

LONGVIEW SCHOOL DISTRICT HEAT PUMP REPLACEMENT AND INDOOR AIR QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98632

LONGVIEW SCHOOL DISTRICT

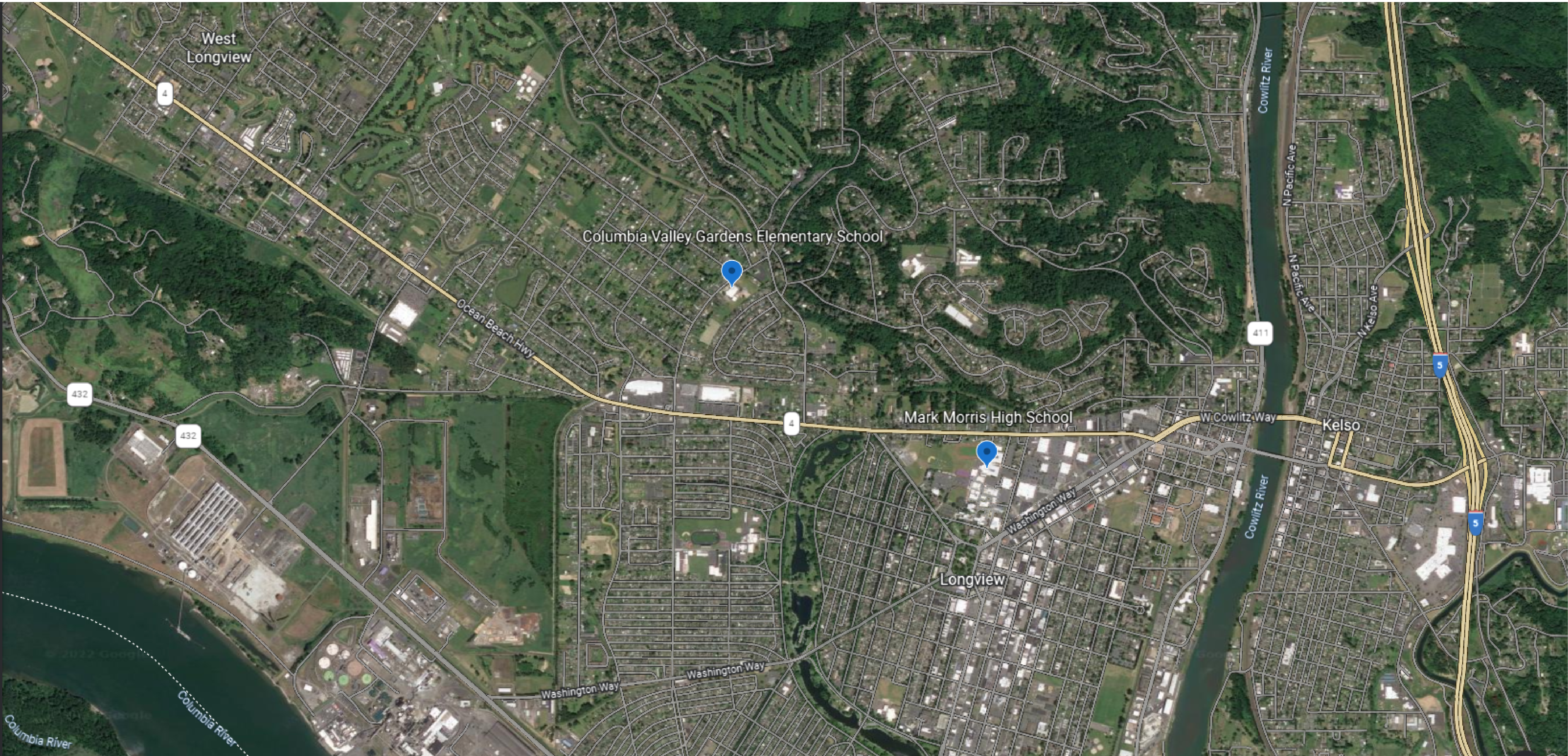
BID SET

INTEGRUS PROJECT NO. 22220.00
OWNER PROJECT NO. 2023-01



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GENERAL STRUCTURAL NOTES

These notes shall govern unless otherwise noted in the drawings. Refer to written specifications for further requirements and amplification of these notes.

Codes
International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction.
Project Jurisdiction: City of Longview, State of Washington.

Design Loads
Reference code: ASCE/SEI 7-16, Minimum Design Loads for Buildings and Other Structures.

Dead Loads

Roof	
Roof - A4 Building	15 psf (superimposed)
Roof - Vocational, Original	28 psf (superimposed)
Roof - Vocational, 1977 addition	14 psf (superimposed)

Mechanical Equipment

- Actual operating weight is by manufacturer.
- Weight indicated on drawings is the maximum design load.
- Notify Architect/Engineer if the manufacturer's operating weight of the equipment provided exceeds the maximum design load, prior to installation of the equipment.

Live Loads
(live load reduction is applied as allowed by the reference code)

Roof	
Typical Roof	20 psf

Handrails/Guardrails	
Assembly	200 lbs at any point, in any direction or 50 lbs/ft along top rail in any direction

Snow

Ground snow load	Pg = 20 psf
Calculated flat roof snow load	PF = 22 psf
Minimum flat roof snow load	PI = 25 psf
Importance factor (snow)	Is = 1.1
Snow exposure factor	Ce = 1.0
Thermal factor	Ct = 1.0
Other Surcharges	per reference code
Unbalanced loads	per reference code

Wind

Basic wind speed (3 second gust)	V = 85 mph
Exposure Category	B
Importance factor (wind)	Iw = 1.15
Topographical Factor	Kzt = 1.0
Directional Coefficient	Kd = 0.85
Gust Effect Factor	G = 0.85
Internal pressure coefficient	Gcp = 0.18
Minimum Net Uplift	16 psf

Earth

Reference IBC Table 1806.2 - Presumptive Load-Bearing Values	
Allowable Bearing Pressure	1,500 psf (Class 5)
Passive resistance	100 pcf

Refer to drawings for additional loads

- CONSTRUCTION LOADS**
- Reference code: ASCE/SEI 37-14, Design Loads on Structures During Construction
 - The structure represented in these drawings has been designed to resist vertical and lateral loads prescribed by the reference code in its final constructed condition. The sequence of construction is the responsibility of the general contractor. All loads experienced by the structure due to the incomplete nature of the structure are the sole responsibility of the general contractor. The general contractor must design and provide temporary shoring and bracing until the final built condition, as shown in these drawings, is achieved.
 - The structure represented in these drawings has not been designed to resist vertical and lateral loads imparted by construction equipment. All loads experienced by the structure while supporting construction equipment are the sole responsibility of the general contractor. The general contractor must design and provide temporary shoring and bracing where required to support construction equipment.
 - Where temporary shoring or bracing is required, retain the services of a structural engineer registered in the project jurisdiction to design and detail the bracing of that equipment for the gravity and lateral forces prescribed by the reference code. Submit the stamped and signed design documents to the project jurisdiction as a deferred submittal for approval prior to performing the work.

FOUNDATION

Reference Codes

- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction, Chapter 18

Strength

Reference IBC Table 1806.2 - Presumptive Load-Bearing Values

Allowable soil bearing pressure	1,500 psf (Class 5)
Passive equivalent fluid pressure	100 pcf

Coordination

- Coordinate grading and excavating requirements with civil/landscape drawings. Foundations are designed to bear on undisturbed native soils or compacted structural fill, as described in the Geotechnical Report, over undisturbed native soils.

- Execution**
- Footing excavations should be cleaned of all loose soil, leveled, and protected from water and construction traffic.
 - Refer to geotechnical report and follow recommendations specific to wet weather earthwork.
 - Refer to geotechnical report and follow recommendations specific to temporary cut slopes.

- Submittals**
- Suitability of soils for bearing is as described in the geotechnical report. Soil bearing surfaces must be observed and approved by the geotechnical engineer of record prior to pouring foundation concrete. Submit the written field report by the geotechnical engineer of record to the Architect/Engineer for approval.

GENERAL CONDITIONS

- TYPICAL CONDITIONS**
- Typical details are not referenced at all locations for which they apply and may not be referenced at all. Details located on typical detail sheets represent the method of construction to be used at all locations, unless otherwise indicated in the drawings.

- EXISTING CONDITIONS**
- Diagrams and dimensions of the existing conditions are provided for reference only. The general contractor must verify all dimensions and existing conditions prior to commencing work in the area of that existing condition. Notify the Architect/Engineer of any discrepancy prior to fabrication and execution of the work in the area of the discrepancy.
 - Fully coordinate with demolition plans and architect to identify location and extent of structural and non-structural elements to be removed. Where there is a discrepancy between the demolition plans and the structural drawings describing the final built condition, contact the Engineer prior to fabrication and execution of the work in the area of the discrepancy.
 - Coordinate with the owner's representative to minimize disruption to the owner's operation and to provide building user and worker safety.
 - Coordinate with the owner's representative on approval for excessive noise and vibration during hours of building operation.
 - For all existing building materials and equipment to remain, provide protection from damage due to construction operations performed under this contract.
 - Any walls, floors, ceilings and/or equipment damaged as a result of construction operations, shall be repaired or replaced to match existing finish and condition.
 - Where walls, floors, or ceilings are removed only for the purpose of accessing an area of work in this contract, replace the walls, floors, and ceilings to match the original condition. Material and finishes for new walls, floors, and ceilings shall match surrounding surfaces unless noted otherwise. Maintain rating or replace with construction of the same rating at all existing fire and smoke rated construction.
 - Verify and maintain the location of existing plumbing, power, communications and data cables so as to not interrupt the continuity of their services, unless noted otherwise.
 - Leave all areas of work broom and dust clean at hard surfaces and vacuum clean at carpeted surfaces.

- DEMOLITION**
- Refer to demolition drawings for the extent and requirements of demolition work. Coordinate location and extent of demolition work with the structural drawings to achieve the final built condition described therein. Notify Architect/Engineer of any discrepancies between the structural, architectural and demolition drawings prior to control built demolition.
 - The general contractor shall be responsible for the sequences of demolition, for providing all temporary shoring and bracing as needed to safely resist all loads which the existing structure may experience during demolition.
 - Where temporary shoring or bracing is required, retain the services of a structural engineer registered in the project jurisdiction to design and detail the bracing of that equipment for the gravity and lateral forces prescribed by the reference code. Submit the stamped and signed design documents to the project jurisdiction as a deferred submittal for approval prior to performing the work.
 - Repair or replace any structural elements damaged during demolition to match the strength, quality, and appearance of the existing condition. Retain the services of a structural engineer registered in the project jurisdiction to design the repair or replacement of a damaged element wherever the strength and quality of the existing element is not evident. Submit the stamped and signed design documents to the project jurisdiction as a deferred submittal for approval prior to performing the work.
 - Sawcut existing concrete and masonry walls at least 1" deep on both faces of wall, all around new openings, prior to removal of material. Do not overcut at corners.
 - Remove all demolition materials from the site unless otherwise noted and dispose of it in a legal manner.

- COORDINATION**
- The written specifications and the drawings of the architectural, mechanical, electrical and civil/landscape disciplines are to be used in conjunction with the structural drawings for bidding and construction.
 - Dimensions for some secondary elements such as windows, doors, walls and floor edges are located only in the architectural drawings. Shop drawing production for structural elements will require dimensional information contained in both the architectural and structural drawings. All requests for dimensions in shop drawing submittals will be referred to the general contractor.
 - The contractor shall coordinate dimensions and conditions between the drawings (including the architectural, mechanical, electrical and civil/landscape disciplines), the specifications, and the site conditions prior to fabrication and construction. Notify Architect/Engineer in writing of any discrepancies in dimensions or conditions found prior to fabricating and executing work in the area of the discrepancy. Architect/Engineer will respond in writing according to the provisions of the general conditions found in the specifications. Any related work performed by the contractor between the discovery of the discrepancy and receipt of the Architect's/Engineer's written response will be done at the contractor's risk.
 - Where the bracing of mechanical, plumbing, fire-suppression and/or electrical equipment is not specifically detailed in the mechanical, plumbing, fire-protection and/or electrical drawings or specifications, retain the services of a structural engineer registered in the jurisdiction of this project to design and detail the bracing of that equipment for the gravity and lateral forces prescribed by the governing building code. Submit the stamped and signed design documents to the project jurisdiction as a deferred submittal for approval prior to performing the work.
 - Where the bracing of ceilings and other architectural elements is not specifically detailed in the architectural drawings or specifications, retain the services of a structural engineer registered in the jurisdiction of this project to design and detail the bracing of those elements for the gravity and lateral forces prescribed by the governing building code. Submit the stamped and signed design documents to the project jurisdiction as a deferred submittal for approval prior to performing the work.
 - Provide coordination drawings showing all anticipated penetrations through the structural elements shown in these drawings. No penetrations through structural elements shall be allowed unless already indicated in the structural drawings or approved in writing by the structural engineer.

- SUBMITTALS**
- Construction utilizing any given material shall not occur until the approved submittals for that material are received from the Architect/Engineer.

REINFORCING

- Reference Codes**
- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction
 - ACI 318-14, Building Code Requirements for Structural Concrete
 - ACI 301-10, Specification for Structural Concrete
 - TMS 402/602-16, Building Code Requirements and Specification for Masonry Structure
 - AWS D1.4/D1.4M-18, Structural Welding Code - Steel Reinforcing Bars

Strength

Deformed Bars (new billet stock)	ASTM A615	Fy = 60 ksi
Weldable Deformed Bars	ASTM A706	Fy = 60 ksi
Epoxy Coated Deformed Bars	ASTM A775	Fy = 60 ksi
Plain Welded Wire Fabric (electrically welded)	ASTM A165	Fy = 60 ksi

Fiber reinforced concrete shall conform to ACI Report 544.1R. Follow manufacturer's recommended mix quantity, but use no less than 1.58/cu yd.

- CONCRETE**
- Reference Codes**
- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction, Chapter 19
 - ACI 301-10, Specification for Structural Concrete
 - ACI SP66 (04), ACI Detailing Manual
 - ACI 318-14, Building Code Requirements for Structural Concrete

Strength

Provide concrete mix design in accordance with ACI 301, and meeting the requirements of the CONCRETE MIX DESIGN TABLE.

- Coordination**
- Conduits embedded within slabs, walls or beams shall be placed between rebar mats where double mats occur. The outside diameter of the conduit shall be smaller than 1/4 x the member thickness and shall be spaced greater than 4 x the conduit outside diameter.
 - Coordinate reinforcing steel placement details with structural embeds and embeds specified in other disciplines. Utilize templates for placing steel in congested areas.
 - No concrete work shall be penetrated for piping or ducts, unless shown in the drawings or approved by the Engineer in writing.

- Execution**
- Provide bar supports as required in the contract documents. Concrete dobies shall be minimum 4000 psi with cast-in double annealed 16 ga iron wires for tying. Wire chairs shall have Class 1 plastic tips.
 - Provide cover as shown in drawings, with a minimum cover as required by the CONCRETE REINFORCING COVER TABLE.
 - Provide rebar splice lengths as shown in the drawings, with a minimum splice as required by the CONCRETE REINFORCING SPLICE TABLE.
 - Camber concrete forms as shown plus deflection due to the weight of wet concrete.
 - One-way slabs shall be cambered 1/1000 of the span, unless noted otherwise on the drawings. Cambers of less than 1/8" may be neglected.
 - Air Content and Slump shall be measured at the truck discharge or at the end of the pump, wherever concrete is pumped. Slump shall be within +/-1/2" of slump specified in the approved mix design submittal.
 - The reinforcement into the correct positions using double annealed 16 ga iron wire. Use wire chairs at maximum 36 inch spacing in formed construction and concrete dobies at maximum 24 inch spacing at concrete cast against grade or rigid insulation to elevate the rebar into the designated positions and to maintain the required concrete cover.
 - Cold Bend bars as noted in drawings to radius specified in ACI 315. Bend bars one time only.
 - Trim bars may be omitted when the opening dimensions are less than the rebar spacing, for opening less than 12"x12". Relocate all interrupted rebar along one side of the opening and place an identical bar on the opposite side of the opening. Alternatively, where the interrupted bar is within 3" of opening edge, rebar may be sprung around the opening with no additional rebar required on the opposite side of the opening.
 - Provide 3/4" chamfer at all exposed concrete edges, unless noted otherwise.

- Submittals**
- Mix Designs meeting or exceeding the requirements of the CONCRETE MIX DESIGN TABLE must be submitted to and approved by the Engineer prior to use. Provide mix designs which correspond to anticipated placement requirements and finish conditions. Deviation from the specified mix design must be demonstrated to be in accordance with ACI 318, Chapter 26 and must be submitted a minimum of two weeks prior to use for approval by the Engineer, with a written explanation of the reason for deviating from the specified mix design. Approval of deviation from the specified mix design is at the discretion of the Engineer.
 - Provide coordinated shop drawings with 1/4" scale elevations of all walls with all reinforcing, openings, structural embeds, and embedded items from other disciplines, all shown in conjunction and dimensioned relative to a common datum. Before submitting shop drawings for structural review, Mechanical and Electrical contractors must mark size and locations of all required penetrations and embeds on wall elevations.
 - Provide certification to show that all rebar welders hold a current WABO certification and are qualified according to AWS D1.4 for all weld sizes and positions required.
 - Slab-on-Grade control joints shown in plan are schematic. Contractor shall provide control joint layout submittal to Engineer for approval showing all control joints that will be provided, conforming to the maximum joint spacing allowed.

CONCRETE REINFORCING COVER TABLE						
Location		Size		Cover		
Cast against and permanently exposed to earth		All		3"		
Exposed to earth or weather		#5 or smaller		1 1/2"		
Interior Wall Faces		#6 or larger		2"		
		#11 or smaller		3/4"		
Slab-on-Grade cast against vapor barrier		#14 and #18		1 1/2"		
		#11 or smaller		1" (see note 1)		
Elevated Slabs		#14 and #18		1 1/2"		
Interior Frames - Beams and Columns (to Ties, Spirals, or stirrups)		#11 or smaller		1" (see note 1)		
		#14 and #18		1 1/2"		
Exterior Frames - Beams and Columns (to Ties, Spirals, or stirrups)		All		2" (see note 2)		

- Notes:**
- Can be 3/4 for 1-hour fire - refer to code plan.
 - Can be 1 1/2 for less than 4-hour fire rating, unless exposed to earth or weather - refer to code plan.

WOOD

- Reference Codes**
- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction, Chapter 23
 - West Coast Lumber Inspection Bureau Standard Grading Rules for West Coast Lumber No. 16, latest edition
 - ANSI/AWC NDS-2018, National Design Specification (NDS) for Wood Construction, with 2018 Supplement
 - ANSI/AWC SDPWS-2015, Special Design Provisions for Wind and Seismic

Strength

2x Joists and Built-Up Members	Douglas Fir-Larch No. 2
2x & 4x Beams and Posts	Douglas Fir-Larch No. 2
2x Wall Studs	Douglas Fir-Larch No. 2
4x Studs and Plates	Douglas Fir-Larch No. 2
Misc. Light Framing	Douglas Fir-Larch No. 2
T&G Decking	Douglas Fir Commercial Grade

Design

- Where required by the drawings, design premanufactured wood joist, trusses and connections to resist construction and building loads described in these documents.

- Coordination**
- Structural walls are those shown in the structural drawings. Refer to architectural drawings for non-structural walls, partitions and soffits.

- Execution**
- Provide ASTM A307 bolts, unless noted otherwise.
 - Provide standard washers at all bolt heads and nuts.
 - All exterior bolts, nuts and washers shall be galvanized.
 - Provide nails conforming to "Common" specification ASTM F1667.
 - Timber connectors called out by letters and numbers shall be by Simpson Strong Tie Company, Inc. Provide fasteners of the size required by the manufacturer, in each hole.
 - All wood plates, ledgers, and blocking in direct contact with concrete or masonry shall be pressure treated with an American Wood Preservers Association (AWPA) approved preservative. Alternatively per IBC section 2304.11, for some exceptions, impervious moisture barriers may be provided between untreated members and concrete or masonry.
 - All metal fasteners in contact with treated wood shall be G-90 galvanized or stainless steel. When using galvanized fasteners, the contractor shall coordinate the galvanization process with the chemical composition of the wood treatment.
 - At all joints: provide cross-bridging at 8'-0" on center maximum. Provide solid blocking or continuous rim at all bearing points. Provide solid blocking under all bearing walls above.
 - Provide double joint under all parallel partitions that extend over more than half the joist length. Provide double joints each side of all openings in floors and roofs unless detailed otherwise. Coordinate size and location of all openings with architectural and Mechanical drawings.
 - Provide two 2x10 headers over and double studs each side of all openings in stud bearing walls unless noted otherwise.
 - Provide solid blocking at floors for wood columns and multiple stud posts to pass through.
 - Provide continuous solid blocking at mid-height of all stud walls over 10'-0" in height.
 - All stud walls unless noted otherwise shall be 2x4 at 16 inches on center at interior walls and 2x6 at 16inches on center at exterior walls.
 - Use full-length studs (balloon frame) on exterior walls at stairways and at vaulted ceilings.
 - All wood stud walls shall have lower wood plates attached to wood framing below with 16d nails at 6 inches on center, staggered or bolted to concrete with 5/8 inch diameter anchor bolts at 4'-0" on center unless noted otherwise on the plans. All anchor bolts shall have 3 x3 x 0.225 inch plate, washers and minimum embedment of 7 inches in concrete.
 - Plywood wall sheathing shall have solid blocking at all edges. Provide the following minimum nailing unless noted otherwise on plans:
 - 10d at 16 inches on center at sheath edge.
 - 10d at 12 inches on center at intermediate bearing points.
 - Where fasteners sizes and/or patterns are not noted, reference IBC Table 2304.10.1 for additional information.

- Submittals**
- All designs required to be provided by the manufacturer shall include drawings and calculation, stamped and signed by an engineer registered to work in the jurisdiction of this project.

WOOD STRUCTURAL PANELS

- Reference Codes**
- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction, Chapter 23

Strength

Plywood sheathing shall be grade Structural I.

Exterior glue up shall be in conformance with the building code, United States Voluntary Product Standards PS-1 or PS-2.

- Execution**
- Stagger panel end joints.
 - Provide approved edge clips at 24 inches on center at unblocked roof and floor sheathing edges.
 - Provide 1/8 inches gap between all abutting panel edges.
 - Provide the following minimum nailing unless noted otherwise on plans:
 - 10d at 6 inches on center at all supported panel edges.
 - 10d at 12 inches on center field nailing.
 - Where replacing damaged existing roof decking and/or sheathing, provide sheathing to match thickness of existing deck/sheathing build-up.

GLUED-LAMINATED TIMBER (GLULAM)

- Reference Codes**
- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction, Chapter 23
 - ANSI/APA A190.1-2017, Standard for Wood Products - Structural Glued Laminated Timber
 - ASTM D3737
 - ANSI/AWC NDS-2018, National Design Specification (NDS) for Wood Construction, with 2018 Supplement

Strength (unless noted otherwise in drawings)

Glulams Douglas Fir Combination 24F-V8

- Coordination**
- All Glulams are architectural grade where exposed to view, unless noted otherwise.
 - Locate AITC identification mark where it will not be exposed to view in the finished building.

- Execution**
- Camber all glulams to a 2,000 foot radius unless noted otherwise. Install glulams with positive camber up. No camber on cantilever glulams or glulams that are continuous over supports.
 - Provide fasteners and connections according to "WOOD" section of these notes.

- Submittals**
- Provide shop drawings, detailing all framing members and connections.
 - Keep AITC certificate of conformance on file for all glulam members.

MASONRY VENEER

- Reference Codes**
- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction, Chapter 21
 - TMS 402/602-16, Building Code Requirements and Specification for Masonry Structures

- Execution**
- Provide wire type seismic veneer ties, spaced at 16" on center horizontal and 16" on center vertical per typical detail and specifications
 - Where veneer is not laid in running bond joint reinforcement is required. See Masonry Veneer specification
 - Provide galvanized steel angles over all openings in masonry veneer per typical detail

FASTENERS

- Execution**
- At repetitive fasteners, place end fasteners no more than 6" from the end of the member
 - For PDF's penetrating a steel substance, use 0.1570 PDF with length fully penetrating the base material thickness, unless the base material thickness is greater than 3/4". For base material thickness 3/4" and thicker, the PDF shall have 3/4" embedment
 - Locate fasteners according to the drawings and with the following minimum edge distance and spacing, unless noted otherwise:

Fastener	Typical size, UNO	Substrate	Min Edge Dist.	Min Spacing
Powder Driven	0.1570 x 1 long	Concrete	3"	4"oc
Powder Driven	0.1570 x Note 2	Steel	1 1/2"	1 1/2"oc
Self-Tapping Screw	1/40 x 1 3/4 long	Concrete	2 1/2"	3"oc
Self-Tapping Screw	1/40 x 1 3/4 long	Steel	1 1/2"	1 1/2"oc

BOLTS/RODS

- Reference Codes**
- AISC, Specification for Structural Joints Using ASTM A325 or A490 Bolts.

Strength

Erection Bolts in Steel	ASTM A307, Snug Tight
All other Bolts in Steel	ASTM F1852, Twist-off Tension Control Bolts
All Bolts in Wood	ASTM A307
Anchor Rods	ASTM F1554, Grade 55
Threaded Rods	ASTM A36
Hardener Steel Washers	ASTM F436
Nuts	ASTM A563, Heavy Hex Nuts

- Execution**
- Place hardened steel washers between nuts and slotted or oversized holes.
 - All high-strength bolts shall be installed, tightened, and inspected in accordance with the AISC Specification for Structural Joints using ASTM A325 Bolts. The criteria for slip critical connections shall apply to all connections, unless noted as snug tight.
 - Use galvanized bolts, rods and washers wherever used in exterior applications and wherever connecting galvanized steel elements.

- Submittals**
- Include anchor rod setting templates with all base plate shop drawings.

STRUCTURAL STEEL

- Reference Codes**
- International Building Code (IBC), 2018 edition, as adopted and amended by the project jurisdiction, Chapter 22
 - AISC 360-16, Specifications for Structural Steel Buildings
 - AISC 341-16, Seismic Provisions for Structural Steel Buildings.

Strength

WT Shapes, WT Shapes	ASTM A592 or A513, Gr 50	Fy = 50 ksi
Angles, Channels	ASTM A36	Fy = 36 ksi
HSS Square Structural Tube	ASTM A500, Gr C	Fy = 50 ksi
HSS Rectangular Structural Tube	ASTM A500, Gr C	Fy = 50 ksi
HSS Round Structural Tube	ASTM A500, Gr C	Fy = 46 ksi
Steel Pipe	ASTM A53, Gr B	Fy = 35 ksi
All other Steel Shapes	ASTM A572 or A588	Fy = 50 ksi
All Steel Plate, UNO	ASTM A572 or A588	Fy = 50 ksi
Steel Plate Designated as 36 ksi	ASTM A36	Fy = 36 ksi

- Plates 2" thick and thicker, that are part of the Lateral Force Resisting System, shall have a minimum Charpy V-notch toughness of 20 ft-lb at 70 degrees F, measured at any location permitted by ASTM A673.
- Hot rolled shapes that are part of the Lateral Force Resisting System shall have a minimum Charpy V-notch toughness of 20 ft-lb at 70 degrees F, tested in the alternate core location as described in ASTM A6.

Coordination

- Refer to architectural drawings for dimensions required for the location of steel elements including, but not limited to, framing around window and door openings, top of parapet and bottom of soffit elevations, wall locations, and edge of deck dimensions.

- Execution**
- The corners of continuity plates and stiffeners placed in the webs of rolled shapes that are part of the Lateral Force Resisting System shall be drilled according to AISC 341 Commentary F3.5b.4 and AWS D1.8 Commentary Section 4.
 - Weld access holes shall comply with the requirements of AISC 360, Section J1.6.
 - Provide N-Bearing 3/4" diameter bolts through horizontal short slotted holes at beam shear connections, unless noted otherwise.
 - Where connection is not accessible to Twist-off Bolt Guns, provide A325 Bolts with load indicator washers.
 - All exterior exposed structural steel shall be galvanized, unless noted otherwise.
 - Unless otherwise noted, beams are equally spaced between dimension points.
 - The Contractor shall be responsible for all erection aids and joint preparations.
 - The Contractor shall be responsible for compliance with all current OSHA requirements.
 - Modification to the structural steel, including holes and copes, shall not be made in the field without prior approval of the Engineer.

- Submittals**
- Shop drawings shall include the following information relative to the Lateral Force Resisting System:
 - Designate all members and connections that are part of the Lateral Force Resisting System.
 - Designate all shop welds that are Demand Critical.
 - Designate and dimension all protected zones.
 - Include welding requirements as specified in AWS D1.8.

WELDS

- Reference Codes**
- AWS D1.1/D1.1M-15, Structural Welding Code - Steel
 - AWS D1.3-08, Structural Welding Code - Sheet Steel
 - AWS D1.4/D1.4M-18, Structural Welding Code - Steel Reinforcing Bars
 - AWS D1.6-01/8M-16, Structural Welding Code - Seismic Supplement
 - AISC 341-16, Seismic Provisions for Structural Steel Buildings

- Strength**
- Electrodes: Minimum yield strength = 70 ksi for all weld processes
- Where welds are designated as demand critical, they shall be made with a filler metal capable of providing a minimum Charpy V-notch toughness of 20 ft-lb at 70 degrees F as determined by the appropriate AWS classification test method or manufacturer certification, and a minimum Charpy V-notch toughness of 40 ft-lb at 70 degrees F per AWS D1.8.
 - All other weld used in members and connections in the Lateral Force Resisting System shall be made with a filler metal that can produce welds that have a minimum Charpy V-notch toughness of 20 ft-lb at 0 degrees F, as determined by the appropriate AWS AS classification test method or manufacturer certification.

- Execution**
- Welding shall be performed in accordance with a welding procedure specification (WPS) as required in AWS D1.1. The WPS variables shall be within the parameters established by the filler metal manufacturer.
 - Field welding symbols have not necessarily been indicated on the drawings. Where no field welding symbols are shown, it is the Contractor's responsibility to coordinate the use of shop and field welds.

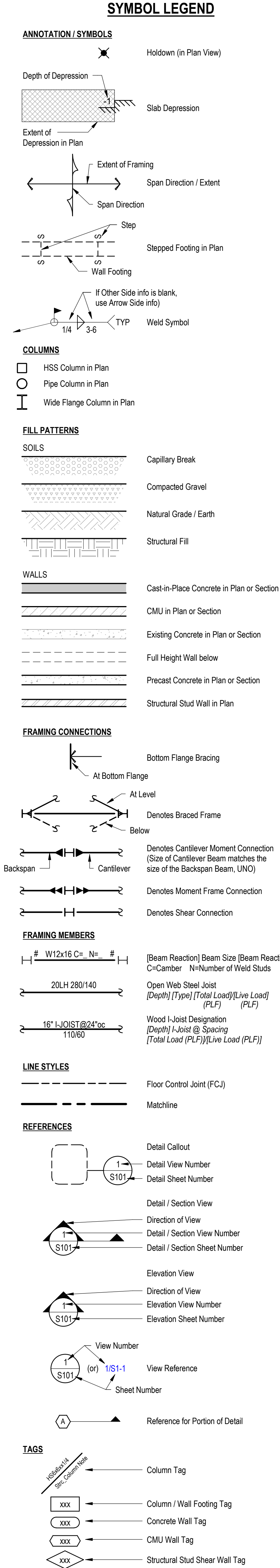
- Submittals**
- All welders shall be AWS or WABO certified. Provide certification that each welder is qualified per AWS D1.1 for each position and weld type that the welder will perform.
 - Provide written Welding Procedure Specifications adhering to AWS D1.1 as well as the following:
 - Type of power source (constant current or constant voltage)
 - Manufacturer and trade name of electrodes used in Demand Critical welds
 - Manufacturer's certification of notch toughness requirements for electrodes used in Demand Critical welds.

SHEET LIST

S2-1	STRUCTURAL GENERAL NOTES
S2-2	STRUCTURAL GENERAL NOTES
S2-3	MARK MORRIS - A4 BUILDING PLANS AND DETAILS
S2-4	MARK MORRIS - VOCATIONAL BUILDING PLANS AND DETAILS
S2-5	DETAILS AND SECTIONS

- Lengths shown are for reinforcing satisfying the following spacing and cover dimensions (multiply lengths shown by 1.5 if these requirements are satisfied):
 - walls and slabs - clear cover > db &

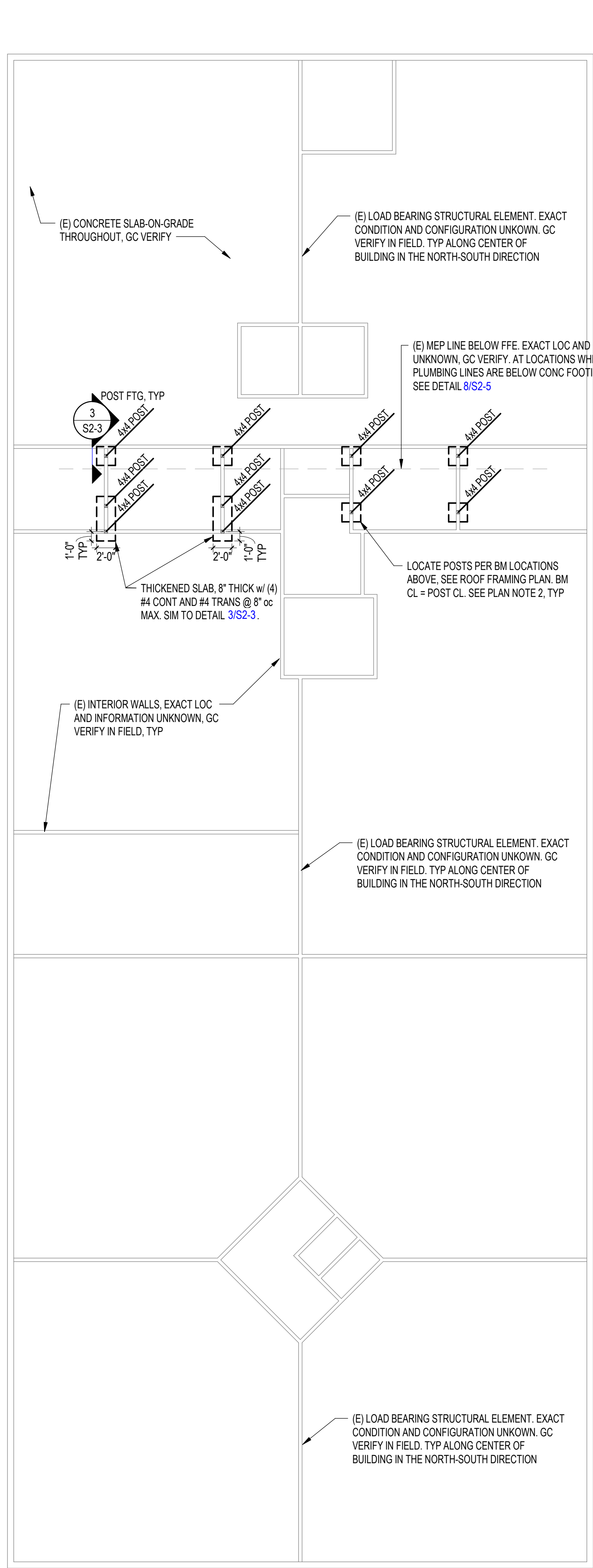
ABBREVIATIONS		ABBREVIATIONS	
*Code References		I	
ACI	AMERICAN CONCRETE INSTITUTE	IN	INCH, INCHES
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	INCL	INCLUDED, INCLUDING
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	INSUL	INSULATION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	INT	INTERIOR
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	IP	INTERLOCKING PUNCH
AWS	AMERICAN WELDING INSTITUTE	J	JOIST
CRSI	CONCRETE REINFORCING STEEL INSTITUTE	JT, JTS	JOINT, JOINTS
IBC	INTERNATIONAL BUILDING CODE	K	KIP
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS	k, KIP	KILOPOUND
ICC-ES	ICC EVALUATION SERVICE	ksi	KIPS PER SQUARE INCH
UBC	UNIFORM BUILDING CODE	L	ANGLE or LENGTH
WABO	WASHINGTON ASSOCIATION OF BUILDING OFFICIALS	LAT	LATERAL
WPS	WELDING PROCEDURES SPECIFICATIONS	LF	LINEAR FOOT
*MISC		LFRS	LATERAL FORCE RESISTING SYSTEM
-	DEGREE	LL	LONGITUDINAL
±	PLUS OR MINUS	LIN	LINEAR
Ø	DIAMETER	LL	LIVE LOAD
A		LLH	LONG LEG HORIZONTAL
AB	ANCHOR BOLT	LLV	LONG LEG VERTICAL
ADD	ADDENDUM	LOC	LOCATION
ADDL	ADDITIONAL	LSH	LONG SLOTTED HOLE
ADH	ADHESIVE	LSL	LAMINATED STRAND LUMBER
ADJ	ADJACENT	LVL	LAMINATED VENEER LUMBER
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	M	
AFF	ABOVE FINISH FLOOR	MAX	MAXIMUM
AHU	AIR HANDLING UNIT	MC	MISCELLANEOUS CHANNEL
ALT	ALTERNATE	MECH	MECHANICAL
ANCH	ANCHOR, ANCHORAGE	MEP	MECHANICAL, ELECTRICAL, PLUMBING
APPROX	APPROXIMATE	MEZZ	MEZZANINE
AR	ANCHOR ROD	MF	MOMENT FRAME
ARCH	ARCHITECT, ARCHITECTURAL	MFR	MANUFACTURER
B		MIN	MINIMUM
BAL	BALANCE	MISC	MISCELLANEOUS
BF	BRACED FRAME	N	
BLDG	BUILDING	N-GROUT	NON-SHRINK GROUT
BLKG	BLOCKING	NLB	NON-LOAD BEARING
BM	BEAM	NS	NEAR SIDE
BOD	BOTTOM OF DECK	NTS	NOT TO SCALE
BOF	BOTTOM OF FOOTING, FOUNDATION	O	
BOS	BOTTOM OF STEEL	OC	ON CENTER
BOT	BOTTOM	OD	OUTSIDE DIAMETER
BP	BASE PLATE	OPNG	OPENING
BRB	BUCKLING RESTRAINED BRACE	OPP	OPPOSITE
BRG	BEARING	OSB	ORIENTED STRAND BOARD
BTWN	BETWEEN	OWJ	OPEN WEB JOIST
C		P	
(c)	COLLECTOR	PAF	POWDER ACTUATED FASTENERS
C	CAMBER or CHANNEL	PERIM	PERIMETER
CANT	CANTILEVER	PERP	PERPENDICULAR
CIP	CAST-IN-PLACE	PJP	PARTIAL JOINT PENETRATION
CJ	CONTROL JOINT	PL	PLATE
CJP	COMPLETE JOINT PENETRATION	PLF	POUNDS PER LINEAL FOOT
CL	CENTERLINE	PLYWD	PLYWOOD
CLR	CLEAR, CLEARANCE	PREFAB	PREFABRICATED
CMU	CONCRETE MASONRY UNIT	PRELIM	PRELIMINARY
COL	COLUMN	PSF	POUNDS PER SQUARE FOOT
COMP	COMPOSITE or COMPRESSION	PSI	POUNDS PER SQUARE INCH
CONC	CONCRETE	PSL	PARALLEL, STRAND LUMBER
CONN	CONNECTION	PT	POINT, POST TENSION
CONT	CONTINUOUS	Q	
CONTR	CONTRACTOR	QTY	QUANTITY
COORD	COORDINATE	R	
CTR	CENTER, CENTERED	REF	REFERENCE
D		REINF	REINFORCE(D), (ING), (MENT)
d	PENNY (NAIL)	REQD	REQUIRED
D&E	DRILL AND EPOXY	REV	REVISION, REVISED
DBA	DEFORMED BAR ANCHOR	S	
DBL	DOUBLE	SCHED	SCHEDULE
DC	DEMAND CRITICAL	SECT	SECTION
DEMO	DEMOLISH, DEMOLITION	SEF	SQUARE FOOT
DIA	DIAMETER	SHTG	SHEATHING
DIAG	DIAGONAL	SIM	SIMILAR
DIAPH	DIAPHRAGM	SOG	SLAB ON GRADE
DIM	DIMENSION	SPA	SPACING
DL	DEAD LOAD	SPEC	SPECIFICATION
DTL	DETAIL	SQ	SQUARE
DWG, DWGS	DRAWING, DRAWINGS	SS	STAINLESS STEEL
DWL, DWLS	DOWEL, BOWELS	SSH	SHORT SLOTTED HOLE
E		STD	STANDARD
EA	EACH	STGD	STAGGERED
EF	EACH FACE	STIFF	STIFFENER
EL, ELEV	ELEVATION	STL	STEEL
ELECT	ELECTRICAL	STRUCT	STRUCTURAL
EMBED	EMBEDMENT	SYM	SYMMETRICAL
ENGR	ENGINEER	T	
EOD	EDGE OF DECK	T&B	TOP AND BOTTOM
EOS	EDGE OF SLAB	T&G	TONGUE AND GROOVE
EQU	EQUAL	TEMP	TEMPERATURE, TEMPORARY
EQUIP	EQUIPMENT	THRD	THREAD, THREADED
ES	EACH SIDE	TO	TOP OF
EW	EACH WAY	TOB	TOP OF BEAM
EXIST, (E)	EXISTING	TOC	TOP OF CONCRETE
EXP	EXPANSION	TOF	TOP OF FOOTING
EXT	EXTERIOR	TOP	TOP OF PARAPET
F		TOS	TOP OF STEEL
FCJ	FLOOR CONTROL JOINT	TOW	TOP OF WALL
FDN	FOUNDATION	TRA	THREADED ROD IN ADHESIVE ANCHOR
FFE	FINISH FLOOR ELEVATION	TRANS	TRANSVERSE
FIN	FINISH	TYP	TYPICAL
FLR	FLOOR	U	
FO	FACE OF	UNO	UNLESS NOTED OTHERWISE
FRMG	FRAMING	UT	ULTRASONIC TEST
FS	FAR SIDE	V	
FT	FOOT, FEET	VERT, V	VERTICAL
FTG	FOOTING	VIF	VERIFY IN FIELD
G		W	
GA	GALUGE, GAGE	W, WF	WIDE FLANGE
GALV	GALVANIZED	W	WITH
GC	GENERAL CONTRACTOR	W/O	WITHOUT
GLB	GLUE LAMINATED BEAM	WCJ	WALL CONTROL JOINT
GR	GRADE, GRADING	WO	WOOD
GWB	GYPSUM WALL BOARD	WF	WIDE FLANGE
H		WP, WPT	WORKING POINT
HAS	HEADED ANCHOR STUD	WS	WELD STUD
HCP	HOLLOW CORE PLANK	WT	WEIGHT or STRUCTURAL TEE CUT FROM WY SECTION
HDR	HEADER	WWF	WELDED WIRE FABRIC
HORIZ, H	HORIZONTAL	X	
HSS	HOLLOW STRUCTURAL SECTION	XS	EXTRA STRONG
HT	HEIGHT	XXS	DOUBLE EXTRA STRONG



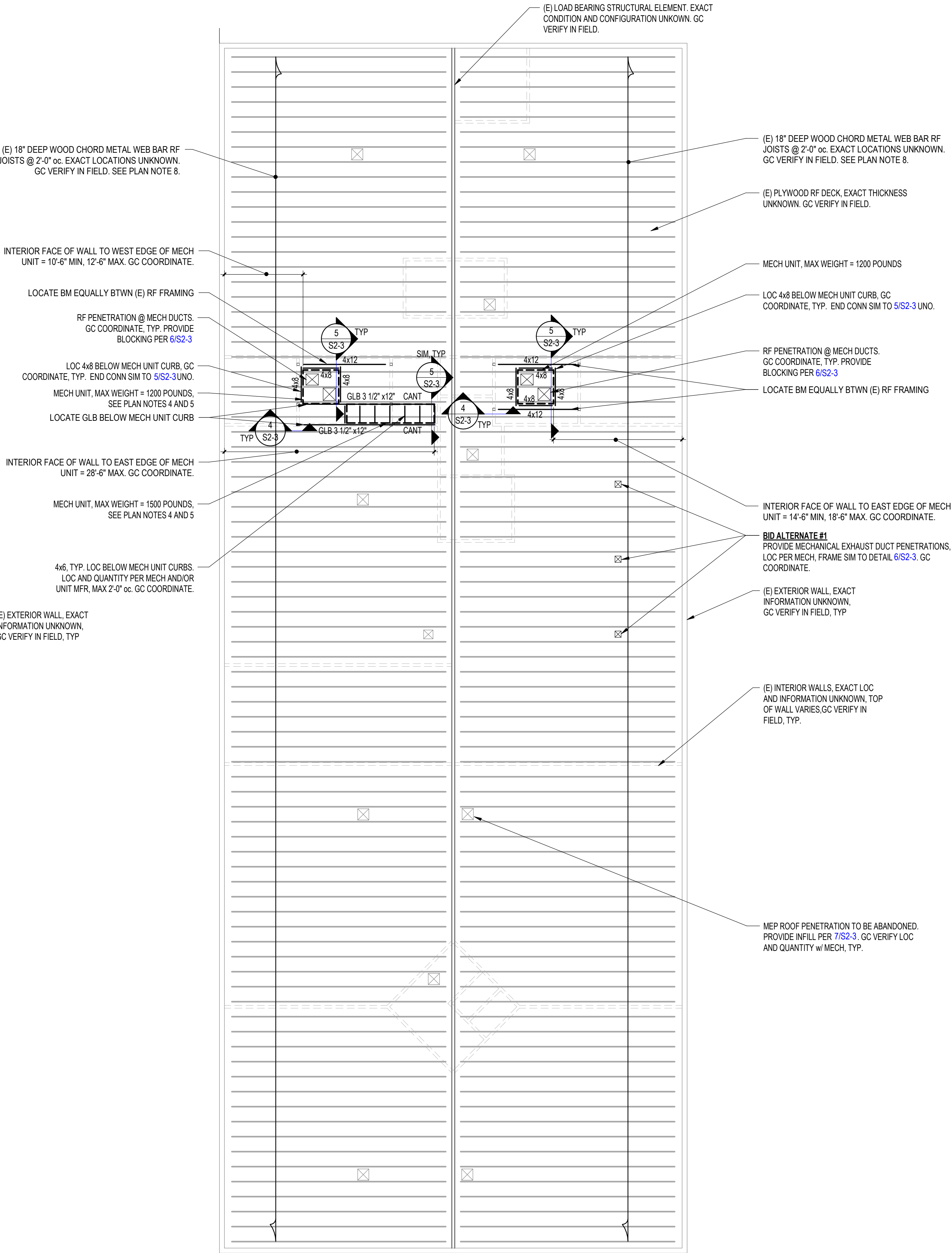
CONSTRUCTION ADMIN		
Deferred Submittals		
• Concrete Mix		
• Metal Stud Systems		
• Temporary Shoring/Bracing of Existing Structure		
1. Deferred Submittal components are intended to be vendor designed and have not been designed by the Architect/Engineer. Refer to the drawings, the specifications, and the material sections of these general notes for design and submittal requirements.		
2. Deferred Submittal components have not been permitted under the base building application. The contractor shall submit the approved submittals for the Deferred Submittal components to the building official. Deferred Submittal components shall not be installed until the building official has permitted the Deferred Submittal.		
3. When the manufacturer is registered and approved to perform work without special inspection, the Contractor is to submit to the Building Official certificates of compliance from the manufacturers at the completion of manufacture stating that the work was performed in accordance with the approved construction documents.		
Structural Observations		
1. Structural Observation by the Structural Engineer is for the purpose of confirming general conformance of the construction with the design intent of the structure.		
2. Structural observations will occur as required to confirm general conformance of the construction with the design intent of the structure.		
3. Structural Observation is not intended to review the Contractor's construction procedures or the Contractor's conformance with the contract.		
4. Structural Observation is not intended to replace the required Special Inspection program.		
Special Inspection		
Special inspections shall be performed by an agency which:		
1. Is employed by the owner;		
2. Is qualified to perform special inspection activities in accordance with IBC Section 1704.2;		
3. Has been approved by the building official to perform special inspections.		
The special inspector shall provide written documentation of qualifications per IBC section 1704.2.1.		
The special inspector shall furnish inspection reports and a final report in accordance with IBC Section 1704.2.4.		
The construction or work for which special inspection is required shall remain accessible and exposed of special inspection purposes until completion of the required special inspections.		
Each contractor responsible for the construction of a main wind- or seismic force-resisting system, designated seismic system or a wind- or seismic-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the building official and the owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain acknowledgement of awareness of the special requirements contained in the statement of special inspection.		
Fabricators		
The special inspector shall verify fabrication and implementation procedures of the following items per IBC Section 1704.2.5 unless the fabricator is registered and approved by the building official to perform such work without special inspection. At the completion of fabrication, the approved fabricator shall submit a certificate of compliance to the building official stating that the work was performed in accordance with the approved construction documents.		
1. Structural Steel - to include the requirements of AISC 360 Chapter N.		
2. Ready Mix Concrete		
3. Light-gage Steel Studs		
4. Light-gage Metal Deck		
SUBMITTALS TO SPECIAL INSPECTOR		
Welding	Structural Steel Light Gage Steel Reinforcing Welding	AWS D1.1 Prequalification AWS D1.3 Prequalification AWS D1.4 Prequalification WABO or AWS Certified
Bolting	High Strength Bolts	Manufacturer's Letter of Certification
CMU Walls	Block Units Grout Mortar	Manufacturer's Letter of Certification Manufacturer's Letter of Certification Manufacturer's Letter of Certification
Adhesive Anchor	Epoxy Adhesive	Manufacturer's Letter of Certification
Concrete	All Concrete Material	All trip tickets, including water/cement ratio in truck
Slab-on-Grade	Concrete	In place water/cement ratio test results
Metal Deck Topping	Concrete	In place water/cement ratio test results
Inspector to review submittals before installation begins. Inspector must inspect job from approved & stamped design & shop drawings, including all clarifications, both written & in drawing form.		
Wind Requirements (IBC 1705.11)		
Special inspections for wind resistance are not required.		

STATEMENT OF SPECIAL INSPECTIONS	
Seismic Requirements (IBC 1704.3.2)	
Special Inspections for Seismic Resistance (IBC 1705.12)	
Seismic Structural Steel and Steel Elements (IBC 1705.12.1, 1705.12.1.2 and AISC 341 Chapter J):	
Special inspection for structural steel seismic force-resisting systems (moment frames, braced frames, steel plate shear walls, etc) and structural steel elements (studs, collectors, chords, foundation elements, etc) shall be in accordance with the quality assurance (QA) requirements of AISC 341 and as noted below:	
1. The special inspector shall provide written documentation of practices and personnel as required by AISC 341 sections J3 and J4.	
2. Inspection of welding shall be in accordance with AISC 341 Section J6 and Tables J6-1, J6-2, and J6-3, inspection tasks prior, during, and after welding.	
3. Inspection of high-strength bolting shall be in accordance with AISC 341 Section J7 and Tables J7-1, J7-2, and J7-3, inspection tasks prior, during, and after bolting.	
4. Inspection of protected zones and reduced beam section moment frames shall be in accordance with AISC 341 section J8 and table J8-1	
5. Inspection of composite structures shall be in accordance with AISC 341 section J9 and table J9-1, J9-2, and J9-3, inspection tasks prior, during and after concrete placement.	
Structural Wood Construction (IBC 1705.12.2):	
Structural Wood seismic force-resisting systems (shear walls, diaphragms, collectors, drag struts, hold downs, etc) shall be inspected in accordance with IBC Section 1705.12.2.	
Structural Cold-Formed Steel Light Frame Construction (IBC 1705.12.3):	
Cold-formed steel light frame seismic force-resisting systems (shear walls, braces, diaphragms, collectors, drag struts, hold downs, etc) shall be inspected in accordance with IBC Section 1705.12.3.	
Designated Seismic Systems (IBC 1705.12.4):	
The special inspector shall examine architectural, mechanical, and electrical components, supports, and attachments in Table 13.2-1 of ASCE 7 and verify that the label, anchorage or mounting conforms to the certificate of compliance required by Sections 13.2.1 and 13.2.2 of ASCE 7.	
Architectural Components (IBC 1705.12.5):	
Periodic special inspection is required during erection and fastening of exterior cladding, interior and exterior veneer, and interior and exterior non-bearing walls over 30 feet in height above grade or walking surface, and for anchorage of access floors. Inspection and limitations to be per IBC Section 1705.12.5.	
Mechanical, Electrical and Plumbing Components (IBC 1705.12.6):	
Periodic special inspection is required during the installation and anchorage of the following items:	
1. Electrical equipment for emergency or standby power systems.	
2. Piping systems designed to carry hazardous materials and their associated mechanical units.	
3. Ductwork designed to carry hazardous materials.	
4. Vibration isolation systems where a nominal clearance of 1/4 inch (6.4 mm) or less is required between the equipment support frame and restraint.	
5. Minimum clearances of Mechanical and electrical equipment, including duct work, piping systems and their structural supports per IBC section 1705.12.6.6 and ASCE 7 Section 13.2.3.	
Storage Racks (1705.12.7):	
Periodic special inspection is required during the anchorage of storage racks 8 feet (2438 mm) or greater in height per IBC Section 1705.12.7.	
Seismic Isolation Systems (IBC 1705.12.8)	
Periodic special inspection is required during the fabrication and installation of seismic isolation systems in accordance with IBC Section 1705.12.8.	
Cold-Formed Steel Special Bolted Moment Frames (IBC 1705.12.9)	
Periodic special inspection is required during the installation of cold-formed special bolted moment frames in accordance with IBC Section 1705.12.9.	
Testing and Qualification for Seismic Resistance (IBC 1705.13)	
Seismic Structural Steel and Steel Elements (IBC 1705.13.1 and AISC 341):	
Nondestructive testing for welded joints within the structural steel seismic force-resisting system shall be in accordance with section J6.2 of AISC 341. This includes testing of k-area welds, CJP Groove welds, where base material is greater than 1.5" thick, welded splices, thermally cut surfaces or beam copes and access holes, reduced beam section repairs, and weld tab removals.	
Concrete Reinforcement (IBC 1705.12 Item 1 and 1705.12.1):	
Certified mill test reports indicating compliance with Section 20.2.2 of ACI 308 shall be provided for each shipment of reinforcement used in those elements designated in the drawings as shear walls, moment frames, and coupling beams.	
Seismic Certification of Designated Seismic Systems (IBC 1705.13.3)	
Manufacturer's certification of seismic qualification in accordance with Section 13.2.2 of ASCE 7 shall be provided for active mechanical and electrical equipment that must remain operable following the design earthquake ground motion and for components with hazardous substances.	
Seismic Certification of Architectural, Mechanical and Electrical Components (IBC 1705.13.2):	
Manufacturer's certification of seismic qualification by analysis, testing or experience data in accordance with ASCE 7 Section 13.2 as well as the applicable sections indicated in ASCE 7 Table 13.2-1 shall be provided for architectural, mechanical and electrical components, supports and attachments per IBC Section 1705.13.2.	
Wind Requirements (IBC 1705.11)	
Special inspections for wind resistance are not required.	

