# ADDENDUM NO. 01

**May 12, 2026**

**Kalamazoo Public Schools EL SOL School**
**1428 Baker Drive**
**Kalamazoo, MI 49048**

**TO: ALL BIDDERS OF RECORD**

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications and the Drawings dated April 27, 2026, by TowerPinkster. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 1-10 through ADD 1-1 and TowerPinkster Addendum No. 01, dated May 8, 2026, consisting of 384 pages.

**A. SPECIFICATION SECTION 00 0010 TITLE PAGE**

1. Revise Bids Received to **Thursday, May 28, 2026, at 2:00 PM**.

**B. SPECIFICATION SECTION 00 20 00 NOTICE TO BIDDERS**

1. Revise Bids Received to **Thursday, May 28, 2026, at 2:00 PM.**
2. Bid Opening. Bids will be publicly opened and read aloud on Thursday, May 28, 2026, shortly after the 2:00 PM Bid receipt deadline, in the Kalamazoo Public Schools Facilities Office, Room 130, 600 West Vine Street, Kalamazoo, MI 49008.

**C. SPECIFICATION SECTION 00 43 50 - SUBCONTRACTORS AND PRODUCTS LIST**

1. **A revised subcontractors and products list attached.**

**D. SPECIFICATION SECTION 01 12 00 - MULTIPLE CONTRACT SUMMARY**

**Paragraph 3.03 BID CATEGORIES**

## A. BID CATEGORY NO. 01 SITEWORK

Add the following Clarifications:

1. Provide removals of utility structures, pavements, trees, vegetation, buried, walls, and concrete items as shown and or described, refer to Sheet CD100 for removal notes. Select areas of demolition and removal may be required, refer to the Site Logistics Plan for additional information.
2. Provide, maintain, and remove tree protection as shown.
3. Provide, maintain, and remove, temporary access roads and temporary building perimeter working platform as shown on Site Logistics Plan.
4. Provide routine grading of the project site to avoid water accumulation related to weather etc.
5. Provide street sweeping on regular/routine basis, and as directed by Skillman at areas affected by construction traffic for the duration of the project.
6. Provide sitework as required to facilitate Rapid Impact Compaction work.
7. Provide excavation, grading, backfilling, and compaction for Bid Category No. 4 Concrete, including but not limited to concrete footings, foundations and slab on grade. Coordinate excavation and backfilling work with Bid Category No. 4 Concrete.
8. Provide and maintain all Soil Erosion and Sedimentation Control measures as required for construction regardless of trade performing the work, and as required by governing authorities.
9. Provide slab on grade drainage fill. Prior to placing drainage fill, all below slab rough-in work shall be installed. Floor boxes, floor drains and similar shall not be installed until after the drainage fill is installed.
10. Additional mobilizations may be required due to various reasons including, but not limited to, sequence of work, winter construction, or access points into the building. Remobilization costs shall be included as necessary, regardless of intent of Guideline Schedule outlining a work category to occur continuously and/or in a single mobilization.
11. Contractors requiring more areas of stone for access to the work or for laydown areas shall provide and remove at their own expense. Damage to permanent surfaces prepared shall be repaired by Contractor causing the damage. Dirt or mud tracked on the public roadways or permanent materials shall immediately be removed by the Contractor causing same.
12. Provide fine grading to +/- 0.10’ for aggregate subbase for Asphalt paving.
13. Provide granular material/sand and aggregate subbase for asphalt paving, concrete paving, concrete slab on grade, concrete curbs, walks, etc.
14. Bid Category No. 22 Mechanical to provide sanitary and storm piping through foundation walls up to and including exterior cleanouts. Reference foundation plumbing plan sheets P000. Bid Category No. 3 Sitework to provide storm and sanitary piping from cleanouts. Bid Category No. 22 Mechanical to provide storm or sanitary piping without cleanout exiting the building minimum 5’ and/or to nearest cleanout.
15. Each Contractor shall protect finish surfaces of their installed work and finish surfaces encountered during the performance of their work.

16. Provide 1000 Gallon Triple Basin Grease Interceptor, piping, concrete deadman, etc., including all piping to within 5' of the building. Refer to P502 and C500.
17. Provide combined water service into Mechanical/Boiler Room/Fire Pump Room, refer to Addendum No. 1 drawings. Terminate piping above slab on grade.
18. Bid Category No. 1 Sitework contractor to provide excavation for footings and foundations per layout provided by Bid Category No. 4 Concrete for Dumpster Enclosure. Bid Category No. 4 Concrete to provide formwork, concrete, dowels, and concrete pad for footings and foundations.

## B. BID CATEGORY NO. 02 ASPHALT PAVING

Add the following Clarifications:

1. Additional mobilizations may be required due to various reasons including, but not limited to, sequence of work, winter construction, or access points into the building. Remobilization costs shall be included as necessary, regardless of intent of Guideline Schedule outlining a work category to occur continuously and/or in a single mobilization.
2. Provide final grading of all aggregate material for asphalt paving. Aggregate material is provided and fine graded to +/- 0.10' by Bid Category No. 1 Sitework.

## C. BID CATEGORY NO. 03 LANDSCAPING

Add the following Clarifications:

1. Provide new planting soil and excavation as required for all trees, shrubs, plants, etc. Subsoil removed from excavations may not be used as planting soil. Remove any excess spoils for your work as required.
2. Seeding protection mats with plastic mesh will not be acceptable.
3. Provide turf maintenance and maintenance services of landscaped and seeded areas until established lawn, refer to Section 32 92 00 Turf and Grasses.

## D. BID CATEGORY NO. 04 CONCRETE

Add the following Clarifications:

1. Provide all below grade insulation for footings, foundations, and under concrete slab on grade.
2. Provide Geo Foam fill.
3. Provide concrete housekeeping/equipment pads as shown on drawings, refer to civil and mechanical drawings. Any Contractors requiring concrete housekeeping pads which are not shown on the drawings shall include costs to provide in their bid.
4. Provide grouting of structural steel base plates to columns.
5. Provide installation of concrete filled steel stair pans, posts and bollards. Steel posts and bollards will be furnished by Bid Category No. 7 Structural and Miscellaneous Steel.
6. Provide topping at hollow core pre-cast concrete areas.
7. Routinely remove concrete spoils from the project site.

8. Provide fine grading of sand/under slab material prior to slab on grade placement.
9. Each Contractor shall protect finish surfaces of their installed work and finish surfaces encountered during the performance of their work.
10. Additional mobilizations may be required due to various reasons including, but not limited to, sequence of work, winter construction, or access points into the building. Remobilization costs shall be included as necessary, regardless of intent of Guideline Schedule outlining a work category to occur continuously and/or in a single mobilization.
11. Bid Category No. 1 Sitework to provide granular material/sand and aggregate subbase for asphalt paving, concrete paving, curbs, walks, etc.
12. Bid Category No. 7 will provide anchor bolts and embeds to Bid Category No. 4 Concrete contractor for installation.
13. Provide all sleeves associated with Concrete work.
14. Bid Category No. 1 Sitework contractor to provide excavation for footings and foundations per layout provided by Bid Category No. 4 Concrete for Dumpster Enclosure. Bid Category No. 4 Concrete to provide formwork, concrete, dowels and concrete pad for footings and foundations.

## E. BID CATEGORY NO. 05 MASONRY

Add the following Clarifications:

1. Bid Category No. 5 Masonry shall provide all Fero Brackets, associated Fero Bracket anchors, shims, for a complete "Low Conductive Fero Anchor" assembly.
2. Provide brick veneer hangers, brackets and veneer angles. Reference details 4 and 7 on Sheet S303, and detail 12 on S301.
3. Provide Masonry Cavity Wall insulation.
4. Provide all Shelf and Veneer Support angles per section 04 2000 Unit Masonry.
5. Provide installation of Structural steel included but no limited to lintels, anchor bolts and bearing plates furnished by Bid Category No. 8 Structural and Miscellaneous Steel.
6. Provide grouting of all hollow metal frames present in masonry walls.
7. Provide stand-alone mockups in conjunction with all required window mockups prior to start of masonry, use of installed work for mockups will not be acceptable.
8. Provide modification of bottom course of masonry walls that are installed on precast plank, prior to concrete topping.
9. Provide all masonry work – Brick Veneer, CMU and Cast Stone with Stainless Steel Anchors required for exterior Monument Sign. Bid Category No. 4 Concrete to provide layout, excavation, concrete footings, foundations, rebars/dowels, etc. and Bid Category No. 23 Electrical to provide digital marquee sign, aluminum posts, and aluminum box with extruded letters.
10. Provide rigid insulation at areas where Masonry wall meets aluminum storefront or window system, and not enclosed in aluminum. Bid Category No. 11 – Aluminum Windows, Glazing, Framed Entrances And Storefronts to provide aluminum enclosures filled with rigid insulation.

## F. BID CATEGORY NO. 06 GENERAL TRADES

Add Section 06 40 23 – Interior Architectural Woodwork
Add Section 06 41 16 – Plastic-Laminate-Faced Architectural Cabinets
Add Section 07 27 26 – Fluid Applied Membrane Air Barriers
Add Section 08 06 71 – Door Hardware Schedule
Add Section 08 71 00 – Door Hardware

Delete Section 08 12 43 – Fire-Resistance-Rated-Frames, added to Bid Category No. 11 Aluminum Windows/Storefront/Curtain Wall Assemblies & Glazing.

Add the following Clarifications:

1. Bid Category No. 6 General Trades shall provide the Reception Desk in its entirety as shown on sheet I501, refer to Reception/Waiting Room 100. Refer to details and all assembly components to provide a complete assembly.
2. Access panels shown on drawings will be provided by General Trades. Access Panels not shown on the drawings but required, must be provided by contractor performing the work.
3. Provide vapor retarder under wood flooring assembly.
4. Provide all wood blocking, nailers, wood sheathing, plywood, etc. for roof assembly.
5. Each Contractor shall protect finish surfaces of their installed work and finish surfaces encountered during the performance of their work.
6. Provide and maintain survey control. Refer to 01 72 00 Field Engineering for requirements. All other Contractors to transfer needed layout from this control for their work, refer to Section 01 72 50 Work Layout.
7. Provide all blocking or backing required for all trades and Owner provided equipment. All trades are to supply layout drawings and requirements prior to framing of individual areas.
8. Provide sweeping compound and 400 manhours at laborer's pay rate (including all fringe benefits and payroll expenses) for general building and site clean-up (or other work) to be performed at the direction of the Construction Manager. At the end of the project, unused hours will be converted into a dollar amount per Wage Scale (including fringe benefits) and returned to the Owner through a deduct Change Order.
9. Provide Knox boxes as shown on drawings.
10. Provide wood base for all metal lockers.
11. Provide glazing in factory glazed wood doors, and fire rated glazing at interior stair tower doors.
12. Provide Thermal Break 2X wood blocking for FSE, refer to S101F.

## G. BID CATEGORY NO. 07 STRUCTURAL & MISCELLANEOUS STEEL

Add the following Clarifications:

1. Bid Category No.7 Masonry contractor to provide brick veneer hangers, brackets and veneer angles as show in details 4 and 7 on Sheet S303, and detail 12 on S301.
2. Provide anchor bolts and embeds to Bid Category No. 4 Concrete contractor for installation.

3. Additional mobilizations may be required due to various reasons including, but not limited to, sequence of work, winter construction, or access points into the building. Remobilization costs shall be included as necessary, regardless of intent of Guideline Schedule outlining a work category to occur continuously and/or in a single mobilization.
4. Provide dumpster enclosure assembly including steel posts, steel frame, metal deck, trim, and enclosure hardware, refer to Sheet L103. Masonry for enclosure will be by Bid Category No. 7 Masonry.
5. Bid Category No. 5 Masonry Contractor will provide all Shelf and Veneer Support angles per section 04 2000 Unit Masonry.
6. Bid Category No. 5 Masonry will provide installation of Structural Steel included but not limited to lintels, anchor bolts and bearing plates furnished by Bid Category No. 7 Structural and Miscellaneous Steel.
7. Provide submittals showing joist bridging layout in coordination with work for other trades, generic bridging details will not be acceptable.
8. Furnish acoustical deck insulation to roofing contractor for installation by Bid Category No. 10 Roofing.
9. Provide tube steel supports at the head of hollow metal frames that do not occur in masonry wall and may not be shown on structural drawings.

## H. BID CATEGORY NO. 08 PRE-CAST CONCRETE

Add the following Clarifications:

1. Provide integral grouting of hollow core precast slabs at all areas of placement, including but not limited to precast-to-precast grouting and precast to Masonry reinforcements, at any opening such as roof hatch, and precast to structural steel.
2. Provide and maintain weep holes on precast plank cores, provide weld plates cast into planks, provide mechanical openings, etc. and indicate all details on shop drawings.

## I. BID CATEGORY NO. 09 METAL STUDS, DRYWALL & ACOUSTICAL CEILINGS

Add the following Clarifications:

1. Each Contractor shall protect finish surfaces of their installed work and finish surfaces encountered during the performance of their work.
2. Include a $5,000 material allowance and 40 man-hours at the current rate (including all fringe benefits and payroll expenses) for replacement of stained or damaged ceiling tiles or other work to be performed at the direction of the Construction Manager. At the end of the project, the unused material allowance and man-hours will be converted into a dollar amount per Wage Scale (including fringe benefits) and returned to the Owner through a deduct Change Order.
3. Provide noise isolation below AHU's, RTU's and ACCU's using four layers of gypsum board (2 at top and 2 at bottom) with mineral fiber insulation in between, reference detail 2 on Sheet A103A.

## J. BID CATEGORY NO. 10 ROOFING

Add the following Clarifications:

1. Bid Category No. 6 General Trades will provide all wood blocking, nailers, wood sheathing, plywood, etc. for roof assembly.
2. Provide any additional wood blocking, wood nailers or plywood if required by submittals.
3. Bid Category No. 5 Masonry to provide vertical 3" cavity wall insulation and Bid Category No. 6 General Trades to provide 2-1/2" blocking insulation at top of walls: masonry and steel beams. The return vertical blocking insulation behind the parapet wall meeting roof insulation will be provided by Bid Category No. 10 Roofing.
4. Screws may not penetrate below the bottom flute of roof deck, screws found below the bottom of flute deck will need removed and patched.
5. Bid Category No. 7 Structural and Miscellaneous Steel will furnish acoustical deck insulation for installation by Bid Category No. 11 Roofing.

## K. BID CATEGORY NO. 11 ALUMINUM WINDOWS/STOREFRONT/CURTAIN WALL ASSEMBLIES & GLAZING

Add Section 08 12 43 – Fire-Resistance-Rated-Frames
Add Section 08 45 23 – Fiberglass-Sandwich-Panel Assemblies
Add Section 08 71 00 – Door Hardware
Add Section 08 87 00 – Architectural Window Film

Add the following Clarifications:

1. Each Contractor shall protect finish surfaces of their installed work and finish surfaces encountered during the performance of their work.
2. Provide all door hardware components for doors in Bid Category No. 11 Aluminum, Windows Glazing and Framed Entrances and Storefronts.
3. Provide Metal Coping System, refer to details on A321.
4. Provide Spray foam insulation at perimeter of all aluminum and fiberglass-panel assemblies.
5. Provide thermal insulation behind spandrel glass and aluminum closures.
6. Bid Category No. 6 General Trades will provide glazing in factory glazed wood doors.
7. Bid Category No. 15 Joint Sealants will provide all joint sealants exposed to view at completion of work, including but not limited to interior and exterior joints between Bid Category No. 12 Aluminum, Windows, Glazing, Framed Entrances and Storefronts and adjacent wall, and all joints in box trim and between box trim and window, storefront, and entrances.
8. Provide all sealant joints not exposed to view.
9. Provide mockups required for each system with sill flashings, subsills, end dams, and trims. Mockups to be prepared prior to preparation of shop drawings and delegated designs.

## L. BID CATEGORY NO. 12 METAL WALL PANELS

Add the following Clarifications:

1. Provide rigid insulation behind metal wall panels as shown on drawings.
2. Bid Category 14 Joint Sealants will provide joint sealants exposed to view. Provide sealant joints not exposed to view.

## M. BID CATEGORY NO. 13 PAINTING

Add the following Clarifications:

1. Provide final coat of paint in work areas or assemblies after all other construction work in each room/area or assembly is complete. Should contractor elect to proceed with final paint the Contractor assumes responsibility for all touch-up required.
2. Include a $3,00 material allowance and 80 man-hours at the current rate (including all fringe benefits and payroll expenses) for priming and painting walls to be performed at the direction of the Construction Manager. At the end of the project, the unused material allowance and man-hours will be converted into a dollar amount per Wage Scale (including fringe benefits) and returned to the Owner through a deduct Change Order.

## N. BID CATEGORY NO. 14 JOINT SEALANTS

Add the following Clarifications:

1. Additional mobilizations may be required due to various reasons including, but not limited to, sequence of work, winter construction, or access points into the building. Remobilization costs shall be included as necessary, regardless of intent of Guideline Schedule outlining a work category to occur continuously and/or in a single mobilization.
2. Provide caulking the joints between hollow metal frames and masonry walls or drywall/plaster wall surfaces.
3. Provide caulking the joints for all reception desks, circulation desks, cubbies, millwork, Casework shown on Sheets A631 and A632 included but not limited to backsplash, joint between casework and masonry wall, etc.
4. Provide all joint sealants exposed to view at completion of work, including but not limited to interior and exterior joints between Bid Category No. 12 Aluminum, Windows, Glazing, Framed Entrances and Storefronts and adjacent wall, and all joints in box trim and between box trim and window, storefront, and entrances.

## O. BID CATEGORY NO. 15 FLOORING

Add the following Clarifications:

1. Provide, maintain and remove floor protection.

**P. BID CATEGORY NO. 16 TERRAZZO**

Add the following Clarifications:

1. Provide, maintain and remove floor protection for your installed work.
2. Contain grinding dust and perform clean up and removal of grinding slurry on a routine basis.
3. Multiple, phased and sequenced installation, including grinding and polishing operations may be needed in conjunction with the Construction Schedule.

**Q. BID CATEGORY NO. 20 FIRE SUPPRESSION**

Add Section 21 05 13 – Common Motor Requirements for Fire Suppression Equipment
Add Section 21 31 13 – Electric Drive Centrifugal Fire Pumps
Add Section 21 39 00 – Pressure Maintenance Pumps
Add Section 21 39 00 – Controllers for Fire-Pump Drivers

**R. BID CATEGORY NO. 22 MECHANICAL**

Add the following Clarifications:

1. Regarding Specification Section 07 84 13 – Firestopping, and Section 07 92 00 - Joint Sealants; provide Firestopping and Joint Sealants in accordance with the Contract Documents. In general, the Contractor whose work creates a joint that requires firestopping or joint sealant (in the normal sequence of work) is to provide the firestopping or joint sealant. MEP trades are to firestop all their own penetrations.
2. Provide sanitary and storm piping through foundation walls up to and including exterior cleanouts. Reference foundation plumbing plan sheets P000.
3. Each Contractor shall protect finish surfaces of their installed work and finish surfaces encountered during the performance of their work.
4. Provide Gas piping from Gas meter to generator, refer to sheet P000D.
5. Provide Gas meter for new Gas service, coordinate with utility company.
6. Bid Category No. 1 Sitework contractor to provide water service into Mechanical/Boiler Room from City Street. Sitework contractor to terminate above slab on grade.

**S. BID CATEGORY NO. 23 ELECTRICAL**

Add the following Clarifications:

1. Provide all emergency stops for boilers as shown on drawings.
2. Provide digital marquee monument sign including aluminum posts, extruded letters, aluminum box/cabinet, etc.

**E. SPECIFICATION SECTION 01 32 00 – SCHEDULES AND REPORTS**

Part 1.03 GUIDELINE SCHEDULE

A. Refer to the attached Guideline Schedule dated May 11, 2026.

**Part 1.07 PROJECT USE SITE PLAN**

A. Refer to the attached Site Logistics Plan dated April 26, 2026.

**F.** Refer to the attached Request For Information (RFI LOG) summary dated May 12, 2026.

TowerPinkster
Architecture · Engineering · Interiors

# ADDENDUM NO. 1

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|---|---|
| **DATE OF ISSUANCE:** | **May 8, 2026** |
| **PROJECT:** | **El Sol School**<br>**1428 Baker Drive**<br>**Kalamazoo, MI 49048** |
| **OWNER:** | **Kalamazoo Public Schools** |
| **ARCHITECT'S PROJECT NO.:** | **23-622.00** |
| **ORIGINAL BID ISSUE DATE:** | **April 24, 2026** |

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## SCOPE OF WORK

This Addendum includes changes to, or clarifications of, the original Bidding Documents and any previously issued addenda, and shall be included in the Bid. All of these Addendum items form a part of the Contract Documents. The Bidder shall acknowledge receipt of this Addendum in the appropriate space provided on the Bid Form. Failure to do so may result in disqualification of the Bid.

## DOCUMENTS INCLUDED IN THIS ADDENDUM

This Addendum includes **13** pages of text and the following documents:

- Bidding Documents: **None**
- Contract Conditions: **None**
- Specification Sections:
  - **00 0110 TP Table of Contents,**
  - **01 5639 Temporary Tree and Plant Protection,**
  - **05 3100 Steel Decking,**
  - **06 4023 Interior Architectural Woodwork,**
  - **06 4116 Plastic-Laminate-Faced Architectural Cabinets,**
  - **07 2726 Fluid-Applied Membrane Air Barriers,**
  - **07 5323 Ethylene-Propylene-Diene-Monomer (EPDM) Roofing,**
  - **08 0671 Door Hardware Schedule,**
  - **08 1113 Hollow Metal Doors and Frames,**
  - **08 1243 Fire-Resistance-Rated Frames,**
  - **08 4113 Aluminum-Framed Entrances and Storefronts,**
  - **08 4523 Fiberglass-Sandwich-Panel Assemblies,**
  - **08 7100 Door Hardware,**
  - **08 8700 Architectural Window Film,**
  - **11 6800 Playfield Equipment and Structures,**
  - **12 6600 Telescoping Stands,**


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- **21 0513 – Common Motor Requirements for Fire Suppression Equipment,**
- **21 1000 – Water Based Fire Suppression Systems,**
- **21 3113 – Electric Drive, Centrifugal Fire Pumps,**
- **21 3900 – Pressure Maintenance Pumps,**
- **21 3900 – Controllers for Fire-Pump Drivers,**
- **22 4000 – Plumbing Fixtures,**
- **23 0593 – Testing, Adjusting, And Balancing For HVAC,**
- **23 6200 – Packaged Compressor and Condenser Units,**
- **32 1313 Concrete Paving.**

- Drawings:

  **GENERAL: G 004, G 101, G 102**

  **SITE: C 100, C 101, C 102, C 103, C 104, C 202, C 300, C 500, C 502, C 600,**

  **LANDSCAPE: LP 100, LP 104**

  **STRUCTURAL: SG 004, SG 005, SG 006, S 101A, S 101B, S 101C, S 101D, S 101E, S 101F, S 102, S 201A, S 201B, S 201C, S 201D, S 201E, S 201F, S 202A, S 202B, S 202C, S 202D, S 202F, S 203, S 311, S 402, S 405, S 411, S 412, S 413, S 414, S 415, S 416, S 801**

  **ARCHITECTURAL: A 101, A 101F, A 102, A 102D, A 102F, A 103, A 103F, A 201, A 201F, A 303, A 304, A 312, A 323, A 324, A 328, A 333, A 334, A 335, A 354, A 415, A 421B, A 501, A 502, A 503, A 504, A 505, A 506, A 508, A 520F, A 808**

  **INTERIOR: I 101F**

  **PLUMBING/MECHANICAL: FP 101F, FP 501, P 001F, P 101F, P 301, P 401, P 501, M 101B, M 101C, M 101D, M 101E, M 101F, M 102A, M 102B, M 102C, M 102D, M 103, M 201A, M 201B, M 201C, M 201D, M 201E, M 201F, M 202A, M 202B, M 202C, M 202D, M 303, M 310, M 501, M 502, M 503, M 504**

  **ELECTRICAL: ES 101, E 101, E 101C, E 101F, E 102, E 102D, E 102F, E 201A, E 201B, E 201F, E 401, E 402, E 403, E 421, E 501, E 505, E 506, E 801, E 802**

  **TECHNOLOGY: TG 001, T 101A, T 101B, T 101E, T 101F, T 102B, T 301B, T 301F, T 402, T 404, T 443**

**CHANGES TO PREVIOUSLY ISSUED ADDENDA**

None.

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**CHANGES TO SPECIFICATIONS**

**ADD-1 Item No. S-1 - Product Clarification**

Refer to Specification Section: 01 5639 Temporary Tree and Plant Protection, 11 6800 Play Field Equipment and Structures, and 32 1313 Concrete Paving

Removed additional protection-zone fencing materials listed under Section 2.1 so that products, listed match detail on plan sheet.

Added requirement of IPEMA Certification Seal for playground equipment and components, listed under Section 2.1

Changed concrete color from “white” to “gray”, listed under Section 2.4.

**ADD-1 Item No. S-2 - Steel Decking Grade**

Refer to Specification Section: 05 3100 Steel Decking

Remove composite metal deck, and add noncomposite form deck.

Update roof deck and acoustical roof deck minimum grade.

**ADD-1 Item No. S-3 - Quality Assurance and Certification Requirement Clarification**

Refer to Specification Section: 11 6800 Play Field Equipment and Structures

Added requirement for manufacturer to have playground equipment and components certified by IPEMA’s third-party product certification service, listed under Section 1.7

**ADD-1 Item No. S-4 - Telescoping Stands Delegated Design Update**

Refer to Specification Section: 12 6600 Telescoping Stands

Telescoping stands updated to be delegated design per requirements by the State. Motor size and number to be included in the delegated design and any increase above 5 horsepower must be coordinated with building electrical design.

**ADD-1 Item No. S-5 - Additional Specification Added**

Refer to Specification Section: 06 4023 Interior Architectural Woodwork, 06 4116 Plastic-Laminate-Faced Architectural Cabinets, 07 2726 Fluid-Applied Membrane Air Barriers, 08 0671 Door Hardware Schedule, 08 4523 Fiberglass-Sandwich-Panel Assemblies, 08 8700 Architectural Window Film

Above mentioned specifications were added to the Project Manual.

**ADD-1 Item No. S-6 - Additional Contactors and Manufacturers**

Added Control Solutions to list of approved tab contractors (referred to tab spec). Added Aaon to packaged air cooled condensing unit list of approved manufacturers. Added acorn to list of approved manufacturers for stainless steel sinks.

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**ADD-1 Item No. S-7 - Additional Details to Pre-Action System**

Clarification added to section 21 1000 regarding the pre-action system used for fire protection in the gymnasium.

**ADD-1 Item No. S-8 - Storefront and Curtain Wall System Updates**

Refer to Specification Section: 08 0671 Door Hardware Schedule, 08 1113 Hollow Metal Doors and Frames, 08 1243 Fire-Resistance-Rated Frames, 08 4113 Aluminum-Framed Entrances and Storefronts, 08 4523 Fiberglass-Sandwich-Panel Assemblies, 08 7100 Door Hardware, 08 8700 Architectural Window Film

Door hardware sets, additional hardware and hollow metal frame information updated per consultant. Fire-resistant frames updated to include aluminum assemblies. Metal panels as part of storefront or curtain wall systems included in Section 08 4113. Sections 08 4523 and 08 8700 were added to Project Manual.

**ADD-1 Item No. S-9 - EPDM Roofing Update**

Refer to Specification Section: 07 5323 Ethylene-Propylene-Diene-Monomer (EPDM) Roofing

Section 07 5323 was updated to not include substrate or vapor barrier.

**CHANGES TO DRAWINGS**

**ADD-1 Item No. D-1 - Pump Room Addition**

Refer to Sheet(s): G004, G 101, G 102, C 100, C 104, C 300, C 500, C 502, C 600, LP 100, LP 104, SG 004, S 101F, S 201F, A 101, A 101F, A 102, A 102F, A 103, A 103F, A 201, A 201F, A 303, A 501, A 520F, I 101F, FP 101F, FP 501F, P 001F, P 101F, P 401, M 101F, M 103, M 201F, M 503, M 504, ES 101, E 101, E 101F, E 102, E 102F, E 201F, E 401, E 402, E 403, E 505, T 101F, T 301F

Code compliance plans and project square footage area were updated and enlarged code compliance plan provided to reflect Pump Room.

Reissued all architectural drawings with fire pump room.

Revised back parking lot entrance sidewalk, frost footing locations, and planting layout to accommodate Pump Room addition.

The water main route and building entry location were changed to enter into the new fire pump room and the FDC has been relocated to the fire pump room SE wall as well.

Add and adjust strip footings, add roof beams, roof deck, deck angles, roof opening framing, and a lintel. Refer to S 101F and S 201F. Update snow drift plan on SG 004.

Add floor drain and corresponding sanitary piping. Add fire pump, jockey pump, intake hood with motorized damper, add exhaust fan with corresponding ductwork into fire pump room. Add unit heater and corresponding HVAC piping.

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Adjust location of water service entrance as reflected in P 101F drawings. Adjust location of Fire protection piping as shown in FP 101F drawings. Adjust location of fire department connections as shown in P 101F.

Finish Plans were updated to reflect the finishes for the pump room. See I 101F for finish tags.

Security camera location adjusted to corner of building.

Building elevations revised to reflect Pump Room.

Relocate site light at new fire pump room

Reissued all electrical drawings with fire pump room in background

Revised one-line diagram, panel feeder schedules, HVAC feeder schedules, and associated panel load sheets to accommodate fire pump and fire jockey pump.

Revise generator size from 200 KW to 250 KW.

Revise ATS-EM and Panel EM from 250 MB to 350 MB. Revised feeder schedules and panel load sheet.

Relocate fire protection water flow and tamper switches to fire pump room.

Added Fire Department Connection to fire pump room.

Added electrical connections to new EF-21 and UH-6

**ADD-1 Item No. D-2 - Site Dimensions and Sheet Number References**

Refer to Sheet[s]: C 101, C 102, C 103, C 104, C 202

Corrected site layout dimensions which were shown at incorrect scale. Corrected referenced sheet number listed with Keynote 4.8 from C 400 to C 700. Corrected referenced sheet number listed on Detail 3.1/C 202 from A 416 to A 415.

**ADD-1 Item No. D-3 - Planter Foundation**

Refer to Sheet[s]: S 101B, S 101D, S 311, A 415

Widen foundation wall along building at planters, and widen footings as required. Show brick ledge at planters, and provide brick ledge elevation. Update plan dimensions. Add top of wall elevation. Add detail 6/S 311.

Updated cmu thickness to accommodate structural wider footings alongside building exterior planter wall. Refer to sheet A 415 for updates.

**ADD-1 Item No. D-4 - Strip Footing Update**

Refer to Sheet[s]: SG 006

Add strip footing size WF66, and update thickness of WF60 strip footing in Wall Footing Schedule on SG 006.

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**ADD-1 Item No. D-5 - Foundation Update**

Refer to Sheet[s]: S 101D, S 101F

Add foundation wall and footing under wall “bumpouts” on S 101D and S 101F.

Update width of foundation wall and concrete ledge elevation at metal panel under main vestibule’s canopy on S 101D.

**ADD-1 Item No. D-6 - Foundation Steps**

Refer to Sheet[s]: S 101A, S 101B, S 101C, S 101D, S 101E, S 101F

Add and update foundation steps, and update footing elevations for steps. Update CMU walls to concrete walls at deeper steps. Add piers where interior spread footings are dropped.

**ADD-1 Item No. D-7 - Pipe Penetration Keyed Note**

Refer to Sheet[s]: S 101A, S 101B, S 101C, S 101D, S 101E, S 101F

Add keyed note 9 to keyed note schedule and show at foundation wall sleeve locations for underground pipe penetrations on S 101A, S 101B, S 101C, S 101D, S 101E, S 101F.

**ADD-1 Item No. D-8 - Deck Angle and Deck Plate**

Refer to Sheet[s]: S 201B, S 201F, S 202B, S 202C, S 202D, S 202F, S 203, S 414, S 801

Add arrow to callout deck angle at small vestibule on north side of Unit B on S 201B.

Add deck plate callout to wall bordering Units C and D on S 202D. Add deck plate line and callout on S 201F.

Remove deck plates on S 201B, S 201F, S 202B, S 202C, S 202F, S 414, S 801.

Add deck angle callouts to 1/S 203.

**ADD-1 Item No. D-9 - Bearing Plates**

Refer to Sheet[s]: SG 006, S 201A, S 201B, S 201C, S 201D, S 201E, S 201F, S 202B, S 202C, S 202D, S 202F, S 203, S 402, S 801

Add bearing plate size to Steel Lintel Schedule on SG 006. Update joist bearing plate size on detail 2/S 402.

Add bearing plate sizes PL21A through PL28A.

Add bearing plates or update bearing plate sizes on S 201A, S 201B, S 201C, S 201D, S 201E, S 201F, S 202B, S 202C, S 202D, S 202F, S 203, S 801.

**ADD-1 Item No. D-10 - Dumpster Enclosure**

Refer to Sheet[s]: S 102

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Update masonry wall type callout on plan views 1/S 102 and 3/S 102.

Update vertical reinforcement spacing, and show transverse reinforcement on detail 2/S 102.

Update sign foundation strip footing size and reinforcement on plan view 3/S 102 and detail 4/S 102.

**ADD-1 Item No. D-11 - Beam Size**

Refer to Sheet[s]: S 201B

Update beam to shallower size to allow duct to pass below on S 201B.

**ADD-1 Item No. D-12 - Unit B Small Canopy Detail**

Refer to Sheet[s]: S 201B, S 416

Add detail 9/S 401B to show HSS wall bracing and storefront bent plate support.

**ADD-1 Item No. D-13 - W27 Carrying CMU Detail**

Refer to Sheet[s]: S 201C, S 416

Add detail 6/S 416 to show interface of steel beam, precast, weldable rebar, and CMU.

**ADD-1 Item No. D-14 - Unit F Canopy Anchors**

Refer to Sheet[s]: S 415

Update anchor sizes in details 3/S 415 and 5/S 415.

**ADD-1 Item No. D-15 - Weldable Rebar**

Refer to Sheet[s]: S 405

Update typical detail 8/S 405 to show vertical bar as weldable rebar.

**ADD-1 Item No. D-16 - Roof Drain Support Framing**

Refer to Sheet[s]: S 203

Add roof drain support framing.

**ADD-1 Item No. D-17 - HSS Beam Size**

Refer to Sheet[s]: S 412

Add HSS beam size to detail 1/S 412.

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**ADD-1 Item No. D-18 - Gridline Name Correction for Clarity**

Refer to Sheet[s]: S 411

Update gridline names in detail 3/S 411.

**ADD-1 Item No. D-19 - Lintel Name**

Refer to Sheet[s]: S 201C, S 202A, S 203

Update lintel names on S 202A and S 203. Update lintel size on S 201C.

**ADD-1 Item No. D-20 - Unit C Vestibule Roof structure**

Refer to Sheet[s]: S 201C

Update deck type callout, and add beams, deck angles, and deck plate to S 201C vestibule.

**ADD-1 Item No. D-21 - Beam End Reactions**

Refer to Sheet[s]: S 201A, S 201B, S 415, S 801

Add beam end reactions to the framing plans where they exceed those shown on SG 006.

Add beam end reactions to detail 1/S 415 and note referring to detail on S 801.

**ADD-1 Item No. D-22 - Shear Walls at Alternate**

Refer to Sheet[s]: S 801

Show shear wall locations.

**ADD-1 Item No. D-23 - Steel Lintel**

Refer to Sheet[s]: S 202D

Update masonry lintel to steel lintel and shift to align with door's new placement.

**ADD-1 Item No. D-24 - Axial Load**

Refer to Sheet[s]: S 201C

Add axial load at column J-20.

**ADD-1 Item No. D-25 - Miscellaneous Minor Detail Updates**

Refer to Sheet[s]: S 202C, S 411, S 412, S 413, S 414

Update threaded rod note on detail 2/S 411. Add threaded rod detail 9/S 411. Update threaded rod connection on detail 3/S 412. Add spreader plate and weld for threaded rod connection on detail 3/S 413.

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Update HSS support angle thickness to 5/16" thick on detail 3/S 411. Update HSS support angle thickness to 3/8" on detail 5/S 412.

Move arrow tip on WT weld on detail 3/S 414.

**ADD-1 Item No. D-26 - Mechanical Unit Change**

Refer to Sheet[s]: SG 005, SG 006, S 201D, S 415

Remove mechanical unit support steel at mechanical mezzanine on S 201D, and remove detail 8/S 415. Remove loading information from SG 005. Remove base plate BP1 from Base Plate Schedule and column C1 from Steel Column Schedule.

**ADD-1 Item No. D-27 - Parapet Caps and Curtain Wall Head**

Refer to Sheet[s]: S 201B, S 203, S 416, A 103, A 323, A 324

Add details 9/S 416 and 10/S 416 to show HSS and bent plates at top of stud wall.

Parapet cap structure at curtain walls referencing Detail 8B/A 323 updated to include HSS tube and bent plate reinforcement. Detail 10D/A 324 added to demonstrate parapet cap locations where stud structure does not require HSS tube reinforcement.

Parapet gravel stops at curtain walls updated to a 9" vertical face so drip edge lands on mullion.

**ADD-1 Item No. D-28 - Classroom Wing Vestibule Wall Base**

Refer to Sheet[s]: A 328

Section 21/A 328 and Detail 21A/A 328 updated to reflect brick wall base.

**ADD-1 Item No. D-29 - Updates in Mechanical Room 215**

Refer to Sheet[s]: G 102, A 102D, A 304, A 505

Louver size increase to accommodate mechanical equipment. Refer to added details in sheet A 102D and updated louver frame elevation.

Updated location to Door 215B to accommodate mechanical equipment and roof insulation. Added steps into the mechanical room.

**ADD-1 Item No. D-30 - Interior Curtain Wall Head Detail and Elevation**

Refer to Sheet[s]: A 312, A 333, A 504

Curtain wall height lowered to clear structural beam. Refer to Section 10/A 312 and Detail 41/A 333 for brake metal on metal stud infill at curtain wall head. Detail 41/A 333 will be typical at all curtain wall heads terminating at beams unless otherwise indicated. Frame elevation 34/A 504 updated to lower height.

**ADD-1 Item No. D-31 - Fire-Resistive Glass and Frame Updates**

Refer to Sheet[s]: A 504, A 506

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Updated framing system type to indicate the use of fire-resistive glass and frame system.

Updated frame elevation 68 and 69 to be a fire-resistive glass and frame system.

**ADD-1 Item No. D-32 - Wall Sections and Detail Updates**

Refer to Sheet(s): A 335, A 354, A 421B

Updated wall section 2/A335 and its corresponding wall details to improve accuracy of design intent and constructability.

Updated detail 6 & 7/A421B to show rated shaft wall system and other updated finishes.

Updated all plan details in A 354 to improve accuracy of design intent and constructability.

**ADD-1 Item No. D-33 - Stage Framing**

Refer to Sheet(s): A 334

Jamb and head framing at stage opening revised for material transition clarification.

**ADD-1 Item No. D-34 - Display Case Detail Updated**

Refer to Sheet(s): A 508

Updated head and sill detail for the Display case. Refer to display case specifications for more information.

**ADD-1 Item No. D-35 - Door Schedule Updates**

Refer to Sheet(s): A 501, A 502, A 808

Added hardware sets in the door schedules.

Updated head, jamb, and sill detail callouts in door schedule.

**ADD-1 Item No. D-36 - Remove Duplicate EF-8**

Refer to Sheet(s): E 101C

Remove duplicate electrical connection to EF-8.

**ADD-1 Item No. D-37 - Add Connection To P-14**

Refer to Sheet(s): E 101F, E 403

Added electrical connection to new pump P-14. Updated drawings, feeder schedule, and panel load sheets.

**ADD-1 Item No. D-38 - Add Second Connection AHU-5**

Refer to Sheet(s): E 102D, E401, E403, and 501

Revise AHU-5 SF breaker and feeder

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Added AHU-5 RF. Revise floorplans, one-line diagram, feeder schedules, and panel load sheets.

Increased panel size of DP2D

**ADD-1 Item No. D-39 - Add Feeder Information to ACCU-13**

Refer to Sheet(s): E403

Added missing feeder information.

**ADD-1 Item No. D-40 - Add ELDs**

Refer to Sheet(s): E 201A and E 201B

Added ELDs to switched zones with emergency light fixtures.

**ADD-1 Item No. D-41 - Add Un-Lit Acoustic Baffles**

Refer to Sheet(s): E 201B, E 201F, and E 421

Added un-lit acoustic baffles to reception 100, corridor c013 and Corridor C015. Revised fixture part numbers for illuminated baffles.

**ADD-1 Item No. D-42 - Revise Title of Alternate Plan**

Refer to Sheet(s): E 801

Revise title of alternate power plan.

**ADD-1 Item No. D-43 - Add Circuit Information to Alternate Lighting Plan**

Refer to Sheet(s): E 802

Added circuit and light fixture tags to alternate classrooms.

Added additional ELDs and occupancy sensors.

Removed exit signs.

**ADD-1 Item No. D-44 - Light Fixture Schedule Revisions**

Refer to Sheet(s): E 421

Revise fixture HA, increased lumen output.

Revise fixture SA and add new fixture SAE with battery backup.

Revise all exit signs.

Remove exit sign labeling detail.

**ADD-1 Item No. D-45 - Sound Attenuation**

Refer to Sheet(s): M 102A, M 102B, M 102D, M 303, M 310, M 501, M 502

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Add silencers to return and supply ducts out of all air handlers as shown in air handler section cuts and described on M 504. Elbow added to duct runout in office 200D as shown on M 102B. Elbows added to ductwork in ESL 214 and Staff 213. Terminal unit silencers added to terminal units as described on M 504. AHU-5 modified to stacked unit. All fans resized with new static losses from silencers and reduced speed for better sound attenuation. AHU-5 supply main resized for lower static losses. AHU-5 outdoor air intake switched to louver on NE wall of main mechanical room.

**ADD-1 Item No. D-46 - Unit Heater and Cabinet Unit Heater Reselection**

Refer to Sheet(s): M 201A, M 201B, M 201C, M 201 D, M 201E, M 201F, M202A, M 202B, M 202C, M 202D

Reselection of unit heaters and cabinet unit heaters to address concerns of low capacity in unoccupied spaces as described on M 503. Hydronic piping resized corresponding to new flow requirements of new selections as shown in M 200 series drawings.

**ADD-1 Item No. D-47 - Domestic Flow Concerns Addressed**

Booster pump added to domestic system and corresponding hydro-pneumatic tank added as shown on P 301. Specification and piping schematic of booster + tank shown on P 401. Domestic plumbing rerouted to order as service entrance, softener, booster, and finally to the system as shown in P 101F.

**ADD-1 Item No. D-48 - Technology Floor Plan Symbol Definitions**

Refer to Sheet(s): TG 001

Additional information given for symbols that appear on the floorplans.

**ADD-1 Item No. D-49 - Meeting Room Button Panel Rough-ins**

Refer to Sheet(s): T 101A, T 101B

Meeting room button panel rough-in types changed to “AVA” from “AVB”.

**ADD-1 Item No. D-50 - Vestibule C002 Technology Updates**

Refer to Sheet(s): T 101B, T 301B

Updates to technology devices and layout in and around Vestuble C002.

**ADD-1 Item No. D-51 - “PRJ-B” Removal**

Refer to Sheet(s): T 101E, T 402

All “PRJ-B” have been changed to “PRJ-A”. “PRJ-B” detail was removed.

**ADD-1 Item No. D-52 - “PRJ” name changed to “PRJ-C”**

Refer to Sheet(s): T 101F, T 402

“PRJ” has been changed to “PRJ-C” for ceiling. “PRJ” detail was updated to read “PRJ-C”.

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**ADD-1 Item No. D-53 - "WAP" adjustment**

Refer to Sheet(s): T 102B

Wireless access point "WAP" adjusted.

**ADD-1 Item No. D-54 - Elevator Security Camera Cabling Detail added**

Refer to Sheet(s): T 404

Details added for elevator security camera cabling and active components.

**ADD-1 Item No. D-55 - Access Control**

Refer to Sheet(s): T 101B, T 301B, T 443

Added card reader to door C002B. Revised "Access Control Door Schedule."

**END OF ADDENDUM.**

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27 1700 - TESTING, ID AND ADMIN OF BALANCED TWISTED PAIR INFRASTRUCTURE
27 1800 - TESTING, ID AND ADMIN OF FIBER INFRASTRUCTURE
27 2626 - IP ADDRESS REQUEST FORM
27 5123.20 - COMMERCIAL INTERCOMMUNICATIONS AND PROGRAM SYSTEMS

**DIVISION 28 — ELECTRONIC SAFETY AND SECURITY**

28 3100 - FIRE DETECTION AND ALARM

**DIVISION 31 — EARTHWORK**

31 1000 - SITE CLEARING
31 2000 - EARTH MOVING
31 2323 - RAPID IMPACT COMPACTION


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**DIVISION 32 — EXTERIOR IMPROVEMENTS**

32 1216 - ASPHALT PAVING
32 1313 - CONCRETE PAVING
32 1316 - DECORATIVE CONCRETE PAVING
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32 3119 - DECORATIVE METAL FENCES AND GATES
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32 9113 - SOIL PREPARATION
32 9200 - TURF AND GRASSES
32 9300 - PLANTS

**DIVISION 33 — UTILITIES**

33 4100 - STORM UTILITY DRAINAGE PIPING


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# SECTION 01 5639 - TEMPORARY TREE AND PLANT PROTECTION

## PART 1 - GENERAL

### 1.1 SUMMARY

A. The Work of this Section Includes: General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Related Requirements:

1. Section 31 1000 "Site Clearing" for removing existing trees and shrubs and for temporary erosion- and sedimentation-control measures if not specified in Section 01 5000 "Temporary Facilities and Controls".

### 1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
   a. Tree-service firm's personnel and equipment needed to make progress and avoid delays.
   b. Arborist's responsibilities.
   c. Quality-control program.
   d. Coordination of Work and equipment movement with the locations of protection zones.
   e. Field quality control.

### 1.3 ACTION SUBMITTALS

A. Product Data:

1. General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction

B. Shop Drawings:

1. Include plans, elevations, and sections showing trees and plants to be protected, locations of protection-zone fencing and signage, and the relationship between equipment-movement routes and material storage locations with protection zones.
2. Detail fabrication and assembly of protection-zone fencing and signage.
3. Indicate extent of utility boring and trenching by hand or with air spade within protection zones.
4. Include existing irrigation system that will be used to water plants.

C. Tree-Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

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1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

D. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

E. Mitigation Requirements: As required by jurisdiction or as developed by arborist, for mitigation of damage to trees and other plantings. Include the following:

1. Local ordinances governing tree mitigation.
2. Standards established under the approved tree mitigation report developed by the arborist.
3. "Digital Guide for Plant Appraisal" by Council of Tree and Landscape Appraisers.

## 1.4 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For arborist and tree service firm.

B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction in accordance with recognized standards and that trees were promptly and properly treated and repaired when damaged.

C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

E. Quality-control program.

## 1.5 QUALITY ASSURANCE

A. Arborist Qualifications: Certified Arborist as certified by ISA.

B. Tree-Service Firm Qualifications: An experienced tree-service firm that has successfully completed temporary tree- and plant-protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

C. Quality-Control Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work without damaging trees and plantings. Include dimensioned diagrams for placement of protection-zone fencing and signage,

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the arborist's and tree-service firm's responsibilities, instructions given to workers on the use and care of protection zones, and enforcement of requirements for protection zones.

1.6 FIELD CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Moving or parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

D. Take precautions to protect plants from airborne contaminants, such as paint or fireproofing overspray.

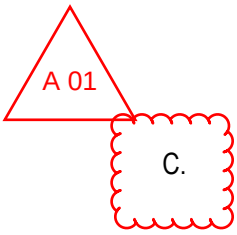
PART 2 - PRODUCTS

2.1 MATERIALS

A. Backfill Soil: Planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.

1. Planting Soil: Planting soil as specified in Section 32 9113 "Soil Preparation"

B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:




1. Type: Shredded hardwood.
2. Size Range: 3 inches maximum, 1/2 inch minimum.
3. Color: Natural.

C. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements: Previously used materials may be used when approved by Architect.

1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with **2-inch** maximum opening in pattern and weighing a minimum of **0.4 lb/ft.**; remaining flexible from **minus 60 to plus 200 deg F**; inert to most chemicals and acids; minimum tensile yield strength of **2000 psi** and ultimate tensile strength of **2680 psi**;

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secured with plastic bands or galvanized-steel or stainless steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than **96 inches** apart.

a. Height: 72 inches.
b. Color: High-visibility orange, nonfading.

## PART 3 - EXECUTION

### 3.1 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

### 3.2 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Architect.

1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours in accordance with arborist's written instructions.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

**END OF SECTION 01 5639**

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## SECTION 05 3100 - STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof deck (wide rib and dovetail).
2. Acoustical roof deck (wide rib and dovetail).
3. ~~Composite metal deck.~~
3. **Noncomposite form deck**

B. Related Requirements:

1. Division 05 Section "Structural Steel Framing" for shop- and field-welded shear connectors.
2. Division 05 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.
3. Division 09 painting Sections for repair painting of primed deck and finish painting of deck.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product certificates.

C. Evaluation reports.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

B. FM Global Listing: Provide steel roof deck evaluated by FM Global and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.


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1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.2 ROOF DECK

A. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade ~~33~~ **50** minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer. Prime both sides of deck.
2. Deck Profile: Type WR, wide rib.
3. Profile Depth: As indicated.
4. Design Uncoated-Steel Thickness: As indicated.
5. Span Condition: Triple span or more.
6. Side Laps: Overlapped or Interlocking seams.

B. Acoustical Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade ~~33~~ **40** minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer. Prime both sides of deck.
2. Deck Profile: Dovetail (Epicore or Versa-Dek)
3. Profile Depth: As indicated.
4. Design Uncoated-Steel Thickness: As indicated.
5. Span Condition: Triple span or more.
6. Side Laps: Overlapped or Interlocking seams.
7. Acoustical Perforations: Deck units with manufacturer's standard perforated vertical webs.
8. Sound-Absorbing Insulation: Manufacturer's standard premolded roll or strip of glass or mineral fiber.
    a. Installation of sound-absorbing insulation is specified in Division 07 Section.


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9. Acoustical Performance: As indicated.

~~2.3 COMPOSITE FLOOR DECK~~

~~A. Composite Steel Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 30, with the minimum section properties indicated, and with the following:~~

~~1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.~~

~~2. Profile Depth: As indicated.~~

~~3. Design Uncoated-Steel Thickness: As indicated.~~

~~4. Span Condition: Triple span or more.~~

**2.3 NONCOMPOSITE FORM DECK**

**A. Fabricate ribbed-steel-sheet noncomposite form-deck panels to comply with "SDI Specifications and Commentary for Noncomposite Steel Form Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:**

**1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 50 minimum, with top and underside surface shop primed with manufacturer's standard baked-on, rust-inhibitive primer.**

**2. Profile Depth: As indicated.**

**3. Design Uncoated-Steel Thickness: As indicated.**

**4. Span Condition: Triple span or more.**

2.4 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Welds and Mechanical Fasteners: Provide fasteners to supporting structure as specified on the drawings for individual decking types. Comply with the following:

1. Powder-actuated carbon steel fasteners: Hilti X ENP 19 L 15 or Hilti X HSN24, or other pre-approved alternate.
2. Fasten metal deck to cold-formed metal trusses with fasteners as indicated on drawings.
3. Welds: min. 5/8” effective diameter.

C. Side-Lap Fasteners: Provide sidelap fasteners as specified on the drawings based on individual decking types. Acceptable types of connectors:

1. Hilti S-SLC 01 M HWH sidelap connector.
2. No. 12 Self-drilling carbon steel screws.


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3. Other pre-approved alternate.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0747 inch thick, with factory-punched hole of 3/8-inch minimum diameter.

G. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

A. General: Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

1. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
2. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
3. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
4. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
5. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
6. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

### 3.2 INSTALLATION OF ROOF DECK

A. Fasten roof-deck panels to steel supporting members as indicated on the drawings.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, as indicated on the drawings.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

D. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.


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1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

E. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

## 3.3 INSTALLATION OF FLOOR DECK

A. Fasten floor-deck panels to steel supporting members as indicated on the drawings.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports as indicated on the drawings.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

## 3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

## 3.5 PROTECTION

A. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

**END OF SECTION 05 3100**


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# SECTION 06 4023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

## 1.1 SUMMARY

A. Section Includes:

1. Interior millwork for Office and Library.
2. Compact-Laminate panels

B. Related Requirements:

1. Section 06 1000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing interior architectural woodwork that are concealed within other construction before interior architectural woodwork installation.
2. Section 06 4116 " Plastic-Laminate Faced Architectural Cabinets" for custom-fabricated cabinets to fit within and abut interior architectural woodwork.
3. Section 09 3000 "Tiling" for tile and cementitious backer applied to face of interior architectural woodwork.
4. Section 09 9123 "Interior Painting" for finishing of painted components of interior architectural woodwork.
5. Section 09 9300 "Staining and Transparent Finishing" for finishing of wood trim components of interior architectural woodwork.
6. Section 12 3623.13 "Plastic-Laminate-Clad Countertops."
   Section 12 3661.16 "Solid Surfacing Countertops."

## 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For interior architectural woodwork.

1. Fully dimensioned shop drawings showing layouts and components, including edge conditions, joinery, terminating conditions, substrate construction, cutouts and holes, and provisions for attachment to substrates. Include elevations, section details, and large-scale details. Indicate color, pattern, and finish selections.
   a. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
   b. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets and other items installed in architectural woodwork.
   c. Show grain direction of any surface materials.

C. Samples for Verification: For the following:

1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.
2. Bulletin Board Cork: 4 by 4 inches (100 by 100mm), for each type, color and pattern required.
3. Wood Trim: 1 by 2 inches, Finished in color and system specified.



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4. Impact Resistant Wood Trim: Indicated thickness, at least 6 inches long including one finished end, for each type required.
5. Compact-Laminate: 4 by 4 inches (100 by 100mm), for each type, color and pattern required.
6. Painted MDF: 4 by 4 inches (100 by 100mm), for each type, color and finish required.
7. Solid Surface: 4 by 4 inches (100 by 100mm), for each type, color and pattern required.
8. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

## 1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program.

## 1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Shop Certification: AWI's Quality Certification Program accredited participant.

B. Installer Qualifications: AWI's Quality Certification Program accredited participant.

C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver interior architectural woodwork until painting and similar finish operations that might damage woodwork have been completed in installation areas. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

## 1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where interior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.



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C. Established Dimensions: Where interior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

## PART 2 - PRODUCTS

### 2.1 INTERIOR ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

B. Grade: Premium.

C. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.

1. Laminate Cladding for Exposed Surfaces:
   a. Horizontal Surfaces: Grade HGS.
   b. Vertical Surfaces: Grade VGS.
   c. Door and Drawer Edges: PVC edge banding, thick.
   d. Countertop Edges: PVC edge banding, 3mm thick.
   e. Retain one edge construction from "Edges" Subparagraph below. Coordinate with standards and grade selection.
   f. Other Edges: PVC edge banding, thick.
   g. Pattern Direction: Horizontal, unless noted otherwise.

D. Compact-Laminate Panel

1. Compact-Laminate Panel .
2. Manufacturer’s standard fire-rated phenolic-core panel materials.
   a. Core Color: manufacturer’s standard, black.

E. Bulletin Board for Exposed Surfaces:

1. Comply with all manufacturer’s recommendations for vertical installation; including but not limited to surface preparation, adhesives, cleaning, protection, etc.

### 2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.

1. MDF: ANSI A208.2, Grade 130.



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2. Particleboard: ANSI A208.1, Grade M-2.

## 2.3 MISCELLANEOUS MATERIALS

A. Support Brackets: As indicated by manufacturer's designations on drawings.

B. Reveals, Corners, and Trims: As indicated by manufacturer's designations on drawings.

C. Grommets: As indicated by manufacturer's designations on drawings.

D. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

E. Anchors and Fasteners: as required by fabricator to support indicated installation.

1. Anchors/Fasteners to be concealed to the maximum extent possible.
2. Anchors/Fasteners to be countersunk where possible.

## 2.4 FABRICATION

A. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

B. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items.

C. Fasteners and Anchors shall be concealed to the maximum extent possible, any exposed fasteners must be limited to interior/user face of desks only.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

A. Before installation, condition interior architectural woodwork to average prevailing humidity conditions in installation areas.

B. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.

C. Install interior architectural woodwork level, plumb, true in line, and without distortion. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates. Do not use face fastening or exposed fasteners.



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# SECTION 06 4116 - PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-faced architectural cabinets.
2. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets that are not concealed within other construction.

B. Related Requirements:

1. Section 06 1000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
2. Section 12 3216 "Manufactured Plastic-Laminate-Faced Casework" for plastic-laminate casework of stock design.
3. Section 12 3623.13 "Plastic-Laminate-Clad Countertops."
4. Section 12 3661.16 “Solid Surface Countertops”.

### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For plastic-laminate-faced architectural cabinets.

1. Include plans, elevations, sections, and attachment details.

2. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples: For each exposed product and for each color and texture specified, in manufacturer's or fabricator's standard size.

D. Samples for Verification: For the following:

1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.

### 1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Qualification Data: For Installer.

C. Quality Standard Compliance Certificates: [AWI Quality Certification Program].


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1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Shop Certification: AWI's Quality Certification Program accredited participant.

B. Installer Qualifications: AWI's Quality Certification Program accredited participant.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of cabinets indicated for construction, finishes, installation, and other requirements.

1. Provide inspections of fabrication and installation together with labels and certificates from AWI certification program indicating that woodwork complies with requirements of grades specified.

B. Grade: Premium.

C. Type of Construction: Frameless.

D. Door and Drawer-Front Style: Flush overlay.


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E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.

F. Laminate Cladding for Exposed Surfaces:

1. Horizontal Surfaces: Grade HGS.
2. Vertical Surfaces: Grade VGS.
3. Door and Drawer Edges: PVC edge banding, 0.12 inch thick.

4. Other Edges: Grade VGS.
5. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.

G. Materials for Semi-exposed Surfaces:

1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
2. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
   a. Edges of Plastic-Laminate Shelves: PVC edge banding, 0.12 inch thick, matching laminate in color, pattern, and finish.

   b. Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.

3. Drawer Sides and Backs: Thermoset decorative panels with PVC or polyester edge banding.

H. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

I. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued dovetail joints.

J. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. Plastic Laminate: As indicated by laminate manufacturer's designations on Drawings.
2. PVC Edgebanding; As indicated on Drawings.

## 2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 5 to 10 percent.
2. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.


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2. Particleboard: ANSI A208.1, Grade M-2.

3. Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

## 2.3 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.

B. Butt Hinges: 2-3/4-inch, five-knuckle steel hinges made from 0.095-inch- thick metal, and as follows:

1. Semiconcealed Hinges for Flush Doors: BHMA A156.9, B01361.
2. Semiconcealed Hinges for Overlay Doors: BHMA A156.9, B01521.

C. Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.

D. Catches: Magnetic catches, BHMA A156.9, B03141.

E. Catches: [Magnetic catches, BHMA A156.9, B03141] [Push-in magnetic catches, BHMA A156.9, B03131] [Roller catches, BHMA A156.9, B03071] [Ball friction catches, BHMA A156.9, B03013].

F. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

G. Shelf Rests: BHMA A156.9, B04013; plastic, two-pin type with shelf hold-down clip.

H. Drawer Slides: BHMA A156.9.

1. Grade 1 and Grade 2: Side mounted.
2. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.
3. For drawers more than 3 inches high, but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100.
4. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200.

I. File Rails

J. Door and Drawer Silencers: BHMA A156.16, L03011.

K. Grommets for Cable Passage: as indicated by manufacturer’s designation on drawings.

L. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.

1. Satin Stainless Steel: BHMA 630.

M. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.


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2.4 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesive for Bonding Plastic Laminate: Contact cement.

2.5 FABRICATION

A. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

B. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

B. Grade: Install cabinets to comply with quality standard grade of item to be installed.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inchesusing concealed shims.

1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with fasteners appropriate for substrate.
4. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with [No. 10 wafer-head screws sized for not less than **1-1/2-inch** penetration into wood framing, blocking, or hanging strips] [No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish] [toggle bolts through metal backing or metal framing behind wall finish].

**END OF SECTION 06 4116**


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# SECTION 07 2726 - FLUID-APPLIED MEMBRANE AIR BARRIERS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Vapor-retarding, fluid-applied air barriers.

B. Related Requirements:

1. Section 06 1600 "Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.

### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For air-barrier assemblies.

1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
3. Include details of interfaces with other materials that form part of air barrier.

### 1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product certificates.

### 1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Remove and replace liquid materials that cannot be applied within their stated shelf life.

B. Protect stored materials from direct sunlight.

### 1.6 FIELD CONDITIONS


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A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.

1. Protect substrates from environmental conditions that affect air-barrier performance.
2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

B. Cover air barriers within time limit recommended by air barrier manufacturer.

## PART 2 - PRODUCTS

### 1.1 PERFORMANCE REQUIREMENTS

A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

### 1.2 HIGH-BUILD AIR BARRIERS, VAPOR RETARDING

A. High-Build, Vapor-Retarding Air Barrier: Synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of 35 mils or thicker over smooth, void-free substrates.

1. Synthetic Polymer Type:

a. Products: Subject to compliance with requirements, provide one of the following:

1) Carlisle Coatings & Waterproofing Inc; Fire Resist Barritech NP.
2) Grace Construction Products; W.R. Grace & Co. -- Conn.; Perm-A-Barrier Liquid.
3) Henry Company; Air-Bloc 32MR.
4) Rubber Polymer Corporation, Inc.; Rub-R-Wall Airtight.
5) Tremco Incorporated; ExoAir 130.

2. Physical and Performance Properties:

a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
b. Vapor Permeance: Maximum 0.1 perm; ASTM E 96/E 96M, Desiccant Method.
c. Ultimate Elongation: Minimum 300 percent; ASTM D 412, Die C.
d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D 4541.
e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
a. UV Resistance: Can be exposed to sunlight for 60 days according to manufacturer's written instructions.
b. Service Temperature Range: From -20 deg F to 160 deg F.


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1.3 MEDIUM-BUILD AIR BARRIERS, VAPOR RETARDING

A. Medium-Build, Vapor-Retarding Air Barrier: Synthetic polymer material with an installed dry film thickness, according to manufacturer's written instructions, of 17 to 30 mils over smooth, void-free substrates.

1. Products: Subject to compliance with requirements, provide one of the following:

a. BASF Corporation; Wall Systems; Senershield-VB.
b. GE Construction Sealants; Momentive Performance Materials Inc.; SEC2500 SilShield AWB.

2. Physical and Performance Properties:

a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
b. Vapor Permeance: Maximum 0.1 perm; ASTM E 96/E 96M, Desiccant Method.
c. Ultimate Elongation: Minimum 350 percent; ASTM D 412, Die C.
d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D 4541.
e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
f. UV Resistance: Can be exposed to sunlight for 90 days according to manufacturer's written instructions.
g. Service Temperature Range: From -20 deg F to 160 deg F.

1.2 ACCESSORY MATERIALS

A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

PART 3 - EXECUTION

1.1 SURFACE PREPARATION

A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.

B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

C. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.

D. Remove excess mortar from masonry ties, shelf angles, and other obstructions.


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E. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

A. Bridge isolation joints expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

1.2 INSTALLATION

A. Install materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.

1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.
3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.

B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

C. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.

D. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.

E. Application: Apply continuous unbroken air-barrier material to substrates in thickness and number of coats recommended in writing by air barrier manufacturer. Apply air-barrier material in full contact around protrusions such as masonry ties.

F. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

1.3 CLEANING AND PROTECTION

A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

B. Remove masking materials after installation.


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END OF SECTION 07 2726


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# SECTION 07 5323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
2. Roof insulation.
3. Cover board.
4. Walkways.

B. Section includes installation of sound-absorbing insulation strips in ribs of roof deck. Sound-absorbing insulation strips are furnished under Section 05 3100 "Steel Decking."

C. Related Requirements:

1. Section 06 1000 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 7100 "Roof Specialties" for manufactured copings and roof edge flashings.
3. Section 07 7200 "Roof Accessories" for roof curbs, roof hatches and walkways.
4. Section 07 9200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
5. Section 22 1423 "Storm Drainage Piping Specialties" for roof drains.

### 1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D1079 and glossary of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

### 1.3 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Construction Manager, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review temporary protection requirements for roofing system during and after installation.


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8. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. FM Approvals' RoofNav Listing:

1. For insulation and roof system component fasteners, include copy of FM Approvals' RoofNav listing. Submittal package must indicate the RoofNav Assembly numbers being used on the project, and must contain a complete FM Approvals' RoofNav assembly report indicating the required fasteners for each component of the roof assembly. A separate assembly number and report must be provided for each of the fire/windstorm classifications listed under the performance requirements for each zone of the roof.

C. Shop Drawings: Include roof plans with project specific sections, details, and attachments to other work. Generic details from manufacturer's catalog will not satisfy this requirement. Roof plan shall be coordinated with the FM Approvals' RoofNav listing, and shall include the following:

1. Layout and thickness if insulation and cover board.
2. Insulation and cover board fastening patterns for corner, perimeter, and field-of-roof locations.
3. Base flashings and membrane terminations.
4. Flashing details at penetrations and equipment curbs.
5. Tapered insulation, thickness, and slopes.
6. Orientation of steel roof deck
7. Orientation and joint locations of roof membrane.
8. Membrane fastening patterns for corner, perimeter, and field-of-roof locations.

D. Samples for Verification: For the following products:

E. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article. Include evidence of complying with performance requirements.
2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.

C. Product Test Reports: For components of roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.


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D. Evaluation Reports: For components of roofing system, from ICC-ES.

1. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.

E. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed, listed in FM Approvals' RoofNav, and listed in SPRI's Directory of Roof Assemblies for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.


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1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, substrate board, vapor retarders, walkway products, flashings and counter flashings, copings and facias, and other components of roofing system.
2. Wind Speed: Warranty shall not have limitation for wind damage for wind speed less than 115 mph (185 kph).
3. Wind Uplift: Warranty shall not have limitation for damage for wind uplift less than the uplift resistance values specified under performance requirements.
4. Warranty Period: 20years from Date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, signed by Installer, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, flashings and counter flashings, copings and facias, for the following warranty period:

1. Warranty Period: Two years from Date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing system and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and flashings shall remain watertight.

1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the Resistance to Foot Traffic Test in FM Approvals 4470.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897:

1. Zone 1 (Roof Area Field): 28.4 lbf/sq. ft..
2. Zone 2 (Roof Area Perimeter): 47.7 lbf/sq. ft. (2.28 kPa/sq. m).
3. Zone 3 (Roof Area Corners): 71.8 lbf/sq. ft. (3.44 kPa/sq. m).

D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.

1. Fire/Windstorm Classification:


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a. Zone 1 (Roof Area Field): Class 1A-60.
b. Zone 2 (Roof Area Perimeter): Class 1A-105.
c. Zone 3 (Roof Area Corners): Class 1A-150.

2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 MH.

E. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.

F. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

G. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

## 2.2 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

A. Manufacturers:

1. Subject to compliance with requirements, provide products by one of the following:

a. Carlisle SynTec Incorporated.
b. Firestone Building Products.
c. Johns Manville; a Berkshire Hathaway company.

B. EPDM Sheet: ASTM D4637/D4637M, Type I, nonreinforced, EPDM sheet.

1. Thickness: 60 mils, nominal.
2. Exposed Face Color: Gray.
3. Source Limitations: Obtain components for roofing system from roof membrane manufacturer.
4. Application: Adhered as a part of a new roofing system.

## 2.3 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.

1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.

a. Plastic Foam Adhesives: 50 g/L.
b. Gypsum Board and Panel Adhesives: 50 g/L.
c. Multipurpose Construction Adhesives: 70 g/L.
d. Fiberglass Adhesives: 80 g/L.
e. Contact Adhesives: 80 g/L.
f. PVC Welding Compounds: 510 g/L.


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g. Other Adhesives: 250 g/L.
h. Single-Ply Roof Membrane Sealants: 450 g/L.
i. Nonmembrane Roof Sealants: 300 g/L.
j. Sealant Primers for Nonporous Substrates: 250 g/L.
k. Sealant Primers for Porous Substrates: 775 g/L.

B. Sheet Flashing: 60-mil- thick EPDM, partially cured or cured, according to application.

C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.

D. Bonding Adhesive: Manufacturer's standard.

E. Low-Rise, Urethane, Fabric-Backed Membrane Adhesive: Roof system manufacturer's standard spray-applied, low-rise, two-component urethane adhesive formulated for compatibility and use with fabric-backed membrane roofing.

F. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 3-inch- wide minimum, butyl splice tape with release film. Factory-applied seam tape will not be accepted.

G. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.

H. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

I. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

J. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to roofing system manufacturer.

K. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

## 2.4 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured by EPDM roof membrane manufacturer, approved for use in FM Approvals' RoofNav-listed roof assemblies.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

1. Compressive Strength: 20 psi.
2. Thermal Resistance: Minimum R-15
3. Thickness: As indicated on drawings.
    a. Base Layer: 2-1/2 inches
    b. Upper Layer: 2-1/2 inches

C. Composite Polyisocyanurate Board Insulation will not be accepted.


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D. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Match roof insulation.
2. Minimum Thickness: 1/4 inch.

a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
b. Saddles: 1/4 inch per foot unless otherwise indicated on Drawings.
c. Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

## 2.5 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
2. Full-spread, spray-applied, low-rise, two-component urethane adhesive.

D. Cover Board: ASTM C1289 Type II, Class 4, Grade 1, 1/2-inch- thick polyisocyanurate, with a minimum compressive strength of 80 psi. Thermal Resistance: Minimum R 2.5.

## 2.6 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, approximately 3/16 inch thick and acceptable to roofing system manufacturer.

1. As defined in section 07 7200
2. Size: Manufacturers standard.
3. Color: Contrasting with roof membrane.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations.


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3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 05 3100 "Steel Decking."
4. Verify minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than recommended by roofing system manufacturer when tested according to ASTM F2170. Submit test reports within 24 hours of performing tests.
6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
7. Verify that joints in precast concrete roof decks have been grouted flush with top of concrete.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Install sound-absorbing insulation strips according to acoustical roof deck manufacturer's written instructions.

## 3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions, submitted FM Approvals' RoofNav assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

## 3.4 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over Metal Decking:

1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows and with long joints continuous at right angle to flutes of decking.

    a. Locate end joints over crests of decking.
    b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.


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c. Make joints between adjacent insulation boards not more than 1/4 inch in width.
d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches. Trim insulation so that water flow is unrestricted.
e. Fill gaps exceeding 1/4 inch with insulation.
f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
g. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.

1) Fasten insulation according to requirements in submitted FM Approvals' RoofNav for specified Windstorm Resistance Classification.
2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.

a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
f. Trim insulation so that water flow is unrestricted.
g. Fill gaps exceeding 1/4 inch with insulation.
h. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
i. Adhere each layer of insulation to substrate using adhesive according to submitted FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

D. Installation Over Concrete Decks:

1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.

a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
b. Make joints between adjacent insulation boards not more than 1/4 inch in width.
c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches. Trim insulation so that water flow is unrestricted.
d. Fill gaps exceeding 1/4 inch with insulation.
e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.


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f. Adhere base layer of insulation to concrete roof deck according to submitted FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

1) Set insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.

a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches. Trim insulation so that water is unrestricted.
f. Fill gaps exceeding 1/4 inch with insulation.
g. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
h. Adhere each layer of insulation to substrate using adhesive according to submitted FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

## 3.5 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. At internal roof drains, conform to slope of drain sump. Trim cover board so that water flow is unrestricted.
3. Cut and fit cover board tight to nailers, projections, and penetrations.
4. Adhere cover board to substrate using adhesive according to submitted FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

a. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
b. Fasten cover board to resist specified uplift pressure at corners, perimeter, and field of roof.


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3.6 INSTALLATION OF ADHERED ROOF MEMBRANE

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Unroll membrane roof membrane and allow to relax before installing.

C. Start installation of roofing in presence of roofing system manufacturer's technical personnel and Owner's testing and inspection agency.

D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and according to submitted FM Approvals' RoofNav listed roof assembly requirements for specified Windstorm Resistance Classification. Allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.

G. Apply roof membrane with side laps shingled with slope of roof deck..

H. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape.

1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
2. Apply lap sealant and seal exposed edges of roofing terminations.

I. Do not use Factory-Applied Seam Tape.

J. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

K. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.7 INSTALLATION OF BASE FLASHING

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.


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E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

## 3.8 INSTALLATION OF WALKWAYS

A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.

1. Install flexible walkways at the following locations:
   a. Provide 200 feet of walkways to be located on the room per Owner and Architect.

2. Provide 6-inch clearance between adjoining pads.
3. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

## 3.9 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to inspect substrate conditions, surface preparation, roof membrane application, sheet flashings, protection, and drainage components, and to furnish reports to Architect.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.

C. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

## 3.10 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 07 5323**


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# SECTION 08 0671 – DOOR HARDWARE SCHEDULE

## PART 1 - GENERAL

### RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

### SUMMARY

B. This Section references specification sections relating to commercial door hardware for the following:

1. Swinging doors.
2. Sliding Doors.
3. Other doors to the extent indicated.

C. Commercial door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical and access control door hardware.
3. Electromechanical and access control door hardware power supplies, back-ups and surge protection.
4. Automatic operators.
5. Cylinders specified for doors in other sections.

D. Related Sections:

1. Division 08 Section “Door Hardware”.

E. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

F. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.


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SUBMITTALS

G. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

H. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

I. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.

J. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

K. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

L. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.


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## DELIVERY, STORAGE, AND HANDLING

M. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

N. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

O. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

## WARRANTY

P. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

## MAINTENANCE SERVICE

Q. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

## PRODUCTS

## SCHEDULED DOOR HARDWARE

R. Refer to “PART 3 – EXECUTION” for required specification sections.

## EXECUTION

## DOOR HARDWARE SETS

S. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.


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4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

T. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.

1. Section 08 7100 – Door Hardware.

U. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. SU - Securitron
4. RO - Rockwood
5. SA - SARGENT
6. RU - Corbin Russwin
7. BE - BEST Locks & Closers
8. HS - HES
9. NO - Norton Rixson
10. OT - Other
11. LU - Lund Equipment Co

## Hardware Sets

### Set: 1.0

Doors: C001C

| | | | | | |
|---|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 Electrified Mullion | EL980 | PC | SA | 087100 | ϟ |
| 1 Rim Exit Device, Nightlatch | PED5247 M52 M54 K157ET | 630 | RU | 087100 | |
| 1 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 | |
| 3 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 4 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 9600 | 630 | HS | 087100 | ϟ |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ϟ |


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| | | | | | |
|---|---|---|---|---|---|
| 1 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 | |
| 1 Vandal Resistant Trim | VRT22 C | US32D | RO | 087100 | |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 | |
| 2 Sweep | 345CNB TKSP | | PE | 087100 | |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 | |
| 2 ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ⚡ |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ⚡ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ⚡ |
| 1 Remote Push Button | - Provided by Others | | OT | 281300 | ⚡ |
| 1 A-Phone | - Provided by Others | | OT | 281300 | |

Notes:

Doors normally closed and locked.
Presentation of valid credential at card reader, or Aiphone / remote pushbutton unlocks electric strike allowing ingress.
Free egress at all times.
Fail-secure.

**Set: 2.0**

Doors: 152B

| | | | | | |
|---|---|---|---|---|---|
| 1 Continuous Hinge | CFM-SLF-HD1 PT | | PE | 087100 | |
| 1 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 Electric Power Transfer | EL-CEPT | 630 | SU | 087100 | ⚡ |
| 1 Flush Bolt | 555 | US26D | RO | 087100 | |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 | |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 1500C | 630 | HS | 087100 | ⚡ |
| 1 Strike Latch Guard | 150 | | HS | 087100 | |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ⚡ |
| 1 Concealed Overhead Holder/Stop | 6-X36 | 630 | NO | 087100 | |


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| | | | | | |
|---|---|---|---|---|---|
| 1 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 | |
| 2 Sweep | 345CNB TKSP | | PE | 087100 | |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 | |
| 1 ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ⚡ |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ⚡ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ⚡ |

Notes:

Doors normally closed and locked.
Presentation of valid credential at card reader unlocks electric strike allowing ingress.
Free egress at all times.
Fail-secure.

**Set: 3.0**

Doors: 155D, C003B, C004B, C005B, C006B, C007B, C017A

| | | | | | |
|---|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 Electrified Mullion | EL980 | PC | SA | 087100 | ⚡ |
| 1 Rim Exit Device, Nightlatch | PED5247 M52 M54 K157ET | 630 | RU | 087100 | |
| 1 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 | |
| 3 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 4 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 9600 | 630 | HS | 087100 | ⚡ |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ⚡ |
| 1 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 | |
| 1 Vandal Resistant Trim | VRT22 C | US32D | RO | 087100 | |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 | |
| 2 Sweep | 345CNB TKSP | | PE | 087100 | |


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| | | | | | |
|---|---|---|---|---|---|
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 | |
| 2 ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ϟ |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ϟ |

Notes:

Doors normally closed and locked.
Presentation of valid credential at card reader unlocks electric strike allowing ingress.
Free egress at all times.
Fail-secure.

**Set: 4.0**

Doors: 153, C002D

| | | | | | |
|---|---|---|---|---|---|
| 1 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 Rim Exit Device, Nightlatch | PED5247 M52 M54 K157ET | 630 | RU | 087100 | |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 2 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 9600 | 630 | HS | 087100 | ϟ |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ϟ |
| 1 Vandal Resistant Trim | VRT22 C | US32D | RO | 087100 | |
| 1 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 | |
| 1 Sweep | 345CNB TKSP | | PE | 087100 | |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 | |
| 1 ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ϟ |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ϟ |


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Notes:

Door normally closed and locked.
Presentation of valid credential at card unlocks electric strike allowing ingress.
Free egress at all times.
Fail-secure.

**Set: 5.0**

Doors: 215B, 216, C016

| | | | | |
|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 Removable Mullion | 910KM | | RU | 087100 |
| 1 Rim Exit Device, Nightlatch | PED5247 M52 M54 K157ET | 630 | RU | 087100 |
| 1 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 |
| 3 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 4 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 |
| 1 Vandal Resistant Trim | VRT22 C | US32D | RO | 087100 |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 |
| 2 Sweep | 345CNB TKSP | | PE | 087100 |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 |

**Set: 6.0**

Doors: 150A, 151, 154

| | | | | |
|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 Flush Bolt | 555 | US26D | RO | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |


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| | | | | | |
|---|---|---|---|---|---|
| 1 | Concealed Overhead Holder/Stop | 6-X36 | 630 | NO | 087100 |
| 1 | Surface Closer | CPS7500 | 689 | NO | 087100 |
| 1 | Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 |
| 2 | Sweep | 345CNB TKSP | | PE | 087100 |
| 1 | Threshold | 1715AK MSES25SS | | PE | 087100 |

**Set: 7.0**

Doors: 151A

| | | | | | |
|---|---|---|---|---|---|
| 1 | Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 | Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 | Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 | Surface Closer | CPS7500 | 689 | NO | 087100 |
| 1 | Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 | Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 |
| 1 | Sweep | 345CNB TKSP | | PE | 087100 |
| 1 | Threshold | 1715AK MSES25SS | | PE | 087100 |

**Set: 8.0**

Doors: 106B, S02.1B, 202

| | | | | | |
|---|---|---|---|---|---|
| 1 | Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 | Rim Exit Device, Nightlatch | PED5247 M54 K157ET M51 | 630 | RU | 087100 |
| 1 | Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 | Vandal Resistant Trim | VRT22 C | US32D | RO | 087100 |
| 1 | Surface Closer | CPS7500 | 689 | NO | 087100 |
| 1 | Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 |
| 1 | Sweep | 345CNB TKSP | | PE | 087100 |
| 1 | Threshold | 1715AK MSES25SS | | PE | 087100 |


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**Set: 9.0**

Doors: 158D

| | | | | |
|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 Removable Mullion | 910KM | | RU | 087100 |
| 2 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 |
| 3 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 3 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 |
| 2 Sweep | 345CNB TKSP | | PE | 087100 |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 |

**Set: 10.0**

Doors: C002C

| | | | | |
|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 Removable Mullion | 910KM | | RU | 087100 |
| 2 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 |
| 3 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 3 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 2 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 |
| 2 Sweep | 345CNB TKSP | | PE | 087100 |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 |

**Set: 11.0**

Doors: C001D

| | | | | |
|---|---|---|---|---|
| 1 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with | 626 | BE | 087100 |


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| | | | | | |
|---|---|---|---|---|---|
| | disposable construction core) | | | | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 | |
| 1 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 | |
| 1 Sweep | 345CNB TKSP | | PE | 087100 | |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 | |

**Set: 12.0**

Doors: 110B, 111B, 112B, 113B, 117C, 133B, 134B, 136B, 137B, 139B, 140B, 141B, 142B, 143B, 153B

| | | | | | |
|---|---|---|---|---|---|
| 1 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 Rim Exit Device, Exit Only | PED5201 M54 EO M51 | 630 | RU | 087100 | |
| 1 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 1 Weatherstrip | - integral within construction of door and frame assembly | | OT | 08 4113 | |
| 1 Sweep | 345CNB TKSP | | PE | 087100 | |
| 1 Threshold | 1715AK MSES25SS | | PE | 087100 | |

**Set: 13.0**

Doors: C001A, C003A

| | | | | | |
|---|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 Electrified Mullion | EL980 | PC | SA | 087100 | ⚡ |
| 1 Rim Exit Device, Nightlatch | PED5247 M52 M54 K157ET | 630 | RU | 087100 | |
| 1 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 | |
| 3 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 4 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 9600 | 630 | HS | 087100 | ⚡ |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ⚡ |
| 1 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 | |
| 1 Vandal Resistant Trim | VRT22 C | US32D | RO | 087100 | |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 2 ElectroLynx Harness | QC-C1500P (power transfer | | MK | 087100 | ⚡ |


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| | | | | | |
|---|---|---|---|---|---|
| | or electric strike to junction box above) | | | | |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ϟ |

Notes:

Doors normally closed and locked.
Presentation of valid credential at card reader unlocks electric strike allowing ingress.
Free egress at all times.
Fail-secure.

**Set: 14.0**

Doors: C002B

| | | | | | |
|---|---|---|---|---|---|
| 1 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 Rim Exit Device, Nightlatch | PED5247 M52 M54 K157ET | 630 | RU | 087100 | |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 2 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 9600 | 630 | HS | 087100 | ϟ |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ϟ |
| 1 Vandal Resistant Trim | VRT22 C | US32D | RO | 087100 | |
| 1 Surface Closer | CPS7500 | 689 | NO | 087100 | |
| 1 ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ϟ |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ϟ |

Notes:

Door normally closed and locked.
Presentation of valid credential at card unlocks electric strike allowing ingress.
Free egress at all times.
Fail-secure.


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**Set: 15.0**

Doors: C001E

| | | | | | |
|---|---|---|---|---|---|
| 1 | Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 | Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 | |
| 1 | Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 | Electric Strike | 1500C | 630 | HS | 087100 | ϟ |
| 1 | SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ϟ |
| 1 | Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 | |
| 1 | ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ϟ |
| 1 | Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 | Card Reader | - Provided by Others | | OT | 281300 | ϟ |
| 1 | Remote Push Button | - Provided by Others | | OT | 281300 | ϟ |

Notes:

Door normally closed and locked.
Presentation of valid credential at card reader, or remote release at reception unlocks electric strike allowing ingress.
Free egress at all times.
Fail-secure.

**Set: 16.0**

Doors: C002A

| | | | | | |
|---|---|---|---|---|---|
| 2 | Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 | |
| 1 | Removable Mullion | 910KM | | RU | 087100 | |
| 2 | Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 | |
| 3 | Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 3 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |


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| | | | | |
|---|---|---|---|---|
| 2 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 |

**Set: 17.0**

Doors: C001B

| | | | | |
|---|---|---|---|---|
| 1 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 Rim Exit Device, Exit Only | PED5201 M52 M54 EO | 630 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 |
| 1 Surface Closer | CPS7500 | 689 | NO | 087100 |

**Set: 18.0**

Doors: 135, 138

| | | | | |
|---|---|---|---|---|
| 1 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 1 Classroom Lock | ML2004 NSA M34 V01 LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 - pull side mount | 689 | NO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |

**Set: 19.0**

Doors: C004A, C005A, C006A, C007A

| | | | | |
|---|---|---|---|---|
| 2 Continuous Hinge | CFM-SLF-HD1 | | PE | 087100 |
| 2 Dummy Bar | PED5000DB M54 | 630 | RU | 087100 |
| 2 Vandal Resistant Trim | VRT22 | US32D | RO | 087100 |
| 2 Surface Closer | CPS7500 SN-134 | 689 | NO | 087100 |

**Set: 20.0**

Doors: 146

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Rim Exit Device | PED5247 A M54 N947PT | 630 | RU | 087100 |
| 1 Rim Cylinder | 12E-72 Less Core (supply | 626 | BE | 087100 |


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| | | | | |
|---|---|---|---|---|
| | with disposable construction core) | | | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 21.0**

Doors: 102, 108, 201

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Rim Exit Device | PED5247 A M54 N947PT | 630 | RU | 087100 |
| 1 Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | CPS7500 SN-134 | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 22.0**

Doors: 155

| | | | | |
|---|---|---|---|---|
| 6 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 2 Concealed Vert Rod Exit, Exit Only | PED5801 M54 EO M55 | 630 | RU | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 4 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 2 Silencer | 608 / 609 | | RO | 087100 |

**Set: 23.0**

Doors: C017


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| | | | | | |
|---|---|---|---|---|---|
| 8 | Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 2 | Concealed Vert Rod Exit, Exit Only | PED5801 A M54 EO M55 | 630 | RU | 087100 |
| 2 | Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 4 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 | Electromagnetic Holder | 994M | 689 | NO | 087100 |
| 1 | Astragal | S772C | | PE | 087100 |
| 1 | Gasketing | S88BL | | PE | 087100 |

Notes:

Doors to be normally held open on door / wall mounted magnetic hold open devices. Magnetic hold open devices to release at activation of fire alarm.

**Set: 24.0**

Doors: S02.2

| | | | | | |
|---|---|---|---|---|---|
| 3 | Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 | Rim Exit Device | PED5210 A M54 N910PT | 630 | RU | 087100 |
| 1 | Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 | Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 | Gasketing | S88BL | | PE | 087100 |
| 3 | Silencer | 608 / 609 | | RO | 087100 |

**Set: 25.0**

Doors: 155C

| | | | | | |
|---|---|---|---|---|---|
| 6 | Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 2 | Concealed Vert Rod Exit, Classroom | PED5845 M54 N9CV45PT M55 | 630 | RU | 087100 |
| 2 | Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 2 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 2 | Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 2 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 | Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 2 | Silencer | 608 / 609 | | RO | 087100 |


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## Set: 26.0

Doors: 158

| | | | | | |
|---|---|---|---|---|---|
| 6 | Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 2 | Concealed Vert Rod Exit, Classroom | PED5845 M54 N9CV45PT M55 | 630 | RU | 087100 |
| 2 | Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 2 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 2 | Surface Closer | CPS7500 SN-134 | 689 | NO | 087100 |
| 2 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 | Silencer | 608 / 609 | | RO | 087100 |

## Set: 27.0

Doors: C012, C013, C015, A002

| | | | | | |
|---|---|---|---|---|---|
| 8 | Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 | Concealed Vert Rod Exit, Classroom | PED5845 A M54 N9CV45PT M55 | 630 | RU | 087100 |
| 1 | Concealed Vert Rod Exit, Exit Only | PED5801 A M54 EO M55 | 630 | RU | 087100 |
| 1 | Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 2 | Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 2 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 | Electromagnetic Holder | 994M | 689 | NO | 087100 |
| 1 | Astragal | S772C | | PE | 087100 |
| 1 | Gasketing | S88BL | | PE | 087100 |
| 2 | Silencer | 608 / 609 | | RO | 087100 |

Notes:

Doors to be normally held open on door / wall mounted magnetic hold open devices. Magnetic hold open devices to release at activation of fire alarm.


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**Set: 28.0**

Doors: 106A

| | | | | | |
|---|---|---|---|---|---|
| 6 | Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 | Removable Mullion | 910KM | | RU | 087100 |
| 2 | Rim Exit Device, Classroom Security | PED5242 M47 M54 N942PT | 630 | RU | 087100 |
| 1 | Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 2 | Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 3 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 2 | Thumbturn Mortise Cylinder | CR1300 | 630 | RU | 087100 |
| 2 | Surface Closer | CPS7500 SN-134 | 689 | NO | 087100 |
| 2 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 | Silencer | 608 / 609 | | RO | 087100 |

**Set: 29.0**

Doors: 117, 133, 134, 136, 137, 139, 140, 141, 142, 143

| | | | | | |
|---|---|---|---|---|---|
| 3 | Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 | Rim Exit Device, Classroom Security | PED5242 M47 M54 N942PT | 630 | RU | 087100 |
| 1 | Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 | Thumbturn Mortise Cylinder | CR1300 | 630 | RU | 087100 |
| 1 | Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 1 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 | Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 | Silencer | 608 / 609 | | RO | 087100 |

**Set: 30.0**

Doors: 158C

| | | | | | |
|---|---|---|---|---|---|
| 2 | Continuous Hinge | CFM-HD1 | | PE | 087100 |
| 1 | Removable Mullion | 910KM | | RU | 087100 |


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| | | | | | |
|---|---|---|---|---|---|
| 2 | Rim Exit Device, Classroom Security | PED5242 M47 M54 N942PT | 630 | RU | 087100 |
| 1 | Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 2 | Rim Cylinder | 12E-72 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 3 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 2 | Thumbturn Mortise Cylinder | CR1300 | 630 | RU | 087100 |
| 2 | Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 2 | Armor Plate | K1050 36" high CSK BEV | US32D | RO | 087100 |
| 2 | Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 2 | Silencer | 608 / 609 | | RO | 087100 |

**Set: 31.0**

Doors: 100B, 100F.1, 100G, 109A, 109B, 109C, 109D, 156B, 158B, 200A, 200B, 200D, 200E

| | | | | | |
|---|---|---|---|---|---|
| 3 | Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 | Entrance Lock | ML2053 NSA M34 LC | 626 | RU | 087100 |
| 1 | Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 | Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 | Silencer | 608 / 609 | | RO | 087100 |

**Set: 32.0**

Doors: 148

| | | | | | |
|---|---|---|---|---|---|
| 3 | Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 | Entrance Lock | ML2053 NSA M34 LC | 626 | RU | 087100 |
| 1 | Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 | Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 | Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 | Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 | Silencer | 608 / 609 | | RO | 087100 |


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**Set: 33.0**

Doors: 100A, 100C, 100E, 100L, 109

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Classroom Lock | ML2055 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 34.0**

Doors: 155B

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Classroom Lock | ML2055 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 35.0**

Doors: 101, 103, 104, 105

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Classroom Lock | ML2055 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |


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| | | | | |
|---|---|---|---|---|
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 36.0**

Doors: 200

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Classroom Lock | ML2055 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 37.0**

Doors: 100H, 100M

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Privacy Lock | ML2060 NSA M34 V21 | 626 | RU | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |
| 1 Coat Hook | 796 | US26D | RO | 087100 |

**Set: 38.0**

Doors: 134A, 136A, 137A, 139A, 140A, 141A, 142A, 143A

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Privacy Lock | ML2060 NSA M34 V21 | 626 | RU | 087100 |
| 1 Concealed Overhead Stop | 1-X36 | 630 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |
| 1 Coat Hook | 796 | US26D | RO | 087100 |


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**Set: 39.0**

Doors: 119, 144B, 202

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Privacy Lock | ML2060 NSA M34 V21 | 626 | RU | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |
| 1 Coat Hook | 796 | US26D | RO | 087100 |

**Set: 40.0**

Doors: 152A

| | | | | |
|---|---|---|---|---|
| 6 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Flush Bolt | 2805 / 2905 | US32D | RO | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 2 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 2 Silencer | 608 / 609 | | RO | 087100 |

**Set: 41.0**

Doors: 158A

| | | | | |
|---|---|---|---|---|
| 6 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Flush Bolt | 2845 / 2945 | US26D | RO | 087100 |
| 1 Dust Proof Strike | 570 | US26D | RO | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |


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| | | | | |
|---|---|---|---|---|
| 1 Coordinator | 2600 series | US28 | RO | 087100 |
| 2 Mounting Bracket | 2601D | US28 | RO | 087100 |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 |
| 2 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 Astragal | S772C | | PE | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 2 Silencer | 608 / 609 | | RO | 087100 |

**Set: 42.0**

Doors: 155A

| | | | | |
|---|---|---|---|---|
| 6 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Flush Bolt | 2845 / 2945 | US26D | RO | 087100 |
| 1 Dust Proof Strike | 570 | US26D | RO | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Coordinator | 2600 series | US28 | RO | 087100 |
| 2 Mounting Bracket | 2601D | US28 | RO | 087100 |
| 2 Surface Closer | CPS7500 | 689 | NO | 087100 |
| 2 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Astragal | S772C | | PE | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 2 Silencer | 608 / 609 | | RO | 087100 |

**Set: 43.0**

Doors: 156A, 200C

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |


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**Set: 44.0**

Doors: 100J, 156C

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Concealed Overhead Stop | 1-X36 | 630 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 45.0**

Doors: 215A

| | | | | |
|---|---|---|---|---|
| 6 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Flush Bolt | 2845 / 2945 | US26D | RO | 087100 |
| 1 Dust Proof Strike | 570 | US26D | RO | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Coordinator | 2600 series | US28 | RO | 087100 |
| 2 Mounting Bracket | 2601D | US28 | RO | 087100 |
| 2 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 2 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 2 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 Astragal | S772C | | PE | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 2 Silencer | 608 / 609 | | RO | 087100 |

**Set: 46.0**

Doors: 206

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |


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| | | | | |
|---|---|---|---|---|
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 47.0**

Doors: 100D, 113A, 115, 117A, 117B, 147, 149

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 48.0**

Doors: 107, 118, 131, 144A, 150B, 201A

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 49.0**

Doors: 145

| | | | | |
|---|---|---|---|---|
| 3 Hinge, Full Mortise | TA2714-MCK | US26D | MK | 087100 |


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| | | | | |
|---|---|---|---|---|
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | CPS7500 SN-134 | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 50.0**

Doors: 156

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Overhead Stop | 10-X36 | 630 | NO | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 51.0**

Doors: 133A

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 52.0**


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Doors: 153A

| | | | | | |
|---|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 | |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 | |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 | |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 | |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 | |
| 1 Gasketing | S88BL | | PE | 087100 | |
| 3 Silencer | 608 / 609 | | RO | 087100 | |

**Set: 53.0**

Doors: 100

| | | | | | |
|---|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 | |
| 1 Classroom Lock | ML2055 NSA LC | 626 | RU | 087100 | |
| 1 Magnetic Lock | M680EBD | 630 | SU | 087100 | ϟ |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 | |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 | |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 | |
| 3 Silencer | 608 / 609 | | RO | 087100 | |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 Remote Push Button | - Provided by Others | | OT | 281300 | ϟ |

Notes:

Magnetic lock normally deactivated.

Remote pushbutton activates magnetic lock.
Remote pushbutton's to be located at reception and principal office.
Either button will lock down office.

**Set: 54.0**


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Doors: 160B, 161B

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Classroom Lock | ML2055 NSA LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 1 Gasketing | S88BL | | PE | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 55.0**

Doors: 132

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Classroom Lock | ML2004 NSA M34 V01 LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 56.0**

Doors: 110A, 111A, 112A, 113, 120, 121, 122, 125, 127, 128, 130, 203, 204, 209, 210, 212, A001, A003

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Classroom Lock | ML2004 NSA M34 V01 LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 |


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| | | | | |
|---|---|---|---|---|
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 57.0**

Doors: 211

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Classroom Lock | ML2004 NSA M34 V01 LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Closer | CPS7500 SN-134 | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 58.0**

Doors: 126, 129, 208

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Classroom Lock | ML2004 NSA M34 V01 LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 |
| 1 Surface Overhead Stop | 10-X36 | 630 | NO | 087100 |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 |
| 3 Silencer | 608 / 609 | | RO | 087100 |

**Set: 59.0**

Doors: 213, 214

| | | | | |
|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 |
| 1 Classroom Lock | ML2004 NSA M34 V01 LC | 626 | RU | 087100 |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with | 626 | BE | 087100 |


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| | | | | | |
|---|---|---|---|---|---|
| | disposable construction core) | | | | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 | |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 | |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 | |
| 1 Gasketing | S88BL | | PE | 087100 | |
| 3 Silencer | 608 / 609 | | RO | 087100 | |

**Set: 60.0**

Doors: 114, 116, 123, 124, 159, 160A, 161A, 162, 205, 207

| | | | | | |
|---|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 | |
| 1 Deadbolt | DL4117 LC | 626 | RU | 087100 | |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Pull Plate | BF 111x70B | US32D | RO | 087100 | |
| 1 Push Plate | 70C-RKW | US32D-316 | RO | 087100 | |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 | |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 | |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 | |
| 3 Silencer | 608 / 609 | | RO | 087100 | |

**Set: 61.0**

Doors: 100N

| | | | | | |
|---|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 | |
| 1 Magnetic Lock | M680EBD | 630 | SU | 087100 | ϟ |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 | |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 1500C | 630 | HS | 087100 | ϟ |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ϟ |


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| | | | | | |
|---|---|---|---|---|---|
| 1 Surface Closer | PR7500 SN-134 | 689 | NO | 087100 | |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 | |
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 | |
| 1 Gasketing | S88BL | | PE | 087100 | |
| 3 Silencer | 608 / 609 | | RO | 087100 | |
| 1 ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ϟ |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ϟ |
| 1 Remote Push Button | - Provided by Others | | OT | 281300 | ϟ |

Notes:

Door normally closed and locked.
Presentation of valid credential at card reader momentarily unlocks electric strike allowing entrance.
Free egress at all times.
Fail-secure.

Magnetic lock normally deactivated.

Remote pushbutton activates magnetic lock at doos A100-1 & A100A2 simultaneously.
Remote pushbutton's to be located at reception and principal office.
Either button will lock down office.
Activation of magnetic lock disables card reader.
No card reader access during lock down at opening A100A2.

## Set: 62.0

Doors: 100F.2

| | | | | | |
|---|---|---|---|---|---|
| 3 Hinge (heavy weight) | T4A3786 | US26D | MK | 087100 | |
| 1 Magnetic Lock | M680EBD | 630 | SU | 087100 | ϟ |
| 1 Storeroom Lock | ML2057 NSA LC | 626 | RU | 087100 | |
| 1 Mortise Cylinder | 1E-74 Less Core (supply with disposable construction core) | 626 | BE | 087100 | |
| 1 Core | - Provided by Kalamazoo Public Schools | 626 | BE | 087100 | |
| 1 Electric Strike | 1500C | 630 | HS | 087100 | ϟ |
| 1 SMART Pac Bridge Rectifier | 2005M3 | | HS | 087100 | ϟ |
| 1 Surface Closer | 7500 SN-134 - pull side mount | 689 | NO | 087100 | |
| 1 Kick Plate | K1050 10" high CSK BEV | US32D | RO | 087100 | |


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| | | | | | |
|---|---|---|---|---|---|
| 1 Wall Stop | 406 / 409 | US32D | RO | 087100 | |
| 1 Gasketing | S88BL | | PE | 087100 | |
| 3 Silencer | 608 / 609 | | RO | 087100 | |
| 1 ElectroLynx Harness | QC-C1500P (power transfer or electric strike to junction box above) | | MK | 087100 | ϟ |
| 1 Power Supply | - Provided by Others | | OT | 281300 | ϟ |
| 1 Card Reader | - Provided by Others | | OT | 281300 | ϟ |
| 1 Remote Push Button | - Provided by Others | | OT | 281300 | ϟ |

Notes:

Door normally closed and locked.
Presentation of valid credential at card reader momentarily unlocks electric strike allowing entrance.
Free egress at all times.
Fail-secure.

Magnetic lock normally deactivated.

Remote pushbutton activates magnetic lock at doos A100-1 & A100A2 simultaneously.
Remote pushbutton's to be located at reception and principal office.
Either button will lock down office.
Activation of magnetic lock disables card reader.

**Set: 63.0**

Doors: S01.1B, S01.2

| | | | | | |
|---|---|---|---|---|---|
| 2 Rim Exit Device, Passage | 12 PE8815 WEL | US32D | SA | 087100 | |
| 1 Furnished By | Fire Rated Steel Entrance and Storefront hardware by 084123 Supplier | | OT | 084123 | |

**Set: 64.0**

Doors: S01.1A

| | | | | | |
|---|---|---|---|---|---|
| 1 Rim Exit Device, Storeroom | 12 56 PE8804 WEL | US32D | SA | 087100 | ϟ |
| 1 Rim Exit Device, Dummy | 12 56 PE8810 WEL | US32D | SA | 087100 | ϟ |
| 1 Furnished By | Fire Rated Steel Entrance and Storefront hardware by 084123 Supplier | | OT | 084123 | |

**Set: 65.0**

Doors: 152C, 157A, 157B


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| | | |
|---|---|---|
| 1 Hardware | - Provided by Overhead Door Contractor | OT 087100 |

**Set: 66.0**

Doors: MISC

| | | |
|---|---|---|
| 1 Repair Kit | QC-R001 | MK 087100 |
| 1 Crimp Tool | QC-R003 | MK 087100 |
| 1 Key Cabinet | 1200 Series x Mounting Brackets & Capacity As Required | LU |

**END OF SECTION 08 0671**


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# SECTION 08 1113 - HOLLOW METAL DOORS AND FRAMES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Louvers installed in hollow metal doors.
4. Light frames and glazing installed in hollow metal doors.

B. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. SDI-113 Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door & Frame Assemblies.
10. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
11. ASTM C1199 - Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
12. ASTM E1423 - Practice for Determining Steady State Thermal Transmittance of Fenestration Systems.
13. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
14. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
15. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
16. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.


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17. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
18. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
19. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Include the following:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of anchorages, joints, field splices, and connections.
6. Details of accessories.
7. Details of moldings, removable stops, and glazing.
8. Details of conduit and preparations for power, signal, and control systems.

D. Samples for Verification:

1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40” above sill) or UL 10C.

1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.


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3. Smoke Control Door Assemblies: Comply with NFPA 105.

a. Smoke "S" Label: Doors to bear “S” label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.

E. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inchspace between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical disciplines are responsible for the product data integration and data reliability of their Work into the coordinated BIM applications.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.


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B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:

1. CECO Door Products (C).
2. Curries Company (CU).
3. Steelcraft (S).

### 2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 metallic coating.

### 2.3 HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

B. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard kraft-paper honeycomb, or one-piece polystyrene core, securely bonded to both faces.

    a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.

3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
4. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.


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6. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Manufacturers Basis of Design:

1. Curries Company (CU) - Polystyrene Core - 707 Series.

## 2.4 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 16 gauge (0.053-inch - thick steel sheet.
3. Manufacturers Basis of Design:

a. Curries Company (CU) - CM Series.
b. Curries Company (CU) - M Series.

C. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

## 2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from metallic coated material, not less than 0.042 inchthick, with corrugated or perforated straps not less than 2 incheswide by 10 incheslong; or wire anchors not less than 0.177 inchthick.
2. Existing Masonry Type: Provide steel pipe spacers welded to plate reinforcing at jamb stops or hat shaped formed strap spacers welded to jamb near the stop. Drill jamb stop and strap spacers for flat head bolts to pass through frame and spacers.
3. Stud Wall Type: Designed to engage stud and not less than 0.042 inchthick.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from metallic coated material, not less than 0.042 inchesthick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

## 2.6 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.


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2.7 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

    a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 18 inchesfrom top and bottom of frame. Space anchors not more than 32 inches on-center and as follows:


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1) Two anchors per jamb up to 60 incheshigh.
2) Three anchors per jamb from 60 to 90 incheshigh.
3) Four anchors per jamb from 90 to 120 incheshigh.
4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inchesor fraction thereof above 120 inches high.

b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

1) Three anchors per jamb up to 60 incheshigh.
2) Four anchors per jamb from 60 to 90 incheshigh.
3) Five anchors per jamb from 90 to 96 incheshigh.
4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inchesor fraction thereof above 96 inches high.
5) Two anchors per head for frames above 42 incheswide and mounted in metal stud partitions.

10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

## 2.8 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.


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PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

E. Verify tolerances against manufacturers installations instructions for tornado and hurricane storm shelter openings.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.

1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.


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1. Non-Fire-Rated Standard Steel Doors:

    a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    b. Between Edges of Pairs of Doors: 1/8 inchplus or minus 1/16 inch.
    c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

## 3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

## 3.5 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

**END OF SECTION 08 1113**


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# SECTION 08 1243 - FIRE-RESISTANCE-RATED FRAMES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Related Sections:

1. Section 08 1113 "Hollow Metal Doors and Frames" for non-fire-rated and fire-protection-rated doors and frames of steel construction.
2. Section 08 1216 "Aluminum Frames" for non-fire-rated and fire-protection-rated frames of aluminum construction.
3. Section 08 8813 "Fire-Rated Glazing" for glazing installed in fire-resistance-rated frames.

### 1.2 DEFINITIONS

A. Fire-Protection-Rated Assemblies: Assemblies consisting of rated framing, doors, and openings up to 45 minutes, limited in size, and not capable of blocking radiant heat.

B. Fire-Resistance-Rated Assemblies: Assemblies consisting of rated framing, doors, and openings that prevents spread of fire and smoke and radiant heat; used in rated wall and door applications 60 minutes and above without size limitations.

### 1.3 COORDINATION

A. Coordinate anchorage installation for fire-resistance-rated frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

### 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include frame details for each frame type, including dimensioned profiles and metal thicknesses.

C. Samples for Initial Selection: For fire-resistance-rated frames with factory-applied color finishes.

D. Samples for Verification:

1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.
2. Fabrication: Prepare Samples approximately 12 by 12 inches to demonstrate compliance with requirements for quality of materials and construction:


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a. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed panels and glazing if applicable.

E. Product Schedule: For fire-resistance-rated frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.5 INFORMATIONAL SUBMITTALS

A. Product test reports.

1.6 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver fire-resistance-rated frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames that include doors with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store fire-resistance-rated frames vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Assemblies: Listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing as an assembly complying with ASTM E119 or UL 263.

1. Smoke- and Draft-Control Assemblies: Provide assemblies with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Recycled Content of Aluminum Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.


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## 2.2 FIRE-RESISTANCE-RATED FRAMES

A. Fire-Resistance-Rated Frames: Steel or aluminum frames with proprietary intumescent fire-resistant materials as follows:

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Aluflam North America; Fire Rated Aluminum Storefront Vision Walls
    b. Curries Company; ASSA ABLOY; Contraflam.
    c. SAFTI FIRST Fire Rated Glazing Solutions; GPX Architectural Series.
    d. Technical Glass Products; Fireframes Heat Barrier Series.

2. Fire Rating: As indicated on Drawings.
3. Finish: Primed for field painting.

## 2.3 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

## 2.4 FABRICATION

A. Fire-Resistance-Rated Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing frames for hardware.


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C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
4. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

## PART 3 - EXECUTION

### 3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

### 3.2 INSTALLATION

A. General: Install fire-resistance-rated frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Fire-Resistance-Rated Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
b. Install frames with removable stops located on secure side of opening.

2. Floor Anchors: Secure with postinstalled expansion anchors.

a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
4. In-Place Metal or Wood-Stud Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:


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a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Glazing: Comply with installation requirements in Section 08 8000 "Glazing" and with hollow-metal manufacturer's written instructions.

## 3.3 CLEANING AND TOUCHUP

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

**END OF SECTION 08 1243**


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# SECTION 08 4113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Exterior and interior storefront framing.
2. Storefront framing for window walls.
3. Storefront framing for punched openings.
4. Exterior and interior manual-swing entrance doors and door frame units.

B. Related Sections:

1. Division 08 Section "Glazed Aluminum Curtain Walls" for curtain-wall systems that mechanically retain glazing on four sides.
2. Division 08 Section "Louvers And Vents" for units installed with aluminum-framed systems.

### 1.2 PERFORMANCE REQUIREMENTS

A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:

1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
2. Dimensional tolerances of building frame and other adjacent construction.
3. Failure includes the following:

a. Deflection exceeding specified limits.
b. Thermal stresses transferring to building structure.
c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
d. Noise or vibration created by wind and by thermal and structural movements.
e. Loosening or weakening of fasteners, attachments, and other components.
f. Failure of operating units.

B. Delegated Design: Design aluminum-framed systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

C. Wind Loads: As indicated on Drawings.

D. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.


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2. Deflection Parallel to Glazing Plane: Limited to L/360 of clear span or 1/8 inch, whichever is smaller.

E. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
2. Test Durations: 10 seconds.

F. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft..

G. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 8.00 lbf/sq. ft..

H. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

I. Condensation Resistance: Provide aluminum-framed systems with framing areas having condensation-resistance factor (CRF) of not less than 56 when tested according to AAMA 1503.

J. Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having an average U-factor of not more than 0.36 Btu/sq. ft. x h x deg F when tested according to AAMA 1503.

## 1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

1. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

E. Delegated-Design Submittal: For aluminum-framed systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Detail fabrication and assembly of aluminum-framed systems.


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2. Include design calculations.

F. Qualification Data: For qualified Installer.

G. Maintenance data.

H. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.

C. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

D. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

E. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

1. Obtain aluminum doors and frames from a single source. Verify that doors and frames will operate and seal properly with specified hardware.

F. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, structural failures, excessive deflection, noise or vibration caused by thermal movements, deterioration of metals and metal finishes and beyond normal weathering, failure of operating components and water leakage through fixed glazing and framing areas.


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2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Storefront Framing:

a. EFCO Corporation.
b. Kawneer North America; an Alcoa company.
c. Tubelite.
d. Vistawall Architectural Products; The Vistawall Group; a Bluescope Steel company.

2. Plank-Type Flush Doors:

### 2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.
5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

B. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer, complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

### 2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction: Thermally broken.


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2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: Front.
4. Frame Profile: 2-inch sightline by 6 inches deep.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts, complying with ASTM A 123/A 123M or ASTM A 153/A 153M.

E. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

F. Framing System Gaskets and Sealants: Manufacturer's standard, recommended by manufacturer for joint type.

1. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

G. Insulated Spandrel Panels: Laminated, metal-faced flat panels with no deviations in plane exceeding 0.8 percent of panel dimension in width or length.

1. Overall Panel Thickness: 1 inch.
2. Exterior Skin: Aluminum.
    a. Thickness: Manufacturer's standard for finish and texture indicated.
    b. Finish: Match framing system.
    c. Texture: Smooth.
    d. Backing Sheet: 1/8-inch- thick tempered hardboard.

3. Interior Skin: Aluminum.
    a. Thickness: Manufacturer's standard for finish and texture indicated.
    b. Finish: Matching storefront framing.
    c. Texture: Smooth.
    d. Backing Sheet: 1/8-inch- thick tempered hardboard.

4. Thermal Insulation Core: Manufacturer's standard rigid, closed-cell, polyisocyanurate board.
5. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency.
    a. Identify products with appropriate markings of applicable testing agency.
    b. Flame-Spread Index: 25 or less.
    c. Smoke-Developed Index: 50 or less.


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2.4 GLAZING SYSTEMS

A. Glazing: As specified in Division 08 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, molded or extruded, of profile and hardness required to maintain watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

D. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:

1. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.
   a. Provide sealants for use inside of the weatherproofing system that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.5 ENTRANCE DOOR SYSTEMS

A. Aluminum Flush Doors (Interior & exterior):

1. Product: Subject to compliance with requirements:
   a. Provide Cross Aluminum Products; ThermaPlank FLT-400 Series.
      Or
   b. Provide Special-Lite Products; SL-16S

2. Surface Texture: Smooth.
3. Finish: Match framing system.

B. Entrance Door Hardware: As specified in Division 08 Section "Door Hardware."

2.6 ENTRANCE DOOR HARDWARE

A. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door to comply with requirements in this Section.

1. Opening-Force Requirements:
   a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.
   b. Accessible Interior Doors: Not more than 5 lbf to fully open door.

B. Weather Stripping: Manufacturer's standard replaceable components.

1. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.
2. Sliding Type: AAMA 701, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.


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C. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

D. Silencers: BHMA A156.16, Grade 1.

## 2.7 ACCESSORY MATERIALS

A. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil thickness per coat.

## 2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. Door Stops: Screw-applied or snap-in box type with minimum 3/4-inch depth.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

G. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

## 2.9 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: Medium bronze.
2. Color: Kingspan ; Bone White.


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PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or applying sealant or tape, or by installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 07 Section "Joint Sealants" to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

F. Install glazing as specified in Division 08 Section "Glazing."

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

H. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum erection tolerances:

1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
2. Alignment:

a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.

3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.


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3.2 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections.

B. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take place as follows. Do not proceed with installation of the next area until test results for previously completed areas show compliance with requirements.

1. Water Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

a. Test Area: A minimum area of 75 feet by 1 story of aluminum-framed systems.

C. Repair or remove work if test results and inspections indicate that it does not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

E. Aluminum-framed assemblies will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.

**END OF SECTION 08 4113**


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# SECTION 08 4523 - FIBERGLASS-SANDWICH-PANEL ASSEMBLIES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes aluminum-framed assemblies incorporating fiberglass-sandwich panels as follows:

1. Wall assemblies.

### 1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For panel assemblies. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: In manufacturer's standard size.

1. For each type of fiberglass-sandwich panel.
2. For each type of exposed finish for framing members.

### 1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Product test reports.

C. Evaluation Research Reports: For fiberglass-sandwich-panel assemblies from ICC-ES.

D. Sample warranties.

### 1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

### 1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.


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1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.8 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
c. Water leakage.

2. Warranty Period: Two years from date of Substantial Completion.

B. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace fiberglass-sandwich panels that exhibit defects in materials or workmanship within specified warranty period.

1. Defects include, but are not limited to, the following:

a. Fiberbloom.
b. Delamination of coating, if any, from exterior face sheet.
c. Color change exceeding requirements.
d. Delamination of panel face sheets from panel cores.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Loads: As indicated on Drawings.

B. Deflection Limits:

1. Vertical Panel Assemblies: Limited to 1/90 of clear span for each assembly component.

C. Structural-Test Performance: ASTM E 330.

1. When tested at positive and negative wind-load design pressures, assemblies do not show evidence of deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not show evidence of material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.


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D. Water Penetration under Static Pressure: Provide panel assemblies that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft..

E. Thermal Movements: Allow for thermal movements from ambient- and surface-temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

F. Energy Performance: Provide panel assemblies with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below and certified and labeled according to NFRC:

1. Thermal Transmittance (U-Factor): Fixed glazing and framing areas shall have U-factor of not more than values indicated for panel types as determined according to NFRC 100.
2. Solar Heat Gain Coefficient (SHGC): Fixed glazing and framing areas shall have a SHGC of no greater than values indicated for panel types as determined according to NFRC 200.
3. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area as determined according to ASTM E 283 at a minimum static-air-pressure differential of 6.24 lbf/sq. ft..

## 2.2 FIBERGLASS-SANDWICH-PANEL ASSEMBLIES

A. Fiberglass-Sandwich-Panel Assemblies: Translucent assemblies that are supported by aluminum framing and glazed with fiberglass-sandwich panels.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Kalwall Corporation.
b. Major Industries, Inc.

## 2.3 FIBERGLASS-SANDWICH PANELS

A. Fiberglass-Sandwich Panels: Uniformly colored, translucent, thermoset, fiberglass-reinforced-polymer face sheets bonded to both sides of a grid core.

1. Core Insulation: Fill panel cores with aerogel.
2. Panel Thickness: 1-1/2 to 1-9/16 inches.
3. Grid Core: Mechanically interlocked, extruded-aluminum I-beams, with a minimum flange width of 7/16 inch.

a. Extruded Aluminum: ASTM B 221, in alloy and temper recommended in writing by manufacturer.
b. I-Beam Construction: Thermally broken, extruded aluminum.
c. Grid Pattern: As indicated on Drawings.

4. Exterior Face Sheet:


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a. Thickness: Not less than 0.052 inch.
b. Color: As selected by Architect from manufacturer's full range.
c. Protective Weathering Surface: Manufacturer's standard.
d. Impact Resistance: No fracture or tear at impact of 60 ft. x lbf by a 3-1/4-inch- diameter, 5-lb freefalling ball according to UL 972 test procedure.

5. Interior Face Sheet:

a. Thickness: Not less than 0.052 inch.
b. Color: As selected by Architect from manufacturer's full range.
c. Impact Resistance: No fracture or tear at impact of 60 ft. x lbf by a 3-1/4-inch- diameter, 5-lb freefalling ball according to UL 972 test procedure.
d. Thermal Transmittance (U-Factor): 0.53 Btu/sq. ft. x h x deg F maximum.
e. Visible Light Transmission: Minimum 20 percent.

B. Fiberglass-Sandwich-Panel Adhesive: Manufacturer's standard for permanent adhesion of facings to cores.

C. Panel Strength:

1. Maximum Panel Deflection: 3-1/2 inches when a 4-by-12-foot panel is tested according to ASTM E 72 at 34 lbf/sq. ft., with a maximum 0.090-inch set deflection after five minutes.
2. Panel Support Strength: Capable of supporting, without failure, a 300-lbf concentrated load when applied to a 3-inch- diameter disk according to ASTM E 661.

D. Panel Performance:

1. Self-Ignition Temperature: 650 deg F or more according to ASTM D 1929.
2. Smoke-Developed Index: 450 or less according to ASTM E 84, or 75 or less according to ASTM D 2843.
3. Combustibility Classification for Panels in Walls: Class CC1 based on testing according to ASTM D 635.
4. Interior Finish Classification: Class A based on testing according to ASTM E 84.
5. Color Change: Not more than 3.0 units Delta E, when measured according to ASTM D 2244, after outdoor weathering compliant with procedures in ASTM D 1435.

a. Outdoor Weathering Conditions: Sixty months in southern Florida.

## 2.4 ALUMINUM FRAMING SYSTEMS

A. Components: Thermally broken, extruded aluminum.

B. Aluminum: Alloy and temper recommended in writing by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308.

C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning skylight components.


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D. Fasteners and Accessories: Manufacturer's standard, corrosion-resistant, nonstaining, and nonbleeding fasteners and accessories; compatible with adjacent materials.

E. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

F. Concealed Flashing: Corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

G. Exposed Flashing and Closures: Aluminum sheet not less than 0.050 inch thick, finished to match framing.

H. Framing Gaskets: Manufacturer's standard.

I. Frame-System Sealants: As specified in Section 07 9200 "Joint Sealants."

J. Corrosion-Resistant Coating: Cold-applied asphalt mastic.

## 2.5 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Color: Medium bronze.

B. High-Performance Organic Finish: Two -coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Color and Gloss: Match Architect's sample.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

A. General: Comply with manufacturer's written instructions.

1. Do not install damaged components.
2. Fit joints between aluminum components to produce hairline joints free of burrs and distortion.
3. Rigidly secure nonmovement joints.
4. Install anchors with separators and isolators to prevent metal corrosion, electrolytic deterioration, and immobilization of moving joints.
5. Seal joints watertight unless otherwise indicated.

B. Metal Protection: Where aluminum components will contact dissimilar materials, protect against galvanic action by painting contact surfaces with corrosion-resistant coating or by installing nonconductive spacers as recommended in writing by manufacturer for this purpose.

C. Install components plumb and true in alignment with established lines and elevations.


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D. Skylight Assemblies: Install continuous aluminum sill closures with weatherproof expansion joints and locked and sealed corners. Locate weep holes at rafters. Install components to drain water passing through joints and moisture migrating within assembly to exterior.

E. Erection Tolerances: Install panel assemblies to comply with the following maximum tolerances:

1. Alignment: Limit offset from true alignment to 1/32 inch where surfaces abut in line, edge to edge, at corners, or where a reveal or protruding element separates aligned surfaces by less than 3 inches; otherwise, limit offset to 1/8 inch.
2. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet, but no greater than 1/2 inch over total length.

3.2 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Water-Spray Test: Before installation of interior finishes has begun, panel assemblies shall be tested according to AAMA 501.2 and shall not show evidence of water penetration.

B. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

**END OF SECTION 08 4523**


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# SECTION 08 7100 - DOOR HARDWARE

## PART 1 - GENERAL

### RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

### SUMMARY

B. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

C. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.


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SUBMITTALS

F. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

G. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

H. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
    a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    b. Complete (risers, point-to-point) access control system block wiring diagrams.
    c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

I. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying


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system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

J. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

## CLOSEOUT SUBMITTALS

K. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

L. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

## QUALITY ASSURANCE

M. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

N. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

O. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

P. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

Q. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

R. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.


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S. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

T. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

U. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

## DELIVERY, STORAGE AND HANDLING

V. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

W. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

X. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

## COORDINATION

Y. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.


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Z. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

## WARRANTY

AA. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

BB. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

CC. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

## PRODUCTS

### 1.2 MATERIALS

A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

## BUTT HINGES

B. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:
2. Two Hinges: For doors with heights up to 60 inchesThree Hinges: For doors with heights 61 to 90 inchesFour Hinges: For doors with heights 91 to 120 inchesFor doors with heights more than 120 inchesprovide 4 hinges, plus 1 hinge for every 30 inchesof door height greater than 120 inchesHinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
   a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
   b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
   a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.


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b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:
   a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:
   a. Hager Companies (HA) - BB Series, 5-knuckle.
   b. Ives (IV) - 5BB Series, 5-knuckle.
   c. McKinney (MK) - TA/T4A Series, 5-knuckle.

## CONTINUOUS HINGES

C. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.
   a. Ives (IV).
   b. Pemko (PE).

## POWER TRANSFER DEVICES

D. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:
   a. Securitron (SU) - EL-CEPT Series.

E. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:
   a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
   b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:
   a. McKinney (MK) - QC-C Series.


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## DOOR OPERATING TRIM

F. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:
    a. Ives (IV).
    b. Rockwood (RO).
    c. Trimco (TC).

G. Coordinators: ANSI/BHMA A156.3 door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

1. Manufacturers:
    a. Ives (IV).
    b. Rockwood (RO).
    c. Trimco (TC).

H. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inchthick, size as indicated in hardware sets,with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:
    a. Ives (IV).
    b. Rockwood (RO).
    c. Trimco (TC).

## CYLINDERS AND KEYING

I. Cylinders: Existing 7-Pin small format interchangeable core (SFIC) Best key system.


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1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
4. Provide all cylinder housings with disposable construction core.
5. Owner (KPS) provides final cores.
6. Acceptable manufacturers:
   a. Stanley Best (BE).
   b. Marshall Best Systems (MB).

## 1.3 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:
   a. Lund Equipment (LU).
   b. MMF Industries (MM).
   c. Telkee (TK).

## MORTISE LOCKS AND LATCHING DEVICES

B. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:
   a. Corbin Russwin Hardware (RU) - ML2000 Series.
   b. dormakaba BEST (BE) - 45H Series.
   c. Sargent Manufacturing (SA) - 8200 Series.
   d. Schlage (SC) - L9000 Series.

## DEADLOCKS AND LATCHES

C. Mortise Deadlocks, Small Case: ANSI/BHMA A156.36, Grade 1, small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.

1. Manufacturers:
   a. dormakaba BEST (BE) - 48H Series.
   b. Corbin Russwin Hardware (RU) - DL4000 Series.
   c. Sargent Manufacturing (SA) - 4870 Series.
   d. Schlage (SC) - L460 Series.


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## LOCK AND LATCH STRIKES

D. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

E. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

## ELECTROMAGNETIC LOCKING DEVICES

F. Surface Electromagnetic Locks (Heavy Duty): Electromagnetic locks to be surface mounted type conforming to ANSI A156.23, Grade 2 with minimum holding force strength of 1,200 pounds. Locks to be capable of accepting between 12 to 24 volts direct current and be UL listed for use on fire rated door assemblies. Electromagnetic coils are to consume no more than 1.5W during normal operation. Locks are to have an integrated door position switch, tamper switch, and lock bond sensor. Locks are to have integrated motion sensor and/or security camera as indicated in the hardware sets. Locks to be capable of detecting door prop conditions and entering low power mode. Provide mounting accessories as needed to suit opening conditions. Power supply to be by the same manufacturer as the lock with combined products having a lifetime replacement warranty.

1. Manufacturers:
   a. Securitron (SU) - M680E Series.

## ELECTRIC STRIKES

G. Standard Electric Strikes: Electric strikes conforming to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Manufacturers:
   a. HES (HS) - 1500/1600 Series.


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H. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes conforming to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.

1. Manufacturers:
   a. HES (HS) - 9400/9500/9600/9700/9800 Series.

I. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

## CONVENTIONAL EXIT DEVICES

J. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
   a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
   b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.


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K. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide exit devices with functions and features as follows:
   a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
   b. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
   c. No catch points: addition of applied deflectors or other added components are not allowed.
   d. No visible plastic.
   e. Heavy duty end caps with flush and overlapping options made of stainless steel, brass, or bronze with architectural finishes.
   f. Constructed of all stainless steel.
   g. Stainless steel pullman type latch with deadlock feature.
   h. Narrow or wide style exterior trim as specified in the hardware sets.
   i. Center case adjustability on concealed vertical rod exit devices; single operation with hex key individually adjusts top or bottom latches. No retainer screws or clips required to maintain adjustment.
   j. Ten-year limited warranty for mechanical features.

2. Manufacturers:
   a. Corbin Russwin Hardware (RU) - PED4000 / PED5000 Series.
   b. Sargent Manufacturing (SA) - PE80 Series.
   c. Von Duprin (VD) - 35A/98 XP Series.

## SURFACE DOOR CLOSERS

L. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

M. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1


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thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Heavy duty surface mounted door closers shall have a 30-year warranty.

2. Manufacturers:
   a. LCN Closers (LC) - 4040 Series.
   b. Norton Rixson (NO) - 7500 Series.

1.4 SURFACE MOUNTED CLOSER HOLDERS

A. Electromagnetic Door Holders: ANSI A156.15, Grade 1 electromagnetic door holder/releases with a minimum 25 to 40 pounds holding power and fail-safe operation; power failure releases door to close.

1. Manufacturers:
   a. LCN Door Closers (LC) - SEM7800 Series.
   b. Norton Rixson (NO) - 900 Series.

ARCHITECTURAL TRIM AND ACCESSORIES

B. Door, Frame and Wall Protective Trim: ANSI/BHMA A156.6, protective products as specified in the hardware sets. Door protection plates shall be not more than 2" less than door width on stop side and 1" less door width on the pull side or on stop side of pairs of doors. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide protective trim with functions and features as follows:
   a. Meets ADA requirements for smooth bottom door surfaces.
   b. UL Classified options for use on fire-rated doors up to 3 hours.
   c. Fabricated from stainless steel, brass, bronze, aluminum, or high-impact plastic.
   d. Available in a variety of sizes, finishes, and profiles to suit aesthetic and functional requirements.
   e. Designed to protect doors, frames, and adjacent walls from damage due to impact, abrasion, or traffic.
   f. Fasteners included; adhesive-backed options available for select models.
   g. Ten-year limited warranty.

2. Manufacturers:
   a. Ives (IV).
   b. Rockwood (RO).
   c. Trimco (TC).

DOOR STOPS AND HOLDERS

C. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door


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stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:
   a. Ives (IV).
   b. Rockwood (RO).
   c. Trimco (TC).

D. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:
   a. dormakaba (DO).
   b. Norton Rixson (NO).
   c. Rockwood (RO).
   d. Sargent Manufacturing (SA).

## ARCHITECTURAL SEALS

E. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

F. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

G. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

H. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

I. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

J. Manufacturers:

1. National Guard Products (NG).
2. Pemko (PE).


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3. Zero (ZE).

## FABRICATION

K. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

## FINISHES

L. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

M. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

N. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## EXECUTION

## EXAMINATION

O. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

P. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

## PREPARATION

Q. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

R. Wood Doors: Comply with ANSI/DHI A115-W series.

## INSTALLATION

S. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.


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T. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

U. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

V. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

W. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

X. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

## FIELD QUALITY CONTROL

Y. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

## ADJUSTING

Z. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

## CLEANING AND PROTECTION

AA. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.


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BB. Clean adjacent surfaces soiled by door hardware installation.

CC. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

## DEMONSTRATION

DD. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

## DOOR HARDWARE SETS

EE. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

FF. Refer to Section 08 0671, Door Hardware Sets, for hardware sets.

**END OF SECTION 08 7100**


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# SECTION 08 8700 – ARCHITECTURAL WINDOW FILM

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Decorative Window Film.

B. Related Sections:

1. Section 08 4113 “Aluminum-Framed Entrances and Storefronts.”
2. Section 08 8000 “Glazing.”
3. Section 08 8813 "Fire-Rated Glazing."

### 1.2 DEFINITIONS

A. Visible Light Transmittance: The ratio of the amount of visible light (380-780 nm) that is allowed to pass through a glazing system to the amount of visible light falling on the glazing system. The value is expressed as a percentage.

B. Diffuse Visible Light Reflectance (exterior): The percentage of visible light falling on a flat, non-mirrored surface that is neither transmitted nor absorbed but scattered backwardly at random angles from that surface. This value is also known as “non-specular reflectance”.

C. Privacy Film Rating: This number, between 0 (clear) and 10 (opaque), represents the relative difficulty an observer has in identifying the nature and character of an object located on the opposite side of the window, with the observer and the object both located at least 2 feet from the pane upon which the product has been installed.

D. Frost Series: These films have frosted and translucent finishes that ensure privacy without sacrificing natural light. They are ideal for commercial interior glazing applications such as office partitions or to meet interior design goals at a fraction of the cost of etched glass.

### 1.3 SUBMITTALS

A. Product Data: Submit for each product specified indicating:

1. Performance properties.
2. Preparation and installation instructions and recommendations.
3. Storage and handling recommendations.

B. Samples: For each type of decorative film specified, two (2) samples, 12 inches square.

C. Qualification Data: Submit documentation indicating qualifications of decorative film manufacturer.

D. Operation and Maintenance Data: Submit for decorative film to include in maintenance manuals.


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1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that has a minimum of 10 years of documented experience manufacturing decorative films similar to be used for this project.

B. Installer Qualifications: A firm that is authorized by decorative film manufacturer to install film in accordance with guidelines set forth by the manufacturer.

C. Source Limitations: Obtain each type of decorative film from same manufacturer.

D. Mock-ups: Build mock-ups to verify selections made under sample submittals and to evaluate surface preparation techniques and application workmanship.

1. Construct mock-ups in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Approved mock-ups may become part of the completed work if undisturbed at time of Substantial Completion.

E. Pre-installation Conference: Conduct conference at project site to discuss methods and procedures relating to installation of the decorative films.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials in manufacturer's protective packaging.

B. Store and protect materials according to manufacturer's written recommendations to prevent damage from condensation, temperature changes, direct exposure to sun, or other causes.

1.6 SITE CONDITIONS

A. Ambient Conditions: Maintain temperature, humidity, and ventilation within limits recommended by manufacturer.

1.7 WARRANTY

A. At project closeout, provide an executed current copy of the manufacturer’s standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DECORATIVE WINDOW FILM

A. Decorative Window Film (DWF)


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1. Basis-of-Design Product: The design of decorative films is based on product by one of the following:

    a. 3M Company.
    b. LLumar.

2. Film: Vinyl.
3. Film Pattern: Frosted.

    a. Visible Light Transmittance: 70 percent minimum.
    b. Thickness: 5.0 mil minimum.

## 2.2 DECORATIVE FILM ACCESSORIES

A. General: Provide accessories either manufactured by or acceptable to Decorative film manufacturer for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Pressure Sensitive Adhesive: This adhesive is activated by pressure and water. It is characterized by its permanently tacky nature and its installation ease.

C. Cleaners, Primers, and Sealers: Types recommended by film manufacturer.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine substrate for compliance. Do not proceed with the installation until satisfactory conditions have been corrected.

## 3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrate thoroughly prior to installation.

C. Protect window frames and finishes and surrounding surfaces to prevent damage during installation.

## 3.3 INSTALLATION

A. Verify pattern before material acquisition.

B. Install with no gaps and overlaps.

C. If seamed, make seams non-overlapping.

D. Do not remove release liner from film until just before each piece of film is cut and ready for installation.


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E. Custom cut to the glass with neat, square corners and edges to within 1/8”-inch of the window frame.

F. Remove air bubbles, blister, and other defects. Be careful to remove “fingers” to eliminate any contamination or excess water pockets. It is crucial to remove as much water as possible during installation.

G. Allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

3.4 FIELD QUALITY CONTROL

A. After installation, view from a distance of 10-feet against a bright uniform background. Film shall appear uniform in appearance with no visible streaks, wrinkles, banding, thin spots or pin holes.

B. If installed film does not meet these criteria, remove and replace with new film.

3.5 CLEANING AND PROTECTION

A. Use cleaning methods recommended by the manufacturer.

B. Remove excess mounting solution at finished seams, perimeter edges, and adjacent surfaces.

C. Replace films that can not be cleaned.

D. Protect installed products until completion of project.

E. Allow a minimum of 30 days after application before using common cleaning solutions. Do not use abrasive type cleaning bristle brushes to avoid scratching film.

**END OF SECTION 08 8700**


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# SECTION 11 6800 - PLAY FIELD EQUIPMENT AND STRUCTURES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes playground equipment as follows:

1. Freestanding playground equipment.
2. Composite playground equipment.

B. Related Sections include the following:

1. Section 11 6823 “Exterior Athletic Equipment” for basketball hoops, soccer goals and gaga pit.
2. Section 32 1313 “Concrete Paving” for concrete surrounding playground surfacing.
3. Section 32 1216 “Asphalt Paving” for asphalt surrounding playground surfacing.
4. Section 32 1816.13 “Playground Protective Surfacing” for playground surfacing.

### 1.2 DEFINITIONS

A. Definitions in ASTM F1487 apply to Work of this Section.

B. IPEMA: International Play Equipment Manufacturers Association.

### 1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

### 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of playground equipment.

1. Include plans, elevations, sections, and attachment details.
2. Include fall heights and use zones for playground equipment, coordinated with the critical-height values of protective surfacing specified in Section 32 1816.13 "Playground Protective Surfacing."

C. Samples for Initial Selection: For each type of exposed finish.

1. Manufacturer's color charts.
2. Include Samples of accessories involving color selection.

D. Samples for Verification: For each type of exposed finish on the following products:

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1. Include Samples of accessories to verify color and finish selection.

2. Posts and Rails: Minimum **6 inches** long.
3. Platforms: Minimum **6 inches** square.
4. Molded Plastic: Minimum **3 inches** square.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer manufacturer and testing agency.

B. Product Certificates: For each type of playground equipment.

C. Material Certificates: For the following items:

1. Shop finishes.

D. Field quality-control reports.

E. Sample Warranty: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Two copies of 8.5x11 informational and graphical product cut-sheets including full parts list, certifications, installation instructions, plan view diagrams indicating product dimensions and safe use zones to scale all bound into one document.

B. Maintenance Data: For playground equipment and finishes to include in maintenance manuals, Two copies of 8.5x11 Maintenance Data bound into one document.

C. Manufacturer’s regional and national representatives full contact information.

D. Published warranty for each piece/type of play equipment.

1.7 QUALITY ASSURANCE

A01

A. Manufacturer Qualifications: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of playground equipment that fail or are damaged in materials or workmanship within the specified warranty period at no additional cost

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including all labor, shipping and handling and any incidental cost required to rectify the problem completely to meet equipment manufacturer's installation requirements.

1. Failures include, but are not limited to, the following:
   a. Improper installation.
   b. Improper assembly
   c. Improper construction
   d. Improper attachment
   e. Structural failures.
   f. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period:
   a. Special Warranty: Shall begin from date of Substantial Completion. Warranty for each piece of play equipment shall be as stated in its 2026 published literature available on the date of bid.
   b. Installation warranty: Shall begin from date of Substantial Completion and shall be in force for a period of two (2) years from that date.

## PART 2 - PRODUCTS

### 2.1 SOURCE LIMITATIONS

A. Obtain playground equipment from single source from single manufacturer. A01

B. Playground equipment and components shall have the IPEMA Certification Seal.

### 2.2 PERFORMANCE REQUIREMENTS

A. Safety Standard: Provide playground equipment according to ASTM F1487.

### 2.3 LOWER ELEMENTARY PLAYGROUND EQUIPMENT

A. Basis-of-Design Product: Subject to compliance with requirements, provide Sinclair Recreation direct-bolt/factory-drilled/clamp-less system, or comparable product by one of the following:

1. BCI Burke Company, LLC
2. Kompan, Inc
3. Landscape Structures Inc.

B. GameTime - Swings with Seats

1. (3) 5287 – Belt Seat for 8' Toprail
2. (1) 5320 – 8' ADA Primetime Swing Frame
3. (1) 5321 – 8' ADA Primetime Swing Add-A-Bay

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4. (1) 5377 – Zero-G (2-5) Beige 8' Height

C. GameTime - Sensory Dome

1. (1) 3320 – Bells 2 sided sensor for Dome
2. (2) 3329 – Sensory Dome Climber Insert
3. (1) 6255 – Sensory Dome – Small

D. GameTime - PrimeTime Unit for 2-5 year olds

1. (5) 6141 – Mini Pod Toad Stool
2. (1) 12009 – 3 1/2"Uprt Ass'Y Alum 6'
3. (4) 12024 – 3 1/2" Uprt Ass'Y Alum 9'
4. (1) 18200 – 36" Sq Punched Deck P/T 1.3125
5. (1) 18699 – Store Front Panel 36"
6. (1) 19035 – Optional Access Step 3' & 5')
7. (1) 19121 – Curved Zip Slide
8. (1) 19243 – Drivers Panel
9. (1) 19285 – Transfer Platform W/ Guardrail 3'
10. (1) 19791 – Dbl Rumble & Roll 2'6"/3'
11. (1) 36081 – Free Standing Wormhole

E. GameTime - Tent Climber

2.4 UPPER ELEMENTARY PLAYGROUND EQUIPMENT

A. GameTime - Sensory Wave Seat

B. GameTime – G6

C. GameTime – SkyRun Zip Track 35 ft Zero G & Zip Db

D. GameTime – Youth 2000

E. GameTime – Custom Powerscape Unit for 5-12 year olds

1. (1) 3928 – Fun Mirror 12" 1S
2. (1) 3945 – Rain 12" 2S
3. (1) 3960 – Maze Panel Sensor 20" One Sided
4. (2) 80000 – 49" Sq Punched Steel Deck
5. (1) 81657 – 2Level Chin Bar
6. (1) 81666 – Fun Seat
7. (1) 81669 – Hand Cycler
8. (1) 81680 – Single Seat
9. (2) 90004 – Two Piece Hex Deck
10. (1) 90023 – 3'0" Transfer System W/ Barrier
11. (1) 90104 – 2'6"/3' Schooner Climber
12. (1) 90218 – Rung Encl Mold S. Whl & Bar,Above Dk
13. (1) 90225 – Decorative Panel, Above Dk

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14. (1) 90266 – 8' Upright, Alum
15. (2) 90267 – 9' Upright, Alum
16. (2) 90268 – 10' Upright, Alum
17. (4) 90270 – 12' Upright, Alum
18. (3) 90272 – 14' Upright, Alum
19. (2) 90273 – 15' Upright, Alum
20. (1) 90299 – 7'□6"/8' Wavy Tree Climber
21. (1) 90354 – Counter Panel
22. (1) 90476 – Rung Enclosure W/Guardrail, Above Dk
23. (1) 90510 – 6' Dueling Wave Zip Slide, Std Dk
24. (1) 90790 – Sloped Funnel Climber Barrier □Dbl□
25. (1) 90842 – Single Spiral
26. (1) 91103 – 7'/8' Double Bubble Climber
27. (1) 91374 – PS Sensory Wave Up & On □3' & 3'6")
28. (1) 91427 – PS Sensory Wave Challenge Transfer 2'
29. (1) 91457 – Sensory Wave Entryway
30. (1) 91458 – Sensory Wave Entryway for 2' Deck
31. (1) 91548 – Dunan Drum Panel
32. (1) 91716 – Modern Transfer w/Barrier 2' Rise
33. (1) 91741 – Tic-Tac-Toe Panel
34. (1) 91789 – 6' Quiver Climber
35. (1) 91870 – Overlook Cable Climber 6'□0" - 9'□0
36. (6) 91931 – Entryway □Versa□
37. (3) G90266 – 8' Upright, Galv
38. (1) G90272 – 14' Upright, Galv

F. GameTime – Swings with Seats

1. (9) 5287 – Belt Seat for 8' Toprail
2. (2) 5297 – Expression Swing Tandem 8' Ht.
3. (4) 5329 – 8' Powerscape Swing Add-A□Bay
4. (1) 5333 – 8' ADA Powerscape Swing Add-A□Bay
5. (1) 5373 – ADA Powerscape & Saucer Swing Combo
6. (1) 5378 – Zero-G □5□12□ Beige 8' Height

G. GameTime – Cantata Chimes

H. GameTime – Hangout Climber

1. (1) 27084 – Geocentrix 3 Connection
2. (3) 26065 – Hang Out Wall
3. (3) 26094 – Triangular Shroud

## 2.5 FABRICATION

A. Provide sizes, strengths, thicknesses, wall thickness, and weights of components as required to comply with requirements in ASTM F1487. Factory drill components for field assembly. Unnecessary holes in components, not required for field assembly, are not permitted. Provide complete play structures, including

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supporting members and connections, means of access and egress, designated play surfaces, barriers, guardrails, handrails, handholds, and other components indicated or required for equipment indicated.

B. Metal Frame: Fabricate main-frame upright support posts from metal pipe or tubing with cross-section profile and dimensions as required. Unless otherwise indicated, provide each pipe or tubing main-frame member with manufacturer's standard drainable bottom plate or support flange. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.

C. Composite Frame: Fabricate main-frame upright support posts from metal and plastic. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.

D. Play Surfaces: Manufacturer's standard elevated drainable decks, platforms, landings, walkways, ramps, and similar transitional play surfaces, designed to withstand loads; fabricated from perforated or expanded metal made into floor units with slip-resistant finish. Fabricate units in modular sizes and shapes to form assembled play surfaces indicated.

E. Protective Barriers: Fabricate according to ASTM F1487. Extend barriers to height above the protected elevated surface according to requirements for use by age group indicated. Fabricate from one or more of the following:

1. Welded-metal pipe or tubing with vertical bars.
2. Steel sheet with openings for vision and ventilation.
3. Metal-pipe or -tubing frame with wire-mesh infill panels.
4. Transparent plastic panels with openings.
5. Vertical wood balusters with metal pipe or tubing or wood frame.
6. Wood panels with openings for vision and ventilation.

F. Guardrails: Provide guardrails configured to completely surround the protected area, except for access openings. Fabricate from welded metal pipe or tubing. Extend guardrails according to requirements for use by age group indicated.

G. Handrails: Welded metal pipe or tubing, maximum OD between 0.95 and 1.55 inches.

1. Provide handrails at heights to comply with requirements for use by age group indicated according to ASTM F1487.

H. Roofs and Canopies: Designed to discourage and minimize climbing by users.

1. Fabricated from opaque plastic.

I. Signs: Manufacturer's standard sign panels, fabricated from opaque plastic with graphics molded in, attached to freestanding, upright support posts.

1. Text: Minimum informational content according to ASTM F1487.
2. Color: To be chosen from manufacture’s standard colors, provided by Architect during submittal process.

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2.6 MATERIALS

A. Aluminum: Material, alloy, and temper recommended by manufacturer for type of use and finish indicated.

B. Steel: Material types, alloys, and forms recommended by manufacturer for type of use and finish indicated, hot-dip galvanized.

C. Stainless-Steel Sheet: Type 304; finished on exposed faces with No. 2B finish.

D. Opaque Plastics: Color impregnated, UV stabilized, and mold resistant.

E. Transparent Plastic: Abrasion-resistant, UV-stabilized polycarbonate sheet; clear, colorless; not less than **3/16 inch** thick.

F. Suspension Chain and Fittings: ASTM A467/A467M, Class CS, 4/0 or 5/0, welded-straight-link coil chain; hot-dip galvanized or PVC coated; with commercial-quality, hot-dip galvanized steel connectors and swing or ring hangers.

G. Suspension Cable: Manufacturer's standard cable; with commercial-quality with steel connectors and swing or ring hangers.

H. Iron Castings and Hangers: Malleable iron, ASTM A47/A47M, Grade 32510, hot-dip galvanized.

I. Post Caps: Cast aluminum or color-impregnated, UV-stabilized, mold-resistant polyethylene or polypropylene; color to match posts.

J. Platform Clamps and Hangers: Cast aluminum or zinc-plated steel, not less than 0.105-inch- nominal thickness.

K. Hardware: Manufacturer's standard; commercial-quality; corrosion-resistant; hot-dip galvanized steel and iron, stainless steel, or aluminum; of a vandal-resistant design.

L. Fasteners: Manufacturer's standard; corrosion-resistant; hot-dip galvanized or zinc-plated steel and iron, or stainless steel; permanently capped; and theft resistant.

2.7 CAST-IN-PLACE CONCRETE

A. Concrete Materials and Properties:

1. Comply with requirements in Section 03 3000 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with minimum 28-day compressive strength of **3000 psi**, **3-inch** slump, and **1-inch-** maximum-size aggregate.
2. Dry-packaged concrete mix complying with ASTM C387/C387M and mixed at site with potable water, according to manufacturer's written instructions, for normal-weight concrete with minimum 28-day compressive strength of **3000 psi**, **3-inch** slump, and **1-inch-** maximum-size aggregate.

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2.8 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils, medium gloss. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

B. PVC Finish: UV-stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on PVC finish, with flame retardant added, and with minimum dry film thickness of 80 mils. Comply with coating manufacturer's written instructions for pretreatment and application.

2.9 IRON AND STEEL FINISHES

A. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of **2 mils**. Comply with coating manufacturer's written instructions for pretreatment, applying, and baking.

B. PVC Finish: UV-stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on PVC finish, with flame retardant added, and with minimum dry film thickness of 80 mils. Comply with coating manufacturer's written instructions for pretreatment and application.

2.10 STAINLESS-STEEL FINISHES

A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

B. Bright, Cold-Rolled, Unpolished Finish: No. 2B.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for earthwork, subgrade elevations, surface and subgrade drainage, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading required for placing playground equipment and protective surfacing is completed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written installation instructions for each equipment type unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.

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1. Maximum Equipment Height: Coordinate installed fall heights of equipment with finished elevations and critical-height values of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.

B. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.

C. Post Set on Subgrade: Level bearing surfaces with drainage fill to required elevation.

D. Post Set with Concrete Footing: Comply with Section 03 3000 "Cast-in-Place Concrete" for measuring, batching, mixing, transporting, forming, and placing concrete.

1. Set equipment posts **[in][on]** concrete footing. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
   a. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

2. Embedded Items: Follow equipment manufacturer's written instructions and drawings to ensure correct installation of anchorages for equipment.
3. Finishing Footings: Smooth top, and shape to shed water.

## 3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. Perform inspection and testing for each type of installed playground equipment according to ASTM F1487.

C. Playground equipment items will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

E. Notify Architect 48 hours in advance of date(s) and time(s) of testing and inspection.

**END OF SECTION 11 6800**

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# SECTION 12 6600 - TELESCOPING STANDS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Electrically operated telescoping stands.

### 1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For telescoping stands in both stacked and extended positions.

1. Include plans, elevations, sections, and attachment details.
2. Include diagrams for power, signal, and control wiring.

C. Samples for Initial Selection: For each type of exposed product and for each color and texture required.

1. Include Samples of accessories involving color and finish selection.

D. Samples for Verification: For the following products prepared on Samples of size indicated below:

1. Decking: 6-inch- square Samples of finished material.
2. Metal Components: 6-inch- square Sample of each color and finish indicated.
3. Seating Material: 6-inch- square Sample of each seating material, color, and finish indicated.

E. Delegated-Design Submittal: For telescoping stands including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

### 1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For Installer.

B. For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.

C. Welding certificates.


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D. Product certificates.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.7 FIELD CONDITIONS

A. Finished Spaces: Do not deliver or install telescoping stands until finishes in spaces to receive them are complete, including suspended ceilings, floors, and painting.

B. Field Measurements: Indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements."

B. Structural Performance: Telescoping stands shall withstand the effects of gravity loads, operational loads, and other loads and stresses according to ICC 300.

C. Accessibility Standard: Comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design and ICC A117.1.

2.2 TELESCOPING STANDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Hussey Seating Company.
2. Interkal LLC.
3. Irwin Telescopic Seating Company; Irwin Seating Company.

B. System Description: Operable system of multiple-tiered seating on interconnected folding platforms that close for storage, without being dismantled, into a nested stack. Telescoping-stand units permit opening and closing of adjacent, individual and multiple rows, and close with vertical faces of platforms in the same vertical plane.


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1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Telescoping-Stands Standard: ICC 300.

C. Wall-Attached Telescoping Stands: Forward-folding system, in which the bleachers open in the forward direction by moving the front row away from the stack to the fully extended position and the rear of bleacher understructure permanently attaches to wall construction.

1. Row Spacing: 24 inches.
2. Row Rise: one dimension between 11 and 12 inches.
3. Seat Type: Benches.
4. Operation: Electrically operated, with friction-type, integral power unit.
5. Electrical Characteristics for Each Seating Section: Match characteristics of building electrical system.
    a. Horsepower: 5 hp or as required by telescoping stand manufacturer. Motor size increase must be coordinated with building electrical.
    b. Voltage: 208 V ac, three phase, 60 hertz.

6. Electrical Controls:
    a. Control Devices: Wall-attached control system.
    b. Limit Switches: Automatically stop power system when telescoping stands reach fully opened or closed positions.
    c. Motion Monitor: Flashing light with self-contained warning horn, rated at 85 dB at 10 feet, mounted under telescoping seating for audio and visual warning during operation.
    d. Transformer: As required to coordinate current characteristics of motor and control station with building electrical system.

## 2.3 COMPONENTS

A. Benches: Seats and skirts.

1. Material: Molded plastic with contour surfaces.
    a. Color: As selected by Architect from manufacturer's standard.

2. Bench Height: Not less than 16 inches or more than 18 inches.
3. Bench Depth: 12 inches.

B. Wheelchair-Accessible Seating: Locate retractable truncated benches to provide wheelchair-accessible seating at locations indicated on Drawings.

1. Equip tiers adjacent to wheelchair-accessible seating with front rails as required by ICC 300.
2. Equip cutouts with full-width front closure panels that match decking construction and finish and that extend from underside of tiers adjacent to cutouts to 1-1/2 inches from finished floor.

C. Deck: Plywood, 5/8 inch thick.

1. Finish: Polyethylene textured overlay bonded to substrate with exterior glue.
    a. Color: As selected by Architect from manufacturer's standard colors.


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D. Risers: Steel sheet with manufacturer's standard, rust-inhibiting coating or hot-dip galvanized finish.

E. Safety Rails: Steel, finished with manufacturer's standard powder coat system.

1. Folding, "P"-shaped, mid-aisle handrails located at centerline of each aisle with seating on both sides.
2. End rails (guards) that are telescoping and self-storing.
3. Back rails (guards) along rear of units where required by ICC 300.
4. Color: Black.

F. Understructure: Structural steel.

1. Finish: Manufacturer's standard rust-inhibiting finish.
2. Color: Manufacturer's standard.

G. Support Column Wheels: Nonmarring, soft, rubber-face wheel assembly under each support column.

1. Include wheels of size, number, and design required to support stands and operate smoothly without damaging the flooring surface, but no fewer than four per column or less than 4 inches in diameter and 1-1/2 inch wide.

H. Control Devices:

1. Wall Attached: Keyed-switch control station, located within full view of each stand and its movement area. Provide two keys per station.

I. Fasteners: Vibration proof, in manufacturer's standard size and material.

## 2.4 ACCESSORIES

A. Steps:

1. Slip-resistant, abrasive tread surfaces at aisles.
2. Intermediate aisle steps, fully enclosed, at each aisle.
3. Transitional top step, fully enclosed, at each aisle where last row of telescoping stands is adjacent to a cross aisle.
4. Removable front steps, fully enclosed, at each aisle, that engage with front row to prevent accidental separation or movement and are equipped with a minimum of four skid-resistant feet.

B. Closure Panels and Void Fillers:

1. Aisle closures at foot level that produce flush vertical face at aisles when system is stored.
2. End panels covering exposed ends of stands in the stored position.
3. Panels at cutouts and truncations for accessible seating.
4. Rear fillers including supports for closing openings between top row and rear wall of adjoining construction.
5. Gap fillers for closing openings between stand units or between stand units and adjoining construction.


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C. Signage:

1. Row letters at each row end.
2. Accessibility signs at each accessible space.

D. Scorer's Table: Removable unit that attaches to mounting sockets installed in telescoping stand unit.

## 2.5 MATERIALS

A. Molded Plastic: High-density polyethylene; blow or injection molded, color-pigmented, textured, impact-resistant, with integral reinforcing ribs for attachment and anchoring points. Provide with UV inhibitors to retard fading.

## 2.6 FABRICATION

A. Fabricate telescoping stands to operate easily without special tools or separate fasteners unless otherwise indicated.

B. Round corners and edges of components and exposed fasteners to reduce snagging and pinching hazards.

C. Form exposed work with flat, flush surfaces, level and true in line.

D. Supports: Fabricate supports to withstand, without damage to components, the forces imposed by use of stands without failure or other conditions that might impair their usefulness.

1. Cantilever bench seat supports to produce toe space uninterrupted by vertical bracing.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

A. Examination: Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Install telescoping stands according to ICC 300 and manufacturer's written instructions.

## 3.2 ADJUSTING

A. Adjust backrests so that they are at proper angles and aligned with each other in uniform rows.

B. Adjust hardware and moving parts to function smoothly, and lubricate, test, and adjust each telescoping stand unit to operate according to manufacturer's written instructions.


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3.3 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to inspect, adjust, operate, and maintain telescoping stands.

**END OF SECTION 12 6600**


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# SECTION 21 0513 - COMMON MOTOR REQUIREMENTS FOR FIRE SUPPRESSION EQUIPMENT

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes general requirements for single-phase and polyphase,general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

### 1.2 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

## PART 2 - PRODUCTS

### 2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

### 2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

### 2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Energy efficient, as defined in NEMA MG 1.

1. Provide premium efficient motors where scheduled or when used with a variable frequency controller.

C. Service Factor: 1.15.

D. Multispeed Motors: Variable torque.

1. For motors with 2:1 speed ratio, consequent pole, single winding.
2. For motors with other than 2:1 speed ratio, separate winding for each speed.


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E. Multispeed Motors: Separate winding for each speed.

F. Rotor: Random-wound, squirrel cage.

G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

H. Temperature Rise: Match insulation rating.

I. Insulation: Class F.

J. Code Letter Designation:

1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

K. Enclosure Material: Manufacturer’s standard material.

## 2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with controller manufacturer.

1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
2. Premium-Efficient Motors: Class B temperature rise; Class F insulation.

## 2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:

1. Permanent-split capacitor.
2. Split phase.
3. Capacitor start, inductor run.
4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.


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PART 3 - EXECUTION

3.1 SHAFT GROUNDING RING INSTALLATION

1. If not factory installed, field install at each three phase motors utilizing a variable frequency controller a shaft grounding ring. Attach according to manufacturer's written instructions.

**END OF SECTION 21 0513**


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# SECTION 21 1000 - WATER-BASED FIRE-SUPPRESSION SYSTEMS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes the following fire-suppression piping inside the building:

1. Wet-pipe sprinkler systems.
2. Combined dry-pipe and preaction sprinkler systems.

B. Related Sections include the following:

1. Division 22 Section "Facility Water Distribution Piping" for piping outside the building.
2. Division 28 Section "Fire Detection and Alarm" for alarm devices not specified in this Section.

### 1.2 DEFINITIONS

A. CPVC: Chlorinated polyvinyl chloride plastic.

B. CR: Chlorosulfonated polyethylene synthetic rubber.

C. High-Pressure Piping System: Fire-suppression piping system designed to operate at working pressure higher than standard 175 psig.

D. PE: Polyethylene plastic.

E. Underground Service-Entrance Piping: Underground service piping below the building.

### 1.3 SYSTEM DESCRIPTIONS

A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device. Hose connections are included if indicated.

B. Combined Dry-Pipe and Preaction Sprinkler System (Double Interlocked): Automatic sprinklers are attached to piping containing compressed air. Fire-detection system in same area as sprinklers actuates tripping devices that open dry-pipe valve without loss of air pressure and actuates fire alarm. Water discharges from sprinklers that have opened.

### 1.4 PERFORMANCE REQUIREMENTS

A. Standard Piping System Component Working Pressure: Listed for at least 175 psig.


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1.5 SUBMITTALS

A. Product Data: For the following:

1. Sprinkler specialty fittings.
2. Valves, including listed fire-protection valves, unlisted general-duty valves, and specialty valves and trim.
3. Air compressors, including electrical data.
4. Sprinklers, escutcheons, and guards. Include sprinkler flow characteristics, mounting, finish, and other pertinent data.
5. Fire department connections, including type; number, size, and arrangement of inlets; caps and chains; size and direction of outlet; escutcheon and marking; and finish.
6. Alarm devices, including electrical data.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Fire-hydrant flow test report.

D. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations, if applicable.

E. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping" and "Contractor's Material and Test Certificate for Underground Piping."

F. Field quality-control test reports.

G. Operation and Maintenance Data: For specialties to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing fire-suppression systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.

B. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX.

C. NFPA Standards: Fire-suppression-system equipment, specialties, accessories, installation, and testing shall comply with the following:

1. NFPA 13, "Installation of Sprinkler Systems."

1.7 COORDINATION

A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.


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1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Sprinkler Cabinets: Finished, wall-mounting, steel cabinet with hinged cover, with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and Include separate cabinet with sprinklers and wrench for each type of sprinkler on Project.

PART 2 - PRODUCTS

2.1 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell end and plain end.

1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron gland, rubber gasket, and steel bolts and nuts.

B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint bell end and plain end.

1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
2. Gaskets: AWWA C111, rubber.

C. Grooved-End, Ductile-Iron Pipe: AWWA C151, with factory- or field-formed, radius-cut-grooved ends according to AWWA C606.

1. Grooved-Joint Piping Systems:
   a. Grooved-End Fittings: ASTM A 536, ductile-iron casting with OD matching ductile-iron-pipe OD.
   b. Grooved-End-Pipe Couplings: AWWA C606, gasketed fitting matching ductile-iron-pipe OD. Include ductile-iron housing with keys matching ductile-iron-pipe and fitting grooves, rubber gasket with center leg, and steel bolts and nuts.
   c. Grooved-End-Pipe Transition Coupling: UL 213 and AWWA C606, gasketed fitting with end matching ductile-iron-pipe OD and end matching steel-pipe OD. Include ductile-iron housing with key matching ductile-iron-pipe groove and key matching steel-pipe groove, rubber gasket listed for use with housing, and steel bolts and nuts.
   d. Grooved-End Transition Flange: UL 213, gasketed fitting with key for ductile-iron-pipe dimensions. Include flange-type, ductile-iron housing with rubber gasket listed for use with housing and steel bolts and nuts.

2.2 STEEL PIPE AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795.

1. Main and line piping NPS 2 and larger to be Schedule 10 grooved.
2. Line piping NPS 1-1/2 and smaller to be Schedule 40 threaded.


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a. If hydraulically proven, NPS 1-1/4 and NPS 1-1/2 may be Schedule 10.

B. Steel Pipe Fittings:

1. Cast-Iron Threaded Flanges: ASME B16.1.
2. Malleable-Iron Threaded Fittings: ASME B16.3.
3. Gray-Iron Threaded Fittings: ASME B16.4.
4. Steel Threaded Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106, Schedule 40, seamless steel pipe. Include ends matching joining method.
5. Steel Threaded Couplings: ASTM A 865.
6. Locking-Lug Fittings: UL 213, ductile-iron body with retainer lugs that require one-quarter turn to secure pipe in fitting.
7. Steel Welding Fittings: ASTM A 234/A 234M, and ASME B16.9 or ASME B16.11.
8. Steel Flanges and Flanged Fittings: ASME B16.5.

C. Grooved-Joint Piping Systems:

1. Grooved-End Fittings: UL-listed, ASTM A 536, ductile-iron casting with OD matching steel-pipe OD.
2. Grooved-End-Pipe Couplings: UL 213 and AWWA C606, rigid pattern, unless otherwise indicated; gasketed fitting matching steel-pipe OD. Include ductile-iron housing with keys matching steel-pipe and fitting grooves, rubber gasket listed for use with housing, and steel bolts and nuts.
3. Gaskets: Material, thickness, and type suitable for intended service and design system temperatures and pressures.

## 2.3 SPRINKLER SPECIALTY FITTINGS

A. Sprinkler specialty fittings shall be UL listed or FMG approved, with 175-psig minimum working-pressure rating, and made of materials compatible with piping.

B. Outlet Specialty Fittings:

1. Mechanical-T and -Cross Fittings: UL 213, ductile-iron housing with gaskets, bolts and nuts, and threaded, locking-lug, or grooved outlets.
2. Snap-On and Strapless Outlet Fittings: UL 213, ductile-iron housing or casting with gasket and threaded outlet.

C. Sprinkler Drain and Alarm Test Fittings: Cast- or ductile-iron body; with threaded or locking-lug inlet and outlet, test valve, and orifice and sight glass.

D. Sprinkler Branch-Line Test Fittings: Brass body with threaded inlet, capped drain outlet, and threaded outlet for sprinkler.

E. Sprinkler Inspector's Test Fitting: Cast- or ductile-iron housing with threaded inlet and drain outlet and sight glass.

F. Drop-Nipple Fittings: UL 1474, adjustable with threaded inlet and outlet, and seals.

G. Dry-Pipe-System Fittings: UL listed for dry-pipe service.


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2.4 LISTED FIRE-PROTECTION VALVES

A. Valves shall be UL listed or FMG approved, with 175-psig minimum pressure rating.

B. Gate Valves with Wall Indicator Posts:

1. Gate Valves: UL 262, cast-iron body, bronze mounted, with solid disc, nonrising stem, operating nut, and flanged ends.

C. Ball Valves: Comply with UL 1091, except with ball instead of disc.

1. NPS 1-1/2 and Smaller: Bronze body with threaded ends.
2. NPS 2 and NPS 2-1/2: Bronze body with threaded ends or ductile-iron body with grooved ends.
3. NPS 3: Ductile-iron body with grooved ends.

D. Butterfly Valves: UL 1091.

1. NPS 2 and Smaller: Bronze body with threaded ends.
2. NPS 2-1/2 and Larger: Bronze, cast-iron, or ductile-iron body; wafer type or with flanged or grooved ends.

E. Check Valves NPS 2 and Larger: UL 312, swing type, cast-iron body with flanged or grooved ends.

F. Gate Valves: UL 262, OS&Y type.

1. NPS 2 and Smaller: Bronze body with threaded ends.
2. NPS 2-1/2 and Larger: Cast-iron body with flanged ends.

G. Indicating Valves: UL 1091, with integral indicating device and ends matching connecting piping.

1. Indicator: Electrical, 115-V ac, prewired, single-circuit, supervisory switch.
2. NPS 2 and Smaller: Ball or butterfly valve with bronze body and threaded ends.
3. NPS 2-1/2 and Larger: Butterfly valve with cast- or ductile-iron body; wafer type or with flanged or grooved ends.

2.5 UNLISTED GENERAL-DUTY VALVES

A. Ball Valves NPS 2 and Smaller: MSS SP-110, 2-piece copper-alloy body with chrome-plated brass ball, 600-psig minimum CWP rating, blowout-proof stem, and threaded ends.

B. Check Valves NPS 2 and Smaller: MSS SP-80, Type 4, Class 125 minimum, swing type with bronze body, nonmetallic disc, and threaded ends.

C. Gate Valves NPS 2 and Smaller: MSS SP-80, Type 2, Class 125 minimum, with bronze body, solid wedge, and threaded ends.

D. Globe Valves NPS 2 and Smaller: MSS SP-80, Type 2, Class 125 minimum, with bronze body, nonmetallic disc, and threaded ends.


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2.6 SPECIALTY VALVES

A. Sprinkler System Control Valves: UL listed or FMG approved, cast- or ductile-iron body with flanged or grooved ends, and 175-psig minimum pressure rating. Control valves shall have 250-psig minimum pressure rating if valves are components of high-pressure piping system.

1. Deluge Valves: UL 260, cast-iron body, hydraulically operated, differential-pressure type. Include bronze seat with O-ring seals, trim sets for bypass, drain, electrical sprinkler alarm switch, pressure gages, drip cup assembly piped without valves and separate from main drain line, fill-line attachment with strainer, and push-rod chamber supply connection.

a. Dry, Pilot-Line Trim Set: Include dry, pilot-line actuator; air- and water-pressure gages; low-air-pressure warning switch; air relief valve; and actuation device. Dry, pilot-line actuator includes cast-iron, operated, diaphragm-type valve with resilient facing plate, resilient diaphragm, and replaceable bronze seat. Valve includes threaded water and air inlets and water outlet. Loss of air pressure on dry, pilot-line side allows pilot-line actuator to open and causes deluge valve to open immediately.

B. Automatic Drain Valves: UL 1726, NPS 3/4, ball-check device with threaded ends.

2.7 MANUAL CONTROL STATIONS

A. Manual Control Stations: UL listed or FMG approved, hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve. Include metal enclosure labeled "MANUAL CONTROL STATION" with operating instructions and cover held closed by breakable strut to prevent accidental opening.

2.8 CONTROL PANELS

A. Description: Single-area, two-area, or single-area cross-zoned type control panel as indicated, including NEMA ICS 6, Type 1 enclosure, detector, alarm, and solenoid-valve circuitry for operation of deluge valves. Panels contain power supply; battery charger; standby batteries; field-wiring terminal strip; electrically supervised solenoid valves and polarized fire alarm bell; lamp test facility; single-pole, double-throw auxiliary alarm contacts; and rectifier.

1. Panels: UL listed and FMG approved when used with thermal detectors and Class A detector circuit wiring. Electrical characteristics are 120-V ac, 60 Hz, with 24-V dc rechargeable batteries.
2. Manual Control Stations: Electric operation, metal enclosure, labeled "MANUAL CONTROL STATION" with operating instructions and a cover held closed by breakable strut.
3. Manual Control Stations: Hydraulic operation, with union, NPS 1/2 pipe nipple, and bronze ball valve. Include metal enclosure labeled "MANUAL CONTROL STATION" with operating instructions and cover held closed by breakable strut.

2.9 SPRINKLERS

A. Sprinklers shall be UL listed or FMG approved, with 175-psig minimum pressure rating.

B. Automatic Sprinklers: With heat-responsive element complying with the following:

1. UL 199, for nonresidential applications.


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C. Sprinkler Types and Categories: Nominal 1/2-inch orifice for "Ordinary" temperature classification rating, unless otherwise indicated or required by application.

D. Sprinkler types, features, and options as follows:

1. Concealed ceiling sprinklers, including cover plate.
2. Extended-coverage sprinklers.
3. Pendent sprinklers.
4. Recessed sprinklers, including escutcheon.
5. Sidewall sprinklers.
6. Upright sprinklers.
7.

E. Sprinkler Finishes: Chrome plated, bronze, and painted.

F. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.

1. Ceiling Mounting: Plastic, white finish, one piece, flat.
2. Sidewall Mounting: Plastic, white finish, one piece, flat.

G. Sprinkler Guards: Wire-cage type, including fastening device for attaching to sprinkler.

## 2.10 FIRE DEPARTMENT CONNECTIONS

A. Wall-Type, Fire Department Connection: UL 405, 175-psig minimum pressure rating; with corrosion-resistant-metal body with brass inlets, brass wall escutcheon plate, brass lugged caps with gaskets and brass chains, and brass lugged swivel connections. Include inlets with threads according to NFPA 1963 and matching local fire department sizes and threads, outlet with pipe threads, extension pipe nipples, check devices or clappers for inlets, and escutcheon plate with marking similar to "AUTO SPKR & STANDPIPE."

1. Type: Exposed, projecting, with two inlets and round escutcheon plate.
2. Finish: Polished chrome-plated.

## 2.11 PRESSURE GAGES

A. Description: UL 393, 3-1/2- to 4-1/2-inch- diameter, dial pressure gage with range of 0 to 250 psig minimum.

1. Water System Piping: Include caption "WATER" or "AIR/WATER" on dial face.

## 2.12 ELEVATOR VALVE RECESSED WALL BOXES

A. Cabinet: Suitable for shut-off valve with supervisory switch.

1. Cabinet Construction: Fire-rated with rating equal to wall installed in.
   a. Non-rated Wall: Non-rated construction
   b. Rated Wall: Fire-rated with rating equal to wall installed in


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2. Cabinet Material: Steel sheet.
3. Recessed Cabinet: Cabinet box recessed in walls of sufficient depth to suit shut-off valve.
   a. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
4. Cabinet Trim Material: Same material and finish as door.
5. Door Material: Steel sheet.
6. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material.
   a. Provide projecting door pull and friction latch.
   b. Provide concealed hinge permitting door to open 180 degrees.
7. Accessories:
   a. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
      1) Identify valve located in cabinet.
8. Finishes: Manufacturer's standard baked-enamel paint.

## PART 3 - EXECUTION

### 3.1 PREPARATION

A. Perform fire-hydrant flow test according to NFPA 13 and NFPA 291. Use results for system design calculations required in Part 1 "Quality Assurance" Article.

B. Report test results promptly and in writing.

### 3.2 EARTHWORK

A. Refer to Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

### 3.3 EXAMINATION

A. Examine roughing-in for hose connections and stations to verify actual locations of piping connections before installation.

B. Examine walls and partitions for suitable thicknesses, fire- and smoke-rated construction, framing for hose-station cabinets, and other conditions where hose connections and stations are to be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.4 PIPING APPLICATIONS, GENERAL

A. Shop weld pipe joints where welded piping is indicated.

B. Do not use welded joints for galvanized-steel pipe.


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C. Flanges, flanged fittings, unions, nipples, and transition and special fittings with finish and pressure ratings same as or higher than system's pressure rating may be used in aboveground applications, unless otherwise indicated.

D. Piping between Fire Department Connections and Check Valves: Galvanized, standard-weight steel pipe with grooved ends; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

E. Underground Service-Entrance Piping: Ductile-iron, grooved-end pipe and fittings; grooved-end-pipe couplings; and grooved joints. Include corrosion-protective encasement.

## 3.5 SPRINKLER SYSTEM PIPING APPLICATIONS

A. Standard-Pressure, Wet-Pipe Sprinkler System, 175-psig Maximum Working Pressure:

1. Sprinkler-Piping Fitting Option: Specialty sprinkler fittings, NPS 2 and smaller, including mechanical-T and -cross fittings, may be used downstream from sprinkler zone valves.

2. NPS 1-1/2 and Smaller: Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
3. NPS 1-1/2 and Smaller: Plain-end, black, standard-weight steel pipe; steel welding fittings; and welded joints.
4. NPS 1-1/2 and Smaller: Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.

5. NPS 2: Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
6. NPS 2: Plain-end, black, standard-weight steel pipe; steel welding fittings; and welded joints.
7. NPS 2: Grooved-end, black, standard-weight steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.
8. NPS 2: Threaded-end, black, Schedule 30 steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
9. NPS 2: Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.
10. NPS 2: Grooved-end, Schedule 10 steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

11. NPS 2-1/2 to NPS 3-1/2: Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
12. NPS 2-1/2 to NPS 3-1/2: Plain-end, black, standard-weight steel pipe; steel welding fittings; and welded joints.
13. NPS 2-1/2 to NPS 3-1/2: Grooved-end, black, standard-weight steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.
14. NPS 2-1/2 to NPS 3-1/2: Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.
15. NPS 2-1/2 to NPS 3-1/2: Grooved-end, Schedule 10 steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

16. NPS 4 to NPS 6: Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
17. NPS 4 to NPS 6: Plain-end, black, standard-weight steel pipe; steel welding fittings; and welded joints.


