CHRISTMAN
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Addendum No.[3]

Project Name: Willow - Bid Package 2 – New Build
Project No.: 221125-090
Architect: Kingscott
Date: 3/18/2024

Bid Package No.: 2
Bid Due Date: 3/21/2024 @ 2:00PM

This Addendum is issued to inform the bidders of modifications in the scope of work being bid for this project.

A. Documents included in this Addendum:

- Kingscott Addendum 3 Writeup
- Specification sections dated 3/18/2024:

Division	Number	Description
03 - Concrete	033543	DIAMOND POLISHING CONCRETE FLOORS
07 - Thermal and Moisture Protection	074213.13	FORMED METAL WALL PANELS
08 - Openings	081416	FLUSH WOOD DOORS
08 - Openings	084113	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
08 - Openings	088000	GLAZING
09 - Finishes	096813	TILE CARPETING
10 - Specialties	101423	PANEL SIGNAGE
10 - Specialties	101423.16	ROOM-IDENTIFICATION PANEL SIGNAGE
10 - Specialties	105113	METAL LOCKERS
11 - Equipment	113013	RESIDENTIAL APPLIANCES
11 - Equipment	114000	FOOD SERVICE EQUIPMENT
12 - Furnishings	123216	MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK
27 - Communications	274116	CLASSROOM AV SYSTEMS
32 - Exterior Improvements	323113	CHAIN LINK FENCES AND GATES

Drawings dated 3/15/2024:

Discipline	Drawing No.	Drawing Title
General	G0.1	TITLE SHEET
Civil	C0.0	COVER
Civil	C2.1	DEMOLITION PLAN
Civil	C4.1	PAVING PLAN
Civil	C4.2	PAVING DETAILS
Civil	C4.3	AMPHITHEATER EXHIBIT
Civil	C4.4	AMPHITHEATER EXHIBIT
Civil	C5.1	GRADING PLAN
Civil	C6.1	UTILITY PLAN
Civil	C6.2	UTILITY DETAIL
Landscape	L1.00	PLAYGROUND OVERALL SITE PLAN
Landscape	L1.01	PLAYGROUND SITE PLAN
Landscape	L1.02	PLAYGROUND DIMENSION PLAN
Landscape	L1.03	PLAYGROUND DRAINAGE PLAN
Landscape	LD1.01	PLAYGROUND DETAILS
Structural	S1.01	FOUNDATION PLAN UNIT 100
Structural	S1.11	LOW ROOF FRAMING PLAN UNIT 100
Structural	S1.21	HIGH ROOF FRAMING PLAN UNIT 100
Structural	S1.22	ROOF FRAMING PLAN UNITS 200, 300, 400
Architectural	A0.2	COMPOSITE CLERESTORY FLOOR PLAN
Architectural	A1.1A	FLOOR PLAN - UNIT 100A
Architectural	A1.3	FLOOR PLAN - UNIT 300
Architectural	A1.4	FLOOR PLAN - UNIT 400
Architectural	A1.5	EQUIPMENT PLAN - UNIT 100
Architectural	A1.9	EQUIPMENT SCHEDULES & DETAILS
Architectural	A1.10	SIGNAGE
Architectural	A1.11	ENLARGED PLANS
Architectural	A2.1A	REFLECTED CEILING PLAN - UNIT 100A
Architectural	A2.3	REFLECTED CEILING PLAN - UNIT 300
Architectural	A2.4	REFLECTED CEILING PLAN - UNIT 400
Architectural	A3.1A	EXTERIOR ELEVATIONS - UNIT 100A
Architectural	A3.1B	EXTERIOR ELEVATIONS - UNIT 100B
Architectural	A3.2	EXTERIOR ELEVATIONS - UNIT 200
Architectural	A3.3	EXTERIOR ELEVATIONS - UNIT 300
Architectural	A3.4	EXTERIOR ELEVATIONS - UNIT 400
Architectural	A4.1	WALL SECTIONS
Architectural	A4.2	WALL SECTIONS
Architectural	A5.2	BUILDING DETAILS
Architectural	A5.4	BUILDING DETAILS
Architectural	A8.1	COLOR LAYOUT PLAN -UNIT 100
Architectural	A9.1	INTERIOR ELEVATIONS

Architectural	A9.4	INTERIOR ELEVATIONS
Architectural	A9.5	INTERIOR ELEVATIONS
Food Service	FS1.1	FOODSERVICE EQUIPMENT PLAN
Food Service	FS4.1	SPECIAL CONDITIONS AND DETAIL CALL-OUT PLAN
Food Service	FS4.5	FOODSERVICE EQUIPMENT DETAILS
Plumbing	P5.0	PLUMBING DETAILS
Plumbing	P6.0	PLUMBING SCHEDULES
Mechanical	M6.0	MECHANICAL SCHEDULES
Mechanical	M8.2	CONTROL DIAGRAMS
Mechanical	M8.3	CONTROL DIAGRAMS
Mechanical	MH1.1A	MECHANICAL HVAC PLAN - UNIT 100A
Fire Protection	FP1.1A	FIRE PROTECTION PLAN - UNIT 100A
Fire Protection	FP1.2	FIRE PROTECTION PLAN - UNIT 200
Fire Protection	FP1.3	FIRE PROTECTION PLAN - UNIT 300
Fire Protection	FP1.4	FIRE PROTECTION PLAN - UNIT 400
Electrical	E6.1	PANEL SCHEDULES - 208/120V PANELS
Electrical	EP1.2	POWER PLAN -UNIT 200
Electrical	EP1.3	POWER PLAN -UNIT 300
Electrical	EP1.4	POWER PLAN -UNIT 400
Electrical	ES1.0	ELECTRICAL SITE POWER PLAN

B. Other modifications:

- Specification Section 00 – Added additional sections to Christman Company front ends typical with all Christman Company projects.
- Work Category Index
- Project Manual;
  - Removed WC13 – Waterproofing from WC Index and all mentions in Project Manual.
  - WC 05 – Removed Work Category Note 5; Bollard Responsibility.
  - WC 10 – Added Specific Note and Detail 4. Bollard Responsibility.
    - *This WC responsible to receive, locate, and install all pipe bollards. WC12 to furnish all Schedule 40 pipe, this WC responsible for excavating pipe bases, pouring the 2000psi concrete, and furnishing the finish pipe sleeves.*
  - WC 11 – Added Specific Notes & Details Note 2; *Exterior insulation beyond waterproof wrap similar to the condition shown in detail A4.2/2 behind all masonry assemblies to be furnished and installed by this WC.*
  - WC 11 – Added Related Work by Others Note 11; *Exterior insulation behind metal panel assemblies and roofing assemblies by others.*
  - WC 14 – Revised Related Work by Others note 3 to include *WC27* callout.
  - WC 15 – Revised Related Work by Others note 8 to include *protection removal by WC14.*
  - WC 15 – Added Specific Notes & Details Note 2; *Exterior insulation beyond waterproof wrap similar to the condition shown in detail A4.2/4 behind all metal wall &*

panel assemblies to be furnished and installed by this WC.
  - WC 15 – Added Related Work by Others Note 10; *Exterior insulation behind masonry assemblies and roofing assemblies by others.*
  - WC 18 – Added Work by Others note 6:
    - *Glazing in Wood Doors by others (WC20).*
  - WC 20 – Added Specific Note & Detail 12 – Provide and install all Fiberboard Wall Panels.
    - *This WC responsible for all FRP wall board panels, including but not limited to where shown in the kitchen/cafeteria area noted as FRP-1 in the specifications and drawings.*
  - WC 20 – Added Specific Note & Detail 13 – Provide all integrated glazing in wood doors.
    - *This WC responsible for all glazing within wood doors provided by this WC.*
  - WC 21 – Added Related Work by Others note 8: Fiber Wall Panels (Noted in drawings as FRP-1)
    - *FRP to be provided and installed by WC 20, WC 21 responsible for Acoustical Wall Panels.*
  - WC 21 – Revised Specific Notes & Details Note 4:
    - This WC responsible for all exterior weather barriers, including vapor/moisture barriers, sealants associated for a complete installation. *It is expected that the inclusion of this on all exterior pre-fabricated assemblies is base bid.*
  - WC 27 – Revised note 19. A. to include installation of roof drains by this WC.
- Work Category Detail Drawing Responsibility: revisions & additions as noted below;
  - Revised Detail Sheet 4.1/1 – Removed *Vertical Zee Girts* from WC21, Added *Vertical Zee Girts* to WC15.
  - Revised Detail Sheet 4.1/2 – Removed *Tectum Decking* from WC20, corrected to WC14 per Addendum 1.
  - Included additional WC Responsibility Details *A4.2/2*, *A4.2/3*, *A4.2/4*, *A5.2/8*.
- Bid Form;
  - Added mandatory alternate to provide **Two Years** of preventative maintenance on Photovolatic Panel Systems.
  - Added mandatory alternate to provide **Two Years** of preventative maintenance on Geothermal Systems Equipment.
  - Removed unit cost for WC13 exterior sheathing.
  - Added unit cost for WC 18 - Translucent Wall Panels
  - Removed voluntary alternate for WC21 to provide Air & Vapor Barrier in Pre-Fabricated Assembly
- All closed & responded to RFI's, and RFI attachments from associated responses.

C. Bids are due <u>3/21/2024 @ 2:00PM.</u>

- **Include in your bid the increase or decrease for all materials, labor, supervision, overhead and profit required to properly and completely execute the work described in this Addendum.**
- **Acknowledge receipt of this Addendum on the Bid Proposal Form.**

The applicable provisions of the Contract Documents shall govern all work included herein unless specifically noted otherwise.

END OF ADDENDUM NO. [#3]

Date: 03/15/2024

Project: Willow School

Owner: Lansing School District

Location: Lansing, MI

A/E #: 2616.01A

ADDENDUM NO. 03

SPECIAL NOTE:

The Notice to Bidders, Instructions to Bidders, General Conditions of the Contract for Construction, Supplementary Conditions of the Contract for Construction, and all modifications and previously issued Contract Documentation are a part of this Addendum.

SCOPE OF WORK:

The following items are changes, additions, deletions, clarifications and/or errors and omissions in plans & specifications and shall be considered by each Bidder in making up and submitting their proposal. All items shall be considered a part of the Contract Documents.

NOTICE TO ALL BIDDERS:

All Bidders shall take note of all items covered by this Addendum. Each Bidder shall review the total scope of his responsibilities with respect to his contract work and his interface with the work of others, as well as his required interface with their work.

SPECIFICATIONS:

Item No. 1. Refer to specification section 033543 (re-Issued):
A. Added product information to paragraph: 3.4 (J1).

Item No. 2. Refer to specification section 074213.13 (re-Issued):
A. Revised Paragraph: 2.3 to include concealed fastener metal wall panel.

Item No. 3. Refer to specification section 081416 (re-Issued):
A. Modified Paragraphs to eliminate AWI and FSC certification.

Item No. 4. Refer to specification section 084113 (re-Issued):
A. Added Paragraphs: 2.4B on FRP doors.

Item No. 5. Refer to specification section 088000 (re-Issued):
A. Added Paragraphs: 2.12 on Insulated Glass.

Item No. 6. Refer to specification section 096813 (re-Issued):
A. Added product information to paragraph: 2.2.

Item No. 7. Refer to specification section 101423 (re-Issued):
A. Correction note to material under section 2.2 (2B), (3B).

Item No. 8. Refer to specification section 101423.16 (re-Issued):
A. Added information to paragraph: 1.5E.
B. Added product information to paragraph 2.5 (A2).
C. Added information to paragraph 3.3 (A), (B), (C).

Item No. 9. Refer to specification section 105113 (re-Issued):
A. Added product information to paragraph: 1.13N-2.

Item No. 10. Refer to specification section 113013 (re-Issued):
A. Added equipment schedule.

Item No. 11. Refer to specification section 114000 (re-Issued):
A. Added information on scrapping stations.

Item No. 12. Refer to specification section 123216 (re-Issued):
A. Correction note to material under section 3.4B.

Item No. 13. Refer to specification section 2741116 (re-Issued):
A. Corrected email address for Clevertouch Contact to jack.willson@clevertouch.com

Item No. 14. Refer to specification section 323113 (re-Issued):
A. Adjusted height in 2.1.A.1.

DRAWINGS:

G0.1 – Title Sheet

- Added new sheet FS4.5.

C2.1: Demolition Plan

- Revised pavement demolition in Ontario Street
- Added demolition for water service at Martin Luther King Jr. Blvd.

C4.1: Paving Plan

- Revised public pavement patches to be AP-H detail
- Added sidewalk and pavement within Martin Luther King Jr. Blvd
- Added hot box pad
- Adjusted Alternate #2 note to specify Montage II Majestic decorative fence and gate
- Added top soil note to community garden.

C4.2: Paving Details

- Added decorative fence details for Alternate #2
- Added detail for large chainlink gate

- Removed erroneous “Willow School” graphic at the bottom of the page.

C5.1: Grading Plan
- Added spot elevations to sidewalk crossing at water tap.
- Added spot elevations to hot box pad.
- Added top soil note to community garden.

C6.1: Utility Plan
- Added standard bedding detail
- Revised structure table
- Adjusted tap at Ontario St.
- Revised OCS 01 storm info
- Revised MH R1 area
- Revised OCS 02 storm info
- Entire domestic and fire service system revised.
    - 4” domestic and 6” fire service
    - Hot box added – See note #13 and southwest side of site near service tap
    - Added water service tap information within MLK Jr. Blvd.
    - Edited FDC location on units 300 and 400 to be on south wall
    - Revised to 5” Storz FDC
    - Removed “extra” FDC on west wall of unit 300

L1.00: Playground Overall Site Plan
- Gaga pit location is revised.

L1.01: Playground Site Plan
- Erroneous sidewalk linework into south playground removed.
- Gaga pit detail corrected w/6” 21AA aggregate playground removed.

L1.02: Playground Dimension Plan
- Gaga pit detail corrected.
- Dimensions added at playground.
- Erroneous sidewalk linework into south playground removed.

L1.03: Playground Drainage Plan
- Gaga pit detail corrected.
- Sheet cleaned up of erroneous info.

LD1.01 Playground Drainage Plan
- Gaga pit detail corrected.
- Sheet cleaned up of erroneous info.

Redi-Rock-Sections

- Removed overhang dimensions.

S1.01: Foundation Plan Unit 100

- Added notes to clarify Storage 181 utilizes reinforced CMU bearing walls.

S1.11: Low Roof Framing Plan Unit 100

- Changed "CFMF headers" to "steel lintels" on reinforced CMU bearing walls at Storage 181.
- Changed framing plan sheet note #16 from "OSB sheathing" to "5/8" gyp sheathing".
- Changed "cold-formed joist schedule" minimum joist depth and gauge.

S1.21: High Roof Framing Plan Unit 100

- Changed framing plan sheet note #16 from "OSB sheathing" to "5/8" gyp sheathing".
- Changed "cold-formed joist schedule" minimum joist depth and gauge.

S1.22: Roof Framing Plan Units 200, 300, 400

- Changed framing plan sheet note #16 from "OSB sheathing" to "5/8" gyp sheathing".
- Changed "cold-formed joist schedule" minimum joist depth and gauge.

A0.1 – Composite Clerestory Floor Plan

- Added correct section references.

A1.1A – Floor Plan – Unit 100A

- Added new walls around Servery equipment.

A1.3 – Floor Plan – Unit 300

- Added new chase walls in toilet room.

A1.4 – Floor Plan – Unit 400

- Added new chase walls in toilet room.

A1.5 – Equipment Plan – Unit 100

- Added MWL-3 to Kitchen 132.
- Added note clarifying kitchen desk to be included in FFE.

A1.9 – Equipment Schedules & Details

- Revised AWP note.

A1.10 – Signage

- Modified notes for bathroom pictorial signage.
- Added Detail of family room lettering.
- Added Exterior Signage Schedule
- Added clarifying notes for room lettering.

A1.11 – Enlarged Plans

- Added new chase walls in toilet rooms in Unit 300 and Unit 400.

A2.1A – Reflected Ceiling Plan – Unit 100A

- Added new wall tags around Servery equipment.
- Modified wall type in Kitchen.

A2.3 – Reflected Ceiling Plan – Unit 300

- Added gyp soffit above lockers.
- Added chase walls to toilet room.

A2.4 – Reflected Ceiling Plan – Unit 400

- Added gyp soffit above lockers.
- Added chase walls to toilet room.

A3.1A – Exterior Elevations – Unit 100A

- Modified elevation view direction.

A3.1B – Exterior Elevations – Unit 100B

- Modified elevation view direction.

A3.2 – Exterior Elevations – Unit 200

- Modified elevation view direction.

A3.3 – Exterior Elevations – Unit 300

- Modified elevation view direction.

A3.4 – Exterior Elevations – Unit 400

- Modified elevation view direction.

A4.1 – Wall Sections

- Modified reference detail and trim note on Detail 6 and Detail 7.

A4.2 – Wall Sections

- Modified Detail 4 verbiage.

A5.2 – Building Details

- Modified metal panel at Detail 8.

A8.1 – Color Layout Plan – Unit 100

- Added coved base Detail for epoxy flooring.
- Added flooring transitions in admin suite, shower room 152.
- Clarifying note to wet wall of drinking fountain.

A9.1 – Interior Elevations

- Edited Acoustical wall panel notes.

A9.4 – Interior Elevations

- Family Room signage notes.
- Added trim to wall tile at wing walls.

A9.5 – Interior Elevations

- Clarifying notes for tile wall base with trim

FS1.1 – Foodservice Equipment Plan

- Added Items 63 and 130 to GC scope.

FS4.1 – Special Conditions and Detail Call-Out Plan

- Added new callouts for scrapping stations.

FS4.5 – Foodservice Equipment Details

- New sheets detailing scrapping stations.

FP1.1A – Fire Protection Plan – Unit 100A

- Removed Fire Department Connection Detail
- Added Vertical Double Detector Check Sprinkler Riser Diagram.
- Revised FDC note to include “5” STORZ PER LANSING AHJ”

FP1.2 – Fire Protection Plan – Unit 200

- Revised FDC note to include “5” STORZ PER LANSING AHJ”

FP1.3 – Fire Protection Plan – Unit 300

- Revised FDC note to include “5” STORZ PER LANSING AHJ”
- Revised FDC location.

FP1.4 – Fire Protection Plan – Unit 400

- Revised FDC note to include “5” STORZ PER LANSING AHJ”
- Revised FDC location.

P5.0 – Plumbing Details

- Revised FDC note to include "5" STORZ PER LANSING AHJ"
- Revised FDC location.

P6.0 – Plumbing Schedules

- Revised schedule to include RS-1 and ORS-1 to align with previously issued specification.

MH1.1A – Mechanical HVAC Plan – Unit 100A

- Added Keynote H15 for ductwork in gymnasium.

M6.0 – Mechanical Schedules

- Revised Note 2 on RTU Schedule.

M8.2 – Control Diagrams

- Revised sequence to note units are to be provided with packaged controls.

M8.3 – Control Diagrams

- Revised sequence to note units are to be provided with packaged controls.

ES1.0 – Electrical Site Power

- Added Keynote S4.
- Added 2 duplex receptacles for Hot Box Heater power.

EP1.2 – Power Plan – Unit 200

- Revised location of fire alarm device per revised FDC location.

EP1.3 – Power Plan – Unit 300

- Revised location of fire alarm device per revised FDC location.

EP1.4 - Power Plan – Unit 400

- Revised location of fire alarm device per revised FDC location

E6.1 – Panel Schedules – 208/120V Panels

- Revised HR3 panel schedule for heater circuits.

END OF ADDENDUM

SECTION 033543
DIAMOND POLISHING CONCRETE FLOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Products and procedures for diamond polishing concrete floors using multi-step wet/dry mechanical process, and accessories indicated, specified, or required to complete polishing.

B. Related Requirements

1. Section 033000 Cast-In-Place Concrete.

1.2 DEFINITIONS

A. Terminology: As defined by CPAA.

1.3 SUBMITTALS

A. Product Data: Manufacturer's technical literature for each product indicated, specified, or required. Include manufacturer's technical data, application instructions, and recommendations.

B. Installer Qualifications: Data for company, principal personnel, experience, and training specified in PART 1 "Quality Assurance" Article.

C. Field Quality Control – Static Coefficient of Friction Test Reports: Reports of testing specified in PART 3 "Field Quality Control" Article.

D. Maintenance Data: For inclusion in maintenance manual required by Division 01.

1. Include manufacturer's instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated use.
2. Include precautions against cleaning products and methods which may be detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

A. Polisher Qualifications:

1. Experience: Company experienced in performing specified work similar in design, products, and extent to scope of this Project; with a record of successful in-service performance; and with sufficient production capability, facilities, and personnel to produce specified work.

2. Supervision: Maintain competent supervisor who is at Project during times specified work is in progress, and is currently certified as Craftsman or Master Craftsman by CPAA.
3. Manufacturer Qualification: Approved by manufacturer to apply liquid applied products.

B. Walkway Auditor: Certified by NFSI to test polished floors for static coefficient of friction according to NFSI 101-A.

C. Static Coefficient of Friction: Achieve not less than 0.5 for level floor surfaces as determined by quality control testing according to NFSI 101-A.

D. Field Mock-up for Aesthetic Purposes: Before performing work of this Section, provide as many field mock-ups required to verify selections made under submittals and to demonstrate aesthetic effects of polishing. Approval does not constitute approval of deviations from Contract Documents, unless such deviations are specifically approved by Architect in writing.

1. Grind, hone, and polish 12 ft. square floor area for each finish approved under sample submittals; include edges and joints.
2. Use same personnel, including supervisors, which will perform work.
3. Install products and materials according to specified requirements.
4. Work shall be representative of those to be expected for work.
5. Finish various components to show maximum variation that will exist in work.
6. Approval is for following aesthetic qualities:

    a. Compliance with approved submittals.
    b. Uniformity of exposed aggregate.
    c. Uniformity of sheen.

7. Obtain Architect's approval before starting work on Project.
8. Protect approved field mock-ups from elements with weather resistant covering.
9. Maintain field mock-ups during construction in an undisturbed condition as a standard for judging completed work.
10. Do not demolish, alter, or remove field mock-ups until acceptable to Owner and Architect.

E. Pre-Installation of Concrete Conference: Prior to placing concrete for areas scheduled for polishing, conduct conference at Project to comply with requirements of applicable Division 01 Sections.

1. Required Attendees:

    a. Owner.
    b. Architect.
    c. Contractor, including supervisor.
    d. Concrete producer.
    e. Concrete finisher, including supervisor.
    f. Concrete polisher, including supervisor.
    g. Technical representative of liquid applied product manufacturers.
    h. Walkway auditor.

2. Minimum Agenda: Polisher shall demonstrate understanding of work required by reviewing and discussing procedures for, but not limited to, following:

a. Tour mock-up and representative areas of required work, discuss and evaluate for compliance with Contract Documents, including substrate conditions, surface preparations, sequence of procedures, and other preparatory work performed by other installers.
b. Review Contract Document requirements.
c. Review approved submittals.

d. Review procedures, including, but not limited to:

1) Details of each step of grinding, honing, and polishing operations.
2) Application of liquid applied products.
3) Protecting concrete floor surfaces until polishing work begins.
4) Protecting polished concrete floors after polishing work is completed.

3. Reports: Record discussions, including decisions and agreements reached, and furnish copy of record to each party attending.

1.5 FLATNESS AND LEVELNESS OF POLISHED CONCRETE FLOOR

A. Concrete Floor Flatness: 45

B. Concrete Floor Levelness: 40

1.6 FIELD CONDITIONS

A. Damage and Stain Prevention: Take precautions to prevent damage and staining of concrete surfaces to be polished.

1. Prohibit vehicle parking over concrete surfaces to be polished.
2. Prohibit pipe cutting operations over concrete surfaces to be polished.
3. Prohibit storage of any items over concrete surfaces to be polished for not less than 28 days after concrete placement.
4. Prohibit ferrous metals storage over concrete surfaces to be polished.
5. Protect from petroleum, oil, hydraulic fluid, or other liquid dripping from equipment working over concrete surfaces to be polished.
6. Protect from acids and acidic detergents contacting concrete surfaces to be polished.
7. Protect from painting activities over concrete surfaces to be polished.

B. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting liquid applied product application.

PART 2 - PRODUCTS

2.1 LIQUID APPLIED PRODUCTS

A. Liquid Densifier: Odorless, non-hazardous, silicate that penetrates concrete to react with free lime and calcium hydroxide to produce permanent chemical reaction that hardens and densifies concrete surface.

1. Approved Manufacturers:

a. Retro-Plate 99, manufactured by Advanced Floor Products, Inc. or approved equal P.O. Box 50533, Provo, Utah 1-801-812-3420. Regional Representative, The Budd Group 1-248-649-5727.
b. BASF Corporation; Construction Systems.
c. Brickform; a division of Solomon Colors.
d. Hoover Color Corporation.
e. Matcrete Inc.
f. Rockwood Pigments NA, Inc.
g. Scofield, L.M. Company.
h. Specialty Concrete Products, Inc.

2. Colors:

a. PC – Salt and Pepper polished concrete product.
b. ST.C-1 – Blue integral color with pigment concentration.
c. ST.C-2 – Bright Blue integral color with pigment concentration.
d. ST.C-3 – Orange integral color with pigment concentration.
e. ST.C-4 – Purple integral color with pigment concentration.

3. Polish Guard: Non-film forming, stain resistant, food resistant, chemical stain resistant, impregnating sealant designed to be used on concrete surfaces previously densified.

a. Retro-Guard, manufactured by Advanced Floor Products, Inc. or approved equal.
b. BASF Corporation; Construction Systems.
c. Brickform; a division of Solomon Colors.
d. Hoover Color Corporation.
e. Matcrete Inc.
f. Rockwood Pigments NA, Inc.
g. Scofield, L.M. Company.
h. Specialty Concrete Products, Inc.

B. Product Warranty

1. Applicator shall warrant the concrete surface for a period of 10 years. The surface shall remain hardened, dustproof and water-repellant.

2.2 ACCESSORIES

A. Patching Compound: Compound composed of 40 percent portland cement, 45 percent limestone, and 15 percent vinyl acetate copolymer, when mixed with dust salvaged from grinding process forms a paste that hardens when surface imperfections are filled.

B. Grout Material: Clear modified silicate sealant, containing no pore clogging latex, when mixed with dust salvaged from grinding process forms a paste that reacts with calcium hydroxide in concrete that hardens when surface imperfections are filled.

C. Protective Cover: Non-woven, puncture and tear resistant, polypropylene fibers laminated with a multi-ply, textured membrane, not less than 18 mils in thickness.

2.3 POLISHING EQUIPMENT

A. Field Grinding and Polishing Equipment:

1. Variable speed, multiple head, counter-rotating, walk-behind machine with not less than 600 pounds of down pressure on grinding or diamond polishing pads.

2. If dry grinding, honing, or polishing, use dust extraction equipment with flow rate suitable for dust generated, with squeegee attachments.

B. Edge Grinding and Polishing Equipment: Hand-held or walk-behind machines which produces same results, without noticeable differences, as field grinding and polishing equipment.

C. Burnishing Equipment: High speed walk-behind or ride-on machines capable of generating 1000 to 2000 revolutions per minute and with sufficient head pressure of not less than 20 pounds to raise floor temperature by 20 degrees F.

D. Metal Bonded Pads: Grinding pads with embedded industrial grade diamonds of varying grits fabricated for mounting on equipment.

E. Resin Bonded Pads: Polishing pads with embedded industrial grade diamonds of varying grits fabricated for mounting on equipment.

F. Burnishing Pads: Maintenance pads for use with high speed burnishing equipment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Acceptance of Surfaces and Conditions:

1. Examine substrates to be polished for compliance with requirements and other conditions affecting performance.
2. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents.
3. Starting work within a particular area will be construed as acceptance of surface conditions.

3.2 PREPARATION

A. Cleaning New Concrete Surfaces:

1. Prepare and clean concrete surfaces.
2. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, paint splatter, and other contaminants incompatible with liquid applied products and polishing.

3.3 VAPOR TESTING CONCRETE FLOORS

A. Alkalinity:

1. Test Method: Measure pH according to method indicated in ASTM F 710.
2. Acceptable Results: pH between 8 and 10.

B. Moisture Vapor Transmission Rate:

1. Test Method: Perform anhydrous calcium chloride test according to ASTM F 1869.
2. Acceptable Results: Not more than 5 pounds per 1000 square feet in 24 hours.

C. Relative Humidity:

1. Test Method: Perform relative humidity test using in situ probes according to ASTM F 2170.
2. Acceptable Results: Not more than 75 percent.

3.4 POLISHING CONCRETE FLOORS

A. Sequence of Polishing: Perform polishing after partition studs are erected, but before gypsum board is installed.

B. Initial Grinding:

1. Use grinding equipment with metal bonded grinding pads.
2. Begin grinding in one direction using sufficient size grit pad.
3. Make sequential passes with each pass perpendicular to previous pass using finer grit pad with each pass, up to 150 grit.
4. Achieve maximum refinement with each pass before proceeding to finer grit pads.
5. Vacuum floor using squeegee vacuum attachment after each pass.
6. Continue grinding until aggregate exposure matches approved field mock-ups.

C. Treating Surface Imperfections:

1. Mix patching compound and grout material with dust created by grinding operations to match color of adjacent concrete surface.
2. Fill surface imperfections including, but not limited to, holes, surface damage, small and micro cracks, air holes, pop-outs, and voids.
3. Work compound and treatment until color differences between concrete surface and filled surface imperfections are not reasonably noticeable when viewed from 10 feet away under lighting conditions that will be present after construction.

D. Liquid Densifier Application: Apply undiluted to point of rejection, remove excess liquid, and allow to cure according to manufacturers instructions.

E. Grout Grinding:

1. Use grinding equipment and appropriate grit grinding pads.
2. While applying fresh grout material prior to, grind concrete in direction perpendicular to initial grinding to remove scratches.
3. Vacuum floor using squeegee vacuum attachment after each pass.

F. Honing:

1. Use grinding equipment with resin bonded grinding pads.
2. Grind concrete in one direction starting with 50 grit pad and make as many sequential passes required to remove scratches, each pass perpendicular to previous pass, up to 400 grit pad reaching maximum refinement with each pass before proceeding to finer grit pads.
3. Auto scrub or vacuum floor using squeegee vacuum attachment after each pass.

G. Polishing:

1. Use polishing equipment with resin bonded polishing and burnishing pads.
2. Begin polishing in one direction starting with 800 grit pad.
3. Make sequential passes with each pass perpendicular to previous pass using finer grit pad with each pass, up to 1500 grit.

4. Make sequential passes with each pass perpendicular to previous pass using finer grit pad with each pass, up to 3000 grit in corridors only.
5. Achieve maximum refinement with each pass before proceeding to finer grit pads.
6. Auto scrub or vacuum floor using squeegee vacuum attachment after each pass.
7. Continue polishing until gloss appearance, as measured according to ASTM E 430, matches approved field mock-ups.

H. Polish Guard: Uniformly apply and remove excessive liquid according to manufacturer's instructions.

I. Final Polish: Using burnishing equipment and finest grit burnishing pads, burnish to uniform sheen matching approved mock-up.

J. Final Polished Concrete Floor Finish:

1. Aggregate Exposure: Class B – Fine Aggregate (Commonly called: Salt/Pepper Finish) 85-95% fine aggregate; 5-15 % blend of fines and coarse aggregate.

2. Reflective Clarity and Reflective Sheen: Level 3, Semi-Polished Appearance, as defined by CPAA:

a. Procedure: Not less than 6 steps with full refinement of each diamond pad up to 1500 grit resin bonded pad with one application of densifier.
b. Gloss Reading: Not less than 60 according to ASTM E 430 before polish guard application.

3.5 FIELD QUALITY CONTROL

A. Field Testing: Engage a qualified walkway auditor to perform field testing according to NFSI 101-A to determine if polished concrete floor finish complies with specified static coefficient of friction.

3.6 CLOSEOUT ACTIVITIES

A. Maintenance Training: CPAA Master Craftsman shall train Owner's designated personnel in proper procedures for maintaining polished concrete floor.

3.7 PROTECTION

A. Covering: After completion of polishing, protect polished floors from subsequent construction activities with protective covering.

END OF SECTION 033543

SECTION 074213.13
FORMED METAL WALL PANELS

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. Exposed fastener metal wall panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review of procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings: Provide shop drawings prepared by manufacturer or manufacturer's authorized Installer. Include full elevations showing openings and penetrations. Include details of each condition of installation and attachment. Provide details at a minimum scale 1-1/2-inch per foot (1:8) of all required trim and extrusions needed for a complete installation.

1. Indicate points of supporting structure that must coordinate with metal wall panel assembly installation.

C. Samples for Initial Selection: For each product specified. Provide representative color charts of manufacturer's full range of colors.

D. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.5 MOCKUPS

A. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.
1. Construct a full-scale mock-up of typical panel assembly with specified tools and materials incorporating pre-fabricated backup panel per Specification 074263.13, windows, doors and other penetrations, as depicted in the Contract Documents.
2. Mock-up shall comply with Design Team requirements.
3. Acceptable mock-up may remain as part of project.

1.6 QUALITY ASSURANCE

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

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

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

1. Failures include, but are not limited to, the following:

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft..

B. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft..

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. 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.

D. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 EXPOSED FASTENER METAL WALL PANELS

A. General: Single-skin exposed fastener metal wall panels applied as exterior rainscreen cladding over pre-fabricated wall framing specified in Division 07 Section "Sto-Panel Backup" with exterior sheathing, an applied membrane that provides air, moisture, and water vapor control, and insulation within the framing and applied outboard of the sheathing specified in Division 07 Section "Thermal Insulation." Metal wall panel installation specified in this Section includes secondary metal subgirt framing for panel attachment.

B. Exposed-Fastener Metal Wall Panels: Formed with vertical panel edges and a flat pan between panel edges; with narrow reveal joint between panels.

1. Manufacturers: Subject to compliance with requirements:

a. Basis of Design: CENTRIA Architectural Systems. Econolap ¾”, or comparable product approved by Architect prior to bid.
b. Alcoa Inc.
c. AEP Span; a BlueScope Steel company.
d. Architectural Building Components.
e. Architectural Metal Systems; a Nucor company.
f. ATAS International, Inc.
g. Berridge Manufacturing Company.
h. MBCI; a division of NCI Building Systems, L.P.

i. Metal-Fab Manufacturing, LLC.

2. Aluminum Face Sheet: Smooth surface coil-coated sheet, ASTM B 209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

   a. Face Sheet Thickness: 0.040 inch.
   b. Surface: Smooth.

3. Panel Coverage: Refer to Construction Documents.
4. Panel Height: Refer to construction documents.
5. Color:
   a. Dove Gray – see plans for location.
   b. Match Architect's custom color – see plans for location.

2.3 CONCEALED FASTENER, LAP SEAM METAL WALL PANEL

A. Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.

B. Single skin, concealed-fastener metal wall panels: flush-joint profile with raised flat pan.
   1. Basis of Design: CENTRIA IW Series IW-10A, or comparable product approved by one of the following:
      a. Morin – A Kingspan Group Company.
   2. Aluminum Face Sheet: Smooth surface coil-coated, ASTM B209, 3003-H14 or 5052-H32 alloy.
      a. Face Sheet: 0.040 inch
      b. Surface: Smooth
   3. Panel Coverage: 12 inches
   4. Panel Thickness: 1.5 inches
   5. Color: Match Architect's custom color – see plans for location.

2.4 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
   1. Z Channels: 16 ga. Minimum.
   2. Sill Channels: 16 ga. Minimum.

B. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

C. Mitered Corners for flat panels: Structurally-bonded horizontal interior and exterior trimless corners matching metal wall panel material, profile, and factory-applied finish, fabricated and finished by metal wall panel manufacturer.
   1. Welded, riveted, fastened, or field- fabricated corners do not meet the requirements of this specification.
   2. Basis of Design: CENTRIA, MicroSeam Corners.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners must be stainless steel with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

   1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
   2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
   3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

F. Wall Louvers, General: Metal louvers, designed to integrate with metal wall panel profile and secondary support system without receptor channels or other flashing, of types and performance indicated. Provide manufacturer's standard louver blade clips matching panel color.

2.5 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Aluminum Panels and Accessories:

1. Three-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish 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.

2. Concealed finish: White or light colored-acrylic.

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.

2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

   a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

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

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

   1. Shim or otherwise plumb substrates receiving metal panels.
   2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
   3. Install screw fasteners in predrilled holes.
   4. Locate and space fastenings in uniform vertical and horizontal alignment.
   5. Install flashing and trim as metal panel work proceeds.
   6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
   7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
   8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

   1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.13

SECTION 081416
FLUSH WOOD DOORS

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. Factory finishing flush wood doors.
2. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Section 081113 "HM doors and Frames" for hollow metal frames.
2. Section 088000 "Glazing" for glass view panels in flush wood doors.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction, louvers, and trim for openings. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:

1. Dimensions and locations of mortises and holes for hardware.
2. Dimensions and locations of cutouts.
3. Doors to be factory finished and finish requirements.

C. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

1.5 INFORMATIONAL SUBMITTALS

~~A. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.~~

1.6 QUALITY ASSURANCE

~~A. Manufacturer Qualifications: A qualified manufacturer that is a certified participant in AWI's Quality Certification Program.~~

~~B. Vendor Qualifications: A vendor that is certified for chain-of-custody by an FSC-accredited certification body.~~

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

B. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during remainder of construction period.

1.9 WARRANTY

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

1. Failures include, but are not limited to, the following:

a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.

b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Algoma Hardwoods, Inc.
2. Eggers Industries.
3. Graham Wood Doors; an Assa Abloy Group company.
4. Marshfield Door Systems, Inc.
5. Mohawk Doors; a Masonite company.
6. Oshkosh Door Company.
7. VT Industries, Inc.

B. Source Limitations: Obtain flush wood doors indicated to be blueprint matched with paneling from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with ~~AWI's~~, AWMAC's, and WI's "Architectural Woodwork Standards."

~~1. Provide AWI Quality Certification Labels indicating that doors comply with requirements of grades specified.~~
2. Contract Documents contain selections chosen from options in quality standard and additional requirements beyond those of quality standard. Comply with those selections and requirements in addition to quality standard.

B. Low-Emitting Materials: Fabricate doors with adhesives and composite wood products that do not contain urea formaldehyde.

C. WDMA I.S.1-A Performance Grade:

1. Heavy Duty unless otherwise indicated.
2. Extra Heavy Duty: Classrooms, public toilets, janitor's closets, assembly spaces, exits, and where indicated.

D. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control, based on testing according to UL 1784.

E. Fire-Rated Wood Doors: Doors 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 NFPA 252.

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

2. Temperature-Rise Limit: At vertical exit enclosures 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.

3. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.

4. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.

5. Pairs: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.

F. Particleboard-Core Doors:

1. Particleboard: ANSI A208.1, Grade LD-1, made with binder containing no urea-formaldehyde.
2. Blocking: Provide wood blocking in particleboard-core doors as follows:

   a. 5-inch top-rail blocking, in doors indicated to have closers.
   b. 5-inch bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
   c. 5-inch midrail blocking, in doors indicated to have exit devices.

3. Provide doors with structural-composite-lumber cores instead of particleboard cores for doors indicated to receive exit devices.

G. Structural-Composite-Lumber-Core Doors:

1. Structural Composite Lumber: WDMA I.S.10.

   a. Screw Withdrawal, Face: 700 lbf.

H. Mineral-Core Doors:

1. Core: Noncombustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire-protection rating indicated.
2. Blocking: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated as follows:

   a. 5-inch (125-mm) top-rail blocking.

b. 5-inch (125-mm) bottom-rail blocking, in doors indicated to have protection plates.
c. 5-inch (125-mm) midrail blocking, in doors indicated to have armor plates.
d. 5-inch (125-mm) midrail blocking, in doors indicated to have exit devices.

3. Edge Construction: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.

a. Screw-Holding Capability: 550 lbf per WDMA T.M.-10.

2.3 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:

1. Grade: Premium, with Grade AA faces.
2. Species: Oak to match existing.
3. Cut: Plain sliced (flat sliced).
4. Match between Veneer Leaves: Book match.
5. Assembly of Veneer Leaves on Door Faces: Center-balance match.
6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 20 feet or more.
8. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
9. Exposed Vertical and Top Edges: Same species as faces or a compatible species - edge Type A.
10. Core: Particleboard.
11. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.
12. WDMA I.S.1-A Performance Grade: Extra Heavy Duty.

2.4 LIGHT FRAMES AND LOUVERS

A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.

1. Wood Species: Same species as door faces.
2. Profile: Flush rectangular beads.
3. At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use.

2.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

1. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
2. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

2.6 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Transparent Finish:

1. Grade: Premium.
2. Finish: WDMA TR-6 catalyzed polyurethane.
3. Staining: Custom color to match existing.
4. Effect: Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores.
5. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

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

3.2 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

   1. Install smoke- and draft-control doors according to NFPA 105.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 084113
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

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. Exterior and interior storefront framing.
2. Storefront framing for punched openings.
3. Exterior and interior manual-swing entrance doors and door-frame units.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.

e. FRP panel.
f. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

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

E. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by a qualified testing agency.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.7 QUALITY ASSURANCE

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

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. 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.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts 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, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

D. Structural: Test according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or 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.

E. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:

1. Fixed Framing and Glass Area:

a. Maximum air leakage of 0.03 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft.

2. Entrance Doors:

a. Single Doors: Maximum air leakage of 0.4 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.

F. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.

G. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..

H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.

a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
b. Low Exterior Ambient-Air Temperature: 0 deg F.
c. Interior Ambient-Air Temperature: 75 deg F.

2.2 MANUFACTURERS

A. Manufactures aluminum storefront and frames: Subject to compliance with requirements provide storefront framing and frames as follows:

1. Basis of Design – Tubelight TU24000 or Architects pre-approved equal.
2. Special-Lite
3. Kawneer
4. EFCO.

B. Manufactures aluminum entry doors: Subject to compliance with requirements provide entry doors as follows:

1. Basis of Design – Special-Lite – SL-15 or Architects pre-approved equal.
2. Tube-Lite
3. Kawneer
4. EFCO

2.3 FRAMING

A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: Center
4. Finish: Clear anodic finish.
5. Fabrication Method: Field-fabricated stick system.
6. Frame Size: Refer to drawings.

B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

D. Materials:

1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

a. Sheet and Plate: ASTM B 209.
b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
c. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.

d. Structural Profiles: ASTM B 308/B 308M.

2. 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.

a. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
b. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
c. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.4 ENTRANCE DOOR SYSTEMS

A. Aluminum Entrance Doors: Manufacturer's standard flush and glazed entrance doors for manual-swing operation.

1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

2. Door Design: As indicated on drawings. Changes to indicated door styles shown will not be allowed.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

a. Provide nonremovable glazing stops on outside of door.

B. FRP Entrance Doors: Flush FRP door shall be SL-17 as manufactured by Special Lite.

1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

2. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.
a. Provide non-removable glazing stops on outside of door.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."

2.6 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: As recommended by manufacturer.

D. Sealants used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

E. Weatherseal Sealants: ASTM C 920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.

   1. Color: Match structural sealant.

2.7 ACCESSORIES

A. 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.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

   1. 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 requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

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. 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. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from interior.
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. Storefront Framing: Fabricate components for assembly using manufactures standard system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At exterior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. 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: Clear anodized to match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

3.2 PREPARATION

A. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

3.3 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 and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Set continuous sill members and flashing in full sealant bed as specified in Section 079200 "Joint Sealants" to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Section 088000 "Glazing."

G. Install weatherseal sealant according to Section 079200 "Joint Sealants" and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

H. 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.

3.4 ERECTION TOLERANCES

A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:

    a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
    b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
    c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.5 MAINTENANCE SERVICE

A. Entrance Door Hardware:

1. 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 entrance door hardware.
2. Initial Maintenance Service: Beginning at Substantial Completion, provide twelve months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Use parts and supplies that are the same as those used in the manufacture and installation of original equipment.

END OF SECTION 084113

SECTION 088000
GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Doors.
2. Glazed entrances.
3. Interior borrowed lites.
4. Storefront framing.
5. Fire-rated glazing.

B. Related Sections include the following:

1. Division 08 Section "Hollow Metal Doors and Frames" for installation of glazing.
2. Division 08 Section "Flush Wood Doors" for installation of glazing.
3. Division 08 Section "Aluminum Framed Entrance and Storefronts" for glazing.

1.3 DEFINITIONS

A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

D. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.

E. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

F. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

G. Fire-Protective Glazing: Glazing capable of confining a fire for a prescribed period of time stated in minutes when tested per NFPA 252 and NFPA 257.

H. Fire-Resistive Glazing: Glazing capable of preventing or retarding the passage of excessive heat, hot gases or flames for a prescribed period of time stated in minutes when tested per ASTM E119.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:

a. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour at 33 feet above grade, according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 6.5, "Method 2-Analytical Procedure," based on mean roof heights above grade indicated on Drawings.

b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.

1) Load Duration: 60 seconds or less.

c. Probability of Breakage for Sloped Glazing: 1 lite per 1000 for lites set more than 15 degrees off vertical and under wind and snow action.

1) Load Duration: 30 days.

d. Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch, whichever is less.

1) For monolithic-glass lites heat treated to resist wind loads.
2) For insulating glass.
3) For laminated-glass lites.

e. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.
f. Thickness of Tinted and Heat-Absorbing Glass: Provide the same thickness for each tint color indicated throughout Project.

C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. 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.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

1. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
2. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:

a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F.
b. Solar Heat Gain Coefficient: NFRC 200.
c. Solar Optical Properties: NFRC 300.

1.5 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Source Limitations for Glass: Obtain the following through one source from a single manufacturer for each glass type: clear float glass, coated float glass, laminated glass, and insulating glass.

C. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

D. Preconstruction Adhesion and Compatibility Testing: Submit to elastomeric glazing sealant manufacturers, for testing indicated below, samples of each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member that will contact or affect elastomeric glazing sealants:

E. Glazing for Fire-Rated Door Assemblies: Glazing for assemblies that comply with NFPA 80 and 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 252.

F. Glazing for Fire-Rated Window Assemblies: Glazing for assemblies that comply with NFPA 80 and 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 NFPA 257.

G. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201 and local codes.

1. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."

H. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:

1. Insulating Glass Certification Council.
2. Associated Laboratories, Inc.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

1.9 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form, made out to Owner and signed by coated-glass manufacturer agreeing to replace coated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form, made out to Owner and signed by laminated-glass manufacturer agreeing to replace laminated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 5 years from date of Substantial Completion.

C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form, made out to Owner and signed by insulating-glass manufacturer agreeing to replace insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 10 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 GLASS PRODUCTS

A. Annealed Float Glass: ASTM C 1036, Type I (transparent flat glass), Quality-Q3; of class indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.

1. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated.

2.3 FIRE-RATED GLAZING PRODUCTS (FRG)

A. Fire-Protection-Rated Glazing, General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 for door assemblies and NFPA 257 for window assemblies.

B. Monolithic Ceramic Glazing: Proprietary Category II Safety Glazing Products in the form of clear, ceramic flat glass; 1/4-inch nominal thickness.

1. Basis-of-Design products: Subject to compliance with requirements, provide one of the following:

a. Safti First; SuperLite II-XL (3/4”) for 45 minute rating.

2.4 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

1. Neoprene, ASTM C 864.
2. EPDM, ASTM C 864.
3. Silicone, ASTM C 1115.
4. Thermoplastic polyolefin rubber, ASTM C 1115.
5. Any material indicated above.

B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets of material indicated below; complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal:

1. Neoprene.
2. EPDM.
3. Silicone.
4. Thermoplastic polyolefin rubber.
5. Any material indicated above.

C. Lock-Strip Gaskets: Neoprene extrusions in size and shape indicated, fabricated into frames with molded corner units and zipper lock-strips, complying with ASTM C 542, black.

2.5 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:

1. Compatibility: Select glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

2.6 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:

1. Type 1, for glazing applications in which tape acts as the primary sealant.
2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

2.8 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with outdoor and indoor faces.

C. Grind smooth and polish exposed glass edges and corners.

2.9 MONOLITHIC FLOAT-GLASS UNITS

A. Uncoated Clear Float-Glass Units: Class 1 (clear) annealed or Kind HS (heat-strengthened) float glass where heat strengthening is required to resist thermal stresses induced by differential shading of individual glass lites and to comply with system performance requirements and Kind FT (fully tempered) float glass.

2.10 TEMPERED GLAZING TYPES

A. Class I (clear), fully tempered float glass, ¼ inch nominal thickness.

1. Provide safety glazing labeling.

2.11 FIRE PROTECTED RATED GLAZING TYPES

A. 45 minute fire rated glazing without hose-stream test; monolithic ceramic glazing.

1. Provide safety glazing labeling. (Cat II).
2. Fully Tempered

2.12 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Low-E-Coated, Tinted Insulating Glass Type:
   a. Basis-of-Design Product: Guardian SN 68 on CrystalGray
   b. Overall Unit Thickness: 1 inch.

c. Minimum Thickness of Each Glass Lite: 6 mm.
d. Outdoor Lite: Tinted heat-strengthened float glass.
e. Interspace Content: Argon.
f. Indoor Lite: Clear heat-strengthened float glass.
g. Low-E Coating: Pyrolytic on second surface.
h. Safety glazing required.

2. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
3. Perimeter Spacer: Polypropylene-covered stainless steel in color selected by Architect.
   a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      1) Saint-Gobain Glass Corp.
      2) Technoform Glass Insulation North America.
      3) Thermix; a brand of Ensinger USA.
4. Desiccant: Molecular sieve or silica gel, or a blend of both.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep system.
3. Minimum required face or edge clearances.
4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or

other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 LOCK-STRIP GASKET GLAZING

A. Comply with ASTM C 716 and gasket manufacturer's written instructions. Provide supplementary wet seal and weep system, unless otherwise indicated.

3.8 MIRROR INSTALLATION

A. Mount mirrors accurately in place in a manner that avoids distorting reflected images. Maintain a space of approximately 1/8 inch between back of mirrors and mounting surface for air circulation.

B. Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.

1. Top and Bottom Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.
2. Install mastic as follows:
   a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
   b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
   c. After mastic is applied, align mirrors and press into place while maintaining a minimum air space of 1/8 inch between back of mirrors and mounting surface.

3.9 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088000

SECTION 096813
TILE CARPETING

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. Walk-Off carpet
   2. Carpet tile at Music Room

B. Related Requirements:

   1. Section 096513 "Resilient Base and Accessories" and Section 096519 "Resilient Tile Flooring" for resilient wall base and accessories installed with carpet tile.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

   1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:

      a. Review delivery, storage, and handling procedures.
      b. Review ambient conditions and ventilation procedures.
      c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
   2. Include manufacturer's written installation recommendations for each type of substrate.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 10 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Master II certification level.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with the Carpet and Rug Institute's CRI 104.

1.10 FIELD CONDITIONS

A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

1.11 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, the following:

a. More than 10 percent edge raveling, snags, and runs.
b. Dimensional instability.
c. Excess static discharge.
d. Loss of tuft-bind strength.
e. Loss of face fiber.
f. Delamination.

3. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE **WALK-OFF CARPET (AT VESTIBULE LOCATIONS)**

A. Interface
1. Pattern: Step Repeat Collection
2. Color: 104940 Iron
3. Backing: GlasBac
4. Manufacturer's Rep:
a. Charles Timmerman
b. Email: Chuck.Timmerman@interface.com
c. Mobile: 616-481-1719

B. Product Number: 1388602500

C. Product Construction: Tufted Textured

D. Loop Yarn System: 100% Recycled Content Nylon

E. Yarn Manufacturer: Aqual

F. Dye Method: 100% Solution Dyed

G. Preservative Protection: InterSept®

H. Tufted Yarn Weight: 26 oz/yd²

I. Machine Gauge: 1/12

J. Pile Height: 0.20 in

K. Pile Thickness: 0.14 in

L. Stitches: 10.00 /in

M. Pile Density: 6,545 oz/yd³

N. Size: 19.69 in x 19.69 in

O. Adhesive: Manufacture Standard

P. Flooring Radiant Panel: (ASTM E-648) Passes

Q. Smoke Density: (ASTM E-662) ≤ 450

R. Flammability Passes Methenamine Pill Test (DOC-FF1-70)

S. Lightfastness (AATCC 16 - E) ≥ 4.0 @ 60 AFU's

T. Static (AATCC - 134) < 3.0 KV

U. Installation Method: Monolithic

V. Warranty: 15 year Standard

2.2 CARPET TILE – MUSIC ROOM

A. JJ Flooring
   1. Pattern: Network Modular - Kinetex
   2. Color: 2910 Maze
   3. Backing: Polyester Felt Cushion
   4. Manufacturer's Rep:
      a. Nichole Lee
      b. Email: nichole.lee@jjflooring.com
      c. Mobile: 1-616-295-4132

B. Construction: Textile Composite

C. Dye: Method Solution Dyed

D. Wear Layer: Polyester - Applied Pattern

E. Total Weight: 4.5 oz - 5.2 oz/ square foot

F. Total Thickness: .205 inches

G. Dimensions: 24" x 24" modules

H. Standard Adhesive: Kinetex Adhesive

I. Packaging: 18 modules per box (72 sq.ft)

J. Standard Warranties: Kinetex Adhesive

K. Optional Warranties: PreFix

2.3 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.

B. Examine carpet tile for type, color, pattern, and potential defects.

C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.

1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

   a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft.in 24 hours.
   b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
   c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

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

3.2 PREPARATION

A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inchwide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Maintain pile-direction patterns recommended in writing by carpet tile manufacturer.

E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

H. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 101423
PANEL SIGNAGE

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. This Section includes the following:

1. Interior panel signs

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.

1. Plaque: Show detailed layout to scale with accurate font, letter sizes, finish, exact text for approval by owner and architect.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:

1. Acrylic.

D. Maintenance Data: For signs to include in maintenance manuals.

1.5 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.

B. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

C. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).

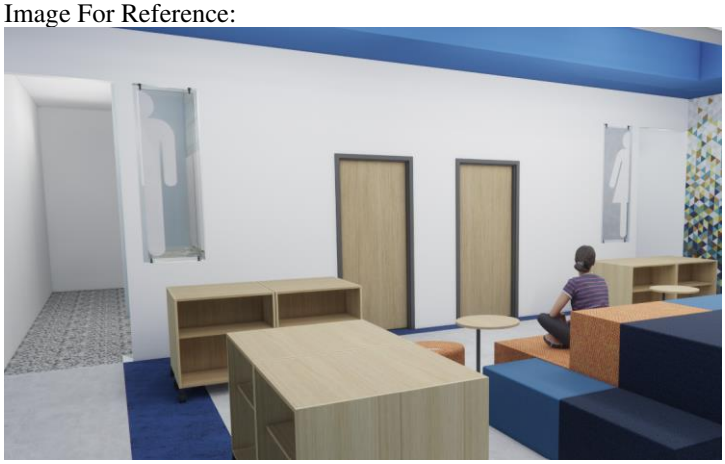
2.2 PANEL INFOGRAPHIC SIGNAGE

A. Manufacturers: Basis of Design:

1. 3Form
   a. Contact: Allyson Hemsworth
   b. Phone: 248-895-6522
   c. Email: Allyson.hemsworth@3-form.com

2. Panel Signage – Building Systems Infographic
   a. Eco Resin: Digital Print
   b. Material: Varia or equal
   c. Pattern: Solid
      Graphics: To be provided to signage company.
   d. Mounting Hardware: Point support hardware.
      1) Manufacturer recommended installation.
      2) Varia Stand-Off Wall Mounts
   e. Image for Reference:

3. Panel Signage – Bathroom Pictorial Sign
   a. Eco Resin: Digital Print
   b. Material: Varia or equal
   c. Pattern: Vellum front and back
   d. Size: See Sheet A1.10 for sizes.
   e. Graphic:
      1) (1) Female Pictorial per restroom group - WHITE (As shown Below)
      2) (1) Male Pictorial per restroom group – WHITE (As shown Below)
   f. Mounting Hardware: Point support hardware.
      1) Manufacturer recommended installation.
      2) Glass Clamp Hardware: Brush Nickle Finish
4. Image For Reference:



2.4 FABRICATION

B. General: Provide manufacturer's standard signs of configurations indicated.

1. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
2. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

2.3 FINISHES, GENERAL

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

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 work.

B. Verify that items, including anchor inserts, are sized and located to accommodate signs.

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

3.2 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.

B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.

1. Two-Face Tape: Mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
2. Silicone-Adhesive Mounting: Attach signs to irregular, porous, or vinyl-covered surfaces.
3. Signs Mounted on Glass: Provide matching opaque plate on opposite side of glass to conceal mounting materials.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 101423-3

SECTION 101423.16
ROOM-IDENTIFICATION PANEL SIGNAGE

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 room-identification signs that are directly attached.

B. Vinyl Graphics

1.3 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.4 COORDINATION

A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For room-identification signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements , including raised characters and Braille, and layout for each sign at least .

C. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Room-Identification Signs: Full-size Sample .

2. Full-size Samples, if approved, will be returned to Contractor for use in Project.

D. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.7 WARRANTY

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

1. Failures include, but are not limited to, the following:
   a. Deterioration of finishes beyond normal weathering.
   b. Deterioration of embedded graphic image.
   c. Separation or delamination of sheet materials and components.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" the ABA standards of the Federal agency having jurisdiction and ICC A117.1 .

2.2 ROOM-IDENTIFICATION SIGNS

A. Room-Identification Sign : Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. APCO Graphics, Inc.; Equal
   b. ASI Sign Systems, Inc.; InTac Series
   c. Inpro Corporation; Equal
   d. Takeform; Fusion
2. Laminated-Sheet Sign: Photopolymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.
   a. Composite-Sheet Thickness: Manufacturer's standard for size of sign .

b. Surface-Applied Graphics: Applied vinyl film .
c. Color(s): As indicated on drawings.

3. Sign-Panel Perimeter: Finish edges smooth.
   a. Edge Condition : Square cut .
   b. Corner Condition in Elevation: Square .
4. Mounting: Surface mounted to wall with concealed fasteners
5. Text and Typeface: Accessible raised characters and Braille typeface as selected by Architect from manufacturer's full range and variable content as scheduled . Finish raised characters to contrast with background color, and finish Braille to match background color.

2.3 VINYL GRAPHICS

A. Vinyl: Precision Cut, high quality vinyl, 3mil thick (min.)

B. Install per manufacturer’s written instructions for GYP wall installations.

C. Size and font: As indicated on drawings

D. Color: White

2.4 SIGN MATERIALS

A. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

B. Vinyl Film: UV-resistant vinyl film with pressure-sensitive, permanent adhesive; die cut to form characters or images as indicated on Drawings.

C. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.5 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. A. Provide back plate for signs to be mounted on glass

2.6 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.

2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

B. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:

1. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Subsequent changeable inserts are by Owner .

2.7 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Accessibility: Install signs in locations on walls and according to the accessibility standard .

C. Mounting Methods:

1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

D. For all glass mounted signage, provide matching back plate on opposite side to conceal mounting method.

3.2 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

3.3 SCHEDULE

A. Signage details on Sheet A1.10

B. Provide new room signage for all spaces and every entry point to spaces

C. Provide one evacuation map for every classroom and lab.

END OF SECTION 101423.16

SECTION 105113
METAL LOCKERS

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. All welded metal, corridor lockers.
2. All welded, athletic metal lockers.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site .

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker and bench.

B. Shop Drawings: For metal lockers.

1. Include plans, elevations, sections, and attachment details.
2. Show locker trim and accessories.
3. Include locker identification system and numbering sequence.

C. Samples: For each color specified, in manufacturer's standard size.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. The following metal locker hardware items equal to 10 percent of amount installed for each type and finish installed, but no fewer than five units:
   a. Locks.
   b. Blank identification plates.
   c. Hooks.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.

1.9 FIELD CONDITIONS

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

1.10 COORDINATION

A. Coordinate sizes and locations of wood bases for metal lockers.

B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures.
   b. Faulty operation of latches and other door hardware.
2. Damage from deliberate destruction and vandalism is excluded.
3. Warranty Period for Welded Metal Lockers: 10 years from date of Substantial Completion.

1.12 PRODUCTS - MANUFACTURERS

A. Source Limitations: Obtain metal lockers and accessories from single source from single locker manufacturer.

1. Obtain locks from single lock manufacturer.

1.13 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: For lockers and locker benches indicated to be accessible, comply with applicable provisions in the ADA standards of the Federal agency having jurisdiction and ICC A117.1 .

B. Basis-of-Design Product: Subject to compliance with requirements, Republic - Metal Storage Lockers or comparable product by the following.
1. DeBourgh Mfg. Co.; Worley Lockers.
2. List Industries Inc.; Lockers.
3. Lyon Workspace Products, LLC; Lockers.
4. Penco Products, Inc.
5. Republic Storage Systems Company; Lockers.

C. Material: Cold-rolled steel sheet.

D. Body: Assembled by riveting or bolting body components together. Fabricate from unperforated steel sheet as follows:

1. Tops, Bottoms, and Intermediate Dividers: 0.024-inchnominal thickness, with single bend at sides.
2. Backs and Sides: 0.024-inchnominal thickness, with full-height, double-flanged connections.
3. Shelves: 0.024-inchnominal thickness, with double bend at front and single bend at sides and back.

E. Frames: Channel formed; fabricated from 0.060-inchnominal-thickness steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral door strike full height on vertical main frames.

1. Cross Frames between Tiers: Channel formed and fabricated from same material as main frames; welded to vertical main frames.
2. Frame Vents: Fabricate face frames with vents.

F. Doors: One piece; fabricated from 0.060-inchnominal-thickness steel sheet; formed into channel shape with double bend at vertical edges and with right-angle single bend at horizontal edges.

1. Doors less than 12 inches wide may be fabricated from 0.048-inchnominal-thickness steel sheet.
2. Doors for box lockers less than 15 inches wide may be fabricated from 0.048-inchnominal-thickness steel sheet.
3. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 15 inches wide; welded to inner face of doors.
4. Stiffeners: Manufacturer's standard full-height stiffener fabricated from 0.048-inchnominal-thickness steel sheet; welded to inner face of doors.
5. Sound-Dampening Panels: Manufacturer's standard, designed to stiffen doors and reduce sound levels when doors are closed, of die-formed metal with full perimeter flange and sound-dampening material; welded to inner face of doors.

6. Door Style: Vented panel as follows:

a. Concealed Vents: Slotted perforations top and bottom horizontal return flanges of doors.

G. Body: Assembled by riveting or bolting body components together. Fabricate from unperforated steel sheet with thicknesses as follows:

1) Tops, Bottoms, and Intermediate Dividers: 0.024-inch nominal thickness, with single bend at sides.
2) Backs and Sides: 0.024-inchnominal thickness, with full-height, double-flanged connections.
3) Shelves: 0.024-inchominal thickness, with double bend at front and single bend at sides and back.

H. Frames: Channel formed; fabricated from 0.060-inchnominal-thickness steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral, full-height door strikes on vertical main frames.

1) Cross Frames between Tiers: Channel formed and fabricated from same material as main frames; welded to vertical main frames.
2) Frame Vents: Fabricate face frames with vents.

I. Hinges: Welded to door and attached to door frame with rivets that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.

1. Continuous Hinges: Manufacturer's standard, steel continuous hinge.

J. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond face of door; pry and vandal resistant.

1. Multipoint Latching: Finger-lift latch control designed for use with built-in combination locks; positive automatic latching and prelocking.

a. Latch Hooks: Equip doors 48 inchesand higher with three latch hooks and doors less than 48 incheshigh with two latch hooks; fabricated from 0.105-inchnominal-thickness steel sheet; welded or riveted to full-height door strikes; with resilient silencer on each latch hook.
b. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism and moving components isolated with vinyl or nylon to prevent metal-to-metal contact, and incorporating a prelocking device that allows locker door to be locked while door is open and then closed without unlocking or damaging lock or latching mechanism.

K. Locks: Built-in combination locks.

L. Equipment: Equip each metal locker with identification plate and the following unless otherwise indicated:

1. Single-Tier Units: Shelf, one double-prong ceiling hook, and two single-prong wall hooks.

2. Filler Panels: Fabricated from 0.048-inchnominal-thickness steel sheet.
3. Boxed End Panels: Fabricated from 0.060-inchnominal-thickness steel sheet.
4. Finished End Panels: Fabricated from 0.024-inchnominal-thickness steel sheet.
5. Center Dividers: Fabricated from 0.024-inchnominal-thickness steel sheet.
6. Steel Zee Base: Fabricated from 16 gauge steel 4" high.

M. Finish: Baked enamel or powder coat.

N. Locker Schedule:

1. **MLW-#**: Single Stack Locker 12" x 15"D x 72"
a. **MLW-1**: Republic - quiet corridor lockers/ single tier: custom-blue (corridor – unit 300)

b. **MLW-2**: Republic- quiet corridor lockers/ single tier: custom-purple (corridor – unit 400)

2. **MLW-3**: Republic-PDQ 3 wide/ Dbl Stack Locker 12” x 15”D x 72”

~~b.~~a.

~~2.~~3. **MAL-#**: Single Stack Locker 12” x 15”D x 60”

a. **MAL-1**: Republic – Heavy Duty Ventilated lockers/ double tier sloped top: Midnight Blue (corridor – unit 300)

b. Accessories:

1) Continuous Sloping Tops: Fabricated from 0.048-inchnominal-thickness steel sheet.

2) Closures: Vertical-end type.

c. Sloping-top corner fillers, mitered.

1.14 LOCKS

A. Built-in combination locks.

1.15 FABRICATION

A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.

1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.

B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments.

C. Equipment: Provide each locker with an identification plate and the following equipment:

1. Single-Tier Units: Shelf, one double-prong ceiling hook, and two single-prong wall hooks.
2. Double-Tier Units: One double-prong ceiling hook and two single-prong wall hooks.

D. Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds smooth and flush.

E. Accessible Lockers: Fabricate as follows:

1. Locate bottom shelf no lower than 15 inches above the floor.
2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.

F. Continuous Sloping Tops: Fabricated in lengths as long as practical, without visible fasteners at splice locations; finished to match lockers.

1. Sloping-top corner fillers, mitered.

G. Recess Trim: Fabricated with minimum 2-1/2-inch face width and in lengths as long as practical; finished to match lockers.

H. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.

I. Boxed End Panels: Fabricated with 1-inch- wide edge dimension, and designed for concealing fasteners and holes at exposed ends of nonrecessed metal lockers; finished to match lockers.

1. Provide one-piece panels for double-row (back-to-back) locker ends.

J. Center Dividers: Full-depth, vertical partitions between bottom and shelf; finished to match lockers.

1.16 ACCESSORIES

A. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.

B. Anchors: Material, type, and size required for secure anchorage to each substrate.

1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls for corrosion resistance.
2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

PART 2 - EXECUTION

2.1 EXAMINATION

A. Examine walls and floors or support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

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

2.2 INSTALLATION

A. Install lockers level, plumb, and true; shim as required, using concealed shims.

1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
2. Anchor single rows of metal lockers to walls near top and bottom of lockers .
3. Anchor back-to-back metal lockers to floor.

B. Welded Lockers: Connect groups together with manufacturer's standard fasteners, with no exposed fasteners on face frames.

C. Equipment:

1. Attach hooks with at least two fasteners.
2. Attach door locks on doors using security-type fasteners.
3. Identification Plates: Identify metal lockers with identification indicated on Drawings.
   a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.

D. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.

1. Attach recess trim to recessed metal lockers with concealed clips.
2. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.
3. Attach sloping-top units to metal lockers, with closures at exposed ends.
4. Attach boxed end panels using concealed fasteners to conceal exposed ends of nonrecessed metal lockers.

2.3 ADJUSTING

A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding.

B. Adjust built-in locks to prevent binding of dial or key and ensure smooth operation prior to substantial completion.

C. Touch-up with factory-supplied paint and repair or replace damaged products before substantial completion.

2.4 PROTECTION

A. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.

B. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 105113

SECTION 113013
RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cooking appliances.

2. Refrigeration appliances.

3. Cleaning appliances.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Field quality-control reports.

C. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 WARRANTY

A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 COOKING APPLIANCES

A. Microwave Oven:

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

a. Amana; Whirlpool Corporation.

b. Bosch US; BSH Home Appliances Corporation.

c. Fisher & Paykel Appliances Ltd.

d. Frigidaire.

e. GE Appliances; Haier Group.

f. Kenmore; Transformco SR Brands LLC.

g. KitchenAid; Whirlpool Corporation.

h. LG Electronics USA, Inc.; LG Electronics Inc.

i. Sharp Electronics Corp.

j. Whirlpool Corporation.

2. Microwave Power Rating: Manufacturer's standard.

3. Material: Stainless steel.

2.3 REFRIGERATION APPLIANCES

A. Refrigerator/Freezer: Two-door refrigerator/freezer with freezer on top and complying with AHAM HRF-1.

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

a. Amana; Whirlpool Corporation.

b. Bosch US; BSH Home Appliances Corporation.

c. Fisher & Paykel Appliances Ltd.

d. Frigidaire.

e. GE Appliances; Haier Group.

f. Kenmore; Transformco SR Brands LLC.

g. KitchenAid; Whirlpool Corporation.

h. LG Electronics USA, Inc.; LG Electronics Inc.

i. Samsung Electronics America, Inc. (SEA); Samsung Electronics Co., Ltd. (SEC).

j. Whirlpool Corporation.

2. Type: Freestanding Built in Undercounter.

3. Storage Capacity:

a. Refrigeration Compartment Volume: 15.6 cu. ft.

b. Freezer Volume: 5.13 cu. ft.

4. General Features:

a. Interior light in refrigeration compartment.

b. Automatic defrost.

c. Interior light in freezer compartment.

d. Automatic icemaker and storage bin.

5. Energy Star: Provide appliances that qualify for the EPA/DOE Energy Star product-labeling program.

6. Front Panel(s): Stainless steel.

2.4 CLEANING APPLIANCES

1. Type: Built-in undercounter.

a. Counter is 34 inches AFF to surface

2. Energy Star: Provide appliances that qualify for the EPA/DOE Energy Star product-labeling program.

3. Front Panel: Stainless steel.

B. Clothes Washer: Complying with AHAM HLW-1.

1. Manufacturers: Subject to compliance with requirements, provide products by

one of the following:

a. Amana; Whirlpool Corporation.

b. Bosch US; BSH Home Appliances Corporation.

c. Fisher & Paykel Appliances Ltd.

d. Frigidaire.

e. GE Appliances; Haier Group.

f. Kenmore; Transformco SR Brands LLC.

g. Maytag; Whirlpool Corporation.

h. Samsung Electronics America, Inc. (SEA); Samsung Electronics Co., Ltd. (SEC).

i. Whirlpool Corporation.

2. Type: Freestanding, top-loading unit.

3. Capacity: 3.8 cu. ft.

4. Agitator: Center spindle.

5. Energy Star: Provide appliances that qualify for the EPA/DOE Energy Star product-labeling program.

6. Water-Efficient Clothes Washer: Provide clothes washer with modified energy factor greater than or equal to 2.0 and water factor less than 5.5.

7. Appliance Finish: Enamel.

C. Clothes Dryer: Complying with AHAM HLD-1.

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

a. Amana; Whirlpool Corporation.

b. Bosch US; BSH Home Appliances Corporation.

c. Fisher & Paykel Appliances Ltd.

d. GE Appliances; Haier Group.

e. Kenmore; Transformco SR Brands LLC.

f. LG Electronics USA, Inc.; LG Electronics Inc.

g. Maytag; Whirlpool Corporation.

h. Samsung Electronics America, Inc. (SEA); Samsung Electronics Co., Ltd. (SEC).

i. Whirlpool Corporation.

2. Type: Freestanding, frontloading, electric unit.

3. Capacity: 5.7 cu. ft.

4. Features:

a. Interior drum light.

5. Appliance Finish: Enamel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.

B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

EQUIPMENT SCHEDULE

RF-1	REFRIGERATOR/FREEZER	TEACHER LOUNGE	30X32
		FAMILY RM	30X32
		SUPPORT OFFICE	30X32
URF-1	= UNDERCOUNTER REF.	NURSE STATION	24x24x33.75
WSHR	= WASHER	FAMILY RM	27x32
DRY	= ELEC. DRYER	FAMILY RM	27X32
MC-1	= MICROWAVE	FAMILY RM	TO FIT 28WX 18DX16 H CABINET
MC-2	= MICROWAVE	TEACHER'S LOUNGE	TO FIT 28WX 18DX16 H CABINET

END OF SECTION 113013

SECTION 114000 - FOODSERVICE EQUIPMENT

PART 1 - GENERAL

Articles 1 through 14 - Standard Form of General Conditions

The entire work shall be subject to the requirements of General Conditions of the Contract for Construction, AIA Documents and specifications, as issued by the Architect, except that any provisions which may be in conflict or are inconsistent with any of the articles of the following Supplementary Conditions shall be void to the extent of such conflict or inconsistency. Contractors will be held to have examined and become fully acquainted with all provisions of this document.

All references to the "Standard Form of General Conditions" as hereinafter used in these specifications shall refer to the above document. The Foodservice Equipment Contractor shall be a subcontractor of the Construction Manager unless otherwise directed by the Architect or contract documents.

1.1 SECTION INCLUDES

A. Foodservice Equipment: Includes standard manufactured and custom fabricated items.

B. Inclusive of Job: The work under this section consists of providing all labor, material, products and equipment that are necessary and required for the complete installation of the foodservice equipment, as indicated on drawings, as herein specified, and as required by all prevailing code requirements of Local, State and Federal entities.

1.2 RELATED SECTIONS

Architectural Documents: All work described in these documents must be carefully coordinated with the work of those other trades directed by the terms and conditions of the Design Teams documents. The drawings and specifications of the Architect and instructions of the Architect and the Construction Manager shall direct the Foodservice Equipment Contractor (F.E.C.) with respect to the project schedule, contract issues, coordination, assignment of responsibility, site conditions, and payment requirements. Prior to the bid due date, these documents can be obtained by contacting the Architect and are to be considered in full force with respect to the work of the F.E.C. Contract: All work by the F.E.C. shall be performed under the contract and payment terms and conditions as defined in the Project Contract Documents. The F.E.C. will be expected to execute a final contract agreement after notice of award of contract, prior to start of work, but no later than 15 calendar days after Notice to Proceed. Provide a copy of your signed contract to Architect.

1.3 COORDINATION WITH OTHER TRADES

Note: The mechanical, plumbing and electrical requirements outlined in these foodservice documents include sections that stipulate the use of certain electrical, mechanical or ventilation components. The F.E.C. shall closely coordinate the work under this contract with the Construction Manager (C.M.) and other contractors including, but not limited to Electrical, Mechanical and Plumbing Contractors.

A. Coordinated Responsibilities:

1. F.E.C. will work closely with the Mechanical Contractor (also referred to as “M.C.”), Plumbing Contractor (also referred to as “P.C.”) and Electrical Contractor (also referred to as “E.C.”) answering any foodservice related questions that arise in the performance of their work. The F.E.C. is to proactively provide installation and connection information and guidance to the C.M., M.C., E.C., P.C. and others as appropriate to each piece of foodservice equipment in the project with regard to the rough-in of utilities, floor preparation, placement and connection of the equipment, building access for delivery, utility loads and other requirements, as necessary to ensure equipment is protected, installed and performs as specified; and the Project Contract Document specifications and all prevailing code requirements are met. Unless otherwise noted on drawings, it is the responsibility of the F.E.C. to closely coordinate the needs of the project to make certain that ALL UTILITY ROUGH-INS ARE LOCATED INSIDE OF WALL CAVITIES, WHERE ROUGH-INS ARE LOCATED AT WALLS. IN ADDITION, MAKE CERTAIN THAT THE INSTALLING TRADES DO NOT RUN ELECTRICAL WIRING, GAS, WATER, OR DRAIN LINES HORIZONTALLY OR VERTICALLY ON EXTERIOR WALL SURFACES. IF THESE REQUIREMENTS ARE NOT MET, THE F.E.C. WILL BE LIABLE FOR THE COST OF RELOCATING UTILITIES THAT DO NOT MEET THIS REQUIREMENT.

2. F.E.C. to furnish loose for installation by others: equipment specific gas hoses, pressure regulators, vacuum breakers, water filters, solenoid valves for water and steam, floor troughs and drain tempering kits, as required by code, the needs of each equipment item, or as required in the contract documents. Drain assemblies (up to the tailpipe or manifold unless otherwise indicated), faucets, waste valves, overflows and swirl sprays shall be installed by the F.E.C. Other non-F.E.C. entities will connect this hardware to the building systems.

3. F.E.C. shall coordinate location of grease traps with the P.C. or M.C. who will be responsible for providing grease traps. Grease traps must be easily accessible for cleaning and maintenance. Grease trap location shall avoid any conflict with legs, braces, cross bracing supports, under-shelves, or other restrictions to access.

4. F.E.C. shall coordinate the location of any soda line chases with the installing trades. All chases must be located so that the soda chases are not visible to the customer. Where possible, the F.E.C. will coordinate the passage of these lines within the body of the foodservice equipment to minimize the need for field cutting and modification of these items. Under no circumstances will any part of the chase be exposed, or counters modified in field as a remedy for the failure to coordinate this work in a manner that would have minimized field installation challenges.

5. F.E.C. shall coordinate roll down shutter and pass-thru window requirements with the foodservice equipment. Anticipate that tracks or guides must be incorporated into backsplashes, counters, tables, equipment, et cetera so that the shutter

hardware appears to be integral with the foodservice equipment. Provide this information in a timely manner, to eliminate any need for rework.

6. The F.E.C. shall coordinate the location of all equipment near floor drains, floor sinks and floor troughs. Under no circumstance will it be acceptable to have equipment legs on top of floor drains, floor sinks or floor troughs. Coordinate these with the fabricators shop drawings.

7. If the F.E.C. is providing the hood canopies and/or the entire hood ventilation system, the F.E.C. is obligated to closely coordinate the ventilation work to ensure that system design and installation functions properly. The system must comply with all codes, completely capture particulates and smoke emitted from the equipment located beneath the hood and be carefully integrated into the building structure so that it does not interfere with structural, electrical, or mechanical devices.

8. The FEC will be required to identify on submittals installation in accordance with the SMACNA Guidelines for Seismic Restraint of Commercial Kitchen Equipment. It is the responsibility of the FEC to confirm such requirement with the authorities having jurisdiction. FEC to ensure applicable shop drawings are signed and sealed by the appropriate certifying engineer.

9. Mechanical, Plumbing and Electrical Contractors will disconnect and make safe any existing equipment prior to demolition and removal by the designated parties.

10. All foodservice equipment noted as existing, whether to be removed, relocated, cleaned, or reused shall be handled by the F.E.C.

11. If required, the approximate weight of any foodservice equipment is to be tabulated and reported to the Owner in a form appropriate for use in any project related documentation needs.

12. The F.E.C. will locate all controls for fabricated counters, whether power or water or waste, in a location that is secure, accessible and convenient for staff.

13. The F.E.C. will be responsible for purchasing and installing any fan units required to keep undercounter spaces below the manufacturer's recommended operating temperatures required for any undercounter equipment.

14. Where gas range equipment is provided, cap front manifolds, provide finishing panels and provide supply in rear of unit. F.E.C. to provide Dormont (or other approved) quick disconnect. Provide restraining cord. Restraining cord to be mounted to wall if blocking is provided. If blocking is not provided mount restraining cord to floor.

15. The F.E.C. will provide and pay for all permits, licenses and approvals that involve foodservice related refrigeration piping and any other categories of foodservice equipment work not included in the permits that will be provided and paid for by the Mechanical, Heating and Ventilation and/or Electrical Contractors.

B. The Plumbing Contractor, or Others as directed by the Contract Documents for the project, shall perform the following:

1. Make all final utility connections between the rough-in point and the equipment.

2. Provide all final connections to foodservice equipment including, but not limited to: faucets, sink drains, sink waste valves, overflow connections, disposer piping, troughveyors, hot food wells, floor troughs and other equipment associated with this project.

3. Provide traps, connecting pipe, shut-off valves, stops, floor drains, floor sinks, drain manifolds, vacuum breakers that are not specific to equipment, grease traps and all other hardware, supplies and parts necessary for the performance of work under this contract; unless specified otherwise in these Specifications. To minimize cleaning and corrosion problems, all exposed plumbing above any equipment or visible in any manner shall be stainless-steel or chrome plated. All exposed steam supply and return lines shall be insulated with a seamless, white, heat tolerant vinyl covers with access to valves.

4. Properly install all drain assemblies and shut off valves for sinks, and interconnecting piping between hot food wells, cold pans, troughveyor drain assemblies, and other equipment. All drain assemblies must be installed per all local health department prevailing codes and be commercial grade.

5. All work must meet all applicable state and local codes and site conditions.

C. The Electrical Contractor shall perform the following:

1. Make all final connections between the rough-in point and the equipment.

2. Provide all final connections to and between all foodservice equipment items including, but not limited to: disposers, cold pans, food wells, walk-ins, ventilation systems, serving counters, et cetera whether new, existing, or vendor supplied.

3. Furnish all safety cut-outs, line disconnect devices, shunt trip breakers, power panels, power cords, ground fault circuit interrupter receptacles, outlets, conduit, wire and other electrical controls, fittings and connections necessary for the installation of the foodservice equipment, with the exception of those specified or shown on drawings as a part of the foodservice equipment furnished by the F.E.C.

4. Work must meet all applicable state and local codes and conditions.

D. Other Contractors, as identified by the Project Contract Documents, shall perform the following:

1. Provide flues and/or vents of size and capacity required to properly ventilate the foodservice equipment except those system components that are being provided by the F.E.C.

2. Provide roof curbs, chases, floor openings, roof openings, flashing and sealing for foodservice ventilation.

3. Provide sleeves or chases of size and capacity required for refrigeration lines and wiring harnesses. Roof openings, flashing and sealing for foodservice refrigeration lines shall be provided.

1.4 DEFINITIONS AND ABBREVIATIONS

A. General Explanation: Certain terms and abbreviations used in Project Contract Documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive but are general for the work to the extent not stated more explicitly in another provision of Project Contract Documents.

B. F.E.C.: Foodservice Equipment Contractor. The Foodservice Equipment Contractor is also referred to, variously, as the “F.S.E.C.” or the “Food Service Equipment Contractor or K.E.C. “Kitchen Equipment Contractor.”.

C. C.M.: Construction Manager. As read, work by the Construction Manager refers to work by the Construction Manager, as defined by the Project Contract Documents.

D. B.I.B.: Base Item Bid. The B.I.B is material, product, or equipment identified in the Item Specifications as the standard to be provided. In the Item Specifications for foodservice equipment, each item identifies a single manufacturer as the B.I.B. The B.I.B is to be distinguished from Contractor's Options, Mandatory Acceptable Manufacturers and Substitutions.

E. Mandatory Acceptable Manufacturer: The mandatory acceptable manufacturer must be quoted separately to fulfill the requirements of the bid. This cannot replace the Base Item Bid. A mandatory acceptable manufacturer should be, unless otherwise indicated, as close to the Base Item Bid in terms of performance, quality and construction. Acceptable manufacturers are governed by the terms and conditions of section 1.5.

F. Acceptable Manufacturer: An acceptable manufacturer is to be “as close as possible” to the standard set by the B.I.B. Acceptable manufacturers are considered manufacturers of lines that are similar enough to be interchangeable with the item specified. The F.E.C. must identify the manufacturer and model, which must be as close in all ways to the Base Item Bid with regard to performance, options, quality and construction.

G. Furnish: Except as otherwise defined in greater detail, term "furnish" shall mean supply and delivery of the equipment to the project site, as well as the unloading, unpacking, assembly, installation, calibration, and operator training of the same.

H. Install: Except as otherwise defined in greater detail, term "install" shall mean that the contractor shall perform all work as outlined in the Project Contract Documents; shall assemble and properly locate all equipment included in the contract and shall make all connections specified within the Project Contract Documents. Install shall also include whatever work is necessary to make the equipment ready for use, in full compliance with all code and project requirements.

I. Provide: Except as otherwise defined in greater detail, term "provide" shall mean and intend furnish, install, test, clean completely and make ready for intended use, as appropriate in each instance.

J. Indicated: The term "indicated" is a cross-reference to graphics, notes or schedules on drawings; to other paragraphs, or schedules in these specifications; and to similar means of recording requirements in Project Contract Documents. Use of terms such as "shown," "noted," "scheduled" and "specified" used in lieu of "indicated" is intended only to help reader locate cross-reference and no limitation of location is intended.

K. Directed, Requested, et cetera: Where not otherwise explained, terms such as "directed," "requested," "selected," "approved," "required," "accepted" and "permitted" mean "directed by Architect," "requested by Architect" and the like. However, no such implied meaning shall extend responsibility of Architect into the Contractor's area of supervision.

L. By Others: Reference to non-foodservice equipment contractor entities, to which work and/or responsibility will be assigned to by the C.M. F.E.C. responsible for coordination to ensure item(s) fit and are integrated as planned and that all utilities are provided.

M. Owner Furnished, Owner Installed (O.F.O.I.) – Items that the owner has purchased or possesses and will install or have another entity (outside of the construction contract) install. F.E.C. responsible for coordination to ensure item(s) fit and are integrated as planned and that all utilities are provided.

N. Project Site, Job Site: The space available to Contractor for performance of the Work, either exclusively or in conjunction with others performing other work as part of the Project.

O. Or: Used in inclusive sense to indicate alternatives of any item or any combination or items in a list unless otherwise indicated.

P. Include: The word “include” and its’ forms are not meant to limit provisions to a list nor to exclude other, unnamed items from a list which it precedes. The phrase, "but not limited to," may be assumed to follow uses of the words “include” and “including.”

Q. Installer: The entity (person or firm) engaged by the Owner, its’ C.M. or its subcontractor for performance of a particular unit of work at project site, including installation, erection, application, and similar required operations. It is a general requirement that such entities (Installers) be regionally recognized as expert in operations they are engaged to perform. The Installer or Installing Contractor is usually a mechanical, plumbing, or electrical contractor, although not limited to these categories.

R. RPZ: Reduced Pressure Zone Backflow Preventer

S. Cross Connection: A connection or arrangement of piping or appurtenances through which a backflow could occur. Cross connections may be made “directly” or “indirectly”.

T. Backflow: Water of questionable quality, wastes, or other contaminants entering a public water supply system due to a reversal of flow. Backflow can occur by either backpressure or back-siphonage conditions.

U. Backpressure: Backpressure conditions occur when the downstream pressure exceeds the upstream pressure.

V. Back-siphonage: Back-siphonage is caused by a vacuum or partial vacuum in a water supply system.

W. Composite wood and agrifiber products are defined as: particleboard, medium density fiberboard (MDF), plywood, wheatboard, and strawboard.

X. Chlorofluorocarbons - CFC - any of various gaseous compounds of carbon, hydrogen, chlorine, and fluorine, used as refrigerants and aerosol propellants, some of which break down the ozone in the atmosphere.

Y. Hydrochlorofluorocarbons - HCFC - a fluorocarbon that is replacing chlorofluorocarbon as a refrigerant and propellant in aerosol cans; considered to be somewhat less destructive to the atmosphere.

Z. Halon - Any of several compounds consisting of one or two carbon atoms combined with bromine and one or more other halogens. Halons are gases and are used as fire-extinguishing agents. They are between three and ten times more destructive to the ozone layer than CFCs are.

1.5 SPECIFIED MANUFACTURERS & MANDATORY ACCEPTABLE MANUFACTURERS

A. Specified Products & Materials: Certain, definite brands of materials, products and equipment are specified as the standard of quality for the Base Item Bid (B.I.B.) where one or more additional brands are named as B.I.B. manufacturers, the bid may be based on any one of the named brands.

B. Mandatory Acceptable Manufacturers: Acceptable manufacturers specified within this section are mandatory. If a manufacturer is simply named, then the F.E.C. may provide a quote from that manufacturer for an item that is as close as possible to the B.I.B. The F.E.C. cannot substitute the Mandatory Acceptable Manufacturer for the B.I.B. In other instances, the Mandatory Acceptable Manufacturer is to help understand the costs associated with additional options for the Item. Selection of a mandatory acceptable manufacturer is due to project conditions or other factors cause it to be in the Owner's interest to evaluate a different material, product or type of equipment.

1. Where an acceptable manufacturer is indicated in the bid documents as "Mandatory," or if it is not further qualified, the F.E.C. may provide a quote for the material, products and/or equipment identified in the Mandatory Acceptable Manufacturer. This is not a substitution for the B.I.B. and can be provided as a separate pricing for the school to determine if they want to substitute this item for the B.I.B. for the price savings.

2. Proposals for mandatory acceptable manufacturers shall include all costs necessary to include them into the project. Review each mandatory acceptable manufacturer to determine its effect on your project. F.E.C. to include in the proposal miscellaneous devices, appurtenances and other items incidental to or

required for a complete installation whether or not directly mentioned as part of the mandatory acceptable manufacturer.

3. The Owner reserves the right to accept or reject any mandatory acceptable manufacturers at the time of awarding the Contract. If, during the progress of the work, it should become desirable to reinstate any mandatory acceptable manufacturer not included in the Contract, the Owner reserves the right to reinstate the mandatory acceptable manufacturer at the price bid by the F.E.C. provided that such action is taken in sufficient time as not to delay the progress of the work or cause additional expense to the F.E.C.

C. Acceptable Manufacturers: Other acceptable manufacturers have been identified in the Item Specifications. It is not the intention to discriminate against other brands or manufacturers whose materials, products or equipment is equal or better to what has been specified. Rather, the naming of a specific brand is intended to establish a definitive standard.

1. Acceptable manufacturers shall be selected on the basis of performance, features and options that most closely match that of the B.I.B.

2. Acceptable manufacturers proposed for range equipment must match with adjacent equipment, if possible.

3. Proposals for acceptable manufacturers shall include all costs necessary to include them into the work. Review each acceptable manufacturer to determine its effect on the project. F.E.C. to include in the B.I.B. miscellaneous devices, appurtenances and other items incidental to or required for a complete installation whether or not directly mentioned as part of the acceptable manufacturer.

4. The owner reserves the right to accept or reject any acceptable manufacturer listed bid. Bids must be based on B.I.B. items as specified, not per mandatory or voluntary acceptable manufacturers.

1.6 SUBSTITUTIONS

A. Requests for substitutions will be considered BEFORE award of contract when extensive revisions to the project contract documents are not required and any changes are in keeping with general intent of project contract documents; when fully documented and properly submitted; when any conditions stated elsewhere in the bid documents are satisfied; and when one or more of the following conditions are satisfied, all as judged by design team.

B. Where the required product, material, or method cannot be provided within the project schedule, but not as a result of F.E.C.'s failure to pursue the work promptly or coordinate various activities properly.

C. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's insurance coverage on completed work, or will encounter other substantial non-

compliances which are not possible to otherwise overcome except by making requested substitution, which F.E.C. thereby certifies to overcome such non-compatibility, non-coordination, non-warranty, non-insurability or other non-compliance as claimed.

D. Where substantial advantage is offered, in terms of cost, time, energy conservation or other valuable considerations, after deducting offsetting responsibilities others may be required to bear, including additional compensation to the design team for redesign and evaluation services, increased cost of other work by design team or separate contractors and similar considerations.

E. Request for a substitution constitutes representation that F.E.C. has investigated proposed substitution and determined that it meets or exceeds specified product in all respects unless deficiencies are conspicuously noted; will provide same warranty for substitution as for specified product; will coordinate installation and make other changes which may be needed for work to be complete in all respects and do so at the F.E.C.'s expense; and waives claims for additional costs which may subsequently become apparent. Where such modifications require work by others, such as but not limited to the Owner, to the C.M., to Other Trades, to the Architect or Engineer, or Bakergroup, the cost of said work will be billed (back-charged) against the F.E.C.'s contract. This includes any substitutions/changes to equipment loads, locations, connections that are not clearly marked up on shop drawings for review by the design team, including but not limited to Bakergroup, architects, engineers, Construction Managers/Construction Managers, etc.

F. In addition, specific to ventilation: It is expected that any chosen mandatory acceptable manufacturer proposed will formally acknowledge, as a part of the evaluation process for changing from B.I.B. manufacturer, that they will meet the hood configuration shown in the project bidding documents, within their ventilation system code listing and without the need to modify air volumes (unless lower), hood dimensions, filter types or other characteristics of the original design solution. Any facility or machinery modifications that become necessary after the award of the foodservice equipment contract, due for any reason to the use of the mandatory acceptable manufacturer's ventilation equipment, will remain a cost to the foodservice equipment contractor. This includes, but is not limited to, structural modifications, changes in fan or duct size, clearances, fire protection, access or cleaning and other elements.

G. Only one request for substitution will be considered for any single product. Substitution requests will only be reviewed and possibly accepted if submitted in approved time to include in addendums/bulletins for documentation before bids are due. If substitution is not accepted or request for substation not received in time, F.E.C. shall provide specified and/or illustrated product.

H. F.E.C.'s submittal of (and Design Team's review of) shop drawings, product data, or samples which relate to work not complying with requirements of Project Contract Documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

I. No substitutions will be permitted following the award of Contract except under emergency conditions such as the sudden and unexpected discontinuance of an item of equipment by

the manufacturer. Determination of what conditions warrant emergency substitutions shall be at Design Team's judgment.

J. Identification of product or equipment being replaced by substitution shall include, but not be limited to, related specification section and drawing numbers, product data, drawings and catalog sheets and shall be fully documented to show compliance with requirements for substitutions.

K. Because of the practice of certain foodservice equipment manufacturers of offering rebates, gifts, "spiffs," bonuses, premiums, and other benefits to foodservice equipment dealers as well as individual salespeople and because the eligibility for such benefits may have an influence on the decision by a F.E.C. to propose a substitution, the receipt of and the eligibility for such benefits must be explicitly described. For each proposed substitution, provide a statement fully answering the following questions:

1. Is your firm eligible for any benefit, including but not restricted to, rebate programs based on quantities purchased in a given period, reductions in future prices, discounts, cash rewards or credits, if the proposed substitution is accepted?

2. Is any individual in your firm eligible for a cash payment, gift, reward, "spiff," or any other form of benefit if the proposed substitution is accepted?

L. Be prepared to attest to accuracy and completeness of this disclosure if requested by design team. Said attestation shall be in the form of a written statement from an officer of the manufacturer attesting to the accuracy and completeness of the F.E.C.'s disclosure. Where the manufacturer is represented by another firm for marketing purposes (commonly referred to as a manufacturer's rep), an officer of the representing firm also shall provide a signed statement attesting to the accuracy and completeness of the F.E.C.'s disclosure. Refusal or inability to provide said statements when requested shall be considered a withdrawal of the proposed substitution.

M. The fact that an F.E.C. or individual related to the F.E.C. is eligible for benefits should the proposed substitution be accepted, does not provide sufficient cause for declining the proposed substitution. However, where there is a difference in judgment or opinion between the Owner or Design Team and the F.E.C. as to whether the proposed substitution is in fact an equal to the B.I.B, said benefits will be considered in the decision to either accept or reject the proposed substitution.

N. Any substitution may require changes in the other parts of the work. By acceptance of a proposed substitution, no representation is made that the nature or extent of such modifications have been determined except as specifically identified by the F.E.C. in their proposal. All changes to the project work compelled by any substitution, whether or not identified in the F.E.C.'s proposal or that subsequently becomes apparent, shall be completed at the expense of the F.E.C.

O. Should a substitution be accepted and should the substitute material, product or equipment prove to be defective or otherwise unsatisfactory for the service or application intended, as evaluated by the design team and within the guarantee period as defined in these specifications, the F.E.C. shall replace this material, product, or equipment at no cost to

the Owner, with that originally specified. All costs of uninstalling, crating, shipping, and restocking shall be the responsibility of the F.E.C.

P. If a substitution is accepted it is the F.E.C.'s responsibility to ensure the electrical, mechanical and plumbing requirements match with those provided at the project site.

Q. Inability to Meet Project Requirements without Modification: If the F.E.C.'s bid for products or equipment must be altered to meet the Project Contract Documents and the F.E.C. Bidder makes no mention that these alterations are required, it will be interpreted that their Bid includes the alterations required.

1.7 SUBMITTALS

A. Preliminary Equipment Schedule: An equipment schedule must be provided by the F.E.C. through the C.M. (or apparent low bid Construction Manager) within seven (7) days of the bid opening. This schedule must include the item number, description, and manufacturer for all new equipment to be provided. The schedule shall also indicate if the piece of equipment is "B.O.D.", or other manufacturer. Note that no substitutions of food service equipment will be allowed unless submitted ten (10) days in advance of the bid date and approved by addendum.

B. Coordination Meeting: A coordination meeting shall be held within fourteen (14) days of the award of the foodservice equipment contract to review the equipment schedule and other relevant issues for coordination of F.E.C. items.

C. Distribution: Submittals shall be in conformance to the requirements set forth herein and as defined by the Project Contract Documents. All submittals shall be to the parties designated by the Project Contract Documents and copied to Architect.

D. Review: The review of submittals is only for compliance to design intent. For all submittals: DESIGN TEAM SHALL NOT BE RESPONSIBLE FOR CHECKING NOR FOR ADDRESSING DEVIATIONS FROM THE PROJECT CONTRACT DOCUMENT REQUIREMENTS OR CHANGES FROM EARLIER SUBMISSIONS. ALL CHANGES FROM THE PROJECT CONTRACT DOCUMENTS AND/OR EARLIER CONTRACTOR SUBMITTALS SHALL BE CONSPICUOUSLY AND SPECIFICALLY NOTED. Where such changes are indicated on shop drawings, note the drawing changes conspicuously and clearly describe the changes in the transmittal that accompanies the drawing.

The number of copies to be submitted and the deadline for submittal shall be as determined by the C.M. If printed copies are required by the owner and is not determined by the C.M., the F.E.C. shall provide eight (8) printed copies. The F.E.C. will be responsible for distribution of drawings and material documents to parties designated by the C.M.

E. Format: Submit Electronic files. Provide hard copies if determined by C.M. All drawing files shall use AutoCAD™ 2007 DWG and AdobeTM PDF, or a more recent version of the same program, and shall be in a drawing format that is acceptable to the owner and the C.M. All cutsheets, submitted electronically, shall be in AdobeTM PDF format.

F. Product Data: Submit buy out brochures, each item shall have a cover sheet with the following information: item number, manufacturer, quantity, model numbers, service

connection requirements, performances, materials, furnished accessories, power and fuel requirements, water and drainage requirements and other similar information. Second sheet shall be a manufacturer's cutsheet showing technical data, installation recommendations, service connection requirements, performances, materials, model numbers, furnished accessories, power/fuel requirements, water/drainage requirements and other similar information.

Where equipment is fabricated, provide cover sheet with the following information: item number, manufacturer, quantity, the words "SEE MANUFACTURERS SHOP DRAWINGS", include service connection requirements, materials, furnished accessories, power/fuel requirements, water/drainage requirements and other similar information.

G. Shop Drawings of Fabricated Equipment: Submit dimensioned fabrication drawings for custom fabricated equipment including plans, elevations and sections, showing materials and gauges used. Cross sections and elevations shall be detailed to a scale of 1-1/2" = 1'-0". Show complete details and dimensions of each item of equipment. Drawings shall be based upon and follow the design drawings and these specifications, without reference to field measurements. For seismic locations provide details in drawings of s seismic bracing for equipment and note that equipment conforms to Seismic Restraint guidelines. If required, include with these submittals, Letters of Assurance and Certificate for Seismic Restraint compliance. These are to be supplied from the applicable engineer, and to state that the installation and design meet all local, provincial, and federal relevant codes.

H. Utility Drawings: Submit drawings indicating: item numbers, equipment schedule including item number, quantity, description of each item and specific points and types of final connection for all utility requirements for foodservice equipment. Utility connections shall be located both horizontally and vertically and indicate details of connection required on each item. Prepare these drawings at 1/4" = 1'-0" scale minimum and in a CAD or BIM format acceptable to Owner. Submit separate drawings for equipment lay-out, electrical, plumbing and ventilation. Utility drawings shall include the information required for all equipment including existing, new, future, vendor, and any other equipment from any other sources made a part of this project. Unless there is a compelling reason to depart from the utility loads or locations shown on the bid documents, the F.E.C. will indicate the same loads and locations. If there is a compelling reason to modify the utility load or locations shown on the bid documents, the F.E.C. will recommend a solution, subject to approval, and conspicuously cloud the change.

I. Setting Drawings and Templates: Submit setting drawing and templates for installation of anchoring devices and for any item where required in the specifications. Submit setting drawings and templates at full scale.

J. Verifying Field Conditions: It is the sole responsibility of the F.E.C. to monitor the progress of the project and to coordinate both timely and mandatory field measurements necessary to achieve the best outcome for the project.

1. The F.E.C. shall visit the site at the appropriate times (before critical closures occur) to ensure that (1) plumbing, electrical and HVAC rough-ins meet with all equipment requirements, the Project Contract Documents and submittals and (2) that the finished walls, door locations and other building elements will exactly

match with the dimensional requirements of the equipment for operation, service and codes.

2. It is the sole responsibility of the F.E.C. to advise the Owner, the C.M., the Design Team, in a timely manner and in writing, of any need to depart from the requirements of the project, as outlined in the Project Contract Documents and subsequent formal project decisions.

3. After field measurements have been taken by the F.E.C., the F.E.C. shall revise their mechanical, electrical, ventilation and fabrication drawings to accurately reflect project conditions. Provide an electronic copy of that file to Architect and the C.M. Print and provide hard copies of the revised drawings to the same if required by the C.M. or owner.

4. The F.E.C. is responsible for making certain that all trades are using the most current and accurate drawings, and that the trades are fully aware of any special field conditions (e.g. “must hold” and close tolerance dimensions) that are required for the proper installation of the foodservice equipment.

5. The F.E.C. will be responsible for any remedial plumbing, electrical or HVAC work that results from their failure to comply with the inspection, timely submittal of project documents, drawings, cutsheets, and coordination requirements of this Project.

K. Ordering and Delivery Report: The F.E.C. shall issue regular, monthly updates to the Project Team. These updates must indicate the status of the shop drawings, loose equipment orders, fabrication progress and site work scheduled. The intent of this clause is to make certain that all parties to the project receive a monthly update indicating the exact status of the foodservice equipment order, fabrication and delivery times, document submittals and site meeting and inspection needs. Refer to 3.3A for more detail.

L. Operator's Manuals: Unless otherwise instructed by the C.M. or Architect, provide electronic copy of manual for review before print. Provide amount of printed copies needed per C.M. and/or owner. If amount is not specified, print and submit eight sets of dimensioned plans, data sheets, manuals and instructions for properly operating the foodservice equipment. Instructions for operating the equipment, together with written guarantee and warranty for each piece of equipment shall be bound in a booklet and presented to the Owner.

1. Provide a list including: item number, quantity, description, manufacturer, and model number of each piece of equipment and service agency contact; complete with name and phone numbers.

2. Provide manuals and instructions for each piece of equipment ninety days prior to the date that the project gets turned over to the Owner.

3. Provide manufacturers written guarantee and warranty forms for each piece of equipment.

4. Submit one electronic copy, in Adobe™ PDF format, of the Operator’s Manual.

M. As-built Documents: The F.E.C. shall produce as-built drawings of each drawing that was supplied by the F.E.C., its fabricator and manufacturers. Submit each drawing in electronic format (AutoCAD™ 2016 or more recent version). As-built drawings shall conform to the format requirements of the Owner, Architect and C.M. At a minimum, the F.E.C. shall update the as-built drawings (in CAD) to reflect all addenda, bulletins, field conditions, modifications to fabricated units and changes in equipment provided (including acceptable manufacturers). The F.E.C. shall provide periodic electronic CAD updates as required over the course of the project. F.E.C. agrees to reimburse Architect, as a deduct from this contract, for any time and out-of-pocket costs related to the failure of the F.E.C. to comply with this requirement. As-built drawings shall be provided within 45 days of substantial completion.

N. Samples: Submit samples of materials and products where indicated.

1. Submit two (2) of each sample. Confirm number of samples required with Architect. Provide additional samples, if required.

2. Samples shall be of sufficient size and quantity to illustrate the functional characteristics of the product with integral related parts, and attachment devices; and to clearly express the full range of color, texture and pattern.

3. Do not use products in the work until required sample review and approvals are completed.

O. Final Distribution: F.E.C. shall be responsible for the ongoing distribution of the most current, up to date information to all team members. Information to include, but not be limited to, all shop drawings, utility drawings, buy-out books, and all other documentation. Project team members are defined in the Project Contract Documents.

1.8 QUALITY ASSURANCE

A. Manufacturer's Qualifications: The manufacturer must be able to show that it has been regularly engaged in manufacturing of foodservice equipment of types, capacities and sizes required, and that its products have been in satisfactory use in similar service for not less than five years.

B. F.E.C.'s Qualifications: Only those firms who can meet the following qualifications will be considered for this work:

1. The F.E.C. shall have at least five years successful experience furnishing and installing foodservice equipment on projects similar in size and scope to that required for this project.

2. The F.E.C. shall be the recognized distributor for the items of equipment specified herein, if of other manufacture than their own.

3. F.E.C. shall have the financial resources to enable the F.E.C. to handle the work in a satisfactory manner and to deliver the required items of equipment so as not to delay the progress of the work.

4. The F.E.C. shall be fully capable of fulfilling the terms and conditions of the warranty provisions required by this contract.

5. The F.E.C. shall be capable of providing a labor and/or material bonds when and if required.

6. Upon demand, the F.E.C. being considered for possible negotiation shall submit to Architect evidence of their ability to fulfill these requirements.

C. Fabricator's Qualifications: Where specified units require custom fabrication, provide units fabricated by a shop with a minimum of five years of experience in similar work. Fabricate all custom equipment items at the same shop. Where units cannot be fully shop-fabricated; complete fabrication work at project site in conformance to specification.

D. Pre-Approved Fabricators: Listed below are the pre-approved fabricators. Other fabricators to be considered must be submitted to Architect or C.M. for approval, in writing, prior to the bid submittal date and before the last addendum. This is, for possible approval. F.E.C. may choose to offer another fabricator not listed below as a voluntary mandatory acceptable manufacturer and listed separately from the base item bid.

Carbone Metal Fabricator, Inc.	240 Marginal St. Chelsea, MA 02150	(617) 884-0237
Commercial Stainless, Inc.	955 Patterson Dr., Bloomsburg, PA 17815	(570) 387-8982
Conover Custom Fab, Inc.	2625 S. Pennsylvania St., Indianapolis, IN 46225	(317) 784-1904
Great Lakes Stainless	1305 Stepke Court, Traverse City, MI 49684	(231) 943-7648
Institutional Equip, Inc.	704 Veterans Parkway, Bolingbrook, IL 60440	(630) 771-0990
John Boos	3601 S. Banker St. Effinham, IL 62401	(888) 431-2667
Nationwide Fabrication	10923 Leroy Dr., Northglenn, CO 80233	(303) 853-0107
Servco	3189 Jamieson Avenue, St. Louis, MO 63139-2595	(314) 781-3189
Titan Stainless Inc.	404 Usher Street, Pageland, SC 28728	(704) 243-8717

1.9 REFERENCE STANDARDS

A. Sanitary Construction and NSF Standards: Comply with applicable National Sanitation Foundation (NSF) standards and recommended criteria. Provide each principal item of foodservice equipment with an NSF "Seal of Approval".

B. Seismic Restraints: Provide seismic restraints for food service equipment according to the Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) "Kitchen Equipment Fabrication Guidelines," appendix 1, "Guidelines for Seismic Restraints of Kitchen Equipment," unless otherwise indicated.

C. UL Labels: Where available, provide UL labels on prime electrical components of foodservice equipment. Provide UL "recognized marking" on other items with electrical components, signifying listing by UL, where available.

D. ANSI Standards: Comply with applicable ANSI standards for electric powered and gas-burning appliances, for piping to compressed gas cylinders and for plumbing fittings including vacuum breakers and air gaps to prevent siphonage in water piping.

E. NFPA Codes: Install foodservice equipment in accordance with the most current and/or applicable National Fire Protection Codes (NFPA) Codes for Gas, Electrical and Commercial Cooking Equipment.

F. ASME Boiler Code: Construct steam generating and closed steam heated equipment to comply with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code.

G. Health Code: Install foodservice equipment in accordance with local health department and all applicable regulations.

H. Architectural Millwork: Casework construction shall be of custom grade in accord with the standards of the Architectural Woodworking Institute or better. Casework will be considered any construction or fabrication requiring the use of wood or laminate.

I. Overlapping and Conflicting Requirements: Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement (whether most costly or not) is intended and will be enforced, unless specifically detailed language written into Project Contract Documents clearly indicates that a less stringent requirement may be fulfilled. Refer instances of uncertainty as to apparent conflicts of standards to Architect and/or C.M. before proceeding.

J. Minimum Quality or Quantity: In every instance, quality level or quantity shown or specified is intended as minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either conform exactly to that minimum or may exceed that minimum. The F.E.C. accepts that Architect will make the final determination of the minimum quality or quantity for the work to be performed or provided. Refer instances of uncertainty as to quality or quantity intended to Architect before proceeding.

K. LEED - Leadership in Energy and Environmental Design - Comply with applicable standards per architect.

1.10 STORAGE, DELIVERY AND HANDLING

A. Storage: F.E.C. shall provide a safe and secure area in which any foodservice equipment that is a part of this project can be stored. Provide adequate protection from damage to or loss of this equipment. Store foodservice equipment in original containers, where available. The F.E.C. shall insure the equipment against damage and loss.

Should the Owner provide a facility for the receiving and storage of foodservice equipment, the F.E.C. shall, nevertheless, retain full responsibility for maintaining the condition of the equipment, shall fully insure it and name the Owner as additionally insured, and shall hold the Owner harmless from any damages or loss that should occur while stored in the Owner's premises.

B. Delivery: All deliveries are to be coordinated with the C.M. through a contact person who will be designated at time of award. All deliveries must be made to the jobsite or a location designated by the C.M. Any delivery errors are the responsibility of the F.E.C. who will rectify the error at no additional cost to the Owner or the Owner’s agent, or representative.

All foodservice equipment requiring fabrication (casework, counters, tables, breath protectors, walk-in refrigeration, hoods, ventilation ductwork, fire protection, et cetera) shall be delivered to the project site one month in advance of the expected installation date and securely stored. The cost of equipment storage will be the responsibility of the F.E.C. Prior to shipping fabricated items, the F.E.C. shall digitally photograph each item to document the condition of the equipment. Copies of the photographs shall be forwarded to C.M. and/or Architect, who will casually review the photographs, alerting the F.E.C. to any obvious errors and defects.

Do not deliver foodservice equipment until project conditions permit prompt installation. If the Owner, Architect or C.M. determines that the site is not ready for the delivery of equipment, the F.E.C. will retain said equipment in the F.E.C.’s storage facilities until the site is ready for installation. Deliver foodservice equipment to the project site in factory-fabricated containers designed to protect equipment and finishes until final installation.

Any piece of equipment that proves impractical for delivery in one piece may be delivered in sections, but all working surfaces shall be fitted and field welded, with working surfaces ground and polished on premises, so that upon completion, each item of equipment will have true, smooth, and even surfaces. Butt jointing and filling with solder will not be permitted.

C. Handling: Handle foodservice equipment carefully to avoid damage to components, enclosures, and finishes. Do not remove coverings until required to clean, test, calibrate and demonstrate the unit. DO NOT INSTALL DAMAGED FOODSERVICE EQUIPMENT; replace and return damaged components to equipment manufacturer.

D. Scheduling and Timeliness: Delivery and storage of all equipment shall be done at such time when construction, finish and mechanical work have progressed to a point permitting such installation. The details of setting and installation shall be so arranged that work of other contractors shall progress without being unnecessarily interfered with or damaged. The F.E.C. will be responsible for alerting project team members to any emerging or

ongoing issues that could undermine the F.E.C.'s ability to complete their work on schedule and within budget.

E. Protection of Equipment: All equipment shall be received at the building or construction site fully insured. It will be the responsibility of the F.E.C. to protect the equipment until completely installed, connected, and approved by Architect or C.M., subsequent to the completion of the contract work.

1.11 PROJECT CONDITIONS

A. Verification: Check and verify the electrical, water, steam, and gas characteristics of the site, including available water, steam, and gas pressures. The F.E.C. shall verify that the site utilities will meet the needs of the new, existing equipment scheduled for re-use, and vendor supplied items.

B. F.E.C. will be responsible for coordinating the utility needs of the equipment with site conditions. Do not order equipment that cannot be supported by the site utility structure. F.E.C. shall provide pressure regulating valves where required for proper operation of equipment.

C. Existing Foodservice Equipment: Work to include: Remove and relocate the equipment indicated in these specifications or on the project drawings as "Existing" or "Relocated."

1. F.E.C. shall visit the site, working with the Owner to tag or mark all equipment scheduled to be re-used. This shall be done prior to the disconnecting of the equipment. The F.E.C. shall be held accountable for any missing equipment for failure to tag or mark the equipment. The F.E.C. shall note utility requirements; dimensions, model numbers, et cetera and photo document all items. All existing equipment shall be removed from the facility prior to construction or at a date specified by the Owner, C.M. or Architect.

2. Equipment scheduled for reuse shall be taken to the F.E.C.'s storage area, cleaned and stored until it can be transported to the project site and installed. During the time said equipment is in the F.E.C.'s possession, it shall be protected from loss and damage; covered by the F.E.C.'s insurance that, in turn, complies with the Owner's terms and conditions for insuring assets stored by others; and delivered to the project site in same operating state that existed at the original site.

3. Equipment shall be cleaned of all grease, dirt and debris. The expectation is that surfaces will be void of any residue.

4. Paint where specified.

5. The F.E.C. shall document the operating condition of each piece of equipment PRIOR to disconnecting it for relocation. Digitally photograph all equipment before it has been disconnected.

6. Repairs and modifications to the equipment are NOT a part of this contract, unless specified for the Item. The Owner, however, is interested in F.E.C. suggestions for repair, reconditioning and upgrades to existing equipment. Estimates for this

work may be quoted separately, after the equipment has been removed and cleaned, and repair or reconditioning needs identified.

7. Equipment not scheduled for reuse shall be removed to location(s) designated by the Owner or by others, not by the F.E.C. With the Owner's concurrence, the F.E.C. may submit an offer to purchase all or part of the remaining equipment; and/or a cost proposal for removing and disposing of scrap equipment.

8. Disconnects of utilities to existing equipment will not be a part of the F.E.C.'s work. That work will be the responsibility of the trades performing the electrical, mechanical and plumbing work for the balance of the project.

D. Protection of Work and Property: The F.E.C. will be held responsible for any damage to Owner's property caused by delivering, uncrating, or installing of the Foodservice Equipment. If any damage is caused by the F.E.C., their agents or subcontractors, the Owner's property shall be restored to its original condition at the expense of the F.E.C.

E. Use of Premises: The F.E.C. shall confine the storage of equipment, materials, tools and all other things related to the F.E.C. work to space allotted to the F.E.C. by the Owner.

1.12 BIDDING

A. The bids shall be submitted as a pdf accompanied by an excel® worksheet. The bids shall identify pricing for each item (and component parts/accessories) listed on the equipment schedule, including items identified as alternates. Items identified as mandatory acceptable manufacturers shall have pricing identified for the base item as well as for each of the mandatory acceptable manufacturers. The owner will then select among the mandatory acceptable manufacturers and the base item manufacturer which manufacturer to use prior to the award of the bid. If project is located in seismic activity area, bidders are to provide Letters of Assurance for the Fire Suppression System(s) and a Certificate for Seismic Restraint compliance.

B. For budget control purposes only, prior to the award of the foodservice contract bid, the owner may elect to remove any item from the equipment award package and defer the item to be purchased later in the project, or to a future time after the project is completed, or to remove the item completely from the project.

C. Bid format

Use the following format for bid submission; inserting the appropriate number of columns for each Mandatory Acceptable Manufacturer in order to provide model #, manufacturer, selling price, total, Energy Star, low water consumption, other/note.

Item #	Item Description	Model #	Base Item Bid Manufacturer	Quantity	Selling Price Each	Total Selling Price	Energy Star	Low Water Consumption	Other/notes	Other

										Acceptable Manufacturers
1										
2										

PART 2 - PRODUCTS

2.1. GENERAL STANDARDS OF QUALITY

Quality of Material: Unless otherwise specified or shown on drawings, all material shall be new, of best quality, perfect and without flaws. All labor shall be performed in a thorough workmanlike manner. Work to be performed by qualified, efficient and skilled employees of the trades involved.

2.2. MATERIALS

A. New Materials: All materials shall be new, of first grade, no seconds will be acceptable. For all materials, the fabricator shall exactly match the manufacturer's requirements for performance and design. This will include the need to provide the materials and labor necessary to provide appropriate insulation, setoffs, spacing from other materials, temperature considerations and any other manufacturer specified needs for the material used.

B. Gauge: Gauges herein specified shall refer to United States Standard Gauge for sheet metal and plate.

C. Stainless-steel: All stainless-steel shall be of the gauge specified (U.S. Standard) 18.8 composition which is generally known as Type 304 and shall have a Number 4 Finish (125-150 grit) as manufactured within the continental limits of the United States. Each piece of equipment shall be specified by gauge with either a general specification form or under the Item Specifications. All sheets shall have a genuine mill finish of not less than 150 grit on one side and not less than 80 grit on the back side. All stainless-steel sheets shall bear the manufacturer's trade mark, designation of type and heat number. All stainless-steel sheets shall have the following content:

Chromium - 18 percent minimum
Nickel - 8 percent minimum
Carbon - 0.2 percent maximum

Straight chrome iron or copper bearing straight chrome steel is not acceptable. All stainless-steel sheets shall be stretcher leveled. All sheets shall be free of buckles, warps and surface imperfections. A hard ground finish will not be acceptable.

D. Stainless-steel Sheets: Shall be of cold rolled stock.

E. Stainless-steel Pipe and Tubing: ASTM A554, Type 304 with No. 4 polished finish; shall be seamless or welded, of gauge specified, of true roundness. Seamless tubing shall be thoroughly and properly annealed, pickled and ground smooth. Welded tubing shall be thoroughly heat-treated and properly quenched to eliminate carbide precipitation. V-Clad shall not be permitted.

F. Galvanized Iron: Wherever specified, galvanized iron shall be of an approved grade of either low carbon steel, pure wrought iron, or copper bearing steel. All sheets are to be commercial quality, stretcher leveled, bonderized and re-rolled to insure a smooth surface.

G. Galvanized Sheet Steel: ASTM A526, except ASTM A527 for extensive forming; ASTM A525, G90 zinc coating, chemical treatment

H. Sheet Steel: ASTM A569 hot-rolled carbon steel

I. Aluminum: ASTM B209 sheet and plate, ASTM B221 extrusions, 0.40-mill clear anodized finish where exposed, unless otherwise indicated

J. White Metal: Shall be corrosion-resistant metal containing not less than 21 percent nickel. Make castings free from pit marks, runs, checks, burrs, and other imperfections; rough grind, polish and buff to bright luster.

K. Plastic Materials and Components: Provide plastic materials and components which conform to NSF 51.

L. High Pressure Decorative Laminate (HPDL): HPDL shall be selected by the Architect from manufacturer's standard palette of colors, unless otherwise indicated.

Laminating adhesives shall contain no urea-formaldehyde resins. The adhesive must be suitable for use in areas where temperature ranges cycles from hot to cold and where moisture may be present at all times.

M. Adhesives, General: For adhesives, sealants, paints and coatings used inside the weather barrier of the project, submit manufacturer’s product data or Safety Data Sheet (SDS) showing printed statements of VOC content in grams per liter (g/L) and VOC emissions in accordance with CDPH Standard Method V1.1-2010 identifying the exposure scenario and total VOC’s after 14 days in milligrams per cubic meter (mg/m³). Document volume (L) used of wet applied products.

(Product) must comply with the limits of VOC content and VOC emissions as indicated in Division 1 Sustainable Design Requirements.

N. Hardwood Work Surfaces: Laminated edge-grained hard maple (Acer saccharum), NHLA First Grade with knots, holes and other blemishes culled out, kiln-dried at eight percent, or less moisture, waterproof glue, machined, sanded, and finished with NSF-approved oil-sealer.

O. High Density Particle Board: Where indicated in counter or cabinet construction, provide high-density particle board.

1. F.E.C. shall provide fire rated material where required by code.

2. This shall be done at no additional expense to the Owner. F.E.C. shall determine if this is required or not.

3. Any permanently installed counters that use composite wood and agrifiber products shall contain no urea-formaldehyde resins.

P. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.

1. F.E.C. shall provide fire rated material where required by code.

2. This shall be done at no additional expense to the Owner. F.E.C. shall determine if this is required or not.

Q. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.

Colors and Patterns: As selected by Architect from manufacturer's full range.

R. Quartz Material: Commercial grade, 3 CM, unless otherwise indicated.

Colors and Patterns: As selected by Architect from manufacturer's full range.

S. Plywood: Where cabinet or counter construction calls for plywood, use birch grade paint finish standard or grade as indicated. For composite wood products, provide manufacturer’s product data indicating that product has low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins (NAF).

Provide composite wood products that have low formaldehyde emissions that meet the California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins (NAF).

T. Sound Deadening: Sound deaden underside of table with premium type mastic, that "skins" on surface when dry. Surface of mastic coating shall be smooth, equal to the standard for hot-rolled steel finish, 3M Coating #1000 E/C or equivalent.

1. Apply two (2) coatings of sound deadening material to underside of tops, drain boards, dishtables, counters and sinks.

2. Apply sound deadening during fabrication. Touch up on project site if required.

U. Gaskets: Solid or hollow (not cellular) neoprene or PVC; light gray, minimum of 40 Shore A hardness, self-adhesive or prepared for either adhesive application or mechanical anchorage.

V. Rapidly Renewable Materials: Rapidly renewable materials used such as bamboo, agrifiber, linoleum, wheatboard, strawboard, or cork specified in the project must be harvested in a 10-year life cycle or shorter.

2.3. MANUFACTURED OR FABRICATED COMPONENTS

A. Wall Anchors: Wherever it is necessary to mount fixtures that are supported from the wall, the fixtures shall be securely attached thereto by means of stainless-steel tapped screws into stainless-steel face and anchor type grounds that are built into the walls. Furnish these grounds to other trades at proper time so other trades can build them into the walls as work progresses. Item Specifications note fixtures requiring such grounds. It is the responsibility of the F.E.C. to coordinate and provide these anchors in a timely manner.

B. Floor Anchors: Wherever it is necessary to mount fixtures to the floor, the fixtures shall be securely attached thereto by means of stainless-steel tapped screws.

C. Faucets: Furnish all faucets including spray rinse units and wall brackets. All faucets to include spring checks. Drill and finish fixtures in preparation for installation. Provide loose to installing contractors. Faucet nozzles are to be centered over sink drain. If faucet is not specified, provide as follows:

1. Built-in hand sink faucets: Deck mounted faucets with 4" centers shall be T & S Brass & Bronze Works B-1141-XSCR4V05 or approved equal, ½" inlet.

2. Deck mounted faucets with 8" centers shall be T & S Brass & Bronze Works B-0221-CR or approved equal, ½" inlet. Faucet nozzle length to be centered over sink drain.

3. Backsplash mounted faucets shall be T & S Brass & Bronze Works B-0231-CR or approved equal, ½" inlet. Faucet nozzle length to be centered over sink drain.

4. Potsink faucets shall be T & S Brass & Bronze Works B-0290-01 or approved equal, 3/4" inlet. Faucet nozzle length to be centered over sink drain.

5. Wall mounted pot and kettle filling faucet for dual temperatures shall be T & S, B-0598-CR and for single temperature shall be T & S, B-0594-CR, ½" inlet.

6. Built-in dipper well, faucet and sink shall be T & S, 2282-01-F05 or approved equal.

7. Pre-rinse faucets: deck mounted shall be T & S, B-0113-12CRBJST low flow and splash mounted shall be T & S, B-0133-12CRBJST low flow or approved equal. Faucet nozzle length to be centered over sink drain.

8. Other faucets such as swing spouts for kettles, et cetera, are also included in this contract. Types required will be stated in Item Specifications.

D. Potable Water Protection & Vacuum Breakers: Furnish all protection devices unless otherwise indicated in the Project Documents. Drill and finish fixtures in preparation for installation. If exposed, provide chrome plated model. Provide loose to installing contractors.

1. Air Gap: The distance of a water inlet or opening above the maximum high-water level or overflow rim in a fixture, device, or container. A “safe air gap” is at least 2 times the diameter of the water inlet pipe, but not less than 1 inch and need not be more than 12 inches.

2. Reduced Pressure Principle Device (RPZ): It consists of 2 independently acting internally loaded check valves separated by a reduced pressure zone. A differential pressure relief valve is located within the zone to maintain the reduced pressure and also discharge water to atmosphere during periods of backflow. This device is used as protection for all direct or indirect cross connections. The device may be subject to back pressure or back-siphonage of toxic chemicals, sewage, or other lethal substances.

3. Pressure Vacuum Breaker: This device allows air to enter the waterline when the pressure in the public system or the service line is reduced to 0 psi or below. The device has a vacuum relief valve which is internally loaded, normally by means of a spring. May be installed for use under continuous line pressure. Must be installed at least 12" above the highest outlet it is to serve.

4. Atmospheric Vacuum Breaker: Allows air to enter the waterline when the pressure in the public system or the service line is reduced to 0 or below, however, since the vacuum relief is not internally loaded the device must be installed on a discharge side of the shut off valve. Should not be subjected to continuous flows for periods of more than 12 hours and must be installed at least 6" inches above the highest outlet it is to serve.

5. Double Check Valve Assembly: Consists of (2) two independently acting internally loaded check valves. This device may be used for back pressure or back-siphonage situations, only if the cross-connection protection is from substances that do not constitute a health hazard.

E. Rotary Waste Valves: Provide two-inch, heavy cast-bronze body; removable flat stainless-steel strainer; twist handle waste outlet and one-piece connected chrome-plated brass overflow, unless otherwise stated in the Item Specifications. Provide waste and overflow by Fisher Faucets, 6100 series or approved equal.

F. Casters: Provide four-inch minimum diameter wheel casters, with 1-1/8-inch tread width, conforming to NSF standards, unless otherwise noted in Item Specifications. Provide sealed, self-lubricating bearings, cadmium-plated or bright zinc-plated steel disc wheels and solid synthetic rubber tires. Provide foot brakes on (2) two casters per unit unless otherwise specified.

2.4. ELECTRICAL REQUIREMENTS - GENERAL

A. Electric Equipment: The F.E.C. is responsible to provide equipment with electrical requirements matched to that of the building facility. Verify electrical requirements of all new and existing equipment. The F.E.C. will be responsible for all costs of restocking and returning equipment that is not matched to the requirements of the building.

B. Wiring: All wiring provided under this contract shall be in full accordance with the latest edition of the National Electrical Code. Further, all wiring provided shall be contained in a metallic raceway, approved by engineer, consisting of a specially fabricated wire-way as in the case of work built into counter work, or in conduit of proper material, or Greenfield flexible conduit, all with necessary provisions for grounding continuity. All conductors provided shall have proper temperature ratings. Any exposed conduit shall be covered in a smooth, chemical resistant and sealed covering. Any wiring needing to run in conduit visible to customers or on exterior of walls/cabinets but must be in stainless-steel conduit or chrome plated.

C. Thermal Overload Protection: All motors of equipment provided shall have the thermal overload protection provided.

D. Control Equipment: Provide all necessary electrical control equipment and internal wiring (if available as factory wired), except as otherwise outlined, mounted on equipment where practicable or where shown on plan.

E. Receptacles: Receptacle manufacturer shall be the same manufacturer that will be used on the balance of the project. Contact the Architect to determine which manufacturer is to be used. The following standards are intended to be the minimum standard for the products: Provide Bryant 5261, where single, and 5262, where duplex, with matching caps on associated equipment as Bryant 5266; 30-amp outlets shall be 4 wire Hubbell 20403 receptacles, with matching cap Hubbell 20415 on associated equipment. All receptacles shall have ground fault circuit interrupter unless indicated on equipment cutsheet to not provide. All receptacle to have grounding conductor.

1. Receptacles larger than 30 amperes shall be Hubbell 60 ampere 9-1059 porcelain face with matching cap, 3 wires, and 7714 brass chrome plated or stainless-steel face plate.

2. Receptacles for 240 volts shall be 3 or 4 wires as required, of twice normal capacity. Twist-lock receptacles to be Hubbell 7310 with matching cap 7311. All caps to be for heavy duty applications. All receptacles to have grounding conductor.

3. Receptacles for cashier's stands to serve cash registers shall be on a dedicated circuit.

4. All receptacles shall have stainless-steel face or matching face color to match surface mounted on.

F. Cover Plates: All receptacles to have 1040 stainless-steel or chrome plated brass cover plates with stainless-steel or chrome plated brass screw for all outlets provide in equipment.

G. Cords: Flexible cords to be provided on equipment shall have grounding conductor and shall be of best quality available to industry, equal to Simplex-Tryex, selenium neoprene.

H. Motor Starters: Provide required starters for all motors. Motor starters required for foodservice equipment and not provided by Other Trades shall be thermal overload

protective type, manual wherever possible, equal to New Series Allen Bradley Bulletin 709 magnetic with necessary accessory equipment where required for proper operation. Where required fully magnetic type W.P.B. station shall be furnished. All manual and magnetic type motor starters provided under this contract for 3 phase motors shall be 3 thermal element type, requiring special coordination with starter manufacturer.

I. Motor Thermal Protection: In instances in which motor thermal protection cannot be built-in where specified into motors provided with equipment, the F.E.C. shall provide externally mounted overload devices of proper number of poles and capacity equal to Turnbull "TT" or Allen Bradley and shall carry wiring from motor terminals to these devices in manner approved by inspection authorities as being in full accord with applicable electrical codes and engineers plans.

J. Wire: Verify with the C.M., in writing, the appropriate wire types for pre-wired equipment. Except as otherwise required, all wire provided shall be type THW dual rating. Wire in counter raceways to be heat resistant type, AVA or equal.

K. Openings: Provide proper openings through all equipment and shelves for piping and electrical conduits. All openings are to be located as close to the rear of the counter and sized just big enough for the pipe or wire. All openings shall be smooth, so not to damage or cut the piping or electrical wires.

L. Panel Boards: These shall be UL listed and properly sized in compliance with current or prevailing version of the National Electric Code.

M. Floor Based Electrical Connections: These shall be made in a manner that will allow portable equipment connected to the floor electrical supply to pass over the point of connection without interference.

N. Code Compliance: All electrical work to be performed in accordance with the prevailing version of the National Electric Code and local regulations.

O. Other Conditions: If not specified as provided by other contractors, F.E.C. to provide all electrical parts including but not limited to contactor strips, line shunts, relays, disconnects (both mechanical and electrical), loose parts and labor required for installation of same not provided by other contractors and pertinent to the installation of equipment under this section. A non-limiting example of this type of equipment would be contactor strips required for the proper operation of fire protection systems.

2.5. STEAM PRESSURE, STEAM THERMOSTATS, STEAM COILS

A. Steam Pressure: All steam operated pressure vessels such as kettles, steamers, urns, et cetera, shall be constructed to A.S.M.E. and the Code requirements of the State in which the project occurs and shall bear labels and certificates of compliance therewith.

B. Steam Thermostats: Provide steam thermostats or temperature regulators for steam heated equipment if required for proper operation of the piece of equipment or if required in the Item Specifications.

C. Steam Coils: All steam coils shall be installed in sufficient quantity to provide ample heat at the available steam pressure (verify project conditions). They shall be tested for 100 pounds per square inch working pressure.

1. In fixtures having coils under more than one shelf, all coils shall be connected together with inlet and outlet extended down through base of fixture to point indicated on drawings for installation of stop valves and final connection.

2. Unless otherwise specified, coils are to be 7/8" O.D. hard copper tubing with brass fittings. Where immersed in water, coils are to be mounted on strap type brackets or feet with a clearance of not less than 1" below coils for cleaning purposes. These feet are to be soldered water-tight to the bottom of the pan in which coils are mounted. Couplings shall be welded or braised in the bottom or sides of fixtures for steam inlet and outlet and shall extend through fixture ready for final connections.

3. Boiler permits shall be acquired by the installing contractor and all fees shall be paid by the installing contractor.

2.6. LOCKS

Cabinets and Refrigerated Units: Provide integral locks on all cabinets and refrigerated units. Locks shall be of sufficient strength to prevent unauthorized entry into the locked space. Locks shall be of the key and cylinder type with tamper-proof mechanisms. Furnish Owner with three (3) sets of keys to each lock at the conclusion of the project, accurately labeled and turned over to the Owner all at one point in time. This lock standard applies to all cabinets unless otherwise indicated in Item Specifications.

