

LONGVIEW SCHOOL DISTRICT HVAC CHILLER REPLACEMENTS AND INDOOR AIR QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98632

LONGVIEW SCHOOL DISTRICT

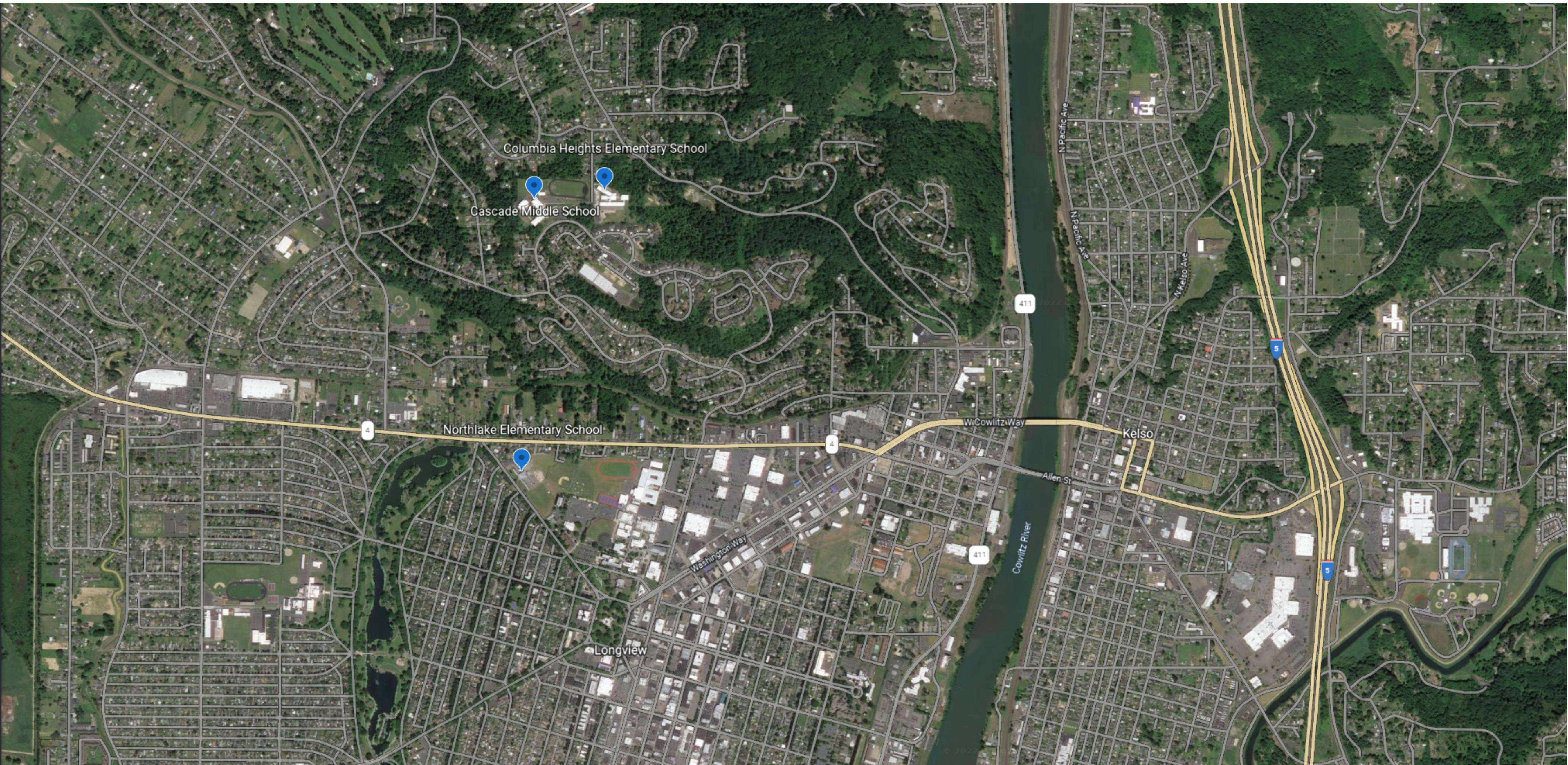
BID SET

INTEGRUS PROJECT NO. 22220.00
OWNER PROJECT NO. 2022-01



SHEET INDEX

AD100	COLUMBIA HEIGHTS DEMOLITION PLAN
S1-1	STRUCTURAL GENERAL NOTES
S1-2	STRUCTURAL GENERAL NOTES
S1-3	PLAN VIEWS AND DETAILS
ME0.1	LEGEND & NOTES
ME0.2	SCHEDULES
ME1.1	DEMO PLAN - NORTHLAKE ES
ME1.2	DEMO PLAN - CASCADE MS
ME1.3	DEMO PLAN - COLUMBIA HEIGHTS
ME2.1	MECH/ELEC PLAN - NORTHLAKE ES
ME2.2	MECH/ELEC PLAN - CASCADE MS
ME2.3	MECH/ELEC PLAN - COLUMBIA HEIGHTS
ME3.1	SCHEMATICS & DETAILS
ME4.1	VENTILATION CALCULATIONS - NORTHLAKE ES
ME4.2	VENTILATION CALCULATIONS - CASCADE MS
ME4.3	VENTILATION CALCULATIONS - COLUMBIA HEIGHTS



PROJECT TEAM

OWNER

LONGVIEW SCHOOL DISTRICT
2715 LILAC STREET
LONGVIEW WA 98362
PHONE: (360) 952-3566
CONTACT: ANDREW TWYMAN
EMAIL: andrew.twyman@esd112.org

ARCHITECT

INTEGRUS ARCHITECTURE
117 SOUTH MAIN STREET, SUITE 100
SEATTLE, WA 98104
PHONE: (206) 628-3137
FAX: (206) 628-3138
CONTACT: SARA WILDER
EMAIL: swilder@integrusarch.com

MECHANICAL

HULTZ / BHU ENGINEERS, INC.
1111 FAWCETT AVE, SUITE 100
TACOMA, WA 98402
PHONE: (523) 383-3257
FAX: (253) 383-3283
CONTACT: BRIAN WHITE
EMAIL: brianw@hultzbhu.com

ELECTRICAL

HULTZ / BHU ENGINEERS INC.
1111 FAWCETT AVE, SUITE 100
TACOMA, WA 98402
PHONE: (523) 383-3257
FAX: (253) 383-3283
CONTACT: PHIL CRAWFORD
EMAIL: philc@hultzbhu.com

11/14/22

SET NO. _____

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	
Typical Roof	23 psf (Sumnerimposed)
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	Pf = 25 psf
Importance factor (snow)	Is = 1.1
Snow exposure factor	Ce = 1.0
Thermal factor	Ct = 1.0
Design Snow Load	25 psf
Drifts	see Snow Drift Plan
Other Surcharges	per reference code
Unbalanced loads	per reference code

Wind	
Basic wind speed (3 second gust)	V = 115 mph
Exposure Category	B
Importance factor (wind)	kw = 1.15
Topographical Factor	Kzt = 1.0
Directional Coefficient	Kd = 0.85
Gust Effect Factor	G = 0.85
Internal pressure coefficient	Cpi = 0.18
Minimum Net Uplift	15 psf

Earth	
Reference IBC Table 1806.2 - Presumptive Load-Bearing Values	
Allowable Bearing Pressure	1,500 psf (Class 5)
Passive resistance	100 psf
Refer to drawings for additional loads	

- CONSTRUCTION LOADS
1. Reference code: ASCE/SEI 57-14, Design Loads on Structures During Construction

2. 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.

3. 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.

4. 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.

GENERAL CONDITIONS

- TYPICAL CONDITIONS
1. 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
1. 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.

2. 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.

3. Coordinate with the owner's representative to minimize disruption to the owner's operation and to provide building user and worker safety.

4. Coordinate with the owner's representative on approval for excessive noise and vibration during hours of building operation.

5. For all existing building materials and equipment to remain, provide protection from damage due to construction operations performed under this contract.

6. 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.

7. 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 reroing or replace with construction of the same rating at all existing fire and smoke rated construction.

8. 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.

9. Leave all areas of work broom and dust clean at hard surfaces and vacuum clean at carpeted surfaces.

- DEMOLITION
1. 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 commencing demolition.

2. 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.

3. 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.

4. 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.

5. 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.

6. Remove all demolition materials from the site unless otherwise noted and dispose of it in a legal manner.

- COORDINATION
1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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
1. Construction utilizing any given material shall not occur until the approved submittals for that material are received from the Architect/Engineer.

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 psf
Coordination	
1. 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	
1. Footing excavations should be cleaned of all loose soil, leveled, and protected from water and construction traffic.	
2. Refer to geotechnical report and follow recommendations specific to wet weather earthwork.	
3. Refer to geotechnical report and follow recommendations specific to temporary cut slopes.	
Submittals	
1. 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.	

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	
1. 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.	
2. Coordinate reinforcing steel placement details with structural embeds and embeds specified in other disciplines. Utilize templates for placing steel in congested areas.	
3. No concrete work shall be generated for piping or ducts, unless shown in the drawings or approved by the Engineer in writing.	

Execution	
1. 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.	
2. Provide cover as shown in drawings, with a minimum cover as required by the CONCRETE REINFORCING COVER TABLE.	
3. Provide rebar splice lengths as shown in the drawings, with a minimum splice as required by the CONCRETE REINFORCING SPLICE TABLE.	
4. Camber concrete forms as shown plus deflection due to the weight of wet concrete.	
5. 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.	
6. 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 +/-2" of slump specified in the approved mix design submittal.	
7. Tie 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.	
8. Cold Bend bars as noted in drawings in 16 to radius specified in ACI 315. Bend bars one time only.	
9. 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.	
10. Provide 3/4" chamfer at all exposed concrete edges, unless noted otherwise.	

- REINFORCING
1. Max Design's 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.

2. 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.

3. Provide certification to show that all rebar welders hold a current WABO certification and are prequalified according to AWS D14 for all bar weld sizes and positions required.

4. 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.

Submittals	
1. Max Design's 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.	
2. 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.	
3. Provide certification to show that all rebar welders hold a current WABO certification and are prequalified according to AWS D14 for all bar weld sizes and positions required.	
4. 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.	

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 A185	Fy = 60 ksi
Fiber reinforced concrete shall conform to ACI Report 544.1R. Follow manufacturer's recommended mix quantity, but use no less than 1.5%cu yd.		

CONCRETE MIX DESIGN TABLE											
Type	Use	28 Day Strength (psi)	Max Aggregate Size	Max W/C Ratio	Required Additives*	Exposure Categories & Classes**					% Air Range
						Freeze-thaw (F)	Sulfate (S)	Contact w/ Water (W)	Corrosion (C)		
A	Footings	4500	3"	0.50	Superplasticizer (6"-8" Slump)	F1	S0	W0	C1	2% max	
B	Interior Slabs & Column Pour-backs	4000	3/4"	0.43		F0	S0	W0	C0	2% max	
C	Exterior Slabs	5000	1"	0.40	Polyfiber Reinf	F2	S0	W1	C2	6% ±1%	
D	All Others	Consult with EOR on case-by-case basis									

- Notes:
1. Concrete mixes A-D shall meet the requirements of ACI 318-14 Chapter 19 and Table 19.3.2.1 REQUIREMENTS FOR CONCRETE BY EXPOSURE CLASS

2. Air Entrainment shall be 2% max except where a higher range is required by it's exposure class

* All admixtures shall be chloride free otherwise approved by the Engineer

** Where the application applies to more than 1 type, the more stringent design parameters shall be used

BOLTS/RODS	
Reference Codes	
• AISC, Specification for Structural Joints Using ASTM A325 or A490 Bolts.	
Strength	
Erection Bolts in Steel	ASTM A307, Snug Tight
Exterior Bolts in Steel	ASTM A307, 1852, 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 A436
Nuts	ASTM A563, Heavy Hex Nuts
Execution	
1. Place hardened steel washers between nuts and slotted or oversized holes.	
2. 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.	
3. Use galvanized bolts, rods, nuts and washers wherever used in exterior applications and wherever connecting galvanized steel elements.	
Submittals	
1. Include anchor rod setting templates with all base plate shop drawings.	

- FASTENERS
1. At repetitive fasteners, place end fasteners no more than 6" from the end of the member

2. 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

3. 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

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 & 3x Beams and Posts	Douglas Fir-Larch No. 2
2x Wall Studs	Douglas Fir-Larch No. 2
6x & Larger Beams and Stringers	Douglas Fir-Larch No. 1
6x & Larger Posts and Timbers	Douglas Fir-Larch No. 1
Studs and Plates	Douglas Fir-Larch No. 2
Max. Light Framing	Douglas Fir-Larch No. 2
T&G Decking	Douglas Fir Commercial Grade

Design	
1. Where required by the drawings, design premanufactured wood joist, trusses and connections to resist construction and building loads described in these documents.	
Coordination	
1. Structural walls are those shown in the structural drawings. Refer to architectural drawings for non-structural walls, partitions and soffits.	
Execution	
1. Provide ASTM A307 bolts, unless noted otherwise.	
2. Provide standard washers at all bolt heads and nuts.	
3. All exterior bolts, nuts and washers shall be galvanized.	
4. Provide nails conforming to "Common" specification ASTM F1667.	
5. 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.	
6. 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.	
7. 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.	
8. At joist areas: provide cross-bridging at 9'-0" on center maximum. Provide solid blocking or continuous rim at all bearing points. Provide solid blocking under all bearing walls above.	
9. Provide double joist under all parallel partitions that extend over more than half the joist length. Provide double joists each side of all openings in floors and roofs unless related otherwise. Coordinate size and location of all openings with architectural and Mechanical drawings.	
10. Provide two 2x10 headers over and double studs each side of all openings in stud bearing walls unless noted otherwise.	
11. Provide solid blocking at floors for wood columns and multiple stud posts to pass through.	
12. Provide continuous solid blocking at mid-height of all stud walls over 10'-0" in height.	
13. 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.	
14. Use full-length studs (balloon frame) on exterior walls at stairways and at vaulted ceilings.	
15. All wood stud walls shall have lower wood plates attached to wood framing below with 16d nails at 6 inches on center, staggered or bedded 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.	
16. Plywood wall sheathing shall have solid blocking at all edges. Provide the following minimum nailing unless noted otherwise on plans: a. 10d at 16 inches on center at sheet edge. b. 10d at 12 inches on center at intermediate bearing points.	
17. Where fasteners sizes and/or patterns are note noted, reference IBC Table 2304.10.1 for additional information.	

- Submittals
1. 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 shall be in conformance with the building code, United States Voluntary Product Standards PS-1 or PS-2.	
Execution	
1. Stagger panel end joints.	
2. Provide approved edge clips at 24 inches on center at unblocked roof and floor sheathing edges.	
3. Provide 1/8 inches gap between all abutting panel edges.	
4. Provide the following minimum nailing unless noted otherwise on plans: a. 10d at 6 inches on center at all supported panel edges. b. 10d at 12 inches on center field nailing	
5. 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/AITC 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
1. All Glulams are architectural grade where exposed to view, unless noted otherwise.

2. Locate AITC identification mark where it will not be exposed to view in the finished building.

- Execution
1. 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.

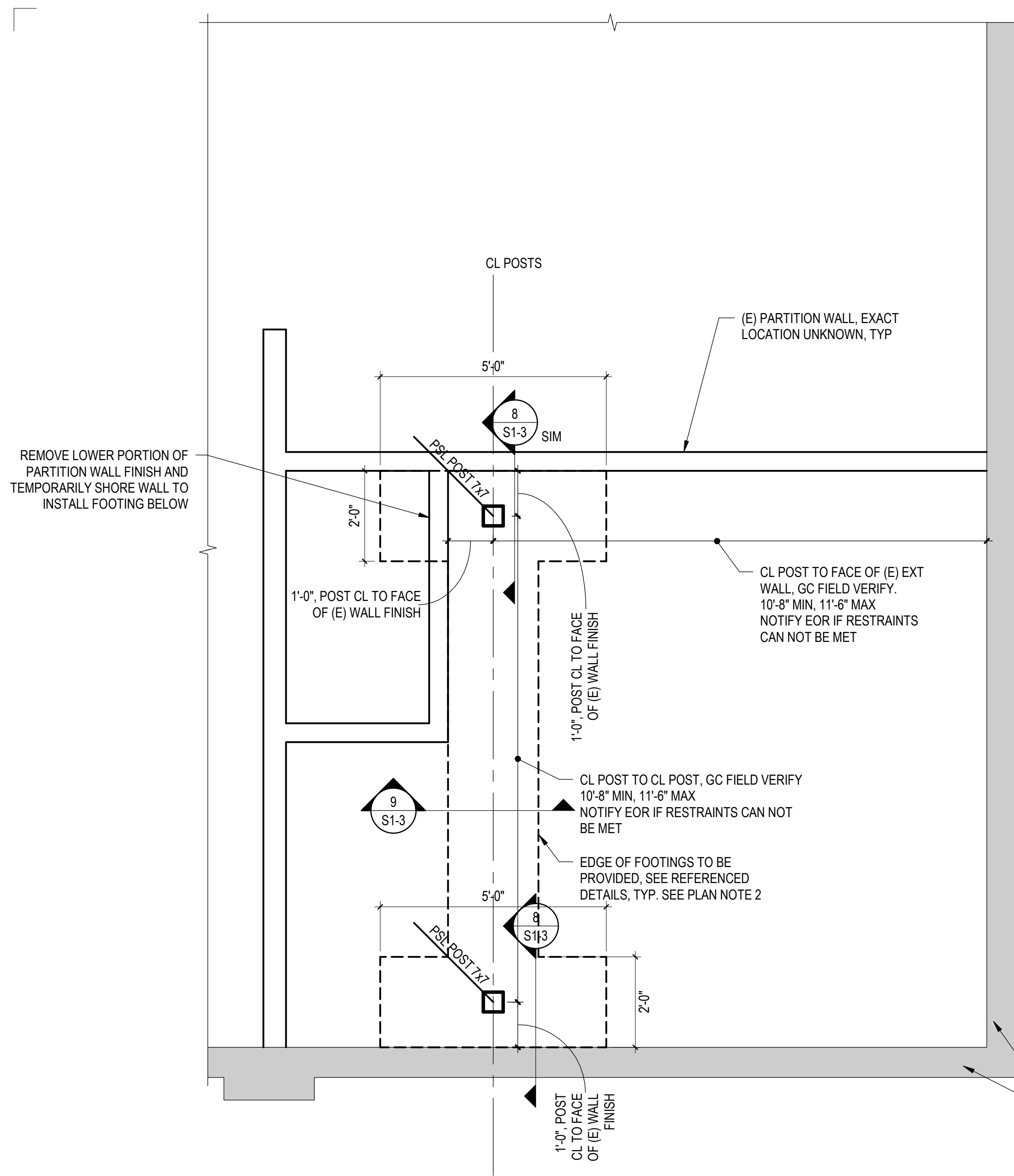
2. Provide fasteners and connectors according to "WOOD" section of these notes.

- Submittals
1. Provide shop drawings, detailing all framing members and connections.

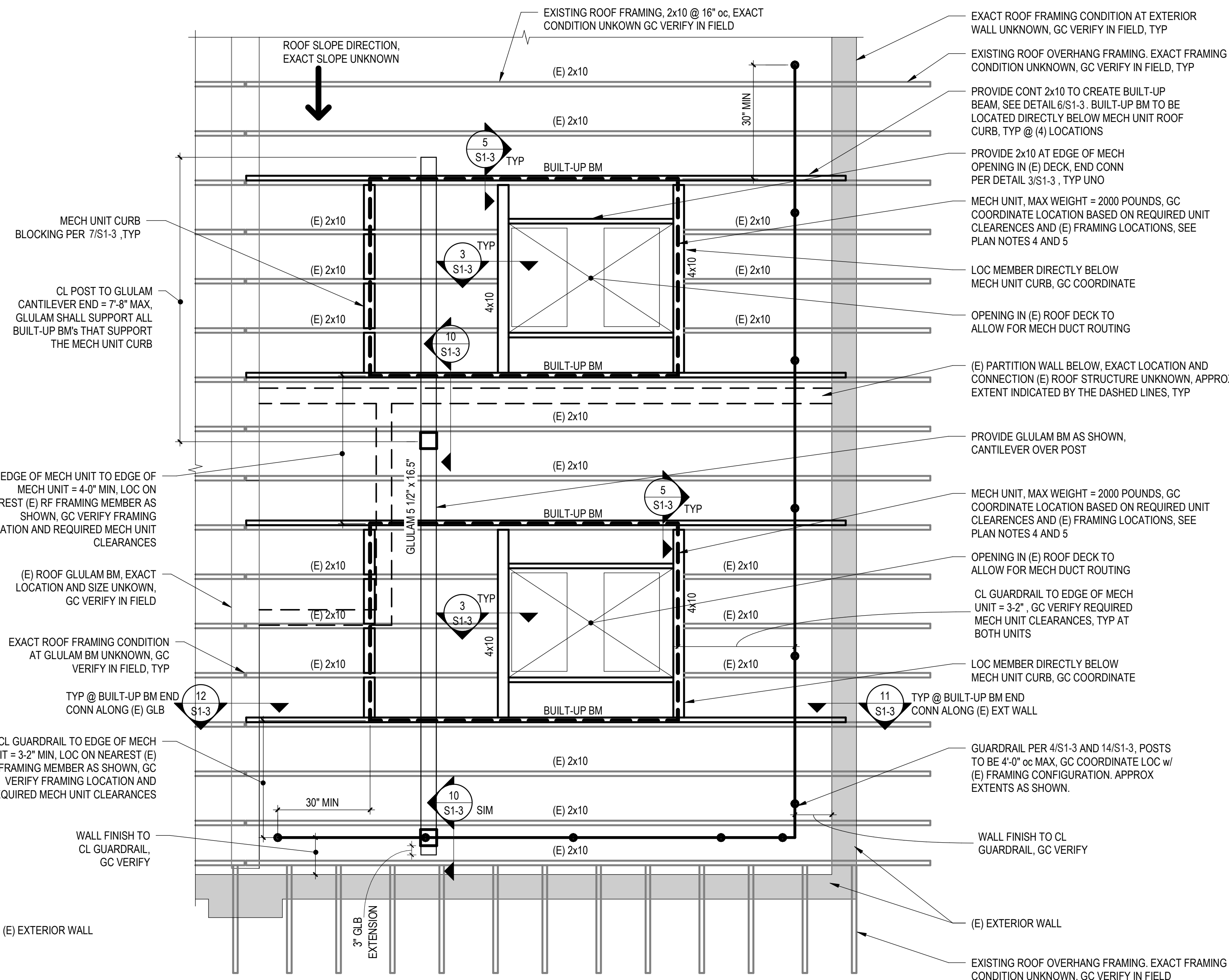
2. Keep AITC certificate of conformance on file for all glulam members.