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18. NPS 4 to NPS 6: Grooved-end, black, standard-weight steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.
19. NPS 4 to NPS 6: Threaded-end, black, Schedule 30 steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
20. NPS 4 to NPS 6: Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.
21. NPS 4 to NPS 6: Grooved-end, Schedule 10 steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

## 3.6 VALVE APPLICATIONS

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Listed Fire-Protection Valves: UL listed and FMG approved for applications where required by NFPA 13.
   a. Shutoff Duty: Use ball, butterfly, or gate valves.

2. Unlisted General-Duty Valves: For applications where UL-listed and FMG-approved valves are not required by NFPA 13.
   a. Shutoff Duty: Use ball, butterfly, or gate valves.
   b. Throttling Duty: Use ball or globe valves.

## 3.7 JOINT CONSTRUCTION

A. Refer to Division 21 Section "Common Work Results for Fire Suppression" for basic piping joint construction.

B. Threaded Joints: Comply with NFPA 13 for pipe thickness and threads. Do not thread pipe smaller than NPS 8 (DN 200) with wall thickness less than Schedule 40 unless approved by authorities having jurisdiction and threads are checked by a ring gage and comply with ASME B1.20.1.

C. Twist-Locked Joints: Insert plain-end piping into locking-lug fitting and rotate retainer lug one-quarter turn.

D. Pressure-Sealed Joints: Use UL-listed tool and procedure. Include use of specific equipment, pressure-sealing tool, and accessories.

E. Mechanically Formed, Copper-Tube-Outlet Joints: Use UL-listed tool and procedure. Drill pilot hole in copper tube, form branch for collar, dimple tube to form seating stop, and braze branch tube into formed-collar outlet.

F. Grooved Joints: Assemble joints with listed coupling and gasket, lubricant, and bolts.

1. Ductile-Iron Pipe: Radius-cut-groove ends of piping. Use grooved-end fittings and grooved-end-pipe couplings.
2. Steel Pipe: Square-cut or roll-groove piping as indicated. Use grooved-end fittings and rigid, grooved-end-pipe couplings, unless otherwise indicated.
3. Copper Tube: Roll-groove tubing. Use grooved-end fittings and grooved-end-tube couplings.
4. Dry-Pipe Systems: Use fittings and gaskets listed for dry-pipe service.


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G. Dissimilar-Metal Piping Joints: Construct joints using dielectric fittings compatible with both piping materials.

1. NPS 2 and Smaller: Use dielectric unions, couplings, or nipples.
2. NPS 2-1/2 to NPS 4: Use dielectric flanges.
3. NPS 5 and Larger: Use dielectric flange insulation kits.

## 3.8 SERVICE-ENTRANCE PIPING

A. Connect fire-suppression piping to water-service piping of size and in location indicated for service entrance to building. Refer to Division 22 Section "Facility Water Distribution Piping" for exterior piping.

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-service piping. Refer to Division 22 Section "Facility Water Distribution Piping" for backflow preventers.

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water service.

## 3.9 WATER-SUPPLY CONNECTION

A. Connect fire-suppression piping to building's interior water distribution piping. Refer to Division 22 Section "Domestic Water Piping" for interior piping.

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water distribution piping. Refer to Division 22 Section "Domestic Water Piping Specialties" for backflow preventers.

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water supply.

## 3.10 PIPING INSTALLATION

A. Refer to Division 21 Section "Common Work Results for Fire Suppression" for basic piping installation.

B. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

C. Install underground ductile-iron service-entrance piping according to NFPA 24 and with restrained joints. Encase piping in corrosion-protective encasement.

D. Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

E. Install unions adjacent to each valve in pipes NPS 2 and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.


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F. Install flanges or flange adapters on valves, apparatus, and equipment having NPS 2-1/2 and larger connections.

G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, sized and located according to NFPA 13.

H. Install sprinkler piping with drains for complete system drainage.

I. Install sprinkler zone control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.

J. Install drain valves on standpipes.

K. Install ball drip valves to drain piping between fire department connections and check valves. Drain to floor drain or outside building.

L. Install alarm devices in piping systems.

M. Hangers and Supports: Comply with NFPA 13 for hanger materials.

1. Install sprinkler system piping according to NFPA 13.

N. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 and with soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

O. Drain dry-pipe sprinkler piping.

P. Pressurize and check dry-pipe sprinkler system piping and air-pressure maintenance devices.

Q. Fill wet-pipe sprinkler system piping with water.

## 3.11 VALVE INSTALLATION

A. Install listed fire-protection valves, unlisted general-duty valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Valves for Wall-Type Fire Hydrants: Install nonrising-stem gate valve in water-supply pipe.

D. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water supply sources.

E. Specialty Valves:

1. Alarm Check Valves: Install in vertical position for proper direction of flow, including bypass check valve and retarding chamber drain-line connection.


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3.12 SPRINKLER APPLICATIONS

A. Drawings indicate sprinkler types to be used. Where specific types are not indicated, use the following sprinkler types:

1. Rooms without Ceilings: Upright sprinklers.
2. Rooms with Suspended Ceilings: Concealed sprinklers.
3. Wall Mounting: Sidewall sprinklers.
4. Special Applications: Extended-coverage, flow-control, and quick-response sprinklers where required.
5. Sprinkler Finishes:
   a. Upright, Pendent, and Sidewall Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.
   b. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
   c. Flush Sprinklers: Bright chrome, with painted white escutcheon.
   d. Recessed Sprinklers: Bright chrome, with bright chrome escutcheon.

3.13 SPRINKLER INSTALLATION

A. Install sprinklers in suspended ceilings in center of narrow dimension of acoustical ceiling panels and tiles.

B. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing. Use dry-type sprinklers with water supply from heated space.

3.14 FIRE DEPARTMENT CONNECTION INSTALLATION

A. Install wall-type, fire department connections in vertical wall.

B. Install freestanding-type, fire department connections in level surface.

1. Install protective pipe bollards on two sides of each fire department connection. Refer to Division 05 Section "Metal Fabrications" for pipe bollards.

C. Install ball drip valve at each check valve for fire department connection.

3.15 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Connect water-supply piping to fire-suppression piping. Include backflow preventer between potable-water piping and fire-suppression piping. Refer to Division 22 Section "Domestic Water Piping Specialties" for backflow preventers.

D. Install ball drip valves at each check valve for fire department connection. Drain to floor drain or outside building.


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E. Connect piping to specialty valves, hose valves, specialties, fire department connections, and accessories.

F. Connect compressed-air supply to dry-pipe sprinkler piping.

G. Connect air compressor to the following piping and wiring:

1. Pressure gages and controls.
2. Electrical power system.
3. Fire alarm devices, including low-pressure alarm.

H. Electrical Connections: Power wiring is specified in Division 26.

I. Connect alarm devices to fire alarm.

J. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

K. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

L. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

## 3.16 LABELING AND IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13 .

## 3.17 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Energize circuits to electrical equipment and devices.
4. Start and run air compressors.
5. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
6. Flush, test, and inspect standpipe systems according to NFPA 14, "System Acceptance" Chapter.
7. Coordinate with fire alarm tests. Operate as required.
8. Verify that equipment hose threads are same as local fire department equipment.

B. Report test results promptly and in writing to Construction Manager and authorities having jurisdiction.

## 3.18 CLEANING AND PROTECTION

A. Clean dirt and debris from sprinklers.

B. Remove and replace sprinklers with paint other than factory finish.

C. Protect sprinklers from damage until Substantial Completion.


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3.19 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain specialty valves. Refer to Division 01 Section "Demonstration and Training."

**END OF SECTION 21 1000**


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# SECTION 21 3113 – ELECTRIC DRIVE, CENTRIFUGAL FIRE PUMPS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Split-case fire pumps.
2. Fire-pump accessories and specialties.

### 1.2 PERFORMANCE REQUIREMENTS

A. Pump Equipment, Accessory, and Specialty Pressure Rating: 175 psig minimum unless higher pressure rating is indicated.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, performance curves, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For fire pumps, motor drivers, and fire-pump accessories and specialties. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

### 1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each fire pump, from manufacturer.

B. Source quality-control reports.

C. Field quality-control reports.

### 1.5 CLOSEOUT SUBMITTALS

A. Alignment Certificate: Include signed certificate verifying based mounted pump alignment procedures have been completed.

B. Operation and maintenance data.


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1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NFPA Compliance: Comply with NFPA 20, "Installation of Stationary Pumps for Fire Protection."

1.7 COORDINATION

A. Coordinate sizes and locations of concrete bases with actual equipment provided.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR CENTRIFUGAL FIRE PUMPS

A. Description: Factory-assembled and -tested fire-pump and driver unit.

B. Finish: Red paint applied to factory-assembled and -tested unit before shipping.

2.2 HORIZONTALLY MOUNTED, SINGLE-STAGE, SPLIT-CASE FIRE PUMPS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. A-C Fire Pump Systems; a business of ITT Industries.
2. Patterson Pump Company; a subsidiary of the Gorman-Rupp Company.
3. PACO Pumps; Grundfos Pumps Corporation, U.S.A.
4. Peerless Pump, Inc.
5. Pentair Pump Group; Aurora Pump.
6. Reddy-Buffaloes Pump Company.
7. Ruhrpumpen, Inc.
8. S.A. Armstrong Limited.

B. Pump:

1. Standard: UL 448, for split-case pumps for fire service.
2. Casing: Axially split case, cast iron with ASME B16.1 pipe-flange connections.
3. Impeller: Cast bronze, statically and dynamically balanced, and keyed to shaft.
4. Wear Rings: Replaceable bronze.
5. Shaft and Sleeve: Steel shaft with bronze sleeve.

    a. Shaft Bearings: Grease-lubricated ball bearings in cast-iron housing.
    b. Seals: Stuffing box with minimum of four rings of graphite-impregnated braided yarn and bronze packing gland.

6. Mounting: Pump and driver shafts are horizontal, with pump and driver on same base.

C. Coupling: Flexible and capable of absorbing torsional vibration and shaft misalignment. Include metal coupling guard.


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D. Driver:

1. Standard: UL 1004A.
2. Type: Electric motor; NEMA MG 1, polyphase Design B.

2.3 FIRE-PUMP ACCESSORIES AND SPECIALTIES

A. Automatic Air-Release Valves: Comply with NFPA 20 for installation in fire-pump casing.

B. Inlet Fitting: Eccentric tapered reducer at pump suction inlet.

C. Outlet Fitting: Concentric tapered reducer at pump discharge outlet.

D. Hose Valve Manifold Assembly:

1. Standard: Comply with requirements in NFPA 20.
2. Header Pipe: ASTM A 53/A 53M, Schedule 40, galvanized steel with ends threaded according to ASME B1.20.1.
3. Header Pipe Fittings: ASME B16.4, galvanized cast-iron threaded fittings.
4. Automatic Drain Valve: UL 1726.

5. Manifold:

a. Test Connections: Comply with UL 405 except provide outlets without clappers instead of inlets.
b. Body: Flush type, brass or ductile iron, with number of outlets required by NFPA 20.
c. Nipples: ASTM A 53/A 53M, Schedule 40, galvanized-steel pipe with ends threaded according to ASME B1.20.1.
d. Adapters and Caps with Chain: Brass or bronze, with outlet threaded according to NFPA 1963 and matching local fire-department threads.
e. Escutcheon Plate: Brass or bronze; rectangular.

f. Hose Valves: UL 668, bronze, with outlet threaded according to NFPA 1963 and matching local fire-department threads.
g. Exposed Parts Finish: Rough brass.
h. Escutcheon Plate Marking: Equivalent to "FIRE PUMP TEST."

2.4 GROUT

A. Standard: ASTM C 1107, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink and recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.5 SOURCE QUALITY CONTROL

A. Testing: Test and inspect fire pumps according to UL 448 requirements for "Operation Test" and "Manufacturing and Production Tests."


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1. Verification of Performance: Rate fire pumps according to UL 448.

B. Fire pumps will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine equipment bases and anchorage provisions, with Installer present, for compliance with requirements and for conditions affecting performance of fire pumps.

B. Examine roughing-in for fire-suppression piping systems to verify actual locations of piping connections before fire-pump installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

A. Fire-Pump Installation Standard: Comply with NFPA 20 for installation of fire pumps, relief valves, and related components.

B. Equipment Mounting:

1. Install fire pumps on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 03 3000 "Cast-in-Place Concrete."

C. Install fire-pump suction and discharge piping equal to or larger than sizes required by NFPA 20.

D. Support piping and pumps separately so weight of piping does not rest on pumps.

E. Install valves that are same size as connecting piping. Comply with requirements for fire-protection valves specified in Division 21 fire-protection piping sections.

F. Install pressure gages on fire-pump suction and discharge flange pressure-gage tappings. Comply with requirements for pressure gages specified in Division 21 fire-protection piping sections.

G. Install piping hangers and supports, anchors, valves, gages, and equipment supports according to NFPA 20.

H. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not factory mounted. Furnish copies of manufacturers' wiring diagram submittals to electrical Installer.

I. Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.


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3.3 ALIGNMENT

A. Align split-case pump and driver shafts after complete unit has been leveled on concrete base, grout has set, and anchor bolts have been tightened.

B. After alignment is correct, tighten anchor bolts evenly. Fill baseplate completely with grout, with metal blocks and shims or wedges in place. Tighten anchor bolts after grout has hardened. Check alignment and make required corrections.

C. Align piping connections.

D. Align pump and driver shafts for angular and parallel alignment according to HI 1.4 and to tolerances specified by manufacturer.

3.4 CONNECTIONS

A. Comply with requirements for piping and valves specified in Division 21fire-protection piping sections.

B. Install piping adjacent to pumps and equipment to allow service and maintenance.

C. Connect fire pumps to their controllers.

3.5 IDENTIFICATION

A. Identify system components. Comply with requirements for fire-pump marking according to NFPA 20.

3.6 FIELD QUALITY CONTROL

A. Test each fire pump with its controller as a unit. Comply with requirements for electric-motor-driver fire-pump controllers specified in Division 21 Section "Controllers for Fire-Pump Drivers."

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Tests and Inspections:

1. After installing components, assemblies, and equipment including controller, test for compliance with requirements.
2. Test according to NFPA 20 for acceptance and performance testing.
3. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
4. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Components, assemblies, and equipment will be considered defective if they do not pass tests and inspections.


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E. Prepare test and inspection reports.

F. Furnish fire hoses in number, size, and length required to reach storm drain or other acceptable location to dispose of fire-pump test water. Hoses are for tests only and do not convey to Owner.

3.7 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire pumps.

**END OF SECTION 21 3113**


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# SECTION 21 3400 – PRESSURE MAINTENANCE PUMPS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Pressure maintenance pumps.

B. Related Section:

1. Division 21 Section "Controllers for Fire-Pump Drivers" for pressure-maintenance-pump controllers.

### 1.2 PERFORMANCE REQUIREMENTS

A. Pump Equipment, Accessory, and Specialty Pressure Rating: 175 psig minimum unless higher pressure rating is indicated.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, performance curves, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For pumps, accessories, and specialties. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

### 1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

### 1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

### 1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.


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1.7 COORDINATION

A. Coordinate sizes and locations of concrete bases with actual equipment provided.

PART 2 - PRODUCTS

2.1 PRESSURE-MAINTENANCE PUMPS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. A-C Fire Pump Systems; a business of ITT Industries.
2. Patterson Pump Company; a subsidiary of the Gorman-Rupp Company.
3. Peerless Pump, Inc.
4. Pentair Pump Group; Aurora Pump.
5. Pentair Pump Group; Fairbanks Morse.
6. Reddy-Buffaloes Pump Company.
7. Ruhrpumpen, Inc.
8. S.A. Armstrong Limited.
9. Sulzer Pumps Ltd.
10. Weir Floway; a company of Weir Clear Liquid.

2.2 MOTORS

A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 21 Section "Common Motor Requirements for Fire Suppression Equipment."

1. Motor Sizes: Minimum size as indicated; if not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. NFPA Standard: Comply with NFPA 20 for installation of pressure-maintenance pumps.

B. Base-Mounted Pump Mounting: Install pumps on concrete bases. Comply with requirements for concrete bases specified in Division 03 concrete section.

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.


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4. Install anchor bolts to elevations required for proper attachment to supported equipment.
5. Attach pumps to equipment base using anchor bolts.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Pressure-maintenance pumps will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.3 ADJUSTING

A. Lubricate pumps as recommended by manufacturer.

B. Set field-adjustable pressure-switch ranges as indicated.

**END OF SECTION 21 3400**


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# SECTION 21 3900 - CONTROLLERS FOR FIRE-PUMP DRIVERS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Full-service, reduced-voltage controllers rated 600 V and less.
2. Controllers for pressure-maintenance pumps.
3. Remote alarm panels.

### 1.2 DEFINITIONS

A. ATS: Automatic transfer switch(es).

B. ECM: Electronic control module.

C. MCCB: Molded-case circuit breaker.

D. NO: Normally open.

E. PID: Proportional integral derivative.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For each type of product indicated.

1. Include plans, elevations, sections, and attachment details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Show tabulations of the following:

    a. Each installed unit's type and details.
    b. Enclosure types and details for types other than NEMA 250, Type 2.
    c. Factory-installed devices.
    d. Nameplate legends.
    e. Short-circuit current (withstand) rating of integrated unit.
    f. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices.

    g. Specified modifications.

4. Include diagrams for power, signal, alarm, control wiring, and pressure-sensing tubing.


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1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Source quality-control reports.

C. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Member company of an NRTL.

B. Source Limitations: Obtain fire-pump controllers and all associated equipment from single source or producer.

1.7 FIELD CONDITIONS

A. Environmental Limitations:

1. Ambient Temperature Rating: Not less than 40 deg F and not exceeding 122 deg F unless otherwise indicated.
2. Altitude Rating: Not exceeding 6600 feet unless otherwise indicated.

1.8 COORDINATION

A. Coordinate layout and installation of controllers with other construction including conduit, piping, fire-pump equipment, and adjacent surfaces. Maintain required clearances for workspace and equipment access doors and panels. Ensure that controllers are within sight of fire-pump drivers.

B. Coordinate sizes and locations of concrete bases, if needed, with actual equipment provided.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with NFPA 20 and NFPA 70.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 FULL-SERVICE CONTROLLERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:


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1. Aquarius Fluid Products, Inc.
2. ASCO Power Technologies, LP; Firetrol Products.
3. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
4. Hubbell Incorporated; Hubbell Industrial Controls.
5. Joslyn Clark Corporation.
6. Master Control Systems, Inc.
7. Metron, Inc.
8. Tornatech.

B. General Requirements for Full-Service Controllers:

1. Comply with NFPA 20 and UL 218.
2. Combined automatic and nonautomatic operation.
3. Factory assembled, wired, and tested; continuous-duty rated.

C. Method of Starting:

1. Pressure-switch actuated.

a. Water-pressure-actuated switch and pressure transducer with independent high- and low-calibrated adjustments responsive to water pressure in fire-suppression piping.
b. System pressure recorder, electric ac driven, with spring backup.

c. Programmable minimum-run-time relay to prevent short cycling.

d. Programmable timer for weekly tests.

2. Solid-State Controller: Reduced-voltage type (delta-wye).
3. Emergency Start: Mechanically operated start handle that closes and retains the motor RUN contactor independent of all electric or pressure actuators.

D. Method of Stopping: Automatic and nonautomatic shutdown after automatic starting.

E. Capacity: Rated for fire-pump-driver horsepower and short-circuit-current (withstand) rating equal to or greater than short-circuit current available at controller location.

F. Method of Isolation and Overcurrent Protection: Interlocked isolating switch and nonthermal MCCB; with a common, externally mounted operating handle, and providing locked-rotor protection.

G. Door-Mounted Operator Interface and Controls:

1. Monitor, display, and control the devices, alarms, functions, and operations listed in NFPA 20 as required for drivers and controller types used.
2. Method of Control and Indication:

a. Microprocessor-based logic controller, with multiline digital readout.
b. Membrane keypad.
c. LED alarm and status indicating lights.

3. Local and Remote Alarm and Status Indications:

a. Controller power on.


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b. Motor running condition.
c. Loss-of-line power.
d. Line-power phase reversal.
e. Line-power single-phase condition.

4. Audible alarm, with silence push button.
5. Nonautomatic START and STOP push buttons or switches.

H. Optional Features:

1. Extra Output Contacts:

a. One NO contact for motor running condition.
b. One set of contacts for loss-of-line power.

2. Local alarm bell.
3. Door-mounted thermal or impact printer for alarm and status logs.
4. Operator Interface Communications Ports: USB, Ethernet, and RS485.

I. ATS:

1. Complies with NFPA 20, UL 218, and UL 1008.
2. Integral with controller as a listed combination fire-pump controller and power transfer switch.
3. Automatically transfers fire-pump controller from normal power supply to alternate power supply in event of power failure.
4. Allows manual transfer from one source to the other.

5. Alternate-Source Isolating and Disconnecting Means: Mechanically interlocked isolation switch and circuit breaker rated at a minimum of 115 percent of rated motor full-load current, with an externally mounted operating handle; circuit breaker shall be provided with nonthermal sensing, instantaneous-only short-circuit overcurrent protection to comply with available fault currents.

6. Local and Remote Alarm and Status Indications:

a. Normal source available.
b. Alternate source available.
c. In normal position.
d. In alternate position.
e. Isolating means open.

7. Audible alarm, with silence push button.
8. Nonautomatic (manual, nonelectric) means of transfer.
9. Engine test push button.
10. Start generator output contacts.
11. Timer for weekly generator tests.

## 2.3 CONTROLLERS FOR PRESSURE-MAINTENANCE PUMPS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Aquarius Fluid Products, Inc.


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2. ASCO Power Technologies, LP; Firetrol Products.
3. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
4. Hubbell Incorporated; Hubbell Industrial Controls.
5. Joslyn Clark Corporation.
6. Master Control Systems, Inc.
7. Metron, Inc.
8. Tornatech.

B. General Requirements for Pressure-Maintenance-Pump Controllers:

1. Type: UL 508, factory-assembled, -wired, and -tested, across-the-line controller; for combined automatic and manual operation.
2. Enclosure: UL 508 and NEMA 250, Type 2 for wall-mounting.
3. Factory assembled, wired, and tested.
4. Finish: Manufacturer's standard color paint.

C. Rate controller for scheduled horsepower and include the following:

1. Fusible disconnect switch.
2. Pressure switch.
3. Hand-off-auto selector switch.
4. Pilot light.
5. Running period timer.

## 2.4 REMOTE ALARM PANELS

A. General Requirements for Remote Alarm Panels: Factory assembled, wired, and tested; and complying with NFPA 20 and UL 218.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Aquarius Fluid Products, Inc.
2. ASCO Power Technologies, LP; Firetrol Products.
3. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
4. Hubbell Incorporated; Hubbell Industrial Controls.
5. Joslyn Clark Corporation.
6. Master Control Systems, Inc.
7. Metron, Inc.
8. Tornatech.

C. Audible and Visual Alarm and Status Indications:

1. Driver running.
2. Loss of phase.
3. Phase reversal.
4. Supervised power on.

5. Common trouble on the controller.

D. Audible and Visual Alarm and Status Indications: Manufacturer's standard indicating lights; push-to-test.


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1. Engine running.
2. Controller main switch turned to the off or manual position.
3. Supervised power on.
4. Common trouble on the controller or engine.
5. Common pump room trouble.
6. Controller connected to alternate power source.

E. Audible alarm, with silence push button.

2.5 ENCLOSURES

A. Fire-Pump Controllers, ATS, Remote Alarm Panels, and Low-Suction-Shutdown Panels: NEMA 250, to comply with environmental conditions at installed locations and NFPA 20.

1. Indoor, Dry and Clean Locations: Type 1 (IEC IP10).
2. Indoor Locations Subject to Dripping Noncorrosive Liquids: Type 2 (IEC IP11).

B. Enclosure Color: Manufacturer's standard "fire-pump-controller red".

C. Nameplates: Comply with NFPA 20; complete with capacity, characteristics, approvals, listings, and other pertinent data.

2.6 SOURCE QUALITY CONTROL

A. Testing: Test and inspect fire-pump controllers according to requirements in NFPA 20 and UL 218.

1. Verification of Performance: Rate controllers according to operation of functions and features specified.

B. Fire-pump controllers will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and surfaces to receive equipment, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine equipment before installation. Reject equipment that is wet or damaged by moisture or mold.

C. Proceed with installation only after unsatisfactory conditions have been corrected.


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## 3.2 CONTROLLER INSTALLATION

A. Coordinate installation of controllers with other construction including conduit, piping, fire-pump equipment, and adjacent surfaces. Maintain required clearances for workspace and equipment access doors and panels. Ensure that controllers are within sight of fire-pump drivers.

B. Coordinate sizes and locations of concrete bases with actual equipment provided.

C. Install controllers within sight of their respective drivers.

D. Connect controllers to their dedicated pressure-sensing lines.

E. Wall-Mounting Controllers: Install controllers on walls with disconnect operating handles not higher than 79 inches above finished floor, and bottom of enclosure not less than 12 inches above finished floor unless otherwise indicated. Bolt units to wall or mount on lightweight structural-steel channels bolted to wall. For controllers not on walls, provide freestanding racks complying with Section 26 0529 "Hangers and Supports for Electrical Systems."

F. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

G. Comply with NEMA ICS 15.

## 3.3 REMOTE ALARM PANEL INSTALLATION

A. Install panels on walls with tops not higher than 72 inches above finished floor unless otherwise indicated. Bolt units to wall or mount on lightweight structural-steel channels bolted to wall. For ATS not on walls, provide freestanding racks using lightweight structural-steel channels bolted to floor.

## 3.4 POWER WIRING INSTALLATION

A. Install power wiring between controllers and their services or sources, and between controllers and their drivers. Comply with requirements in NFPA 20, NFPA 70, and Section 26 0519 "Low-Voltage Electrical Power Conductors and Cables."

## 3.5 CONTROL AND ALARM WIRING INSTALLATION

A. Install wiring between controllers and remote devices and facility's central monitoring system. Comply with requirements in NFPA 20, NFPA 70.

B. Install wiring between remote alarm panels and controllers. Comply with requirements in NFPA 20, NFPA 70, and Section 26 0523 "Control-Voltage Electrical Power Cables."

C. Install wiring between controllers and the building's fire-alarm system. Comply with requirements specified in Section 28 3111 "Digital, Addressable Fire-Alarm System."

D. Bundle, train, and support wiring in enclosures.

E. Connect remote manual and automatic activation devices where applicable.


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3.6 IDENTIFICATION

A. Comply with requirements in NFPA 20 for marking fire-pump controllers.

B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification in NFPA 20 and as specified in Section 26 0553 "Identification for Electrical Systems."

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Acceptance Testing Preparation:

1. Inspect and Test Each Component:

a. Inspect wiring, components, connections, and equipment installations. Test and adjust components and equipment.
b. Test insulation resistance for each element, component, connecting supply, feeder, and control circuits.
c. Test continuity of each circuit.

2. Verify and Test Each Electric-Drive Controller:

a. Verify that voltages at controller locations are within plus 10 or minus 1 percent of motor nameplate rated voltages, with motors off. If outside this range for any motor, notify Engineer before starting the motor(s).
b. Test each motor for proper phase rotation.

3. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Field Acceptance Tests:

1. Do not begin field acceptance testing until suction piping has been flushed and hydrostatically tested and the certificate for flushing and testing has been submitted to Engineer and authorities having jurisdiction.
2. Prior to starting, notify authorities having jurisdiction of the time and place of the acceptance testing.
3. Engage manufacturer's factory-authorized service representative to be present during the testing.
4. Perform field acceptance tests as outlined in NFPA 20.

E. Controllers will be considered defective if they do not pass tests and inspections.

F. Prepare test and inspection reports.


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3.8 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.9 ADJUSTING

A. Adjust controllers to function smoothly and as recommended by manufacturer.

B. Set field-adjustable switches, auxiliary relays, time-delay relays, and timers.

C. Program microprocessors for required operational sequences, status indications, alarms, event recording, and display features. Clear events memory after final acceptance testing and prior to Substantial Completion.

D. Set field-adjustable pressure switches.

3.10 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions until enclosed controllers are ready to be energized and placed into service.

B. Replace controllers whose interiors have been exposed to water or other liquids prior to Substantial Completion.

3.11 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain controllers, remote alarm panels, and to use and reprogram microprocessor-based controls within this equipment.

**END OF SECTION 21 3900**


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# SECTION 22 4000 - PLUMBING FIXTURES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes plumbing fixtures and related components.

B. Related Sections include the following:

1. Division 22 Section "Domestic Water Piping Specialties" for mixing valves and specialty fixtures not included in this Section.

### 1.2 DEFINITIONS

A. Barrier-Free Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.

B. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Piping and general-duty valves are included where indicated. Fittings specified in this Section include:

1. Supplies and stops.
2. Faucets and spouts.
3. Drains and tailpieces.
4. Traps and waste pipes.

### 1.3 ACTION SUBMITTALS

A. Product Data: For each type of plumbing fixture indicated. Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports. Indicate materials and finishes, dimensions, construction details, and flow-control rates.

### 1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

### 1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.

1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.

B. Regulatory Requirements: Comply with the following:


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1. Michigan Building Code (ANSI117) for plumbing fixtures for people with disabilities.
2. Michigan Plumbing Code.
3. Local authority having jurisdiction.
4. Michigan and local Department of Health requirements.

C. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.

D. NSF Compliance as required by authorities having jurisdiction:

1. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components.
2. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."
3. Comply with NSF 372, "Drinking Water System Components – Lead Content"

E. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Subject to compliance with specified requirements, provide commercial grade plumbing fixtures by one of the following:

1. Lavatories, Water Closets, Urinals:
   a. American Standard
   b. Kohler
   c. Zurn
   d. Sloan
   e. Mansfield

2. Stainless Steel Sinks:
   a. Acorn
   b. Elkay
   c. Just

3. Mop Basins:
   a. Fiat
   b. Florestone
   c. Mustee
   d. ProFlo
   e. Swan
   f. Zurn

4. Faucets:
   a. Chicago Faucet

5. Flush Valves:
   a. Sloan
   b. Zurn


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6. Water Closet Seats:
   a. American Standard
   b. Bemis
   c. Centoco
   d. Church
   e. Kohler
   f. ProFlo
   g. Zurn

7. Water Coolers:
   a. Elkay

8. Shower Head and Valves:
   a. Bradley
   b. Chicago Faucet
   c. Powers
   d. Symmons
   e. Delta
   f. Leonard
   g. Zurn
   h. Kohler
   i. American Standard

9. Emergency Shower and Eye Washes:
   a. Acorn
   b. Bradley
   c. Haws
   d. Speakman
   e. Encon
   f. Guardian

10. Fixture Supports:
    a. Josam
    b. Wade
    c. Zurn
    d. Jay R. Smith
    e. MIFAB
    f. Watts.

## 2.2 WATER CLOSETS

A. Refer to drawing P502 for plumbing fixture schedule.

## 2.3 URINALS

A. Refer to drawing P502 for plumbing fixture schedule.


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2.4 LAVATORIES

A. Refer to drawing P502 for plumbing fixture schedule

1. Provide offset tailpiece on barrier-free units.
2. Provide thermostatic mixing valve on hot water line to barrier-free lavatory faucet. Mount below lavatory as high as possible. Refer to Section 22 1119 for mixing valve.
3. Provide plastic under lavatory trap and supplies insulation kit on barrier-free units. Refer to articles below.

2.5 MOP BASINS

A. Refer to drawing P502 for plumbing fixture schedule.

2.6 EMERGENCY EQUIPMENT

A. EEW-1 Emergency Eyewash Fountains: Wall mounted stainless steel receptor with integral stainless steel mounting bracket. Unit shall have stainless steel face spray ring; push-flag type, instant action, ball valve that stays open until manually closed; pressure compensated stream control; and chrome plated strainer and tailpiece. Bradley Model S19-224SS or equivalent. Provide complete with trap, and supplies and stops as specified in the Articles below.

1. Provide ANSI Z 358.1 compliant emergency equipment tempering thermostatic mixing valve on water lines to unit. Install valve in surface mounted wall cabinet.

2.7 SINKS

A. Refer to drawing P502 for plumbing fixture schedule.

1. Provide offset tailpiece on barrier-free units.
2. Provide thermostatic mixing valve on hot water line to barrier-free sink faucet. Mount below sink as high as possible. Refer to Section 22 1119 for mixing valve.
3. Provide plastic under lavatory trap and supplies insulation kit on barrier-free units. Refer to articles below.

2.8 FAUCETS

A. Refer to drawing P502 for plumbing fixture schedule.

1. Refer to sensor faucet and flush valve accessories article below for transformers and mini-junction boxes.

2.9 FLUSH VALVES

A. Refer to drawing P502 for plumbing fixture schedule.


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1. Refer to sensor faucet and flush valve accessories article below for transformers and mini-junction boxes.

## 2.10 TOILET SEATS

A. Refer to drawing P502 for plumbing fixture schedule..

## 2.11 FIXTURE SUPPORTS

A. General: All Fixture support carriers to conform to ANSI A112.6.1M (American National Standards Institute).

B. Urinal and Water Cooler Support Carriers: Wade W-400-AM11-M36 or equivalent foot supported carrier with rectangular structural steel uprights, top support plate, and lower bearing plate with studs.

C. Water Closet Support Carriers: Wade W-300 series or equivalent foot supported carrier with vertical or horizontal waste fitting configuration as required by waste piping installation. Single closet carriers shall be provided with rear anchoring foot. Closet coupling and fixture support rods shall be of proper length for wall thickness. M4 rod support feet shall be furnished when span from inside of finish block wall to face of carrier faceplate exceeds 6". M4 rod support feet shall also be provided on each water closet carrier installed on stud type wall construction.

D. Lavatory Support Carriers: "Wade" Model W-520-M36 Series or equivalent concealed arm, foot supported carrier with rectangular structural steel uprights.

## 2.12 UNDER-LAVATORY GUARDS

A. Under-Lavatory Guard:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Plumberex Specialty Products, Inc.
   b. Truebro by IPS Corporation.
   c. ProFlo

2. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded plastic, white.

## 2.13 FITTINGS, TRIM AND ACCESSORIES

A. Fittings for Plumbing Fixtures: Fittings include the following:

1. Supply Inlets: Copper tube, size required for final connection.
2. Supply Stops: Chrome-plated brass body, angle or straight configuration with compression fittings, loose-key type; size to match inlet pipe and supply riser.
3. Supply Risers: 3/8-inch OD flexible chrome-plated brass tube with 1/2-inch IPS straight or offset, knob-end tailpiece; or braided flexible stainless steel.


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4. Traps: Chrome-plated, 17 gauge tubular brass P-trap and wall bend, with slip-joint inlet, wall flange, and escutcheon; same size as fixture outlet connection.
   a. For concealed applications within water coolers or casework, ASTM F 409 PVC one or two-piece trap and waste to wall maybe used.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.

B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.

1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.

C. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.

D. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.

E. Install wall-mounting fixtures with tubular waste piping attached to supports.

F. Install counter-mounting fixtures in and attached to casework.

G. Install fixtures level and plumb according to roughing-in drawings.

H. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.

1. Exception: Use ball valves if supply stops are not specified with fixture. Valves are specified in Division 22 Section "General-Duty Valves for Plumbing Piping."

I. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.

J. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.


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K. Install toilet seats on water closets.

L. Install traps on fixture outlets.

1. Exception: Omit trap on fixtures with integral traps.
2. Exception: Omit trap on indirect wastes, unless otherwise indicated.

M. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in Division 22 Section "Common Work Results for Plumbing."

N. Set mop basins in leveling bed of cement grout. Grout is specified in Division 22 Section "Common Work Results for Plumbing."

O. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 07 Section "Joint Sealants."

P. Install flush valves in accordance with manufacturer's instructions. Adjust settings and verify proper operation.

1. Install flush valves on barrier-free units with handles on wide side of stall.

Q. Install under-lavatory insulation kits at barrier-free lavatory and sink locations in accordance with the following:

1. Cover hot- and cold-water supply risers, stops and handles, tailpiece, trap, and wall bend. Install in accordance with manufacturer's installation instructions. Trim connectors flush so no sharp edges remain.

## 3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

## 3.4 FIELD QUALITY CONTROL

A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.

B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.

C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.


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3.5 ADJUSTING

A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.

B. Adjust mixing valve maximum temperature limit stop in accordance with manufacturers' recommendations and in compliance with the plumbing code and authority having jurisdiction.

C. Replace washers and seals of leaking and dripping faucets and stops.

3.6 CLEANING

A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials. Do the following:

1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
2. Remove sediment and debris from drains.

B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

3.7 PROTECTION

A. Provide protective covering for installed fixtures and fittings.

B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

3.8 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain the following:

1. Faucets.
2. Flush valves.
3. Water coolers
4. Drinking fountains
5. Shower valves.
6. Washfountains.
7. Emergency shower and eye washes.

B. Refer to Division 01 Section "Demonstration and Training."

3.9 FIXTURE HEIGHT SCHEDULE

A. Install fixtures to heights above finished floor as indicated.

1. Water Closet:
   a. Standard: 15 inches to top of bowl rim.


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b. Barrier Free: 17 to 19 inches, top of seat.

2. Water Closet Flush Valves:
   a. Standard: 11 inches min. above bowl rim.

3. Urinal:
   a. Standard: 22 inches to top of bowl rim.
   b. Barrier Free: 17 inches maximum to top of bowl rim.

4. Urinal Flush Valves:
   a. Standard: 11 inches min. above top.
   b. Barrier Free: 46 inches maximum to flush valve handle.

5. Lavatory:
   a. Standard: 34 inches to top of basin rim.
   b. Barrier Free: 34 inches to top of basin rim.

6. Individual Shower Heads:
   a. Adult Male: 80 inches to bottom of head.
   b. Adult Female: 80 inches to bottom of head.

7. Barrier Free Shower Controls:
   a. Minimum 38 inches above floor.
   b. Maximum 48 inches above floor.

8. Barrier Free Shower Spray Unit Slide Bar:
   a. Bottom minimum 41 inches above floor.
   b. Top minimum 72 inches above floor.

9. Emergency Eye and Face Wash:
   a. Standard: 38 inches to receptor rim.

## 3.10 FIXTURE ROUGH-IN SCHEDULE

A. Line sizes indicated below are run-out sizes, reduce size as required at connection to fixture. Main lines and drops shall be installed in sizes as indicated on drawings.

1. Water Closet (Flush Valve Type):
   a. Cold Water: 1-1/4 Inch.
   b. Waste: 4 Inch.
   c. Vent: 2 Inch.

2. Urinal (Flush Valve Type):
   a. Cold Water: 1-1/4 Inch.
   b. Waste: 2 Inch.
   c. Vent: 1-1/2 Inch.

3. Lavatory:
   a. Hot Water: 1/2 Inch.
   b. Cold Water: 1/2 Inch.


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c. Waste: 1-1/2 Inch.
d. Vent: 1-1/4 Inch.

4. Sink:
   a. Hot Water: 1/2 Inch.
   b. Cold Water: 1/2 Inch.
   c. Waste: 2 Inch.
   d. Vent: 1-1/2 Inch.

5. Shower:
   a. Hot Water: 1/2 Inch.
   b. Cold Water: 1/2 Inch.
   c. Waste: 2, 3, or 4 Inch.

6. Emergency Shower/Eye Wash:
   a. Cold Water: 1 1/4 Inch.

7. Emergency Eye Wash:
   a. Hot Water: 1/2 Inch.
   b. Cold Water: 1/2 Inch.

8. Utility Sink:
   a. Hot Water: 1/2 Inch.
   b. Cold Water: 1/2 Inch.
   c. Waste: 2 inch
   d. Vent: 1-1/4 Inch.

9. Mop Basin:
   a. Hot Water: 3/4 inch.
   b. Cold Water: 3/4 inch.
   c. Waste: 3 inch.
   d. Vent: 1-1/2 inch.

**END OF SECTION 22 4000**


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# SECTION 23 0593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:

1. Balancing Air Systems.
2. Balancing Hydronic Piping Systems.
3. Testing, Adjusting, and Balancing Equipment.

### 1.2 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. BAS: Building automation systems.

C. NEBB: National Environmental Balancing Bureau.

D. TAB: Testing, adjusting, and balancing.

E. TABB: Testing, Adjusting, and Balancing Bureau.

F. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

G. TDH: Total dynamic head.

### 1.3 INFORMATIONAL SUBMITTALS

A. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.

B. Strategies and Procedures Plan: Within 60 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.

C. System Readiness Checklists: Within 90 days of Contractor's Notice to Proceed, submit system readiness checklists as specified in "Preparation" Article.

D. Examination Report: Submit a summary report of the examination review required in "Examination" Article.

E. Certified TAB Reports: Submit four copies of reports prepared, as specified in this Section, on approved forms certified by TAB firm.

F. Instrument calibration reports, to include the following:

1. Instrument type and make.
2. Serial number.
3. Application.


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4. Dates of use.
5. Dates of calibration.

1.4 QUALITY ASSURANCE

A. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 7.2.2 - "Air Balancing."

1.5 FIELD CONDITIONS

A. Owner Occupancy: Owner will occupy the site and existing building during TAB period. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

1.6 COORDINATION

A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, and other mechanics to operate HVAC systems and equipment to support and assist TAB activities.

B. Perform TAB after leakage and pressure tests on distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TAB SPECIALISTS

A. Subject to compliance with requirements, engage one of the following:

1. Subject to compliance with requirements, provide the services of one of the following:
   a. Quality Air Service, Inc.
   b. Control Solutions, Inc
   c. Third Coast Test and Balance.
   d. Aireconomics, Inc

3.2 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.

B. Examine installed systems for balancing devices. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.


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C. Examine the approved submittals for HVAC systems and equipment.

D. Examine equipment performance data.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

E. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

F. Examine test reports specified in individual system and equipment Sections.

G. Examine HVAC equipment and verify that equipment with functioning controls is ready for operation.

H. Examine terminal units**[, such as variable-air-volume boxes,]** and verify that they are accessible and their controls are connected and functioning.

I. Examine strainers. Verify that startup screens have been replaced by permanent screens with indicated perforations.

J. Examine control valves for proper installation for their intended function of throttling, diverting, or mixing fluid flows.

K. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

L. Examine system pumps to ensure absence of entrained air in the suction piping.

M. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.3 PREPARATION

A. Prepare a TAB plan that includes the following:

1. Equipment and systems to be tested.
2. Strategies and step-by-step procedures for balancing the systems.
3. Instrumentation to be used.
4. Sample forms with specific identification for all equipment.

B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:

1. Airside:

a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.
b. Duct systems are complete with terminals installed.


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c. Volume, smoke, and fire dampers are open and functional.
d. Clean filters are installed.
e. Fans are operating, free of vibration, and rotating in correct direction.

f. Variable-frequency controllers' startup is complete and safeties are verified.
g. Automatic temperature-control systems are operational.
h. Ceilings are installed.
i. Windows and doors are installed.
j. Suitable access to balancing devices and equipment is provided.

2. Hydronics:

a. Verify leakage and pressure tests on water distribution systems have been satisfactorily completed.
b. Piping is complete with terminals installed.
c. Water treatment is complete.
d. Systems are flushed, filled, and air purged.
e. Strainers are pulled and cleaned.
f. Control valves are functioning per the sequence of operation.
g. Shutoff and balance valves have been verified to be 100 percent open.
h. Pumps are started and proper rotation is verified.
i. Pump gage connections are installed directly at pump inlet and outlet flanges or in discharge and suction pipe prior to valves or strainers.
j. Variable-frequency controllers' startup is complete and safeties are verified.
k. Suitable access to balancing devices and equipment is provided.

## 3.4 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance"; ASHRAE 111; NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems"; SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing"; and in this Section.

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.

1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 23 0700 "HVAC Insulation."

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.


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3.5 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. For **[variable-air-volume systems]**, develop a plan to simulate diversity.

D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and functioning.

K. Check for proper sealing of air-handling-unit components.

L. Verify that air duct system is sealed as specified in Section 23 3113 "Metal Ducts."

3.6 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
b. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
c. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
d. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.

2. Measure fan static pressures as follows:

a. Measure static pressure directly at the fan outlet or through the flexible connection.
b. Measure static pressure directly at the fan inlet or through the flexible connection.
c. Measure static pressure across each component that makes up the air-handling system.
d. Report artificial loading of filters at the time static pressures are measured.


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3. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.

4. Obtain approval from Engineer for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.

1. Measure airflow of submain and branch ducts.
2. Adjust submain and branch duct volume dampers for specified airflow.
3. Re-measure each submain and branch duct after all have been adjusted.

C. Adjust air inlets and outlets for each space to indicated airflows.

1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
2. Measure inlets and outlets airflow.
3. Adjust each inlet and outlet for specified airflow.
4. Re-measure each inlet and outlet after they have been adjusted.

D. Verify final system conditions.

1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to design if necessary.
2. Re-measure and confirm that total airflow is within design.
3. Re-measure all final fan operating data, rpms, volts, amps, and static profile.
4. Mark all final settings.
5. Test system in economizer mode. Verify proper operation and adjust if necessary.
6. Measure and record all operating data.
7. Record final fan-performance data.

## 3.7 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

A. Single Zone Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Balance systems similar to constant-volume air systems.
2. Set air inlets, air outlets, and supply fan at full-airflow condition.
3. Adjust air outlets to indicated airflow.
4. Readjust fan airflow for final maximum readings.
5. Measure operating static pressure at the sensor that controls the supply fan and verify operation of the static-pressure controller.

6. Set supply fan at minimum airflow if minimum airflow is indicated. Measure static pressure to verify that it is being maintained by the controller.


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7. Check air outlets for a proportional reduction in airflow as described for constant-volume air systems.

    a. If air outlets are out of balance at minimum airflow, report the condition but leave the outlets balanced for maximum airflow.

8. Measure the return airflow to the fan while operating at maximum return airflow and minimum outside airflow. Adjust the fan and balance the return-air ducts and inlets as described for constant-volume air systems.

B. Adjust the variable-air-volume systems as follows:

1. Verify that the system static pressure sensor is located two-thirds of the distance down the duct from the fan discharge.
2. Verify that the system is under static pressure control.
3. Select the terminal unit that is most critical to the supply-fan airflow. Measure inlet static pressure, and adjust system static pressure control set point so the entering static pressure for the critical terminal unit is not less than the sum of the terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
4. Calibrate and balance each terminal unit for maximum and minimum design airflow as follows:

    a. Adjust controls so that terminal is calling for maximum airflow. Some controllers require starting with minimum airflow. Verify calibration procedure for specific project.
    b. Measure airflow and adjust calibration factor as required for design maximum airflow. Record calibration factor.
    c. When maximum airflow is correct, balance the air outlets downstream from terminal units.
    d. Adjust controls so that terminal is calling for minimum airflow.
    e. Measure airflow and adjust calibration factor as required for design minimum airflow. Record calibration factor. If no minimum calibration is available, note any deviation from design airflow.
    f. When in full cooling or full heating, ensure that there is no mixing of hot-deck and cold-deck airstreams unless so designed.
    g. On constant volume terminals, in critical areas where room pressure is to be maintained, verify that the airflow remains constant over the full range of full cooling to full heating. Note any deviation from design airflow or room pressure.

5. After terminals have been calibrated and balanced, test and adjust system for total airflow. Adjust fans to deliver total design airflows within the maximum allowable fan speed listed by fan manufacturer.

    a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
    b. Set terminals for maximum airflow. If system design includes diversity, adjust terminals for maximum and minimum airflow so that connected total matches fan selection and simulates actual load in the building.
    c. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
    d. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.


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e. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.

6. Measure fan static pressures as follows:

a. Measure static pressure directly at the fan outlet or through the flexible connection.
b. Measure static pressure directly at the fan inlet or through the flexible connection.
c. Measure static pressure across each component that makes up the air-handling system.
d. Report any artificial loading of filters at the time static pressures are measured.

7. Set final return and outside airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.

a. Balance the return-air ducts and inlets the same as described for constant-volume air systems.
b. Verify that terminal units are meeting design airflow under system maximum flow.

8. Re-measure the inlet static pressure at the most critical terminal unit and adjust the system static pressure set point to the most energy-efficient set point to maintain the optimum system static pressure. Record set point and give to controls contractor.
9. Verify final system conditions as follows:

a. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to match design if necessary.
b. Re-measure and confirm that total airflow is within design.
c. Re-measure final fan operating data, rpms, volts, amps, and static profile.
d. Mark final settings.
e. Test system in economizer mode. Verify proper operation and adjust if necessary. Measure and record all operating data.
f. Verify tracking between supply and return fans.

## 3.8 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS

A. Prepare test reports for pumps, coils, and heat exchangers. Obtain approved submittals and manufacturer-recommended testing procedures. Crosscheck the summation of required coil and heat exchanger flow rates with pump design flow rate.

B. Prepare schematic diagrams of systems' "as-built" piping layouts.

C. In addition to requirements in "Preparation" Article, prepare hydronic systems for testing and balancing as follows:

1. Check liquid level in expansion tank.
2. Check highest vent for adequate pressure.
3. Check flow-control valves for proper position.
4. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
5. Verify that motor starters are equipped with properly sized thermal protection.
6. Check that air has been purged from the system.


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3.9 PROCEDURES FOR VARIABLE-FLOW HYDRONIC SYSTEMS

A. Balance systems with automatic two- and three-way control valves by setting systems at maximum flow through heat-exchange terminals, and proceed as specified above for hydronic systems.

B. Adjust the variable-flow hydronic system as follows:

1. Verify that the differential-pressure sensor is located as indicated.
2. Determine whether there is diversity in the system.

C. For systems with no diversity:

1. Adjust pumps to deliver total design gpm.

a. Measure total water flow.

1) Position valves for full flow through coils.
2) Measure flow by main flow meter, if installed.
3) If main flow meter is not installed, determine flow by pump TDH or exchanger pressure drop.

b. Measure pump TDH as follows:

1) Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
2) Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
3) Convert pressure to head and correct for differences in gage heights.
4) Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.
5) With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved.

c. Monitor motor performance during procedures and do not operate motor in an overloaded condition.

2. Adjust flow-measuring devices installed in mains and branches to design water flows.

a. Measure flow in main and branch pipes.
b. Adjust main and branch balance valves for design flow.
c. Re-measure each main and branch after all have been adjusted.

3. Adjust flow-measuring devices installed at terminals for each space to design water flows.

a. Measure flow at terminals.
b. Adjust each terminal to design flow.
c. Re-measure each terminal after it is adjusted.
d. Position control valves to bypass the coil and adjust the bypass valve to maintain design flow.
e. Perform temperature tests after flows have been balanced.


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4. For systems with pressure-independent valves at terminals:

    a. Measure differential pressure and verify that it is within manufacturer's specified range.
    b. Perform temperature tests after flows have been verified.

5. For systems without pressure-independent valves or flow-measuring devices at terminals:

    a. Measure and balance coils by either coil pressure drop or temperature method.
    b. If balanced by coil pressure drop, perform temperature tests after flows have been verified.

6. Prior to verifying final system conditions, determine the system differential-pressure set point.

7. If the pump discharge valve was used to set total system flow with variable-frequency controller at 60 Hz, at completion open discharge valve 100 percent and allow variable-frequency controller to control system differential-pressure set point. Record pump data under both conditions.
8. Mark final settings and verify that all memory stops have been set.
9. Verify final system conditions as follows:

    a. Re-measure and confirm that total water flow is within design.
    b. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
    c. Mark final settings.

10. Verify that memory stops have been set.

D. For systems with diversity:

1. Determine diversity factor.
2. Simulate system diversity by closing required number of control valves, as approved by the design engineer.
3. Adjust pumps to deliver total design gpm.

    a. Measure total water flow.

        1) Position valves for full flow through coils.
        2) Measure flow by main flow meter, if installed.
        3) If main flow meter is not installed, determine flow by pump TDH or exchanger pressure drop.

    b. Measure pump TDH as follows:

        1) Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
        2) Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
        3) Convert pressure to head and correct for differences in gage heights.
        4) Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.
        5) With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved.


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c. Monitor motor performance during procedures and do not operate motor in an overloaded condition.

4. Adjust flow-measuring devices installed in mains and branches to design water flows.

   a. Measure flow in main and branch pipes.
   b. Adjust main and branch balance valves for design flow.
   c. Re-measure each main and branch after all have been adjusted.

5. Adjust flow-measuring devices installed at terminals for each space to design water flows.

   a. Measure flow at terminals.
   b. Adjust each terminal to design flow.
   c. Re-measure each terminal after it is adjusted.
   d. Position control valves to bypass the coil, and adjust the bypass valve to maintain design flow.
   e. Perform temperature tests after flows have been balanced.

6. For systems with pressure-independent valves at terminals:

   a. Measure differential pressure, and verify that it is within manufacturer's specified range.
   b. Perform temperature tests after flows have been verified.

7. For systems without pressure-independent valves or flow-measuring devices at terminals:

   a. Measure and balance coils by either coil pressure drop or temperature method.
   b. If balanced by coil pressure drop, perform temperature tests after flows have been verified.

8. Open control valves that were shut. Close a sufficient number of control valves that were previously open to maintain diversity, and balance terminals that were just opened.
9. Prior to verifying final system conditions, determine system differential-pressure set point.
10. If the pump discharge valve was used to set total system flow with variable-frequency controller at 60 Hz, at completion open discharge valve 100 percent and allow variable-frequency controller to control system differential-pressure set point. Record pump data under both conditions.
11. Mark final settings and verify that memory stops have been set.
12. Verify final system conditions as follows:

    a. Re-measure and confirm that total water flow is within design.
    b. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
    c. Mark final settings.

13. Verify that memory stops have been set.

## 3.10 PROCEDURES FOR PRIMARY-SECONDARY HYDRONIC SYSTEMS

A. Balance the primary circuit flow first.

B. Balance the secondary circuits after the primary circuits are complete.

C. Adjust pumps to deliver total design gpm.


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1. Measure total water flow.

    a. Position valves for full flow through coils.
    b. Measure flow by main flow meter, if installed.
    c. If main flow meter is not installed, determine flow by pump TDH or exchanger pressure drop.

2. Measure pump TDH as follows:

    a. Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
    b. Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
    c. Convert pressure to head and correct for differences in gage heights.
    d. Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.
    e. With valves open, read pump TDH. Adjust pump discharge valve until design water flow is achieved.

3. Monitor motor performance during procedures and do not operate motor in an overloaded condition.

D. Adjust flow-measuring devices installed in mains and branches to design water flows.

1. Measure flow in main and branch pipes.
2. Adjust main and branch balance valves for design flow.
3. Re-measure each main and branch after all have been adjusted.

E. Adjust flow-measuring devices installed at terminals for each space to design water flows.

1. Measure flow at terminals.
2. Adjust each terminal to design flow.
3. Re-measure each terminal after it is adjusted.
4. Position control valves to bypass the coil and adjust the bypass valve to maintain design flow.
5. Perform temperature tests after flows have been balanced.

F. For systems with pressure-independent valves at terminals:

1. Measure differential pressure and verify that it is within manufacturer's specified range.
2. Perform temperature tests after flows have been verified.

G. For systems without pressure-independent valves or flow-measuring devices at terminals:

1. Measure and balance coils by either coil pressure drop or temperature method.
2. If balanced by coil pressure drop, perform temperature tests after flows have been verified.

H. Verify final system conditions as follows:

1. Re-measure and confirm that total water flow is within design.
2. Re-measure final pumps' operating data, TDH, volts, amps, and static profile.
3. Mark final settings.


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I. Verify that memory stops have been set.

## 3.11 PROCEDURES FOR MOTORS

A. Motors 1/2 HP and Larger: Test at final balanced conditions and record the following data:

1. Manufacturer's name, model number, and serial number.
2. Motor horsepower rating.
3. Motor rpm.
4. Phase and hertz.
5. Nameplate and measured voltage, each phase.
6. Nameplate and measured amperage, each phase.
7. Starter size and thermal-protection-element rating.
8. Service factor and frame size.

B. Motors Driven by Variable-Frequency Controllers: Test manual bypass of controller to prove proper operation.

## 3.12 PROCEDURES FOR CONDENSING UNITS

A. Verify proper rotation of fans.

B. Measure entering- and leaving-air temperatures.

C. Record fan and motor operating data.

## 3.13 PROCEDURES FOR BOILERS

A. Hydronic Boilers:

1. Measure and record entering- and leaving-water temperatures.
2. Measure and record water flow.
3. Record relief valve pressure setting.

## 3.14 PROCEDURES FOR HEAT-TRANSFER COILS

A. Measure, adjust, and record the following data for each water coil:

1. Entering- and leaving-water temperature.
2. Water flow rate.
3. Water pressure drop for major (more than 20 gpm) equipment coils, excluding unitary equipment such as reheat coils, unit heaters, and fan-coil units.
4. Dry-bulb temperature of entering and leaving air.
5. Wet-bulb temperature of entering and leaving air for cooling coils.
6. Airflow.

B. Measure, adjust, and record the following data for each refrigerant coil:


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1. Dry-bulb temperature of entering and leaving air.
2. Wet-bulb temperature of entering and leaving air.
3. Airflow.

## 3.15 TOLERANCES

A. Set HVAC system's flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
2. Air Outlets and Inlets: Plus or minus 10 percent.
3. Heating-Water Flow Rate: Plus or minus 10 percent.
4. **[Cooling-Water Flow Rate]**: Plus or minus 10 percent.

B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

## 3.16 PROGRESS REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems balancing devices. Recommend changes and additions to systems balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

## 3.17 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.
3. Certify validity and accuracy of field data.

B. Final Report Contents: In addition to certified field-report data, include the following:

1. Equipment operating curves.
2. Manufacturers' test data.
3. Field test reports prepared by system and equipment installers.
4. Other information relative to equipment performance; do not include Shop Drawings and Product Data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB specialist.
3. Project name.
4. Project location.
5. Engineer's name and address.
6. Contractor's name and address.


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7. Report date.
8. Signature of TAB supervisor who certifies the report.
9. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
10. Summary of contents including the following:

    a. Indicated versus final performance.
    b. Notable characteristics of systems.
    c. Description of system operation sequence if it varies from the Contract Documents.

11. Nomenclature sheets for each item of equipment.
12. Data for terminal units, including manufacturer's name, type, size, and fittings.
13. Notes to explain why certain final data in the body of reports vary from indicated values.
14. Test conditions for fans and pump performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.
    b. Conditions of filters.
    c. Cooling coil, wet- and dry-bulb conditions.
    d. Face and bypass damper settings at coils.
    e. Fan drive settings including settings and percentage of maximum pitch diameter.
    f. Inlet vane settings for variable-air-volume systems.
    g. Settings for supply-air, static-pressure controller.
    h. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.
2. Water flow rates.
3. Duct, outlet, and inlet sizes.
4. Pipe and valve sizes and locations.
5. Terminal units.
6. Balancing stations.
7. Position of balancing devices.

E. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:

1. Unit Data:

    a. Unit identification.
    b. Location.
    c. Make and type.
    d. Model number and unit size.
    e. Manufacturer's serial number.
    f. Unit arrangement and class.
    g. Discharge arrangement.
    h. **[Variable frequency drive information]**.

    i. Sheave make, size in inches, and bore.
    j. Center-to-center dimensions of sheave and amount of adjustments in inches.
    k. Number, make, and size of belts.


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l. Number, type, and size of filters.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.

e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Filter static-pressure differential in inches wg.
f. Preheat-coil static-pressure differential in inches wg.
g. Cooling-coil static-pressure differential in inches wg.
h. Heating-coil static-pressure differential in inches wg.
i. Outdoor airflow in cfm.
j. Return airflow in cfm.
k. Return-air damper position.
l. **[Variable frequency drive information]**.
m. **[Preheat-coil static-pressure differential in inches wg (Pa)]**.
n. Cooling-coil static-pressure differential in inches wg.
o. Heating-coil static-pressure differential in inches wg.

F. Apparatus-Coil Test Reports:

1. Coil Data:

a. System identification.
b. Location.
c. Coil type.
d. Number of rows.
e. Fin spacing in fins per inch o.c.
f. Make and model number.
g. Face area in sq. ft..
h. Tube size in NPS.
i. Tube and fin materials.
j. Circuiting arrangement.

2. Test Data (Indicated and Actual Values):

a. Airflow rate in cfm.
b. Average face velocity in fpm.
c. Air pressure drop in inches wg.
d. Outdoor-air, wet- and dry-bulb temperatures in deg F.


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e. Return-air, wet- and dry-bulb temperatures in deg F.
f. Entering-air, wet- and dry-bulb temperatures in deg F.
g. Leaving-air, wet- and dry-bulb temperatures in deg F.
h. Water flow rate in gpm.
i. Water pressure differential in feet of head or psig.
j. Entering-water temperature in deg F.
k. Leaving-water temperature in deg F.

l. Refrigerant expansion valve and refrigerant types.
m. Refrigerant suction pressure in psig.
n. Refrigerant suction temperature in deg F.

G. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:

a. System identification.
b. Location.
c. Make and type.
d. Model number and size.
e. Manufacturer's serial number.
f. Arrangement and class.

g. Sheave make, size in inches, and bore.
h. Center-to-center dimensions of sheave and amount of adjustments in inches.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.

e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
g. Number, make, and size of belts.

3. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Suction static pressure in inches wg.

H. Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:

a. System and air-handling-unit number.


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b. Location and zone.
c. Traverse air temperature in deg F.
d. Duct static pressure in inches wg.
e. Duct size in inches.
f. Duct area in sq. ft..
g. Indicated airflow rate in cfm.
h. Indicated velocity in fpm.
i. Actual airflow rate in cfm.
j. Actual average velocity in fpm.
k. Barometric pressure in psig.

I. Air-Terminal-Device Reports:

1. Unit Data:

a. System and air-handling unit identification.
b. Location and zone.
c. Apparatus used for test.
d. Area served.
e. Make.
f. Number from system diagram.
g. Type and model number.
h. Size.
i. Effective area in sq. ft..

2. Test Data (Indicated and Actual Values):

a. Airflow rate in cfm.
b. Air velocity in fpm.
c. Preliminary airflow rate as needed in cfm.
d. Preliminary velocity as needed in fpm.
e. Final airflow rate in cfm.
f. Final velocity in fpm.
g. Space temperature in deg F.

J. System-Coil Reports: For reheat coils and water coils of terminal units, include the following:

1. Unit Data:

a. System and air-handling-unit identification.
b. Location and zone.
c. Room or riser served.
d. Coil make and size.
e. Flowmeter type.

2. Test Data (Indicated and Actual Values):

a. Airflow rate in cfm.
b. Entering-water temperature in deg F.
c. Leaving-water temperature in deg F.
d. Water pressure drop in feet of head or psig.


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e. Entering-air temperature in deg F.
f. Leaving-air temperature in deg F.

K. Compressor and Condenser Reports: For refrigerant side of air-cooled condensing units, include the following:

1. Unit Data:

a. Unit identification.
b. Location.
c. Unit make and model number.
d. Compressor make.
e. Compressor model and serial numbers.
f. Refrigerant weight in lb.
g. Low ambient temperature cutoff in deg F.

2. Test Data (Indicated and Actual Values):

a. Inlet-duct static pressure in inches wg.
b. Outlet-duct static pressure in inches wg.
c. Entering-air, dry-bulb temperature in deg F.
d. Leaving-air, dry-bulb temperature in deg F.
e. Control settings.
f. Unloader set points.
g. Low-pressure-cutout set point in psig.
h. High-pressure-cutout set point in psig.
i. Suction pressure in psig.
j. Suction temperature in deg F.
k. Condenser refrigerant pressure in psig.
l. Condenser refrigerant temperature in deg F.
m. Oil pressure in psig.
n. Oil temperature in deg F.
o. Voltage at each connection.
p. Amperage for each phase.
q. Kilowatt input.
r. Crankcase heater kilowatt.
s. Number of fans.
t. Condenser fan rpm.
u. Condenser fan airflow rate in cfm.
v. Condenser fan motor make, frame size, rpm, and horsepower.
w. Condenser fan motor voltage at each connection.
x. Condenser fan motor amperage for each phase.

L. Pump Test Reports: Calculate impeller size by plotting the shutoff head on pump curves and include the following:

1. Unit Data:

a. Unit identification.
b. Location.
c. Service.


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d. Make and size.
e. Model number and serial number.
f. Water flow rate in gpm.
g. Water pressure differential in feet of head or psig.
h. Required net positive suction head in feet of head or psig.
i. Pump rpm.
j. Impeller diameter in inches.
k. Motor make and frame size.
l. Motor horsepower and rpm.
m. Voltage at each connection.
n. Amperage for each phase.
o. Full-load amperage and service factor.
p. Seal type.
q. Variable frequency drive information.

2. Test Data (Indicated and Actual Values):

a. Static head in feet of head or psig.
b. Pump shutoff pressure in feet of head or psig.
c. Actual impeller size in inches.
d. Full-open flow rate in gpm.
e. Full-open pressure in feet of head or psig.
f. Final discharge pressure in feet of head or psig.
g. Final suction pressure in feet of head or psig.
h. Final total pressure in feet of head or psig.
i. Final water flow rate in gpm.
j. Voltage at each connection.
k. Amperage for each phase.
l. Variable frequency drive setpoint.

M. Boiler Test Reports:

1. Unit Data:

a. Unit identification.
b. Location.
c. Service.
d. Make and type.
e. Model and serial numbers.
f. Fuel type and input in Btuh.
g. Number of passes.
h. Ignition type.
i. Burner-control types.
j. Voltage at each connection.
k. Amperage for each phase.

2. Test Data (Indicated and Actual Values):

a. Operating pressure in psig.
b. Operating temperature in deg F.
c. Entering-water temperature in deg F.


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d. Leaving-water temperature in deg F.
e. Number of safety valves and sizes in NPS.
f. Safety valve settings in psig.
g. High-limit setting in psig.
h. Operating-control setting.
i. High-fire set point.
j. Low-fire set point.
k. Voltage at each connection.
l. Amperage for each phase.
m. Draft fan voltage at each connection.
n. Draft fan amperage for each phase.
o. Manifold pressure in psig.

N. Instrument Calibration Reports:

1. Report Data:

a. Instrument type and make.
b. Serial number.
c. Application.
d. Dates of use.
e. Dates of calibration.

## 3.18 VERIFICATION OF TAB REPORT

A. The TAB specialist's test and balance engineer shall conduct the inspection in the presence of Engineer and commissioning authority.

B. Engineer and commissioning authority shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.

C. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."

D. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.

E. If TAB work fails, proceed as follows:

1. TAB specialists shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
2. If the second final inspection also fails, Owner may contract the services of another TAB specialist to complete TAB work according to the Contract Documents and deduct the cost of the services from the original TAB specialist's final payment.

F. Prepare test and inspection reports.

**END OF SECTION 23 0593**


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# SECTION 23 6200 - PACKAGED COMPRESSOR AND CONDENSER UNITS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes air-cooled condensing units.

### 1.2 SUBMITTALS

A. Product Data: For each condensing unit, include rated capacities, operating characteristics, furnished specialties, and accessories. Include equipment dimensions, weights and structural loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Wiring Diagrams: Power, signal, and control wiring.

B. Shop Drawings: Signed and sealed by a qualified professional engineer showing the required refrigeration piping design and including the following:

1. Liquid and vapor pipe sizes.
2. Refrigerant specialties.
3. Piping including connections, oil traps, and double risers.

C. Field quality-control test reports.

D. Operation and maintenance data.

E. Warranty: Special warranty specified in this Section.

### 1.3 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of condensing units and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Fabricate and label refrigeration system according to ASHRAE 15, "Safety Code for Mechanical Refrigeration."

D. ASHRAE/IESNA 90.1 Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."


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1.4 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations.

C. Coordinate installation of units with steel mounting frames and roof penetrations.

D. Coordinate location of piping and electrical rough-ins.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of condensing units that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Compressor failure.

2. Warranty Period (Compressor Only): Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 CONDENSING UNITS, AIR COOLED, 1 TO 5 TONS

A. Manufacturers:

1. Aaon.
2. Carrier Corporation.
3. Trane Co.
4. JCI/York.

B. Description: Factory assembled and tested, consisting of compressor, condenser coil, fan, motors, refrigerant reservoir, and operating controls.

C. Compressor: Digital Scroll, hermetically sealed, with rubber vibration isolators.

1. Accumulator: Suction tube.
2. Refrigerant: R-32.


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D. Condenser Coil: Provide one of the following types:

1. Condenser coils shall use Micro-Channel coil type and have a series of flat tubes containing a series of multiple, parallel flow micro-channels layered between the refrigerant manifolds. Micro-channel coils shall consist of a two-pass arrangement. Coils shall be factory leak and pressure tested.
2. Condenser coils shall use seamless copper-tube, aluminum-fin type coil, including subcooling circuit and backseating liquid-line service access valve. Factory pressure test coils, then dehydrate by drawing a vacuum and fill with a holding charge of nitrogen or refrigerant.

E. Condenser Fan: Direct-drive, aluminum propeller fan; with permanently lubricated, totally enclosed fan motor with thermal-overload protection and ball bearings.

F. Accessories:

1. Crankcase heater.
2. Cycle Protector: Automatic-reset timer to prevent rapid compressor cycling.
3. Evaporator Freeze Thermostat: Temperature-actuated switch that stops unit when evaporator reaches freezing temperature.
4. Filter-dryer.
5. High-Pressure Switch: Automatic-reset switch cycles compressor off on high refrigerant pressure.
6. Liquid-line solenoid.
7. Low Ambient Controller: Controls condenser fan speed to permit operation down to minus 20 deg F with time-delay relay to bypass low-pressure switch.
8. Low-Pressure Switch: Automatic-reset switch cycles compressor off on low refrigerant pressure.
9. 24”h equipment stand - provide a permanent foundation.
10. Precharged and insulated suction and liquid tubing.
11. Sound Hood: Wraps around sound attenuation cover for compressor.
12. Thermostatic expansion valve.
13. Time-Delay Relay: Continues operation of evaporator fan after compressor shuts off.

G. Unit Casing: Galvanized steel, finished with baked enamel; with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Mount service valves, fittings, and gage ports on exterior of casing.

## 2.3 CONDENSING UNITS, AIR COOLED, 6 TO 120 TONS

A. Manufacturers:

1. Aaon.
2. Carrier Corporation.
3. Trane Co.
4. JCI/York.

B. Description: Factory assembled and tested, air cooled; consisting of casing, compressors, condenser coils, condenser fans and motors, and unit controls.

C. Compressor: Hermetic or semihermetic compressor designed for service with crankcase sight glass, crankcase heater, and backseating service access valves on suction and discharge ports.


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1. Refrigerant Charge: R-32

D. Condenser Coil: Seamless copper-tube, aluminum-fin coil, including subcooling circuit and backseating liquid-line service access valve. Factory pressure test coils, then dehydrate by drawing a vacuum and fill with a holding charge of nitrogen or refrigerant.

E. Condenser Fans: Propeller-type vertical discharge; either directly or belt driven. Include the following:

1. Permanently lubricated ball-bearing motors.
2. Separate motor for each fan.
3. Dynamically and statically balanced fan assemblies.

F. Operating and safety controls include the following:

1. Manual-reset, high-pressure cutout switches.
2. Automatic-reset, low-pressure cutout switches.
3. Low oil pressure cutout switch.
4. Compressor-winding thermostat cutout switch.
5. Three-leg, compressor-overload protection.
6. Control transformer.
7. Magnetic contactors for compressor and condenser fan motors.
8. Timer to prevent excessive compressor cycling.

G. Accessories:

1. Gage Panel: Package with refrigerant circuit suction and discharge gages.
2. Part-winding-start timing relay, circuit breakers, and contactors.

H. Unit Casings: Designed for outdoor installation with weather protection for components and controls and with removable panels for required access to compressors, controls, condenser fans, motors, and drives. Additional features include the following:

1. Steel, galvanized or zinc coated, for exposed casing surfaces; treated and finished with manufacturer's standard paint coating.
2. Perimeter base rail with forklift slots and lifting holes to facilitate rigging.
3. Gasketed control panel door.
4. Nonfused disconnect switch, factory mounted and wired, for single external electrical power connection.

5. Condenser coil hail guard to protect coil from physical damage.

## 2.4 MOTORS

A. General requirements for motors are specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Controllers, Electrical Devices, and Wiring: Electrical devices and connections are specified in Division 26 Sections.


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2.5 SOURCE QUALITY CONTROL

A. Verification of Performance: Rate condensing units according to ARI 210/240, ARI 340/360, or ARI 365.

1. Energy Efficiency: Equal to or greater than prescribed by ASHRAE/IESNA 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."

B. Test and inspect shell and tube condensers according to ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

C. Testing Requirements: Factory test sound-power-level ratings according to ARI 270.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of condensing units.

B. Examine roughing-in for refrigerant piping systems to verify actual locations of piping connections before equipment installation.

C. Examine walls, floors, and roofs for suitable conditions where condensing units will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install units level and plumb, firmly anchored in locations indicated; maintain manufacturer's recommended clearances.

B. Install condensing units on concrete base. Concrete base is specified in Division 23 Section "Common Work Results for HVAC," and concrete materials and installation requirements are specified in Division 03.

C. Concrete Bases:

1. Install dowel rods to connect concrete base to concrete slab. Unless otherwise indicated, install dowel rods on 18-inch centers around full perimeter of the base.
2. For equipment supported on structural slab, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
4. Install anchor bolts to elevations required for proper attachment to supported equipment.
5. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

D. Install roof-mounting units on structural steel supports.


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E. Vibration Isolation: Mount condensing units on rubber pads with a minimum deflection of ¼". Vibration isolation devices and installation requirements are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."

F. Maintain manufacturer's recommended clearances for service and maintenance.

G. Loose Components: Install electrical components, devices, and accessories that are not factory mounted.

## 3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to machine to allow service and maintenance.

C. Connect precharged refrigerant tubing to unit's quick-connect fittings. Install tubing so it does not interfere with access to unit. Install furnished accessories.

D. Connect refrigerant piping to air-cooled condensing units; maintain required access to unit. Install furnished field-mounted accessories. Refrigerant piping and specialties are specified in Division 23 Section "Refrigerant Piping."

## 3.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. Perform electrical test and visual and mechanical inspection.
2. Leak Test: After installation, charge systems with refrigerant and oil and test for leaks. Repair leaks, replace lost refrigerant and oil, and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper operation, product capability, and compliance with requirements.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
5. Verify proper airflow over coils.

B. Verify that vibration isolation and flexible connections properly dampen vibration transmission to structure.

C. Remove and replace malfunctioning condensing units and retest as specified above.

## 3.5 STARTUP SERVICE

A. Complete installation and startup checks according to manufacturer's written instructions and perform the following:

1. Inspect for physical damage to unit casing.
2. Verify that access doors move freely and are weathertight.
3. Clean units and inspect for construction debris.
4. Verify that all bolts and screws are tight.
5. Adjust vibration isolation and flexible connections.


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6. Verify that controls are connected and operational.

B. Lubricate bearings on fans.

C. Verify that fan wheel is rotating in the correct direction and is not vibrating or binding.

D. Adjust fan belts to proper alignment and tension.

E. Start unit according to manufacturer's written instructions and complete manufacturer's startup checklist.

F. Measure and record airflow over coils.

G. Verify proper operation of condenser capacity control device.

H. Verify that vibration isolation and flexible connections properly dampen vibration transmission to structure.

I. After startup and performance test, lubricate bearings.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain condensing units.

**END OF SECTION 23 6200**


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# SECTION 32 1313 - CONCRETE PAVING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes concrete paving.

1. Driveways.
2. Curbs and gutters.
3. Sidewalks.
4. Dumpster Enclosure Pads.
5. Maintenance Strips.

B. Related Requirements:

1. Section 03 3000 "Cast-in-Place Concrete" for general building applications of concrete.
2. Section 32 1316 "Decorative Concrete Paving" for colored concrete.
3. Section 32 1373 "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within concrete paving and in joints between concrete paving and adjacent construction.
4. Section 32 1723 "Pavement Markings."
5. Section 32 1726 "Tactile Warning Surfacing" for detectable warning tiles.

### 1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

### 1.3 ACTION SUBMITTALS

A. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

### 1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

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1.5 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.7 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below **40 deg F**, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than **50 deg F** and not more than **80 deg F** at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with **ACI 301** and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below **90 deg F** at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with **ACI 301** unless otherwise indicated.

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2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of **100 feet** or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, flat sheet.

B. Galvanized Reinforcing Bars: ASTM A767/A767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A615/A615M, **Grade 60** deformed bars.

C. Tie Bars: ASTM A615/A615M, **Grade 60**; deformed.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.4 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C150/C150M, gray, portland cement Type I. A01

B. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S, uniformly graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: ASTM C260/C260M.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.

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E. Water: Potable and complying with ASTM C94/C94M.

## 2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182..

B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. White, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 2, Class B, dissipating.

## 2.6 RELATED MATERIALS

A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber in preformed strips.

## 2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to **ACI 301**, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.

B. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content, **1-1/2-inch** Nominal Maximum Aggregate Size: 5-1/2 percent plus or minus 1-1/2 percent.
2. Air Content, **1-inch** Nominal Maximum Aggregate Size: 6 percent plus or minus 1-1/2 percent.
3. Air Content, **3/4-inch** Nominal Maximum Aggregate Size: 6 percent plus or minus 1-1/2 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 4000 psi 3000 psi.

2. Maximum W/C Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches, plus or minus **1 inch**.

## 2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M and ASTM C1116/C1116M. Furnish batch certificates for each batch discharged and used in the Work.

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1. When air temperature is between **85 and 90 deg F**, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above **90 deg F**, reduce mixing and delivery time to 60 minutes.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

### 3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### 3.4 INSTALLATION OF STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

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3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting driveways, buildings, concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of [**50 feet**]<**Insert dimension**> unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than **1/2 inch** or more than **1 inch** below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as shown on plans.

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut **1/8-inch-** wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
   a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

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D. Comply with **ACI 301** requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to **ACI 301** by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement joint devices.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

## 3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.
3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface **1/16 to 1/8 inch** deep with a stiff-bristled broom, perpendicular to line of traffic.
4. ing.

## 3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching **0.2 lb/sq. ft. x h** before and during finishing operations. Apply

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according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these as follows:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with **12-inch** lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least **12 inches**, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

## 3.9 PAVING TOLERANCES

A. Comply with tolerances in **ACI 117** and as follows:

1. Elevation: **3/4 inch**.
2. Thickness: Plus **3/8 inch**, minus **1/4 inch**.
3. Surface: Gap below **10-feet-** long; unleveled straightedge not to exceed **1/2 inch**.
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: **1/2 inch per 12 inches** of tie bar.
5. Lateral Alignment and Spacing of Dowels: **1 inch**.
6. Vertical Alignment of Dowels: **1/4 inch**.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: **1/4 inch per 12 inches** of dowel.
8. Joint Spacing: **3 inches**.
9. Contraction Joint Depth: Plus **1/4 inch**, no minus.
10. Joint Width: Plus **1/8 inch**, no minus.

## 3.10 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C172/C172M will be performed according to the following requirements:

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1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is **40 deg F** and below and when it is **80 deg F** and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C31/C31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C39/C39M; test one specimen at seven days and two specimens at 28 days.
   a. A compressive-strength test to be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than **500 psi**.

D. Test results to be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests to contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency will make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

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3.11 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

C. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

**END OF SECTION 32 1313**

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## 2021 MICHIGAN BUILDING CODE

CHAPTER 3 - OCCUPANCY CLASSIFICATION AND USE

SECTION 302 - OCCUPANCY CLASSIFICATION AND USE DESIGNATION
USE GROUP: E - EDUCATION (305.1)

CHAPTER 5 - GENERAL BUILDING HEIGHTS AND AREAS

SECTION 504.3 - ALLOWABLE HEIGHT IN FEET
EDUCATION OCC - TYPE IIB - 5: 75 FEET

SECTION 504.4 - NUMBER OF STORIES
EDUCATION OCC - TYPE IIB - 5: 3

TABLE 506.3.3 - FRONTAGE INCREASE FACTOR
THE AREA FACTOR INCREASE BASED ON FRONTAGE SHALL BE DETERMINED IN ACCORDANCE WITH TABLE 506.3.3.
- WIDTH OF OPEN SPACE IS 30' OR GREATER
- FRONTAGE INCREASE FACTOR = .75

SECTION 508.3.2 - MIXED USE AND OCCUPANCY
ALLOWABLE AREA FOR A MIXED OCCUPANCY, MULTISTORY BUILDING SHALL BE ON THE MOST RESTRICTIVE ALLOWANCES FOR THE OCCUPANCY GROUPS UNDER CONSIDERATION. OCCUPANCY TYPE E IS MOST RESTRICTIVE - USE EQUATION 5-3 TO CALCULATE ALLOWABLE AREA OF EACH STORY.

A1

EQUATION 5-3: ALLOWABLE AREA PER STORY = [TABULAR AREA FACTOR + (TABULAR AREA FACTOR FOR NON-SPRINKLERED BUILDING X FRONTAGE INCREASE FACTOR)]
- CALCULATED ALLOWABLE AREA PER STORY = 54,375
- ACTUAL FIRST FLOOR AREA B1 = 8,050
- ACTUAL FIRST FLOOR AREA B2 = 47,540
- ACTUAL SECOND FLOOR AREA B2 = 16,600
- ACTUAL FIRST FLOOR AREA B3 = 12,522

TO QUALITY FOR AN AREA FACTOR INCREASE BASED ON FRONTAGE, A BUILDING SHALL NOT HAVE LESS THAN 25% OF ITS PERIMETER ON A PUBLIC WAY OR OPEN SPACE.
- ACTUAL PERIMETER ON PUBLIC WAY OR OPEN SPACE = 88%

CHAPTER 6 - TYPES OF CONSTRUCTION

TABLE 601 - FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS
CONSTRUCTION TYPE: IIB, NON-COMBUSTIBLE, 0 HOUR STRUCTURE

| | |
|---|---|
| STRUCTURAL FRAME | 0 HOUR |
| BEARING WALLS EXTERIOR | 0 HOUR |
| BEARING WALLS INTERIOR | 0 HOUR |
| NON-BEARING WALLS AND PARTITIONS | 0 HOUR |
| FLOOR CONSTRUCTION | 0 HOUR |
| ROOF CONSTRUCTION | 0 HOUR |
| STAIR (ENCLOSED) | 1 HOUR |
| SHAFTS | 1 HOUR |

CHAPTER 7 - FIRE PROTECTION AND LIFE SAFETY SYSTEMS

SECTION 706.1 - GENERAL
FIRE WALLS - EACH PORTION OF A BUILDING SEPARATED BY ONE OR MORE FIRE WALLS THAT COMPLY WITH THE PROVISIONS OF THIS SECTION SHALL BE CONSIDERED A SEPARATE BUILDING.

SECTION 714.4.1.2 - THROUGH-PENETRATION FIRESTOP SYSTEM
FILL ALL HOLES AND JOINTS IN FIRE RATED PARTITIONS AND FLOOR ASSEMBLIES AROUND ALL MECHANICAL, PLUMBING, F.P. PIPING, ELECTRICAL PENETRATIONS WITH FIRE RATED FIRE STOP MATERIALS PER SPECIFICATION IN DIVISION 7 AND PER ASTM E814. FILL GAPS BETWEEN TOP OF FIRE RATED WALLS AND FLOOR / ROOF DECKS ABOVE WITH FIRESTOPPING. SUBMIT FIRE STOP TEST REPORTS AND PRODUCT LITERATURE AS REQUESTED BY AUTHORITIES HAVING JURISDICTIONS. MANDE PENETRATIONS THROUGH SMOKE RESISTIVE / PARTITIONS SHALL BE SEALED SMOKE TIGHT WITH SMOKE RESISTIVE SEALANT. GAPS AROUND PENETRATIONS THRU NONRATED FLOOR ASSEMBLIES SHALL BE SEALED WITH NONCOMBUSTIBLE FIRE SAFING SECURED IN PLACE.

SECTION 717 - DUCTS AND AIR TRANSFER OPENINGS
SMOKE/FIRE DAMPERS AND DUCT PENETRATIONS (N/A MEANS NOT APPLICABLE)

| ITEM | FIRE DAMPER | SMOKE DAMPER | SAFING | MBC |
|---|---|---|---|---|
| 1 HR FIRE PARTITIONS | N/A* | N/A | - | 717.5.4 |
| 2 HR FIRE WALLS | X | N/A | - | 717.5.1 |
| STAIR SHAFTS | SEE NOTE 1 | SEE NOTE 1 | - | 1023.5 |
| 1-HR MECHANICAL SHAFTS | X | X | - | 717.5.3 |
| 1-HR FLOOR ASSEMBLIES | X | N/A | - | 717.6.1 |
| THRU 1 NON RATED FL | N/A | N/A | ** | 717.6.3 |
| SMOKE RESISTIVE ROOMS | N/A | N/A | - | *** |

NOTE 1: DUCT PENETRATIONS AND DAMPERS NOT PERMITTED
* MUST MEET 717.5.2 EXCEPTION #3 TO VOID FIRE DAMPERS
** DUCT THRU FLOOR ASSEMBLIES SHALL SEAL GAPS W/ NONCOMB FIRE SAFING
*** SEAL PENETRATIONS WITH SMOKE RESISTIVE SEALANT (NO TRANSFER GRILLES)

CHAPTER 8 - INTERIOR FINISHES

TABLE 803.13 - INTERIOR FINISHES
WITHIN ENCLOSED STAIR EXITS: CLASS A
CORRIDORS: CLASS B
ROOMS: CLASS C

CHAPTER 9 - FIRE PROTECTION AND LIFE SAFETY SYSTEMS

SECTION 907.2.3 - GROUP E FIRE ALARM AND DETECTION SYSTEM
PROVIDE FIRE ALARM SYSTEM THROUGHOUT BUILDING WITH VOICE ALARMS EXCEPT AT MANUAL PULL STATIONS. FIRE SPRINKLER AND FIRE ALARM SYSTEMS CONTRACTOR SHALL BE MICHIGAN CERTIFIED UNDER MICHIGAN ACT 144 AND SHALL SUBMIT SHOP DRAWINGS TO LARA - BUREAU OF FIRE SERVICES FOR APPROVAL.
BUILDING TO BE FULLY SPRINKLED

CHAPTER 10 - MEANS OF EGRESS

TABLE 1004.5 - MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

| | |
|---|---|
| ACCESSORY STORAGE | 300 GROSS |
| ASSEMBLY WITHOUT FIXED SEATS | 7 NET |
| ASSEMBLY STANDING SPACE | 5 NET |
| ASSEMBLY UNCONCENTRATED TABLES AND CHAIRS | 15 NET |
| BUSINESS AREAS | 150 GROSS |
| EDUCATIONAL CLASSROOMS | 20 NET |
| KITCHENS COMMERCIAL | 200 GROSS |

SEE CALCULATED OCCUPANCIES OUTLINED ON COMPLIANCE PLAN

SECTION 1005 - MEANS OF EGRESS
MINIMUM REQUIRED EGRESS WIDTH THE MEANS OF EGRESS WIDTH SHALL NOT BE LESS THAN REQUIRED BY THIS SECTION. THE TOTAL WIDTH OF MEANS OF EGRESS IN INCHES SHALL NOT BE LESS THAN THE TOTAL OCCUPANT LOAD SERVED BY THE MEANS OF EGRESS

SECTION 1005.3 - REQUIRED CAPACITY BASED ON OCCUPANT LOAD
EGRESS WIDTH PER OCCUPANT SERVED: REFER TO LSC NOTES (MORE RESTRICTIVE).

TABLE 1006.2.1 - SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY
MAXIMUM COMMON PATH OF TRAVEL IS 75 FEET WITHIN ASSEMBLY AND GROUP E EXCEPT 100 FEET PERMITTED WITHIN STAFF BUSINESS AREAS COMMON PATH FOR GROUP E IS MORE RESTRICTIVE THAN LSC.

SECTION 1006.2.2.1 - BOILER, INCINERATOR AND FURNACE ROOMS
TWO EXIT ACCESS DOORWAYS ARE REQUIRED IN BOILER, INCINERATOR AND FURNACE ROOMS WHERE THE AREA IS OVER 500 SQUARE FEET ... AND ANY FUEL-FIRED EQUIPMENT EXCEEDS 400,000 BTU'S INPUT CAPACITY. WHERE EXIT ACCESS DOORWAYS ARE REQUIRED, ONE IS PERMITTED TO BE A FIXED LADDER OR AN ALTERNATING TREAD DEVICE. EXIT ACCESS DOORWAYS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE EQUAL TO ONE-HALF THE LENGTH OF THE MAXIMUM OVERALL DIAGONAL DIMENSION OF THE ROOM.

TABLE 1006.3.3 - MINIMUM NUMBER OF EXITS
1 TO 500 OCCUPANTS = 2 EXITS REQUIRED
501 TO 1,000 OCCUPANTS = 3 EXITS REQUIRED
1,000 AND OVER OCCUPANTS = 4 EXITS REQUIRED

SECTION 1007.1.1 - TWO EXITS OR EXIT ACCESS DOORWAYS
WHERE TWO EXITS, EXIT ACCESS DOORWAYS, OR EXIT ACCESS STAIRWAYS ARE REQUIRED FROM ANY PORTION OF THE EXIT ACCESS, THE TWO ELEMENTS SHALL BE PLACED A DISTANCE APART NO LESS THAN ONE-THIRD OF THE LENGTH OF THE MAXIMUM OVERALL DIAGONAL DIMENSION OF THE AREA SERVED WHEN FULLY SPRINKLED.

SECTION 1008.3.5 - ILLUMINATION LEVEL UNDER EMERGENCY POWER
PROVIDE EMERGENCY EGRESS LIGHTING IN ALL MEANS OF EGRESS SPACES HAVING 2 OR MORE MEANS OF EGRESS, IN COMMON TOILET ROOMS AND AT EXTERIOR SIDE OF EXITS. PROVIDE PHOTOMETRIC PLAN CALCULATIONS OF LIGHTING LEVELS TO AND REQUESTED BY AUTHORITIES HAVING JURISDICTION.

SECTION 1009.8 - TWO WAY COMMUNICATION
TWO WAY COMMUNICATION AT ELEVATOR - FOR LOCATION REFER TO CODE PLANS WITH THE "2W" SYMBOL FOR 2-WAY COMMUNICATION OF ELEVATOR AT ALL UPPER LEVELS (NOT REQUIRED AT ACCESSIBLE GRADE FLOOR LEVELS AT ACCESSIBLE EXITS). PROVIDE 2-WAY COMMUNICATION FOR EMERGENCY ASSISTANCE AT ELEVATORS THAT CONNECTS FROM THE UPPER FLOORS AT ELEVATOR TO A CONSTANTLY ATTENDED STATION APPROVED BY THE FIRE DEPARTMENT.

SECTION 1009.8.1 - SYSTEM REQUIREMENTS
IF NO LOCATION IS AVAILABLE (OR NO ONE ANSWERS) SYSTEM SHALL AUTOMATICALLY ACCESS TELEPHONE #911. COMMUNICATION SHALL HAVE ACCESSIBLE DIRECTIONS FOR USE AND TO GIVE THE USER INFORMATION OF WHERE THEY ARE LOCATED (E.G., BUILDING ADDRESS, FLOOR NUMBER, ELEVATOR NUMBER, ETC.). SYSTEM SHALL HAVE BOTH AUDIBLE AND VISIBLE SIGNALS FOR THE HEARING IMPAIRED IN ORDER TO USE SYSTEM.

SECTION 1009.8.2 - DIRECTIONS
PROVIDE DIRECTIONAL INFORMATION TO FIND THIS COMMUNICATION SYSTEM ON ALL EVACUATION SIGNAGE REQUIRED WITHIN BUILDING IN ACCORDANCE WITH FIRE DEPARTMENT APPROVAL.

SECTION 1010.2.9 - PANIC AND FIRE EXIT HARDWARE
DOORS SERVING ROOMS OR SPACES WITH AN OCCUPANT LOAD OF 50 OR MORE IN A GROUP A OR E OCCUPANCY SHALL NOT BE PROVIDED WITH A LATCH OR LOCK OTHER THAN PANIC HARDWARE OR FIRE EXIT HARDWARE.

SECTION 1016.2 - EGRESS THROUGH INTERVENING SPACES
NOT ALLOWED EXCEPT WHERE ADJOINING ROOMS ARE ACCESSORY TO ONE OR THE OTHER AND PROVIDE A DISCERNABLE PATH OF EGRESS TRAVEL TO AN EXIT.

TABLE 1017.2 - TRAVEL DISTANCE LIMITATIONS
EXITS SHALL BE LOCATED ON EACH STORY SUCH THAT THE MAXIMUM LENGTH OF EXIT ACCESS TRAVEL DOES NOT EXCEED THE DISTANCES GIVEN IN TABLE 1017.2. OCCUPANCY E TRAVEL DISTANCE IS 200' WITHOUT A SPRINKLER SYSTEM. TRAVEL DISTANCE IS 250' WITH SPRINKLER SYSTEM.

TABLE 1020.2 - CORRIDOR CONSTRUCTION
E OCCUPANCY NON-SPRINKLED REQUIRES A ONE-HOUR FIRE RESISTANCE RATING. CORRIDORS SHALL BE SMOKE RESISTANT PER LSC NOTE 'B'.

TABLE 1020.3
CORRIDOR WIDTH IN GROUP E OCCUPANCIES HAVING AN OCCUPANT LOAD OF 100 OR MORE SHALL HAVE A MINIMUM WIDTH OF 72 INCHES.

SECTION 1020.5 - DEAD ENDS
MAXIMUM CORRIDOR DEAD END TRAVEL: 20 FEET.

1023.7 INTERIOR EXIT STAIRWAY AND RAMP EXTERIOR WALLS
WHERE NONRATED WALLS OR UNPROTECTED OPENINGS ENCLOSE THE EXTERIOR OF THE STAIRWAY OR RAMPS AND THE WALLS OR OPENINGS ARE EXPOSED BY OTHER PARTS OF THE BUILDING AT AN ANGLE OF LESS THAN 180 DEGREES (3.14 RAD), THE BUILDING EXTERIOR WALLS WITHIN 10 FEET (3048 MM) HORIZONTALLY OF A NONRATED WALL OR UNPROTECTED OPENING SHALL HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 1 HOUR.

*STAIR 1(S01.1) WILL HAVE A 1-HOUR EXTERIOR RATED WALL, THIS RATING WILL EXTEND VERTICALLY FROM THE GROUND TO A POINT 10 FEET (3048 MM) ABOVE THE TOPMOST LANDING OF THE STAIRWAY

SECTION 1028.2 - EXIT DISCHARGE
EXITS SHALL DISCHARGE DIRECTLY TO THE EXTERIOR OF THE BUILDING. THE EXIT DISCHARGE SHALL BE AT GRADE OR SHALL PROVIDE A DIRECT PATH OF EGRESS TRAVEL TO GRADE. EXCEPTIONS PERMITTED PER 1028.2

SECTION 1030.8 - COMMON PATH OF TRAVEL
COMMON PATH OF TRAVEL SHALL NOT EXCEED 75' FOR OCCUPANCIES UNDER 50 AND 50' FOR A SMOKE PROTECTED ASSEMBLY SEATING. COMMON PATH OF EGRESS TRAVEL - THAT PORTION OF EXIT ACCESS WHICH THE OCCUPANTS ARE REQUIRED TO TRAVERSE BEFORE TWO SEPARATE AND DISTINCT PATHS OF EGRESS TRAVEL TO TWO EXITS ARE AVAILABLE. PATHS THAT MERGE ARE COMMON PATHS OF TRAVEL. COMMON PATHS OF EGRESS TRAVEL SHALL BE INCLUDED WITHIN THE PERMITTED TRAVEL DISTANCE.

## 2012 NFPA LIFE SAFETY CODE

1. OCCUPANCY GROUP: E - EDUCATIONAL

2. CONSTRUCTION TYPE: IIB FOR ALL BUILDING AREAS (0,0,0)

3. BUILDING AREA: REFER TO BOTTOM OF RIGHT MOST COLUMN

MEANS OF EGRESS

SECTION 7.3.3
EGRESS WIDTH PER OCCUPANCY SERVED: MINIMUM WIDTH = .3 AT STAIRS AND .2 AT DOORS PER OCCUPANT. [STAIRS = 156" (102" REQ.) ] [DOORS = 850" (502" REQ.)]

SECTION 14.2.6.4
MAXIMUM EXIT ACCESS TRAVEL: 200 FEET.

SECTION 14.2.5.3
NO DEAD-END CORRIDOR SHALL EXCEED 20 FT (6100 MM), OTHER THAN IN BUILDINGS PROTECTED THROUGHOUT BY AN APPROVED, SUPERVISED AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 9.7, IN WHICH CASE DEAD-END CORRIDORS SHALL NOT EXCEED 50 FT (15 M).

SECTION 14.2.5.2.1
COMMON PATH OF TRAVEL SHALL NOT EXCEED 100 FT (30 M) IN A BUILDING PROTECTED THROUGHOUT BY AN APPROVED, SUPERVISED AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 9.7.

SECTION 14.2.11.1.2(1)
EVERY STUDENT OCCUPIED ROOM OVER 250 S.F. MUST HAVE A DOOR OR WINDOW TO THE EXTERIOR UNLESS FULLY SPRINKLED.

SECTION 14.3.6.4
LAVATORIES ARE NOT REQUIRED TO BE SEPARATED FROM CORRIDORS PROVIDED THEY ARE SEPARATED FROM ALL OTHER SPACES WITH ONE-HOUR WALLS.

SECTION 14.3.7.2
SUBDIVISION OF THE BUILDING INTO SMOKE COMPARTMENTS IS NOT REQUIRED BECAUSE THE BUILDING IS PROTECTED THROUGHOUT BY A SUPERVISED AUTOMATIC SPRINKLER SYSTEM.

## 2021 MICHIGAN PLUMBING CODE

PLUMBING FIXTURE COUNTS BASED ON NON-SIMULTANEOUS USE FOR EDUCATIONAL OCCUPANCY (*)
- TOTAL OCCUPANCY = 845 OCCUPANTS
- 26 NORMAL EDUCATION CLASSROOMS (GRADES PK-8) AT 30 STUDENTS EACH (PER TEACHER CONTRACT) = 780 OCCUPANTS
- TEACHERS, ADMINISTRATORS, AND PART TIME STAFF = 65 OCCUPANTS

*GYMNASIUM, CAFETERIA, COMMONS, ART, MUSIC, ACADEMIC SUPPORT OFFICES, AND MEDIA CENTER ARE THE SAME STUDENTS AS CALCULATED IN CLASSROOM COUNTS.
** PLANNED OR POSSIBLE NUMBER OF OCCUPANTS WITHIN SPACES DURING NORMAL SCHOOL HOURS.

TYPICAL OCCUPANCY PLUMBING FIXTURES
- 845 OCCUPANTS
- EDUCATION CLASSIFICATION WATER CLOSETS: 1 / 50 = 17 REQ.
- EDUCATION CLASSIFICATION LAVATORIES: 1 / 50 = 17 REQ.
- EDUCATION CLASSIFICATION DRINKING FOUNTAINS: 1 / 100 = 9 REQ.
- EDUCATION CLASSIFICATION SERVICE SINK: 1 REQ.

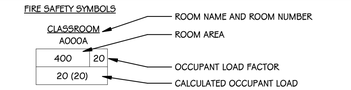
GYMNASIUM
- 515 OCCUPANTS / 2 = 258 OCCUPANTS
- ASSEMBLY CLASSIFICATION MALE WATER CLOSETS = 1 / 125 = 3 REQ.
- ASSEMBLY CLASSIFICATION FEMALE WATER CLOSETS = 1 / 125 = 3 REQ.
- ASSEMBLY CLASSIFICATION MALE LAVATORIES = 1 / 200 = 2 REQ.
- ASSEMBLY CLASSIFICATION FEMALE LAVATORIES = 1 / 200 = 2 REQ.
- ASSEMBLY CLASSIFICATION DRINKING FOUNTAINS = 1 / 500 = 1 REQ.

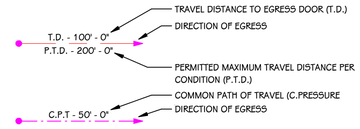
+ AUXILIARY SPACES FOR EVENTS SUCH AS THE GYMNASIUM ARE NON-SIMULTANEOUS USE WITH EDUCATIONAL SPACES

PROVIDED PLUMBING FIXTURES
- WATER CLOSETS = 39 TOTAL
- LAVATORIES = 28 TOTAL
- DRINKING FOUNTAINS = 14 TOTAL
- SERVICE SINK = 2 PROVIDED

## CODE COMPLIANCE KEY

FIRE SAFETY SYMBOLS




XX" / XXX — MAIN EGRESS EXIT

SECONDARY EGRESS EXIT

SMOKE EVACUATION

H — HORIZONTAL EGRESS

FIRE SAFETY SYMBOLS

FE — FIRE EXTINGUISHER

FEC — FIRE EXTINGUISHER CABINET

AED — AUTOMATED EXTERNAL DEFIBRILLATOR (AED) RECESSED CABINET

KNOX — KNOX BOX

## FIRE-RATING KEY

COORDINATE ALL REQUIRED DAMPERS WITH MECHANICAL.

| DESIGNATION | RATING | PRIORITY |
|---|---|---|
| | 3 HOUR | 1 |
| | 2 HOUR FIRE WALL - 706 | 2 |
| | 2 HOUR FIRE PARTITION - 708 | 2 |
| | 2 HOUR FIRE BARRIER - 707 | 2 |
| | 1 HOUR FIRE PARTITION - 708 | 3 |
| | 1 HOUR FIRE BARRIER - 707 | 3 |
| | SMOKE RESISTANT | 4 |

1. ALL PENETRATIONS THROUGH A FIRE OR SMOKE RATED PARTITION SHOULD BE SEALED WITH AN APPROVED U.L. RATED PRODUCT.

2. THE TOPS OF ALL FIRE RATED PARTITIONS SHALL BE SEALED TO THE CONTINUOUS STRUCTURE ABOVE WITH A U.L. RATED SYSTEM OR ASSEMBLY.

3. WOOD BLOCKING IN FIRE-RATED PARTITIONS SHALL BE NON-COMBUSTIBLE TREATED WOOD.

4. REFER TO SPECIFICATION U.L. RATING INFORMATION.

5. FIRE-RATED WALLS ENDING INTO AN ACOUSTICAL DECK MUST HAVE THE FLUTES FILLED- REFER TO TOP OF WALL DETAIL AT ACOUSTIC DECK SHOWN ON THIS SHEET.

- FOR MASONRY WALLS THE MASON SHALL FILL VOIDS AND FIRE SPRAY WITH UL LISTED MATERIAL.
- FOR STUD WALLS USE FIRE SAFING AND FIRE CAULK.

## REFERENCED CODE

| | |
|---|---|
| BUILDING: | 2021 MICHIGAN BUILDING CODE & 2012 NFPA 101 LIFE SAFETY CODE |
| ENERGY: | 2021 MICHIGAN BUILDING CODE |
| PLUMBING: | 2021 MICHIGAN PLUMBING CODE |
| MECHANICAL: | 2021 MICHIGAN MECHANICAL CODE |
| FUEL GAS: | (IFGC) 2021 INTERNATIONAL FUEL GAS CODE |
| ELECTRICAL: | 2023 MICHIGAN ELECTRICAL CODE, PART 8 |
| BARRIER FREE: | 2021 MICHIGAN BUILDING CODE & 2009 ICC & C A117.1 |
| USE GROUP: | E |
| CONSTRUCTION TYPE: | II-B-SM |
| SPRINKLERS: | YES |

A1

## PROJECT AREA

| | |
|---|---|
| TOTAL FINISHED PROJECT | 84712 SF |

1. OCCUPANCY USE GROUP: E - EDUCATIONAL

2. CONSTRUCTION TYPE: IIB FOR ALL BUILDING AREAS

3. BUILDING AREA:

| | |
|---|---|
| FIRST FLOOR: | 68,112 SF |
| SECOND FLOOR: | 16,600 SF |
| TOTAL FINISHED PROJECT: | 84,712 SF |
| ALTERNATE No. 1 AREA: | 2,786 SF |

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

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|---|---|
| ADDENDUM #1 | 05-08-2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

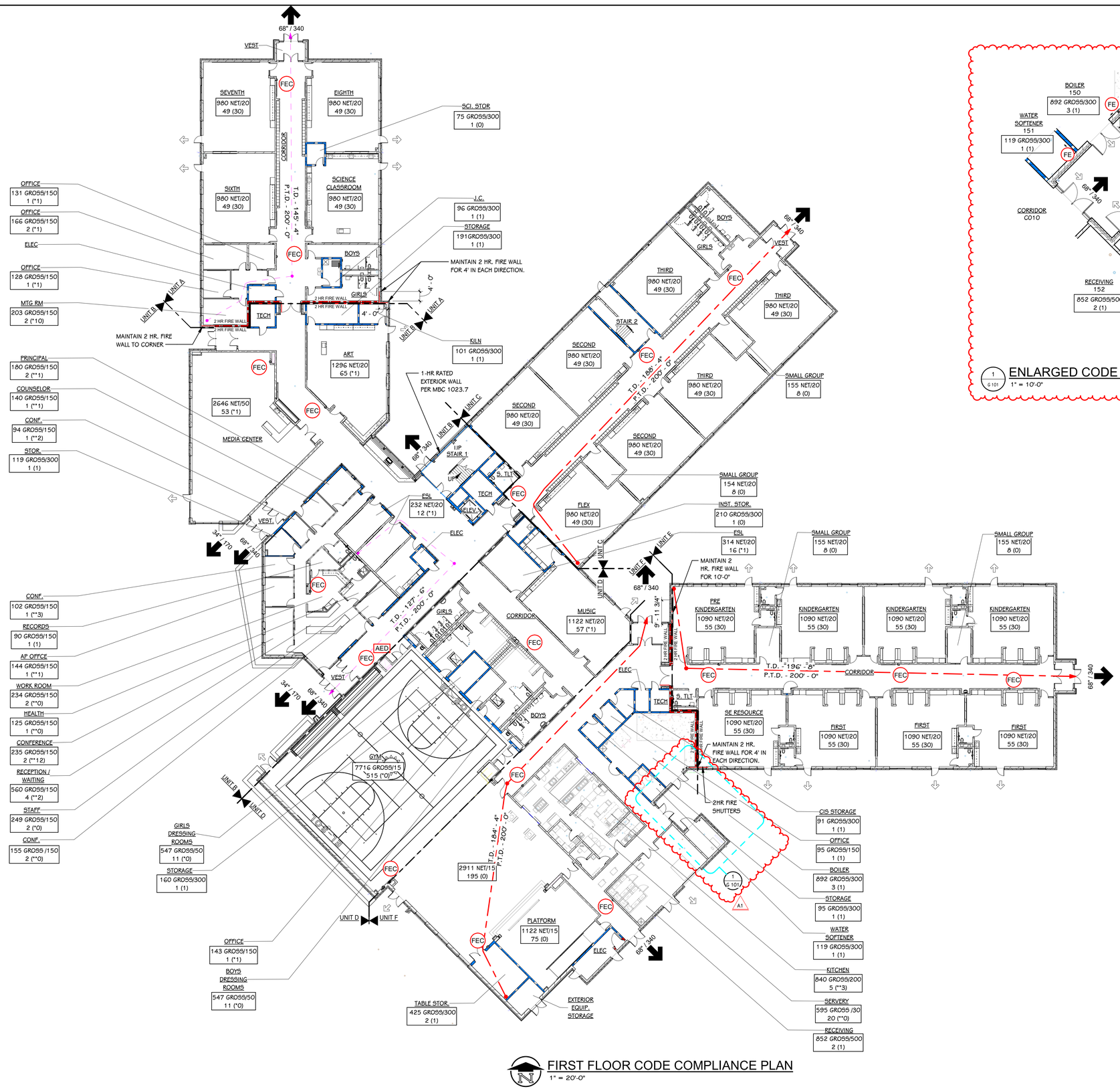
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

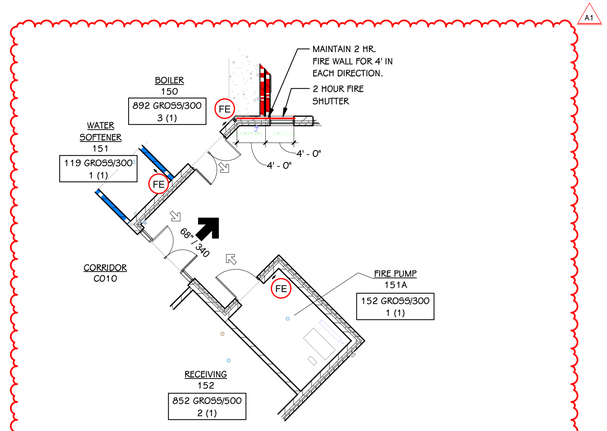
DATE
APRIL 24, 2026

SHEET TITLE
CODE REVIEW

SHEET NUMBER
G 004
23-622.000




FIRST FLOOR CODE COMPLIANCE PLAN
1" = 20'-0"




1 G 101 ENLARGED CODE COMPLIANCE PLAN - PUMP ROOM
1" = 10'-0"

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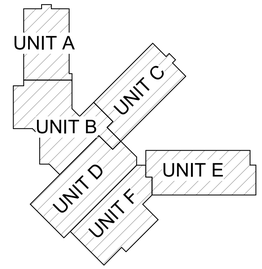
**EL SOL SCHOOL**




KEY PLAN
SCALE: NO SCALE

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DATE
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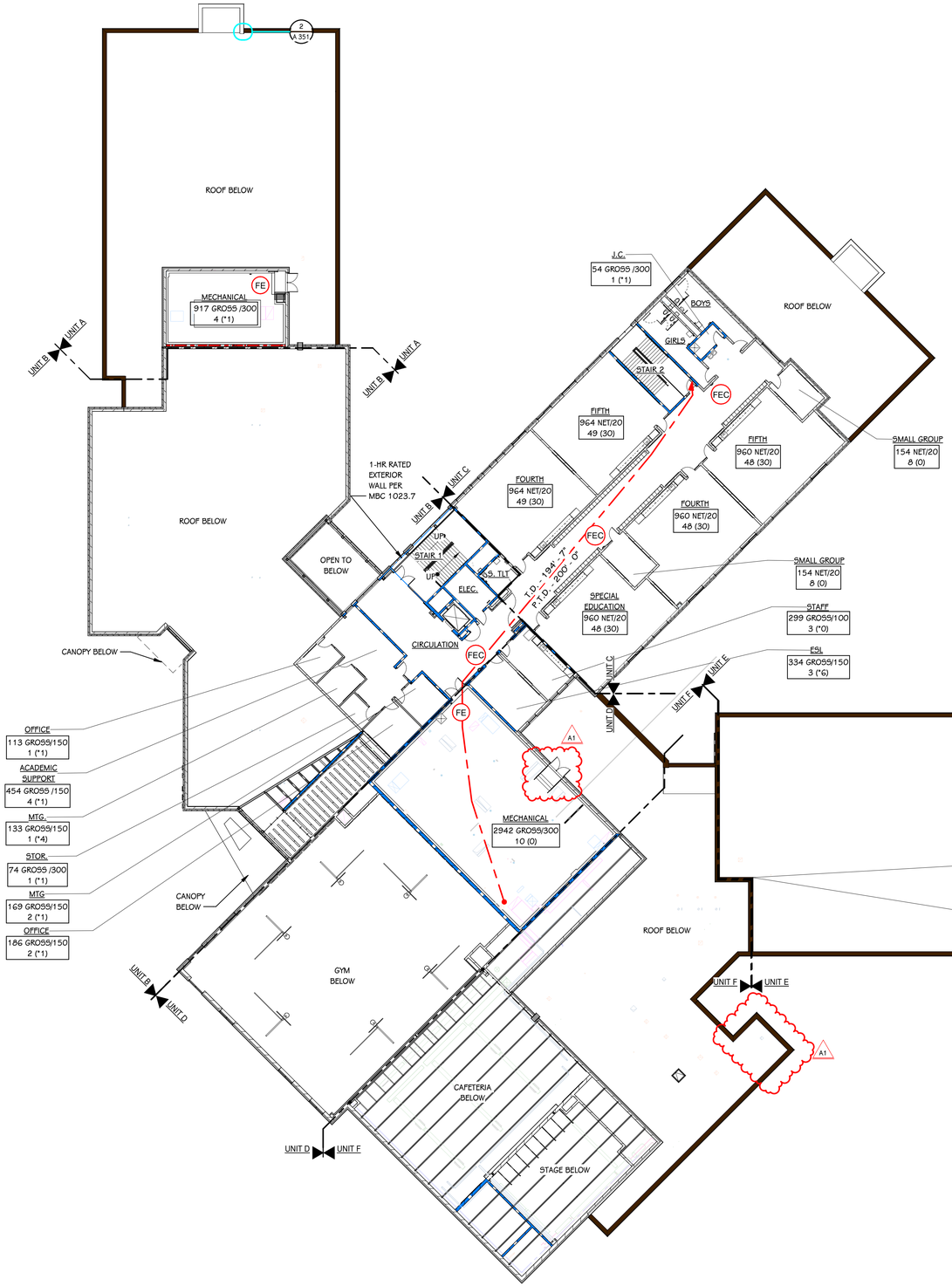
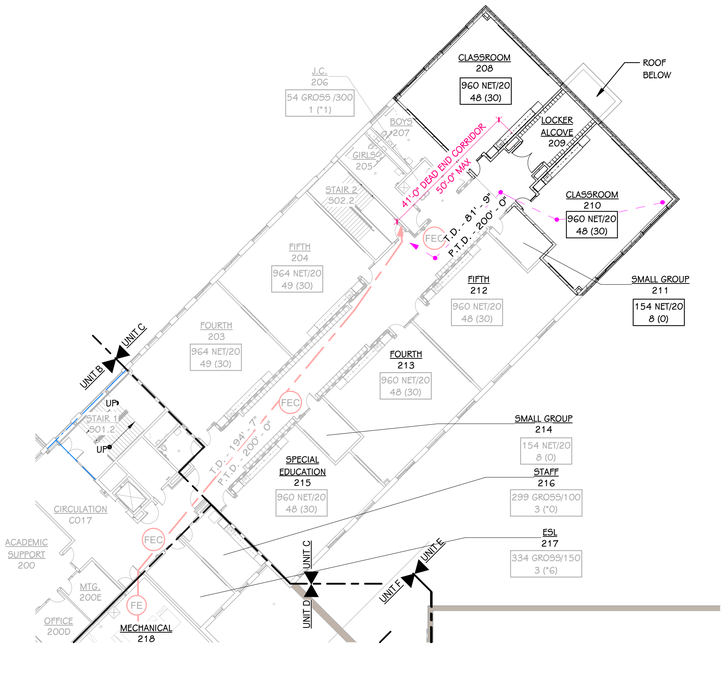



SECOND FLOOR CODE COMPLIANCE PLAN
1" = 20'-0"




SECOND FLOOR CODE COMPLIANCE PLAN - UNIT C - ALT. No. 1
1" = 20'-0"

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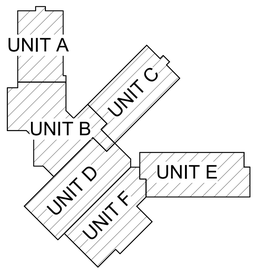


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SECOND FLOOR CODE COMPLIANCE PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
G 102
23-622.000

## ZONING REQUIREMENTS

ZONING
North Property Line: R-2 Single And Two Family Residential
East Property Line: R-2 Single And Two Family Residential
South Property Line: R-2 Single And Two Family Residential and Rm-2 Multiple Family / Mixed Use
West Property Line: R-2 Single And Two Family Residential

PROPOSED USE
Elementary and Middle School, Specalized Curriculum

PARKING
Baker Drive Parking Lot
Total Parking Provided: 111 Spaces
(105 Parking Lot + 2 Standard Accessible + 4 Van Accessible)
Accessible Spaces Required: 5
Accessible Spaces Provided: 6

Craft Avenue Parking Lot
Total Parking Provided: 60 Spaces
(57 Parking Lot + 2 Standard Accessible + 1 Van Accessible)
Accessible Spaces Required: 3
Accessible Spaces Provided: 3

Total Parking Provided: 171 Spaces
(162 Parking Lot + 9 Barrier Free)

All Accessible Parking Spaces Designed Per Most Recent Version Of Accessibility Standards Issued Under The Americans With Disabilities Act (ADA).

Typical Parking Space Dimension: 9' X 18.5'

IMPERVIOUS COVERAGE
Pre-Development Impervious Coverage: 2.2%
Post-Development Impervious Coverage: 52.1%

Net Acreage: 12.1 Acres

## PARKING CALCULATIONS

| USE | PARKING SPACES REQUIRED | QTY | PARKING SPACES REQUIRED |
|---|---|---|---|
| Elementary and Middle School, Specalized Curriculum | 1 space per 1 employee | 50 employees | 50 |
| Assembly / Theater | 1 space per 4.25 students | 500 students | 118 |
| | | | |

Total Parking Spaces Required: 168
Total Parking Spaces Provided: 171

## NOTES - SITE - GENERAL

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## NOTES - SITE - LAYOUT

1. LAYOUT AND VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. BRING DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
2. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE.
3. WHERE DIMENSIONS ARE CALLED AS "EQUAL" SPACE REFERENCE ITEMS EQUALLY, MEASURED TO THEIR CENTER LINES.
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7. PROVIDE EXPANSION JOINTS WHERE CONCRETE FLATWORK MEETS VERTICAL STRUCTURES SUCH AS WELLS, CURBS, STEPS AND BUILDING ELEMENTS AND AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
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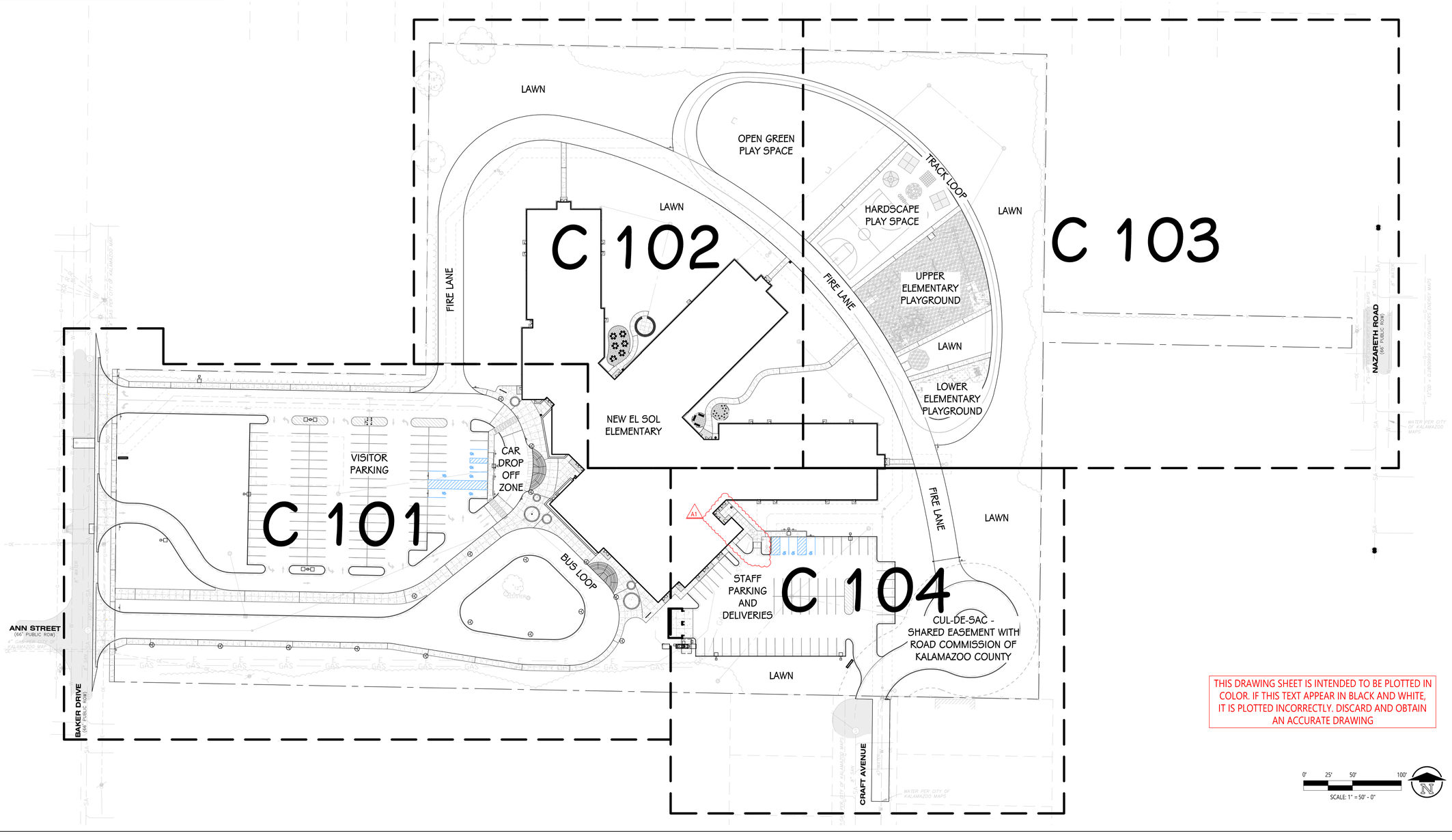


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ADDENDUM #1 05/08/2026
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PROJECT TITLE
NEW EL SOL SCHOOL

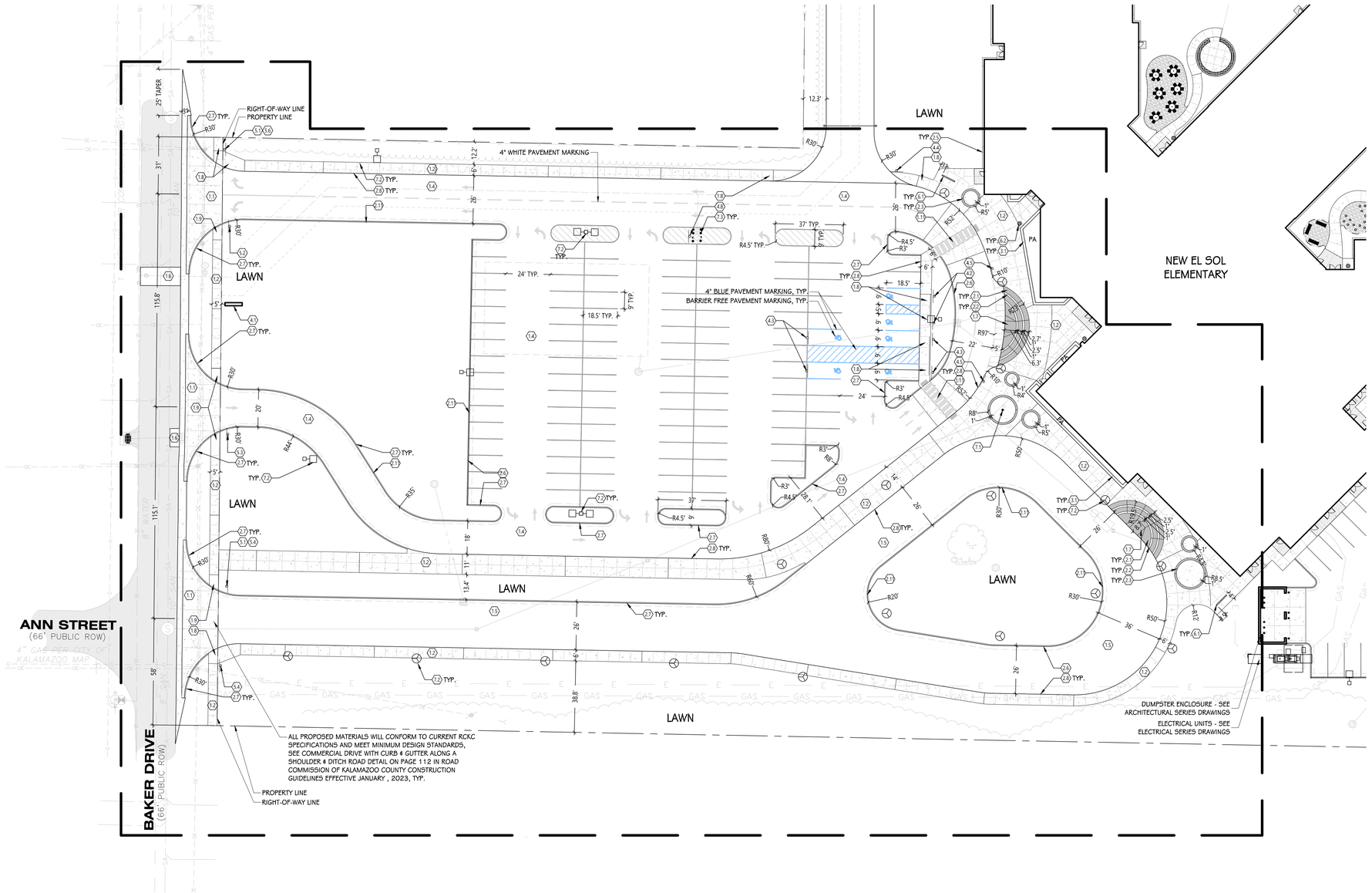
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL SITE PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
C 100
23-622.000

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## LEGEND - SITE - LAYOUT + MATERIALS

- CONCRETE PAVING
- FROST-RESISTANT STOOP, 4'X4' TYPICAL - SEE STRUCTURAL DRAWINGS
- DECORATIVE PAVEMENT
- CRUSHED FINES
- PLAYGROUND SURFACING - ENGINEERED WOOD FIBER, SEE PLAYGROUND PLANS
- PLAYGROUND SURFACING - POUR-IN-PLACE RUBBER, SEE PLAYGROUND PLANS
- SWING GATE
- CONTROL JOINT
- EXPANSION JOINT
- PA PLANTING AREA

## KEYNOTES - SITE - LAYOUT

1.0 PAVEMENTS AND RAMPS
- 1.1 CONCRETE PAVEMENT - DRIVE APPROACH
- 1.2 CONCRETE PAVEMENT - STANDARD DUTY
- 1.3 CONCRETE PAVEMENT - HEAVY DUTY
- 1.4 ASPHALT PAVEMENT - STANDARD DUTY
- 1.5 ASPHALT PAVEMENT - HEAVY DUTY
- 1.6 ASPHALT PAVEMENT - CUL-DE-SAC
- 1.7 MDOT CURB RAMP TYPE F - FLARED SIDES
- 1.8 MDOT CURB RAMP TYPE F - PARALLEL RAMP
- 1.9 MDOT CURB RAMP TYPE R - ROLLED SIDES
- 1.10 PLAYGROUND RAMP
- 1.11 SPEED TABLE

2.0 SPECIALTY PAVEMENTS AND CURBS
- 2.1 DECORATIVE CONCRETE PAVEMENT - STANDARD DUTY DECORATIVE BAND TYPE 1
- 2.2 (NON-COLORED CONCRETE)
- 2.3 DECORATIVE BAND TYPE 2 (COLORED CONCRETE)
- 2.4 CRUSHED FINES
- 2.5 12" WIDE CONCRETE MAINTENANCE STRIP
- 2.6 MDOT D1 CURB AND GUTTER - ROLLED CURB
- 2.7 MDOT F4 CURB AND GUTTER - STANDARD CURB
- 2.8 INTEGRAL CONCRETE CURB
- 2.9 MDOT E2 CURB - SIDE CURB
- 2.10 PLAYGROUND CONCRETE CURB
- 2.11 CONCRETE CURB SPILLWAY - REFER TO CIVIL SERIES DRAWINGS, C400
- 2.12 INTEGRAL CONCRETE PLAYGROUND CURB

3.0 WALLS
- 3.1 RAISED LANDSCAPE PLANTER

4.0 INTERNAL SITE SIGNAGE
- 4.1 ENTRANCE SIGN - REFER TO ARCHITECTURAL SERIES DRAWINGS
- 4.2 BARRIER FREE PARKING SIGN, MUTCD R7-8
- 4.3 VAN ACCESSIBLE BARRIER FREE PARKING SIGN, MUTCD R7-8, 12"x18" AND R7-8A, 6"x12"
- 4.4 NO STOPPING FIRE LANE SIGN, MUTCD E-5481, 12"x18"
- 4.5 STUDENT DROP OFF SIGN, MUTCD K-2967, 12"x18"
- 4.6 STAFF PARKING POST AND PANEL SIGN
- 4.7 WALKING TRACK SIGN - BY OWNER
- 4.8 HYDRANT LOCATION SIGN, REFER TO CIVIL FOR DETAIL, C 700 (A1)

5.0 RIGHT-OF-WAY SIGNAGE
- 5.1 STOP SIGN, MUTCD R1-1, 30"x30"
- 5.2 EXIT ONLY SIGN, MUTCD K-8367, 12"x18"
- 5.3 ENTRANCE ONLY SIGN, MUTCD K-1755, 12"x18"
- 5.4 BUSES ONLY SIGN, MUTCD K-3967, 12"X18"
- 5.5 NO THRU TRAFFIC SIGN, NO OUTLET SIGN, MUTCD K2-1350, 12"x18"
- 5.6 DO NOT ENTER, WRONG WAY SIGN, MUTCD R5-1, 12"x18"

6.0 SITE FURNITURE
- 6.1 BIKE RACK
- 6.2 TRASH RECEPTACLE
- 6.3 TABLE
- 6.4 ADA TABLE
- 6.5 CUSTOM CURVED BENCH
- 6.6 BENCH
- 6.7 MANUFACTURED LOG SEAT

7.0 MISCELLANEOUS SITE FEATURES
- 7.1 FLAG POLE
- 7.2 LIGHT POLE - REFER TO LIGHTING AND ELECTRICAL SERIES DRAWINGS
- 7.3 BOLLARD
- 7.4 GATE TYPE 1 (26', DOUBLE SWING GATE)

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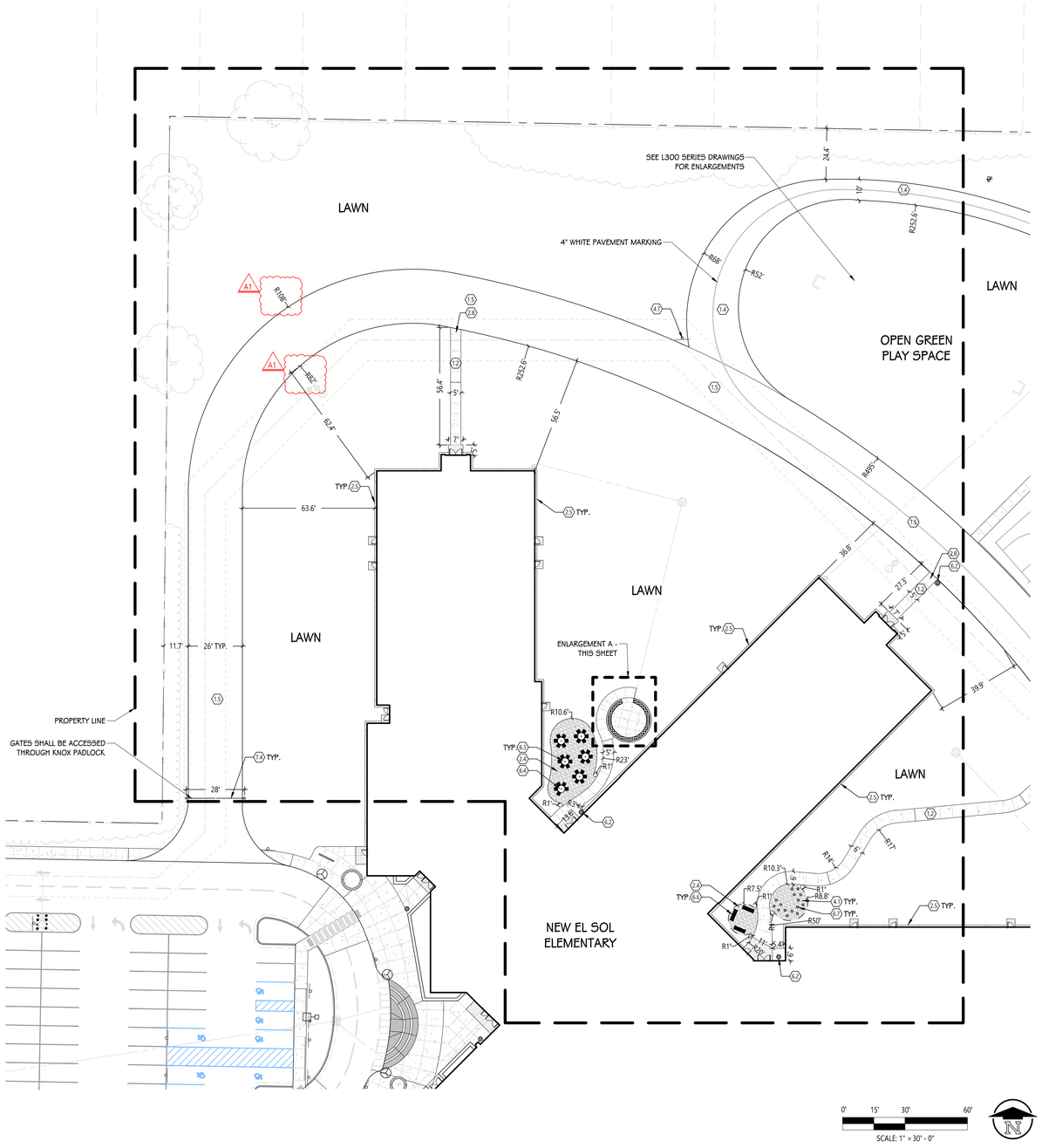


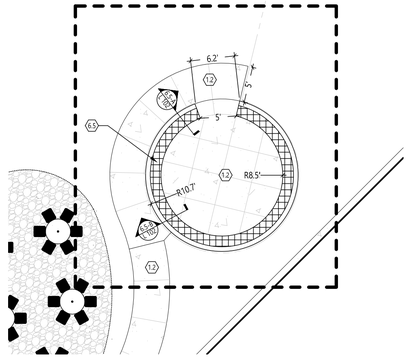


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## NOTES - SITE - LAYOUT

1. LAYOUT AND VERIFY DIMENSIONS PRIOR TO CONSTRUCTION. BRING DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
2. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE.
3. WHERE DIMENSIONS ARE CALLED AS 'EQUAL' SPACE REFERENCE ITEMS EQUALLY, MEASURED TO THEIR CENTER LINES.
4. MEASUREMENTS ARE TO BACK OF CURB, EDGE OR PAVEMENT, FACE OF BUILDING, WALL OR THE FIXED SITE IMPROVEMENT UNLESS OTHERWISE NOTED. DIMENSIONS TO CENTER LINES ARE INDICATED.
5. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.
6. INSTALL INTERSECTING ELEMENTS AT 90 DEGREE ANGLES TO EACH OTHER UNLESS OTHERWISE NOTED.
7. PROVIDE EXPANSION JOINTS WHERE CONCRETE FLATWORK MEETS VERTICAL STRUCTURES SUCH AS WELLS, CURBS, STEPS AND BUILDING ELEMENTS AND AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
8. ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS SHOULD BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER FOR RESOLUTION IMMEDIATELY.
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## LEGEND - SITE - LAYOUT + MATERIALS

- CONCRETE PAVING
- FROST-RESISTANT STOOP, 4'X4' TYPICAL - SEE STRUCTURAL DRAWINGS
- DECORATIVE PAVEMENT
- CRUSHED FINES
- PLAYGROUND SURFACING - ENGINEERED WOOD FIBER, SEE PLAYGROUND PLANS
- PLAYGROUND SURFACING - POUR-IN-PLACE RUBBER, SEE PLAYGROUND PLANS
- SWING GATE
- CONTROL JOINT
- EXPANSION JOINT
- PA PLANTING AREA

## KEYNOTES - SITE - LAYOUT

1.0 PAVEMENTS AND RAMPS
- 1.1 CONCRETE PAVEMENT - DRIVE APPROACH
- 1.2 CONCRETE PAVEMENT - STANDARD DUTY
- 1.3 CONCRETE PAVEMENT - HEAVY DUTY
- 1.4 ASPHALT PAVEMENT - STANDARD DUTY
- 1.5 ASPHALT PAVEMENT - HEAVY DUTY
- 1.6 ASPHALT PAVEMENT - CUL-DE-SAC
- 1.7 MDOT CURB RAMP TYPE F - FLARED SIDES
- 1.8 MDOT CURB RAMP TYPE P - PARALLEL RAMP
- 1.9 MDOT CURB RAMP TYPE R - ROLLED SIDES
- 1.10 PLAYGROUND RAMP
- 1.11 SPEED TABLE

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- 2.2 DECORATIVE BAND TYPE 2 (COLORED CONCRETE)
- 2.3 CRUSHED FINES
- 2.5 12" WIDE CONCRETE MAINTENANCE STRIP
- 2.6 MDOT D1 CURB AND GUTTER - ROLLED CURB
- 2.7 MDOT F4 CURB AND GUTTER - STANDARD CURB
- 2.8 INTEGRAL CONCRETE CURB
- 2.9 MDOT E2 CURB - SIDE CURB
- 2.10 PLAYGROUND CONCRETE CURB
- 2.11 CONCRETE CURB SPILLWAY - REFER TO CIVIL SERIES DRAWINGS, C400
- 2.12 INTEGRAL CONCRETE PLAYGROUND CURB

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- 4.1 ENTRANCE SIGN - REFER TO ARCHITECTURAL SERIES DRAWINGS
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- 4.3 VAN ACCESSIBLE BARRIER FREE PARKING SIGN, MUTCD R7-8, 12"x18" AND R7-8A, 6"x12"
- 4.4 NO STOPPING FIRE LANE SIGN, MUTCD K-5481, 12"x18"
- 4.5 STUDENT DROP OFF SIGN, MUTCD K-2967, 12"x18"
- 4.6 STAFF PARKING POST AND PANEL SIGN
- 4.7 WALKING TRACK SIGN - BY OWNER
- 4.8 HYDRANT LOCATION SIGN, REFER TO CIVIL FOR DETAIL, C 700 (A1)

5.0 RIGHT-OF-WAY SIGNAGE
- 5.1 STOP SIGN, MUTCD R1-1, 30"x30"
- 5.2 EXIT ONLY SIGN, MUTCD K-8367, 12"x18"
- 5.3 ENTRANCE ONLY SIGN, MUTCD K-1755, 12"x18"
- 5.4 BUSES ONLY SIGN, MUTCD K-3967, 12"x18"
- 5.5 NO THRU TRAFFIC SIGN, NO OUTLET SIGN, MUTCD K2-1350, 12"x18"
- 5.6 DO NOT ENTER, WRONG WAY SIGN, MUTCD R5-1, 12"x18"

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- 7.1 FLAG POLE
- 7.2 LIGHT POLE - REFER TO LIGHTING AND ELECTRICAL SERIES DRAWINGS
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KALAMAZOO, MICHIGAN

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DATE
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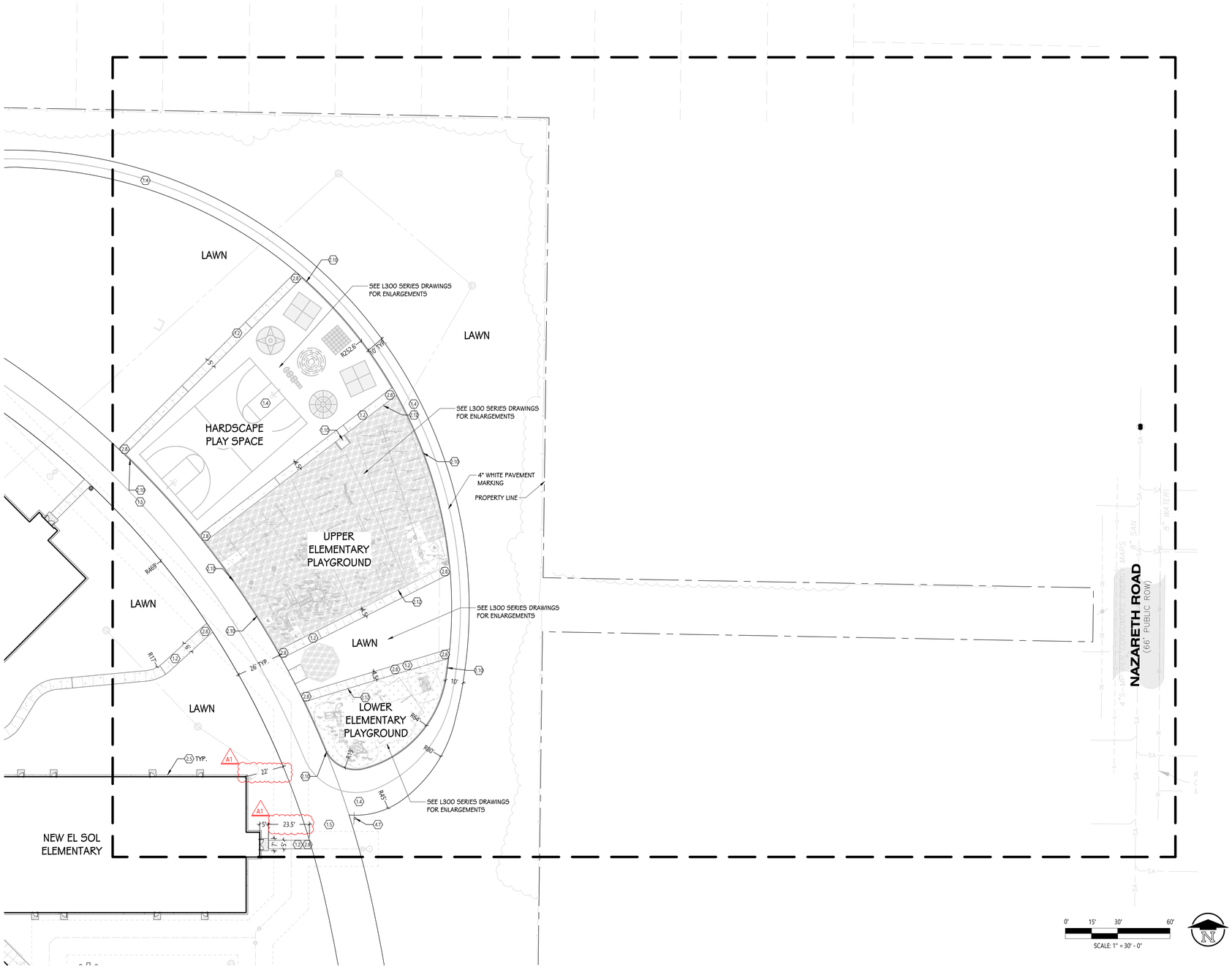


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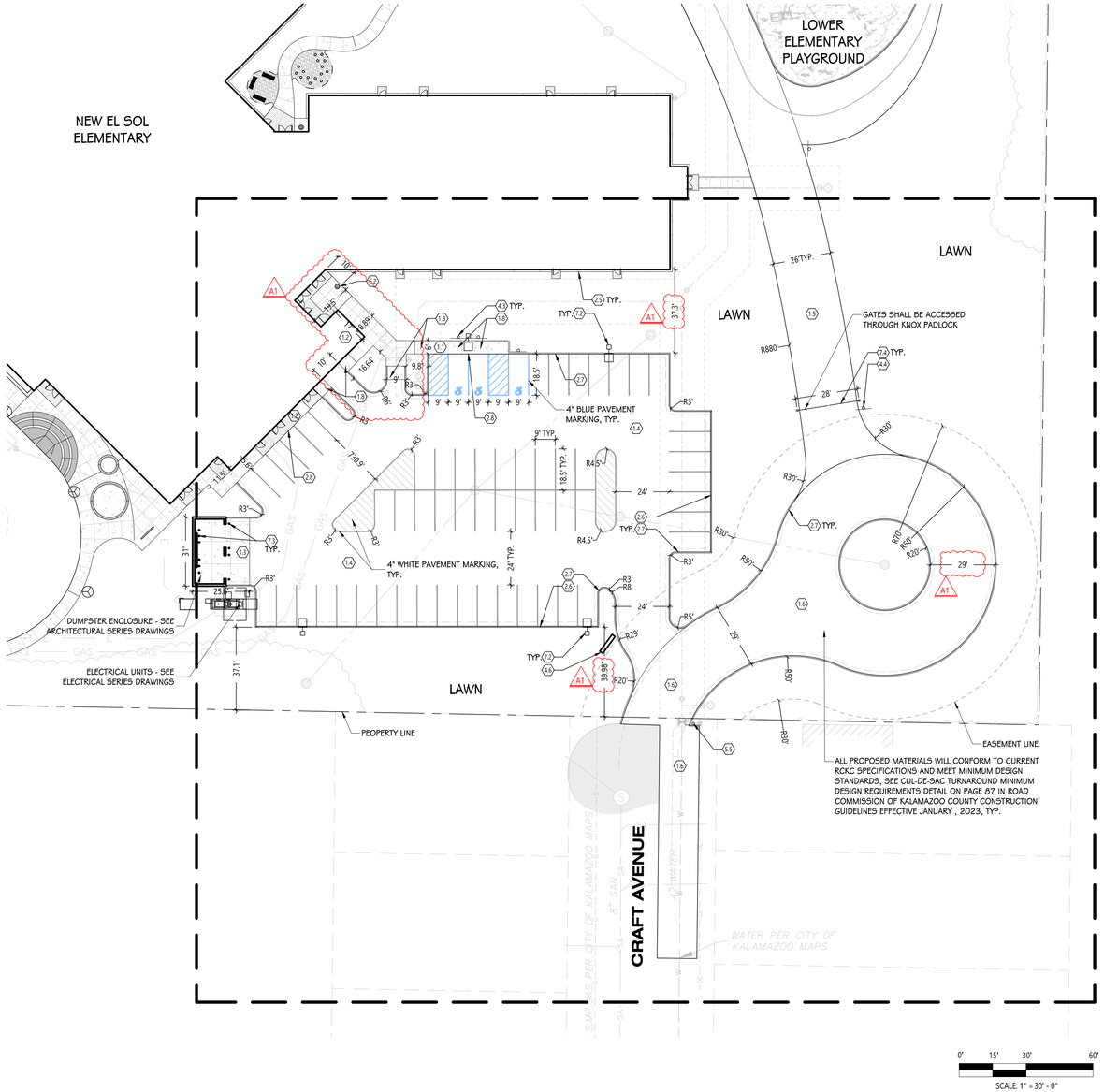


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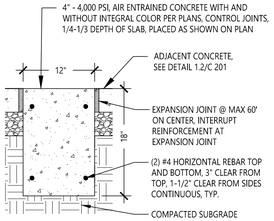
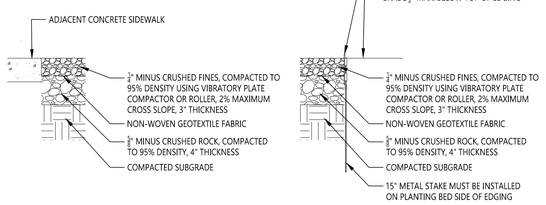
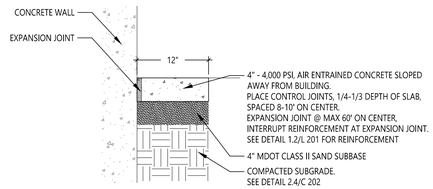


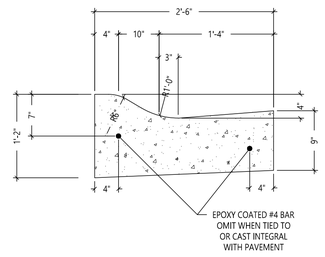

2.2/2.3 C 202 **DECORATIVE CONCRETE BAND**
NOT TO SCALE



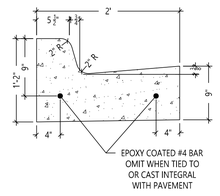

2.4 C 202 **CRUSHED FINES**
NOT TO SCALE



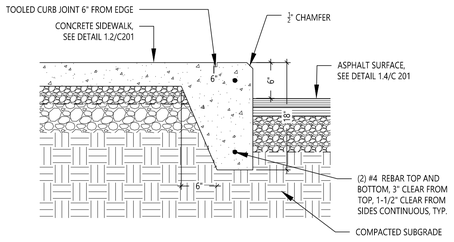

2.5 C 202 **12" WIDE CONCRETE MAINTENANCE STRIP**
NOT TO SCALE



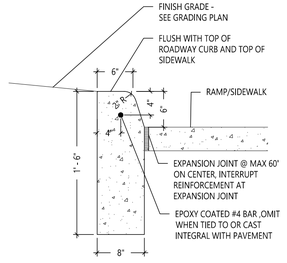

2.6 C 202 **MDOT D1 CURB AND GUTTER - ROLLED CURB**
NOT TO SCALE



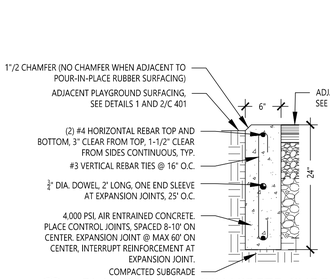

2.7 C 202 **MDOT F4 CURB AND GUTTER - STANDARD CURB**
NOT TO SCALE



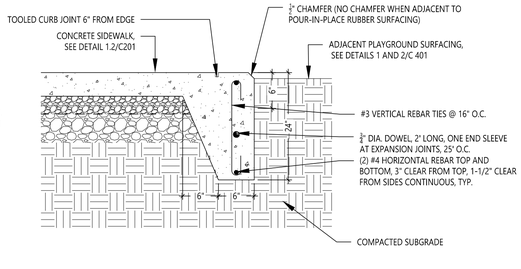

2.8 C 202 **INTEGRAL CONCRETE CURB**
NOT TO SCALE



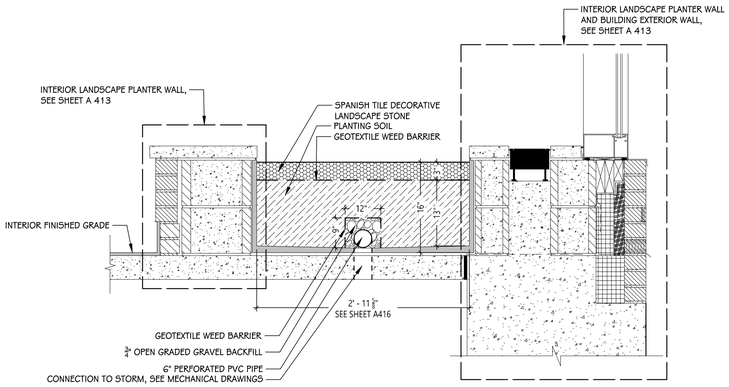

2.9 C 202 **MDOT E2 CURB - SIDE CURB**
NOT TO SCALE



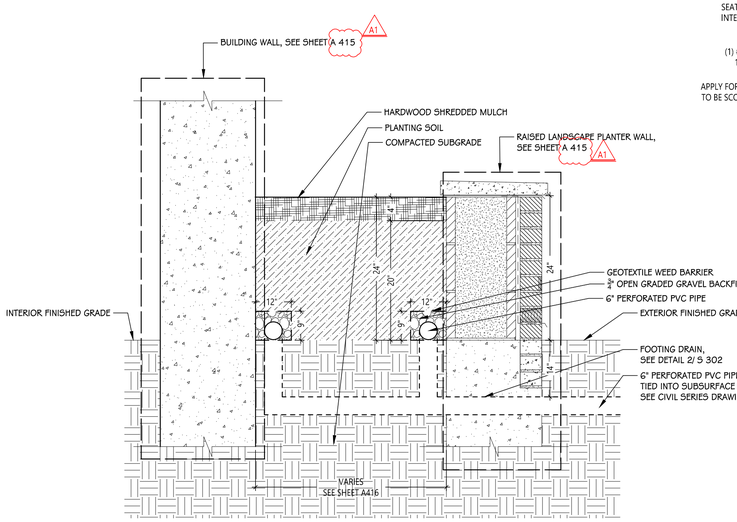

2.10 C 202 **PLAYGROUND CONCRETE CURB**
NOT TO SCALE



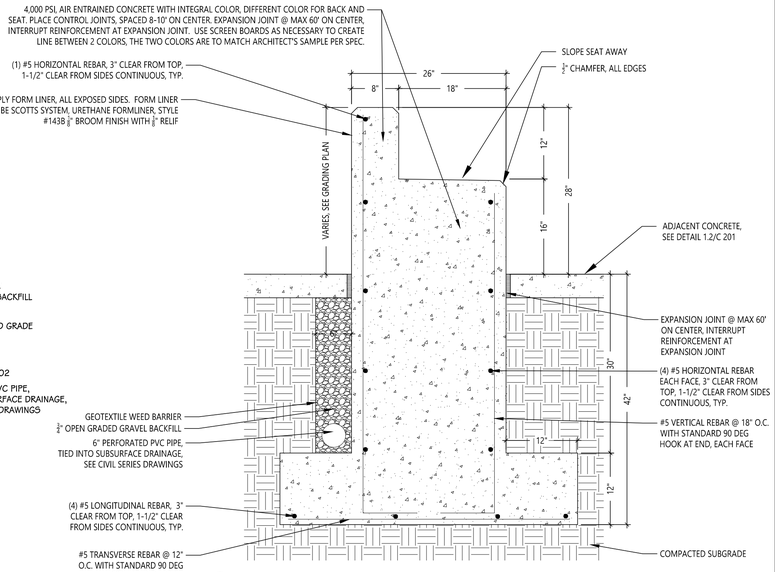

2.12 C 202 **INTEGRAL CONCRETE PLAYGROUND CURB**
NOT TO SCALE




3.0 C 202 **INTERIOR LANDSCAPE PLANTER**
NOT TO SCALE




3.1 C 202 **RAISED LANDSCAPE PLANTER**
NOT TO SCALE




6.5 C 202 **CUSTOM CURVED BENCH - SECTION A**
NOT TO SCALE

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**ADDENDUM #1** **05/08/2026**
**ISSUED FOR** **DATE**

**PROJECT TITLE**
NEW EL SOL SCHOOL

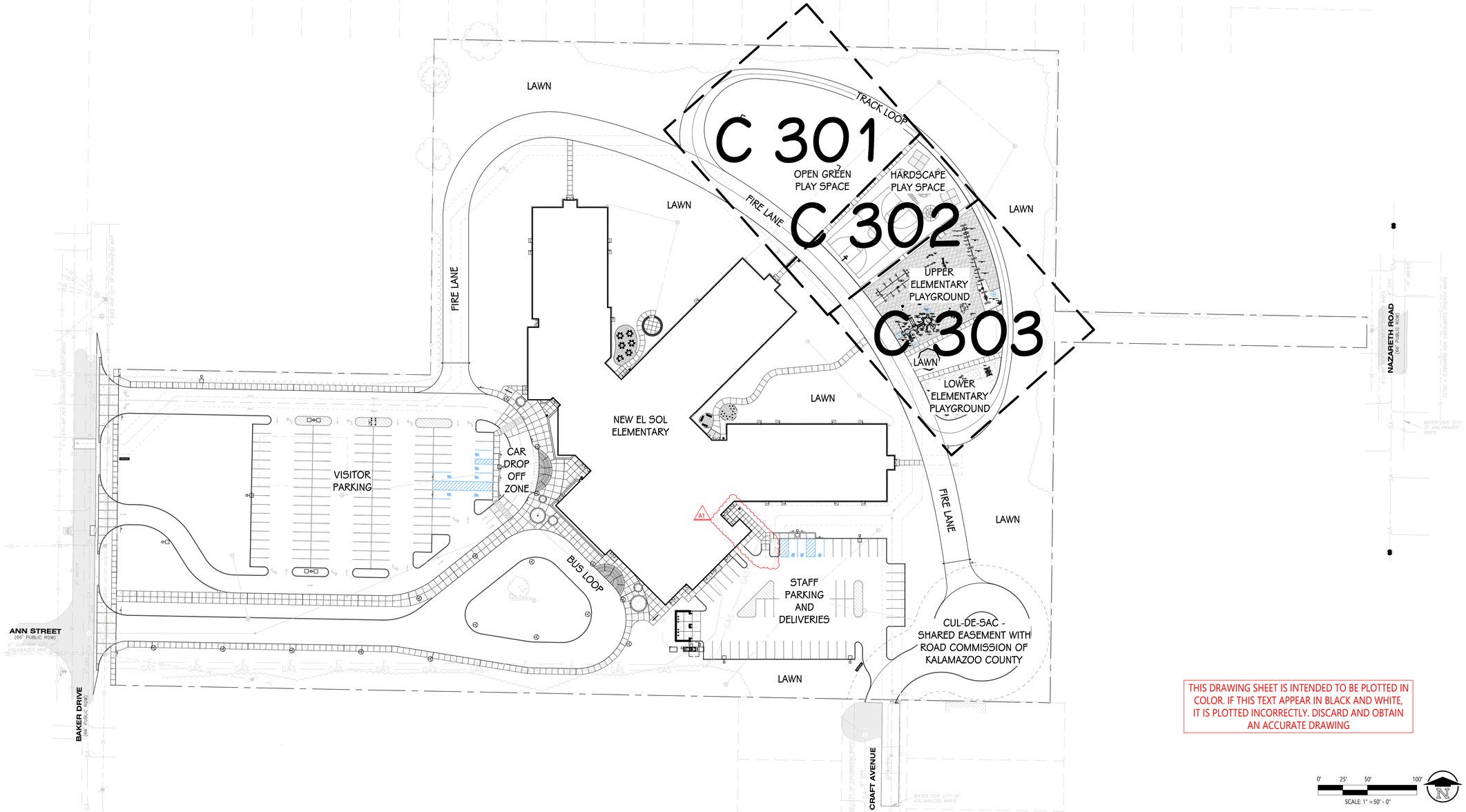
**OWNER**
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

**SHEET TITLE**
SITE DETAILS - CURBS AND WALLS

**DATE**
APRIL 24, 2026

**SHEET NUMBER**
C 202
23-622.000




THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEAR IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

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| ADDENDUM #1 | 05/08/2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL PLAYGROUND LAYOUT PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
C 300
23-622.000

Vriesman & Korhorn
VK CIVIL
Byron Center, MI
(616) 277-2185
Kalamazoo, MI
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www.VKcivil.com
JOB NO. 1383

SCALE: 1" = 50'
0' 25' 50' 75' 100'

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STATE OF MICHIGAN
COLIN FINCH
ENGINEER
NO. 6201064514
LICENSED PROFESSIONAL ENGINEER

ADDENDUM 01 MAY 8, 2026

PROJECT TITLE
NEW EL SOL SCHOOL

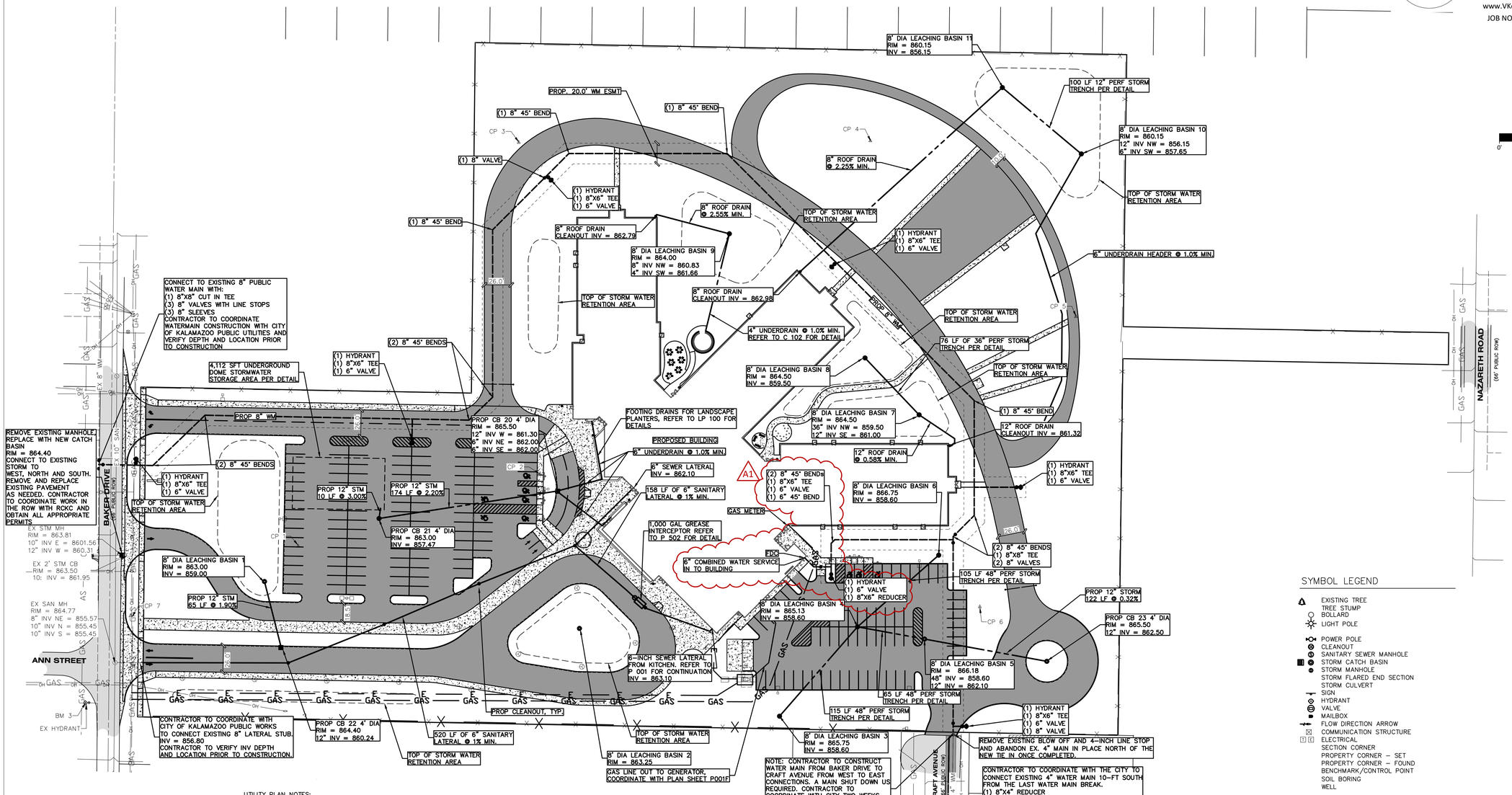
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

DATE
APRIL 24, 2026

SHEET TITLE
UTILITY PLAN

SHEET NUMBER
C 500
23-622.00




## SYMBOL LEGEND

- EXISTING TREE
- TREE STUMP
- BOLLARD
- LIGHT POLE
- POWER POLE
- CLEANOUT
- SANITARY SEWER MANHOLE
- STORM CATCH BASIN
- STORM MANHOLE
- STORM FLARED END SECTION
- STORM CULVERT
- SIGN
- HYDRANT
- VALVE
- MAILBOX
- FLOW DIRECTION ARROW
- COMMUNICATION STRUCTURE
- ELECTRICAL
- SECTION CORNER
- PROPERTY CORNER – SET
- PROPERTY CORNER – FOUND
- BENCHMARK/CONTROL POINT
- SOIL BORING
- WELL

## LINE AND HATCH LEGEND

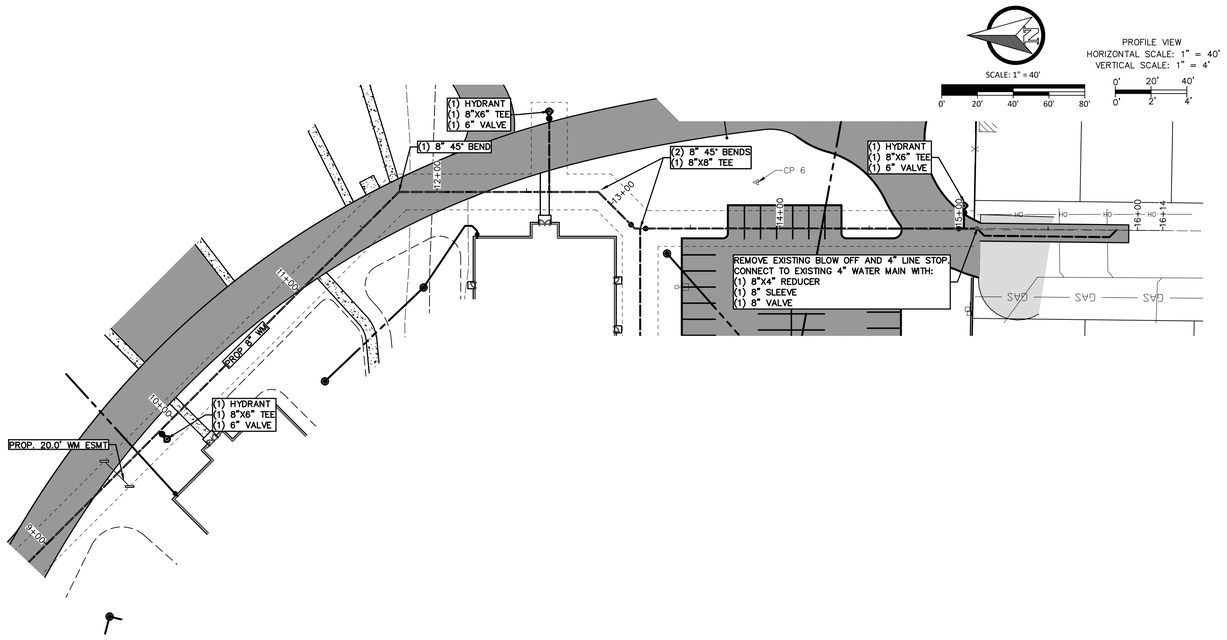
- LANDSCAPING
- EXISTING OVERHEAD ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- PROPOSED UNDERGROUND ELECTRIC
- EXISTING GAS
- PROPOSED GAS
- EXISTING COMMUNICATIONS
- PROPOSED COMMUNICATIONS
- EXISTING FENCE
- PROPOSED FENCE
- RIGHT OF WAY
- EASEMENT
- SETBACK
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING HOT MIXED ASPHALT
- PROPOSED HEAVY DUTY HOT MIXED ASPHALT
- PROPOSED PARKING LOT HOT MIXED ASPHALT
- EXISTING CONCRETE
- PROPOSED CONCRETE
- EXISTING GRAVEL

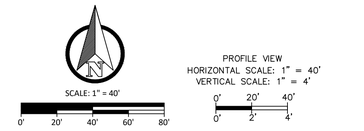
Know what's below.
Call before you dig.

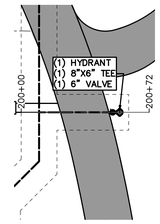
NOTE:
ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE THE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.

UTILITY PLAN NOTES:
1) CONTRACTOR SHALL CONTACT PRIVATE AND PUBLIC UTILITY COMPANIES IF ANY COORDINATION IS NEEDED BETWEEN PROPOSED WORK AND EXISTING UTILITIES.
2) UTILITIES SHOWN (IF ANY) ARE APPROXIMATE LOCATIONS DERIVED FROM MEASUREMENTS OR AVAILABLE RECORDS. THIS MAP IS NOT TO BE INTERPRETED AS SHOWING EXACT LOCATIONS OR SHOWING ALL UTILITIES IN THE AREA. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING UTILITY INFORMATION. THE CONTRACTOR SHALL FIELD VERIFY FOR ACCURACY, LOCATION, AND CONDITION.
3) ALL WATERMAIN TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF KALAMAZOO STANDARD SPECIFICATIONS FOR WATER MAIN AND SERVICE INSTALLATION, 2021 AND EGLE STANDARDS.
4) ALL SANITARY SEWER TO BE CONSTRUCTED IN ACCORDANCE WITH LOCAL CITY OF KALAMAZOO SANITARY SPECIFICATION, 2013 AND EGLE STANDARDS.
5) ALL 6" UNDERDRAIN TO BE CORRUGATED PLASTIC PIPE WITH SOCK, ADS N-12 OR APPROVED EQUAL.
6) ALL STORM SEWER SHALL BE SMOOTH LINED CORRUGATED PLASTIC PIPE, ADS N-12 OR EQUAL, UNLESS OTHERWISE LABELED ON THE PLANS.
7) ALL EXISTING CASTINGS FOR STRUCTURES TO BE ADJUSTED OR RECONSTRUCTED TO GRADE SHALL BE FIELD VERIFIED AT THE TIME OF CONSTRUCTION AND MARKED SUITABLE FOR SALVAGE AND REUSE OR REPLACED.
8) ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
9) CATCH BASINS WITHIN CONCRETE HEAD CURB SHALL HAVE EJ 7045 CASTINGS.
10) CATCH BASINS WITHIN BIT VALLEY CURB SHALL HAVE EJ 7065 CASTINGS WITH M1 GRATE.
11) CATCH BASINS WITHIN PAVED AREAS SHALL HAVE EJ 1020M1 RADIAL FLATE GRATE CASTINGS.
12) STORM SEWER MANHOLES SHALL HAVE EJ 1020 CASTINGS WITH SOLID COVERS.
13) STORM SEWER YARD DRAINS SHALL HAVE EJ 6508 CASTINGS.
14) ROOF DRAINS SHALL BE PVC SCH-40. UNLESS NOTED OTHERWISE
15) CONTRACTOR IS TO UNCOVER AND VERIFY ALL TAP LOCATIONS AND INVERTS. LOCATION AND INVERT DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION FOR RESOLUTION PRIOR TO CONTINUING WORK.
16) SANITARY AND STORM STRUCTURES SHALL BE PRECAST AND HAVE A MAXIMUM OF 2 ADJUSTING RINGS FOR FINISH GRADE ADJUSTMENT.
17) THE CONTRACTOR SHALL MAINTAIN EXISTING UTILITY SERVICE TO ALL ADJOINING PROPERTIES.
18) EXTERIOR HORN AND STROBE SHALL BE TIED IN TO BOTH THE FIRE ALARM AND WATER FLOW FOR THE FDC.
19) FDC TO HAVE KNOX 5" LOCKING STORZ FDC PLUGS MODEL 500, EXTERIOR RATED HORN AND STROBE DEVICE ABOVE THE FDC MOUNTED ON THE ADJACENT ENTRY FACING SOUTHEAST A MINIMUM OF 10' ABOVE GRADE IN HEIGHT AND IN CLEAR VIEW.
20) FDC SIGNAGE TO BE AN APPROVED SIGN ADJACENT TO THE FDC, HAVE THE LETTERS "FDC" AT LEAST 6" HIGH IN ARABIC OF HELVETICA STYLE FONT, INSTALLED AT LEAST 10' ABOVE GRADE AND BE REFLECTIVE WITH WHITE LETTERS ON A RED BACKGROUND.
21) KNOX KEY VAULT BOX 3200 SERIES OR LARGER. THE VAULT SHALL BE MOUNTED UNOBSTRUCTED AND VISIBLE APPROXIMATELY 60-INCHES ABOVE GROUND LEVEL.
22) BUILDING IDENTIFICATION SHALL BE PLAINLY VISIBLE AND LEGIBLE FROM THE STREET. ADDRESS AND STREET NAME LETTERS TO CONTRAST FROM BACKGROUND, BE AT LEAST 12" TALL.

