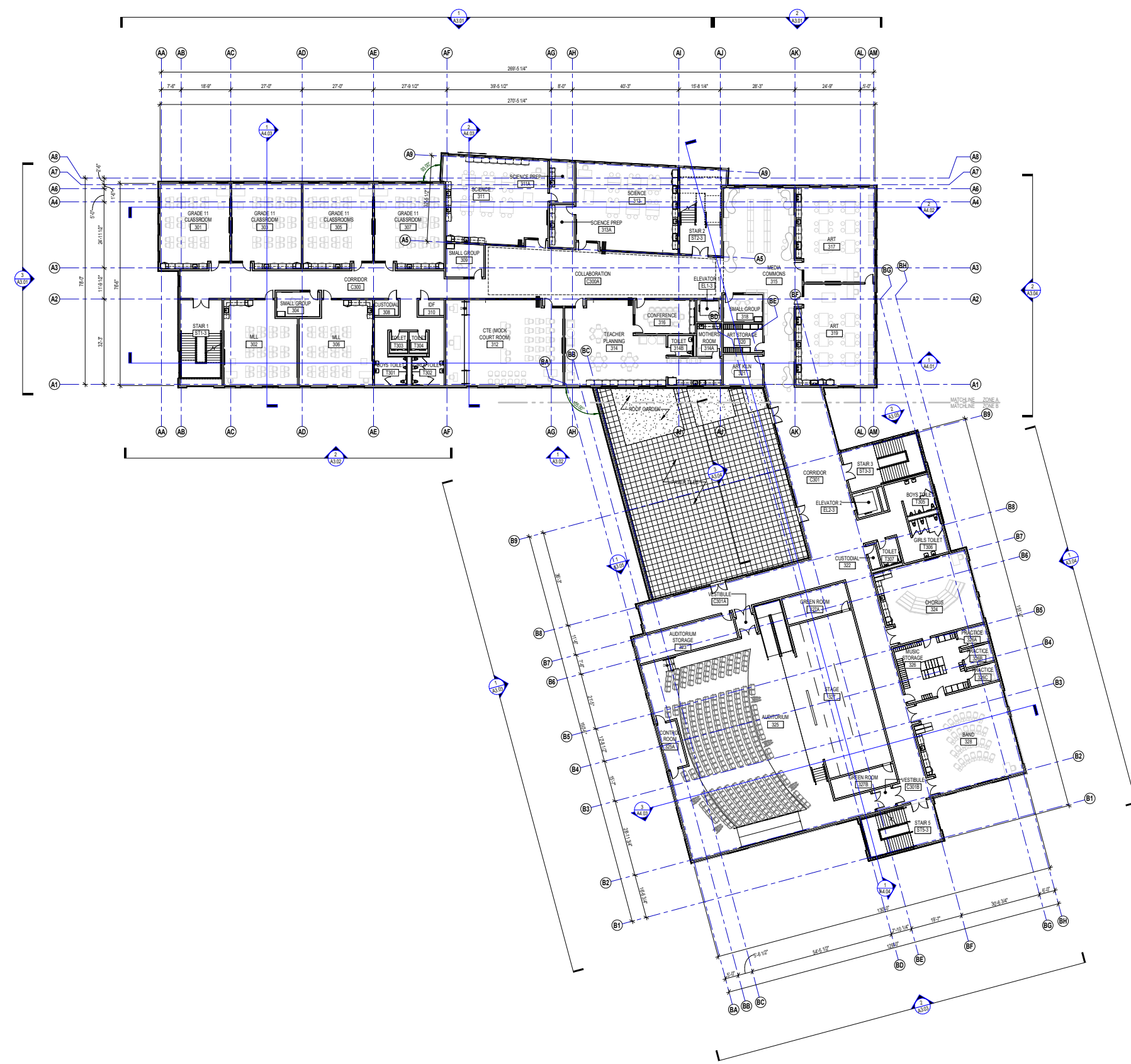
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**OVERALL SECOND FLOOR PLAN**

DRAWN BY: NS / BFC  
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

**A2.12**

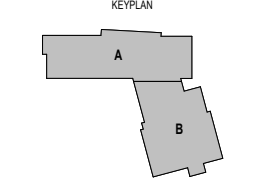
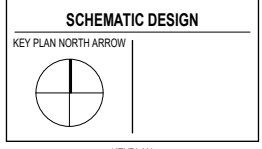
1 SECOND FLOOR OVERALL FLOOR PLAN  
1/16" = 1'-0"



CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

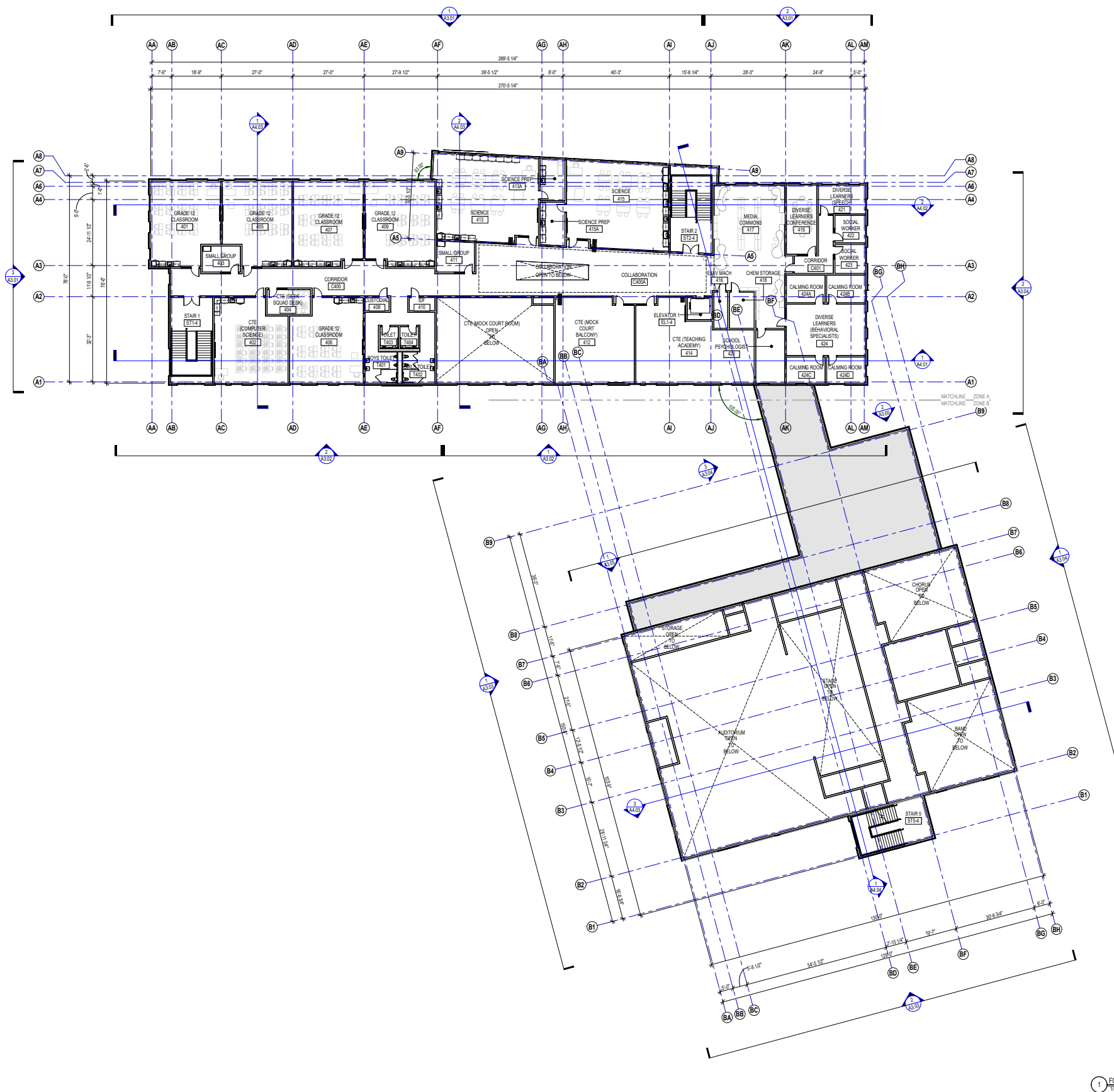
**GENERAL NOTES:**  
1. THIRD FLOOR ELEVATION = 128' - 0"



DRAWING NAME:  
**OVERALL THIRD FLOOR PLAN**

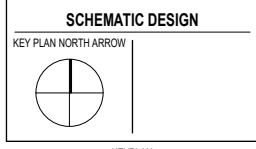
DRAWN BY: NS / BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A2.13**

1 THIRD FLOOR OVERALL FLOOR PLAN  
1/16" = 1'-0"



KEYNOTE LEGEND:

**GENERAL NOTES:**  
1. FIRST FLOOR ELEVATION = 102'-0"  
FINISH FLOOR ELEVATION OF 100'-0" CORRESPONDS TO ELEVATION 'XXX'-X" ON THE CIVIL DRAWINGS



DRAWING NAME:

**OVERALL FOURTH FLOOR PLAN**

DRAWN BY: BFC

REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:

JOB NO.: 2202.00 | **A2.14**

DATE: SEPT 15, 2022

1 FOURTH FLOOR: OVERALL FLOOR PLAN  
1/8" = 1'-0"





CENTRAL FALLS HIGH SCHOOL  
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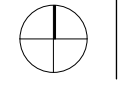
KEYNOTE LEGEND:

ROOF LEGEND	
	ROOF CRICKET - TAPERED RIGID ROOF INSULATION - SLOPE 1/4" PER FOOT MIN.
	ROOF DRAIN LOCATION - SEE DETAIL 11 AS.21
	EXHAUST FAN LOCATION - REFER TO MECHANICAL DRAWINGS FOR FURTHER INFORMATION
	MECHANICAL UNIT - REFER TO MECHANICAL DRAWINGS FOR FURTHER INFORMATION
	ROOF MOUNTED MECHANICAL UNIT LOCATION - REFER TO MECHANICAL FOR FURTHER INFORMATION
	24" X 36" WALK BOARDS (07 53.23.20)

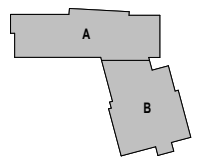
- GENERAL NOTES:**
1. STEEL ROOF DECKS, UNLESS NOTED TO BE FLAT, OR DETAILED OTHERWISE ARE INTENDED TO SLOPE 1/4" PER FOOT MINIMUM TO DRAIN LOWPOINTS. SLOPE MAY BE GREATER THAN 1/4" PER FOOT DUE TO FINAL STEEL ELEVATIONS.
  2. SEE MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL DRAWINGS/SPECIFICATIONS FOR EQUIPMENT REQUIREMENTS.
  3. REFER TO MANUFACTURERS STANDARD ROOFING REQUIREMENTS TO MEET THE SPECIFIED WARRANTY.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN

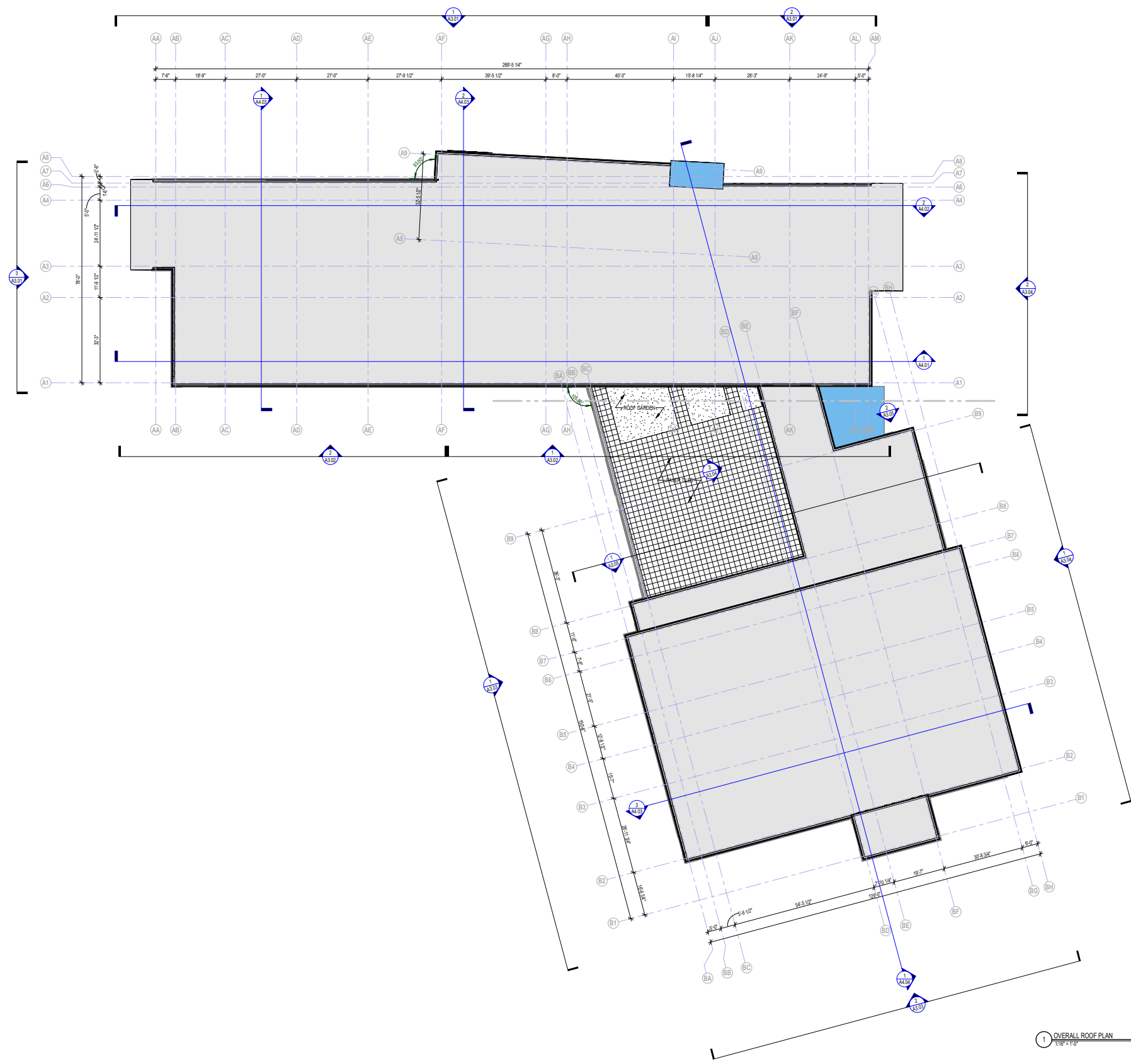


DRAWING NAME:

**OVERALL ROOF PLAN**

DRAWN BY: BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

**A2.15**



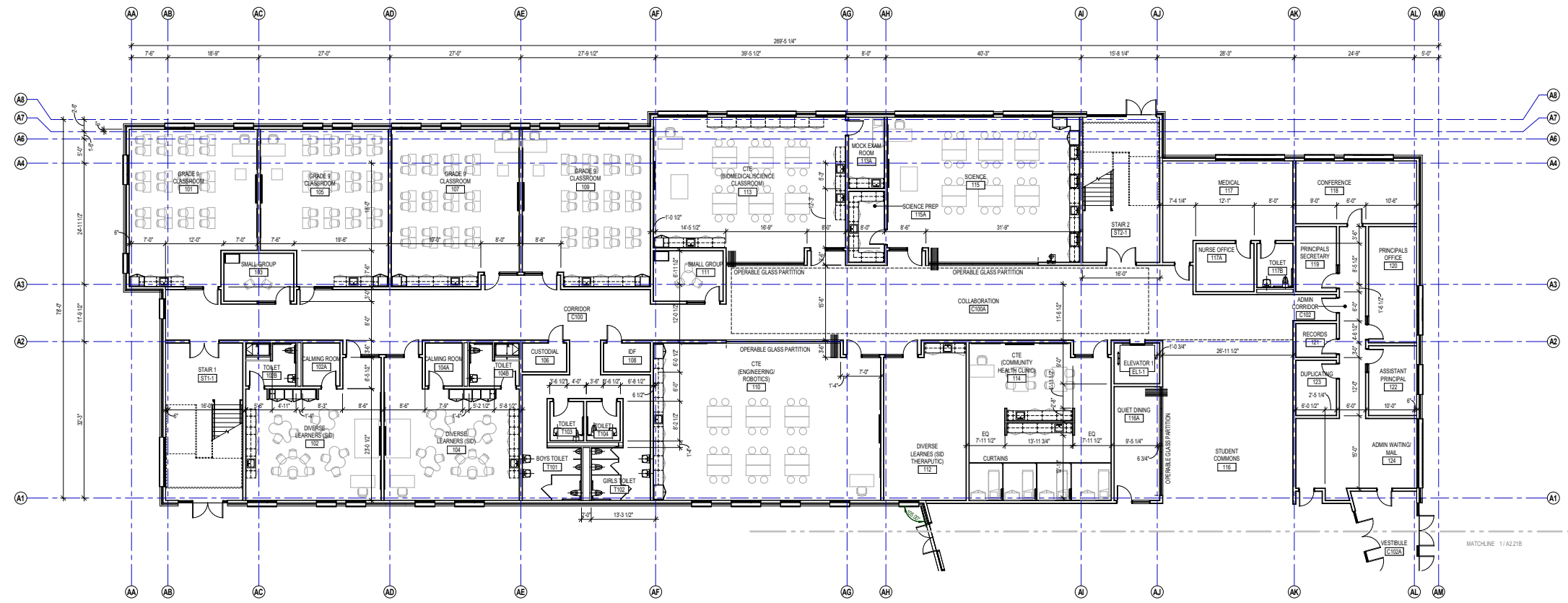
1 OVERALL ROOF PLAN  
1/8" = 1'-0"



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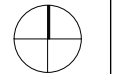
KEYNOTE LEGEND:



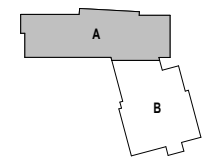
- GENERAL NOTES:**
1. FIRST FLOOR ELEVATION + 100' - 0" FINISH FLOOR ELEVATION OF 100' - 0" CORRESPONDS TO ELEVATION XXX'-X" ON THE CIVIL DRAWINGS.
  2. ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY, AND/OR CENTERLINE OF COLUMN, U.N.O.
  3. REFER TO SHEET A1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEY PLAN



DRAWING NAME:

**FIRST FLOOR  
PLAN - ZONE A**

DRAWN BY:	NS / BFC
REVIEWED BY:	CHR / KK
SCALE:	AS INDICATED
JOB NO.:	2202.00
DATE:	SEPT 15, 2022
DRAWING NUMBER:	<b>A2.21A</b>

1 FIRST FLOOR PLAN - ZONE A  
1" = 10'-0"



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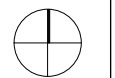
KEYNOTE LEGEND:

**GENERAL NOTES:**

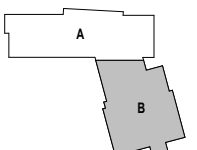
1. FIRST FLOOR ELEVATION + 100' - 0" FINISH FLOOR ELEVATION OF 100' - 0" CORRESPONDS TO ELEVATION XXX'-0" ON THE CIVIL DRAWINGS.
2. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF MASONRY, AND/OR CENTERLINE OF COLUMN, UNLESS NOTED OTHERWISE.
3. REFER TO SHEET A1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN



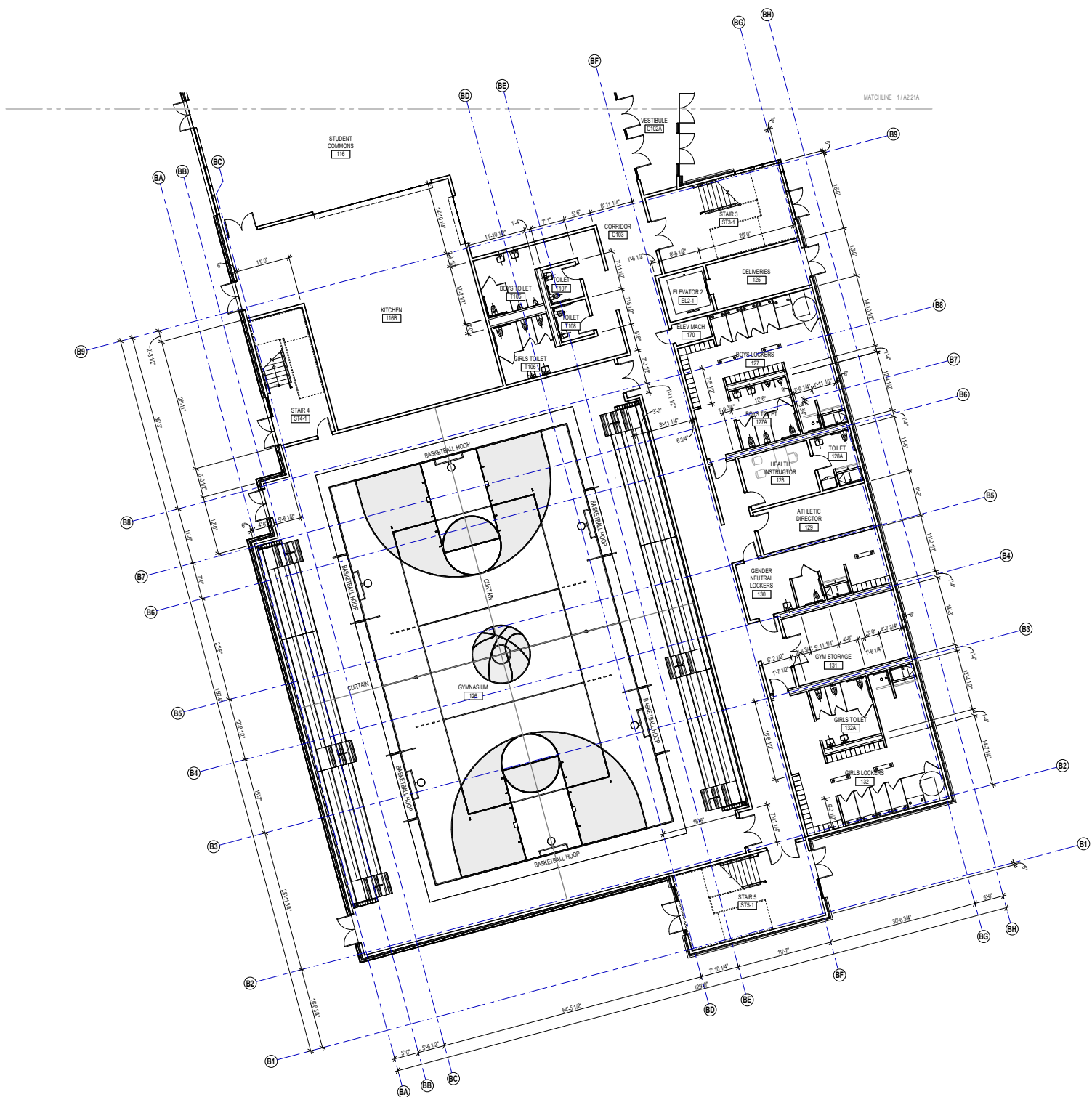
DRAWING NAME:

**FIRST FLOOR PLAN - ZONE B**

DRAWN BY: BFC

REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER: A2.21B  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

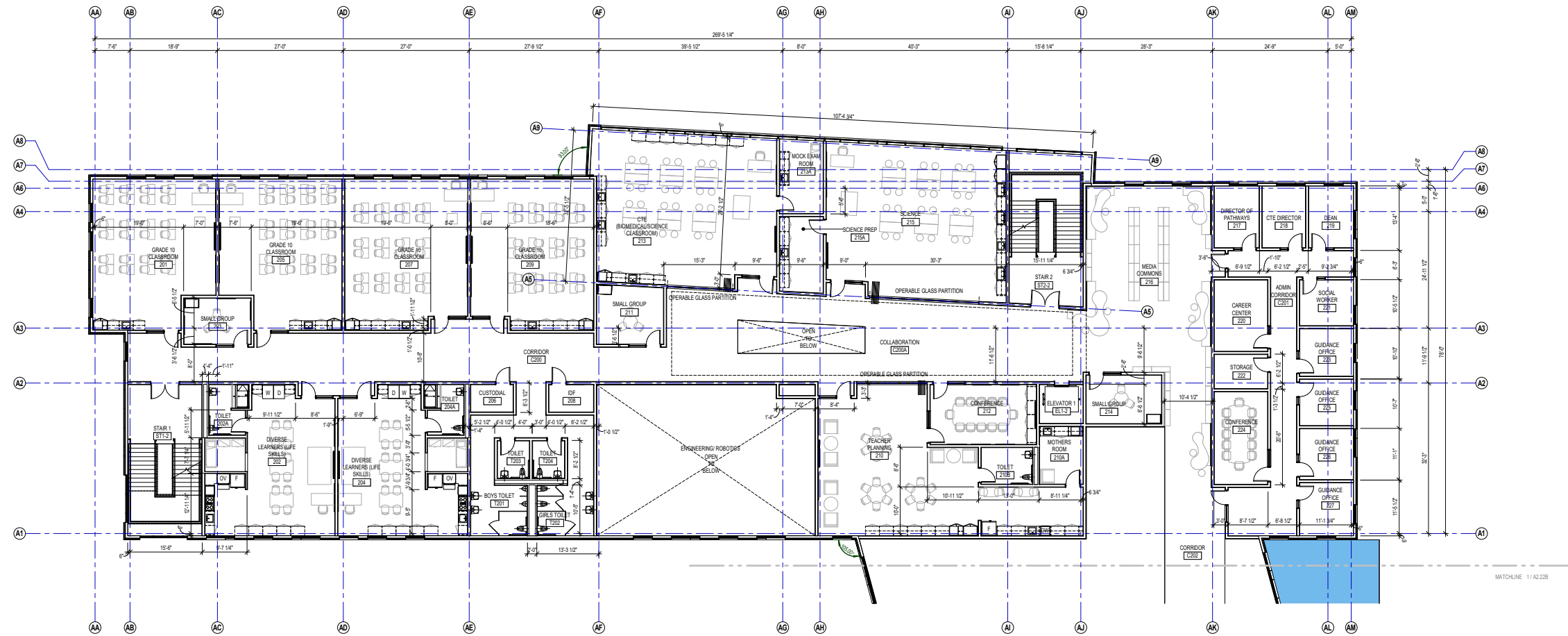


1 FIRST FLOOR PLAN - ZONE B  
P. 1 OF 2



CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:



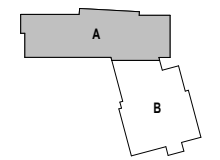
**GENERAL NOTES:**  
 1. SECOND FLOOR ELEVATION +114'-0"  
 2. ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, U.N.O.  
 3. REFER TO SHEET A151 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN

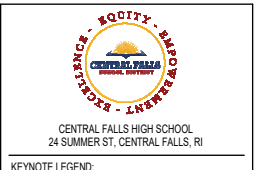
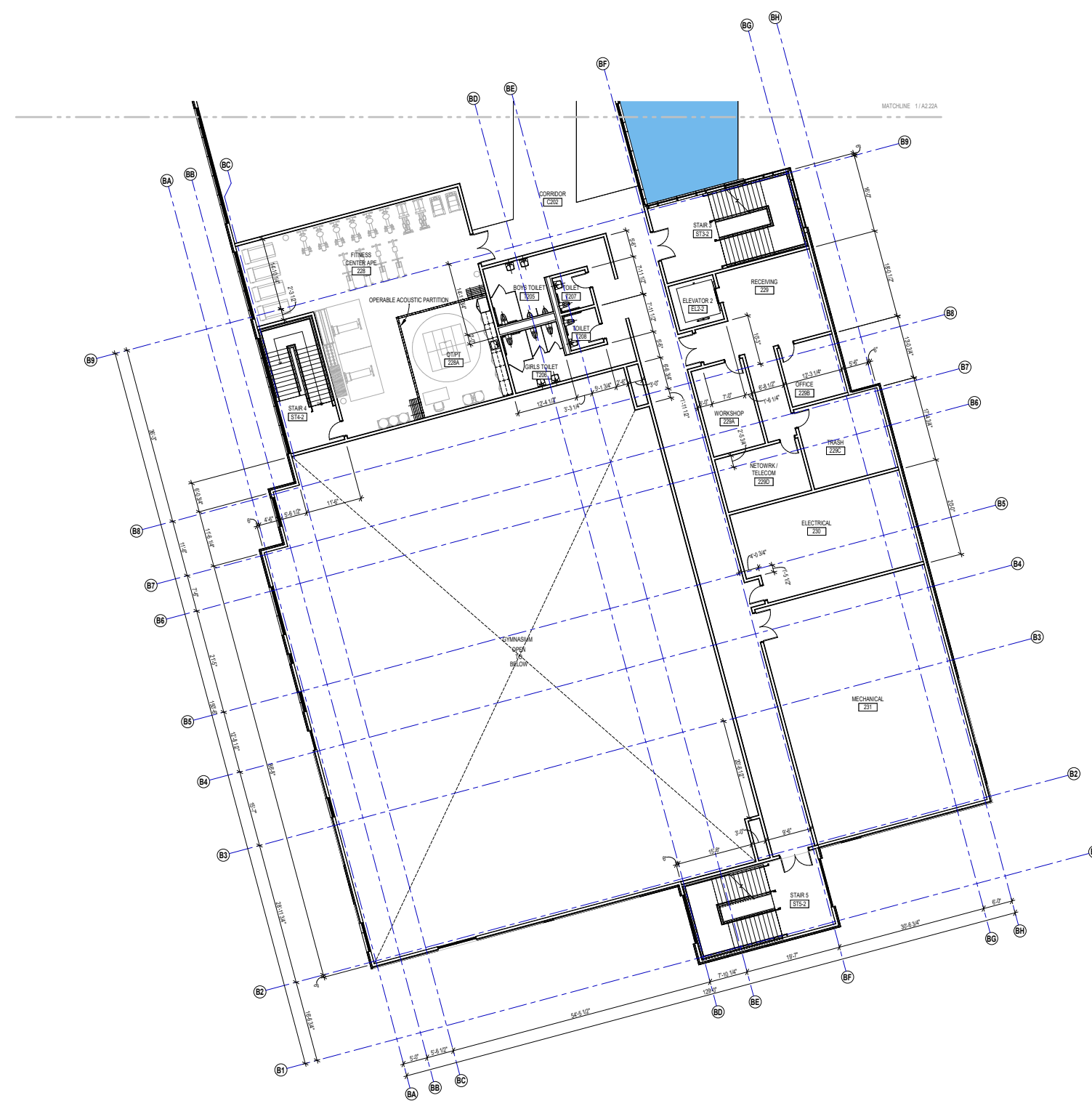


DRAWING NAME:  
**SECOND FLOOR PLAN - ZONE A**

DRAWN BY: BFC  
 REVIEWED BY: CHR / KK

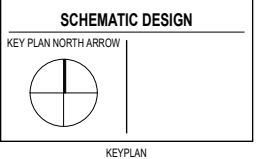
SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00 | **A2.22A**  
 DATE: SEPT 15, 2022

1 SECOND FLOOR PLAN - ZONE A  
1" = 1/8"



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KEYNOTE LEGEND:

- GENERAL NOTES:**
1. SECOND FLOOR ELEVATION = +114'-0"
  2. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF MASONRY, AND/OR CENTERLINE OF COLUMN, U.N.O.
  3. REFER TO SHEET A2.15 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.



DRAWING NAME:

**SECOND FLOOR PLAN - ZONE B**

DRAWN BY: BFC  
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER: A2.22B  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

1 SECOND FLOOR PLAN - ZONE B  
1" = 10'-0"

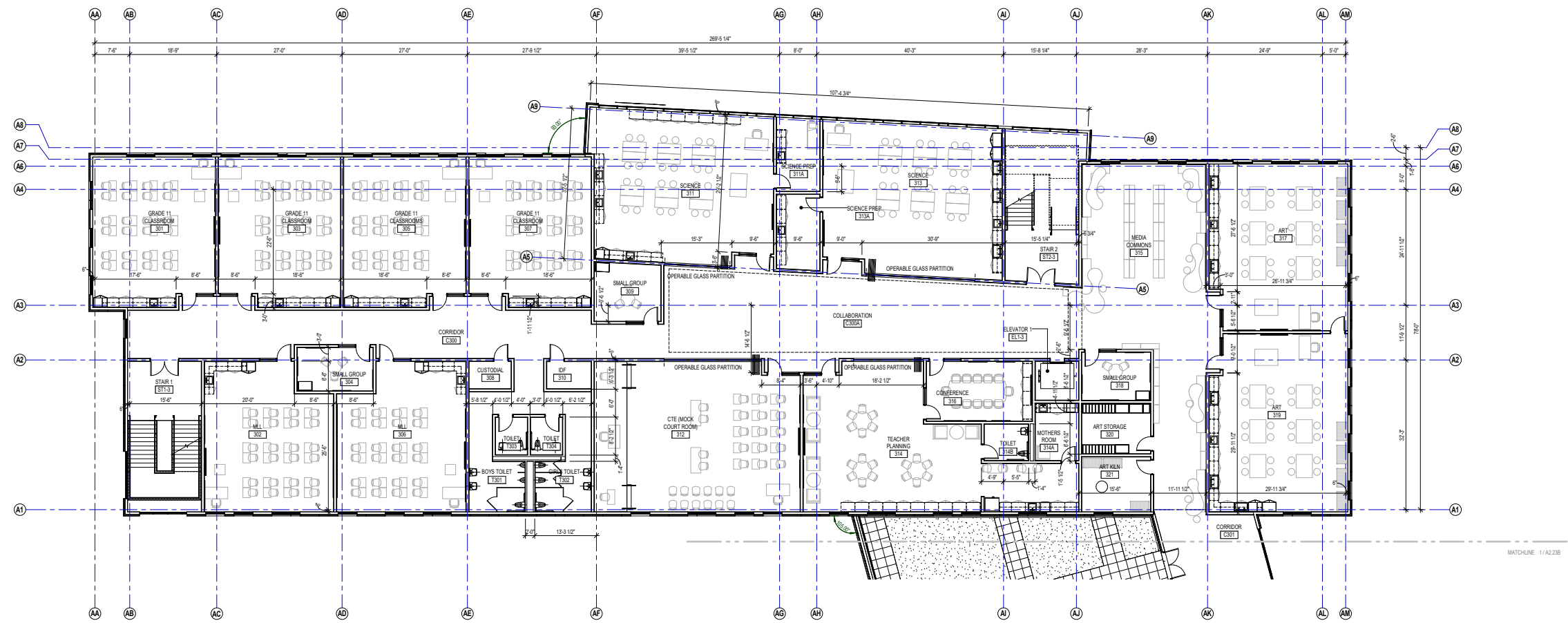




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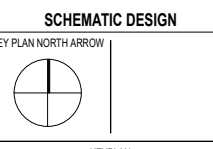
CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:



**GENERAL NOTES:**

1. THIRD FLOOR ELEVATION = 128' - 0"
2. ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, U.N.O.
3. REFER TO SHEET A1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.



DRAWING NAME:

**THIRD FLOOR PLAN - ZONE A**

DRAWN BY: NS / BFC  
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER: A2.23A  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

1 THIRD FLOOR PLAN - ZONE A  
1" = 1/8"

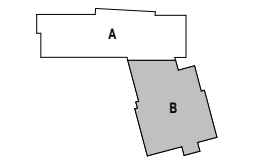
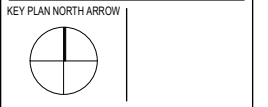


CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- GENERAL NOTES:**
1. THIRD FLOOR ELEVATION = 126' - 0"
  2. ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, UNLESS NOTED OTHERWISE.
  3. REFER TO SHEET A151 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

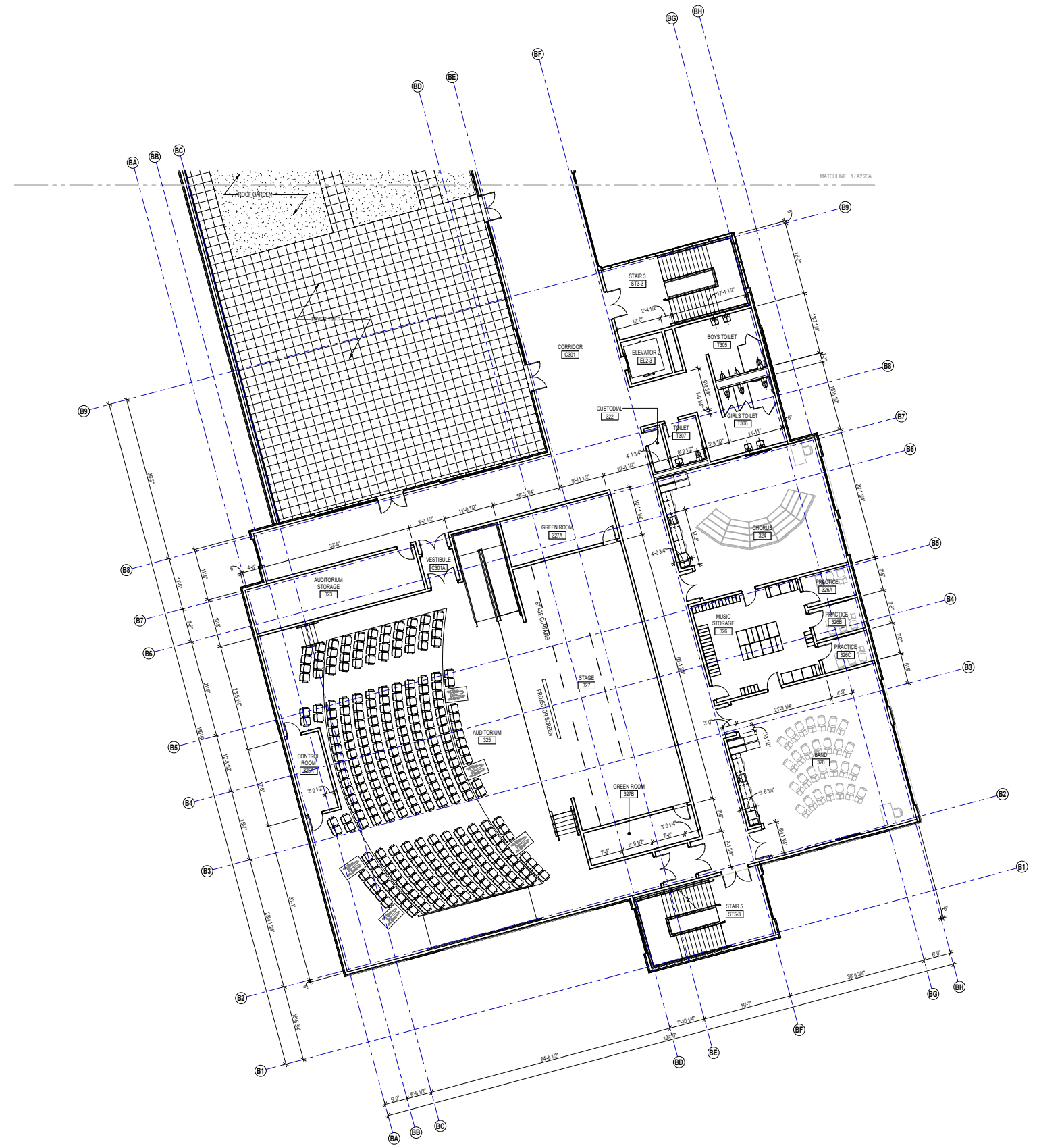
**SCHEMATIC DESIGN**



DRAWING NAME:

**THIRD FLOOR PLAN - ZONE B**

DRAWN BY:	BFC
REVIEWED BY:	CHR / KK
SCALE:	AS INDICATED
JOB NO.:	2202.00
DATE:	SEPT 15, 2022
DRAWING NUMBER:	<b>A2.23B</b>



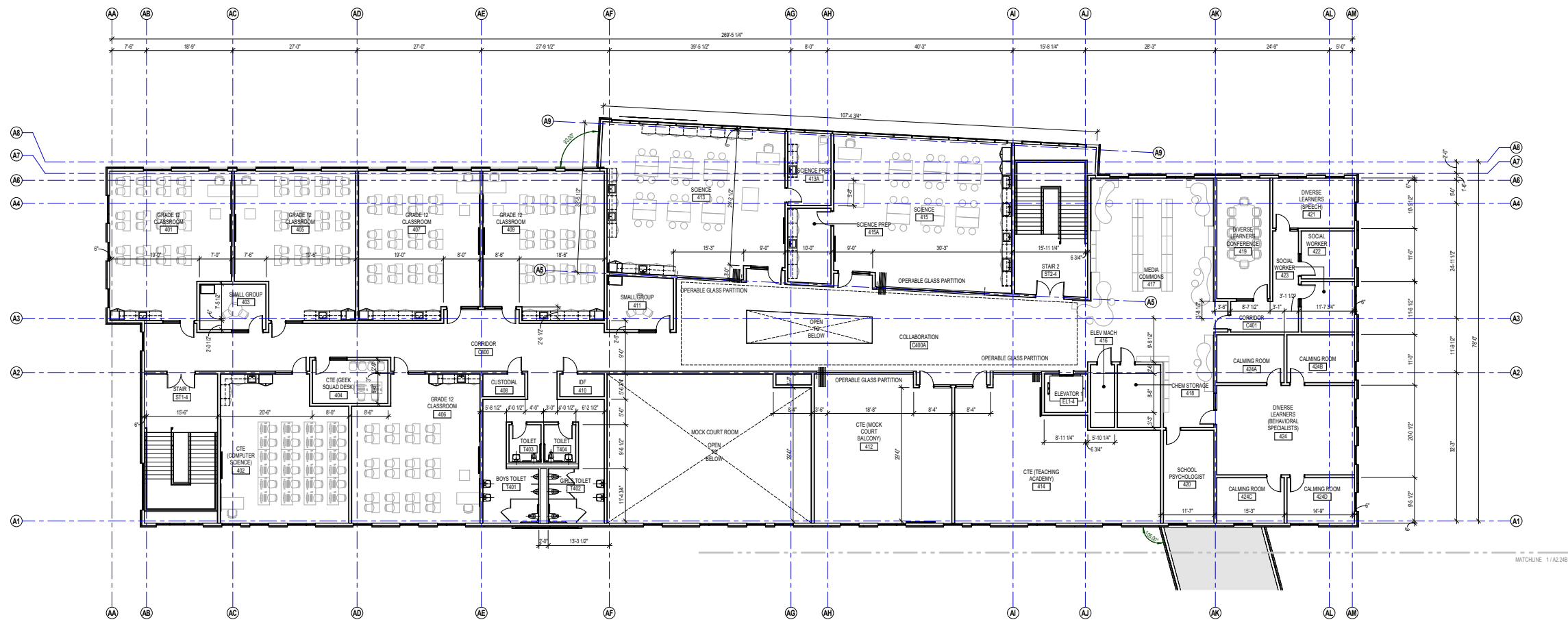
1 THIRD FLOOR PLAN - ZONE B  
1" = 12'-0"



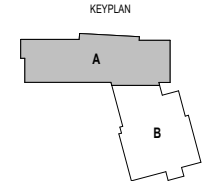
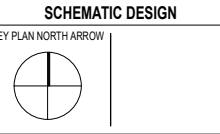
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CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:



- GENERAL NOTES:**
1. FIRST FLOOR ELEVATION + 100' - 0"
  2. FINISH FLOOR ELEVATION OF 100' - 0" CORRESPONDS TO ELEVATION XXX'-X" ON THE OVER DRAWINGS.
  3. ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, U.N.O.
  4. REFER TO SHEET A1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.



DRAWING NAME:

**FOURTH FLOOR PLAN - ZONE A**

DRAWN BY: NS / BFC  
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00 |  
DATE: SEPT 15, 2022 | **A2.24A**

1 FOURTH FLOOR PLAN - ZONE A





CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

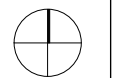
KEYNOTE LEGEND:

**GENERAL NOTES:**

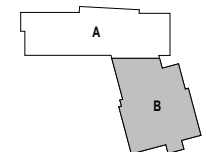
1. FIRST FLOOR ELEVATION + 100' - 0" FINISH FLOOR ELEVATION OF 100' - 0" CORRESPONDS TO ELEVATION XXX'-0" ON THE CIVIL DRAWINGS.
2. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF MASONRY, AND/OR CENTERLINE OF COLUMN, UN. O.
3. REFER TO SHEET A1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN



DRAWING NAME:

**FOURTH FLOOR PLAN - ZONE B**

DRAWN BY: NS / BFC

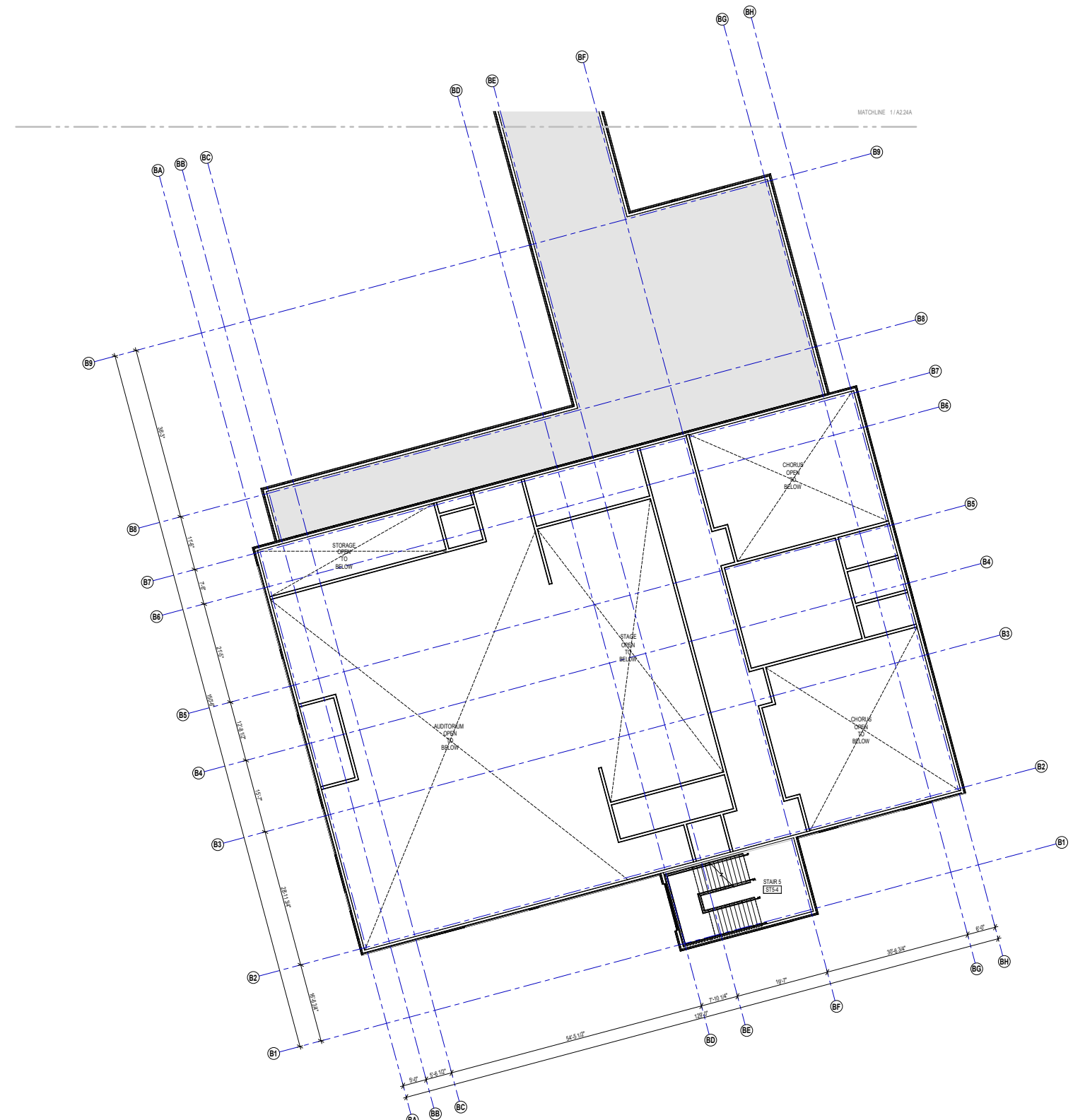
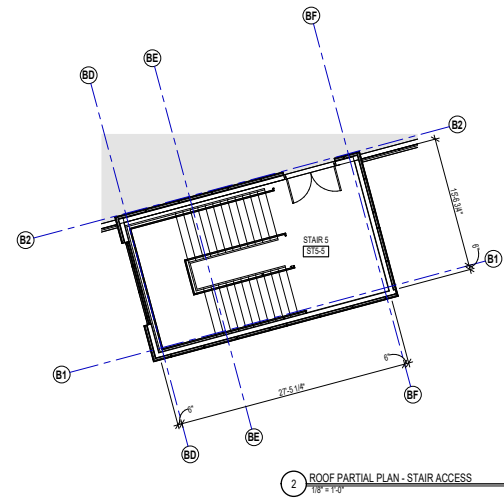
REVIEWED BY: CHR / KK

SCALE: AS INDICATED DRAWING NUMBER:

JOB NO.: 2202.00

DATE: SEPT 15, 2022

**A2.24B**



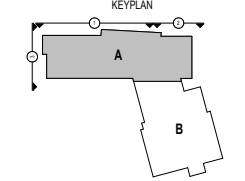
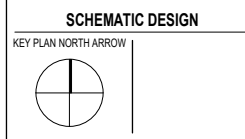


CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

LEGEND	
SPLIT FACE BLOCK COLOR 1	
SPLIT FACE BLOCK COLOR 2	
FIBER CEMENT PANEL COLOR 1	
FIBER CEMENT PANEL COLOR 2	
FIBER CEMENT PANEL COLOR 3	
ALUMINUM METAL PANEL COLOR 1	

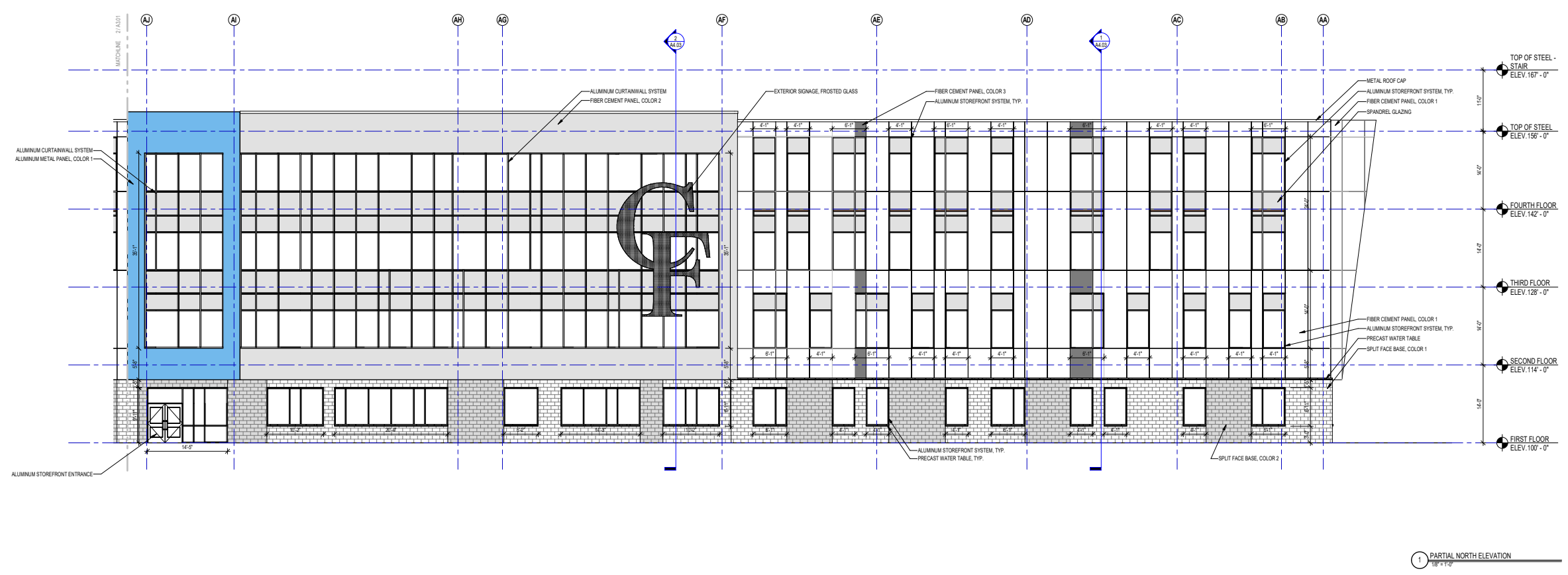
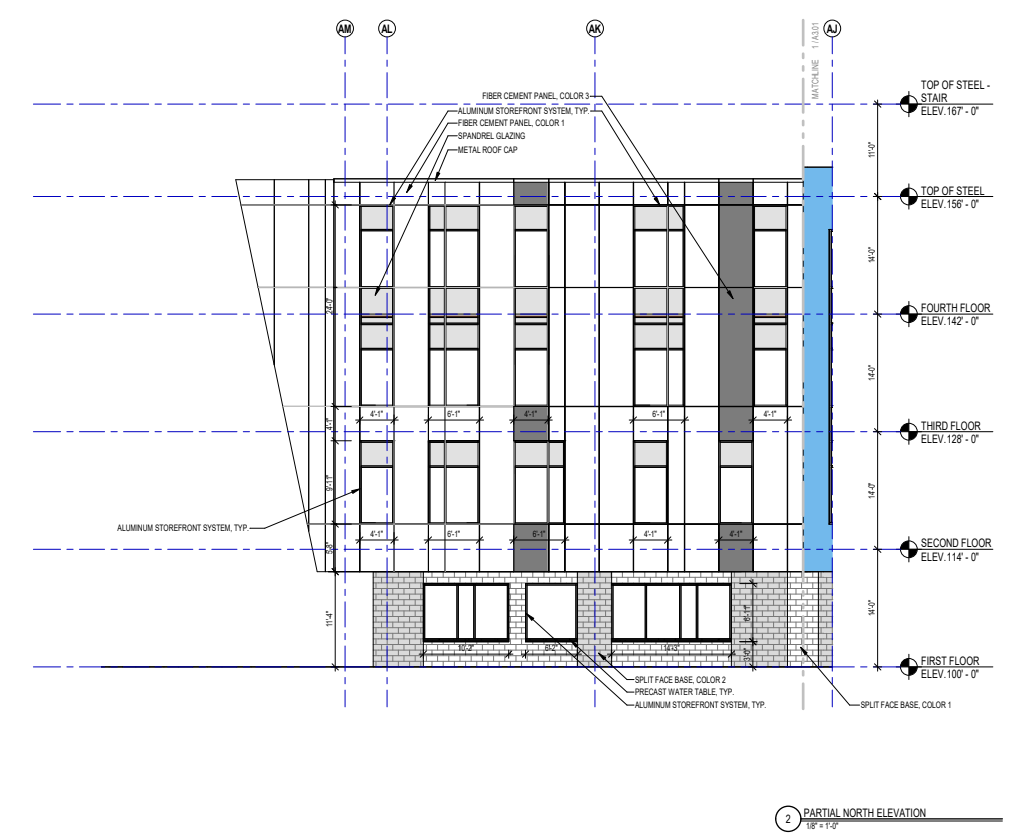
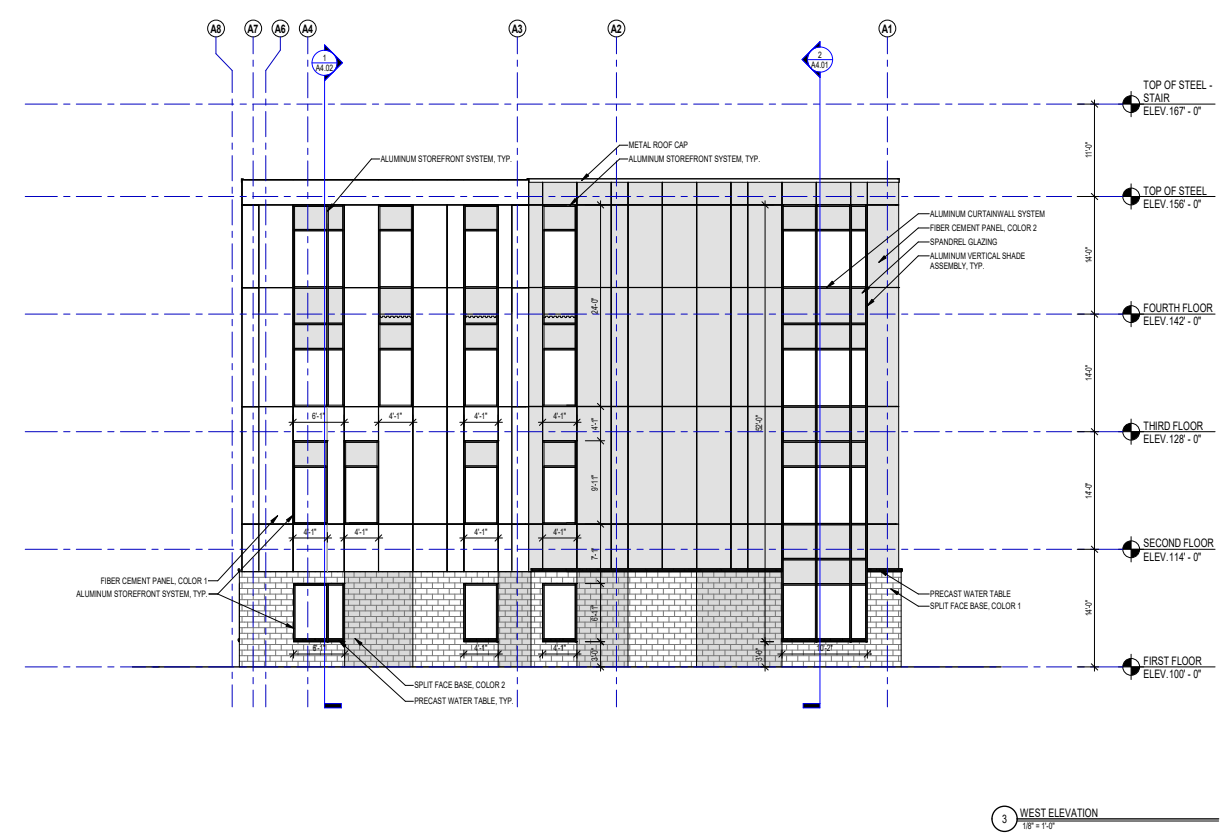
- GENERAL NOTES:**
- REFER TO SHEET A3.01 FOR TYPICAL HORIZONTAL BOND BREAK IN VENEER CHANGES IN VENEER MATERIALS.
  - REFER TO SHEET A3.31 FOR ADDITIONAL FIBER CEMENT PANEL INFORMATION AND DETAILS.
  - COORDINATE EXACT LOCATION OF SPANNERS, CAMERAS, AND LIGHTING WITH ARCHITECT PRIOR TO INSTALLATION.
  - ALL GFRP PANELS AND TRIM TO RECEIVE PAINT. REFERENCE SPEC SECTION 09 91 00 FOR ADDITIONAL INFORMATION.
  - ALL GFRP CORNERS SHALL BE MITERED AND GLUED.
  - REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.
  - REFER TO A3.35 FOR PRECAST AND SUNSHADE TYPES.
  - REFER TO A3.45 FOR REVEAL DETAILS.



