ROGER L. DONALDSON, AIA P.L.C.
ARCHITECT

Member
International Code Council
U.S. Green Building Council
American Institute of Architects
Association of Licensed Architects
National Fire Protection Association
National Frame Builders Association
Construction Specifications Institute
National Council of Architectural Registration Boards

NEW NATURE CENTER
GRATIOT-ISABELLA RESD
FOREST HILLS NATURE CENTER
11297 N. RICH ROAD
ALMA, MICHIGAN 48837

ARCHITECTS PROJECT #**24-43**

DATE: May 13, 2026

ADDENDUM #1

PURPOSE:

This addendum is issued for the purpose of modifying and/or clarifying the original plans and specifications and shall take precedence over them. This addendum forms a part of the Contract Documents.

All work included herein shall be in accordance with the original plans and specifications except as specifically noted herein.

This addendum is being submitted to the State of Michigan SIGMA website.

Receipt of this addendum shall be noted on the Proposal Form in the appropriate locations. Failure to note receipt of this addendum may disqualify the Bidder.

ITEMS INCLUDED WITH ADDENDA:

ADDENDUM #1		Reissued 05/13/2026
SECTION 00 01 10	TABLE OF CONTENTS	Issued 05/13/2026
SECTION 00 41 13	BID PROPOSAL FORM	Reissued 05/13/2026
SECTION 03 35 43	POLISHED CONCRETE FINISHING	Issued 05/13/2026
SECTION 07 41 13	STANDING SEAM METAL ROOFS	Issued 05/13/2026
SECTION 08 17 43	FRP/ALUMINUM HYBRID DOORS	Issued 05/13/2026
SECTION 08 52 00	WOOD WINDOWS	Issued 05/13/2026
SECTION 31 10 00	SITE CLEARING	Issued 05/13/2026
SECTION 31 21 00	EARTHWORK	Issued 05/13/2026
SECTION 32 92 00	TURF AND GRASSES	Issued 05/13/2026
DRAWING SHEET	A1.2	Issued 05/13/2026
DRAWING SHEET	A3.3	Issued 05/13/2026
DRAWING SHEET	E-100	Issued 05/13/2026
DRAWING SHEET	E-500	Issued 05/13/2026
QUESTIONS & ANSWERS		ISSUED 05/13/2026
PRE BID SIGN IN SHEET		05/06/2026

CHANGE TO PROJECT MANUAL:

1. SECTION 00 01 10 TABLE OF CONTENTS REISSUED 05/13/2026

2. SECTION 00 41 13 BID PROPOSAL FORM REISSUED 05/13/2026

3. SECTION 00 43 23 Alternates, p00432-1, add the following Alternate:
Alternate No. 3 New Well
Provide alternate pricing for providing and installing a new well, pump, piping, pressure tank, and all associated accessories for the building.

4. SECTION 00 52 24 AIA A101-2017 EXHIBIT A, P4, §A3.2.2.1, add sub paragraph "**.11**"
".11 Builder's Risk Insurance"

CHANGES TO SPECIFICATIONS:,

5.	SECTION 03 35 43	POLISHED CONCRETE FINISHING	ISSUED 05/13/2026
6.	SECTION 07 41 13	STANDING SEAM METAL ROOFS	ISSUED 05/13/2026
7.	SECTION 08 17 43	FRP/ALUMINUM HYBRID DOORS	ISSUED 05/13/2026
8.	SECTION 08 52 00	WOOD WINDOWS	ISSUED 05/13/2026
9.	SECTION 08 80 00	GLASS AND GLAZING: P08 80 00-2, PARAGRAPH 2.P.2.H; DELETE SUBPARAGRAPH.	
10.	SECTION 31 10 00	SITE CLEARING	ISSUED 05/13/2026
11.	SECTION 31 21 00	EARTHWORK	ISSUED 05/13/2026
12.	SECTION 32 92 00	TURF AND GRASSES	ISSUED 05/13/2026

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RogerAIA@comcast.net email **(517) 694-0011** voice

CHANGES TO DRAWINGS:

13. SHEET 1.2: ADD "WINDOW SCHEDULE AND NOTES', SHEET REISSUED 05/13/2026

14. SHEET 3.3: ADD SHEET 3.3, ISSUED 05/13/2026

15. SHEET C-400 Add the following notes:

- **a. The well drilling contractor is responsible for extending a new 2" water line from the existing well to the new building. The contractor is responsible for providing and installing the piping, pressure tank, and all associated accessories. Piping shall be installed 5' below grade. Coordinate routing with all other trades and existing site conditions. Prior to construction beginning and material being order the contractor shall perform a flow test on the existing well for the civil engineer to review and determine whether the well has enough capacity to serve the new building. If the engineer determines the existing well is not adequate to serve the new building a bulletin will be issued with a solution which could consist of upsizing the existing pump or drilling a new well.**
- **b. Contractor shall provide alternate pricing for providing and installing a new well, pump, piping, pressure tank, and all associated accessories for the building**

16. SHEET P-701 Add the following note:
"**PROVIDE $40,000 ALLOWANCE FOR EQUIPMENT AND LABOR TO INSTALL WATER FILTER AND WATER SOFTENER.**"

17. SHEET E-100 REISSUED 05/13/2026

- **a.** Fixture Type LA: revise model and description as indicated.
- **b.** Fixture Type LH: Delete Amerlux track head.
- **c.** Fixture Type LJ has been changed to follow the requested 2700K color temp for exterior fixtures.
- **d.** Fixture Type LK has been removed, and Fixture Type LA has taken its place as it better suits the needs of the Storage rooms.
- **e.** Fixture Type LL: (4) Exterior Downlights have been given new product numbers to specify the requested 2700K color temp for Exterior Fixtures.
- **f.** Delete Beghelli Exit Sign as it does not have spare battery capacity to drive the XB fixtures.

18. SHEET E-400

- **a.** Change Type LK Fixtures to Type LA.
- **b.** Change the (4) Exterior LG Downlights to Type LL

19. SHEET E-500 Added Key Notes #9, 10, REISSUED 05/13/2026

END OF ADDENDUM #1

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SECTION 00 01 10
TABLE OF CONTENTS

END OF SECTION 00 01 10

SECTION 00 41 13
BID PROPOSAL FORM

BIDDERS NAME: _____

LEGAL ADDRESS: _____

_____

TELEPHONE NO.: _____

FACSIMILE NO.: _____

EMAIL ADDRESS: _____

CONTACT NAME: _____

CONTACT MOBILE PHONE _____

PROPOSAL FOR: ALL TRADES CONSTRUCTION WORK

PROJECT NAME: **GRATIOT-ISABELLA RESD**
NEW NATURE CENTER
ROGER L. DONALDSON, AIA P.L.C.
PROJECT #24-43 - FOREST HILLS NATURE CENTER
11297 N. RICH RD
ALMA, MICHIGAN 48801

PROPOSAL

In response to your invitation to bid, the undersigned submits the following offer to enter into a contract with you and extends this offer for 90 calendar days subsequent to the opening of bids. This offer has been prepared after our examination of the complete plans and specifications, together with their related documents, and our examination of the site and conditions surrounding the construction of the proposed work including the availability of materials, equipment and labor. Included in this offer are all costs necessary to complete the ALL CONSTRUCTION WORK in accordance with the contract documents prepared by Roger L. Donaldson, AIA P.L.C. within the time set forth herein for the sum of:

Bids Due – May 20, 2026 - 2:00 pm pm local time
GRATIOT-ISABELLA RESD – 1131 E. CENTER, ITHACA, MI 48847

ADDENDUM SCHEDULE:

The above proposed bids and schedule includes the following addenda:

No. 1 dated _____ No. 2 dated _____

No. 3 dated _____ No. 4 dated _____

BID PROPOSALS:

Contractor shall submit a separate Proposal Number for all Trades for that Project Work is to be performed. Contractor is not required to submit a proposal for each project.

PROJECT #24-43 - NEW NATURE CENTER
FOREST HILLS NATURE CENTER

Provide all work for New Nature Center and Demoltiono of 2 existing structures and related Work:

$ _____

_____ Dollars

(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

The undersigned hereby agrees to complete the above buildings area work within ____ calendar days.

Alternates

ALTERNATE #1 PROJECT #24-43 - NEW NATURE CENTER
ALTERNATE #1 – ASPHALT SHINGLES

Provide Asphalt Shingles, and related work as shown, (Add/Deduct) $ _____

_____ Dollars

(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

If awarded this Alternate the undersigned hereby agrees to complete
the work within _____ (additional / decreased) calendar days,

ALTERNATE #2 PROJECT #24-43 - NEW NATURE CENTER
ALTERNATE #2 – GEOTHERMAL SYSTEM

Provide all work for providing a Design/Build Geothermal System instead of Propane & Cooling Tower
(Add/Deduct) $ _____

_____ Dollars

(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

If awarded this Alternate the undersigned hereby agrees to complete
the work within _____ (additional / decreased) calendar days,

ALTERNATE #3 PROJECT #24-43 - NEW NATURE CENTER
ALTERNATE #3– NEW WELL

Provide alternate pricing for providing and installing a new well, pump, piping, pressure tank, and all associated accessories for the building.

(Add/Deduct) $ _____

_____ Dollars

(Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

If awarded this Alternate the undersigned hereby agrees to complete
the work within _____ (additional / decreased) calendar days,

FORFEITURE OF BID SECURITY

If within the 90 days this offer is valid, a letter is sent notifying the undersigned of the acceptance of this proposal, the undersigned agrees to deliver within the 10 succeeding days surety bonds in the form specified or will forfeit the enclosed certified or cashier's check or bid bond which accompanies this proposal.

FEE FOR CHANGES IN THE WORK

The undersigned hereby agrees to perform all additional changes in the work ordered by the Owner on the basis of reasonable expenditures, plus reasonable allowance of said cost for overhead and profit. Cost shall be limited to the following: Cost of materials, including sales tax and cost of delivery; cost of labor, including social security, old age and unemployment insurance and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; bond premiums; rental value of equipment and machinery; and the additional costs of supervision and field office personnel directly attributable to the change.

The undersigned hereby agrees to charge the following fees, based on a mark-up percentage of the actual cost for overhead and profit combined, as stated hereinafter:

- For all additional work performed by the contractor's own forces, a fee of 5% percent of the actual cost as defined above.
- For all additional work subcontracted by the contractor, a fee of 5% percent of the subcontract sum for management, overhead and profit.

JOB CONTROL AND COORDINATION

If awarded the All Trades Construction Work Contract, the undersigned will assume control of the site and will coordinate the work of all the trades. All costs of controlling the site and coordinating the work of the subcontractors are included in this proposal.

SUBCONTRACTOR LISTING

The following is a list of the subcontractor(s) that will be performing work or manufacturer supplying material(s) on this project:

Excavation _____

Building Structures _____

Concrete _____

Mechanical _____

Plumbing _____

Electrical _____

Fire Alarm _____

REGULATORY REQUIREMENTS

It is the Contractor's responsibility to confirm that all subcontractors are properly licensed and that all necessary permits are obtained before starting work.

The Owner reserves the right to reject any subcontractor not considered competent to prosecute the work. The Owner representative (s) may request the removal of any contracted person who is deemed unfit to perform the specified work in a competent and professional manner.

The site will be available for the contractor will have full access to the building, 24 hours a day..

The contractor will take every precaution to minimize the migration of dust and debris and to minimize noise where possible. The corridors will remain free of stored materials and debris during business hours. The Contractor will remove all debris created by this contract from the premises at the end of each workday.

If awarded this Contract, the undersigned agrees to commence work immediately upon receipt of Notice to Proceed.

In submitting this Proposal, it is understood that the right is reserved by the Owner to reject any and all Proposals.

The Owner reserves the right to accept or reject all alternates or to accept any one or more alternates without accepting those remaining.

TIME OF COMPLETION

1. Completion in general is defined as all work required and included in the Bid Documents, Specifications, Drawings, Federal and State Regulations, including clean-up, restoration, acceptable visual inspections, completion of change orders approved by the Owner, Architect and Contractor and do not add days to the construction calendar.
2. The Contractor agrees that by submitting a Bid, for base bid, to complete the project within the stipulated number of day to complete using regular and premium work hours as required to complete the project.
3. Contractor realizes he may need to work multiple shifts, weekends and holidays. Any premium wages are included in his Bid.
4. Days are noted as calendar days.
5. The Contractor has full access to the site during all hours.

SIGNATURE

The bidder declares the following legal status in submitting this proposal: (check one)

( ) A Corporation (INC or LLC) organized and existing under the laws of the state of Michigan,

( ) A Partnership,

( ) An Individual doing business as_____.

Respectfully submitted,

By: _____

Title: _____

Date: _____

Fed. Employer Identification No.: _____

State License No.: _____

END OF SECTION 00 41 13

SECTION 03 35 43
POLISHED CONCRETE FINISHING

PART 1 GENERAL

1. 1 SUMMARY

A. This section includes the following.

1. Polished concrete

B. Related Work:

1. Section 03 30 00 Cast-In-Place Concrete

1.2 REFERENCES

A. American Society for Testing and Materials:

1. ASTM-C779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces
2. ASTM G23-81, Ultraviolet Light & Water Spray
3. ASTM C805, Impact Strength
4. ASTM E1155-14, Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers

B. American Concrete Institute

1. ACI 302. 1R-89, Guide for Concrete Floor and Slab Construction

C. Other Test:

1. Reflectivity

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01 60 00- Product Requirements.

1. Provide submittal information within 35 calendar days after the contractor has received the owner's notice to proceed.

B. Product data:

1. Submit special concrete finishes manufacturer's specifications and test data.
2. Submit special concrete finishes describing product to be provided, giving manufacturer’s name and product name for the specified material proposed to be provided under this section.
3. Submit special concrete finishes manufacturer's recommended installation procedures, which when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.
4. Submit special concrete finishes manufacturer’s Material Safety Data Sheet (MSDS) and other safety requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. Minimum of 5 years’ experience performing work of this section on projects similar to scope and requirements of this project.

B. Manufacturer’s Certification:

1. Provide letter of certification signed by manufacturer declaring installer is certified applicator of special concrete finish and is familiar with proper procedures and installation requirements required by the manufacturer.

C. Mock-ups:

1. Apply mock-ups of each type finish, to demonstrate typical joints, surface finish, color variation and standard of workmanship.

a. Build mock-ups 50 square feet minimum in the location indicated or if not indicated, as directed by the Architect or Owner Representative.
b. Notify Architect or Owner Representative seven days in advance of dates and times when mock-ups will be constructed.
c. Obtain from the Architect or Owner Representative approval of mock-ups before starting construction.
d. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.
e. Approved mock-ups may become part of the completed work if undisturbed at time of substantial completion.

D. Protection
1. No satisfactory chemical or cleaning procedure is available to remove petroleum stains from the concrete surface. Prevention is therefore essential.
a. All hydraulic powered equipment must be diapered to avoid staining of the concrete.
b. No trade will park vehicles on the inside slab. If necessary to complete their scope of work, drop cloths will be placed under vehicles at all times.
c. No pipe cutting machine will be used on the inside floor slab.
d. Steel will not be placed on interior slab to avoid rust staining.
e. Acids and acidic detergents will not come into contact with slab.
f. All trades informed that the slab must be protected at all times.

E. Pre-Installation Conference:
1. Conduct conference at project site to review requirements, conditions and schedule.
2. Attendees
Architect
General Contractor/Construction Manager
Concrete Placement Contractor
Finishing Applicator
Product Manufacturer

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original containers, with seal's unbroken, bearing manufacturer labels indicating brand name and directions for storage.

B. Dispense special concrete finish material from factory numbered and sealed containers. Maintain record of container numbers.

1.6 PROJECT CONDITIONS

A. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation, and other conditions affecting topping performance.
B. Concrete Floor Flatness rating minimum: Ff 40
C. Concrete Floor Levelness rating minimum: Fl 30
D. Concrete must be cured a minimum of 45 days before application.
E. Apply prior to installation of walls and equipment, thus providing a complete, uninhibited concrete slab for application.
F. Close areas to traffic during floor application and after for 24 hours.

1.7 WARRANTY

A. Submit for owner's acceptance, manufacturer's standard 10 year Warranty document executed by authorized company official.

PART 2 – PRODUCTS

2.1 GENERAL

A. All materials used shall be from same single source manufacturer

2.2 FINAL FINISH as defined by Concrete Polishing Council. Depth of Grind (acceptable range of each value is plus or minus 5%)

Class B – Fine Aggregate: 90%; coarse aggregate 10% “Salt&Pepper”

A. DISTINCTNESS-OF-IMAGE (DOI) GLOSS

Level 3 – Polished; “800 to 1500 grit polish”, DOI: 40-69%

2.3 CONCRETE DENSIFIER

A. Penetrating proprietary solution of Sodium Silicate that densifies, hardens and dustproofs concrete surface
   1. Odorless, inorganic water based and VOC compliant chemical.
   2. Subject to compliance with requirements, provide
      a. Curecrete, Inc, Retro-Plate 99
      b. Local contact: Jeff Burgy 248-259-2173 JeffBurgy@specifiedfinishes.com

2.4 RELATED MATERIALS

A. Surface Colorant (not used)
   1. Color: Natural

B. Joint Filler: Semi-rigid, 2 component, self-leveling, 100% solids polyuria
   1. 85 Durometer Shore A hardness.
   2. Color as selected by Architect from manufacturers full range.
   3. Approved products
      a. Curecrete CreteFill Pro 85 Joint Filler

B. Water: Potable

C. Neutralizing Agent: Tri-sodium Phosphate

D. Penetrating, invisible, topical repellent/sealer: RetroPel

E. Cleaning Solution: CreteClean Plus with ScarGuard

PART 3- EXECUTION

3.1 SURFACE CONDITIONS:

A. Examine substrate for conditions affecting performance of finish. Do not proceed until unsatisfactory conditions are corrected.