STATEMENT OF SPECIAL INSPECTIONS (cont.)	
Steel Construction (IBC 1705.2 and AISC 360 Chapter N)	
Special inspection for structural steel shall be in accordance with the quality assurance (QA) requirements of AISC 360.	
Inspection of welding shall be in accordance with:	
1. AISC 360 sections N4.2 and N5.4	
2. AISC 360 Table N5.4.1 - Inspection Tasks Prior to Welding	
3. AISC 360 Table N5.4.2 - Inspection Tasks During Welding	
4. AISC 360 Table N5.4.3 - Inspection Tasks After Welding	
5. Nondestructive testing of welded joints shall be in accordance with AISC 360 sections N4.3 and N5.5	
Inspection of high-strength bolting shall be in accordance with:	
1. AISC 360 sections N5.6	
2. AISC 360 Table N5.6.1 - Inspection Tasks Prior to Bolting	
3. AISC 360 Table N5.6.2 - Inspection Tasks During Bolting	
4. AISC 360 Table N5.6.3 - Inspection Tasks After Bolting	
Other inspection tasks, including inspection of anchor rods and embedments supporting structural steel shall be in accordance with AISC 360 N5.8.	
Inspection of composite construction, including steel deck, headed stud anchors shall be in accordance with:	
1. AISC 341 Section J9	
2. AISC 341 Tables J9.1 - J9.3 - Inspection of Steel Elements of Composite Construction Prior to Concrete Placement	
Quality assurance inspections, testing and report submittal shall be in accordance with AISC 360 sections N5.2 and N7.	
Cold-Formed Steel Deck (IBC 1705.2.2)	
Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck shall be in accordance with the quality assurance inspection requirements of SDI QA/QC and in accordance with IBC Section 1705.2.2.	
Open-Web Steel Joists and Joist Girders (IBC 1705.2.3)	
Special inspections for open-web steel joists and joist girders shall be in accordance with:	
1. IBC Section 1705.2.3	
2. IBC Table 1705.2.3 - Required Special Inspection of Open-Web Steel Joists and Joist Girders	
Cold-Formed Steel Trusses Spanning 60 feet or Greater (IBC 1705.2.4)	
Special inspections for cold-formed steel trusses with a span greater than 60 feet shall be in accordance with IBC Section 1705.2.4.	
Concrete Construction (IBC 1705.3)	
Special inspection for concrete construction shall be in accordance with IBC Table 1705.3 - Required Verification and Inspection of Concrete Construction.	
Masonry Construction (IBC 1705.4)	
Special inspections and tests for masonry construction shall be in accordance with the quality assurance requirements of TMS 402-16 section 1.3 and TMS 602-16 section 1.6.	
(see for risk categories 1, 2, or 3)	
1. Inspection and testing of CMU shall be in accordance with TMS 602-16 Table 3 and Table 4 (Level 2 Quality Assurance)	
2. Inspection of Masonry Veneer shall verify compliance with the approved submittals. (Level 1 Quality Assurance)	
(see for risk category 1)	
1. Inspection and testing of CMU shall be in accordance with TMS 602-16 Table 3 and Table 4 (Level 3 Quality Assurance)	
2. Inspection and testing of Masonry Veneer shall be in accordance with TMS 602-16 Table 3 and Table 4 (Level 2 Quality Assurance)	
Wood Construction (IBC 1705.5)	
Special inspections for wood construction shall be in accordance with IBC 1705.5	
Per IBC Section 1705.5.1, diaphragm special inspection shall include inspection of:	
1. Wood structural panel sheathing grade and thickness	
2. Nominal size of framing members at adjoining structural panel sheathing	
3. Fastener (nail or staple) diameter and length, the number of fastener lines, and the spacing between fasteners in each line and at edge margins	
Metal-plate-connected wood trusses:	
Special inspections of wood trusses with overall heights of 60 inches (1524 mm) or greater shall be performed to verify that the installation of the permanent individual truss member restraint/bracing has been installed in accordance with the approved truss submittal package per IBC Section 1705.5.2. For wood trusses with a clear span of 60 feet (18 288 mm) or greater, the special inspector shall verify during construction that the temporary installation restraint/bracing is installed in accordance with the approved truss submittal package per IBC Section 1705.5.2.	
Soils (IBC 1705.6)	
Special inspection for existing site soil conditions, fill placement and load-bearing requirements shall be in accordance with:	
1. IBC 1705.6	
2. IBC Table 1705.6 - Required verification and Inspection of Soils	
Driven Deep Foundations (IBC 1705.7)	
Special inspections and tests during installation of driven deep foundation elements shall be in accordance with IBC Section 1705.7.	
Cast-in-Place Deep Foundations (IBC 1705.8)	
Special inspections and tests during installation of cast-in-place deep foundation elements shall be in accordance with IBC Section 1705.8.	
Helical pile Foundations (IBC 1705.9)	
Continuous special inspections during installation of helical pile foundation elements shall be in accordance with IBC Section 1705.9.	
Fabricated Items (IBC 1705.10)	
Special inspections of fabricated items shall be in accordance with IBC Section 1705.10.	
Sprayed Fire-Resistant Materials (IBC 1705.14)	
Special inspection for sprayed fire-resistant materials shall be in accordance with IBC Sections 1705.14.1 through 1705.14.6	
Mastic and Intumescent Fire-Resisting Coatings (IBC 1705.15)	
Special inspection for mastic and intumescent fire-resistant materials shall be in accordance with IBC Sections 1705.15 and AIWCJ 12-8	
Exterior Insulation and Finish Systems (IBC 1705.16)	
Special inspection for exterior insulation and finish systems shall be in accordance with IBC Sections 1705.16	
Fire-Resistant Penetrations and Joints (IBC 1705.17)	
Special inspection for fire-resistant penetrations and joints shall be in accordance with IBC Sections 1705.17, 1705.17.1, and 1705.17.2	
Smoke Control (IBC 1705.18)	
Special inspection for smoke control systems shall be in accordance with IBC Sections 1705.18	

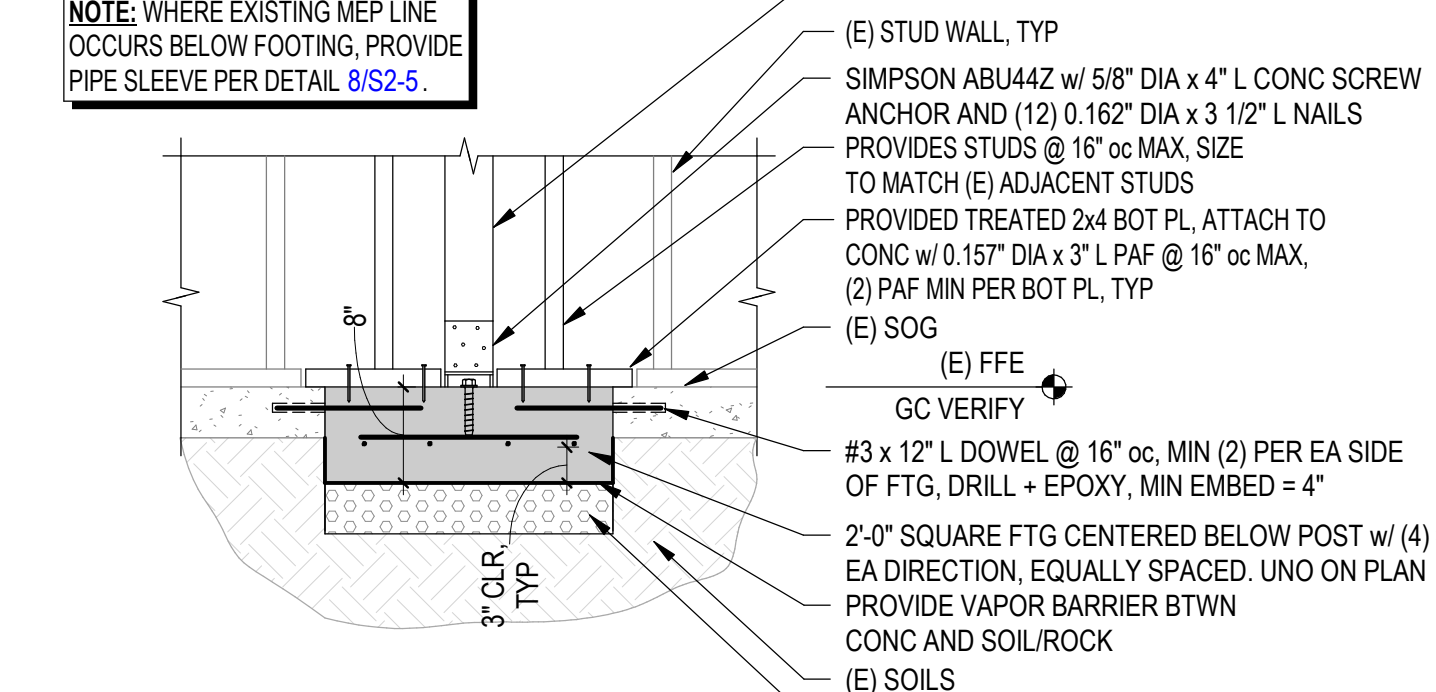


1 MARK MORRIS - AA BUILDING - FIRST/FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

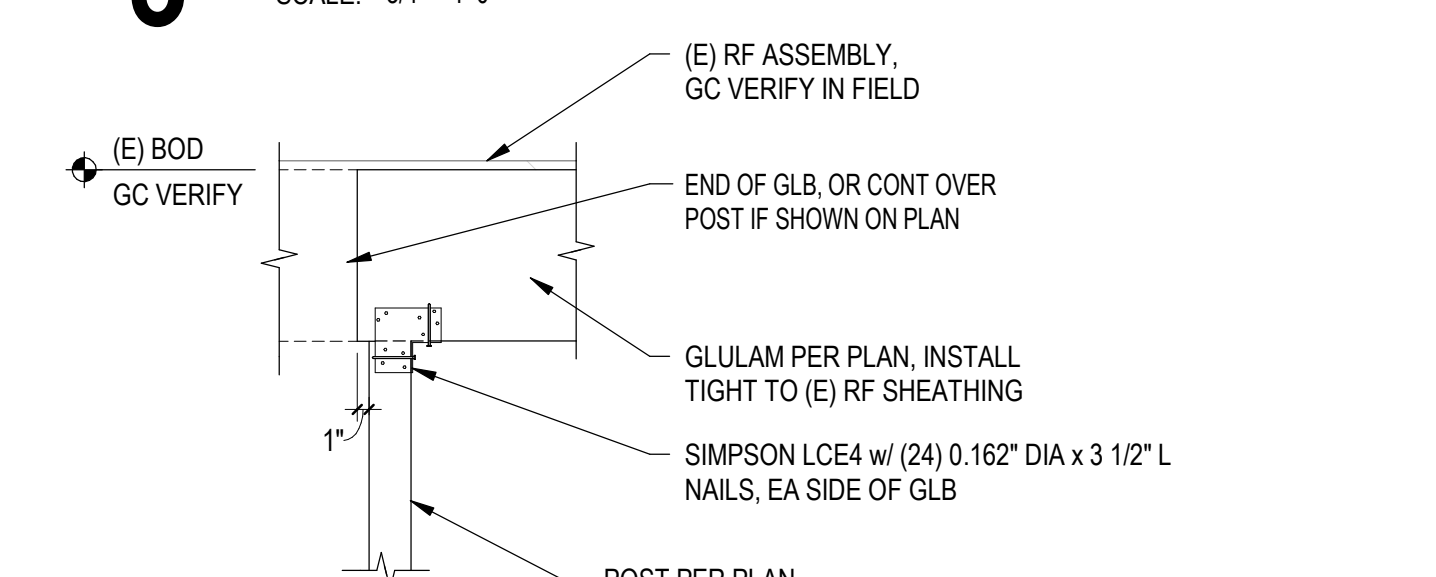


2 MARK MORRIS - AA BUILDING - ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"

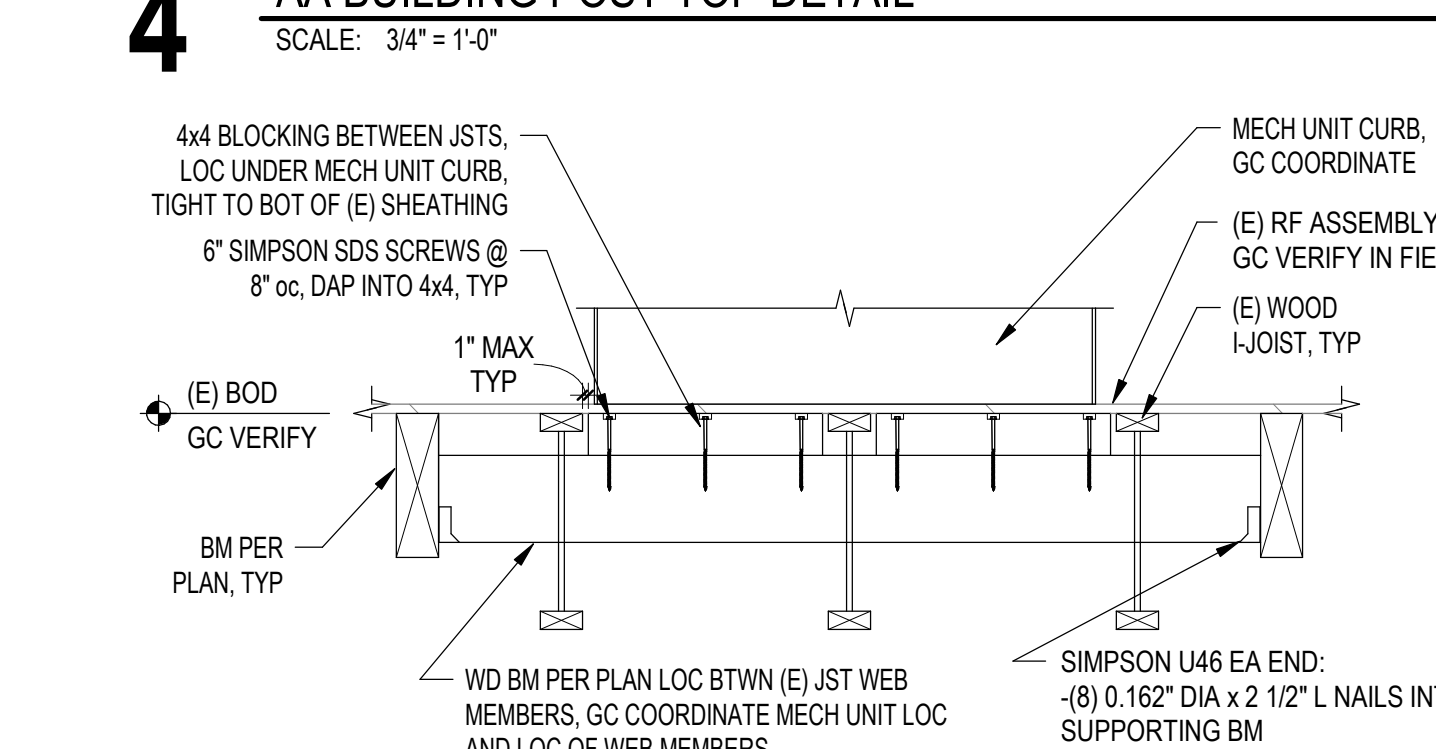
- PLAN NOTES**
- GC TO FIELD VERIFY ALL EXISTING CONDITIONS, EXISTING FRAMING SIZES/LAYOUT, AND EXISTING DIMENSIONS PRIOR TO CONSTRUCTION. NOTIFY EOR OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
 - GC TO LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. NOTIFY DESIGN TEAM OF ALL UTILITY LOCATIONS NEAR THE FOUNDATION SCOPE OF WORK PRIOR TO CONSTRUCTION. SEE DETAIL 8/S2-5 FOR PIPE SLEEVE INFO.
 - EXTENTS OF DEMO WILL VARY DUE TO MEANS AND METHODS AND UNKNOWN EXISTING CONDITIONS. CONTRACTOR SHALL REPAIR AND/OR REINSTALL ALL FINISHES TO MATCH THE ADJACENT OR PREVIOUSLY INSTALLED FINISHES. THIS ALSO APPLIES TO PARTITION WALLS.
 - GC TO DETERMINE LOCATIONS OF MECHANICAL UNITS BASED ON EXISTING ROOF FRAMING LAYOUT OBSERVED IN THE FIELD. DIMENSIONS GIVEN ON PLAN, AND LOCATION OF WEB MEMBERS OF THE EXISTING ROOF JOISTS, PROVIDE DIMENSIONED LAYOUT TO DESIGN TEAM FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
 - THE WEST MECHANICAL UNIT LOCATED ON THE GLULAM BEAM BACKSPAN SHALL BE INSTALLED FIRST. IF THE MECHANICAL UNIT ON THE CANTILEVER PORTION OF THE GLULAM BEAMS IS INSTALLED IN SEPARATE PORTIONS, INSTALL PORTIONS ON THE GLULAM BACKSPAN FIRST.
 - WHERE EXISTING ROOF WOOD SHEATHING AND/OR DECKING IS DAMAGED, REPLACE WITH SHEATHING. SHEATHING THICKNESS TO MATCH EXISTING SHEATHING THICKNESS.
 - AT CANTILEVERS DESIGNATED AS "CANT" ON PLAN, CANTILEVER MEMBER SIZE SHALL MATCH BACKSPAN MEMBER SIZE. MEMBER SHALL BE CONTINUOUS.
 - DO NOT MODIFY OR DAMAGE EXISTING ROOF FRAMING. ACCEPTABLE TO TEMPORARILY REMOVE EXISTING JOIST BRIDGING IN SINGLE JOIST BAYS TO ALLOW FOR INSTALLATION OF SURROUNDING FRAMING. DO NOT DAMAGE EXISTING JOIST BRIDGING HARDWARE. REINSTALL JOIST BRIDGING WITH A WOOD MEMBER OF THE SAME SIZE WITH A MINIMUM SPLICE OVERLAP OF 6" AND (6) 10d COMMON NAILS. POST PER PLAN



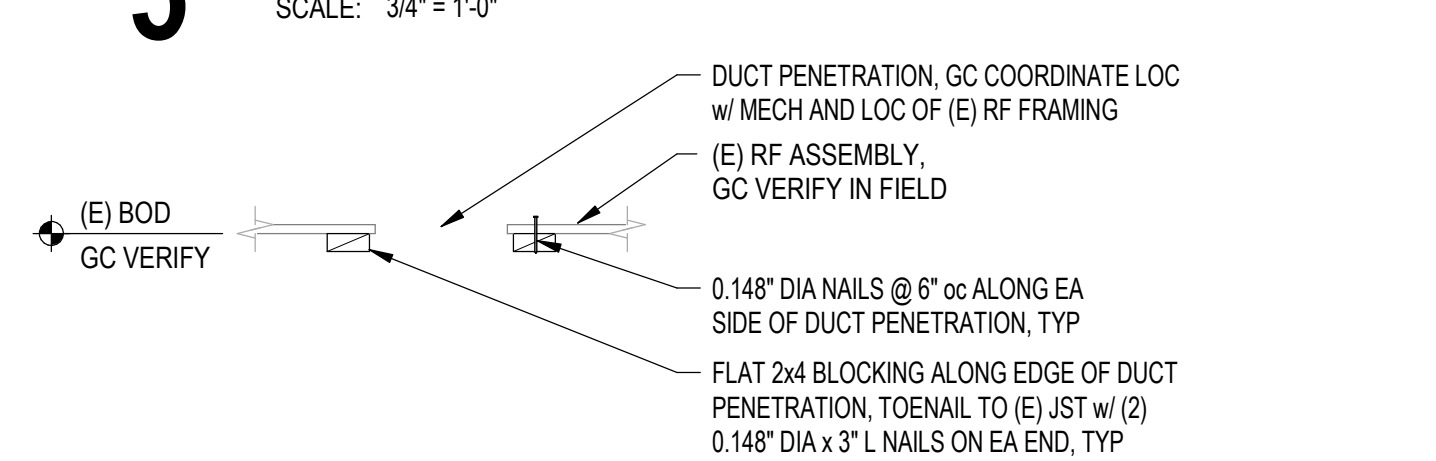
3 AA BUILDING POST BASE DETAIL
SCALE: 3/4" = 1'-0"



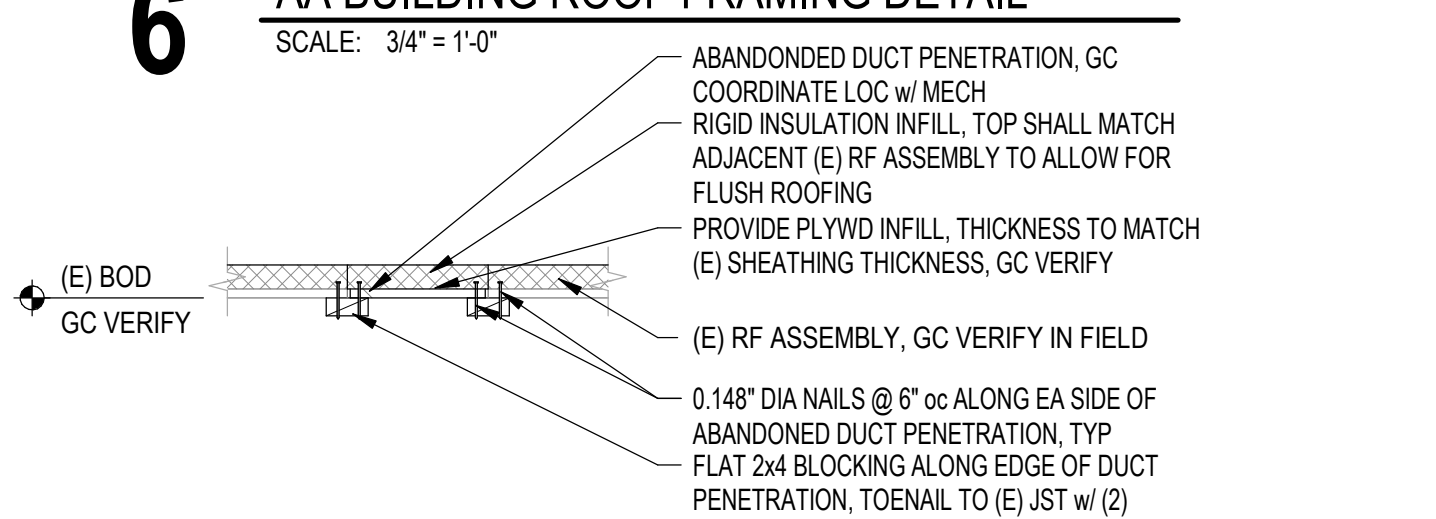
4 AA BUILDING POST TOP DETAIL
SCALE: 3/4" = 1'-0"



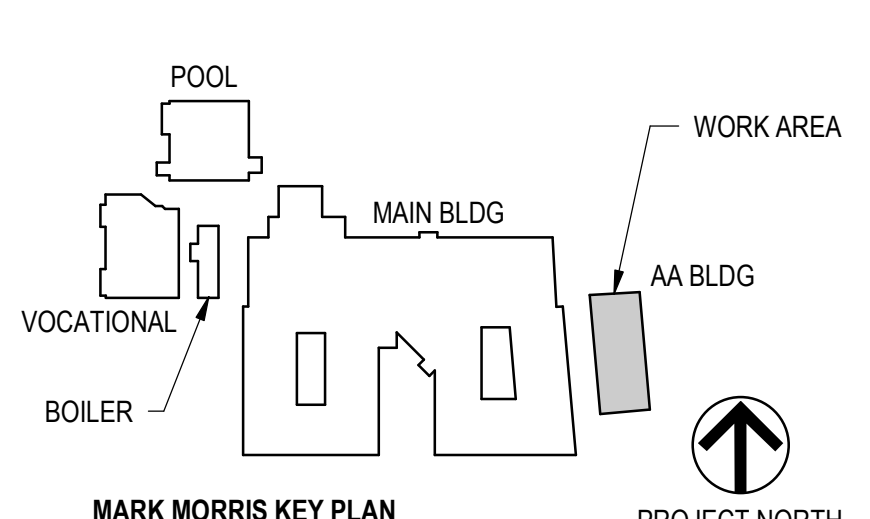
5 AA BUILDING ROOF FRAMING DETAIL
SCALE: 3/4" = 1'-0"



6 AA BUILDING ROOF FRAMING DETAIL
SCALE: 3/4" = 1'-0"



7 AA BUILDING ROOF FRAMING DETAIL
SCALE: 3/4" = 1'-0"



LONGVIEW SCHOOL DISTRICT HEAT PUMP REPLACEMENT AND INDOOR AIR QUALITY IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	01/17/23	
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Drawn By:	AM	
Checked by:	TD	
Revisions		
#	Date	Description

MARK MORRIS - AA BUILDING PLANS AND DETAILS

S2-3

LONGVIEW SCHOOL DISTRICT HEAT PUMP
REPLACEMENT AND INDOOR AIR QUALITY
IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98632

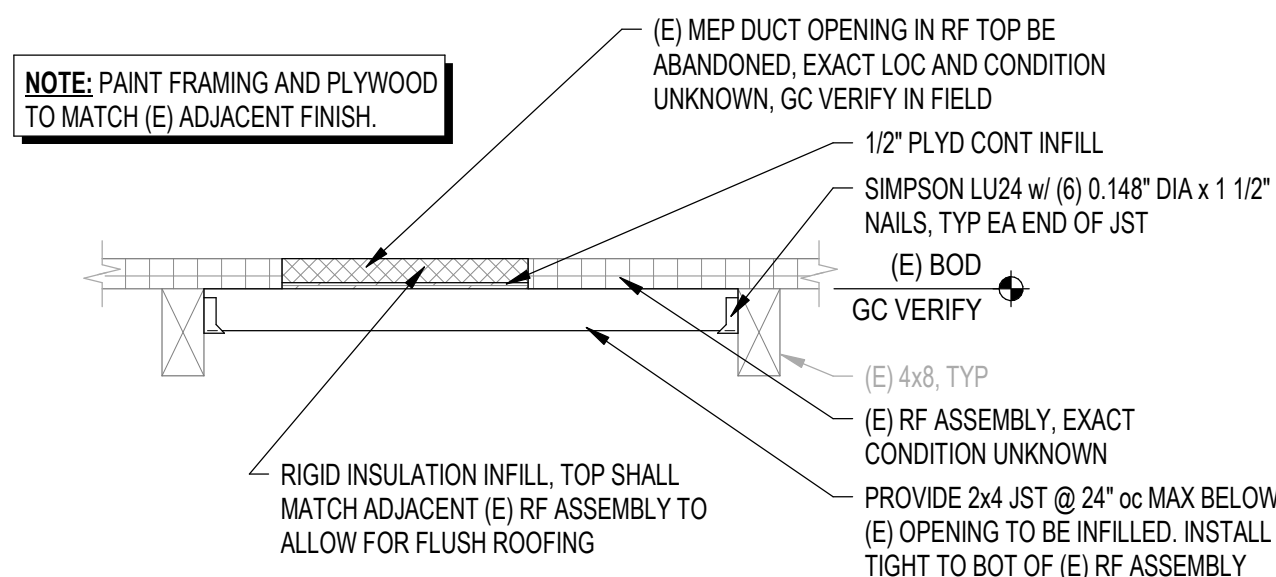
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MARK MORRIS -
VOCATIONAL
BUILDING PLANS
AND DETAILS

S2-4

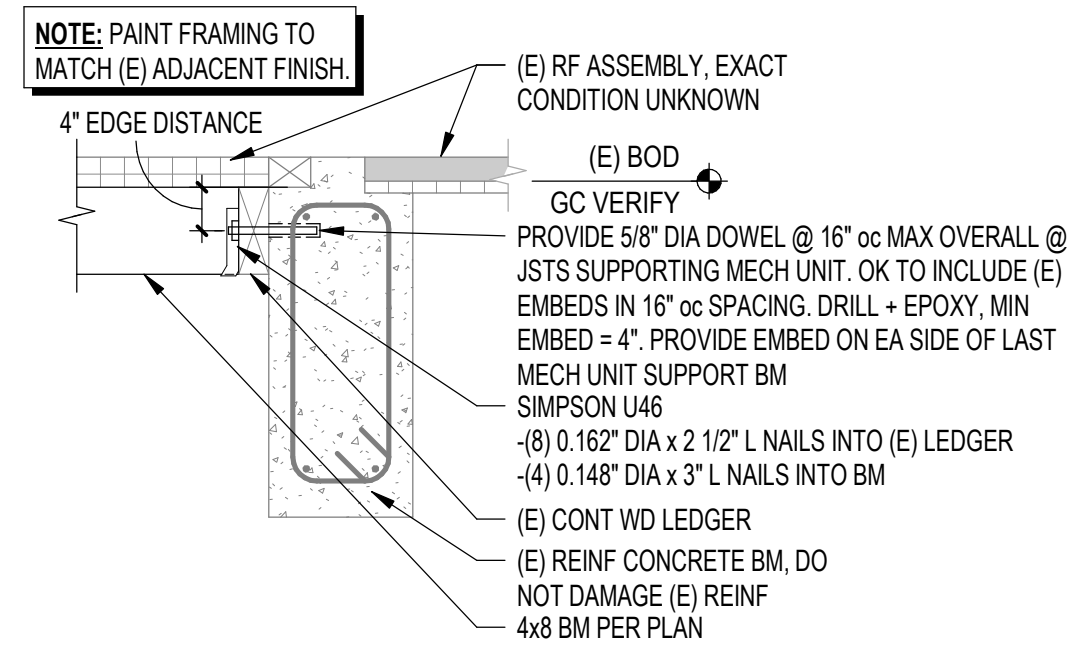
BID SET

- PLAN NOTES**
- GC TO FIELD VERIFY ALL EXISTING CONDITIONS, EXISTING FRAMING SIZES/LAYOUT, AND EXISTING DIMENSIONS PRIOR TO CONSTRUCTION. NOTIFY EOR OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
 - GC TO LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. NOTIFY DESIGN TEAM OF ALL UTILITY LOCATIONS NEAR THE FOUNDATION SCOPE OF WORK PRIOR TO CONSTRUCTION. SEE DETAIL 9S2-5 FOR PIPE SLEEVE INFO.
 - EXTENTS OF DEMO WILL VARY DUE TO MEANS AND METHODS AND UNKNOWN EXISTING CONDITIONS. CONTRACTOR SHALL REPAIR AND/OR REINSTALL ALL FINISHES TO MATCH THE ADJACENT OR PREVIOUSLY INSTALLED FINISHES. THIS ALSO APPLIES TO PARTITION WALLS.
 - GC TO DETERMINE LOCATIONS OF MECHANICAL UNITS BASED ON EXISTING ROOF FRAMING LAYOUT OBSERVED IN THE FIELD AND DIMENSIONS GIVEN ON PLAN. PROVIDE DIMENSIONED LAYOUT TO DESIGN TEAM FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
 - WHERE EXISTING ROOF WOOD SHEATHING AND/OR DECKING IS DAMAGED, REPLACE WITH SHEATHING. SHEATHING THICKNESS TO MATCH EXISTING SHEATHING THICKNESS.
 - AT CANTILEVERS DESIGNATED AS "CANT" ON PLAN, CANTILEVER MEMBER SIZE SHALL MATCH BACKSPAN MEMBER SIZE. MEMBER SHALL BE CONTINUOUS.



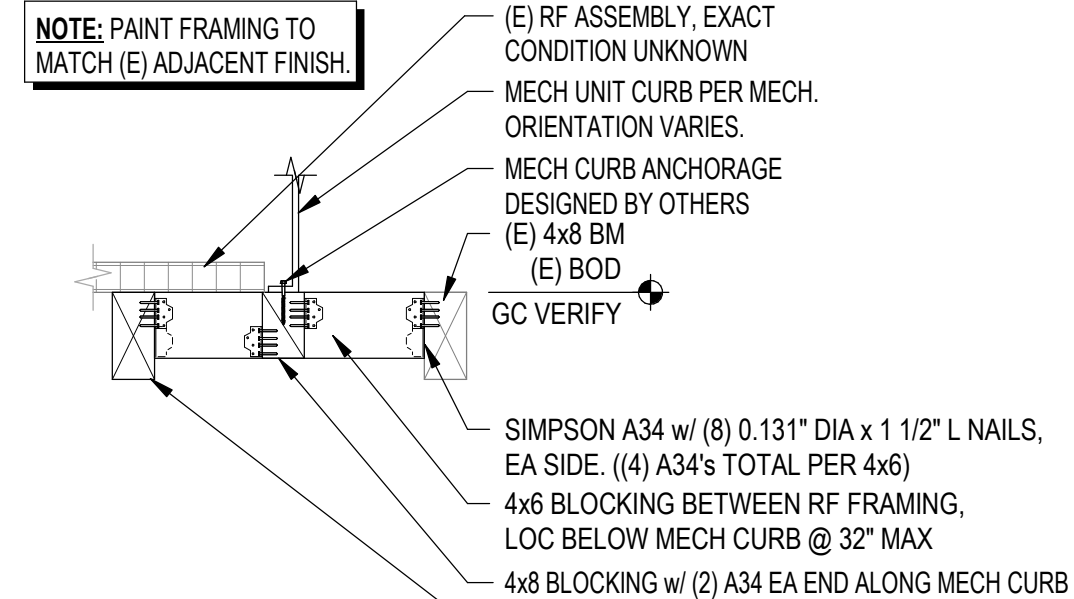
3 VOCATIONAL ROOF OPENING INFILL DETAIL

SCALE: 3/4" = 1'-0"



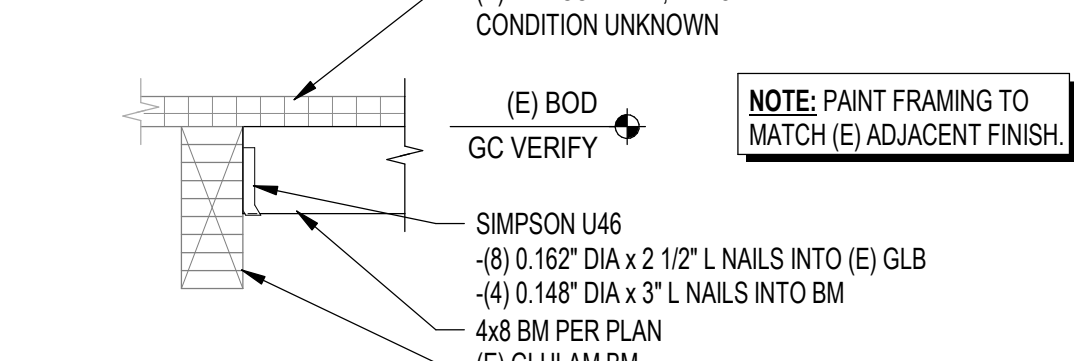
4 VOCATIONAL ROOF FRAMING DETAIL

SCALE: 3/4" = 1'-0"



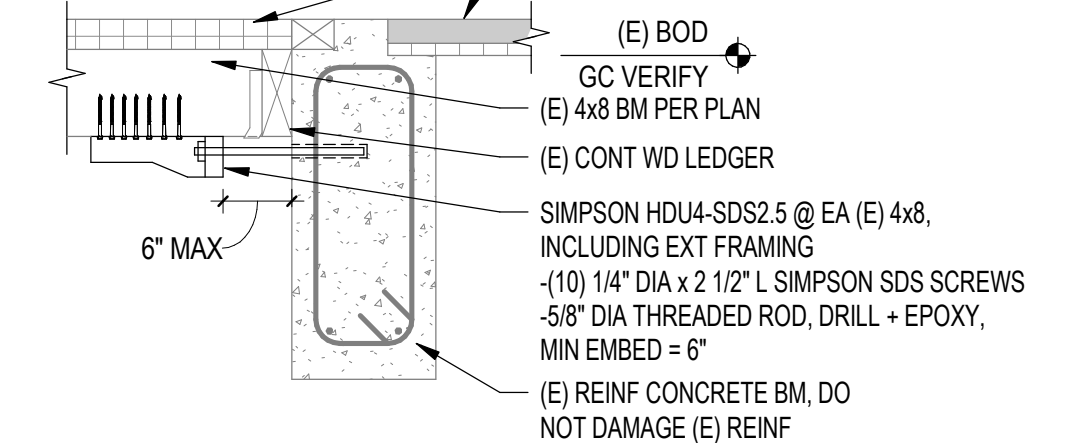
5 VOCATIONAL ROOF FRAMING DETAIL

SCALE: 3/4" = 1'-0"



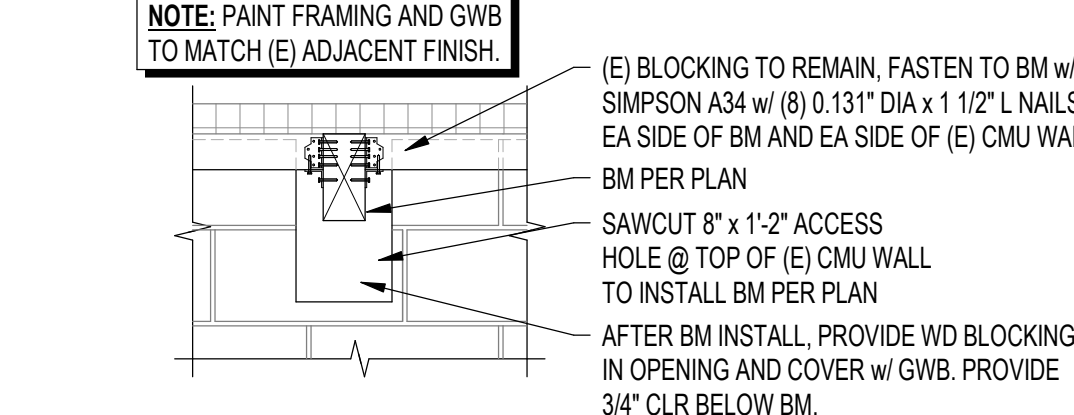
6 VOCATIONAL ROOF FRAMING DETAIL

SCALE: 3/4" = 1'-0"



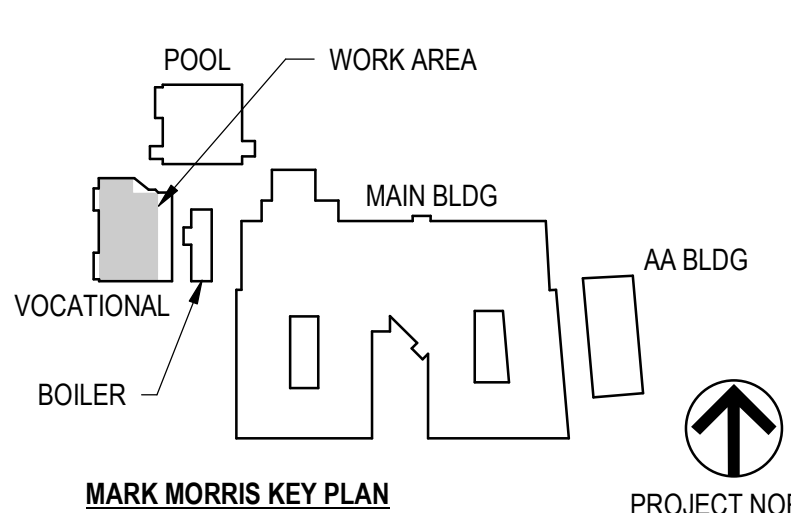
7 VOCATIONAL ROOF FRAMING DETAIL

SCALE: 3/4" = 1'-0"

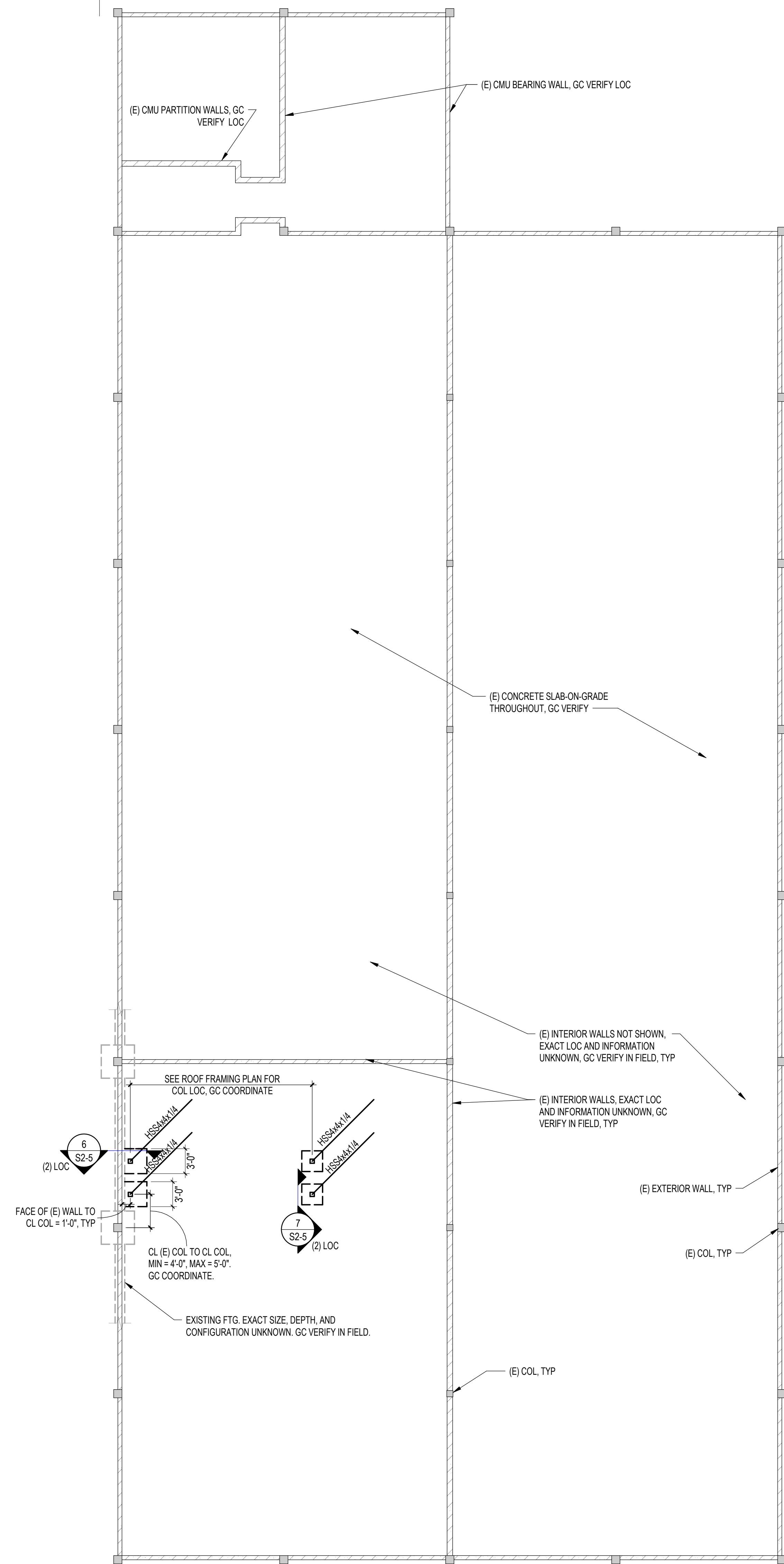


8 VOCATIONAL ROOF FRAMING DETAIL

SCALE: 3/4" = 1'-0"

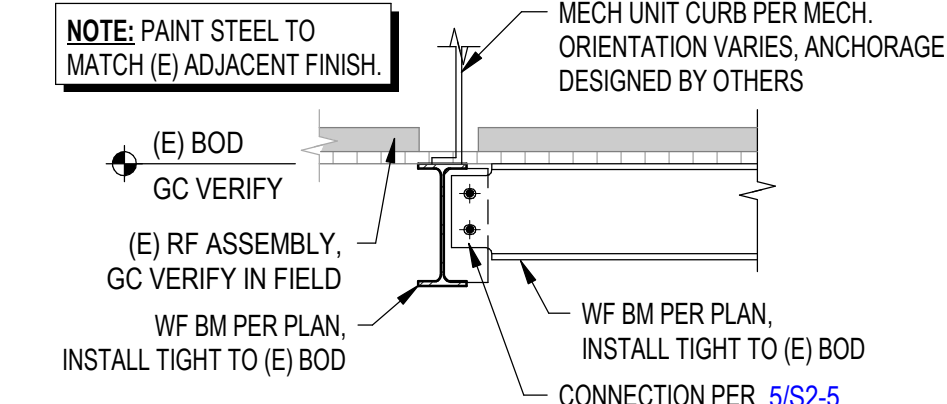


PROJECT NORTH



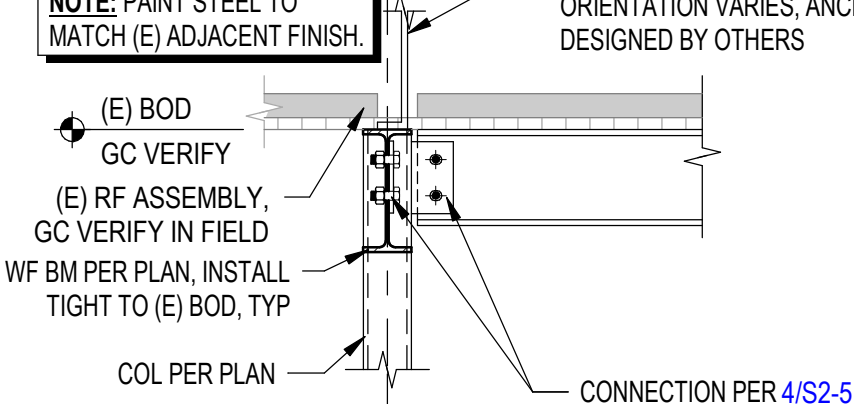
1 MARK MORRIS - VOCATIONAL BUILDING - FIRST/FOUNDATION PLAN

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



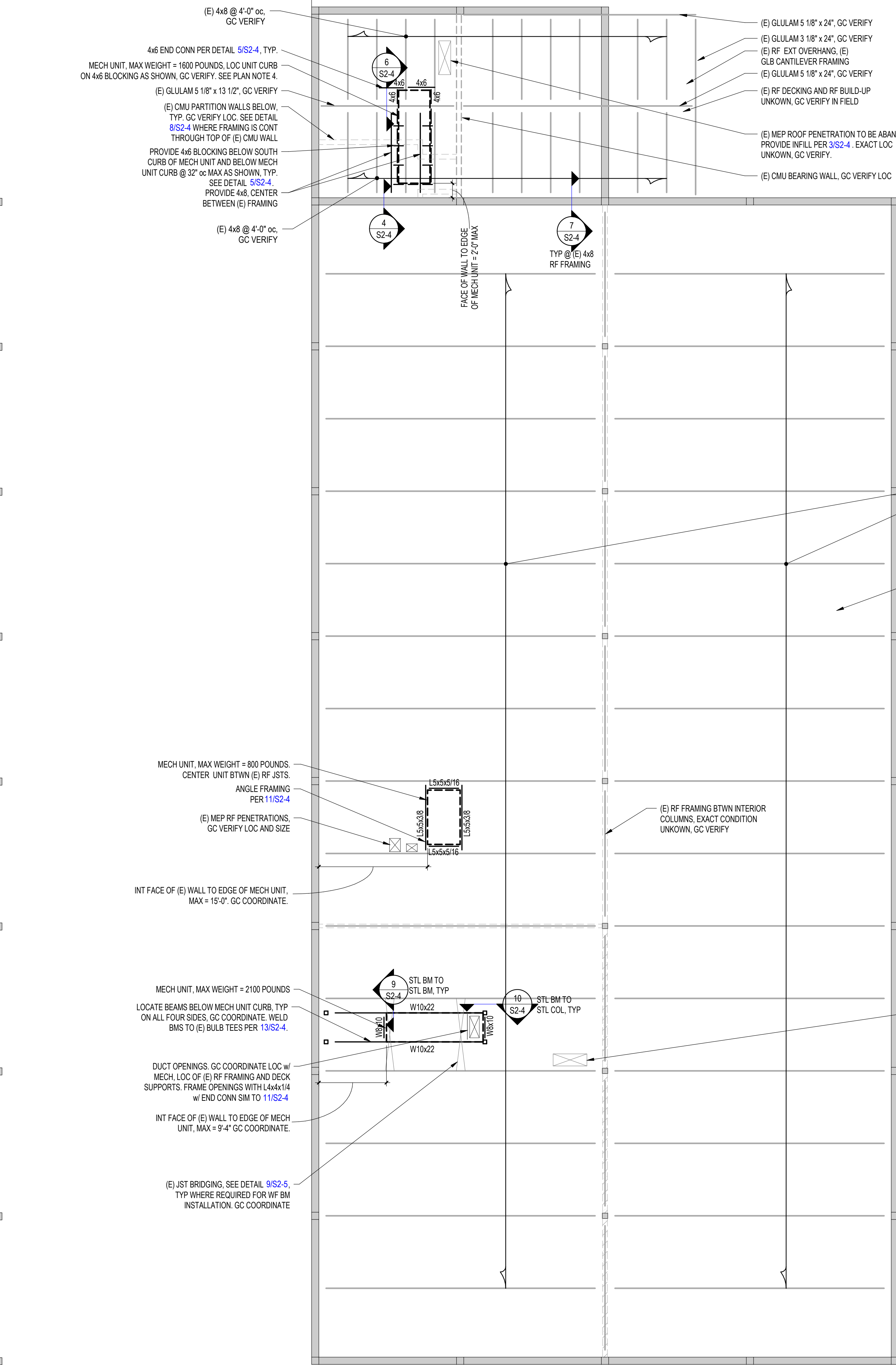
9 VOCATIONAL FRAMING DETAIL

SCALE: 3/4" = 1'-0"



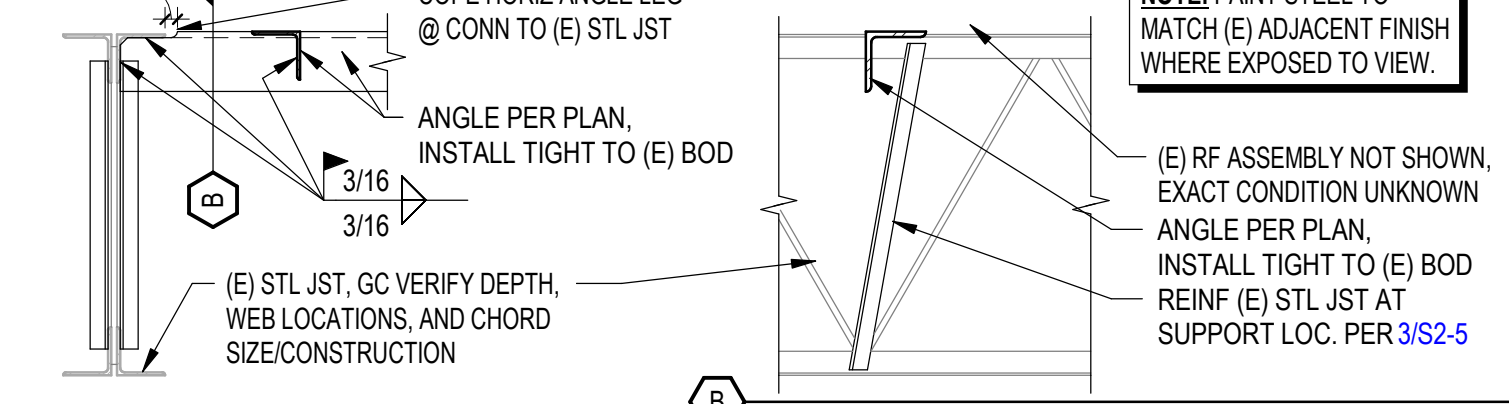
10 VOCATIONAL FRAMING DETAIL

SCALE: 3/4" = 1'-0"



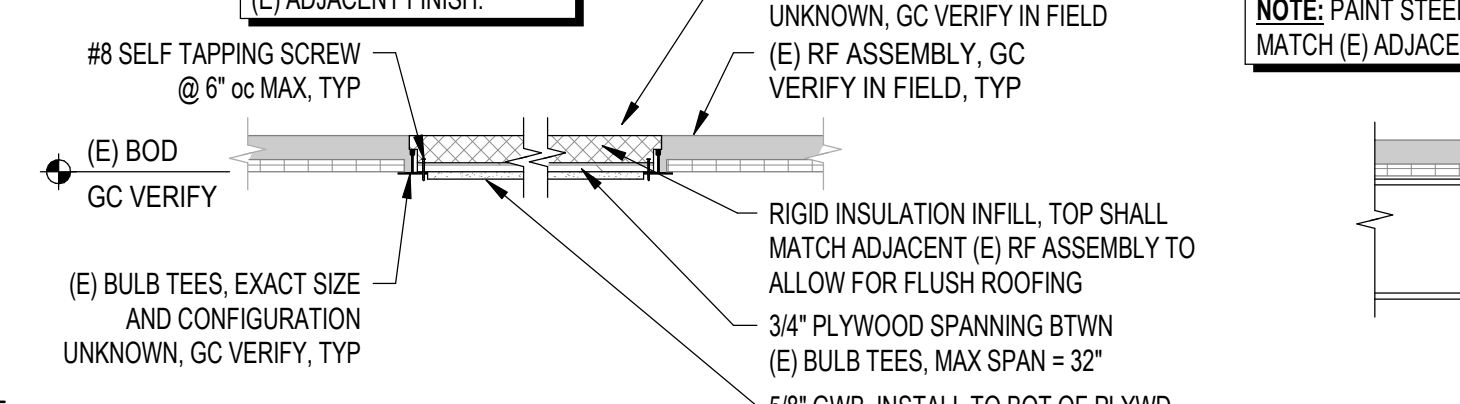
2 MARK MORRIS - VOCATIONAL BUILDING - ROOF FRAMING PLAN

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



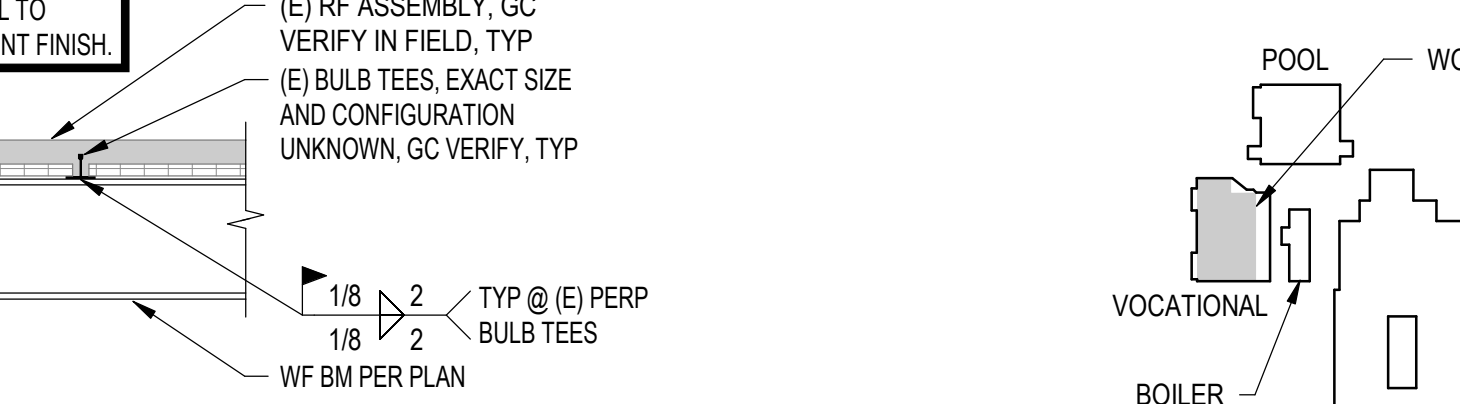
11 VOCATIONAL ANGLE TO JOIST

SCALE: 3/4" = 1'-0"



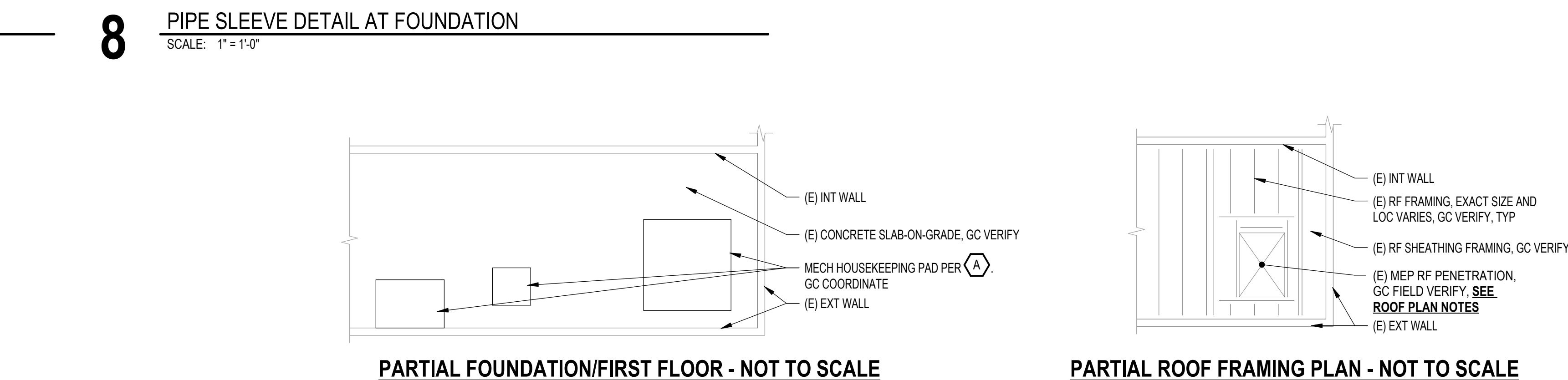
12 VOCATIONAL ROOF INFILL DETAIL

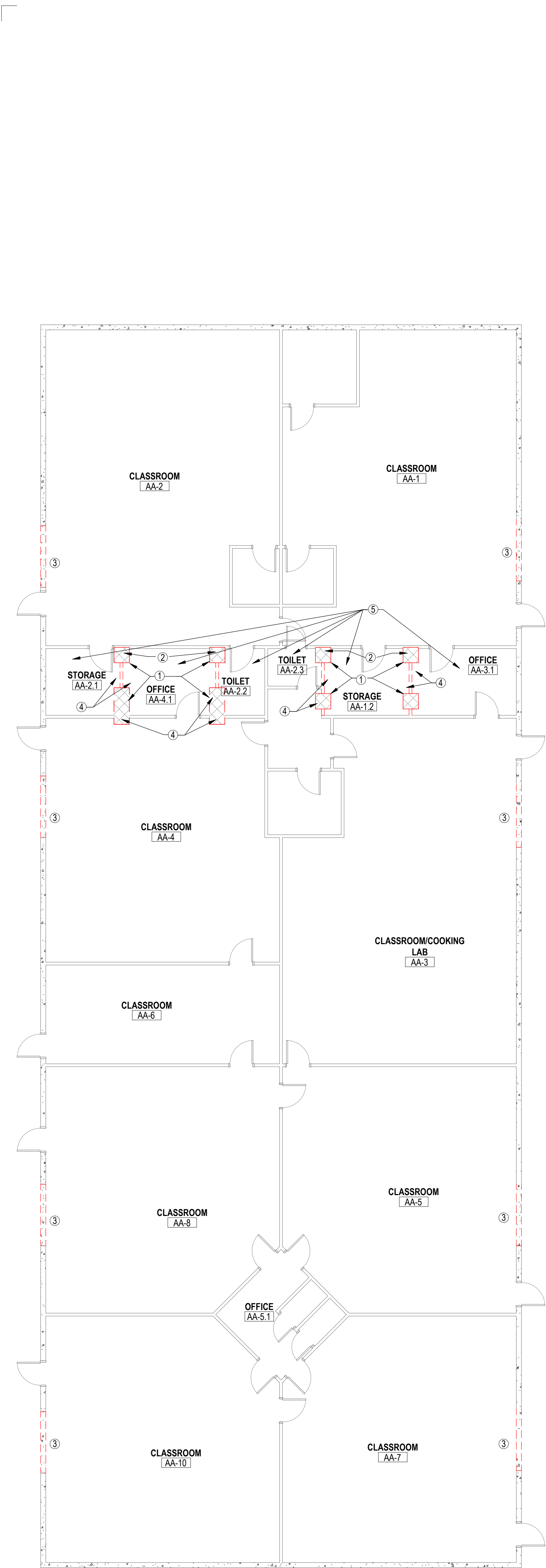
SCALE: 3/4" = 1'-0"



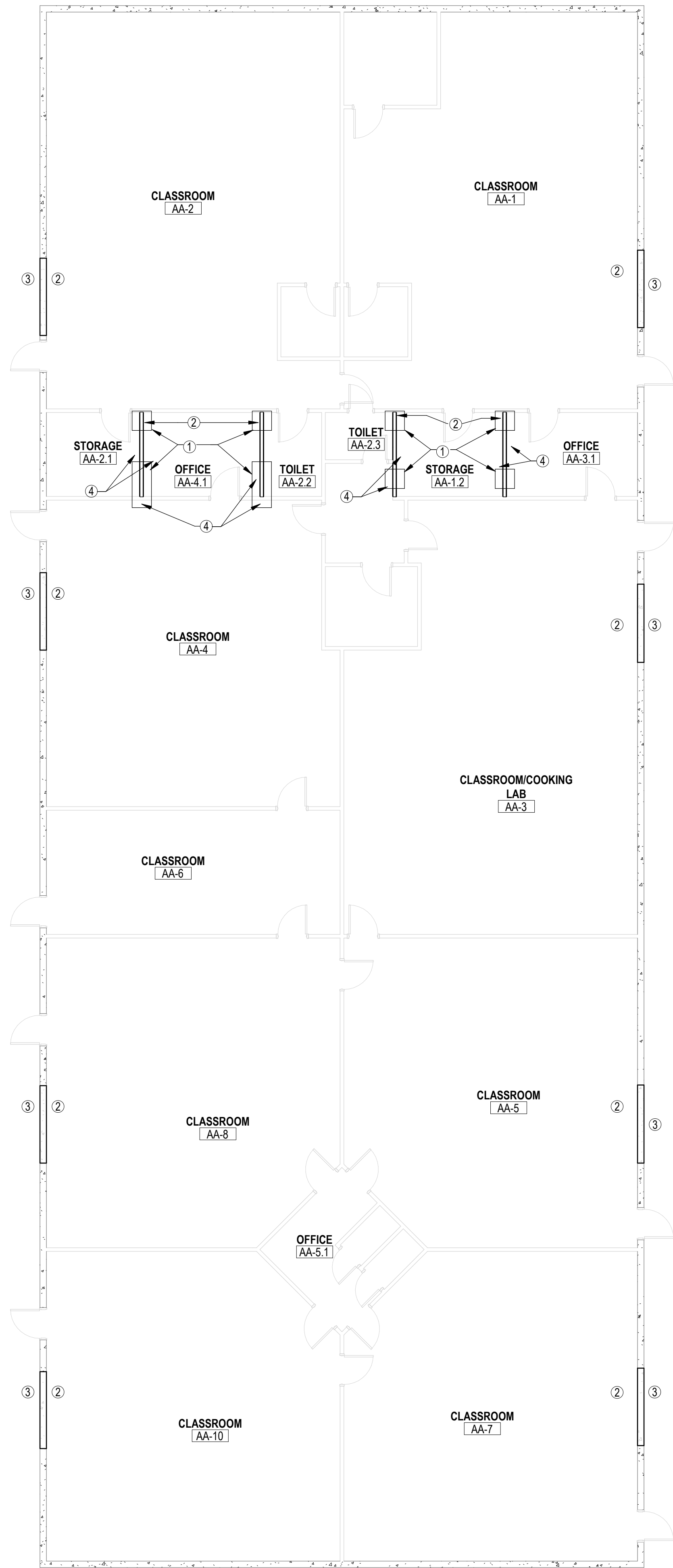
13 VOCATIONAL ROOF FRAMING DETAIL

SCALE: 3/4" = 1'-0"





1 MARK MORRIS AA-BUILDING DEMO PLAN
SCALE: 1/8" = 1'-0"



2 MARK MORRIS AA-BUILDING FLOOR PLAN
SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES

1. DASHED LINES INDICATE EXTENT OF EXISTING ASSEMBLIES TO BE DEMOLISHED.
2. THE DEMOLITION DRAWINGS ARE INTENDED AS A GENERAL GUIDE AS TO THE SCOPE OF DEMOLITION REQUIRED. ADDITIONAL ITEMS THAT ARE NOT SPECIFICALLY IDENTIFIED AND THAT ARE LOGICALLY ASSOCIATED WITH ITEMS CALLED OUT AS BEING REMOVED SHOULD BE REMOVED AS WELL, INCLUDING DEMOLITION IDENTIFIED ON ALL DISCIPLINES DRAWINGS, IF THERE IS A QUESTION CONTACT THE ARCHITECT FOR DIRECTION.
3. OWNER RETAINS THE FIRST RIGHT OF REFUSAL OF ALL DEMOLISHED ITEMS.
4. FOR ALL STRUCTURAL DEMOLITION WORK, REFER TO SPECIFIC DISCIPLINE DEMOLITION DRAWINGS.
5. PROTECT AND MAINTAIN EXISTING WALL ASSEMBLIES AND ASSOCIATED FINISHES, UNO
6. PROTECT EXISTING ELECTRICAL ASSEMBLIES: ALL ELECTRICAL ASSEMBLIES (LIGHTS, ELECTRICAL DATA, FIRE ALARM, SECURITY, ETC) ARE TO REMAIN IN FUNCTION DURING CONSTRUCTION. ANY ELECTRICAL ASSEMBLIES DAMAGED OR REMOVED ARE TO BE REINSTALLED OR REPLACED TO A LIKE NEW CONDITION.
7. PROTECT ALL OWNER INSTALLED STAGE EQUIPMENT. ANY OWNER INSTALLED STAGE EQUIPMENT DAMAGE OR REMOVED SHALL BE REINSTALLED OR REPLACED TO A LIKE NEW CONDITION.
8. PATCH AND REPAIR CEILING, FLOORS AND WALLS TO MATCH ADJACENT. ALIGN FINISHED ASSEMBLIES FOR SMOOTH TRANSITION BETWEEN NEW AND ADJACENT.
9. WHERE MECHANICAL DUCTS ARE ROUTED THROUGH EXISTING PARTITION WALLS, DEMO EXISTING GYPSUM WALL BOARD TO ALLOW FOR ROUTING. SEE STRUCTURAL DRAWING FOR POTENTIAL LOAD BEARING ELEMENTS. DO NOT MODIFY EXISTING FRAMING (INCLUDING STRUCTURAL WALL SHEATHING) WITHOUT APPROVAL FROM THE DESIGN TEAM.