2.7. FABRICATION, GENERAL

A. Welds: All workmanship shall be done with welded rod of same composition as sheets or parts welded. Welds shall be strong, ductile, with excess metal ground off, and finished smooth to match adjacent surface. Welds shall be free of imperfections as pits, runs, spatter, cracks, et cetera, and shall have the same color as adjacent sheet surfaces. All joints in top fixtures, tables, drain board, exposed shelving, sinks, et cetera, shall be electrically welded. Butt welds made of spot-welding straps under seams and filling in with solder will not be acceptable. It is the intention of these specifications that all welded joints shall be homogeneous with the sheet metal itself. Where sheet sizes necessitate a joint, such joint shall be welded. Tops of fixtures shall be fabricated at the factory with welded joints to reduce field welding.

B. Under no circumstances are any welds to be spray painted. All welds are to be ground and polished smooth.

C. Field Joints (Welded): Where field joints are necessary, the tops shall be continuous. Items shall be made in maximum length sections as possible and with as few joints as necessary. Provide proper joint preparation and location. Access shall be provided, where possible, to the back side of the welds. Joints shall be located to provide the minimum length of seam. Field joints are to be provided only for the convenience of

installation and shall be held to an absolute minimum. Show proposed field welds on shop fabrication drawings.

D. Field Joints (Bolted): Bolted field joints, if specified as acceptable, are to be drawn tight leaving a hair-line seam and shall not have any exposed screws or rivets. Joints shall be neatly and carefully fabricated to make the very best appearing joint possible. After equipment is set in place, all field joints shall be tightly pulled together leaving only a hair-line seam. The alignment of the joints shall be made in such a manner that they shall be tightened both horizontally and vertically. Show proposed bolted field joints on shop fabrication drawings.

E. Surfaces: All surfaces shall be completely free of burrs, rough edges, slag or any other debris.

F. Other Exposed Surfaces: All coved corners, legs, table tops and all other exposed surfaces to be ground smooth and polished to a #4 finish.

G. Exposed Joints: All exposed welded joints including field joints shall be suitably ground flush with the adjoining material and neatly finished to harmonize and appear the same.

H. Depressions: Wherever material has been depressed or sunken in by the welding operation, such depressions shall be suitably hammered and peened flush with the adjoining surfaces and, if necessary, again ground to eliminate low spots. All ground surfaces shall then be polished or buffed to match adjoining surfaces consistent with good workmanship.

I. Discoloration: Care shall be exercised in all grinding operations to avoid excessive heating of the metal and metal discoloration. In all cases the grain of rough grinding shall be removed by successive finer polishing operations.

J. Finished Texture: The texture of the final polishing operation shall be uniform and smooth consistent with reasonable care and good workmanship. The general finish of all metal shall be of high grade.

K. Brake Bends: Wherever brake bends occur, they shall be free of open texture or orange peel appearance; and where such brake does not mar the uniformity of the appearance of the material, all such marks shall be removed by suitable grinding, polishing and finishing.

L. Sheared Edges: Wherever sheared edges occur, they shall be free of burrs, projections, and fins to obviate all danger of cutting and laceration when the hand is drawn over such sheared edges.

M. Miters and Bullnose Corners: Where miters or bullnose corners occur, they shall be neatly finished with the under edge of the material neatly ground to a uniform condition and in no case will overlapping material be acceptable.

N. Finish: It is the intention of these specifications to describe fabrication of a quality finish consistent with the highest grade of manufacturing practices in the industry. Edges of tops and over-shelves shall be highly polished or mirrored finish where required by the Item Specifications. Final approval of surface finishes shall be by Architect.

2.8. PIPING AND PIPE CHASES

A. Drain Size: All drains shall be specified and sized to handle the maximum load and temperature. The minimum size of any floor drain shall be 3”.

B. Coordination of Drain Locations: All equipment and drain locations must be carefully coordinated between the F.E.C. and the M.C. in order to assure that equipment legs are not on top of any part of a floor drain, floor sink or floor trough.

C. Pipe Chase Panels: Where top arrangement of enclosed base tables makes it necessary for plumbing and supply piping to be passed through the base, this piping shall be enclosed in a suitable pipe chase with easily removable access panels. These access panels are not to be held in place with screws or latches but are to be formed up in a pan shape, removable without the use of tools. The foregoing only applies to fixtures where an access is required from the front of the fixture, as in the case of pipe chases at end of fixtures containing bottom and intermediate shelves need not be enclosed unless specifically called for in the Item Specifications. Unless otherwise specified, shelves in these fixtures will be turned up a minimum of 3" at the edge of the pipe chase.

D. Access Panels: Where access panels are specified, the panels shall be used for access to drains and electrical junction boxes only. The access panels are used for cleaning and maintenance only. They shall not be used for electrical, plumbing, chases and rough-in penetrations. The access panel shall be made of matching material and removable without tools.

E. Consult with Piping Contractors: In detailing fixtures, consult with piping contractors to be certain that due space allowance is made for traps and other controls, particularly under lower shelves.

F. Shelf Penetration: Where plumbing and supply piping pass through shelves on open base tables, shelves shall be neatly punched or die-stamped for the piping. Show the location of such pipe chases or stamped pipe openings, on plan and/or detail drawings. Provide sufficient size to accommodate all necessary risers so that additional holes need not be cut in the field. Coordinate with plumbing contractors, cautioning them that all piping must be run through chases or slots as provided.

G. Utilities Housing: All utilities for counters and fabricated equipment will be housed in chases constructed for same, pre-wired to minimize field wiring and plumbing.

H. All exposed tubing, ductwork, ventilation, insulation etc that is connected to foodservice equipment and is visible to customers’ needs to be clad in 304 stainless-steel. Minimal seams for cladding.

2.9. SANITARY CONSTRUCTION

Approvals: All fabricated equipment is to be constructed in strict compliance with the latest applicable food equipment and equipment construction standards of the National Sanitation Foundation and shall be in full compliance with the Public Health Regulations of the locality in which the installation is to be made. All fabricated equipment shall have the seal of approval of the National Sanitation Foundation and, if required by code, a UL seal of approval.

2.10. SINKS

A. Construction: Sinks and frames shall be constructed of 14-gauge stainless-steel. The front shall extend up 2-3/4" higher than the drain board line and shall be finished with a 1-3/4" wide channel rim, running full length, with ends of sink frame constructed for welding to drain boards where such are specified. Sink bowls, unless otherwise indicated in Item Specifications, shall be 14-gauge stainless-steel fully welded to frames so that no joint is visible. Where required, provide sinks with drain boards, backsplashes, heaters, or water circulation systems.

1. Where drain boards are required, they shall be electrically welded to the sink frame to provide an integral unit.

2. Where the sink is free standing without drain boards, the channel rims shall continue around both ends with the corners of the channel edge rounded to conform with the radius of the inside vertical corner of the sink. Corners shall be electrically welded.

3. Where a backsplash is required, the rear of the backsplash shall extend to the specified height above the drain board work surface, with the top edge returning to the wall at a 45-degree angle and forming a 2-1/4" clear pipe chase.

4. The ends of the sinks shall be electrically welded to the body of the sink with all vertical and horizontal corners formed on a 3/4" radius with welds ground and polished smooth to a #4 finish.

5. Bottom of sinks shall be depressed and slope to a twist handle waste with handle constructed of 3/8" stainless-steel rod extending to the front of the sink. This twist handle drain shall have a built-in connection for an overflow pipe. Rear of overflow connection to have a polished nickel alloy front plate and shall be completely connected to the drain with nickel plated brass tubing. The Twist handle shall be supported by a stainless-steel bracket welded to the underside of the sink.

6. Provide at top center rear of each compartment, below the drain board line, a polished cast nickel bronze overflow with 1-1/4" O.D. brass tubing connection to outlet at back of drain.

7. Where multiple sink bowls are welded to a frame, a minimum 2" between bowls shall be provided to prevent temperature transfer.

8. Where sinks are specified to set into countertops, the sinks shall be electrically welded to top with continuous weld, ground smooth so that no seam is visible and surfaces match. Drop-in sinks with hardware fasteners will not be accepted unless specifically called for in the Item Specifications.

9. All interior and exterior horizontal and vertical bonds and corners shall be rounded on a 3/4" radius with all joints welded.

10. Mount fill faucets in backsplash. Single compartment sinks shall be fitted with two (2) holes on 8" centers over the center compartment. Where sinks have two or

more compartments, provide two (2) holes on 8" centers over the partition(s). Fit sink(s) with combination chromium plated swing spout faucet(s).

B. Drain Boards: Construct of 14-gauge polished stainless-steel welded integral to the body of the sink with continuous rolled rims and splash of the same height and design as the sink. Roll rim heights at the shallow end shall be 1" high sloping approximately ½" to the sink body, unless otherwise specified. All drain boards shall have horizontal corners coved on 1/4" radius with the vertical corners coved on 1/4"radius. Drain boards must slope in the direction of the sink, so water will not pool.

C. Legs: Sink legs shall be as specified under "Table and Sink Legs". Legs shall be attached with a 14-gauge stainless-steel gusset to the underside of the sink body. The gusset shall be conical shaped and provided with an Allen head dog point set screw.

D. Additional considerations: Where so indicated by the Item Specifications, provide sinks as follows:

1. Where "plug and chain drain" is specified, sink bowls shall slope to a drain which shall be a standard 1-1/2" drain with plug and chain.

2. Where "basket strainer drain" is specified, sink shall be fitted with a 1-1/2" cup strainer assembly.

3. Where "sink compartment heater" is specified, sink compartment shall be heated with electric immersion elements with low water cutout and thermostatic control, as manufactured by Hatco or approved equal and of sufficient wattage to assure 180-degree Fahrenheit rinse water.

2.11. COUNTER AND TABLE TOPS - METAL CONSTRUCTION

A. Tops and Edges: Counter and table tops shall be fabricated with type of edge as specified. The definite choice as to the type of edge profile to be used shall be made before the time of bidding. All tops, unless otherwise specified, shall be 14-gauge stainless-steel. If quartz top is specified, install with a hard seam installation. No seams shall be through any heated or cold pieces of equipment. Verify location of seams with architect and Bakergroup.

B. Top Bracing: Tops shall be braced with 1-1/2" x 1-1/2" x 1/8" galvanized angles and 1-1/2" x 3" x 1-1/2" 14-gauge galvanized channels. On open base tables, one channel shall be placed at each pair of legs. A longitudinal angle shall be placed between the channels for additional top support.

C. Underbracing: Underbracing, will be constructed of stainless-steel channels, size same as in 2.11 A & 2.11 B above. When stainless-steel underbracing is utilized, the above sized channel will be used throughout for underbracing.

D. Top Fastening: Tops shall be fastened to the framing members with protruding studs. Studs shall be welded to the underside of the table top and fastened by means of chrome plated lock washers and acorn nuts.

E. Backsplashes: Backsplashes shall be of the height specified with the standard height being 2" on serving counters, 6" overall on worktables and 10" on dishtables. The splash shall be returned 2" on a 45o angle. All corners of tops formed by bending and/or welding shall have a radius of 3/4".

2.12. SOUND DEADENING

Application: Apply sound deadening material to all tables, counters, sinks, et cetera per section 2.2.

2.13. TABLE AND SINK LEGS

A. Materials: All legs for open base tables, sinks and dishtables shall be constructed of stainless-steel, 14-gauge, seam welded and polished to a #4 finish, unless otherwise specified. Cross rails, where required, shall be of 1-1/4" 14-gauge wall welded tubing of stainless-steel. Cross rails shall be welded to legs with the resulting welds ground and polished to a smooth finish. All legs shall be fitted with a stainless-steel adjustable bullet foot having a minimum of 1" adjustment. All feet furnished shall be vermin proof having closed bottoms of stainless-steel with unexposed threads and a minimum clearance between the foot and the leg of 1/32".

B. Tops: Tops of legs shall be welded to 14-gauge stainless-steel section of channel, closing top of leg, and this channel section shall be sized to nest inside table reinforcing channel and then is bolted in place with stainless-steel bolts and lock washers through both vertical channel legs and gusset if open leg type table. Wherever threads of bolts and screws on the inside of fixtures, which are either visible or might come in contact with the hand or wiping cloth, such bolts and screw threads shall be capped with suitable lock washer and chrome plated brass or bronze acorn nut. Where screw threads are not visible or readily accessible, they might be capped with a standard lock washer and steel nut treated to prevent rusting or corroding.

C. Gussets: All gussets shall be fully enclosed stainless-steel and provided at all leg locations. These gussets shall be one hundred percent (100%) welded to channels in a water-proof, vermin-proof manner. Where gussets occur at angle iron framework, provide triangular 12-gauge stainless-steel corner plates, welded to bottom edge of angle frame and weld gusset to triangular plate. These gussets shall have 16-gauge stainless-steel exterior case complete with galvanized interior case. Legs shall slip fit into internal case and be held in place with stainless-steel set screw.

D. Cabinet and Warmer Legs: All cabinets, warmers and/or other enclosed bodies unless otherwise specified are to be mounted on round pattern adjustable legs. Legs shall be of 1-5/8" o.d. stainless-steel seamless tubing having a stainless-steel adjustable bullet shaped foot with a minimum of 1" of adjustment. Legs shall not be less than 6" high overall. Legs shall be welded to a 14-gauge die-formed stainless-steel mounting plate. This plate shall telescope into a 14-gauge galvanized channel welded to the underside of the body. This channel shall extend the full length of the cabinet. The leg mounting plate shall slide in the channel to permit relocation and removal of the leg. The die forming plate shall have a center embossing for the 1-5/8" o.d. leg tubing and shall have a clinch nut inset screw for locking the leg in place.

E. When to Omit Front Cross Rails: Only where indicated, legs are to be without lower tubing cross-bracing in order to provide space for mobile item storage.

F. Lower Shelves: Where lower shelves are specified, these shelves shall be permanently welded to legs, except when removable shelves are specified, and the stainless-steel tubing cross rails will be omitted.

G. Quantity: Unless otherwise specified, tables and open base fixtures up to 6'-0" in length shall have four (4) legs. Tables from 6'-0" to 12'-0" in length shall have six (6) legs and tables from 12'-0" in length to 18'-0" in length shall have eight (8) legs or more as required to make a substantial fixture to accommodate special construction.

2.14. CABINETS - BASE UNITS, METAL CONSTRUCTION

A. Construction Standards: To be constructed to standards indicated in Section 2.2 of these specifications. All casework to be stainless-steel construction, unless otherwise noted.

B. Countertops: All countertops to be 14-gauge stainless-steel, unless noted otherwise. Provide square rim edge, unless noted otherwise. 4" high splash at all back and side walls, unless noted otherwise. Countertops to be constructed to sizes and profiles shown on plans.

C. Support: Cabinets to be constructed to support all equipment, materials, utilities and products without deflection at any point. All cabinets having a clear span below shall be capable of sustaining 300 pounds of live weight at any point without deflection.

D. Base: All cabinet bases shall be mounted on adjustable stainless-steel legs with bullet feet. All base cabinets shall have a 6" high toe space and, if a cove base is anticipated, a vertical stainless-steel toe kick, removable and suitable as finished surface or as a surface to which a finished base may be applied by contractors other than the F.E.C. Cabinet bases shall have adequate structure to mount, support and rigidly hold a toe kick in place. Applied surfaces shall be applied in sizes that minimize the number of seams required. Show proposed seam locations on your shop drawings. Seam locations must be approved by Design team.

E. Hardware: The following casework hardware is specified to establish the desired design and level of quality. Alternative manufacturers of equivalent products may be used. Casework fabricator shall utilize the correct quantity and spacing of hardware items as recommended by the specific manufacturers:

1. Door Hinges: Blum 110 degree concealed blumotion, screw-on, self-closing hinges. Provide minimal of 3 hinges per door. Increase hinges per door if weight of door exceeds 50 lbs. Provide with stainless-steel hinge arm cover cap and cup cover cap to match hinges (no logos). For approved equivalent hinge, provide sample to architect and Bakergroup for approval.

2. Provide in all locations concealed handle Epco – DP40-A, Aluminum, Satin clear anodized. For approved equivalent handle, provide sample to architect and Bakergroup for approval.

3. All hinges and door catches shall be rigidly mounted to casework. Provide any additional support as needed.

F. Shelves: Provide shelving per Section 2.17 of these Specifications.

2.15. CABINETS - BASE UNITS, MILLWORK CONSTRUCTION

A. Construction Standards: All casework to be constructed to standard indicated in Section 1.9 G of these specifications. All casework to be plastic laminate construction, unless otherwise noted. All plastic laminate cabinets are to be one color, unless otherwise noted. All cabinets shall utilize flush overlay construction.

B. Countertops: All countertops to be as indicated on plans. Provide 1-1/2" shelf edge and 4" high splash at all back and side walls, unless indicated otherwise. Countertops to be constructed to sizes and profiles shown utilizing colors and finishes; provide fusion seaming where available. Locate seams to minimize evidence of seaming.

C. Support: Cabinets to be constructed to support all equipment, materials, utilities and products without deflection at any point. All cabinets having a clear span below shall be capable of sustaining 300 pounds of live weight at any point without deflection.

D. Base: All cabinet bases shall be mounted on adjustable stainless-steel legs with bullet feet. All base cabinets shall have a 6" high toe space and, if a cove base is anticipated, a vertical stainless-steel toe kick, removable and suitable as finished surface or as a surface to which a finished base may be applied by contractors other than the F.E.C. Locate seams to minimize evidence of seaming. Cabinet bases shall adequate structure to mount, support and rigidly hold in place toe kick. Applied surfaces shall be applied in sizes that minimize the number of seams required. Show proposed seam locations on your shop drawings. Seam locations must be approved.

E. Hardware: The following casework hardware is specified to establish the desired design and level of quality. Alternative manufacturers of equivalent products may be used. Casework fabricator shall utilize the correct quantity and spacing of hardware items as recommended by the specific manufacturers:

1. Door Hinges: Blum 110 degree concealed blumotion, screw-on, self-closing hinges. Provide minimal of 3 hinges per door. Increase hinges per door if weight of door exceeds 50 lbs. Provide with stainless-steel hinge arm cover cap and cup cover cap to match hinges (no logos). For approved equivalent hinge, provide sample to architect and Bakergroup for approval.

2. Provide in all locations concealed handle Epco – DP40-A, Aluminum, Satin clear anodized. For approved equivalent handle, provide sample to architect and Bakergroup for approval.

3. All hinges and door catches shall be rigidly mounted to casework. Provide any additional support as needed.

2.16. QUARTZ-MATERIAL COUNTERTOPS

A. Grade: Commercial or as shown per details

B. Solid-Surfacing Material Thickness: 3 CM unless otherwise designated.

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors of quartz material complying with the manufacturer's designations in the architectural finish schedule.

D. Fabricate tops in one piece, unless otherwise indicated. Seam lines must be coordinated with design team. Comply with quartz-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing. Fabricate tops with shop-applied edges of materials and configuration indicated.

E. Drill holes in countertops for plumbing fittings and soap dispensers in shop.

F. Install integral sink bowls in countertops in shop.

2.17. SHELVING (METAL)

A. Removable shelving shall be provided for all counters, cabinets, casework, worktables and equipment stands unless otherwise specified. If under-shelving is not specified provide all tables, dishtables and sinks with tubular under-shelves running the full length of unit. Shelving should be in sections of 20" wide or less. Must be able to fit through dishmachine or fit in 3 compartment sink.

B. Stationary Shelving: Stationary shelving under open base tables shall set approximately 8" above the floor with all edges rolled down on a 3/4" radius approximately 1-3/4". The profile of these shelves shall be as shown in details. Where shelving intersects the leg, the joint shall be formed without openings. The shelving shall be attached by welding the underside. Where shelving abuts walls, turn edge up 2", round corners and finish smooth.

C. Removable Shelving: Removable shelving under open base tables will be supported on 1-1/4" stainless-steel tubing. The resulting shelving shall be rolled down over the rails in maximum 20" wide sections. Where shelving abuts walls, turn edge up 2", round corners and finish smooth. Shelves shall be turned down 90 degree square where the resulting sections abut one another. Shelving should be in sections of 20" wide or less. Must be able to fit through dishmachine or fit in 3 compartment sink.

D. Tubular Shelves: Tubular shelving under open base tables will be set approximately 8" above the floor on 6" centers. Where shelving intersects the leg or a cross brace, it shall be fully welded and polished smooth; the joint shall be formed without openings.

E. Enclosed Shelving: Enclosed cabinet shelving shall be of 18-gauge stainless-steel, back and ends turned up 1-1/2" against body panels and spot welded. Front edge shall be

turned down 1-1/2" and returned ½" on 75-degree angle on intermediate shelf. Lower shelf to be turned down 1-1/2" on front and back 11/16".

F. Enclosed Shelving, Construction: Enclosed cabinet removable shelving shall be made in maximum 20" wide sections having all edges flanged down 1-1/2". The corners of these shelves shall be left open so as to provide an easy to clean corner. Heated cabinet shelves shall be perforated with ½" diameter holes spaced on 3" centers. These shelves shall be removable and supported on angle framework as specified.

G. Elevated Shelving: Elevated shelving 12" wide or less shall be made of 16-gauge stainless-steel. Elevated shelving more than 12" wide shall be made of 14-gauge stainless-steel. The front and ends shall be rolled down on a 3/4" radius - 1-1/2" diameter; roll approximately 180 degrees. This shall be metal edge profile as shown per details. Where shelves are up against the wall or adjacent to fixtures, the edges shall be turned up 1-1/2". All flanges shall be coved on a minimum 1/8" radius with the intersecting turned up flanges at the back and ends also coved. The corners shall be welded, ground and polished to form a fillet of the same radius as other bends.

H. Table Mounted Shelves: Table mounted shelves shall be supported from the top of the fixtures on 1- 1/4" o.d. diameter stainless-steel tubular uprights attached to the shelving with stainless-steel feruled plates and/or stainless-steel triangular brackets. The feruled plates shall be spot welded to the underside of the shelves and the stainless-steel brackets shall be attached with stainless-steel studs, lock washers and acorn nuts. Tubular supports shall be attached to the countertop without visible bolts and/or screws. It is extremely important that on dishtables the supports be located so as not to be placed in working areas. Supports on dishtables shall be extended through the return of the backsplash to a bracket below the working surface of the table. This bracket, whenever possible, shall be bracketed to an existing table leg.

2.18. VENTILATION OF COUNTERS, CABINETS & CASEWORK

F.E.C. shall provide, as an integral part of all counters, cabinets, or casework containing equipment with undercounter compressors or other heat-producing undercounter equipment, forced air ventilation fan equipment as required to maintain proper operating temperatures for the counter mounted and undercounter equipment and properly ventilate the counter cavity. The fan units shall be pre-wired by the F.E.C. to function simultaneously with the operation of the undercounter and counter mounted equipment. Where a ventilation grating is provided, F.E.C. shall provide and install a stainless-steel duct between the fan unit and the ventilation grating. To the extent possible, fan unit(s) shall be hidden from customer sightlines and shall be the quietest unit(s) available for the purpose.

2.19. WALL SHELVING

Stainless-steel Wall Mounted Shelves: Wall mounted shelves shall be supported on 14-gauge stainless-steel cantilever type brackets. These brackets shall be steady and shall be provided with two holes for securely anchoring to the masonry at the job site. Triangular shaped brackets shall be attached to the underside of the shelf with studs, lock washers and chrome plated acorn nuts.

2.20. BREATH PROTECTION

A. Breath Protection: Breath protection shall be of the size shown on plan and shall be approved by design team and Health Department codes and standards.

B. Top Shelf: Top shelf shall be 16-gauge stainless-steel with the front being formed down on a slope to match the slope of the front glass and bracket. The rear and ends of the serving shelf to be turned down 1-3/4" on a 90 degree angle. The rear edge of the shelf shall be returned approximately 1". This channel shall form a housing for a built-in LED light or heat lamp, where so specified. This channel shall accommodate Tombstone type lamp holders which shall have the wiring completely enclosed and extended through tubular support into the base of the fixture, to a remote switch. All corners of the shelf shall be welded, ground and polished smooth. The protector shelf shall be approximately 16" high.

C. Uprights: Shelf shall be mounted on 16-gauge round stainless-steel uprights unless otherwise specified. The uprights will be designed so as to be adjustable up or down 8", in a concealed manner without visible means of attachment.

D. Glass Units: Provide with a removable polished stainless-steel trim for holding the glass. This trim and bracket shall be provided with a cushioning material so as to prevent glass from cracking when it is being fastened in place. Front glass to be as shown in details tempered glass. The end of the protector shelf shall be enclosed with minimal 3/8” thick polished plate glass. Non-tempered glass requires all unfinished edges to be covered completely in stainless-steel trim. Trim is to be completely welded, with no rough or unpolished edges or seams.

E. Lights: Where lights are specified under the item, a base mounted switch will be provided. This switch shall be mounted in a recessed stainless-steel pan, located on or in counter as directed by design team. A ballast and ballast box shall be provided in the base of the counter as required.

F. Heat Strips: Where heat strips are specified under the item, remote infinite controls will be provided. These controls shall be mounted in a recessed stainless-steel pan, located on or in counter as directed by design team. A ballast and ballast box shall be provided in the base of the counter as required, provided by F.E.C.

2.21. DRAWERS

A. Construction: All drawers shall be 18-gauge stainless-steel body measuring 20" x 20" x 5" deep or of size called for in Item Specifications. Provide set of three stacked drawers, unless otherwise indicated.

B. Insert: Drawer pan insert shall be constructed of stainless-steel and die-stamped with bottom corners rolled on a 1" radius and vertical corners rounded on a 2" radius, removable without the use of tools, measuring 20" x 20" x 5" deep or of size called for in Item Specifications.

C. Slides: 14-gauge stainless-steel channel type slides formed with nylon tiered ball bearing rollers. Slide shall be of telescoping channels with a minimum of four rollers per pair. Slide shall be welded to the drawer face and cross bracing forming a cradle to accept the removable drawer body. This slide shall be pitched to allow the drawer to close via gravity. Complete drawer frame and slide assembly will be removable for cleaning. All slides shall be full extension.

D. Fronts and Pulls: Unless otherwise indicated, fronts or face shall be 16-gauge stainless-steel double pan construction with all sides turned back and the corners welded. The face shall be supplied with a stainless-steel recessed grip with hand pull, chrome plated pull. Double panel faces will be sound deadened and insulated. Front shall be attached to drawer body with brackets.

E. Locks: Locks will be supplied as specified in Item Specifications. Locks shall be of sufficient strength to prevent unauthorized entry into the locked space. Locks shall be of the key and cylinder type with tamper-proof mechanisms. Furnish Owner with three (3) sets of keys to each lock at the conclusion of the project, accurately labeled and all delivered at one point in time.

F. Bumpers and Stops: All drawers shall have rubber bumpers for quiet operation and shall have positive stops to prevent accidental withdrawal. Do not provide stick-on style bumpers.

2.22. WORK TABLE TOPS - WOOD CUTTING BOARDS

A. Wood Work Table Tops: Wood tops shall be of the highest quality northern grown hard rock maple. Thickness shall be as specified. Tops shall be constructed of selected strips of edge grain maple electronically bonded to exact dimension with one clear finely finished face. Hardwood curbs or riser to be supplied with 1" radius cove.

B. Cutting Boards, "Richlite": When "Richlite" cutting surfaces are specified, cutting boards will be N.S.F. approved phenolic fiber laminate tops under the trademark "Richlite." Coved risers are ½" thick with a ½" radius cove. Standard height of risers is 4".

C. Cutting Boards: N.S.F. approved thermoplastic tops and cutting boards can be used in areas where cutting or carving surfaces are required. Material shall not warp, crack, bend, chip, or peel. Material shall be high-density polyethylene; pure natural polypropylene; copolymer natural polypropylene. Material shall be acceptable to N.S.F., U.S.D.A. & F.D.A. specifications.

2.23. REFRIGERATED BASES

Controls: F.E.C. shall provide all switches, controls, valves, thermostats and all necessary hardware for a complete system.

2.24. FOOD WARMERS AND PLATE SHELF

A. Heating Wells: Electric food warmers consist of the number of wells as shown on plan. Heating wells shall be of one-piece die-stamped heavy gauge type 302 stainless-steel. Wells shall be heated with 1600-watt stainless-steel heating element connected to a

thermostat equipped with an off position. Each well shall have a pilot light indication when the well is on. Food warmers shall be installed into the countertop having a die-formed headed edge which shall flange down into the food well and be attached with stainless-steel flat head screws. The joint between the countertop and the food well shall be sealed with high temperature sealant to prevent any escape of vapors. Provide insulation around heated drop-in units per manufacturer's recommendations based on countertop material. Examples of insulation to protect from thermal stresses are Nomex and heat reflecting aluminum tape or high-density fiber glass insulation. Verify with countertop manufacturer before fabrication.

B. Food Well Controls: Food well controls shall be mounted on the operator's side of the counter or shall be mounted in a stainless-steel recessed panel below the plate shelf as required per Item Specifications. Food warmers are to be supplied in 115-208-230-volt electrical characteristics. Food wells are to be inter-wired terminating in two or three leads. Wire sizes shall be as specified and required under the National Electric Code.

C. Plate Shelf: Each food warmer, where required, shall be stainless-steel with a dish shelf mounted to the rear of the food wells and below countertop. This shelf shall be fabricated of 16-gauge stainless-steel and shall be approximately 9-1/2" wide front to back. This dish shelf shall be so formed in contour as per detail drawing providing apron for mounting of food well controls and pilots. The plate shelf will also provide a necessary electrical chase for all wiring. Note: If counter containing food wells is to be constructed so that dish carts will roll underneath, shelf is not to be constructed unless specified, and then constructed in such a manner so as not to interfere with the dish cart passage.

D. Drain Valve: All drain valves are to be mounted in a stainless-steel recessed pan mounted in the apron of the counter.

2.25. COLD PANS

A. Non-refrigerated Cold Pans: Shall be of the size shown on drawing. Cold pans shall have an interior liner of 20-gauge polished stainless-steel having all interior corners coved on a minimum 1/4" radius. The exterior of the cold pan shall be constructed of 18-gauge stainless-steel. The bottom of the interior pan shall be creased to 1" chrome plated drain. The bottom and sides of the cold pan shall be provided with a minimum of 2" foamed-in-place insulation. The foam insulation shall have a 1.9-pound density and shall have a "K" factor of 0.12. Where the countertop is turned down into the cold pan, the metal contact shall be broken with breaker strips. Provide cold pan with 1" condensate drain.

B. Refrigerated Cold Pans: Refrigerated cold pan shall be constructed as outlined above having stainless-steel interior pan covered with 3/8" o.d. copper refrigeration coils in a serpentine pattern approximately 2" o.d. fastened to the underside of the inner liner for mechanical refrigeration. These coils shall be die-formed and shaped so as to provide good contact between the copper coil and the stainless-steel liner. Conductive mastic will be applied between the coils and the liner so as to insure uniform transfer of heat from the pan to the coil. The exterior of the pan will be provided with a valve box for cold pan expansion valve. Extend coil leads to the refrigeration condensing unit. Cold pan controls are to be mounted in a recessed stainless-steel pan mounted where shown on plans or stated in the Item Specifications. Provide cold pan with 1" condensate drain.

2.26. WALK-IN REFRIGERATORS AND FREEZERS

A. Condensation Drains: Drain lines shall have a trap to prevent humidity from entering unit. Piping shall be mounted to walls with 1” stand-offs to allow for cleaning.

B. Freezer Compartments: Any drain lines located in freezer compartments shall be fully insulated and wrapped with heat tape to prevent condensation from freezing.

C. Temperature Sensing Probes: Temperature sensing probes shall be covered with a protective, perforated, stainless-steel cover, secured with stainless-steel thumbscrews. This cover shall completely protect all lines. This cover shall be designed to be tight to the wall(s) so that it will not interfere with the placement of rack storage devices. Sensing probe lines will be protected by a stainless-steel enclosure, secured to the walk-in with stainless-steel screws.

D. Panels and Panel Joints: Caulk will not be considered as an acceptable substitute for the tight fit of interlocking panels. Gaps of over 1/8” will not be acceptable. F.E.C. is alerted to make certain that joints are tight. Rework of the walk-in(s) necessitated by the failure of the F.E.C. to make certain that panels are straight, true, undamaged and tightly joined will be at the sole expense of the F.E.C.

E. Conduit runs: All conduit runs must run across the outside, top of the walk-in(s) and have minimal of 1" clearance from adjacent surfaces to allow for cleaning. All conduit runs shall be in stainless-steel.

F. Door hinges, handles and automatic closures: Provide metal units. Must be stainless-steel/chrome finished.

G. Condensing Unit racks: Rack shall be constructed of a minimum 3” x 3” angle iron frame. Rack shall have angle iron support arms at the rear for attachment to the building or wall. Hat channels of 3”-4” width is to be provided for each side of each condensing unit base. Provide flanged feet at all corners of the rack. The rack shall be painted by Foodservice Equipment Contractor. Paint shall be epoxy based and shall be applied over a primer approved for use with such paint in accordance with the manufacturer’s instructions. Paint shall be equal to or better than Sherwin-Williams System 4000 Tile-Clad II (registered TM) catalyzed epoxy coating. Color is to be Slate Gray, unless otherwise specified by the Architect. F.E.C. must validate color with Architect in writing. Provide minimum 18” clearance at the rear of the rack and between the individual condensing units. Coordinate the design with the capability to remove the condensing unit cover for maintenance.

2.27. ITEM SPECIFICATIONS

O.F.O.I. – Owner Furnished, Owner Installed
V.F.V.I. – Vendor Furnished, Vendor Installed
N.I.F.E.C. – Not in Foodservice Equipment Contract.

ITEM #1 HOT SERVING COUNTER

Quantity: One (1)

Manufacturer: Randell
Model: RAN HTD-4

Features:

1. Provide 120V 1PH 16.67A with plug for unit.
2. Top, 14 gauge stainless steel 60" unit.
3. 6" swivel casters (2 locking), standard.
4. Provide (4) hot wells measuring 12" x 20".
5. Provide flexible hose with two-way disconnect for draining hot wells.
6. Provide enclosed cabinet base.
7. Stainless steel construction; provide laminate panels for front and sides. (Wilsonart Landmark-7981 per architect).
8. Provide one (1) 12" deep solid folding V style tray slide on back.
9. Provide breath guard with stainless steel #4 finish uprights and top mounted hardware. Provide slim LED light. Breath guard must meet all NSF standards upon installation.
10. Provide 120V 2A for breath protection.
11. LED light and hot wells to be wired to single point connection.
12. Provide latch assembly.

ACCEPTABLE MANUFACTURER: Duke, LTI Co.
BREATH GUARD ACCEPTABLE MANUFACTURER: BSI, PMG, Versa-Gard

ITEM #1.1 BREATH PROTECTION -- Provided as part of Item 1.

ITEM #1.2 TRAY SLIDE – Provided as part of Item 1.

ITEM #2 SERVING COUNTER

Quantity: One (1)
Manufacturer: Randell
Model: RAN ST-2

Features:

1. Top, 14 gauge stainless steel 24" unit.
2. Provide enclosed base.
3. 6" swivel casters (2 locking), heavy duty.
4. Stainless steel construction provide laminate panels for front and sides. (Wilsonart Landmark-7981 per architect).
5. Provide one (1) 12" deep solid folding V style tray slide on back.
6. Provide latch assembly.

ACCEPTABLE MANUFACTURER: Duke, LTI Co.

ITEM #2.1 TRAY SLIDE – Provided as part of Item 2.

ITEM #3 TRAY RACK DISPENSER

Quantity: One (1)
Manufacturer: Atlas Metal
Model: MCT-1216

Features:

1. Tray platform, 14 gauge stainless steel.
2. Self-leveling cantilevered platform, 14 gauge stainless steel.
3. Provide vinyl corner bumpers.
4. Provide 4” swivel casters (2 locking), heavy duty.

ACCEPTABLE MANUFACTURER: IMC Teddy, Piper Products

ITEM #8 TRAY RACK DISPENSER

Quantity: One (1)
Manufacturer: Atlas Metal
Model: MCT-1216

Features:

1. Tray platform, 14 gauge stainless steel.
2. Self-leveling cantilevered platform, 14 gauge stainless steel.
3. Provide vinyl corner bumpers.
4. Provide 4” swivel casters (2 locking), heavy duty.

ACCEPTABLE MANUFACTURER: IMC Teddy, Piper Products

ITEM #9 HOT SERVING COUNTER

Quantity: One (1)
Manufacturer: Randell
Model: RAN HTD-4

Features:

1. Provide 120V 1PH 16.67A with plug for unit.
2. Top, 14 gauge stainless steel 60” unit.
3. 6" swivel casters (2 locking), standard.
4. Provide (4) hot wells measuring 12” x 20”.
5. Provide flexible hose with two-way disconnect for draining hot wells.
6. Provide enclosed cabinet base.
7. Stainless steel construction provide laminate panels for front and sides. (Wilsonart Landmark-7981 per architect).
8. Provide one (1) 12” deep solid folding V style tray slide on back.
9. Provide breath guard with stainless steel #4 finish uprights and top mounted hardware. Provide slim LED light. Breath guard must meet all NSF standards upon installation.
10. Provide 120V 2A for breath protection.
11. LED light and hot wells to be wired to single point connection.
12. Provide latch assembly.

ACCEPTABLE MANUFACTURER: Duke, LTI Co.
BREATH GUARD ACCEPTABLE MANUFACTURER: BSI, PMG, Versa-Gard

ITEM #9.1 BREATH PROTECTION -- Provided as part of Item 9.

ITEM #9.2 TRAY SLIDE -- Provided as part of Item 9.

ITEM #10 SERVING COUNTER

Quantity: One (1)
Manufacturer: Randell
Model: RAN ST-2

Features:

1. Top, 14 gauge stainless steel 24" unit.
2. Provide enclosed base.
3. 6" swivel casters (2 locking), heavy duty.
4. Stainless steel construction provide laminate panels for front and sides. (Wilsonart Landmark-7981 per architect).
5. Provide one (1) 12" deep solid folding V style tray slide on back.
6. Provide latch assembly.

ACCEPTABLE MANUFACTURER: Duke, LTI Co.

ITEM #10.2 TRAY SLIDE – Provided as part of Item 10.

ITEM #11 HOT HOLDING CABINET

Quantity: One (1)
Manufacturer: Cres Cor
Model: H137SUA12D

Features:

1. Provide 120V unit.
2. Right-hand door swing for front door (top & bottom), standard
3. Model 1405 164 Perimeter Bumper, add 2" to OA dimensions, non-marking, gray.
4. Provide twelve (12) sets wire universal angles.
5. Provide interior for 18 x 26 pans.
6. Analog thermometer
7. Provide with lockable casters.

ACCEPTABLE MANUFACTURER: F.W.E., Metro

ITEM #12 COLD SERVING COUNTER

Quantity: One (1)
Manufacturer: Randell
Model: RS SSC-RCP-4

Features:

1. Top, 14 gauge stainless steel 60" unit.
2. 6" swivel casters (2 locking), standard.
3. Provide mechanically cooled cold well to accommodate 4 pans.
4. Provide 120V with plug for unit and provide 120V 3A for breath protection.
5. Provide enclosed base.
6. Stainless steel construction; provide laminate panels for front, back, and sides. (Wilsonart Landmark-7981 per architect).

7. Provide One (1) 12” deep solid folding V style tray slide on front – provide tray slide at elementary school height.
8. Provide One (1) 12” deep solid folding V style tray slide on rear – provide tray slide at elementary school height.
9. Provide double-sided breath guard with stainless steel #4 finish uprights and top mounted hardware. Provide slim LED light. Breath guard must meet all NSF standards upon installation.
10. Provide latch assembly.
11. Breath Protection light and cold wells to be wired to single point connection.
12. Provide flexible hose with two-way disconnect for draining cold wells.

ACCEPTABLE MANUFACTURER: Duke, LTI Co.
BREATH GUARD ACCEPTABLE MANUFACTURER: BSI, PMG, Versa-Gard

ITEM #12.1 BREATH PROTECTION – Provided as part of Item 12.

ITEM #12.2 TRAY SLIDE– Provided as part of Item 12.

ITEM #13 MILK COOLER

Quantity: One (1)
Manufacturer: Continental Refrigerator
Model: MC5NSSD

Features:

1. Provide 115V 1PH 7.6A with plug for unit.
2. Provide stainless steel 58” unit.
3. Provide lid locking device.
4. Provide 5” swivel casters with front locking brakes.

ACCEPTABLE MANUFACTURER: Duke, LTI Co.

ITEM #15 VENTILATION HOOD

Quantity: Per Drawing
Manufacturer: Captive-Aire
Model: Custom

Features:

1. F.E.C. shall coordinate the structural, architectural, and mechanical needs of this item with the architect, structural engineers and mechanical engineers to make certain that the unit is sized, located-ed and supported correctly.
2. The F.E.C. will supply and physically install this item in compliance with all State, Local and City Building, Fire and Health codes.
3. Verify that all utility requirements and air volumes are properly matched with the ventilation requirements of the equipment located beneath the hood(s). The F.E.C. is cautioned to avoid sizing the hood and air volumes at design minimums.
4. Shape and locate hood as shown on plan – unless the code and performance needs compel a de-sign change. Any design change must be coordinated and approved by Architect and the mechanical engineers, prior to fabrication.

5. If multiple section hoods must be provided with seams or joints for structural integrity, they must not be located over cooking equipment, and must have a cut-out to allow the hood to act as one system.
6. Construction of hood shall meet or exceed all NFPA-96 requirements.
7. Construct all exterior surfaces of exhaust canopy(s) of 18-gauge type 304 430 stainless-steel. Hood shall be sized to operate without the use of end panels.
8. Interior of hood shall be constructed of 18-gauge 304 430 stainless-steel.
9. Heli-arc weld, grind and polish all seams and joints to blend with the base metal unless the design Listing dictates some other material requirement. Weld metals are to be of same composition as base metal.
10. Caulk hood to wall to seal all gaps. Caulk may not be used to seal joints larger than 1/8".
11. Provide with stainless-steel Captrate Solo Filters, UL listed and easily removable for cleaning with-out the use of tools.
12. Provide system with, but not limited to, the following: ventilator hood(s), duct collars and slide gate balancing dampers (at each exhaust duct collar location only). Exhaust collar balancing damper shall close off no more than 1/3rd of the exhaust collar area. Any additional dampers needed for balancing the exhaust air flow are to be furnished and installed by the mechanical contractor, as a part of this project.
13. Provide stand-offs on all sides to allow 0" clearance to combustibles. A 3" non-insulated stand-off is to be included at the rear of the hood. Stand-offs on the sides are to be 1" insulated sections when against walls and 3" non-insulated sections when not adjacent to a wall. When glass panels are to be provided, 3" non-insulated sections are to be provided. Provide a 1" insulated section on the front of the hood.
14. Any walls behind hood(s) must be constructed of non-combustible materials (e.g. tile backer board, cement board). At the beginning of the project, contact the Architect to verify that wall behind or surrounding the hood(s) is non-combustible.
15. F.E.C. to provide and install type 304 430, 18-gauge stainless-steel wall panels under entire length and ends of the hood(s).
16. F.E.C. to furnish and provide type 304 430, 18-gauge stainless steel closure panels from top of hood to ceiling. Field verify ceiling height.
17. Provide hoods with recessed LED lights, providing sufficient lighting levels to meet code.
18. Provide hoods with structural hanging brackets; factory welded.
19. Provide utility cabinet at one or both ends as required to hold the fire suppression and controls systems.
20. Mount bottom of hood 78" A.F.F. or 80" A.F.F. where ADA clearances are required.
21. Provide a multi-section, 18-gauge stainless-steel horizontal linear utility enclosure. This removable stainless-steel enclosure is to cover the top and front of utilities rough-in along the wall. Design the enclosure to fully cover any horizontal gas, water or electrical services and provide closure to the gap between the back of the equipment and the wall. Minimize the depth required for this utility cover.
22. F.E.C. is to provide all necessary threaded rods, brackets and all hardware required to hang hood where shown.
23. Closely coordinate location of J-boxes for control wiring and lighting with other contractors so that all J-boxes are accessible after the project construction is complete.
24. Fans, starters, curbs, duct, duct insulation, fire rating of duct, and disconnects to be furnished by others and installed by others.
25. F.E.C. to provide Demand Control Ventilation (DCV) system. System to include, but is not limited to: microprocessor or PLC based controller; remote Human-Machine Interface (HMI) panel(s); remote fan override and light controls; input sensors located in the hood capture zone, col-lar, and/or duct; room temperature sensor; BMS communications via BACnet MSTP/IP, Mod-Bus, or LonWorks; and Variable Frequency Drives (VFD), if not provided by others. Remote HMI panels to include visual status display and can include fan override and light controls. In-put sensor types are to be temperature, optical, pressure, and/or infrared and can include additional room sensors, as necessary. FEC to verify BMS protocol with HVAC/Controls Engineer. Proprietary BMS protocol is allowed only if compatibility is first verified with the HVAC/Controls

Engineer. FEC to provide and install all hardware and software of any approved proprietary system.

26. F.E.C. to coordinate location of control boxes. Installation of remote HMI panels to ensure that they are flush with mounting surfaces. DCV controller to be mounted in cabinet at the end of the hood.
27. Any and all conduit exposed to view shall be chrome plated or stainless steel. This requirement includes all cover plates, fixtures, elbows, et cetera.
28. Ductwork is furnished, installed, and fire rated by other Contractors. - N.I.F.E.C.
29. Ventilator fan is furnished and installed by other Contractors - N.I.F.E.C.
30. Curb(s) and equipment rails shall be furnished and installed by other Contractors - N.I.F.E.C.
31. Hood and complete ventilation system is to be balanced by other Contractors - N.I.F.E.C.
32. Closely coordinate the needs of this hood ventilator, and all other hood ventilators in this project, to eliminate any concerns or issues related to hood capture, code compliance, duct size, type or location, fan size and any other element that might become a problem for the Owner. Supply hood air requirements to those providing the non-hood portions of the ventilation system. Include static pressure, volume and dimensional information. Submit this in a timely manner. If there are problems related to this hood, F.E.C. agrees to perform velometer tests, as needed, and to pay for the costs associated with any hood problem related issues that arise. If any Architect representatives need to be involved in seeking solutions to performance or capture challenges, the F.E.C. agrees to pay the hourly and travel costs associated with these activities.

ACCEPTABLE MANUFACTURERS: None

ITEM #15.1 VENTILATION HOOD CONTROL BOX – Provided as part of Item 15.

ITEM #15.2 HOOD CONTROL USER INTERFACE – Provided as part of Item 15.

ITEM #16 FIRE SUPPRESSION SYSTEM

Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: R-102 Wet Agent

Features:

1. Model R-102 WET AGENT Provide a complete automatic fire protection system sized to protect all of hood ITEM 16.
2. The pre-engineered, listed, wet chemical agent system shall be capable of suppressing fires in the areas associated with ventilating equipment including hoods, ducts, plenums, and filters as well as auxiliary grease extraction equipment. The system shall also be capable of suppressing fires in are-as associated with cooking equipment.
3. The basic system shall consist of a regulated release assembly which includes a regulated release mechanism and a stainless steel wet chemical storage tank housed within a single stainless steel enclosure. Nozzles, metal blow-off caps, detectors, cartridges, agent, fusible links, and pulley elbows shall be supplied in separate packages in the quantities needed for fire suppression system arrangements. Additional equipment shall include remote manual pull station(s), mechanical and electrical gas valve(s), and electrical switches for automatic equipment and gas line shut-off, and building fire alarm control panel interface. Provide all necessary components required for code approved installation.
4. The system shall be capable of automatic actuation by a fusible link or electric thermal detection system and remote manual actuation by a mechanical pull station.
5. F.E.C. to verify with Engineer if a mechanical or electrical based system should be provided. Verify quantity and size of gas valves to be provided. Provide all necessary components of system re-quired.

6. A mechanical system shall consist of, but is not limited to: mechanical regulated release assembly; mechanical fuel shut-off valve(s) to automatically cut-off fuel to the equipment located beneath the hood in the event of fire; fusible link detectors; cable, pulleys and conduit.
7. An electrical system shall consist of, but is not limited to: electrical regulated release assembly; electric fuel shut-off valve(s) to automatically cut-off fuel to the equipment located beneath the hood in the event of fire; electric thermal detectors; wiring and conduit; manual reset relay; and switches.
8. Interconnect system to shunt-trip breaker or switches to cut-off all electrical service to equipment located beneath the hood in the event of fire.
9. Provide with two (2) micro switches for each system. Verify which configuration is required to tie into the building alarm system: normally open or normally closed.
10. Provide certificate of charge and test by a State authorized Ansul dealer 2 weeks prior to final foodservice inspection by Bakergroup.
11. Unit to be installed in conformance with NFPA-96, UL300 and all applicable codes.
12. Fire suppression systems shall not contain ozone depleting substances such as CFC's, HCFC's or Halons.
13. System designed to protect ductwork at collar and equipment under hood, unless otherwise specified.
14. E.C. is to wire micro switch to shut down hood make up air only. Exhaust fan is to remain on to remove smoke or as dictated by local code.
15. Distribution piping shall not be run horizontally within the exposed hood capture area.
16. Any and all distribution piping exposed to view shall be chrome plated or stainless steel. This requirement includes all fixtures, elbows, et cetera.
17. Provide required UL-300 extinguishing nozzles for all grease producing equipment.
18. F.E.C. shall install this system at a time when the walls are accessible unless directed otherwise by C.M. Surface mounted components will not be accepted.
19. Prior to installing system, verify in writing with the architect, the location of agent tanks and pull stations. See Foodservice drawings for location of agent tanks and suggested locations for pull stations.
20. The F.E.C. will install this system to the highest standards, hiding pipe where possible, avoiding random and unnecessary penetrations in hood enclosures, concealing pipe and conduit for pull stations, coordinating the installation of the pull stations to be flush with finished wall surfaces, and running individual feeds to each head (instead of manifolding them together within the hood cavity).
21. Provide any drawings and specifications required to satisfy reviewing authorities. Copies are also to be provided to Bakergroup for review prior. Drawings to include: locations of agent tank cabinet(s) and remote pull station; piping design layout; type, quantity and location of nozzles; type and quantity of gas shut-off valve; type and quantity of detectors; and control diagram indicating available and/or required external connections. Provide in approved electronic format. Provide hard copies, if required.

ACCEPTABLE MANUFACTURERS: None

ITEM #16.1 FIRE SUPPRESSION PULL STATION –Provided as part of Item 16.

ITEM #17 INDUCTION RANGE

Quantity: One (1)
Manufacturer: Southbend
Model: P36C-ISI

Features:

1. Provide (4) 12” induction cook tops, separated by 12” stainless steel spreader, 36” unit.
2. Provide 208V, 3PH, 34.0A

3. Provide stainless steel cabinet base with doors.
4. Provide 9- ¼” deep front rail.
5. Provide removable drip tray.

ACCEPTABLE MANUFACTURER: Garland

ITEM #18 FILLER FAUCET

Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0598

Features:

1. Provide Double joint swing nozzle.
2. Provide wall mounted 8” centers.
3. Provide Handle at end of faucet for easy accessibility to turn on and off.

ACCEPTABLE MANUFACTURER: None

ITEM #19 CONVECTION STEAMER

Quantity: One (1)
Manufacturer: Cleveland Range
Model: (2) 22CET66.1

Features:

1. Provide (2) electric boilerless convection steamers, with water reservoir, automatic fill controls, stacked.
2. Electric: provide (2) 208V, 3PH, 29.8A, 3-wire.
3. Provide stainless steel equipment stand.
4. Provide removable stainless steel racks.
5. Provide cold water condenser for each compartment.
6. Steam chamber to be all stainless steel construction.
7. Door hinge on left per plan.
8. Provide temperature probe.
9. Provide cartridge based Everpure, Cuno or equal water filtration system, properly matched to the manufacturers filter requirements for this unit and local water conditions. Test local water conditions prior to ordering unit. Mount out of customer view, yet accessible for maintenance, and in a location, that will not expose the unit to damage from cart traffic.
10. F.E.C. shall provide chrome vacuum breaker, chrome backflow preventer or other equipment-specific hardware as required by local health department.

ACCEPTABLE MANUFACTURER: Groen

ITEM #19.1 WATER FILTRATION -- Provide as part of Item 19.

ITEM #20 CONVECTION OVEN

Quantity: One (1)
Manufacturer: Blodgett
Model: MARK V-100 BBL

Features:

1. Electric: provide (2) 208V, 3PH, 53A, stacked.
2. Factory start-up and verification of meeting operating performance requirements.
3. Fully welded stainless steel frame.
4. Stainless steel top, front, sides and back.
5. Annealed stainless steel finish in cooking chambers.
6. (7) Stainless steel wire shelves, per section.
7. Double paned glass doors.
8. Provide extra oven rack.
9. Provide stainless steel drip pans.
10. Interior lights.
11. Provide 4” casters; two (2) locking.

ACCEPTABLE MANUFACTURER: None

ITEM #23 PASS-THRU REFRIGERATOR

Quantity: One (1)
Manufacturer: Continental Refrigerator
Model: 1RENSSPT

Features:

1. 5" Casters, lockable
2. Stainless steel interior and exterior.
3. Exterior thermostats.
4. Provide lockable pass thru doors hinged as shown on plan
5. Provide epoxy coated shelves.

ACCEPTABLE MANUFACTURER: True, Traulsen, Victory

ITEM #24 REACH-IN FREEZER

Quantity: One (1)
Manufacturer: Continental Refrigerator
Model: 2FSNSS

Features:

1. Left Door hinged on left & right door hinged on right, standard
2. Model 50177-4 Casters, swivel, with brakes (5" diameter rubber tires) set of 4 (6" height)
3. Stainless steel interior and exterior.
4. Provide top mounted condensing unit.
5. Exterior thermostats.
6. Provide lockable doors hinged as shown on plan
7. Provide epoxy coated shelves.

ACCEPTABLE MANUFACTURER: True, Traulsen, Victory

ITEM #25 HAND SINK

Quantity: One (1)
Manufacturer: Eagle Group

Model: HSA-10-FA-1P

Features:

1. All stainless steel construction – all welded.
2. Provide faucet with foot pedals.
3. Provide drain and P-Trap.
4. Provide all necessary mounting hardware.
5. Owner to provide each sink with a soap, glove dispenser and towel dispenser.
6. Provide with front perimeter enclosure.
7. Must meet all ASSE 1070 requirements.
8. Provide 6” stainless steel splashguards.

ACCEPTABLE MANUFACTURER: Advance Tabco, Krowne

ITEM #26 TRASH CAN -- O.F.O.I.

ITEM #27 STORAGE RACK

Quantity: Per Drawing
Manufacturer: Metro
Model: MetroMax 4 – Sized per drawing

Features:

1. 86" post with antimicrobial protection, size per plan.
2. Lockable casters.
3. 15-year warranty against corrosion.
4. Removable polymer shelf mats.
5. Adjustable shelves with antimicrobial protection.
6. Assemble and install racks, making certain that rack shelving does not interfere with door swings, lighting, drains, or any other equipment.
7. Provide 5 shelves.

ACCEPTABLE MANUFACTURER: Eagle Group, Cambro

ITEM #30 PAN RACK

Quantity: One (1)
Manufacturer: Cres Cor
Model: 2071820

Features:

1. Utility rack.
2. Provide 5” casters (2 lockable).
3. Provide open sides.
4. Accommodates (20) 18” x 36” sheet pans, slides on 3” centers.
5. Provide welded aluminum construction.

ACCEPTABLE MANUFACTURERS: Cambro, Advance Tabco, New Age, Metro

ITEM #31 PAN RACK

Quantity: One (1)
Manufacturer: Cres Cor

Model: 2071820

Features:

1. Utility rack.
2. Provide 5” casters (2 lockable).
3. Provide open sides.
4. Accommodates (20) 18” x 36” sheet pans, slides on 3” centers.
5. Provide welded aluminum construction.

ACCEPTABLE MANUFACTURERS: Cambro, Advance Tabco, New Age, Metro

ITEM #32 BREAD RACK – V.F.V.I

ITEM #33 BREAD RACK – V.F.V.I

ITEM #40 WORK TABLE WITH SINKS AND DRAWERS

Quantity: One (1)
Manufacturer: Approved Fabricator
Model: CUSTOM

Features:

1. Model CUSTOM Size and shape per plan
2. Construct per details and General Standards.
3. Construct entirely of stainless steel; top shall be 14 gauge.
4. Provide sound deadening per General Standards.
5. Stainless steel 1-5/8" diameter legs, leg gussets and adjustable flanged feet
6. Provide 6” backsplash, enclosed on all sides
7. Must be NSF Approved Fabricator
8. Provide sink(s) per plan and General Standards; sink(s) shall be 14 gauge and have coved corners.
9. Provide faucet per general specs to match the size sink in the details. Faucet shall be B-0221-CR-K-F10 (Include B-0199-01-F10 1.0 GPM Aera-tor) or approved other.
10. Drains that are a part of the worktable or the equipment mounted into the worktable shall be pre-plumbed. Plumbing shall not be less than ¾” in diameter. All plumbing lines shall be installed to minimize interference with the useful function of the worktable cavity. Wherever possible, plumbing lines shall be run against rear surfaces and undersides of equipment and/or shelving to minimize this interference.
11. Wherever penetrations must be made in the worktable to accommodate the passage of utilities, refuse drop holes or other needs, fully sleeve these penetrations so that liquids are prevented from running into the penetration.
12. Provide 3-tier stainless-steel locking utensil drawers, one location. Construct per General Standards. In addition, provide stainless-steel double pan constructed drawer fronts, removable stain-less-steel drawer liners, full extension slides and stainless-steel exterior housing. Provided keyed alike drawers to items 50 and 54.
13. All final power connections to be by E.C. Worktables shall arrive pre-wired by the Fabricator to meet all but not limited to local and state standards. All worktable wiring will meet or exceed prevailing codes for the work category. Run all electrical wiring in moisture resistant, armored conduit, out of sightlines and workspaces.
14. Where J-boxes or receptacles are to be installed within the worktable, fabricator shall provide appropriate mounting plates or other structure for same. Fabricator to provide and install all

boxes, conduit and devices required. E.C. to provide and install all wire from fabricator pre-wired devices to points of final connection.

15. Electrical and plumbing work shall be performed to the highest standards and shall meet with all applicable codes.
16. All wiring will meet or exceed prevailing codes for the work category. Run all electrical wiring in moisture resistant, armored conduit, out of sightlines and workspaces.
17. Switches, receptacles, and other electric appliances that are built into the worktable shall be pre-wired by the F.E.C. to an accessible and convenient connection point, consistent with the electrical requirements shown on the project documents. Provide pre-wired per all NEC codes.

ACCEPTABLE MANUFACTURER: Advance Tabco, Eagle

ITEM #40.1 FAUCET – Provided as part of Item 40.

ITEM #41 OVERSHELF

Quantity: Two (2)
Manufacturer: Advance Tabco
Model: 15” deep; length as shown on plan

Features:

1. 16 gauge stainless steel solid shelf.
2. Provide all hardware and properly mount at height determined by owner.

ACCEPTABLE MANUFACTURER: Eagle, Approved Fabricator

ITEM #43 CAN OPENER

Quantity: One (1)
Manufacturer: Edlund
Model: S-11

Features:

1. Model S-11 Can Opener, manual, 16" bar length, dishwasher safe, rust proof, stainless steel, with cast stainless steel base, NSF certified
2. Stainless steel with cast stainless steel base.
3. Provide with ST-93 Rustproof can opener cleaning tool.

ACCEPTABLE MANUFACTURER: None

ITEM #45 HAND SINK

Quantity: One (1)
Manufacturer: Eagle Group
Model: HSA-10-FA-1P

Features:

1. All stainless steel construction – all welded.
2. Provide faucet with foot pedals.
3. Provide drain and P-Trap.
4. Provide all necessary mounting hardware.
5. Owner to provide each sink with a soap, glove dispenser and towel dispenser.

6. Provide with front perimeter enclosure.
7. Must meet all ASSE 1070 requirements.
8. Provide 6” stainless steel splashguards.

ACCEPTABLE MANUFACTURER: Advance Tabco, Krowne

ITEM #46 REACH-IN REFRIGERATOR

Quantity: One (1)
Manufacturer: Continental Refrigerator
Model: 2RNSS

Features:

1. Stainless steel interior and exterior.
2. Provide top mounted condensing unit.
3. Electric: 115V, 1PH, 6.9A with plug.
4. Provide LED interior lights.
5. Provide lockable solid doors with left door hinged on left & right door hinged on right.
6. Provide epoxy coated shelves.
7. Provide 5" Casters with locks.

ACCEPTABLE MANUFACTURER: True, Traulsen, Victory

ITEM #47 DESK – N.I.F.E.C.

ITEM #50 WORKTABLE WITH DRAWERS AND OVERSHELF

Quantity: One (1)
Manufacturer: Approved Fabricator
Model: CUSTOM

1. Model CUSTOM Size and shape per plan
2. Construct per details and General Standards. Construct entirely of stainless steel; top shall be 14 gauge.
3. Provide sound deadening per General Standards.
4. Stainless steel 1-5/8" diameter legs, leg gussets and adjustable flanged feet
5. Must be NSF Approved Fabricator
6. Provide 3-tier stainless-steel locking utensil drawers. Construct per General Standards. In addition, provide stainless-steel double pan constructed drawer fronts, removable stain-less-steel drawer liners, full extension slides and stainless-steel exterior housing. Provided keyed alike drawers to items 40 and 54.
7. Provide 16-gauge stainless-steel counter mounted, double over shelf per details. Provide with all necessary hardware to properly sit shelf where shown. Verify location in writing with owner before hanging.
8. Wherever penetrations must be made in the worktable to accommodate the passage of utilities, refuse drop holes or other needs, fully sleeve these penetrations so that liquids are prevented from running into the penetration.
9. Provide 3-tier stainless-steel locking utensil drawers, one location. Construct per General Standards. In addition, provide stainless-steel double pan constructed drawer fronts, removable stain-less-steel drawer liners, full extension slides and stainless-steel exterior housing. Provided keyed alike drawers.
10. All final power connections to be by E.C. Worktables shall arrive pre-wired by the Fabricator to meet all but not limited to local and state standards. All worktable wiring will meet or exceed

prevailing codes for the work category. Run all electrical wiring in moisture resistant, armored conduit, out of sightlines and workspaces.

11. Where J-boxes or receptacles are to be installed within the worktable, fabricator shall provide appropriate mounting plates or other structure for same. Fabricator to provide and install all boxes, conduit and devices required. E.C. to provide and install all wire from fabricator pre-wired devices to points of final connection.
12. Electrical and plumbing work shall be performed to the highest standards and shall meet with all applicable codes.
13. All wiring will meet or exceed prevailing codes for the work category. Run all electrical wiring in moisture resistant, armored conduit, out of sightlines and workspaces.
14. Switches, receptacles and other electric appliances that are built into the worktable shall be pre-wired by the F.E.C. to an accessible and convenient connection point, consistent with the electrical requirements shown on the project documents. Provide pre-wired per all NEC codes.

ACCEPTABLE MANUFACTURER: Advance Tabco, Eagle

ITEM #52 TRASH BIN -- O.F.O.I

ITEM #53 COMPOSTING BIN -- O.F.O.I.

ITEM #54 WORKTABLE WITH DRAWERS AND OVERSHELF

Quantity: One (1)
Manufacturer: Approved Fabricator
Model: CUSTOM

1. Model CUSTOM Size and shape per plan
2. Construct per details and General Standards. Construct entirely of stainless steel; top shall be 14 gauge.
3. Provide sound deadening per General Standards.
4. Stainless steel 1-5/8" diameter legs, leg gussets and adjustable flanged feet
5. Must be NSF Approved Fabricator
6. Provide 16-gauge stainless-steel counter mounted, double over shelf per details. Provide with all necessary hardware to properly sit shelf where shown. Verify location in writing with owner before hanging.
7. Wherever penetrations must be made in the worktable to accommodate the passage of utilities, refuse drop holes or other needs, fully sleeve these penetrations so that liquids are prevented from running into the penetration.
8. Provide 3-tier stainless-steel locking utensil drawers, one location. Construct per General Standards. In addition, provide stainless-steel double pan constructed drawer fronts, removable stainless-steel drawer liners, full extension slides and stainless-steel exterior housing. Provided keyed alike drawers.
9. All final power connections to be by E.C. Worktables shall arrive pre-wired by the Fabricator to meet all but not limited to local and state standards. All worktable wiring will meet or exceed prevailing codes for the work category. Run all electrical wiring in moisture resistant, armored conduit, out of sightlines and workspaces.
10. Where J-boxes or receptacles are to be installed within the worktable, fabricator shall provide appropriate mounting plates or other structure for same. Fabricator to provide and install all boxes, conduit and devices required. E.C. to provide and install all wire from fabricator pre-wired devices to points of final connection.
11. Electrical and plumbing work shall be performed to the highest standards and shall meet with all applicable codes.

12. All wiring will meet or exceed prevailing codes for the work category. Run all electrical wiring in moisture resistant, armored conduit, out of sightlines and workspaces.
13. Switches, receptacles and other electric appliances that are built into the worktable shall be pre-wired by the F.E.C. to an accessible and convenient connection point, consistent with the electrical requirements shown on the project documents. Provide pre-wired per all NEC codes.

ACCEPTABLE MANUFACTURER: Advance Tabco, Eagle

ITEM #59 HAND SINK

Quantity: One (1)
Manufacturer: Eagle Group
Model: HSA-10-FA-1P

Features:

1. All stainless steel construction – all welded.
2. Provide faucet with foot pedals.
3. Provide drain and P-Trap.
4. Provide all necessary mounting hardware.
5. Owner to provide each sink with a soap, glove dispenser and towel dispenser.
6. Provide with front perimeter enclosure.
7. Must meet all ASSE 1070 requirements.
8. Provide 6” stainless steel splashguards.

ACCEPTABLE MANUFACTURER: Advance Tabco, Krowne

ITEM #60 UTILITY CART

Quantity: One (1)
Manufacturer: Lakeside Manufacturing
Model: 710

Features:

1. All-welded stainless steel construction, 700lb capacity.
2. Provide (2) shelves.
3. Provide (2) 5” swivel and (2) 8” fixed casters.

ACCEPTABLE MANUFACTURER: Carlisle

ITEM #61 SAFETY CABINET

Quantity: One (1)
Manufacturer: Global Industrial
Model: 298541

Features:

1. Model 298541 Flammable Liquid Cabinet, 43"W x 18"D x 65"H, 45 gallon capacity, (2) adjustable shelves, (2) manual close hinged doors, steel construction with powder coat finish (NET)
2. Steel construction with powder coat cabinet.
3. Provide (2) adjustable shelves.
4. Provide (2) manual close hinged doors.

ACCEPTABLE MANUFACTURER: None

ITEM #62 UTILITY CART

Quantity: One (1)
Manufacturer: Lakeside Manufacturing
Model: 710

Features:

1. All-welded stainless steel construction, 700lb capacity.
2. Provide (2) shelves.
3. Provide (2) 5” swivel and (2) 8” fixed casters.

ACCEPTABLE MANUFACTURER: Carlisle

ITEM #63 CUSTOM MILLWORK - SCRAPPING STATION

MANUFACTURER: Approved Fabricator

QUANTITY: One (1)

MODEL: Custom Fabricated

FEATURES:

1. Unit to be shaped, sized and located where shown on plan. Construct per drawing details, the requirements of the General Standards and this specification.
2. Counter to be constructed to support all equipment, materials, utilities, and products without deflection at any point. In addition, the unit shall be able to support 300 pounds of live weight at any point without deflection.
3. Counter shall be constructed as a rigid structure, suitable for use in a foodservice facility of this type. Countertop edge profile per details.
4. Support on stainless steel adjustable legs, with appropriate base materials attached as shown on details.
5. Unless otherwise illustrated in the detailed drawings, provide 2" high end or backsplashes wherever the counter meets an adjacent walls or other fixed equipment.
6. Where end or backsplashes are employed, seal counter to wall with silicone caulk, taking care to tape seams before applying caulk. Sealing gaps greater than 1/8" will not be acceptable. If the contractor fails to tape the joint and there is caulk residue on the adjacent surface, the contractor will completely remove the caulk, restore the adjacent surface if damaged, tape and reapply the caulk in an improved manner.
7. Wherever penetrations must be made in the counter to accommodate the passage of utilities, refuse drop holes or other needs, fully sleeve these penetrations so that liquids are prevented from running into the penetration.
8. Interior of the counter shall be constructed to provide storage and service access for the equipment shown on plan. Where the counter cavity is not serving as housing for the counter-based equipment, the remaining space shall be developed as a storage cavity. Each storage cavity shall be provided with cleanable back, bottom and sides, rising from the floor of the cabinet to a height of 12” above the floor. The balance of the cavity should be constructed with a melamine finish. Provide trim strips and other finish materials to allow counter-based equipment to be removed for service, when necessary.
9. Due to variations in construction methods between fabricators, drawing details for counters may not show all of the structural support, mounting methods and utility chases required. The counter(s) must be fabricated to meet the performance needs of the plan, and these specifications (e.g. support the beverage and ice machine without deflection, meet NSF standards, et cetera). The exterior elevations and sections do accurately indicate the exterior needs of the counter including materials, dimensions and shape.

10. The location of counter seams, laminate seams and other visible breaks must be approved by the Architect and Bakergroup. Minimize the visibility of these joints. Surfacing material seams and joints shall be designed to occur where counter angles change. Where there is a need to provide multiple sections along a straight counter, the fabricator will design the seams or surface joints to be evenly spaced across the length of the unit. No seams shall go through any heated equipment such as drop in hot wells or heated shelves.
11. Wherever mobile equipment is to be parked up against any counter, provide and install rigid stainless steel angles along the floor to prevent the parked equipment from bumping into the counter. In addition, provide a trimmed out stainless steel protective surface around the interior of counter cutouts where equipment such as lowerators are to be parked.
12. Provide for all counter doors: Three (3) Rockford Process Control (RPC) Five Knuckle Hinge in 304 stainless steel. NOTE: Where the weight of the hinged mass exceeds the support limits of the hinge, provide acceptable manufacturer hinge options for consideration by Bakergroup. Provide in all locations of doors Hafele Item No. 115.61.601: Wire Handle, Matt, Stainless Steel; grade 304, 96 CTC, 106 mm length.
13. Hinge mounts must be strong enough to prevent the hinges from pulling out of the substrate. Doors, hinges and latches shall be designed for long-term durability and have a 10-year warrantee against failure. Mount hinges per Bakergroup detail, rigidly securing the hinge to the door, using five stainless steel flathead screws for each hinge. Rigidly mount hinges to casework using two ¼" bolts similarly secured with hex flange locknuts with nylon inserts and two 3/16" flathead screws for each hinge. Door Catches: Shall be adjustable heavy duty Amerock Roller Catch BP98232G, Amerock Double Roller Catch Part No. 143 or approved equal. Provide non-magnetic type.
14. All surfaces shall be free of burrs and rough edges.
15. Mounting screws and bolts shall match the material they are securing (e.g. stainless screws to attach stainless metal banding, et cetera).
16. Follow all material and appliance manufacturer's requirements for the handling, fabrication, and installation of these items. If any material is deemed unsuitable for the intended use, the F.E.C. must note this in their bid.
17. Provide stainless steel "L" shaped stopper brackets securely mounted to the ground for any equipment on casters built in counter or counter is cut out around. Stopper brackets purpose to hinder equipment from causing destruction of counter.

ITEM #64 TRASH BIN -- O.F.O.I.

ITEM #65 RECYCLING BIN -- O.F.O.I.

ITEM #66 COMPOSTING BIN - O.F.O.I.

ITEM #67 EYE WASH STATION

Quantity: One (1)
Manufacturer: T&S Brass
Model: EW-7656WC

Features:

1. Wall mounted, recessed eyewash unit.
2. Stainless steel housing.

ACCEPTABLE MANUFACTURER: None

ITEM #68 TRASH BIN -- O.F.O.I.

ITEM #69 COMPOSTING BIN -- O.F.O.I.

ITEM #70 SOILED DISHTABLE

Quantity: One (1)
Manufacturer: Approved Fabricator
Model: CUSTOM

Features:

1. Size and shape per plan.
2. Construct per details and General Standard. Construct entirely of stainless-steel; top and sink bowls shall be 14 gauge, 3” rolled rim along all outside edges, 1-5/8" diameter legs and stainless-steel cross rails per General Standard.
3. Sinks shall slope to drains with coved corners.
4. Dish table should slope to drains so that no water pools.
5. Apply sound deadening per General Standard.
6. Provide backsplash (refer to details for height) and sloping back to wall 2" at a 45 degree angle and turned-down ½" toward floor, with enclosed ends. Fasten to wall with Z-clips and seal with silicone caulk.
7. Stainless-steel adjustable feet and leg gussets
8. Provide rotary wastes with connected chrome tailpiece and overflow. Provide stainless-steel mounting clip for each rotary waste valve.
9. Provide removable under-shelving. Provide with closed end-splashes, if exposed.
   Provide 18 gauge stainless-steel wall panel on wall for the entire length of dishtable, to a height 24" above backsplash. Wall paneling shall be joined together with t-strips and sealed with silicone caulk.
10. Top of lip to be 34” above finished floor.
11. Provide with (2) pre-rinse from T&S Brass B-0133-12CRBJST, wall mounted.
12. Provide stainless steel disposer cone for item 72.
13. Construct table to exactly match dishmachine manufacturer’s requirements and all adjacent equipment/tables.
14. Provide with pre-rinse sink before entry to dishmachine to meet code.

ACCEPTABLE MANUFACTURER: Advance Tabco

ITEM #70.1 PRE-RINSE FAUCET – Provided as part of item 70.

ITEM #70.2 SANITIZER – N.I.F.E.C.

ITEM #70.3 PRE-RINSE FAUCET – Provided as part of item 70.

ITEM #72 DISPOSER

Quantity: One (1)
Manufacturer: Salvajor
Model: 300-CA-18-ARSS-LD

Features:

1. Provide 208V, 3PH, 8.8A electrical.
2. Provide with all components necessary for complete installation including, but not limited to, vacuum breaker, solenoid valve, water flow control and water inlets.
3. Provide chrome plated vacuum breaker, chrome plated piping and 45° slip flanges mounted into backsplash.
4. Provide stainless steel water tight control panel with disconnect, start/stop buttons and automatic reversing.
5. Provide all components necessary for mounting into cone sink, provided and welded to be integral to the table surface.
6. Provide swirl spray valves (2) mounted in cone and designed to regulate water flow.
7. Provide sprayer so that it cannot extend below the flood level rim of sink
8. Adjust water feed so that unit operates properly, but does not discharge food or water through the top of the disposer opening.
9. F.E.C. shall provide a reduced pressure zone backflow preventer mounted anywhere in-line or, as required by the local Health Department regulations, provide pressure-style vacuum breaker or other accessories, to the M.C. for installation by same for each water connection

ACCEPTABLE MANUFACTURER: Insinkerator

ITEM #75 OVERSHELF

Quantity: One (1)
Manufacturer: Advance Tabco
Model: 15” deep; length as shown on plan

Features:

1. 16 gauge stainless steel solid shelf
2. Provide all hardware and properly mount at height determined by owner.

ACCEPTABLE MANUFACTURERS: Eagle, Approved Fabricator

ITEM #76 OVERSHELF

Quantity: One (1)
Manufacturer: Advance Tabco
Model: 15” deep; length as shown on plan

Features:

3. 16 gauge stainless steel solid shelf
4. Provide all hardware and properly mount at height determined by owner.

ACCEPTABLE MANUFACTURERS: Eagle, Approved Fabricator

ITEM #77 DISH MACHINE

Quantity: One (1)
Manufacturer: Hobart
Model: CL44EN-ADV+BUILDUP

Features:

1. Conveyor Dishwasher, Advansys model, single tank, (202) racks/hour, insulated hinged doors, .62 gallon/rack, stainless steel enclosure panels, microprocessor controls with low temperature & dirty water indicators, NSF Pot & Pan mode, programable de-lime notification, 30 kW stainless booster, energy recovery (DWER), automatic soil removal (ASR), drain water tempering kit, ENERGY STAR®
2. Electric tank heat 15kW
3. 30kW electric booster
4. 480V, 3PH
5. Single Point (1) service connection standard
6. Standard height
7. Right to left operation
8. Standard feet.
9. NOTE: For water of 3-grains of hardness or more, Hobart suggests adding a water softener.
10. 21” Adjustable vent stack extension, field installed.
11. Include Blower Dryer, Electric, R-L (BDERLCD-STDDOM); standard height

ACCEPTABLE MANUFACTURER: Champion

ITEM #77.1 BLOWER DRYER - Provided as part of item 77.

ITEM #80 CLEAN DISHTABLE

Quantity: One (1)
Manufacturer: Approved Fabricator
Model: CUSTOM

Features:

1. Clean dish table, straight design.
2. Right to left operation.
3. Size and shape as per plan.
4. Provide 14 gauge/304 stainless steel top.
5. Provide 16 gauge/304 stainless steel legs and cross bracing.
6. Provide backsplash. Refer to details for height.
7. Provide 3” rolled front and side rims.
8. Sound deadening per General Standards.

ACCEPTABLE MANUFACTURERS: Advance Tabco, Eagle

ITEM #81 OVERSHELF

Quantity: One (1)
Manufacturer: Advance Tabco
Model: 15” deep; length as shown on plan

Features:

5. 16 gauge stainless steel solid shelf
6. Provide all hardware and properly mount at height determined by owner.

ACCEPTABLE MANUFACTURERS: Eagle, Approved Fabricator

ITEM #84 FLOOR TROUGH

Quantity: One (1)
Manufacturer: Advance Tabco
Model: FFTG-1272

Features:

1. ADA compliant
2. Size and shape per plan
3. Pultruded Fiberglass Grating
4. Meets class 1 rating of 25 or less per ASTM E-84.
5. Meets requirements of ASTM D-635.
6. Resin UV inhibited
7. 0.4” spacing for ADA
8. Panels with permanently bonded grit, baked epoxy, anti-skid surface
9. Grating to carry uniform distributed load of 200 pounds. per sq. ft. on span up to 36” and not to deflect more than 0.25”.
10. Bearing Bars to provide minimum 1” wide openings.
11. Provide Safing for trough.
12. Grating shall run in one direction; away from equipment.
13. Include 14-gauge stainless-steel pans/trough per drawing details.

ACCEPTABLE MANUFACTURER: Eagle

ITEM #85 THREE COMPARTMENT SINK

Quantity: One (1)
Manufacturer: Approved Fabricator
Model: CUSTOM

Features:

1. Model CUSTOM Size and shape per plan and details
2. Construct per details and General Standards.
3. Construct entirely of stainless-steel; top and sink bowls shall be 14-gauge, 2-1/2” rolled rim along all outside edges, 1-5/8" diameter legs and stain-less-steel cross rails per General Standards.
4. Sink shall slope to drains with coved corners.
5. Provide sound deadening per General Standards.
6. Provide backsplash rising 8", minimum, and sloping back to wall 2" at a 45-degree angle and turned-down ½" toward floor, with enclosed ends. Fasten to wall with Z-clips and seal with silicone caulk.
7. Stainless-steel adjustable feet and leg gussets
8. Potsink shall have all welded drain boards. Drain boards and sink must slope to drain so that no water pools on work surfaces.
9. There shall be a 2" air gap between sinks. Provide front apron in front of sink bowls.
10. Provide swing nozzles as shown on details.
11. Provide two (2) T&S B-0230-CR-SC-EK wall mounted, 18" swivel nozzle faucets.
12. Provide one (1) pre-rinse faucet T&S B-0100-12CRBJST, wall mounted with add on faucet 12” swivel nozzle.
13. Provide stainless steel disposer cone for item 86.
14. Provide rotary wastes with connected chrome tailpiece and overflow. Provide stainless-steel mounting clip for each rotary waste valve.
15. Provide removable undershelving. Provide with closed endsplashes, if exposed.

16. Provide 18-gauge stainless-steel wall panel on wall for the entire length of pot sink, to a height of 24" above backsplash. Wall paneling shall be joined together with t-strips and sealed with silicone caulk.
17. Top of potsink lip to be 36” above finished floor.
18. Provide rear connected overflows.

ACCEPTABLE MANUFACTURERS: Advance Tabco, Eagle

ITEM #85.1 PRE-RINSE FAUCET – Provided as part of Item 85.

ITEM #85.2 FAUCET – Provided as part of Item 85.

ITEM #85.3 FAUCET – Provided as part of Item 85.

ITEM #85.4 SANITIZER – N.I.F.E.C.

ITEM #86 DISPOSER

Quantity: One (1)
Manufacturer: Salvajor
Model: 300-CA-18-ARSS-LD

Features:

1. Provide 208V, 3PH, 8.8A electrical.
2. Provide with all components necessary for complete installation including, but not limited to, vacuum breaker, solenoid valve, water flow control and water inlets.
3. Provide chrome plated vacuum breaker, chrome plated piping and 45° slip flanges mounted into backsplash.
4. Provide stainless steel water tight control panel with disconnect, start/stop buttons and automatic reversing.
5. Provide all components necessary for mounting into cone sink, provided and welded to be integral to the table surface.
6. Provide swirl spray valves (2) mounted in cone and designed to regulate water flow.
7. Provide sprayer so that it cannot extend below the flood level rim of sink
8. Adjust water feed so that unit operates properly, but does not discharge food or water through the top of the disposer opening.
9. F.E.C. shall provide a reduced pressure zone backflow preventer mounted anywhere in-line or, as required by the local Health Department regulations, provide pressure-style vacuum breaker or other accessories, to the M.C. for installation by same for each water connection

ACCEPTABLE MANUFACTURER: Insinkerator

ITEM #87 OVERSHELF

Quantity: One (1)
Manufacturer: Advance Tabco
Model: 15” deep; length as shown on plan

Features:

7. 16 gauge stainless steel solid shelf
8. Provide all hardware and properly mount at height determined by owner.

ACCEPTABLE MANUFACTURERS: Eagle, Approved Fabricator

ITEM #88 TRASH BIN -- O.F.O.I.

ITEM #89 HAND SINK

Quantity: One (1)
Manufacturer: Eagle Group
Model: HSA-10-FA-1P

Features:

1. All stainless steel construction – all welded.
2. Provide faucet with foot pedals.
3. Provide drain and P-Trap.
4. Provide all necessary mounting hardware.
5. Owner to provide each sink with a soap, glove dispenser and towel dispenser.
6. Provide with front perimeter enclosure.
7. Must meet all ASSE 1070 requirements.
8. Provide 6” stainless steel splashguards.

ACCEPTABLE MANUFACTURER: Advance Tabco, Krowne

ITEM #100 WALK-IN COOLER / FREEZER

Quantity: One (1)
Manufacturer: American Panel Corporation

Features:

1. Model CUSTOM Size and shape per plans and specifications, 8’10” high (in 8.5” pit)
2. Exterior exposed panel surfaces shall be 20 gauge smooth #304 stainless steel. Unexposed exterior panels shall be stucco aluminum.
3. Interior panel surfaces shall be 20 ga stainless steel.
4. Walk-in with 4” thick factory floor (constructed in the same method and materials as wall and ceiling panels) to be set in a minimum 8.5” deep pit plus wearing floor surface by others; interior pre-manufactured floor surface to be galvanized finish. Concrete by others. See typical detail. Provide s/s coved base for interior of walk-in.
5. Provide 16 gauge stainless steel coved base on exterior of walk-in where finished panels are located.
6. Provide 4” clearance above walk-ins for installation of walk-in.
7. Remove all manufacturers’ stickers, plates, etc on exterior of walk-in. Exterior of walk-in shall be free of all manufacturer branding. Plates or manufacturer named stickers may be added in interior of walk-in only. These shall not be visible to customers if viewing windows are present.
8. Trim and C/J closure panels shall be 20 gauge smooth #304 stainless steel and shall close off all open spaces between walls and interior ceilings.
9. Provide, install and seal with silicone 20 gauge #304 stainless steel base cove at all points where a vertical wall/floor panel meets any building floors creating a 90-degree angle. Provide on interior and exterior of walk-in.

10. Panels shall be soft-nosed and constructed of 4” thick foamed-in-place polyurethane Class 1 UL foam, flame spread of 25 and certified to meet NSF. High density rails and non-insulating materials shall not be utilized in construction.
11. Cam-locks and gaskets shall be foamed-in-place. Use of adhesives and/or fasteners is unacceptable.
12. Provide stainless steel rack to be located where shown on plan for refrigerated system compressor units.
13. Doors and door sections shall be 22 gauge #304 stainless steel front and back with 0.080” textured aluminum or 1/8” aluminum treadbrite kickplates 36” tall factory installed on the interior and exterior; doors hinged as shown on plan. Doors shall have a net opening of 36” x 78”. Handle shall be stationary with slide-bolt or deadbolt locking system with interior safety release. All doors shall be flush mounted, self-closing and include hydraulic door closer. Provide 14” x 14” viewports (heated in low temperature applications). Fiberglass Reinforced Plastic door jambs to have low wattage heater wires and stainless steel thresholds. Three heavy duty, field adjustable cam-lift hinges shall be provided with spring loaded hinges for each door required. All door hinges, handles and automatic closures shall be stainless steel, chrome finished. Bi-parting Clear-View vinyl strip doors with heavy duty rod and hinge assemblies with backing material within the door section are required for each door. All devices shall be mounted with non-corroding or stainless steel hardware. Threshold hardware shall utilize flush mounted flat head stainless steel screws. Do not provide any thermometers on door sections (Modu-larm-75 as specified below is a combination digital thermometer and alarm system).
14. Provide one for each walkin - Modularm-flush mounted 75LC alarm, factory installed and flush mount-ed for each compartment on wall panel adjacent to door section unless a door section is required on an interior wall, in which case the alarm shall be mounted adjacent to the alarm on the wall panel next to exterior entry door of the combination unit. Temperature sensing probe shall be protected with a perforated metal housing. For each walk-in provide a spare contact for a general alarm to be sent to the building automation system.
15. Provide two rows at 6” and 24” of aluminum bumper rails with gray vinyl inserts on all exposed walls and 6” x 6” x 72” tall 0.080” textured aluminum or 0.100” aluminum diamond treadbrite corner guards on all exposed exterior corners.
16. Provide LED light fixtures with low temperature ballasts as shown on the electrical drawing or as required to meet minimum codes. Light fixtures shall be provided and installed by the F.E.C., rigidly mounted per plan with stainless steel fasteners, final connections by the E.C.
17. Conduit runs (exposed) within the walk-in are unacceptable.
18. Any and all penetrations/conduit through walls and/or ceilings shall be sealed with foam and caulked inside and out.
19. Provide with self-supported ceiling. Where ceiling spans exceed the manufacturer’s recommendation for self-supported structures and/or wind/snow load, provide and install the structure necessary to properly support the ceiling panels per the manufacturer’s guidelines.
20. Air-Cooled Condensing Units: All compressors to be Copeland Mfg. or equal, pre-assembled remote systems, UL listed and properly sized for moderate to high use applications to hold + 35 °F for cooler applications and/or –10 °F for freezer applications based on local ambient temperatures. Provide suction accumulators and suction line filter. Provide medium and low temperature defrost timers factory mounted to each condensing unit. All condensing unit components shall be factory built and wired onto a condensing unit base. Provide compressors to work outside with low ambient (-10F) operations. Provide all necessary housing for outside unit including a stainless steel roof curb to match additional curbs provided by others on project. Mount curbs to roof in similar manner as mountings of MUA and fan curbs.
21. Evaporator Coils: Shall be ceiling, end-mount style and shall be UL listed and shall be sized to “balance” with the condensing unit(s). Units to be installed per plans.
22. Use refrigerant most compliant with LEED® standards for both cooler and freezer applications, installed to the highest standards of quality and performance evident in the State. Installation shall be in accordance with all applicable codes and regulations.
23. Provide refrigeration lines that shall be fully insulated with Armstrong “Armaflex” tubing between condensing unit and evaporator coil(s). Refrigeration lines shall be trapped as required.

24. F.E.C. shall provide and connect all components as recommended by the manufacturer. F.E.C. is required to coordinate installation of this item with Other Trades. F.E.C. to provide start-up and adjustment per manufacturer's specifications 96 hours prior to date of completion.
25. F.E.C. to provide 5-year parts and labor warranty on all compressors. Wall, floor and roof panels shall have a 10-year warranty.
26. F.E.C. shall assemble and locate walk-in where shown on plan. F.E.C. shall caulk and seal the bottom of all floor screeds.
27. F.E.C. shall provide and plumb all condensate drain lines to floor drains as shown on plan. Drain lines for freezers shall be heated and all drain lines shall be properly trapped and air gaps provided as necessary.
28. E.C. shall provide, install and wire all required fused disconnects for each condensing unit to the highest standards to meet any and all applicable code requirements.
29. Bearing surface under floor panels must be level and dry. Bottom of panels must have at least 80% contact with floors. FEC to provide sand to fill remaining 20% as needed. The FEC must be able to prove that the surface in which the walk-in floor is to be installed is completely level prior to installing the walk-in cooler or freezer. In the event that the walk-in panels (walls, floors and ceiling) are installed with gaps greater than 1/8", and absence of documentation that the surface was level before installation, the FEC may be required to uninstall the panels, level the surface and reinstall the walk-in at their own cost.

MANDATORY ACCEPTABLE MANUFACTURER: Thermo Kool, Imperial Brown, Bally

ITEM #100.1 WALK-IN FREEZER CONDENSING UNIT – Provided as part of item 100.

ITEM #100.2 WALK-IN FREEZER EVAPORATOR – Provided as part of item 100.

ITEM #100.3 WALK-IN COOLER CONDENSING UNIT – Provided as part of item 100.

ITEM #100.4 WALK-IN COOLER EVAPORATOR -- Provided as part of item 100.

ITEM #101 ENCLOSED PAN RACK

Quantity: Per Drawing
Manufacturer: Cres Cor
Model: 1001833D

Features:

1. Transport Storage Cabinet, mobile, enclosed, 57-3/4" high.
2. Hi-Tensile aluminum exterior & interior, NSF
3. Provide single wall non-insulated, corrugated side walls hold (32) 18" x 26" pans slides on 1-1/2" centers, reinforced door swings 270°, gravity type latch, card clip included.
4. Provide (4) 5" swivel casters (2) braked.

ACCEPTABLE MANUFACTURERS: Advance Tabco, Channel

ITEM #102 PAN RACK

Quantity: Per Drawing
Manufacturer: Cres Cor
Model: 2071820

Features:

1. Utility rack.
2. Provide 5” casters (2 lockable).
3. Provide open sides.
4. Accommodates (20) 18” x 36” sheet pans, slides on 3” centers.
5. Provide welded aluminum construction.

ACCEPTABLE MANUFACTURERS: Cambro, Advance Tabco, New Age, Metro

ITEM #103 DUNNAGE RACK

Quantity: Per Drawing
Manufacturer: Cambro
Model: DRS – Size per drawing

Features:

1. Molded high impact plastic.
2. Slotted top.
3. Color: Speckled Gray (480).

ACCEPTABLE MANUFACTURER: Regency

ITEM #104 STORAGE RACK

Quantity: Per Drawing
Manufacturer: Metro
Model: Metromax 4 – Sized per drawing

Features:

1. 86" post with antimicrobial protection, size per plan.
2. Lockable casters.
3. 15-year warranty against corrosion.
4. Removable polymer shelf mats.
5. Adjustable shelves with antimicrobial protection.
6. Assemble and install racks, making certain that rack shelving does not interfere with door swings, lighting, drains, or any other equipment.
7. Provide 5 shelves.

ACCEPTABLE MANUFACTURER: Eagle Group, Cambro

ITEM #105 DUNNAGE RACK

Quantity: Per Drawing
Manufacturer: Cambro
Model: DRS- Size per drawing

Features:

1. Molded high impact plastic.
2. Slotted top.
3. Color: Speckled Gray (480).

ACCEPTABLE MANUFACTURER: Regency

ITEM #106 STORAGE RACK

Quantity: Per Drawing
Manufacturer: Metro
Model: Metromax 4- Sized per drawing.

Features:

1. 86" post with antimicrobial protection, size per plan.
2. Lockable casters.
3. 15-year warranty against corrosion.
4. Removable polymer shelf mats.
5. Adjustable shelves with antimicrobial protection.
6. Assemble and install racks, making certain that rack shelving does not interfere with door swings, lighting, drains, or any other equipment.
7. Provide 5 shelves.

ACCEPTABLE MANUFACTURER: Eagle Group, Cambro

ITEM #110 LOCKERS – N.I.F.E.C.

ITEM #112 DUNNAGE RACK

Quantity: Per Drawing
Manufacturer: Cambro
Model: DRS- Size per drawing

Features:

1. Molded high impact plastic.
2. Slotted top.
3. Color: Speckled Gray (480).

ACCEPTABLE MANUFACTURER: Regency

ITEM #113 CAN RACK

Quantity: Per Drawing
Manufacturer: Advance Tabco
Model: CR10-162M

Features:

1. Can Rack, mobile design with casters, with sloped glides for automatic can retrieval, designed for #10 & #5 cans, aluminum construction, holds (162) #10 cans, or (216) #5 cans.

ACCEPTABLE MANUFACTURER: Channel

ITEM #115 STORAGE RACK

Quantity: Per Drawing
Manufacturer: Metro
Model: Metromax 4- Sized per drawing.

Features:

1. 86" post with antimicrobial protection, size per plan.
2. Lockable casters.
3. 15-year warranty against corrosion.
4. Removable polymer shelf mats.
5. Adjustable shelves with antimicrobial protection.
6. Assemble and install racks, making certain that rack shelving does not interfere with door swings, lighting, drains, or any other equipment.
7. Provide 5 shelves.

ACCEPTABLE MANUFACTURER: Eagle Group, Cambro

ITEM #130 CUSTOM MILLWORK - MOBILE SCRAPPING STATION

MANUFACTURER: Approved Fabricator

QUANTITY: One (1)

MODEL: Custom Fabricated

FEATURES:

1. Unit to be shaped, sized and located where shown on plan. Construct per drawing details, the requirements of the General Standards and this specification.
2. Counter to be constructed to support all equipment, materials, utilities and products without deflection at any point. In addition, unit shall be able to support 300 pounds of live weight at any point without deflection.
3. Counter shall be constructed as a rigid structure, suitable for use in a foodservice facility of this type. Countertop edge profile per details.
4. Support on heavy duty 6” casters, with appropriate base materials attached as shown on details.
5. Unless otherwise illustrated in the detailed drawings, provide 2" high end or backsplashes wherever the counter meets an adjacent walls or other fixed equipment.
6. Wherever penetrations must be made in the counter to accommodate the passage of utilities, refuse drop holes or other needs, fully sleeve these penetrations so that liquids are prevented from running into the penetration.
7. Interior of the counter shall be constructed to provide storage and service access for the equipment shown on plan. Where the counter cavity is not serving as housing for the counter-based equipment, the remaining space shall be developed as a storage cavity. Each storage cavity shall be provided with cleanable back, bottom and sides, rising from the floor of the cabinet to a height of 12” above the floor. The balance of the cavity should be constructed with a melamine finish. Provide trim strips and other finish materials to allow counter-based equipment to be removed for service, when necessary.
8. Due to variations in construction methods between fabricators, drawing details for counters may not show all of the structural support, mounting methods and utility chases required. The counter(s) must be fabricated to meet the performance needs of the plan, and these specifications (e.g. support the beverage and ice machine without deflection, meet NSF standards, et cetera). The exterior elevations and sections do accurately indicate the exterior needs of the counter including materials, dimensions and shape.
9. The location of counter seams, laminate seams and other visible breaks must be approved by the Architect and Bakergroup. Minimize the visibility of these joints. Surfacing material seams and joints shall be designed to occur where counter angles change. Where there is a need to provide multiple sections along a straight counter, the fabricator will design the seams or surface joints to be evenly spaced across the length of the unit. No seams shall go through any heated equipment such as drop in hot wells or heated shelves.
10. Wherever mobile equipment is to be parked up against any counter, provide and install rigid stainless steel angles along the floor to prevent the parked equipment from bumping into the counter. In addition, provide a trimmed out stainless steel protective surface around the interior of counter cutouts where equipment such as lowerators are to be parked.

11. Provide for all counter doors: Three (3) Rockford Process Control (RPC) Five Knuckle Hinge in 304 stainless steel. NOTE: Where the weight of the hinged mass exceeds the support limits of the hinge, provide acceptable manufacturer hinge options for consideration by Bakergroup. Provide in all locations of doors Hafele Item No. 115.61.601: Wire Handle, Matt, Stainless Steel; grade 304, 96 CTC, 106 mm length.
12. Hinge mounts must be strong enough to prevent the hinges from pulling out of the substrate. Doors, hinges and latches shall be designed for long-term durability and have a 10-year warrantee against failure. Mount hinges per Bakergroup detail, rigidly securing the hinge to the door, using five stainless steel flathead screws for each hinge. Rigidly mount hinges to casework using two ¼" bolts similarly secured with hex flange locknuts with nylon inserts and two 3/16" flathead screws for each hinge. Door Catches: Shall be adjustable heavy duty Amerock Roller Catch BP98232G, Amerock Double Roller Catch Part No. 143 or approved equal. Provide non-magnetic type.
13. All surfaces shall be free of burrs and rough edges.
14. Mounting screws and bolts shall match the material they are securing (e.g. stainless screws to attach stainless metal banding, et cetera).
15. Follow all material and appliance manufacturer's requirements for the handling, fabrication and installation of these items. If any material is deemed unsuitable for the intended use, the F.E.C. must note this in their bid.
16. Provide stainless steel "L" shaped stopper brackets securely mounted to the ground for any equipment on casters built in counter or counter is cut out around. Stopper brackets purpose to hinder equipment from causing destruction of counter.

ITEM #131 TRASH BIN -- O.F.O.I.

ITEM #132 RECYCLING BIN -- O.F.O.I.

ITEM #133 COMPOSTING BIN -- O.F.O.I.

ITEM #135 SERVING COUNTER

Quantity: One (1)
Manufacturer: Randell
Model: RAN ST-3S

Features:

1. Top, 14 gauge stainless steel 36" unit.
2. 6" swivel casters (2 locking), standard.
3. Stainless steel construction provide laminate panels for front and sides. (Wilsonart Landmark-7981 per architect).
4. Modification for elementary height.
5. Provide latch assembly.

ACCEPTABLE MANUFACTURERS: Duke, LTI Co.

ITEM #136 FLATWARE HOLDER

Quantity: One (1)
Manufacturer: Alegacy Foodservice Products
Model: TCD6

Features:

1. Countertop Dispenser, 14-1/2"L, 11-3/4" deep, 5-1/2" front height, 8-3/8" back height, holds six cylinders, satin finish

ACCEPTABLE MANUFACTURERS: Vollrath, FMP

ITEM #137 SERVING COUNTER

Quantity: One (1)
Manufacturer: Randell
Model: RAN ST-3S

Features:

6. Top, 14 gauge stainless steel 36" unit.
7. 6" swivel casters (2 locking), standard.
8. Stainless steel construction provide laminate panels for front and sides. (Wilsonart Landmark-7981 per architect).
9. Modification for elementary height.
10. Provide latch assembly.

ACCEPTABLE MANUFACTURERS: Duke, LTI Co.

ITEM #138 FLATWARE HOLDER

Quantity: One (1)
Manufacturer: Alegacy Foodservice Products
Model: TCD6

Features:

1. Countertop Dispenser, 14-1/2"L, 11-3/4" deep, 5-1/2" front height, 8-3/8" back height, holds six cylinders, satin finish.

ACCEPTABLE MANUFACTURERS: Vollrath, FMP

PART 3 - EXECUTION

3.1. EXAMINATION

A. Verify Project Conditions: The F.E.C., before beginning work, shall examine the space and existing conditions and shall report to Architect and/or C.M. any conditions which prevents the F.E.C. from executing the work as required under the contract.

B. Take Field Dimensions: The F.E.C. shall take all field dimensions and shall be responsible for accurately incorporating them into their shop drawings, as-built drawings and will also be responsible thereafter for any problems with fit, closure, access, connection, code compliance, circulation or finish which results from any lack of timely work on the part of the F.E.C. delayed by failing to accomplish this requirement.

C. The F.E.C.'s millwork fabricator shall meet with Design Team at the Grand Rapids, Michigan office prior to preparation of shop drawings, to review expectations of millwork fabrication and shop drawings.

D. Coordinate with Other Trades: The F.E.C. shall coordinate the locations of chases, grease traps, troughs, floor recesses, roll-up doors and passage ways to ensure that the locations are correct and not conflicting with equipment, columns, footings, equipment bases, legs, et cetera.

E. Verify Installation: The F.E.C. shall verify that products (furnished under this section for installation and under any other Project Contract Document work affecting their work) have been correctly installed.

1. F.E.C. is solely responsible for delivering the foodservice equipment. The F.E.C. shall visit the site to ensure that large pieces of equipment will fit through doors, into elevators, down steps, et cetera. If lifting equipment is required to place foodservice equipment properly, the F.E.C. shall contract and bear the cost of the lifting equipment and personnel required.

2. F.E.C. shall make certain that all equipment is delivered to the site in time to fit through access passages on the path to their final locations.

F. Coordinate Counter Detailing: In detailing fixtures, the F.E.C. shall consult with piping and electrical contractors to be certain that due space allowance is made for passage and mounting of their work, particularly under lower shelves of cabinets and counters. The F.E.C. shall also counsel the trades, instructing them to keep utility runs tight to the un-used areas of the structures which these utilities are passing.

G. Walk-in Refrigeration: The F.E.C. shall verify the size of the space allocated for walk-in cooler and freezer units. If a recessed floor is being used, verify the size and slope of the recess. FLOOR IS TO BE LEVEL. DO NOT PROCEED IF CONDITIONS ARE UNSATISFACTORY FOR A PROPER INSTALLATION. Follow manufacturer's recommendations in determining relevant requirements. F.E.C. shall make certain that refrigeration systems supplied are of sufficient capacities to maintain proper temperatures in heavy use conditions and high temperature environments.

H. Base and Curb Dimensions: F.E.C. shall measure to verify that curbs and bases are level, properly sized and correctly located. Do not proceed if conditions are unsatisfactory.

I. Utility Rough-In Points: The F.E.C. will be responsible for accurately measuring the site and producing mechanical, electrical and detail drawings that will GUIDE OTHER CONTRACTORS in the work they perform in support of the foodservice plans. Once rough-ins are complete, the F.E.C. shall visit the site to measure, document and determine that the precise location of utility rough-in points exactly matches the needs of the equipment and designer’s intentions; verify against plans and drawings. Revise shop drawings to show actual locations of utility services. Issue this inspection report to the C.M., and/or Architect.

J. Ventilation Systems: All air exhaust and supply systems must be designed to prevent air flow cross-currents from occurring near foodservice ventilation hoods. Even low velocity cross-currents can easily undermine the ability of any hood to properly capture smoke and particulates. Island-style hoods are especially sensitive to the presence of cross-currents.

1. The F.E.C. shall attend all meetings related to discussions of ventilation systems at their cost.

2. F.E.C. shall coordinate with the hood manufacturer and the ventilation contractor to ensure hood design and fan sizes are appropriate for the equipment located under the hoods. The F.E.C. shall provide accurate ventilation requirements for all equipment located under the hood(s) and provide documentation of this coordination to the C.M. All hood ventilator designs must match the system variables, as designed. For example: if a larger fan is required to achieve performance at the level specified to accommodate a particular manufacturer, the F.E.C. will be responsible for the additional cost of the fan, ductwork, controls or other increases in the overall cost of the system compelled by the change to the acceptable manufacturer. The F.E.C. will also be responsible for any engineering costs incurred for re-designing the system to accommodate the acceptable manufacturer system. This includes any additional testing and balancing needed to verify system performance.

K. Timing of Examinations: F.E.C. shall examine field conditions in a timely manner, so as not to impede the progress of the project. Perform on-site inspection of utilities as they are roughed-in to make certain that specified locations are appropriate and in keeping with the design. This inspection shall be made before floors are poured or walls covered. The F.E.C. shall be responsible, thereafter, for the costs associated with reworking any building or infrastructure to properly accommodate the equipment specified.

L. Equipment Operations: F.E.C. will make certain that all equipment specified will operate properly as shown on the plan. If any piece of equipment fails to function, correctly, where located, the F.E.C. will be responsible for advising Architect and/or C.M. of the conflict. The F.E.C. has final responsibility for making certain that the equipment will, ultimately, function as intended.

3.2. INSTALLATION

A. Notice to Proper Authorities: The F.E.C., at such time so as not to impede the progress of the project, shall give to the proper authorities all notices as required by law relative to the work in their charge including the Public Health Department or State Regulatory Agencies and State Fire Marshal; obtain all official permits, licenses, et cetera, and pay such proper and legal fees to public officers and others as may be necessary for the faithful performance of the work.

B. Sealing, Closed Bases: Certain fixtures and counters will have closed bases. The F.E.C. shall erect these items, using approved mastic or silicone compound to effectively seal out all space for vermin and eliminate spaces for water to stand.

1. Openings for pipes in walls or bottom of food compartments shall be tightly sealed against the entry of vermin.

2. Reinforcing and framing members that are not totally enclosed or within walls are to be used in such a manner as to be easily cleanable.

3. All framing members shall be constructed and installed so as to eliminate raceways, which facilitate harboring of vermin.

4. The ends of all hollow sections shall be sealed.

5. Where fixed panels are applied to the outside or inside or set into an angle or other reinforced body or counter frame, the method of fastening shall be such as to minimize projections and openings.

C. Access Panels: Access panels are to be used for access to drains and junction boxes ONLY. Access panels are not to be used for any plumbing or electrical chases. The plumbing and electrical lines shall be drilled or punched through sides, tops, shelves and bottom of counters and cabinets. These holes will be the same diameter as the pipe or conduit and sealed with silicone. The penetrations shall be made as far back and off to the sides as possible. Piping shall not interfere with the operation of equipment or storage of product. All piping shall be secured in-place.

D. Set in Place: Set each item of non-mobile and non-portable equipment securely in place; level and adjust to correct height.

E. Support Equipment: Anchor equipment to supporting substrate where indicated or where needed for sustained operation and use without shifting or dislocation. Conceal anchorages where possible.

F. Anchors and Chair Carriers: Where indicated or needed for safety of the equipment operator, anchor equipment to floor or wall with stainless-steel screws or bolts.

G. Seismic Restraints: Fabricate to comply with referenced SMACNA standard, unless otherwise indicated.

H. Coordination with Other Trades: The F.E.C. is to proactively provide installation and connection information and guidance to the C.M., M.C., E.C., P.C. and others as appropriate to each piece of foodservice equipment in the project with regard to the rough-in of utilities, floor preparation, placement and connection of the equipment, building access for delivery, utility loads and other requirements, as necessary, to ensure that equipment is protected; installed and performs as specified; and the Project Contract Document specifications, and all prevailing code requirements are met.

I. Deliver to other contractors all loose plumbing parts, floor troughs, steam fitting, ventilation and electrical parts that are a part of the equipment or the work under this contract, or required for their proper installation, and give instructions for their proper installation of each item.

J. Level Counters and Tables: Adjust countertops and other work surfaces to level tolerance of 1/16 inch maximum offset and maximum variation from level or indicated slope of 1/16 inch per four (4) foot.

K. Field Joints: Complete field-assembly joints in work (joints which cannot be completed in shop) by welding, bolting-and-gasketing or similar methods as required. Set or trim gaskets flush, except for "T" gaskets as indicated. Field joints in fabricated equipment

shall be welded and work surfaces ground and polished on premises, so that upon completion each item of equipment will have true, smooth and even surfaces. Filling with solder is not permitted.

L. Connected Equipment: As distinct from field joints, where a single item of equipment must be shipped and brought into the project site in two or more sections that are welded into one unit, there are instances when two separate pieces of equipment are to be connected. For example, a dishwashing machine and the clean dishtable need to be attached. The F.E.C. shall make these connections rigid and strong by bolting the units together and sealing the joint with minimal amounts of silicone caulking. Under no circumstances shall caulking alone or excessive caulking to fill voids, be acceptable. Joints are to be watertight. Caulk shall only be applied after taping the adjacent surfaces to minimize caulk smearing on to adjacent surfaces. Failure to tape prior to caulking may result in the need to remove the caulk, restore the adjacent surfaces, and re-caulk.

M. Enclosed Spaces: Treat spaces that shall be inaccessible after equipment installation, by covering horizontal surfaces with powdered borax at rate of 4 ounces per square foot.

N. Closure Plates and Strips: Install where required, with joints coordinated with units of equipment.

O. Cut-Outs: The F.E.C. shall provide cut-outs in foodservice equipment where needed to run soda, plumbing, electric, gas or steam lines through equipment items for final connections. These cutouts are to be made at the factory when possible. If a field cut-out is required it will be made just large enough for the piping and in a concealed location. All cut-outs will be sealed and vermin proof. F.E.C. shall sleeve each cutout to prevent liquids from entering.

P. Sealants and Gaskets: Install all around each unit to make joints air-tight, watertight, vermin-proof and sanitary for cleaning purposes. Where necessary, use backer rod to shape sealant bead properly, at 1/4-inch depth. Shape exposed surfaces of sealant slightly concave, with edges flush with faces of materials at joint. At internal corner joints, apply sealant or gaskets to form a sanitary cove, of not less than 3/8-inch radius.

Q. Existing/Relocated Equipment: F.E.C. shall remove existing/relocated equipment from storage and set in place. Final connections shall be by other trades. Test each existing item for proper operation and deliver to Owner in proper working condition or in specified condition.

R. Refrigeration Lines: F.E.C. shall provide and install all connecting refrigeration lines between evaporator coils and condensing units. F.E.C. is to closely coordinate the location of these lines, evaporator coils, condensing units and all necessary components with the C.M., sizing them to accommodate building passages. All penetrations shall be sealed. All refrigerant lines shall be installed to the highest standards and in compliance with all prevailing codes. Once installed, F.E.C. shall properly evacuate and charge all lines with a refrigerant suitable to the manufacturer of the units, and to the Owner. Any special and additional equipment needs necessitated by the length of the refrigerant line runs will be the responsibility of the F.E.C. F.E.C. shall provide the C.M. with written documentation indicating the refrigerant type and quantities used.

S. Existing Refrigeration Removal: Existing refrigeration equipment that is not scheduled to be re-used shall be removed and disposed of properly by the F.E.C. or another appointed individual that the F.E.C. determines is certified. They will certify to the EPA that they have acquired recycling or recovery equipment and are complying with certification requirements for the disposal of the refrigerant set forth by the architect and/or C.M.

3.3. FIELD QUALITY CONTROL

A. Supervision: F.E.C. is to provide a competent field supervisor during the installation of this part of the Work.

1. The field supervisor shall attend scheduled progress meetings. If the field supervisor or the F.E.C.'s representative underperforms, as determined by the C.M., the F.E.C. shall assign a new representative to the project within a two-week period.

2. The field supervisor shall supervise the installation of the equipment and connections and will counsel with other contractors in regard to those connections and installation. The F.E.C. will designate a representative of their firm to REPRESENT THE F.E.C. AT ALL PROJECT MEETINGS WHERE FOODSERVICES ARE A MEANINGFUL PART OF THE DISCUSSION. This representative is contractually obligated to provide timely support for the project, both in the execution of their work and in counseling the other trades whenever there is a need for product information, installation instructions, et cetera.

3. The F.E.C. will work closely with the site supervisor of the owner; and will establish with the site supervisor of the owner the schedule of foodservice equipment shop drawings, fabrication, order placement, delivery, installation, training, and punch list dates. That schedule must be satisfactory to all contractors affected by the F.E.C.'s work. A copy of this schedule should be sent, within two (2) weeks of contract award, to Architect and/or C.M. Schedules must incorporate the delivery of fabricated foodservice equipment to the site three (3) months in advance of installation.

4. On a monthly basis, the F.E.C. and their fabricators shall submit electronic progress reports to the site supervisor and to Architect and/or C.M. The F.E.C. and their fabricators shall complete and submit each progress report by the 7th day of the month, emailing the completed, signed form to those designated by the Owner or Owner's representatives. There will be a $250 late penalty, payable as a credit to the project, for each late progress report or for the failure of the F.E.C. to submit the update. Late penalties shall be assessed on the 25th of the month, unless an extension is authorized in writing by Architect or the C.M.

5. Each progress report shall indicate the status of shop drawings and other submittals, the status of fabricated items, of orders placed, of equipment received and installed and other information as determined at the onset of the project. The report must identify deviations from original schedule plan, any anticipated challenges and/or delays to meeting the schedule and the steps the F.E.C. has

taken to rectify the issues. A progress report form will be provided to the F.E.C. and their fabricators for submission of this information.

6. If the F.E.C. falls behind in the performance of their work, as determined by Architect and/or the supervising member of the Project Team, the F.E.C. may be charged for the additional costs caused by their performance delay. The F.E.C. agrees to this clause and also agrees to pay all personnel, material and overtime charges accrued by any non-F.E.C. personnel who must be utilized in the event the F.E.C. is unable or unwilling to perform as specified or in a timely manner. Any charges accrued will be deducted from the F.E.C.'s contract payment and paid to those incurring costs for the work. Additionally, if the performance delay results in a need to establish temporary foodservices, the F.E.C. will be responsible for all costs of setting up the temporary operation, any additional costs incurred due to running the temporary operation and all costs to disband the temporary operation.

7. The F.E.C. shall arrange for instruction of the operators of each piece of equipment in its proper use and provide training to the satisfaction of Owner. Training shall be conducted by factory-authorized service representative to perform startup services and owner demonstration and training (sales representative does not qualify as factory-authorized service representative). The Owner shall be permitted to video record the training presentation and to retain a copy to the Owner for the Owner's internal use only. Repeat visits to the site may be required and should be anticipated. Coordinate final list of equipment needed to be trained on with owner before setting up. Owner shall make final decision on what equipment needs training on.

B. Weather, Labor Issues, Et cetera: The F.E.C. is cautioned to anticipate the required work required for this project. Consideration should be given to weather, labor issues, factory production schedules and other issues relating to the performance of the F.E.C.'s work or work under the Foodservice Equipment Contract. No additional monies will be paid for delayed work resulting from the F.E.C.'s failure to anticipate the scope of the work required for this project.

C. Equipment Fit: The F.E.C. will make certain that all equipment specified will fit into the spaces provided. If any piece of equipment will not fit where drawn, the F.E.C. will be responsible for advising Architect and/or C.M. of the conflict. The F.E.C. has final responsibility for making certain that equipment will fit as shown and specified.

Where racks or storage shelving are specified to be a certain length, height and width, the F.E.C. will verify that the specified racks will fit as shown and specified and will not interfere with plumbing lines, evaporators, electric conduit or other obstructions to the placement of the rack as shown.

Should the F.E.C. find that any item may not fit as drawn; the F.E.C. must send communication via email to Architect and/or C.M. describing the situation and the proposed solution. Verbal communication does not constitute adequate notification.

3.4. INSTALLATION OF EQUIPMENT:

The F.E.C. shall install the equipment at the site in full compliance with all applicable codes, rules and regulations of the Local, State and Federal governing agencies. If, because of jurisdictional trade agreements or other conditions, any work specified to be performed under this contract must be done by others, the F.E.C. shall sub-let such work to those who may be qualified to do such work or make other arrangements at the F.E.C.'s expense as may be approved by Architect and/or C.M.

During the installation, the F.E.C. must protect all surfaces that might be damaged during the installation of the foodservice equipment. This includes the need to protect wall, roof, ceiling, floors, and passageways. The F.E.C. will be responsible for the orderly repair and restoration of any surfaces that incur damage resulting from their work.

3.5. DELIVERY OF FABRICATED ITEMS

If it becomes necessary to schedule construction so that all partitions will be erected prior to the delivery of the foodservice equipment, bidders are cautioned that all equipment must be fabricated so that it can be move though finished door openings.

It is recommended that the F.E.C. document the condition of the fabricated equipment upon installation at the site with detailed photographs. The digital photos should be taken <u>after installation.</u> The pictures should be of sufficiently high resolution and quality to illustrate the condition of the equipment depicted. The photographs will be accepted by Architect and/or C.M. as a record of the condition of the equipment at installation and <u>may</u> be used to assign responsibility when damages are noted during subsequent site inspections.

3.6. INSPECTIONS BY REGULATORY AUTHORITIES

The authorized representative of State, Local and Owner inspectors and/or Architect shall have access to the work at all times wherever it is in progress or preparation. The F.E.C. shall arrange a convenient time and access for such inspection.

Inspection by Architect and/or C.M.: Architect and/or C.M. shall have free access to the F.E.C.'s shop or shops during the duration of this project for the purpose of making inspections to see that plans, specifications and detail drawings are being adhered to carefully. The F.E.C. shall correct any errors found during these inspections to the extent and within the scope of the plans, specifications, detail drawings and within the conditions of this contract.

3.7. CONDEMNATION PROCEDURES

Material delivered to the site may be inspected by the Owner or C.M. The F.E.C. shall, within 24 hours after receiving written notice to that effect, shall proceed to remove from the grounds or building all materials, fixtures or apparatus condemned in that inspection, whether the same shall be worked or unworked, or take down and remove all portions of the work which was deemed as failing to conform to the drawings and specifications and to the conditions of the contract. In the event that a piece of equipment is rejected for cause, the F.E.C. bears all costs, including, but not limited to, packaging, freight and restocking fees.

3.8. TESTING

Testing: Do not start foodservice equipment until service lines have been tested, balanced, and adjusted for pressure, voltage and similar considerations; and until water and steam lines have been cleaned and treated for sanitation. Before testing, lubricate and prep equipment in accordance with manufacturer's recommendations. Start-up and testing shall be performed by a service agency certified by the manufacturer or fabricator of each item.

A. Test each item of operational equipment to establish that it is operating properly and that all controls and safety devices are functioning.

B. Replace equipment or components of equipment which are found to be defective in its operation, including units which are below capacity or operating with excessive noise or vibration.

3.9. CLEANING

A. Cleaning During Project Progress: Clean up all debris made by F.E.C. personnel as work progresses, leaving all work spaces as clear as reasonable. At the close of each work day, secure the work site so to prevent injury or accident to others. The F.E.C. will be responsible for injuries resulting from failure to secure the work environment associated with their work.

B. Remove Coverings and Clean: After completion of installation and completion of other major work in foodservice areas, remove packaging, protective coverings, labels and clean foodservice equipment internally and externally, so that surfaces are free of grime, grease and manufacturers oils.

C. Restore Damaged Finishes: Restore exposed and semi-exposed finishes to remove abrasions and other damage. Polish exposed metal surfaces and touch-up painted surfaces. Replace work which cannot be successfully restored to the satisfaction of the Owner.

D. Final Cleaning: After testing and start-up, and before Substantial Completion, clean and sanitize foodservice equipment and leave in condition ready for use. The F.E.C. shall contact the Owner to visually inspect the cleaned foodservice equipment and shall provide the Owner with a form that once signed by the Owner, will confirm that the cleaning was performed to a satisfactory level. A copy of the signed statement will be sent to Architect and/or C.M. The F.E.C. will re-clean any equipment identified by the Owner as not cleaned to a satisfactory level. If the F.E.C. fails to clean the equipment to a satisfactory level, the F.E.C.’s contract may be back-charged for cleaning performed by the Owner or the Owner’s representatives.

3.10. DEMONSTRATION AND TRAINING

A. Demonstration: In the presence of Architect and/or C.M. and the Owner, demonstrate that each item functions as specified.

B. Instruction: Provide comprehensive on-site instruction in the proper operation and typical use of each piece of equipment. Instruction shall be provided to the Owner or designated person(s) at or near a date set by Owner at the completion of this project. Instruction shall

be to the satisfaction of the Owner. In the event that a component of operation is phased to begin at a later date than the completion of the project, the Owner shall be able to establish the date for training close to the start-up of the operation. Training shall be conducted by equipment manufacturers representatives, who are factory trained, are certified for the specific model of equipment, and have specialized operating and service knowledge of the equipment. The Owner shall be permitted to video-record the training presentation and to retain a copy for the Owner's internal use only. Training shall include operational performance and preventative maintenance requirements. This may require separate presentations for staff who operate the equipment and staff who perform preventative maintenance, to be determined by the Owner. Instruction shall be to the satisfaction of the Owner. Repeat visits to the site may be required and should be anticipated. Six months after the last date of training for each piece of equipment, the F.E.C. shall have the Owner sign off for each piece of equipment to indicate training was satisfactory and is complete.

3.11. WARRANTIES AND GUARANTEES

A. Period of Guarantee and Remedies: The F.E.C. shall guarantee materials and workmanship on ALL new equipment and all improved equipment for a period of 24 months from the date of acceptance by the Owner (Substantial Completion) and shall leave the work in perfect condition at completion. Should defects develop within the guarantee period, the F.E.C. shall, upon written notice, remedy the defects and reimburse the Owner for all damage to the other work, whether caused by the defects or by the work of correcting the defects. Guarantee shall cover all labor, parts travel and incidental expense.

1. All equipment for a period of 24 months.

2. For refurbished equipment, the warranty shall be limited to the repairs made to the equipment for a period of 24 months.

3. All compressors shall be warranted for the longer of 5 years or the manufacturer's warrantee period.

4. All walk-in refrigeration systems shall be warranted for the longer of 5 years or the manufacturer's warrantee period.

B. Repeated Warranty Calls: If a particular piece of equipment requires two or more service calls within a one-year period, the F.E.C. will extend the warranty period for another year. This clause may be repeated for the same equipment item.

C. The F.E.C. shall provide to the Owner a list identifying the service/repair companies providing warranty work for each piece of equipment; this list is subject to approval by the Owner. Warranty work shall be scheduled within 24 hours of notice of an issue, with the repair occurring within 2 business days. The Owner and the F.E.C. shall determine the process for communicating warranty repairs.

3.12. PUNCH LIST

A. Preliminary Punch List: The F.E.C. shall prepare an internal punch list and complete this list prior to completion of the project. This shall be done to minimize the final punch list

and the time to complete the final punch list. Should defects arise, the F.E.C. shall repair, replace, or, if necessary, notify the appropriate service agents that the equipment is deficient.

B. Punch List: The F.E.C. shall complete all punch lists in a timely manner acceptable to the Owner. When the project is completed and ready for inspection, the F.E.C. shall contact Architect and/or C.M. via email, advising them that the work is complete; all equipment is on-site, in-place, connected, cleaned, calibrated, tested, operational and ready for inspection. Digital documentation of each piece of equipment shall be provided to support the written statement. If Design Team is required to make additional trips to the site after the punch list inspection, the F.E.C. agrees to pay all costs incurred for each additional visit.

3.13. FINAL SUBMITTAL

Final Submittal: The F.E.C. shall submit to the Owner in a timely manner prior to opening the facility, all final submittal listed below. These shall be submitted in one (1) package at one time.

A. Operator and maintenance manuals, per Section 1.5.

B. All keys, each clearly labeled; three (3) for each lock. Provide keyed alike locks for multiple pieces of equipment per area.

C. F.E.C. prepared as-built drawings (see requirements). This requirement includes all shop drawings, rough-in drawings, elevations, section views and plans. As-built drawings must show what was actually installed on site and all changes must be identified. These drawings must be in a drawing AND electronic CAD and/or BIM format acceptable to the Owner, Architect, C.M. and Architect. Provide final drawings in DXF and AutoCAD TM 2007 or more recent version as indicated by owner.

D. Electronic copies of the buy-out documents (as-built).

3.14. CLARIFICATION

A. Questions: Questions concerning the foodservice equipment and these specifications, either before bidding or after the award of the Foodservice Equipment Contract should be addressed to the Architect and/or C.M. or as per contract documents.

B. Discrepancies: It is intended that the F.E.C. will provide the work described in the Contract Documents for this project. Where there is a discrepancy between the drawings and the written documents, the F.E.C. will provide, item for item, those items indicated on one but not the other or the more expensive model and/or quantity of items indicated AND CONSPICUOUSLY NOTE THE DISCREPANCY ON THE BID FORM. For example, a table will be provided by the F.E.C. if shown on plan but not indicated in written specifications. No additional monies will be granted to the F.E.C. if they fail to note the discrepancies on their bid form.

C. Interpretations: Architect and/or C.M. will issue final and binding interpretations regarding foodservice work contained in the foodservice bid documents.

END OF SECTION 114000

SECTION 123216
MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

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. Plastic-laminate-clad casework.
2. Casework hardware and accessories.

B. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for wood blocking for anchoring casework.

2. Section 062023 “Interior Finish Carpentry” for paneling and interior trim locations.
3. Section 092216 "Non-Structural Metal Framing" for reinforcements in metal-framed partitions for anchoring casework.
4. Section 096513 "Resilient Base and Accessories" for resilient base applied to plastic-laminate-clad casework.
5. Section 123623.13 "Plastic-Laminate-Clad Countertops."

1.3 DEFINITIONS

A. Definitions in the AWI/AWMAC/WI's "Architectural Woodwork Standards" apply to the Work of this Section.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

B. Keying Conference: Conduct conference at Project site. Incorporate keying conference decisions into final keying requirements.

1.5 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For plastic-laminate-clad casework.

1. Include plans, elevations, sections, and attachments to other work including blocking and reinforcements required for installation.
2. Indicate types and sizes of casework.
3. Indicate manufacturer's catalog numbers for casework.
4. Show fabrication details, including types and locations of hardware.
5. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and equipment.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer – demonstration of 5 years related experience on projects of similar size and scope.

B. Sample Warranty: For special warranty.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework 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 remainder of construction period. Maintain temperature and relative humidity during remainder of construction period in range

recommended for Project location by the AWI/AWMAC/WI's "Architectural Woodwork Standards."

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

C. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

D. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before enclosing them, and indicate measurements on Shop Drawings.

1.11 WARRANTY

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

1. Failures include, but are not limited to, the following:

a. Delamination of components or other failures of glue bond.
b. Warping of components.
c. Failure of operating hardware.

2. Warranty Period: Five 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. Case Systems, Inc.
2. Stevens Industries, Inc.
3. TMI Systems Design Corporation
4. Flairwood Industries.
5. Architects pre-approved equal.

B. Source Limitations: Obtain all standard plastic laminate casework from single source from single manufacturer.

2.2 GENERAL REQUIREMENTS FOR CASEWORK

A. Quality Standard: Unless otherwise indicated, comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Premium.

B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured plastic-laminate-clad casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 016000 "Product Requirements."

C. Product Designations: Drawings indicate configurations of manufactured plastic-laminate-clad casework by referencing designations of Casework Design Series numbering system in the Appendix of the AWI/AWMAC/WI's "Architectural Woodwork Standards."

2.3 PLASTIC-LAMINATE-CLAD CASEWORK

A. Design: Frameless cabinet construction with the following door and drawer-front style:
1. Flush overlay.

B. Grain Direction for Wood-Grain Plastic Laminate:

1. Doors: Vertical with continuous vertical matching.
2. Drawer Fronts: Vertical with continuous vertical matching.
3. Face Frame Members: Lengthwise.
4. End Panels: Vertical.
5. Bottoms and Tops of Units: Side to side.
6. Knee Space Panels: Vertical.
7. Aprons: Horizontal.

C. Semiexposed Materials:

1. Plastic Laminate: Grade VGS unless otherwise indicated. Provide plastic laminate for semiexposed surfaces unless otherwise indicated.

   a. Colors and Patterns: As selected by Architect from manufacturer's full range.
   b. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed.

2. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.
3. Metal for Steel Drawer Pans: Cold-rolled, carbon-steel sheet complying with ASTM A1008/A1008M; matte finish; suitable for exposed applications.
4. Unless otherwise indicated, provide specified edgebanding on all semiexposed edges.

D. Concealed Materials:
1. Plastic Laminate: Grade BKL.

2.4 CABINET HARDWARE AND ACCESSORIES

A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish commercial-quality, heavy-duty hardware.

1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.

B. Butt Hinges: Powder-coated, semiconcealed, five-knuckle hinges complying with ANSI/BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide two hinges for doors less than 48 inches high, and provide three hinges for doors more than 48 inches high.

C. Wire Pulls: Solid brushed aluminum wire pulls, fastened from back with two screws.
1. Provide two pulls for drawers more than 24 inches wide.

D. Door Catches: Powder-coated. Provide two catches on doors more than 48 inches high.

E. Provide chain door stops at tall cabinets.

F. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.

1. Doors: Provide one bumper at top and bottom of closing edge of each swinging door.
2. Drawers: Provide one bumper on back side of drawer front at each corner.

G. Drawer Slides: ANSI/BHMA A156.9, Type B05091.

1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated, steel ball-bearing slides.

H. Drawer and Hinged-Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with ANSI/BHMA A156.11, Grade 1.

1. Provide a minimum of two keys per lock and six master keys.
2. Provide locks on every door and drawer except sink base.
3. Rooms keyed alike per room and master keyed.

I. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with ANSI/BHMA A156.9, Type B04013.

2.5 MATERIALS

A. Composite Wood Products: Products shall be made without urea formaldehyde.

B. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

C. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.

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

E. Hardboard: ANSI A135.4, Class 1 tempered.

F. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.

G. PVC Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 3.0 mm thick at doors and drawer fronts, 1.0 mm thick elsewhere.

H. Adhesives: Do not use adhesives that contain urea formaldehyde.

2.6 FABRICATION

A. Plastic-Laminate-Clad Cabinet Construction: As required by referenced quality standard, but not less than the following:

1. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch particleboard.
2. Shelves: 3/4-inch-thick plywood or 1-inch- (25-mm-) thick particleboard.
3. Backs of Casework: 1/2-inch-thick particleboard or MDF where exposed, 1/4-inch-thick hardboard dadoed into sides, bottoms, and tops where not exposed.
4. Drawer Fronts: 3/4-inch particleboard.
5. Drawer Sides and Backs: 1/2-inch-thick MDF, with glued dovetail or multiple-dowel joints.
6. Drawer Bottoms: 1/4-inch MDF glued and dadoed into front, back, and sides of drawers. Use 1/2-inch material for drawers more than 24 inches wide.
7. Doors 48 Inches High or Less: 3/4 inch thick, with particleboard or MDF cores and solid-wood stiles and rails.
8. Doors More Than 48 Inches High: 1-1/8 inches (29 mm) thick, with particleboard cores.

B. Mobile Cabinets:
1. Mobile backs: 1 inch thick core.
2. Maximum load rating: 500 pounds.
3. Construction:
   a. Core: 3/4 inch thick.
   b. Core platform: 1 inch thick.
   c. Edging for platform and mobile tops: 3 mm thick.
   d. Mobile tops:
   e. Overhang at front, sides and rear.

C. Sloped Tops: Separate unit from cabinet, set at 30-degree angle.

D. Filler Strips: Provide as needed to close spaces between casework and walls, ceilings, and equipment. Fabricate from same material and with same finish as casework.
1. Provide top and bottom fillers at tall and wall cabinets to match cabinet exterior.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

3.2 INSTALLATION

A. Grade: Install casework to comply with same quality standard grade as item to be installed.

B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch. Bolt adjacent cabinets together with joints flush, tight, and uniform.

D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch.

E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."