DRAWING NAME:

**EXTERIOR ELEVATIONS**

DRAWN BY: NS / BFC  
 REVIEWED BY: CHR / KK  
 SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00  
 DATE: SEPT 15, 2022 **A3.01**





CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

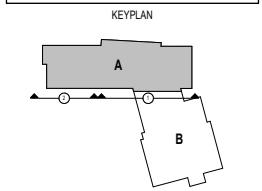
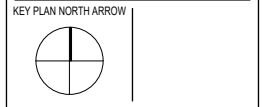
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KEYNOTE LEGEND:

LEGEND	
SPLIT FACE BLOCK COLOR 1	
SPLIT FACE BLOCK COLOR 2	
FIBER CEMENT PANEL COLOR 1	
FIBER CEMENT PANEL COLOR 2	
FIBER CEMENT PANEL COLOR 3	
ALUMINUM METAL PANEL COLOR 1	

- GENERAL NOTES:**
- REFER TO SHEET AS-01 FOR TYPICAL HORIZONTAL BOND BREAK IN VENEER BETWEEN CHANGES IN VENEER MATERIALS.
  - REFER TO SHEET AS-31 FOR ADDITIONAL FIBER CEMENT PANEL INFORMATION AND DETAILS.
  - COORDINATE EXACT LOCATION OF SPARKERS, CAMERAS, AND LIGHTING WITH ARCHITECT PRIOR TO INSTALLATION.
  - ALL GFRP PANELS AND TRIM TO RECEIVE PAINT. REFERENCE SPEC SECTION 09 91 00 FOR ADDITIONAL INFORMATION.
  - ALL GFRP CORNERS SHALL BE MITERED AND GULLED.
  - REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.
  - REFER TO AS-35 FOR PRECAST AND SUNSHADE TYPES.
  - REFER TO AS-35 FOR REVEAL DETAILS.

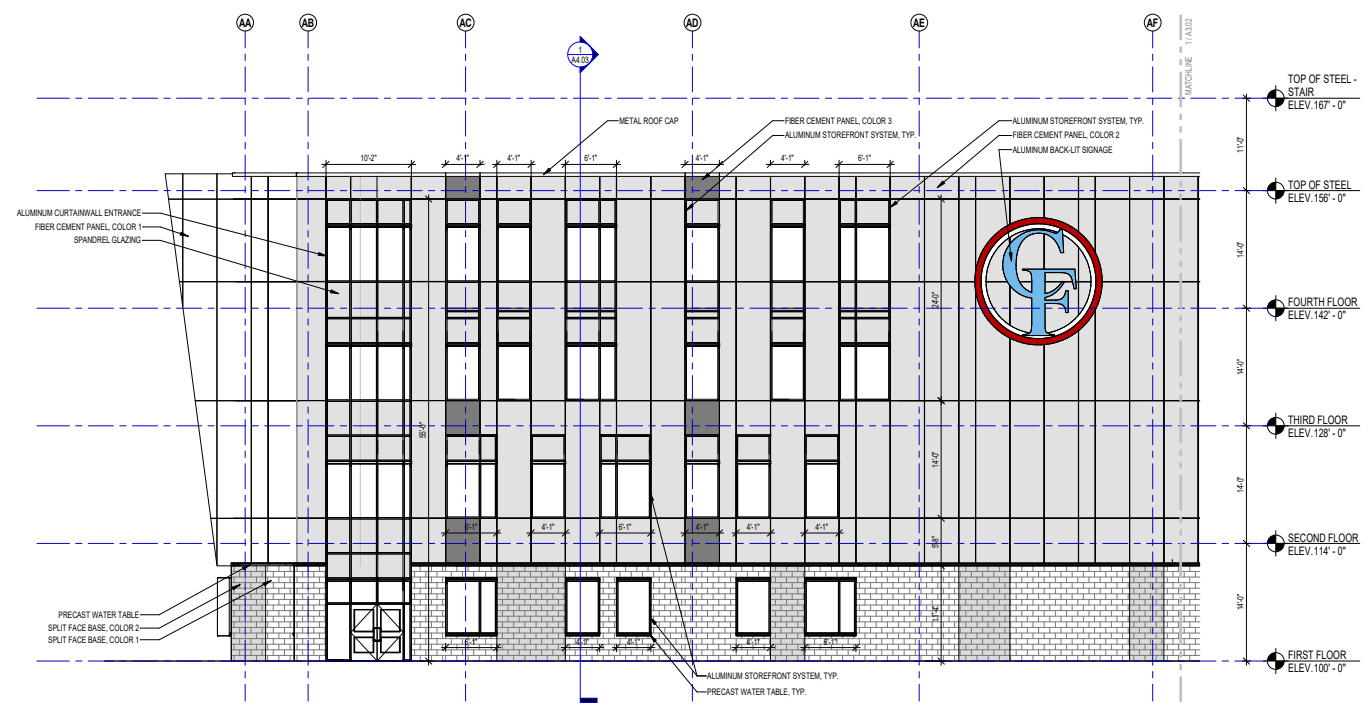
**SCHEMATIC DESIGN**



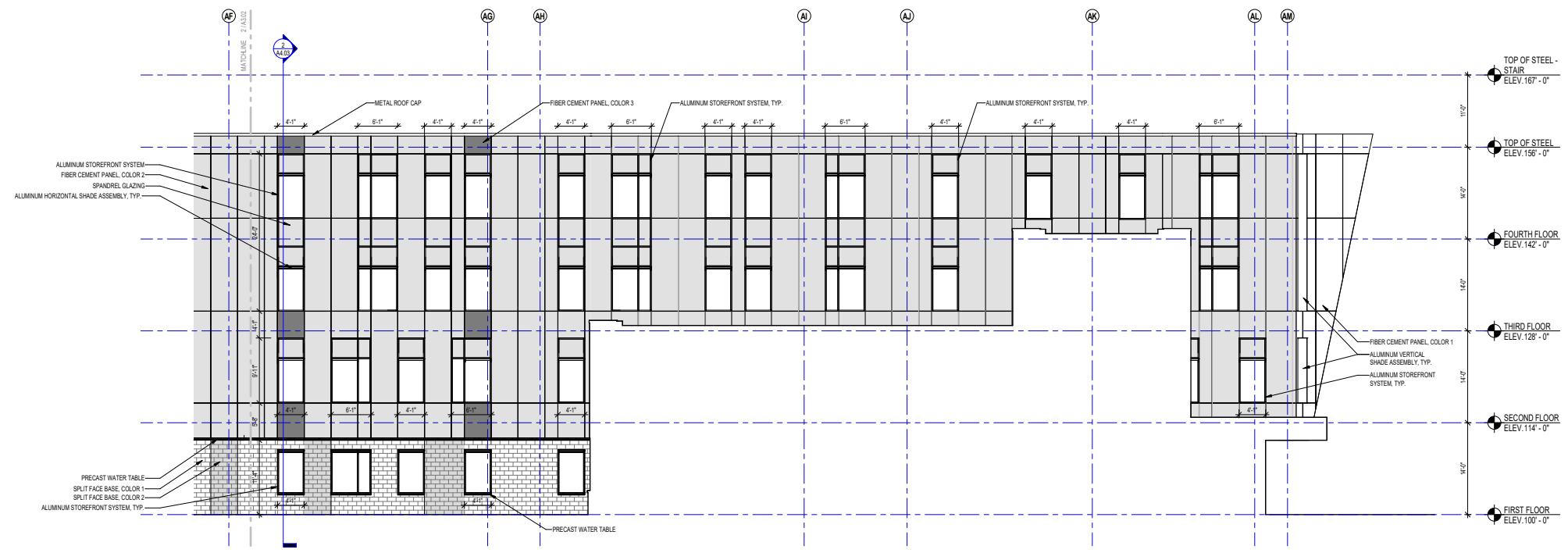
DRAWING NAME:

**EXTERIOR ELEVATIONS**

DRAWN BY:	BFC
REVIEWED BY:	CHR / KK
SCALE:	AS INDICATED   DRAWING NUMBER:
JOB NO.:	2202.00
DATE:	SEPT 15, 2022
<b>A3.02</b>	



2 SOUTH ELEVATION  
1/8" = 1'-0"

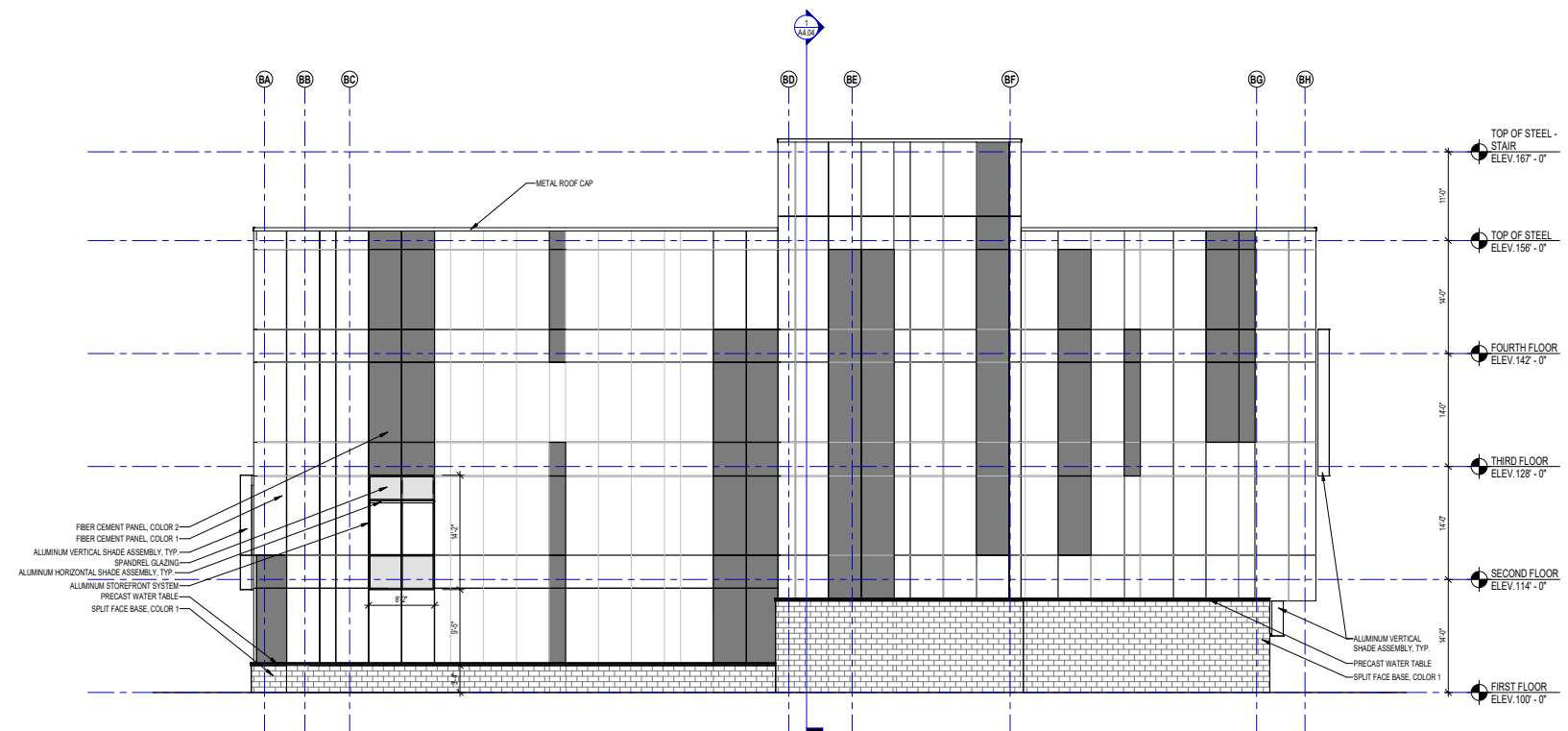


1 SOUTH ELEVATION  
1/8" = 1'-0"



CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

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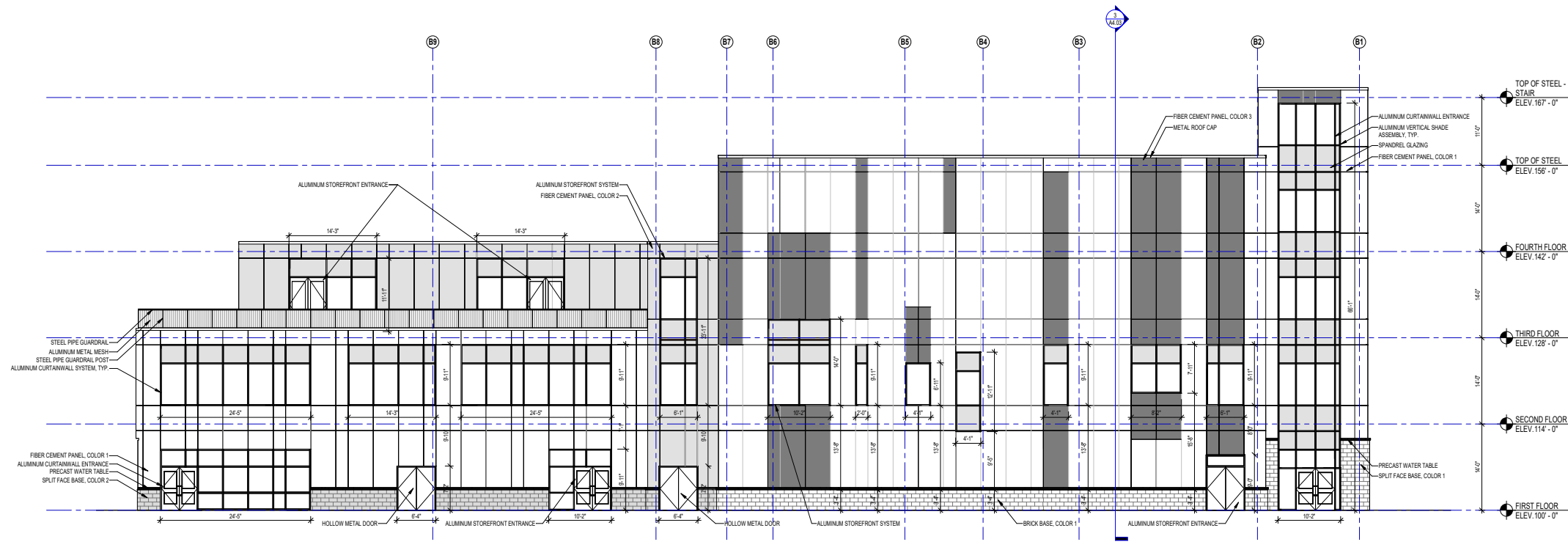
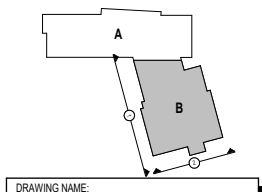
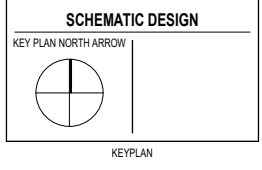


2 SOUTHEAST ELEVATION  
1/8" = 1'-0"

**LEGEND**

SPLIT FACE BLOCK COLOR 1	
SPLIT FACE BLOCK COLOR 2	
FIBER CEMENT PANEL COLOR 1	
FIBER CEMENT PANEL COLOR 2	
FIBER CEMENT PANEL COLOR 3	
ALUMINUM METAL PANEL COLOR 1	

- GENERAL NOTES:**
1. REFER TO SHEET A3.01 FOR TYPICAL HORIZONTAL BOND BREAK IN VENEER CHANGES IN VENEER MATERIALS.
  2. REFER TO SHEET A3.31 FOR ADDITIONAL FIBER CEMENT PANEL INFORMATION AND DETAILS.
  3. COORDINATE EXACT LOCATION OF SPANNERS, CAMERAS, AND LIGHTING WITH ARCHITECT PRIOR TO INSTALLATION.
  4. ALL GFRP PANELS AND TRIM TO RECEIVE PAINT. REFERENCE SPEC SECTION 09 91 00 FOR ADDITIONAL INFORMATION.
  5. ALL GFRP CORNERS SHALL BE MITERED AND GULLED.
  6. REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.
  7. REFER TO A3.35 FOR PRECAST AND SUNSHADE TYPES.
  8. REFER TO A3.45 FOR REVEAL DETAILS.



1 SOUTHWEST ELEVATION  
1/8" = 1'-0"

DRAWING NAME:

**EXTERIOR ELEVATIONS**

DRAWN BY: BFC  
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

**A3.03**



CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

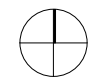
KEYNOTE LEGEND:

LEGEND	
SPLIT FACE BLOCK COLOR 1	
SPLIT FACE BLOCK COLOR 2	
FIBER CEMENT PANEL COLOR 1	
FIBER CEMENT PANEL COLOR 2	
FIBER CEMENT PANEL COLOR 3	
ALUMINUM METAL PANEL COLOR 1	

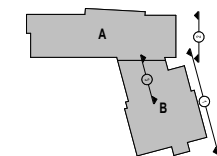
- GENERAL NOTES:**
- REFER TO SHEET A3.01 FOR TYPICAL HORIZONTAL BOND BREAK IN VENEER BETWEEN CHANGES IN VENEER MATERIALS.
  - REFER TO SHEET A3.01 FOR ADDITIONAL FIBER CEMENT PANEL INFORMATION AND DETAILS.
  - COORDINATE EXACT LOCATION OF SPEAKERS, CAMERAS, AND LIGHTING WITH ARCHITECT PRIOR TO INSTALLATION.
  - ALL GFRP PANELS AND TRIM TO RECEIVE PAINT. REFERENCE SPEC SECTION 09 91 00 FOR ADDITIONAL INFORMATION.
  - ALL GFRP CORNERS SHALL BE MITERED AND GULLED.
  - REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.
  - REFER TO A3.05 FOR PRECAST AND SUNSHADE TYPES.
  - REFER TO A3.04 FOR REVEAL DETAILS.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN



DRAWING NAME:

**EXTERIOR ELEVATIONS**

DRAWN BY: NS / BFC

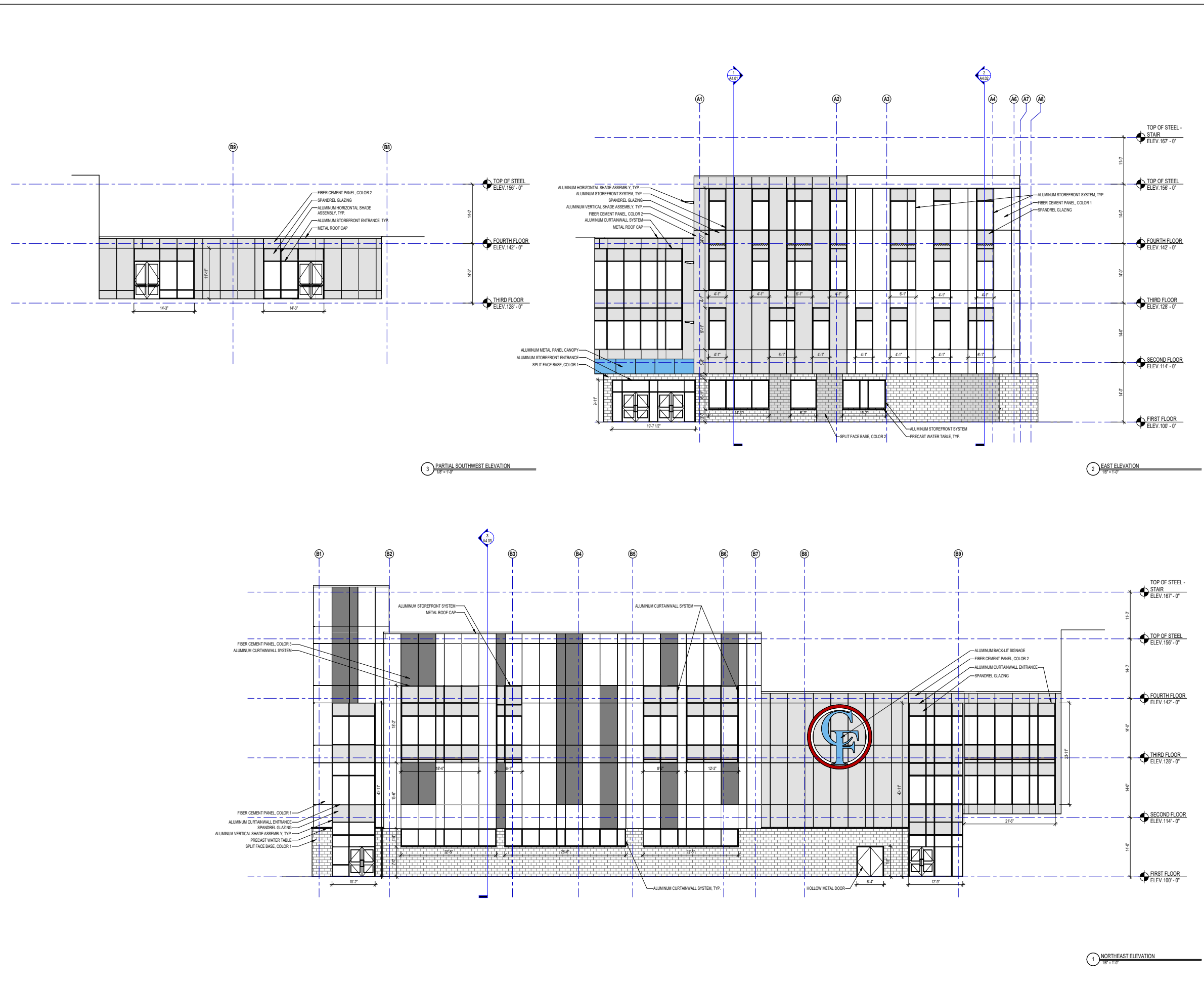
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:

JOB NO.: 2202.00

DATE: SEPT 15, 2022

**A3.04**







CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

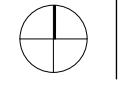
LEGEND	
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SPLIT FACE BLOCK COLOR 2	
FIBER CEMENT PANEL COLOR 1	
FIBER CEMENT PANEL COLOR 2	
FIBER CEMENT PANEL COLOR 3	
ALUMINUM METAL PANEL COLOR 1	

GENERAL NOTES:

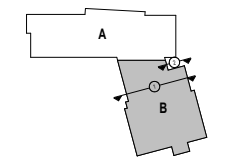
- REFER TO SHEET A3.01 FOR TYPICAL HORIZONTAL BOND BREAK IN VENEER BETWEEN CHANGES IN VENEER MATERIALS.
- REFER TO SHEET A3.31 FOR ADDITIONAL FIBER CEMENT PANEL INFORMATION AND DETAILS.
- COORDINATE EXACT LOCATION OF SPANDRELS, CAMERAS, AND LIGHTING WITH ARCHITECT PRIOR TO INSTALLATION.
- ALL GFRP PANELS AND TRIM TO RECEIVE PAINT. REFERENCE SPEC SECTION 09 91 00 FOR ADDITIONAL INFORMATION.
- ALL GFRP CORNERS SHALL BE MITERED AND GULLED.
- REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.
- REFER TO A3.35 FOR PRECAST AND SUNSHADE TYPES.
- REFER TO A3.45 FOR REVEAL DETAILS.

SCHEMATIC DESIGN

KEY PLAN NORTH ARROW



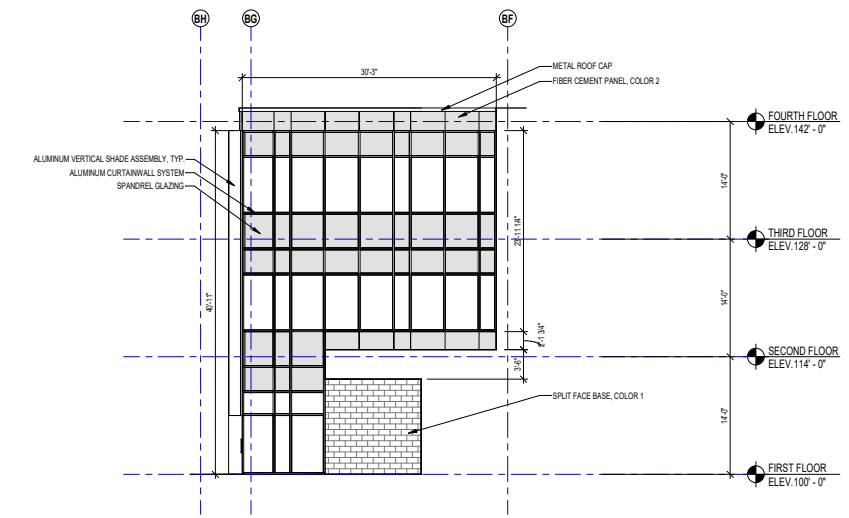
KEYPLAN



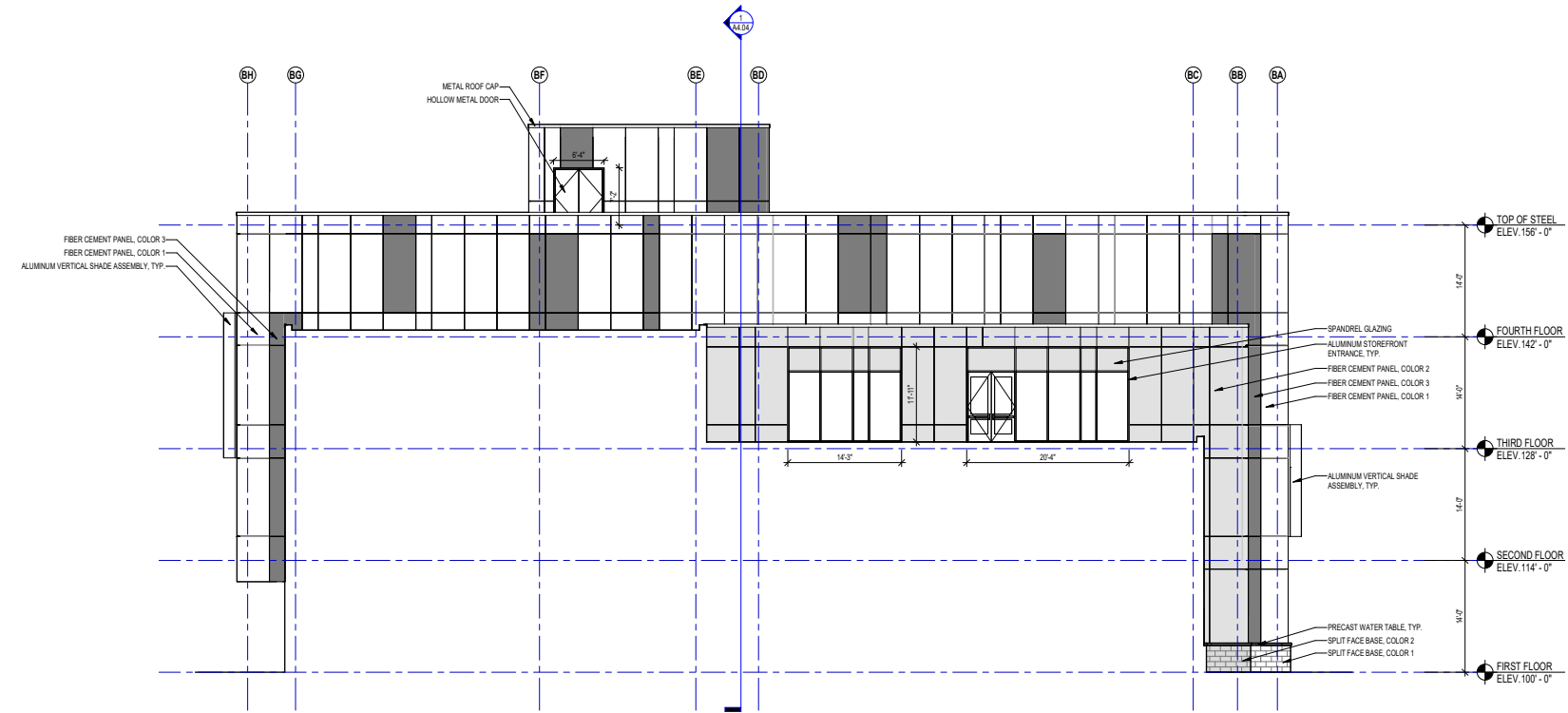
DRAWING NAME:

EXTERIOR ELEVATIONS

DRAWN BY: BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A3.05**



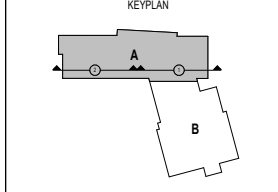
2 PARTIAL NORTHWEST ELEVATION  
1/8" = 1'-0"



1 PARTIAL NORTHWEST ELEVATION  
1/8" = 1'-0"

**GENERAL NOTES:**  
1. REFER TO CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS  
2. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS  
3. REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING

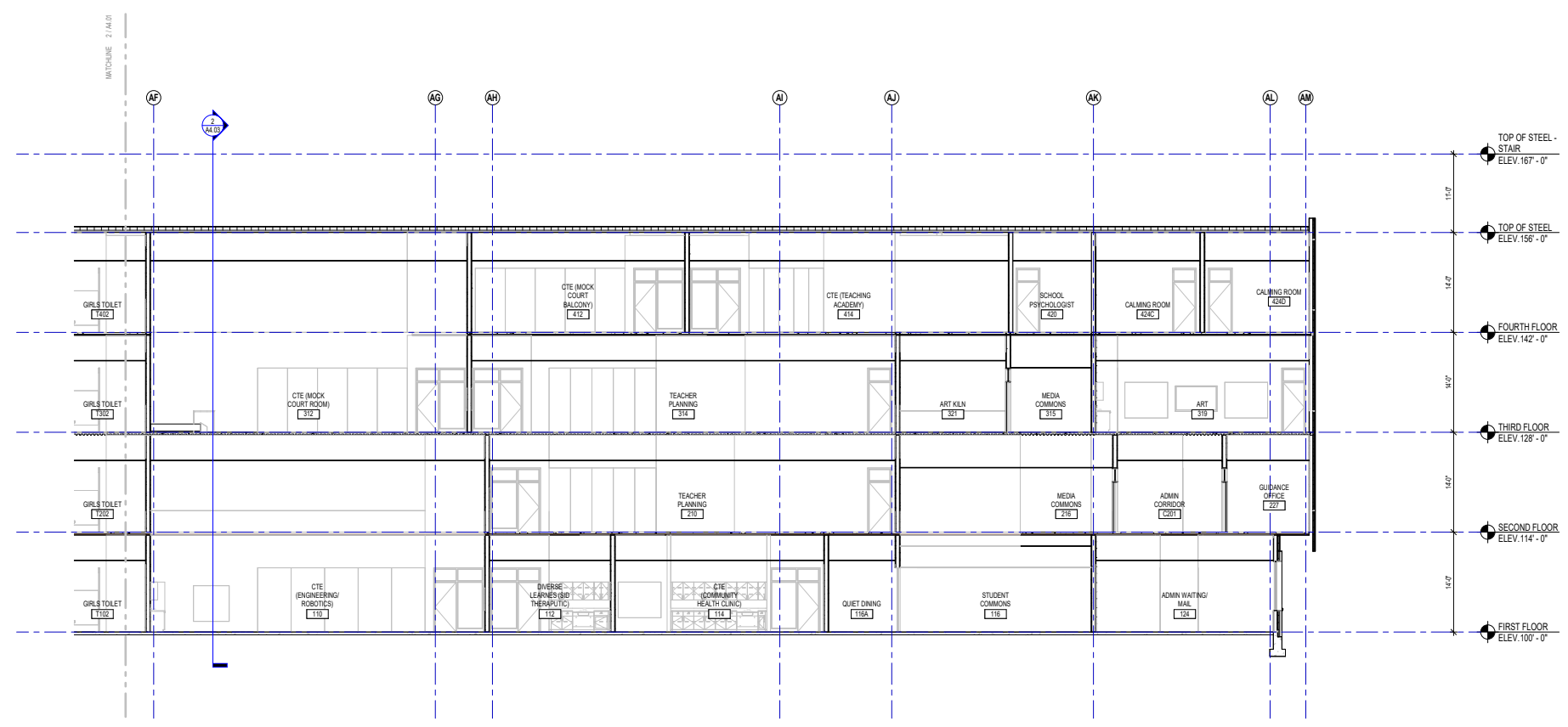
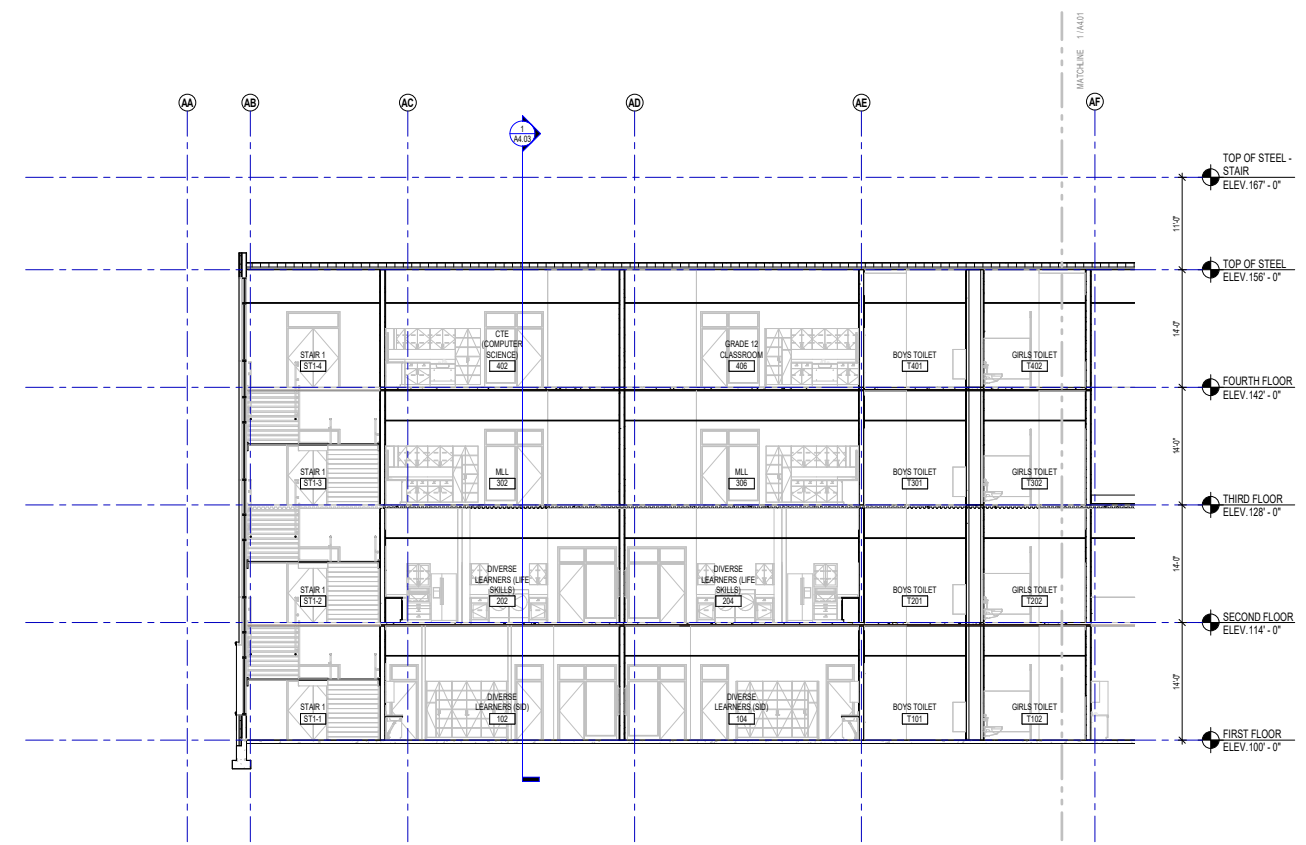
**SCHEMATIC DESIGN**  
KEY PLAN NORTH ARROW



DRAWING NAME:

**BUILDING SECTIONS**

DRAWN BY: NS / BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022  
**A4.01**





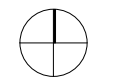
CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

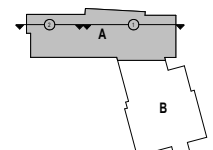
- GENERAL NOTES:**
1. REFER TO CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS
  2. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
  3. REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEY PLAN



DRAWING NAME:

**BUILDING SECTIONS**

DRAWN BY: BFC

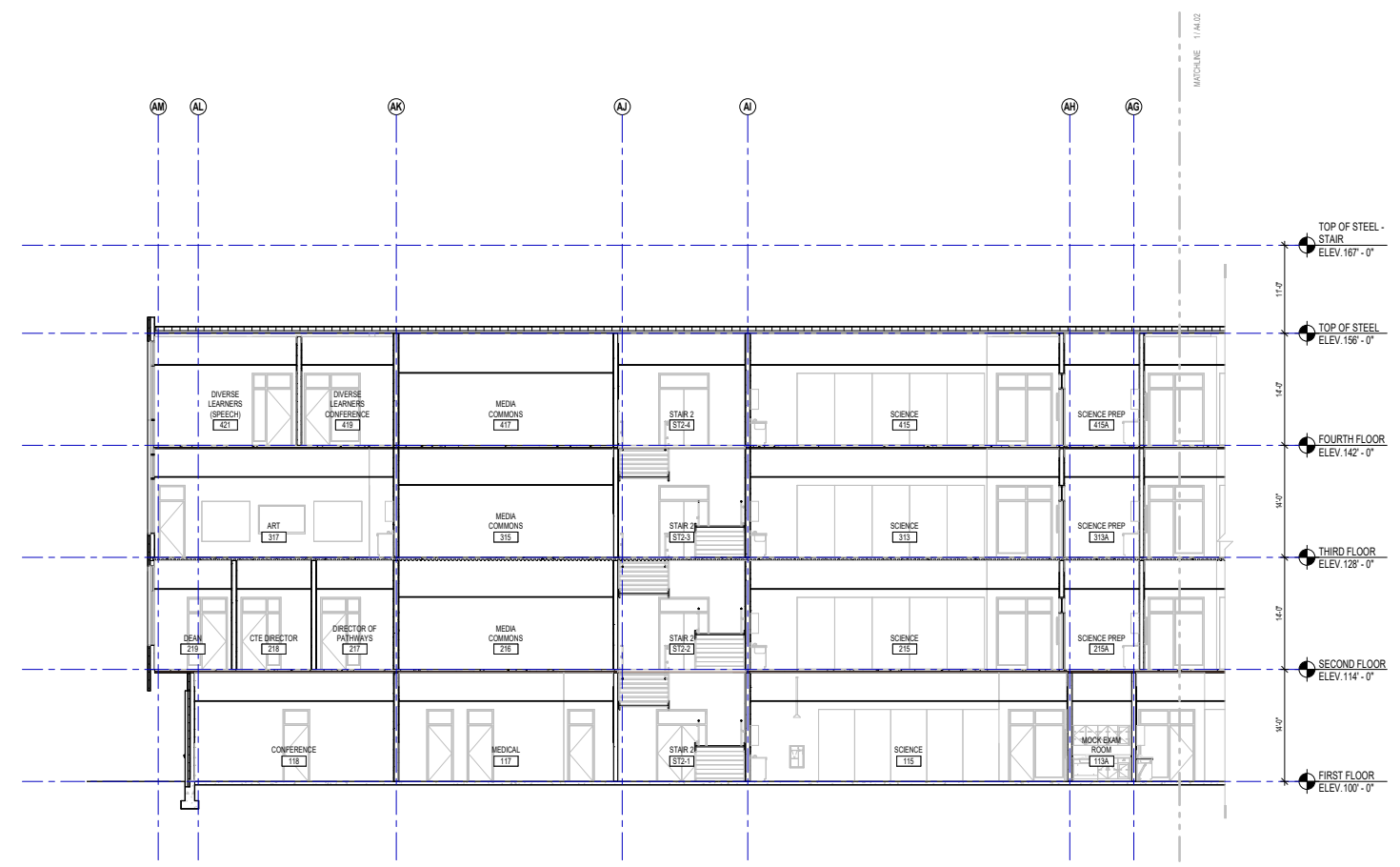
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:

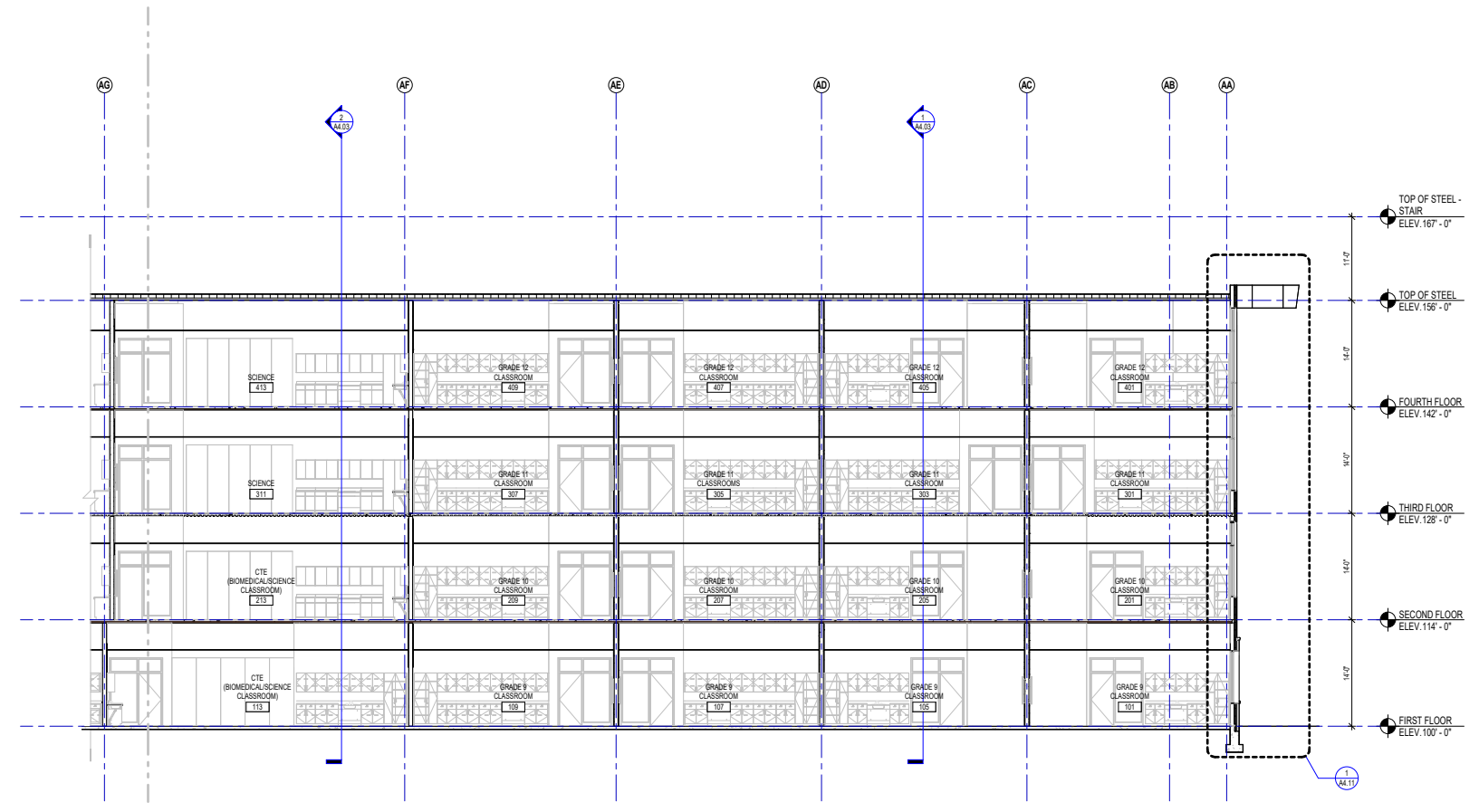
JOB NO.: 2202.00

DATE: SEPT 15, 2022

**A4.02**



2 BUILDING SECTION  
1/8" = 1'-0"



1 BUILDING SECTION  
1/8" = 1'-0"



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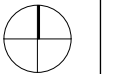
KEYNOTE LEGEND:

**GENERAL NOTES:**

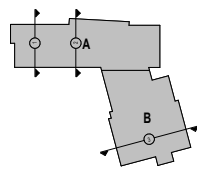
1. REFER TO CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS
2. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
3. REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN



DRAWING NAME:

**BUILDING SECTIONS**

DRAWN BY: NS / BFC

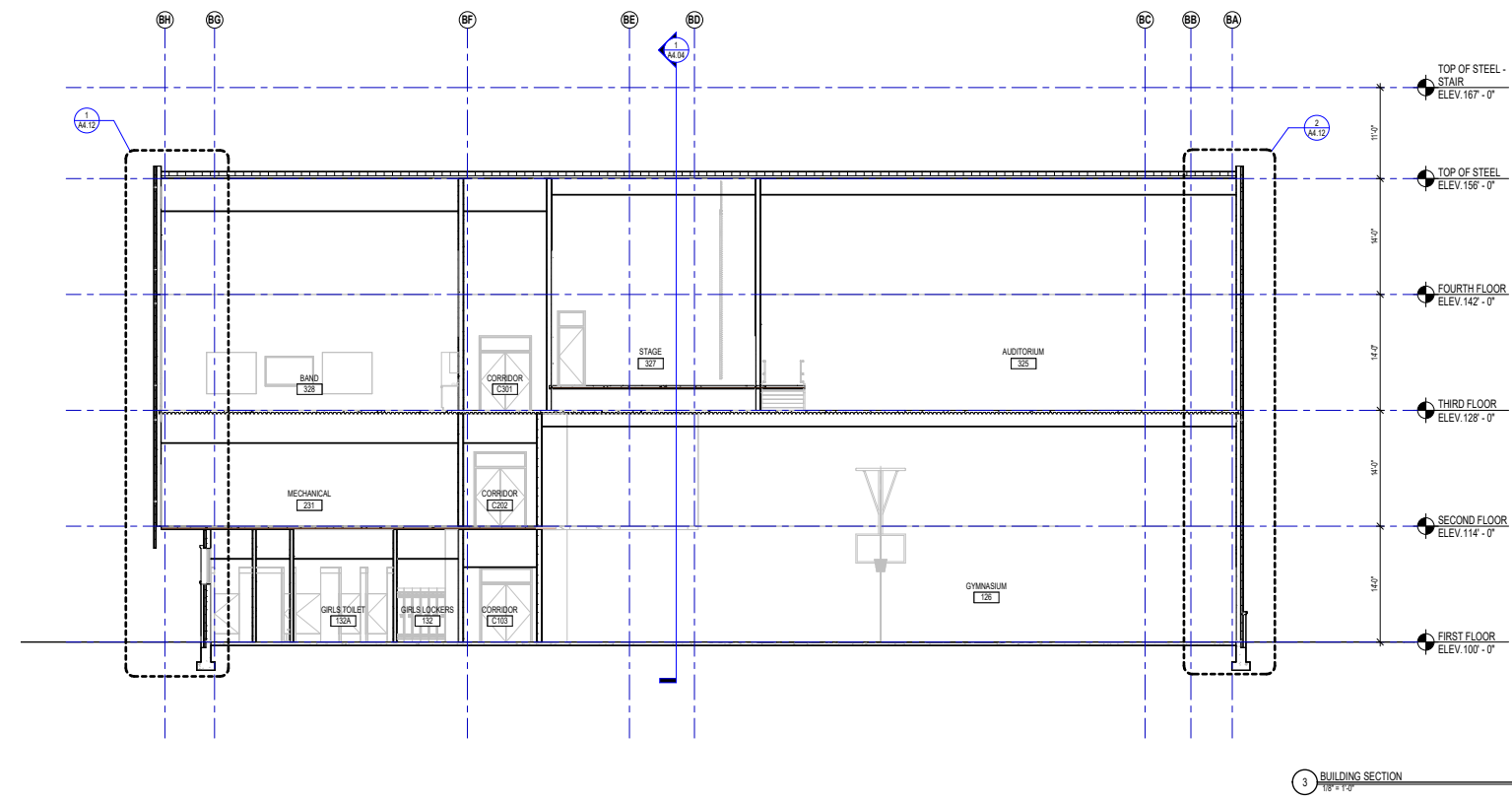
REVIEWED BY: CHR / KK

SCALE: AS INDICATED | DRAWING NUMBER:

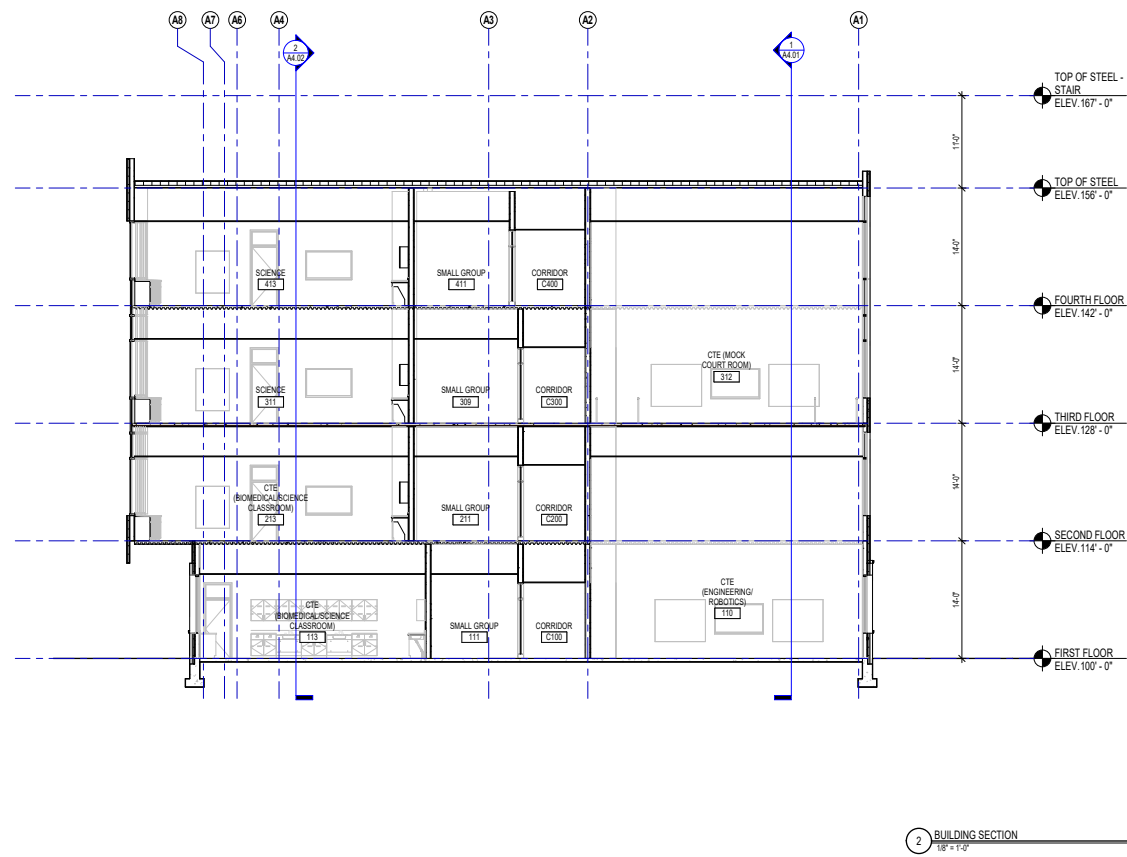
JOB NO.: 2202.00

DATE: SEPT 15, 2022

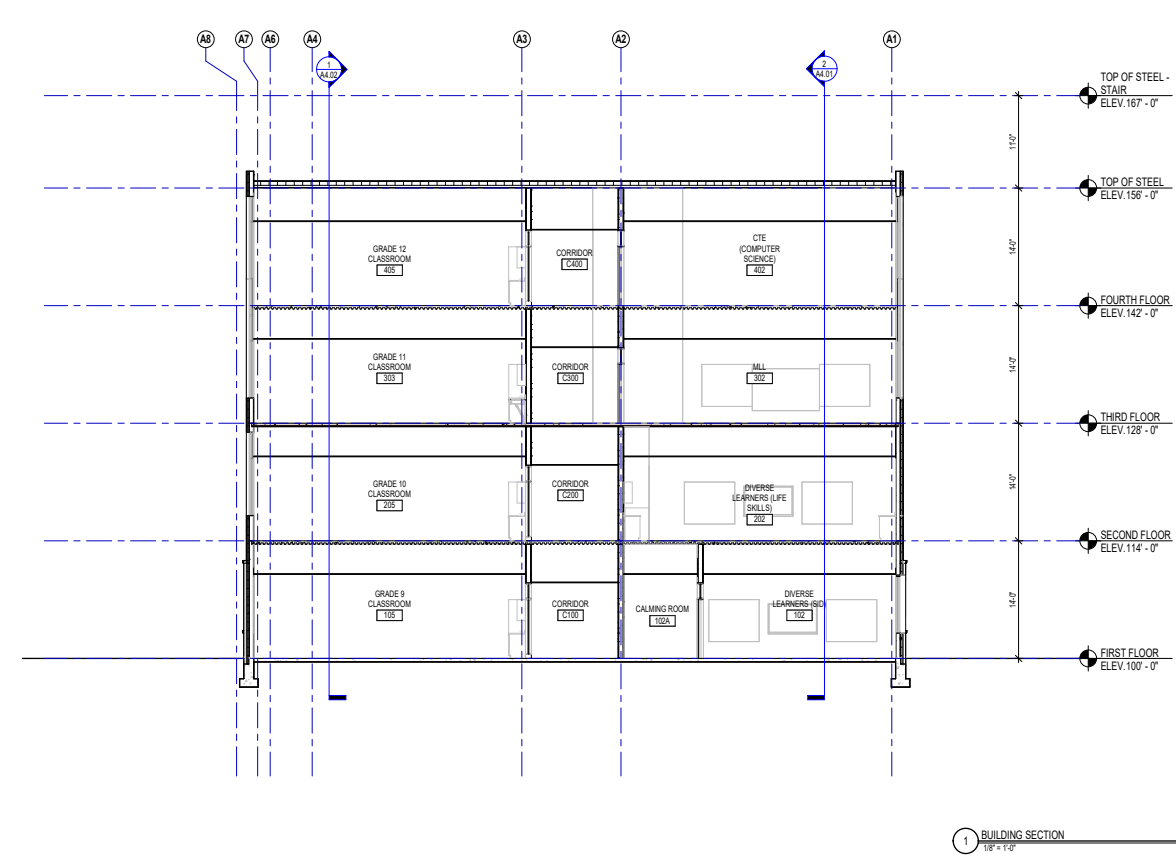
**A4.03**



3 BUILDING SECTION  
1/8" = 1'-0"



2 BUILDING SECTION  
1/8" = 1'-0"



1 BUILDING SECTION  
1/8" = 1'-0"



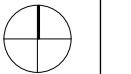
CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

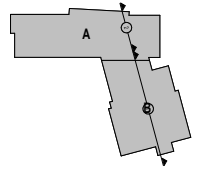
- GENERAL NOTES:**
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  - REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
  - REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



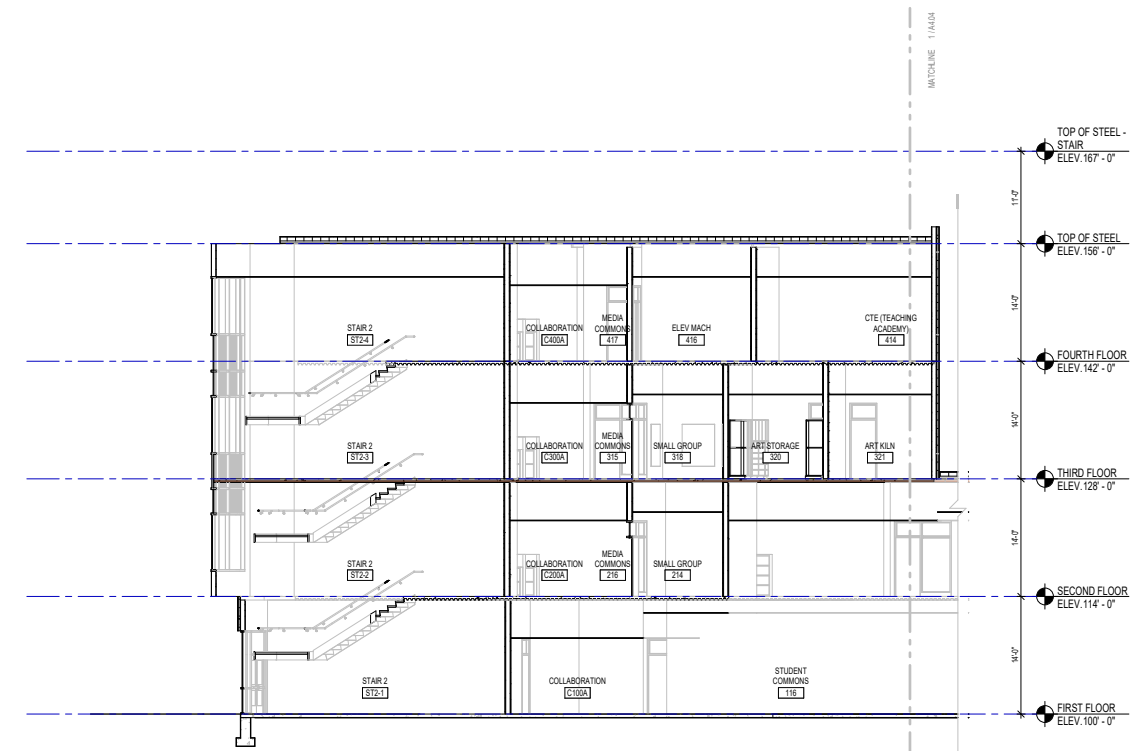
KEY PLAN



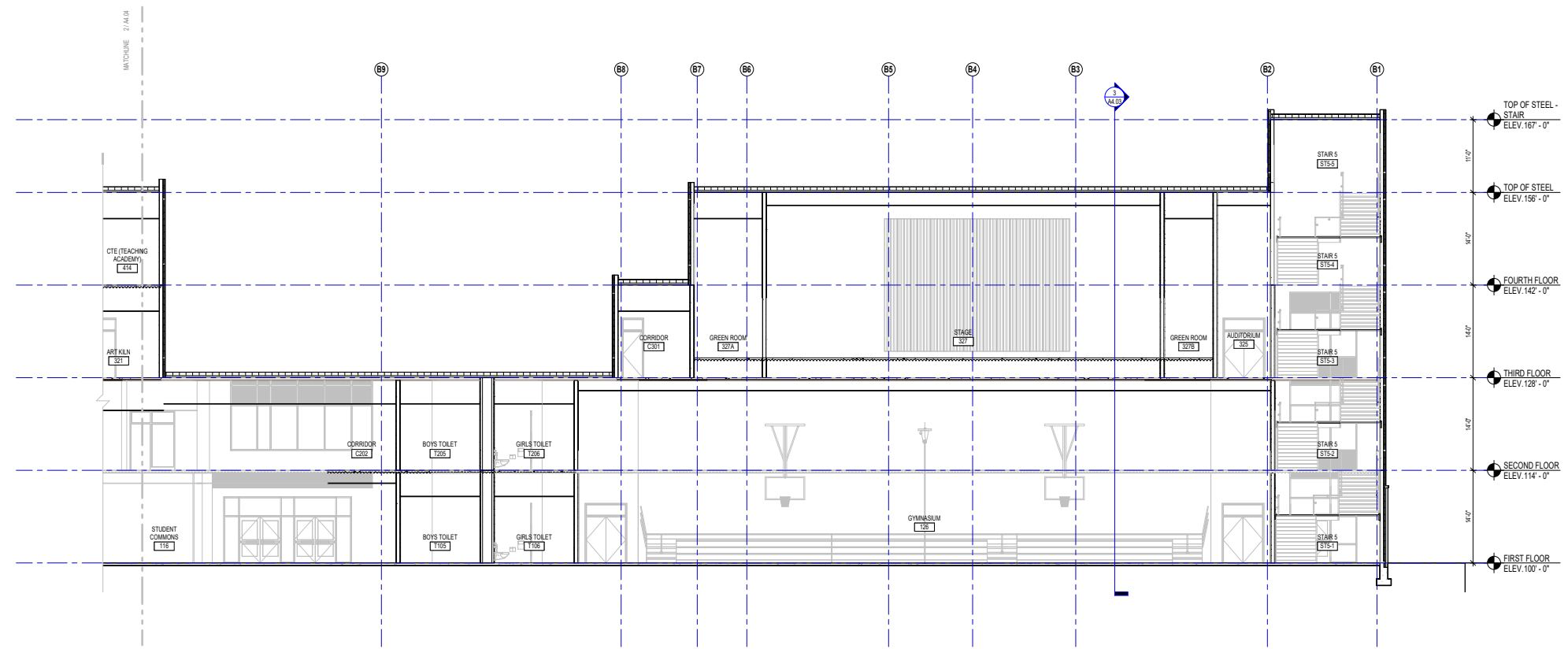
DRAWING NAME:

**BUILDING SECTIONS**

DRAWN BY: BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022  
**A4.04**



2 BUILDING SECTION  
18'-11 1/2"



1 BUILDING SECTION  
18'-11 1/2"





CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

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KEYNOTE LEGEND:

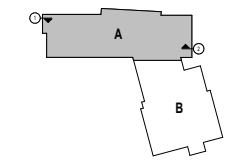
- GENERAL NOTES:**
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  - REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
  - REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL BEAMING
  - REFERENCE EXTERIOR ELEVATIONS FOR VARIATION IN COLORS

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



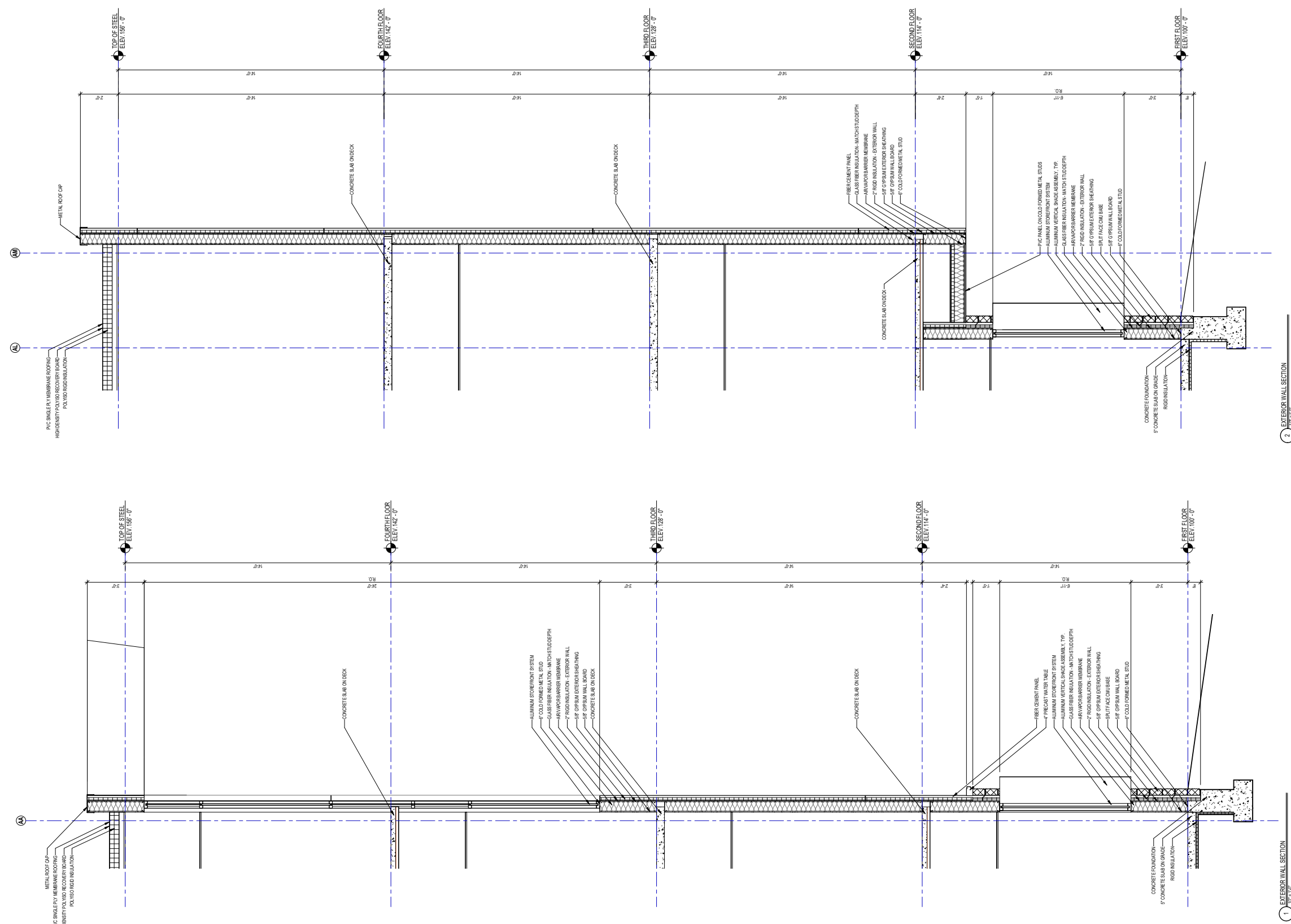
KEY PLAN



DRAWING NAME:

**WALL SECTIONS**

DRAWN BY: BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022  
**A4.11**





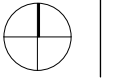
CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

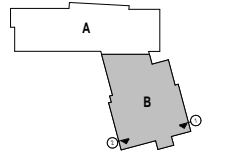
- GENERAL NOTES:**
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  2. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
  3. REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING
  4. REFERENCE EXTERIOR ELEVATIONS FOR VARIATION IN COLORS

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



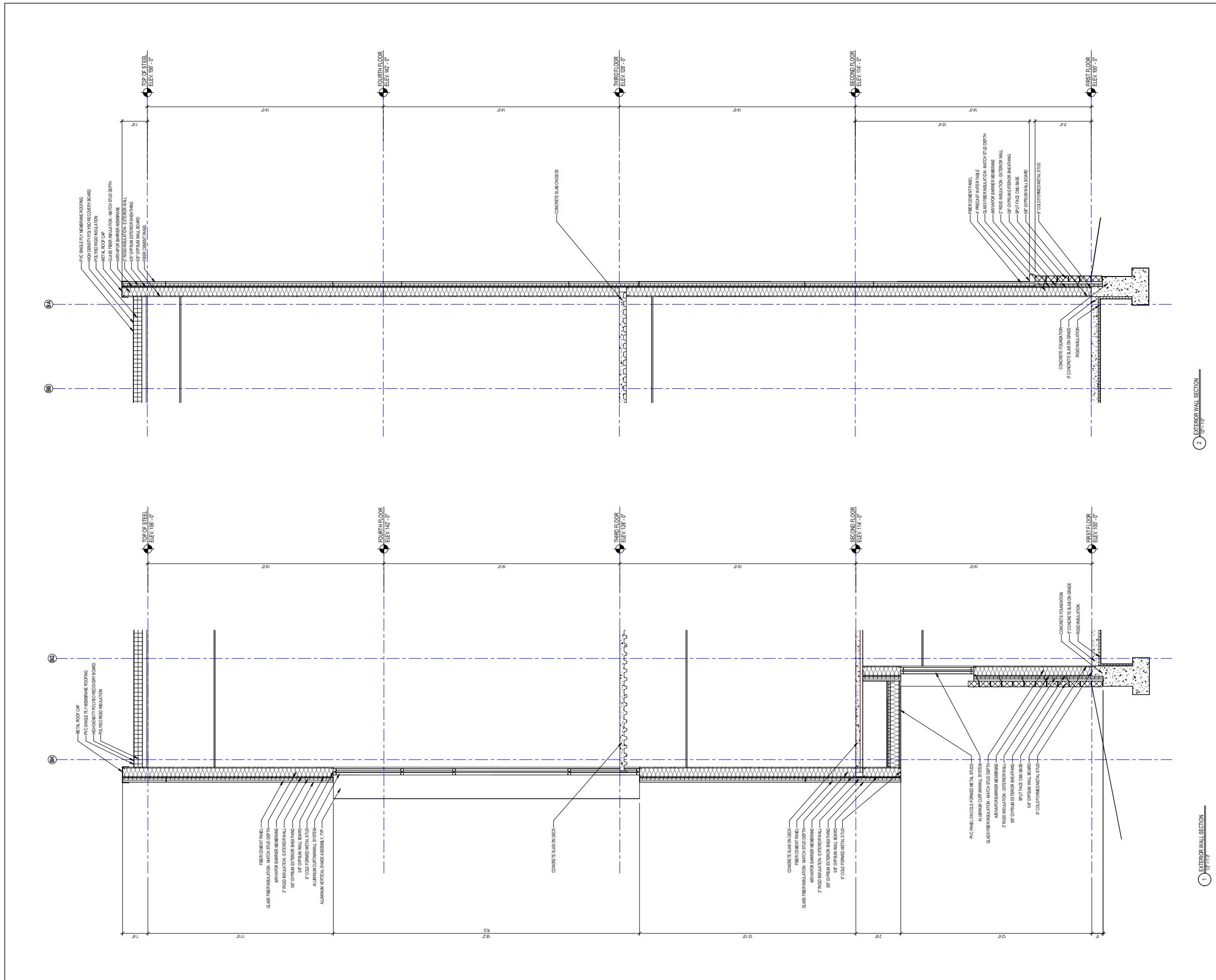
KEY PLAN



DRAWING NAME:

**WALL SECTIONS**

DRAWN BY: NS / BFC  
REVIEWED BY: CHR / KK  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022  
**A4.12**



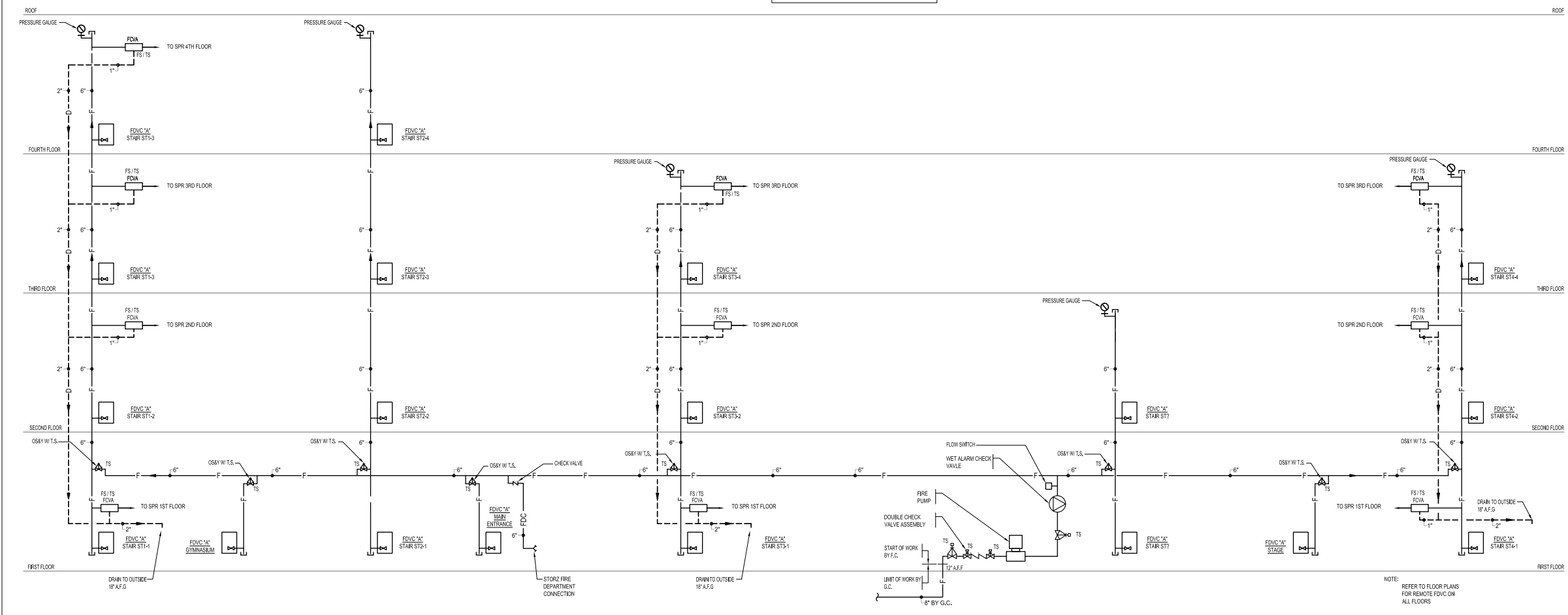




CENTRAL FALLS HIGH SCHOOL  
24 SUMMER ST, CENTRAL FALLS, RI

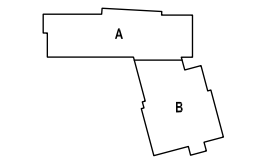
KEYNOTE LEGEND:

NOTES:  
1. ALL VALVES INSTALLED ABOVE CEILINGS OR BEHIND WALLS SHALL INCLUDE AN ACCESS PANEL, SEE SPECIFICATIONS.



**FIRE RISER**

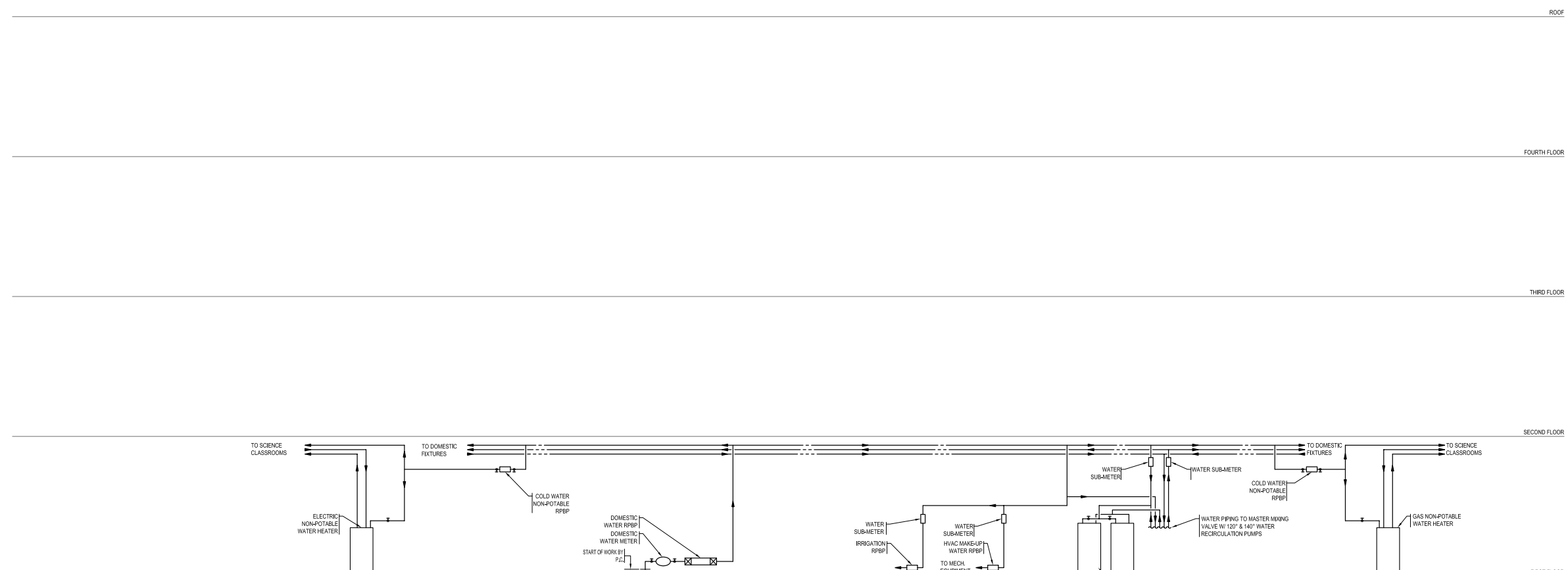
**SCHEMATIC DESIGN**  
KEY PLAN NORTH ARROW  
  
KEYPLAN



DRAWING NAME:  
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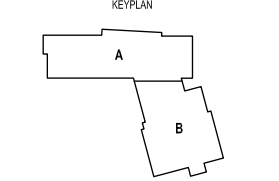
DRAWN BY:	AMD
REVIEWED BY:	AMD
SCALE:	NONE   DRAWING NUMBER:
JOB NO.:	2202.00
DATE:	SEPT 15, 2022

**FP-1**



**1** DOMESTIC HOT WATER RISER DIAGRAM - WATER  
NOT TO SCALE

**SCHEMATIC DESIGN**  
KEY PLAN NORTH ARROW



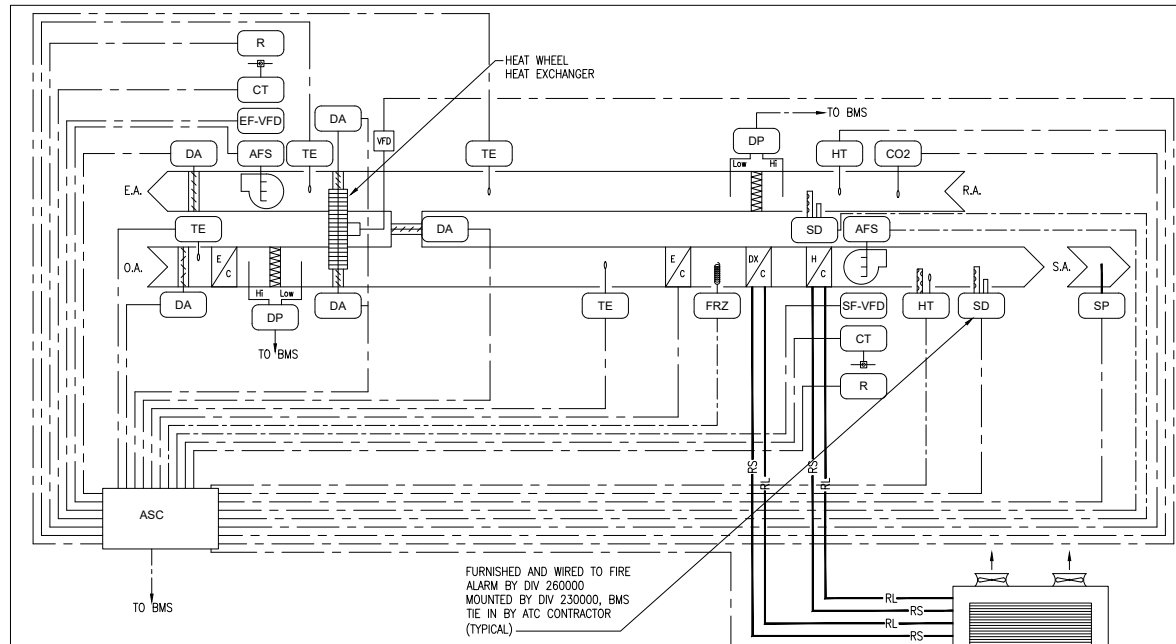
DRAWING NAME:  
**PLUMBING RISER DIAGRAM**

DRAWN BY: AMD  
REVIEWED BY: AMD

SCALE: NONE | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

**P-1**





**SEQUENCE OF OPERATION**

Sheet Metal Contractor shall install smoke dampers in the supply air and return air ductwork to all HVAC systems conveying over 15,000 CFM. The ATC Contractor shall interlock the smoke dampers such that the dampers shall close on receiving a signal from the duct mounted smoke detectors, and shall simultaneously de-energize the equipment. Fire alarm interconnections from the smoke detectors shall remain the responsibility of Division 26.

- Smoke detectors are furnished, installed and wired by others to shut down energy recovery unit on alarm.
- Energy recovery unit shall shut down in general alarm condition.
- Energy recovery units shall be furnished with a factory mounted and wired end devices which shall include but not be limited to dampers, damper actuators, temperature sensors, humidity transducers and pressure sensors.
- Unit controls shall be compatible with BMS through BACnet, LON, or N2 connection as required to suit the automatic temperature control system.
- Provide a static pressure controller two-thirds (2/3) of the distance downstream in the effectively longest duct run. The pressure sensor shall provide the error offset signal to its corresponding adjustable frequency AC drive P.L.D. controller. The controller shall adjust the drive output signal, varying the supply fan speed to maintain the proper system pressure.
- The exhaust fan shall be modulated to track airflow as sensed by fan inlet air flow measuring stations (supply and return). The DDC system shall monitor supply CFM and calculate an exhaust airflow setpoint by subtracting a fixed offset. The calculated exhaust air setpoint shall be maintained by modulating the speed of the exhaust air fan via its variable frequency drive, increasing fan speed on a drop in airflow as sensed by the air sensor.
- Provide high static and low static pressure controllers at the supply fan and at the exhaust fan to stop the system and signal on alarm if limit conditions are exceeded.

- Heating Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The outside air damper and exhaust air damper shall open. The re-circulation damper shall close.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 68°F (adj.).

- Heating Cycle - "Unoccupied":**
- The supply fan shall run only upon demand from the setback set point controller, the exhaust fan shall remain de-energized. The outside air damper and exhaust air damper shall remain closed and the re-circulation damper shall remain open.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 60°F (adj.).

DX heat and backup electric coil:

- Back-up electric coil shall be enable at 17°F and below. If back-up electric coil is enabled the DX heating system shall be locked out. Above 17°F DX heating system shall be enabled and the back-up electric coil shall be locked out.

- Cooling Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The fresh air damper and exhaust air damper shall open. The recirculation damper shall close.
  - Economizer control shall use outside air for cooling requirements on sensing that the ambient enthalpy meets the unit discharge demands (comparative). While in economizer mode, the heat wheel shall stop and the heat wheel bypass dampers shall open.
  - On sensing that ambient air is not appropriate to meet the 'cooling' requirements, the remote duct mounted proportional signal temperature sensor shall initiate the condensing unit and stage the compressors as required to maintain a discharge air temperature of 55°F.

- Cooling Cycle - "Unoccupied":**
- The system shall remain de-energized. The fresh air damper and exhaust air damper shall remain 100% closed.

- Hot Gas Reheat:**
- Reheat is automatically energized whenever dehumidification is needed based on return humidity and return air temperature.

- Freeze Protection Cycle:**
- Electric pre heat will engage to prevent wheel frosting.

- Discharge Air Temperature Reset Control:**
- The ATC contractor shall furnish and install sensors and controls to enable space temperature based reset of discharge air temperature (adj.) to prevent sub-cooling of spaces.
  - The Building Management System sense return air temperature and shall reset the supply air temperature set point according to the straight line ramp function defined herein:

Outside Air Temp.	Supply Air Temp. Set Point
75°F and Above	55°F (adj.)
65°F and Below	68°F (adj.)

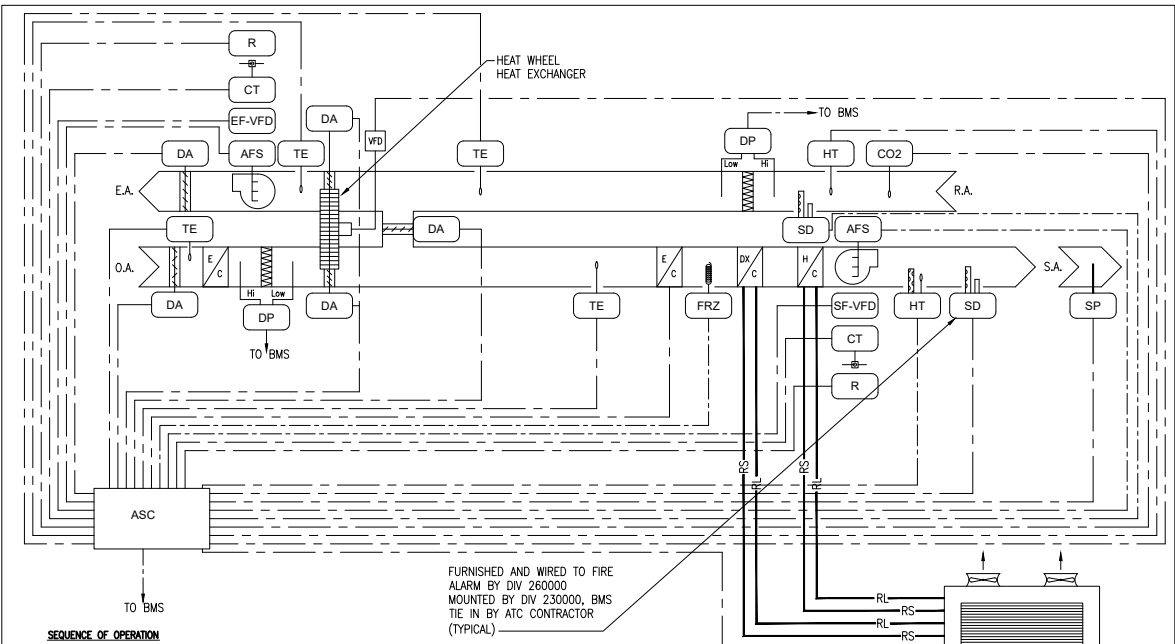
- Static Pressure Reset Control:**
- ATC contractor shall provide static pressure reset control which shall reset the discharge static pressure set point when terminal boxes are in the unoccupied mode (damper closed).

**Static Safeties:** Return duct low static pressure safety will stop supply and return fans, close outdoor/exhaust dampers and open heating coil valve 100% when pressure exceeds set point. The set point is adjustable at the device. A manual reset is required at the device to restart the unit.

- Alarms:** The following alarms will annunciate at the workstation:
- If the supply or return fan status is not indicated within 30sec of start command, a fan failure alarm is generated.
  - If filter differential pressure exceeds the normal pressure setting for the rooftop unit's filters, a dirty filter alarm is generated.
  - Low temperature detector below 35°F.
  - Low static pressure safeties.
  - Discharge air temperature is +/- 5°F form set point during occupied mode.

**Demand load shedding:** Upon demand load shed protocol, either remotely or on site, the selected ERV shall disengage and power down. All dampers shall close. A notification shall be visible on the BMS showing that unit is in Demand Load shed mode. All ERV shall be individual shed or as a group.

ROOFTOP UNIT HEAT PUMP (100% OUTSIDE AIR)



**SEQUENCE OF OPERATION**

Sheet Metal Contractor shall install smoke dampers in the supply air and return air ductwork to all HVAC systems conveying over 15,000 CFM. The ATC Contractor shall interlock the smoke dampers such that the dampers shall close on receiving a signal from the duct mounted smoke detectors, and shall simultaneously de-energize the equipment. Fire alarm interconnections from the smoke detectors shall remain the responsibility of Division 26.

- Smoke detectors are furnished, installed and wired by others to shut down energy recovery unit on alarm.
- Energy recovery unit shall shut down in general alarm condition.
- Energy recovery units shall be furnished with a factory mounted and wired end devices which shall include but not be limited to dampers, damper actuators, temperature sensors, humidity transducers and pressure sensors.
- Unit controls shall be compatible with BMS through BACnet, LON, or N2 connection as required to suit the automatic temperature control system.
- Provide a static pressure controller two-thirds (2/3) of the distance downstream in the effectively longest duct run. The pressure sensor shall provide the error offset signal to its corresponding adjustable frequency AC drive P.L.D. controller. The controller shall adjust the drive output signal, varying the supply fan speed to maintain the proper system pressure.
- The exhaust fan shall be modulated to track airflow as sensed by fan inlet air flow measuring stations (supply and return). The DDC system shall monitor supply CFM and calculate an exhaust airflow setpoint by subtracting a fixed offset. The calculated exhaust air setpoint shall be maintained by modulating the speed of the exhaust air fan via its variable frequency drive, increasing fan speed on a drop in airflow as sensed by the air sensor.
- Provide high static and low static pressure controllers at the supply fan and at the exhaust fan to stop the system and signal on alarm if limit conditions are exceeded.

- Heating Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The fresh air damper and exhaust air damper shall open to minimum air position. The recirculation damper shall close to match outside air damper position.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 60°F (adj.).

- Heating Cycle - "Unoccupied":**
- The supply fan shall run only upon demand from the setback set point controller, the exhaust fan shall remain de-energized. The fresh air damper and exhaust air damper shall remain closed and the recirculation damper shall remain open.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 60°F (adj.).

DX heat and backup electric coil:

- Back-up electric coil shall be enable at 17°F and below. If back-up electric coil is enabled the DX heating system shall be locked out. Above 17°F DX heating system shall be enabled and the back-up electric coil shall be locked out.

- Cooling Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The fresh air damper and exhaust air damper shall open to minimum air position. The recirculation damper shall close to match outside air damper position.
  - Economizer control shall use outside air for cooling requirements on sensing that the ambient enthalpy meets the unit discharge demands (comparative). While in economizer mode, the heat wheel shall stop and the heat wheel bypass dampers shall open.
  - On sensing that ambient air is not appropriate to meet the 'cool-down' requirements, the remote duct mounted proportional signal temperature sensor shall initiate the condensing unit and stage the compressors as required to maintain a discharge air temperature of 55°F.

- Cooling Cycle - "Unoccupied":**
- The system shall remain de-energized. The fresh air damper and exhaust air damper shall remain 100% closed.

- Hot Gas Reheat:**
- Reheat is automatically energized whenever dehumidification is needed based on return humidity and return air temperature.

- Freeze Protection Cycle:**
- Energy wheel shall cycle to prevent wheel frosting.

- Discharge Air Temperature Reset Control:**
- The ATC contractor shall furnish and install sensors and controls to enable space temperature based reset of discharge air temperature (adj.) to prevent sub-cooling of spaces.
  - The Building Management System sense return air temperature and shall reset the supply air temperature set point according to the straight line ramp function defined herein:

Return Air Temp.	Supply Air Temp. Set Point
75°F	55°F (adj.)
70°F	65°F (adj.)

- Demand Controlled Ventilation:**
- Furnish and install a CO2 sensor in the return air duct which shall, through the DDC system modulate the outdoor air, return air and exhaust air dampers in response to the CO2 level in the space.
  - The return air CO2 level shall reset the minimum outdoor CFM set point based on the following reset schedule:

UNIT	O.A. CFM @ 600 PPM CO2	O.A. CFM @ 800 PPM CO2
ERV-4	670	2650
ERV-4	525	2100
ERV-5	525	2100
ERV-8	280	1090

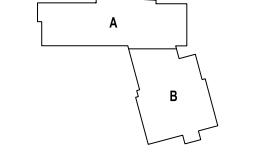
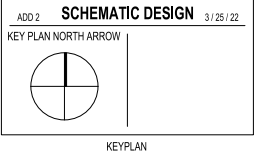
- Supply and return fan speed shall ramp down to 50% (adj.) of maximum when 600 PPM or below is sensed and space temperature is satisfied.
- ERV-3 outside air damper position shall be over ridden upon activation of kitchen hood. Damper position shall modulate to main make up air. MAX cfm 2605. EF/RF shall modulate based on kitchen exhaust fan speed.

**Static Safeties:** Return duct low static pressure safety will stop supply and return fans, close outdoor/exhaust dampers and open heating coil valve 100% when pressure exceeds set point. The set point is adjustable at the device. A manual reset is required at the device to restart the unit.

- Alarms:** The following alarms will annunciate at the workstation:
- If the supply or return fan status is not indicated within 30sec of start command, a fan failure alarm is generated.
  - If filter differential pressure exceeds the normal pressure setting for the rooftop unit's filters, a dirty filter alarm is generated.
  - Low temperature detector below 35°F.
  - Low static pressure safeties.
  - Discharge air temperature is +/- 5°F form set point during occupied mode.

**Demand load shedding:** Upon demand load shed protocol, either remotely or on site, the selected ERV shall disengage and power down. All dampers shall close. A notification shall be visible on the BMS showing that unit is in Demand Load shed mode. All ERV shall be individual shed or as a group. ERV-5 shall not be part of the Demand load shedding.

ROOFTOP UNIT HEAT PUMP

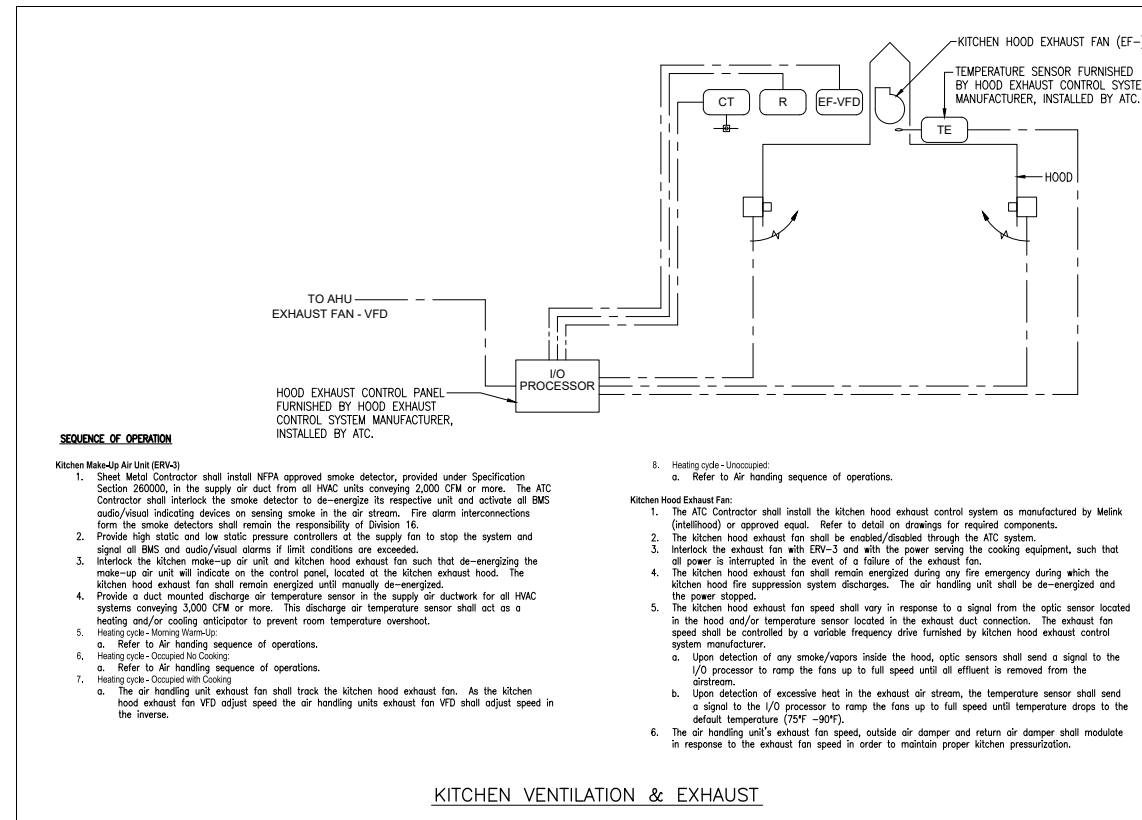


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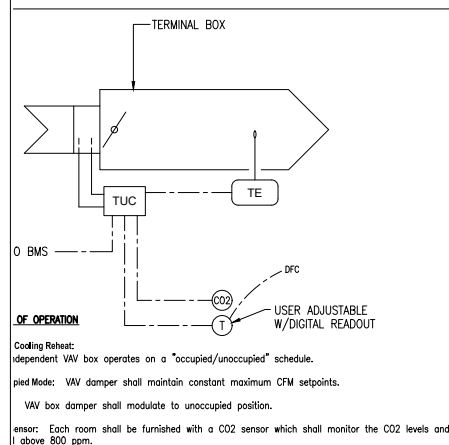
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REVIEWED BY: DAH

SCALE: NONE  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

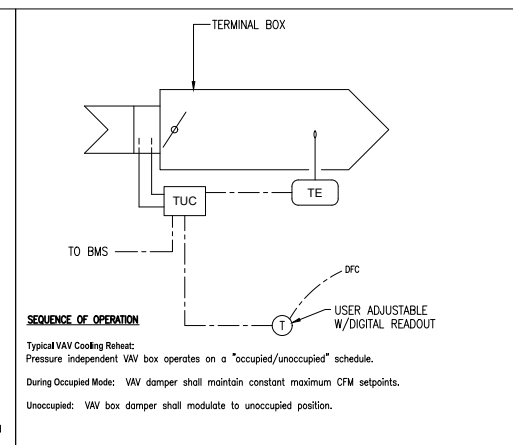
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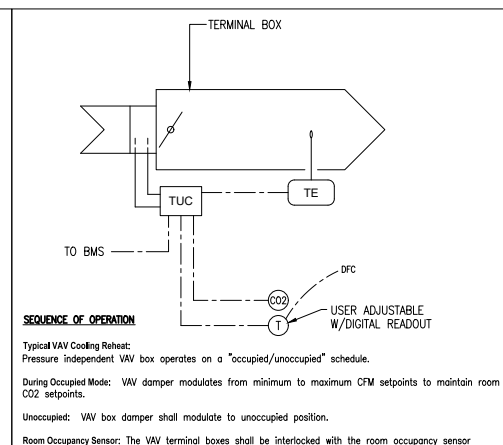
**KITCHEN VENTILATION & EXHAUST**



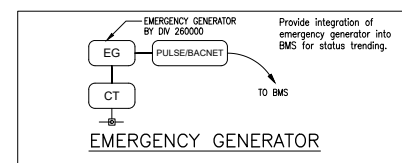
**CONSTANT VOLUME VENTILATION CONTROL VALVE (OFFICE/ADMINISTRATION/NURSES SUITS)**



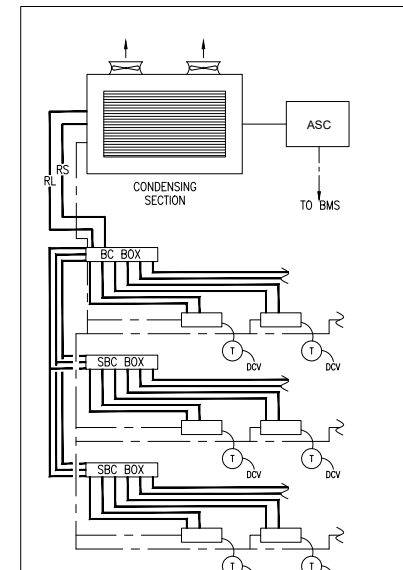
**CONSTANT VOLUME VENTILATION CONTROL VALVE (CORRIDORS)**



**DEMAND VENTILATION CONTROL VALVE**



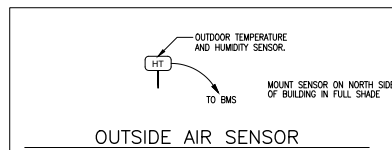
**EMERGENCY GENERATOR**



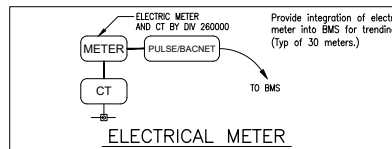
**SEQUENCE OF OPERATION**

- Unit controls shall be compatible with BMS through BACnet, LON, or N2 connection as required to suit the automatic temperature control system.
- Morning Warm-up:**
- The condenser shall engage. The ductless cooling units shall engage. The onboard controls shall determine the optimal fan speed to bring space to occupied set point.
- Heating Cycle - "Occupied":**
- The condenser shall engage. The ductless cooling units shall engage. The onboard controls shall determine the optimal fan speed to maintain space occupied set point.
- Heating Cycle - "Unoccupied":**
- The ductless cooling unit shall run only upon demand from the setback set point controller.
- Cooling Cycle - "Morning Cookdown":**
- The condenser shall engage. The ductless cooling units shall engage. The onboard controls shall determine the optimal fan speed to bring space down to occupied set point.
- Cooling Cycle - "Occupied":**
- The condenser shall engage. The ductless cooling units shall engage. The onboard controls shall determine the optimal fan speed to maintain space occupied set point.
- Cooling Cycle - "Unoccupied":**
- The ductless cooling unit shall run only upon demand from the setback set point controller.

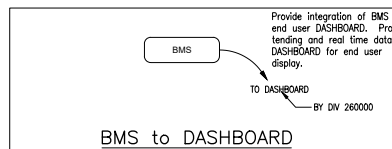
**VARIABLE REFRIGERANT FLOW (VRF)**



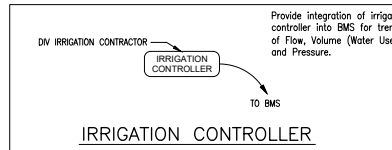
**OUTSIDE AIR SENSOR**



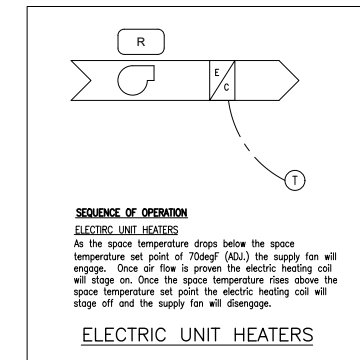
**ELECTRICAL METER**



**BMS to DASHBOARD**



**IRRIGATION CONTROLLER**

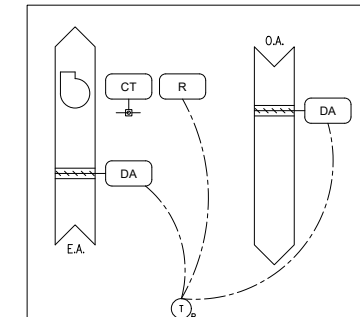


**SEQUENCE OF OPERATION**

**ELECTRIC UNIT HEATERS**

As the space temperature drops below the space temperature set point of 70degF (ADU) the supply fan will engage. Once air flow is proven the electric heating coil will stage on. Once the space temperature rises above the space temperature set point the electric heating coil will stage off and the supply fan will disengage.

**ELECTRIC UNIT HEATERS**

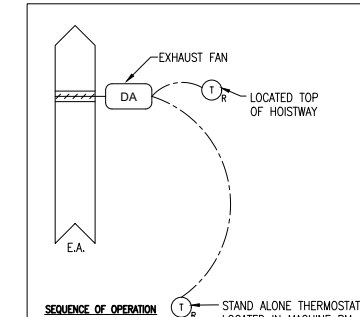


**SEQUENCE OF OPERATION**

Upon a rise in space temperature above setpoint (ADU) as sensed by the remote space mounted reverse acting thermostat, the outside air and exhaust air dampers shall open and the exhaust fan shall start. Upon a drop in space temperature, the reverse shall occur.