B. Verify concrete has cured a minimum of 45 days and has reached 3500 psi

C. Verify that base slab meets finish and surface profile requirements in Division 3 Section “Cast-In-Place Concrete,” and Project Conditions above. Including floor flatness and levelness

D. Verify that floor surfaces are free of construction latents.

3.2 APPLICATION

A. Comply with manufacturer's installation instructions
   1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.
   2. Apply floor finish prior to installation of fixtures and accessories.

B. Floor Surface Grinding and Treatment:
   1. Diamond grind concrete floor surfaces with power disc machine recommended by floor finish manufacturer
   2. Installer to determine the optimum starting grit in order to achieve the specified aggregate exposure.
   3. Sequence from coarse to fine grit.
   4. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level.
   5. Expose aggregate in concrete surface as determined by approved mock-up.
   6. Apply joint and chip filler to match sample

C. Apply concrete densifier/hardener
   1. Follow manufacturer's instructions
   2. Clean surface thoroughly
   3. Apply flood coat of liquid densifier to point of rejection, approximately 200 Sq. Ft. per gallon
   4. Allow to dwell on surface for minimum of 30 minutes and until material begins to jell. Keep hydrated with water mist if necessary
   5. Remove all densifier and scrub clean.
   6. Allow to dry.

D. Floor Surface Polishing
   1. Diamond polish concrete floor surfaces with power disc machine.
   2. Finish edges to match field areas
   3. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level.
   4. Floor shall be thoroughly cleaned between each grit pass to remove all loose material.
   5. Level of sheen shall match that of approved mock-up.

E. Repair any defects and re-polish to match sample.

3.3 TOPICAL SEALERS

A. Topical water and stain repellent
   1. Floor surface must be clean and dry.
   2. Liberally apply, approximately 600 Sq. Ft. per gallon, in an even coat with brush or roller.
   3. Allow to soak into floor until saturated.
   4. If first application is absorbed in less than 10 minutes apply second coat wet-on-wet.
   5. All material must be absorbed, do not leave residue on floor.
   6. Do not traffic for at least 4 hours. Full cure is achieved in 72 hours.

3.4 FINAL CLEANING:

A. Remove surplus materials, rubbish, tools and equipment.

B. Scrub area clean using power machine and cleaner recommended by the densifying material manufacturer

3.4 PROTECTION:

A. Cover and protect finished work in accordance with manufacturer's recommendations.

END OF SECTION 03 35 43

SECTION 07 41 13
STANDING-SEAM METAL ROOF 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 standing-seam metal roof 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 roof accessories and roof-mounted equipment.
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 details, drainage, penetrations, equipment curbs, 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 systems during and after installation.
8. Review 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:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

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

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels 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. 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.

1.8 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.

1.9 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.

1.10 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. 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.

1.11 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: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: 120 mph.
2. Other Design Loads: Ground Snow Loading – 35 psf.

B. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

C. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A- 120 .
2. Hail Resistance: SH.

D. 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.

2.2 STANDING-SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.

B. Clipless, Integral-Standing-Seam Metal Roof Panels Elevate (Firestone) Una-Clad UC-4: Formed with integral ribs at panel edges and intermediate stiffening flat (2) ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using screw fasteners located under concealed side of panels and lapping and interconnecting side edges of adjacent panels.

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

a. Elevate (Firestone Building Products), Una-Clad UC-4, or approved equal

b. AEP Span; A BlueScope Steel Company.
c. Architectural Building Components.
d. CENTRIA Architectural Systems.
e. Fabral.

2. Metallic-Coated Steel Sheet: Zinc-coated galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

a. Nominal Thickness: 24 gage (0.64mm)

b. Exterior Finish: Kynar 500
c. Color: As selected by Owner from Standard Color.

3. Panel Coverage: 18 inches (457 mm) .
4. Panel Height: 1.5 inches (38 mm)

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.
3. Provide Underlayment as recommended by Manufacturer.

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 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. 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, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Gutters: Formed from same material as roof panels, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 12’-0” long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 30 inches (761 mm) o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal roof panels.

1. Gutters to be Elevate (Firestone)/Metal-Era Industrial Gutter System, FS-1 Version or approved equal.

E. Downspouts: Formed from same material as roof panels. Fabricate in 12-foot-long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
1. Elevate (Firestone)/Metal-Era Closed Face Gutter

F. Panel Fasteners: Self-tapping screws designed to withstand design loads.

G. 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 (13 mm) wide and 1/8 inch (3 mm) 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.

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

C. 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.

D. 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 Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
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 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 unacceptable. 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. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. 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.

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 primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof 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 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the entire roof surface.

B. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 07 60 00 "Sheet Metal Flashing and Trim."

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. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use 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. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
1. Clipless Metal Panel Installation: Fasten metal panels to supports with screw fasteners at each lapped joint at location and spacing recommended by manufacturer.
2. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
3. Watertight Installation:

a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
c. At panel splices, nest panels with minimum 6-inch (152-mm) 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 roof panel manufacturers; or, if not indicated, types recommended by metal roof 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 will be permanently watertight and weather resistant.

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 and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

G. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

H. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.

I. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.4 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

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

END OF SECTION 07 41 13

SECTION 08 17 43
FRP/ ALUMINUM HYBRID DOORS

1. GENERAL

1.1. DESCRIPTION OF WORK

A. The extent of each type of door, frame and finish hardware is shown on the drawings and schedules.

B. The following types of doors and frames are required:
1. FRP Flush Doors
2. Aluminum frames.

1.2 QUALITY ASSURANCE

A. Standards: Comply with the requirements and recommendations in applicable specification and standards by NAAMM and AAMA, including the terminology definitions and specifically including the "Entrance Manual" by NAAMM, except to the extent more stringent requirements are indicated.

B. Performance: A minimum ten year record of production of frames, doors and panels and completion of similar projects in type and size.

C. Instruction: The manufacturer or his representative will be available for consultation to all parties engaged in the project including instruction to installation personnel.

D. Field Measurement: Field verify all information prior to fabrication and furnishing of materials. Furnish and install materials omitted due to lack of verification at no additional cost to Owner. All dimensions on bid documents are approximate and to be used for estimating only.

E. Regulation and Codes: Comply with the current edition in force at the project location of all local, state and federal codes and regulations, including:
1. Comply with Part 4- State of Michigan Building Code Rules, Barrier Free Design Rules, MBC 2021 and ICC/ANSI A117.1-2017 as adopted April 6, 2025.
2. ADAAG, Americans with Disabilities Act Accessibility Guidelines.
3. The Americans with Disabilities Act of 1992, and updated in 2010

1.3. SUBMITTALS

A. Product Data If Requested: Submit Manufacturer's product data, specifications and instructions for each type of door and frame required including the following:
1. Include details of core, stile and rail construction, trim for lites and all other components.
2. Include details of finish hardware mounting.
3. Include sample of each aluminum alloy to be used on this project. Where normal finish color and texture variations are expected, include two or more samples to show the range of such variations.
4. Include one sample of typical fabricated section, showing joints, fastenings, quality of workmanship, hardware and accessory items before fabrication of the work proceeds.

B. Submit shop drawings for the fabrication and installation of the doors and frames, and associated components. Details to be shown full scale. Include glazing details and finish hardware schedule.

1.4. PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to jobsite in their original, unopened packages with labels intact. Inspect materials for damage and advise manufacturer immediately of any unsatisfactory materials.

B. Package door assemblies in individual corrugated cartons so no portion of the door has contact with the outer shell of the container. Package and ship frames preassembled to the greatest possible extent.

1.5. PROJECT WARRANTY

A. Provide a written warranty signed by manufacturer, installer and contractor, agreeing to replace, at no cost to the Owner, any doors, frames or factory hardware installation which fail in materials or workmanship, within the warranty period. Failure of materials or workmanship includes:
1. Excessive deflection
2. Faulty operation of entrances
3. Deterioration of finish or construction in excess of normal weathering
4. Defects in hardware installation.

B. The minimum time period of warranty is ten (10) years from acceptance.

1.6. SYSTEM PERFORMANCE FRP FLUSH DOORS

A. Provide door assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below, as demonstrated by testing manufacturer's corresponding stock systems according to test methods designated.

B. Thermal Transmission (exterior doors); U-value of not more than 0.09 (BTU/Hr. x sf x degrees F.) per AAMA 1503.01.

C. Flame Spread/Smoke Developed: Provide FRP doors and panels with the following ratings in accordance with ASTM E 84-79a: Flame Spread: Exterior faces not greater than 145 (Class C); interior faces not greater than 10 (Class A). Smoke Developed: Exterior faces not greater than 345 (Class C); interior faces not greater than 320 (Class A).

D. Additional Criteria: Provide FRP doors and panels with the following performance:
ASTM D 256 - nominal value of 13.5
ASTM D 1242 - nominal value of .23 percent
ASTM D 570 - nominal value of .20 to .40 percent
ASTM D 2583 - nominal value of 50

2. PRODUCTS

2.1. MATERIALS AND ACCESSORIES

A. Aluminum Members: Alloy and temper as recommended by manufacturer for strength, corrosion resistance and application of required finish and control of color; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate with aluminum wall thickness of 0.125".

B. Components: Furnish door and frame components from the same manufacturer. "Splitting" of door and frame components is not permitted.

C. Fasteners: Aluminum non-magnetic stainless steel or other non-corrosive metal fasteners, guaranteed by the manufacturer to be compatible with the doors, frames, stops, panels, hardware, anchors and other items being fastened. For exposed fasteners (if any) provide Phillips head screws with finish matching the item to be fastened.

D. Glazing Gaskets: For glazing factory-installed glass, and for gaskets which are factory-installed in "captive" assembly of glazing stops. Manufacturer's standard stripping of molded neoprene, complying with ASTM D 2000 (Designation 2BC415 to 3BC620), or molded PVC complying with ASTM C 509 Grade 4.

2.2. FABRICATION

A. Sizes and Profiles: The required sizes for door and frame units, and profile requirements are shown on the drawings or elevations. Dimensions shown are approximate, field verify all dimension at each building site. This Supplier must verify all dimensions.

B. Coordination of Fabrication: Field measure before fabrication, show recorded measurements on final shop drawings.

C. Complete the cutting, fitting, forming, drilling and grinding of all metal work prior to assembly. Remove burrs from cut edges, and ease edges and corners to a radius of approximately 1/64".

D. No welding of doors or frames is acceptable.

E. Maintain continuity of line and accurate relation of planes and angles. Secure attachments and support at mechanical joints, with hairline fit at contacting members.

2.3. FIBERGLASS REINFORCED POLYESTER FRP FLUSH DOORS by Special-Lite or Vale Company

A. Materials and Construction
1. Door Thickness.
   a. 1-3/4”.
2. Stiles & Rails.
   a. Aluminum extrusions made from 6063 aluminum alloys with a minimum temper of T5.
   b. Minimum 2-5/16” deep one-piece extrusion with have integral reglets to accept face sheet on both interior and exterior side of door which secure face sheet into place and permit flush appearance.
   c. Screw or snap in place applied caps are not acceptable.
   d. Top rails must have integral legs for interlocking continuous extruded aluminum flush cap.
   e. Bottom rails must have integral legs for interlocking continuous weather bar with single nylon brush weather stripping or manually adjustable SL-301 door bottom with two nylon brush weather stripping.
   f. Meeting stiles to include integral pocket to accept pile brush weather seal.
3. Corners.
   a. Mitered.
   b. Secured with 3/8” diameter full-width steel tie rod through extruded splines top and bottom which are integral to standard tubular shaped rails.

c. 1-1/4" x 1-1/4" x 3/16" 6061 aluminum angle reinforcement at corner to give strong, flat surface for locking hex nut to bear on.
d. Weld, glue, or other methods of corner joinery are not acceptable.

4. Core.
   a. Poured-in-place polyurethane foam.
   b. Laid in foam cores are not acceptable.
   c. Foam Plastic Insulated Doors: IBC 2603.4.
      1. Foam plastic shall be separated from the interior of a building by an approved thermal barrier.
      2. Approved thermal barrier must meet the acceptance criteria of the Temperature Transmission Fire Test and Integrity Fire Test as stated in NFPA 275.
      3. IBC 2603.4.1.7 foam plastic insulation, having a flame spread index less than 75 and a smoke developed index of not more than 450 shall be permitted as a door core when the face is metal minimum 0.032" aluminum or 0.016" steel.
      4. Standard door assembly can be tested to show it meets these requirements without the use of thermal barrier. If no independent testing conducted all doors with foam plastic core must have a thermal barrier.
5. Face Sheet.
   a. Exterior
      1. 0.120" thick, pebble texture, through color with SpecLite 3® integral surfaseal film FRP sheet.
      2. Class C standard.
   b. Interior
      1. 0.120" thick, pebble texture, through color with SpecLite 3® integral surfaseal film FRP sheet.
      2. Class C standard optional Class A available consult manufacturer.
   c. Attachment of face sheet.
      1. Extruded stiles and rails to have integral reglets to accept face sheet on both interior and exterior side of door which secure face sheet into place and permit flush appearance.
      2. Use of glue to bond face sheet to core or extrusions is not acceptable.
6. Cutouts.
   a. Manufacture doors with cutouts for required vision lites, louvers, and panels.
7. Hardware.
   a. Pre-machine doors in accordance with templates from specified hardware manufacturers.
   b. Surface mounted closures will be reinforced for but not prepped or installed at factory.
   c. Factory install door hardware.
8. Reinforcements.
   a. Aluminum extrusions made from 6061 or 6063 aluminum alloys.
   b. Sheet and plate to conform to ASTM-B209.
   c. Alloy and temper to be selected by manufacturer for strength, corrosion resistance, and application of required finish, and control of color.
   d. Bars and tubes to meet ASTM-B221.

2.4. ALUMINUM FRAMING SYSTEMS

A. Tubular Framing
   1. Thermally Broken Aluminum Framing.
      a. Model.
         1. SL-600TB.
      b. Materials.
         1. See 2.5.A.
      c. Perimeter Frame Members.
         1. Storefront frame with thermally broken pocket filler.
         2. Factory fabricated.
         3. Open-back framing is not acceptable.
      d. Thermal Strut.
         1. Fiber reinforced plastic, no other materials will be accepted.
      e. Applied Door Stops.
         1. 5/8" x 1-1/4" or 5/8" x 1-3/4", 0.125" wall thickness, with screws and weather-stripping.
         2. Provide solid ½" aluminum bar behind door stop for closer shoe attachment.
         3. Pressure gasketing for weathering seal.
         4. Counterpunch fastener holes in door stop to preserve full-metal thickness under fastener head.
         5. Minimum ½" aluminum bar reinforcement under doorstop for required hardware attachments, aluminum to meet ASTM-B221.
      f. Caulking.
         1. Caulk joints before assembling frame members.
      g. Frame Member to Member Connections.

1. Secure joints with fasteners.
2. Provide hairline butt joint appearance.
3. Shear block construction only, no screw spline allowed.

h. Hardware
1. Pre-machine and reinforce frame members for hardware in accordance with manufacturer's standards and door hardware schedule.
2. Surface mounted closures will be reinforced for but not prepped or installed at factory.
3. Factory install door hardware.

i. Anchors:
1. Anchors appropriate for wall conditions to anchor framing to wall materials.
2. Door Jamb and Header Mounting Holes: Maximum of 24-inch centers.
3. Secure head and sill members of transom, side lites, and similar conditions.

2.5 MATERIALS

A. Aluminum Members.
1. Aluminum extrusions made 6061 or 6063 aluminum alloys.
2. Sheet and plate to conform to ASTM-B209.
3. Alloy and temper to be selected by manufacturer for strength, corrosion resistance, and application of required finish, and control of color.

B. Fasteners.
1. All exposed fasteners will have a finish to match material being fastened.
2. 410 stainless steel or other non-corrosive metal.
3. Must be compatible with items being fastened.

2.6. GLAZING

A. Design system for replacement of glass.
1. Manufacturer's standard flush glazing system of recessed channels and captive glazing gaskets or applied stops as shown.
2. Allow for thermal expansion on exterior units.
3. 1” Insulated safety, must meet requirements of Michigan Building Code , see Section 08 890 00 Glass & Glazing
4. Factory glazed into doors with bottom of glazing no greater than 43” above finish floor.

2.7. FINISHES

A. Door.
1. Edge Aluminum.
a. Paint.
1. Aluminum.
a. KYNAR®.
1. Topcoat.
a. 70% KYNAR® or HYLAR® 5000 Coating, meets or exceeds all AAMA 2605 specifications, 2.5 to 4.0 wet mils,1.00 to 1.20 dry mils.
2. Color.
a. Selected from Manufacture options

2. FRP Face Sheets
a. Through color.
1. Color. As Selected by Owner

B. Frame

1. Aluminum.
a. Anodizing.
1. Class 1 Anodizing, minimum 0.7 mils thick.
a. Color as Selected by Owner.

2.8. HARDWARE

A. As indicated in Hardware Schedule on the drawings and Section 08 70 00 Finish Hardware.

3. EXECUTION

3.1. INSTALLATION

A. Comply with manufacturer's recommendations and specifications for the installation of the doors and frames. Factory install hardware, glass and louvers in doors. Factory assemble sidelites and transoms to the greatest extent possible.