F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

G. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 CLEANING

A. Repair or remove and replace defective work as directed on completion of installation.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

3.4 LAMINATE SCHEDULE

A. **PLAM-1**: Plastic Laminate (GP28) (**All Vertical surfaces U.N.O**).

1. Manufacturer: WILSONART
2. Color: LANDMARK WOOD
3. Finish: 7981K-28
4. Edge Color: REHAU EDGEBAND TO MATCH

B. PLAM-2~~1~~: Plastic Laminate (GP28) (All Vertical surfaces U.N.O).

1. Manufacturer: WILSONART
2. Color: Indigo
3. Finish: D379-60
4. Edge Color: REHAU EDGEBAND TO MATCH

3.5 SCHEDULE FOLLOWS

***MANUF. LISTED HERE ARE FOR REFERENCE ONLY. REFER TO SPECIFICATION FOR APPROVED BIDDERS.**
***NOT ALL CABINETS LISTED HERE ARE SPECIFIED IN PROJECT. REFER TO EQUIPMENT PLANS.**
***PROVIDE PLASTIC LAMINATE COUNTERTOP AT ALL BASE CABINETS, U.N.O.**

TAG #	TMI STYLE #	CASE STYLE#	STEVENS STYLE #	WIDTH	SIZE DEPTH	HEIGHT	DESCRIPTION	Notes
							34" DRAWER - DOOR BASE CABINETS	Locking of cabinets is typical unless noted otherwise (UNO)
B-3			10432	36"	24"	34"	Drawer, door base cabinet. 2 hinged doors, 2 drawers, 1 adjustable shelf	Locking
B-11			10425	18"	24"	34"	Drawer, door base cabinet. 1 door hinged right, 1 drawer, 1 adjustable shelf	Locking
							34" DRAWER - DOOR BASE COMBINATION CABINETS	
B-43			10129	36"	24"	34"	Door base cabinet. 2 hinged doors, 1 adjustable shelf	Locking
B-44			10129	30"	24"	34"	Door base cabinet. 2 hinged doors, 1 adjustable shelf	Locking
B-45			10129	24"	24"	34"	Door base cabinet. 2 hinged doors, 1 adjustable shelf	Locking

TAG #	TMI STYLE #	CASE STYLE#	STEVENS STYLE #	WIDTH	SIZE DEPTH	HEIGHT	DESCRIPTION	Notes
							34" DRAWER BASE CABINETS	
B-61			10371 Mod.	36"	24"	34"	Drawer base. 4 drawers equal size OR 4" top drawer , 3 bottom drawers equal	Locking
B-62			10371 Mod.	30"	24"	34"	Drawer base. 4 drawers equal size OR 4" top drawer , 3 bottom drawers equal	Locking
B-64			10370	18"	24"	34"	Drawer base. 4 drawers equal size OR 4" top drawer , 3 bottom drawers equal	Locking
B-82			10479	42"	24"	34"	Sink base. Blank panel, 2 hinged doors.	
B-91				48"	24"	34"	Sink base. 2 hinged doors. No toe base. Pocket door hardware- Accuride ProPocket	Floor finish and wall base shall be installed at cabinet interior
B-92				42"	24"	34"	Sink base. 2 hinged doors. No toe base. Pocket door hardware- Accuride ProPocket	Floor finish and wall base shall be installed at cabinet interior
B-113			10316	18"	24"	34"	Drawer base, 2 Equal Drawers (File/ File)	

TAG #	TMI STYLE #	CASE STYLE#	STEVENS STYLE #	SIZE WIDTH	SIZE DEPTH	SIZE HEIGHT	DESCRIPTION	Notes
							36" LOW MOBILE UNITS	
B-501			60181	48"	25"	36"	Mobile Closed Storage, Single face, 2 doors, vert. divider, 2 adjustable shelves, Locking casters	Locking
							24" DOOR WALL CABINETS	All Cabinets to have sloped tops with 26816 slope top cover panel, unless noted otherwise
W-3			16129	36"	14"	24"	Wall cabinet. 2 hinged doors, 2 adjustable shelves. Clear inside depth of 12", vertical divider.	Locking
W-202			16129	42"	14"	30"	Wall cabinet. 2 hinged doors, 2 adjustable shelves. Clear inside depth of 12", fixed vertical divider	Locking
W-203			16129	36"	14"	30"	Wall cabinet. 2 hinged doors, 1 adjustable shelf. Clear inside depth of 12".	Locking
W-204			16129	30"	14"	30"	Wall cabinet. 2 hinged doors, 1 adjustable shelf. Clear inside depth of 12".	Locking
W-206			16121	24"	14"	30"	Wall cabinet. 1 door hinged left, 1 adjustable shelf. Clear inside depth of 12".	Locking
W-209			16120	18"	14"	30"	Wall cabinet. 1 door hinged right, 1 adjustable shelf. Clear inside depth of 12".	Locking

TAG #	TMI STYLE #	CASE STYLE#	STEVENS STYLE #	WIDTH	SIZE DEPTH	HEIGHT	DESCRIPTION	Notes
W-804			16149	30"	18"	30"	Microwave wall cabinet. 2 hinged doors above 12"h, open compartment for micro oven 18"h, 18" overall depth	Locking
								All Cabinets to have sloped tops with 26816 slope top cover panel, unless noted otherwise
							TALL STORAGE	
T-11			26129	48"	24"	84"	Tall storage. 2 doors,1 fixed shelf, 4 adjustable shelves, fixed vertical divider.	Locking, Not sloped
T-13			26129	36"	24"	84"	Tall storage. 2 doors, 1 fixed shelf, 4 adjustable shelves.	Locking
T-14			26129	30"	24"	84"	Tall storage. 2 doors, 1 fixed shelf, 4 adjustable shelves.	Locking
T-20			26129 Mod.	36"	**30"**	84"	Tall storage. 2 doors,1 fixed shelf, 4 adjustable shelves	Locking
T-33			26605	36"	24"	84"	Teachers wardrobe cabinet. 2 hinged doors, 1 fixed shelf, 1 clothes rod, 1 vertical divider, mirror, pin tray, 4 adjustable shelves.	Locking
T-134			25542	12"	**15"**	60"	Single student wardrobe. Open front, fixed upper shelf, one ceiling mount double coat hook, countertop above cubbie.	No sloped top
T-155			63273	48"	**18"**	84"	6 lockers	No sloped top

TAG #	TMI STYLE #	CASE STYLE#	STEVENS STYLE #	WIDTH	SIZE DEPTH	HEIGHT	DESCRIPTION	Notes
							MAILBOXES	
MAIL				72"	24"	84"	See detail on sheet A1.9	Sloped top

SECTION 27 4116 – CLASSROOM AV SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Specification Sections:

1. 27 0000 – General Technology Requirements
2. 27 1000 – General Cabling Requirements
3. 27 5116 – Public Address System

1.2 SUMMARY

A. This Section includes general requirements for:

1. Interactive displays and soundfield amplification systems. Contractor to provide all equipment, materials, mounts, cabling, etc. for complete systems.

2. The soundfield amplification system will be used as the public address system in the classrooms. Refer to the public address system specification section for requirements for non-classroom spaces (corridors, offices, etc.).

1.3 SUBMITTALS

A. Product Data: For each type of product indicated, provide the manufacturer's product data sheet in electronic (PDF) format including dimensions and data on features, performance, electrical characteristics, ratings, and finishes. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. Interactive flat panel display.
2. Cable and connectors.
3. Mounts.
4. Mobile carts.
5. Sound-field amplification system.

B. Samples

1. Provide a sample end-to-end classroom HDMI/USB solution including patch cables, faceplates, and connectors for the Owner to test with their equipment.

1.4 QUALITY ASSURANCE

A. Audio Enhancement EPIC System must be provided by an authorized EPIC reseller, and installed by Audio Enhancement EPIC Level II Certified installer.

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B. Clevertouch display must be provided by an authorized Clevertouch reseller, and the lead installer must be a Clevertouch Certified Engineer or Installer.

C. AV schematics, plans, details, etc. are for conceptual purposes only. Final design to be provided by contractor and approved by Technology Designer. Notify the Technology Designer before bid period question deadline established at the pre-bid meeting should any changes in the bid documents be required to meet the design concept. Once bids have been received, contractor will be responsible for providing a solution approved by the Technology Designer for meeting the design concept.

D. All AV cabling shall be professional grade and sized appropriately for each installation. If signal degradation or image issues occur as the result of cable or adapter selection/installation, it will be replaced at no additional cost to the owner.

E. All AV connectors shall be professional grade. If signal degradation or image issues occurs or as the result of connector selection/termination, it will be replaced and re-terminated at no additional cost to the owner.

F. Contractor is responsible for providing any signal amplification and transmission necessary to ensure a completely functional and professional installation whether or not such items are specifically mentioned in the plans or specifications.

G. Contractor is responsible for all patch cables required to ensure a completely functional and professional, turn-key solution.

PART 2 - PRODUCTS

2.1 INTERACTIVE FLAT PANEL DISPLAY

A. General Requirements:

1. Model: 75” Clevertouch Impact 2 unless size is noted differently on drawings
2. Warranty: Minimum 5 years
3. MDM: Minimum 5 years license (Radix or Manufacturer’s equivalent)
4. Connectivity: HDMI and USB to the teacher’s computer
5. Accessories: Five (5) spare of each accessory that come with each display (e.g. stylus, eraser, etc.)
   Include a cleaning cloth with each display
6. The unit will be mounted to facilitate cleaning and maintenance

B. In addition to the remaining specifications, contract, and manufacturer’s requirements Contractor is responsible for the following:

1. Mount the display and ancillary equipment to facilitate cleaning and maintenance while concealing cabling and equipment that are mounted behind the display.
2. Provide appropriate wall bracing where needed.
3. Use black cable wrap to conceal any visible cables either from the front or side of the display.
4. Provide 10’ audiovisual patch cables for each display unless noted otherwise on the drawings. Provide black mesh cable wrap for AV cables and integrate data cable or other cables provided by others into the cable wrap.
5. Where shown on drawings provide proper over the board bracket and wire management to properly secure and support the unit and associated installation.

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6. Contractor to work with Owner to create a master display with customized display settings, district-standard apps, user settings, etc. Contractor to then setup all boards similarly.
7. All displays are to be installed with sources connected consistently. For example, if the instructor's computer is connected to HDMI 1 in the prototype rooms then HDMI 1 is to be used for the remaining instructor's computer connections.
8. Contractor will ensure display is on the network, named according to the district standard, enrolled in the management solution, with the latest or approved software version installed on each display.
9. Contractor is to connect display to the instructor's computer and ensure both video and USB are functioning correctly.
10. After reviewing standard classroom accessories the Owner and Technology Designer, Contractor should anticipate gathering, organizing, and delivering some accessories to the Owner in a central location, while leaving other accessories secured to the display.
11. At the completion of each room installation, Contractor is to provide photos of each installation including:
    a. Display with the Android module shown on the display
    b. Display connected to the instructor's computer, with the room number written using the display interactivity
    c. Photo of the inputs showing consistent input usage
    d. Photo of the side of the display showing the mount and cable management.

C. Software:

1. Built-in screen mirroring from Chrome, iOS, Mac OS, Windows, and Android.
2. Minimum 5 years MDM license (Radix or Manufacturer's equivalent)
3. Management software that includes as a minimum:
    a. Maintain and inventory of equipment by location, name, serial number, and software version. Group displays by building.
    b. Change device settings remotely
    c. Remotely shut down or restart individual displays or groups of displays
    d. Install apps
    e. Remotely update Android and device firmware
4. Standard software included with the equipment purchase.
5. For any software requiring licensing, include 5 years of licensing as part of base bid allowing the software to be used by all staff and students.

D. Installation Height:

1. Install so the bottom of the display screen at it's lowest position (for height adjustable mounts) is 23" aff.

E. Base Bid Manufacturers:

1. Clevertouch Impact 2

Manufacturer Contact Info:
Jack Willson, VP Clevertouch USA
jack.willson@clevertouch.com

2.2 HEIGHT ADJUSTABLE WALL MOUNT

A. General Requirements

1. Provide ability for users to raise and lower the display manually without any tools.
2. Include any accessories, extension arms, etc. required for the display.

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3. Vertical shift: Minimum 15.5” with ability to remain secure in any vertical position
4. Load capacity: Rated for the weight of the display, ancillary AV equipment, plus 50 lbs.
5. Motorized: No
6. Contractor is to adjust for ease of operation, and for leveling the display.

B. Acceptable Manufacturers

1. Display manufacturer
2. Balance Box
3. Chief Fusion Dynamic
4. Peerles

2.3 MOBILE FLAT PANEL DISPLAY CART

A. General Requirements

1. Screen Size Compatibility: 65” – 86”
2. Weight Capacity: Weight of the display plus 100 lbs.
3. Color: Black power coat finish
4. Mounting Pattern Compatibility: match interactive display
5. Orientation: Landscape
6. Height Adjustable: No
7. Locking casters: Yes (minimum 2 locking)
8. Center of Display to Floor/Table Range: 50 – 70”
9. Computer Shelf: No
10. Power Strip: Provide electrical outlet strip with cord wrap
11. Cord Management: Provide cord wrap for HDMI and USB cables
12. Contractor to place fluorescent tape on the top of the cart legs.

B. Manufacturers

1. Peerless SR598
2. Copernicus
3. Approved equivalent

2.4 HDMI EXTENDERS

A. Two options are given below. Contractor can submit the solution they are comfortable supporting throughout the warranty period.

B. Whichever option is selected, Contractor must provide a sample end-to-end solution including patch cables, faceplates, and connectors for the Owner to test with their equipment.

2.5 HDMI/USB EXTENDER (Option 1)

A. General Requirements

1. Provide HDMI and USB extenders to connect the interactive flat panel display to the instructor’s computer.
2. Format: Decora Wall-plate at teacher desk and a direct connection to the interactive display.
3. Cable: Active Optical HDMI cable

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4. HDMI: HDBaseT 4K@60Hz 4:4:4
5. USB: as required for the connected equipment
6. Instructor faceplate will have one HDMI and one USB input

B. Manufacturers:

1. Kramer CP-AOCH/60
2. Approved equivalent

2.6 HDMI/USB EXTENDER (Option 2)

A. General Requirements

1. Provide HDMI and USB extenders to connect the interactive flat panel display to the instructor's computer.
2. Format: Decora Wall-plate at teacher desk with receiver mounted behind interactive display.
3. HDMI: HDBaseT 4K@60Hz. HDCP compliance
4. USB: as required for the connected equipment
5. Instructor faceplate will have one HDMI and one USB input
6. Contractor will use plenum, shielded, pre-terminated (not field terminated), **black** Category 6 cabling for the connection between transmitter and receiver unless the manufacturer recommends using a different cable (e.g. non-shielded cable or Cat 6A cable, etc.).
7. Terminate the cable in a biscuit box secured behind the display.
8. Contractor is to modify the existing raceway/outlet or supply a surface mounted back box where necessary for the installation.
9. Mount the receiver in a serviceable location behind the display, yet concealed from audience view. Where possible, locate on the side of the display furthest from the door. Utilize cable management or cable wrap to conceal the remaining cables.

B. Manufacturers:

1. Audio Enhancement
2. Crestron
3. Extron
4. Hall Research
5. Kramer
6. Liberty

2.7 SOUND-FIELD AMPLIFICATION

A. Standard Classroom System

1. Audio Enhancement Optimum System with Integrated XD Receiver
2. Audio Enhancement MS-600 amplifier/receiver
3. Audio Enhancement WBA-601 with ambient microphone
4. One (1) teacher microphone and charger. Microphone to have an emergency and call button.
5. One (1) handheld student wireless microphone and charger
6. (4) classroom speakers appropriate to the ceiling type
7. MS-600 auxiliary input connected to the interactive display's audio out port thru the in-wall conduits.
8. Minimum 3-year manufacturer's warranty

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B. Accessories to include in the base bid:

1. Include five (5) additional teacher microphones.
2. Include five (5) handheld student wireless microphones in the base bid

C. Manufacturers:

1. Audio Enhancement EPIC/Optimum — Manufacturer Contact Info:
   Alex North
   alex.north@audioenhancement.com
   (574) 298-4880
2. Other manufacturers can be submitted as a voluntary alternate

2.8 CEILING SPEAKERS

A. In rooms with accessible suspended ceiling tiles speakers shall be recessed-mounted with white grilles.

B. In classrooms with open ceilings provide white WS-09 wall speakers and mount horizontally from the roof beams. Review prototype installation with the Owner, CM or Barton Malow before proceeding.

C. In rooms with open ceilings with no roof beams provide white WS-09 wall speakers and mount to the walls or roof structure as appropriate.

2.9 AV CABLES

A. HDMI cables and adapters are to be hi-speed HDMI cables meeting or exceeding the following:

1. Contractor is to test the cables with the Owner's equipment and must demonstrate a 4K image at 50Hz or higher.
2. Certified to pass complete EDID information
3. Throughput of at least 18 Gbps and designed for 4K@60 4:4:4.
4. Patch cables for user equipment are to be rated by manufacturer as "flexible".
5. Provide strain relief as necessary or as recommended by manufacturer for utilized cable distance.
6. Distances:
   a. For distances up to 25' use a 24AWG HDMI cable (patch cables <15' can be 26 AWG)
   b. For distances >25' use an active Cat 6 HDMI extender or active fiber HDMI cables.

B. Manufactures:

a. Comprehensive AV/IT Series
b. Crestron
c. Extron
d. Kramer

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2.10 FACEPLATES AND MODULE FRAMES

A. Faceplates shall be sized to accommodate the raceway, back box, or floorbox for each location with adequate modules for the required jacks.

B. The following are general guidelines for faceplates:

1. For recessed boxes and surface-mounted faceplates, data faceplates shall be stainless steel with module frames or decora inserts. A/V faceplates may be plastic if necessary to provide the required A/V inserts.
2. Where single-channel surface-mounted raceway and boxes are used, faceplates shall match the raceway color.
3. Where dual-channel surface-mounted raceway is used (e.g. Wiremold V4000), faceplate shall match the faceplates used in the existing installation.
4. Plastic faceplates are to be used where necessary to coordinate and match modular furniture systems.
5. Blank faceplates shall be stainless steel.
6. Blank inserts for dual-channel raceway shall match the faceplate type and color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Review mounting locations before installation. Coordinate locations with the electrical, mechanical, and architectural contractors and mitigate conflicts with other devices and boards.

B. Coordinate mounting height/locations with existing conditions and mount to avoid covering existing devices or devices to be installed during construction.

C. Contractor shall notify Technology Designer of any conflicts before installation.

3.2 MATERIAL HANDLING

A. Contractor shall have a representative onsite to receive delivery of Owner-furnished equipment and verify equipment quantities. Any quantity deviations or items damaged on delivery shall be noted to the Owner in writing immediately following delivery.

B. Contractor shall sign for all equipment that will be installed under their contract and shall be responsible for the equipment until the complete room systems are substantially complete and transferred to the Owner. Contractor will be responsible for coordinating replacement equipment for any items non-functioning upon delivery, and will replace any equipment missing or damaged during installation.

C. Contractor will be responsible for storing equipment until the equipment can be installed. Owner may be able to provide space in a central location for a portion of the Contractor's equipment. Contractor is responsible for transporting the equipment between the storage space and the individual buildings.

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D. Contractor is responsible for any equipment stored on premise. The Owner shall not be responsible for theft or damage to any equipment prior to Owner's acceptance of equipment after it is fully installed and operational.

E. Contractor is responsible to remove packing materials and general debris from the site. The Owner's trash cans and dumpsters are not to be use used except for minor debris cleanup. Contractor is responsible for arranging dumpster drop off and pickup if they choose to use a dumpster as opposed to removing the materials from the site. Any dumpster locations and delivery/pickup times are to be coordinated with the Owner to avoid conflicts with parking, activities, or student drop off / pick up times.

3.3 INSTALLATION

A. Contractor shall choose appropriate mounting method and materials for each location based on manufacturer's requirements, wall construction, building structure, etc.

B. Coordinate equipment location with electrical contractor. Location shown on drawings is approximate; contractor may shift slightly to avoid obstructions (lights, overhead mechanical, etc.) however location must accommodate the interactive display and marker boards.

C. Equipment that extends more than 4" from the wall will be mounted a minimum of 80" above finished floor unless reviewed and approved by Technology Designer or Owner.

D. Install all components according to manufacturer's guidelines. Provide raceway as required for the installation to conceal cables.

E. Provide wire management and cable wrap to manage and conceal cables between the wall and source. Submit cable wrap color for approval prior to installation.

F. Amplifiers or other electronics that have AC line voltage power requirements can not be mounted above the ceiling.

G. Install safety cable for all ceiling equipment supported by the building steel.

H. Contractor is to register all equipment on behalf of the Owner.

3.4 DEMONSTRATION / COMMISSIONING

A. Contractor will setup a prototype classroom with all of the cabling, equipment, and connectors found in a typical classroom. Contractor will demonstrate functionality to the Owner and Technology Designer prior to installing the remaining spaces.

1. The prototype classroom will be setup in time to allow the Owner to test additional equipment in the space.
2. If the construction schedule does not allow a prototype to be setup in a classroom, contractor will utilize all cabling, equipment, and connectors to setup a prototype of the connectivity in a separate space for approval of components. Contractor will still review a typical physical installation before completing all spaces.

B. Demonstration:
1. Contractor to provide one 2-hour overview of the equipment for the pilot classroom teachers.

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2. Contractor to provide one 1-hour overview for the classroom soundfield system. This training will occur after the Owner moves into the building.
3. Contractor to provide training on the Epic system as requested by the administration and office staff.

3.5 AS-BUILT DOCUMENTATION

A. Provide spreadsheet by building identifying installed components for the interactive displays and soundfield systems. Spreadsheet format to be approved by Technology Designer. Include:

1. Location (architectural room number and owner's room number)
2. Manufacturer and model name
3. Model number
4. Display size
5. Serial number (display and Android module)
6. IP address and MAC address for networkable equipment
7. Other pertinent data for the specific equipment.

B. Provide schematic diagram of final AV systems reflecting any changes approved during implementation. Include:

1. Audio flow for each system
2. Video flow for each system

C. Provide complete manufacturer's installation, set-up and maintenance instructions.

D. Provide evidence that all equipment has been registered with the manufacturer on behalf of the owner.

3.6 SPARES

A. Repeated from sections above

1. Five (5) teacher microphones
2. Five (5) handheld student microphones
3. Five (5) spare of each accessory that come with each display (e.g. stylus, eraser, etc.)

END OF SECTION 27 4116

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SECTION 323113 - CHAIN LINK FENCES AND GATES

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. Chain-link fences.
2. Swing gates.

B. Related Requirements:

1. Section 03 3000 "Cast-in-Place Concrete" for cast-in-place concrete post footings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Fence and gate posts, rails, and fittings.
b. Chain-link fabric, reinforcements, and attachments.
c. Gates and hardware.

B. Shop Drawings: For each type of fence and gate assembly.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include accessories, hardware, gate operation, and operational clearances.

C. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:

1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

1.4 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 FENCE FRAMEWORK

A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:

1. Fence Height: 72 inches.
2. Light-Industrial-Strength Material: Group IC-L, round steel pipe, electric-resistance-welded pipe.

    a. Line Post: 2.375 inches in diameter.
    b. End, Corner, and Pull Posts: 2.875 inches.

3. Horizontal Framework Members: Intermediate, top and bottom rails according to ASTM F 1043.

    a. Top Rail: 1.66 inches in diameter.

4. Brace Rails: ASTM F 1043.
5. Metallic Coating for Steel Framework:

    a. Type A: Not less than minimum 2.0-oz./sq. ft. average zinc coating according to ASTM A 123 or 4.0-oz./sq. ft. zinc coating according to ASTM A 653.
    b. Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
    c. External, Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil-thick, zinc-pigmented coating.
    d. Type C: Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
    e. Coatings: Any coating above.

6. Polymer coating over metallic coating.

    a. Color: Black, according to ASTM F 934.

2.2 SWING GATES

A. General: Comply with ASTM F 900 for the following swing-gate types:
1. Single gate.
2. Double gate.

B. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1083 and ASTM F 1043 for materials and protective coatings.

1. Steel Pipe Sizes: Refer to plan detail for sizes

C. Metal Pipe and Tubing: Aluminum. Comply with ASTM B 429 and ASTM F 1043 for materials and protective coatings.
   1. Frames and Bracing: Fabricate members from round tubing with outside dimension and weight according to ASTM F 900.
   2. Aluminum Pipe Sizes: Refer to plan detail for sizes.

D. Frame Corner Construction: As follows:

   1. Welded or assembled with corner fittings and 5/16-inch (7.9-mm-) diameter, adjustable truss rods for panels 5 feet (1.52 m) wide or wider.

E. Gate Posts: Fabricate members from round galvanized steel pipe with outside dimension and weight according to ASTM F 900.

F. Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following: Latches permitting operation from both sides of gate, hinges, center gate stops and, for each gate leaf more than 5 feet (1.5 m) wide, keepers. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.

2.3 FITTINGS

A. Provide fittings according to ASTM F 626.

B. Post Caps: Provide for each post.

   1. Provide line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: For each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

   1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
   2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails to posts.

E. Tension and Brace Bands: Pressed steel.

F. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.

H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:

I. Finish:

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.

a. Polymer coating over metallic coating.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

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

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION

A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.

1. Install fencing on established boundary lines inside property line.

B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

a. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

D. Line Posts: Space line posts uniformly at 96 inches o.c.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts

with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. Locate horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

G. Intermediate and Bottom Rails: Secure to posts with fittings.

H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails. Anchor to framework so fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.

J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

K. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side.

L. Privacy Fabric Screen: Install fabric screen, securely fastened in place.

3.4 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.5 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 32 3113

Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

BID AND CONSTRUCTION
JANUARY 26, 2024

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

DIRECTORY

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905 SOUTH BLVD EAST
ROCHESTER HILLS, MI 48307
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Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024

LSD SB-005
JOB 2616.01A

SHEET TITLE: TITLE SHEET

SHEET NO. G0.1

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LANSING SCHOOL DISTRICT
WILLOW ELEMENTARY

1012 W. WILLOW STREET
LANSING, MICHIGAN 48915

DEVELOPMENT TEAM

CIVIL ENGINEER
SPALDING DeDECKER
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CITY OF LANSING
DEPARTMENT OF ECONOMIC DEVELOPMENT & PLANNING
316 N. CAPITOL AVE.
LANSING, MI 48933
CONTACT SUSAN STACHOWIAK
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ENGINEERING
CITY OF LANSING
PUBLIC SERVICE DEPARTMENT - ENGINEERING
124 W. MICHIGAN AVE.
LANSING, MI 48933
CONTACT DANIEL DANKE
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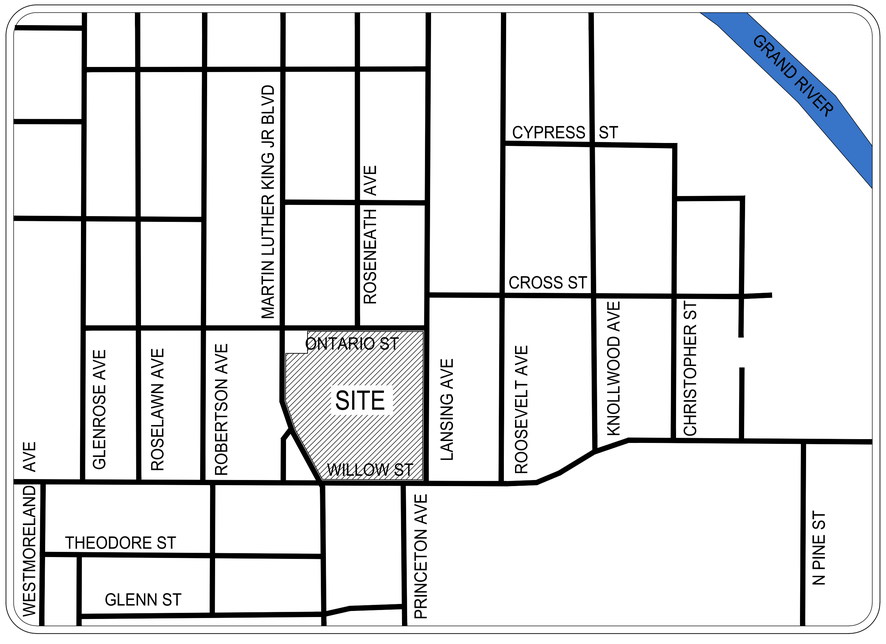
FIRE DEPT.
CITY OF LANSING FIRE DEPARTMENT
120 E. SHIAWASSEE ST
LANSING, MI 48933
CONTACT MARK BURGER
PHONE 517-483-4200



LOCATION MAP
NTS

PROJECT NARRATIVE
THE NEW WILLOW ELEMENTARY SCHOOL WILL BE APPROXIMATELY 74,000 SQUARE FEET AND IS COMPRISED OF A MAIN BUILDING WITH THREE SEPARATE CLASSROOM POD BUILDINGS. SITE FEATURES INCLUDE PATHWAYS BETWEEN BUILDINGS, PLAYGROUND AREAS, COMMUNITY COURT, COMMUNITY GARDEN, AND ON GRADE PARKING WITH CIRCULATION TO AND FROM THE PROPERTY.

WETLANDS
THERE ARE NO EXISTING WETLANDS ON-SITE.

FLOODPLAIN NOTE
PER THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD MAP (MAP NO. 26125C0658F, DATED SEPTEMBER 29, 2006), THE SITE LIES WITHIN ZONE X WHICH ARE AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

CIVIL SHEET INDEX

Sheet Number	Sheet Title
C1.0	GENERAL PLAN
C2.1	DEMOLITION PLAN
C3.1	SESC PLAN
C3.2	SESC DETAILS
C4.1	PAVING PLAN
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C4.3	AMPHITHEATER EXHIBIT
C4.4	AMPHITHEATER EXHIBIT
C5.1	GRADING PLAN
C5.2	GRADING PLAN
C6.1	UTILITY PLAN
C6.2	UTILITY DETAIL
C6.3	UTILITY DETAIL
C6.4	UTILITY DETAIL
C7.1	DRAINAGE AREA MAP

ATTACHED PLANS
- TOPOGRAPHIC/BOUNDARY SURVEY BY CAMPBELL SURVEYING ENGINEERING, INC. DATED NOV. 14, 2022 (1 SHEET)
- STRUCTURE INVERT REPORT BY CAMPBELL SURVEYING ENGINEERING, INC. DATED OCT. 15 2022 (3 SHEETS)

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Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

C:\Users\91167\Desktop\Gengler Sign & Seal.png

Lansing School District

ISSUANCES	DATE
BID AND CONSTRUCTION	01.26.2024
ADDENDUM #3	03.15.2024

KEY PLAN
N

JOB NO. 2616.01A

SHEET TITLE
COVER

SHEET NO.
C0.0

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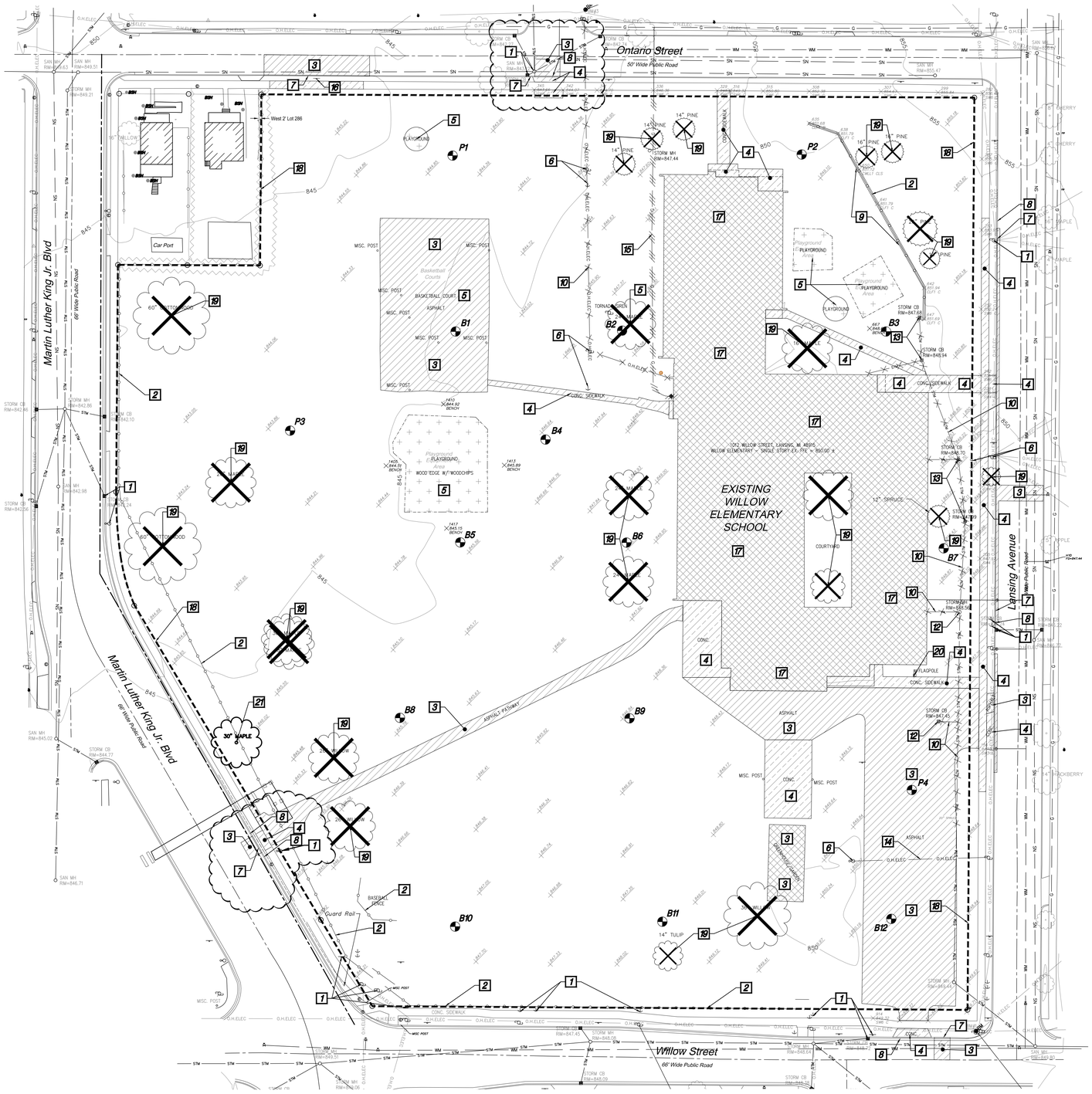


DEMOLITION NOTES

1. PROTECT EXISTING UTILITIES AND UTILITY STRUCTURES TO REMAIN.
2. REMOVE EXISTING CHAIN LINK FENCE, INCLUDING ALL GATES, POSTS, AND FOOTINGS.
3. REMOVE ASPHALT PAVEMENT TO FULL DEPTH (ASSUMED TO BE 2"-4" BASED ON THE GEOTECH REPORTS). SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. EXCAVATE EXISTING AGGREGATE BASE AND SUBGRADE AS NECESSARY TO INSTALL NEW PAVEMENT SECTION INCLUDING NEW AGGREGATE BASE
4. REMOVE CONCRETE PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT.
5. REMOVE AND DISPOSE OF RECREATIONAL, ATHLETIC, AND PLAYGROUND EQUIPMENT, BENCHES, BLEACHERS, ETC. THAT FALL WITHIN THE CONSTRUCTION AREA.
6. REMOVE EXISTING UTILITIES AND UTILITY STRUCTURES.
7. REMOVE CONCRETE CURB AND GUTTER, SAWCUT FULL DEPTH TO NEAREST JOINT, WHERE SHOWN. REMOVAL LIMITS TO BE FIELD VERIFIED BY ENGINEER.
8. PROTECT EXISTING CONCRETE CURB AND GUTTER TO REMAIN.
9. REMOVE EXISTING RETAINING WALL, INCLUDING FOOTINGS.
10. REMOVE EXISTING UTILITY PIPE, BACKFILL WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY.
11. ABANDON EXISTING UTILITY PIPE IN PLACE (CONTRACTOR TO CONFIRM NO CONFLICTS). CUT AND INSTALL WATERTIGHT CAP AT EXISTING PIPE AND INSTALL BULKHEAD AT STRUCTURES WHERE PIPE IS TO BE ABANDONED IN PLACE. FILL WITH FLOWABLE GROUT.
12. REMOVE EXISTING UTILITY STRUCTURE COMPLETE. BACKFILL WITH CLASS II FILL AND COMPACT TO 95% MAXIMUM DENSITY.
13. ABANDON EXISTING UTILITY STRUCTURE. REFER TO DETAIL.
14. REMOVE AND DISPOSE OF EXISTING OVERHEAD ELECTRICAL LINES. CONTRACTOR TO COORDINATE REMOVAL OF OVERHEAD ELECTRICS WITH BWL. CONTRACTOR TO KEEP ANY EXISTING BUILDING OVERHEAD ELECTRICAL LINES ACTIVE UNTIL BUILDING DEMOLITION PROCESS BEGINS.
15. ABANDON EXISTING GAS MAIN, INCLUDING, BUT NOT LIMITED TO ALL VALVES, REGULATORS, AND METERS AS SHOWN. CAP EXISTING GAS SERVICE TO THE MAIN LINE. REMOVE AND CAP EXISTING GAS MAIN AS NECESSARY. CONTRACTOR TO KEEP ANY EXISTING BUILDING GAS LINES ACTIVE UNTIL THE BUILDING DEMOLITION PROCESS BEGINS.
16. REMOVE AND SALVAGE EXISTING SIGN.
17. REMOVE AND PROPERLY DISPOSE OF THE ENTIRE EXISTING BUILDING INCLUDING (BUT NOT LIMITED TO) ROOF, STRUCTURE, WALLS, DOORS, WINDOWS, FIXTURES, EQUIPMENT, MEP SYSTEMS, FLOOR SLAB, FOUNDATION WALLS, AND FOOTINGS. BACKFILL EXCAVATIONS FROM DEMOLITION ACTIVITIES WITH CLASS 2 ENGINEERED FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. CUT AND CAP ALL IMPACTED SITE UTILITIES AS INDICATED
18. CLEAR AND GRUB TO THE LIMITS SHOWN. INCLUDE REMOVAL OF ALL SIGNS, POSTS, FOOTINGS, GRAVEL, BRUSH, SHRUBS, GRASS, AND TREES NOT INDICATED FOR PROTECTION, INCLUDING ROOTS. STRIP TOPSOIL AND STOCKPILE ON SITE IN DESIGNATED LOCATION.
19. REMOVE EXISTING TREE (INCLUDING STUMPS AND ROOTS).
20. REMOVE AND DISPOSE OF EXISTING FLAG POLE, INCLUDING ANY FOOTINGS.
21. PROTECT EXISTING TREE. SEE TREE PROTECTION FENCE DETAIL THIS SHEET

UNLESS OTHERWISE SPECIFIED, PROTECT EXISTING UTILITIES AND UTILITY STRUCTURES TO REMAIN.

EXISTING SIGNAGE AND MAILBOXES WITHIN THE CLEARING LIMITS ARE TO BE REMOVED AND DISPOSED OF.

REMOVE EXISTING LIGHT POLES. REMOVE AND PROPERLY DISPOSE OF ELECTRICAL DEVICES AND ALL CONNECTIONS.

ABANDON EXISTING STORM SEWER PIPE IN PLACE (CONTRACTOR TO CONFIRM NO CONFLICTS). CUT AND INSTALL WATERTIGHT CAP AT EXISTING PIPE AND INSTALL WATERTIGHT BULKHEAD AT STRUCTURES WHERE PIPE IS TO BE ABANDONED IN PLACE. REMOVE AND INSTALL WATERTIGHT CAPS FOR EXISTING STORM SEWER PIPE AS NECESSARY. FILL WITH FLOWABLE GROUT. CONTRACTOR TO KEEP ANY EXISTING BUILDING STORM LINES ACTIVE UNTIL THE BUILDING DEMOLITION PROCESS BEGINS.

CUT EXISTING SANITARY SEWER STRUCTURE 3' BELOW GRADE. FILL WITH GROUT AND BACKFILL UP TO GRADE WITH CLASS II FILL AND COMPACT TO 95% OF MAXIMUM DENSITY. REFER TO EXISTING UTILITY STRUCTURE ABANDONMENT DETAIL THIS SHEET FOR ABANDONMENT PROCESS. CONTRACTOR TO KEEP ANY EXISTING BUILDING SANITARY LINES ACTIVE UNTIL THE BUILDING DEMOLITION PROCESS BEGINS.

ABANDON EXISTING SANITARY SEWER PIPE IN PLACE (CONTRACTOR TO CONFIRM NO CONFLICTS). CUT AND INSTALL WATERTIGHT CAP AT EXISTING PIPE AND INSTALL WATERTIGHT BULKHEAD AT STRUCTURES WHERE PIPE IS TO BE ABANDONED IN PLACE. REMOVE AND INSTALL WATERTIGHT CAPS FOR EXISTING SANITARY SEWER PIPE AS NECESSARY. FILL WITH FLOWABLE GROUT. CONTRACTOR TO KEEP ANY EXISTING BUILDING SANITARY LINES ACTIVE UNTIL THE BUILDING DEMOLITION PROCESS BEGINS.

ABANDON EXISTING WATER MAIN PIPE AND APPLICABLE STRUCTURES (CONTRACTOR TO CONFIRM NO CONFLICTS). BACKFILL WITH CLASS II SAND AND COMPACT TO 95% MAXIMUM DENSITY. INSTALL WATERTIGHT PLUGS AND THRUST BLOCKS WHERE EXISTING WATER MAIN PIPE ARE TO BE DISCONNECTED. CONTRACTOR TO KEEP ANY EXISTING BUILDING WATER MAIN LINES ACTIVE UNTIL THE BUILDING DEMOLITION PROCESS BEGINS.

ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS II FILL MATERIAL, IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

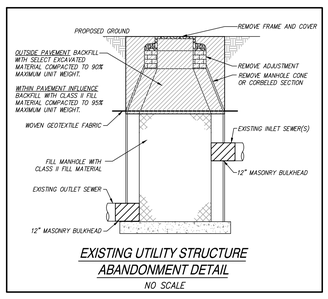
CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BID. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

CONTRACTOR TO PROTECT EXISTING WALKS, PAVEMENT, CURBS, GUTTERS, WALLS, FENCES, GATES, LANDSCAPING AND TREES TO REMAIN DURING CONSTRUCTION.

KINGSCOTT ASSOCIATES, INC. WILL PREPARE AND INCLUDE SPECIFICATION SECTION 012200 UNIT PRICES FOR UNDERCUT AND REPLACEMENT OF POOR SOILS. UNIT PRICE TO INCLUDE DISPOSAL OF POOR SOILS AND IMPORT AND PLACEMENT OF 1"X3" CRUSHED CONCRETE OR 21AA CRUSHED CONCRETE, WITH GEOTEXTILE FABRIC, UP TO PROPOSED SUBGRADE.

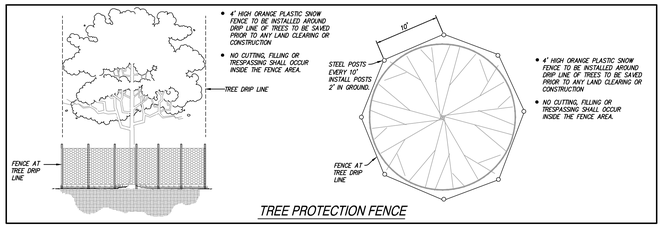
PROTECT GEOTHERMAL BORINGS DURING DEMOLITION

XX — APPROXIMATE BORING LOCATION WITH ID



EXISTING UTILITY STRUCTURE ABANDONMENT DETAIL

NO SCALE



TREE PROTECTION FENCE

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

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Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID AND CONSTRUCTION	01.26.2024
ADDENDUM #3	03.15.2024

KEY PLAN

N

JOB NO. 2616.01A

SHEET TITLE

DEMOLITION PLAN

SHEET NO.

C2.1

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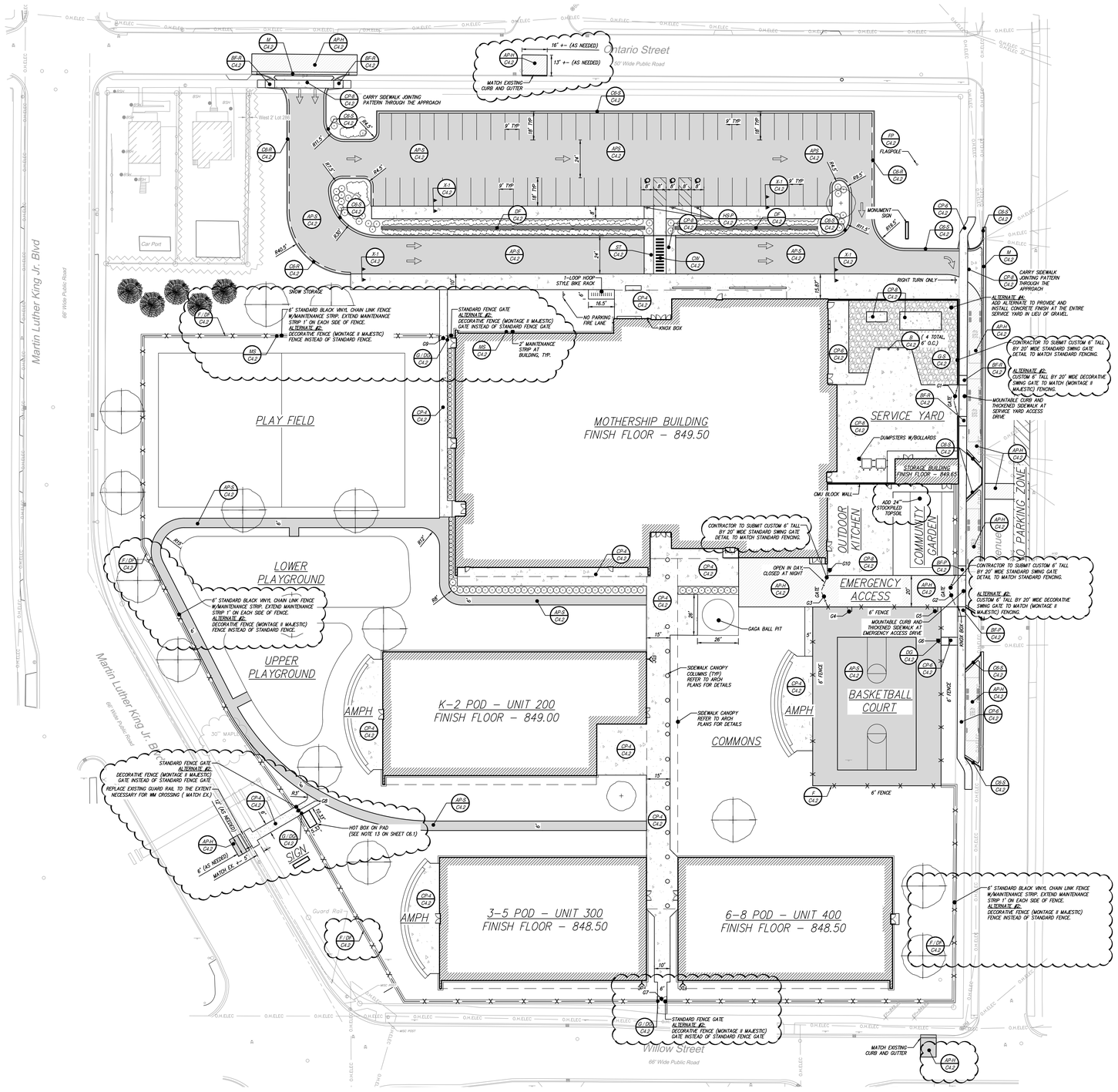

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

GRADING LEGEND

850	EXISTING ELEVATION
• TC 000.00 • G 000.00	PROPOSED TOP OF CURB ELEVATION PROPOSED GUTTER ELEVATION
• G 000.00	OUTSIDE GRADE ELEVATION
11.30 11.31	EXISTING CONTOURS
11.30	PROPOSED CONTOURS
• TP 000.00	TOP OF PAVEMENT ELEVATION
• TW 000.00	TOP OF WALK ELEVATION
• FG 000.00	FINISH GRADE ELEVATION
• T/WALL 000.00	TOP OF WALL ELEVATION
• ME 000.00	MATCH EXISTING ELEVATION
	FLOW ARROW

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE, STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 XXX — STRUCT. NO., STRUCT. TYPE
- DECORATIVE GATE: GXX

PAVING CONSTRUCTION NOTES

1. EARTHWORK AND PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE FOLLOWING ITEMS.
2. REMOVE ANY EXISTING TOPSOIL, VEGETATION, TREES AND OTHER DELETERIOUS MATERIALS TO EXPOSE THE SUBGRADE SOIL. TREE ROOTS SHALL BE COMPLETELY REMOVED.
3. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
4. THE TOP 12 INCHES OF THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91).
5. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOFROLLED UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
6. THE AGGREGATE BASE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE PAVED EDGE.
7. ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY NO LESS THAN 97 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MARSHALL METHOD.
8. A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN THE LEVELING COURSE AND THE WEARING COURSE WHEN EITHER 24 HOURS HAVE ELAPSED BETWEEN PLACEMENT OF THE BITUMINOUS COURSES OR THE SURFACE OF THE PAVEMENT HAS BEEN CONTAMINATED WITH DIRT, DUST, OR FOREIGN MATERIAL. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.1 GALLONS/S.Y. IN THE EVENT A BOND COAT IS NOT REQUIRED, THE LEVELING COURSE MAY REQUIRE LOCALIZED BROOM CLEANING.
9. PERFORMANCE GRADE PG64-28 ASPHALT CEMENT SHALL BE USED IN THE PRODUCTION OF ALL BITUMINOUS MIXTURES. RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE ALLOWED ONLY AS SPECIFIED BY THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, UNLESS NOTED ON THE PROJECT DETAILS.
10. CONSTRUCTION TRAFFIC SHALL BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE PLACEMENT OF THE FINAL LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR TO ANY DAMAGED SECTION RESULTING FROM CONSTRUCTION ACTIVITY.
11. TAPER CURB HEIGHT DOWN TO ZERO HEIGHT IN FIVE FEET AT ALL CURB ENDINGS UNLESS OTHERWISE NOTED ON THE PLAN.
12. WHERE CURB AND GUTTER SECTION IS ADJACENT TO A BARRIER FREE RAMP, DROP CURB HEIGHT TO MAXIMUM 1/4" ACROSS THE RAMP OPENING.
13. DIRECTIONAL ARROW PAVEMENT MARKINGS AND PAVEMENT MARKING LETTERING WHERE INDICATED SHALL BE WHITE PREFORMED THERMOPLASTIC UNLESS OTHERWISE NOTED. INSTALLATION OF THESE PERMANENT PAVEMENT MARKINGS SHALL BE PERFORMED PER THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTIONS 811 AND 920.
14. CONTRACTOR SHALL PROTECT EXISTING CURB, GUTTER, SIDEWALK, WALLS, FENCES AND ALL OTHER EXISTING SITE FEATURES NOT INDICATED FOR REMOVAL OR REHABILITATION.
15. PLACE EXPANSION JOINTS WHERE NEW CONCRETE PAVEMENT OR WALKS ABUT BUILDING WALLS (PROPOSED OR EXISTING), COLUMN WALLS OR BASES, CONCRETE FOUNDATIONS OR BASES, CURBS, OR EXISTING CONCRETE PAVEMENT. PLACE JOINT SEALANT ON ALL EXPANSION JOINTS.
16. CONTRACTOR TO CONSTRUCT CONTRACTION AND EXPANSION JOINTS IN ALL NEW CONCRETE PAVEMENT. CONTRACTION JOINTS SHALL BE TOOLED WHERE SIDEWALK WIDTH IS 8' OR LESS, AND SHALL BE SPACED EQUAL TO THE WIDTH OF THE PAVEMENT (I.E. 8' SPACING FOR 8' WIDE WALK), BUT NOT MORE THAN 10' APART. PLACE EXPANSION JOINTS WITH JOINT SEALANT AT MAXIMUM 50' SPACING. CONTRACTOR SHALL GENERALLY MATCH THE JOINT PATTERNS FOR CONCRETE PAVEMENT WHEN SHOWN ON THE PLANS.
17. WHERE THESE PLANS DIFFER FROM THE STANDARD DETAILS OR STANDARD SPECIFICATIONS OF THE COMMUNITY, THE COMMUNITY REQUIREMENTS SHALL GOVERN.
18. CONCRETE PAVEMENT SHALL MEET THE REQUIREMENTS FOR MDOT GRADE 4000 CONCRETE PER THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

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Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID AND CONSTRUCTION	01.26.2024
ADDENDUM #3	03.15.2024

KEY PLAN

N

JOB NO. 2616.01A

SHEET TITLE

PAVING PLAN

SHEET NO.

C4.1

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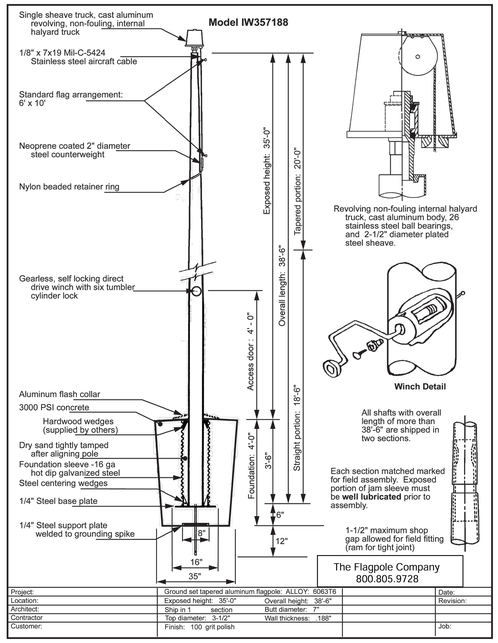
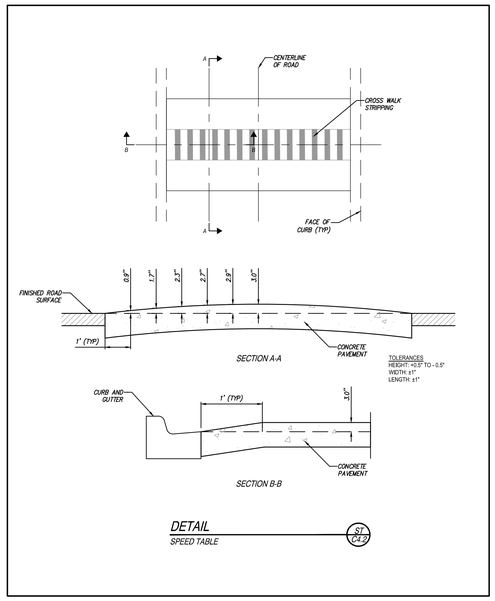
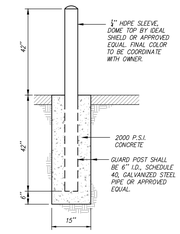


Project:	Ground set tapered aluminum flagpole: ALLOY: 6063T6		Date:
Location:	Exposed height: 35'-0"	Overall height: 38'-6"	Revision:
Architect:	Ship in 1 section	Butt diameter: 7"	
Contractor	Top diameter: 3-1/2"	Wall thickness: .188"	
Customer:	Finish: 100 grit polish		Job:

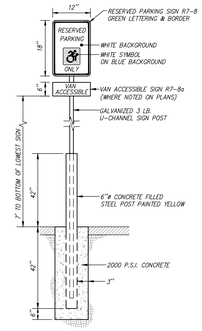
SECTION FLAGPOLE — FP C4.2



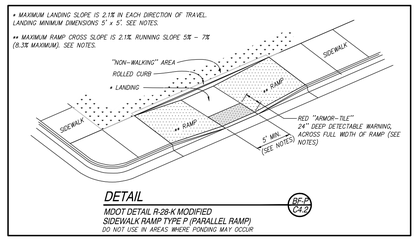
DETAIL SPEED TABLE — ST C4.2



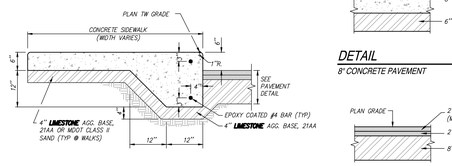
DETAIL BOLLARD DETAIL — B C4.2



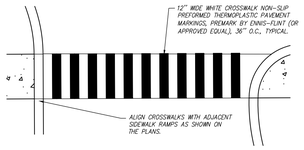
DETAIL BARRIER FREE SIGN IN PAVEMENT DETAIL — BF-R C4.2



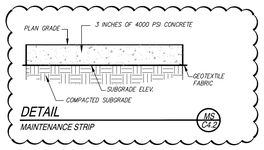
DETAIL
MDOT DETAIL R-28-K MODIFIED
SIDEWALK RAMP TYPE P (PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR
BF-P C4.2



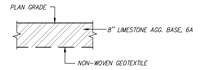
SECTION INTEGRAL WALK/CURB — X-1 C4.2



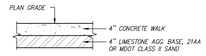
DETAIL CROSSWALK — CW C4.2



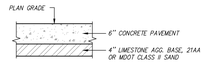
DETAIL MAINTENANCE STRIP — MS C4.2



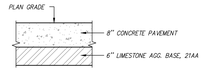
DETAIL STANDARD GRAVEL — GS C4.2



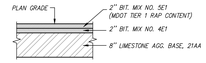
DETAIL 4' CONCRETE WALK — CW-4 C4.2



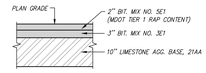
DETAIL 6' CONCRETE WALK — CP-6 C4.2



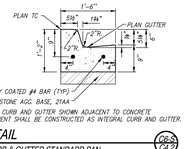
DETAIL 8' CONCRETE PAVEMENT — CP-8 C4.2



DETAIL STANDARD BITUMINOUS PAVEMENT — AP-S C4.2

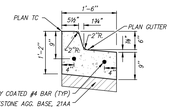


DETAIL HEAVY DUTY BITUMINOUS PAVEMENT — AP-H C4.2

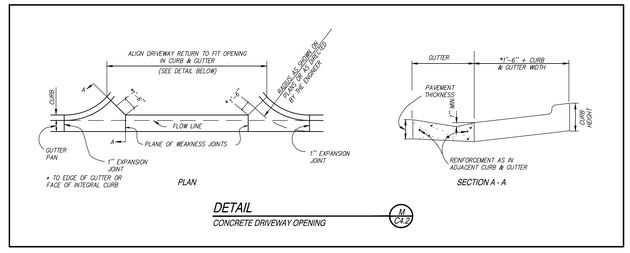


NOTE: CURB AND GUTTER SHOWN ADJACENT TO CONCRETE PAVEMENT SHALL BE CONSTRUCTED AS INTEGRAL CURB AND GUTTER.

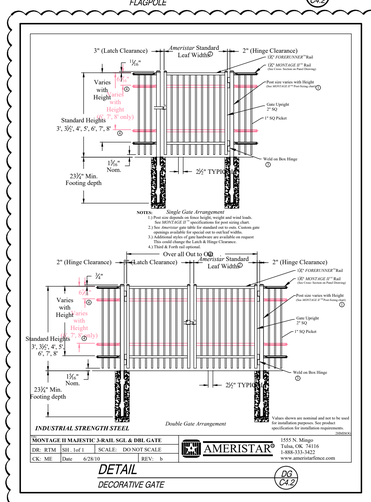
DETAIL 6' CURB & GUTTER STANDARD PAN (MDOT TYPE F1) — CG-S C4.2



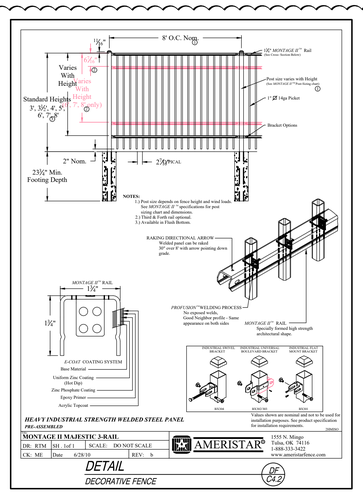
DETAIL 6' CURB & GUTTER REVERSE PAN (MDOT TYPE F1) — CG-R C4.2



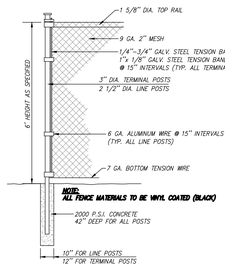
DETAIL CONCRETE DRIVEWAY OPENING — M C4.2



DETAIL DECORATIVE GATE — DG C4.2



DETAIL DECORATIVE FENCE — DF C4.2



NOTE:
TERMINAL POSTS INCLUDE END, COVER, ANGLE, INTERSECTION AND INTERMEDIATE BRACED POSTS.

DETAIL STANDARD 6' CHAIN LINK FENCE — F C4.2

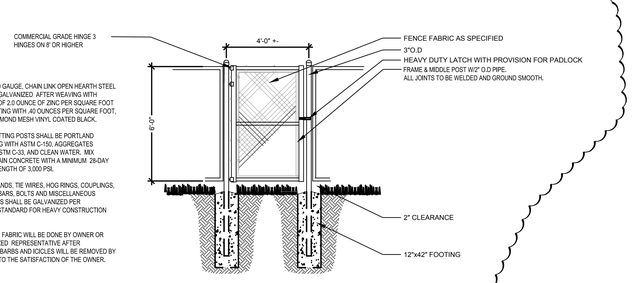
CHAIN LINK FENCE

FABRIC SHALL BE #9 GAUGE, CHAIN LINK OPEN HEARTH STEEL WIRE, HOT-DIPPED GALVANIZED AFTER WEAVING WITH MINIMUM COATING OF 2.0 OUNCE OF ZINC PER SQUARE FOOT OR ALUMINUM COATING WITH .40 OUNCES PER SQUARE FOOT, WOVEN IN 1 1/2" DIAMOND MESH VINYL COATED BLACK.

CONCRETE FOR SETTING POSTS SHALL BE PORTLAND CEMENT COMPLYING WITH ASTM C-150, AGGREGATES COMPLYING WITH ASTM C-33, AND CLEAN WATER. MIX MATERIALS TO OBTAIN CONCRETE WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI.

STRETCHER BAR BANDS, TIE WIRES, HOG RINGS, COUPLINGS, NUTS, STRETCHER BARS, BOLTS AND MISCELLANEOUS FASTENING DEVICES SHALL BE GALVANIZED PER MANUFACTURER'S STANDARD FOR HEAVY CONSTRUCTION FENCE.

INSPECTION OF THE FABRIC WILL BE DONE BY OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE AFTER INSTALLATION. ALL BARBS AND ICICLES WILL BE REMOVED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER.



DETAIL STANDARD 6' CHAIN LINK FENCE GATE — G C4.2

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Lansing School District

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Lansing School District

ISSUANCES	DATE
BID AND CONSTRUCTION	01.26.2024
ADDENDUM #3	03.15.2024

KEY PLAN

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JOB NO. 2616.01A

SHEET TITLE

PAVING DETAILS

SHEET NO.

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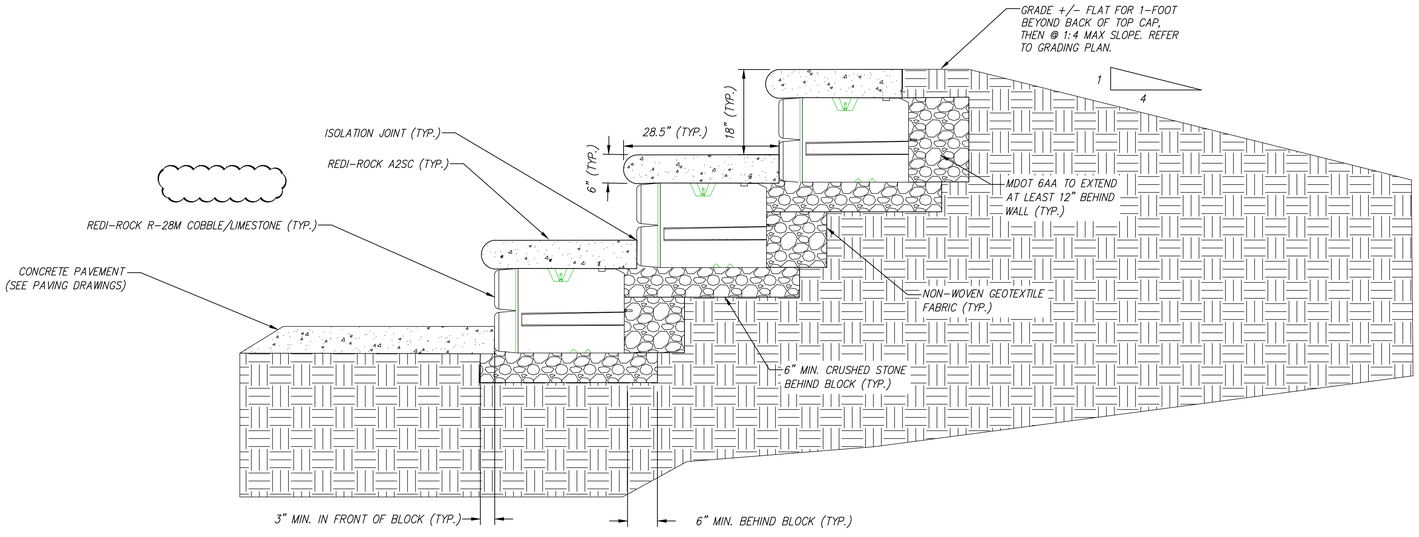
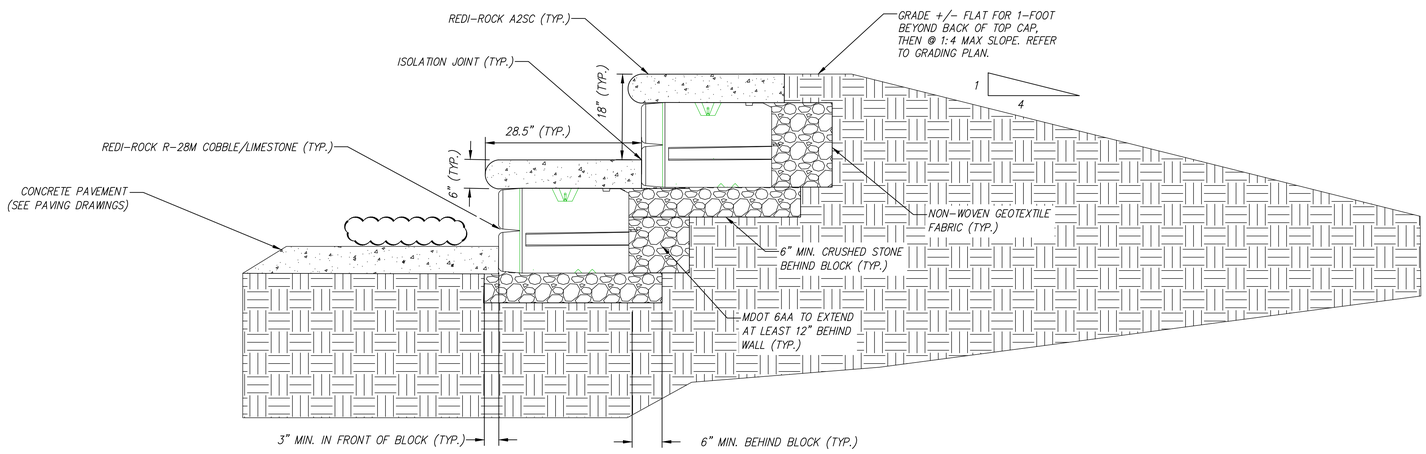


TYPICAL 3 ROW SEATING CROSS SECTION



TYPICAL 2 ROW SEATING CROSS SECTION

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SHEET TITLE

AMPHITHEATER EXHIBIT

SHEET NO.

C4.3

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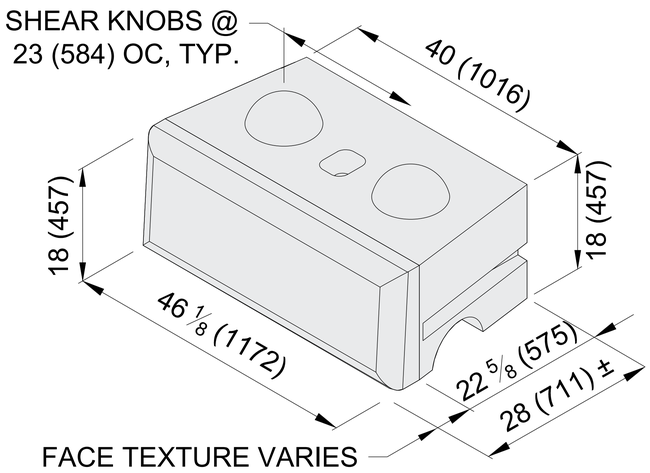
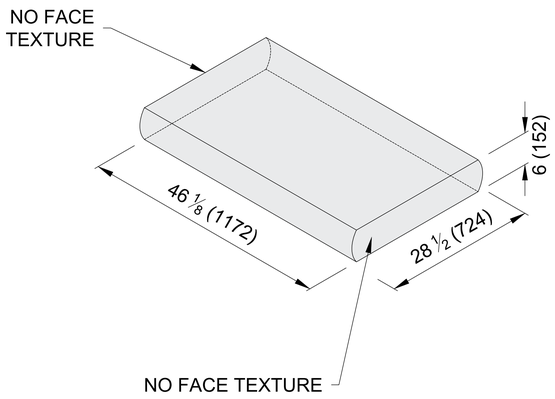
R-28M 28" (710mm) MIDDLE

Face Texture:	Cobble / Limestone	Kingstone / Ledgestone
Block Weight:	1610 lb (730 kg)	1540 lb (700 kg)
Block Volume:	11.28 ft^3 (0.319 m^3)	10.78 ft^3 (0.305 m^3)
Center of Gravity:	13.9" (354 mm)	13.4" (340 mm)



A-2SC TWO-SIDED CAP

Block Weight:	630 lb (290 kg)
Block Volume:	4.42 ft^3 (0.125 m^3)



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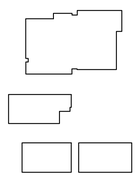

KEY PLAN

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JOB NO. 2616.01A

SHEET TITLE

AMPHITHEATER EXHIBIT

SHEET NO.

C4.4

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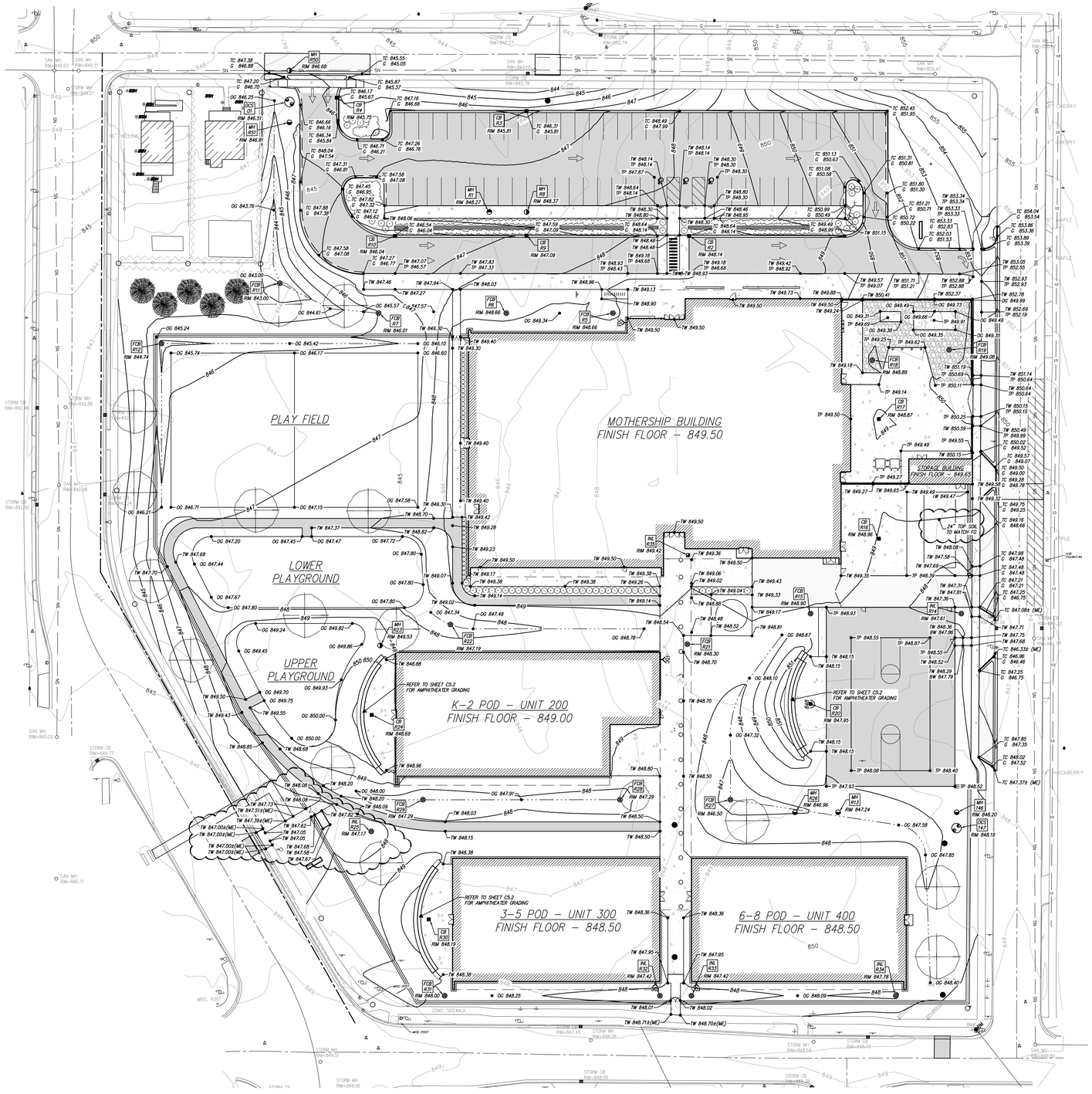

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

GRADING LEGEND

850.00	EXISTING ELEVATION
• TC 000.00 G 000.00	PROPOSED TOP OF CURB ELEVATION PROPOSED GUTTER ELEVATION
• OG 000.00	OUTSIDE GRADE ELEVATION
11.30 11.31	EXISTING CONTOURS
11.30	PROPOSED CONTOURS
• TP 000.00	TOP OF PAVEMENT ELEVATION
• TW 000.00	TOP OF WALK ELEVATION
• FG 000.00	FINISH GRADE ELEVATION
• T/WALL 000.00	TOP OF WALL ELEVATION
• ME 000.00	MATCH EXISTING ELEVATION
	FLOW ARROW

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- 2 UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE, STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 XXX — STRUCT. NO., STRUCT. TYPE

GRADING LEGEND

850.00	EXISTING ELEVATION
• TC 000.00 G 000.00	PROPOSED TOP OF CURB ELEVATION PROPOSED GUTTER ELEVATION
• OG 000.00	OUTSIDE GRADE ELEVATION
11.30 11.31	EXISTING CONTOURS
11.30	PROPOSED CONTOURS
• TP 000.00	TOP OF PAVEMENT ELEVATION
• TW 000.00	TOP OF WALK ELEVATION
• FG 000.00	FINISH GRADE ELEVATION
• T/WALL 000.00	TOP OF WALL ELEVATION
• ME 000.00	MATCH EXISTING ELEVATION
	FLOW ARROW

GRADING NOTES

1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
3. ALL HANDICAP RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
4. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

RESTORATION NOTE

RESTORE ALL DISTURBED LAWN AREAS PER LANDSCAPE PLANS AND SPECIFICATIONS FOR LAWN RESTORATION REQUIREMENTS.

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Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
BID AND CONSTRUCTION	01.26.2024
ADDENDUM #3	03.15.2024

KEY PLAN

N

JOB NO. 2616.01A

SHEET TITLE

GRADING PLAN

SHEET NO.

C5.1

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STORM STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
R1	4' DIA MANHOLE	848.27	18" 24" 18"	E W N	838.00' 837.84' 838.88'	In Out In
R2	4' DIA CATCH BASIN	848.14	12"	W	844.24'	Out
R3	4' DIA CATCH BASIN	845.81	12" 12"	W S	841.28' 841.28'	In Out
R4	4' DIA CATCH BASIN	845.75	12"	E	841.88'	Out
R5	4' DIA FIELD CATCH BASIN	848.66	12"	W	842.96'	Out
R6	4' DIA FIELD CATCH BASIN	848.66	12" 12" 12"	W N E	841.61' 841.61' 841.61'	In Out In
R7	4' DIA FIELD CATCH BASIN	846.01	12"	E	842.42'	Out
R8	4' DIA MANHOLE	848.37	18" 12" 18"	S N W	838.24' 840.00' 838.24'	In In Out
R9	4' DIA CATCH BASIN	847.09	18" 18" 12" 12"	W N S E	838.31' 838.31' 841.10' 843.90'	In Out In In
R10	4' DIA CATCH BASIN	846.04	12" 18"	W E	838.99' 838.59'	In Out
R11	4' DIA FIELD CATCH BASIN	843.00	12" 12"	SW E	839.38' 839.38'	In Out
R12	4' DIA FIELD CATCH BASIN	844.74	12"	NE	839.80'	Out
R50	4' DIA MANHOLE	846.68	18" 24" 24"	S E W	837.34' 836.80' 836.80'	In Out In
R51	5' DIA MANHOLE	846.81	24" 24" 8" 24"	N E NE S	836.92' 837.84' 836.92' 837.84'	Out Out In Out

STORM STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
146	4' DIA MANHOLE	848.20	12" 24" 24"	S W N	840.40' 840.57' 840.57'	Out Out Out
R13	4' DIA MANHOLE	847.24	18" 24" 18"	W N E	840.57' 840.57' 840.65'	In Out Out
R14	2' DIA INLET CB	847.61	12"	W	844.38'	Out
R15	4' DIA FIELD CATCH BASIN	848.90	12" 12" 12"	NE S E	843.42' 843.42' 843.42'	In Out In
R16	4' DIA CATCH BASIN	848.96	12" 12"	N SW	845.02' 845.02'	In Out
R17	4' DIA CATCH BASIN	848.87	12" 12"	N S	845.27' 845.27'	In Out
R18	4' DIA FIELD CATCH BASIN	848.89	12" 12"	E S	845.39' 845.39'	In Out
R19	4' DIA FIELD CATCH BASIN	849.08	12"	W	845.56'	Out
R20	4' DIA CATCH BASIN	847.95	12" 18" 12"	NW S N	841.99' 841.59' 841.99'	In Out In
R21	4' DIA FIELD CATCH BASIN	848.30	12" 12" 8"	W SE N	842.86' 842.86' 843.06'	In Out In
R22	4' DIA FIELD CATCH BASIN	847.19	12" 12" 8" 8"	W E NE NW	843.61' 843.61' 843.55' 843.61'	In Out In In
R23	4' DIA MANHOLE	849.53	12" 12" 8"	S E W	844.31' 844.31' 844.31'	In Out In
R24	4' DIA CATCH BASIN	848.69	12"	N	844.53'	Out
R25	2' DIA INLET CB	847.17	12"	NE	843.82'	Out

STORM STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
R26	5' DIA MANHOLE	846.96	18" 18" 18"	W E N	840.90' 840.90' 840.90'	In Out In
R27	4' DIA FIELD CATCH BASIN	846.50	18" 18"	W E	842.37' 842.37'	In Out
R28	4' DIA FIELD CATCH BASIN	847.29	12" 12" 6"	W E NW	843.00' 842.60' 844.74'	In Out In
R29	4' DIA FIELD CATCH BASIN	847.29	12" 12" 12" 6"	S E SW NW	843.63' 843.63' 843.63' 844.73'	In Out In In
R30	4' DIA CATCH BASIN	848.19	12" 12"	S N	844.38' 844.38'	In Out
R31	4' DIA FIELD CATCH BASIN	848.00	12" 12"	N E	844.88' 844.09'	Out In
R32	2' DIA INLET CB	847.42	12" 12"	W E	844.54' 844.54'	Out In
R33	2' DIA INLET CB	847.42	12" 12"	W E	844.61' 844.61'	Out In
R34	2' DIA INLET CB	847.78	12" 6"	W NE	845.04' 845.04'	Out In
R35	2' DIA INLET	849.42	8" 6" 6" 6"	S E W N	844.19' 844.19' 844.70' 844.92'	Out In In In

SANITARY STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT
S1	4' DIA MANHOLE	848.89	8" 8"	N S	838.98' 838.88'	In Out
S2	4' DIA MANHOLE	846.03	8" 8"	W S	839.56' 839.46'	In Out
S3	4' DIA MANHOLE	848.50	8" 6" 6"	E S N	840.42' 840.58' 841.48'	Out In Out
S4	4' DIA MANHOLE	848.11	6" 4" 4"	N E W	843.93' 844.03' 844.03'	Out In In
S5	4' DIA MANHOLE	845.34	6" 6" 6"	N SE SE	836.64' 836.74' 836.51'	Out In In

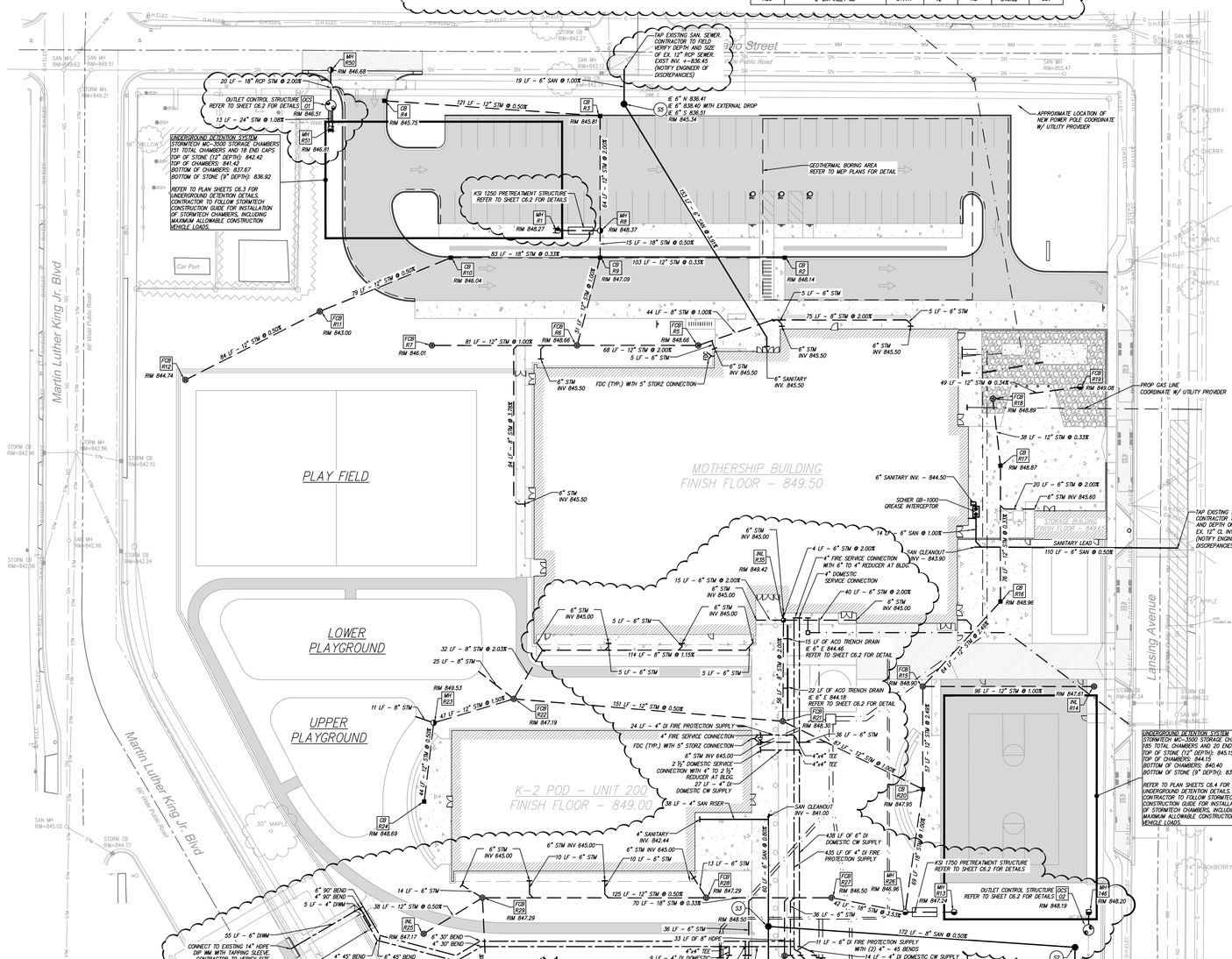
RIM ADJUSTMENT NOTE

REMOVE EXISTING CASTING, COVER AND ADJUSTMENT MATERIALS FROM STRUCTURE. SALVAGE CASTING AND COVER FOR REINSTALLATION AND PROVIDE NEW ADJUSTMENT BRICK/BLOCK/RINGS. REINSTALL ACCORDING TO STANDARD DETAILS (IF INCLUDED). PROTECT EXISTING UTILITY STRUCTURE TO REMAIN.

GRAPHIC SCALE

0 15 30 60

(IN FEET)
1 inch = 30 ft.

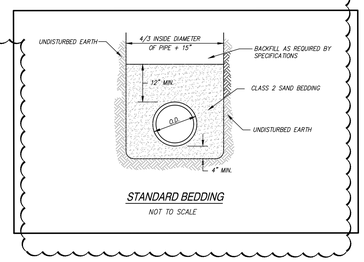


LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: STRUCT. TYPE (CB), STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: STRUCT. NO. 10, STRUCT. TYPE XXX

UTILITY NOTES

1. STORM SEWER 6" AND SMALLER SHALL BE PVC SDR 23.5. STORM SEWER GREATER THAN 6" THROUGH 10" SHALL BE PVC SDR 26. WHERE STORM SEWER 12" AND LARGER IS NOTED AS PVC, PIPE SHALL BE SCHEDULE 40 PVC.
2. WHERE NOTED AS HDPE, STORM SEWER SHALL BE HDPE SMOOTH INTERIOR CORRUGATED PIPE MEETING AASHTO STANDARD M294M–99, UNLESS OTHERWISE NOTED ON PLAN. WHERE NOTED AS RCP, STORM SEWER SHALL BE C76 CL IV (PREM.JT.). INSTALLATION SHALL ADHERE TO ASTM D2321 SPECIFICATION. AFTER INSTALLATION, PIPE SHALL BE CHECKED FOR DEFLECTION BY A METHOD APPROVED BY THE PIPE MANUFACTURER. ANY PIPE DEFLECTION EXCEEDING THE ALLOWABLE MAXIMUM MUST BE REMOVED AND REPLACED.
3. SANITARY SEWER 8" AND LARGER SHALL BE PVC SDR 23.5 PIPE. LEADS 6" AND SMALLER SHALL BE SOLID WALL, PVC, SDR 23.5.
4. WATER MAIN SHALL BE CLASS 52 DUCTILE IRON. WATER MAINS SHALL BE LEAKAGE AND PRESSURE TESTED IN ACCORDANCE WITH AWWA STANDARD C600. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651 PRIOR TO BEING PUT INTO SERVICE.
5. ALL UTILITY TRENCHES THAT FALL WITHIN A 1–ON–1 INFLUENCE OF PAVEMENT AREAS SHALL BE BACKFILLED WITH CLASS 2 SAND AND COMPACTED TO 95% OF MAXIMUM DENSITY.
6. ALL WATER MAIN SHALL BE BURIED WITH 5' OF COVER FROM PROPOSED GRADES. USE 22.5° BENDS TO LOWER WATER MAIN AS NECESSARY AND/OR WHERE NOTED AT UTILITY CROSSING.
7. ALL PUBLIC UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF ALLEN PARK AND/OR WAYNE COUNTY.
8. ALL UTILITIES SHALL BE INSTALLED ON CLASS "B" BEDDING (CLASS 2 SAND) OR BETTER.
9. STORM SEWER STRUCTURE DIAMETERS SHALL BE AS NOTED ON THE PLANS, UNLESS OTHERWISE INDICATED, CASTINGS SHALL BE:
   PVMT. CATCH BASINS – EJIW 5105 – "M1" (FRAMES WITH CURB BOXES WILL NOT BE ALLOWED)
   FIELD CATCH BASINS – EJIW 1040 – "D2"
   STORM MANHOLES – EJIW 1040 – "A"
10. SANITARY MANHOLE COVERS SHALL BE LABELED "SANITARY SEWER" ONLY FOR PRIVATE STRUCTURES. REFER TO CITY STANDARDS FOR REQUIRED TEXT OF UTILITY CASTINGS AT PUBLIC STRUCTURES.
11. LOCATIONS OF LIGHT POLES, IF SHOWN ON THESE DRAWINGS, MAY BE APPROXIMATE. CONFIRM EXACT LOCATION (I.E. CURB OFFSETS, SIDEWALK OFFSETS, ETC.) PRIOR TO STAKING AND CONSTRUCTION. REFER TO SITE ELECTRICAL PLAN FOR DETAILS, AND COORDINATE WITH ELECTRICAL ENGINEER, ARCHITECT, AND CIVIL ENGINEER TO DETERMINE PROPER PLACEMENT.
12. WHERE PUBLIC UTILITY WORK SHOWN ON THESE PLANS DIFFERS FROM THE STANDARD DETAILS OR STANDARD SPECIFICATIONS OF THE COMMUNITY, THE COMMUNITY REQUIREMENTS SHALL GOVERN.
13. HOT BOX – N–PATTERN VALVE DUAL ALUMINUM HEATED ENCLOSURE – HBKE–D"TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS. CONCRETE PAD TO MATCH SITE CONCRETE (CP–4). CONCRETE PAD TO BE 63" W X 124" LONG. CONCRETE PAD TO CONNECT TO FENCE MAINTENANCE STRIP AND INCLUDE AN ADDITIONAL 3' SIDEWALK ALONG THE FRONT OF THE ENCLOSURE AS SHOWN ON PLANS. SEE PLUMBING PLANS FOR INTERIOR DIAGRAM. COORDINATE WITH LBWL FOR THE INSTALLATION OF THE WATER METER. COORDINATE WITH ELECTRICAL PLANS.



STANDARD BEDDING

NOT TO SCALE

SPECIFICATIONS

Notes:
1. 6" plain end inlet/outlet
2. Unit weight - w/ cast iron covers: 824 lbs. (for wet weight add 8,413 lbs.)
3. Maximum operating temperature: 150° F continuous
4. Capacities - Liquid: 1,000 gal.;
   Grease: 5,496 lbs. (753 gal.) @100GPM
   Grease: 4,959 lbs. (679 gal.) @200GPM
   Solids: 211 gal.
5. Satisfies Miami DERM 99% efficiency requirements; retaining the following capacities at 99.0% efficiency:
   5,272 lbs. (722 gal.) @100GPM
   3,127 lbs. (428 gal.) @200GPM
6. For gravity drainage applications only.
7. Do not use for pressure applications.
8. Cover placement allows full access to tank for proper maintenance.
9. Vent not required unless per local code.
10. Engineered inlet and outlet diffusers with inspection ports are removable to inspect / clean piping.
11. Integral air relief / Anti-siphon / Sampling access.
12. Adjustable cover adapters provide up to 4" of additional height.
13. Designed for below-grade, above-grade, indoor or outdoor installations.
14. Safety Start®, access restrictor built into each cover adapter, prevents accidental entry to tanks (450 lb rating).

ENGINEER SPECIFICATION GUIDE

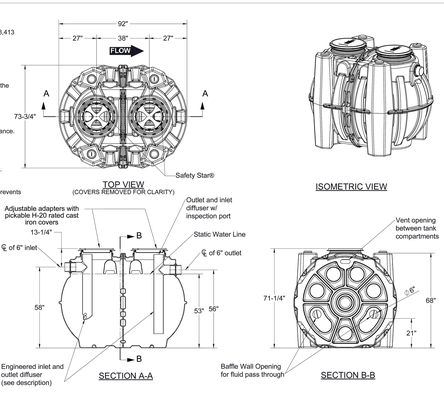
Schier Great Basin™ grease interceptor model # GB-1000 shall be lifetime guaranteed and made in USA of seamless, molded polyethylene with minimum 7/16" uniform wall thickness. Interceptor shall be furnished for above or below-grade installation with adjustable cover adapter and Safety Start® access restrictor built into each cover adapter. Interceptor shall be certified to ASME A112.14.3 (Type D) and CSA B481.1 as well as certified to IAPMO/ANSI Z1001-2021. Interceptor flow rate shall be 100 GPM or 200GPM. Interceptor grease capacity shall be 5,495 lbs. Cover shall provide watertgas-tight seal and have minimum 18,000 lbs. load capacity.

CERTIFIED PERFORMANCE

Great Basin™ hydromechanical grease interceptors are third party performance-tested and listed by IAPMO to ASME A112.14.3 and CSA B481.1 grease interceptor standards and greatly exceed requirements for grease separation and storage. They are compliant to the Uniform Plumbing Code and the International Plumbing Code.

Type D certification does not require a flow control

Satisfies Miami DERM 99% efficiency requirements. Product labels are permanently attached to inside and outside of unit for easy viewing.



SPECIFICATION SHEET

MODEL NUMBER:	PART NUMBER:	4080-002-01
GB-1000	DESCRIPTION:	GB-1000 GREASE INTERCEPTOR 100 GPM/ 200 GPM 6" INLET/OUTLET, H-20 RATED CAST IRON COVER
DWG BY: B.BROWN	DATE: 10/18/2021	REV: 02 ECO: 032822TA

PROPRIETARY AND CONFIDENTIAL

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Lansing School District

ISSUANCES	DATE
BID AND CONSTRUCTION	01.26.2024
ADDENDUM #3	03.15.2024

KEY PLAN

N

JOB NO. 2616.01A

SHEET TITLE

UTILITY PLAN

SHEET NO.

C6.1

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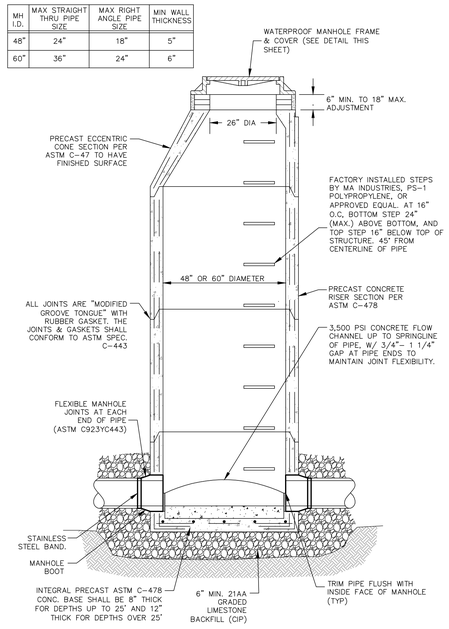
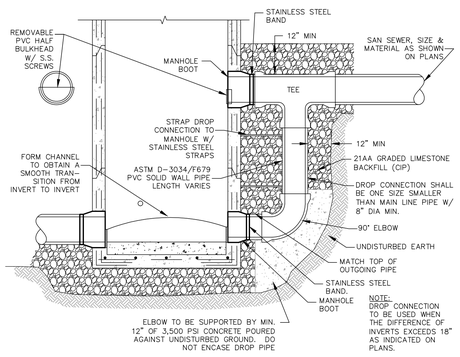
MH I.D.	MAX STRAIGHT THRU PIPE SIZE	MAX RIGHT ANGLE PIPE SIZE	MIN WALL THICKNESS
48"	24"	18"	5"
60"	36"	24"	6"



STANDARD SANITARY SEWER MANHOLE

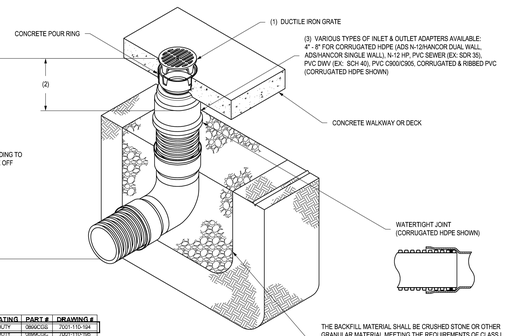
SCALE: NONE



EXTERIOR DROP ASSEMBLY (W/ SPECIAL APPROVAL)

SCALE: NONE

NYLOPLAST 8" INLINE DRAIN: 2708AG _ _ X



THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN(STANDARD)	LIGHT DUTY	0660CCG	7001-110-104
SLOT(OPTION)	LIGHT DUTY	0666CSG	7001-110-105
BRONZE	N/A	0690CGB	7001-110-106
DOME	N/A	0690CGD	7001-110-107

1 - GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05 WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FOR COMPLETE DESIGN DETAILS SEE DRAWING NO. 7003-110-000.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), & PVC SEWER.

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DRAWN BY	EBC	MATERIAL	
DATE	11-15-06		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-15-16		
DWG SIZE	A	SCALE 1:16	SHEET 1 OF 1

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BUFORD, GA 30518
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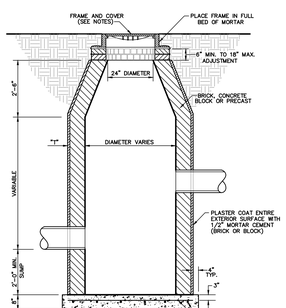
TITLE: 8 IN INLINE DRAIN QUICK SPEC INSTALLATION DETAIL

DWG NO. 7003-110-033 REV F

SPECIAL CATCH BASIN NOTES:

1. STEPS SHALL BE PLACED IN ALL 48" DIAMETER STRUCTURES MORE THAN 4' DEEP.



WALL THICKNESS "T"		
DEPTH	BRICK	PRECAST OR BLOCK
0'-10'	8"	6"
10'-16'	12"	8"

STORM SEWER CATCH BASIN

NO SCALE

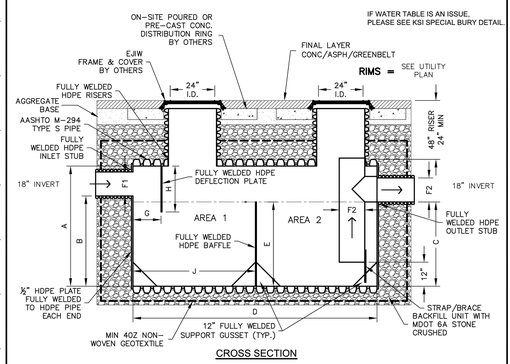
STORM WATER TREATMENT CHAMBER

KSI SERIES 1250 HDPE CHAMBER

NOTE:
INSTALL UNIT PER ASTM D2321

4 OZ NON-WOVEN GEOTEXTILE FABRIC WRAP REQUIRED SEE TRENCH DETAIL

IF WATER TABLE IS AN ISSUE, PLEASE SEE KSI SPECIAL BURY DETAIL



CROSS SECTION

STORM WATER TREATMENT CHAMBER DIMENSIONS AND CAPACITIES

MODEL NO.	A	B	C	D	E	F1	F2	G	H	J	AREA 1	AREA 2
1250-48-12	48"	33"	32"	165"	32"	12"	12"	12"	20"	83"	61.1 CF	149 CF

DESIGN BY: AG / RK	REV: 10-21-22 DATE: 10-10-08	2 OF 2	KSI KENNEDY SOLUTIONS, INC. 10051 Bergin Road Howell, MI 48843 Ph: 800-699-4046
MANUF. APPROVAL BY: .	SCALE: NTS	SHEET NO.	
DRAWING NO. SERIES 1250 SWTC v2022			

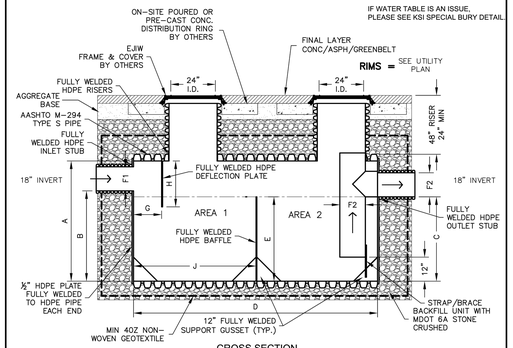
STORM WATER TREATMENT CHAMBER

KSI SERIES 1750 HDPE CHAMBER

NOTE:
INSTALL UNIT PER ASTM D2321

4 OZ NON-WOVEN GEOTEXTILE FABRIC WRAP REQUIRED SEE TRENCH DETAIL

IF WATER TABLE IS AN ISSUE, PLEASE SEE KSI SPECIAL BURY DETAIL

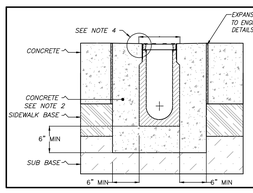


CROSS SECTION

STORM WATER TREATMENT CHAMBER DIMENSIONS AND CAPACITIES

MODEL NO.	A	B	C	D	E	F1	F2	G	H	J	AREA 1	AREA 2
1750-60-15	60"	42"	41"	165"	41"	15"	15"	15"	21"	83"	97.9 CF	140 CF

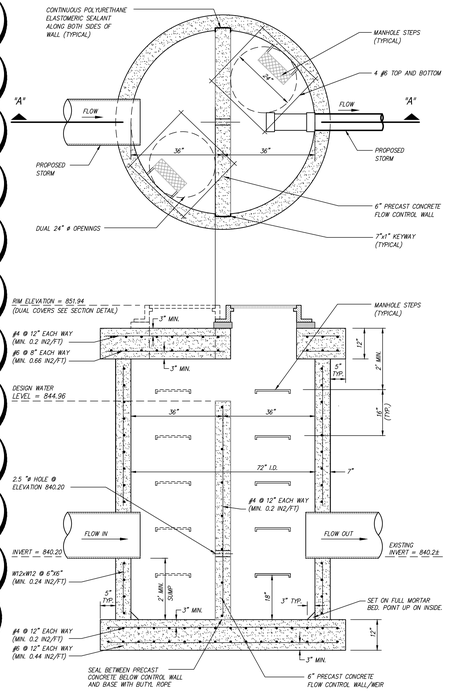
DESIGN BY: AG / RK	REV: 10-21-22 DATE: 10-10-08	2 OF 2	KSI KENNEDY SOLUTIONS, INC. 10051 Bergin Road Howell, MI 48843 Ph: 800-699-4046
MANUF. APPROVAL BY: .	SCALE: NTS	SHEET NO.	
DRAWING NO. SERIES 1750 SWTC v2022			



NOTES:
MODEL NUMBER KS100S SLOPED CHANNEL WITH TYPE 4650 GRATE LOAD CLASS C.
1. IT IS NECESSARY TO ENSURE THE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR THE EXISTING GROUND CONDITIONS. ENGINEERING ADVICE MAY BE REQUIRED.
2. A MINIMUM CONCRETE STRENGTH OF 3000 PSI IS RECOMMENDED. THE CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
3. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/4" ABOVE THE TOP OF THE CHANNEL EDGE.
4. REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR COMPLETE DETAILS.

ACO TRENCH DRAIN KS100S DETAIL

NOT TO SCALE

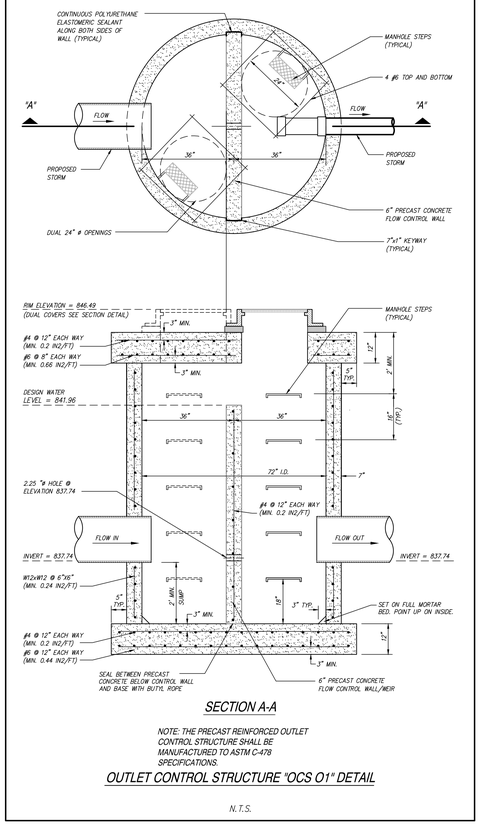


SECTION A-A

NOTE: THE PRECAST REINFORCED OUTLET CONTROL STRUCTURE SHALL BE MANUFACTURED TO ASTM C-478 SPECIFICATIONS.

OUTLET CONTROL STRUCTURE "OCS O2" DETAIL

N.T.S.



SECTION A-A

NOTE: THE PRECAST REINFORCED OUTLET CONTROL STRUCTURE SHALL BE MANUFACTURED TO ASTM C-478 SPECIFICATIONS.

OUTLET CONTROL STRUCTURE "OCS O1" DETAIL

N.T.S.

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ISSUANCES	DATE
BID AND CONSTRUCTION	01.26.2024
ADDENDUM #3	03.15.2024

KEY PLAN

N

JOB NO. 2616.01A

SHEET TITLE

UTILITY DETAIL

SHEET NO.

C6.2

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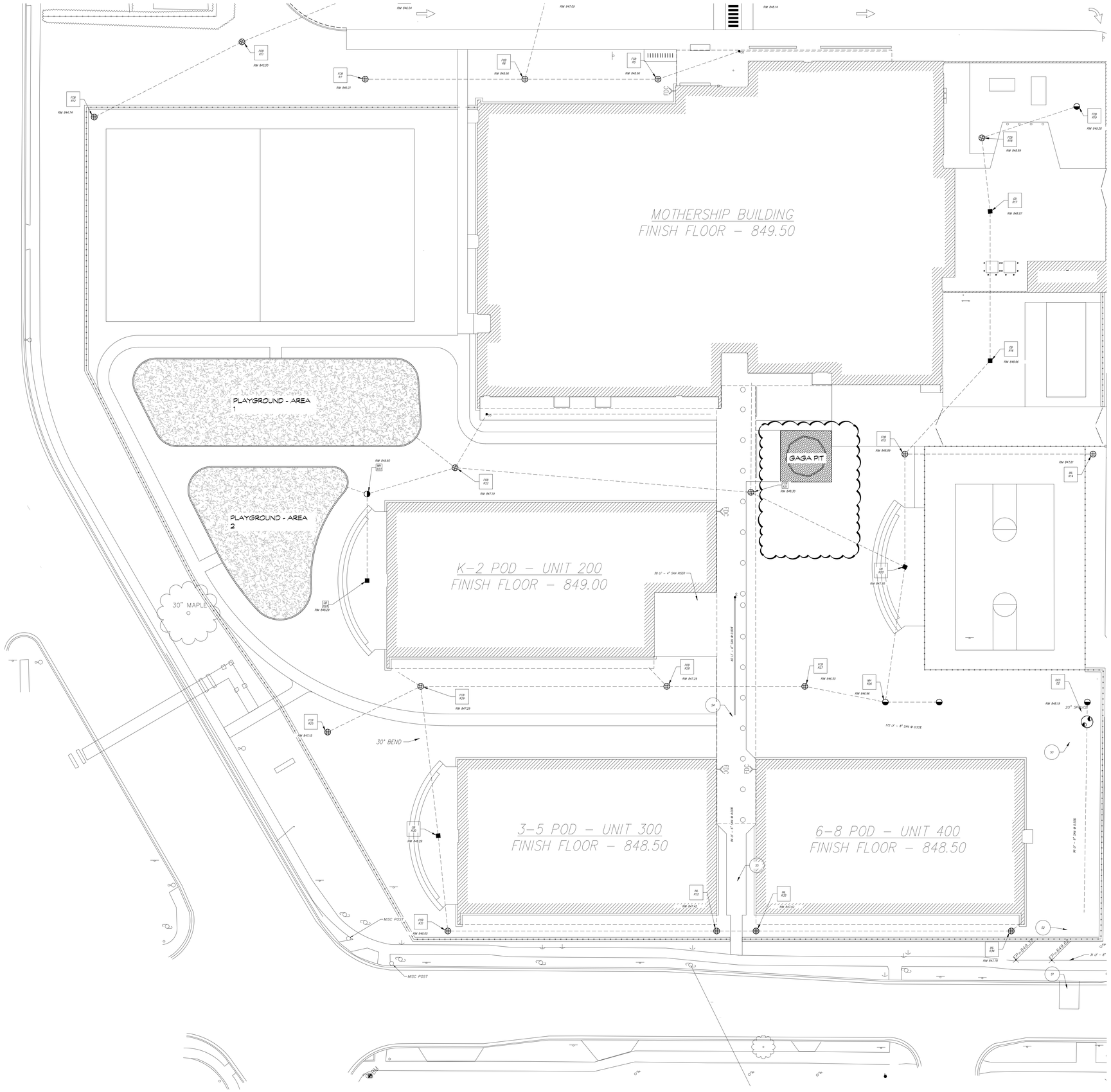

LEGEND

EXISTING	PROPOSED
SPOT ELEVATION	SPOT GRADE
AS-BUILT SPOT ELEVATION	TOP OF WALL ELEVATION
FENCE	TOP OF CURB ELEVATION
DRAINAGE STRUCTURE	MATCH EXISTING ELEVATION
STORM DRAIN	TOP OF TRENCH ELEVATION
LIGHT POLE	DRAINAGE SWALE
ELECTRICAL	CHAINLINK FENCE - SEE PLANS FOR HT.
WATER	ORNAMENTAL FENCE - SEE PLANS FOR HT.
TELEPHONE	DRAINAGE STRUCTURE
IRRIGATION	STORM DRAIN
PROPERTY	FLAT DRAIN
SANITARY	4" PERFORATED DRAINTILE
GAS	6" PERFORATED DRAINTILE
	8" PERFORATED DRAINTILE
	LIGHT POLE
	ELECTRICAL
	WATER
	TELEPHONE
	IRRIGATION
	LIMITS OF CONSTRUCTION
	ALL-WEATHER SURFACE OVER ATHLETIC VIRGIN ASPHALT (2 LIFTS) OVER 21AA LIMESTONE BASE
	RUBBER MAT
	ASPHALT OVERLAY
	NON-REINFORCED CONCRETE OVER COMPACTED SAND BASE
	REINFORCED CONCRETE OVER 21AA LIMESTONE BASE
	TOPSOIL AND SEED
	CRUSHED LIMESTONE ATHLETIC MEAL
	SYNTHETIC TURF
	ENGINEERED WOOD FIBER

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Addendum 03	03/15/2024

JOB NO. 2616.01A

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SHEET TITLE

PLAYGROUND OVERALL SITE PLAN

SHEET NO.

L1.00

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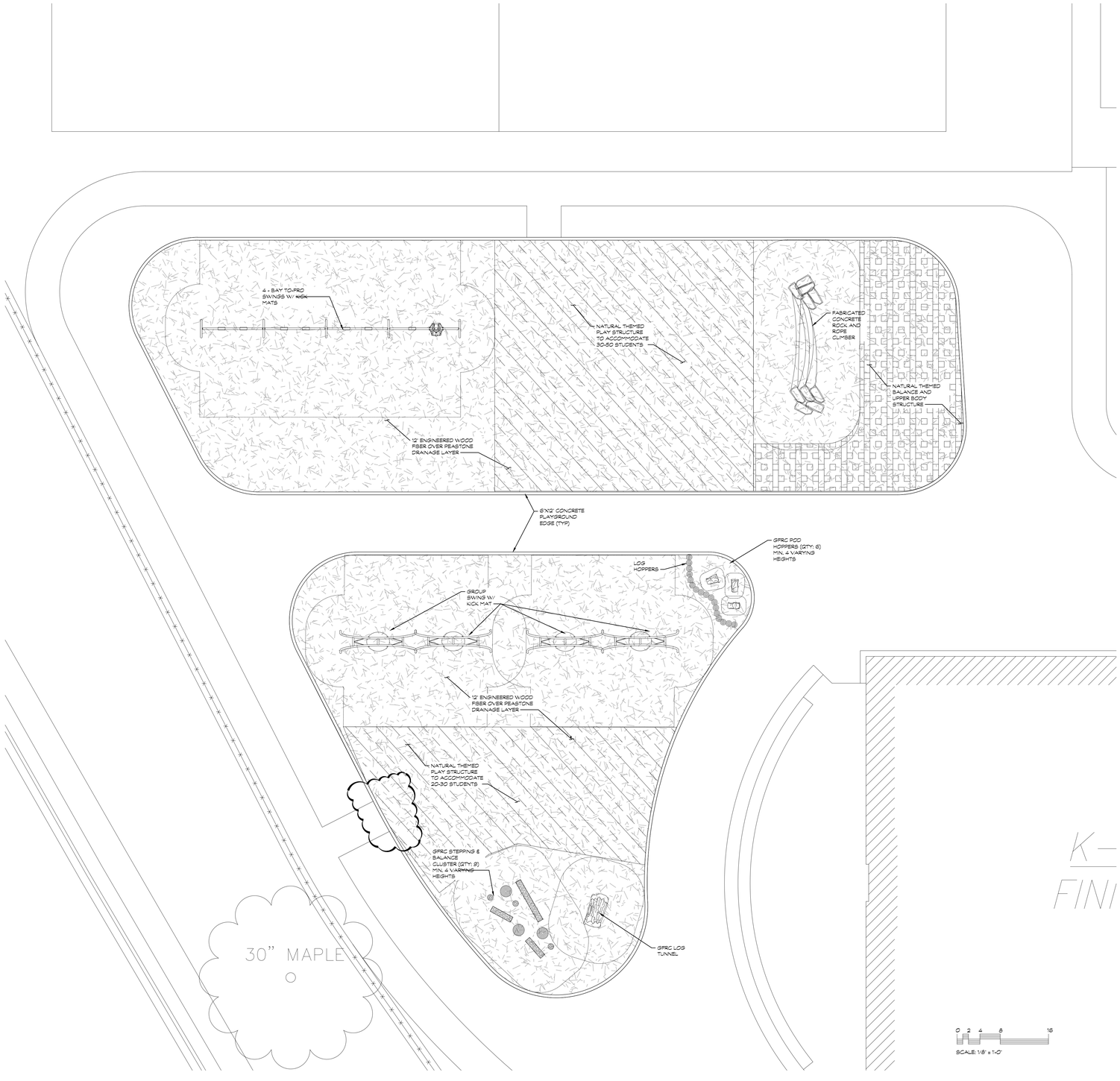

LEGEND

EXISTING

- SPOT ELEVATION
- AS-BUILT SPOT ELEVATION
- FENCE
- DRAINAGE STRUCTURE
- STORM DRAIN
- LIGHT POLE
- ELECTRICAL
- WATER
- TELEPHONE
- IRRIGATION
- PROPERTY
- SANITARY
- GAS

PROPOSED

- SPOT GRADE
- TOP OF WALL ELEVATION
- TOP OF CURB ELEVATION
- MATCH EXISTING ELEVATION
- TOP OF TRENCH ELEVATION
- DRAINAGE SWALE
- CHAINLINK FENCE - SEE PLANS FOR HT.
- ORNAMENTAL FENCE - SEE PLANS FOR HT.
- DRAINAGE STRUCTURE
- STORM DRAIN
- FLAT DRAIN
- 4" PERFORATED DRAINTILE
- 6" PERFORATED DRAINTILE
- 8" PERFORATED DRAINTILE
- LIGHT POLE
- ELECTRICAL
- WATER
- TELEPHONE
- IRRIGATION
- LIMITS OF CONSTRUCTION
- ALL-WEATHER SURFACE OVER ATHLETIC VIRGIN ASPHALT (2 LIFTS) OVER 21AA LIMESTONE BASE
- RUBBER MAT
- ASPHALT OVERLAY
- NON-REINFORCED CONCRETE OVER COMPACTED SAND BASE
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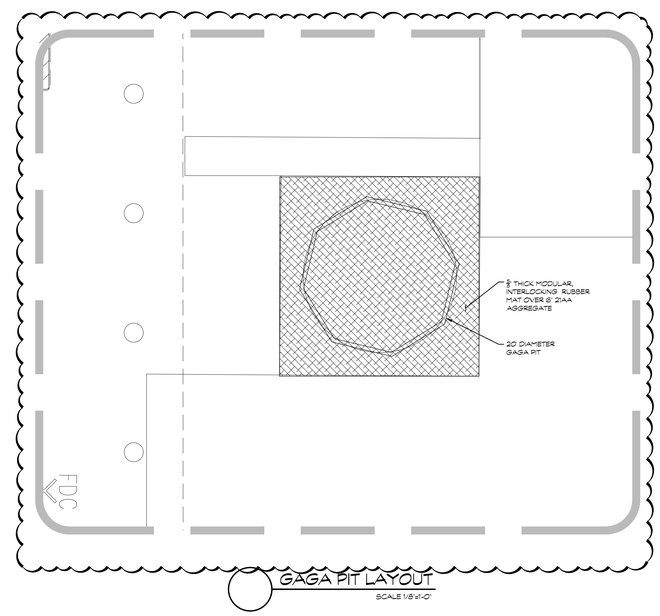
- TOPSOIL AND SEED
- CRUSHED LIMESTONE ATHLETIC MEAL
- SYNTHETIC TURF
- ENGINEERED WOOD FIBER



GAGA PIT LAYOUT
SCALE 1/8"=1'-0"

0 2 4 8 16
SCALE: 1/8" = 1'-0"

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PLAYGROUND SITE PLAN

SHEET NO.

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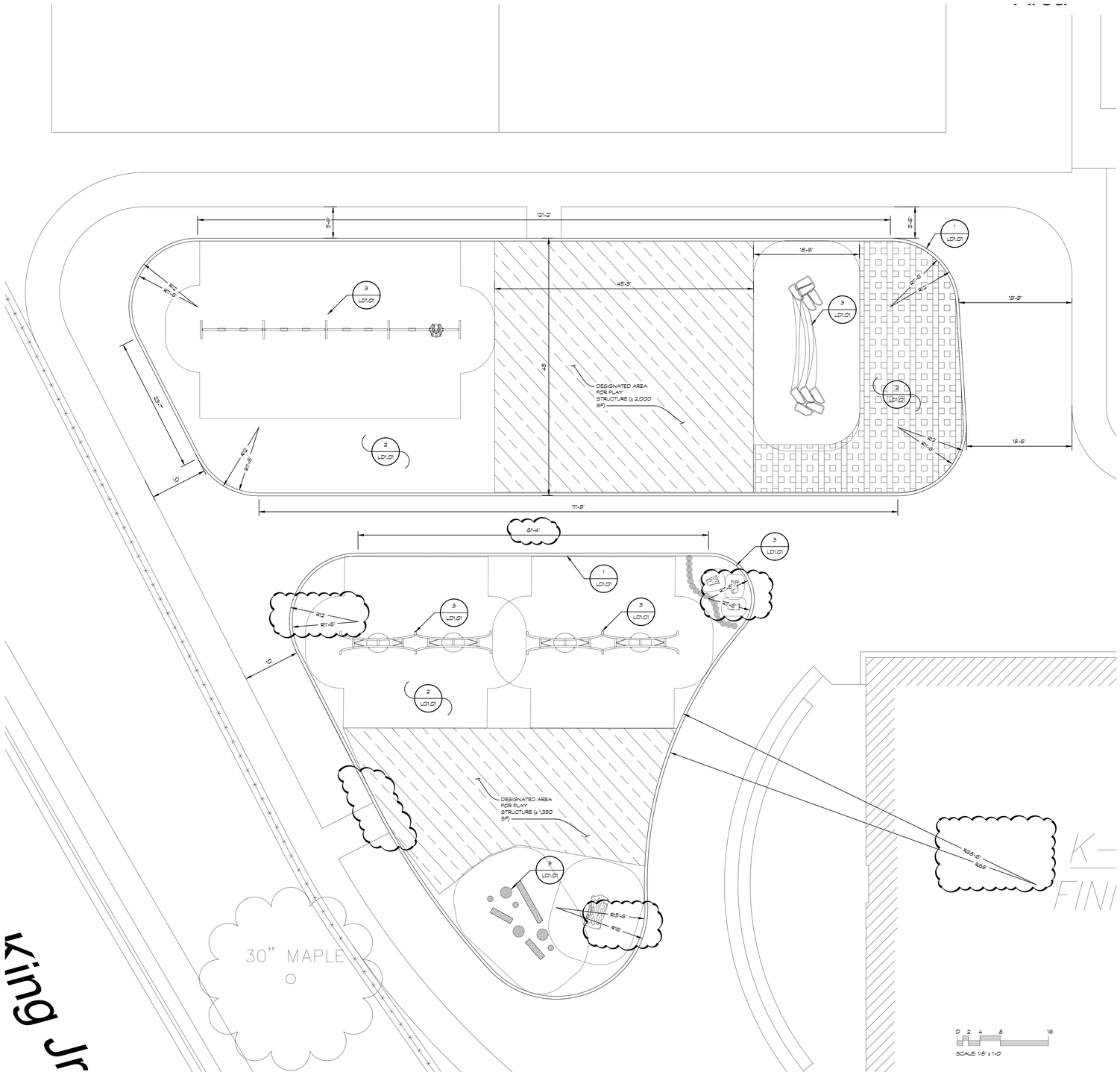

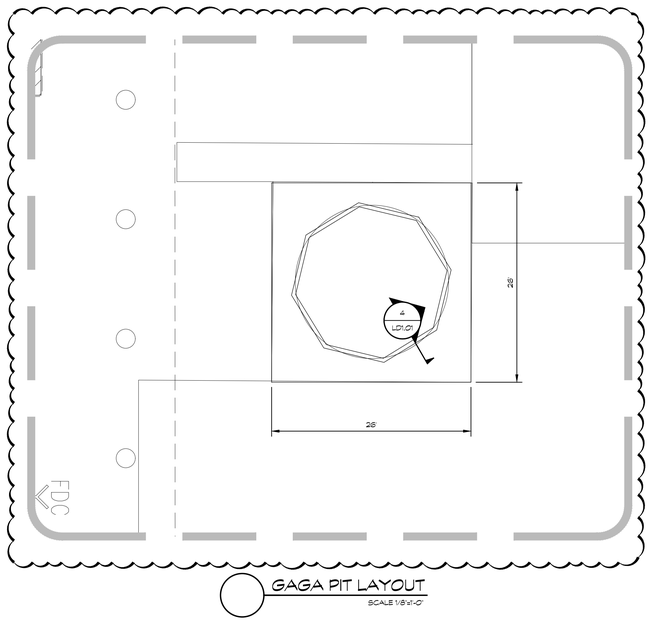

GAGA PIT LAYOUT
SCALE 1/8"=1'-0"

LEGEND

EXISTING	PROPOSED
SPOT ELEVATION	SPOT GRADE
AS-BUILT SPOT ELEVATION	TOP OF WALL ELEVATION
FENCE	TOP OF CURB ELEVATION
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PLAYGROUND DIMENSION PLAN

SHEET NO.

L1.02

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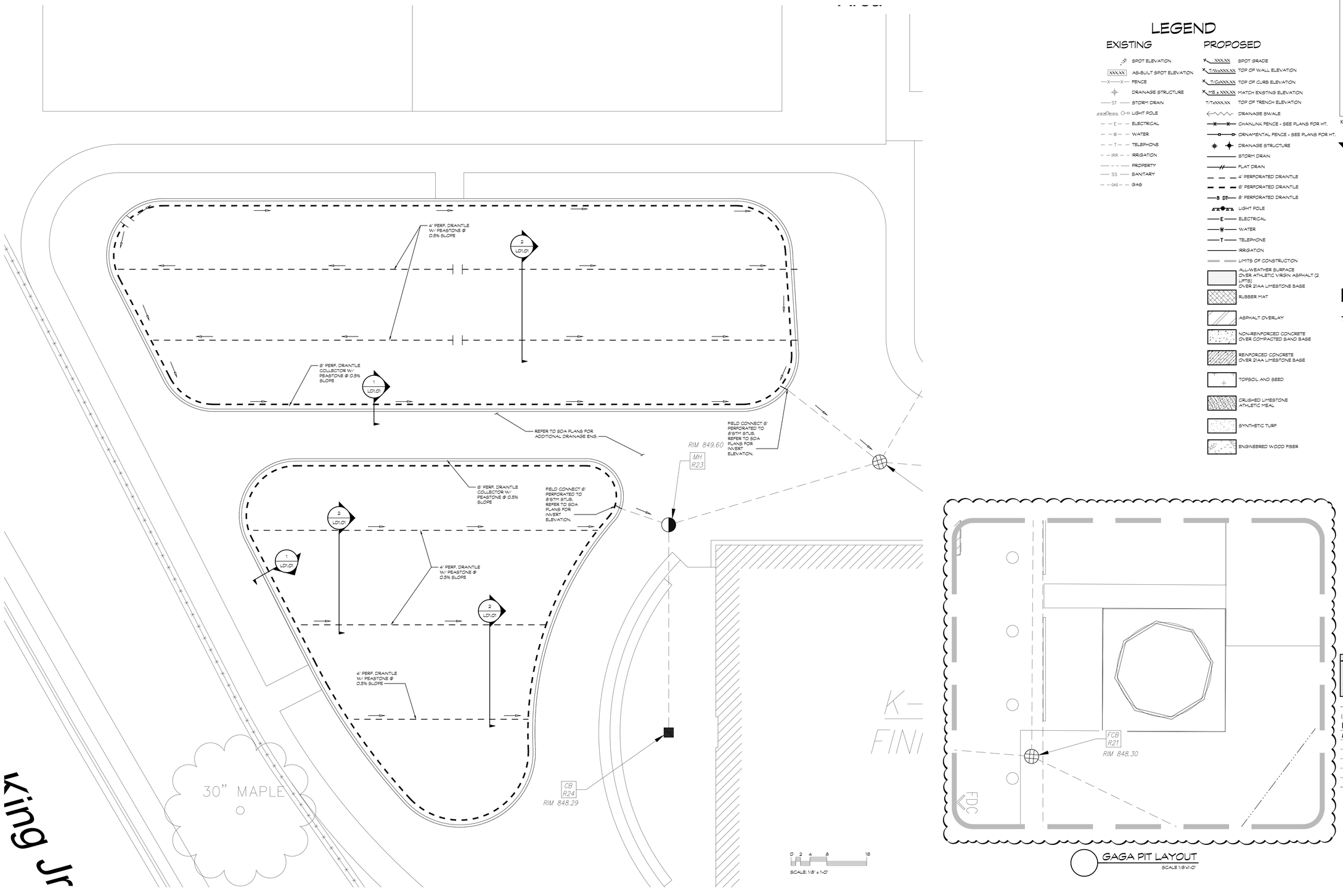

LEGEND

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AS-BUILT SPOT ELEVATION	TOP OF WALL ELEVATION
FENCE	TOP OF CURB ELEVATION
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	CRUSHED LIMESTONE ATHLETIC MEAL
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SHEET TITLE

PLAYGROUND DRAINAGE PLAN

SHEET NO.

L1.03

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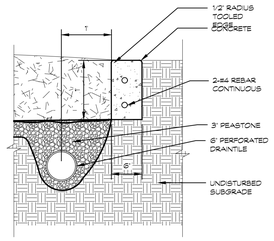
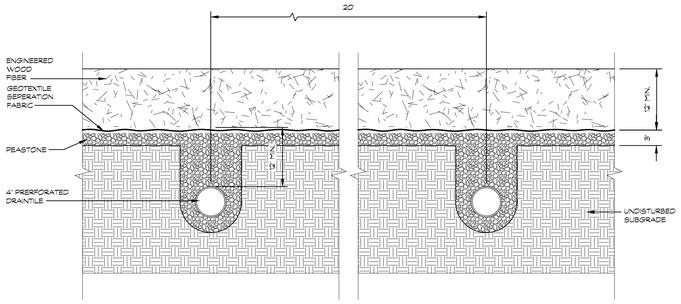


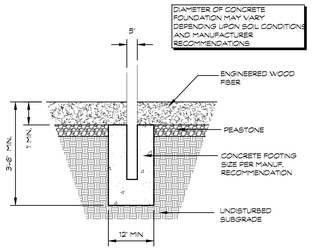
1 PLAY SURFACE CURB DETAIL

SCALE 1"=1'-0"



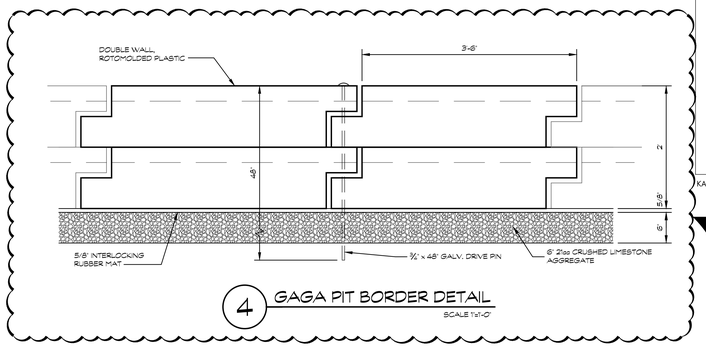
2 4" DRAINTILE SECTION

SCALE 1"=1'-0"



3 POST FOUNDATION

SCALE 3/8"=1'-0"



4 GAGA PIT BORDER DETAIL

SCALE 1"=1'-0"

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SHEET TITLE

PLAYGROUND DETAILS

SHEET NO.

LD1.01

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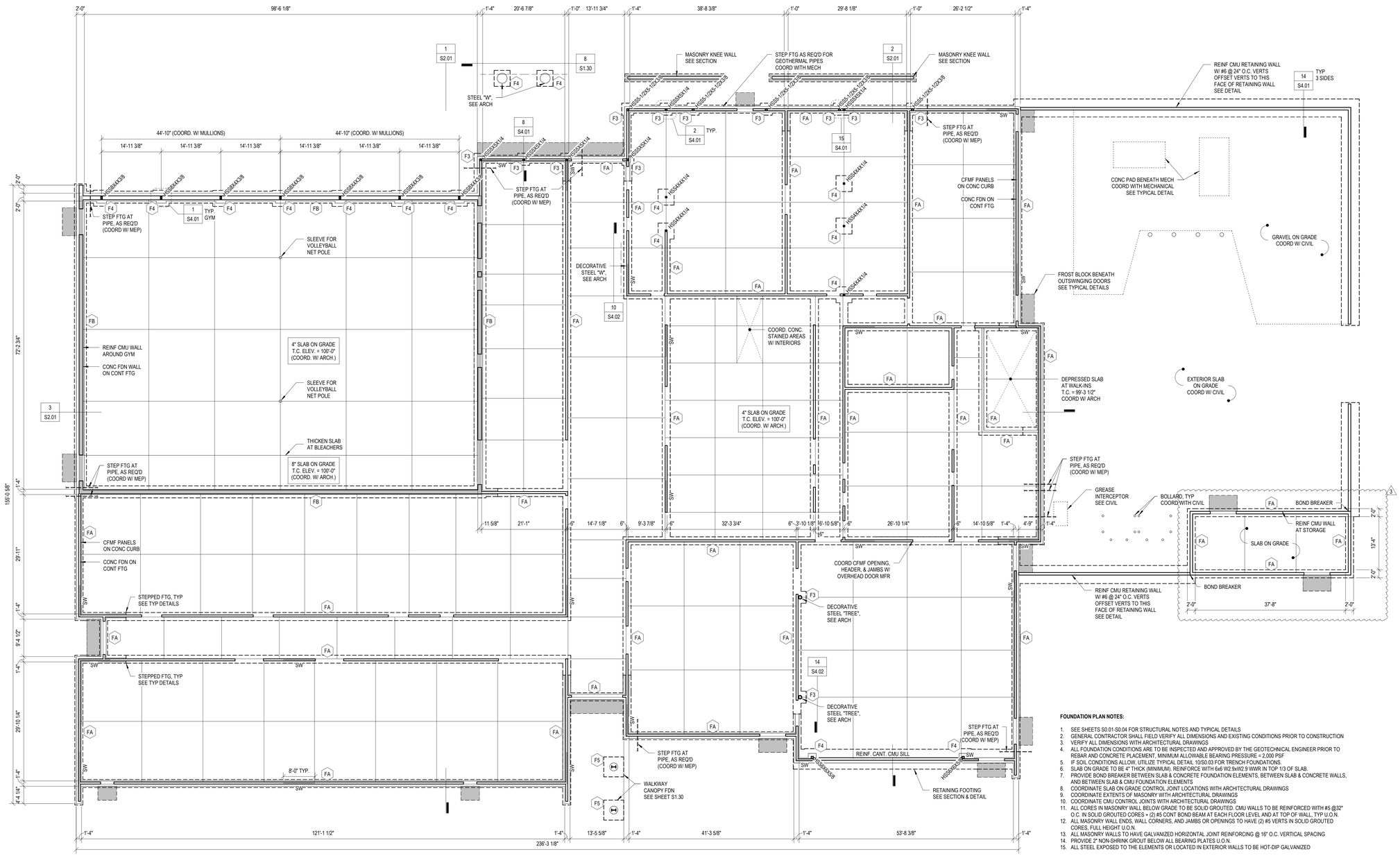

NORTH

1 / S1.01 FOUNDATION PLAN UNIT 100
Scale: 3/32" = 1'-0"

FOUNDATION PLAN NOTES:

1. SEE SHEETS S0.01-S0.04 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT, MINIMUM ALLOWABLE BEARING PRESSURE = 2,000 PSF
5. IF SOIL CONDITIONS ALLOW, UTILIZE TYPICAL DETAIL 10/S0.03 FOR TRENCH FOUNDATIONS.
6. SLAB ON GRADE TO BE 4" THICK (MINIMUM). REINFORCE WITH 6x6 W2.9xW2.9 WWR IN TOP 1/3 OF SLAB.
7. PROVIDE BOND BREAKER BETWEEN SLAB & CONCRETE FOUNDATION ELEMENTS, BETWEEN SLAB & CONCRETE WALLS, AND BETWEEN SLAB & CMU FOUNDATION ELEMENTS
8. COORDINATE SLAB ON GRADE CONTROL JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS
9. COORDINATE EXTENTS OF MASONRY WITH ARCHITECTURAL DRAWINGS
10. COORDINATE CMU CONTROL JOINTS WITH ARCHITECTURAL DRAWINGS
11. ALL CORES IN MASONRY WALL BELOW GRADE TO BE SOLID GROUTED. CMU WALLS TO BE REINFORCED WITH #5 @32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
12. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
13. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICAL SPACING
14. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
15. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

FOUNDATION SCHEDULE

MARK	SIZE	REINFORCING
F3	36" x 36" x 12"	(4) #5 BOT EA WAY
F4	48" x 48" x 12"	(5) #5 BOT EA WAY
F5	60" x 60" x 15"	(6) #5 TOP & BOT EA WAY, HOOK ALL ENDS
FA	Continuous Footing - 2'-0" x 12"	CONT (3) #5 BOT
FB	Continuous Footing - 3'-0" x 12"	CONT (4) #5 BOT

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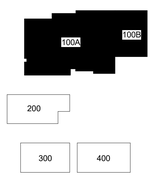
Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

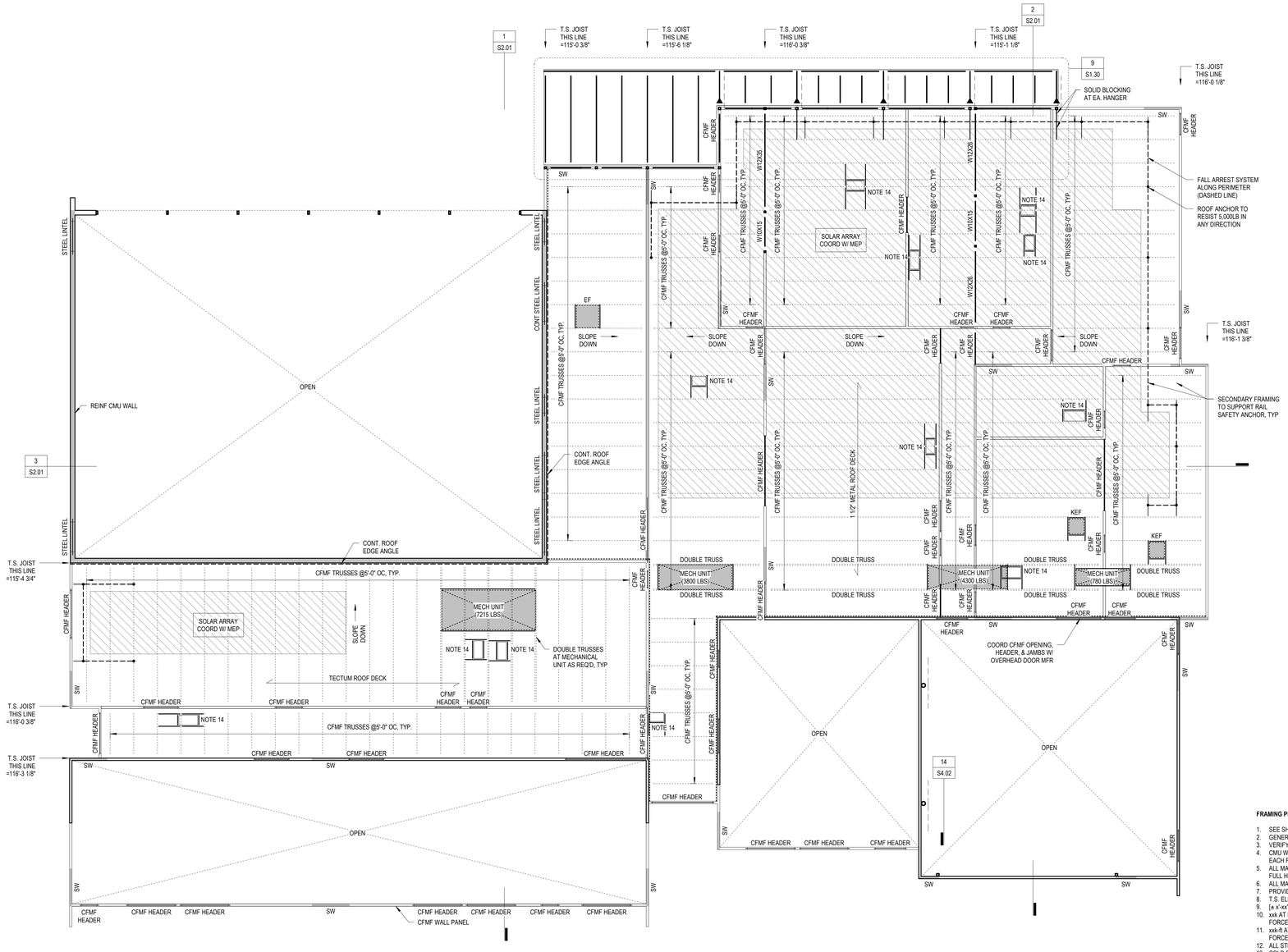
ISSUANCES	DATE
Schematic	04/21/23
Design Development	08/18/23
Bid and Construction	01/26/24
Bid Addendum 01	03/01/24
Bid Addendum 03	03/15/24

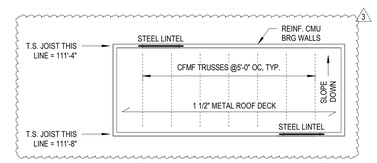


RDA NO. 23008
LSD NO. SB-0059
JOB NO. 2616.01A

SHEET TITLE
FOUNDATION PLAN UNIT 100

SHEET NO.
S1.01





1 S1.11 LOW ROOF FRAMING PLAN UNIT 100
Scale: 3/32" = 1'-0"

FRAMING PLAN NOTES:

1. SEE SHEETS S0.01-S0.04 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL. TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
8. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
9. [x.x'-xx"] DENOTES ELEVATION FROM GIVEN DATUM
10. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM REACTION = 25 KIPS)
11. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
12. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED
13. COLD-FORMED METAL FRAMED WALLS, HEADERS, AND GIRDERS ARE TO BE DESIGNED BY CFMF SUPPLIER
14. HANGING MECHANICAL UNIT. WEIGHT VARIES FROM 150 LBS TO 425 LBS., COORD. WITH MECHANICAL.
15. MECHANICAL UNIT WEIGHTS DO NOT INCLUDE CURB.
16. EXTERIOR WALL SHEATHING TO BE 5/8" GYP SHEATHING FASTEN WITH 8d @ 6" O.C. EDGE. @ 12" O.C. FIELD
17. TRUSS SHOP DRAWINGS TO BE PREPARED BY THE TRUSS SUPPLIER AND SEALED BY A REGISTERED ENGINEER.
18. SEE TRUSS LAYOUT SHOP DRAWINGS FOR FINAL DESIGNS, LAYOUT, REQUIRED BLOCKING, AND BRIDGING.
19. FOLLOW TRUSS SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS.
20. ALL FRAMING CLIPS, STRAPS, AND HANGERS TO BE SIMPSON STRONG-TIE OR APPROVED EQUAL, U.O.N.
21. ALL HANGERS, FASTENERS, NAILS, SCREWS, ETC. TO BE STAINLESS STEEL AT EXTERIOR CONDITIONS. ALL MEMBERS AT EXTERIOR CONDITIONS TO BE P.P.T.