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		
W Shapes, WT Shapes	ASTM A992 or A913, 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

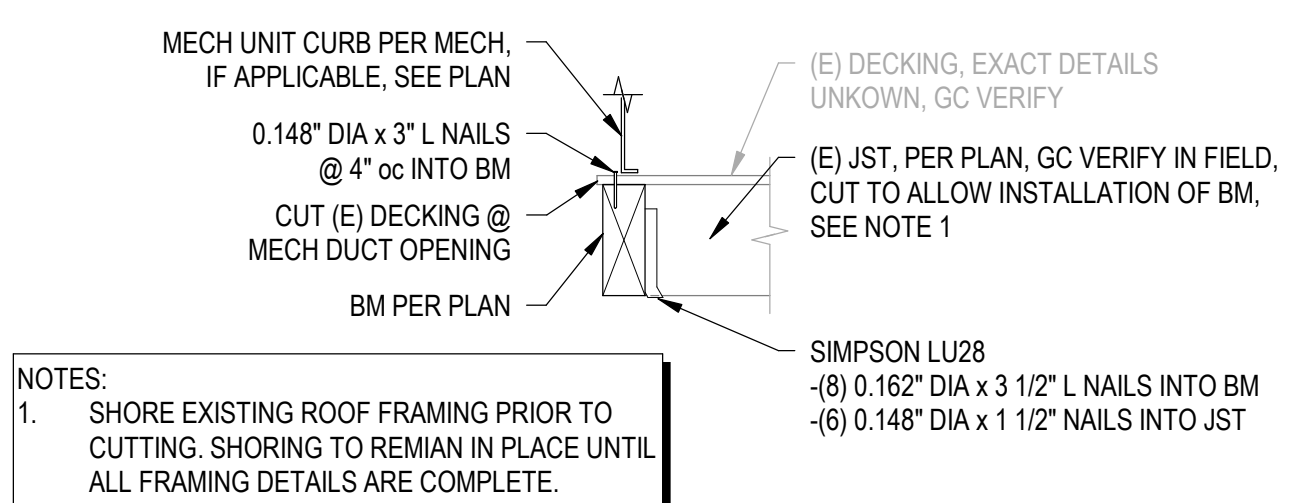
*Code References		ABBREVIATIONS	
ACI	AMERICAN CONCRETE INSTITUTE	IN	INCH, INCHES
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	INCL	INCLUDED, INCLUDING
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	INSUL	INSULATION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	INT	INTERIOR
ASTM	AMERICAN SOCIETY FOR TESTING AND 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	LGT, LONG	LONGITUDINAL
±	PLUS OR MINUS	LIN	LINEAR
Ø	DIAMETER	LL	LIVE LOAD
A	ANCHOR BOLT	LLH	LONG LEG HORIZONTAL
AB	ADDENDUM	LLV	LONG LEG VERTICAL
ADD	ADDITIONAL	LOC	LOCATION
ADH	ADHESIVE	LSH	LONG SLOTTED HOLE
ADJ	ADJACENT	LSL	LAMINATED STRAND LUMBER
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	LVL	LAMINATED VENEER LUMBER
AFF	ABOVE FINISH FLOOR	M	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	BALANCE	MIN	MINIMUM
BAL	BRACED FRAME	MISC	MISCELLANEOUS
BLDG	BUILDING	MTL	METAL
BLKG	BLOCKING	N	NON-SHRINK GROUT
BM	BEAM	N-GROUT	NON-SHRINK GROUT
BOD	BOTTOM OF DECK	NLB	NON-LOAD BEARING
BOF	BOTTOM OF FOOTING, FOUNDATION	NS	NEAR SIDE
BOS	BOTTOM OF STEEL	NTS	NOT TO SCALE
BOT	BOTTOM	O	ON CENTER
BP	BASE PLATE	OD	OUTSIDE DIAMETER
BRB	BUCKLING RESTRAINED BRACE	OPNG	OPENING
BRG	BEARING	OPP	OPPOSITE
BTWN	BETWEEN	OSB	ORIENTED STRAND BOARD
C	CANTILEVER	OWJ	OPEN WEB JOIST
(c)	COLLECTOR	P	POWDER ACTUATED FASTENERS
C	CAMBER or CHANNEL	PAF	PERIMETER
CANT	CANTILEVER	PERIM	PERPENDICULAR
CIP	CAST-IN-PLACE	PERP	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	QUANTITY
CONTR	CONTRACTOR	QTY	QUANTITY
COORD	COORDINATE	d	PENNY (NAIL)
CTR	CENTER, CENTERED	D&E	DRILL AND EPOXY
D	DEMAND CRITICAL	DBA	DEFORMED BAR ANCHOR
d	PENNY (NAIL)	DBL	DOUBLE
D&E	DRILL AND EPOXY	DC	DEMAND CRITICAL
DBA	DEFORMED BAR ANCHOR	DEMO	DEMOLISH, DEMOLITION
DBL	DOUBLE	DIA	DIAMETER
DC	DEMAND CRITICAL	DIAG	DIAGONAL
DEMO	DEMOLISH, DEMOLITION	DIAPH	DIAPHRAGM
DIA	DIAMETER	DIM	DIMENSION
DIAG	DIAGONAL	DL	DEAD LOAD
DIAPH	DIAPHRAGM	DN	DOWN
DIM	DIMENSION	DTL	DETAIL
DL	DEAD LOAD	DWG, DWGS	DRAWING, DRAWINGS
DN	DOWN	DWL, DWLS	DOWEL, DOWELS
DTL	DETAIL	E	EACH
DWG, DWGS	DRAWING, DRAWINGS	EA	EACH
DWL, DWLS	DOWEL, DOWELS	EF	EACH FACE
E	EACH	EL, ELEV	ELEVATION
EA	EACH	ELECT	ELECTRICAL
EF	EACH FACE	EMBED	EMBEDMENT
EL, ELEV	ELEVATION	ENGR	ENGINEER
ELECT	ELECTRICAL	EOD	EDGE OF DECK
EMBED	EMBEDMENT	EOS	EDGE OF SLAB
ENGR	ENGINEER	EQ	EQUAL
EOD	EDGE OF DECK	EQUIP	EQUIPMENT
EOS	EDGE OF SLAB	ES	EACH SIDE
EQ	EQUAL	EW	EACH WAY
EQUIP	EQUIPMENT	EXIST, (E)	EXISTING
ES	EACH SIDE	EXP	EXPANSION
EW	EACH WAY	EXT	EXTERIOR
EXIST, (E)	EXISTING	F	FLOOR CONTROL JOINT
EXP	EXPANSION	FCJ	FLOOR CONTROL JOINT
EXT	EXTERIOR	FDN	FOUNDATION
F	FLOOR CONTROL JOINT	FFE	FINISH FLOOR ELEVATION
FCJ	FLOOR CONTROL JOINT	FIN	FINISH
FDN	FOUNDATION	FLR	FLOOR
FFE	FINISH FLOOR ELEVATION	FO	FACE OF
FIN	FINISH	FRMG	FRAMING
FLR	FLOOR	FS	FAR SIDE
FO	FACE OF	FT	FOOT, FEET
FRMG	FRAMING	FTG	FOOTING
FS	FAR SIDE	G	GAUGE, GAGE
FT	FOOT, FEET	GALV	GALVANIZED
FTG	FOOTING	GC	GENERAL CONTRACTOR
G	GAUGE, GAGE	GLB	GLUE LAMINATED BEAM
GA	GAUGE, GAGE	GR	GRADE, GRADING
GALV	GALVANIZED	GWB	GYPSON WALL BOARD
GC	GENERAL CONTRACTOR	H	HEADED ANCHOR STUD
GLB	GLUE LAMINATED BEAM	HAS	HEADED ANCHOR STUD
GR	GRADE, GRADING	HCP	HOLLOW CORE PLANK
GWB	GYPSON WALL BOARD	HDR	HEADER
H	HEADED ANCHOR STUD	HORIZ, H	HORIZONTAL
HAS	HEADED ANCHOR STUD	HSS	HOLLOW STRUCTURAL SECTION
HCP	HOLLOW CORE PLANK	HT	HEIGHT
HDR	HEADER	I	INCH, INCHES
HORIZ, H	HORIZONTAL	INCL	INCLUDED, INCLUDING
HSS	HOLLOW STRUCTURAL SECTION	INSUL	INSULATION
HT	HEIGHT	INT	INTERIOR
I	INCH, INCHES	IP	INTERLOCKING PUNCH
IN	INCH, INCHES	J	JOIST
INCL	INCLUDED, INCLUDING	JT, JTS	JOINT, JOINTS
INSUL	INSULATION	K	KIP
INT	INTERIOR	k, KIP	KILOPOUND
IP	INTERLOCKING PUNCH	ksi	KIPS PER SQUARE INCH
J	JOIST	L	ANGLE OR LENGTH
JT, JTS	JOINT, JOINTS	LAT	LATERAL
K	KIP	LF	LINEAR FOOT
k, KIP	KILOPOUND	LFRS	LATERAL FORCE RESISTING SYSTEM
ksi	KIPS PER SQUARE INCH	LGT, LONG	LONGITUDINAL
L	ANGLE OR LENGTH	LIN	LINEAR
LAT	LATERAL	LL	LIVE LOAD
LF	LINEAR FOOT	LLH	LONG LEG HORIZONTAL
LFRS	LATERAL FORCE RESISTING SYSTEM	LLV	LONG LEG VERTICAL
LGT, LONG	LONGITUDINAL	LOC	LOCATION
LIN	LINEAR	LSH	LONG SLOTTED HOLE
LL	LIVE LOAD	LSL	LAMINATED STRAND LUMBER
LLH	LONG LEG HORIZONTAL	LVL	LAMINATED VENEER LUMBER
LLV	LONG LEG VERTICAL	M	MAXIMUM
LOC	LOCATION	MC	MISCELLANEOUS CHANNEL
LSH	LONG SLOTTED HOLE	MECH	MECHANICAL
LSL	LAMINATED STRAND LUMBER	MEP	MECHANICAL, ELECTRICAL, PLUMBING
LVL	LAMINATED VENEER LUMBER	MEZZ	MEZZANINE
M	MAXIMUM	MF	MOMENT FRAME
MAX	MAXIMUM	MFR	MANUFACTURER
MC	MISCELLANEOUS CHANNEL	MIN	MINIMUM
MECH	MECHANICAL	MISC	MISCELLANEOUS
MEP	MECHANICAL, ELECTRICAL, PLUMBING	MTL	METAL
MEZZ	MEZZANINE	N	NON-SHRINK GROUT
MF	MOMENT FRAME	N-GROUT	NON-SHRINK GROUT
MFR	MANUFACTURER	NLB	NON-LOAD BEARING
MIN	MINIMUM	NS	NEAR SIDE
MISC	MISCELLANEOUS	NTS	NOT TO SCALE
MTL	METAL	O	ON CENTER
N	NON-SHRINK GROUT	OD	OUTSIDE DIAMETER
N-GROUT	NON-SHRINK GROUT	OPNG	OPENING
NLB	NON-LOAD BEARING	OPP	OPPOSITE
NS	NEAR SIDE	OSB	ORIENTED STRAND BOARD
NTS	NOT TO SCALE	OWJ	OPEN WEB JOIST
O	ON CENTER	P	POWDER ACTUATED FASTENERS
OD	OUTSIDE DIAMETER	PAF	PERIMETER
OPNG	OPENING	PERIM	PERPENDICULAR
OPP	OPPOSITE	PERP	PARTIAL JOINT PENETRATION
OSB	ORIENTED STRAND BOARD	PL	PLATE
OWJ	OPEN WEB JOIST	PLF	POUNDS PER LINEAL FOOT
P	POWDER ACTUATED FASTENERS	PLYWD	PLYWOOD
PAF	PERIMETER	PREFAB	PREFABRICATED
PERIM	PERPENDICULAR	PRELIM	PRELIMINARY
PERP	PARTIAL JOINT PENETRATION	PSF	POUNDS PER SQUARE FOOT
PJP	PLATE	PSI	POUNDS PER SQUARE INCH
PL	PLATE	PSL	PARALLEL, STRAND LUMBER
PLF	POUNDS PER LINEAL FOOT	PT	POINT, POST TENSION
PLYWD	PLYWOOD	Q	QUANTITY
PREFAB	PREFABRICATED	QTY	QUANTITY
PRELIM	PRELIMINARY	d	PENNY (NAIL)
PSF	POUNDS PER SQUARE FOOT	D&E	DRILL AND EPOXY
PSI	POUNDS PER SQUARE INCH	DBA	DEFORMED BAR ANCHOR
PSL	PARALLEL, STRAND LUMBER	DBL	DOUBLE
PT	POINT, POST TENSION	DC	DEMAND CRITICAL
Q	QUANTITY	DEMO	DEMOLISH, DEMOLITION
QTY	QUANTITY	DIA	DIAMETER
d	PENNY (NAIL)	DIAG	DIAGONAL
D&E	DRILL AND EPOXY	DIAPH	DIAPHRAGM
DBA	DEFORMED BAR ANCHOR	DIM	DIMENSION
DBL	DOUBLE	DL	DEAD LOAD
DC	DEMAND CRITICAL	DN	DOWN
DEMO	DEMOLISH, DEMOLITION	DTL	DETAIL
DIA	DIAMETER	DWG, DWGS	DRAWING, DRAWINGS
DIAG	DIAGONAL	DWL, DWLS	DOWEL, DOWELS
DIAPH	DIAPHRAGM	E	EACH
DIM	DIMENSION	EA	EACH
DL	DEAD LOAD	EF	EACH FACE
DN	DOWN	EL, ELEV	ELEVATION
DTL	DETAIL	ELECT	ELECTRICAL
DWG, DWGS	DRAWING, DRAWINGS	EMBED	EMBEDMENT
DWL, DWLS	DOWEL, DOWELS	ENGR	ENGINEER
E	EACH	EOD	EDGE OF DECK
EA	EACH	EOS	EDGE OF SLAB
EF	EACH FACE	EQ	EQUAL
EL, ELEV	ELEVATION	EQUIP	EQUIPMENT
ELECT	ELECTRICAL	ES	EACH SIDE
EMBED	EMBEDMENT	EW	EACH WAY
ENGR	ENGINEER	EXIST, (E)	EXISTING
EOD	EDGE OF DECK	EXP	EXPANSION
EOS	EDGE OF SLAB	EXT	EXTERIOR
EQ	EQUAL	F	FLOOR CONTROL JOINT
EQUIP	EQUIPMENT	FCJ	FLOOR CONTROL JOINT
ES	EACH SIDE	FDN	FOUNDATION
EW	EACH WAY	FFE	FINISH FLOOR ELEVATION
EXIST, (E)	EXISTING	FIN	FINISH
EXP	EXPANSION	FLR	FLOOR
EXT	EXTERIOR	FO	FACE OF
F	FLOOR CONTROL JOINT	FRMG	FRAMING
FCJ	FLOOR CONTROL JOINT	FS	FAR SIDE
FDN	FOUNDATION	FT	FOOT, FEET
FFE	FINISH FLOOR ELEVATION	FTG	FOOTING
FIN	FINISH	G	GAUGE, GAGE
FLR	FLOOR	GALV	GALVANIZED
FO	FACE OF	GC	GENERAL CONTRACTOR
FRMG	FRAMING	GLB	GLUE LAMINATED BEAM
FS	FAR SIDE	GR	GRADE, GRADING
FT	FOOT, FEET	GWB	GYPSON WALL BOARD
FTG	FOOTING	H	HEADED ANCHOR STUD
G	GAUGE, GAGE	HAS	HEADED ANCHOR STUD
GA	GAUGE, GAGE	HCP	HOLLOW CORE PLANK
GALV	GALVANIZED	HDR	HEADER
GC	GENERAL CONTRACTOR	HORIZ, H	HORIZONTAL
GLB	GLUE LAMINATED BEAM	HSS	HOLLOW STRUCTURAL SECTION
GR	GRADE, GRADING	HT	HEIGHT
GWB	GYPSON WALL BOARD	I	INCH, INCHES
H	HEADED ANCHOR STUD	INCL	INCLUDED, INCLUDING
HAS	HEADED ANCHOR STUD	INSUL	INSULATION
HCP	HOLLOW CORE PLANK	INT	INTERIOR
HDR	HEADER	IP	INTERLOCKING PUNCH
HORIZ, H	HORIZONTAL	J	JOIST
HSS	HOLLOW STRUCTURAL SECTION	JT, JTS	JOINT, JOINTS
HT	HEIGHT	K	KIP
I	INCH, INCHES	k, KIP	KILOPOUND
IN	INCH, INCHES	ksi	KIPS PER SQUARE INCH
INCL	INCLUDED, INCLUDING	L	ANGLE OR LENGTH
INSUL	INSULATION	LAT	LATERAL
INT	INTERIOR	LF	LINEAR FOOT
IP	INTERLOCKING PUNCH	LFRS	LATERAL FORCE RESISTING SYSTEM
J	JOIST	LGT, LONG	LONGITUDINAL
JT, JTS	JOINT, JOINTS	LIN	LINEAR
K	KIP	LL	LIVE LOAD
k, KIP	KILOPOUND	LLH	LONG LEG HORIZONTAL
ksi	KIPS PER SQUARE INCH	LLV	LONG LEG VERTICAL
L	ANGLE OR LENGTH	LOC	LOCATION
LAT	LATERAL	LSH	LONG SLOTTED HOLE
LF	LINEAR FOOT	LSL	LAMINATED STRAND LUMBER
LFRS	LATERAL FORCE RESISTING SYSTEM	LVL	LAMINATED VENEER LUMBER
LGT, LONG	LONGITUDINAL	M	MAXIMUM
LIN	LINEAR	MC	MISCELLANEOUS CHANNEL
LL	LIVE LOAD	MECH	MECHANICAL
LLH	LONG LEG HORIZONTAL	MEP	MECHANICAL, ELECTRICAL, PLUMBING
LLV	LONG LEG VERTICAL	MEZZ	MEZZANINE
LOC	LOCATION	MF	MOMENT FRAME
LSH	LONG SLOTTED HOLE	MFR	MANUFACTURER
LSL	LAMINATED STRAND LUMBER	MIN	MINIMUM
LVL	LAMINATED VENEER LUMBER	MISC	MISCELLANEOUS
M	MAXIMUM	MTL	METAL
MAX	MAXIMUM	N	NON-SHRINK GROUT
MC	MISCELLANEOUS CHANNEL	N-GROUT	NON-SHRINK GROUT
MECH	MECHANICAL	NLB	NON-LOAD BEARING
MEP	MECHANICAL, ELECTRICAL, PLUMBING	NS	NEAR SIDE
MEZZ	MEZZANINE	NTS	NOT TO SCALE
MF	MOMENT FRAME	O	ON CENTER
MFR	MANUFACTURER	OD	OUTSIDE DIAMETER
MIN	MINIMUM	OPNG	OPENING
MISC	MISCELLANEOUS	OPP	OPPOSITE
MTL	METAL	OSB	ORIENTED STRAND BOARD
N	NON-SHRINK GROUT	OWJ	OPEN WEB JOIST
N-GROUT	NON-SHRINK GROUT	P	POWDER ACTUATED FASTENERS
NLB	NON-LOAD BEARING	PAF	PERIMETER
NS	NEAR SIDE	PERIM	PERPENDICULAR
NTS	NOT TO SCALE	PERP	PARTIAL JOINT PENETRATION
O	ON CENTER	PL	PLATE
OD	OUTSIDE DIAMETER	PLF	POUNDS PER LINEAL FOOT
OPNG	OPENING	PLYWD	PLYWOOD
OPP	OPPOSITE	PREFAB	PREFABRICATED
OSB	ORIENTED STRAND BOARD	PRELIM	PRELIMINARY
OWJ	OPEN WEB JOIST	PSF	POUNDS PER SQUARE FOOT
P	POWDER ACTUATED FASTENERS	PSI	POUNDS PER SQUARE INCH
PAF	PERIMETER	PSL	PARALLEL, STRAND LUMBER
PERIM	PERPENDICULAR	PT	POINT, POST TENSION
PERP	PARTIAL JOINT PENETRATION	Q	QUANTITY
PJP	PLATE	QTY	QUANTITY
PL	PLATE	d	PENNY (NAIL)
PLF	POUNDS PER LINEAL FOOT	D&E	DRILL AND EPOXY
PLYWD	PLYWOOD	DBA	DEFORMED BAR ANCHOR
PREFAB	PREFABRICATED	DBL	DOUBLE
PRELIM	PRELIMINARY	DC	DEMAND CRITICAL
PSF	POUNDS PER SQUARE FOOT	DEMO	DEMOLISH, DEMOLITION
PSI	POUNDS PER SQUARE INCH	DIA	DIAMETER
PSL	PARALLEL, STRAND LUMBER	DIAG	DIAGONAL
PT	POINT, POST TENSION	DIAPH	DIAPHRAGM
Q	QUANTITY	DIM	DIMENSION
QTY	QUANTITY	DL	DEAD LOAD
d	PENNY (NAIL)	DN	DOWN
D&E	DRILL AND EPOXY	DTL	DETAIL
DBA	DEFORMED BAR ANCHOR	DWG, DWGS	DRAWING, DRAWINGS
DBL	DOUBLE	DWL, DWLS	DOWEL, DOWELS
DC	DEMAND CRITICAL	E	EACH
DEMO	DEMOLISH, DEMOLITION	EA	EACH
DIA	DIAMETER	EF	EACH FACE
DIAG	DIAGONAL	EL, ELEV	ELEVATION
DIAPH	DIAPHRAGM	ELECT	ELECTRICAL
DIM	DIMENSION	EMBED	EMBEDMENT
DL	DEAD LOAD	ENGR	ENGINEER
DN	DOWN	EOD	EDGE OF DECK
DTL	DETAIL	EOS	EDGE OF SLAB
DWG, DWGS	DRAWING, DRAWINGS	EQ	EQUAL
DWL, DWLS	DOWEL, DOWELS	EQUIP	EQUIPMENT
E	EACH	ES	EACH SIDE
EA	EACH	EW	EACH WAY
EF	EACH FACE	EXIST, (E)	EXISTING
EL, ELEV	ELEVATION	EXP	EXPANSION
ELECT	ELECTRICAL	EXT	EXTERIOR
EMBED	EMBEDMENT	F	FLOOR CONTROL JOINT
ENGR	ENGINEER	FCJ	FLOOR CONTROL JOINT
EOD	EDGE OF DECK	FDN	FOUNDATION
EOS	EDGE OF SLAB	FFE	FINISH FLOOR ELEVATION
EQ	EQUAL	FIN	FINISH
EQUIP	EQUIPMENT	FLR	FLOOR
ES	EACH SIDE	FO	FACE OF
EW	EACH WAY	FRMG	FRAMING
EXIST, (E)	EXISTING	FS	FAR SIDE
EXP	EXPANSION	FT	FOOT, FEET
EXT	EXTERIOR	FTG	FOOTING
F	FLOOR CONTROL JOINT	G	GAUGE, GAGE



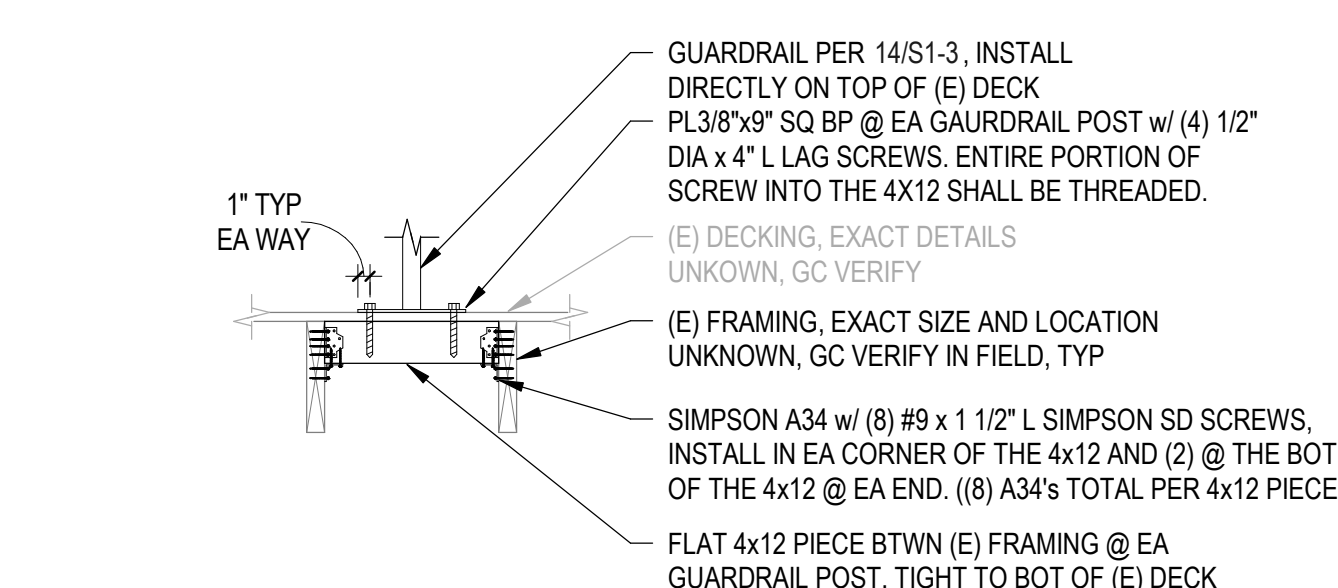
1 COLUMBIA HEIGHTS - PARTIAL FIRST/FOUNDATION PLAN
SCALE: 1/2" = 1'-0"



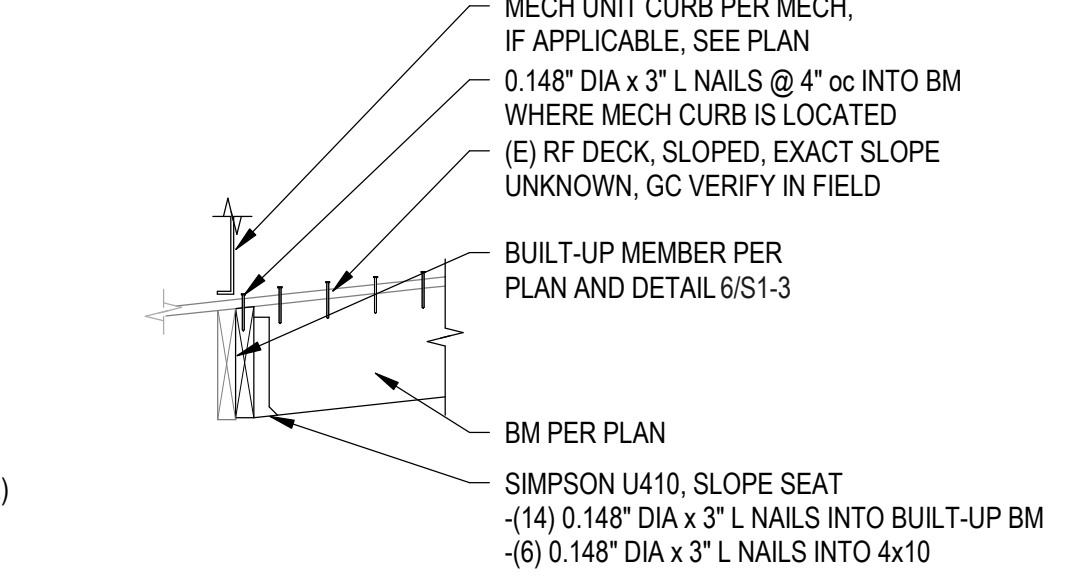
2 COLUMBIA HEIGHTS - PARTIAL ROOF FRAMING PLAN
SCALE: 1/2" = 1'-0"