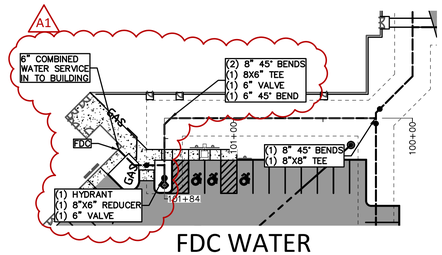
GENERAL NOTES:
1) ALL WORK SHALL BE DONE TO ALL FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS.
2) ALL WORK WITHIN ROW SHALL BE DONE IN ACCORDANCE WITH LOCAL ROADWAY JURISDICTION REQUIREMENTS.
3) CONTRACTOR SHALL RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE, AND OTHER INFRASTRUCTURE DISTURBED OR DAMAGED DUE TO CONSTRUCTION ACTIVITIES TO MATCH EXISTING CONDITIONS.
4) ALL DEBRIS SHALL BE REMOVED FROM THE SITE, AND NO STOCKPILING ON SITE SHALL BE ALLOWED UNLESS APPROVED BY OWNER.
5) THE CONTRACTOR SHALL LIMIT SAWCUT AND PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE REQUIRED OR AS SHOWN ON SITE DEMOLITION PLAN. ALL PAVEMENTS TO BE REMOVED SHALL BE SAWCUT AND REMOVED TO FULL DEPTH AT ALL PAVEMENT LIMITS OR EXISTING JOINTS. IF ANY DAMAGE IS INCURRED TO ANY OF THE SURROUNDING PAVEMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL AND REPAIR AT NO ADDITIONAL COST.
6) CONTRACTOR SHALL CONTACT MISS DIG THREE WORKING DAYS BEFORE YOU DIG. CALL MISS DIG AT 1-800-482-7171 OR 811.
7) ALL WORK SHALL BE DONE TO THE MICHIGAN HANDICAPPED ACCESSIBILITY CODE AND THE AMERICANS WITH DISABILITIES ACT.
8) CONTRACTOR SHALL ENSURE ALL ADA RAMPS AND ACCESS MEET CURRENT ADA STANDARDS. IF IT IS DISCOVERED THAT ANY ITEMS WILL NOT MEET ADA STANDARDS IT SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.
9) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, PERMIT COSTS, DEMOLITION PERMITS, TAP FEES, ASSESSMENTS, UTILITY PERMITS, ROW PERMITS, BONDS, INSURANCE, OR OTHER FEES ASSOCIATED WITH CONSTRUCTION.
10) CONTRACTOR SHALL REVIEW THE GEOTECHNICAL AND ENVIRONMENTAL REPORTS FOR THE SITE AND INCORPORATE INTO THEIR CONSTRUCTION MEANS AND METHODS.
11) THESE PLANS HAVE BEEN DEVELOPED FOR ELECTRONIC FIELD SURVEY LAYOUT. DIMENSIONS SHOWN ARE FOR GRAPHIC PRESENTATION ONLY AND SHOULD NOT BE USED FOR LAYOUT. CONTACT THE ENGINEER IF ANY DISCREPANCIES BETWEEN THE PLAN AND ELECTRONIC DATA ARE DISCOVERED.
12) THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY LIGHTS, BARRICADES, FLAGMEN, ETC. AS REQUIRED TO PERFORM THE WORK. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.
13) THE CONTRACTOR SHALL PROTECT LOCATION OF ALL PROPERTY MARKERS AND BENCHMARKS.
14) THE CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS, BARRICADES, AND SAFETY FENCES TO DETER PEOPLE FROM ENTERING THE WORK AREA AND FOR MAINTAINING AND PROTECTING THE FLOW OF VEHICULAR AND PEDESTRIAN TRAFFIC AROUND THE JOB SITE. TRAFFIC CONTROLS SHALL BE COORDINATED WITH THE LOCAL POLICE DEPARTMENT AND MUNICIPALITY.
15) PRIOR TO CONSTRUCTION OR GRADING A PROTECTIVE BARRIER, FENCE, POST, AND SIGNS CLEARLY INDICATING LIMITS OF DISTURBANCE SHALL BE INSTALLED INDICATING NO TREE REMOVAL OR DISTURBANCES OUTSIDE LIMITS.
16) NO PARKING OF CONTRACTOR OR SUBCONTRACTORS SHALL BE ALLOWED ON PUBLIC STREETS WITHOUT PRIOR APPROVAL.
17) NO BUILDING MATERIAL, EQUIPMENT, VEHICLES, OR CHEMICALS SHALL BE STORED OR PLACED OUTSIDE OF THE LIMITS OF DISTURBANCE.
18) CONSTRUCTION NOISE SHALL BE KEPT TO A MINIMUM DURING NIGHTTIME HOURS AND MUST COMPLY WITH LOCAL MUNICIPAL ORDINANCES.



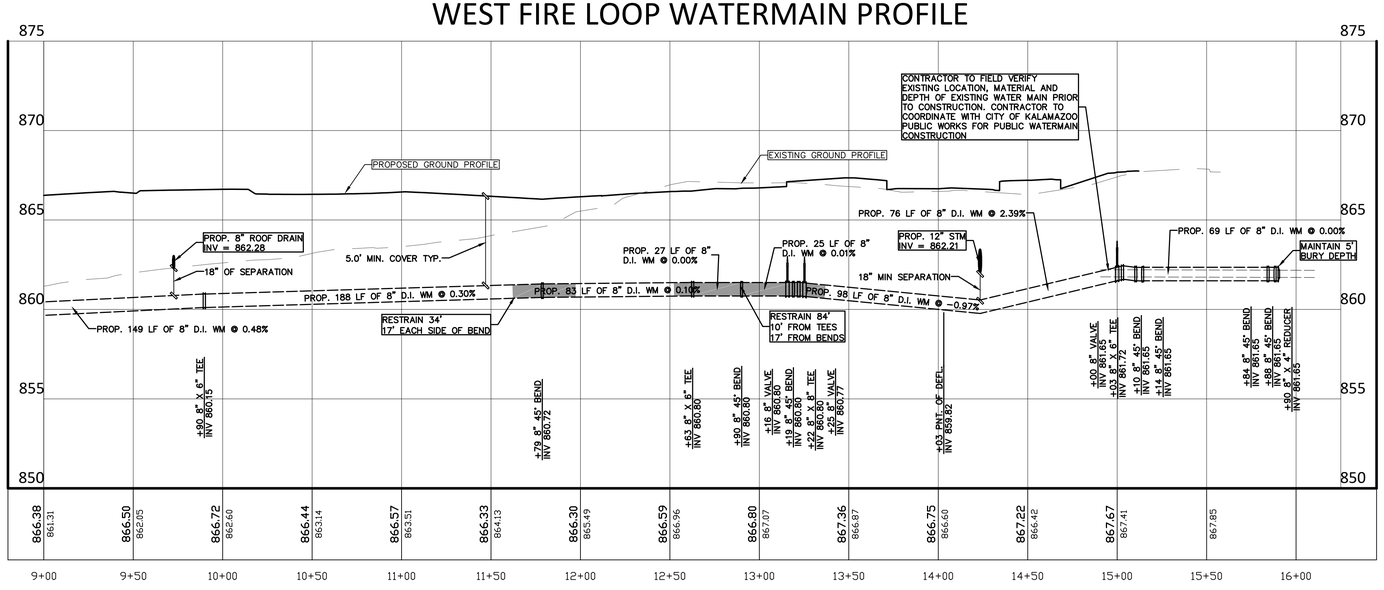



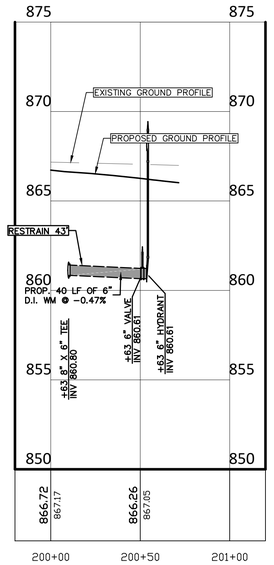

WEST HYDRANT LEAD PROFILE

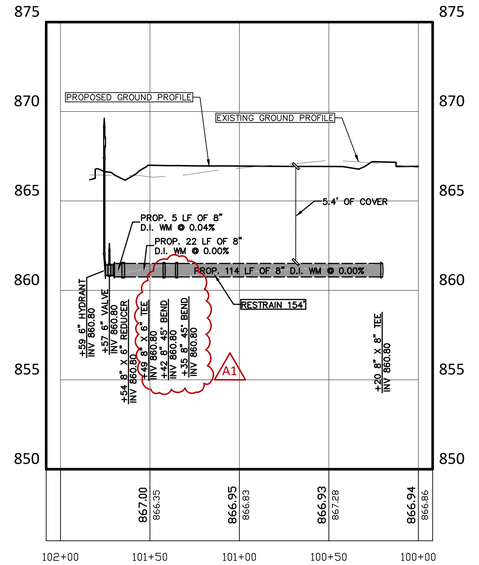



FDC WATER EXTENSION PROFILE

## WEST FIRE LOOP WATERMAIN PROFILE

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COLIN FINCH ENGINEER NO. 6201064514

ADDENDUM 01 MAY 8, 2026

PROJECT TITLE
NEW EL SOL SCHOOL

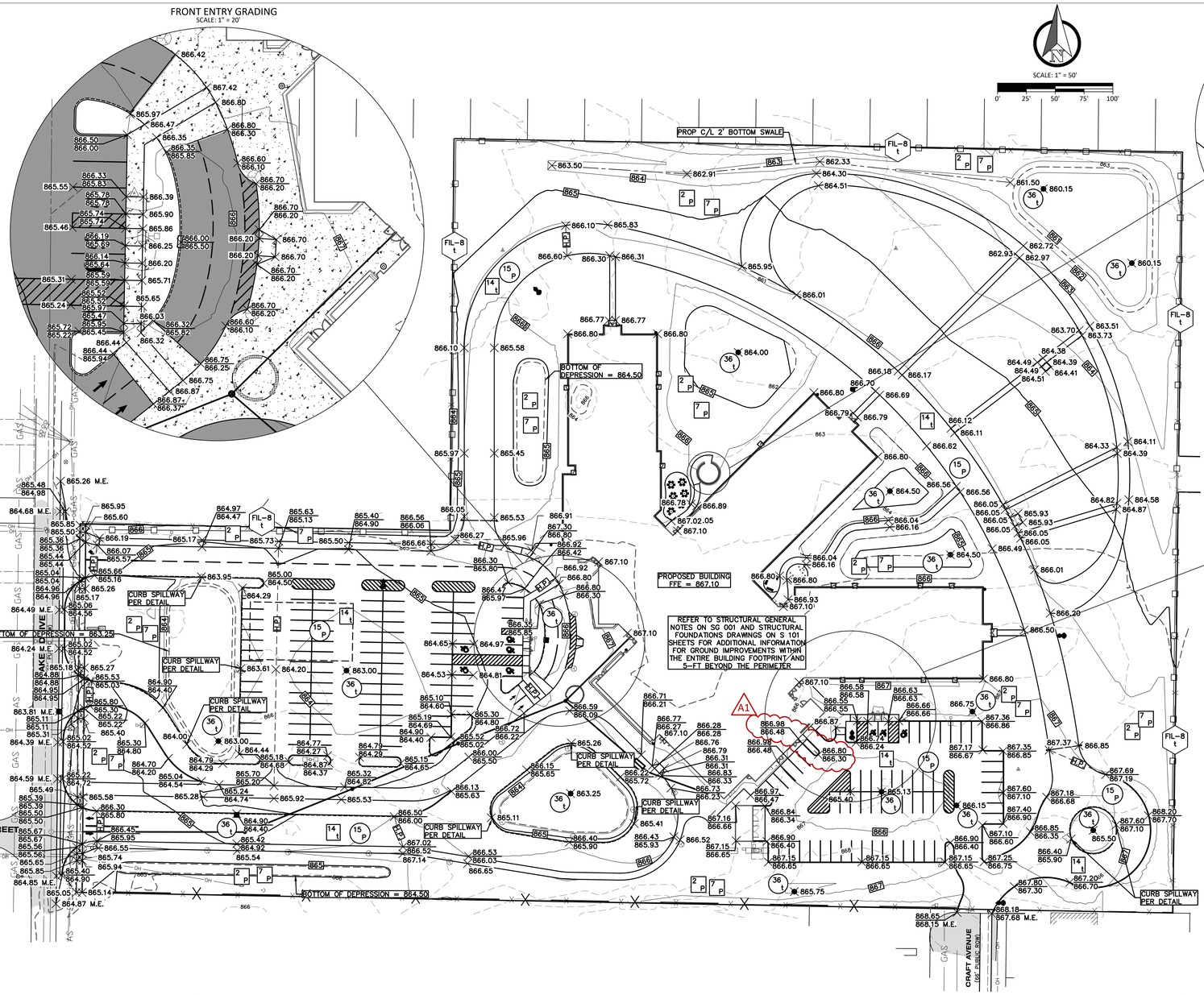
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

DATE
APRIL 24, 2026

SHEET TITLE
PLAN & PROFILE 2

SHEET NUMBER
C 502
23-622.00





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STATE OF MICHIGAN
COLIN FINCH
ENGINEER
NO. 6201064514
LICENSED PROFESSIONAL ENGINEER

ADDENDUM 01 MAY 8, 2026

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

DATE
APRIL 24, 2026

SHEET TITLE
GRADING PLAN

SHEET NUMBER
C 600
23-622.00

LINE LEGEND

TIP IN CURB & GUTTER
TIP OUT CURB & GUTTER

GENERAL SOIL EROSION MEASURES (APPLICABLE TO ENTIRE SITE)

7 P | 15 P | FIL-8 t
14 t | 36 t | TP

34 t LEGEND
MICHIGAN UNIFIED KEYING SYSTEM (MUKS) BEST MANAGEMENT PRACTICE (BMP)
t TEMPORARY CONTROL MEASURE (DURING CONSTRUCTION AND UNTIL PERMANENT MEASURES ARE ESTABLISHED
P PERMANENT CONTROL MEASURE

CONTROL MEASURE KEY

2 P — SELECTIVE GRADING & SHAPING, PERMANENT

7 P — HYDROSEEDING, PERMANENT. TYPICAL IN ALL NON-PAVED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES

14 t — AGGREGATE COVER, TEMPORARY. TYPICAL ON ALL STREETS DISTURBED BY CONSTRUCTION ACTIVITIES

15 P — PAVING, PERMANENT, TYPICAL ON ALL STREETS DISTURBED BY CONSTRUCTION ACTIVITIES.

FIL-2 t — SEDIMENT BASIN BMP EXHIBIT 2, SEDIMENT BASIN, TEMPORARY REQUIRED FOR DE-WATERING ACTIVITIES, SEVERE SLOPES, AND LARGE DISTURBED AREAS.

36 t — SILTSACK, TEMPORARY, TYPICAL AT ALL CATCH BASINS WITHIN OR DISTURBED BY CONSTRUCTION ACTIVITIES

43 t — CULVERT SEDIMENT TRAP, TEMPORARY. TYPICAL AT ALL STORM OUTLETS AND STREAMS DISTURBED BY CONSTRUCTION ACTIVITIES

FIL-8 t — FILTER BMP EXHIBIT 8A, SILT FENCE, TEMPORARY. TYPICAL IN ALL AREAS, ESPECIALLY ADJACENT TO STREAMS, PONDS, ETC. AND ALONG PROJECT UNITS.

TP — TREE PROTECTION, INCLUDES TUNNELING UNDER TREES, TYPICAL FOR ALL TREES ENCOUNTERED UNLESS TREE REMOVAL IS DIRECTED BY THE ENGINEER.

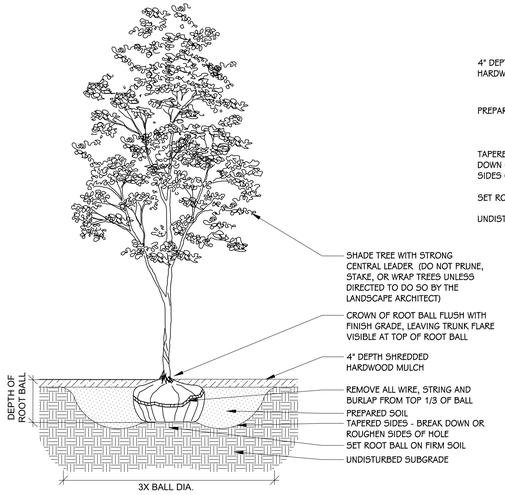
GA — DENOTES GRAVEL ACCESS APPROACH. APPROACH SHALL BE INSTALLED TO PROVIDE STABLE ACCESS TO ROADWAYS AND MINIMIZE DUST AND TRACKING OF MATERIALS ONTO PUBLIC STREETS AND HIGHWAYS. THE APPROACH SHALL BE A MIN. OF 12' WIDE, 6" DEEP, AND CONSIST OF 2"-4" AGGREGATE.

NOTE:
SOIL EROSION AND SEDIMENTATION CONTROL MEASURES INDICATED ARE KNOWN OR ANTICIPATED CONTROL MEASURES NEEDED DURING TYPICAL CONSTRUCTION ACTIVITIES. ADDITIONAL CONTROL MEASURES MAY BE REQUIRED DUE TO CONSTRUCTION ACTIVITY, LOCATION, SOIL TYPE, WEATHER EVENT, ETC. ALL ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE INCIDENTAL TO THE CONSTRUCTION CONTRACT.

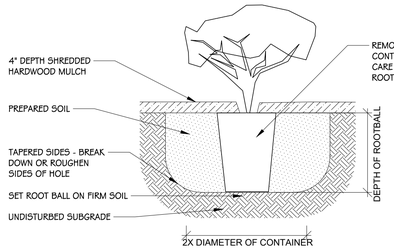
GRADING PLAN NOTES:
1) SOILS EXPOSED IN THE BASE OF ALL SATISFACTORY FOUNDATION EXCAVATIONS SHOULD BE PROTECTED AGAINST ANY DETRIMENTAL CHANGES IN CONDITION SUCH AS FROM DISTURBANCE, RAIN AND FREEZING. SURFACE RUN-OFF WATER SHOULD BE DRAINED AWAY FROM THE EXCAVATION AND NOT ALLOWED TO POND. IF POSSIBLE, ALL FOOTING CONCRETE SHOULD BE POURED THE SAME DAY THE EXCAVATION IS MADE. IF THIS IS NOT PRACTICAL, THE FOOTING EXCAVATIONS SHOULD BE ADEQUATELY PROTECTED.
2) REMOVE ALL SUBGRADE MATERIAL THAT MAY BE SOFTENED BY RAINS, FREEZING, OR CONSTRUCTION TRAFFIC, ETC, AND REPLACE WITH COMPACTED GRANULAR FILL.
3) ALL CONSTRUCTION METHODS SHALL BE DONE IN COMPLIANCE WITH MDOT-EGLE. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING A "SOIL EROSION PERMIT" FROM THE COUNTY AND A "PERMIT BY RULE/NOTICE OF COVERAGE" FROM EGLE IF APPLICABLE, PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF THE COUNTY "SOIL EROSION PERMIT" AND FOR ALL CERTIFIED STORM WATER INSPECTION SERVICE REQUESTED BY THE "PERMIT BY RULE." EROSION CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS AND SHALL NOT RELIEVE THE CONTRACTORS RESPONSIBILITY FOR PROVIDING ALL REQUIRED EROSION CONTROL MEASURES.
4) AVOID UNNECESSARY DISTURBING OR REMOVING OF EXISTING VEGETATED TOPSOIL OR EARTH COVER. THESE COVER AREAS ACT AS SEDIMENT FILTERS.
5) ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL REMOVAL IS REQUIRED FOR FINAL CLEAN UP AND APPROVAL.
6) GEOTEXTILE SILT FENCE SHALL BE INSTALLED AS REQUIRED WHEN CROSSING CREEKS OR WHEN ADJACENT TO WETLANDS OR SURFACE WATER BODIES TO PREVENT SILTATION AND ELSE WHERE AS DIRECTED BY THE ENGINEER. SEEDING AND/OR SODDING SHALL BE INSTALLED ON CREEK BANKS IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION.
7) CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID TRACKING SOIL ONTO ADJACENT ROADWAYS. CONTRACTOR SHALL SWEEP IMMEDIATELY IF THIS OCCURS.
8) ANY DISTURBED AREA WHICH WILL BE LEFT UNWORKED 20 DAYS OR LONGER MUST BE SEEDED TO ESTABLISH VEGETATION FOR TEMPORARY STABILIZATION. BASINS TO BE SEEDED AND MULCH BLANKETS APPLIED IMMEDIATELY TO PROVIDE A STABLE BASE AND AVOID EXCESSIVE EROSION.
9) ALL SOIL EROSION CONTROL MEASURES ARE TO BE IN PLACE PRIOR TO THE START OF ANY GRADING.
10) ALL NON PAVED AREAS TO BE TOPSOILED (6" MIN.) & SEEDED.
11) VARIATION IN EXISTING SOIL CONDITIONS MAY IMPACT THE EARTHWORK QUANTITIES IF UNUSABLE SOILS ARE ENCOUNTERED DURING CONSTRUCTION.
12) DUST CONTROL: THE CONTRACTOR SHALL SUPPLY ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY SUCH AS CALCIUM CHLORIDE, WATER OR A MOTORIZED DUST-FREE STREET SWEEPING DEVICE TO MAINTAIN ALL ROADWAYS BEING USED FOR ACCESS TO THE CONSTRUCTION SITE AND SHALL ADHERE TO ALL ORDINANCES OF THE TOWNSHIP, COUNTY, EGLE OR ANY OTHER GOVERNMENT AGENCY.
13) IF MUD, SOIL OR OTHER DEBRIS IS DEPOSITED ON ADJACENT STREETS, ROADS OR OTHER PROPERTY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF SUCH AT THE END OF EACH WORK DAY OR AS REQUIRED DURING THE WORK DAY.
14) STORMWATER POLLUTION PREVENTION ITEMS SHALL BE IN PLACE PRIOR TO COMMENCING CLEARING OPERATIONS, EARTHWORK GRADING, OR ANY OTHER TYPE OF CONSTRUCTION ACTIVITY.
15) CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE SOIL EROSIONS AND SEDIMENT CONTROL PERMIT.
16) PLACE TEMPORARY EROSION CONTROL MEASURES PRIOR TO EARTH MOVING ACTIVITIES.
17) MULCH BLANKETS SHALL BE PLACED, STAPLED, AND OVERLAPPED ON ALL SLOPES THAT ARE 1 ON 3 OR GREATER AFTER.
18) CONTRACTOR TO INSTALL SILT SACK IN ALL CATCH BASINS ONCE THEY ARE CONSTRUCTED.
19) ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED BY A CERTIFIED STORM WATER OPERATOR AND MAINTAINED BY CONTRACTOR EVERY 7 DAYS AND AFTER EVERY SIGNIFICANT RAIN EVENT IN ACCORDANCE WITH NPDES PERMIT BY RULE REQUIREMENTS IF APPLICABLE.
20) EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED.
21) BEST MANAGEMENT PRACTICES WILL BE UTILIZED DURING AND AFTER CONSTRUCTION OF THE PROJECT. MEASURES WILL INCLUDE THE USE OF SILT FENCING, SEEDING AND MULCHING, SEDIMENT INLET FILTERS, COMPACTION AND PAVING. THE OWNER OF THE SUBJECT PARCEL SHALL HAVE THE RESPONSIBILITY TO MAINTAIN THE PERMANENT SOIL EROSION PROTECTION MEASURES.
22) ANY POND AREA LABELED AS 'INFILTRATION' OR 'RETENTION' SHALL BE CONSTRUCTED IN A MANNER AS TO MINIMIZE COMPACTION OF EXISTING SUBGRADE. CONTRACTOR SHALL PROTECT AREA FROM COMPACTION PRIOR TO INSTALLATION AND THROUGHOUT CONSTRUCTION. IF NECESSARY, EXCAVATE BASIN BOTTOM TO AN UNCOMPACTED SUBGRADE FREE OF ROCKS AND DEBRIS AND ENSURE A SANDY BOTTOM. DO NOT COMPACT SUBGRADE. SEED AND STABILIZE THE BASIN WITH AN MDOT TDS SEED MIXTURE OR MEADOW MIX AS APPROVED BY THE ENGINEER. IF UNSUITABLE SOILS ARE FOUND WITHIN BASIN AREAS CONTRACTOR SHALL CONTACT THE ENGINEER FOR EVALUATION.
23) ALL UNSUITABLE MATERIAL BENEATH PAVED AREAS WITHIN RIGHT-OF-WAY SHALL BE REMOVED TO A DEPTH OF 2 FEET BELOW TOP OF SUBGRADE OR AS DIRECTED BY THE COUNTY ENGINEER AND BACKFILLED WITH MDOT GRANULAR MATERIAL CLASS III.
24) ALL WORK SHALL COMPLY WITH THE PROVISIONS OF PART 91 OF THE EROSION AND SEDIMENTATION CONTROL ACT OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION PA 451 OF 1994, AS AMENDED, AN AS ADMINISTERED BY THE KCDC , OR LOCAL JURISDICTION

Know what's below. Call before you dig.

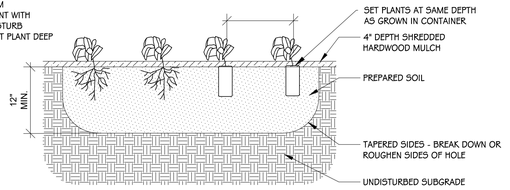
NOTE:
ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE THE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.



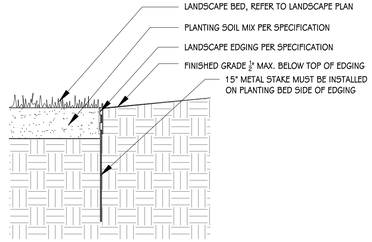

1 LP 100 TREE PLANTING DETAIL
NOT TO SCALE




2 LP 100 SHRUB PLANTING DETAIL
NOT TO SCALE



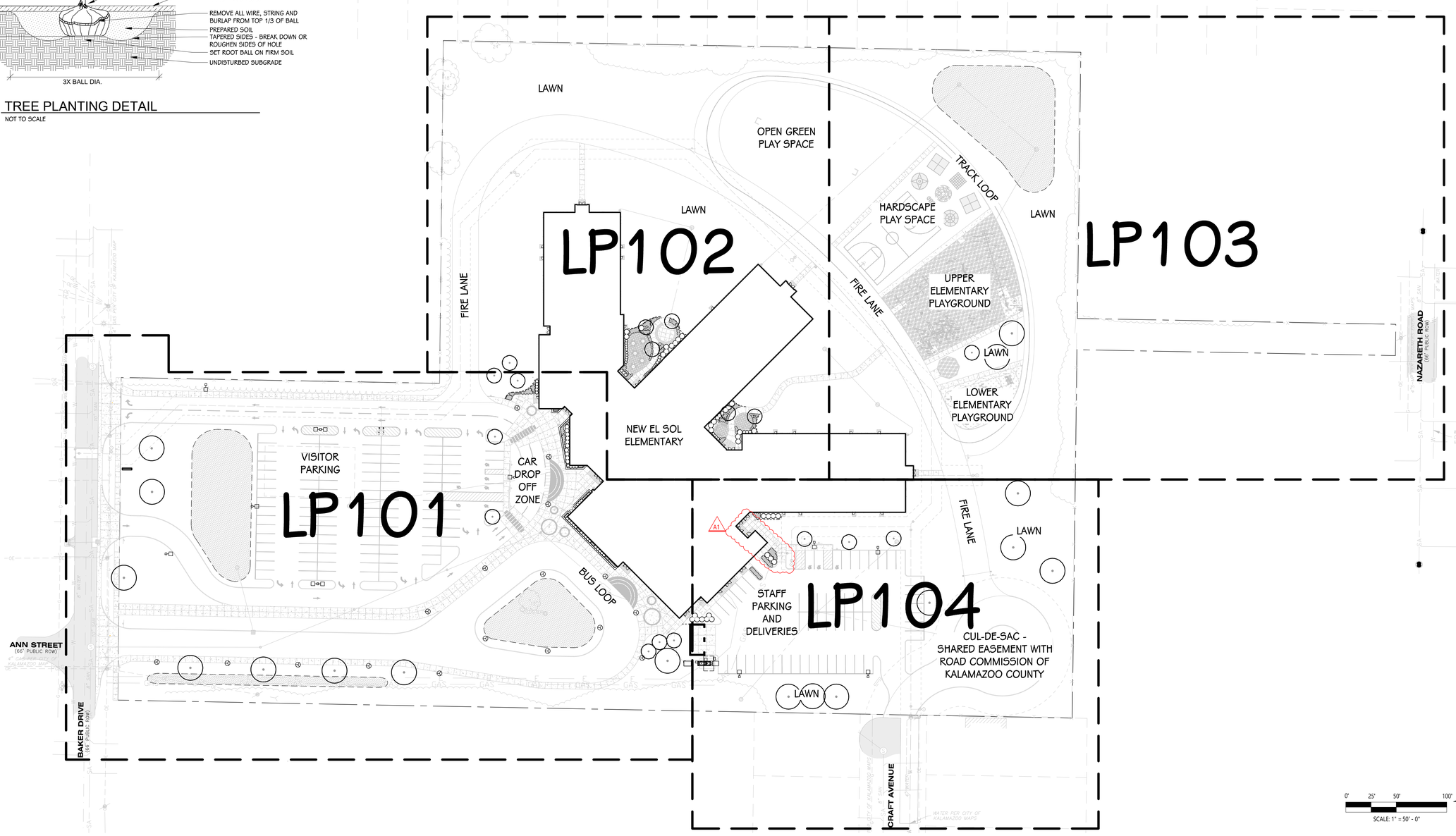

3 LP 100 PERENNIAL PLANTING DETAIL
NOT TO SCALE




3 LP 100 LANDSCAPE EDGING DETAIL
NOT TO SCALE

## NOTES - SITE - PLANTING

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING OF ALL RELATED EXISTING CONDITIONS, PIPES AND STRUCTURES, ETC. PRIOR TO BIDDING AND CONSTRUCTION.
2. SEE SPECIFICATIONS AND DETAILS FOR PLANTING METHODS, REQUIREMENTS, SOIL TESTING, MATERIALS, EXECUTION AND PLANT PROTECTION, AND SEED MIXES.
3. PLANT NAMES MAY BE ABBREVIATED ON DRAWINGS. REFER TO PLANT LIST AND LEGENDS FOR SYMBOLS, ABBREVIATIONS, BOTANICAL AND COMMON NAMES, SIZES, ESTIMATED QUANTITIES AND OTHER REMARKS.
4. WHERE PROVIDED , AREA TAKEOFFS AND PLANT QUANTITY ESTIMATES IN PLANT LIST ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE TO DO THEIR OWN QUANTITY TAKEOFFS FOR ALL PLANT MATERIAL AND SIZES SHOWN THE DRAWINGS. IN CASE OF DISCREPANCIES, BRING TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
6. EDGING TO BE PLACED BETWEEN ALL LANDSCAPE BEDS AND LAWN AREAS.
7. HARDWOOD SHREDDED MULCH SHALL BE PLACED AT A 3" DEPTH AROUND ALL TREES IN IN ALL LANDSCAPE BEDS.
8. ALL UNPAVED AREAS OF THE SITE AND ADJACENT AREAS DISTURBED BY CONSTRUCTION SHALL RECIVE 6" TOPSOIL. SUPPLEMENT WITH IMPORTED TOPSOIL AS REQUIRED TO PROVIDE 6" DEPTH.

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ADDENDUM #1 05/08/2026
ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

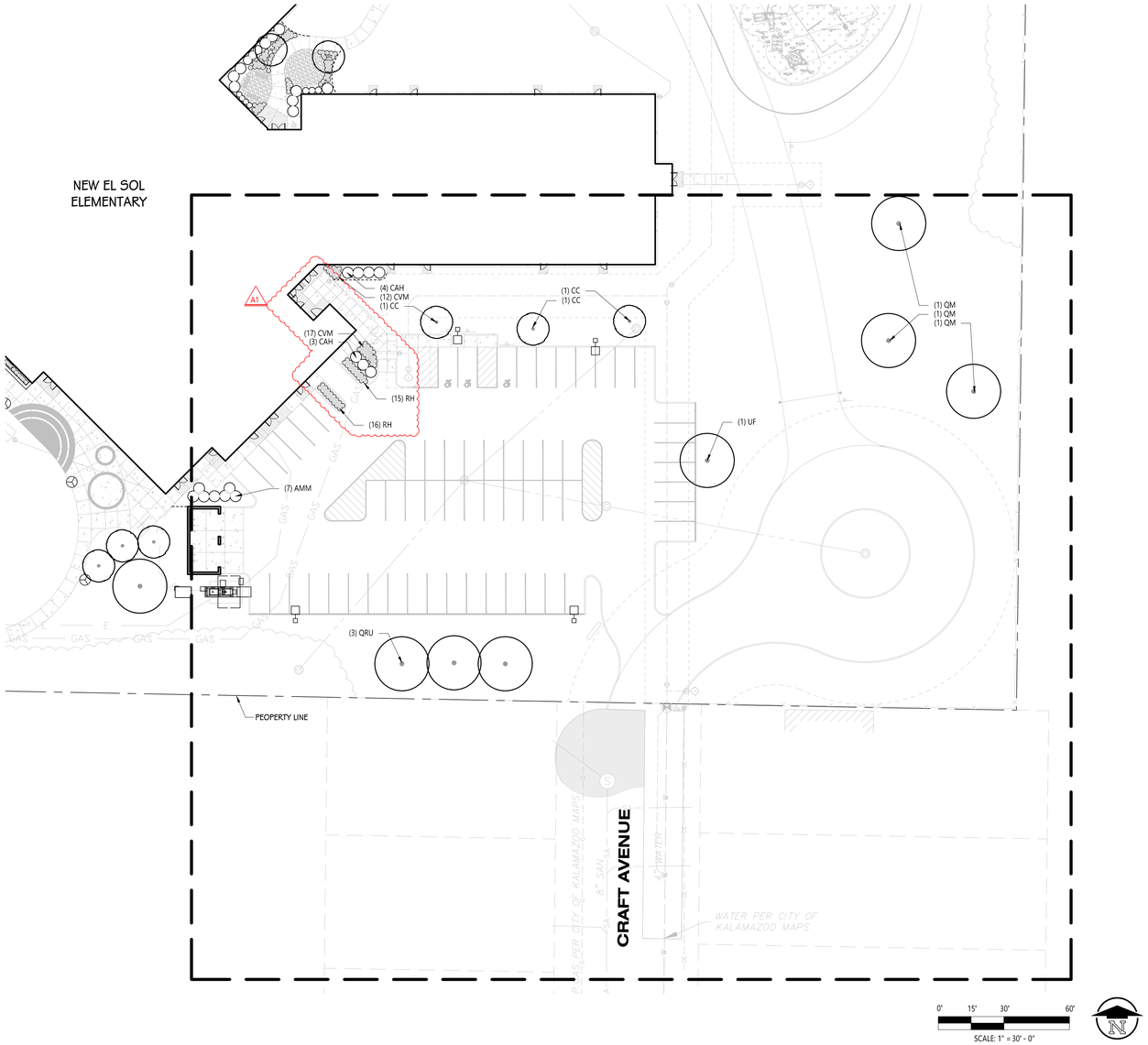
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL PLANTING PLAN + DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
LP 100
23-622.000




## NOTES - SITE - PLANTING

1. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING OF ALL RELATED EXISTING CONDITIONS, PIPES AND STRUCTURES, ETC. PRIOR TO BIDDING AND CONSTRUCTION.
2. SEE SPECIFICATIONS AND DETAILS FOR PLANTING METHODS, REQUIREMENTS, SOIL TESTING, MATERIALS, EXECUTION AND PLANT PROTECTION, AND SEED MIXES.
3. PLANT NAMES MAY BE ABBREVIATED ON DRAWINGS. REFER TO PLANT LIST AND LEGENDS FOR SYMBOLS, ABBREVIATIONS, BOTANICAL AND COMMON NAMES, SIZES, ESTIMATED QUANTITIES AND OTHER REMARKS.
4. WHERE PROVIDED , AREA TAKEOFFS AND PLANT QUANTITY ESTIMATES IN PLANT LIST ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE TO DO THEIR OWN QUANTITY TAKEOFFS FOR ALL PLANT MATERIAL AND SIZES SHOWN THE DRAWINGS. IN CASE OF DISCREPANCIES, BRING TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
6. EDGING TO BE PLACED BETWEEN ALL LANDSCAPE BEDS AND LAWN AREAS.
7. HARDWOOD SHREDDED MULCH SHALL BE PLACED AT A 3" DEPTH AROUND ALL TREES IN IN ALL LANDSCAPE BEDS.
8. ALL UNPAVED AREAS OF THE SITE AND ADJACENT AREAS DISTURBED BY CONSTRUCTION SHALL RECIVE 6" TOPSOIL. SUPPLEMENT WITH IMPORTED TOPSOIL AS REQUIRED TO PROVIDE 6" DEPTH.

## LEGEND - SITE - PLANTING

- DECIDUOUS TREE
- ORNAMENTAL TREE
- SHRUBS
- PERENNIALS
- STORMWATER SEED MIX
- ALUMINUM EDGING

## LP 104 PLANTING SCHEDULE

| CODE | BOTANICAL NAME | COMMON NAME | QTY. | CAL. | HT. | ROOT/CONT. | REMARKS |
|---|---|---|---|---|---|---|---|
| **DECIDUOUS TREES** | | | | | | | |
| QM | QUERCUS MACROCARPA | BUR OAK | 3 | 2" | | B+B | SINGLE STRAIGHT TRUNK, SPECIMEN QUALITY |
| QRU | QUERCUS RUBRA | NORTHERN RED OAK | 3 | 2" | | B+B | SINGLE STRAIGHT TRUNK, SPECIMEN QUALITY |
| UF | ULMUS X 'FRONTIER' | FRONTIER ELM | 1 | 2" | | B+B | SINGLE STRAIGHT TRUNK, SPECIMEN QUALITY |
| | | | | | | | |
| **ORNAMENTAL TREES** | | | | | | | |
| CC | CERCIS CANADENSIS | EASTERN REDBUD | 3 | | 10'-12' | B+B | MULTI-STEM, 4-5 STEMS MINIMUM |
| | | | | | | | |
| **SHRUBS** | | | | | | | |
| AMM | ARONIA MELANOCARPA 'MORTON' | IROQUOIS BEAUTY BLACK CHOKEBERRY | 7 | | | #3 | 5'-0" ON CENTER |
| CAH | CLETHRA ALNIFOLIA 'HUMMINGBIRD' | HUMMINGBIRD SUMMERSWEET | 7 | | | #3 | 4'-0" ON CENTER |
| | | | | | | | |
| | | | | | | | |
| **PERENNIALS** | | | | | | | |
| CVM | COREOPSIS VERTICILLATA 'MOONBEAM' | MOONBEAM THREADLEAF COREOPSIS | 29 | | | #1 | 2'-0" ON CENTER |
| RH | RUDBECKIA HIRTA | BLACK EYED SUSAN | 31 | | | #1 | 2'-0" ON CENTER |

A1

A1

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ADDENDUM #1 05/08/2026
ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

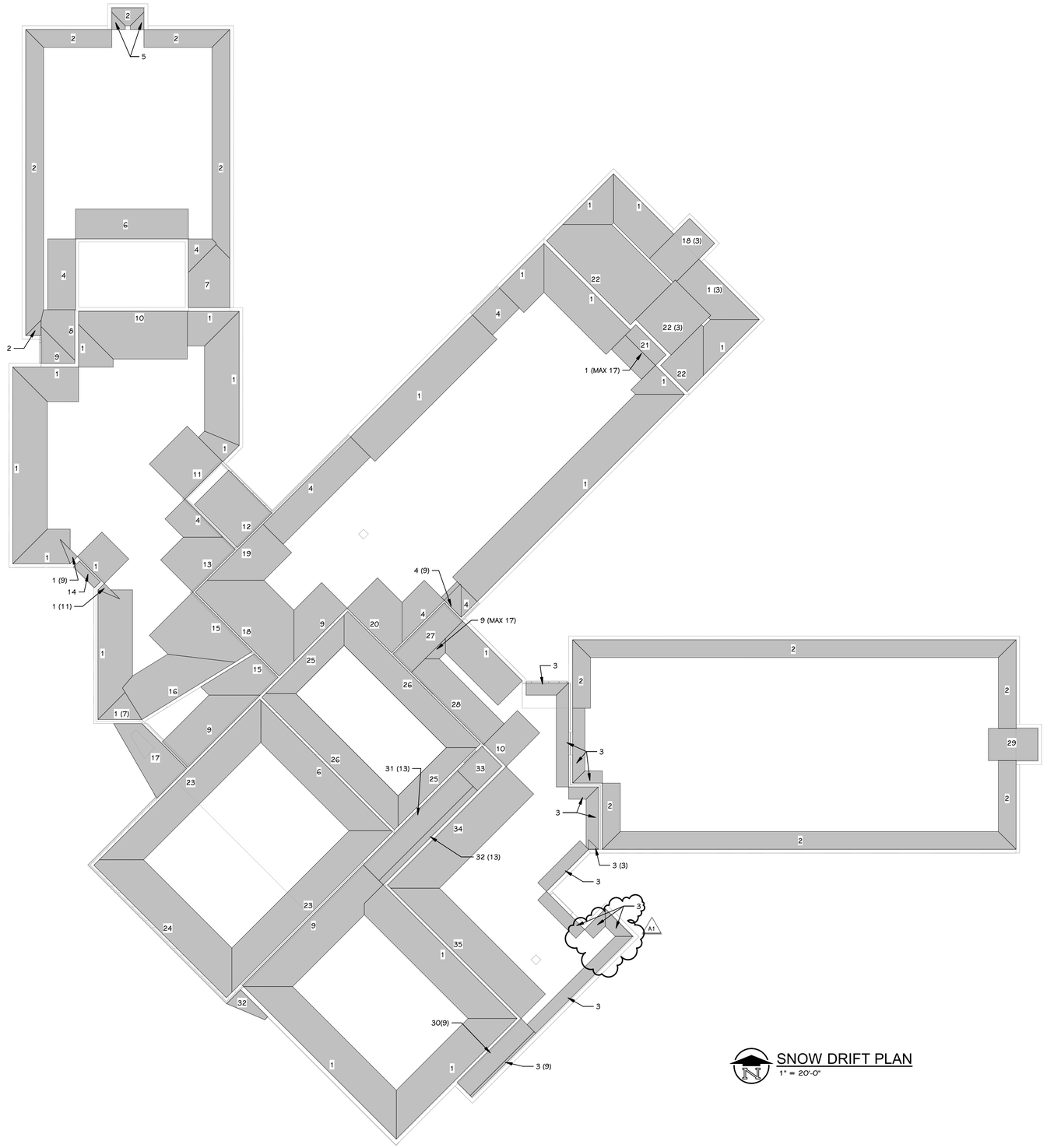
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
PLANTING PLAN ENLARGEMENT

DATE
APRIL 24, 2026

SHEET NUMBER
LP 104
23-622.000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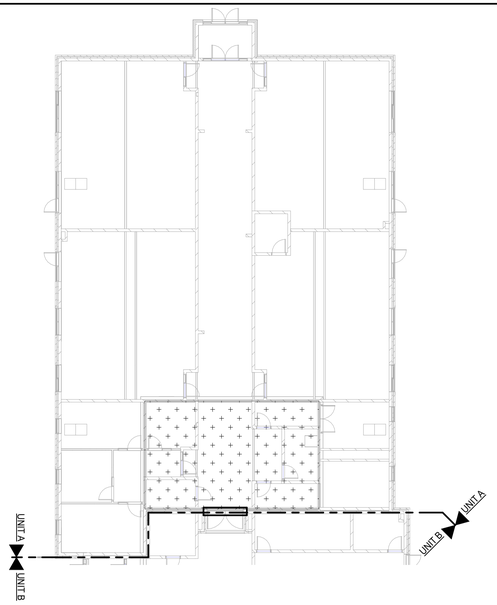
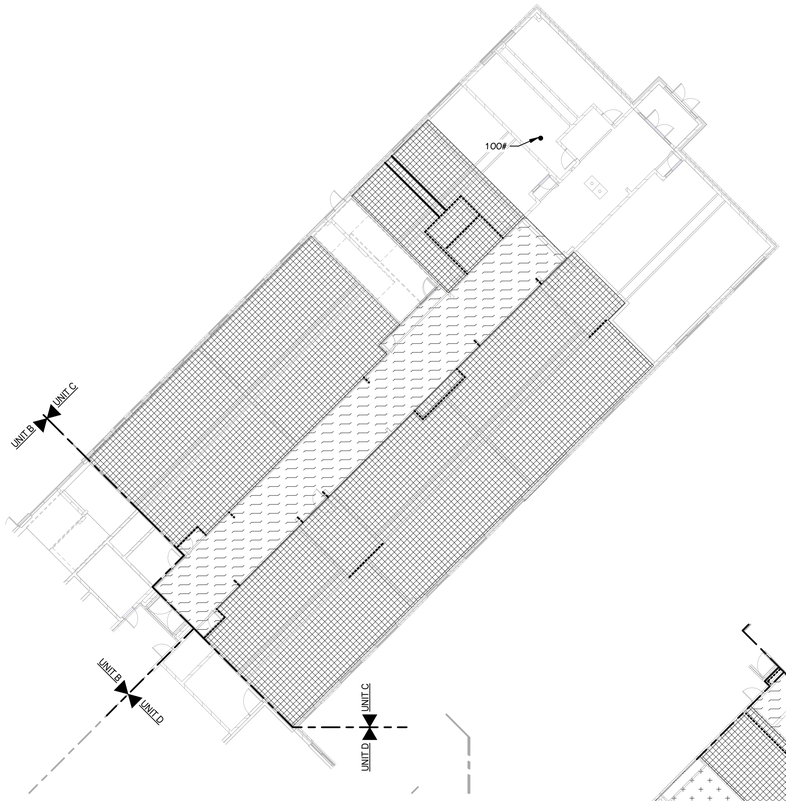
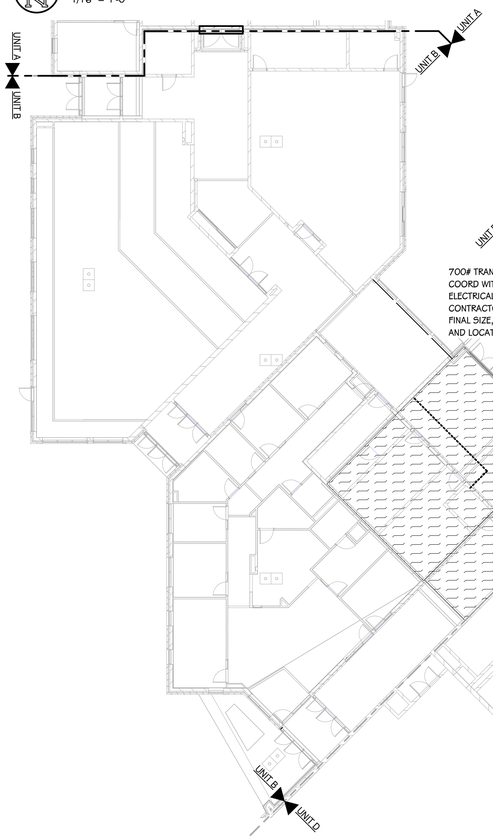



SECOND FLOOR LOADING PLAN - UNIT A
1/16" = 1'-0"



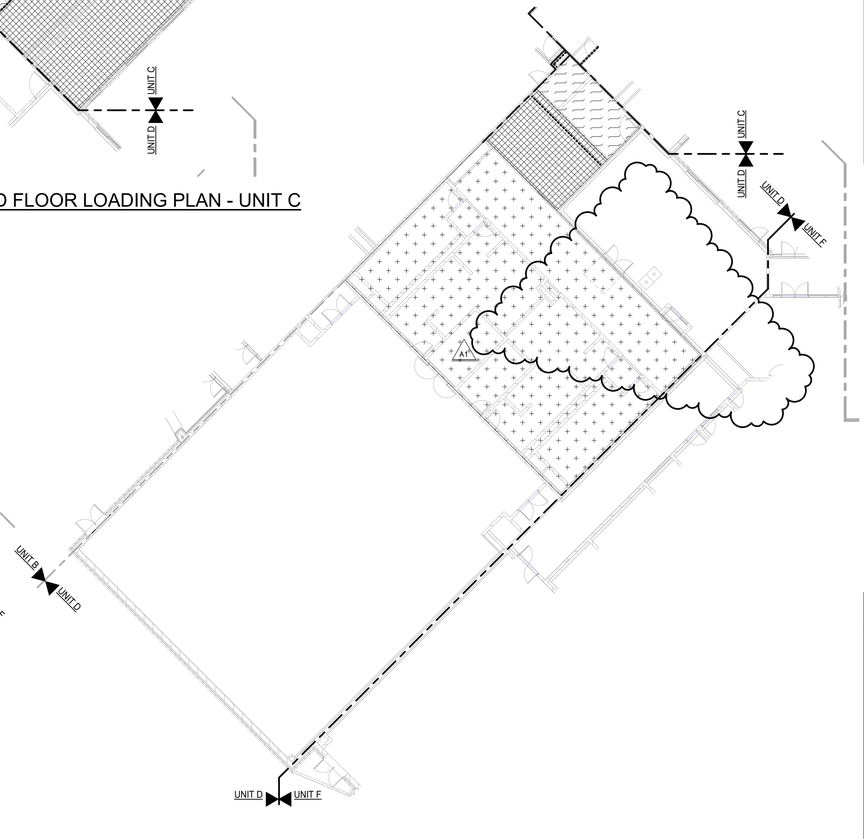

SECOND FLOOR LOADING PLAN - UNIT C
1/16" = 1'-0"







SECOND FLOOR LOADING PLAN - UNIT B
1/16" = 1'-0"




SECOND FLOOR LOADING PLAN - UNIT D
1/16" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

## NOTES - STRUCTURAL - PRECAST LOADING

1. LOADS GIVEN ON THIS SHEET ARE UNFACTORED. IT IS THE RESPONSIBILITY OF THE PRECAST SUPPLIER TO DETERMINE THE APPLICABLE LOAD COMBINATIONS IN ACCORDANCE WITH THE BUILDING CODE FOR THE DESIGN OF THE PRECAST HOLLOWCORE PLANK.

2. UNIFORM DEAD LOADS TO BE USED FOR THE DESIGN OF THE PRECAST HOLLOWCORE PLANK ARE AS FOLLOWS:

| | |
|---|---|
| FLOOR FINISH | 4 PSF |
| 3" CONCRETE TOPPING | 38 PSF |
| M/E/P ALLOWANCE | 5 PSF |
| CEILING/MISC | 5 PSF |
| TOTAL SUPERIMPOSED UNIFORM DEAD LOAD | 52 PSF |

THE PRECAST SUPPLIER SHALL INCLUDE THE ACTUAL SELF-WEIGHT OF THE PRECAST HOLLOWCORE PLANK AS A DEAD LOAD IN ADDITION TO THE SUPERIMPOSED LOADS. FOR THE PURPOSES OF DESIGNING OTHER ELEMENTS OF THE STRUCTURE, THE SELF-WEIGHTOF THE 10" PRECAST HOLLOWCORE PLANK IS ASSUMED TO BE 68 PSF.

3. SEE LOADING PLANS AND LEGEND, THIS SHEET, FOR UNIFORM LIVE LOADS AND ADDITIONAL SUPERIMPOSED DEAD LOADS TO BE USED IN THE DESIGN OF THE PRECAST HOLLOWCORE PLANK.

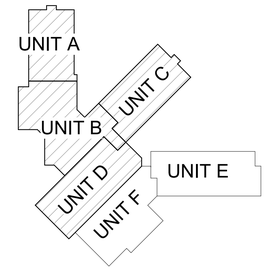
4. WHERE COLLECTOR LOADS ARE NOTED ON PLAN, PRECAST SUPPLIER SHALL DESIGN AND PROVIDE STEEL STUDS AND EMBED PLATES CAPABLE OF TRANSFERRING THE HORIZONTAL LOADS FROM THE PRECAST DIAPHRAGM TO THE TOP OF THE COLLECTOR BEAM. LOADS ARE ASD-LEVEL AND ARE THE WORST CASE OF EITHER 0.6W OR 0.7E LOAD CASES. THE COLLECTOR LOAD ACTS IN THE DIRECTION PARALLEL TO THE DOUBLE LINE SHOWN. STEEL STUDS AND EMBED PLATES AT THE LEVEL OF THE PRECAST SHALL BE SPACED AT EQUAL INTERVALS OVER THE FULL LENGTH OF THE COLLECTOR BEAM AS SHOWN, AND THE EMBED PLATES SHALL BE WELDED TO THE COLLECTOR BEAM AS PER A TYPICAL BEAM SUPPORT.

5. ADDITIONAL POINT LOADS FROM PIPE HANGERS ARE NOT SHOWN. REFER TO MECHANICAL DRAWINGS FOR PIPE LAYOUT. COORDINATE WITH MECHANICAL CONTRACTOR FOR PIPE HANGER LOCATIONS.

## LEGEND - STRUCTURAL - PRECAST LOADING

| UNIFORM LIVE LOAD | DEAD LOAD OF NON-STRUCTURAL PARTITION WALLS SUPPORTED BY SECOND FLOOR |
|---|---|
| 40 PSF | |
| 80 PSF | INDICATES 6" CMU WALL, 510 PLF |
| 100 PSF | INDICATES 8" CMU WALL, 660 PLF |
| 125 PSF | |
| 150 PSF | |

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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| | |
|---|---|
| ADDENDUM 1 | 05/08/26 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR PRECAST LOADING PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
SG 005
23-622.00

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## CONCRETE REINFORCING MINIMUM LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE

USE THIS TABLE FOR A615 GRADE 60 REINFORCING WHEN CONCRETE CLEAR COVER AND CLEAR SPACING IS AT LEAST $d_b$ AND CODE MINIMUM STIRRUPS ARE PROVIDED OR IF MINIMUM STIRRUPS ARE NOT PROVIDED, CLEAR SPACING IS AT LEAST $2d_b$.

(4500 PSI CONCRETE)

| | DEVELOPMENT LENGTH | | | LAP SPLICE LENGTH | |
|---|---|---|---|---|---|
| BAR SIZE | TOP BARS | OTHER BARS | BAR SIZE | TOP BARS | OTHER BARS |
| #3 | 12" | 12" | #3 | 14" | 12" |
| #4 | 18" | 14" | #4 | 23" | 18" |
| #5 | 18" | 14" | #5 | 23" | 18" |
| #6 | 21" | 17" | #6 | 28" | 21" |
| #7 | 35" | 27" | #7 | 45" | 35" |
| #8 | 44" | 34" | #8 | 57" | 44" |
| #9 | 54" | 42" | #9 | 70" | 54" |
| #10 | 66" | 51" | #10 | 86" | 66" |
| #11 | 79" | 61" | #11 | 103" | 79" |

NOTES:

- LAP LENGTHS SHALL BE 1.3 TIMES DEVELOPMENT LENGTH.
- FOR EPOXY COATED REINFORCING MULTIPLY THE TABLE VALUES ABOVE BY 1.5.
- (MC) DENOTES MECHANICAL COUPLER DEVELOPING 125% OF THE BAR YIELD STRENGTH. NO OTHER SPLICE WILL BE ACCEPTED.
- WHEN LAPPING TWO DIFFERENT SIZE BARS, USE THE LAP DIMENSION OF THE SMALLER BAR OR THE ANCHORAGE DIMENSION OF THE LARGER BARS. USE WHICHEVER DIMENSION IS LARGER.
- TOP BARS SHALL BE DEFINED AS BEAM AND SLAB HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE TOP REINFORCEMENT. HORIZONTAL REINFORCING IN WALLS SHALL BE CONSIDERED TOP BARS.

## MASONRY MINIMUM LAP SPLICE SCHEDULE

| BAR SIZE | LAP LENGTH FOR BARS CENTERED IN CMU THICKNESS | LAP LENGTH FOR BARS EACH FACE OF CMU WALL (2 1/2" CLEAR MASONRY COVER) |
|---|---|---|
| #3 | 12" | 12" |
| #4 | 13" | 18" |
| #5 | 20" | 28" |
| #6 | 38" | 52" |
| #7 | 52" | 70" |
| #8 | 79" | 105" |

NOTES:
MECHANICAL COUPLERS DEVELOPING 125% OF THE BAR YIELD STRENGTH ARE PERMITTED AT ANY SPLICE LOCATION AT CONTRACTOR'S OPTION.

## CONCRETE REINFORCING CLEAR COVER REQUIREMENTS

| | |
|---|---|
| CONCRETE CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND | 3" |
| CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH GROUND | |
| #5 BAR AND SMALLER | 1-1/2" |
| #6 BAR AND LARGER | 2" |
| CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND | |
| SLABS, JOISTS, AND WALLS (NOT LARGER THAN #11 BAR) | 3/4" |
| BEAMS, COLUMNS, PIERS | 1-1/2" |

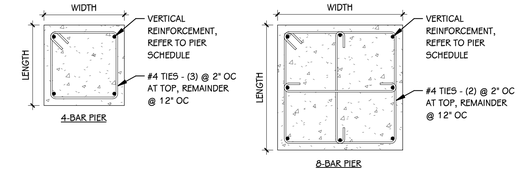
NOTE:
CLEAR COVER DIMENSIONS LISTED ARE CODE-REQUIRED MINIMUMS. PROVIDE GREATER COVER WHERE SPECIFICALLY REQUIRED BY DETAILS.

## SPREAD FOOTING SCHEDULE

| MARK | SIZE THICKNESS | SIZE WIDTH | SIZE LENGTH | REINFORCEMENT |
|---|---|---|---|---|
| F4.0 | 12" | 4' - 0" | 4' - 0" | (4) #5 EW |
| F5.0 | 12" | 5' - 0" | 5' - 0" | (5) #5 EW |
| F6.0 | 14" | 6' - 0" | 6' - 0" | (6) #5 EW |
| F7.0 | 16" | 7' - 0" | 7' - 0" | (8) #5 EW |

## WALL FOOTING SCHEDULE

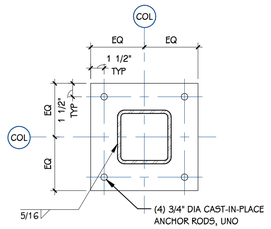
| MARK | SIZE THICKNESS | SIZE WIDTH | REINFORCEMENT LONGITUDINAL | REINFORCEMENT TRANSVERSE |
|---|---|---|---|---|
| WF18 | 12" | 18" | (2) #5 | - |
| WF24 | 12" | 24" | (2) #5 | - |
| WF30 | 12" | 30" | (3) #5 | - |
| WF36 | 12" | 36" | (3) #5 | - |
| WF48 | 12" | 48" | (4) #5 | #5 @ 12" OC |
| WF60 | 14" | 60" | (5) #5 | #5 @ 12" OC |
| WF66 | 14" | 66" | (5) #5 | #5 @ 12" OC |
| WF72 | 18" | 72" | (7) #6 | #6 @ 12" OC |




## PIER SCHEDULE

| MARK | SIZE WIDTH | SIZE LENGTH | REINFORCEMENT VERTICAL |
|---|---|---|---|
| P1 | 18" | 18" | (4) #6 |
| P2 | 24" | 24" | (4) #8 |

NOTES:
1. SCHEDULED PIER DIMENSIONS ARE MINIMUMS. CAST PIERS MONOLITHICALLY WITH FOUNDATION WALLS.
2. REFER TO FOUNDATION PLAN FOR TOP OF PIER ELEVATION.
3. WHERE PIER IS LOCATED WITHIN FOUNDATION WALL, THE HORIZONTAL WALL REINFORCING SHALL BE CONTINUOUS THROUGH THE PIER.
4. COLUMN ANCHOR RODS NOT SHOWN. REFER TO BASE PLATE SCHEDULE.
5. PIER TO BE CENTERED BELOW ASSOCIATED COLUMN UNLESS NOTED OTHERWISE.

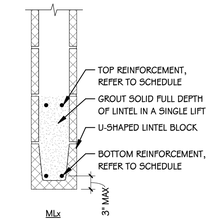



## BASE PLATE SCHEDULE

| MARK | SIZE THICKNESS | SIZE WIDTH | SIZE LENGTH | ANCHOR DIAMETER | ANCHOR EMBEDMENT | NOTES |
|---|---|---|---|---|---|---|
| BP2 | 3/4" | 10" | 10" | 3/4" | 9" | - |
| BP3 | 3/4" | 12" | 12" | 3/4" | 9" | - |
| BP4 | 3/4" | 12" | 12" | 3/4" | 9" | - |
| BP5 | 1" | 14" | 14" | 3/4" | 9" | - |

## STEEL COLUMN SCHEDULE

| MARK | SIZE | NOTES |
|---|---|---|
| C2 | HSS4x4x3/8 | |
| C3 | HSS5x5x1/16 | |
| C4 | HSS5x5x3/8 | |
| C5 | HSS6x6x3/8 | |
| C7 | HSS8x8x5/16 | |
| C8 | HSS8x8x5/8 | |




## MASONRY LINTEL SCHEDULE

| MARK | CMU THICKNESS | CMU DEPTH | REINFORCEMENT TOP | REINFORCEMENT BOTTOM | NOTES |
|---|---|---|---|---|---|
| ML8-1 | 7 5/8" | 8" | - | (2) #5 | - |
| ML8-2 | 7 5/8" | 16" | - | (2) #5 | - |
| ML8-3 | 7 5/8" | 24" | (2) #5 | (2) #5 | - |
| ML8-4 | 7 5/8" | 32" | (2) #5 | (2) #5 | - |
| ML8-5 | 7 5/8" | 40" | (2) #5 | (2) #5 | - |
| ML8-6 | 7 5/8" | 48" | (2) #5 | (2) #5 | - |
| ML12-2 | 11 5/8" | 16" | - | (2) #5 | - |
| ML12-3 | 11 5/8" | 24" | (2) #5 | (2) #5 | - |
| ML12-4 | 11 5/8" | 32" | (2) #5 | (2) #5 | - |

NOTES:
1. ALL OPENINGS WIDER THAN 8" IN MASONRY WALLS REQUIRE LINTELS. NOT ALL LINTELS ARE SHOWN ON PLANS. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATIONS AND SIZES OF OPENINGS. LINTELS LABELED 'ML (MECH)' INDICATE A LINTEL REQUIRED FOR A MECHANICAL OPENING WHICH IS OUTSIDE THE TYPICAL LINTELS SHOWN IN NOTE 5.
2. EXTEND HORIZONTAL REINFORCING AND LINTEL GROUTING 1'-0" PAST EDGES OF OPENING.
3. LINTELS SHALL BE GROUTED SOLID IN ONE CONTINUOUS LIFT.
4. GROUT ALL CELLS SOLID BELOW LINTEL BEARING DOWN TO FOUNDATION.
5. WHERE NO LINTEL DESIGNATION IS NOTED ON FRAMING PLANS, PROVIDE LINTELS AS FOLLOWS:
   A. ML1 FOR OPENINGS LESS THAN OR EQUAL TO 3'-4" WIDE
   B. ML2 FOR OPENINGS LESS THAN OR EQUAL TO 7'-4" WIDE

## ROOF DECK SCHEDULE

| MARK | DECK TYPE & GAUGE | DECK FINISH | FASTENERS SUPPORT | FASTENERS SIDELAP |
|---|---|---|---|---|
| R1 | 1.5 B, 20 GA | PRIMED | HILTI PAFs, 36/4 PATTERN | #10 SCREWS @ 12" OC |
| R2 | 2.0 DA, 20 GA | PRIMED | HILTI PAFs, 24/4 PATTERN, @8" OC TO PERIMETER SUPPORTS | #12 SCREWS @ 12" OC |

## FLOOR DECK SCHEDULE

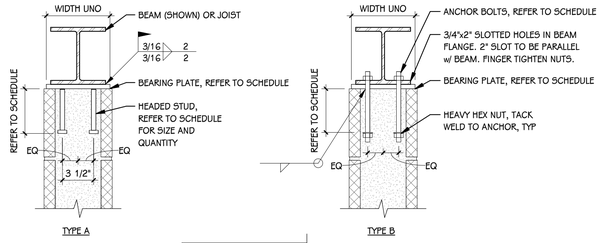
| MARK | DECK TYPE & GAUGE | DECK FINISH | FASTENERS SUPPORT | FASTENERS SIDELAP | CONCRETE TYPE | TOPPING SLAB THICKNESS | TOPPING SLAB REINFORCEMENT |
|---|---|---|---|---|---|---|---|
| F1 | NA | NA | NA | NA | 10" HOLLOWCORE PRECAST PLANK | 3" | WWF 6x6-W2.1xW2.1 |
| F2 | 1.5 FD, 20 GA | GALVANIZED (G60) | HILTI PAFs, 36/4 PATTERN | #10 SCREWS @ 12" OC | NORMAL WEIGHT | 2 1/2" | WWF 6x6-W2.1xW2.1 |

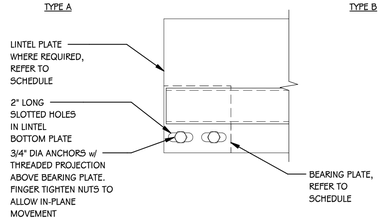
1. HILTI PAFs SHALL BE X-ENP 19 WHERE STEEL BASE MATERIAL THICKNESS IS GREATER THAN 1/4" AND X-HSN 24 WHERE STEEL BASE MATERIAL THICKNESS IS LESS THAN OR EQUAL TO 1/4".
2. DECK TYPES: B = WIDE RIB ROOF DECK, DA - DOVETAIL ACOUSTICAL ROOF DECK, FD = FORM DECK, CD = COMPOSITE DECK
3. NUMBER PRECEDING DECK TYPE INDICATES DEPTH, IN INCHES.
4. FASTENING AT DECK EDGES PARALLEL TO DECK SPAN SHALL BE EQUAL TO THE SUPPORT FASTENER TYPE AND SPACING, UNLESS NOTED OTHERWISE.

## BEAM END REACTION SCHEDULE (LRFD)

| BEAM SIZE | VERTICAL REACTION (KIPS) |
|---|---|
| W8 | 16 |
| W10 | 20 |
| W12, W14, W16 | 35 |
| W18, W21 | 50 |
| W24 | 75 |
| W27 | 85 |
| W30 | 100 |
| W33 AND LARGER | 120 |

NOTES:
1. SPECIFIC LOCATIONS WHERE BEAM REACTIONS EXCEED THE VALUES IN THIS SCHEDULE ARE POSTED ON THE FRAMING PLANS.
2. STEEL FABRICATOR SHALL DESIGN BEAM-TO-BEAM AND BEAM-TO-COLUMN CONNECTIONS FOR THE GREATER OF THE SCHEDULED VAULE AND THE VALUE POSTED ON THE FRAMING PLANS.
3. SCHEDULED AND POSTED VERTICAL REACTIONS ARE FACTORED (LRFD).

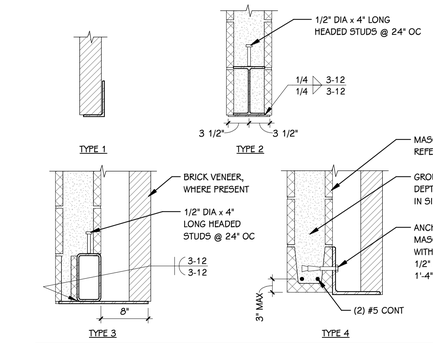



TUBE LINTEL BEARING PLATE
TYPE C

## BEARING PLATE SCHEDULE

| MARK | SIZE THICKNESS | SIZE WIDTH | SIZE LENGTH | ANCHOR QUANTITY | ANCHOR DIAMETER | ANCHOR EMBEDMENT | NOTES |
|---|---|---|---|---|---|---|---|
| PL1A | 5/8" | 6" | 6" | (2) | 3/4" | 5" | - |
| PL2A | 5/8" | 6" | 10" | (2) | 3/4" | 5" | - |
| PL3A | 1" | 6" | 10" | (2) | 3/4" | 5" | - |
| PL5A | 1" | 6" | 12" | (2) | 3/4" | 5" | 12" BEAM BEARING |
| PL6A | 5/8" | 7" | 8" | (2) | 3/4" | 5" | - |
| PL8A | 5/8" | 7" | 12" | (2) | 3/4" | 5" | 12" BEAM BEARING |
| PL8B | 5/8" | 7" | 12" | (2) | 3/4" | 5" | 12" BEAM BEARING |
| PL9A | 1" | 7" | 12" | (2) | 3/4" | 5" | 12" BEAM BEARING |
| PL10A | 5/8" | 8" | 6" | (2) | 3/4" | 5" | - |
| PL11A | 5/8" | 8" | 10" | (2) | 3/4" | 5" | - |
| PL13A | 3/4" | 9" | 7" | (2) | 3/4" | 5" | - |
| PL14A | 1" | 10" | 6" | (2) | 3/4" | 5" | - |
| PL15A | 5/8" | 10" | 10" | (2) | 3/4" | 5" | - |
| PL16B | 1/2" | 7" | 8" | (2) | 3/4" | 6" | - |
| PL17B | 1" | 11" | 8" | (2) | 3/4" | 6" | - |
| PL18C | 3/4" | 7" | 8" | (2) | 3/4" | 6" | - |
| PL19B | 5/8" | 7" | 8" | (2) | 3/4" | 6" | - |
| PL20C | 1/2" | 11" | 8" | (2) | 3/4" | 6" | - |
| PL21A | 5/8" | 7" | 6" | (2) | 3/4" | 5" | - |
| PL21B | 5/8" | 7" | 6" | (2) | 3/4" | 5" | - |
| PL22A | 5/8" | 7" | 7 5/8" | (2) | 3/4" | 5" | - |
| PL23A | 5/8" | 7" | 8" | (2) | 3/4" | 5" | 8" BEAM BEARING |
| PL25A | 1" | 9" | 6" | (2) | 3/4" | 5" | - |
| PL26A | 5/8" | 12" | 6" | (2) | 3/4" | 5" | - |
| PL27A | 1" | 12" | 6" | (2) | 3/4" | 5" | - |
| PL28A | 1" | 14" | 6" | (2) | 3/4" | 5" | - |




## STEEL LINTEL SCHEDULE

| MARK | TYPE | PROFILE | BEARING LENGTH | BEARING PLATE | NOTES |
|---|---|---|---|---|---|
| L1 | 1 | L6x3-1/2x5/16 (LLV) | 8" | NONE | - |
| L2 | 4 | L8x8x1/2 | 8" | NONE | - |
| L3 | 2 | W8x15 WITH 5/16" X 7" BOTTOM PLATE | 8" | PL16B | - |
| L4 | 2 | W12x26 WITH 5/16" X 7" BOTTOM PLATE | 8" | PL16B | - |
| L5-8 | 2 | W16x31 WITH 5/16" X 7" BOTTOM PLATE | 8" | PL16B | - |
| L5-12 | 2 | W16x31 WITH 3/8" X 11" BOTTOM PLATE | 8" | PL17B | - |
| L6 | 2 | W18x46 WITH 5/16" X 11" BOTTOM PLATE | 8" | PL19B | - |
| L7 | NA | HSS5x5x1/4 | 8" | PL20C | - |
| L8 | 3 | HSS16x4x1/4 WITH 5/16" X 15" BOTTOM PLATE | 8" | PL18C | - |

NOTES:
1. ALL OPENINGS WIDER THAN 8" IN MASONRY WALLS REQUIRE LINTELS. NOT NECESSARILY ALL LINTELS ARE SHOWN ON THE FRAMING PLANS. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATIONS AND SIZES OF OPENINGS.
2. 8" LINTEL BEARING REQUIRED, EACH END.
3. ALL LINTELS WITHIN EXTERIOR WALLS SHALL BE GALVANIZED.
4. GROUT CMU SOLID BELOW LINTEL BEARING DOWN TO FOUNDATION.
5. IF A STRUCTURAL COLUMN IS IN THE MASONRY WALL WITHIN 2'-0" FROM EDGE OF OPENING, FRAME LINTEL INTO COLUMN WITH STANDARD AISC CONNECTIONS.
6. BOTTOM PLATE GEOMETRY SHOWN IN DETAIL AND LISTED IN SCHEDULE IS TYPICAL. WHERE SECTIONS ARE CUT ON PLANS THROUGH LINTELS AND DETAILED WITH GEOMETRY THAT DEVIATES FROM THESE GENERAL DETAILS, THIS SPECIFIC GEOMETRY SHALL BE FOLLOWED. WHERE NOTES REGARDING THE BOTTOM PLATE ARE INCLUDED ON THE PLAN THAT DEVIATE FROM THESE GENERAL DETAILS, THE PLAN NOTE SHALL BE FOLLOWED.

REFER TO THE FOLLOWING DETAILS FOR ADDITIONAL SCHEDULES:
1 / S 401 MASONRY WALL SCHEDULE
1 / S 401 CMU WALL JAMB REINFORCEMENT SCHEDULE

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| ADDENDUM 1 | 05/08/26 |
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PROJECT TITLE
NEW EL SOL SCHOOL

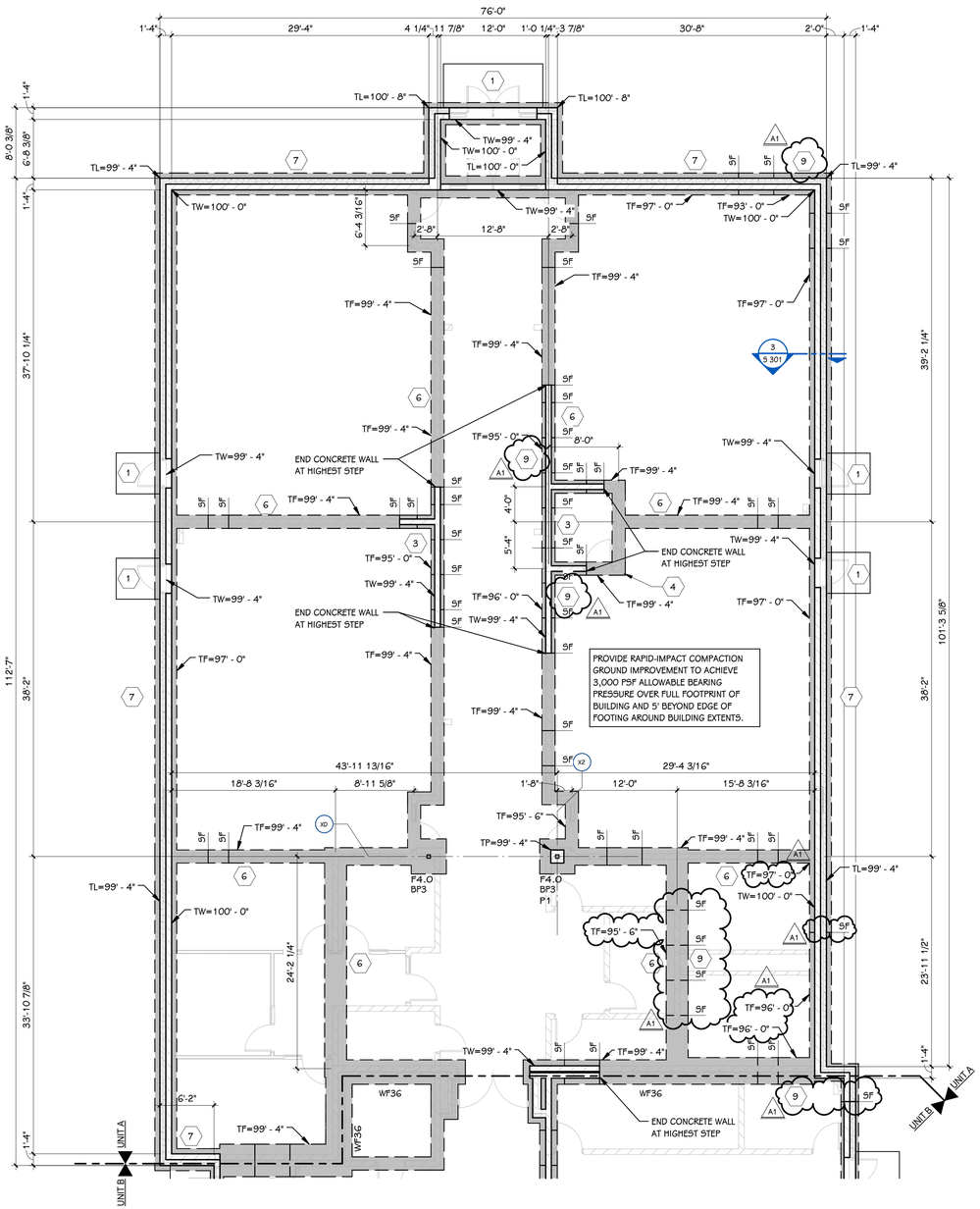
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
STRUCTURAL SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
SG 006
23-622.00




FOUNDATION PLAN - UNIT A

1/8" = 1'-0"

## NOTES - STRUCTURAL - FOUNDATION

1 FLOOR CONSTRUCTION, UNO: 4" SLAB ON GRADE WITH 6x6-W1.4xW1.4 WWF. REFER TO TYPICAL DETAILS ON FOR ADDITIONAL REQUIREMENTS

2 PROVIDE RAPID-IMPACT COMPACTION GROUND IMPROVEMENT TO ACHIEVE 3,000 PSF ALLOWABLE BEARING PRESSURE OVER FULL FOOTPRINT OF BUILDING AND BEYOND BUILDING EXTENTS AS REQUIRED BY SPECIALTY CONTRACTOR.

3 TOP OF SLAB-ON-GRADE ELEVATION = 100'-0", UNO

4 TOP OF PIER ELEVATION = 99'-4", UNO

5 TOP OF BRICK LEDGE ELEVATION = 99' - 4", UNO

6 TOP OF FOOTING ELEVATION = 97'-0" UNO. ALL EXTERIOR FOOTINGS TO EXTEND A MINIMUM OF 3'-6" BELOW FINISHED GRADE.

7 REFER TO GENERAL NOTES FOR DESIGN SOIL BEARING CAPACITY

8 PROVIDE FROST-FREE ENTRANCE APRON AT ALL EXTERIOR DOORS, REFER TO TYPICAL DETAIL

9 REFER TO TYPICAL DETAIL FOR PIPE CROSSINGS AT FOUNDATIONS, STEP FOOTINGS AS REQUIRED TO ALLOW PIPE TO PASS THROUGH FOUNDATION WALL. REFER TO MECHANICAL FOR SIZES AND LOCATIONS OF PIPING, COORDINATE FINAL SIZES AND ELEVATIONS WITH MECHANICAL SUPPLIER.

10 PROVIDE THICKENED SLAB UNDER ALL INTERIOR NON-LOADBEARING CMU WALLS AND STAIR STRINGERS PER TYPICAL DETAILS. THESE ITEMS ARE NOT SHOWN ON THE STRUCTURAL FOUNDATION PLANS. COORDINATE LOCATION WITH THE ARCHITECTURAL DRAWINGS.

11 VERIFY LOCATIONS OF COLUMNS, WALLS, OPENINGS, ETC. WITH ARCHITECTURAL DRAWINGS BEFORE PLACING FOUNDATIONS.

12 COORDINATE WITH ALL DRAWINGS FOR LOCATION OF OPENINGS, SLEEVES, AND UNDER FLOOR PIPES, CONDUITS, DRAINS, DEPRESSIONS, ETC.

13 SHORING, BRACING AND SHEETING MAY BE REQUIRED WHEN EXCAVATION ADJACENT TO THE EXISTING STRUCTURE. DESIGN AND INSTALLATION OF SUCH SHORING, BRACING AND SHEETING IS THE RESPONSIBILITY OF THE CONTRACTOR.

## KEYED NOTES - STRUCTURAL - FOUNDATION

1 PROVIDE FROST-FREE APRON. REFER TO TYPICAL DETAIL.

2 PROVIDE OVERHEAD DOOR APRON. REFER TO TYPICAL DETAIL.

3 CONC FOUNDATION WALL: 8" WALLS TO HAVE #5 @ 12" OC EACH WAY, CENTERED, UNO. WALLS GREATER THAN 8" THICK TO HAVE #5 @ 12" EACH WAY, EACH FACE, UNO. PROVIDE DOWELS TO MATCH SIZE AND SPACING OF CMU WALL REINFORCING.

4 (2) #5 X 5'-0" LONG IN SLAB AT REENTRANT CORNER.

5 RECESS SLAB FOR FREEZER AND COOLER. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. COORDINATE DEPTH OF RECESS WITH FOOD SERVICE CONTRACTOR.

6 REFER TO TYPICAL INTERIOR WALL FOOTING DETAIL.

7 REFER TO TYPICAL EXTERIOR FOUNDATION WALLS DETAIL.

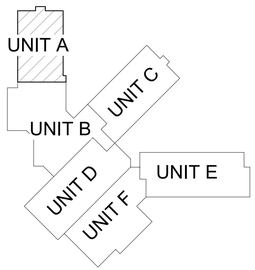
8 RECESS SLAB FOR LOADING DOCK. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. COORDINATE DEPTH OF RECESS WITH LOADING DOCK SUPPLIER.

A1 9 SLEEVE WALL FOR UNDERGROUND PIPE PENETRATION. COORDINATE SLEEVE SIZE AND LOCATION WITH PLUMBING CONTRACTOR.

## LEGEND - STRUCTURAL - FOUNDATION

| | |
|---|---|
| 5F | STEPPED FOOTING. REFER TO TYPICAL DETAILS. CREATE EQUAL STEPS BETWEEN ADJACENT TOP OF FOOTING ELEVATIONS. |
| | TOP OF FOUNDATION ELEMENT; REFER TO FOUNDATION PLAN NOTES FOR ELEVATIONS NOT NOTED ON PLANS |
| TL/TW | TL - TOP OF BRICK LEDGE<br>TW - TOP OF WALL |
| TP/TF | TP - TOP OF PIER<br>TF - TOP OF FOOTING |
| Fx.x/Wx.x | SPREAD FOOTING OR WALL FOOTING DESIGNATION. REFER TO FOOTING SCHEDULES. |
| Px | CONCRETE PIER DESIGNATION. REFER TO TYPICAL PIER DETAILS. |

**EL SOL ELEMENTARY**




KEY PLAN

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

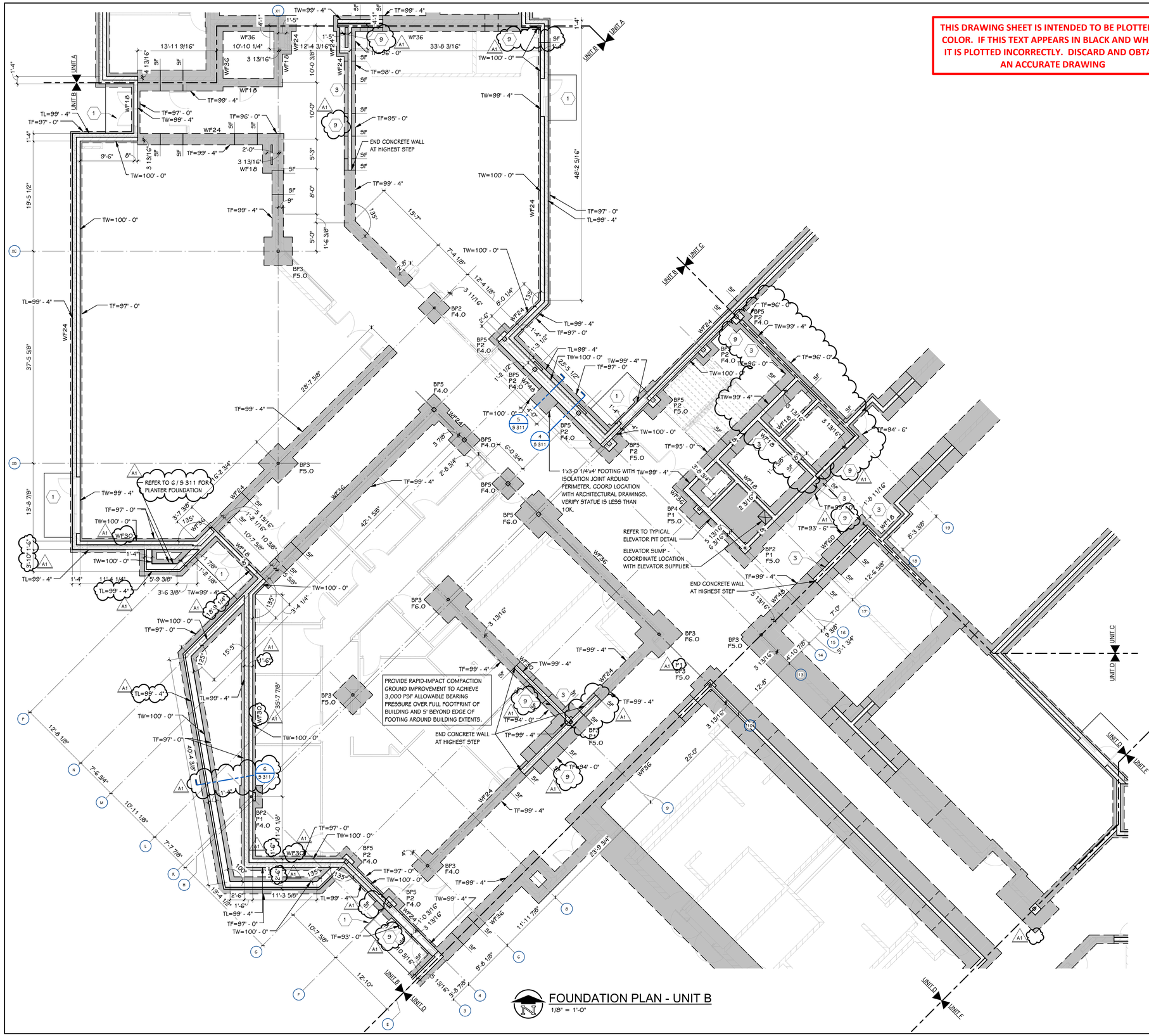
KALAMAZOO, MICHIGAN

SHEET TITLE
FOUNDATION PLAN - UNIT A

DATE
APRIL 24, 2026

SHEET NUMBER
S101A

23-622.00

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## NOTES - STRUCTURAL - FOUNDATION

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7 REFER TO GENERAL NOTES FOR DESIGN SOIL BEARING CAPACITY

8 PROVIDE FROST-FREE ENTRANCE APRON AT ALL EXTERIOR DOORS, REFER TO TYPICAL DETAIL

9 REFER TO TYPICAL DETAIL FOR PIPE CROSSINGS AT FOUNDATIONS, STEP FOOTINGS AS REQUIRED TO ALLOW PIPE TO PASS THROUGH FOUNDATION WALL. REFER TO MECHANICAL FOR SIZES AND LOCATIONS OF PIPING, COORDINATE FINAL SIZES AND ELEVATIONS WITH MECHANICAL SUPPLIER.

10 PROVIDE THICKENED SLAB UNDER ALL INTERIOR NON-LOADBEARING CMU WALLS AND STAIR STRINGERS PER TYPICAL DETAILS. THESE ITEMS ARE NOT SHOWN ON THE STRUCTURAL FOUNDATION PLANS. COORDINATE LOCATION WITH THE ARCHITECTURAL DRAWINGS.

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## KEYED NOTES - STRUCTURAL - FOUNDATION

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4 (2) #5 X 5'-0" LONG IN SLAB AT REENTRANT CORNER.

5 RECESS SLAB FOR FREEZER AND COOLER. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. COORDINATE DEPTH OF RECESS WITH FOOD SERVICE CONTRACTOR.

6 REFER TO TYPICAL INTERIOR WALL FOOTING DETAIL.

7 REFER TO TYPICAL EXTERIOR FOUNDATION WALLS DETAIL.

8 RECESS SLAB FOR LOADING DOCK. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. COORDINATE DEPTH OF RECESS WITH LOADING DOCK SUPPLIER.

9 SLEEVE WALL FOR UNDERGROUND PIPE PENETRATION. COORDINATE SLEEVE SIZE AND LOCATION WITH PLUMBING CONTRACTOR.

## LEGEND - STRUCTURAL - FOUNDATION

| | |
|---|---|
| 5F | STEPPED FOOTING. REFER TO TYPICAL DETAILS. CREATE EQUAL STEPS BETWEEN ADJACENT TOP OF FOOTING ELEVATIONS. |
| | TOP OF FOUNDATION ELEMENT; REFER TO FOUNDATION PLAN NOTES FOR ELEVATIONS NOT NOTED ON PLANS |
| TL/TW | TL - TOP OF BRICK LEDGE<br>TW - TOP OF WALL |
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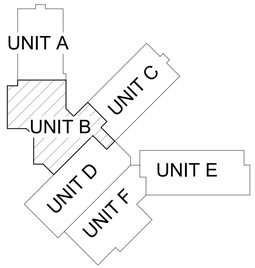
## EL SOL ELEMENTARY




**KEY PLAN**
SCALE: NO SCALE

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KALAMAZOO, MICHIGAN

SHEET TITLE
FOUNDATION PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
S101B
23-622.00

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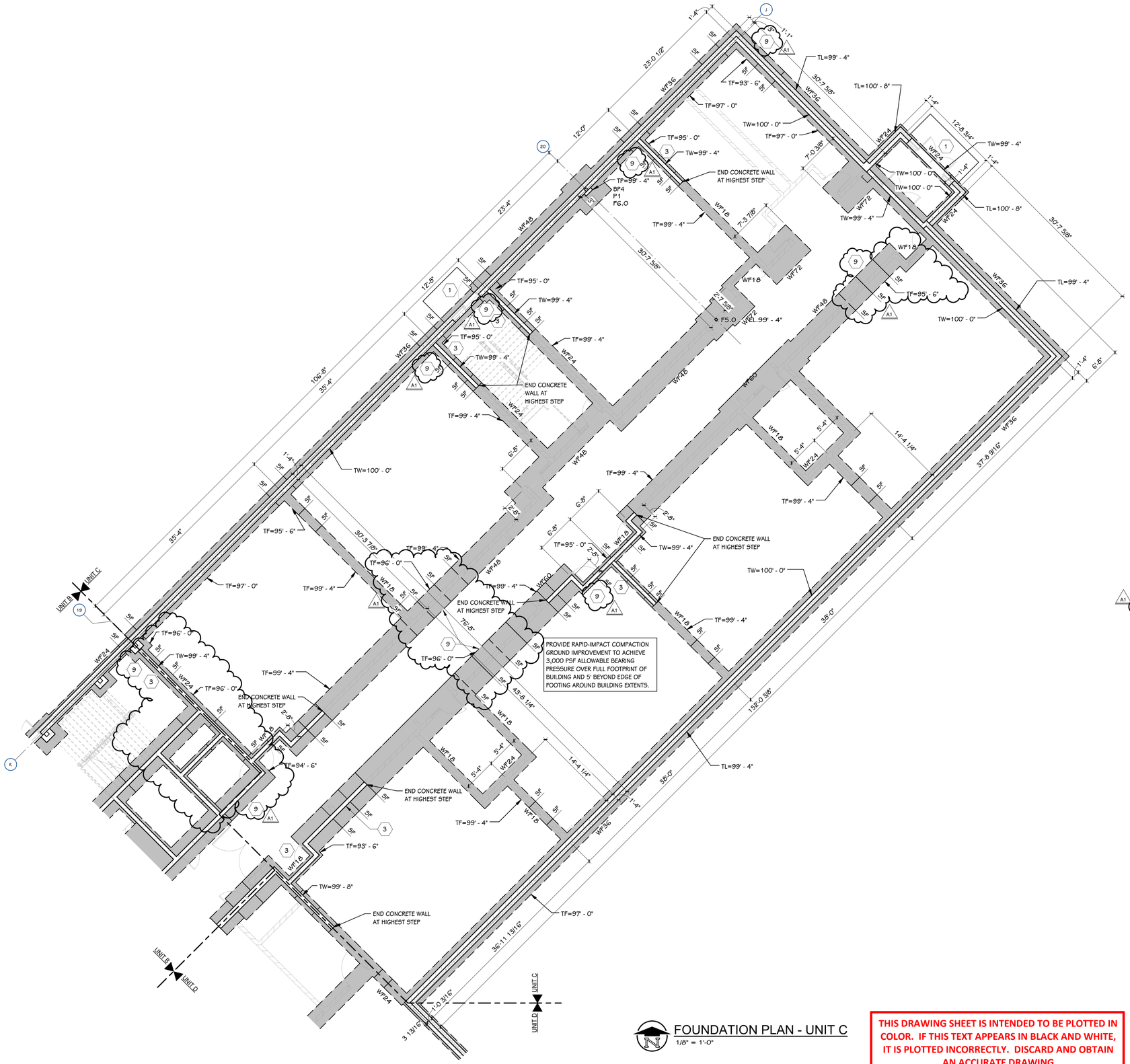


FOUNDATION PLAN - UNIT C
1/8" = 1'-0"

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## NOTES - STRUCTURAL - FOUNDATION

1 FLOOR CONSTRUCTION, UNO: 4" SLAB ON GRADE WITH 6xG-W1.4xW1.4 WWF. REFER TO TYPICAL DETAILS ON FOR ADDITIONAL REQUIREMENTS

2 PROVIDE RAPID-IMPACT COMPACTION GROUND IMPROVEMENT TO ACHIEVE 3,000 PSF ALLOWABLE BEARING PRESSURE OVER FULL FOOTPRINT OF BUILDING AND BEYOND BUILDING EXTENTS AS REQUIRED BY SPECIALTY CONTRACTOR.

3 TOP OF SLAB-ON-GRADE ELEVATION = 100'-0", UNO

4 TOP OF PIER ELEVATION = 99'-4", UNO

5 TOP OF BRICK LEDGE ELEVATION = 99' - 4", UNO

6 TOP OF FOOTING ELEVATION = 97'-0" UNO. ALL EXTERIOR FOOTINGS TO EXTEND A MINIMUM OF 3'-6" BELOW FINISHED GRADE.

7 REFER TO GENERAL NOTES FOR DESIGN SOIL BEARING CAPACITY

8 PROVIDE FROST-FREE ENTRANCE APRON AT ALL EXTERIOR DOORS, REFER TO TYPICAL DETAIL

9 REFER TO TYPICAL DETAIL FOR PIPE CROSSINGS AT FOUNDATIONS, STEP FOOTINGS AS REQUIRED TO ALLOW PIPE TO PASS THROUGH FOUNDATION WALL. REFER TO MECHANICAL FOR SIZES AND LOCATIONS OF PIPING, COORDINATE FINAL SIZES AND ELEVATIONS WITH MECHANICAL SUPPLIER.

10 PROVIDE THICKENED SLAB UNDER ALL INTERIOR NON-LOADBEARING CMU WALLS AND STAIR STRINGERS PER TYPICAL DETAILS. THESE ITEMS ARE NOT SHOWN ON THE STRUCTURAL FOUNDATION PLANS. COORDINATE LOCATION WITH THE ARCHITECTURAL DRAWINGS.

11 VERIFY LOCATIONS OF COLUMNS, WALLS, OPENINGS, ETC. WITH ARCHITECTURAL DRAWINGS BEFORE PLACING FOUNDATIONS.

12 COORDINATE WITH ALL DRAWINGS FOR LOCATION OF OPENINGS, SLEEVES, AND UNDER FLOOR PIPES, CONDUITS, DRAINS, DEPRESSIONS, ETC.

13 SHORING, BRACING AND SHEETING MAY BE REQUIRED WHEN EXCAVATION ADJACENT TO THE EXISTING STRUCTURE. DESIGN AND INSTALLATION OF SUCH SHORING, BRACING AND SHEETING IS THE RESPONSIBILITY OF THE CONTRACTOR.

## KEYED NOTES - STRUCTURAL - FOUNDATION

1 PROVIDE FROST-FREE APRON. REFER TO TYPICAL DETAIL.

2 PROVIDE OVERHEAD DOOR APRON. REFER TO TYPICAL DETAIL.

3 CONC FOUNDATION WALL: 8" WALLS TO HAVE #5 @ 12" OC EACH WAY, CENTERED, UNO. WALLS GREATER THAN 8" THICK TO HAVE #5 @ 12" EACH WAY, EACH FACE, UNO. PROVIDE DOWELS TO MATCH SIZE AND SPACING OF CMU WALL REINFORCING.

4 (2) #5 X 5'-0" LONG IN SLAB AT REENTRANT CORNER.

5 RECESS SLAB FOR FREEZER AND COOLER. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. COORDINATE DEPTH OF RECESS WITH FOOD SERVICE CONTRACTOR.

6 REFER TO TYPICAL INTERIOR WALL FOOTING DETAIL.

7 REFER TO TYPICAL EXTERIOR FOUNDATION WALLS DETAIL.

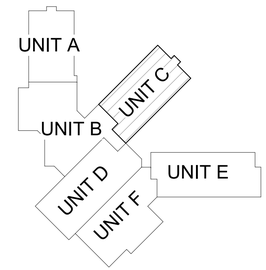
8 RECESS SLAB FOR LOADING DOCK. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. COORDINATE DEPTH OF RECESS WITH LOADING DOCK SUPPLIER.

A1 9 SLEEVE WALL FOR UNDERGROUND PIPE PENETRATION. COORDINATE SLEEVE SIZE AND LOCATION WITH PLUMBING CONTRACTOR.

## LEGEND - STRUCTURAL - FOUNDATION

| | |
|---|---|
| SF | STEPPED FOOTING. REFER TO TYPICAL DETAILS. CREATE EQUAL STEPS BETWEEN ADJACENT TOP OF FOOTING ELEVATIONS. |
| | TOP OF FOUNDATION ELEMENT; REFER TO FOUNDATION PLAN NOTES FOR ELEVATIONS NOT NOTED ON PLANS |
| TL/TW | TL - TOP OF BRICK LEDGE<br>TW - TOP OF WALL |
| TP/TF | TP - TOP OF PIER<br>TF - TOP OF FOOTING |
| Fx.x/WFx.x | SPREAD FOOTING OR WALL FOOTING DESIGNATION. REFER TO FOOTING SCHEDULES. |
| Px | CONCRETE PIER DESIGNATION. REFER TO TYPICAL PIER DETAILS. |

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM 1 | 05/08/26 |

PROJECT TITLE
NEW EL SOL SCHOOL

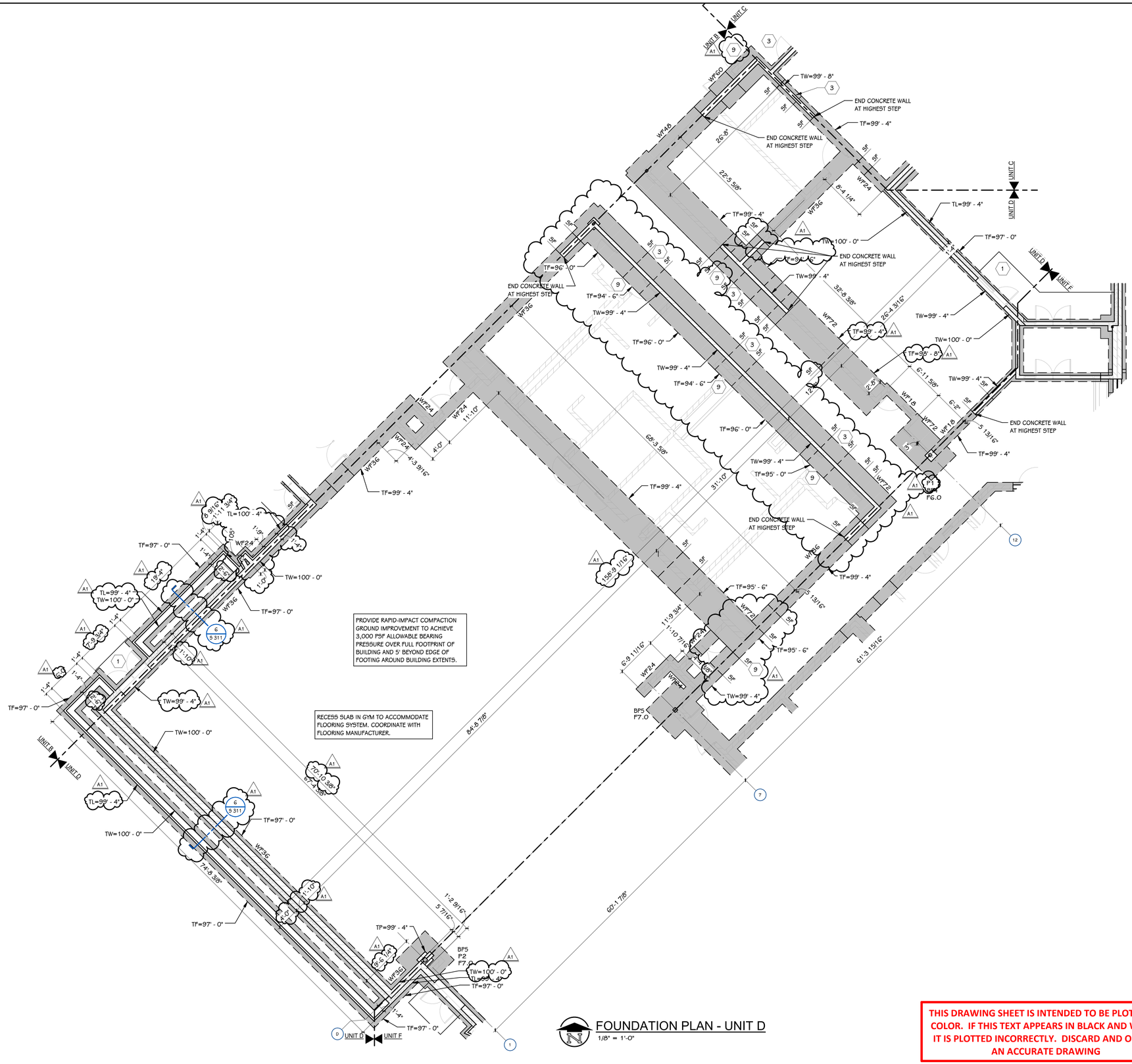
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FOUNDATION PLAN - UNIT C

DATE
APRIL 24, 2026

SHEET NUMBER
S 101C
23-622.00




FOUNDATION PLAN - UNIT D

1/8" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

## NOTES - STRUCTURAL - FOUNDATION

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## LEGEND - STRUCTURAL - FOUNDATION

| | |
|---|---|
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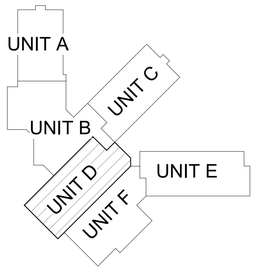
## EL SOL ELEMENTARY




KEY PLAN

SCALE: NO SCALE

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| ADDENDUM 1 | 05/08/26 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

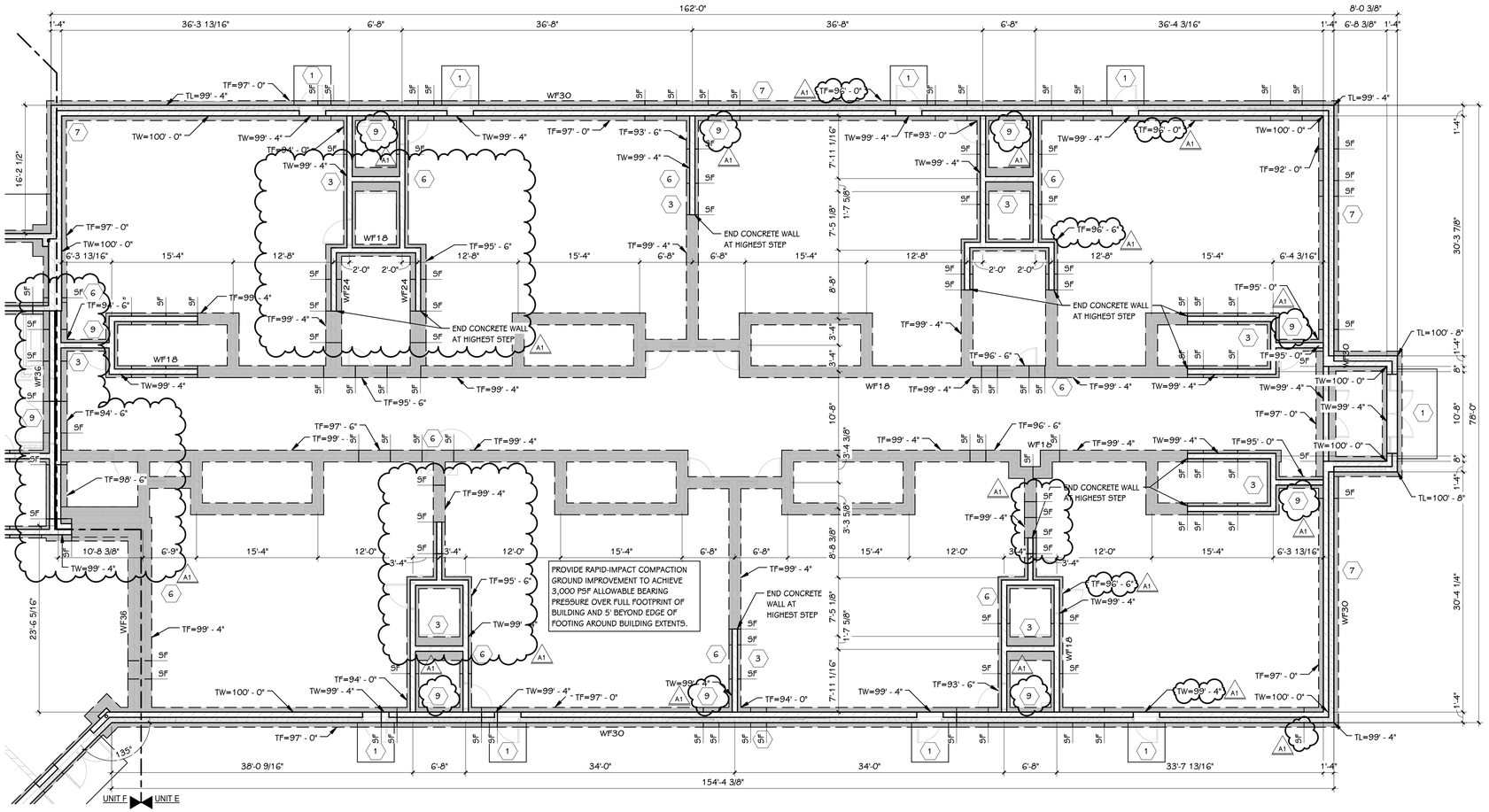
SHEET TITLE
FOUNDATION PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
S101D

23-622.00

DRAWN BY: ACR 5/8/2026 1:12:11 PM




## FOUNDATION PLAN - UNIT E

1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

### NOTES - STRUCTURAL - FOUNDATION

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9 REFER TO TYPICAL DETAIL FOR PIPE CROSSINGS AT FOUNDATIONS, STEP FOOTINGS AS REQUIRED TO ALLOW PIPE TO PASS THROUGH FOUNDATION WALL. REFER TO MECHANICAL FOR SIZES AND LOCATIONS OF PIPING, COORDINATE FINAL SIZES AND ELEVATIONS WITH MECHANICAL SUPPLIER.

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A1 9 SLEEVE WALL FOR UNDERGROUND PIPE PENETRATION. COORDINATE SLEEVE SIZE AND LOCATION WITH PLUMBING CONTRACTOR.

### LEGEND - STRUCTURAL - FOUNDATION

| | |
|---|---|
| 5F | STEPPED FOOTING. REFER TO TYPICAL DETAILS. CREATE EQUAL STEPS BETWEEN ADJACENT TOP OF FOOTING ELEVATIONS. |
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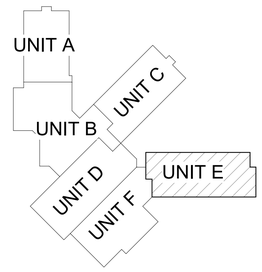
### EL SOL ELEMENTARY




**KEY PLAN**
SCALE: NO SCALE

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|---|---|
| ADDENDUM 1 | 05/08/26 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

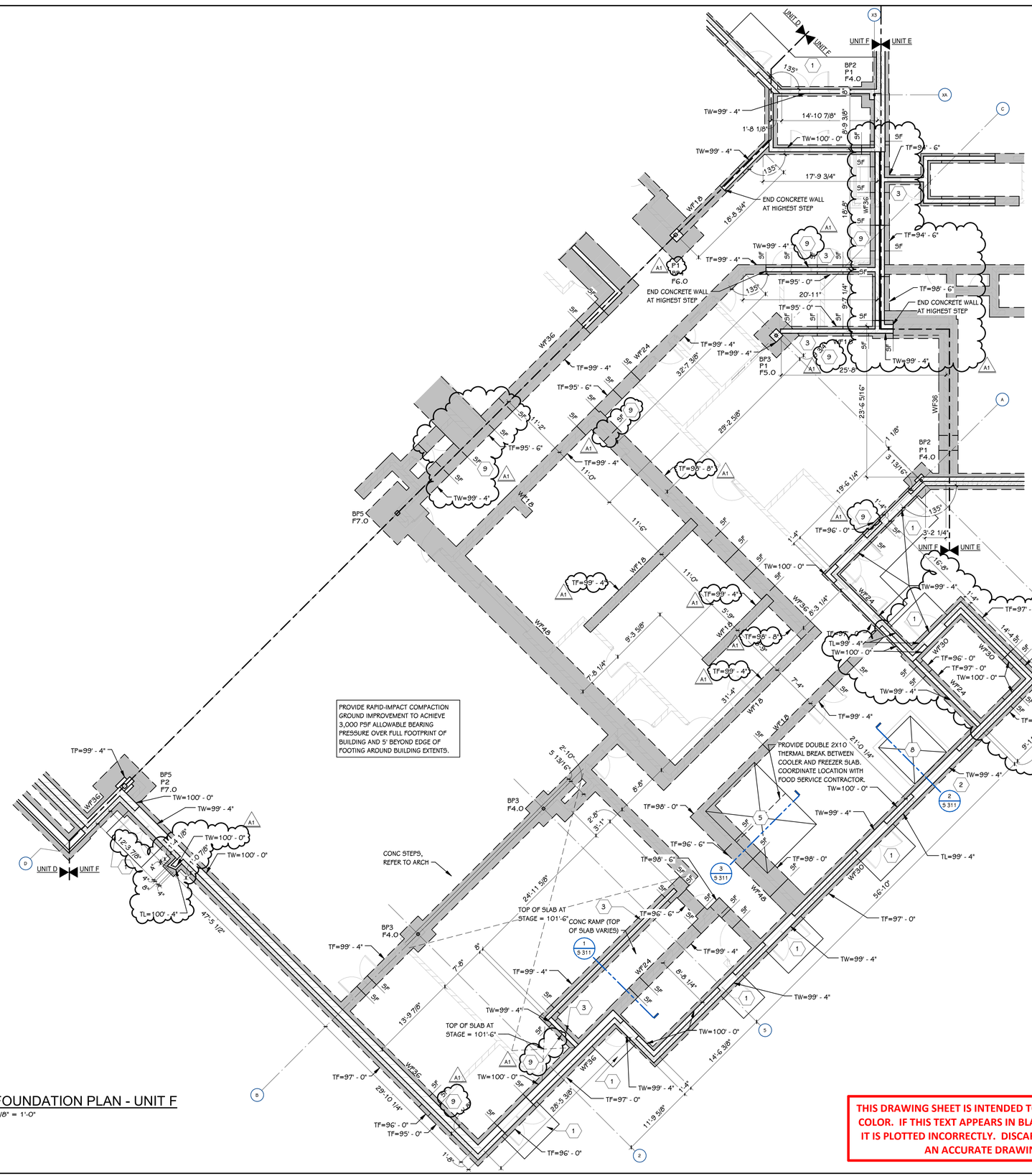
KALAMAZOO, MICHIGAN

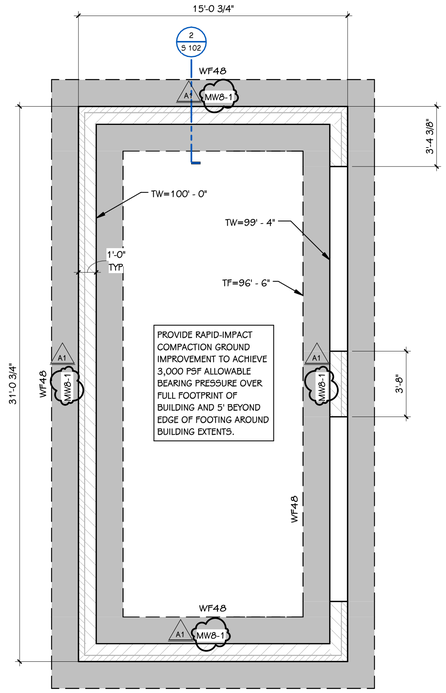
SHEET TITLE
FOUNDATION PLAN - UNIT E

DATE
APRIL 24, 2026

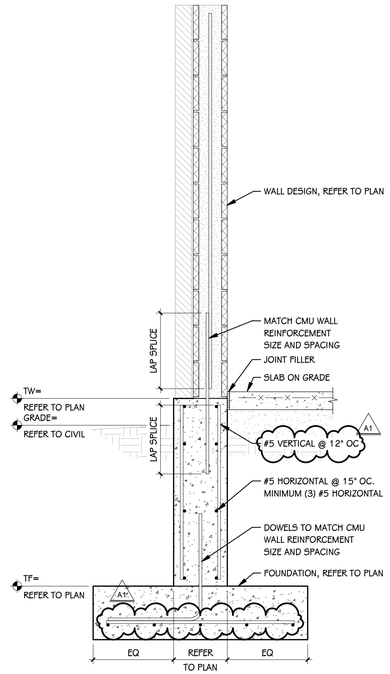
SHEET NUMBER
S101E
23-622.00

DRAWN BY: ACR 5/8/2026 1:12:15 PM

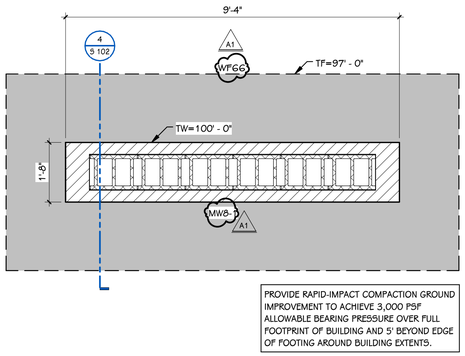

UNIT D
UNIT E
UNIT F
UNIT E
BP2 P1 F4.0
135°
TW=99' - 4"
14'-10 7/8"
#9 3.81"
1'-8 1/8"
TW=100' - 0"
TF=94' - 6"
17'-9 3/4"
END CONCRETE WALL AT HIGHEST STEP
WF18
WF36
18'-8 3/4"
TF=99' - 4"
TF=95' - 0"
20'-11"
9'-7 1/4"
TF=98' - 6"
WF24
BP3 P1 F5.0
25'-8"
TW=99' - 4"
32'-7 3/8"
29'-2 5/8"
23'-6 5/16"
TF=95' - 6"
11'-2"
11'-0"
TF=95' - 8"
BP5 F7.0
19'-6 1/4"
3'-2 1/4"
TF=96' - 0"
TW=100' - 0"
16'-8"
TF=97' - 0"
WF30
TL=99' - 4"
TF=94' - 6"
9'-11 3/4"
9'-3 5/8"
7'-8 1/4"
5'-5"
31'-4"
7'-4"
PROVIDE RAPID-IMPACT COMPACTION GROUND IMPROVEMENT TO ACHIEVE 3,000 PSF ALLOWABLE BEARING PRESSURE OVER FULL FOOTPRINT OF BUILDING AND 5' BEYOND EDGE OF FOOTING AROUND BUILDING EXTENTS.
PROVIDE DOUBLE 2X10 THERMAL BREAK BETWEEN COOLER AND FREEZER SLAB. COORDINATE LOCATION WITH FOOD SERVICE CONTRACTOR.
21'-0 1/4"
BP5 P2 F7.0
TW=100' - 0"
TW=99' - 4"
12'-3 7/8"
1'-4 1/8"
1'-0 7/8"
47'-5 1/2"
TL=100' - 4"
BP3 F4.0
CONC STEPS, REFER TO ARCH
24'-11 5/8"
TOP OF SLAB AT STAGE = 101'-6"
CONC RAMP (TOP OF SLAB VARIES)
TF=96' - 6"
TF=98' - 0"
TF=98' - 6"
TL=99' - 4"
56'-10"
TF=97' - 0"
7'-6"
13'-9 7/8"
29'-10 1/4"
TF=96' - 0"
TF=95' - 0"
1'-6"
8'-8 1/4"
14'-6 3/8"
28'-5 3/8"
11'-9 5/16"
TF=96' - 0"
2'-10"
5 13/16"
2'-6"
3'-1"
8'-8"
6'-11 3/4"
1'-4"
TF=97' - 0"
9'-11 3/8"
10"
TL=99' - 4"
TW=100' - 0"
TF=96' - 0"
TF=97' - 0"
TW=100' - 0"
TL=99' - 4"
TF=94' - 6"
14'-4 5/8"
1'-4"
TF=97' - 0"
TW=99' - 4"
TW=100' - 0"
TF=96' - 0"
TF=95' - 0"
TF=99' - 4"
TF=98' - 0"
TF=96' - 6"
TF=98' - 6"
TF=99' - 4"
TF=99' - 4"
TF=99' - 4



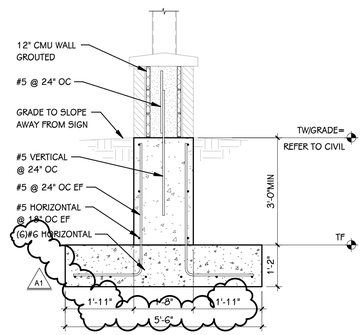

1 / S 102 DUMPSTER FOUNDATION PLAN
1/4" = 1'-0"




2 / S 102 DUMPSTER SECTION
3/4" = 1'-0"




3 / S 102 SIGN FOUNDATION PLAN
1/2" = 1'-0"

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## LEGEND - STRUCTURAL - FOUNDATION

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

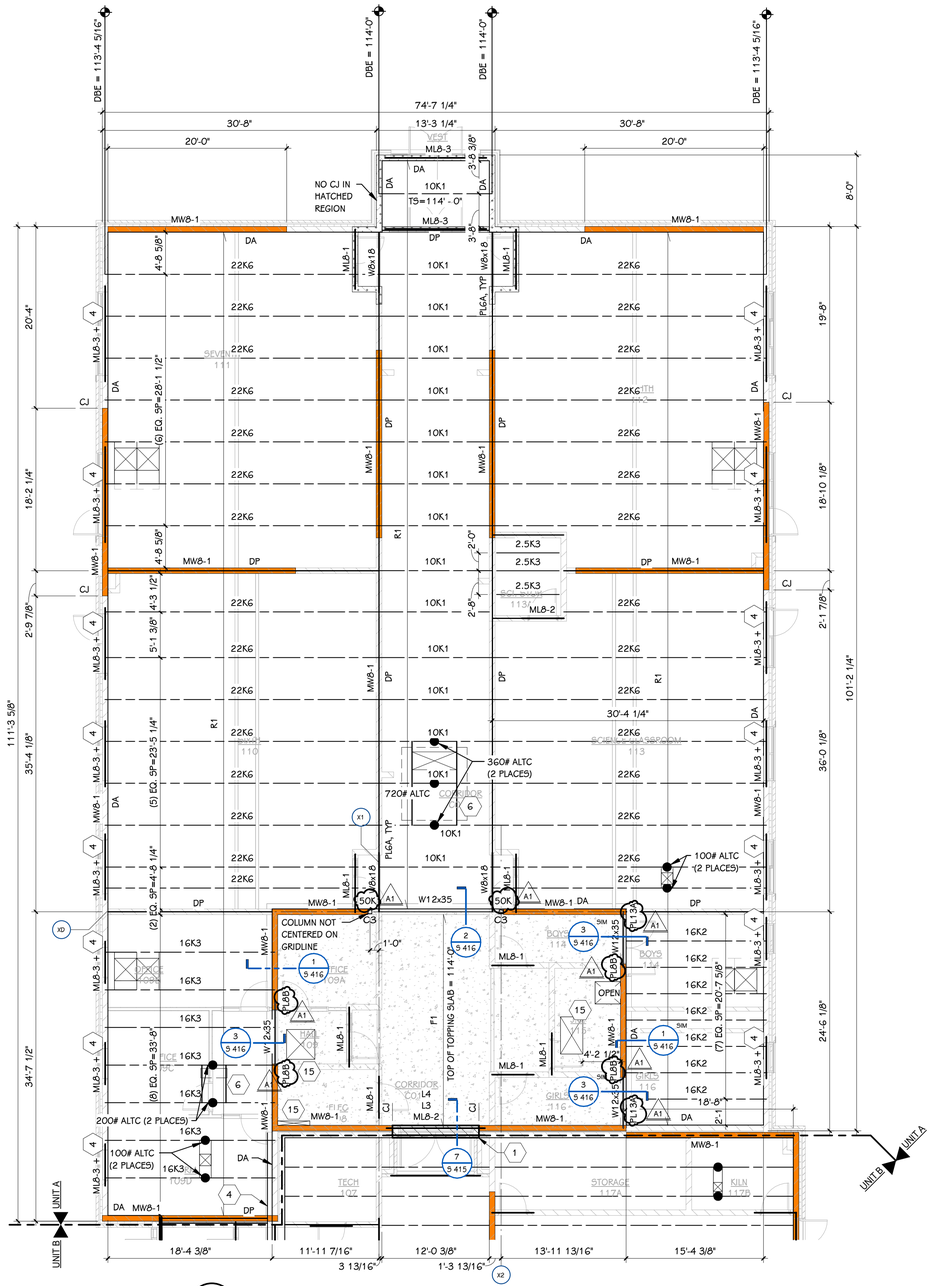
KALAMAZOO, MICHIGAN

SHEET TITLE
FOUNDATION PLAN - MISC

DATE
APRIL 24, 2026

SHEET NUMBER
S 102
23-622.00

DRAWN BY: ACR 5/8/2026 1:12:22 PM




## SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT A

1/8" = 1'-0"

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | SPOT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT SPOT ELEVATIONS AS INDICATED. |
| | INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS. |
| DP | CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS. |
| TOP TEXT<br>BTM TEXT | INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK. |
| BCDW<br>BC | CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER. |
| ALTC<br>or<br>ALBC | CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL. |

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | MOMENT CONNECTION, REFER TO TYPICAL DETAILS. |
| CX | COLUMN TAG, REFER TO COLUMN SCHEDULE. TAG APPEARS ON THE LEVEL CORRESPONDING WITH THE TOP OF THE COLUMN. |
| MWX | MASONRY WALL TYPE DESIGNATION, REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION. |
| LX or MLX | INDICATES LINTEL. REFER TO LINTEL SCHEDULE FOR SIZE OF LINTEL. 'L' PREFIX INDICATES STEEL LINTEL, 'ML' PREFIX INDICATES MASONRY LINTEL. |
| | SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING. |
| CJ | INDICATES SPECIFIC CONTROL JOINT LOCATIONS AS REQUIRED BY STRUCTURAL DESIGN. WHERE INDICATED CONTROL JOINTS EXCEED MAXIMUM SPACING REFER TO BOND BEAM REQUIREMENTS FOR REQUIRED WALL REINFORCING AND CONSTRUCTION. WHERE CJ IS NOT IDENTIFIED PROVIDE CONTROL JOINTS PER GENERAL NOTES ON SG 001. |
| TS | TOP OF STEEL |
| DBE | DECK BEARING ELEVATION |
| (A = XXK) | INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION. |
| DA | L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS. |

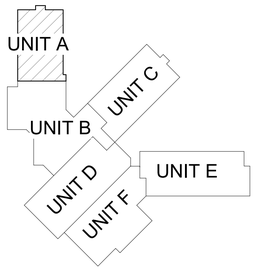
## NOTES - STRUCTURAL - FRAMING

1. TS ELEVATIONS AS FOLLOWS (UNO):
   STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
   UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
   UNITS D & F LOWER ROOF - 114'-3" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 114'-0 1/2"
   ALL OTHER LOCATIONS - REFER TO PLAN
2. REINFORCED MASONRY DESIGNATED THUS: MWx-x. REFER TO TYPICAL DETAILS FOR MASONRY WALL CONSTRUCTION. 8" MASONRY WALLS SHALL BE MW8-1 UNO, AND 12" MASONRY WALLS SHALL BE MW12-1 UNO.
3. ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS
4. REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS
5. ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS
6. WHERE NO SLOPE ARROWS ARE SHOWN, ROOF IS LEVEL.
7. FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.
8. PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1. REFER TO TYPICAL PORTAL FRAME DETAIL.
2. TOP OF BEAM TO FOLLOW SLOPE OF ROOF.
3. COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.
4. CONTINUOUS L4x4x1/4 (GALV.) FOR SUPPORT OF BRICK VENEER. REFER TO ARCHITECTURE DRAWINGS FOR TOP OF ANGLE HORIZONTAL LEG/BOTTOM OF BRICK ELEVATION. REFER TO TYPICAL BRICK SUPPORT BRACKET DETAIL.
5. 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.
6. REFER TO TYPICAL RTU SUPPORT DETAILS.
7. PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.
8. IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.
9. JOIST BRIDGING TO ACCOMMODATE DUCTS. COORDINATE WITH MECHANICAL. TYP BETWEEN JOISTS.
10. ANGLE TO BE CONTINUOUS ALONG FULL LENGTH OF WALL. SEE TYPICAL ROOF EDGE ANGLE SPLICE DETAIL.
11. HOLD PRECAST BACK AND BEAR ON ANGLE INSTEAD OF CMU OVER DUCT. COORDINATE LOCATION AND SIZE WITH MECHANICAL CONTRACTOR.
12. TOOTH IN MASONRY AT WALL INTERSECTION.
13. FABRICATOR TO ACCOMMODATE BEAM DEEP COPE IN CONNECTION DESIGN.
14. ELEVATOR HOIST BEAM BELOW (BY ELEVATOR SUPPLIER). PROVIDE BEARING PLATES AT EACH END OF HOIST BEAM. COORDINATE SIZE, LOCATION, AND ELEVATION OF BEARING PLATES WITH ELEVATOR SUPPLIER.
15. DUCT, PIPE, OR CONDUIT PENETRATION THROUGH FLOOR. PRECAST SUPPLIER TO COORDINATE SIZE AND LOCATION OF OPENING WITH MECHANICAL, PLUMBING, OR ELECTRICAL CONTRACTOR. NOT NECESSARILY ALL OPENINGS ARE SHOWN. PRECAST SUPPLIER TO PROVIDE HEADER FRAMING AT PENETRATIONS AS REQUIRED BY DESIGN.
16. 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW DECK BEARING.
17. 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW PRECAST BEARING.

**EL SOL ELEMENTARY**




**KEY PLAN**
SCALE: NO SCALE

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

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| ADDENDUM 1 | 05/08/26 |
|---|---|
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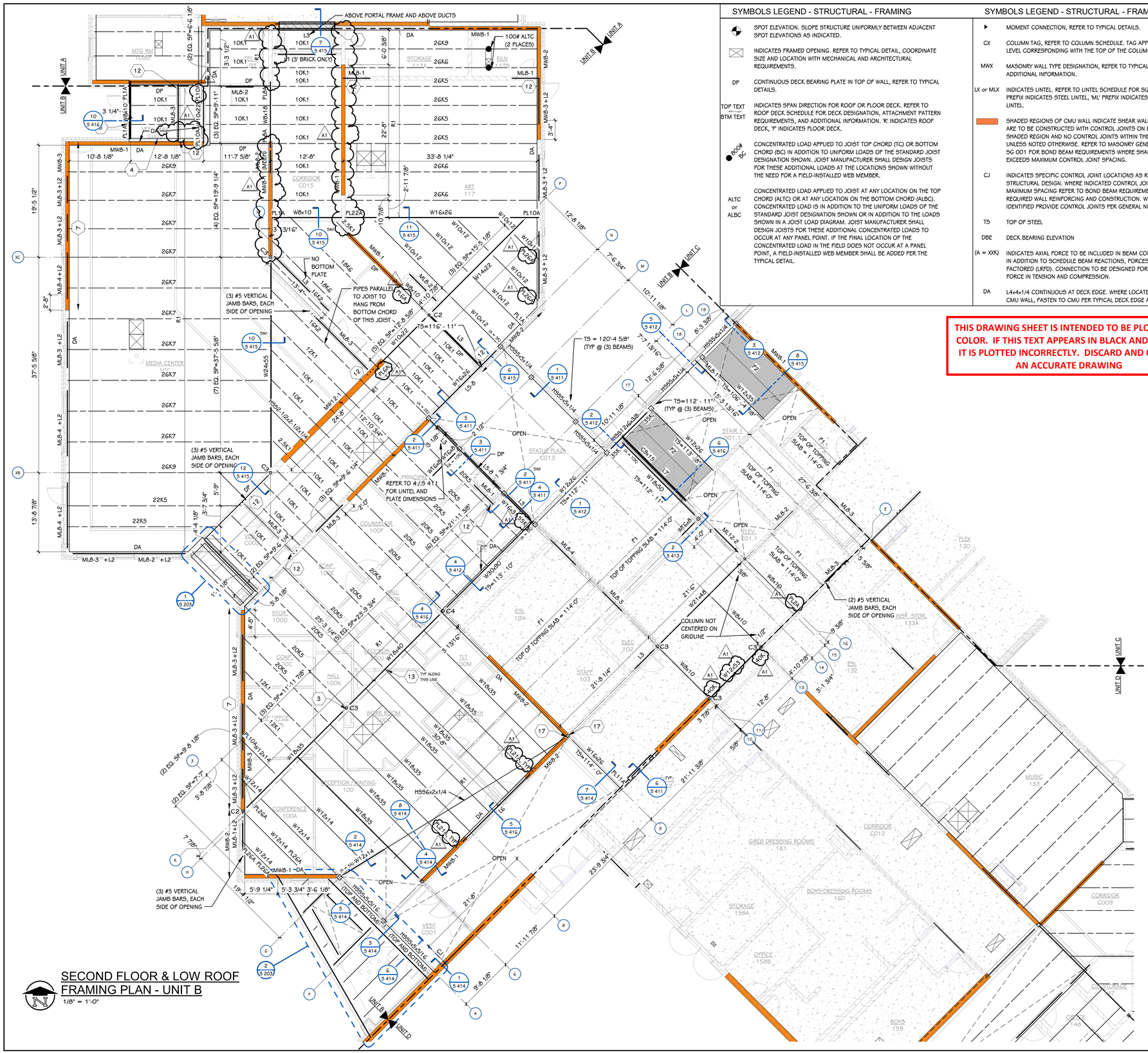


## SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT B

1/8" = 1'-0"

DRAWN BY: ACR 5/8/2026 1:12:31 PM

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

- 5POT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT 5POT ELEVATIONS AS INDICATED.
- INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS.
- DP — CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS.
- TOP TEXT / BTM TEXT — INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK.
- BOC / BC — CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER.
- ALTC or ALBC — CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL.

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

- ▸ — MOMENT CONNECTION, REFER TO TYPICAL DETAILS.
- CX — COLUMN TAG, REFER TO COLUMN SCHEDULE. TAG APPEARS ON THE LEVEL CORRESPONDING WITH THE TOP OF THE COLUMN.
- MWX — MASONRY WALL TYPE DESIGNATION, REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
- LX or MLX — INDICATES LINTEL. REFER TO LINTEL SCHEDULE FOR SIZE OF LINTEL. 'L' PREFIX INDICATES STEEL LINTEL, 'ML' PREFIX INDICATES MASONRY LINTEL.
- SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING.
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- TS — TOP OF STEEL
- DBE — DECK BEARING ELEVATION
- (A = XXK) — INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION.
- DA — L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS.

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## NOTES - STRUCTURAL - FRAMING

1. TS ELEVATIONS AS FOLLOWS (UNO):
   STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
   UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
   UNITS D & F LOWER ROOF - 114'-3" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 114'-0 1/2"
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5. 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.
6. REFER TO TYPICAL RTU SUPPORT DETAILS.
7. PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.
8. IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.
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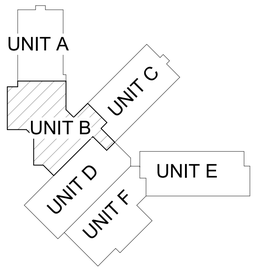


KEY PLAN
SCALE: NO SCALE

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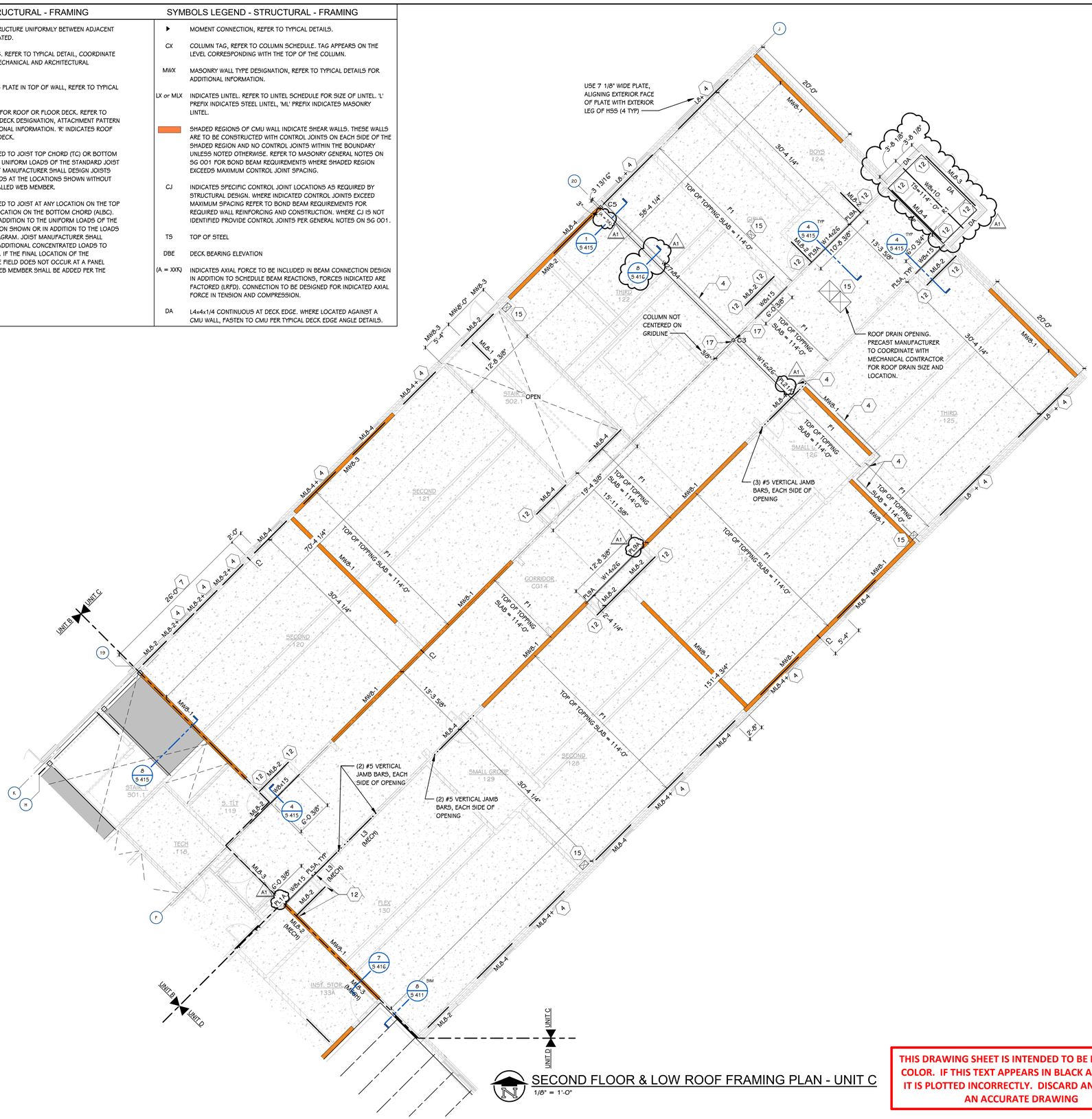


SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT C
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## KEYED NOTES - STRUCTURAL - FRAMING

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3 COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.

4 CONTINUOUS L4x4x1/4 (GALV.) FOR SUPPORT OF BRICK VENEER. REFER TO ARCHITECTURE DRAWINGS FOR TOP OF ANGLE HORIZONTAL LEG/BOTTOM OF BRICK ELEVATION. REFER TO TYPICAL BRICK SUPPORT BRACKET DETAIL.

5 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.

6 REFER TO TYPICAL RTU SUPPORT DETAILS.

7 PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.

8 IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.

9 JOIST BRIDGING TO ACCOMMODATE DUCTS. COORDINATE WITH MECHANICAL. TYP BETWEEN JOISTS.

10 ANGLE TO BE CONTINUOUS ALONG FULL LENGTH OF WALL. SEE TYPICAL ROOF EDGE ANGLE SPLICE DETAIL.

11 HOLD PRECAST BACK AND BEAR ON ANGLE INSTEAD OF CMU OVER DUCT. COORDINATE LOCATION AND SIZE WITH MECHANICAL CONTRACTOR.

12 TOOTH IN MASONRY AT WALL INTERSECTION.

13 FABRICATOR TO ACCOMMODATE BEAM DEEP COPE IN CONNECTION DESIGN.

14 ELEVATOR HOIST BEAM BELOW (BY ELEVATOR SUPPLIER). PROVIDE BEARING PLATES AT EACH END OF HOIST BEAM. COORDINATE SIZE, LOCATION, AND ELEVATION OF BEARING PLATES WITH ELEVATOR SUPPLIER.

15 DUCT, PIPE, OR CONDUIT PENETRATION THROUGH FLOOR. PRECAST SUPPLIER TO COORDINATE SIZE AND LOCATION OF OPENING WITH MECHANICAL, PLUMBING, OR ELECTRICAL CONTRACTOR. NOT NECESSARILY ALL OPENINGS ARE SHOWN. PRECAST SUPPLIER TO PROVIDE HEADER FRAMING AT PENETRATIONS AS REQUIRED BY DESIGN.

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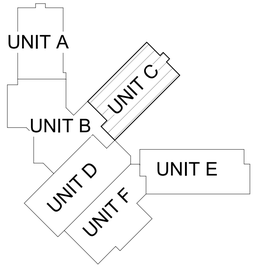
## EL SOL ELEMENTARY




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM 1 | 05/08/26 |
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| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT C

DATE
APRIL 24, 2026

SHEET NUMBER
S 201C
23-622.00

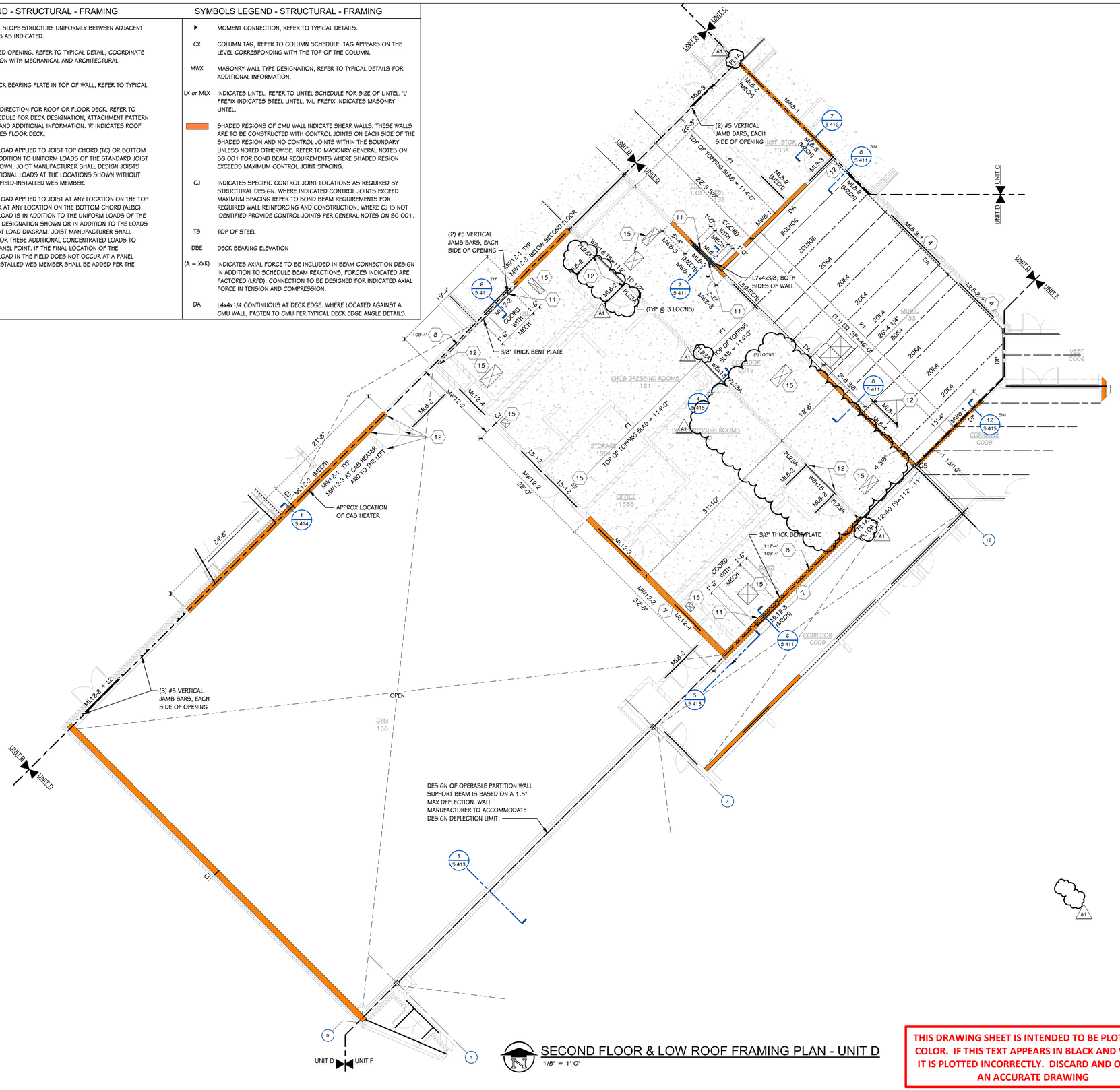
DRAWN BY: ACR 5/8/2026 1:12:37 PM

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | SPOT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT SPOT ELEVATIONS AS INDICATED. |
| | INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS. |
| DP | CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS. |
| TOP TEXT<br>BTM TEXT | INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK. |
| ROOM BC | CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER. |
| ALTC or ALBC | CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL. |

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | MOMENT CONNECTION, REFER TO TYPICAL DETAILS. |
| CX | COLUMN TAG, REFER TO COLUMN SCHEDULE. TAG APPEARS ON THE LEVEL CORRESPONDING WITH THE TOP OF THE COLUMN. |
| MWX | MASONRY WALL TYPE DESIGNATION, REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION. |
| LX or MLX | INDICATES LINTEL. REFER TO LINTEL SCHEDULE FOR SIZE OF LINTEL. 'L' PREFIX INDICATES STEEL LINTEL, 'ML' PREFIX INDICATES MASONRY LINTEL. |
| | SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING. |
| CJ | INDICATES SPECIFIC CONTROL JOINT LOCATIONS AS REQUIRED BY STRUCTURAL DESIGN. WHERE INDICATED CONTROL JOINTS EXCEED MAXIMUM SPACING REFER TO BOND BEAM REQUIREMENTS FOR REQUIRED WALL REINFORCING AND CONSTRUCTION. WHERE CJ IS NOT IDENTIFIED PROVIDE CONTROL JOINTS PER GENERAL NOTES ON SG 001. |
| TS | TOP OF STEEL |
| DBE | DECK BEARING ELEVATION |
| (A = XXK) | INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION. |
| DA | L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS. |




SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT D
1/8" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

## NOTES - STRUCTURAL - FRAMING

1 TS ELEVATIONS AS FOLLOWS (UNO):
STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
UNITS D & F LOWER ROOF - 114'-3" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 114'-0 1/2"
ALL OTHER LOCATIONS - REFER TO PLAN

2 REINFORCED MASONRY DESIGNATED THUS: MWx-x. REFER TO TYPICAL DETAILS FOR MASONRY WALL CONSTRUCTION. 8" MASONRY WALLS SHALL BE MW8-1 UNO, AND 12" MASONRY WALLS SHALL BE MW12-1 UNO.

3 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS

4 REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS

5 ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS

6 WHERE NO SLOPE ARROWS ARE SHOWN, ROOF IS LEVEL.

7 FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.

8 PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1 REFER TO TYPICAL PORTAL FRAME DETAIL.

2 TOP OF BEAM TO FOLLOW SLOPE OF ROOF.

3 COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.

4 CONTINUOUS L4x4x1/4 (GALV.) FOR SUPPORT OF BRICK VENEER. REFER TO ARCHITECTURE DRAWINGS FOR TOP OF ANGLE HORIZONTAL LEG/BOTTOM OF BRICK ELEVATION. REFER TO TYPICAL BRICK SUPPORT BRACKET DETAIL.

5 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.

6 REFER TO TYPICAL RTU SUPPORT DETAILS.

7 PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.

8 IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.

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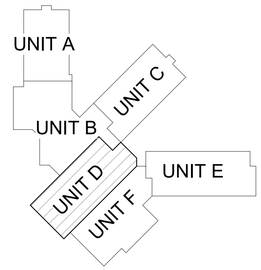
## EL SOL ELEMENTARY




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM 1 | 05/08/26 |
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NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
S 201D
23-622.00

DRAWN BY: ACR 5/8/2026 1:12:39 PM

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
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| TS | TOP OF STEEL |
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| DA | L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS. |

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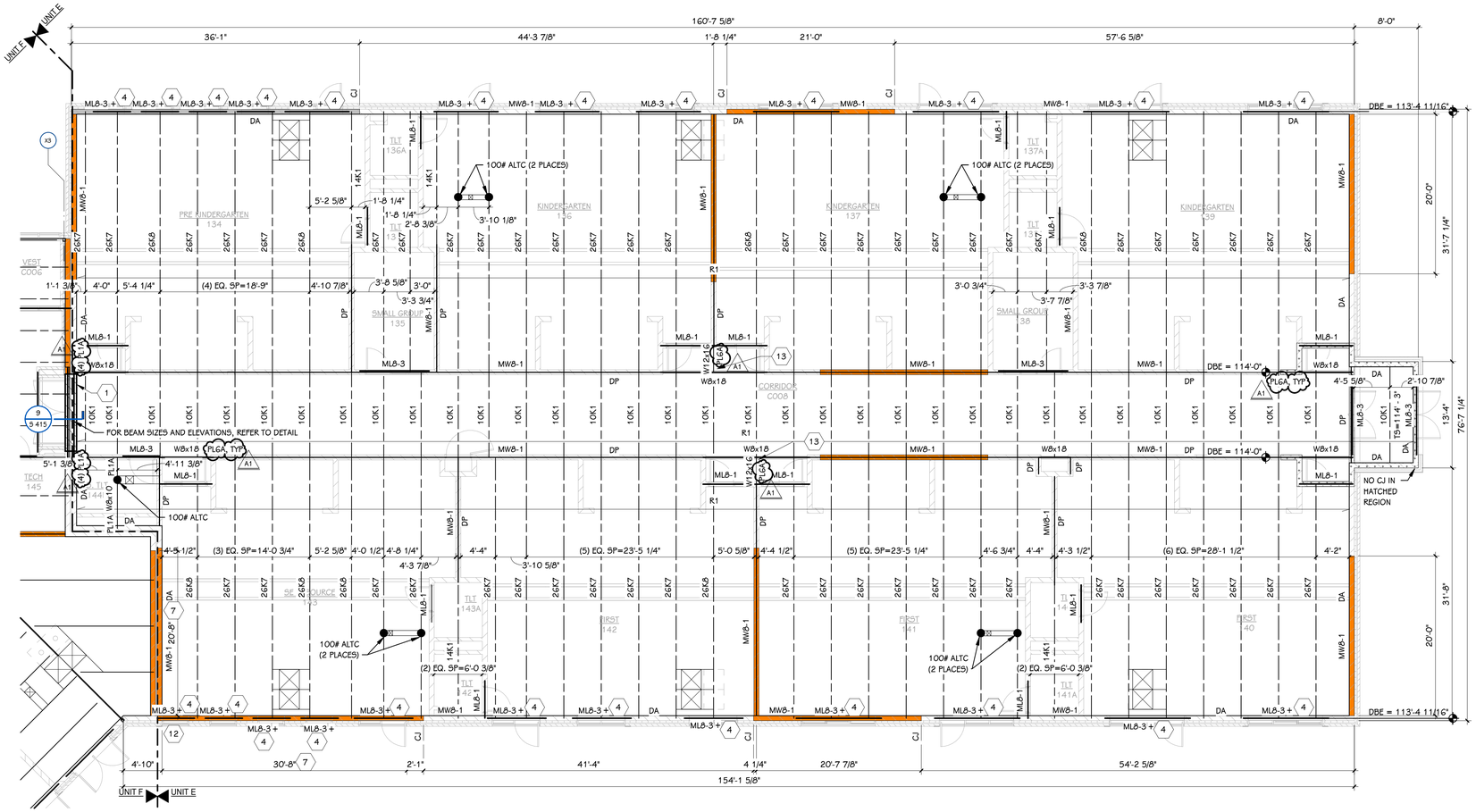
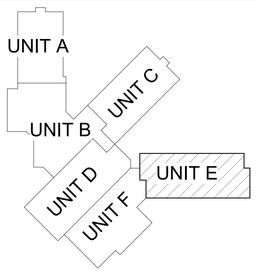



## SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT E

1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**EL SOL ELEMENTARY**




**KEY PLAN**
SCALE: NO SCALE

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| | |
|---|---|
| ADDENDUM 1 | 05/08/26 |
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PROJECT TITLE
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OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT E

DATE
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SHEET NUMBER
S 201E
23-622.00

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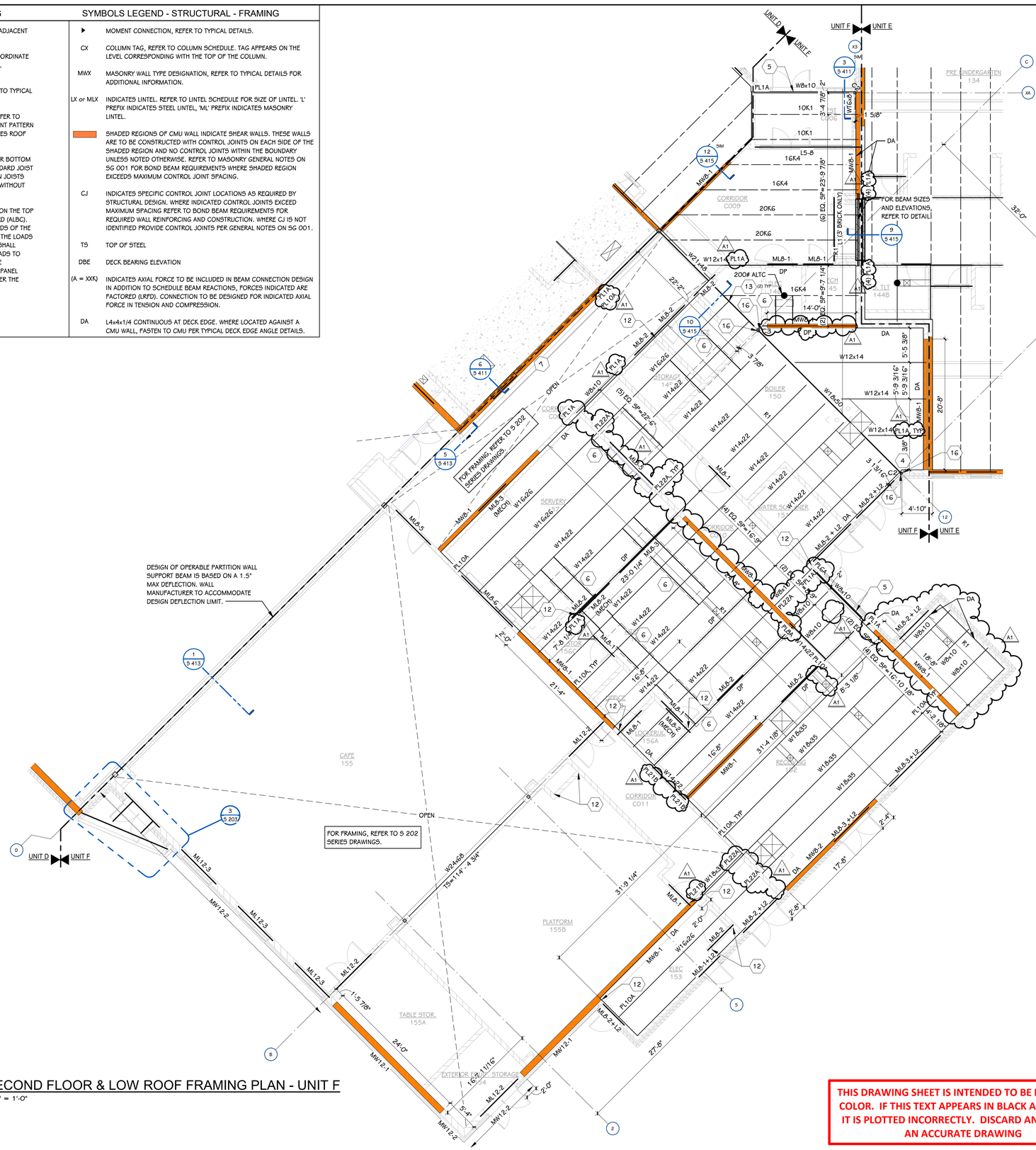


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1/8" = 1'-0"

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## NOTES - STRUCTURAL - FRAMING

1 T5 ELEVATIONS AS FOLLOWS (UNO):
STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
UNITS D & F LOWER ROOF - 114'-3" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 114'-0 1/2"
ALL OTHER LOCATIONS - REFER TO PLAN

2 REINFORCED MASONRY DESIGNATED THUS: MWx-x. REFER TO TYPICAL DETAILS FOR MASONRY WALL CONSTRUCTION. 8" MASONRY WALLS SHALL BE MW8-1 UNO, AND 12" MASONRY WALLS SHALL BE MW12-1 UNO.

3 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS

4 REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS

5 ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS

6 WHERE NO SLOPE ARROWS ARE SHOWN, ROOF IS LEVEL.

7 FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.

8 PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1 REFER TO TYPICAL PORTAL FRAME DETAIL.

2 TOP OF BEAM TO FOLLOW SLOPE OF ROOF.

3 COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.

4 CONTINUOUS L4x4x1/4 (GALV.) FOR SUPPORT OF BRICK VENEER. REFER TO ARCHITECTURE DRAWINGS FOR TOP OF ANGLE HORIZONTAL LEG/BOTTOM OF BRICK ELEVATION. REFER TO TYPICAL BRICK SUPPORT BRACKET DETAIL.

5 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.

6 REFER TO TYPICAL RTU SUPPORT DETAILS.

7 PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.

8 IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.

9 JOIST BRIDGING TO ACCOMMODATE DUCTS. COORDINATE WITH MECHANICAL. TYP BETWEEN JOISTS.

10 ANGLE TO BE CONTINUOUS ALONG FULL LENGTH OF WALL. SEE TYPICAL ROOF EDGE ANGLE SPLICE DETAIL.

11 HOLD PRECAST BACK AND BEAR ON ANGLE INSTEAD OF CMU OVER DUCT. COORDINATE LOCATION AND SIZE WITH MECHANICAL CONTRACTOR.

12 TOOTH IN MASONRY AT WALL INTERSECTION.

13 FABRICATOR TO ACCOMMODATE BEAM DEEP COPE IN CONNECTION DESIGN.

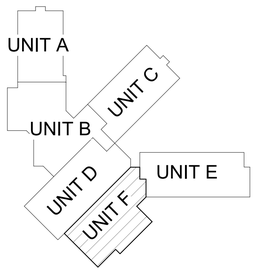
14 ELEVATOR HOIST BEAM BELOW (BY ELEVATOR SUPPLIER). PROVIDE BEARING PLATES AT EACH END OF HOIST BEAM. COORDINATE SIZE, LOCATION, AND ELEVATION OF BEARING PLATES WITH ELEVATOR SUPPLIER.

15 DUCT, PIPE, OR CONDUIT PENETRATION THROUGH FLOOR. PRECAST SUPPLIER TO COORDINATE SIZE AND LOCATION OF OPENING WITH MECHANICAL, PLUMBING, OR ELECTRICAL CONTRACTOR. NOT NECESSARILY ALL OPENINGS ARE SHOWN. PRECAST SUPPLIER TO PROVIDE HEADER FRAMING AT PENETRATIONS AS REQUIRED BY DESIGN.

16 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW DECK BEARING.

17 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW PRECAST BEARING.

## EL SOL ELEMENTARY




KEY PLAN
SCALE: NO SCALE

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|---|---|
| ADDENDUM 1 | 05/08/26 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

DATE
APRIL 24, 2026

SHEET TITLE
SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT F

SHEET NUMBER
S 201F
23-622.00

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | SPOT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT SPOT ELEVATIONS AS INDICATED. |
| | INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS. |
| DP | CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS. |
| TOP TEXT<br>BTM TEXT | INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK. |
| BOTH BC | CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER. |
| ALTC<br>or<br>ALBC | CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL. |

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | MOMENT CONNECTION, REFER TO TYPICAL DETAILS. |
| CX | COLUMN TAG, REFER TO COLUMN SCHEDULE. TAG APPEARS ON THE LEVEL CORRESPONDING WITH THE TOP OF THE COLUMN. |
| MWX | MASONRY WALL TYPE DESIGNATION, REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION. |
| LX or MLX | INDICATES LINTEL. REFER TO LINTEL SCHEDULE FOR SIZE OF LINTEL. 'L' PREFIX INDICATES STEEL LINTEL, 'ML' PREFIX INDICATES MASONRY LINTEL. |
| | SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING. |
| CJ | INDICATES SPECIFIC CONTROL JOINT LOCATIONS AS REQUIRED BY STRUCTURAL DESIGN. WHERE INDICATED CONTROL JOINTS EXCEED MAXIMUM SPACING REFER TO BOND BEAM REQUIREMENTS FOR REQUIRED WALL REINFORCING AND CONSTRUCTION. WHERE CJ IS NOT IDENTIFIED PROVIDE CONTROL JOINTS PER GENERAL NOTES ON SG 001. |
| TS | TOP OF STEEL |
| DBE | DECK BEARING ELEVATION |
| (A = XXK) | INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION. |
| DA | L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS. |

## NOTES - STRUCTURAL - FRAMING

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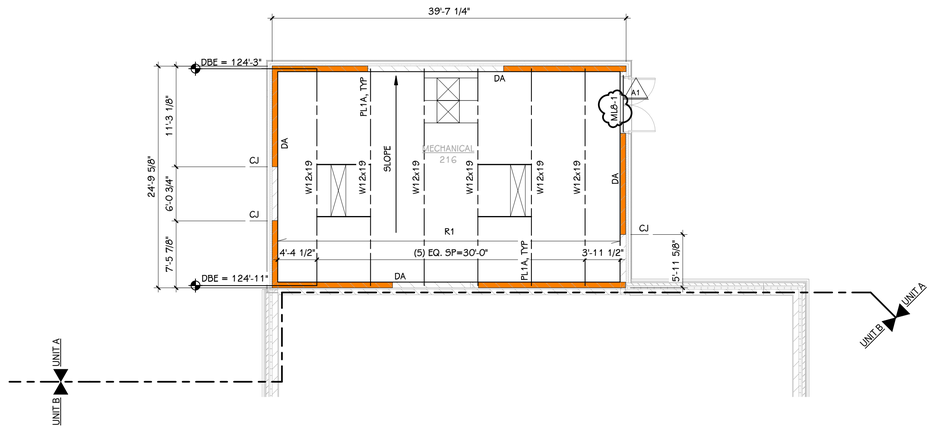
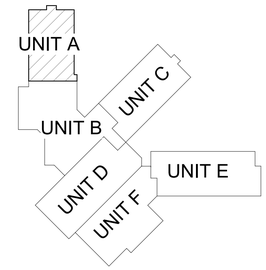



HIGH ROOF FRAMING PLAN - UNIT A
1/8" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

EL SOL ELEMENTARY




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM 1 | 05/08/26 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

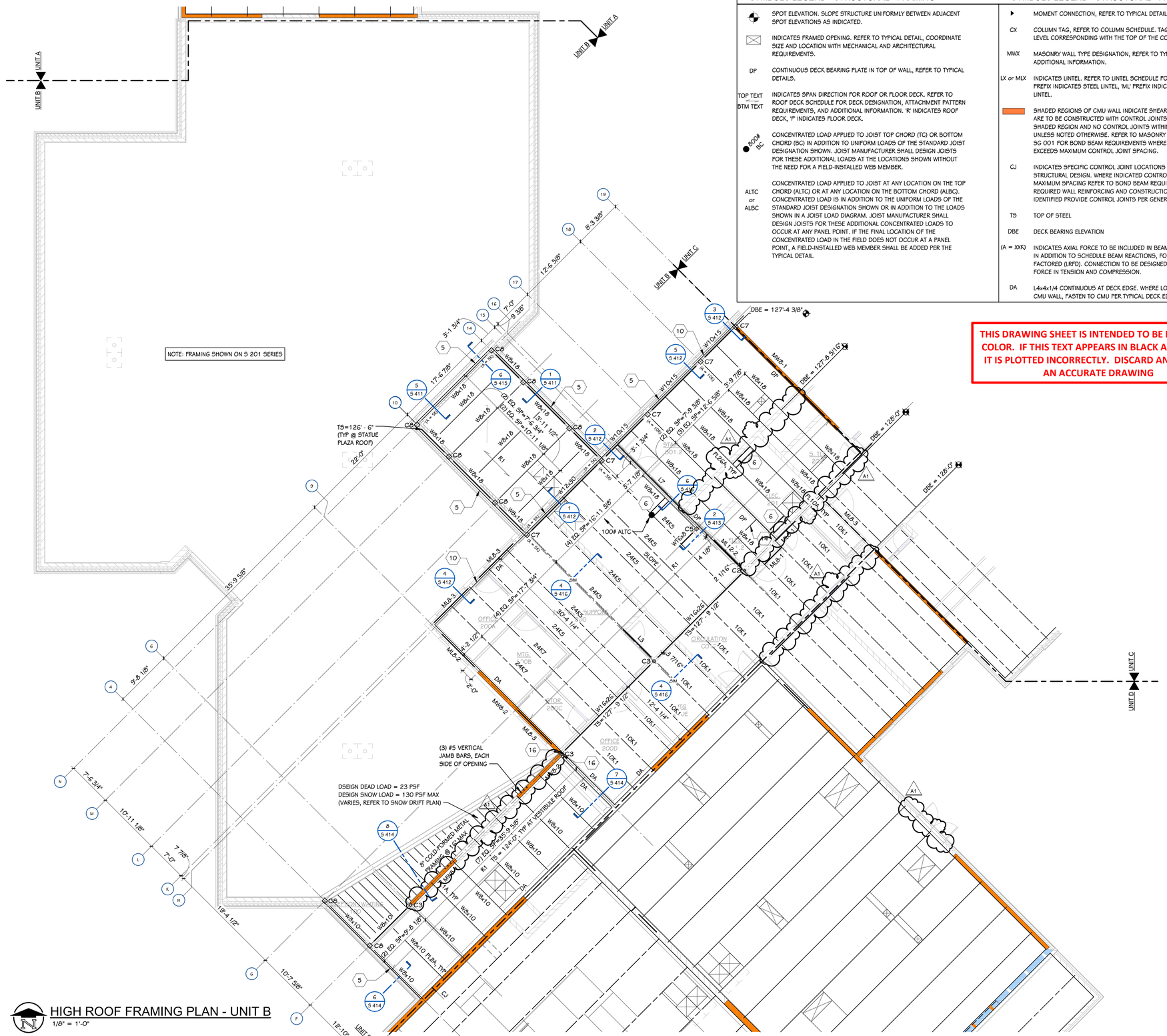
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
HIGH ROOF FRAMING PLAN - UNIT A

DATE
APRIL 24, 2026

SHEET NUMBER
S 202A
23-622.00




HIGH ROOF FRAMING PLAN - UNIT B
1/8" = 1'-0"

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## SYMBOLS LEGEND - STRUCTURAL - FRAMING

- 5POT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT 5POT ELEVATIONS AS INDICATED.
- INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS.
- DP — CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS.
- TOP TEXT / BTM TEXT — INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK.
- BOW / BC — CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER.
- ALTC or ALBC — CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL.

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

- ▸ — MOMENT CONNECTION, REFER TO TYPICAL DETAILS.
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- T5 — TOP OF STEEL
- DBE — DECK BEARING ELEVATION
- (A = XXK) — INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION.
- DA — L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS.

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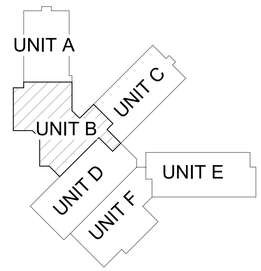


**KEY PLAN**
SCALE: NO SCALE

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SHEET TITLE
HIGH ROOF FRAMING PLAN - UNIT B

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|---|---|
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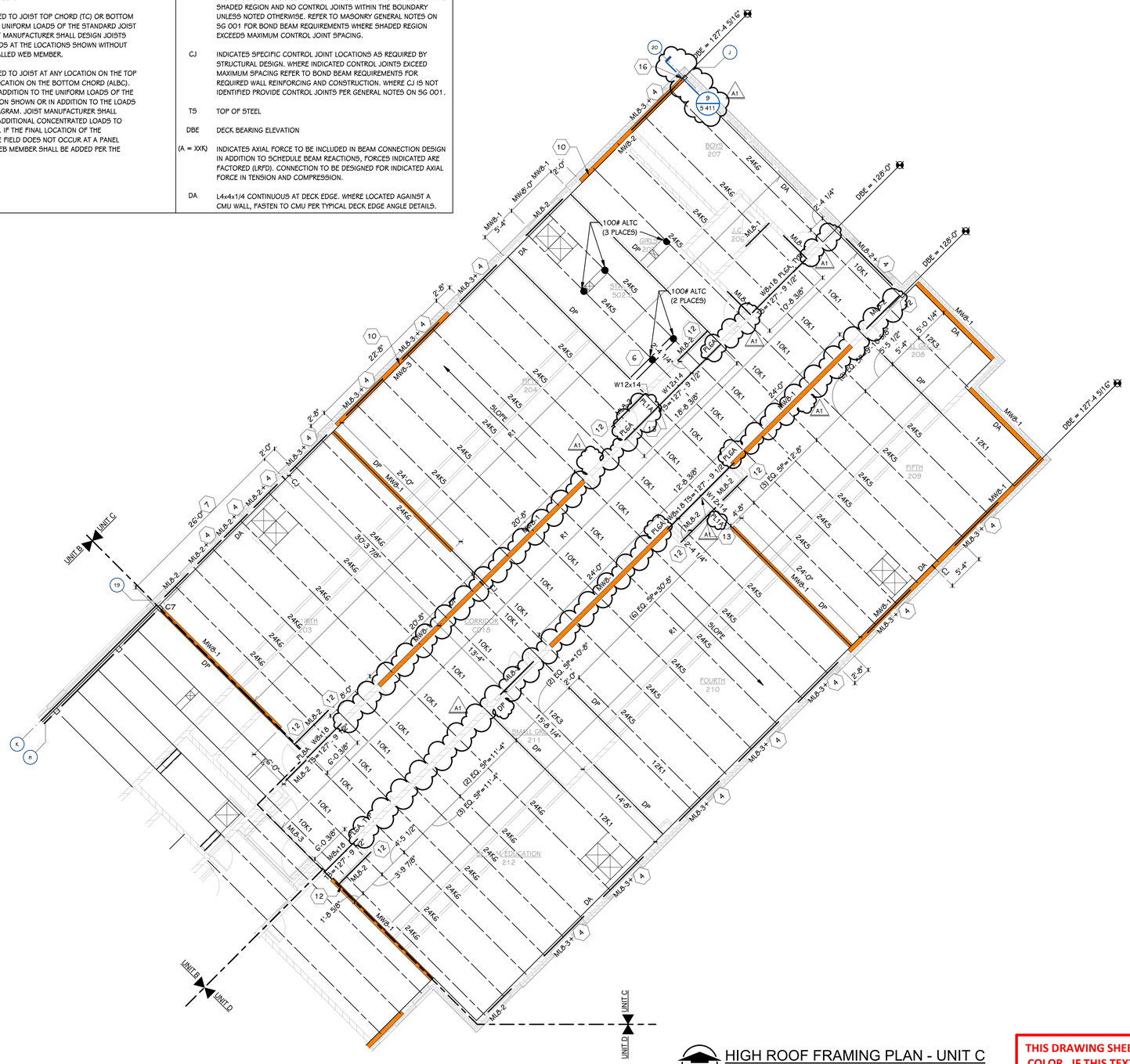
| MWX | MASONRY WALL TYPE DESIGNATION, REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION. |
| LX or MLX | INDICATES LINTEL. REFER TO LINTEL SCHEDULE FOR SIZE OF LINTEL. 'L' PREFIX INDICATES STEEL LINTEL, 'ML' PREFIX INDICATES MASONRY LINTEL. |
| | SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING. |
| CJ | INDICATES SPECIFIC CONTROL JOINT LOCATIONS AS REQUIRED BY STRUCTURAL DESIGN. WHERE INDICATED CONTROL JOINTS EXCEED MAXIMUM SPACING REFER TO BOND BEAM REQUIREMENTS FOR REQUIRED WALL REINFORCING AND CONSTRUCTION. WHERE CJ IS NOT IDENTIFIED PROVIDE CONTROL JOINTS PER GENERAL NOTES ON SG 001. |
| TS | TOP OF STEEL |
| DBE | DECK BEARING ELEVATION |
| (A = XXK) | INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION. |
| DA | L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS. |




THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

## NOTES - STRUCTURAL - FRAMING

1 TS ELEVATIONS AS FOLLOWS (UNO):
STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
UNITS D & F LOWER ROOF - 114'-3" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 114'-0 1/2"
ALL OTHER LOCATIONS - REFER TO PLAN

2 REINFORCED MASONRY DESIGNATED THUS: MWx-x. REFER TO TYPICAL DETAILS FOR MASONRY WALL CONSTRUCTION. 8" MASONRY WALLS SHALL BE MW8-1 UNO, AND 12" MASONRY WALLS SHALL BE MW12-1 UNO.

3 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS

4 REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS

5 ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS

6 WHERE NO SLOPE ARROWS ARE SHOWN, ROOF IS LEVEL.

7 FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.

8 PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1 REFER TO TYPICAL PORTAL FRAME DETAIL.

2 TOP OF BEAM TO FOLLOW SLOPE OF ROOF.

3 COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.

4 CONTINUOUS L4x4x1/4 (GALV.) FOR SUPPORT OF BRICK VENEER. REFER TO ARCHITECTURE DRAWINGS FOR TOP OF ANGLE HORIZONTAL LEG/BOTTOM OF BRICK ELEVATION. REFER TO TYPICAL BRICK SUPPORT BRACKET DETAIL.

5 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.

6 REFER TO TYPICAL RTU SUPPORT DETAILS.

7 PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.

8 IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.

9 JOIST BRIDGING TO ACCOMMODATE DUCTS. COORDINATE WITH MECHANICAL. TYP BETWEEN JOISTS.

10 ANGLE TO BE CONTINUOUS ALONG FULL LENGTH OF WALL. SEE TYPICAL ROOF EDGE ANGLE SPLICE DETAIL.

11 HOLD PRECAST BACK AND BEAR ON ANGLE INSTEAD OF CMU OVER DUCT. COORDINATE LOCATION AND SIZE WITH MECHANICAL CONTRACTOR.

12 TOOTH IN MASONRY AT WALL INTERSECTION.

13 FABRICATOR TO ACCOMMODATE BEAM DEEP COPE IN CONNECTION DESIGN.

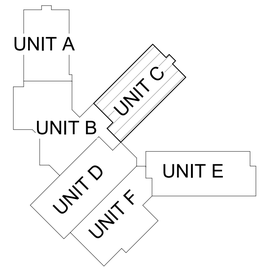
14 ELEVATOR HOIST BEAM BELOW (BY ELEVATOR SUPPLIER). PROVIDE BEARING PLATES AT EACH END OF HOIST BEAM. COORDINATE SIZE, LOCATION, AND ELEVATION OF BEARING PLATES WITH ELEVATOR SUPPLIER.