B. Set units plumb, level and true to line, without warp or rack of doors or frames. Anchor securely in place. Separate aluminum and other metal surfaces with bituminous coatings or other means as approved by architect.

C. Set thresholds in a bed of mastic and backseal. Coordinate height of threshold with door sweep so no light shows under door.

D. Clean surfaces promptly after installation of doors and frames, exercising care to avoid damage to the protective coatings.

E. Remove all stickers from doors and frames placed by factory to identify door openings.

F. Ensure that the doors and frames will be without damage or deterioration (other than normal weathering) at the time of acceptance.

G Provide a minimum one-year written warranty on all labor related to this section. Any workmanship which is defective or deficient shall be corrected to the Owner's satisfaction and at no additional cost to the Owner.

H. Provide "L" angle aluminum trim anodized to match framing as required. Trim to cover area exposed from removal of existing frames.

I. All frames are to be caulked with caulking to match frame color to provide weather tight installation. All stops are to be caulked so there are no gaps between frame and stop.

J. Not used

K Erection shall be accomplished by concerns authorized by the manufacturer, or the manufacturers own erection crews. Field work shall be done by skilled mechanics, and shall be executed in strict conformity with the drawings, the approved shop drawings, and these specifications to achieve a first-class completely watertight installation, without defects and in proper operating condition.

L. Erect framing, doors and accessories in strict accordance with the manufacturer's recommendations and instructions. Consult with manufacturer's representative prior to installation of doors and frames to verify installation procedures and operations.

M. Fitting and Assembly
1. Erect all work in a firm, rigid and workmanlike manner, with angles and lines straight and true and all parts properly aligned, leveled, and securely anchored. Openings to receive glass or doors shall be plumb and square. Fastenings shall generally be concealed. Joints shall be drawn up tight to a hairline fit, except where provision for expansion is to be made. Special allowance shall be made for all members to weep and drain properly. All metal in contact with masonry, concrete or mortar shall have the contact surfaces painted with a heavy brush coat of bituminous paint. Abutting steel and aluminum members shall be separated by a continuous non-metallic shim or performed mastic tape. Joints which cannot be caulked after assembly shall be buttered before assembly with the specified compound. No damaged material shall be installed or accepted.

N. Doors
1. All jambs, head and sill track shall be set in correct locations as shown in the details and shall be level, square, plumb and in alignment with other work in accordance with the manufacturer's installation instructions and reviewed shop drawings. All joints between framing and the building structure shall be sealed in order to secure a watertight installation.
2. Upon completion of the installation of the entrances, make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

O. Caulking
1. All metal-to-metal joints and metal to wall, ceiling, floor joints will be caulked, under this Section, as required obtaining a secure, watertight installation.

3.3. SEALING OF JOINTS

A. Seal all joints between new frames and existing construction with elastomeric sealant, interior and exterior faces of joint.

B. Recesses shall be dry when compounds are installed. Before sealing, pack joint cavity with joint backing to form a fixed backing located the proper depth from the joint face. Select size of joint backing into joint cavity in manner to avoid lengthwise stretching, twisting and braiding.

C. For sealant, depth and width of sealant compound shall be of equal dimension up to 1/2", joints over 1/2" wide shall have sealant depth maintained at 1/2".

D. Prime joints as recommended by manufacturer of sealant. All concrete or masonry surfaces shall be primed. Use primer recommended by the manufacturer of sealant; primer shall be omitted only where so recommended by manufacturer in writing.

E. Follow manufacturer's instructions closely regarding mixing, surface preparation, application life and application procedures. Fill all joints completely without extra cost to Owner, regardless of joint width.

F. Beads shall be either laid smooth or smoothed by a spatula dipped in solvent. Joints shall be filled under pressure, completely filling the space to be caulked, and gun nozzles shall be proper size to fit joint. Sags and rough caulking shall be removed and properly replaced. Nothing less than a first class job in all respects will be acceptable.

G. Finish Compound in recesses between masonry and frames with a smooth bead surface, flush with face of material at each side. Finish compound in recesses in masonry work with a smooth concave surface, flush with face of material at each side.

H. Do not install compounds when air temperature is less than 40 degrees F., nor when recesses are wet or damp.

I.. Sealant must be warranted for at least (5) years.

END OF SECTION 08 17 43

SECTION 08 52 00
WOOD WINDOWS

1 GENERAL

A. Standards: Performance requirements for wood windows are those specified in NWWDA I.S. 2.

B. Window Grade: Comply with requirements of Performance Grade DP 30.

C. Testing: Stock units of each grade of required window shall have been tested in accordance with ASTM E 283 for air infiltration, ASTM E 547 for water penetration, and ASTM E 330 for structural performance. Test samples shall comply with NWWDA I.S. 2 for test sample sizes and methods.

D. Forced Entry Resistance: Comply with Performance Level 10 when tested in accordance with ASTM F 588.

E. Submittals: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections:

F. Product data for each type of window required, including standard construction details and fabrication methods, component profiles and dimensions, data on hardware, accessories and finishes, and recommendations for maintenance and cleaning exterior surfaces.

1. Shop drawings for each type of window specified. Include layout and installation details, typical window unit elevations at 3/4-inch scale, full-size details of typical and composite members, hardware, including operators, glazing details, and accessories.
2. Samples for Initial Color Selection: Submit samples of each finish on 12-inch-long sections. Where finishes involve color variations, include sample sets showing the full range.
3. Certification: Provide certification by a recognized independent testing agency that each window type and grade complies with performance requirements indicated.

G. Safety Glass Standard: Comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.

H. Provide glass permanently marked with the Label of the Safety Glazing Certification Council or other agency acceptable to authorities having jurisdiction.

I. Glazing Standards: Comply with recommendations of the Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual."

J. Insulating Glass Certification Program: Provide units permanently marked with label of the Insulating Glass Certification Council (IGCC) or the Associated Laboratories, Inc. (ALI). Provide the label on spacers or at least one component pane of each unit.

2 PRODUCTS

A. Manufacturers: General Unit sizes are indicated on the drawings. Provide fixed units with exterior aluminum cladding and interior wood trim.

1. Basis of Design: Anderson Exterior Clad Series “A” Windows
2. Pella Clad Architect Series Windows
3. Eagle Exterior Clad Windows
4. Marvin Windows

B. Provide units with 1” Insulating Glass.

C. Materials: Comply with requirements of NWWDA I.S. 2.

D. Wood: Clear Ponderosa Pine or other suitable fine-grain lumber kiln dried to 6 to 12 percent moisture content at time of fabrication and free of visible finger joints, blue stain, knots, pitch pockets and surface checks larger than 1/32 inch wide by 2 inches long. Lumber shall be water-repellent preservative treated after machining in accordance with NWWDA I.S. 4.

E. Aluminum Cladding: Aluminum formed extruded cladding mechanically bonded to exterior sash and frame members.

F. Trim members: Aluminum clad wood, hollow aluminum extrusions, or roll-formed aluminum trim members in factory-applied, selected color, baked-on enamel finish.

G. Anchors, Clips, and Accessories: Fabricate of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with the requirements of ASTM B 633 for SC 3 (severe) service condition; provide strength sufficient to withstand design pressure indicated.

H. Fasteners: Comply with NWWDA I.S. 2 for fabrication and manufacturer's recommendations for type and size of installation fasteners. Use zinc-coated or nonferrous nails and screws for fabrication and installation and brass screws for hardware and accessory installation.

I. Glass and Glazing Materials: Clear, sealed, insulating (safety were required) glazing that complies with ANSI Z97.1 and the "Glass and Glazing" Section.

J. Glazing Seal: Provide extruded vinyl or butyl glazing gasket providing weather weathertight seal.

K. Fabrication: Comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.

L. Comply with referenced standards for moisture content of lumber at time of fabrication and for relative humidity conditions in the installation areas.

1. Fabricate windows to produce units that are reglazable without dismantling sash framing. Provide openings and mortises precut to receive hardware and other items.
2. Each window unit includes sash, frame, stops, sill (including undersill or nosing), exterior casing and moldings, integral mullions and muntins, hardware, and accessories.
3. Provide glazing stops, nailed or snap-on type, coordinated with glass selection and glazing system indicated.

M. Preglazed Window Units: Except for light sizes in excess of 100 united inches, preglaze windows at the shop before delivery.

1. Interior and exterior trim.
2. Support brackets.

N. Complete fabrication, assembly, finishing, and hardware application before shipment to the project site. Disassemble only for shipment and installation. Where necessary for fitting, provide allowance for scribing, trimming, and fitting.

3 EXECUTION:

A. Inspection: Inspect openings before installation. Verify that the opening is correct and the sill plate level. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Walls shall be dry, clean, sound and well-screwed, free of voids, and without offsets at joints. Ensure screw heads are flush with surfaces in opening and within 3 inches of the corner.

1. Coordinate installation with flashings and other built-in components.

C. Installation: Comply with manufacturer's instructions and recommendations for installation of window units.

D. Set units plumb, level, true to line, without warp or rack of frames or sash. Provide support and anchor securely in place.

1. Set sill members in a bed of compound or with joint fillers or gaskets, to provide weathertight construction.

E. Cleaning: Clean surfaces after installation. Avoid damage to coatings and finishes. Remove excess glazing and sealants, dirt, and other substances.

F. Clean glass after installation. Wash and polish both faces before Substantial Completion. Remove nonpermanent labels from glass surfaces.

1. Remove and replace glass that has been broken, chipped, cracked, abraded or damaged during the construction period.

G. Protection: Protect window units from damage or deterioration until time of substantial completion.

END OF SECTION 08 52 00

SECTION 31 10 00
SITE CLEARING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

The extent of site preparation work required is shown on the drawings. This work includes, but is not limited to, all labor, material, equipment, and services necessary for:

Protection of existing trees and vegetation
Clearing and grubbing
Related work as required

1.02 SOIL EROSION AND SEDIMENTATION CONTROL

A. **Purpose** - The purpose of this section is to minimize soil erosion and control sedimentation as required by the Soil Erosion Act, Part 91, PA 451 of 1994 of the State of Michigan as amended.

B. **Permit** - All permits relative to this section shall be obtained prior to construction. Such permit shall be based upon Soil Erosion and Sedimentation Control Plan prepared for this project.

C. **Implementation** - It shall be the responsibility of the Contractor to implement the Soil Erosion and Sedimentation Control Plan for this project in strict accordance with the permit. All materials for the implementation of temporary and permanent soil erosion and sedimentation control measures shall be as per plan or as per other relative sections of the specifications such as seeding, etc. Unless specified within other sections of the specifications, all work under this section shall be in strict accordance with the construction methods as prescribed by the State of Michigan Department of Natural Resources for the implementation of this legislation. Refer to Michigan Guidebook for Soil Erosion and Sedimentation Control, prepared for and distributed by the Water Resources Commission of the Department of Natural Resources, State of Michigan.

1.03 JOB CONDITIONS

A. **Protection of Existing Improvements** - Provide barricades, coverings or other types of protection necessary to prevent damage to existing improvements indicated to remain in place. Protect improvements on adjoining properties and on the Owner's property. Restore any improvements damaged by this work to the original condition as acceptable to the Owner and other parties or authorities having jurisdiction.

B. **Protection of Existing Trees and Vegetation** - Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of Tree roots by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary fences, barricades or guards as required to protect trees and vegetation to be left standing. Water trees and other vegetation to remain within the limits of the contract work as required to maintain their health during the course of construction operations. Provide protection for roots over 1.5" diameter cut during construction operations. Coat the cut faces with an acceptable coating formulated for horticultural use on cut or damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out and cover with earth as soon as possible. Repair or replace trees and vegetation damaged by construction operations in a manner acceptable to the Landscape Architect. Tree damage shall be repaired by a qualified tree surgeon. The selected tree surgeon shall be subject to the written approval of the Landscape Architect. Replace trees and shrubs, which cannot be repaired and restored to full growth status as determined by the tree surgeon. Trees and shrubs, which need to be replaced, shall be equal in value of the tree(s) that need to be replaced. The contractor shall obtain the approval of the Owner regarding the species and the size of all plant material, which needs to be replaced before proceeding with the replacement work.

PART 2 - PRODUCTS [Not Applicable]

PART 3 - EXECUTION

3.01 SITE CLEARING AND GRUBBING

Remove vegetation, improvements or obstruction interfering with the installation of new construction. Clear the project site of

trees, shrubs and other vegetation - except for those indicated to be left standing. Removal includes new and old stumps of trees and their roots. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction. Completely remove stumps, roots and other debris protruding through the ground surface. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 0.5' loose depth, and thoroughly compact to a density equal to adjacent original ground.

3.02 DISPOSAL OF WASTE MATERIALS

Burning of combustible cleared and grubbed materials is not permitted on the Owner's property. Remove from the Owner's property and legally dispose of all waste materials and unsuitable or excess soils.

3.03 TOPSOIL REMOVAL

Topsoil is defined as friable clay loam surface soil found in a depth of not less than 0.4'. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones and other objects over 2.0" in diameter, and without weeds, roots and foreign materials. Strip topsoil from within the areas to be occupied by the building, paving and walks and from other areas within the grading limits to be cut, filled or regraded. Strip topsoil to whatever depth encountered in a manner to prevent intermingling with the underlying subsoil or objectionable material. Remove heavy growth of grass from areas before stripping. Where trees are indicated to be left standing, stop topsoil stripping at a sufficient distance to prevent damage to the main root system. Stockpile topsoil as indicated and where it will not interfere with construction operations or site work. Locate topsoil storage piles in areas shown or where otherwise directed. Construct storage piles to freely drain surface water and cover if required to prevent windblown dust. If soil or weather conditions are unsuitable, the Contractor shall cease topsoil removal operations and resume only when directed to do so by the Landscape Architect. Dispose of excess topsoil the same as waste material, herein specified.

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END OF SECTION 31 10 00

SECTION 31 21 00
EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

The extent of Earthwork required is shown on the drawings. This work includes, but is not limited to furnishing all labor, material, equipment, tools, incidentals, and services necessary for:

Site grading
Cutting
Placement of fill materials
Related work as required

Excavating and backfilling for storm drainage and other utilities are not included as a part of this work and, as may be applicable, may be specified elsewhere in these documents.

1.02 QUALITY ASSURANCE

A. Codes and Standards - Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

B. Lines and Grades - The Contractor shall provide all instrumental surveying required to lay out and construct this work in conformance with the drawings. Verify all subgrades by staking on section lines before installing topsoil or other surfacing material.

1.03 JOB CONDITIONS

A. Site Information - The Contractor shall make his or her own investigation as he or she deems necessary prior to the bid opening. Data on surface or subsurface conditions is not intended as representations or warranties of accuracy or continuity of actual site conditions. It is expressly understood that the Owner and project consultants employed as representatives of the work will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data made available is for the convenience of the Contractor.

B. Existing Utilities – Call MISS DIG prior to beginning work on the site. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with the Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by the Landscape Architect, and then only after acceptable temporary utility services have been provided.

C. Explosives - The use of explosives is not permitted.

D. Protection of Persons and Property - Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washouts and other hazards created by earthwork operations.

PART 2 - PRODUCTS

2.01 DEFINITIONS

Standards - Satisfactory soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M145, soil classification Groups A-1, A-2-4, A-2-5 and A-3. Unsatisfactory soil materials are those defined in AASHTO M145 Soil Classification Groups A-2-6, A-2-7, A-4, A-6 and A-7. Also listed as unsatisfactory are peat and other highly organic soils. Cohesion-less soil materials include gravel, sand gravel mixture and gravely sands. Cohesive soil materials include clayey and silty gravel, sand clay mixtures, gravel silt mixtures, clayey and silty sands, sand silt mixtures, clays, silts and very fine sands.

Subbase Material - Subbase material shall be properly graded mixtures of natural or crushed gravel, crushed stone, crushed slag, or natural or processed sand that will readily compact to the required density complying with AASHTO M147, Grade A, unless otherwise indicated or acceptable to the Landscape Architect.

Stone Aggregate - Crushed Stone Aggregate shall be as per MDOT 20AA Specification. Alternate Crushed Concrete Aggregate shall be in accordance with MDOT 21AA designation.

Topsoil - Topsoil shall be fertile, friable organic soil, characteristic of the soils in the project area that will produce heavy growths of vegetation. Topsoil shall be capable of supporting a healthy and vigorous stand of turf (lawn) grass. The following mechanical analysis shall be met:

1"	Sieve	100% Passing
1/4"	Sieve	97-99% Passing
#100	Sieve	40-60% Passing

The Ph level shall be between 5.5 and 7.5. Organic material shall not be less than 4% by weight nor greater than 25%. Topsoil shall be free of any matter, which will retard or prevent healthy growth of plant material. Slag, cinders, subsoil, and stone shall not exceed 5% by volume. Topsoil shall be free of viable seeds of noxious weeds and/or illegal plants, and herbicide and toxic chemicals. Contractor shall provide a representative sample of proposed topsoil and shall identify the original and current location from which the material will be obtained.

PART 3 - EXECUTION

3.01 INSPECTION

Examine the areas and conditions under which excavation, filling and grading is to be performed and notify the Landscape Architect, in writing, of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3.02 EXCAVATION

Excavation consists of removal and disposal of material encountered when establishing required grade elevations. Earth excavation includes removal and disposal of pavements and other obstructions visible on the ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and other materials encountered that are not classified as rock excavation or unauthorized excavation. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Landscape Architect. Unauthorized excavation, as well as remedial work directed by the Landscape Architect, shall be at the expense of the Contractor.