Upon sensing a space temperature of 104F (ADU) or above, an alarm shall register at the operator's workstation.

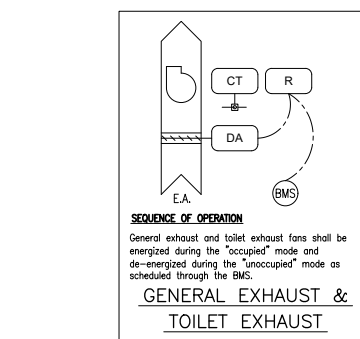
**ELECTRIC ROOM VENTILATION**



**SEQUENCE OF OPERATION**

Upon a rise in space temperature above set point (ADU) as sensed by the remote space mounted reverse acting thermostat, the automatic control damper located in the elevator penthouse shall open. Upon a drop in space temperature, the reverse shall occur.

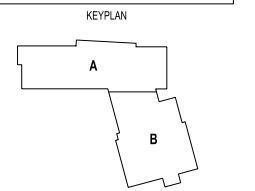
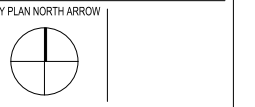
**ELEV. MACHINE ROOM VENT.**



**SEQUENCE OF OPERATION**

General exhaust and toilet exhaust fans shall be energized during the "occupied" mode and de-energized during the "unoccupied" mode as scheduled through the BMS.

**GENERAL EXHAUST & TOILET EXHAUST**



**MECHANICAL CONTROL SEQUENCES**



**SWITCHBOARD SWBD1 SCHEDULE**  
700A, 725/400, 30, 48, 180/200 SHORT CIRCUIT A.I.C., 3-PHASE MOUNTED, WITH SURGE PROTECTION DEVICE

CIRCUIT BREAKER NUMBER	TRIP (A)	LOAD	FEEDER AND CONDUIT SIZE	NOTES
1	3500	MAIN CIRCUIT BREAKER	4800KCMIL - (10) 4" C	-
2	400	PANELBOARD LP41	3500A	-
3	1750	TRANSFORMER TR1		SEE TRANSFORMER SCHEDULE
4	3000	PANELBOARD LP32	3500A	-
5	3000	PANELBOARD LP31	3500A	-
6	3000	PANELBOARD LP22	3500A	-
7	3000	PANELBOARD LP21	3500A	-
8	1000	ATS-2-1	1000A	-
9	3000	PANELBOARD LP12	3500A	-
10	3000	PANELBOARD LP11	3500A	-
11	1750	TRANSFORMER TR12		SEE TRANSFORMER SCHEDULE
12	1300	ATS-1	1300A	-

**PANELBOARD OEDP1 SCHEDULE**  
700A, 725/400, 30, 48, 180/200 SHORT CIRCUIT A.I.C., FLOOR MOUNTED, WITH SURGE PROTECTION DEVICE

CIRCUIT BREAKER NUMBER	TRIP (A)	LOAD	FEEDER AND CONDUIT SIZE	NOTES
1	1300	MAIN CIRCUIT BREAKER	1300A	-
2	500	TRANSFORMER TR1		SEE TRANSFORMER SCHEDULE
3	2500	PANELBOARD OL11	2500A	-
4	2500	PANELBOARD OL12	2500A	-
5	2500	PANELBOARD OL21	2500A	-
6	2500	PANELBOARD OL22	2500A	-
7	2500	PANELBOARD OL31	2500A	-
8	2500	PANELBOARD OL32	2500A	-
9	2500	PANELBOARD OL41	2500A	-

**DRY TYPE TRANSFORMER SCHEDULE**

NOTES:  
1. BOND NEUTRAL OF TRANSFORMER SECONDARY TO TRANSFORMER CASE WITH BONDING JUMPER.  
2. ALL CONDUCTORS REFERENCED IN THIS SCHEDULE ARE COPPER.  
3. WHERE A FUSED DISCONNECT SWITCH OR ENCLOSED CIRCUIT BREAKER IS USED FOR PRIMARY OR SECONDARY PROTECTION, IT SHALL BE LOCATED WITHIN 10' OF THE TRANSFORMER IT IS PROTECTING.  
4. PROVIDE MAC ADAPTERS WHERE REQUIRED FOR TERMINATIONS.  
5. FDS = FUSED DISCONNECT SWITCH, EDS = ENCLOSED CIRCUIT BREAKER.  
6. PHYSICAL SIZE BASED UPON SQUARE D EQUIPMENT.

NAME	SIZE (KVA)	PRIMARY			SECONDARY			NOTES	PHYSICAL SIZE	ADDITIONAL REQUIREMENTS	
		VOLTAGE	OVERCURRENT PROTECTION SIZE (A)	LOCATION OF OVERCURRENT PROTECTION	FEEDER AND CONDUIT SIZE	VOLTAGE	OVERCURRENT PROTECTION SIZE (A)				LOCATION OF OVERCURRENT PROTECTION
TRP11	15	480	250	PANELBOARD EL11	3/8" x 1/100" 34°C	120/208	600	PANELBOARD EP11	480 x 1/100" 1°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	18" X 20"
TRR1	30	480	500	PANELBOARD OEDP1	3/8" x 1/100" 34°C	120/208	1000	RELAY PANEL IQ1	480 x 1/100" 1-1/2°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	18" X 20"
TRD1	112.5	480	1750	SWITCHBOARD SBD1	3/8" x 1/160" 7°C	120/208	4000	DIMMER PANEL DR1	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"
TRP1	112.5	480	1750	PANELBOARD LP11	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD PP11	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"
TRP2	112.5	480	1750	PANELBOARD LP12	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD PP12	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"
TRP21	112.5	480	1750	PANELBOARD LP21	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD PP21	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"
TRP22	112.5	480	1750	PANELBOARD LP22	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD PP22	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"
TRP31	112.5	480	1750	PANELBOARD LP31	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD PP31	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"
TRP32	112.5	480	1750	PANELBOARD LP32	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD PP32	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"
TRP41	112.5	480	1750	PANELBOARD LP41	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD PP41	4800KCMIL x 1/160" 4°C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	24" X 30"

**ZERO SEQUENCE HARMONIC FILTER SCHEDULE**

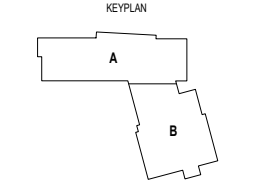
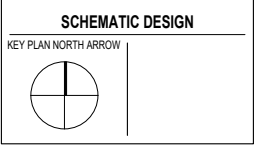
NOTES:  
1. ALL CONDUCTORS REFERENCED IN THIS SCHEDULE ARE COPPER.  
2. PHYSICAL SIZE BASED UPON POWER QUALITY INTERNATIONAL, INC. EQUIPMENT.

NAME	NEUTRAL CURRENT (A)	SIZE (KVA)	VOLTAGE	SIZE (A)	LOCATION	FEEDER AND CONDUIT SIZE	NOTES	PHYSICAL SIZE
ZHF11	500	60	120/208	2000	PANELBOARD CP11	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHF12	500	60	120/208	2000	PANELBOARD CP12	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHF21	500	60	120/208	2000	PANELBOARD CP21	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHF22	500	60	120/208	2000	PANELBOARD CP22	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHF31	500	60	120/208	2000	PANELBOARD CP31	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHF32	500	60	120/208	2000	PANELBOARD CP32	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHF41	500	60	120/208	2000	PANELBOARD CP41	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHFOP11	500	60	120/208	2000	PANELBOARD OP11	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHFOP12	500	60	120/208	2000	PANELBOARD OP12	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHFOP21	500	60	120/208	2000	PANELBOARD OP21	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHFOP22	500	60	120/208	2000	PANELBOARD OP22	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHFOP31	500	60	120/208	2000	PANELBOARD OP31	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHFOP32	500	60	120/208	2000	PANELBOARD OP32	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"
ZHFOP41	500	60	120/208	2000	PANELBOARD OP41	3/8" 3KCMIL x 3/8" 3KCMIL x 7°C	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HO GROUND FILTER CASE PER NEC.	21.50" x 24.50"

**DRY TYPE K-RATED TRANSFORMER SCHEDULE**

NOTES:  
1. BOND NEUTRAL OF TRANSFORMER SECONDARY TO TRANSFORMER CASE WITH BONDING JUMPER.  
2. ALL CONDUCTORS REFERENCED IN THIS SCHEDULE ARE COPPER.  
3. WHERE A FUSED DISCONNECT SWITCH OR ENCLOSED CIRCUIT BREAKER IS USED FOR PRIMARY OR SECONDARY PROTECTION, IT SHALL BE LOCATED WITHIN 10' OF THE TRANSFORMER IT IS PROTECTING.  
4. PROVIDE MAC ADAPTERS WHERE REQUIRED FOR TERMINATIONS.  
5. FDS = FUSED DISCONNECT SWITCH, EDS = ENCLOSED CIRCUIT BREAKER.  
6. PHYSICAL SIZE BASED UPON CONTROLLED POWER COMPANY EQUIPMENT.

NAME	SIZE (KVA)	PRIMARY			SECONDARY			NOTES	PHYSICAL SIZE	ADDITIONAL REQUIREMENTS	
		VOLTAGE	OVERCURRENT PROTECTION SIZE (A)	LOCATION OF OVERCURRENT PROTECTION	FEEDER AND CONDUIT SIZE	VOLTAGE	OVERCURRENT PROTECTION SIZE (A)				LOCATION OF OVERCURRENT PROTECTION
TC11	112.5	480	1750	PANELBOARD LP11	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD CP11	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TC12	112.5	480	1750	PANELBOARD LP12	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD CP12	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TC21	112.5	480	1750	PANELBOARD LP21	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD CP21	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TC22	112.5	480	1750	PANELBOARD LP22	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD CP22	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TC31	112.5	480	1750	PANELBOARD LP31	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD CP31	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TC32	112.5	480	1750	PANELBOARD LP32	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD CP32	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TC41	112.5	480	1750	PANELBOARD LP41	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD CP41	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TOP11	112.5	480	1750	PANELBOARD OL11	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD OP11	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TOP12	112.5	480	1750	PANELBOARD OL12	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD OP12	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TOP21	112.5	480	1750	PANELBOARD OL21	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD OP21	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TOP22	112.5	480	1750	PANELBOARD OL22	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD OP22	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TOP31	112.5	480	1750	PANELBOARD OL31	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD OP31	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TOP32	112.5	480	1750	PANELBOARD OL32	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD OP32	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"
TOP41	112.5	480	1750	PANELBOARD OL41	3/8" x 1/160" 7°C	120/208	4000	PANELBOARD OP41	1/80" x 2/80" - (2) 1/2" C	GROUND TRANSFORMER CASE VIA 1/16" 34°C TO NEAREST AVAILABLE EFFECTIVELY GROUNDING WATER PIPE, STRUCTURAL STEEL, AND/OR GROUND ROD AS PER NEC 250.36	27.50" x 41.50"



DRAWING NAME:  
**ELECTRICAL SCHEDULES**

DRAWN BY: RCB  
REVIEWED BY: RCB

SCALE: NONE  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

DRAWING NUMBER:  
**E-2**





## Section 3 Schematic Design Documents

### 3.6 Schematic Design Documents

#### 3.6.2 Schematic Design Narrative - Dual Language PK-8 BASIS OF DESIGN

##### Building & Design Codes

The new 61,051 gsf Dual Language PK-8 School is designed in accordance with the 2015 International Building Code and the 2012 International Energy Conservation Code. The building is in compliance with the 2012 Rhode Island Fire Safety Code utilizing NFPA 1 and 101. The construction classification will be type 1B fully protected use group E. The building is 3 stories and fully sprinklered. The new school serves 447 students in grades PK-8.

##### Site Design Conditions

The site is located at the the site of the existing Central Falls High School, at 24 Summer Street in Central Falls, Rhode Island. The site is approximately 2.1 acres. The site is served by Summer Street along the north side, and Illinois Street along the west side. Commercial, retail and residential properties abut the site on all sides.

The site currently supports the existing Central Falls High School. The site is generally flat, with a slope and retaining wall on the east side that abuts a high-density residential building. The existing school fills a majority of the site, leaving minimal space for landscape or hardscape. The proposed 3 story building will reduce the built footprint on the site. The existing entries onto the property at Summer Street and Illinois Street will be used for controlled access with the proposed solution.

Stormwater management provisions including site swale, drainage design and water collection systems including rain gardens are included in the project. Outdoor science labs and learning areas are incorporated into the site plan design. Natural landscape areas, including new rain gardens with water storage capacity are provided on the site. Bicycle storage areas and electric vehicle charging stations are included in the site design.

##### Building Design Conditions

The building is 3 story high designed to meet a projected enrollment of 447 students in grades PK-8. The overall square footage is 61,051 square feet which includes 18 general classrooms and 2 general science labs, Learning Commons, one full size gymnasium/cafetorium/stage, and art classrooms.

The school is designed for a Dual Language program, which is defined

by the District, as utilizing a pair of classroom per grade that are connected with an operable partition.

The school contains a safe and secure main entry area flanked by administration, guidance, student support services, and dean's offices. Special Educational educational classrooms and support rooms are evenly distributed throughout the new school building.

The school is designed to meet Northeast Collaborative for High Performance Schools version 4.0 green school standards. The school has the opportunity to receive an additional 2% to 4% additional reimbursement funds by demonstrating 30% to 50% energy and water reduction beyond code (see chart below).

Additional Reimbursement Funds	Reduction from RI Code (Anchored to IECC 2009)	Reduction from NE-CHPS (Based upon IECC 2012)
2%	30%	18% (11 points)
3%	40%	30% (18 points)
4%	50%	42%(22 points)

The District and Design Team is currently establishing the Energy Performance level for the project. The project is eligible to receive 12 to 40 points within the NE-CHPS Reduction Requirement, based upon IECC 2012, is equivalent to 20% up to 100% (see chart below).

Points	NE-CHPS Reduction Requirement (IECC 2012)	zEPI Equivalent	Reduction from RI Code (Anchored to IECC 2009)
Prerequisite	10% minimum reduction	51	23.5%
12 points	20% minimum reduction	46	32%
18 points	30% minimum reduction	40	40.5%
22 points	40% minimum reduction	34	49%
25 points	50% minimum reduction	29	57.5%
28 points	60% minimum reduction	23	66%
31 points	70% minimum reduction	17	74.5%
34 points	80% minimum reduction	11	83%
37 points	90% minimum reduction	6	91.5%
40 points	100% minimum reduction (zero net-energy school)	0	100%

**Thermal Insulation: Building Envelope**

**Window Systems**

Window systems will be energy enhanced thermally broken aluminum curtainwall and aluminum storefront and windows with both fixed and operable frames. Special thermal break material is provided to meet the required thermal performance and other criteria:

Fixed Window Frames:

Air resistance: 6.24psf  
 Water resistance: 15.00psf  
 Uniform Structural Loading: 150psf  
 Condensation Resistance: 75 (frame) & 67 (Glass)

Operable Window Frames:  
 Air resistance: 6.24psf  
 Water resistance: 15.00psf  
 Uniform Structural Loading: 150psf  
 Condensation Resistance: 55

### Door Systems

Door systems are thermally broken aluminum storefront and curtainwall systems with the performance requirements outlined above. These systems have insulated aluminum doors with weatherstripping. Interior vestibules are provided at main and secondary building entrances. Egress only door system are thermally broken hollow metal frames, insulated hollow metal doors (16ga.) Complete with semi-rigid fiberglass insulation core, U Value .48.

### Glazing

Exterior glazing is 1" Low-E clear glass outer layer consisting of 1/4" thick heat-strengthened glass with Low-E sputter coating on the number 2 surface equal to PPG Solarban 60. The inner glazing layer is 1/4" thick clear heat-strengthened glass with an air space of 1/2" thickness. The air space is filled with 90% argon gas and 10% air. The 1" glazing assembly has the following performance characteristics:

Visible Transmittance: 72%  
 Solar Heat Gain Coefficient: 0.40  
 Solar Blockage: 59%  
 Reflectance (interior): 12%  
 Reflectance (exterior): 11%  
 U Value (winter): 0.30

### Window Shades

Window Shades will be provided in all educational classroom spaces. The shade system are roller shades made with aluminum alloy 6063-T5 alloy with a wall thickness of 0.065 inch. Shade fabric is 63% PVC coated fiberglass and 37% fiberglass yarn woven into a 2 inch by 2 inch non-directional basket weave with Micro-ban Protection. Shades will have a 5% openness factor.

### Wall Insulation and Assembly

Exterior wall assembly consists of simulated wood laminated rainscreen cladding anchored to a metal support system which accounts for an air space in front of the air and vapor barrier adhered to a premanufactured "nail-base." The nail-base assembly consists of 5/8" plywood, laminated to 2 inches of rigid insulation. 1 1/2" spray foam insulation is placed on the inside the exterior metal studs @ 16 inches on center, and 5/8" interior gypsum wallboard. The overall U value is 0.055. Spray Foam Insulation to have the following properties:

Density: 2.2 lbs/cf

Compressive Strength: 26lbs/square inch  
Water Absorption: 1.6% by volume  
Water Vapor Transmittance: (2 inch thickness): 0.70 perms

### Roof System

Overall roof assembly is 6.75 inches with 6 inches for an R-value of 36. The overall roof thermal performance is U0.026. Roofing system to provide coverage for maximum wind speed of 105 mph. The roofing manufacturer to provide a 25 year warranty for product quality, performance, and workmanship. Roofing system to be 60 Mil thick, PVC mechanically anchored sheet roofing system. System to obtain Fire Hazard "Class A" as described by the Underwriters Laboratory. Wind Loading shall conform to the 2012 IBC with State of Rhode Island amendments for wind speed and gust requirements.

Insulation will be polyisocyanurate foam insulation manufactured with HCFC-free blowing agent with LTTR R value of 5.6 per inch with minimum thickness of 6 inches and the following properties:

Density: 2.0 pounds per cubic foot  
Compressive Strength: 20 psi  
Moisture Vapor Transmittance: Less than 1 perm  
Water Absorption: Less than 1 percent per volume

Overlayment recovery board is 5/8 inch thick, Class 1, non-structural glass mat faced, noncombustible water-resistant treated gypsum core panel. Vapor barrier is 10mil thick low-density polyethylene vapor barrier/air barrier.

### Natural Daylighting and View

A two-story interconnected gymnasium/cafeteria/stage space has been designed with curtainwall on the west side , flooding the space with natural light.

## STRUCTURAL SYSTEMS & EARTHQUAKE COMPLIANCE

### Building Description

The new building is intended to follow the following:

- No basement spaces.
- The roofs will be constructed with metal deck and structural steel/ joists/trusses pitched to internal roof drains. Roof pitch shall not be less than 1/4" per foot. Tapered insulation may be required in some locations.
- The floor levels will consist of steel beams and girders supporting a concrete slab-on-composite metal deck.
- Elevator shafts will be constructed with CMU. Stairwells will be constructed with gypsum board and/or glass.

### Building Codes and Standards

All structural design criteria for the building will be based on the latest building codes and standards listed below, and by criteria specified by

the owner and architect.

- Rhode Island Building Code: 2018 International Building Code (IBC) with state amendments and referenced standards.
- American Institute of Steel Construction (AISC), Specifications and its Code of Standard Practice.
- American Concrete Institute Building Code Requirements for Reinforced Concrete, ACI 318.
- American Concrete Institute Building Code Requirements for Concrete Masonry Structures, ACI 530 and ACI 530.1.
- Steel Joist Institute (SJI) and Steel Deck Institute (SDI) design standards.
- AISC Design Guide 11 – Floor Vibrations for Human Activity.

**Construction Materials**

**Concrete\*:**

Typical, U.N.O.: 4000 PSI ¾" aggregate 0.45 Max W/C Ratio  
 Slab-on-deck: 3000 PSI ¾" aggregate 0.48 Max W/C Ratio

Concrete shall be normal-weight except that slabs-on-metal-deck shall be lightweight.

Interior slabs-on-grade have a Moisture Vapor Reduction Admixture (Barrier One).

\*Exterior Concrete shall be air-entrained. Lightweight concrete used for slabs-on-metal deck shall also be air-entrained.

**Concrete Reinforcing:**

Deformed Bars ASTM A615 or A706, GR. 60  
 Welded Wire Fabric ASTM A185

**Masonry materials:**

Compressive strength (f'm) 1,900 psi  
 Mortar ASTM C270 Type M or S (load-bearing) or N (non load-bearing)  
 Deformed bars ASTM A615 or A706, Grade 60  
 Grout compressive strength 2,500 psi  
 Joint Reinforcement ASTM A1064, Extra Heavy Duty Ladder Type, Hot-dipped galvanized, 3/16" side rods & 9 ga. cross rods

**Steel Members\*\*:**

Structural Steel	A572 or A992 GR. 50	FY=50KSI
Typical Plates and Angles	ASTM A36	FY=36KSI
Structural Tubing (rectangular)	ASTM A500, GR. B	FY=46KSI
High Strength Bolts	ASTM F3125 (GR. A325 Type I)	FY=92KSI
Drill & Epoxy Anchors	A449	FY=92KSI
Cast-In-Place Anchor Rods	F1554	FY=36KSI

\*\* All exterior steel framing, connections, and components shall be hot-dipped galvanized.



## Design Criteria

### Building Risk Category (IBC Table 1604.5)

Risk Category III (Group E occupancy with occupant load > 250). For the purposes of this narrative, the building was not considered an emergency or recovery shelter.

### Dead Load (DL)

The dead load includes the weight of structure, structural components, equipment, machinery, conduits, piping, ducts, insulation and any item permanently attached to or supported by the structure. Self-weight of framing will be included in calculations/models and is not listed below.

#### Uniform floor loads:

Concrete on Deck (light-weight concrete), typical	42 psf (3.25" on 2" deck = 5.25")
18 ga. Composite Metal Floor Deck	2.5 psf
Concrete Ponding	5 psf
Floor Finishes, typical	5 psf
Floor Finishes – tiled areas	10 psf
Drop Ceiling	2 psf
MEP Allowance (typical)	5 psf

#### Additional floor loads (where applicable):

Elevated seating construction  
 Weight of CMU partitions and operable partitions shall be included.

#### Uniform roof loads:

Roof Deck	3 psf
Roof Membrane	1 psf
1/2" Recovery Board	3 psf
Polyiso Insulation (say 8" average)	3 psf
Drop Ceiling	2 psf
MEP Allowance (typical)	5 psf

#### Additional roof loads (if applicable)

Solar arrays 10 psf

#### Uniform roof terrace loads:

Concrete on Deck (light-weight concrete), typical	42 psf (3.25" on 2" deck = 5.25")
18 ga. Composite Metal Floor Deck	2.5 psf
Concrete Ponding	5 psf
Roof Membrane	1 psf
1/2" Recovery Board	3 psf
Polyiso Insulation (say 8" average)	3 psf
Drop Ceiling	2 psf
MEP Allowance (typical)	5 psf

### Live Load (LL)

Live loads are loads produced by the use and occupancy of the building or other structure that may or may not exist at any given time. Live

loads do not include wind, snow, or seismic loads.

**Uniform Floor Live Loads:**

Slab-on-grade*	250 psf
Classrooms/Offices (50 psf** + 15 psf partitions and library reading rooms)	65 psf
Corridors above 1st floor	80 psf
1st floor corridors, flexible spaces, open classrooms labs, media center, auditorium seating, and stairs, roof terrace.	100 psf
Auditorium stage, mechanical rooms***, and storage	150 psf

\*\*Note that RI Building code lists 40 psf for classrooms, but use 50 psf for simplicity/flexibility between classroom and office/conference spaces.

\*\*\*Or weight of actual equipment, whichever is greater. See building code for minimum concentrated load requirements.

Live load reductions shall be used whenever possible in accordance with the building code.

**Snow Load (SL)**

Snow load shall be as specified in the International Building Code (IBC) per the following criteria:

Ground snow load (Pg)	30 psf
Minimum Flat Roof Snow Load (Pf)	30 psf (RIBC Table 1608.1)
Terrain category	B
Exposure category	Partially Exposed
Exposure factor (Ce)	1.0
Thermal factor (Ct)	1.0
Importance factor (I)	1.1

Drifting and sliding snow shall be considered in design per the IBC.

**Wind Load (WL)**

Wind load shall be as specified in the International Building Code (IBC) per the following criteria:

Basic (ultimate) wind speed (v):	137 mph
Exposure category	B
Basic Velocity pressure (q)	.00256*Kd*Kz*Kzt*I*V2
Pressure coefficient (Cp)	Refer to code

**Seismic Load (EQ)**

Seismic load shall be as specified in the International Building Code (IBC) per the following criteria:

Spectral response acceleration at .2 sec. (Ss)	0.178
Spectral response acceleration at 1 sec. (S1)	0.062
Importance factor (I)	1.25
Site Class	D (assumed)
Site Coefficient	
Fa	1.60
Fv	2.40
Max considered spectral response acceleration	
Sms	0.285
Sm1	0.149
Design spectral response acceleration	
Sds	0.191
Sd1	.099
Seismic Design Category	B (assumed)

Structural systems shall be "Steel Systems not specifically detailed for seismic resistance" (R = 3.0).

### Movable/Operable Partitions

Loading from movable/operable partitions shall be included in the structural design where applicable (see plans). Deflection criteria of these component will be taken into account when designing supporting members.

### Floor Vibrations

All floor designs shall be checked for vibrations due to human activity per AISC Design Guide 11.

### Design Methodology and Load Combinations

Loads shall be combined per provisions of either 2018 IBC or ASCE 7-16 as applicable for allowable strength design (ASD) or load resistance factor design (LRFD). In general, ASD will be used for all systems except for reinforced concrete and reinforced masonry (slender wall systems). LRFD shall be used for reinforced concrete and reinforced masonry.

### Foundations

Generally, foundation systems are assumed to consist of shallow square footings for columns and a continuous perimeter foundation wall. Insulation shall be provided around the perimeter foundation wall as specified by the architect. Foundations subject to frost shall extend to at least 4'-0" below lowest adjacent grade. Some interior foundation walls will be required around changes in slab elevations.

### Slab on Grade

Ground floor construction will be slab-on-grade. The concrete slab on

grade shall generally be 5" thick, 4,000 psi concrete, reinforced with welded wire fabric. The slab shall be thickened/haunched locally and/or reinforced with deformed bars where required, such as supporting heavy equipment or stair framing. A 15 mil vapor barrier shall be provided below the slab on grade. Insulation shall be added below the slab where required by code. Saw cut contraction joints shall be spaced at 15'-0" on-center, maximum. Floor finishes shall be in accordance with architectural requirements.

### **Floor Structure**

The floor framing will generally consist of steel beams, steel girders, and wide-flanged columns. Floor framing shall be composite with the floor slabs, unless non-composite is more economical in some locations (e.g. short spans, large openings each side of beam, etc.). Beam spacing will be 10'-0" on-center maximum, tighter beam spacings may be required where live loads exceed 100 psf. The deck will consist of a 5 1/4" (total thickness) of light-weight concrete on 18 gauge, 2" deep galvanized composite metal deck. The light-weight concrete shall be air-entrained 4%-7%. Structural elements will be fireproofed as needed to meet ratings required by code.

The concrete on metal deck shall be typically reinforced with welded wire fabric. Deformed bars will be provided where required to support heavy equipment, CMU partitions, etc.

Floor members shall be designed for minimum deflection requirements of L/360 (live load) and L/240 (total load), along with analysis for floor vibrations per AISC Design Guide 11. Tighter deflection requirements may be required at movable/operable partitions.

### **Roof Structure**

The roof framing will generally consist of steel joists, wide-flanged girders, and HSS or wide-flanged steel columns. Wide-flanged steel beams shall be used in lieu of joists at column grid lines and where needed for loading (such as at mechanical equipment screens and other areas with concrete on the roof).

Joist/beam spacing will typically be approximately 6'-0" on-center with tighter spacing adjacent to roof steps, around equipment, etc. due to snow drifts (where applicable). The roof framing will be sloped to internal roof drains to minimize tapered insulation with a roof slope of at least 1/4" per foot. Tapered insulation may be required in some locations.

The roof deck will consist generally of 20 gauge 1-1/2" Type B galvanized metal deck. Thicker decking or 3" deep roof deck may be used where beam spacings larger than 6'-0" are used. Roof hatches (or similar) will be provided as required for the installation, access, and removal of equipment. Composite metal deck with lightweight concrete shall be provided below rooftop equipment where necessary for acoustics.

Roof members shall be designed for minimum deflection requirements of L/240 (live/snow load) and L/180 (total load). Tighter deflection requirements may be required at movable/operable partitions and will be coordinated with manufacturer's requirements.

The roof structure will have a mix of overhangs and parapets. Minor overhangs will be achieved with bent plates where possible, larger overhangs may require structural out-riggers. Depending on wall construction parapets may be a continuation of the wall stud if located proud of the framing, if inset, additional structural support stubs may be cantilevered from the roof framing.

#### **Lateral Force Resisting Systems**

The lateral load resisting system will generally consist of braced frames comprised of hollow structural steel sections, and moment frames where braces interfere with the aesthetics or function of the surrounding space or walls. Moment frames may utilize HSS columns or W-shapes where structurally more efficient. The concrete floor decks and metal roof decks will serve as horizontal diaphragms.

#### **Exterior Wall Construction**

Light-gauge metal framing (designed by others) or CMU will generally provide back-up to exterior walls systems, but utilization of the building columns (and installation of wall girts) may be required in some locations. These elements will be designed for component & cladding wind loads along with vertical loads. Wall girts, where needed, shall be HSS sections.

Wall members shall be designed for a minimum out-of-plane deflection requirement of L/240, unless more stringent criteria is provided by the wall system manufacturer.

#### **MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION FIRE PROTECTION**

The following is the Fire Protection system narrative, which defines the scope of work and capacities of the Fire Protection system as well as the Basis of Design.



**A. Codes**

All work installed under Section 210000 shall comply with the MA Building Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

**B. Design Intent**

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Fire Protection work and all items incidental thereto, including commissioning and testing.

**C. General**

1. In accordance with the provisions of the Massachusetts Building Code, a school building of greater than 12,000 s.f. must be protected with an automatic sprinkler system.

**D. Description**

1. The building will be served by a new 8-inch fire service, Double check valve assembly, wet alarm valve complete with electric bell, and fire department connection meeting local thread standards.

2. System will be an automatic sprinkler system with control valve assemblies to limit the sprinkler area controlled to less than 52,000 s.f. as required by NFPA 13-2013.

3. Control valve assemblies shall consist of a supervised shutoff valve, check valve, flow switch and test connection with drain.

4. All areas of the building, including all finished and unfinished spaces and combustibles concealed spaces will be sprinklered.

5. All sprinkler heads will be quick response, pendent in hung ceiling areas and upright in unfinished and spaces without ceilings.

**E. Basis of Design**

1. The mechanical rooms, kitchen, science classrooms, and storage rooms are considered Ordinary Hazard Group 1; stage is considered Ordinary Hazard Group 2; all other areas are considered light hazard.

2. Required Design Densities:

Light Hazard Areas	0.10 GPM over 1,500 s.f.
Ordinary Hazard Group 1	0.15 GPM over 1,500 s.f.
Ordinary Hazard Group 2	0.20 GPM over 1,500 s.f.

3. Sprinkler spacing (max.):

Light Hazard Areas: 225 s.f.

Ordinary Hazard Areas: 130 s.f.

**F. Piping**

Sprinkler piping 2 in. and smaller shall be ASTM A-53, Schedule 40 black steel pipe. Sprinkler/standpipe piping 3 in. and larger shall be ASTM A-135, Schedule 10 black steel pipe.

**G. Fittings**

Fittings on fire service piping, 2 1/2 in. and larger, shall be Victaulic Fire Lock Ductile Iron Fittings conforming to ASTM A-536 with integral grooved shoulder and back stop lugs and grooved ends for use with Style 009-EZ or Style 005 couplings. Branch line fittings shall be welded or shall be Victaulic 920/920N Mechanical Tees. Schedule 10 pipe shall be roll grooved. Schedule 40 pipe, where used with mechanical couplings, shall be roll grooved and shall be threaded where used with screwed fittings. Fittings for threaded piping shall be malleable iron screwed sprinkler fittings.

**H. Joints**

Threaded pipe joints shall have an approved thread compound applied on male threads only. Teflon tape shall be used for threads on sprinkler heads. Joints on piping, 2 1/2 in. and larger, shall be made up with Victaulic, or equal, Fire Lock Style 005, rigid coupling of ductile iron and pressure responsive gasket system for wet sprinkler system as recommended by manufacturer.

**I. Double Check Valve Assembly**

1. Double check valve assembly shall be MA State approved, U.L./F.M. approved, with iron body bronze mounted construction complete with supervised OS & Y gate valves and test cocks. Furnish two spare sets of gaskets and repair kits.

2. Double check valve detector assembly shall be of one of the following:

- a. Watts Series
- b. Wilkins
- c. Conbraco Series

## PLUMBING

The following is the Plumbing system narrative, which defines the scope of work and capacities of the Plumbing system as well as the Basis of Design.

### A. Codes

All work installed under Section 220000 shall comply with the MA Building Code, MA Plumbing Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

### B. Design Intent

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Plumbing work and all items incidental thereto, including commissioning and testing.

### C. General

1. The Plumbing Systems that will serve the project are cold water, hot water, tepid water, sanitary waste and vent system, grease waste system and storm drain system.
2. The building will be serviced by Municipal water and Municipal sewer system.
3. All Plumbing in the building will conform to Accessibility codes and to water conserving sections of the Plumbing Code.

### D. Drainage System

1. Soil, waste, and vent piping system is provided to connect to all fixtures and equipment. System runs from 10 feet outside building and terminates with stack vents through the roof.
2. A separate grease waste system starting with connection to an exterior grease interceptor running thru the Kitchen and Served area fixtures and terminating with a vent terminal through the roof. Point of use grease interceptors are to be provided at grease laden kitchen fixtures per the plumbing code.
3. Storm drainage system is provided to drain all roofs with roof drains piped through the building to a point 10 feet outside the building.
4. Drainage system piping will be service weight cast iron piping; hub and spigot with gaskets for below grade; no hub with gaskets, bands and clamps for above grade 2 in. and larger. Waste and vent piping

1-1/2 in. and smaller will be type 'L' copper.

#### E. Water System

1. New 6-inch domestic water service from the municipal water system will be provided for the New Building. A meter and backflow preventer will be provided.

2. Cold water distribution main is provided. Non-freeze wall hydrants with integral back flow preventers are provided along the exterior of the building.

3. (2) Non-potable water systems will be provided for science classrooms, with a dedicated electric water heater, recirculation pump, & mixing valve.

4. A pump will re-circulate hot water from the piping system. Water temperature will be 120 deg. to serve general use fixtures. A 140 deg. F hot water will be supplied to the kitchen dishwashing equipment.

5. Water piping will be type 'L' copper with wrought copper sweat fittings, silver solder or press-fit system. All piping will be insulated with 1 in. thick high-density fiberglass.

#### F. Fixtures

1. Furnish and install all fixtures, including supports, connections, fittings, and any incidentals to make a complete installation.

2. Fixtures shall be the manufacturer's guaranteed label trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.

3. Vitreous china and acid resisting enameled fixtures, including stops, supplies and traps shall be of one manufacturer by Kohler, American Standard, or TOTO. Supports shall be Zurn, Smith or Watts. All fixtures shall be white. Faucets shall be American Standard, T&S or Chicago.

4. Fixtures shall be as scheduled on drawings.

Water Closet: High efficiency toilet, 1.1 gallon per flush, wall hung, vitreous china, siphon jet. Sensor operated 1.1 gallon per flush-flush valve.

Urinal: High efficiency 0.125 gallon per flush urinal, wall hung, vitreous china. Sensor operated 0.125 gallon per flush-flush valve.

Lavatory: Wall hung/countertop ADA lavatory with 0.35 GPM mixing faucet with sensor programmed for 10 second run-time cycle.

Shower: Tile shower by others. Shower head with 1.5 GPM flow rate, with Shower mixing valve, and Floor drain.

Sink: ADA stainless steel countertop sink 1.5 GPM faucet and aerator.

Drinking Fountain/ Bottle Filler: Hi-low wall mounted electric water cooler, stainless steel basin with bottle filling stations.

Janitor Sink: 30 x 30 Terrazzo mop receptor

## **G. Drains**

Drains are cast iron, caulked outlets, nickaloy strainers, and in waterproofed areas and roofs shall have galvanized iron clamping rings with 6 lb. lead flashings to bond 9 in. in all directions. Drains shall be Smith, Zurn or Watts.

## **H. Valves**

Locate all valves so as to isolate all parts of the system. Shutoff valves 3 in. and smaller shall be ball valves, solder end or screwed, Apollo, Watts or Milwaukee.

## **I. Insulation**

All water piping shall be insulated with snap-on fiberglass insulation Type ASJ-SSL, equal to Johns Manville Micro-Lok HP.

## **J. Cleanouts**

1. Cleanouts shall be full size up to 4 in. threaded bronze plugs located as indicated on the drawings and/or where required in soil and waste pipes.

2. Cleanouts for Special Waste System shall be Zurn #Z9A-C04 polypropylene cleanout plug with Zurn #ZANB-1463-VP nickel bronze scoriated floor access cover.

## **K. Access Doors**

Furnish access doors for access to all concealed parts of the plumbing system that require accessibility. Coordinate types and locations with the Architect.

## **L. Water Heaters**

1. Domestic water heating will be multiple electric storage type water heaters. System is to be equipped with thermostatically controlled mixing devices to control water temperature (120 F) to the fixtures, and



140 F to required Kitchen Equipment where required.

2. Dedicated water heating will be provided for Non-Potable water, (2) electric heat pump water heater per looped system. System is to be equipped with thermostatically controlled mixing devices to control water temperature (120 F) to the fixtures.

## HVAC SYSTEM

### A. Design Criteria

1. Interior environmental conditions will be based on Massachusetts Code 780 CMR 12 and ASHRAE Standard 55-2010.

2. Ventilation of spaces will be designed to meet or exceed the requirements of the latest edition of the Massachusetts State Building Code, the ICC International Mechanical Code and ASHRAE Standard 62, Ventilation for Acceptable Indoor Air Quality.

3. HVAC equipment will be selected to comply with the 2018 edition of the International Energy Conservation Code and ASHRAE 90.1-2013.

4. The HVAC systems will be designed to meet the acoustical requirements of ANSI S12.60-2002. The American National Standards Institute developed this standard specification and design guideline to help eliminate acoustical problems in the design stage of a project. Essentially, the steady background noise level in core learning areas should not exceed an NC of 35.

### B. Heating and Cooling System

1. Heating and cooling will be provided by an all-electric heat pump system. This system will be a hybrid of air source heat pumps and ground source heat pumps.

2. The air source heat pump systems will be comprised of Variable Refrigerant Flow (VRF) systems and Packaged Air Source Heat Pump Energy Recovery Units (ERU).

3. The air source and ground source VRF systems shall be made up of indoor evaporators, branch control boxes (BC) and roof or grade mounted air-cooled condensers. The system utilizes refrigerant as the heat/cooling medium. The refrigerant shall flow from the condensers to the branch control boxes. The branch control boxes are used as control devices directing the liquid refrigerant or gas refrigerant to the indoor evaporators depending on the space heating or cooling needs. This type of VRF system is known as a heat-recovery system. The branch control boxes can take the heat recovered from the cooling zone and

use it to warm up the room in heating mode. This way, the compressor cooling or heating requirements are reduced, which saves energy.

4. The air source and ground source heat pump ERUs shall be used to provide minimum outdoor air ventilation to all spaces utilizing a VRF system for heating and cooling. The ERU shall be comprised of supply fan, exhaust fan, desiccant wheel or fixed plate energy recover exchanger, and a DX heat pump w/hot gas reheat. The ERU will either preheat or precool/dehumidify the incoming ventilation air before being distributed to the spaces. The ventilation air will be distributed to the space via galvanized ductwork system. Exposed ductwork shall not be insulated. Ductwork enclosed in chases and above concealed ceilings shall be insulated with R-5 duct wrap.

### C. Air Conditioning System

1. As part of the base design the following spaces will be provided with air conditioning:

- Administration area including Principal's Office, Assistant Principal's Office, School Psychologist's Office, Counselor's Office, Adjustment Counselor's Office, Pre-school Coordinator's Office, Nurse's Office and conference rooms.
- Teacher's planning/work rooms.
- Multipurpose rooms.
- Sped PT/OT spaces.
- Library/Media center.
- Gymnasium / cafeteria / stage
- Classrooms.
- Music/performing arts areas.
- Kitchen

### D. Summary of HVAC Systems

1. Classrooms, Multipurpose Rooms, Music Rooms, and Teachers Workrooms.

a. VRF system with decoupled ventilation from packaged rooftop air source heat pump energy recovery units (ERUs). The energy recovery ventilation units will supply the classrooms with tempered air via a system of ductwork. Energy recovery rooftop units are an effective way of reducing the overall energy consumption of a building. Energy recovery rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.
- MERV 13 air filters for superior indoor air quality.
- Energy recovery wheel or fixed plate.
- DX heating/cooling coil.
- Hot gas reheat coil.
- Condensing unit.

- Pre-heat electric coil.
- Variable frequency drives.

b. Each classroom will be furnished with two (2) indoor evaporators. Small type spaces shall be furnished with one (1) indoor evaporator. The evaporators shall maintain space setpoint temperatures independently of the ERUs. This air circulates throughout the rooms and is drawn back up to the return grille of the evaporators. This air circulation produces even and consistent temperatures throughout the room.

c. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the ERU units. This energy of the exhaust air leaving the classrooms is recovered at the energy recovery rooftop units.

d. The room thermostats control the operation of the evaporators to maintain space temperature setpoints.

e. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space. CO<sub>2</sub> sensors shall modulate the position of the terminal boxes located in the ventilation supply ductwork prior to discharge in the space.

## 2. Administration Area.

a. Air source VRF system with decoupled ventilation from packaged rooftop air source heat pump energy recovery units (ERUs). The energy recovery ventilation units will supply the spaces with tempered air via a system of ductwork. Energy recovery rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.
- MERV 13 air filters for superior indoor air quality.
- Energy recovery wheel or fixed plate.
- DX heating/cooling coil.
- Hot gas reheat coil.
- Condensing unit.
- Pre-heat electric coil.
- Variable frequency drives.

b. Each space will be furnished with an indoor evaporator(s). Smaller spaces shall be furnished with one (1) indoor evaporator. The evaporators shall maintain space setpoint temperatures independently of the ERUs. This air circulates throughout the rooms and is drawn back up to the return grille of the evaporators. This air circulation produces even and consistent temperatures throughout the room.

c. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the ERUs. This energy of the exhaust air leaving the classrooms is recovered at the energy recovery rooftop units.

d. The room thermostats control the operation of the evaporators to maintain space temperature setpoints.

e. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space. CO<sub>2</sub> sensors shall modulate the position of the terminal boxes located in the ventilation supply ductwork prior to discharge in the space.

### 3. Media Center and Cafeteria

a. Packaged rooftop air source heat pump units will supply these spaces with conditioned air. The conditioned air will be distributed via a system of ductwork and ceiling diffusers or sidewall high throw grilles. The rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.
- MERV 13 air filters for superior indoor air quality.
- DX heating/cooling coil.
- Condensing unit.
- Hot gas reheat.
- Pre-heat electric coil.
- Variable frequency drives.

b. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the indoor air handling units.

c. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space.

d. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

### 4. Gymnasium and Stage

a. Packaged rooftop air source heat pump units will supply these spaces with conditioned air. The conditioned air will be distributed via a system of ductwork and ceiling diffusers or sidewall high throw grilles. The rooftop units will be furnished with the following components:

- Double-wall insulated casings.
- Supply and exhaust fans.

- MERV 13 air filters for superior indoor air quality.
- DX heating/cooling coil.
- Condensing unit.
- Hot gas reheat.
- Pre-heat electric coil.
- Variable frequency drives.

b. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the indoor air handling units.

c. The rooftop units will utilize the demand-controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space.

d. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

#### 5. Kitchen

a. The kitchen areas will be handled by the cafeteria ERV, The ERV, thru controls, will provide tempered make-up air to the kitchen in order to offset the amount of air being exhausted through the kitchen hood.

b. The kitchen hood exhaust system shall be provided with a Mellink kitchen hood exhaust control system, which is designed to vary the speed of the kitchen hood exhaust fan in response to the intensity of the cooking operations taking place. Essentially, the fan will operate at higher speeds when higher heat and smoke producing cooking is taking place. The Mellink system will also modulate the outside air damper and fan speed of the make-up air unit.

#### E. Controls

1. Griffith & Vary, Inc. recommends this facility be furnished with a Building Management System. This system will feature full Digital Direct Controls (DDC). This system will be capable of controlling the following:

- a. Space temperature set point.
- b. Start and stop of all energy recovery rooftop units and air-handling units.
- c. Schedule occupied/unoccupied times for various spaces.
- d. Optimization of plant efficiency.
- e. Monitoring of mechanical equipment and indication of any alarms, which may result from equipment failures.



2. To save energy required to heat or cool outdoor air, carbon dioxide sensors will be employed in the gymnasium, auditorium, and Student Commons to allow a reduction of outdoor air during periods of low occupancy and motion sensors will also be utilized to allow closure of outdoor air dampers when assembly areas are unoccupied. Classrooms will also have occupancy sensors to modulate dampers in the supply air duct branches as a means of saving energy during periods when the classrooms are unoccupied.

## ELECTRICAL SYSTEMS

### A. Electric Service:

1. The building will be provided with an electric service via a pad mounted transformer located on the site as provided by the electric utility company. Primary service conduits in concrete duct bank will be provided from the electric utility pole to the transformer via electric utility company standard manholes. Secondary service feeders and conduits in concrete duct bank will be provided from the transformer to the switchboard. The electric utility company meter will be mounted on the transformer.

2. The building fire pump electric service will be provided via the pad mounted transformer located on site as provided by the electric utility company. Secondary service feeders and conduits in concrete duct bank will be provided from the transformer to the fire pump.

### B. Telephone Service:

1. Telephone service (2) 4" conduits will be provided from a utility pole to the building demarcation point (MDF Room).

### C. Cable TV Service:

1. Cable TV service (2) 4" conduits will be provided from a utility pole to the building demarcation point (MDF Room).

### D. Power Distribution:

Preliminary load calculations indicate that the switchboard will be rated at 3500 amperes at 277/480 volt, three phase, four wire. The switchboard will be provided with a surge protection device. Switchboard distribution sections will feed 277/480 volt panelboards and major Mechanical and Plumbing equipment. Dry-type transformers will be provided to distribute 120/208 volt power for branch circuit panelboards and the Kitchen panelboards. One of the kitchen panelboards will be provided with a shunt trip circuit breaker which will trip if fire suppression under

hoods is initiated, shutting down all circuits under hoods. Panelboards with surge protection devices for computers will be provided, fed from computer grade K-rated transformers. Zero sequence harmonic filters connected to the computer panelboards will be provided to reduce neutral currents. Shops with equipment will be provided with panelboards including shunt trip main circuit breakers and mushroom type shut off switches which can be pushed to shut down power to the panelboards in event of an emergency. Other shops will be provided with dedicated panelboards.

**E. Emergency Power System:**

1. A diesel fuel generator with a sound attenuated, weatherproof enclosure will be provided. Preliminary load calculations indicate that the generator will be rated at 700kW at 277/480 volt, three phase, four wire. Two automatic transfer switches (ATS's) will be provided to separate emergency from optional standby loads. The emergency ATS and associated emergency panelboards will be located in two hour rated closets with two hour rated feeders. The optional standby ATS and associated panelboards will be located in normal electric rooms. Emergency panelboards will be provided with surge protection devices as required by the National Electrical Code. The generator will supply loads as selected by the Owner, as follows:

a. Lighting:

- Exterior building mounted lighting
- Mechanical Room lighting
- Electrical rooms lighting
- Egress Corridors and Stairs lighting
- IDF and MDF lighting
- Administration lighting
- Principal Office lighting
- Nurse lighting
- Health Instructor's Office lighting
- Elevator Machine Room
- Gymnasium lighting
- Custodians Office lighting
- Custodians Receiving and General Supply lighting
- Interior windowless spaces lighting
- Elevator lighting and pit lighting
- Kitchen lighting
- Dining lighting
- Toilet rooms lighting
- Make Air Unit lighting

b. Power:

- Fire Alarm System
- Heating System including Roof Top Heat Pump Units for the

Gymnasium, Dining, Kitchen, and associated receptacles and controls, and Electric Unit Heaters

- Entire Kitchen
- Bidirectional amplifier
- Toilet Room Flush Valves and Sink Sensors
- Custodians Office, a receptacle at work station
- Custodians Receiving and General Supply, a receptacle at work station
- Health Instructor's Office, a receptacle at work station
- P.O.S. at Dining
- Gymnasium receptacles
- Dining, two receptacles
- Administration, a receptacle at work station
- Principal Office, a receptacle at work station
- Nurse, a receptacle at work station
- One Elevator power, Machine Room receptacle, pit receptacles, and dampers
- Water Heaters and Circ pumps
- Generator block heater and battery charger
- Technology equipment including:
  - IDF's each with two technology racks, two 120 volt, 20 amp, single phase receptacles per rack, includes telephone system.
  - MDF with technology racks, two 120 volt, 20 amp, single phase receptacles per rack, includes telephone system.
  - VRF unit for MDF and IDF's with condensate pump receptacle
  - Security System including plywood backboard security circuits, electrified door power supplies, and CCTV cameras (powered by switches in MDF and IDF's)
  - Plywood backboard clock circuits
- Security Office receptacles
- Fire Pump

#### F. Fire Alarm System:

An addressable manual and automatic fire alarm system will be provided. The fire alarm system will call the Fire Department or a Central Station via master box and/or telephone dialer. The fire alarm control panel will be located in the Main Electric Room or an area as so directed by the Fire Department. A remote annunciator panel will be provided in the Vestibule at the Main Lobby and where required by the Fire Department. A map of the entire building will be framed and mounted adjacent to the annunciator. Keyed boxes will be provided outside the Fire Department entries. Manual pull stations will be located within five feet (5') of each egress door and at the entrance to each Stair. Additional pull stations will be provided as required by Code. Heat detectors will be provided at the top of the elevator shaft and any other areas not provided with protection by the fire suppression system. Smoke detectors will be provided in the Corridors, in Stairs at each floor level, in the Elevator Machine Room, and at all elevator landings for early detection of smoke

for recall. All devices including tamper, flow, pressure switches, and PIV, associated with the fire suppression system will be connected to the fire alarm system. Audio/visual appliances will be provided in the Corridors, Classrooms and all large areas such as the Gymnasium, Media Center, Auditorium, and Dining. Visual devices will be provided in Toilet and Conference rooms. Mechanical equipment shall be shut down by the fire alarm system as required by code.

#### **G. Lighting:**

##### 1. Interior:

a. In general, highly efficient LED lighting fixtures will be provided throughout the building. Lighting levels will be in accordance with I.E.S. (Illuminating Engineering Society of North America) recommendations and the Massachusetts State Building Code energy requirements.

##### 2. Exterior:

a. Wall and pole mounted site lighting fixtures will be LED type.

#### **H. Switching:**

Lighting fixtures will be controlled primarily by room occupancy sensors and local low voltage dimmers. Lighting fixtures within primary side lighted areas will be daylight harvested via dimming drivers and photosensors. Lighting control relay panels will be provided to control exterior lighting and control interior lighting where time of day control is required.

#### **I. Devices:**

General convenience receptacles will be located throughout the building as required. Receptacles provided in Toilet rooms, near sinks, the Kitchen, and outdoors will be provided with ground fault protection. Circuiting will be provided to Kitchen, Mechanical, and Plumbing equipment, and miscellaneous loads as required.

#### **J. Bi-directional Amplifier System**

A bi-directional amplifier with coaxial cabling above accessible ceilings will be provided to amplify Fire Department and Police frequencies to ensure that there are no "dead" spots in the building for communication within building.

#### **K. Technology Systems Back Box and Conduit System**

A telephone/data/video/security/clock/speaker conduit system consisting of empty back boxes and conduit with pull strings to above

accessible ceilings will be provided for technology. Cable tray will be provided in MDF and IDF rooms for low voltage wiring.

#### **L. PV System Conduit System**

An empty conduit system with pull strings will be provided for the PV system consisting of photovoltaic panels and an inverter. Conduits will be provided from the switchboard to an exterior mounted disconnect switch for shutting down the PV system if need be. Conduits will also be provided from the exterior disconnect switch to the inverter and from the inverter to the roof.

#### **M. Electric Vehicle Charging Stations**

Electric vehicle charging stations will be provided.

#### **N. Destratification Fans**

Destratification fans will be provided in the Gymnasium.

#### **O. Mass Notification System**

A mass notification system will be provided including control panel, info alarm graphic annunciation and control, addressable speakers, and amber lenses.

#### **P. Lightning Protection**

The building will be provided with a lightning protection system made up of air terminals on the roof with downlead conductors to ground.

### **INFORMATION TECHNOLOGY & SECURITY SYSTEMS**

#### **271000 Structured Cabling**

The new network design will support up to 10GHZ over Category 6A to the desktop.

Twenty-four pair multi-mode OM4 fiber and twelve pair single mode OS2 fiber will be provided from the MDF to every IDF in the building. A 25 pair cat5e riser cable shall be provided from the MDF to every IDF in the building.

Cat 6A cabling will be provided for data, voice, CCTV, and wireless access points (four data drops at each wireless access point location). Wireless access point outlet placements are intended to provide the capability for complete wireless coverage throughout the school.

Each classroom will be wired with 2 data ports and a wall phone jack at the teacher location (category 6A cabling will be provided for the owner provided phone system (support for Voice over IP)). Classrooms will also have 2 data ports located at the back of the room.