DEMO PLAN KEYNOTES:

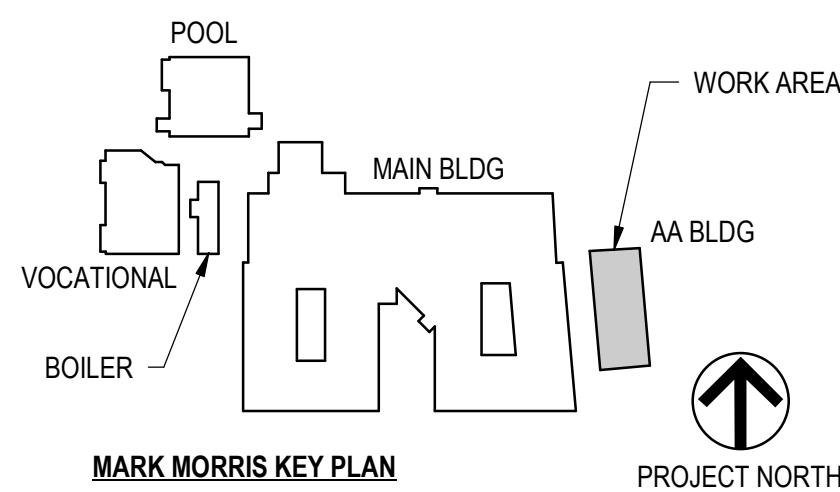
1. DEMOLISH FLOOR FINISHES AS REQUIRED TO SAWCUT AND INSTALL CONCRETE. SAWCUT CONCRETE AS REQUIRED.
2. DEMOLISH WALL FINISHES AND GWB AS REQUIRED TO INSTALL WOOD COLUMNS. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
3. DEMOLISH GWB AND WALL FINISHES AS REQUIRED FOR MECHANICAL DEMOLITION. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
4. SALVAGE EXISTING CASEWORK/COUNTER/SHELVING AS REQUIRED TO COMPLETE STRUCTURAL SCOPE.
5. DEMOLISH GYPSUM WALL BOARD CEILING. SEE A121A FOR MORE INFORMATION.

PLAN KEYNOTES:

1. PATCH FLOOR FINISHES AS REQUIRED
2. REPLACE GWB AND PATCH WALL FINISHES AS REQUIRED
3. **BID ALTERNATE #2:** DEMOLISH (E) LOUVER, INFILL WITH BRICK VENEER TO MATCH EXISTING. TOOTH BRICKS INTO (E) BRICK ADJACENT TO OPENING
4. REINSTALL SALVAGED CASEWORK/COUNTER/SHELVING.

DEMOLITION LEGEND

- ASSEMBLY TO BE DEMOLISHED.
- EXISTING ASSEMBLY TO REMAIN.
- CONCRETE FLOOR SLAB TO BE REMOVED IN ITS ENTIRETY.
--- SAW CUT EDGES.



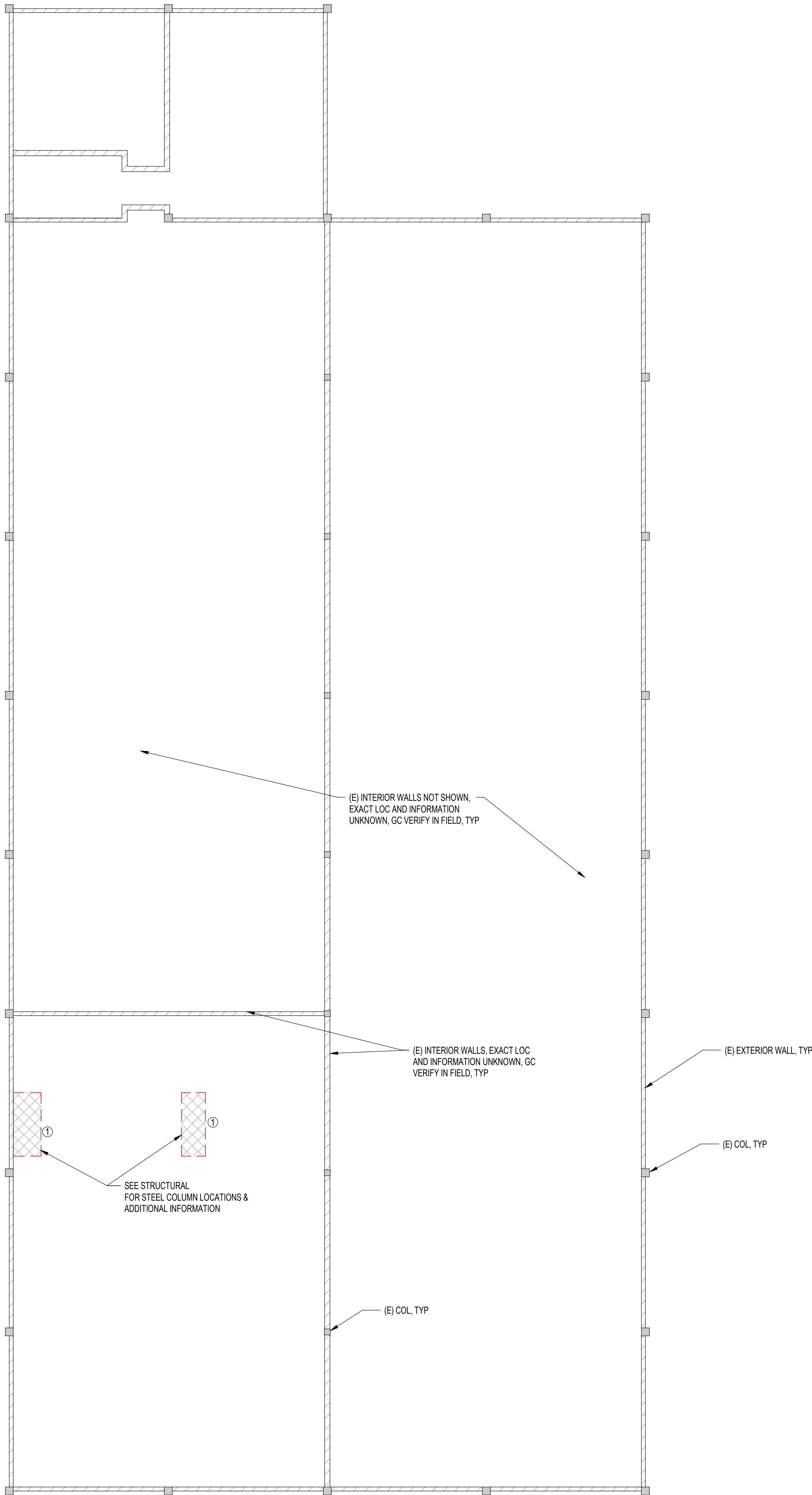
LONGVIEW SCHOOL DISTRICT HEAT PUMP REPLACEMENT AND INDOOR AIR QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98632

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MARK MORRIS -
AA-BUILDING -
DEMO/FLOOR
PLANS

A101A



GENERAL DEMOLITION NOTES

1. DASHED LINES INDICATE EXTENT OF EXISTING ASSEMBLIES TO BE DEMOLISHED.
2. THE DEMOLITION DRAWINGS ARE INTENDED AS A GENERAL GUIDE AS TO THE SCOPE OF DEMOLITION REQUIRED. ADDITIONAL ITEMS THAT ARE NOT SPECIFICALLY IDENTIFIED AND THAT ARE LOGICALLY ASSOCIATED WITH ITEMS CALLED OUT AS BEING REMOVED SHOULD BE REMOVED AS WELL INCLUDING DEMOLITION IDENTIFIED ON ALL DISCIPLINES DRAWINGS. IF THERE IS A QUESTION CONTACT THE ARCHITECT FOR DIRECTION.
3. OWNER RETAINS THE FIRST RIGHT OF REFUSAL OF ALL DEMOLISHED ITEMS.
4. FOR ALL STRUCTURAL DEMOLITION WORK, REFER TO SPECIFIC DISCIPLINE DEMOLITION DRAWINGS.
5. PROTECT AND MAINTAIN EXISTING WALL ASSEMBLIES AND ASSOCIATED FINISHES, UNO
6. PROTECT EXISTING ELECTRICAL ASSEMBLIES. ALL ELECTRICAL ASSEMBLIES (LIGHTS, ELECTRICAL, DATA, FIRE ALARM, SECURITY, ETC) ARE TO REMAIN IN FUNCTION DURING CONSTRUCTION. ANY ELECTRICAL ASSEMBLIES DAMAGED OR REMOVED ARE TO BE REINSTALLED OR REPLACED TO A LIKE NEW CONDITION.
7. PROTECT ALL OWNER INSTALLED STAGE EQUIPMENT. ANY OWNER INSTALLED STAGE EQUIPMENT DAMAGE OR REMOVED SHALL BE REINSTALLED OR REPLACE TO A LIKE NEW CONDITION.
8. PATCH AND REPAIR CEILING, FLOORS AND WALLS TO MATCH ADJACENT. ALIGN FINISHED ASSEMBLIES FOR SMOOTH TRANSITION BETWEEN NEW AND ADJACENT.
9. WHERE MECHANICAL DUCTS ARE ROUTED THROUGH EXISTING PARTITION WALLS, DEMO EXISTING GYPSUM WALL BOARD TO ALLOW FOR ROUTING. SEE STRUCTURAL DRAWING FOR POTENTIAL LOAD BEARING ELEMENTS, DO NOT MODIFY EXISTING FRAMING (INCLUDING STRUCTURAL WALL SHEATHING) WITHOUT APPROVAL FROM THE DESIGN TEAM.

DEMO PLAN KEYNOTES:
① DEMOLISH FLOOR FINISHES AS REQUIRED TO SAWCUT AND INSTALL CONCRETE. SAWCUT CONCRETE AS REQUIRED. SEE STRUCTURAL FOR ADDITIONAL INFORMATION

DEMOLITION LEGEND

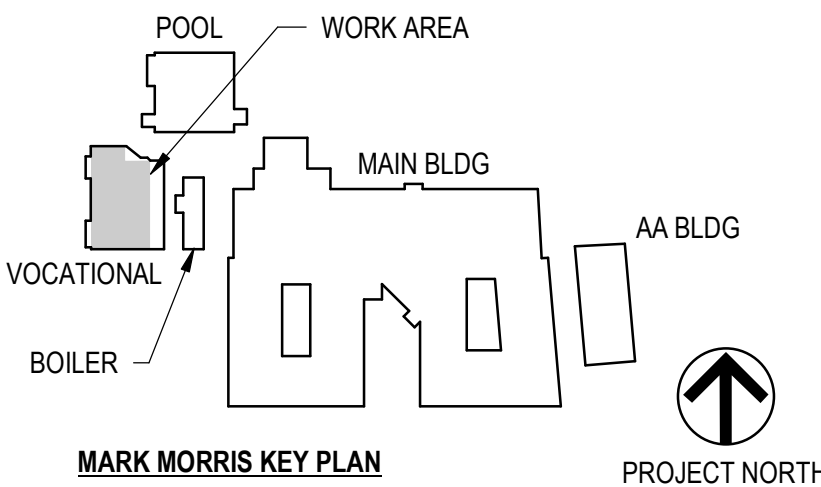
- == == == == ASSEMBLY TO BE DEMOLISHED.
- EXISTING ASSEMBLY TO REMAIN.
- [Red cross-hatch pattern] CONCRETE FLOOR SLAB TO BE REMOVING IN ITS ENTIRETY. SAW CUT EDGES.

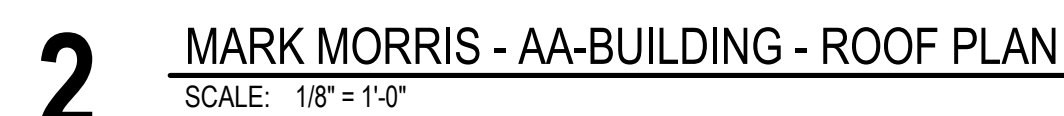
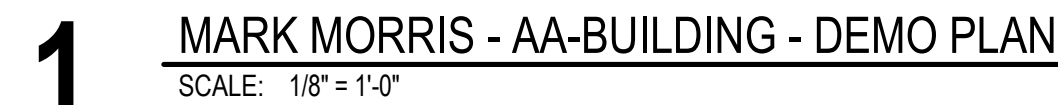
LONGVIEW SCHOOL DISTRICT HEAT PUMP
REPLACEMENT AND INDOOR AIR QUALITY
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MARK MORRIS -
VOCATIONAL
BUILDING - DEMO
PLAN

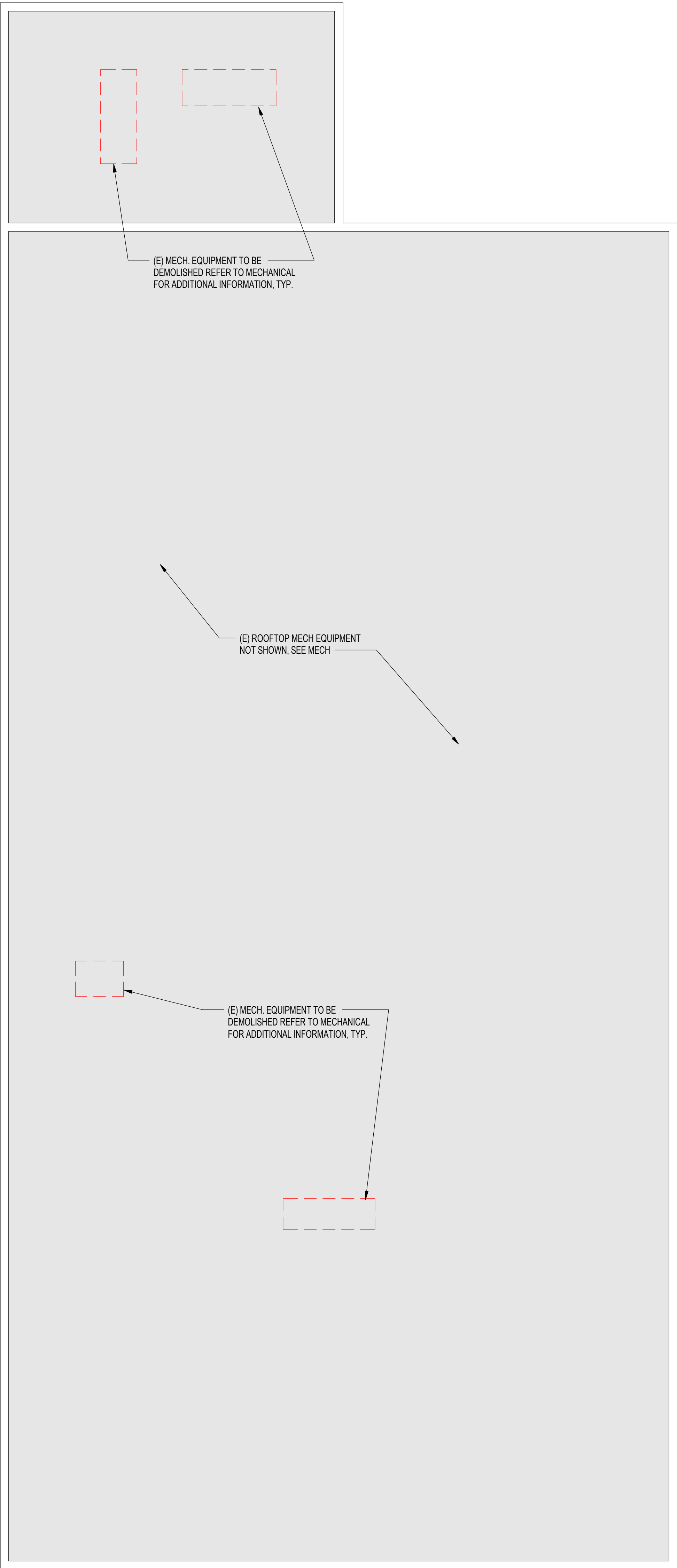
A101B



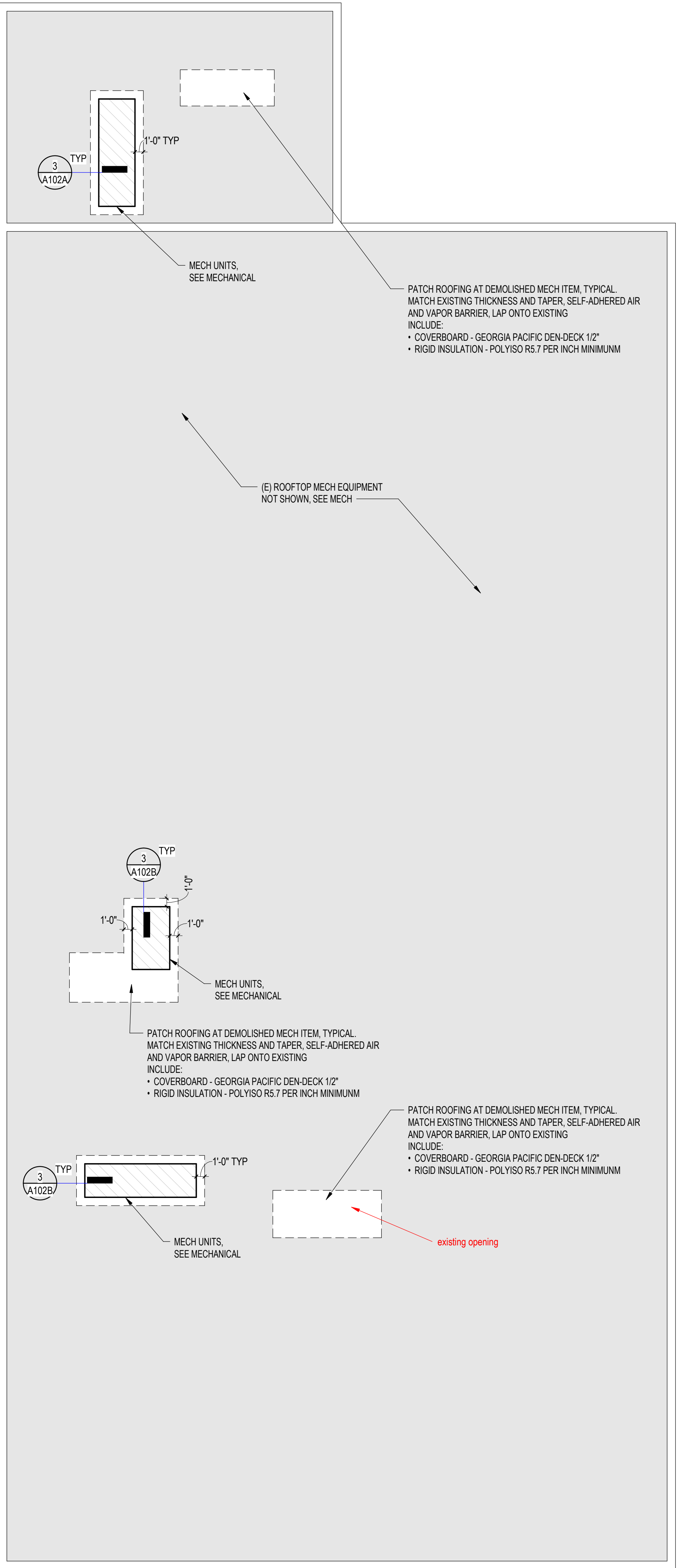


3 MECH CURB
SCALE: 1 1/2" = 1'-0"





1 MARK MORRIS - VOCATIONAL BUILDING - ROOF DEMO PLAN
SCALE: 1/8" = 1'-0"



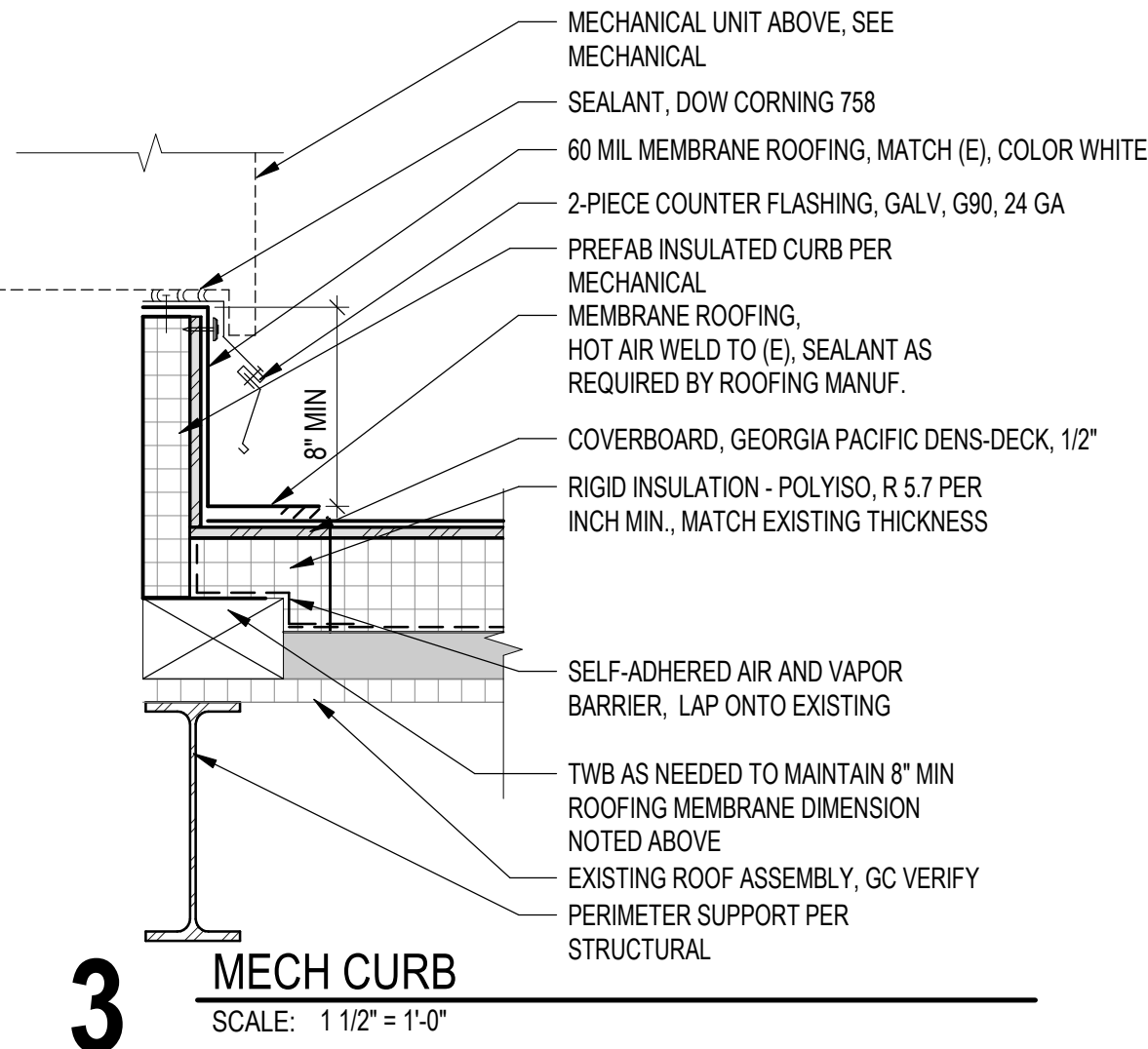
2 MARK MORRIS - VOCATIONAL BUILDING - ROOF PLAN
SCALE: 1/8" = 1'-0"

ARCH ROOF NOTES

1. PATCH ALL OPENINGS OF EXISTING WALLS & EXISTING ROOF LEFT BY REMOVAL OF EXISTING ITEMS. PATCH AS TO MATCH FINISH OF ADJACENT UNDISTURBED AREA
2. REFER TO MECHANICAL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR FURTHER INFORMATION
3. IN ADDITION TO PENETRATIONS SHOWN ON ROOF PLAN, REFER TO MECHANICAL AND ELECTRICAL FOR ADDITIONAL LOCATIONS, TYPES, SIZES AND QUANTITIES. PROVIDE APPROPRIATE FLASHING REQUIRED.
4. PATCH ROOFING MEMBRANE PER MANUFACTURERS RECOMMENDATIONS. VERIFY COMPATIBILITY WITH EXISTING MEMBRANE.

DEMOLITION LEGEND

- ASSEMBLY TO BE DEMOLISHED.
- EXISTING ASSEMBLY TO REMAIN.



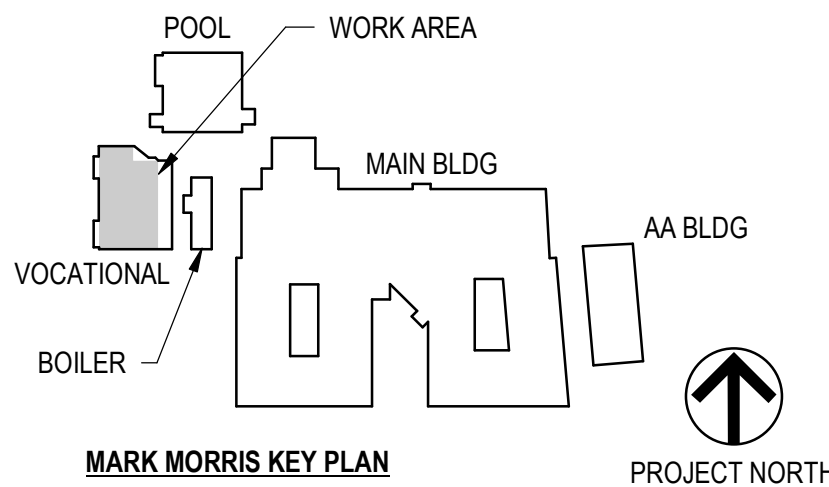
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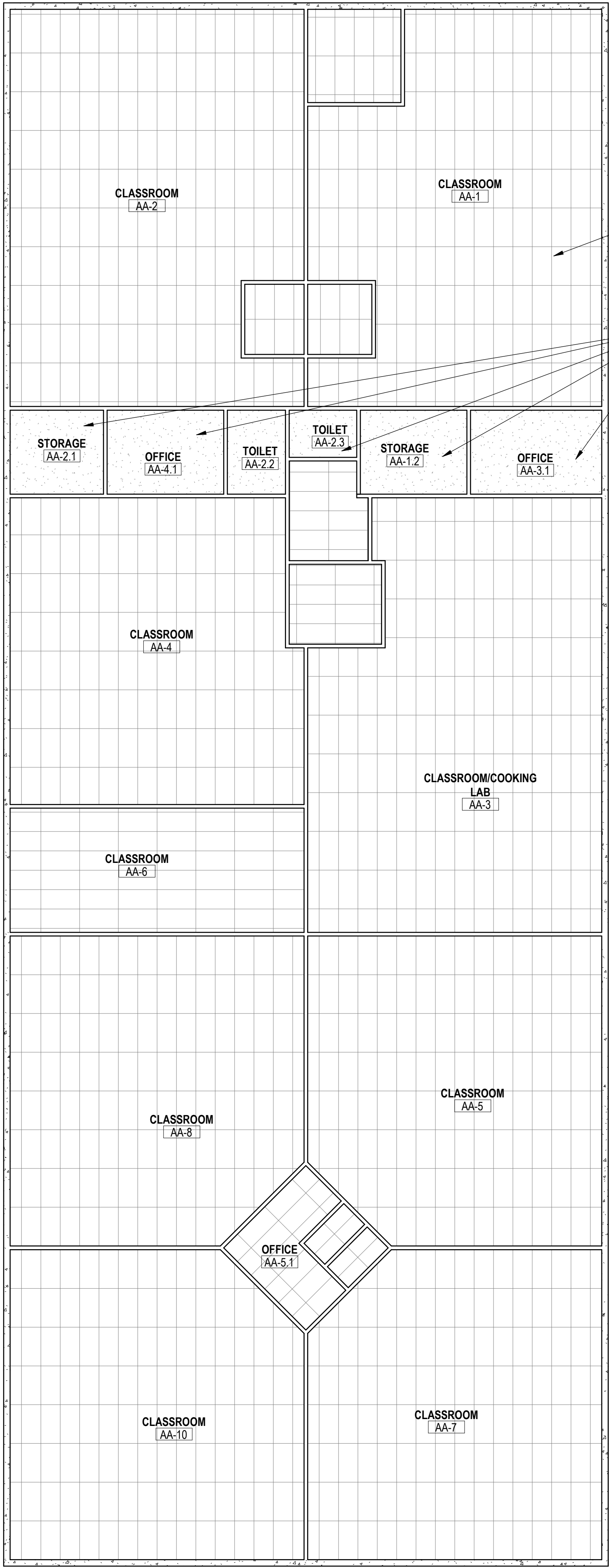
MARK MORRIS -
VOCATIONAL
BUILDING -
DEMO/ROOF PLANS

A102B



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1 MARK MORRIS AA BUILDING - REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

**REFLECTED CEILING PLAN
KEYNOTES**

- 1 REMOVE AND REINSTALL CEILING TILES AND CEILING GRID AS REQUIRED TO COMPLETE STRUCTURAL, MECHANICAL, AND ELECTRICAL SCOPES OF WORK. THIS ALSO INCLUDES THE DEMO SCOPES OF WORK, REPLACE ANY DAMAGED CEILING TILES, CEILING GRIDS, AND ITEMS RELATED TO THE CEILING SYSTEM.
- 2 DEMO EXISTING GYPSUM BOARD CEILING AND ASSOCIATED CEILING SUPPORTS AS REQUIRED TO COMPLETE STRUCTURAL, MECHANICAL, AND ELECTRICAL SCOPES OF WORK. THIS ALSO INCLUDES THE DEMO SCOPES OF WORK. INSTALL 5/8" GYPSUM BOARD CEILING w/ 2x4 @ 16" ON CENTER MAX CEILING FRAMING. MAX 2x4 SPAN = 10 FEET. 2x4 SHALL ONLY SUPPORT GWB AND CEILING MOUNTED LIGHTS. INSTALL FINISH FOR A SMOOTH TRANSITION TO THE ADJACENT EXISTING FINISH.
- 3 PROTECT EXISTING ELECTRICAL ASSEMBLIES (LIGHTS, ELECTRICAL DATA, FIRE ALARM, SECURITY, ETC). ANY ELECTRICAL DAMAGED OR REMOVED SHALL BE REINSTALLED OR REPLACED TO A LIKE NEW CONDITION.

**REFLECTED CEILING PLAN
MATERIAL & FINISH LEGEND**

- EXISTING GYPSUM BOARD
CEILING (GWB), GC VERIFY
- EXISTING ACOUSTICAL CEILING
TILE (ACT-1), GC VERIFY
- OTA OPEN TO ABOVE
- OTS OPEN TO STRUCTURE

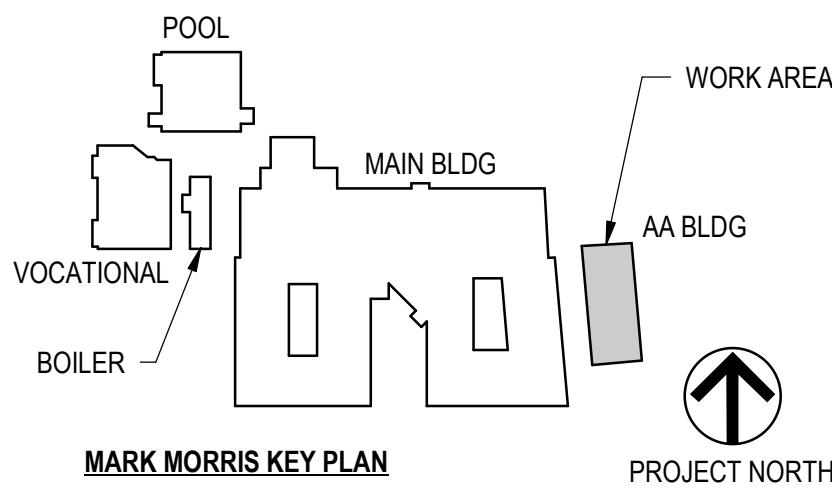
**LONGVIEW SCHOOL DISTRICT HEAT PUMP
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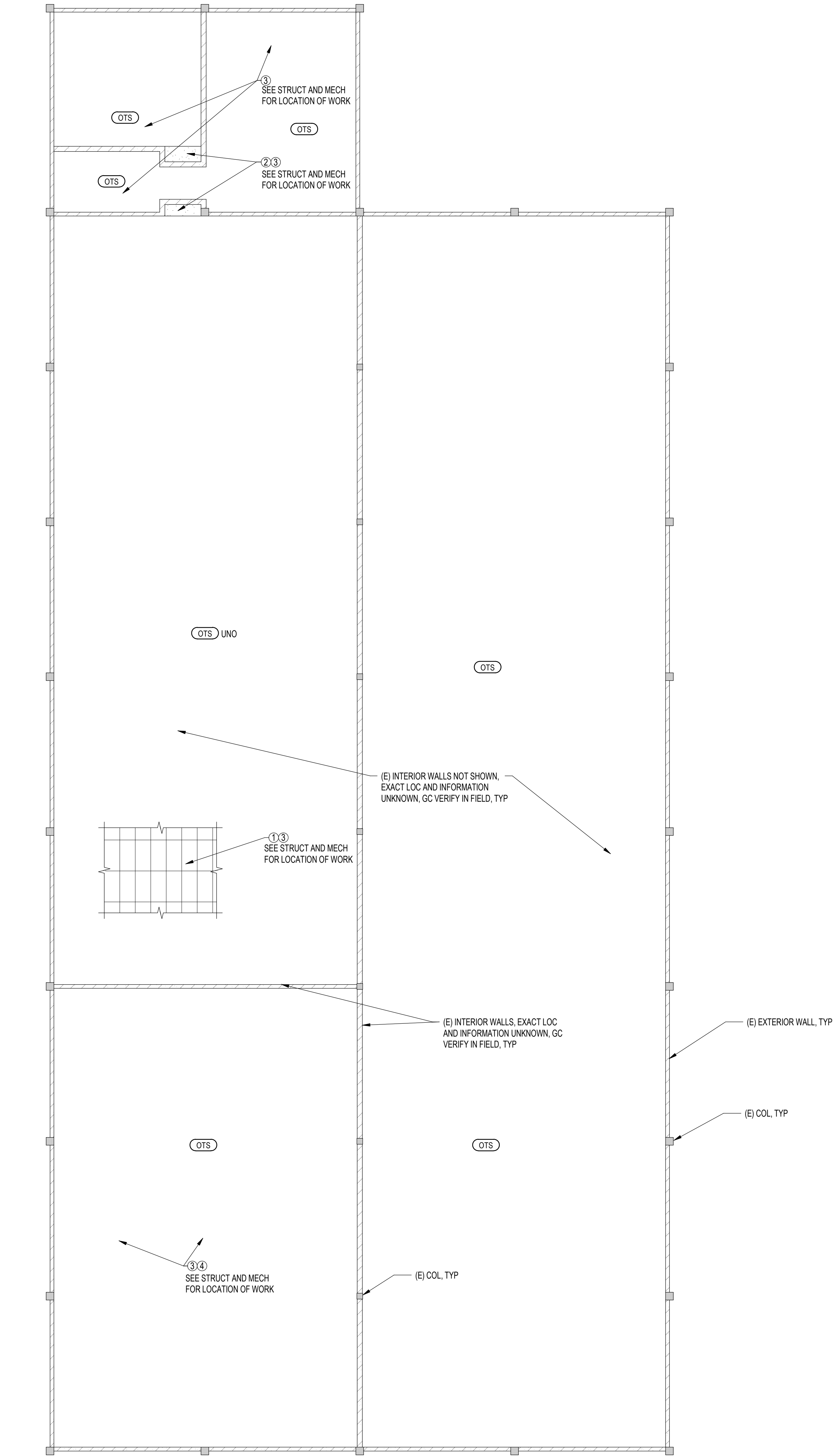
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MARK MORRIS - AA
BUILDING -
REFLECTED
CEILING PLAN

A121A



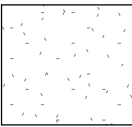


1 MARK MORRIS - VOCATIONAL BUILDING - REFLECTIVE CEILING PLAN
SCALE: 1/8" = 1'-0"

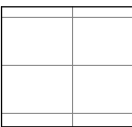
REFLECTED CEILING PLAN
KEYNOTES

- 1 REMOVE AND REINSTALL CEILING TILES AND CEILING GRID AS REQUIRED TO COMPLETE STRUCTURAL, MECHANICAL, AND ELECTRICAL SCOPES OF WORK. THIS ALSO INCLUDES THE DEMO SCOPES OF WORK. REPLACE ANY DAMAGED CEILING TILES, CEILING GRIDS, AND ITEMS RELATED TO THE CEILING SYSTEM. DEMO EXISTING GYPSUM BOARD CEILING AND ASSOCIATED CEILING SUPPORTS AS REQUIRED TO COMPLETE STRUCTURAL, MECHANICAL, AND ELECTRICAL SCOPES OF WORK. THIS ALSO INCLUDES THE DEMO SCOPES OF WORK. INSTALL 5/8" GYPSUM BOARD CEILING w/ 2x4 @ 16" ON CENTER MAX CEILING FRAMING. MAX 2x4 SPAN = 10 FEET. 2x4 SHALL ONLY SUPPORT GWB AND CEILING MOUNTED LIGHTS. INSTALL FINISH FOR A SMOOTH TRANSITION TO THE ADJACENT EXISTING FINISH.
- 2 PROTECT EXISTING ELECTRICAL ASSEMBLIES (LIGHTS, ELECTRICAL, DATA, FIRE ALARM, SECURITY, ETC). ANY ELECTRICAL DAMAGED OR REMOVED SHALL BE REINSTALLED OR REPLACED TO A LIKE NEW CONDITION.
- 3 PAINT DUCTS AND HVAC EQUIPMENT TO MATCH EXISTING. PAINT ADDED STRUCTURAL STEEL SUPPORTS, INCLUDING COLUMNS.
- 4

REFLECTED CEILING PLAN
MATERIAL & FINISH LEGEND



EXISTING GYPSUM BOARD
CEILING (GWB), GC VERIFY



EXISTING ACOUSTICAL CEILING
TILE (ACT-1), GC VERIFY

OTA

OPEN TO ABOVE

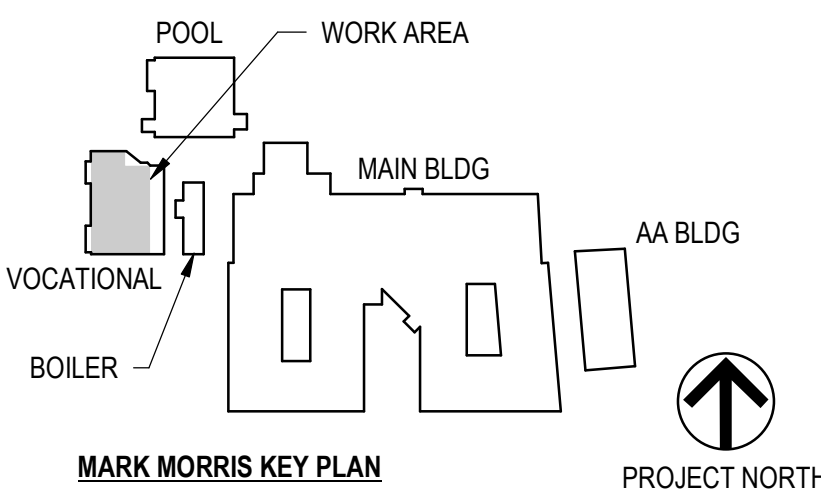
OTS

OPEN TO STRUCTURE

LONGVIEW SCHOOL DISTRICT HEAT PUMP
REPLACEMENT AND INDOOR AIR QUALITY
IMPROVEMENTS

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Job No.:	22220.00	
Drawn By:	Author	
Checked by:	Checker	
Revisions		
#	Date	Description



MARK MORRIS -
VOCATIONAL
BUILDING -
REFLECTED
CEILING PLAN

A121B



REFLECTED CEILING PLAN
KEYNOTES

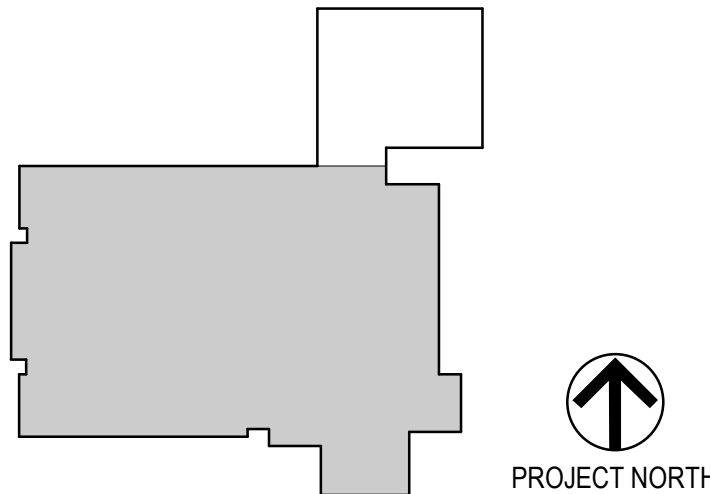
- 1 REMOVE AND REINSTALL CEILING TILES AND CEILING GRID AS REQUIRED TO COMPLETE MECHANICAL AND ELECTRICAL SCOPE OF WORK. THIS ALSO INCLUDES THE DEMO SCOPE OF WORK. REPLACE ANY DAMAGED CEILING TILES, CEILING GRIDS, AND ITEMS RELATED TO THE CEILING SYSTEM.
- 2 PROTECT EXISTING ELECTRICAL ASSEMBLIES (LIGHTS, ELECTRICAL DATA, FIRE ALARM, SECURITY, ETC). ANY ELECTRICAL DAMAGED OR REMOVED SHALL BE REINSTALLED OR REPLACED TO A LIKE NEW CONDITION.

REFLECTED CEILING PLAN
MATERIAL & FINISH LEGEND

- EXISTING GYPSUM BOARD CEILING (GWB), GC VERIFY
- EXISTING ACOUSTICAL CEILING TILE (ACT-1), GC VERIFY
- OTA OPEN TO ABOVE
- OTS OPEN TO STRUCTURE

LONGVIEW SCHOOL DISTRICT HEAT PUMP
REPLACEMENT AND INDOOR AIR QUALITY
IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	01/17/23	
Job No.:	22220.00	
Drawn By:	Author	
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Revisions		
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COLUMBIA VALLEY
GARDENS -
REFLECTED
CEILING PLAN

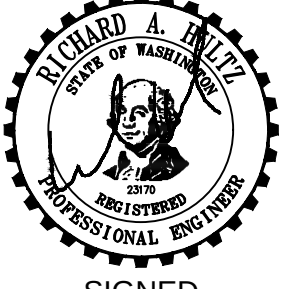
A121C

MECHANICAL GENERAL NOTES	
1. CONTRACTOR SHALL CAREFULLY COORDINATE WORK W/ ALL OTHER TRADES, ESPECIALLY IN CEILING SPACES WHERE SPACE IS TIGHT. SHEET METAL CONTRACTOR SHALL HAVE PRIORITY OVER OTHER MECHANICAL TRADES IN CEILING SPACE WHERE CONFLICTS OCCUR.	7. ALL PIPING SHOWN IS SCHEMATIC, CONTRACTOR SHALL PROVIDE ALL OFFSETS/ELBOWS AS REQ'D TO ALLOW ROUTING AROUND STRUCTURE, ELECTRICAL, & OTHER INTERFERENCES. ALL PIPING SHALL BE RUN CONCEALED, UNO.
2. ALL DUCTWORK SHOWN IS SCHEMATIC, CONTRACTOR SHALL PROVIDE ALL OFFSETS/ELBOWS AS REQ'D TO ALLOW ROUTING AROUND STRUCTURE, ELECTRICAL, & OTHER INTERFERENCES.	8. PROVIDE PRIMARY CONDENSATE DRAINS FOR UNITS GENERATING CONDENSATE IN ACCORDANCE WITH CODE REQUIREMENTS & AS SHOWN ON DRAWINGS.
3. UNSIZED DUCTS SHALL MATCH THE SIZE OF THE LARGEST ADJACENT DUCT THAT IS SIZED, WHERE THE ADJACENT DUCT SIZE IS NOT SHOWN, PROVIDE SA & OA DUCTS SIZED AT 0.08" PD PER 100 FEET, PROVIDE RA DUCTS SIZED AT 0.07" PD PER 100 FEET (OR LARGER AS FAN SP OR NOISE CONSIDERATIONS REQUIRE).	9. ALL DUCTWORK SHALL BE RUN CONCEALED (UNO).
4. WHERE RETURN GRILLE CFMS ARE NOT INDICATED, BALANCER SHALL CALCULATE & SUBMIT FOR ENGINEER REVIEW.	10. PROVIDE FLEX CONNECTORS IN DUCT CONNECTIONS TO ALL EQUIPMENT.
5. DRAWINGS SCALES APPLY TO FULL SIZE SHEET ONLY. USE CAUTION IN OBTAINING DIMENSIONS AND QUANTITIES FROM DRAWINGS THAT ARE NOT FULL SIZE; USE DIMENSIONS CALCULATED FROM DIMENSIONS ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS OVER OTHER METHODS OF OBTAINING DIMENSIONS.	11. PROVIDE TRANSITIONS FROM DUCT SIZES INDICATED TO CONNECTION SIZES AT EQUIPMENT TO MATCH UNIT CONNECTIONS. WHERE THE CONNECTING DUCT IS LINED, THE TRANSITION SHALL BE LINED.
6. SEISMICALLY ANCHOR ALL UNITS & EQUIPMENT TO BUILDING, (UNO). CONTRACTOR IS RESPONSIBLE TO SELECT AND PROVIDE ALL SEISMIC ANCHORING DEVICES FOR ALL MECHANICAL EQUIPMENT.	12. SEE DETAIL SHEET M3.6 FOR SUSPENDED EQUIPMENT SUPPORT.
	13. ALL ITEMS ARE NEW UNLESS SPECIFICALLY NOTED AS EXISTING.

ENERGY CODE NOTES	
EQUIPMENT SIZING, PERFORMANCE, AND TYPE	
1. LOAD CALCULATIONS, C403.1: LOAD CALCULATIONS HAVE BEEN PERFORMED IN ACCORDANCE WITH WSEC C403.1.2.	28. INTEGRATED AIR ECONOMIZER, C403.3.3.1: MECHANICAL COOLING CONTROLS SHALL BE INTERLOCKED WITH AIR ECONOMIZER CONTROLS SO THE OUTSIDE AIR DAMPER REMAINS IN 100% OPEN POSITION WHEN MECHANICAL EQUIPMENT IS IN COOLING TO MEET THE COOLING LOAD, UNTIL THE LEAVING AIR TEMPERATURE IS < 45°F. FOR SYSTEMS WITH COOLING CAPACITY GREATER THAN 65 MBH, CONTROL OF ECONOMIZER DAMPERS SHALL NOT BE CONTROLLED BASED ONLY ON MIXED AIR TEMPERATURE.
2. EQUIPMENT AND SYSTEM SIZING, C403.3: OUTPUT CAPACITIES OF HEATING AND COOLING EQUIPMENT AND SYSTEMS ARE NO GREATER THAN THE SMALLEST AVAILABLE EQUIPMENT SIZE THAT EXCEEDS THE CALCULATED LOADS.	29. ECONOMIZER HIGH LIMIT CONTROLS: PROVIDE HIGH-LIMIT ECONOMIZER SHUT-OFF CONTROL UTILIZING FIXED DRY BULB METHOD. ECONOMIZER SHALL BE OFF WHEN OUTDOOR AIR TEMPERATURE EXCEEDS 75°F.
3. HVAC EQUIPMENT PERFORMANCE, C403.3.2: EQUIPMENT SCHEDULES ARE INCLUDED WITH THESE PLANS.	30. DX AIR HANDLING EQUIPMENT FAULT DETECTION:UNITS WITH DX COOLING 54 MBH AND GREATER SHALL BE PROVIDED WITH AN ECONOMIZER FAULT DETECTION AND DIAGNOSTICS (FDD) SYSTEM TO MONITOR ECONOMIZER OPERATION AND REPORT FAULTS.
4. ELECTRIC MOTOR EFFICIENCY, C405.8: ALL ELECTRIC MOTORS SHALL MEET THE MINIMUM EFFICIENCY OF WSEC TABLES.	SYSTEMS REQUIRING ENERGY RECOVERY
5. FAN POWER LIMITATION: FOR ALL HVAC SYSTEMS WITH TOTAL FAN HP > 5HP, MOTOR HP OR BHP SHALL COMPLY WITH FAN POWER LIMITATIONS PER WSEC.	31. ENERGY RECOVERY VENTILATION/EXHAUST: SYSTEMS WITH DESIGN OUTSIDE AIR GREATER THAN 5,000 CFM AND SYSTEMS WITH OUTSIDE AIR PERCENTAGE EXCEEDING THE VALUES OF WSEC TABLE C403.5.1(1) OR (2) SHALL BE PROVIDED WITH AN ENERGY RECOVERY SYSTEM. SEE EQUIPMENT SCHEDULES FOR TYPE AND EFFECTIVENESS.
6. MOTOR NAMEPLATE HP: FOR EACH FAN, THE MOTOR SHALL BE NO LARGER THAN THE FIRST AVAILABLE MOTOR SIZE GREATER THAN THE BHP.	DEDICATED OUTDOOR AIR SYSTEMS (DOAS)
7. FAN EFFICIENCY: FANS AND FAN SYSTEMS GREATER THAN 5HP SHALL HAVE A FAN EFFICIENCY GRADE (FEG) OF 67 OR HIGHER PER AMCA 205.	32. DEDICATED OUTDOOR AIR SYSTEMS PROVIDED FOR ALL AREAS (EXCEPT RANGES).
8. FAN VARIABLE FLOW CAPACITY: FOR FAN MOTORS 7.5 HP AND GREATER VARIABLE FLOWS SHALL BE PROVIDED WITH A VFD.	33. ENERGY RECOVERY VENTILATION WITH DOAS: ALL DOAS UNITS SHALL BE PROVIDED WITH EXHAUST HEAT RECOVERY WITH RATED EFFECTIVENESS TO INCREASE OSA ENTHALPY BY 50% OR MORE BASED ON THE DELTA BETWEEN THE RETURN AIR AND THE OUTSIDE AIR ENTHALPIES AT DESIGN CONDITIONS.
9. GAS-FIRED FURNACES AND UNIT HEATERS: FOR INPUT RATING OF 225 MBH OR GREATER, PROVIDE WITH INTERMITTENT IGNITION OR INTERRUPTED DEVICE, MECHANICAL DRAFT (INCLUDING POWER VENTING) OR A FLUE OR VENT DAMPER, AND WHERE LOCATED WITHIN A CONDITIONED SPACE, JACKET LOSSES SHALL NOT EXCEED 0.75 PERCENT OF THE INPUT RATING.	34. HEATING/COOLING SYSTEM CONTROLS WITH DOAS: EQUIPMENT THAT PROVIDES ZONE LEVEL HEATING AND COOLING SHALL BE CONFIGURED WITH FANS AND/OR PUMPS THAT CYCLE OFF AND PRIMARY COOLING AIR SHALL SHUT OFF WHEN THERE IS NO CALL FOR HEATING OR COOLING IN THE ZONES THEY SERVE.
10. COMBUSTION HEATING EQUIPMENT: COMBUSTION HEATING EQUIPMENT OVER 225 MBH CAPACITY SHALL HAVE MODULATING OR STAGED COMBUSTION CONTROL (EXCEPT BOILERS AND RADIANT HEATERS).	COMMISSIONING
11. OUTDOOR AIR, EXHAUST & RELIEF DAMPERS: PROVIDE ALL OUTSIDE AIR, EXHAUST AIR, AND RELIEF AIR OPENINGS WITH CLASS 1 (MAX LEAKAGE OF 4 CFM/SF AT 1.0" W.C.) MOTORIZED DAMPERS.	35. SCOPE OF MECHANICAL SYSTEMS COMMISSIONING: ALL MECHANICAL SYSTEMS, EQUIPMENT AND CONTROLS SHALL BE COMMISSIONED.
12. RETURN AIR DAMPERS: PROVIDE RETURN AIR OPENINGS WITH CLASS 1 MOTORIZED DAMPER WHERE USED FOR AIRSIDE ECONOMIZER, WHERE INSTALLED IN UNITARY PACKAGED EQUIPMENT DAMPER, PROVIDE DAMPERS WITH LOWEST LEAKAGE RATE AVAILABLE FROM THE EQUIPMENT MANUFACTURER.	36. COMMISSIONING REQUIREMENTS IN CONSTRUCTION DOCUMENTS: COMMISSIONING PLAN SHALL BE DEVELOPED BY A COMMISSIONING PROFESSIONAL AND CONSIST OF A NARRATIVE DESCRIPTION OF ACTIVITIES, ROLES & RESPONSIBILITIES OF THE COMMISSIONING TEAM, SCHEDULE OF ACTIVITIES INCLUDING TAB, FUNCTIONAL PERFORMANCE TESTING AND VERIFICATION OF PROJECT CLOSE OUT DOCUMENTATION PER C103.6, AND SUBMIT COMPLIANCE CHECKLIST TO THE BUILDING OFFICIAL UPON SUBSTANTIAL COMPLETION. A PRELIMINARY COMMISSIONING REPORT AND/OR COMMISSIONING COMPLIANCE CHECKLIST SHALL BE AVAILABLE FOR AHJ REVIEW PRIOR TO THE FINAL MECHANICAL INSPECTION.
HVAC SYSTEM CONTROLS	
13. THERMOSTATIC CONTROLS: WHERE ADJACENT ZONES CONNECTED BY PERMANENT OPENINGS WITH AREA GREATER THAN 10% OF EITHER ZONE SF, PROVIDE CONTROL TO PREVENT ADJACENT ZONES FROM OPERATING IN CONFLICTING MODES. WHERE A NON-PERIMETER ZONE IS ADJACENT TO A PERIMETER ZONE, PROVIDE CONTROLS TO ONLY ALLOW COOLING IN THE NON-PERIMETER ZONE WHEN IT IS 5 DEGREES HIGHER THAN THE PERIMETER ZONE.	37. AIR SYSTEM BALANCING: HVAC AIR SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH THE SPECIFICATIONS AND THESE WSEC NOTES. SEE SPECIFICATIONS FOR FLOW RATE TOLERANCES.
14. DEADBAND: THERMOSTATIC CONTROLS SHALL BE CONFIGURED WITH 5°F MINIMUM DEADBAND FOR SYSTEMS THAT CONTROL BOTH HEATING AND COOLING.	38. AIR SYSTEM BALANCING DEVICES: PROVIDE ALL SUPPLY AIR OUTLETS AND TERMINAL DEVICES WITH MEANS OF BALANCING AIRFLOW. BALANCE TO FIRST MINIMIZE THROTTLING LOSSES, THEN ADJUST TO MEET DESIGN AIR FLOWS.
15. AUTOMATIC SETBACK AND SHUTDOWN: HVAC SYSTEMS SHALL BE EQUIPPED WITH AUTOMATIC CONTROLS CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES, AND SHALL HAVE MANUAL OVERRIDE CONFIGURED TO OPERATE THE SYSTEM FOR 2 HOURS.	39. FUNCTIONAL PERFORMANCE TESTING CRITERIA: FUNCTIONAL PERFORMANCE TESTING SHALL BE PERFORMED IN ACCORDANCE WITH WSEC.
16. AUTOMATIC START: AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH HVAC SYSTEM, AND BE CAPABLE OF AUTOMATICALLY ADJUSTING DAILY START TIME IN ORDER TO BRING EACH SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.	EQUIPMENT SIZING, PERFORMANCE, AND TYPE
17. OUTDOOR AIR DAMPERS: OUTSIDE AIR INTAKE DAMPERS SHALL AUTOMATICALLY CLOSE WHEN SYSTEM OR SPACES SERVED ARE NOT IN USE OR DURING WARM-UP AND SET BACK.	1. SWH (SERVICE WATER HEATING) EQUIPMENT TYPE & EFFICIENCY, C404.2: EQUIPMENT SCHEDULES ARE INCLUDED WITH THESE PLANS.
18. VENTILATION: MECHANICAL VENTILATION AIR SYSTEMS SHALL BE CONFIGURED TO PROVIDE NOT MORE THAN 150%, BUT AT LEAST THE MINIMUM REQUIRED VOLUME OF OUTDOOR AIR TO EACH ZONE PER IMC. SEE MECHANICAL EQUIPMENT SCHEDULES FOR MINIMUM OUTSIDE AIR VALUES.	2. HEAT TRAPS, C404.4: WATER HEATING EQUIPMENT NOT SUPPLIED WITH INTEGRAL HEAT TRAPS SERVING NON CIRCULATED SYSTEMS SHALL BE PROVIDED WITH HEAT TRAPS ON SUPPLY AND DISCHARGE PIPING.
19. DX AHU VARIABLE COOLING CONTROL: DX COOLING UNITS SHALL BE PROVIDED WITH INTEGRATED ECONOMIZER COOLING AND WITH MODULATING MECHANICAL COOLING CAPACITY USING EITHER MULTIPLE COMPRESSORS OR A VARIABLE SPEED COMPRESSOR.	3. INSULATION UNDER ELECTRIC WATER HEATER, C404.5: ELECTRIC WATER HEATERS IN UNCONDITIONED SPACES OR ON CONCRETE FLOORS SHALL BE PROVIDED WITH INCOMPRESSIBLE R-10 INSULATED PAD.
20. FAN AIRFLOW CONTROL: DX COOLING UNITS, PROVIDE CONTROLS TO VARY THE INDOOR FAN AIRFLOW AS A FUNCTION OF LOAD.	PIPING SYSTEMS
21. DUCT CONSTRUCTION, C403.2.8.1: DUCTWORK SHALL BE CONSTRUCTED AND SEALED PER IMC.	FLUID OPERATING TEMPERATURE <1 1 TO <1-1/2 1-1/2 TO <4 4 TO <8 OVER 8
22. HIGH PRESSURE DUCT TESTING: DUCTED SYSTEMS DESIGNED TO OPERATE ABOVE 3 INCHES WATER GAUGE(W.G.) SHALL BE LEAK TESTED TO DEMONSTRATE MAXIMUM LEAKAGE PER WSEC EQUATION 4-9.	141-200 1.5 1.5 2.0 2.0 2.0
23. DUCT INSULATION: MINIMUM DUCT INSULATION PER WSEC IS AS FOLLOWS:	105-140 1.0 1.0 1.5 1.5 1.5
SERVICE INSULATION LEVEL PROVIDE INSULATION EQUIVALENT TO ENVELOPE REQUIREMENT FOR METAL FRAMED WALLS (TABLE C402.1.3)	40-60 0.5 0.5 1.0 1.0 1.0
OUTSIDE AIR DUCT SERVING INDIVIDUAL SUPPLY UNIT WITH LESS THAN 2,800 CFM OF SUPPLY AIR	<40 0.5 1.0 1.0 1.0 1.5
SUPPLY & RETURN DUCTS IN UNCONDITIONED SPACES	NO INSULATION REQUIRED
SUPPLY DUCTS WITHIN CONDITIONED SPACE WHERE SUPPLY AIR IS < 55 DEG F. OR > 105 DEG F.	ECONOMIZER
EXPOSED DUCTWORK WITHIN A ZONE THAT SERVES THAT ZONE	24. AIR ECONOMIZER REQUIRED: SEE EQUIPMENT SCHEDULES FOR EQUIPMENT PROVIDED WITH ECONOMIZER COOLING.
	25. INTEGRATED ECONOMIZER OPERATION: ECONOMIZERS SHALL BE CONFIGURED FOR PARTIAL COOLING OPERATION EVEN WHERE ADDITIONAL MECHANICAL COOLING IS REQUIRED TO MEET THE LOAD.
	26. ECONOMIZER HEATING IMPACT: ECONOMIZER CONTROLS SHALL BE SUCH THAT ECONOMIZER OPERATION DOES NOT INCREASE BUILDING HEATING ENERGY DURING NORMAL OPERATIONS.
	27. AIR ECONOMIZER CAPACITY: ECONOMIZER OUTSIDE AIR AND RETURN AIR DAMPERS SHALL MODULATE TO PROVIDE UP TO 100% OUTSIDE AIR FOR COOLING.