Dewatering - Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area. Convey water removed from excavations and rainwater to collecting or runoff areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

Materials Storage - Stockpile satisfactory excavated materials where directed, until required for fill. Place grade and shape stockpiles for proper drainage. Locate and retain soil materials away from the edge of excavations. Cover stockpile, or provide temporary vegetative cover as may be required to comply with the Soil Erosion and Sedimentation Act. Dispose of excess soil material and waste materials as directed.

Excavations for Paved Areas - Cut surface under pavements to comply with cross-sections, elevations and grades as shown.

3.03 COMPACTION

Control soil compaction during construction providing minimum percentages of density specified for each area classification. Compact soil to not less than the following percentages of maximum dry density for soils that exhibit a well-defined moisture density relationship determined in accordance with ASTM D 1557.

Turf or Unpaved Areas - Compact top 0.5 foot of subgrade and each layer of backfill or fill material not to exceed 80% maximum density.

Paved Areas - Compact top 1.0 foot of subgrade and each layer of backfill or fill material to ASTM D-1557 value at 95% maximum density.

Moisture Control - Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil materials. Prevent free water from appearing on surface during or subsequent to compaction operations. Remove and replace or scarify and air dry oil material that is too wet to permit compaction to specified density.

3.04 BACKFILL AND FILL - Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below:

Walks and Paved Areas - Use subbase material, satisfactory excavated or borrow material or combination of both. Turf or Unpaved Areas - Use satisfactory excavated or borrow materials.

Ground Surface Preparation - Remove vegetation, debris, unsatisfactory soil materials, obstructions and deleterious materials from ground surface prior to placement of fills. Plow strip or break up sloped surface steeper than one vertical to four horizontal so that fill materials will bond with existing surface. When existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break up the ground surface, pulverize, moisture condition to the optimum moisture content and compact to required depth and percentage of maximum density.

Placement and Compaction - Place fill materials in layers not more than 0.6 foot in loose depth for material compaction by heavy construction equipment and not more than 0.3 foot in loose depth for material compacted by hand operated tampers.

At Existing Trees to Remain - Remove vegetation within dripline and fill with a single layer of uncomplicated topsoil. Hand grade to attain required finish grade.

3.05 DISTRIBUTION OF TOPSOIL

Prior to topsoil placement, the subgrade shall be prepared to uniform levels and slope between points where elevations are shown. Abrupt changes in slope are to be rounded off. Loosen subgrade to a minimum depth of 0.4 foot. Remove stones over 1.0" in any dimension and sticks roots, rubbish and other extraneous matter. Fine rake by York Rake\, Viking Roller Blade\, or approved equal or by hand to produce a smooth even surface that conforms to the grades established on the drawings. Any irregularities shall be corrected in order to prevent the formation of depressions or water pockets. Topsoil shall be uniformly distributed to a minimum depth of 0.4 foot after firming, unless otherwise indicated. Topsoil in planting bed areas, if applicable, shall placed to a minimum depth of 1.0 foot. Topsoil shall be spread in such a manner that finish grading, seeding or sodding, and landscape planting operations can proceed with a minimum of additional soil preparation. Place approximately 50% of the total amount of the topsoil required, work into top of loosened subgrade to create a transition layer, then place remainder of topsoil. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet or in a condition that may otherwise be detrimental to proper grading. Irregularities in the surface resulting from topsoil spreading or other operations shall be corrected in order to prevent the formation of depressions or water pockets. Provide additional clean topsoil - subject to approval of the Landscape Architect - as may be required to complete work. Remove any excess topsoil from the site, or distribute it and grade it as directed by Landscape Architect on site if approved by Owner.

3.06 MAINTENANCE

Protection of Graded Areas - Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded and rutted areas to specified tolerances.

Reconditioning of Compacted Areas - Where completed compacted areas are disturbed by subsequent construction operation or adverse weather, scarify surface, reshape and compact to required density prior to further construction.

3.07 DISPOSAL OF EXCESS AND WASTE MATERIALS

Remove excess excavated material, soil, trash, debris and waste materials and legally dispose of such off the property, except as otherwise specifically noted.

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END OF SECTION 31 20 00

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SECTION 32 92 00
TURF AND GRASSES

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

The extent of seeding work required for this project is shown on the drawings. The work of this section includes, but is not limited to, all labor, material, equipment and service.

Polymer soil amendment application for all scheduled areas
Seeding of all scheduled areas
Mulching of all seeded areas
Related work as required

1.02 LANDSCAPE SUBCONTRACTOR

The selection of the landscape subcontractor, if applicable, is subject to the written approval of the Architect.

1.03 DELIVERY, STORAGE AND HANDLING

Seed, fertilizer and soil amendment materials shall be in original unopened containers and shall indicate weight, analysis, germination rate, name, and date code or control number of the manufacturer. Materials shall be stored in an orderly manner, at a location acceptable to the Architect, in a manner to prevent wetting and/or deterioration.

1.04 PROJECT CONDITIONS

A. **Seed Blend** - Submit proposed seed blend to the Architect for approval.
B. **Polymer Soil Amendment** – Will be applied prior to completion of Final surface grading of top soil, and seeding/landscape material placement.
C. **Seeding** - Perform seeding work only after other work affecting ground surface has been completed.
D. **Watering** - Provide adequate hose and watering equipment as required.
E. **Germination** - Within thirty (30) days after seeding, it is expected that 60-80% of the seed will have germinated and grown.

1.05 SITE CONDITIONS

All unsatisfactory topsoil quantities or qualities or other unsatisfactory conditions detrimental to seeding shall be reported in writing to the Architect. Seeding shall not continue prior to correction of, or written acceptance of the encountered conditions by the Owner.

1.06 WARRANTY

The Contractor shall provide a uniform stand of grass and shall provide watering, mowing and maintenance of all seeded areas prior to final acceptance by the Owner. The Contractor shall reseed all areas, with specified materials, which fail to provide a uniform stand of grass until the Architect accepts all affected areas.

PART 2 - PRODUCTS

2.01 SEED

A. **Permanent cover (& Dormant Cover):** shall be a consistent mixture of the following varieties:

Seed	%/Wt.	Germination
Kentucky Bluegrass	40%	85%
Creeping Red Fescue	40%	90%
Perennial Ryegrass	20%	90%

The seed mixture prepared shall not contain more than 0.15% weed and more than 0.00% noxious weed seed. Submit all tags from seed bags to the Architect for inspection. Kentucky Bluegrass shall be a mixture of at least three (3) varieties. Merion or Fylking Kentucky Bluegrass shall not be used. Ryegrass shall be at least one (1) of the following: Pennfine, Omega, Manhattan, Derby or NK-200.

B. **Temporary Cover:** shall be a consistent mixture of the following varieties:

Seed	lbs/acre	Germination
Kentucky Bluegrass	20	85%
Creeping Red Fescue	20	90%
Perennial Ryegrass	10	90%

Annual ryegrass 5 80%

Note: On highly erodible slopes, contractor may have to add other varieties to the seed mix such as cereal grass.

2.02 FERTILIZER

Fertilizer for turf areas shall have a chemical analysis of at least 12% available nitrogen, 12% readily available phosphoric acid and 12% total available potash (12-12-12).

2.03 MULCH

Mulch shall be straw or other approved organic material commonly used by the industry for the purpose of the mulching of seeding and approved by the Architect. Mulch shall be held in place with an approved tackifier agent intended for such application. The rate of application shall be in accordance with manufacturer's specifications. For hydro seeding, use 2 tons of straw mulch/ acre unless otherwise indicated or approved in writing by the Architect.

2.04 WATER

Water shall be free of substance harmful to seed growth. The Contractor shall furnish hoses and other methods of water transportation and application.

2.05 SOIL AMENDMENT POLYMER

Synthetic cross-linked polymer hydrogel, as follows:

1) $Soil_2O$ Granular by GelTech Solutions or approved equal
2) Approved other

PART 3 – EXECUTION

3.01 GRANULAR POLYMER APPLICATION

Using a broadcast spreader, drop spreader, or by hand spreader, evenly apply granular polymer prior to seeding. Roto-till polymer into the top 3-6 inches (7 -15cm) of soil. $Soil_2O$ Granular polymer can also be combined with seed then roto-tilled into the top 3 – 6 inches of soil, then irrigate.

Turfgrasses	$Soil_2O$ Granular Polymer Rates (US)	$Soil_2O$ Granular Polymer Rates (Metric)
Existing Turf	-	-
Sodding	.45-1 lb 1000 sq/ft low rate range 1.15-2.3 lbs 1000 sq/ft high rate range	.2 – 1.1 kg per 93 sq. meters
Seeding	3-3.5 lbs per 1000 sq. feet	1-2 kg per 93 sq. meters

3.02 SURFACE PREPARATION

Topsoil shall be fine raked to produce a smooth even surface that conforms to established grades. All stones, roots, clods 1.0" and larger in diameter, and all foreign matter shall be removed from the surface of areas to be seeded. The area shall be made smooth and uniform and parallel to the finished grade. The tops and bottoms of all slopes shall be rounded to blend into the natural ground or adjacent slopes by vertical curves.

3.03 TOLERANCE

Seeded areas will be allowed a tolerance of 0.1 foot. Slope for drainage over turf areas shall have a minimum grade of 1.0%.

3.04 CHEMICAL TREATMENT

Seeding and granular polymer application shall not be done on/in soil that has been chemically treated until sufficient time has elapsed to permit dissipation of all toxic materials. The Contractor shall assume full responsibility for any loss or damage to turf arising from improper dissipation of toxic residues, whether or not such materials are specified herein.

3.05 FERTILIZER APPLICATION

Fertilizer shall be applied uniformly over the entire area to be seeded and incorporated into the topsoil. Application rate shall be 15# per 1000 square feet.

3.06 SEEDING

A. Permanent Cover

1. Time to Seed:
   Project site north of US-10: May 1 – October 10
   Project site south of US-10: May 1 – October 1
   Project site in Michigan UP: May 1 – September 30
2. Seed shall be applied evenly over the entire area. This mixture shall be evenly applied by seeding or drilling with a Brillion Seeder, Viking Roller Blade or approved equal at the rate of 5# per 1000 square feet (or 200 # /acre).
3. The seeder shall be equipped with a satisfactory feeding mechanism, an agitator, double disc furrow openers, depth bands and packer wheels. Seed shall be sown to a depth of one-quarter inch (1/4") into a properly prepared seedbed.
4. Seed drilling shall be done in two (2) separate applications crossing the area at right angles to one another to guarantee proper coverage. On sloping land, the final seeding operation shall follow the general contour.
5. All seeded areas shall be top-dressed with either hydro-mulch or peat moss after the seeding is completed.
6. In areas where the drill method of seeding cannot be used, a broadcast method or hydro seeding may be substituted with the prior approval of the Architect (see Section 3.07).
7. Provide barriers as required to keep traffic off the seeded areas after they are completed. Contractor shall remove all barriers he installed when turf is established, and before acceptance by Owner.

3.07 BROADCAST METHOD AND HYDRO SEEDING METHOD

These methods may be used only when authorized in writing by the Architect. When such authorization is given the finish grading and surface treatment is as previously specified.

If the broadcast method is used, the seeding rate must be doubled, and the area must be raked or dragged after seeding to incorporate the seed into the soil, lightly compacted to provide good seed-soil contact, and then an approved top dressing shall be applied.

If hydro seeding is used, an approved mixture of the seed, fertilizer, mulch and a tackifier must be used.

3.08 MULCHING

Spread straw at the rate of one bale per 1000 square feet. Straw shall be mechanically crimped. As an alternate method, approved organic fibrous material may be applied at the rate of 1000# per acre by hydro seeder. Refer to tackifier requirement in 2.03.

3.09 MULCH AND/ OR EROSION CONTROL BLANKETS

Install all blankets that may be indicated on drawings as per details and manufacturer's recommendations.

3.10 WATERING

To the point of acceptance, the Contractor shall be responsible for providing adequate water and application to assure the establishment of a dense, permanent turf.

3.11 MAINTENANCE (OF PERMANENT COVER)

A. Duration - The Contractor shall maintain newly seeded turf until the final acceptance of the entire project by the Owner, or the Owner's Representative.

B. Maintenance Included - Maintain newly seeded turf areas, including watering, spot weeding, mowing, application of herbicides, fungicides, insecticides and reseeding until a full, uniform stand of grass free of weed, undesirable grass species, disease and insects is achieved and accepted by the Architect.

1. Water daily to maintain adequate surface soil moisture for proper seed germination. Continue daily watering for not less than 30 days. After 30 days, apply 1/2" of water two times per week until final acceptance. Use of Building water supply with be available, contractor to provide hoses and sprinklers.
2. Inspect the seeded areas frequently until accepted by Owner to determine what repair work may be required to insure a healthy stand of turf meeting these specifications.
3. Repair, rework and/or reseed all areas that have washed out and/or eroded, or areas where turf has not been established as required.
4. If infestation of weeds or crabgrass develops, treat infested area by hand weeding or control. Furnish and install weed chemical control as per manufacturer recommendation. All herbicidal control, including renovation before reseeding operations, shall be acceptable to the Architect.
5. Provide maintenance until grass growth is fully established.

3.13 ACCEPTANCE

An inspection to determine acceptance of installed lawns will be made by the Architect upon the Contractor's request. Provide notification at least five (5) working days prior to the requested inspection.

A. New lawn areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy uniform stand of specified grasses is established, and is free of weeds, undesirable grass species, disease and insects.

B. Turf areas shall NOT have bare spots or unacceptable cover totaling more than 2% of the individual areas, in areas requested to be inspected.

C. Upon final acceptance, the Owner will assume turf maintenance responsibility.

END OF SECTION 32 92 00

ROGER L. DONALDSON, AIA P.L.C.
ARCHITECT

Member
International Code Council
American Institute of Architects
Association of Licensed Architects
National Fire Protection Association
National Frame Builders Association
Construction Specifications Institute
National Council of Architectural Registration Boards

NEW NATURE CENTER
GRATIOT-ISABELLA RESD
FOREST HILL HATURE CENTER
11297 N. RICH ROAD
ALMA, MICHIGAN 48837

ARCHITECTS PROJECT #**24-43**

DATE: **May 13, 2026**

Questions & Answers

The following clarifications, modifications and/or revisions to the above project shall be considered a part of the original specifications:

1. What is the project Schedule
   Response: Plan on Starting by August. Project is likely a 12-18 month project depending on product delivery schedules.
2. Is this a "Buy America" project?
   Response: No

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3. Who will be responsible for contacting and payment for the power company to relocate the existing Power Pole(s)?
   Response: Contractor or Electrical Contractor
4. Do you have a preference for a well drilling contractor, I assume this is by GC?
   Response: Owner has used Trayers out of Vestaburg, but not mandatory to use them.

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5. Are there any Liquidated Damages on the project?
   Response: No
6. Builders Risk to be by Contractor or the owner?
   Response: By Contractor
7. What are the requirements for temp power on the buildings
   Response: 240/120 volt, single phase, 100 amps to the granary building plus whatever power is required for new construction.
8. Has consumers energy been contacted for power removal/temp power?
   Response: Not for temporary power
9. Is contractor to pay for temp power? If so, what are the past couple months of usage on buildings so they can be calculated into price?
   Response: Yes
10. Is there an asbestos report or does contractor need to include report and allowance for abatement?
    Response: Provide an $10,000 Allowance for the report and any abatements that is required.
11. To confirm only bonds on project are 100% Performance & Payment and 5% Bid Bond?
    Response: Refer to Section 00 52 24 AIA A101- Exhibit A for insurance and bond requirements.

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12. On the Forest Hills Nature Center the plans call for 84'7" trusses in 1 piece. Both of my truss suppliers I work with can't/won't make them or ship them. Wondering how you want me to approach that.

Response: We can accept 2-piece trusses, piggyback trusses may be used the top over 2x4 purlins as directed by the Truss Engineer.

13. The exterior walls call for 7/16 OSB with Rigid R5 insulation or zip. My zip options are R3.6 or R6.6. which would you prefer?
Response: Code minimum is R-5, so we need to use the R6.6.

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14. I see in Specification Section 84200-Aluminum Glass Doors it appears Cross Aluminum is a sole supplier. Will any other Door Suppliers be considered as equal such as Specialite, Vale Doors, Kawneer, or Tubelite?
Response: Main Entrance Door to be Cross, Kawneer, Tubelite, SpecialLite or Vale

15. Regarding the FRP Doors called out in the door schedule, I am not seeing a FRP Door specification. Will Specialite or Vale Doors be viable suppliers for the FRP Doors.
Response: Yes, Special Lite is basis of design, Spec to be issued with Addendum #1.

16. At Doors 118A and 201, a hollow metal door frame is called for. Shouldn't these door frames be Aluminum, typical to the rest of the FRP Door /aluminum frames in the door schedule?
Response: FRP Door in AL frame.

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17. Confirm requirements / responsibility for third party testing, commissioning, etc. Or if any scope will be owner direct.
Response: Contractor is responsible

18. Confirm whether Owner or Contractor carries geotechnical/testing agency costs, including SME observations, proofrolling, compaction testing, and special inspections.
Response: Owner has paid for test to date; Contractor will include cost for during construction

19. Clarify base-bid assumptions for unsuitable soils, undercutting, existing fill removal, proofrolling, engineered fill, and unit prices/allowances.
Response: See Section 00 31 32 - Geotechnical Data

20. Confirm all allowances to include in base bid, including testing, inspections, controls, signage, utility work, or owner-directed items.
Response: Contractor is responsible

21. Confirm responsibility for temporary utilities, temporary heat, snow removal, site access, staging, fencing, and site security.
Response: Contractor is responsible

22. Identify existing utilities to remain, be relocated, abandoned in place, or removed; provide a utility responsibility matrix.
Response: Utility is shown on the Site Civil sheets developed by KEBS, sheets 1 through 9

23. Confirm demolition scope for existing Nature Center and adjoining/northern storage or ancillary building, including foundations, slabs, utilities, septic, salvage, disposal, and restoration.
Response: Contractor to remove all and restore surfaces with grass seeding. Existing Septic field may be abandoned in place.