The technology labs will be capable of accommodating an entire class of students (28). Network access in the technology labs will be wireless. Four ceiling data jacks for wireless access points shall be provided. In addition, the equipment specified below in 274000 for a typical classroom shall be included in each lab.

The MDF and IDFs shall have a shared ground and ground bus installed, bonding the rooms and all cable tray and racks.

#### **272100 Network Switches**

Network electronics (switches) and patch cords shall be provided by the Owner

#### **272133 Wireless Access Points**

Wireless access points, and a controller if applicable, will be provided by the Owner. The subcontractor in section 271000 shall install the wireless access points and shall furnish and install green cat6A patch cords from the WAP outlet above the ceiling to the WAP device.

#### **273000**

The phone system, programming and handsets shall be provided and installed by the Owner. The building shall be cabled to support a voice over IP phone system using Cat 6A.

#### **274000**

The PC/laptop in each classroom shall be provided by the Owner. A new voice lift system and ceiling speaker shall be furnished and installed in each classroom. The base unit shall be installed on the wall behind the footprint of each interactive display. A 75" Promethean Interactive Display shall be furnished and installed on the teaching wall of each classroom in grades 1-8. In grades Pre-K to K, the interactive display will be on a mobile cart, and have a media connector for the voice lift system affixed to the rear of the display. In these rooms, the voicelift base unit will be shelf mounted on the wall near the teacher's desk. The displays and voice lift shall be proprietary.

The gymnasium shall have a sound system, and large format projector and screen.



10 presentation cameras, Okiocam T Plus by Okiolabs shall be furnished and turned over to the owner.

#### **275000**

A new Atlas IED PA system with digital message clocks and call button shall be installed. Plastic call button covers shall be placed over every call button. Integration of the IED PA system to the owners VoIP phone system shall be furnished and installed. Any authorized phone shall be capable of paging the building or zones of the building. Clocks shall be in all offices, conference rooms, and classrooms and group spaces. Exterior PA speakers shall be included. The system shall be proprietary.

#### **277000**

Digital signage displays shall be provided and installed in the student dining area, at the main entry, and in 2 halls per floor. An IPTV system shall not be provided. Digital signage displays shall be furnished and installed by the 274000 subcontractor. Devices and software for the displays shall be furnished, programmed and installed by the owner.

#### **280000**

Identicard access control shall be furnished and installed in the school. All door contacts shall be double pole double throw contacts. The intrusion system and access control system shall each be wired to one set of contacts. With all door contacts being monitored by the access control system, a higher level of situational awareness is provided to the staff regarding entrances and exits of the building while the building is occupied. Traditionally, the intrusion detection system only monitored and reported door alarms during unoccupied times when the system is armed. Leveraging the access control system to also monitor the door contacts allows the staff to receive door alarms during occupied times when the intrusion detection system is typically disarmed. The access control system shall be proprietary. The main entry shall have a video entry system.

An intrusion detection system and related components shall be provided. Every first floor room with a window shall have a motion sensor. Motion sensors shall also be placed within the hallways and in vestibules and at strategic locations.

An indoor/outdoor CCTV system (IP based) will be provided. Coverage shall include entrances, hallways, stairwells, building perimeter, and parking (parking surveillance shall utilize both building mounted cameras as well as pole mounted cameras). Other areas, such as the gym, auditorium, café, and admin area shall be included.

## 260000

A Mass Notification System (MNS) shall be provided, to include alert and fire strobes in all spaces. Large group spaces shall also have a digital scrolling message board with MNS alert notifications.

### THEATER EQUIPMENT

#### Stage Dimming and Lighting System

The Stage Dimming and Lighting system shall be comprised of a 48 dimmer rack and 24 - 120 volt relay cabinet. There shall be a low voltage CAT5e control network for both the house lights and the stage lighting with distributed network outlets allowing for DMX control at all stage lighting pipe locations and at stage level, left and right. Lighting control shall be by means of Element 40-500 control console with two monitors, an access point shall be included for Ipad control of cues. The Stage lighting fixture package will be all LED front lighting, LED par down lights and LED cyclorama lights. Stage lighting will be on Motorized hoists that raise and lower to allow for easy fixture movement for theatrical or dance productions. The Front light pipe shall lower on a motorized hoist with integrated circuits and DMX control.

#### Stage Video Wall

Taking technology to the next level, this facility will incorporate a 20' by 40' - 3.91 mm video wall at the rear of the stage. This will replace the need for a cyclorama curtain and cyc lighting fixtures, it also eliminate the need for a video projector and screen. Control can be processed thru the Crestron system, or local switcher. Camera inputs allow for Image magnification, movies, and computer inputs will allow for presentations to be on the video wall.

#### Stage Audio Visual and Sound

AV control shall be by a Crestron control system with the main control location at the stage storage room. This area will be central hub and shall house the Audio control console, the Lighting control console, Crestron touch screen controller and house light touchscreen control station. A DVD player shall be included as a standard input to the video wall. Speakers shall be hung at a center cluster for voice support and left and right for stereo effects. These shall be amplified and run thru a drive rack to process the sound for the room. A 40 channel digital mixing console and wireless microphone package of 8 units shall be included along with a wireless assisted listening system. Additionally the audio system shall have a back stage communication system connecting the band, chorus, control booth and back stage areas on a clear-com communication system.

#### Stage Rigging and Curtains

The stage shall have a set of curtains and tracks consisting of; a Main valence and Main bi-parting curtain in custom color IFR velour. Three

layers of legs and border masking with a mid-stage traveler all in black velour or IFR fabric and rear black bi-parting velour. All stage curtains shall be on Dead hung line sets. In addition there will be two scenic battens on motorized hoists with a one-way walk-along track for pulling scenic drops on and off stage. There shall be a minimum of four stage lighting pipes on stage, two front side light torm ladders, one on each side of the stage apron and one front of house hoist that raises and lowers complete with dimmer circuits and DMX control for stage lighting fixtures.

## FOOD SERVICE EQUIPMENT

Crabtree McGrath Associates is a consulting firm specializing in food service facilities planning and design. We have worked with Ai3 Architects to study a framework for the design of the kitchen and serving space associated with a new school building. Additionally, Crabtree met with the schools current Food service Director to identify future goals and to seek guidance for the equipment needed in the new facility.

The school's food service operation will be organized into two parts. One part is the "back of house" consisting of food storage, preparation area, and cooking. The other part is what we call the "front of house" or serving area. The serving area is where students approach and are served meals.

### Kitchen and Food Preparation Area

The back of house shall include all the necessary components of a fully functional kitchen to include a receiving area to be used as a staging point for the breakdown and distribution of delivered goods. Refrigerated rooms for the bulk storage of refrigerated and frozen products, sized to accommodate the needs of the facility, shall be provided. Dry goods storage shall be made available for the keeping of canned, boxed, and other non-refrigerated food items. Food grade storage shelving and dunnage platforms shall be provided for dry goods storage and for storage of disposable items such as paper goods.

Food preparation shall take place on stainless steel tables of various sizes and configurations. Tables may be fashioned with sinks, drawers, shelves, and overhead pot storage hooks. Motorized food preparation equipment such as a food slicer, food cutter, and mixer shall be provided. Sizing of this equipment will be based on the scope of food preparation.

Cooking shall take place in a central location adjacent to both food storage and preparation. Equipment shall consist of standard pieces such as convection ovens, boiling kettles, braising pans, steamers, and open burner range tops. Adjustments shall be made to cooking equipment to suite the specific menu.

The facility will include the necessary ware washing equipment to process ware, pots, trays, pans and plastic trays returned from the cafeteria.

Other support facilities located in or adjacent to the kitchen will include a staff toilet, a dedicated kitchen janitor's mop sink with enough space for the storage of mops, buckets and detergents. A clothes washer and dryer will be provided for the washing of mop heads, aprons, and kitchen hand towels. Typically grouped with this equipment are employee locker accommodations for the storage of personal items like coats, handbags, or shoes and an office for the kitchen manager.

Itemized breakdown of equipment:

Refrigerated Storage - The kitchen will require the following storage.

- a. Walk-in cooler for refrigerated storage.
- b. A walk-in freezer for frozen storage.
- c. A walk-in freezer for district wide commodity storage.
- d. Dry goods storage area for paper and food storage.

#### Serving Area

Serving will take place at multiple counters organized into a linear configuration allowing for orderly and secure serving of food products. Counters are grouped into cold and hot food serving lines that will serve the typical school lunch. These lines shall include the necessary equipment needed to provide the cold offerings such as fruit, salads, and beverages.

In addition, a grab and go station, deli sandwich line, grill station, and cold food bar will be utilized to enhance the meal offering and increase participation.

Each of the lines will funnel into a common area large enough to accommodate the flow of traffic where the transaction is to take place to account for meal type and quantity. Counters with tray slides will be provided to accept "Point of Sale" terminals where students can pay with cash or type in a code that is linked to a declining balance pre-paid system.

Within the seating area will be two condiments stands able to display napkins, forks, straws, and other utensils and condiments needed for the lunch period. These units will be mobile and able to be placed where needed. The base cabinet will be equipped with lockable storage.



A TETRA TECH COMPANY

**CODE & FIRE ENGINEERING GROUP**

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Smoke Control System Design  
Due Diligence and 3<sup>rd</sup> Party Reviews

September 13, 2022

James Jordan  
Ai3 Architects, LLC  
526 Boston Post Road  
Wayland, MA 01778

Re: Dual Language – SD Code Compliance  
Central Falls, RI

Dear Mr. Jordan:

Cosentini Associates has reviewed the drawings for the proposed Dual Language school project for compliance with the major fire protection and life safety criteria of the applicable codes and discussed with Ai3 Architects regarding the proposed designs. The proposed project includes the new construction of a Per-K through 8<sup>th</sup> grade school, consisting of three stories and footprint of approximately 31,700 square feet. In our opinion, the project is in compliance with the major fire protection and life safety criteria of the Rhode Island Building Code.

Sincerely,  
COSENTINI ASSOCIATES, INC.  
Code Consulting and Fire Engineering Services

**Rockwood J. Edwards, PE** | Vice President  
**Code and Fire Engineering Group**  
Phone: 617-748-7800 | Fax: 617-748-7801 | Direct Dial: 617-748-0021  
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# DUAL LANGUAGE: PK - 8

SEPT 15, 2022

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**OWNERS PROJECT MANAGER**  
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**CIVIL ENGINEER**  
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 Fax: (781) 740-1012



**CIVIL**  
 C1.0 EXISTING CONDITIONS AND DEMOLITION PLAN  
 C2.0 DRAINAGE PLAN  
 C3.0 DETAILS

**LANDSCAPE**  
 L1.21 HARDSCAPE PLAN  
 LP1.21 LANDSCAPE PLAN

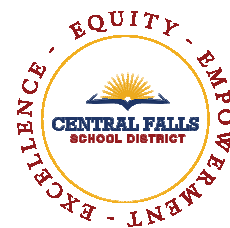
**ARCHITECTURAL**  
 A0.01 ABBREVIATIONS, SYMBOLS & MATERIALS INDICATIONS  
 A0.11 FIRST FLOOR CODE APPROACH PLAN  
 A0.12 SECOND FLOOR CODE APPROACH PLAN  
 A0.13 THIRD FLOOR CODE APPROACH PLAN  
 A0.21 PARTITION TYPES  
 A0.22 PARTITION TYPES  
 A1.11 FIRST FLOOR PROGRAM PLAN  
 A1.12 SECOND FLOOR PROGRAM PLAN  
 A1.13 THIRD FLOOR PROGRAM PLAN  
 A2.11 OVERALL FIRST FLOOR PLAN  
 A2.12 OVERALL SECOND FLOOR PLAN  
 A2.13 OVERALL THIRD FLOOR PLAN  
 A2.14 OVERALL ROOF PLAN  
 A2.21A FIRST FLOOR PLAN ZONE A  
 A2.21B FIRST FLOOR PLAN ZONE B  
 A2.22A SECOND FLOOR PLAN ZONE A  
 A2.22B SECOND FLOOR PLAN ZONE B  
 A2.23A THIRD FLOOR PLAN ZONE A  
 A2.23B THIRD FLOOR PLAN ZONE B  
 A3.01 EXTERIOR ELEVATIONS  
 A3.02 EXTERIOR ELEVATIONS  
 A4.01 BUILDING SECTIONS  
 A4.02 BUILDING SECTIONS  
 A4.11 WALL SECTIONS  
 A4.12 WALL SECTIONS  
 A10.00 ROOM FINISH SCHEDULE

**FIRE PROTECTION**  
 FP.1 FIRE PROTECTION RISER DIAGRAM

**PLUMBING**  
 P.1 PLUMBING RISER DIAGRAM

**MECHANICAL**  
 M.1 MECHANICAL CONTROL SEQUENCE  
 M.2 MECHANICAL CONTROL SEQUENCE

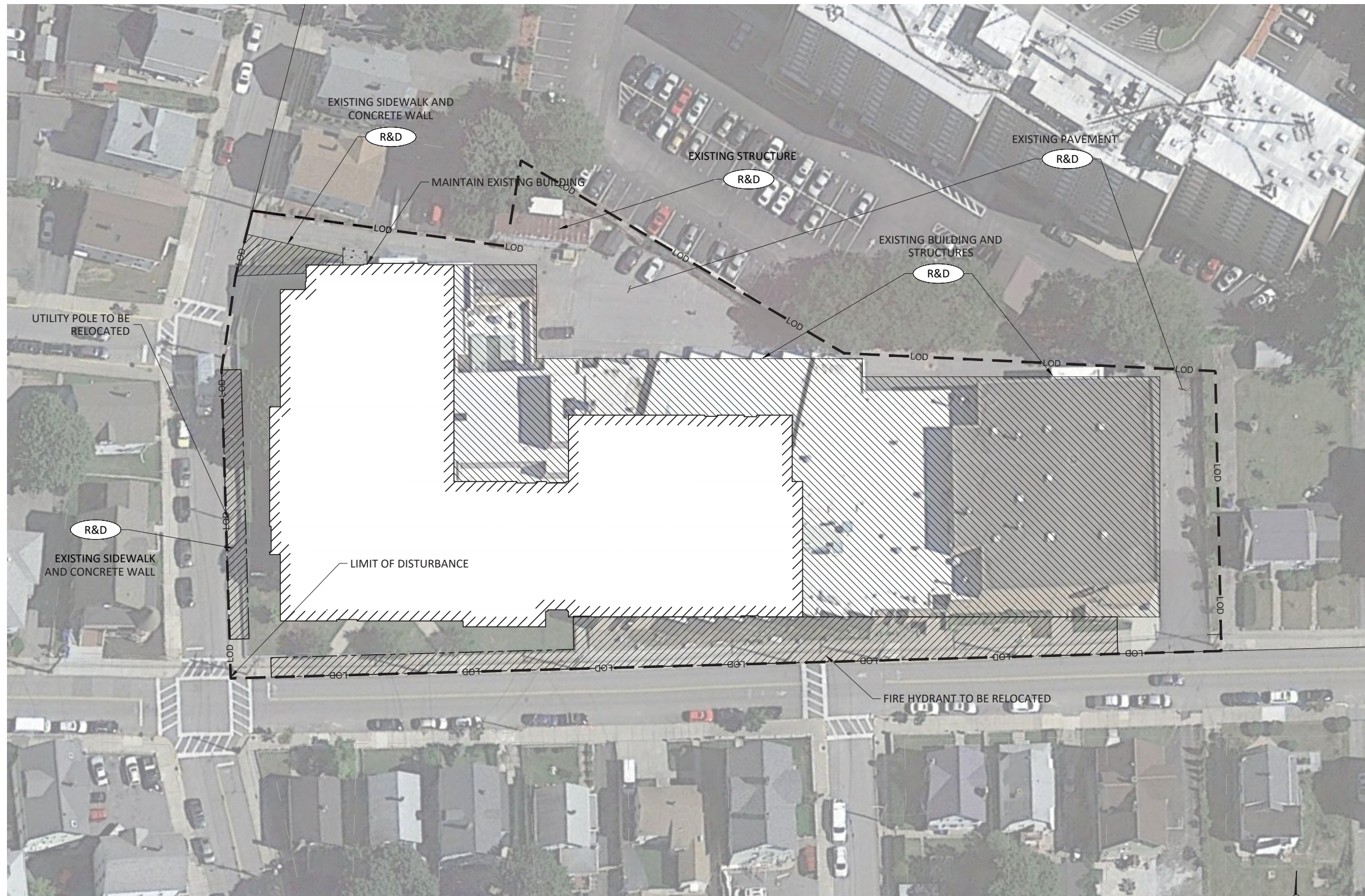
**ELECTRICAL**  
 E.1 ELECTRICAL RISER DIAGRAM & SCHEDULE



## SCHEMATIC DESIGN

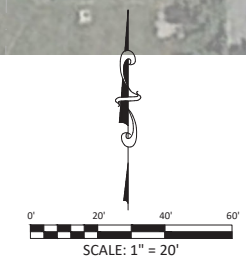
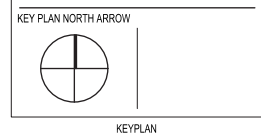
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 A13 PROJECT NO.2202.00 - DUAL LANGUAGE: PK - 8





CENTRAL FALLS DUAL LANGUAGE SCHOOL  
 24 SUMMER ST, CENTRAL FALLS, RI 02863

KEYNOTE LEGEND:



DRAWING NAME:	
EXISTING CONDITIONS AND DEMOLITION PLAN	
DRAWN BY:	JLM
REVIEWED BY:	ABS
SCALE: AS INDICATED	DRAWING NUMBER:
JOB NO.: 2202.00	<b>C1.0</b>
DATE: SEPT 15, 2022	



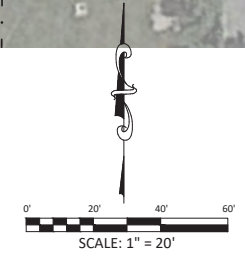
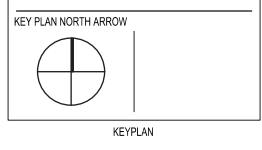


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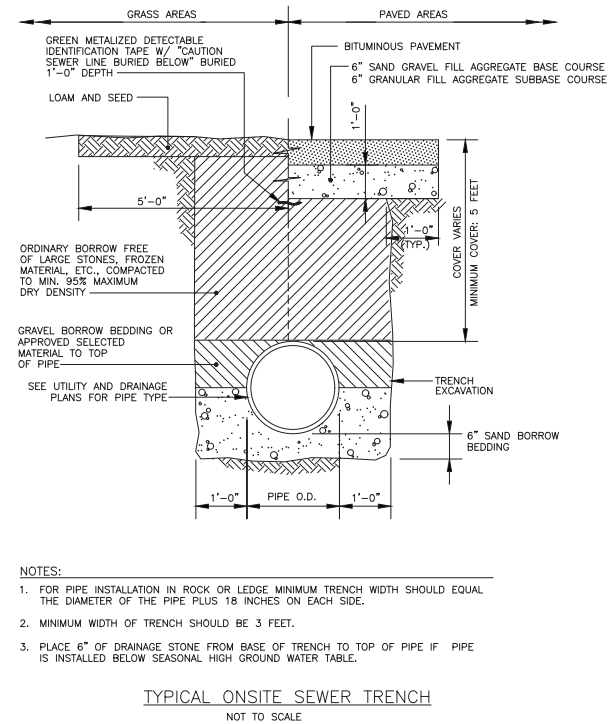
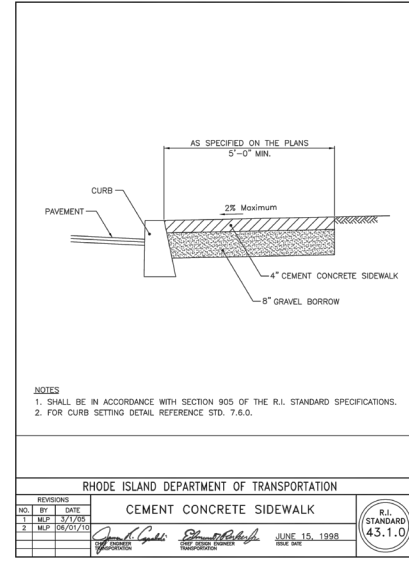
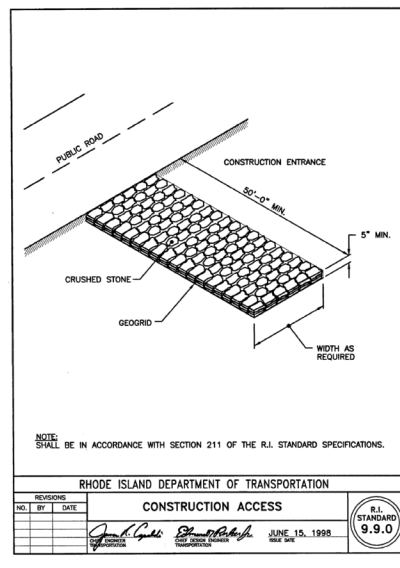
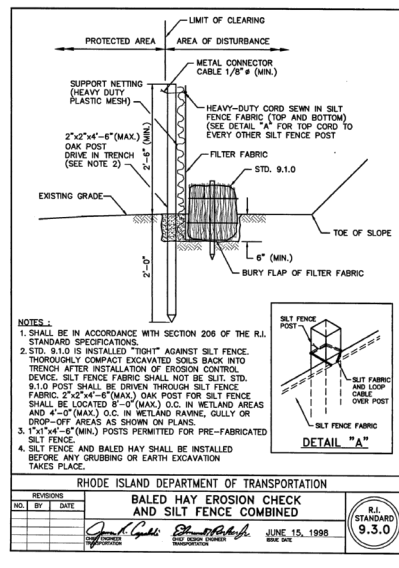
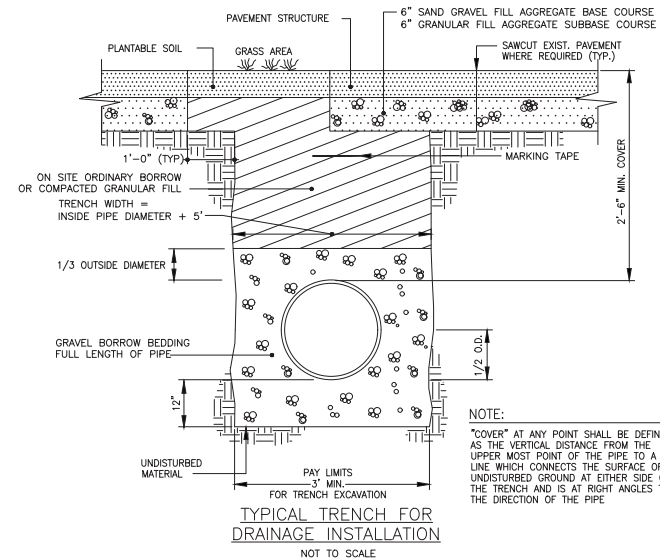
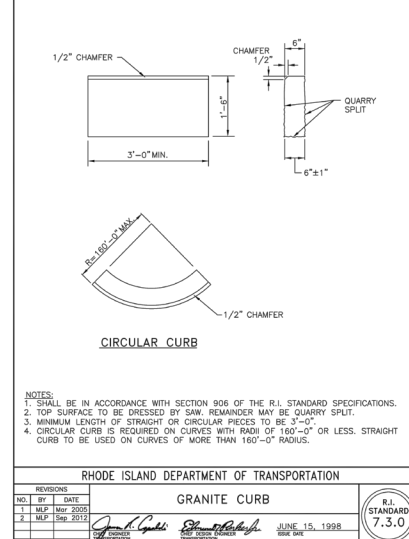
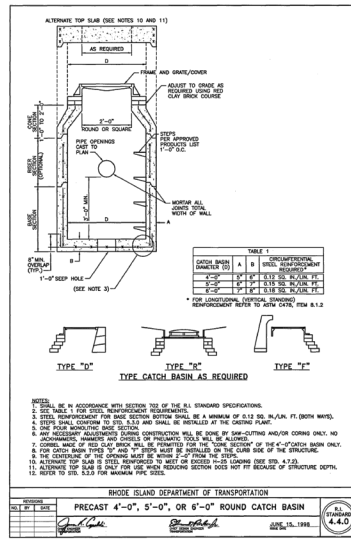
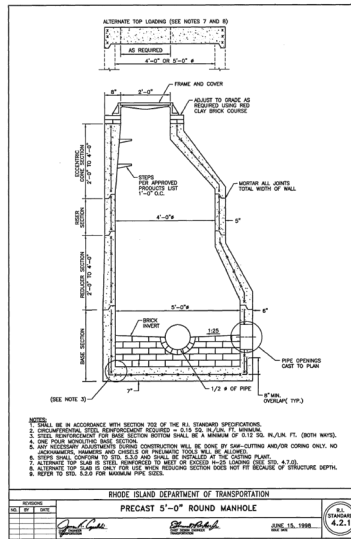
CENTRAL FALLS DUAL LANGUAGE SCHOOL  
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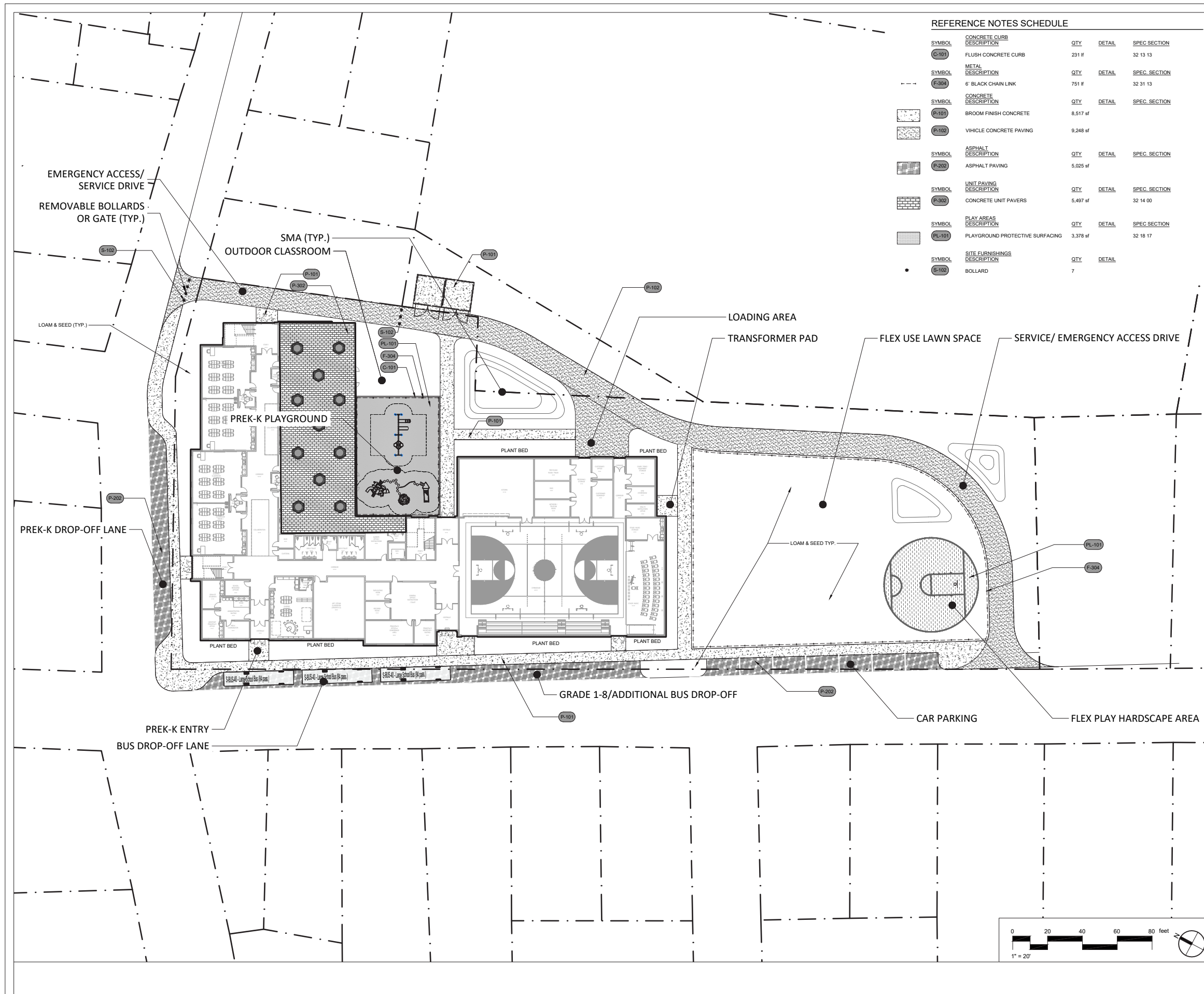
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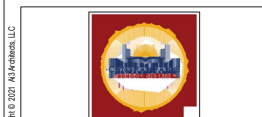
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DRAWN BY:	JLM
REVIEWED BY:	ABS
SCALE:	AS INDICATED
JOB NO.:	2202.00
DATE:	SEPT 15, 2022
DRAWING NUMBER:	C2.0







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KEYNOTE LEGEND:

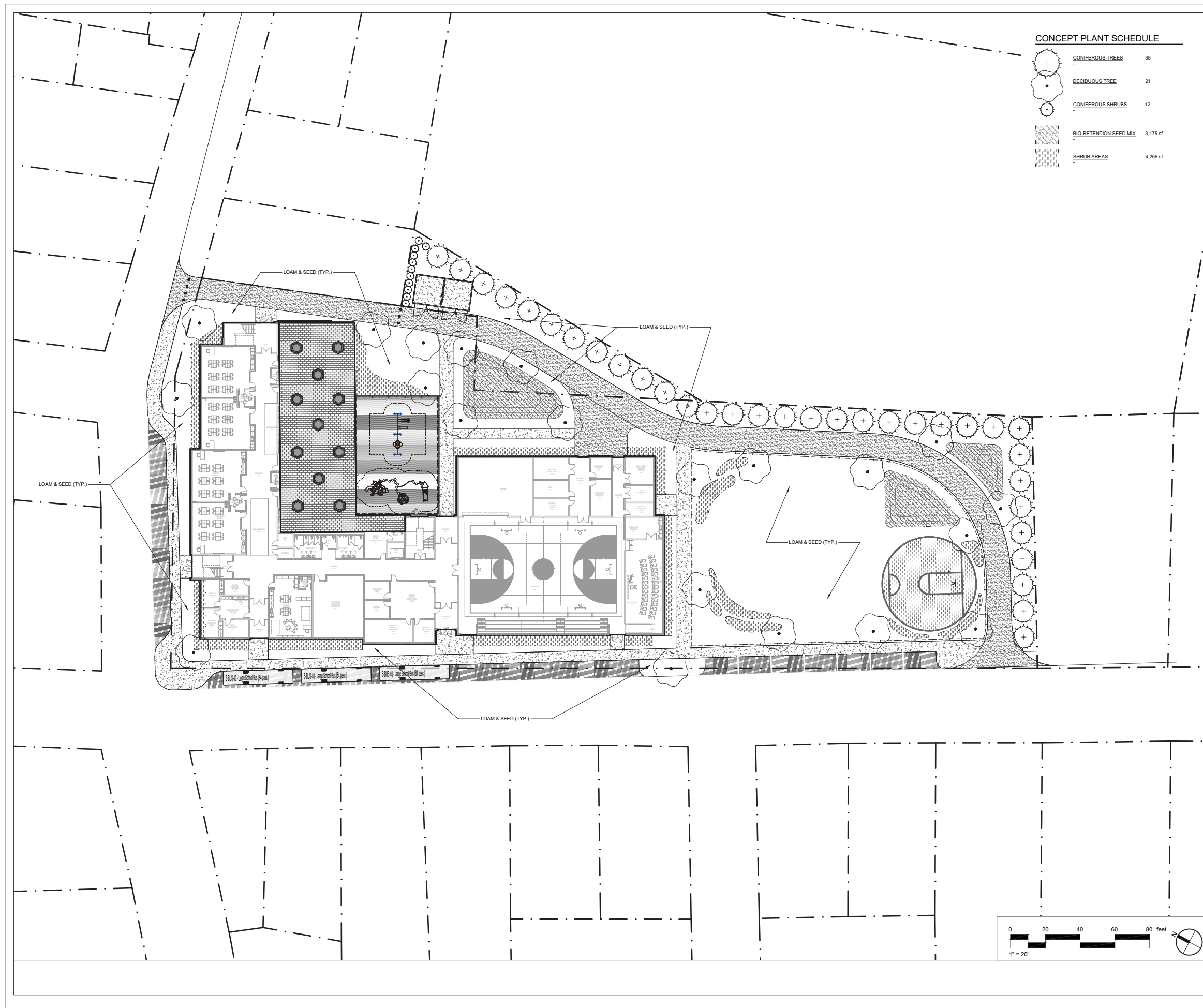
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KEY PLAN NORTH ARROW  
KEY PLAN

DRAWING NAME:  
**HARDSCAPE PLAN**

DRAWN BY: T.J.F.  
REVIEWED BY: A.E.

SCALE: 1" = 20'  
JOB NO.: K1032  
DATE: 9/15/2022

DRAWING NUMBER:  
**L1.21**



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KEYNOTE LEGEND:

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Schematic Design

KEY PLAN NORTH ARROW

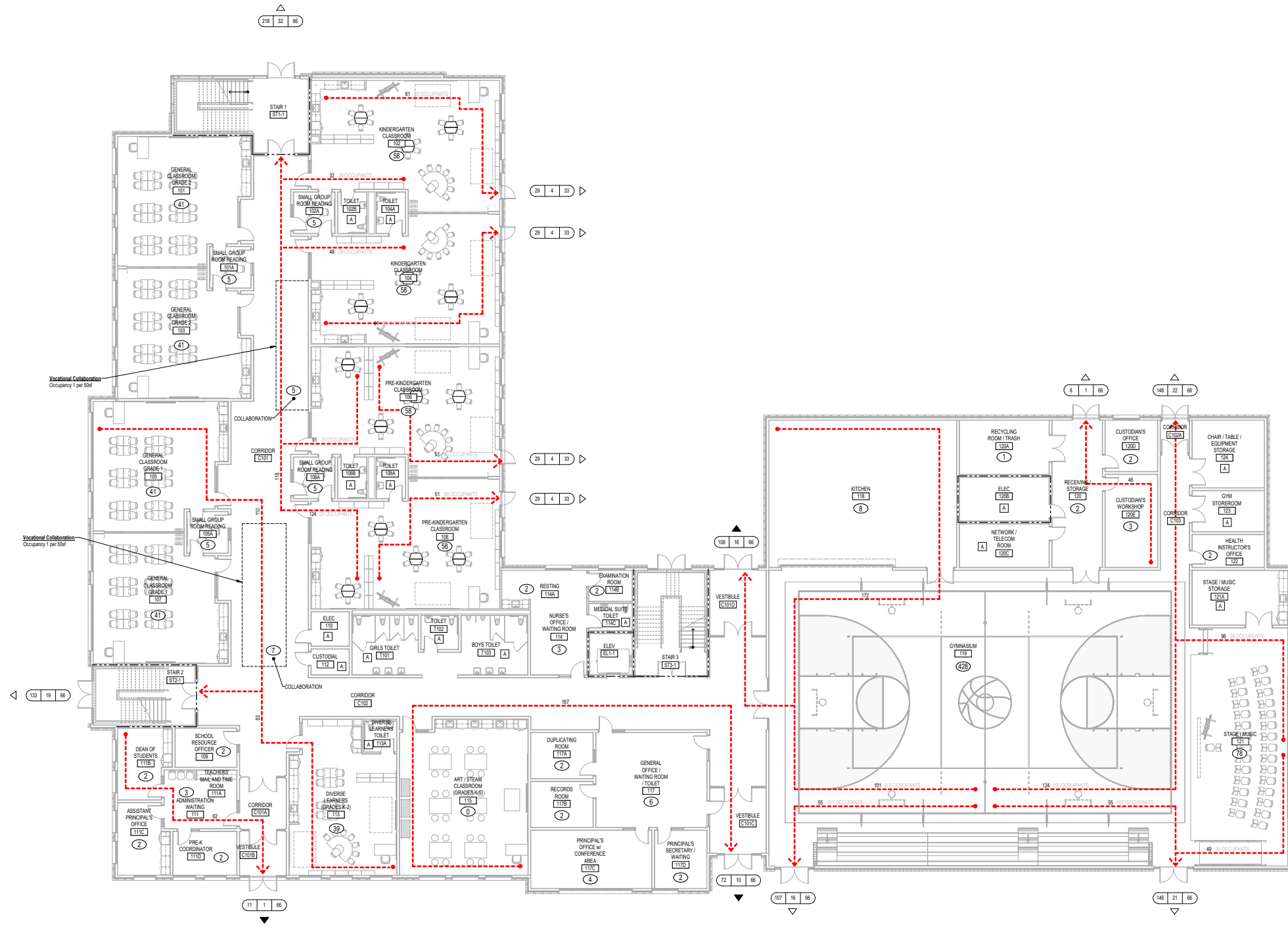
KEY PLAN

DRAWING NAME:  
**LANDSCAPE PLAN**

DRAWN BY: T.J.F.  
REVIEWED BY: A.E.  
SCALE: 1" = 20'  
JOB NO: K1032  
DATE: 9/15/2022  
DRAWING NUMBER:  
**LP1.21**







1 FIRST FLOOR OVERALL FIRE SAFETY PLAN  
11-18-20

**FIRST FLOOR FIRE SAFETY ANALYSIS:**

DRAFT INFORMATION - FURTHER DEVELOPMENT TO FOLLOW IN STAGE III

TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

Building Element	Type	IB
Primary structural frame Including columns, girders, trusses & braces		0
Bearing walls		0
Exterior		0
Interior		0
Exterior Nonbearing walls and partitions		See Table 602
Interior Nonbearing walls and partitions		0
Floor construction and secondary members Including supporting beams & joists		0
Roof construction and secondary members Including supporting beams and joists		0 <sup>c</sup>

c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.

Chapter 10: Means of Egress  
Section 1002 Definitions  
Common Path of Egress Travel: That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.  
Floor Area, Net: The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

**Means of Egress Sizing**  
1005.3.2 Other egress components  
The capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant.  
Exceptions:  
1. For other than Group H and I-2 Occupancies, the capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such components by a means of egress capacity factor of 0.15 inch per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

Required Egress Width:  
1,079 Occupants x 0.15 inches per Occupant = 162 inches  
Designed Egress Width: = 726 inches  
\* 33 inch egress width used for 36 inch door



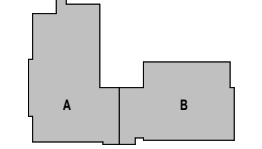
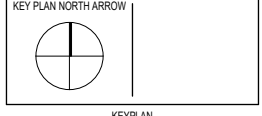
DUAL LANGUAGE  
24 SUMMER ST. CENTRAL FALLS, RI

**FIRE SAFETY PLAN LEGEND:**

- EGRESS WIDTH (DOOR):**  
  - EGRESS WIDTH (INCHES) PROVIDED
  - EGRESS WIDTH (INCHES) REQUIRED
  - NUMBER OF PERSONS EXITING
- EGRESS WIDTH (STAIR):**  
  - EGRESS WIDTH (INCHES) PROVIDED
  - EGRESS WIDTH (INCHES) REQUIRED
  - NUMBER OF PERSONS EXITING
- ROOM NAME**    **ROOM TAG**
- (10) OCCUPANCY
  - (F) FIRE VALVE OR HOSE CABINET WITH EXTINGUISHER
  - (FE) FIRE EXTINGUISHER CABINET
  - (FE) WALL MOUNTED FIRE EXTINGUISHER
  - (A) ACCESSORY SPACE
- TRAVEL DISTANCE IN FEET**
- 2HR FIRE BARRIER
  - 2HR SHAFT WALL
  - 1HR FIRE BARRIER
  - PRIMARY EXIT
  - SECONDARY EXIT
- FIRE RATING**
- 2-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE, AT TOP OF ELEVATOR SHAFTS, ELEVATOR MACHINE ROOM CEILING AND WHERE SHAFTS DO NOT EXTEND TO THE BOTTOM OF THE BUILDING.
  - 1-HOUR FIRE RATING AT UNDERSIDE OF ROOF DECK & STRUCTURE

- GENERAL NOTES:**
- PROVIDE 2-A MINIMUM RATING SINGLE EXTINGUISHER THROUGHOUT - PER NFPA-10:2007
  - PROVIDE 20-B MINIMUM EXTINGUISHER RATING (ORDINARY HAZARD) PER NFPA-10:2007 AT THE FOLLOWING LOCATIONS:  
KITCHEN  
MECHANICAL  
ELEVATOR EQUIPMENT ROOMS  
CATERING/KITCHEN  
CUSTOMER RECEIVING AND SUPPLY  
CUSTOMER WORKSTORAGE
  - PROVIDE FIRE RATED DOORS AND GLAZING IN WALLS DENOTED AS 1 AND 2 HOUR FIRE BARRIER ASSEMBLY ON G0102

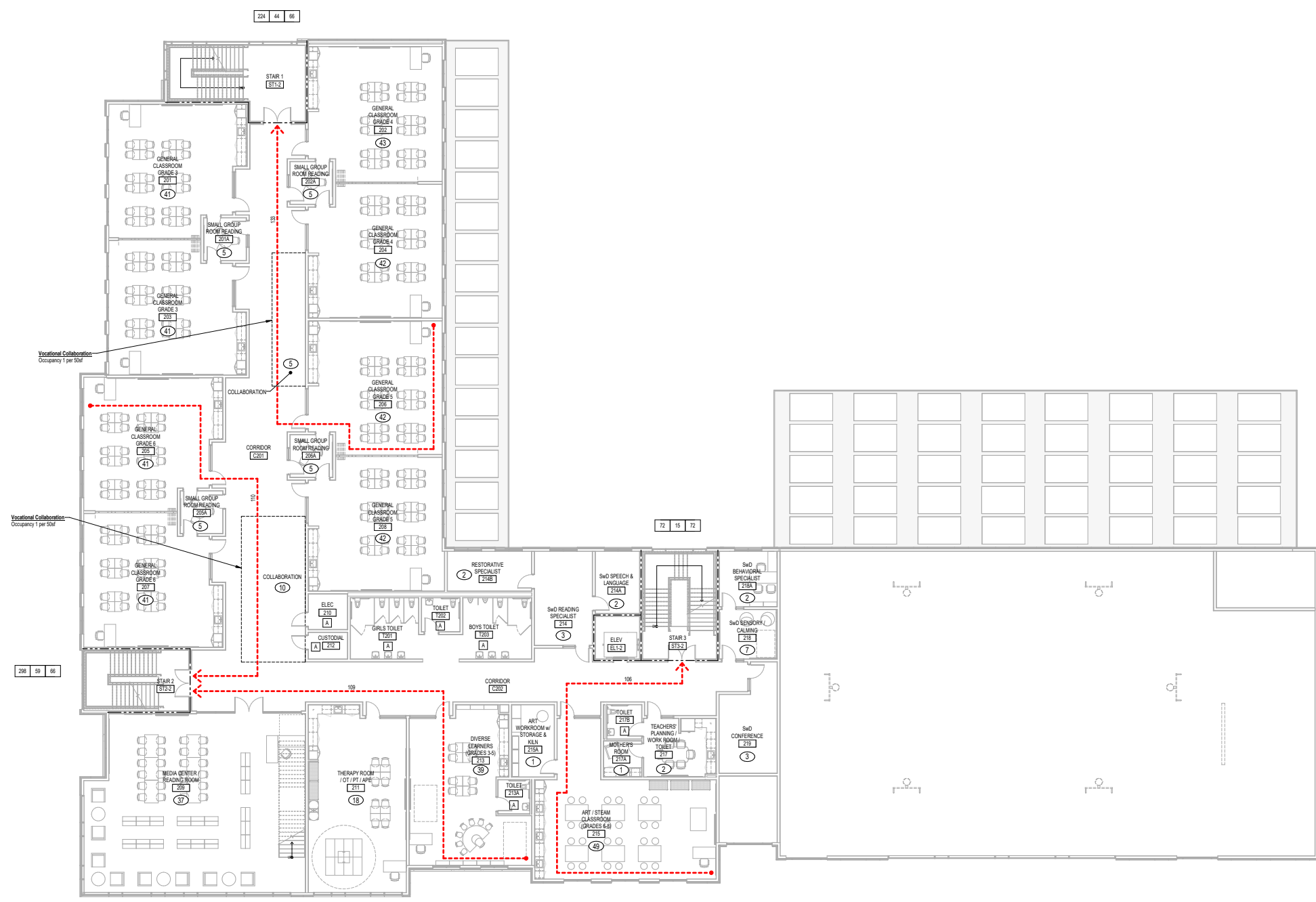
**SCHEMATIC DESIGN**



DRAWING NAME:

**FIRST FLOOR CODE APPROACH PLAN**

DRAWN BY: NS/CRUQ  
 REVIEWED BY: JQ  
 SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00  
 DATE: SEPT 15, 2022    **A0.11**



1 SECOND FLOOR OVERALL FIRE SAFETY PLAN

**SECOND FLOOR FIRE SAFETY ANALYSIS:**

DRAFT INFORMATION - FURTHER DEVELOPMENT TO FOLLOW IN STAGE III  
TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

Building Element	Type	IB
Primary structural frame Including columns, girders, trusses & braces	0	
Bearing walls	0	
Exterior	0	
Exterior Nonbearing walls and partitions	See Table 602	
Interior Nonbearing walls and partitions	0	
Floor construction and secondary members Including supporting beams & joists	0	
Roof construction and secondary members Including supporting beams & joists	0/c	
c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.		

Chapter 10: Means of Egress  
Section 1002 Definitions  
Common Path of Egress Travel: That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.  
Floor Area, Net: The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

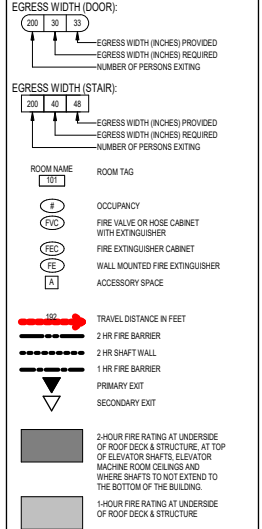
**Means of Egress Sizing**  
1005.3.1 Stairways  
The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.3 inch (7.6mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.

Exceptions:  
1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with section 907.5.2.2.

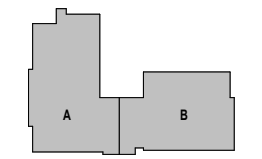
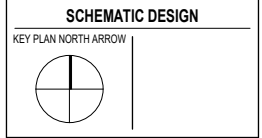
Required Egress Width:  
594 Occupants x 0.2 inches per Occupant = 118 inches  
Designed Egress Width: = 204 inches



KEYNOTE LEGEND: EGRESS



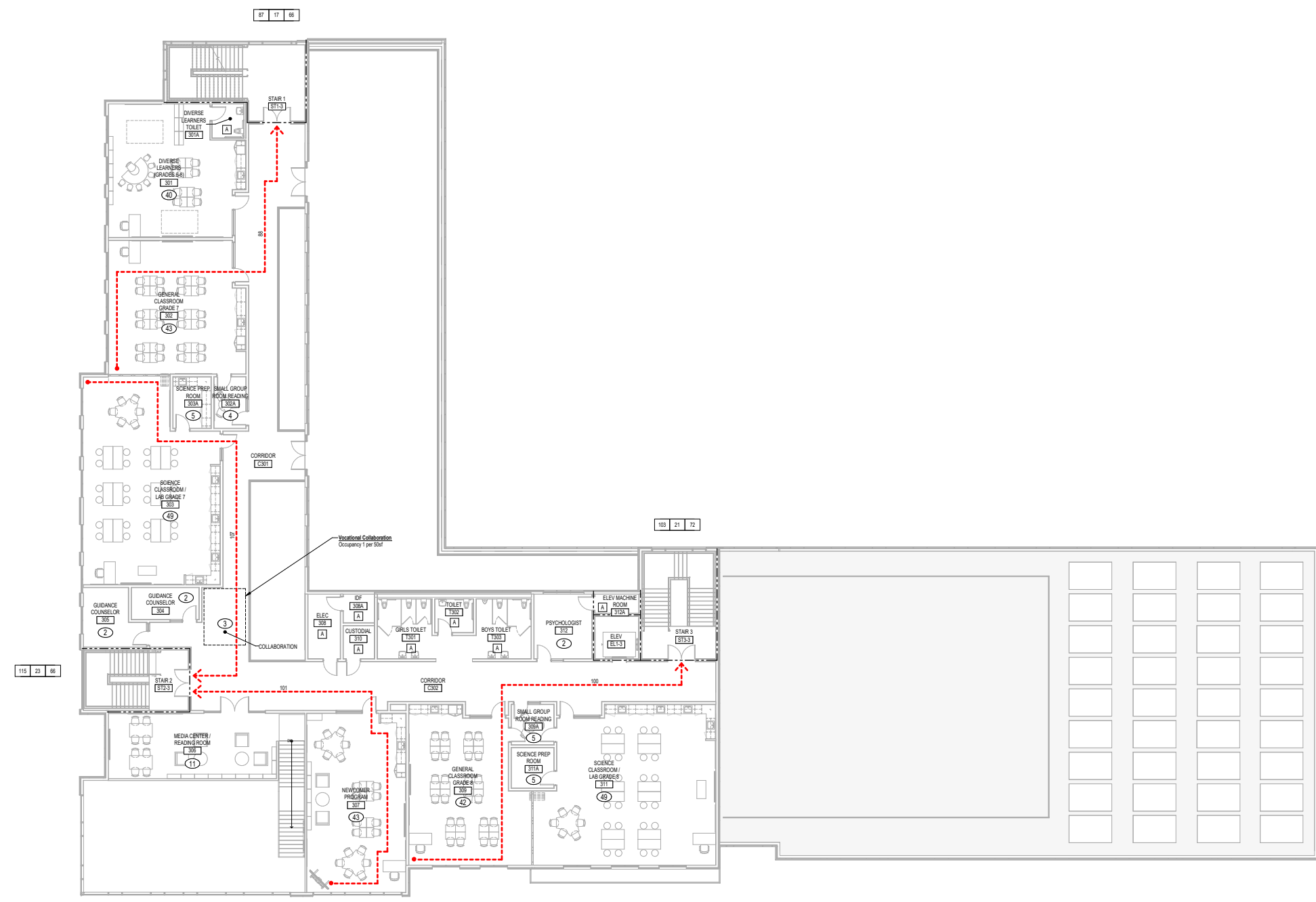
- GENERAL NOTES:**
- PROVIDE 2-A MINIMUM RATING SINGLE EXTINGUISHER THROUGHOUT - PER NFPA-10 c 2007
  - PROVIDE 20-B MINIMUM EXTINGUISHER RATING (ORDINARY HAZARD) PER NFPA-10 c 2007 AT THE FOLLOWING LOCATIONS:  
 KITCHEN  
 MECHANICAL  
 ELEVATOR EQUIPMENT ROOMS  
 CAFETERIA/DINING  
 CUSTODIAN RECEIVING AND SUPPLY  
 CUSTODIAN WORKSTORAGE
  - PROVIDE FIRE RATED DOORS AND GLAZING IN WALLS IDENTIFIED AS 1 AND 2-HOUR FIRE BARRIER ASSEMBLY ON G-02



DRAWING NAME:  
**SECOND FLOOR CODE APPROACH PLAN**

DRAWN BY: NS/C/R/JQ  
REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00 | **A0.12**  
DATE: SEPT 15, 2022



1 THIRD FLOOR OVERALL FIRE SAFETY PLAN  
11-13-17

**THIRD FLOOR FIRE SAFETY ANALYSIS:**

DRAFT INFORMATION - FURTHER DEVELOPMENT TO FOLLOW IN STAGE III  
TABLE 601 FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS

Building Element	Type	IB
Primary structural frame Including columns, girders, trusses & braces		0
Bearing walls		0
Exterior		0
Interior		0
Exterior Nonbearing walls and partitions	See Table 602	
Interior Nonbearing walls and partitions		0
Floor construction and secondary members Including supporting beams & joists		0
Roof construction and secondary members Including supporting beams and joists		0 <sup>c</sup>

c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.

Chapter 10: Means of Egress  
Section 1002 Definitions  
Common Path of Egress Travel: That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.  
Floor Area, Net: The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

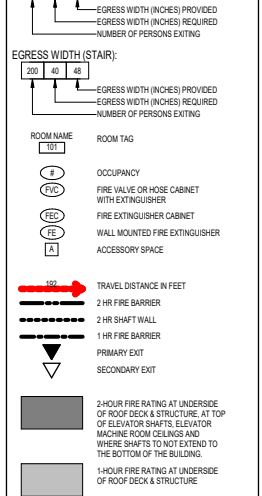
**Means of Egress Sizing**  
1005.3.1 Stairways  
The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.3 inch (7.6mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.  
Exceptions:  
1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with section 907.5.2.2.