15 DUCT, PIPE, OR CONDUIT PENETRATION THROUGH FLOOR. PRECAST SUPPLIER TO COORDINATE SIZE AND LOCATION OF OPENING WITH MECHANICAL, PLUMBING, OR ELECTRICAL CONTRACTOR. NOT NECESSARILY ALL OPENINGS ARE SHOWN. PRECAST SUPPLIER TO PROVIDE HEADER FRAMING AT PENETRATIONS AS REQUIRED BY DESIGN.

16 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW DECK BEARING.

17 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW PRECAST BEARING.

## EL SOL ELEMENTARY




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM 1 | 05/08/26 |
|---|---|
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
HIGH ROOF FRAMING PLAN - UNIT C

DATE
APRIL 24, 2026

SHEET NUMBER
S 202C
23-622.00

DRAWN BY: ACR 5/8/2026 1:12:59 PM

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | SPOT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT SPOT ELEVATIONS AS INDICATED. |
| | INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS. |
| DP | CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS. |
| TOP TEXT<br>BTM TEXT | INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK. |
| ROOM BC | CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER. |
| ALTC<br>or<br>ALBC | CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL. |

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| ▶ | MOMENT CONNECTION, REFER TO TYPICAL DETAILS. |
| CX | COLUMN TAG, REFER TO COLUMN SCHEDULE. TAG APPEARS ON THE LEVEL CORRESPONDING WITH THE TOP OF THE COLUMN. |
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| | SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING. |
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| TS | TOP OF STEEL |
| DBE | DECK BEARING ELEVATION |
| (A = XXK) | INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION. |
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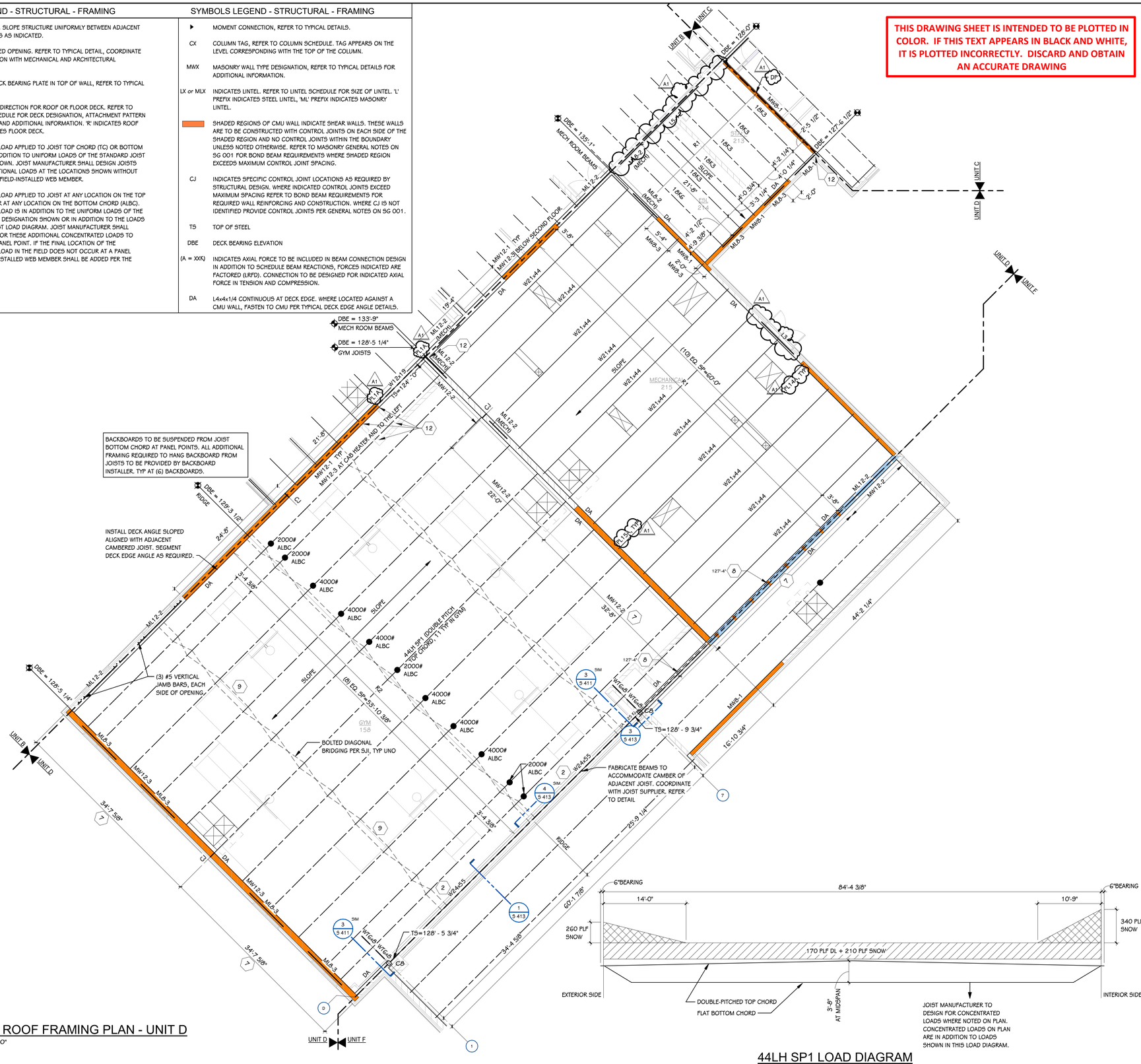


## HIGH ROOF FRAMING PLAN - UNIT D

1/8" = 1'-0"




## 44LH SP1 LOAD DIAGRAM

SCALE: NONE

## NOTES - STRUCTURAL - FRAMING

1 TS ELEVATIONS AS FOLLOWS (UNO):
STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
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7 FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.

8 PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1 REFER TO TYPICAL PORTAL FRAME DETAIL.

2 TOP OF BEAM TO FOLLOW SLOPE OF ROOF.

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5 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.

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8 IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.

9 JOIST BRIDGING TO ACCOMMODATE DUCTS. COORDINATE WITH MECHANICAL. TYP BETWEEN JOISTS.

10 ANGLE TO BE CONTINUOUS ALONG FULL LENGTH OF WALL. SEE TYPICAL ROOF EDGE ANGLE SPLICE DETAIL.

11 HOLD PRECAST BACK AND BEAR ON ANGLE INSTEAD OF CMU OVER DUCT. COORDINATE LOCATION AND SIZE WITH MECHANICAL CONTRACTOR.

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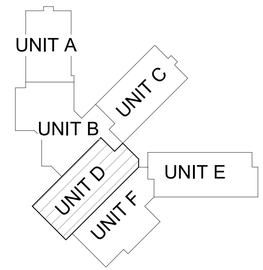
## EL SOL ELEMENTARY




## KEY PLAN

SCALE: NO SCALE

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| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
HIGH ROOF FRAMING PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
S 202D
23-622.00

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
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| DP | CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS. |
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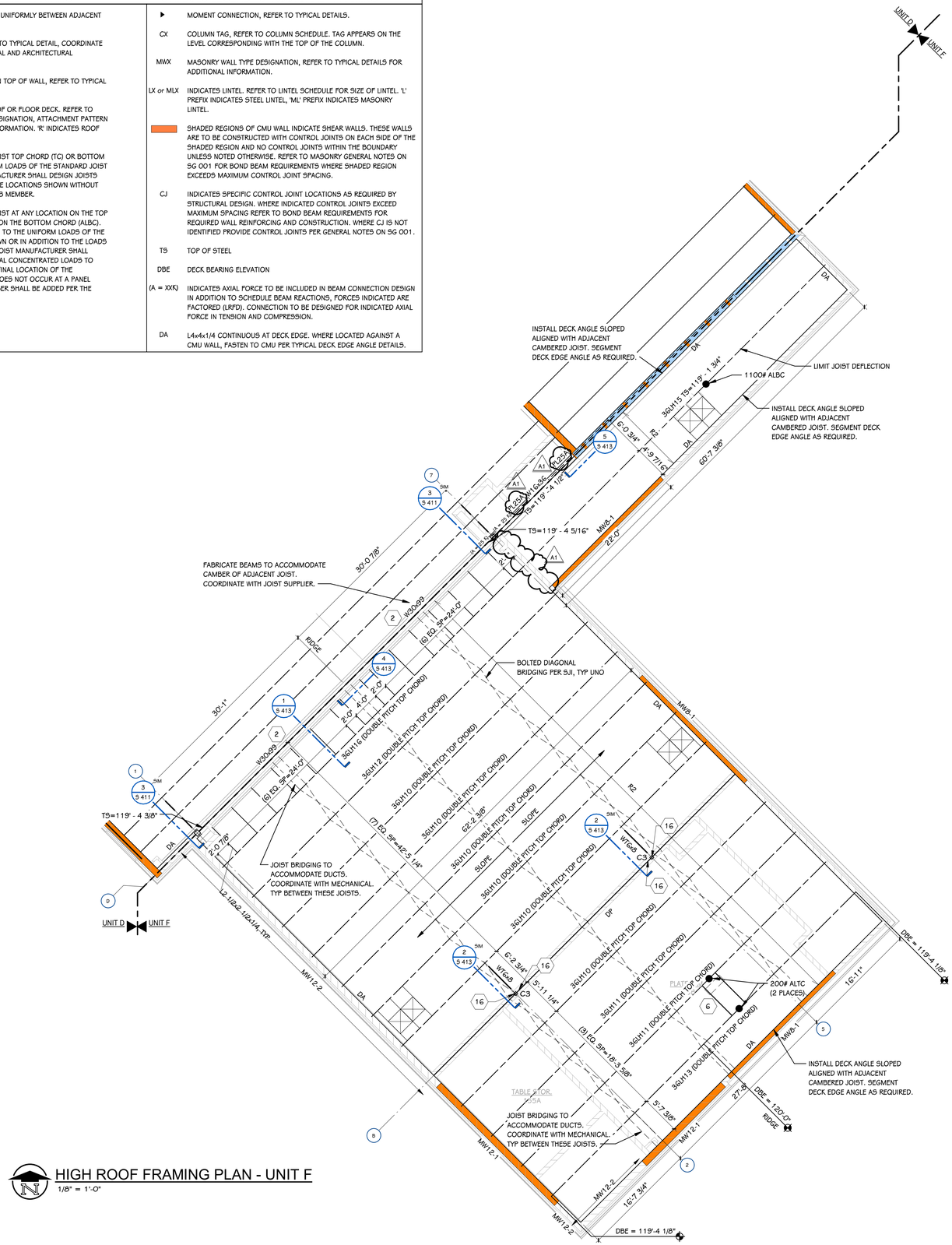


## HIGH ROOF FRAMING PLAN - UNIT F

1/8" = 1'-0"

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7 FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.

8 PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1 REFER TO TYPICAL PORTAL FRAME DETAIL.

2 TOP OF BEAM TO FOLLOW SLOPE OF ROOF.

3 COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.

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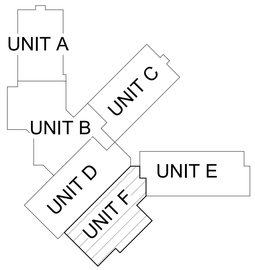


## KEY PLAN

SCALE: NO SCALE

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KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
HIGH ROOF FRAMING PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
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23-622.00

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## SYMBOLS LEGEND - STRUCTURAL - FRAMING

| | |
|---|---|
| | SPOT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT SPOT ELEVATIONS AS INDICATED. |
| | INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS. |
| DP | CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS. |
| TOP TEXT<br>BTM TEXT | INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK. |
| BOW BC | CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER. |
| ALTC or ALBC | CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL. |

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

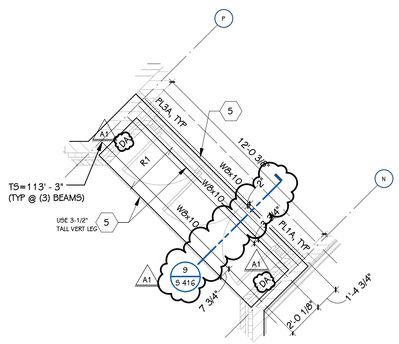
| | |
|---|---|
| | MOMENT CONNECTION, REFER TO TYPICAL DETAILS. |
| CX | COLUMN TAG, REFER TO COLUMN SCHEDULE. TAG APPEARS ON THE LEVEL CORRESPONDING WITH THE TOP OF THE COLUMN. |
| MWX | MASONRY WALL TYPE DESIGNATION, REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION. |
| LX or MLX | INDICATES LINTEL. REFER TO LINTEL SCHEDULE FOR SIZE OF LINTEL. 'L' PREFIX INDICATES STEEL LINTEL, 'ML' PREFIX INDICATES MASONRY LINTEL. |
| | SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING. |
| CJ | INDICATES SPECIFIC CONTROL JOINT LOCATIONS AS REQUIRED BY STRUCTURAL DESIGN. WHERE INDICATED CONTROL JOINTS EXCEED MAXIMUM SPACING REFER TO BOND BEAM REQUIREMENTS FOR REQUIRED WALL REINFORCING AND CONSTRUCTION. WHERE CJ IS NOT IDENTIFIED PROVIDE CONTROL JOINTS PER GENERAL NOTES ON SG 001. |
| TS | TOP OF STEEL |
| DBE | DECK BEARING ELEVATION |
| (A = XXK) | INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION. |
| DA | L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS. |

## NOTES - STRUCTURAL - FRAMING

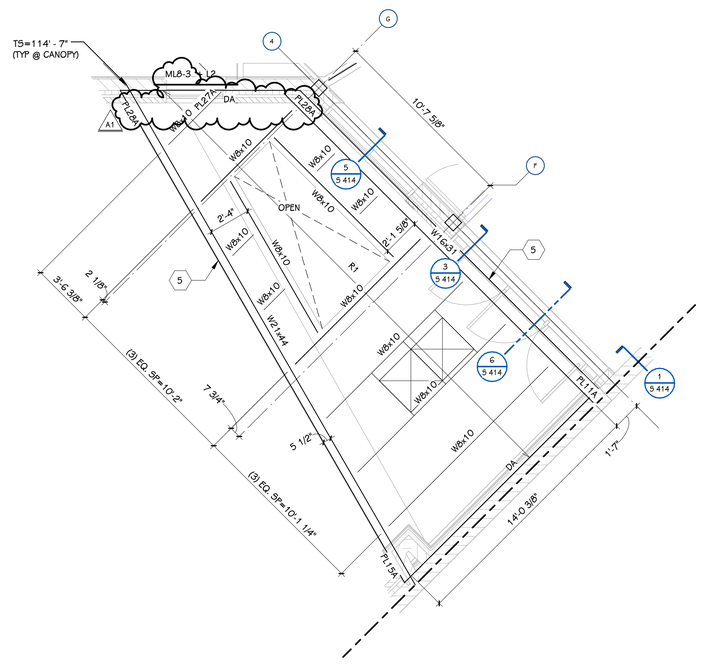
1. TS ELEVATIONS AS FOLLOWS (UNO):
   STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
   UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
   UNITS D & F LOWER ROOF - 114'-3" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 114'-0 1/2"
   ALL OTHER LOCATIONS - REFER TO PLAN
2. REINFORCED MASONRY DESIGNATED THUS: MWx-x. REFER TO TYPICAL DETAILS FOR MASONRY WALL CONSTRUCTION. 8" MASONRY WALLS SHALL BE MW8-1 UNO, AND 12" MASONRY WALLS SHALL BE MW12-1 UNO.
3. ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS
4. REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS
5. ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS
6. WHERE NO SLOPE ARROWS ARE SHOWN, ROOF IS LEVEL.
7. FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.
8. PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1. REFER TO TYPICAL PORTAL FRAME DETAIL.
2. TOP OF BEAM TO FOLLOW SLOPE OF ROOF.
3. COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.
4. CONTINUOUS L4x4x1/4 (GALV.) FOR SUPPORT OF BRICK VENEER. REFER TO ARCHITECTURE DRAWINGS FOR TOP OF ANGLE HORIZONTAL LEG/BOTTOM OF BRICK ELEVATION. REFER TO TYPICAL BRICK SUPPORT BRACKET DETAIL.
5. 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.
6. REFER TO TYPICAL RTU SUPPORT DETAILS.
7. PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.
8. IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.
9. JOIST BRIDGING TO ACCOMMODATE DUCTS. COORDINATE WITH MECHANICAL. TYP BETWEEN JOISTS.
10. ANGLE TO BE CONTINUOUS ALONG FULL LENGTH OF WALL. SEE TYPICAL ROOF EDGE ANGLE SPLICE DETAIL.
11. HOLD PRECAST BACK AND BEAR ON ANGLE INSTEAD OF CMU OVER DUCT. COORDINATE LOCATION AND SIZE WITH MECHANICAL CONTRACTOR.
12. TOOTH IN MASONRY AT WALL INTERSECTION.
13. FABRICATOR TO ACCOMMODATE BEAM DEEP COPE IN CONNECTION DESIGN.
14. ELEVATOR HOIST BEAM BELOW (BY ELEVATOR SUPPLIER). PROVIDE BEARING PLATES AT EACH END OF HOIST BEAM. COORDINATE SIZE, LOCATION, AND ELEVATION OF BEARING PLATES WITH ELEVATOR SUPPLIER.
15. DUCT, PIPE, OR CONDUIT PENETRATION THROUGH FLOOR. PRECAST SUPPLIER TO COORDINATE SIZE AND LOCATION OF OPENING WITH MECHANICAL, PLUMBING, OR ELECTRICAL CONTRACTOR. NOT NECESSARILY ALL OPENINGS ARE SHOWN. PRECAST SUPPLIER TO PROVIDE HEADER FRAMING AT PENETRATIONS AS REQUIRED BY DESIGN.
16. 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW DECK BEARING.
17. 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW PRECAST BEARING.




1/5 203 FRAMING PLAN - UNIT B - SMALL CANOPY
1/4" = 1'-0"


TS=114' - 7"
(TYP @ CANOPY)
ML8-3
L2
PL2A
DA
W8x10
OPEN
R1
W16x31
W7 1+4
(3) EQ. SP=10'-2"
(3) EQ. SP=10'-1 1/4"
10'-7 3/8"
3'-6 3/8"
2 1/8"
2'-4"
2'-1 5/8"
7 3/4"
5 1/2"
PL1TA
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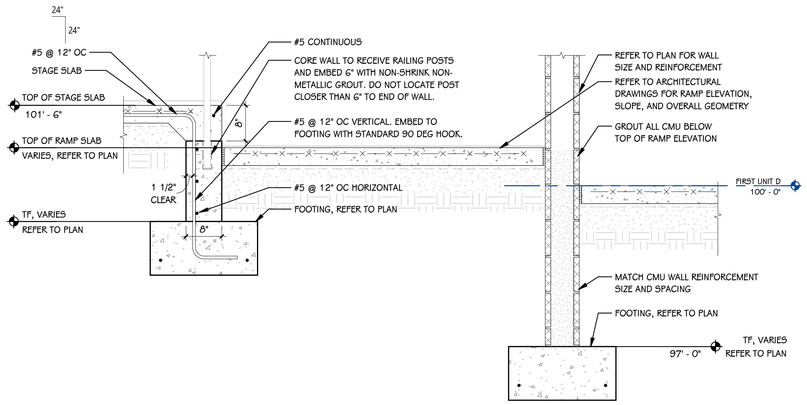
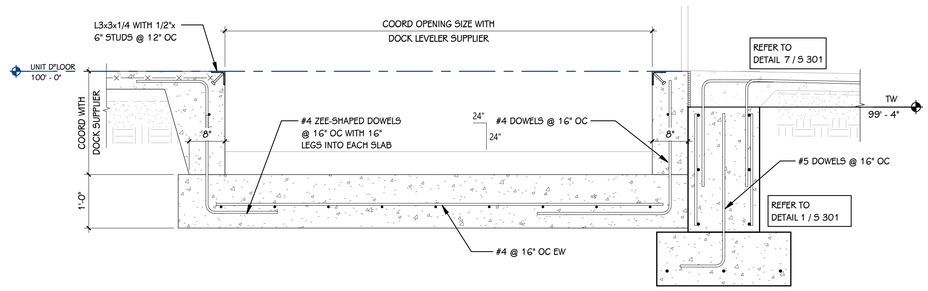
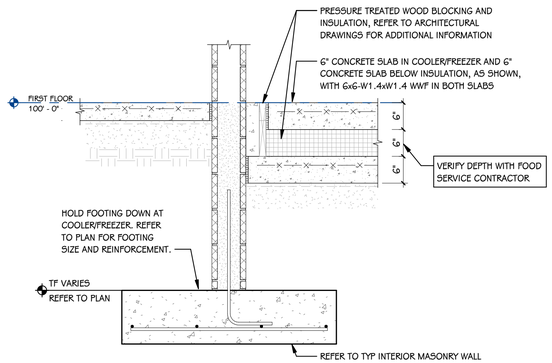


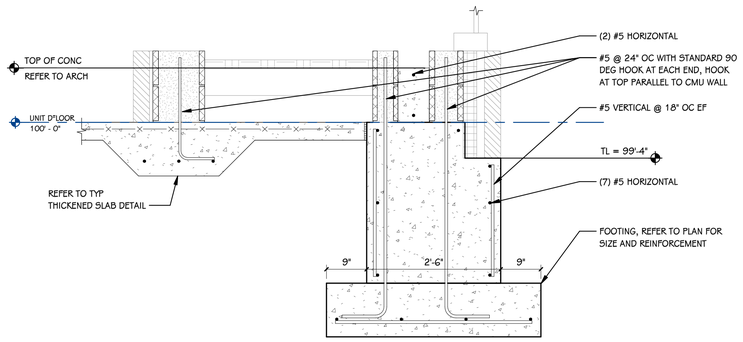

1 / S311 SECTION
3/4" = 1'-0"



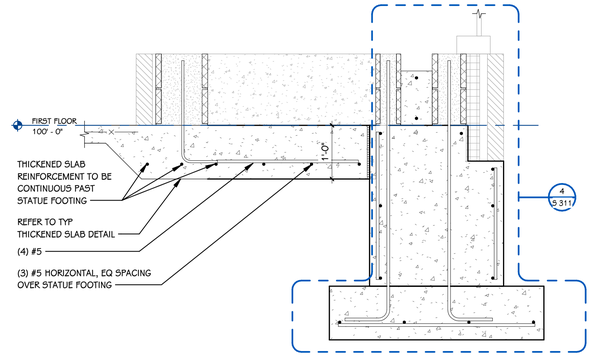

2 / S311 SECTION
3/4" = 1'-0"



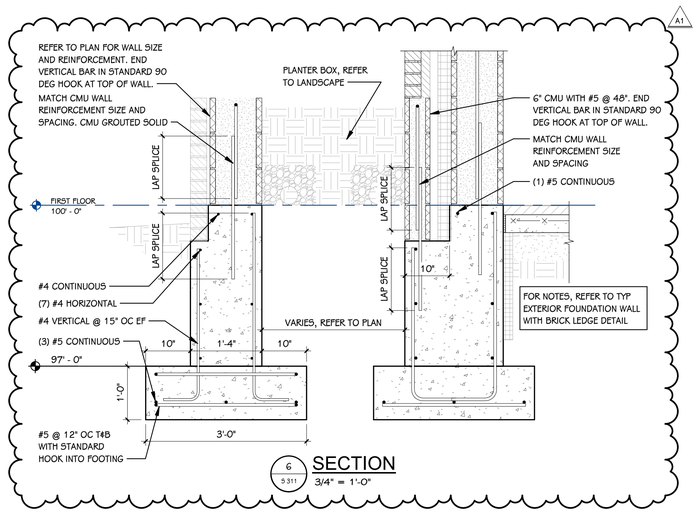

3 / S311 SECTION
3/4" = 1'-0"




4 / S311 SECTION
3/4" = 1'-0"




5 / S311 SECTION
3/4" = 1'-0"




6 / S311 SECTION
3/4" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

DRAWN BY: ACR 5/8/2026 1:13:05 PM

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| ISSUED FOR | DATE |
|---|---|
| ADDENDUM 1 | 05/08/26 |

PROJECT TITLE
NEW EL SOL SCHOOL

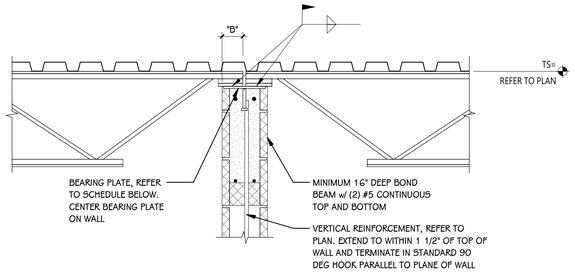
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FOUNDATION DETAILS

DATE
APRIL 24, 2026

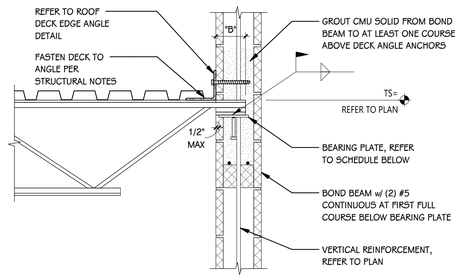
SHEET NUMBER
S 311
23-622.00




| JOIST SERIES | NOMINAL CMU WALL THICKNESS | JOIST BEARING LENGTH 'B' | BEARING PLATE |
|---|---|---|---|
| K | 8" | 3 1/2" * | 1/2" x 7" x 8" w/ (2) 1/2" DIA x 5" HEADED STUDS (5" GAUGE) |
| | 10" | 4 1/2" | 1/2" x 9" x 8" w/ (2) 1/2" DIA x 5" HEADED STUDS (5" GAUGE) |
| | 12" | 5 1/2" | 1/2" x 11" x 8" w/ (2) 1/2" DIA x 5" HEADED STUDS (5" GAUGE) |
| LH | 12" | 5 1/2" * | 3/4" x 11" x 10" w/ (2) 1/2" DIA x 5" HEADED STUDS (5" GAUGE) |

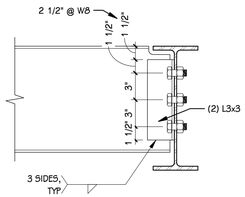
* NOTE: BEARING LENGTH IS LESS THAN TYPICAL SJI MINIMUM BEARING LENGTH. JOIST SUPPLIER TO DESIGN JOIST SEATS FOR REDUCED BEARING LENGTH AS REQUIRED.

1 / S 402 TYP ROOF JOIST BEARING ON CMU WALL - BOTH SIDES
1" = 1'-0"



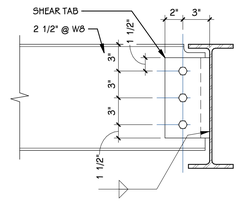

| JOIST SERIES | JOIST BEARING LENGTH 'B' * | BEARING PLATE |
|---|---|---|
| K | 4" | 1/2" x 5" x 8" w/ (2) 1/2" DIA x 5" HEADED STUDS (5" GAUGE) |
| K @ 45° TO WALL | 4" | 1/2" x 6" x 12" w/ (2) 1/2" DIA x 5" HEADED STUDS (5" GAUGE) |
| LH | 6" | 1/2" x 6" x 10" w/ (2) 1/2" DIA x 5" HEADED STUDS (5" GAUGE) |

2 / S 402 TYP ROOF JOIST BEARING ON CMU WALL - ONE SIDE
1" = 1'-0"



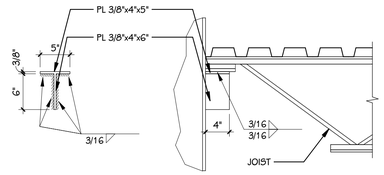

NOTES:
IF REACTIONS ARE NOT INDICATED, CONNECTIONS SHALL DEVELOP 50% OF THE MAXIMUM TOTAL UNIFORM LOAD INDICATED IN PART 3 OF THE AISC MANUAL OF STEEL CONSTRUCTION

3 / S 402 TYP DOUBLE ANGLE CONNECTION
SCALE: NONE

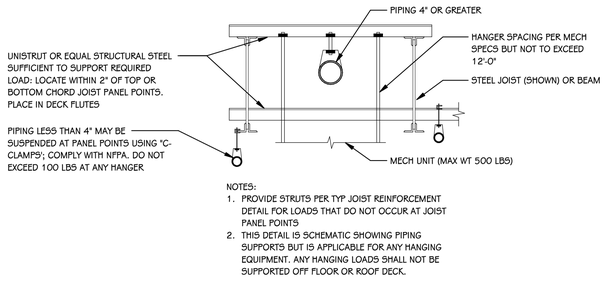



IF REACTIONS ARE NOT INDICATED, CONNECTIONS SHALL DEVELOP 50% OF THE MAXIMUM TOTAL UNIFORM LOAD INDICATED IN PART 3 OF THE AISC MANUAL OF STEEL CONSTRUCTION

4 / S 402 TYP SHEAR TAB CONNECTION
SCALE: NONE

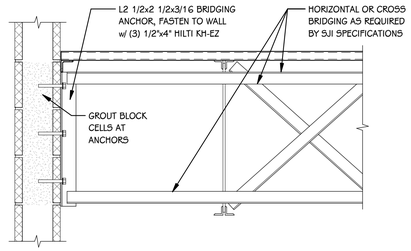



5 / S 402 TYP JOIST SEAT ON COLUMN
SCALE: NONE

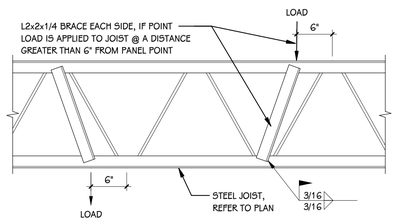



NOTES:
1. PROVIDE STRUTS PER TYP JOIST REINFORCEMENT DETAIL FOR LOADS THAT DO NOT OCCUR AT JOIST PANEL POINTS
2. THIS DETAIL IS SCHEMATIC SHOWING PIPING SUPPORTS BUT IS APPLICABLE FOR ANY HANGING EQUIPMENT. ANY HANGING LOADS SHALL NOT BE SUPPORTED OFF FLOOR OR ROOF DECK.

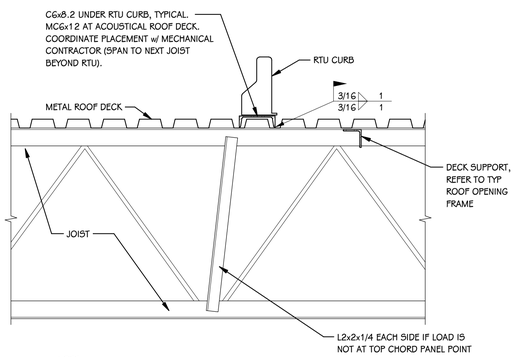
6 / S 402 TYP PIPING, CONDUIT, AND EQUIPMENT SUPPORT
SCALE: NONE




7 / S 402 TYP BRIDGING DETAIL
SCALE: NONE

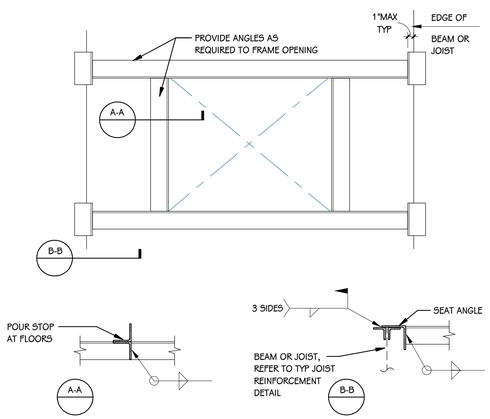



8 / S 402 TYP JOIST REINFORCEMENT
SCALE: NONE



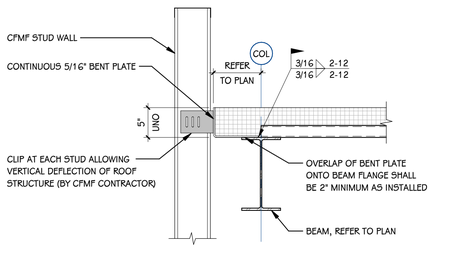

NOTE:
1. IN THE CASE THAT THE RTU IS ORIENTED WITH THE LONG DIMENSION PARALLEL TO JOISTS/BEAMS, PROVIDE CHANNEL BENEATH EACH END OF THE RTU AND @ 4'-0" MAX SPACING BETWEEN ENDS (COORDINATE PLACEMENT WITH OPENING LOCATIONS). CHANNEL SHALL SPAN TO NEXT JOIST BEYOND SIDES OF RTU.
2. WHERE RTU CURB LOCATION RELATIVE TO ROOF DECK RIBS IS SUCH THAT A SINGLE CHANNEL NESTED IN THE DECK RIBS DOES NOT FULLY SUPPORT THE RTU CURB OR DOES NOT PROVIDE AN ADQUATE SURFACE FOR CONNECTION OF THE RTU CURB, PROVIDE DOUBLE CHANNEL AT NO ADDITIONAL COST. COORDINATE WITH MECHANICAL CONTRACTOR.
3. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTIONS OF ROOFTOP EQUIPMENT TO CURBS AND CURBS TO THE SUPPORTING STRUCTURE. DESIGN OF CONNECTIONS SHALL CONSIDER ALL APPLICABLE LOADS IN ACCORDANCE WITH THE BUILDING CODE, INCLUDING WIND AND SEIMIC LOADS.

9 / S 402 TYP ROOFTOP CURB SUPPORT
SCALE: NONE

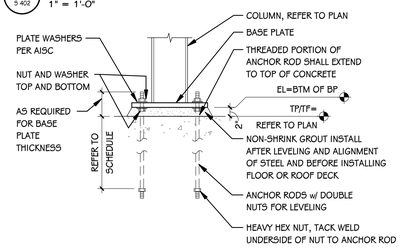



| JOIST SPACING | FRAME ANGLE | SEAT ANGLE |
|---|---|---|
| ≤ 6'-0" OC | L3x3x1/4 | L3x3x1/4 x 6" |
| ≤ 10'-0" OC | L5x3 1/2x1/4 (LLV) | L5x3 1/2x1/4 (LLV) x 6" |

10 / S 402 TYP ROOF/FLOOR OPENING FRAME
SCALE: NONE




11 / S 402 TYP ROOF EDGE ON STEEL BEAM AT BYPASS STUD WALL
1" = 1'-0"




12 / S 402 TYP CAST IN PLACE ANCHOR SETTING
SCALE: NONE

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PROJECT TITLE
NEW EL SOL SCHOOL

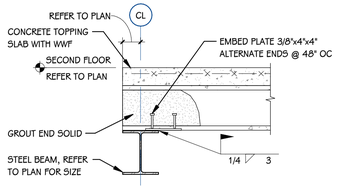
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

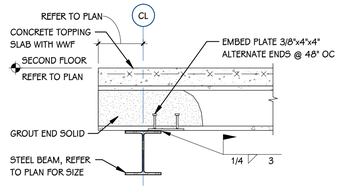
SHEET TITLE
TYPICAL FRAMING DETAILS

DATE
APRIL 24, 2026

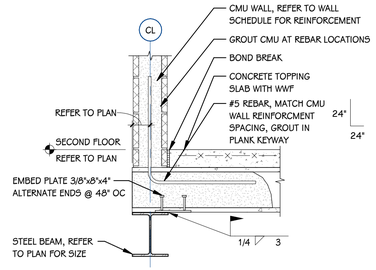
SHEET NUMBER
S 402
23-622.00



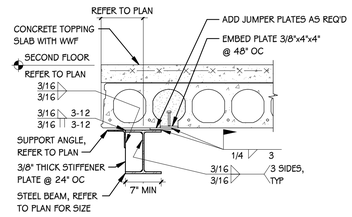

1 / S 405 — TYP PLANK BEARING ON BEAM
SCALE: NONE



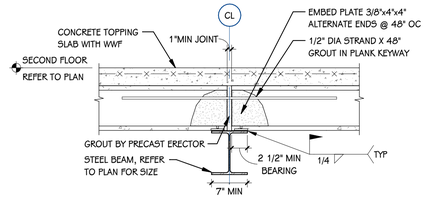

2 / S 405 — TYP PLANK CANTILEVERING OVER STEEL BEAM
SCALE: NONE




3 / S 405 — TYP PLANK BEARING ON BEAM - w/ CMU WALL ABOVE
SCALE: NONE




4 / S 405 — TYP PLANK PARALLEL TO BEAM
SCALE: NONE




5 / S 405 — TYP PLANK BEARING ON BEAM - BOTH SIDES
SCALE: NONE




6 / S 405 — TYP PLANK PARALLEL TO BEAM - BOTH SIDES
SCALE: NONE

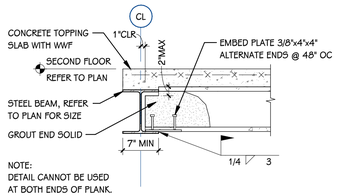



7 / S 405 — TYP PLANK BEARING ON BEAM - INTERIOR DIRECTION CHANGE
SCALE: NONE




8 / S 405 — TYP PLANK BEARING ON BEAM - BOTH SIDES w/ CMU WALL ABOVE
SCALE: NONE

9 / S 405 — TYP PLANK BEARING ON BEAM ON UPSET STEEL
SCALE: NONE




10 / S 405 — TYP PLANK BEARING ON BEAM ON UPSET STEEL w/ PLANK COPING
SCALE: NONE

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PROJECT TITLE
NEW EL SOL SCHOOL

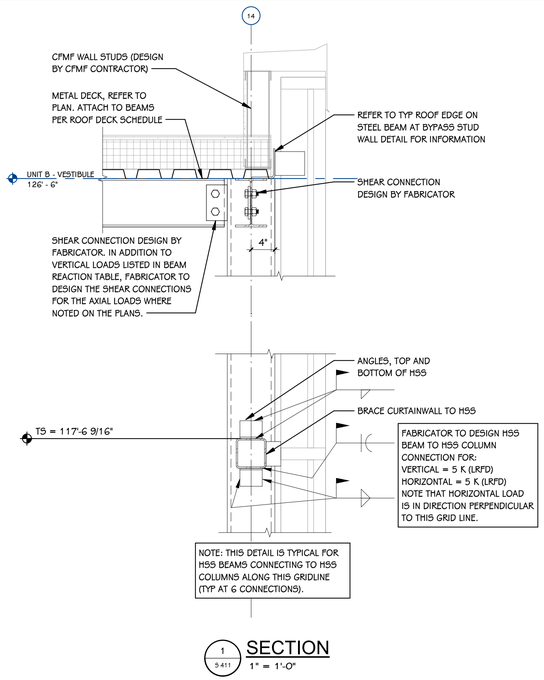
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

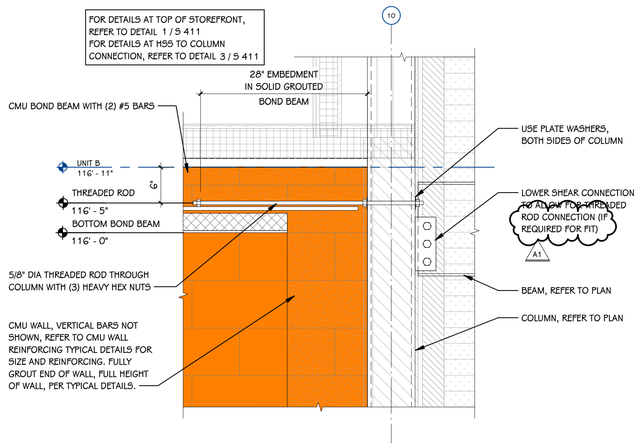
SHEET TITLE
TYPICAL FRAMING DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
S 405
23-622.00




1 / S 411 SECTION 1" = 1'-0"

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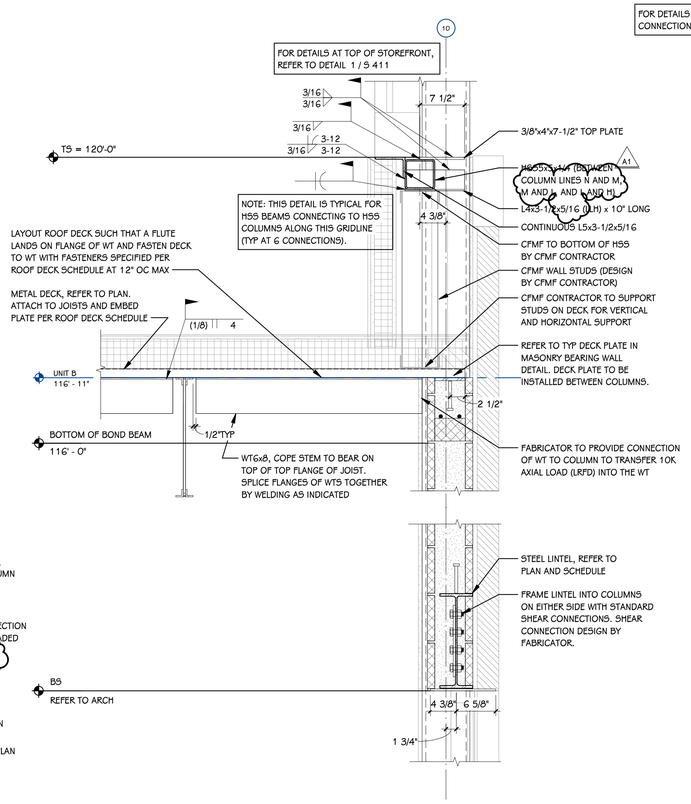
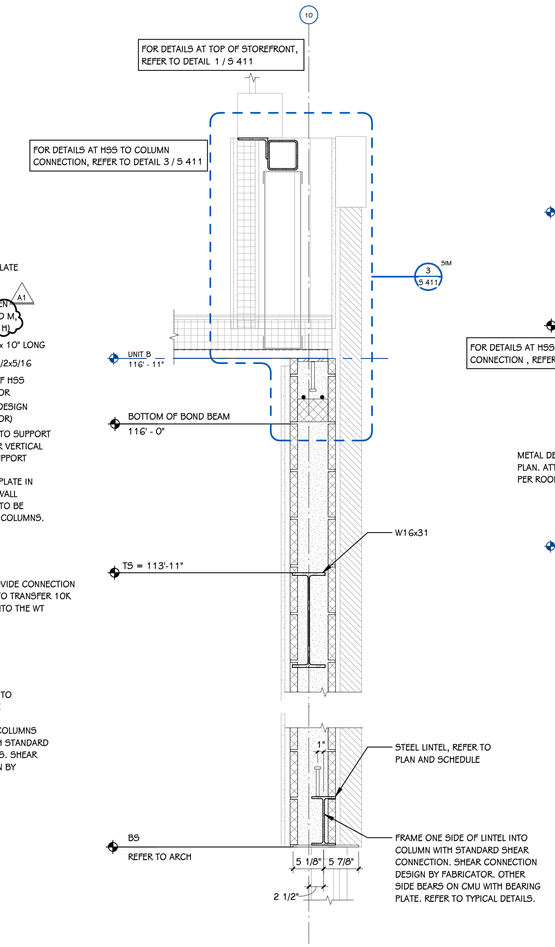



3 / S 411 SECTION 1" = 1'-0"

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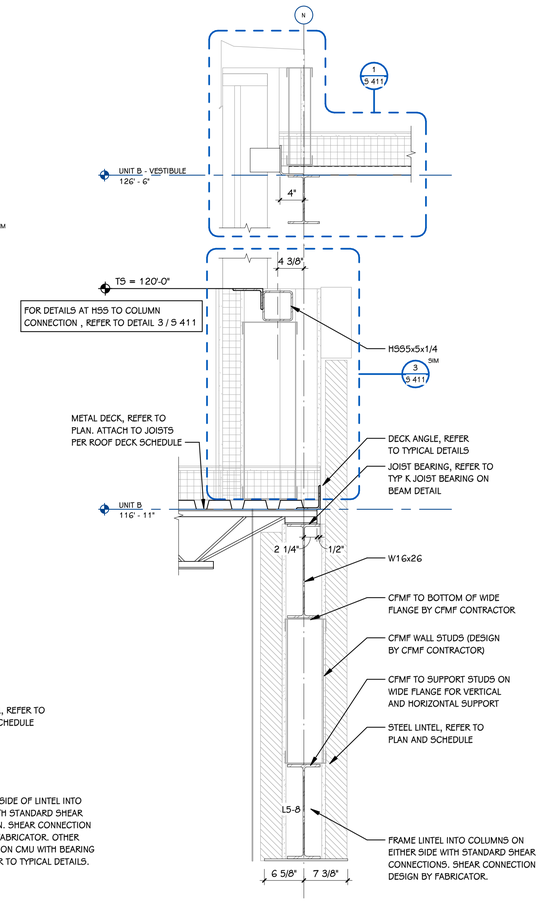


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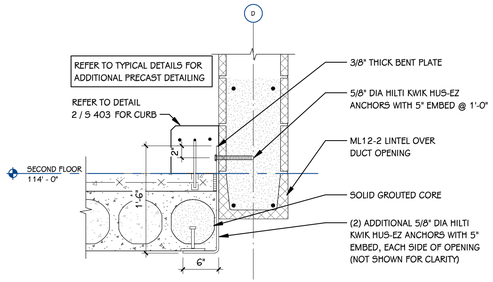
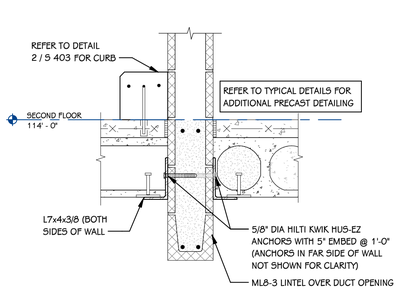
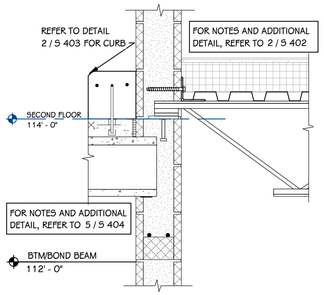


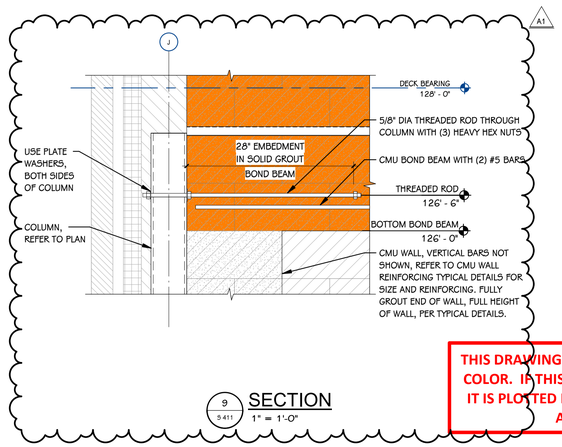

6 / S 411 SECTION 1" = 1'-0"




7 / S 411 SECTION 1" = 1'-0"




8 / S 411 SECTION 1" = 1'-0"




9 / S 411 SECTION 1" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FRAMING DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
S 411
23-622.00

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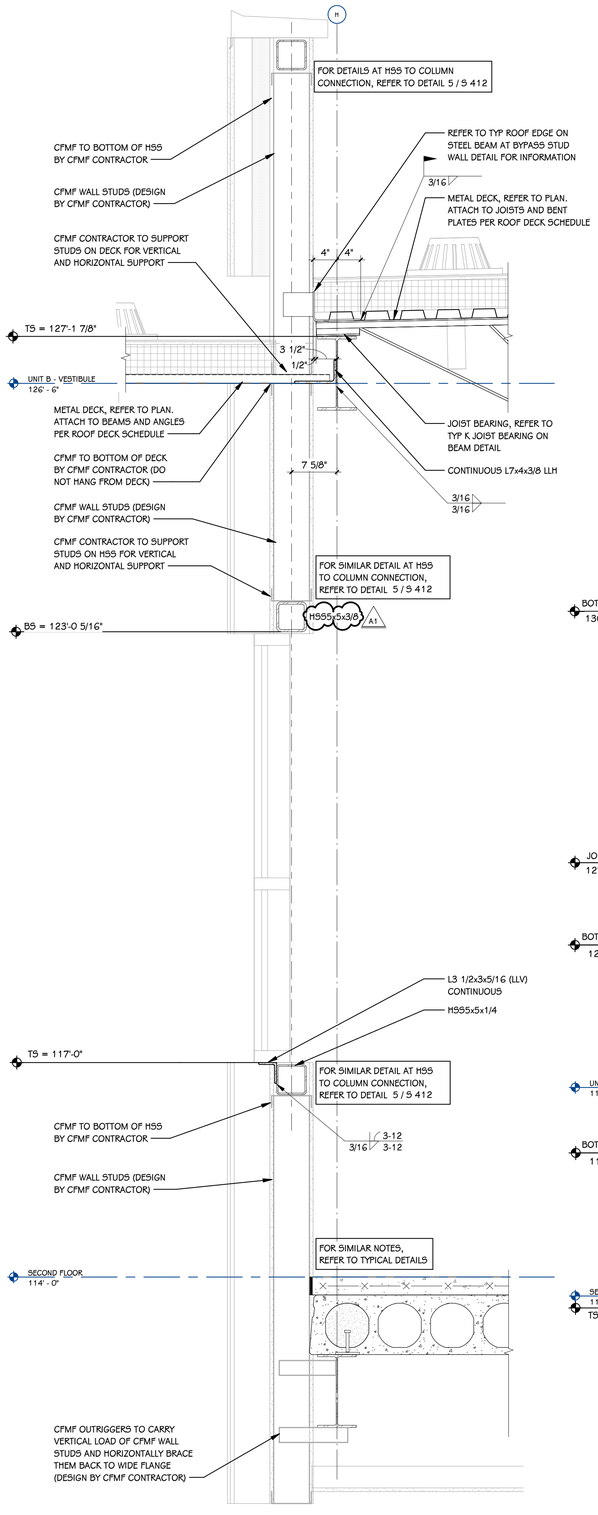
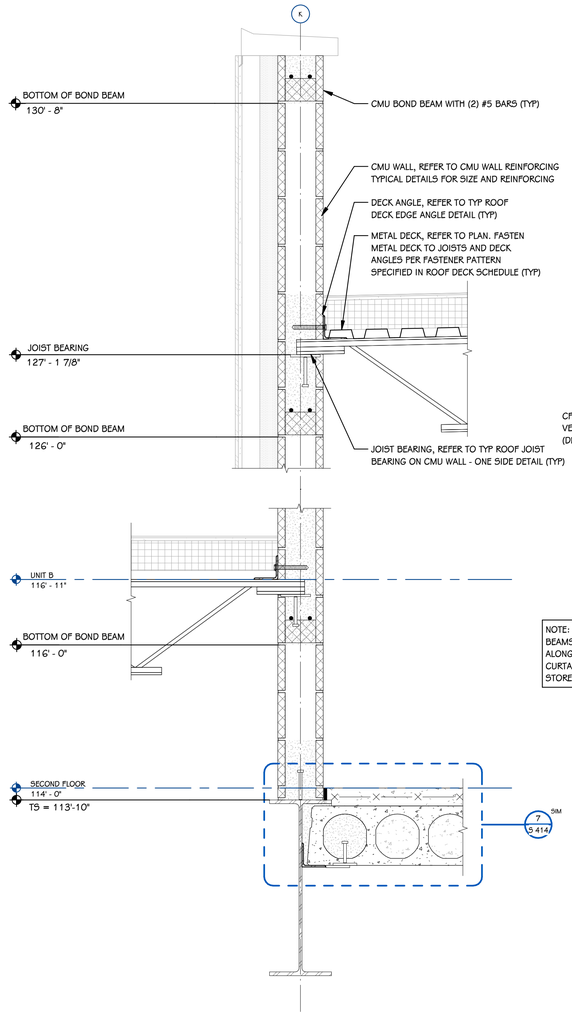
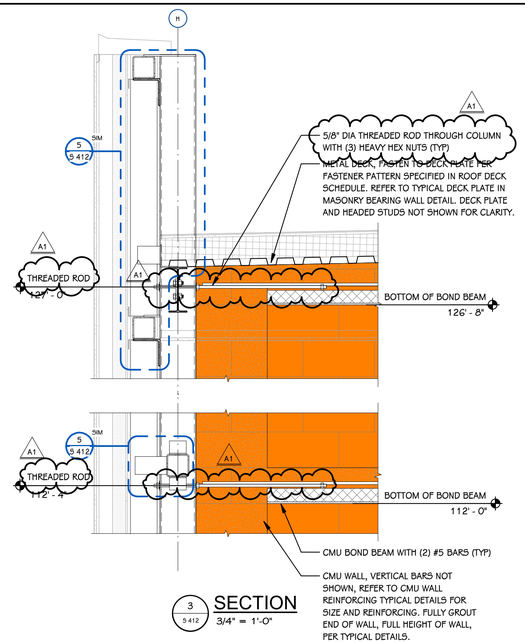



1 / S 412 SECTION
1" = 1'-0"



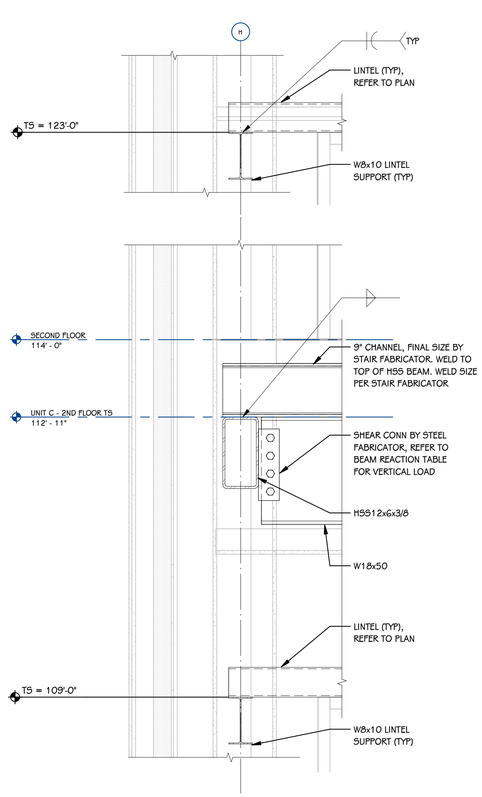

4 / S 412 SECTION
1" = 1'-0"




3 / S 412 SECTION
3/4" = 1'-0"




5 / S 412 SECTION
1" = 1'-0"




2 / S 412 SECTION
1" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

DATE
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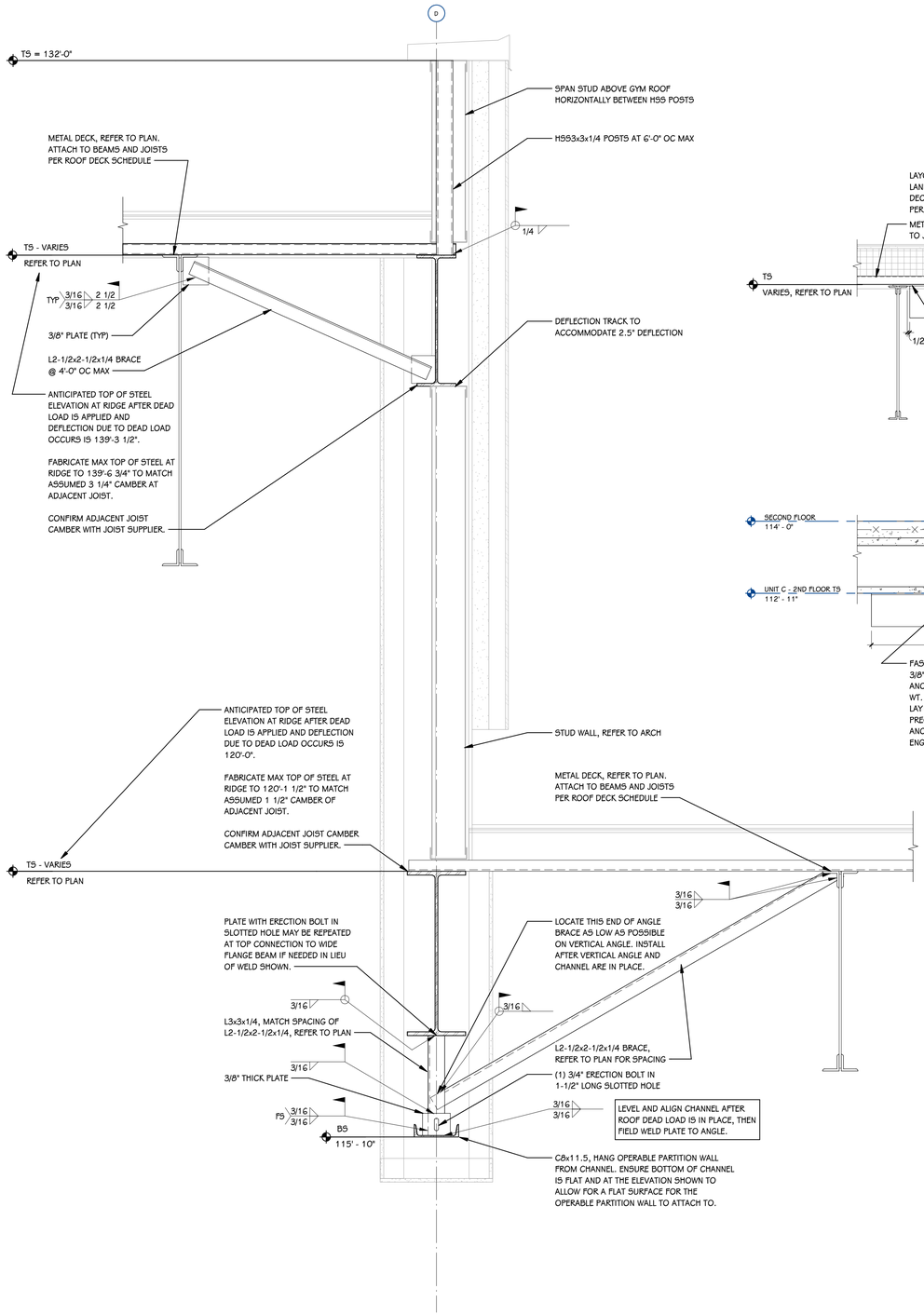
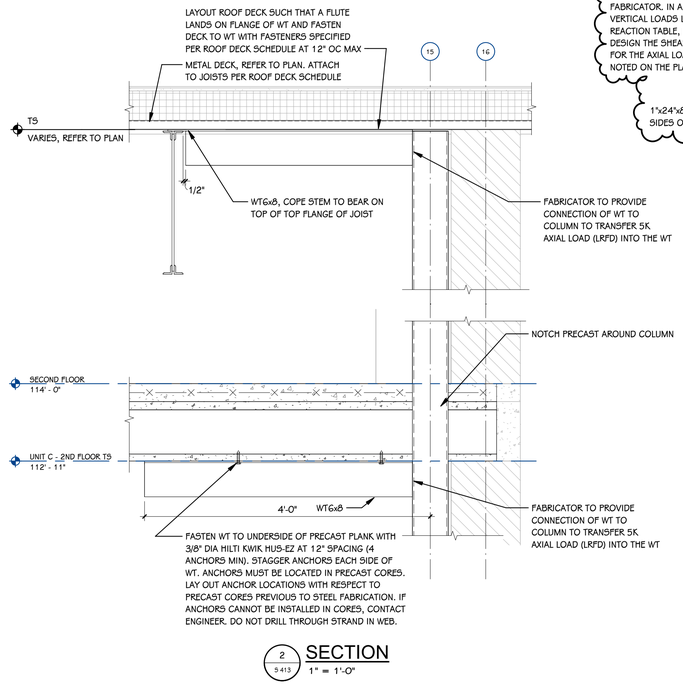
SHEET NUMBER
S 412
23-622.00




1 / S.413 SECTION
1" = 1'-0"




2 / S.413 SECTION
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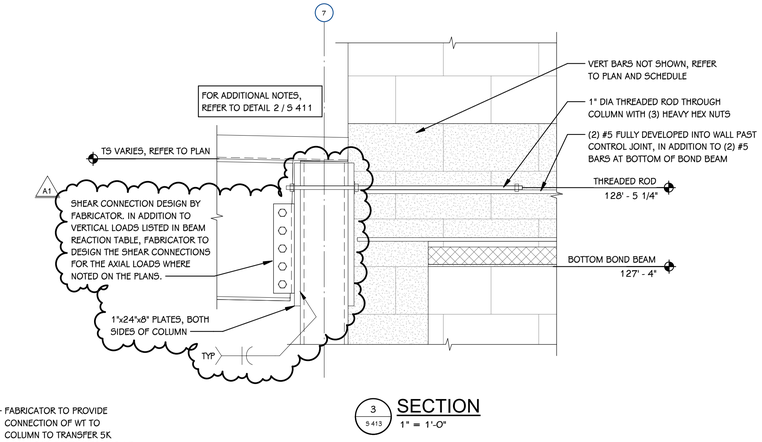


3 / S.413 SECTION
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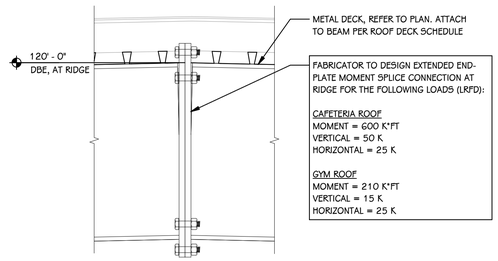


4 / S.413 SECTION
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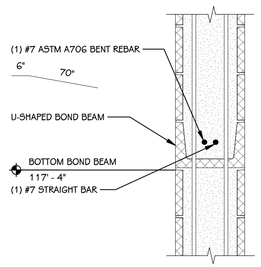
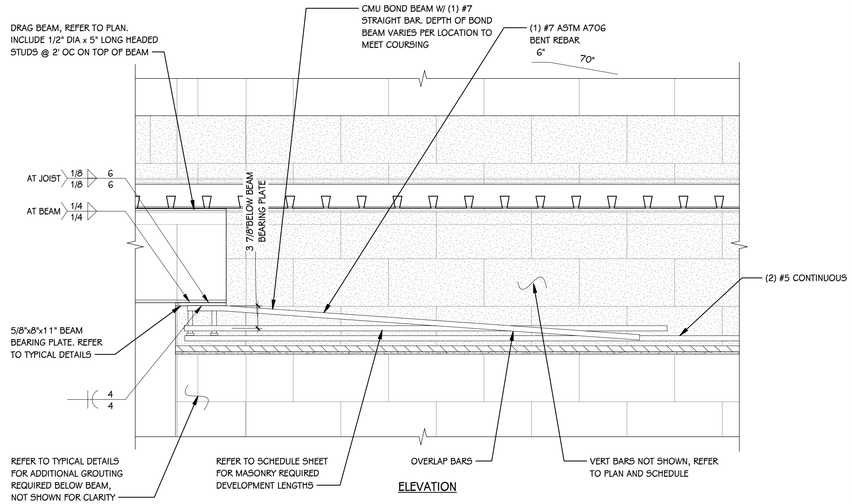



SECTION AT OVERLAP




ELEVATION

5 / S.413 SECTION
1" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

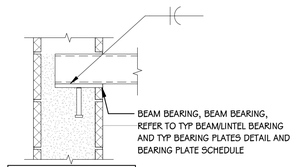
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FRAMING DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
S 413
23-622.00




1 / S414 SECTION
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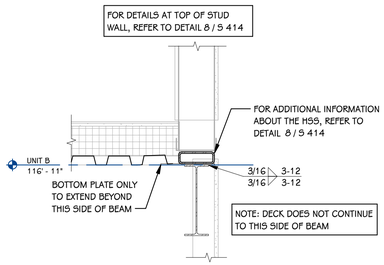


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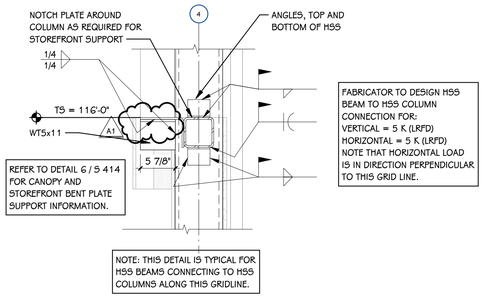


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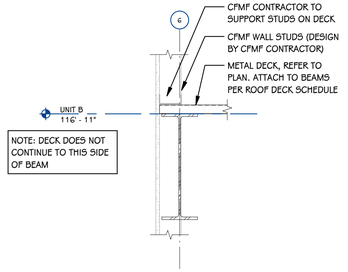


4 / S414 SECTION
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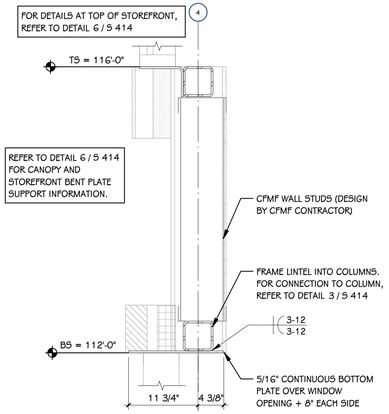


5 / S414 SECTION
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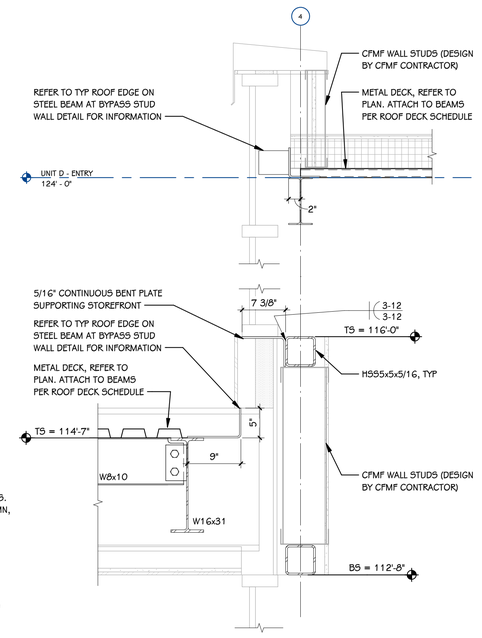


6 / S414 SECTION
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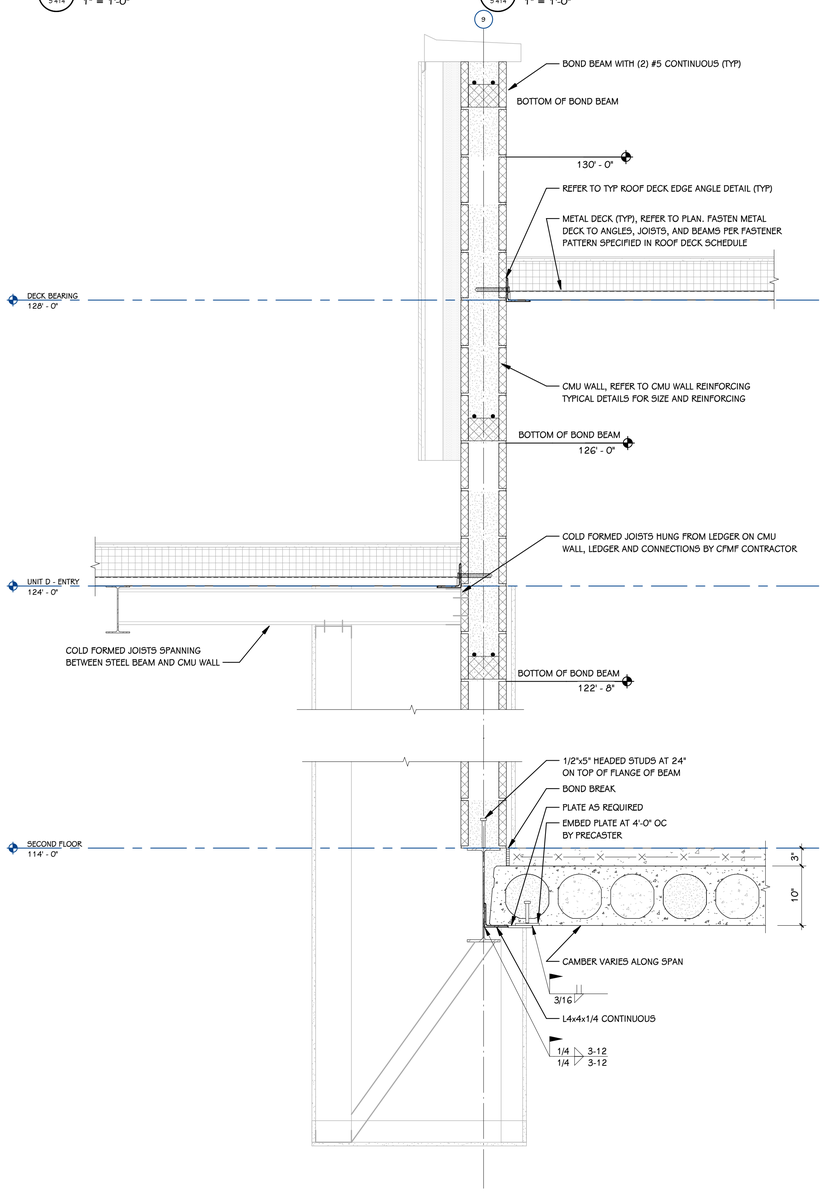


7 / S414 SECTION
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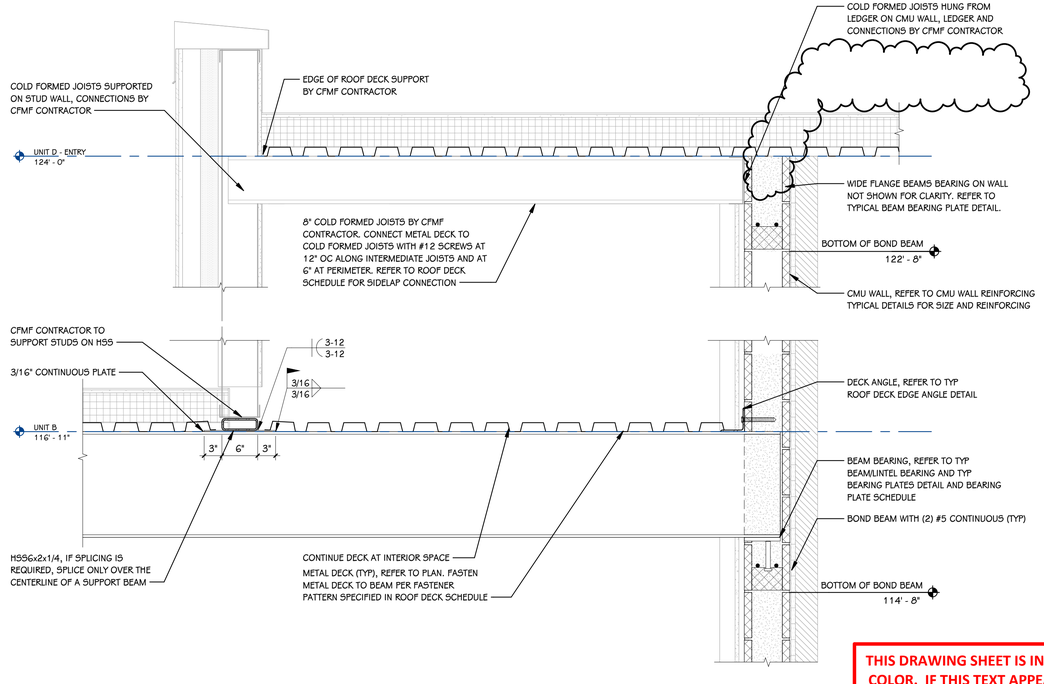


8 / S414 SECTION
1" = 1'-0"

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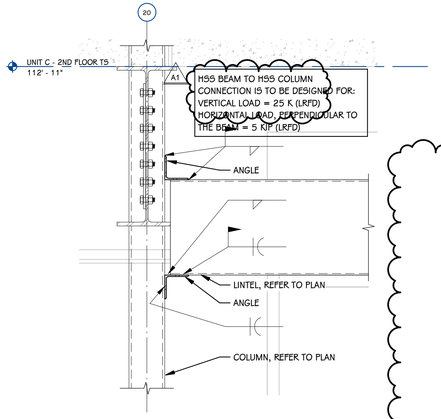


1 / S 415 SECTION
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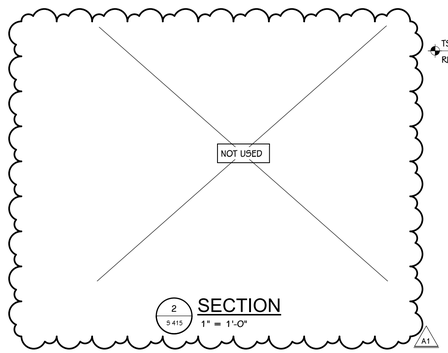
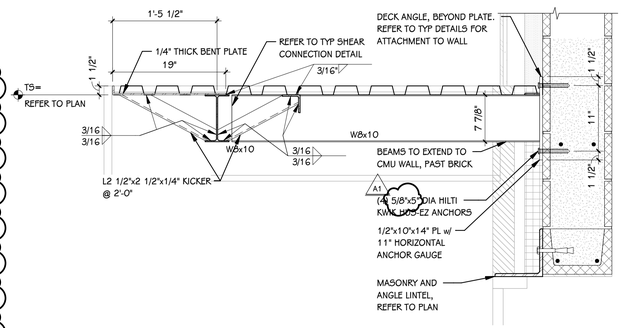
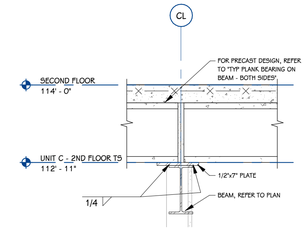


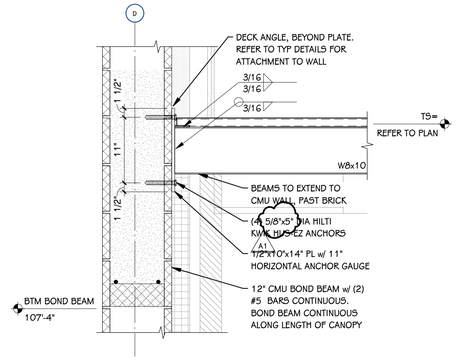

2 / S 415 SECTION
1" = 1'-0"



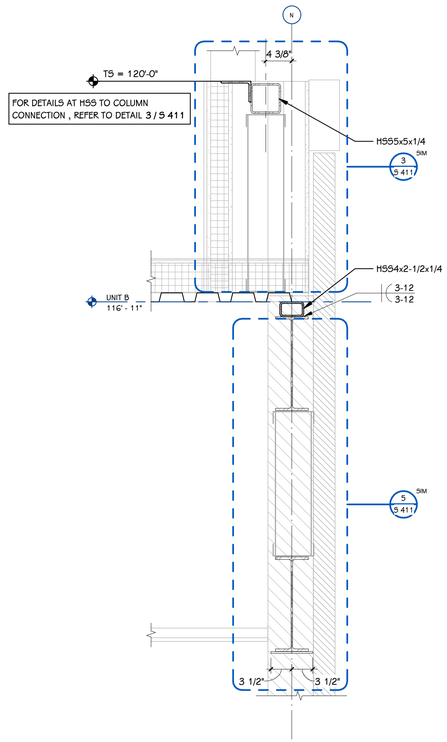

3 / S 415 SECTION
SCALE: NONE




4 / S 415 SECTION
1" = 1'-0"




5 / S 415 SECTION
1" = 1'-0"




6 / S 415 SECTION
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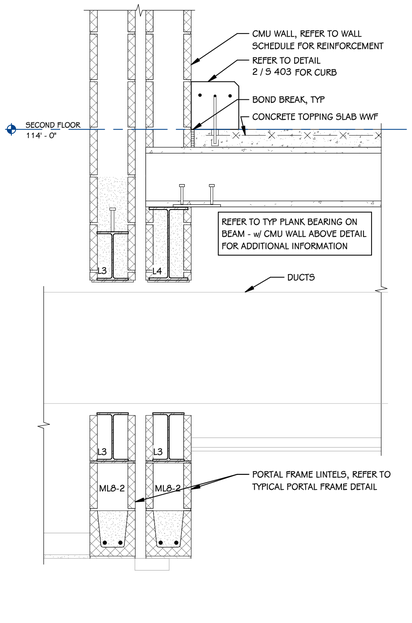


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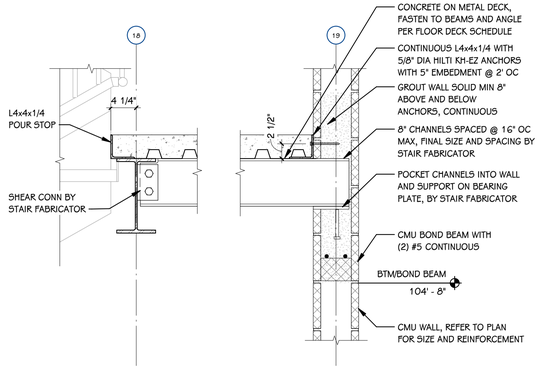


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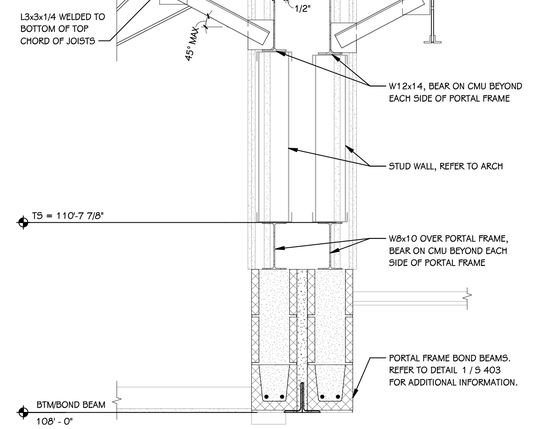


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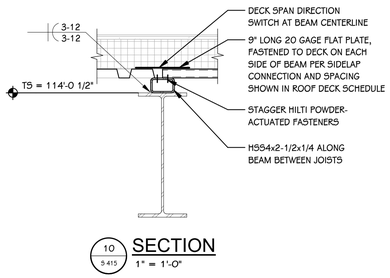


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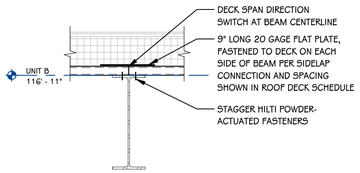


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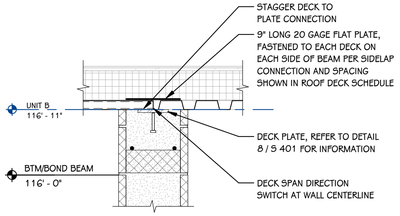


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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FRAMING DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
S 415
23-622.00

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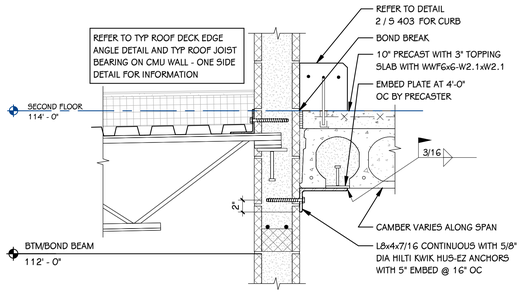


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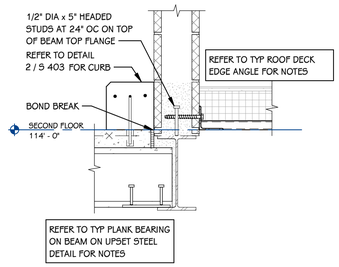


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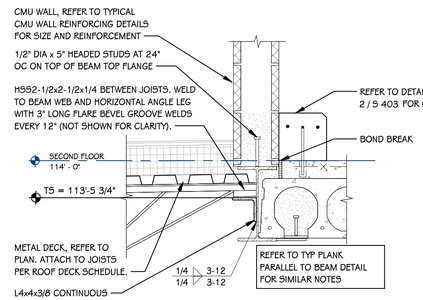


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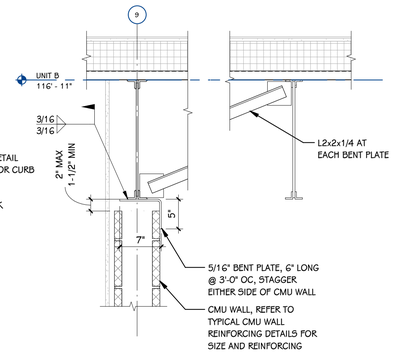


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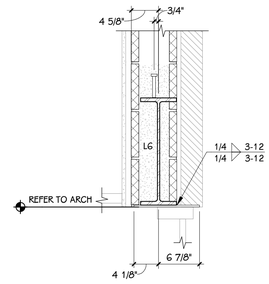


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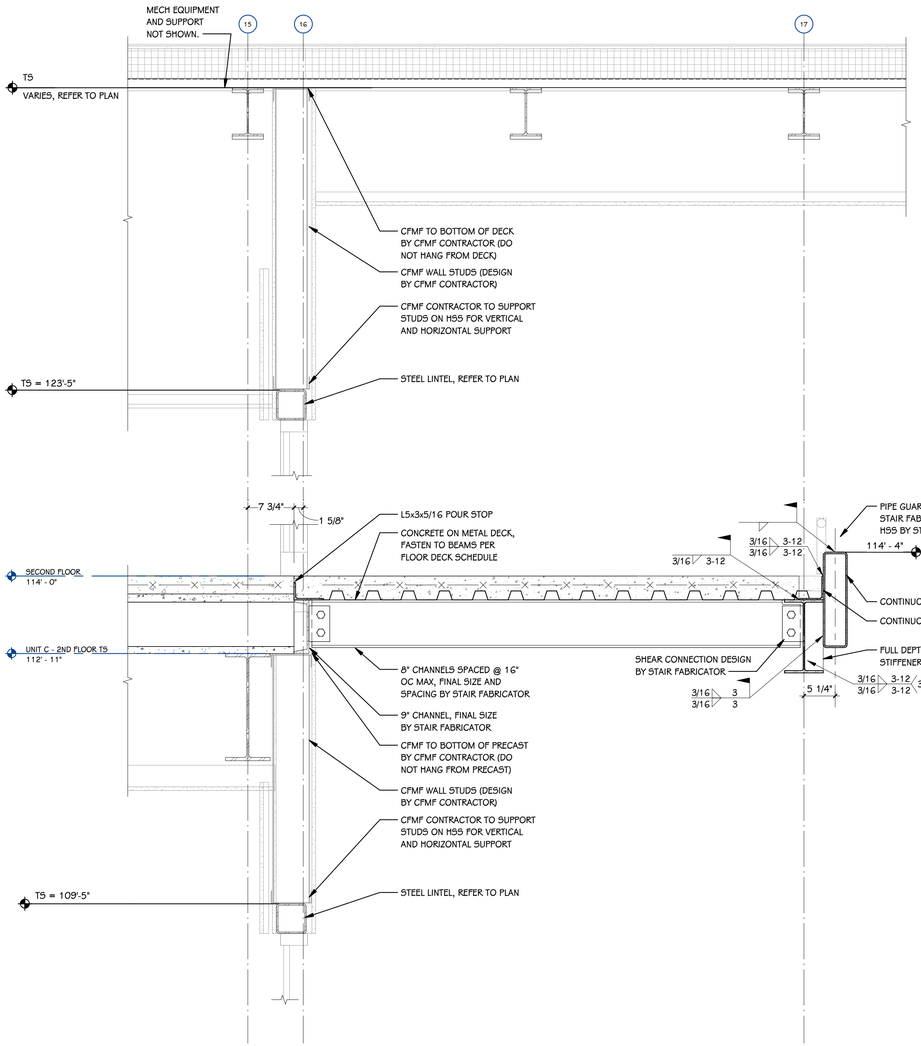


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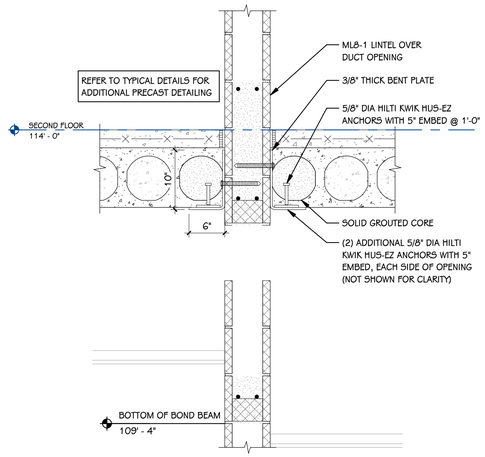


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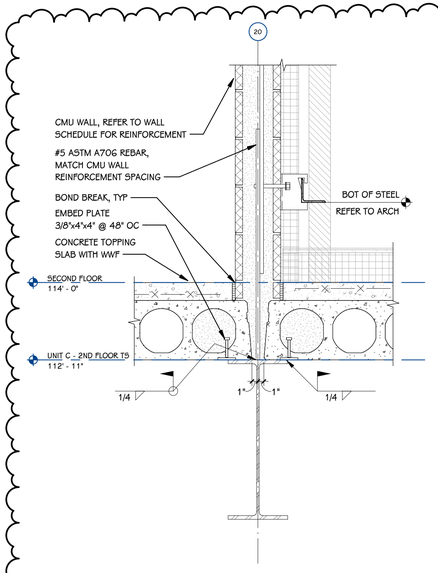


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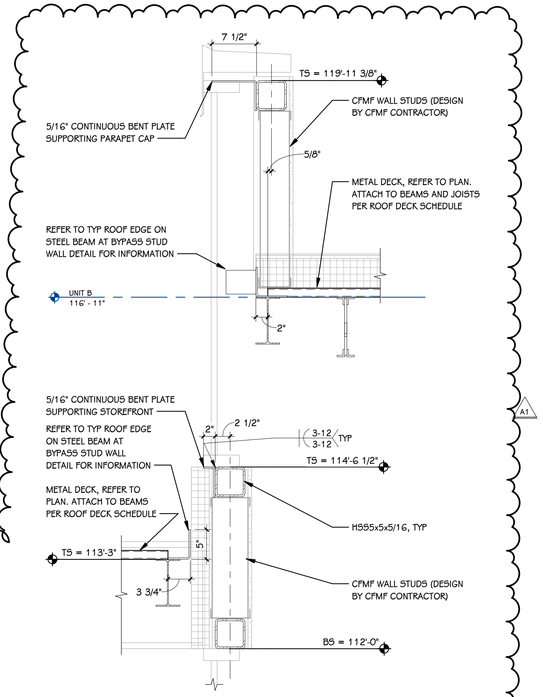


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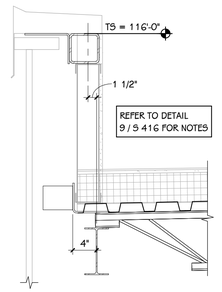


10 / S 416 SECTION
1" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FRAMING DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
S 416
23-622.00

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

SPOT ELEVATION. SLOPE STRUCTURE UNIFORMLY BETWEEN ADJACENT SPOT ELEVATIONS AS INDICATED.

INDICATES FRAMED OPENING. REFER TO TYPICAL DETAIL, COORDINATE SIZE AND LOCATION WITH MECHANICAL AND ARCHITECTURAL REQUIREMENTS.

DP — CONTINUOUS DECK BEARING PLATE IN TOP OF WALL, REFER TO TYPICAL DETAILS.

TOP TEXT / BTM TEXT — INDICATES SPAN DIRECTION FOR ROOF OR FLOOR DECK. REFER TO ROOF DECK SCHEDULE FOR DECK DESIGNATION, ATTACHMENT PATTERN REQUIREMENTS, AND ADDITIONAL INFORMATION. 'R' INDICATES ROOF DECK, 'F' INDICATES FLOOR DECK.

ROOM BC — CONCENTRATED LOAD APPLIED TO JOIST TOP CHORD (TC) OR BOTTOM CHORD (BC) IN ADDITION TO UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL LOADS AT THE LOCATIONS SHOWN WITHOUT THE NEED FOR A FIELD-INSTALLED WEB MEMBER.

ALTC or ALBC — CONCENTRATED LOAD APPLIED TO JOIST AT ANY LOCATION ON THE TOP CHORD (ALTC) OR AT ANY LOCATION ON THE BOTTOM CHORD (ALBC). CONCENTRATED LOAD IS IN ADDITION TO THE UNIFORM LOADS OF THE STANDARD JOIST DESIGNATION SHOWN OR IN ADDITION TO THE LOADS SHOWN IN A JOIST LOAD DIAGRAM. JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THESE ADDITIONAL CONCENTRATED LOADS TO OCCUR AT ANY PANEL POINT. IF THE FINAL LOCATION OF THE CONCENTRATED LOAD IN THE FIELD DOES NOT OCCUR AT A PANEL POINT, A FIELD-INSTALLED WEB MEMBER SHALL BE ADDED PER THE TYPICAL DETAIL.

## SYMBOLS LEGEND - STRUCTURAL - FRAMING

MOMENT CONNECTION, REFER TO TYPICAL DETAILS.

CX — COLUMN TAG, REFER TO COLUMN SCHEDULE. TAG APPEARS ON THE LEVEL CORRESPONDING WITH THE TOP OF THE COLUMN.

MWX — MASONRY WALL TYPE DESIGNATION, REFER TO TYPICAL DETAILS FOR ADDITIONAL INFORMATION.

LX or MLX — INDICATES LINTEL. REFER TO LINTEL SCHEDULE FOR SIZE OF LINTEL. 'L' PREFIX INDICATES STEEL LINTEL, 'ML' PREFIX INDICATES MASONRY LINTEL.

SHADED REGIONS OF CMU WALL INDICATE SHEAR WALLS. THESE WALLS ARE TO BE CONSTRUCTED WITH CONTROL JOINTS ON EACH SIDE OF THE SHADED REGION AND NO CONTROL JOINTS WITHIN THE BOUNDARY UNLESS NOTED OTHERWISE. REFER TO MASONRY GENERAL NOTES ON SG 001 FOR BOND BEAM REQUIREMENTS WHERE SHADED REGION EXCEEDS MAXIMUM CONTROL JOINT SPACING.

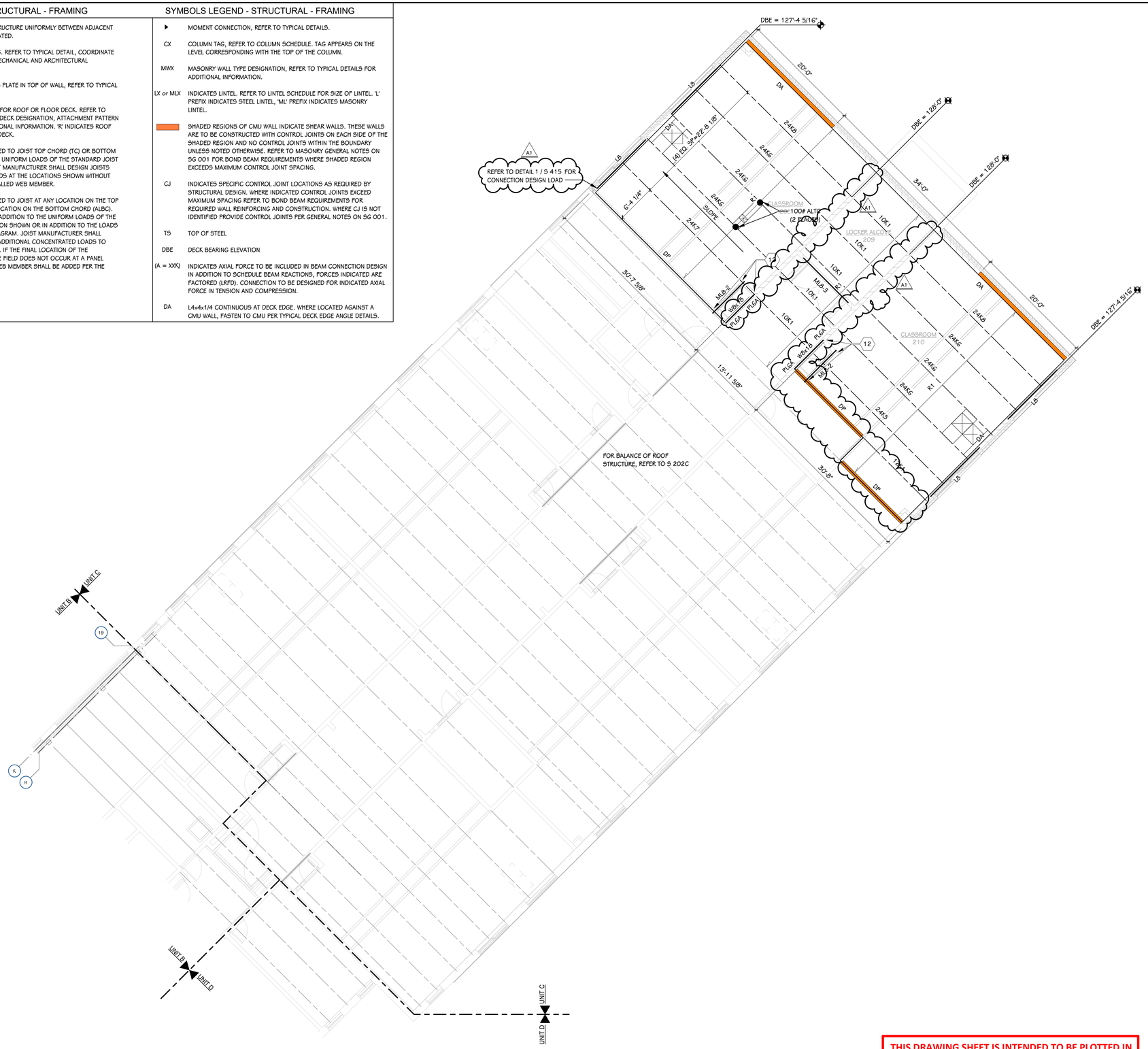
CJ — INDICATES SPECIFIC CONTROL JOINT LOCATIONS AS REQUIRED BY STRUCTURAL DESIGN. WHERE INDICATED CONTROL JOINTS EXCEED MAXIMUM SPACING REFER TO BOND BEAM REQUIREMENTS FOR REQUIRED WALL REINFORCING AND CONSTRUCTION. WHERE CJ IS NOT IDENTIFIED PROVIDE CONTROL JOINTS PER GENERAL NOTES ON SG 001.

TS — TOP OF STEEL

DBE — DECK BEARING ELEVATION

(A = XXK) — INDICATES AXIAL FORCE TO BE INCLUDED IN BEAM CONNECTION DESIGN IN ADDITION TO SCHEDULE BEAM REACTIONS, FORCES INDICATED ARE FACTORED (LRFD). CONNECTION TO BE DESIGNED FOR INDICATED AXIAL FORCE IN TENSION AND COMPRESSION.

DA — L4x4x1/4 CONTINUOUS AT DECK EDGE. WHERE LOCATED AGAINST A CMU WALL, FASTEN TO CMU PER TYPICAL DECK EDGE ANGLE DETAILS.




HIGH ROOF FRAMING PLAN - UNIT C

1/8" = 1'-0"

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## NOTES - STRUCTURAL - FRAMING

1 TS ELEVATIONS AS FOLLOWS (UNO):
STEEL SUPPORTING HOLLOW CORE PRECAST - 112'-11"
UNIT B - 116'-11" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 116'-8 1/2"
UNITS D & F LOWER ROOF - 114'-3" TYPICAL WITH GIRDERS SUPPORTING JOISTS AT 114'-0 1/2"
ALL OTHER LOCATIONS - REFER TO PLAN

2 REINFORCED MASONRY DESIGNATED THUS: MWx-x. REFER TO TYPICAL DETAILS FOR MASONRY WALL CONSTRUCTION. 8" MASONRY WALLS SHALL BE MW8-1 UNO, AND 12" MASONRY WALLS SHALL BE MW12-1 UNO.

3 ALL MASONRY WALLS TO EXTEND TO UNDERSIDE OF ROOF DECK, UNO. REFER TO TYPICAL DETAILS

4 REFER TO ARCHITECTURAL DRAWINGS FOR INTERIOR WALL DIMENSIONS

5 ALL OPENINGS IN MASONRY WALLS WIDER THAN 8" REQUIRE LINTELS. FOR LINTELS NOT SHOWN ON PLANS REFER TO LINTEL SCHEDULE FOR SIZE, COORDINATE LOCATIONS AND OPENING WIDTHS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS

6 WHERE NO SLOPE ARROWS ARE SHOWN, ROOF IS LEVEL.

7 FRAMING WITHIN CMU WALLS ARE CENTERED WITHIN CMU WALLS UNO.

8 PROVIDE A CONTROL JOINT AT ALL COLUMN LOCATIONS WITHIN MASONRY WALLS UNLESS THE COLUMN IS WITHIN A SHADED REGION ON THIS PLAN.

## KEYED NOTES - STRUCTURAL - FRAMING

1 REFER TO TYPICAL PORTAL FRAME DETAIL.

2 TOP OF BEAM TO FOLLOW SLOPE OF ROOF.

3 COORDINATE BEAM FLANGE WIDTH TO ALLOW BEAM BEARING ON ALL FOUR SIDES.

4 CONTINUOUS L4x4x1/4 (GALV.) FOR SUPPORT OF BRICK VENEER. REFER TO ARCHITECTURE DRAWINGS FOR TOP OF ANGLE HORIZONTAL LEG/BOTTOM OF BRICK ELEVATION. REFER TO TYPICAL BRICK SUPPORT BRACKET DETAIL.

5 1/4" BENT PLATE AT SLAB OR DECK EDGE. REFER TO TYPICAL DETAILS.

6 REFER TO TYPICAL RTU SUPPORT DETAILS.

7 PROVIDE A SINGLE COURSE CONTINUOUS HORIZONTAL BOND BEAM WITH (2) #5 @ 4'-0" OC MAX OVER THE FULL HEIGHT OF THE WALL. NO CONTROL JOINTS ALLOWED WITHIN THIS REGION.

8 IN ADDITION TO BOND BEAMS NOTED ELSEWHERE, INCLUDE A BOND BEAM WITH (2) #5 CONTINUOUS, AND ENSURE BARS ARE CONTINUOUS FULL LENGTH OF BOND BEAM, INCLUDING THROUGH CONTROL JOINTS. BOTTOM OF BOND BEAM ELEVATION SHOWN NEXT TO KEYED NOTE CALLOUT. GROUT CMU SOLID FROM DECK, BEAM, OR JOIST CONNECTION DOWN TO BOND BEAM ELEVATION NOTED.

9 JOIST BRIDGING TO ACCOMMODATE DUCTS. COORDINATE WITH MECHANICAL. TYP BETWEEN JOISTS.

10 ANGLE TO BE CONTINUOUS ALONG FULL LENGTH OF WALL. SEE TYPICAL ROOF EDGE ANGLE SPLICE DETAIL.

11 HOLD PRECAST BACK AND BEAR ON ANGLE INSTEAD OF CMU OVER DUCT. COORDINATE LOCATION AND SIZE WITH MECHANICAL CONTRACTOR.

12 TOOTH IN MASONRY AT WALL INTERSECTION.

13 FABRICATOR TO ACCOMMODATE BEAM DEEP COPE IN CONNECTION DESIGN.

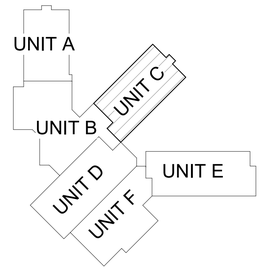
14 ELEVATOR HOIST BEAM BELOW (BY ELEVATOR SUPPLIER). PROVIDE BEARING PLATES AT EACH END OF HOIST BEAM. COORDINATE SIZE, LOCATION, AND ELEVATION OF BEARING PLATES WITH ELEVATOR SUPPLIER.

15 DUCT, PIPE, OR CONDUIT PENETRATION THROUGH FLOOR. PRECAST SUPPLIER TO COORDINATE SIZE AND LOCATION OF OPENING WITH MECHANICAL, PLUMBING, OR ELECTRICAL CONTRACTOR. NOT NECESSARILY ALL OPENINGS ARE SHOWN. PRECAST SUPPLIER TO PROVIDE HEADER FRAMING AT PENETRATIONS AS REQUIRED BY DESIGN.

16 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW DECK BEARING.

17 1/2" DIA x 4" HEADED STUD WELDED TO SIDE OF COLUMN AND EMBEDDED INTO SOLID GROUTED CMU. LOCATE 4" BELOW TOP OF FIRST FULL COURSE OF BOND BEAM BELOW PRECAST BEARING.

**EL SOL ELEMENTARY**




KEY PLAN

SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ALTERNATE 1 - ROOF PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
S 801
23-622.00

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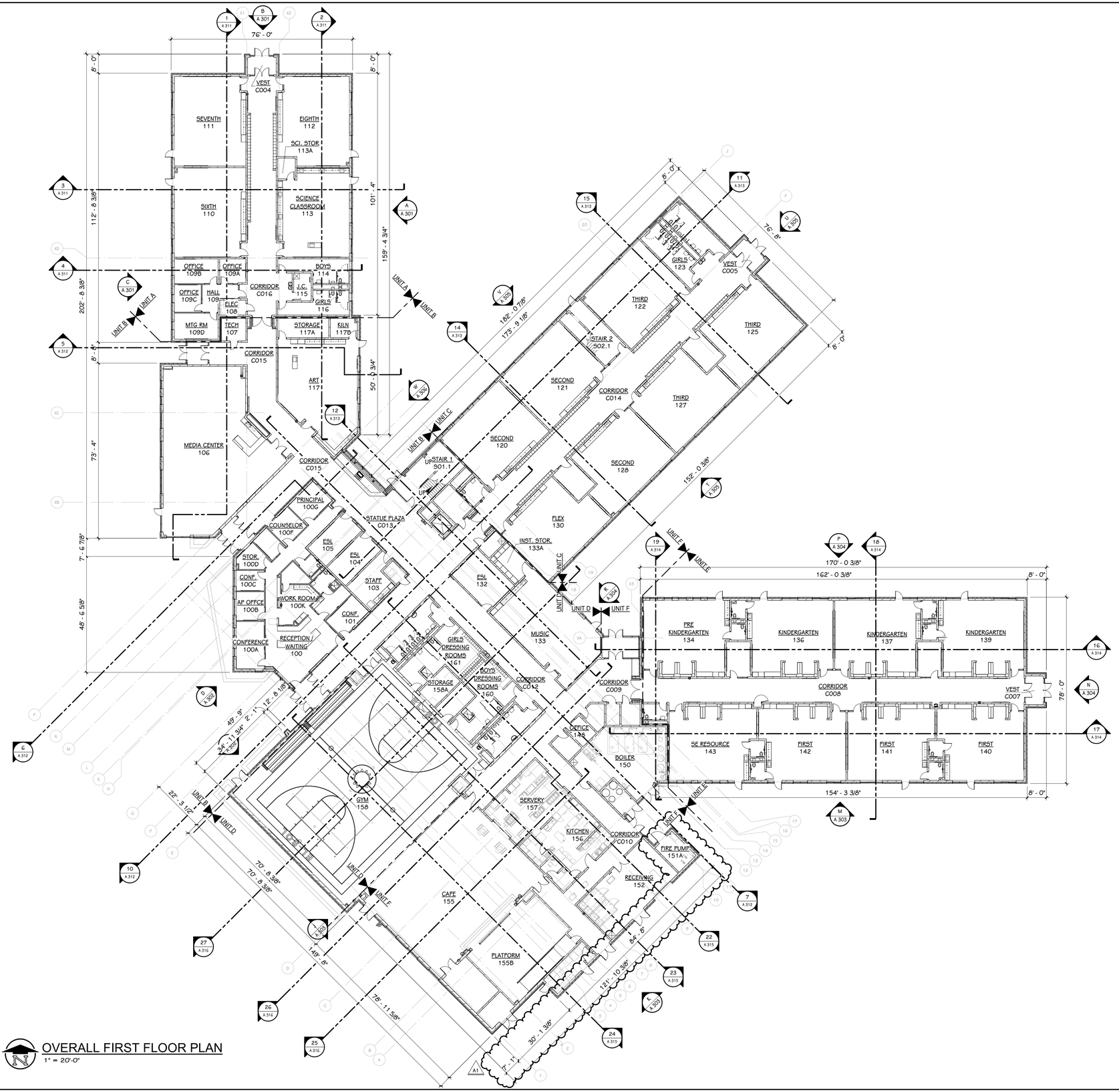
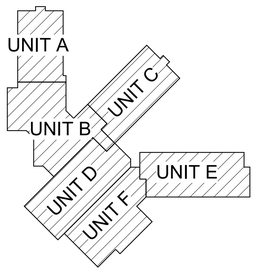



## OVERALL FIRST FLOOR PLAN

1" = 20'-0"

**EL SOL SCHOOL**

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL FIRST FLOOR PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
A 101

23-622.000

## KEYED NOTES - ARCHITECTURAL - CONSTRUCTION

1 EXTENT OF INSULATED DOUBLE FREEZER/COOLER SLAB. COORDINATE THEREMO BREAK WITH MANUF. RECOMENDATIONS

2 INTEGRAL MASONRY PLANTER.

3 4" THICK CONCRETE PAD - COORDINATE SIZE AND LOCATION WITH MECHANICAL DRAWINGS.

4 8"x8" INTEGRAL CONCRETE CURB AROUND PERIMETER WALLS AND FLOOR PENETRATIONS

5 DOUBLE TIER METAL LOCKERS. REFER TO INTERIORS.

6 WALL MOUNTED HANDRAIL.

7 CAST-IN-PLACE CONCRETE STEP AND LANDING. REFER TO STRUCTURAL.

8 ACCESS LADDER GUARDRAIL WITH GATE.

9 SOAP AND TOWEL DINSPENSERS AT SINK. REFER TO TOILET ACCESSORIES SCHEDULE ON A400s.

10 BARRIER-FREE SINK, REFER TO MECHANICAL

11 WATER COOLER, REFER TO MECHANICAL

12 FIRE-RATED, PREFORMED EXPANSION JOINT.

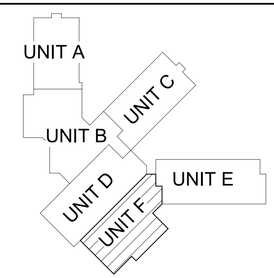
13 SAFETY PADS - 2'x7', MOUNT 4" AFF.

14 SAFETY PADS - 2'x7', MOUNT 4" AFF, CENTER ON BASKETBALL HOOP.

15 SAFETY PADS ON DOOR TO ALIGN TO ADJACENT SAFETY PADS.

FIRST FLOOR PLAN - UNIT F
1/8" = 1'-0"

## EL SOL SCHOOL

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NEW EL SOL SCHOOL

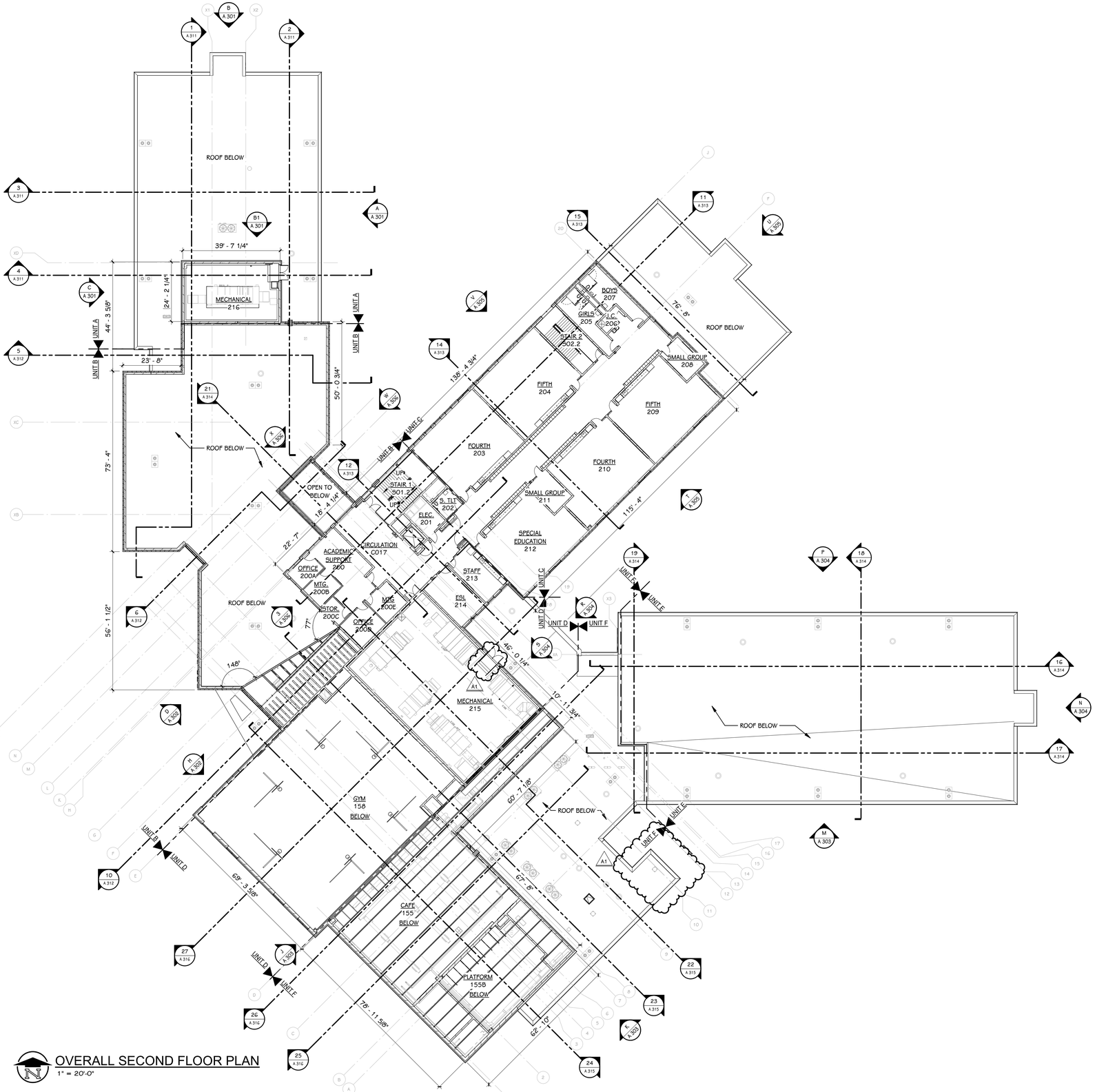
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR PLAN - UNIT F

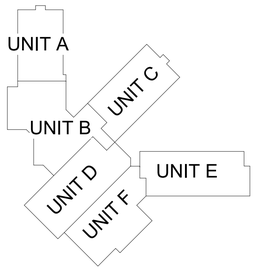
DATE
APRIL 24, 2026

SHEET NUMBER
A 101F
23-622.000




OVERALL SECOND FLOOR PLAN
1" = 20'-0"

**EL SOL SCHOOL**




KEY PLAN
SCALE: NO SCALE

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NEW EL SOL SCHOOL

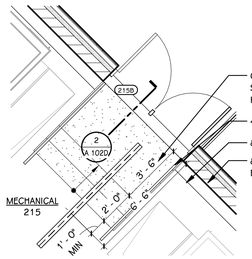
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

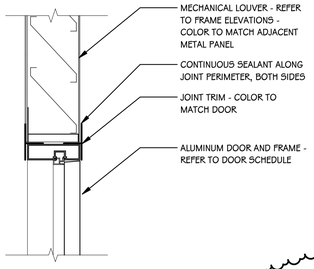
SHEET TITLE
OVERALL SECOND FLOOR PLAN

DATE
APRIL 24, 2026

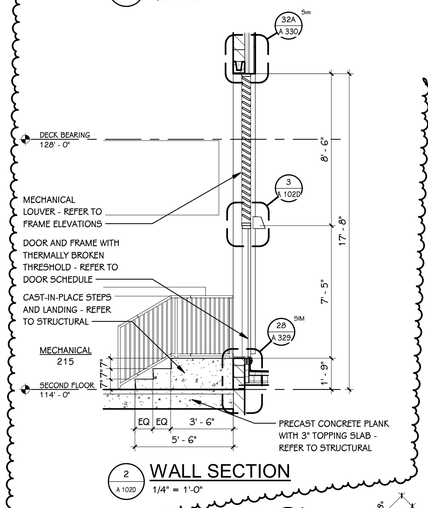
SHEET NUMBER
A 102
23-622.000



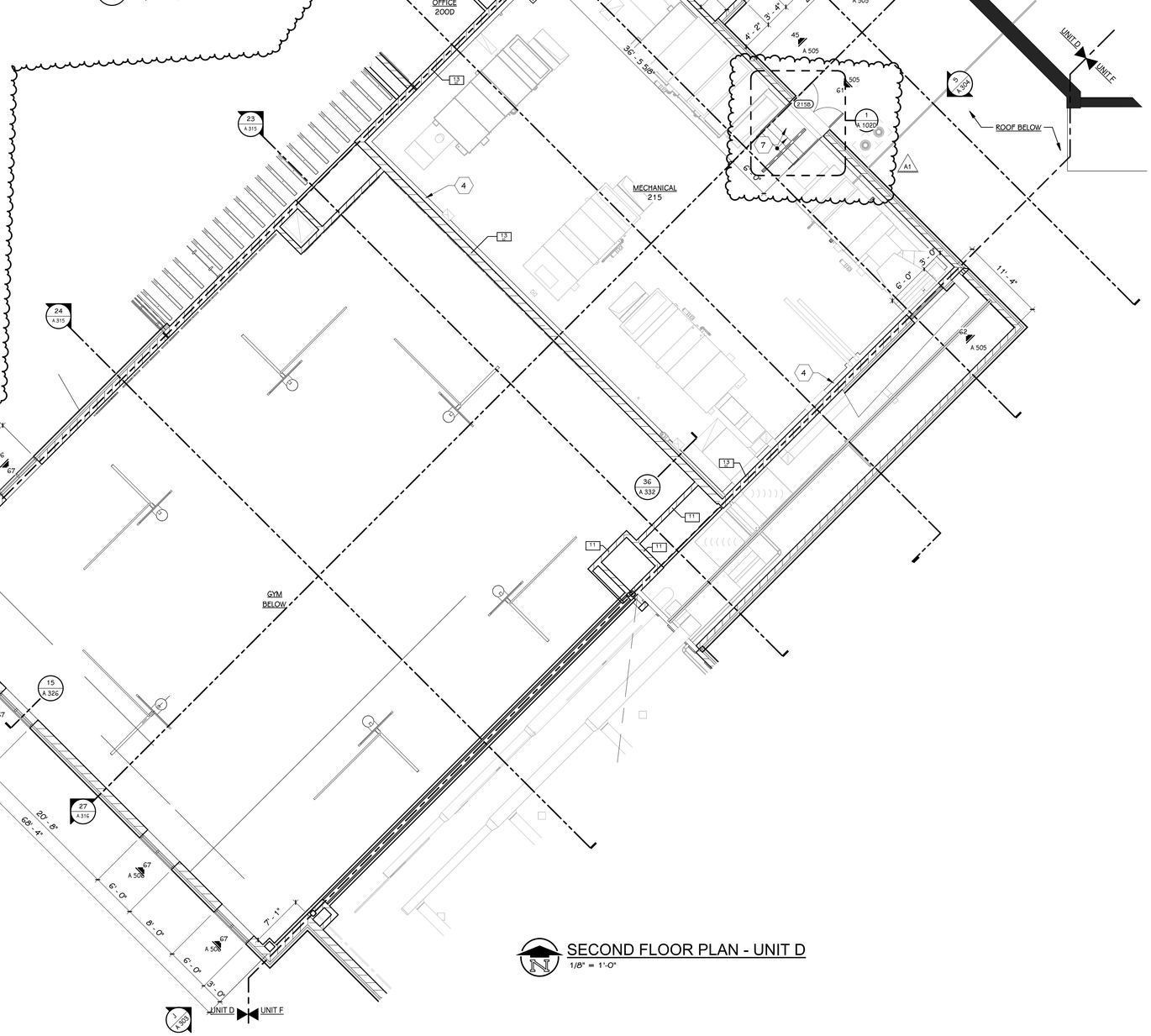

1 A 1020 **ENLARGED PLAN**
1/4" = 1'-0"




3 A 1020 **WALL DETAIL**
1 1/2" = 1'-0"




2 A 1020 **WALL SECTION**
1/4" = 1'-0"

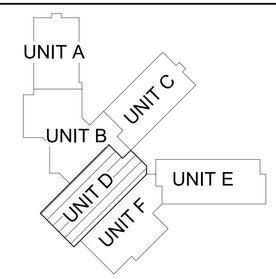



SECOND FLOOR PLAN - UNIT D
1/8" = 1'-0"

## KEYED NOTES - ARCHITECTURAL - CONSTRUCTION

1. EXTENT OF INSULATED DOUBLE FREEZER/COOLER SLAB. COORDINATE THEREMO BREAK WITH MANUF. RECOMENDATIONS
2. INTEGRAL MASONRY PLANTER.
3. 4" THICK CONCRETE PAD - COORDINATE SIZE AND LOCATION WITH MECHANICAL DRAWINGS.
4. 8"x8" INTEGRAL CONCRETE CURB AROUND PERIMETER WALLS AND FLOOR PENETRATIONS
5. DOUBLE TIER METAL LOCKERS. REFER TO INTERIORS.
6. WALL MOUNTED HANDRAIL.
7. CAST-IN-PLACE CONCRETE STEP AND LANDING. REFER TO STRUCTURAL.
8. ACCESS LADDER GUARDRAIL WITH GATE.
9. SOAP AND TOWEL DINSPENSERS AT SINK. REFER TO TOILET ACCESSORIES SCHEDULE ON A400s.
10. BARRIER-FREE SINK, REFER TO MECHANICAL
11. WATER COOLER, REFER TO MECHANICAL
12. FIRE-RATED, PREFORMED EXPANSION JOINT.
13. SAFETY PADS - 2'x7', MOUNT 4" AFF.
14. SAFETY PADS - 2'x7', MOUNT 4" AFF, CENTER ON BASKETBALL HOOP.
15. SAFETY PADS ON DOOR TO ALIGN TO ADJACENT SAFETY PADS.

**EL SOL SCHOOL**




**KEY PLAN**
SCALE: NO SCALE

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| ADDENDUM #1 | 05-08-2026 |

PROJECT TITLE
NEW EL SOL SCHOOL

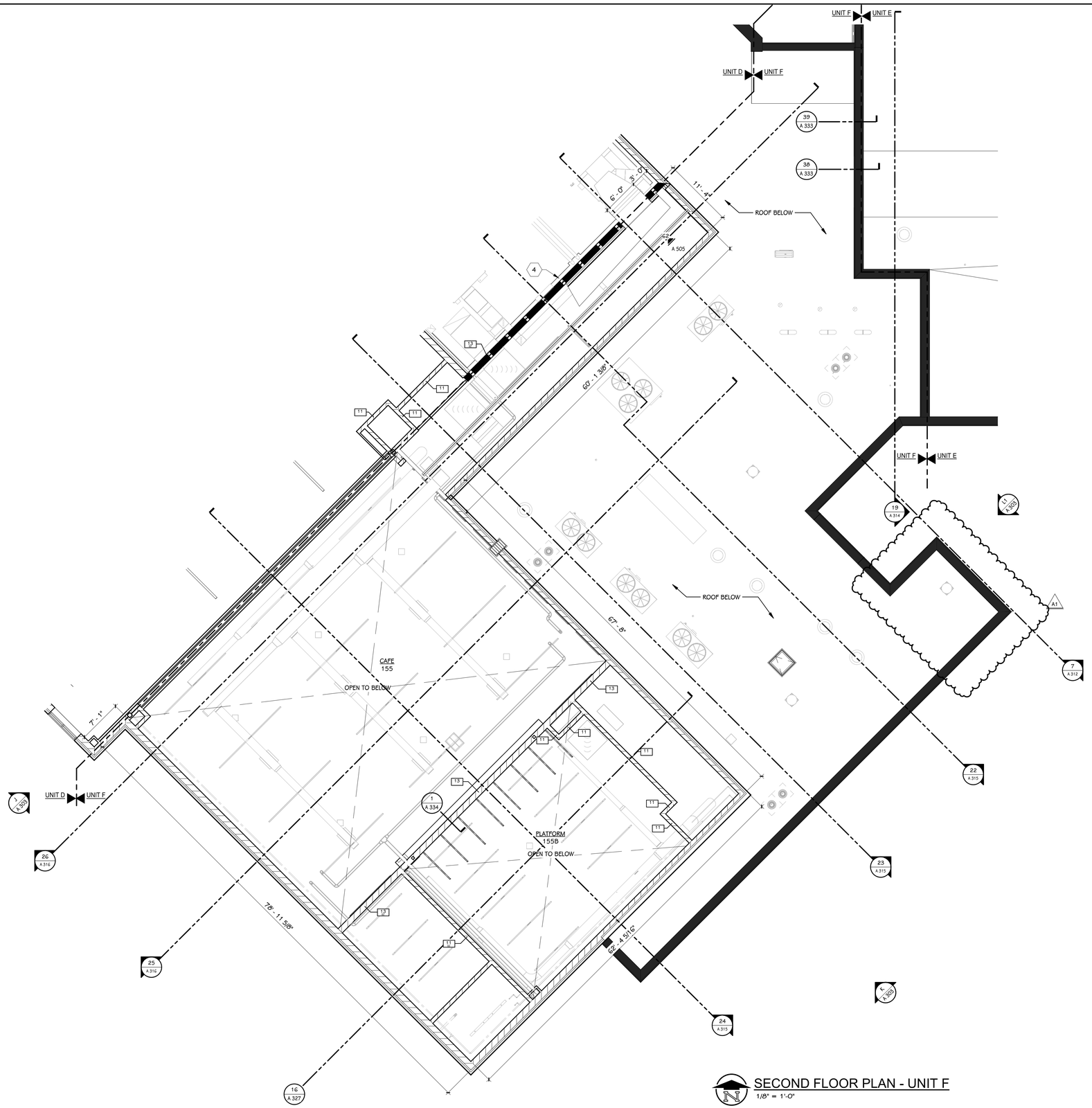
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
A 102D
23-622.000




## KEYED NOTES - ARCHITECTURAL - CONSTRUCTION

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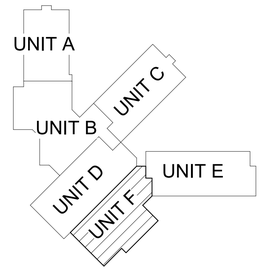
**EL SOL SCHOOL**




**KEY PLAN**
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

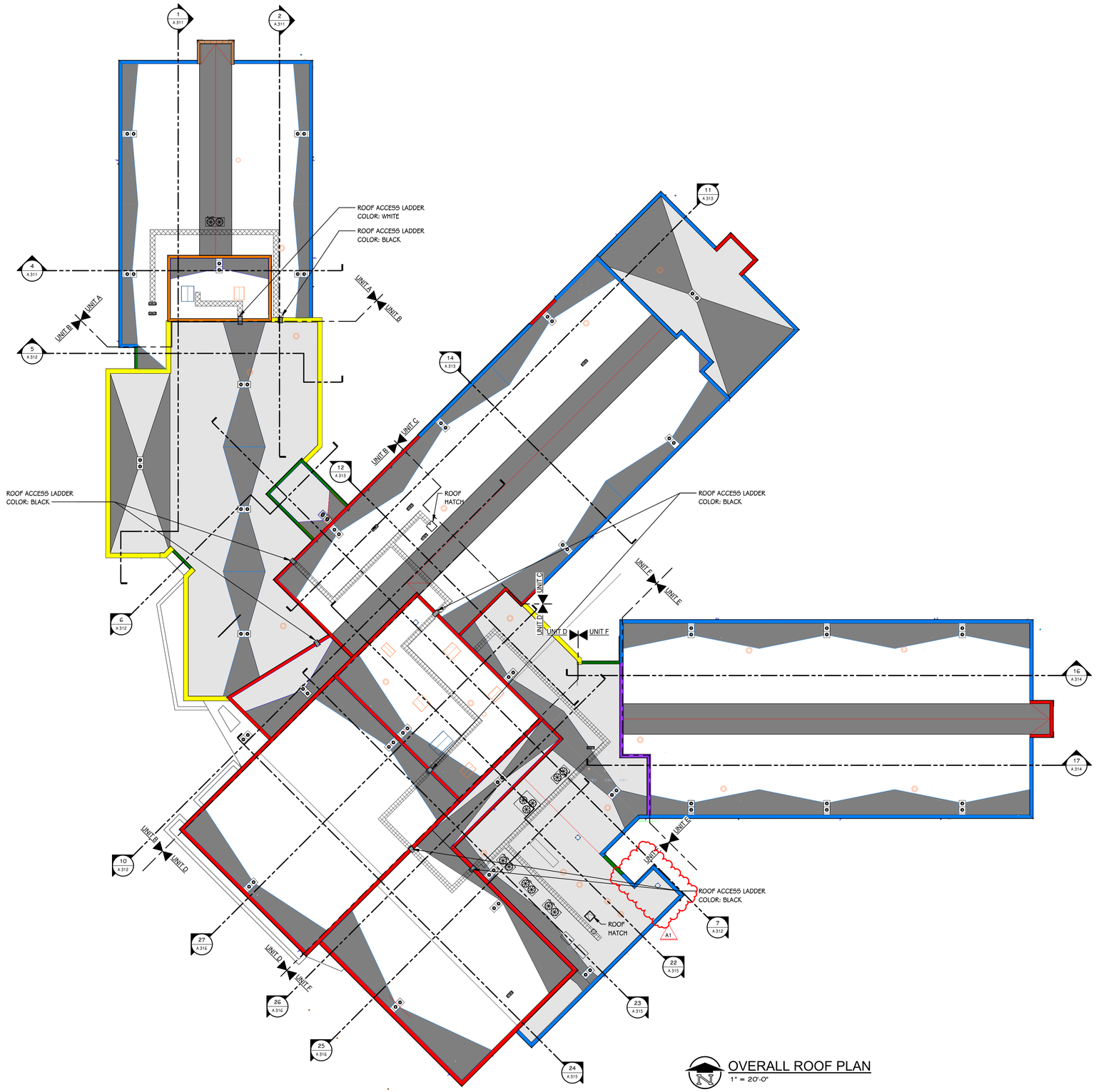
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
A 102F
23-622.000




OVERALL ROOF PLAN
1" = 20'-0"

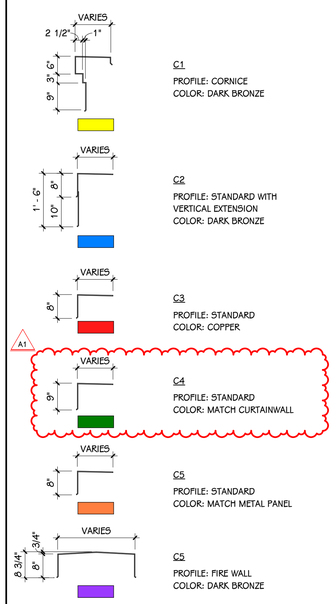
## ROOF PLAN KEY

| | |
|---|---|
| | PITCHING STEEL - FOR FIELD SLOPE |
| | TAPERED INSULATION - TAPERED FOR FIELD SLOPE |
| | TAPERED INSULATION - TAPERED FOR CROSS SLOPE |
| | WALKWAY PADS - REFER TO SPECS FOR MORE INFORMATION |
| RD/OD | ROOF AND OVERFLOW DRAIN - SEE PLUMBING DRAWINGS |
| ← | ROOF SLOPE DUE TO TAPERED INSULATION OR SLOPED STRUCTURE - REFER TO STRUCTURAL DRAWINGS |
| AHU OR RTU | ROOF TOP UNIT - SEE MECHANICAL DRAWINGS |
| ACCU | CONDENSING UNIT - SEE MECHANICAL DRAWINGS |
| E.F. | EXHAUST FAN / HOOD - SEE MECHANICAL DRAWINGS |

## NOTES

1. TYPICAL ROOF SLOPE 1/4" / 1'-0" UNLESS NOTED OTHERWISE.
2. PROVIDE ROOFING MANUFACTURER'S STANDARD ROOFING TERMINATION DETAILS AT ALL PARAPETS, PRE-MANUFACTURED ROOF EDGE SYSTEMS, CURBS, PIPE PENETRATIONS, ETC.
3. PROVIDE CRICKETS AS REQUIRED AT ALL MECHANICAL UNITS, VENTS, ETC. TO MAINTAIN POSITIVE SLOPE OF 1/4" /1'-0" MINIMUM.

## ROOF COPING KEY

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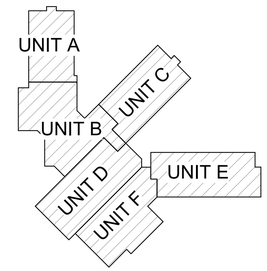
## EL SOL SCHOOL




KEY PLAN
SCALE: NO SCALE

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NEW EL SOL SCHOOL

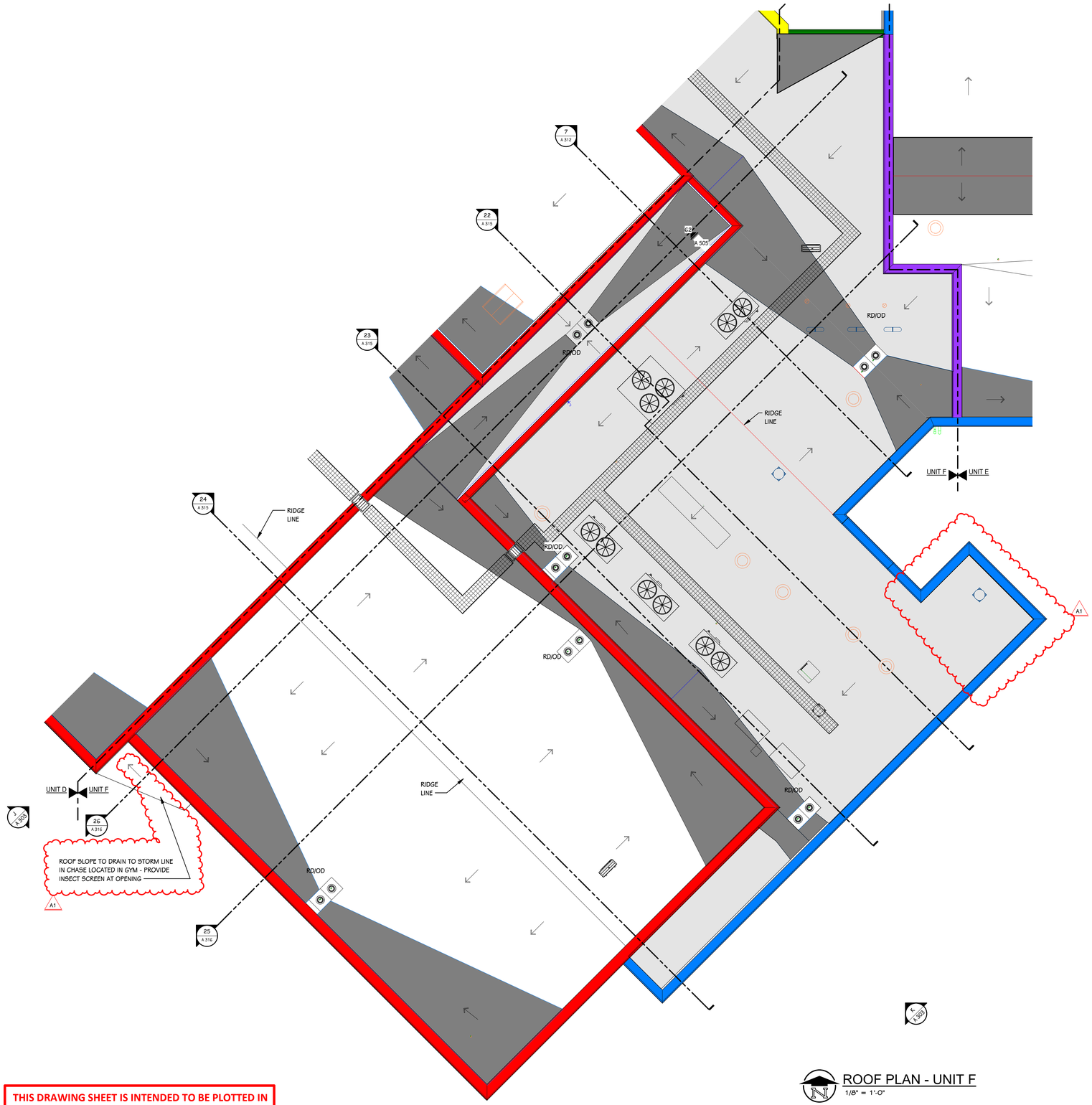
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL ROOF PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
A 103
23-622.000




ROOF PLAN - UNIT F
1/8" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

## KEYED NOTES - ARCHITECTURAL - ROOF

1 WALL MOUNTED PRIME AND PAINTED GALV. STEEL LADDER WITH PLATFORM OVER PARAPET WALL. LADDER BOTH SIDES.

## ROOF PLAN KEY

| | |
|---|---|
| | PITCHING STEEL - FOR FIELD SLOPE |
| | TAPERED INSULATION - TAPERED FOR FIELD SLOPE |
| | TAPERED INSULATION - TAPERED FOR CROSS SLOPE |
| | WALKWAY PADS - REFER TO SPECS FOR MORE INFORMATION |
| RD/OD | ROOF AND OVERFLOW DRAIN - SEE PLUMBING DRAWINGS |
| ← | ROOF SLOPE DUE TO TAPERED INSULATION OR SLOPED STRUCTURE - REFER TO STRUCTURAL DRAWINGS |
| AHU OR RTU | ROOF TOP UNIT - SEE MECHANICAL DRAWINGS |
| ACCU | CONDENSING UNIT - SEE MECHANICAL DRAWINGS |
| E.F. | EXHAUST FAN / HOOD - SEE MECHANICAL DRAWINGS |

## NOTES

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2. PROVIDE ROOFING MANUFACTURERS STANDARD ROOFING TERMINATION DETAILS AT ALL PARAPETS, PRE-MANUFACTURED ROOF EDGE SYSTEMS, CURBS, PIPE PENETRATIONS, ETC.
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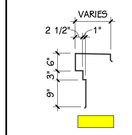
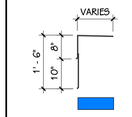
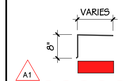


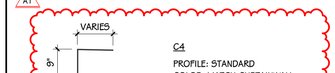

C1
PROFILE: CORNICE
COLOR: DARK BRONZE



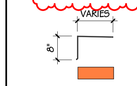

C2
PROFILE: STANDARD WITH VERTICAL EXTENSION
COLOR: DARK BRONZE



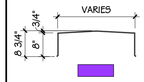

C3
PROFILE: STANDARD
COLOR: COPPER




C4
PROFILE: STANDARD
COLOR: MATCH CURTAINWALL

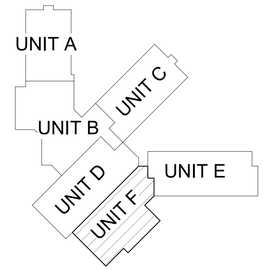



C5
PROFILE: STANDARD
COLOR: MATCH METAL PANEL




C5
PROFILE: FIRE WALL
COLOR: DARK BRONZE

## EL SOL SCHOOL




KEY PLAN
SCALE: NO SCALE

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NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ROOF PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
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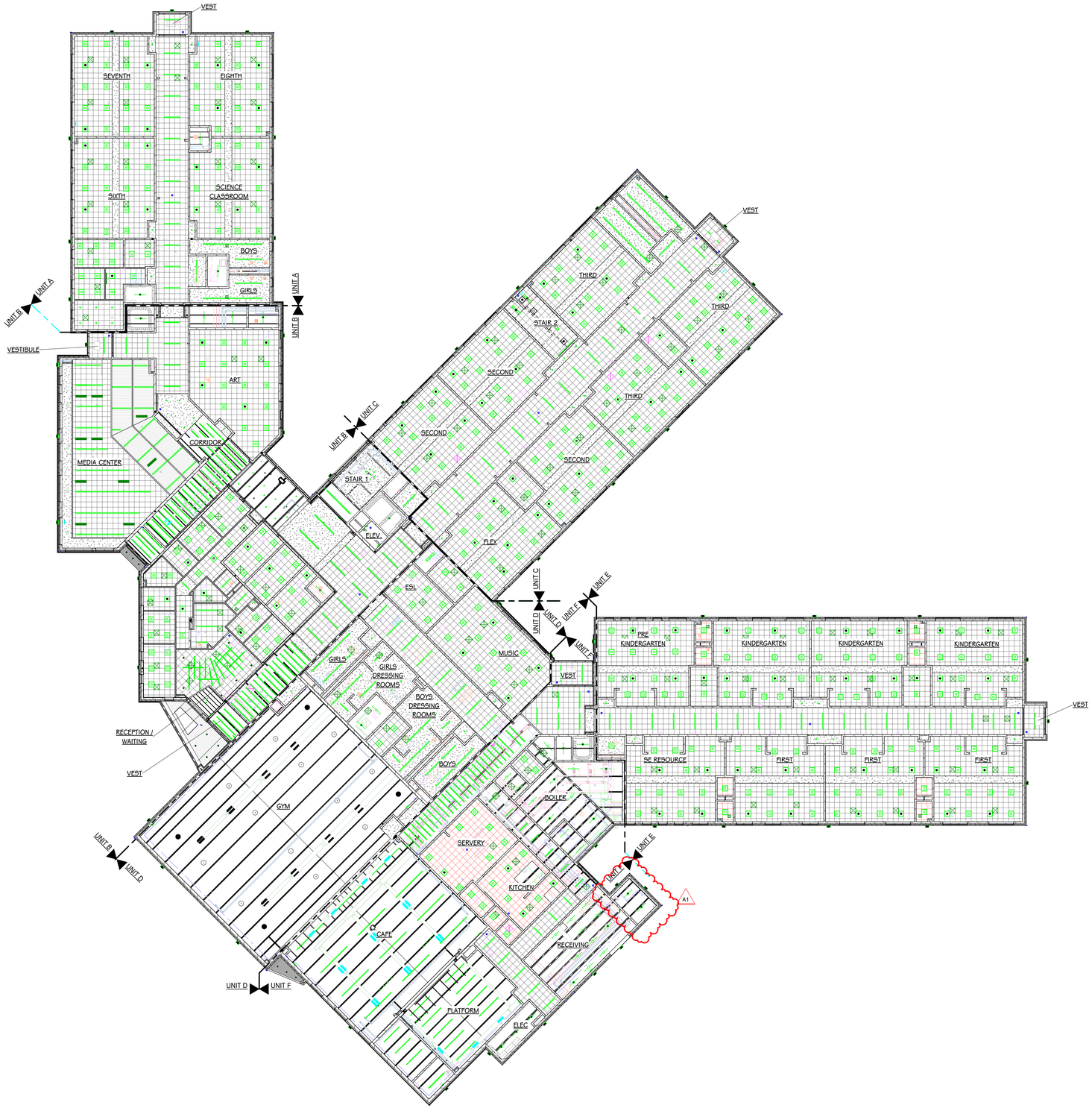
23-622.000




OVERALL FIRST FLOOR REFLECTED CEILING PLAN
1" = 20'-0"

## KEY - REFLECTED CEILING

- PAINTED GYPSUM BOARD
  REFER TO REFLECTED CEILING PLAN FOR PAINT COLOR
  FIRE SUPPRESSION COVERS IN P-1, P-3, AND P-4 TO BE BRUSHED CHROME
  FIRE SUPPRESSION COVERS IN P-2 TO BE BLACK
- ACOUSTICAL TILE GRID (ACP-1)
  24" x 24" LAY IN
  FIRE SUPPRESSION COVERS TO BE WHITE
- ACOUSTICAL TILE GRID (ACP-2)
  24" x 24" LAY IN
  FIRE SUPPRESSION COVERS TO BE WHITE
- PAINTED EXPOSED CEILING
  UNLESS NOTED OTHERWISE, P-6
  FIRE SUPPRESSION COVERS IN P-6 TO BE BRUSHED CHROME
- LINEAR METAL CEILING (LMC-1)
  8" X 96" PLANKS
  FIRE SUPPRESSION COVERS TO BE BLACK
- ○ OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
- MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

## GENERAL NOTES - REFLECTED CEILINGS

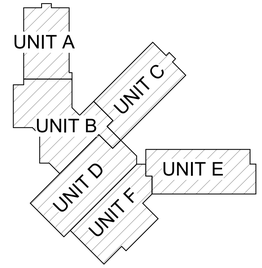
1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS FOR PAINT COLORS.

## KEYED NOTES - ARCHITECTURAL - REFLECTED CEILING

1 LINEAR BAFFLES. REFER TO MATERIAL SELECTION SCHEDULE. OPEN TO STRUCTURE ABOVE.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

**EL SOL SCHOOL**




KEY PLAN
SCALE: NO SCALE

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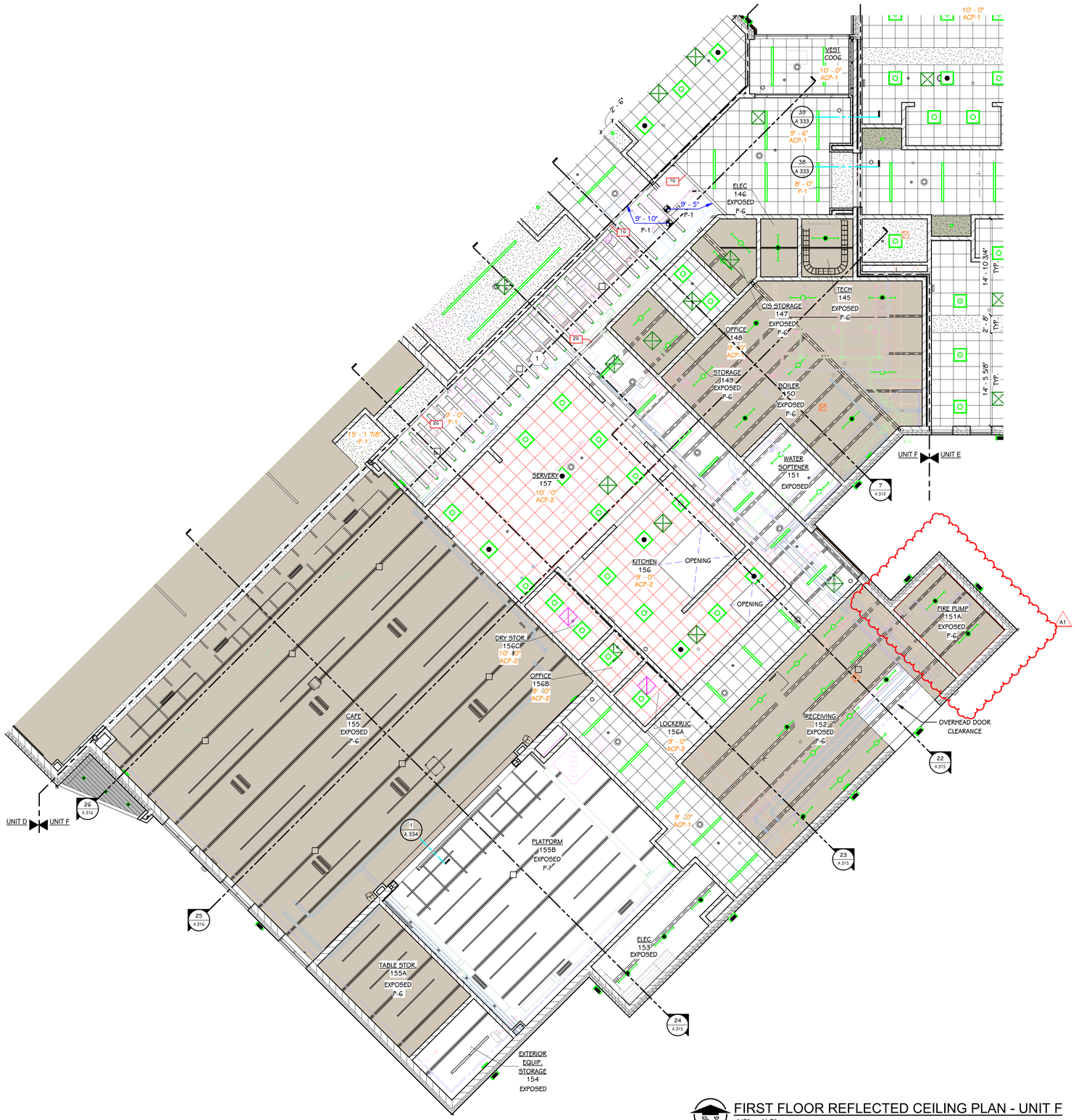
PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
KALAMAZOO, MICHIGAN

SHEET TITLE
OVERALL FIRST FLOOR REFLECTED CEILING PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
A 201
23-622.000




FIRST FLOOR REFLECTED CEILING PLAN - UNIT F

1/8" = 1'-0"

## KEY - REFLECTED CEILING

- PAINTED GYPSUM BOARD
  REFER TO REFLECTED CEILING PLAN FOR PAINT COLOR
  FIRE SUPPRESSION COVERS IN P-1, P-3, AND P-4 TO BE BRUSHED CHROME
  FIRE SUPPRESSION COVERS IN P-2 TO BE BLACK
- ACOUSTICAL TILE GRID (ACP-1)
  24" x 24" LAY IN
  FIRE SUPPRESSION COVERS TO BE WHITE
- ACOUSTICAL TILE GRID (ACP-2)
  24" x 24" LAY IN
  FIRE SUPPRESSION COVERS TO BE WHITE
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  UNLESS NOTED OTHERWISE, P-6
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- MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

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2. AT AREAS OF EXPOSED CEILING PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS FOR PAINT COLORS.

## KEYED NOTES - ARCHITECTURAL - REFLECTED CEILING

1 LINEAR BAFFLES. REFER TO MATERIAL SELECTION SCHEDULE. OPEN TO STRUCTURE ABOVE.

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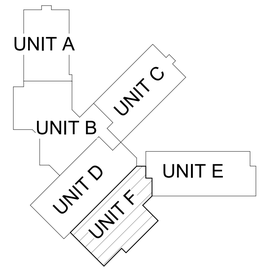
## EL SOL SCHOOL




KEY PLAN

SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

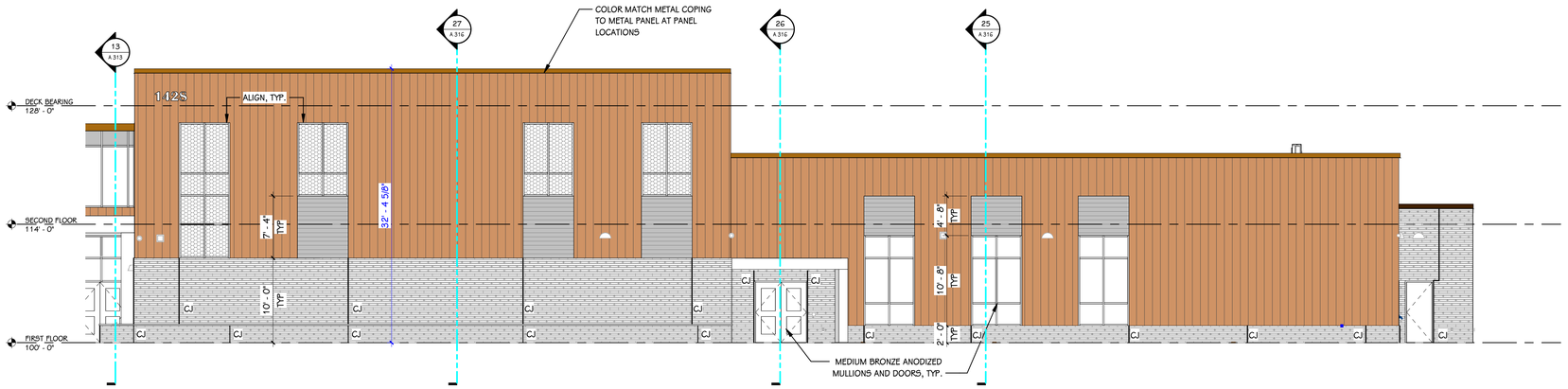
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR REFLECTED CEILING PLAN - UNIT F

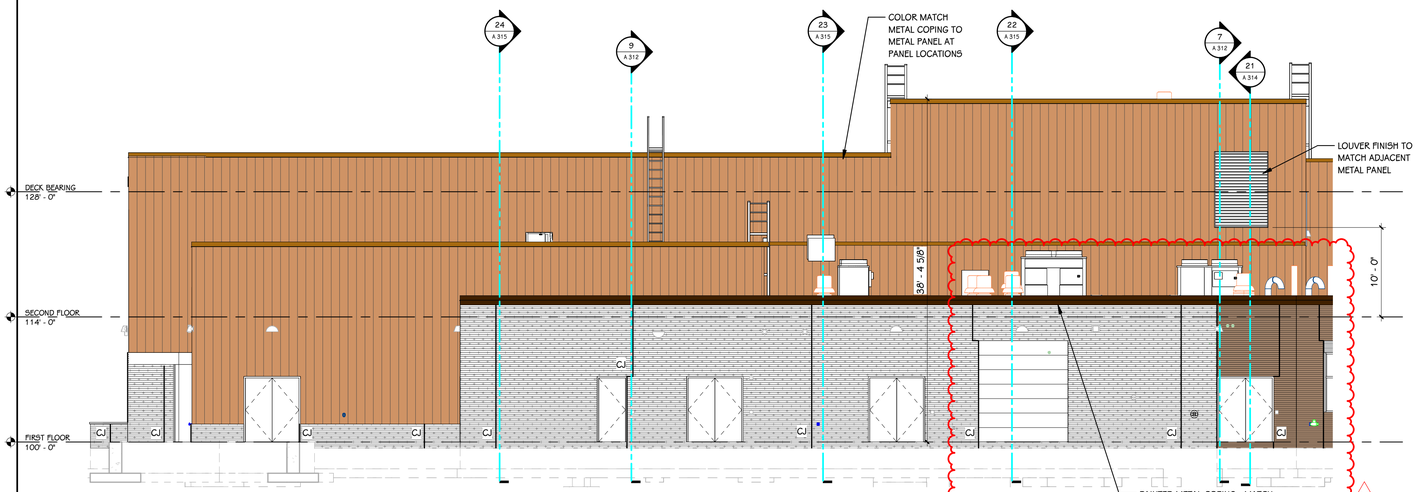
DATE
APRIL 24, 2026

SHEET NUMBER
A 201F

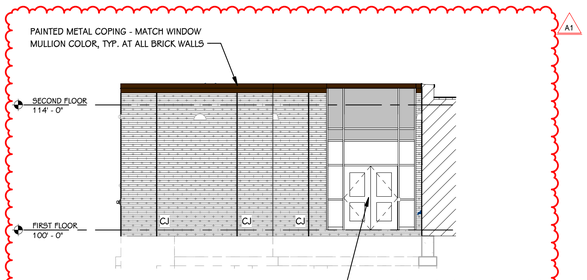
23-622.000




J / A 303 SOUTHWEST ELEVATION - UNIT D/F
1/8" = 1'-0"

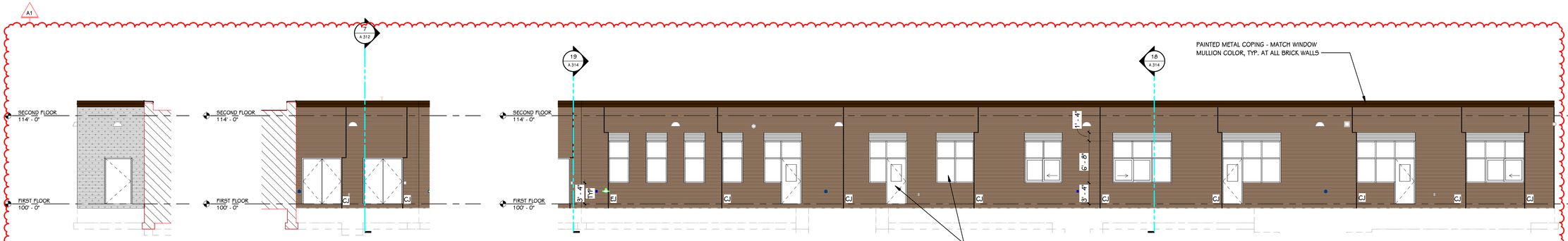



K / A 303 SOUTHEAST ELEVATION - UNIT F
1/8" = 1'-0"




L1 / A 303 NORTHEAST ELEVATION - UNIT F
1/8" = 1'-0"

PAINTED METAL COPING - MATCH WINDOW MULLION COLOR, TYP. AT ALL BRICK WALLS




L2 / A 303 WEST ELEVATION
1/8" = 1'-0"

L3 / A 303 SOUTH ELEVATION
1/8" = 1'-0"

M / A 303 SOUTH ELEVATION - UNIT E
1/8" = 1'-0"

**EXTERIOR ELEVATION KEY**

| | |
|---|---|
| | BRICK 1, COLOR: BELDEN BRICK - MODULAR, 481-483 SMOOTH |
| | BRICK 2, PATTERN 1: REFER TO EXTERIOR BRICK PATTERNS |
| | BRICK 3, PATTERN 2: REFER TO EXTERIOR BRICK PATTERNS |
| | BRICK 4, PATTERN 3: REFER TO EXTERIOR BRICK PATTERNS |
| METAL PANEL 1 | COLOR: METALLIC COPPER<br>PROFILE: MAC ARCHITECTURAL PANELS, MIX OF MS 1 AND MS 1.1 |
| METAL PANEL 2 | COLOR: BRONZE (MATCH WINDOW MULLION)<br>PROFILE: GLASS INFILL INSULATED METAL PANEL SMOOTH FINISH |
| METAL PANEL 3 | COLOR: CORK<br>PROFILE: MAC ARCHITECTURAL PANELS, NORWOOD, HORIZONTAL ORIENTATION |
| METAL PANEL 4 | COLOR: KINGSPAN BONE WHITE<br>PROFILE: CENTRIA 2.75" THICK, VERSAWALL+, 36" WIDE PANELS |

CJ = CONTROL JOINT, COLOR: TBD

EJ - BUILDING EXPANSION JOINT, COLOR: TBD

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

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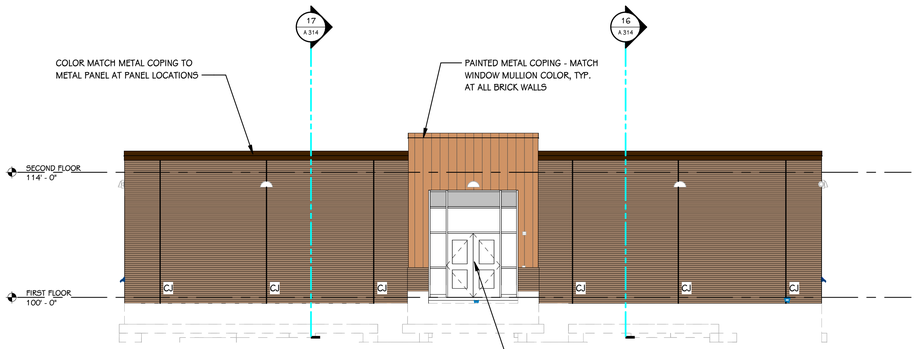
A 303
23-622.000



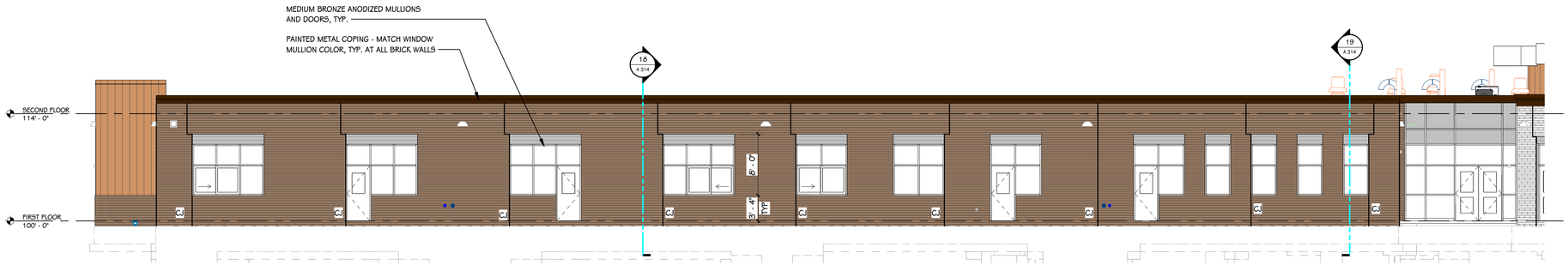

N / A 304 EAST ELEVATION - UNIT E
1/8" = 1'-0"

## EXTERIOR ELEVATION KEY

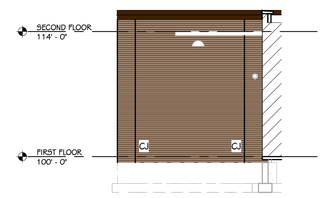
- BRICK 1, COLOR: BELDEN BRICK - MODULAR, 481-483 SMOOTH
- BRICK 2, PATTERN 1: REFER TO EXTERIOR BRICK PATTERNS
- BRICK 3, PATTERN 2: REFER TO EXTERIOR BRICK PATTERNS
- BRICK 4, PATTERN 3: REFER TO EXTERIOR BRICK PATTERNS
- METAL PANEL 1 — COLOR: METALLIC COPPER; PROFILE: MAC ARCHITECTURAL PANELS, MIX OF MS 1 AND MS 1.1
- METAL PANEL 2 — COLOR: BRONZE (MATCH WINDOW MULLION); PROFILE: GLASS INFILL INSULATED METAL PANEL SMOOTH FINISH
- METAL PANEL 3 — COLOR: CORK; PROFILE: MAC ARCHITECTURAL PANELS, NORWOOD, HORIZONTAL ORIENTATION
- METAL PANEL 4 — COLOR: KINGSPAN BONE WHITE; PROFILE: CENTRIA 2.75" THICK, VERSAWALL+, 36" WIDE PANELS

CJ = CONTROL JOINT, COLOR: TBD

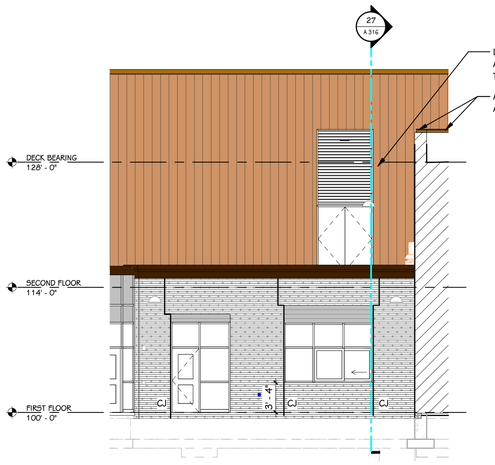
EJ - BUILDING EXPANSION JOINT, COLOR: TBD



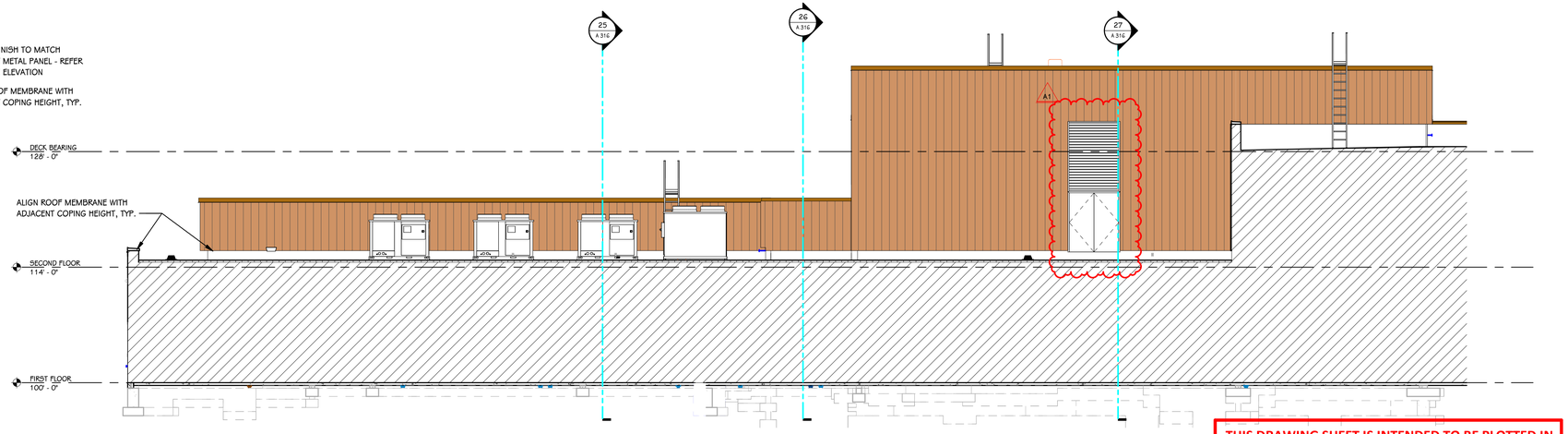

P / A 304 NORTH ELEVATION - UNIT E
1/8" = 1'-0"




Q / A 304 WEST ELEVATION - UNIT E
1/8" = 1'-0"




R / A 304 NORTHEAST ELEVATION - UNIT D
1/8" = 1'-0"




S / A 304 NORTHEAST ELEVATION - UNIT D
1/8" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

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PROJECT TITLE
NEW EL SOL SCHOOL

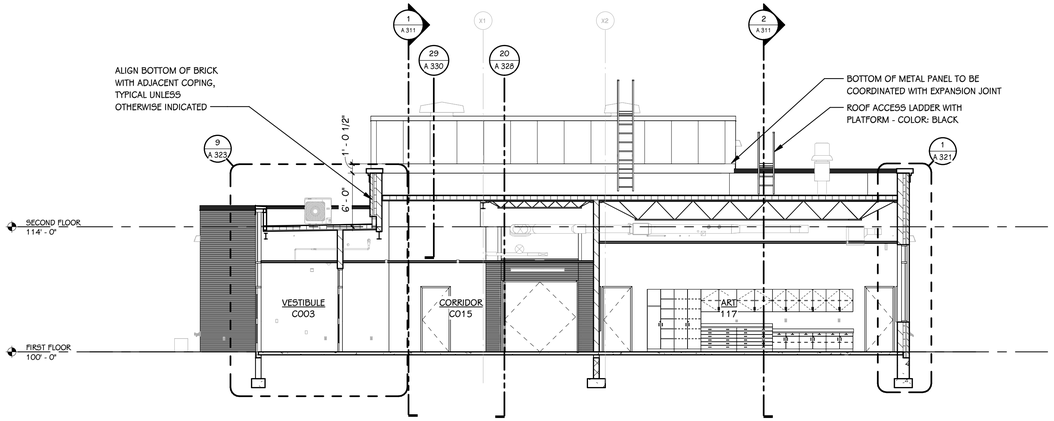
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

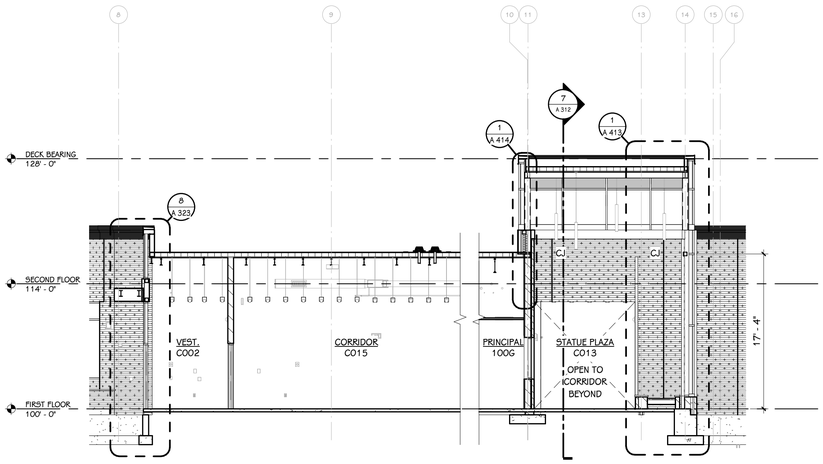
SHEET TITLE
EXTERIOR ELEVATIONS

DATE
APRIL 24, 2026

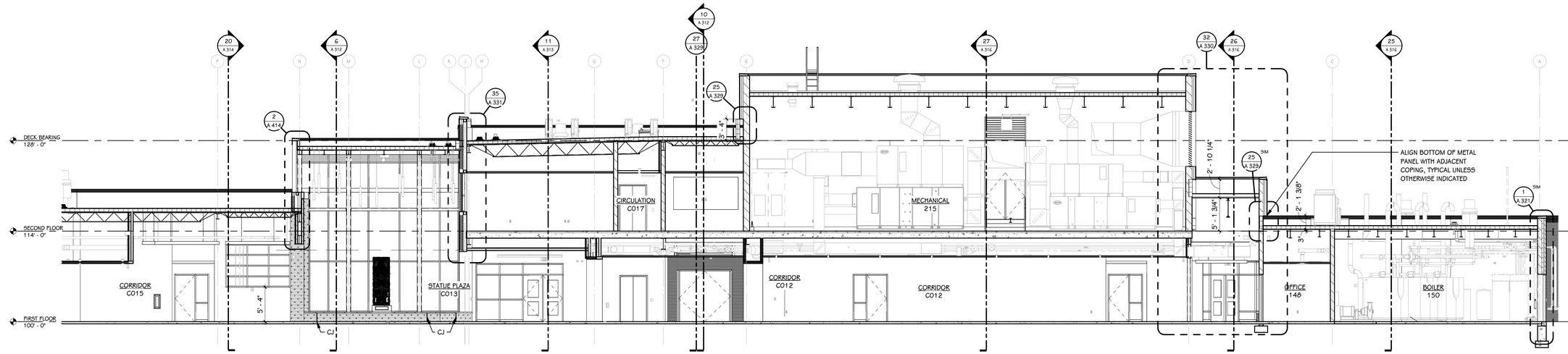
SHEET NUMBER
A 304
23-622.000



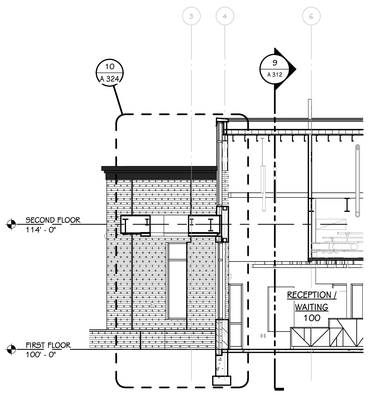

5 A 312 BUILDING SECTION
1/8" = 1'-0"



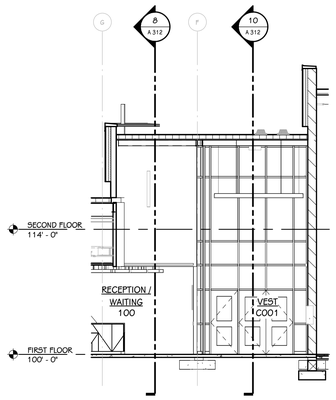

6 A 312 BUILDING SECTION
1/8" = 1'-0"



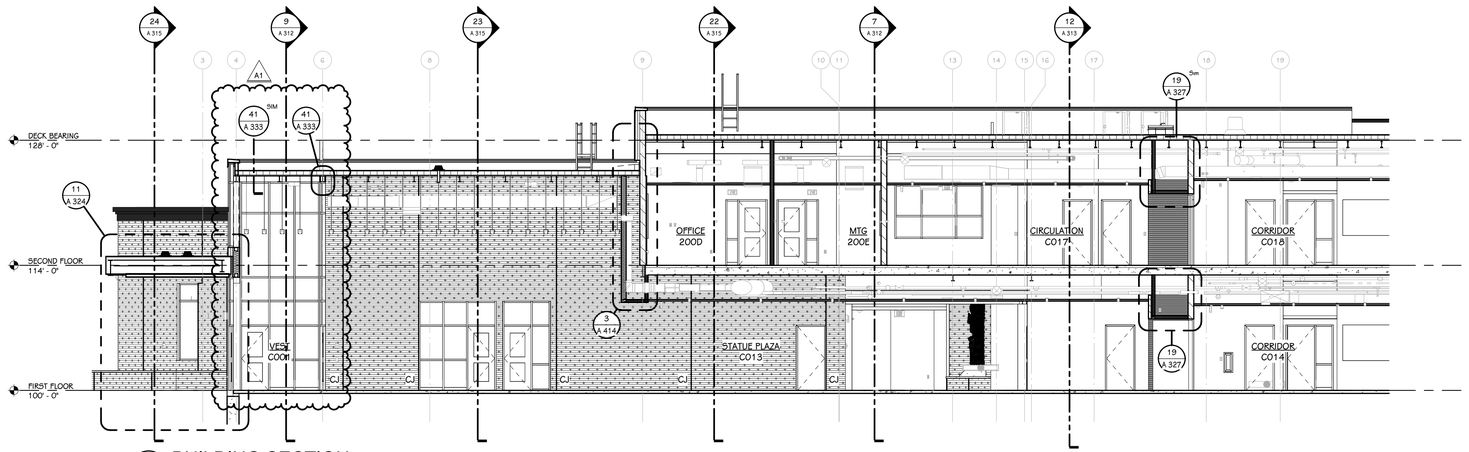

7 A 312 BUILDING SECTION
1/8" = 1'-0"




8 A 312 BUILDING SECTION
1/8" = 1'-0"




9 A 312 BUILDING SECTION
1/8" = 1'-0"




10 A 312 BUILDING SECTION
1/8" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

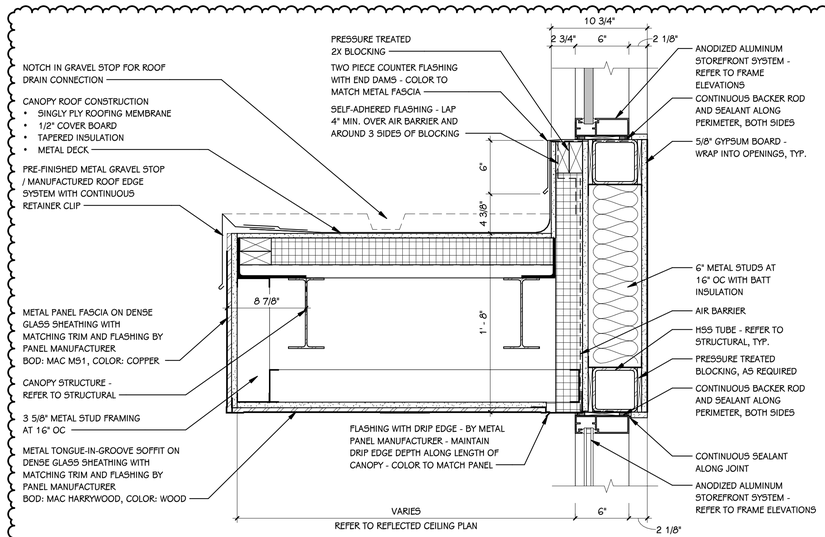
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