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24. Confirm whether hazardous material testing has been completed. Age and condition of existing buildings and infrastructure isn't clear from documents included.
Response: No testing has been completed. Provide an $10,000 Allowance for the report and any abatements that is required.

25. Clarify asphalt shingle alternate scope, including underlayment, ice/water shield, flashing, gutters, fascia/trim, snow guards, roof penetrations, warranty, and structural/loading changes.
Response: See Section 07 31 13 Asphalt Shingles.

26. Clarify propane provider scope and cost responsibility, including tank lease/purchase, pad/protection, trenching/backfill, regulator, piping limits, coordination, startup, and initial fuel fill.
Response: The propane provider shall provide and install the propane tank, regaulator, piping, and all associated accessories between the tank and regulator. Tank to be filled full.

27. Confirm well provider scope and cost responsibility, including pressure tank, piping/accessories between well and pressure tank, controls, power, startup, and where plumbing scope begins.
Response: The well drilling contractor is responsible for extending a new 2" water line from the existing well to the new building. The contractor is responsible for providing and installing the piping, pressure tank, and all associated accessories. Plumbing contractors scope starts after the pressure tank. See Addedum #1, Note added to Sheet C-400

28. Confirm water filter and water softener basis of design and whether an addendum will be issued before bid; if not, provide required allowance.
Response: Provide $40,000 allowance for equipment and labor to install water filter and water softener.

29. Confirm Owner vs Contractor responsibility for access control software, credentials, programming, cloud/subscription fees, commissioning, and training.
Response: Contractor to furnish and install all equipment, wiring, and conduit and to coordinate integration into the RESD's existing multi-building system. New software for this building, commissioning and training are to be provided by the contractor. Coordinate programming with owner. All costs associated with this project are to be included in the bid.

30. Can you please specify the window materials, or is there a desired manufacturer
Response: Anderson "A" Series, Spec to be issued with Addendum #1.

31. Can you please specify the desired fence around the electrical equipment.
Response: See KEBS Drawings, Sheet 9, "TYPICAL WOOD SCREEN FENCE ELEVATION"

32. Will there be a landscaping plan, or should we include an allowance?
Response: By Owner

33. Is there a spec for the exterior signage, or is this owner provided?
Response: By Owner

34. Is this a prevailing wage project?
Response: No

35. The wood door veneer sates cut red oak, but this cut is not available in red oak. Only plain sliced is available for this door is that acceptable?
Response: Yes, plain sliced is acceptable

36. Door 118A - Reads FRP to HM but is an AL callout on drawing, Please Confirm the correct door type.
Response: FRP Door in AL frame.

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37. Door 201 - Reads FRP to HM but is an AL callout on drawing. Please Confirm the correct door type.
Response: FRP Door in AL frame.

38. Door113 shows 1 hour rating but that is actually 114. Please confirm which door is fire rated.
Response: Yes, Door 113 should be 1 hour rated.

39. What finish level of concrete polishing is required.
Response: Class B "salt & pepper", Level 3 (gloss) finish, Spec to be issued with Addendum #1.

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40. Will the ductwork (spiral) be painted?
Response: No, exposed

41. Will the T&G need to be stained and finished?
Response: Yes

42. Will the exposed trusses need and stain and finish?
Response: Yes

43. What will be the finish on the FRP doors?
Response: FRP Doors are prefinished

44. Door #118A and 201 – Frames and door slab styles do not match.
Response: FRP Doors in AL frames

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45. We would like to know if there is a spec for 27 0000 or bid category or if the owner installs this.We need clarification on the key notes for Print E-500.
Response: Keyynotes #9, 10 addeed, Sheet E-500 Reisssued with Addendum #1.

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46. I can't find the thickness of the Tectum ceiling panels, can you please provide that information?
Response: Tectum Pinacle Panels are standard 1" Thick.

47.

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GENERAL PLAN NOTES:

1. Do not scale these drawings, use dimensions indicated on the drawings and those verified at the project site. Any dimensions or areas that are unclear on the drawings shall be clarified by the Owner's Representative. Scaling of these drawings or other methods to determine dimensions will not be acceptable.
2. When references are made to Contractor, that includes Owner self performing construction work.
3. Contractors shall review and verify all dimensions and shall notify Architect of any discrepancies.
4. Contractor shall maintain Project in a dry condition at all times.
5. Contractor shall be responsible for protection and safekeeping of all products stored at the site and within the building.
6. Contractor shall coordinate all mechanical, plumbing, electrical and other trade work prior to placing concrete slabs, or gypsum drywall board.
7. The contractor shall assume that he may be required to provide the highest quality of work and the greatest quantity of materials required for a complete project conforming to all noted codes, whether or not such materials required for such conformance are indicated in these plans.
8. Contractor shall properly store materials in accordance with manufacturer's instructions or recommendations. All materials shall be stored in a dry and safe manner. Materials that become wet shall be replaced or properly dried out prior to being used in the Project.
9. All floor surfaces shall be slip resistant and securely attached in accordance with the MBC §1003.4. The static coefficient of friction for all floor surfaces shall be as 0.6 minimum.
10. Egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort. (*MBC §1010.1.9*)
11. Door handles, pulls, latches, locks and other operating devices on doors shall not require tight grasping, tight pinching or twisting of the wrist to operate. (*MBC §1010.1.9.1*)
12. Exterior door concrete slab shall be flush with interior floor elevation with threshold no greater than ½" in height. Comply with ICC/ANSI §303.
13. Provide address numbers of a size and in a location acceptable to the authority having jurisdiction. (IFC §505)
14. Provide a Knox box for fire department access (IFC §506). Locate on buildings per fire marshal and verify with the Architect.
15. Provide nonabsorbent finish and backing at Toilet Room Walls and Floor. Provide 4" Base, and Water Resistant Gypsum Drywall on surfaces adjacent to Water Closets, Lavatories, Mop Basin and Drinking Fountains. (MBC §1210.2)
16. All water faucets shall meet ICC/ANSI §309.4 requirements for operable parts - Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the rest. The force required to activate operable parts shall be 5 pounds, maximum.
17. Install suspended ceiling grid shall conform to generally accepted engineering practice and the requirements of MBC §808 and in accordance with ASTM C635 and ASTM C636-96 "standard practice for installation of metal ceiling suspension systems for acoustical tile and lay-in panels". Grid work shall be supported with a minimum of 1-12 gauge. Hanger wire to structure above at 4'-0" on center Each way.
18. Provide raised character and braille exit signs. A sign stating "**EXIT**" in visual characters, raised characters and braille and complying with ICC A117.1 shall be provided adjacent to each door to an area of refuge, an exterior area for assisted rescue, an exit stairway or ramp, an exit passageway and the exit discharge. (MBC §1013.4)
19. Provide Minimum (1) 5 lb 2A:10B:C Fire Extinguishers per 3,000 square feet of area, Maximum Distance of 75' to any Fire Extinguisher and as shown on the drawings. (MBC §905) Review placement with Fire Department/Marshall or Chief prior to installing.
20. All wood in contact with earth, concrete, concrete masonry, clay masonry, or exposed to the weather shall be pressure treated to resist decay, level UC4B (CCA 0.60) for Posts, UC3B (ACQ or ACZA 0.25) for deck, stringers, beam, framing and other lumber or better.
21. Dimensions are to:
    Exterior face of studs in exterior walls.
    Face of Stud in new walls.
22. In wet areas, use Moisture Resistant Drywall.
23. Wall Construction: Owner may use the following wall construction methods as may be required and noted on the drawings.

INTERIOR WALL TYPE

24. **INTERIOR WALL, TYPE 0.1**
Dimensioned at 7" nominal, 5/8" Gypsum Drywall each side of 2x6 Wood Studs at 2'-0" on center. Fill wall cavity with 3" dense mineral fiber sound attenuation blankets, friction fit. Minimum STC-45. Extend wall to bottom of structure above.

INTERIOR FIRE RATED WALL TYPE

25. **INTERIOR WALL, TYPE 1.1** - 1 Hour Rated:
UL Design # U305
Dimensioned at 7" nominal, 5/8" Gypsum Drywall, Fire code Type "X" each side of 2x6 Wood Studs at 1'-4" on center. Fill wall cavity with 3" dense mineral fiber sound attenuation blankets, friction fit. Minimum STC-45. Extend wall to bottom of structure above.

EXTERIOR WALL TYPES:

26. **EXTERIOR WALL, TYPE E.1:** (Typical)
Dimensioned at 8" nominal, 5/8" Gypsum Drywall over 4 mil vapor barrier at interior side of 1-1/2" x 5-1/2" Timberstrand Laminated Strand Lumber (LSL) Wood Studs @ 1'-4" on center. Fill wall cavity with 5-1/2" fiberglass thermal insulation batts (R-19 Min.), friction fill. Exterior shall be covered with 1" Continous Rigid Insulation (R-5 Min.) and 7/16" Minimum exterior structural wood sheathing (ZIP System® R-Sheathing or equal).
Lower 2'-0" portion of wall covered with Stone Veneer and Cap (QR Stone - Splitface Granite Mackinaw)
Upper Walll covered with Hardie Board Pre-Finished Compostie Siding, See Elevation for Siding profile.

27. **EXTERIOR WALL TYPE E.2:** (Main Hall)
Dimensioned at 9" nominal, 5/8" Gypsum Drywall over 4 mil vapor barrier at interior side of 1-1/2" x 7-1/4" Timberstrand Laminated Strand Lumber (LSL) Wood Studs @ 1'-4" on center. Fill wall cavity with 7-1/2" fiberglass thermal insulation batts (R-19 Min.), friction fill. Exterior shall be covered with 1" Continous Rigid Insulation (R-5 Min.) and 7/16" Minimum exterior structural wood sheathing (ZIP System® R-Sheathing or equal).
Lower 2'-0" portion of wall covered with Stone Veneer and Cap (QR Stone - Splitface Granite Mackinaw)
Upper Walll covered with Hardie Board Pre-Finished Compostie Siding, See Elevation for Siding profile.

INTERIOR FIRE RATED FCEILING

28. **CEILING TYPE F:1: (Mechanical Room 114)**
GA File No. RC2602,
FM FC 172, 2-25-72, ITS, 8-6-98
Base layer 5 / 8" type X gypsum wallboard applied at right angles to 2 x 10 wood joists 24" o.c. with 1 1 / 4"Type W or S drywall screws 24" o.c. Face layer 5 / 8"type X gypsum wallboard or gypsum veneer base applied at right angles to joists with 1 7 / 8" Type W or S drywall screws 12" o.c. at joints and intermediate joists and 1 1 / 2"Type G drywall screws 12" o.c. placed 2" back on either side of end joints. Joints offset 24" from base layer joints. Wood joists supporting 1 / 2" plywood with exterior glue applied at right angles to joists with 8d nails. Appropriate roof covering.
Ceiling provides one hour fire resistance protection for framing, including trusses.

Fire Rated Construction Notes:

29. **Nails and Screws**
Nails are specified according to ASTM F547, "Standard Terminology of Nails for Use with Wood and Wood-Base Materials," or ASTM C514, "Standard Specification for Nails for the Application of Gypsum Board." Nails used to attach gypsum board to wood framing should be cement-coated box nails or cement-coated cooler nails unless specified otherwise in the individual designs. Screws meeting ASTM C1002, "Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs," or ASTM C954, "Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness," may be substituted for nails, one for one, when the head diameter, length, and spacing equal or exceed the requirements for the specified nails

30. **Gypsum Board Joint Treatment (Fire Taping)**
Unless otherwise specified in the individual designs, all gypsum board systems except those with predecorated or metal-covered surfaces have joints taped and joints and fastener heads covered with one coat of joint compound (fire taped). Base layers in multi-layer systems are not required to have joints or fastener heads taped or covered with joint compound.

31. **Gypsum Board Joint Treatment (all painted surfaces, unless noted otherwise)**
Unless otherwise specified in the individual designs, all gypsum board systems shall be finished to Level 4. All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound shall be applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of final finishes. GA-214-10c.

DRAWING LEGEND

(1 / A4.1) Detail Number / Sheet where Detail is shown

(1 / A4.1) Interior Elevation Number / Sheet where Interior Elevation is shown

Room Name / ### — New Room Name / Room Area sq.ft. / Room # of Occupants / Room Number

(###) New Door Number

New Wall

New Door

Required Clearance Area

Power Door Actuator

Card Reader

Electric Strike

Intercom & Call Button/Camera

Window Type

GENERAL PLAN NOTES: (continued)

32. **Gypsum Board Joint Treatment Level 5 (where noted)**
All joints and interior angles shall have tape embedded In joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound shall be applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound, A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, applied to the entire surface. The surface shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a drywall primer prior to the application of finish paint. GA-214-10c.

33. Provide Labeling near new duct penetrations on each side of new Fire Rated Walls as indicated below.
MBC 2021 Section 703.7 Marking and identification.
Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:
1. Be located in accessible concealed floor, floor-ceiling or attic spaces;
2. Be located within 15 feet (4572 mm) of the end of each wall and at intervals not exceeding 30 feet (9144 mm) measured horizontally along the wall or partition; and 3. Include lettering not less than 3 inches (76 mm) in height with a minimum 3/8 inch (9.5 mm) stroke in a contrasting color incorporating the suggested wording.
"FIRE AND/OR SMOKE BARRIER PROTECT ALL OPENINGS" or other wording.
Exception: Walls in Group R-2 occupancies that do not have a removable decorative ceiling allowing access to the concealed space.

34. Provide Fire blocking maximum 10'-0" on center in concealed framing areas (soffits, bulkheads, etc.).
§718.2.1 Fireblocking materials . Fireblocking shall consist of the following materials:
1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
3. One thickness of 0.719-inch (18.3 mm) wood structural panels with joints backed by 0.719-inch (18.3 mm) wood structural panels.
4. One thickness of 0.75-inch (19.1 mm) particleboard with joints backed by 0.75-inch (19 mm) particleboard.
5. One-half-inch (12.7 mm) gypsum board.
6. One-fourth-inch (6.4 mm) cement-based millboard.
7. Batts or blankets of mineral wool, mineral fiber or other approved materials installed in such a manner as to be securely retained in place.
8. Cellulose insulation tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.
9. Mass timber complying with Section 2304.11.

35. See Sheet A 4.1 for Enlarged TOILET ROOM PLANS, INTERIOR ELEVATIONS.
36. See Sheet A 4.2 for DOOR & FRAME SCHEDULE, DOOR TYPES, And Hardware Schedule.
37. See Sheet A 4.2 for ROOM FINISH SCHEDULE.
38. Provide all necessary nailers, blocking and grounds as required to support handrails, guardrails, doorstops, wall mounted cabinets, etc. Set work plumb, level and accurately cut. (All nailers, blocking and grounds shall be non-combustible or fire-retardant.)
39. Control joints in gypsum board shall not exceed 30 feet, or as indicated on drawings or by Architect.
40. Seal all openings around ducts, pipes, conduit, etc. Which pass through floors, walls, and roofs with an approved material and method.
41. Pitch all grades and exterior slabs away from building for drainage.
42. Slope floors uniformly 1/2" minimum in ten feet to floor drain.
43. Provide vertical control joints in concrete @ 30'-0" on center Maximum unless otherwise noted.
44. All slabs on grade shall have construction or control joints not to exceed 25'-0" spacing, unless otherwise noted. Construction joints shall be keyed.
45. All interior slabs on grade shall be reinforced with 6X6-W1.4XW1.4 Welded Wire Fabric . Unless otherwise noted.
46. Provide ½" remolded expansion joint material between floor slab and foundation walls where concrete slab is left exposed.
47. Provide 2" Rigid Insulation below all floor slabs with heated floors and snow melt systems.
48. Provide Control Joints in Exterior slabs at intervals not to exceed 10' x 10'.
49. Provide Control Joints in Floor slab at Intervals not to Exceed 20' x 20'.
50. Provide Control Joints in Sidewalk slabs at intervals not to exceed 5' x 5'.
51. **DS** = Downspout Location. Provide Downspout, Elbow, Extension Leader and 34" Long Concrete Splash Block at each location. Coordinate Locations during Construction with Owner.
52. Exit Sign with Battery Backup. ⊗
53. Fire Alarm Devices
54. EWC = Electric Water Cooler. Barrier free, comply with Rules for Barrier Free Design, Part 4 of the State of Michigan Building Code 2021. Comply with "Clean Drinking Water Access Act" State of Michigan Act 154 of 2023, be certified to meet NSF/ANSI standard 53 for lead reduction and NSF/ANSI standard 42 for particulate removal. Provide filter that is certified to meet NSF/ANSI standard 53 for lead reduction and NSF/ANSI standard 42 for particulate removal.
55. BFS = Bottle Filling Station, Barrier free, comply with Rules for Barrier Free Design, Part 4 of the State of Michigan Building Code 2021. Comply with "Clean Drinking Water Access Act" State of Michigan Act 154 of 2023, be certified to meet NSF/ANSI standard 53 for lead reduction and NSF/ANSI standard 42 for particulate removal. Provide filter that is certified to meet NSF/ANSI standard 53 for lead reduction and NSF/ANSI standard 42 for particulate removal.