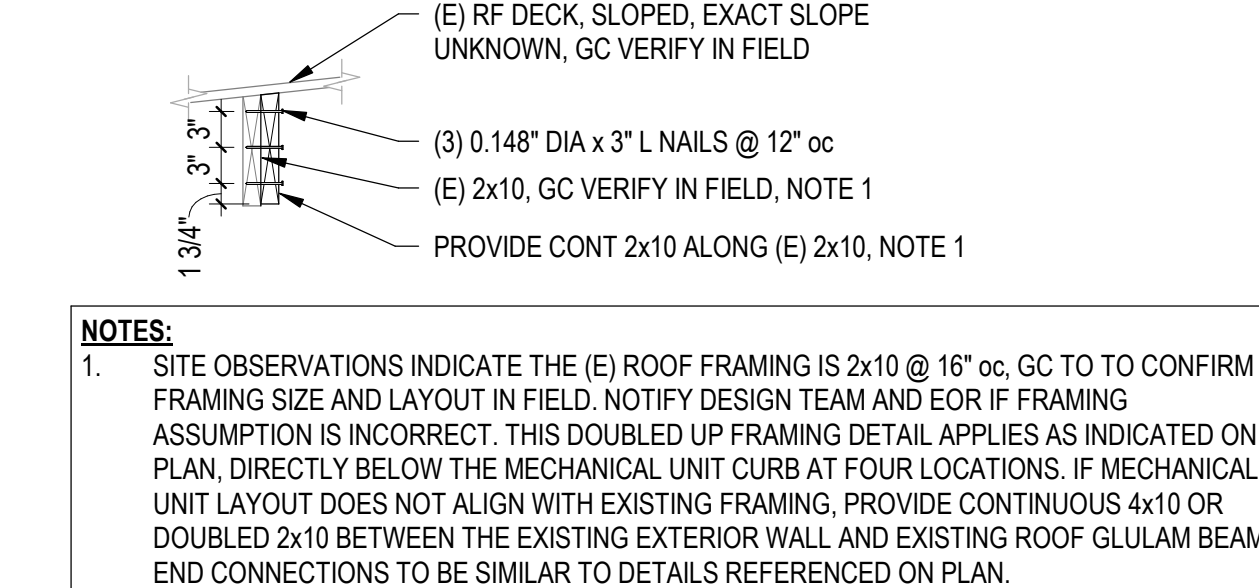
3 COLUMBIA HEIGHTS FRAMING DETAIL
SCALE: 3/4" = 1'-0"



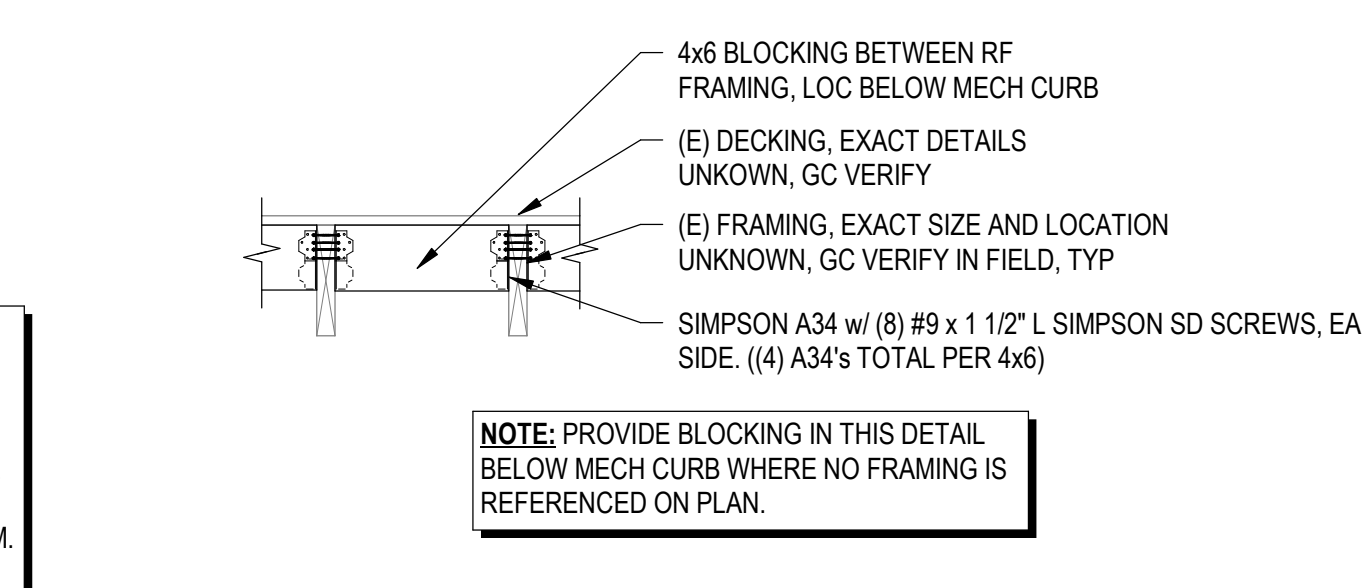
4 COLUMBIA HEIGHTS GUARDRAIL FRAMING DETAIL
SCALE: 3/4" = 1'-0"



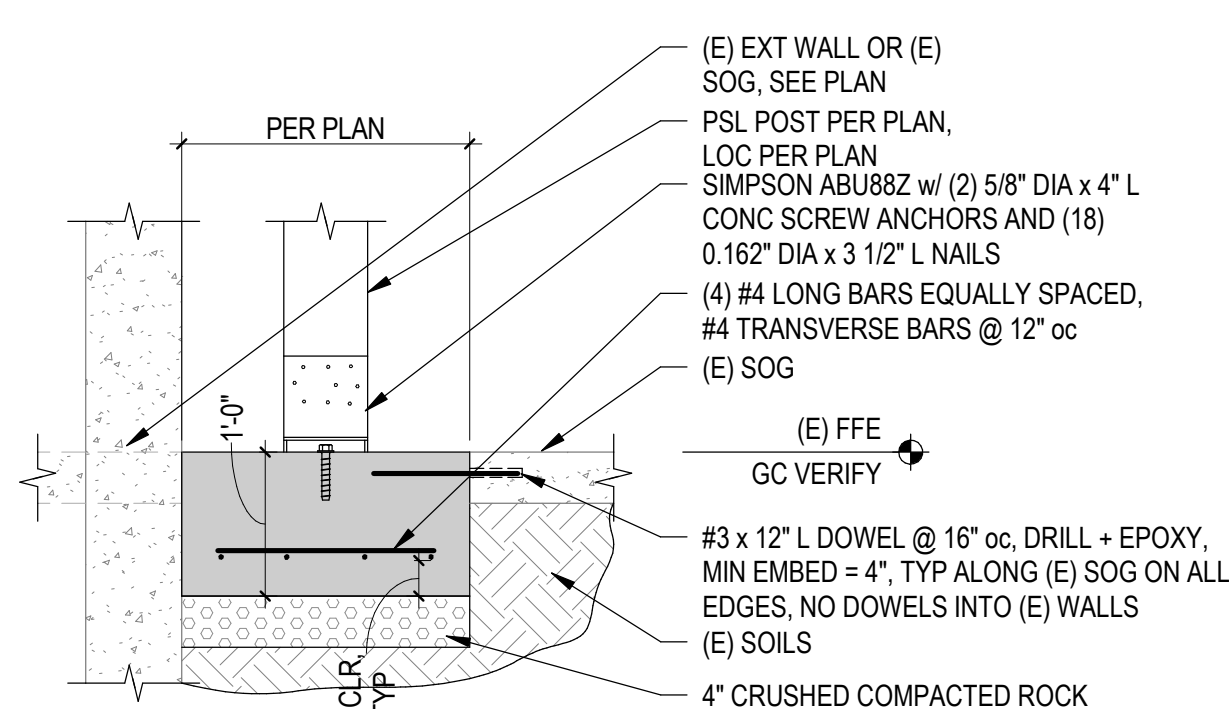
5 COLUMBIA HEIGHTS FRAMING DETAIL
SCALE: 3/4" = 1'-0"



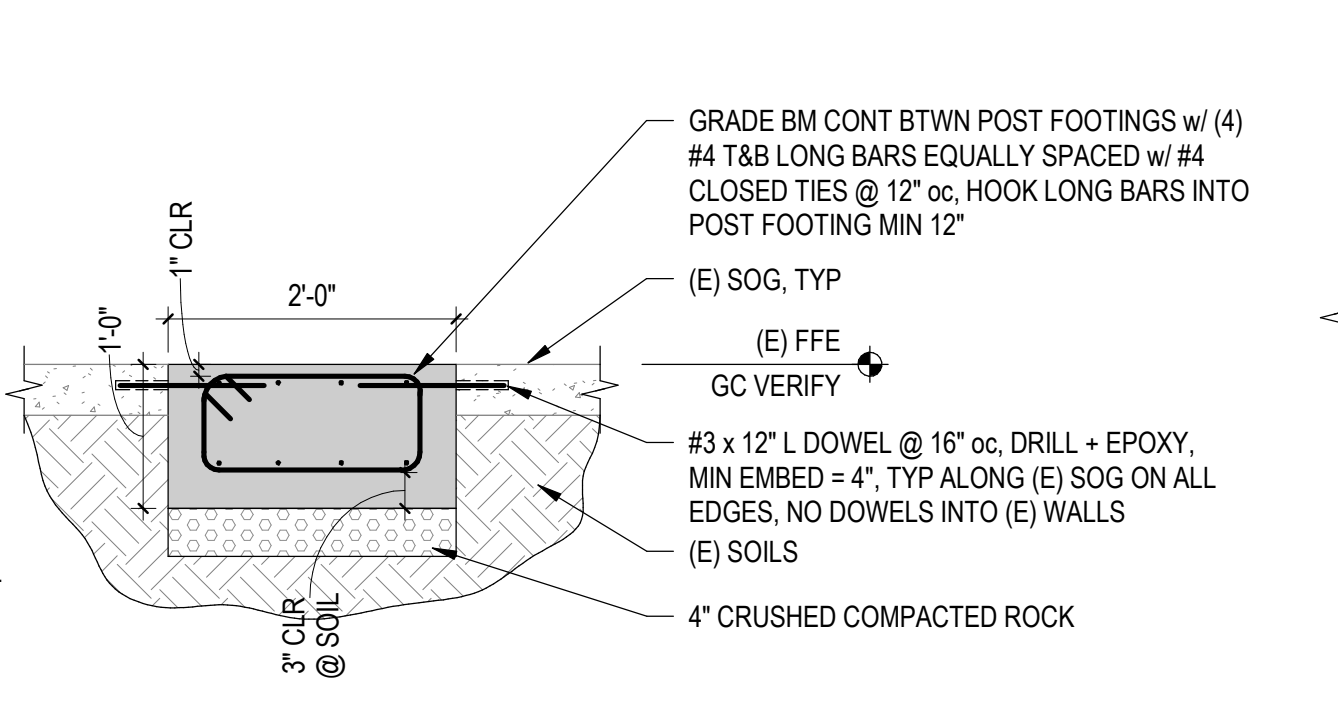
6 COLUMBIA HEIGHTS BUILT-UP BEAM
SCALE: 3/4" = 1'-0"



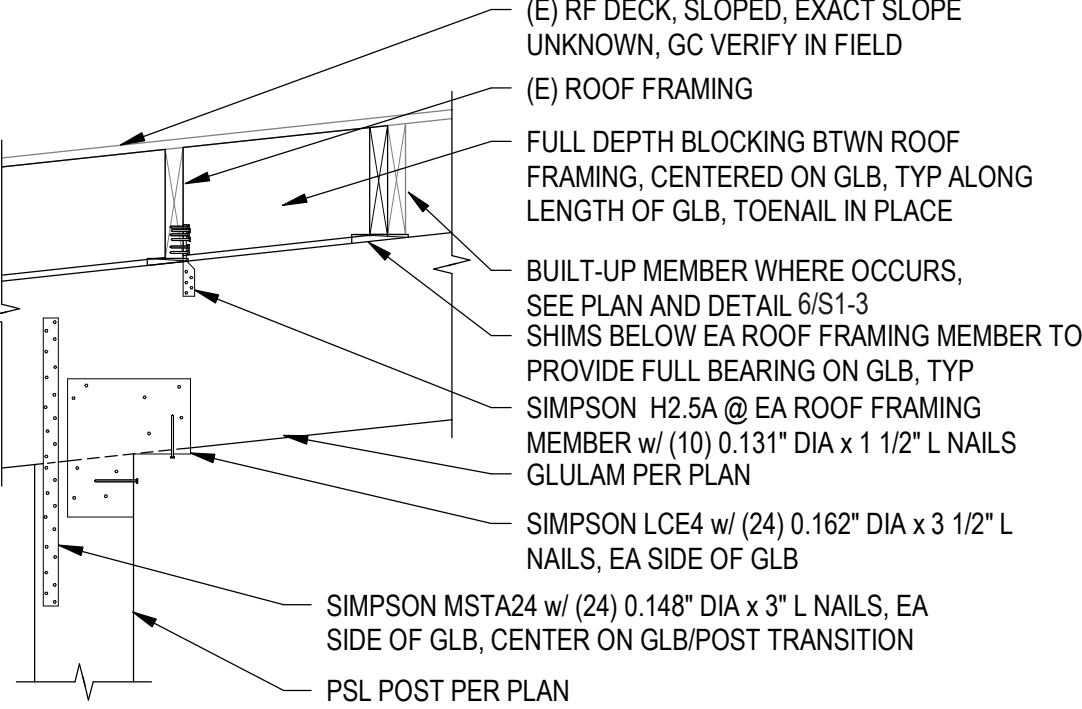
7 COLUMBIA HEIGHTS MECH CURB BLOCKING
SCALE: 3/4" = 1'-0"



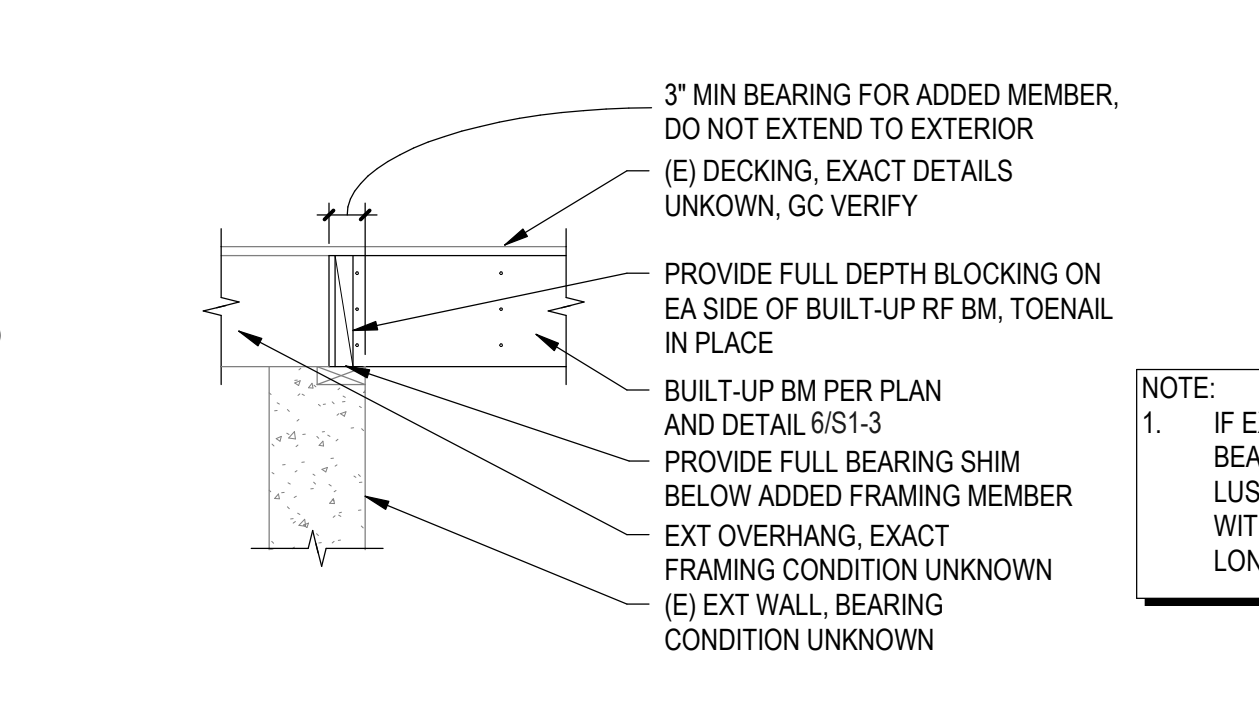
8 COLUMBIA HEIGHTS POST BASE DETAIL
SCALE: 3/4" = 1'-0"



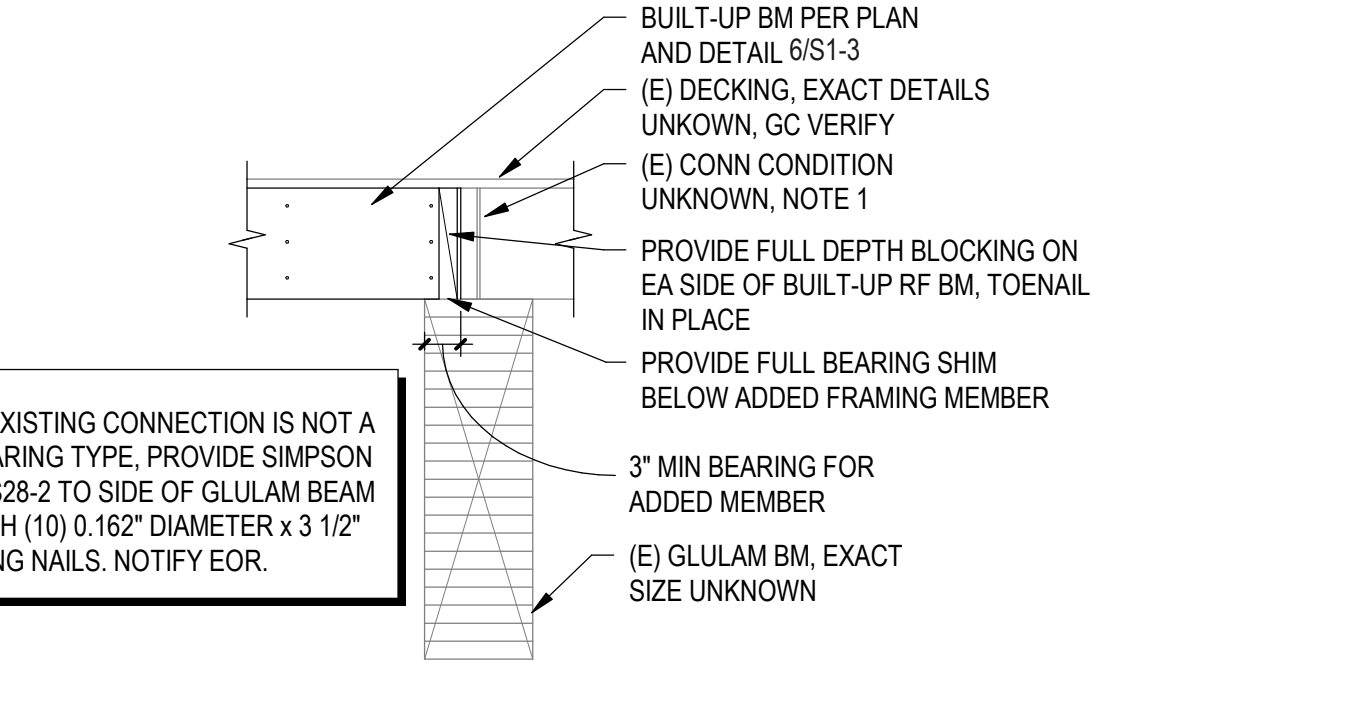
9 COLUMBIA HEIGHTS GRADE BEAM DETAIL
SCALE: 3/4" = 1'-0"



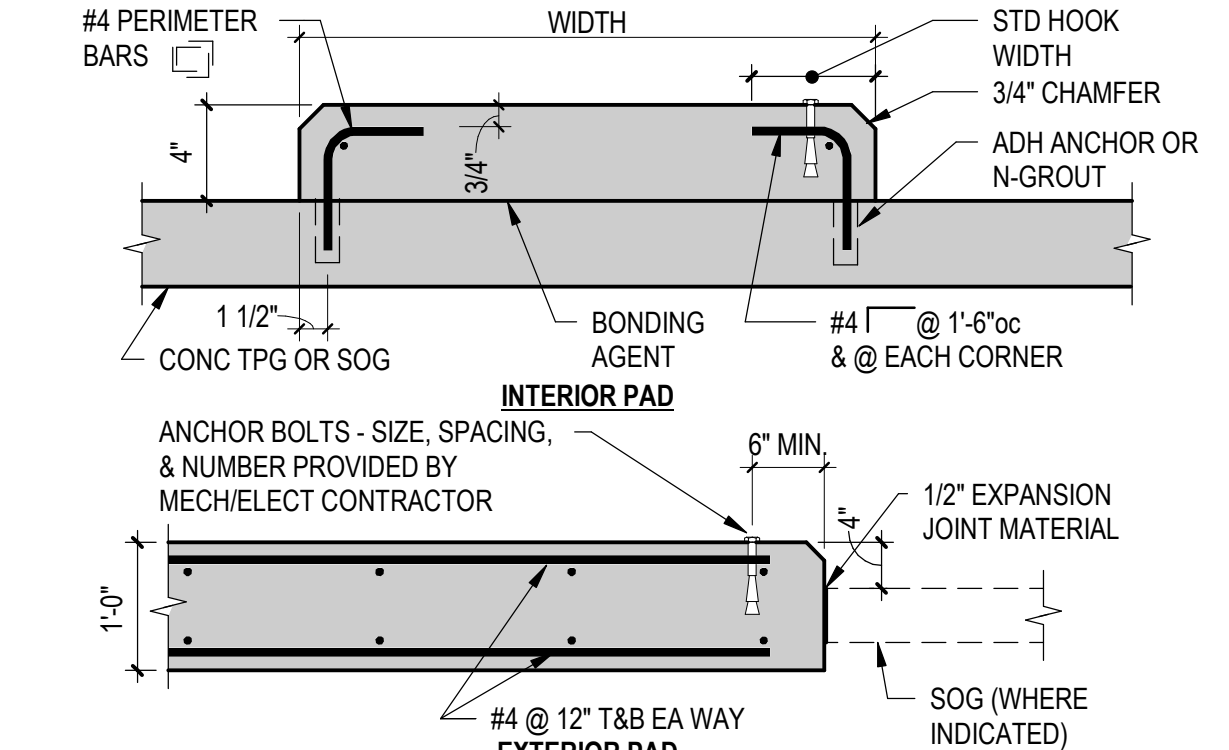
10 COLUMBIA HEIGHTS POST TOP DETAIL
SCALE: 3/4" = 1'-0"



11 COLUMBIA HEIGHTS BUILT-UP BM CONN
SCALE: 3/4" = 1'-0"



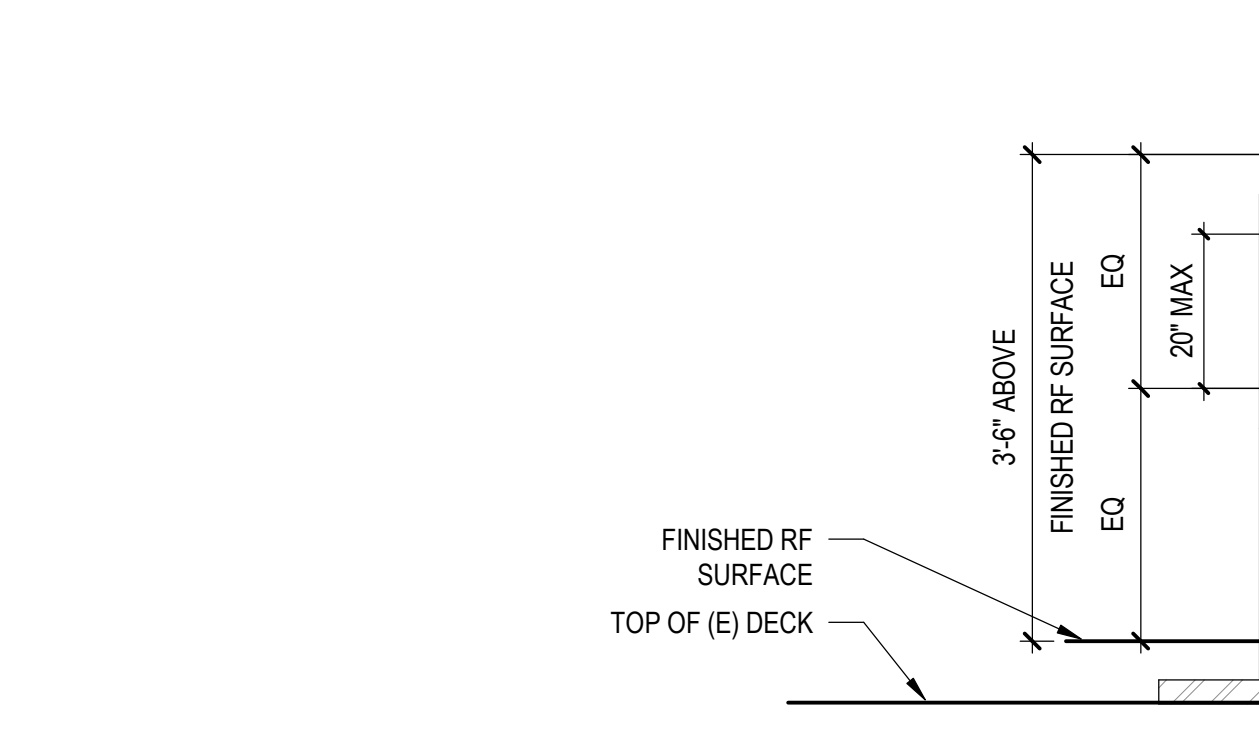
12 COLUMBIA HEIGHTS BUILT-UP BM CONN
SCALE: 3/4" = 1'-0"