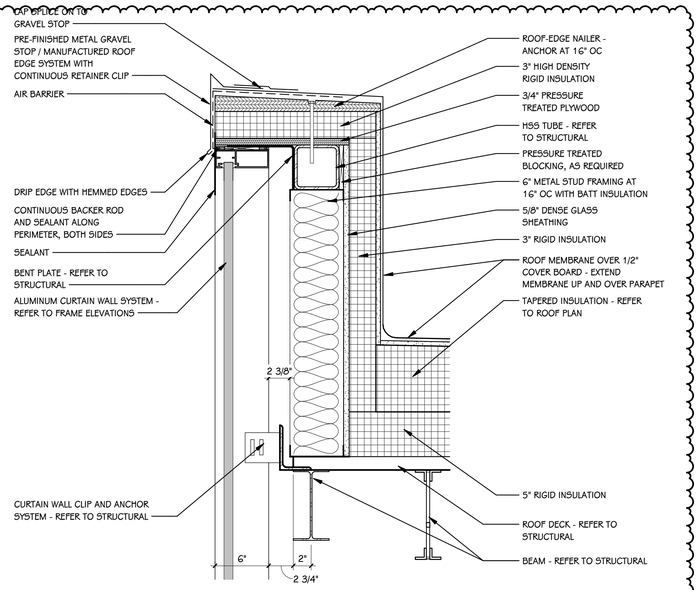
SHEET TITLE
BUILDING SECTIONS

DATE
APRIL 24, 2026

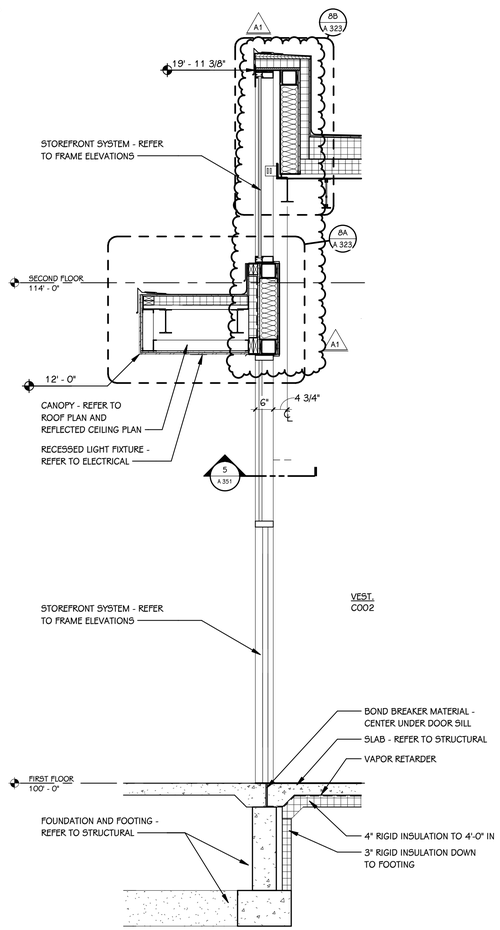
SHEET NUMBER
A 312
23-622.000



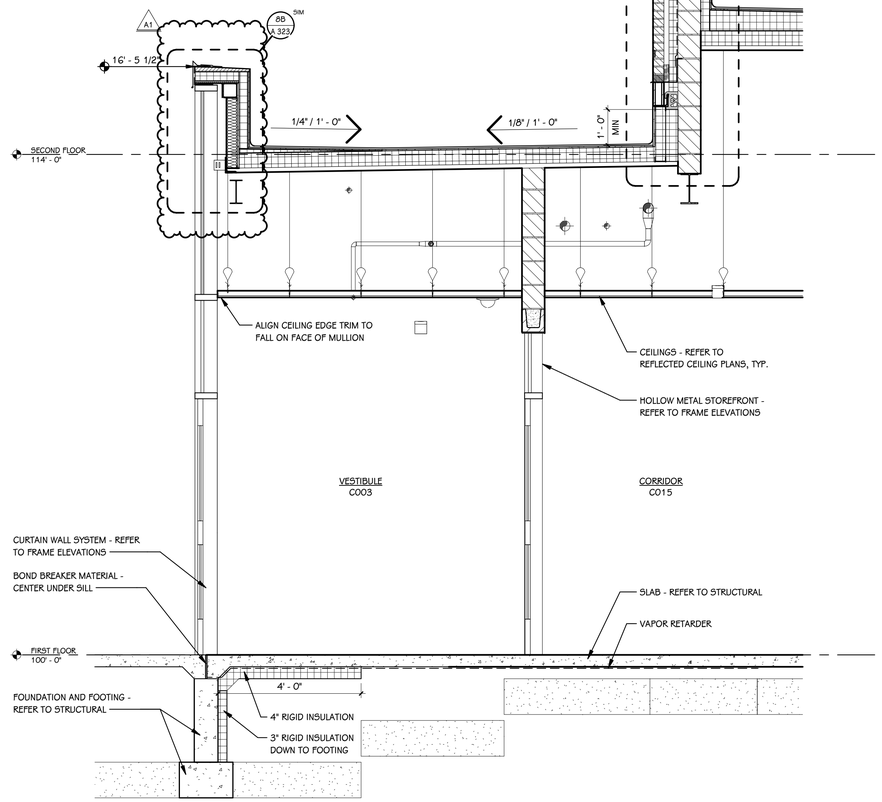

8A / A 323 WALL DETAIL
1 1/2" = 1'-0"



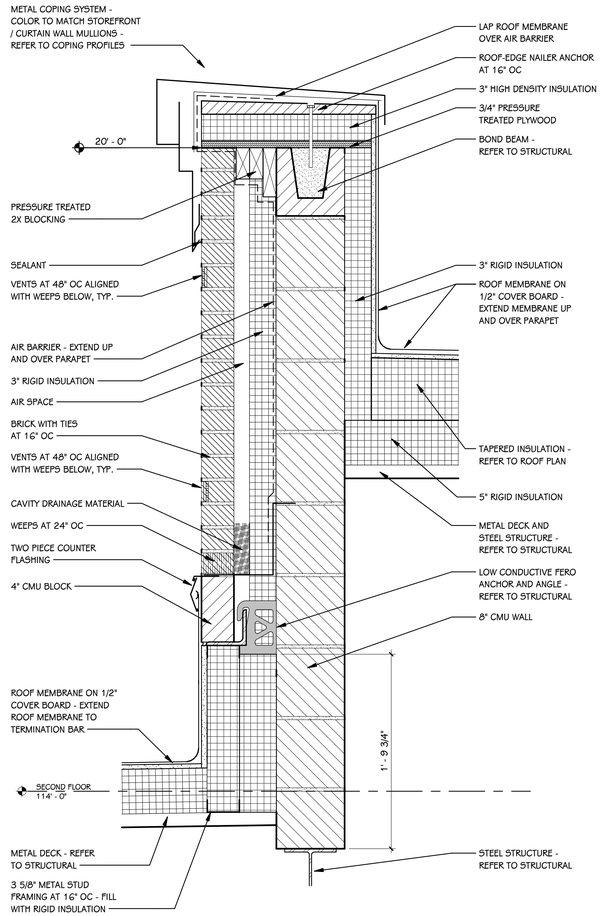

8B / A 323 WALL DETAIL
1 1/2" = 1'-0"




8 / A 323 WALL SECTION
1/2" = 1'-0"




9 / A 323 BUILDING SECTION
1/2" = 1'-0"




9A / A 323 WALL DETAIL
1 1/2" = 1'-0"

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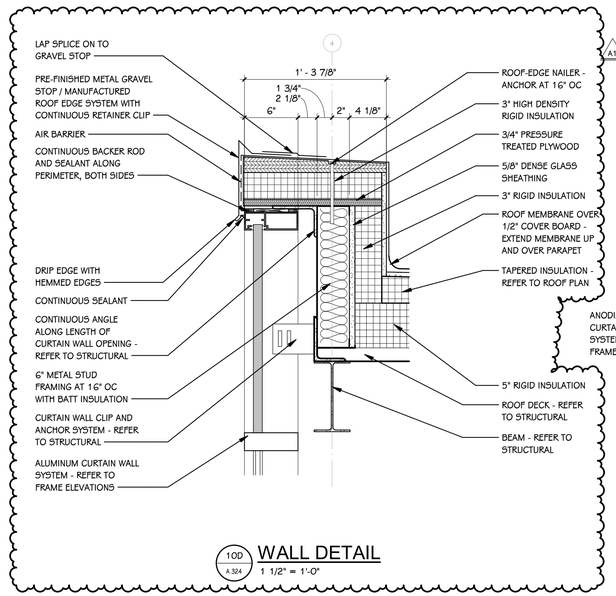
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

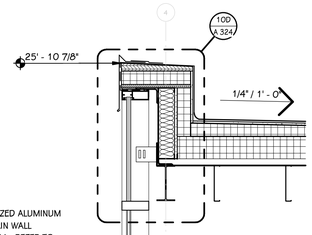
SHEET TITLE
WALL SECTIONS AND DETAILS

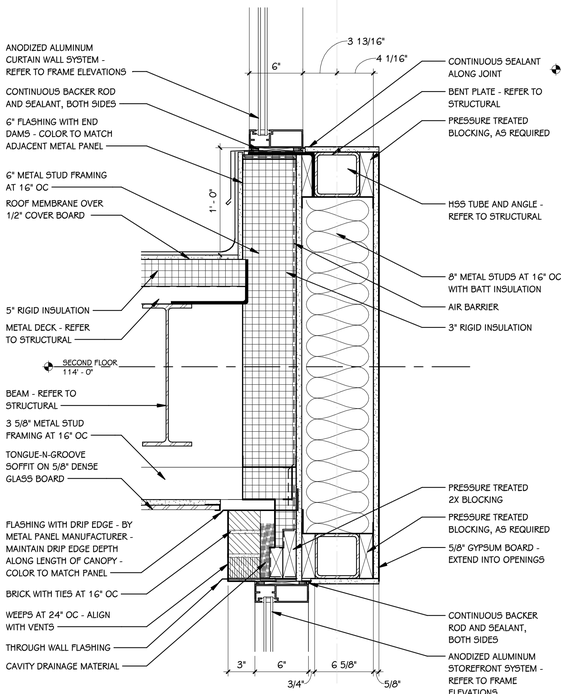
DATE
APRIL 24, 2026

SHEET NUMBER
A 323
23-622.000

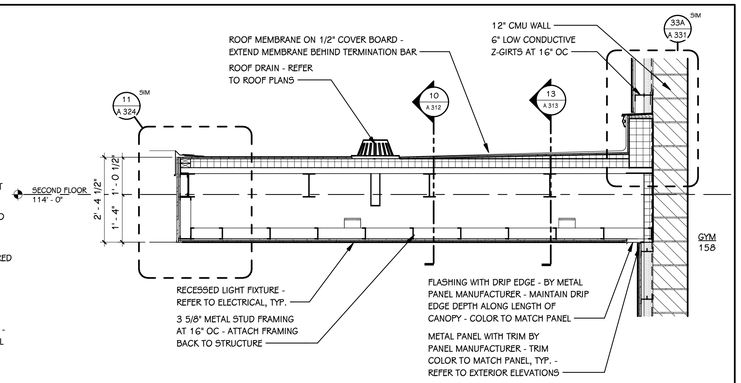



10D A 324 WALL DETAIL
1 1/2" = 1'-0"

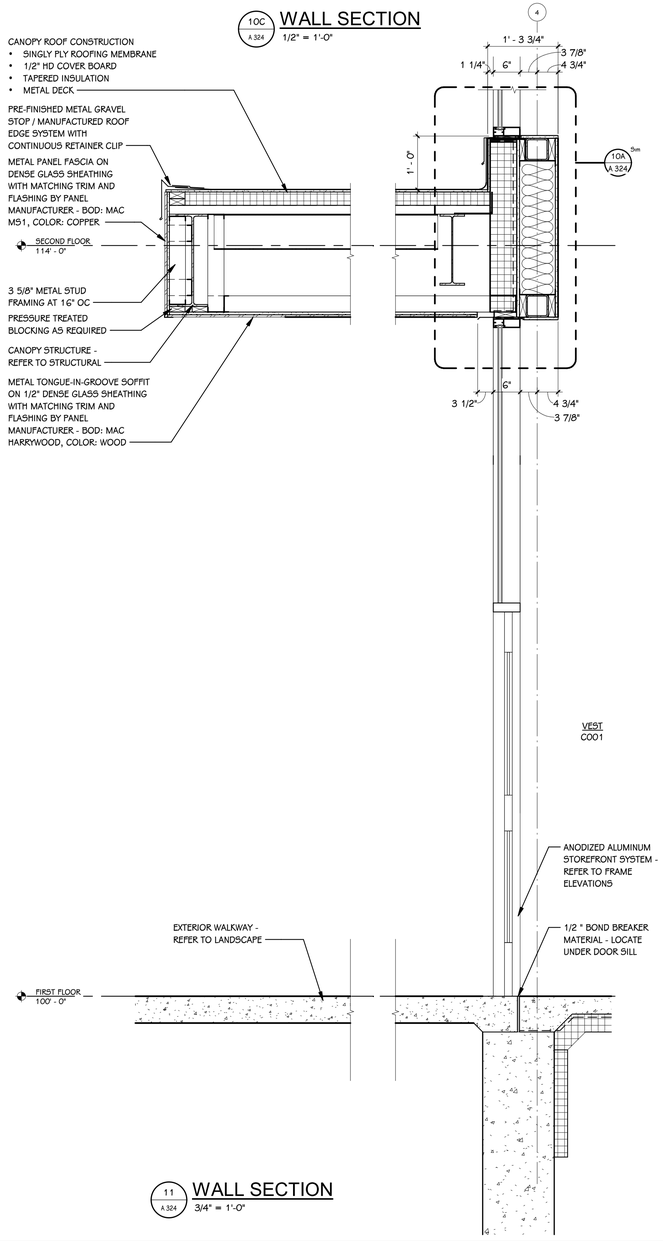


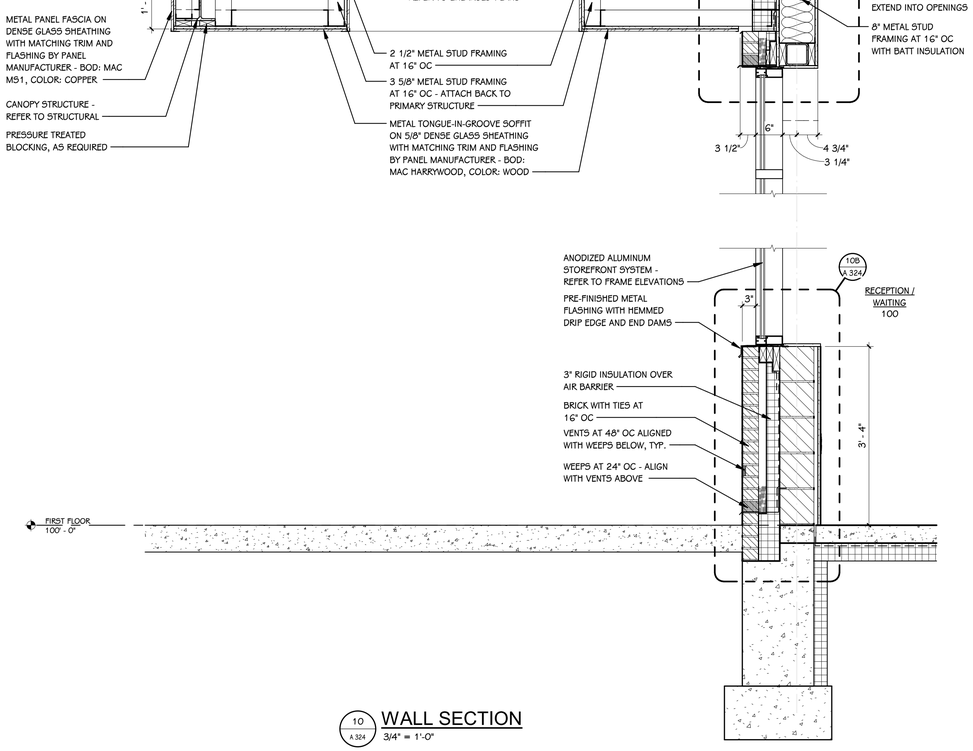




10A A 324 WALL DETAIL
1 1/2" = 1'-0"



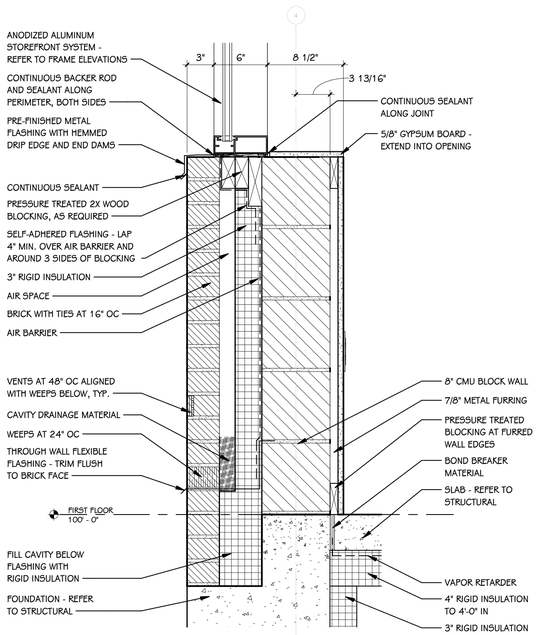

10C A 324 WALL SECTION
1/2" = 1'-0"




10 A 324 WALL SECTION
3/4" = 1'-0"




10B A 324 WALL DETAIL
1 1/2" = 1'-0"

11 A 324 WALL SECTION
3/4" = 1'-0"

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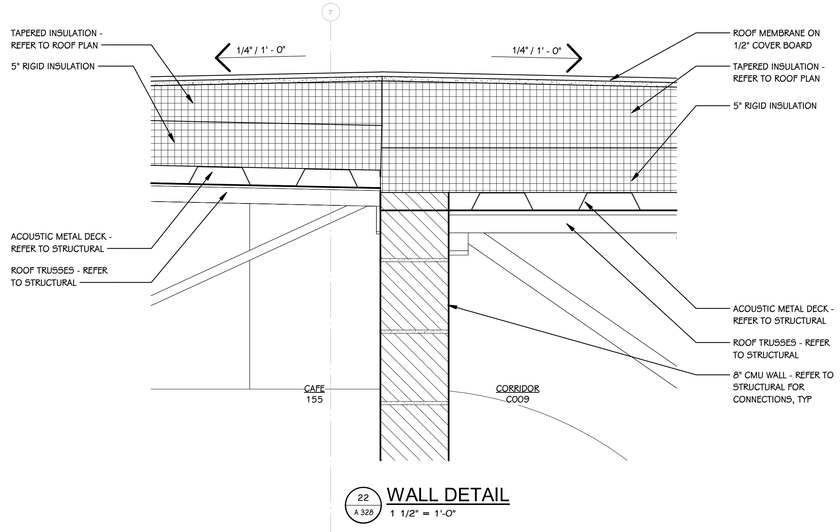
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

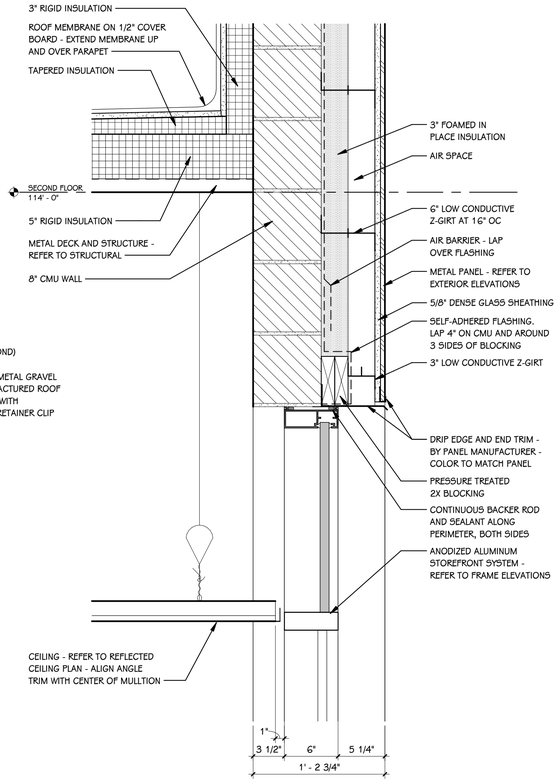
DATE
APRIL 24, 2026

SHEET TITLE
WALL SECTIONS AND DETAILS

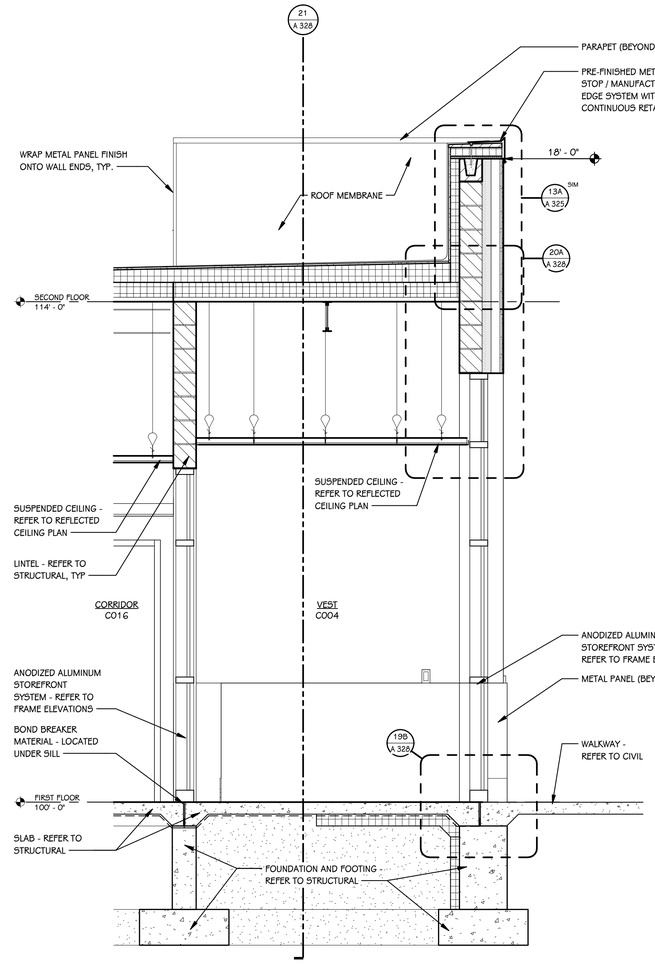
SHEET NUMBER
A 324
23-622.000



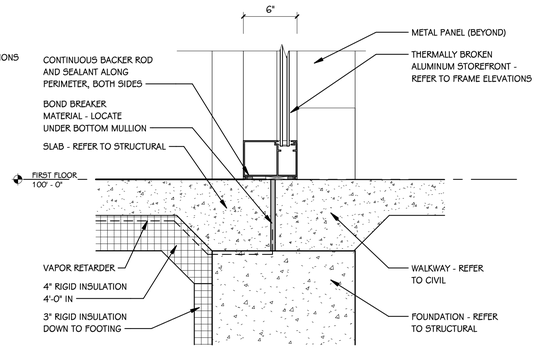

22 A 328 **WALL DETAIL**
1 1/2" = 1'-0"



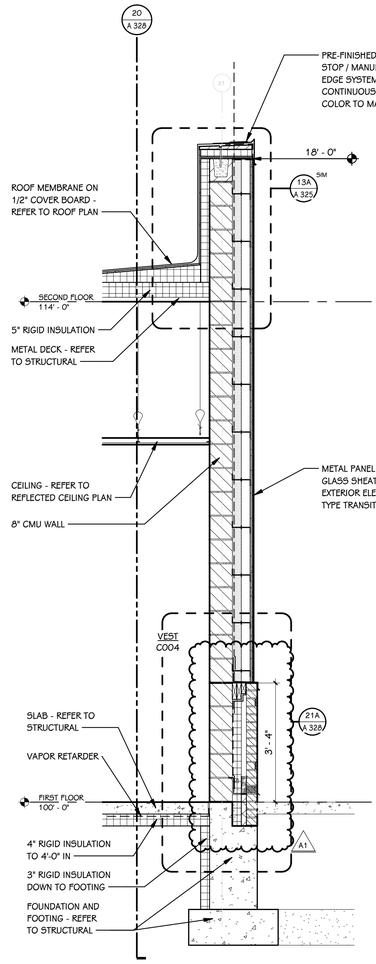

20A A 328 **WALL DETAIL**
1 1/2" = 1'-0"



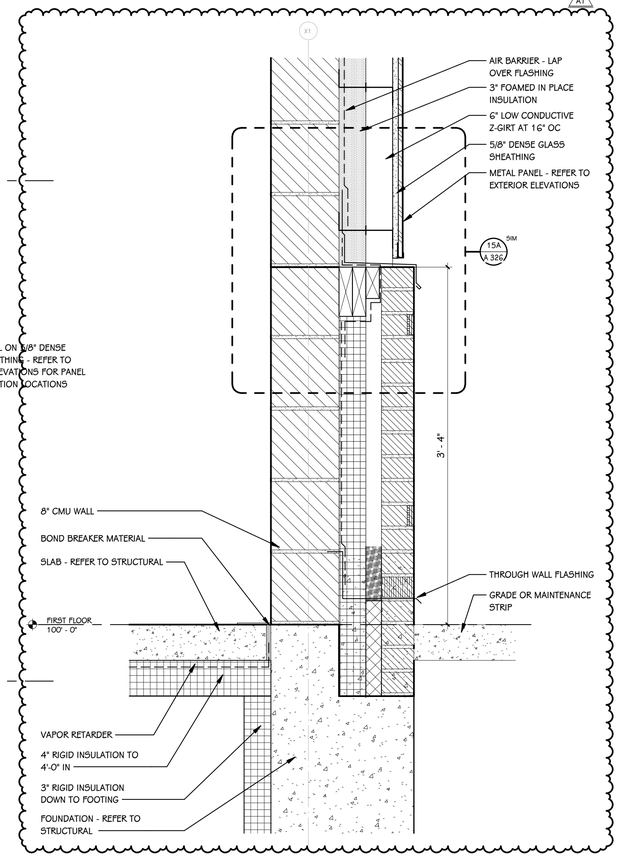

20 A 328 **WALL SECTION**
1/2" = 1'-0"




19B A 328 **WALL DETAIL**
1 1/2" = 1'-0"




21 A 328 **WALL SECTION**
1/2" = 1'-0"




21A A 328 **WALL DETAIL**
1 1/2" = 1'-0"

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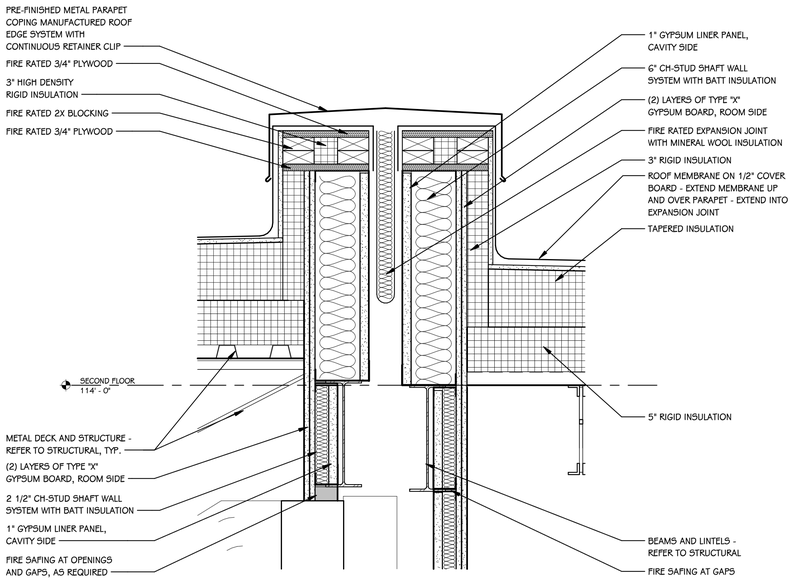
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

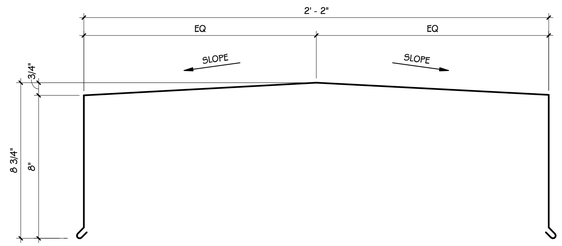
SHEET TITLE
WALL SECTIONS AND DETAILS

DATE
APRIL 24, 2026

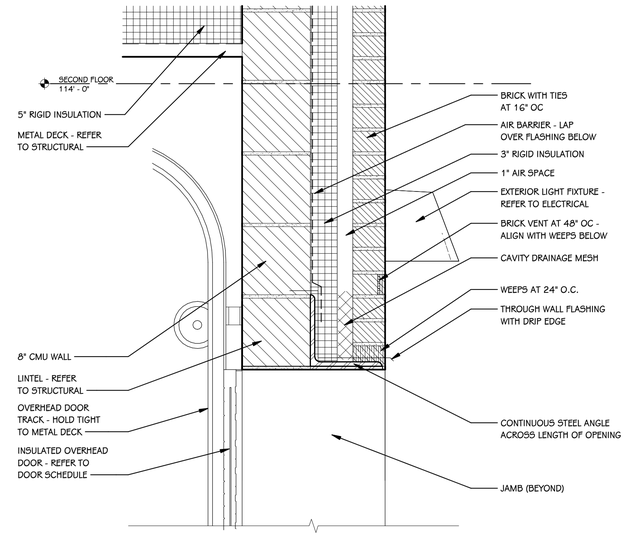
SHEET NUMBER
A 328
23-622.000



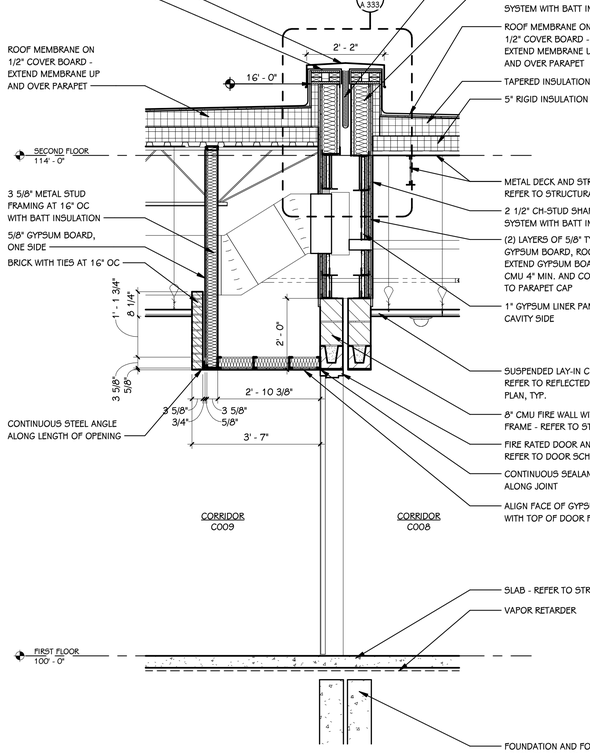

38A A 333 WALL DETAIL
1 1/2" = 1'-0"



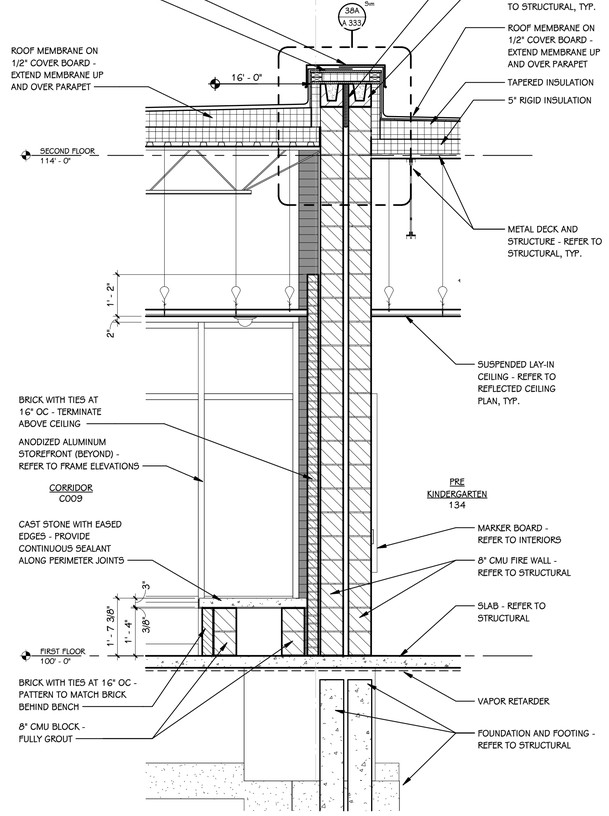

38B A 333 FIRE WALL COPING
3" = 1'-0"



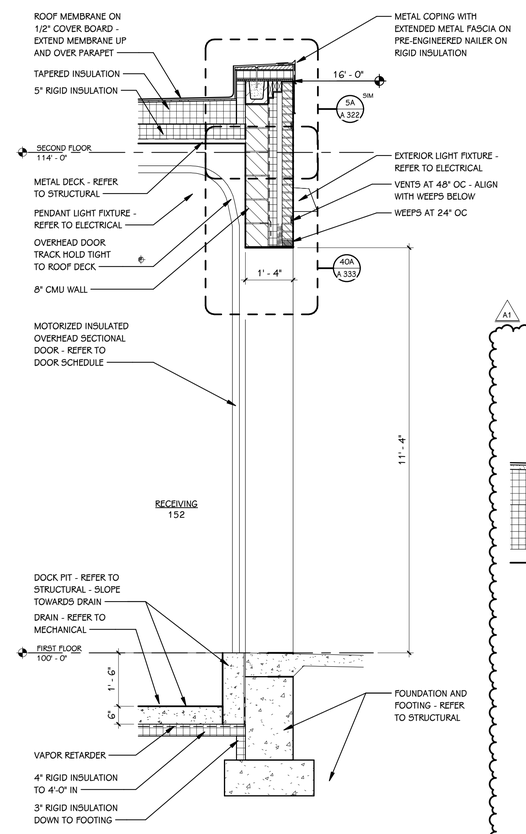

40A A 333 OVERHEAD DOOR HEAD DETAIL
1 1/2" = 1'-0"




38 A 333 WALL SECTION
1/2" = 1'-0"




39 A 333 WALL SECTION
1/2" = 1'-0"




40 A 333 WALL SECTION
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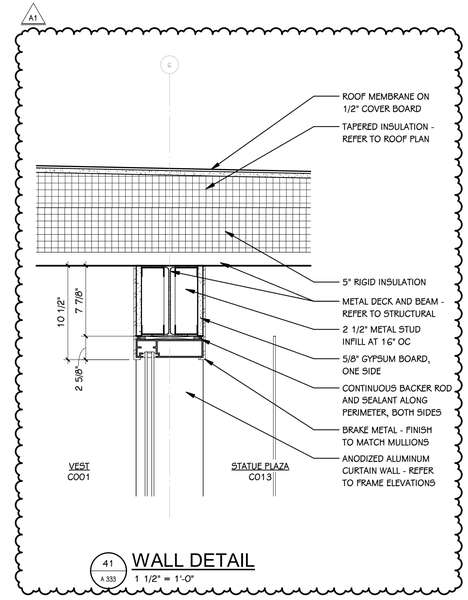


41 A 333 WALL DETAIL
1 1/2" = 1'-0"

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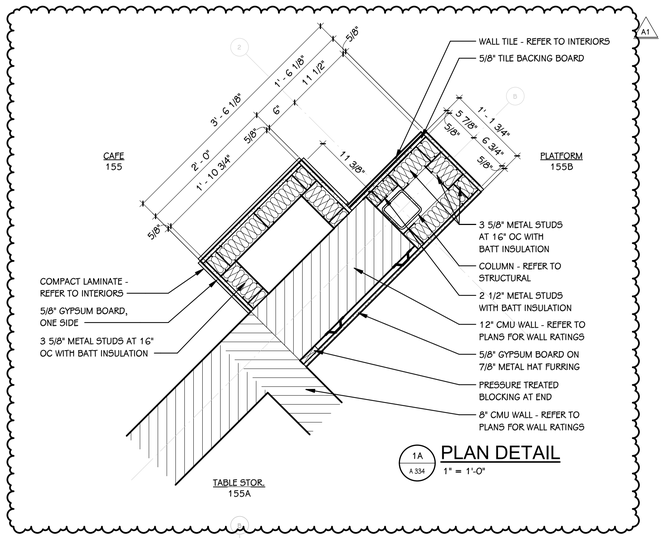
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

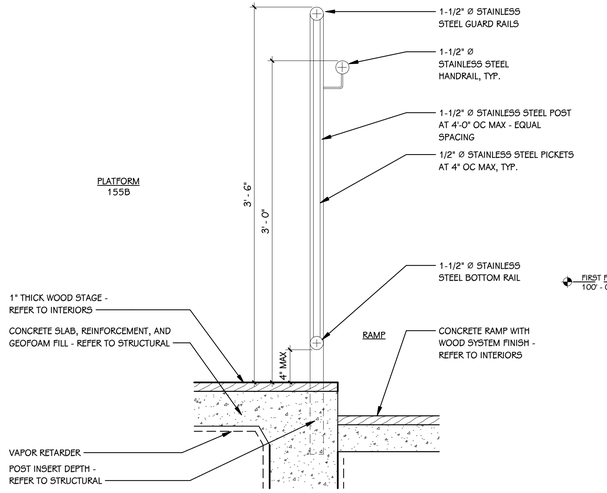
SHEET TITLE
WALL SECTIONS AND DETAILS

DATE
APRIL 24, 2026

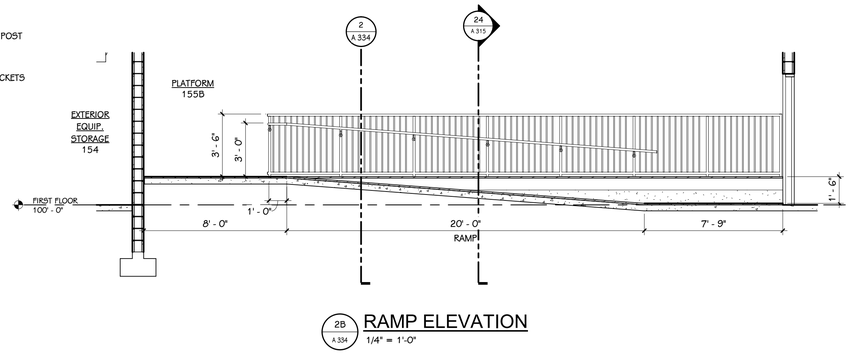
SHEET NUMBER
A 333
23-622.000



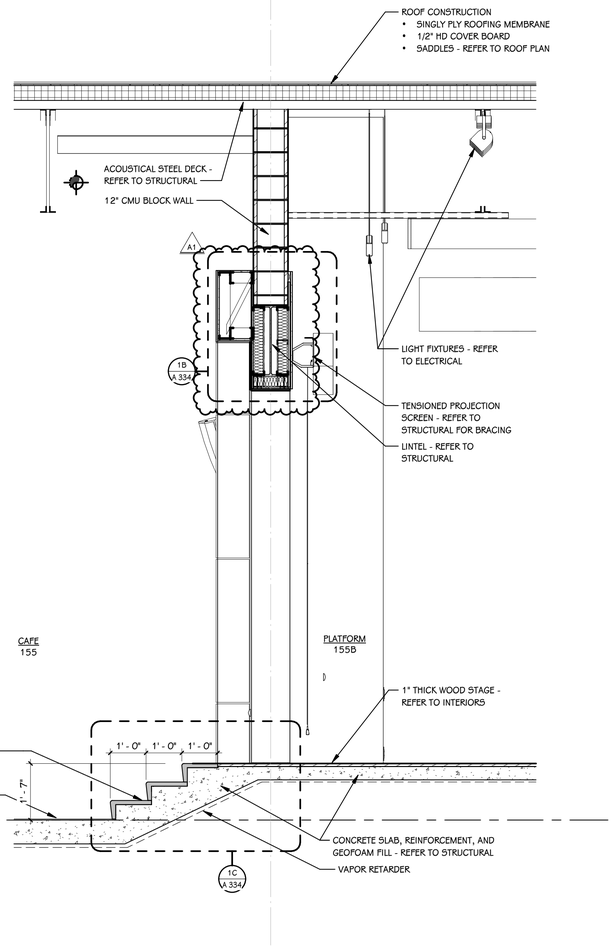

1A A.334 PLAN DETAIL
1" = 1'-0"



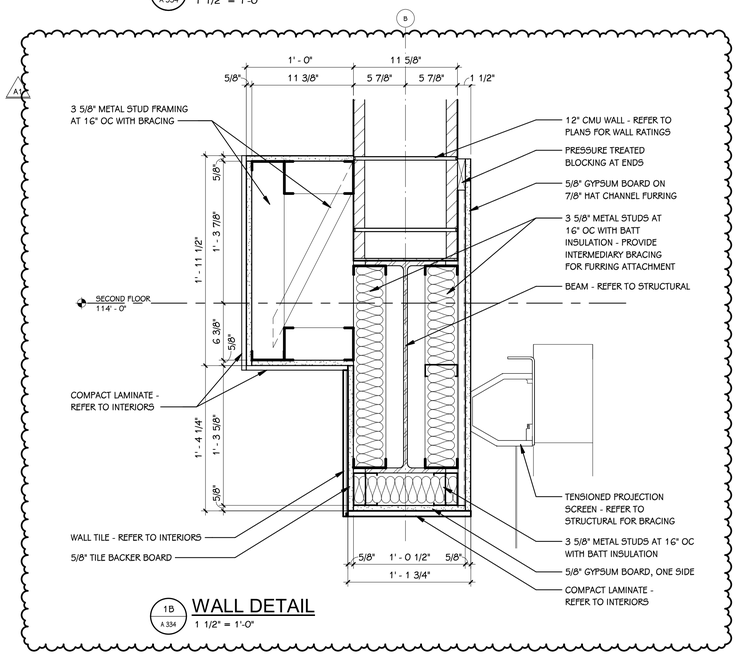

2A A.334 WALL DETAIL AT STAGE RAMP
1 1/2" = 1'-0"



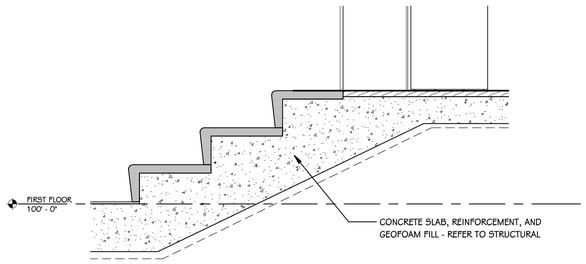

2B A.334 RAMP ELEVATION
1/4" = 1'-0"



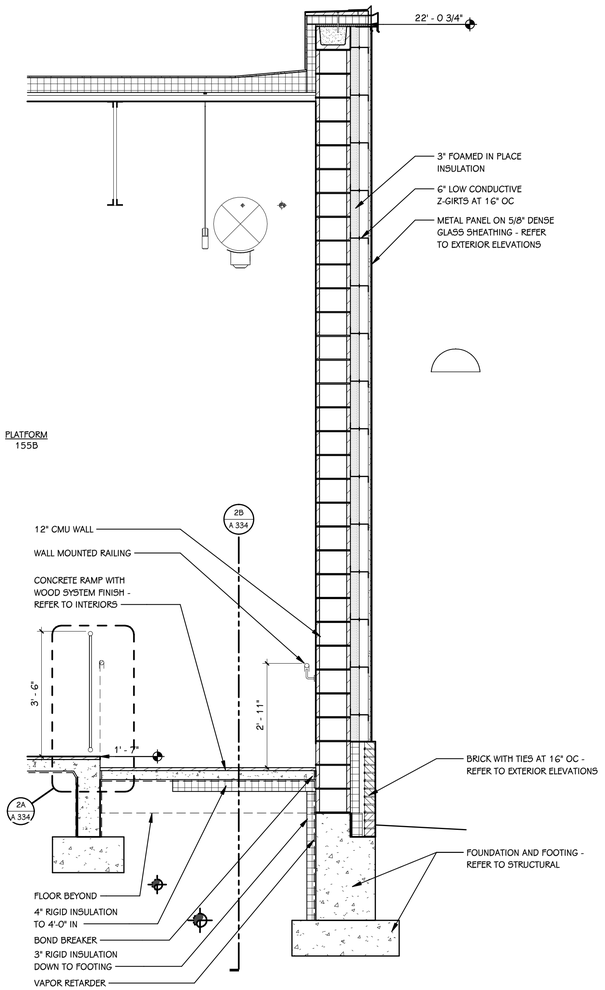

1 A.334 WALL SECTION @ STAGE
1/2" = 1'-0"




1B A.334 WALL DETAIL
1 1/2" = 1'-0"




1C A.334 WALL DETAIL
1" = 1'-0"




2 A.334 WALL SECTION @ STAGE RAMP
1/2" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

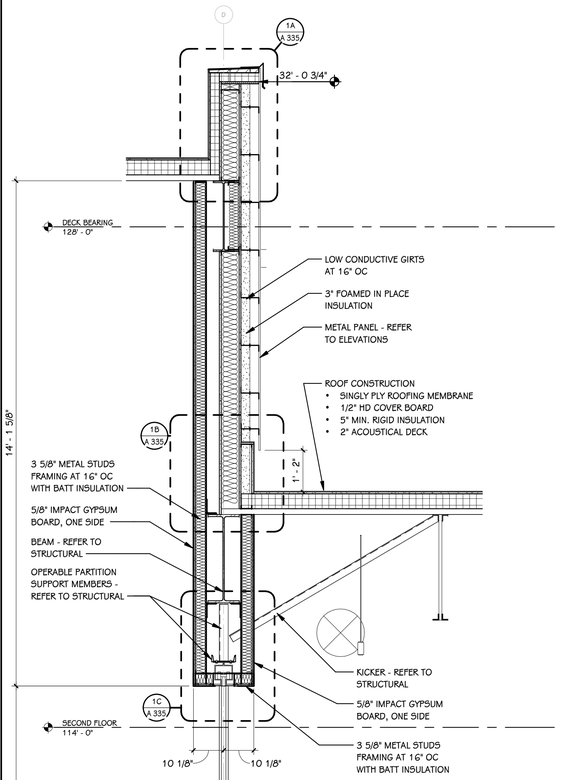
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

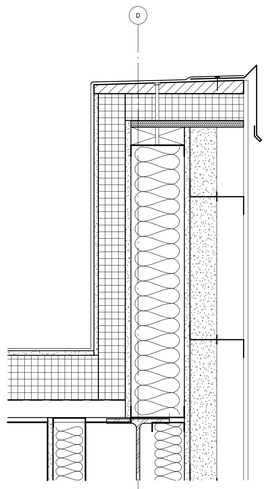
SHEET TITLE
WALL SECTIONS AND DETAILS - STAGE

DATE
APRIL 24, 2026

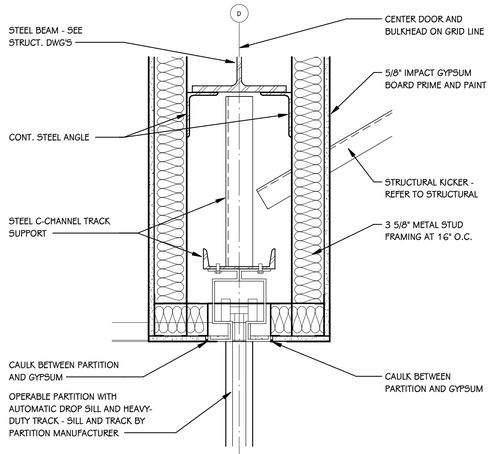
SHEET NUMBER
A 334
23-622.000



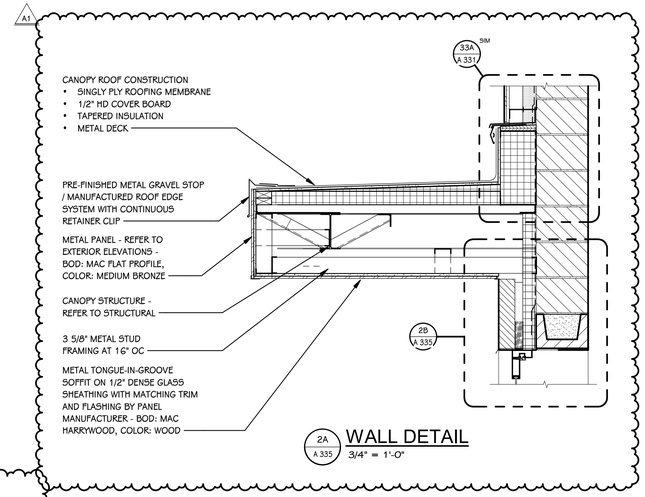

1 A 335 WALL SECTION
1/2" = 1'-0"



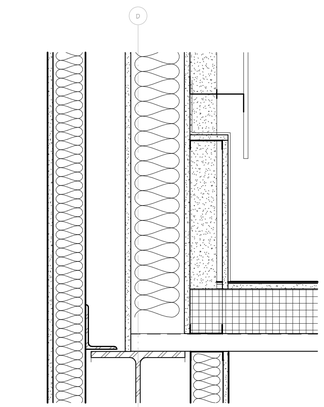

1A A 335 WALL DETAIL
1 1/2" = 1'-0"




1C A 335 WALL DETAIL
1 1/2" = 1'-0"



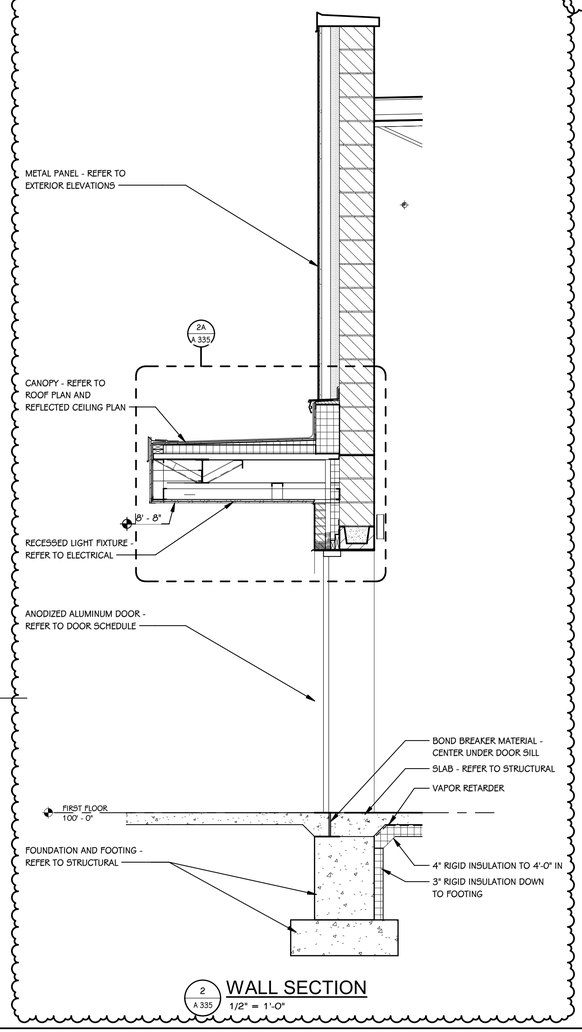

2A A 335 WALL DETAIL
3/4" = 1'-0"



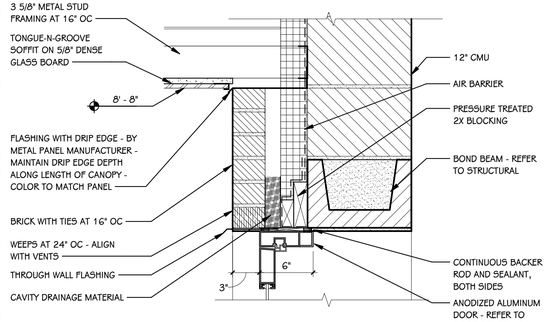

1B A 335 WALL DETAIL
1 1/2" = 1'-0"




1D A 335 WALL DETAIL
1 1/2" = 1'-0"




2 A 335 WALL SECTION
1/2" = 1'-0"




2B A 335 HEAD DETAIL
1 1/2" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

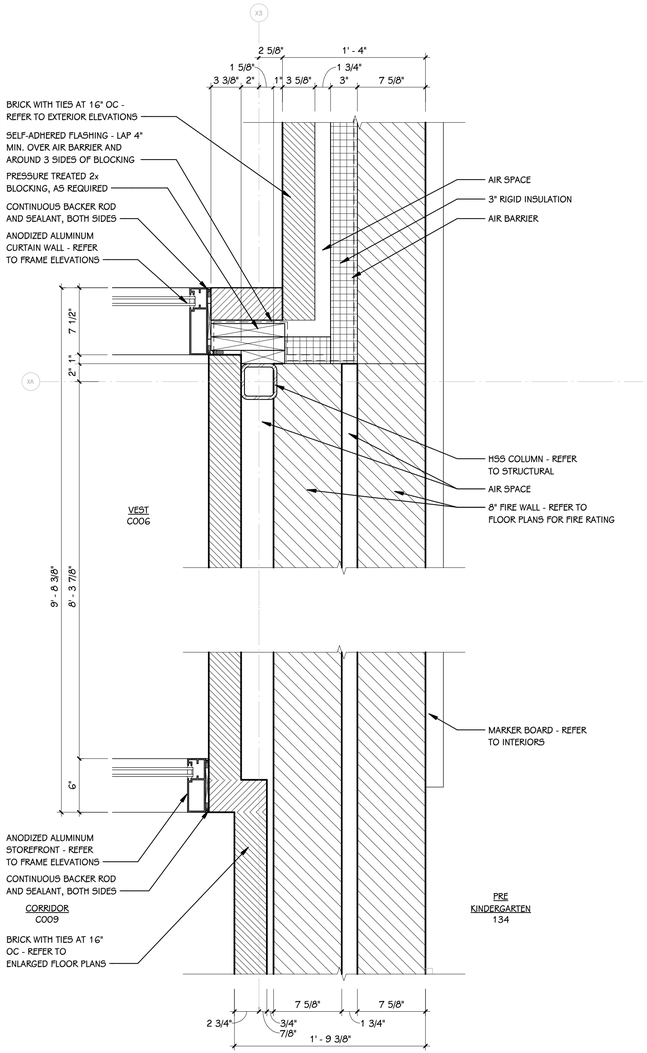
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

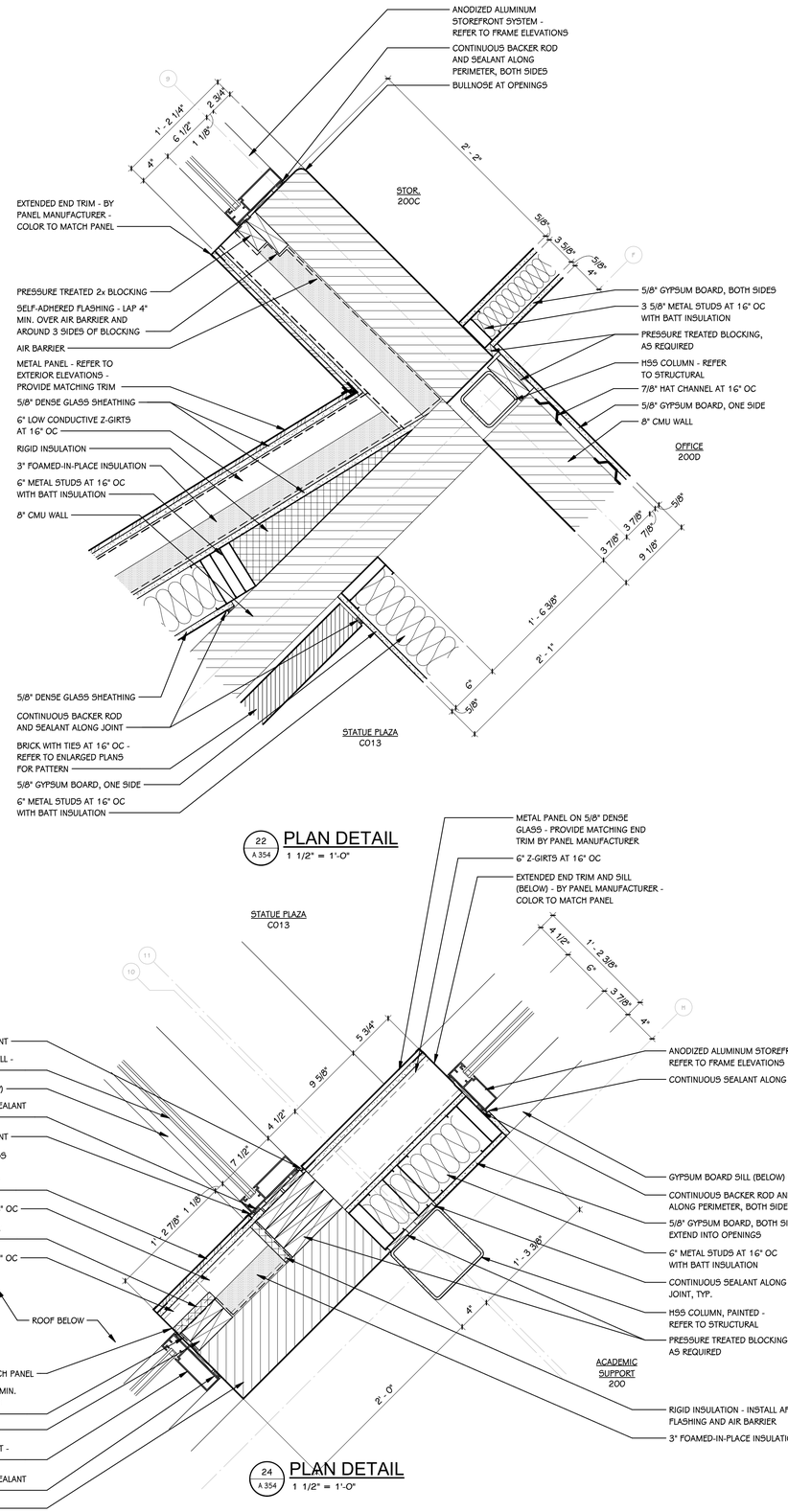
SHEET TITLE
WALL SECTIONS AND DETAILS - CAFETERIA

DATE
APRIL 24, 2026

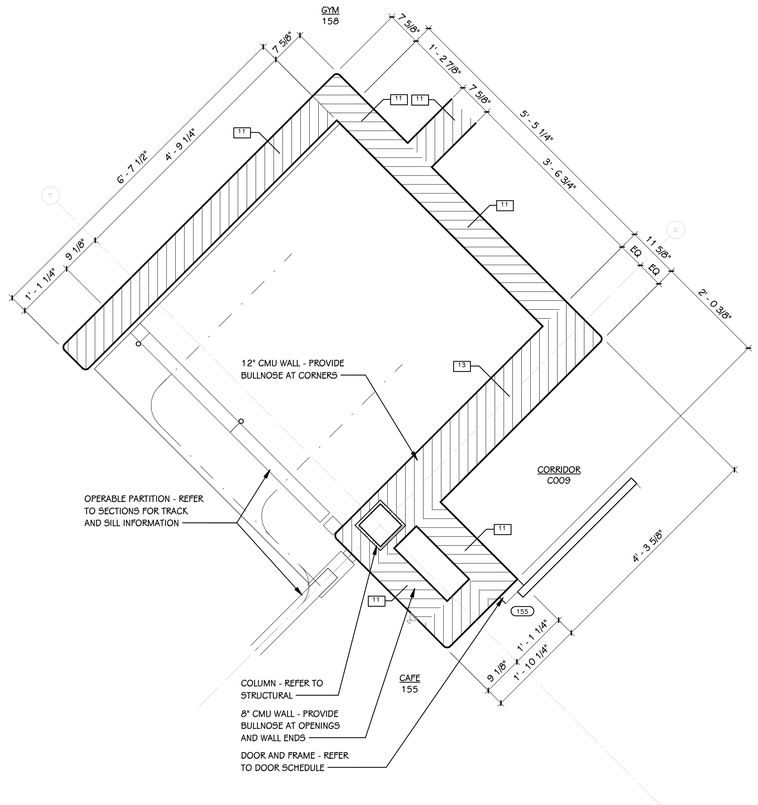
SHEET NUMBER
A 335
23-622.000



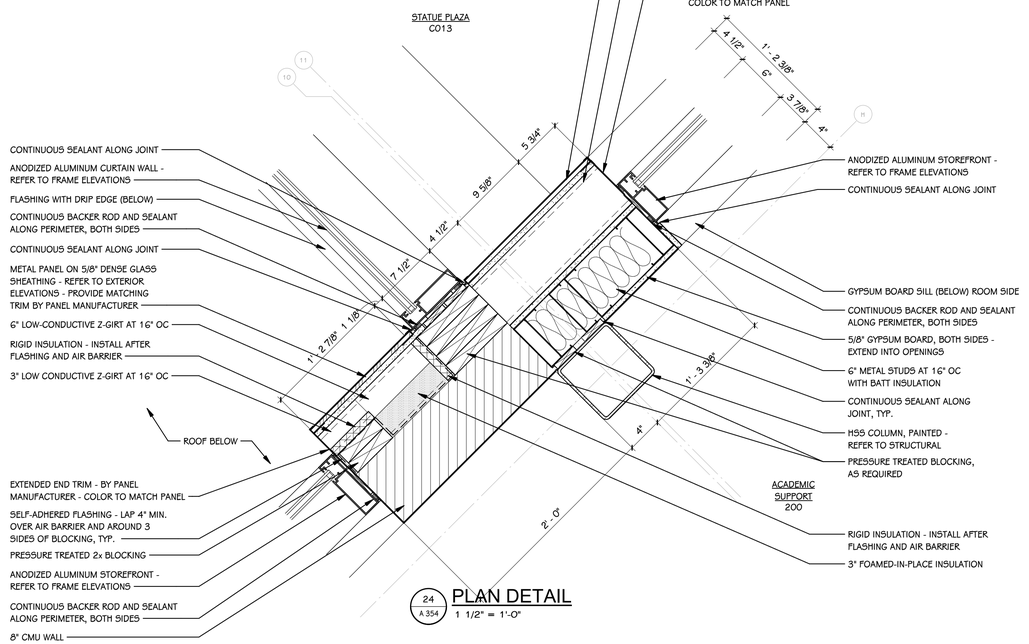

22 / A 354 PLAN DETAIL
1 1/2" = 1'-0"



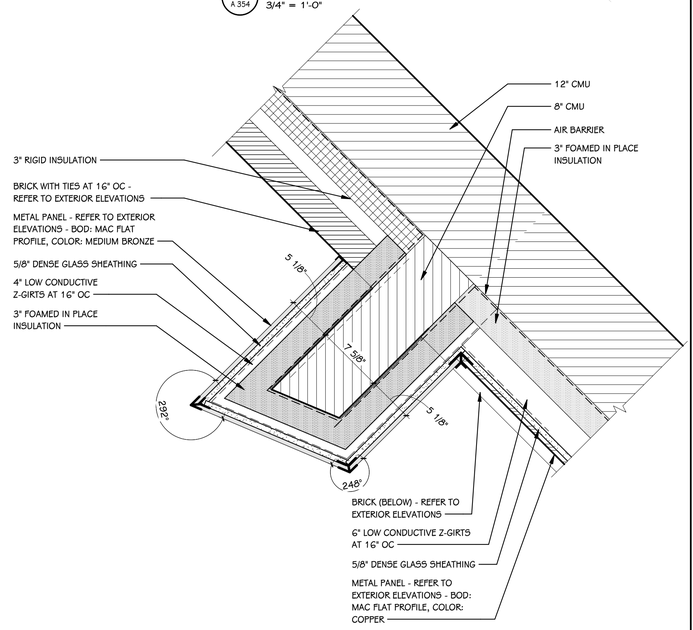

23 / A 354 PLAN DETAIL
3/4" = 1'-0"




21 / A 354 PLAN DETAIL
1 1/2" = 1'-0"




24 / A 354 PLAN DETAIL
1 1/2" = 1'-0"




25 / A 354 PLAN DETAIL
1 1/2" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

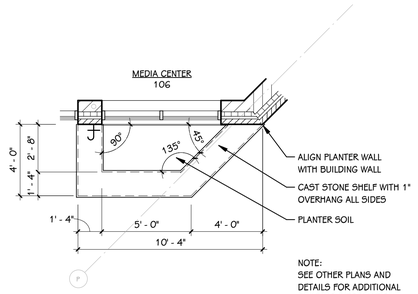
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

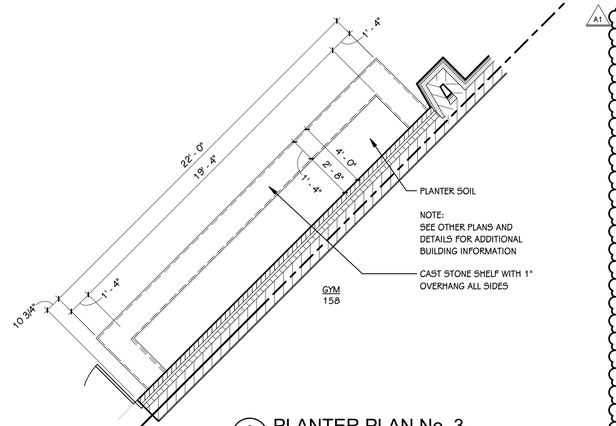
DATE
APRIL 24, 2026

SHEET TITLE
ENLARGED PLAN DETAILS

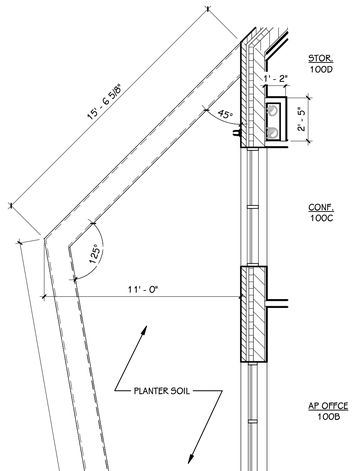
SHEET NUMBER
A1
A 354
23-622.000

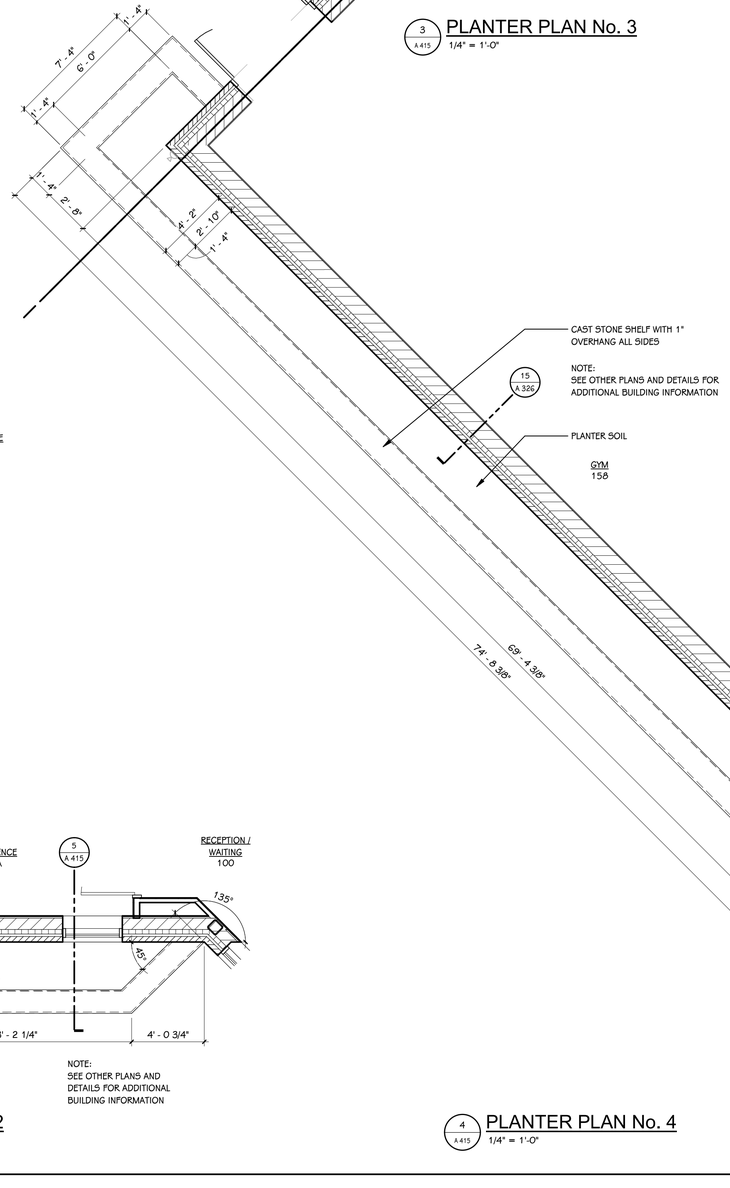


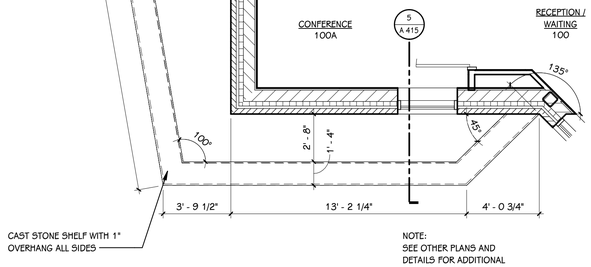

1 / A415 PLANTER PLAN No. 1
1/4" = 1'-0"




3 / A415 PLANTER PLAN No. 3
1/4" = 1'-0"

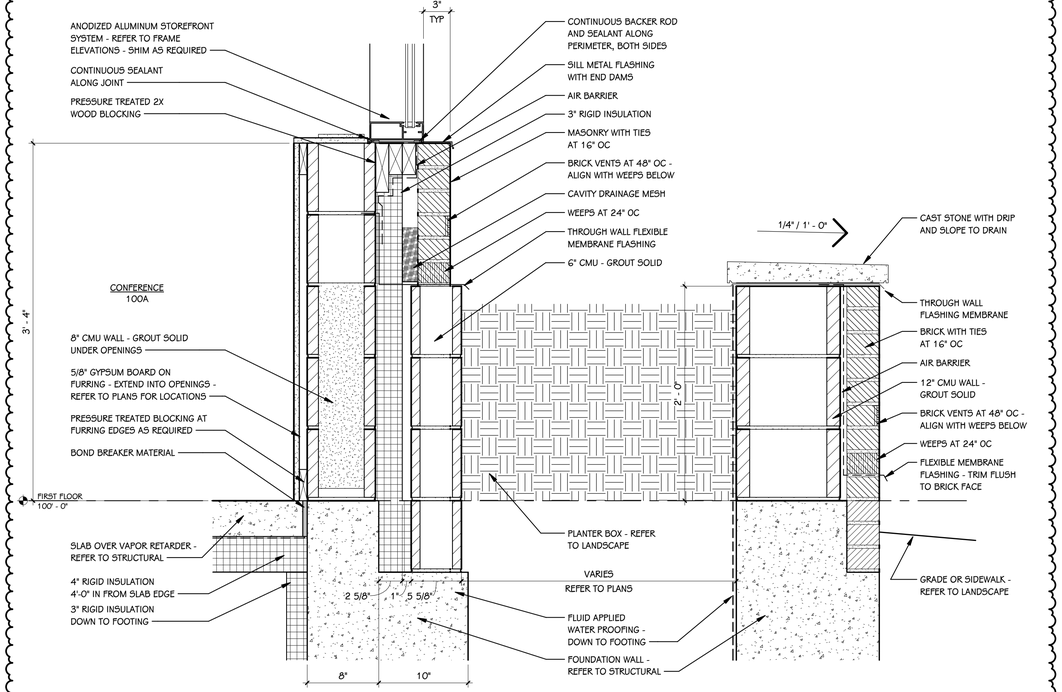


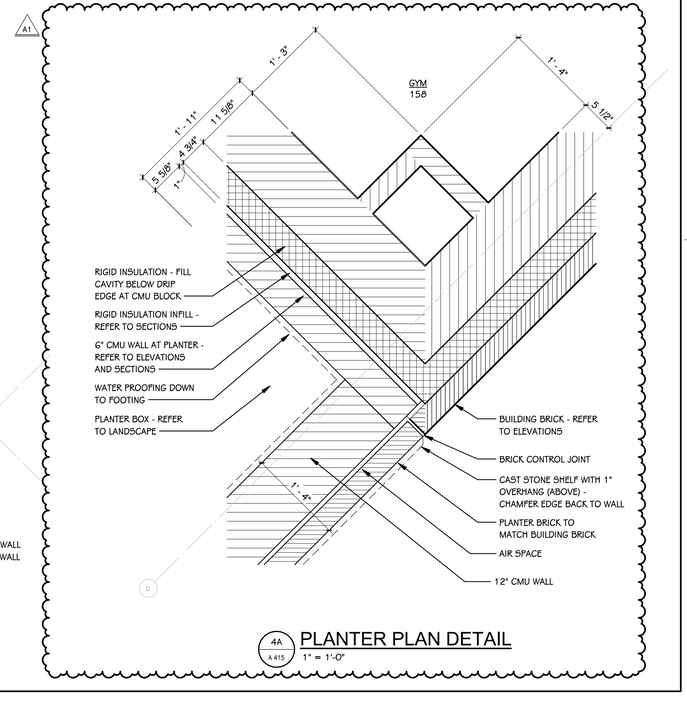




2 / A415 PLANTER PLAN No. 2
1/4" = 1'-0"

4 / A415 PLANTER PLAN No. 4
1/4" = 1'-0"




5 / A415 PLANTER SECTION
1 1/2" = 1'-0"




4A / A415 PLANTER PLAN DETAIL
1" = 1'-0"

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NEW EL SOL SCHOOL

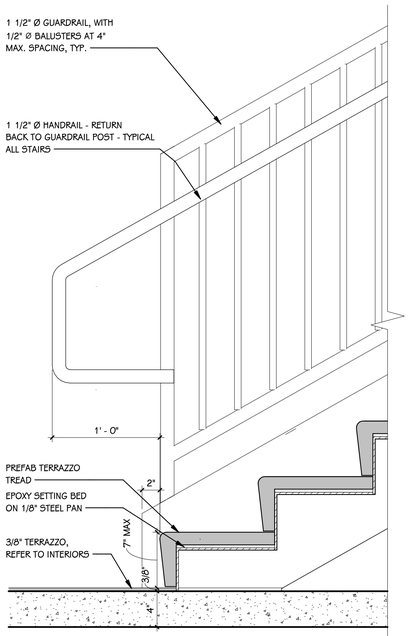
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

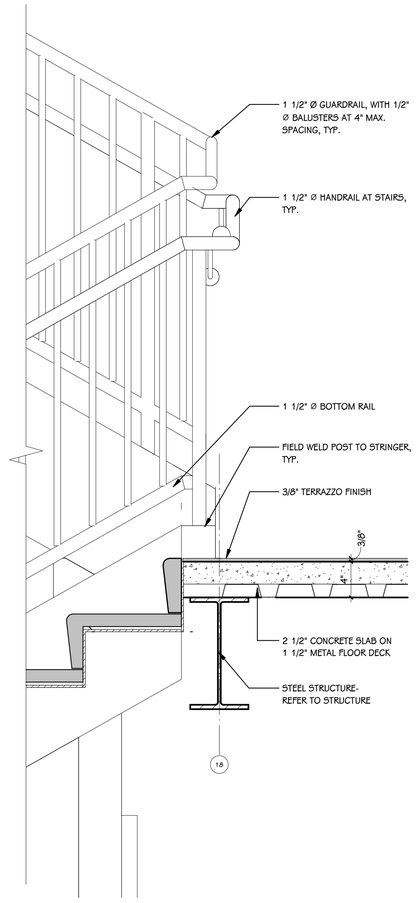
SHEET TITLE
PLANTER PLANS AND DETAILS

DATE
APRIL 24, 2026

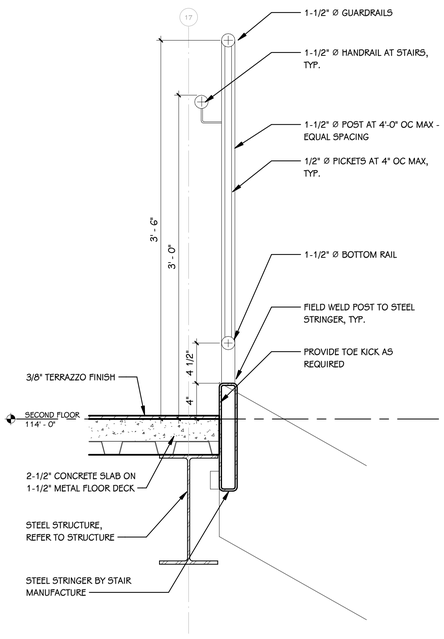
SHEET NUMBER
A 415
23-622.000



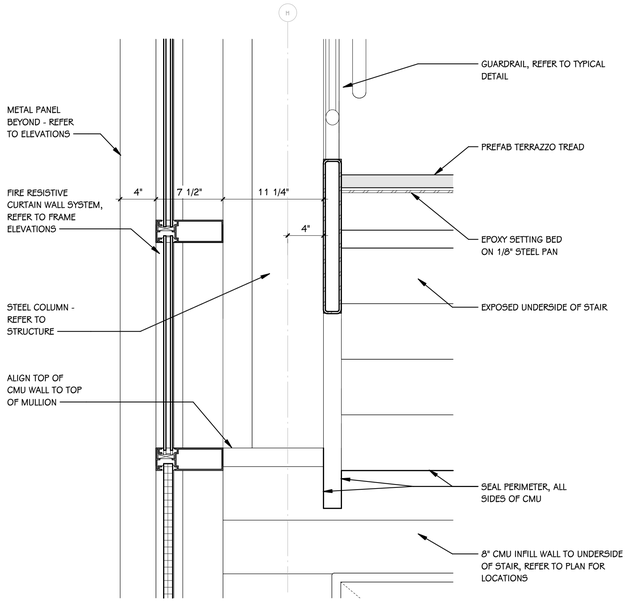

1 A 421B **STAIR DETAIL**
1 1/2" = 1'-0"



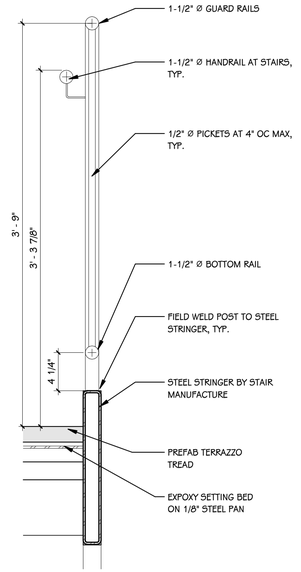

2 A 421B **STAIR DETAIL**
1 1/2" = 1'-0"



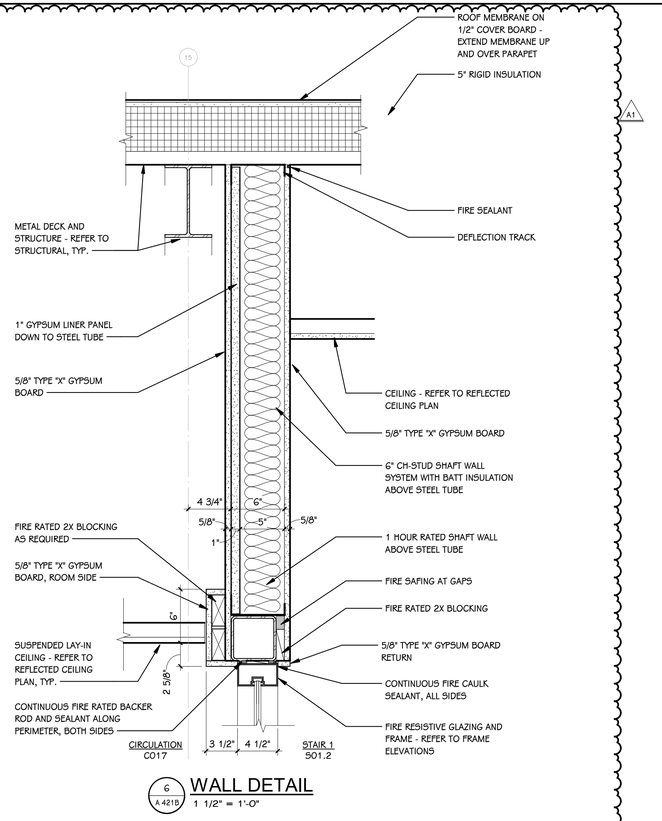

3 A 421B **STAIR DETAIL**
1 1/2" = 1'-0"



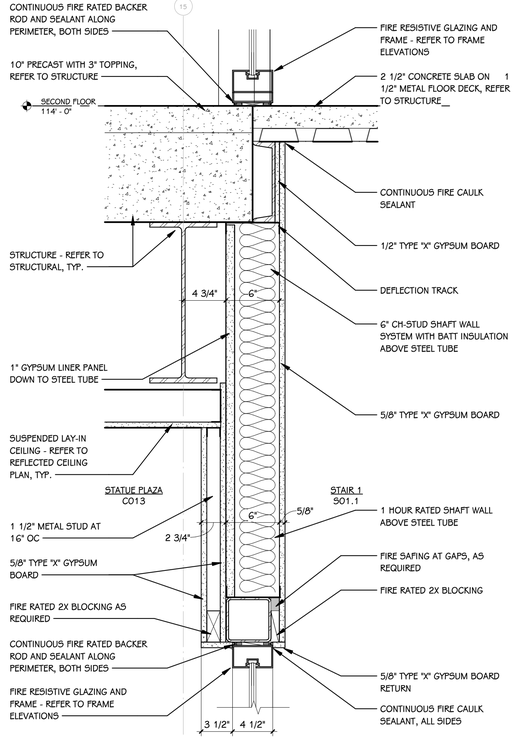

4 A 421B **WALL DETAIL**
1 1/2" = 1'-0"




5 A 421B **STAIR DETAIL**
1 1/2" = 1'-0"




6 A 421B **WALL DETAIL**
1 1/2" = 1'-0"




7 A 421B **WALL DETAIL**
1 1/2" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ENLARGED STAIR PLANS, SECTIONS AND DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
A 421B
23-622.000

# FIRST FLOOR DOOR SCHEDULE

| NUMBER | | ROOM NAME | FIRE RATING | | DOOR | | | SIZE | | FRAME | | | DETAILS | | | GLASS | ACCESS CONTROLS | | | | | HDWR. SET | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOOR | ROOM | | DOOR | FRAME | TYPE | MAT | FIN | WIDTH | HEIGHT | ELEV | MAT | FIN | HEAD | JAMB | SILL | | A-PHONE | BARRIER-FREE | CARD READER | ELEC. LOCK HDWR. | MAG HOLD | | |
| 100 | 100 | RECEPTION / WAITING | 45 MIN | 45 MIN | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 36 | HM | P-7 | H9 | J9 | - | FPG-1 | No | No | No | Yes | No | 53.0 | - |
| 100A | 100 | RECEPTION / WAITING | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 33.0 | - |
| 100B | 100B | AP OFFCE | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 31.0 | - |
| 100C | 100C | CONF. | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 33.0 | - |
| 100D | 100N | HALL | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H9 | J9 | - | - | No | No | No | No | No | 47.0 | - |
| 100E | 100E | CONF. | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 33.0 | - |
| 100F.1 | 100F | COUNSELOR | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 31.0 | - |
| 100F.2 | 100F | COUNSELOR | 45 MIN | 45 MIN | G | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H7 | J7 | - | FPG-1 | No | No | No | Yes | No | 62.0 | - |
| 100G | 100G | PRINCIPAL | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 31.0 | - |
| 100H | 100H | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 37.0 | - |
| 100J | 100J | RECORDS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 44.0 | - |
| 100L | 100L | HEALTH | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 33.0 | - |
| 100M | 100M | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 37.0 | - |
| 100N | 100N | HALL | 45 MIN | 45 MIN | N | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H9 | J9 | - | FPG-1 | No | No | No | Yes | No | 61.0 | - |
| 101 | 101 | CONF. | 45 MIN | 45 MIN | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 3 | HM | P-7 | H9 | J9 | - | FPG-1 | No | No | No | No | No | 35.0 | - |
| 102 | 102 | ELEC | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H9 | J9 | - | - | No | No | No | No | No | 21.0 | - |
| 103 | 103 | STAFF | 45 MIN | 45 MIN | N | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H9 | J9 | - | FPG-1 | No | No | No | No | No | 35.0 | - |
| 104 | 104 | ESL | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2B | HM | P-7 | H9 | J9 | - | - | No | No | No | No | No | 35.0 | - |
| 105 | 105 | ESL | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2B | HM | P-7 | H9 | J9 | - | - | No | No | No | No | No | 35.0 | - |
| 106A | 106 | MEDIA CENTER | - | - | FG2 | WD | PREFIN | 6' - 0" | 7' - 2" | 35 | HM | P-7 | H2 | J2 | - | LG-1 | No | No | No | No | No | 28.0 | REMOVABLE MULLION |
| 106B | 106 | MEDIA CENTER | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 1B | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 8.0 | - |
| 107 | 107 | TECH | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 48.0 | - |
| 108 | 108 | ELEC | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 21.0 | - |
| 109 | 109 | HALL | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | LG-1 | No | No | No | No | No | 33.0 | - |
| 109A | 109A | OFFICE | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 31.0 | - |
| 109B | 109B | OFFICE | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 31.0 | - |
| 109C | 109C | OFFICE | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 31.0 | - |
| 109D | 109D | MTG RM | - | - | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H1 | J1 | - | LG-1 | No | No | No | No | No | 31.0 | - |
| 110A | 110 | SIXTH | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 110B | 110 | SIXTH | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 14 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 111A | 111 | SEVENTH | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 111B | 111 | SEVENTH | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 15 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 112A | 112 | EIGHTH | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 112B | 112 | EIGHTH | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 15 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 113 | 113 | SCIENCE CLASSROOM | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 113A | 113 | SCIENCE CLASSROOM | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 47.0 | - |
| 113B | 113 | SCIENCE CLASSROOM | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 14 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 114 | 114 | BOYS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | |
| 115 | 115 | J.C. | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 47.0 | - |
| 116 | 116 | GIRLS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 117 | 117 | ART | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 117A | 117A | STORAGE | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 47.0 | - |
| 117B | 117B | KILN | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 47.0 | - |
| 117C | 117 | ART | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 2B | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 118 | 118 | TECH | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H10 | J10 | - | - | No | No | No | No | No | 48.0 | - |
| 119 | 119 | S. TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 39.0 | - |
| 120 | 120 | SECOND | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 121 | 121 | SECOND | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 122 | 122 | THIRD | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 123 | 123 | GIRLS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 124 | 124 | BOYS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 125 | 125 | THIRD | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 126 | 126 | SMALL GROUP | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 58.0 | - |
| 127 | 127 | THIRD | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 128 | 128 | SECOND | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 129 | 129 | SMALL GROUP | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 58.0 | - |
| 130 | 130 | FLEX | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 131 | C013 | STATUE PLAZA | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 48.0 | - |
| 132 | 132 | ESL | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 55.0 | - |
| 133 | 133 | MUSIC | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 133A | 133A | INST. STOR. | 45 MIN | 45 MIN | F | WD | PREFIN | 4' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 51.0 | - |
| 133B | 133 | MUSIC | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 50 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 134 | 134 | PRE KINDERGARTEN | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 134A | 134A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 134B | 134 | PRE KINDERGARTEN | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 55 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 135 | 135 | SMALL GROUP | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 57 | AL | ANOD | H2 | J2 | - | LG-1 | No | No | No | No | No | 18.0 | - |
| 136 | 136 | KINDERGARTEN | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 136A | 136A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 136B | 136 | KINDERGARTEN | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 55 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 137 | 137 | KINDERGARTEN | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 137A | 137A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 137B | 137 | KINDERGARTEN | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 56 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 138 | 138 | SMALL GROUP | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 57 | AL | ANOD | H2 | J2 | - | LG-1 | No | No | No | No | No | 18.0 | - |
| 139 | 139 | KINDERGARTEN | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 139A | 139A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 139B | 139 | KINDERGARTEN | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 56 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 140 | 140 | FIRST | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 140A | 140A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 140B | 140 | FIRST | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 56 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 141 | 141 | FIRST | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 141A | 141A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 141B | 141 | FIRST | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 56 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 142 | 142 | FIRST | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 142A | 142A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 142B | 142 | FIRST | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 55 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 143 | 143 | SE RESOURCE | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 29.0 | - |
| 143A | 143A | TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 38.0 | - |
| 143B | 143 | SE RESOURCE | - | - | G | AL | ANOD | 3' - 0" | 7' - 2" | 55 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | No | No | No | 12.0 | - |
| 144A | 144A | ELEC. | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | | HM | P-7 | H2 | J2 | - | | No | No | No | No | No | 48.0 | - |
| 144B | 144B | S. TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 39.0 | - |
| 145 | 145 | TECH | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 49.0 | - |
| 146 | 146 | ELEC | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 20.0 | - |
| 147 | 147 | CIS STORAGE | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 47.0 | - |
| 148 | 148 | OFFICE | 45 MIN | 45 MIN | N | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | LG-1 | No | No | No | No | No | 32.0 | - |
| 149 | 149 | STORAGE | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 47.0 | - |
| 150A | 150 | BOILER | - | - | F | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | Yes | Yes | No | 6.0 | REMOVABLE MULLION |
| 150B | 150 | BOILER | 45 MIN | 45 MIN | F | HM | P-? | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 48.0 | - |
| 151 | 151 | WATER SOFTENER | - | - | F | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | Yes | Yes | No | 6.0 | REMOVABLE MULLION |
| 151A | 151A | FIRE PUMP | - | - | F | AL | ANOD | 4' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | No | No | No | 7.0 | - |
| 152A | 152 | RECEIVING | - | - | F | HM | P-? | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 40.0 | |
| 152B | 152 | RECEIVING | - | - | F | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | Yes | Yes | No | 2.0 | |
| 152C | 152 | RECEIVING | - | - | OHS | AL | PREFIN | 10' - 0" | 11' - 4" | | STL | P-7 | 2/A333 | 12/A507 | - | - | No | No | No | No | No | 65.0 | MOTORIZED OVERHEAD DOOR |
| 153 | 153 | ELEC | - | - | F | AL | ANOD | 3' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | Yes | Yes | No | 4.0 | - |

## GENERAL NOTES - DOORS

1 REFER TO A 500's SHEETS FOR ADDITIONAL ACCESS CONTROL INFORMATION NOT NOTED ON THIS SHEET.

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ADDENDUM #1 05-08-2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
DOOR SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
A 501
23-622.000

## FIRST FLOOR DOOR SCHEDULE CONTINUED

| NUMBER | | ROOM NAME | FIRE RATING | | DOOR | | | SIZE | | FRAME | | | DETAILS | | | GLASS | ACCESS CONTROLS | | | | | HDWR. SET | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOOR | ROOM | | DOOR | FRAME | TYPE | MAT | FIN | WIDTH | HEIGHT | ELEV | MAT | FIN | HEAD | JAMB | SILL | | A-PHONE | BARRIER-FREE | CARD READER | ELEC. LOCK HDWR. | MAG HOLD | | |
| 153A | 153A | ELEC | 90 MIN | 90 MIN | F | HM | P-? | 4' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 52.0 | - |
| 153B | 153 | ELEC | - | - | F | AL | ANOD | 3' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | No | No | No | 12.0 | - |
| 154 | 154 | EXTERIOR EQUIP. STORAGE | - | - | F | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | No | No | No | 6.0 | REMOVABLE MULLION |
| 155 | 155 | CAFE | - | - | F | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | LG-1 | No | No | No | No | No | 22.0 | REMOVABLE MULLION |
| 155A | 155A | TABLE STOR. | 45 MIN | 45 MIN | F | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 42.0 | REMOVABLE MULLION |
| 155B | 20255 | RAMP | - | - | F | WD | PREFIN | 3' - 0" | 7' - 10" | 1 | HM | P-7 | H2 A1 | J2 | - | - | No | No | No | No | No | 34.0 | - |
| 155C | 155 | CAFE | - | - | FG2 | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | IG-1 | No | No | No | No | No | 25.0 | - |
| 155D | 155 | CAFE | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 2B/A335 | 1C/A321 | - | IG-1 | No | No | Yes | Yes | No | 3.0 | REMOVABLE MULLION |
| 156 | 156 | KITCHEN | - | - | F | HM | P-? | 4' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 50.0 | - |
| 156A | 156A | LOCKER/JC | - | - | F | HM | P-? | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 43.0 | - |
| 156B | 156A | LOCKER/JC | - | - | F | HM | P-? | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 31.0 | - |
| 156C | 156C | DRY STOR. | - | - | F | HM | P-? | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 44.0 | - |
| 157A | 157 | SERVERY | - | - | OHC | STL | PREFIN | 9' - 0" | 8' - 0" | | - | PREFIN | HG | JG | - | - | No | No | No | No | No | 65.0 | - |
| 157B | 157 | SERVERY | - | - | OHC | STL | PREFIN | 10' - 0" | 8' - 0" | - | - | PREFIN | HG | JG | - | - | No | No | No | No | No | 65.0 | - |
| 158 | 158 | GYM | - | - | FG2 | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | LG-1 | No | No | No | No | No | 26.0 | REMOVABLE MULLION |
| 158A | 158A | STORAGE | 45 MIN | 45 MIN | F | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 41.0 | - |
| 158B | 158 | GYM | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 31.0 | - |
| 158C | 158 | GYM | - | - | FG2 | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | LG-1 | No | No | No | No | No | 30.0 | REMOVABLE MULLION |
| 158D | 158 | GYM | - | - | G | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | IG-1 | No | No | Yes | Yes | No | 9.0 | REMOVABLE MULLION |
| 159 | 159 | BOYS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 160A | 160 | BOYS DRESSING ROOMS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 160B | 160 | BOYS DRESSING ROOMS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 54.0 | - |
| 161A | 161 | GIRLS DRESSING ROOMS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 161B | 161 | GIRLS DRESSING ROOMS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 54.0 | - |
| 162 | 162 | GIRLS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| C001A | C001 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 34 | AL | ANOD | - | - | - | LG-1 | No | No | No | Yes | No | 13.0 | REMOVABLE MULLION |
| C001B | C001 | VEST | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 34 | AL | ANOD | - | 1C/A411 | - | LG-1 | No | No | Yes | Yes | No | 17.0 | - |
| C001C | C001 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 27 | AL | ANOD | 10A/A324 | 1A/A411 | - | IG-1 | No | No | No | Yes | No | 1.0 | REMOVABLE MULLION |
| C001D | C001 | VEST | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 27 | AL | ANOD | 10A/A324 | 1B/A411 | - | IG-1 | No | No | Yes | Yes | No | 11.0 | - |
| C001E | 100 | RECEPTION / WAITING | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 33 | AL | ANOD | - | 1B/A411 & 1C/A411 | - | LG-1 | No | No | Yes | Yes | No | 15.0 | - |
| C002A | C015 | CORRIDOR | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 24 | AL | ANOD | H8 | J8 | - | LG-1 | No | No | No | No | No | 16.0 | REMOVABLE MULLION |
| C002B | C015 | CORRIDOR | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 24 | AL | ANOD | H8 | J8 | - | LG-1 | No | No | Yes | Yes | No | 14.0 | - |
| C002C | C002 | VEST. | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 23 | AL | ANOD | 8A/A323 | 5/A351 | - | IG-1 | No | No | No | No | No | 10.0 | REMOVABLE MULLION |
| C002D | C002 | VEST. | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 13 | AL | ANOD | 8A/A323 | 5/A351 | - | 23 | No | No | Yes | Yes | No | 4.0 | - |
| C003A | C015 | CORRIDOR | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 17 | AL | ANOD | H8 | J8 | - | IG-1 | No | No | No | No | No | 13.0 | REMOVABLE MULLION |
| C003B | C003 | VESTIBULE | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 16 | AL | ANOD | 8B/A323 | 4/A351 & 5/A351 | | IG-1 | No | No | Yes | Yes | No | 3.0 | REMOVABLE MULLION |
| C004A | C016 | CORRIDOR | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 13 | AL | ANOD | H8 | 1/A351 | - | LG-1 | No | No | No | No | No | 19.0 | REMOVABLE MULLION |
| C004B | C004 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 12 | AL | ANOD | 20A/328 | 1/A351 | - | IG-1 | No | No | Yes | Yes | No | 3.0 | REMOVABLE MULLION |
| C005A | C005 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 13 | AL | ANOD | H8 | 1/A351 | - | LG-1 | No | No | No | No | No | 19.0 | REMOVABLE MULLION |
| C005B | C005 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 12 | AL | ANOD | 20A/328 | 1/A351 | - | IG-1 | No | No | Yes | Yes | No | 3.0 | REMOVABLE MULLION |
| C006A | C006 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 60 | AL | ANOD | H8 | J8 & 21/A354 | - | LG-1 | No | No | No | No | No | 19.0 | REMOVABLE MULLION |
| C006B | C006 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 59 | AL | ANOD | - | 5/A351 & 21/A354 | - | IG-1 | No | No | Yes | Yes | No | 3.0 | REMOVABLE MULLION |
| C007A | C007 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 13 | AL | ANOD | H8 | 1/A351 | - | LG-1 | No | No | No | No | No | 19.0 | REMOVABLE MULLION |
| C007B | C007 | VEST | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 12 | AL | ANOD | 20A/328 | 1/A351 | - | IG-1 | No | No | Yes | Yes | No | 3.0 | REMOVABLE MULLION |
| C012 | C008 | CORRIDOR | 90 MIN | 90 MIN | F | WD | PREFIN | 8' - 0" | 7' - 10" | 1 | HM | P-7 | 3B/A333 | 13/A352 | - | - | No | No | No | No | Yes | 27.0 | - |
| C013 | C014 | CORRIDOR | 45 MIN | 45 MIN | F | WD | PREFIN | 8' - 0" | 7' - 10" | 1 | HM | P-7 | 19/A327 | 11/A352 | - | - | No | No | No | No | Yes | 27.0 | - |
| C015 | C016 | CORRIDOR | 90 MIN | 90 MIN | F | WD | PREFIN | 8' - 0" | 7' - 10" | 1 | HM | P-7 | 4/A201A | 8/A352 | - | - | No | No | No | No | Yes | 27.0 | - |
| C016 | C010 | CORRIDOR | - | - | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 58 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | Yes | Yes | No | 5.0 | REMOVABLE MULLION |
| C017A | C011 | CORRIDOR | - | - | F | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 1B/A321 | 1C/A321 | - | - | No | No | Yes | Yes | No | 3.0 | REMOVABLE MULLION |
| E01.1 | E01.1 | ELEV. | | | | | | 4' - 0" | 7' - 0" | | | | | | | - | | | Yes | Yes | | | |
| S01.1A | S01.1 | STAIR 1 | 60 MIN | 60 MIN | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 32 | AL | ANOD | - | 19/A353 | - | FRG-1 | No | No | Yes | Yes | No | 64.0 | REMOVABLE MULLION |
| S01.1B | C013 | STATUE PLAZA | 60 MIN | 60 MIN | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 40 | AL | ANOD | 7/A421B | 19/A353 & 17/A353 | - | FRG-1 | No | No | No | No | No | 63.0 | REMOVABLE MULLION |
| S02.1B | S02.1 | STAIR 2 | - | - | FG2 | AL | ANOD | 3' - 0" | 7' - 2" | 48 | AL | ANOD | 1B | - | - | IG-1 | No | No | No | No | No | 8.0 | - |
| S02.2 | S02.1 | STAIR 2 | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 6 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 24.0 | - |

## SECOND FLOOR DOOR SCHEDULE

| NUMBER | | ROOM NAME | FIRE RATING | | DOOR | | | SIZE | | FRAME | | | DETAILS | | | GLASS | ACCESS CONTROLS | | | | | HDWR. SET | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOOR | ROOM | | DOOR | FRAME | TYPE | MAT | FIN | WIDTH | HEIGHT | ELEV | MAT | FIN | HEAD | JAMB | SILL | | A-PHONE | BARRIER-FREE | CARD READER | ELEC. LOCK HDWR. | MAG HOLD | | |
| 201A | | | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | | No | No | No | No | No | 48.0 | - |
| 200 | 200 | ACADEMIC SUPPORT | 45 MIN | 45 MIN | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | FPG-1 | No | No | No | No | No | 36.0 | - |
| 200A | 200A | OFFICE | - | - | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 2B | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 31.0 | - |
| 200B | 200B | MTG. | - | - | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 2B | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 31.0 | - |
| 200C | 200C | STOR. | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 43.0 | - |
| 200D | 200D | OFFICE | - | - | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 2B | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 31.0 | - |
| 200E | 200E | MTG | - | - | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 2B | HM | P-7 | H1 | J1 | - | - | No | No | No | No | No | 31.0 | - |
| 201 | 201 | ELEC. | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 21.0 | - |
| 202 | 202 | S. TLT | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 39.0 | - |
| 203 | 203 | FOURTH | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 204 | 204 | FIFTH | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 205 | 205 | GIRLS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 206 | 206 | J.C. | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 46.0 | - |
| 207 | 207 | BOYS | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 60.0 | - |
| 208 | 208 | SMALL GROUP | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 58.0 | - |
| 209 | 209 | FIFTH | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 210 | 210 | FOURTH | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 211 | 211 | SMALL GROUP | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 57.0 | - |
| 212 | 212 | SPECIAL EDUCATION | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| 213 | 213 | STAFF | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | | No | No | No | No | No | 59.0 | - |
| 214 | 214 | ESL | 45 MIN | 45 MIN | FG2 | WD | PREFIN | 3' - 0" | 7' - 2" | 2A | HM | P-7 | H2 | J2 | - | FPG-1 | No | No | No | No | No | 59.0 | - |
| 215A | 215 | MECHANICAL | 45 MIN | 45 MIN | F | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 A1 | J2 | - | - | No | No | No | No | No | 45.0 | - |
| 215B | 215 | MECHANICAL | - | - | F | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 3/A102D 20A/328 | 14/A326 | 28/A329 | - | No | No | No | No | No | 5.0 | - |
| 216 | 216 | MECHANICAL | - | - | F | AL | ANOD | 6' - 0" | 7' - 2" | 1 | AL | ANOD | 20A/328 | - | 28/A329 | - | No | No | No | No | No | 5.0 | - |
| C017 | C018 | CORRIDOR | 45 MIN | 45 MIN | F | WD | PREFIN | 8' - 0" | 7' - 10" | 1 | HM | P-7 | 19/A327 | 11/A352 | - | - | No | No | No | No | No | 23.0 | - |
| E01.2 | E01.2 | ELEV. | | | | | | 4' - 0" | 7' - 0" | | | | | | | | | | | | | | |
| S01.2 | S01.2 | STAIR 1 | 60 MIN | 60 MIN | FG2 | AL | ANOD | 6' - 0" | 7' - 2" | 40 | AL | ANOD | 6/A421B | 19/A353 & 17/A353 | - | - | No | No | No | No | No | 63.0 | - |
| S02.2 | S02.2 | STAIR 2 | 45 MIN | 45 MIN | F | WD | PREFIN | 3' - 0" | 7' - 2" | 6 | HM | P-7 | H2 | J2 | - | | No | No | No | No | No | 24.0 | - |

### GENERAL NOTES - DOORS

1 REFER TO A 500's SHEETS FOR ADDITIONAL ACCESS CONTROL INFORMATION NOT NOTED ON THIS SHEET.

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ADDENDUM #1 05-08-2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

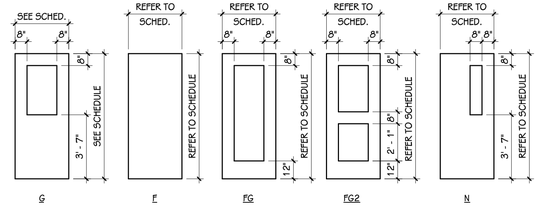
OWNER
KALAMAZOO PUBLIC SCHOOLS

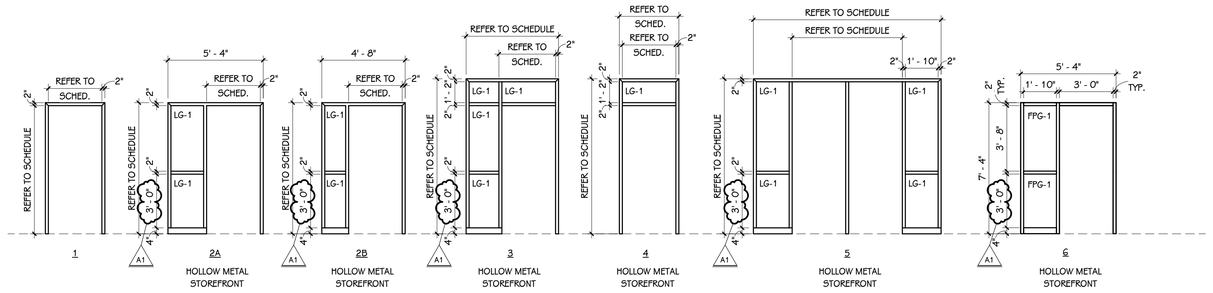
KALAMAZOO, MICHIGAN

SHEET TITLE
DOOR SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
A 502
23-622.000



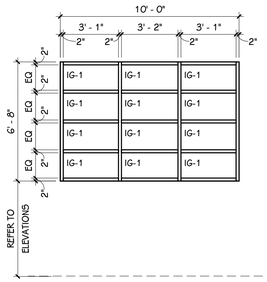




## FRAME ELEVATION KEY

| | |
|---|---|
| IG-1: | INSULATED GLAZING |
| LG-1: | SAFETY GLAZING |
| FPG-1: | FIRE PROTECTED GLAZING |
| FRG-1: | FIRE RESISTIVE GLAZING |
| IMP-1: | INSULATED METAL PANEL |
| | SPANDREL GLASS PANEL |
| | GLASS PANEL WITH FROSTED FILM |
| | INSULATED METAL PANEL |
| | KALWALL PANEL |
| | INDICATES SLIDING WINDOW |

## DOOR PANEL LEGEND

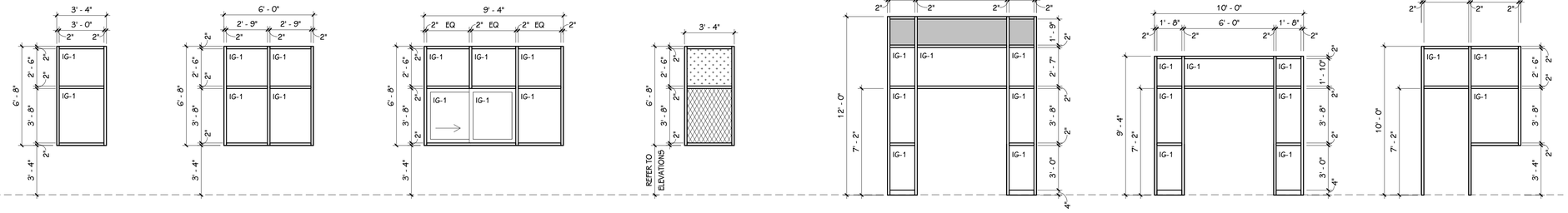
SCALE: NONE




7
HOLLOW METAL STOREFRONT

## FRAME ELEVATIONS

SCALE: NONE




8
ALUMINUM STOREFRONT

9
ALUMINUM STOREFRONT

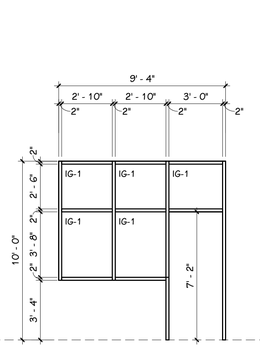
10
ALUMINUM STOREFRONT

11
ALUMINUM STOREFRONT

12
ALUMINUM STOREFRONT

13
ALUMINUM STOREFRONT

14
ALUMINUM STOREFRONT

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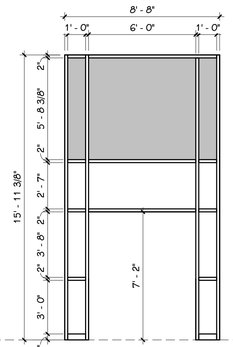


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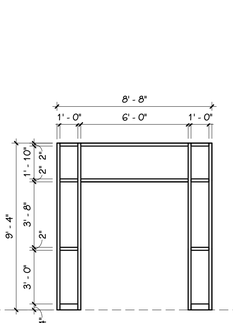
ALUMINUM CURTAIN WALL

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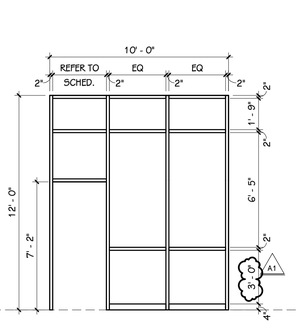


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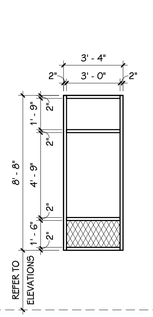


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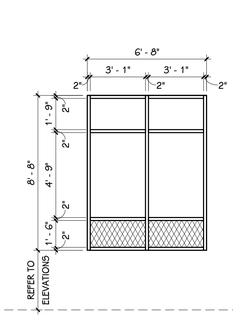


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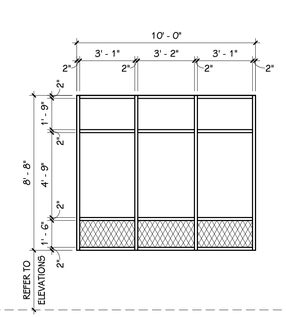


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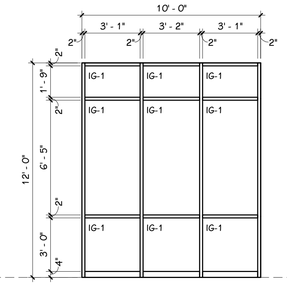


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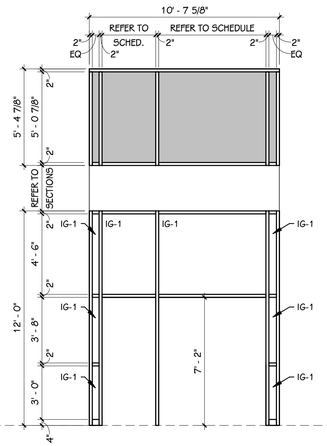


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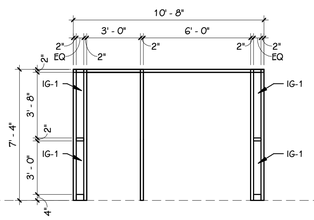


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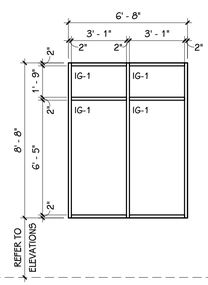


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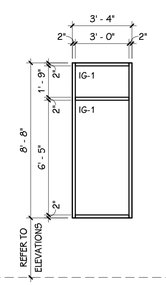


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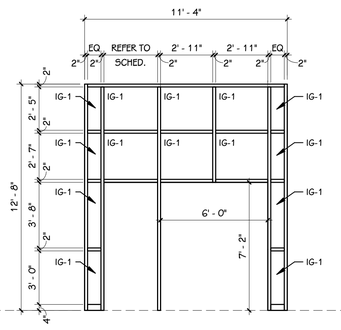
ALUMINUM STOREFRONT

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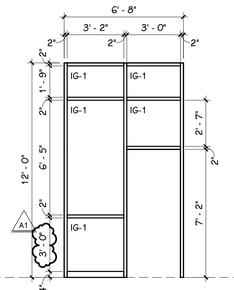
ALUMINUM CURTAIN WALL

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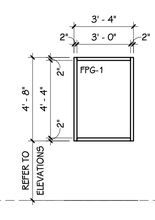


29
ALUMINUM STOREFRONT

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| ADDENDUM #1 | 05-08-2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
DOOR AND FRAME ELEVATIONS

DATE
APRIL 24, 2026

SHEET NUMBER
A 503
23-622.000

30A
ALUMINUM
CURTAIN WALL

ALIGN




30B
ALUMINUM
CURTAIN WALL

ALIGN




30C
ALUMINUM
CURTAIN WALL

## FRAME ELEVATION KEY

| | |
|---|---|
| IG-1: | INSULATED GLAZING |
| LG-1: | SAFETY GLAZING |
| FPG-1: | FIRE PROTECTED GLAZING |
| FRG-1: | FIRE RESISTIVE GLAZING |
| IMP-1: | INSULATED METAL PANEL |
| | SPANDREL GLASS PANEL |
| A1 | GLASS PANEL WITH FROSTED FILM |
| | INSULATED METAL PANEL |
| | KALWALL PANEL |
| | INDICATES SLIDING WINDOW |




31
A1 EXTERIOR FIRE-RESISTIVE GLASS AND FRAME CURTAIN WALL SYSTEM




32
A1 EXTERIOR FIRE-RESISTIVE GLASS AND FRAME CURTAIN WALL SYSTEM




33
ALUMINUM
CURTAIN WALL




34
ALUMINUM
CURTAIN WALL




35
HOLLOW METAL
STOREFRONT




36
HOLLOW METAL
STOREFRONT




37
A1 INTERIOR FIRE-RESISTIVE GLASS AND FRAME SYSTEM




38
HOLLOW METAL
STOREFRONT




39
HOLLOW METAL
STOREFRONT




40
A1 INTERIOR FIRE-RESISTIVE GLASS AND FRAME SYSTEM




41
ALUMINUM
STOREFRONT




42
ALUMINUM
STOREFRONT




43
ALUMINUM
STOREFRONT

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KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FRAME ELEVATIONS

DATE
APRIL 24, 2026

SHEET NUMBER
A 504
23-622.000

## FRAME ELEVATION KEY

| | |
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| IG-1: | INSULATED GLAZING |
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| IMP-1: | INSULATED METAL PANEL |
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| | GLASS PANEL WITH FROSTED FILM |
| | INSULATED METAL PANEL |
| | KALWALL PANEL |
| | INDICATES SLIDING WINDOW |

NOT USED

44

45 ALUMINUM STOREFRONT

46 ALUMINUM STOREFRONT

47 ALUMINUM STOREFRONT

48 ALUMINUM CURTAIN WALL

49 ALUMINUM STOREFRONT

50 ALUMINUM STOREFRONT

51 ALUMINUM STOREFRONT

52 ALUMINUM STOREFRONT

53 ALUMINUM STOREFRONT

54 ALUMINUM STOREFRONT

55 ALUMINUM STOREFRONT

56 ALUMINUM STOREFRONT

57 HOLLOW METAL STOREFRONT

58 ALUMINUM CURTAIN WALL

59 ALUMINUM CURTAIN WALL

60 ALUMINUM STOREFRONT

61 ALUM. LOUVER

62 ALUM. LOUVER

63 ALUM. LOUVER

NOTE:
PROVIDE BLANK-OFF PANELS AS REQUIRED AT LOUVERS.

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FRAME ELEVATIONS

DATE
APRIL 24, 2026

SHEET NUMBER
A 505
23-622.000

## FRAME ELEVATION KEY

| | |
|---|---|
| IG-1: | INSULATED GLAZING |
| LG-1: | SAFETY GLAZING |
| FPG-1: | FIRE PROTECTED GLAZING |
| FRG-1: | FIRE RESISTIVE GLAZING |
| IMP-1: | INSULATED METAL PANEL |
| | SPANDREL GLASS PANEL |
| A1 | GLASS PANEL WITH FROSTED FILM |
| | INSULATED METAL PANEL |
| | KALWALL PANEL |
| | INDICATES SLIDING WINDOW |

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| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

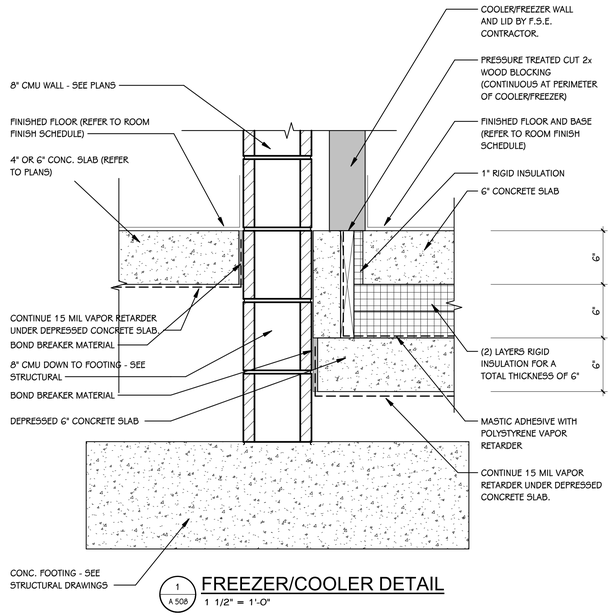
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

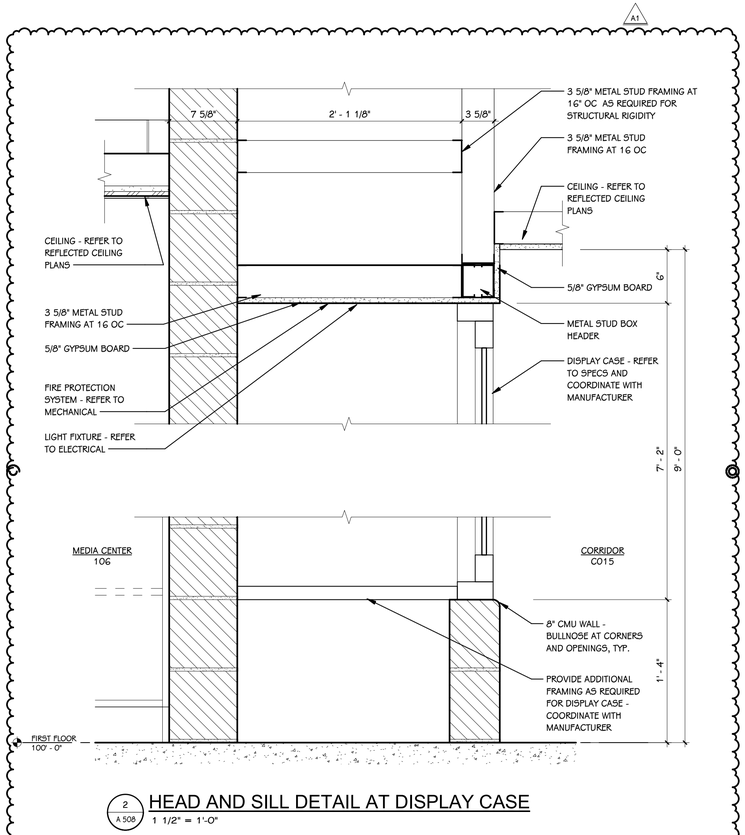
SHEET TITLE
FRAME ELEVATIONS

DATE
APRIL 24, 2026

SHEET NUMBER
A 506
23-622.000




1 / A 508 FREEZER/COOLER DETAIL
1 1/2" = 1'-0"




2 / A 508 HEAD AND SILL DETAIL AT DISPLAY CASE
1 1/2" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

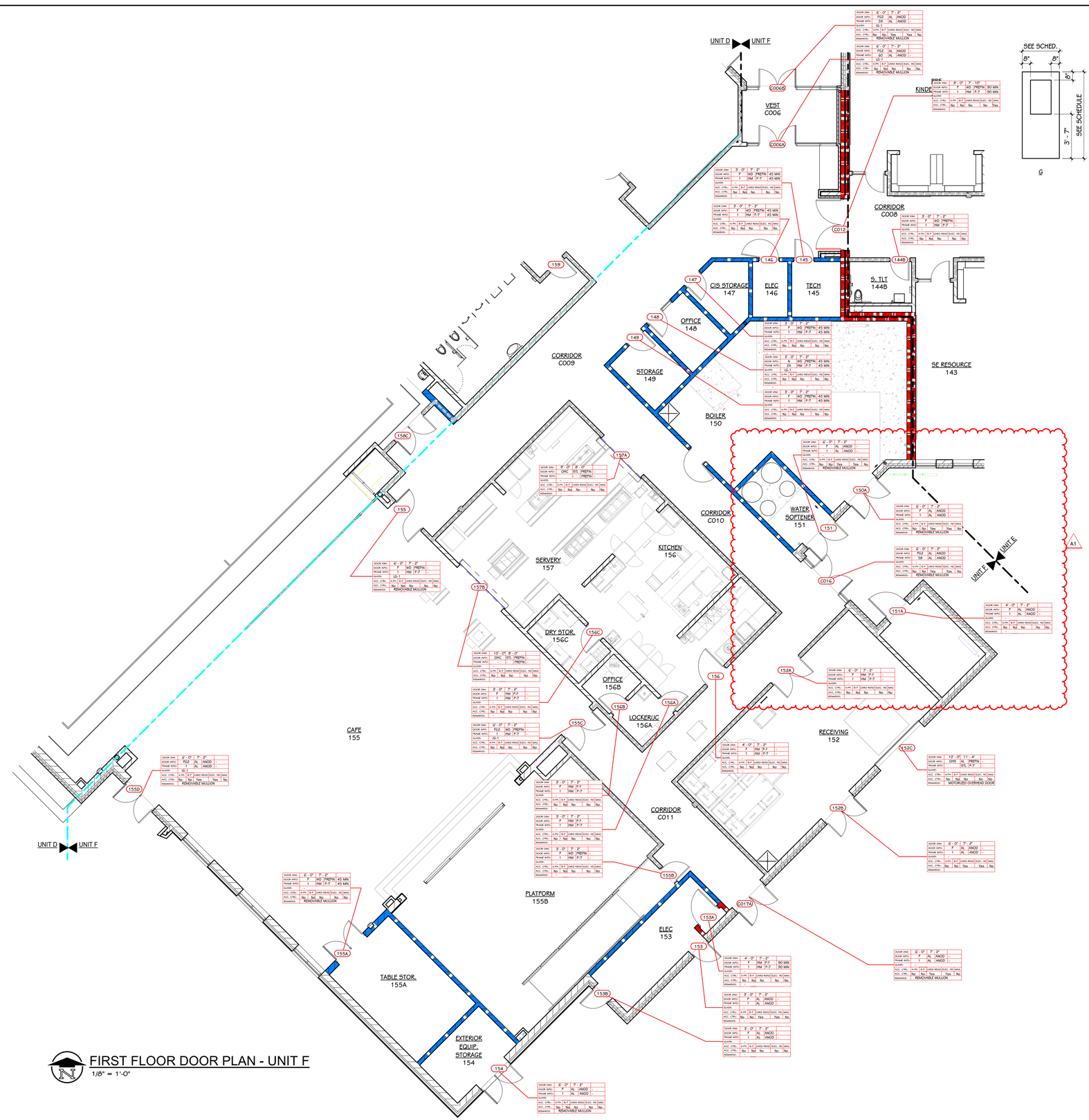
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
HEAD, JAMB, AND SILL DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
A 508
23-622.000

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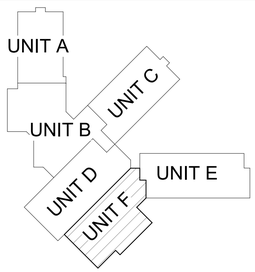
## EL SOL SCHOOL




**KEY PLAN**
SCALE: NO SCALE

## FIRST FLOOR DOOR PLAN - UNIT F
1/8" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR DOOR PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
A 520F
23-622.000

## SECOND FLOOR DOOR SCHEDULE - ALTERNATE

| NUMBER | | ROOM NAME | FIRE RATING | | DOOR | | | SIZE | | FRAME | | | DETAILS | | | GLASS | ACCESS CONTROLS | | | | | HDWR. SET | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOOR | ROOM | | DOOR | FRAME | TYPE | MAT | FIN | WIDTH | HEIGHT | ELEV | MAT | FIN | HEAD | JAMB | SILL | | A-PHONE | BARRIER-FREE | CARD READER | ELEC. LOCK HDWR. | MAG HOLD | | |
| A001 | 208 | CLASSROOM | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | A3 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |
| A002 | 209 | LOCKER ALCOVE | 45 MIN | 45 MIN | F | WD | PREFIN | 6' - 0" | 7' - 2" | 1 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | Yes | 27.0 | - |
| A003 | 210 | CLASSROOM | - | - | F | WD | PREFIN | 3' - 0" | 7' - 2" | A3 | HM | P-7 | H2 | J2 | - | - | No | No | No | No | No | 56.0 | - |

A1

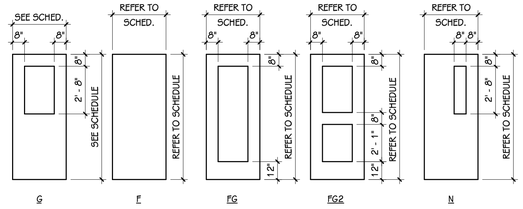
### GENERAL NOTES - DOORS

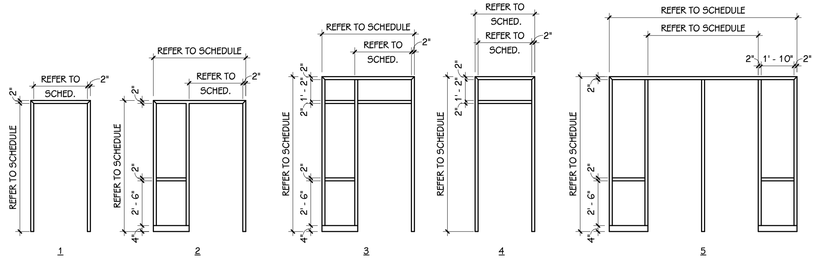
1 REFER TO A 500's SHEETS FOR ADDITIONAL ACCESS CONTROL INFORMATION NOT NOTED ON THIS SHEET.

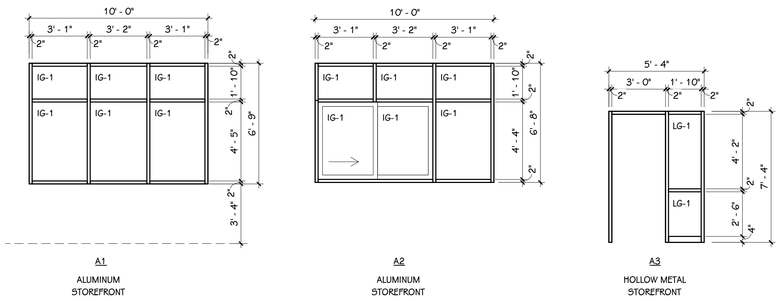
### FRAME ELEVATION KEY

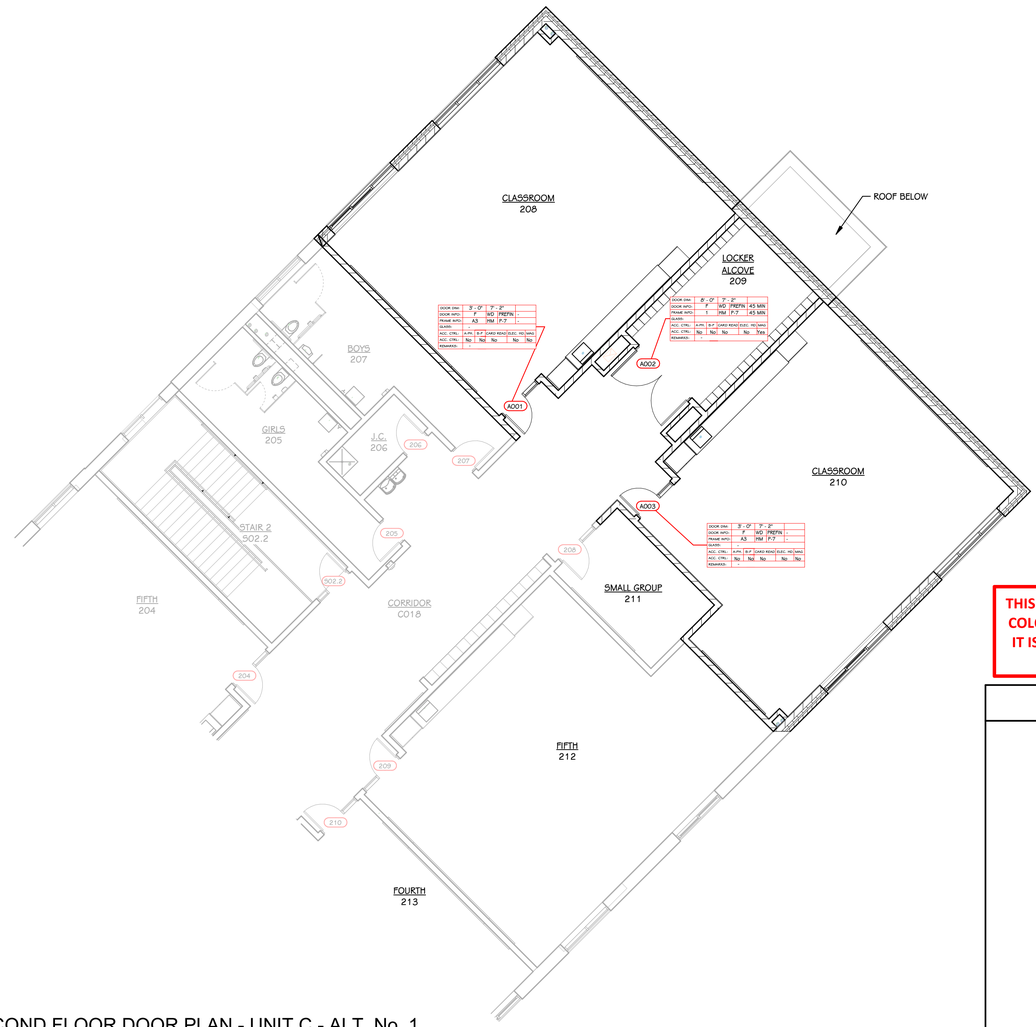
A1

- IG-1: INSULATED GLAZING
- LG-1: SAFETY GLAZING
- FPG-1: FIRE PROTECTED GLAZING
- FRG-1: FIRE RESISTIVE GLAZING
- IMP-1: INSULATED METAL PANEL
- SPANDREL GLASS PANEL
- GLASS PANEL WITH FROSTED FILM
- INSULATED METAL PANEL
- KALWALL PANEL
- INDICATES SLIDING WINDOW




SECOND FLOOR DOOR PLAN - UNIT C - ALT. No. 1

1/8" = 1'-0"

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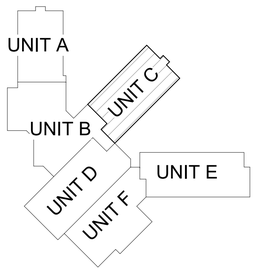
**EL SOL SCHOOL**




**KEY PLAN**

SCALE: NO SCALE

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ADDENDUM #1 05-08-2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

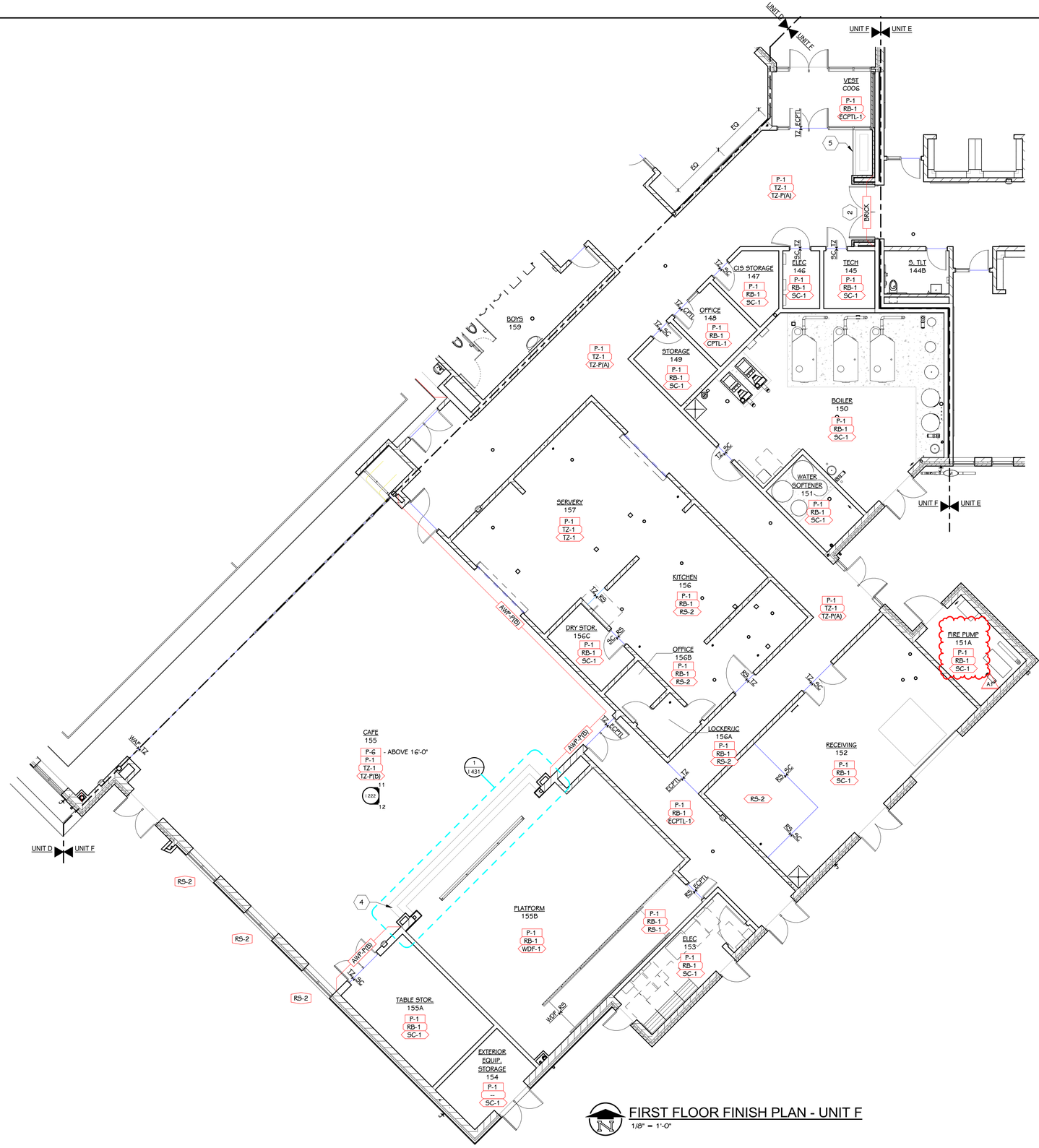
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ALTERNATE No. 1 - DOOR SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
A 808
23-622.000




## NOTES - FINISH PLANS

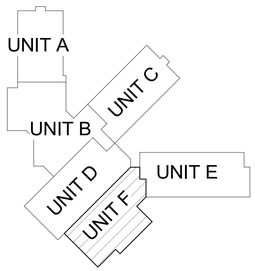
1. FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
2. CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
3. REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
4. DASHED LINE INDICATES LINE OF CEILING ABOVE, REFER TO REFLECTED CEILING PLANS.

## KEYED NOTES - INTERIOR - FINISH PLAN

1. BRICK TO MATCH EXTERIOR BRICK LINEAR PATTERN, APPLY RUBBER BASE AND DO NOT PAINT.
2. BRICK TO MATCH EXTERIOR BRICK GRADIENT PATTERN, APPLY RUBBER BASE AND DO NOT PAINT.
3. BUILT IN DISPLAY CASE W. GLASS FRONT, SHELVES AND TACKABLE BACK SURFACE, BASIS OF DESIGN TO BE ONNIT DSP-01 5969 BUILT-IN DISPLAY CASE. SEE SPECIFICATION FOR MORE INFORMATION.
4. STAIR TO BE TERRAZZO (TZ-1), SEE ARCHITECTURAL DETAILS FOR MORE INFORMATION.
5. POLISHED CONCRETE CAP - SEE ARCHITECTURAL DETAILS FOR MORE INFORMATION.
6. TACKBOARD TO BE MOUNTED ABOVE CIRCULATION DESK COUNTER.
7. METAL LOCKERS, REFER TO ARCHITECTURAL.
8. FLOATING PLASTIC LAMINATE SHELF TO BE MOUNTED ABOVE COUNTER - REFER TO INTERIOR ELEVATIONS FOR DETAILS

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

**EL SOL SCHOOL**




**KEY PLAN**
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

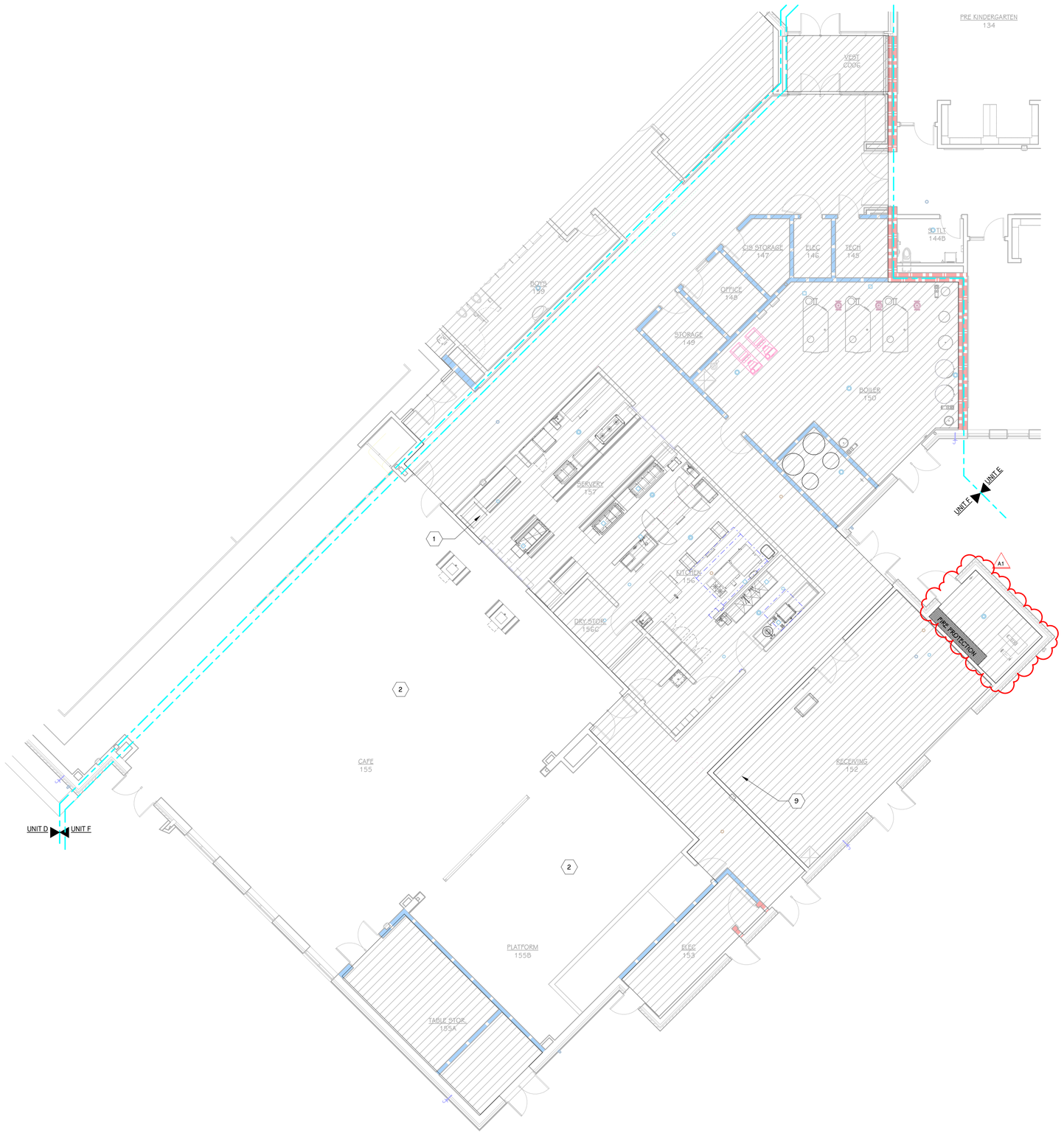
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR FINISH PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
A101F
23-622.000




FIRST FLOOR FIRE PROTECTION PLAN - UNIT F
1/8" = 1'-0"

## GENERAL NOTES - FIRE PROTECTION

1 DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. DRAWINGS ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.

2 IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT OTHER THAN BASIS OF DESIGN, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.

3 COORDINATE ALL NEW CONSTRUCTION WORK OR ACTIVITY WITH THAT WHICH IS REQUIRED BY OTHER TRADES OR INSTALLERS IN ORDER TO PROVIDE A COMPLETE SYSTEM INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.

4 INSTALLER SHALL VERIFY ALL EXISTING JOBSITE CONDITIONS AND DIMENSIONS AND BE RESPONSIBLE FOR THE SAME. NOTIFY THE ENGINEER OF DISCREPANCIES PRIOR TO COMMENCING WORK.

5 FIRE SEAL ALL PENETRATIONS, SUCH AS PIPES, DUCTS, CONDUIT, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.

6 FIRE PROTECTION INSTALLER IS RESPONSIBLE FOR PATCHING OF WALLS, CEILINGS, AND FLOORS WHERE FIRE PROTECTION PIPING HAS BEEN REMOVED, RELOCATED, OR INSTALLED.

7 ALL PIPING SHALL AVOID LOCATIONS DIRECTLY ABOVE ALL ELECTRICAL EQUIPMENT. COORDINATE WITH ELECTRICAL.

## KEYED NOTES - FIRE PROTECTION - CONSTRUCTION

1 INSTALLATION CONTRACTOR SHALL PROVIDE A WET PIPE FIRE PROTECTION SYSTEM. CONTRACTOR SHALL DETERMINE SPACE DENSITY AND HYDRAULICALLY CALCULATE MOST DEMANDING AREA. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA-13, THE AUTHORITY HAVING JURISDICTION.

2 REFER TO SECOND FLOOR FIRE PROTECTION PLAN.

3 FIRST FLOOR FIRE PROTECTION IN STAIRWELL SHALL BE PROVIDED UNDER LANDING AND STAIR.

4 PROVIDE HIGH TEMPERATURE SPRINKLER HEAD IN KILN ROOM FOR WET PIPE PROTECTION SYSTEM.

5 ELEVATOR SHAFT CONTROL VALVE.

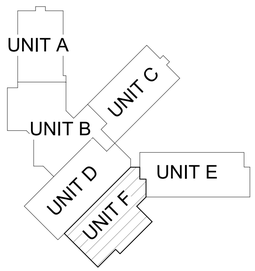
6 INSTALLATION CONTRACTOR SHALL PROVIDE A DOUBLE INTERLOCKED PREACTION FIRE PROTECTION SYSTEM. CONTRACTOR SHALL DETERMINE SPACE DENSITY AND HYDRAULICALLY CALCULATE MOST DEMANDING AREA. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA-13, THE AUTHORITY HAVING JURISDICTION, AND STATE AND LOCAL REQUIREMENTS.

7 ALL PIPING WITHIN PENTHOUSES & MEZZANINES TO BE COORDINATED WITH FINAL DUCTWORK AND EQUIPMENT LOCATIONS PRIOR TO INSTALL.

8 PROVIDE FIRE PROTECTION TO TROPHY CASE.

9 PROVIDE DRY TYPE HEADS TO WALK-IN COOLER.

**EL SOL SCHOOL**




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM #1 | 05/08/2026 |
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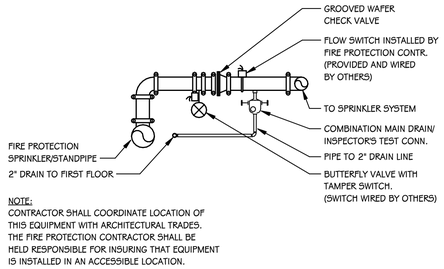
PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR FIRE PROTECTION PLAN - UNIT F

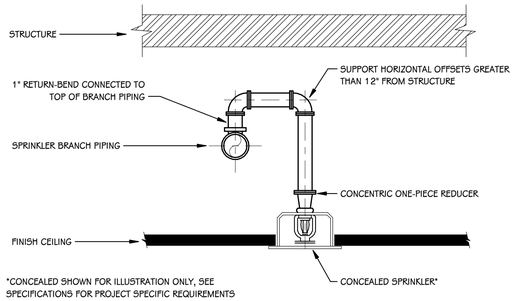
DATE
APRIL 24, 2026

SHEET NUMBER
FP 101F
23-622.000



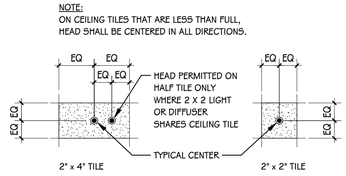

NOTE:
CONTRACTOR SHALL COORDINATE LOCATION OF THIS EQUIPMENT WITH ARCHITECTURAL TRADES. THE FIRE PROTECTION CONTRACTOR SHALL BE HELD RESPONSIBLE FOR INSURING THAT EQUIPMENT IS INSTALLED IN AN ACCESSIBLE LOCATION.

## FLOOR CONTROL VALVING SCHEMATIC
SCALE: NONE

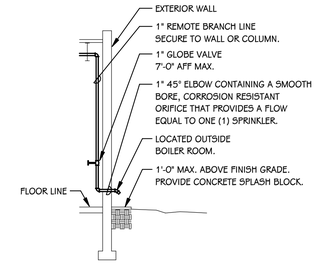



*CONCEALED SHOWN FOR ILLUSTRATION ONLY, SEE SPECIFICATIONS FOR PROJECT SPECIFIC REQUIREMENTS

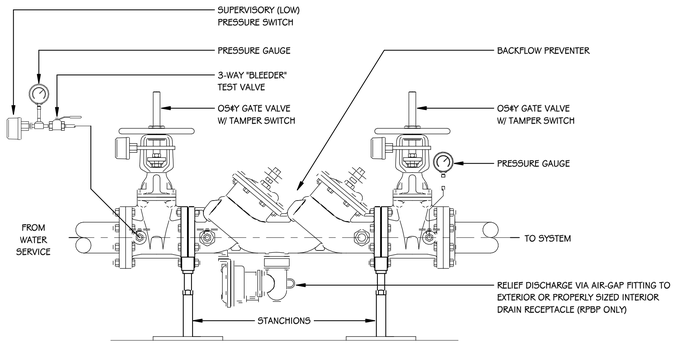
## RETURN BEND PIPING
SCALE: NONE



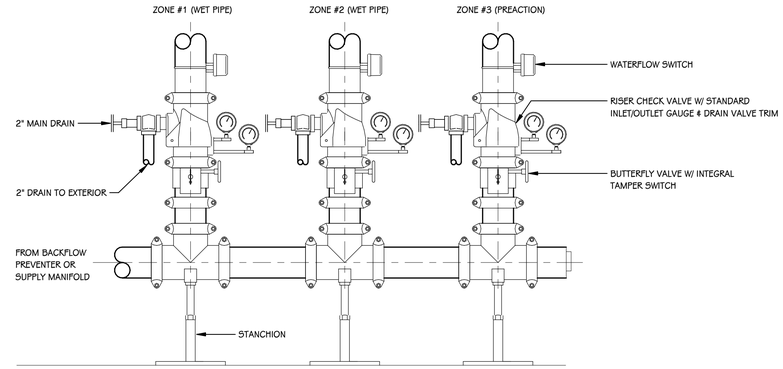

## CEILING TILE DETAIL
SCALE: NONE



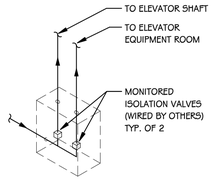

## INSPECTOR'S TEST CONNECTION DETAIL
SCALE: NONE



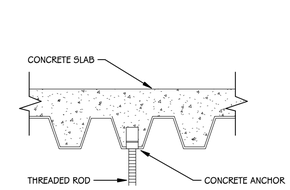

## BACKFLOW PREVENTER
SCALE: NONE



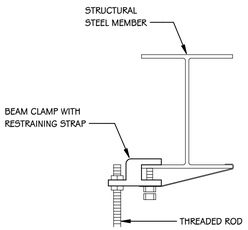

## WET SYSTEM RISER (CHECK VALVE)
SCALE: NONE



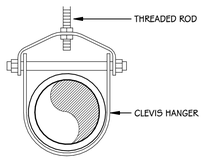

## ELEVATOR VALVING
SCALE: NONE



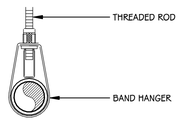

ATTACHMENT TO CONCRETE STRUCTURE




ATTACHMENT TO STEEL STRUCTURE




PIPE HANGERS FOR NPS 4" AND LARGER




PIPE HANGERS FOR NPS 3" AND SMALLER

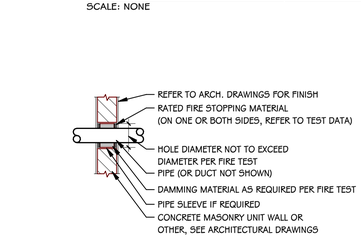
| NFPA 13 MINIMUM REQUIRED HANGER ROD SIZES | |
|---|---|
| PIPE SIZE | DIAMETER OF ROD |
| UP TO AND INCLUDING 4" | 3/8" |
| 5", 6", 8" | 1/2" |
| 10", 12" | 5/8" |

**SURGE RESTRAINT**

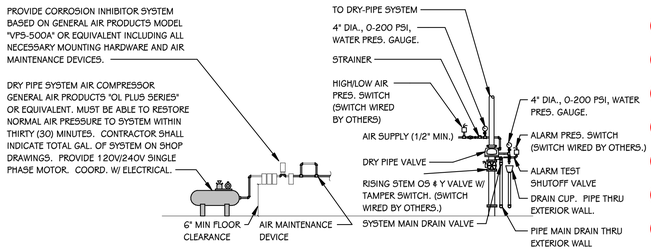
PROVIDE SURGE RESTRAIN AT HANGER VIA RESTRAINT CLIP OR THREADED ROD EXTENSION TO PIPE SURFACE AS REQUIRED BY NFPA 13.

1. END OF BRANCH PIPING WHERE MAXIMUM SYSTEM PRESSURE EXCEEDS 100 PSI.
2. RETURN BEND OFFSETS GREATER THAN 12" WHERE MAXIMUM SYSTEM PRESSURE EXCEEDS 100 PSI.
3. RETURN BEND OFFSETS GREATER THAN 24".

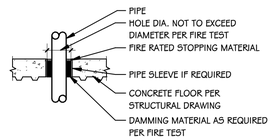
## PIPING SUPPORTS
SCALE: NONE



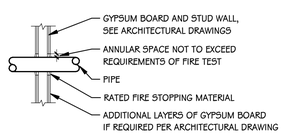

## WALL PENETRATIONS
SCALE: NONE




## DRY-PIPE FIRE PROTECTION
SCALE: NONE

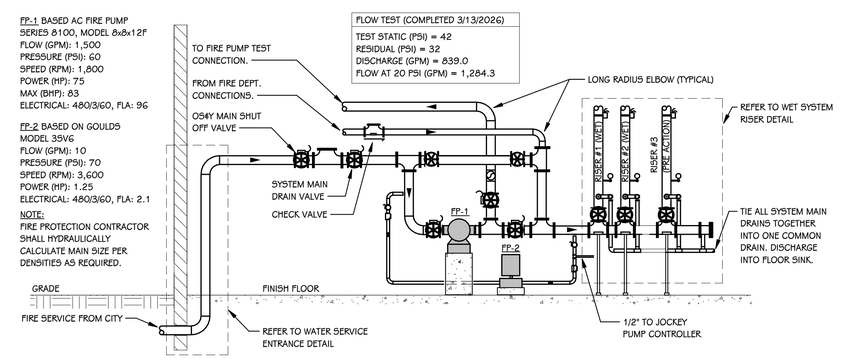



## FLOOR PENETRATIONS
SCALE: NONE




## STUD WALL PENETRATIONS
SCALE: NONE

A1




## FIRE PUMP PIPING DETAIL
SCALE: NONE

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PROJECT TITLE
NEW EL SOL SCHOOL

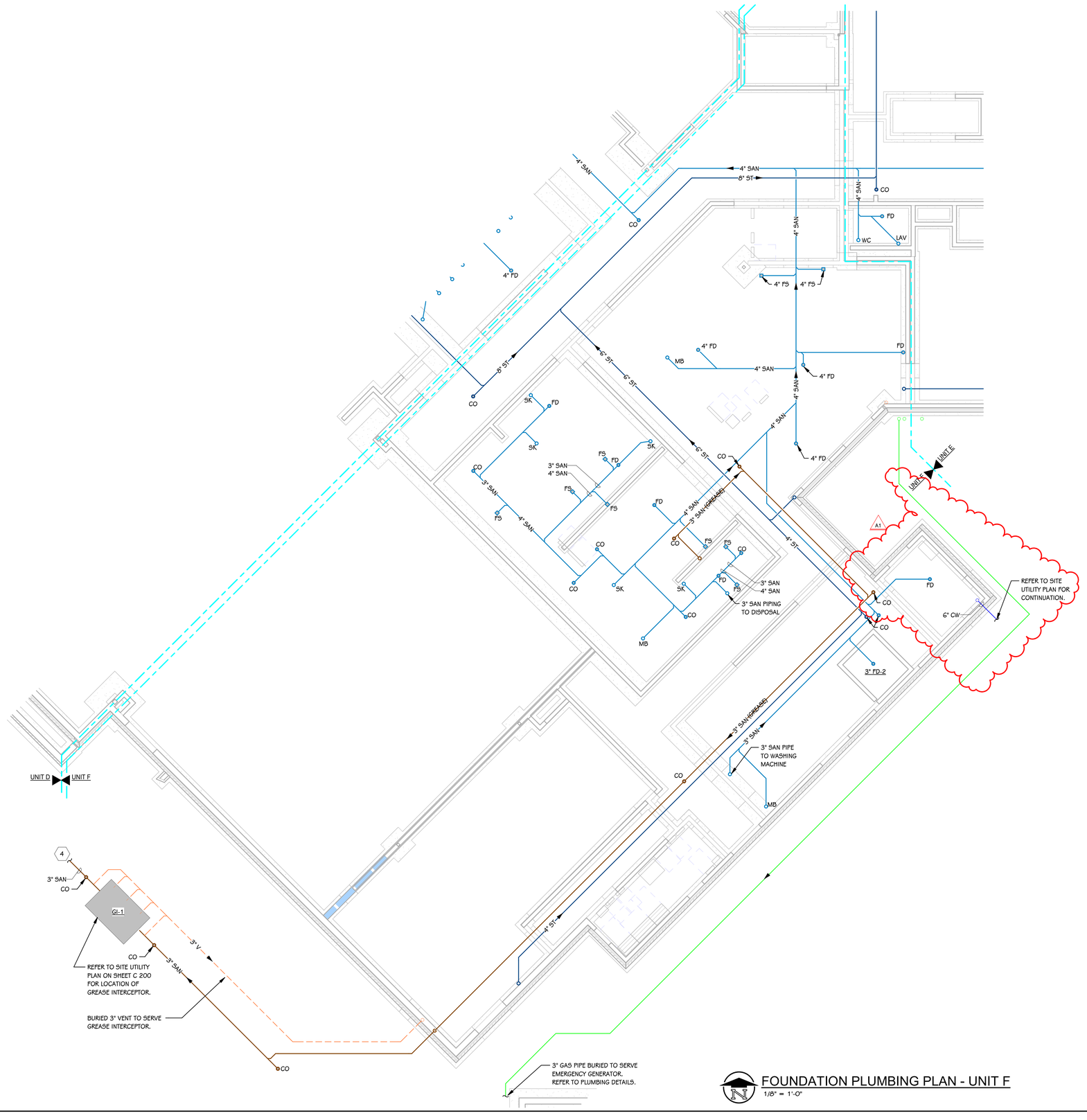
OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

DATE
APRIL 24, 2026

SHEET TITLE
FIRE PROTECTION SCHEDULES AND DETAILS

SHEET NUMBER
FP 501
23-622.000




FOUNDATION PLUMBING PLAN - UNIT F
1/8" = 1'-0"

## KEYED NOTES - PLUMBING - DOMESTIC

1 ART ROOM SHALL BE EQUIPPED WITH SOLIDS INTERCEPTORS BELOW ALL SINKS. REFER TO SPECIFICATIONS.

2 1 1/4" GAS PIPE RISER TO MAKE UP AIR UNIT.

3 3/4" DROP TO DRAIN WATER TEMPERING KIT. 3/4" DROP TO REVERSE OSMOSIS SYSTEM. 3/4" CW PIPE TO COMBI OVEN SHALL BE PIPED THROUGH RO SYSTEM. REFER TO KITCHEN EQUIPMENT SCHEDULES FOR DETAIL.

4 REFER TO SITE UTILITY PLAN ON CIVIL SHEETS FOR CONTINUATION.

5 PROVIDE SINK, FAUCET, HW & CW SUPPLY LINES, AND SHUTOFF VALVES. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.

6 PROVIDE WATER CLOSET, CW SUPPLY LINE, AND SHUTOFF VALVE. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.

7 PROVIDE URINAL, CW SUPPLY LINE, AND SHUTOFF VALVE. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.

8 PROVIDE ELECTRIC WATER COOLER, CW SUPPLY LINE, AND SHUTOFF VALVE. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.

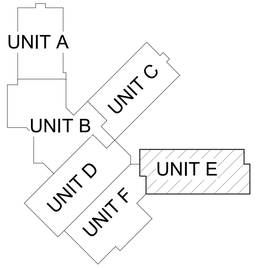
9 PROVIDE SHOWER, MIXING VALVE, TRIM, HW & CW SHUTOFF VALVES WITH ACCESS PANEL. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.

10 PROVIDE WALL CLEANOUT AT THE BASE OF THE STACK.

11 ROUTE 3/4" CW WITH ACCESSIBLE SHUTOFF VALVE WITH ACCESS PANEL AS NEEDED. MOUNT 18" AFG.

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**EL SOL SCHOOL**




KEY PLAN
SCALE: NO SCALE

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ADDENDUM #1 05/08/2026

ISSUED FOR DATE

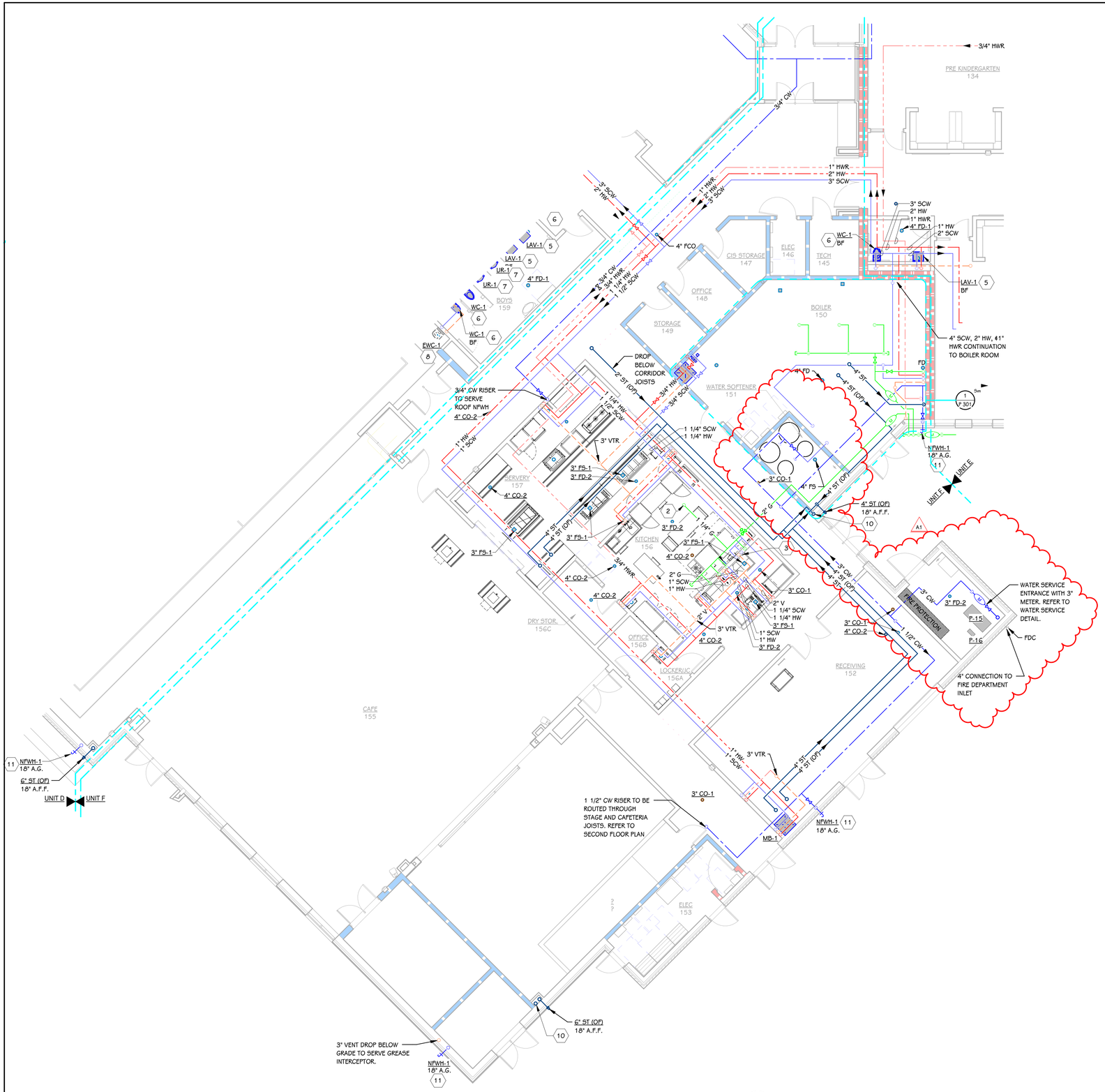
PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

SHEET TITLE
FOUNDATION PLUMBING PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
P 001F
23-622.000




## FIRST FLOOR PLUMBING PLAN - UNIT F

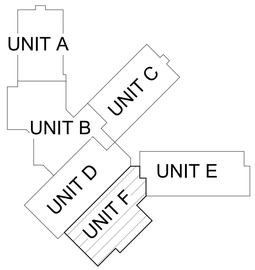
1/8" = 1'-0"

### KEYED NOTES - PLUMBING - DOMESTIC

1. ART ROOM SHALL BE EQUIPPED WITH SOLIDS INTERCEPTORS BELOW ALL SINKS. REFER TO SPECIFICATIONS.
2. 1 1/4" GAS PIPE RISER TO MAKE UP AIR UNIT.
3. 3/4" DROP TO DRAIN WATER TEMPERING KIT. 3/4" DROP TO REVERSE OSMOSIS SYSTEM. 3/4" CW PIPE TO COMBI OVEN SHALL BE PIPED THROUGH RO SYSTEM. REFER TO KITCHEN EQUIPMENT SCHEDULES FOR DETAIL.
4. REFER TO SITE UTILITY PLAN ON CIVIL SHEETS FOR CONTINUATION.
5. PROVIDE SINK, FAUCET, HW & CW SUPPLY LINES, AND SHUTOFF VALVES. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.
6. PROVIDE WATER CLOSET, CW SUPPLY LINE, AND SHUTOFF VALVE. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.
7. PROVIDE URINAL, CW SUPPLY LINE, AND SHUTOFF VALVE. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.
8. PROVIDE ELECTRIC WATER COOLER, CW SUPPLY LINE, AND SHUTOFF VALVE. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.
9. PROVIDE SHOWER, MIXING VALVE, TRIM, HW & CW SHUTOFF VALVES WITH ACCESS PANEL. REFER TO MINIMUM SIZE CONNECTION SCHEDULE FOR ROUGH-IN SIZE TO FIXTURE.
10. PROVIDE WALL CLEANOUT AT THE BASE OF THE STACK.
11. ROUTE 3/4" CW WITH ACCESSIBLE SHUTOFF VALVE WITH ACCESS PANEL AS NEEDED. MOUNT 18" AFG.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

**EL SOL SCHOOL**




**KEY PLAN**
SCALE: NO SCALE

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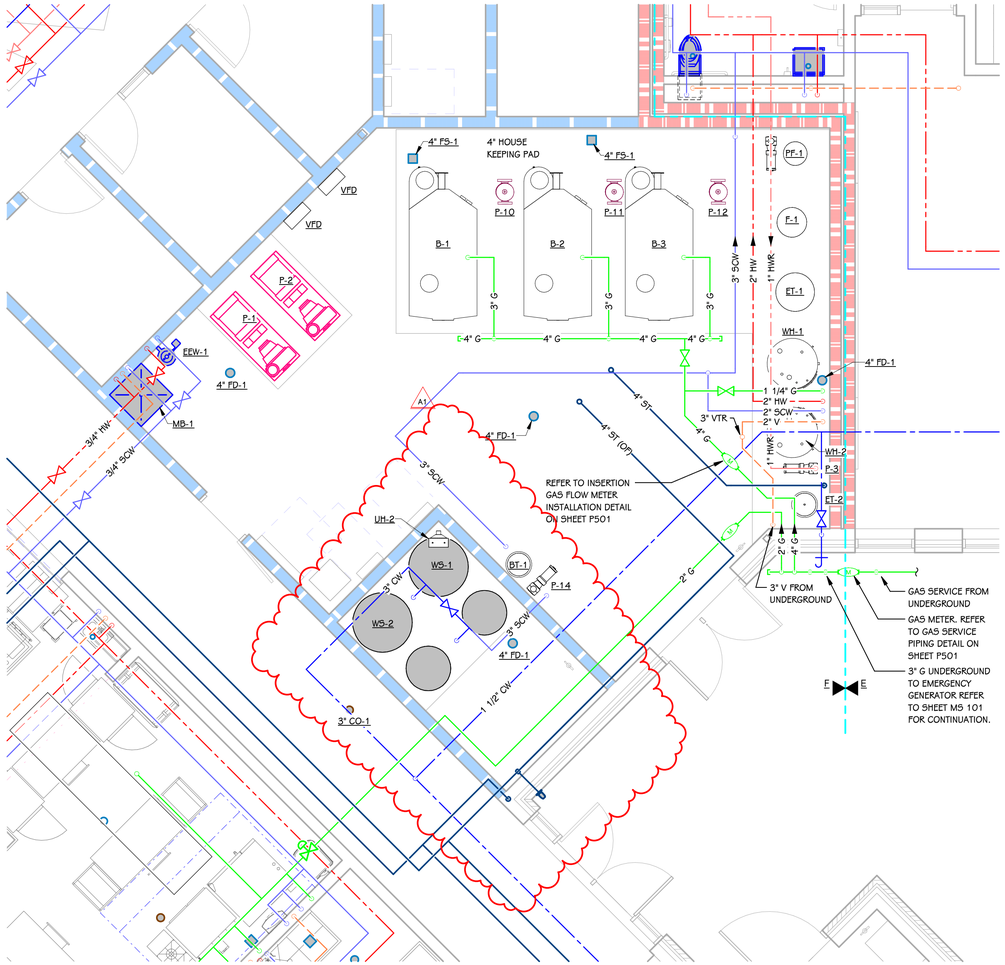
PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
P 101F
23-622.000




1 / P 301 ENLARGED BOILER ROOM
1/4" = 1'-0"

**KEYED NOTES - PLUMBING - ENLARGED - CONSTRUCTION**

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

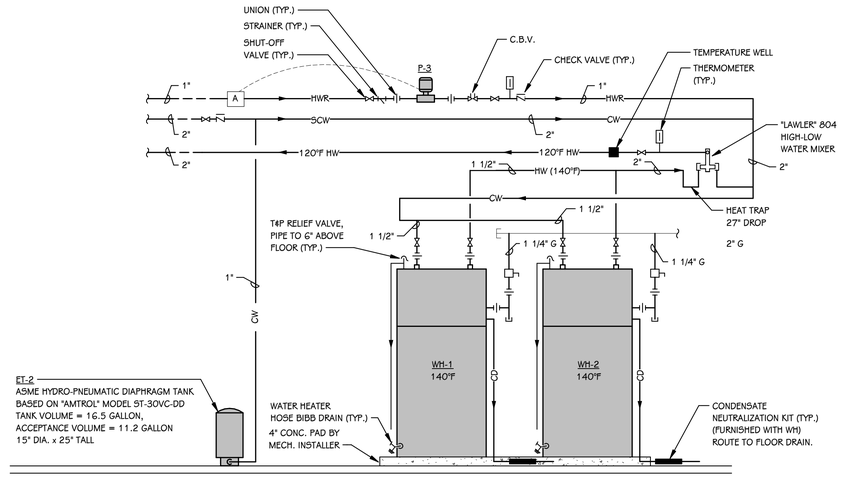
Kalamazoo, Michigan

SHEET TITLE
ENLARGED PLUMBING PLANS

DATE
APRIL 24, 2026

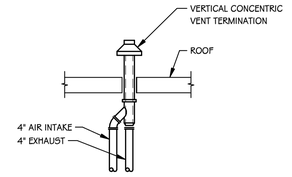
SHEET NUMBER
P 301

23-622.000



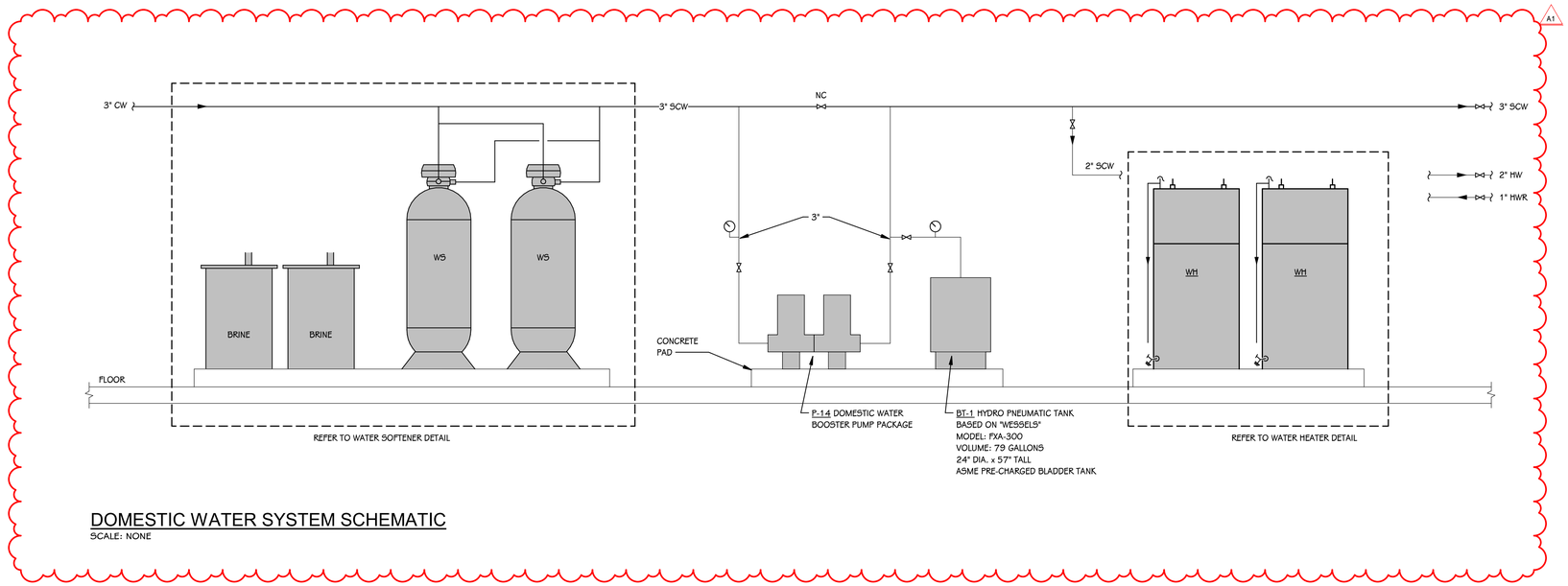

## WATER HEATER DETAIL (2 WATER HEATERS) - DOMESTIC

SCALE: NONE




DIRECT VENT / AIR INTAKE (TYPICAL 2 WATER HEATERS)

WH-1 & WH-2
WATER HEATER BASED ON "LOCHINVAR" OR EQUAL, MODEL SNA401-125, SHIELD GAS WATER HEATER. 96% EFF., 117 GALLON, 399,000 BTUH INPUT, 976 GPH @ 100°F RISE, 1" GAS CONNECTION, 1-1/2" WATER CONNECTIONS. VENT THROUGH ROOF PER MANUFACTURERS RECOMMENDATIONS WITH CONCENTRIC KIT, INCLUDE WITH CONDENSATE NEUTRALIZATION KIT. ELECTRICAL = 115/1/60.