ABBREVIATIONS:

AFF Above Finish Floor
BFS Bottle Filling Station
BLR Boiler
CR Card Reader
DF Drinking Fountain
DS Downspout
EHD Electric Hand Dryer
EP Electrical Panel
ES Electric Strike
EWC Electric Water Cooler
FACP Fire Alarm Control Panel
FCO Floor Clean Out
FD Floor Drain
FE Fire Extinguisher, Maximum height 48" AFF
GB Grab Bar (horizontal)
GFU Glycol Feeder Unit
HB Hose Bibb
HP Heat Pump
HWH Hot Water Heater
IB Intercom & Call Button/Camera
KDAT Kiln Dried After Treatment
LAV Lavatory
LS Laundry Sink
MBC Michigan Building Code, current edition
o.c. On Center
OB Ooulet Box
SC Shower Curtain
SS Service Sink
TD Trench Drain
TTH Toilet Tissue Holder
UR Urinal
VB Vertical grab Bar
W/D Washer / Dryer
WC Water Closet (Toilet)
YCO Yard Clean Out

WINDOW SCHEDULE

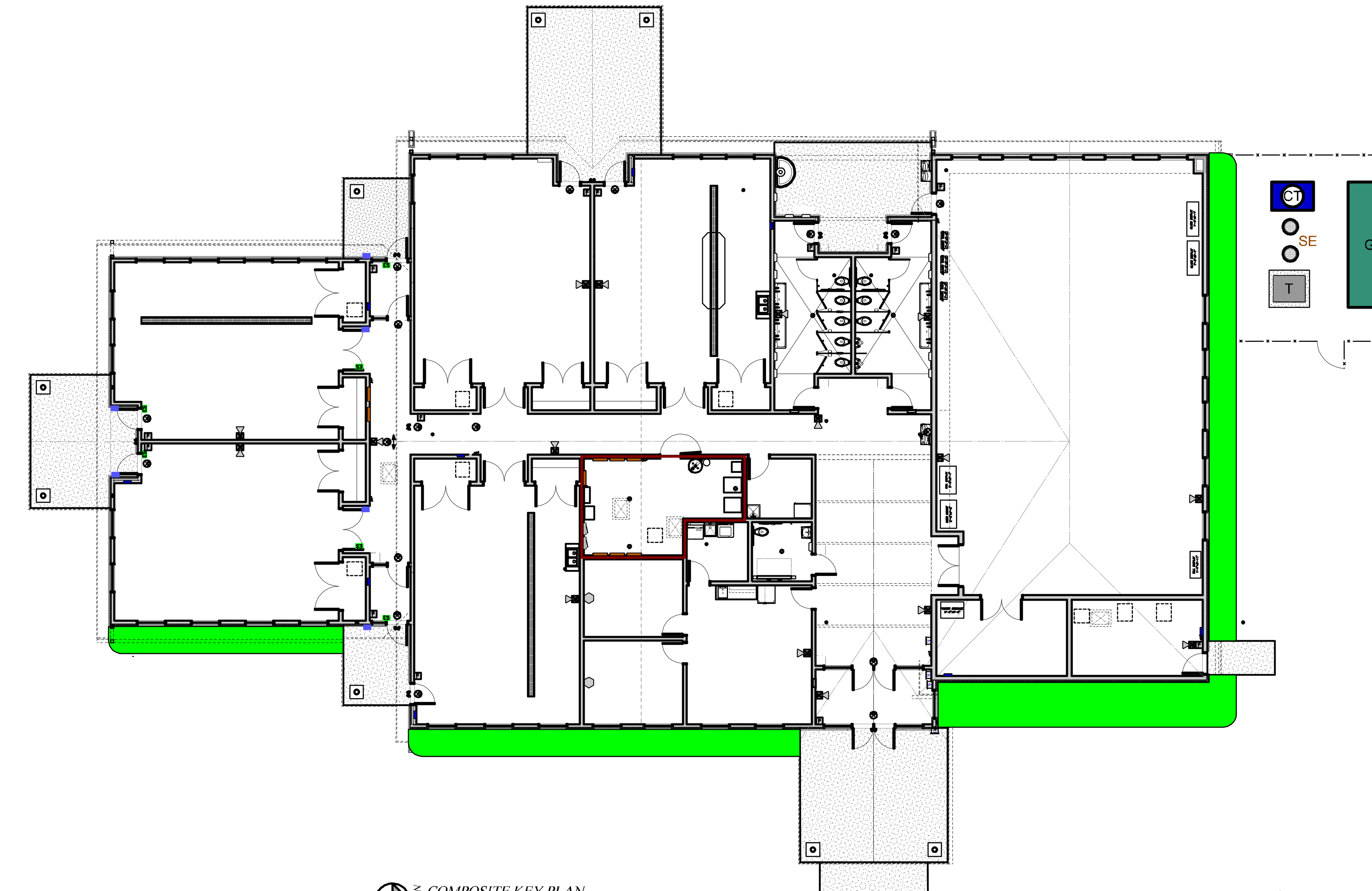
MARK	SIZE: Units	SIZE: Width	SIZE: Height	Anderson Model	FRAME: Type	FRAME: Material	Glass: Thickness	Glass: Material	Exit	Screen	Remarks
A	(1)	4'-8"	2'-4"	AAN4824	F	Wood	1"	Insul	No	Yes	
	(1)	4'-8"	2'-10"	AAN4834	AW	Wood	1"	Insul	No	No	
B	(1)	4'-8"	2'-4"	AAN4824	F	Wood	1"	Insul	No	Yes	See Note 12.
	(1)	4'-8"	2'-10"	AAN4834	AW	Wood	1"	Insul	No	No	
C	(1)	4'-8"	2'-4"	AAN4824	F	Wood	1"	Insul	No	Yes	
	(1)	4'-8"	2'-10"	AAN4834	AW	Wood	1"	Insul	No	No	
D	(1)	4'-8"	2'-4"	AAN4824	F	Wood	1"	Insul	No	Yes	
	(1)	4'-8"	2'-10"	AAN4834	AW	Wood	1"	Insul	No	No	
E	(1)	4'-8"	2'-4"	AAN4824	F	Wood	1"	Insul	No	Yes	
	(1)	4'-8"	2'-10"	AAN4834	AW	Wood	1"	Insul	No	No	
F	See Sheet A4.2 for Sizes				F	Wood	1"	Insul	No	No	

WINDOW SCHEDULE NOTES

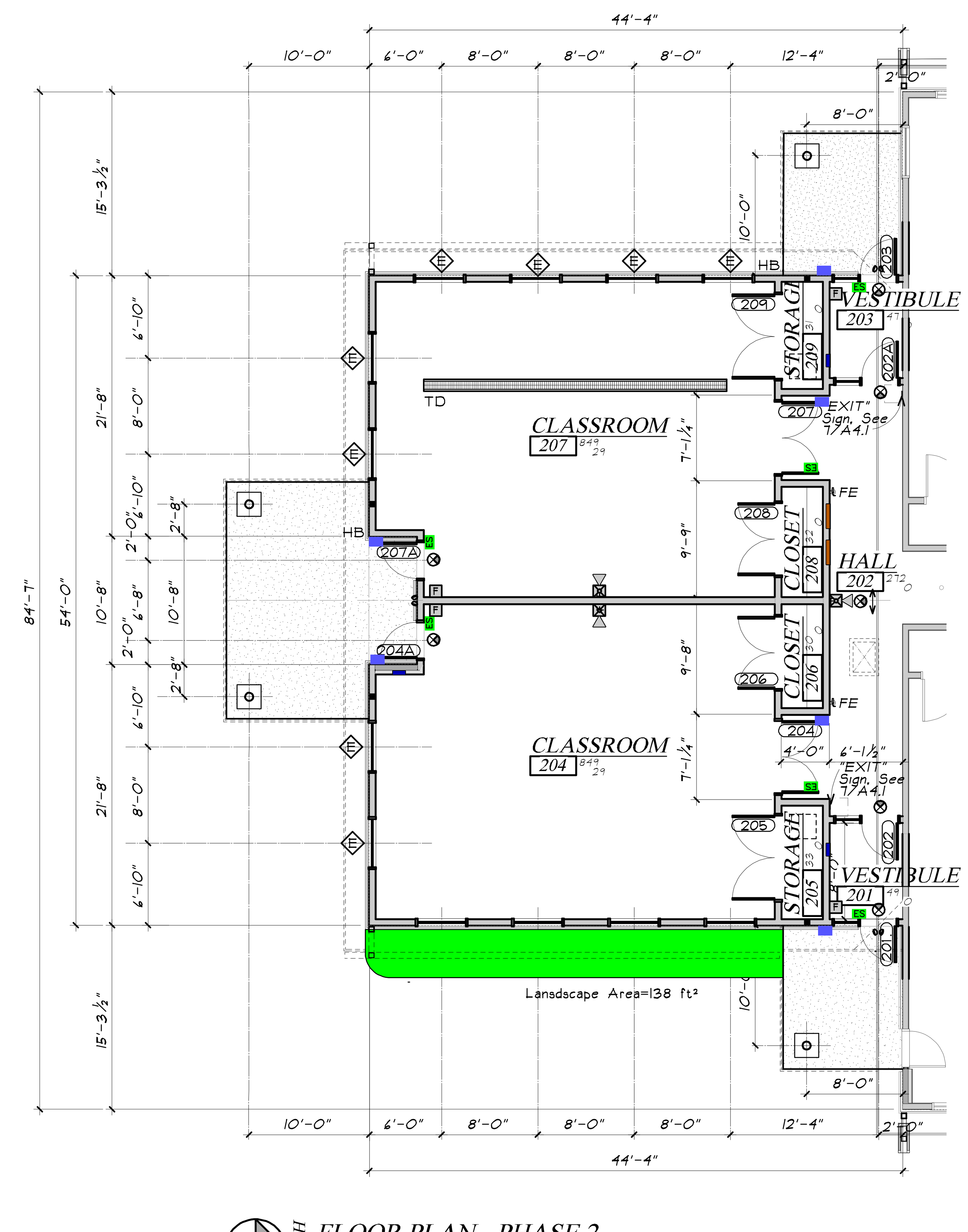
1 Basis of Design Windows shall be Anderson "A" Series Windows. Acceptable Alternate Manufacturers to incllude Marvind and Pella,
2 Window Size indicated nominal sash rough opening dimension. Verify with selected Manufacturer's standard sizes.
3 **Units** in the schedule indicate number of window units joined together to make the opening. Contractor shall verify and be responsible for total count of all openings.
4 Provide Screens for all operable units. Owner to advise on screens to install.
5 Glazing in Windows shall comply with 2021 MBC §2406 and CPSC 16 CFR 1201 and shall be Safety Glazing when in Hazardous Locaitons. Safety Glazing shall be properly lablel for iidentification.
6 All Windows shall have a U-Value of 0.35 or better, comply with 2021 Michigan Uniform Energy Code, Climate Zone 5A.
7 All windows shall have wood interior jambs, wrap extended jambs and head with 5/8" Gypsum Drywall as required for wall depth.
8 All windows shall have exterior Aluminum Cladding, color as selected by Owner.
9 See Section 08 80 00 for glass specifications.
10 Provide Corian Sills at all windows, extend 1/2" beyound face of drywall.
11 Provide 1x4 Exterior Board Trim around side, tiop and sill when not above stone waincscot.
12 Window note require if Phase 2 is awarded with Phase 1.

ABBREVIATIONS

AW = Awning lolwer, fixed above
F = Fixed
Insul 2 = Insulating / Double Pane Glass
Wood = Wood Framed, Aluminum Clad Exterior, Wood Jamb Interior



COMPOSITE KEY PLAN



FLOOR PLAN - PHASE 2
Scale: 1/8" = 1'-0"

ROGER L. DONALDSON, AIA P.L.C.
ARCHITECT

Forest Hills Nature Center
New Nature Center
11297 N Rich Rd
Seville Township, Gratiot County
Alma, Michigan 48801
PROJECT #24-43

FLOOR PLAN - PHASE 2, PLAN NOTES & DETAILS

SHEET TITLE

A1.2
SHEET NUMBER

ROGER L. DONALDSON, AIA P.L.C.
ARCHITECT

Member
U.S. Green Building Council
American Institute of Architects
Association of Licensed Architects
National Fire Protection Association
National Frame Builders Association
Construction Specifications Institute
International Conference of Building Officials
National Council of Architectural Registration Boards

Gratiot-Isabella RESD **May 6, 2026**

FOREST HILL N ATURE CENTER
11297 N. RICH ROAD
ALMA, MICHIGAN

Project #24-43

PRE BID WALK THROUGH

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Tom Stanley	Owen Ames Kimball	517-525-8660	TStanley@OAKM.com
Lary Sheffert	Denali Const	989-205-0094	denalilary@gmail.com
Eric Head	Three Rivers Corp	(989)-513-9770	ehead@trccorp.com
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Zach Yetsbrough	Yetsbrough Excavating & Trucking	(989) 387-5717	ZachYetsbrough@yetsbroughexcavating3.com
Matt Guidi	WIELAND	517-526-3732	mguidi@wielandbuilds.com

BIDS DUE AT GRATIOT ISABELLA RESD – WEDNESDAY MAY 20, 2026 2:00PM

4787 Tartan Lane • **Holt, Michigan 48842-1935**

(517) 694-0011 voice
RogerAIA@comcast.net e-mail

ROGER L. DONALDSON, AIA P.L.C.
ARCHITECT

Member
U.S. Green Building Council
American Institute of Architects
Association of Licensed Architects
National Fire Protection Association
National Frame Builders Association
Construction Specifications Institute
International Conference of Building Officials
National Council of Architectural Registration Boards

Gratiot-Isabella RESD **May 6, 2026**

FOREST HILL NATURE CENTER
11297 N. RICH ROAD
ALMA, MICHIGAN

Project #24-43

PRE BID WALK THROUGH

Name	Company	Phone	email
Contractors			
Kevin Zimmerman	C & R Electric	989-828-4020	Kevin@CandRelec.com
Jeff Rooksberry	Town + Country Group	813-481-4837	Jeff.Rooksberry@tcgroupinc.com
MAT VUSICH	BURFORD P+H	989-875-6601	burfordPH@gmail.com
Loren Cole	Gateway Refrigerat	9893863900	lorena@gw4yrct.com

BIDS DUE AT GRATIOT ISABELLA RESD – WEDNESDAY MAY 20, 2026 2:00PM

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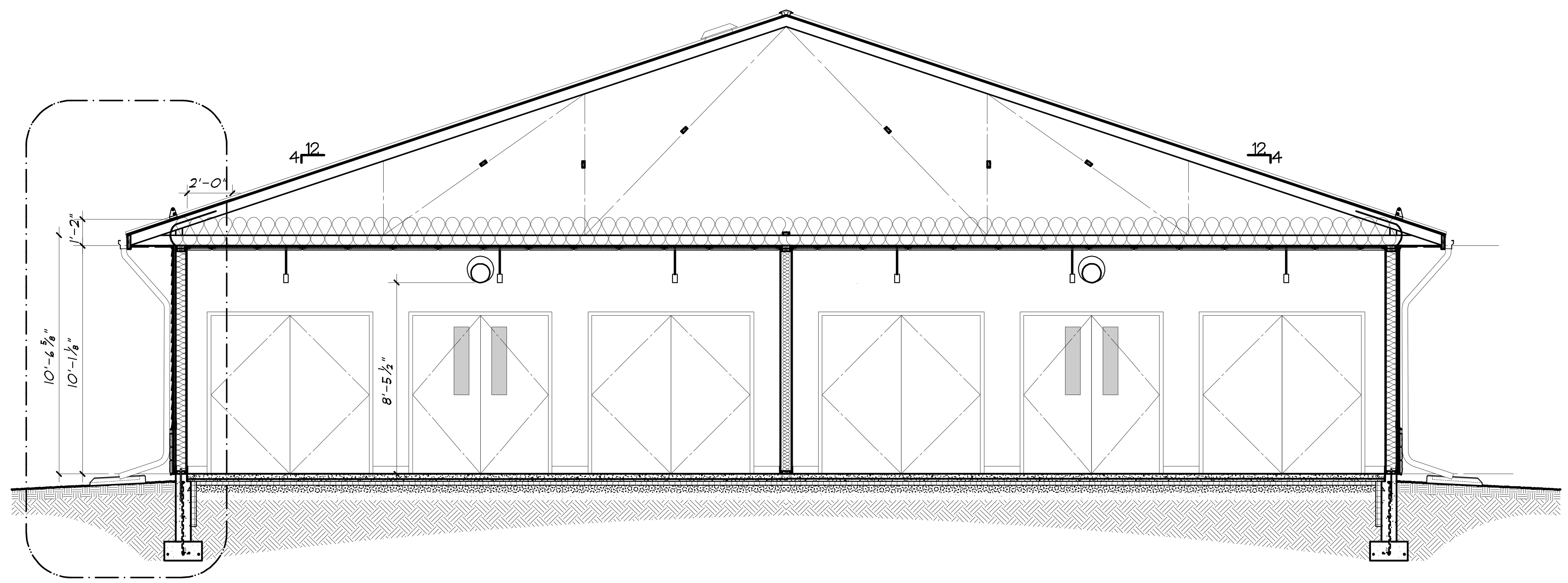
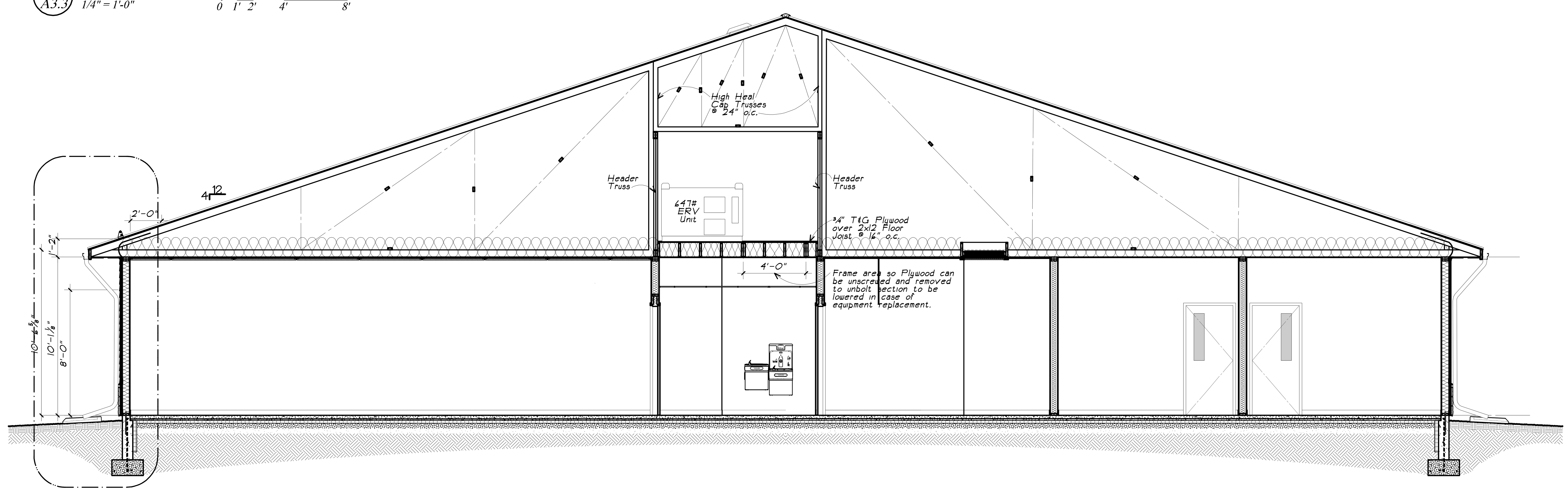