MECHANICAL DEMOLITION NOTES	
1. DEMOLITION DRAWINGS ARE INTENDED TO ONLY GIVE A GENERAL REPRESENTATION OF THE DEMOLITION INVOLVED, AND DO NOT CONSTITUTE A FULL LISTING OF ALL ITEMS.	7. REFERENCE ARCHITECTURAL DRAWINGS FOR WHERE CEILING/WALL AND OTHER GENERAL DEMOLITION WORK IS BEING DONE.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW SITE CONDITIONS AND TO IDENTIFY ALL DEMOLITION WORK AND INCLUDE IN HIS BID ALL COSTS FOR DEMOLITION.	8. EXISTING DUCTS, AIR INLETS/OUTLETS, EQUIPMENT SHOWN DASHED REPRESENT MAJOR MECHANICAL ITEMS TO BE REMOVED. SEE NOTES AND KEYED NOTES WHICH COVER ALL OTHER MISCELLANEOUS MECHANICAL ITEMS TO BE REMOVED.
3. CONTRACTOR SHALL VERIFY THE LOCATIONS & CONNECTIONS OF ALL ITEMS NOTED TO BE REMOVED.	9. SEE MECHANICAL FLOOR PLANS FOR HVAC DUCTS THAT ARE BEING REUSED.
4. ALL EXISTING ITEMS NOT BEING REUSED SHALL BE REMOVED. THIS INCLUDES SUCH ITEMS AS THERMOSTATS, CONTROL DEVICES, DUCTS, FANS, PIPING, GRILLES, SUPPORTS, VALVES, CURBS, AND RELATED ACCESSORIES.	10. WHERE EXISTING DUCTS ARE REUSED, AND EXIST, BRANCH DUCTS ARE REMOVED, PROVIDE SHEET METAL PATCH WITH INSULATION AT UNUSED CONNECTION (INSULATION REQUIRED ON SUPPLY AIR DUCTS ONLY).
5. ABANDONED ITEMS, ANCHORS, INSERTS, PIPE STUBS, AND OTHER PROJECTIONS NOT BEING CONCEALED BY NEW CONSTRUCTION SHALL BE REMOVED TO 1" BELOW THE ADJACENT FINISHED SURFACE, AND THE DISTURBED AREA PATCHED.	11. WHERE FLOOR DRAINS ARE REMOVED, LOCATE AND REMOVE TRAP PRIMER THAT SERVED DRAIN(S) AND CAP OFF CW PIPING.
6. PATCH ALL WALL/FLOOR/CEILING OPENINGS LEFT BY REMOVAL OF EXIST. ITEMS. PATCH SO AS TO MATCH FINISH OF ADJACENT UNDISTURBED AREA.	12. HOLD ALL REMOVED ITEMS FOR OWNERS REVIEW. ITEMS SELECTED BY OWNER FOR SALVAGE SHALL BE MOVED BY THE CONTRACTOR TO THE OWNERS STORAGE ROOM (VERIFY EXACT LOCATION WITH OWNER). ITEMS NOT SELECTED BY OWNER FOR SALVAGE SHALL BE DISPOSED OF OFF SITE BY CONTRACTOR.

MECHANICAL LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PIPE UP	AAV	AUTOMATIC AIR VENT
	PIPE DOWN	AFF	ABOVE FINISHED FLOOR
	PIPE TEE IN LINE, BRANCH PIPE DOWN	APPROX	APPROXIMATELY
	CONDENSATE LINE	ARCH	ARCHITECTURAL
	HYDRONIC SUPPLY	BDD	BACK DRAFT DAMPER
	HYDRONIC RETURN	BTU	BRITISH THERMAL UNIT
	COLD WATER (CW)	BTUH	BRITISH THERMAL UNIT/HOUR
	ISOLATION VALVE	BLDG	BUILDING
	UNION	C	CAPACITY
	CONCENTRIC REDUCER	CAP	CONDENSATE
	DUCT UP (ROUND)	CD	CEILING DIFFUSER
	DUCT DOWN (ROUND)	CER	CEILING EXHAUST REGISTER
	DUCT SECTION (SUPPLY)	CFM	CUBIC FEET PER MINUTE
	DUCT SECTION (EXHAUST OR RETURN)	CLG	CEILING
	ROUND DUCT	COP	COEFFICIENT OF PERFORMANCE
	TURNING VANES	COMP	COMPRESSOR
	DUCT (FIRST FIGURE, SIDE SHOWN)	CONN	CONNECTION
	LINED DUCT (DIM. FOR NET FREE AREA)	DEG F, °F	DEGREE FAHRENHEIT
	RISE (R) OR DROP (D) ARROW IN DIRECTION OF FLOW	DH	DUCT HEATER
	VOLUME DAMPER (MANUAL)	DN	DOWNDRAFT
	MOTORIZED DAMPER	DWG	DRAWING
	FLEXIBLE CONNECTION	DB	DRY BULB
	FLEXIBLE DUCT	EA	EACH
	CEILING OUTLET	EC	ELECTRICAL CONTRACTOR
	CEILING INLET	ECM	ELECTRONIC COMMUTATED MOTOR
	WALL OUTLET (OR INLET)	ELEC	ELECTRICAL, ELECTRIC
	TEMPERATURE SENSOR	EER	ENERGY EFFICIENCY RATIO
	SWITCH	EAT	ENTERING AIR TEMPERATURE
	PHOTOGRAPH IDENTIFIER	EWB	ENTERING WET BULB
	DETAIL IDENTIFICATION NUMBER	EDB	ENTERING DRY BULB
	SECTION IDENTIFICATION LETTER	EOL	END OF LINING
		ESP	EXTERNAL STATIC PRESSURE
		ET	EXPANSION TANK
		(ETR)	EXISTING TO REMAIN
		EXIST, (E)	EXISTING
		EXH	EXHAUST
		EXT	EXTERIOR
		FD	FIRE DAMPER
		PFM	FEET PER MINUTE
		PS	FEET PER SECOND
		FLEX	FLEXIBLE
		FLA	FULL LOAD AMPS
		FLR	FLOOR
		FLV	FLUID VOLUME
		GPH	GALLON PER HOUR
		HP-#	HEAT PUMP NUMBER
		HP	HORSE POWER
		IN	INCH
		KW	KILOWATT
		LAT	LEAVING AIR TEMPERATURE
		LDB	LEAVING DRY BULB
		LWB	LEAVING WET BULB
		MAV	MANUAL AIR VENT
		MFR	MANUFACTURER
		MAX	MAXIMUM
		MFS	MAXIMUM FUSE SIZE
		MBH	THOUSAND BTUH
		MECH	MECHANICAL
		MNI	MINIMUM
		MCA	MINIMUM CIRCUIT AMPS
		MOP	MAXIMUM OVERCURRENT PROTECTION
		NC	NORMALLY CLOSED
		NO	NORMALLY OPEN
		NTS	NOT TO SCALE
		OBD	OPPOSED BLADE DAMPER
		OA	OUTSIDE AIR
		PH	PHASE
		PD	PRESSURE DROP
		QTY	QUANTITY
		RLA	RATED LOAD AMPS
		REF	REFERENCE
		REQ'D	REQUIRED
		R	RETURN
		RA	RETURN AIR
		RVI	ROOF VENT INTAKE
		RVR	ROOF VENT RELIEF
		RPM	REVOLUTIONS PER MINUTE
		RM	ROOM
		S	SUPPLY
		SA	SUPPLY AIR
		S.O.	SCREENED OPENING
		S.S.	STAINLESS STEEL
		SHT	SHEET
		TEMP	TEMPERATURE
		TD	TRANSFER DUCT/TEMPERATURE DROP
		TG	TRANSFER GRILLE
		TSAT	THERMOSTAT
		TSP	TOTAL STATIC PRESSURE
		TYP	TYPICAL
		UNO	UNLESS NOTED OTHERWISE
		UPC	UNIFORM PLUMBING CODE
		V	VOLTS, VOLTAGE
		VFD	VARIABLE FREQUENCY DRIVE
		W	WATT
		WB	WET BULB
		WI	WITH
		WSEC	WASHINGTON STATE ENERGY CODE
		WSG	WALL SUPPLY GRILLE
		WSR	WALL SUPPLY REGISTER



SIGNED
1-12-2023

HULTZ & BHU
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1111 Fawcett Ave Suite 100 Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-188

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date: 1/17/2023

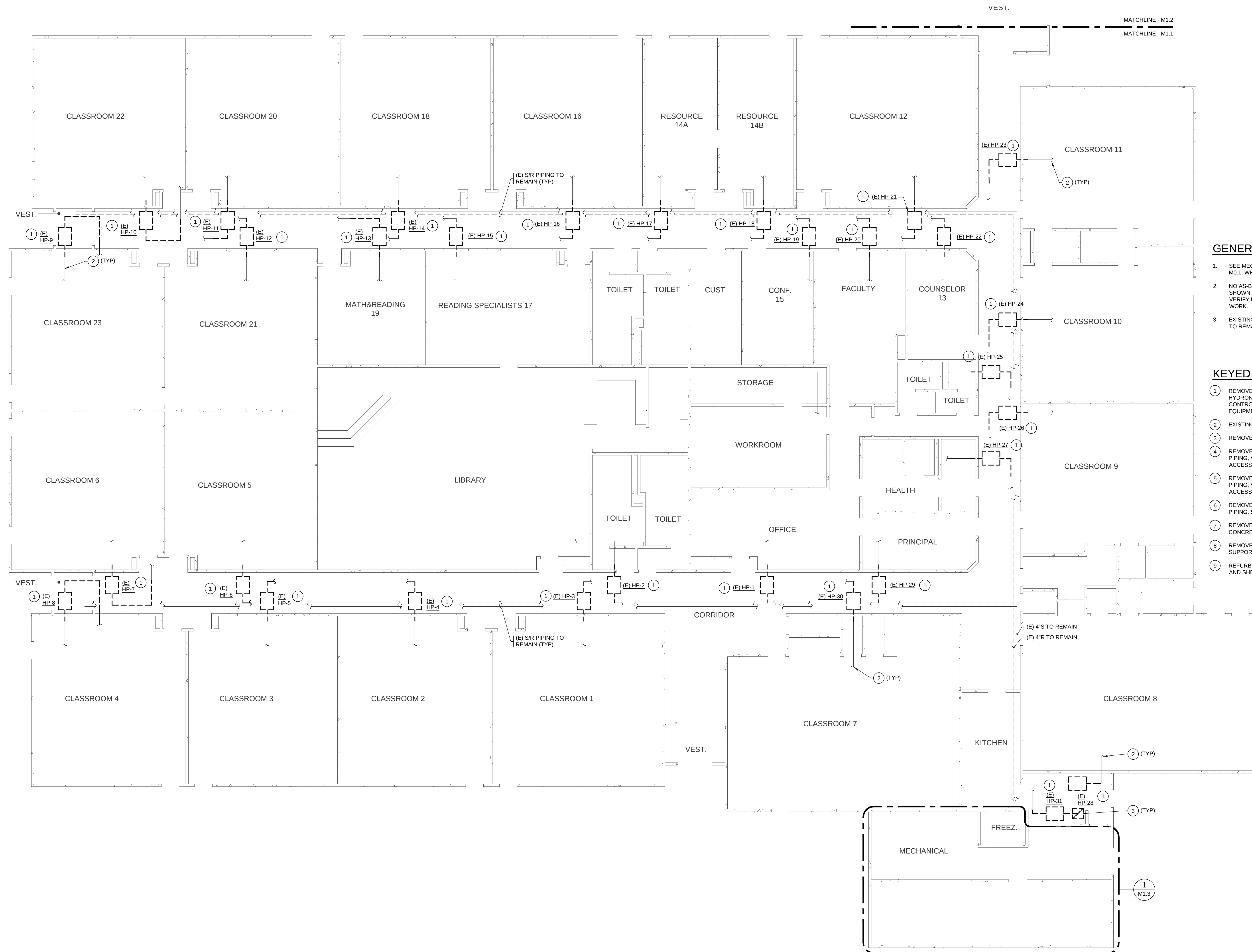
Job No.:

Drawn By: MB

Checked by: RH

Revisions

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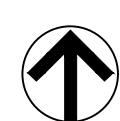


GENERAL DEMOLITION NOTES:

1. SEE MECHANICAL GENERAL DEMOLITION NOTES ON SHEET M0.1, WHICH APPLY TO ALL DEMOLITION WORK.
2. NO AS-BUILTS EXIST. EXISTING EQUIPMENT LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
3. EXISTING ROOF VENT INTAKES (RVI) & RELIEFS (RVR) ARE TO REMAIN, UNO.

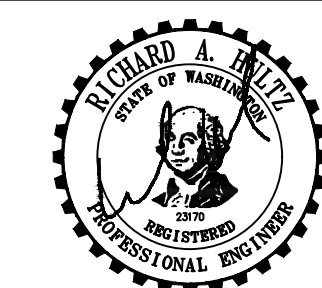
KEYED DEMOLITION NOTES:

- 1 REMOVE EXISTING WATER SOURCE HEAT PUMP, FILTER RACK, HYDRONIC BRANCH PIPING, & RELATED ACCESSORIES. EXISTING CONTROLS TO REMAIN AND BE RE-CONNECTED TO NEW EQUIPMENT.
- 2 EXISTING BRANCH DUCTWORK TO REMAIN (UNO).
- 3 REMOVE EXISTING DUCTWORK, AND ASSOCIATED GRILLE.
- 4 REMOVE EXISTING FLUID COOLER COMPLETE, INCLUDING PIPING, VALVES, FITTINGS, SUPPORTS, CONTROLS, POWER & ACCESSORIES.
- 5 REMOVE EXISTING ELECTRIC BOILER COMPLETE, INCLUDING PIPING, VALVES, FITTINGS, SUPPORTS, CONTROLS, POWER & ACCESSORIES.
- 6 REMOVE EXISTING EXPANSION TANK COMPLETE, INCLUDING PIPING, SUPPORTS & ACCESSORIES.
- 7 REMOVE EXISTING STORAGE TANK, AND ASSOCIATED CONCRETE BASE.
- 8 REMOVE ALL HYDRONIC PIPING, PUMPS, VALVES, FITTING, SUPPORTS & ACCESSORIES THIS AREA.
- 9 REFURBISH EXISTING AIR HANDLING UNIT. SEE SPECIFICATIONS AND SHEET M2.2 FOR COMPLETE REQUIREMENTS.



COLUMBIA VALLEY GARDENS - MECHANICAL FLOOR PLAN - DEMO

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



SIGNED

1-12-2023

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**LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS**

Date: 1/17/2023

Job No.:

Drawn By: MB

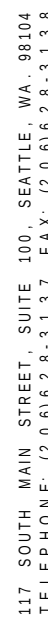
Checked by: RH

Revisions		
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COLUMBIA VALLEY
GARDENS -
MECHANICAL FLOOR
PLAN - DEMO

M1.1

BID SET



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engineers inc.

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Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhui.com Job Number: 22-188

Date: 1/17/20

Job No. _____

Drawn By	M
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Checked by: _____

Revisions

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COLUMBIA VALLEY
GARDENS -
MECHANICAL FLOOR
PLAN - DEMO

BID SET



COLUMBIA VALLEY GARDENS - MECHANICAL FLOOR PLAN - DEMO

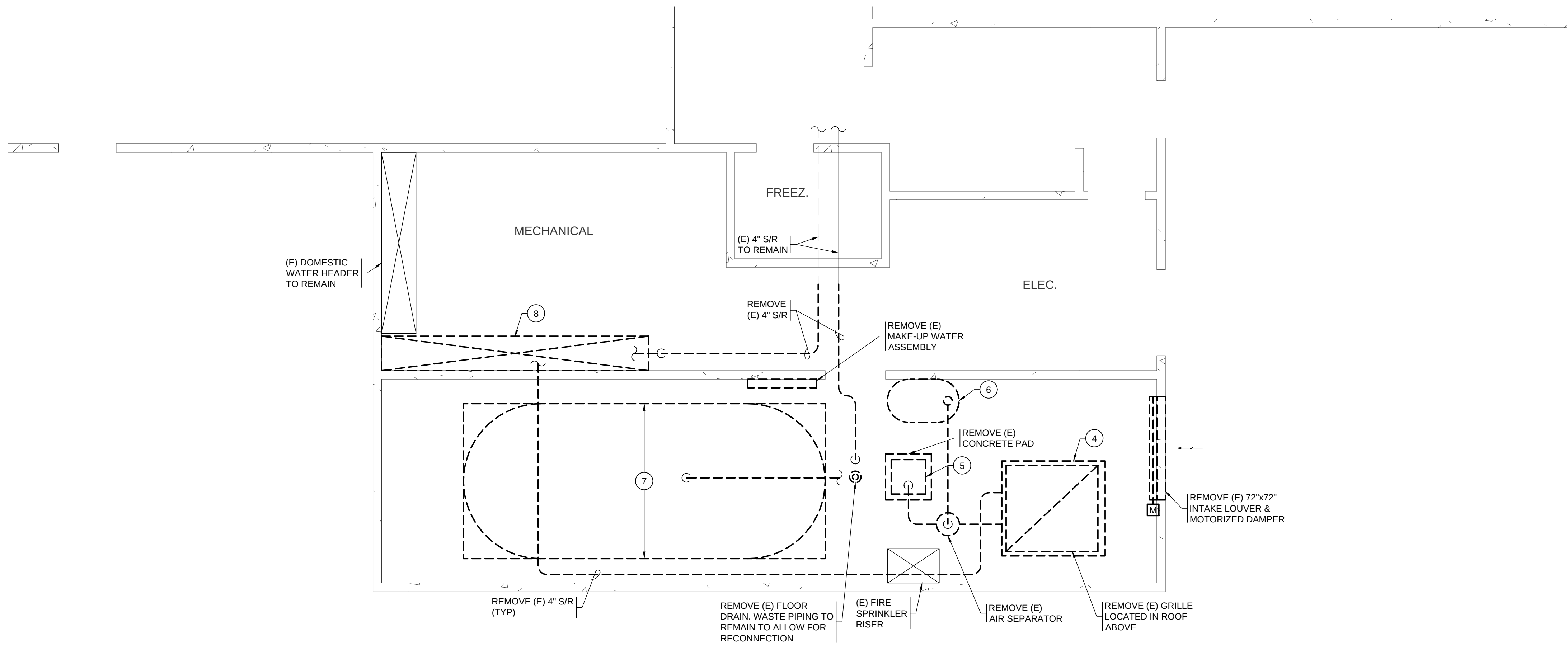
SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES:

1. SEE MECHANICAL GENERAL DEMOLITION NOTES ON SHEET M0.1, WHICH APPLY TO ALL DEMOLITION WORK.
2. NO AS-BUILTS EXIST. EXISTING EQUIPMENT LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
3. EXISTING ROOF VENT INTAKES (RVI) & RELIEFS (RVR) ARE TO REMAIN. UNO.

KEYED DEMOLITION NOTES:

- 1 REMOVE EXISTING WATER SOURCE HEAT PUMP, FILTER RACK, HYDRONIC BRANCH PIPING, & RELATED ACCESSORIES. EXISTING CONTROLS TO REMAIN AND BE RE-CONNECTED TO NEW EQUIPMENT.
- 2 EXISTING BRANCH DUCTWORK TO REMAIN (UNO).
- 3 REMOVE EXISTING DUCTWORK, AND ASSOCIATED GRILLE.
- 4 REMOVE EXISTING FLUID COOLER COMPLETE, INCLUDING PIPING, VALVES, FITTINGS, SUPPORTS, CONTROLS, POWER & ACCESSORIES.
- 5 REMOVE EXISTING ELECTRIC BOILER COMPLETE, INCLUDING PIPING, VALVES, FITTINGS, SUPPORTS, CONTROLS, POWER & ACCESSORIES.
- 6 REMOVE EXISTING EXPANSION TANK COMPLETE, INCLUDING PIPING, SUPPORTS & ACCESSORIES.
- 7 REMOVE EXISTING STORAGE TANK, AND ASSOCIATED CONCRETE BASE.
- 8 REMOVE ALL HYDRONIC PIPING, PUMPS, VALVES, FITTING, SUPPORTS & ACCESSORIES THIS AREA.
- 9 REFURBISH EXISTING AIR HANDLING UNIT. SEE SPECIFICATIONS AND SHEET M2.2 FOR COMPLETE REQUIREMENTS.



GENERAL DEMOLITION NOTES:

1. SEE MECHANICAL GENERAL DEMOLITION NOTES ON SHEET M0.1, WHICH APPLY TO ALL DEMOLITION WORK.
2. NO AS-BUILTS EXIST. EXISTING EQUIPMENT LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
3. EXISTING ROOF VENT INTAKES (RVI) & RELIEFS (RVR) ARE TO REMAIN, UNO.

KEYED DEMOLITION NOTES:

1. REMOVE EXISTING WATER SOURCE HEAT PUMP, FILTER RACK, HYDRONIC BRANCH PIPING, & RELATED ACCESSORIES. EXISTING CONTROLS TO REMAIN AND BE RE-CONNECTED TO NEW EQUIPMENT.
2. EXISTING BRANCH DUCTWORK TO REMAIN (UNO).
3. REMOVE EXISTING DUCTWORK, AND ASSOCIATED GRILLE.
4. REMOVE EXISTING FLUID COOLER COMPLETE, INCLUDING PIPING, VALVES, FITTINGS, SUPPORTS, CONTROLS, POWER & ACCESSORIES.
5. REMOVE EXISTING ELECTRIC BOILER COMPLETE, INCLUDING PIPING, VALVES, FITTINGS, SUPPORTS, CONTROLS, POWER & ACCESSORIES.
6. REMOVE EXISTING EXPANSION TANK COMPLETE, INCLUDING PIPING, SUPPORTS & ACCESSORIES.
7. REMOVE EXISTING STORAGE TANK, AND ASSOCIATED CONCRETE BASE.
8. REMOVE ALL HYDRONIC PIPING, PUMPS, VALVES, FITTING, SUPPORTS & ACCESSORIES THIS AREA.
9. REFURBISH EXISTING AIR HANDLING UNIT. SEE SPECIFICATIONS AND SHEET M2.2 FOR COMPLETE REQUIREMENTS.



COLUMBIA VALLEY GARDENS - ENLARGED MECHANICAL ROOM PLAN - DEMO
SCALE: 1/4" = 1'-0"



SIGNED

1-12-2023

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LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date: 1/17/2023

Job No.:

Drawn By: MB

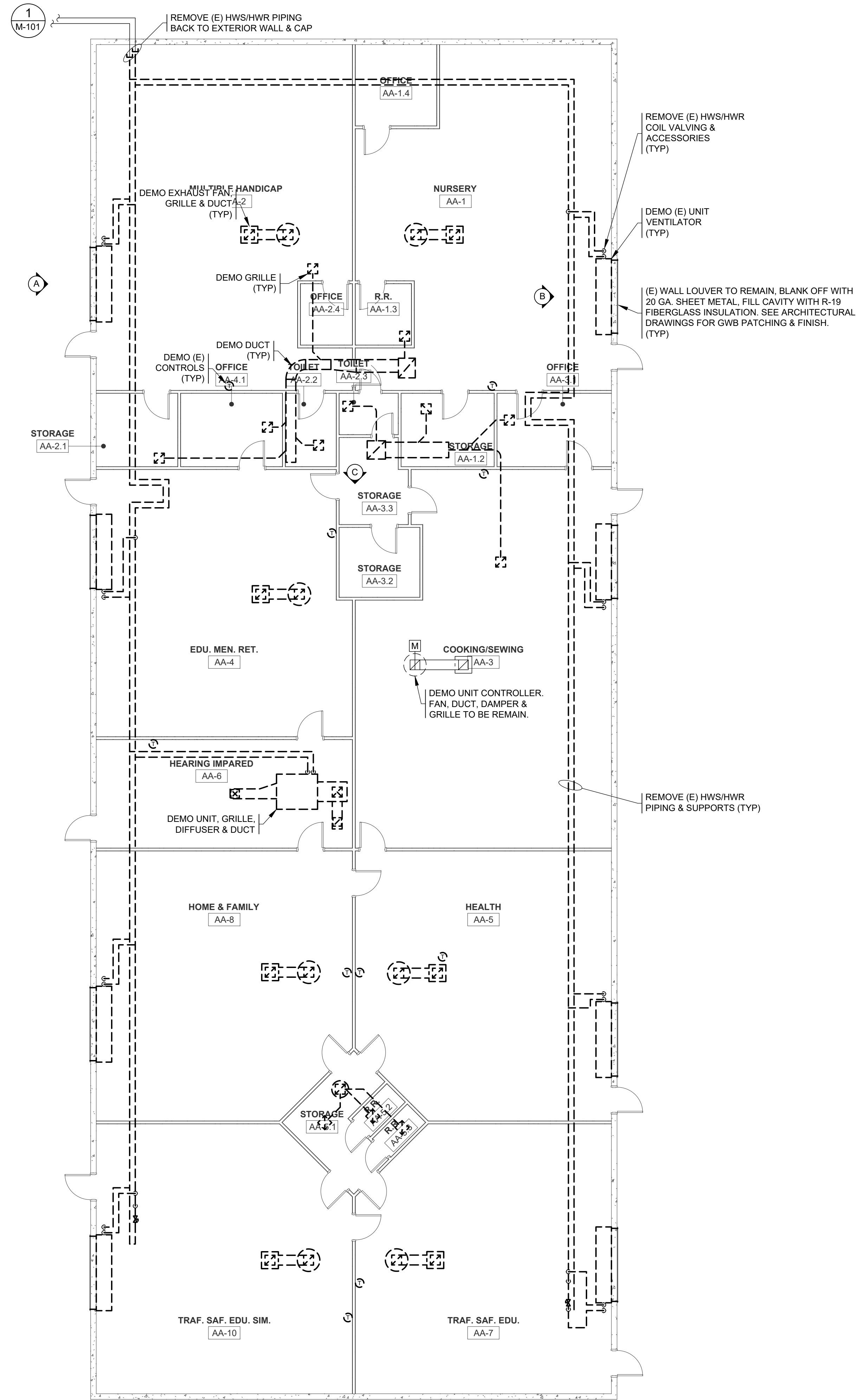
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Revisions		
#	Date	Description

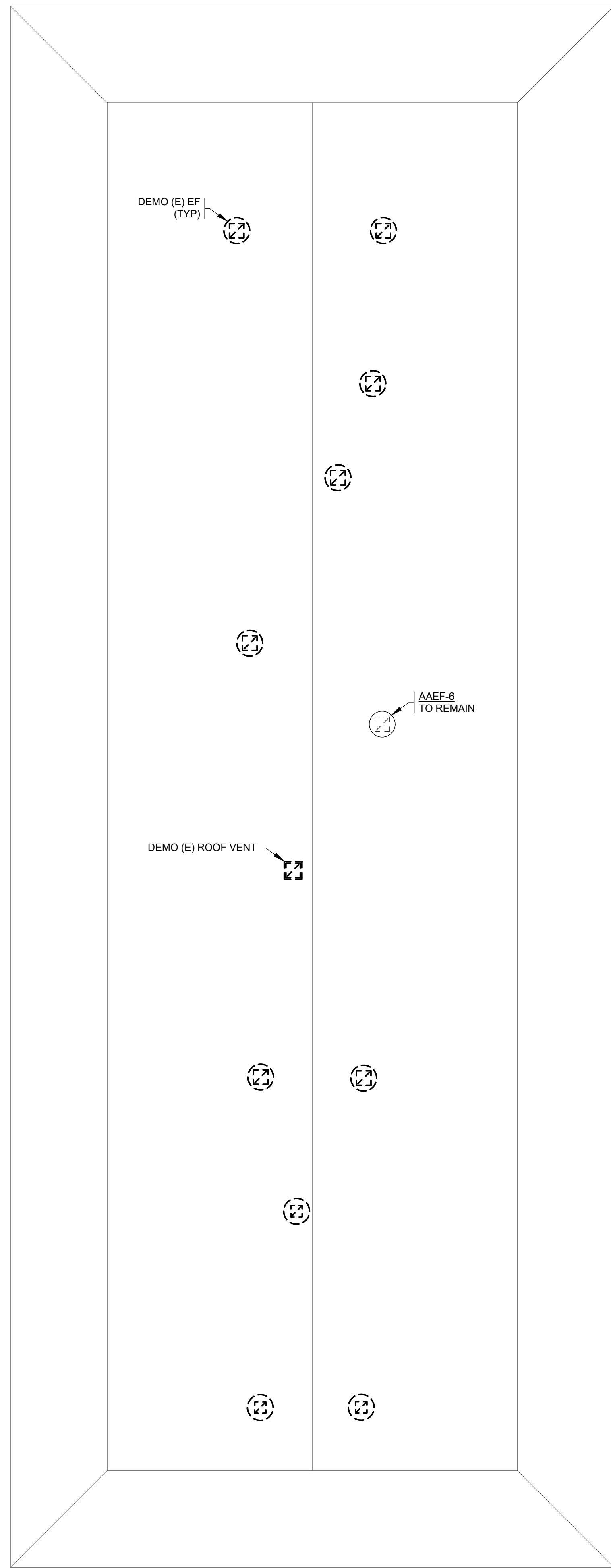
COLUMBIA VALLEY
GARDENS - ENLARGED
MECHANICAL ROOM
PLAN - DEMO

M1.3

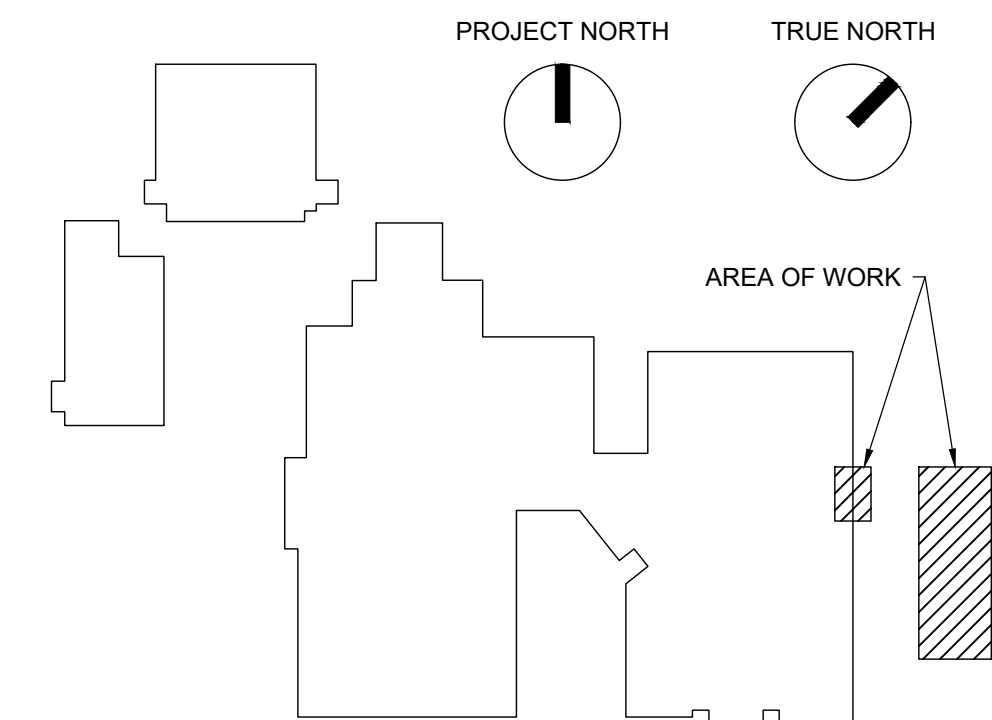
BID SET



AA-BUILDING MECHANICAL DEMO FLOOR PLAN
SCALE: 1/8" = 1'-0"



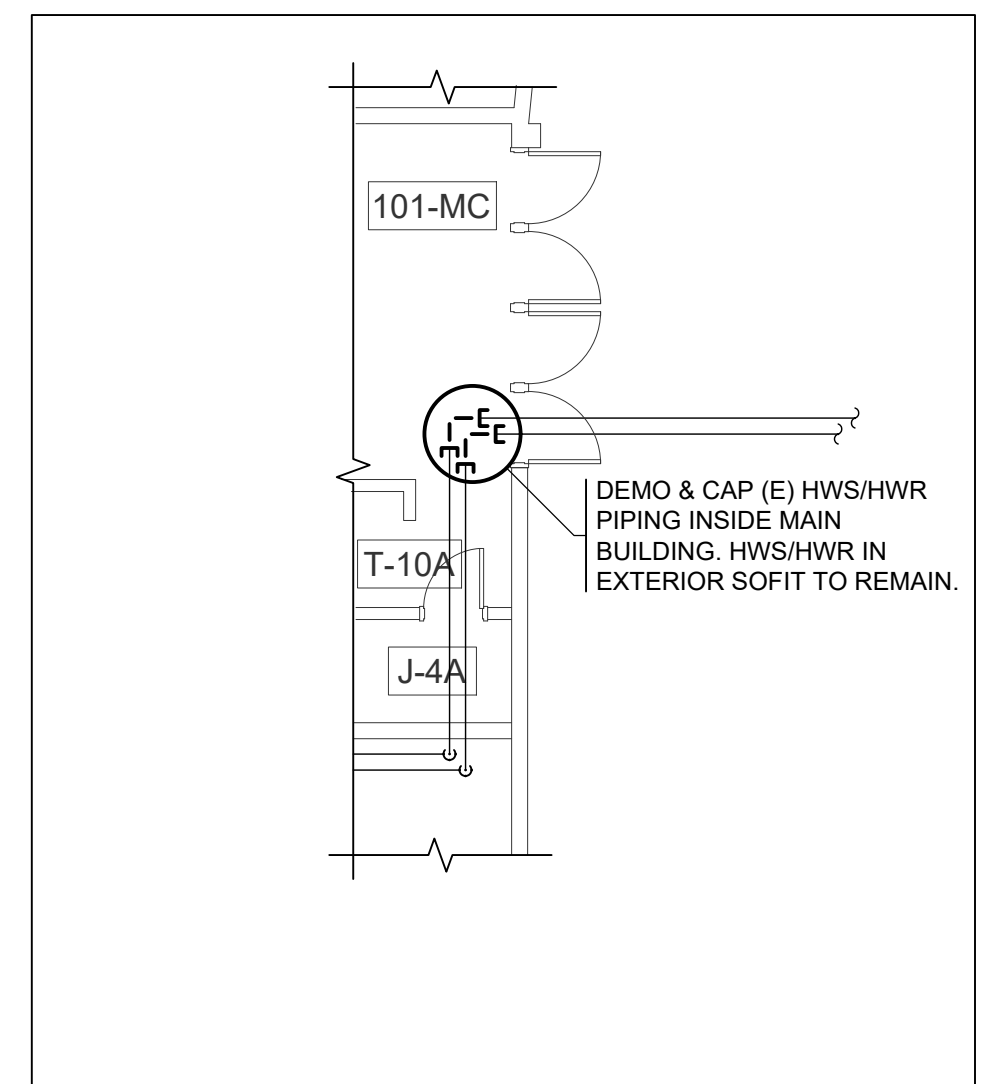
AA-BUILDING MECHANICAL DEMO ROOF PLAN
SCALE: 1/8" = 1'-0"



MARK MORRIS HS KEY PLAN
SCALE: NTS

GENERAL NOTES:

1. SEE DEMOLITION NOTES & MECHANICAL GENERAL NOTES SHEET M001.
2. PATCH ALL OPENINGS IN (E) WALLS & (E) ROOF LEFT BY REMOVAL OF (E) ITEMS. PATCH TO MATCH FINISH OF ADJACENT UNDISTURBED AREA.



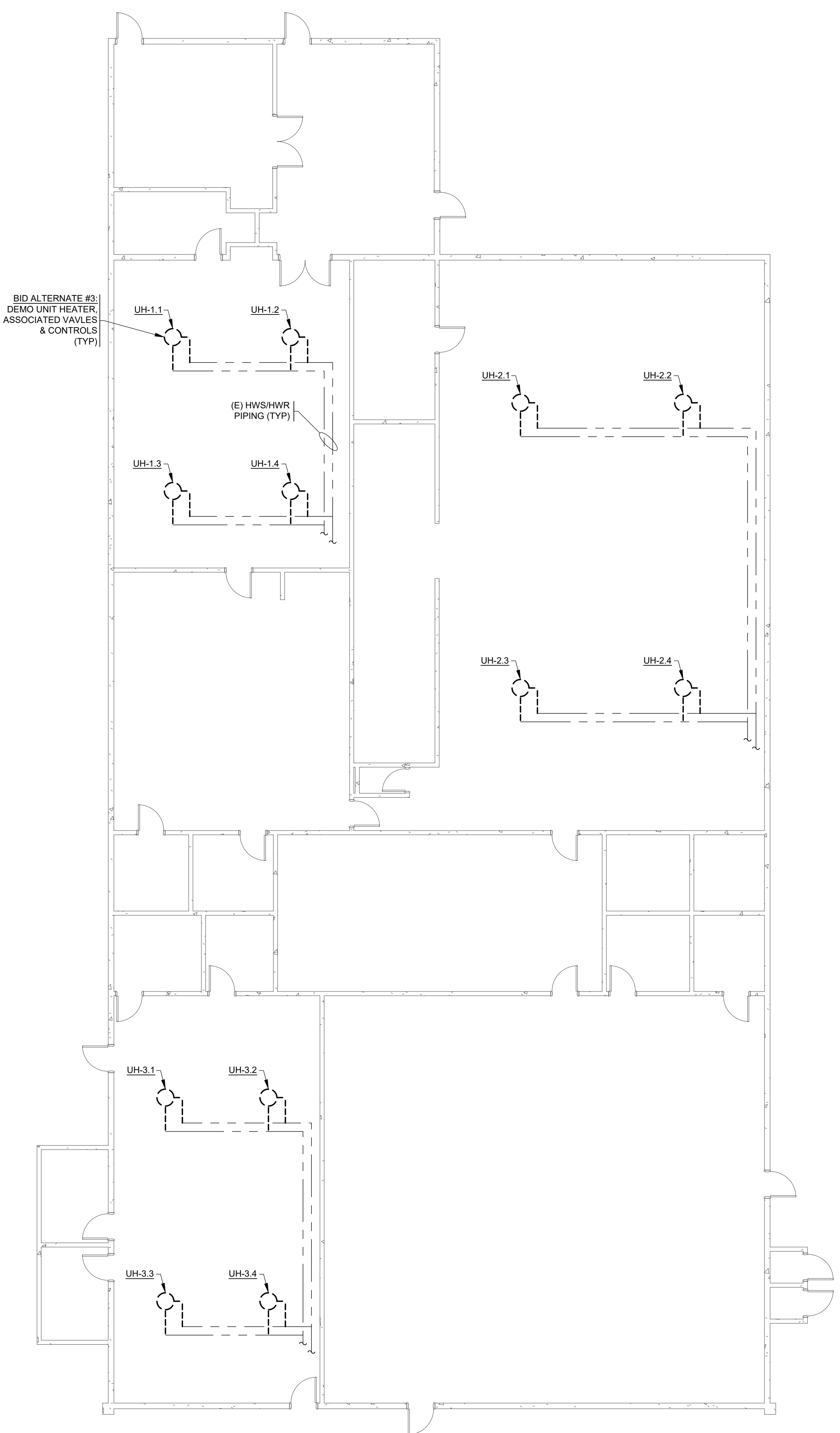
MAIN BUILDING - NORTH ENTRY
1/8"=1"

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

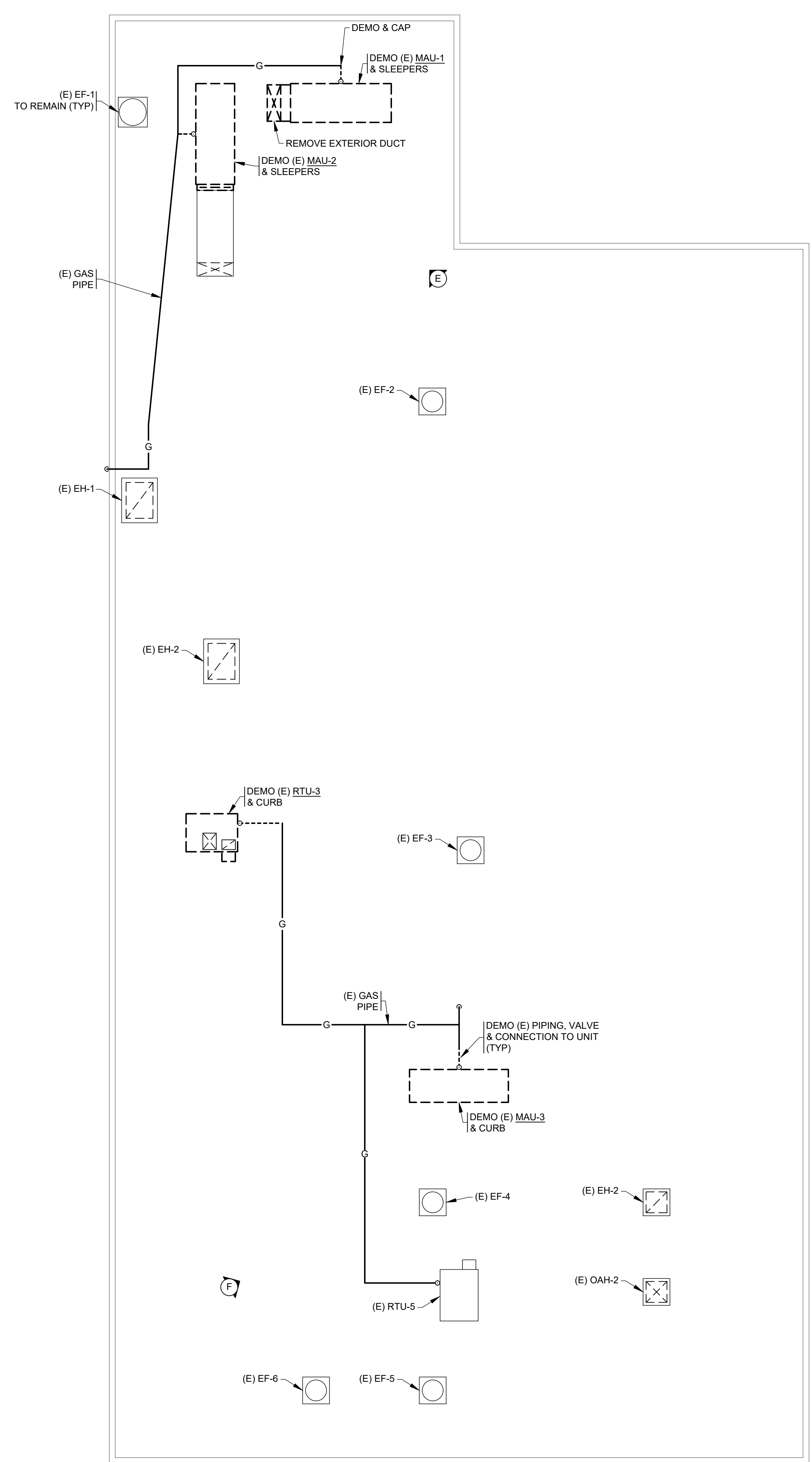
Date:	01/17/2023	
Job No.:	22220.00	
Drawn By:	Author	
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Revisions		
#	Date	Description

MECHANICAL
DEMO PLAN -
MARK MORRIS HS
AA-BUILDING

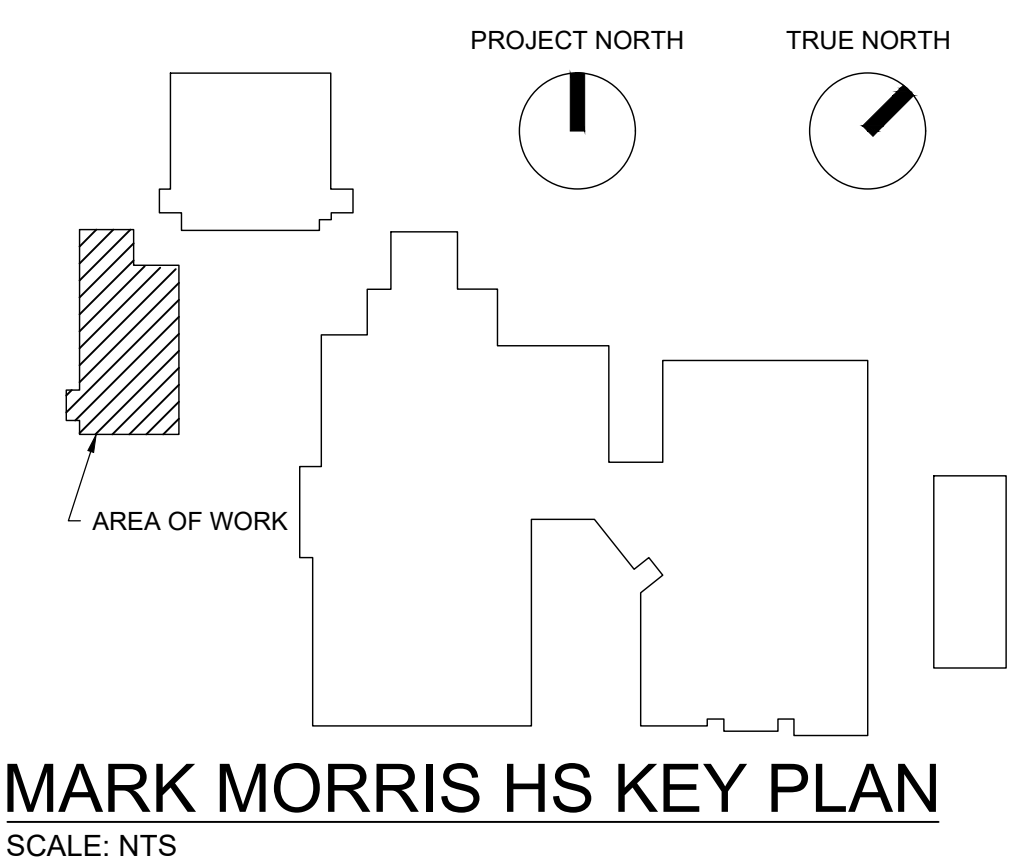
M1.4



ALTERNATE BID #2
VOCATIONAL BUILDING MECHANICAL DEMO PLAN
SCALE: 1/8" = 1'-0"



VOCATIONAL BUILDING MECHANICAL ROOF DEMO PLAN
SCALE: 1/8" = 1'-0"



MARK MORRIS HS KEY PLAN
SCALE: NTS

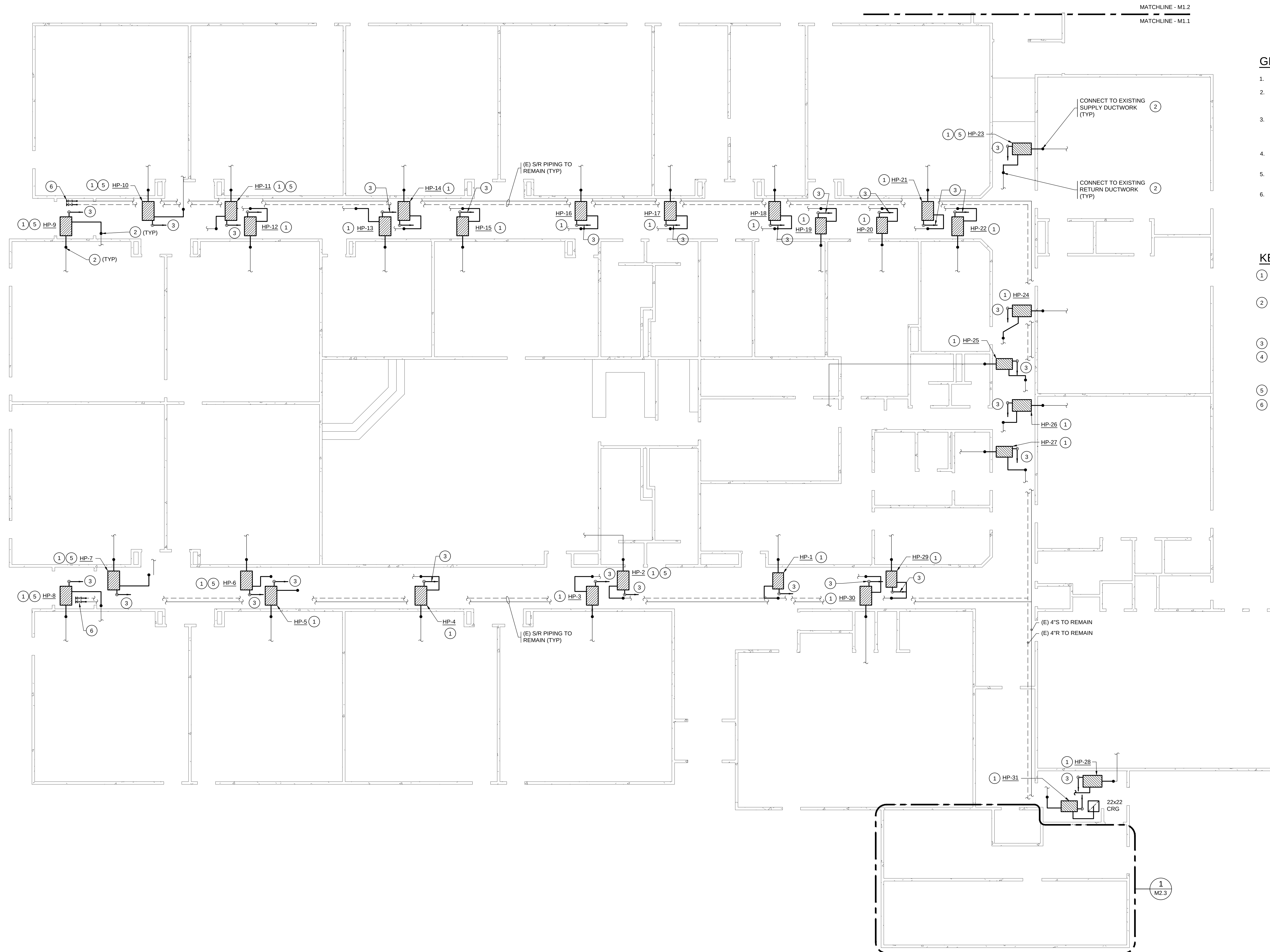
GENERAL NOTES:

1. SEE DEMOLITION NOTES & MECHANICAL GENERAL NOTES SHEET M001.
2. PATCH ALL OPENINGS IN (E) ROOF LEFT BY REMOVAL OF (E) ITEMS. PATCH TO MATCH FINISH OF ADJACENT UNDISTURBED AREA.

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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Revisions		
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MECHANICAL
DEMO PLAN -
MARK MORRIS HS
VOCATIONAL BUILDING



- GENERAL NOTES:**
- SEE MECHANICAL GENERAL NOTES ON SHEET M0.1.
 - LOCATE MOTORIZED DAMPERS AND ACTUATORS TO BE ACCESSIBLE. PROVIDE DUCT ACCESS DOORS TO ALLOW ACCESS TO DAMPERS.
 - PROVIDE TRANSITIONS AT DUCT CONNECTIONS TO EQUIPMENT TO MATCH UNIT CONNECTION SIZES. TRANSITIONS SHALL BE LINED WHERE CONNECTING DUCTS ARE LINED.
 - FIELD VERIFY EXISTING CONDITIONS TO CONFIRM DUCT ROUTING AND LOCATIONS PRIOR TO BEGINNING WORK.
 - EXISTING PIPE SIZES, DUCTS AND GRILLES ARE APPROXIMATE AND NEED TO BE VERIFIED.
 - SEE DETAIL 2, M3.1 FOR HEAT PUMP PIPING CONNECTIONS. PROVIDE 2-WAY CONTROL VALVE, UNO.

- KEYED NOTES:**
- INSTALL NEW HEAT PUMP IN SAME LOCATION AS PREVIOUSLY DEMOD HEAT PUMP. RECONNECT TO DUCTWORK WHICH SERVED DEMOD UNIT.
 - PROVIDE A MINIMUM OF 5 FEET 16/12 LINED DUCTWORK. PROVIDE ALL NECESSARY OFFSETS AND TRANSITIONS TO CONNECT TO EXISTING. CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK DIMENSIONS PRIOR TO BEGINNING WORK.
 - 3/4" C. CONNECT TO EXISTING CONDENSATE DRAIN LINES.
 - REFURBISH EXISTING UNIT: NEW CASING SEALS, NEW BEARINGS. CLEAN INTERIOR. REPLACE EXISTING FAN MOTOR. SEE SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
 - NO 2-WAY CONTROL VALVE REQUIRED.
 - END OF LINE. BLOWDOWN VALVE.