## DOMESTIC WATER SYSTEM SCHEMATIC

SCALE: NONE

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PROJECT TITLE
NEW EL SOL SCHOOL

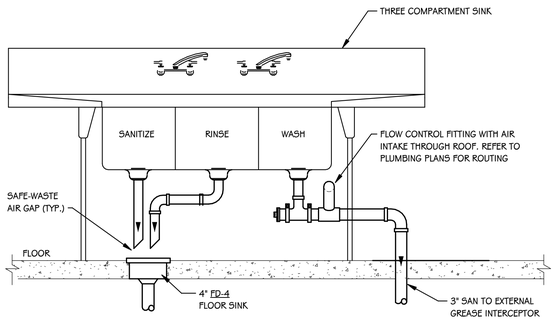
OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
PLUMBING RISER DIAGRAMS

DATE
APRIL 24, 2026

SHEET NUMBER
P 401
23-622.000



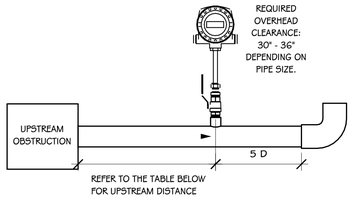

## THREE COMPARTMENT SINK WASTE PIPING

SCALE: NONE

| Upstream Obstruction | Minimum Upstream Straight Pipe Run Required | |
|---|---|---|
| | Without Flow Conditioner | With Flow Conditioner |
| Single bend preceded by > 9 diameters of straight pipe | 10 Diameters | 3 Diameters |
| Pipe size reduction in straight pipe run | 10 Diameters | 3 Diameters |
| Multiple bends in plane with < 9 diameters of straight pipe between them | 20 Diameters | 5 Diameters |
| Pipe size expansion in straight pipe run | 20 Diameters | 5 Diameters |
| Tees | 30 Diameters | 5 Diameters |
| Multiple bends out of plane | 30 Diameters | 5 Diameters |
| Modulating or regulating valve | 40 Diameters | 10 Diameters |

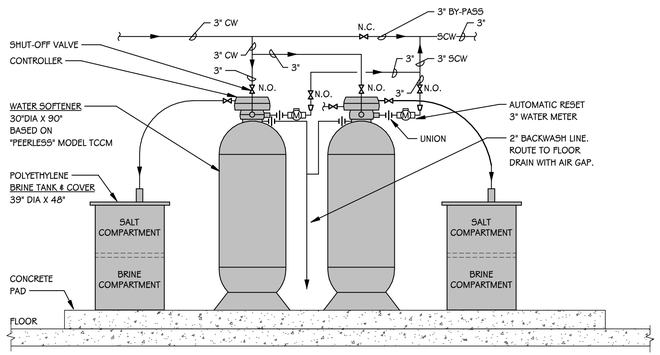
### NOTES

1. PROVIDE INSERTION STYLE, THERMAL MASS FLOW METER FOR NATURAL GAS APPLICATION(S).
2. REFER TO DRAWINGS AND SCHEDULES FOR METER QUANTITIES AND LOCATIONS.
3. REFER TO MANUFACTURERS INSTALLATION AND OPERATING REQUIREMENTS.
4. PROVIDE MODEL NUMBER: F-5100-1110-1NG WITH INSTALLATION KIT AS MANUFACTURED BY ONICON, INC. WWW.ONICON.COM
5. LOCAL REPRESENTATIVE FOR ONICON INC. BLUEFIELD ENGINEERED SYSTEMS; PHONE: 888-445-HVAC(4822)
6. LINK METER TO BUILDING MANAGEMENT SYSTEM.




## INSERTION GAS FLOW METER INSTALLATION DETAIL

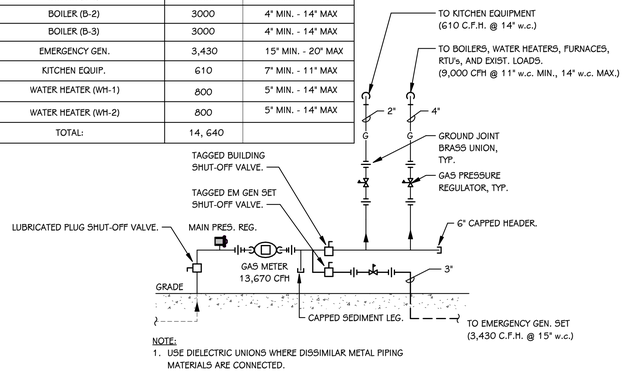
SCALE: NONE




## WATER SOFTENER DETAIL - DUPLEX

SCALE: NONE

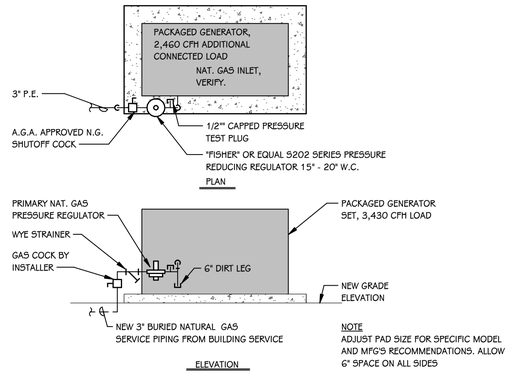
| NATURAL GAS LOAD SCHEDULE - TOTAL BUILDING | | |
|---|---|---|
| EQUIPMENT | LOAD (CFH) | PRESSURE (IN WC) |
| BOILER (B-1) | 3000 | 4" MIN. - 14" MAX |
| BOILER (B-2) | 3000 | 4" MIN. - 14" MAX |
| BOILER (B-3) | 3000 | 4" MIN. - 14" MAX |
| EMERGENCY GEN. | 3,430 | 15" MIN. - 20" MAX |
| KITCHEN EQUIP. | 610 | 7" MIN. - 11" MAX |
| WATER HEATER (WH-1) | 800 | 5" MIN. - 14" MAX |
| WATER HEATER (WH-2) | 800 | 5" MIN. - 14" MAX |
| TOTAL: | 14, 640 | |




NOTE:
1. USE DIELECTRIC UNIONS WHERE DISSIMILAR METAL PIPING MATERIALS ARE CONNECTED.

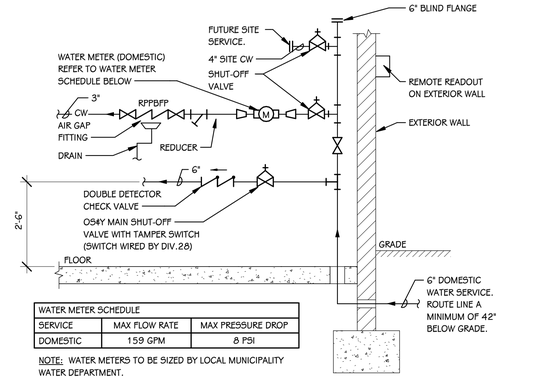
## GAS SERVICE PIPING DETAIL

SCALE: NONE




## TYPICAL GENERATOR FUEL PIPING

SCALE: NONE

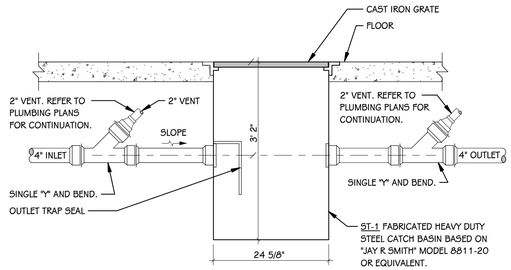



| WATER METER SCHEDULE | | |
|---|---|---|
| SERVICE | MAX FLOW RATE | MAX PRESSURE DROP |
| DOMESTIC | 159 GPM | 8 PSI |

NOTE: WATER METERS TO BE SIZED BY LOCAL MUNICIPALITY WATER DEPARTMENT.

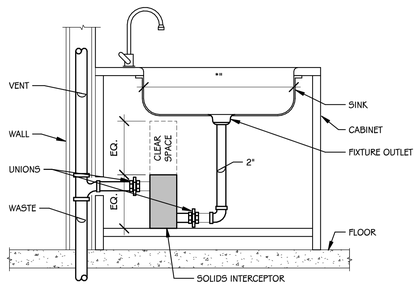
## WATER SERVICE DETAIL

SCALE: NONE



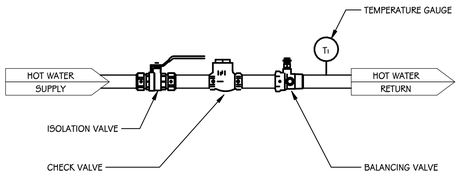

## SAND TRAP DETAIL

SCALE: NONE



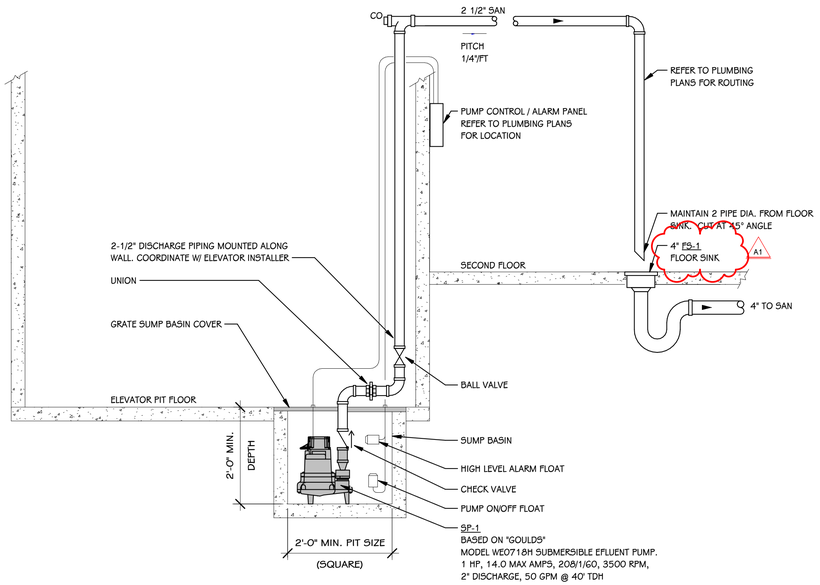

## SOLIDS INTERCEPTOR DETAIL

SCALE: NONE




## BALANCING VALVE ASSEMBLY DETAIL

SCALE: NONE




## ELEVATOR SUMP PUMP (SP-1) DETAIL

SCALE: NONE

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PROJECT TITLE
NEW EL SOL SCHOOL

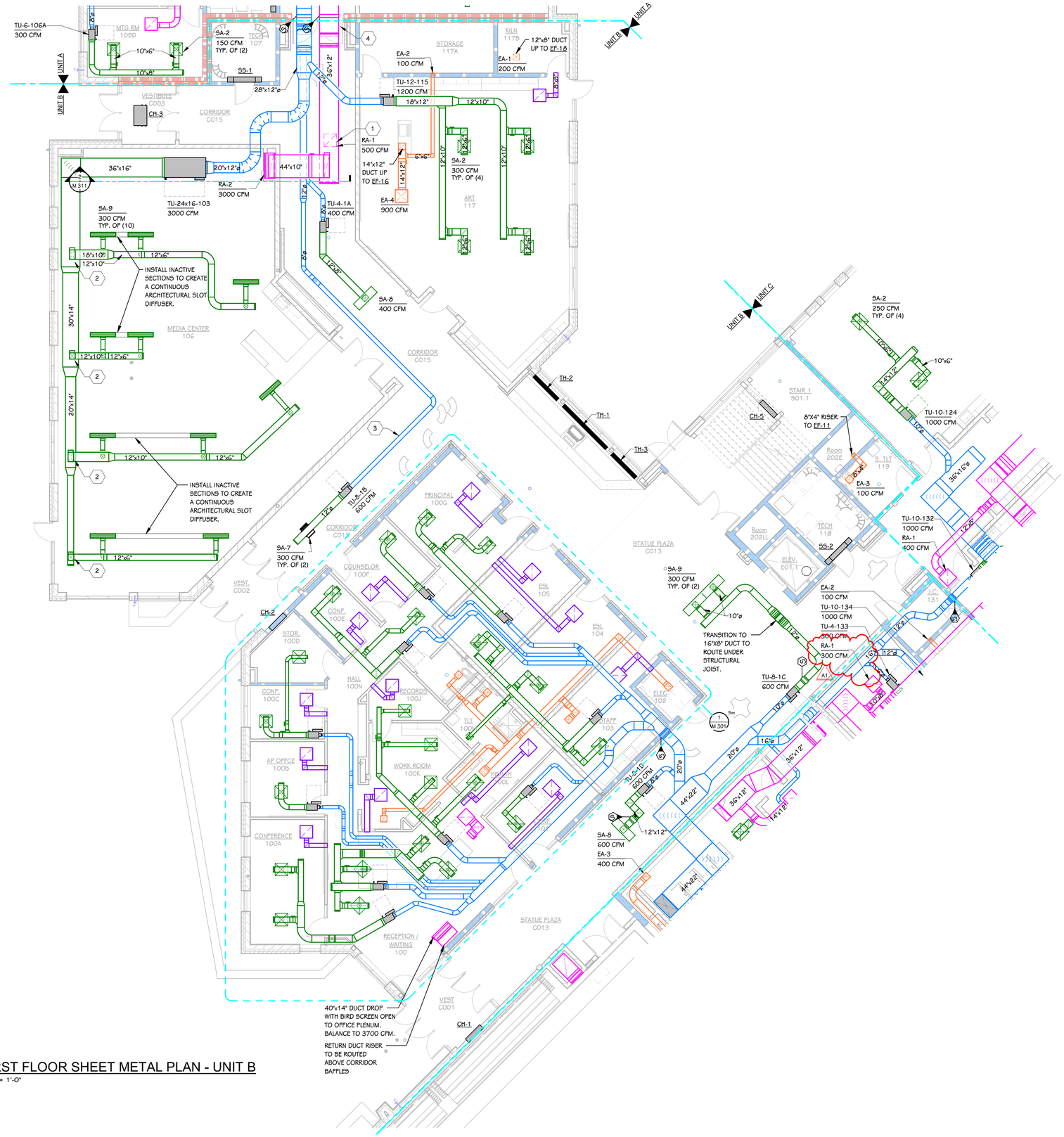
OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
PLUMBING SCHEDULES AND DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
P 501
23-622.000




FIRST FLOOR SHEET METAL PLAN - UNIT B
1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.

2 ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.

3 EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.

4 ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.

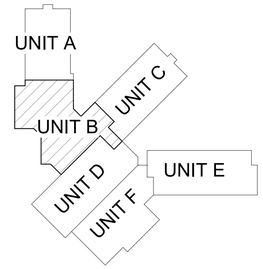
5 DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE BELOW STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

6 DUCTWORK TO BE ROUTED THROUGH STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

7 KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

EL SOL SCHOOL




KEY PLAN
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
M101B
23-622.000

FIRST FLOOR SHEET METAL PLAN - UNIT C
1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.

2 ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.

3 EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.

4 ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.

5 DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE BELOW STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

6 DUCTWORK TO BE ROUTED THROUGH STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

7 KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

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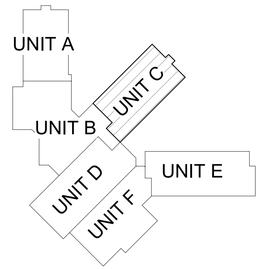
EL SOL SCHOOL




KEY PLAN
SCALE: NO SCALE

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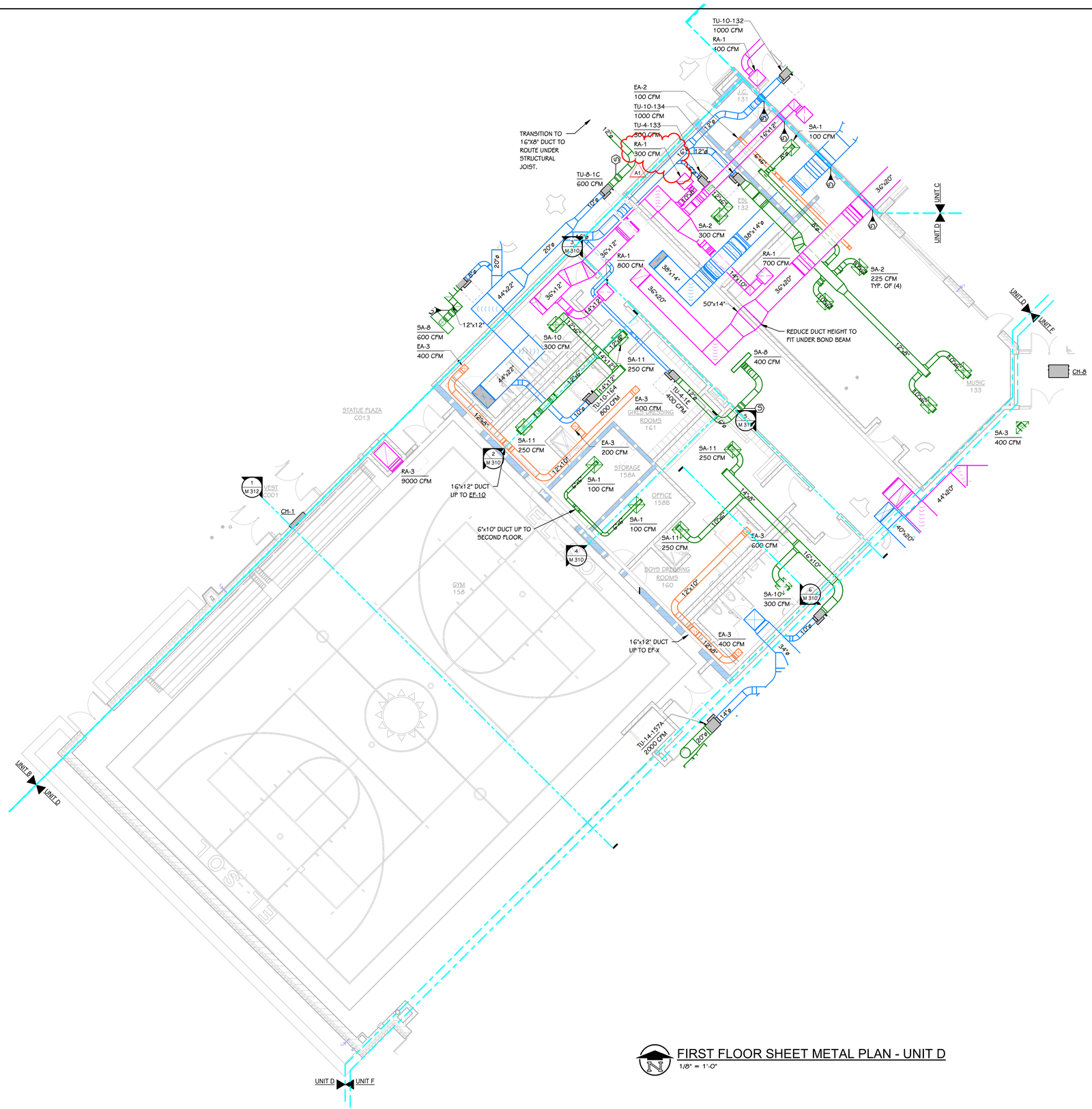
PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT C

DATE
APRIL 24, 2026

SHEET NUMBER
M 101C
23-622.000




FIRST FLOOR SHEET METAL PLAN - UNIT D
1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1. 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.
2. ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.
3. EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.
4. ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.
5. DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE BELOW STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.
6. DUCTWORK TO BE ROUTED THROUGH STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.
7. KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

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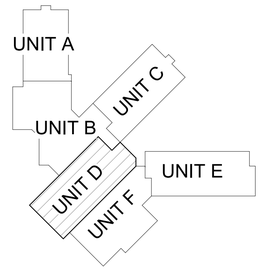
**EL SOL SCHOOL**




**KEY PLAN**
SCALE: NO SCALE

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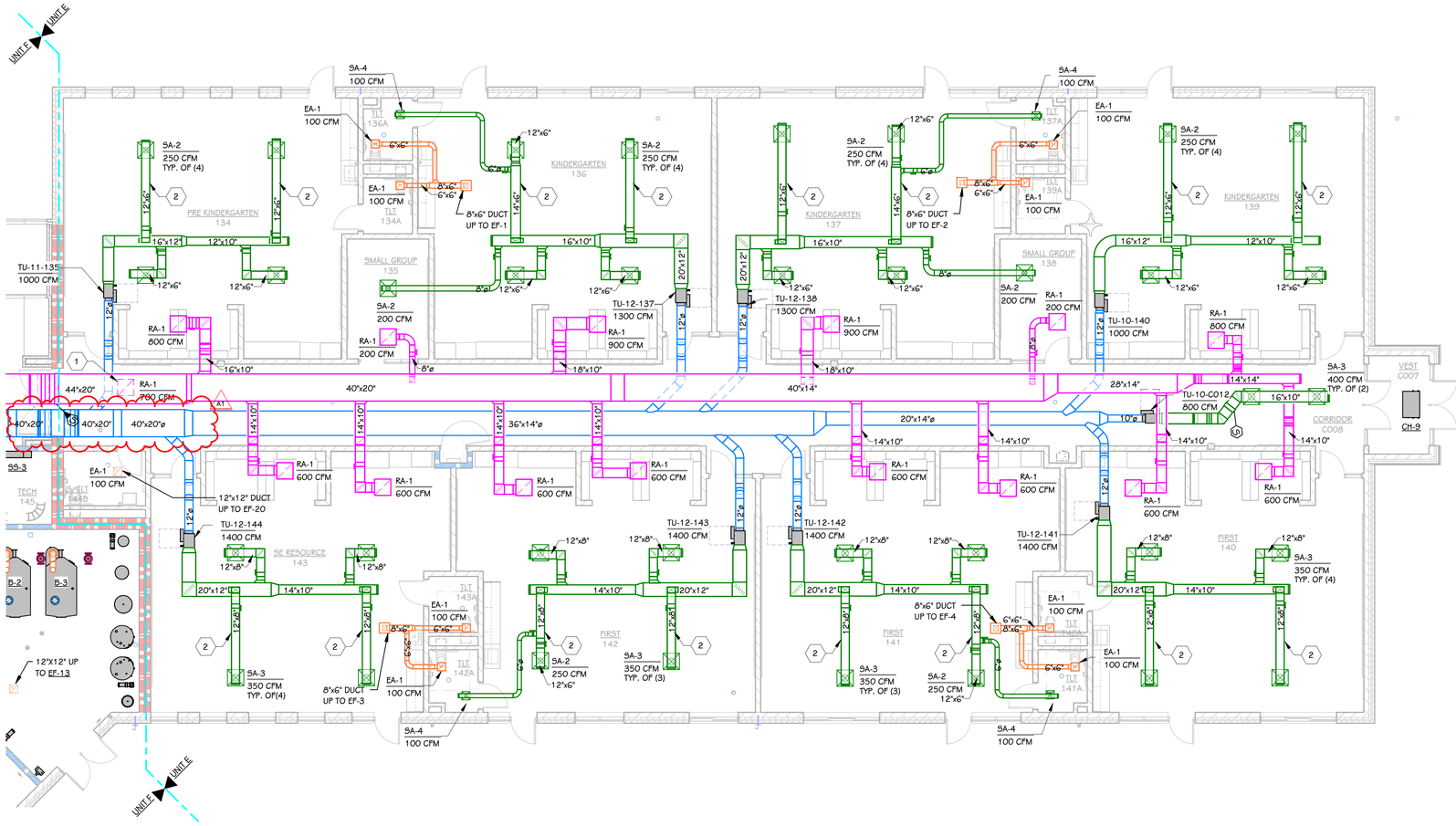
PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
M 101D
23-622.000




FIRST FLOOR SHEET METAL PLAN - UNIT E

1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.

2 ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.

3 EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.

4 ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.

5 DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE BELOW STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

6 DUCTWORK TO BE ROUTED THROUGH STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

7 KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

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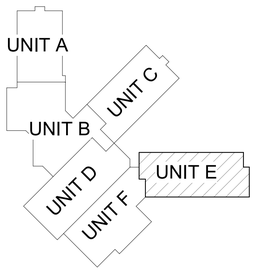
**EL SOL SCHOOL**




KEY PLAN

SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

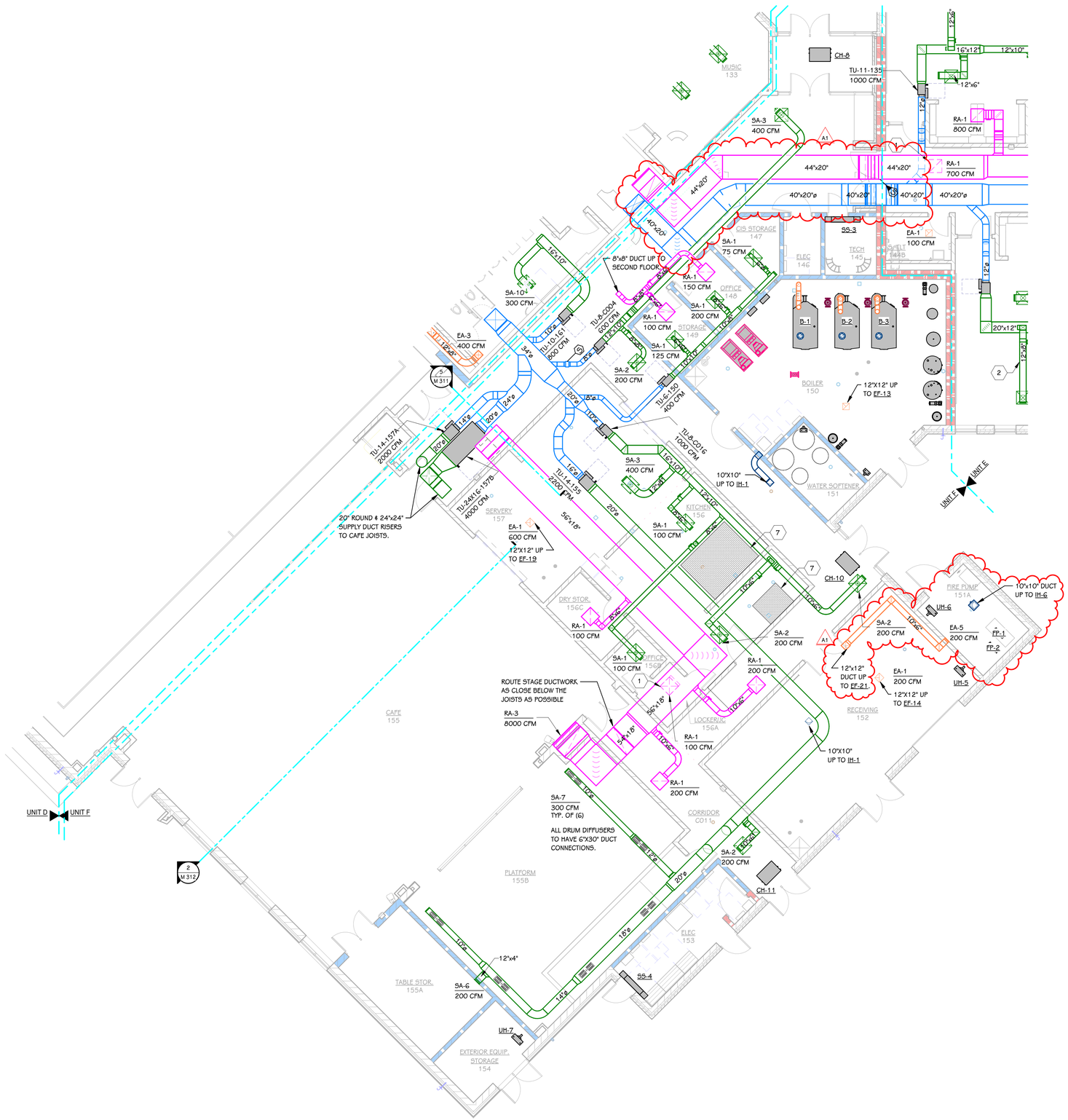
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT E

DATE
APRIL 24, 2026

SHEET NUMBER
M101E

23-622.000




FIRST FLOOR SHEET METAL PLAN - UNIT F

1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1. 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.
2. ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.
3. EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.
4. ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.
5. DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE BELOW STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.
6. DUCTWORK TO BE ROUTED THROUGH STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.
7. KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

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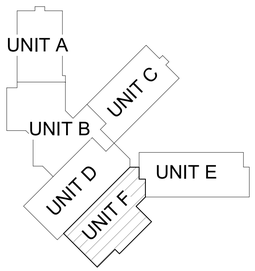


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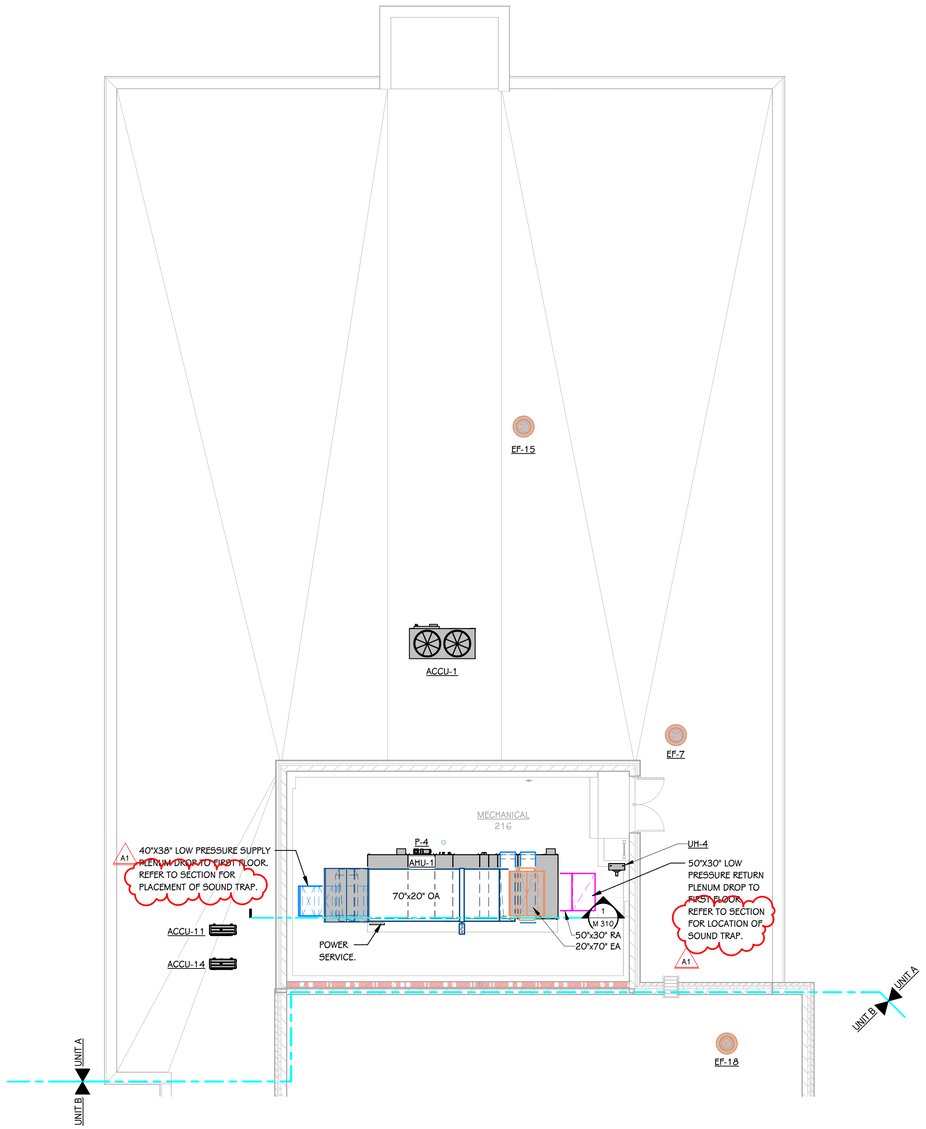
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR SHEET METAL PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
M 101F

23-622.000




SECOND FLOOR SHEET METAL PLAN - UNIT A

1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.

2 ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.

3 EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.

4 ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.

5 DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE BELOW STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

6 DUCTWORK TO BE ROUTED THROUGH STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.

7 KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

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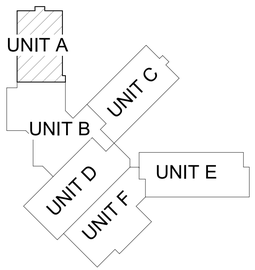


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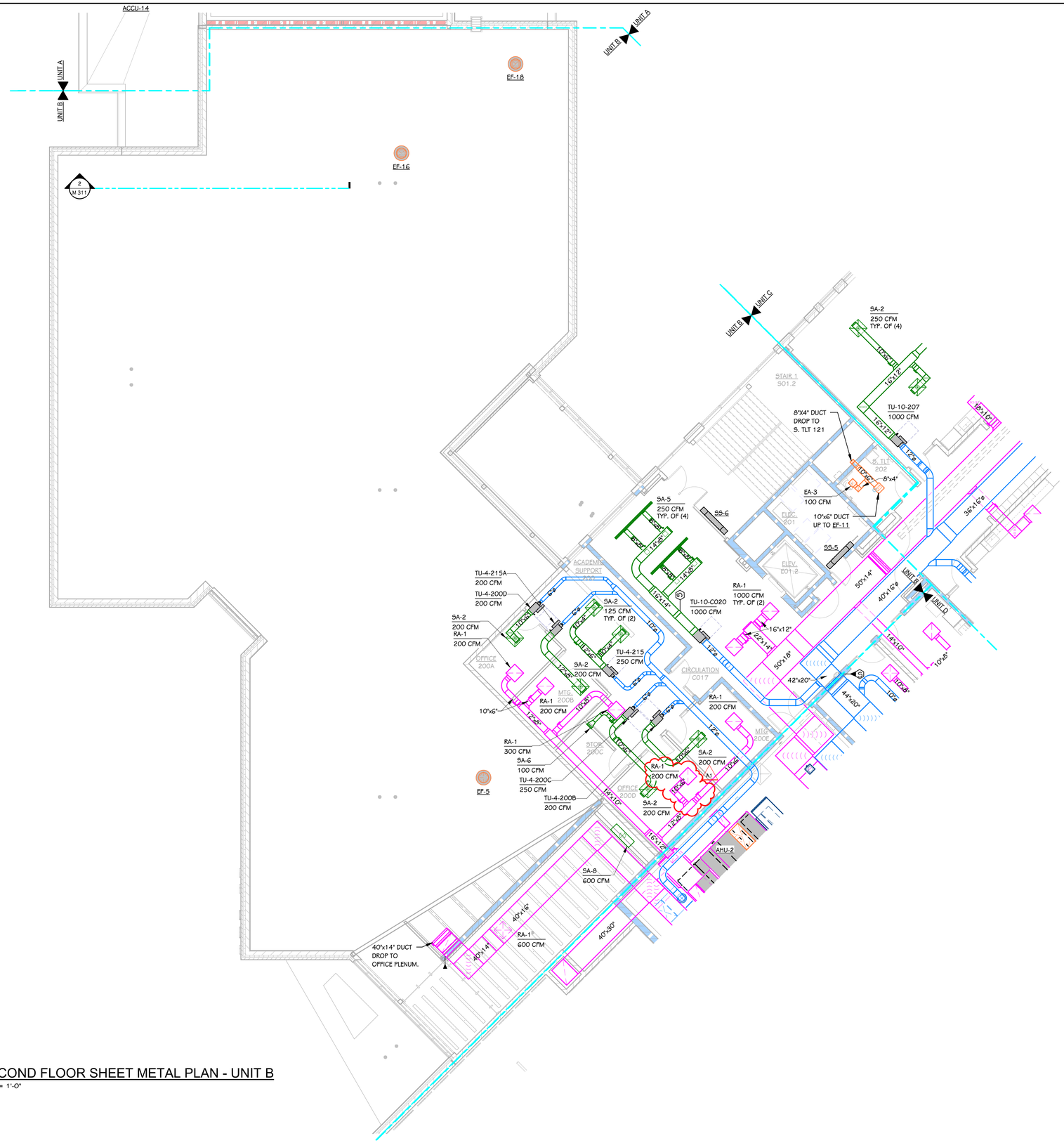
SHEET TITLE
SECOND FLOOR SHEET METAL PLAN - UNIT A

DATE
APRIL 24, 2026

SHEET NUMBER
M 102A

23-622.000




SECOND FLOOR SHEET METAL PLAN - UNIT B
1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.

2 ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.

3 EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.

4 ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.

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7 KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

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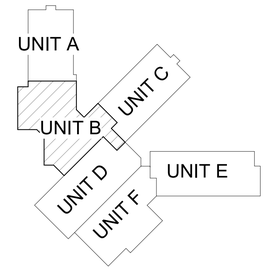


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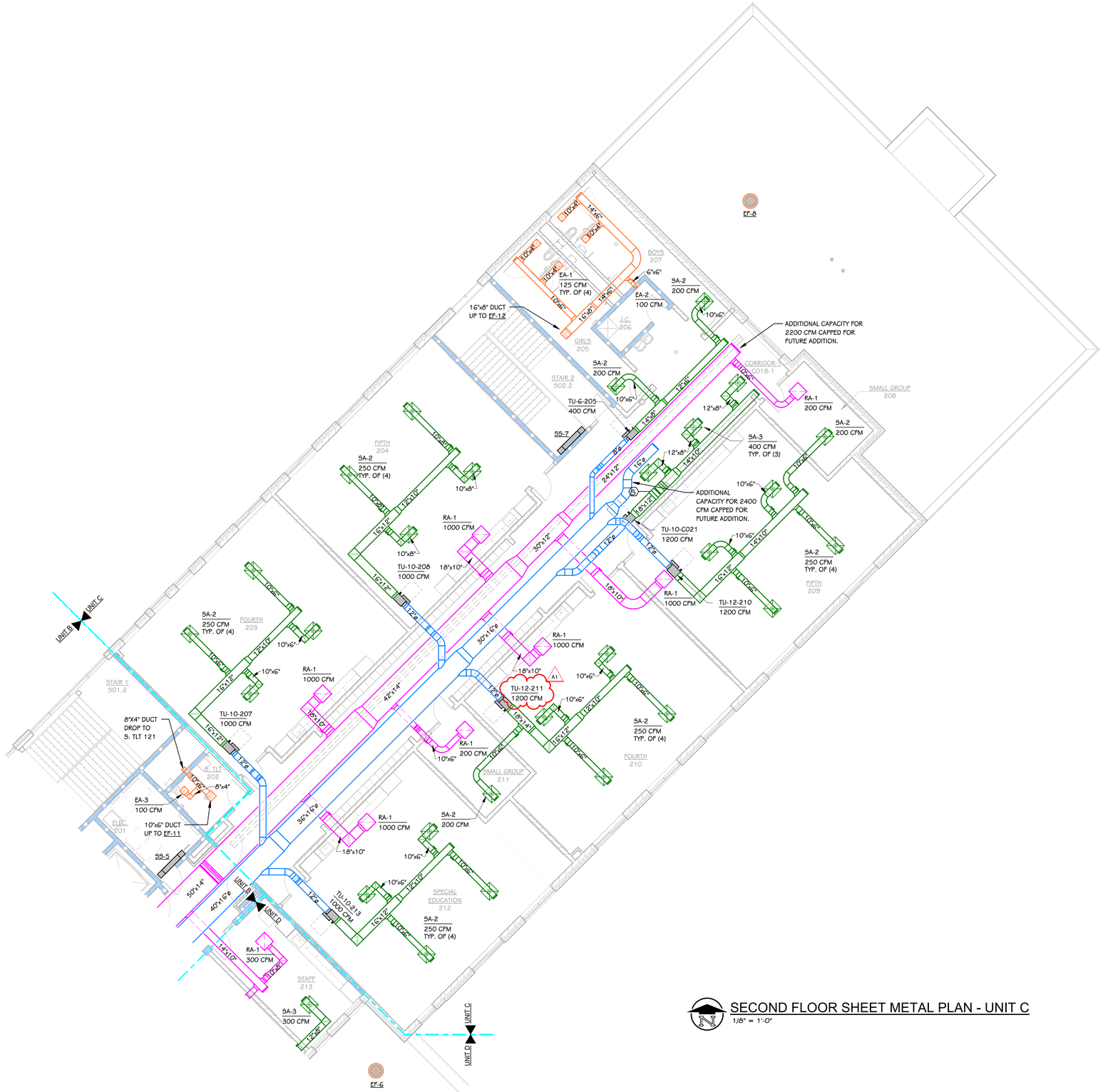
SHEET TITLE
SECOND FLOOR SHEET METAL PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
M 102B
23-622.000




SECOND FLOOR SHEET METAL PLAN - UNIT C
1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.

2 ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.

3 EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.

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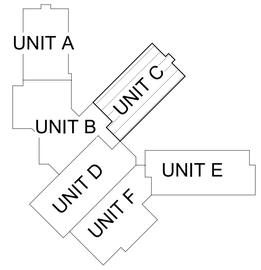


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SHEET TITLE
SECOND FLOOR SHEET METAL PLAN - UNIT C

DATE
APRIL 24, 2026

SHEET NUMBER
M 102C

23-622.000

SECOND FLOOR SHEET METAL PLAN - UNIT D

1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1. 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.
2. ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.
3. EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.
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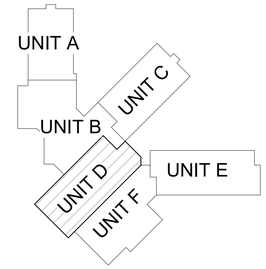


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Kalamazoo, Michigan

SHEET TITLE
SECOND FLOOR SHEET METAL PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
M 102D

23-622.000

OVERALL MECHANICAL ROOF PLAN
1" = 20'-0"

## KEYED NOTES - MECHANICAL - SHEET METAL

1 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.

2 ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.

3 EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.

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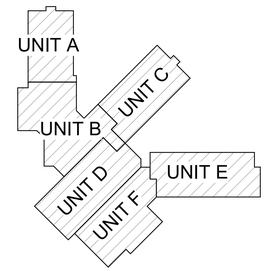


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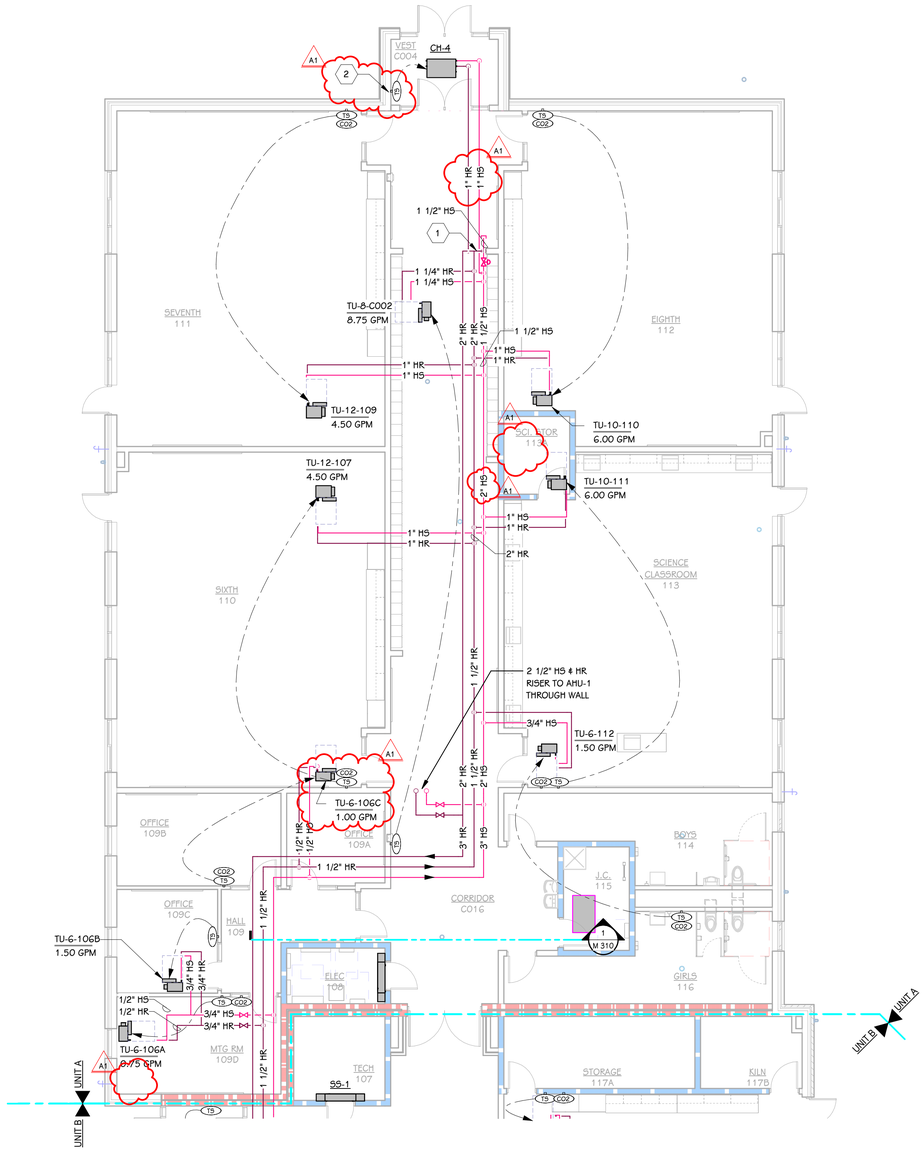
SHEET TITLE
OVERALL MECHANICAL ROOF PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
M 103
23-622.000




FIRST FLOOR HVAC PIPING PLAN - UNIT A

1/8" = 1'-0"

**KEYED NOTES - MECHANICAL - HVAC PIPING**

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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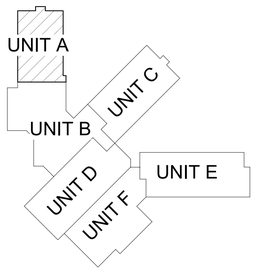


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Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT A

DATE
APRIL 24, 2026

SHEET NUMBER
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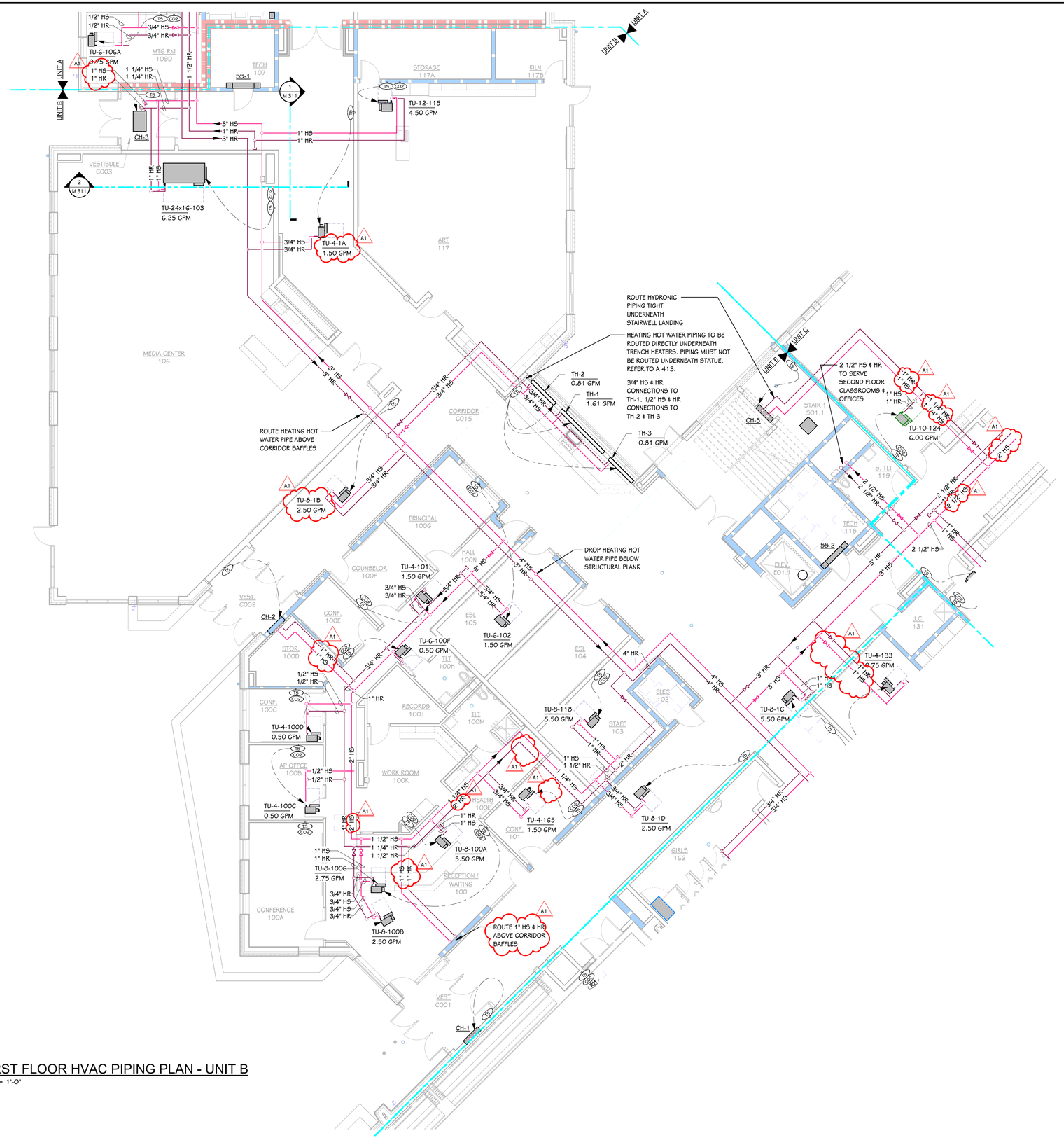


FIRST FLOOR HVAC PIPING PLAN - UNIT B

1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - HVAC PIPING

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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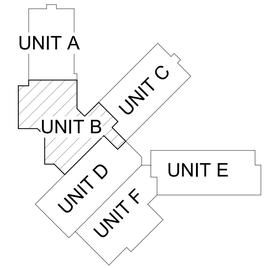


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Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
M 201B

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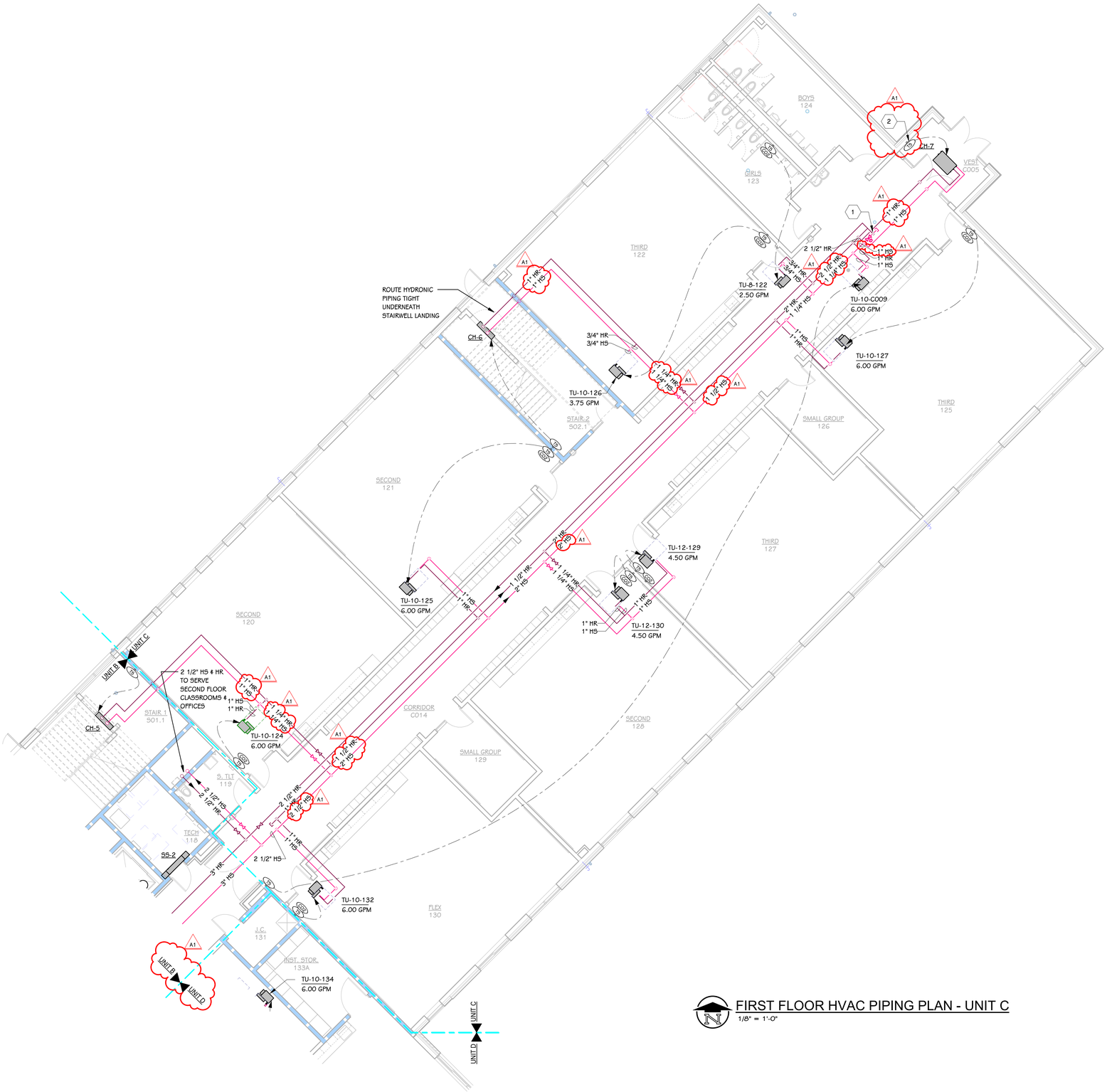


FIRST FLOOR HVAC PIPING PLAN - UNIT C

1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - HVAC PIPING

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

A1 2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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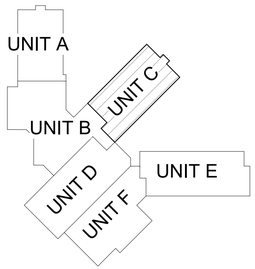


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SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT C

DATE
APRIL 24, 2026

SHEET NUMBER
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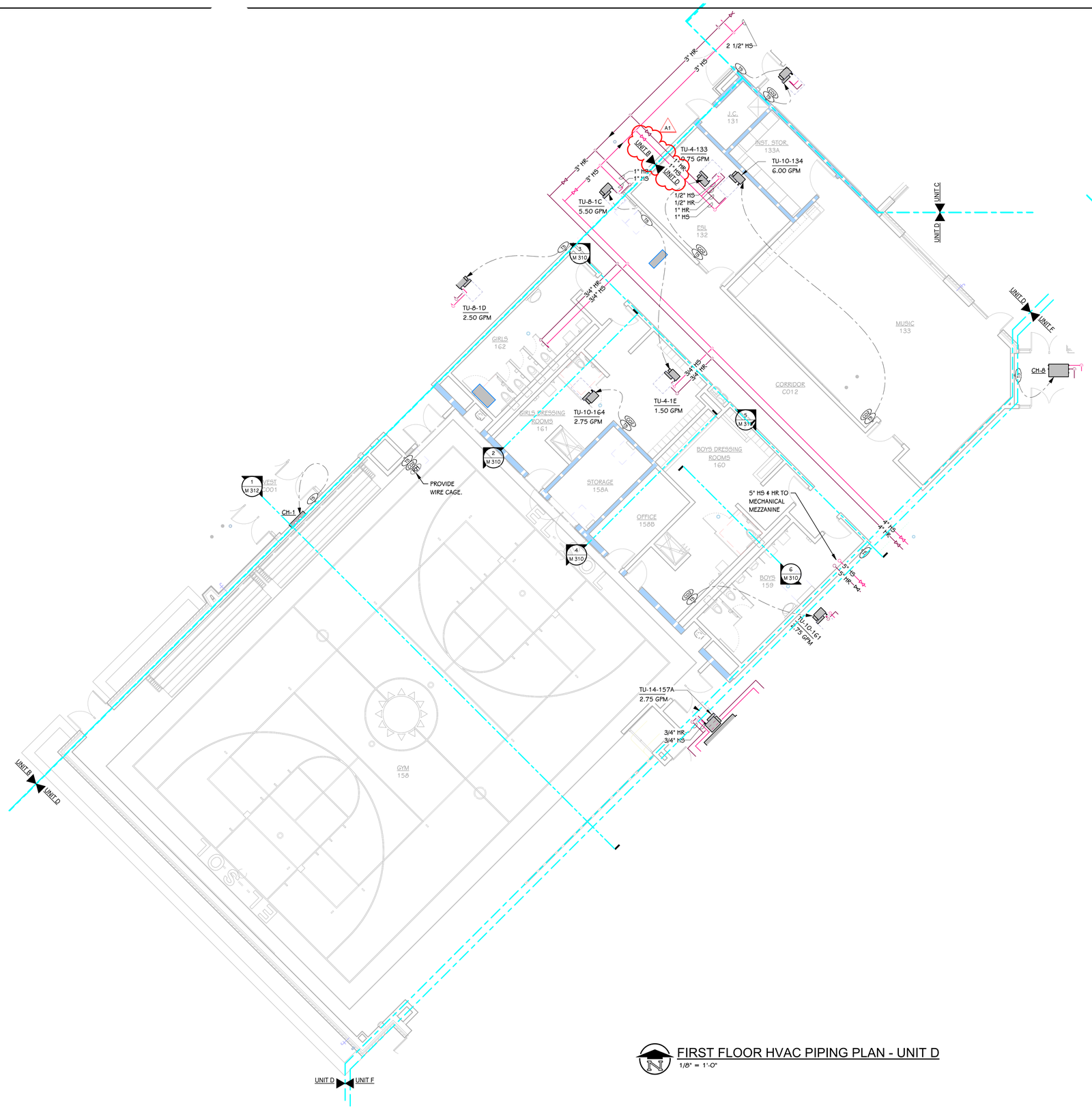


FIRST FLOOR HVAC PIPING PLAN - UNIT D
1/8" = 1'-0"

**KEYED NOTES - MECHANICAL - HVAC PIPING**

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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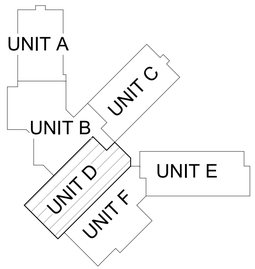


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SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
M 201D
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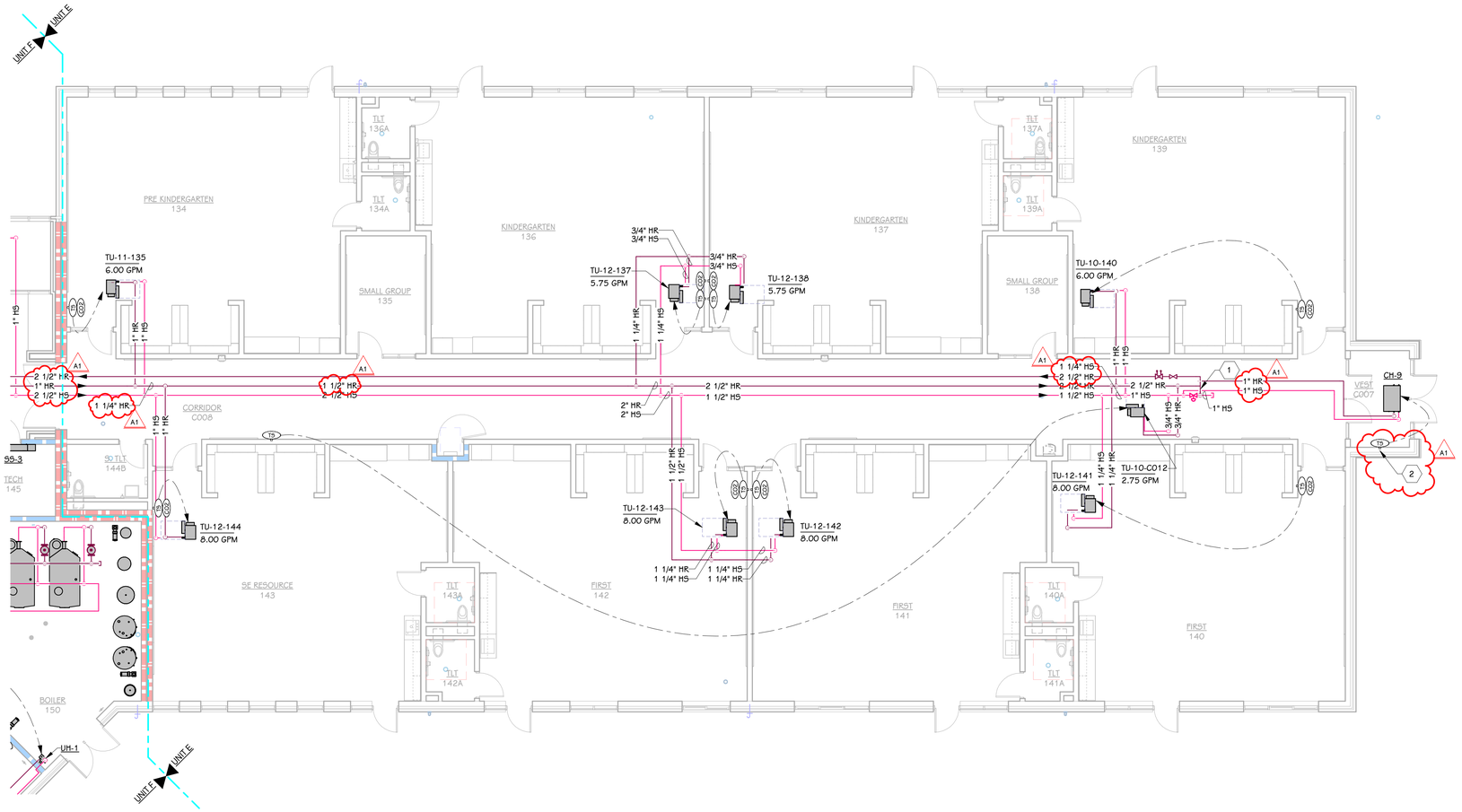


FIRST FLOOR HVAC PIPING PLAN - UNIT E

1/8" = 1'-0"

**KEYED NOTES - MECHANICAL - HVAC PIPING**

A1

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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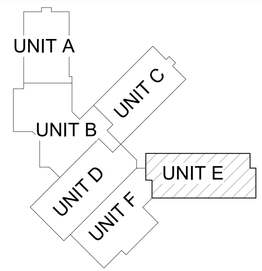


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SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT E

DATE
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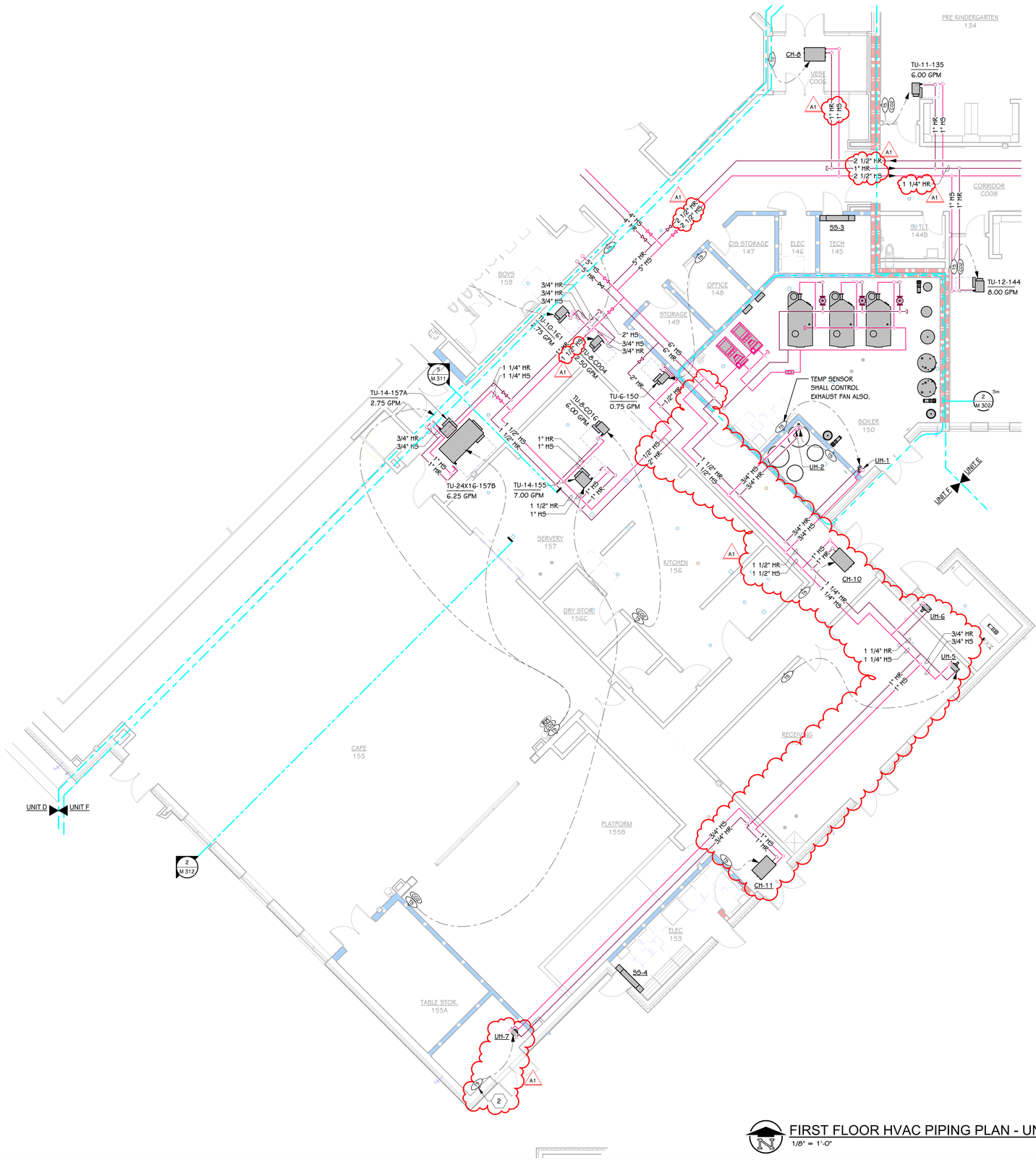



## FIRST FLOOR HVAC PIPING PLAN - UNIT F

1/8" = 1'-0"

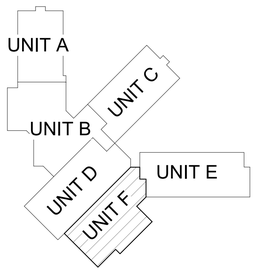
### KEYED NOTES - MECHANICAL - HVAC PIPING

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

A1 2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

**EL SOL SCHOOL**




**KEY PLAN**

SCALE: NO SCALE

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| ADDENDUM #1 | 05/08/2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

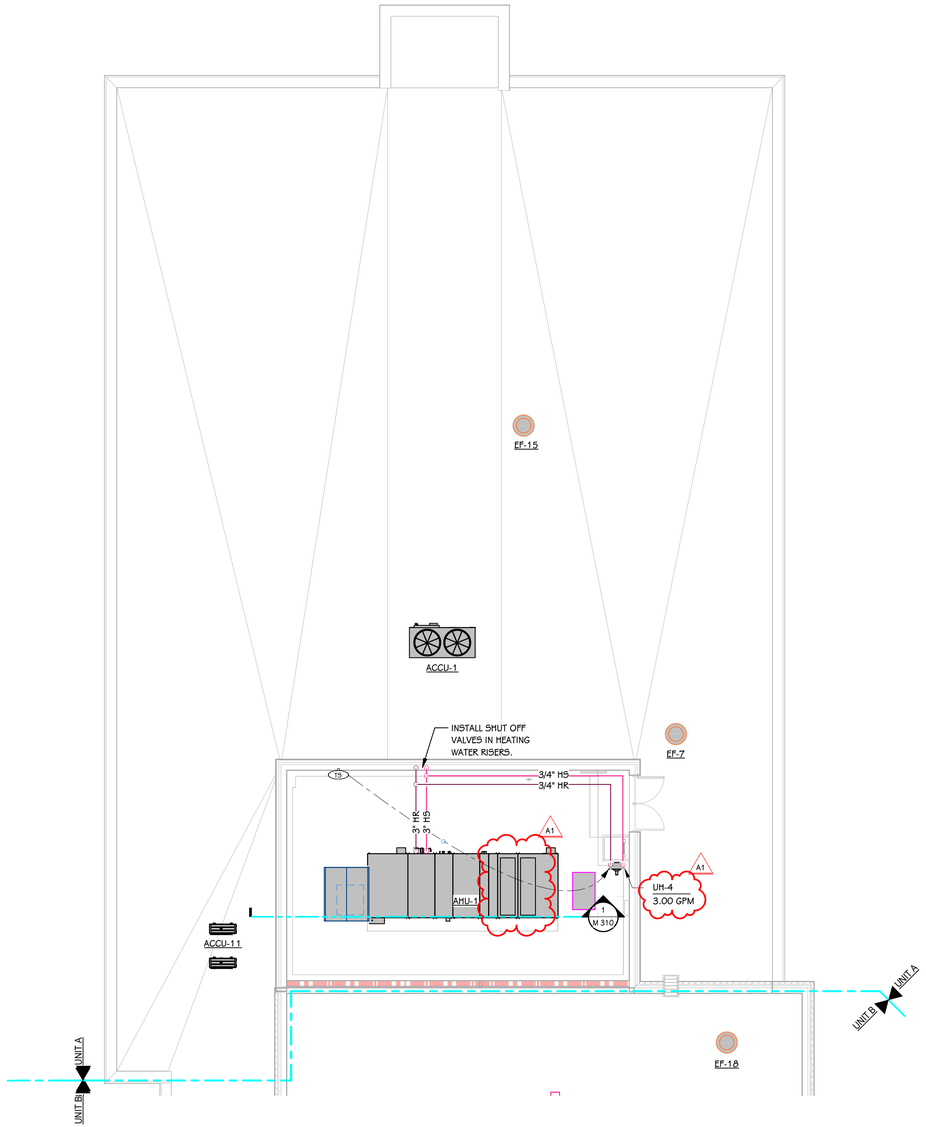
Kalamazoo, Michigan

SHEET TITLE
FIRST FLOOR HVAC PIPING PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
M 201F

23-622.000




SECOND FLOOR HVAC PIPING PLAN - UNIT A

1/8" = 1'-0"

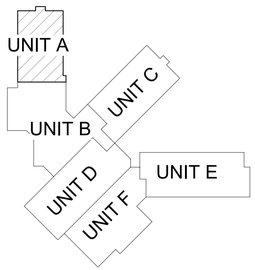
**KEYED NOTES - MECHANICAL - HVAC PIPING**

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

**EL SOL SCHOOL**




**KEY PLAN**

SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

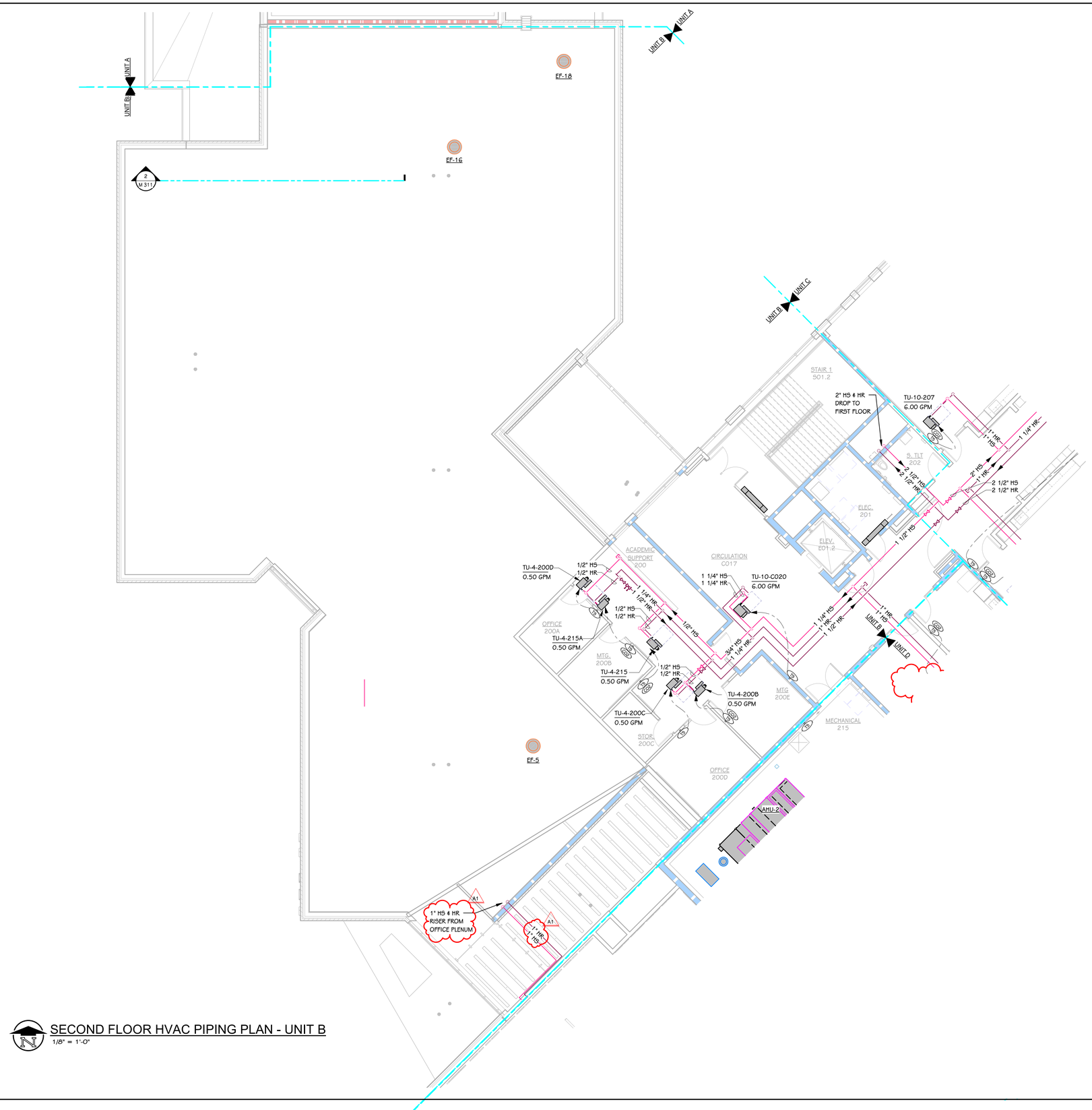
Kalamazoo, Michigan

SHEET TITLE
SECOND FLOOR HVAC PIPING PLAN - UNIT A

DATE
APRIL 24, 2026

SHEET NUMBER
M 202A

23-622.000




SECOND FLOOR HVAC PIPING PLAN - UNIT B
1/8" = 1'-0"

**KEYED NOTES - MECHANICAL - HVAC PIPING**

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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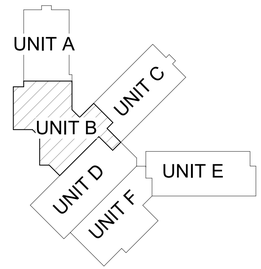
**EL SOL SCHOOL**




**KEY PLAN**
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

SHEET TITLE
SECOND FLOOR HVAC PIPING PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
M 202B
23-622.000

SECOND FLOOR HVAC PIPING PLAN - UNIT C
1/8" = 1'-0"

**KEYED NOTES - MECHANICAL - HVAC PIPING**

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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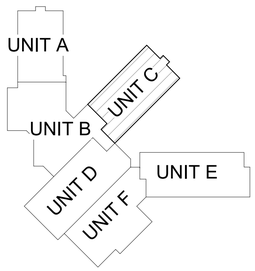


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PROJECT TITLE
NEW EL SOL SCHOOL

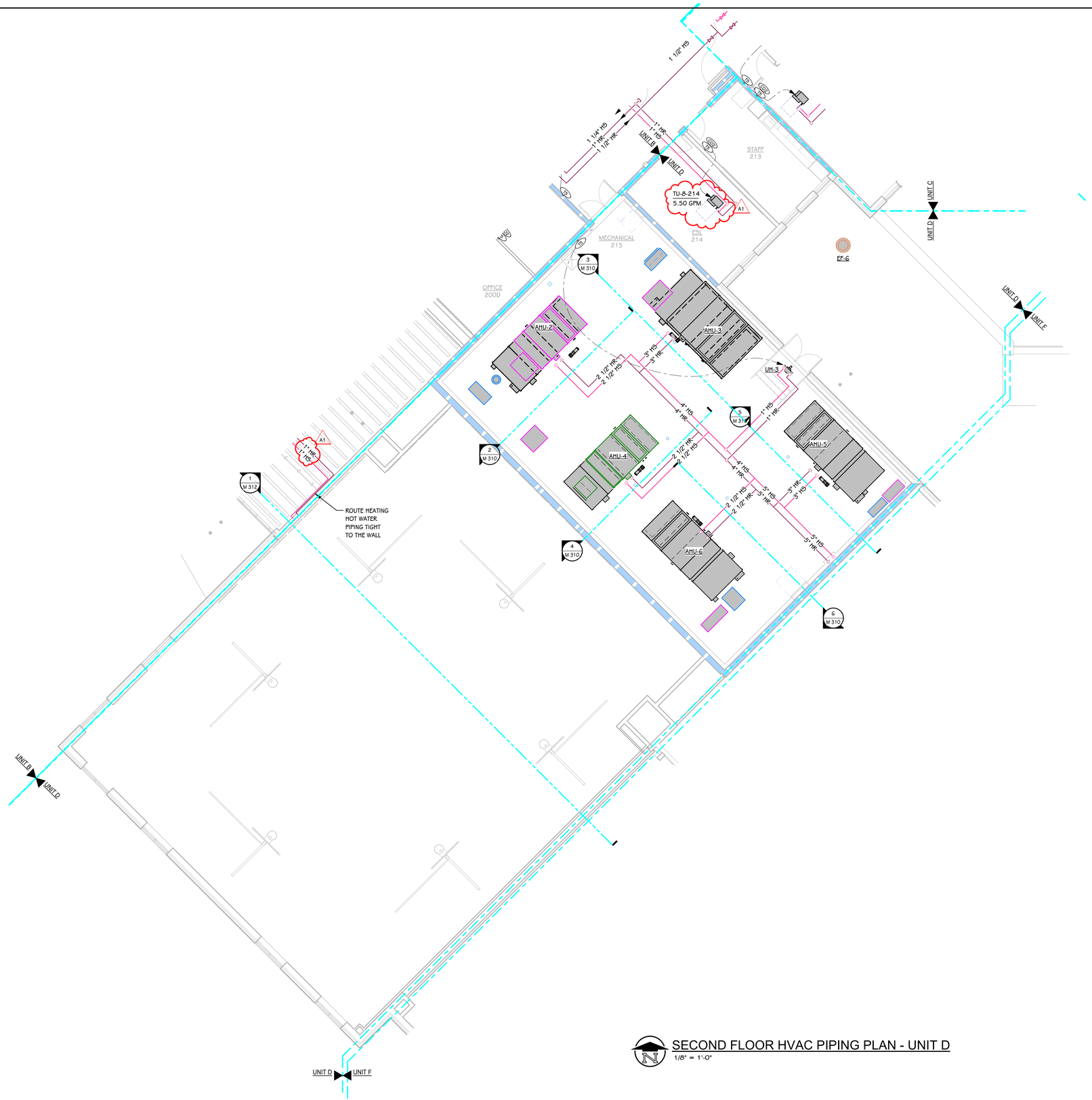
OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
SECOND FLOOR HVAC PIPING PLAN - UNIT C

DATE
APRIL 24, 2026

SHEET NUMBER
M 202C
23-622.000




SECOND FLOOR HVAC PIPING PLAN - UNIT D

1/8" = 1'-0"

## KEYED NOTES - MECHANICAL - HVAC PIPING

1 REFER TO MINIMUM FLOW & TEMP. PIC VALVE DETAIL.

2 PROVIDE RIGID INSULATION BEHIND SENSOR BACKPLATE TO PREVENT EXTERNAL INFLUENCE.

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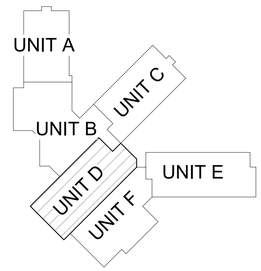
**EL SOL SCHOOL**




**KEY PLAN**

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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

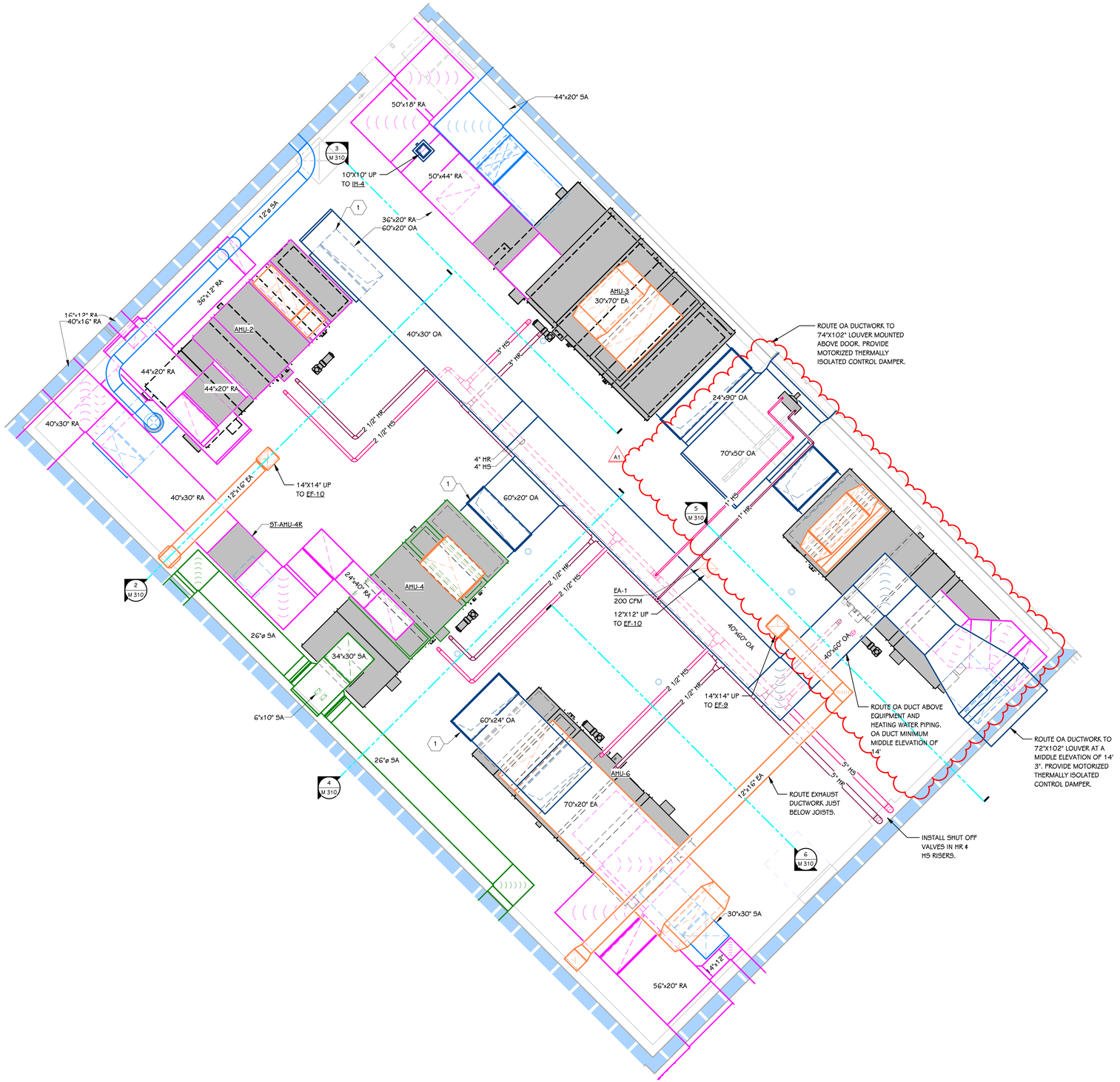
Kalamazoo, Michigan

SHEET TITLE
SECOND FLOOR HVAC PIPING PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
M 202D

23-622.000




## KEYED NOTES - MECHANICAL - SHEET METAL

1. 24"X24" RA DUCT WITH BALANCE DAMPER DOWN TO RA-1.
2. ROUTE DUCTWORK IN BETWEEN STRUCTURAL JOISTS.
3. EXPOSED DUCTWORK SHALL BE PRIMED FOR PAINT. REFER TO INTERIORS SHEETS.
4. ROUTE DUCTWORK AND INSULATION BELOW 12 FEET TO AVOID STRUCTURAL BOND BEAM.
5. DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE BELOW STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.
6. DUCTWORK TO BE ROUTED THROUGH STRUCTURAL JOISTS. REFER TO MECHANICAL SECTIONS.
7. KITCHEN EQUIPMENT EXTENDS INTO PLENUM. ROUTE DUCTWORK TO AVOID SHADED REGION.

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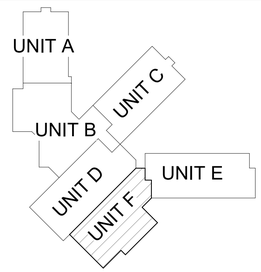
**EL SOL SCHOOL**




**KEY PLAN**
SCALE: NO SCALE

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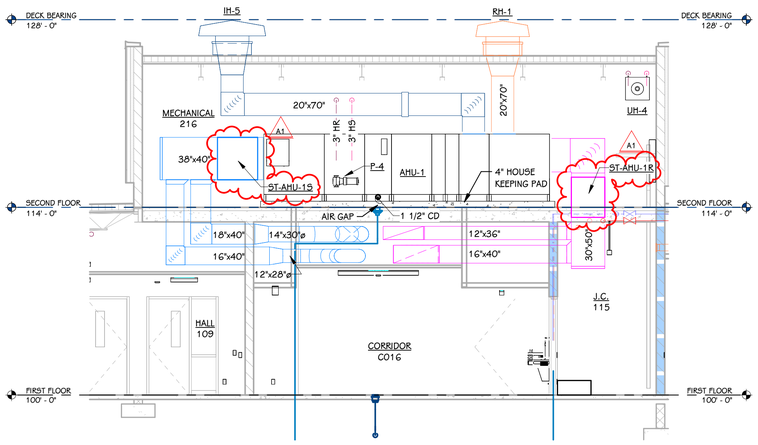
PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS
Kalamazoo, Michigan

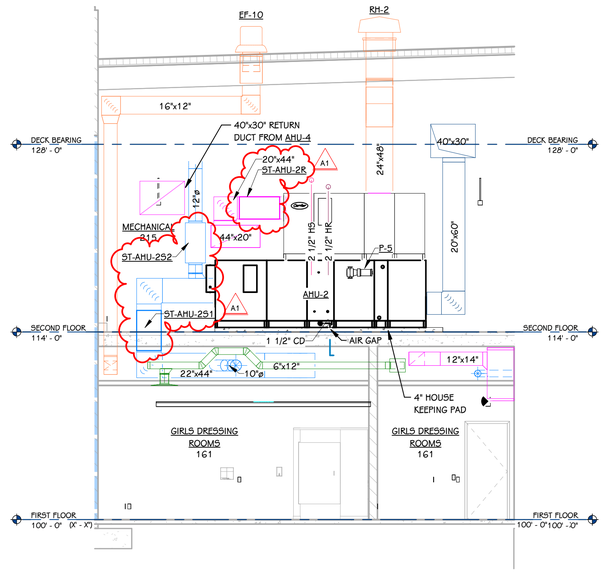
SHEET TITLE
ENLARGED MECHANICAL ROOM PLAN

DATE
APRIL 24, 2026

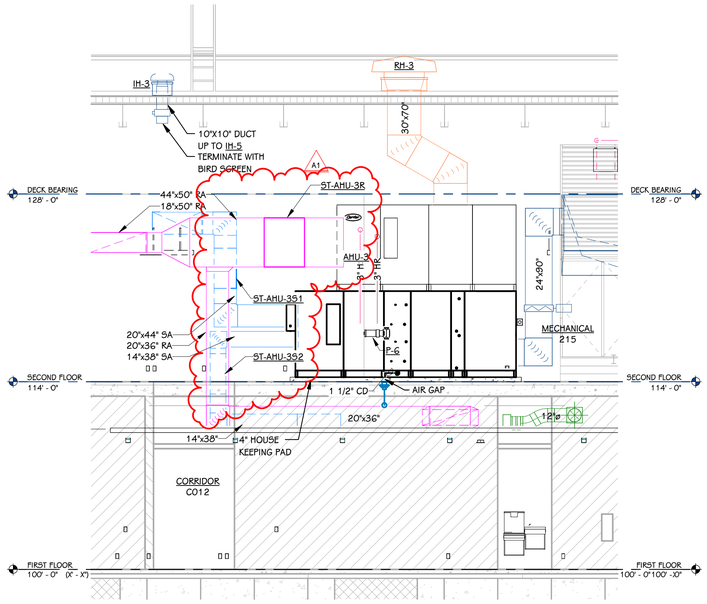
SHEET NUMBER
M 303
23-622.000



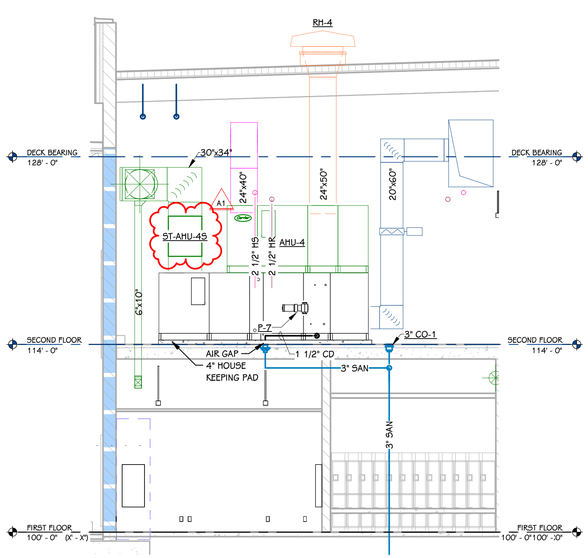

1 M 310 **AHU-1 SECTION**
3/16" = 1'-0"



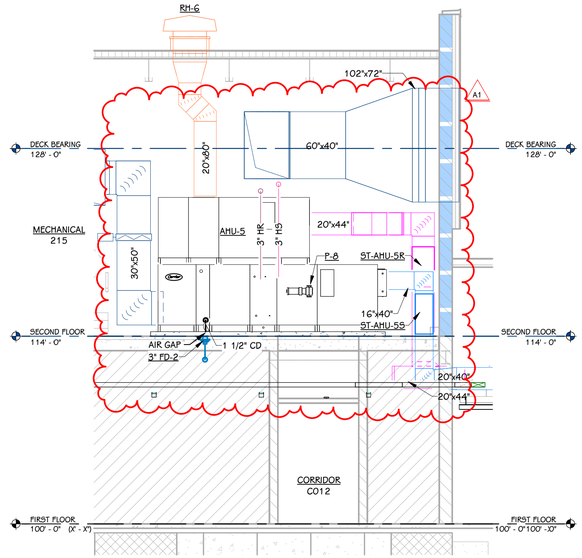

2 M 310 **AHU-2 SECTION**
3/16" = 1'-0"



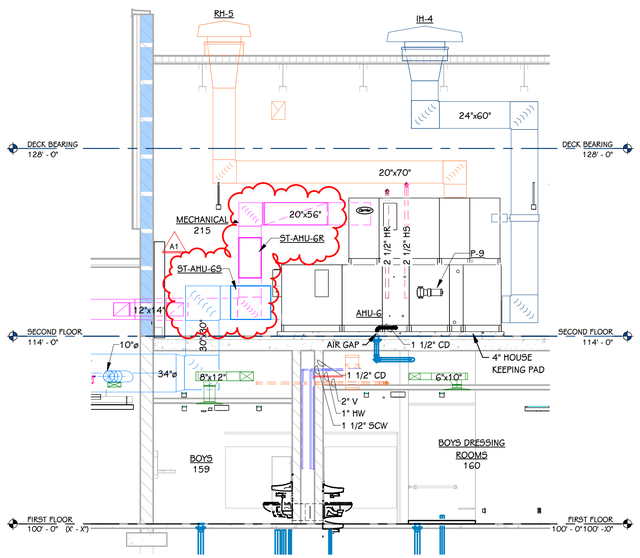

3 M 310 **AHU-3 SECTION**
3/16" = 1'-0"




4 M 310 **AHU-4 SECTION**
3/16" = 1'-0"




5 M 310 **AHU-5 SECTION**
3/16" = 1'-0"




6 M 310 **AHU-6 SECTION**
3/16" = 1'-0"

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PROJECT TITLE
NEW EL SOL SCHOOL

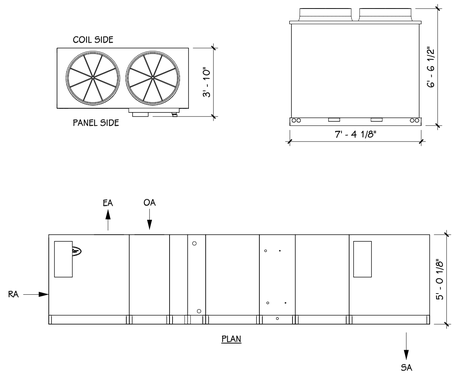
OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
MECHANICAL SECTIONS

DATE
APRIL 24, 2026

SHEET NUMBER
M 310
23-622.000




## AHU-1 (MIDDLE SCHOOL)

1/4" = 1'-0"

AREA SERVED: MIDDLE SCHOOL CLASSROOMS, MIDDLE SCHOOL OFFICES, ART ROOM, MEDIA CENTER
TYPE: INDOOR MODULAR, MULTIZONE ZONE VARIABLE VOLUME, 11,800 CFM, BASED ON CARRIER
OUTSIDE AIR: 1,600 - 3,400 CFM
WEIGHT: 4680 LBS
UNIT MOUNTING: 4" HOUSEKEEPING PAD

DISCHARGE / INLET SOUND POWER LEVELS (db)

| | 63 HZ | 125 HZ | 250 HZ | 500 HZ | 1 kHZ | 2 kHZ | 4 kHZ | 8 kHZ |
|---|---|---|---|---|---|---|---|---|
| SUPPLY | 79 | 88 | 93 | 90 | 94 | 90 | 89 | 87 |
| RETURN | 73 | 86 | 89 | 84 | 81 | 82 | 94 | 83 |
| RADIATED | 70 | 82 | 86 | 81 | 78 | 77 | 88 | 80 |

FILTERS: 2" PLEATED 90% EFFICIENCY MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

DX COOLING COIL (28ME):
CAPACITY: 396.90 TMBH, 328.11 SMBH
ENTERING AIR TEMP (DBWB): 80.70 / 65.40°F
LEAVING AIR TEMP (DBWB): 55.27 / 54.24°F
6 ROWS, 11 FPI MAX, 24.41 FT² FA, 483.4 FPM FV.

ACCU-1
TYPE: 30 TON NOMINAL DIGITAL SCROLL CONDENSING UNIT BASED ON "CARRIER" - MODEL 38RC
SERVES: AHU-1
OPERATING WEIGHT: 1310 LBS
REFRIGERANT: R-32
CAPACITY: 383.64 MBH @ 45°F SUCTION, 95°F DB
ELECTRICAL: 460V/3PH/60HZ, 65.5 MCA, 90 MOCP, 65kA SCCR
EER: 11.27 @ AHRI CONDITIONS
FEATURES: NON-FUSED DISCONNECT, BACnet IP/ MSTP

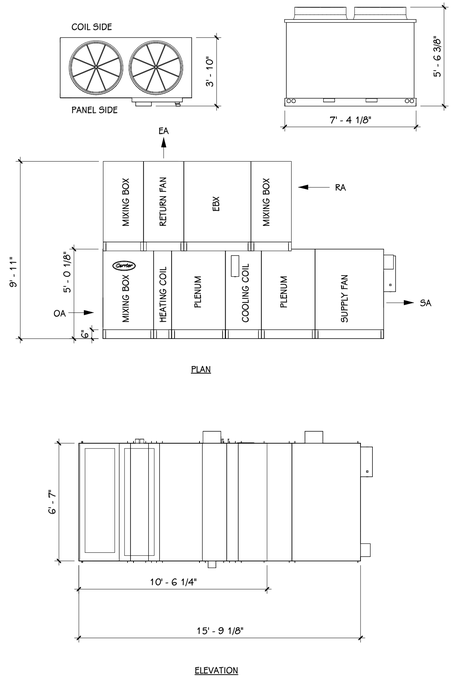
HEATING COIL:
CAPACITY: 1,009.27 TMBH
ENTERING / LEAVING FLUID TEMP: 130 / 96.46°F
ENTERING / LEAVING AIR TEMP (DB): -10 / 57.54°F
FLOW RATE / FLUID PRESSURE DROP: 61.0 GPM / 3.3'
2 ROWS, 24.41 FT² FA, 483.4 FPM FV

SUPPLY FAN: 11,800 CFM, (2) FAN, 12.92 HP TOTAL , 11.2 BHP TOTAL, 1.50" ESP, 2524 RPM.

RETURN FAN: 11,800 CFM, (2) FAN, 4.62 HP TOTAL, 3.5 BHP TOTAL, 0.82" ESP, 1954 RPM.

ELECTRICAL: 460V/3PH/60HZ, 32.8 FLA, 41.0 MCA, 50 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

OPTIONS: PROVIDE WITH MINIMUM 3 YEAR MANUFACTURER'S WARRANTY, DUCT DETECTORS BY DIV. 26, CONVENIENCE RECEPTACLE, & BI-POLAR IONIZION.




## AHU-2 (CENTRAL)

1/4" = 1'-0"

AREA SERVED: FIRST & SECOND FLOOR MAIN OFFICES, MUSIC, FLEX, & CENTRAL CORRIDOR
TYPE: INDOOR MODULAR, MULTIZONE ZONE VARIABLE VOLUME, 9,800 CFM, BASED ON CARRIER
OUTSIDE AIR: 1,000 - 1,800 CFM
WEIGHT: 4,975 LBS
UNIT MOUNTING: 4" HOUSEKEEPING PAD

DISCHARGE / INLET SOUND POWER LEVELS (db)

| | 63 HZ | 125 HZ | 250 HZ | 500 HZ | 1 kHZ | 2 kHZ | 4 kHZ | 8 kHZ |
|---|---|---|---|---|---|---|---|---|
| SUPPLY | 82 | 87 | 90 | 89 | 87 | 88 | 84 | 80 |
| RETURN | 76 | 86 | 81 | 80 | 81 | 80 | 79 | 74 |
| RADIATED | 75 | 80 | 83 | 79 | 74 | 73 | 77 | 72 |

FILTERS: 2" PLEATED 90% EFFICIENCY MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

DX COOLING COIL (28ME):
CAPACITY: 275.78 TMBH, 245.64 SMBH
ENTERING AIR TEMP (DBWB): 78.50 / 64.10°F
LEAVING AIR TEMP (DBWB): 55.58 / 54.66°F
6 ROWS, 11 FPI MAX, 21.44 FT² FA, 457.1 FPM FV.

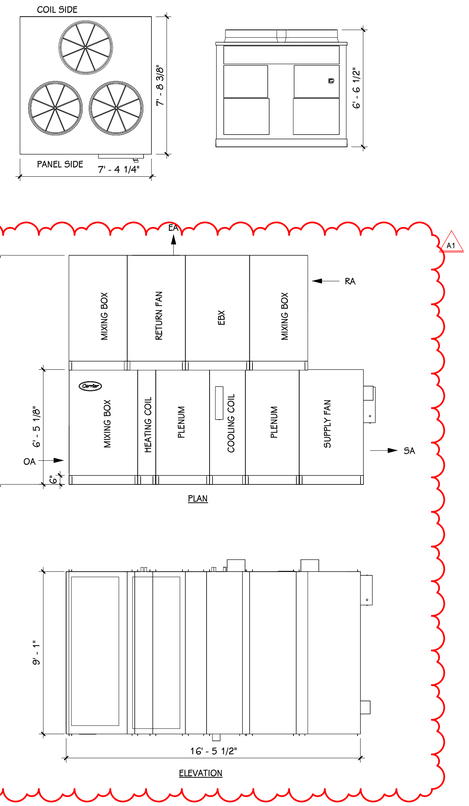
ACCU-2
TYPE: 25 TON NOMINAL DIGITAL SCROLL CONDENSING UNIT BASED ON "CARRIER" - MODEL 38RC
SERVES: AHU-2
OPERATING WEIGHT: 1149 LBS
REFRIGERANT: R-32
CAPACITY: 257.9 MBH @ 45°F SUCTION, 95°F DB
ELECTRICAL: 460V/3PH/60HZ, 44.3 MCA, 60 MOCP, 65kA SCCR
EER: 11.79 @ AHRI CONDITIONS
FEATURES: NON-FUSED DISCONNECT, BACnet IP/ MSTP

HEATING COIL:
CAPACITY: 945 TMBH
ENTERING / LEAVING FLUID TEMP: 130 / 100°F
ENTERING / LEAVING AIR TEMP (DB): -10 / 64.93°F
FLOW RATE / FLUID PRESSURE DROP: 62.6 GPM / 13.6'
2 ROWS, 21.44 FT² FA, 457.1 FPM FV

SUPPLY FAN: 9,800 CFM, (2) FAN, 11.15 HP TOTAL, 9.8 BHP TOTAL, 2.00" ESP, 2,352 RPM.
460V/3PH/60HZ, 14.4 FLA, 18.0 MCA, 25 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

RETURN FAN: 9,800 CFM, (2) FAN, 5.8 HP TOTAL, 5.1 BHP TOTAL, 2.12" ESP, 2480 RPM.
460V/3PH/60HZ, 14.6 FLA, 16.4 MCA, 20 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

OPTIONS: PROVIDE WITH MINIMUM 3 YEAR MANUFACTURER'S WARRANTY, DUCT DETECTORS BY DIV. 26, CONVENIENCE RECEPTACLE, & BI-POLAR IONIZION.




## AHU-3 (2ND-5TH)

1/4" = 1'-0"

AREA SERVED: SECOND GRADE AND FIFTH GRADE CLASSROOM BLOCK, SECOND FLOOR STUDENT COMMONS
TYPE: INDOOR MODULAR, MULTIZONE ZONE VARIABLE VOLUME, 19,500 CFM, BASED ON CARRIER
OUTSIDE AIR: 2,400 - 4,200 CFM
WEIGHT: 8,750 LBS
UNIT MOUNTING: 4" HOUSEKEEPING PAD

DISCHARGE / INLET SOUND POWER LEVELS (db)

| | 63 HZ | 125 HZ | 250 HZ | 500 HZ | 1 kHZ | 2 kHZ | 4 kHZ | 8 kHZ |
|---|---|---|---|---|---|---|---|---|
| SUPPLY | 81 | 86 | 94 | 91 | 95 | 92 | 88 | 84 |
| RETURN | 75 | 77 | 87 | 89 | 92 | 91 | 87 | 85 |
| RADIATED | 72 | 79 | 87 | 81 | 78 | 78 | 81 | 76 |

FILTERS: 2" PLEATED 90% EFFICIENCY MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

DX COOLING COIL (28ME):
CAPACITY: 634.61 TMBH, 523.41 SMBH
ENTERING AIR TEMP (DBWB): 79.20 / 64.60°F
LEAVING AIR TEMP (DBWB): 54.65 / 53.65°F
6 ROWS, 11 FPI MAX, 40.00 FT² FA, 487.5 FPM FV.

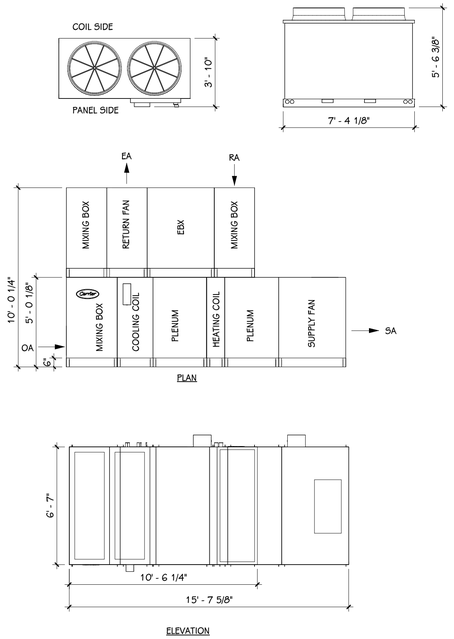
ACCU-3
TYPE: 40 TON NOMINAL DIGITAL SCROLL CONDENSING UNIT BASED ON "CARRIER" - MODEL 38RC
SERVES: AHU-3
OPERATING WEIGHT: 2053 LBS
REFRIGERANT: R-32
CAPACITY: 497.8 MBH @ 45°F SUCTION, 95°F DB
ELECTRICAL: 460V/3PH/60HZ, 76.5 MCA, 90 MOCP, 65kA SCCR
EER: 12.20 @ AHRI CONDITIONS
FEATURES: NON-FUSED DISCONNECT, BACnet IP/ MSTP

HEATING COIL:
CAPACITY: 1,780.4 TMBH
ENTERING / LEAVING FLUID TEMP: 130 / 100.31°F
ENTERING / LEAVING AIR TEMP (DB): -10 / 61.79°F
FLOW RATE / FLUID PRESSURE DROP: 119.9 GPM / 7.9'
2 ROWS, 40.00 FT² FA, 487.5 FPM FV

SUPPLY FAN: 19,500 CFM, (4) FAN, 23.4 HP TOTAL, 20.5 BHP TOTAL, 2.10" ESP, 2,421 RPM.
460V/3PH/60HZ, 37.0 FLA, 46.3 MCA, 70 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

RETURN FAN: 15,000 CFM, (6) FAN, 6.6 HP TOTAL, 5 BHP TOTAL, 1.13" ESP, 3,200 RPM.
460V/3PH/60HZ, 46.6 FLA, 44.4 MCA, 50 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

OPTIONS: PROVIDE WITH MINIMUM 3 YEAR MANUFACTURER'S WARRANTY, DUCT DETECTORS BY DIV. 26, CONVENIENCE RECEPTACLE, & BI-POLAR IONIZION.




## AHU-4 (GYMNASIUM)

1/4" = 1'-0"

AREA SERVED: GYMNASIUM & GYMNASIUM STORAGE
TYPE: INDOOR MODULAR, SINGLE-ZONE VARIABLE VOLUME, 9,000 CFM, BASED ON CARRIER
OUTSIDE AIR: 400 - 2900 CFM
WEIGHT: 4,924 LBS
UNIT MOUNTING: 4" HOUSEKEEPING PAD

DISCHARGE / INLET SOUND POWER LEVELS (db)

| | 63 HZ | 125 HZ | 250 HZ | 500 HZ | 1 kHZ | 2 kHZ | 4 kHZ | 8 kHZ |
|---|---|---|---|---|---|---|---|---|
| SUPPLY | 81 | 87 | 86 | 82 | 84 | 83 | 81 | 77 |
| RETURN | 75 | 83 | 79 | 78 | 79 | 77 | 77 | 67 |
| RADIATED | 74 | 80 | 79 | 73 | 71 | 70 | 74 | 67 |

FILTERS: 2" PLEATED 90% EFFICIENCY MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

DX COOLING COIL (28ME):
CAPACITY: 283.16 TMBH, 247.91 SMBH
ENTERING AIR TEMP (DBWB): 81.30 / 65.80°F
LEAVING AIR TEMP (DBWB): 56.11 / 55.53°F
6 ROWS, 13 FPI MAX, 21.44 FT² FA, 419.8 FPM FV.

ACCU-4
TYPE: 25 TON NOMINAL DIGITAL SCROLL CONDENSING UNIT BASED ON "CARRIER" - MODEL 38RC
SERVES: AHU-4
OPERATING WEIGHT: 1174 LBS
REFRIGERANT: R-32
CAPACITY: 257.9 MBH @ 45°F SUCTION, 95°F DB
ELECTRICAL: 460V/3PH/60HZ, 44.3 MCA, 60 MOCP, 65kA SCCR
EER: 11.79 @ AHRI CONDITIONS
FEATURES: NON-FUSED DISCONNECT, BACnet IP/ MSTP

HEATING COIL:
CAPACITY: 820.45 TMBH
ENTERING / LEAVING FLUID TEMP: 130 / 100°F
ENTERING / LEAVING AIR TEMP (DB): -10 / 61.98°F
FLOW RATE / FLUID PRESSURE DROP: 55.3 GPM / 2.6'
2 ROWS, 21.44 FT² FA, 419.8 FPM FV

SUPPLY FAN: 9,000 CFM, (2) FAN, 7.07 HP TOTAL, 6.2 BHP TOTAL, 0.60" ESP, 2,016 RPM.
460V/3PH/60HZ, 10.2 FLA, 11.5 MCA, 15 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

RETURN FAN: 9,000 CFM, (2) FAN, 2.72 HP TOTAL, 2.3 BHP TOTAL, 0.80" ESP, 1,560 RPM.
460V/3PH/60HZ, 10.2 FLA, 11.5 MCA, 15 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

OPTIONS: PROVIDE WITH MINIMUM 3 YEAR MANUFACTURER'S WARRANTY, DUCT DETECTORS BY DIV. 26, CONVENIENCE RECEPTACLE, & BI-POLAR IONIZION.

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ADDENDUM #1 05/08/2026
ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

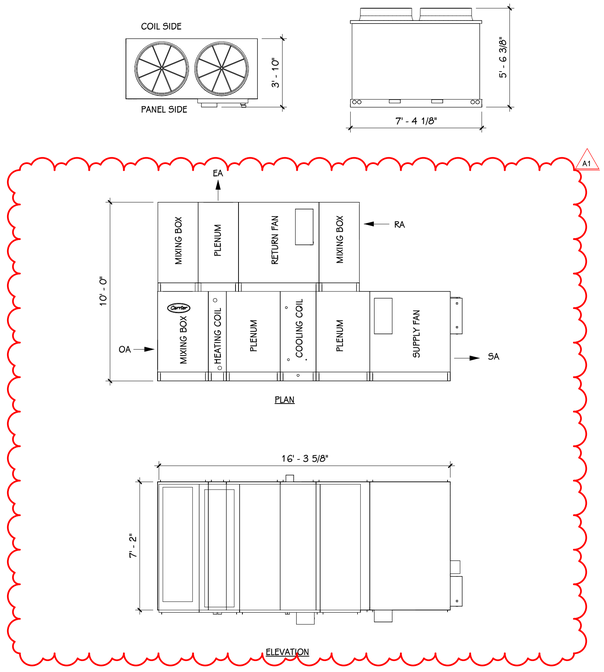
OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
MECHANICAL SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
M 501
23-622.000




## AHU-5 (PRE-FIRST)

1/4" = 1'-0"

AREA SERVED: MIDDLE SCHOOL CLASSROOMS, MIDDLE SCHOOL OFFICES, ART ROOM, MEDIA CENTER
TYPE: INDOOR MODULAR, MULTIZONE ZONE VARIABLE VOLUME, 10,600 CFM, BASED ON CARRIER
OUTSIDE AIR: 900 - 2,800 CFM
WEIGHT: 5,265 LBS
UNIT MOUNTING: 4" HOUSEKEEPING PAD

DISCHARGE / INLET SOUND POWER LEVELS (db) — A1

| | 63 HZ | 125 HZ | 250 HZ | 500 HZ | 1 kHZ | 2 kHZ | 4 kHZ | 8 kHZ |
|---|---|---|---|---|---|---|---|---|
| SUPPLY | 77 | 82 | 92 | 89 | 92 | 89 | 86 | 84 |
| RETURN | 71 | 83 | 82 | 80 | 87 | 82 | 83 | 77 |
| RADIATED | 68 | 75 | 84 | 79 | 75 | 75 | 80 | 77 |

FILTERS: 2" PLEATED 90% EFFICIENCY MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

DX COOLING COIL (28ME):
CAPACITY: 348.23 TMBH, 294.32 SMBH
ENTERING AIR TEMP (DB/WB): 81.20 / 65.70°F
LEAVING AIR TEMP (DB/WB): 55.81 / 54.90°F
6 ROWS, 11 FPI MAX, 24.41 FT² FA, 434.2 FPM FV.

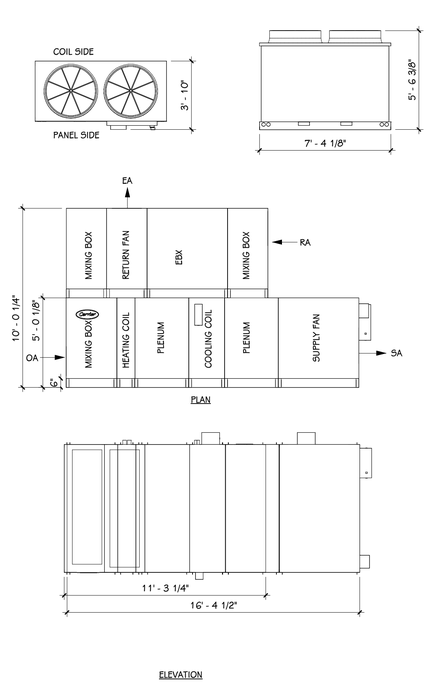
ACCU-5
TYPE: 30 TON NOMINAL DIGITAL SCROLL CONDENSING UNIT BASED ON "CARRIER" - MODEL 38RC
SERVES: AHU-5
OPERATING WEIGHT: 1310 LBS
REFRIGERANT: R-32
CAPACITY: 383.64 MBH @ 45°F SUCTION, 95°F DB
ELECTRICAL: 460V/3PH/60HZ, 65.5 MCA, 90 MOCP, 65kA SCCR
EER: 11.27 @ AHRI CONDITIONS
FEATURES: NON-FUSED DISCONNECT, BACnet IP/ MSTP

HEATING COIL:
CAPACITY: 986 TMBH
ENTERING / LEAVING FLUID TEMP: 130 / 100°F
ENTERING / LEAVING AIR TEMP (DB): -10 / 76.18°F
FLOW RATE / FLUID PRESSURE DROP: 106.6 GPM / 13.6'
4 ROWS, 30.35 FT² FA, 477.8 FPM FV

A1
SUPPLY FAN: 11,000 CFM, (2) FAN, 12.64 HP TOTAL, 11.0 BHP TOTAL, 2.10" ESP, 2,494 RPM.
460V/3PH/60HZ, 20.6 FLA, 25.8 MCA, 40 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

RETURN FAN: 11,000 CFM, (2) FAN, 5.85 HP TOTAL, 4.9 BHP TOTAL, 1.71" ESP, 2,009 RPM.
460V/3PH/60HZ, 16.4 FLA, 18.5 MCA, 25 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

OPTIONS: PROVIDE WITH MINIMUM 3 YEAR MANUFACTURER'S WARRANTY, DUCT DETECTORS BY DIV. 26, CONVENIENCE RECEPTACLE, ¢ BI-POLAR IONIZION.




## AHU-6 (CAFETERIA)

1/4" = 1'-0"

AREA SERVED: MIDDLE SCHOOL CLASSROOMS, MIDDLE SCHOOL OFFICES, ART ROOM, MEDIA CENTER
TYPE: INDOOR MODULAR, MULTIZONE ZONE VARIABLE VOLUME, 10,900 CFM, BASED ON CARRIER
OUTSIDE AIR: 900 - 2,500 CFM
WEIGHT: 5,582 LBS
UNIT MOUNTING: 4" HOUSEKEEPING PAD

DISCHARGE / INLET SOUND POWER LEVELS (db) — A1

| | 63 HZ | 125 HZ | 250 HZ | 500 HZ | 1 kHZ | 2 kHZ | 4 kHZ | 8 kHZ |
|---|---|---|---|---|---|---|---|---|
| SUPPLY | 80 | 89 | 90 | 86 | 92 | 88 | 83 | 79 |
| RETURN | 76 | 82 | 77 | 74 | 72 | 73 | 76 | 63 |
| RADIATED | 73 | 83 | 83 | 75 | 75 | 74 | 74 | 68 |

FILTERS: 2" PLEATED 90% EFFICIENCY MERV-13, CLOGGED FILTER SWITCH AND MAGNEHELIC GAUGE.

DX COOLING COIL (28ME):
CAPACITY: 343.81 TMBH, 291.53 SMBH
ENTERING AIR TEMP (DB/WB): 79.5 / 64.7°F
LEAVING AIR TEMP (DB/WB): 55.04 / 54.14°F
6 ROWS, 11 FPI MAX, 24.41 FT² FA, 446.5 FPM FV.

ACCU-6
TYPE: 25 TON NOMINAL DIGITAL SCROLL CONDENSING UNIT BASED ON "CARRIER" - MODEL 38RC
SERVES: AHU-6
OPERATING WEIGHT: 1278 LBS
REFRIGERANT: R-32
CAPACITY: 330.7 MBH @ 45°F SUCTION, 95°F DB
ELECTRICAL: 460V/3PH/60HZ, 126.4 MCA, 175 MOCP, 5kA SCCR
EER: 11.75 @ AHRI CONDITIONS
FEATURES: NON-FUSED DISCONNECT, BACnet IP/ MSTP

HEATING COIL:
CAPACITY: 992.18 TMBH
ENTERING / LEAVING FLUID TEMP: 130 / 100°F
ENTERING / LEAVING AIR TEMP (DB): -10 / 61.87°F
FLOW RATE / FLUID PRESSURE DROP: 66.8 GPM / 3.9'
2 ROWS, 24.41 FT² FA, 446.5 FPM FV

A1
SUPPLY FAN: 10,900 CFM, (3) FAN, 10.88 HP TOTAL, 9.3 BHP TOTAL, 1.40" ESP, 2058 RPM.
460V/3PH/60HZ, 28.8 FLA, 36.0 MCA, 50 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

RETURN FAN: 10,900 CFM, (3) FAN, 4.35 HP TOTAL, 3.7 BHP TOTAL, 2.26" ESP, 1,705 RPM.
460V/3PH/60HZ, 24.6 FLA, 26.7 MCA, 30 MOCP, SINGLE POINT POWER CONNECTION, EC MOTOR.

OPTIONS: PROVIDE WITH MINIMUM 3 YEAR MANUFACTURER'S WARRANTY, DUCT DETECTORS BY DIV. 26, CONVENIENCE RECEPTACLE, ¢ BI-POLAR IONIZION.

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ADDENDUM #1 05/08/2026
ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
MECHANICAL SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
M 502
23-622.000

## CABINET UNIT HEATERS - HOT WATER

**BASED ON MODINE**

| MARK | MODEL | TYPE | CFM | MBH | GPM | COIL ROWS | HP | RPM | VOLTAGE | MAX RECESS | MOUNTING HEIGHT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CH-1 | CW-003 | WALL | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | PARTIALLY RECESSED | 4' | EXTENDED 2.5" FROM WALL |
| CH-2 | CW-003 | WALL | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | 4' | |
| CH-3 | CW-003 | CEILING | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | CEILING | |
| CH-4 | CW-003 | CEILING | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | CEILING | |
| CH-5 | CW-003 | WALL | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | 4' | |
| CH-6 | CW-003 | WALL | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | 4' | |
| CH-7 | CW-003 | CEILING | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | CEILING | |
| CH-8 | CW-003 | CEILING | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | CEILING | |
| CH-9 | CW-003 | CEILING | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | CEILING | |
| CH-10 | CW-003 | CEILING | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | CEILING | |
| CH-11 | CW-003 | CEILING | 340 | 20.9 | 5 | 3 | 0.4 | 1625 | 120/1 | FULLY RECESSED | CEILING | |

NOTES:

1. BASED ON 130°F EWT, 20°F dT
2. 1" PLEATED FILTERS.
3. COLOR TO BE SELECTED BY ARCHITECT, SUBMIT COLOR CHART WHEN ISSUING SHOP DRAWINGS.

## PUMPS

**BASED ON BELL & GOSSETT**

| MARK | MODEL | FLOW RATE (GPM) | HEAD (FT) | PEIcl | MOTOR DATA | | | | | SYSTEM | SERVICE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | HP | BHP | RPM | VOLTAGE | PHASE | | | |
| P-1 | 1510-3BD | 350.0 | 76 | 0.9 | 15 | 8.3 | 1635 | 460 | 3 | HWS | SYSTEM PUMP | |
| P-2 | 1510-3BD | 350.0 | 76 | 0.9 | 15 | 8.3 | 1635 | 460 | 3 | HWS | SYSTEM PUMP | |
| P-3 | HVX2 | 5.0 | 20 | - | 0.167 | 0 | 3300 | 115 | 1 | DOMESTIC | WH-1 | |
| P-4 | ECOCIRC XL 65-130 | 61.0 | 25 | - | 0.75 | 0 | 2452 | 208 | 1 | HWS | AHU-1 | |
| P-5 | ECOCIRC XL 65-130 | 62.6 | 25 | - | 0.75 | 0 | 2468 | 208 | 1 | HWS | AHU-2 | |
| P-6 | ECOCIRC XL 70-145 | 99.2 | 25 | - | 1.5 | 0 | 2892 | 208 | 1 | HWS | AHU-3 | |
| P-7 | ECOCIRC XL 65-130 | 55.3 | 25 | - | 0.75 | 0 | 2397 | 208 | 1 | HWS | AHU-4 | |
| P-8 | ECOCIRC XL 65-130 | 65.6 | 25 | - | 1 | 0 | 2500 | 208 | 1 | HWS | AHU-5 | |
| P-9 | ECOCIRC XL 65-130 | 66.8 | 25 | - | 1 | 0 | 2513 | 208 | 1 | HWS | AHU-6 | |
| P-10 | e-80 | 288.0 | 12 | - | 1.5 | 1.14 | 1101 | 460 | 3 | HWR | B-1 | |
| P-11 | e-80 | 288.0 | 12 | - | 1.5 | 1.14 | 1101 | 460 | 3 | HWR | B-2 | |
| P-12 | e-80 | 288.0 | 12 | - | 1.5 | 1.14 | 1101 | 460 | 3 | HWR | B-3 | |
| P-13 | ECOCIRC XL 70-145 | 80.0 | 20 | - | 1 | 0 | 2461 | 208 | 1 | HWS | P-1 | |
| P-14 | HVX2 | 125.0 | 110 | - | 5.5 | 0 | 3600 | 460 | 3 | DOMESTIC | DOMESTIC SYSTEM PUMP | |

NOTES:

1. VFD PROVIDED BY TEMPERATURE CONTROLS CONTRACTOR.
2. WET ROTOR PUMP WITH INTEGRATED VARIABLE FREQUENCY DRIVE AND BMS COMMUNICATIONS. ALL AVAILABLE POINTS SHALL BE REVEALED TO THE BMS.
3. LEAD-FREE BRONZE CIRCULATOR

## TRENCH HEATER - HOT WATER

**BASED ON KATHERM**

| MARK | ELEMENT | | | | | COVER | COVER | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | MODEL | # OF ROWS | LENGTH | BTU/FT | FLOW | HEIGHT | TYPE | MOUNTING HEIGHT | FINISH | |
| TH-1 | QK-14251101 | 1 | 9' - 8" | 1650 | 1.61 GPM | 0' - 5 3/32" | ROLL-UP GRILLE | FLUSH | ALUMINUM, PAINTED DB 703 | |
| TH-2 | QK-14251101 | 1 | 5' - 4" | 1500 | 0.81 GPM | 0' - 5 3/32" | ROLL-UP GRILLE | FLUSH | ALUMINUM, PAINTED DB 703 | |
| TH-3 | QK-14251101 | 1 | 5' - 4" | 1500 | 0.81 GPM | 0' - 5 3/32" | ROLL-UP GRILLE | FLUSH | ALUMINUM, PAINTED DB 703 | |

## OUTSIDE AIR INTAKE/RELIEF HOODS

**BASED ON GREENHECK**

| MARK | HOOD MODEL | THROAT SIZE | HOOD SIZE | AIRFLOW (CFM) | MAX PD (IN WG) | CURB HEIGHT | REMARKS |
|---|---|---|---|---|---|---|---|
| IH-1 | GRSI-8 | 10" x 10" | 20" x 20" | 200 | 0.05 | 24" | |
| IH-2 | GRSI-8 | 10" x 10" | 20" x 20" | 200 | 0.05 | 24" | |
| IH-3 | GRSI-8 | 10" x 10" | 20" x 20" | 200 | 0.05 | 24" | |
| IH-4 | FGI-38x60 | 38" x 60" | 35" x 99" | 11,000 | 0.114 | 24" | |
| IH-5 | FGI-30x54 | 30" x 54" | 31" x 87" | 11,300 | 0.237 | 24" | |
| IH-6 | GRSI-8 | 10" x 10" | 20" x 20" | 200 | 0.05 | 24" | |
| RH-1 | FGR-28x48 | 28" x 48" | 49" x 63" | 11,300 | 0.332 | 24" | |
| RH-2 | FGR-24x50 | 24" x 50" | 44" x 63" | 9,800 | 0.333 | 24" | |
| RH-3 | FGR-38x52 | 38" x 52" | 59" x 75" | 16,200 | 0.335 | 24" | |
| RH-4 | FGR-24x46 | 24" x 46" | 41" x 63" | 9,000 | 0.331 | 24" | |
| RH-5 | FGR-28x48 | 28" x 48" | 49" x 63" | 10,600 | 0.338 | 24" | |
| RH-6 | FGR-28x48 | 28" x 48" | 49" x 63" | 10,900 | 0.328 | 24" | |

NOTES:

1. HOOD THROAT SIZE TO MATCH DUCT SIZE.

## UNIT HEATER - HOT WATER

**BASED ON RITTLING**

| MARK | MODEL | TYPE | CFM | MBH | GPM | WPD (FT H2O) | HP | FLA | VOLTAGE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| UH-1 | RH-86 | HORIZONTAL | 1,340 | 31 | 3.1 | 0.2 | 0.1 | 1.3 | 120/1 | |
| UH-2 | RH-47 | HORIZONTAL | 730 | 16.9 | 1.7 | 0.1 | 1/15 | 0.72 | 120/1 | |
| UH-3 | RH-193 | HORIZONTAL | 2,900 | 79 | 7.8 | 0.8 | 1/4 | 2.75 | 120/1 | |
| UH-4 | RH-86 | HORIZONTAL | 1,340 | 31 | 3.1 | 0.2 | 0.1 | 1.3 | 120/1 | |
| UH-5 | RH-86 | HORIZONTAL | 1,340 | 31 | 3.1 | 0.2 | 0.1 | 1.3 | 120/1 | |
| UH-6 | RH-33 | HORIZONTAL | 490 | 10 | 1 | 0.1 | 0.1 | 0.72 | 120/1 | |
| UH-7 | RH-47 | HORIZONTAL | 730 | 16.9 | 1.7 | 0.1 | 1/15 | 0.72 | 120/1 | |

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|---|---|
| ADDENDUM #1 | 05/08/2026 |
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PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
MECHANICAL SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
M 503
23-622.000

## TERMINAL UNITS

**BASED ON PRICE**

| MARK | MAX CFM | TYPE | NC (MAX) | SP DROP (MAX) | INLET SIZE | SILENCER | REHEAT COIL MBH | REHEAT COIL TR | REHEAT COIL W.P.D. | REHEAT COIL GPM | MIN CFM | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TU-4-1A | 400 | SDV | 25 | 0.4" | 06 | No | 19.5 | 45 | 5' MAX | 1.50 | 133 | |
| TU-4-1E | 400 | SDV | 25 | 0.4" | 06 | No | 19.5 | 45 | 5' MAX | 1.50 | 133 | |
| TU-4-100C | 250 | SDV | 25 | 0.4" | 04 | No | 12.2 | 45 | 5' MAX | 0.50 | 83 | |
| TU-4-100D | 200 | SDV | 25 | 0.4" | 04 | No | 9.8 | 45 | 5' MAX | 0.50 | 67 | |
| TU-4-101 | 200 | SDV | 25 | 0.4" | 04 | No | 9.8 | 45 | 5' MAX | 1.50 | 67 | |
| TU-4-133 | 300 | SDV | 25 | 0.4" | 06 | No | 14.6 | 45 | 5' MAX | 0.75 | 100 | |
| TU-4-165 | 150 | SDV | 25 | 0.4" | 04 | No | 7.3 | 45 | 5' MAX | 1.50 | 50 | |
| TU-4-200B | 200 | SDV | 25 | 0.4" | 04 | No | 9.8 | 45 | 5' MAX | 0.50 | 67 | |
| TU-4-200C | 250 | SDV | 25 | 0.4" | 04 | No | 14.6 | 45 | 5' MAX | 0.50 | 83 | |
| TU-4-200D | 200 | SDV | 25 | 0.4" | 04 | No | 9.8 | 45 | 5' MAX | 0.50 | 67 | |
| TU-4-215 | 250 | SDV | 25 | 0.4" | 04 | No | 12.2 | 45 | 5' MAX | 0.50 | 83 | |
| TU-4-215A | 200 | SDV | 25 | 0.4" | 04 | No | 9.8 | 45 | 5' MAX | 0.50 | 67 | |
| TU-6-100F | 350 | SDV | 25 | 0.4" | 06 | No | 17.1 | 45 | 5' MAX | 0.50 | 117 | |
| TU-6-102 | 350 | SDV | 25 | 0.4" | 06 | No | 9.8 | 45 | 5' MAX | 1.50 | 117 | |
| TU-6-106A | 300 | SDV | 25 | 0.4" | 06 | No | 14.6 | 45 | 5' MAX | 0.75 | 100 | |
| TU-6-106B | 400 | SDV | 25 | 0.4" | 06 | No | 19.5 | 45 | 5' MAX | 1.50 | 133 | |
| TU-6-106C | 350 | SDV | 25 | 0.4" | 06 | Yes | 17.1 | 45 | 5' MAX | 1.00 | 117 | |
| TU-6-112 | 400 | SDV | 25 | 0.4" | 06 | No | 19.5 | 45 | 5' MAX | 1.50 | 133 | |
| TU-6-150 | 400 | SDV | 25 | 0.4" | 06 | No | 19.5 | 45 | 5' MAX | 0.75 | 133 | |
| TU-6-205 | 400 | SDV | 25 | 0.4" | 06 | No | 19.5 | 45 | 5' MAX | 1.50 | 133 | |
| TU-8-1B | 600 | SDV | 25 | 0.4" | 08 | No | 0.0 | 45 | 5' MAX | 2.50 | 200 | |
| TU-8-1C | 600 | SDV | 25 | 0.4" | 08 | No | 29.3 | 45 | 5' MAX | 5.50 | 200 | |
| TU-8-1D | 600 | SDV | 25 | 0.4" | 08 | No | 29.3 | 45 | 5' MAX | 2.50 | 200 | |
| TU-8-100A | 700 | SDV | 25 | 0.4" | 08 | No | 34.2 | 45 | 5' MAX | 5.50 | 233 | |
| TU-8-100B | 600 | SDV | 25 | 0.4" | 08 | No | 29.3 | 45 | 5' MAX | 2.50 | 200 | |
| TU-8-100G | 800 | SDV | 25 | 0.4" | 08 | No | 39.1 | 45 | 5' MAX | 2.75 | 267 | |
| TU-8-118 | 700 | SDV | 25 | 0.4" | 08 | No | 34.2 | 45 | 5' MAX | 5.50 | 233 | |
| TU-8-122 | 600 | SDV | 25 | 0.4" | 08 | No | 29.3 | 45 | 5' MAX | 2.50 | 200 | |
| TU-8-214 | 700 | SDV | 25 | 0.4" | 10 | Yes | 34.2 | 45 | 5' MAX | 5.50 | 233 | |
| TU-8-C002 | 550 | SDV | 25 | 0.4" | 06 | No | 33.0 | 45 | 5' MAX | 8.75 | 183 | |
| TU-8-C004 | 600 | SDV | 25 | 0.4" | 08 | No | 29.3 | 45 | 5' MAX | 2.50 | 200 | |
| TU-8-C016 | 1,000 | SDV | 25 | 0.4" | 10 | No | 24.4 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-110 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-111 | 1,100 | SDV | 25 | 0.4" | 10 | No | 50.0 | 45 | 5' MAX | 6.00 | 367 | |
| TU-10-124 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-125 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-126 | 1,000 | SDV | 25 | 0.4" | 10 | No | 47.6 | 45 | 5' MAX | 3.75 | 333 | |
| TU-10-127 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-132 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-134 | 1,000 | SDV | 25 | 0.4" | 10 | No | 37.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-140 | 1,000 | SDV | 25 | 0.4" | 10 | No | 51.3 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-161 | 800 | SDV | 25 | 0.4" | 10 | No | 39.1 | 45 | 5' MAX | 2.75 | 267 | |
| TU-10-164 | 800 | SDV | 25 | 0.4" | 10 | No | 39.1 | 45 | 5' MAX | 2.75 | 267 | |
| TU-10-207 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-208 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-213 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-C009 | 900 | SDV | 25 | 0.4" | 10 | No | 14.6 | 45 | 5' MAX | 6.00 | 300 | |
| TU-10-C012 | 800 | SDV | 25 | 0.4" | 10 | No | 39.1 | 45 | 5' MAX | 2.75 | 267 | |
| TU-10-C020 | 1,000 | SDV | 25 | 0.4" | 12 | Yes | 68.4 | 45 | 5' MAX | 6.00 | 333 | |
| TU-10-C021 | 1,200 | SDV | 25 | 0.4" | 10 | No | 58.6 | 45 | 5' MAX | 4.50 | 400 | |
| TU-11-135 | 1,000 | SDV | 25 | 0.4" | 10 | No | 48.8 | 45 | 5' MAX | 6.00 | 333 | |
| TU-12-107 | 1,200 | SDV | 25 | 0.4" | 12 | No | 53.7 | 45 | 5' MAX | 4.50 | 400 | |
| TU-12-109 | 1,200 | SDV | 25 | 0.4" | 12 | No | 51.3 | 45 | 5' MAX | 4.50 | 400 | |
| TU-12-115 | 1,200 | SDV | 25 | 0.4" | 12 | Yes | 58.6 | 45 | 5' MAX | 4.50 | 400 | |
| TU-12-129 | 1,200 | SDV | 25 | 0.4" | 12 | No | 48.8 | 45 | 5' MAX | 4.50 | 400 | |
| TU-12-130 | 1,200 | SDV | 25 | 0.4" | 12 | No | 58.6 | 45 | 5' MAX | 4.50 | 400 | |
| TU-12-137 | 1,300 | SDV | 25 | 0.4" | 12 | No | 63.5 | 45 | 5' MAX | 5.75 | 433 | |
| TU-12-138 | 1,300 | SDV | 25 | 0.4" | 12 | No | 63.5 | 45 | 5' MAX | 5.75 | 433 | |
| TU-12-141 | 1,400 | SDV | 25 | 0.4" | 12 | No | 68.4 | 45 | 5' MAX | 8.00 | 467 | |
| TU-12-142 | 1,400 | SDV | 25 | 0.4" | 12 | No | 68.4 | 45 | 5' MAX | 8.00 | 467 | |
| TU-12-143 | 1,400 | SDV | 25 | 0.4" | 12 | No | 68.4 | 45 | 5' MAX | 8.00 | 467 | |
| TU-12-144 | 1,400 | SDV | 25 | 0.4" | 12 | No | 68.4 | 45 | 5' MAX | 8.00 | 467 | |
| TU-12-210 | 1,200 | SDV | 25 | 0.4" | 12 | No | 58.6 | 45 | 5' MAX | 4.50 | 400 | |
| TU-12-211 | 1,200 | SDV | 25 | 0.4" | 12 | No | 58.6 | 45 | 5' MAX | 4.50 | 400 | |
| TU-14-155 | 2,200 | SDV | 25 | 0.4" | 14 | No | 9.8 | 45 | 5' MAX | 7.00 | 733 | |
| TU-14-157A | 2,000 | SDV | 25 | 0.4" | 14 | Yes | 0.0 | 45 | 5' MAX | 2.75 | 0 | |
| TU-24x16-103 | 3,000 | SDV | 25 | 0.4" | 24x16 | Yes | 73.2 | 45 | 5' MAX | 6.25 | 1000 | |
| TU-24X16-157B | 4,000 | SDV | 25 | 0.4" | 24x16 | Yes | 0.0 | 45 | 5' MAX | 6.25 | 1333 | |
| Grand total: 68 | | | | | | | 2387.5 | | | | | |

NOTES:

1. REHEAT COIL SIZING BASED ON 130°F EWT, 110°F LWT, W/ BOX AT MAXIMUM FLOW.

## GRILLES, REGISTERS, & DIFFUSERS

**BASED ON PRICE**

| MARK | PANEL SIZE | FACE SIZE | NECK SIZE | MODEL | CFM RANGE | VCD | THROW | MATERIAL | FINISH | INSTALLATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5A-1 | 24"x24" | 22"x22" | 6" Ø | ASCDA | 120-200 | NO | 2-3-6 | ALUMINUM | WHITE | LAY-IN | |
| 5A-2 | 24"x24" | 22"x22" | 8" Ø | ASCDA | 175-315 | NO | 3-5-9 | ALUMINUM | WHITE | LAY-IN | |
| 5A-3 | 24"x24" | 22"x22" | 10" Ø | ASCDA | 210-490 | NO | 4-6-10 | ALUMINUM | WHITE | LAY-IN | |
| 5A-4 | 24"x24" | 12"x12" | 6" Ø | ASCDA | 75-125 | NO | 3-5-8 | ALUMINUM | WHITE | LAY-IN | |
| 5A-5 | 48" LONG | 3 - 3/4" SLOTS | 8" Ø | SDS | 200-300 | NO | 12-18-25 | ALUMINUM | PER ARCH | CEILING | |
| 5A-6 | - | 12"x4" | - | 620 | 0-200 | NO | 6-9-12 | ALUMINUM | PER ARCH | SIDEWALL | |
| 5A-7 | - | 18"x6" | - | HCD | 300-750 | NO | 38-47-67 | ALUMINUM | WHITE | DUCT-MOUNTED | |
| 5A-8 | 48" LONG | 4 - 1" SLOTS | 10" Ø | SDS | 300-500 | NO | 18-23-31 | ALUMINUM | PER ARCH | SIDEWALL | |
| 5A-9 | 48" LONG | 4 - 3/4" SLOTS | 10" Ø | SDS | 250-450 | NO | 12-18-28 | ALUMINUM | PER ARCH | CEILING | |
| 5A-10 | 24"x24" | 22"x22" | 10" Ø | ASCDA | 210-490 | YES | 4-6-10 | ALUMINUM | WHITE | LAY-IN | |
| 5A-11 | 24"x24" | 22"x22" | 8" Ø | ASCDA | 175-315 | YES | 3-5-9 | ALUMINUM | WHITE | LAY-IN | |
| 5A-12 | 24"x24" | 12"x12" | 6" Ø | ASCDA | 75-125 | YES | 3-5-8 | ALUMINUM | WHITE | LAY-IN | |
| | | | | | | | | | | | |
| RA-1 | 24"x24" | - | 22"x22" | 80 | 0 - 2100 | NO | - | ALUMINUM | WHITE | LAY-IN | |
| RA-2 | - | 48"x20" | - | 90 | 3000 | NO | - | ALUMINUM | PER ARCH | SIDEWALL | |
| RA-3 | - | 60"X30" | - | 90 | 8000-9000 | NO | - | ALUMINUM | PER ARCH | SIDEWALL | 1 |
| RA-4 | 24"x24" | - | 12"x24" | 80 | 0-1200 | NO | - | ALUMINUM | WHITE | LAY-IN | |
| | | | | | | | | | | | |
| TA-1 | 24"x24" | - | 22"x22" | 80 | 0-2100 | NO | - | ALUMINUM | WHITE | LAY-IN | |
| | | | | | | | | | | | |
| EA-1 | 24"x24" | - | 12"x12" | 80 | 0-500 | NO | - | ALUMINUM | WHITE | LAY-IN | |
| EA-2 | - | 6"x6" | - | 80 | 0-100 | NO | - | ALUMINUM | PER ARCH | SIDEWALL | |
| EA-3 | 24"x24" | - | 12"x12" | 80 | 0-500 | YES | - | ALUMINUM | WHITE | LAY-IN | |
| EA-4 | 24"x24" | - | 22"x22" | 80 | 0-2100 | NO | - | ALUMINUM | WHITE | LAY-IN | |
| EA-5 | - | 10"x6" | - | 80 | 0-200 | NO | - | ALUMINUM | PER ARCH | SIDEWALL | |

NOTES:

1. HEAVY DUTY CONSTRUCTION FOR GYM APPLICATION.

## AIR & DIRT SEPARATORS

**BASED ON BELL & GOSSETT**

| MARK | MODEL | TYPE | DIAMETER (INCHES) | HEIGHT (INCHES) | WEIGHT (LBS) | SYSTEM FLOW (GPM) | PRESSURE DROP (FT H2O) | SYSTEM SERVED | FLUID TYPE | LOCATION | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AS-1 | CRS-HV MAG | COALESCING | 12.75 | 57 | 615 | 800 | 3.88 | HYDRONIC | WATER | BOILER RM. | NEODYMIUM 45H MAGNET |

## EXHAUST FANS

**BASED ON GREENHECK**

| MARK | MODEL | TYPE | AIR FLOW (CFM) | ESP (IN WC) | SONES | MOTOR DATA EC MOTOR | MOTOR DATA BRAKE HP | MOTOR DATA RPM | MOTOR DATA VOLTAGE | MOTOR DATA PHASE | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EF-1 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-2 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-3 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-4 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-5 | CUE-099-VG | ROOF, CENTRIFUGAL | 600 | 0.50 | 6.7 | Yes | 0.1 | 1800 | 120 | 1 | |
| EF-6 | CUE-060-VG | ROOF, CENTRIFUGAL | 100 | 0.25 | 3.2 | Yes | 0.02 | 1800 | 120 | 1 | |
| EF-7 | CUE-099-VG | ROOF, CENTRIFUGAL | 600 | 0.50 | 6.7 | Yes | 0.1 | 1800 | 120 | 1 | |
| EF-8 | G-100-VG | ROOF, CENTRIFUGAL | 800 | 0.50 | 6.8 | Yes | 0.13 | 1800 | 120 | 1 | |
| EF-9 | CUE-140-VG | ROOF, CENTRIFUGAL | 1000 | 0.70 | 9.5 | Yes | 0.21 | 1800 | 120 | 1 | |
| EF-10 | CUE-140-VG | ROOF, CENTRIFUGAL | 1000 | 0.70 | 9.5 | Yes | 0.21 | 1800 | 120 | 1 | |
| EF-11 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-12 | CUE-099-VG | ROOF, CENTRIFUGAL | 600 | 0.50 | 6.7 | Yes | 0.1 | 1800 | 120 | 1 | |
| EF-13 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-14 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-15 | CUE-060-VG | ROOF, CENTRIFUGAL | 100 | 0.25 | 3.2 | Yes | 0.02 | 1800 | 120 | 1 | |
| EF-16 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-17 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-18 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-19 | CUE-099-VG | ROOF, CENTRIFUGAL | 600 | 0.50 | 6.7 | Yes | 0.1 | 1800 | 120 | 1 | |
| EF-20 | G-097-VG | ROOF, CENTRIFUGAL | 200 | 0.50 | 7.0 | Yes | 0.07 | 1800 | 120 | 1 | |
| EF-21 | CUE-060-VG | ROOF, CENTRIFUGAL | 100 | 0.25 | 3.2 | Yes | 0.02 | 1800 | 120 | 1 | |

NOTES:

1. INTERLOCK EXHAUST FAN WITH ASSOCIATED DAMPER.
2. PROVIDE WITH VARI-GREEN MOTOR.
3. MOTORIZED DAMPER BY TEMPERATURE CONTROLS CONTRACTOR.

## SOUND TRAP SCHEDULE

**BASED ON PRICE**

| MARK | MODEL | CFM | TYPE | DIMENSIONS HEIGHT | DIMENSIONS WIDTH | DIMENSIONS LENGTH | P.D. | VELOCITY (FPM) | DUCT SERVICE | MINIMUM REQUIRED LOSS (dB) 63 OCT. | 125 OCT. | 250 OCT. | 500 OCT. | 1K OCT. | 2K OCT. | 4K OCT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ST-AHU-1R | RL | 8,450 | RECTANGULAR | 30" | 50" | 36" | 0.06 | 811 | RETURN | 6 | 8 | 14 | 25 | 31 | 24 | 21 | |
| ST-AHU-1S | RL | 11,800 | RECTANGULAR | 38" | 40" | 36" | 0.06 | 1118 | SUPPLY | 6 | 8 | 14 | 25 | 31 | 24 | 21 | |
| ST-AHU-2R | RL | 8,200 | RECTANGULAR | 20" | 44" | 36" | 0.06 | 1342 | RETURN | 3 | 5 | 11 | 22 | 28 | 21 | 18 | |
| ST-AHU-2S1 | RL | 8,700 | RECTANGULAR | 22" | 44" | 36" | 0.06 | 1294 | SUPPLY | 6 | 8 | 14 | 25 | 31 | 24 | 21 | |
| ST-AHU-2S2 | CS | 1,100 | CIRCULAR | 12" | 12" | 36" | 0.11 | 1401 | SUPPLY | 4 | 6 | 16 | 25 | 31 | 20 | 15 | |
| ST-AHU-3R | RL | 17,300 | RECTANGULAR | 44" | 50" | 36" | 0.06 | 1132 | RETURN | 6 | 11 | 17 | 28 | 34 | 27 | 24 | |
| ST-AHU-3S1 | RL | 11,100 | RECTANGULAR | 20" | 44" | 36" | 0.06 | 1816 | SUPPLY | 3 | 5 | 11 | 22 | 28 | 21 | 18 | |
| ST-AHU-3S2 | RL | 7,900 | RECTANGULAR | 14" | 38" | 36" | 0.06 | 2138 | SUPPLY | 3 | 5 | 11 | 22 | 28 | 21 | 18 | |
| ST-AHU-4R | RL | 9,000 | RECTANGULAR | 30" | 40" | 36" | 0.06 | 1080 | RETURN | 6 | 8 | 14 | 25 | 31 | 24 | 21 | |
| ST-AHU-4S | RL | 9,000 | RECTANGULAR | 30" | 34" | 36" | 0.06 | 1271 | SUPPLY | 6 | 8 | 14 | 25 | 31 | 24 | 21 | |
| ST-AHU-5R | RL | 9,300 | RECTANGULAR | 20" | 44" | 36" | 0.06 | 1674 | RETURN | 3 | 5 | 11 | 22 | 28 | 21 | 18 | |
| ST-AHU-5S | RL | 11,000 | RECTANGULAR | 16" | 40" | 36" | 0.06 | 1980 | SUPPLY | 3 | 5 | 11 | 22 | 28 | 21 | 18 | |
| ST-AHU-6R | RL | 8,600 | RECTANGULAR | 20" | 56" | 36" | 0.06 | 1106 | RETURN | 6 | 11 | 17 | 28 | 34 | 27 | 24 | |
| ST-AHU-6S | RL | 11,000 | RECTANGULAR | 30" | 30" | 36" | 0.06 | 1760 | SUPPLY | 3 | 5 | 11 | 22 | 28 | 21 | 18 | |

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ADDENDUM #1 05/08/2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

Kalamazoo, Michigan

SHEET TITLE
MECHANICAL SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
M 504
23-622.000

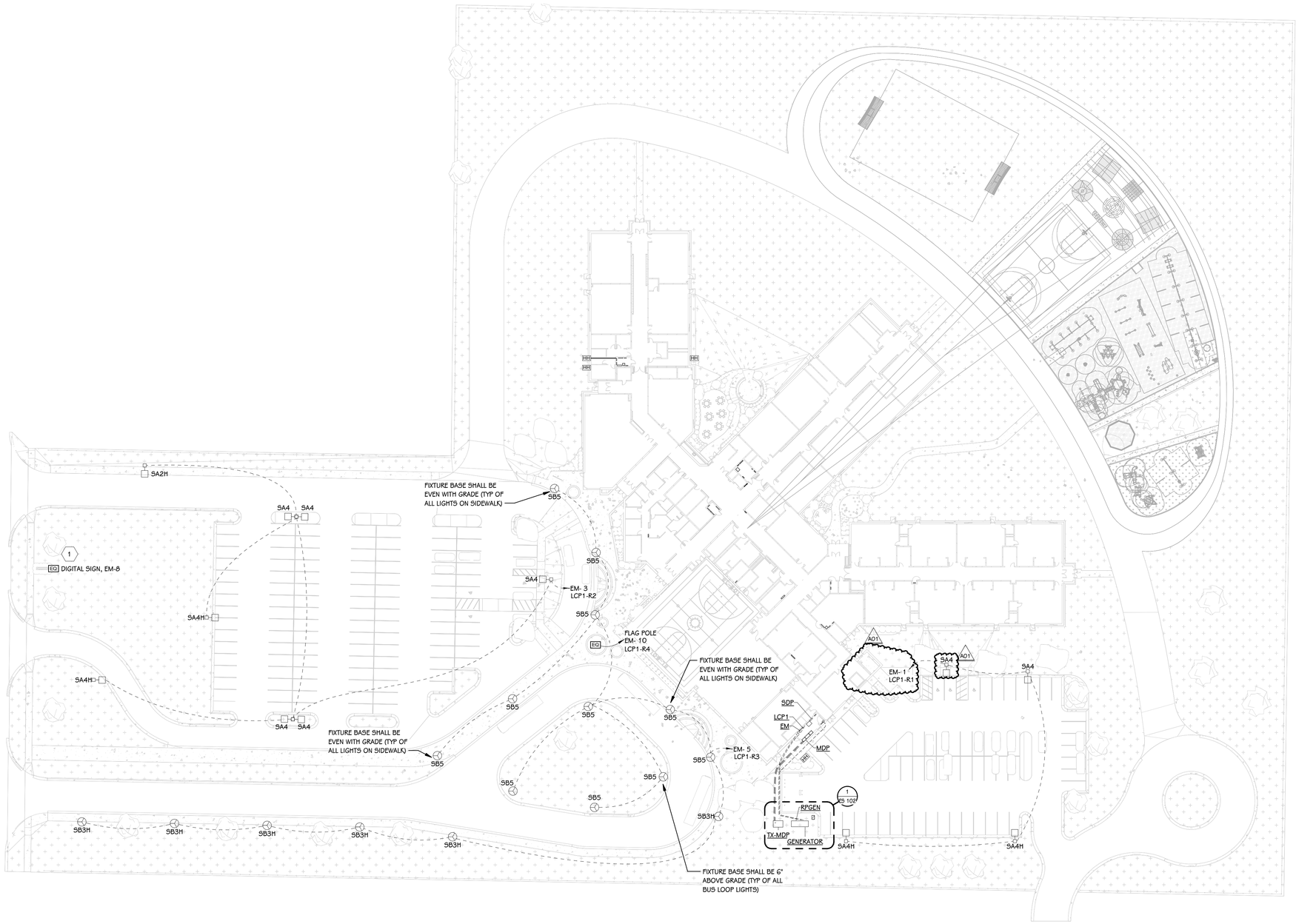
## SITE LIGHT FIXTURE SCHEDULE

| TYPE | DESCRIPTION | MOUNTING | WATTS | MANUFACTURER | NOTES |
|---|---|---|---|---|---|
| SA2H | AREA SITE LIGHT | 25' ROUND TAPERED AL POLE | 180 VA | LITHONIA #DSX1LED-P8-40K-80CRI-T2M-MVOLT-(MTG)-nLIGHT AIR-(COLOR)-HS OR EQUAL BY COOPER McGRAW EDISON GALN | 1, 2 |
| SA4 | AREA SITE LIGHT | 25' ROUND TAPERED AL POLE | 216 VA | LITHONIA #DSX1LED-P8-40K-80CRI-T4M-MVOLT-(MTG)-nLIGHT AIR-(COLOR) OR EQUAL BY COOPER McGRAW EDISON GALN | 1, 2 |
| SA4H | AREA SITE LIGHT | 25' ROUND TAPERED AL POLE | 216 VA | LITHONIA #DSX1LED-P8-40K-80CRI-T4M-MVOLT-(MTG)-nLIGHT AIR-(COLOR)-HS OR EQUAL BY COOPER McGRAW EDISON GALN | 1, 2 |
| SB3H | AREA PATHWAY LIGHT | 15' ROUND TAPERED AL POLE | 86 VA | BEGA # 84 147-40K-(FINISH) w/ BI-LEVEL DIMMING AND MOTION SENSOR OR EQUAL BY STERNBERG SL660 | 1, 2, 3 |
| SB5 | AREA PATHWAY LIGHT | 15' ROUND TAPERED AL POLE | 86 VA | BEGA # 84 147-40K-(FINISH) w/ BI-LEVEL DIMMING AND MOTION SENSOR OR EQUAL BY STERNBERG SL660 | 1, 2, 3 |

1 ALL LED FIXTURES TO HAVE WARRANTY TO MEET OR EXCEED WARRANTY INCLUDED IN BASIS OF DESIGN. FIXTURES LISTED AS EQUALS SHALL MEET DELIVERED LUMENS, CRI, EFFICACY AND OPTIONS OF THAT SPECIFIED. REFER TO SPECIFICATIONS 265100 AND 265600 FOR ADDITIONAL REQUIREMENTS.

2 THE MOUNTING DESCRIPTION IS GENERAL. REFER TO SHOP DRAWINGS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR SPECIFIC MOUNTING DETAILS.

3 REFER TO BUILDING ELEVATIONS FOR FIXTURE PLACEMENT, CENTER OVER DOORS, ALIGN SIMILAR FIXTURES.




ELECTRICAL SITE PLAN
1" = 40'-0"

## NOTES - ELECTRICAL - SITE

1 WIRE UPSIZING IS NOTED WHERE APPROPRIATE TO ACCOMMODATE FOR VOLTAGE DROP. WIRE SIZES SHALL BE #10 UNLESS OTHERWISE NOTED.

2 WIRE UPSIZING SHOWN IS ONLY ACCURATE FOR THE WIRING CONFIGURATION SHOWN. CONTRACTOR SHALL ENSURE THAT ALL VOLTAGE DROP REQUIREMENTS ARE MET IF WIRING CONFIGURATION CHANGES.

3 PROVIDE TRENCHING AND DIRECTIONAL BORING AS REQUIRED FOR ALL ELECTRICAL SITE WORK. REFER TO SITE / CIVIL UTILITY PLAN, CALL MISS DIG, AND RADAR SITE PRIOR TO ANY SITE TRENCHING OR DIRECTIONAL BORING.

4 ALL CONDUITS SHALL ENTER/EXIT THE BUILDING BELOW GRADE. CUT AND PATCH AS REQUIRED. NO EXPOSED CONDUIT SHALL BE ALLOWED.

5 ALL CONDUITS FOR COMMUNICATIONS AND FUTURE POWER SHALL HAVE PULL STRING.

## KEYED NOTES - ELECTRICAL - SITE - CONSTRUCTION

1 PROVIDE NEMA 3R 277V-120V SINGLE PHASE 1 KVA TRANSFORMER AND NEMA 3R DISCONNECT SWITCH FOR DIGITAL MARQUEE SIGN. COORDINATE WITH SHOP DRAWINGS PRIOR TO ORDERING AND INSTALLATION.

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| ADDENDUM 01 | 05-08-2026 |

PROJECT TITLE
NEW EL SOL SCHOOL

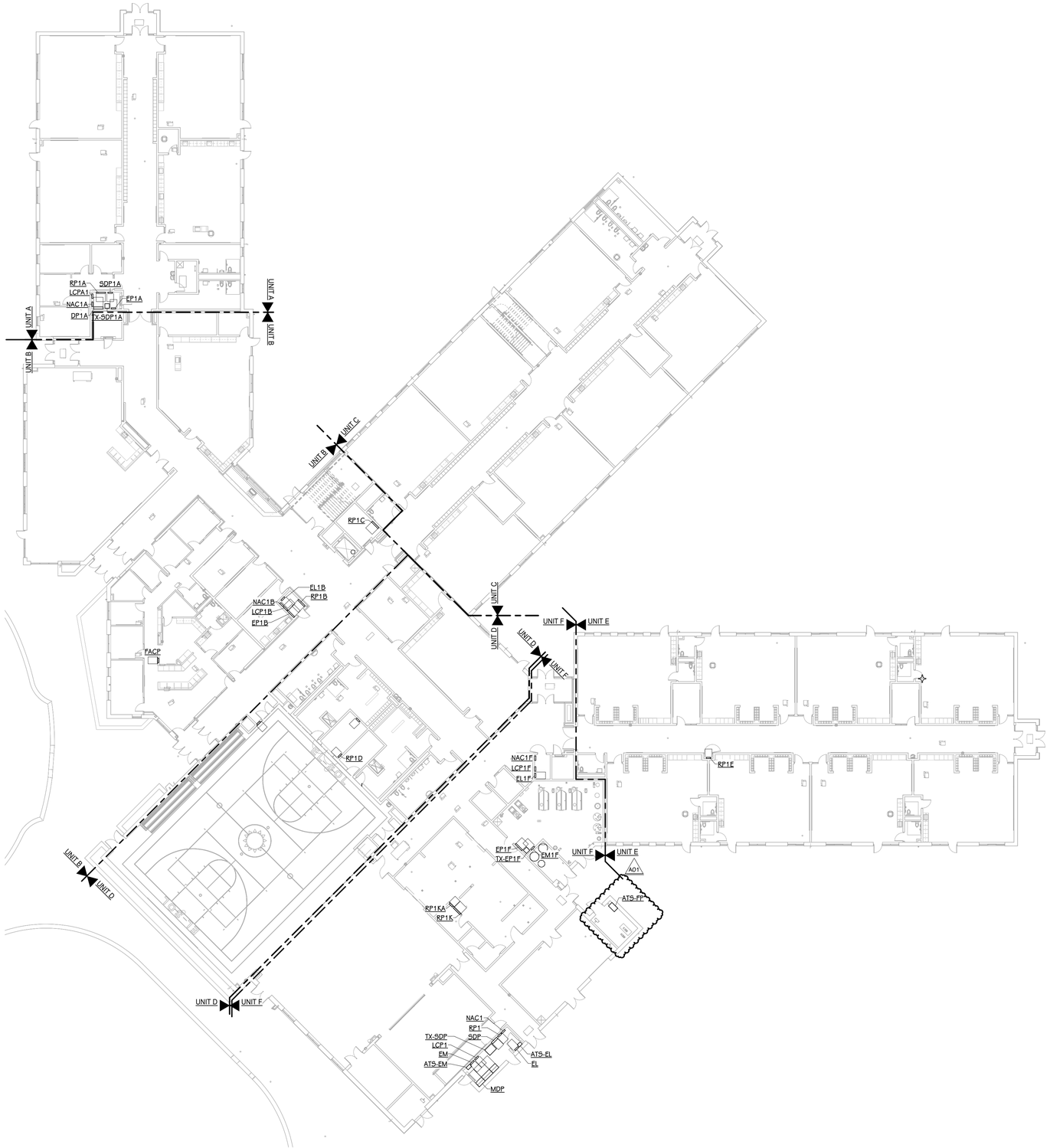
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ELECTRICAL SITE PLAN

DATE
APRIL 24, 2026

SHEET NUMBER
ES 101
23-622.000




FIRST FLOOR POWER PLAN - OVERALL
1" = 20'-0"

## KEYED NOTES - ELECTRICAL - POWER

1 PRE-ACTION SYSTEM SMOKE DETECTOR. COORDINATE INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR.

2 PROVIDE FIRE ALARM CONNECTION TO PREACTION SYSTEM CONTROLLER, VALVE DETECTION, FLOW SWITCHES, AND TAMPER SWITCHES. COORDINATE ALL INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR. PROVIDE ALL REQUIRED CONNECTIONS FOR A FULLY FUNCTIONAL SYSTEM.

3 ALL DISCONNECTS SHALL HAVE AUX CONTACTS. COORDINATE FUSE SIZE FOR ELEVATOR POWER CIRCUIT WITH SHOP DRAWINGS. CONNECT TO FIRE ALARM SYSTEM. REFER TO TECHNOLOGY DRAWINGS FOR TELEPHONE SYSTEM INFORMATION. COORDINATE ALL ADDITIONAL INSTALLATION REQUIREMENTS IN FIELD WITH ELEVATOR CONTRACTOR.

4 FEED INDOOR MINISPLIT UNIT FROM ACCU UNIT MOUNTED ON THE ROOF ABOVE, REFER TO DETAIL. PROVIDE DISCONNECT SWITCH FOR CONDENSATE PUMP, CONNECT TO CIRCUIT INDICATED OR NEAREST AVAILABLE UNSWITCHED 120V CIRCUIT.

5 FEED RECEPTACLE FROM LOAD SIDE OF ADJACENT GFCI RECEPTACLE.

6 PROVIDE GFCI BREAKER IN NEW PANELBOARD FOR CIRCUIT INDICATED.

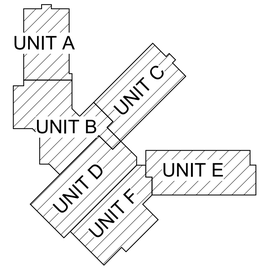
7 INTERWIRE UNIT DISCONNECT, LIGHTING, SWITCHING, AND GENERAL RECEPTACLE CIRCUITS. PROVIDE ALL WORK NECESSARY FOR A COMPLETE INSTALLATION. MOUNT LIGHT SWITCHES AT MAX 48" AFF.

8 COORDINATE ALL TECHNOLOGY ROUGH-IN LOCATIONS, MOUNTING HEIGHTS, AND ADDITIONAL REQUIREMENTS WITH TECHNOLOGY DRAWINGS AND INSTALLER IN FIELD PRIOR TO INSTALLATION.

9 INTERWIRE OVERHEAD DOOR POWER, CONTROLS, AND PHOTO EYES. REFER TO DETAIL.

10 PROVIDE LINE VOLTAGE AND LOW VOLTAGE CONNECTION TO ELECTRIC ROLLER SHADES. COORDINATE BACKBOX LOCATION WITH MANUFACTURE SHOP DRAWINGS AND IN FIELD WITH INSTALLER. MOUNT SHADE CONTROLLERS IN SAME BACKBOX AS ROOM LIGHTING SWITCHES. PROVIDE ALL REQUIRED EQUIPMENT FOR A COMPLETE INSTALLATION.

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

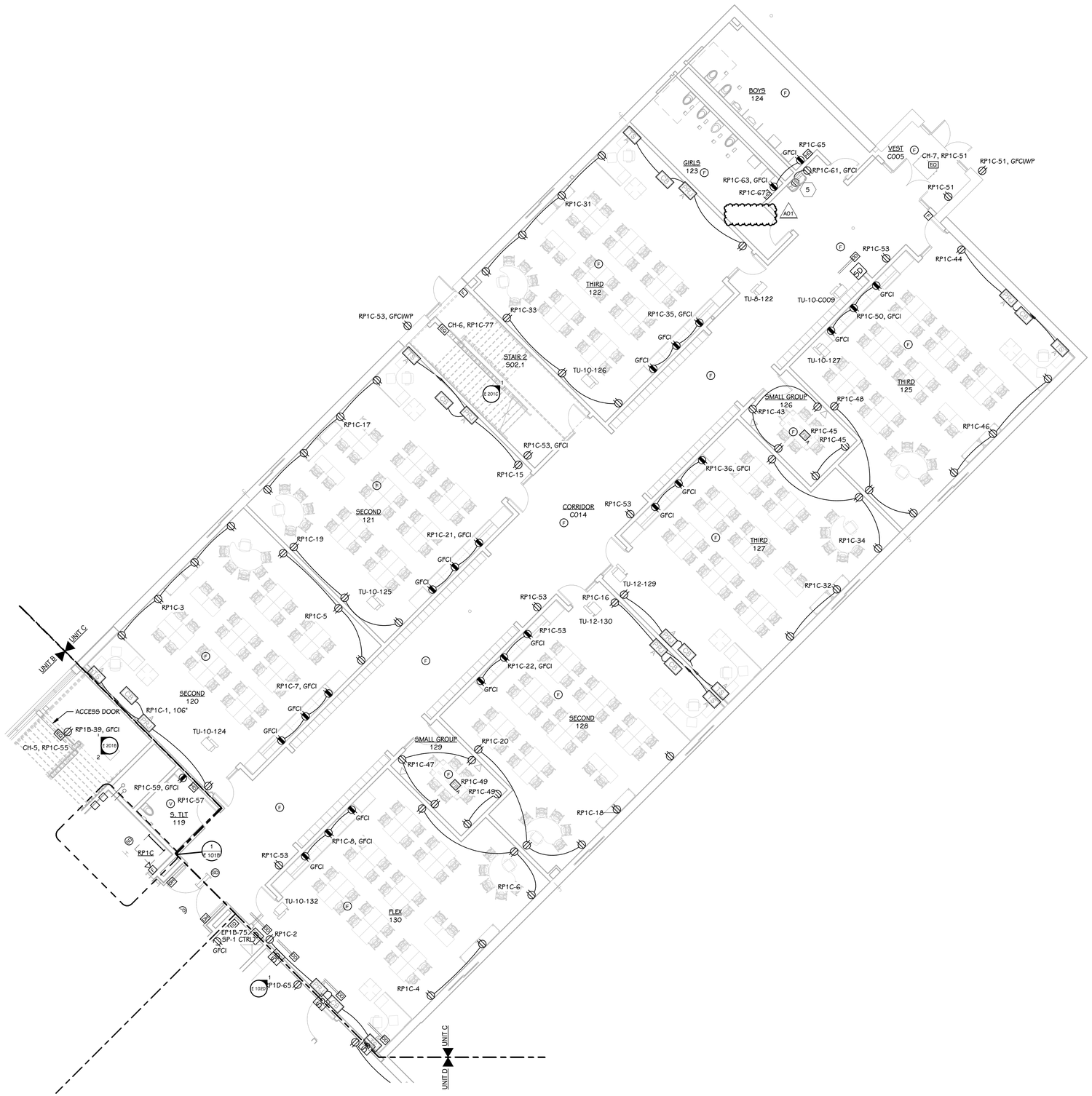
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR POWER PLAN - OVERALL

DATE
APRIL 24, 2026

SHEET NUMBER
E101
23-622.000




FIRST FLOOR POWER PLAN - UNIT C
1/8" = 1'-0"

## KEYED NOTES - ELECTRICAL - POWER

1 PRE-ACTION SYSTEM SMOKE DETECTOR. COORDINATE INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR.

2 PROVIDE FIRE ALARM CONNECTION TO PREACTION SYSTEM CONTROLLER, VALVE DETECTION, FLOW SWITCHES, AND TAMPER SWITCHES. COORDINATE ALL INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR. PROVIDE ALL REQUIRED CONNECTIONS FOR A FULLY FUNCTIONAL SYSTEM.

3 ALL DISCONNECTS SHALL HAVE AUX CONTACTS. COORDINATE FUSE SIZE FOR ELEVATOR POWER CIRCUIT WITH SHOP DRAWINGS. CONNECT TO FIRE ALARM SYSTEM. REFER TO TECHNOLOGY DRAWINGS FOR TELEPHONE SYSTEM INFORMATION. COORDINATE ALL ADDITIONAL INSTALLATION REQUIREMENTS IN FIELD WITH ELEVATOR CONTRACTOR.

4 FEED INDOOR MINISPLIT UNIT FROM ACCU UNIT MOUNTED ON THE ROOF ABOVE, REFER TO DETAIL. PROVIDE DISCONNECT SWITCH FOR CONDENSATE PUMP, CONNECT TO CIRCUIT INDICATED OR NEAREST AVAILABLE UNSWITCHED 120V CIRCUIT.

5 FEED RECEPTACLE FROM LOAD SIDE OF ADJACENT GFCI RECEPTACLE.

6 PROVIDE GFCI BREAKER IN NEW PANELBOARD FOR CIRCUIT INDICATED.

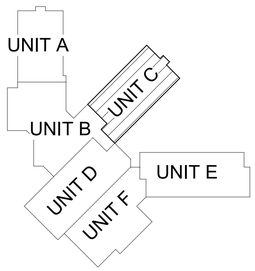
7 INTERWIRE UNIT DISCONNECT, LIGHTING, SWITCHING, AND GENERAL RECEPTACLE CIRCUITS. PROVIDE ALL WORK NECESSARY FOR A COMPLETE INSTALLATION. MOUNT LIGHT SWITCHES AT MAX 48" AFF.

8 COORDINATE ALL TECHNOLOGY ROUGH-IN LOCATIONS, MOUNTING HEIGHTS, AND ADDITIONAL REQUIREMENTS WITH TECHNOLOGY DRAWINGS AND INSTALLER IN FIELD PRIOR TO INSTALLATION.

9 INTERWIRE OVERHEAD DOOR POWER, CONTROLS, AND PHOTO EYES. REFER TO DETAIL.

10 PROVIDE LINE VOLTAGE AND LOW VOLTAGE CONNECTION TO ELECTRIC ROLLER SHADES. COORDINATE BACKBOX LOCATION WITH MANUFACTURE SHOP DRAWINGS AND IN FIELD WITH INSTALLER. MOUNT SHADE CONTROLLERS IN SAME BACKBOX AS ROOM LIGHTING SWITCHES. PROVIDE ALL REQUIRED EQUIPMENT FOR A COMPLETE INSTALLATION.