8
A3.3
BUILDING SECTION - PHASE 2
1/4" = 1'-0"
0 1' 2' 4' 8'



7
A3.3
BUILDING SECTION
1/4" = 1'-0"
0 1' 2' 4' 8'

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Forest Hills Nature Center
New Nature Center
11297 N Rich Rd
Seville Township, Gratiot County
Alma, Michigan 48801
PROJECT #24-43

MARK	DATE	DESCRIPTION
B ☒	05/13/2026	Issued/Reissued Addendum #1
CD	04/24/2026	Bidding and Plan Review
CD	03/11/2026	90% Owner Review
DD	10/24/2025	50% Review Set

Plot Date: 05/11/2026

BUILDING SECTIONS
SHEET TITLE

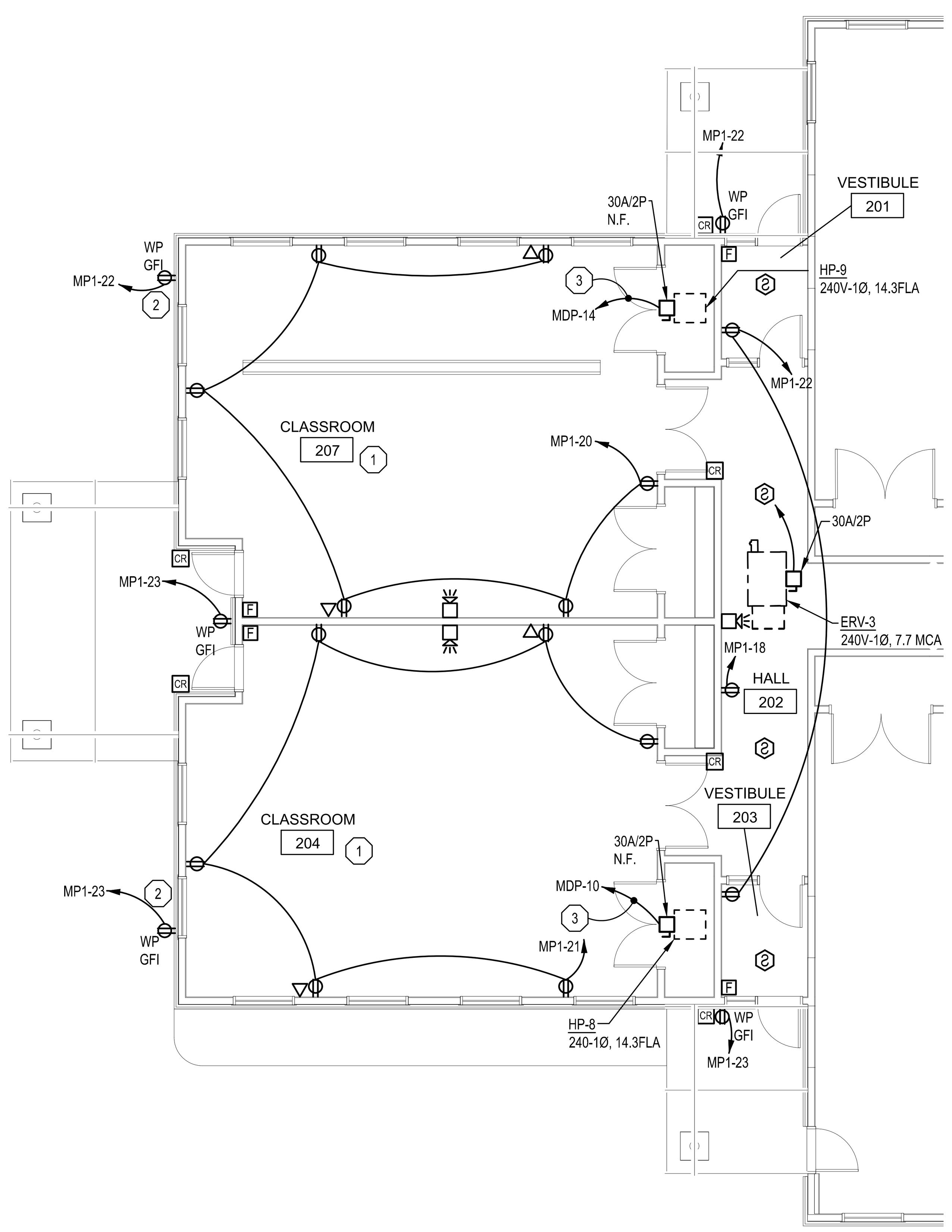
A3.3
SHEET NUMBER
FILE NO.
24-43 A200

ELECTRICAL KEY NOTES - PHASE 2

1. GENERAL RECEPTACLES SHALL BE SWITCHED WITH LIGHTING. REFER TO RECEPTACLE CONTROL DETAILS. PROVIDE POWERPACKS PER BRANCH CIRCUIT IN BREAKROOMS, OFFICES, AND CLASSROOMS AS REQUIRED.
2. CONTRACTOR SHALL INSTALL SPECIFIED RECEPTACLES ABOVE DECORATIVE STONE WAINSCOT.
3. (2) #10, (1) #10 GND, (1) 3/4" CND.

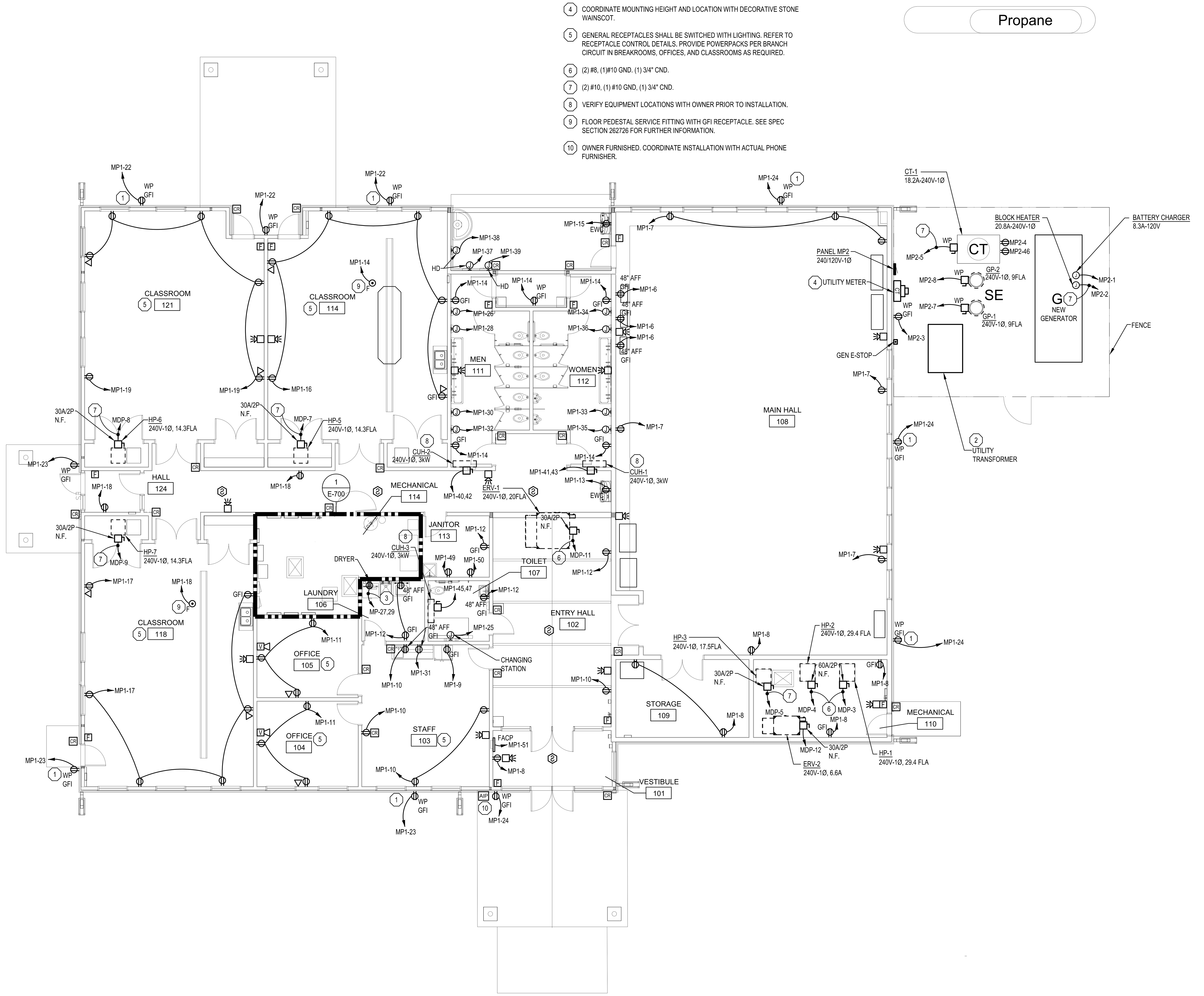
ELECTRICAL KEY NOTES - PHASE 1

1. CONTRACTOR SHALL INSTALL SPECIFIED RECEPTACLES ABOVE DECORATIVE STONE WAINSCOT.
2. COORDINATE FINAL LOCATION WITH LOCAL UTILITY COMPANY.
3. (3) #10, (1) #10 GND, (1) 3/4" CND.
4. COORDINATE MOUNTING HEIGHT AND LOCATION WITH DECORATIVE STONE WAINSCOT.
5. GENERAL RECEPTACLES SHALL BE SWITCHED WITH LIGHTING. REFER TO RECEPTACLE CONTROL DETAILS. PROVIDE POWERPACKS PER BRANCH CIRCUIT IN BREAKROOMS, OFFICES, AND CLASSROOMS AS REQUIRED.
6. (2) #8, (1)#10 GND. (1) 3/4" CND.
7. (2) #10, (1) #10 GND, (1) 3/4" CND.
8. VERIFY EQUIPMENT LOCATIONS WITH OWNER PRIOR TO INSTALLATION.
9. FLOOR PEDESTAL SERVICE FITTING WITH GFI RECEPTACLE. SEE SPEC SECTION 262726 FOR FURTHER INFORMATION.
10. OWNER FURNISHED. COORDINATE INSTALLATION WITH ACTUAL PHONE FURNISHER.



FLOOR PLAN - PHASE 2 - POWER NEW

SCALE: 1/8" = 1'-0"



FLOOR PLAN - PHASE 1 - POWER NEW

SCALE: 1/8" = 1'-0"

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MATRIX CONSULTING ENGINEERS, INC

CONSULTANT

Forest Hills Nature Center
New Nature Center
1297 N Rich Rd, Alma, MI 48801
Seville Township, Gratiot County
Alma, Michigan 48801

PROJECT #24-43

MARK	DATE	DESCRIPTION
CD	04/24/2026	Bidding and Plan Review
B	05/13/2026	SHEET RE-ISSUED

FLOOR PLAN – POWER NEW

SHEET TITLE

E-500

SHEET NUMBER

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ELECTRICAL SYMBOLS LEGEND

OUTLETS
- SINGLE RECEPTACLE (120 VOLT)
- DUPLEX RECEPTACLE
- EMERGENCY RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- F FLUSH FLOOR BOX
- S SURFACE FLOOR BOX
- SPECIAL EQUIPMENT RECEPTACLE
- TELEPHONE OUTLET
- DATA OUTLET
- TELEPHONE / DATA OUTLET
- PP POWER POLE
- J JUNCTION BOX
- J WALL JUNCTION BOX
- J PULL (JUNCTION) BOX
- UNDERFLOOR JUNCTION BOX
- CEILING MOUNTED WIFI

SWITCHES
- $ SINGLE-POLE SWITCH
- $3 THREE-WAY SWITCH
- $4 FOUR-WAY SWITCH
- $P SWITCH WITH PILOT LIGHT
- $TO THERMAL OVERLOAD SWITCH
- $M MANUAL MOTOR SWITCH
- $K KEY SWITCH
- $T TIME SWITCH
- D DIMMER SWITCH

MECHANICAL
- SINGLE PHASE MOTOR
- THREE PHASE MOTOR
- RESISTANCE HEATER, KW SHOWN
- PIPE TRACE HEATER
- EH ELECTRIC UNIT HEATER
- WH ELECTRIC WATER HEATER

NURSE CALL
- NCC NURSE CALL CONTROLLER
- M MASTER STATION
- P EMERGENCY PULL STATION
- E EMERGENCY PUSH STATION
- CB CODE BLUE STATION
- A PENDENT INTERFACE
- L BED / LIGHT INTERFACE
- B1 SINGLE BED STATION
- B2 DUAL BED STATION
- DOME LIGHT
- SRS STAFF REGISTER STATION
- S STAFF STATION
- DS DUTY STATION

DESIGNATIONS
- DEMOLITION NOTE
- PLAN NOTE
- ADDENDUM NOTE

FIXTURES
- LIGHT FIXTURE
- STRIP FIXTURE
- EMERGENCY LIGHT FIXTURE
- IN-GRADE LIGHT FIXTURE
- SPOTLIGHT (number of heads shown)
- EXIT SIGN (face & direction as shown)
- WALL MOUNT LIGHT FIXTURE
- CEILING LIGHT FIXTURE
- TRACK & FIXTURE
- STREET TYPE POLE FIXTURE
- POLE MOUNTED LIGHT FIXTURE
- EXTERIOR WALL MOUNT LIGHT FIXTURE
- WALLPACK LIGHT FIXTURE
- SPECIAL PURPOSE LIGHT FIXTURE
- HIGH BAY LIGHT FIXTURE
- EMERGENCY EGRESS LIGHT FIXTURE (number of heads shown)
- DOCK LIGHT FIXTURE

CIRCUITRY and RACEWAYS
- CONDUIT INSTALLED(by E.C.)
- CONDUIT INSTALLED(by others)
- CONDUIT STUB UP
- CONDUIT STUB DOWN
- 1,3 HOME RUN (with circuit numbers)
- END OF CONDUIT RUN
- END OF CONDUIT RUN, CAP AND STAKE
- "CONDUIT RUN CONTINUES" INDICATION
- OR FLEXIBLE PIGTAILS/CONNECTIONS
- WM WIREMOLD AS SPECIFIED
- PM PLUGMOLD AS SPECIFIED
- BD BUS DUCT
- UFD UNDERFLOOR DUCT

SOUND and SIGNAL
- S SPEAKER
- WALL MOUNTED SPEAKER
- WALL MOUNTED SPEAKER / CLOCK COMBO
- SINGLE FACE CLOCK
- DUAL FACE CLOCK
- VI VIDEO INPUT
- AV AUDIO / VIDEO INPUT
- BELL
- V VOLUME CONTROL
- B BUZZER
- CHIME
- TELEVISION OUTLET
- M MICROPHONE OUTLET
- I INTERCOM OUTLET
- C CAMERA
- DC DOOR CONTACT
- M MOTION DETECTOR
- B BEAM DETECTOR
- KP KEY PAD
- SSCP SECURITY SYSTEM CONTROL PANEL
- CCTV CCTV CONTROL PANEL
- CR CARD READER
- SS STUDENT STATION
- AS ADMINISTRATION STATION
- TS TEACHER STATION
- G GLASS BREAK
- AIP AI PHONE