COLD-FORMED SHEAR WALL SCHEDULE (MIN.)

MARK	SHEATHING	FASTENER SPACING	JAMB STUD SIZE	LENGTH
SW	5/8" GYP (MIN), BOTH SIDES	6"OC EDGES / 12"OC FIELD	(2) 600S162-43	8'-0" TYP.

COLD-FORMED WALL SCHEDULE (MIN.)

MARK	STUD SIZE	TOP+BOT TRACK
--	600S162-43 @16"OC	600T125-43

COLD-FORMED COLUMN SCHEDULE (MIN.)

MARK	POST SIZE	COMMENTS
--	(2) 600S162-43	BOXED

COLD-FORMED HEADER SCHEDULE (MIN.)

MARK	BEAM SIZE	TOP+BOT TRACK
--	(2) 600S162-43	600T125-43

COLD-FORMED JOIST SCHEDULE (MIN.)

MARK	JOIST SIZE	COMMENTS
--	6S162-43 @16" OC	--

COLD-FORMED HEADER SCHEDULE (MIN.)

MARK	HEADER SIZE	TOP+BOT. TRACK	SILL SIZE	SHOULDER STUDS
--	(2) 600S162-54	600T125-43	600T125-43	600T125-43

*CFMF IS A DELEGATED DESIGN ITEM. MEMBER SIZES SHOWN ARE **MINIMUM** DEPTH, GAUGES, AND SPACINGS WHICH MAY REQUIRE LARGER SIZES BASED ON ANALYSIS AND DESIGN BY SUPPLIER'S ENGINEER. REFER TO SPECIFICATIONS.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

Willow School

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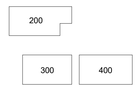
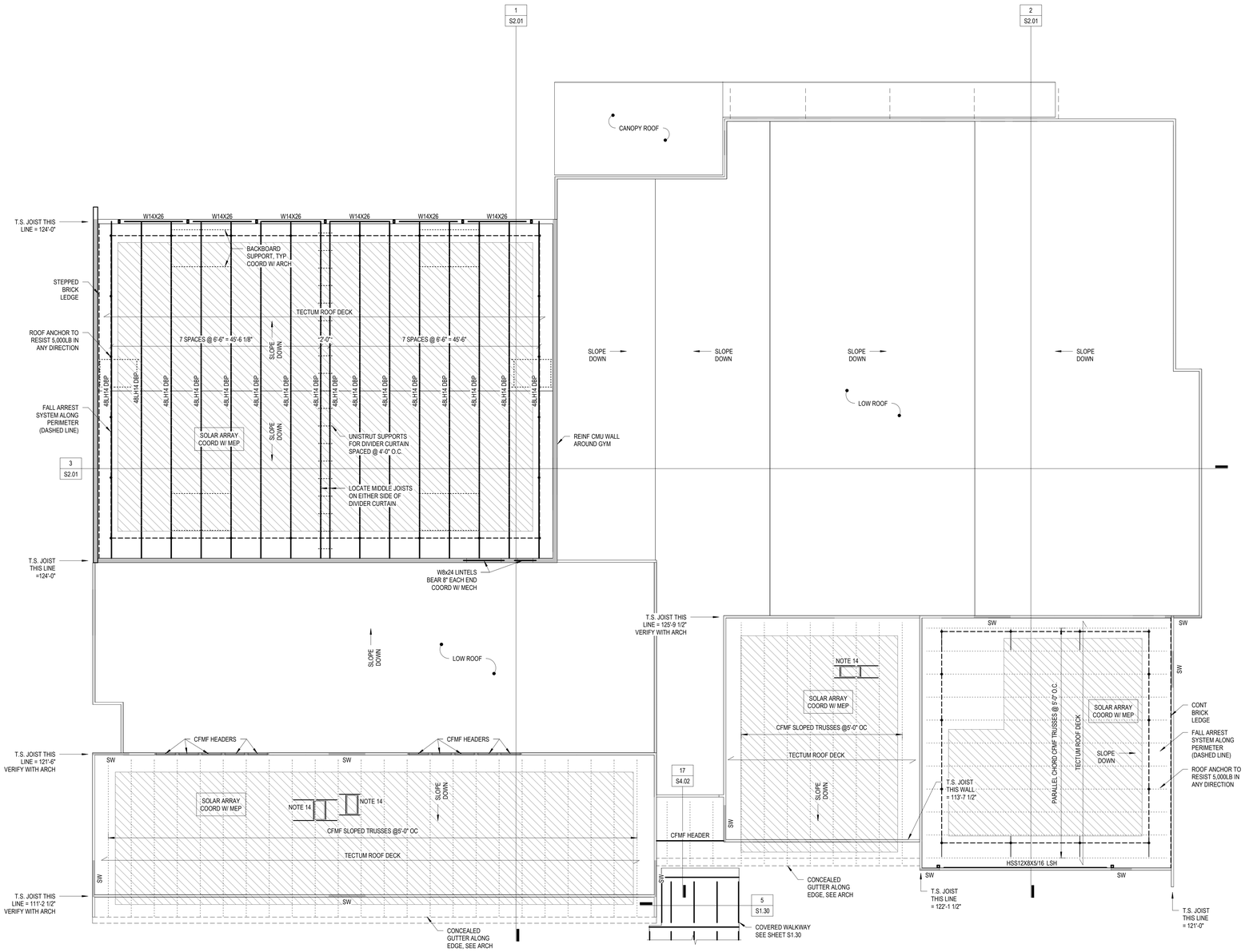


RDA NO. 23008
LSD NO. SB-0059
JOB NO. 2616.01A

N

SHEET TITLE
LOW ROOF FRAMING PLAN
UNIT 100

SHEET NO.
S1.11



NORTH

1 S1.21 HIGH ROOF FRAMING PLAN UNIT 100
Scale: 3/32" = 1'-0"

FRAMING PLAN NOTES:

1. SEE SHEETS S0.01-S0.04 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
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5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
8. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK.
9. [x x'-xx"] DENOTES ELEVATION FROM GIVEN DATUM
10. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM REACTION = 25 KIPS)
11. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
12. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED
13. COLD-FORMED METAL FRAMED WALLS, HEADERS, AND GIRDERS ARE TO BE DESIGNED BY CFMF SUPPLIER
14. HANGING MECHANICAL UNIT. WEIGHT VARIES FROM 150 LBS TO 425 LBS., COORD. WITH MECHANICAL.
15. MECHANICAL UNIT WEIGHTS DO NOT INCLUDE CURB.
16. EXTERIOR WALL SHEATHING TO BE 5/8" GYP SHEATHING, FASTEN WITH 8d @ 6" O.C. EDGE, @ 12" O.C. FIELD
17. TRUSS SHOP DRAWINGS TO BE PREPARED BY THE TRUSS SUPPLIER AND SEALED BY A REGISTERED ENGINEER.
18. SEE TRUSS LAYOUT SHOP DRAWINGS FOR FINAL DESIGNS, LAYOUT, REQUIRED BLOCKING, AND BRIDGING.
19. FOLLOW TRUSS SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS.
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21. ALL HANGERS, FASTENERS, NAILS, SCREWS, ETC. TO BE STAINLESS STEEL AT EXTERIOR CONDITIONS. ALL MEMBERS AT EXTERIOR CONDITIONS TO BE P.P.T.

COLD-FORMED SHEAR WALL SCHEDULE (MIN.)

MARK	SHEATHING	FASTENER SPACING	JAMB STUD SIZE	LENGTH
SW	5/8" GYP (MIN), BOTH SIDES	6"OC EDGES / 12"OC FIELD	(2) 600S162-43	8'-0" TYP.

COLD-FORMED WALL SCHEDULE (MIN.)

MARK	STUD SIZE	TOP+BOT TRACK
--	600S162-43 @16"OC	600T125-43

COLD-FORMED COLUMN SCHEDULE (MIN.)

MARK	POST SIZE	COMMENTS
--	(2) 600S162-43	BOXED

COLD-FORMED HEADER SCHEDULE (MIN.)

MARK	BEAM SIZE	TOP+BOT TRACK
--	(2) 600S162-43	600T125-43

COLD-FORMED JOIST SCHEDULE (MIN.)

MARK	JOIST SIZE	COMMENTS
--	6S162-43 @16" OC	--

COLD-FORMED HEADER SCHEDULE (MIN.)

MARK	HEADER SIZE	TOP+BOT. TRACK	SILL SIZE	SHOULDER STUDS
--	(2) 600S162-54	600T125-43	600T125-43	600T125-43

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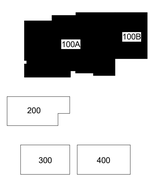
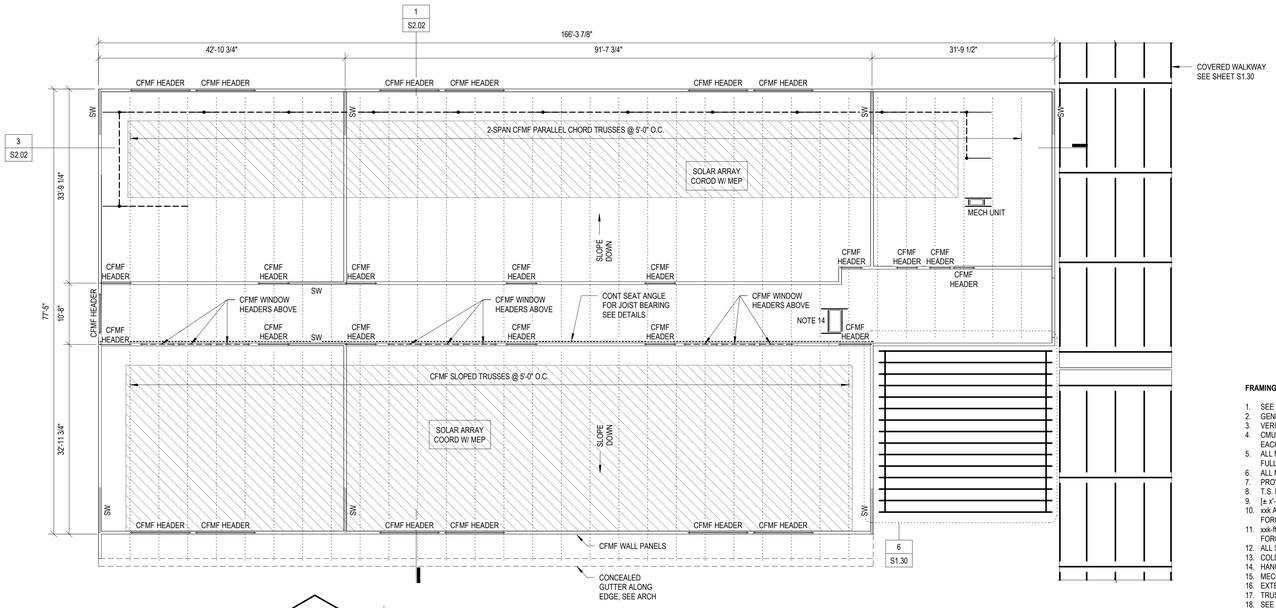


RDA NO. 23008
LSD NO. SB-0059
JOB NO. 2616.01A

N

SHEET TITLE
HIGH ROOF FRAMING PLAN
UNIT 100

SHEET NO.
S1.21



NORTH

1 S1.22 ROOF FRAMING PLAN UNIT 200
Scale: 3/32" = 1'-0"

FRAMING PLAN NOTES:

1. SEE SHEETS S0.01-S0.04 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
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9. [± x'-xx"] DENOTES ELEVATION FROM GIVEN DATUM
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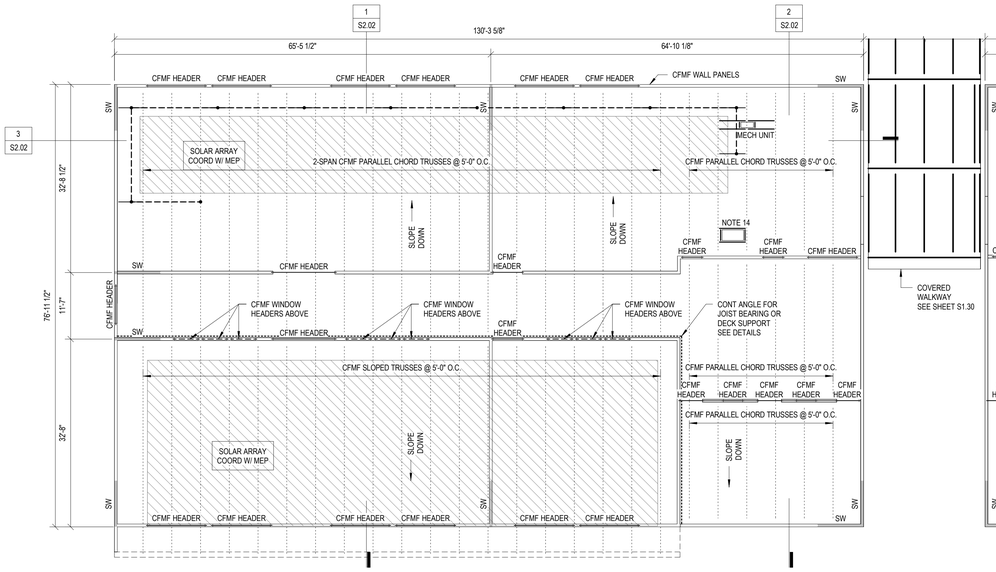
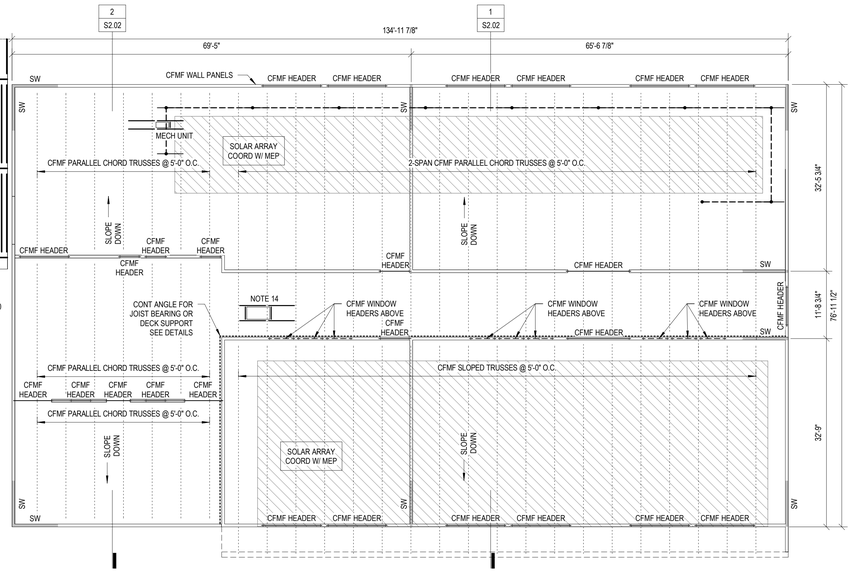


NORTH

2 S1.22 ROOF FRAMING PLAN UNIT 300
Scale: 3/32" = 1'-0"



NORTH

3 S1.22 ROOF FRAMING PLAN UNIT 400
Scale: 3/32" = 1'-0"

COLD-FORMED SHEAR WALL SCHEDULE (MIN.)				
MARK	SHEATHING	FASTENER SPACING	JAMB STUD SIZE	LENGTH
SW	5/8" GYP (MIN), BOTH SIDES	6"OC EDGES / 12"OC FIELD	(2) 600S162-43	8'-0" TYP.

COLD-FORMED WALL SCHEDULE (MIN.)		
MARK	STUD SIZE	TOP+BOT TRACK
--	600S162-43 @16"OC	600T125-43

COLD-FORMED COLUMN SCHEDULE (MIN.)		
MARK	POST SIZE	COMMENTS
--	(2) 600S162-43	BOXED

COLD-FORMED HEADER SCHEDULE (MIN.)		
MARK	BEAM SIZE	TOP+BOT TRACK
--	(2) 600S162-43	600T125-43

COLD-FORMED JOIST SCHEDULE (MIN.)		
MARK	JOIST SIZE	COMMENTS
--	6S162-43 @16" OC	--

COLD-FORMED HEADER SCHEDULE (MIN.)				
MARK	HEADER SIZE	TOP+BOT. TRACK	SILL SIZE	SHOULDER STUDS
--	(2) 600S162-54	600T125-43	600T125-43	600T125-43

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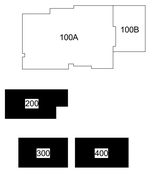

RDA NO. 23008
LSD NO. SB-0059
JOB NO. 2616.01A

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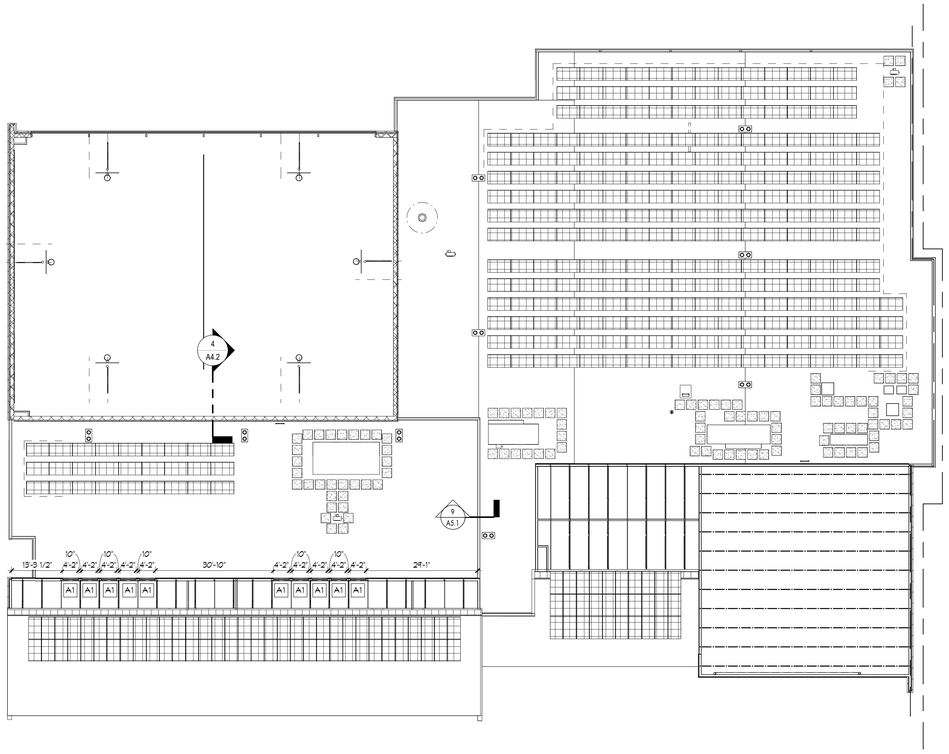
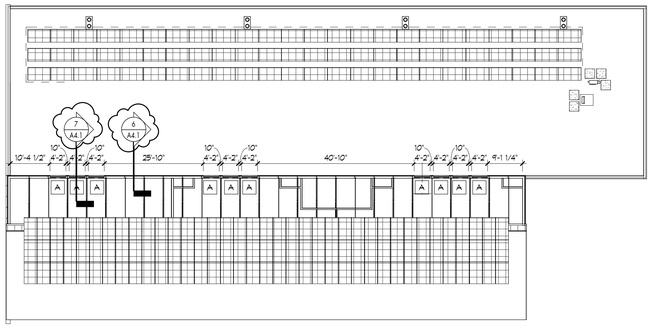
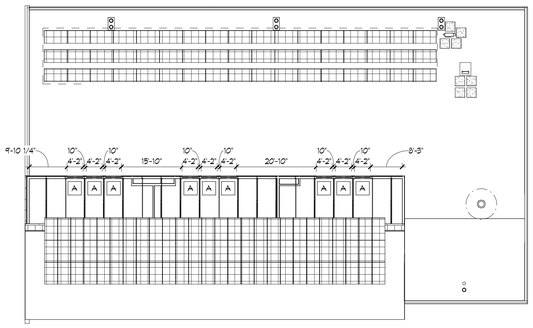
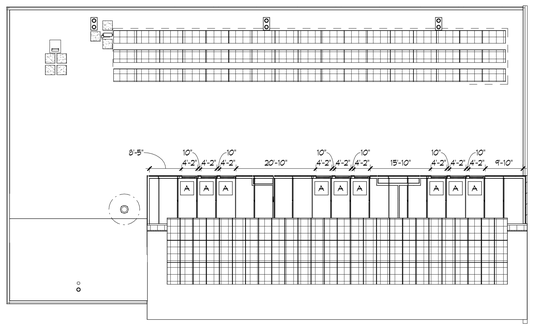
SHEET TITLE
ROOF FRAMING PLAN
UNITS 200, 300, 400

SHEET NO.
S1.22









1 COMPOSITE CLERESTORY FLOOR PLAN
1/16" = 1'-0"

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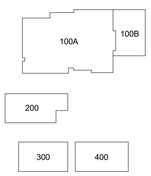

KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE COMPOSITE CLERESTORY FLOOR PLAN

SHEET NO. A0.2

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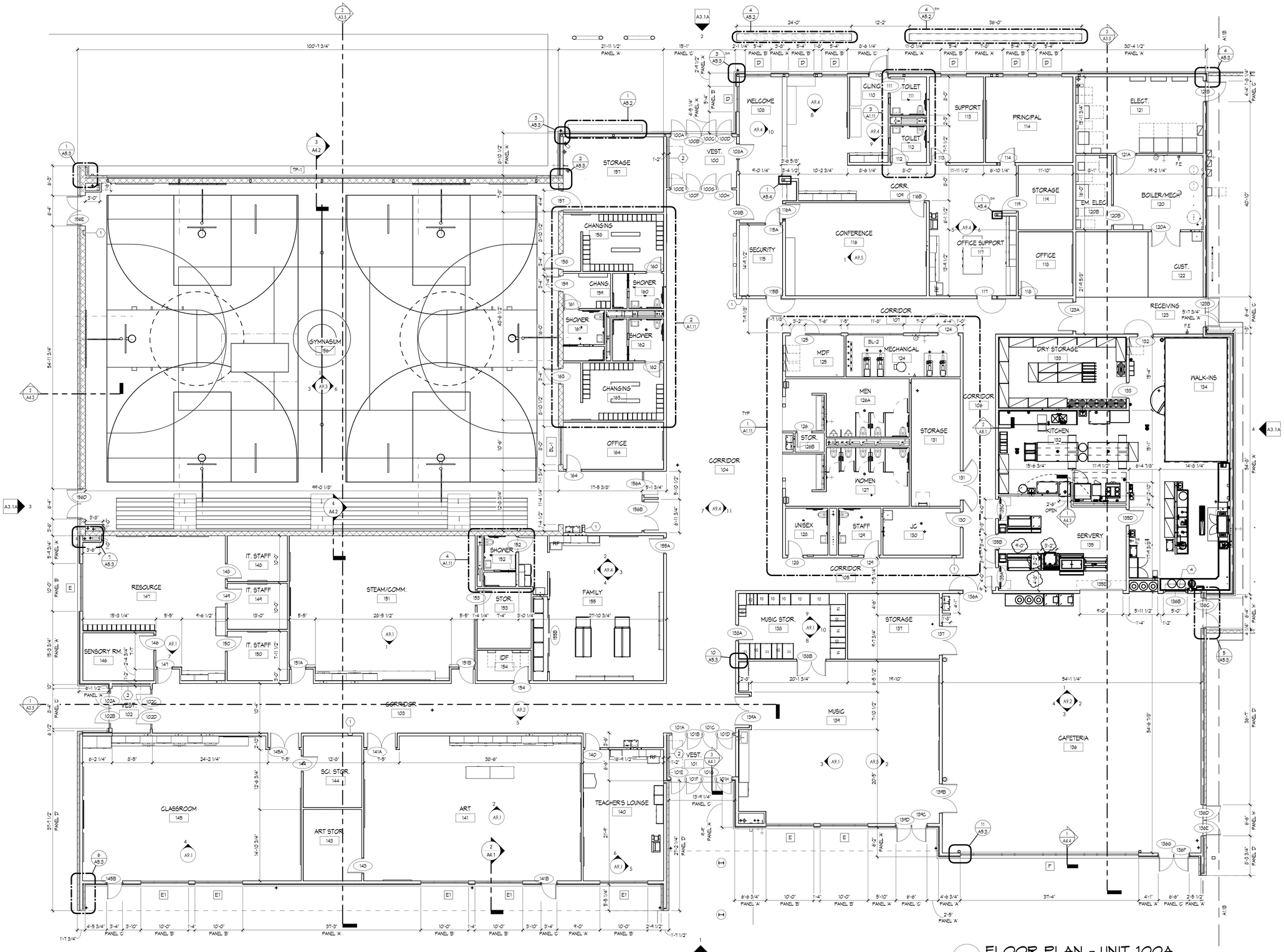
ARCHITECTURAL PLAN KEYNOTES

1. NEW FIRE EXTINGUISHER & EXTINGUISHER CABINET. REFER TO SPECIFICATION SECTION 104400.
2. 3-5/8" METAL STUD FURRED WALL WITH GYP ON ONE SIDE FOR RECESSED CABINET UNIT HEATER.
3. 4" CONCRETE EQUIPMENT HOUSEKEEPING PAD. REFER TO STRUCTURAL DRAWINGS & COORDINATE w/ MECHANICAL AND ELECTRICAL EQUIPMENT.
4. SLIP-IN CEILING COUNTER DOOR WITH INTEGRAL FRAME AND SILL. REFER TO SPEC SECTION 083323.

ARCHITECTURAL GENERAL NOTES

1. XX INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.
2. REFER TO EQUIPMENT PLANS FOR CABINWORK, VISUAL DISPLAY BOARDS, LOCKERS, SHELVING, ETC.
3. REFER TO COLOR LAYOUT PLANS FOR FLOOR FINISH PATTERNS AND COLORS.
4. CONTRACTOR SHALL COORDINATE LOCATIONS OF FLOOR DRAINS, CLEAN OUTS, ETC, WITH APPROPRIATE TRADES.
5. REFER TO ENLARGED PLANS FOR ADDITIONAL NOTES AND DIMENSIONS.
6. MASONRY CONTRACTOR TO INSTALL LOOSE LINTELS FOR MISCELLANEOUS OPENINGS NOT INDICATED ON DRAWINGS BUT REQUIRED FOR MECHANICAL, ELECTRICAL, FOOD SERVICE EQUIPMENT OR OTHER ITEMS THAT PASS THROUGH A WALL. STEEL LINTELS SHALL BE SUPPLIED BY THE STEEL CONTRACTOR.
7. ALL PARTITION WALLS TO RUN TIGHT TO DECK, U.N.O.
8. REFER TO PARTITION TYPES SHOWN ON REFLECTED CEILING PLANS AND PARTITION TYPE SHEET A2.5 .
10. DIMENSIONS SHOWN ARE TO FACE OF WALL.
11. FILL/SEAL ALL PENETRATIONS THROUGH WALLS & VOIDS AT STRUCTURAL MEMBERS.
12. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS, U.N.O.
13. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
14. 3M SECURITY FILM - AT ALL EXTERIOR WINDOWS, 6FT AND BELOW OR FROM THE NEXT MULLION AFTER 6FT AND BELOW. REFER TO SPECIFICATION SECTION 088716.



1 FLOOR PLAN - UNIT 100A
1/8" = 1'-0"

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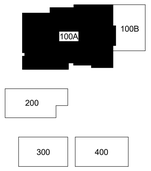

KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
FLOOR PLAN - UNIT 100A

SHEET NO.
A1.1A

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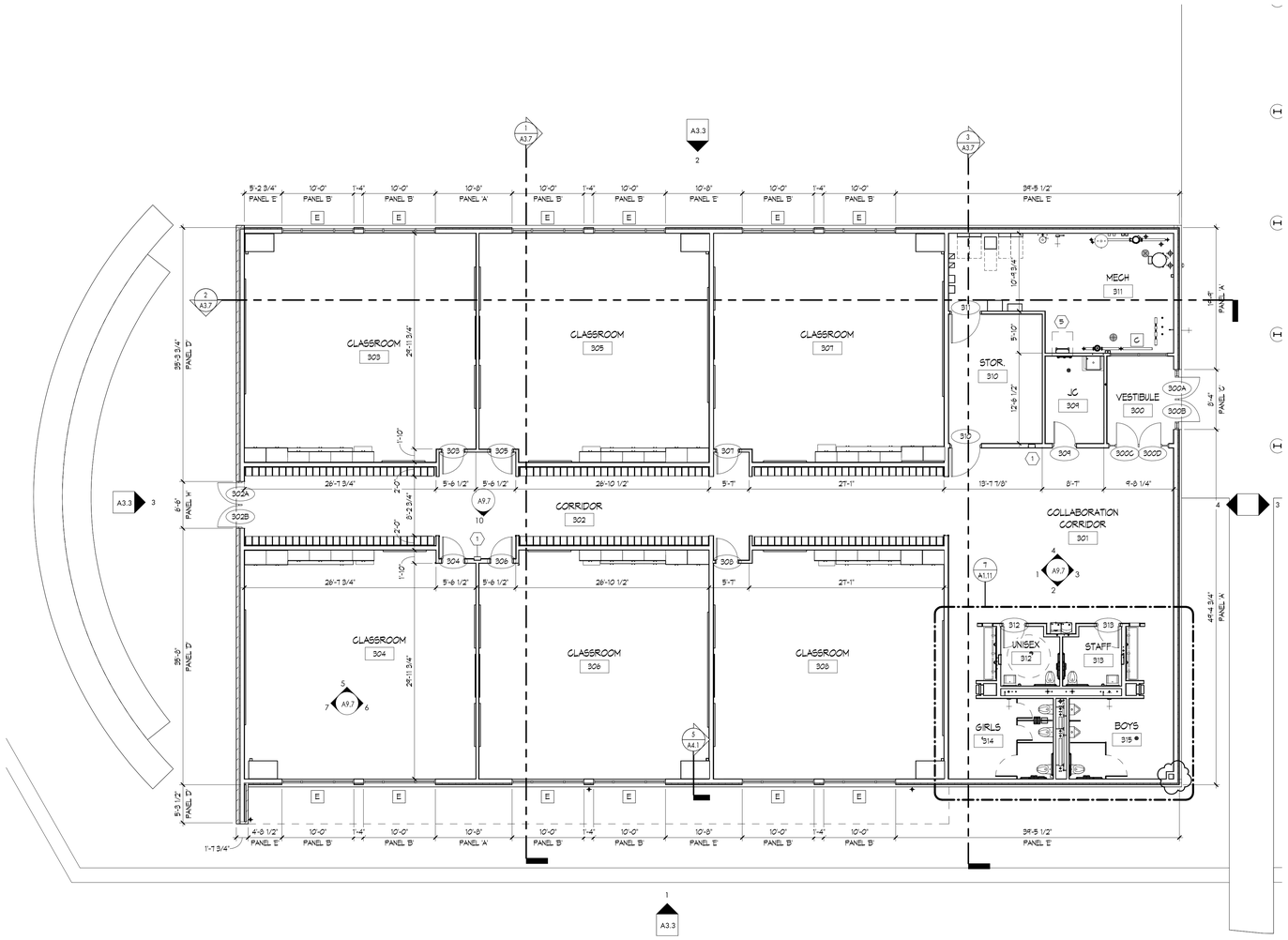
ARCHITECTURAL PLAN KEYNOTES

1. NEW FIRE EXTINGUISHER & EXTINGUISHER CABINET. REFER TO SPECIFICATION SECTION 104400.
2. 3-5/8" METAL STUD FURRED WALL WITH GYP ON ONE SIDE FOR RECESSED CABINET UNIT HEATER.
3. 4" CONCRETE EQUIPMENT HOUSEKEEPING PAD. REFER TO STRUCTURAL DRAWINGS & COORDINATE W/ MECHANICAL AND ELECTRICAL EQUIPMENT.
4. SLIP-IN CEILING COUNTER DOOR WITH INTEGRAL FRAME AND SILL. REFER TO SPEC SECTION 083323.

ARCHITECTURAL GENERAL NOTES

1. XX INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.
2. REFER TO EQUIPMENT PLANS FOR CABINWORK, VISUAL DISPLAY BOARDS, LOCKERS, SHELVING, ETC.
3. REFER TO COLOR LAYOUT PLANS FOR FLOOR FINISH PATTERNS AND COLORS.
4. CONTRACTOR SHALL COORDINATE LOCATIONS OF FLOOR DRAINS, CLEAN OUTS, ETC, WITH APPROPRIATE TRADES.
5. REFER TO ENLARGED PLANS FOR ADDITIONAL NOTES AND DIMENSIONS.
6. MASONRY CONTRACTOR TO INSTALL LOOSE LINTELS FOR MISCELLANEOUS OPENINGS NOT INDICATED ON DRAWINGS BUT REQUIRED FOR MECHANICAL, ELECTRICAL, FOOD SERVICE EQUIPMENT OR OTHER ITEMS THAT PASS THROUGH A WALL. STEEL LINTELS SHALL BE SUPPLIED BY THE STEEL CONTRACTOR.
7. ALL PARTITION WALLS TO RUN TIGHT TO DECK, U.N.O.
8. REFER TO PARTITION TYPES SHOWN ON REFLECTED CEILING PLANS AND PARTITION TYPE SHEET A2.5 .
10. DIMENSIONS SHOWN ARE TO FACE OF WALL.
11. FILL/SEAL ALL PENETRATIONS THROUGH WALLS & VOIDS AT STRUCTURAL MEMBERS.
12. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS, U.N.O.
13. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
14. 3M SECURITY FILM - AT ALL EXTERIOR WINDOWS, 6FT AND BELOW OR FROM THE NEXT MULLION AFTER 6FT AND BELOW. REFER TO SPECIFICATION SECTION 088716.



1 FLOOR PLAN - UNIT 300
1/8" = 1'-0"

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

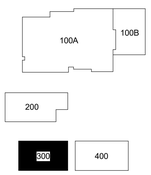
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
FLOOR PLAN - UNIT 300

SHEET NO.
A1.3

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ARCHITECTURAL PLAN KEYNOTES

1. NEW FIRE EXTINGUISHER & EXTINGUISHER CABINET. REFER TO SPECIFICATION SECTION 104400.
2. 3-5/8" METAL STUD FURRED WALL WITH GYP ON ONE SIDE FOR RECESSED CABINET UNIT HEATER.
3. 4" CONCRETE EQUIPMENT HOUSEKEEPING PAD. REFER TO STRUCTURAL DRAWINGS & COORDINATE W/ MECHANICAL AND ELECTRICAL EQUIPMENT.
4. SLIP-IN CEILING COUNTER DOOR WITH INTEGRAL FRAME AND SILL. REFER TO SPEC SECTION 083323.

ARCHITECTURAL GENERAL NOTES

1. XX INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.
2. REFER TO EQUIPMENT PLANS FOR CABINWORK, VISUAL DISPLAY BOARDS, LOCKERS, SHELVING, ETC.
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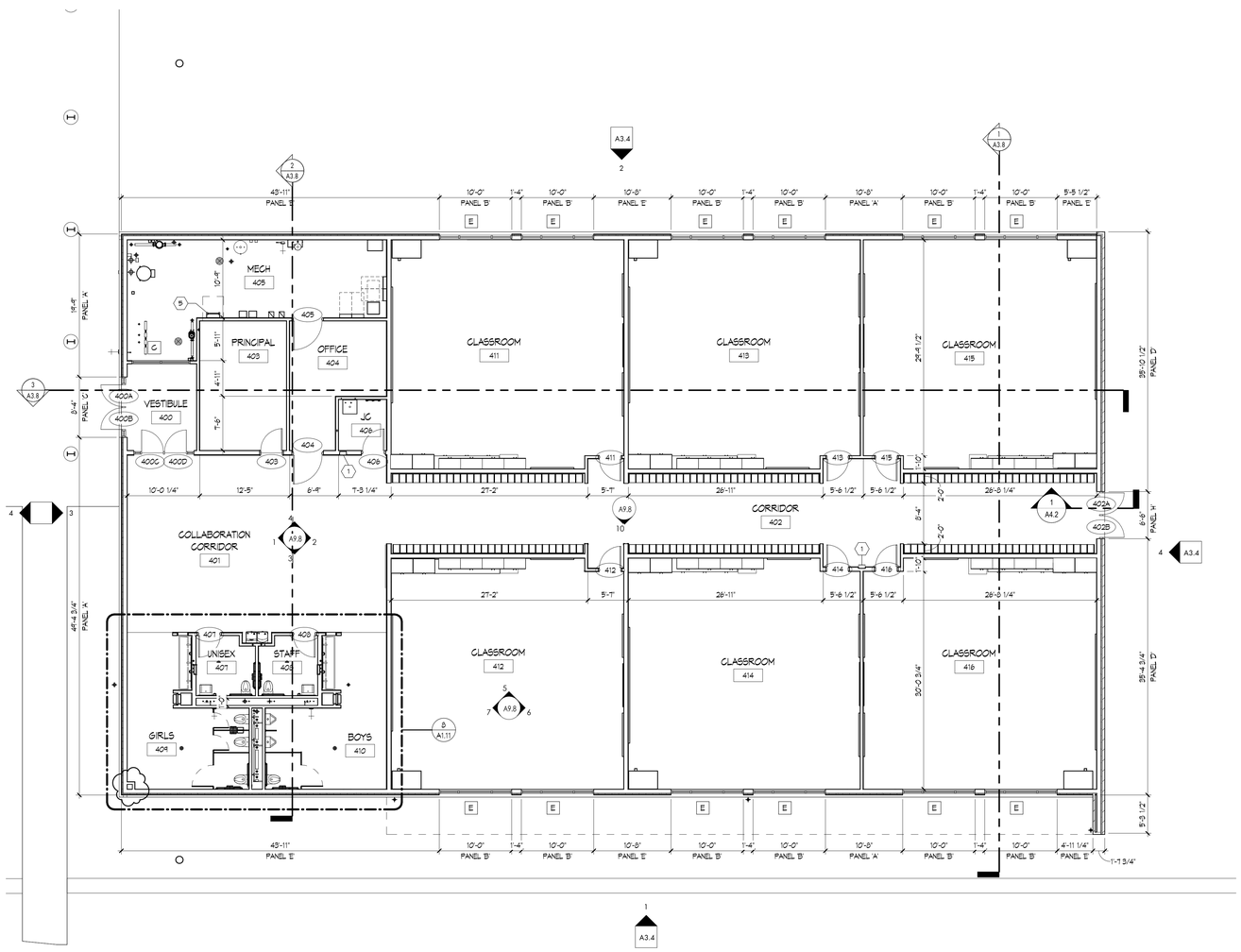
11. FILL/SEAL ALL PENETRATIONS THROUGH WALLS & VOIDS AT STRUCTURAL MEMBERS.
12. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS, U.N.O.
13. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
14. 3M SECURITY FILM - AT ALL EXTERIOR WINDOWS, 6FT AND BELOW OR FROM THE NEXT MULLION AFTER 6FT AND BELOW. REFER TO SPECIFICATION SECTION 088116.



1 FLOOR PLAN - UNIT 400

1/8" = 1'-0"

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

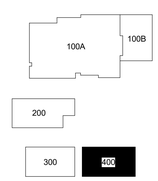
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

N

LSD SB-005
JOB 2616.01A

SHEET TITLE
FLOOR PLAN - UNIT 400

SHEET NO.
A1.4

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EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE AT 84" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER = PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL BASE CABINETS SHALL HAVE COUNTERTOPS WITH BACK AND SIDE SPLASH. REFER TO **DIVISION 12 SPECIFICATIONS.**
7. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
8. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
9. SEE SHEET A1.10 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
10. TRIM WALL PROTECTION AROUND POWER/DATA OUTLETS (TYP.)
11. SEE SHEET A1.9 FOR VISUAL DISPLAY SCHEDULE.
12. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's. INFORM ARCHITECT OF CONFLICTS.

EQUIPMENT PLAN LEGEND

X-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINETS SHALL SLOPED TOPS AND ALL DOORS SHALL HAVE LOCKS U.N.O.

B-_# = BASE CABINET
W-_# = WALL CABINET
T-_# = TALL CABINET
FILLER = PROVIDE FACE, TOP, BOTTOM AND / OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET

RS-# = ROLLER SHADE, SPECIFICATION SECTION 122413

= SIGNS (FOR TYPES AND MOUNTING, SEE SHEET A1.25 AND SPEC SECTION 101419, 101423 & 101424

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

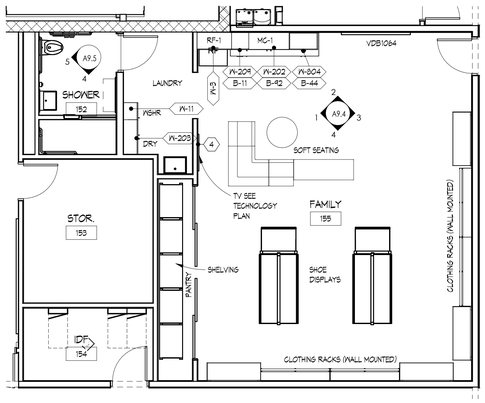
APPLIANCE PLAN LEGEND

SEE SPEC. SECTION 113013

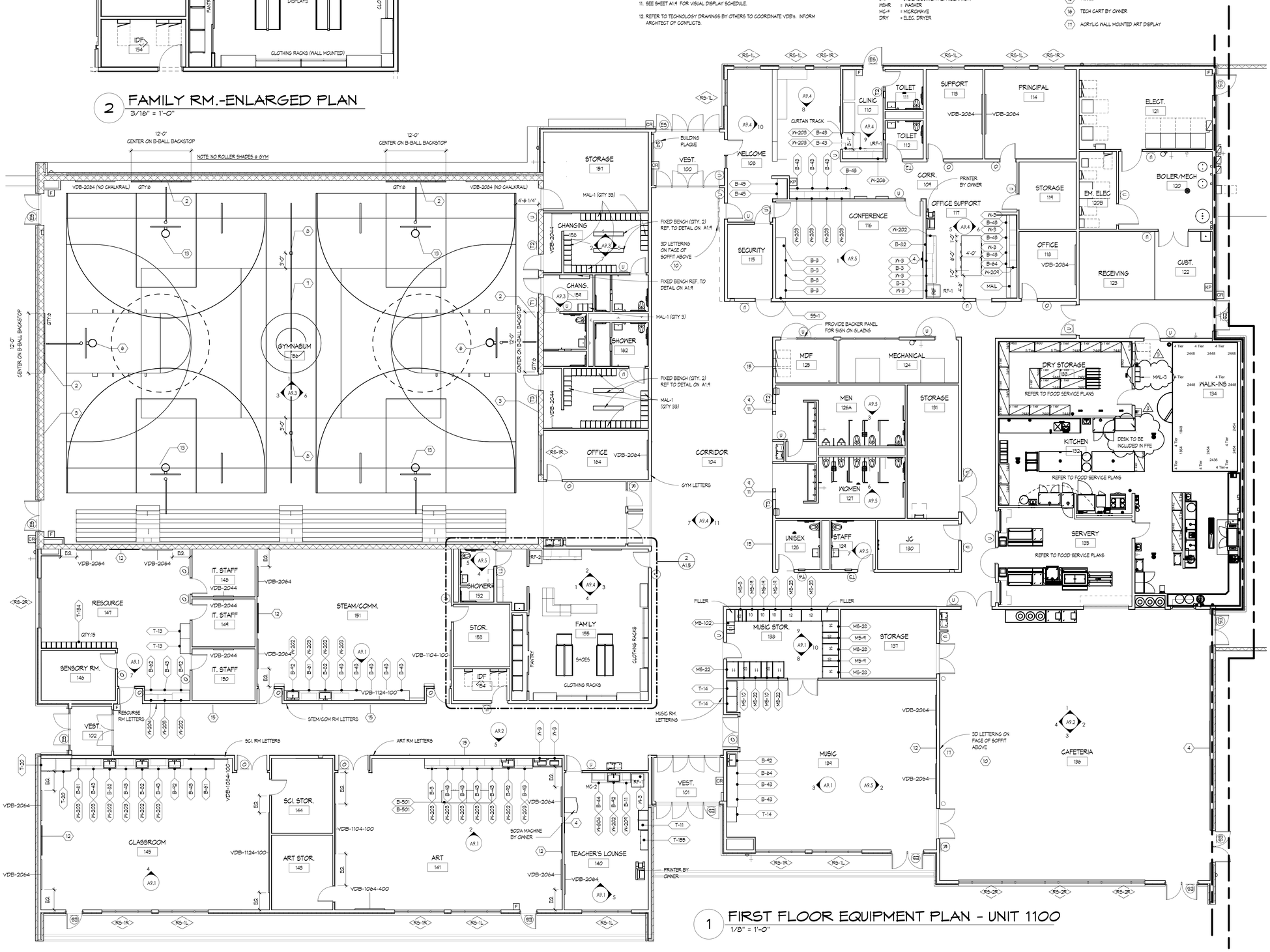
RF-# = REFRIGERATOR
URF-# = UNDERCOUNTER REFRIGERATOR
WSHR = WASHER
MC-# = MICROWAVE
DRY = ELEC. DRYER

EQUIPMENT PLAN NEYNOTES

1. CASEWORK FILLER TYP
2. GYM WALL PADS, 2' W X 8' H X 2" THICK, MOUNTED AT 4" AFF, REFER TO SPECIFICATION SECTION 116623
3. GYM SCOREBOARD. REFER TO SPECIFICATION SECTION 116623
4. FLAT SCREEN TV, SEE TECHNOLOGY DRAWINGS
5. SHORT THROUGH PROJECTOR BY TECHNOLOGY CONSULTANT
6. SIDE RETRACTABLE BASKETBALL BACKSTOP (GLASS) SEE SPECIFICATION SECTION 116623
7. GYMNASIUM DIVIDER, SEE SPEC SECTION 083513
8. VOLLEYBALL SLEEVE, REFER TO SPECIFICATION SECTION 116623
9. FRAME OUT OPENING WITH WOOD TRIM AND PAINT SAME COLOR AS WALL
10. ARCHITECTURAL LETTERS, SEE INTERIOR ELEVATIONS AND SHEET A1.10
11. GLASS N OPENING WITH FROSTED BOY/GIRL SYMBOL, SEE SHEET A1.10
12. WALL MOUNTED INTERACTIVE TOUCH SCREEN, SEE TECHNOLOGY PLAN
13. FORWARD RETRACTABLE BASKETBALL BACKSTOP (GLASS) SEE SPECIFICATION SECTION 116623
14. TECH CART BY OWNER
15. ACRYLIC WALL MOUNTED ART DISPLAY



2 FAMILY RM.-ENLARGED PLAN
3/16" = 1'-0"



1 FIRST FLOOR EQUIPMENT PLAN - UNIT 1100
1/8" = 1'-0"

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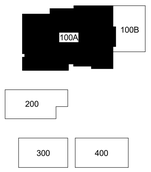
Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 01	03/01/2024
Addendum 03	03/15/2024



KEY PLAN
LSD SB-005
JOB 2616.01A
N

SHEET TITLE
EQUIPMENT PLAN - UNIT 100

SHEET NO.
A1.5

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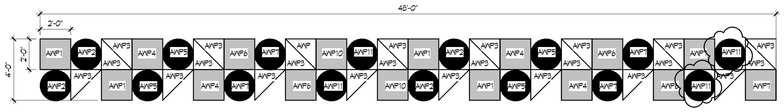
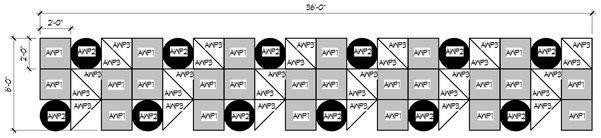
ACOUSTIC WALL PANEL SCHEDULE (AWP-#)

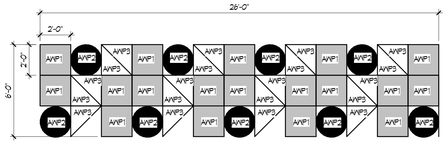
AWP1- DARK BLUE
AWP2- LIGHT BLUE
AWP3- GRAY
AWP4- DARK ORANGE
AWP5- LIGHT ORANGE
AWP6- BRIGHT BLUE
AWP7- LIGHT BRIGHT BLUE
AWP10- DARK PURPLE
AWP11- LIGHT PURPLE



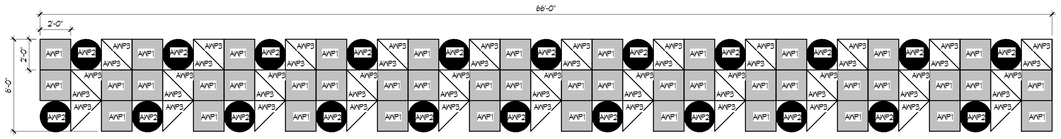
AWP-136



AWP-141 & AWP-145



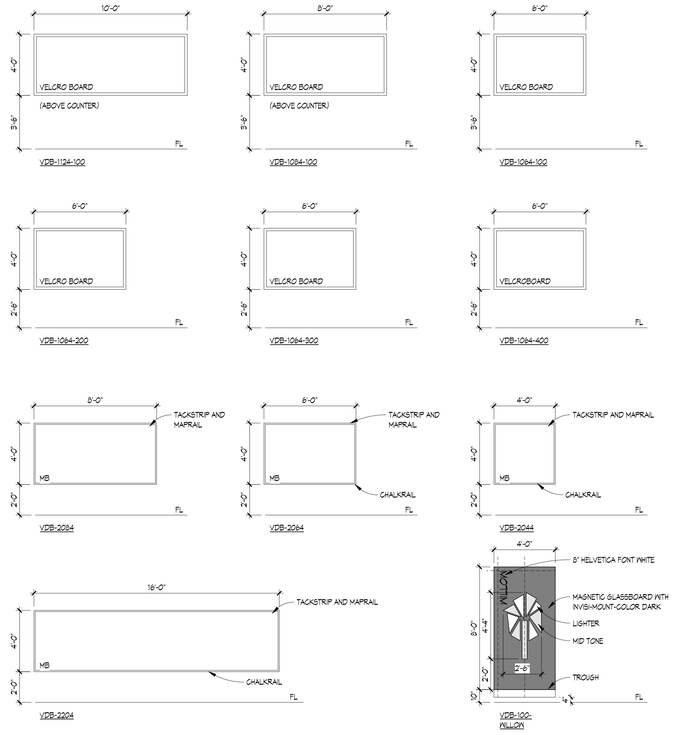
AWP-151



AWP-156

VDB SCHEDULE (VDB-#)

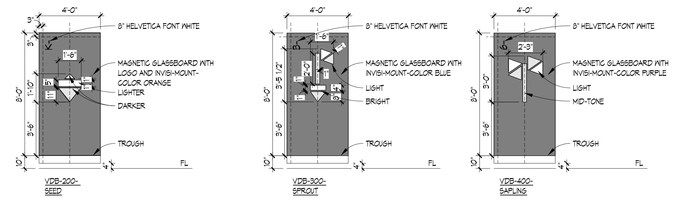
COORDINATE LOCATIONS WITH TECHNOLOGY DEVICES BEFORE INSTALLATION

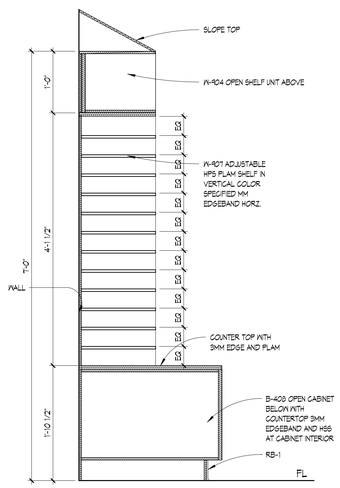


ROLLER SHADES (RS-#)

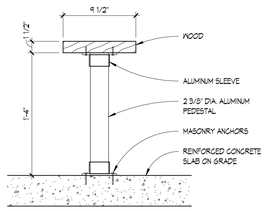
SECTION 122413

RS-1L	SINGLE ROLLER SHADE	3% LIGHT FILTERING	LEFT SIDE MANUALLY OPERATED
RS-1R	SINGLE ROLLER SHADE	3% LIGHT FILTERING	RIGHT SIDE MANUALLY OPERATED
RS-2R	(CAFETERIA) DUAL ROLLER SHADE	3% LIGHT FILTERING/ BLACK OUT	RIGHT SIDE MOTORIZED

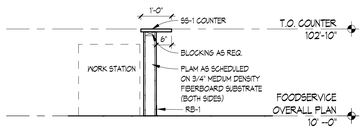




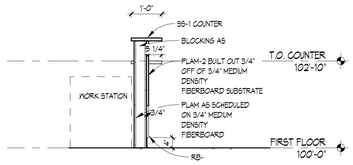
6 MAILBOX CASEWORK DETAIL
1" = 1'-0"



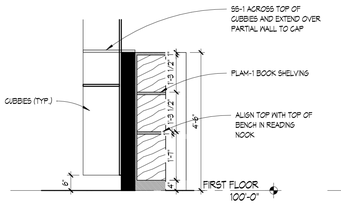
7 LOCKER ROOM BENCH SECTION
1 1/2" = 1'-0"



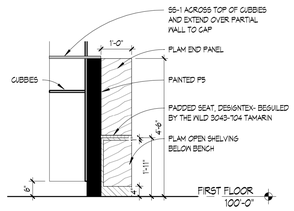
3 RECEPTION DESK ADA COUNTER
1/2" = 1'-0"



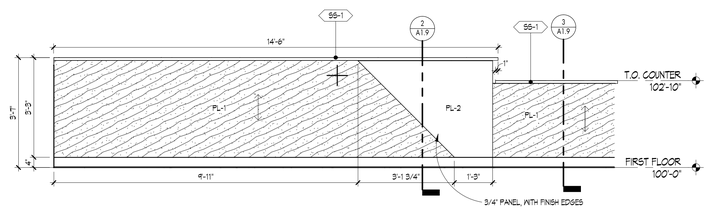
2 RECEPTION DESK TRANSACTION COUNTER
1/2" = 1'-0"



5 READING NOOK SHELVING
1/2" = 1'-0"



4 READING NOOK SECTION
1/2" = 1'-0"



1 FRONT DESK
1/2" = 1'-0"

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KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
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Addendum 03	03/15/2024

LSD SB-005
JOB 2616.01A

SHEET TITLE
EQUIPMENT SCHEDULES & DETAILS

SHEET NO.
A1.9

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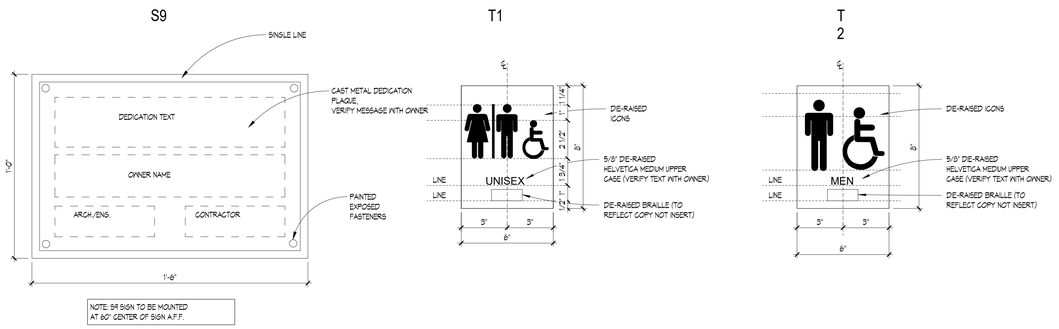
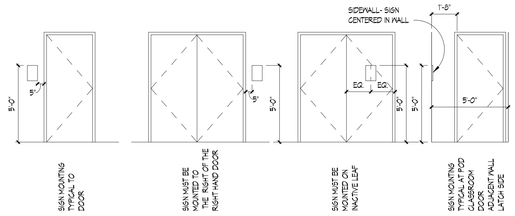
SIGNAGE TYPES



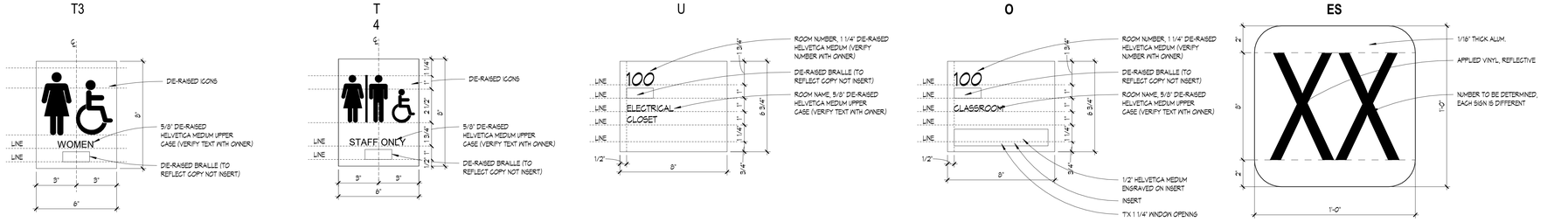
NOTE: S9 SIGN TO BE MOUNTED AT 60" CENTER OF SIGN A.F.F.

SIGNAGE MOUNTING HEIGHTS (U.N.O.)



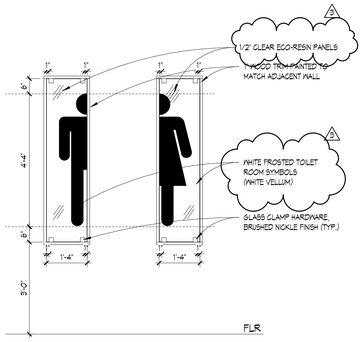
EXTERIOR SIGNAGE SCHEDULE (ES)

DOOR TAG	LOCATION	DOOR NUMBER
100A	VESTIBULE	01
110	CLINIC	02
121B	ELECT.	03
123B	RECEIVING	04
136C	CAFETERIA	05
136D	CAFETERIA	06
136F	CAFETERIA	07
139C	MUSIC	08
101H	VESTIBULE	09
141B	ART	10
145B	CLASSROOM	11
102B	VESTIBULE	12
156D	GYMNASIUM	13
156E	GYMNASIUM	14



NOTE: SIGN TO BE MOUNTED ON INSIDE AND OUTSIDE OF EACH EXTERIOR DOOR WHEN MOUNTING ON GLASS, ELIMINATE ALUMINUM PANELS ADHERE NUMBER DIRECTLY TO GLASS.

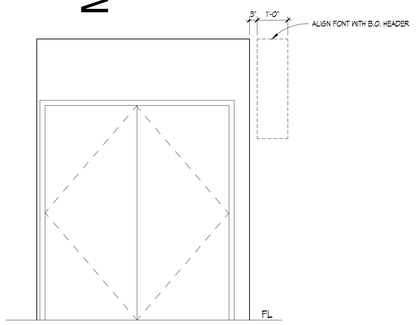
TOILET ROOM GLASS SIGNAGE



ROOM LETTERING

VINYL LETTERING 1'-0" WHITE FONT- HELVETICA MEDIUM UPPER CASE

GYM
MUSIC
ART
SCI.
RES.



*MIRROR AS SHOWN N INTERIOR ELEVATIONS

ARCHITECTURAL LETTERING

3D 5" WHITE FONT- HELVETICA MEDIUM UPPER CASE

UNIT 100-MAIN OFFICE
UNIT-100-CAFETERIA

6'-0"
WILLOW SCHOOL

UNIT 100-ART DISPLAYS
UNIT 200-ART DISPLAY
UNIT 300-ART DISPLAY
UNIT 400-ART DISPLAY

5'-3"
WILLOW STUDENT WORK

2'-6" WHITE VINYL- HELVETICA MEDIUM UPPER CASE

UNIT 200-VESTIBULE
K-2

UNIT 300-VESTIBULE
3-5

UNIT 400-VESTIBULE
6-8

FAMILY ROOM LETTERING

10" WHITE FONT- HELVETICA MEDIUM UPPER CASE

PANTRY
3'-1"

LAUNDRY
5'-7"

RESTROOM
4'-5"

SIGNAGE

3" = 1'-0"

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024

LSD SB-005
JOB 2616.01A

SHEET TITLE
SIGNAGE

SHEET NO.
A1.10

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TOILET ACCESSORIES

MARK	DESCRIPTION
TA-1	TOILET PAPER DISPENSER - OFCI
TA-2	LIQUID SOAP DISPENSER - OFCI
TA-3A	SEMI-RECESSED PAPER TOWEL DISPENSER/WASTE RECEPTABLE COMBO UNIT - 19 GAL.
TA-3B	RECESSED PAPER TOWEL DISPENSER/WASTE RECEPTABLE COMBO UNIT - 4.9 GAL.
TA-3C	SEMI-RECESSED PAPER TOWEL DISPENSER/WASTE RECEPTABLE COMBO UNIT - 12 GAL.
TA-4	SANITARY NAPKIN DISPOSAL UNIT
TA-5	GRAB BAR - 42"
TA-6	GRAB BAR - 36" (AMBULATORY)
TA-7	VERTICAL GRAB BAR - 18"
TA-8	GRAB BAR - 24" x 36" (SHOWER)
TA-9	MIRROR - 2'-0"w x 3'-0"h
TA-10	SHOWER ROD & CURTAIN
TA-11	MOP & BROOM RACK
TA-12	WARDROBE HOOK
TA-13	BABY CHANGING STATION

NOTES:

1. INSTALL UNDERLAVATORY GUARDS AT EACH LAVATORY PLUMBING CONNECTION PER SPECIFICATION SECTION 102800.
2. SEE EQUIPMENT PLANS FOR ADDITIONAL ACCESSORIES NOT LOCATED IN TOILET ROOMS.
3. TOILET ACCESSORIES NOTED 'PROVIDED BY OWNER' SHALL BE CONTRACTOR INSTALLED.
4. SLOPE FLOOR MIN. 1/8" PER FOOT TO DRAIN, U.N.O.

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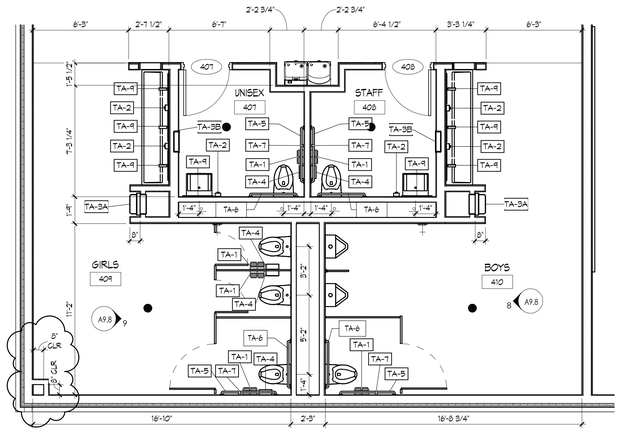
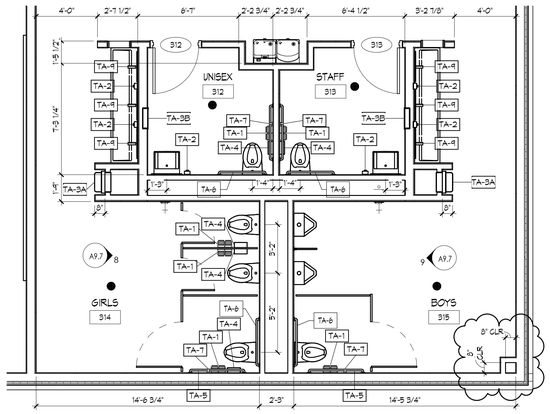
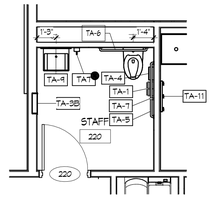


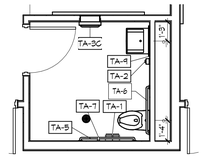
8 UNIT 400 TOILET
1/4" = 1'-0"



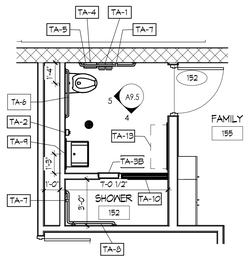
7 UNIT 300 TOILET
1/4" = 1'-0"



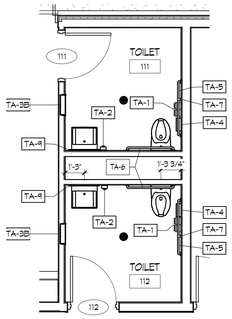
6 UNIT 200 STAFF TOILET
1/4" = 1'-0"



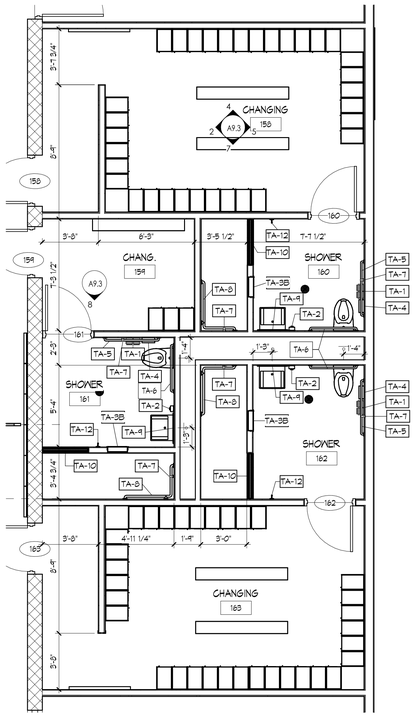
5 UNIT 200 TYP. TOILET
1/4" = 1'-0"



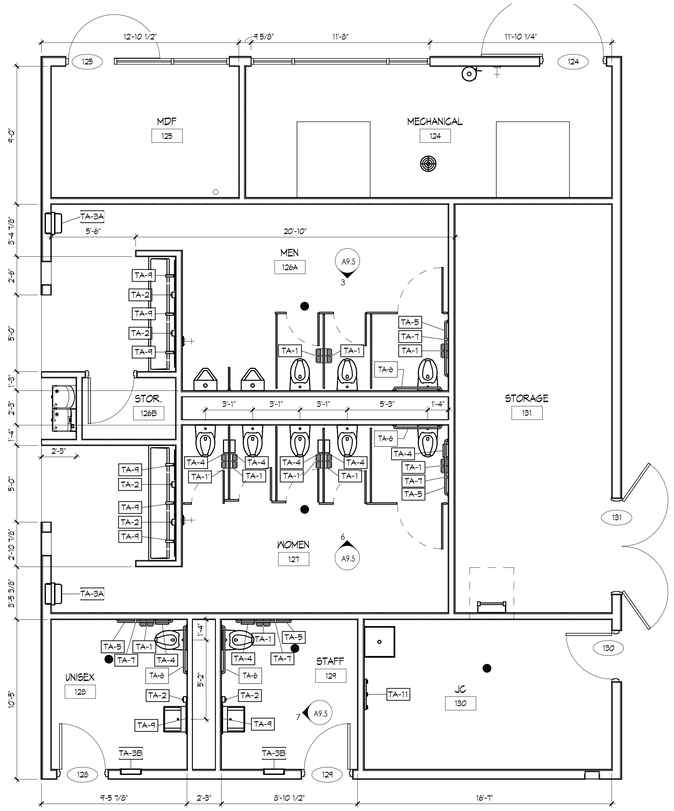
4 UNIT 100 FAMILY ROOM TOILET
1/4" = 1'-0"



3 UNIT 100 OFFICE SUITE TOILET
1/4" = 1'-0"



2 UNIT 100 GYMNASIUM CHANGING RM
1/4" = 1'-0"



1 UNIT 100 TOILET ROOMS
1/4" = 1'-0"

Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024

LSD SB-005
JOB 2616.01A

SHEET TITLE
ENLARGED PLANS

SHEET NO.
A1.11

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REFLECTED CEILING LEGEND

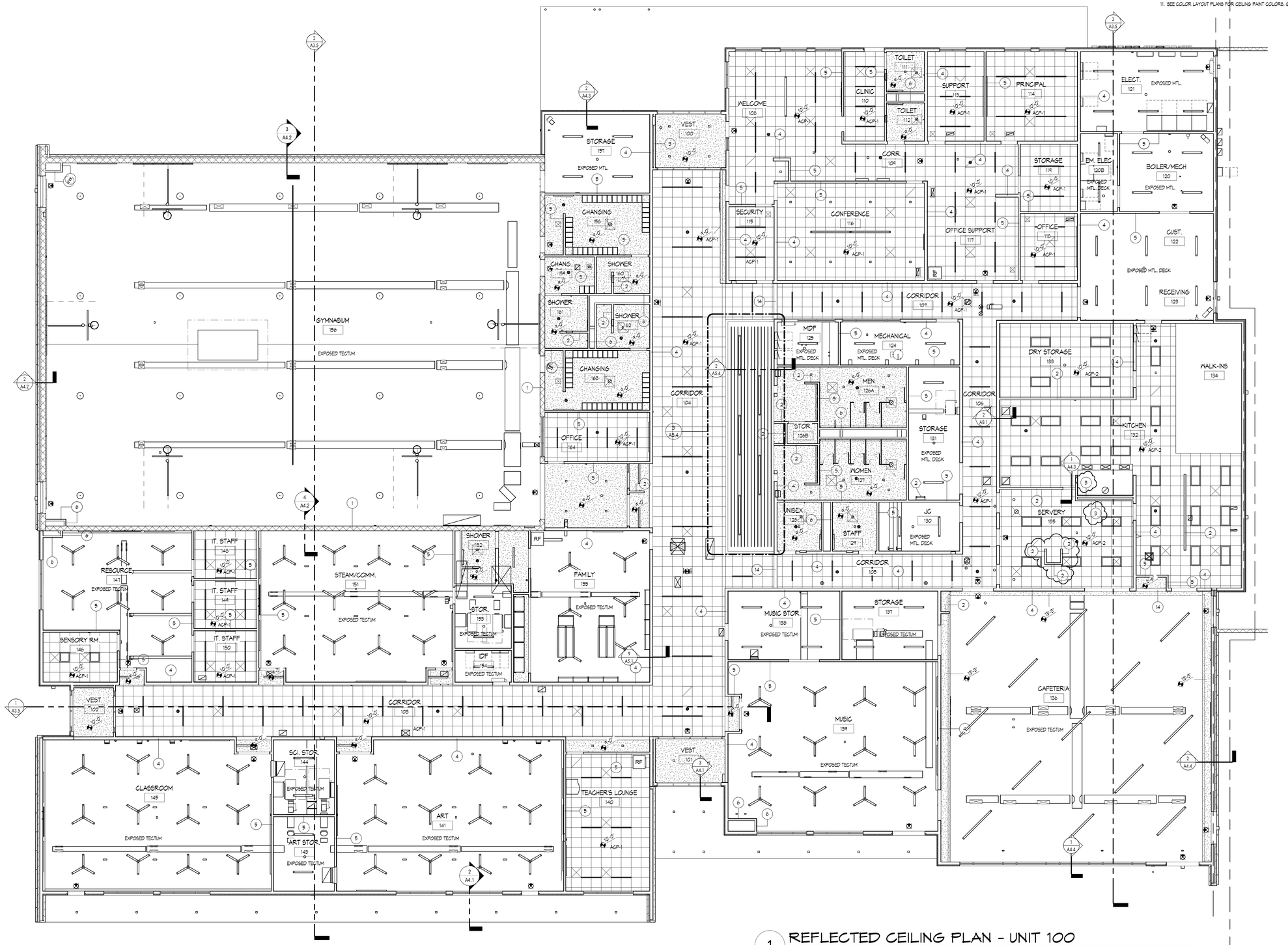
- PARTITION TYPE
- 2x4' SURFACE MOUNTED LIGHT FIXTURE
- 1'x4' SURFACE MOUTNED LIGHT FIXTURE
- 2'x2' SURFACED / PENDANT MOUTNED LIGHT FIXTURE
- 12'x12' SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2'x4' RECESSED LIGHT FIXTURE
- 1'x4' RECESSED LIGHT FIXTURE
- 2'x2' RECESSED LIGHT FIXTURE
- 12'x12' RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SMOKE DETECTOR
- PUBLIC ADDRESS SPEAKER
- SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE. REFER TO COLOR LAYOUT SHEETS FOR ADDITIONAL INFO.
2. NEW LADDER AND ROOF ACCESS HATCH. REFER TO DETAIL ON A5.1.
3. ALIGN GYP SOFFIT WITH TOP OF LOCKERS.

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR PARTITION TYPES AND BULKHEAD DETAILS REFER TO SHEET A2.5 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR STOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APG SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.



1 REFLECTED CEILING PLAN - UNIT 100

1/8" = 1'-0"

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Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

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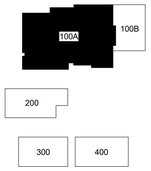

KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
REFLECTED CEILING PLAN - UNIT 100A

SHEET NO.
A2.1A

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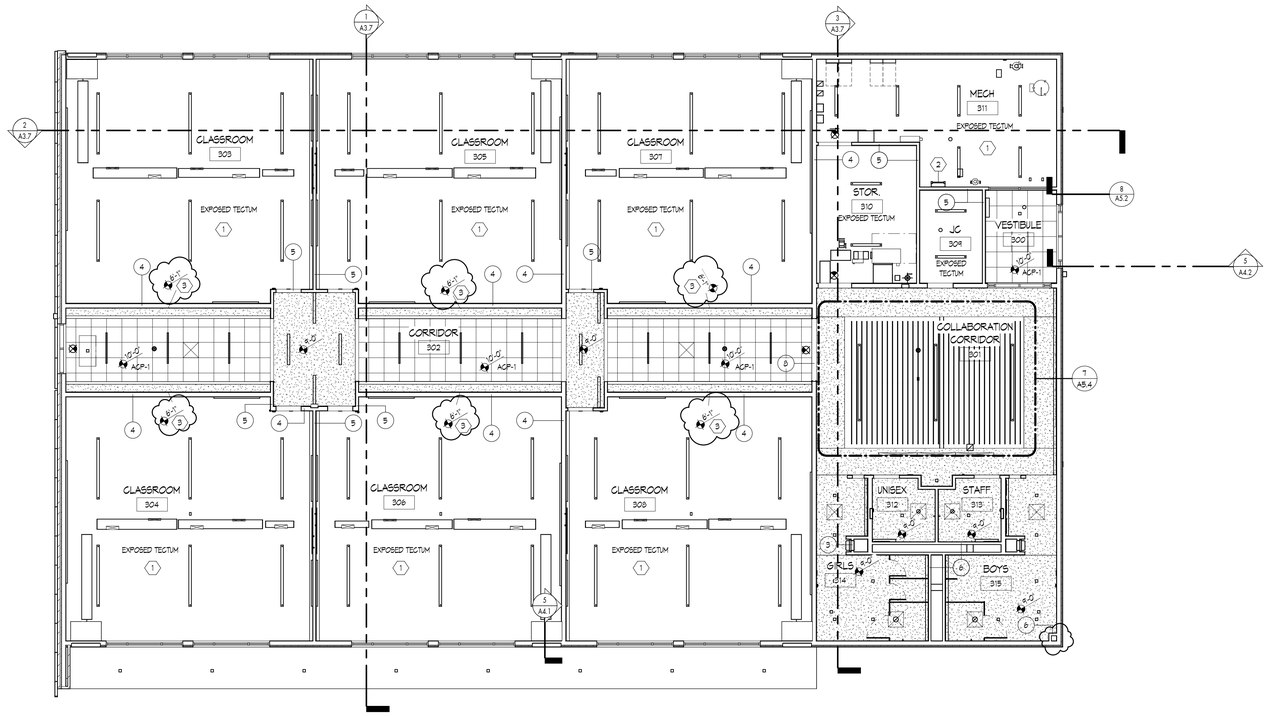
REFLECTED CEILING PLAN GENERAL NOTES

1. FOR PARTITION TYPES AND BULKHEAD DETAILS REFER TO SHEET A2.5 .
2. PROVIDE 'BULLNOSE' GMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR STOPPING AT ALL PENETRATIONS AND OPENINS THROUGH ALL NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR SYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

REFLECTED CEILING LEGEND

PARTITION TYPE	COVE LIGHT FIXTURE
2X4' SURFACE MOUNTED LIGHT FIXTURE	SMOKE DETECTOR
1X4' SURFACE MOUNTED LIGHT FIXTURE	PUBLIC ADDRESS SPEAKER
2X2' SURFACED / PENDANT MOUTNED LIGHT FIXTURE	SOUND SYSTEM SPEAKER
12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE	DROP CORD RECEPTACLE
SURFACE / PENDANT MOUNTED LIGHT FIXTURE	SPRINKLER HEAD
2X4' RECESSED LIGHT FIXTURE	SUPPLY DIFFUSER
1X4' RECESSED LIGHT FIXTURE	SUPPLY DIFFUSER
2X2' RECESSED LIGHT FIXTURE	RETURN / EXHAUST GRILLE
12"X12" RECESSED LIGHT FIXTURE	SLOT DIFFUSER
RECESSED LIGHT FIXTURE	TRACK LIGHT
CEILING MOUNTED EXIT SIGN	
INDUSTRIAL FLUORESCENT	



REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE. REFER TO COLOR LAYOUT SHEETS FOR ADDITIONAL INFO.
2. NEW LADDER AND ROOF ACCESS HATCH. REFER TO DETAIL ON A5.1.
3. ALIGN GYP SOFFIT WITH TOP OF LOCKERS.

1 REFLECTED CEILING PLAN - UNIT 300
1/8" = 1'-0"

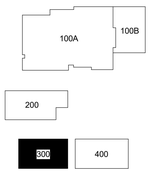
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A
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SHEET TITLE
REFLECTED CEILING PLAN - UNIT 300

SHEET NO.
A2.3

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REFLECTED CEILING PLAN GENERAL NOTES

1. FOR PARTITION TYPES AND BULKHEAD DETAILS REFER TO SHEET A2.5 .
2. PROVIDE "BULLNOSE" CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR STOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.

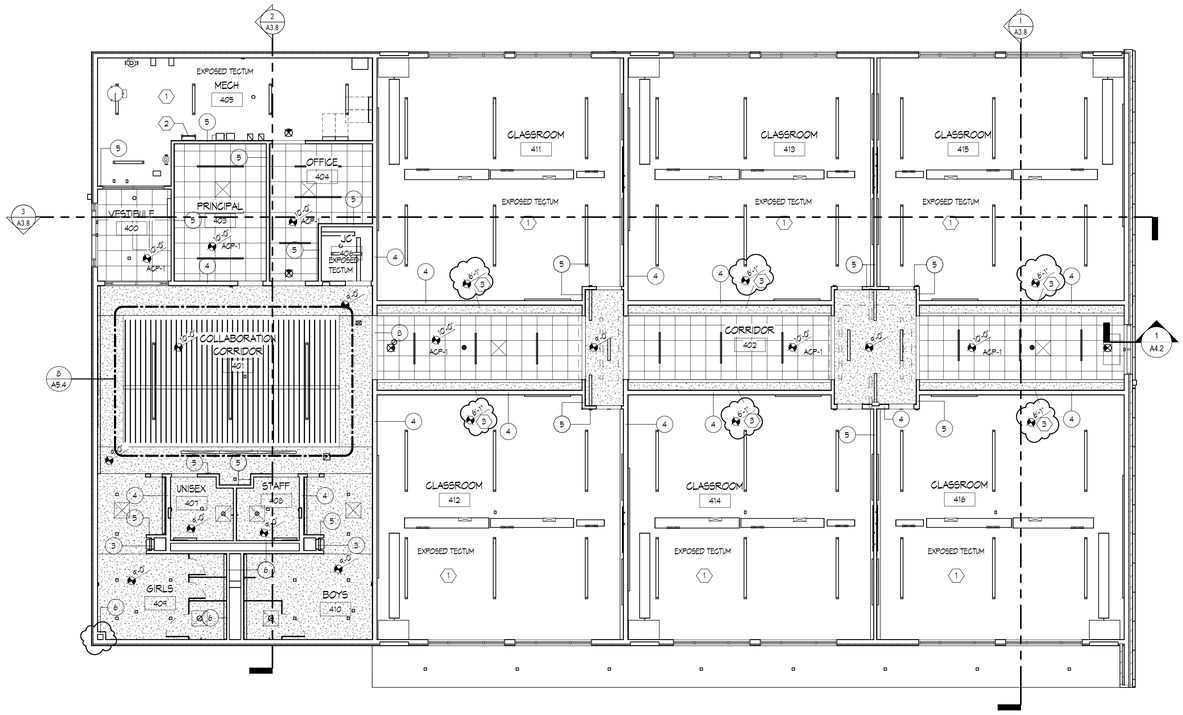
KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

REFLECTED CEILING LEGEND

PARTITION TYPE	COVE LIGHT FIXTURE
2x4' SURFACE MOUNTED LIGHT FIXTURE	SMOKE DETECTOR
1x4' SURFACE MOUTNED LIGHT FIXTURE	PUBLIC ADDRESS SPEAKER
2x2' SURFACED / PENDANT MOUTNED LIGHT FIXTURE	SOUND SYSTEM SPEAKER
12"x12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE	DROP CORD RECEPTACLE
SURFACE / PENDANT MOUNTED LIGHT FIXTURE	SPRINKLER HEAD
2x4' RECESSED LIGHT FIXTURE	SUPPLY DIFFUSER
1x4' RECESSED LIGHT FIXTURE	SUPPLY DIFFUSER
2x2' RECESSED LIGHT FIXTURE	RETURN / EXHAUST GRILLE
12"x12" RECESSED LIGHT FIXTURE	SLOT DIFFUSER
RECESSED LIGHT FIXTURE	TRACK LIGHT
CEILING MOUNTED EXIT SIGN	
INDUSTRIAL FLUORESCENT	

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE. REFER TO COLOR LAYOUT SHEETS FOR ADDITIONAL INFO.
2. NON LADDER ATTIC ACCESS HATCH. REFER TO DETAIL ON A5.1.
3. ALIGN GYP SOFFIT WITH TOP OF LOCKERS.



1 REFLECTED CEILING PLAN - UNIT 400
1/8" = 1'-0"

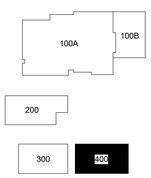
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

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SHEET TITLE
REFLECTED CEILING PLAN - UNIT 400

SHEET NO.
A2.4

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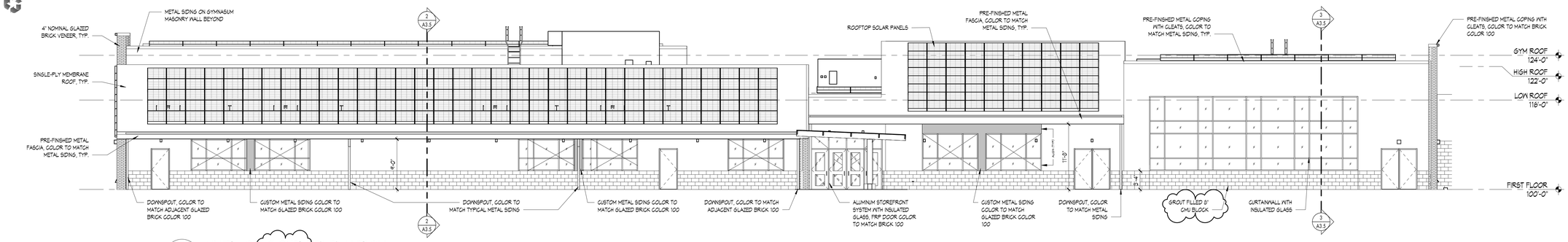
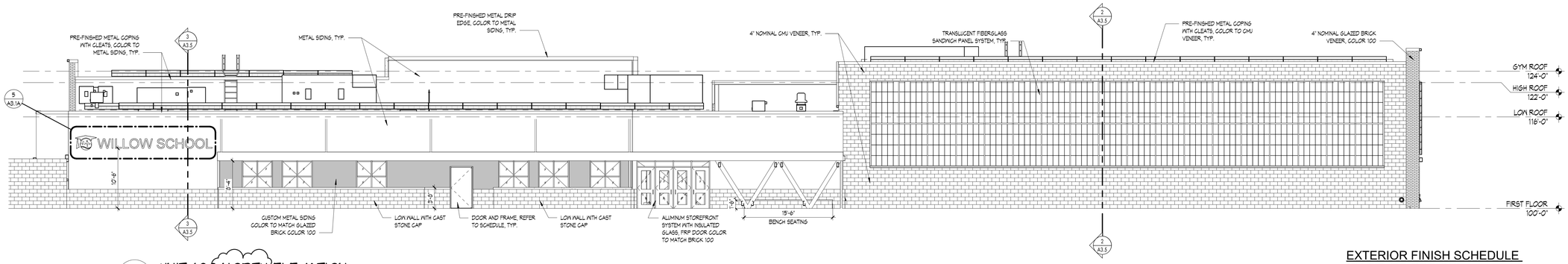
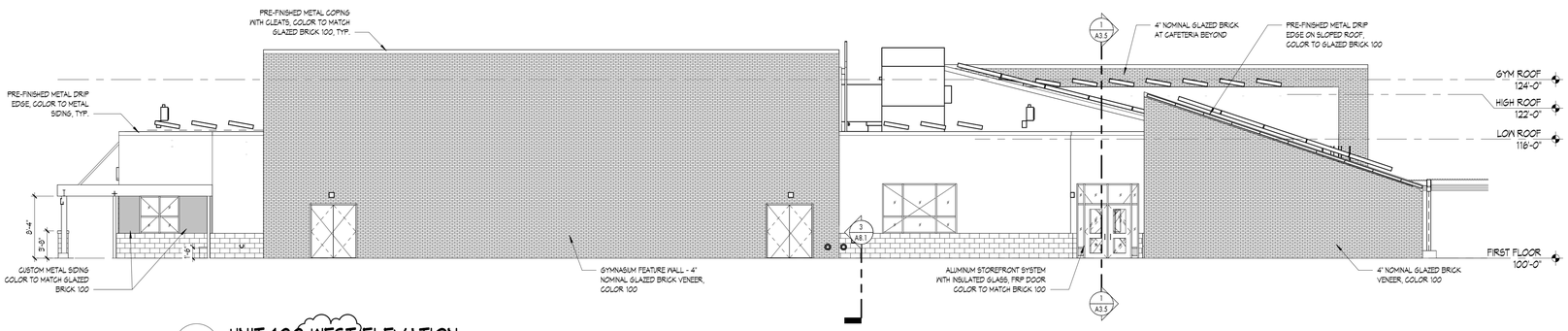


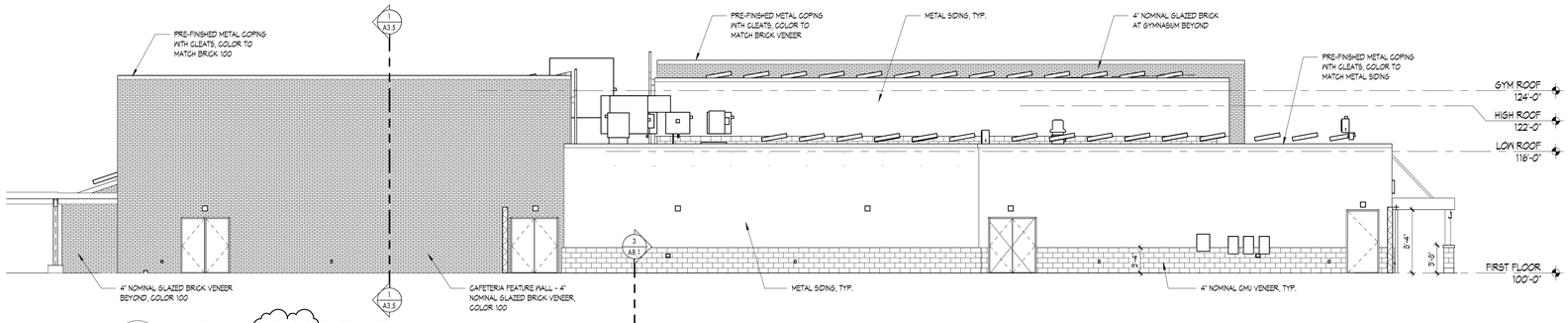
1 UNIT 100 SOUTH ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.1A



2 UNIT 100 NORTH ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.1A



3 UNIT 100 WEST ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.1A



4 UNIT 100A EAST ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.1A

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

BRICK 100: BELDEN BRICK
COLOR: STARRY NIGHT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 200: BELDEN BRICK
COLOR: PUMPKIN PATCH GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 300: BELDEN BRICK
COLOR: KEY WEST GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 400: BELDEN BRICK
COLOR: EGGPLANT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

METAL SIDING: CENTRIA ECONOLAP 3/4"
COLOR: VARIES

STANDARD CMU VENEER:
COLOR: GRAY
BLOCK MOTOR: SPEC MIX 'SM100 - GRAY'
BLOCK SEALANT: PHYLON 1422 ACRYLIC - 2 COAT

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: GRAY
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: SLATE GRAY
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: SLATE GRAY

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-GUARDIAN GRAY GLASS SNX62/27 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER
- 4" NOMINAL BRICK VENEER
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

5 BUILDING SIGN
1/4" = 1'-0"
REFER TO 2 / A3.1A

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL

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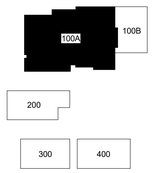
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A
N

SHEET TITLE
EXTERIOR ELEVATIONS - UNIT 100A

SHEET NO.
A3.1A

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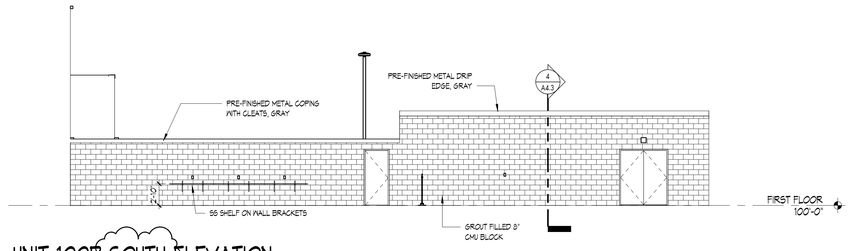
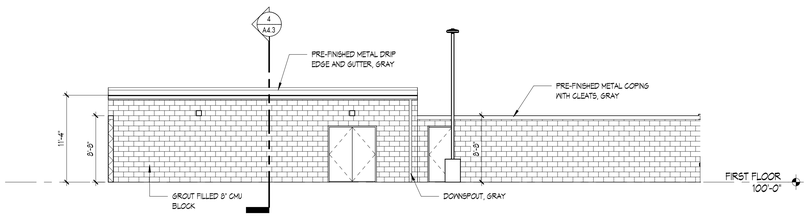


1 UNIT 100B SOUTH ELEVATION

1/8" = 1'-0"

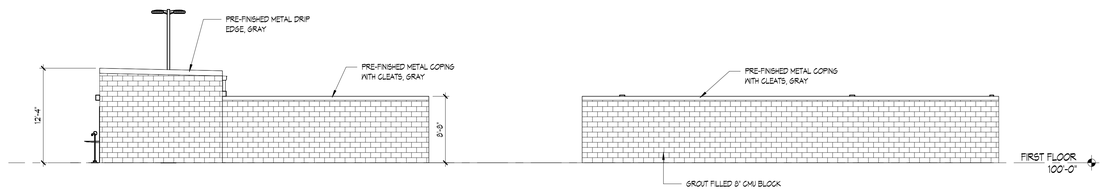
REFER TO 1 / A1.1B



2 UNIT 100B NORTH ELEVATION

1/8" = 1'-0"

REFER TO 1 / A1.1B



3 UNIT 100B EAST ELEVATION

1/8" = 1'-0"

REFER TO 1 / A1.1B

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

BRICK 100: BELDEN BRICK
COLOR: STARRY NIGHT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 200: BELDEN BRICK
COLOR: PUMPKIN PATCH GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 300: BELDEN BRICK
COLOR: KEY WEST GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 400: BELDEN BRICK
COLOR: EGGPLANT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

METAL SIDING: CENTRIA ECONOLAP 3/4"
COLOR: VARIES

STANDARD CMU VENEER:
COLOR: GRAY
BLOCK MOTOR: SPEC MIX 'SM100 - GRAY"
BLOCK SEALANT: PHYLON 1422 ACRYLIC - 2 COAT

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: GRAY
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: SLATE GRAY
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: SLATE GRAY

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-
GUARDIAN GRAY GLASS SNX62/27 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER
- 4" NOMINAL BRICK VENEER
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

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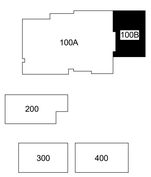
Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
EXTERIOR ELEVATIONS - UNIT 100B

SHEET NO.
A3.1B

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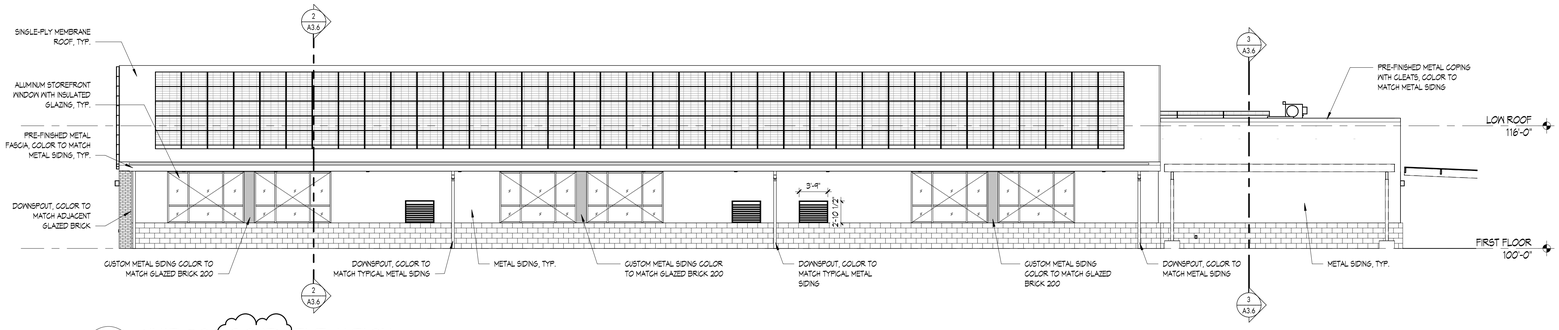
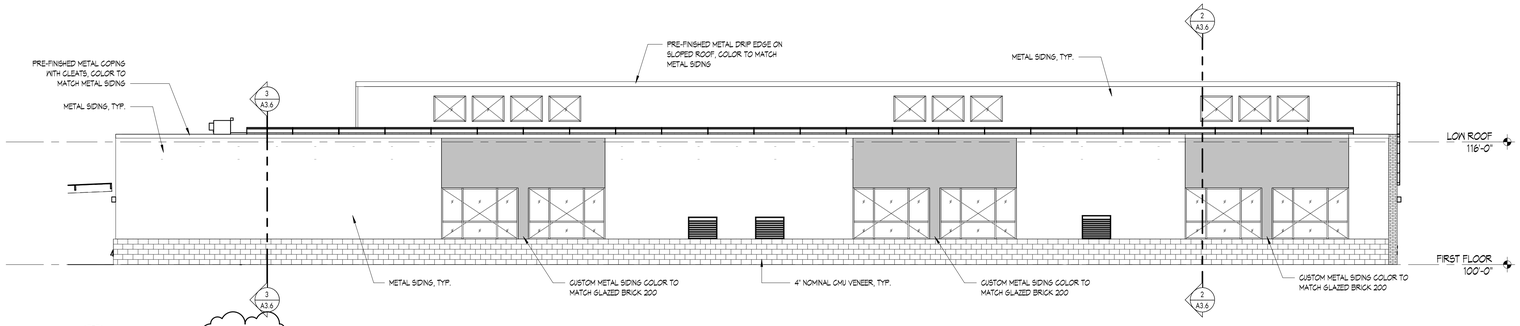


3 UNIT 200 SOUTH ELEVATION

1/8" = 1'-0"

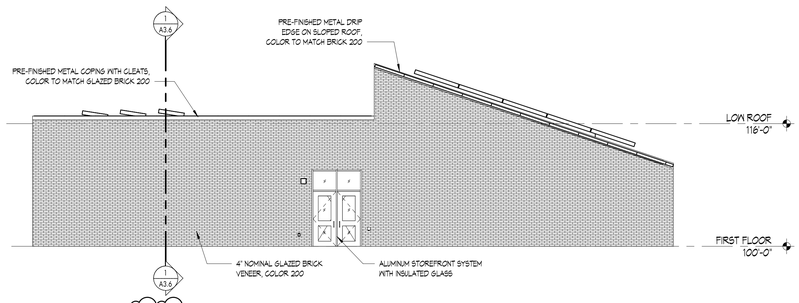
REFER TO 1 / A1.2



4 UNIT 200 NORTH ELEVATION

1/8" = 1'-0"

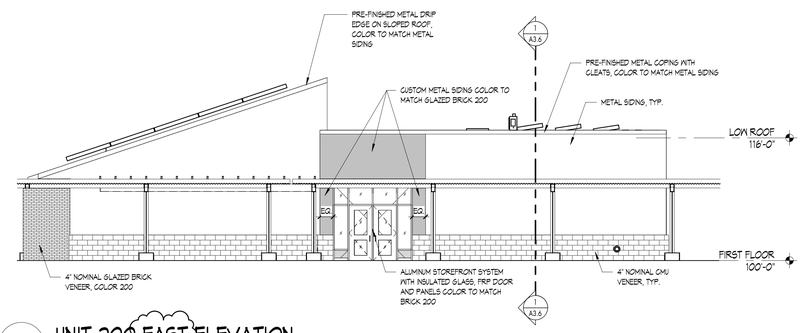
REFER TO 1 / A1.2



2 UNIT 200 WEST ELEVATION

1/8" = 1'-0"

REFER TO 1 / A1.2



1 UNIT 200 EAST ELEVATION

1/8" = 1'-0"

REFER TO 1 / A1.2

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

BRICK 100: BELDEN BRICK
COLOR: STARRY NIGHT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 200: BELDEN BRICK
COLOR: PUMPKIN PATCH GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 300: BELDEN BRICK
COLOR: KEY WEST GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 400: BELDEN BRICK
COLOR: EGGPLANT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

METAL SIDING: CENTRIA ECONOLAP 3/4"
COLOR: VARIES

STANDARD CMU VENEER:
COLOR: GRAY
BLOCK MOTOR: SPEC MIX 'SM100 - GRAY"
BLOCK SEALANT: PHYLON 1422 ACRYLIC - 2 COAT

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: GRAY
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: SLATE GRAY
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: SLATE GRAY

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-
GUARDIAN GRAY GLASS SNX62/27 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER
- 4" NOMINAL BRICK VENEER
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

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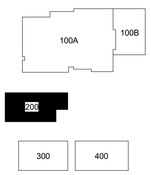
Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
EXTERIOR ELEVATIONS - UNIT 200

SHEET NO.
A3.2

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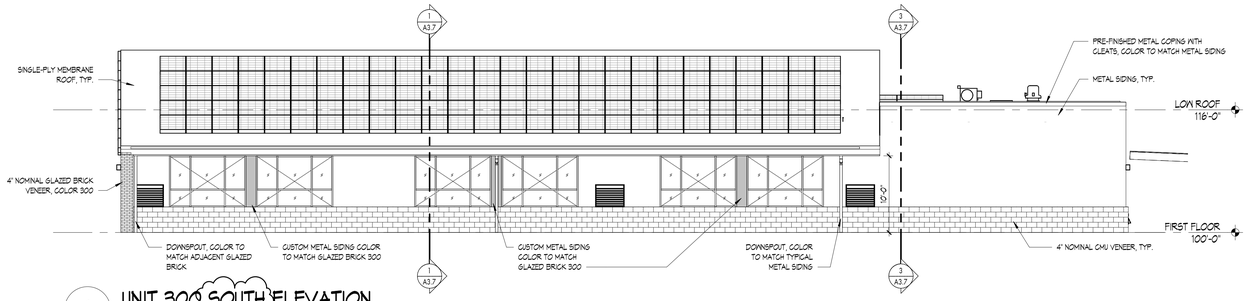
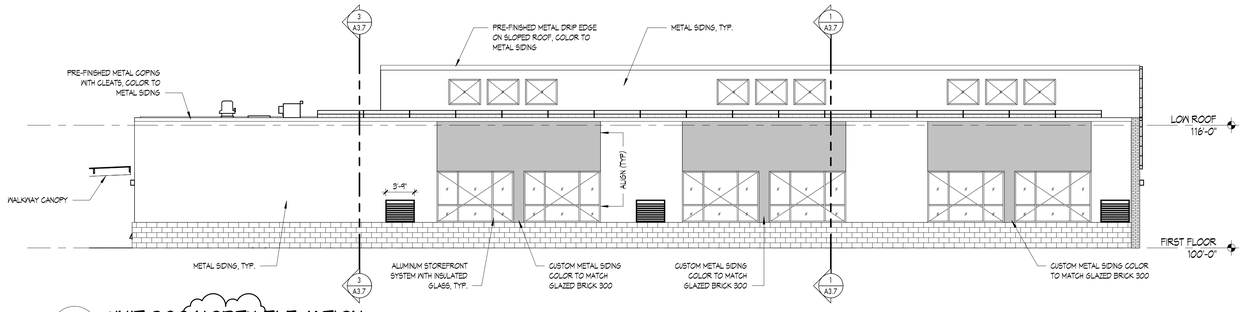


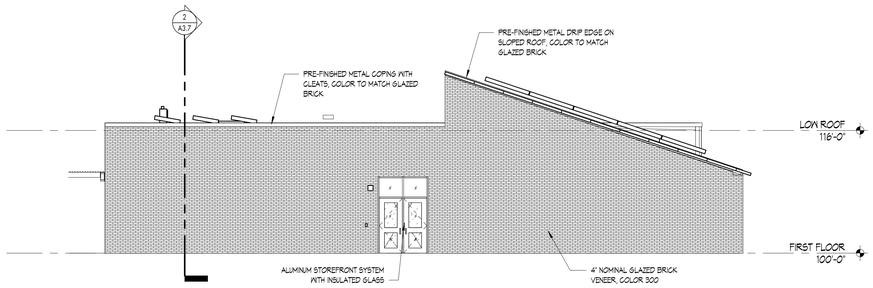
1 UNIT 300 SOUTH ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.3



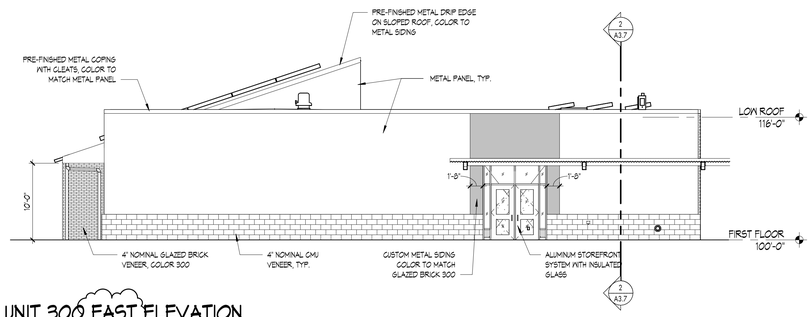
2 UNIT 300 NORTH ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.3



3 UNIT 300 WEST ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.3



4 UNIT 300 EAST ELEVATION

1/8" = 1'-0" REFER TO 1 / A1.3

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

BRICK 100: BELDEN BRICK
COLOR: STARRY NIGHT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 200: BELDEN BRICK
COLOR: PUMPKIN PATCH GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 300: BELDEN BRICK
COLOR: KEY WEST GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 400: BELDEN BRICK
COLOR: EGGPLANT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

METAL SIDING: CENTRIA ECONOLAP 3/4"
COLOR: VARIES

STANDARD CMU VENEER:
COLOR: GRAY
BLOCK MOTOR: SPEC MIX SM100 - GRAY"
BLOCK SEALANT: PHYLON 1422 ACRYLIC - 2 COAT

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: GRAY
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: SLATE GRAY
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: SLATE GRAY

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-GUARDIAN GRAY GLASS SNX62/27 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER
- 4" NOMINAL BRICK VENEER
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

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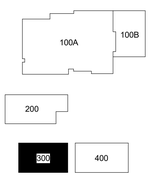
Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
EXTERIOR ELEVATIONS - UNIT 300

SHEET NO.
A3.3

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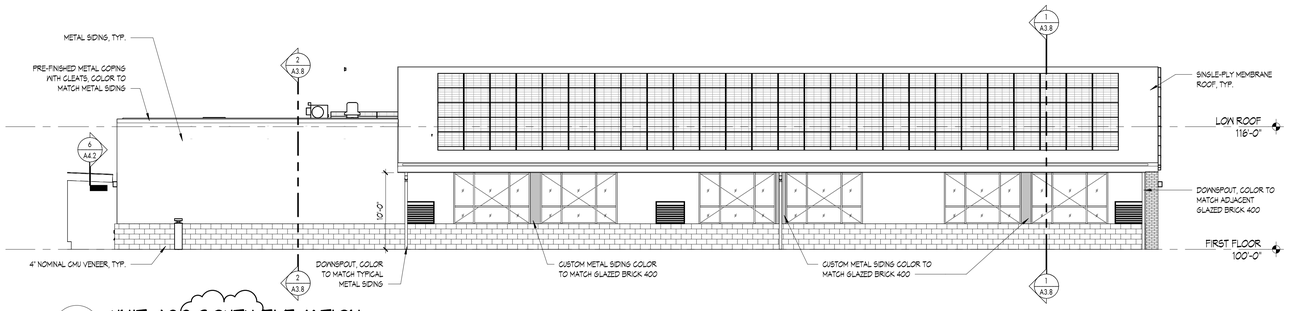
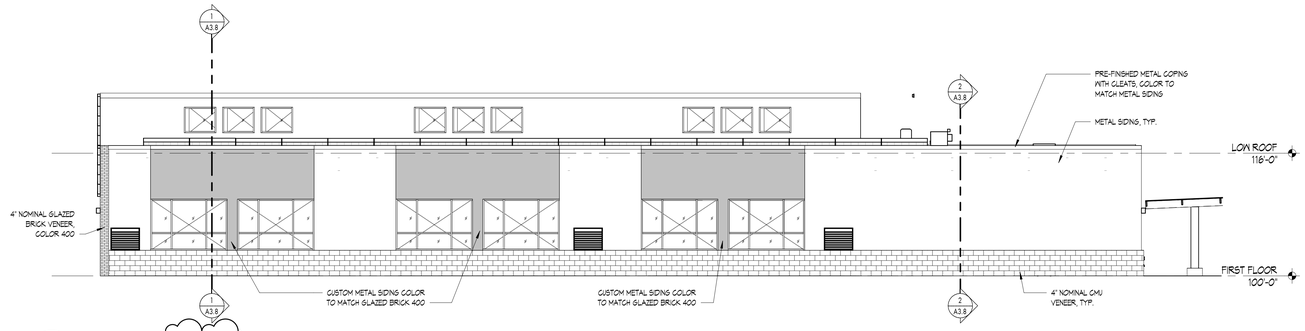
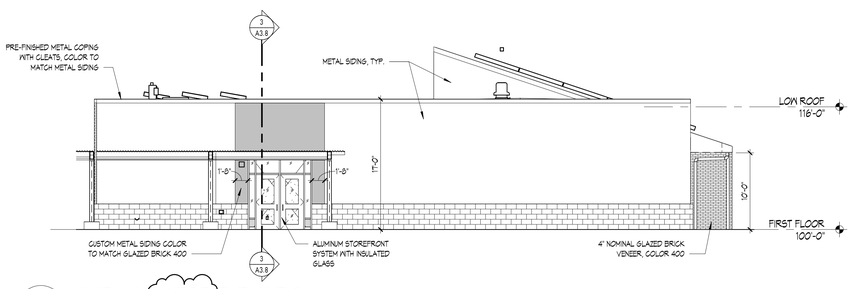


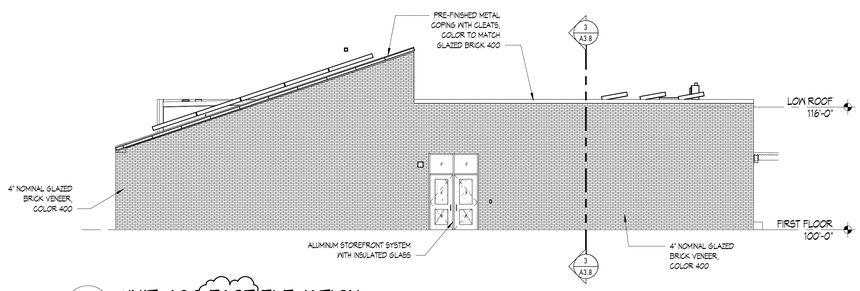
1 UNIT 400 SOUTH ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.3



2 UNIT 400 NORTH ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.3



3 UNIT 400 WEST ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.3



4 UNIT 400 EAST ELEVATION
1/8" = 1'-0"
REFER TO 1 / A1.4

EXTERIOR FINISH SCHEDULE (BASIS-OF-DESIGN)

BRICK 100: BELDEN BRICK
COLOR: STARRY NIGHT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 200: BELDEN BRICK
COLOR: PUMPKIN PATCH GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 300: BELDEN BRICK
COLOR: KEY WEST GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

BRICK 400: BELDEN BRICK
COLOR: EGGPLANT GLAZE
TYPE: FBX
SMOOTH TEXTURE: ASTM-C216
SIZE: 3 5/8"X 2 1/4"X 7 5/8" (MODULAR)

METAL SIDING: CENTRIA ECONOLAP 3/4"
COLOR: VARIES

STANDARD CMU VENEER:
COLOR: GRAY
BLOCK MOTOR: SPEC MIX 'SM100 - GRAY"
BLOCK SEALANT: PHYLON 1422 ACRYLIC - 2 COAT

TRANSLUCENT FIBERGLASS SANDWICH PANEL SYSTEM: KALWALL CORP.
COLOR: WHITE ON INTERIOR, CRYSTAL ON EXTERIOR
ALUMINUM FRAMING COLOR: GRAY
GRID PATTERN: NOMINAL 12" X 24" SHOJI

CURTAINWALL FRAMING: TUBELIGHT 400TU, 2-1/2" X 6"
COLOR: SLATE GRAY
CURTAINWALL SEALANT: TBD

STOREFRONT FRAMING (TYPICAL): TUBELIGHT TU24000, 2" X 4-1/2"
COLOR: SLATE GRAY

INSULATED GLAZING: 1" INSULATED GLASS UNIT WITH LOW-E COATING-
GUARDIAN GRAY GLASS SNX62/27 WITH LOW-E ON #2, CLEAR INTERIOR LITE

EXPOSED GALVANIZED LINTELS: COLOR: MATCH ADJACENT COLOR

EXTERIOR FINISH LEGEND

- METAL SIDING (CUSTOM COLOR)
- 4" NOMINAL CMU VENEER
- 4" NOMINAL BRICK VENEER
- TRANSLUCENT FIBERGLASS SANDWICH PANEL

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Lansing School District

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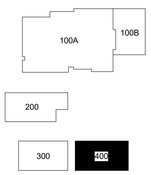

KEY PLAN

LSD SB-005
JOB 2616.01A
N

SHEET TITLE
EXTERIOR ELEVATIONS - UNIT 400

SHEET NO.
A3.4

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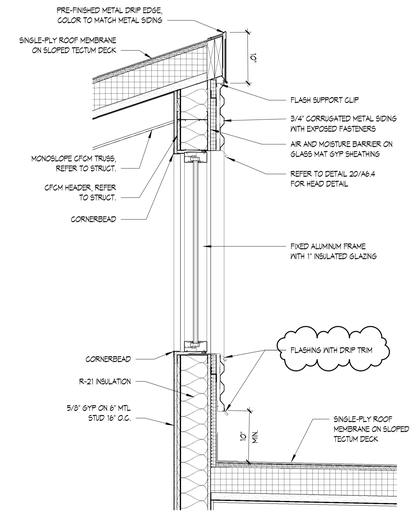
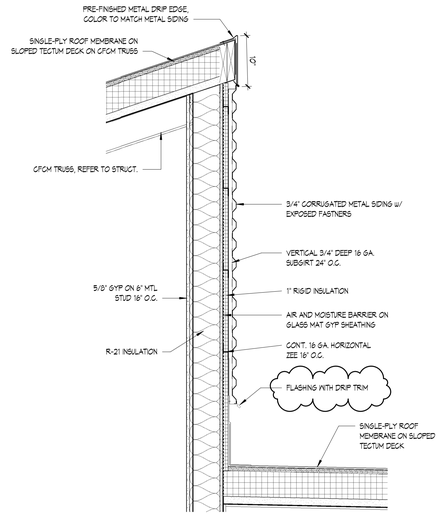


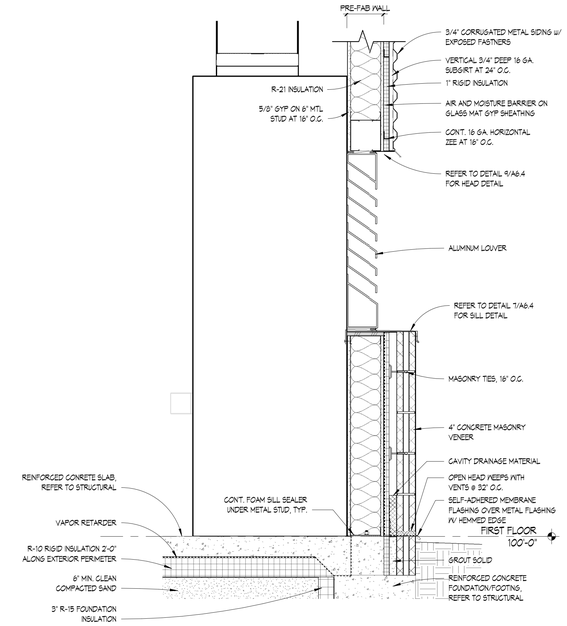
7 PANEL TYPE "G" - CLERESTORY

1" = 1'-0" REFER TO 1 / A0.2



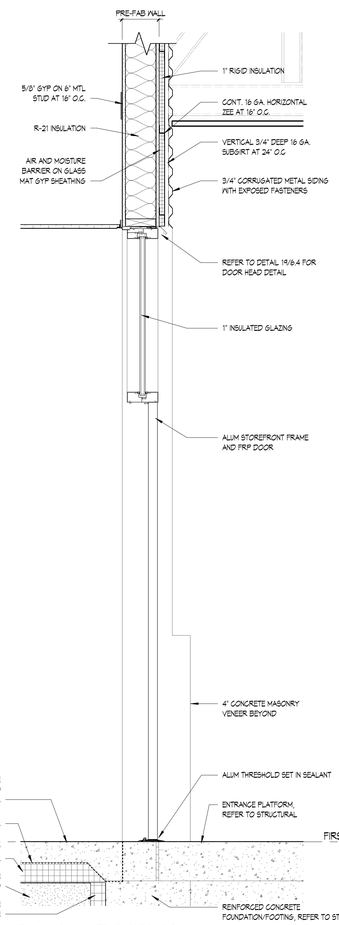
6 PANEL TYPE "F"

1" = 1'-0" REFER TO 1 / A0.2



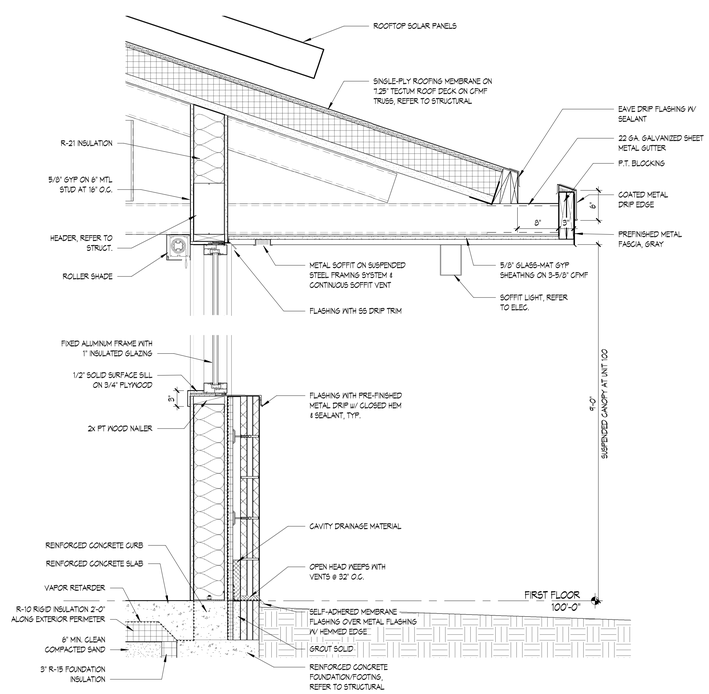
5 PANEL TYPE "E" - LOUVER

1" = 1'-0" REFER TO 1 / A1.3



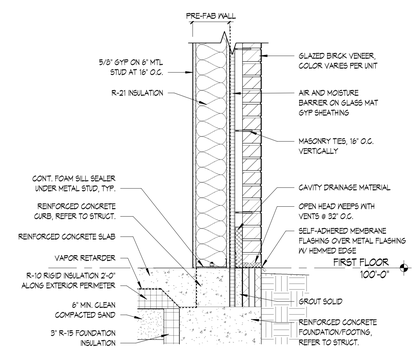
3 PANEL TYPE "C" - DOOR AT CORRUGATED METAL PANEL

1" = 1'-0" REFER TO 1 / A1.1A



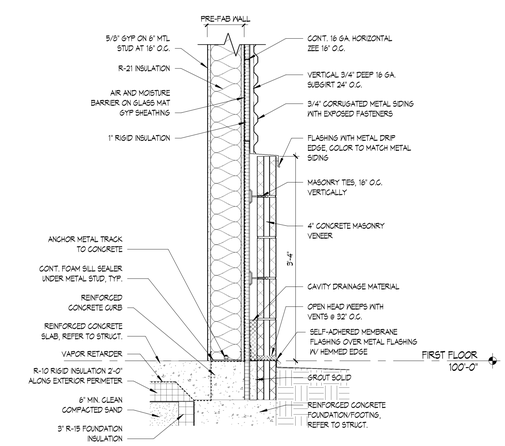
2 PANEL TYPE "B" - WINDOW

1" = 1'-0" REFER TO 1 / A1.1A



4 PANEL TYPE "D"

1" = 1'-0" REFER TO 1 / A1.2



1 PANEL TYPE "A"

1" = 1'-0" REFER TO 1 / A1.2

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Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024

LSD SB-005
JOB 2616.01A

SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.1

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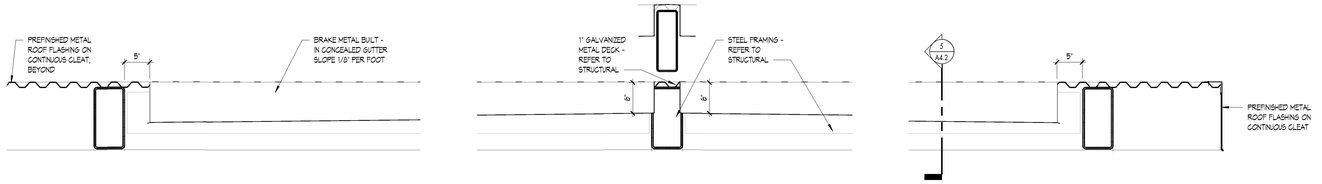
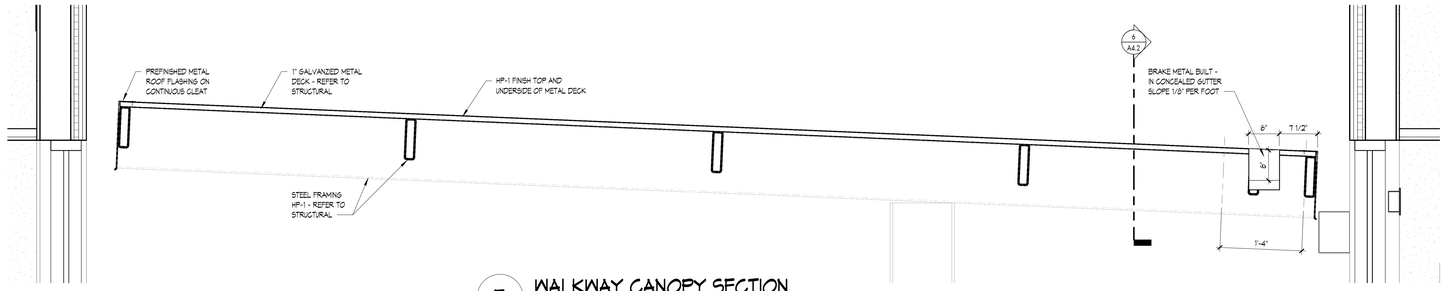


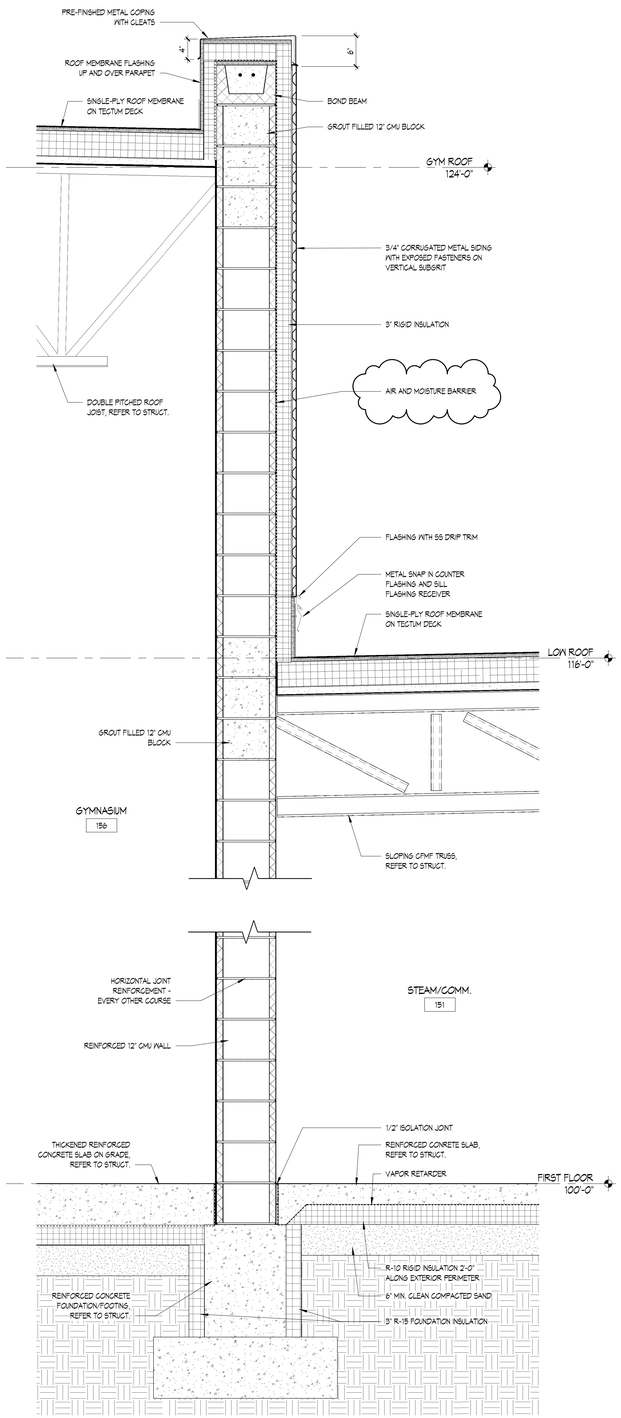
6 WALKWAY CANOPY SECTION

1" = 1'-0" REFER TO 1 / A0.3



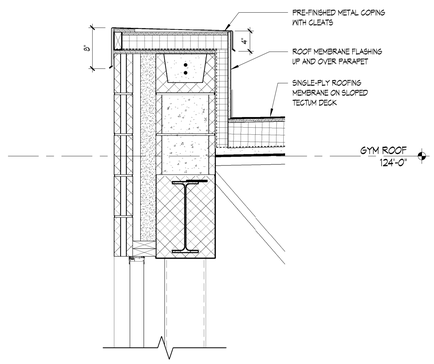
5 WALKWAY CANOPY SECTION

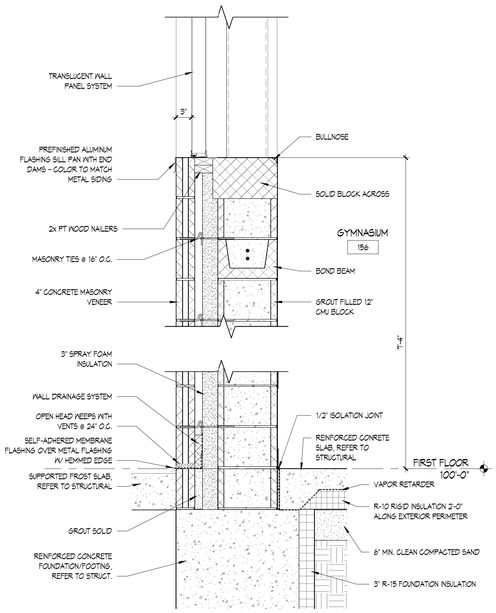
1" = 1'-0" REFER TO 1 / A0.3



4 GYM WALL SECTION

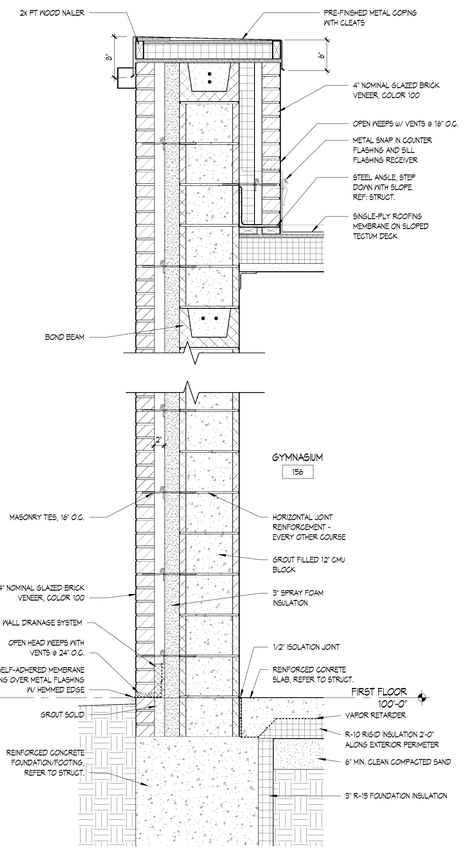
1" = 1'-0" REFER TO 1 / A0.1





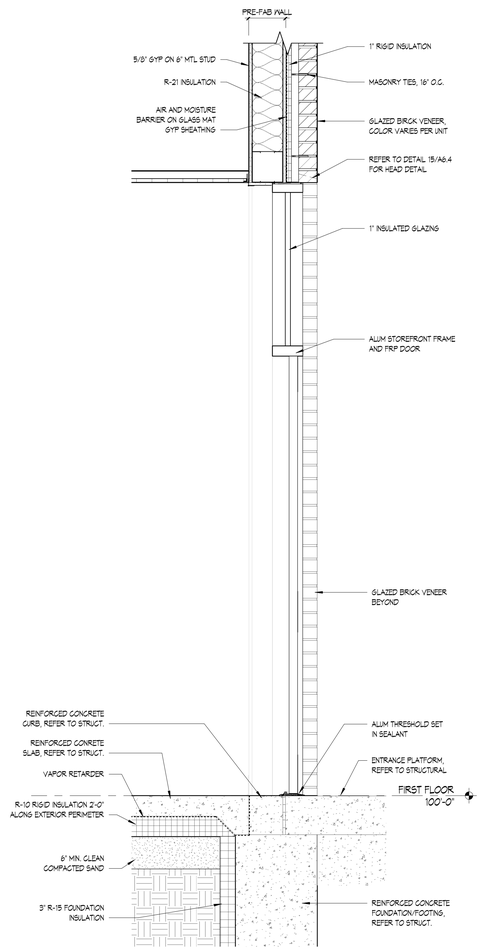
3 GYMNASIUM TRANSLUCENT PANEL

1" = 1'-0" REFER TO 1 / A1.1A



2 GYMNASIUM FEATURE WALL

1" = 1'-0" REFER TO 1 / A1.1A



1 PANEL TYPE 'H' - DOOR AT MASONRY WALL

1" = 1'-0" REFER TO 1 / A1.4

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Lansing School District

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SHEET TITLE
WALL SECTIONS

SHEET NO.
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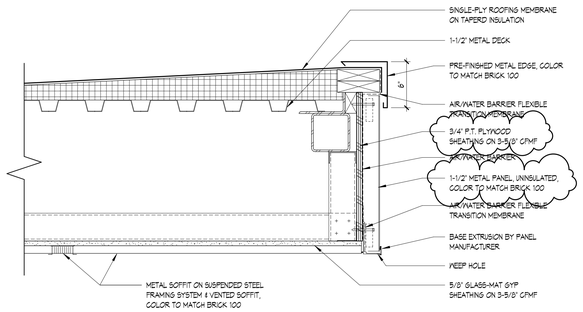
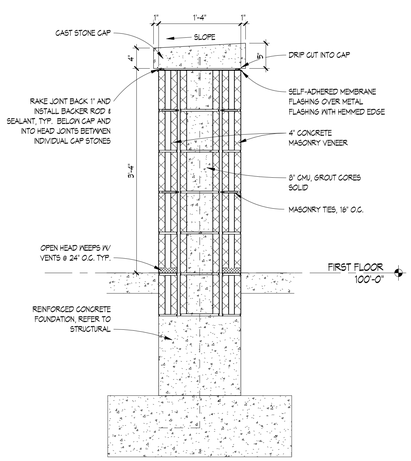


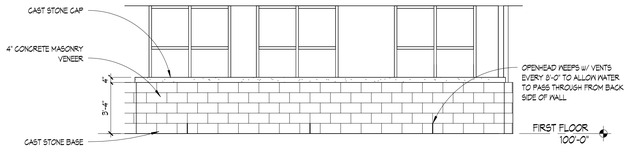
8 ENTRY CANOPY SECTION - UNIT 100

1 1/2" = 1'-0" REFER TO 1 / A0.3



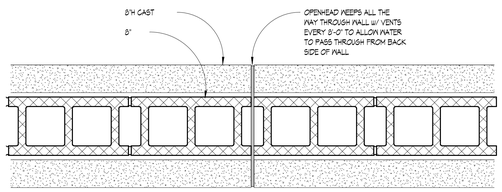
5 LOW WALL SECTION

1" = 1'-0" REFER TO 4 / A5.2



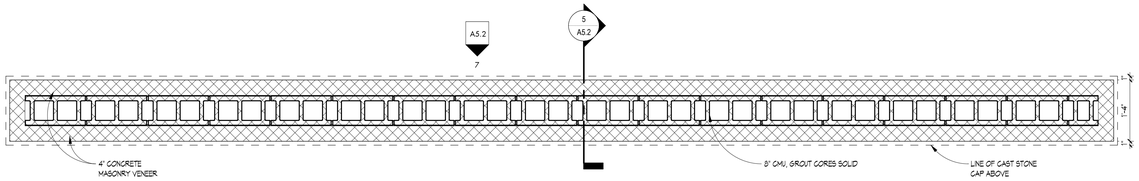
7 LOW WALL ELEVATION

1/4" = 1'-0" REFER TO 4 / A5.2



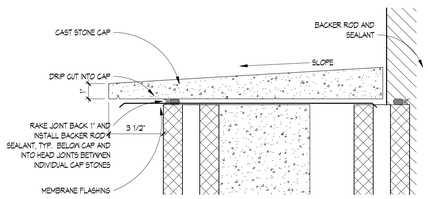
6 LOW WALL BASE PLAN DETAIL

1 1/2" = 1'-0"



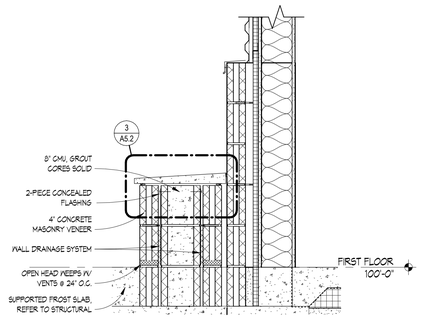
4 LOW WALL PLAN DETAIL

3/4" = 1'-0" REFER TO 1 / A1.1A



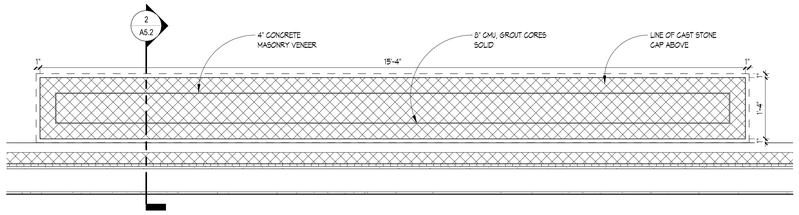
3 BENCH CAP DETAIL

3" = 1'-0" REFER TO 2 / A5.2



2 BENCH SECTION

1" = 1'-0" REFER TO 1 / A5.2



1 BENCH PLAN DETAIL

3/4" = 1'-0" REFER TO 1 / A1.1A

Lansing School District

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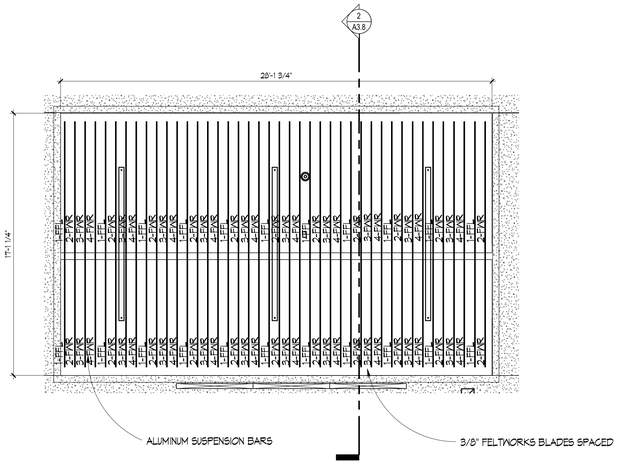
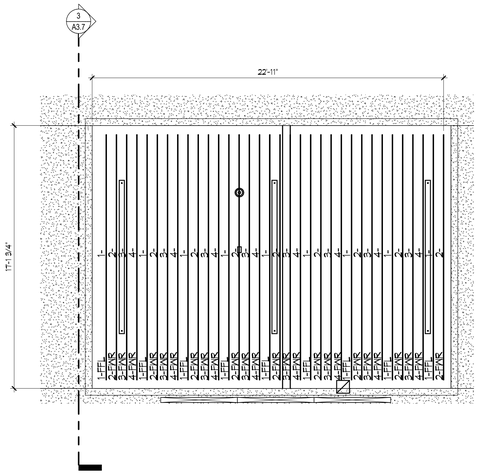
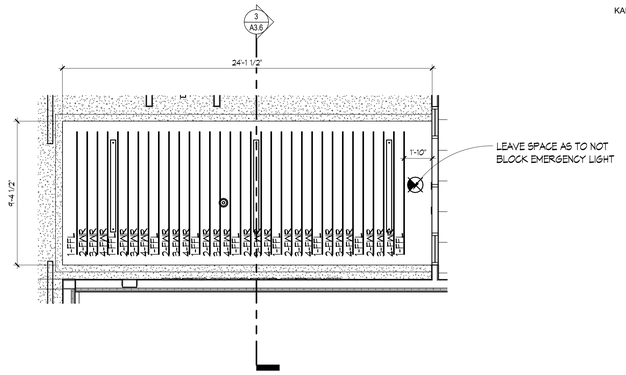


8 FIRST FLOOR RCP - UNIT 400 - Callout 1
1/4" = 1'-0"



7 FIRST FLOOR RCP - UNIT 300 - Callout 1
1/4" = 1'-0"



6 FIRST FLOOR RCP - UNIT 200 - Callout 1
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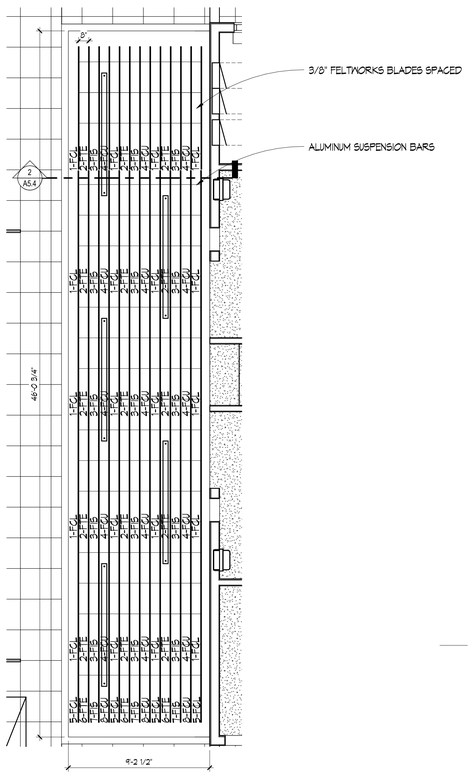
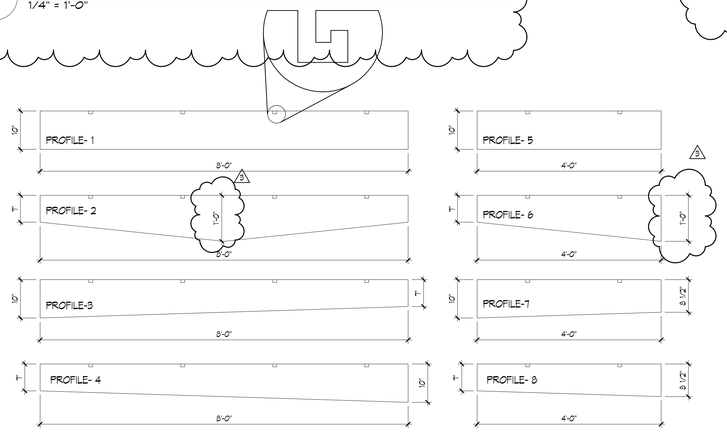


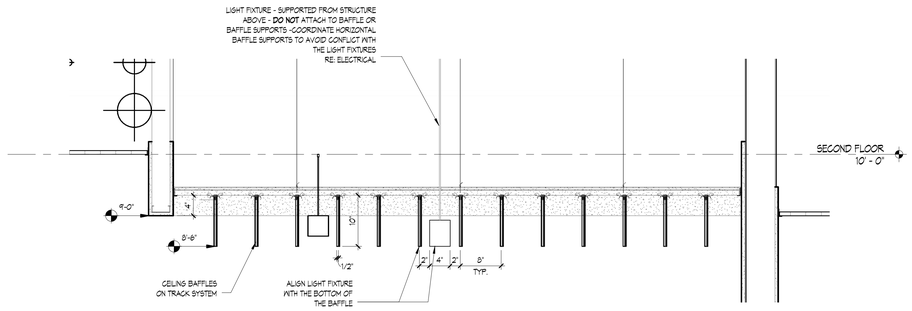
3 BAFFLE CEILING RCP-UNIT 100
1/4" = 1'-0"



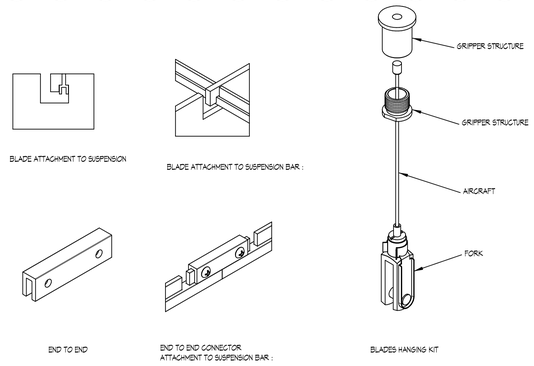
5 ACOUSTICAL BAFFLE
3/4" = 1'-0"

ARMSTRONG FELTWORKS

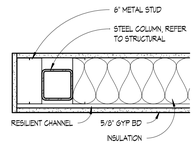
COLOR	TAG
FCL-CELESTRIAL	PROFILE #-
FTE-TANGERINE	COLOR
FIS-IRIS	
FCU-CUSTOM PURPLE	
FWR-WHISPER	
FFL-FLANNEL	



2 BAFFLE CEILING SECTION
1" = 1'-0"
REFER TO 1 / A2.1A



4 BAFFLE CONNECTION
NTS



1 COLUMN AT INTERIOR WALL
1 1/2" = 1'-0"
REFER TO 1 / A1.1A

Lansing School District

ISSUANCES	DATE
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SHEET TITLE: BUILDING DETAILS

SHEET NO.: A5.4

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COLOR LAYOUT PLAN GENERAL NOTES

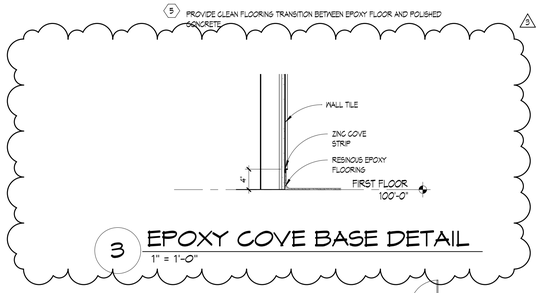
1. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES.
2. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
3. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10' OR AS NOTED ON COLOR PLANS.
4. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
5. PAINT EXPOSED DOMESTIC WATER PIPING P-1 U.N.O.
6. PAINT EXPOSED FIRE SUPPRESSION LINE PIPING P-5 U.N.O.
7. PAINT EXPOSED GEOTHERMAL LINE PIPING P-3 U.N.O.
8. PAINT EXPOSED ELECTRICAL CONDUIT P-4 U.N.O.
9. AT EXPOSED CEILING, PAINT STRUCTRUAL ELEMENTS TO MATCH COLOR INDICATED.
10. VERIFY LETTERING FONT AND SIZES WITH OWNER IN FIELD.
11. ALL WINDOW SILLS TO RECEIVE WHITE SOLID SURFACE U.N.O.
12. PAINT ALL HM FRAMES AND DOORS P-3 U.N.O.
13. ALL RESINOUS EPOXY FLOORS TO HAVE INTEGREL RESINOUS EPOXY BASE U.N.O.