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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APRIL 24, 2026

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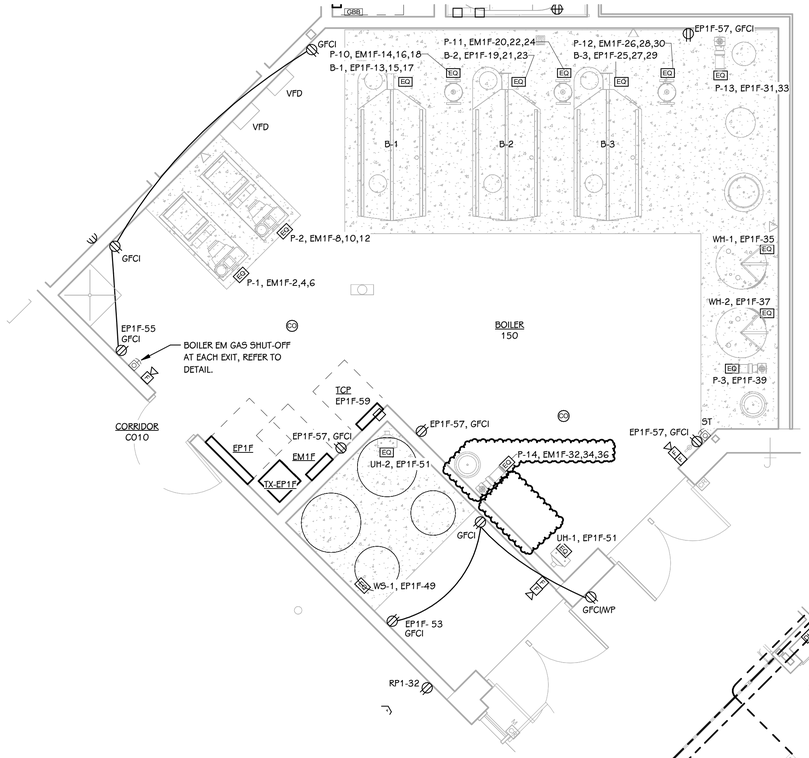
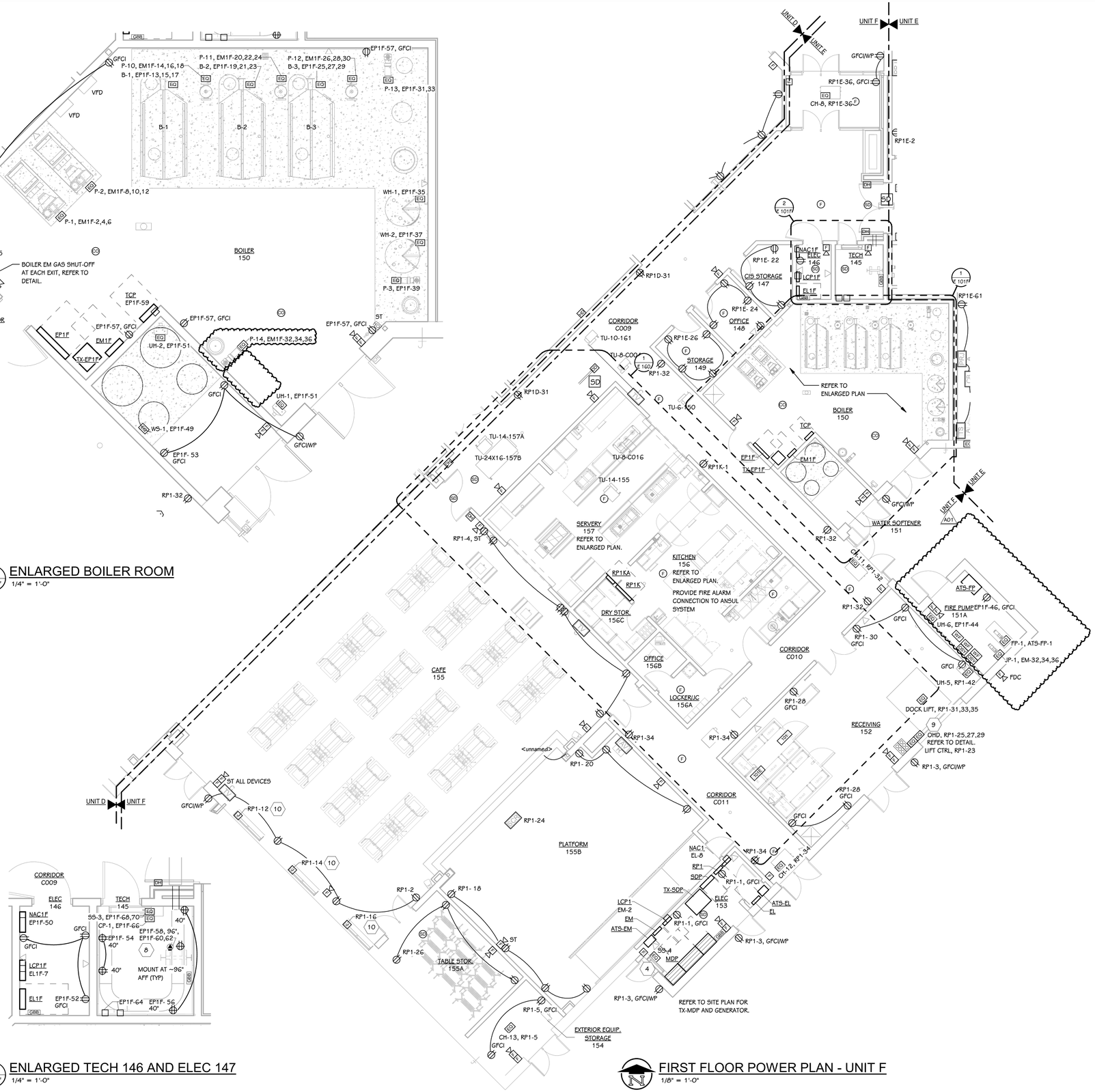
E101C
23-622.000




1 E 101F ENLARGED BOILER ROOM
1/4" = 1'-0"




1 E 101F FIRST FLOOR POWER PLAN - UNIT F
1/8" = 1'-0"




2 E 101F ENLARGED TECH 146 AND ELEC 147
1/4" = 1'-0"

## KEYED NOTES - ELECTRICAL - POWER

1 PRE-ACTION SYSTEM SMOKE DETECTOR. COORDINATE INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR.

2 PROVIDE FIRE ALARM CONNECTION TO PREACTION SYSTEM CONTROLLER, VALVE DETECTION, FLOW SWITCHES, AND TAMPER SWITCHES. COORDINATE ALL INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR. PROVIDE ALL REQUIRED CONNECTIONS FOR A FULLY FUNCTIONAL SYSTEM.

3 ALL DISCONNECTS SHALL HAVE AUX CONTACTS. COORDINATE FUSE SIZE FOR ELEVATOR POWER CIRCUIT WITH SHOP DRAWINGS. CONNECT TO FIRE ALARM SYSTEM. REFER TO TECHNOLOGY DRAWINGS FOR TELEPHONE SYSTEM INFORMATION. COORDINATE ALL ADDITIONAL INSTALLATION REQUIREMENTS IN FIELD WITH ELEVATOR CONTRACTOR.

4 FEED INDOOR MINISPLIT UNIT FROM ACCU UNIT MOUNTED ON THE ROOF ABOVE, REFER TO DETAIL. PROVIDE DISCONNECT SWITCH FOR CONDENSATE PUMP, CONNECT TO CIRCUIT INDICATED OR NEAREST AVAILABLE UNSWITCHED 120V CIRCUIT.

5 FEED RECEPTACLE FROM LOAD SIDE OF ADJACENT GFCI RECEPTACLE.

6 PROVIDE GFCI BREAKER IN NEW PANELBOARD FOR CIRCUIT INDICATED.

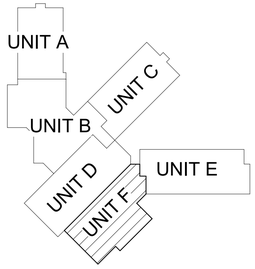
7 INTERWIRE UNIT DISCONNECT, LIGHTING, SWITCHING, AND GENERAL RECEPTACLE CIRCUITS. PROVIDE ALL WORK NECESSARY FOR A COMPLETE INSTALLATION. MOUNT LIGHT SWITCHES AT MAX 48" AFF.

8 COORDINATE ALL TECHNOLOGY ROUGH-IN LOCATIONS, MOUNTING HEIGHTS, AND ADDITIONAL REQUIREMENTS WITH TECHNOLOGY DRAWINGS AND INSTALLER IN FIELD PRIOR TO INSTALLATION.

9 INTERWIRE OVERHEAD DOOR POWER, CONTROLS, AND PHOTO EYES. REFER TO DETAIL.

10 PROVIDE LINE VOLTAGE AND LOW VOLTAGE CONNECTION TO ELECTRIC ROLLER SHADES. COORDINATE BACKBOX LOCATION WITH MANUFACTURE SHOP DRAWINGS AND IN FIELD WITH INSTALLER. MOUNT SHADE CONTROLLERS IN SAME BACKBOX AS ROOM LIGHTING SWITCHES. PROVIDE ALL REQUIRED EQUIPMENT FOR A COMPLETE INSTALLATION.

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM 01 | 05-08-2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

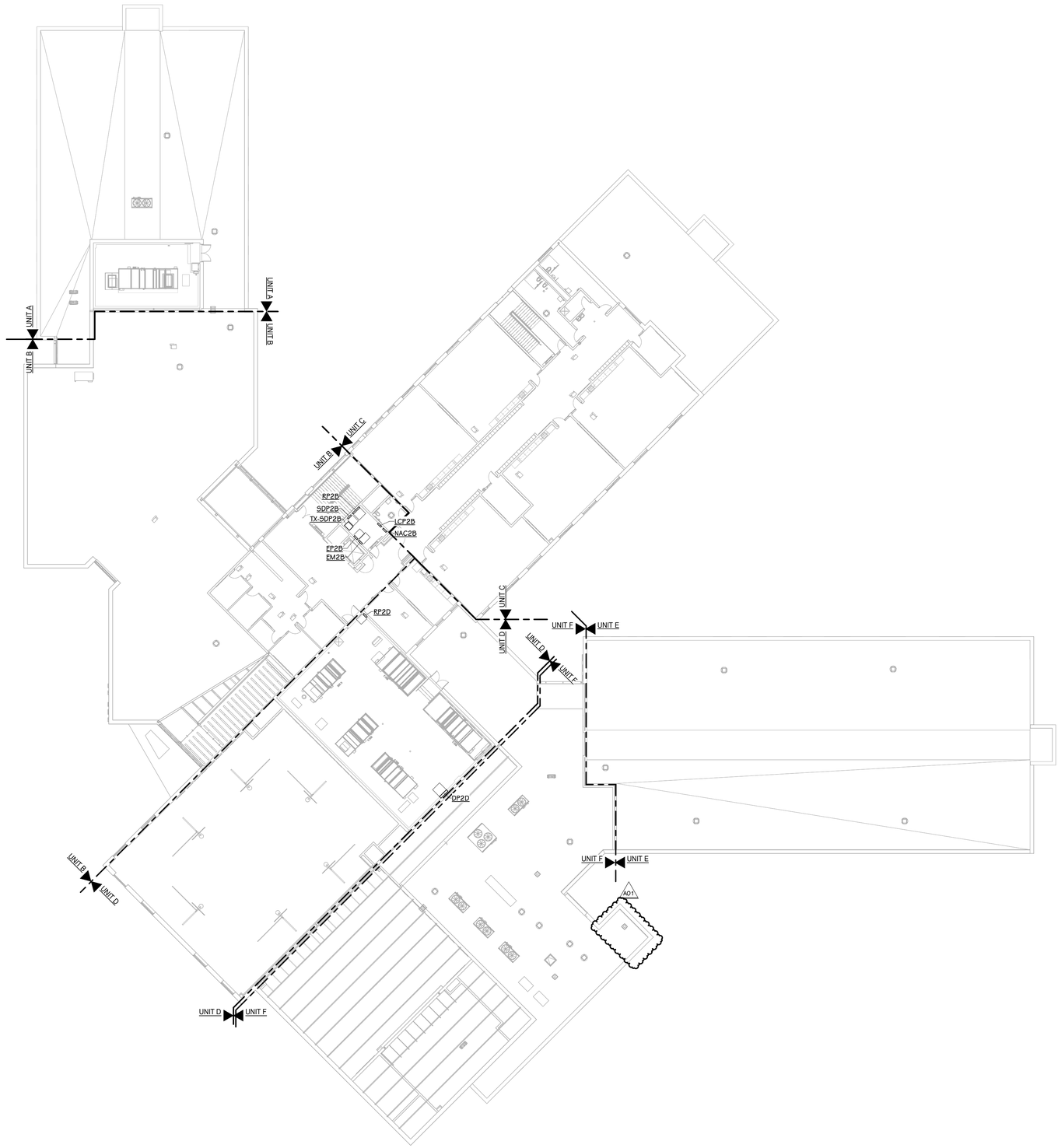
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

DATE
APRIL 24, 2026

SHEET TITLE
FIRST FLOOR POWER PLAN - UNIT F

SHEET NUMBER
E 101F
23-622.000




OVERALL SECOND FLOOR POWER PLAN
1" = 20'-0"

## KEYED NOTES - ELECTRICAL - POWER

1 PRE-ACTION SYSTEM SMOKE DETECTOR. COORDINATE INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR.

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7 INTERWIRE UNIT DISCONNECT, LIGHTING, SWITCHING, AND GENERAL RECEPTACLE CIRCUITS. PROVIDE ALL WORK NECESSARY FOR A COMPLETE INSTALLATION. MOUNT LIGHT SWITCHES AT MAX 48" AFF.

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9 INTERWIRE OVERHEAD DOOR POWER, CONTROLS, AND PHOTO EYES. REFER TO DETAIL.

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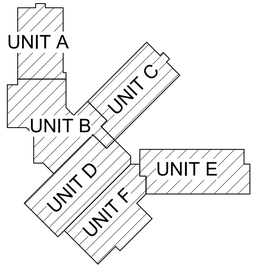
**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

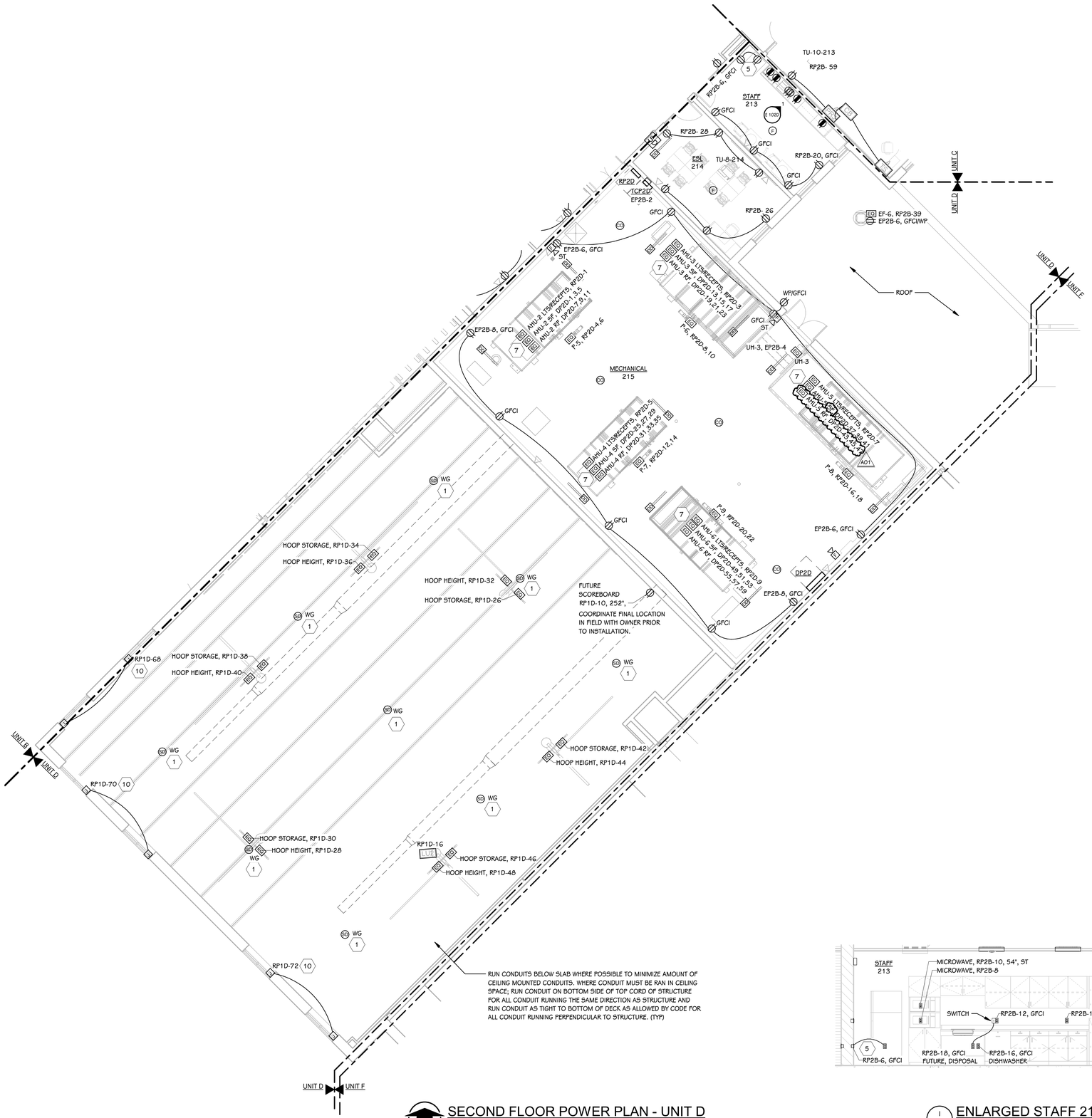
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

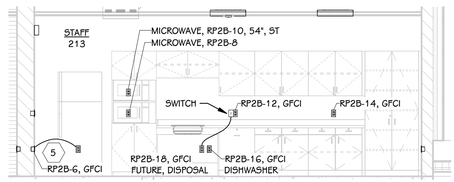
SHEET TITLE
SECOND FLOOR POWER PLAN - OVERALL

DATE
APRIL 24, 2026

SHEET NUMBER
E102
23-622.000




SECOND FLOOR POWER PLAN - UNIT D
1/8" = 1'-0"




ENLARGED STAFF 213
1/4" = 1'-0"

## KEYED NOTES - ELECTRICAL - POWER

1 PRE-ACTION SYSTEM SMOKE DETECTOR. COORDINATE INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR.

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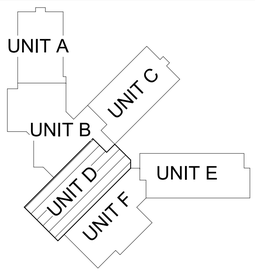
**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

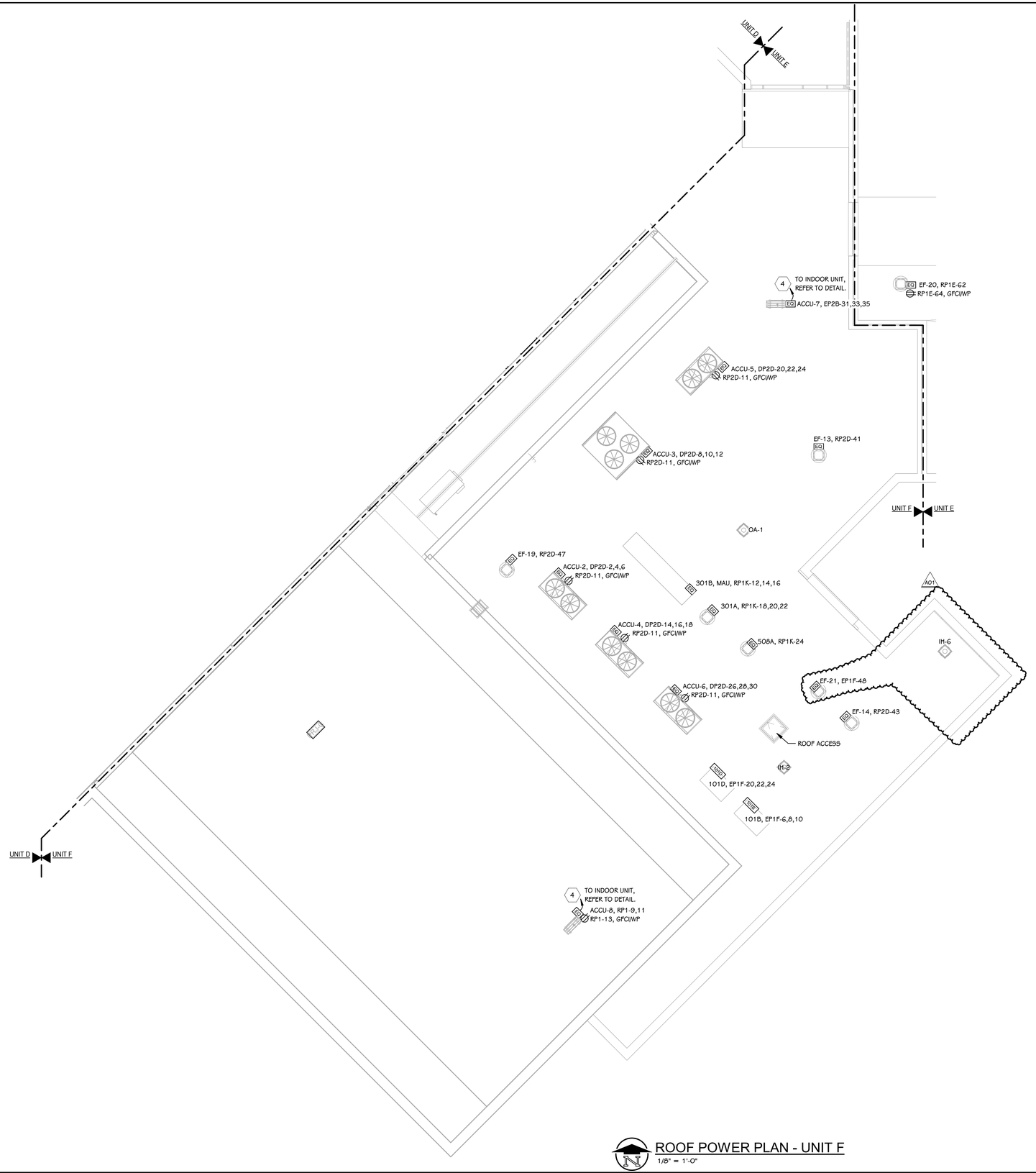
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR POWER PLAN - UNIT D

DATE
APRIL 24, 2026

SHEET NUMBER
E 102D
23-622.000




ROOF POWER PLAN - UNIT F
1/8" = 1'-0"

## KEYED NOTES - ELECTRICAL - POWER

1 PRE-ACTION SYSTEM SMOKE DETECTOR. COORDINATE INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR.

2 PROVIDE FIRE ALARM CONNECTION TO PREACTION SYSTEM CONTROLLER, VALVE DETECTION, FLOW SWITCHES, AND TAMPER SWITCHES. COORDINATE ALL INSTALLATION REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR. PROVIDE ALL REQUIRED CONNECTIONS FOR A FULLY FUNCTIONAL SYSTEM.

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9 INTERWIRE OVERHEAD DOOR POWER, CONTROLS, AND PHOTO EYES. REFER TO DETAIL.

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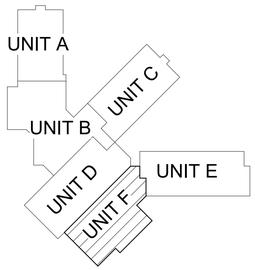
**EL SOL ELEMENTARY**

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SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

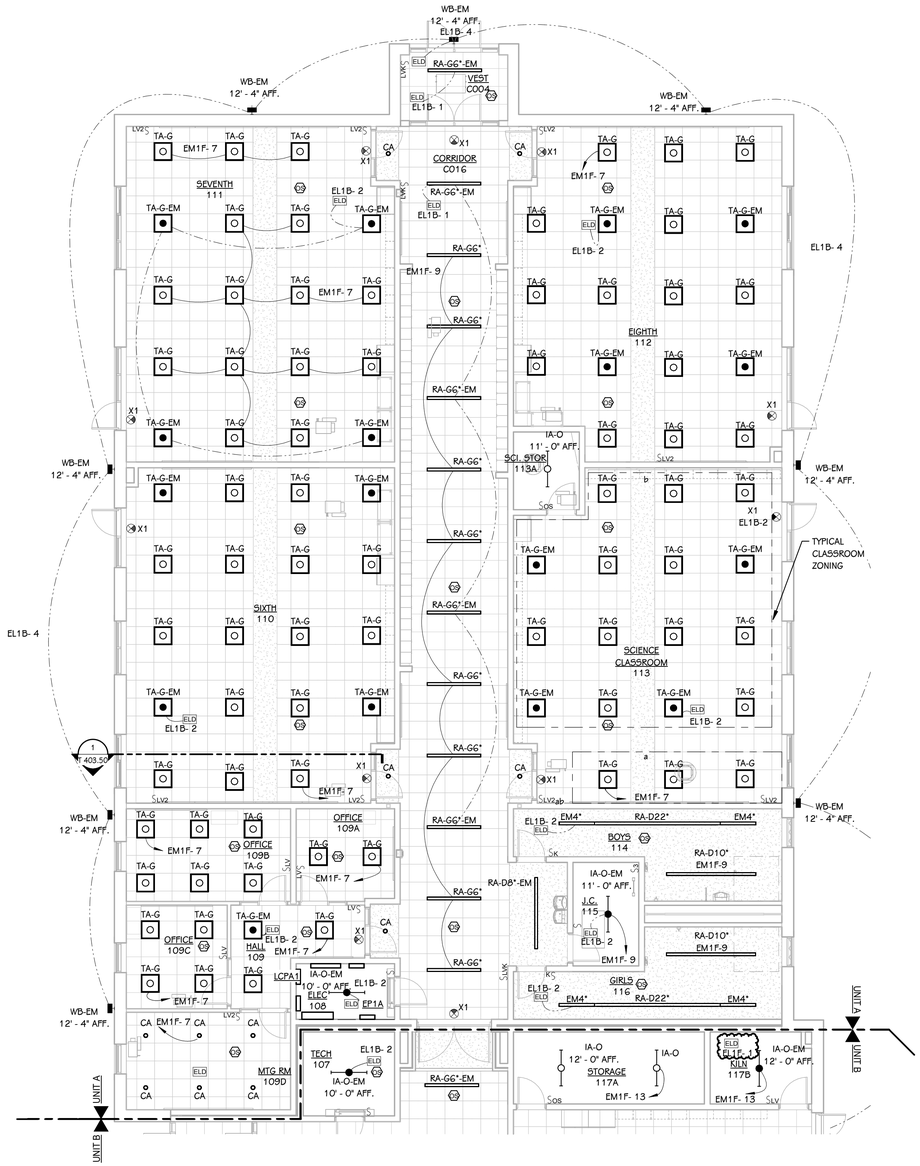
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ROOF POWER PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
E102F
23-622.000



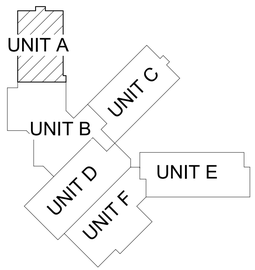

FIRST FLOOR LIGHTING PLAN - UNIT A

1/8" = 1'-0"

**KEYED NOTES - ELECTRICAL - LIGHTING**

1 COORDINATE ALL LIGHTING WITH DUCT WORK, REFER TO REFLECTED CEILING PLAN AND MECHANICAL PLANS. PROVIDE UNISTRUT AS REQUIRED TO MOUNT FIXTURE BETWEEN OR UNDER PIPING AND DUCTWORK. ADJUST SPACING AND MOUNTING HEIGHT AS REQUIRED. COORDINATE WITH MECHANICAL CONTRACTOR.

**EL SOL ELEMENTARY**




KEY PLAN

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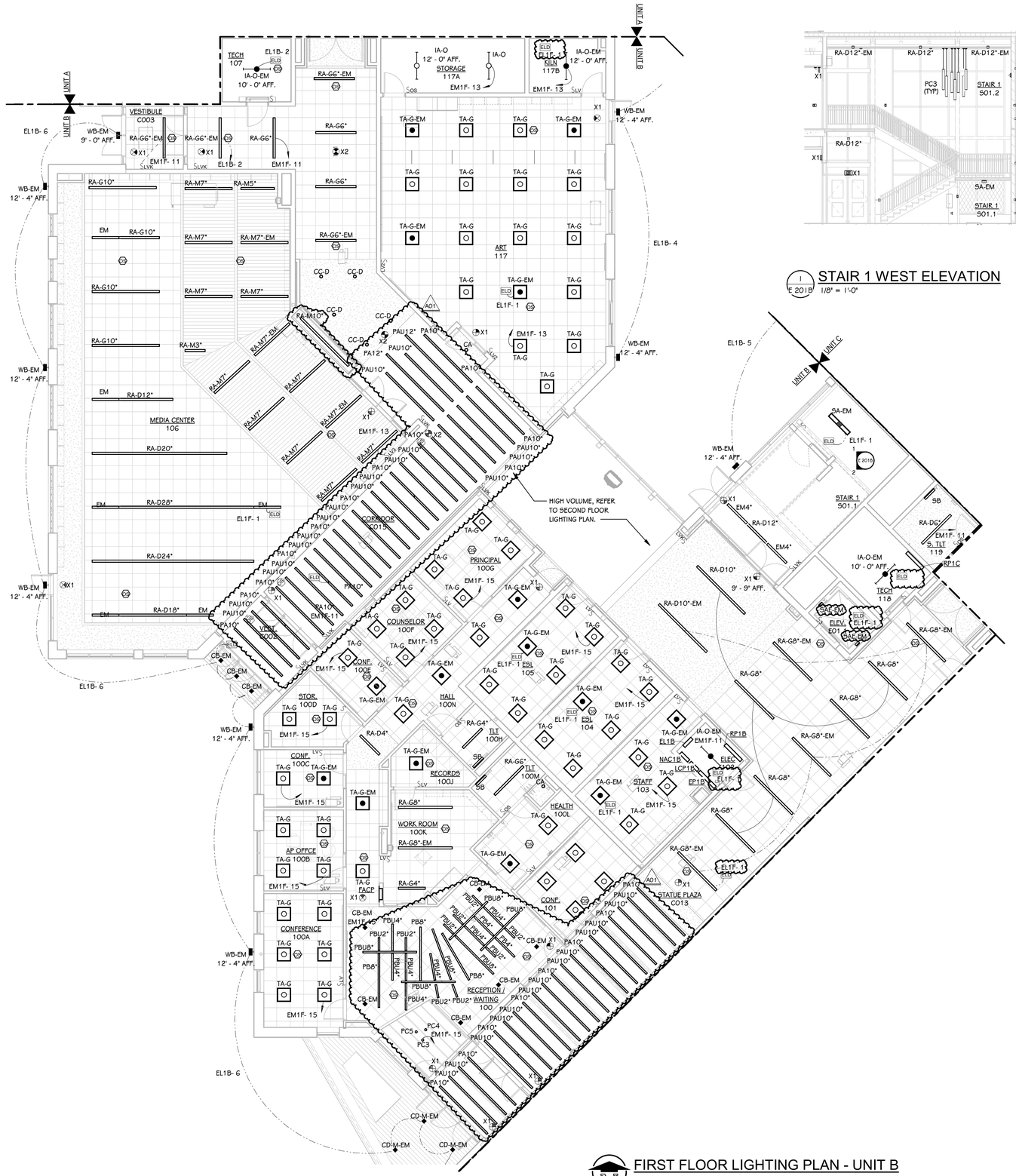
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT A

DATE
APRIL 24, 2026

SHEET NUMBER
E 201A

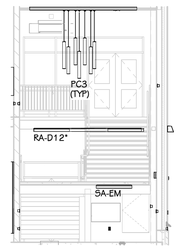
23-622.000




FIRST FLOOR LIGHTING PLAN - UNIT B
1/8" = 1'-0"




1 E 201B STAIR 1 WEST ELEVATION
1/8" = 1'-0"

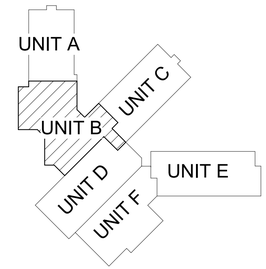



2 E 201B STAIR 1 SOUTH ELEVATION
1/8" = 1'-0"

**KEYED NOTES - ELECTRICAL - LIGHTING**

1 COORDINATE ALL LIGHTING WITH DUCT WORK, REFER TO REFLECTED CEILING PLAN AND MECHANICAL PLANS. PROVIDE UNISTRUT AS REQUIRED TO MOUNT FIXTURE BETWEEN OR UNDER PIPING AND DUCTWORK. ADJUST SPACING AND MOUNTING HEIGHT AS REQUIRED. COORDINATE WITH MECHANICAL CONTRACTOR.

**EL SOL ELEMENTARY**




**KEY PLAN**
SCALE: NO SCALE

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KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT B

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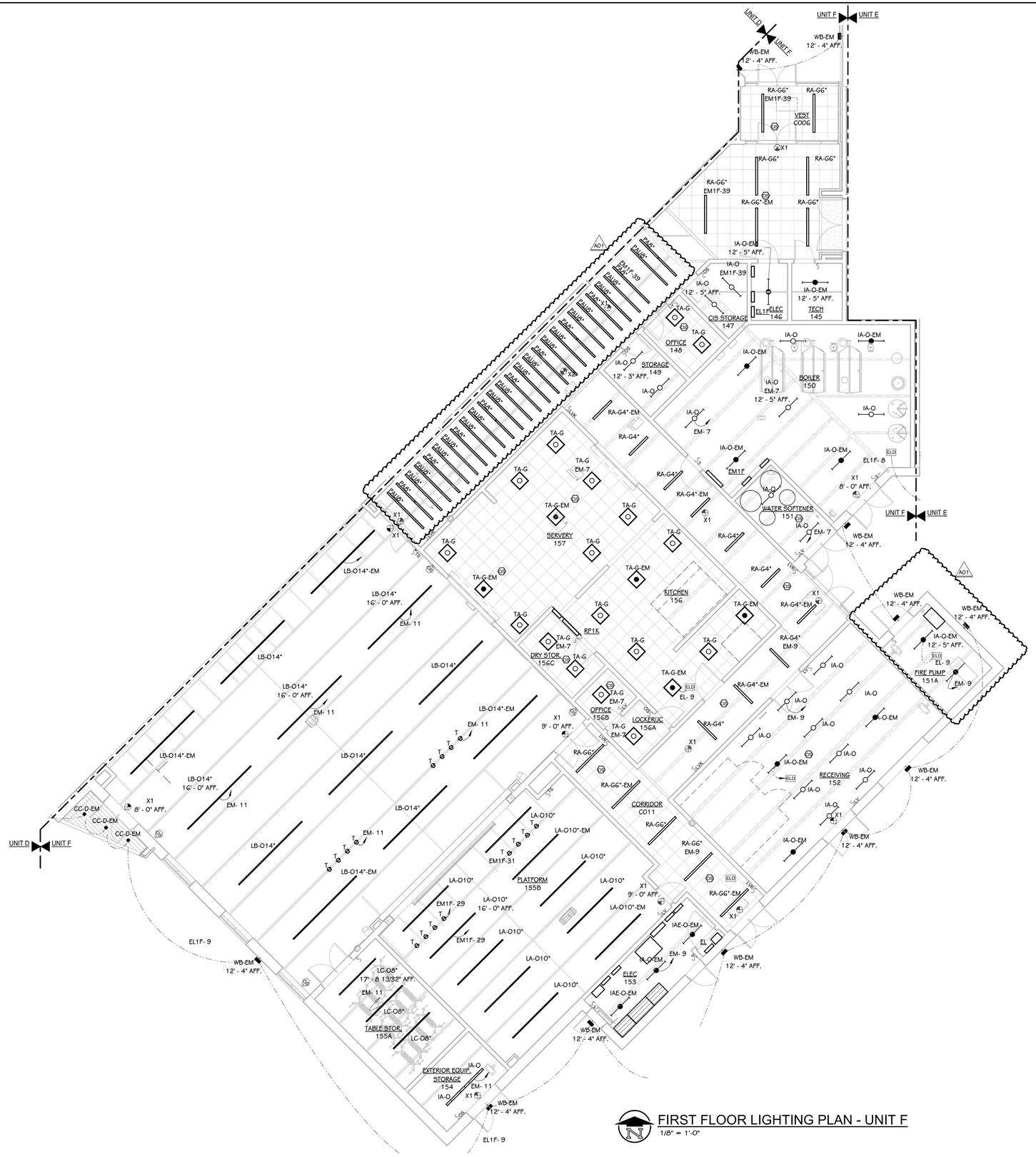


FIRST FLOOR LIGHTING PLAN - UNIT F

1/8" = 1'-0"

**KEYED NOTES - ELECTRICAL - LIGHTING**

1 COORDINATE ALL LIGHTING WITH DUCT WORK, REFER TO REFLECTED CEILING PLAN AND MECHANICAL PLANS. PROVIDE UNISTRUT AS REQUIRED TO MOUNT FIXTURE BETWEEN OR UNDER PIPING AND DUCTWORK. ADJUST SPACING AND MOUNTING HEIGHT AS REQUIRED. COORDINATE WITH MECHANICAL CONTRACTOR.

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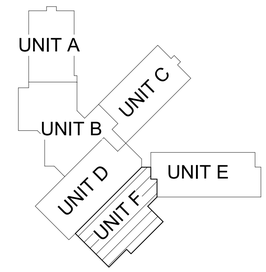


KEY PLAN

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KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
E 201F

23-622.000

| PANEL METER SCHEDULE | | |
|---|---|---|
| SYMBOL | APPLICATION | BASIS OF DESIGN |
| (M) | DISTRIBUTION PANEL | SHARK 250, EQUIPMENT MOUNTED |
| METER | BRANCH PANEL, ALL LIGHTING PANELS | SHARK 100, EQUIPMENT MOUNTED |
| MCM | MULTI CHANNEL METER WITH CTS | PACKETPOWER (ALL BREAKERS WITH 25% SPARE CT CAPACITY) |
| CT | INDIVIDUAL BREAKER CTs | PACKETPOWER |
| - - - - | CATEGORY CABLING OR RS485 PROVIDE MODBUS BRIDGES AS REQUIRED | |

RECEPTACLES LOADS = BUILDING LOAD - HVAC - LIGHTING

METERING AND SUB-METERING DEVICES SHOWN ARE NOT INTENDED TO REPRESENT A COMPLETE ENGINEERED DESIGN. DEVICES SHOWN ARE INDICATED TO ILLUSTRATE GENERAL DESIGN INTENT TO ASSIST THE CONTRACTOR IN SCOPING, PRICING, AND COORDINATION WITH OTHER SYSTEMS. THE METERING EQUIPMENT SUPPLIER SHALL BE RESPONSIBLE TO PROVIDE ALL NECESSARY DEVICES, ACCESSORIES, PROGRAMMING, AND COMMISSIONING REQUIRED FOR A COMPLETE SYSTEM. PROVIDE ADDITIONAL COMPONENTS NECESSARY EVEN IF THOSE DEVICES ARE NOT INDICATED IN THESE DOCUMENTS. REFER TO TECHNOLOGY SPECIFICATIONS FOR CABLE COLORING AND LABELING REQUIREMENTS.

SYSTEM REQUIREMENTS.
1. 15 MINUTE DEMAND INTERVAL RECORDING FOR ALL UTILITIES AND SUB METERING INDICATED.
2. SUMMATION OF METERED EQUIPMENT INTO 3 CATEGORIES: HVAC, LIGHTING, AND RECEPTACLES.
3. STORAGE FOR ALL METERING AND SUBMETERING DATA COLLECTED FOR A MINIMUM OF 3 YEARS.
4. REMOTE ACCESS OF METERING DATA.

## PANEL LABEL NOMENCLATURE:

| | | | |
|---|---|---|---|
| MAIN DISTRIBUTION PANEL | MDP | EMDP | EMERGENCY MAIN DISTRIBUTION PANEL |
| DISTRIBUTION PANEL | D | ED | EMERGENCY DISTRIBUTION PANEL |
| LIGHTING PANEL | L | EL | EMERGENCY LIGHTING PANEL (LIFE SAFETY) |
| SECONDARY DISTRIBUTION PANEL | S | ES | EMERGENCY SECONDARY DISTRIBUTION PANEL |
| RECEPTACLE BRANCH PANEL | R | ER | EMERGENCY RECEPTACLE BRANCH PANEL |

ER1A-##
- ## - CIRCUIT BREAKER NUMBER
- A - SEQUENCE OR AREA
- 1 - FLOOR LEVEL (OMITTED IF SINGLE)
- R - PANEL TYPE (SEE ABOVE)
- E - EMERGENCY

## TRANSFORMER/ATS LABEL NOMENCLATURE:

TX-R1A
- NAME OF PANEL SERVED FROM SECONDARY
- TX - TRANSFORMER PREFIX, ATS - AUTO TRANSFER SWITCH

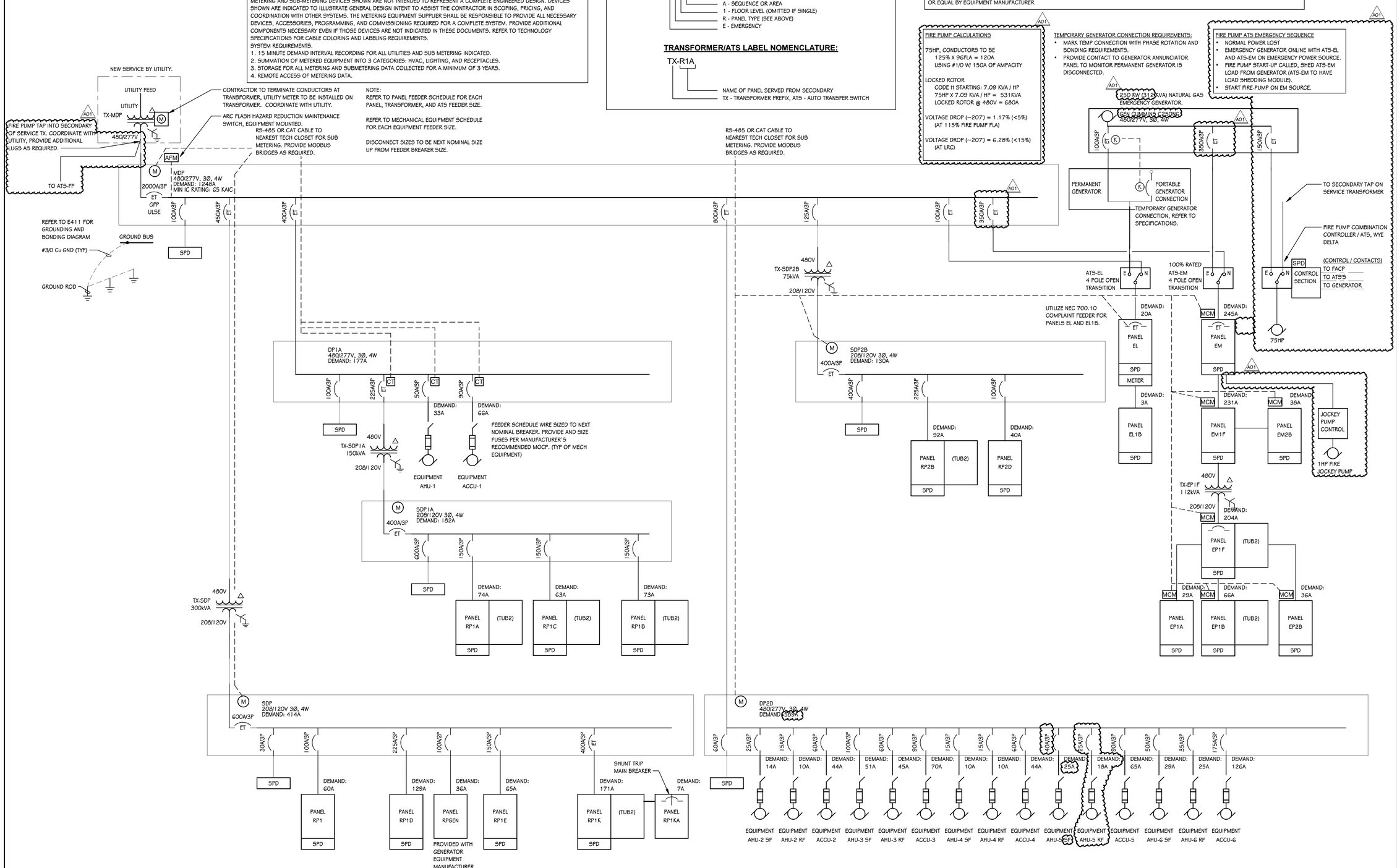
NOTE:
REFER TO PANEL FEEDER SCHEDULE FOR EACH PANEL, TRANSFORMER, AND ATS FEEDER SIZE.

REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR EACH EQUIPMENT FEEDER SIZE.

DISCONNECT SIZES TO BE NEXT NOMINAL SIZE UP FROM FEEDER BREAKER SIZE.

| SERVICE ENTRANCE SPD SCHEDULE | | | | | |
|---|---|---|---|---|---|
| VOLTAGE | SWITCHBOARD AMPS | RAYVOSS SPD MODEL | SURGE RATING | PROTECTION MODES | MAX WIRE / MIN BREAKER |
| 480/277V Wye | Up to 2000A | 277-3Y-N3-7-04-C-H | 140kA/Mode | L-N, L-G, N-G | 4/0 / 100A |
| OR EQUAL BY EQUIPMENT MANUFACTURER | | | | | |

| BRANCH PANEL SPD SCHEDULE | | | | | |
|---|---|---|---|---|---|
| VOLTAGE | PANEL AMPS | RSE2 SPD MODEL | SURGE RATING | PROTECTION MODES | BREAKER AMPS |
| 208/120V Wye | Up to 400A | RSE-2-120-3Y-A-05-E-F-S | 50kA/Mode | L-N, L-G, N-G | 30A |
| 480/277V Wye | Up to 400A | RSE-2-277-3Y-A-05-E-F-S | 50kA/Mode | L-N, L-G, N-G | 30A |
| 480/277V Wye | 400A-2000A | RSE-2-277-3Y-A-10-E-F-S | 100kA/Mode | L-N, L-G, N-G | 60A |
| OR EQUAL BY EQUIPMENT MANUFACTURER | | | | | |




ELECTRICAL ONE-LINE DIAGRAM
SCALE: NONE

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| | |
|---|---|
| ADDENDUM 01 | 05-08-2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ELECTRICAL ONE-LINE DIAGRAM

DATE
APRIL 24, 2026

SHEET NUMBER
E 401
23-622.000

## ELECTRICAL TRANSFORMER SCHEDULE

| TRANSFORMER NAME | FED FROM | SIZE | PRIMARY VOLTAGE (V) | BREAKER / POLES | TRANSFORMER G.E.C. | PRIMARY FEEDER # OF SET(S) | PRIMARY FEEDER WIRE | PRIMARY FEEDER GROUND | PRIMARY FEEDER EMT | SECONDARY FEEDER LOAD NAME | SECONDARY FEEDER SECONDARY OCP | SECONDARY FEEDER # OF SETS | SECONDARY FEEDER WIRE | SECONDARY FEEDER GROUND | SECONDARY FEEDER EMT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TX-SDP2B | MDP | 75 kVA | 480 V | 125 A / 3 | 1 #2 | 1 SET | 3 #1/0 | #6 GND. | 2" | SDP2B | 400 A | 1 SETS | 4 #600 KCMIL | #1/0 G.E.C. | 4" |
| TX-SDP | MDP | 300 kVA | 480 V | 450 A / 3 | 1 #3/0 | 2 SETS | 3 #4/0 | #2 GND. | 2 1/2" | SDP | 600 A | 2 SETS | 4 #350 KCMIL | #2 G.E.C. | 3" |
| TX-EP1F | EM1F | 112.5 kVA | 480 V | 200 A / 3 | 1 #1/0 | 1 SET | 3 #3/0 | #6 GND. | 2" | EP1F | 400 A | 1 SET | 4 #600 KCMIL | #1/0 G.E.C. | 4" |
| TX-SDP1A | DP1A | 150 kVA | 480 V | 225 A / 3 | 1 #2/0 | 1 SET | 3 #350 KCMIL | #4 GND. | 3" | SDP1A | 400 A | 1 SET | 4 #600 KCMIL | #1/0 G.E.C. | 4" |

## ELECTRICAL PANEL FEEDER SCHEDULE

| DESCRIPTION | FED FROM | CURRENT (FLA) | DEMAND (FLA) | BREAKER / POLES | FEEDER # OF SETS | FEEDER WIRE | FEEDER GROUND | FEEDER EMT | ACCUM VOLT DROP % |
|---|---|---|---|---|---|---|---|---|---|
| 480 V | | | | | | | | | |
| ATS-EL | MDP | 20 A | 20 A | 100 A / 3 | 1 SET | 4 #1 | #8 GND. | 2" | 0.5% |
| ATS-EL | GENERATOR | 20 A | 20 A | 100 A / 3 | 1 SET | 4 #1 | #8 GND. | 2" | 0.5% |
| ATS-EM | MDP | 267 A | 245 A | 350 A / 3 | 1 SET | 4 #500 KCMIL | #3 GND. | 3 1/2" | 0.6% |
| ATS-EM | GENERATOR | 267 A | 245 A | 350 A / 3 | 1 SET | 4 #500 KCMIL | #3 GND. | 3 1/2" | 0.6% |
| ATS-FP | TX-MDP | 120 A | 120 A | TAP SECONDARY OF TX-MDP | 1 SET | 4 #1/0 | #6 GND. | 2" | 1.1% |
| ATS-FP | GENERATOR | 120 A | 120 A | 150 A / 3 | 1 SET | 4 #1/0 | #6 GND. | 2" | 1.1% |
| DP1A | MDP | 223 A | 177 A | 400 A / 3 | 1 SET | 4 #600 KCMIL | #3 GND. | 4" | 1.8% |
| DP2D | MDP | 589 A | 609 A | 800 A / 3 | 2 SETS | 4 #600 KCMIL | #1/0 GND. | 4" | 1.2% |
| EL | ATS-EL | 20 A | 20 A | 100 A / 3 | 1 SET | 4 #1 | #8 GND. | 2" | 0.5% |
| EL1B | EL | 3 A | 3 A | 30 A / 3 | 1 SET | 4 #10 | #10 GND. | 3/4" | 0.9% |
| EL1F | EL | 15 A | 15 A | 30 A / 3 | 1 SET | 4 #10 | #10 GND. | 3/4" | 1.3% |
| EM | ATS-EM | 267 A | 245 A | 250 A / 3 | 1 SET | 4 #250 KCMIL | #4 GND. | 3" | 0.7% |
| EM1F | EM | 253 A | 231 A | 250 A / 3 | 1 SET | 4 #250 KCMIL | #4 GND. | 3" | 1.4% |
| EM2B | EM1F | 39 A | 38 A | 100 A / 3 | 1 SET | 4 #1 | #8 GND. | 2" | 1.9% |
| MDP | TX-MDP | 1404 A | 1269 A | 2000 A / 3 | 5 SETS | 4 #600 KCMIL | #3/0 G.E.C. | 4" | 0.4% |
| 208 V | | | | | | | | | |
| EP1A | EP1F | 29 A | 29 A | 60 A / 3 | 1 SET | 4 #4 | #10 GND. | 1 1/4" | 3.0% |
| EP1B | EP1F | 83 A | 66 A | 125 A / 3 | 1 SET | 4 #1/0 | #6 GND. | 2" | 1.8% |
| EP1F | TX-EP1F | 256 A | 204 A | 400 A / 3 | 1 SET | 4 #600 KCMIL | #1/0 G.E.C. | 4" | 0.3% |
| EP2B | EP1F | 36 A | 36 A | 100 A / 3 | 1 SET | 4 #1 | #8 GND. | 2" | 1.4% |
| RP1 | SDP | 60 A | 60 A | 100 A / 3 | 1 SET | 3 #1 | #8 GND. | 1 1/2" | 0.6% |
| RP1A | SDP1A | 97 A | 74 A | 150 A / 3 | 1 SET | 4 #1/0 | #6 GND. | 2" | 0.6% |
| RP1B | SDP1A | 103 A | 73 A | 150 A / 3 | 1 SET | 4 #1/0 | #6 GND. | 2" | 1.9% |
| RP1C | SDP1A | 89 A | 63 A | 150 A / 3 | 1 SET | 4 #1/0 | #6 GND. | 2" | 1.7% |
| RP1D | SDP | 138 A | 129 A | 225 A / 3 | 1 SET | 4 #4/0 | #4 GND. | 2 1/2" | 2.0% |
| RP1E | SDP | 96 A | 65 A | 150 A / 3 | 1 SET | 4 #1/0 | #6 GND. | 2" | 1.7% |
| RP1K | SDP | 217 A | 171 A | 400 A / 3 | 1 SET | 4 #600 KCMIL | #3 GND. | 4" | 1.1% |
| RP1KA | RP1K | 9 A | 7 A | 60 A / 3 | 1 SET | 4 #4 | #10 GND. | 1 1/4" | 1.2% |
| RP2B | SDP2B | 132 A | 92 A | 225 A / 3 | 1 SET | 4 #4/0 | #4 GND. | 2 1/2" | 0.4% |
| RP2D | SDP2B | 40 A | 40 A | 100 A / 3 | 1 SET | 4 #4/0 | #4 GND. | 2 1/2" | 0.4% |
| SDP | TX-SDP | 533 A | 414 A | 600 A / 3 | 2 SETS | 4 #350 KCMIL | #3/0 G.E.C. | 3" | 0.5% |
| SDP1A | TX-SDP1A | 288 A | 182 A | 400 A / 3 | 1 SET | 4 #600 KCMIL | #1/0 G.E.C. | 4" | 0.3% |
| SDP2B | TX-SDP2B | 172 A | 130 A | 400 A / 3 | 1 SET | 4 #600 KCMIL | #1/0 G.E.C. | 4" | 0.2% |
| 208 V | | | | | | | | | |
| RPGEN | SDP | 36 A | 36 A | 100 A / 2 | 1 SET | 3 #1 | #8 GND. | 1 1/2" | 1.1% |

NOTES:

GENERAL: ELECTRICAL PANEL FEEDER SCHEDULE GENERAL NOTES:

1 CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS (UNLESS OTHERWISE INDICATED WITH AN "AL" FOR ALUMINUM). UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

2 G.E.C. = GROUNDING ELECTRODE CONDUCTOR FOR SEPARATELY DERIVED SYSTEM (PER SET, USE EQUIVALENT CMIL AND GEC FROM 250.66)

3 GND. = EQUIPMENT GROUNDING CONDUCTOR (E.G.C.)

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ADDENDUM 01 05-08-2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ELECTRICAL CONNECTION SCHEDULES

DATE
APRIL 24, 2026

SHEET NUMBER
E 402
23-622.000

## ELECTRICAL POWER FEEDER SCHEDULE

| DESCRIPTION | FED FROM | DISCONNECT MEANS | CURRENT (FLA) | DEMAND (FLA) | BREAKER/POLES | FEEDER # OF SETS | FEEDER WIRE | FEEDER GROUND | FEEDER EMT | ACCUM VOLT DROP % | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 480 V | | | | | | | | | | | |
| POWER - ELEV-1 | EM2B | FDS W/ AUX CONACTS | 27 A | 27 A | 60 A/3 | 1 SET | 4 #4 | #10 GND. | 1 1/4" | 2.0% | 1 |
| POWER - FIRE SHUTTER | EL1F | NFDS | 2 A | 2 A | 15 A/3 | 1 SET | 4 #12 | #12 GND. | 3/4" | 1.4% | |
| 208 V | | | | | | | | | | | |
| POWER - DOCK LIFT | RP1 | NFDS | 18 A | 18 A | 35 A/3 | 1 SET | 3 #8 | #10 GND. | 3/4" | 1.4% | |
| POWER - OVERHEAD DOOR | RP1 | NFDS | 5 A | 5 A | 15 A/3 | 1 SET | 3 #12 | #12 GND. | 3/4" | 1.1% | |
| POWER - OVERHEAD DOOR, SERVERY | RP1K | NFDS | 5 A | 5 A | 15 A/3 | 1 SET | 3 #12 | #12 GND. | 3/4" | 1.3% | |
| POWER - OVERHEAD DOOR, SERVERY | RP1K | NFDS | 5 A | 5 A | 15 A/3 | 1 SET | 3 #12 | #12 GND. | 3/4" | 1.5% | |

NOTES:

GENERAL: CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS UNLESS OTHERWISE NOTED. UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

1 PROVIDE DRY CONTACT FROM GENERATOR ATS TO ELEVATOR CONTROLLER TO INDICATE GENERATOR RUNNING ON EMERGENCY POWER.

NOTES:

GENERAL: ELECTRICAL PANEL FEEDER SCHEDULE GENERAL NOTES:

1 CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS (UNLESS OTHERWISE INDICATED WITH AN "AL" FOR ALUMINUM). UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

2 G.E.C. = GROUNDING ELECTRODE CONDUCTOR FOR SEPARATELY DERIVED SYSTEM (PER SET, USE EQUIVALENT CMIL AND GEC FROM 250.66)

3 GND. = EQUIPMENT GROUNDING CONDUCTOR (E.G.C.)

## ELECTRICAL HVAC FEEDER SCHEDULE

| DESCRIPTION | FED FROM | DISCONNECT MEANS | CURRENT (FLA) | DEMAND (FLA) | BREAKER/POLES | FEEDER # OF SETS | FEEDER WIRE | FEEDER GROUND | FEEDER EMT | ACCUM VOLT DROP % |
|---|---|---|---|---|---|---|---|---|---|---|
| 480 V | | | | | | | | | | |
| HVAC - ACCU-1 | DP1A | FACTORY NEMA 3R NFDS | 66 A | 66 A | 90 A/3 | 1 SET | 3 #1 | #8 GND. | 1 1/2" | 2.1% |
| HVAC - ACCU-2 | DP2D | FACTORY NEMA 3R NFDS | 44 A | 44 A | 60 A/3 | 1 SET | 3 #4 | #10 GND. | 1 1/4" | 1.5% |
| HVAC - ACCU-3 | DP2D | FACTORY NEMA 3R NFDS | 70 A | 70 A | 90 A/3 | 1 SET | 3 #1/0 | #8 GND. | 2" | 1.4% |
| HVAC - ACCU-4 | DP2D | FACTORY NEMA 3R NFDS | 44 A | 44 A | 60 A/3 | 1 SET | 3 #4 | #10 GND. | 1 1/4" | 1.6% |
| HVAC - ACCU-5 | DP2D | FACTORY NEMA 3R NFDS | 65 A | 65 A | 90 A/3 | 1 SET | 3 #1/0 | #8 GND. | 2" | 1.4% |
| HVAC - ACCU-6 | DP2D | FACTORY NFDS | 126 A | 126 A | 175 A/3 | 1 SET | 3 #3/0 | #6 GND. | 2" | 1.6% |
| HVAC - AHU-1 | DP1A | FACTORY NFDS | 33 A | 33 A | 50 A/3 | 1 SET | 3 #4 | #10 GND. | 1 1/4" | 2.0% |
| HVAC - AHU-2 RF | DP2D | FACTORY NFDS | 10 A | 10 A | 15 A/3 | 1 SET | 3 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - AHU-2 SF | DP2D | FACTORY NFDS | 14 A | 14 A | 25 A/3 | 1 SET | 3 #8 | #10 GND. | 3/4" | 1.6% |
| HVAC - AHU-3 RF | DP2D | FACTORY NFDS | 45 A | 45 A | 60 A/3 | 1 SET | 3 #4 | #10 GND. | 1 1/4" | 1.7% |
| HVAC - AHU-3 SF | DP2D | FACTORY NFDS | 51 A | 51 A | 100 A/3 | 1 SET | 3 #1/0 | #8 GND. | 2" | 1.5% |
| HVAC - AHU-4 RF | DP2D | FACTORY NFDS | 10 A | 10 A | 15 A/3 | 1 SET | 3 #12 | #12 GND. | 3/4" | 1.7% |
| HVAC - AHU-4 SF | DP2D | FACTORY NFDS | 10 A | 10 A | 15 A/3 | 1 SET | 3 #10 | #10 GND. | 3/4" | 1.6% |
| HVAC - AHU-5 RF | DP2D | FACTORY NFDS | 19 A | 19 A | 25 A/3 | 1 SET | 3 #10 | #10 GND. | 3/4" | 1.6% |
| HVAC - AHU-5 SF | DP2D | FACTORY NFDS | 26 A | 26 A | 40 A/3 | 1 SET | 3 #8 | #10 GND. | 3/4" | 1.5% |
| HVAC - AHU-6 RF | DP2D | FACTORY NFDS | 25 A | 25 A | 35 A/3 | 1 SET | 3 #8 | #10 GND. | 3/4" | 1.6% |
| HVAC - AHU-6 SF | DP2D | FACTORY NFDS | 29 A | 29 A | 50 A/3 | 1 SET | 3 #6 | #10 GND. | 1" | 1.5% |
| HVAC - FP-1 | ATS-FP | NFDS W/ AUX CONTACTS | 120 A | 120 A | 150 A/3 | 1 SET | 3 #1/0 | #6 GND. | 2" | 1.3% |
| HVAC - JP-1 | EM | NFDS W/ AUX CONTACTS | 2 A | 2 A | 15 A/3 | 1 SET | 3 #12 | #12 GND. | 3/4" | 0.9% |
| HVAC - P-1 | EM1F | VFD | 21 A | 21 A | 40 A/3 | 1 SET | 3 #6 | #10 GND. | 1" | 1.6% |
| HVAC - P-2 | EM1F | VFD | 21 A | 21 A | 40 A/3 | 1 SET | 3 #6 | #10 GND. | 1" | 1.6% |
| HVAC - P-10 | EM1F | NFDS | 3 A | 3 A | 15 A/3 | 1 SET | 3 #10 | #10 GND. | 3/4" | 1.5% |
| HVAC - P-11 | EM1F | NFDS | 3 A | 3 A | 15 A/3 | 1 SET | 3 #10 | #10 GND. | 3/4" | 1.5% |
| HVAC - P-12 | EM1F | NFDS | 3 A | 3 A | 15 A/3 | 1 SET | 3 #10 | #10 GND. | 3/4" | 1.5% |
| HVAC - P-14 | EM1F | VFD | 11 A | 11 A | 20 A/3 | 1 SET | 3 #12 | #12 GND. | 3/4" | 1.6% |
| 208 V | | | | | | | | | | |
| HVAC - 301B - MAU | RP1K | NEMA 3R FDS | 38 A | 38 A | 50 A/3 | 1 SET | 4 #6 | #10 GND. | 1" | 2.1% |
| HVAC - ACCU-7 | EP2B | NEMA 3R FDS | 7 A | 7 A | 40 A/3 | 1 SET | 4 #8 | #10 GND. | 1" | 2.1% |
| HVAC - B-1 | EP1F | FDS | 6 A | 6 A | 15 A/3 | 1 SET | 4 #12 | #12 GND. | 3/4" | 1.0% |
| HVAC - B-2 | EP1F | FDS | 6 A | 6 A | 15 A/3 | 1 SET | 4 #12 | #12 GND. | 3/4" | 1.0% |
| HVAC - B-3 | EP1F | FDS | 6 A | 6 A | 15 A/3 | 1 SET | 4 #12 | #12 GND. | 3/4" | 1.1% |
| HVAC - MOTORIZED BLEACHERS | RP1D | NFDS | 18 A | 18 A | 35 A/3 | 1 SET | 4 #8 | #10 GND. | 1" | 3.1% |
| 208 V | | | | | | | | | | |
| HVAC - ACCU-3 | EP1F | NEMA 3R FDS | 10 A | 10 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 0.8% |
| HVAC - ACCU-8 | RP1 | NEMA 3R FDS | 12 A | 12 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 1.0% |
| HVAC - ACCU-9 | EP2B | NEMA 3R FDS | 12 A | 12 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 1.9% |
| HVAC - ACCU-10 | EP2B | NEMA 3R FDSNEMA 3R FDS | 12 A | 12 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 2.0% |
| HVAC - ACCU-11 | EP1A | NEMA 3R FDS | 12 A | 12 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 3.7% |
| HVAC - ACCU-12 | RP2B | NEMA 3R FDS | 12 A | 12 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 0.9% |
| HVAC - ACCU-13 | RP2B | NEMA 3R FDS | 12 A | 12 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 1.6% |
| HVAC - ACCU-14 | RP1A | NEMA 3R FDS | 12 A | 12 A | 40 A/2 | 1 SET | 2 #8 | #10 GND. | 3/4" | 1.2% |
| HVAC - P-4 | RP1A | STARTER / DISC | 8 A | 8 A | 15 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.5% |
| HVAC - P-5 | RP2D | STARTER / DISC | 8 A | 8 A | 15 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.4% |
| HVAC - P-6 | RP2D | STARTER / DISC | 11 A | 11 A | 20 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.7% |
| HVAC - P-7 | RP2D | STARTER / DISC | 8 A | 8 A | 15 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.5% |
| HVAC - P-8 | RP2D | STARTER / DISC | 9 A | 9 A | 15 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.2% |
| HVAC - P-9 | RP2D | STARTER / DISC | 9 A | 9 A | 15 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.0% |
| HVAC - P-13 | EP1F | STARTER / DISC | 11 A | 11 A | 15 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - SP-1 | EP1B | STARTER / DISC | 8 A | 8 A | 15 A/2 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.8% |
| 120 V | | | | | | | | | | |
| HVAC - AHU-1 LTS/RECEPTS | RP1A | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.8% |
| HVAC - AHU-2 LTS/RECEPTS | RP2D | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.7% |
| HVAC - AHU-3 LTS/RECEPTS | RP2D | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.3% |
| HVAC - AHU-4 LTS/RECEPTS | RP2D | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.8% |
| HVAC - AHU-5 LTS/RECEPTS | RP2D | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - AHU-6 LTS/RECEPTS | RP2D | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - CH-2 | RP1C | FACTORY | 7 A | 7 A | 20 A/1 | 1 SET | 2 #10 | #10 GND. | 3/4" | 4.5% |
| HVAC - CH-3 | RP1A | FACTORY | 5 A | 5 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.0% |
| HVAC - CH-5 (UNDER STAIR) | RP1C | FACTORY | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 3.4% |
| HVAC - CH-6 | RP1C | FACTORY | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 4.3% |
| HVAC - CP-1 | EP1A | MMS REFER TO DETAIL | 1 A | 1 A | 20 A/1 | 1 SET | 2 #10 | #10 GND. | 3/4" | 5.3% |
| HVAC - CP-1 | EP1B | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 3.6% |
| HVAC - CP-1 | EP1F | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.2% |
| HVAC - CP-1 | EP2B | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.7% |
| HVAC - EF-1 | RP1E | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 3.9% |
| HVAC - EF-2 | RP1E | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 4.4% |
| HVAC - EF-3 | RP1E | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 3.8% |
| HVAC - EF-4 | RP1E | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 4.3% |
| HVAC - EF-5 | RP2B | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.5% |
| HVAC - EF-6 | RP2B | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.5% |
| HVAC - EF-7 | RP1A | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.7% |
| HVAC - EF-8 | RP2B | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.1% |
| HVAC - EF-9 | RP2D | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.3% |
| HVAC - EF-10 | RP2D | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.2% |
| HVAC - EF-11 | RP2B | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.0% |
| HVAC - EF-12 | RP2B | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - EF-13 | RP2D | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - EF-14 | RP2D | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.2% |
| HVAC - EF-15 | RP1A | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - EF-16 | RP1A | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.7% |
| HVAC - EF-17 | RP2D | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.3% |
| HVAC - EF-18 | RP1A | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.7% |
| HVAC - EF-19 | RP2D | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.7% |
| HVAC - EF-20 | RP1E | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 3.4% |
| HVAC - EF-21 | EP1F | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.0% |
| HVAC - EF-ELEV | RP2B | MMS REFER TO DETAIL | 6 A | 6 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.6% |
| HVAC - KILN EF | RP1B | MMS REFER TO DETAIL | 8 A | 8 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 7.4% |
| HVAC - P-3 | EP1F | MMS REFER TO DETAIL | 10 A | 10 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.6% |
| HVAC - SP-1 CONTROLER | EP1B | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 4.4% |
| HVAC - UH-1, UH-2 | EP1F | MMS REFER TO DETAIL | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 0.9% |
| HVAC - UH-3, MECH 215 | EP2B | MMS REFER TO DETAIL | 1 A | 1 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 2.8% |
| HVAC - UH-4 (MECH ROOM ABOVE) | EP1A | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 5.8% |
| HVAC - UH-5 | EP1 | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.9% |
| HVAC - UH-6 | EP1F | MMS REFER TO DETAIL | 2 A | 2 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.0% |
| HVAC - WH-1 | EP1F | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.5% |
| HVAC - WH-2 | EP1F | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.4% |
| HVAC - WS-1 | EP1F | NFDS | 4 A | 4 A | 20 A/1 | 1 SET | 2 #12 | #12 GND. | 3/4" | 1.1% |

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ADDENDUM 01 05-08-2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

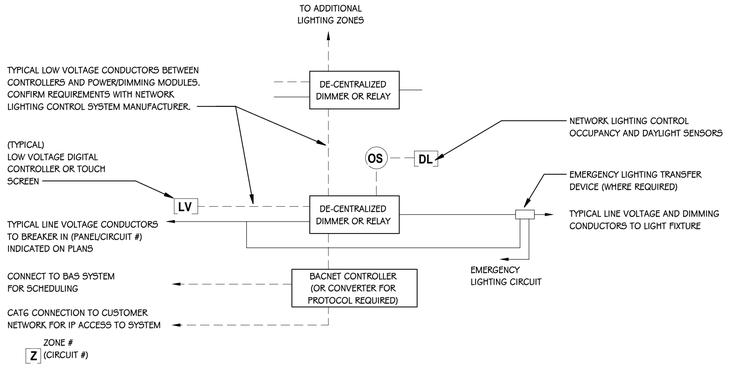
KALAMAZOO, MICHIGAN

SHEET TITLE
HVAC FEEDER SCHEDULE

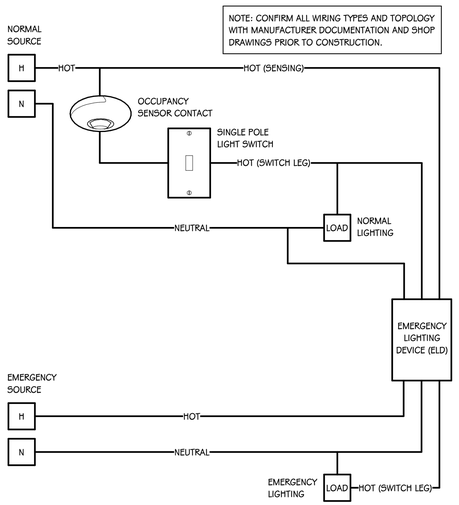
DATE
APRIL 24, 2026

SHEET NUMBER
E 403
23-622.000

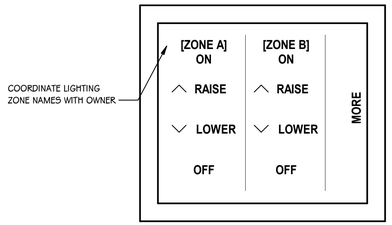
NOTE:
REFER TO LIGHTING CONTROL ZONE SCHEDULES FOR ZONE CONTROL QUANTITY. PROVIDE LOCALIZED CONTROLLERS IN ELECTRICAL ROOMS AND CEILING SPACES.



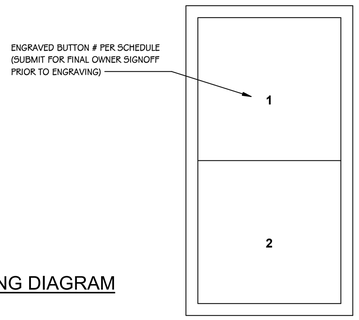

## LOW VOLTAGE NETWORK LIGHTING CONTROL WIRING DIAGRAM
SCALE: NONE




## SWITCHED EMERGENCY LIGHT FIXTURE "ELD" WIRING DIAGRAM
SCALE: NONE




## TOUCH SCREEN LIGHTING CONTROLLER
SCALE: NONE

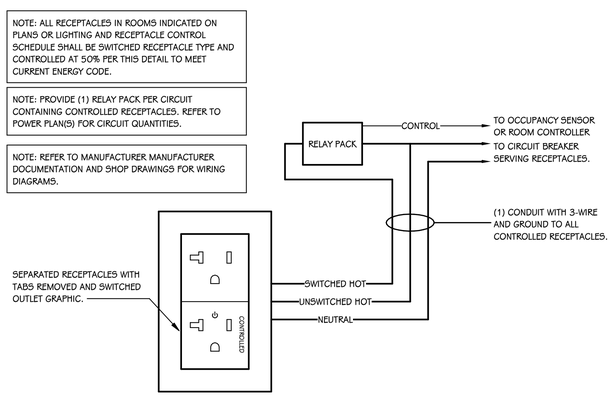



## CONTROL LV-2A
SCALE: NONE

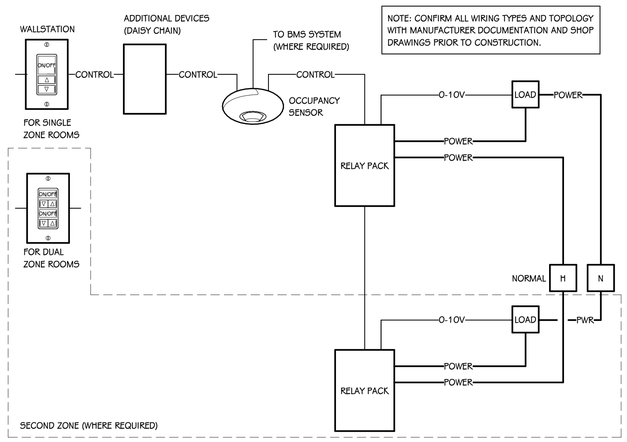
NOTE: ALL RECEPTACLES IN ROOMS INDICATED ON PLANS OR LIGHTING AND RECEPTACLE CONTROL SCHEDULE SHALL BE SWITCHED RECEPTACLE TYPE AND CONTROLLED AT 50% PER THIS DETAIL TO MEET CURRENT ENERGY CODE.

NOTE: PROVIDE (1) RELAY PACK PER CIRCUIT CONTAINING CONTROLLED RECEPTACLES. REFER TO POWER PLAN(S) FOR CIRCUIT QUANTITIES.

NOTE: REFER TO MANUFACTURER MANUFACTURER DOCUMENTATION AND SHOP DRAWINGS FOR WIRING DIAGRAMS.




## CONTROLLED RECEPTACLE WRING DIAGRAM
SCALE: NONE




## OCCUPANCY SENSOR WIRING DIAGRAM
SCALE: NONE

## LIGHT FIXTURE SCHEDULE

| TYPE | SERIES | DESCRIPTION | MOUNTING | CEILING TYPE | DRIVER | WATTS | MANUFACTURER | NOTES |
|---|---|---|---|---|---|---|---|---|
| CA | CA | RECESSED DOWNLIGHT | RECESSED | ACOUSTIC GRID | 0-10V | 15 VA | GOTHAM: IVOG-D-30LM-40K-90CRI-MWD-MIN1-MVOLT-ZT-NCH-P-AR-L55-F | 1, 2, 3, 4 |
| CB | CB | RECESSED DOWNLIGHT | RECESSED | ACOUSTIC GRID | 0-10V | 15 VA | GOTHAM: IVOG-D-30LM-40K-90CRI-MWD-MIN1-MVOLT-ZT-NCH-P-AR-L55-F | 1, 2, 3, 4 |
| CC-D | CC-D | RECESSED DOWNLIGHT | RECESSED | GYP DRYWALL | 0-10V | 15 VA | GOTHAM: IVOG-D-30LM-40K-90CRI-MWD-MIN1-MVOLT-ZT-NCH-P-AR-L55-F | 1, 2, 3, 4 |
| CD-M | CD-M | RECESSED DOWNLIGHT | RECESSED | METAL SYSTEM | 0-10V | 15 VA | GOTHAM: IVOG-D-30LM-40K-90CRI-MWD-MIN1-MVOLT-ZT-NCH-WL-P-AR-L55-F | 1, 2, 3, 4 |
| EM* | EM | RECESSED LINEAR, 4' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 28 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C-FE-SW | 1, 2, 3, 4 |
| HA | HA | HIGH BAY PENDANT | PENDANT | METAL SYSTEM | 0-10V | 285 VA | HOLOPHANE #HOL01-50000LM-MDFR-MVOLT-40K-80CRI-PNQ (COLOR) | 1, 2, 3, 4 |
| IA-O | IA-O | INDUSTRIAL PENDANT LINEAR, 4' - 0" LONG | PENDANT | METAL SYSTEM | 0-10V | 41 VA | LITHONIA: #CLX-LED-LINEAR-L48-5000LM-MEF-FDL-MVOLT-GZ10-40K-80CRI | 1, 2, 3, 4 |
| IAE-O | IAE-O | INDUSTRIAL PENDANT LINEAR, 4' - 0" LONG | PENDANT | METAL SYSTEM | 0-10V | 41 VA | LITHONIA: #CLX-LED-LINEAR-L48-5000LM-MEF-FDL-MVOLT-GZ10-40K-80CRI | 1, 2, 3, 4 |
| LA-O10* | LA-O | PENDANT LINEAR | PENDANT | METAL SYSTEM | 0-10V | 71 VA | FINELITE: #HP4-P-D-XX-H-840-F-9GLG-277-SC-FC-10%-FA5O-C4-FE-SW | 1, 2, 3, 4 |
| LB-O14* | LB-O | PENDANT LINEAR | PENDANT | METAL SYSTEM | 0-10V | 99 VA | FINELITE: #HP4-P-D-XX-H-840-F-9GLG-277-SC-FC-10%-FA5O-C4-FE-SW | 1, 2, 3, 4 |
| LC-O8* | LC-O | PENDANT LINEAR | PENDANT | METAL SYSTEM | 0-10V | 57 VA | FINELITE: #HP4-P-D-XX-H-840-F-9GLG-277-SC-FC-10%-FA5O-C4-FE-SW | 1, 2, 3, 4 |
| PA8* | PA | PENDANT LINEAR | PENDANT | METAL SYSTEM | 0-10V | 0 VA | FOCAL POINT #5EAM 2-AU5M25-RL-8-700LF-40K-90CRI-1C-UNV-LD1-J24(COLOR)-DTS-WHCD-CHT-(LENGTH) | 1, 2, 3, 4 |
| PA10* | PA | PENDANT LINEAR, 10' - 0" LONG | PENDANT | EXPOSED DECK | 0-10V | 0 VA | FOCAL POINT #5EAM 2-AU5M25-RL-8-700LF-40K-90CRI-1C-UNV-LD1-J24(COLOR)-DTS-WHCD-CHT-(LENGTH) | 1, 2, 3, 4 |
| PA12* | PA | PENDANT LINEAR, 12' - 0" LONG | PENDANT | EXPOSED DECK | 0-10V | 0 VA | FOCAL POINT #5EAM 2-AU5M25-RL-8-700LF-40K-90CRI-1C-UNV-LD1-J24(COLOR)-DTS-WHCD-CHT-(LENGTH) | 1, 2, 3, 4 |
| PAU8* | PAU | UNLIT ACOUSTIC BAFFLE, 8' - 0" LONG | PENDANT | METAL SYSTEM | N/A | 0 VA | FOCAL POINT #5EAM 2-AU5M25-SD-8-J24(COLOR)-DTS-NH-CHT-(LENGTH) | 1, 2, 3, 4 |
| PAU10* | PAU | UNLIT ACOUSTIC BAFFLE, 10' - 0" LONG | PENDANT | EXPOSED DECK | N/A | 0 VA | FOCAL POINT #5EAM 2-AU5M25-SD-8-J24(COLOR)-DTS-NH-CHT-(LENGTH) | 1, 2, 3, 4 |
| PAU12* | PAU | UNLIT ACOUSTIC BAFFLE, 12' - 0" LONG | PENDANT | EXPOSED DECK | N/A | 0 VA | FOCAL POINT #5EAM 2-AU5M25-SD-8-J24(COLOR)-DTS-NH-CHT-(LENGTH) | 1, 2, 3, 4 |
| PB4* | PB | PENDANT LINEAR, 4' - 0" LONG | PENDANT | EXPOSED DECK | 0-10V | 30 VA | FOCAL POINT #5EAM 2-AU5M25-RL-6-700LF-40K-90CRI-1C-UNV-LD1-J24(COLOR)-DTG-WHCD-CHT-(LENGTH) | 1, 2, 3, 4 |
| PB8* | PB | PENDANT LINEAR, 8' - 0" LONG | PENDANT | EXPOSED DECK | 0-10V | 61 VA | FOCAL POINT #5EAM 2-AU5M25-RL-6-700LF-40K-90CRI-1C-UNV-LD1-J24(COLOR)-DTG-WHCD-CHT-(LENGTH) | 1, 2, 3, 4 |
| PBU2* | PBU | UNLIT ACOUSTIC BAFFLE, 2' - 0" LONG | PENDANT | EXPOSED DECK | N/A | 0 VA | FOCAL POINT #5EAM 2-AU5M25-SD-6-J24(COLOR)-DTG-NH-CHT-(LENGTH) | 1, 2, 3, 4 |
| PBU4* | PBU | UNLIT ACOUSTIC BAFFLE, 4' - 0" LONG | PENDANT | EXPOSED DECK | N/A | 0 VA | FOCAL POINT #5EAM 2-AU5M25-SD-6-J24(COLOR)-DTG-NH-CHT-(LENGTH) | 1, 2, 3, 4 |
| PBU8* | PBU | UNLIT ACOUSTIC BAFFLE, 8' - 0" LONG | PENDANT | EXPOSED DECK | N/A | 0 VA | FOCAL POINT #5EAM 2-AU5M25-SD-6-J24(COLOR)-DTG-NH-CHT-(LENGTH) | 1, 2, 3, 4 |
| PC3 | PC3 | PENDANT CYLINDER | PENDANT | EXPOSED DECK | 0-10V | 26 VA | GOTHAM: EVO4PC-40I-30-AR-L55-MWD-MVOLT-GZ1-JBX-PCAN-S3-GTD-COLOR | 1, 2, 3, 4 |
| PC4 | PC4 | PENDANT CYLINDER | PENDANT | EXPOSED DECK | 0-10V | 26 VA | GOTHAM: EVO4PC-40I-30-AR-L55-MWD-MVOLT-GZ1-JBX-PCAN-S4-GTD-COLOR | 1, 2, 3, 4 |
| PC5 | PC5 | PENDANT CYLINDER | PENDANT | EXPOSED DECK | 0-10V | 26 VA | GOTHAM: EVO4PC-40I-30-AR-L55-MWD-MVOLT-GZ1-JBX-PCAN-S5-GTD-COLOR | 1, 2, 3, 4 |
| RA-D4* | RA-D | RECESSED LINEAR, 4' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 28 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D6* | RA-D | RECESSED LINEAR, 6' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 42 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D8* | RA-D | RECESSED LINEAR, 8' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 56 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D10* | RA-D | RECESSED LINEAR, 10' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 70 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D12* | RA-D | RECESSED LINEAR, 12' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 84 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D16* | RA-D | RECESSED LINEAR, 16' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 112 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D18* | RA-D | RECESSED LINEAR, 18' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 126 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D20* | RA-D | RECESSED LINEAR, 20' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 140 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D22* | RA-D | RECESSED LINEAR, 22' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 154 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D24* | RA-D | RECESSED LINEAR, 24' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 168 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-D28* | RA-D | RECESSED LINEAR, 28' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 196 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-5F-FE-SW | 1, 2, 3, 4 |
| RA-G4* | RA-G | RECESSED LINEAR, 4' - 0" LONG | RECESSED | ACOUSTIC GRID | 0-10V | 28 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C1-FE-SW | 1, 2, 3, 4 |
| RA-G6* | RA-G | RECESSED LINEAR, 6' - 0" LONG | RECESSED | ACOUSTIC GRID | 0-10V | 42 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C1-FE-SW | 1, 2, 3, 4 |
| RA-G8* | RA-G | RECESSED LINEAR, 8' - 0" LONG | RECESSED | ACOUSTIC GRID | 0-10V | 56 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C1-FE-SW | 1, 2, 3, 4 |
| RA-G10* | RA-G | RECESSED LINEAR, 10' - 0" LONG | RECESSED | ACOUSTIC GRID | 0-10V | 70 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C1-FE-SW | 1, 2, 3, 4 |
| RA-M3* | RA-M | RECESSED LINEAR, 3' - 0" LONG | RECESSED | METAL SYSTEM | 0-10V | 21 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C3-FE-SW | 1, 2, 3, 4 |
| RA-M5* | RA-M | RECESSED LINEAR, 4' - 11 1/2" LONG | RECESSED | METAL SYSTEM | 0-10V | 35 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C3-FE-SW | 1, 2, 3, 4 |
| RA-M7* | RA-M | RECESSED LINEAR, 7' - 0" LONG | RECESSED | METAL SYSTEM | 0-10V | 49 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C3-FE-SW | 1, 2, 3, 4 |
| RA-M10* | RA-M | RECESSED LINEAR, 10' - 0" LONG | RECESSED | | 0-10V | 70 VA | FINELITE: #HP4-R-D-XX-H-840-F-9GLG-277-SC-FC-10%-C3-FE-SW | 1, 2, 3, 4 |
| SA | SA | SURFACE TROFFER, 4' - 0" LONG | SURFACE | SURFACE | 0-10V | 37 VA | KENALL #MLHA8-45-F-MW-PP-45L40K-DCC-DV | 1, 2, 3 |
| SAE | SAE | SURFACE TROFFER, 4' - 0" LONG | SURFACE | SURFACE | 0-10V | 37 VA | KENALL #MLHA8-45-F-MW-PP-45L40K-DCC-DV-LEL | 1, 2, 3 |
| SB | SB | VANITY LIGHT, 2' - 0" LONG | WALL | WALL | 0-10V | 37 VA | FINELITE #HPR-LED-F-DCO-2X2-B-840-9GLG-277V-SC-FC-10%-C1-9GLG | 1, 2, 3 |
| T | T | LED TRACK HEAD | TRACK | TRACK | 0-10V | 9 VA | LUMINI SENSO: #GG2-A90-630-3000K-10-02BLK-LC9-120V | 1, 2, 3 |
| TA-G | TA-G | RECESSED TROFFER, 2' - 0" LONG | RECESSED | ACOUSTIC GRID | DALI | 37 VA | FINELITE #HPR-LED-F-DCO-2X2-B-840-9GLG-277V-SC-FC-10%-C1-9GLG | 1, 2, 3 |
| TB | TB | RECESSED TROFFER, 4' - 0" LONG | RECESSED | GYP DRYWALL | 0-10V | 37 VA | FINELITE #HPR-LED-F-DCO-2X4-B-840-9GLG-277V-SC-FC-10%-C1-9GLG | 1, 2, 3 |
| WB | WB | LED WALL PACK | WALL | WALL | 0-10V | 46 VA | LITHONIA #DSXW1-LED-10C-530-40K-T3M-MVOLT-H1-BBW-PE-DBLXD | 1, 2, 3 |
| WLA8* | WLA | WALL MOUNT LED LINEAR | WALL | WALL | 0-10V | 768 VA | FINELITE: #HP-4-WM-D-B-B-840-F-9GLG-277-SC-FC-10%-MB-FE-SA | 1, 2, 3, 4 |
| X1 | X1 | EXIT SIGN | SURFACE | SURFACE | N/A | 5 VA | LITHONIA #LQC-W-1-R | 1, 2, 5 |
| X2 | X2 | EXIT SIGN | SURFACE | SURFACE | N/A | 5 VA | LITHONIA #LQC-W-2-R | 1, 2, 5 |
| X3 | X3 | EXIT SIGN | SURFACE | SURFACE | N/A | 5 VA | KENALL #MET5W-MW-R-DT (A01) | 1, 2, 5 |

* FIELD COORDINATE AND FIELD MEASURE FOR CUSTOM LENGTH FIXTURES, LENGTHS PROVIDED ARE ROUNDED AND DEPEND ON FIELD CONDITIONS.

1 ALL LED FIXTURES TO HAVE WARRANTY TO MEET OR EXCEED WARRANTY INCLUDED IN BASIS OF DESIGN. FIXTURES LISTED AS EQUALS SHALL MEET DELIVERED LUMENS, CRI, EFFICACY AND OPTIONS OF THAT SPECIFIED. REFER TO SPECIFICATIONS 265100 AND 265600 FOR ADDITIONAL REQUIREMENTS.

2 THE MOUNTING DESCRIPTION IS GENERAL. REFER TO SHOP DRAWINGS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR SPECIFIC MOUNTING DETAILS.

3 ONLY SUBMIT ONE SET OF LINEAR FIXTURE INFORMATION PER FIXTURE SERIES WHERE VARIOUS LENGTH FIXTURES OF SAME SERIES ARE USED.

4 FIXTURE LENGTH PER LIGHTING FLOOR PLANS. FIELD VERIFY BEFORE ORDERING AND COORDINATE WITH FRAMING CONTRACTOR FOR HOLD DIMENSIONS.

5 EXIT SIGNS DIRECTIONAL ARROWS TO BE CONFIRMED ON PLANS PRIOR TO ORDERING. ARROWS ON GRAPHICS MAY NOT MATCH THOSE OF DESCRIPTION DUE TO FACE DIRECTION IN REFERENCE.

A01

### LIGHT FIXTURE TYPE NAME NOMENCLATURE:

FIXTURE STYLE

| | |
|---|---|
| TROFFER (2X4, 2X2) | T |
| RECESSED LINEAR | R |
| RECESSED DOWNLIGHT (CAN) | C |
| LINEAR PENDANT | L |
| WALL MOUNTED | W |
| PENDANT CYLINDER | PC |
| PENDANT DECORATIVE | PD |

CEILING TYPE

| | |
|---|---|
| DRYWALL (GYP BOARD) | D |
| GRID CEILING (LAY-IN) | G |
| OPEN EXPOSED CEILING | O |
| WOOD CEILING | W |
| METAL CEILING | M |

(RECESSED LINEAR 8' EXAMPLE)

RA8*-EM
LP3A-9

R - FIXTURE STYLE
A - FIXTURE SERIES
8 - FIXTURE LENGTH OR DIAMETER
* - CUSTOM LENGTH
EM - EMERGENCY
## - PANEL/CIRCUIT NUMBER

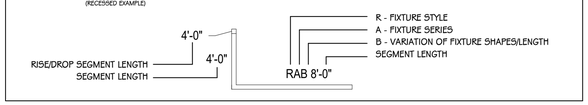
(RECESSED DOWNLIGHT IN WOOD CEILING EXAMPLE)

CD-W-EM
LP3A-9

C - FIXTURE STYLE
A - FIXTURE SERIES
W - CEILING TYPE
EM - EMERGENCY
## - PANEL/CIRCUIT NUMBER

### CUSTOM MULTI-SEGMENT LINEAR LIGHT FIXTURE NOMENCLATURE:

(RECESSED EXAMPLE)

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| ISSUED FOR | DATE |
|---|---|
| ADDENDUM 01 | 05-08-2026 |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
LIGHTING SCHEDULES AND DETAILS

DATE
APRIL 24, 2026

SHEET NUMBER
E 421
23-622.000

# PANELBOARD " DP1A" LOAD SCHEDULE

**PANEL:** DP1A
**LOCATION:** ELEC 108 / Level 1
**ADDED ACCESSORIES:** SPD
**MOUNTING:** SURFACE
**AMPS:** 400 A MLO
**FEED-THRU LUGS...** No
**VOLTAGE:** 480/277V, 3PH, 4W
**FED FROM:** MDP
**A.I.C. VALUE:** 11850 A
(PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A (VA) | | B (VA) | | C (VA) | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | HVAC - AHU-1 | 50 | 3 | 9090 | 35283 | | | | | 3 | 225 | TX-SDP1A | 2 |
| 3 | -- | -- | -- | | | 9090 | 35880 | | | -- | -- | -- | 4 |
| 5 | -- | -- | -- | | | | | 9090 | 32655 | -- | -- | -- | 6 |
| 7 | HVAC - ACCU-1 | 90 | 3 | 18152 | 0 | | | | | 3 | 60 | SPARE | 8 |
| 9 | -- | -- | -- | | | 18152 | 0 | | | -- | -- | -- | 10 |
| 11 | -- | -- | -- | | | | | 18152 | 0 | -- | -- | -- | 12 |
| 13 | SPARE | 100 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 14 |
| 15 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 16 |
| 17 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 18 |
| 19 | SPARE | 125 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 20 |
| 21 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 22 |
| 23 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 24 |
| 25 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 26 |
| 27 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 28 |
| 29 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 30 |
| 31 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 32 |
| 33 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 34 |
| 35 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 36 |
| 37 | SURGE PROTECTIVE DEVICE (SPD) | 30 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 38 |
| 39 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 40 |
| 41 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 42 |
| | **TOTAL LOAD:** | | | 62525 VA | | 63122 VA | | 59897 VA | | | | | |
| | **ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** | | | 0 VA | | 0 VA | | 0 VA | | | | | |
| | **TOTAL AMPS:** | | | 227 A | | 229 A | | 216 A | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 89723 VA | 100.00% | 89723 VA | | |
| POWER - | 8500 VA | 100.00% | 8500 VA | **TOTAL CONNECTED LOAD:** | 185543 VA |
| RECEPTACLE - | 86240 VA | 55.80% | 48120 VA | **TOTAL ESTIMATED DEMAND:** | 147423 VA |
| TECHNOLOGY - | 1080 VA | 100.00% | 1080 VA | **TOTAL CONNECTED LOAD (A):** | 223 A |
| | | | | **TOTAL ESTIMATED DEMAND...** | 177 A |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

# DISTRIBUTION PANEL " MDP" LOAD SCHEDULE

**SWITCHBOARD:** MDP
**LOCATION:** ELEC 153
**OPTIONS:**
**VOLTAGE:** 480/277V
**FED FROM:** TX-MDP
**MAINS RATING:** 2000 A
**A.I.C. RATING:** 36719 A

| CIRCUIT NUMBER | LOAD NAME | RATING (A) | NUMBER OF POLES | CURRENT (A) |
|---|---|---|---|---|
| 1 | TX-SDP | 450 A | 3 | 231 A |
| 2 | DP1A | 400 A | 3 | 223 A |
| 3 | TX-SDP2B | 125 A | 3 | 74 A |
| 4 | DP2D | 800 A | 3 | 589 A |
| 5 | ATS-EL | 100 A | 3 | 20 A |
| 6 | ATS-EM | 350 A | 3 | 267 A |
| 7 | SPACE | -- | 1 | -- |
| 8 | SPACE | -- | 1 | -- |
| 9 | SPACE | -- | 1 | -- |
| 10 | SPACE | -- | 1 | -- |
| 11 | SPACE | -- | 1 | -- |
| 12 | SPACE | -- | 1 | -- |
| 13 | SPACE | -- | 1 | -- |
| 14 | SPACE | -- | 1 | -- |
| 15 | SPACE | -- | 1 | -- |
| 16 | SPACE | -- | 1 | -- |
| 17 | SPACE | -- | 1 | -- |
| 18 | SPACE | -- | 1 | -- |
| 19 | SPACE | -- | 1 | -- |
| 20 | SPACE | -- | 1 | -- |
| 21 | SPACE | -- | 1 | -- |
| 22 | SPACE | -- | 1 | -- |
| 23 | SPACE | -- | 1 | -- |
| 24 | SPARE | 400 A | 1 | -- |
| 25 | SPARE | 400 A | 1 | -- |
| 26 | SPARE | 250 A | 1 | -- |
| 27 | SPARE | 250 A | 1 | -- |
| 28 | SPARE | 100 A | 1 | -- |
| 29 | SPARE | 100 A | 1 | -- |
| 30 | SURGE PROTECTIVE DEVICE | 100 A | 3 | -- |

| | |
|---|---|
| TOTAL CONNECTED VA: | 1167657 VA |
| TOTAL CONNECTED AMPS: | 1404 A |
| TOTAL DEMAND VA: | 1037845 VA |
| TOTAL DEMAND AMPS: | 1248 A |

# PANELBOARD " DP2D" LOAD SCHEDULE

**PANEL:** DP2D
**LOCATION:** MECHANICAL 215 / SECOND FLOOR
**ADDED ACCESSORIES:** SPD
**MOUNTING:** SURFACE
**AMPS:** 800 A MLO
**FEED-THRU LUGS...** No
**VOLTAGE:** 480/277V, 3PH, 4W
**FED FROM:** MDP
**A.I.C. VALUE:** 26690 A
(PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A | | B | | C | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | HVAC - AHU-2 SF | 25 | 3 | 3991 | 12277 | | | | | 3 | 60 | HVAC - ACCU-2 | 2 |
| 3 | -- | -- | -- | | | 3991 | 12277 | | | -- | -- | -- | 4 |
| 5 | -- | -- | -- | | | | | 3991 | 12277 | -- | -- | -- | 6 |
| 7 | HVAC - AHU-2 RF | 15 | 3 | 2827 | 19399 | | | | | 3 | 90 | HVAC - ACCU-3 | 8 |
| 9 | -- | -- | -- | | | 2827 | 19399 | | | -- | -- | -- | 10 |
| 11 | -- | -- | -- | | | | | 2827 | 19399 | -- | -- | -- | 12 |
| 13 | HVAC - AHU-3 SF | 100 | 3 | 14133 | 12277 | | | | | 3 | 60 | HVAC - ACCU-4 | 14 |
| 15 | -- | -- | -- | | | 14133 | 12277 | | | -- | -- | -- | 16 |
| 17 | -- | -- | -- | | | | | 14133 | 12277 | -- | -- | -- | 18 |
| 19 | HVAC - AHU-3 RF | 60 | 3 | 12360 | 18152 | | | | | 3 | 90 | HVAC - ACCU-5 | 20 |
| 21 | -- | -- | -- | | | 12360 | 18152 | | | -- | -- | -- | 22 |
| 23 | -- | -- | -- | | | | | 12360 | 18152 | -- | -- | -- | 24 |
| 25 | HVAC - AHU-4 SF | 15 | 3 | 2827 | 35029 | | | | | 3 | 175 | HVAC - ACCU-6 | 26 |
| 27 | -- | -- | -- | | | 2827 | 35029 | | | -- | -- | -- | 28 |
| 29 | -- | -- | -- | | | | | 2827 | 35029 | -- | -- | -- | 30 |
| 31 | HVAC - AHU-4 RF | 15 | 3 | 2827 | 0 | | | | | 3 | 15 | SPARE | 32 |
| 33 | -- | -- | -- | | | 2827 | 0 | | | -- | -- | -- | 34 |
| 35 | -- | -- | -- | | | | | 2827 | 0 | -- | -- | -- | 36 |
| 37 | HVAC - AHU-5 SF | 40 | 3 | 7150 | 0 | | | | | 3 | 30 | SPARE | 38 |
| 39 | -- | -- | -- | | | 7150 | 0 | | | -- | -- | -- | 40 |
| 41 | -- | -- | -- | | | | | 7150 | 0 | -- | -- | -- | 42 |
| 43 | HVAC - AHU-5 RF | 25 | 3 | 5127 | 0 | | | | | 3 | 50 | SPARE | 44 |
| 45 | -- | -- | -- | | | 5127 | 0 | | | -- | -- | -- | 46 |
| 47 | -- | -- | -- | | | | | 5127 | 0 | -- | -- | -- | 48 |
| 49 | HVAC - AHU-6 SF | 50 | 3 | 7981 | 0 | | | | | 3 | 60 | SPARE | 50 |
| 51 | -- | -- | -- | | | 7981 | 0 | | | -- | -- | -- | 52 |
| 53 | -- | -- | -- | | | | | 7981 | 0 | -- | -- | -- | 54 |
| 55 | HVAC - AHU-6 RF | 35 | 3 | 6817 | 0 | | | | | 3 | 100 | SPARE | 56 |
| 57 | -- | -- | -- | | | 6817 | 0 | | | -- | -- | -- | 58 |
| 59 | -- | -- | -- | | | | | 6817 | 0 | -- | -- | -- | 60 |
| 61 | SURGE PROTECTIVE DEVICE (SPD) | 60 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 62 |
| 63 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 64 |
| 65 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 66 |
| | **TOTAL LOAD:** | | | 163171 VA | | 163171 VA | | 163171 VA | | | | | |
| | **ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** | | | 0 VA | | 0 VA | | 0 VA | | | | | |
| | **TOTAL AMPS:** | | | 589 A | | 589 A | | 589 A | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 489514 VA | 100.00% | 489514 VA | | |
| | | | | **TOTAL CONNECTED LOAD:** | 489514 VA |
| | | | | **TOTAL ESTIMATED DEMAND:** | 489514 VA |
| | | | | **TOTAL CONNECTED LOAD (A):** | 589 A |
| | | | | **TOTAL ESTIMATED DEMAND...** | 589 A |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

# PANELBOARD " SDP" LOAD SCHEDULE

**PANEL:** SDP
**LOCATION:** ELEC 153 / Level 1
**ADDED ACCESSORIES:** SPD
**MOUNTING:** SURFACE
**AMPS:** 600 A MB
**FEED-THRU LUGS...** No
**VOLTAGE:** 208/120V, 3PH, 4W
**FED FROM:** TX-SDP
**A.I.C. VALUE:** 29966 A
(PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A (VA) | | B (VA) | | C (VA) | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RP1 | 100 | 3 | 6598 | 3000 | | | | | 2 | 100 | RPGEN | 2 |
| 3 | -- | -- | -- | | | 6768 | 4500 | | | -- | -- | -- | 4 |
| 5 | -- | -- | -- | | | | | 8387 | 15306 | 3 | 225 | RP1D | 6 |
| 7 | RP1K | 400 | 3 | 28485 | 17766 | | | | | -- | -- | -- | 8 |
| 9 | -- | -- | -- | | | 25407 | 16746 | | | -- | -- | -- | 10 |
| 11 | -- | -- | -- | | | | | 24455 | 13160 | 3 | 150 | RP1E | 12 |
| 13 | SPARE | 225 | 3 | 0 | 9970 | | | | | -- | -- | -- | 14 |
| 15 | -- | -- | -- | | | 0 | 11540 | | | -- | -- | -- | 16 |
| 17 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 18 |
| 19 | SPARE | 150 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 20 |
| 21 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 22 |
| 23 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 24 |
| 25 | SPARE | 100 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 26 |
| 27 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 28 |
| 29 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 30 |
| 31 | SPARE | 60 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 32 |
| 33 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 34 |
| 35 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 36 |
| 37 | SURGE PROTECTIVE DEVICE (SPD) | 60 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 38 |
| 39 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 40 |
| 41 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 42 |
| | **TOTAL LOAD:** | | | 65819 VA | | 64961 VA | | 61308 VA | | | | | |
| | **ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** | | | 0 VA | | 0 VA | | 0 VA | | | | | |
| | **TOTAL AMPS:** | | | 553 A | | 546 A | | 511 A | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 31656 VA | 100.00% | 31656 VA | | |
| POWER - | 42093 VA | 100.00% | 42093 VA | **TOTAL CONNECTED LOAD:** | 192087 VA |
| RECEPTACLE - | 62772 VA | 57.97% | 36386 VA | **TOTAL ESTIMATED DEMAND:** | 149004 VA |
| Spare | 7500 VA | 100.00% | 7500 VA | **TOTAL CONNECTED LOAD (A):** | 533 A |
| TECHNOLOGY - | 360 VA | 100.00% | 360 VA | **TOTAL ESTIMATED DEMAND...** | 414 A |
| KITCHEN - | 47706 VA | 65.00% | 31009 VA | | |
| | | | | | |
| | | | | | |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
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| | |
|---|---|
| ADDENDUM 01 | 05-08-2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

DATE
APRIL 24, 2026

SHEET TITLE
ELECTRICAL PANEL LOAD SHEETS

SHEET NUMBER
E 501
23-622.000

# PANELBOARD " EP1F" LOAD SCHEDULE

**PANEL:** EP1F | **LOCATION:** BOILER 150 / Level 1 | **ADDED ACCESSORIES:** DOUBLE TUB, SPD FULLY RATED
**MOUNTING:** SURFACE | **AMPS:** 200 A MB | **FEED-THRU LUGS...** No
**VOLTAGE:** 208/120V, 3PH, 4W | **FED FROM:** TX-EP1F | **A.I.C. VALUE:** 13493 A (PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A | | B | | C | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EP1A | 60 | 3 | 2640 | 1200 | | | | | 1 | 30 | KITCHEN - 101 - WALK-IN COOLER | 2 |
| 3 | -- | -- | -- | | | 4190 | 600 | | | 1 | 20 | KITCHEN - 101A - COOLER COIL | 4 |
| 5 | -- | -- | -- | | | | | 3540 | 1201 | 3 | 20 | KITCHEN - 101D - FREEZER COMPRESSOR | 6 |
| 7 | EP1B | 125 | 3 | 9114 | 1201 | | | | | -- | -- | -- | 8 |
| 9 | -- | -- | -- | | | 9400 | 1201 | | | -- | -- | -- | 10 |
| 11 | -- | -- | -- | | | | | 11360 | 1200 | 1 | 20 | KITCHEN - 101 - WALK-IN FREEZER | 12 |
| 13 | HVAC - B-1 | 15 | 3 | 780 | 1560 | | | | | 2 | 25 | KITCHEN - 101C - FREEZER COIL | 14 |
| 15 | -- | -- | -- | | | 780 | 1560 | | | -- | -- | -- | 16 |
| 17 | -- | -- | -- | | | | | 780 | 600 | 1 | 20 | KITCHEN - 101E - FREEZER HEAT TRACE | 18 |
| 19 | HVAC - B-2 | 15 | 3 | 780 | 1768 | | | | | 3 | 20 | KITCHEN - 101D - FREEZER COMPRESSOR | 20 |
| 21 | -- | -- | -- | | | 780 | 1768 | | | -- | -- | -- | 22 |
| 23 | -- | -- | -- | | | | | 780 | 1768 | -- | -- | -- | 24 |
| 25 | HVAC - B-3 | 15 | 3 | 780 | 0 | | | | | 1 | 20 | SPARE | 26 |
| 27 | -- | -- | -- | | | 780 | 0 | | | 1 | 20 | SPARE | 28 |
| 29 | -- | -- | -- | | | | | 780 | 0 | 1 | 20 | SPARE | 30 |
| 31 | HVAC - P-13 | 15 | 2 | 1150 | 0 | | | | | 1 | 20 | SPARE | 32 |
| 33 | -- | -- | -- | | | 1150 | 0 | | | 1 | 20 | SPARE | 34 |
| 35 | HVAC - WH-1 | 20 | 1 | | | | | 500 | 0 | 1 | 20 | SPARE | 36 |
| 37 | HVAC - WH-2 | 20 | 1 | 500 | 0 | | | | | 1 | 20 | SPARE | 38 |
| 39 | HVAC - P-3 | 20 | 1 | | | 1254 | 0 | | | 1 | 20 | SPARE | 40 |
| 41 | SPARE | 20 | 1 | | | | | 0 | 500 | 1 | 20 | POWER - PREACTION CONTROLLER (PAC) | 42 |
| 43 | SPARE | 20 | 1 | 0 | 250 | | | | | 1 | 20 | HVAC - UH-6 | 44 |
| 45 | SPARE | 20 | 1 | | | 0 | 180 | | | 1 | 20 | RECEPTACLE - FIRE PUMP ROOM | 46 |
| 47 | SPARE | 20 | 1 | | | | | 0 | 250 | 1 | 20 | HVAC - EF-21 | 48 |
| 49 | HVAC - WS-1 | 20 | 1 | 500 | 500 | | | | | 1 | 20 | POWER - NAC1F | 50 |
| 51 | HVAC - UH-1, UH-2 | 20 | 1 | | | 500 | 540 | | | 1 | 20 | RECEPTACLE - ELEC 146 | 52 |
| 53 | RECEPTACLE - WATER SOFTENER 151 | 20 | 1 | | | | | 540 | 360 | 1 | 20 | RECEPTACLE - TECH 145 | 54 |
| 55 | RECEPTACLE - BOILER 150 | 20 | 1 | 540 | 360 | | | | | 1 | 20 | RECEPTACLE - TECH 145 | 56 |
| 57 | RECEPTACLE - BOILER 150 | 20 | 1 | | | 720 | 500 | | | 1 | 20 | RECEPTACLE - TECH 145, RACK | 58 |
| 59 | POWER - TEMP CONTROL PANEL | 20 | 1 | | | | | 500 | 1000 | 2 | 20 | RECEPTACLE - TECH 145, RACK | 60 |
| 61 | SPARE | 20 | 1 | 0 | 1000 | | | | | -- | -- | -- | 62 |
| 63 | SPARE | 20 | 1 | | | 0 | 1000 | | | 1 | 20 | POWER - TECH 145, SECURITY PANELS | 64 |
| 65 | SPARE | 20 | 1 | | | | | 0 | 250 | 1 | 20 | HVAC - CP-1 | 66 |
| 67 | SPARE | 20 | 1 | 0 | 1000 | | | | | 2 | 40 | HVAC - ACCU-3 | 68 |
| 69 | EP2B | 100 | 3 | | | 4733 | 1000 | | | -- | -- | -- | 70 |
| 71 | -- | -- | -- | | | | | 4173 | 0 | 1 | 20 | SPARE | 72 |
| 73 | -- | -- | -- | 4023 | 0 | | | | | 1 | 20 | SPARE | 74 |
| 75 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 76 |
| 77 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 78 |
| 79 | SURGE PROTECTIVE DEVICE (SPD) | 30 | 3 | 0 | 0 | | | | | 1 | 20 | SPARE | 80 |
| 81 | -- | -- | -- | | | 0 | 0 | | | 1 | 20 | SPARE | 82 |
| 83 | -- | -- | -- | | | | | 0 | 0 | 1 | 20 | SPARE | 84 |

**TOTAL LOAD:** 29647 VA | 32637 VA | 30083 VA
**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** 0 VA | 0 VA | 0 VA
**TOTAL AMPS:** 247 A | 273 A | 251 A

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 28921 VA | 100.00% | 28921 VA | | |
| POWER - | 10700 VA | 100.00% | 10700 VA | TOTAL CONNECTED LOAD: | 92368 VA |
| RECEPTACLE - | 36260 VA | 63.79% | 23130 VA | TOTAL ESTIMATED DEMAND: | 73769 VA |
| Spare | 500 VA | 100.00% | 500 VA | TOTAL CONNECTED LOAD (A): | 256 A |
| TECHNOLOGY - | 360 VA | 100.00% | 360 VA | TOTAL ESTIMATED DEMAND... | 205 A |
| KITCHEN - | 15627 VA | 65.00% | 10158 VA | | |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

# PANELBOARD " SDP2B" LOAD SCHEDULE

**PANEL:** SDP2B | **LOCATION:** ELEC. 201 / SECOND FLOOR | **ADDED ACCESSORIES:** SPD
**MOUNTING:** SURFACE | **AMPS:** 400 A MB | **FEED-THRU LUGS...**
**VOLTAGE:** 208/120V, 3PH, 4W | **FED FROM:** TX-SDP2B | **A.I.C. VALUE:** 14001 A (PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A (VA) | | B (VA) | | C (VA) | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RP2D | 100 | 3 | 4735 | 12790 | | | | | 3 | 225 | RP2B | 2 |
| 3 | -- | -- | -- | | | 5295 | 16860 | | | -- | -- | -- | 4 |
| 5 | -- | -- | -- | | | | | 4430 | 17827 | -- | -- | -- | 6 |
| 7 | SPARE | 100 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 8 |
| 9 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 10 |
| 11 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 12 |
| 13 | SPARE | 60 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 14 |
| 15 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 16 |
| 17 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 18 |
| 19 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 20 |
| 21 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 22 |
| 23 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 24 |
| 25 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 26 |
| 27 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 28 |
| 29 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 30 |
| 31 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 32 |
| 33 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 34 |
| 35 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 36 |
| 37 | SURGE PROTECTIVE DEVICE | 30 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 38 |
| 39 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 40 |
| 41 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 42 |

**TOTAL LOAD:** 17525 VA | 22155 VA | 22257 VA
**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** 0 VA | 0 VA | 0 VA
**TOTAL AMPS:** 146 A | 191 A | 191 A

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 20117 VA | 100.00% | 20117 VA | | |
| POWER - | 1800 VA | 100.00% | 1800 VA | TOTAL CONNECTED LOAD: | 61937 VA |
| RECEPTACLE - | 40020 VA | 62.49% | 25010 VA | TOTAL ESTIMATED DEMAND: | 46927 VA |
| | | | | TOTAL CONNECTED LOAD (A): | 172 A |
| | | | | TOTAL ESTIMATED DEMAND... | 130 A |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

# PANELBOARD " EP1B" LOAD SCHEDULE

**PANEL:** EP1B | **LOCATION:** ELEC 102 / Level 1 | **ADDED ACCESSORIES:** DOUBLE TUB, SPD
**MOUNTING:** SURFACE | **AMPS:** 225 A MLO | **FEED-THRU LUGS...** No
**VOLTAGE:** 208/120V, 3PH, 4W | **FED FROM:** EP1F | **A.I.C. VALUE:** 3955 A (PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A | | B | | C | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RECEPTACLE - RECEPTION / WAITING 100 | 20 | 1 | 180 | 180 | | | | | 1 | 20 | RECEPTACLE - RECEPTION / WAITING 100 | 2 |
| 3 | RECEPTACLE - RECEPTION / WAITING 100 | 20 | 1 | | | 180 | 180 | | | 1 | 20 | RECEPTACLE - RECEPTION / WAITING 100 | 4 |
| 5 | RECEPTACLE - RECEPTION / WAITING 100 | 20 | 1 | | | | | 180 | 360 | 1 | 20 | RECEPTACLE - WORK ROOM 100K | 6 |
| 7 | RECEPTACLE - WORK ROOM 100K | 20 | 1 | 360 | 180 | | | | | 1 | 20 | RECEPTACLE - WORK ROOM 100K | 8 |
| 9 | RECEPTACLE - WORK ROOM 100K | 20 | 1 | | | 180 | 360 | | | 1 | 20 | RECEPTACLE - WORK ROOM 100K | 10 |
| 11 | RECEPTACLE - WORK ROOM 100K | 20 | 1 | | | | | 360 | 720 | 1 | 20 | RECEPTACLE - PRINCIPAL 100G | 12 |
| 13 | RECEPTACLE - RECORDS 100J | 20 | 1 | 540 | 540 | | | | | 1 | 20 | RECEPTACLE - ESL 105 | 14 |
| 15 | RECEPTACLE - ESL 105 | 20 | 1 | | | 540 | 540 | | | 1 | 20 | RECEPTACLE - ESL 104 | 16 |
| 17 | RECEPTACLE - ESL 104 | 20 | 1 | | | | | 540 | 540 | 1 | 20 | RECEPTACLE - STAFF 103 | 18 |
| 19 | RECEPTACLE - STAFF 103 | 20 | 1 | 360 | 180 | | | | | 1 | 20 | RECEPTACLE - STAFF 103 | 20 |
| 21 | RECEPTACLE - STAFF 103 | 20 | 1 | | | 180 | 180 | | | 1 | 20 | RECEPTACLE - STAFF 103 | 22 |
| 23 | RECEPTACLE - STAFF 103 | 20 | 1 | | | | | 180 | 180 | 1 | 20 | RECEPTACLE - STAFF 103 | 24 |
| 25 | RECEPTACLE - STAFF 103 | 20 | 1 | 180 | 180 | | | | | 1 | 20 | RECEPTACLE - STAFF 103 | 26 |
| 27 | RECEPTACLE - STAFF 103 | 20 | 1 | | | 180 | 720 | | | 1 | 20 | RECEPTACLE - CONF. 101 | 28 |
| 29 | RECEPTACLE - CONF. 101 | 20 | 1 | | | | | 600 | 1080 | 1 | 20 | RECEPTACLE - RECEPTION / WAITING 100 | 30 |
| 31 | CONFERENCE 100A | 20 | 1 | 720 | 540 | | | | | 1 | 20 | RECEPTACLE - CONFERENCE 100A | 32 |
| 33 | RECEPTACLE - AP OFFCE 100B | 20 | 1 | | | 720 | 1200 | | | 1 | 20 | RECEPTACLE - CONFERENCE 100A | 34 |
| 35 | RECEPTACLE - CONF. 100C | 20 | 1 | | | | | 600 | 1080 | 1 | 20 | RECEPTACLE - Room 100C, 100D | 36 |
| 37 | RECEPTACLE - CONF. 100E | 20 | 1 | 600 | 720 | | | | | 1 | 20 | RECEPTACLE - CONF. 100E | 38 |
| 39 | POWER - TLT 100H | 20 | 1 | | | 900 | 720 | | | 1 | 20 | RECEPTACLE - COUNSELOR 100F | 40 |
| 41 | POWER - TLT 100M | 20 | 1 | | | | | 900 | 540 | 1 | 20 | RECEPTACLE - HEALTH 100L | 42 |
| 43 | RECEPTACLE - HEALTH 100L | 20 | 1 | 360 | 360 | | | | | 1 | 20 | RECEPTACLE - HALL 100N | 44 |
| 45 | RECEPTACLE - Room 100M, 100H | 20 | 1 | | | 360 | 0 | | | 1 | 20 | SPARE | 46 |
| 47 | POWER - HEALTH 100L | 20 | 1 | | | | | 900 | 0 | 1 | 20 | SPARE | 48 |
| 49 | RECEPTACLE - VEST C001, CH-1 | 20 | 1 | 624 | 0 | | | | | 1 | 20 | SPARE | 50 |
| 51 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 52 |
| 53 | SPARE | 20 | 1 | | | | | 0 | 500 | 1 | 20 | POWER - NAC1B | 54 |
| 55 | SPARE | 20 | 1 | 0 | 500 | | | | | 1 | 20 | POWER - LCP1B | 56 |
| 57 | SPARE | 20 | 1 | | | 0 | 360 | | | 1 | 20 | RECEPTACLE - ELEC 102 | 58 |
| 59 | SPARE | 20 | 1 | | | | | 0 | 720 | 1 | 20 | RECEPTACLE - TECH 118 | 60 |
| 61 | SPARE | 20 | 1 | 0 | 360 | | | | | 1 | 20 | RECEPTACLE - TECH 118 | 62 |
| 63 | SPARE | 20 | 1 | | | 0 | 360 | | | 1 | 20 | RECEPTACLE - TECH 118, RACK 1 | 64 |
| 65 | SPARE | 20 | 1 | | | | | 0 | 180 | 2 | 20 | RECEPTACLE - TECH 118, RACK 1 | 66 |
| 67 | SPARE | 20 | 1 | 0 | 180 | | | | | -- | -- | -- | 68 |
| 69 | RECEPTACLE - ELEV. E01.1 | 20 | 1 | | | 180 | 360 | | | 1 | 20 | RECEPTACLE - TECH 118, RACK 2 | 70 |
| 71 | HVAC - SP-1 | 15 | 2 | | | | | 840 | 180 | 2 | 20 | RECEPTACLE - TECH 118, RACK 2 | 72 |
| 73 | -- | -- | -- | 840 | 180 | | | | | -- | -- | -- | 74 |
| 75 | HVAC - SP-1 CONTROLER | 20 | 1 | | | 500 | 0 | | | 1 | 20 | SPARE | 76 |
| 77 | | | | | | | | 0 | 1 | 20 | SPARE | 78 | |
| 79 | SURGE PROTECTIVE DEVICE (SPD) | 30 | 3 | 0 | 250 | | | | | 1 | 20 | HVAC - CP-1 | 80 |
| 81 | -- | -- | -- | | | 0 | 500 | | | 1 | 20 | POWER - FIRE ALARM CONTORL PANEL | 82 |
| 83 | -- | -- | -- | | | | | 0 | 180 | 1 | 20 | RECEPTACLE - EXTERIOR MAIN ENTRY | 84 |

**TOTAL LOAD:** 9114 VA | 9400 VA | 11360 VA
**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** 0 VA | 0 VA | 0 VA
**TOTAL AMPS:** 76 A | 79 A | 95 A

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 2874 VA | 100.00% | 2874 VA | | |
| POWER - | 4200 VA | 100.00% | 4200 VA | TOTAL CONNECTED LOAD: | 29874 VA |
| RECEPTACLE - | 22440 VA | 72.28% | 16220 VA | TOTAL ESTIMATED DEMAND: | 23654 VA |
| TECHNOLOGY - | 360 VA | 100.00% | 360 VA | TOTAL CONNECTED LOAD (A): | 83 A |
| | | | | TOTAL ESTIMATED DEMAND... | 66 A |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

# PANELBOARD " EM" LOAD SCHEDULE

**PANEL:** EM | **LOCATION:** ELEC 153 / Level 1 | **ADDED ACCESSORIES:** SPD
**MOUNTING:** SURFACE | **AMPS:** 350 A MB | **FEED-THRU LUGS...** No (AO1)
**VOLTAGE:** 480/277V, 3PH, 4W | **FED FROM:** ATS-EM | **A.I.C. VALUE:** 27307 A (PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A (VA) | | B (VA) | | C (VA) | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | LIGHTING - STAFF LOT | 20 | 1 | 864 | 500 | | | | | 1 | 20 | POWER - LCP1 | 2 |
| 3 | LIGHTING - MAIN LOT | 20 | 1 | | | 1512 | 505 | | | 1 | 20 | LIGHTING - SW BUILDING LIGHTS | 4 |
| 5 | LIGHTING - BUS LOOP AND ENTRY | 20 | 1 | | | | | 1376 | 598 | 1 | 20 | LIGHTING - EAST BUILDING LIGHTS | 6 |
| 7 | LIGHTING - UNIT F KITCHEN AND BOILER ROOM | 20 | 1 | 1150 | 1000 | | | | | 1 | 20 | POWER - DIGITAL SIGN | 8 |
| 9 | LIGHTING - UNIT F SOUTH LIGHTS | 20 | 1 | | | 1192 | 100 | | | 1 | 20 | POWER - FLAG POLE | 10 |
| 11 | LIGHTING - CAFE AND STORAGE LIGHTS | 20 | 1 | | | | | 1447 | 0 | 1 | 20 | SPARE | 12 |
| 13 | SPARE | 20 | 1 | 0 | 0 | | | | | 1 | 20 | SPARE | 14 |
| 15 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 16 |
| 17 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 18 |
| 19 | SPARE | 20 | 1 | 0 | 0 | | | | | 1 | 20 | SPARE | 20 |
| 21 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 22 |
| 23 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 24 |
| 25 | SPARE | 20 | 1 | 0 | 0 | | | | | 1 | 20 | SPARE | 26 |
| 27 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 28 |
| 29 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 30 (AO1) |
| 31 | SPARE | 20 | 1 | 0 | 582 | | | | | 3 | 15 | HVAC - JP-1 | 32 |
| 33 | SPARE | 20 | 1 | | | 0 | 582 | | | -- | -- | -- | 34 |
| 35 | SPARE | 20 | 1 | | | | | 0 | 582 | -- | -- | -- | 36 |
| 37 | SURGE PROTECTIVE DEVICE (SPD) | 30 | 3 | 0 | 71209 | | | | | 3 | 250 | EM1F | 38 |
| 39 | -- | -- | -- | | | 0 | 73758 | | | -- | -- | -- | 40 |
| 41 | -- | -- | -- | | | | | 0 | 65122 | -- | -- | -- | 42 |

**TOTAL LOAD:** 75305 VA | 77649 VA | 69124 VA
**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** 0 VA | 0 VA | 0 VA
**TOTAL AMPS:** 275 A | 284 A | 250 A

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 82212 VA | 100.00% | 82212 VA | | |
| LIGHTING - | 51104 VA | 100.00% | 51104 VA | TOTAL CONNECTED LOAD: | 222077 VA |
| Other | 768 VA | 100.00% | 768 VA | TOTAL ESTIMATED DEMAND: | 203478 VA |
| POWER - | 35247 VA | 100.00% | 35247 VA | TOTAL CONNECTED LOAD (A): | 267 A |
| RECEPTACLE - | 36260 VA | 63.79% | 23130 VA | TOTAL ESTIMATED DEMAND... | 245 A |
| Spare | 500 VA | 100.00% | 500 VA | | |
| TECHNOLOGY - | 360 VA | 100.00% | 360 VA | | |
| KITCHEN - | 15627 VA | 65.00% | 10158 VA | | |
| EM LIGHTING - | 0 VA | 0.00% | 0 VA | | |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

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|---|---|
| ADDENDUM 01 | 05-08-2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ELECTRICAL PANEL LOAD SHEETS

DATE
APRIL 24, 2026

SHEET NUMBER
E 505
23-622.000

## PANELBOARD " EL1F" LOAD SCHEDULE

**PANEL:** EL1F | **MOUNTING:** SURFACE | **VOLTAGE:** 480/277V, 3PH, 4W
**LOCATION:** ELEC 146 / Level 1 | **AMPS:** 60 A MLO | **FED FROM:** EM
**ADDED ACCESSORIES:** SPD | **FEED-THRU LUGS...** No | **A.I.C. VALUE:** 1872 A
(PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A (VA) | | B (VA) | | C (VA) | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EM LIGHTING - UNIT B CLASSROOMS | 20 | 1 | 1072 | 1491 | | | | | 1 | 20 | EM LIGHTING - UNIT C CLASSROOMS | 2 |
| 3 | EM LIGHTING - UNIT E CLASSROOMS | 20 | 1 | | | 1552 | 2530 | | | 1 | 20 | EM LIGHTING - SECOND FLOOR LEVEL | 4 |
| 5 | EM LIGHTING - GYM 160 | 20 | 1 | | | | | 1155 | 509 | 1 | 20 | EM LIGHTING - MUSIC 133 | 6 |
| 7 | POWER - LCP1F | 20 | 1 | 500 | 1144 | | | | | 1 | 20 | EM LIGHTING - SE BUILDING LIGHTS | 8 |
| 9 | EM LIGHTING - S/SW BUILDING LIGHTS | 20 | 1 | | | 505 | -- | | | 1 | -- | SPACE | 10 |
| 11 | SPARE | 20 | 1 | | | | | 0 | -- | 1 | -- | SPACE | 12 |
| 13 | SPARE | 20 | 1 | 0 | -- | | | | | 1 | -- | SPACE | 14 |
| 15 | SPARE | 20 | 1 | | | 0 | -- | | | 1 | -- | SPACE | 16 |
| 17 | SPARE | 20 | 1 | | | | | 0 | -- | 1 | -- | SPACE | 18 |
| 19 | SPARE | 20 | 1 | 0 | -- | | | | | 1 | -- | SPACE | 20 |
| 21 | POWER - FIRE SHUTTER | 15 | 3 | | | 617 | -- | | | 1 | -- | SPACE | 22 |
| 23 | -- | -- | -- | | | | | 617 | -- | 1 | -- | SPACE | 24 |
| 25 | -- | -- | -- | 617 | -- | | | | | 1 | -- | SPACE | 26 |
| 27 | | | | | | | -- | | | 1 | -- | SPACE | 28 |
| 29 | | | | | | | | | -- | 1 | -- | SPACE | 30 |
| | **TOTAL LOAD:** | | | 4824 VA | | 5204 VA | | 2281 VA | | | | | |
| | **ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** | | | 0 VA | | 0 VA | | 0 VA | | | | | |
| | **TOTAL AMPS:** | | | 19 A | | 20 A | | 8 A | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| LIGHTING - | 150 VA | 100.00% | 150 VA | | |
| POWER - | 2350 VA | 100.00% | 2350 VA | **TOTAL CONNECTED LOAD:** | 12308 VA |
| EM LIGHTING - | 9808 VA | 100.00% | 9808 VA | **TOTAL ESTIMATED DEMAND:** | 12308 VA |
| | | | | **TOTAL CONNECTED LOAD (A):** | 15 A |
| | | | | **TOTAL ESTIMATED DEMAND...** | 15 A |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

## PANELBOARD " EL" LOAD SCHEDULE

**PANEL:** EL | **MOUNTING:** SURFACE | **VOLTAGE:** 480/277V, 3PH, 4W
**LOCATION:** Level 1 | **AMPS:** 100 A MB | **FED FROM:** ATS-EL
**ADDED ACCESSORIES:** SPD | **FEED-THRU LUGS...** No | **A.I.C. VALUE:** 15666 A
(PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A (VA) | | B (VA) | | C (VA) | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EL1F | 30 | 3 | 4824 | 1024 | | | | | 3 | 30 | EL1B | 2 |
| 3 | -- | -- | -- | | | 5204 | 547 | | | -- | -- | -- | 4 |
| 5 | -- | -- | -- | | | | | 2281 | 979 | -- | -- | -- | 6 |
| 7 | EM LIGHTING - CAFE | 20 | 1 | 555 | 500 | | | | | 1 | 20 | POWER - NAC PANEL | 8 |
| 9 | EM LIGHTING - KITCHEN | 20 | 1 | | | 586 | 0 | | | 1 | 20 | SPARE | 10 |
| 11 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 12 |
| 13 | SPARE | 20 | 1 | 0 | 0 | | | | | 1 | 20 | SPARE | 14 |
| 15 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 16 |
| 17 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 18 |
| 19 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 20 |
| 21 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 22 |
| 23 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 24 |
| 25 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 26 |
| 27 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 28 |
| 29 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 30 |
| 31 | SPACE | -- | 1 | -- | -- | | | | | 1 | -- | SPACE | 32 |
| 33 | SPACE | -- | 1 | | | -- | -- | | | 1 | -- | SPACE | 34 |
| 35 | SPACE | -- | 1 | | | | | -- | -- | 1 | -- | SPACE | 36 |
| 37 | SURGE PROTECTIVE DEVICE (SPD) | 30 | 3 | 0 | -- | | | | | 1 | -- | SPACE | 38 |
| 39 | -- | -- | -- | | | 0 | -- | | | 1 | -- | SPACE | 40 |
| 41 | -- | -- | -- | | | | | 0 | -- | 1 | -- | SPACE | 42 |
| | **TOTAL LOAD:** | | | 6902 VA | | 6337 VA | | 3260 VA | | | | | |
| | **ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** | | | 0 VA | | 0 VA | | 0 VA | | | | | |
| | **TOTAL AMPS:** | | | 27 A | | 25 A | | 12 A | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| LIGHTING - | 170 VA | 100.00% | 170 VA | | |
| POWER - | 2850 VA | 100.00% | 2850 VA | **TOTAL CONNECTED LOAD:** | 16499 VA |
| EM LIGHTING - | 13479 VA | 100.00% | 13479 VA | **TOTAL ESTIMATED DEMAND:** | 16499 VA |
| | | | | **TOTAL CONNECTED LOAD (A):** | 20 A |
| | | | | **TOTAL ESTIMATED DEMAND...** | 20 A |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

## PANELBOARD " EM1F" LOAD SCHEDULE

**PANEL:** EM1F | **MOUNTING:** SURFACE | **VOLTAGE:** 480/277V, 3PH, 4W
**LOCATION:** BOILER 150 / Level 1 | **AMPS:** 250 A MLO | **FED FROM:** EM
**ADDED ACCESSORIES:** SPD | **FEED-THRU LUGS...** No | **A.I.C. VALUE:** 16801 A
(PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A | | B | | C | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EM2B | 100 | 3 | 11672 | 5820 | | | | | 3 | 40 | HVAC - P-1 | 2 |
| 3 | -- | -- | -- | | | 11551 | 5820 | | | -- | -- | -- | 4 |
| 5 | -- | -- | -- | | | | | 8810 | 5820 | -- | -- | -- | 6 |
| 7 | LIGHTING - UNIT A CLASSROOMS | 20 | 1 | 3379 | 5820 | | | | | 3 | 40 | HVAC - P-2 | 8 |
| 9 | LIGHTING - UNIT A CORRIDOR LIGHTS | 20 | 1 | | | 1207 | 5820 | | | -- | -- | -- | 10 |
| 11 | LIGHTING - UNIT B CORRIDOR LIGHTS | 20 | 1 | | | | | 1329 | 5820 | -- | -- | -- | 12 |
| 13 | LIGHTING - UNIT B ROOMS | 20 | 1 | 2476 | 831 | | | | | 3 | 15 | HVAC - P-10 | 14 |
| 15 | LIGHTING - UNIT B OFFICE | 20 | 1 | | | 2684 | 831 | | | -- | -- | -- | 16 |
| 17 | LIGHTING - UNIT C NORTH CLASSROOMS | 20 | 1 | | | | | 1665 | 831 | -- | -- | -- | 18 |
| 19 | LIGHTING - UNIT C SOUTH CLASSROOMS | 20 | 1 | 2664 | 831 | | | | | 3 | 15 | HVAC - P-11 | 20 |
| 21 | LIGHTING - UNIT C CORRIDOR AND BATHROOMS | 20 | 1 | | | 2511 | 831 | | | -- | -- | -- | 22 |
| 23 | LIGHTING - UNIT D LIGHTS | 20 | 1 | | | | | 2685 | 831 | -- | -- | -- | 24 |
| 25 | LIGHTING - GYM EAST | 20 | 1 | 2280 | 831 | | | | | 3 | 15 | HVAC - P-12 | 26 |
| 27 | LIGHTING - GYM WEST | 20 | 1 | | | 2280 | 831 | | | -- | -- | -- | 28 |
| 29 | LIGHTING - STAGE WEST | 20 | 1 | | | | | 357 | 831 | -- | -- | -- | 30 |
| 31 | LIGHTING - STAGE EAST | 20 | 1 | 357 | 3048 | | | | | 3 | 20 | HVAC - P-14 | 32 |
| 33 | LIGHTING - UNIT E NORTH CLASSROOMS | 20 | 1 | | | 2664 | 3048 | | | -- | -- | -- | 34 |
| 35 | LIGHTING - UNIT E SOUTH CLASSROOMS | 20 | 1 | | | | | 2553 | 3048 | -- | -- | -- | 36 |
| 37 | LIGHTING - UNIT E CORRIDOR | 20 | 1 | 1002 | 0 | | | | | 3 | 40 | SPARE | 38 |
| 39 | LIGHTING - UNIT F NORTH LIGHTS | 20 | 1 | | | 614 | 0 | | | -- | -- | -- | 40 |
| 41 | LIGHTING - UNIT A BUILDING LIGHTS | 20 | 1 | | | | | 460 | 0 | -- | -- | -- | 42 |
| 43 | LIGHTING - UNIT C BUILDING LIGHTS | 20 | 1 | 552 | -- | | | | | 1 | -- | SPACE | 44 |
| 45 | LIGHTING - SW BUILDING LIGHTS | 20 | 1 | | | 427 | -- | | | 1 | -- | SPACE | 46 |
| 47 | SPARE | 20 | 1 | | | | | 0 | -- | 1 | -- | SPACE | 48 |
| 49 | SPARE | 20 | 1 | 0 | -- | | | | | 1 | -- | SPACE | 50 |
| 51 | SPARE | 20 | 1 | | | 0 | -- | | | 1 | -- | SPACE | 52 |
| 53 | SPARE | 20 | 1 | | | | | 0 | -- | 1 | -- | SPACE | 54 |
| 55 | SURGE PROTECTIVE DEVICE (SPD) | 30 | 3 | 0 | 29647 | | | | | 3 | 200 | TX-EP1F | 56 |
| 57 | -- | -- | -- | | | 0 | 32637 | | | -- | -- | -- | 58 |
| 59 | -- | -- | -- | | | | | 0 | 30083 | -- | -- | -- | 60 |
| | **TOTAL LOAD:** | | | 71209 VA | | 73758 VA | | 65122 VA | | | | | |
| | **ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** | | | 0 VA | | 0 VA | | 0 VA | | | | | |
| | **TOTAL AMPS:** | | | 260 A | | 270 A | | 235 A | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| HVAC - | 80466 VA | 100.00% | 80466 VA | | |
| LIGHTING - | 42461 VA | 100.00% | 42461 VA | **TOTAL CONNECTED LOAD:** | 210089 VA |
| Other | 768 VA | 100.00% | 768 VA | **TOTAL ESTIMATED DEMAND:** | 191490 VA |
| POWER - | 33647 VA | 100.00% | 33647 VA | **TOTAL CONNECTED LOAD (A):** | 253 A |
| RECEPTACLE - | 36260 VA | 63.79% | 23130 VA | **TOTAL ESTIMATED DEMAND...** | 230 A |
| Spare | 500 VA | 100.00% | 500 VA | | |
| TECHNOLOGY - | 360 VA | 100.00% | 360 VA | | |
| KITCHEN - | 15627 VA | 65.00% | 10158 VA | | |
| EM LIGHTING - | 0 VA | 0.00% | 0 VA | | |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

## PANELBOARD " EL1B" LOAD SCHEDULE

**PANEL:** EL1B | **MOUNTING:** SURFACE | **VOLTAGE:** 480/277V, 3PH, 4W
**LOCATION:** ELEC 102 / Level 1 | **AMPS:** 60 A MLO | **FED FROM:** EL
**ADDED ACCESSORIES:** SPD | **FEED-THRU LUGS...** No | **A.I.C. VALUE:** 954 A
(PROVIDE 25% HIGHER A.I.C. RATING)

| | CIRCUIT DESCRIPTION | TRIP (A) | POLES | A (VA) | | B (VA) | | C (VA) | | POLES | TRIP (A) | CIRCUIT DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | EM LIGHTING - CORRIDOR C016 | 20 | 1 | 210 | 814 | | | | | 1 | 20 | EM LIGHTING - SEVENTH 109 | 2 |
| 3 | EM LIGHTING - MECHANICAL 216 | 20 | 1 | | | 41 | 506 | | | 1 | 20 | EM LIGHTING - UNIT A BUILDING LIGHTS | 4 |
| 5 | EM LIGHTING - NE BUILDING LIGHTS | 20 | 1 | | | | | 552 | 427 | 1 | 20 | EM LIGHTING - UNIT B EAST BUILDING LIGHTS | 6 |
| 7 | SPARE | 20 | 1 | 0 | 0 | | | | | 1 | 20 | SPARE | 8 |
| 9 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 10 |
| 11 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 12 |
| 13 | SPARE | 20 | 1 | 0 | 0 | | | | | 1 | 20 | SPARE | 14 |
| 15 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 16 |
| 17 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 18 |
| 19 | SPARE | 20 | 1 | 0 | 0 | | | | | 1 | 20 | SPARE | 20 |
| 21 | SPARE | 20 | 1 | | | 0 | 0 | | | 1 | 20 | SPARE | 22 |
| 23 | SPARE | 20 | 1 | | | | | 0 | 0 | 1 | 20 | SPARE | 24 |
| 25 | SURGE PROTECTIVE DEVICE (SPD) | 30 | 3 | 0 | 0 | | | | | 1 | 20 | SPARE | 26 |
| 27 | -- | -- | -- | | | 0 | 0 | | | 1 | 20 | SPARE | 28 |
| 29 | -- | -- | -- | | | | | 0 | 0 | 1 | 20 | SPARE | 30 |
| | **TOTAL LOAD:** | | | 1024 VA | | 547 VA | | 979 VA | | | | | |
| | **ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):** | | | 0 VA | | 0 VA | | 0 VA | | | | | |
| | **TOTAL AMPS:** | | | 4 A | | 2 A | | 4 A | | | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS | |
|---|---|---|---|---|---|
| LIGHTING - | 5 VA | 100.00% | 5 VA | | |
| EM LIGHTING - | 2545 VA | 100.00% | 2545 VA | **TOTAL CONNECTED LOAD:** | 2550 VA |
| | | | | **TOTAL ESTIMATED DEMAND:** | 2550 VA |
| | | | | **TOTAL CONNECTED LOAD (A):** | 3 A |
| | | | | **TOTAL ESTIMATED DEMAND...** | 3 A |

**NOTES:**

PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

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**ADDENDUM 01** 05-08-2026
**ISSUED FOR** DATE

**PROJECT TITLE**
NEW EL SOL SCHOOL

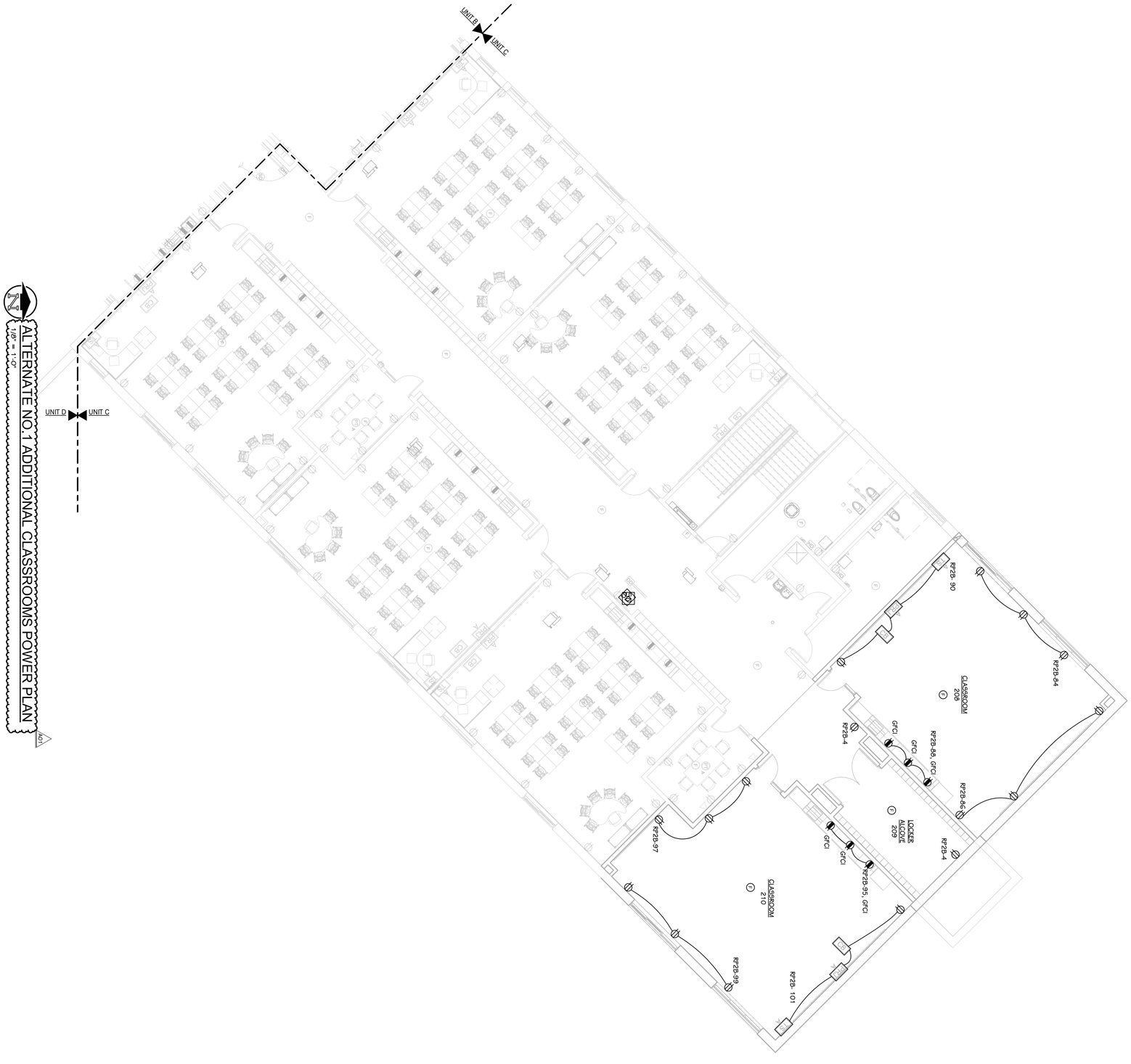
**OWNER**
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

**SHEET TITLE**
ELECTRICAL PANEL LOAD SHEETS

**DATE**
APRIL 24, 2026

**SHEET NUMBER**
E 506
23-622.000




**SHEET TITLE**
ALTERNATE NO.1 ADDITIONAL CLASSROOMS POWER PLAN

**SHEET NUMBER**
E 801
23-622.000

**DATE**
APRIL 24, 2026

**OWNER**
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

**PROJECT TITLE**
NEW EL SOL SCHOOL

**ISSUED FOR** — **DATE**
ADDENDUM 01 — 05-08-2026

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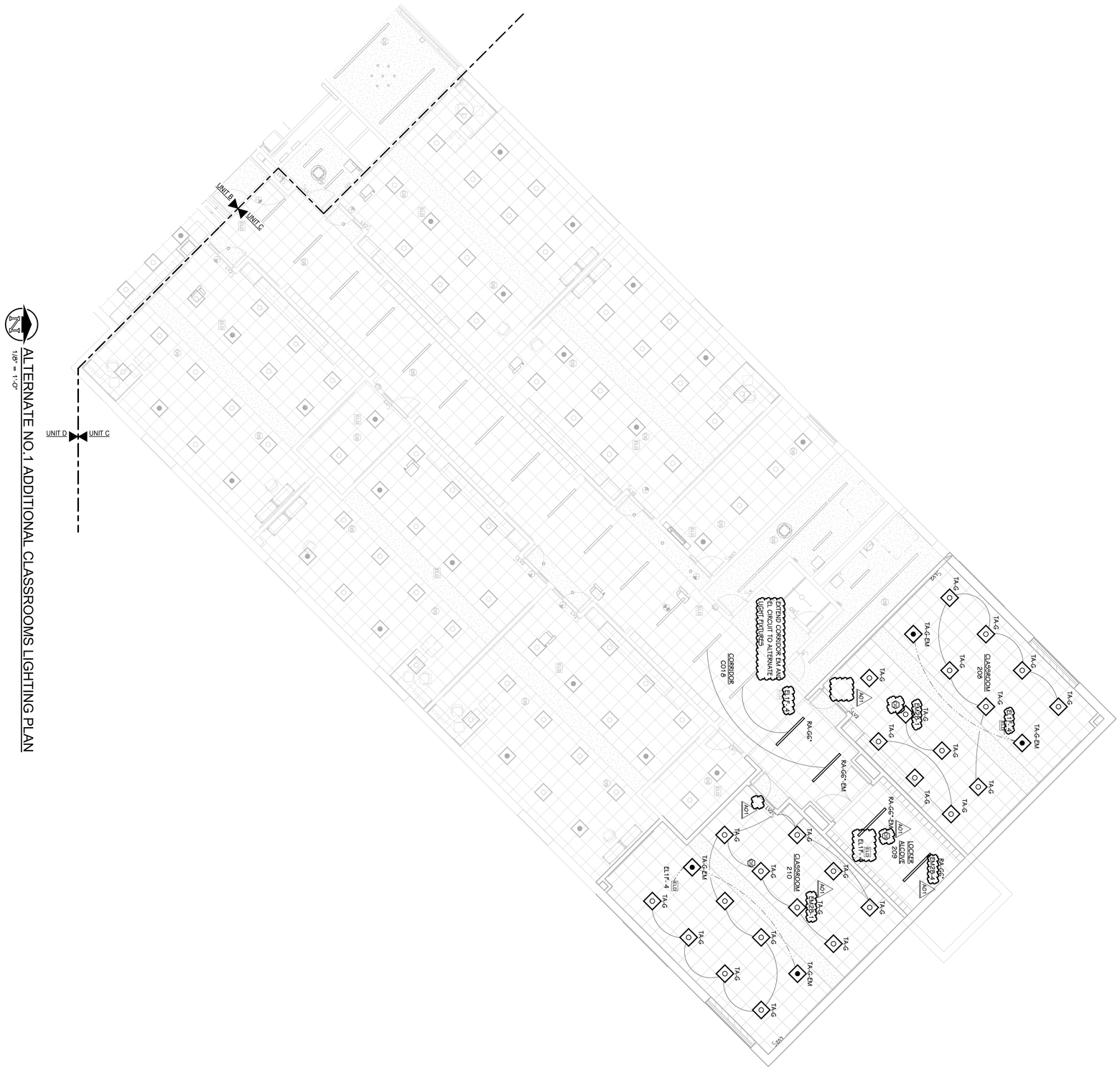


1/8" = 1'-0"

ALTERNATE NO.1 ADDITIONAL CLASSROOMS LIGHTING PLAN

**SHEET TITLE**
ALTERNATE NO.1 ADDITIONAL CLASSROOMS LIGHTING PLAN

**SHEET NUMBER**
E 802
23-622.000

**DATE**
APRIL 24, 2026

**OWNER**
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

**PROJECT TITLE**
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## TECHNOLOGY PROVISION MATRIX

| DEVICE TYPE | OWNER PROVIDED / INSTALLED | CONTRACTOR PROVIDED / INSTALLED | AV CONTRACTOR PROVIDED / INSTALLED | SECURITY CONTRACTOR PROVIDED / INSTALLED | COMMENTS |
|---|---|---|---|---|---|
| ACCESS CONTROL: CABLING TO DOORS AND KEYPADS | | | | X | |
| ACCESS CONTROL: ELECTRIFIED DOOR HARDWARE | | X | | | PROVIDED BY DOOR HARDWARE MANUFACTURER. |
| ACCESS CONTROL: ENCLOSURES, READERS, SENSORS, POWER SUPPLIES, CABLING, ETC. | | | | X | |
| AV: EQUIPMENT, MOUNTING HARDWARE, FACEPLATES, & CABLING | | | X | | |
| AV: SOUND-MASKING SYSTEM (DEVICES & CABLING) | | | X | | |
| CABLING: BACKBONE DATA CABLING, TERMINATIONS, & PATCH PANELS (INCLUDES SECURITY CAMERAS, EXCLUDES ACCESS CONTROL TO DOORS) | | X | | | |
| CABLING: CABLE TRAY (INSIDE TELECOM ROOMS) | | X | | | |
| CABLING: CABLE TRAY (OUTSIDE TELECOM ROOMS) | | X | | | |
| CABLING: HORIZONTAL DATA CABLING, TERMINATIONS, & PATCH PANELS | | X | | | |
| CLOCKS & CABLING | | X | | | |
| GROUNDING BUSBARS IN TELECOM ROOMS | | X | | | |
| NETWORK: EQUIPMENT (SWITCHES & WIRELESS ACCESS POINTS) | X | | | | |
| NETWORK: RACKS | | X | | | |
| PAGING: CABLING & DEVICES | | X | | | |
| PATHWAY & ROUGH INS FOR ACCESS CONTROL DEVICES (DOORS, CARD READERS "CR", KEYPADS "KP") | | X | | | REFER TO T 300 SECURITY SHEETS. |
| PATHWAY FOR COMMUNICATIONS (CONDUIT, SLEEVES, ROUGH-IN BOXES, ETC.) | | X | | | PROVIDED BY THE EC, MANAGED UNDER SKILLMAN. |
| PLYWOOD BACKERBOARD (INSIDE TELECOM ROOMS) | | X | | | |
| SECURITY: CAMERAS - HARDWARE & PROGRAMMING (EXCLUDES CABLING) | | | | X | |
| SECURITY: EXTERIOR CAMERA PENETRATIONS | | X | | | |
| SECURITY: INTERCOMS & CABLING | | X | | | |
| SECURITY: ON-PREM STORAGE & CAMERA LICENSES | X | | | | TECHNOLOGY CONTRACTOR SHALL COORDINATE WITH OWNER TO ACTIVATE CAMERA LICENSES. |
| UPS DEVICES | | X | | | |

### STRUCTURED CABLING

| | | MOUNTING HEIGHTS |
|---|---|---|
| | DATA/VOICE OUTLET - 4 SQ BOX, 3G COVER, 1" CONDUIT STUB | 16" |
| WP | WALL PHONE OUTLET - 4 SQ BOX, 3G COVER | 44" |
| | DATA/VOICE OUTLET - 4 SQ BOX, 3G COVER, SURFACE #WM500 | 16" |
| | DATA/VOICE OUTLET - 4 SQ BOX, 3G COVER, 1" CONDUIT STUB 4" ABOVE BACKSPLASH | |
| | SECURITY CONTROLS PATHWAY - 4 SQ BOX, 3G COVER WITH BRUSH PLATE, 1" CONDUIT STUB | 16" |
| WAP | WIRELESS ACCESS POINT (REFER TO DETAILS) | |
| GBB | GROUNDING BUS BAR WITH DEDICATED GROUND, (REFER TO DETAILS) | |
| | CABLE TRAY, (12"x4" UNLESS NOTED OTHERWISE) | |
| | CLOCK (REFER TO DETAILS) | 90" TO CENTER |
| CLP | CALL BUTTON - 4 SQ BOX, 3G COVER | 40" UNLESS NOTED |
| MCP | MASTER CLOCK PANEL | |
| PAG | PAGING SYSTEM HEAD END | |
| TC-# | NETWORK COMMUNICATION RACK - FLOOR STANDING 3' CLEAR ON BOTH SIDES | |
| | 4'X8'X3/4" FIRE-RATED PLYWOOD, A/C FINISH, MOUNT VERTICALLY | 12" |
| E | CONDUIT SLEEVE IN ACCESSIBLE CEILING (2" CONDUIT UNLESS NOTED OTHERWISE, ONLY SHOWN ON PLANS INDICATING SPECIFIC CONDITIONS, REFER TO GENERAL NOTES FOR SLEEVES THAT ARE REQUIRED INTO ALL SPACES) | |

**NOTES:**

DEVICES REQUIRING DATA DROPS MAY INCLUDE SYMBOLS NOT LOCATED UNDER THE "STRUCTURED CABLING" SECTION.

QTY. OF DATA DROPS TO EACH DEVICE IS DENOTED BY "#" NEAR THE DEVICE SYMBOL ON THE ASSOCIATED FLOOR PLANS.

### AUDIO/VISUAL

| | | |
|---|---|---|
| TV n | TV WALL RECESSED "FSR" BACKBOX, (REFER TO DETAILS) | |
| PSJ n | PROJECTOR, (REFER TO DETAILS) | |
| AVA | A/V BUTTON PANEL, 4 SQ BOX, 1-G OPENING, 1"C | 44" |
| AVB | A/V TOUCH PANEL, 4 SQ BOX, 2-G OPENING, 1"C | 44" |
| TS n | TECHNOLOGY OR TEACHER'S STATION BOXES, USE FSR MUDRING MUD-2G-** FOR 2-GANG OPENINGS(REFER TO DETAILS) | |
| AVI | A/V INPUT, 4 SQ BOX, 1-G OPENING, 1"C | 16" |
| XLR | MICROPHONE JACK, 4 SQ BOX, 1-G OPENING, 1"C | 16" |
| CB | CEILING BOX, (REFER TO DETAILS) | |
| BT | BLUETOOTH DEVICE - DEEP 4 SQ BOX, 2-G OPENING, PROTECTIVE COVER | 16" |
| ANT | ANTENNA, 1"C TO 4-SQUARE BOX, MOUNT TO BOTTOM OF TRUSS | |
| SCR | PROJECTOR SCREEN, (REFER TO DETAILS) | |
| SW | LOUDSPEAKER CEILING - MOUNTED | |
| SP AO1 | LOUDSPEAKER WALL - MOUNTED | |
| MON | MONITOR OUTPUT, 4 SQ BOX, 1-G OPENING, 1"C | 16" |
| SW | PAGING SPEAKER CEILING - MOUNTED | |
| SP | PAGING SPEAKER WALL - MOUNTED | |
| LUI | LU INTERACTIVE (REFER TO DETAILS) | |

### SECURITY SYMBOLS

| | |
|---|---|
| | SECURITY CAMERA - WALL |
| | SECURITY CAMERA - CEILING |
| SCP | SECURITY CABLING PATHWAY, 4 SQ, 3G BRUSH PLATE, 1" CONDUIT STUB |
| ACP# | ACCESS CONTROL PANEL (REFER TO DETAILS) |
| RB | RELEASE BUTTON - "#" DENOTES QTY. |
| IMS | INTERCOM MASTER STATION |
| LD | LOCKDOWN BUTTON |
| DA | DURESS ALARM PUSH BUTTON - UNDER DESK |
| CR | CARD READER - 4 SQ BOX, 3G COVER, 3/4" CONDUIT STUB |
| CR M | CARD READER, MULLION MOUNT, 3/4" CONDUIT STUB |
| LS | LOCKDOWN STROBE (REFER TO DETAILS) |
| KP | KEY PAD - 4 SQ BOX, 3G COVER, 3/4" CONDUIT STUB |
| ICM | INTERCOM - 4 SQ BOX, 3G COVER, 3/4" CONDUIT STUB (IC2 GETS 2G COVER) |
| SD | SOUNDER - 4 SQ BOX, 3G COVER, 3/4" CONDUIT STUB |
| STR AO1 | STROBE - 4 SQ BOX, 3G COVER, 3/4" CONDUIT STUB |
| STG | STROBE (GYM) - 4 SQ BOX @ 90° AFF, 2-G COVER, 3/4" CONDUIT STUB |
| VP | VAPE SENSOR |
| # | ACCESS CONTROL DETAIL INDICATOR: REFER TO ACCESS CONTROL DETAILS AND SCHEDULE |

REFER TO SECURITY DRAWINGS, DETAILS AND PLANS FOR LOCATIONS AND ROUGH-IN INFORMATION

### GENERAL NOTES - TECHNOLOGY - VIDEO SYSTEMS

1 INSTALLED VIDEO SYSTEMS SHALL NOT HAVE NOISE, FLICKER, UNEVEN BRIGHTNESS, OR ANY OTHER VISUAL ANOMALIES OR DEFICIENCIES.

2 EDID SHALL BE MANAGED AND MAINTAINED TO ENSURE PROPER DISPLAY IDENTIFICATION BY SOURCES.

3 HDCP SHALL BE MAINTAINED FROM ALL SOURCES TO ALL SINKS.

4 COORDINATE ALL NETWORK NEEDS WITH OWNER INCLUDING IP ADDRESSING, PROTOCOLS REQUIRED FOR EQUIPMENT OPERATION, AND BANDWIDTH IMPLICATIONS.

*AV SHALL BE INSTALLED BY OTHERS AS PART OF A SEPARATE PROJECT - SECURITY & AV #23622.050

### GENERAL NOTES - TECHNOLOGY

1 TECHNOLOGY CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR NEW WORK OR WHERE DEVICES ARE REMOVED AND NOT REPLACED.

2 TECHNOLOGY CONTRACTOR SHALL COORDINATE WITH G SERIES SHEETS DEVICE COORDINATION DETAIL. DEVICES ARE TO ALIGN VERTICALLY AND HORIZONTALLY AND FOLLOW THE RULES OF THIS DETAIL CONSISTENTLY. A PRE-INSTALL DEVICE COORDINATION MEETING FOR DEVICE FINISHES AND LAYOUT MAY BE REQUIRED IN THE SPECIFICATION FOR THIS PROJECT.

3 REFER TO TECHNOLOGY, ELECTRICAL AND ARCHITECTURAL DETAILS AND ELEVATIONS FOR SYMBOL INFORMATION AND ELEVATION DETAIL.

4 DEVICES AND EQUIPMENT SHOWN DASHED OR WITH AN "X" ARE TO BE REMOVED. FIXTURES, DEVICES AND EQUIPMENT SHOWN LIGHTLY OR WITH AN "E" ARE EXISTING TO REMAIN UNDISTURBED.

5 DEVICES SHOWN WITH AN "R" ARE EXISTING TO BE REPLACED WITH NEW DEVICE AND COVER PLATE.

6 TEMPORARILY SUPPORT EXISTING CEILING DEVICES TO REMAIN IN EXISTING CEILINGS TO BE REPLACED. REINSTALL DEVICES INTO NEW CEILING.

7 CONTRACTOR SHALL BE RESPONSIBLE FOR PROJECT PHASING. TEMPORARY WIRING TO KEEP SYSTEMS RUNNING SHALL BE PROVIDED AS REQUIRED WHILE BUILDING IS OCCUPIED BETWEEN PHASES OF CONSTRUCTION.

### GENERAL NOTES - TECHNOLOGY - STRUCTURED CABLING

1 BICSI TECHNICIAN (TECH) CERTIFICATION IS REQUIRED FOR THE LEAD INSTALLER THAT WILL BE ONSITE AT ALL TIMES. AO1

2 EACH INSTALLER IS REQUIRED TO BE CERTIFIED BY THE MANUFACTURER OF THE PRODUCTS THAT ARE INSTALLED (I.E. PANDUIT, BELDEN, HUBBELL, COMMSCOPE, ETC.).

3 VALID BICSI TECH AND MANUFACTURER INSTALLER CERTIFICATES SHALL BE INCLUDED IN SUBMITTAL PACKAGE.

4 ALL CERTIFICATION TEST RESULTS OF THE STRUCTURED CABLING SYSTEM SHALL BE SUBMITTED TO TOWERPINKSTER AS PART OF THE CLOSEOUT PACKAGE.

5 STRUCTURED CABLING INTEGRATOR SHALL PROVIDE A MANUFACTURER'S 25 YEAR WARRANTY AT PROJECT COMPLETION.

6 ALL CABLES SHALL HAVE A MINIMUM OF 5FT SERVICE LOOP AT OUTLET LOCATION OR AS NOTED ON DRAWINGS.

7 ALL DATA CABLES SHALL HAVE A MINIMUM OF 5FT SERVICE LOOP IN THE TELECOMMUNICATIONS ROOM.

8 DATA CABLES SHALL NOT BE BUNDLED IN GROUPS OF MORE THAN 24 WITHIN A TELECOMMUNICATIONS ROOM.

9 THE STRUCTURED CABLING INTEGRATOR SHALL PROVIDE, WITHIN EACH TELECOMMUNICATIONS ROOM, THE MINIMUM NUMBER OF PATCH PANELS REQUIRED TO SUPPORT ALL INSTALLED DATA CABLES, WITH ADDITIONAL CAPACITY TO ACCOMMODATE AT LEAST 20 FUTURE DATA CABLE TERMINATIONS.

10 ALL DATA FACEPLATES SHALL MATCH THE COLOR, STYLE AND MATERIAL (I.E. STAINLESS STEEL, PLASTIC, ETC.) OF THE ELECTRICAL DEVICE FACEPLATE WITHIN EACH SPACE.

11 ALL HORIZONTAL CABLES (CATEGORY CABLE, COAX, FIBER, ETC.) SHALL BE CERTIFIED BY USING A MINIMUM OF A LEVEL IIIE CERTIFICATION TESTER THAT IS WITHIN MANUFACTURER'S CALIBRATION PERIOD.

12 ALL BACKBONE FIBER STRANDS SHALL BE CERTIFIED BY USING A MINIMUM OF A LEVEL IIIE CERTIFICATION TESTER THAT IS WITHIN MANUFACTURER'S CALIBRATION PERIOD.

### GENERAL NOTES - TECHNOLOGY - AUDIO SYSTEMS

1 AUDIO SYSTEM SHALL BE FREE OF NOISE, RATTLE, HUM, BUZZ, OR ANY OTHER AUDIO DISTORTIONS.

2 SECURE CABLES UTILIZING VELCRO STRAPS. WIRE "ZIP TIES" SHALL NOT BE USED.

3 ROUTE ALL CABLES IN A MANNER THAT WILL ENSURE SIGNAL INTEGRITY AND WILL NOT INTRODUCE CROSSTALK.

4 PROVIDE A SERVICE LOOP FOR RACKS AND EQUIPMENT SUITABLE TO EASILY PLUG AND UNPLUG EQUIPMENT FOR TROUBLESHOOTING OR REPLACEMENT.

5 NEATLY DRESS ALL CABLING INSTALLED INSIDE AND OUTSIDE OF RACKS IN A SUITABLE HARNESS TO KEEP CABLES CLEAN, NEAT, AND TIDY.

6 COMMISSION AUDIO SYSTEM USING AUDIO MEASUREMENT MICROPHONE AND SOFTWARE (SMAART OR EASERA).)

7 ADJUST EQ AND CROSSOVER SETTINGS IN AMPLIFIER AND/OR DSP TO PROVIDE FLAT FREQUENCY RESPONSE, FULL RANGE AUDIO WITH PROTECTIVE LIMITING.

8 USE SPEECH, HIGH QUALITY REFERENCE AUDIO, AND SINE WAVE SWEEPS TO TEST THE SYSTEM - CORRECT ANY ABNORMALITIES.

9 VERIFY PROPER FUNCTION OF ALL INSTALLED EQUIPMENT (NEW AND EXISTING).

10 TURN OVER EXISTING UNUSED EQUIPMENT TO OWNER - NEATLY ORGANIZED.

11 COORDINATE WITH OWNER FOR LABELING OF EQUIPMENT AND AUDIO CONSOLE CHANNELS AND BUSSES AS WELL AS CONSOLE CONFIGURATION.

12 REMOTE MOUNT ALL ANTENNAS AS REQUIRED FOR MAXIMUM PERFORMANCE.

13 CONFIGURE DELAYS ON ANY SPEAKERS THAT ARE STAGGERED IN A LISTENING PLANE TO TIME-ALIGN AUDIO.

14 CONNECT COMPONENTS TO POWER SEQUENCER IN SUCH A WAY AS TO MITIGATE POPPING AND SYSTEM DAMAGE DURING SYSTEM POWER UP AND POWER DOWN.

*AV SHALL BE INSTALLED BY OTHERS AS PART OF A SEPARATE PROJECT - SECURITY & AV #23622.050

### GENERAL NOTES - TECHNOLOGY - ACCESS CONTROLS

1 ALL INSTALLATION AND PROGRAMMING SHALL BE COMPLETED BY OR OVERSEEN BY A MANUFACTURER CERTIFIED INSTALLER.

2 PRIOR TO CONNECTING ANY DEVICE TO THE NETWORK, DEFAULT USERNAMES AND PASSWORDS SHALL BE CHANGED TO OWNER'S STANDARDS.

3 CABLES SHALL BE NEATLY MANAGED AND LABELED WITHIN ACCESS CONTROL PANELS. ZIP TIES ARE NOT ACCEPTABLE METHODS OF CABLE MANAGEMENT.

4 EACH ACCESS CONTROL CABLE SHALL BE LABELED WITH THEIR FUNCTION AT THE ACCESS CONTROL PANEL. REFER TO ACCESS CONTROL LABELING DETAILS FOR REQUIREMENTS.

5 UNLESS NOTED OTHERWISE, POWER SUPPLIES SHALL BE HARD WIRED AND NOT CORD AND PLUG. COORDINATE WITH ELECTRICAL CONTRACTOR TO CONNECT TO AN EMERGENCY OR GENERATOR-FED CIRCUIT.

6 COORDINATE WITH OWNER TO PROGRAM DOORS AND DEVICES ACCORDING TO OWNER'S NAMING CONVENTIONS.

7 REFER TO ACCESS CONTROL SCHEDULE FOR PROGRAMMING REQUIREMENTS OF EACH DOOR.

8 ANY SPARE CONDUCTORS/CABLES SHALL BE SPOOLED ABOVE ACCESSIBLE CEILING NEAR DOOR AND LABELED WITH THE DOOR NUMBER AND PANEL NUMBER, AS WELL AS "SPARE".

*ACCESS CONTROL SHALL BE INSTALLED BY OTHERS AS PART OF A SEPARATE PROJECT - SECURITY & AV #23622.050

### GENERAL NOTES - TECHNOLOGY - SECURITY CAMERAS

1 INSTALLATION SHALL BE COMPLETED BY OR OVERSEEN BY A MANUFACTURER CERTIFIED PROFESSIONAL.

2 INSTALL CAMERAS USING ALL APPROPRIATE HANGERS, FASTENERS, ETC. CAMERAS INSTALLED IN GRID/LAY IN CEILING SHALL HAVE SAFETY WIRE TYING THE CAMERA TO STRUCTURE ABOVE. EXTERIOR CAMERAS SHALL HAVE WEATHERTIGHT SEALANT AND SURGE SUPPRESSION INSTALLED. REFER TO CAMERA ROUGH IN DETAILS.

3 PRIOR TO CONNECTION TO OWNER'S NETWORK, DEFAULT USERNAME AND PASSWORD SHALL BE CHANGED. COORDINATE WITH OWNER FOR DEVICE SPECIFIC USERNAMES AND PASSWORDS.

4 CAMERA SHALL BE CONFIGURED BASED ON OWNER'S NETWORK CONFIGURATION AND NAMING STANDARDS. COMPLETE AN IP ADDRESS REQUEST WITH THE OWNER, COORDINATE NAMING CONFIGURATION BASED ON CAMERA COORDINATION SPREADSHEET.

5 INSTALL CAMERAS WITH INITIAL VIEW DEFINED BY THE CAMERA COORDINATION SPREADSHEET OR COVERAGE ANGLES PROVIDED BY ARCHITECT. VARIFOCAL AIMING WHERE REQUIRED TO OBTAIN INTENDED VIEW SHALL BE COMPLETED.

6 FOLLOWING SETTING THE INITIAL VIEW, COORDINATE AIMING MODIFICATIONS WITH ARCHITECT AND OWNER AND OBTAIN SIGN OFF PER CAMERA THROUGH THE CAMERA AIMING COORDINATION SPREADSHEET.

7 CONFIGURE CAMERA TO RECORD TO NVR BASED ON OWNER'S RECORDING CONFIGURATION STANDARDS. RESOLUTION, FRAMES PER SECOND, CONTINUOUS/MOTION ACTIVATED RECORDING, ANALYTICS, AND ANY OTHER FEATURES SHALL BE COORDINATED.

8 LABEL CAMERA HOUSING IN A LOCATION VISIBLE FROM THE GROUND. REFER TO CAMERA LABELING DETAIL FOR REQUIREMENTS.

9 CAMERA SYMBOLS AND COVERAGE ANGLES SHALL BE SET IN VMS MAPS ONCE OWNER AND ARCHITECT HAVE SIGNED OFF ON VIEWS.

*SECURITY CAMERAS SHALL BE INSTALLED BY OTHERS AS PART OF A SEPARATE PROJECT - SECURITY & AV #23622.050

### GENERAL NOTES - TECHNOLOGY - PAGING AND CLOCKS

1 FOR CLOCKS REQUIRING A MANUFACTURER-SPECIFIC IN-WALL ROUGH-IN BOX, THE CLOCK CONTRACTOR SHALL PROVIDE THE ROUGH-IN BOX TO ELECTRICIAN FOR WALL INSTALLATION. THE CLOCK CONTRACTOR AND ELECTRICIAN SHALL COORDINATE AHEAD OF SCHEDULED WALL INSTALLATIONS. COORDINATE WITH CONSTRUCTION MANAGER.

2 PAGING AND CLOCK CONTROLLERS SHALL BE PROPERLY CONFIGURED FOR TIME SYNCHRONIZATION WITH OWNER'S NETWORK TIME PROTOCOL (NTP) SOURCE. COORDINATE NTP ADDRESS WITH OWNER.

3 PAGING SPEAKER CABLING SHALL BE SIZED APPROPRIATELY FOR CABLE LENGTH AND POWER LOAD OF A GIVEN CIRCUIT.

4 FOR WIRELESS CLOCK SYSTEMS THAT REQUIRE FCC LICENSURE, THE CLOCK INTEGRATOR SHALL COORDINATE ANY REQUIRED LICENSE APPLICATION FORMS THAT ARE REQUIRED TO BE COMPLETED BY THE OWNER.

5 THE CLOCK INTEGRATOR SHALL BE RESPONSIBLE FOR REVIEW OF THE PROJECT ARCHITECTURAL ELEVATIONS AND ADHERE TO CLOCK PLACEMENT/ALIGNMENT GUIDELINES. ANY PLACEMENT CLARIFICATION REQUESTS SHALL BE MADE BY RFI.

6 FOR INTEGRATION OF NEW PAGING HEADEND HARDWARE TO PRE-EXISTING PAGING CIRCUITS, THE PAGING INTEGRATOR SHALL PERFORM A PRE-INSTALLATION SPEAKER TEST OF ALL EXISTING SPEAKERS. ANY FAULTY EXISTING SPEAKERS SHALL BE NOTED AND COMMUNICATED TO THE CM/ARCHITECT PRIOR TO THE INSTALLATION OF NEW EQUIPMENT.

7 THE PAGING SYSTEM INTEGRATOR SHALL PROVIDE INTERCONNECTION CABLING TO THE PRIMARY FIRE ALARM PANEL TO ALLOW THE FIRE ALARM SYSTEM TO OVERRIDE PAGING. CONNECTION AT THE FIRE PANEL SHALL BE BY THE FIRE ALARM INTEGRATOR. COORDINATE WITH OTHER TRADES.

8 THE PAGING SYSTEM RISER DETAIL IS INTENDED TO BE DIAGRAMMATICAL FOR THE PURPOSE OF UNDERSTANDING THE BASIC SYSTEM ARCHITECTURE. THE PAGING INTEGRATOR SHALL PROVIDE ALL COMPONENTS, CABLES AND ADAPTERS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM, REGARDLESS IF SHOWN ON THE DIAGRAM.

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|---|---|
| ADDENDUM 01 | 05-08-2026 |

PROJECT TITLE
NEW EL SOL SCHOOL

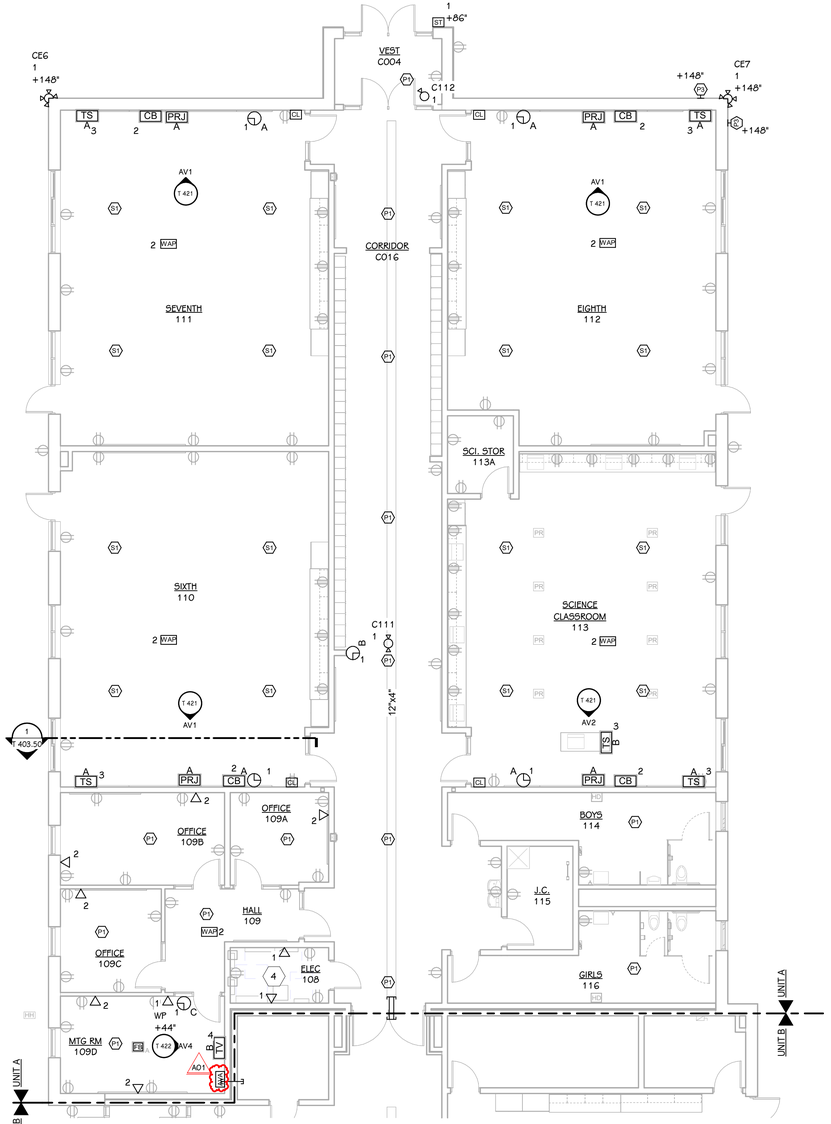
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
TECHNOLOGY SYMBOLS AND GENERAL NOTES

DATE
APRIL 24, 2026

SHEET NUMBER
TG 001
23-622.000




FIRST FLOOR TECHNOLOGY PLAN - UNIT A
1/8" = 1'-0"

## KEYED NOTES - TECHNOLOGY - CONSTRUCTION

1 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. REFER TO "SECURITY CABLING PATHWAY - RECEPTION / WAITING" DETAIL. CABLING AND FINAL LOCKDOWN COORDINATION SHALL BE PROVIDED BY THE SECURITY CONTRACTOR AS PART OF A SEPARATE PROJECT.