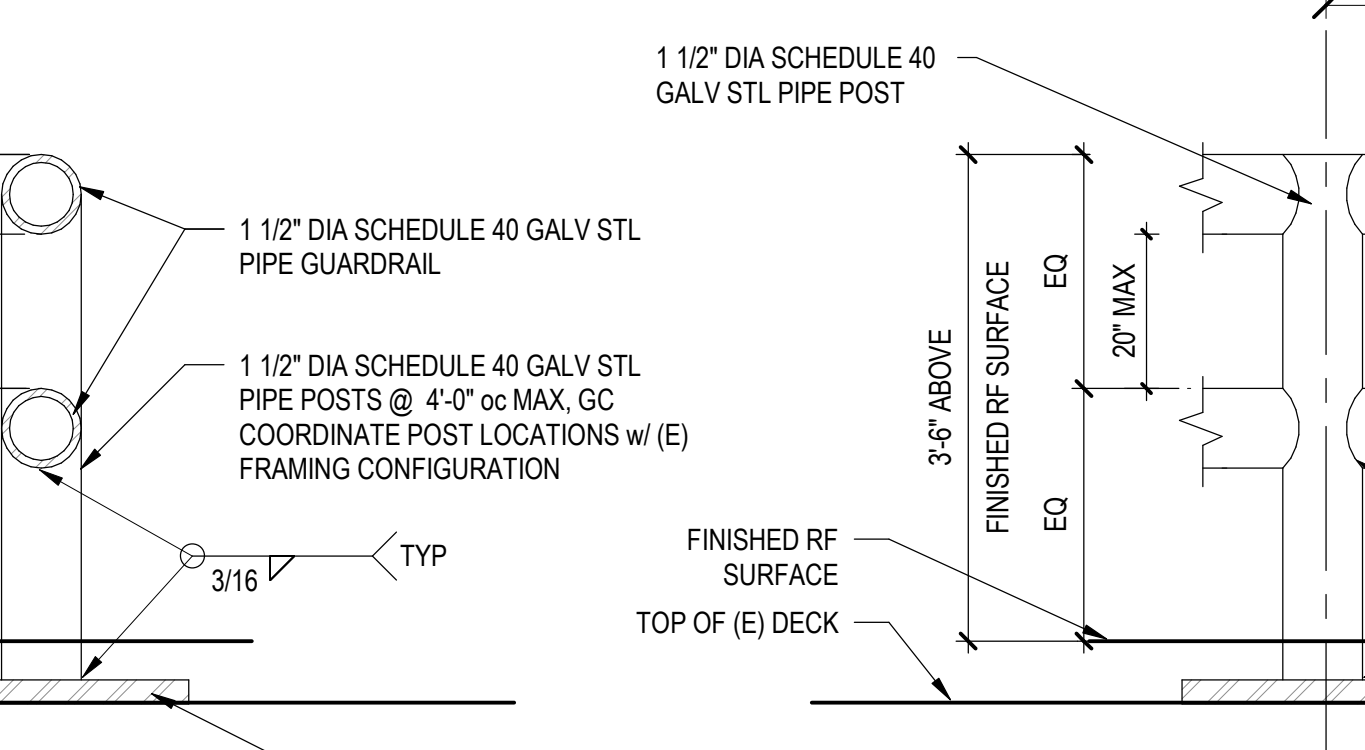
13 CHILLER REPLACEMENT DETAIL
SCALE: 1" = 1'-0"



14 COLUMBIA HEIGHTS GUARDRAIL DETAIL
SCALE: 3" = 1'-0"

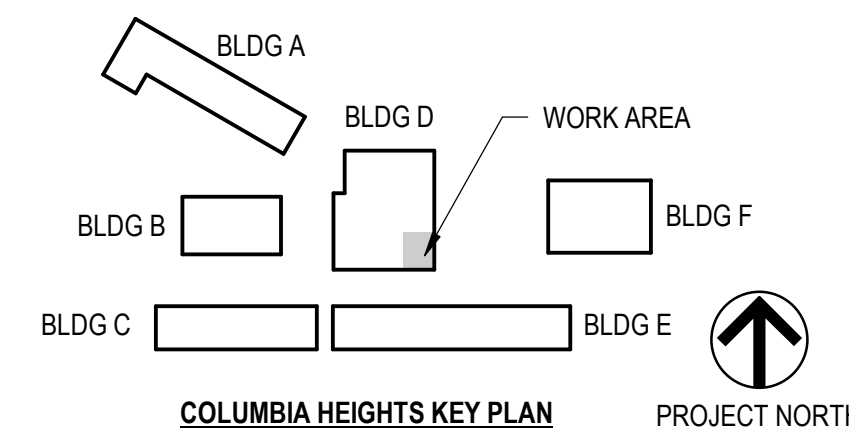


14 COLUMBIA HEIGHTS GUARDRAIL DETAIL
SCALE: 3" = 1'-0"



GUARDRAIL POST CORNER

- 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.
 - 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 REQUIRED CLEARANCES SHOWN ON PLAN. PROVIDE DIMENSIONED LAYOUT TO DESIGN TEAM FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
 - THE SOUTH MECHANICAL UNIT SHALL BE INSTALLED FIRST.
 - SHORE EXISTING FRAMING AS REQUIRED TO ASSEMBLE THE RECONFIGURED ROOF FRAMING.
 - WHERE EXISTING ROOF WOOD SHEATHING AND/OR DECKING IS DAMAGED, REPLACE WITH SHEATHING. SHEATHING THICKNESS TO MATCH EXISTING STRUCTURAL ASSEMBLY THICKNESS.

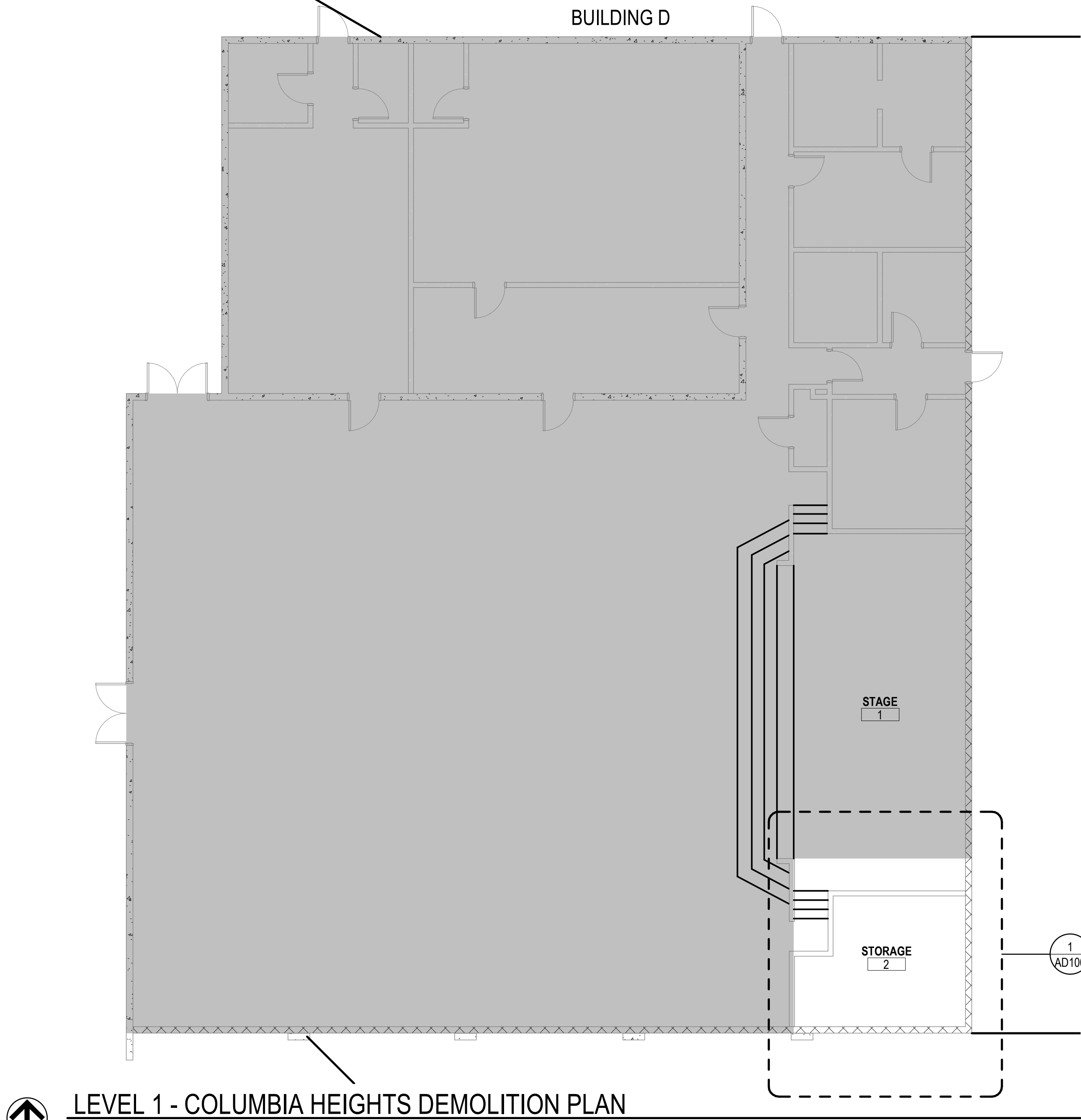


LONGVIEW SCHOOL DISTRICT HVAC CHILLER REPLACEMENTS AND INDOOR AIR QUALITY IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98032

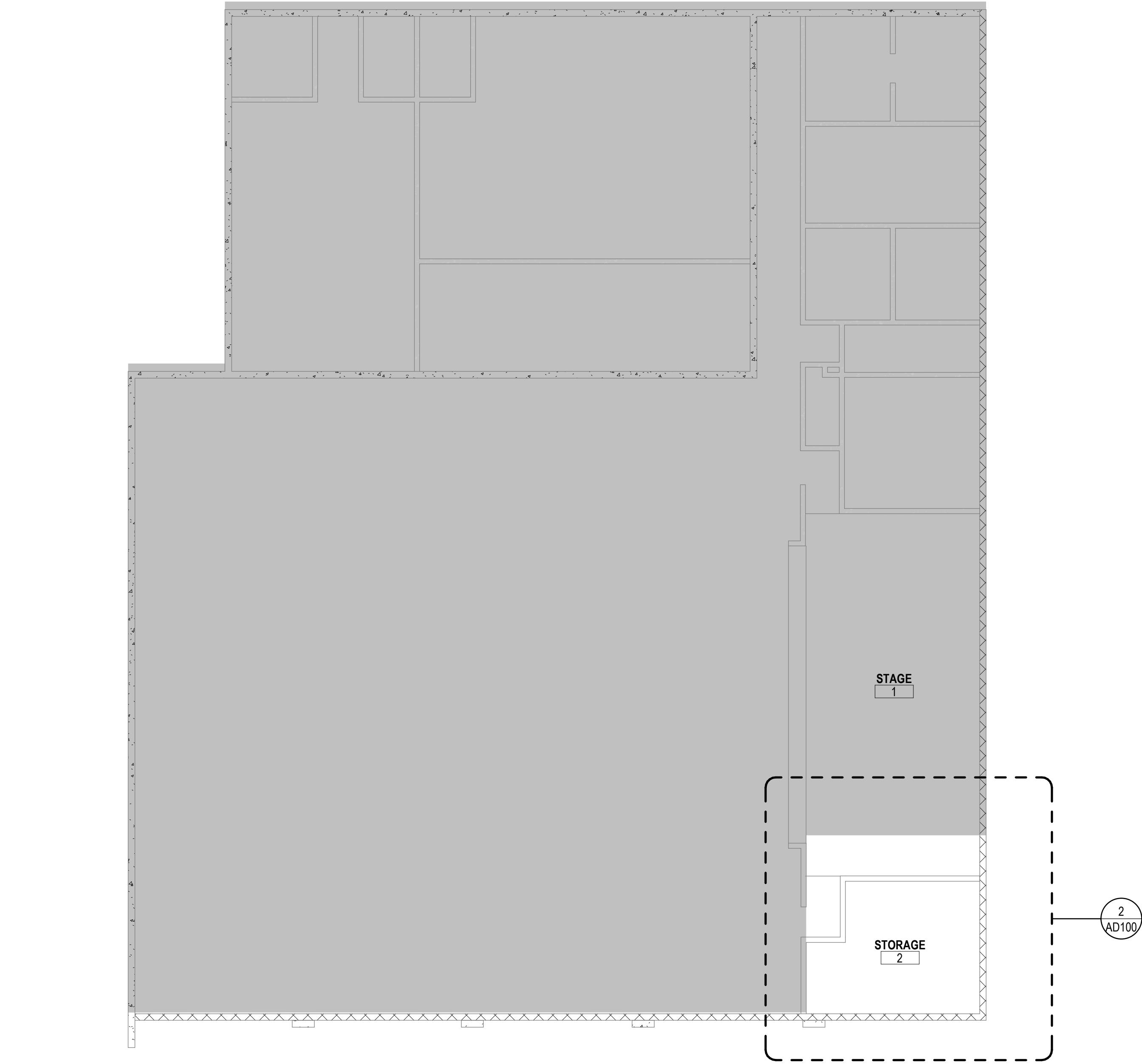
Date:	11/14/22	
Job No.:	22220.00	
Drawn By:	AM	
Checked by:	TD	
Revisions		
#	Date	Description

PLAN VIEWS AND DETAILS

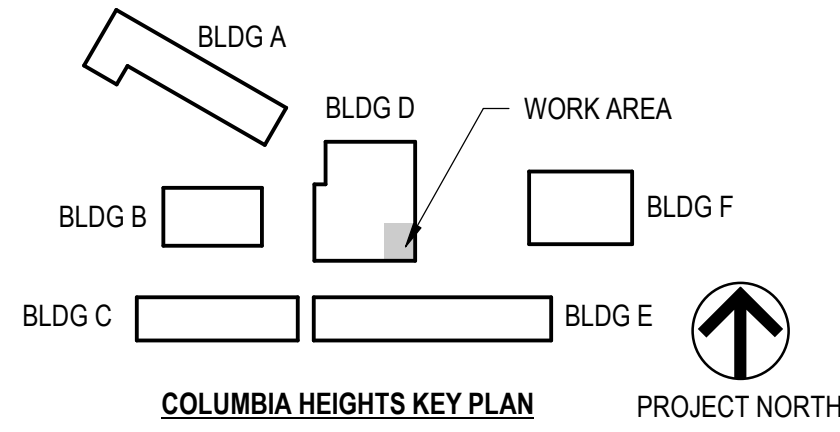
S1-3



LEVEL 1 - COLUMBIA HEIGHTS DEMOLITION PLAN



LEVEL 1 - COLUMBIA HEIGHTS REFLECTED CEILING DEMO PLAN

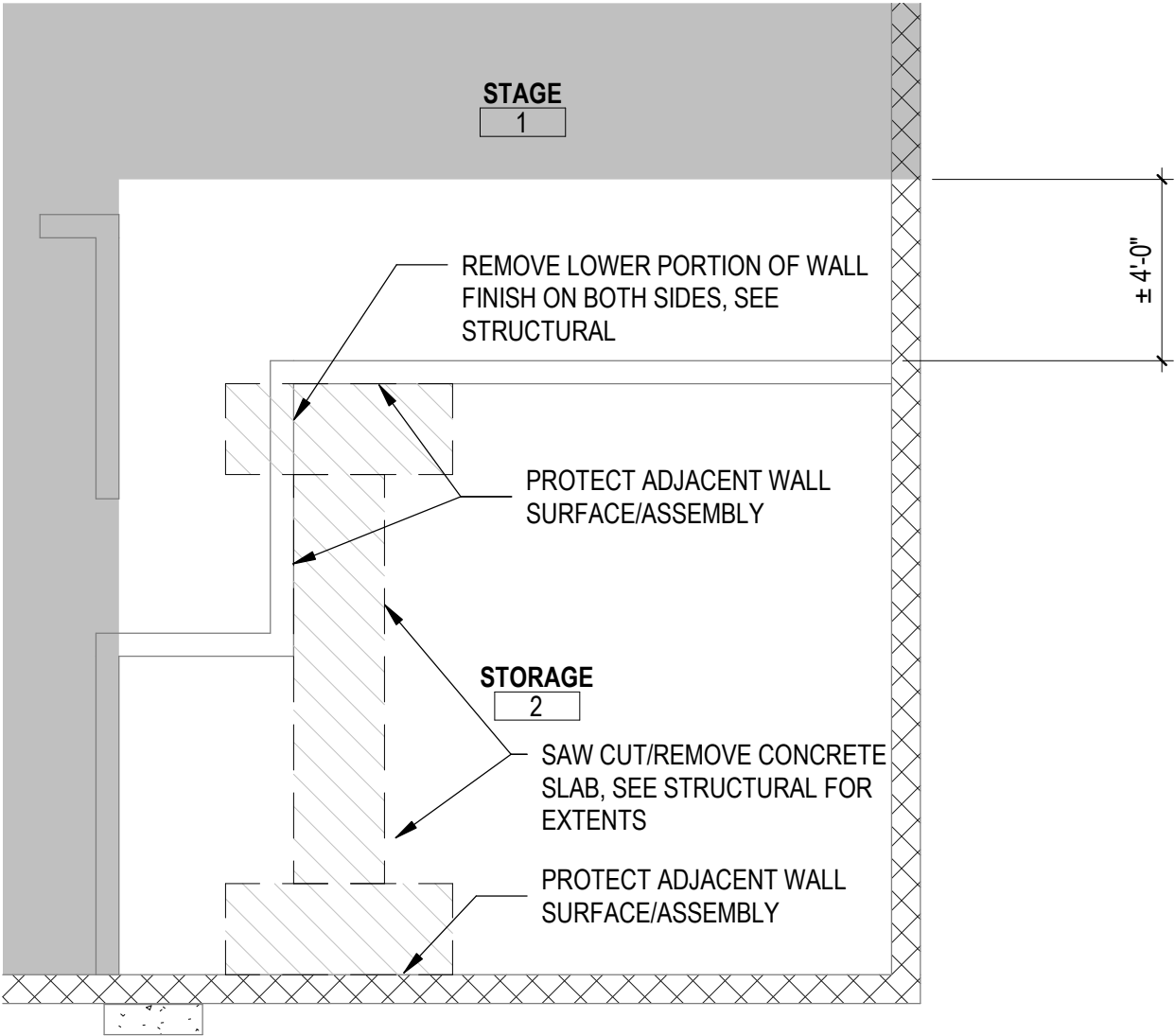


GENERAL DEMOLITION NOTES

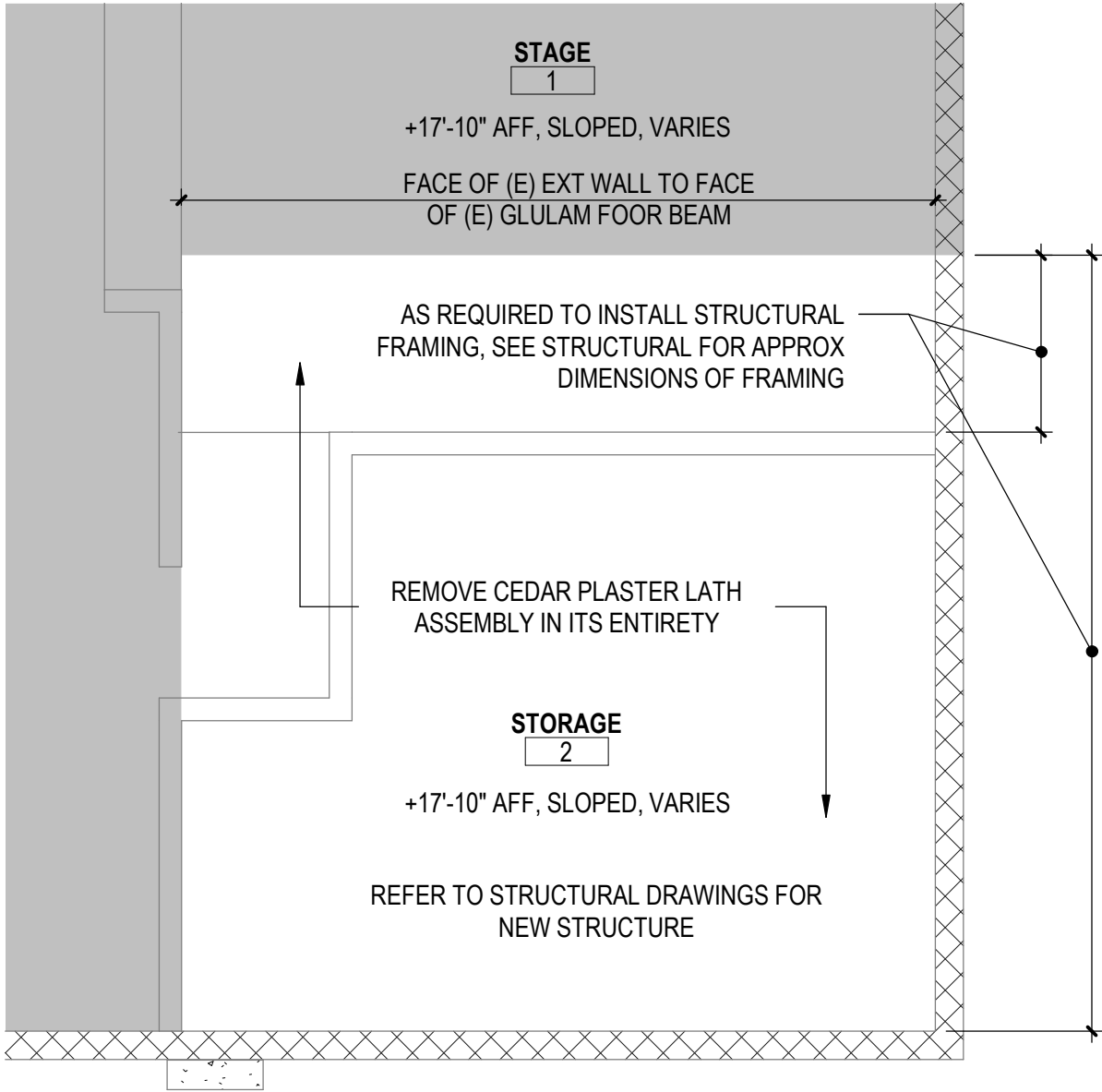
1. DASHED LINES INDICATE EXTENT OF EXISTING ASSEMBLIES TO BE DEMOLISHED.
2. THE DEMOLITION DRAWINGS ARE INTENDED AS A GENERAL GUIDE AS TO THE SCOPE OF DEMOLITION REQUIRED. ADDITIONAL ITEMS THAT ARE NOT SPECIFICALLY IDENTIFIED AND THAT ARE LOGICALLY ASSOCIATED WITH ITEMS CALLED OUT AS BEING REMOVED SHOULD 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.

DEMOLITION LEGEND

- EXISTING ASSEMBLY TO REMAIN.
- ASSEMBLY TO BE DEMOLISHED.
- CONCRETE FLOOR SLAB TO BE REMOVED IN ITS ENTIRETY. SAW CUT EDGES.
- AREA OF WORK TO BE LIMITED OR NONE.



LEVEL 1 - COLUMBIA HEIGHTS ENLARGED DEMO PLAN



LEVEL 1 - COLUMBIA HEIGHTS ENLARGED REFLECTED CEILING DEMO PLAN

LONGVIEW SCHOOL DISTRICT HVAC CHILLER REPLACEMENTS AND INDOOR AIR QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98632

Date: 11/14/22
Job No.: 22220.00
Drawn By: Author
Checked by: Checker

Revisions		
#	Date	Description

COLUMBIA HEIGHTS
DEMOLITION PLAN

AD100

GENERAL ELECTRICAL NOTES
1. SEE ARCHITECTURAL PLANS FOR LOCATION OF FIRE RATED CONSTRUCTION.
2. MINIMUM CONDUIT SIZE FOR HOMERUNS AND FOR CONDUIT INSTALLED BELOW GRADE OUTDOORS SHALL BE 3/4 INCH.
3. LIGHTING, POWER, AND MECHANICAL EQUIPMENT CONDUCTORS SHALL NOT BE COMBINED IN THE SAME RACEWAY UNLESS NOTED OTHERWISE.

REMODEL ELECTRICAL NOTES
1. FIELD VERIFY EXISTING CIRCUITS BEING REPLACED OR MODIFIED, AND SCHEDULED FOR PANELBOARDS BEING REPLACED. USE AVAILABLE SPARE BREAKERS TO RECONNECT EXISTING CIRCUITS NOT SHOWN. REVISE CIRCUIT DIRECTORIES AND NOTE CHANGES ON RECORD DRAWINGS.
2. IT IS ASSUMED THAT EXISTING WIRING ABOVE CEILINGS AND IN CRAWLSPACES ARE NOT SUPPORTED PER CODE. INCLUDE NEW CONDUIT SUPPORTS FOR EXISTING WIRING ACCESSED DURING CONSTRUCTION.
3. EXISTING BRANCH CIRCUIT WIRING MAY INTERFERE WITH NEW HVAC DUCTS AFTER ALLOWANCE FOR OFF-SET. INCLUDE LABOR AND MATERIALS FOR RELOCATING 15 FEET OF CONDUIT, 50 FEET OF CONDUCTORS BASED ON MAXIMUM 3/4" CONDUIT AND #10 THWN CONDUCTORS.
4. CONTRACTOR SHALL DEMO ALL ELECTRICAL DEVICES AND WIRING INDICATED. EXTEND WIRING AS REQUIRED TO RECONNECT ANY DEVICES OR EQUIPMENT NOT INDICATED FOR REMOVAL.
5. EXISTING WIRING INDICATED ON PLANS IS BASED ON RECORD DRAWINGS OR PROBABLE CIRCUIT PATH. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS & LOCATIONS OF ALL ITEMS BEFORE BIDDING & AGAIN BEFORE BEGINNING ANY WORK.