COLOR LAYOUT PLAN LEGEND

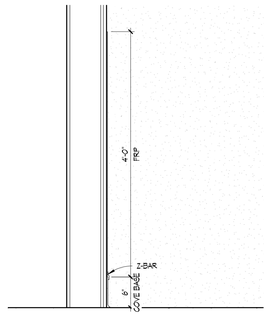
- PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
- MATCH EXISTING ADJ. COLOR
- CERAMIC FLOOR TILE, SEE SPECIFICATION SECTION 093013
- CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
- RESILIENT athletic FLOORING, SEE SPECIFICATION SECTION 096566
- NTEGRAL PIGMENTED CONCRETE FLOORING, SEE SPECIFICATION SECTION 033543
- LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096519
- C.T. — CARPET TILE, SEE SPECIFICATION SECTION 096680
- MT — BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
- P.C. — POLISHED CONCRETE FLOOR, (SALT & PEPPER)
- RB-# — RUBBER BASE, SEE SPECIFICATION SECTION 096513
- REF-# — RESINOUS EPOXY FLOORING
- RT — RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
- S.C. — SEALED CONCRETE FLOOR
- ST.C. — STAINED CONCRETE FLOOR
- CONTROL JOINT
- PRODUCT EXTENTS WITH MATERIAL INDICATED
- WP — WORK POINT
- FLOORING TRANSITION
- MATERIAL INSTALL DIRECTION
- A | B — CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

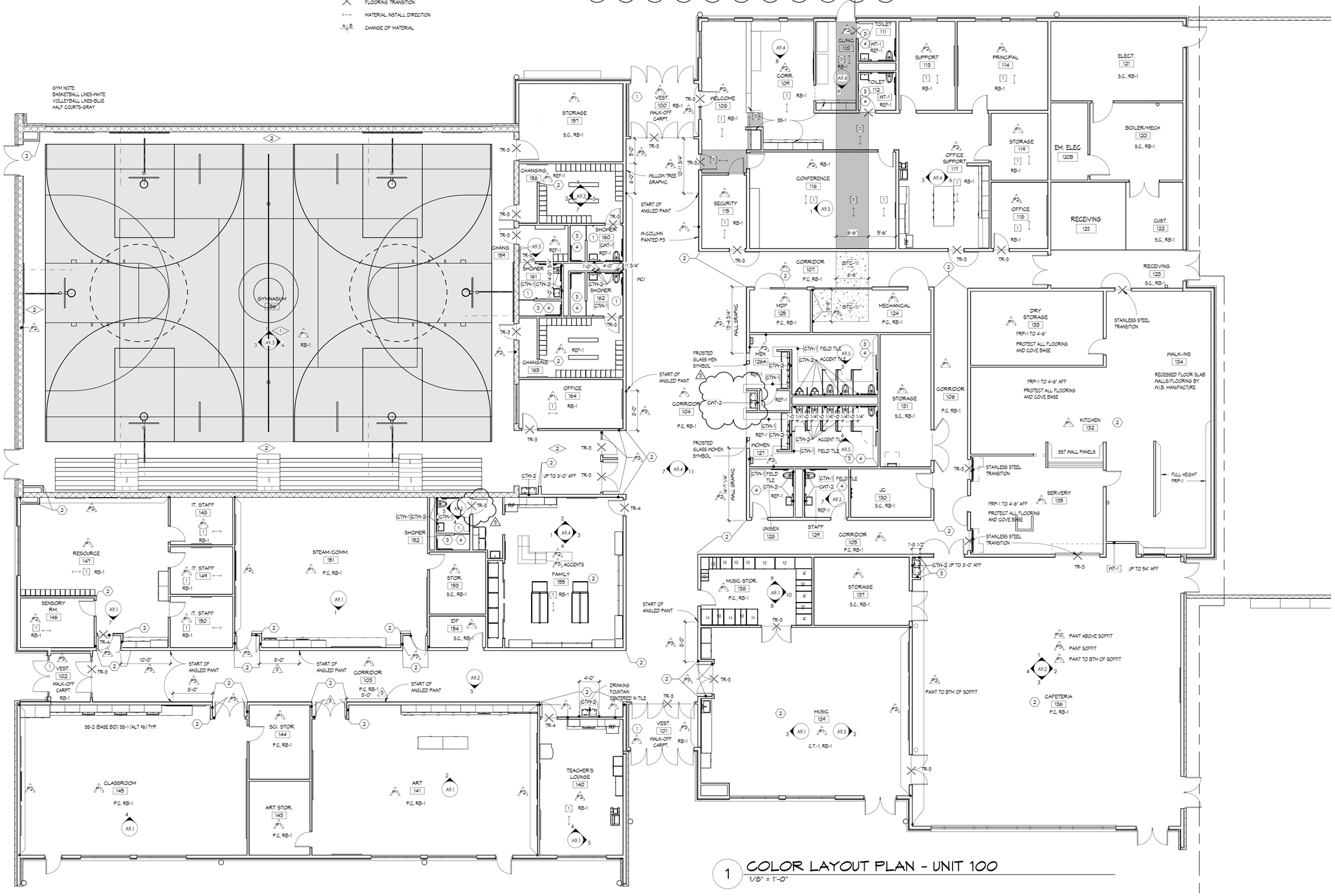
1. WALKOFF CPT WITH RB-1.
2. ALUMINUM CORNER GUARD, 5'-0" H - MOUNT 4'A.F.F.
3. METAL TRIM AT EXPOSED CORNERS OF WALL TILE
4. FULL HEIGHT WALL TILE
5. PROVIDE CLEAN FLOORING TRANSITION BETWEEN EPOXY FLOOR AND POLISHED CONCRETE



3 EPOXY COVE BASE DETAIL
1" = 1'-0"



2 KITCHEN BASE DETAIL
1" = 1'-0"



1 COLOR LAYOUT PLAN - UNIT 100
1/8" = 1'-0"

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Lansing, MI 48915

Lansing School District

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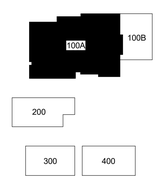

KEY PLAN

LSD SB-005
JOB 2616.01A
N

SHEET TITLE
COLOR LAYOUT PLAN - UNIT 100

SHEET NO.
A8.1

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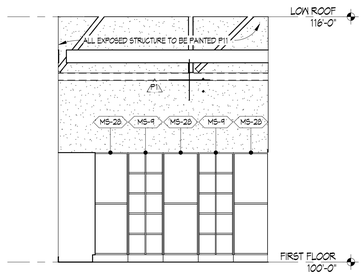
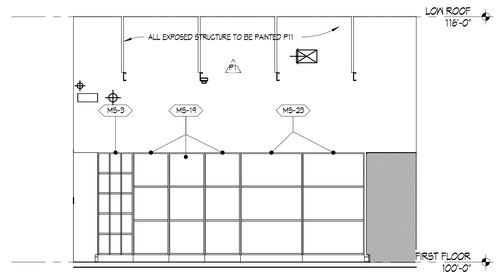
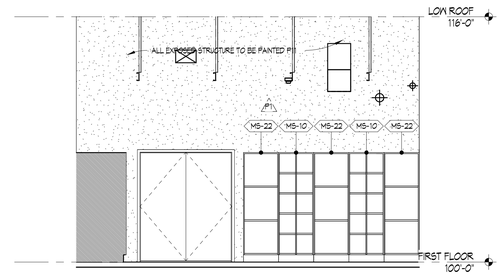


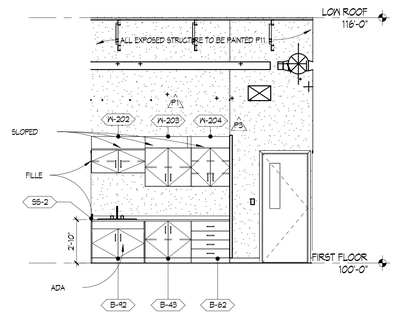
10 BAND STORAGE- EAST ELEVATION
1/4" = 1'-0"



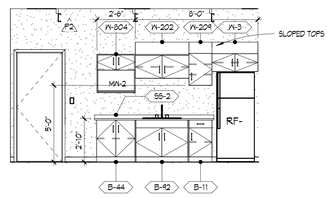
9 BAND STORAGE-NORTH ELEVATION
1/4" = 1'-0"



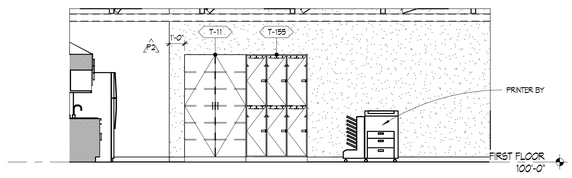
8 BAND STORAGE-SOUTH ELEVATION
1/4" = 1'-0"



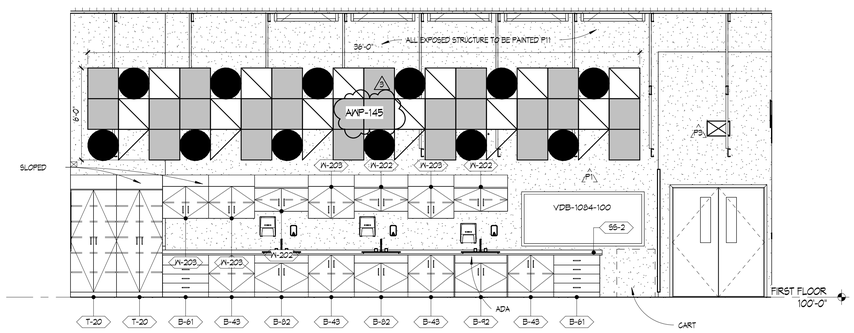
7 RESOURCE RM.-ELEVATION
1/4" = 1'-0"



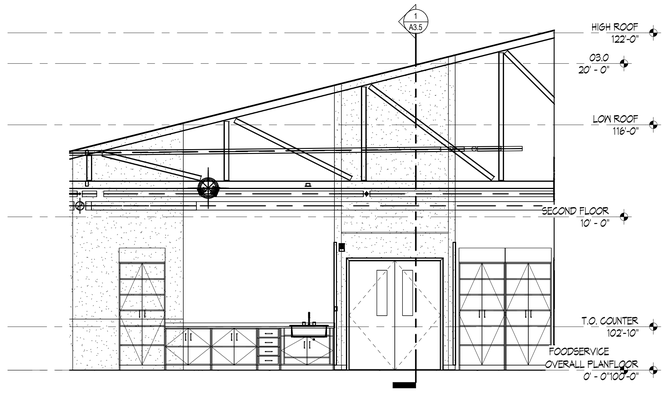
6 TEACHERS LOUNGE-ELEVATION
1/4" = 1'-0"



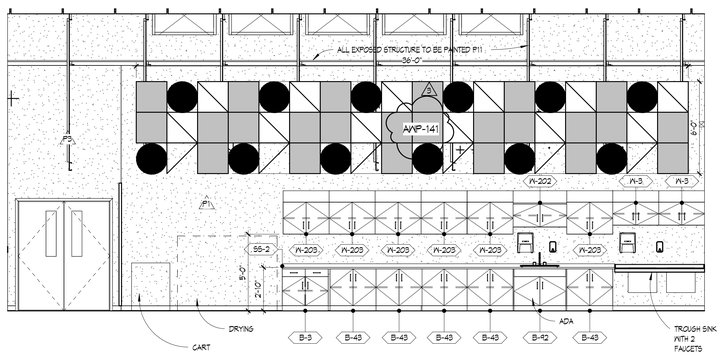
5 TEACHER LOUNGE-ELEVATION 2
1/4" = 1'-0"



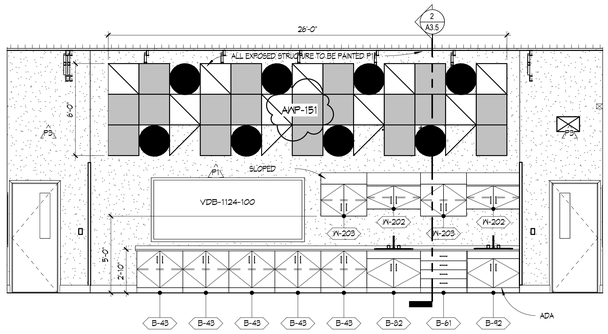
4 CLASSROOM- ELEVATION
1/4" = 1'-0"



3 MUSIC RM-CASEWORK ELEVATION1
1/4" = 1'-0"



2 ART RM-ELEVATION
1/4" = 1'-0"



1 STEM/COMM. -ELEVATION
1/4" = 1'-0"

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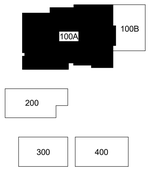
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

SHEET TITLE
INTERIOR ELEVATIONS

SHEET NO.
A9.1

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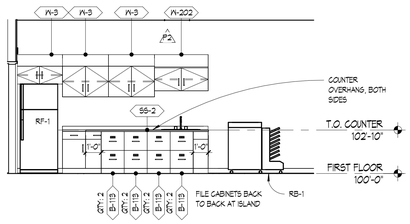
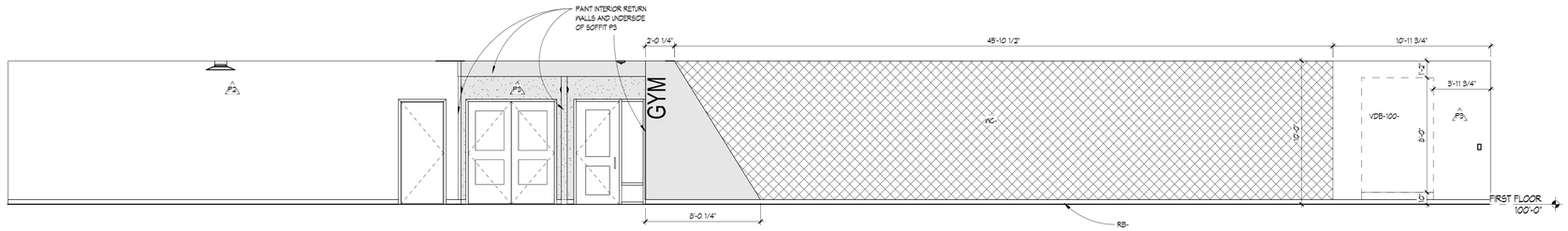
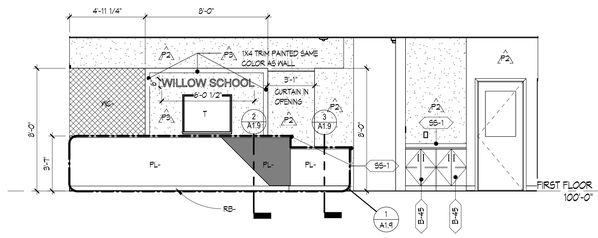


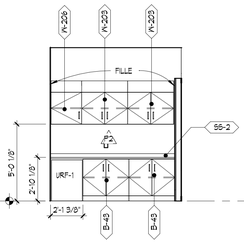
5 OFFICE SUPPORT- ELEVATION
1/4" = 1'-0"



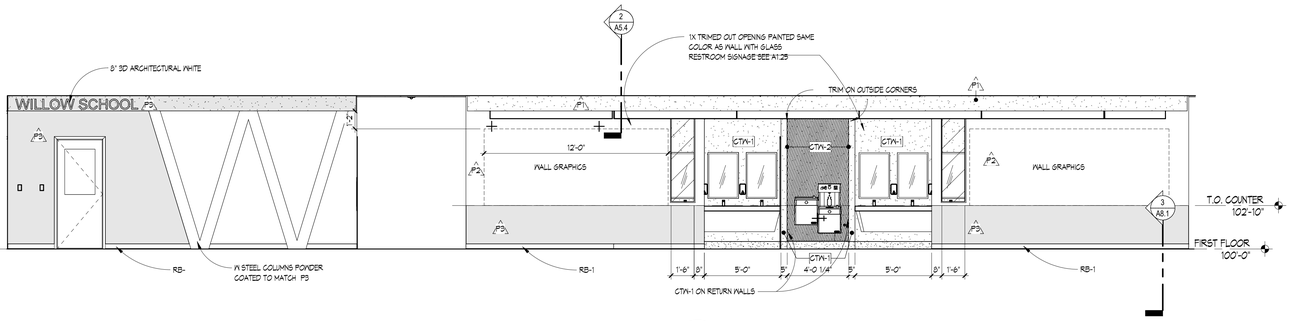
7 CORIDOOR- GYM ENTRY
1/4" = 1'-0"



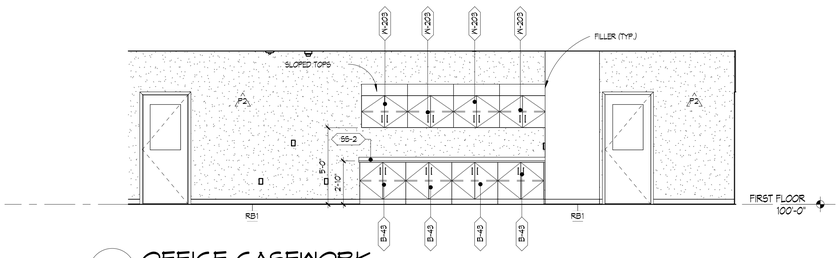
10 FRONT DESK ELEVATION
1/4" = 1'-0"



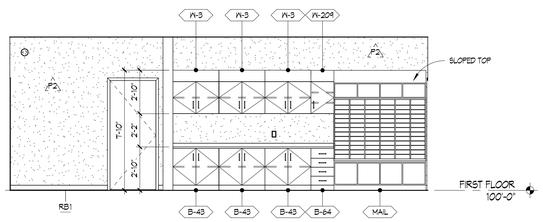
9 CLINIC CASEWORK ELEVATION
1/4" = 1'-0"



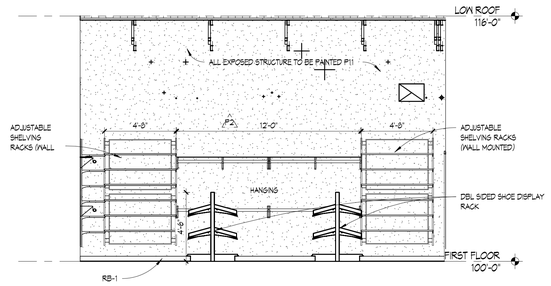
11 CORRIDOR- RESTROOM ENTRY
1/4" = 1'-0"



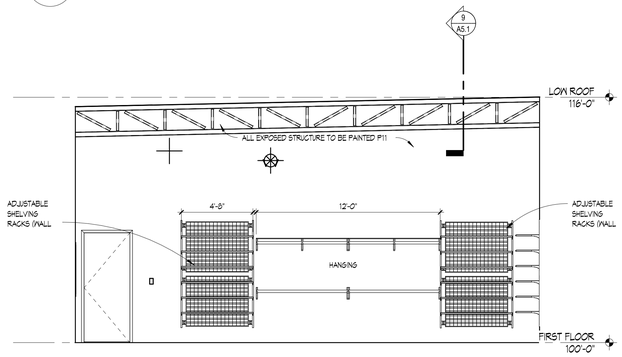
8 OFFICE CASEWORK
1/4" = 1'-0"



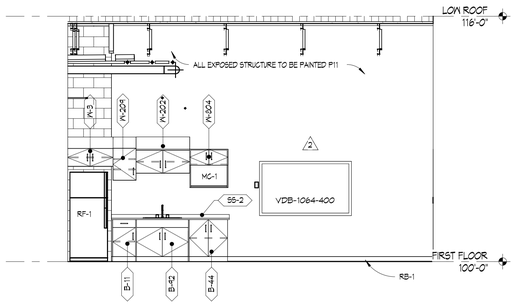
6 OFFICE SUPPORT ELEVATION 2
1/4" = 1'-0"



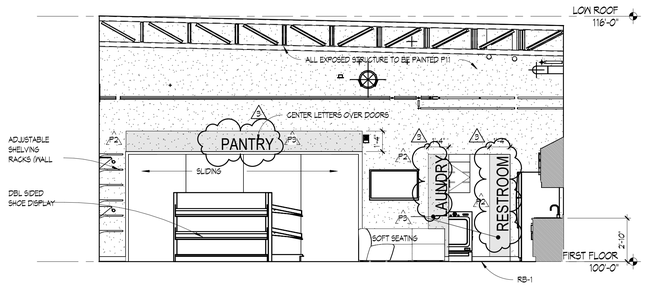
4 FAMILY RM.-SOUTH ELEVATION
1/4" = 1'-0"



3 FAMILY RM.-EAST ELEVATION
1/4" = 1'-0"



2 FAMILY RM- NORTH ELEVATION
1/4" = 1'-0"



1 FAMILY RM. -WEST ELEVATION
1/4" = 1'-0"

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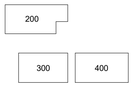
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
INTERIOR ELEVATIONS

SHEET NO.
A9.4

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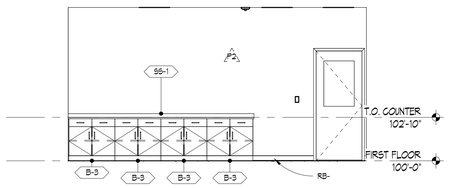
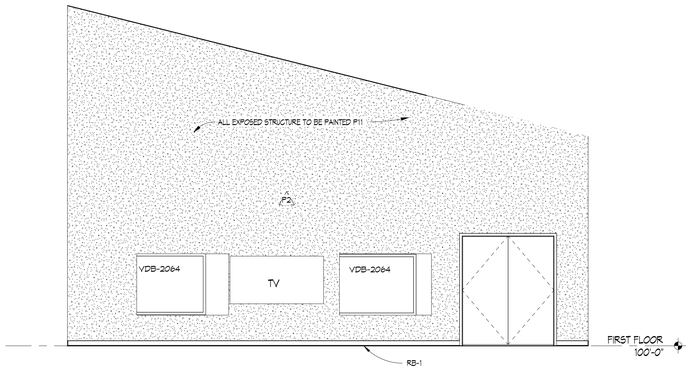
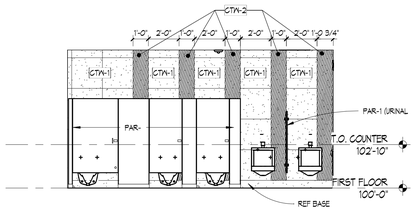


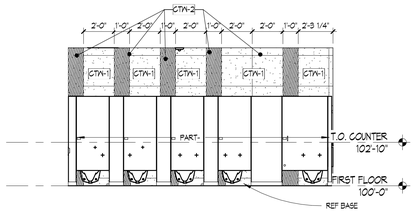
1 CONFERENCE RM ELEVATION
1/4" = 1'-0"



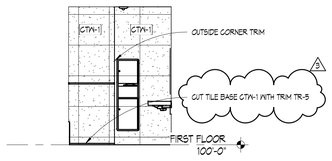
2 MUSIC EAST WALL
1/4" = 1'-0"



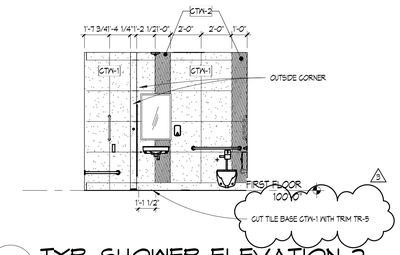
3 MEN'S RESTROOM ELEVATION
1/4" = 1'-0"



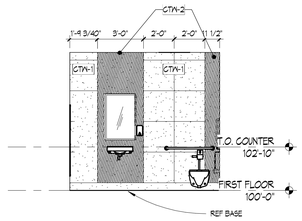
6 WOMEN'S RESTROOM ELEVATION
1/4" = 1'-0"



4 TYP. SHOWER ELEVATION
1/4" = 1'-0"



5 TYP. SHOWER ELEVATION 2
1/4" = 1'-0"



7 TYP. SINGLE RESTROOM
1/4" = 1'-0"

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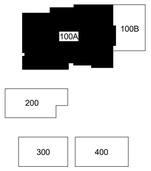
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024
Addendum 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET TITLE
INTERIOR ELEVATIONS

SHEET NO.
A9.5

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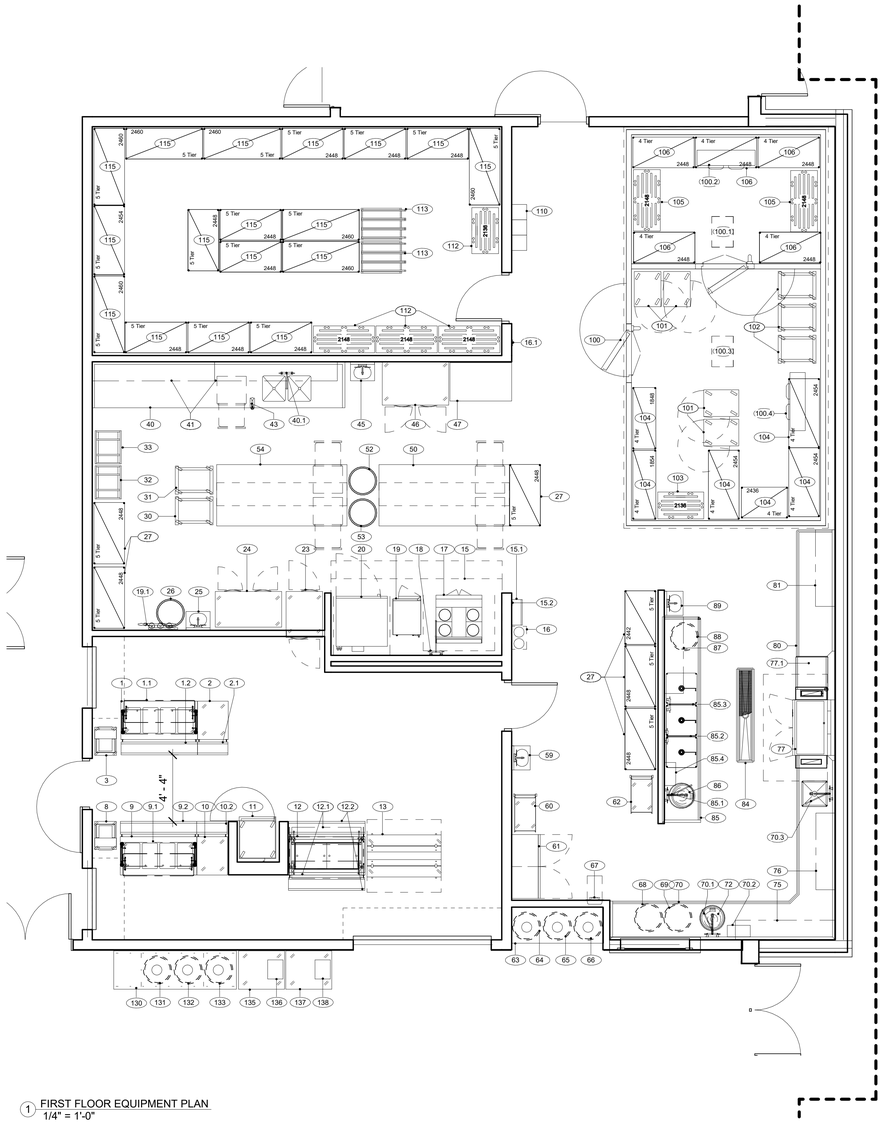

1 FIRST FLOOR EQUIPMENT PLAN
1/4" = 1'-0"

EQUIPMENT SCHEDULE KEY

O.F.O.I	OWNER FURNISHED, OWNER INSTALLED
V.F.V.I	VENDOR FURNISHED, VENDOR INSTALLED
N.I.F.E.C.	NOT IN FOODSERVICE EQUIPMENT CONTRACT

EQUIPMENT SCHEDULE

ITEM #	EQUIPMENT DESCRIPTION	NOTES
1	HOT SERVING COUNTER	
1.1	BREATH PROTECTION	
1.2	TRAY SLIDE	
2	SERVING COUNTER	
2.1	TRAY SLIDE	
3	TRAY RACK DISPENSER	
8	TRAY RACK DISPENSER	
9	HOT FOOD SERVING COUNTER	
9.1	BREATH PROTECTION	
9.2	TRAY SLIDE	
10	SERVING COUNTER	
10.2	TRAY SLIDE	
11	HOT HOLDING CABINET	
12	COLD SERVING COUNTER	
12.1	DOUBLE SIDED BREATH PROTECTION	
12.2	TRAY SLIDE	
13	MILK COOLER	
15	VENTILATION HOOD	
15.1	HOOD CONTROL BOX	
15.2	USER CONTROL INTERFACE	
16	FIRE SUPPRESSION SYSTEM	
16.1	FIRE SUPPRESSION PULL STATION	SUGGESTED LOCATION
17	INDUCTION RANGE	
18	FILLER FAUCET	
19	CONVECTION STEAMER	
20	CONVECTION OVEN	
23	PASS-THRU REFRIGERATOR	
24	REACH-IN FREEZER	
25	HANDSINK	
26	TRASH CAN	O.F.O.I.
27	STORAGE RACK	
30	PAN RACK	
31	PAN RACK	
32	BREAD RACK	V.F.V.I.
33	BREAD RACK	N.I.F.E.C.
40	WORKTABLE WITH SINKS AND DRAWERS	
40.1	FAUCET	
41	OVERSHELF	
43	CAN OPENER	
45	HANDSINK	
46	REACH IN REFRIGERATOR	
47	DESK	N.I.F.E.C.
50	WORKTABLE WITH DRAWERS AND OVERSHELF	
52	TRASH CAN	O.F.O.I.
53	COMPOSTING CAN	O.F.O.I.
54	WORKTABLE WITH DRAWERS AND OVERSHELF	
59	HANDSINK	
60	UTILITY CART	1
61	SAFETY CABINET	
62	UTILITY CART	
63	SCRAPPING STATION	
64	TRASH CAN	O.F.O.I.
65	RECYCLING CAN	O.F.O.I.
66	COMPOSTING CAN	O.F.O.I.
67	EYE WASH STATION	
68	TRASH CAN	O.F.O.I.
69	COMPOSTING CAN	O.F.O.I.
70	SOILED DISHTABLE WITH SINK	
70.1	PRE-RINSE FAUCET	
70.2	SANITIZER	N.I.F.E.C.
70.3	PRE-RINSE FAUCET	
72	DISPOSER	
75	OVERSHELF	
76	OVERSHELF	
77	DISH MACHINE	
77.1	BLOWER DRYER	
80	CLEAN DISHTABLE	
81	OVERSHELF	
84	FLOOR TROUGH	
85	THREE COMPARTMENT SINK	
85.1	PRE-RINSE FAUCET	
85.2	FAUCET	
85.3	FAUCET	
85.4	SANITIZER	N.I.F.E.C.
86	DISPOSER	
87	OVERSHELF	
88	TRASH CAN	O.F.O.I.
89	HANDSINK	
100	WALK-IN COOLER / FREEZER	
100.1	WALK-IN FREEZER CONDENSER	LOCATION PER MECH DWGS
100.2	WALK-IN FREEZER EVAPORATOR	
100.3	WALK-IN COOLER CONDENSER	LOCATION PER MECH DWGS
100.4	WALK-IN COOLER EVAPORATOR	
101	ENCLOSED PAN RACK	
102	PAN RACK	
103	DUNNAGE RACK	
104	STORAGE RACK	
105	DUNNAGE RACK	
106	STORAGE RACK	
110	LOCKERS	N.I.F.E.C.
112	DUNNAGE RACK	1
113	CAN RACK	
115	STORAGE RACK	
130	MOBILE SCRAPPING STATION	
131	TRASH CAN	O.F.O.I.
132	RECYCLING CAN	O.F.O.I.
133	COMPOSTING CAN	O.F.O.I.
135	SERVING COUNTER	
136	FLATWARE HOLDER	
137	SERVING COUNTER	
138	FLATWARE HOLDER	

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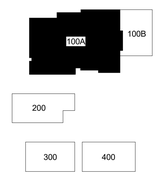
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCE	DAT
CD COORDINATION	11.09.2023
ADDENDUM 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 230538

N

SHEET TITLE
FOODSERVICE EQUIPMENT PLAN

SHEET NO.
FS1.1

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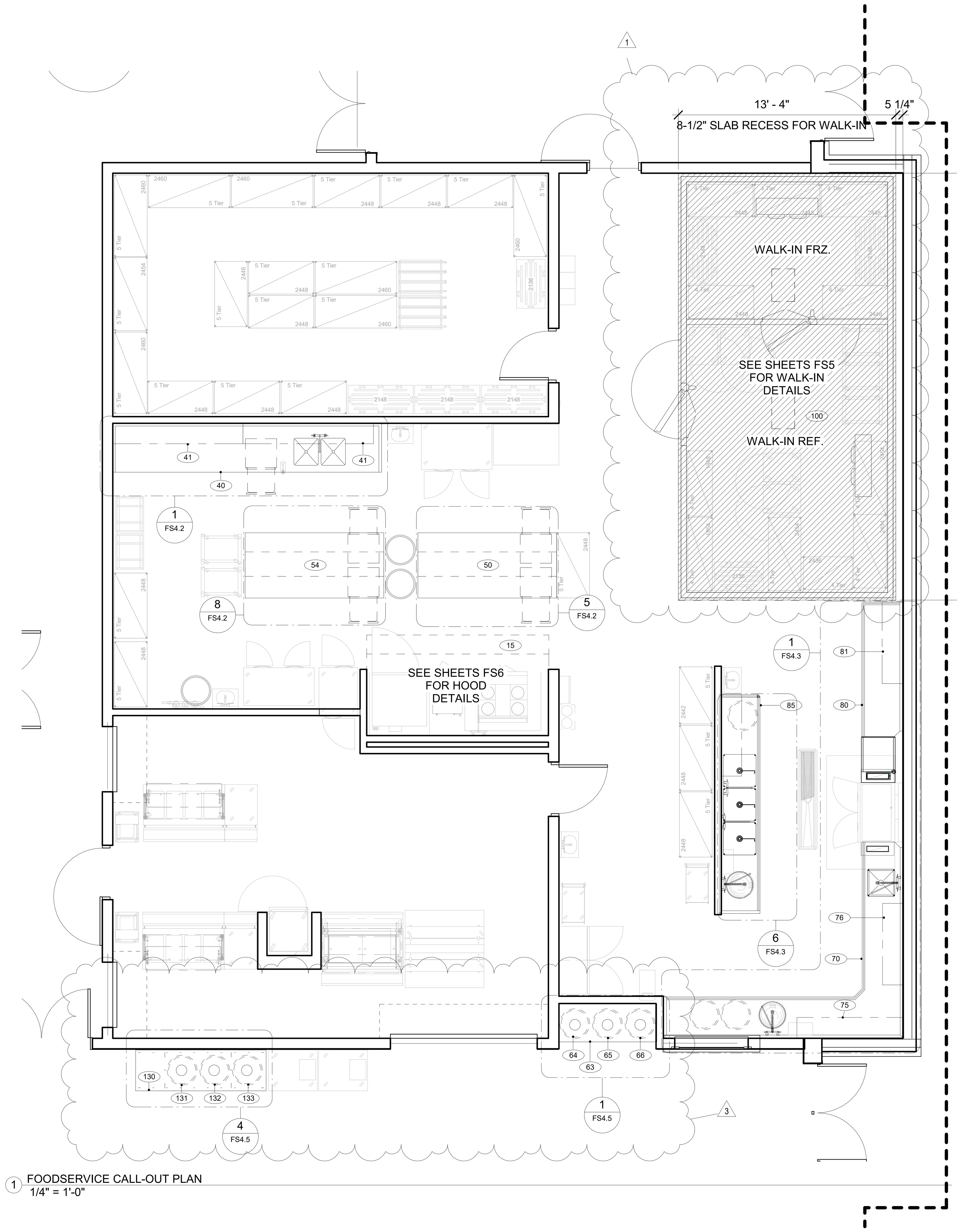

1 FOODSERVICE CALL-OUT PLAN
1/4" = 1'-0"

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Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCE	DAT
CD COORDINATION	11.09.2023
ADDENDUM 01	03/01/2024
ADDENDUM 03	03/15/2024

100A
100B
200
300
400
KEY PLAN
N

LSD SB-005
JOB 230538

SHEET TITLE
SPECIAL CONDITIONS AND DETAIL CALL-OUT PLAN

SHEET NO.
FS4.1

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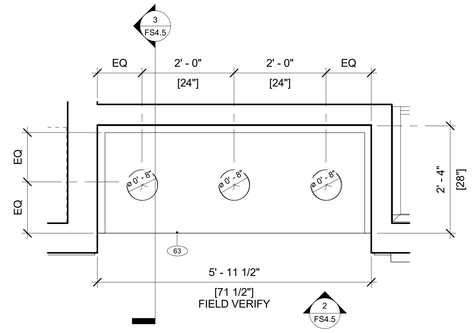
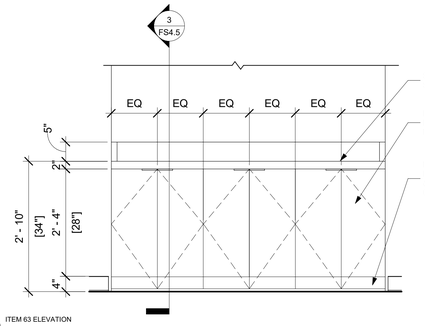


1 ITEM 63 CALL-OUT
3/4" = 1'-0"

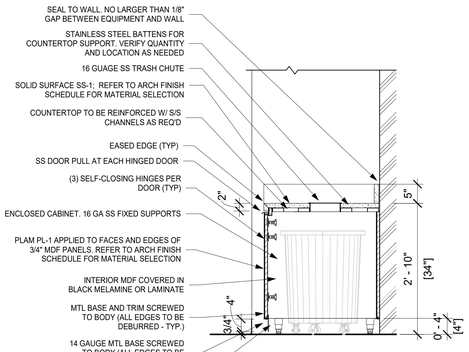


SOLID SURFACE SS-1; REFER TO ARCH FINISH SCHEDULE FOR MATERIAL SELECTION

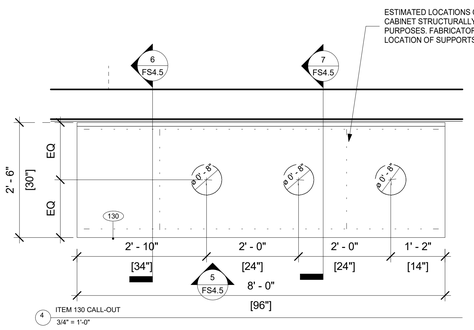
PLAM PL-1 APPLIED TO FACES AND EDGES OF 3/4" MDF PANELS. REFER TO ARCH FINISH SCHEDULE FOR MATERIAL SELECTION

MTL BASE AND TRIM. REFER TO ARCH FINISH SCHEDULE FOR MATERIAL SELECTION. SCREW AND USE ADHESIVE TO ATTACH TO MDF. SCREWS SHOULD NOT BE VISIBLE TO GUESTS

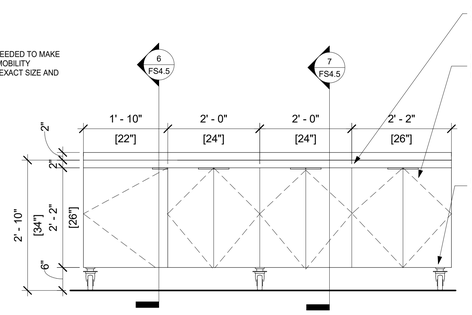
2 ITEM 63 ELEVATION
3/4" = 1'-0"



3 ITEM 63 SECTION
3/4" = 1'-0"



4 ITEM 130 CALL-OUT
3/4" = 1'-0"

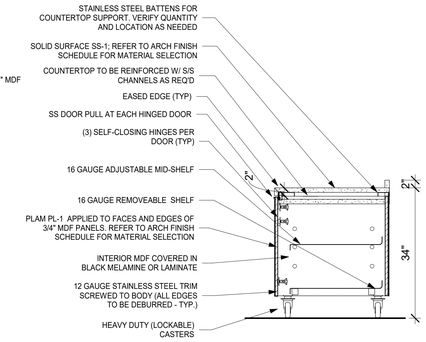


SOLID SURFACE SS-1; REFER TO ARCH FINISH SCHEDULE FOR MATERIAL SELECTION

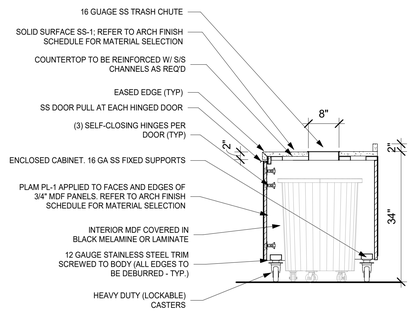
PLAM PL-1 APPLIED TO FACES AND EDGES OF 3/4" MDF PANELS. REFER TO ARCH FINISH SCHEDULE FOR MATERIAL SELECTION

FABRICATOR TO CONFIRM HOW MANY SETS OF CASTERS NEEDED FOR SUPPORT OF CABINET

5 ITEM 130 ELEVATION
3/4" = 1'-0"



6 ITEM 130 SECTION 1
3/4" = 1'-0"



7 ITEM 130 SECTION 2
3/4" = 1'-0"

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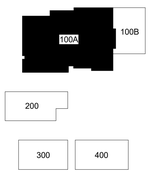
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCE	DAT
CD COORDINATION	11.09.2023
ADDENDUM 03	03/15/2024



KEY PLAN

LSD SB-005
JOB 230538

N

SHEET TITLE
FOODSERVICE EQUIPMENT DETAILS

SHEET NO.
FS4.5

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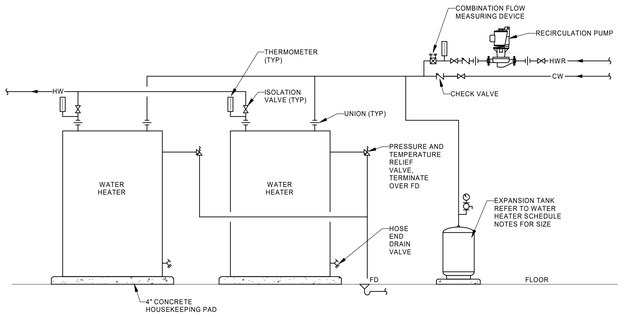
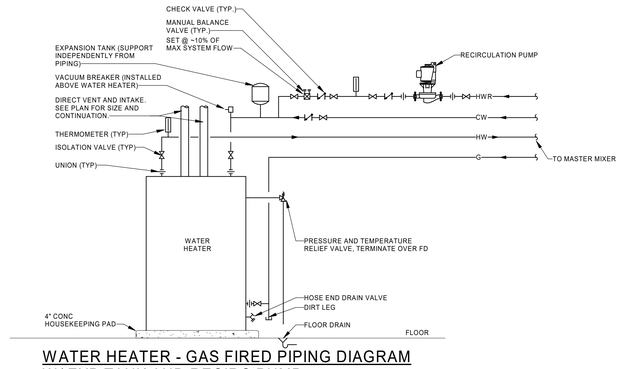


WATER HEATER - ELECTRIC PIPING DIAGRAM
NO SCALE



WATER HEATER - GAS FIRED PIPING DIAGRAM W/ EXP TANK AND RECIRC PUMP
NO SCALE

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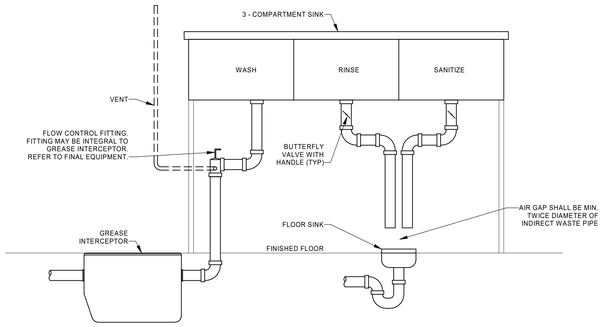
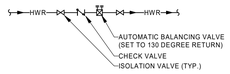
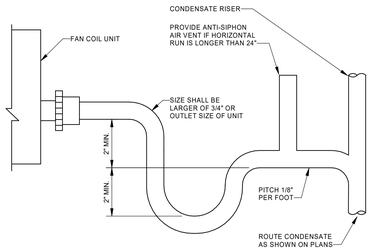


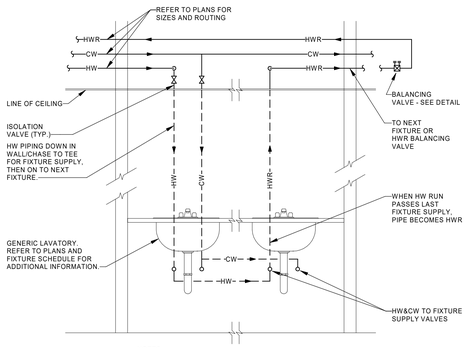


NOTE:
1. PROVIDE AT ALL HWR CONNECTION TO HW MAIN/BRANCH.

BALANCING VALVE ASSEMBLY DETAIL
NO SCALE

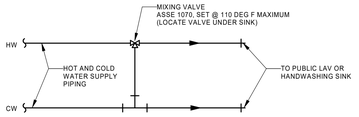


CONDENSATE DRAIN - FAN COIL DETAIL
NO SCALE

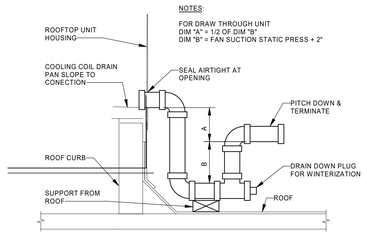


NOTES:
1. NUMBER OF LAVS VARY - REFER TO FLOOR PLANS

TYPICAL LAVATORY HW / HWR PIPING DETAIL
NO SCALE

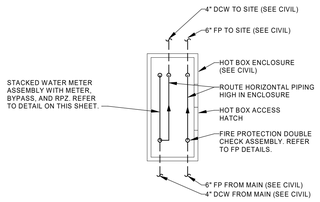


POINT OF USE THERMOSTATIC MIXING VALVE DETAIL
NO SCALE

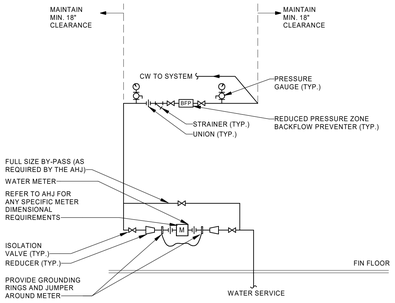


RTU COOLING COIL DRAIN PAN TRAP DETAIL
NO SCALE

LOCATED ON HOT BOX ENCLOSURE. REFER TO CIVIL.



WATER METER HOT BOX DIAGRAM
NO SCALE



NOTES:
1. WATER METER AND BACK FLOW PREVENTER SHALL BE SUPPORTED FROM THE FLOOR.

WATER METER WITH STACKED RPZ DETAIL
NO SCALE

Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 03	03.15.2024

LSD NO. SB-0059
JOB NO. 2616.01A

SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P5.0

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PLUMBING FIXTURES/SPECIALTIES SCHEDULE

TAG	BARRIER FREE	ITEM	PIPE CONNECTION SIZES: WASTE	VENT	CW	HW	MANUFACTURER & MODEL NO.	ACCESSORIES
EEW-1	-	EMERGENCY EYE/FACE WASH - PEDESTAL			1/2"	1/2"	HAWS 7777	CORROSION RESISTANT; STAINLESS STEEL DUST COVER, UNIVERSAL EMERGENCY SIGN AND STAY OPEN BALL VALVE ASSEMBLY, PROVIDE WITH TEST TAG AND ASSE 1071 MIXING VALVE.
EWC-1	Y	ELECTRIC WATER COOLER - SINGLE WITH BOTTLE FILLER	1 1/2"	1 1/2"	1/2"		ELKAY LZS8WSSK	PUSHBAR ACTIVATION WITH VANDAL-RESISTANT BUBBLER. 120V, 1 PH, 6 FLA, 370 WATTS, SHUT OFF VALVE AND 1-1/2" P-TRAP, VISUAL FILTER MONITOR. PROVIDE REPLACEMENT FILTERS (3-PACK)
EWC-2	-	ELECTRIC WATER COOLER - SINGLE WITH BOTTLE FILLER	1 1/2"	1 1/2"	1/2"		ELKAY LZS8WSSK	PUSHBAR ACTIVATION WITH VANDAL-RESISTANT BUBBLER. 120V, 1 PH, 6 FLA, 370 WATTS, SHUT OFF VALVE AND 1-1/2" P-TRAP, VISUAL FILTER MONITOR. PROVIDE REPLACEMENT FILTERS (3-PACK)
FD-1	-	FLOOR DRAIN - GENERAL	3"				ZURN Z415S-Y	TYPE "S" STRAINER AND SEDIMENT BUCKET. CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR.
FD-2	-	FLOOR DRAIN - MECHANICAL ROOM	4"				JR SMITH 2330Y	12" ROUND TOP WITH SEDIMENT BUCKET AND VANDAL PROOF CAST IRON ADA GRATE.
FD-3	-	FLOOR DRAIN - INDIRECT WASTE	4"				JR SMITH 2005Y	6" ROUND TOP WITH ADJUSTABLE NICKEL BRONZE STRAINER. PROVIDE WITH OVAL FUNNEL FOR INDIRECT WASTE.
FS-1	-	FLOOR SINK	2"				JR SMITH 300 SERIES	12" SQUARE BODY WITH PORCELAIN ENAMEL, ACID RESISTANT COATED CAST IRON BODY AND GRATE WITH ANTI-SPLASH DOME STRAINER AND 1/2 GRATE. IN FOOD SERVICE APPLICATIONS - COORDINATE RIM ELEVATION AFF WITH AHJ.
HB-1	-	HOSE BIBB - INTERIOR PUBLIC AREAS			3/4"		JR SMITH 5618	MODERATE CLIMATE NARROW WALL HYDRANT WITH INTEGRAL VACUUM BREAKER, REMOVABLE KEY
LAV-1	Y	LAVATORY - WALL MOUNTED	1 1/2"	1 1/2"	1/2"	1/2"	KOHLER GREENWICH K-2032 WITH SLOAN ETF-600 FAUCET	20.75"x18.25" LAVATORY VITREOUS CHINA WALL HUNG WITH FRONT OVERFLOW; ELECTRONIC SENSOR FAUCET 24 VAC, 50/60 HZ, VANDAL RESISTANT OUTLET WITH 0.5 GPM MAX FLOW RATE. PROVIDE WITH ASSE 1070 MIXING VALVE.
LAV-2	Y	LAVATORY - 3-STATION WASH BASIN	1 1/2"	1 1/2"	3/4"	3/4"	BRADLEY VERGE LVAD3 WITH VERGE S53-3500 FAUCET	VITREOUS CHINA 3-STATION WASH BASIN WITH QUARTZ EVERO CLASSIC - GEO SERIES ANTARCTICA FINISH.; VERGE LINEA SERIES FAUCET SHALL BE TOUCH FREE VANDAL RESISTANT OUTLET WITH 0.5 GPM MAX FLOW RATE. SILICONE TIP WITH BRUSHED STAINLESS FINISH. PROVIDE WITH AC ADAPTOR (COORDINATE WITH ELECTRICAL) PROVIDE WITH ASSE 1070 MIXING VALVE. PROVIDE DR1 SS TRENCH DRAIN CAP.
NFRH-1	-	NON-FREEZE ROOF HYDRANT			3/4"		JR SMITH 5906	3/4" HOSE CONNECTION; PROVIDE WITH VACUUM BREAKER; PROVIDE ALL MOUNTING HARDWARE AND PIPE, FULL SIZE DRAIN TO APPROPRIATE RECEPTOR. COORDINATE INSTALLATION WITH ROOFING CONTRACTOR PRIOR TO COMPLETION OF ROOF WORK.
NFWH-1	-	NON-FREEZE WALL HYDRANT			3/4"		JR SMITH 5509QT	BRONZE NICKEL PLATED, QUARTER TURN SELF DRAINING NON-FREEZE HYDRANT WITH INTEGRAL VACUUM BREAKER. "T" HANDLE KEY AND STAINLESS STEEL LOCKING BOX WITH "W" ON COVER.
ORS-1	-	OVERFLOW ROOF SUMP					MIFAB R1100-W-U	ADJUSTABLE WATER DAM, UNDERDECK CLAMP AND LOW PROFILE DOME
RS-1	-	ROOF SUMP					MIFAB R1100-U	UNDERDECK CLAMP AND LOW PROFILE DOME
SH-1	Y	SHOWER	2"	1 1/2"	1/2"	1/2"	SYMMONS ORIGINS 9605-PLR-TRM	SHOWER/HAND SHOWER TRIM WITH 1 MODE. WALL-MOUNTED METAL LEVER HANDLE WITH 1.5 GPM SHOWER HEAD, ARM AND FLANGE, SYMMONS TUB/SHOWER VALVE 262XBODY, AND HANDHELD WAND WITH HOSE AND 36" SLIDE/GRAB BAR. ALL COMPONENTS SHALL BE POLISHED CHROME FINISH. PRESSURE BALANCED MIXING VALVE SHALL MEET ASSE 1016 AND HAVE UNIVERSAL INLETS/OUTLETS AND SUPPLY STOPS.
SK-1	Y	SINK - STAINLESS STEEL UNDERMOUNT	1 1/2"	1 1/2"	1/2"	1/2"	KOHLER UNDERTONE K-3332-NA WITH CHICAGO 50-E35-317XKABCP FAUCET	23"x17.5"x7.5"SINGLE BOWL UNDERMOUNT STAINLESS STEEL SINK WITH PERFECT DRAIN. MANUAL FAUCET SHALL BE 6" GOOSENECK WITH WRIST BLADE HANDLES, 1.5 GPM VANDAL RESISTANT LAMINAR FLOW OUTLET. PROVIDE WITH ASSE 1070 MIXING VALVE.
SK-2	Y	SINK - STAINLESS STEEL UNDERMOUNT	1 1/2"	1 1/2"	1/2"	1/2"	KOHLER UNDERTONE K-3325-NA WITH KOHLER SIMPLICE K-596 FAUCET	23"x17.5"x9.5"SINGLE BOWL UNDERMOUNT STAINLESS STEEL SINK WITH PERFECT DRAIN. 9" GOOSENECK WITH PULL DOWN 1.5 GPM SWING FAUCET WITH VIBRANT STAINLESS FINISH, 1.5 GPM VANDAL RESISTANT LAMINAR FLOW OUTLET. PROVIDE SOLIDS INTERCEPTOR EQUAL TO STRIEM SIDEKICK WITH FRONT ACCESS. PROVIDE P-TRAP AND PROVIDE WITH ASSE 1070 MIXING VALVE. PROVIDE CONNECTIONS FROM DISHWASHER TO SINK DRAIN AND HW SUPPLY PER DISHWASHER MFR INSTRUCTIONS. PROVIDE CW CONNECTION TO REFRIGERATOR ICE MAKER.
SK-3	Y	SINK - 2 STATION WASH BASIN	1 1/2"	1 1/2"	1/2"	1/2"	BRADLEY VERGE LVAD2 WITH VERGE FAUCET - LINEA SERIES	QUARTZ 2-STATION WASH BASIN WITH QUARTZ EVERO CLASSIC - GEO SERIES ANTARCTICA FINISH.; VERGE LINEA SERIES FAUCET SHALL BE TOUCH FREE VANDAL RESISTANT OUTLET WITH 0.5 GPM MAX FLOW RATE. SILICONE TIP WITH BRUSHED STAINLESS FINISH. PROVIDE WITH AC ADAPTOR (COORDINATE WITH ELECTRICAL) PROVIDE WITH ASSE 1070 MIXING VALVE. PROVIDE DR1 SS TRENCH DRAIN CAP.
SS-1	-	SERVICE SINK	3"	1 1/2"	3/4"	3/4"	FIAT STOCKTON TSBC-1611 WITH CHICAGO 540-LD897SWXF317CP FAUCET	32"x32"x12" CORNER MOP SERVICE BASIN WITH STAINLESS STEEL CAPS ON CORNER THRESHOLD. PROVIDE FIAT 832AA HOSE & HOSE BRACKET, MSG WALL GUARDS, AND MOP HANGER. FAUCET SHALL BE WALL MOUNTED 8" FIXED CENTER WITH VACUUM BREAKER, WRISTEBLADE HANDLES, INTEGRAL STOPS, PAIL HOOK.
SS-2	-	SERVICE TUB	3"	1 1/2"	3/4"	3/4"	FIAT P-1 WITH FIAT A-1	24"x20"x15.75" FLOOR MOUNTED SERVICE/LAUNDRY TUB. POLY TUB WITH (4) 20" TALL PAINTED STEEL LEGS. FAUCET SHALL SHALL BE DECK MOUNTED 4" CENTERS SWING SPOUT, LEVER HANDLES, CHROME FINISH. PROVIDE ONE INTEGRAL DRAIN WITH DRAIN PLUG, 1-1/2" TAILPIECE, P-TRAP WITH C.O. PLUG PER DRAIN.
TD-1	-	TRENCH DRAIN	2"				LUXE LINEAR - SQUARE PATTERN	PROVIDE SLOPED INNER CHANNEL FOR CENTER DRAINAGE. PROVIDE WITH LUXE 2" PVC DRAIN BASE.
UR-1	Y	URINAL - WALL MOUNTED	2"	1 1/2"	3/4"		KOHLER DEXTER K-5016-ET WITH SLOAN ROYAL 186-1 FLUSH VALVE	ADA, VITREOUS CHINA, WALL MOUNTED, TOP SPUD; DIAPHRAGM-TYPE, POLISHED CHROME MANUAL FLUSH VALVE, 1.0 GPF
WC-1	Y	WATER CLOSET - FLUSH VALVE, WALL MOUNTED	4"	2"	1"		KOHLER KINGSTON ULTRA K-84325 WITH SLOAN ROYAL 111-1.6 FLUSH VALVE	ADA, VITREOUS CHINA, WALL MOUNTED, ELONGATED BOWL, TOP SPUD, ANTIMICROBIAL FINISH; PROVIDE OLSONITE 95CT ELONGATED TOILET SEAT, HEAVY DUTY, OPEN FRONT SEAT; DIAPHRAGM-TYPE, POLISHED CHROME MANUAL FLUSH VALVE, 1.6 GPF
WMB-1	-	WASHING MACHINE BOX	2"	1 1/2"	1/2"	1/2"	SIOUX CHIEF OX BOX SERIES 696	WITH WATER HAMMER ARRESTORS
YH-1	-	NON-FREEZE YARD HYDRANT			3/4"		JR SMITH 5909	3/4" HOSE CONNECTION; PROVIDE WITH VACUUM BREAKER; PROVIDE ALL MOUNTING HARDWARE AND PIPE. PROVIDE LOCKABLE COLLAR SOLD SEPARATELY.

NOTES:
1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES.
2. PROVIDE CARRIERS FOR ALL APPLICABLE FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. CONCEALED ARM CARRIERS REQUIRED FOR SINGLE STATION LAVATORIES. PROVIDE ALL CARRIERS WITH FOOT SUPPORTS.
3. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1. ALL EXPOSED LAVATORY AND SINK TRIM ON WHEELCHAIR ACCESSIBLE FIXTURES SHALL BE COVERED WITH A SEAMLESS ANTIMICROBIAL VINYL INSULATING OUTER SHELL.
4. PROVIDE ASSE 1072 BARRIER-TYPE INLINE TRAP SEAL DEVICES FOR EACH FLOOR DRAIN AND FLOOR SINK AND TRAP SUBJECT TO EVAPORATION LOSS.
5. PROVIDE COMMERCIAL GRADE SUPPLIES TO SINKS AND LAVATORIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.
6. PROVIDE POINT OF USE THERMOSTATIC MIXING VALVES, ASSE 1070, FOR ALL ADA SINKS AND HANDWASHING SINKS.

DOMESTIC WATER HEATER SCHEDULE (GAS TANK TYPE)

UNIT ID	LOCATION / AREA SERVED	STORAGE CAPACITY (GAL)	FUEL TYPE	GAS PRESS. MIN.-MAX. (IN WG)	INPUT (MBH)	RECOVERY AT 100°F (GPH)	THERMAL EFFICIENCY	ELECTRICAL: MOCP	VOLTS	PHASE	DISCONNECT: FURN. BY	INST. BY	TYPE	MANUFACTURER / MODEL NO.	REMARKS
DWH-101	UNIT 100 KITCHEN	119	NG	4.5-14	400	456	94	15	120	1	EC	EC	-	BRADFORD WHITE / EF-120T-400-3N(A)	

NOTES:
1. 4" CONCRETE HOUSEKEEPING CURB.
2. FLA SHALL BE PROVIDED FROM MANUFACTURER'S LITERATURE AND SHALL BE INCLUDED IN PRODUCT DATA SUBMITTAL TO ENGINEER.
3. PROVIDE CONDENSATE NEUTRALIZATION KIT.
4. UNIT TO BE POWER DIRECT VENTED.
5. LEAK DETECTION KIT.
6. DWH-101 EXPANSION TANK: ASME, MFR: B&G, MODEL: PTA30V, QTY: 1, REQ. TANK VOL.: 15 GAL, REQ. ACCEPTANCE VOL.: 10 GAL, VERTICAL, DIAPHRAGM, WITH AIR PRESSURE GAUGE AND BLADDER MONITOR DEVICE. PROVIDE 4" CONCRETE HOUSEKEEPING CURB.
7. PROVIDE BACNET COMMUNICATION GATEWAY.

DOMESTIC HOT WATER RECIRULATION PUMP SCHEDULE

UNIT ID	SYSTEM SERVED	TYPE	FLOW (GPM)	HEAD (FT)	ELECTRICAL: kW (INPUT)	BHP	HP	VOLTS	PHASE	DISCONNECT: FURN. BY	INST. BY	TYPE	MANUFACTURER / MODEL NO.	REMARKS
P-DWH-101	UNIT 100 KITCHEN	INLINE	5	10	0.6	0.03	-	115	1	EC	EC	SWITCH	B&G ECOCIRC XL N 20-23	SET ON CONSTANT PRESSURE MODE
P-DWH-102	UNIT 100 HOUSE	INLINE	10	25	0.5	-	0.5	208	1	EC	EC	SWITCH	B&G ECOCIRC XL N 36-45	SET ON CONSTANT PRESSURE MODE
P-DWH-200	UNIT 200	INLINE	5	15	0.1	-	1/12	115	1	EC	EC	SWITCH	B&G ECOCIRC XL N 20-35	SET ON CONSTANT PRESSURE MODE
P-DWH-300	UNIT 300	INLINE	5	15	0.1	-	1/12	115	1	EC	EC	SWITCH	B&G ECOCIRC XL N 20-35	SET ON CONSTANT PRESSURE MODE
P-DWH-400	UNIT 400	INLINE	5	15	0.1	-	1/12	115	1	EC	EC	SWITCH	B&G ECOCIRC XL N 20-35	SET ON CONSTANT PRESSURE MODE

NOTES:
1. PERFORMANCE BASED ON WATER, UNLESS OTHERWISE INDICATED.
2. PUMPS SHALL BE NON-OVERLOADING.
3. PUMP SHALL HAVE EC MOTOR AND SHALL HAVE BUILT IN OVERLOAD AND THERMAL PROTECTION, NO ADDITIONAL OVERLOAD PROTECTION IS REQUIRED.
4. PUMPS SHALL BE INSTALLED IN ORIENTATION RECOMMENDED BY MFG.

DOMESTIC WATER HEATER SCHEDULE (ELECTRIC TANK TYPE)

UNIT ID	LOCATION / AREA SERVED	STORAGE CAPACITY (GAL)	RECOVERY AT 90°F (GPH)	ELECTRICAL: INPUT (KW)	VOLTS	PHASE	DISCONNECT: FURN. BY	INST. BY	TYPE	MANUFACTURER / MODEL NO.	REMARKS
DWH-102	UNIT 100 HOUSE	80	24	4	208	1	EC	EC	-	BRADFORD WHITE / RE2H80T10	
DWH-103	UNIT 100 HOUSE	80	24	4	208	1	EC	EC	-	BRADFORD WHITE / RE2H80T10	
DWH-200	UNIT 200	50	24	4	208	1	EC	EC	-	BRADFORD WHITE / RE2H50T10	
DWH-300	UNIT 300	50	24	4	208	1	EC	EC	-	BRADFORD WHITE / RE2H50T10	
DWH-400	UNIT 400	50	24	4	208	1	EC	EC	-	BRADFORD WHITE / RE2H50T10	

NOTES:
1. FLA SHALL BE PROVIDED FROM MANUFACTURER'S LITERATURE AND SHALL BE INCLUDED IN PRODUCT DATA SUBMITTAL TO ENGINEER.
2. 4" CONCRETE HOUSEKEEPING CURB.
3. DWH-102/103 EXPANSION TANK: ASME, MFR: B&G, MODEL: PTA-30V, QTY: 1, REQ. TANK VOL.: 15 GAL, REQ. ACCEPTANCE VOL.: 10 GAL, VERTICAL, DIAPHRAGM, WITH AIR PRESSURE GAUGE AND BLADDER MONITOR DEVICE. PROVIDE 4" CONCRETE HOUSEKEEPING CURB.
4. DWH-200/300/400 EXPANSION TANK: ASME, MFR: B&G, MODEL: PTA-12V, QTY: 1, REQ. TANK VOL.: 5 GAL, REQ. ACCEPTANCE VOL.: 3.3 GAL, VERTICAL, DIAPHRAGM, WITH AIR PRESSURE GAUGE AND BLADDER MONITOR DEVICE.

GREASE INTERCEPTOR SCHEDULE

UNIT ID	FLOW RATE (GPM)	GREASE CAPACITY (LBS)	INSTALLATION TYPE	DIMENSIONS: HEIGHT (IN)	LENGTH (IN)	WIDTH (IN)	MANUFACTURER / MODEL NO.	REMARKS
GI-100	100	1895	UNDERGROUND	44"	87"	33"	SHIER / GB-250	

NOTES:
1. PROVIDE WITH FIELD CUT RISER SYSTEM, FCR2, ACCESSORY FOR EACH COVER (2). COORDINATE RISER HEIGHT REQUIRED IN FIELD WITH ALL OTHER TRADES.
2. PROVIDE WITH CAST IRON COVERS.
3. INTEGRAL AIR RELIEF / ANTI-SIPHON / SAMPLING ACCESS.

THERMOSTATIC MIXING VALVE SCHEDULE

UNIT ID	SYSTEM SERVED	MIN. FLOW (GPM)	MAX. FLOW (GPM)	PRESS. DROP AT MAX. FLOW (PSIG)	MANUFACTURER / MODEL NO.	REMARKS
TMV-1	SINGLE SINK/LAVATORY	0.5	1.5	5.00	BRADLEY NAVIGATOR S59-4007	ASSE 1070
TMV-2	EMERGENCY EYE WASH	3.0	5.0	5.00	BRADLEY S19-2150 (EFX20)	ASSE 1071

NOTES:
1. PIPE PER MFR INSTRUCTIONS.
2. LEAD FREE DESIGN WITH CHECK VALVES ON SUPPLY INLETS.
3. ADJUSTABLE SETPOINT.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYALOAK

Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 03	03.15.2024

LSD NO. SB-0059
JOB NO. 2616.01A
SHEET TITLE
PLUMBING SCHEDULES
SHEET NO.
P6.0

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ROOFTOP AIR HANDLING UNIT SCHEDULE - (GEOTHERMAL)

UNIT ID	TOTAL SUPPLY (CFM)	MINIMUM OA (CFM)	SUPPLY FAN ESP (IN WG)	SUPPLY FAN FAN TYPE	SUPPLY FAN DRIVE TYPE	SUPPLY FAN BHP	SUPPLY FAN HP	EXHAUST FAN ESP (IN WG)	EXHAUST FAN FAN TYPE	EXHAUST FAN DRIVE TYPE	EXHAUST FAN BHP	EXHAUST FAN HP	ERV UNIT ID	GEOTHERMAL HEAT PUMP COOLING TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	AIR EDB (°F)	AIR EWB (°F)	AIR LDB (°F)	AIR LWB (°F)	AIR APD (IN WG)	23.5% PROPYLENE GLYCOL FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WPD (FT HD)	CONTROL VALVE CONFIG.	GEOTHERMAL HEAT PUMP HEATING MIN. TOTAL CAPACITY (MBH)	AIR EAT (°F)	AIR LAT (°F)	AIR APD (IN WG)	23.5% PROPYLENE GLYCOL FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WPD (FT HD)	CONTROL VALVE CONFIG.	FILTER TYPE	ELECTRICAL MOCP	MCA	FLA	VOLTS	PHASE	STARTER/DISCONNECT TYPE	FURN. BY	INST. BY	CURB HEIGHT (IN)	UNIT WEIGHT (LBS)	MANUFACTURER / MODEL NO.	REMARKS
RTU-136	8100	2620	1.20	BACKWARD CURVED	DIRECT	7.02	10	0.25	BACKWARD CURVED	DIRECT	6.01	10	ERV-RTU-136	360	300	76.1	64.8	52.2	51.9	0.54	46	90	107.1	10.00	2-WAY	247.7	-0.5	111	0.50	46	32	23.7	10.00	3-WAY	MERV 13	90	72	67	460	3	NON-FUSED	MFR	MFR	14"	4300	AAON / RNA-025	
RTU-156	11800	3850	1.25	BACKWARD CURVED	DIRECT	8.19	15	0.25	BACKWARD CURVED	DIRECT	0.66	1	ERV-RTU-156	523	434	76.1	64.7	52.4	51.9	0.50	72	90	106	15.00	2-WAY	376.3	-0.5	115	0.50	72	32	24.1	15.00	2-WAY	MERV 13	110	90	84	460	3	NON-FUSED	MFR	MFR	40"	7215	AAON / RNA-040	
RTU-DOAS-100	7100	7100	1.00	BACKWARD CURVED PLENUM	DIRECT	6.27	10	0.75	BACKWARD CURVED PLENUM	DIRECT	5.8	7.5	ERV-DOAS-100	429	302	79.04	68.03	54.14	53.56	0.50	75	90	100.4	20.00	3-WAY	520.4	55	88	0.50	75	32	26	20.00	2-WAY	MERV 13	150	145	140	460	3	NON-FUSED	MFR	MFR	14"	3800	AAON / RN-025	

NOTES:
1. DUCT SMOKE DETECTORS ON UNIT SUPPLY AND RETURN FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF.
2. UNIT TO BE PROVIDED WITH MANUFACTURER CONTROLS. REFER TO CONTROLS DIAGRAM AND SOO. CONTROLLER SHALL BE CAPABLE OF FULLY INTEGRATING INTO THE BMS.
3. ALL FANS SELECTED FOR RTUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN INDUCTION MOTORS ARE USED THEN THE REQUIREMENT IS TO USE THE NEXT AVAILABLE NEMA NAMEPLATE HORSEPOWER MOTOR, AND WHEN ECM'S ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION IC90.1-2013-11 ADDITIONAL INFORMATION.
4. PROVIDE UNIT WITH FACTORY WIRED 115V GFCI CONVENIENCE OUTLET.
5. PROVIDE SINGLE POINT POWER, FACTORY WIRED.
6. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT. ENSURE OUTDOOR AIR INTAKE IS GREATER THAN 10'-0" FROM ANY BUILDING EXHAUST.
7. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
8. ANY ITEM IN CONTRACT DOCUMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.
9. PROVIDE RTU-136 WITH HORIZONTAL SUPPLY AND RETURN CONNECTIONS. PROVIDE RTU-156 WITH DOWN DISCHARGE AND THYBAR ROOF CURB FOR HORIZONTAL SUPPLY AND RETURN. PROVIDE RTU-DOAS-100 WITH DOWN SUPPLY AND RETURN.
10. PROVIDE WITH HOT GAS REHEAT
    A. RTU-136: 188.5 MBH
    B. RTU-156: 275 MBH
    C. RTU-DOAS-100: 145 MBH
11. PROVIDE WITH ELECTRIC PREHEAT COIL.
    A. RTU-136: 40 KW; SEPARATE DISCONNECT REQUIRED - 460V / 3 PHASE, 50.2 FLA
    B. RTU-156: 50 KW; SEPARATE DISCONNECT REQUIRED - 460V / 3 PHASE, 62.8 FLA
    C. RTU-DOAS-100: 50 KW; ELECTRICAL PERFORMANCE AND REQUIREMENTS ARE PART OF UNIT. ONE DISCONNECT FOR ENTIRE UNIT.
12. R-410A VARIABLE CAPACITY SCROLL
13. PROVIDE WITH DRY-BULB ECONOMIZER
14. PROVIDE WITH BALANCING VALVES, WATER FLOW SWITCH, AND HEAD PRESSURE CONTROL
15. MINIMUM OPERATING CONDITIONS EFFICIENCY:
    A. RTU-136
       a. EER: 10.4
       b. COP: 4.8
    B. RTU-156
       a. EER: 12.3
       b. COP: 4.89
    C. RTU-DOAS-100
       a. EER: 13.8
       b. COP: 5.98
16. COORDINATE UNITS AIC RATINGS WITH ELECTRICAL CONTRACTOR.

ENERGY RECOVERY SECTION SCHEDULE

UNIT ID	RTU OR AHU UNIT ID	SUMMER OUTSIDE AIR EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	SUMMER EXHAUST AIR EDB (°F)	RH	LDB (°F)	LWB (°F)	WINTER OUTSIDE AIR EDB (°F)	LDB (°F)	WINTER EXHAUST AIR EDB (°F)	RH	LDB (°F)	REMARKS
ERV-136	RTU-136	89	73.2	78.5	66.5	75	55	85	71	-0.5	51.3	70	20	17.1	
ERV-156	RTU-156	89	73.2	78.3	66.1	75	55	85.4	71	-0.5	52.1	70	20	16.9	
ERV-DOAS-100	RTU-DOAS-100	89	73.2	79.04	68.03	75	55	85.09	69.53	21	55	70	20	35	

NOTES:
1. ERV TO BE PACKAGED WITH RTU EQUIPMENT.

ELECTRIC TEMPERING COIL SCHEDULE

UNIT ID	SERVICE	CAPACITY (kW)	STAGES	AIR MIN FLOW (CFM)	AIR MAX LDB (°F)	AIR MIN AIR VELOCITY (FT/MIN)	ELECTRICAL VOLTS	ELECTRICAL PHASE	DISCONNECT FURN. BY	DISCONNECT INST. BY	DISCONNECT TYPE	MANUFACTURER / MODEL NO.	REMARKS
ETC-HP-108	HP-108	3.0	1	400	95	400	208	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM4	
ETC-HP-114	HP-114	3.0	1	250	95	560	208	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECS4	
ETC-HP-139	HP-139	3.0	1	400	95	400	208	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM4	
ETC-HP-140	HP-140	3.0	1	400	95	400	208	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM4	
ETC-HP-141	HP-141	3.0	1	400	95	400	208	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM4	
ETC-HP-145	HP-145	3.0	1	400	95	400	208	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM4	
ETC-HP-201	HP-201	7.3	2	550	95	550	460	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM84	
ETC-HP-301	HP-301	7.3	2	550	95	550	460	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM84	
ETC-HP-401	HP-401	11	2	700	95	700	460	3	MFR	MFR	SWITCH	WATERFURNACE/THERMOLEC / ECM124	

NOTES:
1. HEATER TO BE PROVIDED BY SAME MANUFACTURER/PRODUCT REPRESENTATIVE AS WATER SOURCE HEAT PUMP.
2. HEATER TO BE CONTROLLED BY WATER SOURCE HEAT PUMP CONTROLLER.
3. PROVIDE WITH FACTORY MOUNTED DISCONNECT (SEPARATE FROM HEAT PUMP DISCONNECT).
4. FIELD VERIFY DUCT SIZE REQUIREMENTS WITH SHEET METAL CONTRACTOR.

WATER SOURCE HEAT PUMP SCHEDULE - (GEOTHERMAL)

UNIT ID	SERVICE	TOTAL AIRFLOW (CFM)	OA AIRFLOW (CFM)	ESP (IN-WG)	SUPPLY FLUID (23% PG) FLOW (GPM)	SUPPLY FLUID WPD (FT HD)	COOLING TOTAL CAPACITY (MBH)	COOLING SENSIBLE CAPACITY (MBH)	COOLING EWT (°F)	COOLING LWT (°F)	COOLING EDB (°F)	COOLING EWB (°F)	COOLING LDB (°F)	HEATING TOTAL CAPACITY (MBH)	HEATING EWT (°F)	HEATING LWT (°F)	HEATING EAT (°F)	HEATING LAT (°F)	MOCP	MCA	FLA	VOLTS	PHASE	DISCONNECT FURN. BY	INST. BY	TYPE	MANUFACTURER / MODEL NO.	REMARKS
HP-A-114	UNIT 100	465	0	0.40	2.0	10.60	8.7	7.1	90	100	75	63	60.9	7.0	32	26	70	84	10.15	6.1	5.0	208	1	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 009	2KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 5, 6-16
HP-A-117	UNIT 100	465	0	0.40	2.0	10.60	8.7	7.1	90	100	75	63	60.9	7.0	32	26	70	84	10.15	6.1	5.0	208	1	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 009	NOTES 1, 5, 6-16
HP-A-126	UNIT 100	465	0	0.40	2.0	10.60	8.7	7.1	90	100	75	63	60.9	7.0	32	26	70	84	10.15	6.1	5.0	208	1	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 009	NOTES 1, 5, 6-16
HP-B-103	UNIT 100	465	0	0.40	3.0	4.10	12.32	9.22	90	100	75	63	56.6	8.53	32	26	70	87	10.15	7.1	5.8	208	1	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 012	NOTES 1, 5, 6-16
HP-B-104	UNIT 100	465	0	0.40	3.0	4.10	12.32	9.22	90	100	75	63	56.6	8.53	32	26	70	87	10.15	7.1	5.8	208	1	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 012	NOTES 1, 5, 6-16
HP-C-140	UNIT 100	850	0	0.40	3.5	6.40	13.75	11.79	90	100	75	63	62.2	11.04	32	26	70	82	15	11.9	10.3	208	1	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 015	1 KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 3, 4, 6-16
HP-E-108	UNIT 100	955	0	0.40	6.0	12.60	22.49	22.22	90	100	75	63	56.9	18.02	32	26	70	87.5	10.15	6.5	5.5	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 024	1 KW ELECTRIC HEAT; NOTES 1, 3, 4, 6-16
HP-E-116	UNIT 100	955	0	0.40	6.0	12.60	22.49	22.22	90	100	75	63	56.9	18.02	32	26	70	87.5	10.15	6.5	5.5	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 024	NOTES 1, 3, 4, 6-16
HP-E-155	UNIT 100	955	0	0.40	6.0	12.60	22.49	22.22	90	100	75	63	56.9	18.02	32	26	70	87.5	10.15	6.5	5.5	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 024	NOTES 1, 3, 4, 6-16
HP-F-151	UNIT 100	900	0	0.40	6.0	8.40	25.02	18.46	90	100	75	63	56	17.93	32	26	70	88.5	10.15	8.4	7.6	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 026	NOTES 1, 2-4, 6-16
HP-F-201	UNIT 200	900	150	0.40	6.0	8.40	25.61	20.28	90	100	77.3	64.3	58.7	18.46	32	27	58	74.9	10.15	8.4	7.6	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 026	6 KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 2-4, 6-16
HP-G-301	UNIT 300	1300	160	0.40	8.0	11.50	25.73	21.83	90	98	76.7	63.8	59.4	19.9	32	28	61	76.8	10.15	6.6	5.7	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 030	7 KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 3, 4, 6-16
HP-I-135	UNIT 100 SERVERY	1300	0	0.40	9.0	10.40	35.24	27.42	90	100	75	63	55.5	25.79	32	26	70	88.4	15	11.2	9.8	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 038	NOTES 1, 2-4, 6-16
HP-I-139	UNIT 100	1300	0	0.40	9.0	10.40	35.24	27.42	90	100	75	63	55.5	25.79	32	26	70	88.4	15	11.2	9.8	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 038	3 KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 3, 4, 6-16
HP-I-141	UNIT 100	1300	0	0.40	9.0	10.40	35.24	27.42	90	100	75	63	55.5	25.79	32	26	70	88.4	15	11.2	9.8	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 038	1 KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 3, 4, 6-16
HP-I-145	UNIT 100	1300	0	0.40	9.0	10.40	35.24	27.42	90	100	75	63	55.5	25.79	32	26	70	88.4	15	11.2	9.8	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 038	3 KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 3, 4, 6-16
HP-I-147	UNIT 100	1300	0	0.40	9.0	10.40	35.24	27.42	90	100	75	63	55.5	25.79	32	26	70	88.4	15	11.2	9.8	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 038	NOTES 1, 3, 4, 6-16
HP-I-401	UNIT 400	1300	235	0.40	9.0	10.40	35.87	29.08	90	100	77.5	64.4	57.6	26.44	32	27	57	75.1	10.15	6.6	5.7	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 030	8 KW ELECTRIC HEAT (SEE SCHEDULE); NOTES 1, 3, 4, 6-16
HP-K-132	UNIT 100 KITCHEN	1550	0	0.40	12.0	11.70	45.22	30.61	90	100	75	63	56.7	34.47	32	26	70	90.6	15	12.10	10.50	460	3	MFR	MFR	NON-FUSED	WATERFURNACE 500 SERIES / 049	(SEE SCHEDULE); NOTES 1, 3, 4, 6-16

NOTES:
1. SINGLE SPEED COMPRESSOR
2. TWO SPEED COMPRESSOR
3. HOT GAS REHEAT
4. VARIABLE SPEED ECM BLOWER
5. VARIABLE SPEED CONSTANT TORQUE ECM BLOWER
6. INSULATED COPPER WATER COIL
7. SOUND KIT
8. COMPOSITE DRAIN PAN WITH NO SECONDARY CONNECTION
9. ALL ALUMINUM, UNCOATED AIR COIL
10. MERV 13 FILTER WITH 4-SIDED FILTER RACK
11. AURORA DDC CONTROLLER TO BE INTERFACED AND COMPATABLE WITH BACNET BMS
12. 2-WAY WATER VALVE W/ WATER FLOW REGULATOR
13. HOSE KIT WITH MEMORY STOP.
14. ROOM THERMOSTAT (REFER TO DRAWING FOR LOCATION) WITH TEMPERATURE (AND HUMIDITY WHERE HOT GAS REHEAT AVAILABLE), WITH SLIDER AND NO DIGITAL DISPLAY.
15. BI-POLAR IONIZATION
16. PROVIDE LINING FOR RETURN DUCTWORK DIRECTLY CONNECTED TO HEAT PUMPS. PROVIDE FLEXIBLE CONNECTION FOR ALL DUCTWORK CONNECTED DIRECTLY TO HEAT PUMP (SUPPLY AND RETURN).
17. PROVIDE HP-I-141 AND HP-1-145 WITH 3-WAY CONTROL VALVE.

UNIT VENTILATOR SCHEDULE - (GEOTHERMAL)

UNIT ID	AIRFLOW (CFM)	MIN. OA (CFM)	HEATING COIL MIN. TOTAL CAPACITY (MBH)	HEATING AIR EAT (°F)	HEATING AIR LAT (°F)	HEATING 23% PG FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WPD (FT HD)	COOLING COIL TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	COOLING AIR EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	COOLING 23% PG FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WPD (FT HD)	CONTROL VALVE CONFIG.	DEPTH (IN)	WIDTH (IN)	HEIGHT (IN)	MOCP	MCA	FLA	VOLTS	PHASE	DISCONNECT FURN. BY	INST. BY	FILTER TYPE	MANUFACTURER / MODEL NO.	REMARKS
VUV-A-202	1500	500	34.6	61.8	83.2	12	32	27.5	13.50	46.5	34	77	65	56.1	52.3	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-205	1500	500	34.6	61.8	83.2	12	32	27.5	13.50	46.5	34	77	65	56.1	52.3	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-208	1500	500	34.6	61.8	83.2	12	32	27.5	13.50	46.5	34	77	65	56.1	52.3	12	90	99.5	8.80	3-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-211	1500	500	34.6	61.8	83.2	12	32	27.5	13.50	46.5	34	77	65	56.1	52.3	12	90	99.5	8.80	3-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-214	1500	500	34.6	61.8	83.2	12	32	27.5	13.50	46.5	34	77	65	56.1	52.3	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-217	1500	500	34.6	61.8	83.2	12	32	27.5	13.50	46.5	34	77	65	56.1	52.3	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-303	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-304	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-305	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-306	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-307	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	3-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-308	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	3-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-411	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	3-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-412	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	3-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-413	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-414	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-415	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER
VUV-A-416	1500	545	34.7	59.9	81.3	12	32	27.5	13.50	47.3	34	77	65	56.9	53.7	12	90	99.5	8.80	2-WAY	33"	48"	90"	20	18.7	16.0	460	3	MFR	MFR	MERV 13	AIREDALE / SMG48	PROVIDE WITH 3KW AUXILIARY HEATER

NOTES:
1. COORDINATE UNIT AND PIPING ARRANGEMENT WITH FIELD CONDITIONS PRIOR TO ORDERING.
2. PROVIDE WITH FACTORY MOUNTED AND WIRED UNIT DISCONNECT SWITCH.
3. PROVIDE WITH MODINE CONTROL SYSTEMS AND INTEGRATE INTO BACNET CONTROLS SYSTEM. REFER TO CONTROL DRAWINGS.
4. PROVIDE WITH EC MOTORS.
5. PROVIDE UNIT WITH PIPING PACKAGE INCLUSIVE OF: COMINATION STRAINER W/ BALL VALVE, BLOW DOWN, UNITION & PT PORTS, CONTROL VALVE, AND COMBINATION AUTO-FLOW VALVE WITH SHUT OFF & PT PORTS. ENSURE CONTROL VALVE IS SELECTED CONTROL VALVE SHALL BE SELECTED FOR A PRESSURE DROP EQUAL TO TWO TIMES THE PRESSURE DROP OF THE ASSOCIATED HEAT TRANSFER DEVICE, BUT NOT MORE THAN 10 FT OF HEAD OR LESS THAN 2.3 FT OF HEAD.
6. PROVIDE WITH OA & RA DAMPER & ECONOMIZER WITH POWERED EXHAUST.
7. PROVIDE STUDY PACKAGE CONSTRUCTION.
8. PROVIDE HOT GAS REHEAT.
9. PROVIDE WITH OUTDOOR AIR LOUVER, ADAPTER BACK, END PANELS, AND DUCT SHROUD.
10. PROVIDE COPPER CONDENSATE DRAIN THROUGH EXTERIOR WALL, TERMINATE WITH ELBOW TOWARDS GRADE.
11. PROVIDE LIGHT GRAY COLOR.

MAKE UP AIR UNIT SCHEDULE - (GAS HEATING ONLY)

UNIT ID	SERVICE	AIRFLOW (CFM)	SUPPLY FAN ESP (IN WG)	FAN TYPE	DRIVE TYPE	BHP	HP	NATURAL GAS HEATING SECTION INPUT (MBH)	OUTPUT (MBH)	GAS PRESS. MIN.-MAX. (IN WG)	BURNER TYPE	EAT (°F)	LAT (°F)	FILTER TYPE	ELECTRICAL MOCP	MCA	VOLTS	PHASE	DISCONNECT FURN. BY	INST. BY	CURB HEIGHT (IN)	UNIT WEIGHT (LBS)	MANUFACTURER / MODEL NO.	REMARKS
MAU-100	KITCHEN	1760	1.00	MIXED FLOW	DIRECT DRIVE	0.95	1.5	155	142.6	7-14	DIRECT FIRED	-5	70	MERV 8	15	4.1	460	3	MFR	MFR	16	780	GREENHECK / DGX-P109-HA12-MF	

NOTES:
1. TEMPERATURE CONTROLS BY TCC AND COORDINATED WITH KITCHEN HOOD CONTROLLER. REFER TO CONTROLS DIAGRAM AND SOO.
2. ALL FANS SELECTED FOR RTUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN INDUCTION MOTORS ARE USED THEN THE REQUIREMENT IS TO USE THE NEXT AVAILABLE NEMA NAMEPLATE HORSEPOWER MOTOR, AND WHEN ECM'S ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION IC90.1-2013-11 ADDITIONAL INFORMATION.
3. PROVIDE SINGLE POINT POWER, FACTORY WIRED. MANUFACTURER TO PROVIDE DISCONNECT.
4. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT. ENSURE OUTDOOR AIR INTAKE IS GREATER THAN 10'-0" FROM ANY BUILDING EXHAUST.
5. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
6. ANY ITEM IN CONTRACT DOCUMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.

PUMP SCHEDULE

UNIT ID	SYSTEM SERVED	TYPE	FLOW (GPM)	HEAD (FT)	MIN % EFF	ELECTRICAL BHP	HP	VOLTS	PHASE	DISCONNECT FURN. BY	INST. BY	TYPE	STARTER TYPE	SIZE	FURN. BY	INST. BY	MANUFACTURER / MODEL NO.	REMARKS
GHXP-101	UNIT 100 GEOTHERMAL PRIMARY LOOP	END SUCTION BASE MOUNTED	285	71	71	7.1	10	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-1510 2.5BB	
GHXP-102	UNIT 100 GEOTHERMAL PRIMARY LOOP	END SUCTION BASE MOUNTED	285	71	71	7.1	10	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-1510 2.5BB	
GHXP-103	UNIT 100 GEOTHERMAL SECONDARY LOOP	END SUCTION BASE MOUNTED	290	90	76.5	9	15	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-1510 2.5AC	
GHXP-104	UNIT 100 GEOTHERMAL SECONDARY LOOP	END SUCTION BASE MOUNTED	290	90	76.5	9	15	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-1510 2.5AC	
GHXP-201	UNIT 200 GEOTHERMAL PRIMARY LOOP	INLINE	90	78	52	2.38	3	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	
GHXP-202	UNIT 200 GEOTHERMAL PRIMARY LOOP	INLINE	90	78	25	2.38	3	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	
GHXP-203	UNIT 200 GEOTHERMAL SECONDARY LOOP	INLINE	76	63	50.4	2.4	5	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	
GHXP-204	UNIT 200 GEOTHERMAL SECONDARY LOOP	INLINE	76	63	50.4	2.4	5	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	
GHXP-301	UNIT 300 GEOTHERMAL PRIMARY LOOP	INLINE	85	40	60.7	1.44	3	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-60	
GHXP-302	UNIT 300 GEOTHERMAL PRIMARY LOOP	INLINE	85	40	60.7	1.44	3	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-60	
GHXP-303	UNIT 300 GEOTHERMAL SECONDARY LOOP	INLINE	85	63	53.7	2.55	5	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	
GHXP-304	UNIT 300 GEOTHERMAL SECONDARY LOOP	INLINE	85	63	53.7	2.55	5	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	
GHXP-401	UNIT 400 GEOTHERMAL PRIMARY LOOP	INLINE	85	40	60.7	1.44	3	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-60	
GHXP-402	UNIT 400 GEOTHERMAL PRIMARY LOOP	INLINE	85	40	60.7	1.44	3	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-60	
GHXP-403	UNIT 400 GEOTHERMAL SECONDARY LOOP	INLINE	85	63	53.7	2.55	5	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	
GHXP-404	UNIT 400 GEOTHERMAL SECONDARY LOOP	INLINE	85	63	53.7	2.55	5	460	3	MFR	MC	VFD	VFD	-	MFR	MC	BELL & GOSSETT / E-80	

NOTES:
1. PERFORMANCE IS BASED ON 23% PROPYLENE GLYCOL UNLESS NOTED OTHERWISE.
2. PUMPS SHALL BE NON-OVERLOADING.
3. WHEN VFD CONTROL IS SPECIFIED, PROVIDE WITH NEMA PREMIUM EFFICIENT MOTOR WITH AEGIS SHAFT GROUNDING RINGS.
4. BASE MOUNTED PUMPS TO BE MOUNTED ON 4" HOUSEKEEPING PAD.

EXPANSION TANK SCHEDULE

UNIT ID	SYSTEM SERVED	TYPE	MIN PSIG	MAX PSIG	MIN (°F)	MAX (°F)	SYSTEM VOLUME (GAL)	TANK VOLUME (GAL)	DIA (IN)	HEIGHT (IN)	MANUFACTURER / MODEL NO.	REMARKS
ET-100	UNIT 100 HEAT PUMP LOOP	DIAPHRAGM	10.00	50.00	32	90	4500	115	24"	66"	BELL & GOSSETT / D200	
ET-200	UNIT 200 HEAT PUMP LOOP	DIAPHRAGM	10.00	50.00	32	90	1225	60	20"	49"	BELL & GOSSETT / D100	
ET-300	UNIT 300 HEAT PUMP LOOP	DIAPHRAGM	10.00	50.00	32	90	1225	60	20"	49"	BELL & GOSSETT / D100	
ET-400	UNIT 400 HEAT PUMP LOOP	DIAPHRAGM	10.00	50.00	32	90	1250	60	20"	49"	BELL & GOSSETT / D100	

NOTES:
1. PERFORMANCE IS BASED ON 23.5% PROPYLENE GLYCOL UNLESS NOTED OTHERWISE.
2. MOUNT ON 4" HOUSEKEEPING PAD.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 01	03.01.2024
Addendum 03	03.15.2024

LSD NO. SB-0059
JOB NO. 2616.01A
SHEET TITLE
MECHANICAL SCHEDULES
SHEET NO.
M6.0

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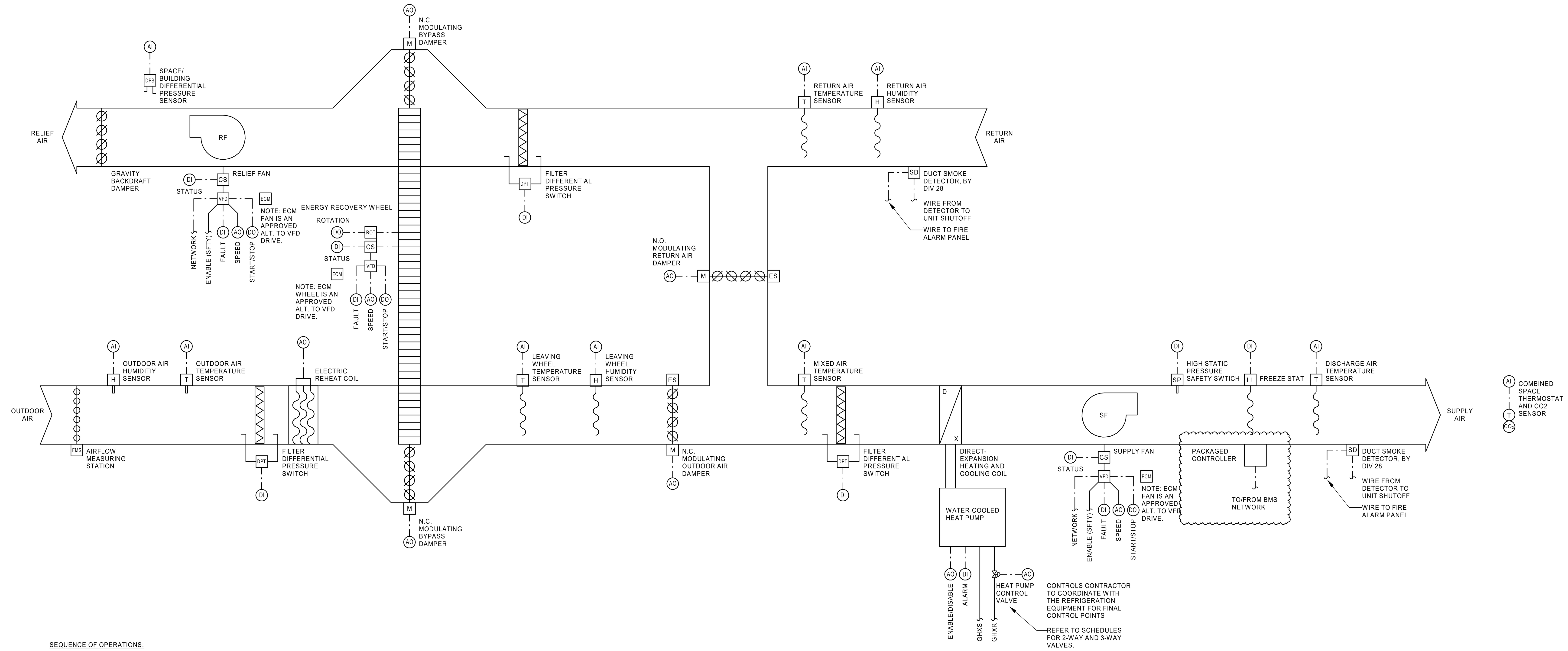

SEQUENCE OF OPERATIONS:

GENERAL

THE SINGLE-ZONE VAV AIR-HANDLING UNIT SEQUENCES HEREIN DEPICT GENERAL INTENT OF OPERATION AND ARE TO BE PERFORMANCE BASED. FOR COMPLETE PROCEDURAL FUNCTIONALITY, THE UNITS SHALL FOLLOW THE GUIDELINES IN ASHRAE 90.1-2013 CHAPTER 6, AHRAE 62.1-2016, AND ASHRAE GUIDELINE 36 CHAPTERS 5.1-5.4, 5.15, AND 5.18 WITHOUT EXPLICIT STATEMENT. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONAL RESULTS USING DIFFERENT UNDERLYING DETAILED LOGIC WILL BE ACCEPTABLE.

UNIT SHALL BE PROVIDED WITH MANUFACTURER CONTROLS. THE TEMERPATURE CONTROLS CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL CONTROL POINTS ARE PROVIDED AND THE SEQUENCE OF OPERATIONS IS MET AS INDICATED ON THIS SHEET. IF UNIT IS NOT SUPPLIED WITH CERTAIN POINTS/ACCESSORIES REQUIRED TO MEET SEQUENCE, IT IS THE RESPONSIBILITY OF THE TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE NECESSARY ITEMS.

AT MINIMUM, PROVIDE A GRAPHICAL REPRESENTATION OF THE DIAGRAM AND ASSOCIATED POINTS INDICATED ABOVE. ALL ADDITIONAL POINTS NOT STRICTLY REQUIRING GRAPHICAL REPRESENTATION, SHALL STILL BE READ/WRITE ACCESSIBLE AT THE OWS/BAS. ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, ETC. LISTED HEREIN THE SEQUENCE SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR. VALUES FOR ALL POINTS, INCLUDING HARDWARE POINTS, SHALL BE OVERRIDABLE. EXCEPTIONS CAN BE MADE REGARDING MACHINE OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER VARIABLE FREQUENCY DRIVES OR ELECTRONIC COMMUTATED MOTOR; SEQUENCE MAY USED INTERCHANGEABLE.

THE ROOFTOP UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES AS DETERMINED BY THE ZONE GROUPS ASSOCIATED WITH THE UNIT: (1) OCCUPIED, (2) COOLDOWN, (3) UNOCCUPIED COOLING, (4) WARMUP, (5) UNOCCUPIED HEATING, AND (6) UNOCCUPIED MODE.

MINIMUM DISCHRAGE AIR TEMPERATURE SETPOINT SHALL BE 55ºF (ADJ.) **MAXIMUM DISCHARGE AIR TEMPERATURE** SHALL BE 95ºF (ADJ.)

UNOCCUPIED CONTROL:

DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. THE SUPPLY FAN SHALL BE OFF. THE TEMPERATURE CONTROL LOOP SHALL BE SET TO DEADBAND.

DURING UNOCCUPIED MODE, THE AHU CONTROLLER OR BAS SHALL CONTINUOUSLY POLL THE ZONE TEMPERATURE SENSOR. IF THE ZONE TEMPERATURE SENSOR FALLS OUTSIDE OF THE UNOCCUPIED SETPOINT RANGES, THE UNIT SHALL BE ENABLED AND RUN IN UNOCCUPIED HEATING OR UNOCCUPIED COOLING MODES UNTILL THE UNOCCUPIED SETPOINTS ARE 1ºF ABOVE OR BELOW UNOCCUPIED SETPOINT RESPECTIVELY.

WHEN UNOCCUPIED COOLING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN UNOCCUPIED HEATING MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO A **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN.

FACILITY COOLDOWN / WARMUP CONTROL:

THE FACILITY COOLDOWN / WARMUP SEQUENCES SHALL USE A CALCULATED OPTIMIZED START ROUTINE PRIOR TO SCHEDULED OCCUPIED MODE. THE MORNING WARM-UP / COOL-DOWN ROUTINE SHALL BE INITIATED BY THE BAS. DEFAULT FACILITY COOLDOWN / WARMUP START TIME SHALL BE SIXTY MINUTES.

DURING FACILITY COOLDOWN / WARMUP MODE, THE OUTDOOR AIR DAMPER SHALL BE FULLY CLOSED. THE RETURN AIR DAMPER SHALL BE FULLY OPEN. EXCEPTION: IF ECONOMIZER MODE WOULD RESULT IN AN OVERALL MECHANICAL ENERGY SAVINGS, THEN OUTDOOR AIR DAMPER SHALL BE OPENED.

WHEN FACILITY COOLDOWN MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN **MINIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR.

WHEN FACILITY WARMUP MODE IS INITIATED BY THE AHU CONTROLLER OR BAS, THE SUPPLY AIR TEMPERATURE CONTROL LOOP SHALL BE ENABLED AND OPERATE UP TO THE **MAXIMUM DISCHARGE AIR TEMPERATURE** AS MEASURED AT THE DISCHARGE AIR TEMPERATURE SENSOR. NOTE: ZONE REHEAT SHALL BE THE SECOND STAGE OF HEATING (AS REQUIRED).

FACILITY COOLDOWN/ WARMUP MODES SHALL SWTICH TO OCCUPIED MODE OPPERATION ONCE THE SPACE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR OCCUPIED TIME.

OUTDOOR AIR CONTROL:

WHEN IN OCCUPIED MODE, THE AHU CONTROLLER OR BAS SHALL INCLUDE MEANS TO AUTOMATICALLY REDUCE OUTDOOR AIR INTAKE AIRFLOW BELOW DESIGN RATES IN RESPONSE TO CHANGES IN SPACE CO2 CONCENTRATION LEVELS.

UPON RISING CO2 CONCENTRATION LEVELS, THE OUTDOOR AIR DAMPER ACTUATOR SHALL MODULATE OPEN. THE AHU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MAXIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE) UNLESS IN ECONOMIZER MODE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS, THE OUTDOOR AIR DAMPER ACTUATOR SHALL MODULATE CLOSED. DAMPER POSITION LIMITED TO NO LESS THAN THE BUILDING COMPONENT OUTDOOR AIRFLOW.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN AIRFLOW MEASURING DEVICE.

ECONOMIZER (DRY-BULB):

DURING UNOCCUPIED MODE, THE BYPASS DAMPER(S) SHALL BE CLOSED.

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE BYPASS DAMPER TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING. THE WHEEL SHALL STOP.

IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE BYPASS DAMPER SHALL CLOSE.

IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE BYPASS DAMPER(S) SHALL CLOSE.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. AT CONDITION, THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

IF UNIT HAS PACKAGED CONTROLS, MANUFACTURER SEQUENCES SHALL GOVERN.

ENTHALPY WHEEL DEFROST CONTROL:

THE UNITS CONTROLLER SHALL PROVIDE MEANS TO PROTECT WHEEL FROM FROSTING. THE UNIT SHALL USE AN ELECTRIC PREHEAT COIL TO PRETREAT THE OUTDOOR AIR PRIOR TO ENTERING THE WHEEL WHENEVER FROST CONDITIONS ARE POSSIBLE. CONTROLS CONTRACTOR SHALL CONSULT MANUFACTURERS LITTERATURE.

FIRE ALARM MODE CONTROL:

THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL VIA THE FIRE ALARM CONTROL MODULE. NEXT, THE OUTDOOR AIR DAMPER SHALL CLOSE AND THE UNIT SHALL BE DISABLED.

SYSTEM SHALL MANUALLY RESET FOLLOWING AN ALARM EVENT.

RELIEF FAN CONTROL:

PROVIDE OFFSET TO MAINTAIN BUILDING POSITIVE BUILDING PRESSURE (0.03 - 0.05 IN W.C.).

ENABLE, DISABLE, AND MODULATE EXHAUST FAN BASED ON BUILDING PRESSURE CONTROL. REFER TO ASHRAE G36 5.16.9.

SETPOINTS:

UNOCCUPIED SPACE COOLING SETPOINT SHALL BE 80ºF (ADJ.)
UNOCCUPIED SPACE HEATING SETPOINT SHALL BE 65ºF (ADJ.)
OCCUPIED SPACE COOLING SETPOINT SHALL BE 75ºF (ADJ.) 60% RH* (ADJ.)
OCCUPIED SPACE HEATING SETPOINT SHALL BE 70ºF (ADJ.)

*RELATIVE HUMIDITY WILL NOT BE DIRECTLY CONTROLLED. THIS IS A CONDITION THAT CAN BE EXPECTED UNDER NORMAL OPERATING CONDITIONS.

SUPPLY FAN AND SUPPLY AIR TEMPERATURE CONTROL:

SUPPLY FAN SPEED AND TEMPERATURE SEQUENCE SHALL IMPLEMENT ASHRAE G36 SECTION 5.18.4 AND GENERALLY FOLLOW THE LOGIC BELOW:

THE SUPPLY FAN SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN, THE OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION INITIALLY.

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

AS SPACE TEMPERATURE INCREASES, THE HEAT PUMP CONTROL VALVE SHALL OPEN FULLY. THE UNIT SHALL THEN MODULATE ECONOMIZER DAMPERS (WHEN ECONOMIZER MODE IS ENABLED) AND/OR SHALL MODULATE THE HEAT PUMP SYSTEM TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE COOLING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE **MINIMUM DISCHARGE AIR TEMPERATURE**. AT WHICH POINT, BOTH THE MECHANICAL COOLING SYSTEM AND THE SUPPLY FAN WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND **MINIMUM DISCHARGE AIR TEMPERATURE**.

AS SPACE TEMPERATURE BEGINS TO DECREASES, THE PROCESS SHALL WORK IN REVERSE ORDER.

AS SPACE TEMPERATURE DECREASES, THE HEAT PUMP CONTROL VALVE SHALL OPEN FULLY. THE UNIT SHALL THEN MODULATE THE HEAT PUMP SYSTEM TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE **MAXIMUM DISCHARGE AIR TEMPERATURE**. AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND **MAXIMUM DISCHARGE AIR TEMPERATURE**.

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

HIGH STATIC PRESSURE SAFETY SWTICH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE SET TO TRIP AT 4" W.G. AND SHALL BE RESET MANUALLY AT THE UNIT.

FREEZE STAT: WHEN A FREEZE CONDITION OCCURS, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. FREEZE STAT SHALL BE SET TO TRIP AT 40°F AND SHALL BE RESET MANUALLY AT THE UNIT.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWTICH: WHEN DIFFERENTIAL PRESSURE ACCROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

OUTDOOR AIR DAMPER POSITION: THE OUTDOOR AIR DAMPER SHALL FAIL CLOSED. IF THE OUTDOOR AIR DAMPER FAILS TO OPEN/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

RETURN AIR DAMPER POSITION: THE RETURN AIR DAMPER SHALL FAIL OPEN. IF THE RETURN AIR DAMPER FAILS TO CLOSE/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

SINGLE-ZONE VAV RTU W/ WSHP, ERW CONTROLS DIAGRAM
SCALE: 1/8" = 1'-0"

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 03	03.15.2024

LSD NO. SB-0059
JOB NO. 2616.01A

SHEET TITLE
CONTROL DIAGRAMS

SHEET NO.
M8.2

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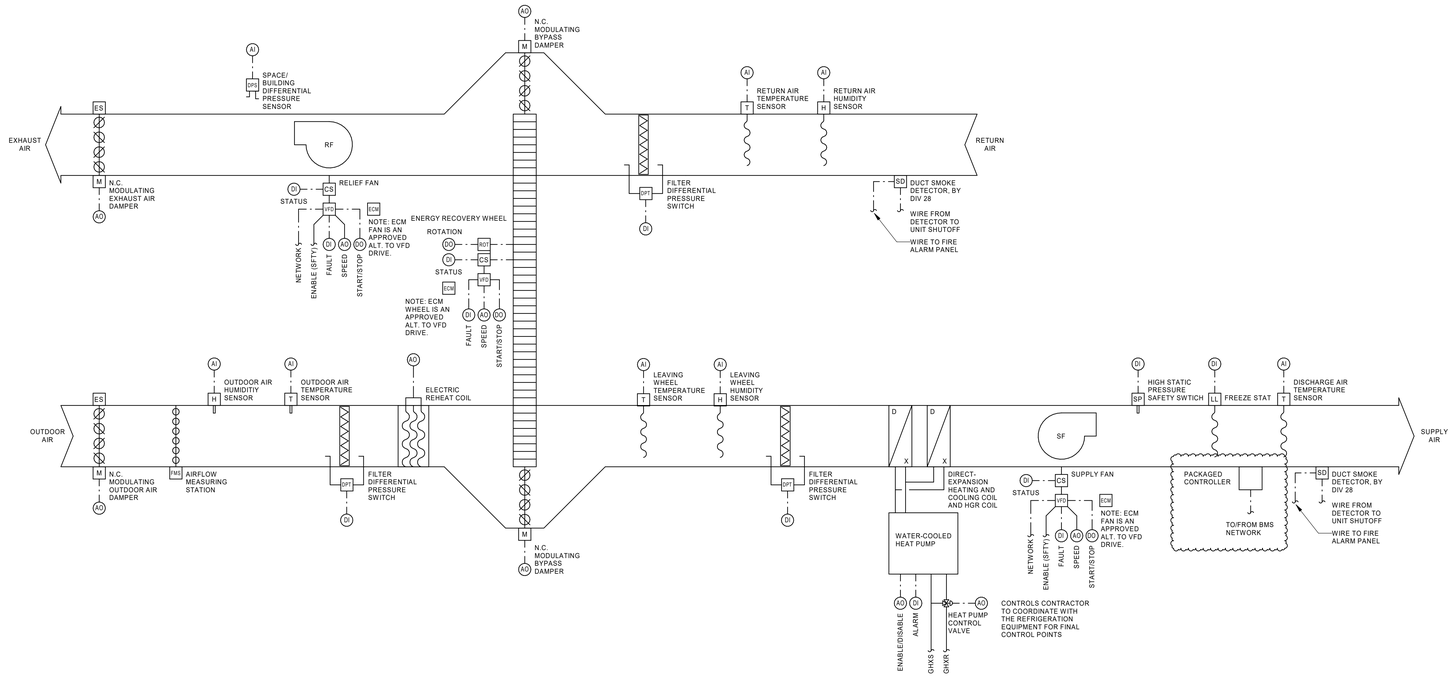

SEQUENCE OF OPERATIONS:

GENERAL

THE DEDICATED OUTDOOR AIR UNIT (DOAS) SEQUENCES HEREIN DEPICT GENERAL INTENT OF OPERATION AND ARE TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONAL RESULTS USING DIFFERENT UNDERLYING DETAILED LOGIC WILL BE ACCEPTABLE.

UNIT SHALL BE PROVIDED WITH MANUFACTURER CONTROLS. THE TEMERPATURE CONTROLS CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL CONTROL POINTS ARE PROVIDED AND THE SEQUENCE OF OPERATIONS IS MET AS INDICATED ON THIS SHEET. IF UNIT IS NOT SUPPLIED WITH CERTAIN POINTS/ACCESSORIES REQUIRED TO MEET SEQUENCE, IT IS THE RESPONSIBILITY OF THE TEMPERATURE CONTROLS CONTRACTOR TO PROVIDE NECESSARY ITEMS.

AT MINIMUM, PROVIDE A GRAPHICAL REPRESENTATION OF THE DIAGRAM AND ASSOCIATED POINTS INDICATED ABOVE. ALL ADDITIONAL POINTS NOT STRICTLY REQUIRING GRAPHICAL REPRESENTATION, SHALL STILL BE READ/WRITE ACCESSIBLE AT THE OWS/BAS. ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, ETC. LISTED HEREIN THE SEQUENCE SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR. VALUES FOR ALL POINTS, INCLUDING HARDWARE POINTS, SHALL BE OVERRIDABLE. EXCEPTIONS CAN BE MADE REGARDING MACHINE OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER VARIABLE FREQUENCY DRIVES OR ELECTRONIC COMMUTATED MOTOR; SEQUENCE MAY USED INTERCHANGEABLE.

DISCHRAGE AIR TEMPERATURE SETPOINT SHALL BE 70°F (ADJ.) IN WINTER AND 75°F (ADJ.) IN SUMMER.

UNOCCUPIED CONTROL:

DURING UNOCCUPIED MODE, THE OUTDOOR AIR AND EXHAUST AIR DAMPER SHALL BE FULLY CLOSED. THE SUPPLY FAN SHALL BE OFF. THE TEMPERATURE CONTROL LOOP SHALL BE SET TO DEADBAND.

OUTDOOR AIR CONTROL:

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN AIRFLOW MEASURING DEVICE.

ECONOMIZER BYPASS DAMPERS (DRY-BULB):

DURING UNOCCUPIED MODE, THE BYPASS DAMPER(S) SHALL BE CLOSED.

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE BYPASS DAMPER TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING. THE WHEEL SHALL STOP.

IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE BYPASS DAMPER SHALL CLOSE.

IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE BYPASS DAMPER(S) SHALL CLOSE.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. AT CONDITION, THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

IF UNIT HAS PACKAGED CONTROLS, MANUFACTURER SEQUENCES SHALL GOVERN.

ENTHALPY WHEEL DEFROST CONTROL:

THE UNITS CONTROLLER SHALL PROVIDE MEANS TO PROTECT WHEEL FROM FROSTING. THE UNIT SHALL USE AN ELECTRIC PREHEAT COIL TO PRETREAT THE OUTDOOR AIR PRIOR TO ENTERING THE WHEEL WHENEVER FROST CONDITIONS ARE POSSIBLE. CONTROLS CONTRACTOR SHALL CONSULT MANUFACTURERS LITTERATURE.

FIRE ALARM MODE CONTROL:

THE SUPPLY FAN SHALL SHUT DOWN. WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL VIA THE FIRE ALARM CONTROL MODULE. NEXT, THE OUTDOOR AIR DAMPER SHALL CLOSE AND THE UNIT SHALL BE DISABLED.

SYSTEM SHALL MANUALLY RESET FOLLOWING AN ALARM EVENT.

SUPPLY FAN AND SUPPLY AIR TEMPERATURE CONTROL:

THE SUPPLY FAN SHALL RUN WHEN THE SYSTEM IS OPERATING IN OCCUPIED MODE.

PRIOR TO START AND OPERATION OF THE SUPPLY FAN, THE OUTDOOR AIR DAMPER SHALL OPEN.

THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE DOAS CONTROLLER OR BAS. THE SUPPLY FAN SHALL RUN AT CONSTANT VOLUME.

THE DOAS SHALL CONTROL TO DISCHARGE AIR TEMPERATURE.

WHEN THERE IS A CALL FOR MECHANICAL HEATING OR COOLING, THE HEAT PUMP CONTROL VALVE SHALL OPEN FULLY. THE UNIT SHALL THEN MODULATE THE HEAT PUMP SYSTEM, THE ENERGY RECOVERY WHEEL, AND/OR THE BYPASS DAMPERS TO MAINTAIN **DISCHARGE AIR TEMPERATURE** SETPOINT IN THE MOST ENERGY EFFICENT MANNER.

RELIEF FAN CONTROL:

PROVIDE OFFSET TO MAINTAIN BUILDING POSITIVE BUILDING PRESSURE (0.03 - 0.05 IN W.C.).

PRIOR TO START AND OPERATION OF THE EXHAUST FAN, THE OUTDOOR AIR DAMPER SHALL OPEN.

ENABLE, DISABLE, AND MODULATE EXHAUST FAN BASED ON BUILDING PRESSURE CONTROL.

DEHUMIDIFICATION CONTROL:

DEHUMIDICATION MODE SHALL BE ENABLED DURING NORMAL DOAS OPPERATION WHEN THE SUPPLY FAN IS PROVEN ON, THE RETURN AIR HUMIDITIY RAISES ABOVE 60% RH, AND THE OUTDOOR TEMPERATURE IS ABOVE 55°F.

WHEN ENABLED, THE DOAS CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE HEAT PUMP COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTIAN THE DISCHRAGE AIR TEMPERATURE SETPOINT. ONCE THE RETURN AIR HUMIDITY LOWERS TO 50% RH DEHUMIDIFICATION MODE SHALL BE DISABLED.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

HIGH STATIC PRESSURE SAFETY SWTICH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE SET TO TRIP AT 4" W.G. AND SHALL BE RESET MANUALLY AT THE UNIT.

FREEZE STAT: WHEN A FREEZE CONDITION OCCURS, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. FREEZE STAT SHALL BE SET TO TRIP AT 40°F AND SHALL BE RESET MANUALLY AT THE UNIT.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWTICH: WHEN DIFFERENTIAL PRESSURE ACCROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

OUTDOOR AIR DAMPER POSITION: THE OUTDOOR AIR DAMPER SHALL FAIL CLOSED. IF THE OUTDOOR AIR DAMPER FAILS TO OPEN/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

EXHAUST AIR DAMPER POSITION: THE RETURN AIR DAMPER SHALL FAIL OPEN. IF THE RETURN AIR DAMPER FAILS TO CLOSE/MODULATE, AS INDICATED BY THE END SWITCH, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

DEDICATED OUTDOOR AIR UNIT W/ WSHP, ERW CONTROLS DIAGRAM

NO SCALE

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Willow School

Lansing School District

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SHEET TITLE
CONTROL DIAGRAMS

SHEET NO.
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HVAC KEYNOTES

H1 ROUTE ØØ EA DUCT UP THROUGH ROOF IN WEATHER TIGHT ENCLOSURE. TERMINATE WITH GOOSE NECK MINIMUM 18" ABOVE ROOF. PROVIDE WITH BIRD SCREEN.

H2 FOR SUPPLY AND EXHAUST DUCTWORK SERVING SHOWER ROOMS, PROVIDE ALUMINUM SHEET METAL SOLDERED WATER TIGHT AND PITCHED TO LAST REGISTER. PROVIDED PITCH DRAIN IN DUCTWORK AT LOW POINT.

H3 GRILLES MOUNTED AT 22". REFER TO DETAIL.

H4 GRILLES MOUNTED AT 45°. REFER TO DETAIL.

H5 ROUTE 8"Ø OA DUCT UP THROUGH ROOF IN WEATHER TIGHT ENCLOSURE. TERMINATE WITH GOOSE NECK MINIMUM 18" ABOVE ROOF. PROVIDE WITH BIRD SCREEN.

H6 KITCHEN VENTILATION HOOD BY FSEC. COORDINATE DUCTWORK SIZES AND CONNECTION WITH HOOD MFR.

H7 CONNECT DISHWASHER EXHAUST DUCTWORK TO COLLAR ON DISHWASHER (BY FSEC), PROVIDE 18 GA. STAINLESS STEEL WELDED DUCTWORK. PROVIDE STAINLESS STEEL TRIM COLLAR AT CEILING.