2 EC SHALL PROVIDE THE ROUGH-IN AND SINGLE GANG BOX AT 40" AFF. CABLING AND DEVICE SHALL BE PROVIDED AND INSTALLED BY THE TECHNOLOGY CONTRACTOR. REFER TO "CALL BUTTON & CLOCK" DETAIL.

3 EC SHALL PROVIDE THE ROUGH-IN AND DOUBLE GANG BOX AT 40" AFF. CABLING AND DEVICE SHALL BE PROVIDED AND INSTALLED BY THE TECHNOLOGY CONTRACTOR. REFER TO "CALL BUTTON & CLOCK" DETAIL.

4 DATA CABLES FOR ELEC/MECH EQUIPMENT. COORDINATE FINAL LOCATION WITH THE ELECTRICAL / MECHANICAL CONTRACTOR.

5 PAGING SPEAKER SHALL BE INSTALLED IN A COMPOUND GWB CEILING. PRECONSTRUCTION BRACKET SHALL BE INSTALLED AT THIS LOCATION. REFER TO DETAILS.

6 DATA CABLE SHALL BE USED AS A POTS LINE FOR THE ELEVATOR PHONE.

7 INSTALLATION OF THE ELEVATOR CAMERA AND CARD READER SHALL BE PERFORMED BY THE ELEVATOR CONTRACTOR. ELEVATOR CARD READERS SHALL BE PROVIDED BY THE SECURITY CONTRACTOR AS PART OF A SEPARATE PROJECT. SECURITY CONTRACTOR SHALL COORDINATE WITH ELEVATOR CONTRACTOR AND CM.

8 ELEVATOR CAMERA AND CARD READER SHALL HAVE A DEDICATED TRAVEL CABLE. SIX (6) SHIELDED PAIRS AND ONE (1) COAXIAL CABLE AT MINIMUM. STRUCTURED CABLING CONTRACTOR SHALL RUN CABLE BETWEEN ITS ORIGIN AND ELEVATOR. ELEVATOR CONTRACTOR SHALL INSTALL TRAVEL CABLE.

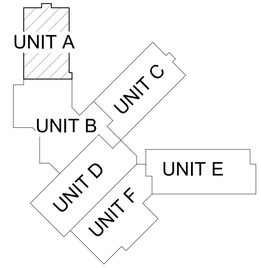
9 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. CABLING SHALL BE PROVIDED BY THE SECURITY CONTRACTOR.

10 DEVICES ARE ARE PRE-WIRE / ROUGH-IN ONLY.

11 COORDINATE FINAL LOCATION WITH FOOD SERVICE INSTALLER.

12 RECEIVING DOOR INTERCOM SHALL TRIGGER THE ATLAS IED END POINT LOCATED IN THE KITCHEN.

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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| | |
|---|---|
| ADDENDUM 01 | 05-08-2026 |
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

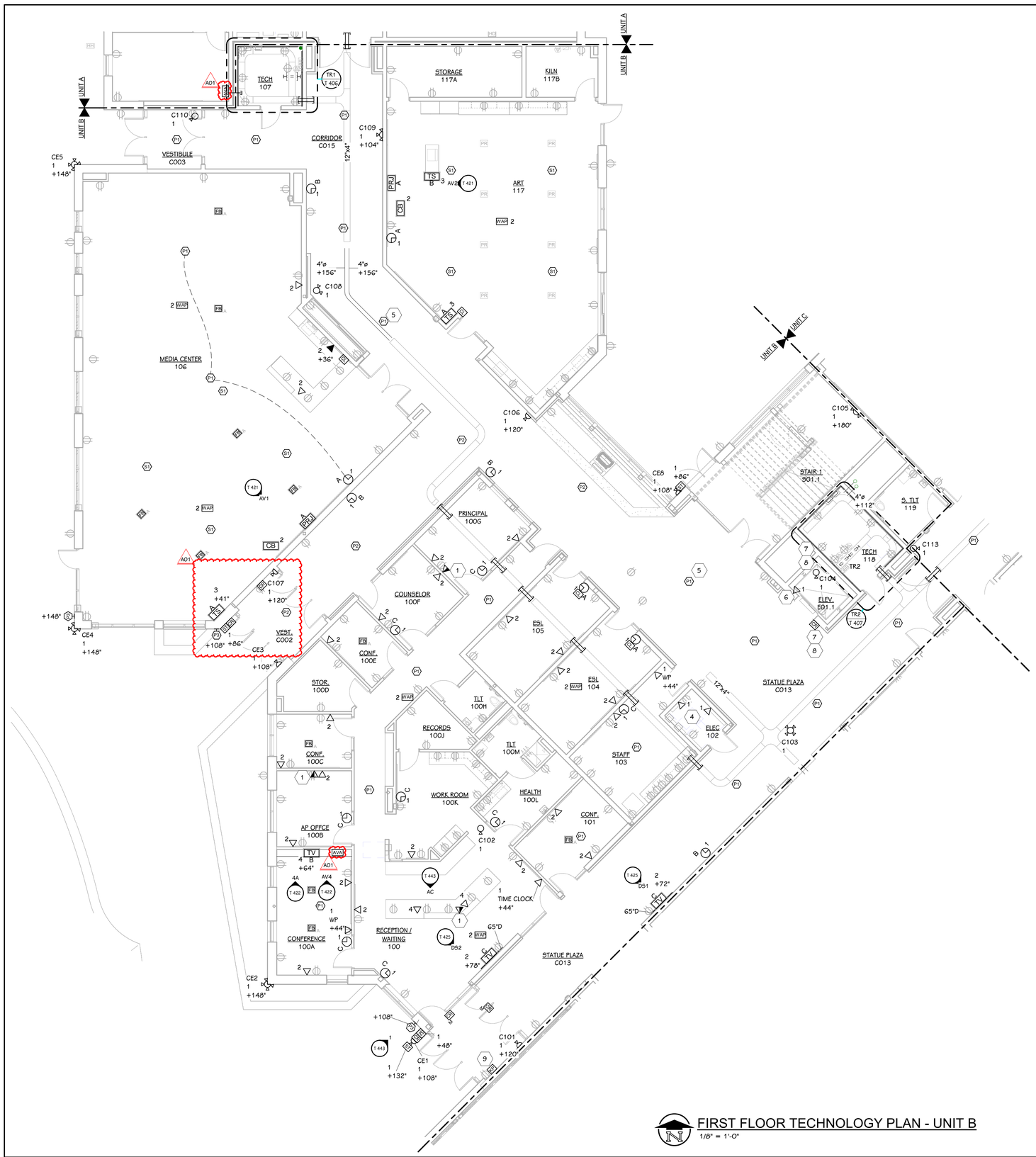
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR TECHNOLOGY PLAN - UNIT A

DATE
APRIL 24, 2026

SHEET NUMBER
T 101A
23-622.000




FIRST FLOOR TECHNOLOGY PLAN - UNIT B
1/8" = 1'-0"

## KEYED NOTES - TECHNOLOGY - CONSTRUCTION

1 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. REFER TO "SECURITY CABLING PATHWAY - RECEPTION / WAITING" DETAIL. CABLING AND FINAL LOCKDOWN COORDINATION SHALL BE PROVIDED BY THE SECURITY CONTRACTOR AS PART OF A SEPARATE PROJECT.

2 EC SHALL PROVIDE THE ROUGH-IN AND SINGLE GANG BOX AT 40" AFF. CABLING AND DEVICE SHALL BE PROVIDED AND INSTALLED BY THE TECHNOLOGY CONTRACTOR. REFER TO "CALL BUTTON & CLOCK" DETAIL.

3 EC SHALL PROVIDE THE ROUGH-IN AND DOUBLE GANG BOX AT 40" AFF. CABLING AND DEVICE SHALL BE PROVIDED AND INSTALLED BY THE TECHNOLOGY CONTRACTOR. REFER TO "CALL BUTTON & CLOCK" DETAIL.

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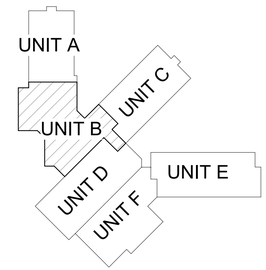
9 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. CABLING SHALL BE PROVIDED BY THE SECURITY CONTRACTOR.

10 DEVICES ARE ARE PRE-WIRE / ROUGH-IN ONLY.

11 COORDINATE FINAL LOCATION WITH FOOD SERVICE INSTALLER.

12 RECEIVING DOOR INTERCOM SHALL TRIGGER THE ATLAS IED END POINT LOCATED IN THE KITCHEN.

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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PROJECT TITLE
NEW EL SOL SCHOOL

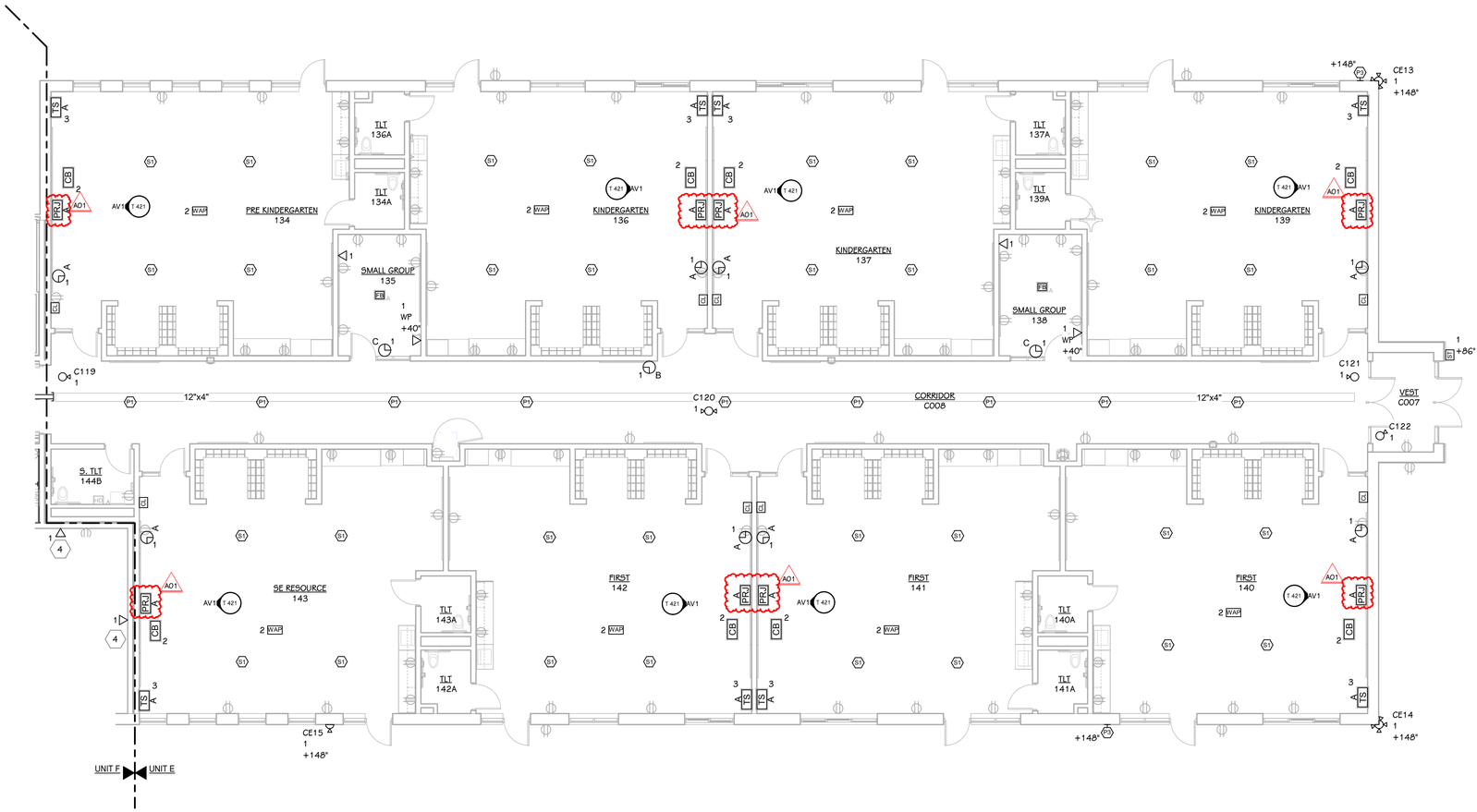
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR TECHNOLOGY PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
T 101B
23-622.000




FIRST FLOOR TECHNOLOGY PLAN - UNIT E

1/8" = 1'-0"

## KEYED NOTES - TECHNOLOGY - CONSTRUCTION

1 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. REFER TO "SECURITY CABLING PATHWAY - RECEPTION / WAITING" DETAIL. CABLING AND FINAL LOCKDOWN COORDINATION SHALL BE PROVIDED BY THE SECURITY CONTRACTOR AS PART OF A SEPARATE PROJECT.

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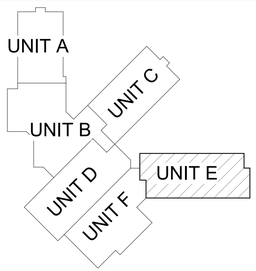
11 COORDINATE FINAL LOCATION WITH FOOD SERVICE INSTALLER.

12 RECEIVING DOOR INTERCOM SHALL TRIGGER THE ATLAS IED END POINT LOCATED IN THE KITCHEN.

**EL SOL ELEMENTARY**




**KEY PLAN**

SCALE: NO SCALE

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| ADDENDUM 01 | 05-08-2026 |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR TECHNOLOGY PLAN - UNIT E

DATE
APRIL 24, 2026

SHEET NUMBER
T 101E

23-622.000

FIRST FLOOR TECHNOLOGY PLAN - UNIT F

1/8" = 1'-0"

## KEYED NOTES - TECHNOLOGY - CONSTRUCTION

1 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. REFER TO "SECURITY CABLING PATHWAY - RECEPTION / WAITING" DETAIL. CABLING AND FINAL LOCKDOWN COORDINATION SHALL BE PROVIDED BY THE SECURITY CONTRACTOR AS PART OF A SEPARATE PROJECT.

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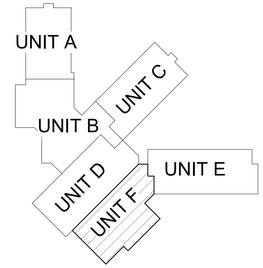
11 COORDINATE FINAL LOCATION WITH FOOD SERVICE INSTALLER.

12 RECEIVING DOOR INTERCOM SHALL TRIGGER THE ATLAS IED END POINT LOCATED IN THE KITCHEN.

**EL SOL ELEMENTARY**




KEY PLAN

SCALE: NO SCALE

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| ADDENDUM 01 | 05-08-2026 |
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| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

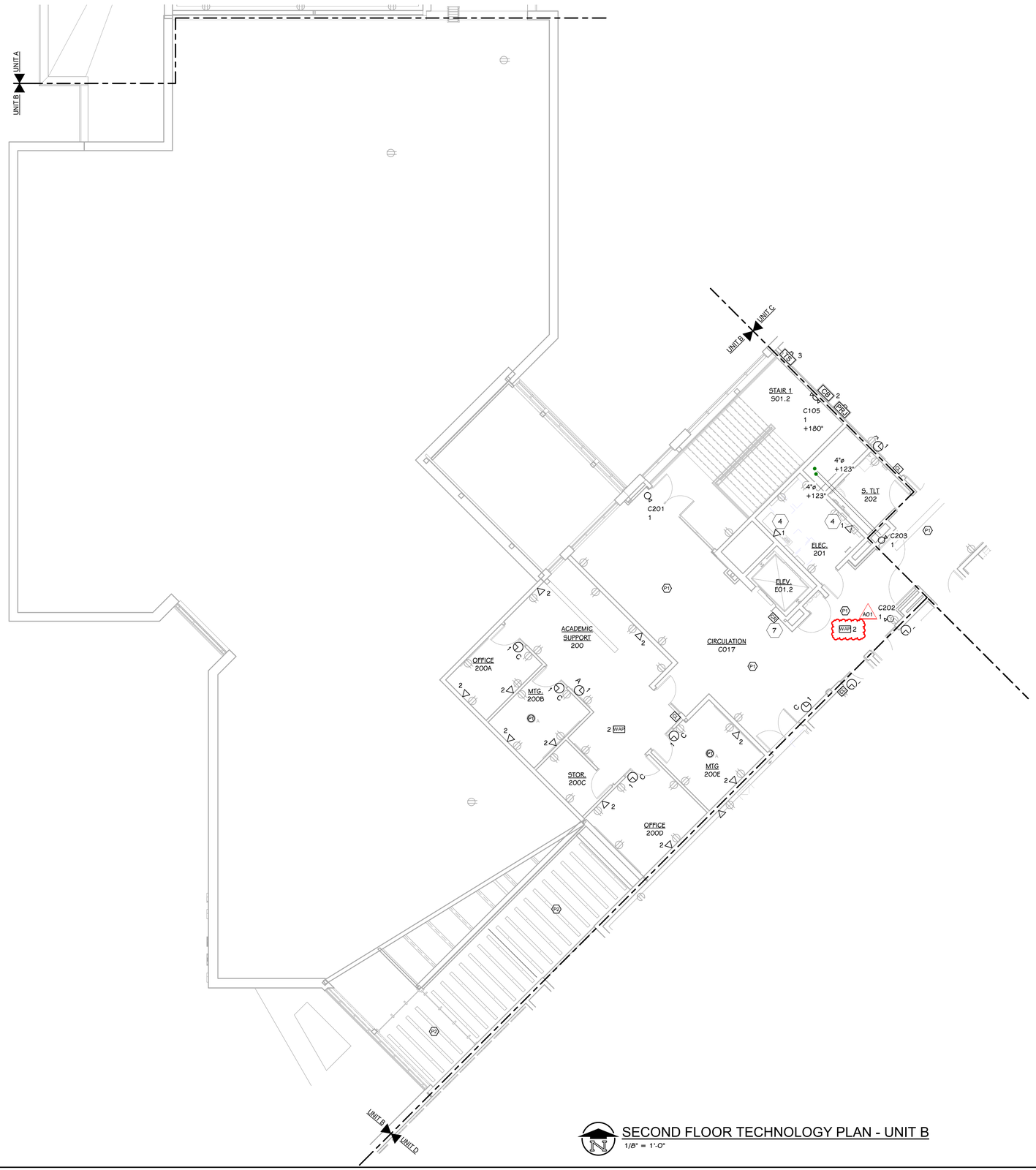
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR TECHNOLOGY PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
T 101F

23-622.000




SECOND FLOOR TECHNOLOGY PLAN - UNIT B
1/8" = 1'-0"

**KEYED NOTES - TECHNOLOGY - CONSTRUCTION**

1 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. REFER TO "SECURITY CABLING PATHWAY - RECEPTION / WAITING" DETAIL. CABLING AND FINAL LOCKDOWN COORDINATION SHALL BE PROVIDED BY THE SECURITY CONTRACTOR AS PART OF A SEPARATE PROJECT.

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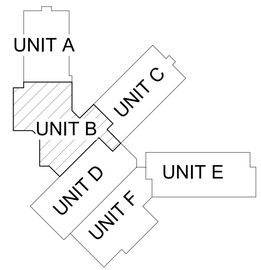
12 RECEIVING DOOR INTERCOM SHALL TRIGGER THE ATLAS IED END POINT LOCATED IN THE KITCHEN.

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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| ADDENDUM 01 | 05-08-2026 |

PROJECT TITLE
NEW EL SOL SCHOOL

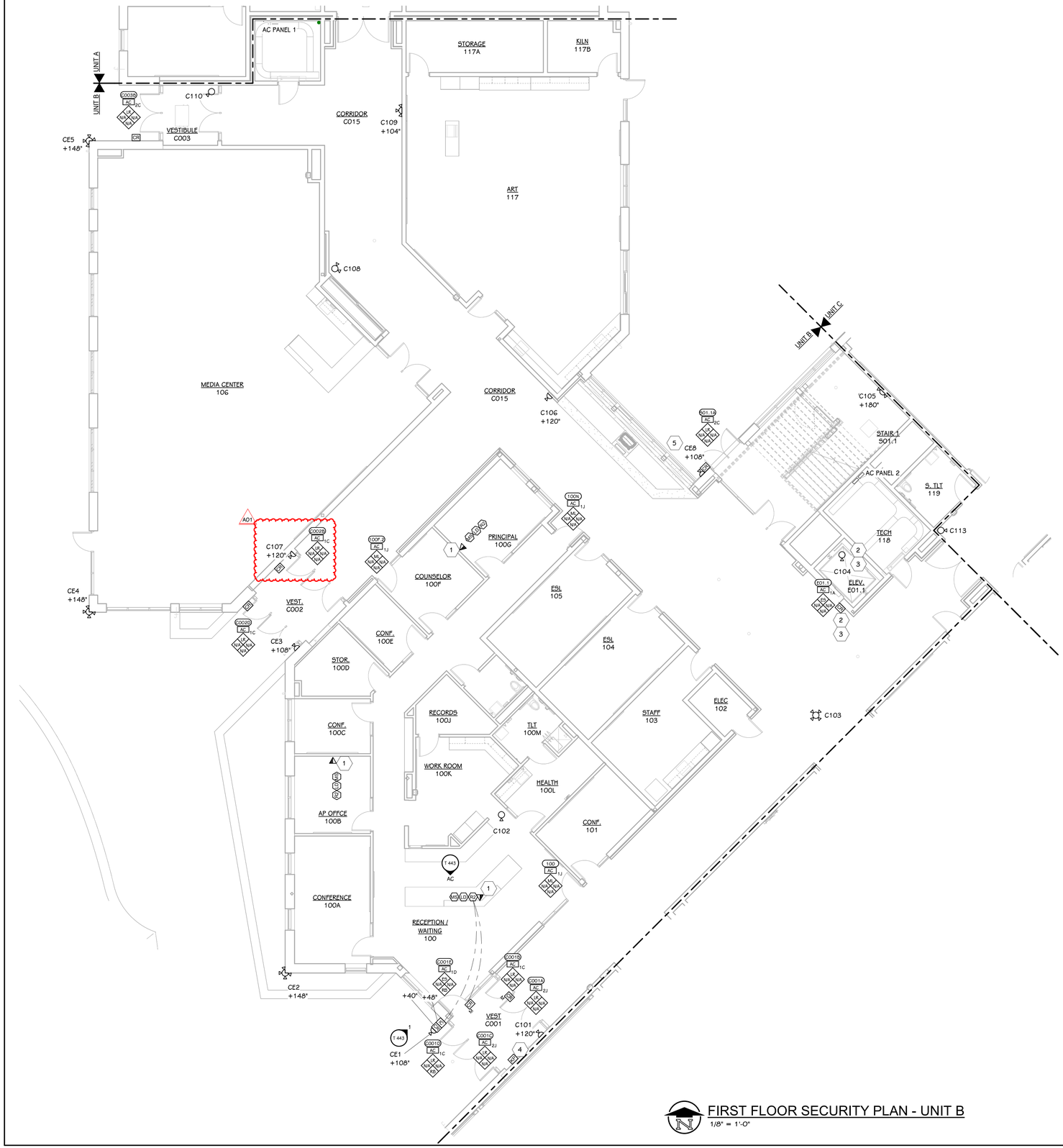
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
SECOND FLOOR TECHNOLOGY PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
T 102B
23-622.000




FIRST FLOOR SECURITY PLAN - UNIT B
1/8" = 1'-0"

## KEYED NOTES - SECURITY - CONSTRUCTION

1 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. CABLING SHALL BE PROVIDED BY THE SECURITY CONTRACTOR.

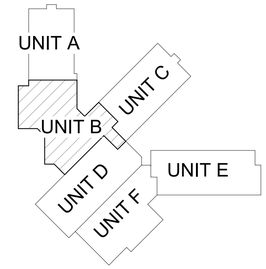
2 ELEVATOR CARD READERS SHALL BE PROVIDED BY THE SECURITY CONTRACTOR. INSTALLATION OF ELEVATOR CAMERA AND CARD READERS SHALL BE PERFORMED BY THE ELEVATOR CONTRACTOR. SECURITY CONTRACTOR SHALL COORDINATE WITH ELEVATOR CONTRACTOR AND CM.

3 ELEVATOR CAMERA AND CARD READER SHALL HAVE A DEDICATED TRAVEL CABLE. 6 SHIELDED PAIRS AND 1 COAXIAL CABLE AT MINIMUM. CABLING CONTRACTOR SHALL RUN AND INSTALL TRAVEL CABLE BETWEEN ITS ORIGIN AND ELEVATOR.

4 PROVIDE ACCESS CONTROL CABLING TO KEYPAD. KEYPAD SHALL BE PROVIDED AND INSTALLED BY OTHERS.

5 CARD READER AND CAMERA SHALL BE VERTICALLY ALIGNED.

**EL SOL ELEMENTARY**




KEY PLAN
SCALE: NO SCALE

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| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

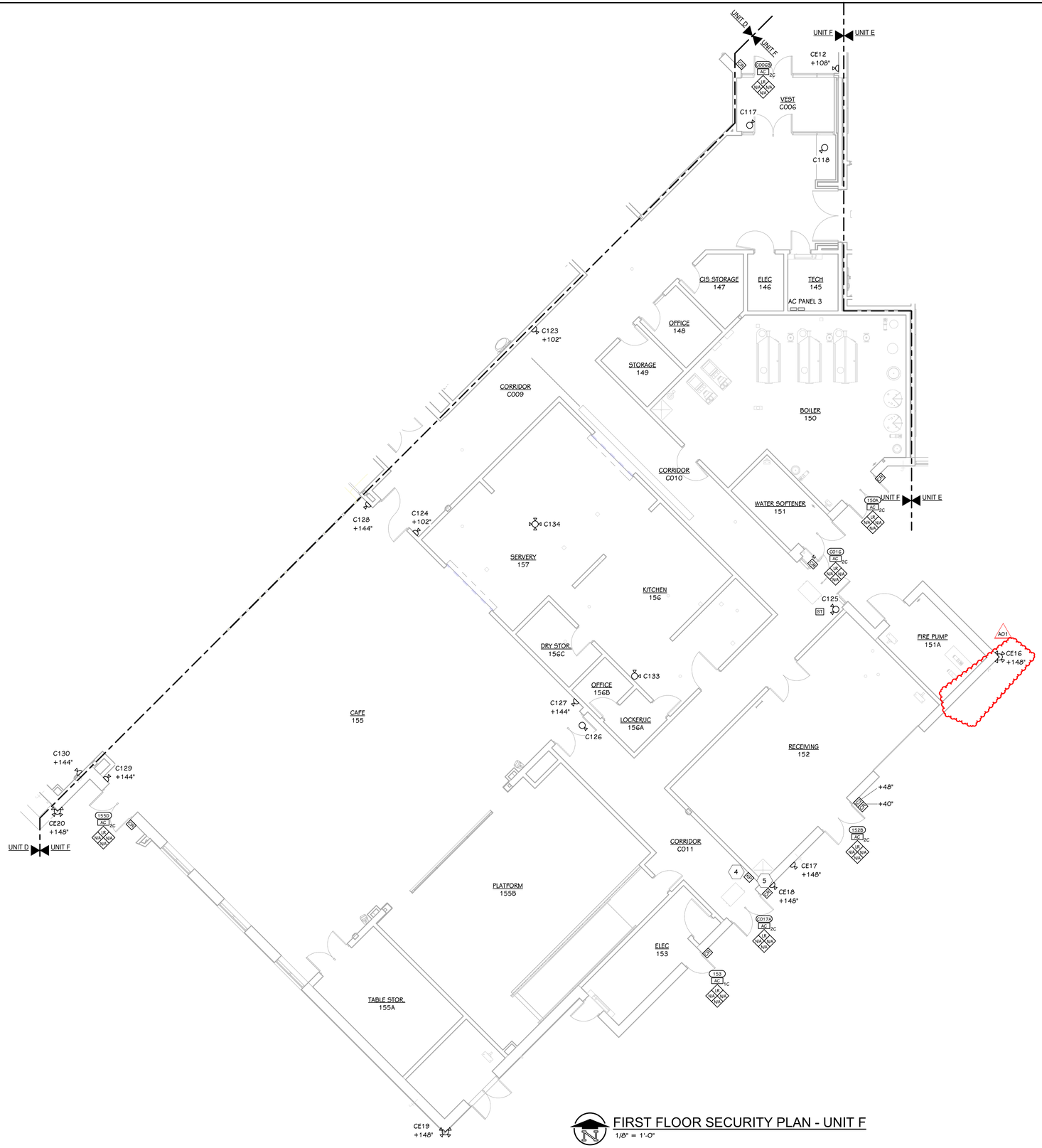
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR SECURITY PLAN - UNIT B

DATE
APRIL 24, 2026

SHEET NUMBER
T 301B
23-622.000




## FIRST FLOOR SECURITY PLAN - UNIT F

1/8" = 1'-0"

### KEYED NOTES - SECURITY - CONSTRUCTION

1 EC SHALL PROVIDE A DOUBLE-GANG ROUGH-IN BOX AT THIS LOCATION. THIS BOX SHALL BE USED AS A PATHWAY FOR SECURITY AND ACCESS CONTROL CABLING. CABLING SHALL BE PROVIDED BY THE SECURITY CONTRACTOR.

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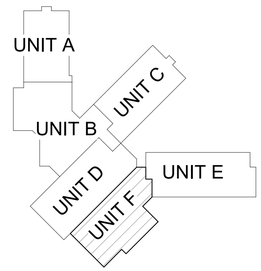
4 PROVIDE ACCESS CONTROL CABLING TO KEYPAD. KEYPAD SHALL BE PROVIDED AND INSTALLED BY OTHERS.

5 CARD READER AND CAMERA SHALL BE VERTICALLY ALIGNED.

### EL SOL ELEMENTARY




KEY PLAN
SCALE: NO SCALE

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ADDENDUM 01 05-08-2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

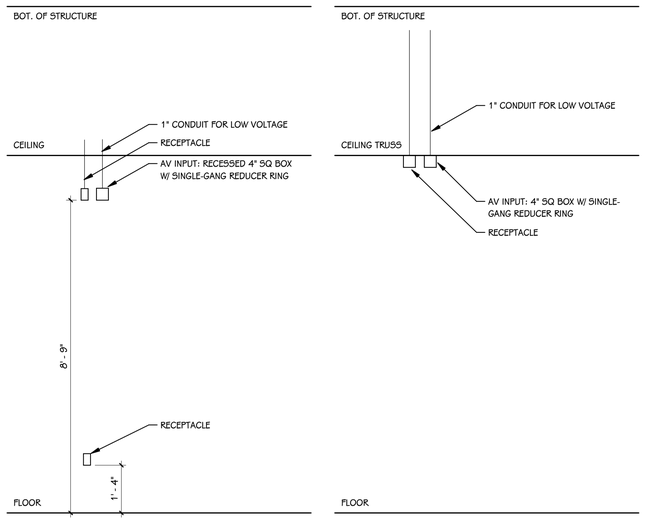
KALAMAZOO, MICHIGAN

SHEET TITLE
FIRST FLOOR SECURITY PLAN - UNIT F

DATE
APRIL 24, 2026

SHEET NUMBER
T 301F

23-622.000




"PRJ-A" DETAIL

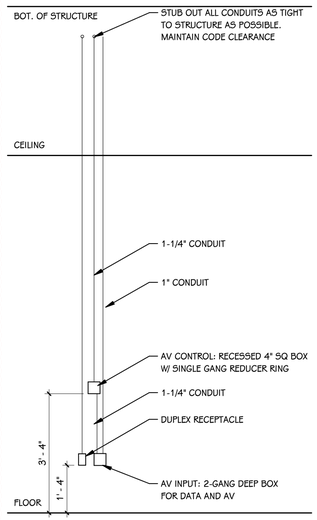
1/2" = 1'-0"




"PRJ-C" DETAIL

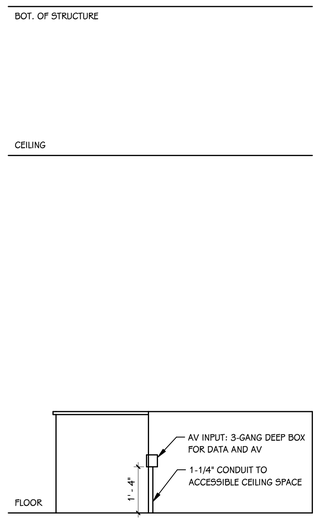
SCALE: NONE

AO1



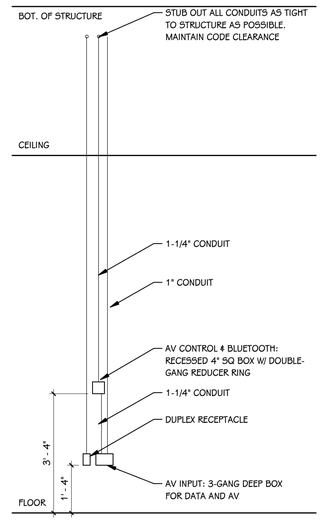

"TS-A" DETAIL

1/2" = 1'-0"




"TS-B" DETAIL

1/2" = 1'-0"




"TS-C" DETAIL

SCALE: NONE




"LU1" DETAIL

1/2" = 1'-0"




"TV-A" DETAIL

1/2" = 1'-0"




"TV-B" DETAIL

1/2" = 1'-0"




"TV-C" DETAIL

1/2" = 1'-0"




"TV-D" DETAIL

1/2" = 1'-0"




"AV-R" DETAIL

SCALE: NONE

DRAWN BY: Author
5/8/2026 2:05:49 PM

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ADDENDUM 01 — 05-08-2026

ISSUED FOR — DATE

PROJECT TITLE
NEW EL SOL SCHOOL

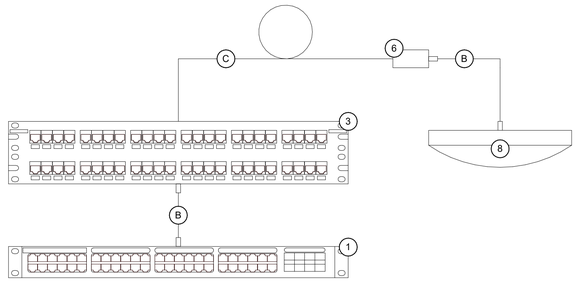
OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
TECHNOLOGY ROUGH-IN DETIALS

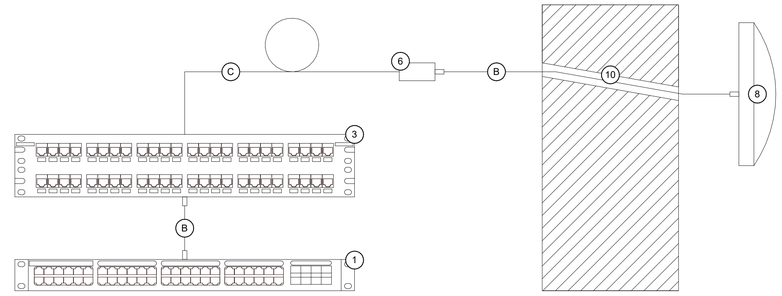
DATE
APRIL 24, 2026

SHEET NUMBER
T 402
23-622.000



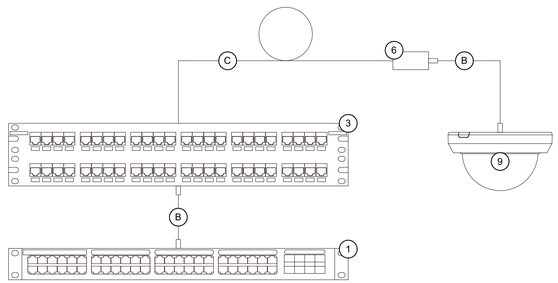

INTERIOR WIRELESS ACCESS POINT CABLING DETAIL
SCALE: NONE

| INTERIOR WAP EQUIPMENT SCHEDULE | | |
|---|---|---|
| KEY # | DESCRIPTION | COMMENTS |
| 1 | NETWORK SWITCH | PROVIDED BY OWNER. |
| 3 | PATCH PANEL | REFER TO TR PLAN ELEVATION. |
| 6 | SURFACE MOUNT BOX | REFER TO FACEPLATE & SURFACE BOX SCHEDULE. |
| 8 | WIRELESS ACCESS POINT | PROVIDED BY OWNER. |
| B | PATCH CORD | REFER TO PATCH CORD SCHEDULE. |
| C | CATEGORY CABLE | REFER TO DATA CABLE SCHEDULE. INCLUDE 15' SERVICE LOOP. |



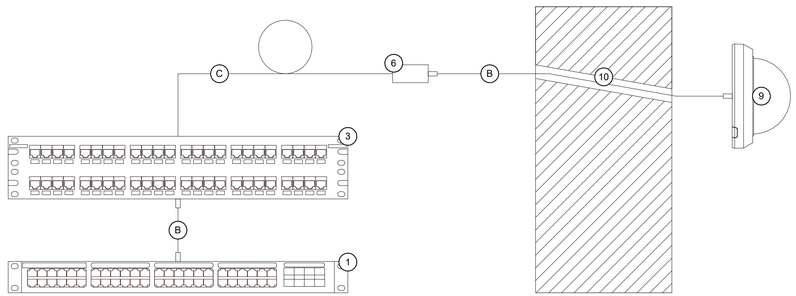

EXTERIOR WIRELESS ACCESS POINT CABLING DETAIL
SCALE: NONE

| EXTERIOR WAP EQUIPMENT SCHEDULE | | |
|---|---|---|
| KEY # | DESCRIPTION | COMMENTS |
| 1 | NETWORK SWITCH | PROVIDED BY OWNER. |
| 3 | PATCH PANEL | REFER TO TR PLAN ELEVATION. |
| 6 | SURFACE MOUNT BOX | REFER TO FACEPLATE & SURFACE BOX SCHEDULE. |
| 8 | WIRELESS ACCESS POINT | PROVIDED BY OWNER. |
| 10 | WALL CORING | ENSURE CORING IS ANGLED DOWNWARD TOWARD THE EXTERIOR TO HELP PREVENT WATER INFILTRATION. |
| B | PATCH CORD | REFER TO PATCH CORD SCHEDULE. |
| C | CATEGORY CABLE | REFER TO DATA CABLE SCHEDULE. INCLUDE 15' SERVICE LOOP. |




INTERIOR SECURITY CAMERA CABLING DETAIL
SCALE: NONE

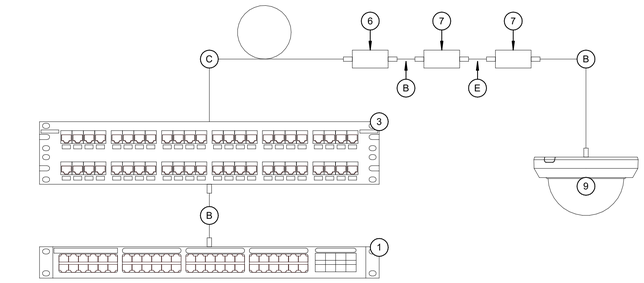
| INTERIOR CAMERA EQUIPMENT SCHEDULE | | |
|---|---|---|
| KEY # | DESCRIPTION | COMMENTS |
| 1 | NETWORK SWITCH | PROVIDED BY OWNER. |
| 3 | PATCH PANEL | REFER TO TR PLAN ELEVATION. |
| 6 | SURFACE MOUNT BOX | REFER TO FACEPLATE & SURFACE BOX SCHEDULE. |
| 9 | CAMERA | REFER TO SECURITY CAMERA SCHEDULE. |
| B | PATCH CORD | REFER TO PATCH CORD SCHEDULE. |
| C | CATEGORY CABLE | REFER TO DATA CABLE SCHEDULE. INCLUDE 15' SERVICE LOOP. |




EXTERIOR SECURITY CAMERA CABLING DETAIL
SCALE: NONE

| EXTERIOR CAMERA EQUIPMENT SCHEDULE | | |
|---|---|---|
| KEY # | DESCRIPTION | COMMENTS |
| 1 | NETWORK SWITCH | PROVIDED BY OWNER. |
| 3 | PATCH PANEL | REFER TO TR PLAN ELEVATION. |
| 6 | SURFACE MOUNT BOX | REFER TO FACEPLATE & SURFACE BOX SCHEDULE. |
| 9 | CAMERA | REFER TO SECURITY CAMERA SCHEDULE. |
| 10 | WALL CORING | ENSURE CORING IS ANGLED DOWNWARD TOWARD THE EXTERIOR TO HELP PREVENT WATER INFILTRATION. |
| B | PATCH CORD | REFER TO PATCH CORD SCHEDULE. |
| C | CATEGORY CABLE | REFER TO DATA CABLE SCHEDULE. INCLUDE 15' SERVICE LOOP. |

AO1




ELEVATOR SECURITY CAMERA CABLING DETAIL
SCALE: NONE

| ELEVATOR CAMERA EQUIPMENT SCHEDULE | | | | |
|---|---|---|---|---|
| KEY # | DESCRIPTION | MANUFACTURER | PART # | COMMENTS |
| 1 | NETWORK SWITCH | N/A | N/A | PROVIDED BY OWNER. |
| 3 | PATCH PANEL | N/A | N/A | REFER TO TR PLAN ELEVATION. |
| 6 | SURFACE MOUNT BOX | N/A | N/A | REFER TO FACEPLATE & SURFACE BOX SCHEDULE. |
| 7 | ETHERNET OVER COAX | AXIS | T8640 | |
| 9 | CAMERA | N/A | N/A | REFER TO SECURITY CAMERA SCHEDULE. |
| B | PATCH CORD | N/A | N/A | REFER TO PATCH CORD SCHEDULE. |
| C | CATEGORY CABLE | N/A | N/A | REFER TO DATA CABLE SCHEDULE. INCLUDE 15' SERVICE LOOP. |
| E | COAX CABLE | N/A | N/A | INSTALLED BY ELEVATOR CONTRACTOR BETWEEN ELEVATOR CAB AND ELEVATOR EQUIPMENT. |

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ADDENDUM 01 05-08-2026

ISSUED FOR DATE

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
TECHNOLOGY DETAILS - WAP AND CAMERA CABLING

DATE
APRIL 24, 2026

SHEET NUMBER
T 404
23-622.000

## ACCESS CONTROL DOOR SCHEDULE

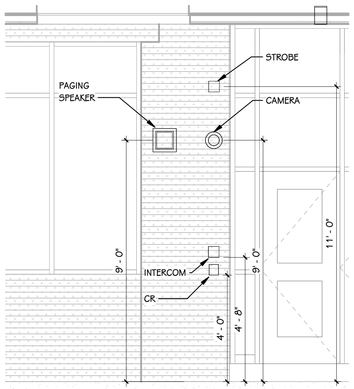
A01

| NUMBER | ACCESS CONTROLS | SECURITY INFO | | | |
|---|---|---|---|---|---|
| DOOR | CARD READER | LOCKING HARDWARE TYPE | OTHER | DOOR DETAIL # | PROGRAMMING NOTES |
| 100 | No | ML | N/A | 1J | 5, 6, 9 |
| 100F.2 | No | ML | N/A | 1J | 5, 6, 9 |
| 100N | No | ML | N/A | 1J | 5, 6, 9 |
| 150A | Yes | LR | N/A | 2C | 1, 2, 5 |
| 152B | Yes | LR | N/A | 2C | 1, 2, 5 |
| 153 | Yes | LR | N/A | 1C | 1, 2, 5 |
| 155D | Yes | LR | N/A | 2C | 1, 2, 5 |
| 158D | Yes | LR | N/A | 2C | 1, 2, 5 |
| C001A | No | LR | N/A | 2J | 1, 10 |
| C001B | Yes | LR | N/A | 1C | 1, 2, 5 |
| C001C | No | LR | N/A | 2J | 1, 10 |
| C001D | Yes | LR | RB | 1C | 1, 2, 3, 4, 5 |
| C001E | Yes | ES | RB | 1D | 1, 2, 3, 5 |
| C002B | Yes | LR | N/A | 1C | 1, 2, 5 |
| C002D | Yes | LR | N/A | 1C | 1, 2, 5 |
| C003B | Yes | LR | N/A | 2C | 1, 2, 5 |
| C004B | Yes | LR | N/A | 2C | 1, 2, 5 |
| C005B | Yes | LR | N/A | 2C | 1, 2, 5 |
| C006B | Yes | LR | N/A | 2C | 1, 2, 5 |
| C007B | Yes | LR | N/A | 2C | 1, 2, 5 |
| C016 | Yes | LR | N/A | 2C | 1, 2, 5 |
| C017A | Yes | LR | N/A | 2C | 1, 2, 5 |
| E01.1 | Yes | ES | N/A | 1A | 1, 2 |
| S01.1A | Yes | LR | N/A | 2C | 1, 2, 5 |

Grand total: 24

PROGRAMMING NOTES LEGEND:
1.) DOOR NORMALLY LOCKED VIA ACCESS CONTROL SYSTEM.
2.) PRESENTATION OF VALID CREDENTIAL TO CARD READER MOMENTARILY UNLOCKS ELECTRIFIED HARDWARE AND ALLOWS ACCESS.
3.) UPON ACTIVATION OF RELEASE BUTTON TIED THROUGH THE ACCESS CONTROL SYSTEM, THE ELECTRIFIED HARDWARE MOMENTARILY UNLOCKS AND ALLOWS ACCESS.
4.) UPON ACTIVATION OF RELEASE VIA INTERCOM SYSTEM, A RELAY TO THE ACCESS CONTROL PANEL WILL MOMENTARILY UNLOCK ELECTRIFIED HARDWARE, ALLOWING ACCESS.
5.) DURING THE EVENT OF A LOCKDOWN, ELECTRIFIED HARDWARE REVERTS TO A LOCKED STATE, ONLY ALLOWING THOSE WITH CREDENTIALS TO UNLOCK THE ELECTRIFIED HARDWARE UNTIL LOCKDOWN IS DEACTIVATED.
6.) DOOR NORMALLY UNLOCKED DURING REGULAR HOURS.
7.) DOOR CONTACT FOR MONITORING ONLY.
8.) DOOR NORMALLY LOCKED DURING REGULAR HOURS (MANUAL LOCK).
9.) MAGLOCK SHALL BE TIED TO LOCKDOWN.
10.) DOOR HAS ELECTRIFIED HARDWARE TO ALLOW DOOR SCHEDULING. THIS DOOR SHALL NOT HAVE A CARD READER.

*IN THE EVENT THAT ANY DOOR IS PROPPED OPEN FOR "X" AMOUNT OF TIME, OWNER & RECEPTION SHALL BE NOTIFIED VIA TEXT MESSAGE AND E-MAIL. "X" SHALL BE DETERMINED BY OWNER.

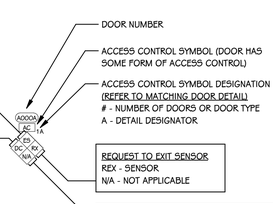



I / T 443 FRONT ENTRANCE ELEVATION
3/8" = 1'-0"

## ACCESS CONTROL DOOR LABEL NOMENCLATURE:

LOCKING HARDWARE TYPE
EH - ELECTRIFIED HANDLE
ES - ELECTRONIC STRIKE
LH - MULTIPLE LOCKING METHODS
LR - ELECTRIFIED LATCH RETRACTION / PANIC HARDWARE
ML - MAGNETIC LOCK
SS - SURFACE STRIKE

DOOR CONTACT
DC - DOOR CONTACT
N/A - NOT APPLICABLE




DOOR NUMBER
ACCESS CONTROL SYMBOL (DOOR HAS SOME FORM OF ACCESS CONTROL)
ACCESS CONTROL SYMBOL DESIGNATION (REFER TO MATCHING DOOR DETAIL)
# - NUMBER OF DOORS OR DOOR TYPE
A - DETAIL DESIGNATOR

REQUEST TO EXIT SENSOR
REX - SENSOR
N/A - NOT APPLICABLE

OTHER OPTIONS
DE - DELAYED EGRESS (TIE TO FIRE ALARM SYSTEM)
LD - TIED TO LOCKDOWN BUTTON
RB - TIED TO REMOTE RELEASE BUTTON
SO - LOCAL SOUNDER
N/A - NOT APPLICABLE

PROVIDE THESE DEVICES WHERE INDICATED AT EACH DOOR SYMBOL AND/OR IN SECURITY DOOR SCHEDULE. REFER TO CORRESPONDING DOOR DETAILS FOR ARRANGEMENT AND ROUGH-IN REQUIREMENTS.

ACCESS CONTROL NOTES:
- ALL TIMES LISTED BELOW ARE APPROXIMATES; FINAL PROGRAMMED TIMES SHALL BE COORDINATED WITH OWNER.

- COORDINATE DOOR UNLOCK AND LOCK SCHEDULE WITH OWNER. AT MINIMUM, PROVIDE SCHEDULED UNLOCK FOR THE FOLLOWING:
  - NORMAL SCHOOL START (E.G. 7:30AM-8:00AM UNLOCK)
  - DELAYED SCHOOL START (E.G. TWO HOUR DELAY)
  - HALF DAY SCHEDULE
  - NON-SCHOOL DAY
  - EVENT PROGRAMMING x3 (E.G. THREE SEPARATE EVENT TEMPLATES THE OWNER MAY DESIRE, SUCH AS A BASKETBALL OR VOLLEYBALL GAME).
  - LOCKDOWN (OVERRIDES ALL SCHEDULES, SETS ALL DOORS TO LOCKED, AND RESTRICTS CARD ACCESS TO AN "EXECUTIVE PRIVILEGE" ROLE - E.G. SCHOOL RESOURCE OFFICER, DISTRICT ADMIN, AND OTHERS THE OWNER DEEMS ACCEPTABLE.

- REFER TO DRAWINGS FOR CARD READER LOCATIONS, DOORS REQUIRING READ IN/READ OUT CREDENTIALING REQUIREMENTS.

- REFER TO ELECTRICAL DRAWINGS AND COORDINATE WITH ELECTRICAL CONTRACTOR FOR SEQUENCING ACCESS CONTROL SYSTEM WITH AUTOMATIC DOOR OPERATORS. DOORS WITH AUTOMATIC OPERATORS SHALL NOT OPERATE UNLESS THE ACCESS CONTROL PLATFORM HAS SET THE DOOR TO "UNLOCKED", OR AN APPROPRIATE ACCESS CREDENTIAL HAS BEEN PRESENTED.

- REFER TO ELECTRICAL DRAWINGS AND COORDINATE WITH FIRE ALARM CONTRACTOR FOR ALL DOORS REQUIRING INTERFACE WITH FIRE ALARM, E.G. DOORS NOTED TO FAIL SAFE UPON SMOKE/FLOW ACTIVATION. MANUAL FIRE PULL STATIONS SHALL NOT UNLOCK ANY DOORS.

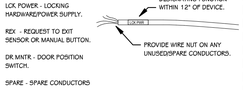
- REFER TO ELECTRICAL DRAWINGS AND COORDINATE WITH FIRE ALARM CONTRACTOR FOR REQUIRED RELAYS TO RELEASE MAGNETICALLY HELD DOORS UPON ACTIVATION OF LOCKDOWN.

- REFER TO ARCHITECTURAL DOOR SCHEDULE AND SPECIFICATION SECTION 08 "DOOR HARDWARE" FOR COORDINATING LOCK POWER FOR ELECTRIFIED HARDWARE (I.E. ELECTRIC STRIKES, LATCH RETRACTION, ELECTRIFIED TRIM/HANDLE, MAGLOCKS, ETC.), INCLUDING QUANTITY OF ELECTRIFIED HARDWARE PER DOOR. PROVIDE ADEQUATE POWER SUPPLIES TO POWER ELECTRIFIED HARDWARE ASSOCIATED WITH EACH ACCESS CONTROL PANEL AT FULL CAPACITY (E.G. IF ACP-2B IS ONLY DESIGNED TO INTERFACE WITH 4 DOORS BUT CAN BE SIZED TO 12, PROVIDE ENOUGH POWER SUPPLY CAPACITY TO POWER ADDITIONAL 8 DOORS).

- ALL ACCESS CONTROL WORK DONE PERTAINING TO ELEVATORS SHALL BE COORDINATED WITH THE ELEVATOR CONTRACTOR FOR CODE COMPLIANCE AND INTERFACE WITH ELEVATOR CONTROLLER.

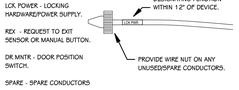
### AC CABLES AT DEVICE

NAMING CONVENTIONS
LCK POWER - LOCKING HARDWARE/POWER SUPPLY.
REX - REQUEST TO EXIT SENSOR OR MANUAL BUTTON.
DR.MNTR - DOOR POSITION SWITCH.
SPARE - SPARE CONDUCTORS

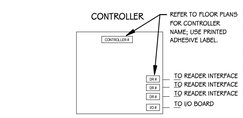



### AC CABLES AT PANEL

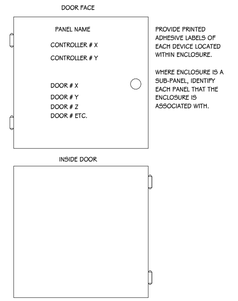
NAMING CONVENTIONS
LCK POWER - LOCKING HARDWARE/POWER SUPPLY.
REX - REQUEST TO EXIT SENSOR OR MANUAL BUTTON.
DR.MNTR - DOOR POSITION SWITCH.
SPARE - SPARE CONDUCTORS



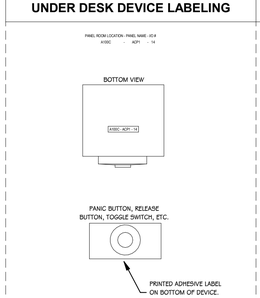

### PANEL INTERIOR LABELING



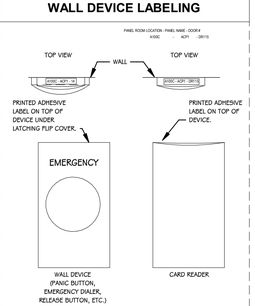

### PANEL EXTERIOR LABELING



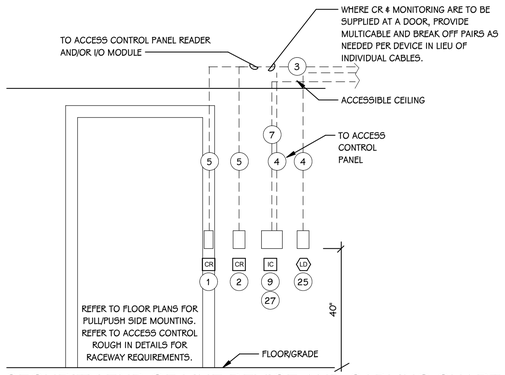

### UNDER DESK DEVICE LABELING



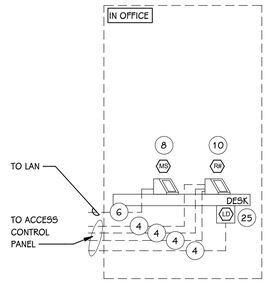

### WALL DEVICE LABELING




## TYPICAL SECURITY DEVICE LABELING DETAIL
SCALE: NONE




## SECURITY END OF LINE DEVICE AND CABLING CHART
SCALE: NONE



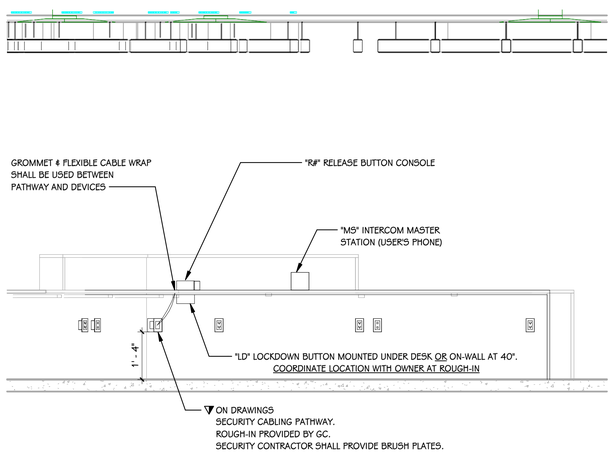

GENERAL NOTES APPLY TO ALL LV CABLE*

- ALL CABLE SHALL BE PLENUM RATED IN PLENUM SPACE.
- CABLES UTILIZING WIEGAND COMMS SHALL NOT EXCEED 500FT TO ACCESS CONTROL PANEL.
- CABLES UTILIZING OSDP SHALL NOT EXCEED 2000FT.
- CABLE SIZING SHALL BE VERIFIED PRIOR TO INSTALLATION AND UPSIZED AS NECESSARY TO ELIMINATE SIGNAL LOSS.
- CABLES SHALL BE RUN IN CONTINUOUS OR NON-CONTINUOUS CABLE MANAGEMENT SYSTEMS. FREE-RUN CABLING IS NOT ACCEPTABLE ANYWHERE. ZIP TIES, ELECTRICAL TAPE, OR OTHER SIMILAR ADHESIVES ARE NOT ACCEPTABLE.
- WHERE IN EXPOSED AREAS (E.G. UNDER DESK, ALONG COUNTERTOP), CABLES SHALL BE RUN IN MESH CABLE SLEEVE (TECHFLEX FGN2.00-25-BLACK, CUT TO SIZE).
- ALL DEVICES THAT CONTROL DOOR HARDWARE SHALL BE CABLED TO INTERFACE THROUGH THE ACCESS CONTROL PLATFORM AND NEVER BE DIRECTLY CONNECTED TO THE LOCK POWER.

*SEE COPPER CABLE DETAIL AND SPECIFICATIONS FOR REQUIREMENTS AND CONDITIONS.

## SECURITY END OF LINE DEVICE & CABLING SCHEDULE

| KEY # | DESCRIPTION | MANUFACTURER | PART # | COMMENTS |
|---|---|---|---|---|
| 1 | CARD READER - MULLION | HID | SIGNO 20KTS-00-000000 | USE WHEN CR SYMBOL IS SHOWN ON MULLION, FRAME, OR OTHER NARROW-WIDTH MOUNTING APPLICATION. |
| 2 | CARD READER - STANDARD | HID | SIGNO 40KTS-00-000000 | SCHLAGE MTB SERIES ACCEPTABLE EQUIVALENT. |
| 3 | CABLE - MULTICABLE | BELDEN | 6584FJ ACCESS CONTROL | USE WHEN DOOR REQUIRES CR AND ANY OTHER DEVICE. OTHERWISE, SEE BELOW CABLES. |
| 4 | CABLE - 18/4 AWG/CONDUCTOR | BELDEN | 6341FE | UPSIZE CABLE AS REQUIRED TO ELIMINATE SIGNAL LOSS. |
| 5 | CABLE - 18/6 AWG/CONDUCTOR | BELDEN | 6304FE | UPSIZE CABLE AS REQUIRED TO ELIMINATE SIGNAL LOSS. |
| 6 | CABLE - INTERCOM MASTER STATION | | CATEGORY CABLE | REFER TO DATA CABLE SCHEDULE. |
| 7 | CABLE - INTERCOM DOOR STATION | | CATEGORY CABLE | REFER TO DATA CABLE SCHEDULE. TO ALGO 8028 CONTROL STATION. |
| 8 | DEVICE - INTERCOM MASTER STATION | N/A | OWNERS DESK PHONE | COORDINATE WITH OWNER TO PROGRAM PHONES FOR INTERCOM DIALING AND DOOR RELEASE THROUGH ACP. |
| 9 | DEVICE - INTERCOM DOOR STATION | ALGO | 8028 | RECESS IN NEW EXTERIOR WALL, OR SURFACE MOUNT ON EXISTING EXTERIOR WALL. OWNER PROVIDED. |
| 10 | DEVICE - DESK MOUNT CONTROLS BOX & SWITCHES | SCHLAGE | 8204-MMMM-M5 | COORDINATE FINAL LOCATION WITH OWNER AT TIME OF INSTALL. PROVIDE ADHESIVE LABEL OF EACH DOOR TIED TO SPECIFIC RELEASE. |
| 25 | DEVICE - LOCKDOWN BUTTON | STI | 592422LD-EN | COORDINATE FINAL LOCATION WITH OWNER. THIS MAY BE DESK OR WALL-MOUNT. |
| 27 | DEVICE - REAR INTERCOM DOOR STATION | AXIS | I7010-VE | RECESS IN NEW EXTERIOR WALL, OR SURFACE MOUNT ON EXISTING EXTERIOR WALL AT LOCATION MARKED "IC2" |




AC / T 443 SECURITY CABLING PATHWAY - RECEPTION / WAITING
1/2" = 1'-0"

THIS SHEET SHOWN FOR REFERENCE ONLY.
AV & SECURITY SHALL BE COMPLETED BY OTHERS AS A PART OF PROJECT #23622.050

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| ADDENDUM 01 | 05-08-2026 |
|---|---|
| ISSUED FOR | DATE |

PROJECT TITLE
NEW EL SOL SCHOOL

OWNER
KALAMAZOO PUBLIC SCHOOLS

KALAMAZOO, MICHIGAN

SHEET TITLE
ACCESS CONTROL DETAILS - FOR REFERENCE ONLY

DATE
APRIL 24, 2026

SHEET NUMBER
T 443
23-622.000

# PROJECT MANUAL VOLUME I

| | |
|---|---|
| **PROJECT:** | Kalamazoo Public Schools<br>EL SOL School-New Construction<br>1428 Baker Drive<br>Kalamazoo, MI 49048 |
| **TSC PROJECT NO.:** | 224010.11 |
| **A/E PROJECT NO.:** | 23-622 |
| **OWNER:** | Kalamazoo Public Schools<br>1220 Howard Street<br>Kalamazoo, MI 49008 |
| **ARCHITECT/ENGINEER:** | TowerPinkster |
| **DATED:** | April 27, 2026 |
| **PRE-BID CONFERENCE/SITE EXAMINATION:** | May 12, 2026, at 3:00 PM<br>Kalamazoo Public Schools-Facilities Office<br>600 West Vine Street<br>Kalamazoo, MI 49008 |
| **BIDS RECEIVED:** | *May 28, 2026, at 2:00 PM*<br>Kalamazoo Public Schools Facilities Office<br>600 West Vine Street<br>Kalamazoo, MI 49008 |
| **BIDDERS' CONTACTS:** | **ARCHITECT/ENGINEER:**<br>TowerPinkster<br>242 East Kalamazoo Avenue<br>Kalamazoo, MI 49007<br>Architect's Contact: Michael Galovan<br>Phone: 269-343-6133<br><br>**CONSTRUCTION MANAGER:**<br>The Skillman Corporation<br>8120 Moorsbridge Road, Suite 101<br>Portage, MI 49024<br>Project Manager: Michael Kounelis<br>Phone: 269-207-3049 |

## SECTION 00 02 00 - NOTICE TO BIDDERS

### NOTICE TO BIDDERS

Notice is hereby given that sealed bids will be received:

By: Kalamazoo Public Schools
1220 Howard Street
Kalamazoo, MI 49008

For: Kalamazoo Public Schools EL SOL School
1428 Baker Drive
Kalamazoo, MI 49048

At: Kalamazoo Public Schools Facilities Office
600 West Vine Street
Kalamazoo, MI 49008

Until: *May 28, 2026, at 2:00 PM*

Bid Opening: Bids will be publicly opened and read aloud on *May 28, 2026, at 2:00 PM*, at the Kalamazoo Public Schools Facilities Office, 600 West Vine Street, Kalamazoo, MI 49008

All work for the complete construction of the Project will be under one or more prime contracts with the Owner based on bids received and on combinations awarded. The Construction Manager will manage the construction of the Project.

Construction shall be in full accordance with the Bidding Documents which are on file with the Owner and may be examined by prospective bidders at the following locations:

Office of the Construction Manager
The Skillman Corporation
8120 Moorsbridge Rd. Suite 101
Portage, MI 49024

The Skillman Plan Room

www.skillmanplanroom.com

Prime and Non-Prime Contract Bidders must place an order on **www.skillmanplanroom.com** to be able to download documents electronically or request printed documents. There is no cost for downloading the bidding documents. Bidders desiring printed documents shall pay for the cost of printing, shipping and handling. Reprographic Services are provided by:

**Kal-Blue, 5870 South Sprinkle Rd, Suite 1, Kalamazoo, MI 49002, Phone 269-349-8681**

A Pre-Bid Conference will be held Virtual and onsite on May 12, 2026 at 3:00 PM, local time, at the Kalamazoo Public Schools, Facilities Office, Room 130. Attendance by bidders is optional, but recommended, in order to clarify or answer questions concerning the Drawings and Project Manual for the Project.

---

**Microsoft Teams meeting**
**Join:** https://teams.microsoft.com/meet/251005845245839?p=dG1PmWrKMqQS7IgttT
Meeting ID: 251 005 845 245 839
Passcode: Jw7na26y

---

Need help? | System reference
**Dial in by phone**
+1 317-762-3960,,975265018# United States, Indianapolis
Find a local number
Phone conference ID: 975 265 018#
For organizers: Meeting options | Reset dial-in PIN

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Bid security in the amount of five percent (5%) of the Bid must accompany each Bid in accordance with the Instructions to Bidders.

The successful Bidders will be required to furnish Performance and Payment Bonds for one hundred percent (100%) of their Contract amount prior to execution of Contracts.

Contractors submitting bids for the performance of any Work as specified in this building Project should make such Bids to **Kalamazoo Public Schools.** Contractors are advised that the Contract as finally entered into with any successful Bidder shall be entered into with *Kalamazoo Public Schools.*

The Owner reserves the right to accept or reject any Bid (or combination of Bids) and to waive any irregularities in bidding. All Bids may be held for a period not to exceed **90** days before awarding contracts.

Kalamazoo Public Schools

By: Karen Jackson

END OF SECTION 00 02 00

## SECTION 00 43 50 - SUBCONTRACTORS AND PRODUCTS LIST

PART 1 - GENERAL

### 1.01 DESCRIPTION

A. The two (2) low responsive Bidders in each Bid Category shall furnish electronically, the following Subcontractors and Products List to the Construction Manager within **two (2) working days (48 hrs.)** of bid opening, unless submitted with Bid. . The blanks appropriate to the Bid Category(ies) on which they bid shall be completed.

1. The Owner and Architect shall have the right to select any material or equipment named in the Specifications for any particular item where the Bidder either fails to list same or lists more than one name for the item in question.
2. It is intended that this list will show the manufacturer and supplier of major items of work that will be subcontracted and to whom.

### 1.02 INSTRUCTIONS FOR SUBCONTRACTORS AND PRODUCTS LISTS

A. Each Bidder shall submit a copy of his list of subcontractors and manufacturers of products and equipment proposed for work indicated as required above.

B. The list shall be submitted on forms provided and shall be completely executed. "As Specified" or "With Equipment" type of terminology will not be accepted.

C. Under "Subcontractor", insert the name of the firm which the Bidder proposes to have perform the respective work. If work will be done by the Prime Bidder and no subcontract will be awarded, state "By Own Forces".

D. Submission does not constitute acceptance for use of listed manufacturers' products. Materials and subcontractors are subject to the provisions of the General Conditions and "Standard of Product Acceptability" and must be formally reviewed and adjudged acceptable by the Architect/Engineer.

E. Engineer, Architect and Owner reserve the right to reject submissions of materials, work, or subcontractors that do not, in their opinion, meet the requirements of Drawings, Specifications or job conditions.

F. Materials and subcontractors used for work on the Project shall be in accordance with accepted material list.

1. The list is intended to assure use of materials and vendors acceptably equivalent to those specified and is not a substitution sheet or complete listing of required materials or services.

2. Substitutions for listed items will not be allowed, except when termed acceptable, in writing by the Architect/Engineer, provided that substitution will result in a cost savings to the Owner , determined by the Owner to be a better product, or is made necessary due to unavailability of listed item. Unavailability shall be confirmed in writing by manufacturer named on accepted list.

## 1.03 CIVIL AND ARCHITECTURAL WORK SUBCONTRACTORS AND PRODUCTS LIST

BID CATEGORY NO. 01 SITEWORK

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 01 53 20 | Tree and Plant Protection | | | |
| 01 55 00 | Access Roads and Parking Areas | | | |
| 01 56 20 | Dust Control | | | |
| 01 56 80 | Erosion Control | | | |
| 31 10 00 | Site Clearing | | | |
| 31 20 00 | Earth Moving | | | |
| 31 23 23 | Rapid Impact Compaction | | | |
| 33 41 00 | Storm Utility Drainage Piping | | | |

| | |
|---|---|
| Name of Bidder: | Date: |
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 02 ASPHALT PAVING

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 32 12 16 | Asphalt Paving | | | |
| 32 17 23 | Pavement Markings | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 03 LANDSCAPING

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 32 91 13 | Soil Preparation | | | |
| 32 92 00 | Turf And Grasses | | | |
| 32 93 00 | Plants | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 04 CONCRETE

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 03 30 00 | Cast-In-Place Concrete | | | |
| 03 35 43 | Polished Concrete | | | |
| 03 60 00 | Post Installed Anchors | | | |
| 07 17 00 | Bentonite Waterproofing | | | |
| 07 19 00 | Water Repellents | | | |
| 32 13 13 | Concrete Paving | | | |
| 32 13 16 | Decorative Concrete Paving | | | |
| 32 13 73 | Concrete Paving Joint Sealants | | | |
| 32 17 26 | Tactile Warning Surfacing | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 05 MASONRY

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 03 60 00 | Post Installed Anchors | | | |
| 04 01 10 | Masonry Cleaning | | | |
| 04 20 00 | Unit Masonry | | | |
| 04 72 00 | Cast Stone Masonry | | | |
| 07 14 16 | Cold Fluid-Applied Waterproofing | | | |
| 07 21 00 | Thermal Insulation | | | |
| 07 21 19 | Foamed-In-Place Insulation | | | |
| 07 26 00 | Vapor Retarders | | | |
| 07 84 46 | Fire-Resistive Joint Systems | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 06 GENERAL TRADES

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 01 51 80 | Temporary Fire Protection | | | |
| 01 52 10 | Construction Aids and Temporary Enclosures | | | |
| 01 52 60 | Rubbish Container | | | |
| 01 53 10 | Fences (Temporary Security) | | | |
| 01 53 30 | Barricades | | | |
| 01 72 00 | Field Engineering | | | |
| 03 60 00 | Post Installed Anchors | | | |
| 06 10 00 | Rough Carpentry | | | |
| *06 40 23* | *Interior Architectural Woodwork* | | | |
| *06 41 16* | *Plastic-Laminate-Faced Architectural Cabinets* | | | |
| 06 16 00 | Sheathing | | | |
| 07 26 00 | Vapor Retarders | | | |
| *07 27 26* | *Fluid Applied Membrane Air Barriers* | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 07 84 13 | Penetration Firestopping | | | |
| 07 95 13.13 | Interior Expansion Joint Cover Assemblies | | | |
| 07 95 13.16 | Exterior Expansion Joint Cover Assemblies | | | |
| *08 06 71* | *Door Hardware Schedule* | | | |
| 08 11 13 | Hollow Metal Doors And Frames | | | |
| ~~08 12 43~~ | ~~Fire-Resistance-Rated Frames~~ | | | |
| 08 14 16 | Flush Wood Doors | | | |
| 08 31 13 | Access Doors And Frames | | | |
| 08 33 23 | Overhead Coiling Doors | | | |
| 08 36 13 | Sectional Doors | | | |
| *08 71 00* | *Door Hardware* | | | |
| 09 64 00 | Wood Flooring | | | |
| 09 64 66 | Wood Athletic Flooring | | | |
| 09 84 33 | Sound-Absorbing Wall Units | | | |
| 10 11 00 | Visual Display Units | | | |
| 10 12 00 | Display Cases | | | |
| 10 14 19 | Dimensional Letter Signage | | | |
| 10 14 26 | Post And Panel Pylon Signage | | | |
| 10 14 53 | Traffic Signage | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 10 14 63 | Electronic Message Signage | | | |
| 10 21 13.19 | Plastic Toilet Compartments | | | |
| 10 22 39 | Folding Panel Partitions | | | |
| 10 26 00 | Wall And Door Protection | | | |
| 10 28 00 | Toilet, Bath, And Laundry Accessories | | | |
| 10 43 13 | Defibrillator Cabinets | | | |
| 10 44 00 | Interior Signs | | | |
| 10 44 13 | Fire Extinguisher Cabinets | | | |
| 10 44 16 | Fire Extinguishers | | | |
| 10 75 16 | Flagpoles | | | |
| 11 13 19 | Stationary Loading Dock Equipment | | | |
| 11 61 43 | Stage Curtains | | | |
| 11 66 23 | Gymnasium Equipment | | | |
| 11 68 00 | Play Field Equipment And Structures | | | |
| 11 68 23 | Exterior Athletic Equipment | | | |
| 12 66 00 | Telescoping Stands | | | |
| 32 31 19 | Decorative Metal Fences And Gates | | | |
| 32 33 00 | Site Furnishings | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 07 STRUCTURAL & MISCELLANEOUS STEEL

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 01 53 30 | Barricades | | | |
| 03 60 00 | Post Installed Anchors | | | |
| 05 12 00 | Structural Steel Framing | | | |
| 05 21 00 | Steel Joist Framing | | | |
| 05 31 00 | Steel Decking | | | |
| 05 50 00 | Metal Fabrications | | | |
| 05 51 13 | Metal Pan Stairs | | | |
| 05 52 13 | Pipe And Tube Railings | | | |
| 06 10 00 | Rough Carpentry | | | |
| 06 16 00 | Sheathing | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 08 PRE-CAST CONCRETE

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 03 41 00 | Precast Structural Concrete | | | |
| 03 60 00 | Post Installed Anchors | | | |
| 07 84 46 | Fire-Resistive Joint Systems | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 09 METAL STUDS, DRYWALL & ACOUSTICAL CEILINGS

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 05 40 00 | Cold-Formed Metal Framing | | | |
| 07 05 43.02 | Cladding Support System Greengirt | | | |
| 07 21 00 | Thermal Insulation | | | |
| 07 25 00 | Weather Barriers | | | |
| 07 26 00 | Vapor Retarders | | | |
| 09 21 16.23 | Gypsum Board Shaft Wall Assemblies | | | |
| 09 22 16 | Non-Structural Metal Framing | | | |
| 09 29 00 | Gypsum Board | | | |
| 09 51 13 | Acoustical Panel Ceilings | | | |
| 09 54 23 | Linear Metal Ceilings | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 10 ROOFING

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 53 23 | Ethylene-Propylene-Diene-Monomer (Epdm) Roofing | | | |
| 07 62 00 | Sheet Metal Flashing And Trim | | | |
| 07 71 00 | Roof Specialties | | | |
| 07 71 29 | Manufactured Roof Expansion Joints | | | |
| 07 72 00 | Roof Accessories | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 11 ALUMINUM
WINDOWS/STOREFRONT/CURTAIN WALL ASSEMBLIES & GLAZING

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 08 11 16 | Aluminum Doors And Frames | | | |
| *08 12 43* | *Fire-Resistance-Rated-Frames* | | | |
| 08 41 13 | Aluminum-Framed Entrances And Storefronts | | | |
| 08 44 13 | Glazed Aluminum Curtain Walls | | | |
| *08 45 23* | *Fiberglass-Sandwich-Panel Assemblies* | | | |
| 08 51 13 | Aluminum Windows | | | |
| *08 71 00* | *Door Hardware* | | | |
| 08 80 00 | Glazing | | | |
| *08 87 00* | *Architectural Window Film* | | | |
| 08 88 13 | Fire-Rated Glazing | | | |
| 08 90 00 | Louvers And Vents | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 12 METAL WALL PANELS

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 27 15 | Nonbituminous Self-Adhering Sheet Air Barriers | | | |
| 07 42 13.13 | Formed Metal Wall Panels | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 13 PAINTING

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 18 00 | Traffic Coatings | | | |
| 09 91 13 | Exterior Painting | | | |
| 09 91 23 | Interior Painting | | | |
| 09 96 00 | High-Performance Coatings | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 14 JOINT SEALANTS

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 92 00 | Joint Sealants | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 15 FLOORING

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 09 30 00 | Tiling Sf0 | | | |
| 09 65 00 | Resilient Flooring | | | |
| 09 65 13 | Resilient Base And Accessories | | | |
| 09 68 13 | Tile Carpeting | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 16 TERRAZZO

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 09 66 23 | Resinous Matrix Terrazzo Flooring | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 17 CASEWORK

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 12 32 16 | Manufactured Plastic-Laminate-Faced Casework | | | |
| 12 36 23.13 | Plastic-Laminate-Clad Countertops | | | |
| 12 36 53 | Laboratory Countertops | | | |
| 12 36 61.16 | Solid Surfacing Countertops | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 18 LOCKERS

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | 01 21 00 | | | |
| 10 51 13 | Metal Lockers | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 19 ELEVATOR

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 84 13 | Penetration Firestopping | | | |
| 14 21 23 | Machine-Room-Less Electric Traction Passenger Elevators | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 20 FIRE SUPPRESSION

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 84 13 | Penetration Firestopping | | | |
| 21 05 00 | Common Work Results For Fire Suppression | | | |
| *21 05 13* | *Common Motor Requirements for Fire Suppression Equipment* | | | |
| 21 10 00 | Water Based Fire Suppression Systems | | | |
| *21 31 13* | *Electric Drive Centrifugal Fire Pumps* | | | |
| *21 39 00* | *Pressure Maintenance Pumps* | | | |
| *21 39 00* | *Controllers for Fire-Pump Drivers* | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 21 FOOD SERVICE EQUIPMENT

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 84 13 | Penetration Firestopping | | | |
| 11 40 00 | Food Service Equipment | | | |

| | |
|---|---|
| Name of Bidder: | Date: |
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

## 1.04 MECHANICAL WORK SUBCONTRACTORS AND PRODUCTS LIST

BID CATEGORY NO. 22 MECHANICAL

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If dual listing of manufacturers or subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice.

MECHANICAL WORK

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 01 51 30 | Temporary Heating, Ventilation and Cooling | | | |
| 01 51 50 | Temporary Water | | | |
| 07 84 13 | Penetration Firestopping | | | |
| 22 05 00 | Common Work Results For Plumbing | | | |
| 22 05 13 | Common Motor Requirements For Plumbing Equipment | | | |
| 22 05 19 | Meters And Gages For Plumbing Piping | | | |
| 22 05 23 | General Duty Valves For Plumbing Piping | | | |
| 22 05 29 | Hangers And Supports For Plumbing Piping And Equipment | | | |
| 22 05 53 | Identification For Plumbing Piping And Equipment | | | |
| 22 07 00 | Plumbing Insulation | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 22 08 00 | Commissioning Of Plumbing | | | |
| 22 11 13 | Facility Water Distribution Pipin | | | |
| 22 11 16 | Domestic Water Piping | | | |
| 22 11 19 | Domestic Water Piping Specialties | | | |
| 22 11 23 | Domestic Water Pumps | | | |
| 22 13 13 | Facility Sanitary Sewers | | | |
| 22 13 16 | Sanitary Waste And Vent Piping | | | |
| 22 13 19 | Sanitary Waste Piping Specialties | | | |
| 22 14 13 | Facility Storm Drainage Piping | | | |
| 22 14 23 | Storm Drainage Piping Specialties | | | |
| 22 31 00 | Domestic Water Softeners | | | |
| 22 34 00 | Fuel-Fired Domestic Water Heaters | | | |
| 22 40 00 | Plumbing Fixtures | | | |
| 23 05 00 | Common Work Results For HVAC | | | |
| 23 05 13 | Common Motor Requirements For HVAC Equipment | | | |
| 23 05 19 | Meters And Gages For HVAC Piping | | | |
| 23 05 23 | General-Duty Valves For HVAC Piping | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 23 05 29 | Hangers And Supports For HVAC Piping And Equipment | | | |
| 23 05 53 | Identification For HVAC Piping And Equipment | | | |
| 23 05 93 | Testing, Adjusting, And Balancing For HVAC (best updated) | | | |
| 23 07 00 | HVAC Insulation | | | |
| 23 08 00 | Commissioning Of HVAC | | | |
| 23 09 00 | Instrumentation And Control For HVAC | | | |
| 23 11 23 | Facility Natural Gas Piping (best) | | | |
| 23 21 13 | Hydronic Piping | | | |
| 23 21 23 | Hydronic Pumps | | | |
| 23 23 00 | Refrigerant Piping (best) | | | |
| 23 25 00 | HVAC Water Treatment | | | |
| 23 31 13 | Metal Ducts | | | |
| 23 33 00 | Air Duct Accessories | | | |
| 23 34 23 | HVAC Power Ventilators | | | |
| 23 36 00 | Air Terminal Units | | | |
| 23 37 13 | Diffusers, Registers, And Grilles | | | |
| 23 37 23 | HVAC Gravity Ventilators | | | |
| 23 40 00 | Antimicrobial Systems For HVAC | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 23 51 00 | Breechings, Chimneys, And Stacks | | | |
| 23 52 16 | Condensing Boilers | | | |
| 23 62 00 | Packaged Compressor And Condenser Units | | | |
| 23 73 13 | Modular Indoor Central Station Air Handling Units | | | |
| 23 81 26 | Split-System Air-Conditioners | | | |
| 23 82 39 | Unit Heaters | | | |

Plumbing Fixtures: Manufacturer:

a)_____ _____

b)_____ _____

c)_____ _____

d)_____ _____

e)_____ _____

f)_____ _____

g)_____ _____

h)_____ _____

i) _____ _____

j)_____ _____

k)_____ _____

l)_____ _____

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

## 1.05 ELECTRICAL WORK SUBCONTRACTORS AND PRODUCTS LIST

BID CATEGORY NO. 23 ELECTRICAL

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If dual listing of manufacturers or subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice.

ELECTRICAL WORK

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 01 51 10 | Temporary Electricity, Lighting and Warning Systems | | | |
| 07 84 13 | Penetration Firestopping | | | |
| 26 05 00 | Common Work Results For Electrical | | | |
| 26 05 19 | Low-Voltage Electrical Power Conductors And Cables | | | |
| 26 05 26 | Grounding And Bonding For Electrical Systems | | | |
| 26 05 29 | Hangers And Supports For Electrical Systems | | | |
| 26 05 33 | Raceways And Boxes For Electrical Systems | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 26 05 43 | Underground Ducts And Raceways For Electrical Systems | | | |
| 26 05 44 | Sleeves And Sleeve Seals For Electrical Raceways And Cabling | | | |
| 26 05 53 | Identification For Electrical Systems | | | |
| 26 05 73 | Coordination Studies | | | |
| 26 05 74 | Overcurrent Protective Device Arc-Flash Study | | | |
| 26 08 00 | Commissioning Of Electrical Systems | | | |
| 26 09 13 | Electrical Energy Metering | | | |
| 26 09 23 | Lighting Control Devices | | | |
| 26 09 43 | Lighting Control System | | | |
| 26 22 00 | Low Voltage Transformers | | | |
| 26 24 13 | Switchboards | | | |
| 26 24 16 | Panelboards | | | |
| 26 27 26 | Wiring Devices | | | |
| 26 28 13 | Fuses | | | |
| 26 28 16 | Enclosed Switches And Circuit Breakers | | | |
| 26 29 13 | Enclosed Controllers | | | |
| 26 29 23 | Variable Frequency Motor Controllers (gs) | | | |
| 26 32 13 | Engine Generators (gsnatgas) | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 26 36 00 | Transfer Switches | | | |
| 26 43 13 | Surge Protection For Low-Voltage Electrical Power Circuits | | | |
| 26 51 00 | Interior Lighting | | | |
| 26 55 61 | Theatrical Lighting | | | |
| 26 56 00 | Exterior Lighting | | | |
| 28 31 00 | Fire Detection And Alarm | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

## 1.05 ELECTRICAL WORK SUBCONTRACTORS AND PRODUCTS LIST

BID CATEGORY NO. 24 TECHNOLOGY

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If dual listing of manufacturers or subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice.

ELECTRICAL WORK

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 07 84 13 | Penetration Firestopping | | | |
| 27 05 00 | Common Work Results For Communications | | | |
| 27 05 26 | Grounding And Bonding For Communications Systems | | | |
| 27 05 28 | Pathways For Communications Systems | | | |
| 27 05 36 | Ladder Rack For Telecommunication Rooms | | | |
| 27 05 53 | Identification For Communications Systems | | | |
| 27 11 16 | Telecommunication Room Equipment And Racks | | | |

| Section | Description | Cost $$$ | Subcontractor | Manufacturer |
|---|---|---|---|---|
| 27 13 23 | Communications Optical Fiber Backbone Cabling | | | |
| 27 15 13 | Communications Copper Horizontal Cabling | | | |
| 27 17 00 | Testing, ID And Admin Of Balanced Twisted Pair Infrastructure | | | |
| 27 18 00 | Testing, ID And Admin Of Fiber Infrastructure | | | |
| 27 26 26 | IP Address Request Form | | | |
| 27 51 23.20 | Commercial Intercommunications And Program Systems | | | |

| Name of Bidder: | Date: |
|---|---|
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

BID CATEGORY NO. 25 PLAYGROUND EQUIPMENT

NAME OF BIDDER_____

The undersigned hereby submits the following Subcontractors and Products List which becomes a part of the undersigned Contract proposal. Subcontractor purchased material, equipment, and labor shall be under the direct management and control of the Prime Contractor. If a dual listing of manufacturers and subcontractors is herein made, it is understood the Architect/Engineer (not the Contractor) will select the manufacturer or subcontractor of his choice. State the XBE Designation.

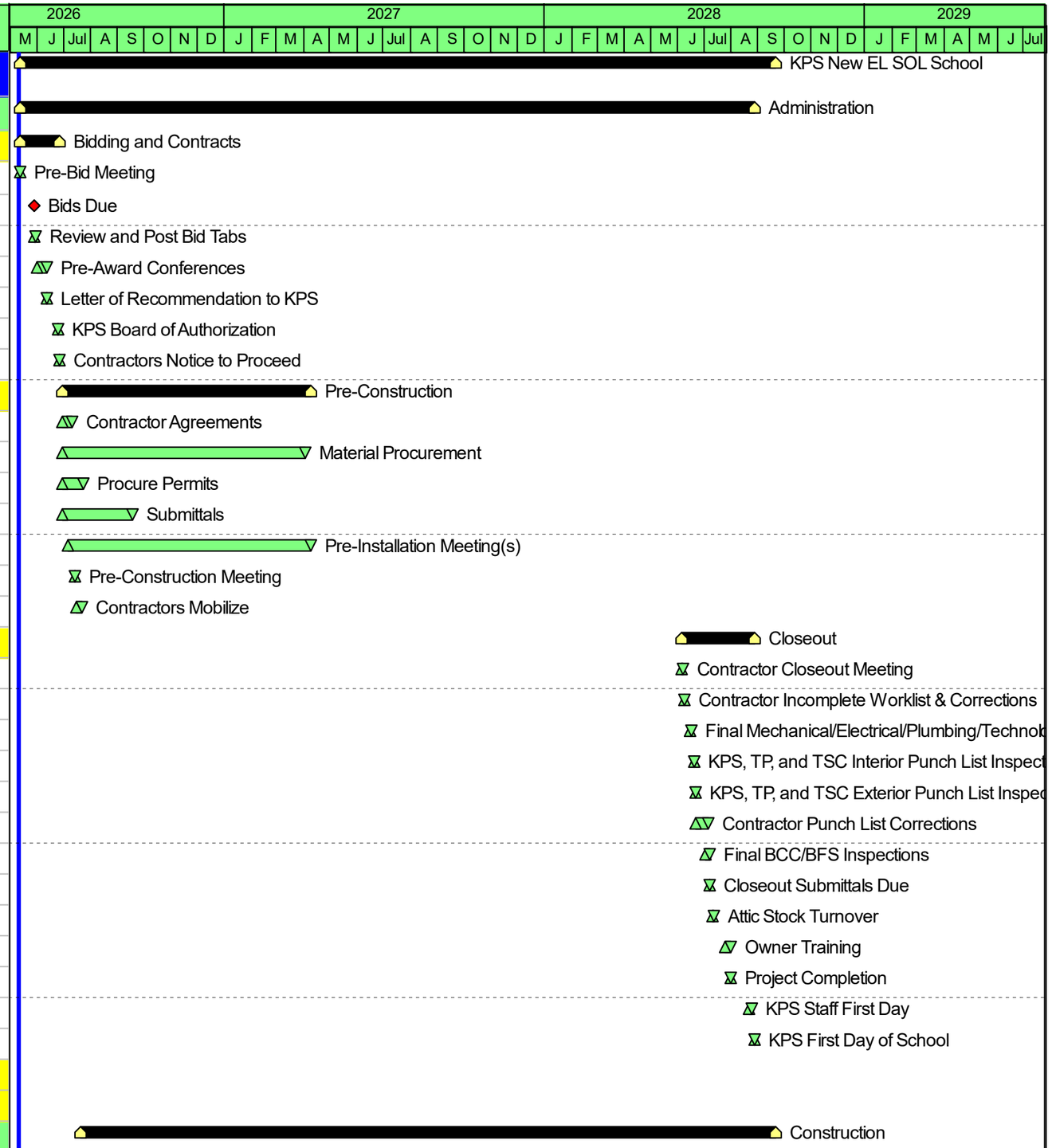
CIVIL AND ARCHITECTURAL WORK

| **Section** | **Description** | **Cost $$$** | **Subcontractor** | **Manufacturer** |
|---|---|---|---|---|
| 01 21 00 | Allowances | | | |
| 32 18 16.13 | Playground Protective Surfacing | | | |

| | |
|---|---|
| Name of Bidder: | Date: |
| Address: | |
| City/State/Zip: | |
| Telephone: | |
| By: | |

END OF SECTION 00 43 50

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| **KPS New EL SOL School** | 617 | 12-May-26 | 20-Sep-28 |
| **Administration** | 600 | 12-May-26 | 28-Aug-28 |
| **Bidding and Contracts** | 34 | 12-May-26 | 26-Jun-26 |
| Pre-Bid Meeting | 1 | 12-May-26 | 12-May-26 |
| Bids Due | 0 | | 28-May-26 |
| Review and Post Bid Tabs | 1 | 29-May-26 | 29-May-26 |
| Pre-Award Conferences | 10 | 01-Jun-26 | 12-Jun-26 |
| Letter of Recommendation to KPS | 1 | 12-Jun-26 | 12-Jun-26 |
| KPS Board of Authorization | 1 | 25-Jun-26 | 25-Jun-26 |
| Contractors Notice to Proceed | 1 | 26-Jun-26 | 26-Jun-26 |
| **Pre-Construction** | 205 | 29-Jun-26 | 09-Apr-27 |
| Contractor Agreements | 10 | 29-Jun-26 | 10-Jul-26 |
| Material Procurement | 200 | 29-Jun-26 | 02-Apr-27 |
| Procure Permits | 20 | 29-Jun-26 | 24-Jul-26 |
| Submittals | 60 | 29-Jun-26 | 18-Sep-26 |
| Pre-Installation Meeting(s) | 200 | 06-Jul-26 | 09-Apr-27 |
| Pre-Construction Meeting | 1 | 14-Jul-26 | 14-Jul-26 |
| Contractors Mobilize | 5 | 15-Jul-26 | 21-Jul-26 |
| **Closeout** | 60 | 06-Jun-28 | 28-Aug-28 |
| Contractor Closeout Meeting | 1 | 06-Jun-28 | 06-Jun-28 |
| Contractor Incomplete Worklist & Corrections | 2 | 08-Jun-28 | 09-Jun-28 |
| Final Mechanical/Electrical/Plumbing/Technology Inspections | 2 | 15-Jun-28 | 16-Jun-28 |
| KPS, TP, and TSC Interior Punch List Inspections | 1 | 20-Jun-28 | 20-Jun-28 |
| KPS, TP, and TSC Exterior Punch List Inspections | 1 | 21-Jun-28 | 21-Jun-28 |
| Contractor Punch List Corrections | 10 | 22-Jun-28 | 05-Jul-28 |
| Final BCC/BFS Inspections | 5 | 03-Jul-28 | 07-Jul-28 |
| Closeout Submittals Due | 1 | 07-Jul-28 | 07-Jul-28 |
| Attic Stock Turnover | 3 | 10-Jul-28 | 12-Jul-28 |
| Owner Training | 5 | 25-Jul-28 | 31-Jul-28 |
| Project Completion | 1 | 01-Aug-28 | 01-Aug-28 |
| KPS Staff First Day | 5 | 21-Aug-28 | 25-Aug-28 |
| KPS First Day of School | 1 | 28-Aug-28 | 28-Aug-28 |
| **Pre-Installation Meetings** | 0 | | |
| **Material Delivery Dates** | 0 | | |
| **Construction** | 568 | 20-Jul-26 | 20-Sep-28 |

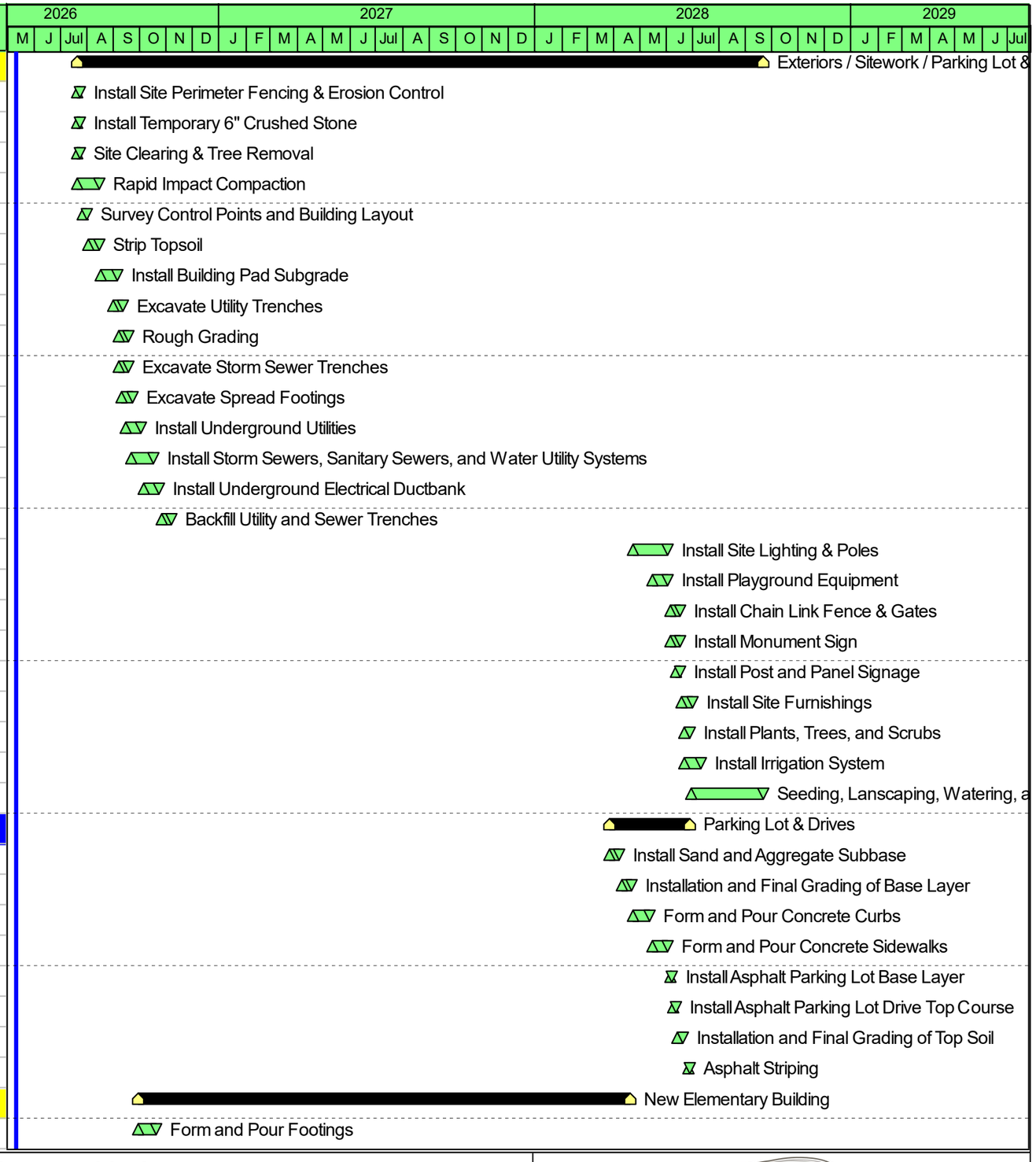



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**


SKILLMAN

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| **Exteriors / Sitework / Parking Lot & Drives** | 568 | 20-Jul-26 | 20-Sep-28 |
| Install Site Perimeter Fencing & Erosion Control | 5 | 20-Jul-26 | 24-Jul-26 |
| Install Temporary 6" Crushed Stone | 5 | 20-Jul-26 | 24-Jul-26 |
| Site Clearing & Tree Removal | 5 | 20-Jul-26 | 24-Jul-26 |
| Rapid Impact Compaction | 20 | 20-Jul-26 | 14-Aug-26 |
| Survey Control Points and Building Layout | 5 | 27-Jul-26 | 31-Jul-26 |
| Strip Topsoil | 10 | 03-Aug-26 | 14-Aug-26 |
| Install Building Pad Subgrade | 15 | 17-Aug-26 | 04-Sep-26 |
| Excavate Utility Trenches | 10 | 31-Aug-26 | 11-Sep-26 |
| Rough Grading | 10 | 07-Sep-26 | 18-Sep-26 |
| Excavate Storm Sewer Trenches | 10 | 07-Sep-26 | 18-Sep-26 |
| Excavate Spread Footings | 10 | 09-Sep-26 | 22-Sep-26 |
| Install Underground Utilities | 15 | 14-Sep-26 | 02-Oct-26 |
| Install Storm Sewers, Sanitary Sewers, and Water Utility Systems | 20 | 21-Sep-26 | 16-Oct-26 |
| Install Underground Electrical Ductbank | 15 | 05-Oct-26 | 23-Oct-26 |
| Backfill Utility and Sewer Trenches | 10 | 26-Oct-26 | 06-Nov-26 |
| Install Site Lighting & Poles | 30 | 24-Apr-28 | 02-Jun-28 |
| Install Playground Equipment | 15 | 15-May-28 | 02-Jun-28 |
| Install Chain Link Fence & Gates | 10 | 05-Jun-28 | 16-Jun-28 |
| Install Monument Sign | 10 | 05-Jun-28 | 16-Jun-28 |
| Install Post and Panel Signage | 5 | 12-Jun-28 | 16-Jun-28 |
| Install Site Furnishings | 10 | 19-Jun-28 | 30-Jun-28 |
| Install Plants, Trees, and Scrubs | 5 | 21-Jun-28 | 27-Jun-28 |
| Install Irrigation System | 15 | 21-Jun-28 | 11-Jul-28 |
| Seeding, Lanscaping, Watering, and Maintenance | 60 | 29-Jun-28 | 20-Sep-28 |
| **Parking Lot & Drives** | 68 | 27-Mar-28 | 28-Jun-28 |
| Install Sand and Aggregate Subbase | 10 | 27-Mar-28 | 07-Apr-28 |
| Installation and Final Grading of Base Layer | 10 | 10-Apr-28 | 21-Apr-28 |
| Form and Pour Concrete Curbs | 15 | 24-Apr-28 | 12-May-28 |
| Form and Pour Concrete Sidewalks | 15 | 15-May-28 | 02-Jun-28 |
| Install Asphalt Parking Lot Base Layer | 3 | 05-Jun-28 | 07-Jun-28 |
| Install Asphalt Parking Lot Drive Top Course | 3 | 08-Jun-28 | 12-Jun-28 |
| Installation and Final Grading of Top Soil | 5 | 14-Jun-28 | 20-Jun-28 |
| Asphalt Striping | 3 | 26-Jun-28 | 28-Jun-28 |
| **New Elementary Building** | 408 | 29-Sep-26 | 20-Apr-28 |
| Form and Pour Footings | 15 | 29-Sep-26 | 19-Oct-26 |

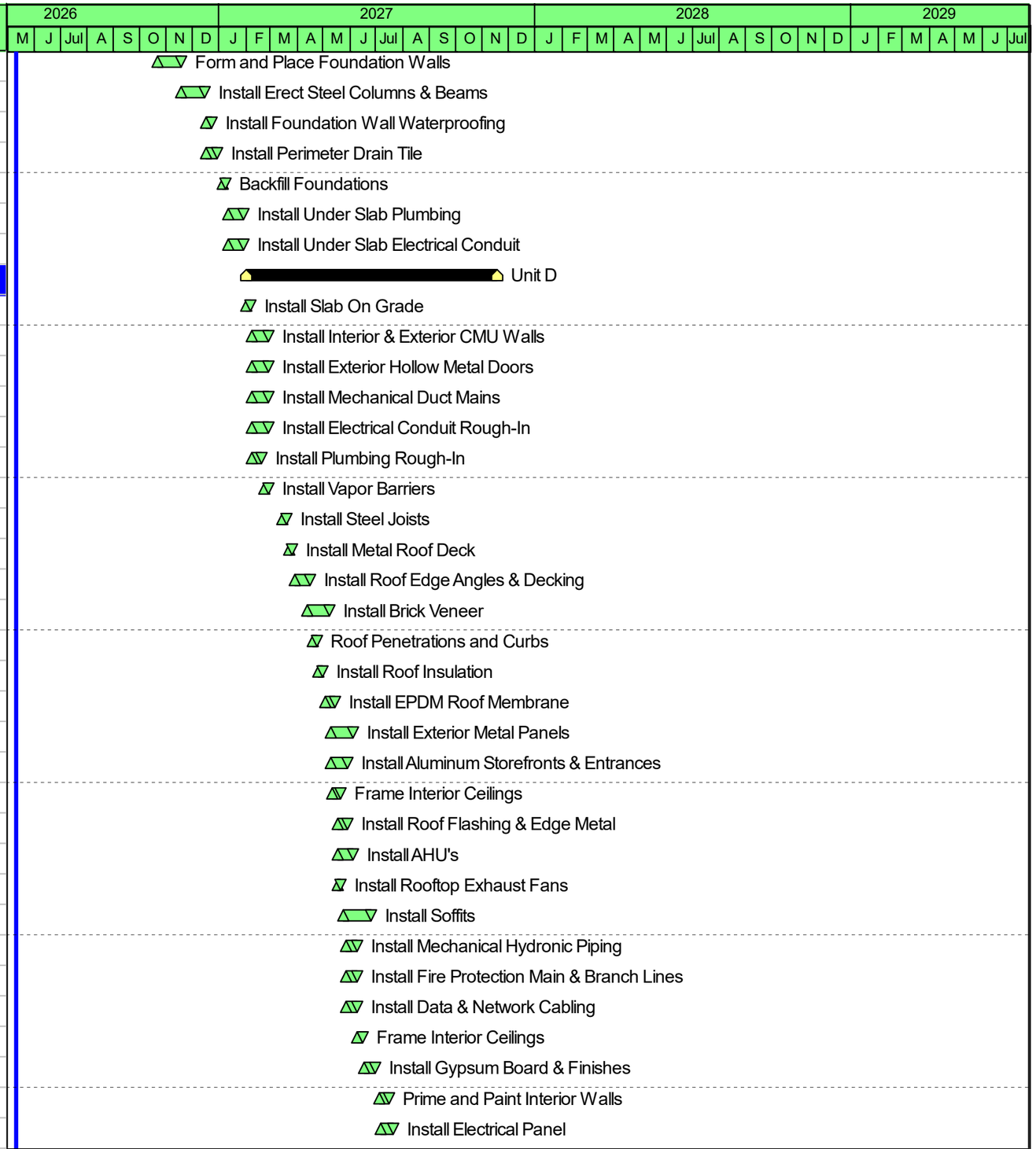



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**
**2 of 10**

SKILLMAN

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Form and Place Foundation Walls | 20 | 21-Oct-26* | 17-Nov-26 |
| Install Erect Steel Columns & Beams | 20 | 18-Nov-26 | 15-Dec-26 |
| Install Foundation Wall Waterproofing | 5 | 16-Dec-26 | 22-Dec-26 |
| Install Perimeter Drain Tile | 10 | 16-Dec-26 | 29-Dec-26 |
| Backfill Foundations | 5 | 04-Jan-27 | 08-Jan-27 |
| Install Under Slab Plumbing | 15 | 11-Jan-27 | 29-Jan-27 |
| Install Under Slab Electrical Conduit | 15 | 11-Jan-27 | 29-Jan-27 |
| **Unit D** | 209 | 01-Feb-27 | 18-Nov-27 |
| Install Slab On Grade | 5 | 01-Feb-27 | 05-Feb-27 |
| Install Interior & Exterior CMU Walls | 15 | 08-Feb-27 | 26-Feb-27 |
| Install Exterior Hollow Metal Doors | 15 | 08-Feb-27 | 26-Feb-27 |
| Install Mechanical Duct Mains | 15 | 08-Feb-27 | 26-Feb-27 |
| Install Electrical Conduit Rough-In | 15 | 08-Feb-27 | 26-Feb-27 |
| Install Plumbing Rough-In | 10 | 08-Feb-27 | 19-Feb-27 |
| Install Vapor Barriers | 5 | 22-Feb-27 | 26-Feb-27 |
| Install Steel Joists | 5 | 15-Mar-27 | 19-Mar-27 |
| Install Metal Roof Deck | 5 | 22-Mar-27 | 26-Mar-27 |
| Install Roof Edge Angles & Decking | 15 | 29-Mar-27 | 16-Apr-27 |
| Install Brick Veneer | 20 | 12-Apr-27 | 07-May-27 |
| Roof Penetrations and Curbs | 5 | 19-Apr-27 | 23-Apr-27 |
| Install Roof Insulation | 5 | 26-Apr-27* | 30-Apr-27 |
| Install EPDM Roof Membrane | 10 | 03-May-27 | 14-May-27 |
| Install Exterior Metal Panels | 20 | 10-May-27 | 04-Jun-27 |
| Install Aluminum Storefronts & Entrances | 15 | 10-May-27* | 28-May-27 |
| Frame Interior Ceilings | 8 | 12-May-27 | 21-May-27 |
| Install Roof Flashing & Edge Metal | 10 | 17-May-27 | 28-May-27 |
| Install AHU's | 15 | 17-May-27 | 04-Jun-27 |
| Install Rooftop Exhaust Fans | 5 | 17-May-27 | 21-May-27 |
| Install Soffits | 25 | 24-May-27 | 25-Jun-27 |
| Install Mechanical Hydronic Piping | 10 | 27-May-27 | 09-Jun-27 |
| Install Fire Protection Main & Branch Lines | 10 | 27-May-27 | 09-Jun-27 |
| Install Data & Network Cabling | 10 | 27-May-27 | 09-Jun-27 |
| Frame Interior Ceilings | 5 | 10-Jun-27 | 16-Jun-27 |
| Install Gypsum Board & Finishes | 10 | 17-Jun-27 | 30-Jun-27 |
| Prime and Paint Interior Walls | 10 | 05-Jul-27 | 16-Jul-27 |
| Install Electrical Panel | 10 | 07-Jul-27 | 20-Jul-27 |




Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**
**3 of 10**

SKILLMAN

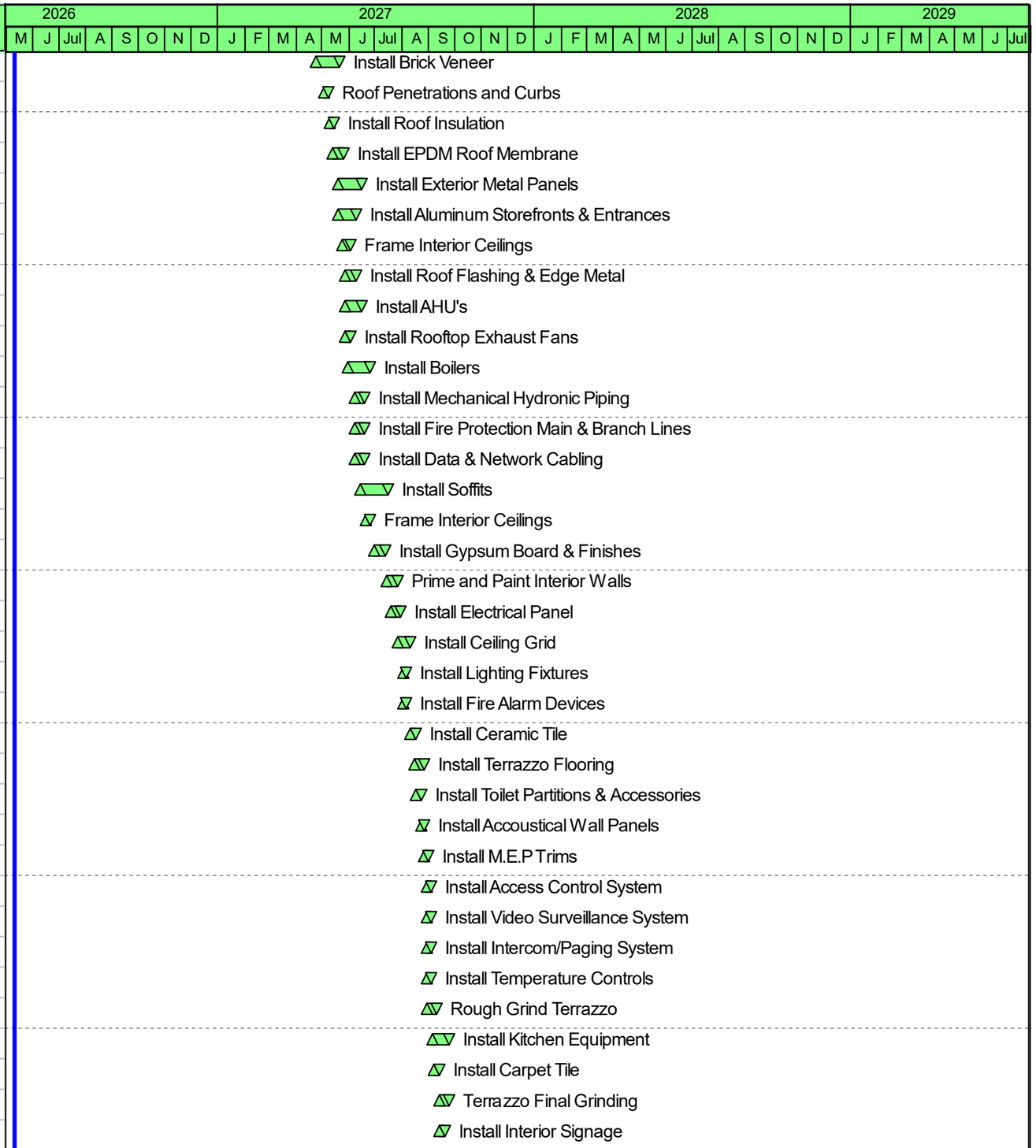
| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Install Ceiling Grid | 10 | 19-Jul-27 | 30-Jul-27 |
| Install Lockers | 5 | 19-Jul-27 | 23-Jul-27 |
| Install Terrazzo Flooring | 10 | 02-Aug-27 | 13-Aug-27 |
| Install Ceramic Tile | 5 | 02-Aug-27 | 06-Aug-27 |
| Install Lighting Fixtures | 5 | 02-Aug-27 | 06-Aug-27 |
| Install Fire Alarm Devices | 5 | 02-Aug-27 | 06-Aug-27 |
| Install Toilet Partitions & Accessories | 5 | 09-Aug-27 | 13-Aug-27 |
| Rough Grind Terrazzo | 10 | 16-Aug-27 | 27-Aug-27 |
| Install Bleachers & Basketball Hoops | 15 | 18-Aug-27 | 07-Sep-27 |
| Install Access Control System | 5 | 19-Aug-27 | 25-Aug-27 |
| Install Video Surveillance System | 5 | 19-Aug-27 | 25-Aug-27 |
| Install Intercom/Paging System | 5 | 19-Aug-27 | 25-Aug-27 |
| Install Temperature Controls | 5 | 19-Aug-27 | 25-Aug-27 |
| Install Accoustical Wall Panels | 5 | 23-Aug-27 | 27-Aug-27 |
| Install M.E.P Trims | 5 | 26-Aug-27 | 01-Sep-27 |
| Terrazzo Final Grinding | 10 | 30-Aug-27 | 10-Sep-27 |
| Install Gym Flooring, Striping, and Sealer | 25 | 02-Sep-27 | 06-Oct-27 |
| Install Carpet Tile | 5 | 07-Sep-27 | 13-Sep-27 |
| Terrazzo Polishing | 10 | 13-Sep-27 | 24-Sep-27 |
| Install Interior Doors & Hardware | 10 | 14-Sep-27 | 27-Sep-27 |
| Install Interior Signage | 5 | 14-Sep-27 | 20-Sep-27 |
| Install Ceiling Tiles | 20 | 14-Sep-27 | 11-Oct-27 |
| Install Flooring Protection | 40 | 24-Sep-27 | 18-Nov-27 |
| Install Rubber Base | 3 | 13-Oct-27 | 15-Oct-27 |
| **Unit F** | 199 | 01-Mar-27 | 02-Dec-27 |
| Install Slab On Grade | 5 | 01-Mar-27 | 05-Mar-27 |
| Install Interior & Exterior CMU Walls | 15 | 08-Mar-27 | 26-Mar-27 |
| Install Exterior Hollow Metal Doors | 15 | 08-Mar-27 | 26-Mar-27 |
| Install Mechanical Duct Mains | 15 | 08-Mar-27 | 26-Mar-27 |
| Install Electrical Conduit Rough-In | 15 | 08-Mar-27 | 26-Mar-27 |
| Install Plumbing Rough-In | 10 | 08-Mar-27 | 19-Mar-27 |
| Install Vapor Barriers | 5 | 22-Mar-27 | 26-Mar-27 |
| Install Steel Joists | 5 | 29-Mar-27 | 02-Apr-27 |
| Install Overhead Door | 10 | 29-Mar-27 | 09-Apr-27 |
| Install Metal Roof Deck | 5 | 05-Apr-27 | 09-Apr-27 |
| Install Roof Edge Angles & Decking | 15 | 12-Apr-27 | 30-Apr-27 |

Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**


SKILLMAN

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Install Brick Veneer | 20 | 23-Apr-27 | 20-May-27 |
| Roof Penetrations and Curbs | 5 | 03-May-27 | 07-May-27 |
| Install Roof Insulation | 5 | 10-May-27* | 14-May-27 |
| Install EPDM Roof Membrane | 10 | 13-May-27 | 26-May-27 |
| Install Exterior Metal Panels | 20 | 20-May-27 | 16-Jun-27 |
| Install Aluminum Storefronts & Entrances | 15 | 20-May-27* | 09-Jun-27 |
| Frame Interior Ceilings | 8 | 24-May-27 | 02-Jun-27 |
| Install Roof Flashing & Edge Metal | 10 | 27-May-27 | 09-Jun-27 |
| Install AHU's | 15 | 27-May-27 | 16-Jun-27 |
| Install Rooftop Exhaust Fans | 5 | 27-May-27 | 02-Jun-27 |
| Install Boilers | 20 | 31-May-27 | 25-Jun-27 |
| Install Mechanical Hydronic Piping | 10 | 07-Jun-27 | 18-Jun-27 |
| Install Fire Protection Main & Branch Lines | 10 | 07-Jun-27 | 18-Jun-27 |
| Install Data & Network Cabling | 10 | 07-Jun-27 | 18-Jun-27 |
| Install Soffits | 25 | 14-Jun-27 | 16-Jul-27 |
| Frame Interior Ceilings | 5 | 21-Jun-27 | 25-Jun-27 |
| Install Gypsum Board & Finishes | 10 | 30-Jun-27 | 13-Jul-27 |
| Prime and Paint Interior Walls | 10 | 14-Jul-27 | 27-Jul-27 |
| Install Electrical Panel | 10 | 19-Jul-27 | 30-Jul-27 |
| Install Ceiling Grid | 10 | 28-Jul-27 | 10-Aug-27 |
| Install Lighting Fixtures | 5 | 02-Aug-27 | 06-Aug-27 |
| Install Fire Alarm Devices | 5 | 02-Aug-27 | 06-Aug-27 |
| Install Ceramic Tile | 5 | 10-Aug-27 | 16-Aug-27 |
| Install Terrazzo Flooring | 10 | 16-Aug-27 | 27-Aug-27 |
| Install Toilet Partitions & Accessories | 5 | 17-Aug-27 | 23-Aug-27 |
| Install Accoustical Wall Panels | 5 | 23-Aug-27 | 27-Aug-27 |
| Install M.E.P Trims | 5 | 26-Aug-27 | 01-Sep-27 |
| Install Access Control System | 5 | 30-Aug-27 | 03-Sep-27 |
| Install Video Surveillance System | 5 | 30-Aug-27 | 03-Sep-27 |
| Install Intercom/Paging System | 5 | 30-Aug-27 | 03-Sep-27 |
| Install Temperature Controls | 5 | 30-Aug-27 | 03-Sep-27 |
| Rough Grind Terrazzo | 10 | 30-Aug-27 | 10-Sep-27 |
| Install Kitchen Equipment | 15 | 06-Sep-27 | 24-Sep-27 |
| Install Carpet Tile | 5 | 07-Sep-27 | 13-Sep-27 |
| Terrazzo Final Grinding | 10 | 13-Sep-27 | 24-Sep-27 |
| Install Interior Signage | 5 | 14-Sep-27 | 20-Sep-27 |

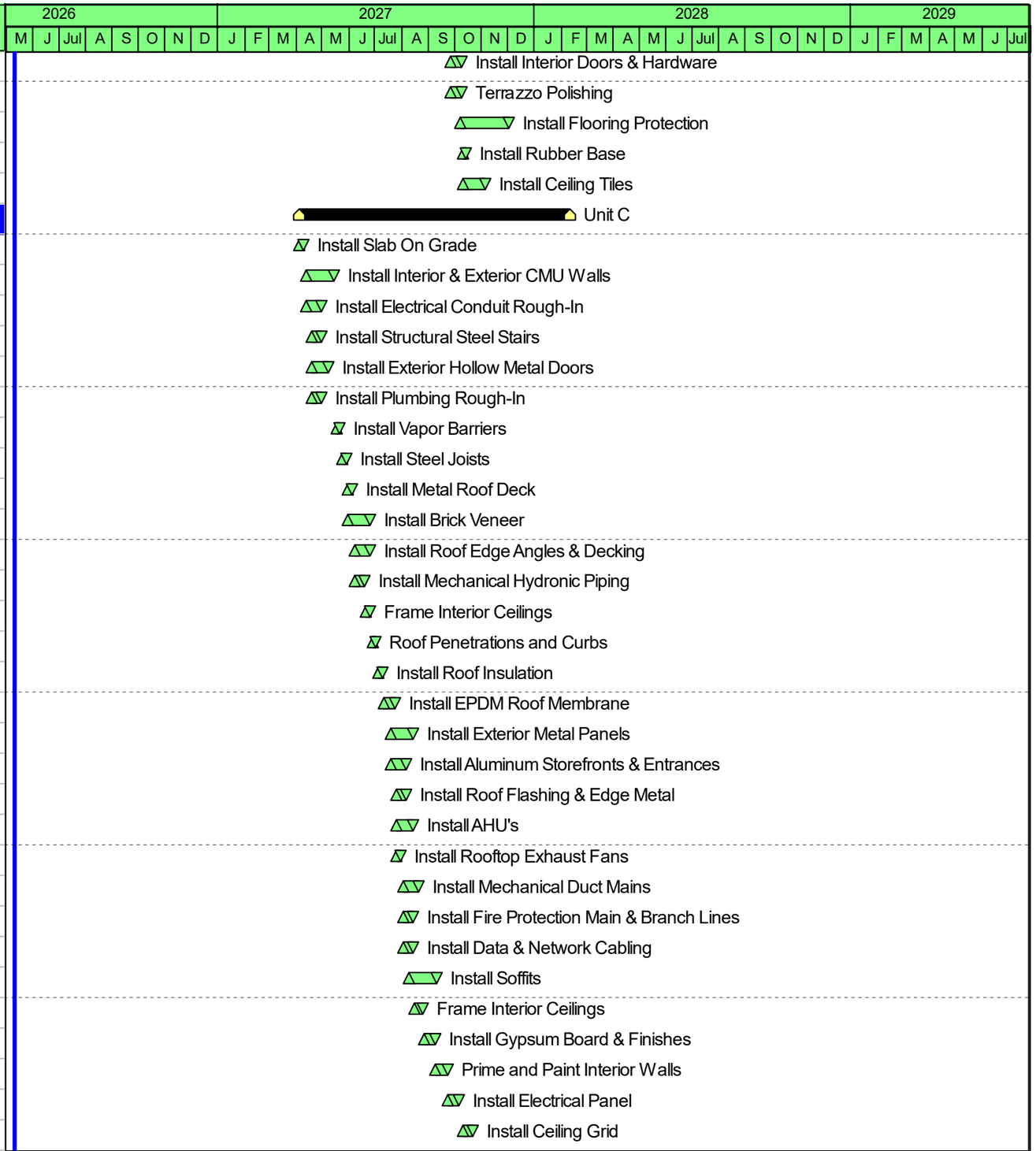



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**
**5 of 10**

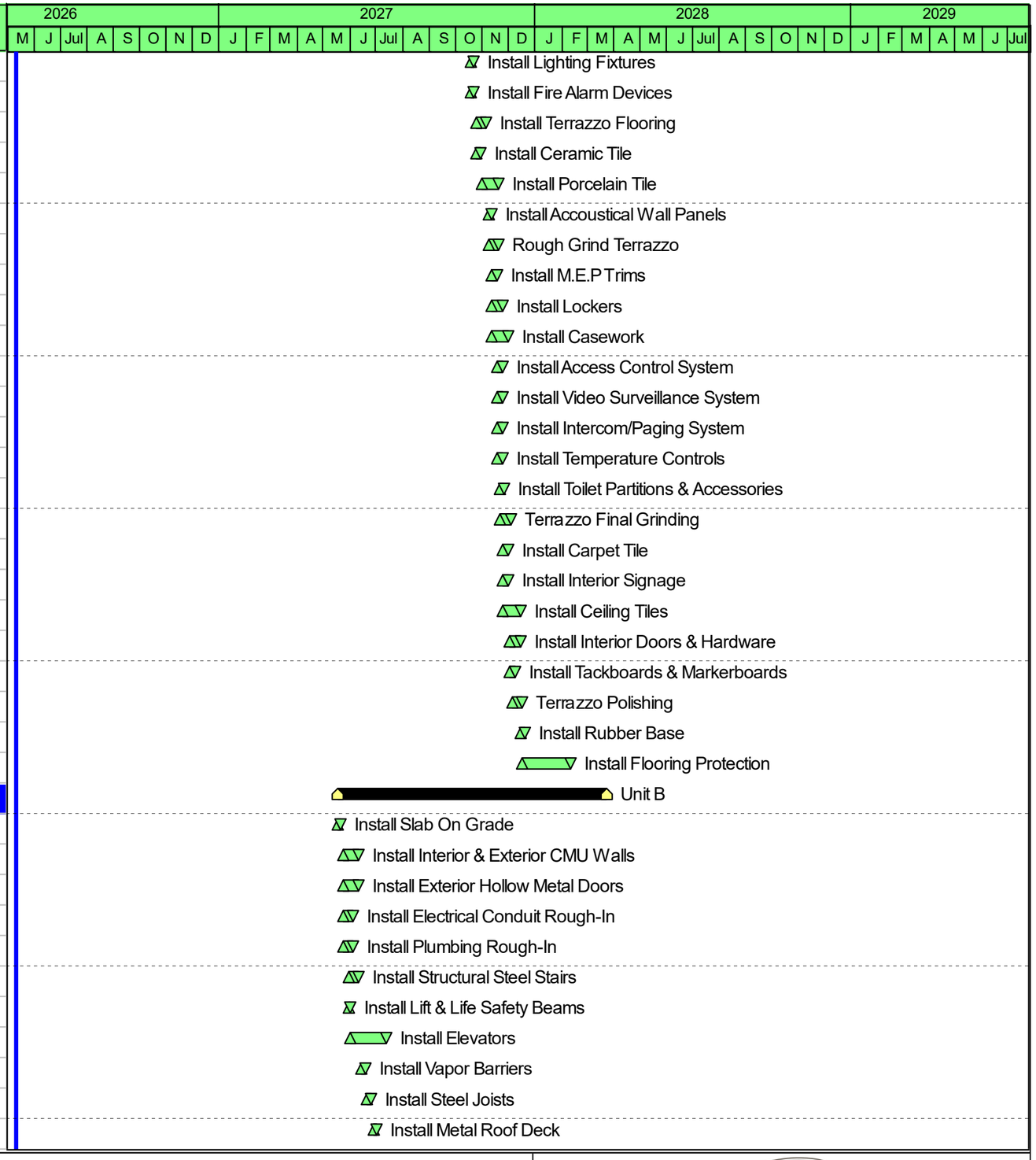
SKILLMAN

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Install Interior Doors & Hardware | 10 | 27-Sep-27 | 08-Oct-27 |
| Terrazzo Polishing | 10 | 27-Sep-27 | 08-Oct-27 |
| Install Flooring Protection | 40 | 08-Oct-27 | 02-Dec-27 |
| Install Rubber Base | 3 | 11-Oct-27 | 13-Oct-27 |
| Install Ceiling Tiles | 20 | 11-Oct-27 | 05-Nov-27 |
| **Unit C** | 224 | 05-Apr-27 | 10-Feb-28 |
| Install Slab On Grade | 5 | 05-Apr-27 | 09-Apr-27 |
| Install Interior & Exterior CMU Walls | 25 | 12-Apr-27 | 14-May-27 |
| Install Electrical Conduit Rough-In | 15 | 12-Apr-27 | 30-Apr-27 |
| Install Structural Steel Stairs | 10 | 19-Apr-27 | 30-Apr-27 |
| Install Exterior Hollow Metal Doors | 15 | 19-Apr-27 | 07-May-27 |
| Install Plumbing Rough-In | 10 | 19-Apr-27 | 30-Apr-27 |
| Install Vapor Barriers | 5 | 17-May-27 | 21-May-27 |
| Install Steel Joists | 5 | 24-May-27 | 28-May-27 |
| Install Metal Roof Deck | 5 | 31-May-27 | 04-Jun-27 |
| Install Brick Veneer | 20 | 31-May-27 | 25-Jun-27 |
| Install Roof Edge Angles & Decking | 15 | 07-Jun-27 | 25-Jun-27 |
| Install Mechanical Hydronic Piping | 10 | 07-Jun-27 | 18-Jun-27 |
| Frame Interior Ceilings | 5 | 21-Jun-27 | 25-Jun-27 |
| Roof Penetrations and Curbs | 5 | 28-Jun-27 | 02-Jul-27 |
| Install Roof Insulation | 5 | 05-Jul-27* | 09-Jul-27 |
| Install EPDM Roof Membrane | 10 | 12-Jul-27 | 23-Jul-27 |
| Install Exterior Metal Panels | 20 | 19-Jul-27 | 13-Aug-27 |
| Install Aluminum Storefronts & Entrances | 15 | 19-Jul-27* | 06-Aug-27 |
| Install Roof Flashing & Edge Metal | 10 | 26-Jul-27 | 06-Aug-27 |
| Install AHU's | 15 | 26-Jul-27 | 13-Aug-27 |
| Install Rooftop Exhaust Fans | 5 | 26-Jul-27 | 30-Jul-27 |
| Install Mechanical Duct Mains | 15 | 02-Aug-27 | 20-Aug-27 |
| Install Fire Protection Main & Branch Lines | 10 | 02-Aug-27 | 13-Aug-27 |
| Install Data & Network Cabling | 10 | 02-Aug-27 | 13-Aug-27 |
| Install Soffits | 25 | 09-Aug-27 | 10-Sep-27 |
| Frame Interior Ceilings | 8 | 16-Aug-27 | 25-Aug-27 |
| Install Gypsum Board & Finishes | 10 | 26-Aug-27 | 08-Sep-27 |
| Prime and Paint Interior Walls | 10 | 09-Sep-27 | 22-Sep-27 |
| Install Electrical Panel | 10 | 23-Sep-27 | 06-Oct-27 |
| Install Ceiling Grid | 10 | 11-Oct-27 | 22-Oct-27 |




Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Install Lighting Fixtures | 5 | 18-Oct-27 | 22-Oct-27 |
| Install Fire Alarm Devices | 5 | 18-Oct-27 | 22-Oct-27 |
| Install Terrazzo Flooring | 10 | 25-Oct-27 | 05-Nov-27 |
| Install Ceramic Tile | 5 | 25-Oct-27 | 29-Oct-27 |
| Install Porcelain Tile | 15 | 01-Nov-27 | 19-Nov-27 |
| Install Accoustical Wall Panels | 5 | 08-Nov-27 | 12-Nov-27 |
| Rough Grind Terrazzo | 10 | 08-Nov-27 | 19-Nov-27 |
| Install M.E.P Trims | 5 | 11-Nov-27 | 17-Nov-27 |
| Install Lockers | 10 | 11-Nov-27 | 24-Nov-27 |
| Install Casework | 15 | 11-Nov-27 | 01-Dec-27 |
| Install Access Control System | 5 | 18-Nov-27 | 24-Nov-27 |
| Install Video Surveillance System | 5 | 18-Nov-27 | 24-Nov-27 |
| Install Intercom/Paging System | 5 | 18-Nov-27 | 24-Nov-27 |
| Install Temperature Controls | 5 | 18-Nov-27 | 24-Nov-27 |
| Install Toilet Partitions & Accessories | 5 | 22-Nov-27 | 26-Nov-27 |
| Terrazzo Final Grinding | 10 | 22-Nov-27 | 03-Dec-27 |
| Install Carpet Tile | 5 | 25-Nov-27 | 01-Dec-27 |
| Install Interior Signage | 5 | 25-Nov-27 | 01-Dec-27 |
| Install Ceiling Tiles | 15 | 25-Nov-27 | 15-Dec-27 |
| Install Interior Doors & Hardware | 10 | 02-Dec-27 | 15-Dec-27 |
| Install Tackboards & Markerboards | 5 | 02-Dec-27 | 08-Dec-27 |
| Terrazzo Polishing | 10 | 06-Dec-27 | 17-Dec-27 |
| Install Rubber Base | 3 | 16-Dec-27 | 20-Dec-27 |
| Install Flooring Protection | 40 | 17-Dec-27 | 10-Feb-28 |
| **Unit B** | 224 | 17-May-27 | 23-Mar-28 |
| Install Slab On Grade | 5 | 17-May-27 | 21-May-27 |
| Install Interior & Exterior CMU Walls | 15 | 24-May-27 | 11-Jun-27 |
| Install Exterior Hollow Metal Doors | 15 | 24-May-27 | 11-Jun-27 |
| Install Electrical Conduit Rough-In | 10 | 24-May-27 | 04-Jun-27 |
| Install Plumbing Rough-In | 10 | 24-May-27 | 04-Jun-27 |
| Install Structural Steel Stairs | 10 | 31-May-27 | 11-Jun-27 |
| Install Lift & Life Safety Beams | 2 | 31-May-27 | 01-Jun-27 |
| Install Elevators | 30 | 02-Jun-27 | 13-Jul-27 |
| Install Vapor Barriers | 5 | 14-Jun-27 | 18-Jun-27 |
| Install Steel Joists | 5 | 21-Jun-27 | 25-Jun-27 |
| Install Metal Roof Deck | 5 | 28-Jun-27 | 02-Jul-27 |

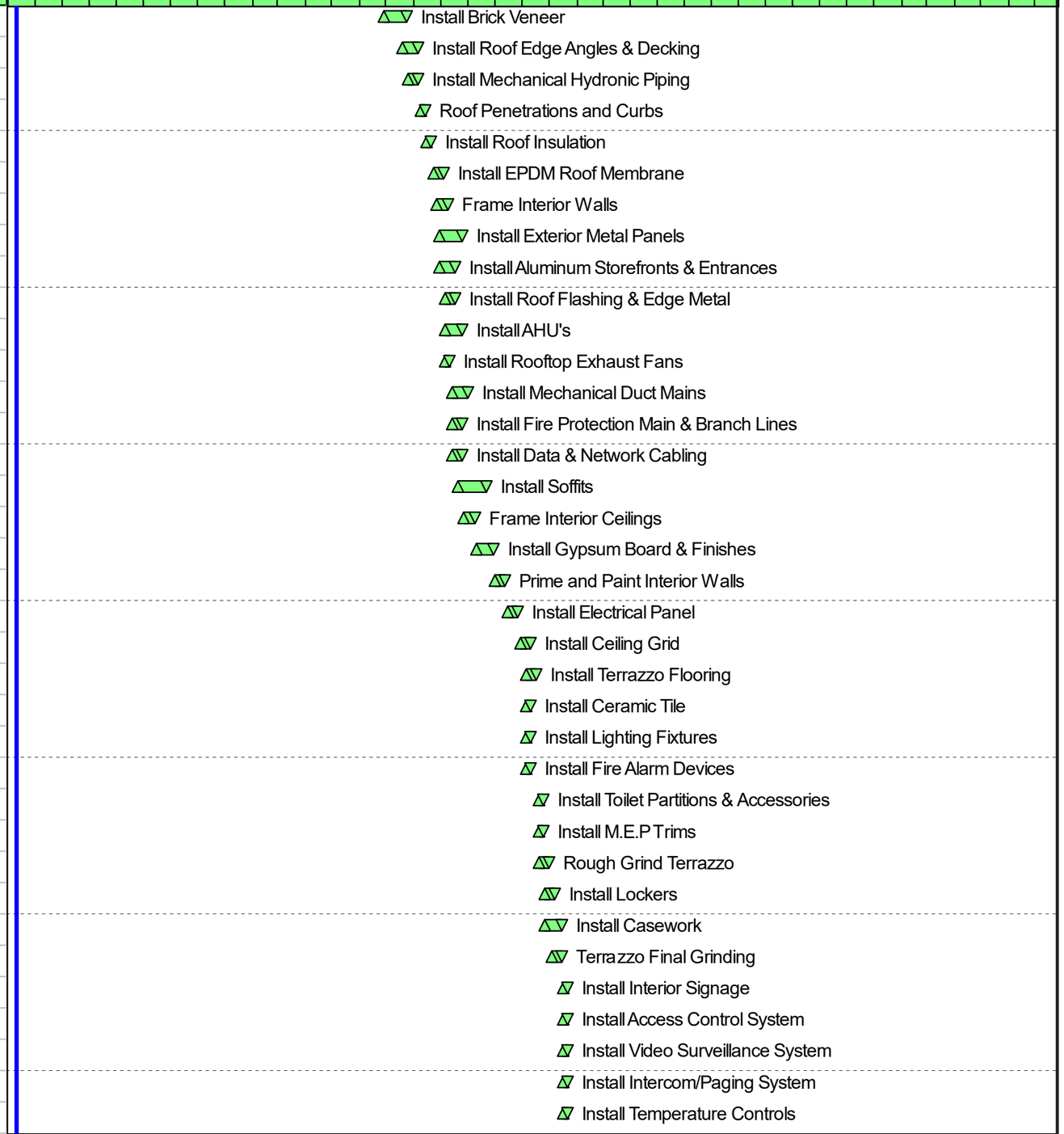



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**


SKILLMAN

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Install Brick Veneer | 20 | 28-Jun-27 | 23-Jul-27 |
| Install Roof Edge Angles & Decking | 15 | 19-Jul-27 | 06-Aug-27 |
| Install Mechanical Hydronic Piping | 10 | 26-Jul-27 | 06-Aug-27 |
| Roof Penetrations and Curbs | 5 | 09-Aug-27 | 13-Aug-27 |
| Install Roof Insulation | 5 | 16-Aug-27* | 20-Aug-27 |
| Install EPDM Roof Membrane | 10 | 23-Aug-27 | 03-Sep-27 |
| Frame Interior Walls | 10 | 26-Aug-27 | 08-Sep-27 |
| Install Exterior Metal Panels | 20 | 30-Aug-27 | 24-Sep-27 |
| Install Aluminum Storefronts & Entrances | 15 | 30-Aug-27* | 17-Sep-27 |
| Install Roof Flashing & Edge Metal | 10 | 06-Sep-27 | 17-Sep-27 |
| Install AHU's | 15 | 06-Sep-27 | 24-Sep-27 |
| Install Rooftop Exhaust Fans | 5 | 06-Sep-27 | 10-Sep-27 |
| Install Mechanical Duct Mains | 15 | 13-Sep-27 | 01-Oct-27 |
| Install Fire Protection Main & Branch Lines | 10 | 13-Sep-27 | 24-Sep-27 |
| Install Data & Network Cabling | 10 | 13-Sep-27 | 24-Sep-27 |
| Install Soffits | 25 | 20-Sep-27 | 22-Oct-27 |
| Frame Interior Ceilings | 10 | 27-Sep-27 | 08-Oct-27 |
| Install Gypsum Board & Finishes | 15 | 11-Oct-27 | 29-Oct-27 |
| Prime and Paint Interior Walls | 10 | 01-Nov-27 | 12-Nov-27 |
| Install Electrical Panel | 10 | 15-Nov-27 | 26-Nov-27 |
| Install Ceiling Grid | 10 | 29-Nov-27 | 10-Dec-27 |
| Install Terrazzo Flooring | 10 | 06-Dec-27 | 17-Dec-27 |
| Install Ceramic Tile | 5 | 06-Dec-27 | 10-Dec-27 |
| Install Lighting Fixtures | 5 | 06-Dec-27 | 10-Dec-27 |
| Install Fire Alarm Devices | 5 | 06-Dec-27 | 10-Dec-27 |
| Install Toilet Partitions & Accessories | 5 | 20-Dec-27 | 24-Dec-27 |
| Install M.E.P Trims | 5 | 20-Dec-27 | 24-Dec-27 |
| Rough Grind Terrazzo | 10 | 20-Dec-27 | 31-Dec-27 |
| Install Lockers | 10 | 27-Dec-27 | 07-Jan-28 |
| Install Casework | 15 | 27-Dec-27 | 14-Jan-28 |
| Terrazzo Final Grinding | 10 | 03-Jan-28 | 14-Jan-28 |
| Install Interior Signage | 5 | 17-Jan-28 | 21-Jan-28 |
| Install Access Control System | 5 | 17-Jan-28 | 21-Jan-28 |
| Install Video Surveillance System | 5 | 17-Jan-28 | 21-Jan-28 |
| Install Intercom/Paging System | 5 | 17-Jan-28 | 21-Jan-28 |
| Install Temperature Controls | 5 | 17-Jan-28 | 21-Jan-28 |

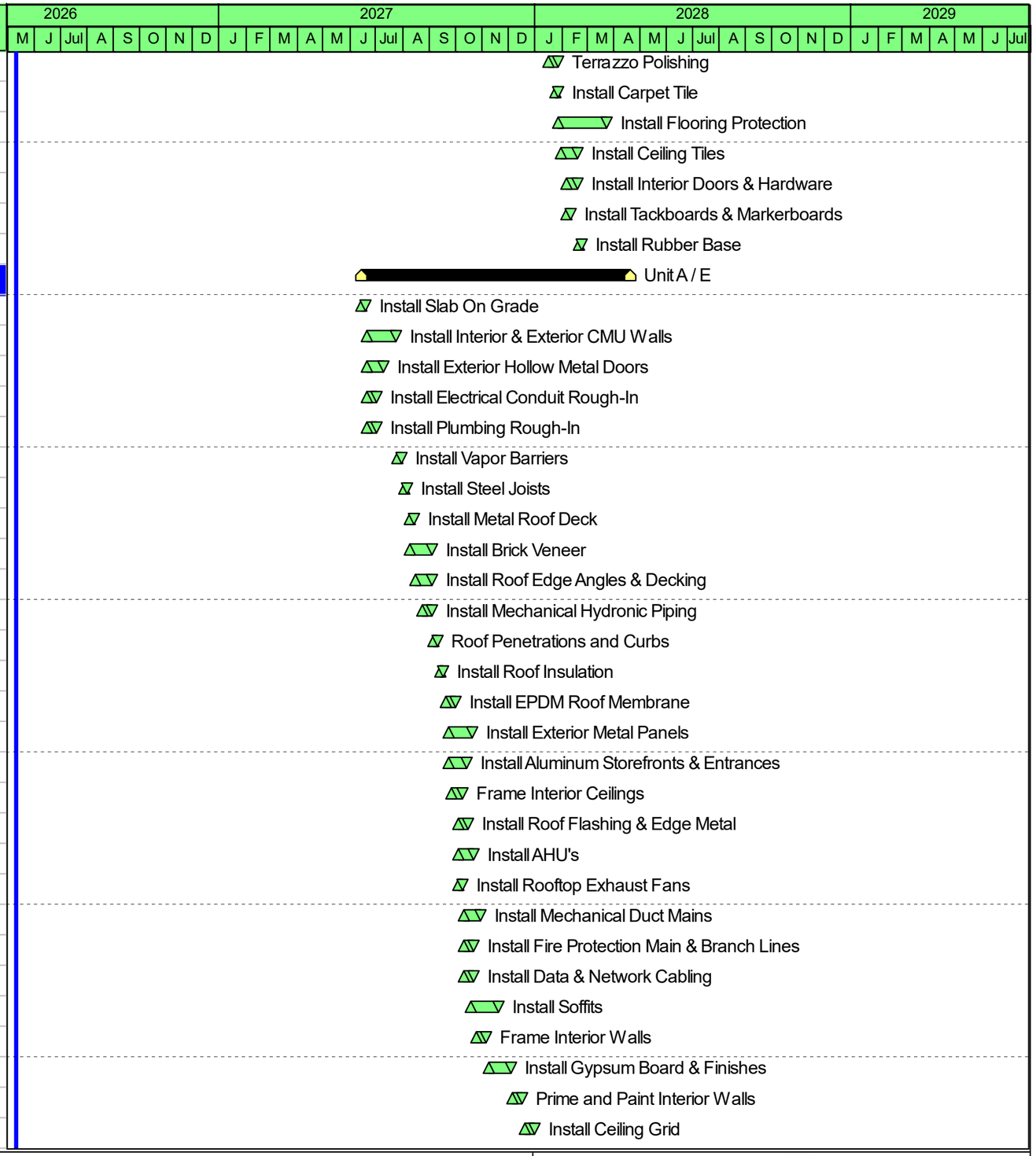



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**


SKILLMAN

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Terrazzo Polishing | 10 | 17-Jan-28 | 28-Jan-28 |
| Install Carpet Tile | 5 | 24-Jan-28 | 28-Jan-28 |
| Install Flooring Protection | 40 | 28-Jan-28 | 23-Mar-28 |
| Install Ceiling Tiles | 15 | 31-Jan-28 | 18-Feb-28 |
| Install Interior Doors & Hardware | 10 | 07-Feb-28 | 18-Feb-28 |
| Install Tackboards & Markerboards | 5 | 07-Feb-28 | 11-Feb-28 |
| Install Rubber Base | 3 | 21-Feb-28 | 23-Feb-28 |
| **Unit A / E** | 224 | 14-Jun-27 | 20-Apr-28 |
| Install Slab On Grade | 5 | 14-Jun-27 | 18-Jun-27 |
| Install Interior & Exterior CMU Walls | 25 | 21-Jun-27 | 23-Jul-27 |
| Install Exterior Hollow Metal Doors | 15 | 21-Jun-27 | 09-Jul-27 |
| Install Electrical Conduit Rough-In | 10 | 21-Jun-27 | 02-Jul-27 |
| Install Plumbing Rough-In | 10 | 21-Jun-27 | 02-Jul-27 |
| Install Vapor Barriers | 5 | 26-Jul-27 | 30-Jul-27 |
| Install Steel Joists | 5 | 02-Aug-27 | 06-Aug-27 |
| Install Metal Roof Deck | 5 | 09-Aug-27 | 13-Aug-27 |
| Install Brick Veneer | 20 | 09-Aug-27 | 03-Sep-27 |
| Install Roof Edge Angles & Decking | 15 | 16-Aug-27 | 03-Sep-27 |
| Install Mechanical Hydronic Piping | 10 | 23-Aug-27 | 03-Sep-27 |
| Roof Penetrations and Curbs | 5 | 06-Sep-27 | 10-Sep-27 |
| Install Roof Insulation | 5 | 13-Sep-27* | 17-Sep-27 |
| Install EPDM Roof Membrane | 10 | 20-Sep-27 | 01-Oct-27 |
| Install Exterior Metal Panels | 20 | 23-Sep-27 | 20-Oct-27 |
| Install Aluminum Storefronts & Entrances | 15 | 23-Sep-27* | 13-Oct-27 |
| Frame Interior Ceilings | 10 | 27-Sep-27 | 08-Oct-27 |
| Install Roof Flashing & Edge Metal | 10 | 04-Oct-27 | 15-Oct-27 |
| Install AHU's | 15 | 04-Oct-27 | 22-Oct-27 |
| Install Rooftop Exhaust Fans | 5 | 04-Oct-27 | 08-Oct-27 |
| Install Mechanical Duct Mains | 15 | 11-Oct-27 | 29-Oct-27 |
| Install Fire Protection Main & Branch Lines | 10 | 11-Oct-27 | 22-Oct-27 |
| Install Data & Network Cabling | 10 | 11-Oct-27 | 22-Oct-27 |
| Install Soffits | 25 | 18-Oct-27 | 19-Nov-27 |
| Frame Interior Walls | 10 | 25-Oct-27 | 05-Nov-27 |
| Install Gypsum Board & Finishes | 20 | 08-Nov-27 | 03-Dec-27 |
| Prime and Paint Interior Walls | 10 | 06-Dec-27 | 17-Dec-27 |
| Install Ceiling Grid | 10 | 20-Dec-27 | 31-Dec-27 |

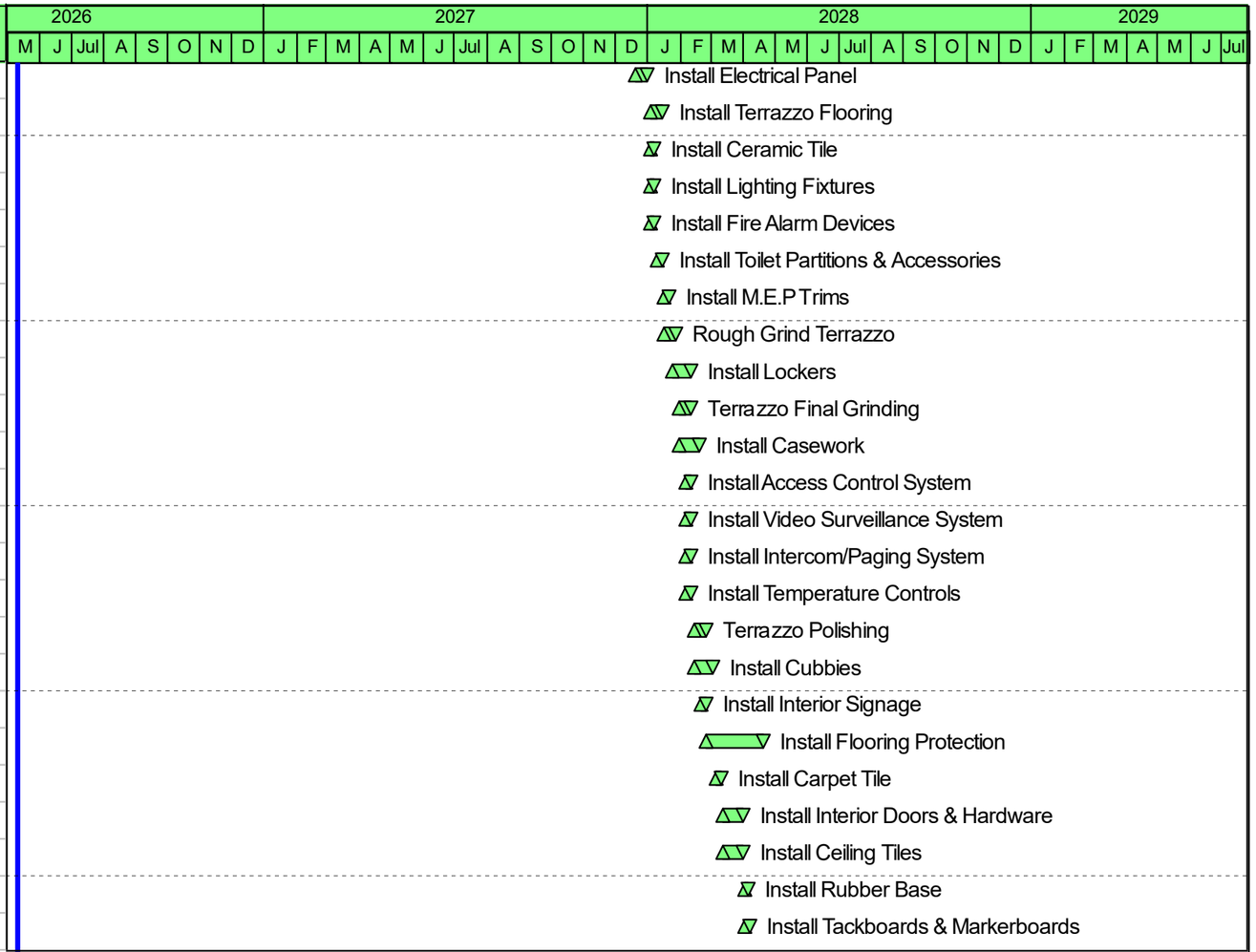



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**


SKILLMAN

| Activity Name | Original Duration | Start | Finish |
|---|---|---|---|
| Install Electrical Panel | 10 | 20-Dec-27 | 31-Dec-27 |
| Install Terrazzo Flooring | 10 | 03-Jan-28 | 14-Jan-28 |
| Install Ceramic Tile | 5 | 03-Jan-28 | 07-Jan-28 |
| Install Lighting Fixtures | 5 | 03-Jan-28 | 07-Jan-28 |
| Install Fire Alarm Devices | 5 | 03-Jan-28 | 07-Jan-28 |
| Install Toilet Partitions & Accessories | 5 | 10-Jan-28 | 14-Jan-28 |
| Install M.E.P Trims | 5 | 17-Jan-28 | 21-Jan-28 |
| Rough Grind Terrazzo | 10 | 17-Jan-28 | 28-Jan-28 |
| Install Lockers | 15 | 24-Jan-28 | 11-Feb-28 |
| Terrazzo Final Grinding | 10 | 31-Jan-28 | 11-Feb-28 |
| Install Casework | 15 | 31-Jan-28 | 18-Feb-28 |
| Install Access Control System | 5 | 07-Feb-28 | 11-Feb-28 |
| Install Video Surveillance System | 5 | 07-Feb-28 | 11-Feb-28 |
| Install Intercom/Paging System | 5 | 07-Feb-28 | 11-Feb-28 |
| Install Temperature Controls | 5 | 07-Feb-28 | 11-Feb-28 |
| Terrazzo Polishing | 10 | 14-Feb-28 | 25-Feb-28 |
| Install Cubbies | 15 | 14-Feb-28 | 03-Mar-28 |
| Install Interior Signage | 5 | 21-Feb-28 | 25-Feb-28 |
| Install Flooring Protection | 40 | 25-Feb-28 | 20-Apr-28 |
| Install Carpet Tile | 5 | 06-Mar-28 | 10-Mar-28 |
| Install Interior Doors & Hardware | 15 | 13-Mar-28 | 31-Mar-28 |
| Install Ceiling Tiles | 15 | 13-Mar-28 | 31-Mar-28 |
| Install Rubber Base | 3 | 03-Apr-28 | 05-Apr-28 |
| Install Tackboards & Markerboards | 5 | 03-Apr-28 | 07-Apr-28 |




Actual Work
Remaining Work
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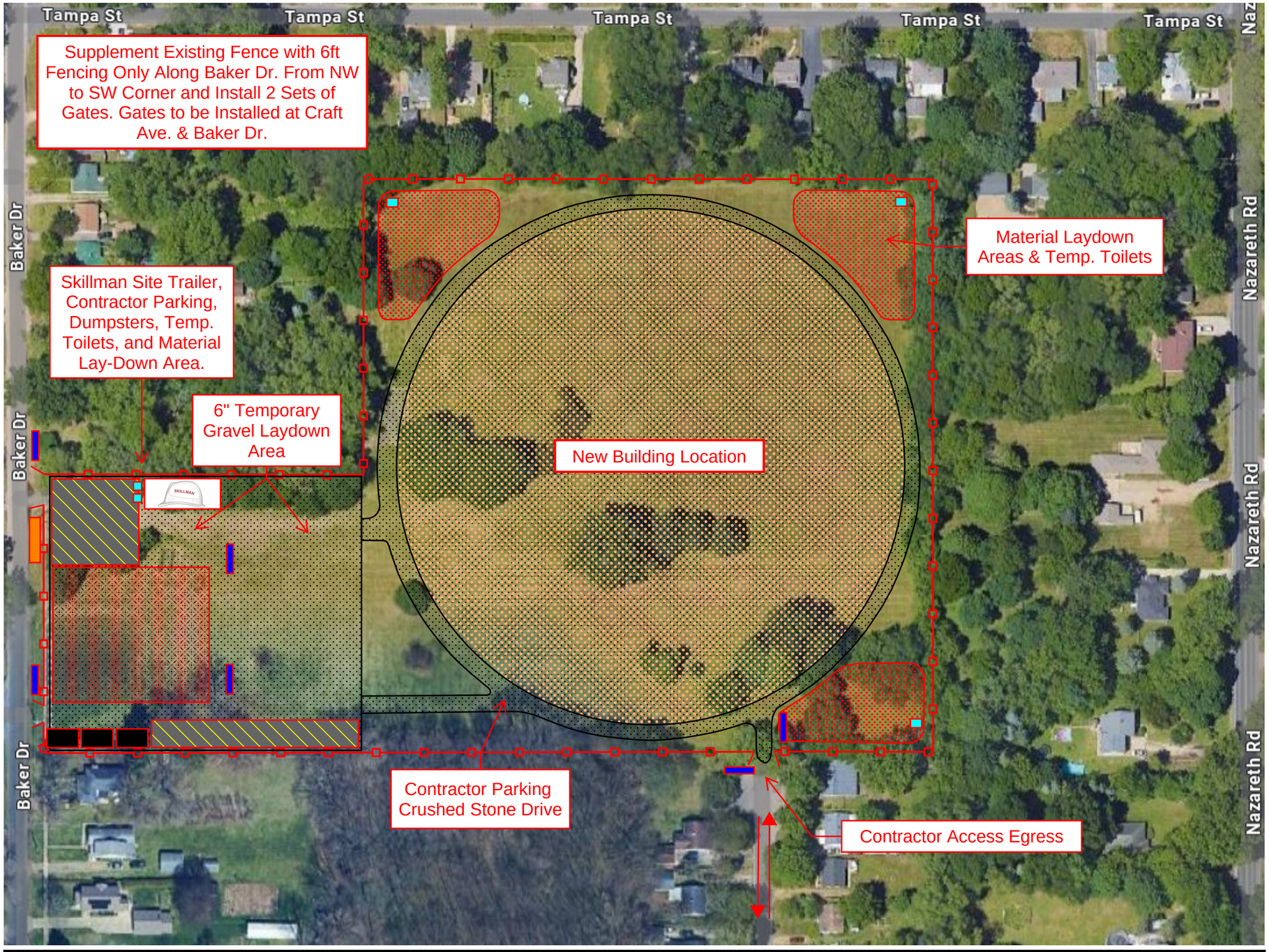
**224010.11 KPS New EL SOL School**
**Guidline Schedule - 11-May-26**
**10 of 10**

SKILLMAN

# Kalamazoo Public Schools

NEW EL SOL SCHOOL




## LEGEND:

Material Laydown Area
6" Crushed Stone =

6" Temp. Crushed Stone
10' Wide Stone Access
Drive for Reference =

Skillman Site Trailer =

Contractor Parking Area =

Dumpsters =

Large Project Sign =

Project Traffic and Contractor
Entrance Signage =

Temporary Toilets =

SKILLMAN

The SKILLMAN Corporation
Construction Management

TowerPinkster
Architecture · Engineering · Interiors

Kalamazoo Public Schools

## Site Logistics Plan - 4/29/26

## KPS New EL SOL School Project - Pre-Bid RFI Log

Date - 5/5/2026

| RFI # | Company Submitting RFI | Date Received | RFI Description | To be Answered By: | RFI Response - PLEASE DATE YOUR RESPONSE | Response Type: Draft or Final | Addendum Item |
|---|---|---|---|---|---|---|---|
| 1 | AOA Access | 5/5/2026 | Please advise what openings are required to be fire resistance-rated frames (081243) | TowerPinkster | **Updated frame elevations will be provided in upcoming Addendum No. 1 LD May 8, 2026** | FINAL | ISSUED |
| 2 | AOA Access | 5/5/2026 | I noticed that fire resistance-rated frames (081243) are in the general trades package. These are normally provided by the glass and glazing package as they come as a full assembly and are installed by the supplier. | Skillman | **Section 08 12 43 will be removed from Bid Category No. 6 General Trades and will be added to Bid Category No. 11 Aluminmum Windows/Storefront etc. in Addendum No. 1. MJK 05.11.26.** | FINAL | YES |
| 3 | Midwest Glass | 5/5/2026 | Can a hardware spec please be provided.<br>Hardware is not listed in any bid category can you please clarify who is responsible for door hardware. | TowerPinkster | **Hardware specs and sets will be provided in upcoming Addendum No. 1 LD May 8, 2026** | FINAL | ISSUED |
| 4 | Midwest Glass | 5/5/2026 | Are all joint sealants to be done by BC-14 including perimeters of storefront frames? | Skillman | This scope will be clarified in forthcoming Addendum No. 2. MJK 05.11.26. | DRAFT | |
| 5 | Midwest Glass | 5/5/2026 | Spec 08 12 43 is in BC-06, these are aluminum storefront type frames should these be moved to BC-11? | Skillman | **Section 08 12 43 will be removed from Bid Category No. 6 General Trades<br>and will be added to Bid Category No. 11 Aluminmum Windows/ Storefront etc. in Addendum No. 1. MJK 05.11.26.** | FINAL | YES |
| 6 | Midwest Glass | 5/5/2026 | Spec 08 11 16 is unclear as to what type of doors these are and what the proper application would be. Can this please be clarified. | TowerPinkster | **Door types are as shown on door panel type legend and door schedule. LD May 8, 2026** | FINAL | NO |
| 7 | Midwest Glass | 5/5/2026 | Can spec 08 45 23 Fiberglass Sandwich panels please be added. | TowerPinkster | **See Addendum No. 1 for added Fiberglass Sandwich panel spec. LD May 8, 2026** | FINAL | ISSUED |
| 8 | Midwest Glass | 5/5/2026 | Can design requirements for the insulated metal panels please be included in 08 41 13 | TowerPinkster | **See updated spec 08 4113 in Addendum No. 1 detailing the insulated metal panels to be glazed in. LD. May 8, 2026** | FINAL | ISSUED |
| 9 | Midwest Glass | 5/5/2026 | 08 44 13 lists frame dimensions of 2"x7.5" would a 2.5"x7.5" framing system be acceptable? | TowerPinkster | **2 1/2" x 7 1/2" curtain wall frames are acceptable in lieu of the 2"x7.5 specified. Other frame size as noted on drawings are still required. LD May 8, 2026** | FINAL | NO |
| 10 | Midwest Glass | 5/5/2026 | Can the frosted glass panels please be included in 08 80 00. | TowerPinkster | **Used window film instead of frosted glass per spec section 08 8700 Architectural Window Film - Addendum No. 1 LD May 8, 2026** | FINAL | ISSUED |
| 11 | Davenport Masonry | 5/5/2026 | Shop drawing requirements -Please clarify the required level of detail expected to satisfy this requirement Unit Masonry 042000 1.3 B<br>A. Will the mason be required to submit shop drawings for CMU or brick elevations showing coursing and bond for any walls? | TowerPinkster | **FULL detailed shop drawings with elevations of every wall are required as outlined in the spec. LD May 8, 2026** | FINAL | NO |
| 12 | Davenport Masonry | 5/5/2026 | Please confirm that the mason contractor is NOT responsible for the following:<br>Delegated Design, BIM requirements, dumpsters for masonry waste, caulking/sealants for mason control, expansion joints, & frames, wood blocking, top of wall fire safing, smoke rating, or acoustical ratings. Also, fire-rated expansion joints, expansion joists with insulation on A329, preformed joint seal on A352, typical top of masonry walls 12 gage angles and plates on S401, L4x4x1/4" 1'-o" long angles on S404. | Skillman | | DRAFT | |
| 13 | Davenport Masonry | 5/5/2026 | Who is responsible for rigid insulation at top of wall and backside side of parapet typical locations 13A/A325 , 1A/A321?<br>Who is responsible for below grade perimeter rigid insulation down to foundation on concrete typical 14/A326? | Skillman | | DRAFT | |
| 14 | Davenport Masonry | 5/5/2026 | Is Bid Category 7 furnishing Fero Brackets, Associated Lintels, bolts and shims typical 9/S401 to Bid Category 5 to install? | Skillman | **Bid Category No. 5 Masonry shall provide all Fero Brackets, associated Fero Bracket anchors,<br>shims, for a complete "Low Conductive Fero Anchor" assembly. MJK 05.11.26.** | FINAL | YES |
| 15 | Davenport Masonry | 5/5/2026 | Bid Category 5 has specification section 072119 Foamed In Place Insulation referenced. Please provide location(s) where the mason would be responsible for this? | Skillman | | DRAFT | |
| 16 | Davenport Masonry | 5/5/2026 | Details on architectural drawings, for example 30/A330 call for Air Barrier in the masonry cavity. I don't see any specifications for Air Barrier in the specifications. What specification is to be referenced/use for the Air Barrier? Who is responsible to furnish and install the Air Barrier? | TowerPinkster | **Air-barrier spec will be issued as part of Addendum No. 1 LD May 8, 2026** | FINAL | ISSUED |
| 17 | AOA Access | 5/5/2026 | Is this a prevailing wage project? | Skillman | **No - BML, 5/5/2026** | FINAL | NO |
| 18 | Midwest Glass | 5/5/2026 | Is there a construction schedule? | Skillman | **Included with Addendum 01 - BML, 5/5/2026** | FINAL | YES |
| 19 | Chiattello | 5/6/2026 | Clarification on roof color, see attached responses from all 3 manufactures response to the color grey. (Blake sent Kayla attachments) | TowerPinkster | **All EPDM roofing to be Grey. LD May 8, 2026** | FINAL | NO |
| 20 | Chiattello | 5/6/2026 | Clarification on roof assembly, specifications ask for substrate board vapor barrier, no thickness. All details ask for 5" rigid insulation with 1/2 cover bored. | TowerPinkster | **Substrate board and vapor barrier are not needed. For roof assembly requirements see addendum no. 1 for updated spec and drawing details. LD May 8, 2026** | FINAL | ISSUED |
| 21 | Hunter Prell | 5/6/2026 | Can you provide the specifications for the pre-action system being installed in the gym? | TowerPinkster | **Refer to section 21 1000 in Addendum No. 1 DV May 8, 2026** | FINAL | ISSUED |
| 22 | Hunter Prell | 5/6/2026 | Who is responsible for bringing the underground water supply into the building for the fire suppression system? | Skillman | | DRAFT | |
| 23 | NEIS | 5/6/2026 | Please confirm if millwork items are to be by bid category No 17. Such items include Compact laminate paneling, reception desk & media circulation desk. Additionally, please provide any specification sections that govern millwork items. 064023, 064116 and 066116 are mentioned in some documents but not included in the project manual. | Skillman | | DRAFT | |
| 24 | NEIS | 5/6/2026 | Please confirm classroom cubbies detailed on I 503 are by the casework bid category. | Skillman | | DRAFT | |

## KPS New EL SOL School Project - Pre-Bid RFI Log

Date - 5/5/2026

| RFI # | Company Submitting RFI | Date Received | RFI Description | To be Answered By: | RFI Response - PLEASE DATE YOUR RESPONSE | Response Type: Draft or Final | Addendum Item |
|---|---|---|---|---|---|---|---|
| 25 | Davenport Masonry | 5/7/2026 | Who is responsible for furnishing and installing preformed expansion joint typical shown in detail 4/A201A? | Skillman | | DRAFT | |
| 26 | Davenport Masonry | 5/7/2026 | Please clarify whether more than one mortar color will be required for the brick patterns shown on drawing A307. Can standard non-colored gray mortar be used for all brick patterns, or are specific mortar colors intended to correspond with the various brick types/patterns shown? If multiple mortar colors are required, please identify the required color locations and provide corresponding specifications/sample requirements. | TowerPinkster | **All mortar to be Solomon Colors 70A Orange or equal. LD May 7, 2026** | FINAL | YES |
| 27 | Division 5 Metal Works | 5/8/2026 | Specs for steel fabricator & steel erector call out AISC requirement, and shows it will not be waived for this project. Division 5 is not currently AISC certified fabricator, and as such will not be able to bid this project.<br>We also have this same requirement showing up on the specs for the Woodward school project, and won't be able to bid that one either, unless spec is waived. | TowerPinkster | **This requirement will not be waived from this project. LD May 8, 2026** | FINAL | NO |
| 28 | RLE Concrete | 5/8/2026 | What bid category will be responsible for light pole bases? | Skillman | **Bid Category No. 23 Electrical will provide concrete Light Pole Bases. MJK 05.11.26.** | FINAL | YES |
| 29 | RLE Concrete | 5/8/2026 | What bid category will be responsible for interior and exterior housekeeping pads? | Skillman | **Bid Category No. 04 Concrete will be responsible to provide ALL interior and exterior concrete housekeeping pads as shown on the drawings. Any concrete housekeeping pads not shown on the drawings will be the responsibility of the Contractor requiring the housekeeping pad. MJK 05.11.26.** | FINAL | YES |
| 30 | RLE Concrete | 5/8/2026 | The specs for the exterior concrete are calling out white cement which is quite a bit more money than gray cement? Could we use gray cement in the exterior concrete and decorative concrete? | TowerPinkster | **Concrete paving to be: " Portland Cement: ASTM C150/C150M, gray portland cement Type I." Updated spec to be provided in upcoming addendum. - 05/05/2026 LF** | FINAL | YES |
| 31 | Hall Builders | 5/11/2026 | Who is responsible for the compact Laminate panels? | Skillman | **Refer to Addendum No. 1, Section 01 12 23 Multiple Contract Summary Section for clarifications regarding Millwork and Plasticl Laminate. MJK 05.11.26.** | FINAL | YES |
| 32 | Hall Builders | 5/11/2026 | Who is responsible for the roller shades? | TSC/TP | **BC06 - General Trades is repsonsible for roller shades. *Need spec section from TP.* - 5/11/26, BML** | FINAL | YES |
| 33 | NEIS | 5/11/2026 | See typical cubby detail 3D I 503; the typical detail shows a 1/2'' SSM material bottom shelf with front nosing that extrudes 1/2'' beyond the cubby side panel. Would the design team accept reducing the bottom panel depth of the cubbies by 1/2'' to allow the solid surface's front nosing to sit flush with the side panels of the manufactured cubbies? This would allow for individual solid surface tops to be installed at each cubby, creating a uniform look, while eliminating the need for manufactured cubbies to be installed on top of a continuous SSM bottom shelf. We encountered a similar detail on another TowerPinkster project and were able to proceed in the manner detailed above. | TowerPinkster | | DRAFT | |
| 34 | NEIS | 5/11/2026 | See detail 4 sheet I 301 (room 100N): What are the countertop and casework material selections in this elevation? | TowerPinkster | | DRAFT | |
| 35 | NEIS | 5/11/2026 | Reference Spec 123216 - Manufactured PLAM Casework - example Science Classroom 113. Please confirm clear acrylic is an acceptable material for glazed doors on casework. | TowerPinkster | | DRAFT | |
| 36 | NEIS | 5/11/2026 | Reference 3D I 503; should the cubbie base be SSM-2 or SSM-1? The detail lists SSM-2 but the finish plan references SSM-1, which is correct? | TowerPinkster | | DRAFT | |
| 37 | Earley & Associates | 5/11/2026 | The spec lists site concrete as WHITE CEMENT; is this to be grey? | TowerPinkster | **Concrete paving to be: " Portland Cement: ASTM C150/C150M, gray portland cement Type I." Updated specwas provided in Addendum 01, Note that this was already answered via RFI #30 -5/12/2026 LF** | FINAL | YES |
| 39 | Earley & Associates | 5/11/2026 | For scope, who is to provide bollard and bollard covers? | Skillman | **Bollards are specified in Section 32-3300 Site Furnishings. Bollards shall be supplied by Bid Category No. 7 Structural & Misc. Steel, inlcluding the HDPE sleeves, and shall be installed by Bid Category No. 4 Concrete. MJK 05.11.26.** | FINAL | YES |
| 40 | Hall Builders | 5/11/2026 | I see a set of soccer goals on the plan but in the spec there is not a manufacture on what it is supposed to be. We will need to have this to price this out. I am assuming this would be part of the general trades package. | TSC/TP | | DRAFT | |
| 41 | Bareman & Associates | 5/11/2026 | Sec. 116623-Gymnasium Equipment mentions a "Mat Storage Systems" but we cannot locate this system on the plans. Please verify where the mat storage system is located. | TowerPinkster | | DRAFT | |
| 42 | Bareman & Associates | 5/11/2026 | Sec. 083323, 2.3, A.1 calls for 200,000 cycles. This is extremely high for this doors application. Is the standard 50,000 cycles acceptable? | TowerPinkster | | DRAFT | |
| 43 | Bareman & Associates | 5/11/2026 | Sec. 083323, 2.3. A.8 & A.9 call for both "manual" and "electric" operation. Which operation is required? | TowerPinkster | | DRAFT | |
| 44 | Bareman & Associates | 5/11/2026 | Sec. 083323, A, 11 lists multiple finish options. Please clarify which finish is required. | TowerPinkster | | DRAFT | |
| 45 | Bareman & Associates | 5/11/2026 | Sec. 083323, 2.4, A,3 lists "air infiltration" requirements. Is the fire door also supposed to be insulated? | TowerPinkster | | DRAFT | |
| 46 | Bareman & Associates | 5/11/2026 | Sec. 083323, 2.4, A.4 calls for a "stainless steel" curtain but note 12 lists other painted options. Please clarify which finish is required. | TowerPinkster | | DRAFT | |
| 47 | Lakeshore Glass | 5/12/2026 | Frame 40 on door schedule is labeled as AL and the window elevation shows this frame as HM, Pleas clarify which is correct | TowerPinkster | | DRAFT | YES |