 COLUMBIA VALLEY GARDENS - - MECHANICAL FLOOR PLAN
SCALE: 1/8" = 1'-0"

**LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS**

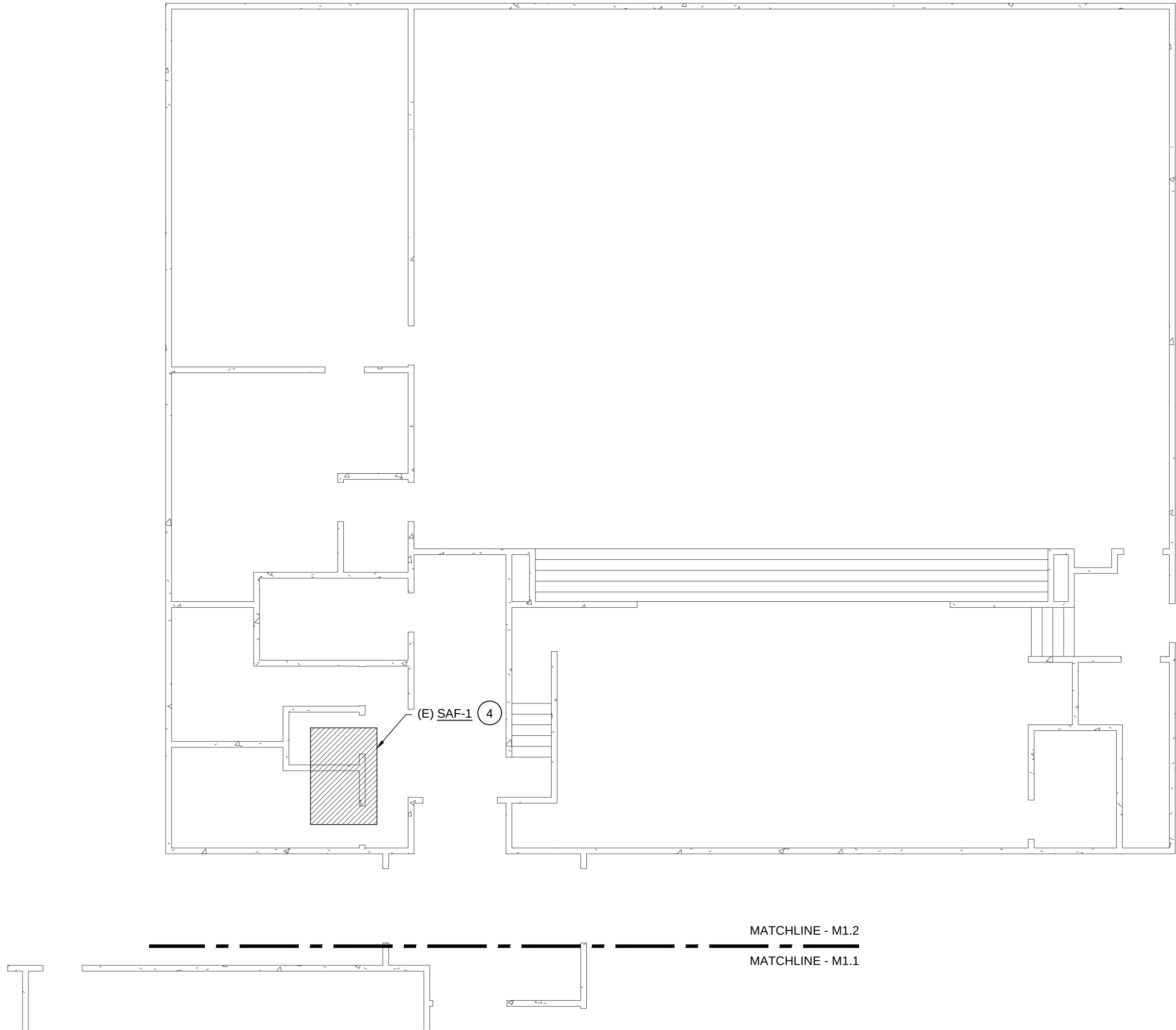
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#	Date Description

COLUMBIA VALLEY
GARDENS -
MECHANICAL FLOOR
PLAN



COLUMBIA VALLEY GARDENS - MECHANICAL FLOOR PLAN

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



GENERAL NOTES:

1. SEE MECHANICAL GENERAL NOTES ON SHEET M0.1.
2. LOCATE MOTORIZED DAMPERS AND ACTUATORS TO BE ACCESSIBLE. PROVIDE DUCT ACCESS DOORS TO ALLOW ACCESS TO DAMPERS.
3. PROVIDE TRANSITIONS AT DUCT CONNECTIONS TO EQUIPMENT TO MATCH UNIT CONNECTION SIZES. TRANSITIONS SHALL BE LINED WHERE CONNECTING DUCTS ARE LINED.
4. FIELD VERIFY EXISTING CONDITIONS TO CONFIRM DUCT ROUTING AND LOCATIONS PRIOR TO BEGINNING WORK.
5. EXISTING PIPE SIZES, DUCTS AND GRILLES ARE APPROXIMATE AND NEED TO BE VERIFIED.
6. SEE DETAIL 2, M3.1 FOR HEAT PUMP PIPING CONNECTIONS. PROVIDE 2-WAY CONTROL VALVE, UNO.

KEYED NOTES:

- ① INSTALL NEW HEAT PUMP IN SAME LOCATION AS PREVIOUSLY DEMOD HEAT PUMP. RECONNECT TO DUCTWORK WHICH SERVED DEMOD UNIT.
- ② PROVIDE A MINIMUM OF 5 FEET 16/12 LINED DUCTWORK. PROVIDE ALL NECESSARY OFFSETS AND TRANSITIONS TO CONNECT TO EXISTING. CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK DIMENSIONS PRIOR TO BEGINNING WORK.
- ③ 3/4" C. CONNECT TO EXISTING CONDENSATE DRAIN LINES.
- ④ REFURBISH EXISTING UNIT: NEW CASING SEALS, NEW BEARINGS, CLEAN INTERIOR, REPLACE EXISTING FAN MOTOR. SEE SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
- ⑤ NO 2-WAY CONTROL VALVE REQUIRED.
- ⑥ END OF LINE BLOWDOWN VALVE.

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date:	1/17/2023	
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Drawn By:	MB	
Checked by:	RH	
Revisions		
#	Date	Description

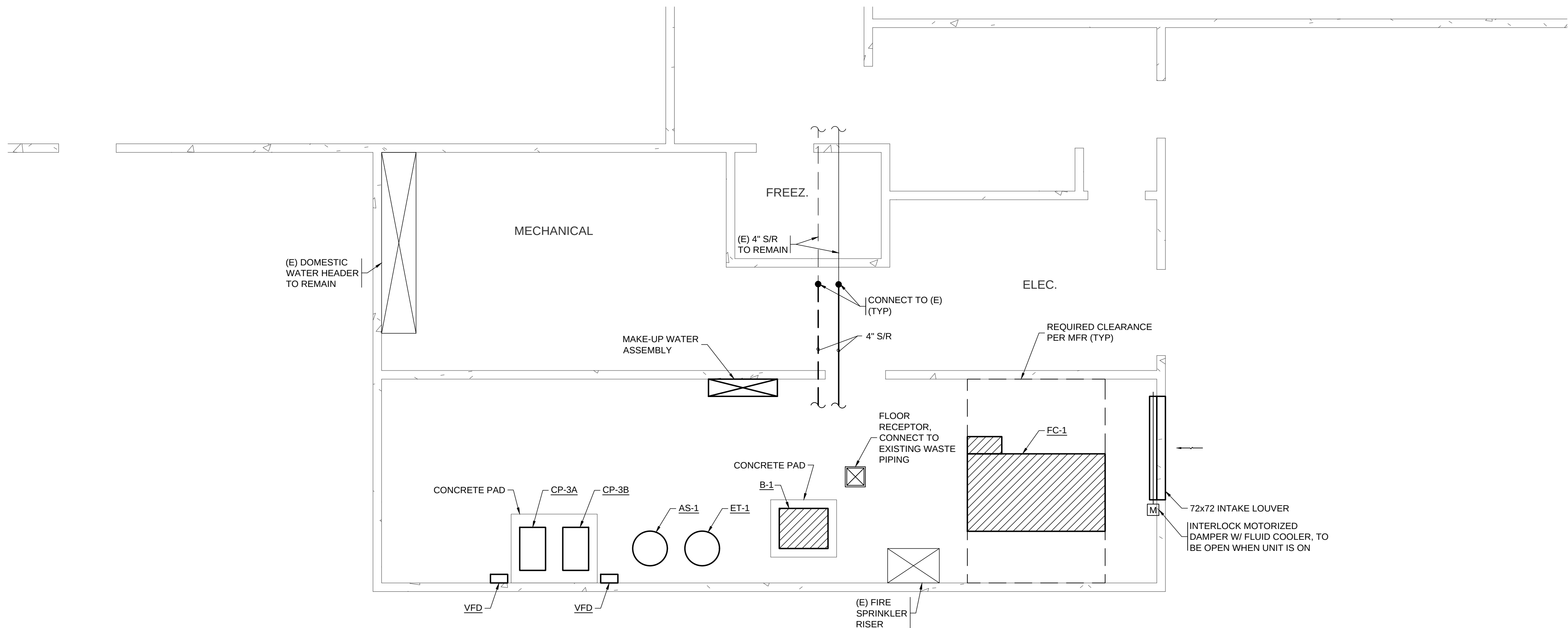
COLUMBIA VALLEY
GARDENS -
MECHANICAL FLOOR
PLAN

M2.2



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- NOTES:
- SEE PIPING SCHEMATIC ON SHEET M3.1 AND EQUIPMENT DETAILS FOR COMPLETE PIPING CONNECTIONS. NOT ALL ITEMS/CONNECTIONS SHOWN IN PLAN.
 - ROUTE PIPING HIGH TO ALLOW ACCESS TO ALL EQUIPMENT.

GENERAL NOTES:

- SEE MECHANICAL GENERAL NOTES ON SHEET M0.1.
- LOCATE MOTORIZED DAMPERS AND ACTUATORS TO BE ACCESSIBLE. PROVIDE DUCT ACCESS DOORS TO ALLOW ACCESS TO DAMPERS.
- PROVIDE TRANSITIONS AT DUCT CONNECTIONS TO EQUIPMENT TO MATCH UNIT CONNECTION SIZES. TRANSITIONS SHALL BE LINED WHERE CONNECTING DUCTS ARE LINED.
- FIELD VERIFY EXISTING CONDITIONS TO CONFIRM DUCT ROUTING AND LOCATIONS PRIOR TO BEGINNING WORK.
- EXISTING PIPE SIZES, DUCTS AND GRILLES ARE APPROXIMATE AND NEED TO BE VERIFIED.
- SEE DETAIL 2, M3.1 FOR HEAT PUMP PIPING CONNECTIONS. PROVIDE 2-WAY CONTROL VALVE, UNO.

KEYED NOTES:

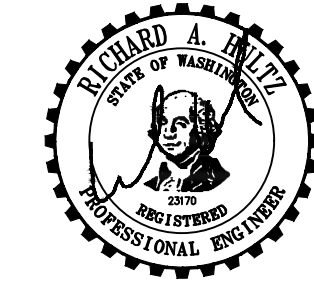
- INSTALL NEW HEAT PUMP IN SAME LOCATION AS PREVIOUSLY DEMO'D HEAT PUMP. RECONNECT TO DUCTWORK WHICH SERVED DEMO'D UNIT.
- PROVIDE A MINIMUM OF 5 FEET 16/12 LINED DUCTWORK . PROVIDE ALL NECESSARY OFFSETS AND TRANSITIONS TO CONNECT TO EXISTING. CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK DIMENSIONS PRIOR TO BEGINNING WORK.
- 3/4" C, CONNECT TO EXISTING CONDENSATE DRAIN LINES.
- REFURBISH EXISTING UNIT: NEW CASING SEALS, NEW BEARINGS, CLEAN INTERIOR, REPLACE EXISTING FAN MOTOR. SEE SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
- NO 2-WAY CONTROL VALVE REQUIRED.
- END OF LINE. BLOWDOWN VALVE.

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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#	Date Description

COLUMBIA VALLEY
GARDENS - ENLARGED
MECHANICAL ROOM
PLAN

M2.3



SIGNED

1-12-2023

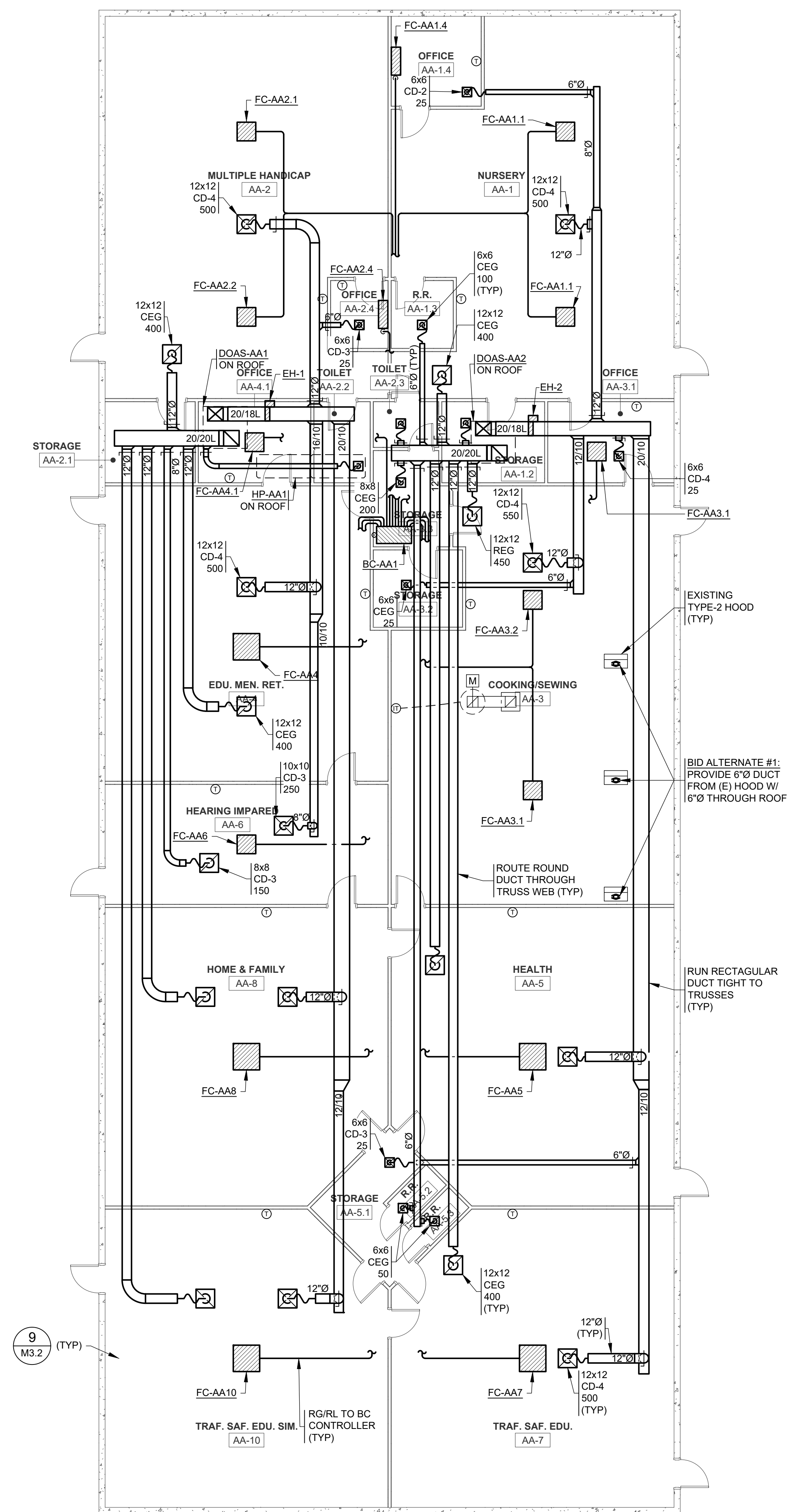
HULTZ & BHU
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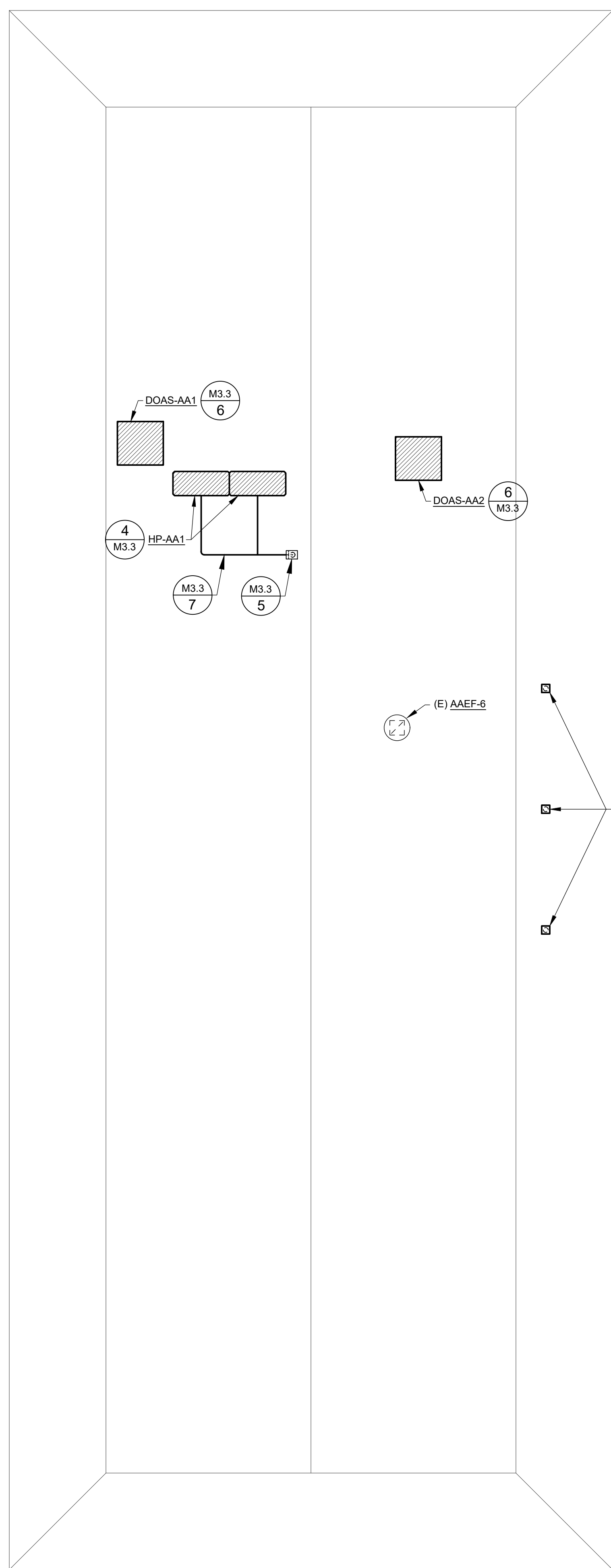
117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA 98104
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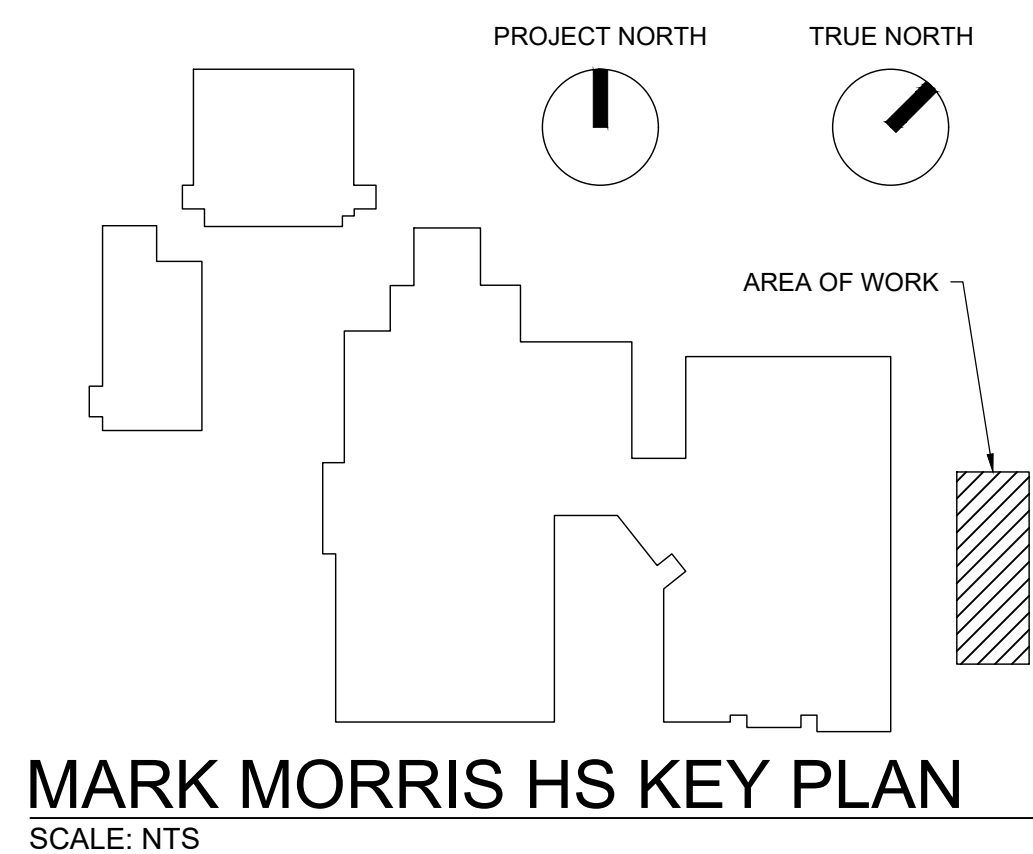
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AA-BUILDING MECHANICAL FLOOR PLAN
SCALE: 1/8" = 1'-0"



AA-BUILDING MECHANICAL ROOF PLAN
SCALE: 1/8" = 1'-0"



MARK MORRIS HS KEY PLAN
SCALE: NTS

GENERAL NOTES:

- SEE MECHANICAL GENERAL NOTES SHEET M001.
- ROUTE 3/4" CONDENSATE DRAINS FROM HVAC EQUIPMENT TO SERVICE SINK IN STORAGE AA-2.1. CONTRACTOR TO FIELD DETERMINE ROUTING.

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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MECH/ELEC PLAN -
MARK MORRIS HS
AA-BUILDING

M2.4



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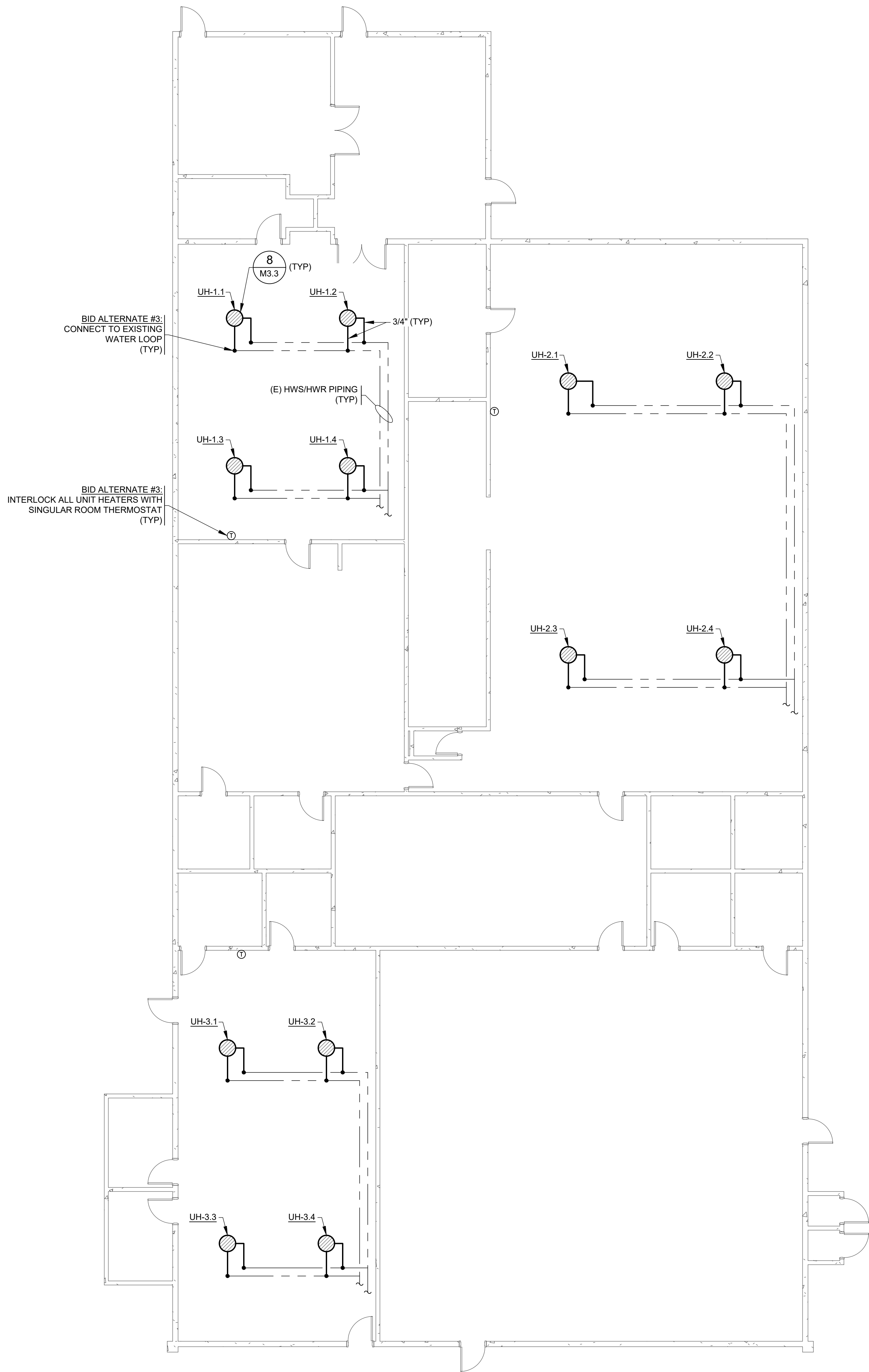
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BID SET

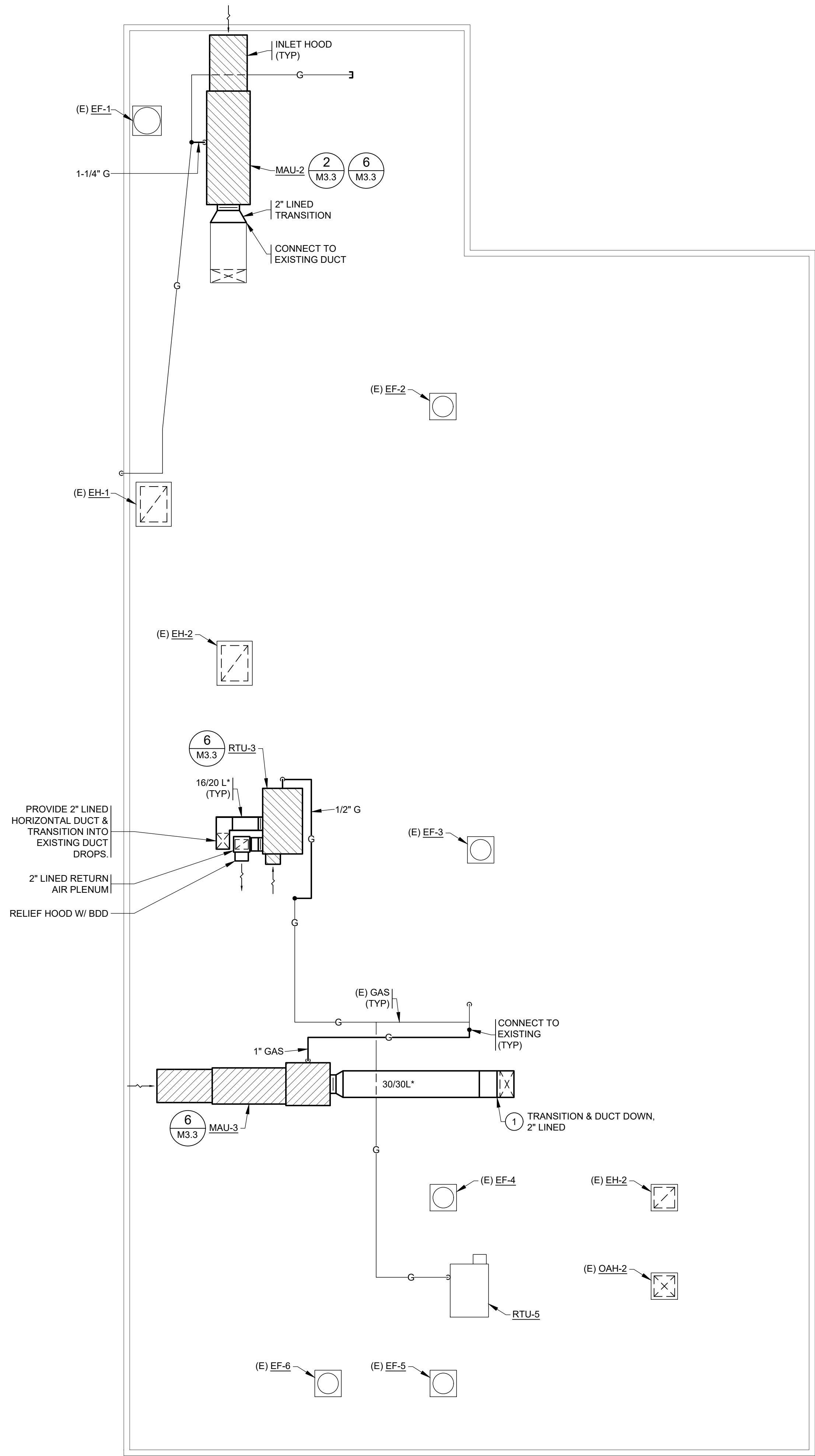
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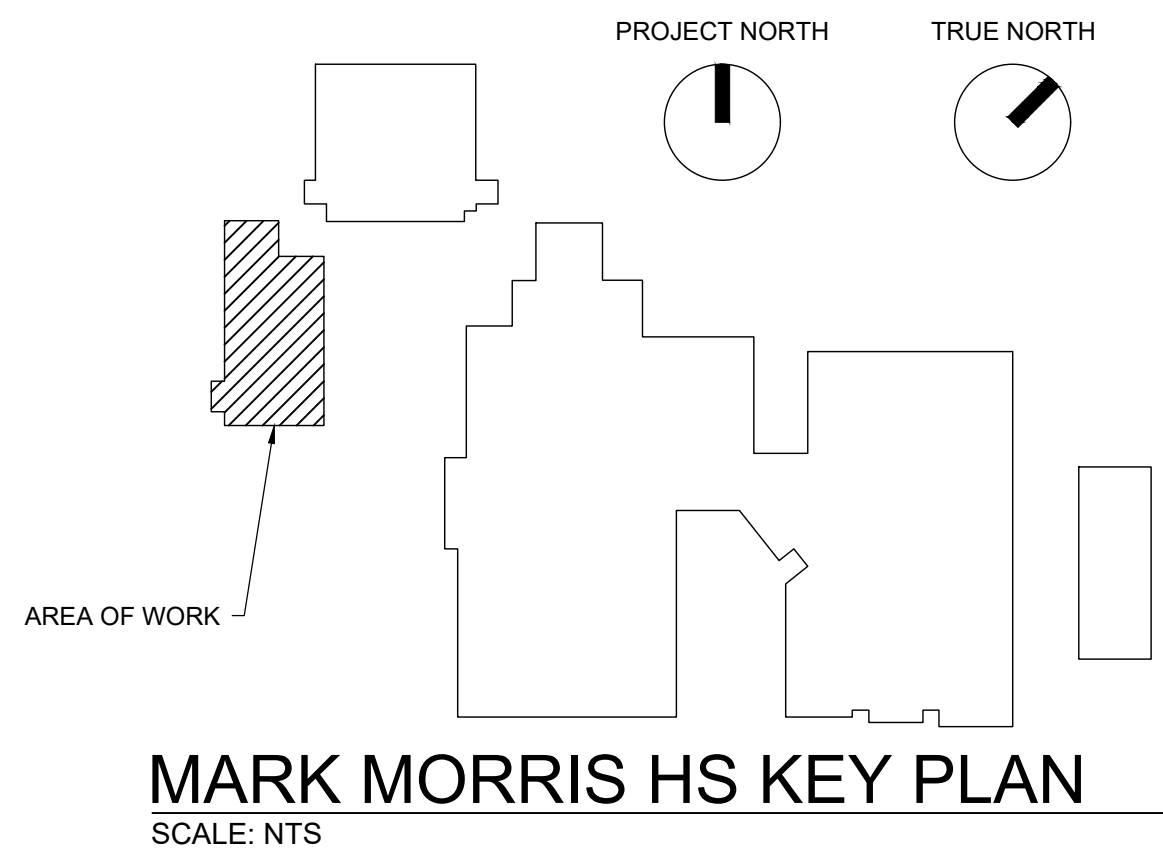
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ALTERNATE BID #2
VOCATIONAL BUILDING MECHANICAL PLAN
SCALE: 1/8" = 1'-0"



VOCATIONAL BUILDING MECHANICAL ROOF PLAN
SCALE: 1/8" = 1'-0"



GENERAL NOTES:

1. SEE MECHANICAL GENERAL NOTES SHEET M001.
2. COORDINATE UNIT LOCATIONS USING ARCHITECTURAL & STRUCTURAL PLANS.
3. VERIFY SIZE & LOCATION OF EXISTING ITEMS INDICATED TO CONNECT TO.

KEYED NOTES:

1. HORIZONTAL EXTERIOR DUCTWORK TO MATCH EXISTING DUCT DROP SIZE.

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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Revisions	
#	Date
	Description

MECH/ELEC PLAN -
MARK MORRIS HS
VOCATIONAL BUILDING

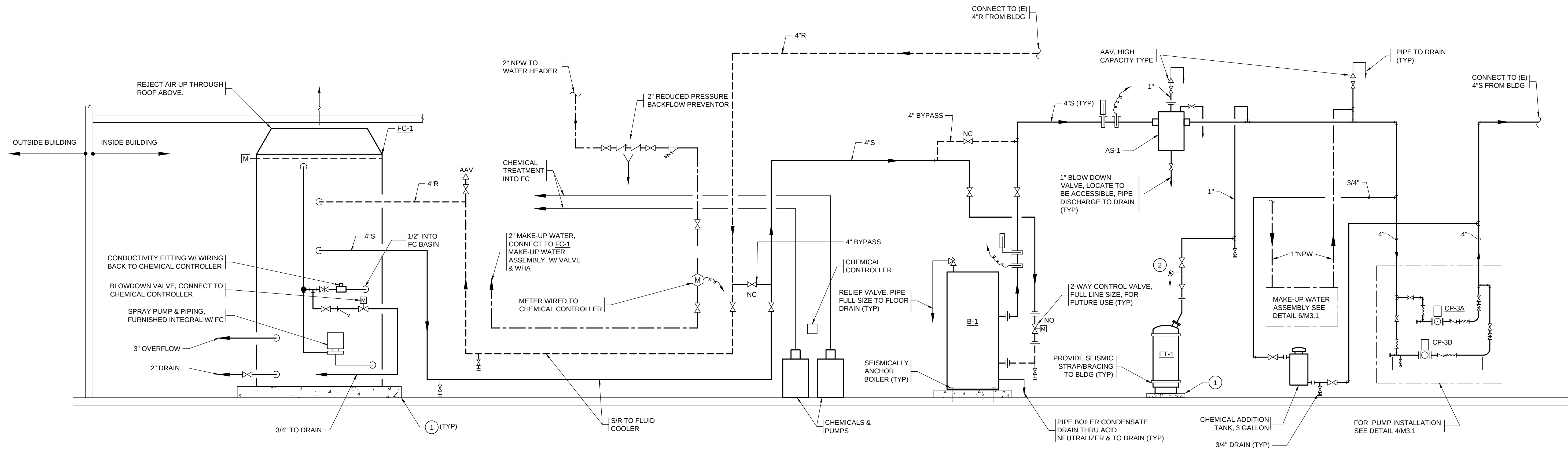
M2.5

BID SET



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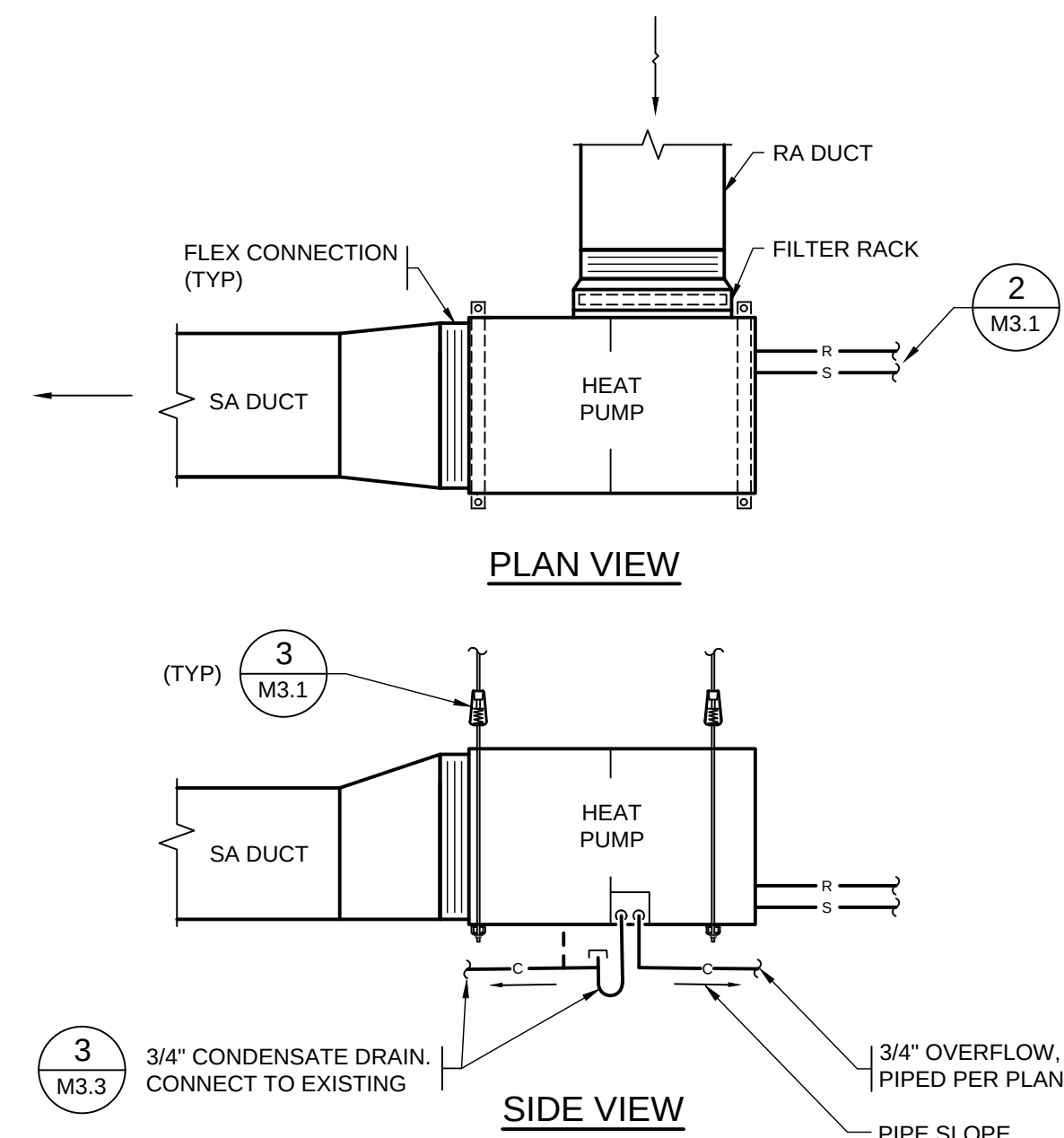


KEYED NOTES:

- 6" HIGH CONCRETE HOUSEKEEPING PAD, 3" LARGER THAN EQUIPMENT ALL AROUND. ANCHOR PAD TO STRUCTURE, AND EQUIPMENT TO PAD (TYP.)
- 75 PSIG RELIEF VALVE; PIPE DISCHARGE TO DRAIN.

BOILER & FLUID COOLER PIPING SCHEMATIC

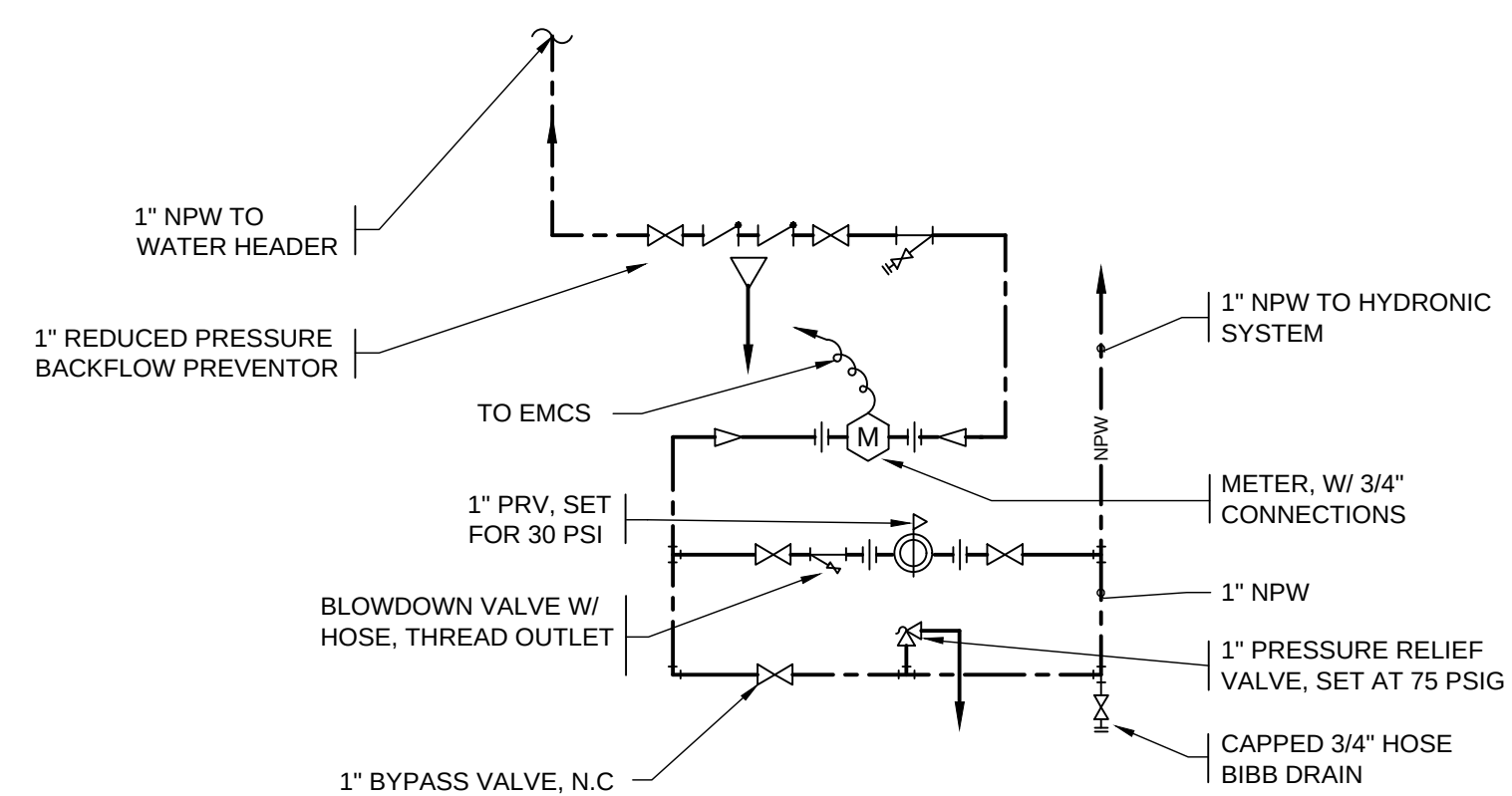
NTS



- NOTES:
- DUCT SIZES SHALL MATCH THAT OF EXISTING.
 - OA/RA DAMPERS ARE LOCATED REMOTE FROM UNIT AT R.V.I.S.
 - LOCATE SUPPORTS SO AS NOT TO OBSTRUCT UNIT ACCESS DOORS/PANELS.

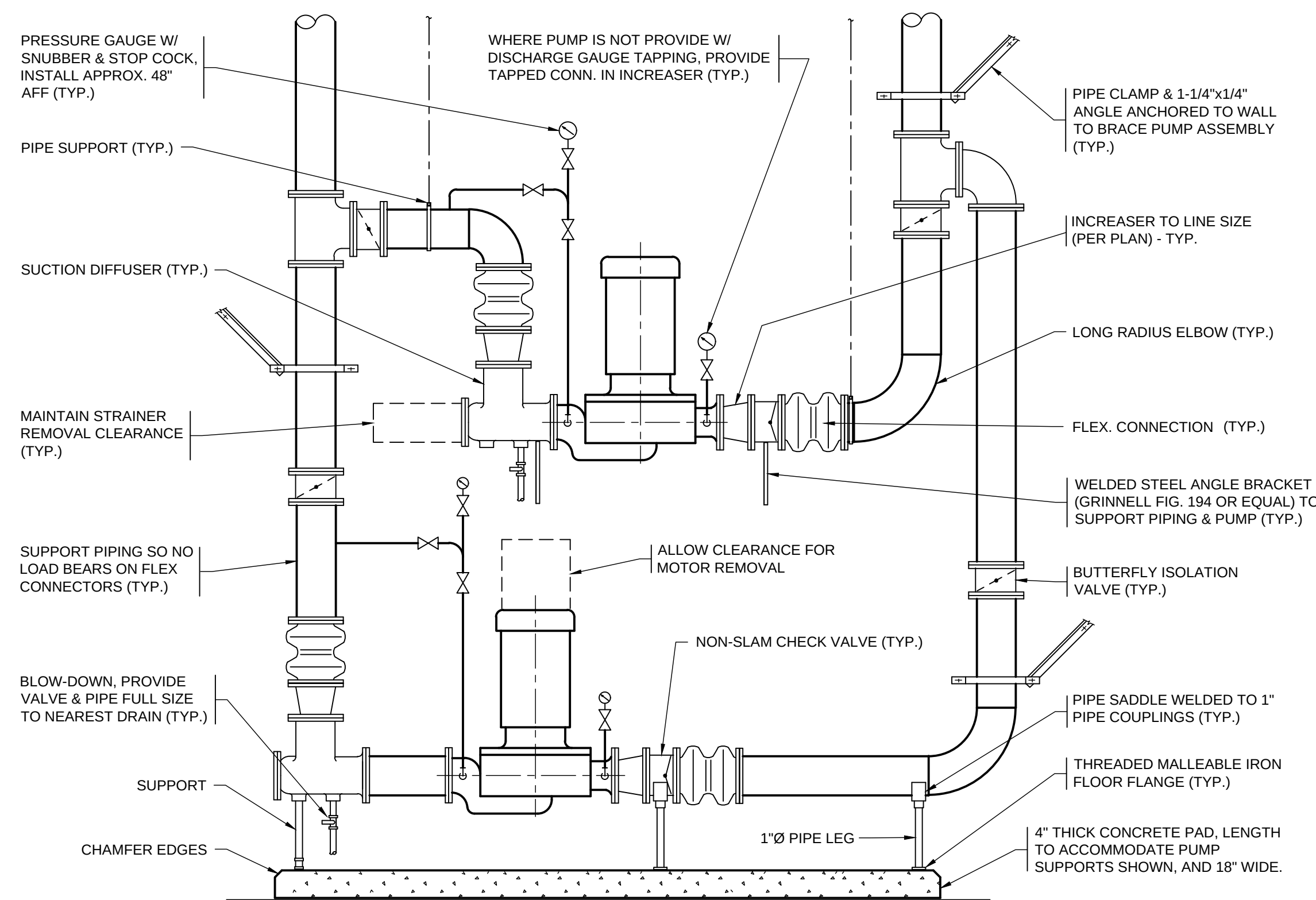
HEAT PUMP INDOOR UNIT

NTS



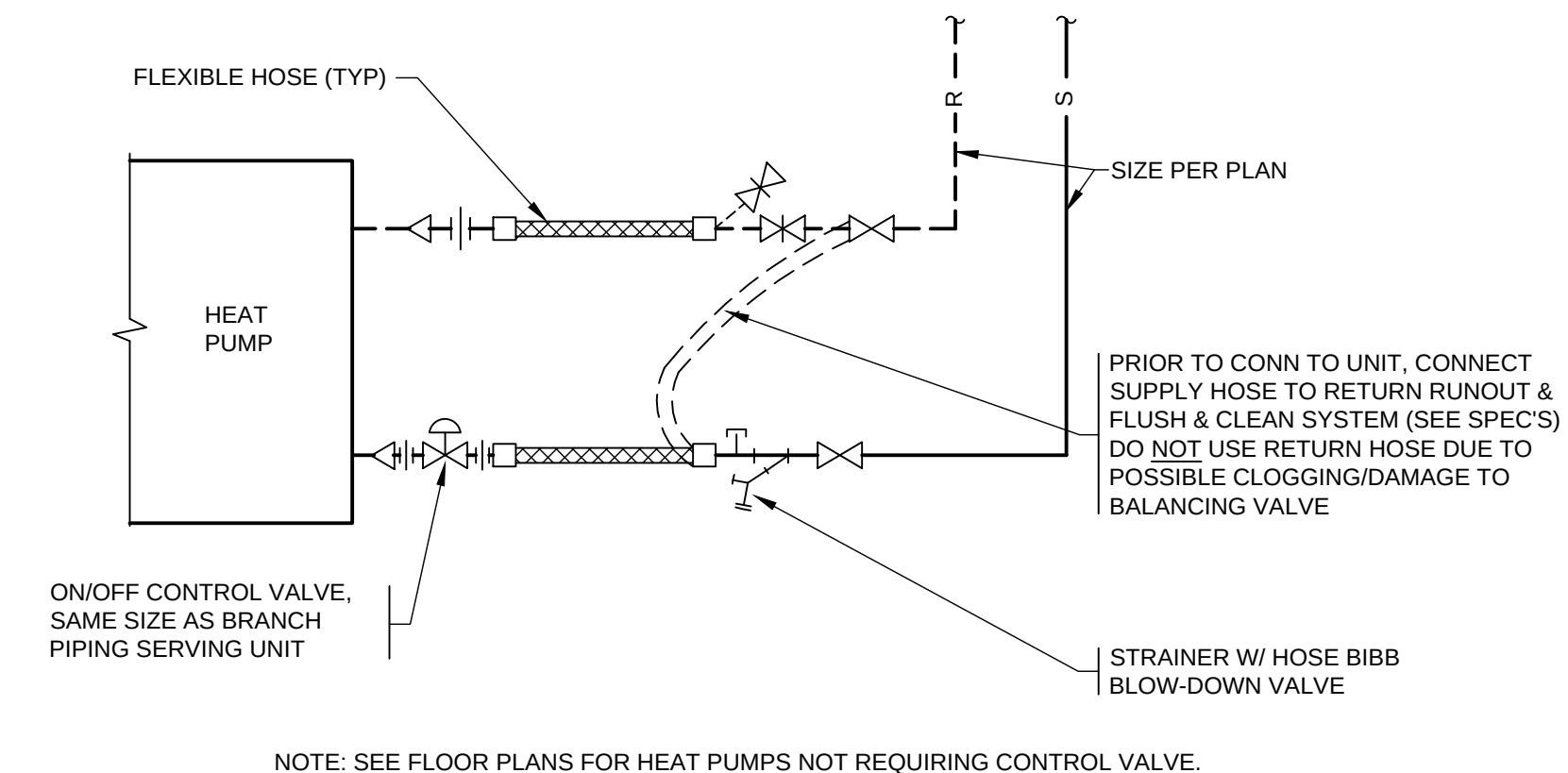
MAKE-UP WATER ASSEMBLY

NTS



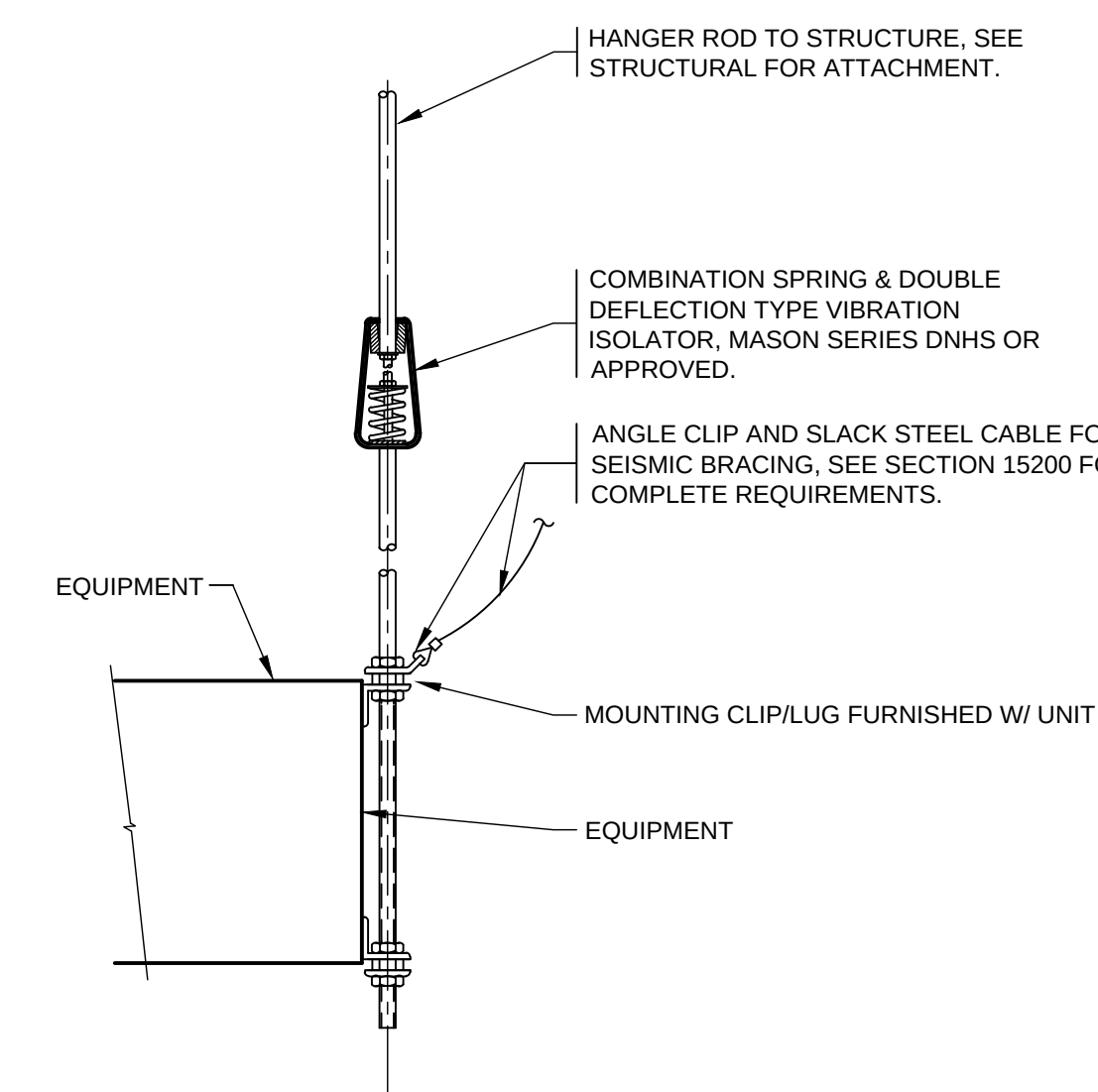
INLINE PUMP DETAIL

NTS



HEAT PUMP PIPING

NTS



- NOTES:
- ALL SUSPENDED HVAC EQUIPMENT W/ ROTATING COMPONENTS SHALL HAVE VIBRATION ISOLATORS AS SHOWN.
 - VIBRATION ISOLATORS SHALL BE SELECTED FOR 1" DEFLECTION.
 - FOR INTERNALLY ISOLATED UNITS PROVIDE DOUBLE DEFLECTION NEOPRENE HANGER (MASON SERIES HD OR APPROVED) IN LIEU OF TYPE SHOWN. SIZE FOR 1/8" DEFLECTION.
 - SEE STRUCTURAL & SPECIFICATIONS FOR ATTACHMENT TO STRUCTURE & OTHER ANCHORING REQUIREMENTS.