H8 PITCH DUCTWORK TO DISHWASHER CONNECTION. PROVIDE PITCHED DRAIN IN DUCTWORK AT LOW POINT.

H9 90X24" RA ELBOW DOWN ALONG WALL. FINISH WITH BELLMOUTH OPENING AND BIRD SCREEN APPROX 15'-0" A.F.F.

H10 LINE FIRST 10 FT OF SUPPLY AIR DUCTWORK OUT OF THE VUV. REFER TO SPECS FOR FURTHER INFO.

H11 RACK AND ROUTE REFRIGERANT PIPING AND ELECTRICAL CONDUIT FROM CONDENSING UNIT ON ROOF TO ASSOCIATED FAN COIL UNIT. MOUNT EQUIPMENT ON RAILS OR CURB, 14" MIN. COORDINATE WITH ARCHITECTURAL/ROOFING TRADES. ROUTE REFRIGERANT PIPING THROUGH ROOF IN WEATHER TIGHT ENCLOSURE.

H12 PROVIDE GALVANEALED DUCTWORK AND PAINT TO MATCH ARCHITECTURAL FINISH. COORDINATE COLOR WITH ARCHITECTURE.

H13 4" DRYER EXHAUST. PROVIDE DRYER TERMINATION CAP IN SIDE WALL OF ROOF CURB. TERMINATE IN ROOF CURB SIMILAR TO PIPE CURB DETAIL, REFER TO DETAIL SHEETS. FOLLOW ALL MANUFACTURER GUIDELINES FOR EXHAUST ROUTING AND TERMINATION.

H14 8ms controller. Coordinate location with controls contractor and electrical contractor. Controls programming by mechanical contractor.

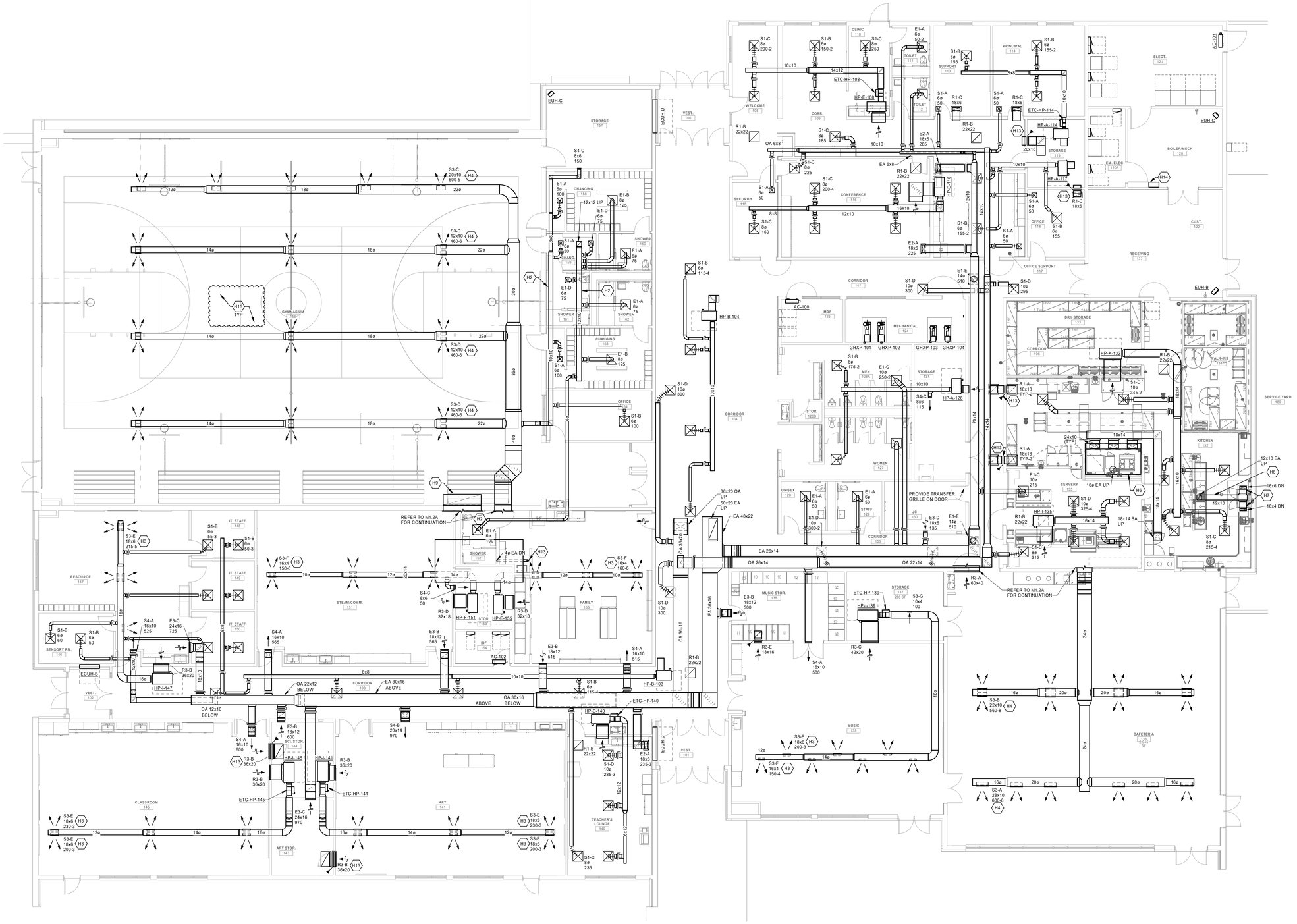
H15 ROUTE DUCTWORK WITHIN TRUSS SPACE. COORDINATE WITH STRUCTURAL TRADES.

HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE HVAC SYSTEMS COMPLETE PER SPECIFICATION, SMACNA STANDARDS, AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITERED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR STRUCTURAL CONDITIONS OR OTHER CONDITIONS.
2. CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER TRADES. ALL DUCTWORK IS TO BE ROUTED AS HIGH AS POSSIBLE. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3. DUCTWORK/PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK/PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. DUCTWORK/PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS ETC. WITH ARCHITECTURAL TRADES. SEAL ALL PIPING AND DUCT PENETRATIONS.
7. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.

HVAC GENERAL NOTES

8. COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO BALANCING DAMPERS, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
9. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE WHERE NO DUCT SIZE IS INDICATED ON PLAN.
10. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0".
11. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DIAGRAMS AND DETAILS.
12. PAINT ALL VISIBLE INTERIOR SURFACES OF EXHAUST/RETURN GRILLES, REGISTERS AND VISIBLE ASSOCIATED DUCTWORK FLAT BLACK.
13. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
14. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR DAMPERS, VALVES, AND CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
15. DUCTWORK TO AND FROM VAV BOXES/TERMINAL UNITS SHALL BE EQUAL TO THE BOX CONNECTIONS SIZES UNLESS INDICATED OTHERWISE.
16. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
17. ALL BRANCH PIPING TO TERMINAL UNITS TO BE 3/4" UNLESS OTHERWISE NOTED.
18. AT EACH CONNECTION OF GAS SUPPLY TO EQUIPMENT PROVIDE A UNION, SHUT-OFF VALVE, TEE WITH SEDIMENT TRAP & PRESSURE TEST PLUG, REGULATOR AND UNION. FOR MEDIUM PRESSURE REGULATORS, AN ADDITIONAL TEE WITH PRESSURE TEST PLUG SHALL BE INSTALLED NOT LESS THAN 10 PIPE DIAMETERS DOWNSTREAM. SEDIMENT TRAPS SHALL BE INSTALLED SUCH THAT THERE IS ROOM BELOW TO REMOVE THE CAP/PLUG AND CLEAN THE TRAP. WEATHERPROOF PAINT ALL EXTERIOR GAS PIPING.
19. AT EACH CONNECTION OF GAS SUPPLY TO EQUIPMENT, PROVIDE A PIPE UNION, GAS SHUT-OFF VALVE, TEE AND 6" LONG DIRT LEG WITH CAP. WEATHERPROOF PAINT ALL GAS PIPING.
20. IN AREAS WHERE PIPING IS EXPOSED AND VISIBLE TO OCCUPANTS, PLACE PIPING LABEL AND FLOW ARROWS AT BOTTOM OF PIPING.



MECHANICAL HVAC PLAN - UNIT 100A

SCALE: 1/8" = 1'-0"

KINGSCOTT
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Willow School

Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 03	03.15.2024

100A | 100B | 200 | 300 | 400

KEY PLAN

LSD NO. SB-0059
JOB NO. 2616.01A

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SHEET TITLE
MECHANICAL HVAC PLAN - UNIT 100A

SHEET NO.
MH1.1A

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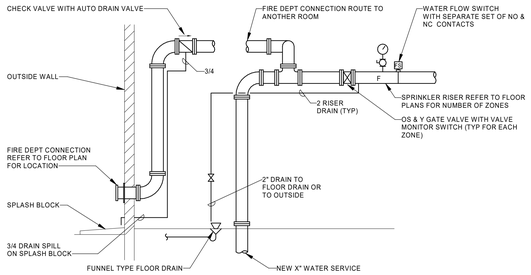
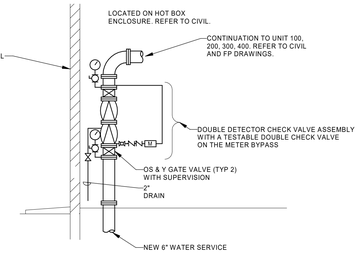
FIRE PROTECTION HYDRAULIC DESIGN CRITERIA

OCCUPANCY	HAZARD CLASSIFICATION	REMOTE AREA (SQUARE FEET)	DENSITY (GPM PER SQ. FT.)	REMARKS
CLASSROOMS, PUBLIC SPACES, LOBBIES, CORRIDORS, OFFICES, LOUNGES, MEETING ROOMS, GUEST ROOMS, ETC.., CEILING SPACES WITH COMBUSTIBLE MATERIALS.	LIGHT HAZARD	1500 (OR 5 HEADS MINIMUM)	0.10	USE QUICK RESPONSE SPRINKLERS
MECHANICAL ROOMS, ELECTRICAL ROOMS, EQUIPMENT ROOMS, KITCHENS, FOOD SERVICE AREAS, MAINTENANCE ROOMS, STORAGE ROOMS	ORDINARY HAZARD GROUP 1	1500 (OR 5 HEADS MINIMUM)	0.15	USE QUICK RESPONSE SPRINKLERS

NOTES:
1. DESIGN AND DESIGN CRITERIA SHALL BE PER NFPA.
2. MAXIMUM AREA PER HEAD CAN BE 400 SF, WHERE EXTENDED COVERAGE HEADS ARE ALLOWED AND UTILIZED.



VERTICAL AUTOMATIC SPRINKLER RISER DIAGRAM
NO SCALE



VERTICAL DOUBLE DETECTOR CHECK SPRINKLER RISER DIAGRAM
NO SCALE

FIRE PROTECTION GENERAL NOTES

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2. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. SPRINKLER PIPING SHALL NOT BE LOCATED BELOW MECHANICAL EQUIPMENT.
3. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
4. FIRE PROTECTION TRADES SHALL SUBMIT PLANS, FLOW AND PRESSURE TEST AND CALCULATIONS TO THE LOCAL FIRE MARSHAL AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RESUBMIT PLANS AND CALCULATIONS FOR RECORD TO THE ARCHITECT AS WELL AS THE FIRE MARSHAL.
5. CONTRACTOR SHALL PROVIDE ALL NECESSARY TESTS AND PAY FOR ALL FEES, PERMITS, INSPECTIONS, AND LICENSES, AS REQUIRED BY THE LOCAL AUTHORITY.

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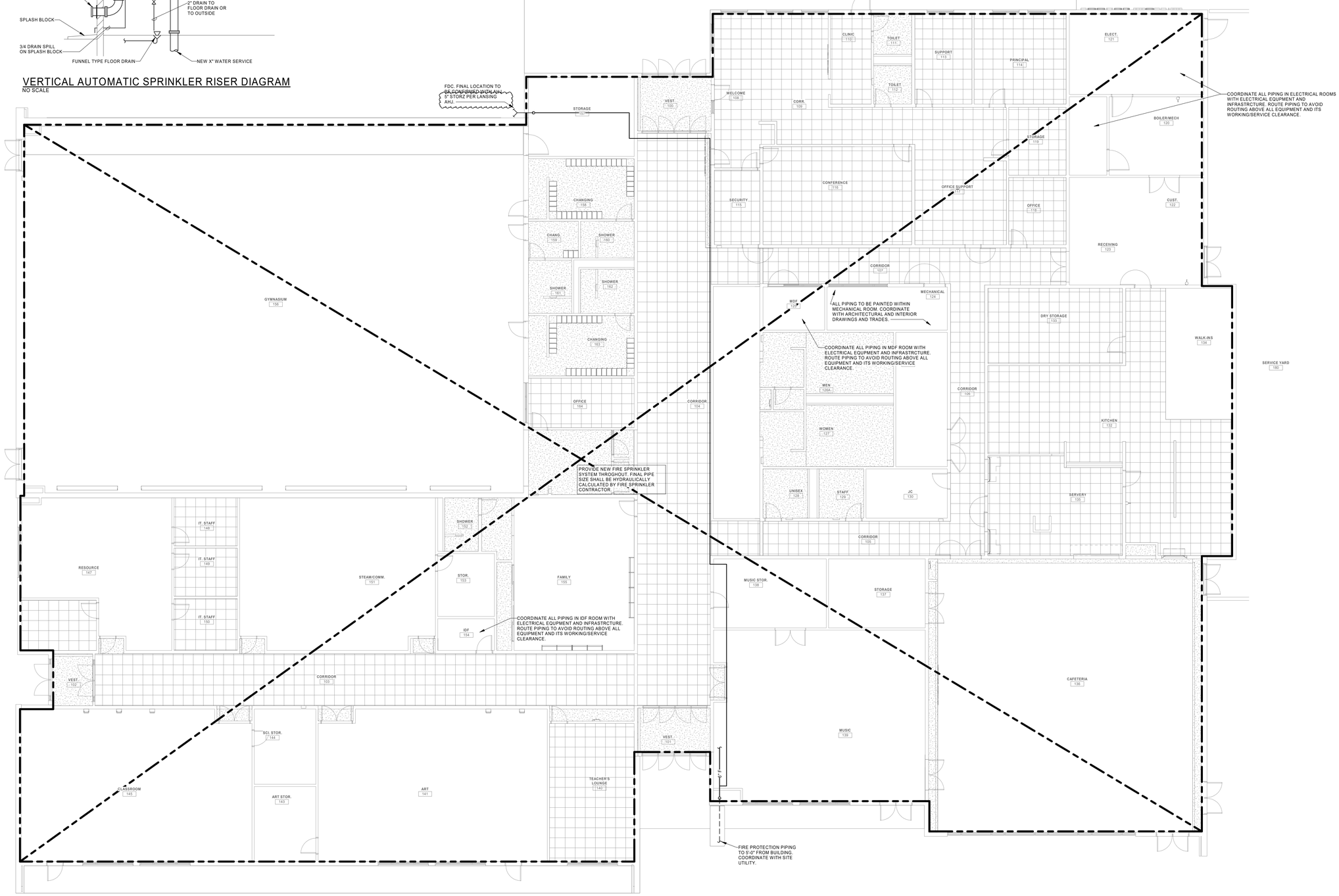

FIRE PROTECTION PLAN - UNIT 100A
SCALE: 1/8" = 1'-0"

Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANCES	DATE
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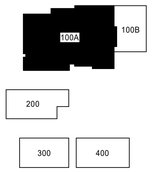

KEY PLAN

ISD NO. SB-0059
JOB NO. 2616.01A

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SHEET TITLE
FIRE PROTECTION PLAN - UNIT 100A

SHEET NO.
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FIRE PROTECTION GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL INTENT OF THE WORK. PROVIDE/REWORK FIRE PROTECTION SYSTEMS COMPLETE, PER APPLICABLE CODES, NFPA, OWNERS INSURER'S REQUIREMENTS AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION INCLUDING ALL PIPING, OFFSETS, FITTINGS, DRAINS, VALVES, SPRINKLER HEADS, ETC. AS REQUIRED FOR A COMPLETE OPERABLE SYSTEM.
2. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. SPRINKLER PIPING SHALL NOT BE LOCATED BELOW MECHANICAL EQUIPMENT.
3. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
4. FIRE PROTECTION TRADES SHALL SUBMIT PLANS, FLOW AND PRESSURE TEST AND CALCULATIONS TO THE LOCAL FIRE MARSHAL AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RESUBMIT PLANS AND CALCULATIONS FOR RECORD TO THE ARCHITECT AS WELL AS THE FIRE MARSHAL.
5. CONTRACTOR SHALL PROVIDE ALL NECESSARY TESTS AND PAY FOR ALL FEES, PERMITS, INSPECTIONS, AND LICENSES, AS REQUIRED BY THE LOCAL AUTHORITY.

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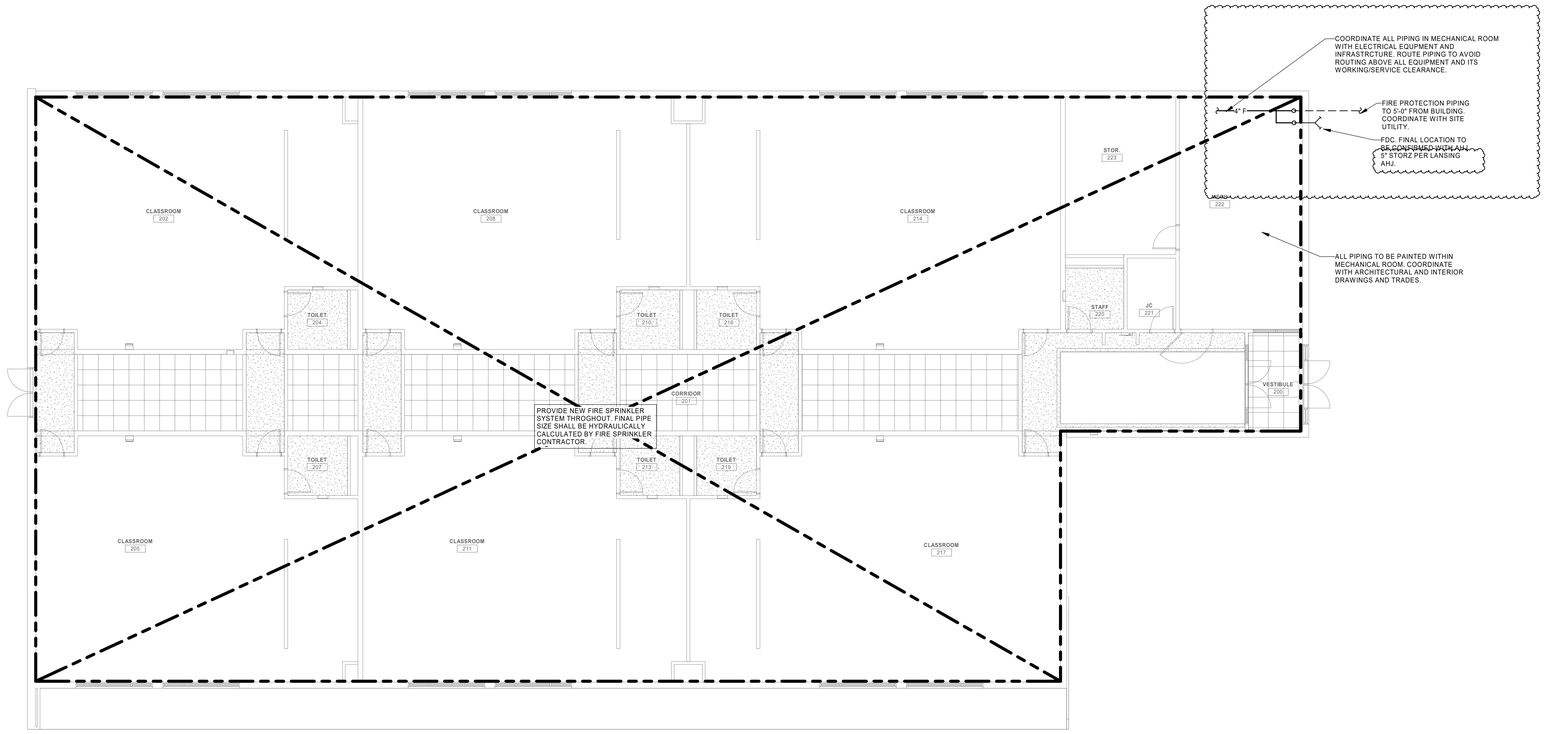
1012 W. Willow
Lansing, MI 48915

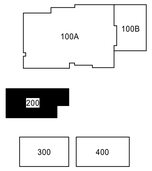


FIRE PROTECTION PLAN - UNIT 200

SCALE: 1/8" = 1'-0"

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 03	03.15.2024



KEY PLAN

LSD NO. SB-0059
JOB NO. 2616.01A

N

SHEET TITLE

FIRE PROTECTION PLAN - UNIT 200

SHEET NO.

FP1.2

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FIRE PROTECTION GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL INTENT OF THE WORK. PROVIDE/REWORK FIRE PROTECTION SYSTEMS COMPLETE, PER APPLICABLE CODES, NFPA, OWNERS INSURER'S REQUIREMENTS AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION INCLUDING ALL PIPING, OFFSETS, FITTINGS, DRAINS, VALVES, SPRINKLER HEADS, ETC. AS REQUIRED FOR A COMPLETE OPERABLE SYSTEM.
2. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. SPRINKLER PIPING SHALL NOT BE LOCATED BELOW MECHANICAL EQUIPMENT.
3. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
4. FIRE PROTECTION TRADES SHALL SUBMIT PLANS, FLOW AND PRESSURE TEST AND CALCULATIONS TO THE LOCAL FIRE MARSHAL AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RESUBMIT PLANS AND CALCULATIONS FOR RECORD TO THE ARCHITECT AS WELL AS THE FIRE MARSHAL.
5. CONTRACTOR SHALL PROVIDE ALL NECESSARY TESTS AND PAY FOR ALL FEES, PERMITS, INSPECTIONS, AND LICENSES, AS REQUIRED BY THE LOCAL AUTHORITY.

KINGSCOTT
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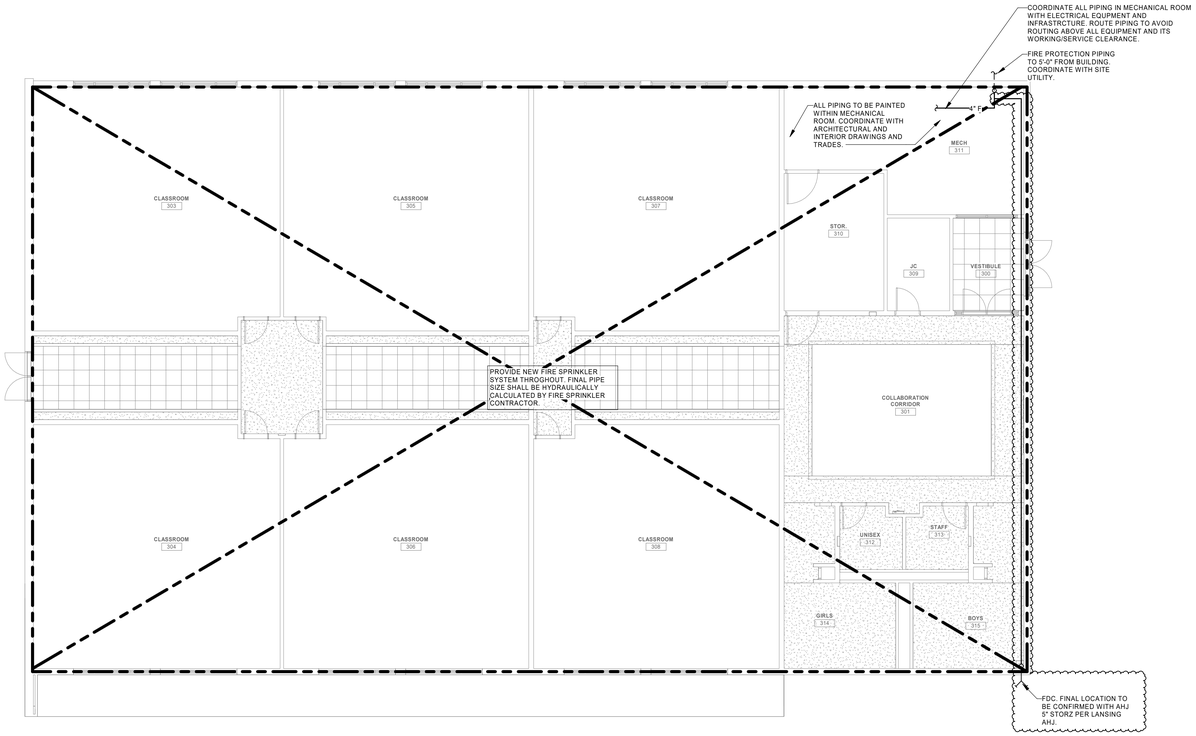
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

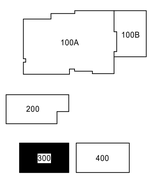


FIRE PROTECTION PLAN - UNIT 300

SCALE: 1/8" = 1'-0"

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 03	03.15.2024



KEY PLAN

LSD NO. SB-0059
JOB NO. 2616.01A

N

SHEET TITLE

FIRE PROTECTION PLAN - UNIT 300

SHEET NO.

FP1.3

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FIRE PROTECTION GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL INTENT OF THE WORK. PROVIDE/REWORK FIRE PROTECTION SYSTEMS COMPLETE, PER APPLICABLE CODES, NFPA, OWNERS INSURER'S REQUIREMENTS AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION INCLUDING ALL PIPING, OFFSETS, FITTINGS, DRAINS, VALVES, SPRINKLER HEADS, ETC. AS REQUIRED FOR A COMPLETE OPERABLE SYSTEM.
2. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. SPRINKLER PIPING SHALL NOT BE LOCATED BELOW MECHANICAL EQUIPMENT.
3. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
4. FIRE PROTECTION TRADES SHALL SUBMIT PLANS, FLOW AND PRESSURE TEST AND CALCULATIONS TO THE LOCAL FIRE MARSHAL AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RESUBMIT PLANS AND CALCULATIONS FOR RECORD TO THE ARCHITECT AS WELL AS THE FIRE MARSHAL.
5. CONTRACTOR SHALL PROVIDE ALL NECESSARY TESTS AND PAY FOR ALL FEES, PERMITS, INSPECTIONS, AND LICENSES, AS REQUIRED BY THE LOCAL AUTHORITY.

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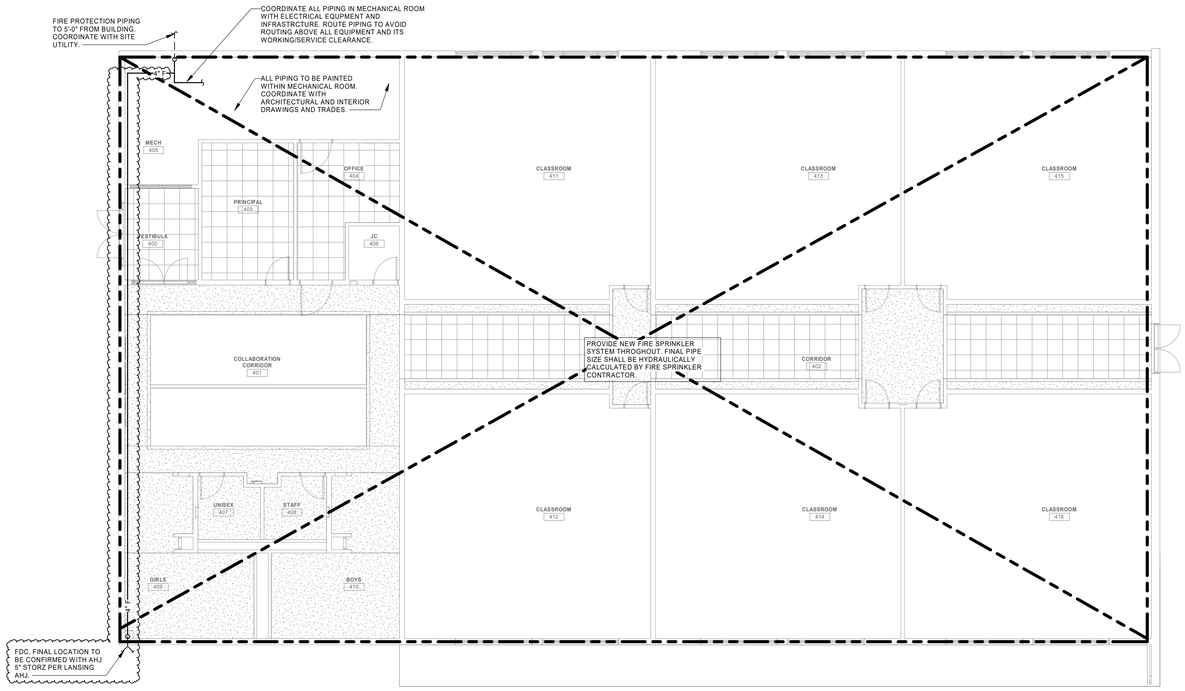
Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

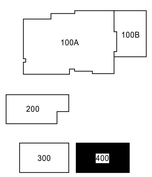


FIRE PROTECTION PLAN - UNIT 400

SCALE: 1/8" = 1'-0"

Lansing School District

ISSUANCES	DATE
Bid and Construction	01.26.2024
Addendum 03	03.15.2024



KEY PLAN

LSD NO. SB-0059
JOB NO. 2616.01A

N

SHEET TITLE

FIRE PROTECTION PLAN - UNIT 400

SHEET NO.

FP1.4

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PANEL NAME: HR1C

PANEL LOCATION:	IDF 138	**MAIN:**	MLO	**VOLTAGE:**	120/208 Wye
ENCLOSURE:	TYPE 1	**BUSSING:**	225 A	**PHASE:**	3
MOUNTING:	SURFACE	**GROUND BUS:**	STANDARD	**WIRE:**	4
		NEUTRAL:	100.00%	**MIN A.I.C. RATING:**	10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	REC - NORTH GENERAL USE - GYM 156	20 A	1	720	720					1	20 A	REC - SOUTH GENERAL USE - GYM 156	2
3	REC - WEST SCOREBOARD - GYM 156	20 A	1			180	180			1	20 A	REC - EAST SCOREBOARD - GYM 156	4
5	REC - MAIN COURT BACKBOARD MOTOR - GYM 156	20 A	1					1380	1380	1	20 A	REC - MAIN COURT BACKBOARD MOTOR - GYM 156	6
7	REC - SIDE COURT BACKBOARD MOTOR - GYM 156	20 A	1	1380	1380					1	20 A	REC - SIDE COURT BACKBOARD MOTOR - GYM 156	8
9	REC - SIDE COURT BACKBOARD MOTOR - GYM 156	20 A	1			1380	1380			1	20 A	REC - SIDE COURT BACKBOARD MOTOR - GYM 156	10
11	FLOORBOXES - GYM156	20 A	1					720	180	1	20 A	REC - DRINKING FOUNTAIN - GYM 156	12
13	FOLDING BLEACHERS - GYM 156	30 A	3	1057	1176					1	20 A	FOLD-UP DIVIDER POWER/CONTROLLER - GYM 156	14
15						1057	720			1	20 A	REC - FAMILY 155	16
17								1057	180	1	20 A	REC - FAMILY SHOWER 152	18
19	REC - WASHER - FAMILY 155	20 A	1	1000	180					1	20 A	REC - REFRIGERATOR - FAMILY 155	20
21	REC - DRYER - FAMILY 155	30 A	2			2200	180			1	20 A	REC - MICROWAVE UPPER CABINETS - FAMILY 155	22
23								2200	360	1	20 A	REC - ABOVE COUNTER - FAMILY	24
25	REC - FAMILY 155	20 A	1	720	360					1	20 A	REC - STOR 153, IDF 154	26
27	REC - TEACHING WALL - STEAM/COMM 151	20 A	1			900	900			1	20 A	REC - STEAM/COMM 151	28
29	REC - CHARGING STATION - STEAM/COMM 151	20 A	1					180	540	1	20 A	REC - ABOVE COUNTER - STEAM/COMM 151	30
31	(GFCI) REC - CORD REEL - STEAM/COMM 151	20 A	1	1080	1080					1	20 A	REC - IT STAFF 148, 149	32
33	REC - IT STAFF 149, 150	20 A	1			1080	900			1	20 A	REC - TEACHING WALL - RESOURCE 147	34
35	REC - RESOURCE 147	20 A	1					900	180	1	20 A	REC - CHARGING STATION - RESOURCE 147	36
37	REC - SENSORY RM 146	20 A	1	720	1080					1	20 A	REC - CORRIDOR 103	38
39	REC - DRINKING FOUNTAIN - CORRIDOR 103	20 A	1			180	180			1	20 A	REC - CHARGING STATION - CLASSROOM	40
41	REC - ABOVE COUNTER - CLASSROOM 145	20 A	1					720	1080	1	20 A	REC - TEACHING WALL - CLASSROOM	42
43	REC - CLASSROOM 145	20 A	1	900	1080					1	20 A	(GFCI) REC - CORD REEL - CLASSROOM	44
45	REC - ART STOR 143, SCI STOR 144	20 A	1			360	180			1	20 A	REC - CHARGING STATION - ART 141	46
47	REC - ABOVE COUNTER - ART 141	20 A	1					540	1080	1	20 A	REC - TEACHING WALL - ART 141	48
49	REC - ART 141	20 A	1	900	1080					1	20 A	(GFCI) REC - CORD REEL - ART 141	50
51	REC - VENDING - TEACHER'S LOUNGE 140	20 A	1			180	540			1	20 A	REC - TEACHER'S LOUNGE 140	52
53	REC - COPIER/PRINTER - TEACHER'S LOUNGE 140	20 A	1					180	800	1	20 A	REC - REFRIGERATOR - TEACHER'S LOUNGE 140	54
55	REC - ABOVE COUNTER - TEACHER'S LOUNGE 140	20 A	1	360	1500					1	20 A	REC - MICROWAVE - TEACHER'S LOUNGE 140	56
57	REC - ROOF MAINTENANCE	20 A	1			540	1000			3	20 A	ETC-HP-145 - STORAGE 144	58
59	ETC-HP-141 - STORAGE 144	20 A	3					1000	1000				60
61				1000	1000								62
63						1000	1248			2	20 A	ACCU-102 - ROOF	64
65	REC - EXTERIOR - SOUTH, WEST	20 A	1					720	1248				66
67	REC - EXTERIOR PEDESTAL MOUNTED	20 A	1	360	1000					1	20 A	MONUMENT SIGN - ILLUMINATION - SOUTH	68
69	MONUMENT SIGN - WIRELESS RECEIVER - SOUTH	20 A	1			500	1071			2	15 A	HP-C-140 - CORRIDOR 103	70
71	HP-B-103 - CORRIDOR 104	20 A	2					603	1071				72
73				603	1000					3	20 A	ETC-HP-140 - CORRIDOR 103	74
75	(GFCI) REC - CORD REEL - STEAM/COMM 151	20 A	1			1080	1000						76
77	(GFCI) REC - CORD REEL - CLASSROOM	20 A	1					1080	1000				78
79	(GFCI) REC - CORD REEL - ART 141	20 A	1	1080	0					1	20 A	SPARE	80
81	SPARE	20 A	1			0	0			1	20 A	SPARE	82
83	SPARE	20 A	1					0	0	1	20 A	SPARE	84
			TOTAL LOAD:	24516 VA		20116 VA		21379 VA					
			TOTAL AMP:	206 A		168 A		180 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	5845 VA	100.00%	5845 VA		
HEATING	9000 VA	100.00%	9000 VA	**CONNECTED LOAD:**	66 kVA
Motor	3170 VA	106.25%	3369 VA	**DEMAND LOAD:**	53 kVA
RECEPTACLE	37040 VA	63.50%	23520 VA	**TOTAL CONNECTED:**	183 A
POWER	9956 VA	100.00%	9956 VA	**TOTAL DEMAND:**	147 A
LIGHTING	1000 VA	125.00%	1250 VA		

NOTES:

PANEL NAME: HR1B

PANEL LOCATION:	MDF 125	**MAIN:**	MLO	**VOLTAGE:**	120/208 Wye
ENCLOSURE:	TYPE 1	**BUSSING:**	125 A	**PHASE:**	3
MOUNTING:	RECESSED	**GROUND BUS:**	STANDARD	**WIRE:**	4
		NEUTRAL:	100.00%	**MIN A.I.C. RATING:**	10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	REC - CORRIDOR 104, 107	20 A	1	1080	1080					1	20 A	REC - GENERAL USE 105, 106, 130, 131, 137, 138	2
3	REC - GENERAL USE - MECHANICAL 124	20 A	1			1080	60			1	20 A	AUTOMATIC FAUCET - MEN 126A, WOMENS 127	4
5	REC - DRINKING FOUNTAIN - CORRIDOR 104	20 A	1					180	540	1	20 A	REC - MEN 126A, STOR. 126B, WOMEN 127	6
7	REC - UNISEX128, STAFF 129	20 A	1	360	900					1	20 A	REC - MUSIC 139	8
9	REC - ABOVE COUNTER - MUSIC 139	20 A	1			360	1080			1	20 A	REC - TEACHING WALL - MUSIC 139	10
11	REC - CHARGING STATION - MUSIC 139	20 A	1					180	360	1	20 A	REC - CAFETERIA AV RACK - STORAGE	12
13	REC - DIGITAL DISPLAY MENU -CAFETERIA 136	20 A	1	180	1248					2	20 A	ACCU-100 - ROOF MAIN BUILDING	14
15	REC - DRINKING FOUNTAIN - CAFETERIA 136	20 A	1			180	1248						16
17	REC - GENERAL USE - CAFETERIA 136	20 A	1					1080	180	1	20 A	REC - CEILING PROJECTOR - CAFETERIA 139	18
19	REC - EXTERIOR - SOUTH	20 A	1	540	360					1	20 A	REC - CAFETERIA 136	20
21	ETC-HP-139 - STORAGE 137	20 A	3			1000	720			1	20 A	REC - OFFICE 164	22
23								1000	180	1	20 A	REC - SHOWER 161	24
25				1000	180					1	20 A	REC - SHOWER 160	26
27	MOTORIZED SHADES - CAFETERIA 136	20 A	1			200	1279			2	20 A	EUH-C - STORAGE 157	28
29	GMU-100 - MECH 124	25 A	1					1656	1279				30
31	REC - CHANGING 158, 159, 163, STORAGE 157	20 A	1	900	603					2	15 A	HP-B-104 - CORRIDOR 104	32
33	REC - CHANGING SHOWER 162	20 A	1			180	603						34
35	REC - AV CABINET - STORAGE 157	20 A	1					360	540	1	20 A	REC - CAFETERIA PROJ. WALL - CAFETERIA 136	36
37	SPARE	20 A	1	0	0					1	20 A	SPARE	38
39	SPARE	20 A	1			0	0			1	20 A	SPARE	40
41	SPARE	20 A	1					0	0	1	20 A	SPARE	42
43	SPARE	20 A	1	0	0					1	20 A	SPARE	44
45	SPACE	--	1			--	--			1	--	SPACE	46
47	SPACE	--	1					--	--	1	--	SPACE	48
49	SPACE	--	1	--	--					1	--	SPACE	50
51	SPACE	--	1			--	--			1	--	SPACE	52
53	SPACE	--	1					--	--	1	--	SPACE	54
55	SPACE	--	1	--	--					1	--	SPACE	56
57	SPACE	--	1			--	--			1	--	SPACE	58
59	SPACE	--	1					--	--	1	--	SPACE	60
61	SPACE	--	1	--	--					1	--	SPACE	62
63	SPACE	--	1			--	--			1	--	SPACE	64
65	SPACE	--	1					--	--	1	--	SPACE	66
67	SPACE	--	1	--	--					1	--	SPACE	68
69	SPACE	--	1			--	--			1	--	SPACE	70
71	SPACE	--	1					--	--	1	--	SPACE	72
73	SPACE	--	1	--	--					1	--	SPACE	74
75	SPACE	--	1			--	--			1	--	SPACE	76
77	SPACE	--	1					--	--	1	--	SPACE	78
79	SPACE	--	1	--	--					1	--	SPACE	80
81	SPACE	--	1			--	--			1	--	SPACE	82
83	SPACE	--	1					--	--	1	--	SPACE	84
			TOTAL LOAD:	8431 VA		7990 VA		7535 VA					
			TOTAL AMP:	71 A		67 A		63 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	3702 VA	100.00%	3702 VA		
HEATING	5558 VA	100.00%	5558 VA	**CONNECTED LOAD:**	24 kVA
Motor	1676 VA	124.70%	2090 VA	**DEMAND LOAD:**	23 kVA
RECEPTACLE	12960 VA	88.58%	11480 VA	**TOTAL CONNECTED:**	66 A
POWER	60 VA	100.00%	60 VA	**TOTAL DEMAND:**	64 A

NOTES:

PANEL NAME: HR1A

PANEL LOCATION:	ELECT. 121	**MAIN:**	400 A	**VOLTAGE:**	120/208 Wye
ENCLOSURE:	TYPE 1	**BUSSING:**	400 A	**PHASE:**	3
MOUNTING:	SURFACE	**GROUND BUS:**	STANDARD	**WIRE:**	4
		NEUTRAL:	100.00%	**MIN A.I.C. RATING:**	10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	HR1B - IDF 124	125 A	3	8431	24516					3	225 A	HR1C - IDF 154	2
3						7990	20116						4
5								7535	21379				6
7	HR5 - EXTERIOR STORAGE BUILDING	50 A	3	1440	2000					2	25 A	DWH-102 - BOILER/MECH 120	8
9						194	2000						10
11								0	510	2	20 A	P-DWH-102 - BOILER/MECH 120	12
13	REC - PRINCIPAL 114	20 A	1	900	510								14
15	REC - OFFICE 118	20 A	1			720	1300			2	20 A	ACCU-101 - ROOF	16
17	REC - SECURITY 115	20 A	1					720	1300				18
19	REC - CHECK-IN COMPUTER - WELCOME 108	20 A	1	180	2000					2	25 A	DWH-103 - BOILER/MECH 120	20
21	REC - GENERAL USE - CONFERENCE 116	20 A	1			720	2000						22
23	REC - GENERAL USE - CONFERENCE 116	20 A	1					900	1000	3	20 A	ETC-HP-114 - STORAGE 119	24
25	FLOORBOXES, REC - CONFERENCE 116	20 A	1	900	1000								26
27	REC - ABOVE COUNTER - CONFERENCE 116	20 A	1			360	1000						28
29	REC - OFFICE SUPPORT 117	20 A	1					360	520	2	15 A	HP-A-114 - STORAGE 119	30
31	REC - ABOVE COUNTER - OFFICE SUPPORT 117	20 A	1	540	520								32
33	REC - REFRIGERATOR - OFFICE SUPPORT 117	20 A	1			180	1000			3	20 A	ETC-HP-108 - CLINC 110	34
35	REC - COPY/PRINTER - OFFICE SUPPORT 117	20 A	1					180	1000				36
37	REC - REFRIGERATOR, GENERAL USE - CLINIC 110	20 A	1	720	1000								38
39	REC - GENERAL USE - 120, 120B, 121	20 A	1			900	520			2	15 A	HP-A-117 - STORAGE 119	40
41	REC - DISPLAY - WELCOME 108	20 A	1					360	520				42
43	REC - DESK WELCOME 108	20 A	1	360	1279					2	20 A	EUH-C - BOILER/MECH 120	44
45	REC - OFFICE SUPPORT 117	20 A	1			360	1279						46
47	REC - COFFEE BAR, GENERAL USE 108, 109	20 A	1					1080	520	2	15 A	HP-A-126 - STORAGE 131	48
49	REC - TOILET 111, TOILET 112	20 A	1	360	520								50
51	REC - COMPUTER - RECEIVING 123	20 A	1			360	600			1	20 A	P-DWH-101 - BOILER/MECH 120	52
53	REC - RECEIVING 123	20 A	1					720	500	1	15 A	DWH-101 - BOILER/MECH 120	54
55	REC - SUPPORT 113, STORAGE 119	20 A	1	900	500					1	20 A	MONUMENT SIGN - WIRELESS RECEIVER - SOUTH	56
57	REC - ROOF MAINTENANCE	20 A	1			540	1000			1	20 A	MONUMENT SIGN - ILLUMINATION - NORTH	58
59	GENERATOR BATTERY CHARGER	20 A	1					1200	1200	1	20 A	GENERATOR BLOCK HEATER	60
61	REC - EXTERIOR SERVICE YARD, NORTH FACADE	20 A	1	720	0					1	20 A	SPARE	62
63	SPARE	20 A	1			0	0			1	20 A	SPARE	64
65	SPARE	20 A	1					0	0	1	20 A	SPARE	66
67	SPARE	20 A	1	0	0					1	20 A	SPARE	68
69	SPARE	20 A	1			0	--			1	--	SPACE	70
71	SPACE	--	1					--	--	1	--	SPACE	72
73	SPACE	--	1	--	--					1	--	SPACE	74
75	SPACE	--	1			--	--			1	--	SPACE	76
77	SPACE	--	1					--	--	1	--	SPACE	78
79	SPACE	--	1	--	--					1	--	SPACE	80
81	SPACE	--	1			--	--			1	--	SPACE	82
83	SPACE	--	1					--	--	1	--	SPACE	84
			TOTAL LOAD:	49296 VA		43140 VA		41504 VA					
			TOTAL AMP:	413 A		362 A		346 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	15267 VA	100.00%	15267 VA		
HEATING	23117 VA	100.00%	23117 VA	**CONNECTED LOAD:**	134 kVA
Motor	6966 VA	105.94%	7380 VA	**DEMAND LOAD:**	107 kVA
RECEPTACLE	65480 VA	57.64%	37740 VA	**TOTAL CONNECTED:**	372 A
POWER	20916 VA	100.00%	20916 VA	**TOTAL DEMAND:**	297 A
LIGHTING	2194 VA	125.00%	2743 VA		

NOTES:

PANEL NAME: HR4

PANEL LOCATION:	MECH 410A	**MAIN:**	225 A	**VOLTAGE:**	120/208 Wye
ENCLOSURE:	TYPE 1	**BUSSING:**	225 A	**PHASE:**	3
MOUNTING:	SURFACE	**GROUND BUS:**	STANDARD	**WIRE:**	4
		NEUTRAL:	100.00%	**MIN A.I.C. RATING:**	10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	REC - TEACHING WALL - CLASSROOM 411	20 A	1	900	900					1	20 A	REC - TEACHING WALL - CLASSROOM 412	2
3	REC - CHARGING STATION - CLASSROOM 411	20 A	1			180	180			1	20 A	REC - CHARGING STATION - CLASSROOM 412	4
5	REC - CLASSROOM 411	20 A	1					900	900	1	20 A	REC - CLASSROOM 412	6
7	REC - TEACHING WALL - CLASSROOM 413	20 A	1	900	900					1	20 A	REC - TEACHING WALL - CLASSROOM 414	8
9	REC - CHARGING STATION - CLASSROOM 413	20 A	1			180	180			1	20 A	REC - CHARGING STATION - CLASSROOM 414	10
11	REC - CLASSROOM 413	20 A	1					900	900	1	20 A	REC - CLASSROOM 414	12
13	REC - TEACHING WALL - CLASSROOM 415	20 A	1	900	900					1	20 A	REC - TEACHING WALL - CLASSROOM 416	14
15	REC - CHARGING STATION - CLASSROOM 415	20 A	1			180	180			1	20 A	REC - CHARGING STATION - CLASSROOM 416	16
17	REC - CLASSROOM 415	20 A	1					900	900	1	20 A	REC - CLASSROOM 416	18
19	REC - GIRLS AND BOYS	20 A	1	360	180					1	20 A	REC - STAFF 408	20
21	REC - STAFF 407	20 A	1			180	60			1	20 A	AUTOMATIC FAUCETS - BOYS 400	22
23	REC - DRINKING FOUNTAIN - COLLAB CORR 401	20 A	1					180	900	1	20 A	REC - CORRIDOR, VEST 400	24
25	FACP - VESTIBULE 400	20 A	1	100	720					1	20 A	REC - PRINCIPAL 410	26
27	REC - MECH, STOR, JC 406	20 A	1			540	2000			2	25 A	DWH-400 - MECH 405	28
29	REC - CLG MT DISPLAY - MECH 405	20 A	1					180	2000				30
31	P-DWH-400 - MECH 405	15 A	1	264	360					1	20 A	REC - ROOF MAINTENANCE	32
33	ACCU-400 - ROOF	20 A	2			1300	360			1	20 A	REC - LV SERVER EQ - MECH 405	34
35								1300	180	1	20 A	REC - MECHANICAL CONTROLS	36
37	INTERCOM MASTER - PRINCIPAL 404	20 A	1	800	603					2	15 A	EF-400 - ROOF	38
39	DOOR LOCKS - 400 POD	20 A	1			220	603						40
41	GMU-400 - MECH 405	25 A	1					1656	900	1	20 A	REC - OFFICE 404	42
43	LIGHTING INVERTER - MECH 405	20 A	1	1250	0					1	20 A	SPARE	44
45	SPARE	20 A	1			0	0			1	20 A	SPARE	46
47	SPARE	20 A	1					0	0	1	20 A	SPARE	48
49	SPARE	20 A	1	0	0					1	20 A	SPARE	50
51	SPARE	20 A	1			0	--			1	--	SPACE	52
53	SPACE	--	1					--	--	1	--	SPACE	54
55	SPACE	--	1	--	--					1	--	SPACE	56
57	SPACE	--	1			--	--			1	--	SPACE	58
59	SPACE	--	1					--	--	1	--	SPACE	60
61	SPACE	--	1	--	--					1	--	SPACE	62
63	SPACE	--	1			--	--			1	--	SPACE	64
65	SPACE	--	1					--	--	1	--	SPACE	66
67	SPACE	--	1	--	--					1	--	SPACE	68
69	SPACE	--	1			--	--			1	--	SPACE	70
71	SPACE	--	1					--	--	1	--	SPACE	72
73	SPACE	--	1	--	--					1	--	SPACE	74
75	SPACE	--	1			--	--			1	--	SPACE	76
77	SPACE	--	1					--	--	1	--	SPACE	78
79	SPACE	--	1	--	--					1	--	SPACE	80
81	SPACE	--	1			--	--			1	--	SPACE	82
83	SPACE	--	1					--	--	1	--	SPACE	84
			TOTAL LOAD:	10037 VA		6343 VA		12696 VA					
			TOTAL AMP:	88 A		53 A		111 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	2600 VA	100.00%	2600 VA		
Motor	3126 VA	113.24%	3540 VA	**CONNECTED LOAD:**	29 kVA
RECEPTACLE	16920 VA	79.55%	13460 VA	**DEMAND LOAD:**	26 kVA
POWER	5180 VA	100.00%	5180 VA	**TOTAL CONNECTED:**	81 A
LIGHTING	1250 VA	125.00%	1563 VA	**TOTAL DEMAND:**	73 A

NOTES:

PANEL NAME: HR3

PANEL LOCATION:	MECH 310A	**MAIN:**	225 A	**VOLTAGE:**	120/208 Wye
ENCLOSURE:	TYPE 1	**BUSSING:**	225 A	**PHASE:**	3
MOUNTING:	SURFACE	**GROUND BUS:**	STANDARD	**WIRE:**	4
		NEUTRAL:	100.00%	**MIN A.I.C. RATING:**	10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	REC - TEACHING WALL - CLASSROOM 303	20 A	1	900	900					1	20 A	REC - TEACHING WALL - CLASSROOM 304	2
3	REC - CHARGING STATION - CLASSROOM 303	20 A	1			180	180			1	20 A	REC - CHARGING STATION - CLASSROOM 304	4
5	REC - CLASSROOM 303	20 A	1					900	900	1	20 A	REC - CLASSROOM 304	6
7	REC - TEACHING WALL - CLASSROOM 305	20 A	1	900	900					1	20 A	REC - TEACHING WALL - CLASSROOM 306	8
9	REC - CHARGING STATION - CLASSROOM 305	20 A	1			180	180			1	20 A	REC - CHARGING STATION - CLASSROOM 306	10
11	REC - CLASSROOM 305	20 A	1					900	900	1	20 A	REC - CLASSROOM 306	12
13	REC - TEACHING WALL - CLASSROOM 307	20 A	1	900	900					1	20 A	REC - TEACHING WALL - CLASSROOM 308	14
15	REC - CHARGING STATION - CLASSROOM 307	20 A	1			180	180			1	20 A	REC - CHARGING STATION - CLASSROOM 308	16
17	REC - CLASSROOM 307	20 A	1					900	900	1	20 A	REC - CLASSROOM 308	18
19	REC - BIRLS 314, BOYS 315	20 A	1	360	180					1	20 A	REC - STAF 312	20
21	REC - STAFF 313	20 A	1			180	60			1	20 A	AUTOMATIC FAUCETS - GIRLS 314, BOYS 315	22
23	REC - DRINKING FOUNTAIN - COLLAB CORR 301	20 A	1					180	900	1	20 A	REC - VESTIBULE 300, CORR. 301, 302	24
25	FACP - VESTIBULE 300	20 A	1	100	180					1	20 A	REC - CLG MT DISPLAY - MECH 311	26
27	REC - STOR, JC, MECH	20 A	1			720	264			1	15 A	P-DWH-300 - MECH 311	28
29	DWH-300 - MECH 311	25 A	2					2000	1300	2	20 A	ACCU-300 - ROOF 300	30
31				2000	1300								32
33	REC - ROOF MAINTENANCE	20 A	1			360	800			1	20 A	INTERCOM MASTER - MECH 311	34
35	REC - LV SERVER EQ - MECH 311	20 A	1					360	180	1	20 A	REC - MECHANICAL CONTROLS	36
37	AUTOMATIC DOOR ACTUATORS - VESTIBULE 300	20 A	1	230	200					1	20 A	LIGHTING	38
39	EF-300 - ROOF	15 A	2			603	1250			1	20 A	LIGHTING INVERTER - MECH 311	40
41								603	50	1	20 A	MOTORIZED DAMPERS	42
43	MOTORIZED DAMPERS	20 A	1	50	1000					1	20 A	REC - HOT BOX HEATER	44
45	REC - HOT BOX HEATER	20 A	1			1500	0			1	20 A	SPARE	46
47	SPARE	20 A	1					0	0	1	20 A	SPARE	48
49	SPARE	20 A	1	0	0					1	20 A	SPARE	50
51	SPARE	20 A	1			0	0			1	20 A	SPARE	52
53	SPARE	20 A	1					0	--	1	--	SPACE	54
55	SPACE	--	1	--	--					1	--	SPACE	56
57	SPACE	--	1			--	--			1	--	SPACE	58
59	SPACE	--	1					--	--	1	--	SPACE	60
61	SPACE	--	1	--	--					1	--	SPACE	62
63	SPACE	--	1			--	--			1	--	SPACE	64
65	SPACE	--	1					--	--	1	--	SPACE	66
67	SPACE	--	1	--	--					1	--	SPACE	68
69	SPACE	--	1			--	--			1	--	SPACE	70
71	SPACE	--	1					--	--	1	--	SPACE	72
73	SPACE	--	1	--	--					1	--	SPACE	74
75	SPACE	--	1			--	--			1	--	SPACE	76
77	SPACE	--	1					--	--	1	--	SPACE	78
79	SPACE	--	1	--	--					1	--	SPACE	80
81	SPACE	--	1			--	--			1	--	SPACE	82
83	SPACE	--	1					--	--	1	--	SPACE	84
			TOTAL LOAD:	11000 VA		6817 VA		10973 VA					
			TOTAL AMP:	97 A		57 A		97 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	2600 VA	100.00%	2600 VA		
Motor	1470 VA	120.51%	1772 VA	**CONNECTED LOAD:**	29 kVA
RECEPTACLE	17980 VA	77.81%	13990 VA	**DEMAND LOAD:**	25 kVA
POWER	5290 VA	100.00%	5290 VA	**TOTAL CONNECTED:**	80 A
LIGHTING	1450 VA	125.00%	1813 VA	**TOTAL DEMAND:**	71 A

NOTES:

PANEL NAME: HR2

PANEL LOCATION:	MECH 210	**MAIN:**	225 A	**VOLTAGE:**	120/208 Wye
ENCLOSURE:	TYPE 1	**BUSSING:**	225 A	**PHASE:**	3
MOUNTING:	SURFACE	**GROUND BUS:**	STANDARD	**WIRE:**	4
		NEUTRAL:	100.00%	**MIN A.I.C. RATING:**	10,000

CKT	DESCRIPTION	BKR SIZE	P	A		B		C		P	BKR SIZE	DESCRIPTION	CKT
1	REC - TEACHING WALL - CLASSROOM 205	20 A	1	1080	1080					1	20 A	REC - TEACHING WALL - CLASSROOM 202	2
3	REC - ABOVE COUNTER - CLASSROOM 205	20 A	1			180	180			1	20 A	REC - ABOVE COUNTER - CLASSROOM 202	4
5	REC - CHARGING STATION - CLASSROOM 205	20 A	1					180	180	1	20 A	REC - CHARGING STATION - CLASSROOM 202	6
7	REC - CLASSROOM 205	20 A	1	720	720					1	20 A	REC - CLASSROOM 202	8
9	REC - TEACHING WALL - CLASSROOM 211	20 A	1			1080	1080			1	20 A	REC - TEACHING WALL - CLASSROOM 208	10
11	REC - ABOVE COUNTER - CLASSROOM 211	20 A	1					180	180	1	20 A	REC - ABOVE COUNTER - CLASSROOM 208	12
13	REC - CHARGING STATION - CLASSROM 211	20 A	1	180	180					1	20 A	REC - CHARGING STATION - CLASSROOM 208	14
15	REC - CLASSROOM 211	20 A	1			720	720			1	20 A	REC - CLASSROOM 208	16
17	INTERCOM MASTER - MECH 222	20 A	1					800	360	1	20 A	REC - LV SERVER EQ - MECH 210	18
19	REC - TEACHING WALL - CLASSROOM 217	20 A	1	1080	1080					1	20 A	REC - TEACHING WALL - CLASSROOM 214	20
21	REC - ABOVE COUNTER - CLASSROOM 217	20 A	1			180	180			1	20 A	REC - ABOVE COUNTER - CLASSROOM 214	22
23	REC - CHARGING STATION - CLASSROOM 217	20 A	1					180	180	1	20 A	REC - CHARGING STATION - CLASSROOM 214	24
25	REC - CLASSROOM 217	20 A	1	720	720					1	20 A	REC - CLASSROOM 214	26
27	REC - MECHANICAL CONTROLS	20 A	1			180	1250			1	20 A	LIGHTING INVERTER - MECH 222	28
29	REC - GENERAL USE - MECH 222, JC 221, STOR 223	20 A	1					1080	180	1	20 A	REC - STAFF 208	30
31	EF-220 - STAFF 220, EF-221 - JC 221	20 A	1	104	264					1	15 A	P-DWH-200- MECH 222	32
33	REC - DRINKING FOUNTAIN - CORRIDOR 201	20 A	1			180	180			1	20 A	REC - ROOF MAINTENANCE	34
35	REC - CORRIDOR 201	20 A	1					900	180	1	20 A	REC - CLG MT DISPLAY - MECH 222	36
37	ACCU-200 - ROOF 200	20 A	2	1300	828					2	20 A	DWH-200 - MECH 222	38
39						1300	828						40
41	FACP - VESTIBULE 200	20 A	1					100	1656	1	25 A	GMU-200 - MECH 222	42
43	GMU-300 - MECH 311	25 A	1	1656	220					1	20 A	AUTOMATIC DOOR ACTUATORS - VESTIBULE 200	44
45	MOTORIZED DAMPERS	20 A	1			50	0			1	20 A	SPARE	46
47	SPARE	20 A	1					0	0	1	20 A	SPARE	48
49	SPARE	20 A	1	0	0					1	20 A	SPARE	50
51	SPARE	20 A	1			0	0			1	20 A	SPARE	52
53	SPARE	20 A	1					0	--	1	--	SPACE	54
55	SPACE	--	1	--	--					1	--	SPACE	56
57	SPACE	--	1			--	--			1	--	SPACE	58
59	SPACE	--	1					--	--	1	--	SPACE	60
61	SPACE	--	1	--	--					1	--	SPACE	62
63	SPACE	--	1			--	--			1	--	SPACE	64
65	SPACE	--	1					--	--	1	--	SPACE	66
67	SPACE	--	1	--	--					1	--	SPACE	68
69	SPACE	--	1			--	--			1	--	SPACE	70
71	SPACE	--	1					--	--	1	--	SPACE	72
73	SPACE	--	1	--	--					1	--	SPACE	74
75	SPACE	--	1			--	--			1	--	SPACE	76
77	SPACE	--	1					--	--	1	--	SPACE	78
79	SPACE	--	1	--	--					1	--	SPACE	80
81	SPACE	--	1			--	--			1	--	SPACE	82
83	SPACE	--	1					--	--	1	--	SPACE	84
			TOTAL LOAD:	11932 VA		8288 VA		6336 VA					
			TOTAL AMP:	102 A		72 A		53 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED LOAD	PANEL TOTALS	
HVAC	2600 VA	100.00%	2600 VA		
Motor	3576 VA	111.58%	3990 VA	**CONNECTED LOAD:**	27 kVA
RECEPTACLE	16200 VA	80.86%	13100 VA	**DEMAND LOAD:**	24 kVA
POWER	2930 VA	100.00%	2930 VA	**TOTAL CONNECTED:**	74 A
LIGHTING	1250 VA	125.00%	1563 VA	**TOTAL DEMAND:**	67 A

NOTES:

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Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANC	DAT
Bid and Construction	01.26.2024
Addendum 03	03.15.2024

LSD **SB-005**
JOB 2616.01A

SHEET

PANEL SCHEDULES - 208/120V PANELS

SHEET

E6.1

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POWER KEYNOTES

R1 ELECTRICAL CONTRACTOR TO INSTALL CORD REELS ON UNDERSIDE OF CEILING JOIST.
R2 EQUIPMENT DISCONNECT PROVIDED BY MANUFACTURER. EC TO PROVIDE POWER CONNECTION FOR EQUIPMENT AS INDICATED. COORDINATE INSTALLATION WITH MECHANICAL TRADES AND FINAL EQUIPMENT SUBMITTAL POWER REQUIREMENTS.
R3 PROVIDE A RECEPTACLE AT 15'-0" AFF FOR SCOREBOARD POWER. BASIS OF DESIGN DAKTRONICS BB-2155. PROVIDE A 1" CONDUIT ROUTED FROM SCOREBOARD TO FLOOR BOXES AT EACH SCORER'S TABLE FOR SCOREBOARD CONTROLS. COORDINATE FINAL LOCATION WITH G.C. PRIOR TO ROUGH-IN.
R4 PROVIDE A 30A, 208V, 3 PHASE DISCONNECT MOUNTED AT 18" AFF TO CENTER OF DISCONNECT. PROVIDE A RECESSED JUNCTION BOX AT EACH BLEACHER MOTOR LOCATION AT 18" AFF. ROUTE 3/4" CONDUIT BETWEEN EACH MOTOR AND THE MAIN CONTROL BOX. PROVIDE 3/4" CONDUIT WITH PULLSTRING FOR REMOTE CONTROLLER IN SWITCH CABINET IN GYMNASIUM. COORDINATE WITH FINAL EQUIPMENT SUBMITTAL AND INSTALLATION INSTRUCTION PRIOR TO ROUGH-IN.
R5 PROVIDE JUNCTION BOX IN CEILING STRUCTURE AT EACH BACKBOARD FOR RETRACTABLE BACKBOARD FOR POWER CONNECTION. PROVIDE 3/4" CONDUIT WITH PULLSTRING ROUTED CONCEALED IN WALL FOR REMOTE CONTROLLER IN SWITCH CABINET IN GYMNASIUM. COORDINATE LOCATION OF POWER CONNECTION WITH INSTALLATION MANUALS AND EQUIPMENT PROVIDER PRIOR TO ROUGH-IN.
R6 (2) 4" CONDUITS FROM INCOMING ISP. COORDINATE WITH CIVIL AND UTILITY PRIOR TO ROUGH-IN.
R7 SWITCH CABINET FOR CONTROL OF BLEACHERS, GOAL HOISTS, SCOREBOARD AND PARTITION. COORDINATE WITH SCOREBOARD, BLEACHER AND SWITCH CABINET EQUIPMENT PROVIDERS AND INSTALLATION INSTRUCTIONS PRIOR TO ROUGH-IN. COORDINATE FINAL LOCATION WITH G.C. AND OWNER'S REP PRIOR TO ROUGH-IN.
R8 PROVIDE A JUNCTION BOX FED FROM GFCI BREAKER FOR AUTOMATIC FAUCET POWER.

POWER KEYNOTES

R9 PROVIDE LINK BETWEEN CARD READER AND AUTOMATIC DOOR SO DOOR ACTUATOR ONLY ACTIVATES UPON USE OF CARD READER. COORDINATE WITH SECURITY AND LOW VOLTAGE CONTRACTORS.
R10 PROVIDE POWER TO DOOR OPENER ACTUATOR FOR AUTOMATIC DOORS. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN.
R11 COORDINATE AND PROVIDE A SINGLE GANG JUNCTION BOXES AND CONDUIT TO DOOR FRAME, LOCATED ABOVE THE ACCESSIBLE CEILING OR AT 10'-0" AFF FOR LOW VOLTAGE DOOR CONTROLS WHERE INDICATED. COORDINATE WITH ARCHITECTURAL DOOR HARDWARE SCHEDULE, SECURITY AND LOW VOLTAGE DRAWINGS.
R12 PROVIDE TWO LAYERS OF 4' X 8' X 3/4" FIRE RETARDANT PLYWOOD BACKBOARD ON INDICATED WALLS. REFER TO LOW VOLTAGE DRAWINGS FOR ADDITIONAL INFORMATION.
R13 AC UNIT IS FED FROM ACCU COMPRESSOR ON ROOF. COORDINATE ROUTING OF CONTROL WIRE AND POWER FEED WITH MECHANICAL CONTRACTOR.
R14 INCOMING UNDERGROUND CONDUIT FROM MAIN BUILDING. COORDINATE CONDUIT LANDING LOCATION WITH ELECTRICAL PANELS AND LOW VOLTAGE RACK FINAL LOCATIONS.
R15 PROVIDE A JUNCTION BOX FOR POWER CONNECTION FOR FOLD-UP DIVIDER BY DRAPER. PROVIDE 3/4" CONDUIT WITH PULLSTRING ROUTED CONCEALED IN WALL FOR REMOTE CONTROLLER IN SWITCH CABINET IN GYMNASIUM. COORDINATE LOCATION OF POWER CONNECTION WITH INSTALLATION MANUALS AND EQUIPMENT PROVIDER PRIOR TO ROUGH-IN.
R16 PROVIDE 2" CONDUIT STUBBED INTO MAIN ELECTRICAL ROOM, ROUTED UNDERGROUND AND STUBBED INTO GREENHOUSE FOR FUTURE USE. PROVIDE WITH PULL STRING. LABEL AND CAP BOTH ENDS.
R17 PROVIDE A STANDARD RECEPTACLE IN A SHALLOW JUNCTION BOX AT THE END OF THE ISLAND. IF GFI PROTECTION IS REQUIRED, PROVIDE VIA UP-STREAM DEVICE OR BREAKER.

POWER KEYNOTES

R18 CONFIRM REQUIRED NEMA CONFIGURATION OF RECEPTACLE, FINAL CIRCUIT BREAKER SIZE, AND WIRE SIZE FOR DRYER RECEPTACLE WITH FINAL SUBMITTAL PRIOR TO INSTALL.
R19 PROVIDE RECEPTACLE FOR MICROWAVE IN CABINET ABOVE EQUIPMENT. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT WITH MANUFACTURER INSTALLATION INSTRUCTIONS AND FINAL MILLWORK DESIGN.
R20 INCOMING TECHNOLOGY CONDUITS TO BE LOCATED DIRECTLY BELOW WALL MOUNTED RACK PROVIDED BY TECHNOLOGY.
R21 CABLE TRAY IN TECHNOLOGY AREAS SHALL BE PROVIDED BY AND INSTALLED BY LOW VOLTAGE. SHOWN FOR REFERENCE ONLY.
R22 LOCATE RECEPTACLE CENTER ON LIGHT FIXTURE ABOVE.
R23 PROVIDE JUNCTION BOXES ON WALL ABOVE WINDOWS FOR POWER CONNECTIONS WHERE INDICATED. ALSO PROVIDE A DUPLEX JUNCTION BOX FOR SWITCH CONTROLLER WHERE INDICATED. COORDINATE FINAL LOCATION OF ALL JUNCTION BOXES WITH ARCHITECTURAL TRADES PRIOR TO ROUGH-IN.
R24 PROVIDE FINAL QUANTITIES OF FLOW AND TAMPER SWITCHES PER FIRE PROTECTION CONTRACTOR. COORDINATE FINAL LOCATION IN FIELD WITH ARCHITECTURAL AND FIRE PROTECTION TRADES.
R25 REFER TO SHEET ES.1 FOR CARD READER DETAILS.
R26 PROVIDE 6-INCH SOLID BOTTOM CABLE TRAY FOR DATA / AV CABLING. MOUNT TO WALL WITH BOTTOM ELEVATION AT 11'-0" AFF. MODIFY RACEWAY IN FIELD TO FIT WALL LENGTH. PROVIDE ALL REQUIRED CONNECTORS, ELBOWS, ETC.
R27 ELECTRICAL CONTRACTOR SHALL COORDINATE IN THE FIELD WITH THE ILLUMINATED BUILDING SIGNAGE EQUIPMENT PROVIDER AND INSTALLER FOR THE LOCATION OF THE SIGNAGE POWER CONNECTION PRIOR TO ROUGH-IN. PROVIDE ADDITIONAL JUNCTION BOXES AS REQUIRED BY SIGNAGE INSTALLER.

POWER KEYNOTES

R28 PROVIDE A EXTRA DEEP JUNCTION BOX FOR LOW VOLTAGE. COORDINATE LOCATION WITH LOW VOLTAGE DRAWINGS AND INSTALLER PRIOR TO ROUGH-IN.
R29 PROVIDE CONDUIT (3) 2" CONDUIT SLEEVES FROM STORAGE ROOMS, THROUGH WALL, STUBBED INTO TRUSS LEVEL OF GYM OR CAFETERIA AND (3) 2" CONDUITS SLEEVES STUBBED INTO CEILING SPACE OF ADJACENT CORRIDOR.
R30 PROVIDE CONDUIT SLEEVES THROUGH FIRE RATED WALL, STUBBED INTO CORRIDOR ABOVE CEILING. ELECTRICAL CONTRACTOR TO MAINTAIN FIRE RATINGS AT WALL PENETRATIONS. LOCATE AT 12'AFF UNLESS NOTED OTHERWISE.
PROVIDE:
A. (2) 2" CONDUIT SLEEVES AT CLASSROOMS CABLE TRAY.
B. (3) 3" CONDUIT SLEEVES AT CABLE TRAY ASSOCIATED WITH POD'S SERVER RACKS.
C. (3) 4" CONDUIT SLEEVES AT MDF 125.
D. (3) 3" CONDUIT SLEEVES AT IDF 154.
R31 (1) 4" CONDUIT FOR LOW VOLTAGE DISTRIBUTION TO PODS. COORDINATE WITH TECHNOLOGY CONSULTANT, CIVIL AND OWNER PRIOR TO ROUGH-IN.
R32 PV ARRAY MOUNTED FIXED TO ROOF WITH UNIRAC RAIL RACKING SYSTEM NXT UMOUNT. PROVIDE SUPPLEMENTAL RACKING CONNECTION COMPONENTS RECOMMENDED BY RACKING MANUFACTURER DUE TO THICKNESS OF TECTUM ROOF DECK. REFER TO RAIL RACKING DETAIL ON PAGE ES.0.
R33 PV ARRAY ON FLAT ROOF TO UTILIZE BALLASTED RACKING SYSTEM UNIRAC RM10. COORDINATE COMPONENTS AND INSTALL WITH RACKING MANUFACTURER.

POWER GENERAL NOTES

1. ALL RECEPTACLES ON EXTERIOR, IN KITCHEN, IN CONCESSION, IN LABORATORY, AND WITHIN 6'-0" OF SINK OR OTHER WATER SUPPLY SHALL BE READILY ACCESSIBLE GFCI TYPE RECEPTACLE.
2. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
3. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
4. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
5. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.

ELECTRICAL CONTRACTOR TO COORDINATE FINAL SIZES, QUANTITIES, HEIGHTS, AND LOCATIONS FOR LOW VOLTAGE BACKBOX AND CONDUIT WITH LOW VOLTAGE DOCUMENTS ON T-SERIES SHEETS PRIOR TO INSTALLATION.

ELECTRICAL CONTRACTOR TO PROVIDE WALL SLEEVES AS SHOWN ON POWER DOCUMENTS AS WELL AS ANY ADDITIONAL SLEEVES NEEDED DURING CONSTRUCTION FOR LOW VOLTAGE INSTALLER CABLE PATHWAYS.

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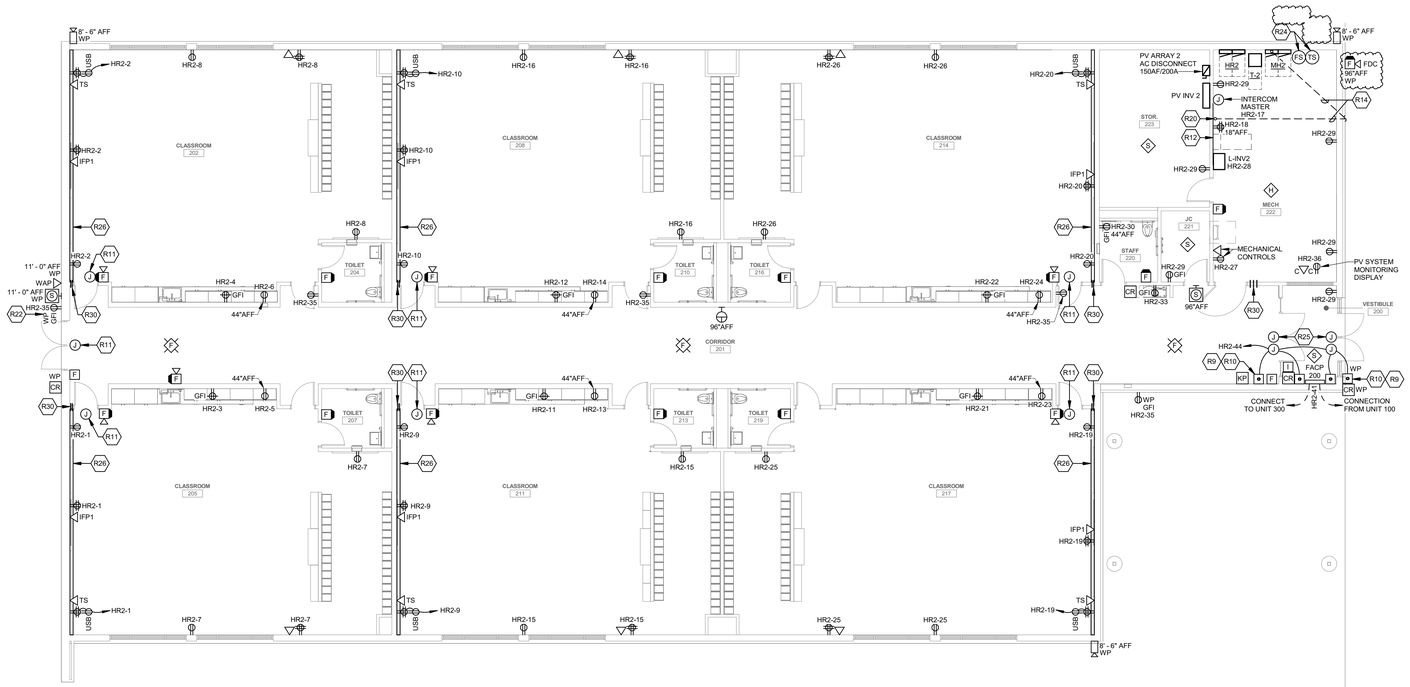

POWER PLAN - UNIT 200
SCALE: 1/8" = 1'-0"

Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANC	DAT
Bid and Construction	01.26.2024
Addendum 03	03.15.2024

200

300 400

KEY PLAN

LSD SB-005
JOB 2616.01A

N

SHEET
POWER PLAN - UNIT 200

SHEET
EP1.2

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POWER KEYNOTES

R1 ELECTRICAL CONTRACTOR TO INSTALL CORD REELS ON UNDERSIDE OF CEILING JOIST.
R2 EQUIPMENT DISCONNECT PROVIDED BY MANUFACTURER. EC TO PROVIDE POWER CONNECTION FOR EQUIPMENT AS INDICATED. COORDINATE INSTALLATION WITH MECHANICAL TRADES AND FINAL EQUIPMENT SUBMITTAL POWER REQUIREMENTS.
R3 PROVIDE A RECEPTACLE AT 15'-0" AFF FOR SCOREBOARD POWER. BASIS OF DESIGN DAKTRONICS BB-2155. PROVIDE A 1" CONDUIT ROUTED FROM SCOREBOARD TO FLOOR BOXES AT EACH SCORER'S TABLE FOR SCOREBOARD CONTROLS. COORDINATE FINAL LOCATION WITH G.C. PRIOR TO ROUGH-IN.
R4 PROVIDE A 30A, 208V, 3 PHASE DISCONNECT MOUNTED AT 18" AFF TO CENTER OF DISCONNECT. PROVIDE A RECESSED JUNCTION BOX AT EACH BLEACHER MOTOR LOCATION AT 18" AFF. ROUTE 3/4" CONDUIT BETWEEN EACH MOTOR AND THE MAIN CONTROL BOX. PROVIDE 3/4" CONDUIT WITH PULLSTRING FOR REMOTE CONTROLLER IN SWITCH CABINET IN GYMNASIUM. COORDINATE WITH FINAL EQUIPMENT SUBMITTAL AND INSTALLATION INSTRUCTION PRIOR TO ROUGH-IN.
R5 PROVIDE JUNCTION BOX IN CEILING STRUCTURE AT EACH BACKBOARD FOR RETRACTABLE BACKBOARD FOR POWER CONNECTION. PROVIDE 3/4" CONDUIT WITH PULLSTRING ROUTED CONCEALED IN WALL FOR REMOTE CONTROLLER IN SWITCH CABINET IN GYMNASIUM. COORDINATE LOCATION OF POWER CONNECTION WITH INSTALLATION MANUALS AND EQUIPMENT PROVIDER PRIOR TO ROUGH-IN.
R6 (2) 4" CONDUITS FROM INCOMING ISP. COORDINATE WITH CIVIL AND UTILITY PRIOR TO ROUGH-IN.
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POWER KEYNOTES

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R10 PROVIDE POWER TO DOOR OPENER ACTUATOR FOR AUTOMATIC DOORS. COORDINATE EXACT LOCATION PRIOR TO ROUGH-IN.
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R12 PROVIDE TWO LAYERS OF 4' X 8' X 3/4" FIRE RETARDANT PLYWOOD BACKBOARD ON INDICATED WALLS. REFER TO LOW VOLTAGE DRAWINGS FOR ADDITIONAL INFORMATION.
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POWER KEYNOTES

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R25 REFER TO SHEET ES.1 FOR CARD READER DETAILS.
R26 PROVIDE 6-INCH SOLID BOTTOM CABLE TRAY FOR DATA / AV CABLING. MOUNT TO WALL WITH BOTTOM ELEVATION AT 11'-0" AFF. MODIFY RACEWAY IN FIELD TO FIT WALL LENGTH. PROVIDE ALL REQUIRED CONNECTORS, ELBOWS, ETC.
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POWER KEYNOTES

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PROVIDE:
A. (2) 2" CONDUIT SLEEVES AT CLASSROOMS CABLE TRAY.
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POWER GENERAL NOTES

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2. REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS TO VERIFY LOCATION OF DEVICES.
3. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
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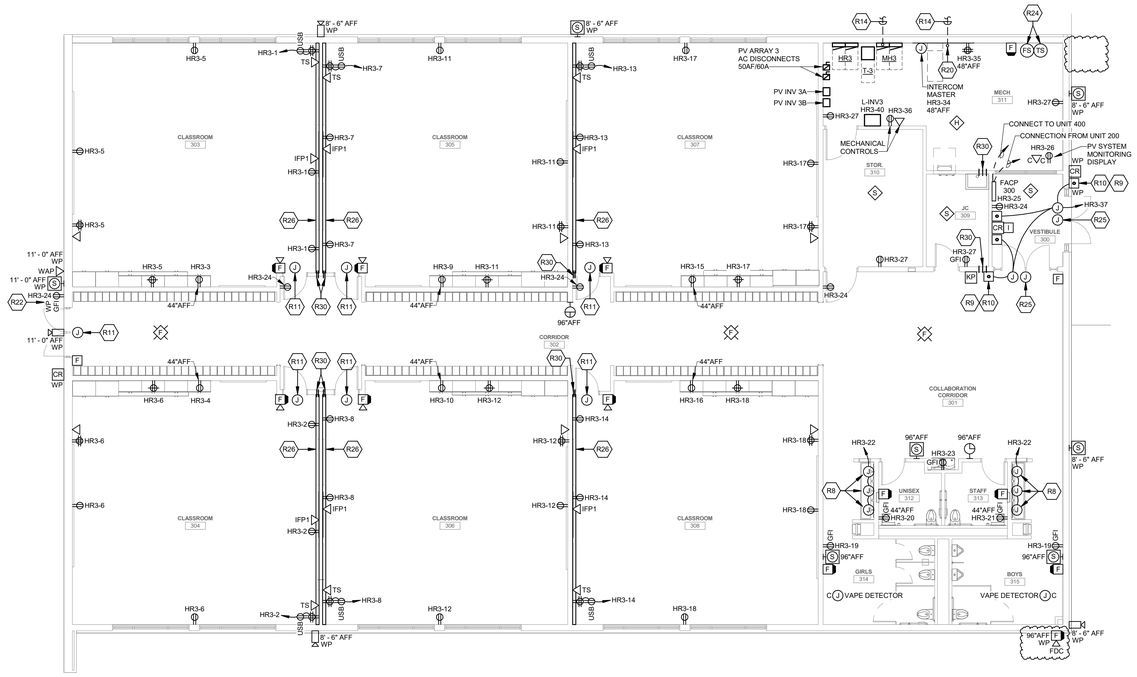

POWER PLAN - UNIT 300
SCALE: 1/8" = 1'-0"

Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANC	DAT
Bid and Construction	01.26.2024
Addendum 03	03.15.2024

100A 100B 200 300 400

KEY PLAN
LSD SB-005
JOB 2616.01A
N

SHEET
POWER PLAN - UNIT 300

SHEET
EP1.3

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POWER KEYNOTES

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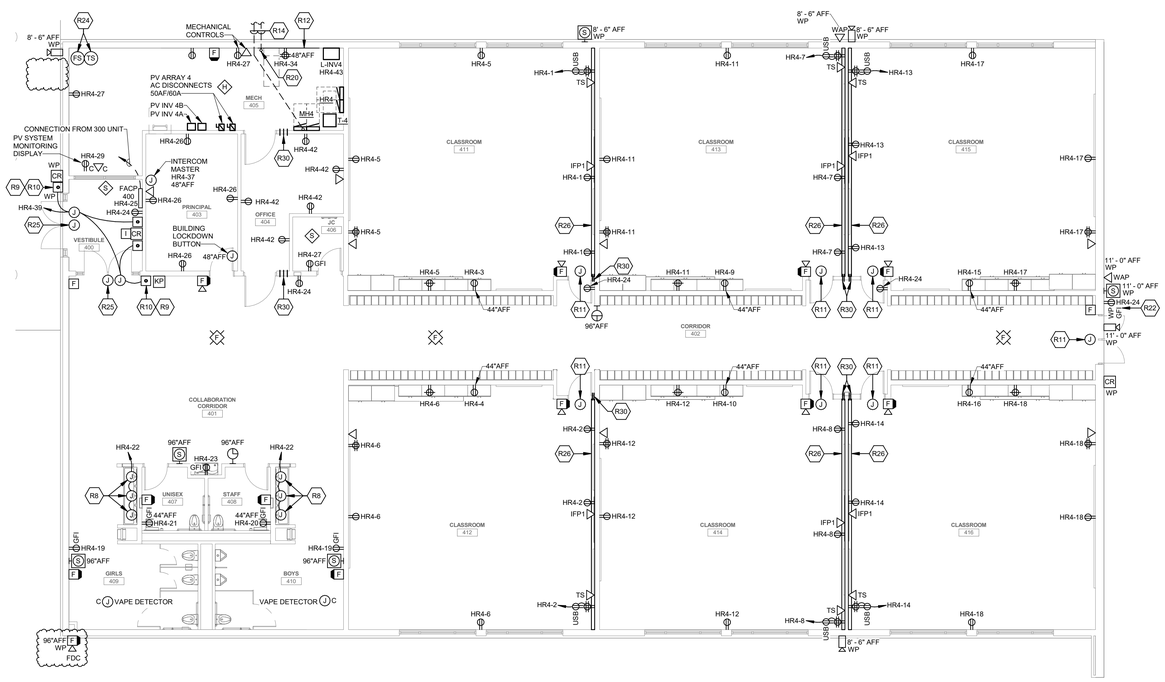
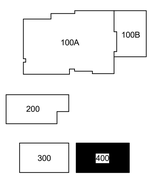


POWER PLAN - UNIT 400
SCALE: 1/8" = 1'-0"

Lansing School District

ISSUANC	DAT
Bid and Construction	01.26.2024
Addendum 03	03.15.2024



KEY PLAN
LSD SB-005
JOB 2616.01A
N

SHEET
POWER PLAN - UNIT 400

SHEET
EP1.4

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Willow School
Lansing School District
1012 W. Willow
Lansing, MI 48915

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SITE PLAN GENERAL NOTES

1. FIELD VERIFY LOCATIONS OF EXISTING UNDERGROUND SERVICES TO COORDINATE ALL POLE BASE LOCATIONS AND UNDERGROUND SERVICES BEING INSTALLED UNDER THIS CONTRACT WITH CIVIL DRAWINGS PRIOR TO INSTALLATION OF POLE BASES AND CONDUIT.

ELECTRICAL SITE PLAN KEYNOTES

S1 PROVIDE ARLINGTON 19.5" LOW-PROFILE ENCLOSURE WITH BUILT-IN COVER, MODEL GDP19B-77020 OR EQUAL.

S2 FROM MANHOLE, DISTRIBUTE (1) 2" CONDUIT TO EACH 200, 300, AND 400 UNIT MAIN MEP ROOM. INCLUDE LOW VOLTAGE DISTRIBUTION CONDUIT IN TRENCH WITH POWER DUCT BANK. INSTALL LOW VOLTAGE CONDUIT MINIMUM 2' FROM POWER CONDUITS IN TRENCH.

S3 PROVIDE (2) 4" CONDUIT UNDERGROUND FROM MDF ROOM TO 5' OUTSIDE BUILDING FOR INCOMING ISP(S). COORDINATE WITH CIVIL DRAWINGS FOR CONTINUATION OF ISP TRENCHING/CONDUITS.

S4 PROVIDE GFCI RATED DUPLEX RECEPTACLE IN HOT BOX STRUCTURE TO POWER ELECTRIC HEATER. REFER TO HOT BOX MANUFACTURER DETAILS FOR INSTALLATION GUIDELINES.

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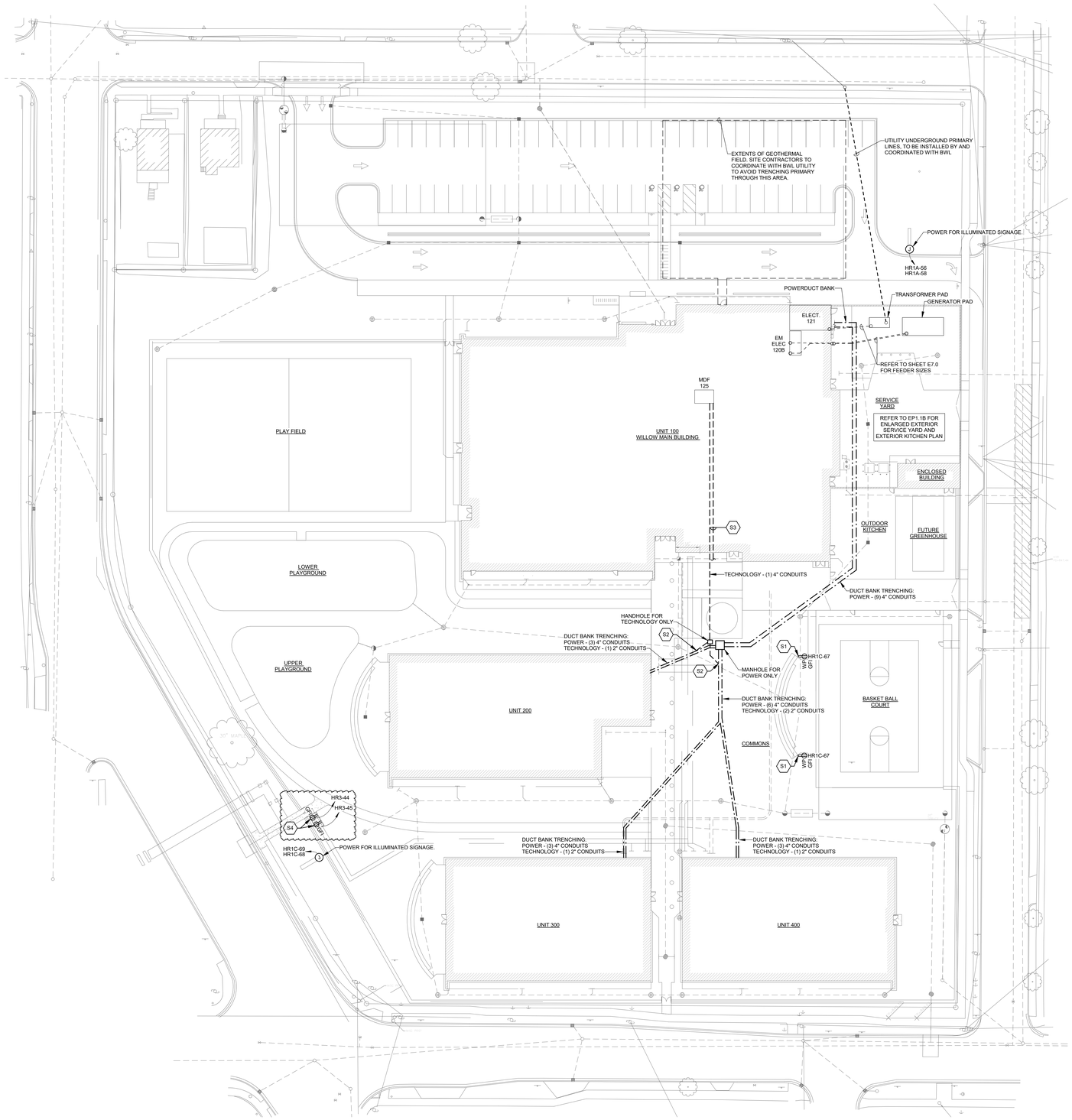

ELECTRICAL SITE POWER PLAN
SCALE: 1" = 30'-0"

Willow School

Lansing School District

1012 W. Willow
Lansing, MI 48915

Lansing School District

ISSUANC	DAT
Bid and Construction	01.26.2024
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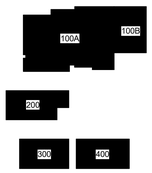

KEY PLAN

LSD SB-005
JOB 2616.01A
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SHEET
ELECTRICAL SITE POWER PLAN

SHEET
ES1.0

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01010 SUMMARY OF WORK

01011 RELATED DOCUMENTS

1.1 Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections, apply to work specified in this section.

1.2 Information given in the Division 1 General Requirements shall supplement information given in the General and Supplementary Conditions. The most stringent provision in the General Conditions, General Requirements, Contract Drawings and Specifications shall govern the execution of any work or requirement.

01012 CONSTRUCTION MANAGER

1.1 The Christman Company is the Construction Manager. Wherever the term General Contractor or Contractor (in the context of the General Contractor) is used, it shall be given the same meaning as Construction Manager.

1.2 The Trade Contractor and his sub-Trade Contractors shall agree to and accept the same responsibility and follow the same terms of the Conditions of the Contract as the Construction Manager for the work for which he is under contract.

01013 PROJECT

1.1 The Work as defined in the General Conditions and described in the Contract Document.

01014 RELATED WORK NOT-IN-CONTRACT (NIC)

1.1 Reference Section 00210 for any work that will be performed by the Owner or accomplished under separate contract.

01015 REPLACEMENT MATERIAL (For Owner's future use)

1.1 If any specific amounts are called for in the individual Sections, provide the specified amounts. If none are specified and a surplus is left, request instructions from the Construction Manager before discarding the surplus.

01016 LABOR, MATERIALS, TAXES & WORKMANSHIP

1. LABOR AND MATERIALS

1.1 Unless otherwise specified in these Contract Documents, all materials and workmanship shall be new and of the best grade of their respective kind for the purpose.

1.2 Unless otherwise specifically provided in the Contract Documents, the Trade Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, transportation, and other facilities and services necessary for the proper execution and completion of the Work.

1.3 The Trade Contractor shall at all times enforce strict discipline and good order among his

employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him.

2. TAXES

2.1 Unless tax exempt status is specifically noted, it is understood that the bid prices stated shall include all applicable Federal, State or other Governmental division taxes and assessments. Also, all contributions for unemployment compensation, health and welfare, old age benefits or other purposes now or hereafter effective during the term of the contract, and the Owner and Construction Manager shall not be liable for any additional charges therefore.

01017 CRITICAL PHASING & STAGES OF CONSTRUCTION

1. INTRODUCTION

1.1 Critical phasing and critical stages of construction have been established herein for the project. It is extremely important that the "Critical Phasing & Stages of Construction" requirements be understood and complied with.

1.2 The Construction Manager shall coordinate detailed critical phasing and sequencing and scheduling with the Owner's representative.

1.3 The Construction Manager shall provide overall scheduling and coordination for the entire project. All Trade Contractors shall acknowledge the Construction Manager's right to establish and set up, or subsequently modify, the sequencing and scheduling of all Work on this project for the earliest completion and/or benefit to the Owner.

1.4 All Trade Contractors shall expedite the ordering and delivering of materials and equipment, etc. to meet these critical phasing and staging requirements and to make every effort possible to minimize disruption of normal building usage.

2. BID SCHEDULES

2.1 The preliminary construction schedule narrative included in the Contract Documents represents the general order and time frames for work to be followed by the Construction Manager in coordinating the project. Trade Contractors are to assume that their work will be coordinated in a manner consistent with industry practice, and the efficient coordination of all other trades. Trade Contractors recognize and accept their work may be sequenced and paced by other trades.

2.2 Please note that although the schedule defines the planned order of construction, Bidders should not assume that any assurance is given or implied as to the calendar dates associated with completion of the work of a particular contract.

2.3 All Trade Contractors and Trade Subcontractors recognize and shall accept modifications to the schedule which are reasonable, in the opinion of the Construction Manager, for the general interest of the project as a result of allowable time extensions (formally or informally approved) in any contract, and such modifications are inherent to the construction process and shall not qualify as a basis for extra compensation from the Construction Manager or Owner.

2.4 The Trade Contractor, in submitting a proposal for the work of a particular work category, agrees to commit the necessary resources to complete the work activities of that work category, within a time span not greater than the planned duration. Work included within a work category, but not specifically defined by a particular work activity, is to be accomplished in a reasonable manner in conjunction with other work of the work category, and in such a way as to avoid complication of or to delay the work of other Trade Contractors.

3. PROJECT SEQUENCING

3.1 GENERAL SEQUENCING

3.1.1 The overall project sequencing is indicated within the Preliminary Construction Schedule. Refer to Section 00200 and Section 01310.

3.2 RESTRICTIVE SEQUENCING & SCHEDULING

3.2.1 More restrictive sequencing to coordinate the Owner's on-going operations and/or for the coordination of the various trades shall be identified in Section 00210 SPECIAL PROVISIONS or as otherwise directed by the Construction Manager; All Trade Contractors agree to cooperate and alter their operations to maintain these more specified restrictions and sequences of the work.

3.3 SPECIFIC PROJECT REQUIREMENTS

3.3.1. Refer to the work category description and Section 00210 for specific information on scheduling requirements.

4. MUTUAL COOPERATION

4.1. Mutual cooperation between the Owner, the Architect, the Construction Manager, and the Trade Contractors to coordinate these construction and building operation requirements is anticipated and expected.

01018 USE OF SITE

1.1 Trade Contractor shall limit his use of the premises for his work and for storage to allow for (I) work by other Trade Contractors; (ii) Owner occupancy; and (iii) public use.

1.2 Limitations on site usage as well as specified requirements that impact site utilization are indicated on the drawings and by other contract documents. In addition to these limitations and requirements, the Construction Manager will administer allocation of available space equitably among entities needing both access and space so as to produce the best overall efficiency in performance as the total work of the project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

1.3 ACCESS TO SITE

Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1.4 Trade Contractor shall assume full responsibility for the protection and safekeeping of products under his contract, stored on the site.

1.5 Move any stored products, under Trade Contractor's control, which interfere with operations of the Owner or separate Contractor.

1.6 Obtain and pay for the use of additional storage or work areas needed for operations.

1.7 Nonsmoking Property: Tobacco is not permitted on Lansing School District property.

01019 OWNER'S RIGHT TO OCCUPY

1.1 The Owner, at his election, may from time to time occupy any parts of the project as the work in connection therewith is completed to such a degree as will, in the opinion of the Owner, permit

of their use for the purposes for which they are intended. The Owner will, prior to any such partial occupancy, give notice to the Construction Manager thereof and such occupancy shall be based upon the following:

a. Such occupancy shall not constitute an acceptance of work not performed in accordance with the Contract Documents or relieve Trade Contractors of liability to perform any work required by their Contract but not completed at the time of occupancy.

b. Trade Contractors shall be relieved of all maintenance costs on the units or parts occupied under this agreement.

c. Owner shall assume the risk of loss with respect to any unit or part occupied under the terms of this agreement.

d. The Trade Contractor shall not be required to furnish heat, light and water or other such services used in the units or parts occupied, without proper re-numeration therefore.

END OF SECTION

01019 CONTRACT CONSIDERATIONS

SECTION INCLUDES:

1.1 Inspection and Testing Allowance

1.2 Schedule of Values

1.3 Application for Payment

1.4 Change Procedures

1.1 INSPECTION & TESTING ALLOWANCES

If inspection and testing allowances have been assigned to the Trade Contractors, the following shall apply:

1.1.1 Costs included in allowances

a. Cost of engaging an inspection or testing firm, execution of inspection or tests, reporting results.

1.1.2 Costs not included in the allowance:

a. Incidental labor and facilities required to assist inspection or testing firm.

b. Costs of testing laboratory services required by Contractor separate from Contract Document requirements.

c. Costs of retesting upon failure of previous tests as determined by Architect-Engineer.

1.1.3 Payment Procedures:

a. Submit one copy of the inspection or testing firm's invoice with next application for payment.

b. Pay invoice on approval by Architect-Engineer.

1.1.4 Funds will be drawn from inspection and testing allowances only by Change Order.

1.2 SCHEDULE OF VALUES

1.2.1 Submit schedule through Contractor's Trade Contractor Portal. Application for Payments cannot be processed until Schedule of Values is approved. Without prior approval of the Construction Manager, **no single line item can exceed $100,000. Unless indicated otherwise, allowances and change orders must be listed as separate line items.**

The schedule of values must be itemized as follows:

1.2.2 Format: Unless instructed otherwise, utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify bonds, insurance, and permits separately.

1.2.3 Allowances should be added as individual line items for each section in the Schedule of Values.

1.2.4 Include within each line item, a directly proportional amount of Contractor's overhead and profit.

1.2.5 Approved Change Orders will automatically be added as a line item in the Schedule of

Values through the Trade Contractor Portal.

1.3 APPLICATIONS FOR PAYMENT

1.3.1 Pay Applications are to be created and submitted through the Trade Contractor Portal which conforms to the AIA G702 Form. The Trade Contractor Portal is the exclusive method of submitting a payment application.

1.3.2 Payment Period: First of month to first of month unless agreed to otherwise.

1.3.3 Waiver of liens and Sworn Statements shall accompany all Payment Requests unless agreed to otherwise. Also to be produced and submitted through the Trade Contractor Portal.

1.4 CHANGE PROCEDURES

1.4.1 The Architect-Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201, 1987 Edition, Paragraph 7.4.

1.4.2 The Architect-Engineer may issue a change management document which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within five (5) calendar days.

1.4.3 The Contractor may propose a change by submitting request for change to the Architect-Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Sections 01600 and 01600A.

1.4.4 Stipulated Sum/Price Change Order: Based on change management document and Contractor's fixed price quotation; or, Contractor's request for a Change Order as approved by Architect-Engineer.

1.4.5 Unit Price Change Order: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work, which are not pre-determined, execute Work under a change management document. Changes in Contract sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

1.4.6 Change Management Document: Architect-Engineer may issue a change authorization signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.

1.4.7 Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect-Engineer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.

a. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate

costs for changes in the Work.

b. Execution of Change Orders: Architect-Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

c. Overhead and Profit: Overhead and Profit shall include the following:

d. Supervision, Superintendents, Commercial General Liability and Umbrella Insurances, Wage of Time Keepers, Watchmen and Clerks, Small tools with material value of less than $1,500.00, Incidentals, General Office Expense, and all other expenses not included in Labor Rates. The percentage fee for Overhead and Profit on the Contractor's own work shall be 15% of net cost. The percentage fee for Overhead and Profit on Subcontractor's work shall be 5%.

END OF SECTION

01020 ALLOWANCES

1. GENERAL

1.1 Allowances will be established as directed in the Work Category Descriptions and are required to be included within the Trade Contractor's base bid. The amount included is an actual cost and does not include overhead and profit. Overhead and profit shall be included in the Trade Contractor's base bid, not in the allowance. Charges against the allowances will be at the Trade Contractor's net rate without overhead and profit as it is already included in the Contractor's base bid. These allowances are set up to be used only when authorized by the Construction Manager. Labor charged against the allowances will be in accordance with mutually accepted labor rates listed in each Trade Contractor's respective contract. Work expended by use of the allowances may be billed for each month in the Trade Contractor's monthly billing provided proper documentation and allowance authorizations are provided. In the event a balance remains within a specific allowance at the end of the project, a change order will be issued deducting the balance remaining in the allowance from the Trade Contractor's contract. All savings as a result of the Trade Contractor's non-use of these allowances will be the Owner's.

END OF SECTION

01030 SPECIAL PROJECT PROCEDURES

01031 ALTERATIONS

1.1 ASBESTOS ADVISORY

1.1.1 All asbestos contaminated materials shall be removed by the Owner.

1.2 NON-ABATEMENT TRADE CONTRACTOR RESPONSIBILITIES

1.2.1 Some areas of this project may contain asbestos in some locations. The Owner will attempt to remove or encapsulate all known asbestos prior to the start of renovations. This section contains the asbestos related requirements of all Trade Contractors working on this project.

1.3 GENERAL REQUIREMENTS

1.3.1 All Federal, State and local laws, rules, regulations and ordinances for asbestos related work shall be adhered to, including but not limited to, OSHA, MIOSHA, EPA and DEQ.

1.3.2 All Non-Abatement Trade Contractors working around asbestos containing materials are to have a minimum of 2-hours of awareness training on the health and safety aspects of asbestos.

1.3.3 All Non-Abatement Trade Contractors involved with the disturbance of Category I non-friable asbestos (roof felts, floor tile, transit chimney, etc.) are required to have all workers receive a minimum of 8-hours "hands-on" OSHA approved training prior to beginning work.

1.3.4 In addition a Non-Abatement Trade Contractor involved with the removal of Category I non-friable asbestos will have at least one on-site worker, employed by the Non-Abatement Trade Contractor, who has successfully completed an asbestos "Supervisor" course and received accreditation. The course shall meet the criteria of EPA's Model Accreditation Plan (40CFR Part 763) for Supervisor or its equivalent.

1.3.5 Documentation of said training must be posted at the job site during the removal of asbestos containing material(s), disposal, and/or handling.

1.3.6 Monitoring will be conducted pursuant to OSHA regulation 29 CFR 1926.1101.

1.3.7 THE NON-ABATEMENT TRADE CONTRACTOR IS TO STOP WORK AND NOTIFY THE CONSTRUCTION MANAGER ANY TIME SUSPECTED ASBESTOS CONTAINING MATERIALS ARE ENCOUNTERED BY ANY OF HIS/HER WORKERS.

1.3.8 All Non-Abatement Trade Contractors that will be removing Category I non-friable asbestos containing materials are to contact the Owner who will arrange and pay for the Environmental Consultant to provide air monitoring services.

1.4 EXCLUSIONARY STATEMENT FOR BUILDING CONSTRUCTION/RENOVATION MATERIALS

1.4.1 All building materials/products used for renovations or replacement purposes are to be asbestos and lead-free. Asbestos and lead-free is to be defined as materials that contain 0% asbestos or lead. All Contractors are to be prepared to submit data, for a building

material/product that he/she is proposing or required to use, to verify the absence of asbestos and lead.

1.4.2 The Non-Abatement Trade Contractors are to complete and sign the form titled "Exclusionary Statement for Building Construction/Renovation Materials".

1.5 NOTIFICATION

1.5.1 All Non-Abatement Trade Contractors that are required to remove Category 1 non-friable asbestos are to fill out and submit to the Michigan Department of Natural Resources, the "**NOTIFICATION OF INTENT TO RENOVATE/DEMOLISH**", in accordance with the Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) and the Department of Labor and Economic Growth (DLEG).

END OF SECTION

01040 COORDINATION

01041 GENERAL

1.1 The Construction Manager is ultimately responsible for coordination to complete all work shown on the drawings and specified herein independent of the location of the work on drawings and within the specifications. The arrangement of work within the specifications into Divisions and Sections shall be considered as given for convenience of reference only and shall not be held to conform to jurisdictional rules which may prevail in any particular trade. It shall be the responsibility of the Construction Manager to so arrange or group items of work under a particular trade to conform with the prevailing customs of that trade and best interest of the Owner.

01042 GENERAL INSTALLATION PROVISIONS

1.1 PRE-INSTALLATION CONFERENCES: The Construction Manager shall hold pre-installation meeting at the project site well before installation of each unit of work, which requires coordination with other work. Installer and representatives of the manufacturers and fabricators who are involved in or affected by that unit of work, and with its coordination or interpretation with other work that has preceded or will follow shall attend this meeting. The Construction Manager will advise the Architect/Engineer of scheduled meeting dates.

a. The Construction Manager shall record significant discussions of each conference, and record agreements and disagreements, along with the final plan of action. The Construction Manager shall then distribute the record of meeting promptly to everyone concerned, including the Owner and Architect/Engineer.

b. Do not proceed with the work if the pre-installation conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the work and reconvene pre-installation conference at the earliest possible date.

1.2 Installer's Inspection of Conditions: Require the installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed. The installer shall report all unsatisfactory conditions in writing to the Construction Manager. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

1.3 Coordinate enclosure of the work with required inspections and tests so as to minimize the necessity of uncovering work for that purpose.

1.4 Mounting Heights: Where mounting heights are not indicated. Refer to the Construction Manager for decision. Products installed at a location not indicated or approved by the Architect or Construction Manager shall be relocated at the Trade Contractor's expense.

01043 COORDINATION OF PERMANENT UTILITY CONNECTIONS

1.1 New utility connections shall be coordinated with local utilities and the Project Superintendent.

01044 MECHANICAL & ELECTRICAL COORDINATION

1.1 All Trade Contractors shall make arrangements with the Construction Manager before connecting to existing facilities. If interruption of service is required, it shall be done at the convenience of the Owner as scheduled by the Construction Manager / General Contractor.

END OF SECTION

01045 CUTTING AND PATCHING

1. GENERAL

1.1 RELATED DOCUMENTS

Drawing and general provisions of contract, including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this Section.

1.2 DESCRIPTION OF REQUIREMENTS

1.2.1 Definition: "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

a. "Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.

1.3 RELATED WORK SPECIFIED ELSEWHERE

1.3.1 Refer to mechanical and electrical specifications sections for additional requirements and limitations on cutting and patching of mechanical and electrical work.

1.4 QUALITY ASSURANCE

1.4.1 Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.

a. Before cutting and patching the following categories of work, obtain the Construction Manager's approval to proceed:

- Structural Steel - Miscellaneous structural metals, including lintels, equipment supports, stair systems and similar categories of work.
- Structural Concrete - Foundation construction, Retaining walls, Structural decking, Exterior wall construction, Piping, ductwork, vessels and equipment. Reinforcing steel shall not be heated to bend or reshape a bar.

b. Visual Requirements: Do not cut and patch work exposed on the building's exterior or in it's occupied spaces, in a manner that would, in the Architect/Engineer's opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Architect/ Engineer to be cut and patched in a visually unsatisfactory manner.

2. PRODUCTS

2.1 MATERIALS

2.1.1 General: Use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

3. EXECUTION

3.1 INSPECTION

3.1.1 Inspect existing conditions of the project, including elements subject to damage or to movement during cutting and patching.

3.1.2 After uncovering work, inspect the conditions affecting the installation of products or performance of the work.

3.1.3 Report unsatisfactory or questionable conditions to the Construction Manager in writing; do not proceed with the work until the Construction Manager has provided further instructions.

3.2 PREPARATION

3.2.1 Provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the work.

3.2.2 Provide devices and methods to protect other portions of the project from damage.

3.2.3 Provide protection from the elements for that portion of the project, which may be exposed by cutting and patching work, and maintain excavations free from water.

3.3 PERFORMANCE

3.3.1 Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation or repairs. Cutting and patching shall be performed by individuals certified, licensed, or otherwise qualified as experienced and with sufficient training to perform the required task.

3.3.2 Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

3.3.3 Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

3.3.4 Restore work which has been cut or removed; install new products to provide complete work in accord with requirements of Contract Documents.

3.3.5 Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

3.3.6 Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.

3.3.7 For continuous surfaces refinish to nearest intersection. For an assembly, refinish the entire unit.

3.4 CLEANING

3.4.1 Thoroughly clean areas and spaces where work is performed or used as access to work. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

4. CUTTING & PATCHING FOR MECHANICAL WORK

4.1 The Mechanical Contractor shall be responsible for all cutting, core drilling, and patching for their work. Cutting and patching shall be performed by individuals certified, licensed, or otherwise qualified as experienced and with sufficient training to perform the required task.

4.2 The Mechanical Contractor shall be responsible for the accurate location of all openings necessary for the installation of the mechanical work. Any additional openings required to move his work due to an error in the initial layout shall be made at the expense of the Mechanical Contractor.

5. CUTTING & PATCHING FOR ELECTRICAL WORK

5.1 The Electrical Contractor shall be responsible for all cutting, core drilling, and patching for their work. Cutting and patching shall be performed by individuals certified, licensed, or otherwise qualified as experienced and with sufficient training to perform the required task.

5.2 The Electrical Contractor shall be responsible for the accurate location of all openings necessary for the installation of the electrical work. Any additional openings required to move his work due to an error in the initial layout shall be made at the expense of the Electrical Contractor.

END OF SECTION

01050 FIELD ENGINEERING

01051 LAYOUT

1.1 Under the supervision and with the assistance of the Construction Manager, each Trade Contractor will be responsible for the layout of his particular portion of the work. Checking of layout and any assistance provided by the Construction Manager shall in no way be construed to relieve the Trade Contractors of their responsibilities for layout dimensions, tolerances, and accuracy of their work as set forth in the Contract Documents.

1.2 Each Trade Contractor shall carefully protect monuments, stakes, and benchmarks. If destroyed or disturbed by the Trade Contractor or his employees, the cost of replacing them shall be charged against the Trade Contractor and shall be deducted from the Trade Contractor's contract amount.

1.3 Except as otherwise noted, each Trade Contractor shall obtain his own field measurements and establish lines, grades, levels, and measurements shown on the drawings, and reconcile all measurements and conditions shown on the drawings with existing conditions at site, from the site survey provided and building corner indications and ground floor elevation designated by the Construction Manager.

1.4 Before custom fabricating any materials, the Trade Contractor shall verify all dimensions of any existing and new work, and shall be responsible for their accuracy. Any differences found shall be submitted to the Architect through the Construction Manager, for consideration before proceeding with the work. No extra compensation will be permitted because of differences between actual dimensions and measurements indicated on the project drawings.

END OF SECTION

01060 REGULATORY REQUIREMENTS

01061 APPLICABLE CODES

1.1 Reference section 00210 for the list of applicable codes.

01062 WAGES, LABOR & EQUAL EMPLOYMENT OPPORTUNITY

1.1 The Trade Contractor shall provide for labor needs from the ranks of working labor locally. The Trade Contractor shall enforce the same conditions upon all Trade Subcontractors engaged by the Trade Contractor for the performance of any portion of the work.

1.2 Successful bidders shall be required to subscribe to the principles of equal opportunity in its employment practices, and shall be required to enforce the same conditions upon all Trade Subcontractors engaged by the Trade Contractor for the performance of any portion of the work.

01063 FIRE HAZARD CLASSIFICATION

1.1 Fire hazard classifications for materials as specified in the technical specification shall be those established by publication in Current Building Materials List published by Underwriters' Laboratories, Inc., or certified to by notarized affidavit from Southwest Research Institute, or other agency acceptable to the State Construction Code Commission.

1.2 Where compliances are established by publication in Building Materials List, Trade Contractor shall so represent in writing to the Construction Manager. Where compliances are to be established by affidavit, Trade Contractor shall submit properly notarized affidavit that the material has been tested in accordance with requirements of ASTM E84, ASTM E119, or other specified standard, and found to qualify for the specified classifications. Affidavit shall state the name of the testing agency. The affidavit for testing is to be certified by the manufacturer for material and by the installer for installation.

1.3 Six copies of affidavits and other representations of compliance shall be submitted to the Construction Manager at time of shop drawing or sample submittal, whichever comes first.

1.4 In addition, the Construction Manager and Trade Contractor shall have the said materials inspected upon receipt, also before installation, and shall submit upon request prior to final acceptance of project, six copies of properly notarized affidavits by the Construction Manager and Trade Contractor as to the inspection (naming the inspector and other witnesses), certifying that the materials covered by previously submitted affidavits or other representations of compliance with the requirements for specified classifications were received at the jobsite properly labeled or otherwise certified to, and said materials were installed, and in a manner to in no way harm said compliances.

2. FIRE MARSHAL AFFIDAVITS

2.1 The Conditions of the Contract and Division 1 - General Requirements, are a part of this Section.

2.2 The requirements specified hereinafter refer to compliance with Codes and Regulations of governing authorities referred to in Article 4 of the General Conditions.

2.3 Submit in triplicate, notarized affidavits for the products required as specified in the various technical sections of the specifications. Affidavits shall be submitted to the appropriate field office responsible for the project. Affidavit shall be signed and notarized, and in the following format:

AFFIDAVIT

This is to certify that, (Name of Product) which was or will be furnished to (Company making Application of Product) for (Job or Project Name and Address) is the same in all respects in content, and specifications for mixing and/or application as the specimen tested by (Name of Laboratory) on their project or test number (Test Number) dated (Date of Test).

Flame Spread _____
Fuel Contributed _____
Smoke Developed _____

END OF SECTION

01070 ABBREVIATIONS & SYMBOLS

01071 LIST OF ABBREVIATIONS

ACI	American Concrete Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
BIM	Building Information Modeling
BOCA	Building Officials and Code Administrators
ICBO	International Conference of Building Officials
LEED	Leadership in Environmental and Energy Design (if applicable)
DOT	Department of Transportation
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
SMACNA	Sheet Metal & A/C Contractors National Association
UBC	Uniform Building Code
OSHA	Occupational Safety and Health Administration

END OF SECTION

01095 REFERENCE STANDARDS AND DEFINITIONS

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

a. Basic Contract definitions are included in the General Conditions and Special Conditions.

b. Indicated: The term "indicated" refers to graphic representations, notes, or schedules on the drawings, other paragraphs or schedules in the specifications, and similar requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled" and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.

c. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the work.

d. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."

e. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."

f. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

g. Installer: An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, sub-contractor, or sub-sub-contractor, for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

h. Unless otherwise indicated, the term "experienced" when used with the term "Installer" means having a minimum of 5 previous projects similar in size and scope to this project, being familiar with the precautions required, and having compiled with requirements of the authority having jurisdiction.

i. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter". It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

j. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with

the Contractor.

This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

k. Project Site: The space available to the Trade Contractors for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the drawings and may or may not be identical with the description of the land upon which the Project is to be built.

l. Testing Laboratories: A "testing Laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

a. Specification Format: The Specifications are organized into Divisions and Sections based on either the Construction Specifications Institute's 16-Division format or the MASTERFORMAT sections 020000-480000.

b. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1) Abbreviated Language: Language used in Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the full context of the Contract Documents so indicates.

2) Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

3) The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

c. Summary References: The Summary Article of each Specification Section includes references to Work Included, Related Work Specified Elsewhere, Products Furnished but not Installed by this Section, and similar phrases. These listings are provided as a guide to the Contractor to assist the Contractor in locating related information within the Specification. No guarantee regarding the absolute completeness of these references is intended or may be inferred nor shall the presence, or lack thereof, of any reference relieve the Contractor of the final responsibility for proper completion of the work.

1.4 INDUSTRY STANDARDS

a. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.

b. Publication Dates: Where the date of issue of a referenced standard is not specified, comply with the latest referenced standard in effect at the time of Bid Opening.

c. Conflicting Requirements: Where compliance with two or more standards is specified, and the standards establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Architect for a decision before proceeding.

d. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.

1) Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source and maintain these standards, for reference by the Contractor, and Architect, in a convenient location within the temporary office.

e. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where acronyms or abbreviations are used in the Project Manual, they mean the recognized name of the Trade organization, standards generating organization, authority having jurisdiction, or other entity applicable. Refer to the "Encyclopedia of Associations", published by Gale Research Company, available in most libraries.

1.5 SUBMITTALS

a. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS

Not applicable.

PART 3 EXECUTION

Not applicable.

END OF SECTION

01100 ALTERNATES

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

1.2.1 Voluntary and Mandatory Alternates are defined as alternate products, materials, equipment, installations or systems for the work, which may, at the Owner's option, be selected to either add to or delete from the scope of the project.

1.2.2 Alternates may, or may not, substantially change scope and general character of the work, and must not be confused with "allowances", "unit prices", "change orders", "substitutions", and other similar provisions.

1.3 COORDINATION

1.3.1 Coordinate pertinent related work and modify surrounding work as required to properly integrate the work under each Alternate, and to provide the complete construction required by the plans and specifications. Each Alternate includes all related work required to provide the work described in the individual Alternate.

1.4 DESCRIPTION OF ALTERNATES

1.4.1 Refer to Section 00210 for a description of the basic change added to or deleted from the scope of the project.

1.4.2 The Owner reserves the right to select any Alternate following submission of the bid. If selected subsequent to the award and execution of the Agreement, the Alternate will be affected by Change Order and the sole consideration shall be the price quoted in the bid.

1.4.3 Each contractor should review each alternate and include a "deduct or add" amount on the trade contract proposal form. At the end of each alternate is a summary of the Work Categories affected by the alternate.

1.4.4 RELATED DOCUMENTS

a. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.4.5 DESCRIPTION OF REQUIREMENTS:

a. Definition: An alternate is an amount proposed by Bidders and stated on the Bid Form that will be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents. Alternate Bid Pricing shall be firm for 90 days from date of award.

b. Coordination: Coordinate related work and modify or adjust adjacent work as required to ensure that work affected by each accepted alternate is complete and fully integrated into the project.

c. Notification: Immediately following award of Contract, prepare and distribute to each party involved, notification of the status of each alternate. Indicate whether alternates have been accepted, rejected or deferred for construction at a later date. Include a complete description of negotiated modifications to alternates, if any.

d. Schedule: A "Schedule of Alternates" is included in Section 00210. Specification sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the work described under each alternate.

1) Include as part of each alternate, miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

01110 VOLUNTARY ALTERNATES

1.1 Bidding of Voluntary Alternates is encouraged. It shall be understood that Voluntary Alternates cannot be considered as a basis for determining a low bid. Contractor may only be determined low bidder based upon the Contract Documents and specified bid alternates in Section 01100.

END OF SECTION

01150 MEASUREMENT AND PAYMENTS

1.1 DESCRIPTION

This Section describes the means and methods required for payment for work performed as an extra to the Contract.

1.2 CHANGES IN THE WORK

1.2.1 The Owner and Architect reserve the right to make changes in the work without notice to sureties or in any way rendering the Contract void.

1.2.2 Changes in the work will be described in Supplemental Instruction (SI), Construction Change Directive (CCD), Bulletins, Proposal Request, or Field Orders issued by the Architect or Construction Manager in accordance with the General Conditions and the Supplementary Conditions, and with procedures described in this Section.

1.2.3 Unless specified otherwise, Bulletins and Proposal Requests are not authorization to proceed with the changes described, and Supplemental Instructions, Construction Change Directives or Field Orders countersigned by the Owner are authorization to proceed. The Trade Contractor will be authorized to proceed with extra work by an approved quotation or signed Field Order.

1.2.4 No claims for additional compensation will be considered for changes in the work unless authorization to proceed has been given by a signed Construction Change Directive**,** Field Order or a Change Order issued by the Construction Manager.

1.2.5 Promptly submit to the Construction Manager, a written detailed quotation of the additional cost, credit or statement noting no change upon the receipt of each Construction Change Directive, Bulletin or Field Order.

1.2.6 Each quotation is subject to approval of the Construction Manager, Architect and the Owner, after which a Change Order will be issued to modify each Trade Contract.

1.2.7 Regard each Construction Change Directive, Bulletin or Field Order as a complete unit and enumerate in detail as to labor, materials and related item in the quotation. Provide additional information as requested by the Construction Manager, Architect and/or Owner.

1.2.8 Proceed promptly in accordance with, and upon receipt of a Change Order. The Contract Sum will be adjusted in accordance with pricing methods described in the General Conditions or as modified by the Supplementary Conditions and as specified in the contract.

END OF SECTION

01200 PROJECT MEETINGS

01215 PRE-CONSTRUCTION SITE INSPECTION

1.1 Each Trade Contractor shall be held to have visited the site of the proposed work before submitting his proposal and to have familiarized himself with all existing conditions affecting the execution of his work in this project. No allowance or extra consideration on behalf of the Trade Contractor will subsequently be made by reason of failure to observe the site conditions, nor on behalf of any subcontractor for the same reason.

01225 PROGRESS MEETINGS

1.1 At regular intervals, the Construction Manager shall hold meetings at the jobsite with the representatives of the various Trade Contractors engaged on the project, to coordinate the progress of the work. The Construction Manager shall notify all parties required to attend, the time and place of these meetings.

1.2 The Construction Manager shall conduct and keep a written record of all such meetings, and distribute copies of them to the Architect, Owner, and all Trade Contractors interested in the matters covered.

1.3 All Trade Contractors shall furnish to the Construction Manager's Field Representative, all available information concerning the conditions and progress of their work, including manpower used on a daily basis.

END OF SECTION

01310 CONSTRUCTION SCHEDULES

1.1 EXECUTION OF THE WORK

1.2 CONSTRUCTION PLANNING

Within five (5) days after the award of each Trade Contract, all Trade Contractors shall submit the following scheduling information:

1.2.1 A Procurement Status Report, in a format acceptable to the Construction Manager, which shall itemize all material and equipment, submittal and review requirements, fabrication and delivery lead times, and delivery requirements needed to meet the Trade Contractor's schedule as well as the overall project schedule.

1.2.2 Each Trade Contractor shall submit their own detailed schedule, in a format acceptable to the Construction Manager, which incorporates: the procurement information of Article 1.1.1-above, all known interfacing of other trades, the Trade Contractor's anticipated durations, and all other information the Trade Contractor feels is necessary to identify their requirements for the Construction Manager to coordinate with the Construction Manager's direction and scheduling.

1.3 CONSTRUCTION SCHEDULING

1.3.1 A detailed Construction Schedule will be prepared with the Trade Contractor's input immediately after award of bids and submittal of the above information. Section 00200 provides the "preliminary construction schedule" which describes the approximate durations of sequence of the projects. The completion dates provided are firm and must be achieved. It is intended that all bidders agree to accept the final schedule, and acknowledge that other Trade Contractor's work is paced by, or dependent upon, the various activities being able to commence and proceed with associated activities as scheduled. The approved Construction Schedule shall be regarded as a firm contractual commitment by all parties affected therein.

1.3.2 All Trade Contractors and their Trade Subcontractors recognize and shall accept modifications to the schedule which are reasonable, in the opinion of the Construction Manager for the general interest of the project, as a result of allowable time extensions (formally or informally approved) in any contract, and such modifications are inherent to the construction process and shall not qualify as a basis for extra compensation from the Construction Manager or Owner."

1.3.3 If a CPM network schedule is used to coordinate the work of the project, start and finish dates for each work activity will be furnished to the Trade Contractor to schedule his work. Periodically, these dates will be revised to reflect changed project conditions. The Construction Manager will attempt to schedule the start of the work of any Trade Contractor on the date for the activity, and the Trade Contractor agrees to cooperate in following that direction.

1.3.4 If it is apparent that a Trade Contractor is not going to complete his work in the time allotted, said Contractor must notify the Construction Manager within five (5) days after publication of the schedule. Adjustments may be made to accommodate a Trade Contractor, if the above notification is received and it is within the dates established.

Otherwise the schedule shall be deemed accepted by all parties and become the schedule for the Trade Contractor. Each Trade Contractor will be responsible to be familiar with the schedule and how it will effect or modify his operations, including his coordination with the activities of other Trade Contractors.

1.3.5 It is expressly agreed that time is of the essence for the completion of work under his contract, and the Trade Contractor agrees to perform the work within the time and in the manner specified or within the time extensions the Owner may grant; provided, however, that the Trade Contractor may be liable for any damages suffered by the Owner due to failure of the Trade Contractor to perform the specified work within the specified time.

1.3.6 The Trade Contractor, within five (5) days after being notified to commence work, agrees to commence work in the field of such points as the Construction Manager may designate, and to continue diligently to perform the work, and to fully complete all of his work to the satisfaction of the Construction Manager and Owner. The work shall be carried to completion with utmost speed.

1.3.7 If the Trade Contractor delays progress for any reason other than those allowed by the General Conditions, and refuses to adequately man the project or to work overtime, the Construction Manager may accelerate the work of subsequent Trade Contractors and backcharge all costs to the late Trade Contractor. All direction in this regard will be given in writing to the Trade Contractor.

END OF SECTION

01370 SCHEDULE OF VALUES

1.1 REQUIREMENTS: The Christman Company requires that all Pay Applications and related information (Schedule of Values) be processed through its proprietary Trade Contractor Portal. Trade Contractor agrees to comply with the requirements of the portal. This is your only method of submitting a payment application.

1.1.1 There is No Fee associated with using the Portal.

1.1.2 This also includes Compliance related information such as the Sworn Statement, supporting Waivers, and Insurance Certificates.

END OF SECTION

01400 QUALITY CONTROL

01410 TESTING LABORATORY SERVICES

1.1 TESTING LABORATORY SERVICES

1.1.1 GENERAL: All work (materials and installation procedures) as indicated in specifications, shall be tested and inspected by an independent testing and inspection agency, approved by the Architect/Engineer to provide the quality control requirements in accordance with these specifications. Results of these tests and inspections when performed in accordance with these specifications will not be disputed by either party. Failure of the Trade Contractor to provide quality control in accordance with this specification may result in the replacement of the work at the Trade Contractor's expense.

1.1.2 Owner Provided Testing – Refer to Section 00210 and work category descriptions for testing services provided by the Owner, if applicable.

1.2 TRADE CONTRACTOR'S RESPONSIBILITY

1.2.1 Unless identified otherwise, Trade Contractors are responsible for testing and/or balancing as defined in their work categories and/or designated specification sections.

1.3 TESTING & INSPECTION AGENCY RESPONSIBILITIES

1.3.1 Perform all testing and inspection of the work in accordance with these specifications. Furnish qualified personnel and sufficient equipment in a timely manner when required by the Trade Contractor and/or Architect/Engineer to perform all testing and inspection in accordance with these specifications. Provide written reports, electronically and at least one hard copy, in a timely manner of the work tested and inspected. The reports shall include complete material test results and for in place material, a sketch showing the exact location where the test was taken on the project site. The inspection and testing agency and its representatives are not authorized to revoke, alter, relax, enlarge or release any requirements of the contract documents, nor to approve or accept any portion of the work.

Work will be checked by representatives of the testing agencies as it progresses, but failure to detect any defective work or product will not in any way prevent later rejection when such defect is discovered, nor will it obligate the Owner to final acceptance. When it appears that the work or product furnished is in non-conformance with the contract documents, the representative of the testing agency will direct the attention of the Architect/Engineer and Trade Contractor to such non- conformance.

1.4 AUTHORITY OF THE ARCHITECT/ENGINEER

1.4.1 The Architect/Engineer may order from time to time additional tests and inspection beyond those required, if in his opinion, the subject work may not be meeting specification. The cost for these tests and inspections shall be born by the Trade Contractor if results indicate that work was NOT within the project specifications. The Architect/Engineer may terminate the testing and inspection agency. The Trade

Contractor shall then furnish to Construction Manager the name of an additional agency for approval. The Architect/Engineer may perform quality control tests and inspections.

END OF SECTION

Indoor Air Quality (IAQ) Management Plan - During Construction

Objective

Protect indoor air quality during construction for the safety of construction workers and for the assurance of a high quality indoor environment after building occupancy.

Plan

- Materials have been specified to minimize indoor air pollutants from material off-gassing. Subcontractors are to make every effort to meet the specified requirements for materials.
- Those materials and construction practices that do not specifically meet the requirements of the specifications, should be of the lowest toxicity available in the industry.
- For those materials and construction practices that introduce air quality concerns, use the following procedures to help prevent buildup of contaminates to the indoor environment.

Definitions

- Absorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, materials containing/wrapped in fabrics, fibrous insulation/materials and other materials containing materials with similar absorptive characteristics.
- Contaminants: Gases (i.e. carbon monoxide, acetylene), paint, sealants and coating vapors, regulated pollutants, airborne mold and mildew, products that emit volatile organic compounds during installation, drying, or curing.
- Particulates: Dust, dirt, smoke, concrete dust, masonry dust, drywall dust, wood dust, silica, fiberglass and other airborne solid matter.

HVAC Protection

- Mechanical systems protection – all ductwork not being worked on should be covered to prevent the infiltration of particulate matter. Care should also be given to protect ductwork from collection of particulate matter during delivery to the site. All mechanical equipment that has openings where particulate matter could enter, should be covered at all times.
- If possible, avoid using permanently installed air handlers for temporary heating/cooling during construction – particularly during demolition.
- Do not store construction or waste materials in the mechanical room.
- Use temporary filtration media during construction to protect HVAC at each return air grille; filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE 52.2 – 1999. Isolate the return side of the HVAC system from the surrounding environment as much as possible. Return side shall have the heaviest work areas dampered off and all return system openings sealed with plastic. Return side shall be shut down whenever possible during heavy construction and demolition.
- When the system is off, all supply ducts, equipment and openings should be sealed with plastic for further protection.
- Provide continuous ventilation rate of one air change per hour minimum during construction. Provide additional ventilation as may be necessary to protect workers' health and avoid the accumulation of volatile compounds, dust and other harmful airborne contamination.

- Filtration media must have a Minimum Efficiency Reporting Value (MERV) of 8.
- Maintain a list, and cut sheet, of each air filter used during construction and at the end of construction. Include the MERV value, manufacturer name and model number.

Source Control

- Subcontractors to use low emitting products as specified. When limited resources are available, materials should be used that have the low toxicity emissions available.
- Use electrically powered equipment when feasible and switch from diesel to bottled gas for equipment such as generators or fork lifts.
- High levels of contaminant odor generated during removal of contaminated soils - consult Construction Manager and testing consultant upon first discovery of a contaminant odor. Respirators may need to be worn.
- Gaseous vapors generated during temporary heating operations – contractors to utilize explosive gas detectors that detect harmful levels of carbon monoxide, propane, natural gas, and smoke. Use electric or steam heaters for temporary heat when possible.
- Concrete floor sealing, block sealing and waterproofing - utilize fans, open windows, and respirators.
- Other- Allow sufficient time for dissipation of odor after installation of materials with elevated concentrations of VOC's and other moisture related/containing materials (i.e. fluid applied coatings, adhesives).
- Exhaust pollution sources to the outside through an available exhaust system or portable fan vented to the outside. Depending on the nature of the material and the location of the exhaust, special filtration may or may not be necessary.
- If exhausting the pollution sources is not feasible, the use of a portable air cleaner may be effective.