Required Egress Width:  
305 Occupants x 0.2 inches per Occupant = 61 inches  
Designed Egress Width: = 204 inches



DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

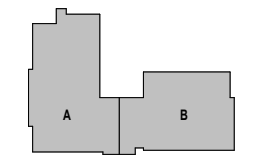
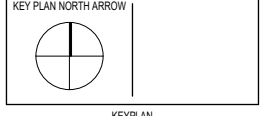
KEYNOTE LEGEND: EGGEND:



**GENERAL NOTES:**

- PROVIDE 2 A MINIMUM RATING SINGLE EXTINGUISHER THROUGHOUT - PER NFPA-10, 2007
- PROVIDE 20 B MINIMUM EXTINGUISHER RATING (ORDINARY HAZARD) PER NFPA-10, 2007 AT THE FOLLOWING LOCATIONS:  
KITCHEN  
MECHANICAL  
ELEVATOR EQUIPMENT ROOMS  
CAFETERIA/DINING  
CUSTOMER RECEIVING AND SUPPLY  
CUSTOMER WORKSTORAGE
- PROVIDE FIRE RATED DOORS AND GLAZING IN WALLS DENOTED AS 1 AND 2 HOUR FIRE BARRIER ASSEMBLY ON G0 02

**SCHEMATIC DESIGN**



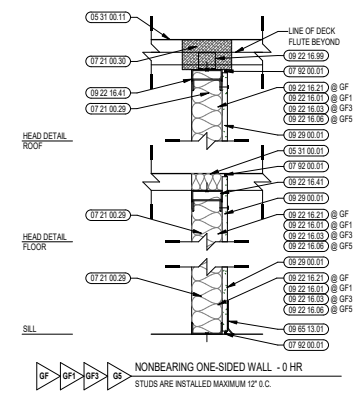
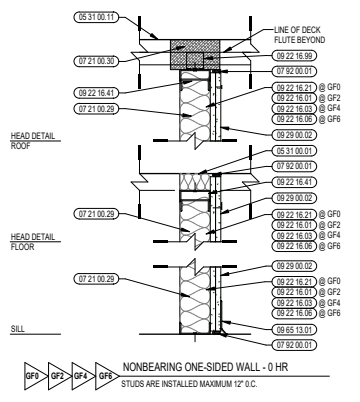
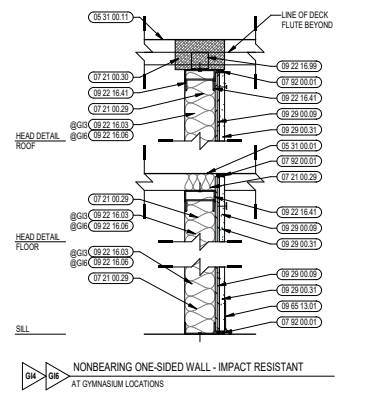
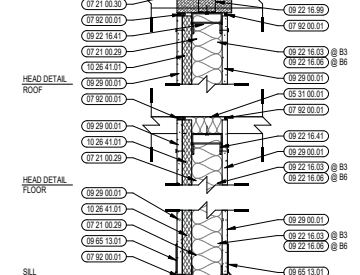
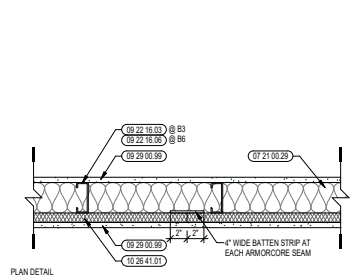
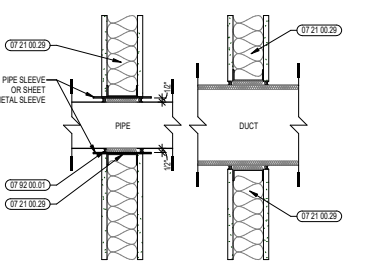
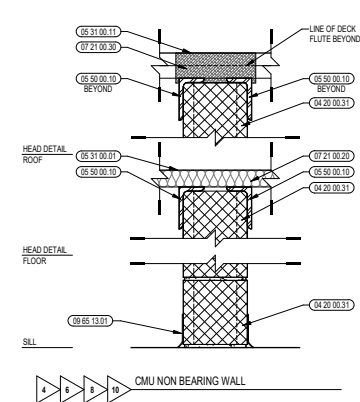
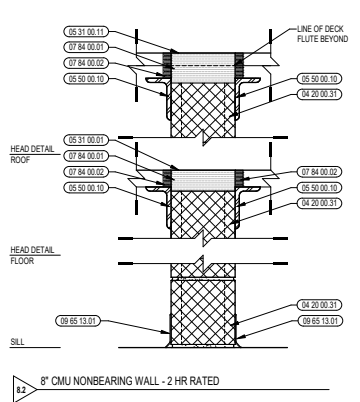
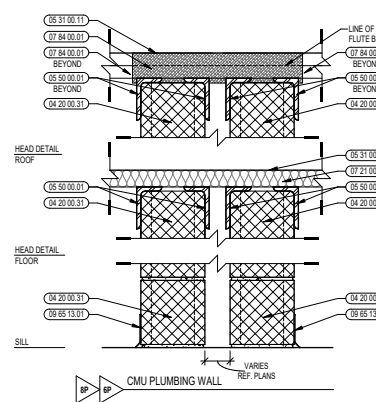
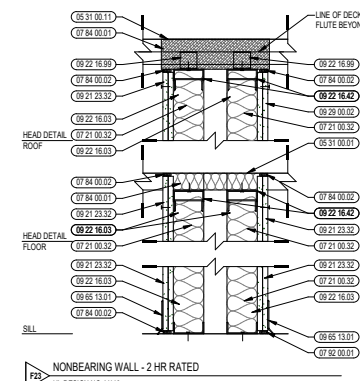
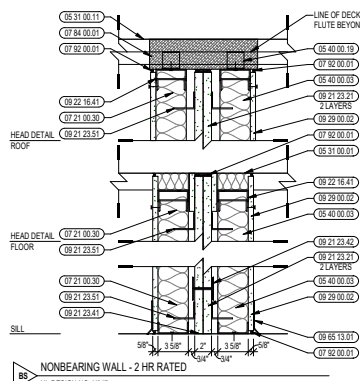
DRAWING NAME:

**THIRD FLOOR CODE APPROACH PLAN**

DRAWN BY: NS/C/R/JQ  
REVIEWED BY: JQ  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A0.13**

KEYNOTE LEGEND

- 04 20 00.31 CMU - STANDARD - NORMAL WEIGHT - REFERENCE DRAWINGS FOR DEPTH SIZE AND FIRE RATING
- 05 31 00.01 COMPOSITE STEEL DECK - SEE STRUCTURAL
- 05 31 00.11 STEEL ROOF DECK - 3 INCH GALVANIZED - SEE STRUCTURAL
- 05 40 00.09 STEEL STUDS - 3/8 INCH - 16 INCHES O.C. MAX
- 05 40 00.19 STEEL Z-CLIP - 1/8 GAGE MIN. - 1 INCH MIN. DEPTH - 16 INCHES O.C. MAX
- 05 50 00.01 STEEL ANGLE - 1 X 1 X 1/4 LVLV - CONTINUOUS - 12 INCH DIA SLOTTED HOLES @ VERTICAL LEG STAGGERED - HOLES @ 24 INCHES O.C.
- 05 50 00.19 STEEL ANGLE - 8/16 INCH CLIP - SEE STRUCTURAL
- 07 21 00.20 GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
- 07 21 00.21 GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - FACED
- 07 21 00.29 MINERAL FIBER INSULATION
- 07 21 00.30 MINERAL FIBER ACOUSTICAL INSULATION - 3 1/2 INCH
- 07 84 00.01 FIRE SAFING MINERAL WOOL
- 07 84 00.02 CALK - CALK AND PUTTY
- 07 92 00.02 JOINT SEALANT - TYPE AS REQUIRED
- 09 21 23.21 GYPSUM SHAFTWALL LINER PANEL - 1 INCH
- 09 21 23.32 GYPSUM BOARD - 5/8 INCH TYPE X - 2 LAYERS
- 09 21 23.41 METAL SHAFTWALL C-STUD TRACK - 2 INCH
- 09 21 23.42 METAL SHAFTWALL H-STUD - 2 INCH
- 09 21 23.51 ALUMINUM 2402-1/2 INCH BREAKAWAY CLIP - MAX 10 FEET O.C. VERTICALLY
- 09 22 16.01 METAL STUD - 5/8 INCH - 16 INCHES O.C. MAX
- 09 22 16.03 METAL STUD 3/8 INCH - 16 INCHES O.C. MAX
- 09 22 16.06 METAL STUD 8 INCH - 16 INCHES O.C. MAX
- 09 22 16.09 METAL FLURRING CHANNEL - 7/8 INCH - 16 INCHES O.C. MAX
- 09 22 16.41 METAL DEFLECTION TRACK ASSEMBLY
- 09 22 16.42 METAL DEFLECTION TRACK ASSEMBLY - FIRE RATED
- 09 22 16.99 METAL CLIP FOR WALL FRAMING - 16 GA - 24 INCHES O.C. MAX
- 09 29 00.01 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 1 LAYER
- 09 29 00.02 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - 2 LAYERS
- 09 29 00.09 5/8 INCH GYPSUM BOARD - LEVEL 4 FINISH - IMPACT RESISTANT
- 09 29 00.99 GYPSUM BOARD SYSTEM - LEVEL 4 FINISH - REFER TO FLOOR PLANS AND WALL TYPES FOR COMPONENTS
- 09 13 01 RUBBER BASE - 1/4 INCH
- 10 26 41 01 BULLET RESISTANT PANEL - LEVEL 4 - UL 752



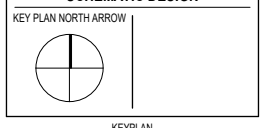
PARTITION TYPES



KEYNOTE LEGEND:

- GENERAL NOTES:**
1. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL SPRAY FIREPROOFING. PROVIDE PATCHING & TOUCH UP OF SPRAY FIREPROOFING AS REQUIRED. TYP. CLIP FOR WALL FRAMING AT STRUCTURAL STEEL CONDITIONS (ROOF DECK, COLUMNS & BRACING) KEYNOTED 09 22 16 99 IS REQUIRED TO PROVIDE CLEARANCE FOR SPRAY FIREPROOFING.
  2. SEE MECHANICAL DRAWINGS FOR CMU PARTITION PENETRATIONS BY DUCTS. PROVIDE STEEL LINTELS AS REQUIRED. SEE STRUCTURAL DRAWINGS FOR LINTEL SCHEDULE.
  3. PROVIDE DIAGONAL BRACING @ METAL STUD PARTITIONS ABOVE CEILING AS REQUIRED.
  4. ALL STEEL ANGLE RESTRAINERS & ASSOCIATED STEEL CHANNELS & ANGLES BETWEEN STRUCTURE ARE TO BE FURNISHED BY 05 50 00.
  5. SEE STRUCTURAL DRAWINGS FOR SIZES OF ALL STEEL ANGLE RESTRAINERS AND REQUIREMENTS OF FABRICATION METAL BETWEEN STRUCTURAL MEMBERS.
  6. ALL WALL PENETRATIONS INCLUDING, BUT NOT LIMITED TO PIPING OR DUCTWORK SHOULD BE SEALED. REFER TO WALL PENETRATION DETAILS.
  7. SEE INTERIOR ELEVATIONS & ROOM FINISH SCHEDULE FOR WALL FINISHES OR WALL TILE APPLICATIONS.
  8. ALL INTERIOR WALLS SHALL EXTEND TO UNDERSIDE OF DECK, U.N.O.
  9. DIMENSIONS ARE TO FACE OF FOUNDATION (F.O.F.), FACE OF STUD (F.S.), OR FACE OF MASONRY (F.O.M.), UNLESS NOTED AS "HOLD" CLEAR, "MIN. MARK" OR OTHERWISE INDICATED. DIMENSION LINES INTERSECTING AT COLUMN LINES WITH TCM MARKS ARE TO BE TAKEN FROM COLUMN CENTER.
  10. ANY METAL STUD PARTITIONS EXCEEDING 14' 0" FLOOR TO FLOOR IN HEIGHT SHALL BE CONSTRUCTED BY COLD-FORMED METAL FRAMING, SECTION 05 40 00, UNLESS NOTED OTHERWISE.
  11. GYPSUM BOARD LAYERS IDENTIFIED ON WALL TYPES SHALL BE REPLACED AS NOTED:
    - A. ALL TOILET ROOM & LOCKER ROOM LOCATIONS SHALL HAVE MOISTURE RESISTANT GYPSUM BOARD (09 29 00.33)
    - B. ALL CORRIDORS, STAIRS, VESTIBULES, LOBBIES AND OTHER OPEN CIRCULATION AREAS SHALL HAVE ABUSE RESISTANT GYPSUM BOARD (09 29 00.32) FROM FLOOR LEVEL TO 4' 0" A.F.F.
    - C. ALL FIRE-RATED WALLS SHALL HAVE TYPE "X" GYPSUM BOARD (09 21 23.31 / 09 21 23.32).
    - D. ALL GYPSUM BOARD SURFACES WITHIN THE GYMNASIUM SHALL BE IMPACT RESISTANT GYPSUM BOARD (09 29 00.31) FROM FLOOR LEVEL TO 12' 0" A.F.F.

SCHEMATIC DESIGN



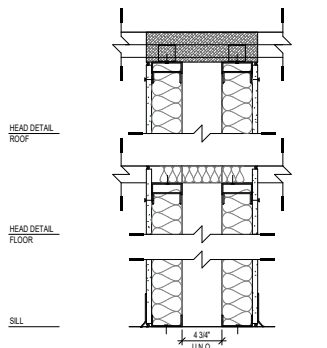
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PARTITION TYPES

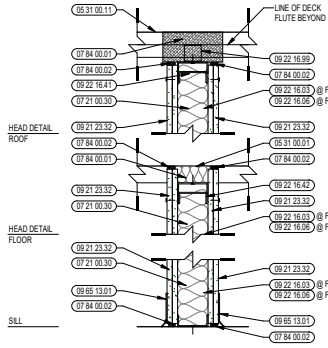
DRAWN BY: BFC  
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 JOB NO.: 2202.00  
 DATE: SEPT 15, 2022  
**A0.21**



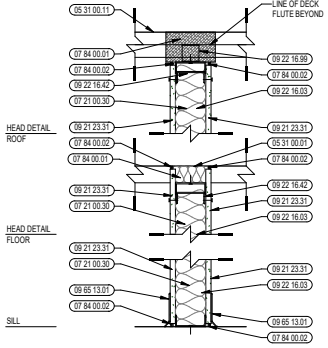
- KEYNOTE LEGEND:**
- 04 20 00 31 CMU - STANDARD - NORMAL WEIGHT - REFERENCE DRAWINGS FOR DEPTH SIZE AND FIRE RATING
  - 05 31 00 01 COMPOSITE STEEL DECK - SEE STRUCTURAL
  - 05 31 00 01 STEEL ROOF DECK - 1/2" INCH GALVANIZED - SEE STRUCTURAL
  - 05 31 00 11 STEEL ROOF DECK - 3/4" INCH GALVANIZED - SEE STRUCTURAL
  - 05 50 00 10 STEEL ANGLE - SEISMIC CLIP - SEE STRUCTURAL
  - 07 21 00 20 GLASS FIBER BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
  - 07 21 00 22 GLASS FIBER ACOUSTICAL BLANKET INSULATION - MATCH DEPTH OF STUD - UNFACED
  - 07 21 00 30 MINERAL FIBER INSULATION
  - 07 21 00 32 MINERAL FIBER ACOUSTICAL INSULATION - 3 1/2" INCH
  - 07 84 00 01 FIRE SAFING MINERAL WOOL
  - 07 84 00 02 CALK - CALK AND PUTTY
  - 07 92 00 01 JOINT SEALANT - TYPE AS REQUIRED
  - 09 21 23 11 METAL SHAFTWALL C-H STUD - 2 1/2" INCH - 24 INCHES O.C. MAX
  - 09 21 23 12 METAL SHAFTWALL J-RUNNER
  - 09 21 23 21 GYPSUM SHAFTWALL LINER PANEL - 1/2" INCH
  - 09 21 23 31 GYPSUM BOARD - 5/8" INCH TYPE X - 1 LAYER
  - 09 21 23 32 GYPSUM BOARD - 5/8" INCH TYPE X - 2 LAYERS
  - 09 22 16 03 METAL STUD 3-5/8" INCH - 16 INCHES O.C. MAX
  - 09 22 16 08 METAL STUD 6" INCH - 16 INCHES O.C. MAX
  - 09 22 16 09 METAL STUD 8" INCH - 16 INCHES O.C. MAX
  - 09 22 16 41 METAL DEFLECTION TRACK ASSEMBLY
  - 09 22 16 42 METAL DEFLECTION TRACK ASSEMBLY - FIRE RATED
  - 09 22 16 90 METAL CLIP FOR WALL FRAMING - 16 GA - 24 INCHES O.C. MAX
  - 09 29 00 01 5/8" INCH GYPSUM BOARD - LEVEL 4 FINISH - 1 LAYER
  - 09 29 00 02 5/8" INCH GYPSUM BOARD - LEVEL 4 FINISH - 2 LAYERS
  - 09 29 00 03 GYPSUM BOARD SYSTEM - LEVEL 4 FINISH - REFER TO FLOOR PLANS AND WALL TYPES FOR COMPONENTS
  - 09 30 13 11 CERAMIC WALL TILE - TYPE CT-1
  - 09 30 19 01 CERAMITICUS BACKING BOARD
  - 09 65 13 01 RUBBER BASE - 4" INCH



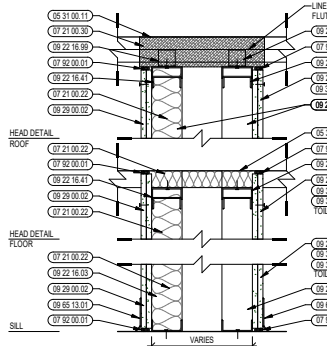
**NONBEARING WALL - ACOUSTICAL - 1 HR RATED**  
 UL DESIGN NO. U483  
 STC 50  
 EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE



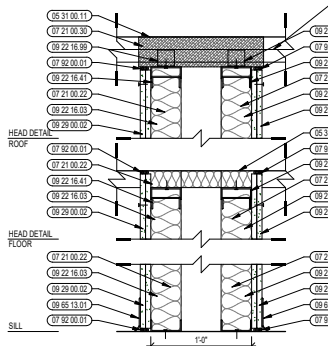
**NONBEARING WALL - 2 HR RATED**  
 UL DESIGN NO. U419  
 STC 50



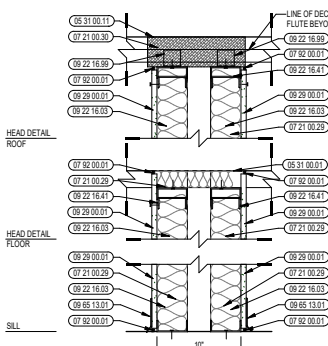
**NONBEARING WALL - 1 HR RATED**  
 UL DESIGN NO. U419  
 STC 48



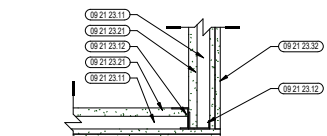
**PLUMBING WALL**  
 STC 60  
 ALL PLUMBING CONNECTIONS SHALL BE SECURED EXCLUSIVELY TO THE STUDS ON THE TOILET SIDE OF THE WALL TO PREVENT TRANSMISSION OF STRUCTURE-BORN NOISE TO ADJACENT SPACES  
 EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE



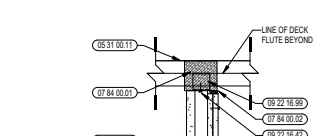
**NONBEARING WALL - ACOUSTICAL**  
 STC 60  
 EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE



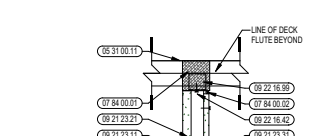
**NONBEARING WALL - ACOUSTICAL**  
 STC 50  
 EACH ROW OF STUDS TO BE FREESTANDING TO PREVENT TRANSMISSION OF NOISE  
 NOTE: AT CLASSROOM CORRIDORS (CORRIDOR SIDE), ABUSE RESISTANT GYP. WILL BE USED FROM ABOVE THE TILE TO 9'-0" A.F.F.



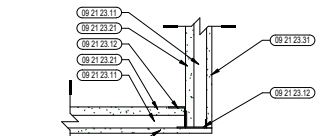
**SHAFT CEILING - 2 HR RATED**  
 UL DESIGN NO. U497



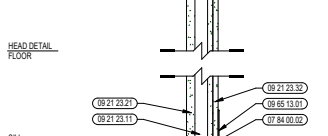
**SHAFT WALL - 2 HR RATED**  
 UL DESIGN NO. U497



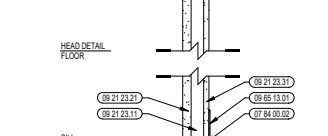
**SHAFT WALL - 1 HR RATED**  
 UL DESIGN NO. U497



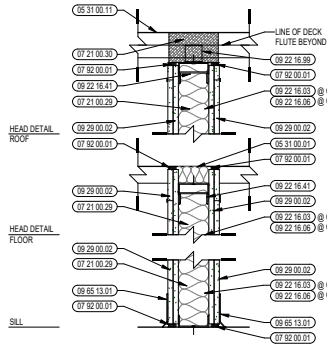
**SHAFT CEILING - 1 HR RATED**  
 UL DESIGN NO. U497



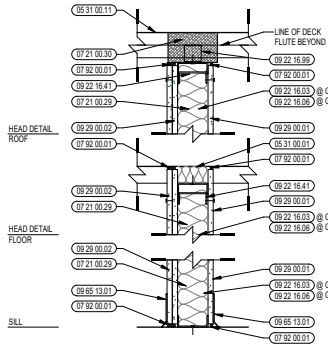
**SHAFT WALL - 2 HR RATED**  
 NOTE: PROVIDE 7/8" x 1 3/8" 24 GA. GALVANIZED BRACING ANGLE @ 5'-0" MAX.



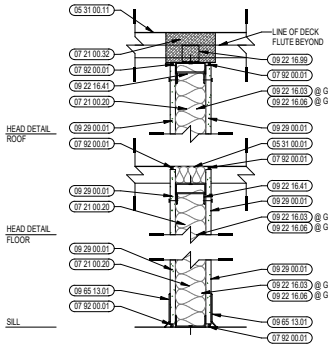
**SHAFT WALL - 1 HR RATED**  
 NOTE: PROVIDE 7/8" x 1 3/8" 24 GA. GALVANIZED BRACING ANGLE @ 5'-0" MAX.



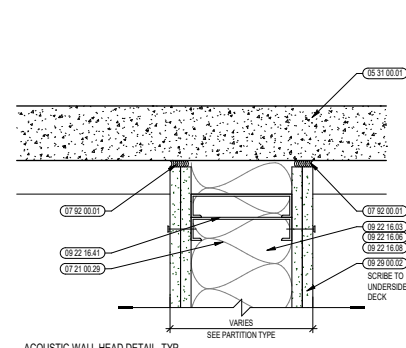
**NONBEARING WALL - ACOUSTICAL**  
 STC 50  
 NOTE 1: STUDS ARE INSTALLED MAXIMUM 12" O.C.  
 NOTE 2: AT CLASSROOM CORRIDORS (CORRIDOR SIDE), ABUSE RESISTANT GYP. WILL BE USED FROM ABOVE THE TILE TO 9'-0" A.F.F.



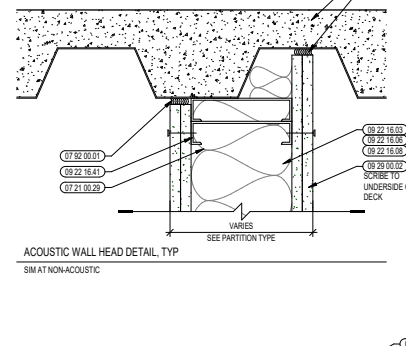
**NONBEARING WALL - ACOUSTICAL**  
 STC 48  
 NOTE 1: STUDS ARE INSTALLED MAXIMUM 12" O.C.  
 NOTE 2: AT CLASSROOM CORRIDORS (CORRIDOR SIDE), ABUSE RESISTANT GYP. WILL BE USED FROM ABOVE THE TILE TO 9'-0" A.F.F.



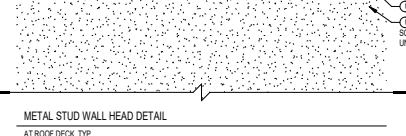
**NONBEARING WALL**  
 STC 48



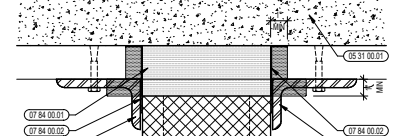
**ACOUSTIC WALL HEAD DETAIL TYPE**  
 SIM AT NONACOUSTIC



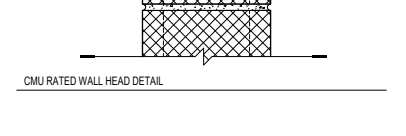
**ACOUSTIC WALL HEAD DETAIL TYPE**  
 SIM AT NONACOUSTIC



**METAL STUD WALL HEAD DETAIL AT ROOF DECK TYPE**



**CMU RATED WALL HEAD DETAIL**



**CMU RATED WALL HEAD DETAIL**

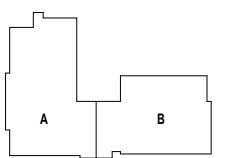
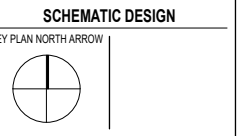


508 Boston Post Rd  
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 Waltham, MA  
 www.ai3architects.com



DUAL LANGUAGE  
 24 SUMMER ST. CENTRAL FALLS, RI

- GENERAL NOTES:**
1. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL SPRAY FIBERPROOFING. PROVIDE PATCHING & TOUCH UP OF SPRAY FIBERPROOFING AS REQUIRED. TYP. CLIP FOR WALL FRAMING AT STRUCTURAL STEEL CONDITIONS (ROOF DECK, COLUMNS & BRACING) KEYNOTED 09 22 16 09 IS REQUIRED TO PROVIDE CLEARANCE FOR SPRAY FIBERPROOFING.
  2. SEE MECHANICAL DRAWINGS FOR CMU PARTITION PENETRATIONS BY DUCTS. PROVIDE STEEL LINTELS AS REQUIRED. SEE STRUCTURAL DRAWINGS FOR LINTEL SCHEDULE.
  3. PROVIDE DIAGONAL BRACING @ METAL STUD PARTITIONS ABOVE CEILING AS REQUIRED.
  4. ALL STEEL ANGLE RESTRAINERS & ASSOCIATED STEEL CHANNELS & ANGLES BETWEEN STRUCTURE ARE TO BE FABRICATED METAL BETWEEN STRUCTURAL MEMBERS.
  5. SEE STRUCTURAL DRAWINGS FOR SIZES OF ALL STEEL ANGLE RESTRAINERS AND REQUIREMENTS OF FABRICATION METAL BETWEEN STRUCTURAL MEMBERS.
  6. ALL WALL PENETRATIONS INCLUDING, BUT NOT LIMITED TO, PIPING OR DUCTWORK SHOULD BE SEALED. REFER TO WALL PENETRATION DETAILS.
  7. SEE INTERIOR ELEVATIONS & ROOM FINISH SCHEDULE FOR WALL FINISHES OR WALL TILE APPLICATIONS.
  8. ALL INTERIOR WALLS SHALL EXTEND TO UNDERSIDE OF DECK, U.N.O.
  9. DIMENSIONS ARE TO FACE OF FOUNDATION (IF O.C.), FACE OF STUD (IF O.S.) OR FACE OF MASONRY (IF O.M.), UNLESS NOTED AS "HOLD," "CLEAR," "MIN," "MAX," OR OTHERWISE INDICATED. DIMENSION LINES INTERSECTING AT COLUMN LINES WITH TICK MARKS ARE TO BE TAKEN FROM COLUMN CENTER.
  10. ANY METAL STUD PARTITIONS EXCEEDING 14'-0" FLOOR TO FLOOR IN HEIGHT SHALL BE CONSTRUCTED BY COLDFORMED METAL FRAMING. SECTION 05 40 00, UNLESS NOTED OTHERWISE.
  11. GYPSUM BOARD LAYERS IDENTIFIED ON WALL TYPES SHALL BE RESKED AS NOTED.
    - A. ALL TOILET ROOM & LOCKER ROOM LOCATIONS SHALL HAVE MOISTURE RESISTANT GYPSUM BOARD (09 29 00 03).
    - B. ALL CORRIDORS, STAIRS, VESTIBULES, LOBBIES AND OTHER OPEN CIRCULATION AREAS SHALL HAVE ABUSE RESISTANT GYPSUM BOARD (09 29 00 02) FROM FLOOR LEVEL TO 9'-0" A.F.F.
    - C. ALL FIRE-RATED WALLS SHALL HAVE TYPE "X" GYPSUM BOARD (09 21 23 31 / 09 21 23 32).
    - D. ALL GYPSUM BOARD SURFACES WITHIN THE GYMNASIUM SHALL BE IMPACT RESISTANT GYPSUM BOARD (09 29 00 01) FROM FLOOR LEVEL TO 12'-0" A.F.F.



DRAWING NAME:  
**PARTITION TYPES**

DRAWN BY: BFC  
 REVIEWED BY: JO

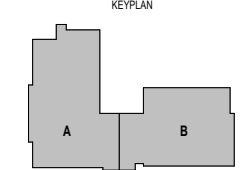
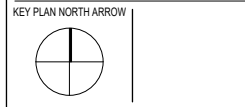
SCALE: AS INDICATED | DRAWING NUMBER:  
 JOB NO.: 2202.00  
 DATE: SEPT 15, 2022  
**A0.22**



KEYNOTE LEGEND:

- ROOM LEGEND**
- ADMINISTRATION & GUIDANCE
  - ART & MUSIC
  - AUDITORIUM/DRAMA
  - CIRCULATION
  - CORE ACADEMIC SPACES
  - CUSTODIAL & MAINTENANCE
  - DINING & FOOD SERVICES
  - HEALTH & PHYSICAL EDUCATION
  - MEDIA CENTER
  - MEDICAL
  - STORAGE AND ME/FP SPACES
  - SECC
  - SND / DIVERSE LEARNERS
  - TOILET ROOMS
  - CTE
  - COLLABORATION

**SCHEMATIC DESIGN**



**FIRST FLOOR PROGRAM PLAN**

DRAWING NAME:  
**FIRST FLOOR PROGRAM PLAN**

DRAWN BY: CHR / BFC  
REVIEWED BY: JO

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A1.11**

1 FIRST FLOOR OVERALL FLOOR PLAN  
3/2" = 1'-0"



DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

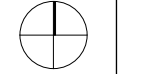
KEYNOTE LEGEND:

- ROOM LEGEND**
- ADMINISTRATION & GUIDANCE
  - ART & MUSIC
  - AUDITORIUM/Drama
  - CIRCULATION
  - CORE ACADEMIC SPACES
  - CUSTOMAL & MAINTENANCE
  - DINING & FOOD SERVICES
  - HEALTH & PHYSICAL EDUCATION
  - MEDIA CENTER
  - MEDICAL
  - STORAGE AND MEPP/PP SPACES
  - SEC
  - SWD / DIVERSE LEARNERS
  - TOILET ROOMS
  - CTE
  - COLLABORATION

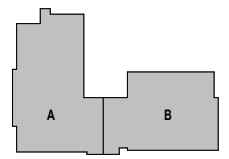


**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN



DRAWING NAME:

**SECOND FLOOR PROGRAM PLAN**

DRAWN BY: NS / CHR / BFC

REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:

JOB NO.: 2202.00

DATE: SEPT 15, 2022

**A1.12**

1 SECOND FLOOR: OVERALL FLOOR PLAN  
3/22" = 1'-0"



DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

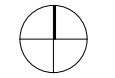
KEYNOTE LEGEND:

ROOM LEGEND

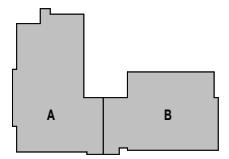
- ADMINISTRATION & GUIDANCE
- ART & MUSIC
- AUDITORIUM/Drama
- CIRCULATION
- CORE ACADEMIC SPACES
- CUSTOMER & MAINTENANCE
- DINING & FOOD SERVICES
- HEALTH & PHYSICAL EDUCATION
- MEDIA CENTER
- MEDICAL
- STORAGE AND ME/PEP SPACES
- SDC
- SWD / DIVERSE LEARNERS
- TOILET ROOMS
- CTE
- COLLABORATION

SCHEMATIC DESIGN

KEY PLAN NORTH ARROW



KEYPLAN



DRAWING NAME:

THIRD FLOOR PROGRAM PLAN

DRAWN BY: CHR / BFC

REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:

JOB NO.: 2202.00

DATE: SEPT 15, 2022

**A1.13**

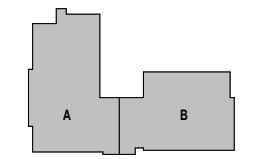
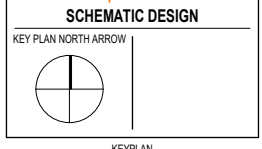
1 THIRD FLOOR: OVERALL FLOOR PLAN  
3/22/22



DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

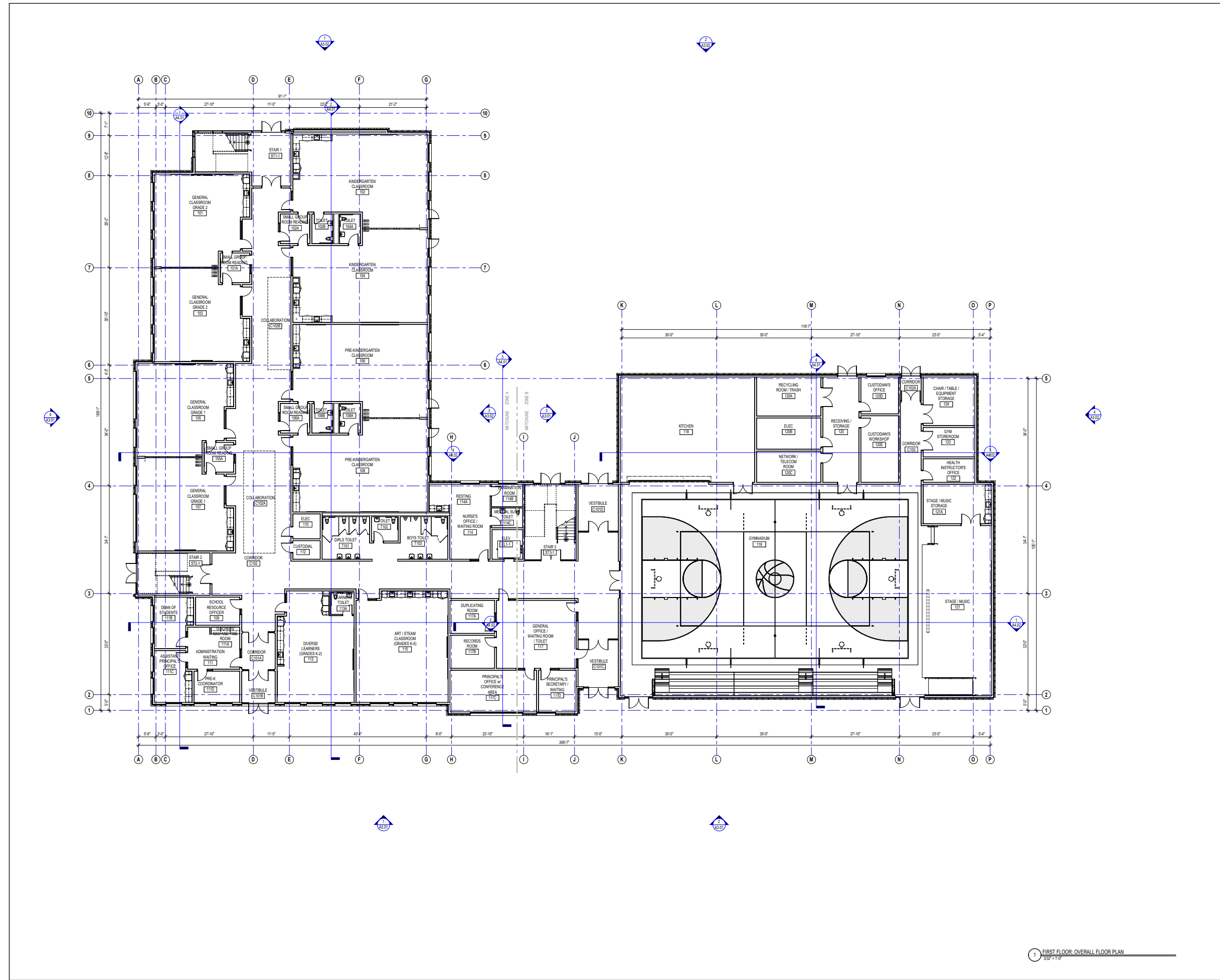
**GENERAL NOTES:**  
1. FIRST FLOOR ELEVATION = 102'-0"  
FINISH FLOOR ELEVATION OF 101'-0" CORRESPONDS TO ELEVATION 'XXX'-X" ON THE CIVIL DRAWINGS.



DRAWING NAME:  
**OVERALL FIRST FLOOR PLAN**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A2.11**



1 FIRST FLOOR - OVERALL FLOOR PLAN  
3/32" = 1' = 0"

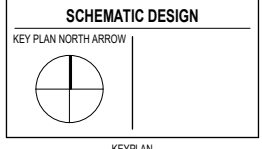




DUAL LANGUAGE  
24 SUMMER ST., CENTRAL FALLS, RI

KEYNOTE LEGEND:

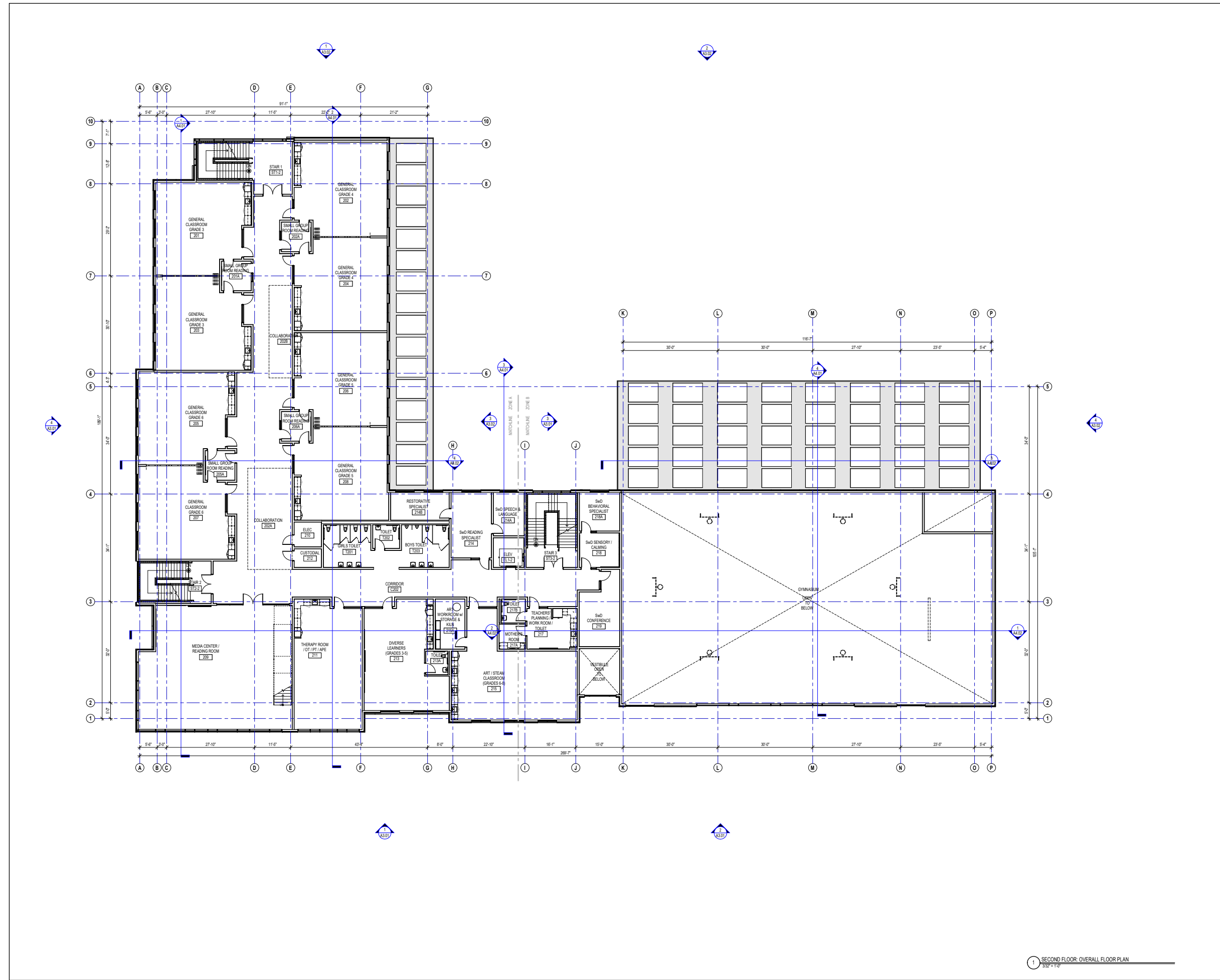
**GENERAL NOTES:**  
1. SECOND FLOOR ELEVATION = 114' - 0"



DRAWING NAME:  
**OVERALL SECOND FLOOR PLAN**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00 | **A2.12**  
DATE: SEPT 15, 2022

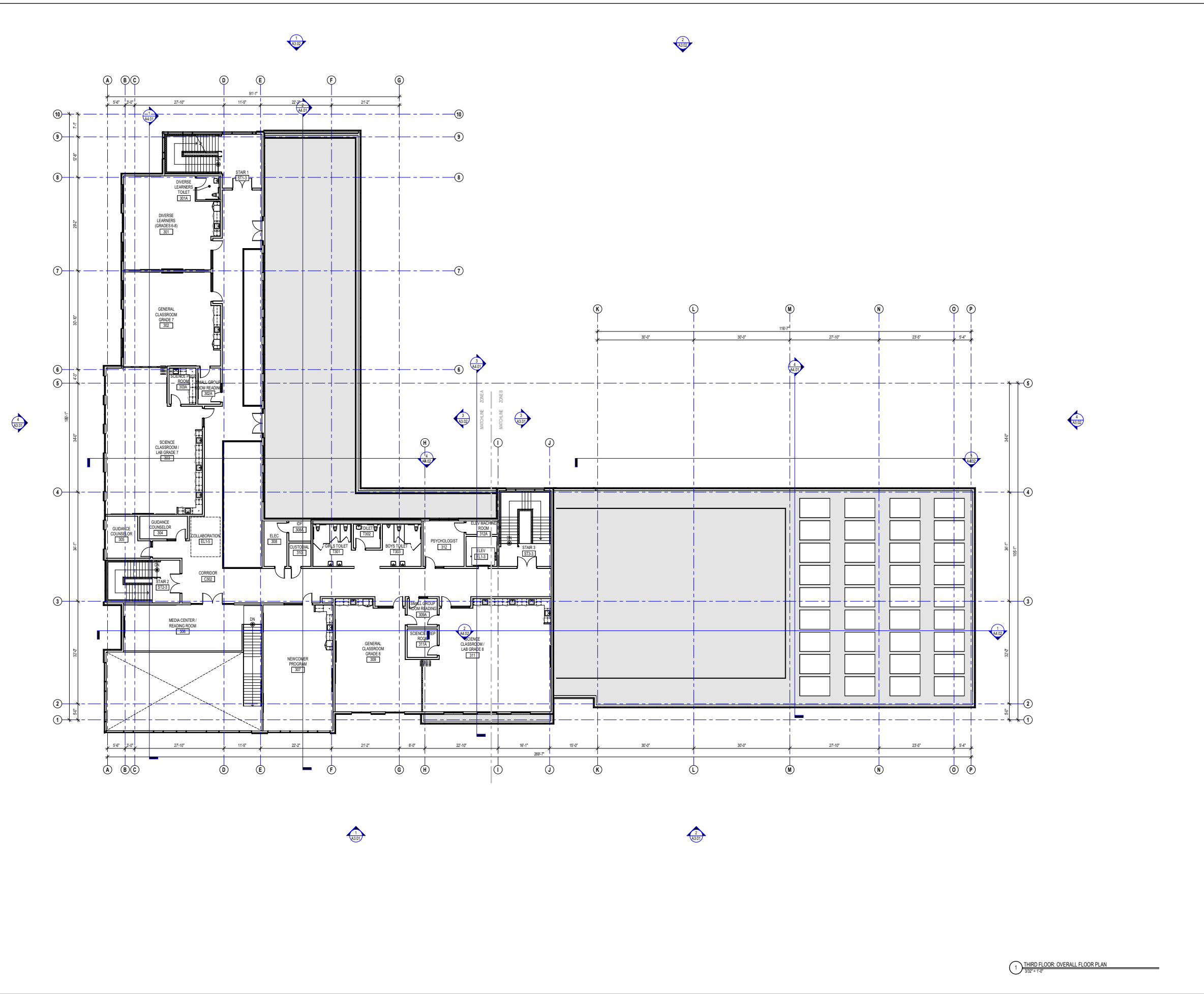


1 SECOND FLOOR - OVERALL FLOOR PLAN  
3/32" = 1'-0"

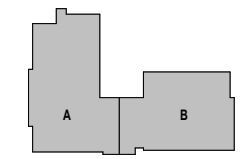
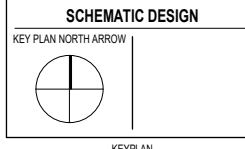


DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:



**GENERAL NOTES:**  
1. THIRD FLOOR ELEVATION = 128' - 0"



DRAWING NAME:  
**OVERALL THIRD FLOOR PLAN**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00 | **A2.13**  
DATE: SEPT 15, 2022

1 THIRD FLOOR, OVERALL FLOOR PLAN  
3/32" = 1'-0"



DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

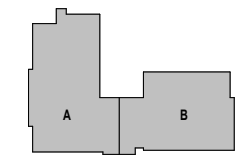
ROOF LEGEND	
	ROOF CRICKET - TAPERED RIGID ROOF INSULATION - SLOPE 1/4" PER FOOT MIN.
	ROOF DRAIN LOCATION - SEE DETAIL 1 AS 21
	EXHAUST FAN LOCATION - REFER TO MECHANICAL DRAWINGS FOR FURTHER INFORMATION
	MECHANICAL UNIT - REFER TO MECHANICAL DRAWINGS FOR FURTHER INFORMATION
	ROOF MOUNTED MECHANICAL UNIT LOCATION - REFER TO MECHANICAL FOR FURTHER INFORMATION
	24" X 36" WALK BOARDS (07 53 23 25)

- GENERAL NOTES:**
1. STEEL ROOF DECKS, UNLESS NOTED TO BE FLAT, OR DETAILED OTHERWISE ARE INTENDED TO SLOPE 1/4" PER FOOT MINIMUM TO DRAIN LOWPOINTS. SLOPE MAY BE GREATER THAN 1/4" PER FOOT DUE TO FINAL STEEL ELEVATIONS.
  2. SEE MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL DRAWINGS/SPECIFICATIONS FOR EQUIPMENT REQUIREMENTS.
  3. REFER TO MANUFACTURERS STANDARD ROOFING REQUIREMENTS TO MEET THE SPECIFIED WARRANTY.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW

KEY PLAN



DRAWING NAME:

**OVERALL ROOF PLAN**

DRAWN BY: CHR

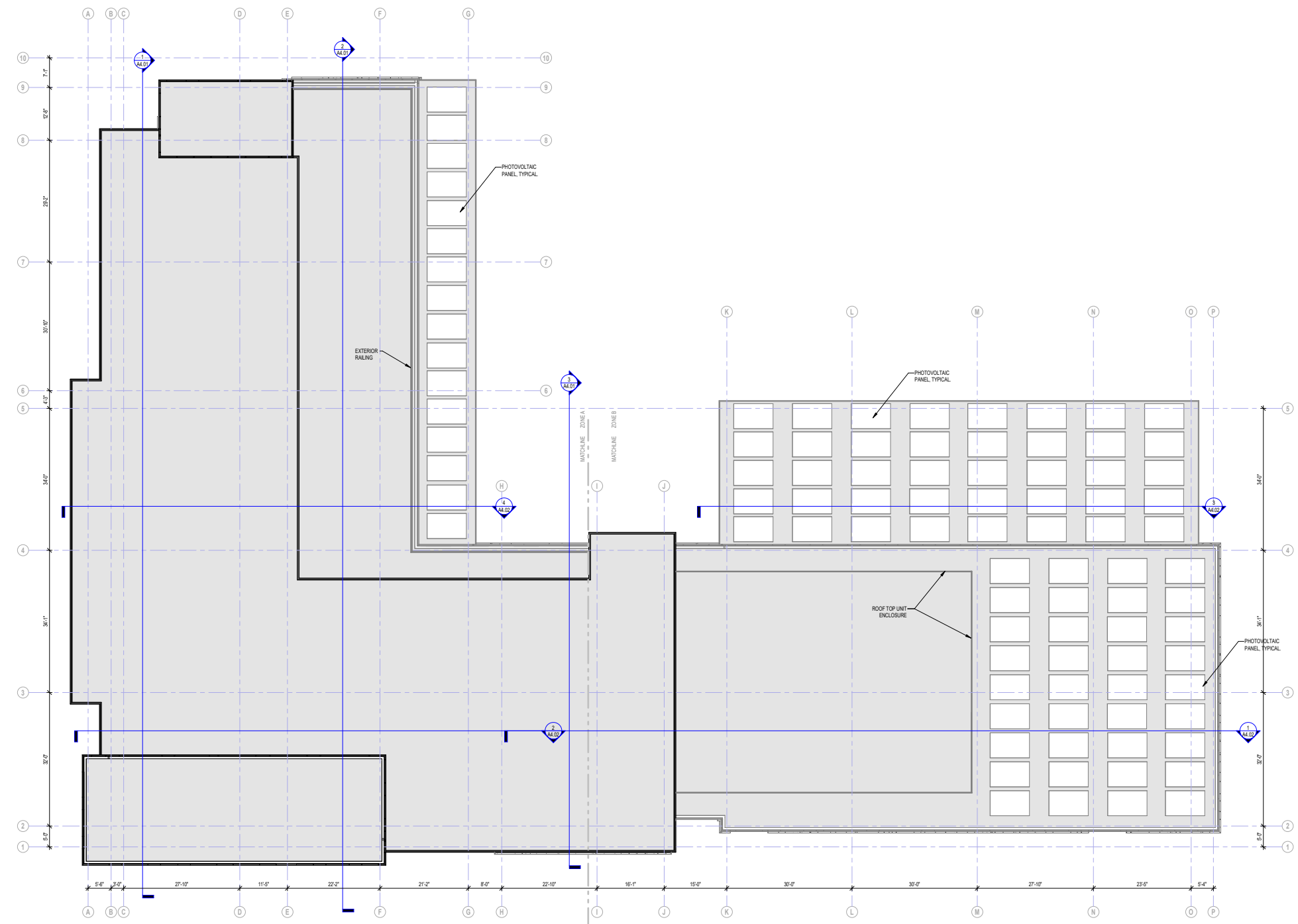
REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER: JQ

JOB NO.: 2202.00

DATE: SEPT 15, 2022

**A2.14**



1 OVERALL ROOF PLAN  
3/16" = 1'-0"



DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

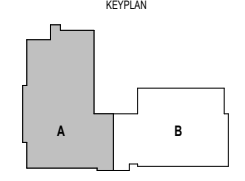


- GENERAL NOTES:**
- FIRST FLOOR ELEVATION = 100' - 0" FINISH FLOOR ELEVATION OF 100' - 0" CORRESPONDS TO ELEVATION XXX'-X" ON THE CIVIL DRAWINGS.
  - ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, U.N.D.
  - REFER TO SHEET A1.01 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW

KEY PLAN

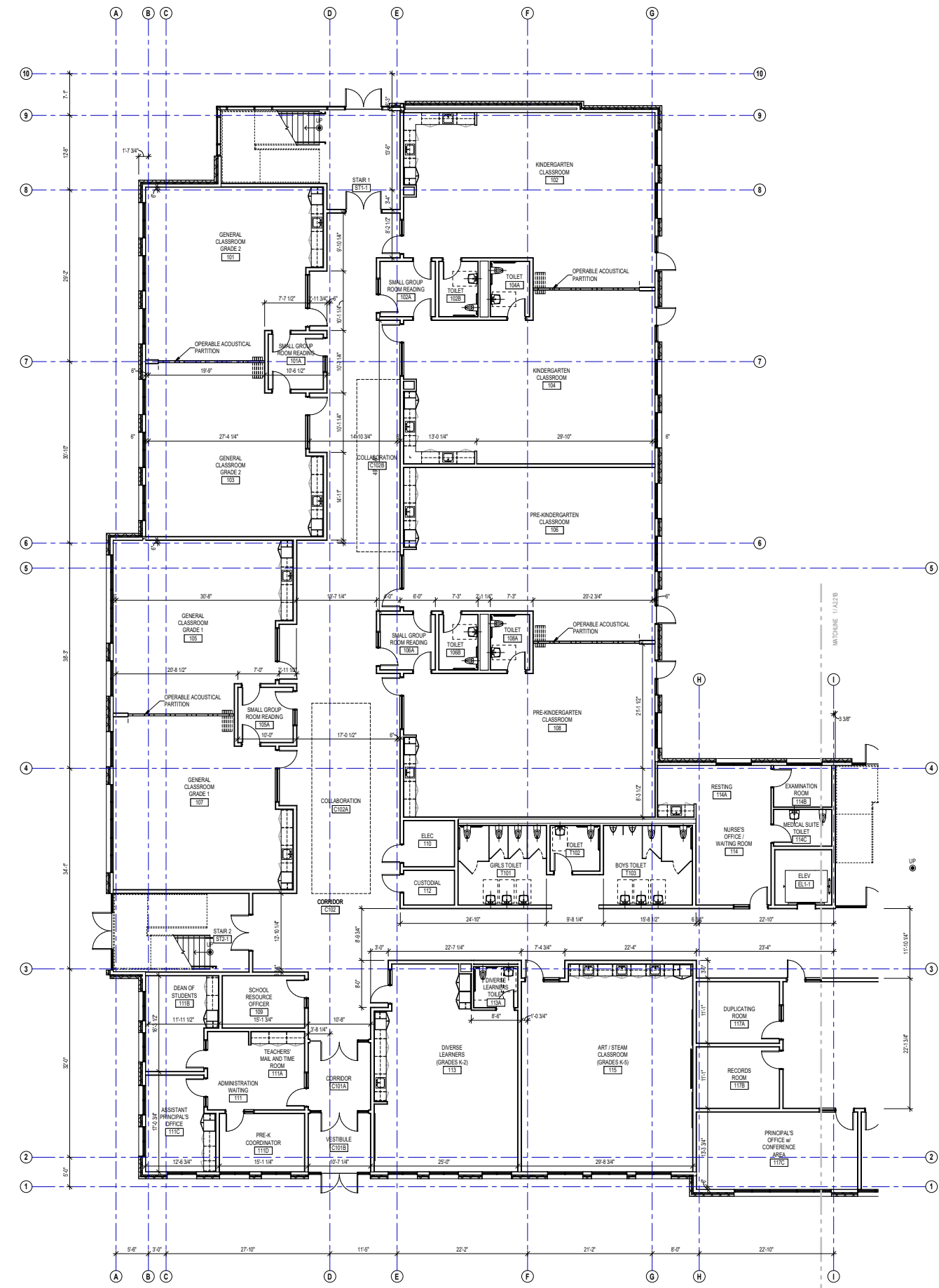


DRAWING NAME:

**FIRST FLOOR PLAN ZONE A**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ  
SCALE: AS INDICATED  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022

DRAWING NUMBER:  
**A2.21A**



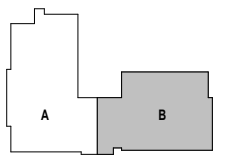
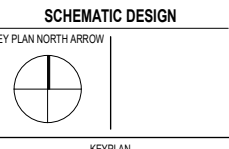
1 FIRST FLOOR PLAN - ZONE A  
18'-11 1/2"



DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- GENERAL NOTES:**
1. FIRST FLOOR ELEVATION + 100' - 0" FINISH FLOOR ELEVATION OF 100' - 0" CORRESPONDS TO ELEVATION XXX'-0" ON THE CIVIL DRAWINGS.
  2. ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY, AND/OR CENTERLINE OF COLUMN, U.N.O.
  3. REFER TO SHEET A51 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.