SUSPENDED EQUIP. SUPPORT

NTS

LONGVIEW SCHOOL DISTRICT HEAT PUMP REPLACEMENT AND INDOOR AIR QUALITY IMPROVEMENTS

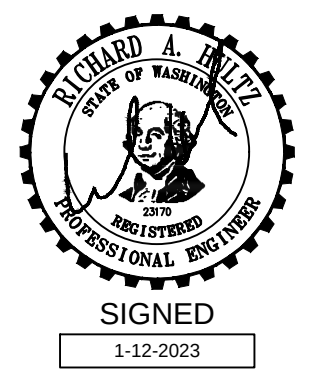
Date:	1/17/2023	
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MECHANICAL DETAILS

M3.1

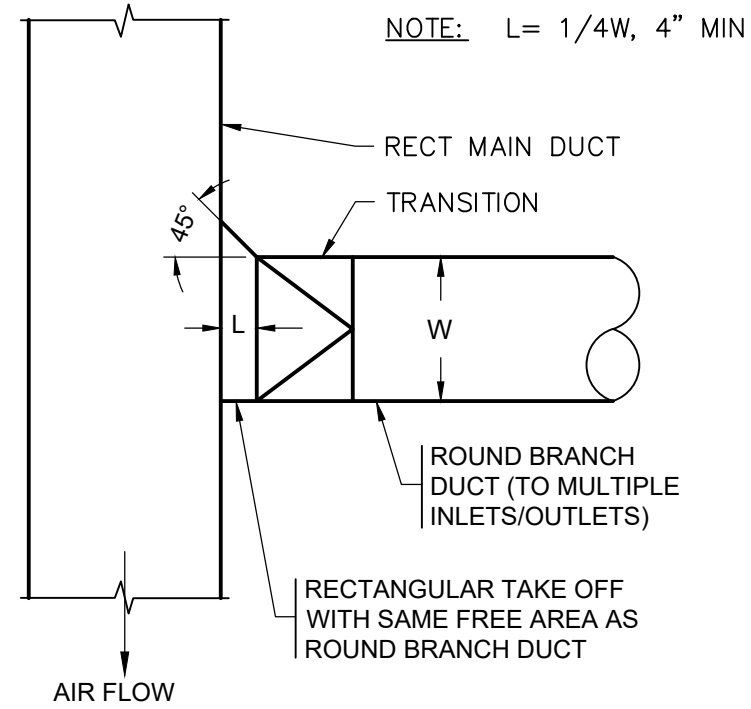
BID SET

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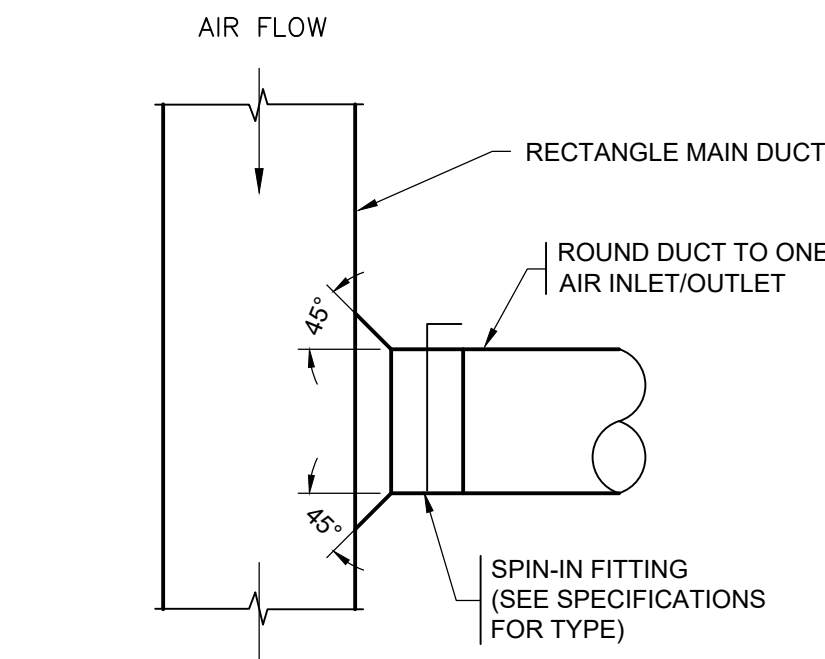


SERVING MULTIPLE INLET/OUTLET, UNO

RECT-TO-ROUND
BRANCH DUCT CONNECTION

NTS

1
M3.2



BRANCH SERVING MULTIPLE AIR
INLETS/OUTLETS

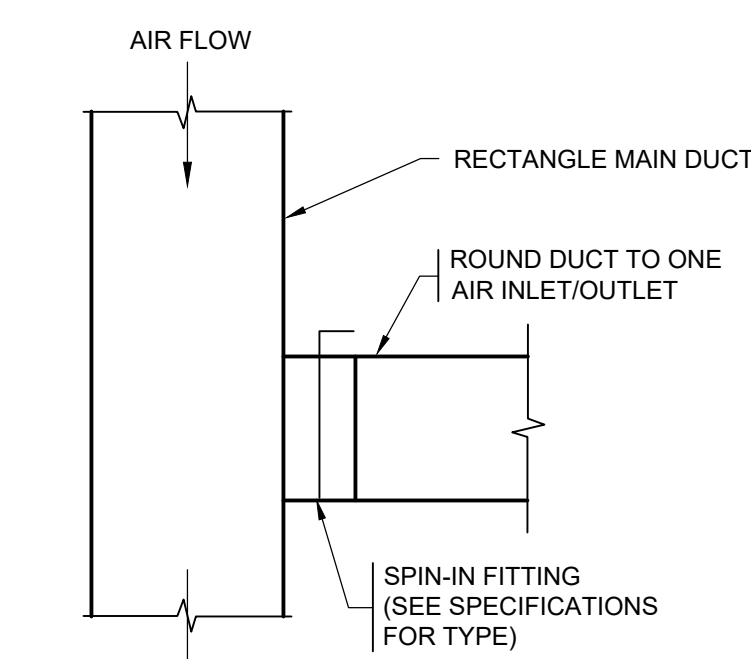
NOTE:

WHERE MAIN DUCT DOES NOT HAVE ADEQUATE HEIGHT TO ACCEPT ROUND DUCT, PROVIDE RECTANGULAR CONNECTION, WITH SAME FREE AREA AS ROUND DUCT, AND TRANSITION TO ROUND

RECT-TO-ROUND
BRANCH DUCT CONNECTION

NTS

2
M3.2



SERVING ONE INLET/OUTLET

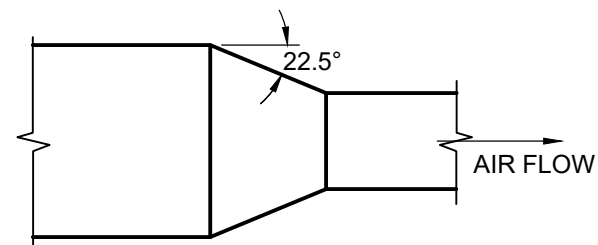
NOTE:

WHERE MAIN DUCT DOES NOT HAVE ADEQUATE HEIGHT TO ACCEPT ROUND DUCT, PROVIDE RECTANGULAR CONNECTION, WITH SAME FREE AREA AS ROUND DUCT, AND TRANSITION TO ROUND

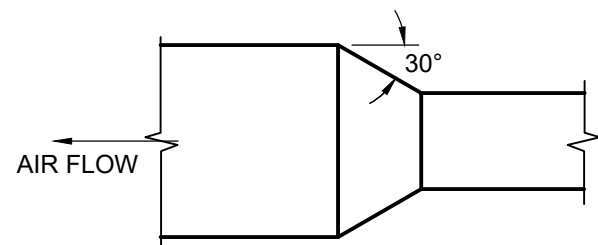
RECT-TO-RECT
BRANCH DUCT CONNECTION

NTS

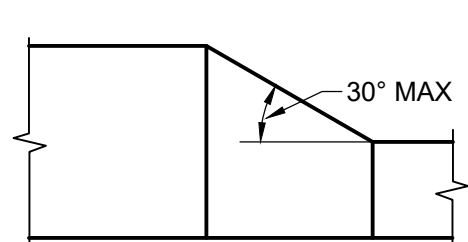
3
M3.2



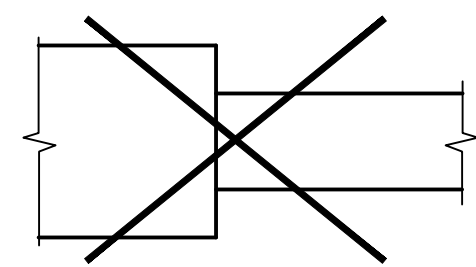
CONCENTRIC TRANSITION
(DIVERGING)



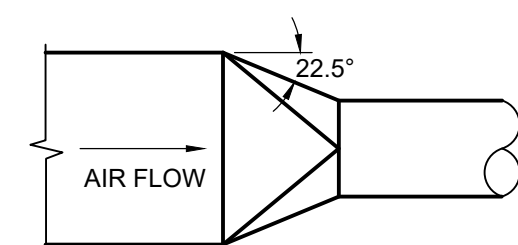
CONCENTRIC TRANSITION
(CONVERGING)



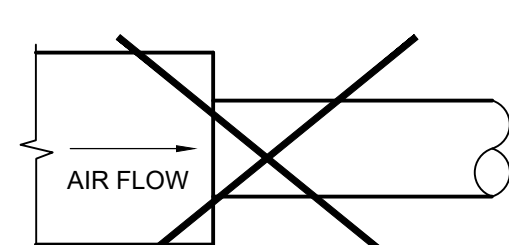
ECCENTRIC TRANSITION



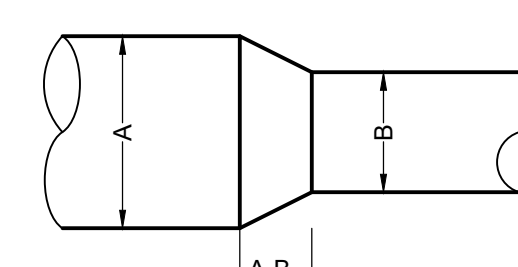
STRAIGHT TAP NOT
ALLOWED



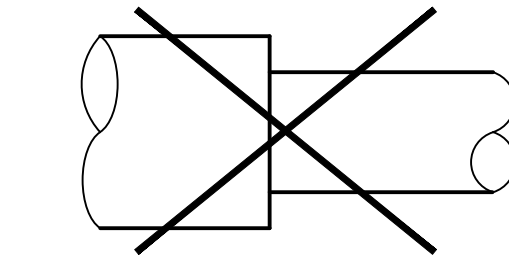
RECT - TO ROUND



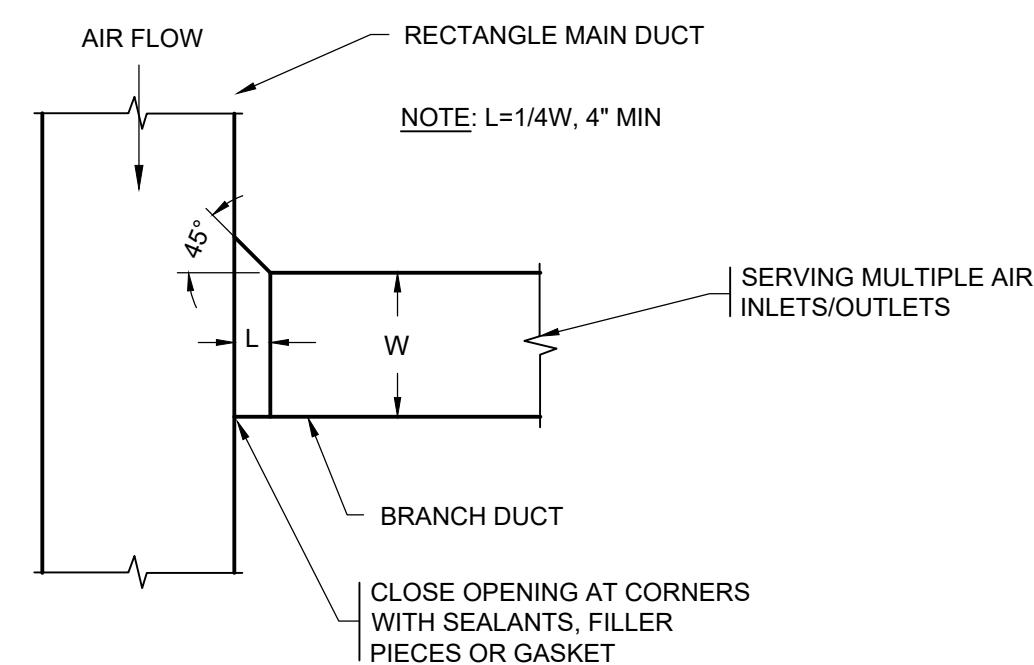
STRAIGHT TAP NOT
ALLOWED



ROUND - TO ROUND



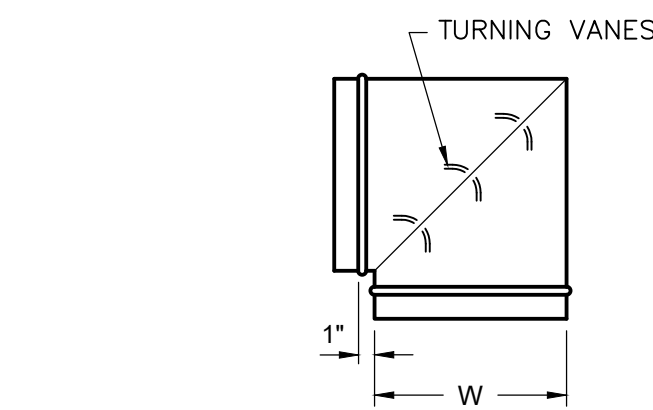
STRAIGHT TAP NOT
ALLOWED



RECT-TO-RECT
BRANCH DUCT CONNECTION

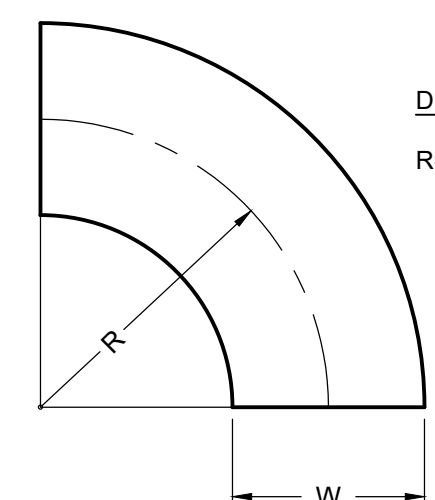
NTS

6
M3.2

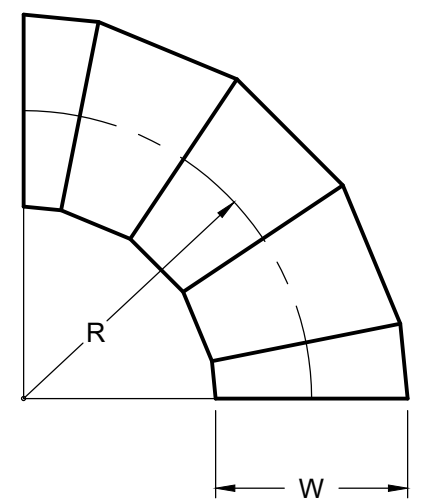


MITERED 90° ELBOW

DIMENSION:	
DIAMETER (INCH)	NUMBER OF VANES
3-9	2
10-14	3
15-19	4
20-60	5
OVER 60	12" MAX. SPACING



DIE-STAMPED ELBOW



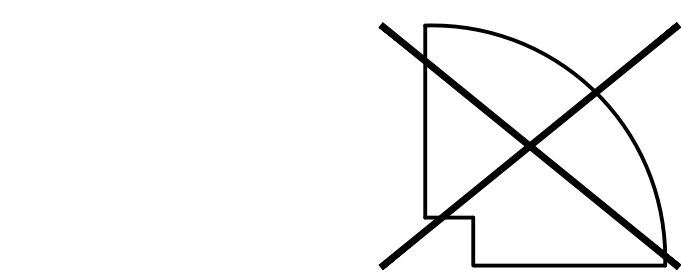
FABRICATED ELBOW

DIMENSION:	
ANGLE	NUMBER OF GORES
0-35°	2
36-71°	3
72-90°	5

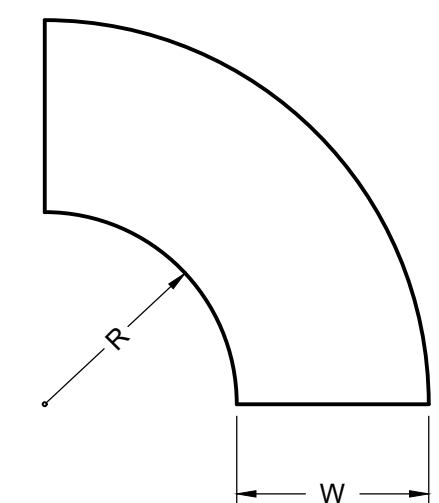
ELBOWS - ROUND

NTS

7
M3.2



RADIUS ELBOW

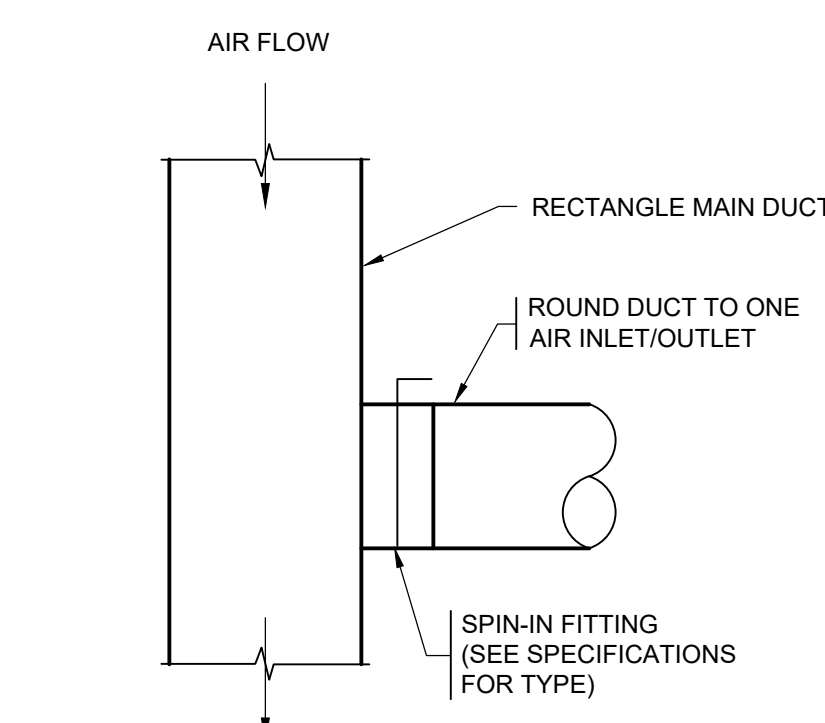


MITERED ELBOW

ELBOWS - RECTANGULAR

NTS

8
M3.2



SERVING ONE INLET/OUTLET

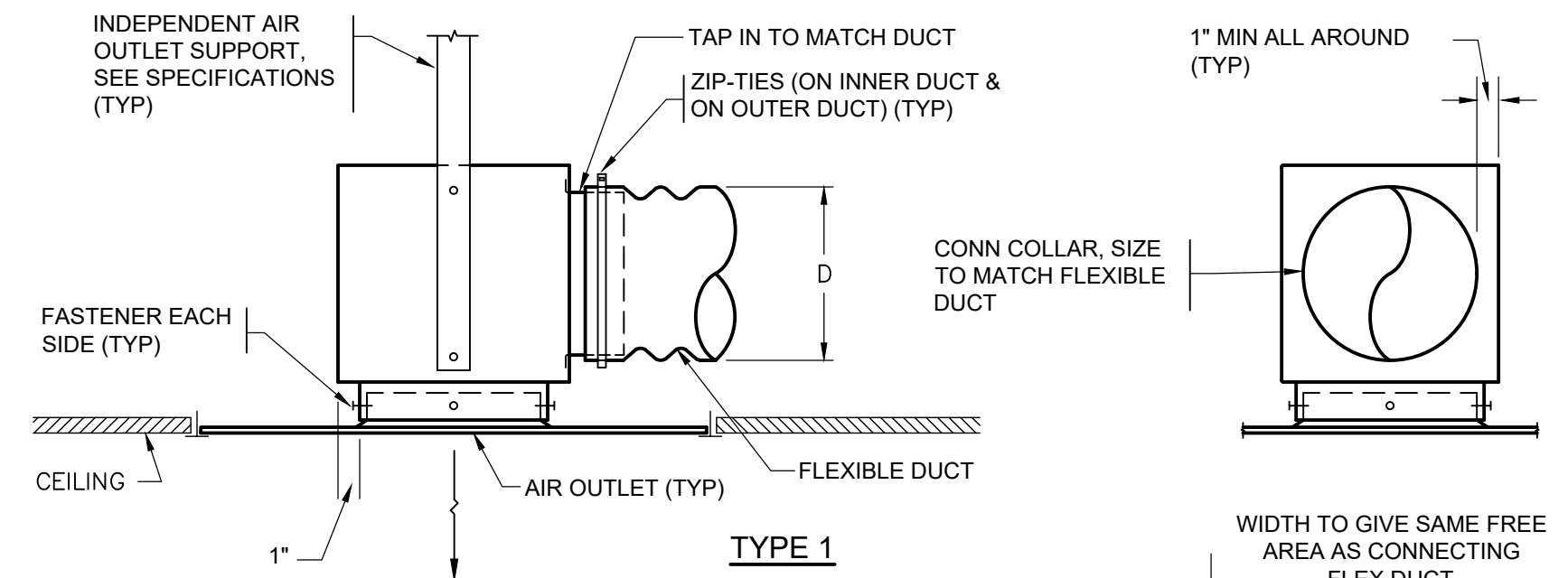
NOTE:

WHERE MAIN DUCT DOES NOT HAVE ADEQUATE HEIGHT TO ACCEPT ROUND DUCT, PROVIDE RECTANGULAR CONNECTION, WITH SAME FREE AREA AS ROUND DUCT, AND TRANSITION TO ROUND

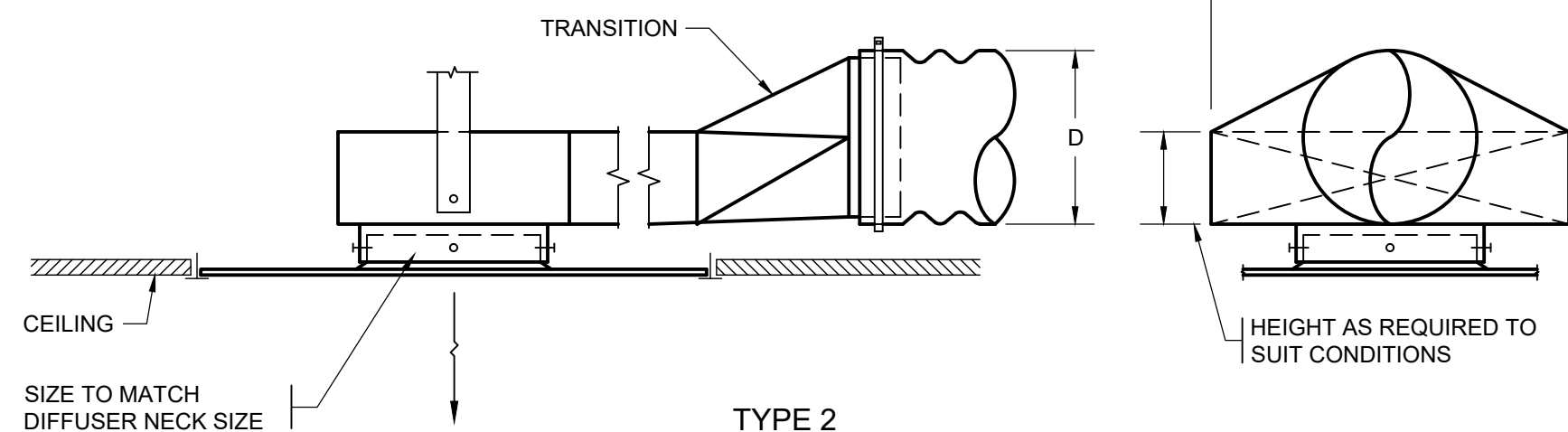
RECT-TO-ROUND
BRANCH DUCT CONNECTION

NTS

9
M3.2



TYPE 1



TYPE 2

NOTES:

1. PROVIDE TYPE 1 UNLESS BUILDING CONDITIONS REQUIRE LOWER PROFILE - THEN USE TYPE 2.
2. CONSTRUCT PLENUM BOXES OF MIN. 26 GA. GALV. STEEL.
3. NOT ALLOWED AT TRANSFER DUCTS.
4. LINE PLENUM & DUCT TO AIR OUTLET WHERE SO NOTED ON PLANS OR IN SPECIFICATIONS.
5. CEILING TYPE & AIR OUTLET FRAME STYLE MAY VARY FROM THAT DEPICTED.
6. NOT ALL SUPPORTS ARE SHOWN FOR CLARITY.
7. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TIGHT CONDITION - FLEX DUCT
AIR OUTLET CONNECTION

NTS

10
M3.2

└

integrus
ARCHITECTURE

117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA 98104
TELEPHONE (206) 467-3133 FAX (206) 467-3138



SIGNED

1-12-2023

HULTZ & BHU
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1111 Fawcett Ave Suite 100
Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-204

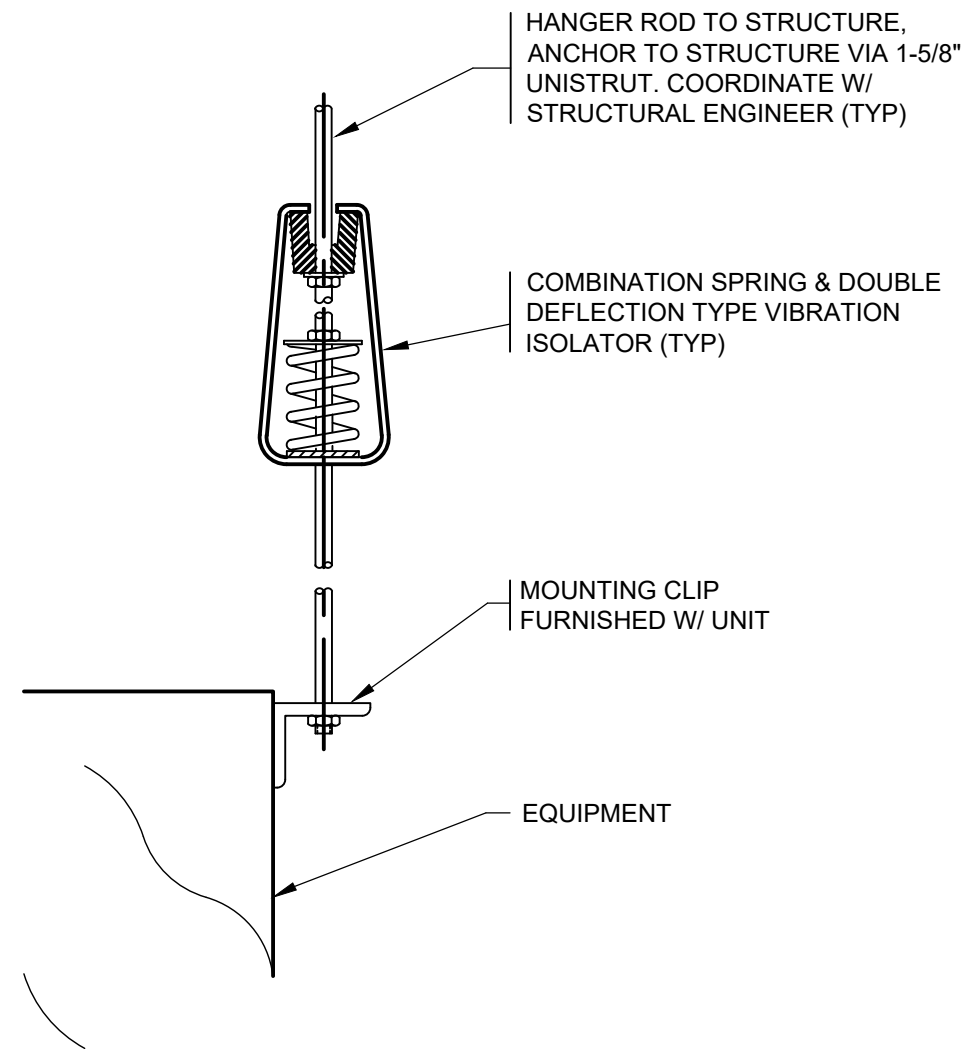
LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date:	01/17/2023
Job No.:	22220.00
Drawn By:	Author
Checked by:	Checker
Revisions	
#	Date Description

MECHANICAL DETAILS -
MARK MORRIS HS

M3.2

BID SET



TOP SUPPORT

NOTES:

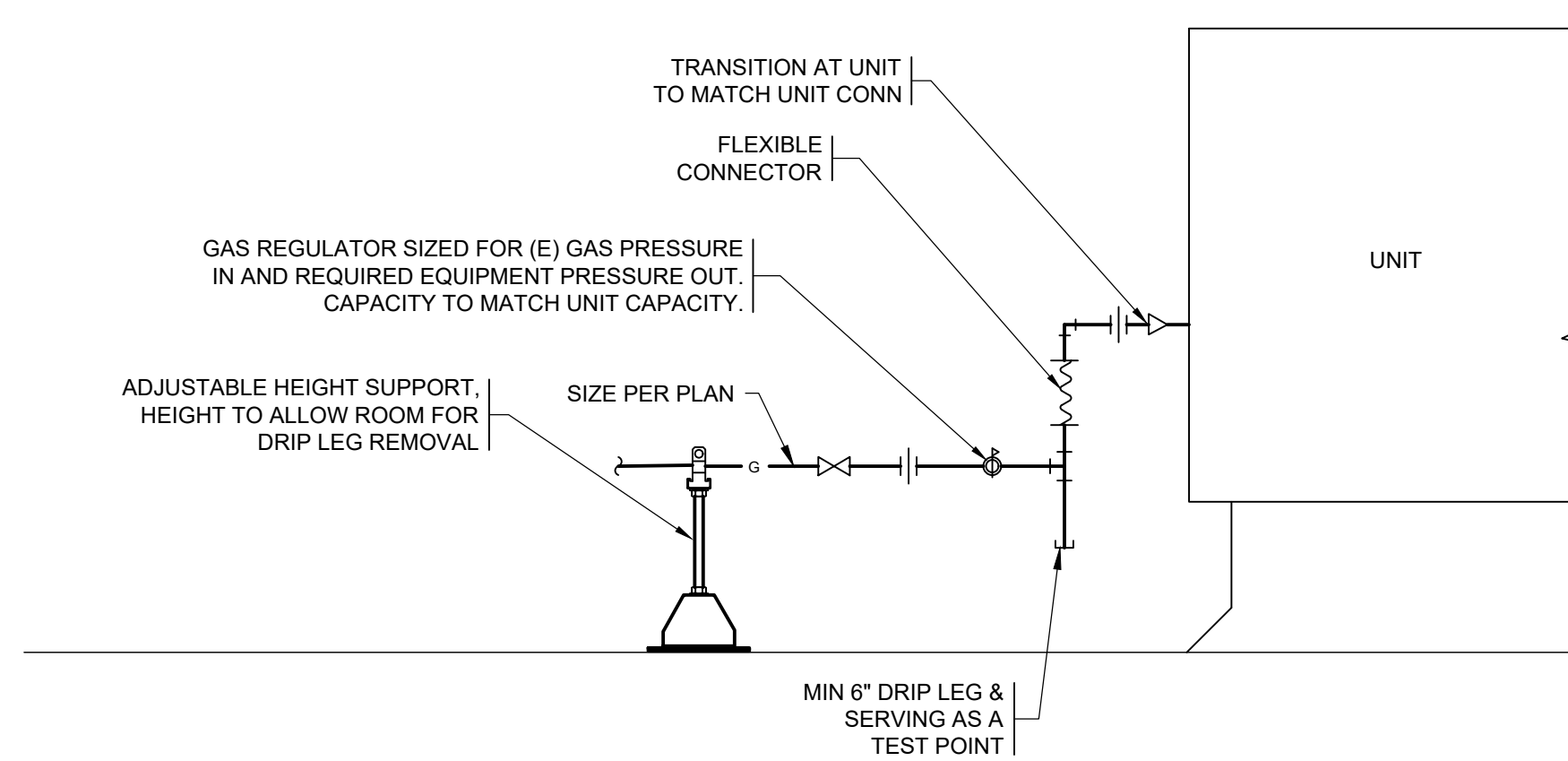
1. ALL SUSPENDED HVAC EQUIPMENT W/ ROTATING COMPONENTS SHALL HAVE VIBRATION ISOLATORS AS SHOWN.
2. VIBRATION ISOLATORS SHALL BE SELECTED FOR 1" DEFLECTION (UNO).
3. SEE STRUCTURAL FOR ATTACHMENT TO STRUCTURE & OTHER ANCHORING REQUIREMENTS.
4. DIRECT DRIVE EQUIPMENT MAY USE RUBBER-IN-SHEAR TYPE ISOLATORS.
5. PROVIDE SEISMIC RESTRAINTS PER SPECIFICATIONS PER CODE.

SUSPENDED EQUIPMENT SUPPORT

NTS

1

M3.3

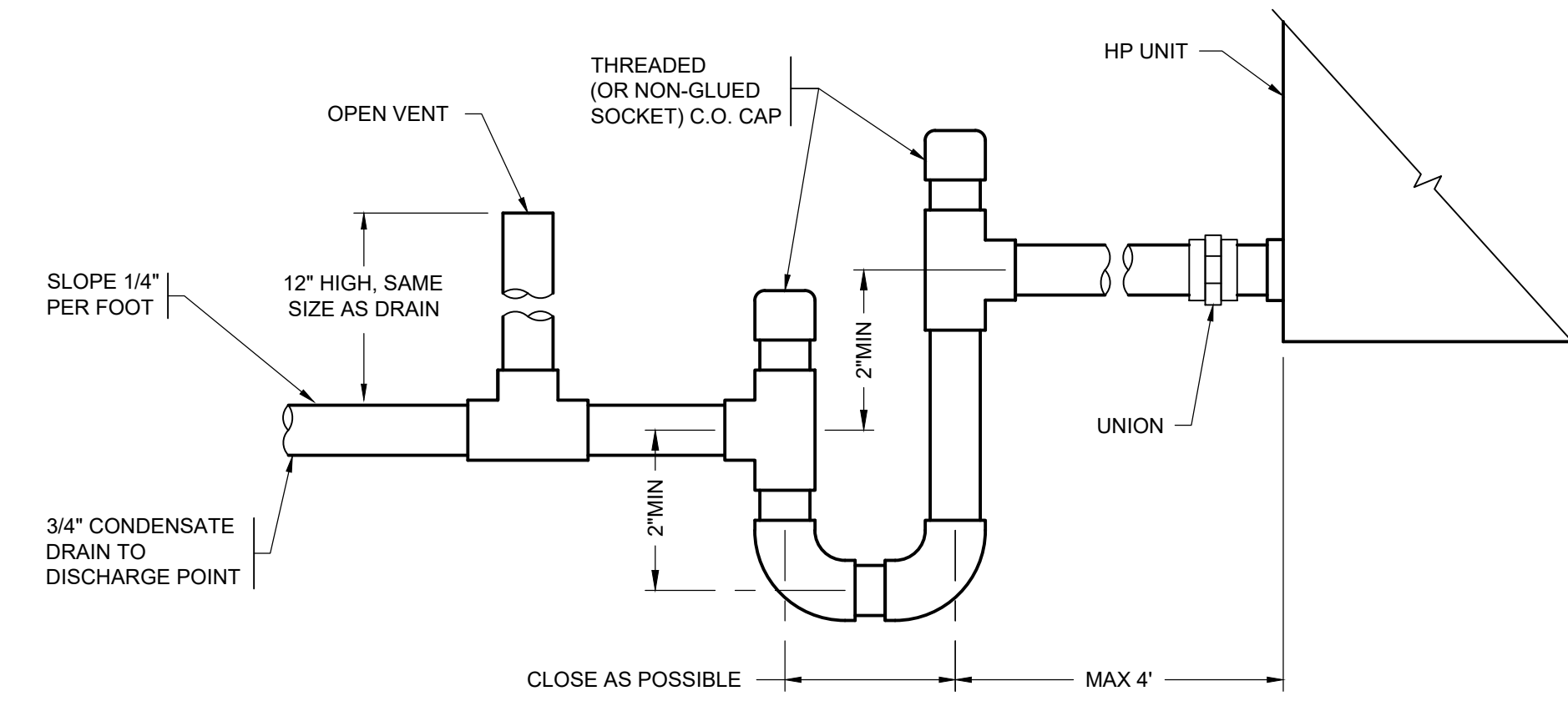


ROOFTOP UNIT GAS CONN

NTS

2

M3.3



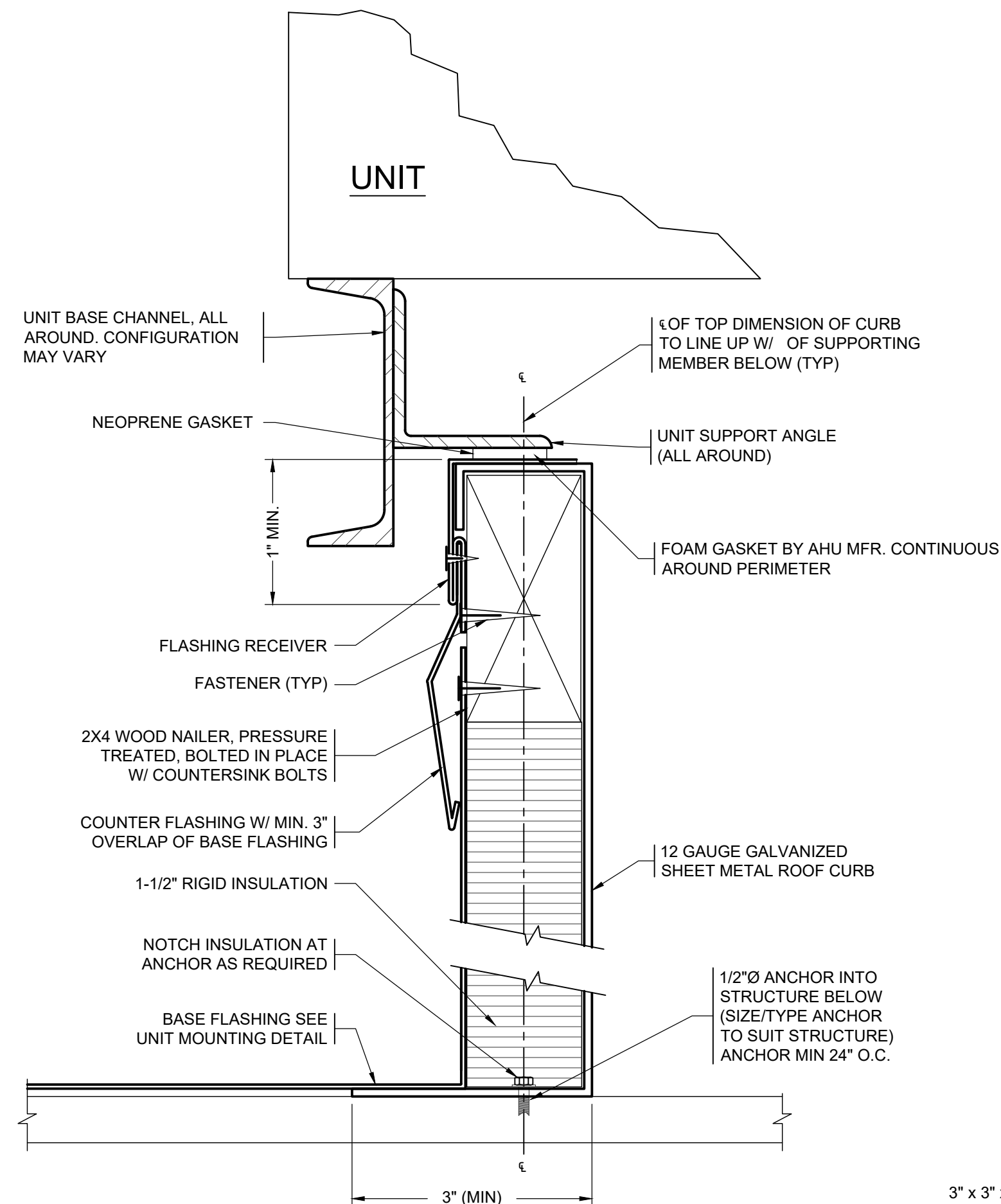
NOTE: PROVIDE OPEN VENT AS SHOWN WHERE LENGTH OF DRAIN PIPE IS 15 FEET OR MORE

CONDENSATE DRAIN DETAIL

NTS

3

M3.3

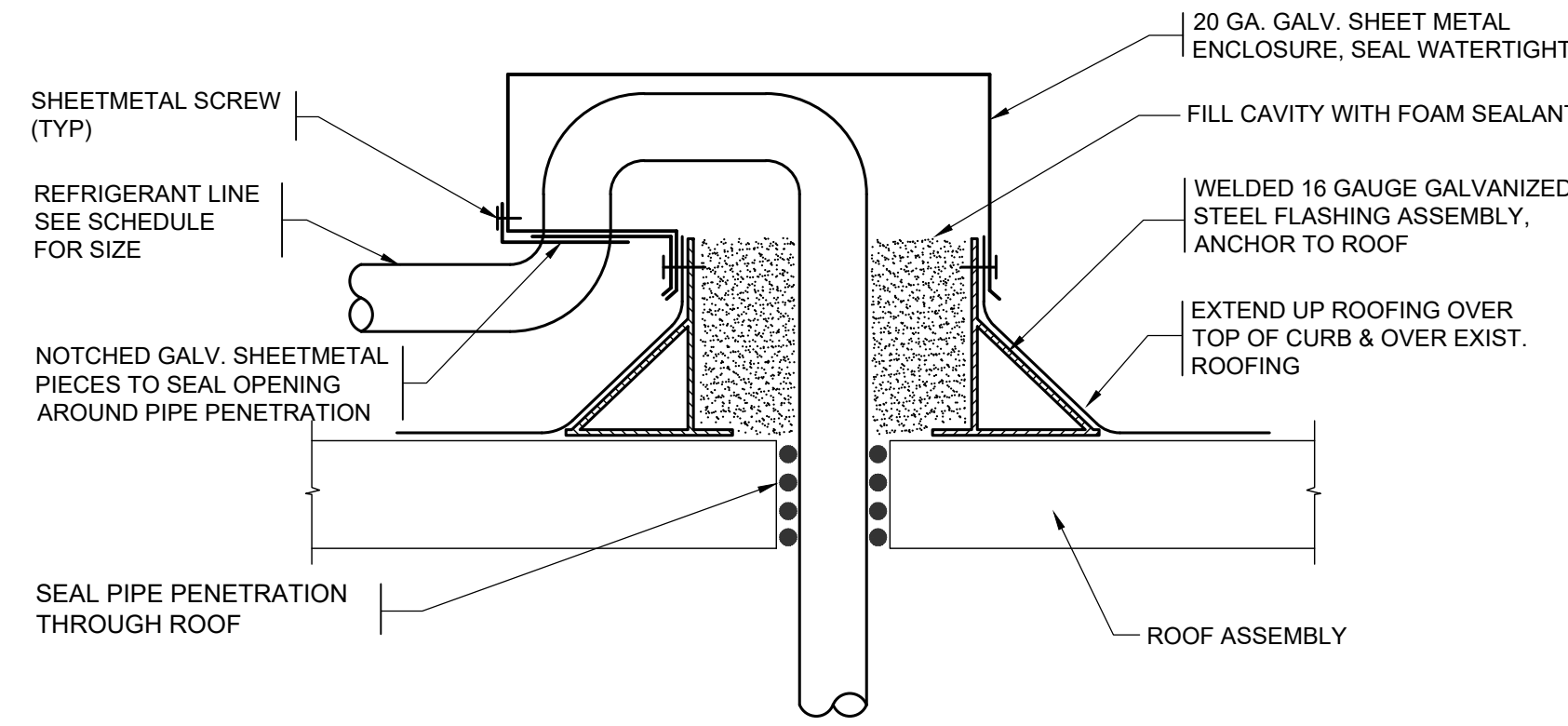


UNIT CURB

NTS

6

M3.3

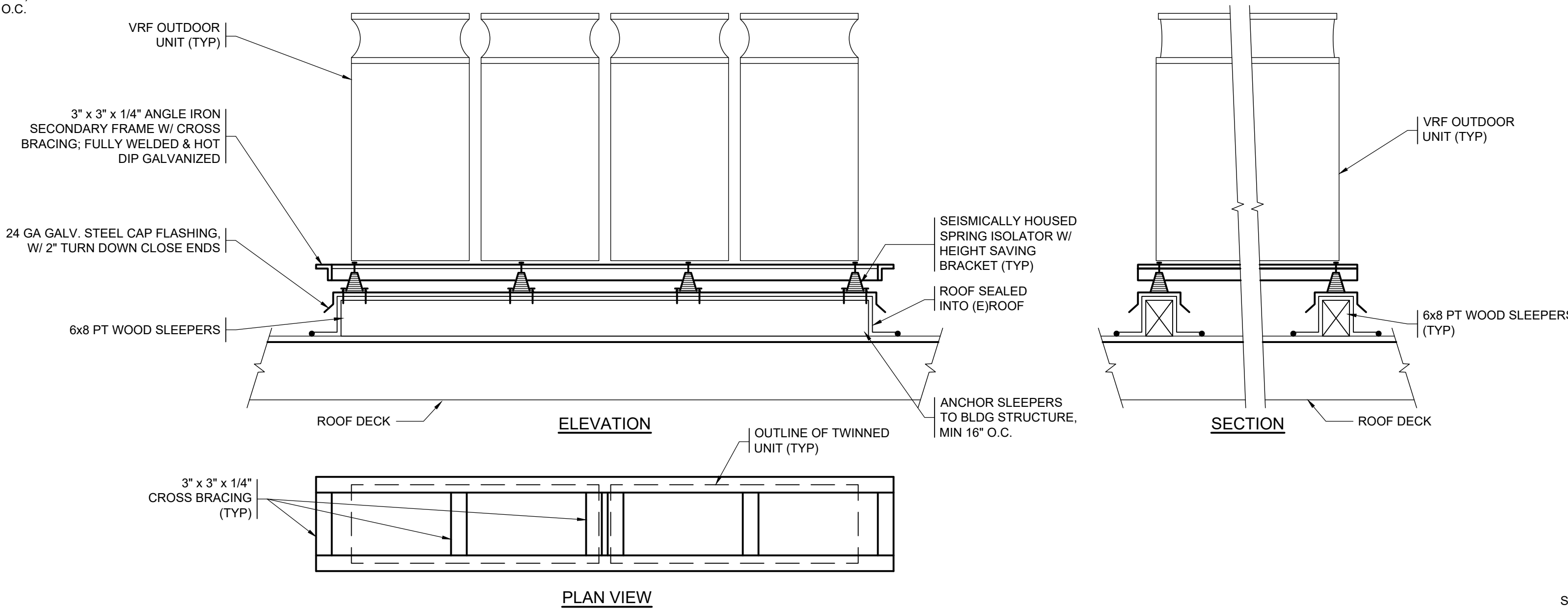


REFRIGERANT PIPING

NTS

5

M3.3



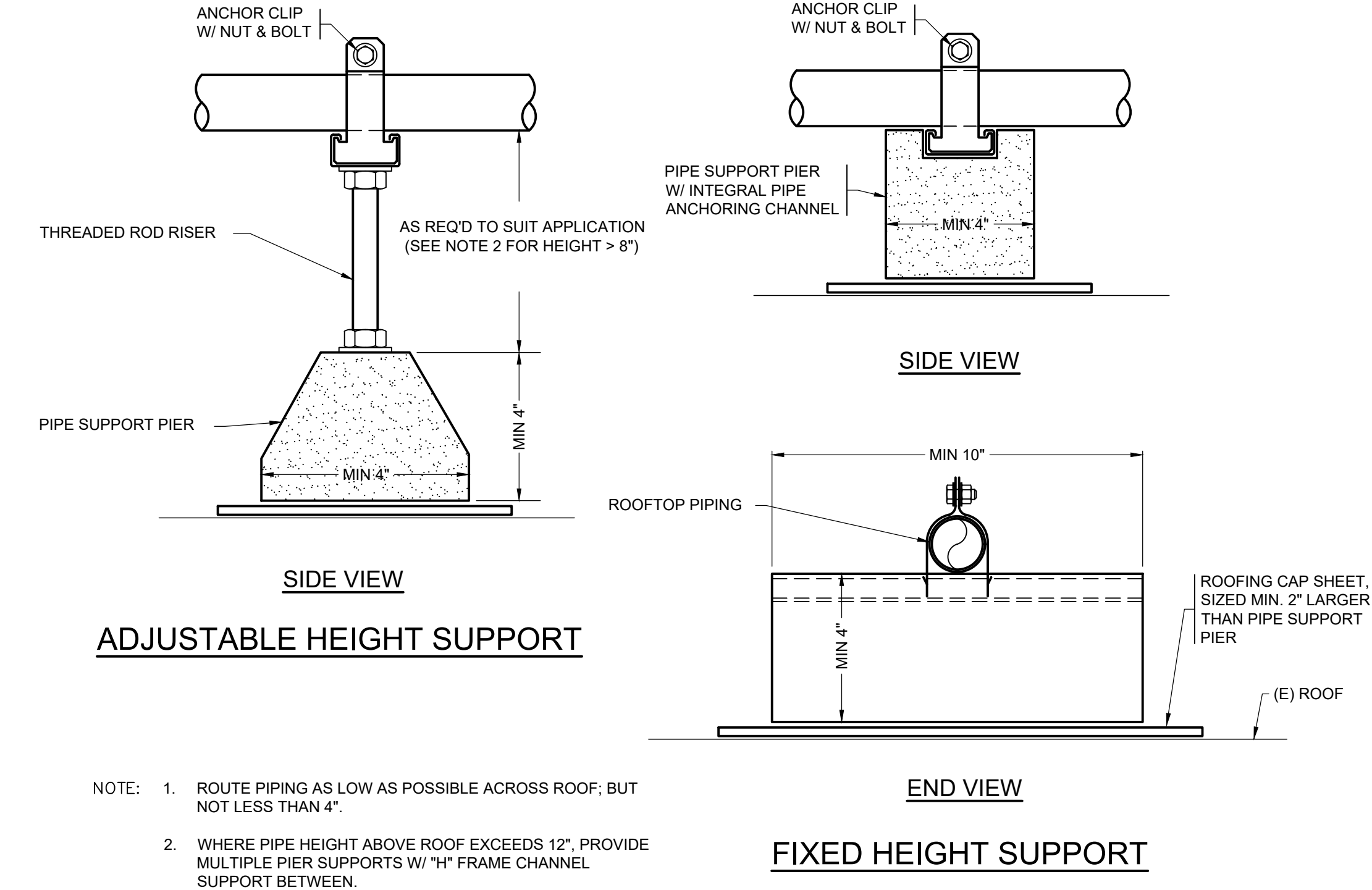
- NOTES:
1. ANCHOR UNITS TO SECONDARY FRAME, FRAME TO ISOLATORS & ISOLATORS TO SLEEPERS.
 2. LOCATE CROSS BRACING SUCH THAT IT DOES NOT BLOCK WEEP HOLES ON UNITS.

VRF OUTDOOR UNIT MOUNTING DETAIL

NTS

4

M3.3



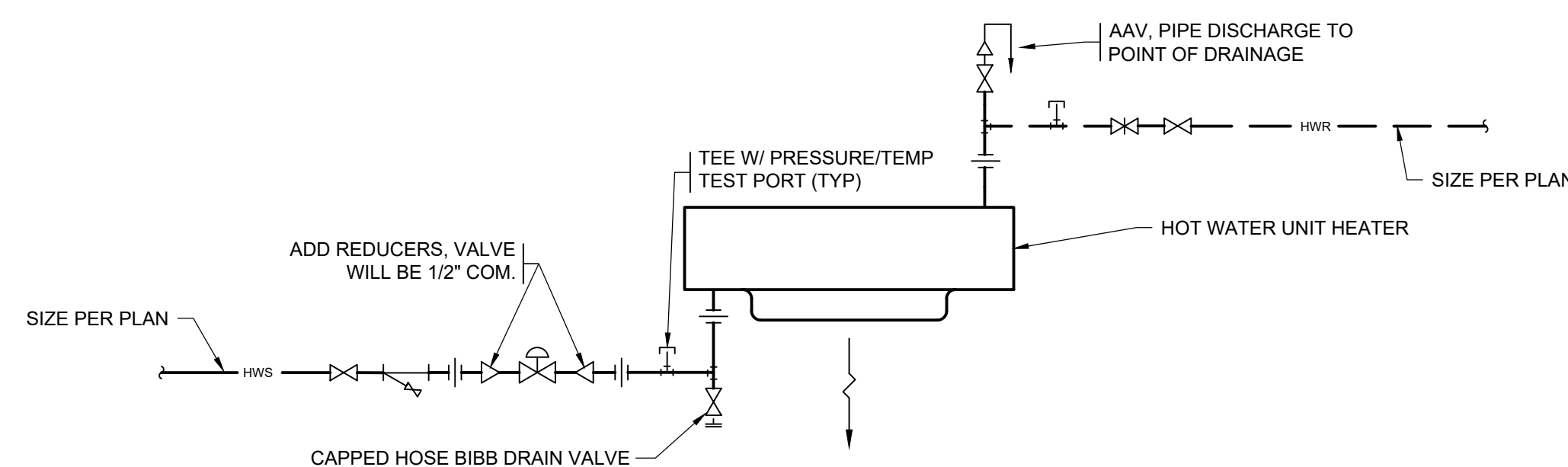
- NOTE:
1. ROUTE PIPING AS LOW AS POSSIBLE ACROSS ROOF, BUT NOT LESS THAN 4\".
 2. WHERE PIPE HEIGHT ABOVE ROOF EXCEEDS 12\", PROVIDE MULTIPLE PIER SUPPORTS W/ 1/4\" FRAME CHANNEL SUPPORT BETWEEN.

ROOFTOP PIPE SUPPORT

NTS

7

M3.3



UH COIL CONNECTION

NTS

8

M3.3

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1-12-2023

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Job Number: 22-204

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date:	01/17/2023	
Job No.:	22220.00	
Drawn By:	Author	
Checked by:	Checker	
Revisions		
#	Date	Description

MECHANICAL DETAILS -
MARK MORRIS HS

M3.3

BID SET

DIAGRAM SYMBOL LEGEND	DESCRIPTION	CONT.No	PAGE
---	POWER WIRE		
---	CONTROL WIRE		
---	REF. PIPE		

PIPING AND CONTROLS
SYMBOL DESCRIPTION
J1 CMV-R300NCK
J2 CMV-R304S-G
J3 CMV-V102SS-G2
SYMBOL DESCRIPTION PIPING SIZE
P1 1/8"
P2 3/8" / 1-1/8"
P3 3/8" / 5/8"
P4 3/4" / 1-1/2"
P5 1-1/8" / 1-3/8"
NOTES
* If the thermostat wiring greater than 32' then use 16-2 AWG only

Diamond System Builder
sw: 4.4.3.44
db: 4.4.3.13
1/12/2023
8:19 AM

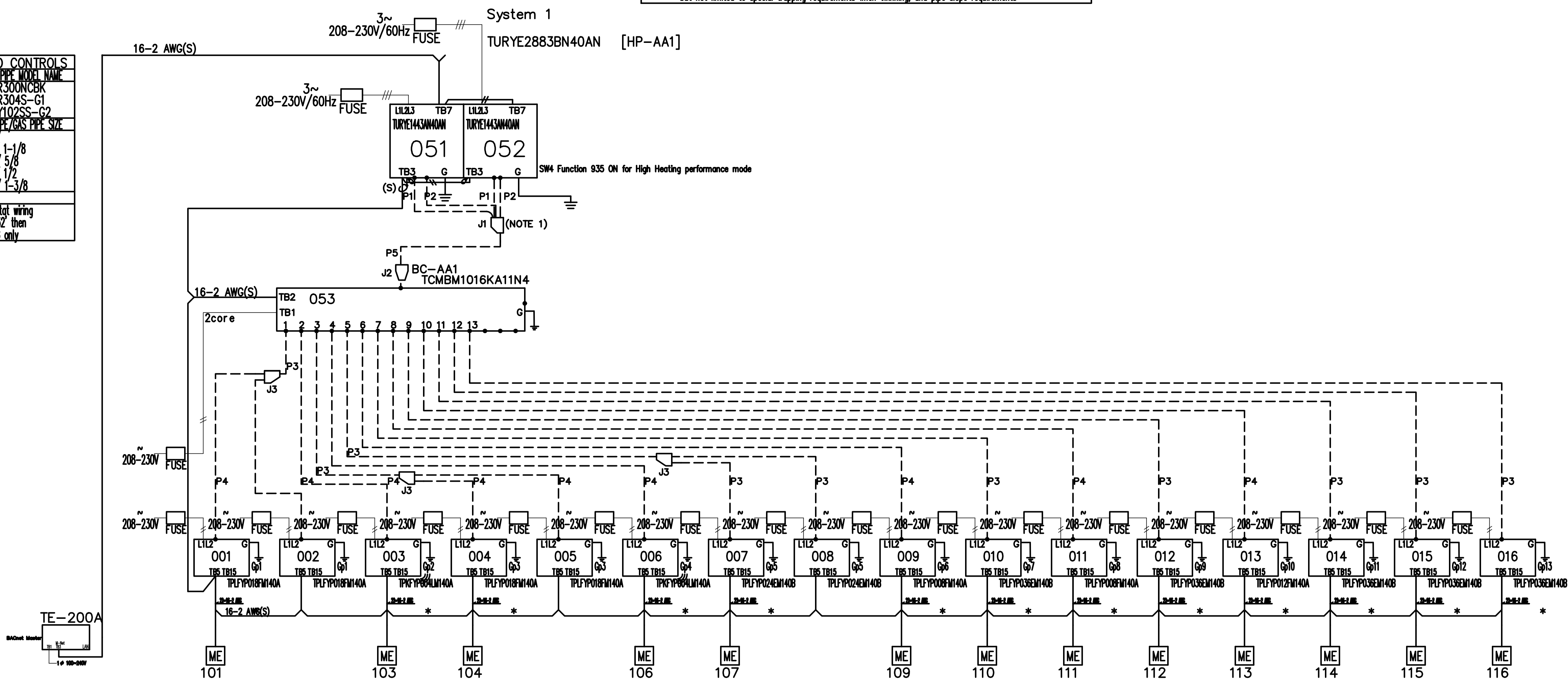
REMARKS
Originator: Michael Woods
Comments:

CITY MULTI SYSTEM SCHEMATIC DWG.

This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record. Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.

1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

Code Notes:
NOTE 1: Install tubing Y's within 15 degrees of level and with 20 inches of straight pipe on converging connection - reference installation manual for additional details including but not limited to special trapping requirements when tubing, and pipe slope requirements



CC-AA1.1, CC-AA1.2, EC-AA1.4, CC-AA2.1, CC-AA2.2, EC-AA2.4, CC-AA3.1, CC-AA3.2, CC-AA3.3, CC-AA4, CC-AA4.1, CC-AA5, CC-AA6, CC-AA7, CC-AA8, CC-AA10

REFRIGERANT PIPING DIAGRAM

1

M3.4

NOTE:

THIS DIAGRAM HAS BEEN PROVIDED BY THE VRF MFR AND IS PRELIMINARY & APPROXIMATE ONLY. IT DOES NOT SHOW ALL REQ'D CONTROL DEVICES NOR ALL CONNECTIONS, NOR A DESIGN FOR OTHER MFR'S. OBTAIN FROM VRF MFR UPDATED DIAGRAM WITH ALL PIPING SIZES, CONTROLS, WIRING, AND RELATED REQUIREMENTS. SUBMIT SHOP DRAWINGS AS SPECIFIED.