Pathway Interruption

- Erect barriers to contain the construction area. The barriers should be selected based upon the worst case contributor to dust or odor escaping from the site.
- Locate trash dumpsters, recycling centers and pollutions sources at reasonable distances from the site, so as not to affect the air quality of the surrounding areas.
- Depending on the weather conditions, ventilate using 100% outside air to exhaust contaminated air directly to the outside during installation of VOC-emitting materials.
- Depressurize the work area allowing the air pressure differential between construction and clean areas to contain dust and odors.

Housekeeping

- Isolate areas with high particulate concentration using solid physical barriers from floor to ceiling (plastic sheeting or similar).
- Asbestos abatement- A certified abatement firm and testing consultant will be hired to handle these situations. No trades are to be present in areas while abatement activities are taking place. Areas being abated shall be separated from trades/Owner occupants by a solid physical barrier.
- Control dust and particulate concentration with wetting agents or sweeping compounds.

- If vacuum cleaners are being used for cleaning activities, use high efficiency particulate air filters in them.
- Remove spills of high VOC-emitting materials immediately.
- Use low-toxic cleaning supplies for surfaces, equipment and worker's personal use.
- Do not allow water to accumulate in the building envelope or anywhere on-site. Take care to remove the accumulated water as soon as possible and disinfect the area if necessary.
- Do not install any building materials that have become wet. If building materials do become wet then dry the materials out completely before they are covered up. Failure to do this will result in harmful mold growth which will be very expensive to remediate after the fact.
- When performing sanding operations for gypsum board assemblies, provide the following protection:

    1. Isolate the space
    2. Provide plastic sheet separation during sanding
    3. Close and seal all air system devices and ductwork
    4. Sequence construction to avoid contamination of other spaces with gypsum dust
    5. Provide worker protection

Scheduling

- Consult manufacturers for appropriate dry out times of materials prior to arrival on site. Factory aging of materials with strong odor emissions should be considered prior to delivery of materials on-site.
- Absorptive materials should be sequenced to arrive on-site when moisture and humidity levels are at acceptable levels based upon manufacturer's written/acceptable requirements.
- Products that do not meet the specified requirements, due to limited availability of materials, should be stored in dry, well ventilated areas for odor dissipation (off-gassing/conditioning).
- If absorbent materials must be stored in high humidity on site, protect absorbent materials with an impermeable moisture barrier, preferably a barrier containing recycled content.
- Upon completion of construction, replace all filtration media immediately prior to occupancy.
- After construction ends consideration should be given for conducting a baseline indoor air quality testing procedure for the affected space in the building.

Building Flush Out

- The Construction Manager, with the help of the Mechanical and Controls Contractors, will conduct a building flush out with new filtration media at 100% outside air after construction ends and prior to testing. The building flush out shall comply with the latest LEED requirements for the *Construction IAQ Management Plan – Before Occupancy*

Management & Enforcement of Plan

Construction Manager:

Superintendent shall give a copy of this plan to all subcontractors and shall reinforce the requirements of this plan on a daily basis and reserves the right to modify or change the plan at his or her discretion based on the current safety situation of the site. A testing consultant will be hired to monitor and report

air contaminants and ventilation effectiveness at the discretion of the Superintendent. Project Engineer will support Superintendent in duct protection inspections throughout building.

Photo Documentation:
The Project Superintendent or Project Engineer shall document implementation of the IAQ Plan by taking at least 6 photos on at least 3 different occasions throughout the project. These photos should show each of the IAQ strategies described in this plan.

Architect:
Review compliance with plan during weekly site visits.

Owner:
Reserves the right at any time to verify compliance and request a team meeting to review project safety goals at his/her discretion.

Resources:
These guidelines were developed through referencing the SMACNA IAQ Guidelines for Occupied Buildings under Construction and the USGBC LEED-NC for New Construction Reference Guide.

- www.smacna.org
- www.usgbc.org

01500 TEMPORARY FACILITIES

1.1 DESCRIPTION OF REQUIREMENTS

1.1.1 This section specifies requirements for temporary services and facilities, including such items as temporary utility services, temporary construction and support facilities, and project security and protection. Refer to Section 00210 for additional requirements.

1.1.2 USE CHARGES: No cost or usage charges for temporary services or facilities are chargeable to the Owner or Architect/Engineer. The Construction Manager is responsible for these charges where indicated. In all other cases the Trade Contractor requiring same is responsible for the charges incurred. Cost or use charges for temporary services or facilities will not be accepted as a basis of claims for a change order.

1.2 PROTECTION OF EXISTING FACILITIES

1.2.1 Each Trade Contractor shall provide and maintain proper shoring and bracing for existing underground utilities, sewers, and building foundations encountered during his excavation work, to protect them from collapse or other type of damage until such time as they are to be removed, incorporated into the new work, or can be properly backfilled upon completion of new work.

1.2.2 Each Trade Contractor shall provide and maintain proper shoring and bracing for existing structures and finishes encountered during the execution of his work to protect from collapse or other type of damage until such time as they are to be removed, incorporated into the new work, or can be properly backfilled upon completion of new work.

1.2.3 Each Trade Contractor shall provide and maintain temporary protection for new and existing work during the execution of his work to protect from dirt and damage. Any damage to new and/or existing work resulting from the lack of or inadequate temporary protection shall be this contractor's responsibility to restore.

01510 TEMPORARY UTILITIES

1.1 TEMPORARY ELECTRICAL POWER & LIGHTING

Unless identified otherwise, the following provisions shall apply:

1.1.1 The temporary electrical power and lighting will be installed and maintained by the Electrical Trade Contractor (WC 28). Refer to Section 00210 to verify if the Owner shall pay for all power consumed for the temporary electrical service.

1.1.2 All Trade Contractors shall obtain the power for their temporary electric requirements from the existing power source available on the site. All necessary lugs, transformers, disconnect switches, fuses, cable, posts, ground fault interrupters, etc., required for connection to the power source and distribution, including wires, cable, supports, etc., shall be provided by Trade Contractor, all as coordinated and approved by the Construction Manager. The Owner shall pay for all reasonable amounts of power consumed for the temporary electrical service. Electric heaters will not be allowed for heating temporary trailers and offices.

1.1.3 Any electrical requirements for power or lighting beyond those listed in this paragraph

shall be the responsibility of the Trade Contractor requiring them.

1.1.4 Overtime work requiring standby electricians shall be at the expense of the Trade Contractor requiring same. Installation of temporary electrical power and lighting shall be as scheduled by the Construction Manager.

1.1.5 Electric welder machines will not be allowed to be used without the express permission and approval of the Construction Manager and Owner. The Trade Contractor would have to pay for all equipment and materials required to provide the distribution and power supply if permission were granted to use electric welders, all as coordinated and approved by the Construction Manager.

1.1.6 All temporary electrical installations shall be in compliance with the latest National Electrical Code or OSHA, whichever is more stringent.

1.2 TEMPORARY HEAT

1.2.1 Unless identified otherwise, all equipment and labor for temporary heat after building enclosure shall be furnished by the Mechanical Trade Contractor (WC 27). Refer to Section 00210 to verify if energy will be supplied by the Owner when the heating equipment is connected to the existing power system.

1.3 COLD WEATHER PROTECTION

1.3.1 Unless identified otherwise, each Trade Contractor shall provide the temporary heat and protection necessary to allow his work to continue during cold weather. The building shall be considered to be enclosed when the exterior walls, roofing and temporary closures to all wall and roof openings are in place.

1.4 TEMPORARY TELEPHONE SERVICE

1.4.1 Each Trade Contractor shall provide temporary job site telephone service as required at his own expense.

1.4.2 Telephone numbers for summoning aid, such as the Police Department, the Fire Department, physicians, ambulances, and rescue squads from outside sources shall be conspicuously posted by the Construction Manager at the site of the work.

1.5 TEMPORARY POTABLE WATER SUPPLY

1.5.1 Unless identified otherwise, the Mechanical Trade Contractor (WC 27) shall furnish, install, maintain, and remove if necessary, a temporary water supply system as required. Refer to Section 00210 to verify if Owner shall pay for water usage fees when connected to the Owner's existing system.

1.6 TEMPORARY TOILET FACILITIES

1.6.1 The Construction Manager shall provide and maintain adequate toilet facilities in a clean and sanitary condition for the use of all Trade Contractors. The use of chemical toilet facilities will be permitted.

1.7 FIRST AID

1.7.1 The Trade Contractor shall provide a completely equipped first-aid kit, which shall be readily accessible at all times and shall be provided and maintained at the site of the work in a clean and orderly condition. The required number of employees who have been properly instructed shall be designated to be in charge of first aid work. At least one such employee shall be available at all times that the work is in progress.

1.8 TEMPORARY FIRE PROTECTION

1.8.1 Each Trade Contractor shall be responsible for temporary fire protection related to his own work.

1.8.2 Unless identified otherwise, The General Trades Contractor (WC 20) shall furnish fire extinguishers in accordance with OSHA, as required for the building. Each Trade Contractor shall furnish fire extinguishers in accordance with OSHA requirements when his work required additional extinguishers.

01520 CONSTRUCTION AIDS

1.1 HOISTING & SCAFFOLDING

1.1.1 All hoisting required in the performance of each Trade Contractor will be provided by that Contractor. If a crane is 125 tons or greater, or is a tower crane, only certified operators are allowed. Trade Contractor is responsible for providing required documentation of certification of operators PRIOR to start of work.

1.1.2 Each Trade Contractor shall provide his own scaffolding, which shall be in accordance with all OSHA safety requirements.

01530 BARRIERS

1.1 TEMPORARY SITE FENCE

1.1.1 The temporary site fencing will be provided by the Construction Manager unless otherwise specifically noted.

1.2 TEMPORARY BARRICADES, TRAFFIC CONTROL & TRAFFIC LIGHTS

1.2.1 Each Trade Contractor is responsible for the maintenance and replacement (when removed) of all temporary barricades, traffic control, and traffic lights. In addition, each Trade Contractor shall be responsible for installation of temporary barricades in accordance with MIOSHA requirements at openings created by that trade contractor.

01540 SECURITY

1.1 WATCHMAN

1.1.1 Unless identified otherwise, the services of a watchman will not be provided by either the Owner or the Construction Manager. Each Trade Contractor shall be responsible for, and make good any loss not covered by the Builder's Risk Insurance and shall be responsible for the associated deductible costs.

01550 ACCESS ROADS & PARKING AREAS

1.1 CONSTRUCTION PARKING

1.1.1 Refer to Section 00210 for parking requirements.

01560 SPECIAL CONTROLS

1.1 WORK INCLUDED: The work covered by this Section of the Specifications pertains to Special Controls.

1.1.1 LIMITING EXPOSURES OF WORK: Each Trade Contractor shall supervise performance of the work in such a manner and by such means which will ensure that none of the work, whether completed or in progress, will be subjected to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Such exposures include, where applicable, but not by way of limitation the following:

- Excessive static or dynamic loading.
- Excessive internal or external pressures.
- Excessively high or low temperatures.
- Thermal shock.
- Excessively high or low humidity.
- Air contamination or pollution.
- Water or ice.
- Solvents.
- Chemicals.
- Light.
- Puncture.
- Abrasion.
- Heavy traffic.
- Soiling.
- Bacteria.
- Insect infestation.
- Combustion.
- Electrical current.
- High speed operation, improper lubrication, unusual wear or other misuse.
- Incompatible interface.
- Destructive testing.
- Misalignment.
- Excessive weathering.
- Unprotected storage.
- Improper shipping or handling.
- Theft and Vandalism.

1.2 SPECIAL CONTROLS DESCRIPTIONS

1.2.1 SPECIFICATIONS BY REFERENCE: Where reference is made in the specifications to standards of any technical society, association, governmental agency, etc., said specifications or standards shall apply and be binding as though fully repeated therein and are to be considered as a part of these specifications.

1.2.2 RELATED WORK: The contractor shall conduct his work in a manner to prevent air, water, and noise pollution by establishing adequate controls during the construction operations. All controls shall be in accordance with the applicable laws of the State of Michigan.

A. AIR POLLUTION: The open burning of combustible wastes from clearing and grubbing operations and of waste construction materials will not be permitted. The Contractor shall dispose of all such wastes at sanitary landfill(s) licensed by the Michigan Department of Natural Resources.

1) Dust Control: The contractor shall maintain all traveled areas in a safe, dust-free condition at all times. To accomplish this, the Contractor shall remove any tracked materials such as mud, dirt, etc. from construction and haul roads, furnish and apply chloride treatment to temporary roads, furnish and install temporary road patches or surfaces, or any approved methods or systems.

B. WATER POLLUTION: The contractor will be required to perform all construction operations in a manner that will conform to the requirements of Act 347, Soil Erosion and Sedimentation Control Act. Methods to be used are indicated herein (Items No. 1 thru No. 46) and referenced with numbers and symbols to the plans when special details are designated. The contractor shall also be required to perform all work in conformance with the requirements of Act 346, Inland Lakes and Streams. The permits for the construction will be obtained by the Owner, unless otherwise noted in the work category description.

C. NOISE POLLUTION: The contractor shall exercise judgment in the conduct of operations, which by nature result in excessive noise. All such operations shall be coordinated with the Construction Manager and Owner to avoid disruption to Owner operations.

D. CONSTRUCTION DEBRIS: All construction debris shall be removed from the construction site(s) at regular intervals and disposed of at sanitary landfill(s) licensed by State department having authority.

E. HOUSEKEEPING: The project work areas shall be maintained in a neat and clean condition and all debris and waste materials shall be removed from work areas on a daily basis.

1.2.3 VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL: The contractor shall be responsible for providing, installing, and maintaining vehicular and pedestrian traffic control signs, lights, and barricades in conjunction with construction operations where applicable. Vehicular traffic control measures shall be in accordance with the Michigan Manual of Uniform Traffic Control Devices.

A. STREET CLOSING: No street or roadway may be closed to traffic without prior written permission of the governing body having jurisdiction over the street or roadway.

B. EXISTING TRAFFIC CONTROL SIGNS: Existing traffic control signs which conflict with construction operations may be temporarily removed. The contractor shall provide traffic control for the duration of the sign displacement and signs shall be replaced in the proper location immediately after construction

operations adjacent to the sign locations are completed.

01590 FIELD OFFICES

1.1 The Construction Manager shall maintain a temporary field office at the site, equipped with telephone, plan desk and plan files, properly heated and illuminated for his, the Architect's, and the Owner's exclusive use. Each Trade Contractor shall provide his own office as necessary. Temporary offices shall be arranged to avoid interfering with construction, and location shall be approved by the Construction Manager.

01595 SMOKING POLICY

1.1 Refer to Section 00210 for Smoking Policy. Failure to comply with this policy may result in the loss of smoking privileges for all construction personnel on the project, and/or dismissal from the site. There will be no smoking in the Construction Manager's field office.

END OF SECTION

01600 MATERIAL AND EQUIPMENT

01610 MOVING MATERIALS

1.1 If at any time it becomes necessary to move materials temporarily located on site, which is to enter into their final construction, the Trade Contractor furnishing the materials shall, when so directed by the Construction Manager, move them to another location at his own expense.

01620 STORAGE & PROTECTION

1.1 GENERAL

1.1.1 Each Trade Contractor shall use the area designated by the Construction Manager for storage of materials, etc., but shall confine this area to a minimum within Contract limits as shown on the plans. Storage beyond this area will not be permitted. Roof areas shall NOT be used for the storage of windows, removals, debris or any other construction items. Storage on the site is very limited and Trade Contractors shall provide for the bulk of materials remote from the site. Refer to Section 00210 for project specific requirements.

1.1.2 Each Trade Contractor shall provide suitable and sufficiently enclosed and covered spaces, with raised flooring, to protect materials and equipment from damage by weather or construction work.

01625 SALVAGING OF MATERIALS

1.1 GENERAL

1.1.1 If applicable, materials or equipment shown on drawing or specified herein to be salvaged but not reused, shall become the property of the Owner and each Trade Contractor shall deliver said items to location designated by the Construction Manager. All items not specified to be salvaged for reuse or delivered to the Owner, will be removed from the project site and disposed of legally.

01631 PRODUCTS AND SUBSTITUTIONS

1.1 SUMMARY

Specified Herein: General Requirements for Substitutions and Product Acceptance.

1.2 SUBSTITUTION SUBMITTALS

1.2.1 The following submittals shall be required for materials, assemblies, and component parts of assemblies where scheduled in the "Submittals" Section of Division 1, specified in the Trade Sections or required by the Construction Manager or the Architect as a condition precedent to acceptance of a proposal material, a statement of:

a. Product Certification
b. Manufacturer's review of documents and conditions of use.
c. Approval of proposed Applicator or Installer.
d. Proposal for on-site instruction.
e. Manufacturer's supervision of inspection.

1.2.2 Submittals shall be in same form as specified for Request for Acceptance of Materials described herein and, wherever practical should accompany such request.

1.2.3 Submit description of the complete system for each assembly listing all proposed components and acknowledging adjacent materials which are in contact with material or function as a part of the system.

1.2.4 Where one or more of these services are specified, they are considered to be an integral part of the new system. A proposal to delete any specified service will be considered as a reduction in Scope, subject to general conditions for changes in the work.

1.3 MODIFICATIONS

1.3.1 Letter of certification, or request for acceptance, shall indicate all modifications and clarifications to the Contract Documents, including additional instructions for installation or use, which are, in the opinion of the Manufacturer, necessary for proper performance.

1.3.2 If any of the services specified under this Section are not scheduled as a requirement but are normally recommended by the Manufacturer, notify the Construction Manager and the Architect of such recommendation.

1.3.3 Modifications and clarifications to the Contract Documents, which in the opinion of the Architect do not affect the finished quality of appearance of the Work, will be accepted, subject to the following conditions:

a. Conform to the functional intent of system design.
b. Accepted by all contracting parties, including Subcontractor and Manufacturer.
c. Include all costs in the original bid price for adjustments to the scope of the Work including the work of other trades.

1.3.4 Modification which affect the scope of the work, or the work of other trades, and for any reason can not be settled prior to bidding, will be considered under the terms of the General Conditions as Changes in the Work.

1.4 PROTECTION CERTIFICATION

1.4.1 Product certification is a statement by the manufacturer that to the best of its knowledge, the material has not failed to perform when previously used for similar purposes and under similar conditions of use.

1.4.2 Obtain and submit statements from manufacturers and fabricators of materials, assemblies and component parts of assemblies that the product as delivered conforms to their published data.

1.4.3 Obtain manufacturer's approval for all variations from published recommendations for installation, operation and conditions of use.

1.4.4 It shall be the duty of the supplier of any material on this Work to submit evidence, upon request, that his material is in compliance with the applicable codes, ordinances and standards referenced therein, in the method in which the material is used in this project.

1.5 GENERAL REQUIREMENTS FOR SUBSTITUTIONS

1.5.1 The Contract Documents indicate and call for certain articles, devices, products, fixtures, materials and work by named manufacturers. The Contract shall be based on materials and work manufactured and supplied by those named.

1.5.2 Definitions:

a. Specified Manufacturers or Materials: Those named in the Contract Documents.
b. Substitutions: Manufacturers or materials, which are not named in the Contract Documents.

1.5.3 Trade Contractor's Responsibility: Manufacturers and trade names are specified to establish a standard. The fact that a product is named does not constitute a guarantee by the Architect that the named Manufacturers have agreed to provide or to modify their product in order to meet all requirements of the Contract Documents. It is the responsibility of the Trade Contractor to obtain assurances from its suppliers that the product it proposes to use will meet all requirements of the Contract Documents. The fact that a material or Manufacturer is a substitution shall not act to either increase or decrease the Trade Contractor's responsibility for performance.

1.5.4 Substitutions During Bidding:

a. Substitutions shall be included in the proposal under the following conditions only and shall follow all requirements of "Acceptance of Substitutions". Paragraph 1.5.6.
b. When the Trade Contractor knows of another product of equal or better quality and performance, which is more readily available.
c. When the trade contractor has had unsatisfactory experience with one or more of the specified products or has reason to believe that the specified manufacturer will not provide the necessary guarantees or assume responsibility for performance.

1.5.5 Substitutions After Contract:

a. Substitutions proposed after execution of the Contract will, if approved by the Architect, be handled in accordance with Article 12 "Changes in the Work" as modified and supplemented herein. A **Request for Change** is sufficient authorization for the Trade Contractor's issuance of a purchase order.
b. A change of Manufacturer or product previously approved will be considered and handled as a Change in the Work.
c. Increases in the cost of materials or Work resulting from the failure of the Trade

Contractor to issue a purchase order within the time limits stated in the specified manufacturer's original proposal shall be the sole responsibility of the Trade Contractor and shall not be grounds for a substitution or an increase in the Contract Sum.

1.5.6 Acceptance of Substitutions:

a. Substitutions will be considered for any manufacturer except where only one manufacturer is listed.
b. In all cases where substitutions are proposed by the trade contractor, it shall be the sole responsibility of the trade contractor to provide adequate data and samples as required by the Architect to evaluate the substitution.
c. Request for acceptance of substitution shall be presented not less than seven (7) days in advance of the date on which a decision by the Architect is required and shall:

1) Include all information required by this Specification.
2) State the reason for the substitution.
3) Include accurate cost data if the substitute material involves a change in the Contract Sum, or if so requested by the Architect.
4) Provide or make arrangements for the Manufacturer to provide complete data describing the proposed substitution, including samples and itemized comparison with the specified materials, and work, if requested by the Architect.

d. The Architect shall not be obliged to justify his reason for rejecting a proposed substitution.

e. In the event that a substitution is accepted conditionally on the Contractor's agreement to assume full responsibility for equality and performance, the Contract shall provide a full value warranty and agree to make good all damages resulting from the failure of the substitute product.

1.6 ACCEPTANCE OF MATERIALS AND MANUFACTURERS

1.6.1 Standard Materials:

a. Architect's acceptance applies to the Manufacturer only and shall not act to permit any deviation from other requirements of the Specifications.

b. Acceptance will be based on the Manufacturer's specifications at time of issuance of Bidding Documents. Deviations from such specifications shall be considered as a substitution.

c. Requests for acceptance shall be in tabular form stating Specification paragraph and material selected, except as otherwise provided.

d. Shop Drawings shall not indicate any material for which acceptance has not been received, unless accompanied by a separate request for approval. In no case shall Architect's review and return of Shop Drawings constitute and acceptance of

either specified or substitute manufacturers or materials.

1.6.2 Special Materials

a. Special materials are materials, which are specified as requiring supervision or technical services by the manufacturer for proper installation.

b. Request for acceptance of special materials shall include a letter from the manufacturer which letter shall contain all information required hereinafter.

1.6.3 Materials Involving Supplementary Warranty or Maintenance Contract:

a. These materials shall be submitted as a request for acceptance over the signature of a qualified technical representative in the direct employment of the manufacturer or such other person as the manufacturer may authorize in writing. Request for acceptance shall contain the following information:

1) Name of project.
2) Name of Contractor, Subcontractor or other party to whom material is furnished.
3) Reference to Specification Section and Article where material is specified and other Contract Documents necessary for identification.
4) Statement of acceptance of documents, conditions, and performance requirements.
   i. Statement that documents as issued are in accordance with manufacturer's recommendations for use of specified materials, or
   ii. Recommended modification of detail, use, application or for substitution of different product by same manufacturer as being more suitable for the performance requirements of the warranty.
5) Statement that detailed installation instructions will be provided.
6) Extent of job site technical services, consultants or instructors proposed, if any.
7) Statement that warranty will be provided.
8) Special provisions required to keep warranty in force.

b. Requests for acceptance may be in the form of a letter including the above items and addressed to the subcontractor responsible for installation of the material, or may be according to a sample form of Material Proposal, provided by the Architect.

c. Upon receipt of the manufacturer's proposal, the subcontractor shall add his own statement agreeing to comply with the manufacturer's requirements and warranting his own workmanship.

d. The contractor shall submit letter of endorsement and copies of all documents, including letters of comment, to the Architect for approval. In the event that the request for approval recommends a change in the work, modification of detail, or substitution of material, the contractor shall indicate his concurrence with the change as being within the scope of the contract or indicate the change in the Contract Sum for making such change, or state his objections to the change.

1.7 AIR POLLUTION CONTROL

1.7.1 Request for approval of equipment, which may generate air pollutants, shall be accompanied by certification of compliance with approvals from all State and Local Air Pollution Control Authorities having jurisdiction.

1.7.2 Request shall state that manufacturer has provided all information and complied with all requirements of the above agencies including requirements for in place monitoring and measurements.

1.8 INSPECTION AND TESTING

1.8.1 In accordance with Sections of this Division applying to Laboratory Tests and Inspections, the Owner has the option to employ independent inspectors for certain portions of the Work and to have materials tested by an Independent Testing Laboratory.

1.8.2 In addition to necessary samples of materials, manufacturer shall provide information and data required by the laboratories and inspectors for the proper performance of their work.

1.8.3 Where certification by Independent Testing Laboratory is required to demonstrate compliance with a specified standard (ASTM, ANSI or similar), Laboratory Reports shall be dated not more than two years prior to submittal and shall refer to the issue of said standard current as of the issue date of the Contract Documents. Later issue or similar standards superseding the standards will be accepted subject approval by the Architect.

END OF SECTION

1700 PROJECT CLOSEOUT

1.1 DESCRIPTION OF REQUIREMENTS

1.1.1 DEFINITIONS: Project closeout is the term used to describe certain collective project requirements, indicating completion of the Work that are to be fulfilled near the end of the Contract time in preparations for final acceptance and occupancy of the Work by the Owner, as well as final payment to each Trade Contractor and the normal termination of the Contract.

a. Specific requirements for individual units of work are included in the appropriate sections in Divisions 2 through 42.

1.2 PREREQUISITES FOR SUBSTANTIAL COMPLETION

1.2.1 GENERAL: Complete the following before requesting the Construction Manager to coordinate inspections for certification of substantial completion, either for the entire Work or for portions of the Work. List known exceptions in the request.

a. In the progress payment request that coincides with, the date substantial completion is claimed, show either 100% completion for the portion of the Work claimed as "substantially complete", or list incomplete items, the value of incomplete work, and reasons for the Work being incomplete.
b. Include supporting documentation for completion as indicated in these contract documents.
c. Advise Construction Manager of pending insurance change-over requirements.
d. Submit special warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, and similar documents.
e. Obtain and submit releases enabling the Owner's full, unrestricted use of the Work and access to services and utilities. Where required, include occupancy permits, operating certificates and similar releases.
f. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
g. Deliver tools, spare parts, extra stocks of material and similar physical items to Construction Manager.
h. Make the final change-over of locks and transmit keys to the Construction Manager. Advise the Construction Manager's personnel of the change over in security provisions.
i. Complete start up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mockups, and similar elements.
j. Complete final cleaning up requirements, including touch-up painting of marred surfaces.
k. Touch-up and otherwise repair and restore marred exposed finishes.
l. Submit a statement showing an accounting of change-over requirements.

1.2.2 INSPECTION PROCEDURES: Upon receipt of the Trade Contractor's request for inspection, the Architect/Engineer will either proceed with inspection or advise the Construction Manager of unfilled prerequisites.

a. Following the initial inspection, the Architect/Engineer will either prepare the certificate of substantial completion, or will advise the Construction Manager of work which must be performed before the certificate will be issued. The Architect/Engineer will repeat the inspection when requested and when assured that the Work has been substantially completed.

b. Results of the completed inspection will form the initial "punchlist" for final acceptance.

1.3 PREREQUISITES FOR FINAL ACCEPTANCE

1.3.1 GENERAL: Complete the following before requesting the Architect / Engineer's final inspection for certification of final acceptance, and final payment as required by the General Conditions. List known exceptions, if any, in the request.

a. Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
b. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
c. Submit a certified copy of the Architect/Engineer's final punchlist of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and has been endorsed and dated by the Architect/Engineer.
d. Submit consent of surety.
e. Submit a final liquidated damages settlement statement, acceptable to the Owner where applicable.
f. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

1.3.2 REINSPECTION PROCEDURE: The Architect/Engineer will reinspect the Work upon receipt of the Construction Manager's notice that the work, including punchlist items resulting from earlier inspections, has been completed, except for these items whose completion has been delayed because of circumstances that are acceptable to the Architect/Engineer.

a. Upon completion of reinspection, the Architect/Engineer will either prepare a certificate of final acceptance, or will advise the Construction Manager of work that is incomplete or of obligations that have not been fulfilled, but are required for final acceptance.
b. If necessary, the reinspection procedure will be repeated.

1.4 RECORD DOCUMENT SUBMITTALS

1.4.1 GENERAL: Specific requirements for record documents are indicated in the individual sections of these specifications. Other requirements are indicated in the General Conditions. General submittal requirements are indicated in the various "submittals" sections.

a. Do not use record documents for construction purposes; protect from deterioration and loss provide access to record documents for the Architect/Engineer's reference during normal working hours.

1.4.2 Record Drawings: Maintain a record set contract drawings and shop drawings in a clean, undamaged condition. Mark up the set of record documents to show the actual installation where the installed work varies substantially from the work as originally shown. Mark whichever drawing is most capable of showing the actual "field" condition fully and accurately; however, where shop drawings are used for mark up, record a cross reference at the corresponding location on the working drawings. Give particular attention to concealed work that would be difficult to measure and record at a later date.

a. Mark record sets with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work.
b. Mark up new information, which is known to be important to the Owner, but for some reason was not shown on either contract drawings or shop drawings.
c. Note related change order numbers where applicable.
d. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
e. At the completion of the Trade Contractor's work, submit record sets of drawings to the Construction Manager showing all record drawing conditions.

1.4.3 RECORD SPECIFICATIONS: Maintain one complete copy of the Project Manual, including specifications addenda, bulletins, and one copy of other written constriction documents such as change orders and similar modifications issued in printed form during construction. Mark these documents to show substantial variations in the actual work performed in comparison with the text of the specifications and modifications as issued. Give particular attention to substitutions, selection of options and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related record drawing information and product data, where applicable.

a. Upon completion of the Work, submit record specifications to the Construction Manager for the Owner's records.

1.4.4 RECORD PRODUCT DATA: Maintain one copy of each product data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with the submitted information. Give particular attention to concealed products and portions of the Work, which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and markup of record drawings and specifications.

a. Upon completion of mark up, submit complete sets of record product data to the Construction Manager for the Owner's records.

1.4.5 MISCELLANEOUS RECORD SUBMITTALS: Refer to other sections of the specifications for requirements of miscellaneous record keeping and submittals in connection with the actual performance of the Work. Immediately prior to the date or dates of substantial completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to Construction Manager for the Owner's records.

1.4.6 MISCELLANEOUS MANUALS; Organize operating and maintenance date into suitable sets of manageable size. Bind data into individual binders properly identified and indexed. Unless identified otherwise, bind each set of data in a heavy duty 3 ring vinyl covered binder, with pocket folders for folded sheet information. Mark the appropriate identification on both front and spine of each binder. 3-ring vinyl covered binder, with pocket folders for folded sheet information. Mark the appropriate identification on both front and spine of each binder.

a. Include the following types of information in operation and maintenance manuals:
   - Emergency instructions.
   - Spare parts listing.
   - Copies of warranties.
   - Wiring diagrams.
   - Recommended "turn around" cycles.
   - Inspection procedures.

- Shop drawings and product data.

2.1 EXECUTION

2.2 CLOSEOUT PROCEDURES

2.2.1 GENERAL OPERATING AND MAINTENANCE INSTRUCTIONS: Arrange for each installer of operating equipment and other work that requires regular or continuing maintenance, to meet at the site with the Owner's personnel to provide necessary basic instruction in the proper operation and maintenance of the entire Work. Where installers are not experienced in the required procedures, include instruction by the manufacturer's representatives.

a. As part of this instruction provide a detailed review of the following items:
- Maintenance manuals.
- Record documents.
- Spare parts and materials.
- Tools.
- Lubricants.
- Fuels.
- Identification systems.
- Control sequences.
- Hazards.
- Cleaning.
- Warranties, bonds, maintenance agreements and similar continuing commitments.

b. As part of this instruction for operating equipment demonstrate the following procedures:
- Start-up.
- Shut down.
- Noise and vibration adjustments.

2.3 FINAL CLEANING

2.3.1 GENERAL: Special cleaning requirements for specific units of Work are included in the appropriate sections of the specifications. General Cleaning during the regular progress of the Work is required by the General Conditions and Subcontract Agreements.

2.3.2 CLEANING: Provide final cleaning of the Work at the time indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program. Comply with the manufacturer's instructions for operations.

Complete the following cleaning operations before requesting the Architect /Engineer's inspection for certification of substantial completion:

a. Remove labels which are not required as permanent labels.
b. Clean transparent materials, including mirrors and glass in doors and windows, to a polished condition. Remove substances, which are noticeable as vision obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
c. Clean exposed exterior and interior hard surfaced finishes to a dust free condition, free of dust, stains, films and similar noticeable distracting substances. Leave concrete floors broom clean. Vacuum carpeted surfaces.
d. Wipe surfaces of mechanical and electrical equipment clean. Remove excess

lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

e. Clean the project site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas to a broom clean condition; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even textured surface.

2.3.3 REMOVAL OF PROTECTION: Remove temporary protection devices and facilities, which were installed during the course of the work to protect previously, completed work during remainder of the construction period.

2.3.4 COMPLIANCE: Comply with safety standards and governing regulations for cleaning operation. Do not burn waste materials at site. Do not bury debris or excess materials on Owner's property. Do not discharge volatile or other harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

a. Where extra materials of value remaining after completion of associated work have become Owner's property, dispose of these materials to the Owner's best advantage as directed.

END OF SECTION

01740 WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 Specified Herein: Warranties and continuing services required to be provided by manufacturers of materials and systems where required for proper performance.

1.1.2 The word "Guarantee" when appearing in any Contract Document or construction correspondence shall be defined as warranty in accordance with Article 3.5 of the General Conditions.

1.2 SUBMITTALS

1.2.1 Submit warranties in accordance with Article 3.5 of the General Conditions as modified by Supplementary Conditions and additional requirements specified under the individual Trade Sections.

1.2.2 Required types of warranties and additional services are scheduled and listed in the Trade Sections.

1.2.3 In all cases where "Special Warranties" or "Service Contracts" are required, the request for approval of materials will be accepted by the Owner and the Architect on the understanding that manufacturer agrees to provide the specified warranty or other service unless stated otherwise in the request.

1.2.4 The Owner will not be bound to accept any limitations or variations from the specified warranty, which were not filed with the request for acceptance and accepted prior to purchase of materials.

1.2.5 Warranties shall be submitted prior to request for payment for 100% completion in each case, shall acknowledge the responsibilities defined under Supplementary Conditions and shall include:

a. Manufacturer's warranty that all materials comply with its published standards, comply with the requirements of the Specifications and where specified, are adequate for the proposed use.
b. Subcontractor's warranty that all workmanship complies with the requirements of the Specifications and of the manufacturer.
c. Contractor's warranty covering the entire work and accepting responsibility for all limitations imposed by the manufacturer or subcontractor except where such limitations have been previously accepted by the Architect.
d. Certification and verification of previously submitted information including statement of all limitations, required maintenance and similar conditions of the warranty.

1.3 STANDARD WARRANTIES

1.3.1 A standard warranty is a warranty whose terms are essentially the same as normally

offered by the manufacturer of standard with the industry.

1.3.2 General Conditions require that standard warranties apply as a minimum requirement notwithstanding the fact that submittal of a copy of the warranty is not required.

1.3.3 Unless otherwise specified, a standard warranty shall be for a period on two (2) years from Date of Substantial Completion.

1.3.4 Contractor shall obtain and furnish to the Owner from each manufacturer of materials or equipment incorporated into the Work a warranty at least as favorable to Owner as that customarily given by such manufacturer to others. Contractor shall inform itself as to any conditions precedent to the effectiveness of each manufacturer's warranty and comply with all such conditions (or obtain waivers thereof from the manufacturer) so that such warranty shall be fully effective. If any event occurs which might invalidate any manufacturer's warranty, contractor shall promptly notify the Owner and the Architect.

1.3.5 All warranty periods shall commence on the Date of Substantial Completion except that, if it is discovered after said date that certain work or materials were not in fact in conformance with the requirements of the Contract Documents, the applicable warranty period shall re-commence from the completion of the repair or replacement of such Work to make it so conform.

1.3.6 The fact that a manufacturer's warranty differs in its terms from those of the contractor or any subcontractor, the acceptance by the Owner of any warranty of a manufacturer or subcontractor, or the fact that the Owner has claimed initially on such warranty, shall not in any way release contractor from his warranty obligations under the contract.

1.4 SPECIAL WARRANTIES

1.4.1 A special warranty is one whose terms, in addition to the standard coverage offered by the manufacturer, contain other special provisions, including:

a. Acknowledgment of specified list of items, which shall be specifically noted as being covered by the warranty.
b. Acknowledgment of specific conditions for use or exposure.
c. Extension of warranty to waive standard exceptions or to extend limits including time.
d. Requirements for specific performance by other trades including method of separation and protection from, or assurance of compatibility with, adjacent materials.
e. Assemblies and systems, which may include products of other manufacturers.
f. Conditions where certain performance criteria are specified and must be either acknowledged or actual limits are required to be determined by performance testing subject to Owner's review and acceptance.
g. Conditions where manufacturer's continuing involvement such as maintenance or advisory service is required.

1.4.2 Maintenance Service During Warranty Period:

a. Reference to routine maintenance required to be performed by the Owner during

the warranty period shall be listed in the original submittal of proposed warranty.

b. All other administration and maintenance service required during the warranty period, including installation of items repaired or replaced under the terms of the warranty shall be included in the original Contract.

1.5 SERVICE CONTRACTS

1.5.1 Required types of Service Contract Proposals are scheduled under Schedule or Required Submittals and are listed in the Trade Sections.

1.5.2 Where specified, the subcontractor or manufacturer originally supplying services and skills required for proper maintenance and agreeing to maintain availability of replacement parts and materials.

1.5.3 The Service Contract is in addition to, and independent of, the Warranty and shall not act to either extend the Warranty or to reduce the contractor's responsibilities thereunder.

1.5.4 Unless otherwise specified or agreed, Service Contracts shall be written for a period of five (5) years starting with the termination of similar services included under the warranty and shall include cancellation privilege annually when exercised at least 60 days prior to anniversary date.

1.5.5 The contractor shall:

a. Prior to submittal of manufacturer of subcontractor for approval, verify that specified service is available and will be offered.
b. Secure from the manufacturer of subcontractor a bona fide proposal to perform the specified services.
c. When so directed, assist the Architect in obtaining proposals for the performance of the specified services by other competent parties.

1.6 ADVISORY AND INSPECTION SERVICE

1.6.1 Advisory and Inspection Service consists of:

a. Periodic inspection on a regular scheduled basis. Include schedule of proposed inspections of the agreement.

b. All necessary information, including special training, where required to adequately instruct Owner's maintenance personnel in preventive maintenance repairs and treatments. If such maintenance work is recommended:

1) Obtain or submit price quotations for recommended work.

2) When so instructed by the Owner, make all necessary arrangements for the performance of the Work.

1.6.2 Parts and Materials Agreement:

a. Where standard commercially available parts of materials are suitable for maintenance or repair, inform Owner concerning trade name or description and location where they may be obtained.

b. Where parts or materials are not readily available maintain replacement stocks at a location as required to prevent undue delay in repairs or loss of use of equipment pending delivery.

1.7 MAINTENANCE SERVICE

1.7.1 A Maintenance Service Contract is an agreement that in addition to Advisory and Inspection Service, the Manufacturer will provide, or otherwise make available through his agent, a regular maintenance service program scheduled during normal working hours.

1.7.2 Proposals shall schedule proposed times for servicing and list the services to be performed.

1.7.3 Maintenance service of equipment shall be performed solely by the original Equipment Contractor and shall not be assigned or transferred to any agent or subcontractor without the approval of the Owner.

1.7.4 Repairs:

a. Permanent repairs shall be started within seven (7) days after notification by the Owner.

b. In the event that emergency and permanent repairs are not started within the specified time limits, or if the work is stopped without the Owner's consent, the Owner shall have the same options to have repairs performed by others as specified under Warranties without invalidating this agreement.

1.7.5 Equipment maintenance shall include systematic examinations, and adjustments and lubrication of all equipment. The Equipment Maintenance Contractor shall repair and replace electrical and mechanical parts whenever required using only genuine standard parts recommended or produced by the manufacturer of the equipment.

1.7.6 Addition work when so directed by the Owner shall be included under the work of the Maintenance Contract and the Contractor shall be reimbursed at the current prevailing rate for the cost of materials, labor and services. Such additional work shall include:

a. Repairs or replacement required as a result of negligence, abuse, or other actions contrary to the Equipment Contractor's operating instructions.
b. Improvement or additional equipment required by the Owner, Insurance Companies, or Governmental Authorities.
c. Except for emergency service, the additional cost for overtime work based on the difference between regular and overtime labor when the Owner requests that such work be performed outside of regular working and so authorized in writing.

1.7.7 Additional requirements for specific maintenance contracts are specified in the various Trade Sections.

1.8 EMERGENCY CALL-BACK SERVICE

1.8.1 Emergency Call-Back Service is an agreement to provide rescue and repair service on an emergency basis where required for the protection of life and property.

1.8.2 Owner's agreement to permit manufacturers to assign agreement to an agent does not relieve manufacturer of responsibility to verify that service remains available for the specified time.

1.8.3 Agreement shall remain in effect for the lifetime of all Warranties, Service Contracts and for such longer time as may be specified or agreed.

1.8.4 Service shall be available on a 24 hour, 7-day basis and shall be performed within the following time limit after notification of emergency unless otherwise specified. Maintain emergency telephone number on file with the Owner for nights and weekends.

1.9 CERTIFICATION

1.9.1 Product Certification: See Division 1, Section titled "Material and Equipment".

1.9.2 Workmanship Certification is a statement by the applicator or installer that all materials and workmanship in connection with the system have been furnished and installed in complete conformance with Contract Documents, and with the manufacturer's specifications and requirements for the particular type of use specified.

1.9.3 A product certification where specified as a requirement shall be in a form similar to the following:

> "We, the (Manufacturing Company), certify that the complete system as detailed and specified can be installed and will perform in accordance with the requirements of the specifications and the ASTM Standards referenced therein for the guarantee period of Two (2) years or such longer period as may be negotiated between the Owner and the (Manufacturing Company).
>
> Upon completion of the Project we will inspect the work and certify to the Owner that the system as installed is in accordance with the Manufacturer's requirements or indicated in writing what remedial action is necessary in order that it does so conform."

END OF SECTION

017419 CONSTRUCTION WASTE MANAGEMENT

1.1 RELATED DOCUMENTS

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

B. 017419-1 TCC Waste Management Plan

C. 017419-2 TCC LEED Misc Waste Diversion Form

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

2. Salvaging non-hazardous demolition and construction waste.
2. Disposing of non-hazardous demolition and construction waste.

B. Related Sections include the following:

2. Division 1 Section "Summary of Multiple Contracts" for coordination of responsibilities for waste management.

2. Division 1 Section "Temporary Facilities and Controls" for environmental-protection measures during construction, and location of waste containers at Project site.

2. Division 02 Section "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements[, and for disposition of hazardous waste].

2. Division 02 Section "Selective Structure Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

2. Division 04 Section "Unit Masonry" for disposal requirements for masonry waste.

2. Division 04 Section "Stone Masonry" for disposal requirements for excess stone and stone waste.

2. Division 31 Section "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials

2. Demolition Waste:

a. Asphaltic concrete paving.
b. Concrete.
c. Concrete reinforcing steel.
d. Brick.
e. Concrete masonry units.
f. Wood studs.
g. Wood joists.
h. Plywood and oriented strand board.
i. Wood paneling.
j. Wood trim.
k. Structural and miscellaneous steel.
l. Rough hardware.
m. Roofing.
n. Insulation.
o. Doors and frames.
p. Door hardware.

q. Windows.
r. Glazing.
s. Metal studs.
t. Gypsum board.
u. Acoustical tile and panels.
v. Carpet.
w. Carpet pad.
x. Demountable partitions.
y. Equipment.
z. Cabinets.
aa. Plumbing fixtures.
bb. Piping.
cc. Supports and hangers.
dd. Valves.
ee. Sprinklers.
ff. Mechanical equipment.
gg. Refrigerants.
hh. Electrical conduit.
ii. Copper wiring.
jj. Lighting fixtures.
kk. Lamps.
ll. Ballasts.
mm. Electrical devices.
nn. Switchgear and panel boards.
oo. Transformers.

2. Construction Waste:
   a. Masonry and CMU.
   b. Lumber.
   c. Wood sheet materials.
   d. Wood trim.
   e. Metals.
   f. Roofing.
   g. Insulation.
   h. Carpet and pad.
   i. Gypsum board.
   j. Piping.
   k. Electrical conduit.
   l. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:

      1) Paper.
      2) Cardboard.
      3) Boxes.
      4) Plastic sheet and film.
      5) Polystyrene packaging.
      6) Wood crates.
      7) Plastic pails.

1.5 ACTION SUBMITTALS

A. Comply with Section 017419.1 Waste Management Project Specific Plan or submit an equally comprehensive Waste Management Plan.

1.6 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

2. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
2. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
2. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
2. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

A. General: Comply with Section 017419.1 Waste Management Project Specific Plan in the following section, or submit an equally comprehensive Waste Management Plan.

B. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:

2. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
2. Total cost of disposal (with no waste management).
2. Revenue from salvaged materials.
2. Revenue from recycled materials.
2. Savings in hauling and tipping fees by donating materials.
2. Savings in hauling and tipping fees that are avoided.
2. Handling and transportation costs. Include cost of collection containers for each type of waste.

2. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

1.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan as approved by Construction Manager. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

2. Comply with Division 1 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

2. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

2. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 1 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

1.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work:

2. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
2. Store items in a secure area until installation.
2. Protect items from damage during transport and storage.

2. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use:

2. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
2. Store items in a secure area until delivery to Owner.
2. Transport items to Owner's storage area designated by Owner.
2. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

1.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

2. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.

D. Disposal: Transport waste materials and dispose of at designated spoil areas on Owner's property.

E. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

SECTION 018119 – INDOOR AIR REQUIREMENTS

PART 1 – GENERAL

1.2. SECTION INCLUDES
   A. Overview of indoor air quality requirements and procedures, including product/material selection.
1.3. DEFINITIONS
   A. Volatile Organic Compounds (VOCs): Organic chemicals that produce vapors readily at room temperature and normal atmospheric pressure (e.g. gasoline, solvents, etc.). VOCs react with sunlight and nitrogen to form ground-level ozone, a chemical that has detrimental effect on human health, agricultural crops, forests, soil, groundwater and ecosystems.
   B. Carpet and Rug Institute (CRI) Green Label: a program established by the national trade association representing the carpet and rug industry to identify carpet products that have been tested by an independent laboratory and have met the criteria for low VOC emissions.
1.4. REFERENCES
   A. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA). IAQ
      a. Guidelines for Occupied Buildings Under Construction. Second Edition, 2007.
   B. ASHRAE. ANSI/ASHRAE 52.2-1999: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
   C. EPA. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air.
   D. State of California. South Coast Air Quality Management District (SCAQMD) Rule 1168. January 2005 (as amended).
   E. State of California. South Coast Air Quality Management District (SCAQMD) Rule 1113. January 2004 (as amended).
   F. Green Seal. Paints (GS-11). January 1997. May 1993.
   G. Green Seal. Anti-Corrosive Paints (GC-03). January 1997.
   H. U.S. Green Building Council. "Indoor Environmental Quality Credit 3: Construction IAQ
      a. Management Plan and Credit 4: Low-Emitting Materials" Leadership in Energy and Design
      b. Environmental Design Reference Guide for Green Building Design and Construction, 2009 Edition. USGBC. "Materials & Resources Credit 2: Construction Waste Management". Leadership in Energy and Environmental Design Reference Guide for Green Building Design and Construction, 2009 Edition.
   I. California Department of Health Services Standard Practice for the Treating of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.
1.5. OBJECTIVES
   A. Meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2_{nd} Edition, 2007, Chapter 3.
   B. Protect construction workers and future building occupants from indoor air quality problems resulting from construction activities and building materials.

C. Reduce the production and circulation of pollutants during construction.
D. Protect equipment and absorptive materials stored and installed on-site from moisture, dust and dirt accumulation during construction.
E. Prepare the building for occupancy following construction and prior to occupancy.

1.6. DESCRIPTION OF WORK
A. The site superintendent (or other person designated by the Contractor) shall be responsible for all aspects of LEED coordination during construction related to indoor air quality management.
B. Reference 018119-1 TCC Indoor Air Quality Management Plan – During Construction for the required Best Management Practices for Contractors and Sub-Contractors.

1.7. LEED START-UP MEETING
A. Prior to mobilization on-site, the Contractor shall hold a start-up meeting with the Architect to review indoor air quality management requirements. This meeting shall include a review of:
1. Indoor air quality management objectives.
2. Indoor air quality management requirements and procedures.
3. Indoor air quality management documentation and submittals.

1.8. LEED COORDINATION MEETING
A. Prior to start of construction, the Contractor (in conjunction with the Architect) shall hold a coordination meeting with the construction team to explain the indoor air quality management requirements to the Sub-Contractors. This meeting shall include a review of:
1. Indoor air quality management objectives.
2. Indoor air quality management requirements and procedures.
3. Indoor air quality management documentation and submittals.

1.9. SUBMITTALS
A. Product VOC Identification
1. Collect supporting documentation (MSDSs, product data sheets, letter from manufacturers, etc.) to document VOC emission rates for all adhesives, sealants, paints and coatings that are applied onsite and fall within the building weather barrier.
2. Submit completed supporting product literature to the Contractor and Or Architect for review at least 14 days prior to ordering.
B. Low Emitting Flooring Systems
1. Collect supporting documentation (letters from manufacturers, product literature, etc.) for all carpet and hard surface flooring products used in the building.
2. Submit completed supporting product literature to the Contractor and Or Architect for review at least 14 days prior to ordering..
C. IAQ Management Inspection Log
1. Contractor / Subcontractor shall keep a completed log. The log shall commence when the building is enclosed and carry through to building turnover.
D. Photo Documentation Checklist
1. Photographs shall be provided as specified in the checklist.
2. Photographs will be taken on **six** different occasions during construction to prove continuous compliance.

2. PART 2 - PRODUCTS

2.1. GENERAL

A. The VOC content limits listed in this section may be amended from time to time by their governing bodies. In the event that the VOC limits listed below are higher than the VOC limits in effect at the date of application for building permit, the VOC limits in effect at the date of application for building permit shall be used.

B. Reference SECTION 016119 LEED PRODUCT REQUIREMENTS for product Indoor Air Quality / Emission requirements and acceptable levels.

3. PART 3 - EXECUTION

3.1. POLUTANT SOURCE IDENTIFICATION

A. Identify potential sources of indoor air pollutants on the construction site.

B. Any construction activity or material that produces odor and/or dust is considered a source of air pollutants. Pollutant sources include, but are not limited to:

C. Materials that produce detectable odor:

Paints	Coatings	Grouts
Stains	Adhesives	Epoxy Flooring
Sealants	Caulking	Solvents
Pesticides	Fuels	Cleaning Products

D. Materials that create dust:

Concrete Products	Drywall	Wood Products
Acoustical Ceiling Tile	Insulation	Ceramic Tile

E. Equipment that emit products of combustion or create odor and/or dust:

Generators	Compressors	Cutting Tools / Saws
Touché / Welders	Vehicles	Portable Heaters

F. Construction activities that disrupt pollutants:

Demolition	Repair	Renovation

G. Other

Demolition	Repair	Renovation

3.2. MINIMIZE POLLUTANTS

A. Reference 018119-1 TCC Indoor Air Quality Management Plan – During Construction

B. Additional measures include but are not limited for the minimization of pollutants generated inside the building from the sources identified under article 3.1:

1. Smoking shall be prohibited inside the building at all times during construction and within 25 feet of building entrances once enclosed.
2. Fuelling up equipment outside the building.
3. Storing gasoline or solvents outside the building.
4. Restricting outdoor vehicular/equipment traffic and operation where emissions can enter the building.
5. Reducing on-site emissions by using equipment that burns propane/natural gas or is powered by electricity.
6. Exhausting pollutant sources directly outside using temporary or permanent ventilation equipment. Where exhaust is not feasible, locally re-circulate air through a portable air cleaner.
7. Collecting and bagging sawdust from woodworking tools.

8. Covering and/or sealing all indoor sources of odor and dust.
9. Using painting techniques that minimize odor (e.g roller instead of spraying).
10. Using cleaning practices that minimize dust (e.g. vacuum instead of sweeping).
11. Using cleaning products that minimize pollution, fumes, VOC's, etc.
12. Prohibiting the burning of garbage.

3.3. HOUSEKEEPING MEASURES

A. Prevent the accumulation of moisture, dust and dirt in the building from the sources identified under article 3.1 using the following measures:
   1. Frequently cleaning interior surfaces to minimize dust and dirt accumulation.
      a) Note: Localized cleaning should occur immediately after a construction activity is completed and/or at the end of each day. A full building clean-up must be performed at least once a week.

B. Promptly clean all spills (fuels, lubricants, paints, adhesives, etc.).

C. Clean or remove excess products.
   1. All Pollutant Containment, Housekeeping and HVAC protection measures will be reviewed by the Contractor and / or Architect during site visits.
      a) All deficiencies identified by the Contractor and / or Architect must be remedied and documented in the IAQ Management Inspection Log within 48 hours of notification.
      b) The Contractor shall clean or replace any equipment or materials that is incorrectly stored or improperly protected at no extra cost to the contract.

3.4. REMOVAL OF PROTECTION MEASURES

A. All products/materials installed as a part of indoor air quality management measures shall be removed prior to building turnover. Any remedial work required as a result of removing the measures is the responsibility of the Contractor.

END OF SECTION 018119

The Work Category (W.C.) Description is included as a guide for Prospective Bidders to summarize the scope of work involved with the work category. The description included is **not** a final summary of the scope of work and should not be construed as such. **All** Contract Documents should be used, as a reference in preparing the Bid Proposal and any omissions in the proposal does not relieve the successful bidder of the responsibility to perform this work.

W.C. No.	Category Description	Specification Reference
02	Earthwork / Site Utilities	Division 00, Division 01, 311000, 311012, 311018, 312000, 323220, 331100, 333100, 334100, 334605
03	Geothermal	Division 00, Division 01, 232113, 232610, 232620, 232630, 232650
05	Site Concrete	Division 00, Division 01, 033000, 311012, 321313, 321373
06	Asphalt Paving	Division 00, Division 01, 311012, 321216, 321415
07	Fencing	Division 00, Division 01
08	Landscaping	Division 00, Division 01, 311012, 329200
10	Structural Concrete	Division 00, Division 01, 033000, 033543, 311012, 096119
11	Masonry	Division 00, Division 01, 042000, 072100, 072119, 083113
12	Structural Steel	Division 00, Division 01, 051200, 052100, 053100, 055000, 118129
~~13~~	~~Waterproofing/Dampproofing~~	~~Division 00, Division 01~~
	WC 13 REMOVED IN ADDENDUM 3	
14	Roofing & Sheetmetal	Division 00, Division 01, 061053, 061600, 075323, 075416, 076200, 077100, 077200
15	Metal Siding	Division 00, Division 01, 074213.13, 074293, 077100
18	Glass/Glazing & Aluminum Entrances	Division 00, Division 01, 084113, 084523, 087100, 088000, 088700
19	Joint Sealants	Division 00, Division 01, 078413, 078446, 079200

20	General Trades	Division 00, Division 01, 035113, 061053, 061600, 081113, 081416, 081816.23, 083323, 087100, 101100, 101416, 101419, 101423, 101423.16, 102113.17, 102600, 102800, 104400, 105113, 116623, 116653, 122413, 123000, 123216, 123616, 123661.16, 127600, 102123
21	Walls & Ceilings	Division 00, Division 01, 054000, 054400, 061600, 072100, 072500, 074200, 083113, 092216, 092900, 095113, 098433, 098436
22	Hard Tile & Terrazzo	Division 00, Division 01, 093013, 096723
23	Carpet & Resilient Flooring	Division 00, Division 01, 096513, 096516, 096519, 096566, 096813
24	Painting & Wallcovering	Division 00, Division 01, 097200, 099124, 099600
25	Playground Equipment	Division 00, Division 01, 116800, 329410,
26	Fire Protection	Division 00, Division 01, 083113, Division 21, 331100
27	Mechanical & Plumbing Systems	Division 00, Division 01, 077200, 083113, Division 22, Division 23, 311012, 312000, 331100, 333100
28	Electrical Systems	Division 00, Division 01, 077200, 083113, 115213, Division 26, Division 27, Division 28, 311012, 312000
29	Food Service Equipment	Division 00, Division 01, 113013, 114000

Work Category No. 05 - Site Concrete

Work Included:

The subcontractor shall timely perform all Site Concrete work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes:

1. Furnish and install all cast-in-place concrete as shown and/or specified including but not limited to sidewalks, curbs and gutters, concrete stairs, concrete paving, concrete planters, frost walls, ADA warning tactile strips, and supported slabs. Includes all labor, material, accessories, and equipment for a complete installation.
2. Furnish and install joint sealants, curing agents, sealers, and/or expansion joints at curbs, sidewalks, and concrete paving. Protect work until sealants have cured.
3. Complete fine grading and compaction under all walks, curbs, and gutters.
4. This work is to be coordinated during the same time period with W.C. 06 Bituminous Paving and W.C. 08 Landscaping.
5. ~~This WC responsible to receive, locate, and install all pipe bollards. WC12 to furnish all Schedule 40 pipe, this WC responsible for excavating pipe bases, pouring the 2000psi concrete, and furnishing the pipe sleeves.~~

ADDENDUM 3 – REMOVE NOTE 5 FROM THIS WC

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. Provide and install maintenance strips.
   A. Install concrete footings for all fence posts. Intent is to do this the same time as the maintenance strip at the fencing.

Related Work by Others:

1. Refer to section 00210 and 01019 for testing requirements and responsibilities.
2. Subbase material installed to +/-0.1' by W.C. 02.
3. Structural Concrete by WC 10.

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $10,000. Reference Section 01020 for specific instructions on allowances. Intent of allowance is for possible concrete light pole bases.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 05

Work Category No. 10 - Structural Concrete

Work Included:

The subcontractor shall timely perform all Structural Concrete work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes:

1. Furnish and install all cast-in-place concrete as shown and/or specified including but not limited to foundations, slab-on-grade, elevated slabs, equipment pads, housekeeping pads.
2. Includes re-steel, foundation waterproofing, waterstops, pre-molded joint filler, bonding agents, vapor & moisture barriers, perimeter foundation and below slab rigid insulation, grouting of structural steel leveling & base plates, expansion and control joints, floor sealers and hardeners, curing compounds, drilling and grouting of dowels, fine grading under slabs-on-grade.
3. All grouting as shown and specified including pump/equipment bases, steel base plates, and grouting of steel beam floor reinforcing.
4. Install all sleeves in concrete slabs including but not limited to Volleyball Net Pole sleeves. Volleyball Net Pole sleeves to be furnished by WC 20. Coordinate with WC20 on final installation locations.
5. Includes installation of anchor bolts, embeds, dovetail anchors, floor doors, unitstrut, and sleeves embedded in structural concrete supplied by others. Coordinate and assist other trades in setting sleeves in formwork. WC 12 will perform an anchor bolt survey – complete timely repair any deficiencies found prior to mobilization of the Structural steel contractor.
6. Includes all forming, placing, finishing, reinforcement, finishing as required, setting, shoring, recesses for other work, dowels, steps, epoxy adhesives.
7. Where required, drill and epoxy all embedded reinforcing.
8. Where required on construction documents, install all poured concrete mechanical and plumbing equipment pads.
9. Includes all required layouts for the performance of this W.C. All surveying necessary to establish proper layout and elevations are the responsibility of this work category.
10. Provide block outs for other trades as shown in contract documents and approved by the construction manager.
11. Furnish, install and maintain temporary winter protection/enclosures and heat for this work categories work activities. This includes fuel, equipment, maintenance and safety provisions to continue and complete this work in an uninterrupted manner, despite weather conditions.
12. Floor finish tolerances (i.e. flatness and levelness requirements) to be installed to meet requirements of specifications. Provide a concrete survey to confirm pours are within the specified tolerances prior to demobilization.

13. This contractor is responsible for the subgrade protection from frost, water, etc once excavation for concrete is complete and forming is to proceed. This includes dewatering.
14. Provide engineered shoring system for supported cast in place concrete walls and formed supported slabs as specified, including all engineering of and installation of any required reshoring.
15. All concrete embedded items, which are furnished by others, shall be installed, received, inventoried, unloaded, handled and protected by this work category, i.e. Steel, Pre-cast and Curtain wall embedded items, inserts, anchor bolts, Elevator embeds, misc. iron embeds etc., shall be clearly marked and labeled per approved and previously provided erection drawings, and be appropriately delivered (FOB jobsite) to this subcontractor for installation.
16. This WC responsible for all staining, sealing and coatings on concrete surfaces, including polishing and grinding as required.
17. Any saw cutting, grinding, chipping and patching work etc. generating concrete dust, shall be approved in advance by the Construction Manager. Dust control and safety procedures will be reviewed and enforced during this activity.
18. Drill and epoxy dowels into existing concrete structures as required.
19. Create, maintain, and remove concrete waste from concrete wash out pit(s) in a location agreed to with the Construction manager for the duration of this trades work.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. Provide and install all bond breaker as required in foundation plan note 7.
2. Provide all reinforcement in concrete slabs, concrete walls, and concrete footings/foundations.
3. Furnish and install concrete expansion joints and associated fire stop as specified. Shop drawings required immediately for this work.
4. This WC responsible to receive, locate, and install all pipe bollards. WC12 to furnish all Schedule 40 pipe, this WC responsible for excavating pipe bases, pouring the 2000psi concrete, and furnishing the pipe sleeves.

   ADDENDUM 3 – ADD NOTE 4 TO THIS WC

Related Work by Others:

1. Furnish anchor bolts and leveling bases by WC 12.
2. Concrete materials testing and periodic "in progress" field inspections by Owner. However, if excessive re-testing is required, this subcontractor will be assessed re-testing costs.
3. Foundation sub- drainage system by WC- 02.
4. Site concrete pavements & curb/gutter by WC 05.
5. Utility thrust blocks and concrete encasement of site electrical by WC 26, 27, & 28.
6. Building pad, sub base and sand cushion for slab on grade and walks by WC 02.
7. Cavity wall insulation by WC 11.

8. Reinforcing steel contained entirely within unit masonry by W.C. 11.
9. Embedded items in concrete furnished by others.
10. De-watering of all excavations to be performed by WC 02 until forming begins.
11. Perimeter draining by W.C. 02.
12. Walk pads on roof supplied and installed by W.C. 14.
13. Grouting of precast concrete planks and masonry by others. Precast hollowcore ends should be either grouted or dammed by the precast contractor prior to WC 10.

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $10,000. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 10

Work Category No. 11 - Masonry

Work Included:

The subcontractor shall timely perform all Masonry work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes, including, but not limited to:

1. Furnish and install all brick/masonry assemblies, stone assemblies, concrete masonry units, cast stone caps, necessary anchoring of unit masonry work to structural and miscellaneous steel, weeps, and vents. Includes all labor, material, accessories, and equipment for a complete installation.
2. Furnish and install horizontal and vertical masonry wall reinforcement, anchors, through wall flashing, bond beams, insulation, dampproofing, fire safing (including perimeter of walls), top of wall plates, sealants, caulking, expansion joints assemblies and covers, compressible fillers, expansion joint fillers, and isolation material.
3. Furnish and install all spray foam insulation.
4. All through wall flashings shall be inspected by local building authority (if applicable) and Construction Manager prior to being concealed.
5. Receive and install all metal embedded lintels, masonry wall angle supports, bearing plates, anchors, steel lintels, counter flashing reglets, roof counter flashing, etc. as supplied by others to be installed in masonry. Includes final adjustment of items including where masonry walls abut metal deck or steel members.
6. Furnish and install access panels if shown in masonry walls. Install all access panels in masonry as may be provided by others.
7. Cooperate and coordinate masonry Work with other trades for proper locations of rough-ins and penetrations thru masonry walls. Coordinate with structural steel contractor regarding location and size of tie-in points for steel bearing on existing masonry walls. Required preparation of openings including cutting of block, grouting of walls, and installation of bearing plates by this contractor.
8. Include sawcutting and necessary patching where the removal of brick is required for structural tie-in or for corridor penetrations. All saw cutting needs to be wet cut to help reduce dust.
9. This WC responsible for all fireproofing/smoke proofing as required in the life safety plan at all masonry wall locations.
10. Include all masonry coatings, including any glazing or graffiti protection as required.
11. Provide and install all cast stone.
12. Provide and install all building paper required at typical wall joint shown on detail 8 on A5.1.
13. This work category will be responsible for review/coordination of approved shop drawings such as the curtain wall system, door and window openings, etc, prior to work taking place. These documents can be obtained for review from the Construction Manager.
14. Provide required brick and stone samples as well as a mock-up wall as indicated in the specifications, to

be reviewed and approved by the architect and owner prior to construction starting for this work category.

15. Masonry wall cavities and top of walls shall be covered and protected each day.
16. Furnish, install and maintain temporary winter protection/enclosures and heat as required for proper installation of this contractor's work. This includes fuel, equipment, maintenance and safety provisions to continue and complete this work in an uninterrupted manner, despite weather conditions.
17. Clean and wash all masonry and stone as specified and in accordance with approved sample. Protect any finished products from the cleaning agents.
18. Protect any new and/or existing adjacent surfaces, including from overspray of insulation, or mortar droppings.
19. This WC responsible to provide and install backerrod and make all joints readily available for WC 19 to caulk joints.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. This work category responsible for exterior bench at main entrance detailed on A5.2 including but not limited to CMU, flashing, masonry veneer, drainage system, weeps, and cast stone cap.
2. Exterior insulation beyond waterproof wrap similar to the condition shown in detail A4.2/2 behind all masonry assemblies to be furnished and installed by this WC.
   ADDENDUM 3 – ADD NOTE 2 TO THIS WC

Related Work by Others:

1. Foundation insulation by WC 10.
2. Steel lintels and angles furnished by WC 12.
3. Installation of roof flashing (parapet caps) by WC 14.
4. Installation of Metal Coping by WC 14.
5. Exterior joint sealants by WC 19.
6. Hollow metal frames furnished by WC20.
7. Elevator frames furnished by WC 30.
8. Layout of masonry wall penetrations in existing walls by WC 20, 27 and 28.
9. Expansion Joint Covers by WC 20.
10. Grouting of frames in metal stud walls by WC 21.
11. Exterior insulation behind metal panel assemblies and roofing assemblies by others.

    ADDENDUM 3 – ADD NOTE 11 TO THIS WC

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $0. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 11

Work Category No. 14 - Roofing & Sheet Metal

Work Included:

The subcontractor shall timely perform all Roofing & Sheet Metal work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes:

1. Furnish and install all membrane roofing, metal roofing, built-up roofing, roof insulation, roof expansion joints, roof hatches and accessories, gutters and downspouts, overflow scuppers, walkway protection, pre-finished metal coping with cleats, ballast, flashings, copings, gravel stops, reglets, termination bars, trim, sealants, ice and water shield, etc., indicated by the contract documents (not just limited to the roof plan) or as required for a complete installation, including labor, materials, equipment, adhesives, fasteners and accessories.
2. Include removal of perimeter fall protection system in conjunction with roofing installation.
3. Include covered walkway metal roofing, including break metal concealed gutters, and metal flashing. Steel supports by others (WC12).
4. Where perimeter details cannot be completed until the building skin is complete, provide preliminary weather protection (i.e. extend and secure membrane over parapet walls, if required).
5. Coordinate with mechanical contractor and steel contractor for installation of roof curbs for mechanical equipment.
6. Furnish all hoisting, lifting, and handling, etc. of materials as required for this W.C.
7. Provide broom cleaning of concrete and metal deck roof areas, just prior to installation of roofing systems, i.e. tracked dirt, unidentifiable debris.
8. All fire stopping, flashings, roof termination details shall be inspected and documented by Construction Manager prior to being covered up and concealed.
9. All specified warranty requirements shall be met by this W.C., including all costs of inspection and observation by manufacturer's representatives as required.
10. Subcontractor and manufacturer's representatives shall attend a Pre-Roofing Conference at the project site at a time determined by Owner, Architect, and the Construction Manager.
11. Furnish, install and maintain safety barricades and flagging for the duration of the project to be used by all contractors. If this subcontractor creates an opening or leading edge that creates a fall hazard, perimeter protection/guardrails shall be promptly installed by this subcontractor. Fall protection shall satisfy all safety requirements. If this subcontractor requires existing fall protection to be removed or modified, seek prior approval from the Construction Manager, adjust fall protection as needed and promptly restore fall protection to original condition. This subcontractor shall install perimeter protection to meet safety standards before and after concrete decks are poured. Once this subcontractor has completed respective work, an inspection of all perimeter protection shall be conducted by the Construction Manager, and all identified deficiencies shall be corrected by this subcontractor. Perimeter roof protection/guardrails

similar to above, shall be furnished and installed by this subcontractor, constructed and located, as approved by the Construction Manager prior to installation. All perimeter guardrails/protection shall be removed by others as permanent walls and details are constructed.

12. All materials and equipment shall be secured at all times for wind loads.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. Furnish and install roof hatch assembly including associated roof curb.
2. Provide and install roof walkway pads where required as shown on A0.3.
3. Penetrations for roof drains in metal decking to be cut and sealed by this WC.
4. This WC responsible for any winter conditions needed to install roofing systems per the schedule. Including but not limited to snow removal, ice removal, and temporary heaters.
5. This WC to provide all flashing, sealing, and termination points as required in metal panel, brick, etc. as required where this roofing membrane ties into vertical walls.
6. Furnish and install tectum decking, include cutting for roof penetrations & coordinate with MEP trades for all locations.

   This WC responsible for cutting of all tectum decking as required, including for roof drains, plumbing, mechanical, etc. as required. Coordinate with WC 27, 28, 14 for locations. Corrective work for damaged tectum, or improper cutting to be the responsibility of this WC and corrected by this WC.

   ADDENDUM 1 – ADD NOTE 6 TO WC 14

Related Work by Others:

1. Prefabricated roof curbs for mechanical equipment to be furnished and installed by W.C. 27.
2. Wood blocking and wood nailers by others.
   a. This WC required for all roof blocking as noted in specific details and diagrams at roof edge, and terminations.
3. Roof sump pans, roof drains, overflow roof drains, roof stairs and ladders – furnished and installed by others (WC27).
4. Manufacturer representative to be on site for all inspections as specified. This WC responsible for all payments and fees associated with these inspections, and perform all corrective actions.

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $0. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 14

Work Category No. 15 – Metal Siding

Work Included:

The subcontractor shall timely perform all Metal Siding work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes:

1. Furnish and install all metal siding including but not limited to corrugated metal siding with exposed fasteners, bent metal trim, drip edges, copings, joint sealants, gaskets, integral louvers, vents, soffits, secondary support framing, shims, flashings, trim, and accessories. Include all clips and fasteners.
2. Furnish and install pre-finished sheet metal closures, end panel extrusions, gravel stops, copings, panel flashings, stainless steel counter flashings, etc. Sheet metal copings over architectural pre-cast wall panels. Furnish and install above referenced sheet metal closures and trim that is in contact with metal wall panels & louvers for a complete watertight assembly, including required design and engineering.
3. This contractor to coordinate and cooperate with roofing subcontractor on locations of counter flashings, sheet metal closures & trim details, anchoring and other termination details, for a complete water tight installation.
4. Full coordination with other contractors to insure all penetrations through the metal siding are sealed completely.
5. Provide and install all custom metal siding, including custom colors as required.
6. Provide a color chart with the base bid to indicate which colors have been priced. Provide an alternate price for increased costs for custom colors and color samples for these colors.
7. All embedded items, i.e. masonry and pre-cast counter flashing reglets, shall be clearly marked/labeled per approved erection drawings, and appropriately delivered to assigned subcontractor responsible for installation of embedded items. 48-hour advance notification of embedded shipments will be required for proper coordination with others.
8. Promptly construct field mock-up sheet metal.
9. Properly protect adjacent roofing systems from damage, with rigid insulation and plywood, to avoid crushing tapered roof insulation. Coordinate temporary roof protection details with roofing subcontractor.
10. All flashings, roof termination details need to be inspected by the Construction Manager prior to being covered up and concealed.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. This WC responsible for all winter conditions associated with the installation of metal siding, including the removal of snow, ice, and moisture.

2. Exterior insulation beyond waterproof wrap similar to the condition shown in detail A4.2/4 behind all metal wall & panel assemblies to be furnished and installed by this WC.

ADDENDUM 3 – ADD NOTE 2 TO THIS WC

Related Work by Others:

1. Independent Field Testing by Owner.
2. Steel frame and girts by WC 12.
3. Roof expansion joints and associated counter flashing by WC-14.
4. Flat roof by WC 14.
5. Wood blocking and plywood in contact with metal wall panels by WC 20.
6. Louvers not integral with metal wall panels, blank-off panels at louvers and metal louvers by WC 27.
7. Provide in advance, counter flashing reglets to pre-cast and masonry subcontractors, installation by others.
8. Removal of perimeter roof guardrails/protection by WC 14
9. Roof sump pans, roof drains, overflow roof drains, lighting protection devices and cable, wall and roof anchors, davits, roof stairs and ladders furnished and installed by others.
10. Exterior insulation behind masonry assemblies and roofing assemblies by others.

ADDENDUM 3 – ADD NOTE 10 TO THIS WC

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $0. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 15

Work Category No. 18 – Glass, Glazing, and Aluminum Entrances

Work Included:

Complete all Glass, Glazing, and Aluminum Entrances work in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, etc.), Addenda, Specification Sections:

Reference Work Category Index

Work Category Notes:

1. Furnish and install all aluminum entrance, storefront, curtain wall system, windows, interior and exterior glass/glazing, and window systems complete as shown and/or specified. Includes all labor, material, accessories, and equipment for a complete installation.
2. Furnish and install all required fasteners, angles and supports required for complete installation of these systems.
3. Include all sealants related to this work required for a complete installation, including glass to aluminum, aluminum to aluminum, aluminum to adjacent surfaces. Verify compatibility of sealants to surfaces.
4. Furnish and install aluminum covers, aluminum doors, aluminum door frames, door hardware at all aluminum doors, sills, mullions, trim, sill extensions, flashing and counter flashing etc. where aluminum systems abut other finishes and/or are shown to incorporate structural members or adjacent to the window/glazing systems.
5. Furnish and install glass in openings with frosted boy/girl symbols.
6. Furnish and install all glazing at doors and lite frames provided by others. Includes removal, reinstallation, filler-putty and finish touch-up of glazing stops.
7. Furnish and install fire stop assembly where floors adjoin the curtain wall system and insulation incorporated into the curtain wall system.
8. Coordinate rigid insulation installation with roofing, floor firestopping, and floor anchors systems.
9. Coordinate flashing details with roofing subcontractor for water tight installation. All counter flashing details to be inspected and documented by Construction Manager, prior to being concealed.
10. Expansion joints integral with curtain wall systems are by Subcontractor.
11. Furnish and install metal panel in fills, integral with curtain wall & storefront systems.
12. Coordinate this work with structural, architectural and other related trades for thru-wall flashings, trim, closures, joint sealant work, and architectural finishes for a complete water tight assembly.
13. Complete shop drawings and sealed engineering calculations by licensed engineer showing compliance with specified design criteria.
14. Removal of all labels, stickers, markup, etc. from glass and final washing and cleaning of glass at or just prior to substantial completion. Replace glass damaged from heat absorption into glass from stickers not removed.
15. Furnish and install all security window film as required.
16. Construct field mock-up wall requirements. Expedite mock-up shop drawings and submittals for prompt review and installation, well in advance of installation. Field mock-up will be subject to independent air &

water infiltration testing, performed by an Independent Testing Agency.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. Joint sealants as required to be installed within this WC's assembly shall be furnished and installed by this WC.
2. Coordinate coping color / material with roofing / metal panel coping.. define who does which if they intersect.
3. This WC responsible for all winter conditions associated with the installation of metal siding, including the removal of snow, ice, and moisture.

Related Work by Others:

1. Independent Testing Agency by Owner.
2. Finish joint sealants at aluminum covers/caps and interior surfaces by WC 19.
3. Window sills, rough carpentry, and wood and metal framing below sills by others.
4. Framed mirrors by WC 20 or 27.
5. Cores provided by this WC, keyed by district.
    i. Provide 2 temporary additional cores for construction access at each building, include 2 keys for construction manager.
6. Glazing in Wood Doors by others (WC20).

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $0. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 18

Work Category No. 20 – General Trades

Work Included:

The subcontractor shall timely perform all work as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes:

1. Complete all exterior and interior Carpentry/Millwork (rough and finish) and various General Trades Work as noted within this Work Category, including all labor, materials and equipment required for a complete installation.
2. All exterior and interior rough and finish carpentry including counters, cabinets, trim, nailers, blocking and plywood sheathing. This includes all wood framing in openings.
3. Furnish and install all plywood sheathing and blocking.
4. Furnish all embedded anchors and bolts for rough carpentry to masonry and concrete to be installed by others.
5. Furnish and install all reading nooks, including all padded seats.
6. Furnish and install wood blocking, FRT, sheets, boards, plywood, etc. for required materials that are to be installed by this work category.
7. Furnish and install all retractable bleacher seating, gymnasium equipment, including but not limited to basketball hoops, gymnasium divider, retractable backstops, scoreboards, and volleyball equipment.
8. Provide and install all signage and visual displays, including but not limited to 3D lettering, Dedication Plaque, wayfinding, architectural & interior signage, room lettering, wall applied vinyl lettering.
    - Parking lot signage (Handicapped parking for example) provided by others (WC06).
9. ~~Furnish and install tectum decking, include cutting for roof penetrations & coordinate with MEP trades for all locations.~~
    - ~~This WC responsible for cutting of all tectum decking as required, including for roof drains, plumbing, mechanical, etc. as required. Coordinate with WC 27, 28, 14 for locations. Corrective work for damaged tectum, or improper cutting to be the responsibility of this WC and corrected by this WC.~~ **ADDENDUM 1 – REMOVE NOTE 9 FROM WC 20**
10. If in-wall backing/blocking is required by a specific manufacturer for products included as part of this Work, though not specifically shown within the documents, i.e. architectural millwork, handrails, wall trim, wall mounted toilet partitions, shower rods and curtains, visual display surfaces, metal lockers, fire extinguisher cabinets, misc. accessories, etc., Subcontractor to furnish and install blocking for a complete installation. Also, Subcontractor to furnish and install required sheet metal strip backing for materials provided as part of this Work, as well as materials furnished by the Owner and specifically assigned to Subcontractor for installation of sharps containers, coat hooks, and other items listed.
11. Furnish and install all wood blocking in gypsum walls as required for cabinets, toilet partitions, metal and

wood lockers, hangers, racks, brackets, handrail, owner furnished items, etc. Also furnish and install all roof required nailers/blocking. Any blocking in pre-manufactured metal studs walls will need to be coordinated with WC 21.

12. Furnish and install all toilet partitions, and all bathroom/toilet accessories including but not limited to semi-recessed paper towel dispenser/waste combo unit (4.9gal, 12gal, 18gal), sanitary napkin disposal unit, grab bars (all), mirrors, shower rods and curtains, mop & broom racks, wardrobe hooks, baby changing stations.
    - Include installation of all, including ones noted as provided by owner installed by contractor. For example, TA1 is provided by owner, this WC to receive and install all locations. TA-3A is to furnish and install.
13. Provide non-combustible wood blocking in walls for wall mounted accessories and equipment installed by Owner/others shown or specified.
14. Furnish and install all fire extinguisher cabinets, fire extinguishers, including any selective demolition necessary, and wall blocking necessary for a complete installation of recessed or surface mounted cabinets.
    - Provide temporary fire extinguishers & fire extinguisher stands throughout the project duration for all contractors use. Provide and place per MIOSHA regulations.
15. Furnish and install doors, frames, and hardware. Furnish only and coordinate delivery of frames to be received and installed by others. Electric strikes, magnetic hold-opens, power transfer units will be installed by others – WC-28. Coordinate deliveries, installation instructions & wiring diagrams directly with WC-28.
16. Furnish and install all hollow metal door frames.
17. Manufacturer's rep is to review, approve and sign off on the installation of all door hardware before acceptance by TCC and the Owner.
18. All interior finish carpentry, architectural woodwork, countertops, shelving and millwork. Provide all sealants to adjacent surfaces, including dissimilar materials. Coordinate counter top support spacing with WC 27 under lavatory guards and lavatory installation.
19. Furnished and install all window sills.
20. Furnish and install all solid-surface materials and grommets as indicated.
21. All architectural hardware for cabinets supplied by this Work Category.
22. Include all stainless steel required and associated with millwork.
23. All fabricated materials are to be shop assembled to the greatest extent possible before shipping to the job site.
24. Furnish and installation of specialties including but not limited to: lockers, casework, countertops, visual display boards, Velcro boards, acrylic art displays, benches, towel bars, shower curtain rods, curtain tracks, coat rods, coat racks, mop holders, robe hooks, shelving, wall and corner guards, impact rails, fire extinguishers, fire extinguisher cabinets, wall protection, brackets, associated signage, coat/clothes hooks, shelving, bulletin boards, wall mounted cabinets, cabinet fillers, tack strips, tack boards, overhead doors coiling counter doors, etc., as well as all items mentioned in the above referenced spec sections. Include all accessories required for coiling doors including supports, structural steel, etc. as required for a complete installation in openings.
25. Equipment items designated as Owner-Furnished/Contractor-Installed are a part of this scope of work.

Owner furnished equipment isolated to an electrical connection "only" will be handled by the electrical subcontractor. Equipment requiring water, steam, ducting, etc. will be handled by the mechanical subcontractor. All equipment that does not have any mechanical and/or electrical connection is the responsibility of this work category to receive, unload, distribute, and install.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. Furnish and install flagpole, including the footing required.
2. Furnish volleyball net pole sleeves for installation by WC10. Instruct on final location for installation.
3. Furnish and install all roller window shades.
4. Furnish and install a set of temporary double doors at each building, include ability for doors to be locked from the outside for site security.
5. Furnish and install temporary windows constructed of 2x4 frame, with visqueen like material wrapped for site security and temperature control, anchored in a non-destructive manner so as to not damage finished walls.
6. Keying of all cylinders including master keying, etc. in accordance with the specifications. Key schedule to be provided by Owner.
7. Provide 832 hour allowance for laborers and 240 carpenter hours to be used at the discretion of TCC. Daily time tickets will be required by TCC.
   i. Purpose for general laborer hours is to be for general construction site cleanup, ensure laborer is supplied appropriately to perform general construction cleanup with cleaning supplies, sweeping compound, hand tools, etc.
8. Broom clean finish to be left for WC 22 & 23 flooring installation, provided by this WC.
9. Furnish and install all benches, including interior locker room benches ~~exterior benches~~, including all anchoring, sleeves, pedestals, reinforcing, footings, blocking, etc. as required for a complete installation.

ADDENDUM 1 – REMOVE EXTERIOR BENCHES FROM WC 20

10. Furnish and install all interior and exterior shelving, including stainless steel shelf on wall brackets shown on A3.1B detail 1.
11. Furnish and install cubicle system.

ADDENDUM 1 – ADD NOTE 11 TO WC 08

12. This WC responsible for all FRP wall board panels, including but not limited to where shown in the kitchen/cafeteria area noted as FRP-1 in the specifications and drawings.

ADDENDUM 3 – ADD NOTE 12 TO THIS WC

13. This WC responsible for all glazing within wood doors provided by this WC.

ADDENDUM 3 – ADD NOTE 13 TO THIS WC

Related Work by Others:

1. Dumpsters provided by the Construction Manager.

2. Temporary water and electrical
3. Benchmarks and column lines (one in each direction) by Construction Manager.
4. Roof access doors, curbs, expansion joints and accessories by WC 14
5. Roof insulation by WC 14.
6. Independent testing and inspections by Owner.
7. Roof mechanical equipment curbs by WC 27, installed by WC 14.
8. Temporary heat by Construction Manager.
9. Aluminum entrance door hardware furnished and installed by WC 18.
10. Roof accessories furnished and installed by WC 14.
11. All aluminum door hardware provided by WC 18 and keyed by same.
12. All structural framing by WC 12 and WC 21.
13. Stainless steel countertops with Food Service Equipment by WC 29.

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $10,000. Reference Section 01020 for specific instructions on allowances. Intent of allowance is possible weather structures over mock-ups if needed.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 20

Work Category No. 21 – Walls & Ceilings

Work Included:

The subcontractor shall timely perform all Walls & Ceilings work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Proposal Section, Contract Forms, General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes:

1. Furnish and install all interior and exterior gypsum board including all requirements for high abuse type and type X, metal stud framing, cold-formed framing, insulation, ceiling grid, ceiling tile, as shown and/or specified. Includes all labor, material, accessories, and equipment for a complete installation.
2. Above ceiling support wires for ceiling grid, soffits and hard ceilings will be installed after MEP-above ceiling rough-ins. Hanger wires where required to support light fixtures, grilles, and registers, etc.
3. Furnish and install all expansion joints and covers in drywall, soffit assemblies and/or ceiling grid assemblies. Properly anchor, level and set, including fire barrier(s) under and beyond expansion joint areas. Installation of wall and ceiling expansion joints shall occur just prior to finish painting per floor. Fire barrier(s) within concealed locations shall be installed and inspected prior to being covered by architectural walls and ceilings.
4. All interior and exterior wall and ceiling fire stopping, thermal and acoustical insulation as it relates to this contractors work.
5. Furnish and install all fireproofing where this WC is responsible to join fire rated assembly walls, and all penetrations made by with WC's activities per the drawings and specifications.

   ADDENDUM 1 – REVISED NOTE 5

6. Acoustic sealants and caulking of work within this work category including bottom, sides and top of rated walls. Furnish and install all necessary fire caulking related to this W.C including all required fire taping of walls and ceilings. Subcontractor shall be required to fire-stop, smoke seal and sound seal, all other remaining penetrations, and schedule all Work of this type to completed and inspected just prior to ceiling grid installation.
7. Coordinate with MEP contractors for any ceiling grid penetrations/custom ceiling tile cuts.
8. Properly fire stop and seal all fire wall penetrations created by this work. Fire stop to mechanical, electrical, and plumbing sleeves furnished and installed by others.
9. Furnish and install all access panels shown on the drawings in stud partitions or ceilings including mechanical and electrical panels. It is your responsibility to review all drawings complete including the mechanical and electrical drawings. Install all access panels in metal stud walls and ceilings furnished by mechanical, fire protection, and electrical contractors (not shown on drawings).
10. All layout and control lines for wall, partitions, and ceilings related to this W.C.
11. Furnish and install all ceiling surfaces per the drawings and specifications. Include cutting sprinkler heads. A nominal quantity of additional heads required by inspectors to be expected in addition to those shown on the fire protection drawings.

12. Install all light gauge metal framing including truss system & stiff clips.
13. Include furnishing and installing all acoustical wall panels, and acoustical baffles.
14. Tape and sand joints to bottom of gypsum board to provide even, clean joints to receive vinyl base.
15. All cold-formed framing, fire-stopping, vapor barriers, non-load bearing steel framing, gypsum board, glass-reinforced gypsum fabrications, acoustical ceilings, acoustical wall panels Work, including all labor, materials and equipment required for a complete installation.
16. All interior joint sealants at the following conditions:
    a. All fire rated joints in pre-fabricated joints shall be installed by this WC as required, including any fire rated insulation and fire caulking as required on the life safety plan.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this Work Category.

1. This WC responsible to provide and install joint sealants, fire stopping, etc. at pre-manufactured wall joints if needed after installation in the field.
2. This WC responsible to provide and install Z Strip where shown in transitions from Protect All Flooring; Wall base to Wall Protection.
3. Base bid is to include pre-manufactured CFMF walls and trusses in contractors shop as much as possible and then deliver and install on site. Alternate #1 is to forgo this option and instead build walls and trusses onsite with conventional methods.
4. This WC responsible for all exterior weather barriers, including vapor/moisture barriers, sealants associated for a complete installation. It is expected that the inclusion of this on all exterior pre-fabricated assemblies is base bid.
   ADDENDUM 3 – REVISED NOTE 4 TO THIS WC

Related Work by Others:

1. Dumpsters by Construction Manager.
2. Temporary Water and electrical by Construction Manager.
3. Benchmarks and column lines (one in each direction) by Construction Manager.
4. Roof insulation by WC-14.
5. Independent testing and inspections by Owner.
6. Temporary heat by Construction Manager.
7. Exclude foundation and masonry insulation.
8. FRP to be provided and installed by WC 20, WC 21 responsible for Acoustical Wall Panels.

   ADDENDUM 3 – ADD NOTE 8 TO THIS WC

Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $5,000. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 21

Work Category No. 27 – Mechanical and Plumbing Systems

Work Included:

The subcontractor shall timely perform all Mechanical and Plumbing work, as detailed below, in accordance with the contract documents (including Bidding Requirements, Contract Forms and General Conditions, Supplemental Conditions, General Requirements, Addenda, etc.), including, but not limited to, the following Specification Sections and Work Scope Items. Unless otherwise noted, this contractor is responsible for all items specified in the following specifications sections:

Reference Work Category Index

Work Category Notes:

1. Furnish and install all mechanical and plumbing systems, including domestic water, sanitary and vent, hydronic piping, water heaters, boilers, unit heaters, unit ventilators, air handling units, chillers, water features, VAV boxes, mechanical louvers, radiant heat systems, humidifiers, condensate, heat exchangers, ductwork, insulation, plumbing fixtures, temperature controls including DDC or BMS systems, system commissioning, air and water balancing, etc., indicated by the contract documents (not just limited to the mechanical and plumbing drawings) or as required for a complete installation, including labor, materials, accessories and equipment for a complete installation.
    a. This WC required to carry SC Tech as controls subcontractor for base bid. Provide any alternate contractors as a voluntary alternate.
        i. Controls Contractor shall provide their own underground conduit for all controls wiring between buildings as necessary.
2. All cutting, capping, coring, patching and firesafing of walls, floors, ceilings, etc., required for the installation of this work. Patch and repair work is to be done professionally by skilled craftsmen. All such openings require prior written approval from the Construction Manager, before work begins. Furnish and install all sleeves and or misc. steel in walls, floors, roofs and ceilings that may be required by this W.C.
3. Furnish drawings showing size and location of concrete pads required for mechanical equipment to Construction Manager. Installation of these pads is by W.C. 10.
4. All utility connection, disconnections, tie-ins, crossovers, shut downs and similar work must be performed and scheduled so they will not interfere with other work. It may be necessary to make these changes during "off" hours, or it may be necessary to make "hot tap" connections. The contractor should plan on premium time for this work. Coordinate with the Construction Manager prior to performing this work.
5. Furnish access panels where required for the wall and ceiling valves, dampers and controls that are not shown on the Architectural/Mechanical plans but are necessary for the Mechanical Systems.
6. Furnish all hoisting, lifting, scaffolding and handling of all materials required to complete this work category.
7. Installation of all plumbing and mechanical equipment up to tie in points of food service equipment is required by this WC including floor drains, cold water & hot water supply tie-ins, gas tie ins, etc. as required for WC29 to furnish equipment, and tie in to services provided by this WC.
8. The Electrical, Fire Protection, and Mechanical Contractors will be required to coordinate in a formal coordination process to accomplish the rough-in and final layout as required and specified in Section 1049. Any relocation required to coordinate work will be done at no additional cost to the Owner. All contractors are required to furnish layout and coordination prints for their work prior to these meetings allowing the team to be better prepared at each coordination meeting. Detailers will be provided by this

contractor to accomplish this coordination. These meetings shall be coordinated with the construction manager and shall be held on-site.

9. Provide and install mechanical equipment tags, pipe identification and other required identification of signage related to his work.

10. Run the various building piping systems out five (5) feet from the building walls and make the final connections to underground systems.

11. The mechanical contractor will provide assistance during concrete pours to guarantee the proper elevation of drains is maintained during the concrete pour. Accommodate floor finishes when calculating elevations.

12. Furnish and install all roof curbs and necessary or required auxiliary steel framing for equipment supplied under this W.C. This includes any auxiliary steel required at roof openings not shown on the structural drawings, or for pipe hangers and plenum stiffeners.

13. A coordination meeting will be set up between the controls contractor, mechanical contractor, electrician, and construction manager prior to control work. This will include all required work for a complete system as indicated in the construction documents.

14. Provide and install all plumbing equipment including but not limited to under-lavatory guards, mixing valves, water fountains, vacuum breakers, expansion tanks, water heaters, check valves, recirculation pumps, flow measuring devices, thermometers, pressure relief valves, vents, eye wash stations, showers, wall hydrants, sinks (including 3-station wash basin), service tubs, urinals, grease interceptor.

    a. Food service equipment by others (WC29).

15. Provide and install all mechanical equipment & associated accessories including but not limited to roof curbs/rails, fan coils, condensing units, BMS controllers, exhaust fans, return units, unit ventilators, duct smoke detectors, glycol makeup units, electric heaters, mini-split systems, differential pressure devices,

    a. Kitchen Hoods by others (WC29).

16. Provide and install all aluminum louvers for unit ventilators.

17. This WC responsible for the entirety of the geothermal system beyond the riser, including furnishing and installing all pumps, tanks, valves, etc. as required to perform all geothermal system functions.

18. Cutting of metal deck by others, this WC to provide temporary protection for roof penetrations that cannot be enclosed by end of the day.

19. Provide and install all plumbing up to roof drain locations.

    a. Furnish and install roof drains to be by this WC. This WC responsible for all penetrations in roofing material and decking (including tectum).

20. Provide valve schedule indicating the location of all valves installed at the completion of the plumbing system.

21. Provide and install all roof curb and roof top equipment including placing and hoisting as required.

22. This WC responsible for caulking and patching all plumbing & mechanical penetrations, including any toothing, grouting, caulking, firestopping, firecaulking, etc. as necessary to enclose penetrations made by this WC's work.

Specific Notes and Details:

The following details and notes are included in this Work Category; this list is to clarify the specific items noted below and does not exclude other details or otherwise limit the scope of work for this work category:

1. Installation in exposed ceiling locations needs to be closely coordinated and approved by The Christman Company. All contractors will do a mock up for all unitstrut, fasteners, clips, etc. that will be installed in the ceiling space of a typical classroom. This mock up needs to be approved before overhead MEP installation can start.

2. Pipe insulation wrap must be installed in a clean and visually appealing manner as the mechanical spaces are to be visible. Ensure pipe wrap joints are tight, labels are straight and applied in a clear, consistent manner.

3. ~~This WC shall assume that pre-fabricated walls (by WC 21) are base bid, and this WC is responsible to coordinate with pre-fabricated wall contractor. This coordination is to ensure all in-wall rough-ins are complete and in place prior to enclosing walls, this may include coordination between trades for shop time for fabricated materials. Failure to coordinate and install all in-wall material will need to be corrected, and this WC will be responsible for any repairs, painting, etc. as required to correct revised work.~~

   ADDENDUM 1 – REMOVE NOTE 3 FROM WC 27

4. Upon completion of Geothermal System installation, provide liquid fill to complete level."

   ADDENDUM 1 – ADD NOTE 4 TO WC 27

Related Work by Others:

1. Concrete equipment pads by W.C. 10.
2. Roof vents flashing and counter flashing by W.C. 14.
3. Fire protection system and risers by W.C. 26.
4. Site and footing drainage systems by W.C. 02.
5. Power supply to mechanical equipment by W.C. 28.
6. Installation of access panels/doors by W.C. 21 or WC 11.
7. Furnish and install of vents in metal panel assembly by WC 15.
8. Site utilities beyond 5' from building perimeter by WC 02 or Utility Company.
9. Counter tops to be cut by WC 20.
10. Food service equipment by WC 29.
11. Residential appliances by WC 29.

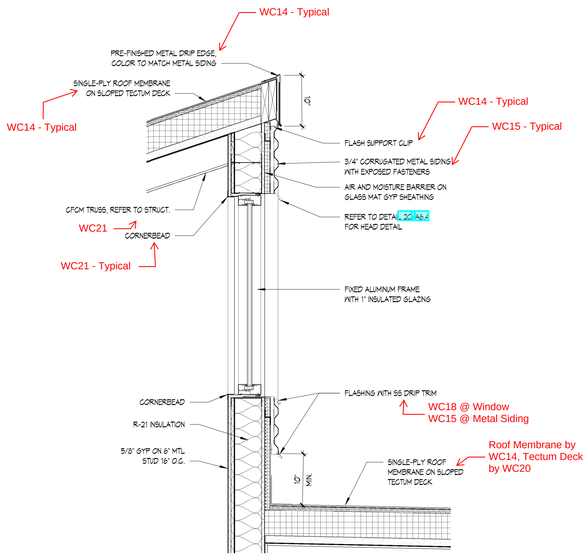
Allowances:

This Contractor shall include in their Base Bid a Construction Manager's allowance of $20,000. Reference Section 01020 for specific instructions on allowances.

Unit Prices:

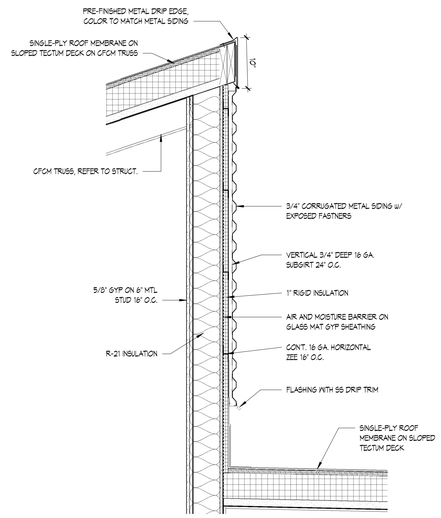
Unit Prices are to be complete furnished in-place operations, and include all costs, incidental materials and work, insurance, fringes, bonds, engineering, overhead and profit. Reference the Trade Contract Proposal form for unit pricing required.

End of Work Category No. 27



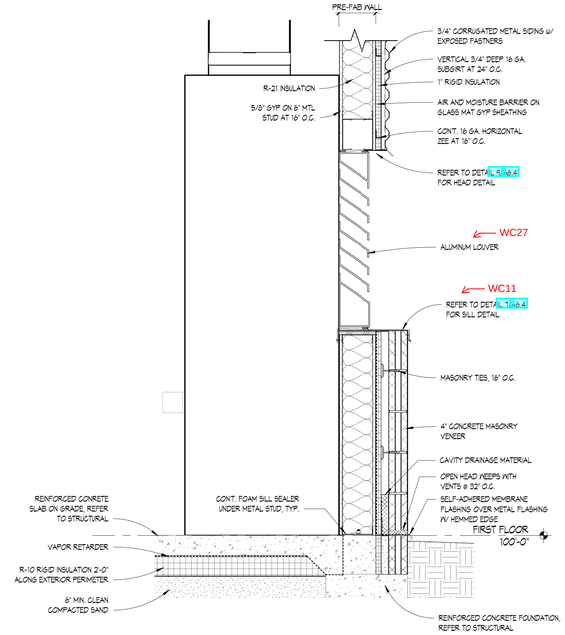
7 PANEL TYPE "G" - CLERESTORY

1" = 1'-0" REFER TO 1 / D1.12



6 PANEL TYPE "F"

1" = 1'-0" REFER TO 1 / D1.12



5 PANEL TYPE "E" - LOUVER

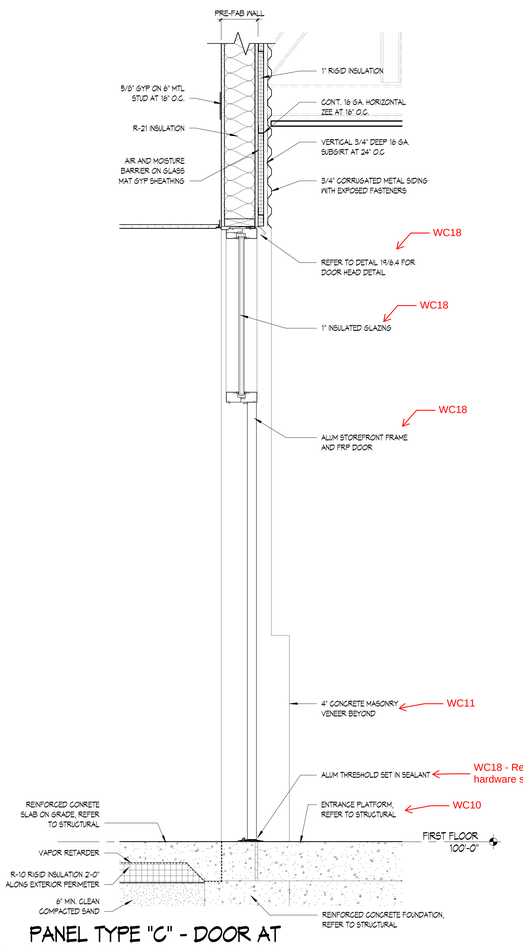
1" = 1'-0" REFER TO 1 / A1.2

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

Willow School

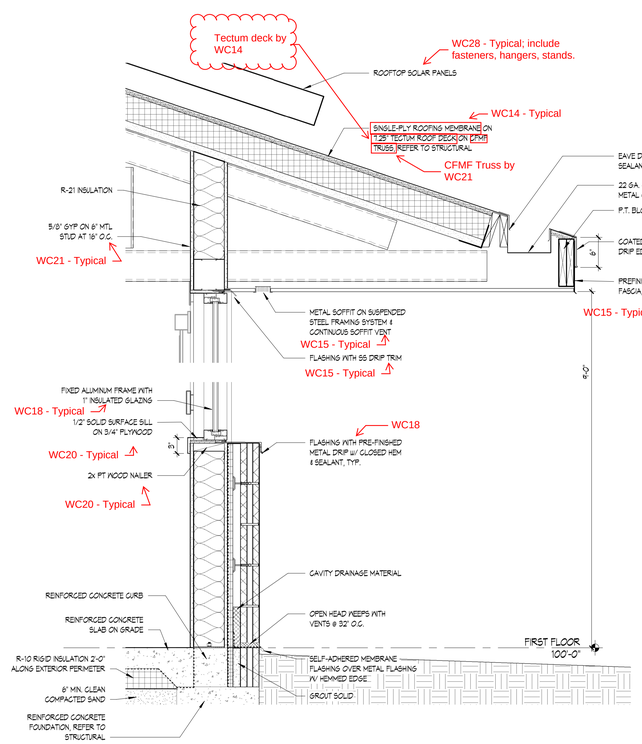
Lansing School District

1012 W. Willow
Lansing, MI 48915



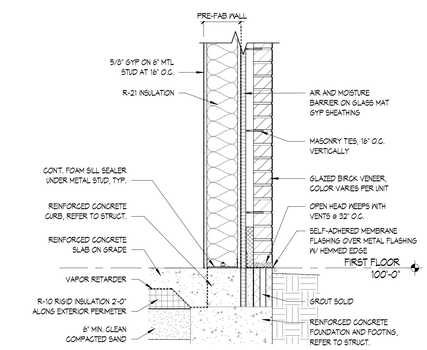
3 PANEL TYPE "C" - DOOR AT CORRUGATED METAL PANEL

1" = 1'-0" REFER TO 1 / A1.1A



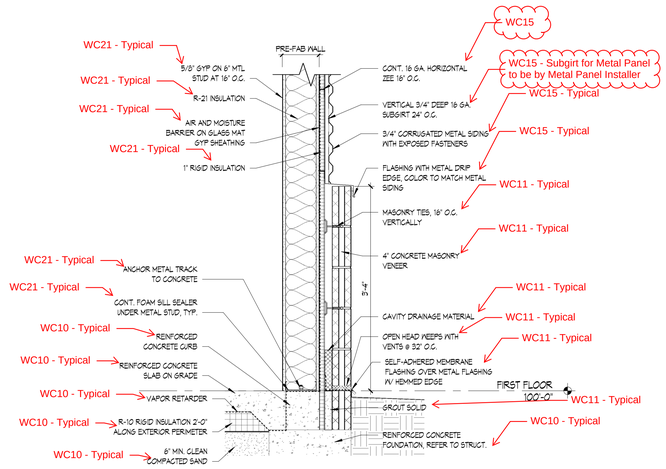
2 PANEL TYPE "B" - WINDOW

1" = 1'-0" REFER TO 1 / A1.1A



4 PANEL TYPE "D"

1" = 1'-0" REFER TO 1 / A1.2



1 PANEL TYPE "A"

1" = 1'-0" REFER TO 1 / A1.2

Lansing School District

ISSUANCES	DATE
Bid and Construction	01/26/2024

ISD NO. SB-0059
JOB NO. 2616.01A

SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.1

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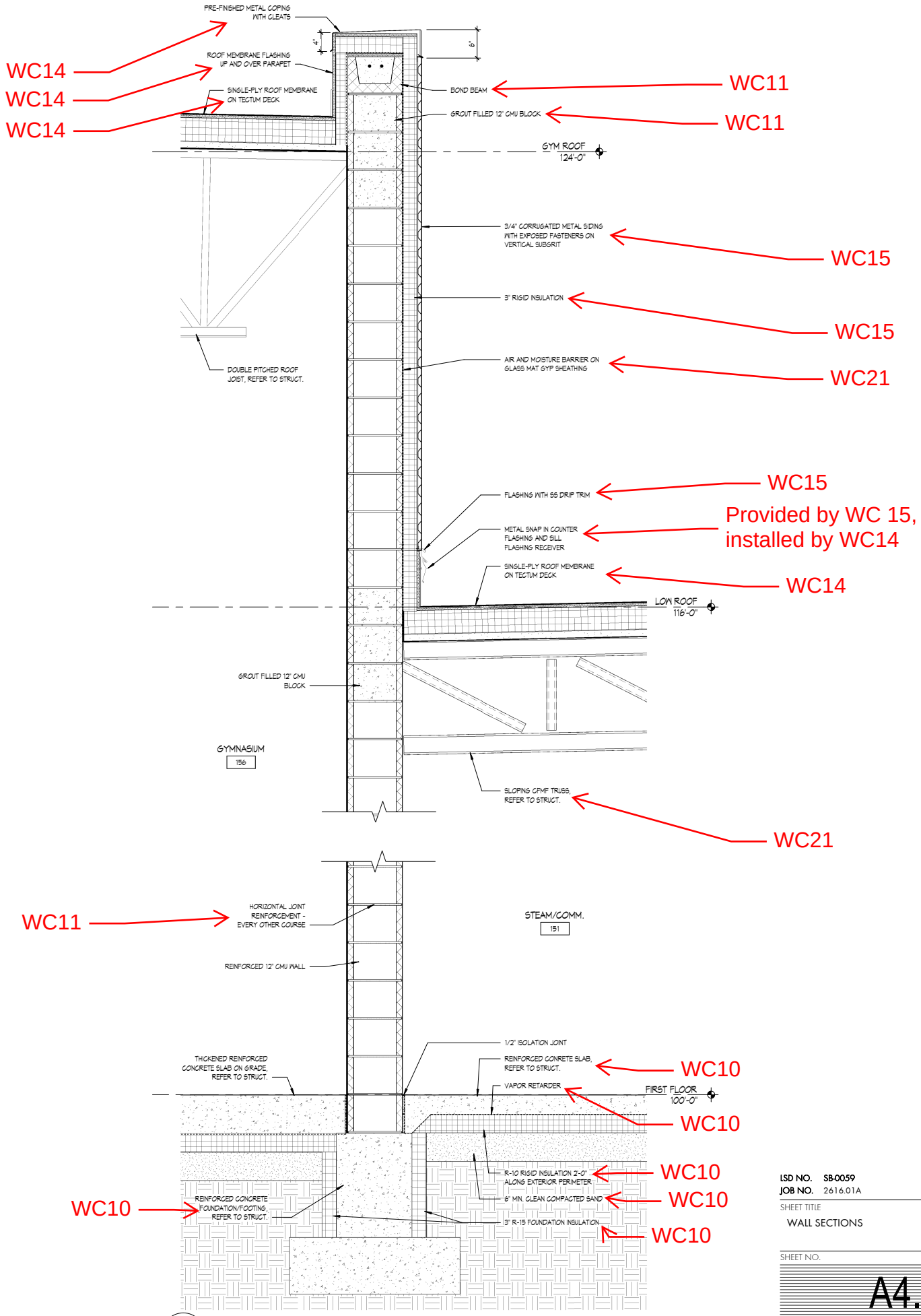
LAST EDIT BY: Kingscott
C:\Users\kingscott\Documents\Lansing_Willow_AHA_v2026_Jan\ga4FCKT.rvt



4 GYM WALL SECTION

1" = 1'-0"

REFER TO 1 / A0.1

LSD NO. SB-0059
JOB NO. 2616.01A

SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.2

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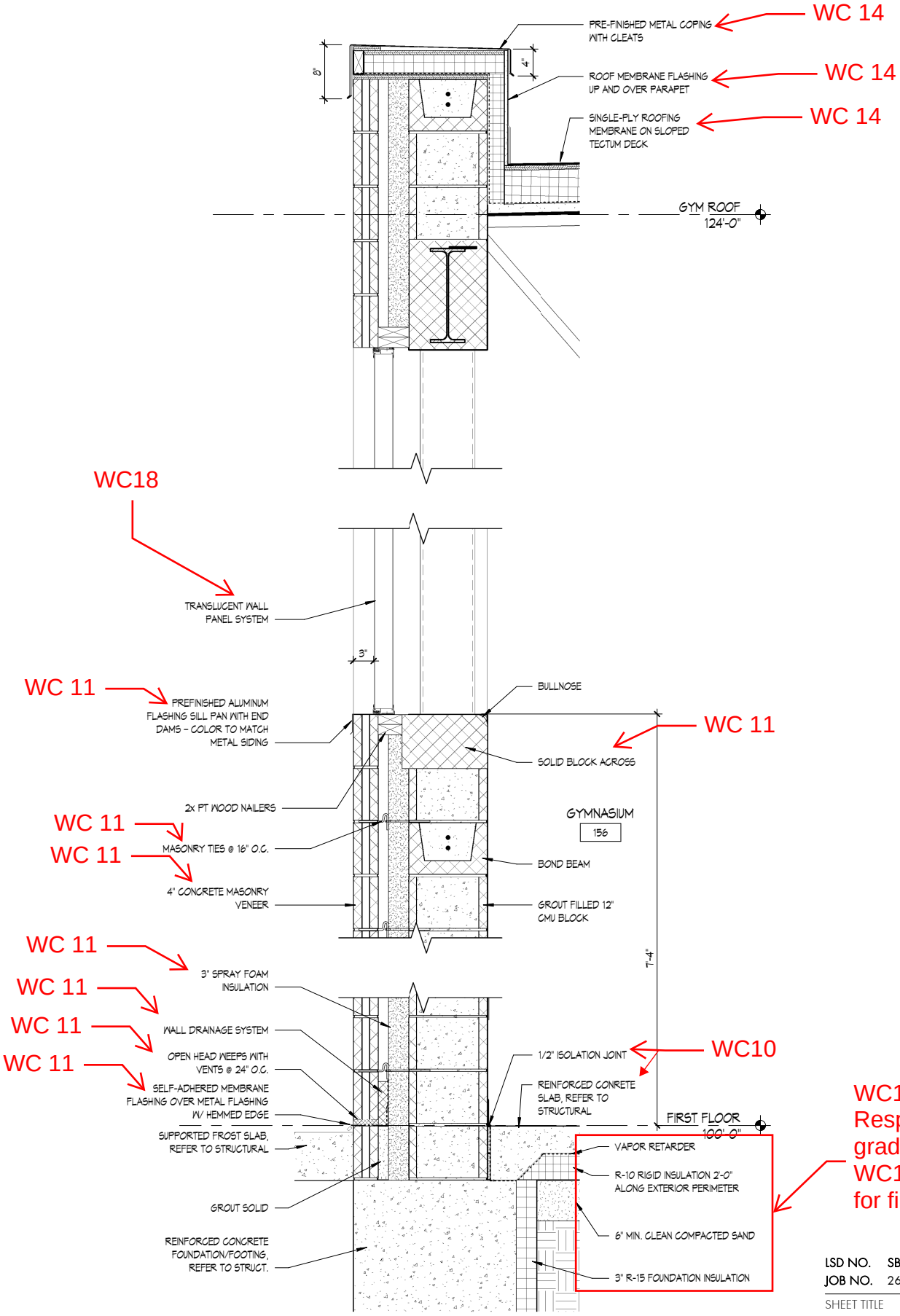

WC10, WC02 Responsible for grading up to +/-1", WC10 responsible for fine grading

LSD NO. SB-0059
JOB NO. 2616.01A

SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.2

3

GYMNASIUM TRANSLUCENT PANEL

1" = 1'-0"

REFER TO 1 / A1.1A

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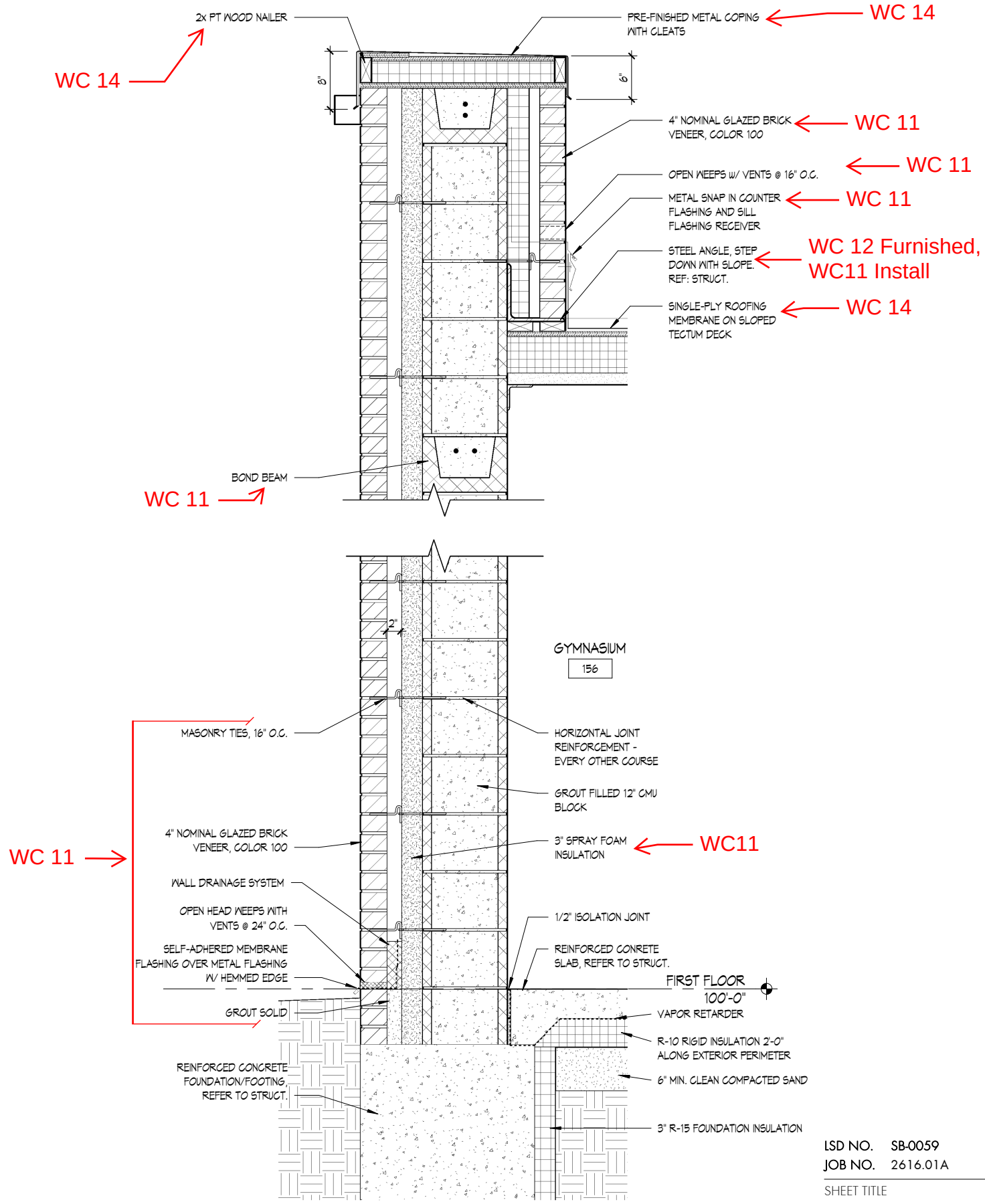

LSD NO. SB-0059
JOB NO. 2616.01A

SHEET TITLE
WALL SECTIONS

SHEET NO.
A4.2

2 GYMNASIUM FEATURE WALL
1" = 1'-0"
REFER TO 1 / A1.1A

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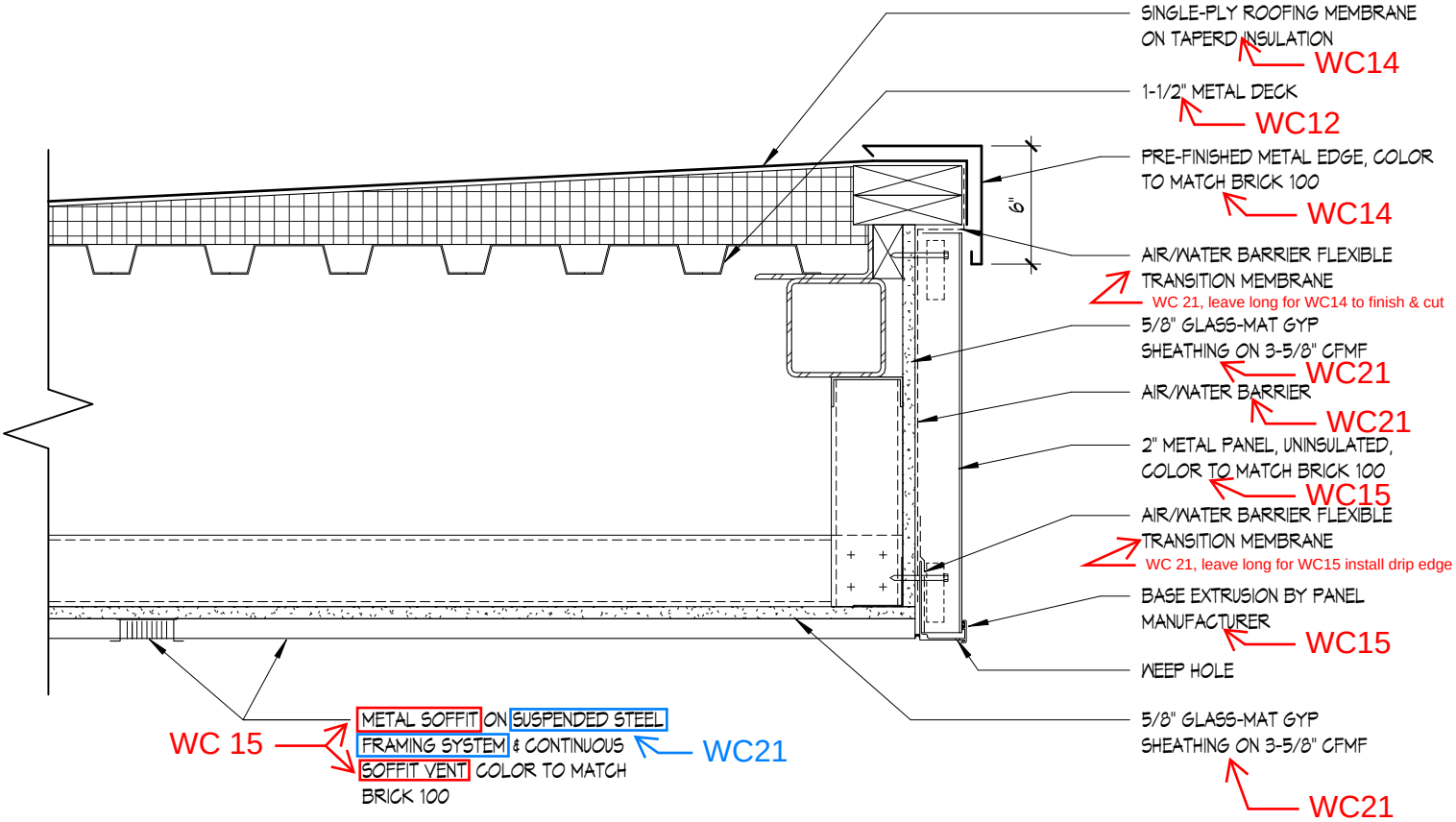

ENTRY CANOPY SECTION - UNIT 100

8

1 1/2" = 1'-0"

REFER TO 1 / A0.3

LSD	SB-005
JOB	2616.01A

SHEET TITLE
BUILDING DETAILS

SHEET NO.
A5.2

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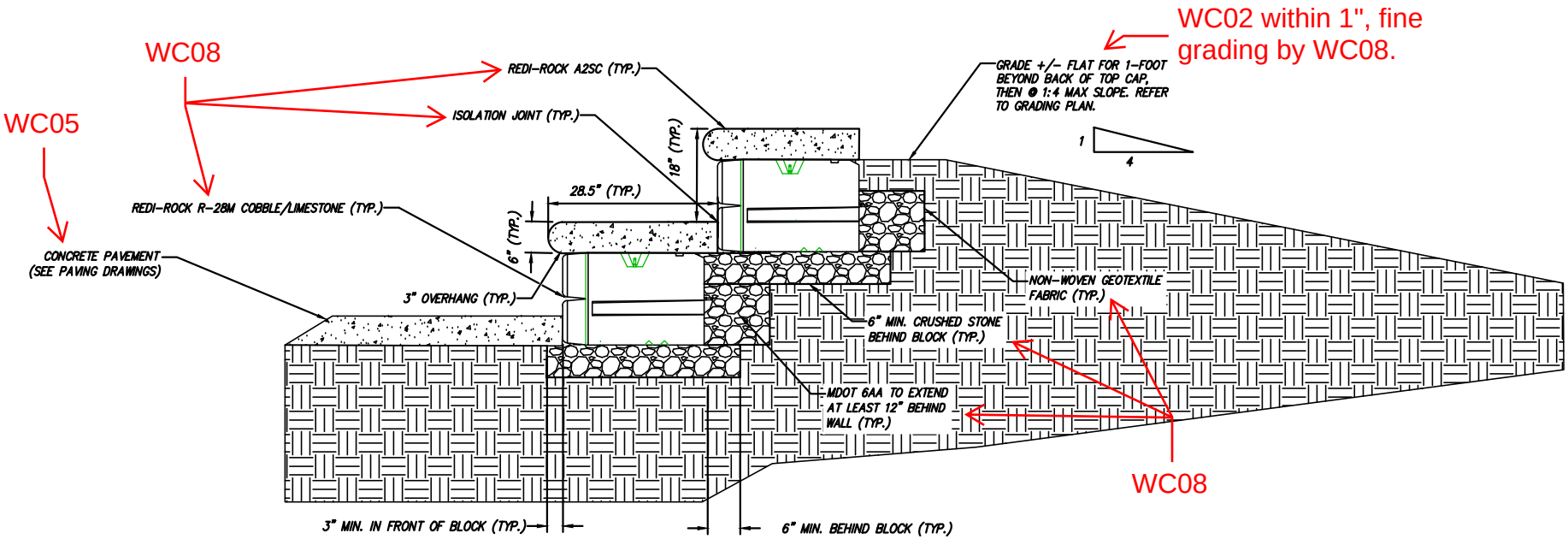
WC08
WC05
WC02 within 1", fine grading by WC08.
REDI-ROCK A2SC (TYP.)
ISOLATION JOINT (TYP.)
REDI-ROCK R-28M COBBLE/LIMESTONE (TYP.)
CONCRETE PAVEMENT (SEE PAVING DRAWINGS)
3" OVERHANG (TYP.)
28.5" (TYP.)
18" (TYP.)
6" (TYP.)
GRADE +/- FLAT FOR 1-FOOT BEYOND BACK OF TOP CAP, THEN @ 1:4 MAX SLOPE. REFER TO GRADING PLAN.
1
4
NON-WOVEN GEOTEXTILE FABRIC (TYP.)
6" MIN. CRUSHED STONE BEHIND BLOCK (TYP.)
MDOT 6AA TO EXTEND AT LEAST 12" BEHIND WALL (TYP.)
WC08
3" MIN. IN FRONT OF BLOCK (TYP.)
6" MIN. BEHIND BLOCK (TYP.)

TRADE CONTRACT PROPOSAL FORM

WORK CATEGORY NO. 00 and _____ Date: _____

TO: The Christman Company
208 N. Capitol Avenue
Lansing, Michigan, 48933-1357

Re: Willow School
1012 W Willow St,
Lansing, MI 48915

Ladies & Gentlemen:

Having carefully examined General Conditions, Supplementary Conditions, General Requirements, Advertisement for Bids, Instructions to Bidders, Proposal Section, Specifications, Drawings, all Addenda issued, Work Category Descriptions, and understanding the scope of work involved in this Work Category (ies) and those that interface with it (them), the undersigned does hereby propose to furnish all labor, materials, insurances, taxes, tools, equipment and services to complete all work required for the Work Category(ies) indicated in accordance with the Work Category Description and the Contract Documents prepared by _____.

BASE PROPOSAL SUM:

_____
_____ ($_____)

PERFORMANCE & PAYMENT BOND: The Trade Contractor may be required to furnish a Co-Obligee Labor & Material Payment & Performance Bonds for the full contract amount.
The name of the Bonding Company is: _____.
The sum of ($_____) to cover cost of furnishing these bonds is ***added to*** the base bid.

EXPERIENCE MODIFICATION RATING (EMR):
List the EMR for your firm as determined by your insurance carrier for the past three (3) years.
2023 _____ 2022 _____ 2021 _____

ADDENDA: The following Addenda have been received, are hereby acknowledged, and their execution is included in Bid Sums listed herein.
No _____ Dated _____ No _____ Dated _____ No. _____ Dated _____

TIME AND MATERIAL RATES: Provide labor rates below for all onsite labor.

Labor rates listed below include the following:

Cost of labor including Michigan Single Business Tax, Social Security and Medicare, Federal and State Unemployment Tax, and Fringe Benefits Under Collective Bargaining Agreements, and Worker's Compensation Insurance. The rates listed below do not include overhead and/or profit. These rates are only for additions and/or deletions to the contract that could not have been anticipated at the time of the bid.

TRADE CONTRACT PROPOSAL FORM

WORK CATEGORY NO. 00 and _____ Date: _____

	TRADE	STRAIGHT TIME	SHIFT TIME	1 1/2 TIME	DOUBLE TIME
1					
2					
3					
4					
5					
6					

OVERHEAD AND PROFIT(FOR FUTURE CHANGES): Overhead and Profit shall include the following: Supervision, Superintendents, Commercial General Liability and Umbrella Insurances, Wage of Time Keepers, Watchmen and Clerks, Small tools with material value of less than $1,500.00. Incidentals, General Office Expense, and all other expenses not included in Labor Rates as listed above. The percentage fee for Overhead and Profit on the Contractor's own work shall be 15% of net cost. The percentage fee for Overhead and Profit on Subcontractor's work shall be 5% (see log).

MANDATORY ALTERNATES:
Reference Specification Section 012300 for alternate descriptions.

Alternate #1 (Standard Exterior Wall Construction in lieu of Prefab) Add/Deduct $_____
Alternate #2 (Decorative Black Metal Picket Fence) Add/Deduct $_____
Alternate #3 (KEE Roofing in lieu of EPDM) Add/Deduct $_____
Alternate #4 (Concrete Finish at Entire Service Yard) Add/Deduct $_____
Alternate #5 (Polished Concrete with Level 1 and 3 in lieu of 2) Add/Deduct $_____
Alternate #6 (Solid Surface Countertops in lieu of paperstone) Add/Deduct $_____
Alternate #7 (Photovoltaic System 2 Year Preventative Maintenance) Add/Deduct $_____
Alternate #8 (Geothermal System 2 Year Preventative Maintenance) Add/Deduct $_____

UNIT PRICES:
WC 02 – Snow Removal (parking lots, drives, laydown area, walkway to main entrance) $_____/Hour
WC 02 – Street Sweeping $_____/Event
WC 02 – Excavation & Removal of Unsuitable Soils (Off-Site) $_____/cy (truck)
WC 02 – Engineered Fill (Sand) Compacted in Place $_____/cy (truck)
WC 02 – Engineered Fill (21AA) Compacted in Place $_____/cy (truck)
WC 02 – Amount Included for Temporary Drives & Laydown Area $_____
WC 05 – Typical Curb & Gutter $_____/sf
WC 05 – Typical 4" Sidewalk $_____/sf
WC 05 – Heavy Duty Concrete Pavement $_____/sf
WC 06 – Standard Duty Asphalt $_____/sf
WC 10 – Amount to add Barrier One style admixture to slabs $_____/sf

_____
Bidder's Name

TRADE CONTRACT PROPOSAL FORM

WORK CATEGORY NO. 00 and _____ Date: _____

WC 20 – Amount included for temporary windows & doors $_____
WC 22 & 23 – Amount included for temporary flooring protection $_____
WC 23 – Amount to add vapor barrier at all flooring not passing moisture tests $_____/sf
WC 18 – Unit Price for Translucent Glazing $_____

VOLUNTARY ALTERNATIVES (Variations From Materials Specified):
Undersigned proposes the following voluntary alternates for materials and/or equipment specified, it being understood that, should any voluntary alternate(s) be accepted by the Owner, applicable amount(s) hereinafter listed will be added to or deducted from the Base Bid. (No voluntary alternates are required)

1. _____ $ _____ (Add/Deduct)
2. _____ $ _____ (Add/Deduct)
3. _____ $ _____ (Add/Deduct)

SCHEDULE:
The undersigned if awarded a Contract, agrees to work concurrently with the work of other Trade Contractors and the Construction Manager, according to the "Approved Construction Schedule."

BIDDER'S CERTIFICATE:

I hereby certify that all statements herein are made on behalf of

_____
(Name of Corporation, Partnership or Person Submitting a Bid)

A Corporation organized and existing under the laws of the State of _____

An individual doing business as _____

Signature:
Title:
Address:

Phone:
Fax:
Email:

_____
Bidder's Name

RFI LOG

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
185	Acoustical Baffle	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/11/2024	Austin Brown	03/15/2024	03/17/24					
	Q: Austin Brown Sent Mon Mar 11, 2024 at 12:31 pm EDT What is the Dimension at the center of Profile 2 and 6 Acoustical Baffle at 5/A5.4? Additionally, the detail number 4 and 5 are used twice on A5.4.													
	A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 01:09 pm EDT Profile 2 dimension is 1'-0" at the center, Profile 6 dimension is 1'-0" at the long end. Drawing to be updated in addendum. RFI 185.png													
184	SUBSTITUTION REQUEST - ASSA ABLOY	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/11/2024	Austin Brown	03/15/2024	03/17/24					
	Q: Austin Brown Sent Mon Mar 11, 2024 at 12:28 pm EDT Attached is a substitution request/RFI for Power Door Operators AA-CSI Form Willow Elementary.pdf Norton_Low_Energy_Door_Operators_Brochure.pdf Norton Product Warranty.pdf													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 04:18 pm EDT Approved - subject to compliance w/ specification requirements													
183	21AA - Crushed Concrete or Limestone	Closed		None	DePrekel, Collin ... Singh, Romica (Ki... Szeszulski, Sami ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/08/2024	Austin Brown	03/12/2024	03/11/24					
	Q: Austin Brown Sent Fri Mar 8, 2024 at 09:31 am EST Please verify for 21AA stone, is concrete or limestone required?													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:59 pm EST Limestone is required. If there is a substantial cost savings for crushed concrete, please offer it as a voluntary alternate.													
182	Trench Footing Detail	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Q: Austin Brown Sent Wed Mar 6, 2024 at 04:13 pm EST Would a trench footing would be acceptable for all areas that require a 2’ or 3’ wide footing? This would save a significant amount of time on the project, as well as all the cost associated with the foundation excavation and backfill. I have attached details of each size for reference. The few footing areas that are wider than 3’, would still be a standard footing and wall. Please let me know as soon as possible if this would be a viable option. Trench Footing Details.pdf													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 01:14 pm EST Trench footings are permissible where soil conditions have enough cohesion to hold a straight vertical edge, without tapering. Our foundation plans specifically show this option. Please refer to foundation plan notes and typical trench foundation detail 10/S0.03 and disregard the proposed details that were attached to this RFI. RFI-182_bc.pdf													
181	Roof Tie System & Tectum Decking	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 02:32 pm EST Can a detail be provided on how the roof tie of system attaches to the locations where tectum deck is shown?													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 01:21 pm EST Roof safety anchors are typically provided by a company that specializes in fall protection systems. Below is an example detail for reference. There are two (2) different roof diaphragms (metal deck and tectum) but in either case the safety anchors are directly fastened to the CFMF roof structure. RFI-181_bc.pdf													
180	Security Film Height Requirement	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 01:14 pm EST The extent of the security window film was given, which states all exterior glass within 6’ 0” (72”) of floor line. This effects all windows type D, E, and F. The bottom glass panel clearly needs security film, but the next glass panel up starts at 68” above floor. Please clarify if the panel above starting at 68" A.F.F requires security film going up the full length of the panel.													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 04:20 pm EDT Security film to go up full length of panel.													
179	SUBSTITUTION REQUEST - Omnisport	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 01:07 pm EST See attached for product data regarding substitution request BOD Gerflor Taraflex Multi Use 6.2 Requested Substitution Omnisport Multi-Use 6.2mm 2021 Brochure - Omnisports - TSI - final.pdf													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 01:01 pm EST Rejected, reason is to stay consistent with gym flooring product at other Lansing schools.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
178	SUBSTITUTION REQUEST - DynaCourt	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 01:06 pm EST
Dynamic Sports Construction, Inc. requests the consideration, and approval of our DynaCourt® 6.7mm synthetic flooring system product as equal and for inclusion in the above referenced project/section via addendum. Attached, you will find specifications for the proposed system, recent DynaCourt® installation photos sent for your review. DynaCourt® is manufactured in an ISO-9002 certified facility.