GENERAL 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.
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.
3. CONTRACTOR SHALL VERIFY THE LOCATIONS & CONNECTIONS OF ALL ITEMS NOTED TO BE REMOVED.
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.
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.
6. PATCH ALL WALL/FLOOR/CEILING OPENINGS LEFT BY REMOVAL OF EXIST. ITEMS. PATCH SO AS TO MATCH FINISH OF ADJACENT UNDISTURBED AREA.
7. 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.
8. SEE MECHANICAL FLOOR PLANS FOR HVAC DUCTS THAT ARE BEING REUSED.
9. 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.

GENERAL MECHANICAL NOTES
1. ALL WORK IS BASE BID UNLESS SPECIFICALLY NOTED AS ALTERNATE BID WORK.
2. MECHANICAL WORK IS NOT LIMITED TO MECHANICAL DRAWINGS AND DIVISION 22, 23, AND 25 SPECIFICATIONS. THERE IS ADDITIONAL MECHANICAL WORK TO BE INCLUDED IN THE BID INDICATED ON OTHER DRAWINGS AND IN OTHER SPECIFICATION DIVISIONS. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL MECHANICAL WORK.
3. ALL ITEMS ARE NEW UNLESS SPECIFICALLY NOTED AS EXISTING.
4. DRAWINGS SCALES APPLY TO FULL SIZE SHEET ONLY; FULL SIZE SHEETS ARE 42"x30". USE CAUTION IN OBTAINING DIMENSIONS AND QUANTITIES FROM DRAWINGS THAT ARE NOT THIS FULL SIZE; USE DIMENSIONS CALCULATED FROM DIMENSIONS ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS OVER OTHER METHODS OF OBTAINING DIMENSIONS.
5. SEISMICALLY ANCHOR ALL UNITS & EQUIPMENT TO BUILDING. (UNO). CONTRACTOR IS RESPONSIBLE TO SELECT AND PROVIDE ALL SEISMIC ANCHORING DEVICES FOR ALL MECHANICAL EQUIPMENT, ALL PIPING AND ALL DUCTWORK. CONTRACTOR SHALL SUBMIT DETAILS AND PLANS TO BUILDING INSPECTOR FOR REVIEW AND COMMENT PRIOR TO INSTALLATION.
6. UNSIZED PLUMBING PIPING SHALL MATCH THE SIZE OF THE LARGEST ADJACENT CONNECTING PIPE SIZE SHOWN, WHERE THE ADJACENT PIPE IS NOT SHOWN (OR NOT CLEAR), THE PIPE SIZE SHALL BE BASED ON THE GPM FLOWING IN THE PIPE (USE FIXTURE UNITS AND CORRESPONDING GPM PER THE UPC FOR DOMESTIC WATER SYSTEMS; USE WASTE FIXTURE UNITS & UPC TABLES FOR WASTE/VENT SYSTEM), AND A VELOCITY NO GREATER THAN 4 FEET PER SECOND. USE UPC CURVES FOR GPM/VELOCITY FOR APPROPRIATE PIPING MATERIAL INVOLVED.
7. ALL DUCT PENETRATIONS THRU WALLS AND FLOORS SHALL BE PROVIDED WITH CLOSURE COLLARS (BOTH SIDES OF PENETRATION) AND BE TIGHTLY SEALED TO PREVENT THE TRANSMISSION OF NOISE.
8. ALL DUCTWORK SHOWN IS SCHEMATIC. CONTRACTOR SHALL PROVIDE ALL OFFSETS/ELBOWS AS REED TO ALLOW ROUTING AROUND STRUCTURE, ELECTRICAL, & OTHER INTERFERENCES.
9. HVAC DUCT FITTINGS/CONNECTIONS OF ELBOWS/TRANSITIONS SHALL COMPLY WITH SMACNA STANDARDS.
10. PROVIDE AIR BALANCING OF HVAC SYSTEMS, HYDRONIC SYSTEM. SEE SECTION 23 05 93 AND VENTILATION CALCULATION SHEETS FOR COMPLETE REQUIREMENTS.
11. PROVIDE FLEX CONNECTORS IN DUCT CONNECTIONS TO ALL EQUIPMENT.
12. 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.
13. ALL DUCTWORK SHALL BE CONSTRUCTED TO 1" PRESSURE CLASS, AND SEAL CLASS C.
14. FIELD VERIFY SIZE OF ALL EXISTING DUCTS SHOWN BEING CONNECTED TO PRIOR TO FABRICATION OF CONNECTING DUCTWORK. PROVIDE TRANSITIONS AS NECESSARY TO MAKE CONNECTIONS.
15. BUILDING FEATURES AND PIPING AND DUCT LOCATIONS & SIZES SHOWN ON PLANS ARE APPROXIMATE & ARE BASED ON AS-BUILT DATA PROVIDED BY THE OWNER. A COMPLETE REVIEW IS REQUIRED TO BE MADE BY THE CONTRACTOR. VERIFY SIZES PRIOR TO BIDDING AND BEGINNING WORK.
16. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING EQUIPMENT, PIPING, WALLS, SUPPORTS, DUCTWORK, ELECTRICAL AND RELATED BUILDING FEATURES AND RELOCATE/REVISE SUCH EXISTING ITEMS AS NECESSARY TO ALLOW FOR THE WORK INDICATED.
17. CONTRACTOR SHALL FIELD VERIFY THE SIZES AND LOCATIONS OF ALL EXISTING ITEMS SHOWN BEING CONNECTED TO. VERIFICATION SHALL OCCUR PRIOR TO MATERIALS BEING ORDERED OR FABRICATED.
18. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO REVIEW AND VERIFY EXISTING CONDITIONS AND CONSTRUCTION MATERIALS, INCLUDING, BUT NOT LIMITED TO, ALL WALLS, FLOORS, CEILINGS, AND OTHER AREAS THAT MAY BE DISTURBED DURING CONSTRUCTION IN ORDER TO ACCOMPLISH THE WORK IN THESE DOCUMENTS. THE CONTRACTOR SHALL ALSO VISIT THE SITE AGAIN PRIOR TO BEGINNING ANY WORK.
19. PROVIDE DUCT TRANSITIONS AS NECESSARY TO CONNECT TO EXISTING SYSTEMS. SUCH SYSTEMS SHALL BE FIELD REVIEWED FOR SIZE, DIRECTION OF FLOW, LOCATION AND TYPE PRIOR TO ORDERING/FABRICATING TRANSITIONS. OWNER PROVIDED AS-BUILT DRAWINGS THAT SHOW SUCH INFORMATION ARE CONSIDERED APPROXIMATE. CONTRACTOR SHALL ASSUME IN HIS BID ONE TRANSITION FOR EACH CONNECTION TO EXISTING SYSTEMS. PIPING CONNECTIONS ON EXISTING ITEMS MAY BE ONE PIPE SIZE SMALLER OR LARGER THAN SHOWN, AND DUCT CONNECTIONS ON EXISTING ITEMS MAY BE UP TO 6 INCHES WIDER OR SMALLER THAN SHOWN.
20. PROVIDE PIPING TRANSITIONS AS NECESSARY TO CONNECT TO EXISTING SYSTEMS. SUCH SYSTEMS SHALL BE FIELD REVIEWED FOR SIZE, DIRECTION OF FLOW, LOCATION AND TYPE PRIOR TO ORDERING/FABRICATING TRANSITIONS. OWNER PROVIDED AS-BUILT DRAWINGS THAT SHOW SUCH INFORMATION ARE CONSIDERED APPROXIMATE. CONTRACTOR SHALL ASSUME IN HIS BID ONE TRANSITION FOR EACH CONNECTION TO EXISTING SYSTEMS. PIPING CONNECTIONS ON EXISTING ITEMS MAY BE MULTIPLE PIPE SIZES SMALLER OR LARGER THAN SHOWN.
21. WHERE ITEMS ARE DISCONNECTED FROM EXISTING DUCTWORK, COVER EXPOSED DUCTWORK OPENINGS UNTIL THEY ARE RE-CONNECTED (OR PERMANENTLY CAPPED).
22. LIMITED AS-BUILT DRAWINGS ARE AVAILABLE FOR REVIEW AT HULTZ/BHU ENGINEERS INC. OFFICE, 1111 FAWCETT AVENUE, SUITE 100 TACOMA, WA 98402

ENERGY CODE NOTES

EQUIPMENT SIZING, PERFORMANCE, AND TYPE

1. EQUIPMENT AND SYSTEM SIZING, C403.2.2: EQUIPMENT HAS BEEN SELECTED TO MATCH EXISTING EQUIPMENT SIZES.

2. HVAC EQUIPMENT PERFORMANCE, C403.2.3/C403.2.13.1: EQUIPMENT SCHEDULES ARE INCLUDED WITH THESE PLANS.

PIPING SYSTEMS

3. PIPING INSULATION, C403.2.9: MINIMUM PIPE INSULATION PER WSEC IS AS FOLLOWS:

INSULATION THICKNESS
(NOMINAL PIPE SIZE)

FLUID OPERATING TEMPERATURE	<1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	OVER 8
>350	4.5	5.0	5.0	5.0	5.0
251-350	3.0	4.0	4.5	4.5	4.5
201-250	2.5	2.5	2.5	3.0	3.0
141-200	1.5	1.5	2.0	2.0	2.0
105-140	1.0	1.0	1.5	1.5	1.5
40-60	0.5	0.5	1.0	1.0	1.0
<40	0.5	1.0	1.0	1.0	1.5

4. PIPE INSULATION EXPOSED TO WEATHER, C403.2.9.1: PROVIDE METAL JACKETING ON ALL PIPE INSULATION EXPOSED TO WEATHER AND SEAL ALL SEAMS WATER TIGHT.

COMMISSIONING


















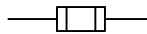








5. SCOPE OF MECHANICAL SYSTEMS COMMISSIONING, C408.2: FLUID COOLERS AND CONTROLS ARE REQUIRED TO BE COMMISSIONED.

PROJECT CLOSE OUT DOCUMENTATION

6. DOCUMENTATION SUBMITTAL REQUIREMENTS, C103.6: SUBMIT ALL CLOSEOUT DOCUMENTATION INCLUDING AS-BUILTS AND O&M'S TO OWNER WITHIN 180 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.

7. THESE "ENERGY CODE NOTES" ARE LISTED TO SATISFY THE BUILDING DEPARTMENT'S REQUIREMENT THAT CERTAIN INFORMATION BE PLACED ON THE PLANS, BUT DO NOT DIMINISH THE FULL PROJECT REQUIREMENTS. PROVIDE ITEMS IN EXCESS OF CODE WHERE NOTED ON DRAWINGS AND IN SPECIFICATIONS. FOR OTHER ADDED REQUIREMENTS, SEE SPECIFICATIONS.

DRAWING INDEX
ME0.1 LEGEND & NOTES
ME0.2 SCHEDULES
ME1.1 DEMO PLAN - NORTHLAKE ES
ME1.2 DEMO PLAN - CASCADE MS
ME1.3 DEMO PLAN - COLUMBIA HEIGHTS ES
ME2.1 MECH/ELEC PLAN - NORTHLAKE ES
ME2.2 MECH/ELEC PLAN - CASCADE MS
ME2.3 MECH/ELEC PLAN - COLUMBIA HEIGHTS ES
ME3.1 SCHEMATICS & DETAILS
ME4.1 VENTILATION CALCULATIONS - NORTHLAKE ES
ME4.2 VENTILATION CALCULATIONS - CASCADE MS
ME4.3 VENTILATION CALCULATIONS - COLUMBIA HEIGHTS ES

ELECTRICAL LEGEND	
(SOME SYMBOLS MAY NOT BE USED ON DRAWINGS)	
SYMBOL	DESCRIPTION
	BUBBLE NOTE TAG SYMBOL: # - IDENTIFYING NUMBER
	DETAIL SYMBOL: (AS INDICATED ON DRAWINGS) # - IDENTIFYING NUMBER B - SHEET WHERE DETAIL SHOWN
	DUPLEX RECEPTACLE (NEMA 5-20R)
	GFCI DUPLEX RECEPTACLE (NEMA 5-20R) SUBSCRIPT: WP WEATHERPROOF
	EQUIPMENT CONNECTION
	DRYER RECEPTACLE (NEMA 14-30R)
	TAMPER RESISTANT DUPLEX RECEPTACLE (NEMA 5-15R)
	TAMER PROOF RECEPTACLE WITH BLANK FACE GFCI IN DOUBLE GANG OUTLET
	FOURPLEX RECEPTACLE (NEMA 5-20R)
	SPLIT WIRED RECEPTACLE, 1/2 OF RECEPTACLE IS CONTROLLED BY OCCUPANCY SENSOR OR TIME SWITCH
	SINGLE POLE TOGGLE SWITCH
	DIGITAL SWITCH STATION
	THREE-WAY TOGGLE
	PANELBOARD
	DRY TYPE TRANSFORMER
	CIRCUIT BREAKER
	DISCONNECT SWITCH
	FUSE
	TRANSFORMER
	GROUNDING WYE CONNECTION
	CURRENT TRANSFORMER (CT)
200/150-3P	DEVICE SIZE / FUSE OR TRIP RATING - No. OF POLES
	HEAVY LINE WEIGHT = NEW WORK (RECEPTACLE SHOWN)
	STANDARD LINE WEIGHT = EXISTING TO REMAIN (RECEPTACLE SHOWN)
	BROKEN LINE WORK = ELECTRICAL DEMOLITION (RECEPTACLE SHOWN)
	WIRING CONCEALED UNDERGROUND OR BELOW FLOOR
	WIRING HOMERUN

MECHANICAL LEGEND			
SYMBOL	DESCRIPTION	ABBREV.	DESCRIPTION
WASTE OR SOIL (W)		AFF	ABOVE FINISHED FLOOR
VENT (V)		AHU	AUTHORITY HAVING JURISDICTION
		ARCH	AIR HANDLING UNIT
COLD WATER (CW)		APPROX	APPROXIMATELY
HOT WATER (HW)		ARCH	ARCHITECTURAL
HOT WATER CIRCULATING (HWC)		ASSY	ASSEMBLY
		AAV	AUTOMATIC AIR VENT
		B.O.D.	BOTTOM OF DUCT
		BTU	BRITISH THERMAL UNIT
HWS	HEATING WATER SUPPLY (HWS)	BTUH	BRITISH THERMAL UNIT/HOUR
HWR	HEATING WATER RETURN (HWR)	BLDG	BUILDING
CHS	COOLING WATER SUPPLY (CHS)	CAP	CAPACITY
CHR	COOLING WATER RETURN (CHR)	CLG	CEILING
C	CONDENSATE (C)	CO	CLEAROUT
G	NATURAL GAS (G)	COP	COEFFICIENT OF PERFORMANCE
		COMP	COMPRESSOR
		CONN	CONNECTION
		CONT	CONTINUE, CONTINUATION
		CFH	CUBIC FEET PER HOUR
		CFM	CUBIC FEET PER MINUTE
		CW	COLD WATER
		DEG F, °F	DEGREE FAHRENHEIT
	ISOLATION VALVE - SEE SPECIFICATIONS FOR TYPE	DIA, Ø	DIAMETER
	BALANCING VALVE	DN	DOWN
	TWO-WAY CONTROL VALVE	DWG	DRAWING
	THREE-WAY CONTROL VALVE	DB	DRY BULB
	CHECK VALVE	(E)	EXISTING
	DRAIN VALVE WITH HOSE CONNECTION	EA	EACH
	PIPE UP	ECM	ELECTRONIC COMMUTATED MOTOR
	PIPE DOWN	EFF	EFFICIENCY
	PIPE TEE IN LINE, BRANCH PIPE DOWN	ELEC	ELECTRICAL, ELECTRIC
	UNION	EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
	RELIEF VALVE OR SAFETY VALVE	EER	ENERGY EFFICIENCY RATIO
	STRAINER WITH BLOW-OFF VALVE	EAT	ENTERING AIR TEMPERATURE
	CONCENTRIC REDUCER	EWB	ENTERING WET BULB
	HOSE BIBB	EDB	ENTERING DRY BULB
AAV	AUTOMATIC AIR VENT	EOL	END OF LINING
	MANUAL AIR VENT	EXH	EXHAUST
	PRESSURE GAUGE	EXIST	EXISTING
	PRESSURE REDUCING VALVE	ESP	EXTERNAL STATIC PRESSURE
	THERMOWELL	ETR	EXISTING TO REMAIN
	THERMOMETER	FV	FACE VELOCITY
M	METER	FPM	FEET PER MINUTE
20"12"	DUCT (FIRST FIGURE, SIDE SHOWN)	FLEX	FLEXIBLE
20"12L 20"12L"	LINED DUCT (DIM. FOR NET FREE AREA)	FL	FULL LOAD AMPS
R(D)	RISE (R) OR DROP (D)	GAL	GALLON
	ARROW IN DIRECTION OF FLOW	G	GAS
	DUCT SECTION (SUPPLY)	HP	HORSE POWER
	DUCT SECTION (EXHAUST OR RETURN)	HW	HOT WATER
	ROUND DUCT OR FLAT OVAL	HWC	HOT WATER CIRCULATION
	VOLUME DAMPER (MANUAL)	INTEGR	INTEGRAL
	MOTORIZED DAMPER	INCH	INCH
	FLEXIBLE CONNECTION	KW	KILOWATT
	FLEXIBLE DUCT	L	LINING
	ELBOW WITH TURNING VANES	LAT	LEAVING AIR TEMPERATURE
	DUCT UP (RECTANGULAR)	LDB	LEAVING DRY BULB
	DUCT UP (RECTANGULAR)	LWT	LEAVING WATER TEMPERATURE
	DUCT DOWN (RECTANGULAR)	LWB	LEAVING WET BULB
	DUCT DOWN (RECTANGULAR)	MAV	MANUAL AIR VENT
	DUCT UP (ROUND)	MAX	MAXIMUM
	DUCT DOWN (ROUND)	MFR	MANUFACTURER
T T T	THERMOSTAT G= WITH GUARD A= AVERAGED WITH OTHER	MBH	THOUSAND BTUH
C	C02 SENSOR G= WITH GUARD	MID	MIDDLE
		MCA	MINIMUM CIRCUIT AMPACITY
		MECH	MECHANICAL
		MIN	MINIMUM
		MSB	MAIN SWITCHBOARD
		NO	NORMALLY OPEN
		NC	NORMALLY CLOSED
		NO	NUMBER
		NTS	NOT TO SCALE
		OA	OUTSIDE AIR
		OAI	OUTSIDE AIR INTAKE
		PH	PHASE
		PD	PRESSURE DROP
		R	RETURN
		RLA	RATED LOAD AMPS
		REF	REFERENCE
		REQ'D	REQUIRED
		RA	RETURN AIR
		RPM	REVOLUTIONS PER MINUTE
		RM	ROOM
		S	SUPPLY
		SA	SUPPLY AIR
		S.O.	SCREENED OPENING
		SS	STAINLESS STEEL
		TEMP	TEMPERATURE
		TYP	TYPICAL
		UNO	UNLESS NOTED OTHERWISE
		VFD	VARIABLE FREQUENCY DRIVE
		V	VOLTS, VOLTAGE, VENT
		WC	WATER COLUMN
		WCO	WALL CLEAN OUT
		WL	WALL LOUVER
		W	WASTE
		WA	WATT
		WB	WET BULB
		W	WITH
2	DETAIL/SECTION IDENTIFICATION NUMBER		
M3.1	SHEET ON WHICH DETAIL IS SHOWN		
NOTE: FOR DESCRIPTION OF OTHER ABBREVIATIONS SEE SYMBOL LISTING TO THE LEFT, EQUIPMENT/ITEMS SCHEDULES, AND ABBREVIATIONS LISTED IN SPECIFICATIONS			

integrusARCHITECTURE

117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA 98104
TELEPHONE: (206) 467-9173 FAX: (206) 467-9178

SEATTLE
TACOMA
PORTLAND
BELLINGHAM
EVERETT
SPokane

SIGNED
1/15/2022

HULTZBHUengineers, inc.

1111 Fawcett Ave Suite 100 Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-187

LONGVIEW SCHOOL DISTRICT

HVAC CHILLER REPLACEMENT AND INDOOR AIR

QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98032

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW
Revisions	
#	Date Description

LEGEND & NOTES

ME0.1

PACKAGE GAS HEATING / ELECTRIC COOLING UNIT SCHEDULE																								
SCHOOL	SYMBOL	SPECIFIED MANUFACTURER AND SERIES NUMBER ****	AREA SERVED	COOLING CAPACITY *			HEATING CAPACITY **			SUPPLY FAN			COMPRESSOR		CONDENSER FAN		FILTER		MAX WEIGHT (LBS)	MIN OUTDOOR AIR ***	UNIT ELECTRICAL			REMARKS
				TOTAL MBH	SENSIBLE MBH	EFF.	INPUT MBH	OUTPUT MBH	AFUE	CFM	ESP	MOTOR HP	QTY	RLA (EA)	QTY	FLA (EA)	TYPE	MIN SF			MCA	MOCP	VOLTS/ PH	
COLUMBIA HEIGHTS	F-4	TRANE YHC-120	GYMNASIUM	117.0	89.6	12.4 EER	250	200	80%	4000	1.0"	2.75	2	19.6/13.2	1	2.7	2" PTA MERV 8	18.75	2000	450	48	60	208/3	2 STAGE HEATING, CO2 CONTROL ON OUTSIDE AIR DAMPER
COLUMBIA HEIGHTS	F-5	TRANE YHC-120	GYMNASIUM	117.0	89.6	12.4 EER	250	200	80%	4000	1.0"	2.75	2	19.6/13.2	1	2.7	2" PTA MERV 8	18.75	2000	450	48	60	208/3	2 STAGE HEATING, CO2 CONTROL ON OUTSIDE AIR DAMPER
* COOLING CAPACITY IS AHRI RATING: AT 80° F DB; 67° F WB INDOOR COIL, EAT, 95° F OUTDOOR COIL EAT, AND AHRI NOMINAL CFM				*** MINIMUM OA EXCEEDS CODE CALCULATED MINIMUM.						GENERAL NOTES: 1. PROVIDE ALL UNITS WITH 0-100% OA ECONOMIZER, DISCONNECT, CURB, & RELIEF AIR CAPABILITY.														
** RATED IN ACCORDANCE WITH ANSI AND DOE STANDARDS.				**** MODEL NO S ARE PRELIMINARY, CONTRACTOR SHALL PROVIDE LATEST MFR'S MODELS, MEETING CAPACITIES & EFFICIENCIES SCHEDULED.						2. ALL UNITS SHALL USE R410A OR R407C REFRIGERANT (UNO).														
										3. UNIT CAPACITIES MAY EXCEED THAT SCHEDULED; VALUES ARE MINIMUMS.														

CHILLER SCHEDULE - BASE BID																						
SCHOOL	SYMBOL	BASIS OF DESIGN MANUFACTURER AND SERIES NUMBER	TYPE	COOLING PERFORMANCE								COMPRESSORS		FANS			ELECTRICAL			MAXIMUM PHYSICAL SIZE	MAX WEIGHT LBS	REMARKS
				TONS	EFF	EWT	LWT	GPM	WATER PD, FT	OAT	QTY**	RLA EA.	QTY**	RLA EA.	KW EA.	MCA	MOP	VOLTS/PH				
NORTHLAKE ES	N-CH-1	YORK SERIES YLAA0120	PACKAGED AIR COOLED SCROLL	120	17.09 IPLV	9.79 EER	54	44	287	20.4	95	4	106	6	7.6	1.67	507 20	600 20*	208/3 120/1*	89"W x 144"L x 96"H	5700	2 REFRIGERATION CIRCUITS W/ ACOUSTIC TREATMENT
CASCADE MS	C-CH-1	YORK SERIES YLAA0155	PACKAGED AIR COOLED SCROLL	145	17.78 IPLV	9.71 EER	54	44	347	22.4	95	5	53	8	4.0	1.68	315 20	350 20*	460/3 120/1*	89"W x 188"L x 96"H	7200	2 REFRIGERATION CIRCUITS W/ ACOUSTIC TREATMENT
* FOR UNITS INTEGRAL HEAT TAPE				NOTES: 1. UNIT A-WEIGHTED SOUND POWER SHALL NOT EXCEED 91 dBA AT FULL LOAD, DESIGN CONDITIONS, PER AHRI.																		
** COMPRESSOR & FAN QTY SHOWN IS MINIMUM.																						