DRAWING NAME:

**FIRST FLOOR PLAN ZONE B**

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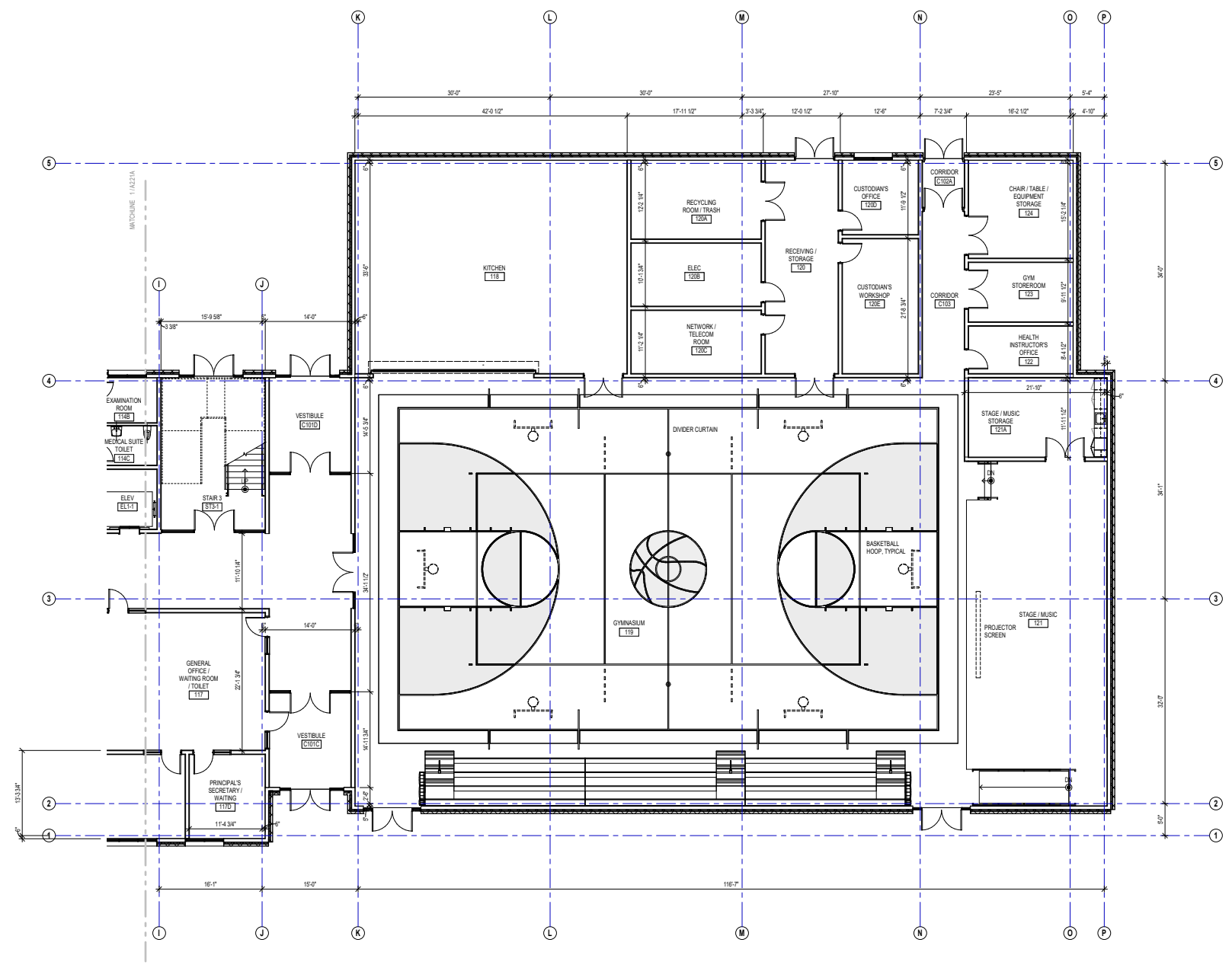
DRAWN BY: NSI / CHR

REVIEWED BY: JQ

SCALE: AS INDICATED DRAWING NUMBER: A2.21B

JOB NO.: 2202.00

DATE: SEPT 15, 2022



1 FIRST FLOOR PLAN - ZONE B  
1/8" = 1'-0"





DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

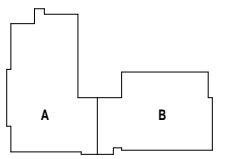
- GENERAL NOTES:**
1. SECOND FLOOR ELEVATION = 114' - 0"
  2. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, U.N.O.
  3. REFER TO SHEET AS1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEY PLAN



DRAWING NAME:

**SECOND FLOOR PLAN ZONE A**

DRAWN BY: NSI/CHR

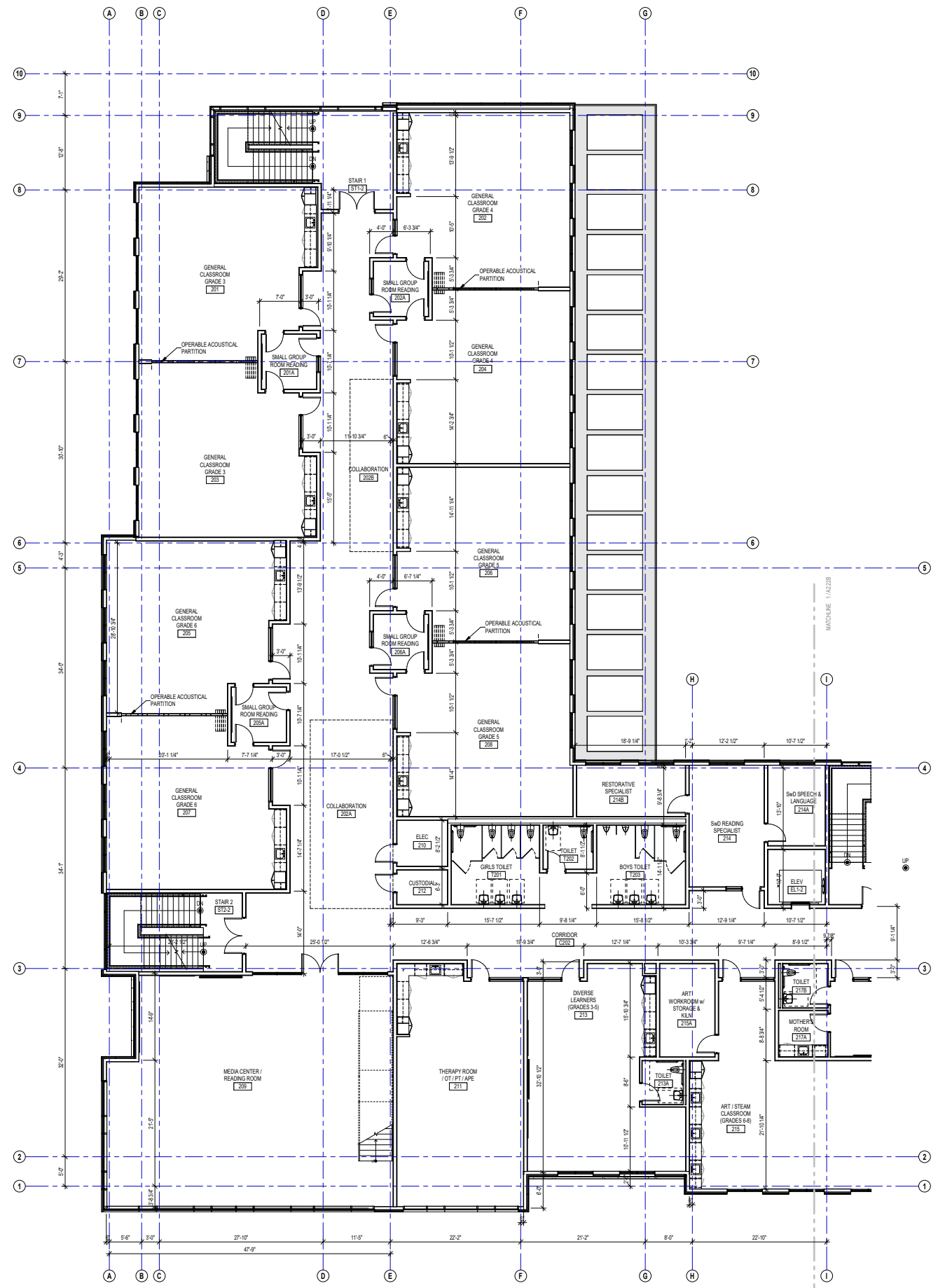
REVIEWED BY: JQ

SCALE: AS INDICATED DRAWING NUMBER:

JOB NO.: 2202.00

DATE: SEPT 15, 2022

**A2.22A**



1 SECOND FLOOR PLAN - ZONE A  
1/8" = 1'-0"

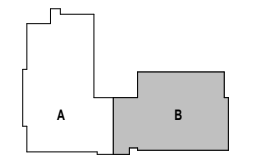
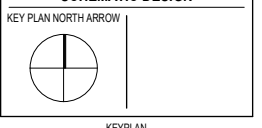


DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- GENERAL NOTES:**
1. SECOND FLOOR ELEVATION = 114'-0"
  2. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, U.N.O.
  3. REFER TO SHEET A1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

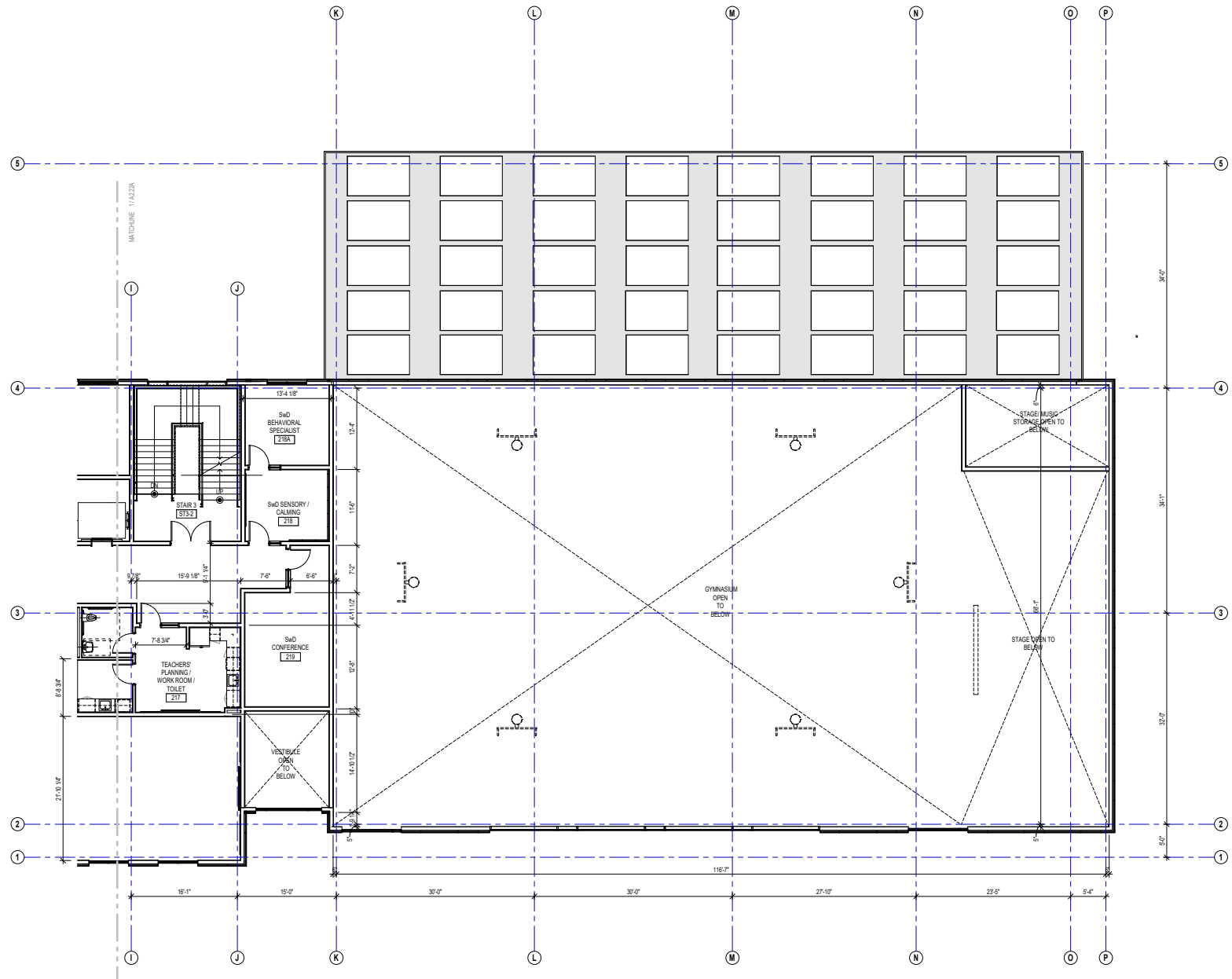
**SCHEMATIC DESIGN**



DRAWING NAME:

**SECOND FLOOR PLAN ZONE B**

DRAWN BY: NSI/CHR  
REVIEWED BY: JQ  
SCALE: AS INDICATED DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A2.22B**



1 SECOND FLOOR PLAN - ZONE B  
1/8" = 1'-0"

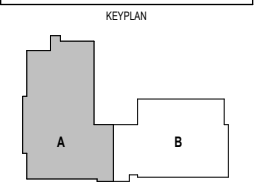
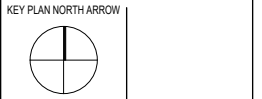


DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- GENERAL NOTES:**
1. THIRD FLOOR ELEVATION = 128' - 0"
  2. ALL DIMENSIONS ARE TO FACE OF STUD. FACE OF MASONRY AND/OR CENTERLINE OF COLUMN, UN. D.
  3. REFER TO SHEET AS1 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

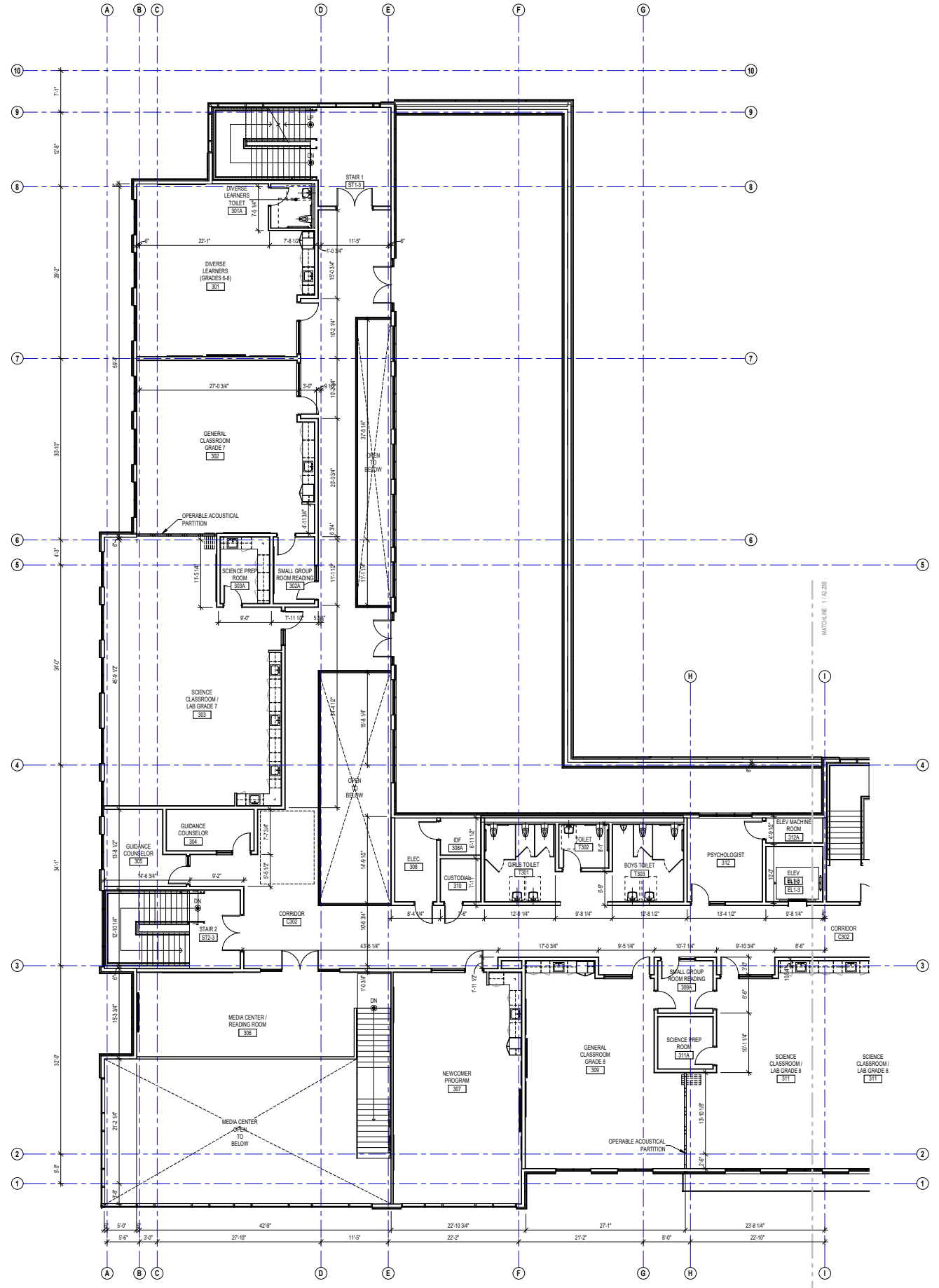
**SCHEMATIC DESIGN**



DRAWING NAME:

**THIRD FLOOR PLAN ZONE A**

DRAWN BY:	NS/ CHR
REVIEWED BY:	JQ
SCALE:	AS INDICATED
JOB NO.:	2202.00
DATE:	SEPT 15, 2022
DRAWING NUMBER:	<b>A2.23A</b>



1 THIRD FLOOR PLAN - ZONE A  
1/8" = 1'-0"

KEYNOTE LEGEND:

**GENERAL NOTES:**

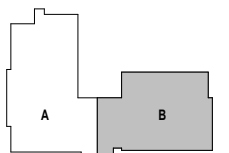
1. THIRD FLOOR ELEVATION + 128' - 0"
2. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF MASONRY, AND/OR CENTERLINE OF COLUMN, UNLESS NOTED OTHERWISE.
3. REFER TO SHEET A7.51 FOR FIRE EXTINGUISHER MOUNTING HEIGHTS.

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEYPLAN



DRAWING NAME:

**THIRD FLOOR  
PLAN ZONE B**

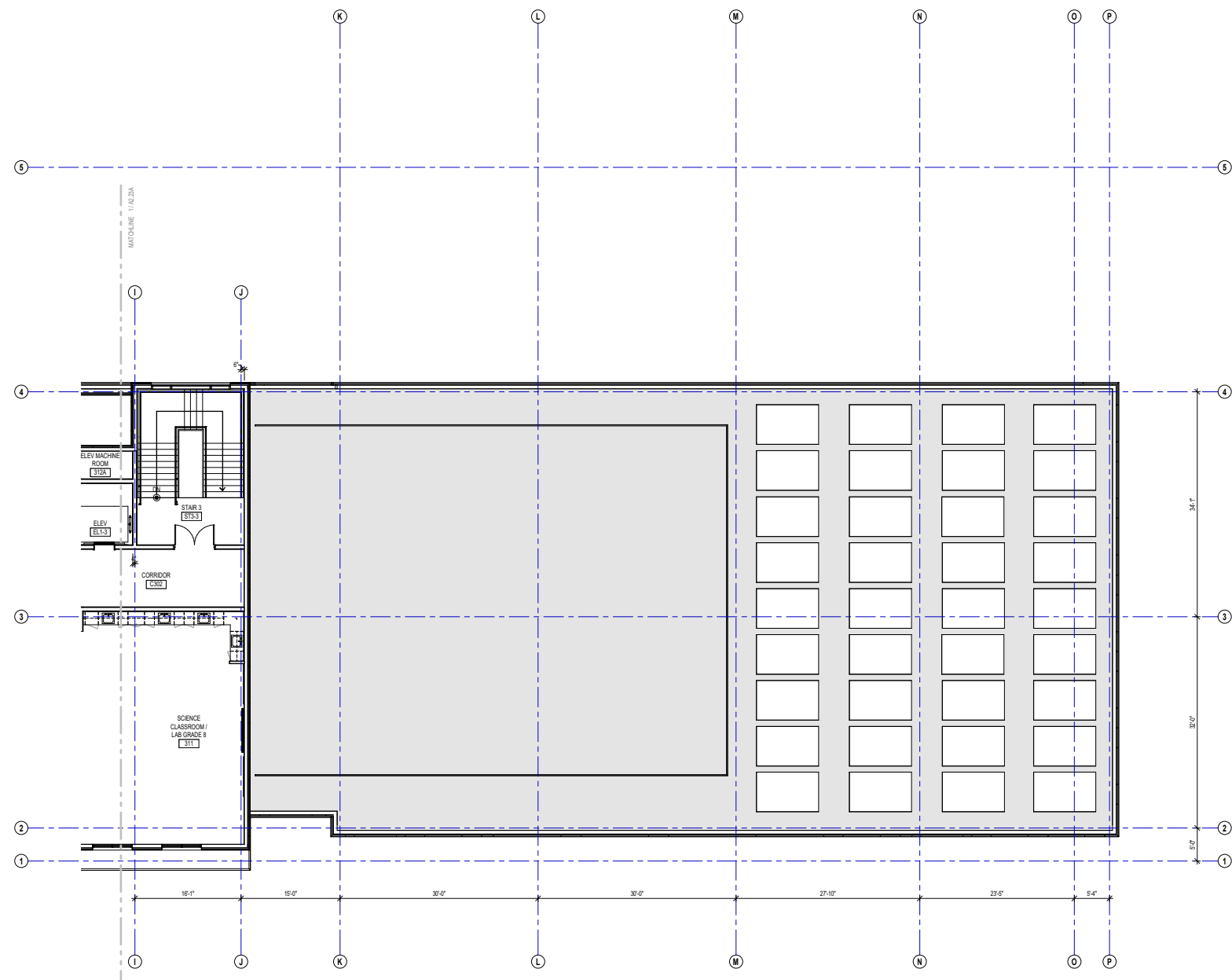
DRAWN BY: NS/CHR

REVIEWED BY: JQ

SCALE: AS INDICATED DRAWING NUMBER: A2.23B

JOB NO.: 2202.00

DATE: SEPT 15, 2022



1 THIRD FLOOR PLAN - ZONE B  
1/8" = 1'-0"

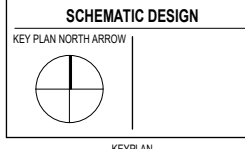


DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

LEGEND	
	SPLIT FACE BLOCK COLOR 1
	FIBER CEMENT PANEL COLOR 1
	FIBER CEMENT PANEL COLOR 2

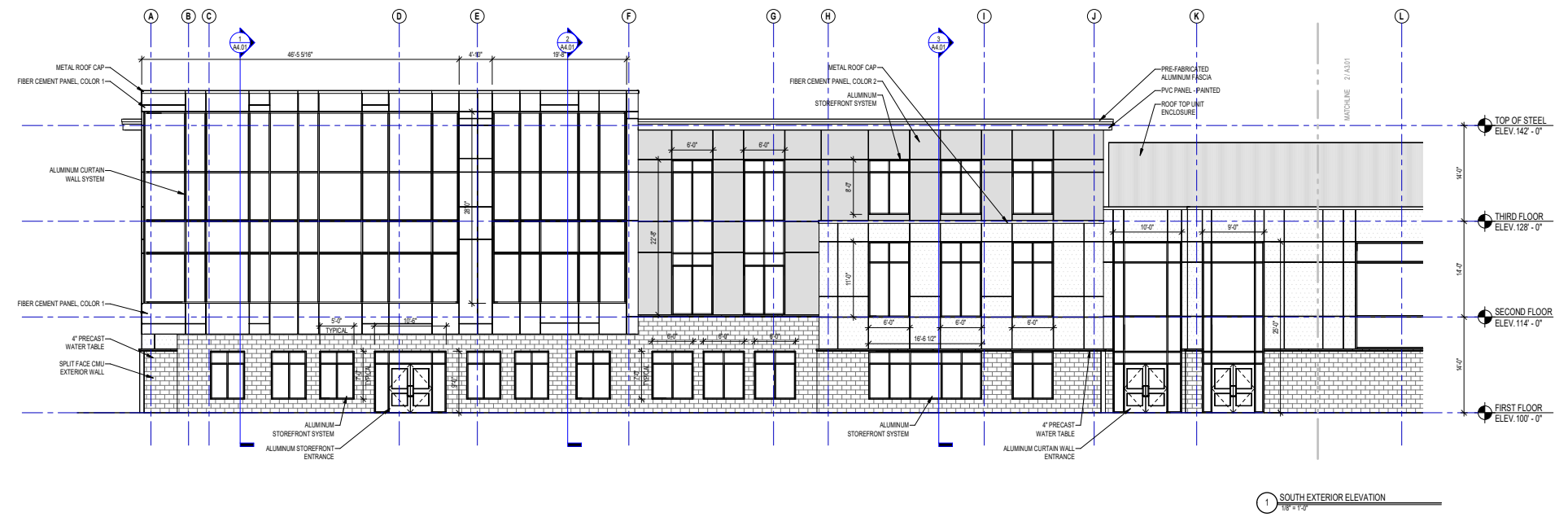
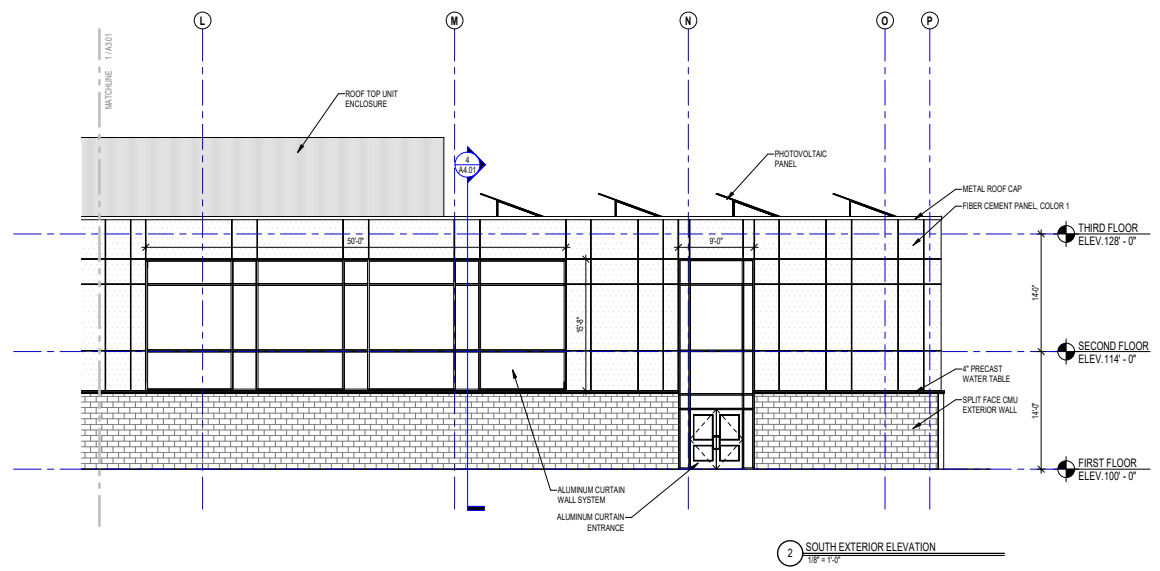
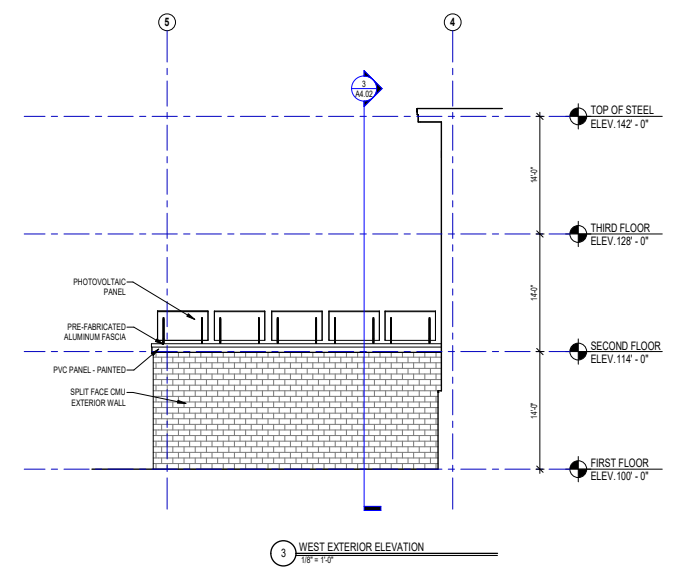
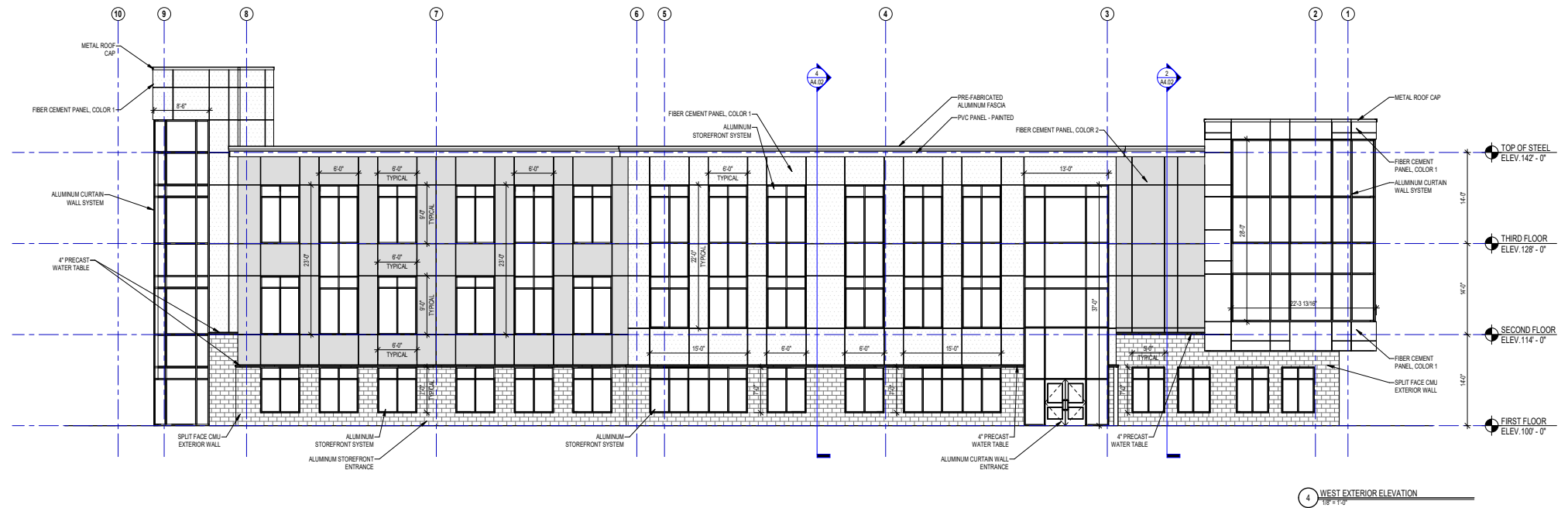
- GENERAL NOTES:**
- REFER TO SHEET AS.01 FOR TYPICAL HORIZONTAL BOND BREAK IN VENEER BETWEEN CHANGES IN VENEER MATERIALS.
  - REFER TO SHEET AS.31 FOR ADDITIONAL FIBER CEMENT PANEL INFORMATION AND DETAILS.
  - COORDINATE EXACT LOCATION OF SPEAKERS, CAMERAS, AND LIGHTING WITH ARCHITECT PRIOR TO INSTALLATION.
  - ALL GFRP PANELS AND TRIM TO RECEIVE PAINT. REFERENCE SPEC SECTION 09 91 00 FOR ADDITIONAL INFORMATION.
  - ALL GFRP CORNERS SHALL BE MITERED AND GULLED.
  - REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.
  - REFER TO AS.35 FOR PRECAST AND SUNSHADE TYPES.
  - REFER TO AS.45 FOR REVEAL DETAILS.



DRAWING NAME:  
**EXTERIOR ELEVATIONS**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A3.01**





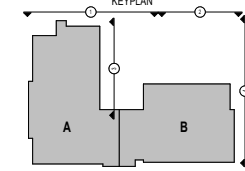
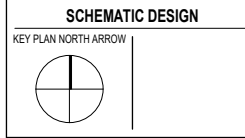


DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

LEGEND	
	SPLIT FACE BLOCK COLOR 1
	FIBER CEMENT PANEL COLOR 1
	FIBER CEMENT PANEL COLOR 2

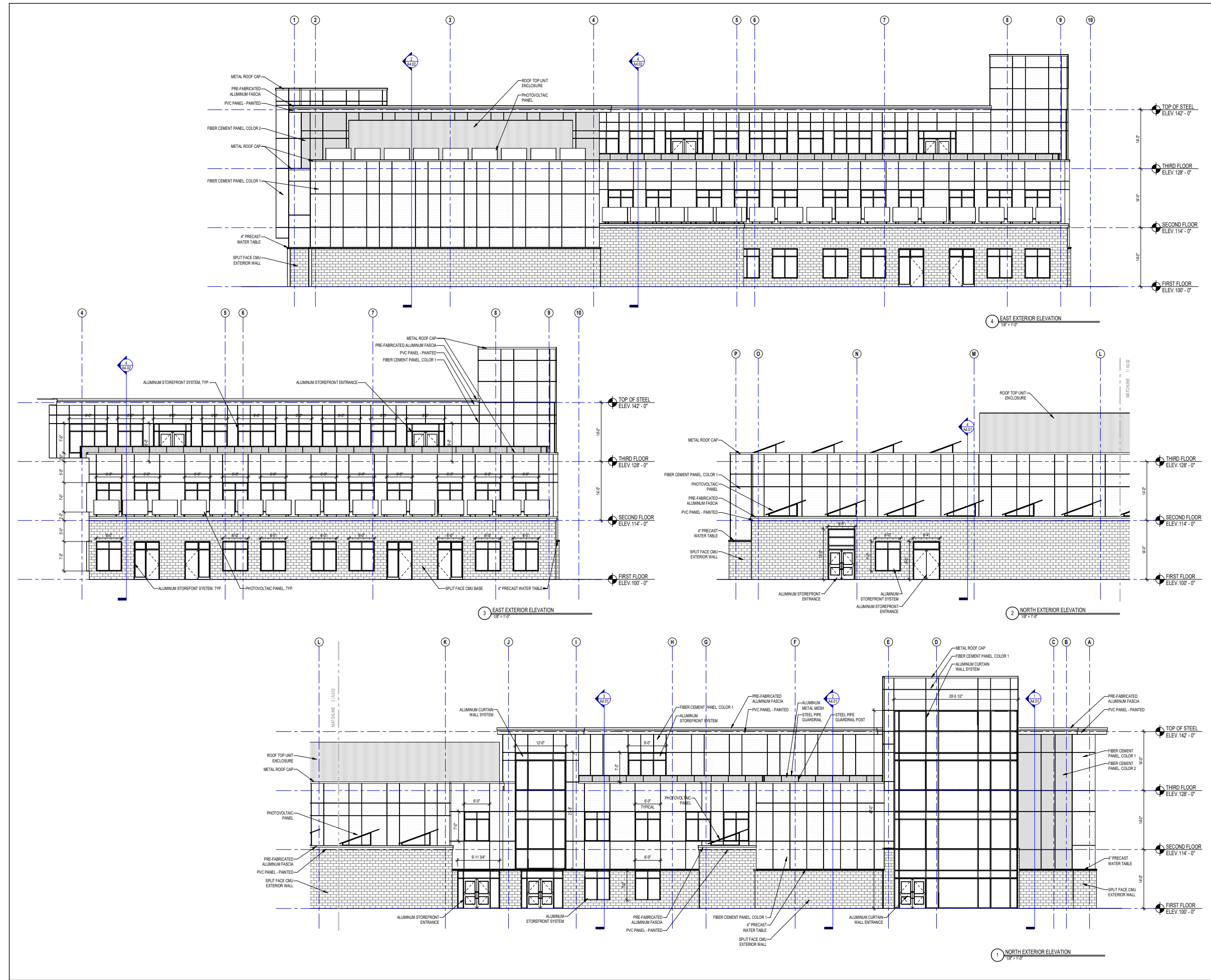
- GENERAL NOTES:**
- REFER TO SHEET AS.07 FOR TYPICAL HORIZONTAL BOND BREAK IN VENEER BETWEEN CHANGES IN VENEER MATERIALS.
  - REFER TO SHEET AS.31 FOR ADDITIONAL FIBER CEMENT PANEL INFORMATION AND DETAILS.
  - COORDINATE EXACT LOCATION OF SPEAKERS, CAMERAS, AND LIGHTING WITH ARCHITECT PRIOR TO INSTALLATION.
  - ALL GFRP PANELS AND TRIM TO RECEIVE PAINT. REFERENCE SPEC SECTION 09 91 00 FOR ADDITIONAL INFORMATION.
  - ALL GFRP CORNERS SHALL BE MITERED AND GULLED.
  - REFER TO CIVIL DRAWINGS FOR FINISH GRADE ELEVATIONS.
  - REFER TO AS.35 FOR PRECAST AND SUNSHADE TYPES.
  - REFER TO AS.45 FOR REVEAL DETAILS.



DRAWING NAME:

**EXTERIOR ELEVATIONS**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A3.02**



**GENERAL NOTES:**

1. REFER TO CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS
2. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
3. REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING

**SCHEMATIC DESIGN**

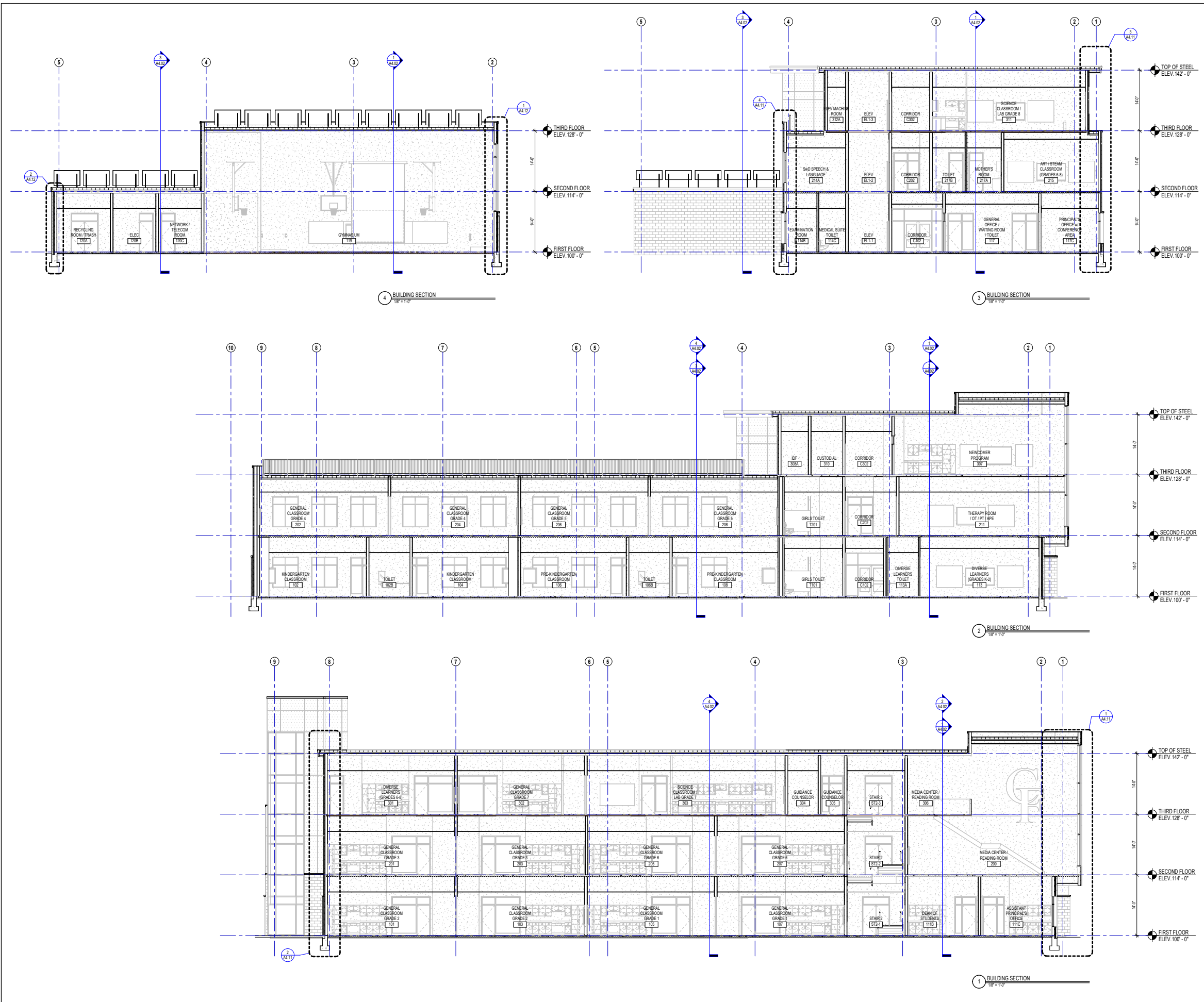
KEY PLAN NORTH ARROW

KEY PLAN

DRAWING NAME:

**BUILDING SECTIONS**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A4.01**





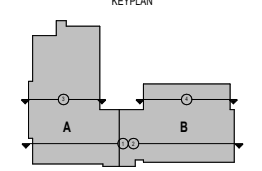
DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

- GENERAL NOTES:**
- REFER TO CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS
  - REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
  - REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING

**SCHEMATIC DESIGN**

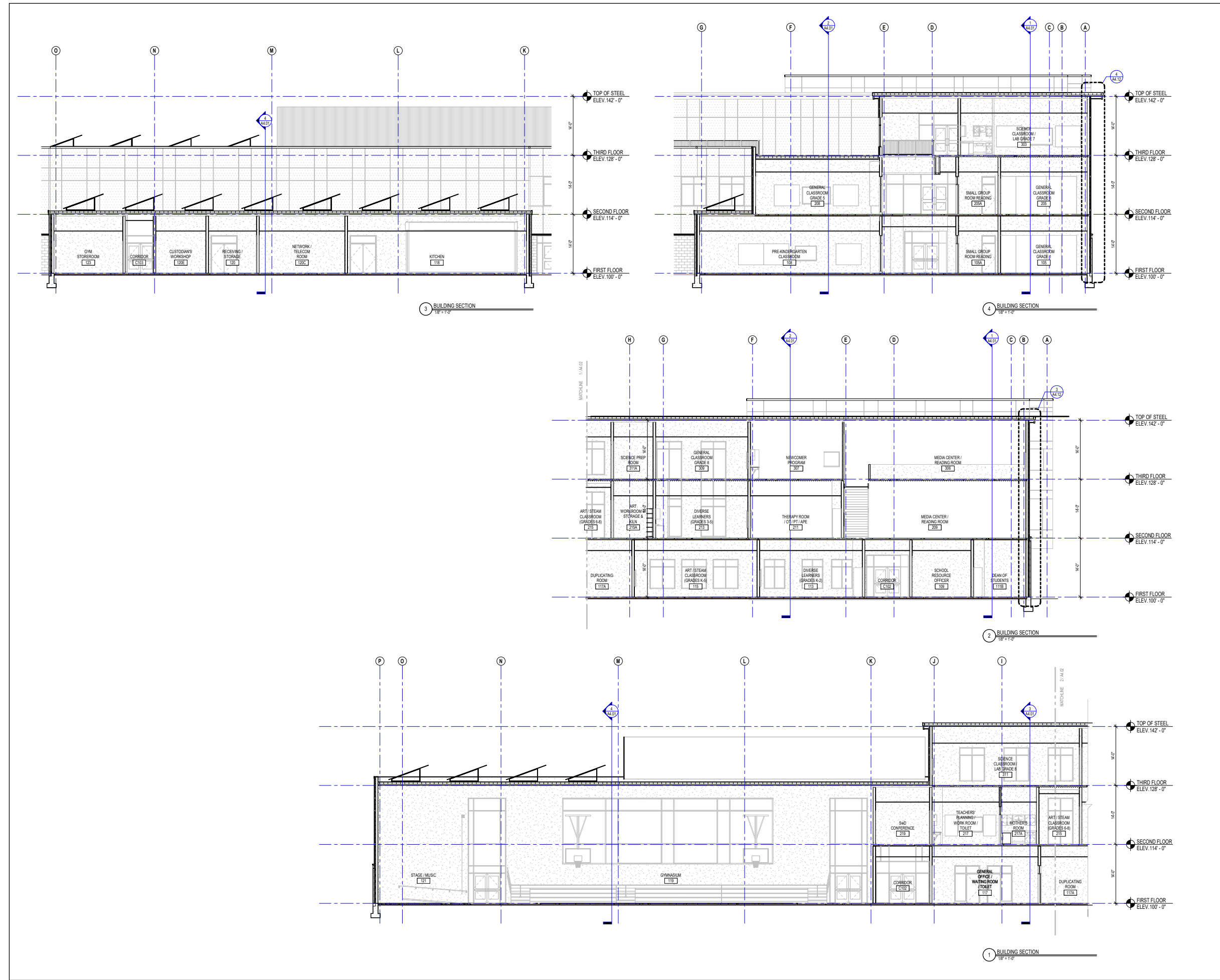
KEY PLAN NORTH ARROW



DRAWING NAME:

**BUILDING SECTIONS**

DRAWN BY: CHR  
REVIEWED BY: JQ  
SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A4.02**

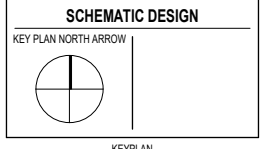




DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

KEYNOTE LEGEND:

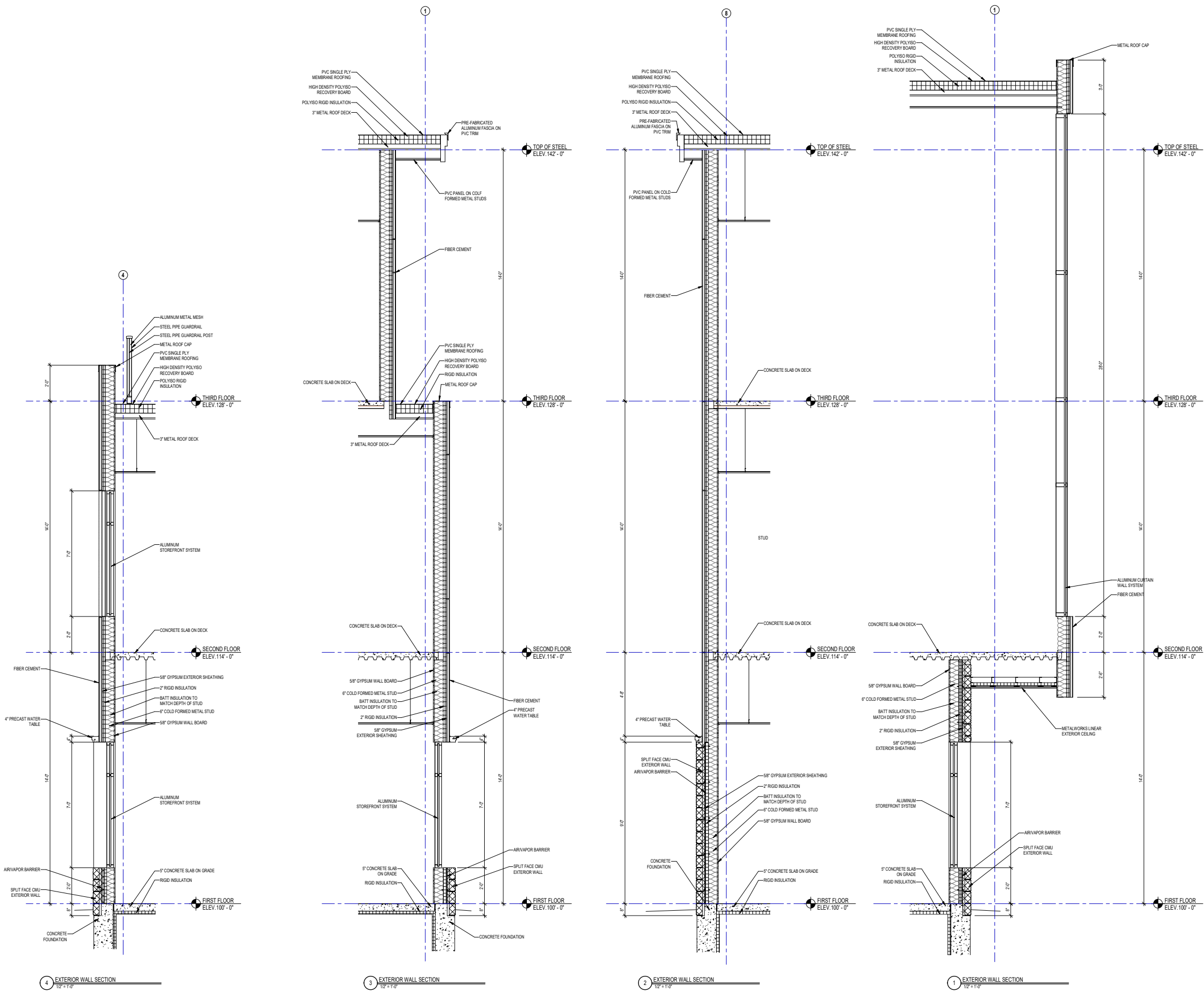
- GENERAL NOTES:**
- REFER TO CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS
  - REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
  - REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL DECKING
  - REFERENCE EXTERIOR ELEVATIONS FOR VARIATION IN COLORS



DRAWING NAME:  
**WALL SECTIONS**

DRAWN BY: NS/CHR  
REVIEWED BY: JQ

SCALE: AS INDICATED | DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **A4.11**







DUAL LANGUAGE  
24 SUMMER ST, CENTRAL FALLS, RI

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KEYNOTE LEGEND:

**GENERAL NOTES:**

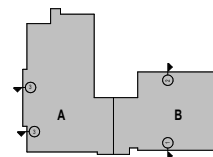
1. REFER TO CIVIL DRAWINGS FOR FINAL GRADE ELEVATIONS
2. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS
3. REFER TO STRUCTURAL DRAWINGS FOR TRUE DIRECTION OF STEEL BEAMING
4. REFERENCE EXTERIOR ELEVATIONS FOR VARIATION IN COLORS

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEY PLAN



DRAWING NAME:

**WALL SECTIONS**

DRAWN BY: NSI/CHR

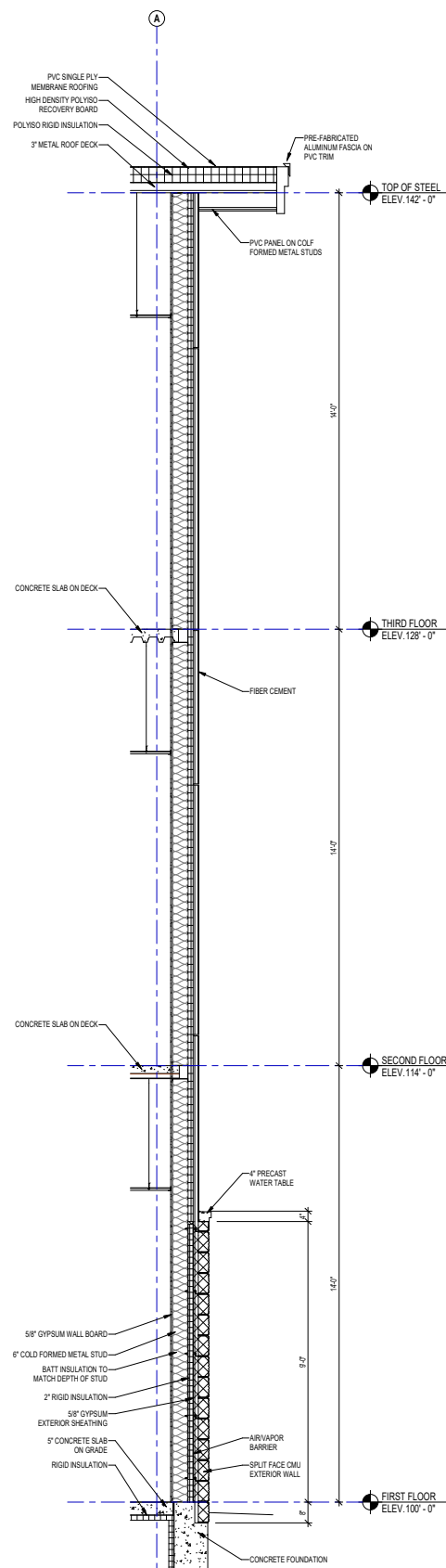
REVIEWED BY: JQ

SCALE: AS INDICATED DRAWING NUMBER:

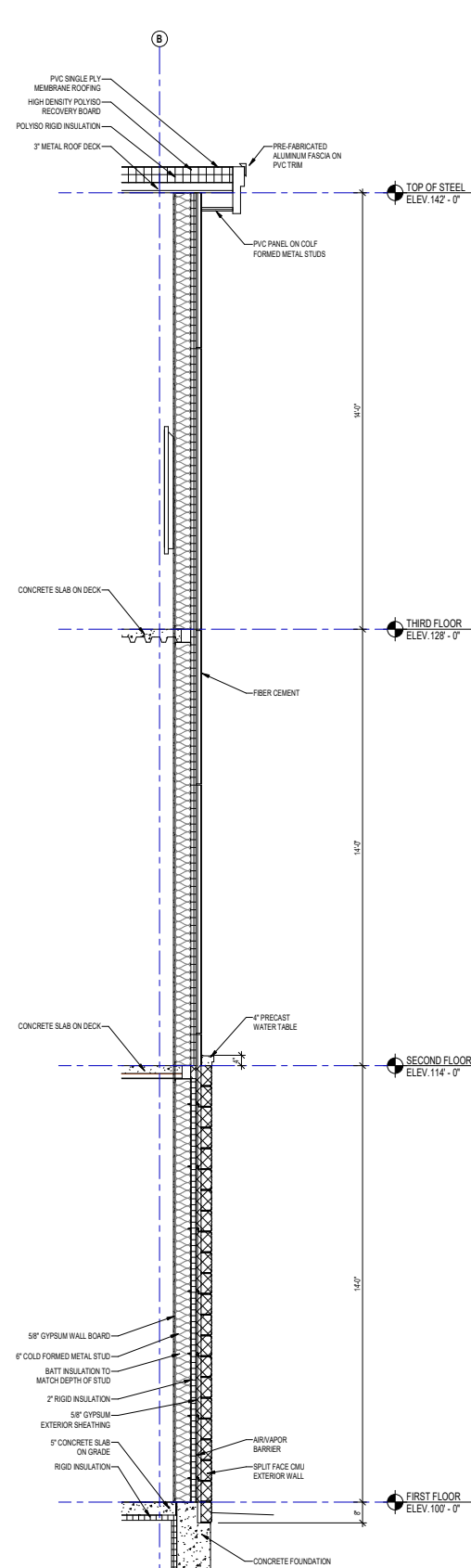
JOB NO.: 2202.00

DATE: SEPT 15, 2022

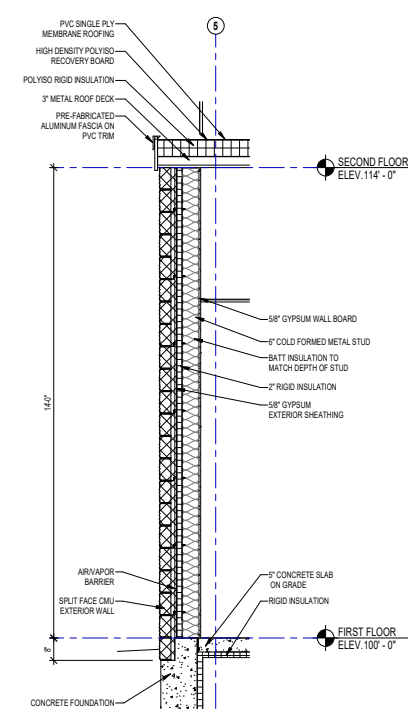
**A4.12**



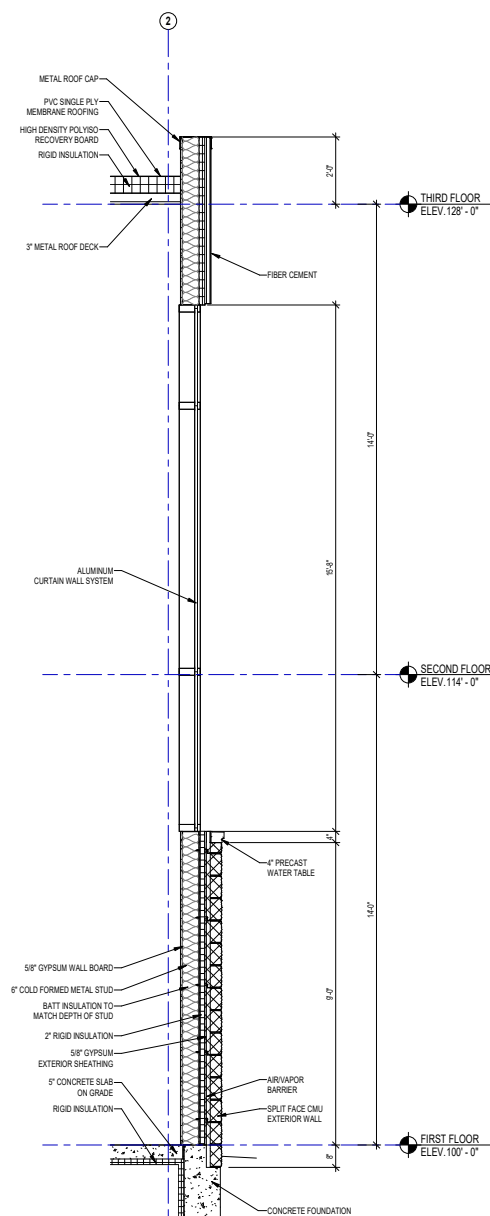
4 EXTERIOR WALL SECTION  
1/2" = 1'-0"



3 EXTERIOR WALL SECTION  
1/2" = 1'-0"



2 EXTERIOR WALL SECTION  
1/2" = 1'-0"



1 EXTERIOR WALL SECTION  
1/2" = 1'-0"





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ROOM FINISH SCHEDULE

Table with columns: ROOM #, ROOM NAME, FLOOR MATERIAL, BASE MATERIAL, WALL MATERIAL (N, E, S, W), CEILING, NOTES. Rows include 301 DIVERSE LEARNERS (GRADES 6-8), 301A DIVERSE LEARNERS TOILET, 302 GENERAL CLASSROOM GRADE 7, etc.