- Our systems have been installed throughout Michigan including at Adrian College in Adrian, Doyle Recreation Center in Sturgis, and Jenison Public Schools in Jenison

Please review the attached product specifications, photos of installations and references. We look forward to hopefully being included in the specifications for this project by Addenda and any projects that you may have in the future.

Substitution Request.pdf

A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 12:59 pm EDT
Rejected, reason is to stay consistent with gym flooring product at other lansing schools.

177	Play Surfaces Requirement	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/06/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 01:02 pm EST
Who is responsible for the placement of the pea stone or fiber play surface in the playground areas?

A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 01:04 pm EST
WC 25. See note Note 2 in WC 25;

2. Include furnish and installation of specified playground topping surfaces as indicated in the Landscape drawing L1.01. This shall include but not be limited to the following surfaces; Natural themed balance and upper body structure, natural themed play structure, 12” engineered wood fiber over peastone drainage layer, and 5/8” thick modular interlocking rubber mat.

176	GAGA pit surfaces	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/06/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 12:18 pm EST
I cannot find a treatment for the GAGA ball pit surfaces. It states a 5/8” rubber interlocking surface but I cannot find the responsible WC or a base course for under the interlocking mats.

A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 01:00 pm EST
Subbase is required to be installed to +/- 1".

Per WC08;
"2. Subbase material installed to +/-0.1’ by W.C. 02."

175	Community Garden Soil Depth	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 12:11 pm EST
What thickness shall the topsoil be installed in the community garden?

A: Romica Singh (Kingscott) Responded Fri Mar 15, 2024 at 10:01 am EDT
Noted in addendum 3.

174	Demolition Clarification	Closed		None	Brown, Austin	03/06/2024	Austin	03/10/2024	03/06/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					(Th...		Brown							
	Q: Austin Brown Sent Wed Mar 6, 2024 at 12:00 pm EST What condition will the site be in post demolition ? Are all site features slated for demolition going to be taken care of with building demolition or is it just buildings and all site features will be in the earthwork bid?													
	A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 12:04 pm EST Attached drawing from Project Manual, WC02 states all items highlighted in blue are to be done by WC02. Note all items **not** highlighted in blue are the responsibility of the already contracted demolition contractor. Demolition Plan C2.1.pdf													
173	Maintenance Strip Cross Section	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:58 am EST Is there a cross section for the maintenance strip for the fence detail F/C4.2 and detail DF/C4.2 ? Is there a cross section for the maintenance strip along the building ?													
	A: Romica Singh (Kingscott) Responded Fri Mar 15, 2024 at 10:00 am EDT Details to be added to addendum 3.													
172	Stud framing thickness clarification	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:57 am EST Reference Spec section 092216 Non-Structural Framing: The spec is calling for a Minimum Base Metal Thickness of 0.0312 inch. Can we use 0.30 mil stud which has a Design Thickness of 0.0312 inch and a Minimum base metal thickness of 0.0296 inch? Or do we have to use a 0.33 mil stud that has a Design Thickness of 0.0346 inch and a Minimum base metal thickness of 0.0329 inch?													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 04:13 pm EDT 33mil minimum required.													
171	Alternate WC21 Traditional Build - STO product or Building Wrap	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:54 am EST Regarding the stick frame alternate for WC21, do we use the Building Wrap as stated in Spec 072500 Weather Barriers such as Tyvek or a STO product like what is applied on the STO Panel spec section 074200?													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 05:16 pm EST Please use building wrap stated in Spec 072500 for stick frame alternate.													
170	Confirm CSJ guage - 18 or 20ga	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:53 am EST Reference 054000 CFMF Spec & S1.11? The specs are calling for minimum 20 GA CSJ Studs for both Exterior and Interior Non-Load bearing wall framing, and the structural drawings are showing a minimum of 18 ga CSJ. Which gauge for Exterior and Interior Non-Load bearing wall framing are we to use?													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 01:11 pm EST "CSJ" seems to indicate "cold-formed steel joist", but the question refers to wall framing studs. Specifications state minimum interior and exterior wall stud gauge to be 33mils (20ga) and the general wall schedule states 43mils (18ga). Please proceed with 43mils (18ga) as a minimum. RFI-170_bc.pdf													
169	Delegated Design & Bidding	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/18/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:52 am EST The CFMF, shear walls, prefabricated wall panels and Lt gauge trusses noted on the structural drawings are all delegated design. Since delegated design has not been contracted yet, are we to bid the minimums as referenced and drawn?													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 18, 2024 at 08:37 am EDT Delegated design is to be assumed a part of base bidding requirements. Indicated design requirements in the drawings is to be used as a minimum for bidding purposes.													
168	Playground Curb	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:49 am EST Is there a concrete curb around the playground and if so is there a detail?													
	A: Romica Singh (Kingscott) Responded Fri Mar 15, 2024 at 10:00 am EDT Yes, detail in addendum 3.													
167	Acoustical Wall Panel 8	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:48 am EST Sheet A1.9 shows a circular wall panel on one of its elevations labeled AWP8. This does not exist in the schedule above the elevations. What color is this panel supposed to be?													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 04:15 pm EDT The 2 circular wall panels labeled AWP8 are supposed to be AWP11. Drawing will be updated in addendum.													
166	Geothermal Excavation Requirement	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/13/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:48 am EST Can you provide direction on the 5’ deep excavation, for the geothermal headers? Width, length?													
	A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 13, 2024 at 01:41 pm EDT For depth, refer to GHX 5.0 details illustrating the intent for Geothermal horizontal run depth and top of well depth. For width and length, refer to GHX 1.0 for geothermal run system extent. Sloping/stepping of excavation to be required based on soil conditions and MIOSHA requirements.													
165	Stone WC Responsibility	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 11:08 am EST 1. Addendum 1, WC 02 item 12 has geo, stone crossed off, WC08 item SNP item 2 has it removed from their scope as well? Who is performing this work?													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact

2. Pre-Bid Meeting Agenda, 2. Construction Program Overview, C. WC-05 Exterior Amphitheater Seating?

3. Please provide a new scope of work for WC-05 for clarification if in fact it has changed?

A:

Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 11:38 am EST
1. Note 3 (added in Addendum 1) in WC 08 states;

"WC02 Amphitheater sub base by others up to 1” of required grade (WC02). Crushed stone, geotextile fabric, and seating stones shall be furnished and installed by this WC."

The intent with this change is to make it clear that WC02 is responsible for bringing appropriate fill in and grading to 1" tolerance of the seating feature, and WC08 is responsible for fine grading and above. Annotated detail is attached to help clarify.

2. This was mistaken on the agenda, WC08 is responsible for redi-rock assembly (amphitheater seating) as noted in the project manual.

3. See response to 2 above.
Amphitheater Seating WC Responsibility.pdf

164	Solar panel supports and Roofing	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					

Q:

Austin Brown Sent Wed Mar 6, 2024 at 11:04 am EST
Where is the detail to flash the solar panel support penetrations. How many supports are going to penetrate the roof system. Are the supports going to be installed prior to the roof being installed.

A:

Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 12:57 pm EDT
For the sloped deck we have at detail on sheet E5.1. The supports would be installed over the tectum roof deck. We have a note for this on the roof plans on note R32: “*pv array mounted fixed to roof with unirac rail racking system nxt umount. provide supplemental racking connection components recommended by racking manufacturer due to thickness of tectum roof deck. refer to rail racking detail on page e5.0.”*
This is the rail racking system:
https://unirac.com/product/nxt-umount/
For the flashing, see the flashkit pro (#7) on page 4 of the attached pdf installation guide.
Tilted Roof PV Racking_NXT-UMOUNT_Design and Engineering Guide.pdf
Tilted Roof PV Racking_NXT-UMOUNT-Detail_Drawings.pdf
NXT-UMOUNT_Installation-Guide_20231110.pdf
Sloped Roof PV Rail Racking Detail.PNG

163	Tectum Decking WC Responsibilities	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/06/24					

Q:

Austin Brown Sent Wed Mar 6, 2024 at 10:58 am EST

1. Do you have any contacts for certified tectum installers.
2. Who is going to be responsible to keep the tectum dry, especially during possible winter weather conditions in December.
3. Who is responsible for snow removal on all roof areas

A:

Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 11:02 am EST
1. Please reach out to manufacturers for lists of qualified installers.

2. Protection of tectum decking is to be by WC14. The change from WC20 to WC14 is to reflect the importance of ensuring the roofer is responsible of the tectum decking and only installs as much as can be protected during the installation process until the roof is completed.

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact

3. The roofer. Please refer to Work Category note 4 pasted below for reference;
"4. This WC responsible for any winter conditions needed to install roofing systems per the schedule. Including but not limited to snow removal, ice removal, and temporary heaters. "

162	Roofer responsibility for Tectum Deck	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/11/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 10:53 am EST
Addendum 1 puts the supply, installation, cutting ect of the tectum deck on work category 14 ie roofers. You have to be a certified structural contractor to install tectum deck. We are not certified to do that work.

A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 10:57 am EST
In reviewing tectum decking best practices, manufacturers of tectum decking advised in this change to create an assurance that the roofer will only install as much tectum decking as they can waterproof at the end of the day. The change here was to align with manufacturer best practices as advised.

The tectum deck and tectum decking responsibilities may be sub-contracted out under the roofer to qualified installers.

161	Gym Insulation WC Requirement	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/13/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 10:52 am EST
What work category has the rigid insulation at the parapet of the gymnasium walls as shown on Sheet A4.2 Details 2 and 3?

A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 13, 2024 at 01:08 pm EDT
Additional WC notes added in Addendum 3 to clarify.

160	Wood blocking clarification	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/13/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 10:51 am EST

1. What work category has the wood blocking at the parapet of the gymnasium walls as shown on Sheet A4.2 Details 2 and 3?
2. What work category has the wood blocking at the storage room as shown on Sheet A4.2 Detail 4?
3. What work category has the wood blocking at the entry canopy as shown on Sheet A5.2 Detail 8?

A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 13, 2024 at 01:08 pm EDT
Additional details specifically requested have been called out and annotated in Addendum 3.

159	Detail 2, A4.1 Tectum Deck Responsibility	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/11/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 10:49 am EST
Please confirm that the tectum decking is now by WC#14. Please revise Sheet A4.1 Detail 2 showing tectum decking by WC#14.
4.1 Detail 2.pdf

A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 10:50 am EST
Revised Detail 2 incorporating revised tectum deck requirement attached.
4.1 Detail 2.pdf

158	Roofing Blocking Requirement	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/11/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 10:38 am EST
Please confirm that all blocking at Sheet A4.1 Detail #2 are by WC#14? See attached drawing for reference.
4.1 Detail 2.pdf

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 10:48 am EST Detail attached to provide additional verification for blocking responsibility. Clarified Detail 2-4.1.pdf													
157	Clock System Manufacturer - Spaling & AtlasIED	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 10:18 am EST Div 27 (Clocks) Would Sapling or AtlasIED be an acceptable manufacturer for the clock system?													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 04:40 pm EST Sapling is acceptable.													
156	Exterior HN or PA Speakers	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 10:18 am EST Div 27 (Public Address) On the outside of the building the prints identify a mix of exterior horns being used, some are “HN” and some are “PA” is this intentional or can one style be decided?													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 04:39 pm EST The intent is to have a consistent looking box-type horn/speaker enclosure throughout campus. Horns were shown where the throw distance is greater than a speaker may be suited for. Contractors should use discretion in selecting the appropriate device to provide adequate and intelligible coverage of the area.													
155	COVID EHB-250-W as HDBaseT Extender	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 10:16 am EST Would the COVID EHB-250-W be an acceptable HDBaseT Extender?													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 04:40 pm EST The COVID EHB-250-W is acceptable if cable length doesn’t exceed the 132’ manufacturer specification for transmitting 4K/60 signal.													
154	Ceiling Speaker Clarification	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 10:15 am EST Div 27 (A/V) According to the prints the type of speaker to use for classroom audio are to be surface mounted and hung from a truss, however the project manual describes classroom speakers are being circle cut-in style normally used in ceiling tiles. Please clarify.													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 04:38 pm EST Classroom speakers need to be surface-mountable to a steel truss. Refer to architectural reflected ceiling plans for ceiling types throughout the facilies.													
153	Cafeteria Curtain Wall CMU Clarification	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/11/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Q: Austin Brown Sent Wed Mar 6, 2024 at 10:13 am EST On page A3.1A in the drawings 12" Grout Filled CMU Block are called out under the Cafeteria curtain wall. Details 3/A4.4 and 3/A9.2 call for this to be a two wythe wall made up of 8" CMU and 4" CMU veneer. Please clarify.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 05:01 pm EST two wythe wall is correct, not 12". Elevation on A3.1A will be corrected in addendum.													
152	SUBSTITUTION REQUEST - Translucent Wall Panel	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 10:11 am EST Please see our attached substitution request for FPS Willow School in Lansing, MI. Please also note we can quote the high impact rated Interior sheets as described on 084523-4, but we do not believe it is necessary. Willow School Lansing APPROVAL REQUEST Kingscott 3 5 24!.pdf Project completion list - Michigan - Kingscott.doc COLOR COMPARISON.png													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 01:44 pm EDT Rejected - Kalwall to have specific performance.													
151	Callout Details	Closed		None	Brown, Austin (Th...	03/06/2024	Austin Brown	03/10/2024	03/13/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 10:06 am EST Can a work category callout sheet be provided for the other wall type details 4.2, 4.3, and 4.4? Also, addendum 1 has no changes to marked up 4.1 sheet, was this intended?													
	A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 6, 2024 at 10:08 am EST There is no current intent to provide a callout for every wall detail. Addendum 1 revised WC15 & WC21 responsibility on detail 1 framing for metal siding on 4.1.													
150	Music Casework and AWI Registration	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 09:59 am EST Specification 123000-2.2.A.2 is calling for labels and certificates to be provided for the music casework and for the project to be registered with AWI's Quality Certification Program, is an AWI registration going to be required for the Music Casework?													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 04:44 pm EST AWI registration not required.													
149	Fire Rated Core & Casework	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 09:34 am EST Specification 123000 - 2.5 Materials A indicates fire rated particleboard is required for this project, since the casework is located in a classroom and not in a hallway, are fire-rated cores still required for this project?													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 01:02 pm EST Fire rated cores not required.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
148	PLAM-1 Color confirmation	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 09:28 am EST
In spec section 123216, 3.4 Laminate Schedule, PLAM-1 is listed twice, with 2 different colors and PLAM-2 is not listed; is the Indigo D379-60 intended to be PLAM-2?

A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 04:51 pm EST
Yes, Indigo D379-60 is intended to be PLAM-2.

147	Room numbering and room signage	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 09:14 am EST
1. On Drawings sheet A1.01, I'm seeing sign types but no signage schedule. Please advise

2. The 'Room Lettering' listed on Drawing sheet A1.01 doesn't mention a spec for material. Are these to be acrylic dimensional letters or vinyl?

3. Drawings sheet A9.4, 'Family Rm. -West Elevation' lists 'Pantry,' 'Laundry' and 'Restroom.' Will these be included as part of the 'Room Lettering' sets per page A1.01 (listed above)? Please advise.

A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 01:35 pm EDT
1. Signage schedule for exterior doors to be added in addendum. Interior door numbering schedule TBD by owner.
2. Vinyl.
3. Yes, see attached. Will be updated in addendum as well.
RFI 147 family letters.png
RFI 147.png

146	Class B Bedding	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ...	03/06/2024	Austin Brown	03/10/2024	03/18/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 08:53 am EST
Please define Class B Bedding, I have seen this typically referred to as sand, but I have also seen this required to be stone in the past depending on the engineer.

A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 18, 2024 at 11:15 am EDT
We can use a Class II sand for backfill. Will be updated in plans. Detail to be added in addendum showing the required pipe bedding.

145	Wall Tile or Resinous Wall Base	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 08:02 am EST
Unit 200 Toilet Rooms walls are showing on Detail 3/A9.6 wall base. Is the wall base shown CTW1 wall tile cut down? Or will this be Resinous Wall Base? Please advise.

A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 01:17 pm EDT
Refer to general notes on Sheet A8.1 - ALL RESINOUS EPOXY FLOORS TO HAVE INTEGRAL RESINOUS EPOXY BASE.

144	Walkoff Carpet in Music Room 139	Closed		None	Szeszulski, Sami ...	03/06/2024	Austin Brown	03/10/2024	03/17/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					Singh, Romica (Ki...									
	Q: Austin Brown Sent Wed Mar 6, 2024 at 08:01 am EST I just wanted to verify that Music Room 139 on Finish Plan A8.1 receives Walk Off Carpet throughout. Is this correct?													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 01:52 pm EDT No walk-off carpet in music room 139. Drawings to be updated in addendum to show tile carpeting.													
143	Wall Tile Coverage	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/17/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 07:52 am EST Toilet Rooms 111 & 112 show CTW-1 wall tile to be installed. I just wanted to verify CTW-2 wall tile is not being installed in these Toilet Rooms like the other Toilet Rooms that have the CTW1 & CTW2 wall tile pattern in Unit 100. Is this Correct, no CTW2 wall tile in Toilet Rooms 111 & 112?													
	A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 11:10 am EDT Correct, just CTW-1 for toilet rooms 111 and 112.													
142	Missing Reference Page D1.12	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 07:45 am EST Details 6 & 7/A4.1 indicates to refer to 1/D1.12. We don't find that page Please advise.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 04:24 pm EST There is no sheet D1.12, it should say A0.2. Notation will be updated in addendum. Clerestory details.png													
141	East Cafeteria Elevation Height of Parapet Wall	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 07:44 am EST Please provide section through east cafeteria wall. exterior elevation shows wall at 26' and interior is at 22'. what is the construction of the roof parapet wall?													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 04:16 pm EST The east wall is a "Feature Wall" and higher than the remaining walls. Refer to detail 2/A4.4													
140	Elevation & Structural Detail Orientation	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					
	Q: Austin Brown Sent Wed Mar 6, 2024 at 07:39 am EST Architectural Exterior elevations and structural Exterior elevations are marked the opposite of each other. Why? I believe the architectural is wrong. Please correct. East is west and west is east.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 04:11 pm EST Arch to update in addendum.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
139	Wall base - Ceramic tile/Resinous	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/06/2024	Austin Brown	03/10/2024	03/13/24					

Q: Austin Brown Sent Wed Mar 6, 2024 at 07:36 am EST
There is some discrepancies on what wall base is being installed in the gang toilets and single toilets. Some toilet rooms are showing resinous base, some show ceramic tile cut with Schluter trim (Dilex) to be installed and some are not labeled. Could you clarify what wall base is being installed in the toilet rooms in Unit 100, Unit 200, Unit 300 & Unit 400. Please see attached.

A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 05:29 pm EST

- No attachment was provided.
- The color layout general notes state all epoxy floors to have an integral epoxy base U.N.O. and a detail will be added.
- All epoxy floors have the integral base. The showers have TR5 and drinking fountains have TR2 trim with tile but they are not epoxy floors they have concrete or tile floors.
- Color layout plans to be updated in Addendum with additional clarifications.

138	SUBSTITUTION REQUEST - CSI (Controls contractor)	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/05/2024	Austin Brown	03/09/2024	03/17/24					

Q: Austin Brown Sent Tue Mar 5, 2024 at 01:46 pm EST
I would like to submit an RFI to request Distech Controls by Control Solutions, Inc. be added as an approved temperature controls installer. We have done other work in the district and are currently working on Everett High School. Please let me know if you need anything else.

[no attachment included in RFI email]

A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 09:22 am EDT
The district has expressed the desire for SC Tech to remain as the controls contractor for this project. Deviation from that requires further District review and approval.
221125-090-LSD_Willow_School-138-SUBSTITUTION_REQUEST-CSI_Controls_contractor-2024-03-05.pdf

137	SUBSTITUTION REQUEST - Stevens Casework Manufacturere	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/05/2024	Austin Brown	03/09/2024	03/13/24					

Q: Austin Brown Sent Tue Mar 5, 2024 at 01:45 pm EST
Please see attached substitution request for Stevens as an alternate manufacturer for Music Casework
202403041113.pdf
MUSIC FEATURES.pdf

A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 04:25 pm EST
Approved.

136	SUBSTITUTION REQUEST - Playcraft Systems	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/05/2024	Austin Brown	03/09/2024	03/17/24					

Q: Austin Brown Sent Tue Mar 5, 2024 at 01:43 pm EST
I would like to get Playcraft Systems Playground equipment approved as an equal manufacturer for this bid.
PlaycraftSystems-Booklet-Quality 2023.pdf

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	A: Romica Singh (Kingscott) Responded Fri Mar 15, 2024 at 10:02 am EDT Rejected for quality standards.													
135	WC 18 Cores	Closed		None	Brown, Austin (Th...	03/05/2024	Austin Brown	03/09/2024	03/05/24					
	Q: Austin Brown Sent Tue Mar 5, 2024 at 01:41 pm EST Please confirm that work category 18 is to provide their own cores.													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 01:42 pm EST WC 18 is to provide own door hardware, including cores to be turned over to owner for keying for all aluminum doors and frames as required.													
134	Door Cylinder Keying	Closed		None	Brown, Austin (Th...	03/05/2024	Austin Brown	03/09/2024	03/05/24					
	Q: Austin Brown Sent Tue Mar 5, 2024 at 01:40 pm EST Please confirm that we are to provide cores zero bitted to be combinated by the owner?													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 01:41 pm EST This is correct. WC 20 will provide door cylinders for all doors/frames required, owner will take receipt of door cylinders, keying, and final installation during turnover. Note requirements for construction cores are still in place.													
133	Wood door finish	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/05/2024	Austin Brown	03/09/2024	03/13/24					
	Q: Austin Brown Sent Tue Mar 5, 2024 at 01:39 pm EST Wood door spec 081416 2.6 C.4 calls for the wood doors to have a semi filled finish. Masonite (Algoma, Graham, Marshfield, Mohawk) and Oshkosh will not add an additional finish coat to their doors.													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 04:42 pm EST Semi filled finish not required.													
132	Factory Glazing & Wood Doors	Closed		None	Brown, Austin (Th...	03/05/2024	Austin Brown	03/09/2024	03/05/24					
	Q: Austin Brown Sent Tue Mar 5, 2024 at 01:26 pm EST Wood door spec 081416 2.5 C.2 calls for the factory finished wood doors to be factory glazed. Please confirm that the wood doors are to be factory glazed and **NOT** to be glazed by work category 18 glass, Glazing and aluminum entrances.													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 01:37 pm EST Forthcoming addendum to correct error in Project Manual that contradicted this specification. WC20 (General Trades) to have factory glazing installed per specification, not WC18.													
131	FSC Requirement - Wood Doors	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/05/2024	Austin Brown	03/09/2024	03/13/24					
	Q: Austin Brown Sent Tue Mar 5, 2024 at 01:22 pm EST Wood door spec 081416 1.6 B calls for the vendor to be certified for chain of custody by and FSC accredited certification body. Please advise if these wood doors need to be FSC.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 03:38 pm EST FSC certification not required.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
130	AWI Label Requirement	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/05/2024	Austin Brown	03/09/2024	03/13/24					

Q: Austin Brown Sent Tue Mar 5, 2024 at 01:21 pm EST
The wood door spec 081416 1.6 A call for the wood doors to come with AWI certification labels. Most of the companies listed in the spec do not participate in the AWI labeling program anymore since it was a rarely used program and the cost of the program was too much. All of the manufacturers listed produce their doors to AWI standards. Please advise if the labels are needed.

A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 03:37 pm EST
AWI certification labels not required.

129	Interior Hollow Metal Welding	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/05/2024	Austin Brown	03/09/2024	03/13/24					

Q: Austin Brown Sent Tue Mar 5, 2024 at 01:20 pm EST
Hollow metal spec section 081113 2.4 C.2 calls full profile welding on the interior frames. 081113 2.8 D.1 calls for the frames to have the face joints continuously welded but doesn't not say that the profile needs to be welded. Please advise if the frames need to be face welded or full profile welded. Face welding is most common. Full profile welding adds a good amount of shop labor and does not add any strength to the frames. We have had issues in the past with full profile frames warping due to the heat of welding the profile.

A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:17 pm EST
Face weld all frames and profiles.

128	OSB or DensGlass	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					

Q: Austin Brown Sent Mon Mar 4, 2024 at 02:26 pm EST
Please clarify if exterior sheathing for fabricated walls is either to be OSB or DensGlass.

If OSB, please clarify ratings (FR)?

The architectural details are showing 5/8" DensGlass Sheathing.

When you look at Structural Framing Note #16/S1.11, OSB is noted. If you look at the table labeled "Cold-Formed Shear Wall Schedule (Min.)" on the same sheet, the fastener spacing is identical to note #16. However, note #16 does say "exterior wall sheathing" which implies all exterior sheathing (not just at shear walls).

A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 04:59 pm EST
Exterior wall sheathing to be gyp, not OSB.

127	Service Yard Concrete	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/05/24					

Q: Austin Brown Sent Mon Mar 4, 2024 at 02:14 pm EST
Who is responsible for the concrete in the service yard?

A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 02:20 pm EST
Structural Concrete (WC10) shall be responsible for the forming and pouring of the structural foundation walls for the masonry walls, Site Concrete (WC 05) shall be responsible for the "Exterior Slab On Grade"

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
126	Prevailing Wage	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/04/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 02:13 pm EST Is this project prevailing wage?													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 02:13 pm EST No.													
125	Concrete Footing Excavation	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/04/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 02:12 pm EST Who is responsible for foundation excavation?													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 02:13 pm EST WC02 responsible to provide all trenching for foundation wall forming and pouring, and responsible to backfill as required.													
124	FDC Requirement	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 02:01 pm EST The city of Lansing is requesting all FDC be Storz 5" not the 2.5" siamese that they show on the drawings. Please verify													
	A: Craig Gengler (Spalding DeDecker) Responded Mon Mar 11, 2024 at 01:18 pm EDT 5" will be included on an upcoming addendum sheet.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:32 pm EST 5" noted; refer to changes in upcoming addendum 03. 221125-090-LSD_Willow_School-124-FDC_Requirement-2024-03-04.pdf													
123	SUBSTITUTION REQUEST - Carehawk 2000IP and Lightspeed 975	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 02:00 pm EST We would like to propose using the Carehawk 2000IP and Lightspeed 975 system as an alternate to the Audio Enhancement Epic System. Let us know if this is approved. Caerehawk_App_Brief_v5 (003).pdf 975_Datasheet_DS0597US01-2 (002).pdf CareHawk-CH2000IP-Brochure (LIT-0020-2.00).pdf													
	A: Romica Singh (Kingscott) Responded Thu Mar 7, 2024 at 04:37 pm EST Rejected. The Audio Enhancements EPIC System is the only approved system for this project.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
122	Gates & Rails Requirement - Fencing	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/04/2024	Austin Brown	03/08/2024	03/13/24					

Q: Austin Brown Sent Mon Mar 4, 2024 at 01:58 pm EST
1 - Regarding Alternate 2: Deco black metal picket fence in lieu of black PVC chain link: How many rails is the deco fence to have?
2 – Regarding larger Gates: The written specs indicate horizontal slide gates, the plans indicate swing gates, and there is no detail drawing for the base bid, but the alternate shows swing gates. Please advise the style of gate for the larger gates.

A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:39 pm EST
Fencing and gates will be further clarified in an upcoming Addendum

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
121	Fence Height	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/04/2024	Austin Brown	03/08/2024	03/13/24					

Q: Austin Brown Sent Mon Mar 4, 2024 at 01:57 pm EST
What is the height of the fence as the drawing indicates 6’ tall but the written specs indicate 8’ tall. The detail sheet states: height as specified.

A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:37 pm EST
6' is the correct height. Further clarifications will be included in an upcoming Addendum

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
120	Differences in Details on S1.11	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					

Q: Austin Brown Sent Mon Mar 4, 2024 at 01:57 pm EST
In Unit 100B, sheet S1.11 appears to show the Storage Building 181 as CFMF Panels. On sheet A1.1B, this building is shown as 8” Reinforced Masonry (see architectural section 4/A4.3). Which is correct?

Exterior wall cuts show the exterior sheathing to be 5/8” Gyp sheathing But on the Structural Plans under framing plan notes #16 is says exterior wall sheathing to be OSB Sheathing See page S1.11 for example

A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 03:57 pm EST

- 8" reinforced masonry construction is correct for the exterior storage building.
- Exterior wall sheathing to be 5/8" gyp, not osb.

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
119	Finish Floor Plan Class B or Class D	Closed		None	Szeszulski, Sami ...	03/04/2024	Austin Brown	03/08/2024	03/05/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					Singh, Romica (Ki...									
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:55 pm EST The floor finish plan states that the polished floor will have a salt and pepper finish (Class B), while the specification book indicates that the polished floor will receive a large aggregate finish (Class D). Could you please clarify this discrepancy for us?													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 09:56 am EST Floor plan is correct, polished floor will have a salt and pepper finish (class B). Specs to be corrected in Addendum.													
118	FSE Elevation Request	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:54 pm EST Are there elevation drawings available for the serving counters? We cannot make out what is surrounding item #11, the hot cabinet. Is that a counter that has the heated box underneath or is that a field-built item? We also need elevations for the counters -in reference to the heights.													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 12:05 pm EST Attached are cutsheets of the serving counter and hot cabinet for reference. The hot cabinet is surrounded by 3-5/8" stud walls with gyp on either side for protection. Architectural drawings to be updated in addendum with wall tags. Serving Lines.pdf 11.pdf													
117	Metal Soffit Continuous Run	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:54 pm EST Section 2 / A4.1 and 3 / A4.3 indicate a run of continuous soffit vent within the soffit panels. Spec 074293 2.2.C.2 notes the soffit panels to be vented/perforated panels. Can you clarify if design intent is solid soffit panels with continuous vent or vented soffit panels?													
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 02:18 pm EST Soffit to be vented/perforated panels per spec. Details 2 and 3 will be updated with correct wording in addendum.													
116	2 coat ILO 3 coat Finish System	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:53 pm EST Spec 074213.13 2.3.C notes 3-coat fluoropolymer finish system. Manufacturer standard is 2-coat fluoropolymer finish system. Is 2-coat fluoropolymer acceptable in lieu of 3-coat?													
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 02:16 pm EST 2-coat fluoropolymer finish is acceptable.													
115	Mitered Corner Panels or Metal Corner Flashing	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:52 pm EST Spec 074213.13 2.4.C notes mitered corner panels. Details 8 & 9 / A5.3 indicate metal corner flashing at corner of panels. Please clarify if mitered corner panels or metal corner flashing is required?													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 02:12 pm EST Detail 8 and 9 are correct with metal corner flashing at corner of panels.													
114	Wood Trim Signage	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/04/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:51 pm EST Cut sheet A1.10 item toilet room glass signage calls out to have wood trim painted to match adjacent wall. Who is to supply the wood trim?													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 01:51 pm EST Signage is to be done by WC20, trim is to be installed by WC20.													
113	Differences in Room Lettering Requirements	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:50 pm EST Cut sheet A1.10 calls item room lettering does not call out for the Paint, Laundry or Restroom letters as presented on Cut Sheet A9.4. item 1. Please advise.													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 10:18 am EST Sheet A9.4 is correct. A1.10 will be corrected to match A9.4 in addendum.													
112	SUBSTITUTION REQUEST - VALLEY SIGN	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:49 pm EST Specification 101423.16 Room-identification panel signage. For room ID signs can Valley City Sign be an approved alternative manufacturer? Please see the attached documents for construction methods VCS ADA vandal resistant 6.28.pdf VCS ADA Signs 6.28.pdf													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 11:15 am EST Approved.													
111	Panel Signage Material	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:48 pm EST Specifications 101423 Panel signage what is the material for the female and male pictorial graphics?													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:44 pm EST 3form clear varia resin product with white vellum for the graphic as specified.													
110	Alternative Sign - Plexiglass over Glass Request	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/18/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:47 pm EST													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Specifications 101423 Panel signage For Bathroom Pictorial signage can an acrylic panel be an approved alternate instead of the glass? Glass has a high chance of being damaged due to tampering. Acrylic would be a more economical and safer alternative.													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 01:47 pm EDT No glass to be used. Only 3form clear varia resin product with white vellum for the graphic as specified. Spec will be updated to remove glass.													
109	Eco-Resin Clarification	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:46 pm EST Specifications 101423 Panel signage for the panel infographic signage calls out for a eco-resin and glass to be used for the construction of the sign please advise.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:45 pm EST Eco-resin, a 3form varia product to print graphic on. No glass.													
108	Meter Pit Details	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:45 pm EST Do you have details for the Meter/Valve Pit structure and the internal piping design?													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:38 pm EST The water services will be clarified in an upcoming Addendum.													
107	Fire Service Line Size	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:44 pm EST It is not clear as to if the fire service line and the Domestic line are both 4” and the Domestic lines step down to 2.5 “ for service connections, Please clarify ?													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:36 pm EST Water services will be clarified in an upcoming Addendum													
106	New Water Service Connection Method	Closed		None	Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...									
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:43 pm EST Is there a new connection that will be required in the ROW of MLK? Live tap?													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:35 pm EST A new live tap will be required and will be shown in an upcoming Addendum													
105	GAGA Pir Underbase	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:42 pm EST The GAGA pit. Is there anything under the rubber mat? Then on drawing L1.01 it looks like there are two of these pits. Is that correct?													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:36 pm EST A single Gaga pit is to be constructed and a detail for the base will be included in an upcoming Addendum													
104	Gym Ductwork Clash	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:39 pm EST The duct work in the gym appears to be in conflict with the divider curtain and at least 3 of the basketball backstops. Will the ductwork be moved or will we need to figure into our bid cradling down below the duct work? If we need to cradle below then the divider curtain will be in the airspace of the volleyball court.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:31 pm EST Ductwork to be routed in truss space and coordinated with structural trades; divider to be located with the top at the bottom chord of truss. Refer to upcoming addendum 03. 221125-090-LSD_Willow_School-104-Gym_Ductwork_Clash-2024-03-04.pdf													
103	Laydown Area Stone	Closed		None	Dobbs, Andrew (Th...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:38 pm EST Who’s responsible for the laydown stone?													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 07:16 am EST WC 02 shall be responsible to furnish and install, as well as maintain laydown stone areas as shown on the logistics plan.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
102	Concrete Maintenance Strip at fence/building	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:38 pm EST I haven't seen a detail for the conc. maintenance strip at the fence or the building.													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:34 pm EST A detail will be included in an upcoming Addendum													
101	Crane Pad	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:35 pm EST What size of crane pad is needed and is stone required?													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 01:37 pm EST Crane Pad requirements shall be coordinated between trades on location and duration, and assembly required. The uncertainty of this why this shall be funded by WC allowance.													
100	Retaining Wall at Service Yard	Closed		None	Dobbs, Andrew (Th...	03/04/2024	Austin Brown	03/08/2024	03/11/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:35 pm EST Who's responsible for the retaining wall at service yard?													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Mon Mar 11, 2024 at 08:59 am EDT WC 11 responsible for CMU retaining walls; WC 10 responsible for retaining wall footings.													
99	Foundation Subbase Material	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:34 pm EST Please verify subbase material beneath building sog's. Is it 6" granular per S0.01, note 11-Foundations or is it per detail 3-S0.03?													
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 02:39 pm EST S0.1 foundation note #11 states 6" and detail 3/S0.03 depicts 4". The minimum granular sub-base should ultimately be determined by the geotechnical engineer, which is listed as "6 inches" per page 6 of SME Geotechnical Evaluation Report (092683.00 dated July 26, 2023). RFI-099_bc.pdf													
98	Building Subbase Requirement	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:33 pm EST Who is responsible for the building subbase?													

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	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 07:22 am EST Fill material shall be supplied by the excavation contractor (WC02) to bring building foundations to grade, including foundation walls and slabs on grade up to 1" of final grade requirements, with fine grading by installing contractor (either site or structural concrete).													
97	Tree Protection	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:32 pm EST 1. Tree Protection Fence is in WC02 and WC08													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 07:34 am EST Removed temporary protection measures for WC 08.													
96	Pre-Bid Meeting List	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/04/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:31 pm EST Will a pre-bid meeting (Teams) attendee list be made available?													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 01:32 pm EST Yes, this will become available in an upcoming addendum													
95	Footings for Fencing - WC Responisbility	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:30 pm EST The footings for the fence, it states that the concrete contractor is installing footings for the fence post. Does this include digging the holes and placing the poles in the correct location (material will be supplied by the fence contractor)?													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 07:44 am EST Fence contractor required to auger, assemble and set posts for fencing. Fencing contractor shall place concrete for footings in post bases just enough to shore posts in place and prevent movement when site concrete contractor pours the maintenance strip. Fencing contractor shall then return to complete fencing.													
94	FRP Door Specification	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/18/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:29 pm EST Is there a specification for the FRP doors?													
	A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 01:59 pm EDT FRP door shall be SL-17 as manufactured by Special Lite. Info added to Specification 084113 in Addendum 03.													
93	Floor Tile to Vinyl Tile Transitions	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:27 pm EST In Family Room 155 there is a Toilet Room that receives CFT-1 Floor Tile. What type of transition will they be installing at the door where CFT-1 Floor Tile meets LVT-1 Vinyl Tile.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 12:43 pm EST Transition from Shower 152 to Family Room 155 to be TR-3: Schluter Reno-Ramp-K(Alum Satin) at Tile/Tarraflex To Epoxy.													
92	Shower Room Stall Requirements	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:27 pm EST 1. Does the Shower Rooms stalls only in Family 155, Shower 161 & 162 receive mud beds? Or the stall and toilet room where CFT-1 is being installed?													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 09:42 am EST Mud beds in all areas where CFT-1 is installed.													
91	Wall Tile requirement in Men's Storage Room 126B	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:26 pm EST There is a storage room in Men’s Room 126A. I just want to verify that storage room 126B does not receive wall tile correct?													
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 01:38 pm EST Correct, there is no wall tile in storage room 126B.													
90	Trim between Resinous Base and Wall Tile	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:25 pm EST The Men’s Room, Women’s Room & Single Restrooms on Details 3,6 & 7/ A9.5 shows resinous base to be installed. Wall Tile is being installed above the resinous wall base. Is there any metal trim between the resinous wall base and the ceramic wall tile being installed? Please advise.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:48 pm EST Zinc cove strip to be added between tile and resinous base.													
89	Wall Tile at Water Fountain	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:24 pm EST Finish Plan A8.1 shows a water fountain in Corridor 104 to receive CTW-2 on the return walls at the water fountain. Detail 11/A9.4 shows CTW-1 wall tile to be installed on return walls at the water fountain. Please advise as to what Wall Tile is to be installed at the return walls for the water fountain in Corridor 104. CTW-1 or CTW-2.													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 12:29 pm EST CTW-1 as detailed on 11/A9.4 to be installed on return walls at the drinking fountain.													
88	Attachment Method Above Baffles	Closed		None	Szeszulski, Sami ... Singh, Romica	03/04/2024	Austin Brown	03/08/2024	03/05/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					(Ki...									
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:23 pm EST Is there a drywall ceiling above the baffles that they attach to? It appears that there is in section 2/A5.4. Please advise.													
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 01:34 pm EST There is no gyp ceiling above the baffles. The baffles are on a suspended track system.													
87	Z- BAR at Kitchen Base Detail 2/A8.1	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:21 pm EST Is note #2 of Specific Notes and Details on Bid Category 21 work scope referencing detail 2/A8.1? If yes, it appears to be part of FRP installation. What is the specific part required? Generally, a cap mold is included at the top of base at this condition. Please advise.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:07 pm EST See attached cutsheet for cove cap/z-bar detail. Detail---Cove-Cap-Z-Bar-17.2.pdf													
86	Firestopping Requirement for WC21	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/04/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:13 pm EST Scope indicates Bid Category 21 is to include firestopping for mechanical and electrical work. Is this correct? Very difficult to estimate someone else's work.													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 01:16 pm EST WC 21 is only responsible to fireproof any penetrations caused by their own work in fire rated walls. Electrical penetrations made by the electrical contractor in fire rated walls shall be fireproofed by the electrical contractor, and mechanical penetrations made by the mechanical contractor in fire rated walls shall be fireproofed by the mechanical contractor. Should walls include penetrations in the pre-manufacture assembly to allow for MEP equipment, MEP contractors are required to coordinate the location and appropriate sizes for penetrations installed by factory manufacturer. The MEP trade is then responsible to fireproof/smokeproof as required in all rated walls once MEP equipment is installed.													
85	Rigid Insulation Requirement	Closed		None	Dobbs, Andrew (Th...	03/04/2024	Austin Brown	03/08/2024	03/18/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:11 pm EST Which bid category is responsible for the 1" rigid insulation shown over the air barrier on exterior walls?													
	A: Austin Brown (The Christman Company (LAN)) Responded Wed Mar 13, 2024 at 01:07 pm EDT Additional details added in Addendum 3 to clarify exterior insulation requirements. Intent for exterior wall insulation on the interior of the walls is to be provided by WC 21. Exterior insulation on the exterior of the walls is to be provided by WC with coverings over insulation, in the following instances that would be; Insulation behind Masonry facade to be installed by masonry contractor (WC11) Insulation behind metal wall panel assembly to be installed by metal wall contractor (WC15) Insulation behind Roofing/Roof Coping to be installed by roofing contractor (WC14)													
84	Sheathing & Block Walls	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:11 pm EST													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Section detail 4/A4.2 shows sheathing over block wall. Is this detail correct? Sheathing is not detailed on drawing.													
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 01:31 pm EST The detail was worded incorrectly. There is no sheathing over the block wall. Wording will be corrected in addendum.													
83	Acoustical Ceiling Limits & Termination	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 01:10 pm EST Acoustical ceiling in corridors 302 and 402 does not show going wall to wall. Should an aluminum cap be included at these locations and will 4" be acceptable?													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 03:19 pm EST Gyp soffit to be added to align with the top of the lockers for a "built-in" look. See attached image. Drawings to be updated in addendum. 166730a9-2dd4-4587-b8ff-68c4d117004f.jpg gyp above lockers.png													
82	ACP-2 Grid Requirements	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:57 pm EST Does ACP-2 require Aluminum capped Grid? Specs unclear.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:09 pm EST Yes, please provide an aluminum capped grid for ACP-2.													
81	AWP requirements	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:55 pm EST Is Classroom 145 the only classroom that gets Acoustical Wall Panels?													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:12 pm EST No- as shown on A1.9, classrooms 145, 141, and 151 have acoustical panels.													
80	Backing Specified Requirements	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:55 pm EST All wall types are showing a horizontal stud at 34" and 84". If this is for backing, should it occur only where backing is required, and it appears that the scope is calling for wood blocking. If metal backing is desired flat stock is a much more economical choice. If the purpose for the horizontal stud is for wall stiffening rather than blocking or backing, may we use a spazzer in place of the horizontal stud? These are made specifically for that purpose and reduce the labor cost significantly.													
	A: Romica Singh (Kingscott) Responded Mon Mar 4, 2024 at 01:28 pm EST The horizontal studs at 34" and 84" are for installation of vdb's &/or casework and could be either metal or wood studs.													

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79	Furniture Requirements	Closed		None	Brown, Austin (Th...	03/04/2024	Austin Brown	03/08/2024	03/04/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:50 pm EST Which scope are the shelving, shoe displays, soft seating and clothing racks in the family room 155 in? Are these owner finished? Product info and details are missing.													
	A: Austin Brown (The Christman Company (LAN)) Responded Mon Mar 4, 2024 at 12:53 pm EST Adjustable shelving racks, shoe racks, soft seating, and clothing racks are not a part of any work category for this project at this time. Assume no responsibility to supply these items as noted in Family Room.													
78	Locker Detail T-155	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:49 pm EST Can you provide more details for T-155. It is unclear if this is a millwork locker or a metal locker?													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:11 pm EST They are plastic laminate lockers and should be part of the casework package. They are shown on 5/A9.1 in elevation and sizes are listed in the casework schedule in specs. The laminate should match the other casework PLAM-1.													
77	Request for Finish/Equipment Schedule	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/17/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:48 pm EST Can you issue a finish/equipment legend and finish schedule? It is hard to determine what finishes are what when there isn't a legend and schedule to reference.													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 04:17 pm EDT See attached for finish schedule. 01-WILLOW_CD MATERIALS SELECTED.pdf													
76	Tectum Panel Thickness	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	03/04/2024	Austin Brown	03/08/2024	03/13/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:47 pm EST AWP Tectum panels are spec’d as Designart, 2” thick. Designart panels only come in 1” thick. Tectum can custom produce these panels at 2” but for an additional custom fee. Please clarify if 1” or 2” are required.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:14 pm EST 1 inch is acceptable.													
75	General Trades & Exterior Benches	Closed		None	Dobbs, Andrew (Th...	03/04/2024	Austin Brown	03/08/2024	03/05/24					
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:43 pm EST General trades scope mentions to furnish and install exterior benches at scope item #9. The only exterior benches shown are built in CMU with a precast top and concrete footing shown on A5.2. Surely this is not by the general trades contractor. Please clarify the which if any exterior benches are provided by the general trades contractor.													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 07:49 am EST Correct. Removed "exterior benches" from WC 20 in Addendum 1.													
74	Playground Surfacing	Closed		None	Singh, Romica	03/04/2024	Austin	03/08/2024	03/13/24					

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					(Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...		Brown							
	Q: Austin Brown Sent Mon Mar 4, 2024 at 12:42 pm EST L1.01 displays multiple shaded textures which do not appear in the legend on the same page. Please clarify the attached shade requirements, and what the surface material shall be. In addition, the sidewalk coming into the project from MLK appears to interfere with the surfacing texture on the lower playground equipment. Please clarify the intent for this detail. RFI 74.pdf													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:34 pm EST This will be clarified in an upcoming Addendum													
73	SUBSTITUTION REQUEST - DrexelMetals	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/13/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 02:21 pm EST Attached substitution request for Metal Wall Panels manufacturer to be substituted for Drexel Corrugated metal. Drexel Corrugated.pdf													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:03 pm EST Approved.													
72	SUBSTITUTION REQUEST - Perimeter Edge System	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/05/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 02:20 pm EST See attached. JAMF Substitution Request For New Willow Elementary Project.pdf JA-22-Fascia.pdf													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 10:17 am EST Approved.													
71	SUBSTITUTION REQUEST - SINAK products	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/05/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 01:16 pm EST We respectfully submit for your consideration a request to approve SINAK products as an accepted substitute on New Willow Elementary Construction. Please find links below to supporting documentation demonstrating equal or superior performance to the specified products.													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact

Substitution Request Summary: Substitution Request - New Willow Elementary Construction.pdf

SINAK LithiumCure 2000, classified as a Curing Agent, Water Cure Equivalent Type, Penetrating, is topically spray applied at the time of concrete placement, taking the place of traditional water curing methods. Compatible with all sealers, hardeners/densifiers, adhesives, flooring, coatings, and moisture vapor control systems, including MVRA, SINAK LithiumCure 2000 is a cost effective alternative to all other curing methods and will reduce labor costs and accelerate the construction schedule.

Suggested Water Cure Equal Concrete Curing Agent Substitute for Moisture-Retaining Cover: ASTM C171; Absorptive Cover: AASHTO M182; Water Cure: - LithiumCure 2000
Supporting Documentation:

- MSDS - LithiumCure 2000
- Product Spec - LithiumCure 2000
- Sustainability Certifications & Standards - LithiumCure 2000
- Technical Datasheet - LithiumCure 2000

A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 12:16 pm EST
What is actually being substituted? The specifications already list the curing materials in 2.9 and the cutsheets already seem to match and this reads more as a submittal. Or is it supposed to replace something else?

70	Caulking & Fireproofing/caulking	Closed		None	Dobbs, Andrew (Th...	02/27/2024	Austin Brown	03/02/2024	03/05/24					

Q: Austin Brown Sent Tue Feb 27, 2024 at 01:14 pm EST
Can you further define scope item #7 in work category 19 fireproofing/smokeproofing

A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 08:17 am EST
Mechanical and plumbing fixtures (ie. Toilets & Sinks) shall be caulked by this WC. Penetrations created by MEP contractor shall be fire caulked by this WC as required.

69	WC 15 - Scope Clarifications	Closed		None	Dobbs, Andrew (Th...	02/27/2024	Austin Brown	03/02/2024	03/05/24					

Q: Austin Brown Sent Tue Feb 27, 2024 at 01:13 pm EST

1. See work category 15, item number 1&2 says copings, but the coping spec section 077100 is listed under work category 14, please confirm who is responsible for these copings?
2. See work category 15, item number 1 says integral louvers, where are these located?
3. See work category 15, item numbers 5&6, item 5 says to include the custom colors, but item 6 says to provide an add for custom colors, which is correct?

A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 08:28 am EST
1. Details showing metal panels matching coping, where coping meets metal panels is to be provided and installed by WC 15, coping not to match and not located at metal panel assembly is to be by WC 14. Coping is by WC15 to match metal panels, specification section added to WC15.

2. Integral louver referenced in WC15 is in relation to the continuous vent, an example of which is shown on detail 2/A4.1.

3. Custom Colors are to be considered base bid, and shall be included in WC15's pricing. Intent for item 6 on the bid form is to provide the "added" cost for custom colors where if "standard" colors are utilized may be reduced.

68	2-Coat or 3-Coat finish	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	02/28/24					

Q: Austin Brown Sent Tue Feb 27, 2024 at 01:12 pm EST
See spec section 074213.13, 2.6, C, 1 says 3-coat finish, but Centria's Dove Gray is a standard 2-coat finish. Is a 2-coat finish acceptable for this color?

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	See spec section 074293, C, 3, c&d, it says 3-coat finish, but Centria's Regal White is a standard 2-coat finish. Is a 2-coat finish acceptable for this color?													
	A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 02:24 pm EST Yes, 2-coat finish for centria panels are acceptable.													
67	074213.13, 2.4, F Location	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	02/28/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 01:11 pm EST See spec section 074213.13, 2.4, F, where are these located?													
	A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 02:36 pm EST Refer to elevations A3.1a-A3.4													
66	Air/Weather Barrier Included in Wall Assembly, and WC Responsible for Vertical Girts	Closed		None	Dobbs, Andrew (Th...	02/27/2024	Austin Brown	03/02/2024	03/11/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 01:10 pm EST See 3/A4.1 & similar details, please confirm that the prefabricated wall sections will include the air / water barrier, horizontal Z furrings and 1" rigid insulation? Bid Category 15 to supply only the vertical girts and wall panels, correct?													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Mon Mar 11, 2024 at 09:19 am EDT WC 21 to provide and install air/water barrier at pre-fabricated walls. Horizontal z furrings and rigid insulation behind metal panels by WC 15.													
65	Wall Panel penetration	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	02/28/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 01:09 pm EST See 3/A4.3 & similar details are the wall panels actually required to go all the way up to the roof deck, or can they stop at the soffit?													
	A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 02:38 pm EST They should stop at the soffit.													
64	SS Flashing to Finish Siding Flashing Color	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/13/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:47 am EST See 6/A4.1 & similar details, it says "Flashing with SS drip trim", typically these flashings are the same material and finish as the panels, is that acceptable?													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 09:49 am EST Same material and finish as the wall panel is acceptable.													
63	Metal Fascia WC Responsibility	Closed		None	Brown, Austin (Th...	02/27/2024	Austin Brown	03/02/2024	03/05/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:46 am EST See 2/A4.1, which work category is responsible for the "Prefinished Metal Fascia, Gray"													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 08:47 am EST													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	WC15 to provide and install noted item.													
62	Specification Section for 8/A5.2	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/17/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:45 am EST See 8/A5.2, this detail shows a 2" Metal Panel, please provide a specification for this panel.													
	A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 03:05 pm EDT Detail to be updated in addendum to show Centria IW-10A 1.5" metal panel.													
61	SUBSTITUTION REQUEST - Morin	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/13/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:43 am EST Please see attached for Product Data associated with the below items; Morin's C-29-E Profile B as an equal for spec section 074213.13, 2.2, B, 1, a Morin's F-12-0 as an equal for spec section 074293, 2.2, C, 2? Morin F-12-0 Product Data.pdf Morin C-29-E Profile B Product Data.pdf													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 09:22 am EST Approved with metal corner flashing, not mitered, per RFI #115.													
60	Insulated Glass Material	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/17/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:38 am EST Specification section 088000-Glazing does not call out insulated glass unit material description to be bid. Please provide a specification.													
	A: Romica Singh (Kingscott) Responded Thu Mar 14, 2024 at 04:00 pm EDT Adding following to addendum 03: Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190. 1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants. 2. Perimeter Spacer: Polypropylene-covered stainless steel in color selected by Architect. a. Manufacturers: Subject to compliance with requirements, provide products by one of the following: 1) Saint-Gobain Glass Corp. 2) Technoform Glass Insulation North America. 3) Thermix; a brand of Ensinger USA. 3. Desiccant: Molecular sieve or silica gel, or a blend of both.													
59	Residential Appliance quantity & models	Closed		None	Szeszulski, Sami ... Singh, Romica	02/27/2024	Austin Brown	03/02/2024	03/17/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					(Ki...									

Q: Austin Brown Sent Tue Feb 27, 2024 at 11:37 am EST
In regard to the upcoming bid for the Willow School project, the scope of work category #29 (food service equipment) includes residential appliances. Upon reviewing the written itemized spec section 113013 for the residential appliances, there are no quantities or model #'s listed. Are you able to provide this information?

A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 04:25 pm EDT
See attached - Schedule to be added to specification in addendum with tags on plans.
113013 Schedule.png

58	Security Film Requirement	Closed		None	Brown, Austin (Th...	02/27/2024	Austin Brown	03/02/2024	02/27/24					

Q: Austin Brown Sent Tue Feb 27, 2024 at 11:35 am EST
Bid Category # 18 includes "Security Window Film" but I don't see it called for on any notes or elevations. Where is it to be used?

A: Austin Brown (The Christman Company (LAN)) Responded Tue Feb 27, 2024 at 11:36 am EST
Refer to note 14 on Architectural General Notes, pasted below for reference;

3M SECURITY FILM -AT ALL EXTERIOR WINDOWS, 6FT AND BELOW OR FROM THE NEXT MULLION AFTER 6FT AND BELOW. REFER TO SPECIFICATION SECTION 088716.

57	Corridor Door Fire Rating Confirmation	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/05/24					

Q: Austin Brown Sent Tue Feb 27, 2024 at 11:32 am EST
It appears there are several door openings in corridors that may need to be fire-rated but are not called out as such on the door schedule. Please review and advise if fire-rating is to be added to any door openings.

A: Romica Singh (Kingscott) Responded Thu Feb 29, 2024 at 05:10 pm EST
Door Schedule is correct.

56	BL-2 Glazing Rating	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/05/24					

Q: Austin Brown Sent Tue Feb 27, 2024 at 11:32 am EST
It appears window type BL-2 may require 45-min. rated glazing. Please confirm.

A: Romica Singh (Kingscott) Responded Thu Feb 29, 2024 at 05:02 pm EST
Correct, BL-2 requires 45 min rated glazing.

55	Window Type A, A1, B, C location	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/13/24					

Q: Austin Brown Sent Tue Feb 27, 2024 at 11:31 am EST
I can not find aluminum storefront windows type A, A-1, B, or C on the drawings? Were these not used and need to be deleted from the documents?

A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 02:51 pm EST

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	• A and A1 are tagged on composite clerestory plan A0.2. • B and C to be removed from documents.													
54	Frame Type 5	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	02/28/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:31 am EST Frame type # 5 is not used on the door schedule. Should this frame type be deleted, or is a frame not listed correctly on the schedule?													
	A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 02:59 pm EST Door 156A should be frame type 5, but without the transom. Door Frame Type 5.png													
53	Vestibule Fire Rated Glass & Fire Rated Frames	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/17/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:30 am EST All interior vestibule aluminum frames with FRP doors are called on the door schedule to have insulated glass. Shouldn’t all of these be non-thermal frames with ¼” glass?													
	A: Romica Singh (Kingscott) Responded Wed Mar 13, 2024 at 01:48 pm EDT Interior vestibule frames with insulated glass to remain 1" for fire rating.													
52	Roof drain and overflor design	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/13/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:30 am EST Can we get a basis-of-design for the roof drains and overflows please? The drawings lead us to believe these could be combination units so it is imperative we know what is desired.													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:29 pm EST Intent is for RS and ORS to be separate (as indicated in upcoming Addendum 03) and as already indicated in specification. However, they can be combined pending it is conducive to work flow and meet intent of specification; example is "Mifab R1150-Spec" 221125-090-LSD_Willow_School-52-Roof_drain_and_overflor_design-2024-02-27.pdf													
51	Cubicle Curtains and Track responsibility	Closed		None	Brown, Austin (Th...	02/27/2024	Austin Brown	03/02/2024	02/27/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:28 am EST Please verify what work category is responsible for curtain track system (Spec 102123). Currently shown to be installed by WC 21 though this is typically installed by WC 20.													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Feb 27, 2024 at 11:28 am EST Work Category responsibility will be revised from WC 21 to WC 20 in an upcoming addendum.													
50	SUBSTITUTION REQUEST - Dimensional Metals	Closed		None	Szeszulski, Sami ... Singh, Romica	02/27/2024	Austin Brown	03/02/2024	03/13/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					(Ki...									
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:26 am EST Attached substitution request. Substitution Request - New Willow Elementary.pdf													
	A: Romica Singh (Kingscott) Responded Wed Mar 6, 2024 at 02:01 pm EST Approved.													
49	Mechanical Piping - Painting Responsibility	Closed		None	Brown, Austin (Th...	02/27/2024	Austin Brown	03/02/2024	02/27/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:23 am EST There are notes on Plumbing & Mechanical drawings stating to "paint piping to match adjacent architecture where crossing above open ceilings" as well as “all piping to be painted within mechanical rooms”. Please verify who is responsible for this painting. We don’t feel this should be the mechanical’s responsibility. Thank you													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Feb 27, 2024 at 11:25 am EST Painting of all mechanical piping, fixtures, plumbing, etc. as shown is the responsibility of the Painting contractor. WC27 (mechanical) is required to install all items for a complete system, including insulation and labels in coordination with WC24 (painters) to prevent clashes/touchups where possible.													
48	AWP Color Selection	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	02/28/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:22 am EST On sheet A1.9, the color codes are not all assigned to the wall sound panels. Most of the square panels are labeled AWP1, and a couple of the circles are labeled AWP11. The triangles are not labeled with anything. What color are the triangles supposed to be? Also, am I to assume all squares and all circles will share the same color?													
	A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 01:28 pm EST Squares and circles will be different colors. See image for updated color codes, sheet to be issued in addendum. Acoustic Wall Panel Schedule.png													
47	SUBSTITUTION REQUEST - Versico Roofing Systems	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/27/2024	Austin Brown	03/02/2024	03/13/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:21 am EST Attached is a brochure showing the roofing systems that Versico offers. Versico All Systems Brochure.pdf													
	A: Romica Singh (Kingscott) Responded Tue Mar 5, 2024 at 08:49 am EST Approved.													
46	Underground Detention System Design	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ...	02/27/2024	Austin Brown	03/02/2024	03/13/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					Gerrish, Tom (Spa... Gengler, Craig (S...									
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:19 am EST Sheet C6.1 at the underground detentions; the OCS that is within the systems 4 ea, 2 at ea system is not being designed by ADS, per their table on pages 6.3 and 6.4. In chart reference items G & F. See attachment, let me know if I am missing this information somewhere else. UGS OCS.pdf													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:30 pm EST Please review the attached clarifying document and submit an additional RFI if there are still questions. UGS OCS - SDA Response - 24-02-29.pdf													
45	RCP and HDPE piping	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	02/27/2024	Austin Brown	03/02/2024	03/13/24					
	Q: Austin Brown Sent Tue Feb 27, 2024 at 11:18 am EST It appears per note 1 on C6.1 that RCP pipe is required for the project except when the size is under 12". Specifications call for HDPE water treatment chamber. Please verify. Why is the engineer utilizing RCP pipe for the whole job (note 1 page c6.1), except when the size is under 12” I only ask because they have spec’d an HDPE water treatment chamber.													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:27 pm EST HDPE piping will be required for the project except for pipes that extend into the right-of-way. This is clarified in an upcoming Addendum.													
44	Casework Manufacturer Substitution Request	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/23/2024	Austin Brown	02/27/2024	02/28/24					
	Q: Austin Brown Sent Fri Feb 23, 2024 at 09:56 am EST Substitution request to add Grand Valley Wood Products, 4030 Eastern Ave, Grand Rapids, MI 49508, as a manufacturer for Specification Sections: 123000 MANUFACTURED PLASTIC-LAMINATE-CLAD MUSIC CASEWORK 123216, MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK													
	A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 02:17 pm EST Approved. Confirmed with owner and CM.													
	A: Romica Singh (Kingscott) Responded Mon Feb 26, 2024 at 08:51 am EST We are unfamiliar with this manufacture. Can they provide specs and a list of similar projects?													
43	FS5.2 Bubbles	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Q: Austin Brown Sent Thu Feb 22, 2024 at 11:23 am EST Why are some of the notes on FS5.2 bubbled?													
	A: Romica Singh (Kingscott) Responded Thu Feb 22, 2024 at 02:10 pm EST These are not revision clouds, but rather bubbles shown on the manufacturer's drawings to highlight critical dimensions and action items for installation.													
42	Depressed Slab Foundations, and Structural/FSE drawing height discrepancies	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 11:23 am EST • It looks like there is supposed to be a detail cut number for the depressed slab foundations on S1.01 as there is a cut line but no detail number on it. There are two details for the depressed slab on S4.01. ◦ It appears to be that per section F-F on FS5.2, the ½" difference is supposed to be filled with leveling sand. In regards to the leveling sand, section F-F says it is to be "by others" but spec section 114000 Item #100 feature #29 says "FEC to provide sand to fill…". Please clarify if FEC is to provide/install? ◦ Details on the structural drawings indicate the depressed slab is to be 8". The FSE drawings indicate the slab is to be recessed 8-1/2".													
	A: Romica Singh (Kingscott) Responded Tue Feb 27, 2024 at 09:50 am EST • The cut line on S1.01 is the tail end of 3/S2.01, which is a building section for the head is on the other side of the sheet. • The FEC should provide the sand. The walk-in drawings refer to "others" to indicate that the sand will not be provided from the walk-in manufacturer with the walk-in itself. • Structural drawings will be updated to show 8-1/2" recess. The cooler/depressed slab will be shifted to the west by 5-1/4" to keep the right side of cooler -8" to keep the exterior masonry veneer on coursing.													
41	Desk, Scrapping Stations, Lockers	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	03/05/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 11:19 am EST Item #47 is a desk but it calls it as NIFEC "not in FEC" scope. I don't see a detail for this desk anywhere else throughout the drawings so I can easily assign it to my general trades contractor. It also is not called on the equipment plan. Can we get a detail for this desk or is it in the specs somewhere? • ◦ Same for Items #63 and 130 scrapping stations ◦ Same for Item #110 lockers													
	A: Romica Singh (Kingscott) Responded Thu Feb 29, 2024 at 04:25 pm EST Desk, lockers, and scrapping stations to be detailed in addendum.													
40	Equipment Schedule NIFEC or VFVI requirement	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 11:13 am EST On the equipment schedule on FS1.1 it calls for Item 33 to be NIFEC. However in the specs it calls for it to be VFVI. Since this is the same item as #32, I'm pretty sure it is supposed to be VFVI. Please confirm?													
	A: Romica Singh (Kingscott) Responded Thu Feb 22, 2024 at 02:09 pm EST Item 33 should also be V.F.V.I. The intention is that these racks will be supplied by the school's bread vendor, but we are simply making space for them on the plan.													
39	Earthwork/Landscaping WC Requirements for Stone & Fabric at Retaining Wall	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	03/05/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:50 am EST Specific notes and details item 12 – this is inefficient to have this WC place the stone and fabric usually the retaining wall installer will do this. It would make more sense for this WC to prep the subgrade then get out of the landscapers way so they can install everything.													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 08:09 am EST WC 02 to install subbase up to 1" of grade required for WC 08 to take over from there. Revised in Addendum 1.													
38	Temporary Road Construction	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	03/13/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:48 am EST WC Note 17, Install maintain and remove temp roads for concrete and deliver, etc. Where do these roads go? Is this the green road on the logistic plan? Please provide location if other than what is on logistic plan, width depth etc for proper pricing. Same question would pertain to Specific notes and Detail item 7. Where, width length, depth, etc.													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 10:31 am EST Yes, this is the green drive on the logistics plan. The drive dimensions are roughly 15' wide and 150' long. The dimensions for the laydown area are 120' x 130'. Depth shall be 10", maintenance as required by the construction manager to maintain drives and access through the site.													
37	2" & 3" Underground outlet & pipe size	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:46 am EST There are drains and cleanouts scheduled/specified with 2” outlets on the drawings (example - trench drains). Plumbing general note #11 states that the minimum pipe size underground is to be 3”. Please explain. Code allows for a minimum pipe underground to be 2”. Typically 2” piping would run underground to serve sinks and lavatories.													
	A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:21 am EST Underground piping shall be 3 inches. The drain from the fixture can be 2" in the vertical until it connects to the 3" horizontal piping buried underground. 221125-090-LSD_Willow_School-37-2_amp_3_Underground_outlet_amp_pipe_size-2024-02-22.pdf													
36	BWL Water Service & BWL installation	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:44 am EST Being this project will have BWL for water service it is assumed that BWL will bring the water services into the building and up to the first flange. Please confirm.													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Wed Feb 28, 2024 at 12:22 pm EST I do not believe that is the case. I don't believe Lansing Board of Water and Light brings the water service into the building. WC 02 is responsible for tapping off the main and bringing it into the building to the first flange.													
35	BIM Requirements	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	02/22/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:44 am EST Are you looking to have on-site coordination meetings/efforts or BIM? Will the design model be provided to develop coordination drawing from?													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 03:28 pm EST BIM is not required on this project so no coordinate meetings will be held by The Christman Company.													
34	Temporary Heating Requirement	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	02/22/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:43 am EST Who is responsible to supply, install and maintain temporary heating/ventilation for the project? Can there be an allowance allocated for this keeping all bids inline?													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 03:26 pm EST The CM (Christman) will be responsible for providing and maintaining temporary heat during the winter. No temporary air conditioning is planned at this time.													
33	Glycol in Geothermal System Requirement	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	03/05/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:43 am EST Who is responsible for the Glycol in the heat pump loop (interior and exterior)? What is the estimated volume of the exterior geothermal system?													
	A: Austin Brown (The Christman Company (LAN)) Responded Tue Mar 5, 2024 at 08:09 am EST WC27 to provide glycol or liquid fill for geothermal system.													
32	MUA Exhaust Fan WC 27 or 29 Install	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	02/22/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:42 am EST Please verify if Kitchen MUA unit and Kitchen exhaust fans are provided and installed by WC 29 or WC 27?													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 03:14 pm EST WC 27 to provide and install MAU and Kitchen Exhaust Fans.													
31	Cast Iron Piping to PVC for Storm & Sanitary Request	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:40 am EST 221005 Plumbing Piping, Below Grade – Specifications only allow for cast iron piping on underground (sanitary & storm). Please consider the use of PVC for these applications.													
	A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:06 am EST PVC can be used and will be indicated in spec in upcoming addendum. 221125-090-LSD_Willow_School-31-Cast_Iron_Piping_to_PVC_for_Storm_amp_Sanitary_Request-2024-02-22.pdf													
30	Meter Valve Pit Detail Request	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	02/22/2024	Austin Brown	02/26/2024	03/13/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:39 am EST I cannot find a detail for the meter/valve pit, can a detail be provided? And a detail for the inside, if we are providing the valve and accessories.													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:28 pm EST The water services will be revised and clarified in an upcoming Addendum													
29	Gas line installation requirement	Closed		None	Dobbs, Andrew	02/22/2024	Austin	02/26/2024	02/22/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
					(Th...		Brown							
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:39 am EST Specific Notes, item 4, the site utility contractor will not be able to furnish and install the gas lines, this would probably be by the gas company? As far as the coordination of the install with the municipality that seams that would be something the CM would do and we would just make sure that that our work does not interfere with theirs? What is your intent with that note?													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 03:02 pm EST Utility provider to provide and install gas line main to meter and PRV. WC 27 to provide and install all gas piping after the PRV including the generator. Correct the CM will schedule and coordinate the work for the utility company gas main but need to make sure work carried out by others in this area is coordinated with.													
28	Trench Drain Responsibility Requirement	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	02/22/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:34 am EST What WC is installing the ACO trench drain?													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 02:36 pm EST ACO trench drain(s) to be provided and installed by WC 02.													
27	Existing Meter Vault Size	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	02/22/2024	Austin Brown	02/26/2024	03/13/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 10:32 am EST On sheet 6.1 coming out of the back of the meter vault towards MLK, what size line is this? I do not see an existing line there, I am guessing we are to assume that the line is under the curb? Please clarify.													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:26 pm EST The water services will be revised and clarified in an upcoming Addendum													
26	Request to use poly pipe ILO specified systems for Natural Gas Piping	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 09:24 am EST 231123-2, 2.1 Natural Gas Piping Buried Within 5 Feet – Please consider the use of poly pipe, direct bury for approval in this application. Neither of the (2) specified systems are conducive to today's project budgets.													
	A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:08 am EST Yes, proposed piping is allowed for buried pipe. Updated spec will be issued in addendum. 221125-090-LSD_Willow_School-26-Request_to_use_poly_pipe_ILO_specified_systems_for_Natural_Gas_Piping-2024-02-22.pdf													
25	Type K or Type L copper for Geothermal Heat Pump Loop	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 09:21 am EST													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	232113-3, 2.2 Geothermal Heat Pump Loop Water Piping, Above Grade (B) – Please verify that the intent is to use type “K” copper in lieu of industry standard type “L” on this system for piping ¾” – 2”.													
	A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:09 am EST Type L or Type K are allowed. Spec to be updated in addendum. 221125-090-LSD_Willow_School-25-Type_K_or_Type_L_copper_for_Geothermal_Heat_Pump_Loop-2024-02-22.pdf													
24	Hyrdonic System & Grooved Systems	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 09:20 am EST 232113-3, 2.1 Hydronic System Requirements B,3,a – Please verify if Grooved systems are acceptable above lay-in ceilings.													
	A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:10 am EST Yes, grooved systems are acceptable above lay-in ceilings. 221125-090-LSD_Willow_School-24-Hyrdonic_System_amp_Grooved_Systems-2024-02-22.pdf													
23	Roof Work Clarification for WC27 & 14	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	02/22/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 09:19 am EST WC 27 note #19 – Indicates that the roof sumps are provided by WC 14 and WC 27 plumbs up to them. WC 14 – Related work by others #3 states roof sump pans, roof drains and overflows are furnished and installed by others.													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 02:31 pm EST Sump pans to be provided and installed by WC 12. Roof drains and overflows by WC 14. Plumbing to roof drains/sump pans by WC 27.													
22	Pre-Fabricated Walls & WC27 Specific Note Clarification	Closed		None	Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	02/22/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 09:18 am EST W2 27 Specific Notes and Details #3 – Please give better clarity to this note. Is there something more to us needing to have our installation done in the “pre-fabricated” walls prior to enclosing walls? This doesn’t seem to be any different than if the walls were field assembled.													
	A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 02:27 pm EST The intent of this note is to clarify that this WC might need to travel to the pre-fabrication site of where these walls are pre-fabricated to install in-wall rough-ins if needed.													
21	Meter vault to site water line size	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki... DePrekel, Collin ... Gerrish, Tom (Spa... Gengler, Craig (S...	02/22/2024	Austin Brown	02/26/2024	03/13/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 09:17 am EST On sheet 6.1, coming from the meter vault to the site, there is a 4” water line and a 2.5? I am having a hard time figuring out if it is a 2.5”, please confirm.													
	A: Craig Gengler (Spalding DeDecker) Responded Fri Mar 8, 2024 at 01:25 pm EST The water services will be revised and clarified in an upcoming addendum													

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
20	HP Control Points	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					

Q: Austin Brown Sent Thu Feb 22, 2024 at 09:13 am EST
M8.4
Please Confirm what points are to come with the HP Controls. “UNITS THAT ARE PROVIDED WITH PACKAGED OR SEMI PACKAGED CONTROLS SHALL BE CAPABLE OF INTERFACING / INTEGRATING INTO THE BMS.”

A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:12 am EST
Coordination of points need to occur with submitted and purchased equipment.
221125-090-LSD_Willow_School-20-HP_Control_Points-2024-02-22.pdf

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
19	Control Valves & Controls Conduit	Closed		None	Singh, Romica (Ki... Szeszulski, Sami ... Dobbs, Andrew (Th...	02/22/2024	Austin Brown	02/26/2024	03/05/24					

Q: Austin Brown Sent Thu Feb 22, 2024 at 08:57 am EST
General
Please Confirm who is responsible for the control valves on the equipment with factory controls.

Will there be a conduit for Controls, provided by Electrical, between the buildings?

A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:15 am EST
As indicated in the schedules (VUV and HP), the unit shall be provided with control valve from factory.
CM (Christman) to coordinate who provides final valve.
CM (Christman) to coordinate required conduit between buildings as required and ensure scope is covered.
221125-090-LSD_Willow_School-19-Control_Valves_amp_Controls_Conduit-2024-02-22.pdf

A: Andrew Dobbs (The Christman Company (LAN)) Responded Thu Feb 22, 2024 at 02:24 pm EST
WC 27 to provide and install control valves for the mechanical equipment. Kingscott, please confirm if any of the technology conduits are for controls?

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
18	RTU Controls: Factory supplied or contractor supplied	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					

Q: Austin Brown Sent Thu Feb 22, 2024 at 08:39 am EST
M8.2
Please Confirm ALL RTU Controls and points are by Factory. “CONTROLS CONTRACTOR TO COORDINATE WITH THE REFRIGERATION EQUIPMENT FOR FINAL CONTROL POINTS”

A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:16 am EST
SES will update Note 2 in RTU schedule to indicate controls by TCC.
221125-090-LSD_Willow_School-18-RTU_Controls_Factory_supplied_or_contractor_supplied-2024-02-22.pdf

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
17	Kitchen Controls	Closed		None	Dobbs, Andrew (Th... Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					

#	Subject	Status	Responsible Contractor	Received From	Assignee	Date Initiated	RFI Manager	Due Date	Closed Date	Ball In Court	Location	Schedule Impact	Cost Code	Cost Impact
	Q: Austin Brown Sent Thu Feb 22, 2024 at 08:38 am EST **M8.1** Please Confirm all of the Kitchen MAU and EF Controls are by FSEC – TCC Contractor has one point (BACnet) connection.													
	A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:18 am EST FSEC is providing the hood controller only, and a BMS drop is required for that. However, MAU, EF, and wiring between hood panel and controllers shall be by TCC. All points need to be coordinated with the submitted equipment and between all trades (TCC, FSEC, EC, and MC). 221125-090-LSD_Willow_School-17-Kitchen_Controls-2024-02-22.pdf													
16	UV Controls: Provided by Contractor/Manufacturer	Closed		None	Szeszulski, Sami ... Singh, Romica (Ki...	02/22/2024	Austin Brown	02/26/2024	02/28/24					
	Q: Austin Brown Sent Thu Feb 22, 2024 at 08:37 am EST **M8.1** Please confirm if the Unit Ventilator controls are provided by the manufacturer or provided by the controls contractor. In the past, this has been an item provided by the controls contractor for Lansing Schools projects.													
	A: Romica Singh (Kingscott) Responded Wed Feb 28, 2024 at 09:19 am EST VUV's are to be supplied with Modine controls capable of interfacing with the BMS system and the TCC shall ensure the BMS can read points. 221125-090-LSD_Willow_School-16-UV_Controls_Provided_by_Contractor_Manufacturer-2024-02-22.pdf													

END OF PRE-BID RFI'S, PAGE 41/41.

REMAINING RFI'S NOT INCLUDED ARE DEMO BID PACKAGE RELATED.

The Christman Company
208 N Capitol Ave
Lansing, Michigan 48933-1357
P: (517) 482-1488

Project: 221125-090 LSD Willow School
Lansing, Michigan 48933

RFI #182: Trench Footing Detail

Status	Open		
To	Sami Szeszulski (Kingscott) Romica Singh (Kingscott)	**From**	Austin Brown (The Christman Company (LAN))
Date Initiated	Mar 6, 2024	**Due Date**	Mar 10, 2024
Location		**Project Stage**	
Cost Impact		**Schedule Impact**	
Spec Section		**Cost Code**	
Drawing Number		**Reference**	
Linked Drawings			
Received From			
Copies To			

Activity

Question

Question from Austin Brown The Christman Company (LAN) *on Wednesday, Mar 6, 2024 at 04:13 PM EST*

Would a trench footing would be acceptable for all areas that require a 2' or 3' wide footing? This would save a significant amount of time on the project, as well as all the cost associated with the foundation excavation and backfill. I have attached details of each size for reference. The few footing areas that are wider than 3', would still be a standard footing and wall. Please let me know as soon as possible if this would be a viable option.

Attachments
Trench Footing Details.pdf

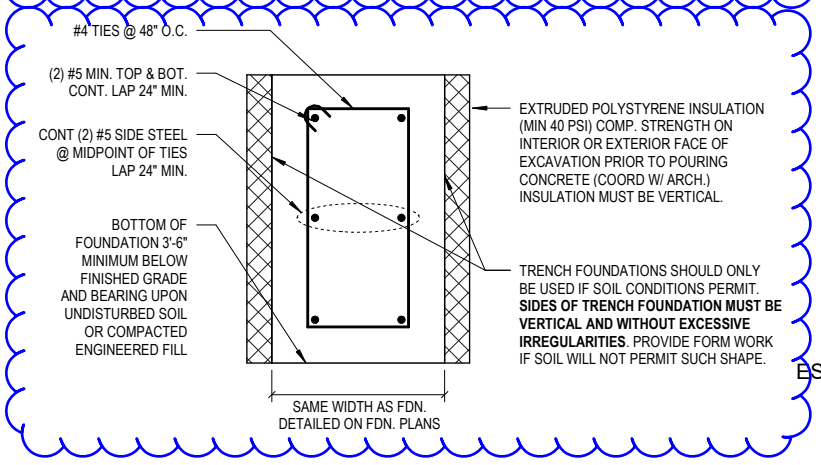
Awaiting an Official Response

Trench footings are permissible where soil conditions have enough cohesion to hold a straight vertical edge, without tapering. Our foundation plans specifically show this option. Please refer to foundation plan notes and typical trench foundation detail 10/S0.03 and disregard the proposed details that were attached to this RFI.

Brad Cutter
Robert Darvas Associates
March 7, 2024

FOUNDATION PLAN NOTES:

1. SEE SHEETS S0.01-S0.04 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT, MINIMUM ALLOWABLE BEARING PRESSURE = 2,000 PSF
5. IF SOIL CONDITIONS ALLOW, UTILIZE TYPICAL DETAIL 10/S0.03 FOR TRENCH FOUNDATIONS.



The Christman Company
208 N Capitol Ave
Lansing, Michigan 48933-1357
P: (517) 482-1488

Project: 221125-090 LSD Willow School
Lansing, Michigan 48933

RFI #181: Roof Tie System & Tectum Decking

Status	Open		
To	Sami Szeszulski (Kingscott) Romica Singh (Kingscott)	**From**	Austin Brown (The Christman Company (LAN))
Date Initiated	Mar 6, 2024	**Due Date**	Mar 10, 2024
Location		**Project Stage**	
Cost Impact		**Schedule Impact**	
Spec Section		**Cost Code**	
Drawing Number		**Reference**	
Linked Drawings			
Received From			
Copies To			

Activity

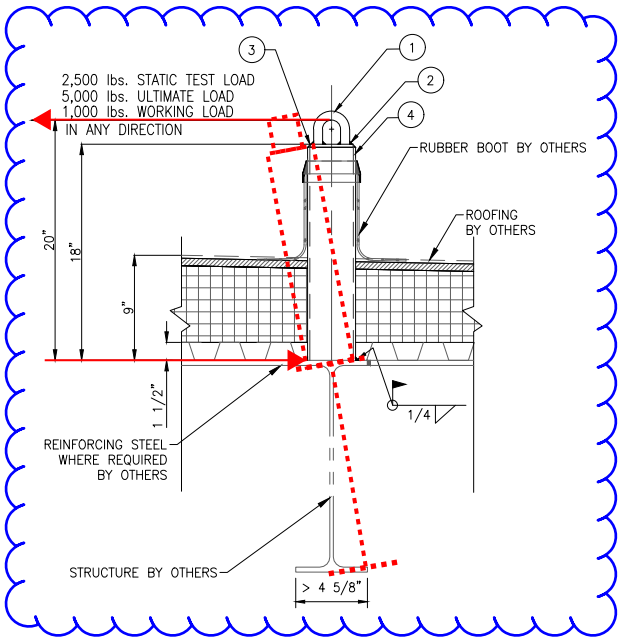
Question

Question from Austin Brown The Christman Company (LAN) *on Wednesday, Mar 6, 2024 at 02:32 PM EST*
Can a detail be provided on how the roof tie of system attaches to the locations where tectum deck is shown?

Awaiting an Official Response

Roof safety anchors are typically provided by a company that specializes in fall protection systems. Below is an example detail for reference. There are two (2) different roof diaphragms (metal deck and tectum) but in either case the safety anchors are directly fastened to the CFMF roof structure.

Brad Cutter
Robert Darvas Associates
March 7, 2024



The Christman Company
208 N Capitol Ave
Lansing, Michigan 48933-1357
P: (517) 482-1488

Project: 221125-090 LSD Willow School
Lansing, Michigan 48933

RFI #170: Confirm CSJ guage - 18 or 20ga

Status	Open		
To	Sami Szeszulski (Kingscott) Romica Singh (Kingscott)	**From**	Austin Brown (The Christman Company (LAN))
Date Initiated	Mar 6, 2024	**Due Date**	Mar 10, 2024
Location		**Project Stage**	
Cost Impact		**Schedule Impact**	
Spec Section		**Cost Code**	
Drawing Number		**Reference**	
Linked Drawings			
Received From			
Copies To			

Activity

Question

Question from Austin Brown The Christman Company (LAN) *on Wednesday, Mar 6, 2024 at 11:53 AM EST*

Reference 054000 CFMF Spec & S1.11? The specs are calling for minimum 20 GA CSJ Studs for both Exterior and Interior Non-Load bearing wall framing, and the structural drawings are showing a minimum of 18 ga CSJ. Which gauge for Exterior and Interior Non-Load bearing wall framing are we to use?

Awaiting an Official Response

"CSJ" seems to indicate "cold-formed steel joist", but the question refers to wall framing studs. Specifications state minimum interior and exterior wall stud gauge to be 33mils (20ga) and the general wall schedule states 43mils (18ga). Please proceed with 43mils (18ga) as a minimum.

Brad Cutter
Robert Darvas Associates
March 7, 2024

2.4 EXTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 33 mils (0.0329 inch).
2. Flange Width: 1-5/8 inches.
3. Section Properties: As required by structural performance.

2.5 INTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 33 mils (0.0329 inch).
2. Flange Width: 1-5/8 inches.
3. Section Properties: As required by structural performance.

COLD-FORMED WALL SCHEDULE (MIN.)		
MARK	STUD SIZE	TOP+BOT TRACK
--	600S162-43 @16"OC	600T125-43

STRUCTURAL NOTES

GENERAL

1. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE DRAWINGS AND THE WRITTEN SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THE INFORMATION ON THE WRITTEN SPECIFICATIONS, THE DRAWINGS, AND THESE NOTES, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.

The Christman Company
208 N Capitol Ave
Lansing, Michigan 48933-1357
P: (517) 482-1488

Project: 221125-090 LSD Willow School
Lansing, Michigan 48933

RFI #170: Confirm CSJ guage - 18 or 20ga

Status	Open		
To	Sami Szeszulski (Kingscott) Romica Singh (Kingscott)	**From**	Austin Brown (The Christman Company (LAN))
Date Initiated	Mar 6, 2024	**Due Date**	Mar 10, 2024
Location		**Project Stage**	
Cost Impact		**Schedule Impact**	
Spec Section		**Cost Code**	
Drawing Number		**Reference**	
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Copies To			

Activity

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Brad Cutter
Robert Darvas Associates
March 7, 2024

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COLD-FORMED WALL SCHEDULE (MIN.)		
MARK	STUD SIZE	TOP+BOT TRACK
--	600S162-43 @16"OC	600T125-43

STRUCTURAL NOTES

GENERAL

1. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE DRAWINGS AND THE WRITTEN SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THE INFORMATION ON THE WRITTEN SPECIFICATIONS, THE DRAWINGS, AND THESE NOTES, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.

JOB: _____

ITEM NO: _____

INSULATED STAINLESS STEEL HOT CABINET MODEL H-137-SUA-12D

H-137-SUA-12D

FEATURES AND BENEFITS:

- Fully insulated hot cabinet keeps prepared foods at serving temperatures.
- Powerful, yet efficient, 1500 Watt heating system maintains the right temperature to properly hold products. Heats up to 200˚F (93˚C).
- Standard solid state electronic control with large, clear, easy-to-read and operate LED digital display to ensure holding at precise food temperature.
- Internal frame in body maintains structural rigidity.
- Stainless steel construction throughout for ease of cleaning. One piece extended base protects cabinet body.
- Smooth interior coved corners prevent food particle/grease buildup.
- Safety-conscious anti-microbial latches protect against spreading germs.
- Field reversible insulated Dutch doors prevent temperature loss. Silicone door gaskets for proper seal.
- Standard with right hand hinging; left hand hinging available upon request.
- High temperature ceramic magnetic latches for “easy open”; twist-lock catch secures door during transport.
- Recessed push/pull handles on both sides prevent damage to walls; allows easy maneuvering.
- Twelve sets of chrome plated wire universal angles accommodate a large variety of pan sizes on adjustable 1-1/2" centers.
- Heavy duty 5" swivel casters, two with brakes. Provides mobility when fully loaded.

Standard solid state electronic control with large, clear, easy-to-read and operate LED digital display to ensure holding at precise food temperature

ACCESSORIES and OPTIONS (Available at extra cost):

- ❑ Tempered Glass Door Windows
- ❑ Key Lock Handles
- ❑ Lock Hasp
- ❑ Extra Universal Angles
- ❑ Change from standard chrome plated wire angles to angles designed for transporting
- ❑ Corner Bumpers
- ❑ Perimeter Bumper
- ❑ Rear Push Handle
- ❑ Bail Handles
- ❑ Various Caster Options
- ❑ Removable Cord Set
- ❑ 208 or 240 Volt Service
- ❑ Upgrade to 2000 Watts Power Unit
- ❑ HACCP Documentation (Built-in USB port)

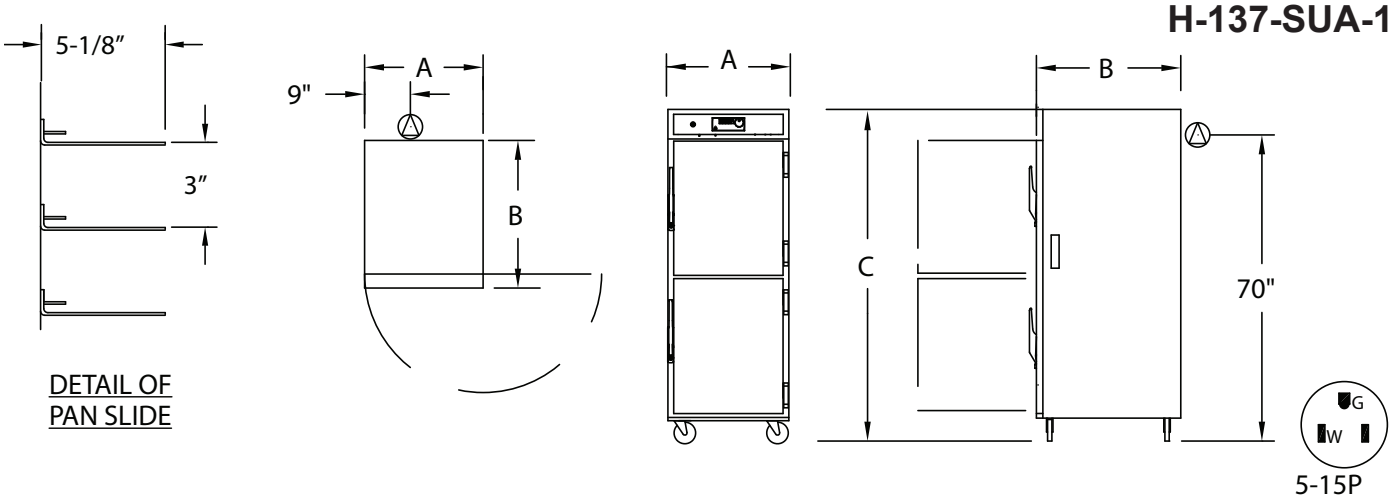
See page B-20 for accessory details.

CRES COR®
5925 Heisley Road • Mentor, OH 44060-1833
Phone: 877/CRESCOR • Fax: 440/350-7267
www.crescor.com

GOLD

Gold indicates our Best Insulated Hot Cabinets with the best warranty in the industry.
3-Year Parts / 1-Year Labor.

H-137-SUA-12D



CRES COR MODEL NO.	PAN			DIM "A"	DIM "B"	DIM "C"	INSIDE DIMENSIONS				WEIGHT ACT.
	CAP/ ANGLES	SIZE		WIDTH	DEPTH	HEIGHT	WIDTH	DEPTH	HEIGHT		
H-137-SUA-12D	12 SETS	SEE NOTE BELOW	IN	28-3/4	32-3/4	73	22	26-7/8	58	LBS	283
			MM	730	835	1855	560	685	1475	KG	128

NOTES: 1. Pan sizes 22" x 20" (560 x 510) Roast & Bake Pans, 10" x 20" (255 x 510) Roast & Bake Pans, 18" x 26" (460 x 660) Bun Pans, 14" x 18" (355 x 460) Service Trays, 12" x 20" (305 x 510) Steam Table Pans. Refer to Pan Size Chart at end of section.
2. When ordering bumpers, add 2" to overall dimensions.

GOLD

Gold indicates our Best Insulated Hot Cabinets with the best warranty in the industry.
3-Year Parts / 1-Year Labor.

CABINET:
- Body: 22 ga. stainless steel.
- Reinforcement: Internal framework of 18 ga. stainless steel.
- Insulation: Fiberglass, thermal conductivity (K factor) is .23 at 75˚F. 1-1/2" in doors, base top; 2" in sidewalls.
- Air tunnels: 22 ga. stainless steel; lift-out type, mounted on sides.
- Push/pull handles (2): 5" vertical; recessed.
- Interior coved corners.

BASE:
- One piece construction, .125 aluminum.
- Casters: 5" dia., swivel, modulus tires, 1-1/4 wide, load cap. 250 lbs. each, temp. range -45˚/+180˚F. Delrin bearings. Front casters equipped with brakes.

DUTCH DOORS:
- Field reversible.
- Formed 22 ga. stainless steel.
- Latches: Chrome plated zinc, high temperature ceramic magnetic type, mounted inboard.
- Transport Latches.
- Hinges: Heavy duty chrome plated zinc.
- Gaskets: Perimeter type, silicone.
- Pan stops: Embossed.

PAN SLIDES:
- Wire angles (.306 dia.), nickel chrome plated steel, mounted on lift-off posts.
- Spaced on 4-1/2" centers; adjustable on 1-1/2" centers.

Scan QR code to view Spec Sheet, Operating Manual, Wiring Diagram or to call Customer Service.

If you need a QR reader visit your App Store on your Smartphone or Tablet.

HOT UNIT COMPONENTS:
- Thermostat: Solid state digital display control, room ambient to 200˚F (93˚C).
- Switch: ON-OFF push button type.
- Power cord: Permanent, 10 ft., 14/3 ga.
- Heater: 1470 Watts.
- Blower motor.
- Vent Fan.
- Thermometer: Digital.

POWER REQUIREMENTS:
- 1500 Watts, 120 Volts, 60 Hz., single phase, 12 Amps., 15 Amp. service.

SHORT FORM SPECIFICATIONS

Cres Cor Insulated Hot Cabinet Model H-137-SUA-12D. Solid state electronic controlled time and temperatures. Cabinet 22 ga. stainless steel; stainless steel internal frame. (12) sets wire universal angles for multiple pan sizes, adjustable spacing every 1-1/2". Field reversible Dutch doors, 22 ga. stainless steel. Fiberglass insulation in sides, 2"; doors, base, top 1-1/2". Interior coved corners. 1500 Watt, 120 Volt power unit. One piece insulated base, .125 aluminum. 5" swivel modulus casters, Delrin bearings. Load capacity 250 lbs. each. 3-Year Parts / 1-Year Labor warranty. Provide the following accessories: ____ ____ ____ . NSF, CSA-US, CSA-C listed. Energy Star Qualified.

CRES COR®
5925 Heisley Road • Mentor, OH 44060-1833
Phone: 877/CRESCOR • Fax: 440/350-7267
www.crescor.com

In line with its policy to continually improve its products, CRES COR reserves the right to change materials and specifications without notice.

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Litho in U.S.A.

randell®

SERVING LINES

STAINLESS STEEL HOT FOOD WELL MODELS RAN HTD

Mobile, heated display pan serving station. 16 gauge stainless steel top with locking device designed to work with all other Ranserve equipment. Stainless steel body with interchangeable panels, available with enclosed base, open storage or heated storage base. is provided with 4 swivel casters (2 locking). Individual thermostatically controlled 12" x 20" die-stamped hot food wells with drains manifolded to common 1" drain and valve provided. Meets NSF Std. #4 for product holding.

PROJECT NAME:	
LOCATION:	
ITEM NO:	
QTY:	
MODEL NO:	
AIA NO:	
SIS NO:	
CSI SECTION:	11400

Model HTD-3 enclosed base shown.

SHORT FORM SPEC: Electric heated display pan serving station. 16 gauge stainless steel top with locking device, stainless steel body with interchangeable panels, provided with 4 swivel casters (2 locking). 1-piece top with individual thermostatically controlled die-stamped wells with drains manifolded to common 1" drain with valve.

AVAILABLE MODELS:

CLOSED BASE (NO STORAGE)
- ☐ RAN HTD-2
- ☐ RAN HTD-3
- ☐ RAN HTD-4
- ☐ RAN HTD-5
- ☐ RAN HTD-6

OPEN BASE (STORAGE)
- ☐ RAN HTD-2S
- ☐ RAN HTD-3S
- ☐ RAN HTD-4S
- ☐ RAN HTD-5S
- ☐ RAN HTD-6S

HEATED BASE (STORAGE)
- ☐ RAN HTD-3B
- ☐ RAN HTD-4B
- ☐ RAN HTD-5B
- ☐ RAN HTD-6B

STANDARD FEATURES:

- Individual thermostatic controls for precise food temperatures
- Meets NSF Std. #4 for product holding
- All stainless steel top with die-stamped raised sanitary rim pan openings
- Drain and gate valve provided
- Swivel casters - (2) locking
- Concealed locking mechanism with easy to use spring activated catch
- Stainless steel body with interchangeable panels
- 8' cordset

CABINET CONSTRUCTION: Body frame to be all welded construction of steel with exposed corners to be 1 1/2" stainless steel. All corners welded and polished. Body end panels to be either stainless steel or plastic laminate with galvanized steel backing (specify laminate color). Body ends and panels to be removable to allow the changing of colors. Removable control panel for easy access to heating elements. Unit to be equipped with 4 swivel casters, (2) locking. Open storage model (HTD-S) includes stainless steel undershelf constructed of 22 gauge stainless steel with integrally welded steel under-bracing. Heated base models (HTD-B) are NSF approved for food storage. Thermostatically controlled, electrically heated base with hinged door(s) and chrome shelf (1 per door).

TOP CONSTRUCTION: Top to be one piece of die-formed 16 gauge stainless steel with 1-1/2", 90° nosing on all sides. Unit fitted with complement of 12" x 20" top openings with raised die-stamped perimeters.

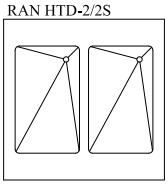
FOOD WELLS: Electrically heated food wells are independently controlled by thermostatic controls and include drains manifolded to common valve. Each well provided with on/off indicator light mounted into removable control panel allowing easy access to heating element boxes. 8' cordset provided for voltage specified.

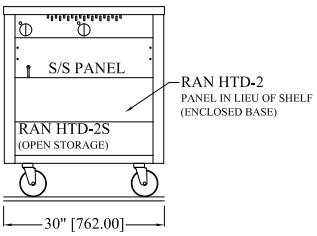
ORIGIN OF MANUFACTURE:

Designed and manufactured in the United States.

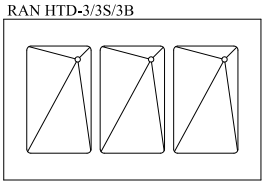
OPTIONS/ACCESSORIES:
- ☐ Canopy
- ☐ Overshelves
- ☐ Trayslides
- ☐ Corian top
- ☐ Laminate panels
- ☐ Powder-coated panels
- ☐ Kick plate(s)
- ☐ 14 gauge top
- ☐ Graphics
- ☐ Breath Guards
- ☐ Elementary school height (not available on "B" series)
- ☐ Electrical Distribution System
- ☐ Sliding doors ("S" series only)
- ☐ Door lock
- ☐ Reduced wattage elements

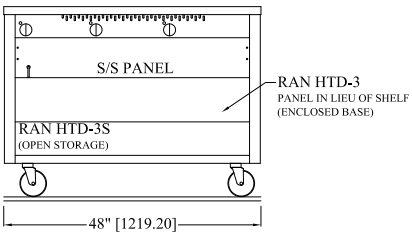
RAN HTD-2/2S

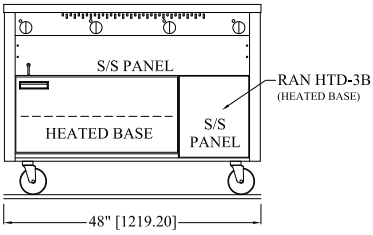




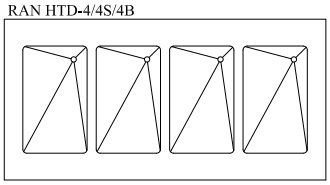
RAN HTD-3/3S/3B

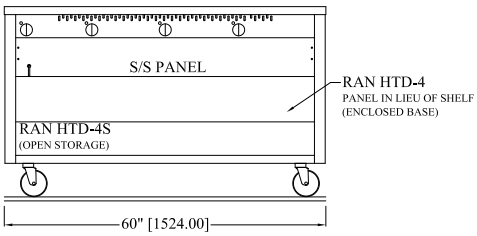


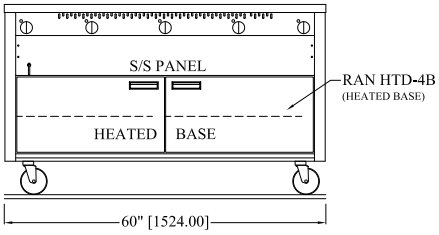




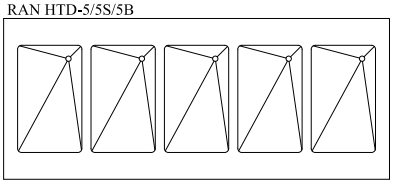
RAN HTD-4/4S/4B

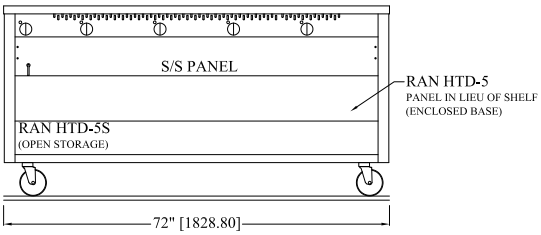


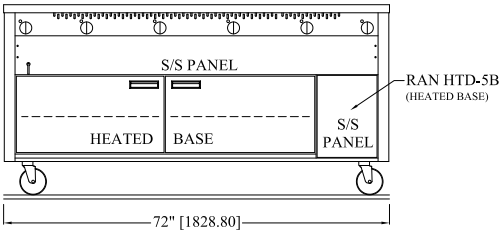




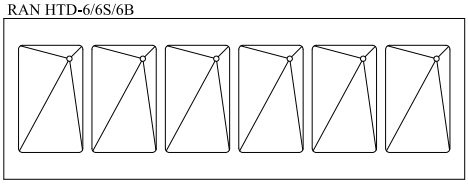
RAN HTD-5/5S/5B

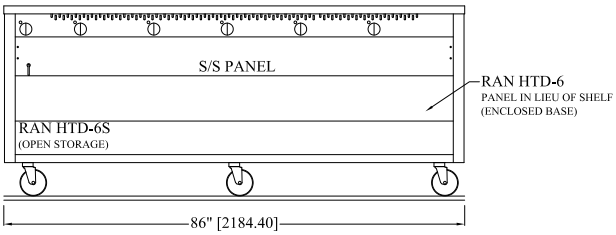


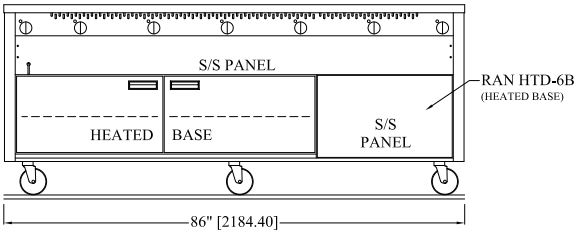




RAN HTD-6/6S/6B







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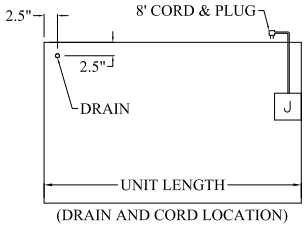

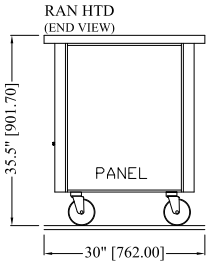

MODELS	L	D	H	No. of Wells	120V				208V				240V		Ship Wt.
					500W		1100W		865W		1100W		Amps*	NEMA	
					Amps*	NEMA	Amps*	NEMA	Amps*	NEMA	Amps*	NEMA			
CLOSED BASE/OPEN BASE															
RAN HTD-2/S	30"	30"	35.5"	2	8.33	5-15P	18.40	5-30P	8.32	6-15P	10.58	6-15P	9.17	6-15P	175
RAN HTD-3/S	48"	30"	35.5"	3	12.50	5-20P	27.5	5-50P	12.48	6-20P	15.87	6-20P	13.75	6-20P	215
RAN HTD-4/S	60"	30"	35.5"	4	16.67	5-30P	36.67	5-50P	16.63	6-30P	21.15	6-30P	18.33	6-30P	260
RAN HTD-5/S	72"	30"	35.5"	5	20.83	5-30P	N/A	N/A	20.79	6-30P	26.44	6-50P	22.92	6-30P	325
RAN HTD-6/S	86"	30"	35.5"	6	25	5-50P	N/A	N/A	24.95	6-50P	31.73	6-50P	27.5	6-50P	390
HEATED STORAGE BASE															
RAN HTD-3B	48"	30"	35.5"	3	18.75	5-30P	33.75	5-50P	16.45	6-30P	19.84	6-30P	17.92	6-30P	230
RAN HTD-4B	60"	30"	35.5"	4	22.92	5-50P	N/A	N/A	20.6	6-30P	25.12	6-50P	22.5	6-30P	275
RAN HTD-5B	72"	30"	35.5"	5	27.08	5-50P	N/A	N/A	24.76	6-50P	30.41	6-50P	27.09	6-50P	350
RAN HTD-6B	86"	30"	35.5"	6	31.25	5-50P	N/A	N/A	29.92	6-50P	35.7	6-50P	31.67	6-50P	415

*Note: Amperage for base unit only. Any accessory heat lamp or display illumination loads must be added to the total amperage.

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The Christman Company
208 N Capitol Ave
Lansing, Michigan 48933-1357
P: (517) 482-1488

Project: 221125-090 LSD Willow School
Lansing, Michigan 48933

RFI #104: Gym Ductwork Clash

Status	Open		
To	Sami Szeszulski (Kingscott) Romica Singh (Kingscott)	**From**	Austin Brown (The Christman Company (LAN))
Date Initiated	Mar 4, 2024	**Due Date**	Mar 8, 2024
Location		**Project Stage**	
Cost Impact		**Schedule Impact**	
Spec Section		**Cost Code**	
Drawing Number		**Reference**	
Linked Drawings			
Received From			
Copies To			

Activity

Question

Question from Austin Brown The Christman Company (LAN) *on Monday, Mar 4, 2024 at 01:39 PM EST*

The duct work in the gym appears to be in conflict with the divider curtain and at least 3 of the basketball backstops. Will the ductwork be moved or will we need to figure into our bid cradling down below the duct work? If we need to cradle below then the divider curtain will be in the airspace of the volleyball court.

Awaiting an Official Response

Ductwork to be routed in truss space and coordinated with structural trades; divider to be located with the top at the bottom chord of truss. Refer to upcoming Addendum 03.

Steven Gunther | SES | 03-05-2024

The Christman Company
208 N Capitol Ave
Lansing, Michigan 48933-1357
P: (517) 482-1488

Project: 221125-090 LSD Willow School
Lansing, Michigan 48933

RFI #99: Foundation Subbase Material

Status	Open		
To	Sami Szeszulski (Kingscott) Romica Singh (Kingscott)	**From**	Austin Brown (The Christman Company (LAN))
Date Initiated	Mar 4, 2024	**Due Date**	Mar 8, 2024
Location		**Project Stage**	
Cost Impact		**Schedule Impact**	
Spec Section		**Cost Code**	
Drawing Number		**Reference**	
Linked Drawings			
Received From			
Copies To			

Activity

Question

Question from Austin Brown The Christman Company (LAN) *on Monday, Mar 4, 2024 at 01:34 PM EST*

Please verify subbase material beneath building sog's. Is it 6" granular per S0.01, note 11-Foundations or is it per detail 3-S0.03?

Awaiting an Official Response

Thanks for passing this along. S0.1 foundation note #11 states 6" and detail 3/S0.03 depicts 4". The minimum granular sub-base should ultimately be determined by the geotechnical engineer, which is listed as "6 inches" per page 6 of SME Geotechnical Evalulation Report (092683.00 dated July 26, 2023).

Brad Cutter
Robert Darvas Associates
March 4, 2024

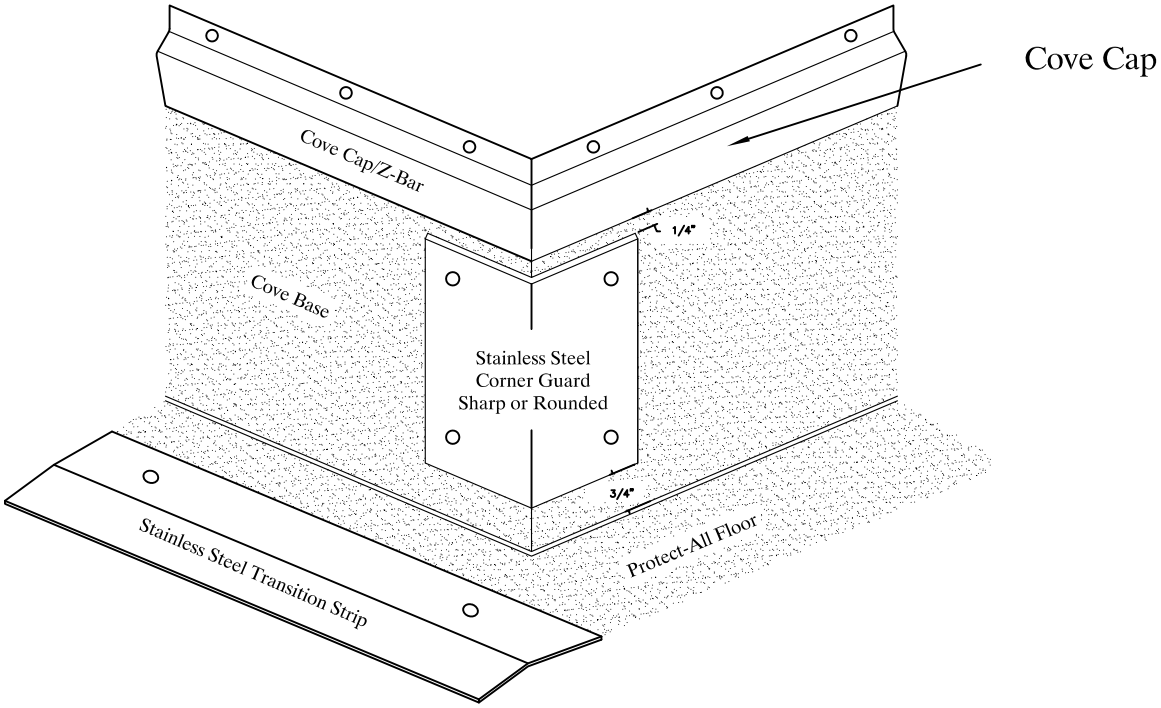
FOUNDATIONS

1. FOUNDATION CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE SOIL REPORT BY SOIL AND MATERIALS ENGINEER, 2663 EATON RAPIDS ROAD, LANSING, MICHIGAN DATED JULY 26, 2023 (SME JOB NO. 092683.00). THE CONTRACTOR SHALL OBTAIN A COPY OF THE SOIL REPORT AND BECOME FAMILIAR WITH THE REQUIREMENTS AND RECOMMENDATIONS THEREIN.

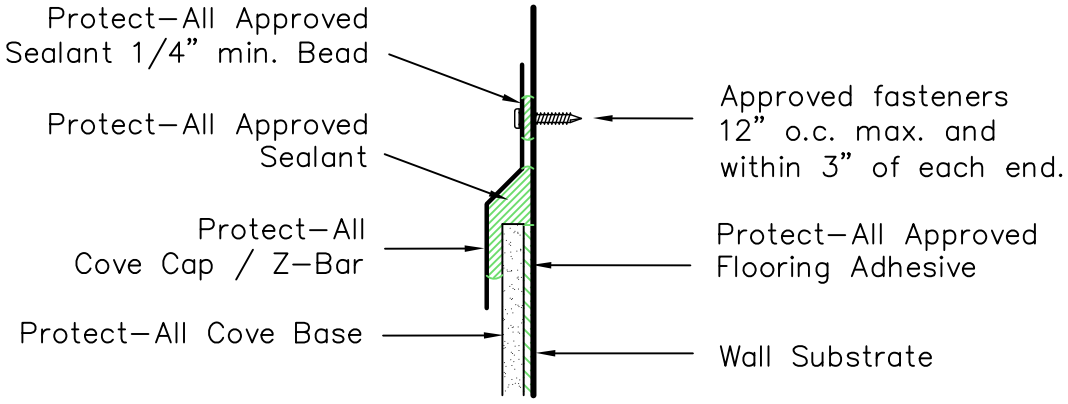
The top 6 inches of the slab subbase should consist of an approved MDOT Class II granular material to provide a leveling surface for construction of the slab and a moisture capillary break between the slab and the underlying soils. MDOT 21AA dense-graded aggregate can be used as subbase material, instead of the Class II granular material, for improved stability and greater resistance to disturbance due to construction traffic. The thickness of dense-graded aggregate required to stabilize and protect the subgrade will depend on the condition of subgrade soils during construction and the type and volume of construction equipment to traffic the prepared subgrade. The leveling surface must be compacted per the "Engineered Fill Requirements" section of this report as discussed in Section 4.1.4.

Protect-All Flooring

DETAIL



Cove Cap / Z-Bar



Stainless Steel bar – butt ends together
Aluminum bar – overlap bars 3/4" minimum

REVISED: 04/12/17	COVE CAP / Z-BAR
PREVIOUS: -	GENERAL DETAIL
SCALE: NONE	PROTECT-ALL FLOORING

LANSING CD MATERIALS

A/E #

INTERIOR FINISHES

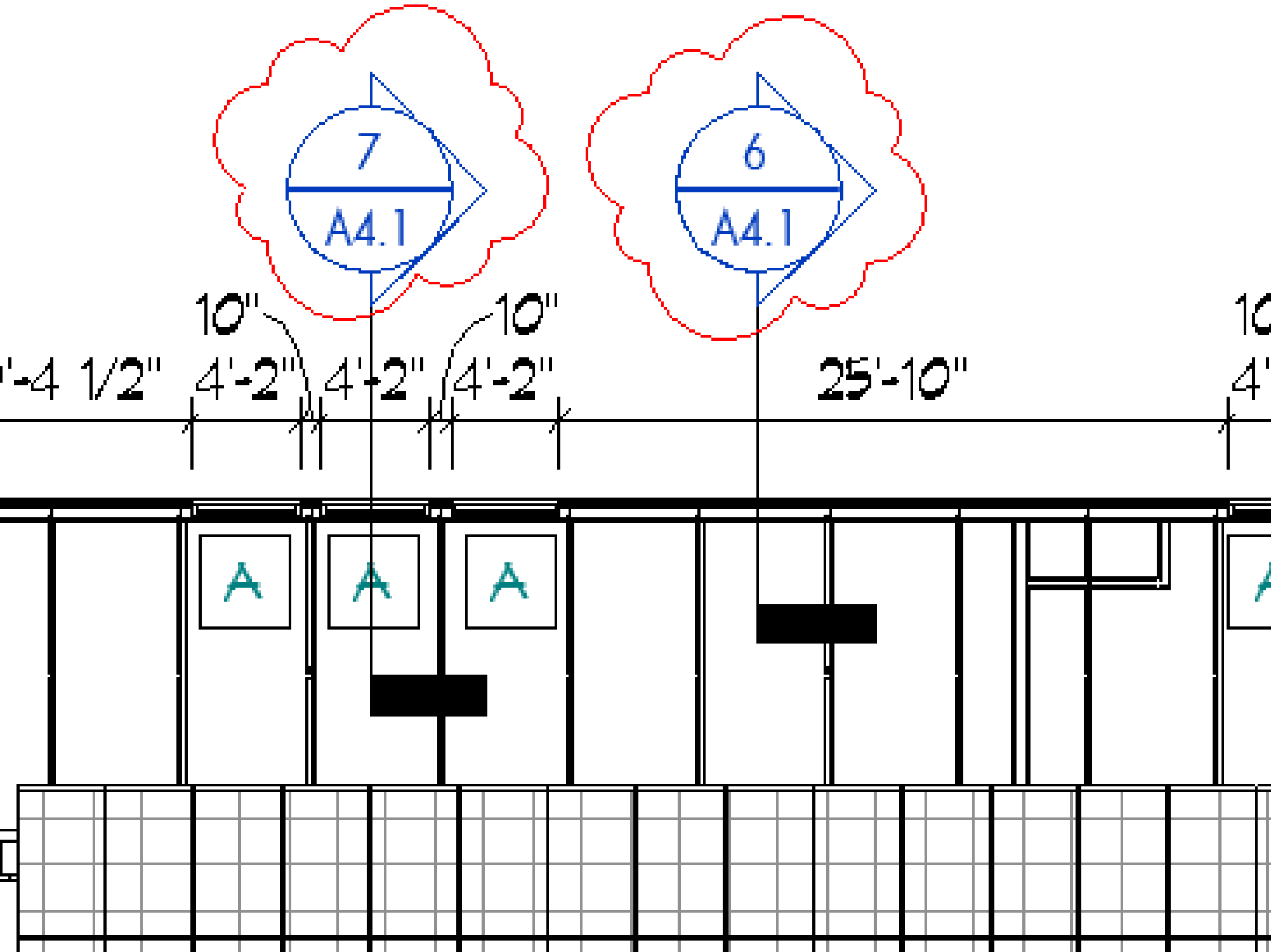
CD INTERIOR FINISHES

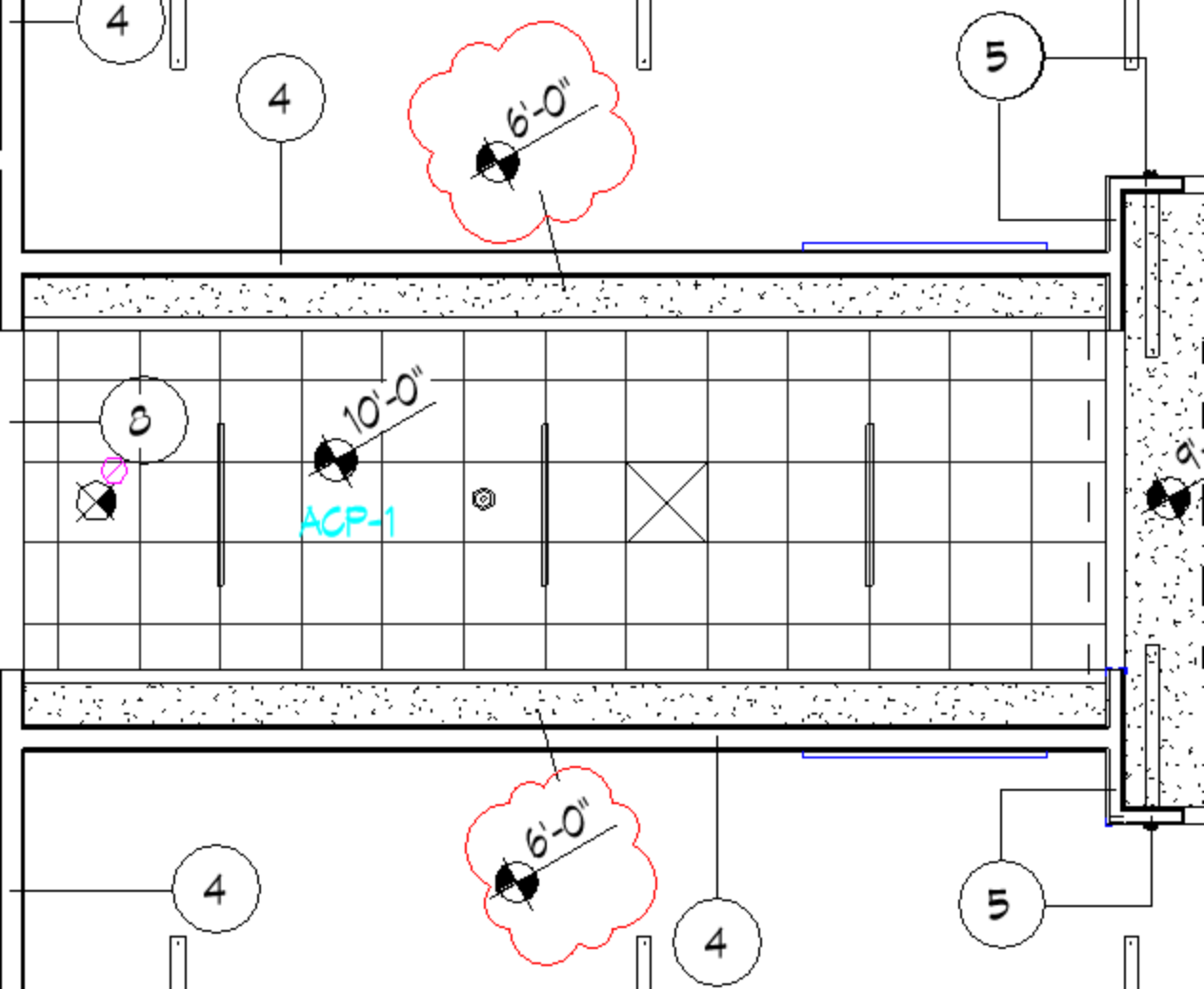
TAG	MATERIAL	MANUFACTURER	PATTERN	COLOR	SIZE	COMMENT
WALLS						
WC-1	WALL COVERING	LEVEL	L11-0302 CONFETTI	BLUEBERRY	SEE DRAWING	UNIT-100
WC-2	WALL COVERING	LEVEL	L11-0301 CONFETTI	CARNIVAL	SEE DRAWING	UNIT-200,300,400
CTW-1	CERAMIC WALL TILE	BEAVER TILE & STONE-DEL CONA	ESSENTIAL	HET05 GRAY	24" x 24"	RESTROOMS-FIELD
CTW-2	CERAMIC WALL TILE	BEAVER TILE & STONE-MARKET COLLECTION	HUSTLE-SHIMMIE	VOGUE	12" x 11.63"	RESTROOMS-ACCENT UNIT 100
CTW-3	CERAMIC WALL TILE	BEAVER TILE & STONE-MARKET COLLECTION	HUSTLE-SHIMMIE	FANDAGO	12" x 11.63"	RESTROOMS-ACCENT UNIT 200
CTW-4	CERAMIC WALL TILE	MARKET COLLECTION	HUSTLE-SHIMMIE	SOUL CITY	12" x 11.63"	RESTROOMS-ACCENT UNIT 300
CTW-5	CERAMIC WALL TILE	BEAVER TILE & STONE-MARKET COLLECTION	HUSTLE-SHIMMIE	BRONX	12" x 11.63"	RESTROOMS-ACCENT UNIT 400
P-1	PAINT	SHERWIN-WILLIAMS	SW 7004	SNOWBOUND		NEUTRAL
P-2	PAINT	SHERWIN-WILLIAMS	SW7073	ICY		UNIT 100
P-3	PAINT	SHERWIN-WILLIAMS	SW6538	DIGNIFIED		UNIT 100/GAS
P-4	PAINT	SHERWIN-WILLIAMS	SW6626	SUNSET		UNIT 200
P-5	PAINT	SHERWIN-WILLIAMS	SW6886	INVIGORATE		UNIT 200/FIRE
P-6	PAINT	SHERWIN-WILLIAMS	SW 9144	MOONMIST		UNIT 300
P-7	PAINT	SHERWIN-WILLIAMS	SW 6959	BLUE CHIP		UNIT 300/WATER
P-8	PAINT	SHERWIN-WILLIAMS	SW7067	CITYSCAPE		HM DOOR & FRAMES
P-9	PAINT	SHERWIN-WILLIAMS	SW6832	IMPULSIVE PURPLE		UNIT 400/ELECTRICAL
P-10	PAINT	SHERWIN-WILLIAMS	SW6549	ASH VIOLET		UNIT 400
P-11	PAINT	SHERWIN-WILLIAMS	SW 7064	PASSIVE		STRUCTURE
ST-1	STAIN	SHERWIN-WILLIAMS		SW W433 Amber Pine		FOR DOORS TO MATCH PLAM-1

FLOORS						
LVT-1	LUXURY VINYL TILE	INTERFACE	NORTHERN GRAIN	A02611 OAK SATIN	25 CM X 1 M	MAIN- ASHLAR
LVT-2	LUXURY VINYL TILE	INTERFACE	WALK ON BY	A01507 ROYAL BLUE	50 CM X 50 CM	UNIT 100-NON DIRECTIONAL
LVT-3	LUXURY VINYL TILE	INTERFACE	STUDIO SET	A00720 ROYAL BLUE	25 CM X 1 M	UNIT 100-ASHLAR
LVT-4	LUXURY VINYL TILE	INTERFACE	WALK ON BY	A01504 ORANGE	50 CM X 50 CM	UNIT 200-NON DIRECTIONAL
LVT-5	LUXURY VINYL TILE	INTERFACE	STUDIO SET	A00716 ORANGE	25 CM X 1 M	UNIT 200-ASHLAR
LVT-6	LUXURY VINYL TILE	INTERFACE	WALK ON BY	A01508 DARK GREEN	50 CM X 50 CM	UNIT 300-NON DIRECTIONAL
LVT-7	LUXURY VINYL TILE	INTERFACE	STUDIO SET	A00721 ELECTRIC BLUE	25 CM X 1 M	UNIT 300-ASHLAR
LVT-8	LUXURY VINYL TILE	INTERFACE	WALK ON BY	A01506 VIOLET	50 CM X 50 CM	UNIT 400-NON DIRECTIONAL
LVT-9	LUXURY VINYL TILE	INTERFACE	STUDIO SET	A00719 VIOLET	25 CM X 1 M	UNIT 400-ASHLAR
PROTECT ALL	VINYL FLOORING	PROTECT-ALL FLOORING		DARK GRAY		
WALK-OFF CARPET	CARPET TILE	INTERFACE	STEP REPEAT COLLECTION SR899	104940 IRON	19.69 in x 19.69 in	VESTIBULES
CT-1	CARPET TILE	JJ FLOORING	NETWORK	2910 MAZE	24"X24"	MUSIC
PC	POLISHED CONCRETE		SALT AND PEPPER			
ST.C-1	STAINED CONCRETE			BLUE		UNIT 100
ST.C-2	STAINED CONCRETE			BRIGHT BLUE		UNIT 200
ST.C-3	STAINED CONCRETE			ORANGE		UNIT 300
ST.C-4	STAINED CONCRETE			PURPLE		UNIT 400
RAF-1	RESLIENT ATHELTIC FLOOR	GERFLOR	TARAFLEX, SPORT M PLUS	6381 MAPLE DESIGN		WHITE LINES?
RAF-2	RESLIENT ATHELTIC FLOOR	GERFLOR	TARAFLEX, MULTIPURPOSE 6.2	6430 BLUE		WHITE LINES?
REF-1	RESINOUS FLOORING (EPOXY)	CHIPS UNLIMITED	1/8" DECO FLAKE	7004-30%, 7064-31%,7069-38%		RESTROOMS/LOCKER ROOMS
RB-1	RUBBER BASE	ROPPEE		DARK GRAY		
CTF-1	CERAMIC FLOOR TILE	BEAVER TILE & STONE-DEL CONA	ESSENTIAL	HET05 GRAY	1.4×1.4 MOSAIC	MESH MOUNTED

CASEWORK						
PL-1	PLASTIC LAMINATE	WILSONART		7981-LANDMARK WOOD		VERTICAL SURFACE (BODY OF CASEWORK)
PL-2	PLASTIC LAMINATE	WILSONART		D379-INDIGO		RECEPTION DESK ACCENT
SS-1	SOLID SURFACE	DURAT	STANDARD COLLECTION	012 - WHITE W/ MULTI	1-1/2" STRAIGHT EDGE	HORIZONTAL SURFACE W/ 4" BACKSPLASH (COUNTERTOPS)
SS-2	SOLID SURFACE	PAPERSTONE	COVERPLY	PEWTER	1-1/4"	HORIZONTAL SURFACE W/ 4" BACKSPLASH (COUNTERTOPS)
SS-3	SOLID SURFACE	WILSONART		D354SL- DESIGNER WHITE		HORIZONTAL SURFACE (WINDOW SILLS)
SPECIALTIES						
PAR-1	RESTROOM PARTITION	ASI	ULTIMATE PRIVACY	BLUE		UNIT 100 RESTROOMS-PHENOLIC
PAR-2	RESTROOM PARTITION	ASI	ULTIMATE PRIVACY	BRIGHT BLUE		UNIT 300 RESTROOMS-PHENOLIC
PAR-3	RESTROOM PARTITION	ASI	ULTIMATE PRIVACY	PURPLE		UNIT 400 RESTROOMS-PHENOLIC
LOC-1	LOCKERS	REPUBLIC	QUIET CORRIDOR LOCKERS/ SINGLE TIER	CUSTOM-BLUE	12" x 6'-0" X 15"	CORRIDORS-UNIT 300
LOC-2	LOCKERS	REPUBLIC	QUIET CORRIDOR LOCKERS/ SINGLE TIER	CUSTOM-PURPLE	12" x 6'-0" X 15"	CORRIDORS-UNIT 400
LOC-3	LOCKERS	REPUBLIC	HEAVY-DUTY VENTILATED LOCKER	61-MIDNIGHT BLUE	12" x 5'-0" X 15" SLOPED TOPS	LOCKER ROOMS
UPHOLTERY						
VDBXXX-100	WALLCOVERING	MOMENTUM	ACS	20 RAIN	VARIES	TACKBOARD
VDBXXX-200	WALLCOVERING	MOMENTUM	ACS	13 PUMPKIIN	VARIES	TACKBOARD
VDBXXX-300	WALLCOVERING	MOMENTUM	ACS	14 SAPHIRE	VARIES	TACKBOARD
VDBXXX-400	WALLCOVERING	MOMENTUM	ACS	18 WISTERIA	VARIES	TACKBOARD
ACCESSORIES						
TR-1	METAL	SCHLUTER	QUADEC-K	ACGB-BRUSHED CHROME		OUTSIDE EDGES OF TILE
TR-2	METAL	SCHLUTER	DILEX-AHKA	ACGB-BRUSHED CHROME	AHKA 100-3/8"	COVE BTM OF TILE
TR-3	METAL	SCHLUTER	RENO-RAMP-K	ALUM SATIN		TILE/TARRAFLEX TO EPOXY
TR-4	METAL	SCHLUTER	VINPRO-U	ACGB-BRUSHED CHROME		RESILIENT/CONC.

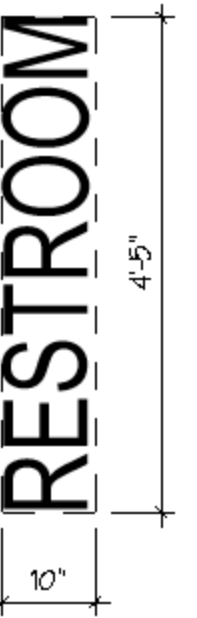
3 - 5


7
A4.1
6
A4.1
10"
10"
'-4 1/2"
4'-2"
4'-2"
4'-2"
25'-10"
A
A
A


4
4
6'-0"
5
8
10'-0"
ACP-1
6'-0"
4
4
5

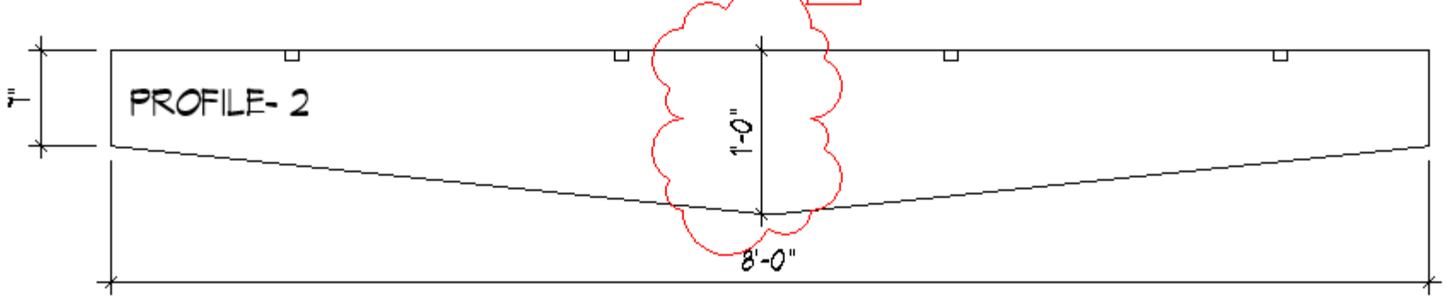
FAMILY ROOM LETTERING

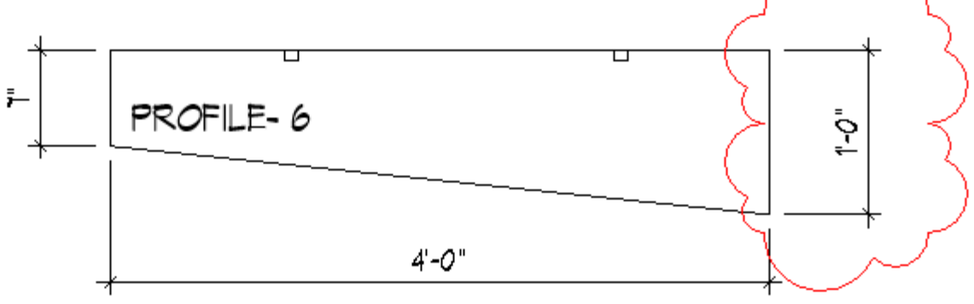
10" WHITE FONT- HELVETICA MEDIUM UPPER CASE



EXTERIOR SIGNAGE SCHEDULE (ES)

DOOR TAG	LOCATION	DOOR NUMBER
100A	VESTIBULE	01
110	CLINIC	02
121B	ELECT.	03
123B	RECEIVING	04
136C	CAFETERIA	05
136D	CAFETERIA	06
136F	CAFETERIA	07
139C	MUSIC	08
101H	VESTIBULE	09
141B	ART	10
145B	CLASSROOM	11
102B	VESTIBULE	12
156D	GYMNASIUM	13
156E	GYMNASIUM	14


PROFILE- 2
7"
1'-0"
8'-0"


PROFILE- 6
7"
1'-0"
4'-0"