CHILLER SCHEDULE - ALTERNATE BID																							
SCHOOL	SYMBOL	BASIS OF DESIGN MANUFACTURER AND SERIES NUMBER	TYPE	COOLING PERFORMANCE								COMPRESSORS		FANS			ELECTRICAL			MAXIMUM PHYSICAL SIZE	MAX WEIGHT LBS	REMARKS	
				TONS	EFF	EWT	LWT	GPM	WATER PD, FT	OAT	QTY**	RLA EA.	QTY**	RLA EA.	KW EA.	MCA	MOP	VOLTS/PH					
NORTHLAKE ES	N-CH-1	SMART AEO 40.1E.F4HDDA	PACKAGED AIR COOLED SCROLL	110	24.40 IPLV	11.65 EER	54	44	265	13.77	95	4	-	6	-	-	530 20	600 20*	208/3 120/1*	91"W x 142"L x101"H	7000	① 2 REFRIGERATION CIRCUITS W/ ACOUSTIC TREATMENT	
CASCADE MS	C-CH-1	SMART AEO 54.2B.F2HJA	PACKAGED AIR COOLED SCROLL	150	25.08 IPLV	12.77 EER	54	44	360	11.82	95	6	-	8	-	-	233 20	350 20*	460/3 120/1*	91"W x 189"L x 101"H	10,000	2 REFRIGERATION CIRCUITS W/ ACOUSTIC TREATMENT	
* FOR UNITS INTEGRAL HEAT TAPE				NOTES: 1. UNIT A-WEIGHTED SOUND POWER SHALL NOT EXCEED 91 dBA AT FULL LOAD, DESIGN CONDITIONS, PER AHRI.														① PROVIDE UNIT WITH FACTORY FURNISHED POWER TRANSFORMER TO ALLOW CHILLER CONNECTION TO VOLTAGE AND PHASE NOTED.					
** COMPRESSOR & FAN QTY SHOWN IS MINIMUM.																							

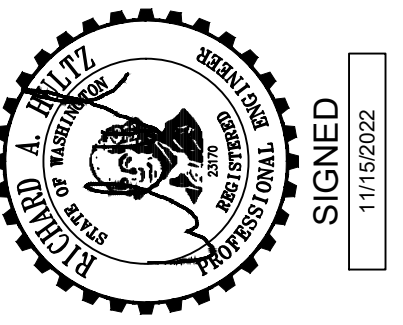
PUMP SCHEDULE								
SYMBOL	BASIS OF DESIGN MANUFACTURER AND SERIES NO.	TYPE	SERVICE	GPM	HEAD FT. H2O	ELECTRICAL		REMARKS
						HP	VOLTS/PH	
N-CP-1	BELL & GOSSETT SERIES E-80	INLINE	N-CH-1	250	75	7.5	208/3	BRONZE FITTED W/ VFD
C-CP-3	BELL & GOSSETT SERIES E-80	INLINE	COOLING LOOP	250	75	7.5	460/3	BRONZE FITTED W/ VFD
C-CP-4	BELL & GOSSETT SERIES E-80	INLINE	COOLING LOOP	250	75	7.5	460/3	BRONZE FITTED W/ VFD
C-CP-7	BELL & GOSSETT SERIES E-80	INLINE	C-CH-1	300	25	3	460/3	BRONZE FITTED

MISCELLANEOUS EQUIPMENT SCHEDULE								
SCHOOL	SYMBOL	ITEM DESCRIPTION	BASIS OF DESIGN MANUFACTURER AND SERIES NO.	AREA EQUIPMENT SERVED	EQUIPMENT CAPACITY	ELECTRICAL		REMARKS
						POWER	VOLTS / PH	
NORTHLAKE ES	N-HT-1	ELECTRIC HEAT TRACE	RAY CHEM	CHILLER PIPING	5 WATTS PER LINEAR FOOT	500 WATTS	115/1	W/ POWER CONN KIT & THERMOSTAT
CASCADE MS	C-HT-1	ELECTRIC HEAT TRACE	RAY CHEM	CHILLER PIPING	5 WATTS PER LINEAR FOOT	500 WATTS	115/1	W/ POWER CONN KIT & THERMOSTAT

MECHANICAL EQUIPMENT ELECTRICAL 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			
F-4	PACKAGED HEATING/COOLING	COLUMBIA HEIGHTS ES GYMNASIUM	-	13.83	38.4	48.0	60	208 3	1-1/4"C-4#6 + #10G	•	FUSED	BASE BID ALTERNATE BID BASE BID ALTERNATE BID		
F-5	PACKAGED HEATING/COOLING	COLUMBIA HEIGHTS ES GYMNASIUM	-	13.83	38.4	48.0	60	208 3	1-1/4"C-4#6 + #10G	•	FUSED			
N-CH-1	CHILLER	NORTHLAKE ES	-	146.12	405.6	507.0	600	208 3	(2) 3"C- 4#350KCM + #1GND	•	FUSED			
N-CH-1	CHILLER	NORTHLAKE ES	-	152.75	424.0	530.0	600	208 3	(2) 3"C- 4#350KCM + #1GND	•	FUSED			
C-CH-1	CHILLER	CASCADE MS	-	200.78	252.0	315.0	350	460 3	(2) 2"C - 4#210 + #3G	•	FUSED			
C-CH-1	CHILLER	CASCADE MS	-	148.51	186.4	233.0	350	460 3	(2) 2"C - 4#210 + #3G	•	FUSED			
N-CP-1	CIRCULATION PUMP	NORTHLAKE ES BOILER ROOM	7.5	8.72	24.2	30.3	40	208 3	1"C - 4#6 + #10G	•	VFD			
C-CP-3	CIRCULATION PUMP	CASCADE MS BOILER ROOM	7.5	8.76	11.0	13.8	20	460 3		•	VFD			
C-CP-4	CIRCULATION PUMP	CASCADE MS BOILER ROOM	7.5	8.76	11.0	13.8	20	460 3		•	VFD			
C-CP-7	CIRCULATION PUMP	CASCADE MS BOILER ROOM	3	2.39	3.0	3.8	20	460 3		•	STARTER			
N-HT-1	HEAT TRACE	NORTHLAKE ES	-	0.50	4.3	5.4	20	115 1		•	TOGGLE			
C-HT-1	HEAT TRACE	CASCADE MS	-	0.50	4.3	5.4	20	115 1		•	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



HULTZ & BHU

engineers inc

1111 Fawcett Ave Suite 100
Tacoma, WA 98402
Phone: (253) 383-3257
general@hultzbhu.com

SIGNED
17595022

Date: 11/14/22

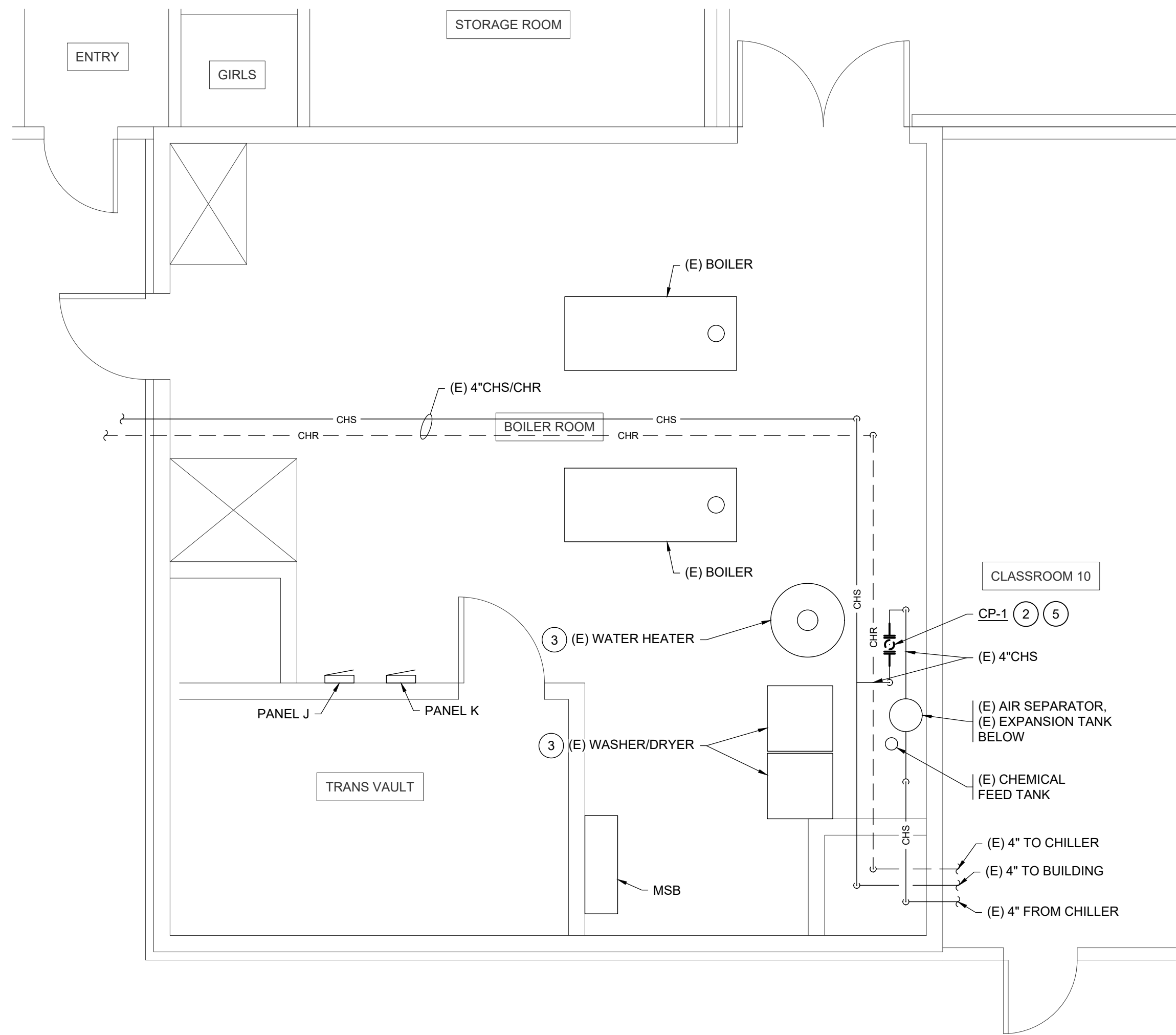
Job No.: 22220.00

Drawn By: MB

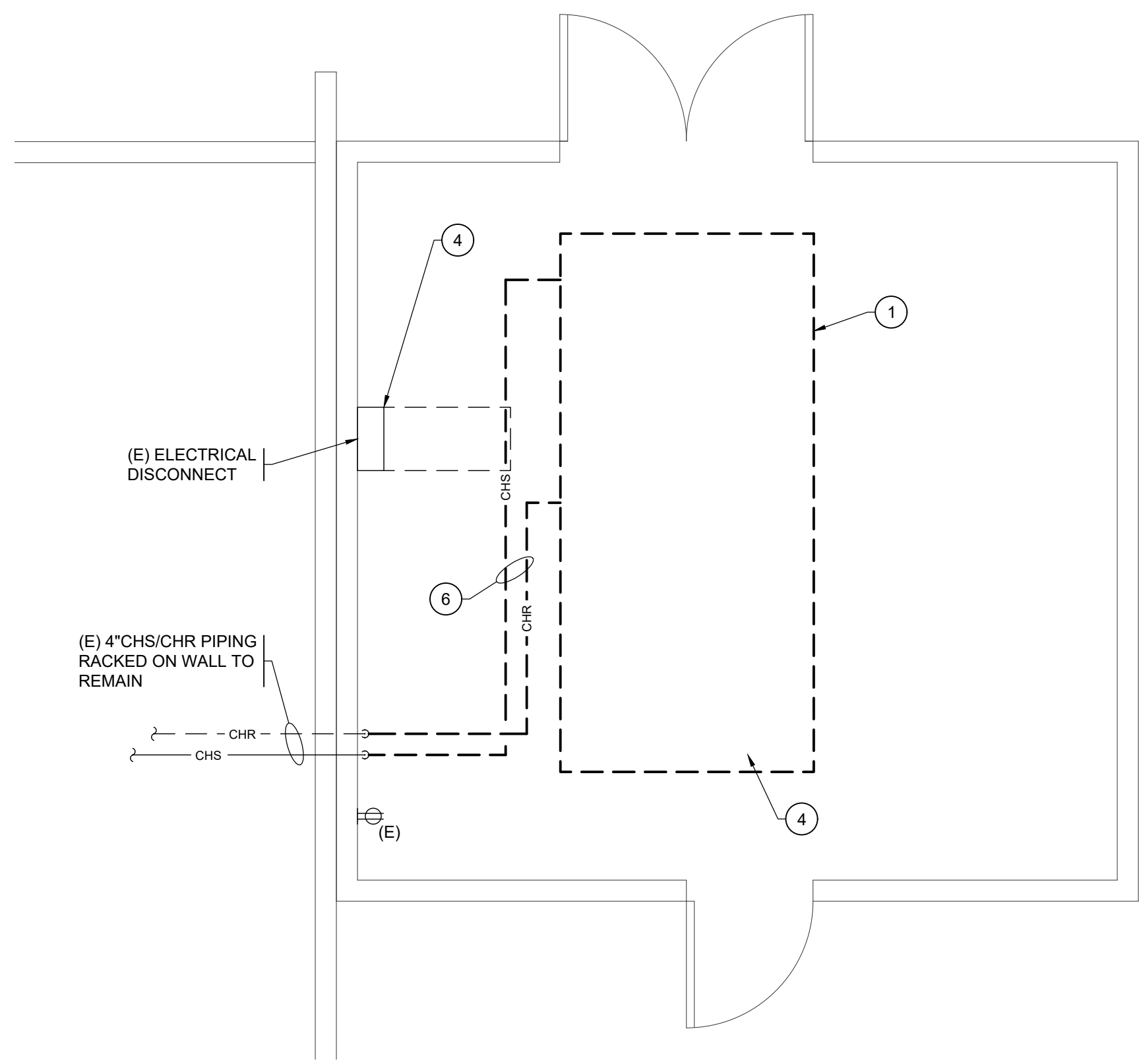
Checked by: BW

Revisions

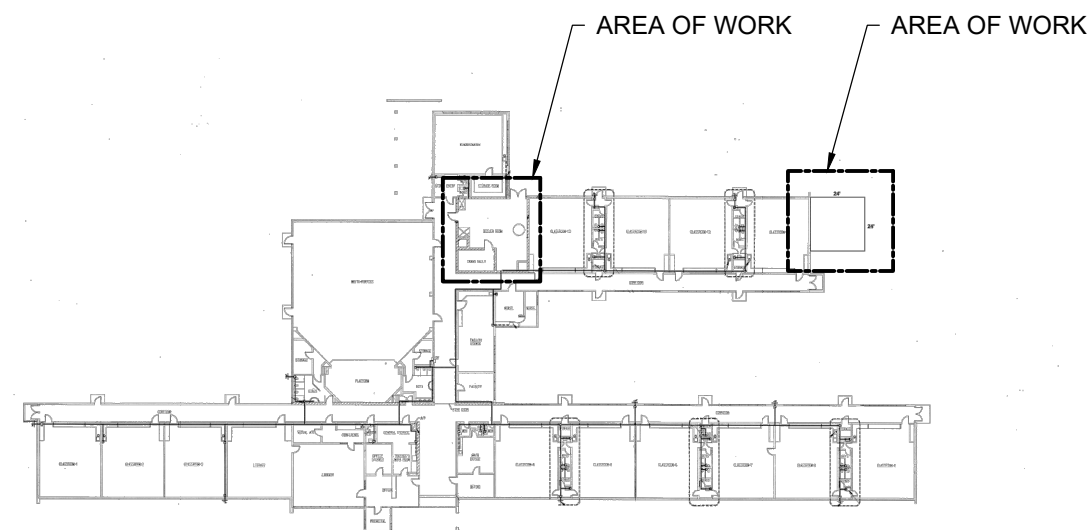
#	Date	Description
---	------	-------------



BOILER ROOM PLAN - MECH/ELEC DEMO
SCALE: 1/4" = 1'-0"



PARTIAL SITE PLAN - MECH/ELEC DEMO
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

GENERAL NOTES:

- SEE GENERAL NOTES ON SHEET ME0.1.
- SALVAGE BUILDING EMCS CONTROLS AT CHILLER & PUMPS FOR RE-USE; UNLESS NOTED OTHERWISE.

KEYED NOTES:

- REMOVE EXISTING CHILLER COMPLETE INCLUDING SUPPORTS, PIPING, VALVES, FITTINGS AND ACCESSORIES.
- REMOVE EXISTING PUMP COMPLETE INCLUDING SUPPORTS AND ACCESSORIES. PIPING TO REMAIN FOR CONNECTION TO NEW PUMP.
- SALVAGE & REINSTALL EQUIPMENT AS NECESSARY TO ACCESS PUMP.
- REMOVE ELECTRICAL CONNECTION TO (E) CHILLER. REMOVE CONDUCTORS BACK TO DISCONNECT AND DISCONNECT. RETAIN CONDUCTORS AND CIRCUIT FOR RE-USE.
- REMOVE ELECTRICAL CONNECTION TO PUMP. RETAIN CIRCUIT AND CONDUCTORS FOR RE-USE.
- REMOVE EXISTING PIPING COMPLETE INCLUDING SUPPORTS, HEAT TRACE, VALVES AND ACCESSORIES. RETAIN EXISTING CIRCUIT SERVING HEAT TRACE FOR RE-USE.

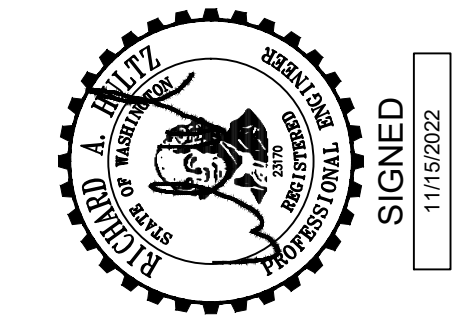
LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW

Revisions		
#	Date	Description

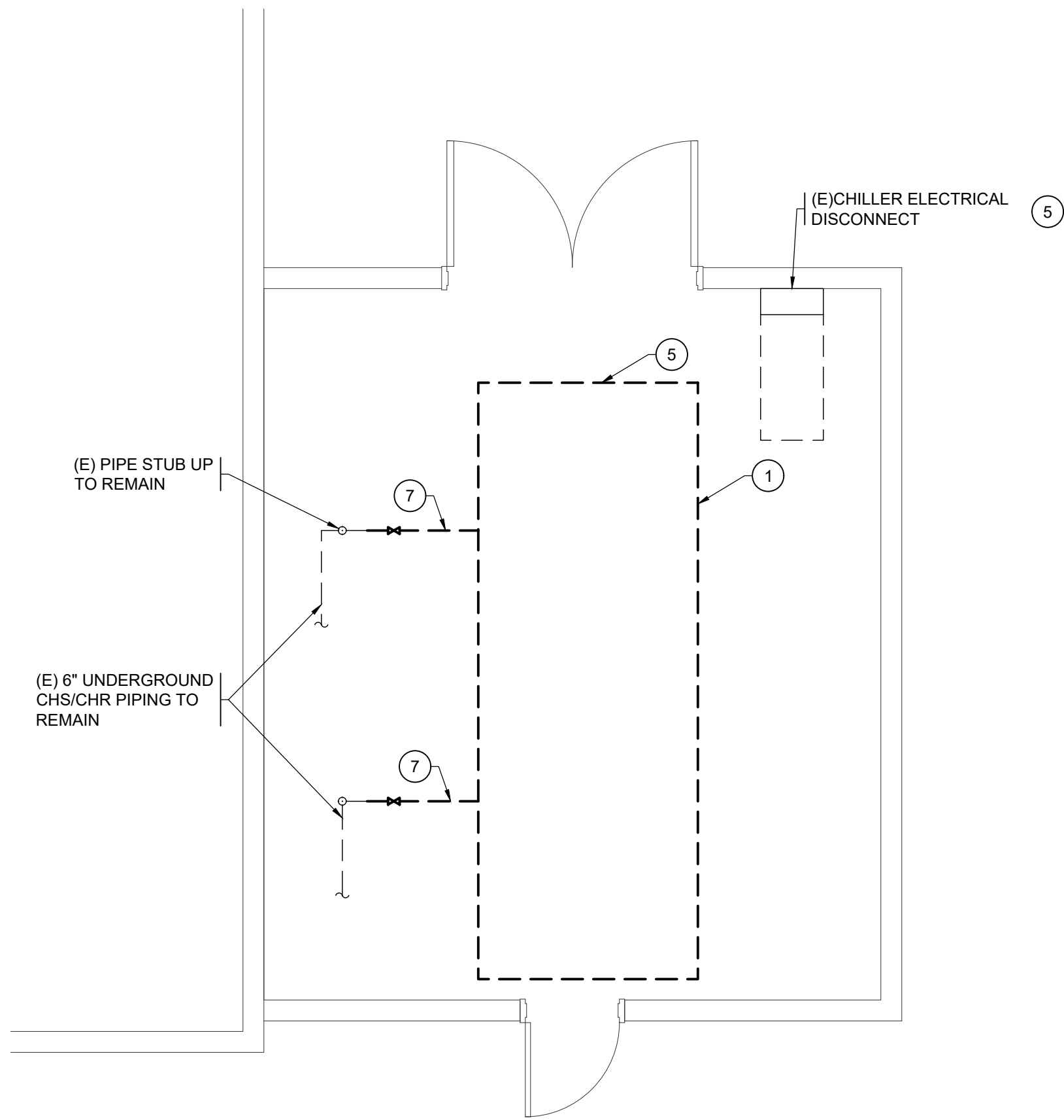
DEMO PLAN -
NORTHLAKE ES

ME1.1

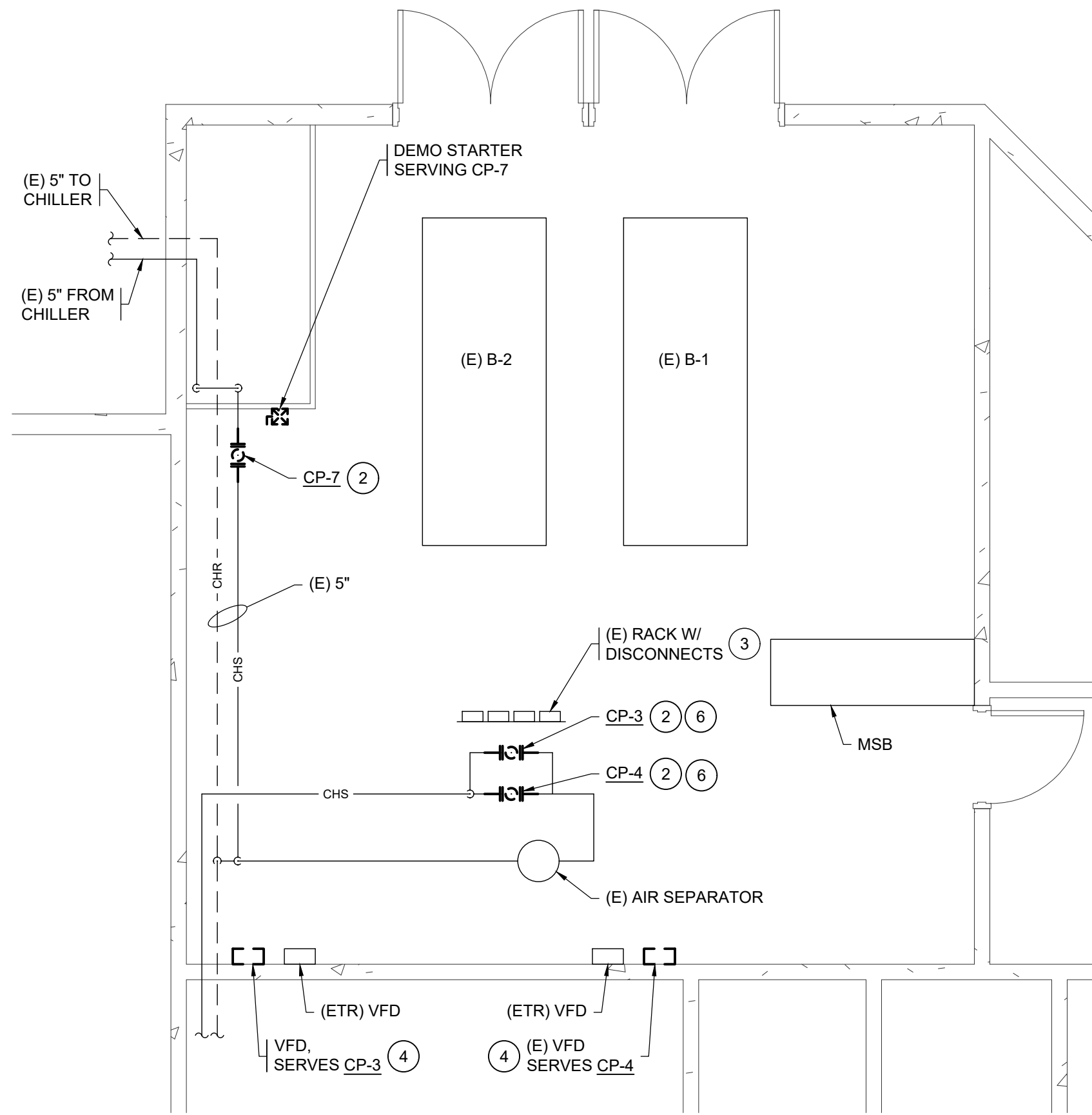


HULTZ & BHU
engineers inc
1111 Fawcett Ave Suite 100 Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-187

integrus
ARCHITECTURE
117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA 98104
TELEPHONE: (206) 467-1133 FAX: (206) 467-1138



PARTIAL SITE PLAN - DEMO
SCALE: 1/4" = 1'-0"



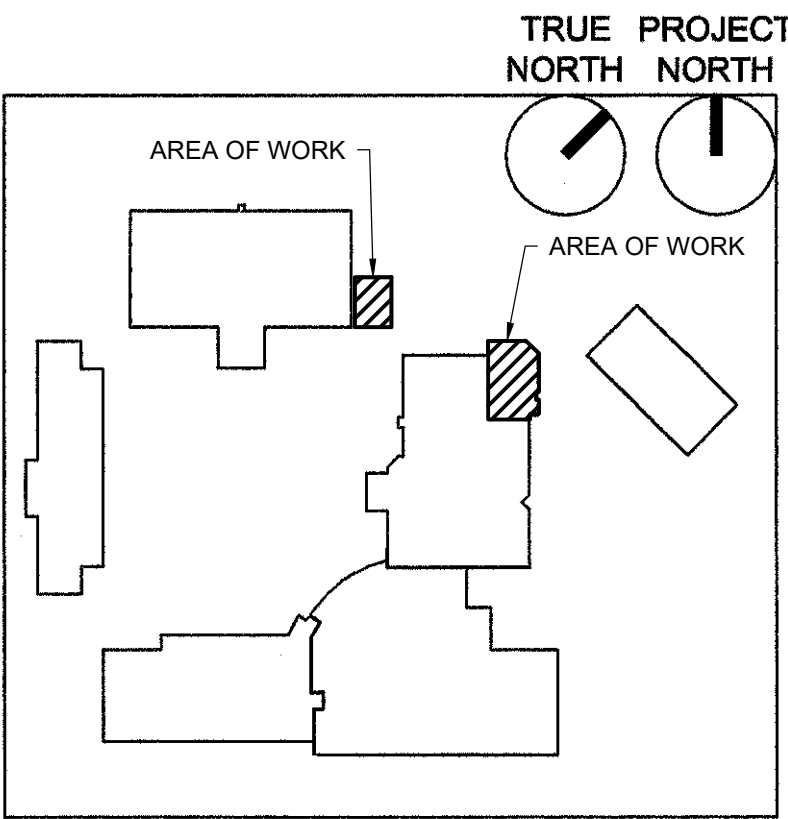
BOILER ROOM PLAN - DEMO
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. SEE GENERAL NOTES ON SHEET ME0.1.
2. SALVAGE BUILDING EMCS CONTROLS FOR RE-USE, UNLESS NOTED OTHERWISE.