ROOM FINISH SCHEDULE

Table with columns: ROOM #, ROOM NAME, FLOOR MATERIAL, BASE MATERIAL, WALL MATERIAL (N, E, S, W), CEILING, NOTES. Rows include 201 GENERAL CLASSROOM GRADE 3, 201A SMALL GROUP ROOM READING, 202 GENERAL CLASSROOM GRADE 4, etc.

ROOM FINISH SCHEDULE

Table with columns: ROOM #, ROOM NAME, FLOOR MATERIAL, BASE MATERIAL, WALL MATERIAL (N, E, S, W), CEILING, NOTES. Rows include 101 GENERAL CLASSROOM GRADE 2, 101A SMALL GROUP ROOM READING, 102 KINDERGARTEN CLASSROOM, etc.

GENERAL NOTES

- 1. GENERAL CONTRACTOR TO COORDINATE ALL SLAB DEPRESSIONS AS REQUIRED WITH FINISH FLOOR SYSTEMS AND MATERIALS SPECIFIED.
2. SPACES NOT LISTED SHALL RECEIVE THE SAME FINISHES AS SIMILAR FUNCTION SPACES.
3. "EXP" DENOTES EXPOSED TO VIEW STRUCTURAL STEEL, METAL DECK, FABRICATED METAL DUCTWORK, PIPES & CONDUIT REQUIRED TO BE PAINTED. ALL WALLS IN ROOMS NOTED AS EXPOSED SHALL HAVE A PAINT TRANSITION LINE. HEIGHT TO BE COORDINATED IN FIELD.
4. EXPOSED CONCRETE FLOORS TO BE PAINTED, U.N.O.
5. REFER TO 00.01 GENERAL INFORMATION & CODE ANALYSIS.
6. REFER TO INTERIOR ELEVATIONS FOR VARIATION IN TILE HEIGHT AND EXTENTS.
- GANG TOILET ROOMS SHALL HAVE WALL TILE INSTALLED TO CEILING ON WET WALLS, U.N.O.
- SINGLE TOILET ROOMS SHALL HAVE WALL TILE INSTALLED TO CEILING ON WET WALLS, U.N.O.
- SHOWER AREAS SHALL HAVE WALL TILE INSTALLED TO CEILING ON ALL THREE WALLS.
7. PROVIDE ALUMINUM EDGE TRIM AT ALL OUTSIDE CORNER AND EXPOSED EDGE CONDITIONS OF PORCELAIN WALL TILE, UNLESS NOTED OTHERWISE. REFER TO TYPICAL DETAILS ON A7.11
8. PROVIDE CERAMIC TILE ON ALL WALLS OF KITCHEN AND DRY FOOD STORAGE. TILE TO RUN FROM FINISH FLOOR TO MINIMUM 6" ABOVE ACT CEILING. PATTERN TO CONSIST OF ONE BELD COLOR AND UP TO 10% ACCENT TILES. REFER TO SAMPLE PATTERNS IN A7 SERIES FOR ADDITIONAL INFORMATION.
9. REFER TO REFLECTED CEILING PLAN ACT TYPES. PROVIDE ACT RETENTION CLIPS AT ALL TOILET ROOMS, LOCKER ROOMS, VESTIBULES & FIRE RATED SPACES.
10. REFER TO REFLECTED CEILING PLAN FOR CEILING HEIGHTS, ACT TYPES & CEILING EXTENTS. PROVIDE ACT RETENTION CLIPS AT ALL TOILET ROOMS, VESTIBULES & FIRE RATED SPACES.
11. MULTIPLE COLORS / PATTERNING REQUIRED FOR FLOORING FINISHES AND WALL TILES. REFER TO A7 SERIES FOR SAMPLE PATTERN LAYOUTS AND COLOR VARIATION. THESE DRAWINGS ARE INTENDED TO DEMONSTRATE THE VARIETY OF COLOR AND PATTERNING THAT WILL BE REQUIRED. THOUGH FINAL SELECTIONS WILL BE ISSUED AFTER APPROVAL OF SHOP DRAWINGS AND PRODUCT LITERATURE FROM INSTALLING CONTRACTOR.
12. WALL MATERIAL ON ROOM FINISH SCHEDULE REFERS TO PLAN ORIENTATION REPRESENTED IN ARCHITECTURAL DOCUMENTS, WHERE "NORTH" REFERS TO THE TOP OF THE ARCHITECTURAL DRAWING SHEET FOR THE SPACE INDICATED.
13. UNLESS NOTED OTHERWISE, GYPSUM SURFACE BEHIND VINYL WALL COVERINGS TO BE LEVEL 4 FINISH AND PRIMED PRIOR TO WALL COVERING OR INSTALLED. GYPSUM SURFACES BEHIND VINYL SIGNAGE GRAPHICS TO BE LEVEL 5 FINISH AND PRIMED PRIOR TO GRAPHIC IS INSTALLED.
14. FURNISH AND INSTALL RUBBER FLOORING AT ALL ELEVATORS. BY SECTION 09.65.23 PROVIDE SAME TYPE AND COLOR RUBBER FLOORING MATERIAL AS USED AT THE STAIR LANDINGS.
15. STAGE FLOORING WILL BE PAINTED MASONITE BOARD. THE FLOOR PLAN SHALL IDENTIFY LOCATION OF THE TRANSITION TO ADJACENT FLOORING MATERIAL. AREAS DIRECTLY UNDER FIXED SEATING IN AUDITORIUM ARE TO BE CONC. PAINTED W/ EPOXY DECK ENAMEL. ALL OTHER AREAS TO BE CARPET, U.N.O.

ABBREVIATIONS / FINISH LEGEND

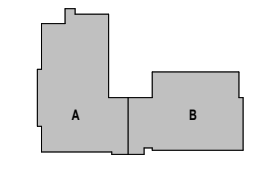
Table with columns: Abbreviation, Description, Abbreviation, Description. Includes ACT (Acoustical Ceiling Tile), CONC. PAINTED (Concrete Painted with Epoxy Deck Enamel), POLISHED (Polished Concrete Finishing), CB (Broadloom Carpet), CT (Ceramic Wall Tile), CPT (Carpet Tile), CMT (Ceramic Mosaic Tile), CMTB (Ceramic Mosaic Tile Base), EP (Epoxy Paint), EXP (Exposed), FRP (Fiberglass Reinforced Panel), LAM (Laminated Stage Flooring), LAMB (Laminated Stage Flooring Base), MAT (Entrance Mats & Grates), MFR (Manufacturer), P (Painted), PT (Porcelain Tile), QT (Quarry Tile), R (Rubber Flooring), RA (Athletic Rubber Flooring), RB (Rubber Base), RSF (Resilient Sheet Flooring), RTF (Resilient Tile Flooring), SSA (Spray-on Sound Absorption), SCRF (Static-Control, Resilient Flooring), VWC (Vinyl Wall Covering), WCR (Vinyl Wall Cladding - Rigid Sheet), WD (Wood), WAB (Wood Athletic Flooring Vented Base), WAF (Wood Athletic Flooring), WSF (Wood Strip Flooring).

SCHEMATIC DESIGN

KEY PLAN NORTH ARROW



KEYPLAN



DRAWING NAME:

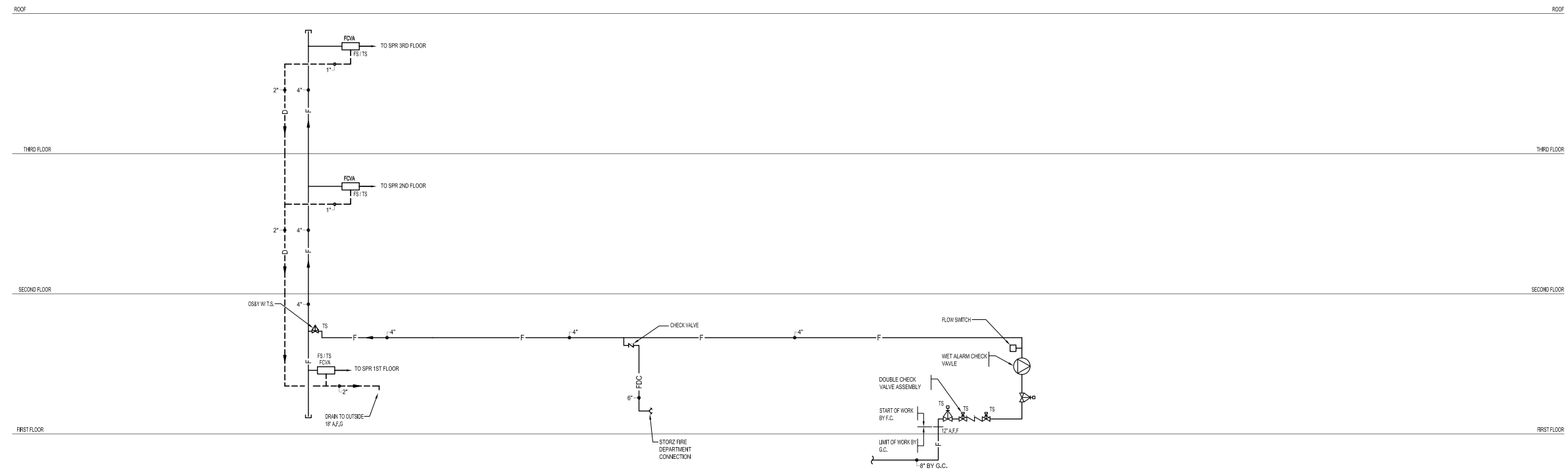
ROOM FINISH SCHEDULE

DRAWN BY: CHR

REVIEWED BY: JQ

SCALE: AS INDICATED DRAWING NUMBER: 2202.00 JOB NO.: 2202.00 DATE: SEPT 15, 2022 A10.00

NOTES:  
1. ALL VALVES INSTALLED ABOVE CEILINGS OR BEHIND WALLS SHALL INCLUDE AN ACCESS PANEL, SEE SPECIFICATIONS.

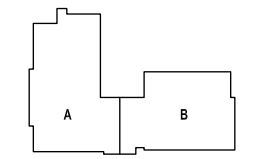


**FIRE RISER**

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW

KEYPLAN



DRAWING NAME:  
**FIRE PROTECTION RISER DIAGRAM**

DRAWN BY: AMD  
REVIEWED BY: AMD

SCALE: NONE | DRAWING NUMBER:  
JOB NO.: 2202.00 | **FP-1**  
DATE: SEPT 15, 2022



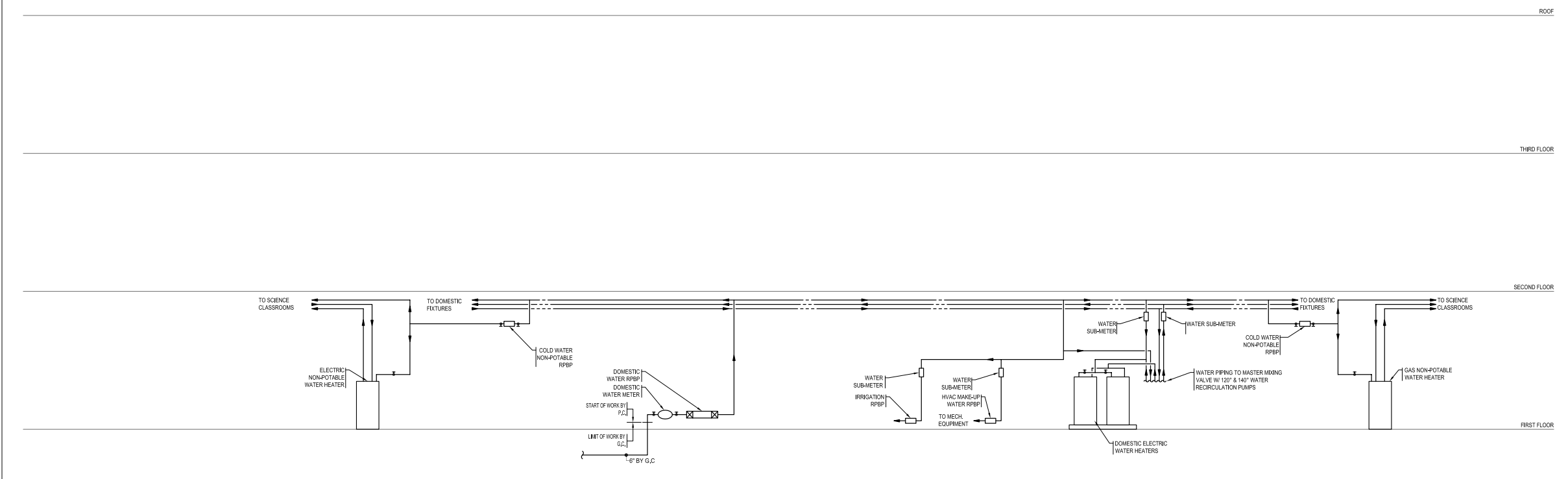
330 Boston Post Rd. Waltham, MA 02451  
908.508.0700 www.ai3arch.com

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508-295-0003 (F)  
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**CENTRAL FALLS SCHOOL DISTRICT**  
DUAL LANGUAGE  
24 SUMMER, CENTRAL FALLS, RI

KEYNOTE LEGEND:

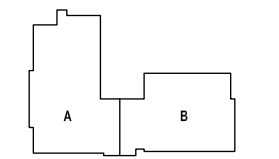


**1** DOMESTIC HOT WATER RISER DIAGRAM - WATER  
NOT TO SCALE

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW

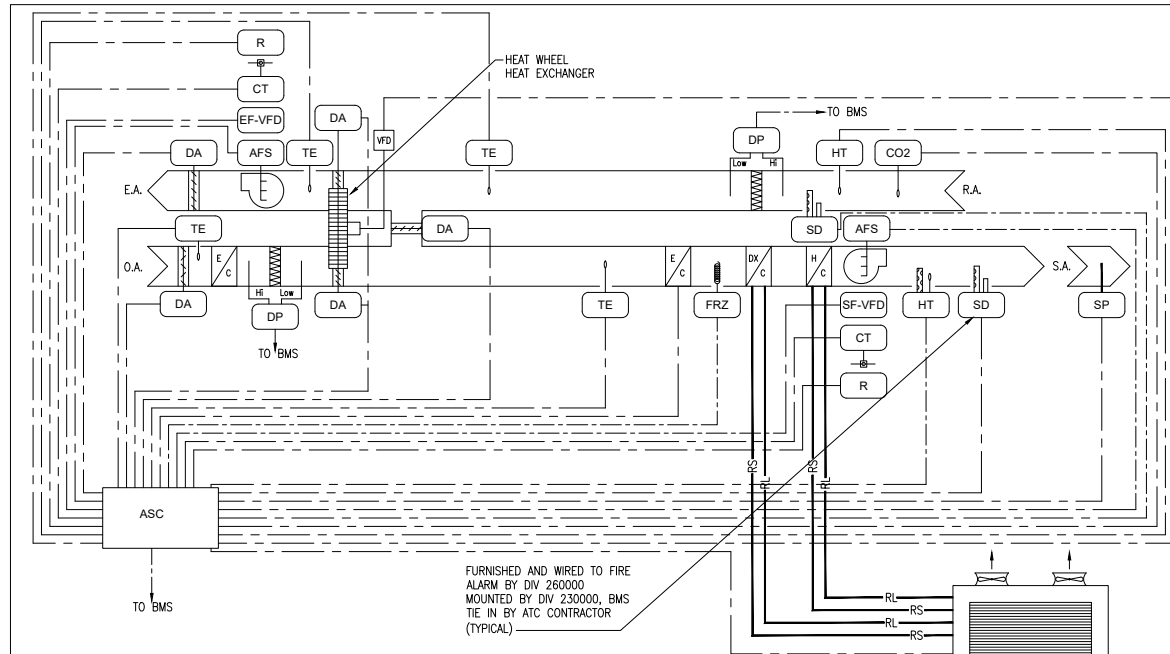
KEYPLAN



DRAWING NAME:  
**PLUMBING RISER DIAGRAM**

DRAWN BY: AMD  
REVIEWED BY: AMD

SCALE: NONE | DRAWING NUMBER:  
JOB NO.: 2202.00 | **P-1**  
DATE: SEPT 15, 2022



**SEQUENCE OF OPERATION**

Sheet Metal Contractor shall install smoke dampers in the supply air and return air ductwork to all HVAC systems conveying over 15,000 CFM. The ATC Contractor shall interlock the smoke dampers such that the dampers shall close on receiving a signal from the duct mounted smoke detectors, and shall simultaneously de-energize the equipment. Fire alarm interconnections from the smoke detectors shall remain the responsibility of Division 26.

- Smoke detectors are furnished, installed and wired by others to shut down energy recovery unit on alarm.
- Energy recovery unit shall shut down in general alarm condition.
- Energy recovery units shall be furnished with a factory mounted and wired end devices which shall include but not be limited to dampers, damper actuators, temperature sensors, humidity transducers and pressure sensors.
- Unit controls shall be compatible with BMS through BACnet, LON, or N2 connection as required to suit the automatic temperature control system.
- Provide a static pressure controller two-thirds (2/3) of the distance downstream in the effectively longest duct run. The pressure sensor shall provide the error offset signal to its corresponding adjustable frequency AC drive P.L.D. controller. The controller shall adjust the drive output signal, varying the supply fan speed to maintain the proper system pressure.
- The exhaust fan shall be modulated to track airflow as sensed by fan inlet air flow measuring stations (supply and return). The DDC system shall monitor supply CFM and calculate an exhaust airflow setpoint by subtracting a fixed offset. The calculated exhaust air setpoint shall be maintained by modulating the speed of the exhaust fan via its variable frequency drive, increasing fan speed on a drop in airflow as sensed by the air sensor.
- Provide high static and low static pressure controllers at the supply fan and at the exhaust fan to stop the system and signal on alarm if limit conditions are exceeded.

- Heating Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The outside air damper and exhaust air damper shall open. The re-circulation damper shall close.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 68°F (adj.).

- Heating Cycle - "Unoccupied":**
- The supply fan shall run only upon demand from the setback set point controller, the exhaust fan shall remain de-energized. The outside air damper and exhaust air damper shall remain closed and the re-circulation damper shall remain open.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 60°F (adj.).

DX heat and backup electric coil

- Back-up electric coil shall be enable at 17°F and below. If back-up electric coil is enabled the DX heating system shall be locked out. Above 17°F DX heating system shall be enabled and the back-up electric coil shall be locked out.

- Cooling Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The fresh air damper and exhaust air damper shall open. The recirculation damper shall close.
  - Economizer control shall use outside air for cooling requirements on sensing that the ambient enthalpy meets the unit discharge demands (comparative). While in economizer mode, the heat wheel shall stop and the heat wheel bypass dampers shall open.
  - On sensing that ambient air is not appropriate to meet the 'cooling' requirements, the remote duct mounted proportional signal temperature sensor shall initiate the condensing unit and stage the compressors as required to maintain a discharge air temperature of 55°F.

- Cooling Cycle - "Unoccupied":**
- The system shall remain de-energized. The fresh air damper and exhaust air damper shall remain 100% closed.

- Hot Gas Reheat:**
- Reheat is automatically energized whenever dehumidification is needed based on return humidity and return air temperature.

- Freeze Protection Cycle:**
- Electric pre heat will engage to prevent wheel frosting.

- Discharge Air Temperature Reset Control:**
- The ATC contractor shall furnish and install sensors and controls to enable space temperature based reset of discharge air temperature (adj.) to prevent sub-cooling of spaces.
  - The Building Management System sense return air temperature and shall reset the supply air temperature set point according to the straight line ramp function defined herein:

Outside Air Temp	Supply Air Temp Set Point
75°F and Above	55°F (adj.)
65°F and Below	68°F (adj.)

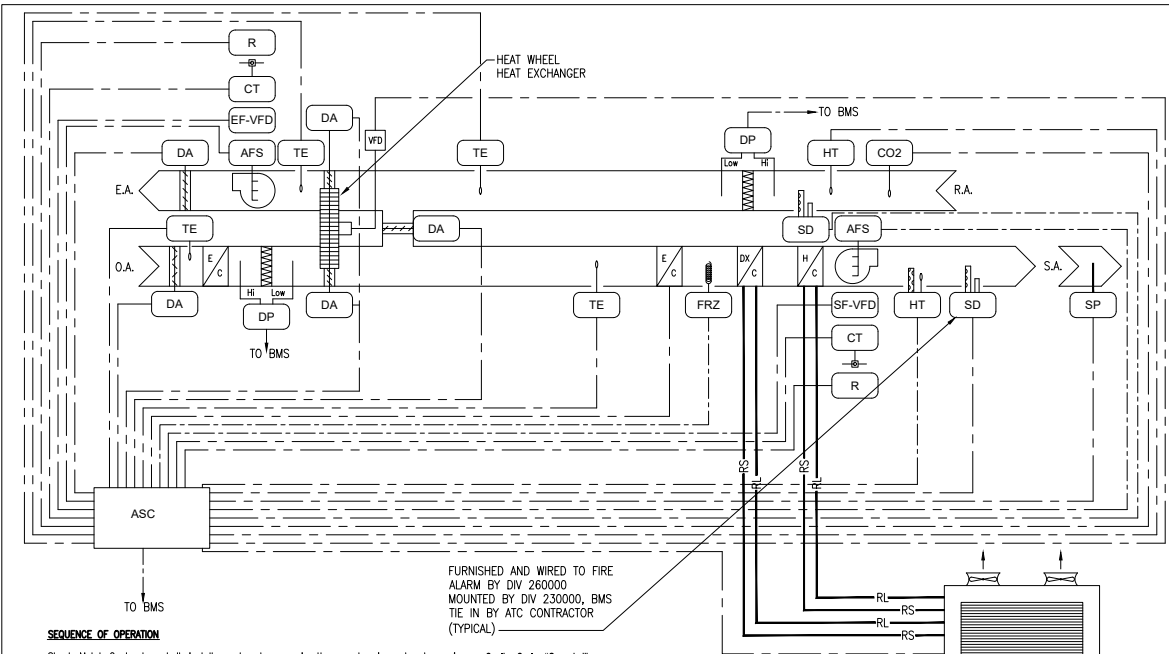
- Static Pressure Reset Control:**
- ATC contractor shall provide static pressure reset control which shall reset the discharge static pressure set point when terminal boxes are in the unoccupied mode (damper closed).

**Static Safeties:** Return duct low static pressure safety will stop supply and return fans, close outdoor/exhaust dampers and open heating coil valve 100% when pressure exceeds set point. The set point is adjustable at the device. A manual reset is required at the device to restart the unit.

- Alarms:** The following alarms will announce at the workstation:
- If the supply or return fan status is not indicated within 30sec of start command, a fan failure alarm is generated.
  - If filter differential pressure exceeds the normal pressure setting for the rooftop unit's filters, a dirty filter alarm is generated.
  - Low temperature detector below 35°F.
  - Low static pressure safeties.
  - Discharge air temperature is +/- 5°F form set point during occupied mode.

**Demand load shedding:** Upon demand load shed protocol, either remotely or on site, the selected ERV shall disengage and power down. All dampers shall close. A notification shall be visible on the BMS showing that unit is in Demand Load shed mode. All ERV shall be individual shed or as a group.

ROOFTOP UNIT HEAT PUMP (100% OUTSIDE AIR)



**SEQUENCE OF OPERATION**

Sheet Metal Contractor shall install smoke dampers in the supply air and return air ductwork to all HVAC systems conveying over 15,000 CFM. The ATC Contractor shall interlock the smoke dampers such that the dampers shall close on receiving a signal from the duct mounted smoke detectors, and shall simultaneously de-energize the equipment. Fire alarm interconnections from the smoke detectors shall remain the responsibility of Division 26.

- Smoke detectors are furnished, installed and wired by others to shut down energy recovery unit on alarm.
- Energy recovery unit shall shut down in general alarm condition.
- Energy recovery units shall be furnished with a factory mounted and wired end devices which shall include but not be limited to dampers, damper actuators, temperature sensors, humidity transducers and pressure sensors.
- Unit controls shall be compatible with BMS through BACnet, LON, or N2 connection as required to suit the automatic temperature control system.
- Provide a static pressure controller two-thirds (2/3) of the distance downstream in the effectively longest duct run. The pressure sensor shall provide the error offset signal to its corresponding adjustable frequency AC drive P.L.D. controller. The controller shall adjust the drive output signal, varying the supply fan speed to maintain the proper system pressure.
- The exhaust fan shall be modulated to track airflow as sensed by fan inlet air flow measuring stations (supply and return). The DDC system shall monitor supply CFM and calculate an exhaust airflow setpoint by subtracting a fixed offset. The calculated exhaust air setpoint shall be maintained by modulating the speed of the exhaust fan via its variable frequency drive, increasing fan speed on a drop in airflow as sensed by the air sensor.
- Provide high static and low static pressure controllers at the supply fan and at the exhaust fan to stop the system and signal on alarm if limit conditions are exceeded.

- Heating Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The fresh air damper and exhaust air damper shall open to minimum air position. The recirculation damper module to match outside air damper position.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 60°F (adj.).

- Heating Cycle - "Unoccupied":**
- The supply fan shall run only upon demand from the setback set point controller, the exhaust fan shall remain de-energized. The fresh air damper and exhaust air damper shall remain closed and the recirculation damper shall remain open.
  - The heat pump shall engage as directed by the remote duct mounted temperature sensor to maintain a discharge air temperature of 60°F (adj.).

- DX heat and backup electric coil:**
- Back-up electric coil shall be enable at 17°F and below. If back-up electric coil is enabled the DX heating system shall be locked out. Above 17°F DX heating system shall be enabled and the back-up electric coil shall be locked out.

- Cooling Cycle - "Occupied":**
- The supply and exhaust fan shall run continuously. The fresh air damper and exhaust air damper shall open to minimum air position. The recirculation damper module to match outside air damper position.
  - Economizer control shall use outside air for cooling requirements on sensing that the ambient enthalpy meets the unit discharge demands (comparative). While in economizer mode, the heat wheel shall stop and the heat wheel bypass dampers shall open.
  - On sensing that ambient air is not appropriate to meet the 'cool-down' requirements, the remote duct mounted proportional signal temperature sensor shall initiate the condensing unit and stage the compressors as required to maintain a discharge air temperature of 55°F.

- Cooling Cycle - "Unoccupied":**
- The system shall remain de-energized. The fresh air damper and exhaust air damper shall remain 100% closed.

- Hot Gas Reheat:**
- Reheat is automatically energized whenever dehumidification is needed based on return humidity and return air temperature.

- Freeze Protection Cycle:**
- Energy wheel shall cycle to prevent wheel frosting.

- Discharge Air Temperature Reset Control:**
- The ATC contractor shall furnish and install sensors and controls to enable space temperature based reset of discharge air temperature (adj.) to prevent sub-cooling of spaces.
  - The Building Management System sense return air temperature and shall reset the supply air temperature set point according to the straight line ramp function defined herein:

Return Air Temp.	Supply Air Temp. Set Point
75°F	55°F (adj.)
70°F	65°F (adj.)

- Demand Controlled Ventilation:**
- Furnish and install a CO2 sensor in the return air duct which shall, through the DDC system modulate the outdoor air, return air and exhaust air dampers in response to the CO2 level in the space.
  - The return air CO2 level shall reset the minimum outdoor CFM set point based on the following reset schedule:

UNIT	O.A. CFM @ 600 PPM	CO2 O.A. CFM @ 800 PPM	CO2
ERV-4	670	2650	
ERV-4	525	2100	
ERV-5	525	2100	
ERV-8	280	1090	

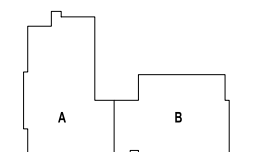
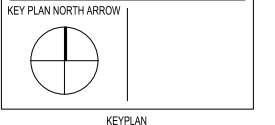
- Supply and return fan speed shall ramp down to 50% (adj) of maximum when 600 PPM or below is sensed and space temperature is satisfied.
- ERV-3 outside air damper position shall be over ridden upon activation of kitchen hood. Damper position shall modulate to main make up air. MAX cfm 2605. EF/RF shall modulate based on kitchen exhaust fan speed.

**Static Safeties:** Return duct low static pressure safety will stop supply and return fans, close outdoor/exhaust dampers and open heating coil valve 100% when pressure exceeds set point. The set point is adjustable at the device. A manual reset is required at the device to restart the unit.

- Alarms:** The following alarms will announce at the workstation:
- If the supply or return fan status is not indicated within 30sec of start command, a fan failure alarm is generated.
  - If filter differential pressure exceeds the normal pressure setting for the rooftop unit's filters, a dirty filter alarm is generated.
  - Low temperature detector below 35°F.
  - Low static pressure safeties.
  - Discharge air temperature is +/- 5°F form set point during occupied mode.

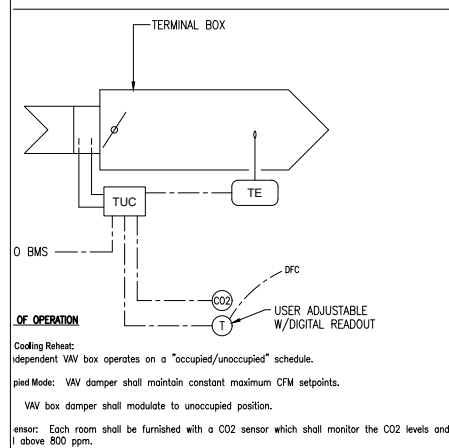
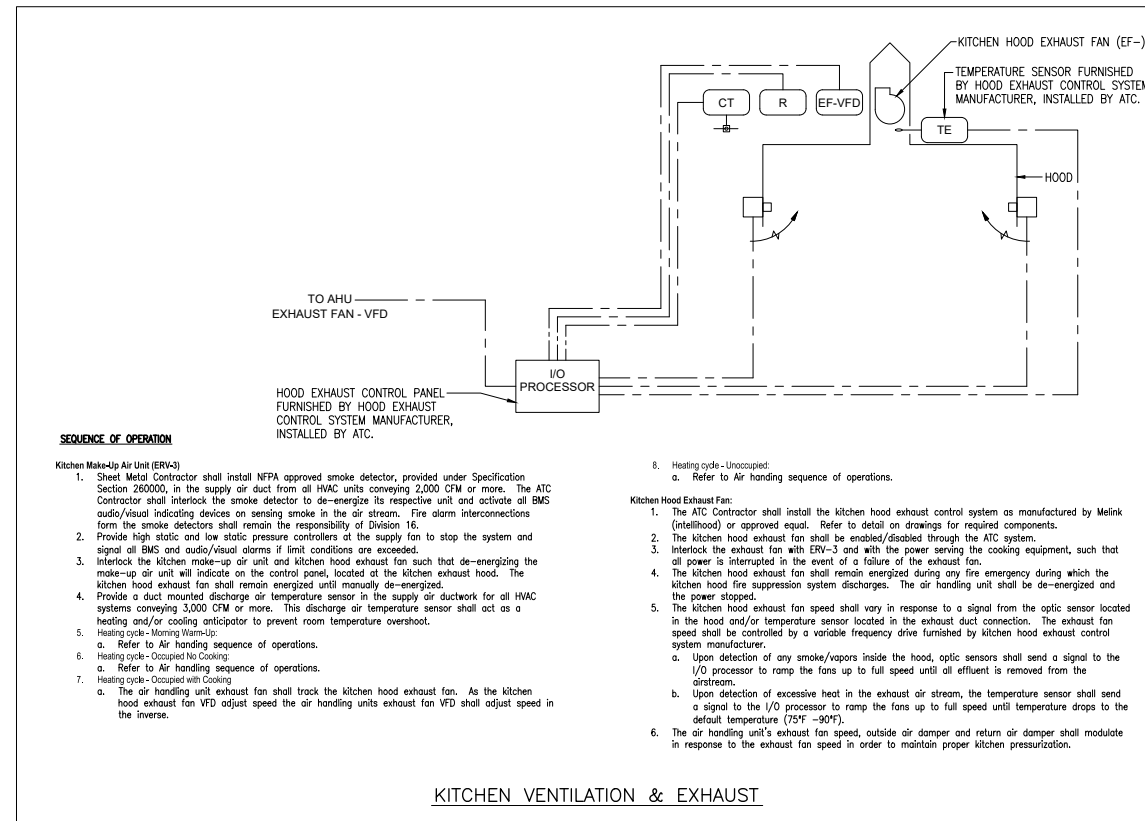
**Demand load shedding:** Upon demand load shed protocol, either remotely or on site, the selected ERV shall disengage and power down. All dampers shall close. A notification shall be visible on the BMS showing that unit is in Demand Load shed mode. All ERV shall be individual shed or as a group. ERV-5 shall not be part of the Demand load shedding.

ROOFTOP UNIT HEAT PUMP

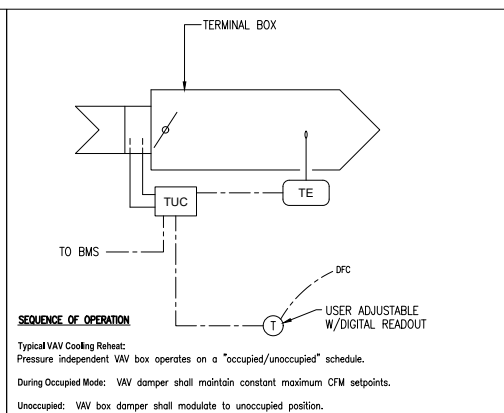


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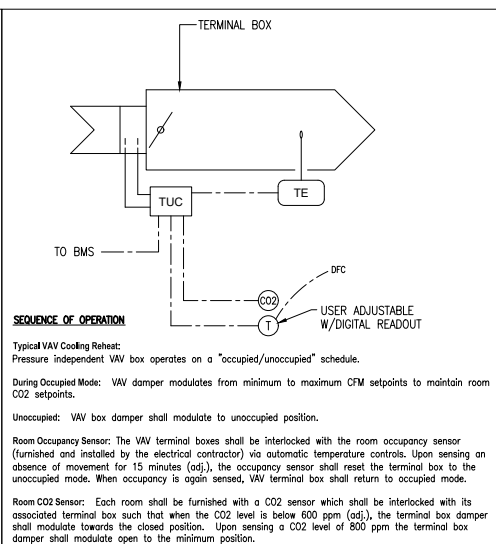
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DATE: SEPT 15, 2022  
**M-1**



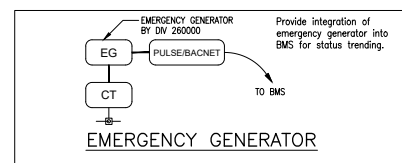
**CONSTANT VOLUME VENTILATION CONTROL VALVE (OFFICE/ADMINISTRATION/NURSES SUITS)**



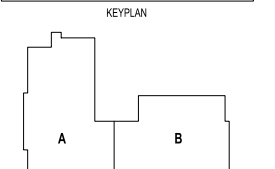
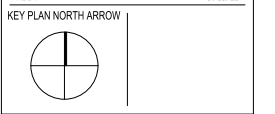
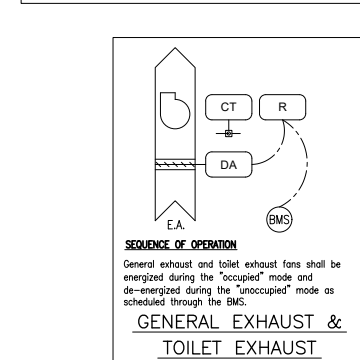
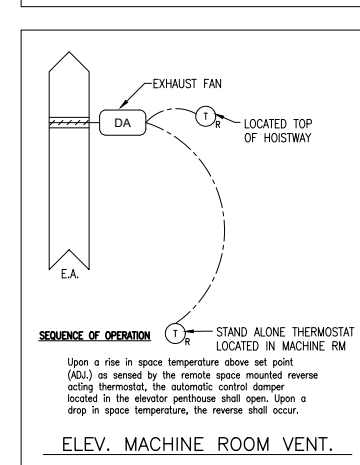
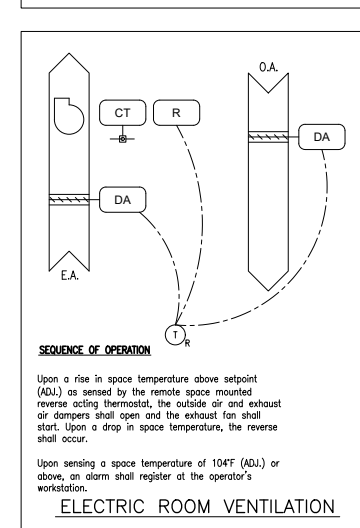
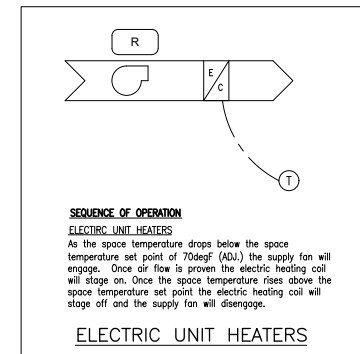
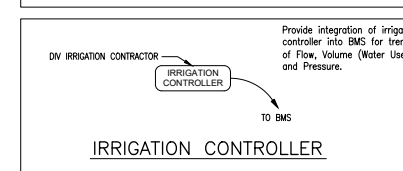
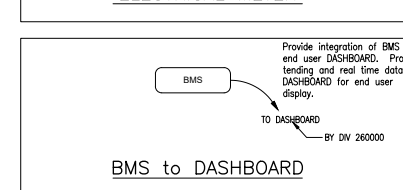
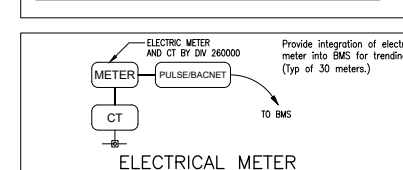
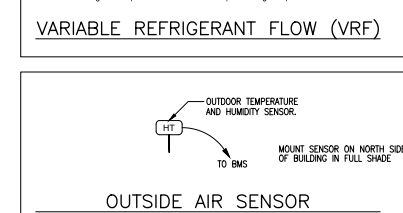
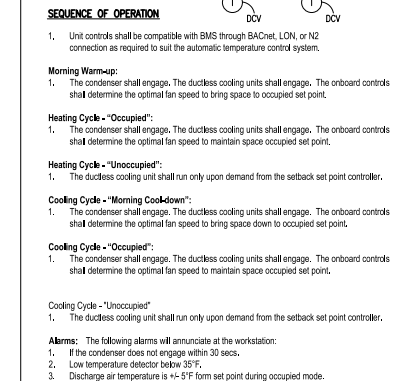
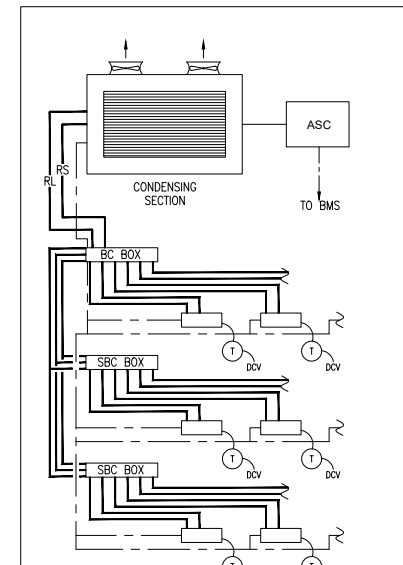
**CONSTANT VOLUME VENTILATION CONTROL VALVE (CORRIDORS)**



**DEMAND VENTILATION CONTROL VALVE**



**EMERGENCY GENERATOR**



DRAWING NAME:  
**MECHANICAL CONTROL SEQUENCES**

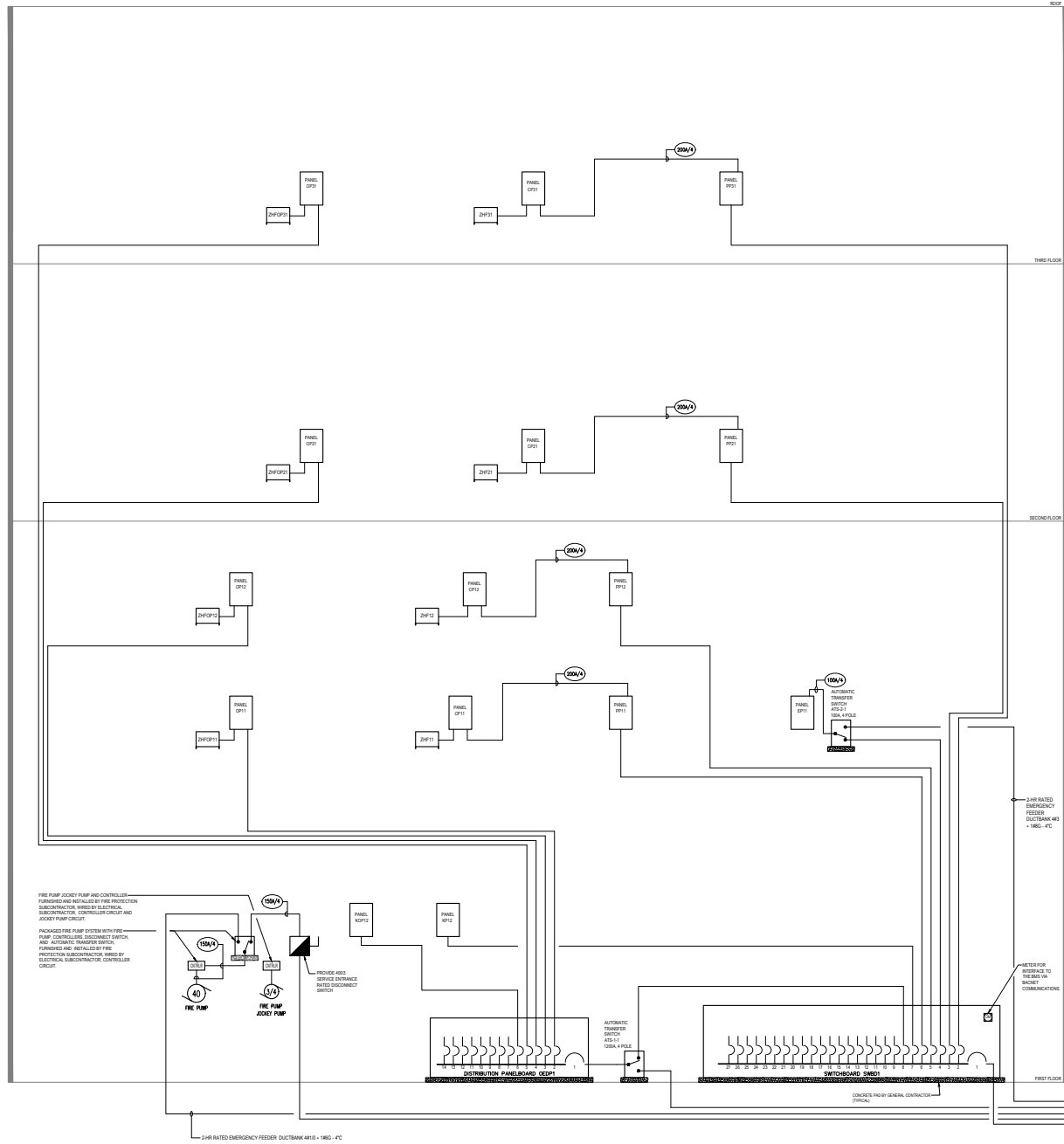
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REVIEWED BY: DAH  
SCALE: NONE DRAWING NUMBER:  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022 **M-2**





DUAL LANGUAGE  
24 SUMMER, CENTRAL FALLS, RI

KEYNOTE LEGEND:



**SWITCHBOARD SWBD1 SCHEDULE**  
TOTAL CAPACITY: 30 x 480/277V BREAKERS @ 100% LOADS, WITH 100% PROTECTION DEVICE

CIRCUIT BREAKER NUMBER	TRIP IN	LOAD	FEEDER AND CONDUIT SIZE	NOTES
1	3000	MAIN CIRCUIT BREAKER	4000X100L - 100-4C	100% RATED MAIN CIRCUIT BREAKER
2	8000	PANELBOARD PP01	1000A	
3	8000	PANELBOARD PP02	1000A	
4	1000	ATS-2-1	1000A	
5	8000	PANELBOARD PP12	1000A	
6	8000	PANELBOARD PP11	1000A	
7	1000	PANELBOARD KP12	1000A	
8	1000	ATS-1	1000A	

**PANELBOARD OEDP1 SCHEDULE**  
TOTAL CAPACITY: 30 x 480/277V BREAKERS @ 100% LOADS, WITH 100% PROTECTION DEVICE

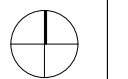
CIRCUIT BREAKER NUMBER	TRIP IN	LOAD	FEEDER AND CONDUIT SIZE	NOTES
1	1000	MAIN CIRCUIT BREAKER	1000A	
2	3000	PANELBOARD OP11	1000A	
3	3000	PANELBOARD OP12	1000A	
4	3000	PANELBOARD OP21	1000A	
5	3000	PANELBOARD OP22	1000A	
6	500	PANELBOARD KP12	1000A	

**ZERO SEQUENCE HARMONIC FILTER SCHEDULE**  
NOTES:  
1. ALL CONDUCTORS REFERENCED IN THIS SCHEDULE ARE COPPER.  
2. PHYSICAL SIZE NEEDED FOR POWER QUALITY INTERNATIONAL, INC. EQUIPMENT.

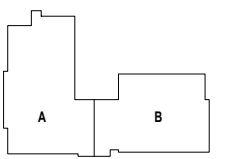
NAME	RATED CURRENT (A)	SIZE (IN)	VOLTAGE	OVERCURRENT PROTECTION		NOTES	PHYSICAL SIZE
				SIZE (IN)	LOCATION		
ZHF1	250	3/8	1000V	1000	PANELBOARD OP11	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	18.25" x 26.25"
ZHF2	250	3/8	1000V	1000	PANELBOARD OP12	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	18.25" x 26.25"
ZHF3	250	3/8	1000V	1000	PANELBOARD OP21	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	18.25" x 26.25"
ZHF4	250	3/8	1000V	1000	PANELBOARD OP22	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	18.25" x 26.25"
ZHF01	500	3/4	1000V	2000	PANELBOARD OP11	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	21.87" x 24.87"
ZHF02	500	3/4	1000V	2000	PANELBOARD OP12	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	21.87" x 24.87"
ZHF03	500	3/4	1000V	2000	PANELBOARD OP21	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	21.87" x 24.87"
ZHF04	500	3/4	1000V	2000	PANELBOARD OP22	DO NOT GROUND ZERO SEQUENCE HARMONIC FILTER TERMINAL HG. GROUND FILTER CASE PER IEC.	21.87" x 24.87"

**SCHEMATIC DESIGN**

KEY PLAN NORTH ARROW



KEY PLAN



**ELECTRICAL RISER DIAGRAM & SCHEDULES**

DRAWN BY: RCB  
REVIEWED BY: RCB  
SCALE: NONE | DRAWING NUMBER: E-1  
JOB NO.: 2202.00  
DATE: SEPT 15, 2022