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1-12-2023

LONGVIEW SCHOOL DISTRICT HEAT PUMP REPLACEMENT AND INDOOR AIR QUALITY IMPROVEMENTS

Date: 01/17/2023

Job No.: 22220.00

Drawn By: Author

Checked by: Checker

Revisions

#	Date	Description
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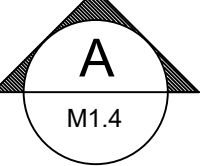
MECHANICAL DETAILS -
MARK MORRIS HS

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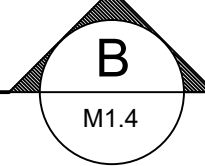
EXISTING VENTILATOR LOUVER

NTS



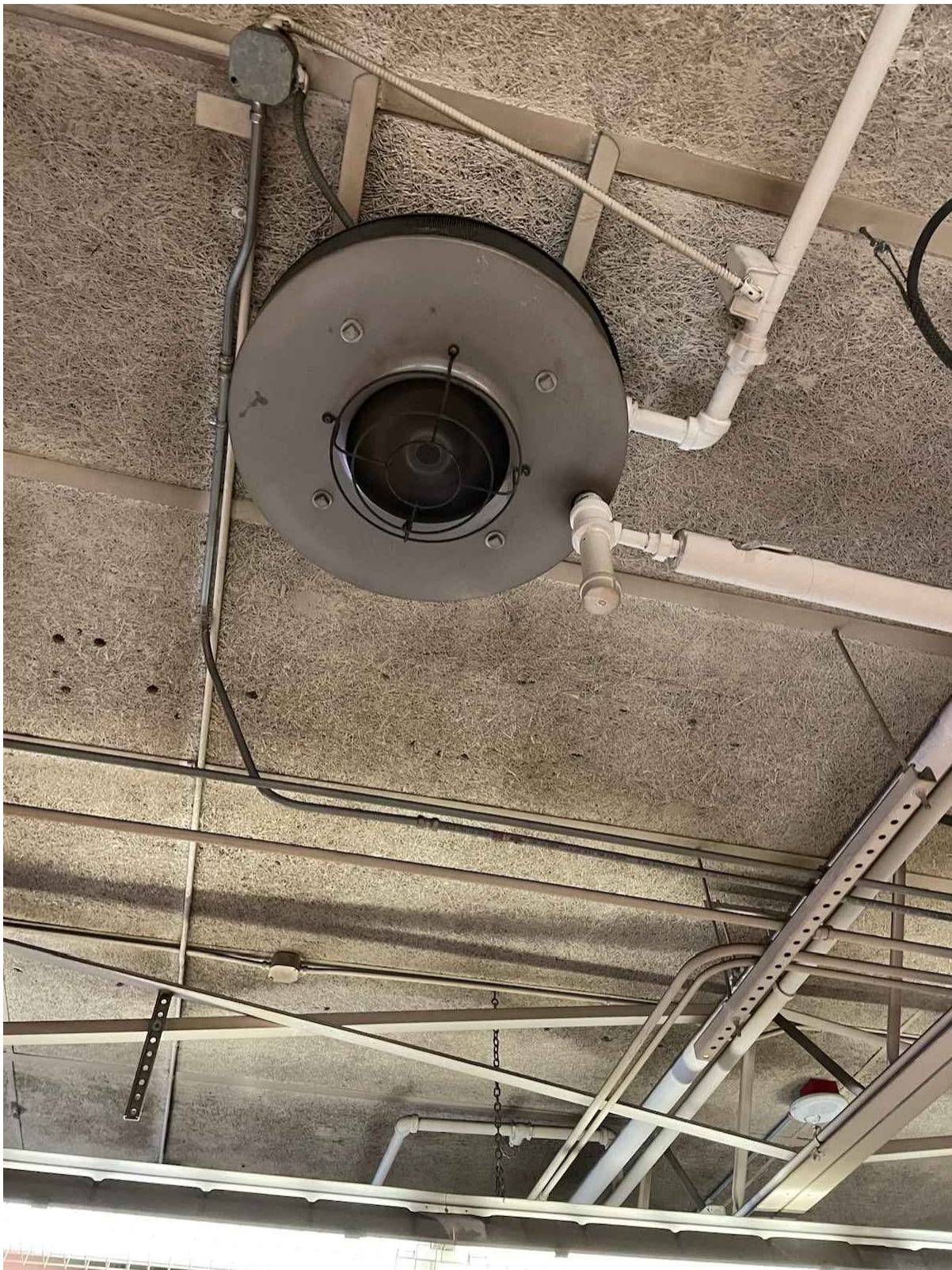
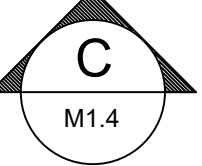
EXISTING UNIT VENTILATOR

NTS



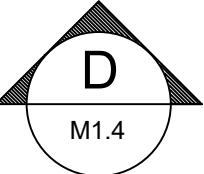
PLENUM SPACE

NTS



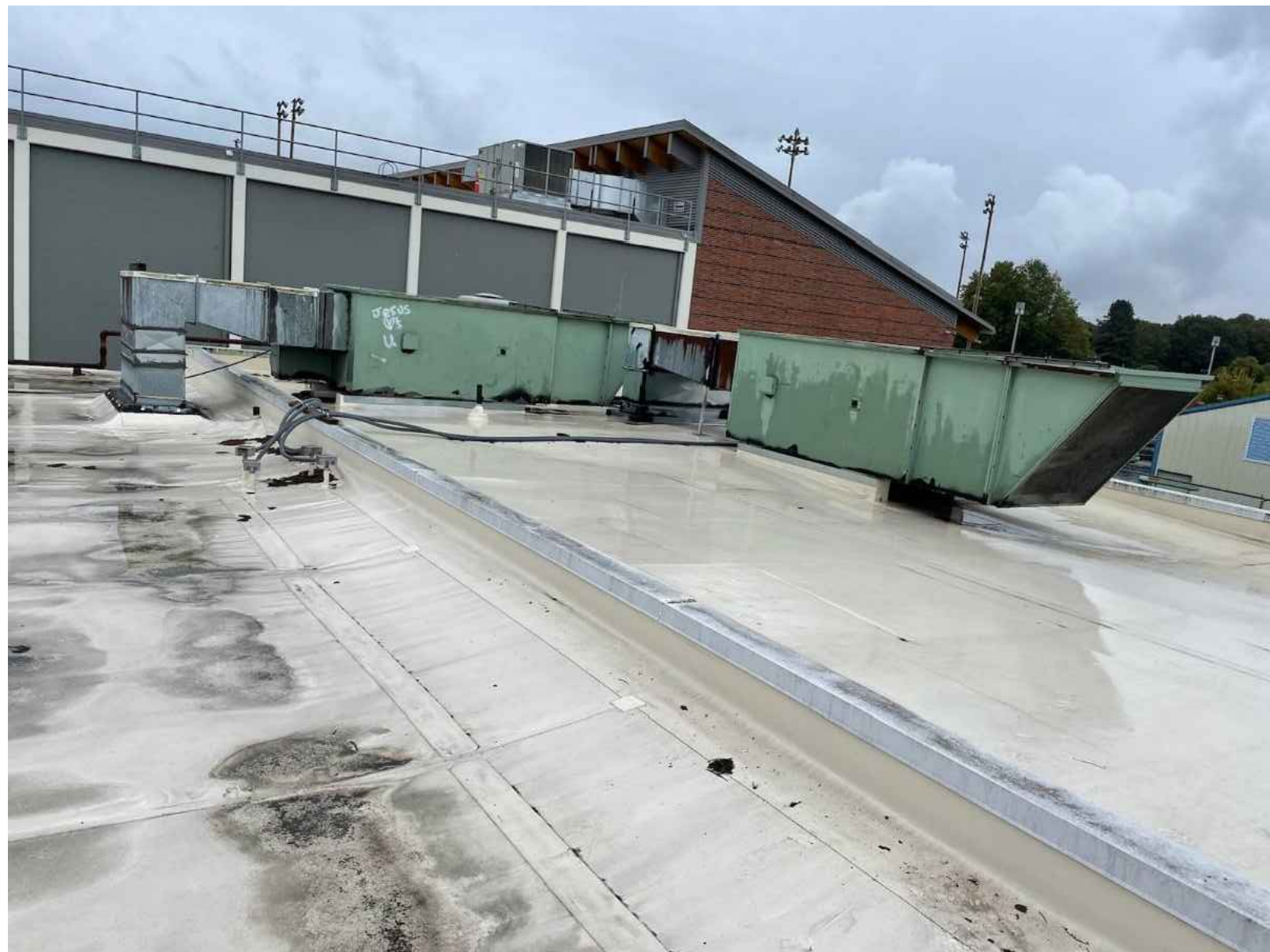
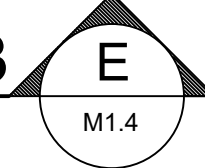
EXISTING VOCATIONAL
BUILDING UNIT HEATER

NTS



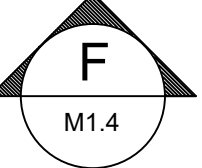
MAU-3 & RTU-3

NTS



MAU-1 & MAU-2

NTS



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1-12-2023

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date:	01/17/2023
Job No.:	22220.00
Drawn By:	Author
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MECHANICAL DETAILS -
MARK MORRIS HS



1. CLASSROOMS	63,644 S.F.
2. ADMINISTRATION	4,697 S.F.
3. CORRIDORS	22,357 S.F.
4. SERVICE AREAS	35,745 S.F.
5. LIBRARY	7,312 S.F.
6. GYM	33,352 S.F.
7. COMMONS	7,032 S.F.
TOTAL =	174,139 S.F.

TOTAL GROSS = 184,610 S.F.



BUILDING B	
GROSS	9,752 S.F.
1 CLASSROOM	8,683 S.F.
4 SERVICE AREAS	629 S.F.

- BALANCING NOTES**
- CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
 - WHERE EXISTING HVAC SYSTEM IS PROVIDED WITH CO2 CONTROLS, THE SCHEDULED MINIMUM OUTDOOR AIR CFM MAY BE REDUCED TO 50% OF THE CALCULATED VALUE.

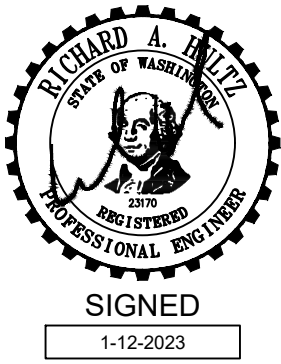
- KEYED NOTES**
- HEATING & VENTILATING UNIT

- MARK MORRIS HS NOTES**
- EXISTING HVAC SYSTEM CONSISTS OF CENTRAL AIR HANDLER SUPPLYING HOT & COLD AIR TO TERMINAL VAV UNITS.
 - LIMITED MECHANICAL AS BUILTS ARE AVAILABLE FOR USE BY CONTRACTOR. CONTACT ENGINEER.

BALANCING NOTES

1. CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
2. WHERE EXISTING HVAC SYSTEM IS PROVIDED WITH CO2 CONTROLS, THE SCHEDULED MINIMUM OUTDOOR AIR CFM MAY BE REDUCED TO 50% OF THE CALCULATED VALUE.

HVAC Unit	Zone #	Name	Occup Category	Space Supply Air	HVAC UNIT Outdoor Airflow
HV-6	1	A-2 SOCIAL SCIENCE	CLASSROOM	1125	6250
	2	A-3 SOCIAL SCIENCE	CLASSROOM	1125	
	3	A-4 SOCIAL SCIENCE	CLASSROOM	1125	
	4	A-5 SOCIAL SCIENCE	CLASSROOM	1125	
	5	A-6 SOCIAL SCIENCE	CLASSROOM	1125	
	6	A-7 ENGLISH	CLASSROOM	1125	
	6	201-A CORRIDOR	CORRIDOR	360	
	7	A-8 ENGLISH	CLASSROOM	1125	
	8	A-9 ENGLISH	CLASSROOM	1125	
	9	A-10 ENGLISH	CLASSROOM	1125	
	10	A-11 ENGLISH	CLASSROOM	1125	
	11	A-12 ENGLISH	CLASSROOM	1125	
	12	A-14 COMPUTER LAB	COMPUTER LAB	1410	
	A-15, 15.2, 15.3 & 15.4				
	13	TEACHER PREP	OFFICE SPACE	1100	
	13	A-15.1 TOILET	TOILET ROOM	70	
	13	A-15.4 CONFERENCE	CONFERENCE ROOM	200	
	14	A-16 TECH ROOM	CLASSROOM	100	
	14	A-16 BOOK STORAGE	OFFICE SPACE	650	
	15	B-6 FOREIGN LANGUAGE	CLASSROOM	1200	
	15	202-B CORRIDOR	CORRIDOR	460	
	16	B-7 FOREIGN LANGUAGE	CLASSROOM	1200	
	16	201-B(2) CORRIDOR	CORRIDOR	300	
	17	202-A CORRIDOR	CORRIDOR	670	
	17	203-A CORRIDOR	CORRIDOR	440	
HV-9	1	C-1 TYPING	CLASSROOM	1275	11500
	2	C-2 COMPUTERS	COMPUTER LAB	1275	
	3	C-3(1) TEACHER PREP	OFFICE SPACE	675	
	4	C-3.1 WORK	OFFICE SPACE	200	
	4	C-3.2 TOILET	TOILET ROOM	30	
	4	C-3(2) TEACHER PREP	OFFICE SPACE	475	
	5	C-5 BUSINESS	CLASSROOM	1425	
	6	C-6 ACCOUNTING	CLASSROOM	1125	
	7	C-7 MATH	CLASSROOM	1125	
	8	C-8 MATH	CLASSROOM	1125	
	9	C-9 MATH	CLASSROOM	1125	
	10	C-10 MATH	CLASSROOM	1125	
	11	C-11 MATH	CLASSROOM	1125	
	12	C-12 MATH	CLASSROOM	1125	
	13	C-13 BOOK STORAGE	OFFICE SPACE	250	
	14	C-14 COMPUTER LAB	COMPUTER LAB	1410	
	15	C-15 LEARNING DISABLE	CLASSROOM	700	
	15	301-C CORRIDOR	CORRIDOR	640	
	16	C-16 LEARNING DISABLE	CLASSROOM	700	
	16	301-D CORRIDOR	CORRIDOR	640	
	17	D-1 ART	ART CLASSROOM	1450	
	17	D-1.1 OFFICE	OFFICE SPACE	100	
	17	D-1.2 PROJECTION ROOM	OFFICE SPACE	50	
	18	D-2 PHOTOGRAPHY	CLASSROOM	1200	
	18	D-2.6 STUDIO	OFFICE SPACE	150	
	19	D-2.1 PRESS	CLASSROOM	300	
	20	D-2.2 OFFICE	OFFICE SPACE	75	
	20	D-2.3 PROCESS CAMERA ROOM	CLASSROOM	120	
	21	D-2.4 B&W DARK ROOM	CLASSROOM	600	
	21	D-2.5 COLOR DARK ROOM	CLASSROOM	100	
	22	D-3 BIOLOGY	CLASSROOM	1425	
	23	D-4 BIOLOGY	CLASSROOM	1425	
	24	D-3.1 OFFICE	OFFICE SPACE	50	
	24	D-4.1 OFFICE	OFFICE SPACE	50	
	24	D-9 BIOLOGY PREP	OFFICE SPACE	300	
	25	D-5 PHYSICAL SCIENCE	CLASSROOM	1425	
	26	D-6 PHYSICAL SCIENCE	CLASSROOM	1425	
	27	D-5.1 OFFICE	OFFICE SPACE	50	
	27	D-6.1 OFFICE	OFFICE SPACE	50	
	27	D-7.1 OFFICE	OFFICE SPACE	50	
	27	D-8.1 OFFICE	OFFICE SPACE	50	
	27	D-10 SCIENCE PREP	OFFICE SPACE	800	
	28	D-7 CHEMISTRY	CLASSROOM	1425	
	29	D-8 PHYSICS	CLASSROOM	1425	
	30	102-MC MAIN CORRIDOR	CORRIDOR	3150	
	30	T-10	TOILET ROOM	250	
	30	T-20	TOILET ROOM	250	
HV-8	1	T01-B ENTRY	CORRIDOR	1240	3500
	1	L-1 LIBRARY	LIBRARY	640	
	1	L-1.1 COMPUTER	COMPUTER LAB	200	
HV-8	1	L-1.2 ENTRY	CORRIDOR	200	
	1	L-5 TOILET	TOILET ROOM	35	
	1	L-6 TOILET	TOILET ROOM	35	
HV-3	1	L-2 OFFICE	OFFICE	130	
	2	L-3 WORK ROOM	OFFICE SPACE	500	
	2	L-4 AV STORAGE	STORAGE	340	
HV-3	3	M-2, 2.1, 2.2, 3, 3.1, 4, 4.1 & 4.2	CLASSROOM	3060	
	3	M-4.1 & 4.2 OFFICE & STORAGE	OFFICE SPACE	1640	
HV-3	1	M-1 MULTIPURPOSE	MULTIUSE ASSEMBLY	11560	6000
	1	M-1.1 PEP CLUB	CLASSROOM	85	
	1	M-1.2 ASB	CLASSROOM	210	
HV-4	1	M-5 BAND	MUSICTHEATRE/DANCE	2000	825
	1	M-5.1 OFFICE	OFFICE	80	
	1	M-5.2 PRACTICE	MUSICTHEATRE/DANCE	65	
	1	M-5.3 PRACTICE	MUSICTHEATRE/DANCE	125	
	1	M-5.5 PRACTICE	MUSICTHEATRE/DANCE	65	
HV-5	1	MS-2 STORAGE	STORAGE	165	900
	1	M-6 CHOIR	MUSICTHEATRE/DANCE	2000	
	1	M-6.1 OFFICE	OFFICE SPACE	120	
	1	M-6.2 PRACTICE	MUSICTHEATRE/DANCE	80	
	1	M-6.3 PRACTICE	MUSICTHEATRE/DANCE	100	
HV-5	1	M-6.5 VESTIBULE	CORRIDOR	110	
	1	M-6.7 PRACTICE	MUSICTHEATRE/DANCE	240	
	1	MS-1 INSTRUMENTS	STORAGE	410	
HV-1 & HV-2	1	G-1 GYMNASIUM	GYM	30560	4000
	1	G-2 WRESTLING	GYM	2000	
HV-7	1	A-1 SOCIAL SCIENCE	CLASSROOM	1125	2000
	2	B-1 RECEIVING	OFFICE SPACE	325	
HV-7	2	B-1.1 TOILET	TOILET ROOM	35	
	2	B-3 IN SCHOOL SUSPENSION	CLASSROOM	650	
HV-7	3	B-2 FACULTY	KITCHENETTE	1275	
	4	B-6 LOBBY	MAIN ENTRY LOBBY	600	
HV-7	4	B-9 RECEPTION	RECEPTION AREA	350	
	4	B-10 MAIL	OFFICE AREA	200	
HV-7	4	203-B CORRIDOR	CORRIDOR	150	
	4	T-5B TOILET	TOILET ROOM	135	
HV-7	5	B-11 GUIDANCE	RECEPTION AREA	840	
	5	B-11.1 OFFICE	OFFICE SPACE	120	
HV-7	5	B-11.2 OFFICE	OFFICE SPACE	120	
	5	B-11.3 OFFICE	OFFICE SPACE	120	
HV-7	5	B-11.4 OFFICE	OFFICE SPACE	120	
	5	B-11.7 OFFICE	CONFERENCE ROOM	170	
HV-7	6	AD-1 & 2 WAITING	OFFICE SPACE	320	
	6	AD-1 & 10 STUDENT SERVICES	OFFICE SPACE	970	
HV-7	6	AD-11 OFFICE	OFFICE SPACE	85	
	7	AD-3 OFFICE	OFFICE SPACE	220	
HV-7	7	AD-4 OFFICE	OFFICE SPACE	250	
	7	AD-5 OFFICE	OFFICE SPACE	200	
HV-7	7	AD-6 OFFICE	OFFICE SPACE	200	
	7	AD-7 OFFICE	OFFICE SPACE	220	
HV-7	7	AD-8 HOLDING	OFFICE SPACE	120	
	8	N-1 TREATMENT	OFFICE SPACE	160	
HV-7	8	N-2 OFFICE	OFFICE SPACE	75	
	8	N-3 BEDROOM	OFFICE SPACE	120	
HV-7	8	N-4 TOILET	TOILET ROOM	50	
	8	T-6B	TOILET ROOM	150	
HV-7	9	201-B(3) CORRIDOR	CORRIDOR	730	



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LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date: 01/17/2023
Job No.: 22220.00
Drawn By: Author
Checked by: Checker

#	Date	Description
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VENTILATION
CALCULATIONS -
MARK MORRIS

ABBREVIATIONS			
(SOME ABBREVIATIONS MAY NOT BE USED ON DRAWINGS)			
ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A or AMP	AMPERES	MCC	MOTOR CONTROL CENTER
AC	ALTERNATING CURRENT	MCM, KCM	THOUSAND CIRCULAR MILS
A/C	AIR CONDITIONING	MDF	MAIN DISTRIBUTION FRAME
AIC	AMPERE INTERRUPTING CAPACITY	MECH	MECHANICAL
AL	ALUMINUM	MIN	MINIMUM
ARCH	ARCHITECTURAL	MLO	MAIN LUGS ONLY
ATS	AUTOMATIC TRANSFER SWITCH	MOP, MOCF	MAXIMUM OVERCURRENT PROTECTION
AWG	AMERICAN WIRE GAUGE	NIC	NOT IN CONTRACT
BKR	BREAKER	NTS	NOT TO SCALE
BLDG	BUILDING	OC	ON CENTER
C	CONDUIT	PA	PUBLIC ADDRESS
C.O.	CONDUIT ONLY	PB	PULLBOX
CB	CIRCUIT BREAKER	Ø or PH	PHASE
CCTV	CLOSED CIRCUIT TELEVISION	PNL	PANEL
CFM	CUBIC FEET PER MINUTE	PR	PAIR
CKT	CIRCUIT	PRI	PRIMARY
CLG	CEILING	PVC	POLYVINYL CHLORIDE
CONC	CONCRETE	RECP	RECEPTACLE
CT	CURRENT TRANSFORMER	REQ	REQUIRED
CU	COPPER	RM	ROOM
CW	COLD WATER	SHT	SHEET
DC	DIRECT CURRENT	SP	SINGLE POLE
DIA	DIAMETER	SPD	SURGE PROTECTIVE DEVICE
DIV	DIVISION	SPDT	SINGLE POLE, DOUBLE THROW
DPDT	DOUBLE POLE, DOUBLE THROW	SPST	SINGLE POLE, SINGLE THROW
DPST	DOUBLE POLE, SINGLE THROW	SW	SWITCH
DWG	DRAWING	SWBD	SWITCHBOARD
EGC	EQUIPMENT GROUND CONDUCTOR	TEL	TELEPHONE
ELEC	ELECTRIC	TV	TELEVISION
EMT	ELECTRICAL METALLIC TUBING	TTB	TELECOMMUNICATIONS TERMINAL BOARD
EXST, (E)	EXISTING	TYP	TYPICAL
ETR	EXISTING TO REMAIN	UL	UNDERWRITERS LABORATORY
EV	ELECTRIC VEHICLE	UF	UNDERFLOOR
FA	FIRE ALARM	UG	UNDERGROUND
FC	FOOTCANDLE	V	VOLTS
FCA	FULL LOAD AMPS	VA	VOLT AMPERES
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	VAC	VOLTS ALTERNATING CURRENT
GND	GROUND	VAR	REACTIVE VOLT AMPERES
HP	HORSEPOWER	W	WATTS
IDF	INTERMEDIATE DISTRIBUTION FRAME	WP	WEATHERPROOF
J-BOX	JUNCTION BOX	/W	WITH
KV	KILOVOLTS	W/O	WITHOUT
KVA	KILOVOLT AMPERES	XFER	TRANSFER
KW	KILOWATTS	XFMR	TRANSFORMER
LT	LIGHT		
LTG	LIGHTING		
MAX	MAXIMUM		
MCA	MINIMUM CIRCUIT AMPS		
MCB	MAIN CIRCUIT BREAKER		

OUTLET MOUNTING HEIGHTS			
(MEASURE TO CENTER OF BOX, UNLESS OTHERWISE INDICATED)			
COUNTER HEIGHT (*)	+3 INCHES ABOVE SPLASH	FIRE ALARM	
CASEWORK OUTLETS	AS DIRECTED	MANUAL STATIONS	48 INCHES TO TOP
SWITCHES AND DIMMERS	48 INCHES	SIGNALING DEVICES	80 INCHES TO BOTTOM
RECEPTACLES	18 INCHES	REMOTE ALARM LIGHTS	80 INCHES TO BOTTOM
THERMOSTATS	48 INCHES	REMOTE ANNUNCIATOR	60 INCHES TO BOTTOM
OCCUPANCY SENSORS	12 FEET MAXIMUM	GRAPHIC PLAQUES	60 INCHES TO BOTTOM
DATA (COMPUTER)	18 INCHES	SECURITY	
WALL PHONE	48 INCHES	KEY PAD	48 INCHES TO TOP
TV (TELEVISION)	18 INCHES	CARD READER	48 INCHES
TV WALL MOUNTED	CENTER OF TV BRACKET	CCTV	WITHIN 6 INCHES OF CAMERA MOUNT
SPEAKERS	90 INCHES	CCTV POLE MOUNTED	16 FEET
CLOCKS	90 INCHES		
CLOCK/SPEAKER	90 INCHES, GYM OR COMMONS - 120"		
PROJECTOR	ABOVE WHITEBOARD, TO BE COORDINATED		

ELECTRICAL LEGEND			
(SOME SYMBOLS MAY NOT BE USED ON DRAWINGS)			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
DISTRIBUTION			
	PANELBOARD - SURFACE	POWER	
	PANELBOARD - EXISTING (SURFACE PANEL SHOWN)	<u>ALL RECEPTACLES ARE TAMPER RESISTANT</u>	
	SWITCHBOARD OR MCC (DRAWN TO SCALE)		DUPLEX RECEPTACLE (NEMA 5-20R)
	DISCONNECT SWITCH	SUBSCRIPT: IG	ISOLATED GROUND
	FUSED DISCONNECT SWITCH	WC	CHILLED WATER FOUNTAIN
	MAGNETIC MOTOR STARTER OR OTHER MOTOR CONTROL DEVICE AS SCHEDULED	REF	REFRIGERATOR
	DRY TYPE TRANSFORMER	COP	COPIER
	WIRING CONCEALED IN CEILING OR WALL	P	PEDESTAL
	WIRING CONCEALED UNDERGROUND OR BELOW FLOOR	WP	WEATHERPROOF
	WIRING EXPOSED	C	CEILING
	WIRING HOMERUN	DW	DISHWASHER
	CONDUIT UP, DOWN	P	WALL MOUNT PROJECTOR
	FLEXIBLE WIRING CONNECTION	TV	VIDEO DISPLAY OUTLET. REFER TO ARCHITECTURAL DETAILS FOR MOUNTING HEIGHT
GENERAL			
	BUBBLE NOTE TAG SYMBOL: # - IDENTIFYING NUMBER		FOURPLEX RECEPTACLE (NEMA 5-20R)
	SCHEDULED EQUIPMENT CONNECTION (INCLUDE ALL WIRING, DISCONNECTING MEANS, CONTROL AND OTHER REQUIREMENTS SCHEDULED)		DUPLEX RECEPTACLE, 1/2 CONTROLLED BY OCCUPANCY SENSOR OR TIME SWITCH
	DETAIL SYMBOL: # - IDENTIFYING NUMBER A - SHEET WHERE DETAIL SHOWN		GFCI DUPLEX RECEPTACLE (NEMA 5-20R)
	REVISION CALLOUT		ASTERISK INDICATES COUNTER HEIGHT OUTLET (DUPLEX RECEPTACLE SHOWN)
	FLAG NOTE		RANGE RECEPTACLE (NEMA 14-50R)
	SCHEDULED CONDUIT CALLOUT		DRYER RECEPTACLE (NEMA 14-30R)
LIGHTING			
	LUMINAIRE (TO SCALE ON DRAWINGS)		SPECIAL PURPOSE OUTLET (AS NOTED)
	EMERGENCY FIXTURE - TWIN HEAD		RECESSED FLOOR BOX FOR POWER & SIGNAL (DUPLEX AND DATA DROP SHOWN)
	COMBINATION EXIT SIGN AND TWIN HEAD EMERGENCY LIGHTING UNIT		DISCONNECT SWITCH
	EXIT FIXTURE - CEILING		FUSED DISCONNECT SWITCH
	EXIT FIXTURE - WALL		JUNCTION BOX
	EXIT FIXTURE WITH DIRECTION ARROWS		MOTOR CONNECTION
	LIGHT FIXTURE ON NIGHT LIGHT CIRCUIT PROVIDE UNSWITCHED HOT CONDUCTOR		EQUIPMENT CONNECTION
	INDICATES CONTROL ZONE	SUBSCRIPT: WH	WATER HEATER
	POLE MOUNTED LIGHT	HD	HAND DRYER
	INDICATES LUMINAIRE TYPE	WC	WATER COOLER
LIGHTING CONTROL			
	PHOTOCELL, EXTERIOR		SINGLE POLE TOGGLE SWITCH
	DIGITAL SWITCH STATION		SWITCH
	SWITCH SUBSCRIPTS: 2 DOUBLE POLE 3 THREE WAY 4 FOUR WAY D DIMMER EP EXPLOSION PROOF K KEY OPERATED LV LOW VOLTAGE LVM LOW VOLTAGE MASTER M MANUAL MOTOR STARTER W/O W/OVERLOADS MC MOMENTARY CONTACT P SWITCH W/PILOT LIGHT T TIMER WP WEATHERPROOF a, b, c MULTIGANG SWITCH STATION		DAYLIGHT SENSOR - DUAL ZONE
	OCCUPANCY SENSOR		UL924 EMERGENCY TRANSFER RELAY

GENERAL ELECTRICAL NOTES:

- SEE ARCHITECTURAL PLANS FOR LOCATION OF FIRE RATED CONSTRUCTION.
- BRANCH CIRCUIT NOTES:
 - VERIFY BRANCH CIRCUIT WIRE COUNT BEFORE PULLING CONDUCTORS. PROVIDE REQUIRED CONDUCTORS TO EACH OUTLET AND DEVICE FOR PHASE, NEUTRAL AND EQUIPMENT GROUND BASED ON CIRCUIT DESIGNATIONS SHOWN AND AS OTHERWISE INDICATED ON PLANS OR NOTE BELOW.
 - FOR SWITCHED OUTLETS, PROVIDE ADDITIONAL CONDUCTOR COUNT REQUIRED FOR SWITCH LEGS TO ACCOMMODATE SWITCH CONTROL INDICATED. MAINTAIN UNSWITCHED LEG IN LIGHTING BRANCH CIRCUITS TO EXIT, EMERGENCY, AND NIGHT LIGHTING SHOWN.
 - MINIMUM BRANCH CIRCUIT CONDUCTOR SIZE FOR OUTDOOR AND EXTERIOR BUILDING LIGHTING SHALL BE #10 AWG.
 - PROVIDE SEPARATE NEUTRAL CONDUCTOR FOR BRANCH CIRCUITS SERVING RECEPTACLE OUTLETS UNLESS OTHERWISE INDICATED.
- MINIMUM CONDUIT SIZE FOR HOMERUNS AND FOR CONDUIT INSTALLED BELOW GRADE OUTDOORS SHALL BE 3/4 INCH.
- REFER TO ARCHITECTURAL PLANS FOR LIGHT FIXTURE LOCATIONS AND FOR MOUNTING HEIGHT OF SUSPENDED AND WALL MOUNTED LIGHT FIXTURES. REFER TO REFLECTED CEILING PLANS, INTERIOR ELEVATIONS, EXTERIOR ELEVATIONS, ROOM SECTIONS, AND DETAILS SHOWN ON ARCHITECTURAL CONTRACT DOCUMENTS PRIOR TO ROUGH-IN. REPORT CONFLICTS TO ARCHITECT/ENGINEER FOR RESOLUTION.
- REFER TO ARCHITECTURAL ELEVATIONS FOR LOCATION AND MOUNTING HEIGHT OF WIRING DEVICES. REPORT CONFLICTS TO ARCHITECT/ENGINEER FOR RESOLUTION.
- VERIFY EXACT LOCATION OF FLOOR BOXES AND OUTLETS LOCATED IN KNEE SPACES AND CASEWORK. OBTAIN ARCHITECT APPROVAL PRIOR TO ROUGH-IN.
- VERIFY BACK BOX REQUIREMENTS OF EQUIPMENT FURNISHED UNDER OTHER THAN DIVISION 26, 27 OR 28 SECTIONS AND EQUIPMENT FURNISHED BY OWNER.
- SEE MECHANICAL PLANS FOR QUANTITY AND LOCATION OF FIRE / SMOKE DAMPERS. PROVIDE 120 VOLT CONNECTION TO EACH DAMPER.

ENERGY CODE COMPLIANCE NOTES

- MANUAL LIGHTING CONTROL: PROVIDE EACH ROOM WITH MANUAL LIGHTING CONTROL AS INDICATED. REMOTE LIGHTING CONTROLS SHALL IDENTIFY WHERE LIGHTS ARE CONTROLLED AND ON/OFF STATUS. MANUAL CONTROLS FOR SPACES NOT COVERED IN C405.2.1 LISTED EXCEPTIONS SHALL INCLUDE PROVISION FOR 50% LIGHT REDUCTION.
- AUTOMATIC TIME SWITCH CONTROL: PROVIDE PROGRAMMABLE TIME SWITCH WITH MANUAL OVERRIDE FOR AUTOMATIC CONTROL OF LIGHTING IN ALL AREAS OF THE BUILDING NOT CONTROLLED BY OCCUPANCY SENSORS. TIME SWITCH AND OVERRIDE CONTROL SHALL COMPLY WITH MINIMUM REQUIREMENTS OF C405.2.2.1.
- OCCUPANCY SENSORS: PROVIDE OCCUPANCY SENSORS IN ALL CLASSROOMS, CONFERENCE/MEETING ROOMS, LUNCH AND BREAK ROOMS, PRIVATE OFFICES, RESTROOMS, WAREHOUSE AND STORAGE SPACES, JANITORIAL CLOSETS, AND OTHER SPACES 300 SQUARE FEET OR LESS OR BY C405.2.1.
- DAYLIGHT ZONES: PROVIDE AUTOMATIC CONTROL OF PRIMARY (DZ1) AND SECONDARY (DZ2) DAYLIGHT ZONES INDICATED ON PLANS INDEPENDENT OF MANUAL LIGHTING CONTROL ZONES INDICATED.
- DAYLIGHT ZONE CONTROL: PROVIDE AUTOMATIC CONTINUOUS DIMMING CONTROL OF LIGHTS LOCATED WITHIN PRIMARY AND SECONDARY DAYLIGHT ZONES.
 - MEANS OF EGRESS: PROVIDE AUTOMATIC CONTROL OF EGRESS LIGHTING BY MEANS OF OCCUPANCY SENSORS OR TIME CLOCK AS INDICATED. EMERGENCY LIGHTS TO HAVE UL924 RELAYS TO OVERRIDE CONTROL STATE UPON LOSS OF POWER.
 - DISPLAY AND ACCENT LIGHTS: PROVIDE MANUAL CONTROL AS INDICATED.
 - FIXED MOUNTED TASK LIGHTING: PROVIDE LIGHTS WITH INTEGRAL ON/OFF CONTROL AND CONTROL BY OCCUPANCY SENSOR IN SPACE.
- EXTERIOR LIGHTING CONTROL: PROVIDE AUTOMATIC CONTROL OF EXTERIOR LIGHTING USING COMBINATION OF PHOTOCELL AND ENERGY MANAGEMENT SYSTEM; SEE SERVICE PLAN FOR ADDITIONAL INFORMATION.
- ELECTRIC ENERGY METERING : PROVIDE END-USE METERING FOR HVAC AND WATER HEATING PER SECTION C409.
- TRANSFORMERS: DRY TYPE DISTRIBUTION TRANSFORMERS RATED 600 VOLTS OR LESS SHALL COMPLY WITH MINIMUM EFFICIENCY REQUIREMENTS OF NEMA TP-1, TABLE 4-2.
- MOTORS SHALL COMPLY WITH EFFICIENCY REQUIREMENTS OF C405.8, SEE MECHANICAL DOCUMENTS FOR MOTOR EFFICIENCY DATA.
- COMMISSIONING: PROVIDE PROGRAMMING, CALIBRATION, AND FUNCTIONAL PERFORMANCE TESTING OF AUTOMATIC LIGHTING CONTROL SYSTEMS TO INCLUDE OCCUPANCY SENSORS, DAYLIGHT CONTROLS, AND TIME SWITCHES PER APPROVED COMMISSIONING PLAN. SUBMIT COMPLETED COMMISSIONING COMPLIANCE CHECKLIST (C408.1.4) FOR SIGNATURE PRIOR TO FINAL INSPECTIONS BY MECHANICAL AND ELECTRICAL INSPECTION AUTHORITIES.

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date:	1/17/2023
Job No.:	
Drawn By:	AD
Checked by:	PC
Revisions	
#	Date Description

LEGEND, NOTES &
SCHEDULES

MARK MORRIS HS MECHANICAL EQUIPMENT CONNECTION SCHEDULE													
NAME	DESCRIPTION	LOCATION	MAXIMUM RATINGS					(CU) FEEDER		DISCONNECT	REMARKS		
			HP	KVA	FLA	MCA	MOCP	VOLT/PH	#12 EACH PHASE + NEUTRAL +GND. UNO.	BY		DESCRIPTION	
BC-AA1	BRANCH CONRTOLLER	AA BUILDING	-	0.21	1.0	1.0	20	208 1		•	TOGGLE		
FC-AA1.1	VRF INDOOR HEAT PUMP	CLASSROOM AA-1	-	0.08	0.4	0.5	20	208 1		•	TOGGLE		
FC-AA1.2	VRF INDOOR HEAT PUMP	CLASSROOM AA-1	-	0.08	0.4	0.5	20	208 1		•	TOGGLE		
FC-AA1.4	VRF INDOOR HEAT PUMP	OFFICE AA-1.4	-	0.08	0.4	0.5	20	208 1		•	TOGGLE		
FC-AA2.1	VRF INDOOR HEAT PUMP	CLASSROOM AA-2	-	0.08	0.4	0.5	20	208 1		•	TOGGLE		
FC-AA2.2	VRF INDOOR HEAT PUMP	CLASSROOM AA-2	-	0.04	0.2	0.2	20	208 1		•	TOGGLE		
FC-AA2.4	VRF INDOOR HEAT PUMP	OFFICE AA-2.4	-	0.08	0.4	0.5	20	208 1		•	TOGGLE		
FC-AA3.1	VRF INDOOR HEAT PUMP	CLASSROOM AA-3	-	0.08	0.4	0.5	20	208 1		•	TOGGLE		
FC-AA3.2	VRF INDOOR HEAT PUMP	CLASSROOM AA-3	-	0.07	0.3	0.4	20	208 1		•	TOGGLE		
FC-AA3.3	VRF INDOOR HEAT PUMP	OFFICE AA3.1	-	0.08	0.4	0.5	20	208 1		•	TOGGLE		
FC-AA4	VRF INDOOR HEAT PUMP	CLASSROOM AA-4	-	0.07	0.3	0.4	20	208 1		•	TOGGLE		
FC-AA4.1	VRF INDOOR HEAT PUMP	OFFICE AA-4.1	-	0.15	0.7	0.9	20	208 1		•	TOGGLE		
FC-AA5	VRF INDOOR HEAT PUMP	CLASSROOM AA-5	-	0.15	0.7	0.9	20	208 1		•	TOGGLE		
FC-AA7	VRF INDOOR HEAT PUMP	CLASSROOM AA-7	-	0.15	0.7	0.9	20	208 1		•	TOGGLE		
FC-AA8	VRF INDOOR HEAT PUMP	CLASSROOM AA-8	-	0.15	0.7	0.9	20	208 1		•	TOGGLE		
FC-AA10	VRF INDOOR HEAT PUMP	CLASSROOM AA-10	-	0.15	0.7	0.9	20	208 1		•	TOGGLE		
HP-AA1	OUTDOOR HEAT PUMP	AA BUILDING	-	-	(2) 42.4	(2) 53	(2) 60	208 3	(2) 1-1/4"C - 4#6 + #10G	•	FUSED		
DOAS-1	ENERGY RECOVERY UNIT	AA BUILDING	-	5.51	26.5	33.1	40	208 1	3/4"C 3#8 + #10G	•	FUSED		
DOAS-2	ENERGY RECOVERY UNIT	AA BUILDING	-	5.51	26.5	33.1	40	208 1	3/4"C 3#8 + #10G	•	FUSED		
EH-1	ELECTRIC HEATER	DOAS-1	-	15.00	41.7	52.1	60	208 3	1-1/4"C - 4#6 + #10G	•	FUSED		
EH-2	ELECTRIC HEATER	DOAS-2	-	15.00	41.7	52.1	60	208 3	1-1/4"C - 4#6 + #10G	•	FUSED		
MAU-2	MAKE UP AIR UNIT	SHOP BUILDING	-	-	29.4	36.7	40	208 3	3/4"C 4#8 + #10G	•	FUSED		
MAU-3	MAKE UP AIR UNIT	SHOP BUILDING	-	-	24.2	30.3	40	208 3	3/4"C 4#8 + #10G	•	FUSED		
RTU-3	ROOFTOP UNIT	SHOP BUILDING	-	-	18.6	23.3	25	208 1		•	TOGGLE		
UH-1.1	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-1.2	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-1.3	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-1.4	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-2.1	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-2.2	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-2.3	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-2.4	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-3.1	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-3.2	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-3.3	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		
UH-3.4	HOT WATER UNIT HEATER	SHOP BUILDING	1/40	-	1.0	20.0	20	120 1		•	TOGGLE		

COLUMBIA VALLEY GARDENS ES MECHANICAL EQUIPMENT CONNECTION SCHEDULE													
NAME	DESCRIPTION	LOCATION	MAXIMUM RATINGS					(CU) FEEDER	CIRCUIT#	DISCONNECT	REMARKS		
			HP	KVA	FLA	MCA	MOCP	VOLT/PH		#12 EACH PHASE + NEUTRAL +GND. UNO.		BY	DESCRIPTION
HP-1	WATER SOURCE HEAT PUMP	MAIN OFFICE	0.1	-	5.7	7.1	20	208 1	3°C-4#350KCM	•	TOGGLE		
HP-2	WATER SOURCE HEAT PUMP	LIBRARY	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-3	WATER SOURCE HEAT PUMP	CLASSROOM 1	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-4	WATER SOURCE HEAT PUMP	CLASSROOM 2	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-5	WATER SOURCE HEAT PUMP	CLASSROOM 3	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-6	WATER SOURCE HEAT PUMP	CLASSROOM 5	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-7	WATER SOURCE HEAT PUMP	CLASSROOM 6	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-8	WATER SOURCE HEAT PUMP	CLASSROOM 4	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-9	WATER SOURCE HEAT PUMP	CLASSROOM 23	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-10	WATER SOURCE HEAT PUMP	CLASSROOM 22	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-11	WATER SOURCE HEAT PUMP	CLASSROOM 21	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-12	WATER SOURCE HEAT PUMP	CLASSROOM 20	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-13	WATER SOURCE HEAT PUMP	CLASSROOM 19	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-14	WATER SOURCE HEAT PUMP	CLASSROOM 18	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-15	WATER SOURCE HEAT PUMP	CLASSROOM 17	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-16	WATER SOURCE HEAT PUMP	CLASSROOM 16	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-17	WATER SOURCE HEAT PUMP	RESOURCE 14A	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-18	WATER SOURCE HEAT PUMP	RESOURCE 14B	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-19	WATER SOURCE HEAT PUMP	CONFERENCE 15	0.1	-	5.7	7.1	20	208 1		•	TOGGLE		
HP-20	WATER SOURCE HEAT PUMP	FACULTY	0.1	-	5.7	7.1	20	208 1		•	TOGGLE		
HP-21	WATER SOURCE HEAT PUMP	CLASSROOM 12	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-22	WATER SOURCE HEAT PUMP	CLASSROOM 13	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-23	WATER SOURCE HEAT PUMP	CLASSROOM 11	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-24	WATER SOURCE HEAT PUMP	CLASSROOM 10	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-25	WATER SOURCE HEAT PUMP	WORKROOM	0.1	-	5.7	7.1	20	208 1		•	TOGGLE		
HP-26	WATER SOURCE HEAT PUMP	CLASSROOM 9	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-27	WATER SOURCE HEAT PUMP	HEALTH	0.1	-	5.7	7.1	20	208 1		•	TOGGLE		
HP-28	WATER SOURCE HEAT PUMP	CLASSROOM 8	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-29	WATER SOURCE HEAT PUMP	PRINCIPAL	0.1	-	5.7	7.1	20	208 1		•	TOGGLE		
HP-30	WATER SOURCE HEAT PUMP	CLASSROOM 7	0.5	-	12.3	15.4	20	208 3		•	TOGGLE		
HP-31	WATER SOURCE HEAT PUMP	KITCHEN	0.1	-	5.7	7.1	20	208 1		•	TOGGLE		
FC-1	FLUID COOLER	BOILER ROOM	11	3.00	3.0	3.8	20	480 3	•	TOGGLE			
B-1	BOILER	BOILER ROOM		180.00	216.0	270.0	300	480 3	•	FUSED			
CP-3A	CIRCULATION PUMP	BOILER ROOM	3	2.49	3.0	3.8	20	480 3	•	TOGGLE			
CP-3B	CIRCULATION PUMP	BOILER ROOM	3	2.49	3.0	3.8	20	480 3	•	TOGGLE			

EQUIPMENT CONNECTION SCHEDULE NOTES:

1. VERIFY VOLTAGE, PHASE, FLA/MCA OF EACH CONNECTION WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. NOTIFY ARCHITECT/ENGINEER WHEN SCHEDULED SUPPLY WILL NOT MEET NEC REQUIREMENTS.
2. OUTLETS, DISCONNECTS, CONTROLLERS, AND EQUIPMENT CONNECTIONS FOR ROOF TOP AND OTHER OUTDOOR EQUIPMENT SHALL BE WEATHER PROOF.
3. LOCATION OF OUTLETS, DISCONNECTS, CONTROL DEVICES, AND EQUIPMENT CONNECTIONS ARE DIAGRAMMATIC AND TO BE LOCATED IN FIELD BY THE CONTRACTOR AS APPROVED BY THE ENGINEER. UNLESS OTHERWISE INDICATED ON PLANS, INSTALL SCHEDULED DISCONNECTS AND CONTROL DEVICES IN SIGHT OF EQUIPMENT. ARRANGE WIRING AND EQUIPMENT TO AVOID INTERFERENCE WITH OTHER WORK AND TO MAXIMIZE ACCESSIBILITY FOR MAINTENANCE AND REPAIRS.
4. COORDINATE WITH THE OTHER INSTALLING CONTRACTORS TO ENSURE NEC REQUIRED ACCESS TO DISCONNECTS IS PROVIDED FOR EACH PIECE OF EQUIPMENT.
5. PROVIDE SMOKE DUCT DETECTORS IN HEATING AND COOLING SYSTEMS PER INTERNATIONAL MECHANICAL CODE. SEE DIVISION 25 EQUIPMENT SCHEDULES FOR ADDITIONAL UNITS RATED OVER 2000 CFM AND PROVIDE DUCT DETECTOR AS REQUIRED.
6. WIRING BETWEEN EQUIPMENT DISCONNECT AND POINT OF CONNECTION SHALL COMPLY WITH NEC BASED ON EQUIPMENT NAMEPLATE RATING EXCEPT MINIMUM BRANCH CIRCUIT RATING SHALL BE 20 AMPERES.
7. SIZE OF DISCONNECT SWITCH AND MOTOR STARTER SHALL BE SIZED TO COMPLY WITH NEC REQUIREMENTS. WHERE INDICATED MOTOR CONTROL IS NOT LOCATED IN SIGHT OF MOTOR AS DEFINED BY NEC, PROVIDE ADDITIONAL DISCONNECTING MEANS TO COMPLY WITH NEC 430.102.
8. WIRING SIZES ARE BASED ON 60 DEGREE C. FOR AMPACITIES 100 AMPERES AND LESS. FOR FEEDERS LESS THAN 100 FEET IN LENGTH, CONDUCTOR SIZES MAY BE SELECTED BASED ON 75 DEGREE C. WHERE EQUIPMENT INSTALLED IS LABELED FOR 75 DEGREE C. WIRING.
9. SCHEDULE LEGEND:

•

= FURNISH AND INSTALL NEW UNDER DIVISION 26

○

= INSTALL UNDER DIVISION 26; FURNISHED WITH EQUIPMENT OR BY OTHERS.

X

= FURNISH AND INSTALL BY OTHERS (NOT DIVISION 26)

+

= EXISTING, RELOCATED EQUIPMENT

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date:1/17/2023

Job No.:

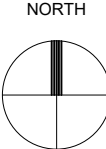
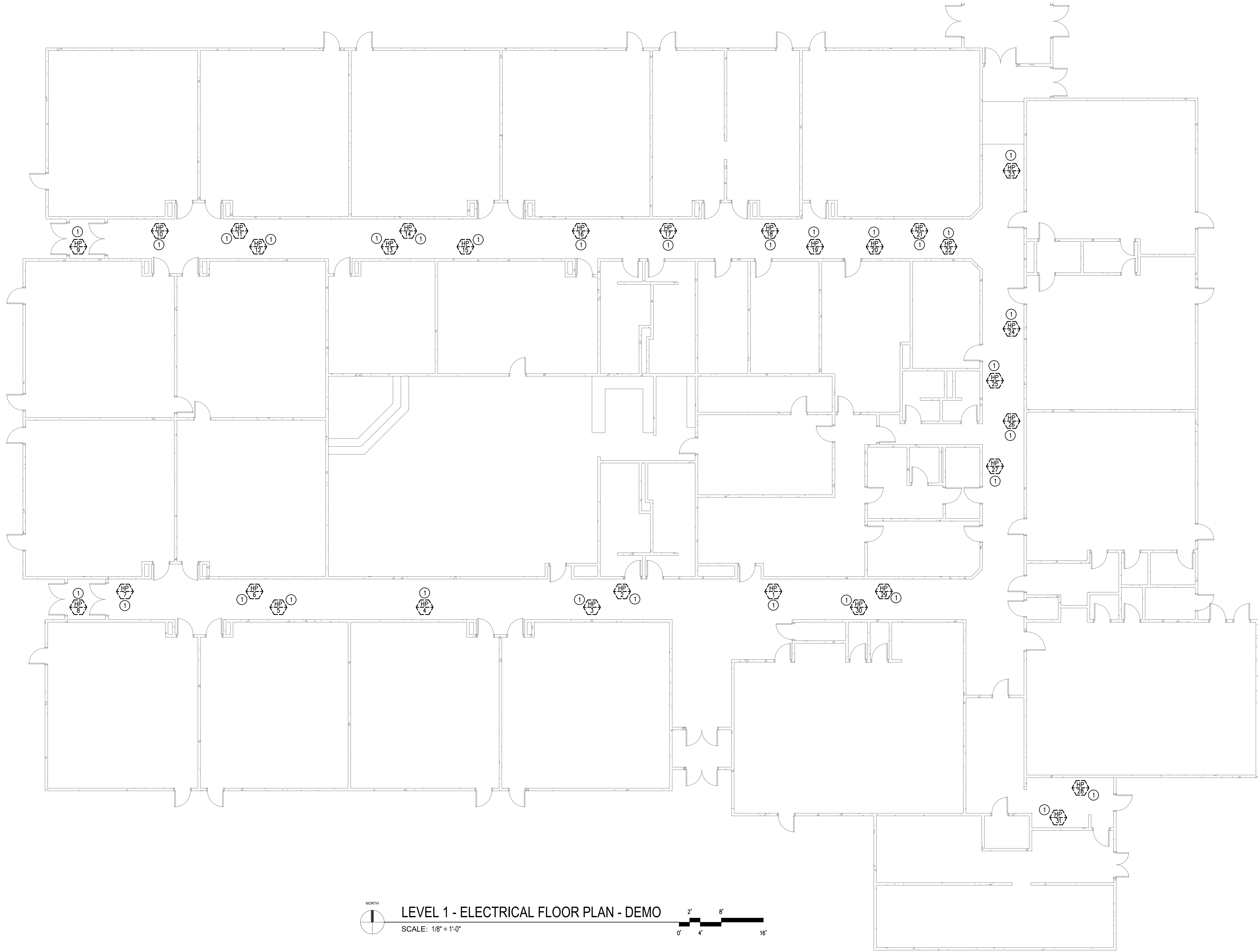
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Revisions

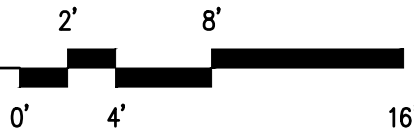
#	Date	Description
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ELECTRICAL
SCHEDULES



LEVEL 1 - ELECTRICAL FLOOR PLAN - DEMO

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



GENERAL NOTES:

1. XX

PLAN NOTES:

- ① DISCONNECT ELECTRICAL CONNECTION TO HEAT PUMP TO ALLOW FOR REMOVAL. RETAIN CIRCUIT AND LEAVE CONDUCTORS IN PLACE FOR REUSE AT NEW EQUIPMENT.

Date: 1/17/2023

Job No.:

Drawn By: AD

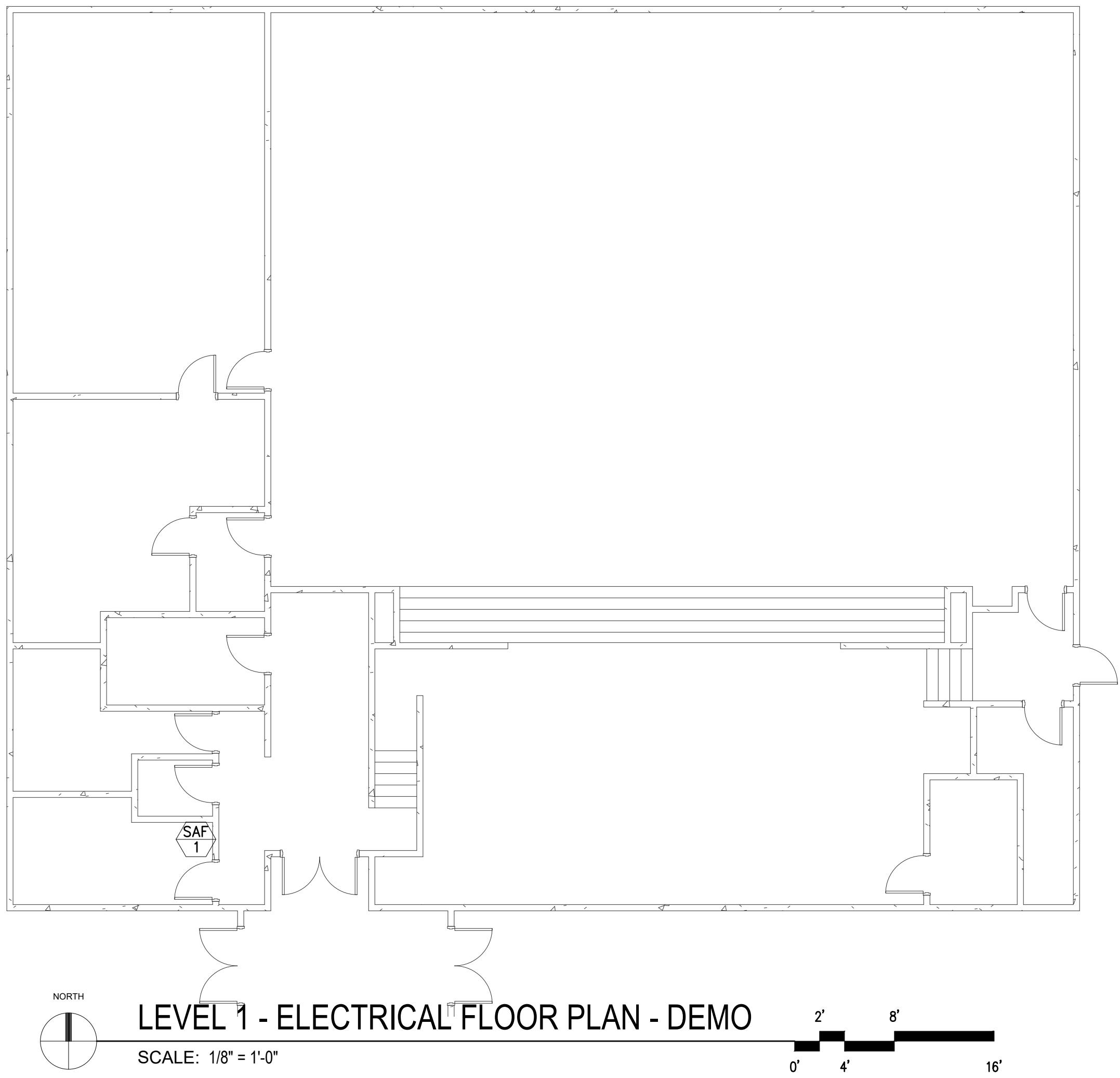
Checked by: PC

Revisions

#	Date	Description
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GENERAL NOTES:

1. XX

PLAN NOTES:

- ① .