KEYED NOTES:

- 1 REMOVE EXISTING CHILLER COMPLETE INCLUDING SUPPORTS, PIPING, VALVES, FITTINGS AND ACCESSORIES.
- 2 REMOVE EXISTING PUMP COMPLETE INCLUDING SUPPORTS AND ACCESSORIES, PIPING TO REMAIN FOR CONNECTION TO NEW PUMP.
- 3 SALVAGE & REINSTALL EQUIPMENT AS NECESSARY TO ACCESS PUMP.
- 4 REMOVE EXISTING VFD THAT SERVED REMOVED PUMP.
- 5 REMOVE ELECTRICAL CONNECTION TO (E) CHILLER, REMOVE CONDUCTORS BACK TO DISCONNECT. REMOVE DISCONNECT, RETAIN CONDUCTORS AND CIRCUIT FOR RE-USE.
- 6 REMOVE ELECTRICAL CONNECTION TO PUMP, REMOVE CONDUCTORS AND CONDUIT BACK TO VFD, RETAIN CIRCUIT AND CONDUCTORS FOR RE-USE.
- 7 REMOVE EXISTING PIPING COMPLETE INCLUDING SUPPORTS, HEAT TRACE, VALVES AND ACCESSORIES.



KEY PLAN
SCALE: NTS

LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW
Revisions	
#	Date Description

DEMO PLAN -
CASCADE MS

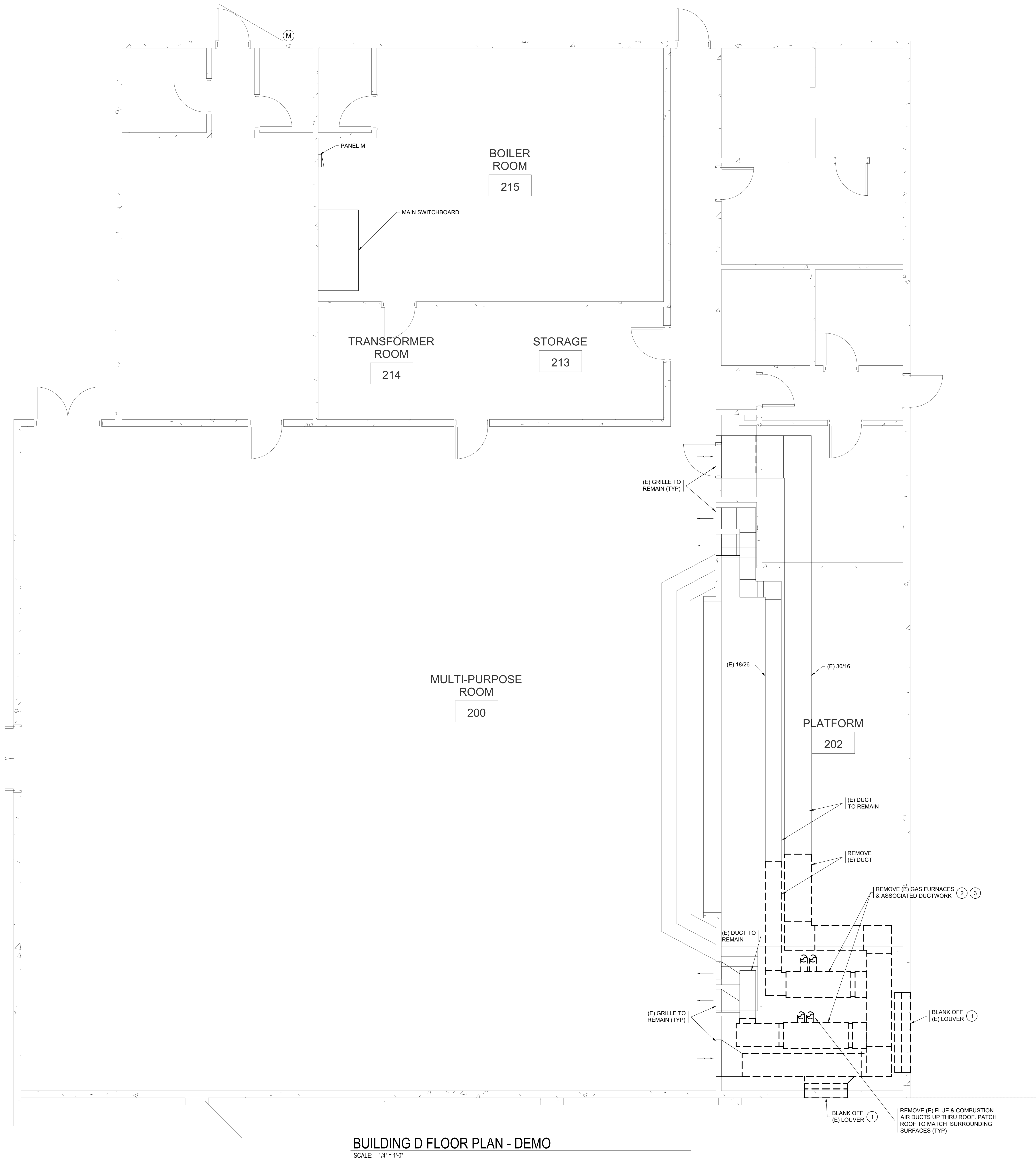
ME1.2



HULTZ & BHU
engineers inc
1111 Fawcett Ave Suite 100 Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-187

integrus
ARCHITECTURE

117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA, 98104
TELEPHONE: (206) 426-5133 FAX: (206) 426-5138



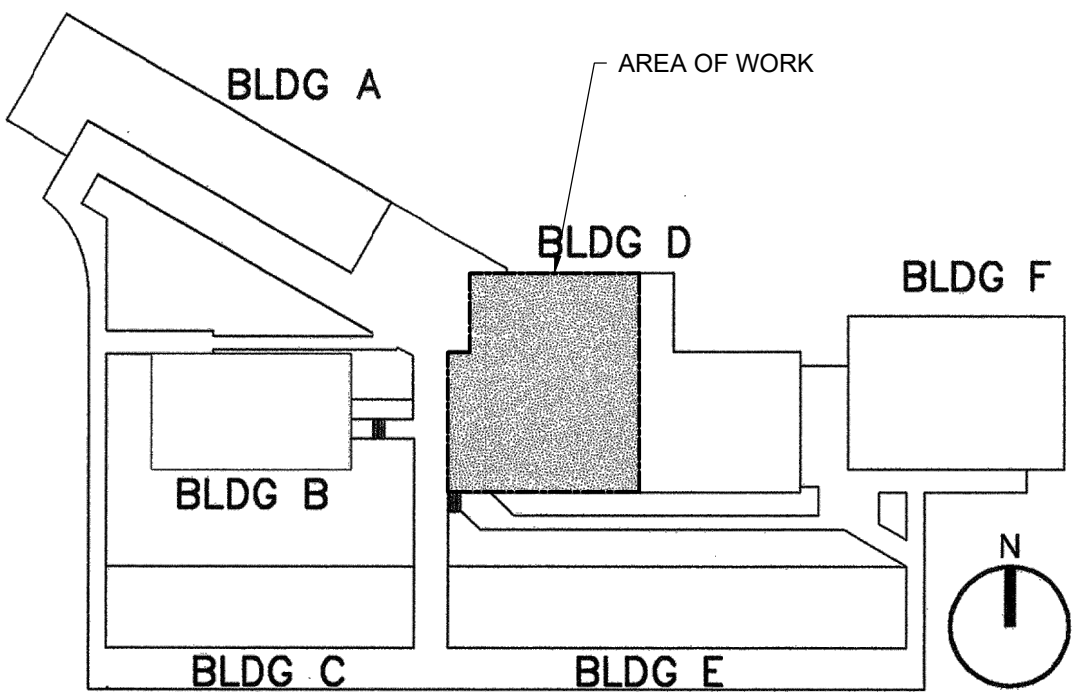
BUILDING D FLOOR PLAN - DEMO
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

- 1. SEE GENERAL NOTES ON SHEET ME0.1.
- 2. SALVAGE BUILDING EMCS CONTROLS FOR RE-USE, UNLESS NOTED OTHERWISE.

KEYED NOTES:

- 1 PROVIDE MIN 20 GAUGE GALV SHEET METAL ON BACK OF LOUVER W/ FIBERGLASS BATT INSULATION ON BLDG SIDE. PATCH WALL W/ 5/8" GWB, PAINT & FINISH TO MATCH ADJACENT WALL.
- 2 REMOVE ELECTRICAL CONNECTIONS TO FURNACE. REMOVE ALL CONDUCTORS BACK TO SERVING PANEL. CONGEALED CONDUIT MAY BE ABANDONED IN PLACE.
- 3 REMOVE EXISTING GAS FURNACE COMPLETE INCLUDING SUPPORTS, DUCTWORK, GAS PIPING AND CONTROLS, FLUES, ACCESSORIES. PATCH ROOF AT FLUE AND GAS PIPING PENETRATIONS.



KEY PLAN
SCALE: NTS

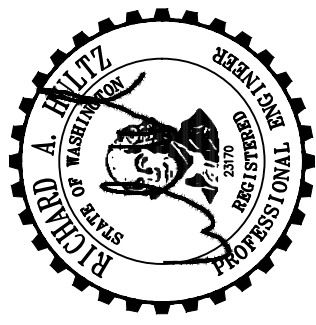
LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW
Revisions	
#	Date Description

DEMO PLAN -
COLUMBIA HEIGHTS ES

ME1.3



HULTZ & BHU
engineers inc
1111 Fawcett Ave Suite 100 Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-187

SIGNED
11/15/2022

integrus
ARCHITECTURE
117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA, 98104
TELEPHONE: (206) 427-1158 FAX: (206) 427-1158

NORTHLAKE ES REVISED CIRCUIT SUMMARY			
	KVA	AMPS	NOTES
LOAD REMOVED			
CIRCULATION PUMP #1	-7.5HP	-19.40	
CHILLER	-152.35	-423.20	
LOAD ADDED			
CIRCULATION PUMP #1	7.5HP	19.40	
CHILLER	152.64	424.00	1
NET CHANGE			
TOTAL ADDED LOAD	0.29	0.80	
NOTES:			
(1) ASSUMING LARGEST LOAD IS ACCEPTED			

GENERAL NOTES:

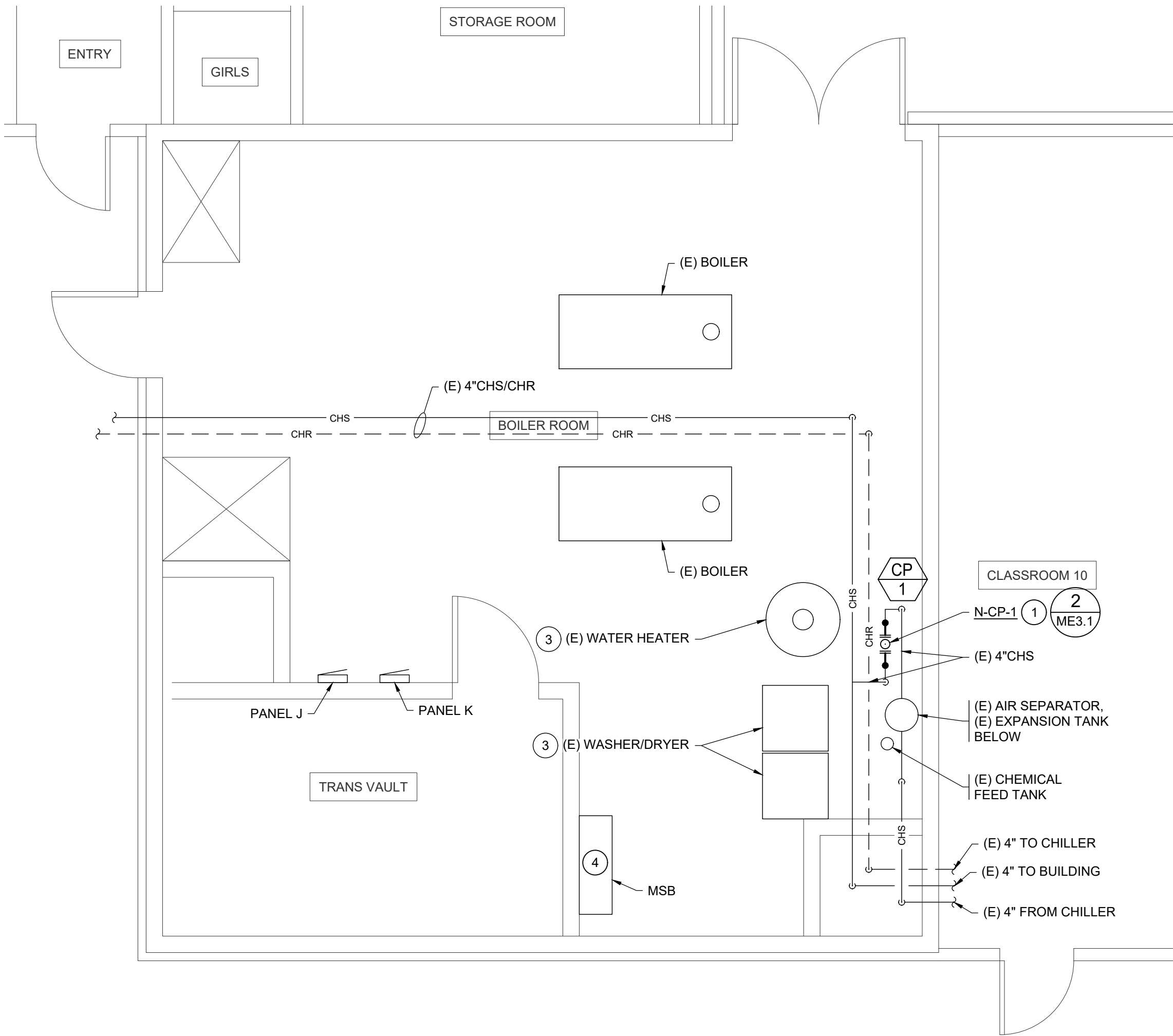
- SEE GENERAL NOTES ON SHEET ME0.1.
- REINSTALL/CONNECT (E) BUILDING EMCS CONTROLS FOR CONTROL OF EQUIPMENT.

KEYED NOTES:

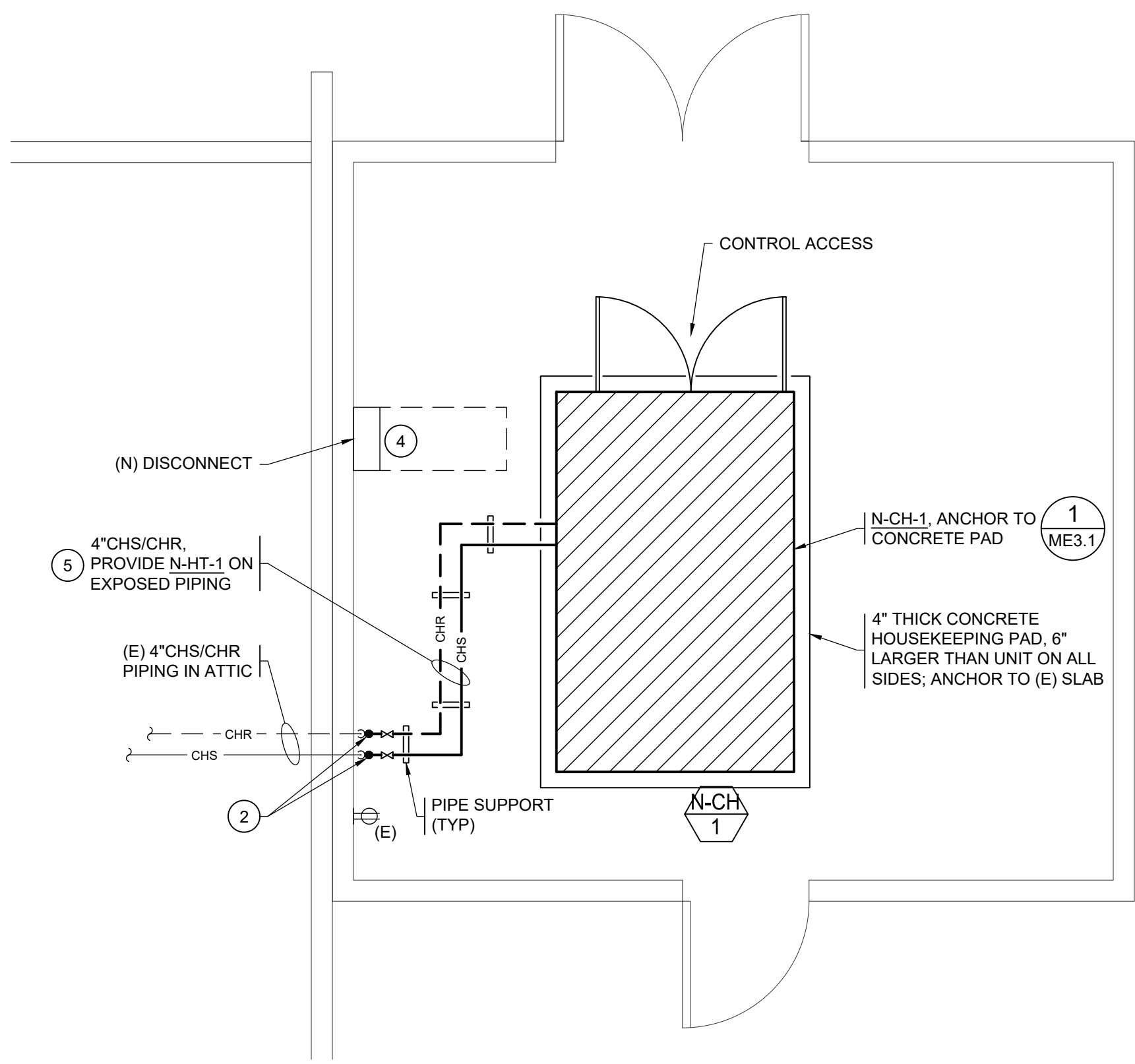
- CONNECT PUMP TO EXISTING PIPING. PROVIDE OFFSETS & TRANSITIONS AS NECESSARY TO MAKE CONNECTIONS. PROVIDE NEW SUPPORTS AND ANCHOR PUMP TO EXISTING FLOOR.
- CONNECT TO EXISTING PIPING. VERIFY EXISTING PIPE SIZE, TYPE, AND LOCATION PRIOR TO ORDERING MATERIALS. PROVIDE OFFSETS & TRANSITIONS AS NECESSARY TO MAKE CONNECTIONS.
- REMOVE (E) EQUIPMENT AND REINSTALL EXISTING EQUIPMENT AS NECESSARY TO INSTALL PUMPS.
- REUSE (E) 600A CIRCUIT BREAKER IN MSB FEEDING (N) DISCONNECT. REUSE (E) CONDUCTORS FROM CIRCUIT BREAKER TO DISCONNECT. PROVIDE DISCONNECT AND FINAL EQUIPMENT CONNECTIONS.
- CONNECT HEAT TRACE TO (E) CIRCUIT THAT FED DEMO'D HEAT TRACE.

FLUSHING AND TESTING:

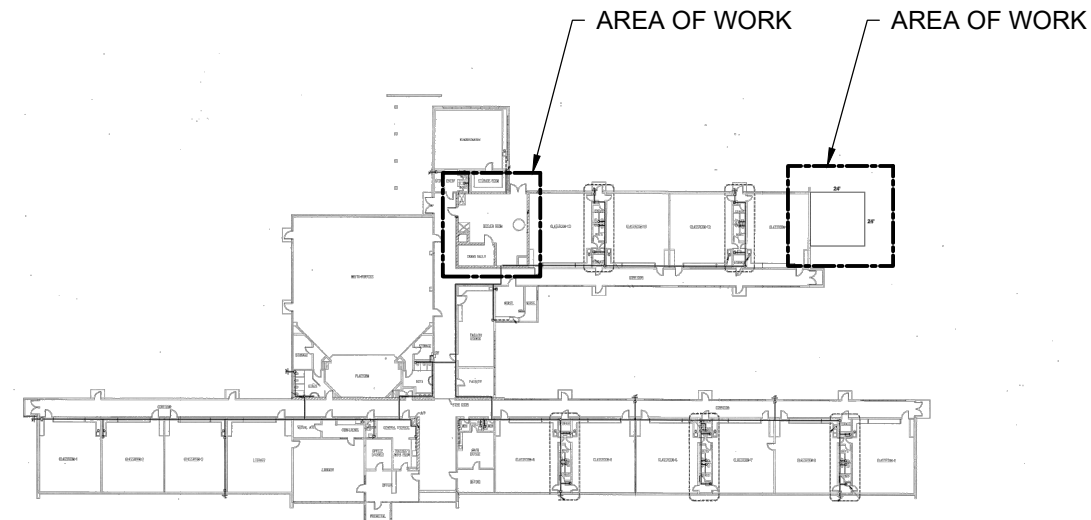
- CONTRACTOR SHALL FLUSH ENTIRE CHS/CHR PIPING SYSTEM AFTER REMOVAL OF EQUIPMENT AND PRIOR TO INSTALLATION OF NEW EQUIPMENT. FLUSHING SHALL COMPLY WITH SECTION 23 21 13. AFTER FLUSHING, BLOWDOWN AND CLEAN ALL STRAINER AND PIPING SYSTEM.
- AFTER FLUSHING AND CONNECTION OF NEW EQUIPMENT, PRESSURE TEST ENTIRE PIPING SYSTEM AND INVESTIGATE FOR LEAKS.
- PROVIDE CHEMICAL TREATMENT TO RESTORE SYSTEM TO PRE-FLUSHING LEVELS. REFERENCE SECTION 23 21 13.