SERVICE and EQUIPMENT
- TVSS TRANSIENT VOLTAGE SURGE SUPPRESSION
- VFD VARIABLE FREQUENCY DRIVE
- T TRANSFORMER
- FUSED DISCONNECT SWITCH
- MAGNETIC STARTER
- COMB. STARTER
- PANELBOARD, SURFACE MOUNTED
- PANELBOARD, FLUSH MOUNTED
- WEATHERHEAD
- UTILITY METER, AS REQUIRED
- DIGITAL EQUIPMENT METER, AS REQUIRED
- CT CURRENT TRANSFORMERS
- G GENERATOR, KW SHOWN
- TT TELEPHONE TERMINAL BOARD
- GROUND CONNECTION PER N.E.C.
- WW WIREWAY
- TS TRANSFER SWITCH
- ENCLOSED CIRCUIT BREAKER
- CAPACITOR

CONTROL
- T THERMOSTAT
- H HUMIDISTAT
- PC PHOTOCELL (voltage as required)
- TC TIME CLOCK (24 hour U.O.N.)
- 3 PUSHBUTTON STATION (number of buttons indicated)
- CONTROL TRANSFORMER
- LIGHTING CONTACTOR
- IRRIGATION CONTROLLER (120 volt xxVA connection by x/C)
- DS1 WALL MOUNT DUAL TECHNOLOGY SENSOR
- OS2 OCCUPANCY SENSOR / PHOTOCELL
- OS3 ULTRASONIC SENSOR - 360° - 2 CIRCUIT
- OS4 DUAL TECHNOLOGY SENSOR - 360° - 1000 SQ FT
- OS5 DUAL TECHNOLOGY SENSOR - 360° - 500 SQ FT
- OC SWITCH STYLE OCCUPANCY SENSOR
- PP POWER PACK
- $T DIGITAL TIME SWITCH

FIRE ALARM
- SMOKE DETECTOR
- HEAT DETECTOR
- DUCT SMOKE DETECTOR
- F/S DUCT SMOKE DETECTOR
- HORN
- HORN & LIGHT
- SPEAKER
- SPEAKER & LIGHT
- F PULL STATION
- FACP FIRE ALARM CONTROL PANEL
- ANN ANNUNCIATOR PANEL
- EOL END OF LINE DEVICE
- REMOTE INDICATING LIGHT, WALL MTD.
- REMOTE INDICATING LIGHT, CLG. MTD.
- MAGNETIC DOOR HOLDER
- FC FIREFIGHTER COMMUNICATION JACK
- F FLOW SWITCH (furnished by FP/C)
- TAMPER SWITCH (furnished by FP/C)
- V VISUAL ONLY UNIT
- FCPS FIRE CONTROL POWER SUPPLY
- M MONITOR MODULE
- C CONTROL MODULE
- CO CARBON MONOXIDE DETECTOR

GENERAL ELECTRICAL NOTES:

1. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE, NEC, AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT AND CONNECTIONS WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL AND EQUIPMENT DRAWINGS.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL POWER, CONDUITS, CABLETRAY, AND OTHER COMPONENTS AS SHOWN ON THE EQUIPMENT PROVIDER DRAWINGS FOR INSTALLATION OF SYSTEM.
4. "BACK TO BACK" OR THROUGH THE WALL BOXES SHALL NOT BE USED.
5. INSTALL HANDLE LOCK-ON, ON ALL CIRCUIT BREAKERS CONTROLLING NIGHT LIGHT, EMERGENCY LIGHT AND EXIT LIGHT CIRCUITS.
6. ALL RECEPTACLES SHALL BE HARD USE, SPECIFICATION GRADE.
7. PROVIDE TAMPER RESISTANT RECEPTACLES WHERE REQUIRED BY APPLICABLE CODES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER TYPE SHALL BE MOUNTED IN AN ACCESIBLE LOCATION, PER CODE OR PROVIDED WITH A GFCI BREAKER.
9. ALL CONDUCTORS SHALL BE COPPER. ALUMINUM WIRES SHALL NOT BE USED.
10. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR POWER FEEDS AND 1" FOR DATA FEEDS.
11. FINAL CONNECTION TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT.
12. 120/208VAC CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
13. PROVIDE EQUIPMENT GROUNDING CONDUCTORS FOR ALL POWER AND LIGHTING CIRCUITS.
14. ALL LIGHTING AND POWER CONDUCTORS SHALL BE 12 AWG MINIMUM. ALL CONTROL CONDUCTORS SHALL BE 14 AWG MINIMUM OR AS SPECIFIED BY MANUFACTURER.
15. DEDICATED NEUTRAL SHALL BE PROVIDED FOR ALL CIRCUITS. SHARED NEUTRALS ARE NOT ALLOWED.
16. BASIS OF DESIGN IS FOR A COMPLETE ELECTRICAL SYSTEM, INSTALLED PER CODE REQUIREMENTS.
17. PROVIDE AN UNSWITCHED HOT TO ALL EMERGENCY BATTERY PACKS, LIGHTING INVERTERS AND EMERGENCY LIGHTING UNITS AHEAD OF AN LIGHTING CONTROLS FROM THE BRANCH CIRCUIT SERVING LIGHTING IN THE SURROUNDING AREA.
18. ALL RECEPTACLES IN GARAGE AREA SHALL BE MOUNTED AT 48" AFF UNLESS OTHERWISE NOTED.

ABBREVIATIONS LEGEND

A	AMPS
AC	ABOVE COUNTER
ACU-	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU-	AIR HANDLING UNIT
AIC	AMPS INTERRUPTING CAPACITY
AS	ABOVE SHELF
ATS	AUTOMATIC TRANSFER SWITCH
B-	BOILER
BC	BELOW COUNTER
BLDG	BUILDING
CHLR-	CHILLER
CND (C)	CONDUIT
CKT	CIRCUIT
CKT BKR	CIRCUIT BREAKER
CT-	COOLING TOWER
CU-	CONDENSING UNIT
CUH-	CABINET UNIT HEATER
DFU-	DUCT FURNACE
DISC	DISCONNECT
DWG	DRAWING
DWH-	DOMESTIC WATER HEATER
EBB-	ELECTRIC BASEBOARD
EC	ELECTRICAL CONTRACTOR
EF-	EXHAUST FAN
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EXIST./EX.	EXISTING
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONDUIT
FLR	FLOOR
FLUOR	FLUORESCENT
FSES	FOOD SERVICE EQUIP. SUPPLIER
F/S	FIRE/SMOKE
FU-	FURNACE
GC	GENERAL CONTRACTOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
H-	HUMIDIFIER
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
HP	HORSEPOWER
HR	HOUR
HVAC	HEATING/VENTILATING/AIR CONDITIONING
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
LC	LIGHT CONTROL
LT	LIGHT
LTG	LIGHTING
LT FLEX	LIQUID TIGHT FLEXIBLE METAL CONDUIT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
MIN	MINIMUM
MLO	MAIN LUG ONLY
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MUAU-	MAKE-UP AIR UNIT
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	POLE
P-	PUMP
PB	PULL BOX
PNL	PANEL
PRV-	POWER ROOF VENTILATOR
PVC	POLY VINYL CLORIDE
PWR	POWER
RECEPT	RECEPTACLE
RGC	RIGID GALVANIZED STEEL CONDUIT
RTU-	ROOF TOP UNIT
SF-	SUPPLY FAN
SPEC	SPECIFICATIONS
SW	SWITCH
SWBD	SWITCHBOARD
TCC	TEMPERATURE CONTROL CONTRACTOR
TR	TAMPER PROOF RECEPTACLE
TS	TAMPER PROOF SWITCH
TYP	TYPICAL
UF	UNDER FLOOR
UH-	UNIT HEATER
UL	UNDERWRITERS' LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VL	VERIFY LOCATION WITH OWNER
W	WATTS
W/	WITH
W/O	WITHOUT
WP	WEATHER PROOF
XFMR	TRANSFORMER

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NO.	DESCRIPTION AND COMMENTS	DIMMING INFO	FIXTURE MOUNTING HEIGHT	LIGHT ENGINE
LA	LITHONIA ELITE OR EQUAL -	CSS-L48-ALO3-MVOLT-MIN10-ZT-40K-80CRI OEC4-LED-3000L/4000L/5000L-DIM10-MVOLT-25K/40K/50K-85 - -	4' SURFACE MOUNTED LINEAR FIXTURE. - - -	0-10V	SURFACE MOUNTED	3000 LUMENS 25W, 4000K LED
LAEM	LITHONIA ELITE OR EQUAL -	CSS-L48-ALO3-MVOLT-MIN10-ZT-40K-80CRI-E10W OEC4-LED-3000L/4000L/5000L-DIM10-MVOLT-25K/40K/50K-85-O-EMG-LED -	4' SURFACE MOUNTED LINEAR FIXTURE WITH 10W EMERGENCY BATTERY PACK. - - -	0-10V	SURFACE MOUNTED	3000 LUMENS 25W, 4000K LED
LB60	MARK ARCHITECTURAL PINNACLE OR EQUAL -	S2PID-60FT-MSL8-80CRI-40K-600LMF-I80CRI-I40K-I300LMF-MIN1 -FLL-MVOLT-NLTAIR2-APIR-SAPIR EX2DI-A-HE-840HO-840-60-ACXJB-U-OL5-1-W-SNSLM -	60' SUSPENDED LINEAR FIXTURE WITH DIRECT/INDIRECT LIGHTING AND INTEGRATED SENSORS. PROVIDE REQUIRED SUSPENSION MOUNTING HARDWARE. - -	0-10V	REFER TO FLOOR PLAN	42000LUMENS 396W, 4000K LED
LBEM	MARK ARCHITECTURAL PINNACLE OR EQUAL -	S2PID-XXFT-MSL4-80CRI-40K-600LMF-I80CRI-I40K-I300LMF-MIN1 -FLL-MVOLT-1E10WLCP-NLTAIR2-APIR-SAPIR EX2DI-A-HE-840HO-840-XX-ACXJB-U-OL5-1-W-FSB-SNSLM -	4' SUSPENDED LINEAR FIXTURE WITH DIRECT/INDIRECT LIGHTING, INTEGRATED SENSORS, AND 10W EMERGENCY BATTERY PACK. PROVIDE REQUIRED SUSPENSION MOUNTING HARDWARE. -	0-10V	REFER TO FLOOR PLAN	900LUMENS/FT 6.6W/FT, 4000K LED
LC	MARK ARCHITECTURAL PINNACLE OR EQUAL -	S2PID-XXFT-MSL8-80CRI-40K-400LMF-I80CRI-140K-I300LMF-MIN1 -FLL-MVOLT-NLTAIR2-APIR-SAPIR EX2DI-A-HE-840-840-XX-ACXJB-U-OL5-1-W-SNSLM -	SUSPENDED LINEAR FIXTURE WITH DIRECT/INDIRECT LIGHTING AND INTEGRATED SENSORS. COORDINATE FIXTURE RUN LENGTH WITH FLOORPLAN. PROVIDE REQUIRED SUSPENSION MOUNTING HARDWARE. -	0-10V	8'-6" AFF	700LUMENS/FT 5.1W/FT, 4000K LED
LCEM	MARK ARCHITECTURAL PINNACLE OR EQUAL -	S2PID-XXFT-MSL4-80CRI-40K-400LMF-I80CRI-140K-I300LMF-MIN1 -FLL-MVOLT-1E10WLCP-NLTAIR2-APIR-SAPIR EX2DI-A-HE-840-840-XX-ACXJB-U-OL5-1-W-FSB-SNSLM -	4' SUSPENDED LINEAR FIXTURE WITH DIRECT/INDIRECT LIGHTING, INTEGRATED SENSORS AND 10W EMERGENCY BATTERY PACK. PROVIDE REQUIRED SUSPENSION MOUNTING HARDWARE. -	0-10V	8'-6" AFF	700LUMENS/FT 5.1W/FT, 4000K LED
LD	MARK ARCHITECTURAL PINNACLE OR EQUAL -	SL2L-XXFT-FLP-80CRI-40K-400LMF-MIN1-MVOLT-NLTAIR2-API EV1D-A-HE-840-XX-G1-U-FSD-1-W - -	RECESSED LINEAR FIXTURE WITH INTEGRATED OCCUPANCY SENSORS. COORDINATE FIXTURE RUN LENGTH WITH FLOORPLAN. - -	0-10V	RECCESSED	400LUMENS/FT 3.14W/FT, 4000K LED
LDEM	MARK ARCHITECTURAL PINNACLE OR EQUAL -	SL2L-XXFT-FLP-80CRI-40K-400LMF-MIN1-MVOLT-NLTAIR2-API -1E10WLCP EV1D-A-HE-840-XX-G1-U-FSD-1-W-FSB -	4' RECESSED LINEAR FIXTURE WITH INTEGRATED SENSORS AND 10W EMERGENCY BATTERY PACK. - -	0-10V	RECCESSED	400LUMENS/FT 3.14W/FT, 4000K LED
LE	MARK ARCHITECTURAL PINNACLE OR EQUAL -	WHSPR-LCTR-2X4-80CRI-40K-3000LM-MIN1-MVOLT-SWC- NLTAIR2-PIR TR24-W-G9-U-OL2-1-W -	RECESSED 2X4 TROFFER WITH INTEGRATED SENSORS - - -	0-10V	RECCESSED	3000 LUMENS 21W, 4000K LED
LEEM	MARK ARCHITECTURAL PINNACLE OR EQUAL -	WHSPR-LCTR-2X4-80CRI-40K-3000LM-MIN1-MVOLT-SWC-E10W NLTAIR2-PIR TR24-W-G9-U-OL2-1-FSB-W -	RECESSED 2X4 TROFFER WITH INTEGRATED SENSORS AND 10W EMERGENCY BATTERY PACK. - -	0-10V	RECCESSED	3000 LUMENS 21W, 4000K LED
LF	MARK ARCHITECTURAL PINNACLE OR EQUAL -	S2SD-LLP-XXFT-80CRI-40K-600LMF-SCT-MIN1-FLL-MVOLT- NLTAIR2-APIR EV1D-A-HE-840HO-XX-G1-U-FSD-1-W-FSB -	4' SURFACE MOUNTED LINEAR FIXTURE WITH INTEGRATED OCCUPANCY SENSORS. - - -	0-10V	SURFACE	600LUMENS/FT 4.7W/FT, 4000K LED
LFEM	MARK ARCHITECTURAL PINNACLE OR EQUAL -	S2SD-LLP-XXFT-80CRI-40K-400LMF-SCT-MIN1-FLL-MVOLT- E10WLCP-NLTAIR2-APIR EV1D-A-HE-840HO-XX-G1-U-FSD-1-W-FSB -	4' SURFACE MOUNTED LINEAR FIXTURE WITH INTEGRATED OCCUPANCY SENSORS AND 10W EMERGENCY BATTERY PACK. - -	0-10V	SURFACE	600LUMENS/FT 4.7W/FT, 4000K LED
LG	LITHONIA H.E. WILLIAMS OR EQUAL -	LDN6-40/10-LO6-MVOLT-GZ1 6DR-L10-8-40-DIM-UNV-O-M-CS - -	6" LED DOWNLIGHT - - -	0-10V	RECESSED	1000 LUMENS 9W, 4000K LED
LH	LUMENPULSE OR EQUAL - -	LATSM2-A-120-L07-40K-CR90-MFR - - -	LED TRACK LIGHTING - - -	0-10V	SURFACE	700 LUMENS 7W, 4000K LED
LI	LUMENWERX PINNACLE OR EQUAL -	VIAWETS-D-PYC-HLO-SW-90CRI-500LMF-27K-4FT-UNV-D1 EX3-WET-N-827-XX-BOR-S-U-FSD-1 - -	SURFACE MOUNTED WET RATED FIXTURE - - -	0-10V	SURFACE	2000 LUMENS 23W, 2700K LED
LJ	HYDREL OR EQUAL - -	WANDER3-SRM-P2-90CRI-27K-MVOLT-MW-12BCK-ZT-BL - - -	EXTERIOR WALLPACK. 2700K COLOR TEMPERATURE FOR OUTDOOR USE. - - -	0-10V	BUILDING MOUNTED	1806 LUMENS 21W, 4000K LED
LL	LITHONIA OR EQUAL - -	LDN6-27/10-LO6-MVOLT-GZ1 - - -	6" LED DOWNLIGHT. 2700K COLOR TEMPERATURE FOR OUTDOOR USE. - - -	0-10V	RECESSED	1000 LUMENS 9W, 4000K LED
XA	LITHONIA OR EQUAL - -	LQM-S-3-G-MVOLT-EL-HO - - -	LED EXIT SIGN WITH BLACK FACE AND GREEN LETTERING - - -	0-10V	UNIVERSAL	LED
XB	LITHONIA OR EQUAL - -	ERE-GY-T-SQ-WP - - -	LED BATTERY POWERED EXTERIOR EM LIGHTING - - -	0-10V	UNIVERSAL	LED

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CONSULTANT

Forest Hills Nature Center
New Nature Center
1297 N Rich Rd, Alma, MI 48801
Seville Township, Gratiot County
Alma, Michigan 48801

PROJECT #24-43

MARK	DATE	DESCRIPTION
CD	04/24/2026	Bidding and Plan Review
B	05/13/2026	SHEET RE-ISSUED
CD		
CD		
CD		
CD		

ELECTRICAL-SYMBOLS, NOTES, AND ABBREVIATIONS

SHEET TITLE

E-100

SHEET NUMBER

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