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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Drawn By:	AD
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Revisions		
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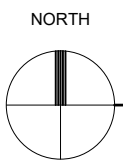
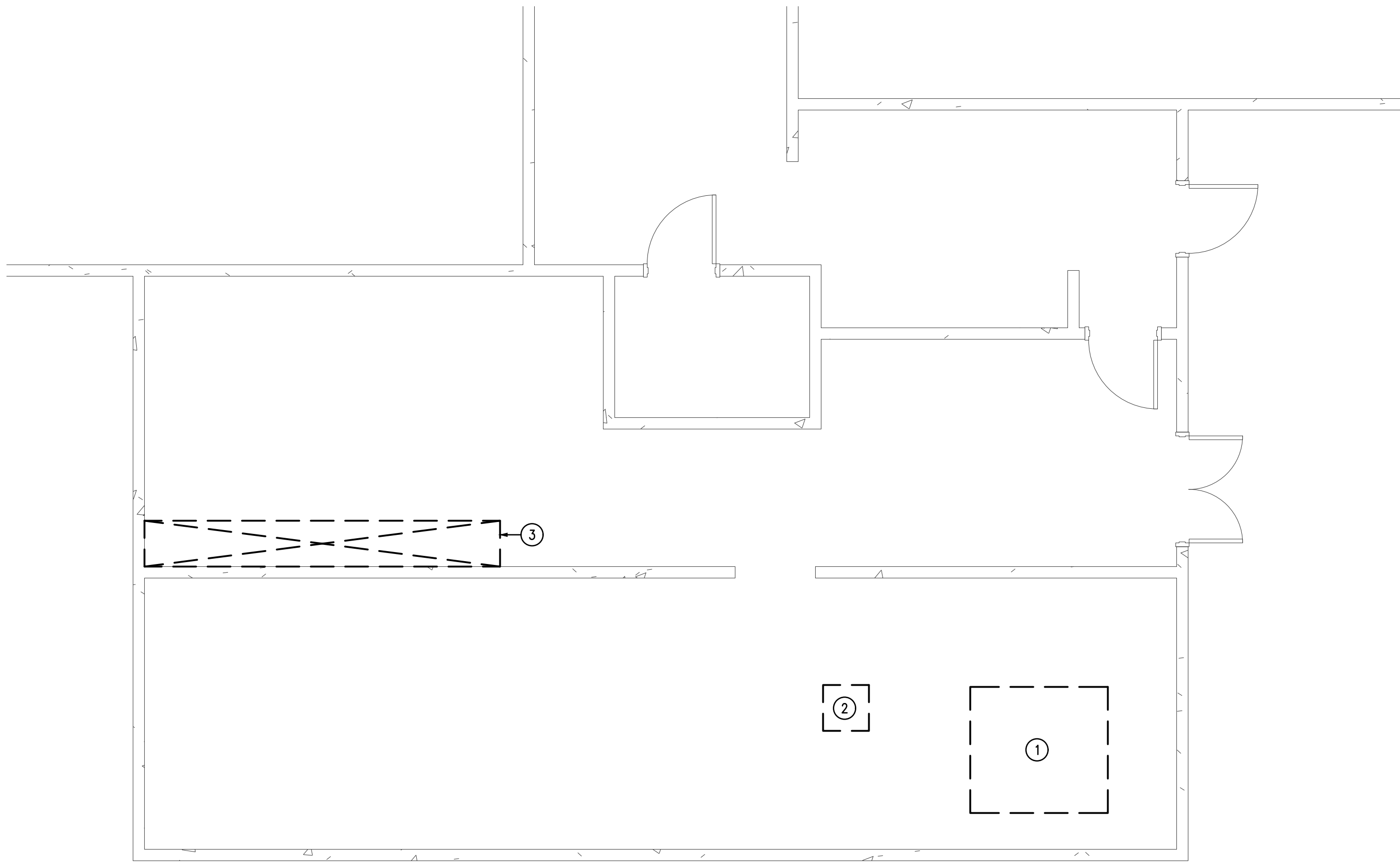
COLUMBIA VALLEY
GARDEN
LEVEL 1
ELECTRICAL FLOOR
PLAN - DEMO

ED3.2

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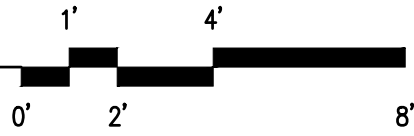
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ENLARGED MECHANICAL ROOM PLAN - DEMO

SCALE: 1/4" = 1'-0"



GENERAL NOTES:

1. XX

PLAN NOTES:

- ① DISCONNECT ELECTRICAL CONNECTION TO FLUID COOLER TO ALLOW FOR REMOVAL.
- ② DISCONNECT ELECTRICAL CONNECTION TO ELECTRICAL BOILER TO ALLOW REMOVAL.
- ③ DISCONNECT ELECTRICAL CONNECTION TO HYDRONIC PUMPS TO ALLOW FOR REMOVAL.

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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Checked by:	PC

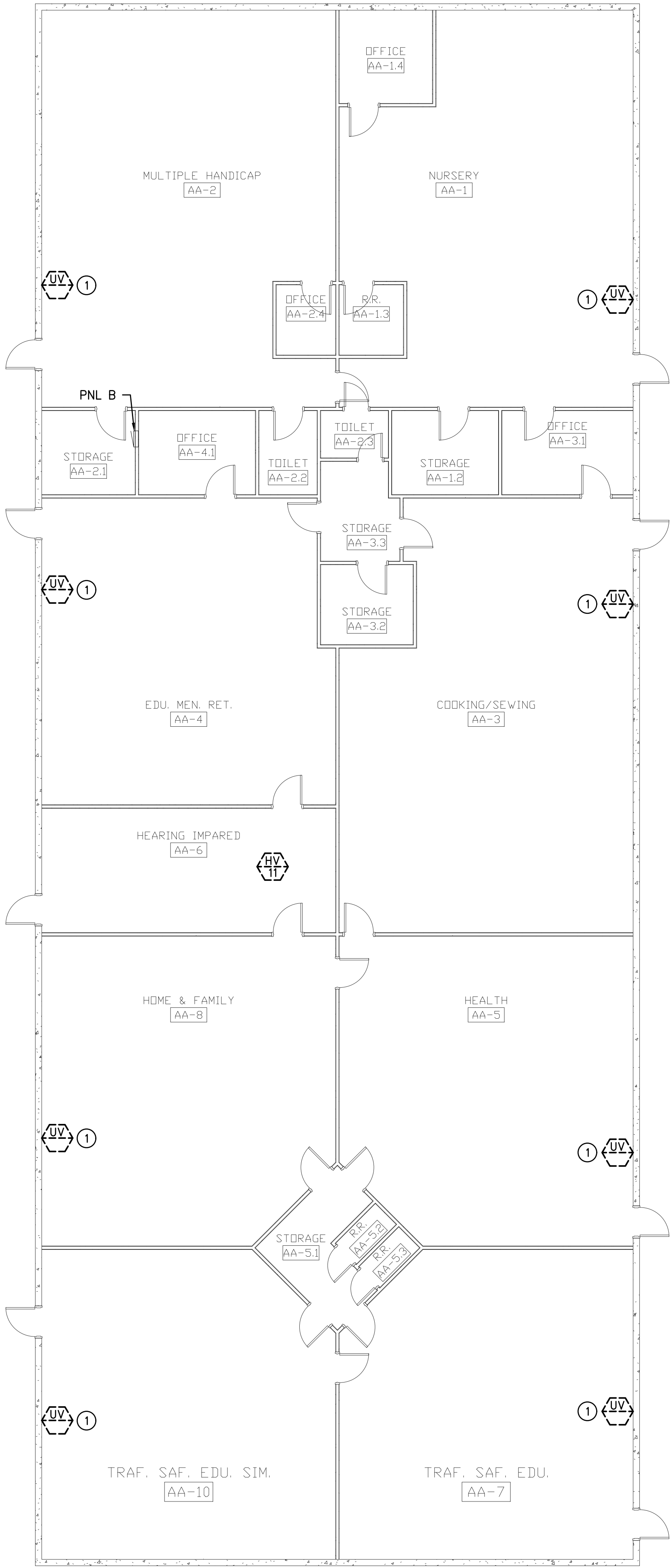
Revisions		
#	Date	Description

COLUMBIA VALLEY
GARDEN
LEVEL 1 ENLARGED
MECHANICAL ROOM
PLAN - DEMO

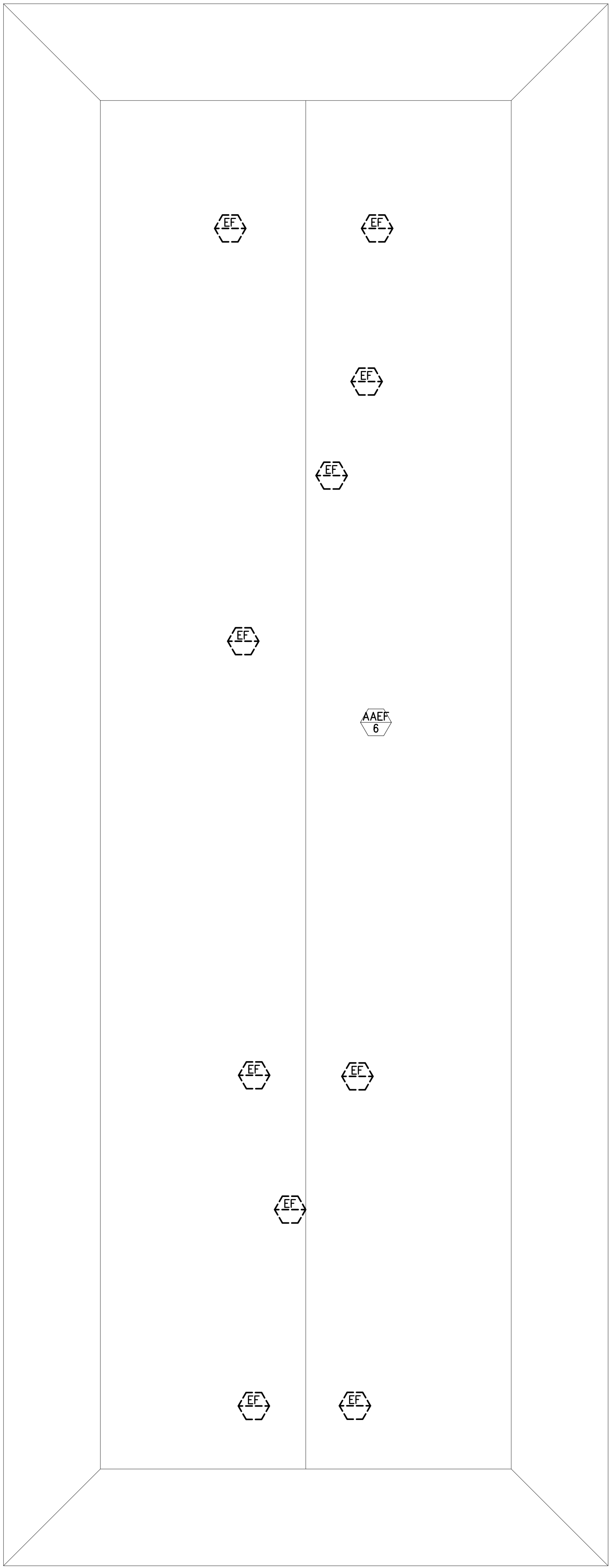
ED3.3

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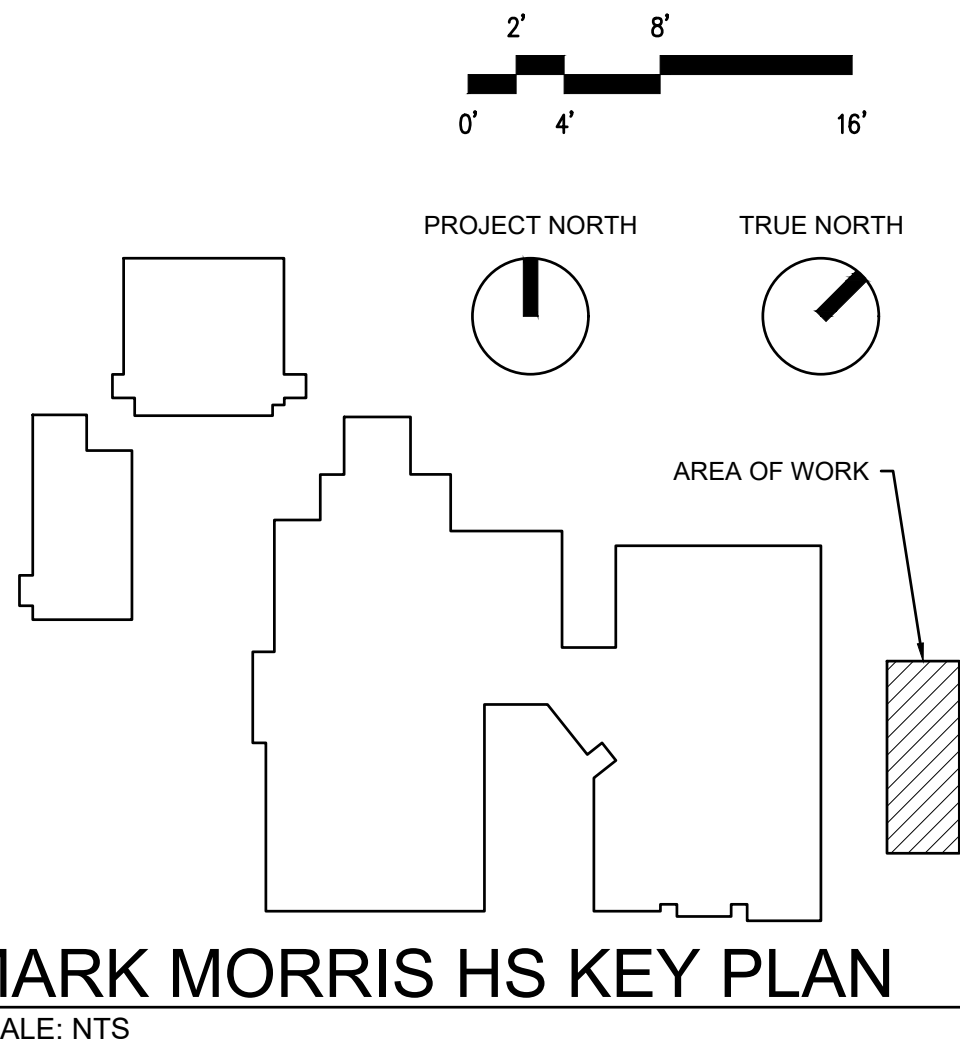
AA-BUILDING ELECTRICAL FLOOR PLAN - DEMO
SCALE: 1/8" = 1'-0"



AA-BUILDING ELECTRICAL ROOF PLAN - DEMO
SCALE: 1/8" = 1'-0"

GENERAL NOTES:
1. XX

PLAN NOTES:
① DISCONNECT ELECTRICAL CONNECTION TO HEATER UNIT.
REMOVE CONDUIT AND CONDUCTORS BEAK TO PANEL B.

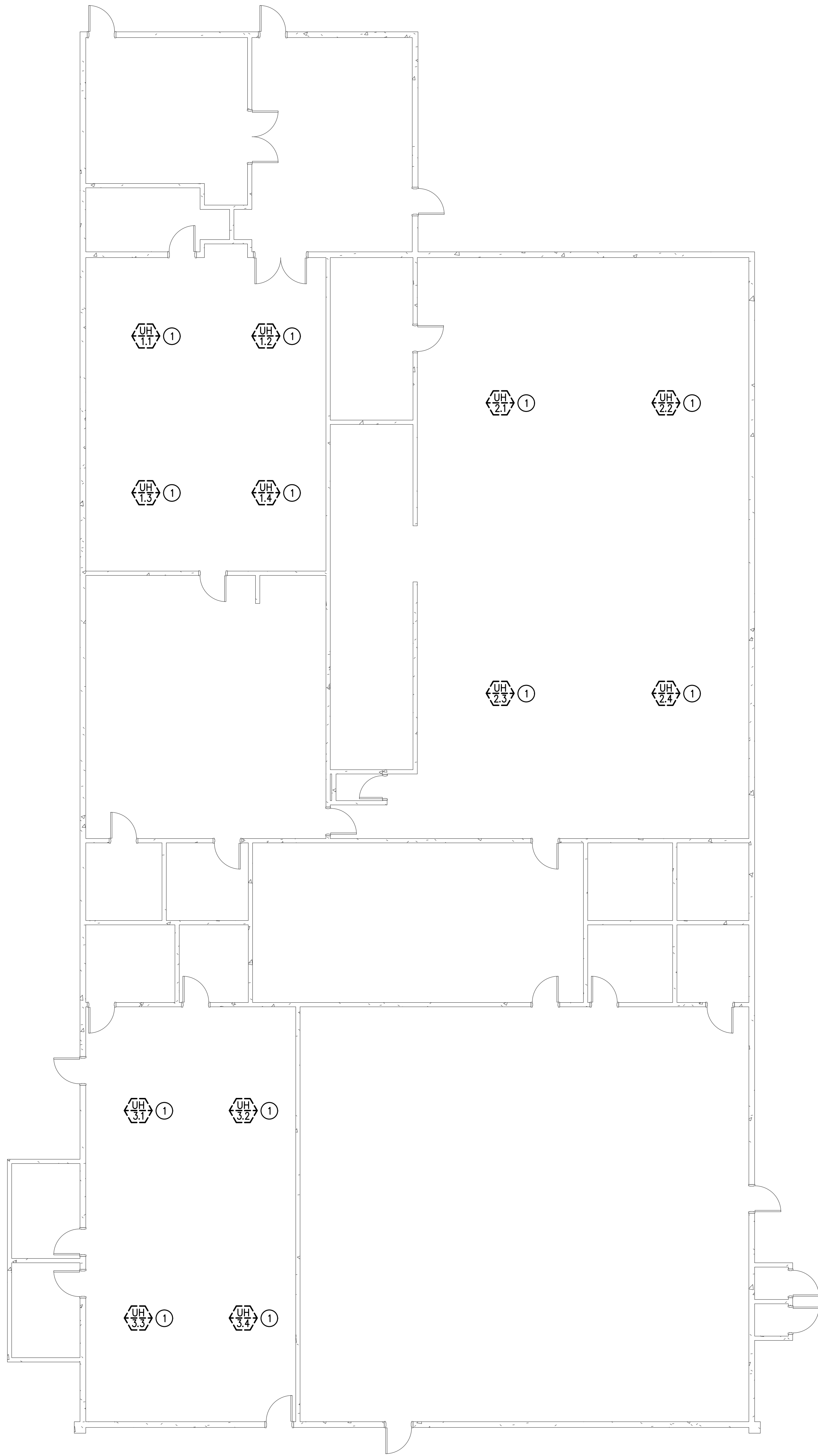


LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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#	Date Description

AA-BUILDING
ELECTRICAL DEMO

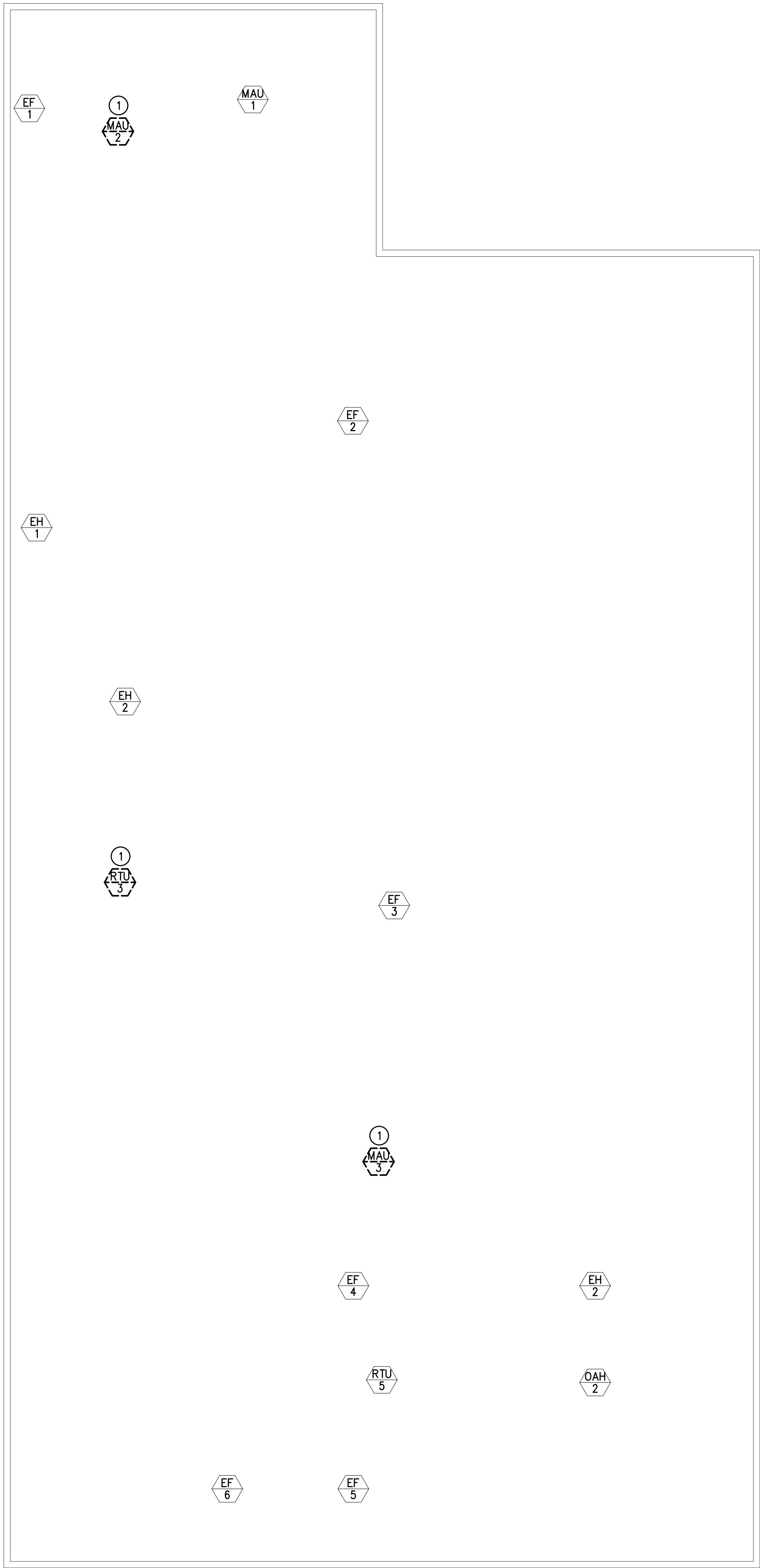
ED3.4



ALT BID #2 VOCATIONAL BUILDING ELECTRICAL PLAN - DEMO

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

0' 4' 8' 16'



VOCATIONAL BUILDING ELECTRICAL ROOF PLAN - DEMO

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

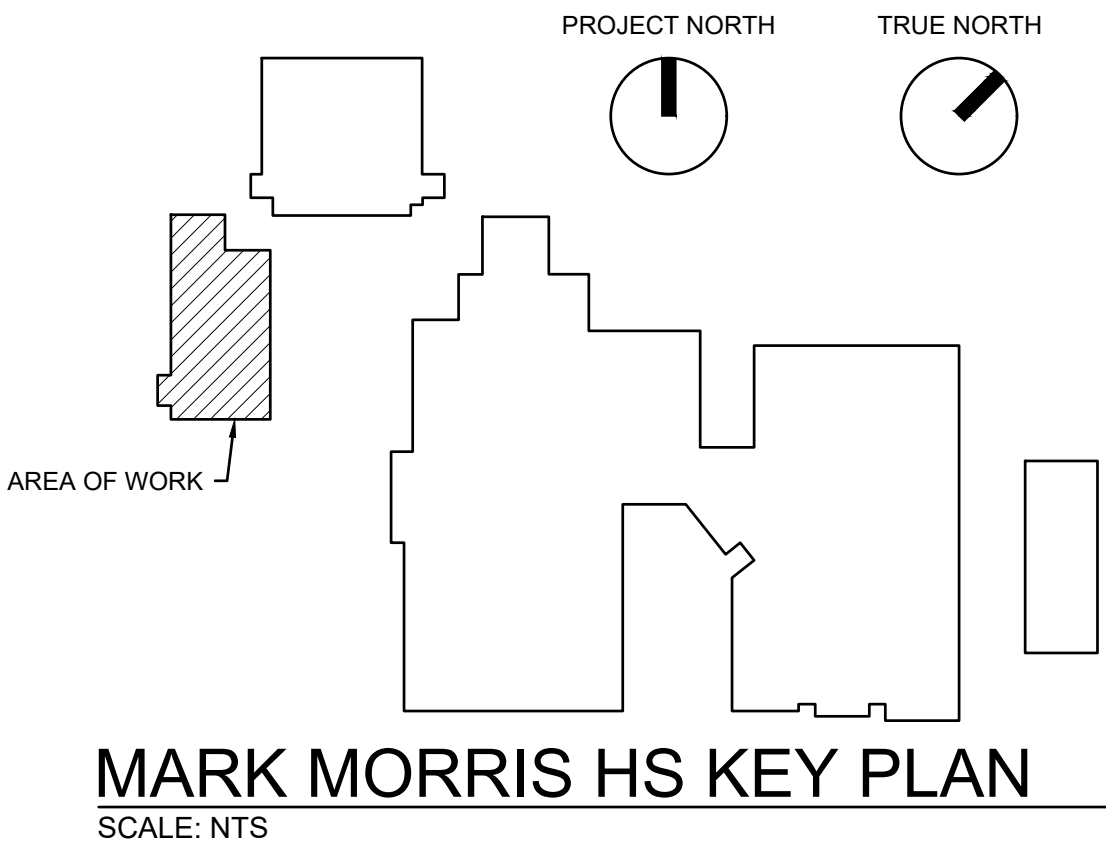
0' 4' 8' 16'

GENERAL NOTES:

1. XX

PLAN NOTES:

- ① DISCONNECT ELECTRICAL CONNECTION TO EQUIPMENT BEING REMOVED.



LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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Checked by:	PC	
Revisions		
#	Date	Description

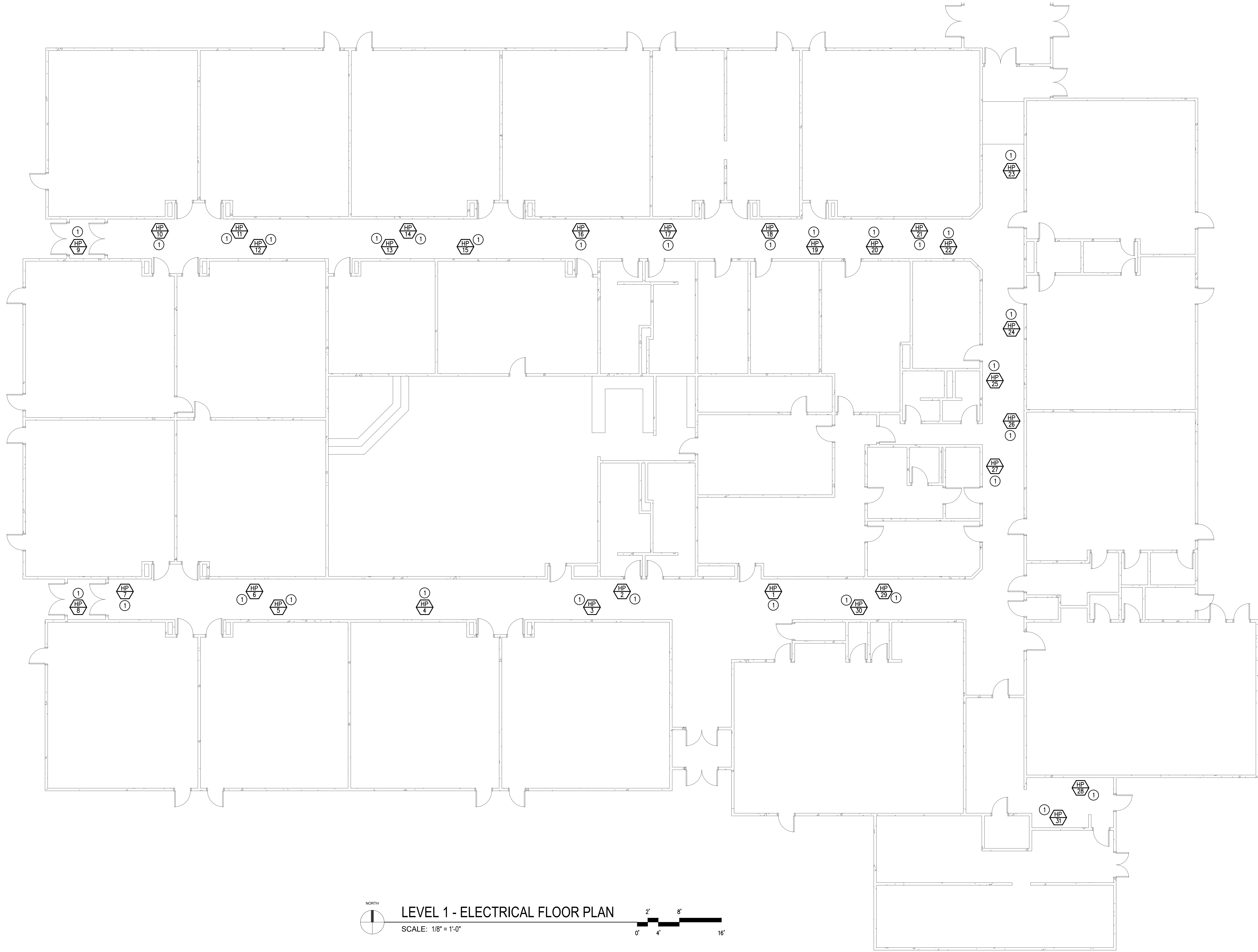
VOCATIONAL BUILDING
ELECTRICAL DEMO

ED3.5

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BID SET



NORTH
LEVEL 1 - ELECTRICAL FLOOR PLAN
SCALE: 1/8" = 1'-0"
0' 2' 4' 8' 16'

GENERAL NOTES:

1. XX

PLAN NOTES:

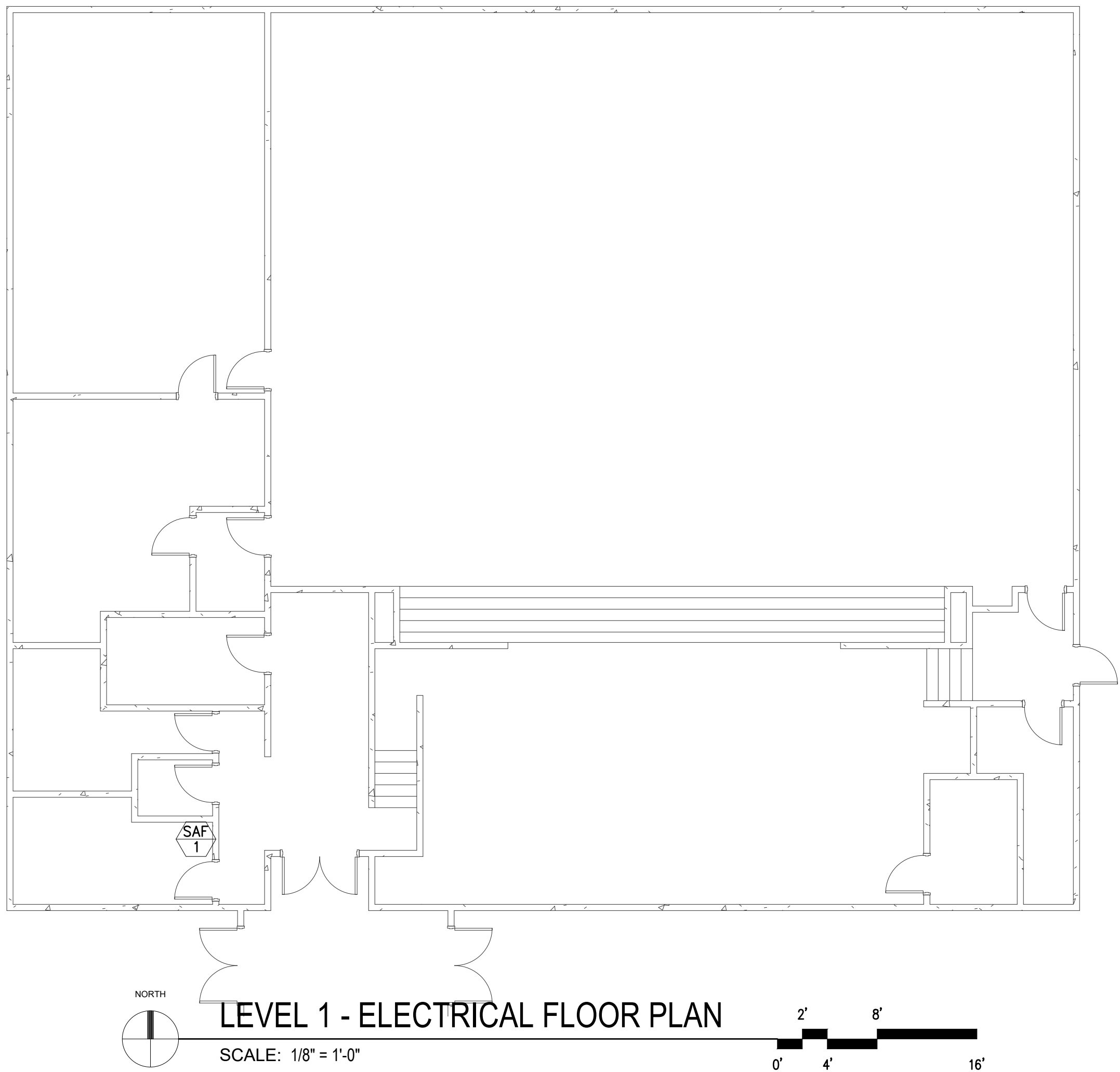
- ① CONNECT NEW EQUIPMENT TO EXISTING CIRCUIT, MODIFY AND EXTEND WIRING AS REQUIRED.

**LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS**

Date:	1/17/2023
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GENERAL NOTES:

1. XX

PLAN NOTES:

- ① .

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

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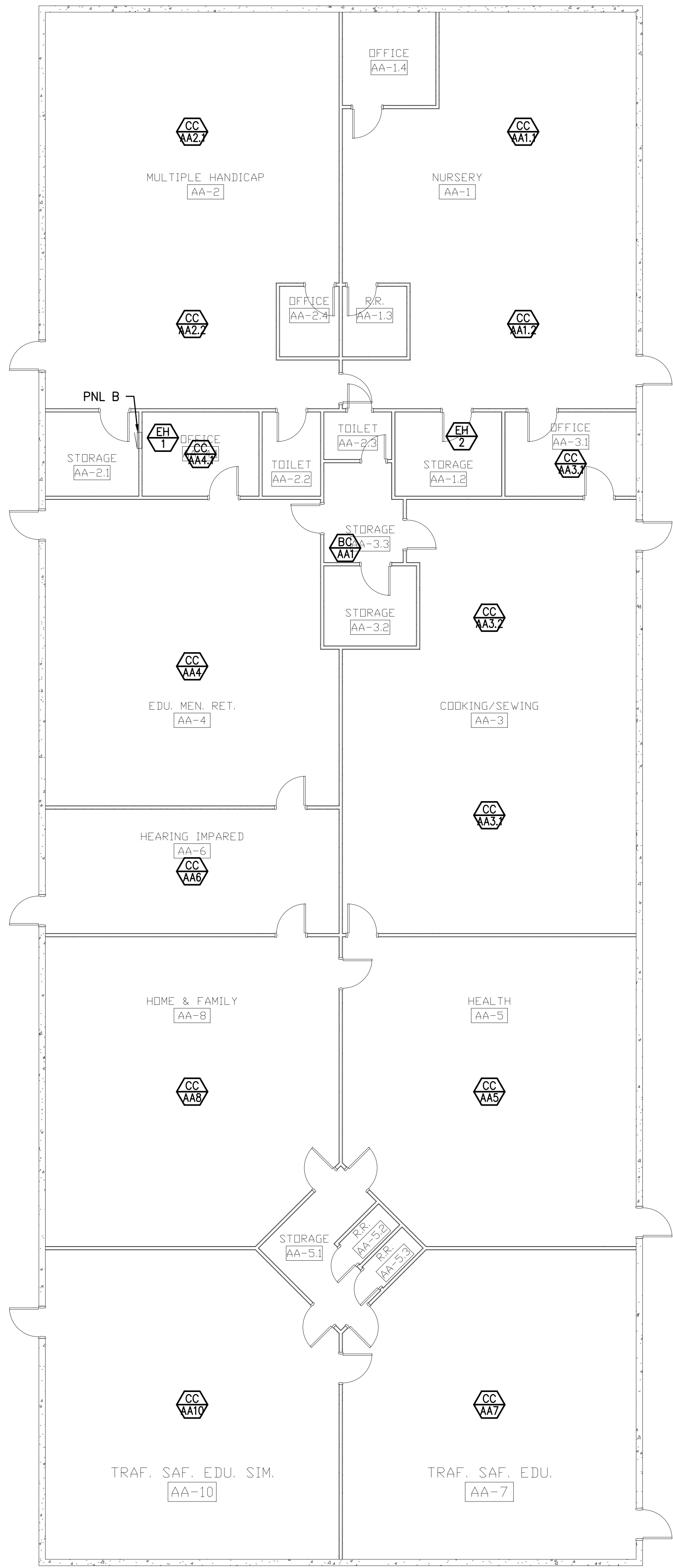
COLUMBIA VALLEY
GARDEN
LEVEL 1
ELECTRICAL FLOOR
PLAN

E3.2

BID SET

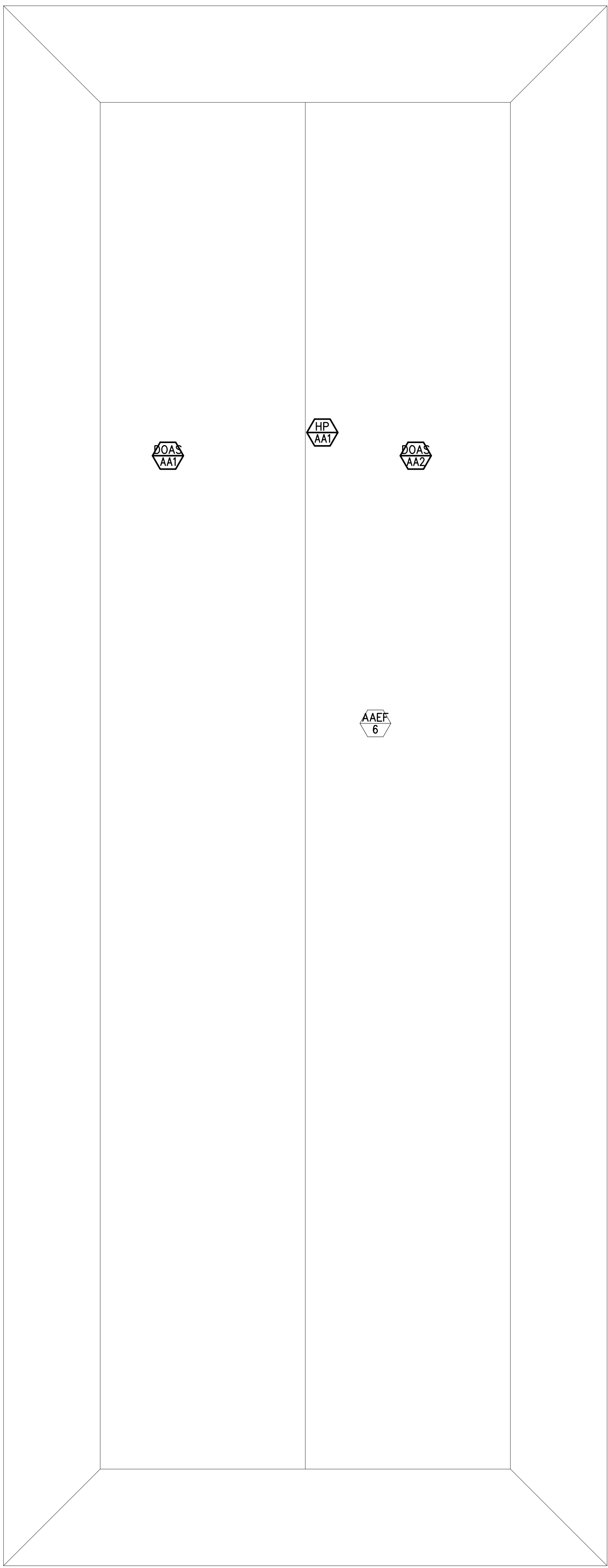
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AA-BUILDING ELECTRICAL FLOOR PLAN

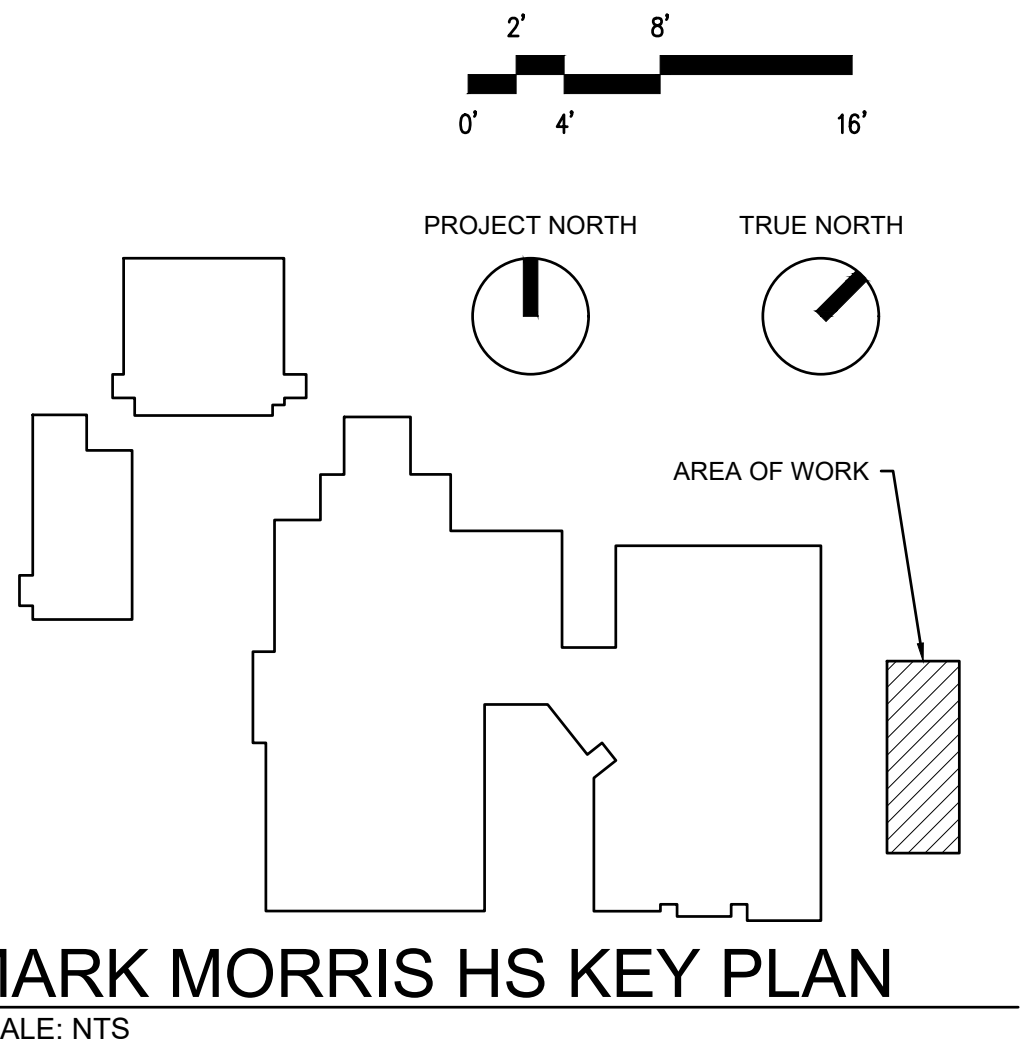
SCALE: 1/8" = 1'-0"



AA-BUILDING ELECTRICAL ROOF PLAN

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

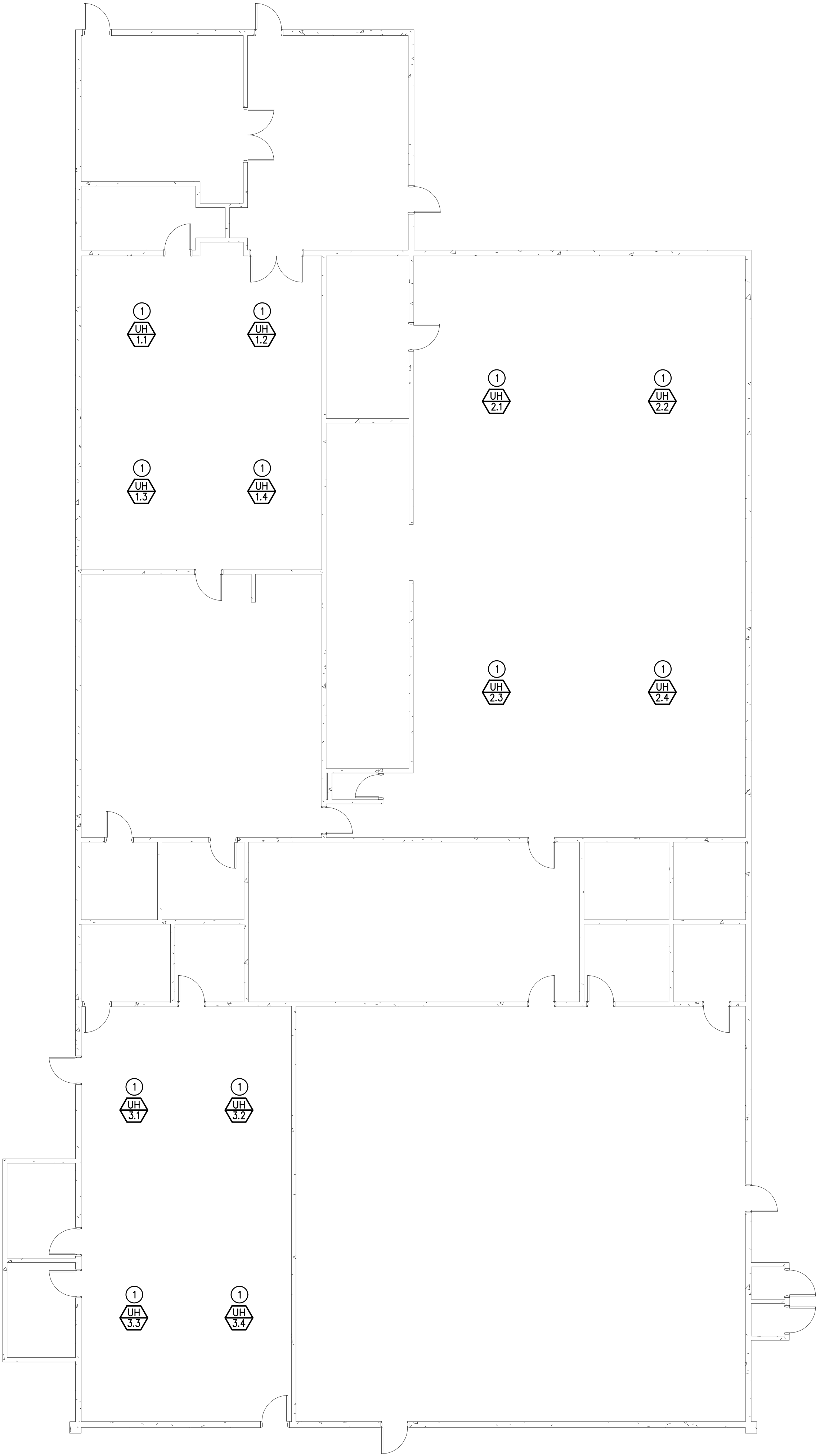
- GENERAL NOTES:
1. XX
- PLAN NOTES:
- ① PROVIDE NEW PANEL 'B2' TO SERVE NEW MECHANICAL EQUIPMENT, FED FROM 368-MDP-001. ROUTE FEEDERS TO BREEZEWAY AND CONCEAL IN OVERHEAD CHASE.



MARK MORRIS HS KEY PLAN

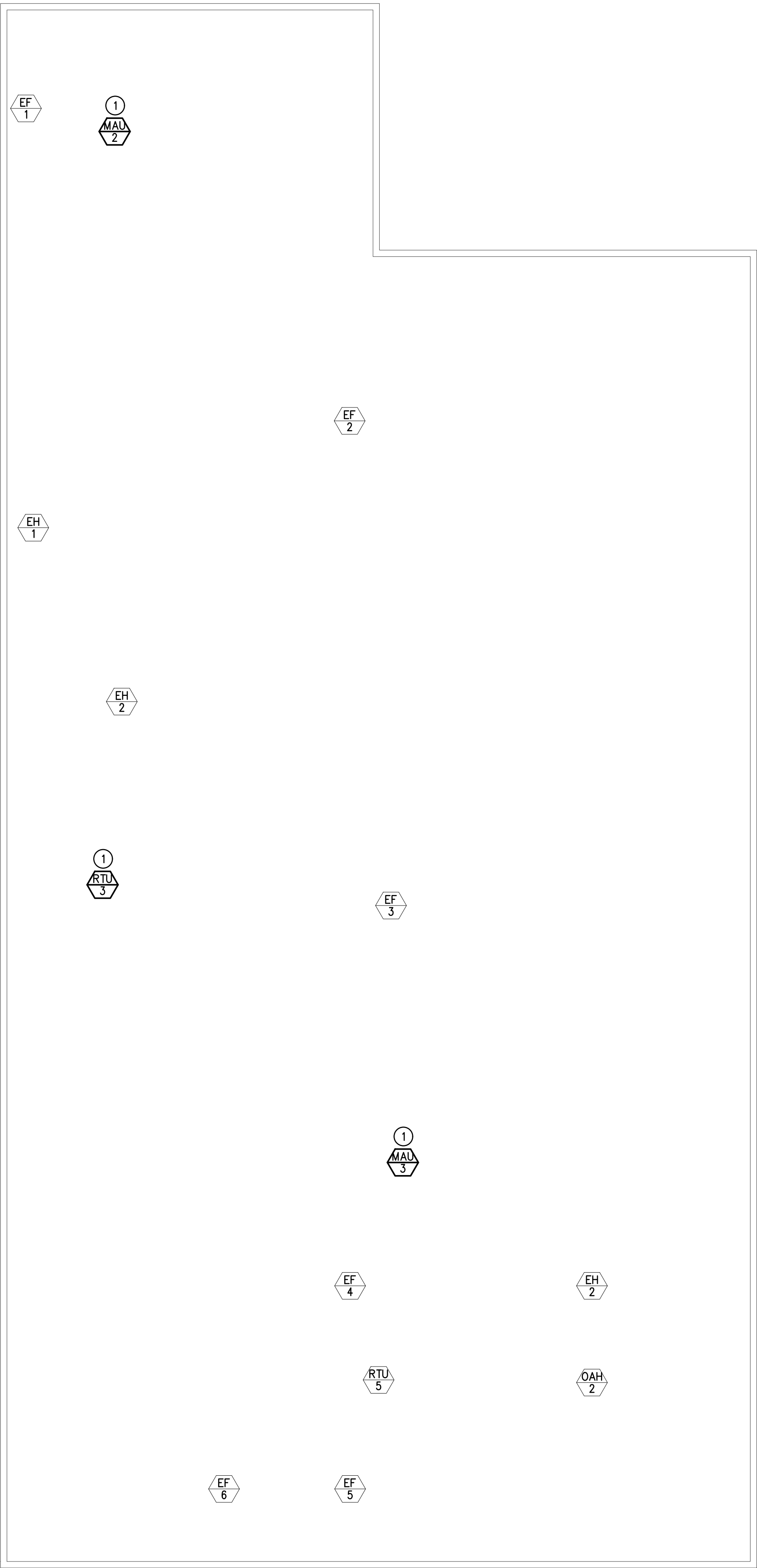
SCALE: NTS

Date:	1/17/2023
Job No.:	22220.00
Drawn By:	AD
Checked by:	PC
Revisions	
#	Date Description



ALT BID #2 VOCATIONAL BUILDING ELECTRICAL PLAN

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



VOCATIONAL BUILDING ELECTRICAL ROOF PLAN

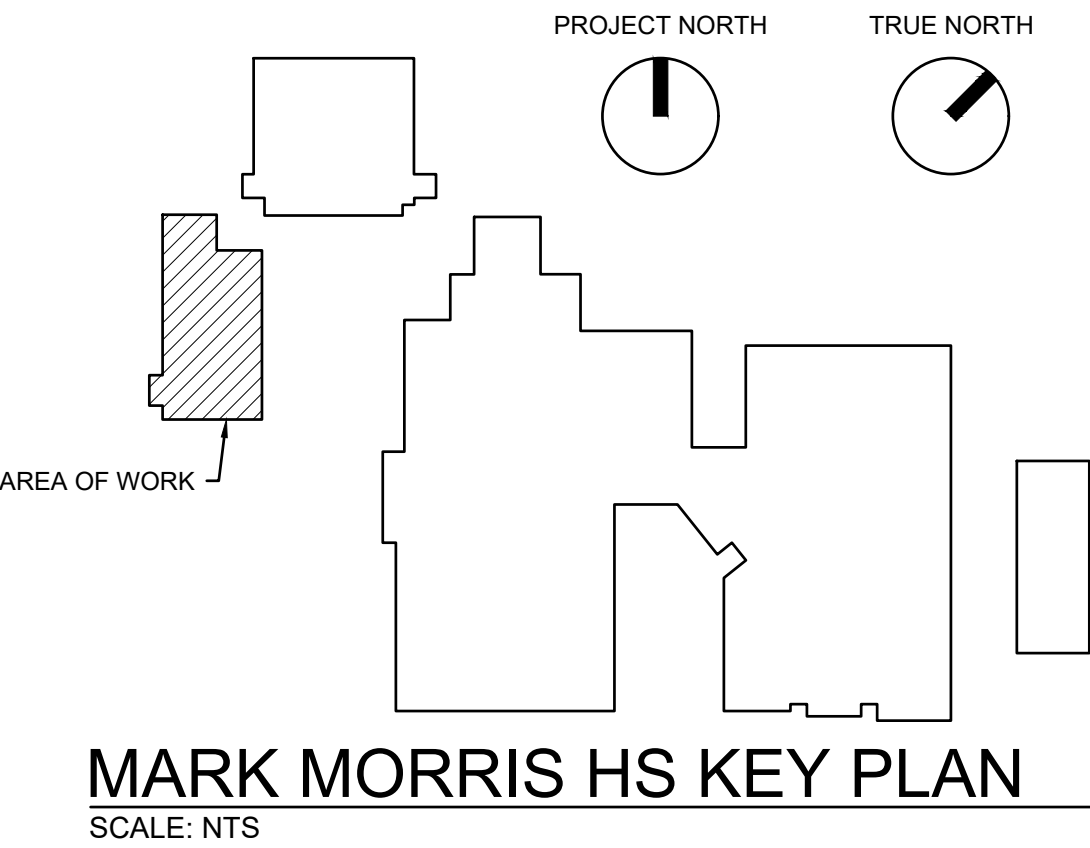
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. EXISTING EQUIPMENT TO REMAIN CIRCUITED AS IS UNLESS NOTED OTHERWISE.

PLAN NOTES:

- ① CONNECT TO SAME CIRCUIT AS REMOVED EQUIPMENT. REUSE EXISTING CIRCUIT BREAKER AND CONDUCTORS.



MARK MORRIS HS KEY PLAN
SCALE: NTS

LONGVIEW SCHOOL DISTRICT
HEAT PUMP REPLACEMENT AND
INDOOR AIR QUALITY IMPROVEMENTS

Date:	1/17/2023	
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Drawn By:	AD	
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VOCATIONAL BUILDING
ELECTRICAL PLAN

LONGVIEW SCHOOL DISTRICT HEAT PUMP REPLACEMENT AND INDOOR AIR QUALITY IMPROVEMENTS

Date:	1/17/2023	
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Revisions		
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VOCATIONAL ELECTRICAL SCHEDULES

E7.1

EXISTING

B2

GRID

SECTION 1 OF 1

LOCATION: AA Building

VOLTAGE

208/120

4W

ENCLOSURE

FLUSH

X SURFACE

X NEMA TYPE 1

NEMA TYPE 3R

NEMA TYPE 12

RATING: 225 A

MAIN:

LUG

ACCESSORIES

ISOLATED GROUND

SPD

200% NEUTRAL

FEED THRU LUGS

DOUBLE LUGS

A/C ASSEMBLY

SERVICE RATED

X 10K

25K

42K

DESCRIPTION	*	VA	BKR	CKT	A	B	C	CKT	BKR	VA	*	DESCRIPTION
INDOOR HEAT PUMPS		500	20/2	1	1000			2	20/2	500		INDOOR HEAT PUMPS
HP-AA1		500	-	3		1000		4	-	500		
		5000	60/3	5			8500	6	40/3	3500		DOAS-1
		5000	-	7	8500			8	-	3500		
HP-AA1		5000	60/3	9			8500	10	-	3500		
		5000	60/3	11			8500	12	40/3	3500		DOAS-2
		5000	-	13	8500			14	-	3500		
EH-1		5000	50/3	15			8500	16	-	3500		
		3500	40/3	17				18	40/3	3500		EH-2
		3500	-	19	7000			20	-	3500		
		3500	-	21		7000		22	-	3500		
		20/1	23				0	24	20/1			
		20/1	25	0				26	20/1			
		20/1	27			0		28	20/1			
		20/1	29				0	30	20/1			
		20/1	31	0				32	20/1			
		20/1	33			0		34	20/1			
		20/1	35				0	36	20/1			
		20/1	37	0				38	20/1			
		20/1	39			0		40	20/1			
		20/1	41				0	42	20/1			
		20/1	43	0				44	20/1			
		20/1	45			0		46	20/1			
		20/1	47				0	48	20/1			
		20/1	49	0				50	20/1			
		20/1	51			0		52	20/1			
	20/1	53				0	54	20/1				

BREAKER CODE:

A=AFCI, G=GFCI, N=SWITCHED NEUTRAL, S=SHUNT TRIP

K=KEYED, P=PADLOCK ATTACHMENT

KVA

25000

25000

24000

VA

VA

VA

VA SUB-TOTAL

TOTAL LOAD

KVA

AMPS

LIGHTING

RECEPTACLES

RECEPTACLES OVER 10K

MOTORS

LARGEST MOTOR

KITCHEN

NONCOINCIDENT

REMAINDER

EV CHARGER

X 125%

X 100%

X 50%

X 100%

X 125%

X 100%

X 0%

X 100%

X 125%

* REMARKS

LIGHT LINE WEIGHT EQUALS EXISTING

HEAVY LINE WEIGHT EQUALS NEW

LOAD CALCULATION - 30 DAY RECORDING					
208/120- 3PH					
Description					Remarks
Recording Period	12/7/2022	to	1/12/2023		
Peak Amperes	664.11	AMPS	230.1	KVA	
Seasonal Adjustment			100%		School was occupied
Adjusted Demand			239.1	KVA	
Occupancy Adjustment			100%		Continuous occupancy
Adjusted Demand			239.1		
Demand Factor			125%		NEC 220 87(2)
Adjusted Demand			286.8		
New Load Added	205.4	AMPS	73.9	KVA	New load @208-3phase
Total Load			372.8	KVA	
			1035.5	AMPS	