BOILER ROOM PLAN - MECH/ELEC
SCALE: 1/4" = 1'-0"



PARTIAL SITE PLAN - MECH/ELEC
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

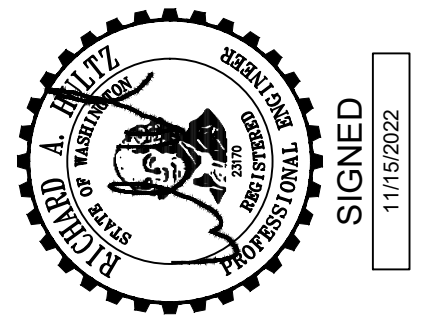
LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW

Revisions		
#	Date	Description

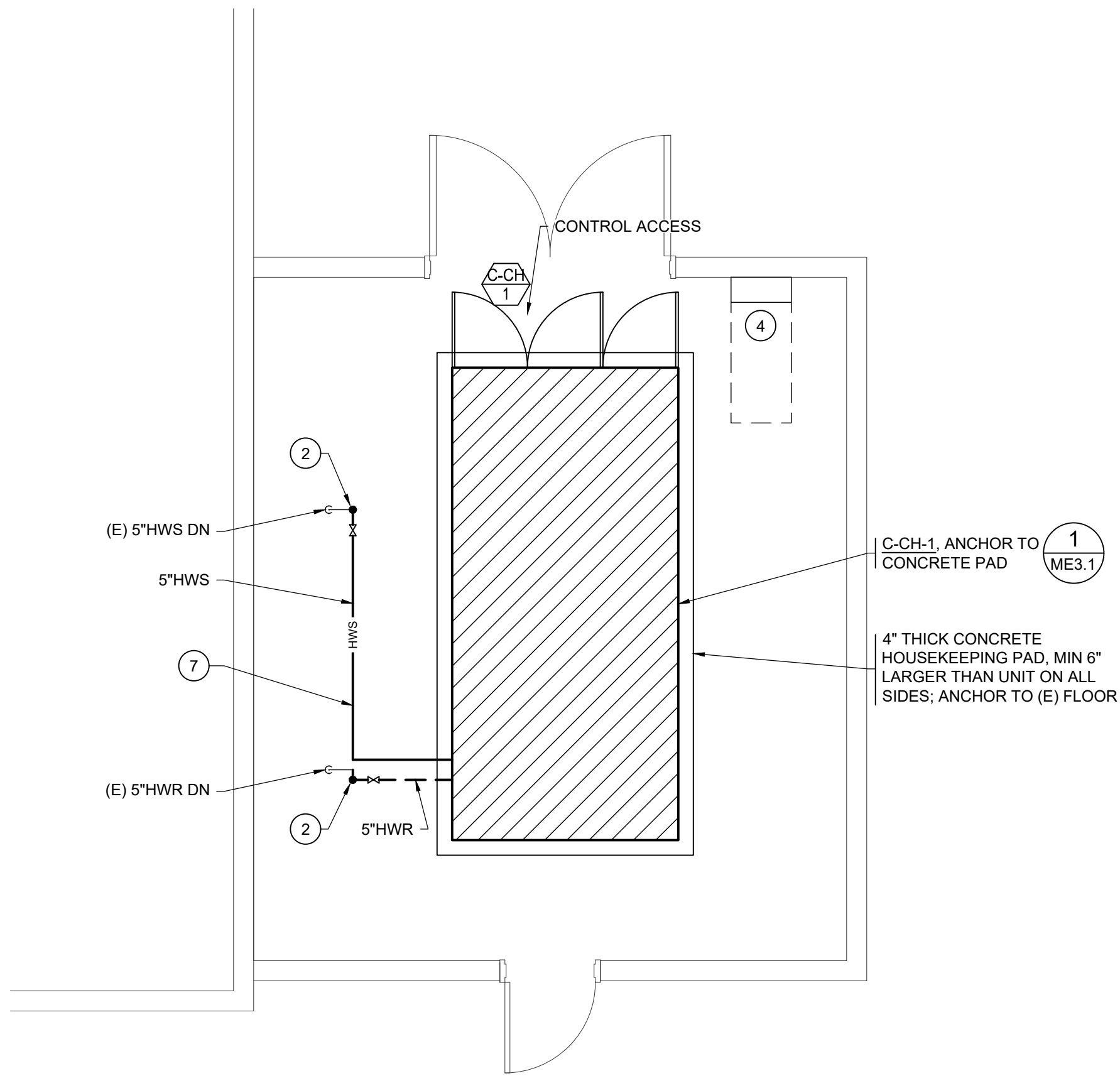
MECH/ELEC PLAN -
NORTHLAKE ES

ME2.1

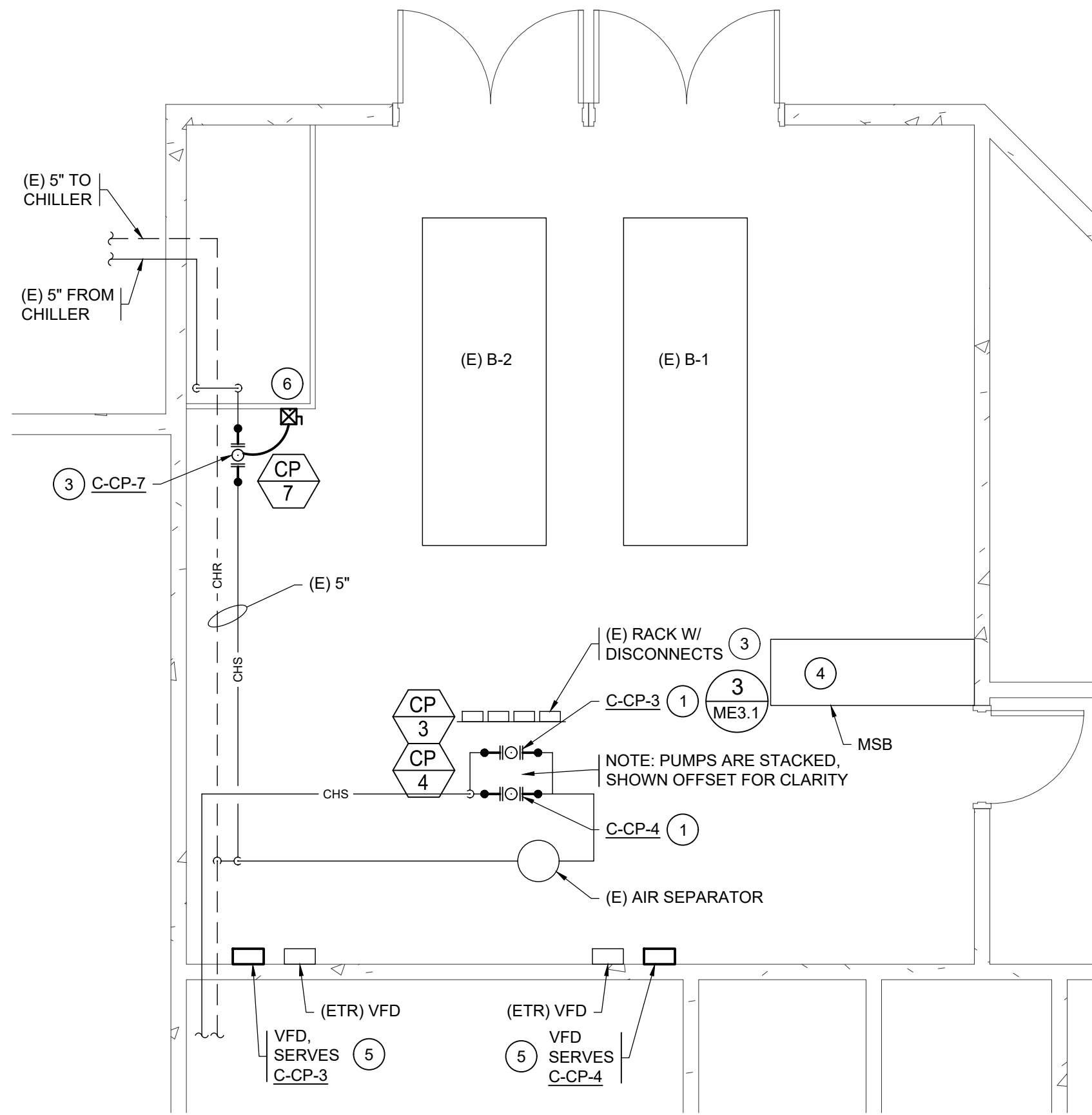


HULTZ & BHU
engineers inc
1111 Fawcett Ave Suite 100
Tacoma, WA 98402
Phone: (253) 383-3257
general@hultzbhu.com
Fax: (253) 383-3283
Job Number: 22-187

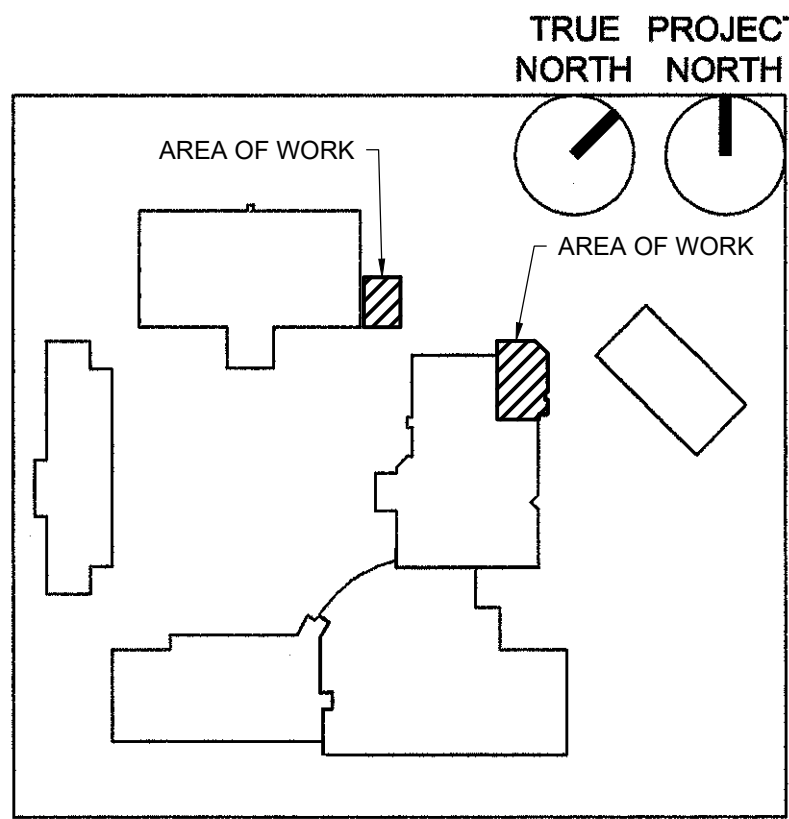
integrus
ARCHITECTURE
117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA, 98104
TELEPHONE: (206) 467-1158
FAX: (206) 467-1158



PARTIAL SITE PLAN - MECH/ELEC
SCALE: 1/4" = 1'-0"



BOILER ROOM PLAN - MECH/ELEC
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

CASCADE MS REVISED CIRCUIT SUMMARY			
	480/277VAC, 3PH		
LOAD REMOVED	KVA	AMPS	NOTES
CIRCULATION PUMP #3	-7.5HP	-9.70	
CIRCULATION PUMP #4	-7.5HP	-9.70	
CIRCULATION PUMP #7	-3HP	-4.10	
CHILLER	-204.09	-245.60	
LOAD ADDED			
CIRCULATION PUMP #3	7.5HP	9.70	
CIRCULATION PUMP #4	7.5HP	9.70	
CIRCULATION PUMP #7	3HP	4.10	
CHILLER	209.41	252.00	1
TOTAL ADDED LOAD	5.32	6.40	
NOTES: (1) ASSUMING LARGEST LOAD IS ACCEPTED			

GENERAL NOTES:

- SEE GENERAL NOTES ON SHEET ME0.1.
- REINSTALL/CONNECT (E) BUILDING EMCS CONTROLS FOR CONTROL OF EQUIPMENT.

KEYED NOTES:

- CONNECT PUMP TO EXISTING PIPING. PROVIDE OFFSETS & TRANSITIONS AS NECESSARY TO MAKE CONNECTIONS. PROVIDE NEW SUPPORTS AND ANCHOR PUMP TO EXISTING FLOOR.
- CONNECT TO EXISTING PIPING. VERIFY EXISTING PIPE SIZE, TYPE, AND LOCATION PRIOR TO ORDERING MATERIALS. PROVIDE OFFSETS & TRANSITIONS AS NECESSARY TO MAKE CONNECTIONS.
- SALVAGE AND REINSTALL EXISTING EQUIPMENT AS NECESSARY TO INSTALL PUMPS.
- REUSE (E) 350A CIRCUIT BREAKER IN MSB TO FEED NEW DISCONNECT. REUSE (E) CONDUCTORS FROM CIRCUIT BREAKER TO DISCONNECT. PROVIDE FINAL EQUIPMENT CONNECTIONS.
- REUSE EXISTING CIRCUITS FOR NEW VFD AND CIRCULATION PUMP. PROVIDE FINAL CONNECTIONS FROM VFD TO PUMP.
- REUSE EXISTING CIRCUIT THAT FED REMOVED STARTER. PROVIDE FINAL CONNECTION FROM STARTER TO PUMP.
- CONNECT HEAT TRACE TO (E) CIRCUIT THAT FED DEMOD HEAT TRACE.

FLUSHING AND TESTING:

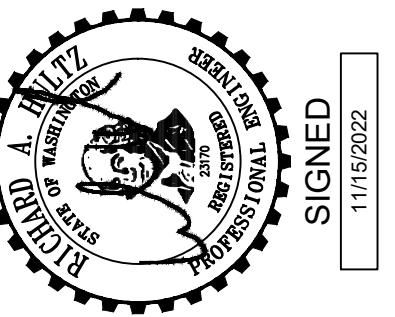
- CONTRACTOR SHALL FLUSH ENTIRE CHS/CHR PIPING SYSTEM AFTER REMOVAL OF EQUIPMENT AND PRIOR TO INSTALLATION OF NEW EQUIPMENT. FLUSHING SHALL COMPLY WITH SECTION 23 21 13. AFTER FLUSHING, BLOWDOWN AND CLEAN ALL STRAINER AND PIPING SYSTEM.
- AFTER FLUSHING AND CONNECTION OF NEW EQUIPMENT, PRESSURE TEST ENTIRE PIPING SYSTEM AND INVESTIGATE FOR LEAKS.
- PROVIDE CHEMICAL TREATMENT TO RESTORE SYSTEM TO PRE-FLUSHING LEVELS. REFERENCE SECTION 23 21 13.

LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW
Revisions	
#	Date Description

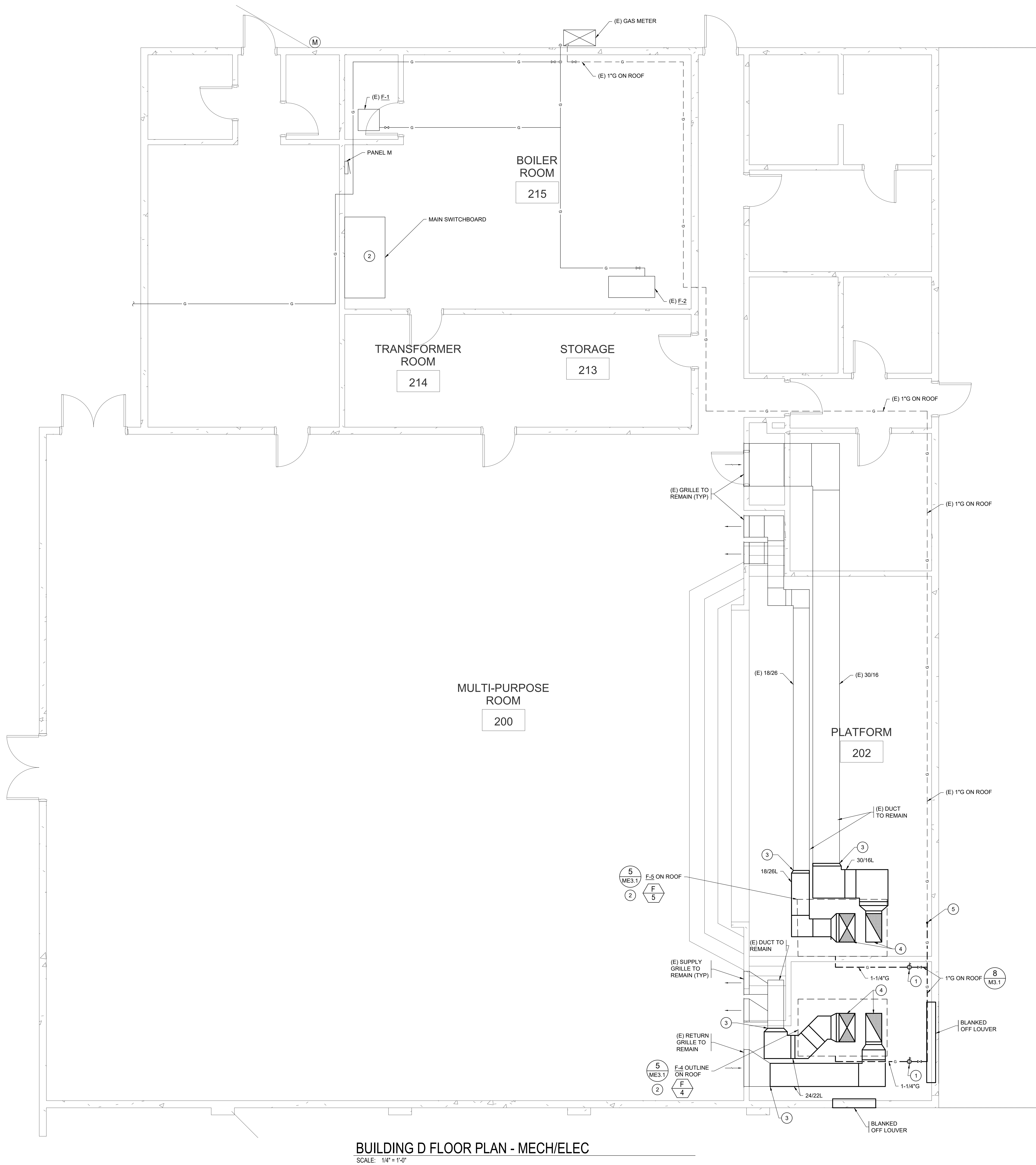
MECH/ELEC PLAN -
CASCADE MS

ME2.2



HULTZ & BHU
engineers inc
1111 Fawcett Ave Suite 100
Tacoma, WA 98402
Phone: (253) 383-3257
general@hultzbhu.com
Fax: (253) 383-3283
Job Number: 22-187

integrus
ARCHITECTURE
117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA 98104
TELEPHONE: (206) 467-5133 FAX: (206) 467-1158



BUILDING D FLOOR PLAN - MECH/ELEC
SCALE: 1/4" = 1'-0"

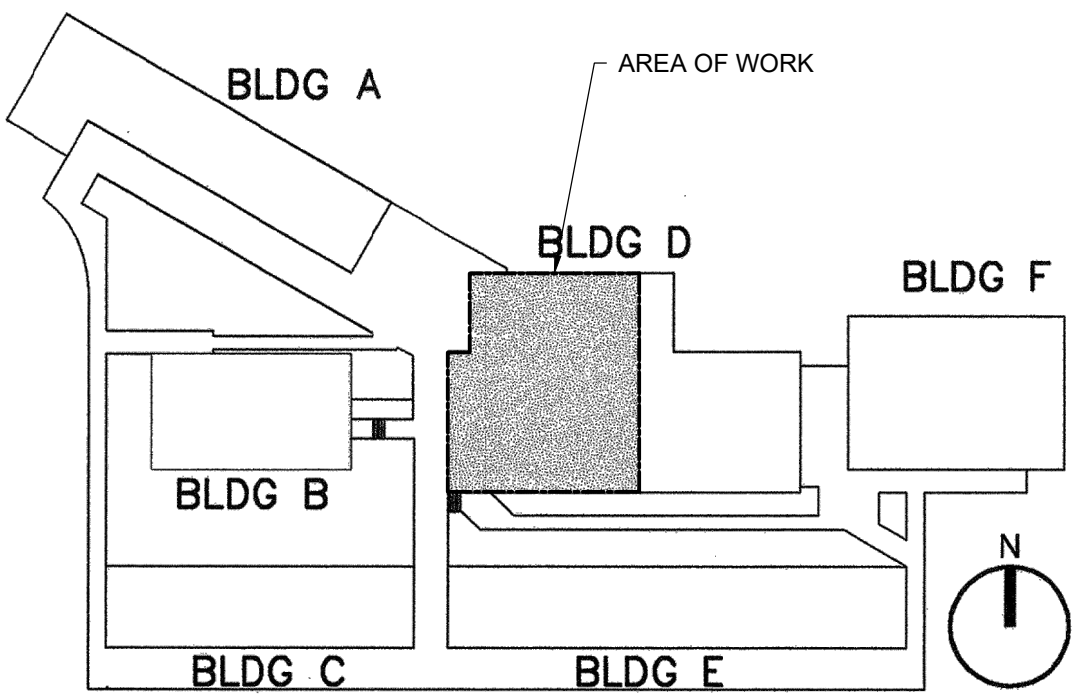
GENERAL NOTES:

- SEE GENERAL NOTES ON SHEET ME0.1.
- REINSTALL/CONNECT (E) BUILDING EMCS CONTROLS FOR CONTROL OF EQUIPMENT.
- SEE DETAIL 8, SHEET ME3.1 FOR GAS PIPING ON ROOF.
- SEE DETAIL 7, SHEET ME3.1 FOR GAS PIPING CONNECTION TO UNIT.

KEYED NOTES:

- GAS PRESSURE REGULATOR: 2 PSI INLET, 7" W.C. OUTLET PRESSURE. CAPACITY TO MATCH EQUIPMENT BEING CONNECTED.
- PROVIDE 60A 3P CIRCUIT BREAKER COMPATIBLE WITH GE SPECTRA SERIES PANEL BOARD TO FEED EACH NEW UNIT F-4 AND F-5.
- CONNECT DUCT TO EXISTING. VERIFY EXISTING SIZE AND LOCATION PRIOR TO ORDERING MATERIALS. PROVIDE OFFSETS AND TRANSITIONS AS NECESSARY TO MAKE CONNECTION.
- DUCT UP TO UNIT OF ROOF. DUCT SIZE SHALL MATCH UNIT CONNECTION SIZE. DUCT SHALL BE LINED.
- CONNECT PIPING TO EXISTING. VERIFY EXISTING PIPE SIZE, LOCATION, MATERIAL, AND CONTENTS PRIOR TO ORDERING MATERIALS. PROVIDE OFFSETS & TRANSITION AS NECESSARY TO MAKE CONNECTION.

LOAD CALCULATION - 30 DAY RECORDING					
480/277 - 3PH					
Description				Remarks	
Recording Period	11/7/2022				
Peak Amperes	337.5	AMPS	121.5	KVA	11/7/2022
Seasonal Adjustment			100%		HVAC was active
Adjusted Demand			121.5	KVA	
Occupancy Adjustment			100%		Continuous occupancy
Adjusted Demand			121.5		
Demand Factor			125%		NEC 220.87(2)
Adjusted Demand			151.9	KVA	
New Load Added	76.8	AMPS	27.6	KVA	New load @208-3phase
Total Load				179.5	KVA
				498.7	AMPS



KEY PLAN
SCALE: NTS

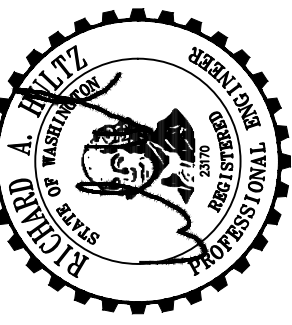
LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW
Revisions	
#	Date Description

MECH/ELEC PLAN -
COLUMBIA HEIGHTS ES

ME2.3

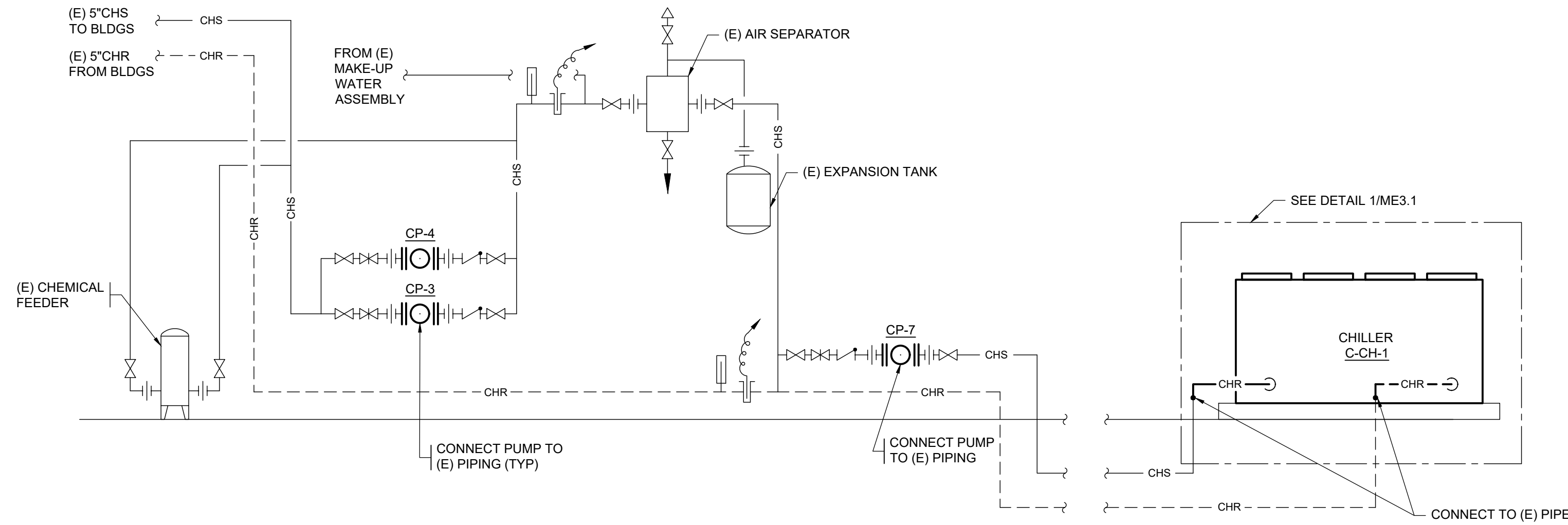


HULTZ & BHU
engineers inc
1111 Fawcett Ave Suite 100 Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-187

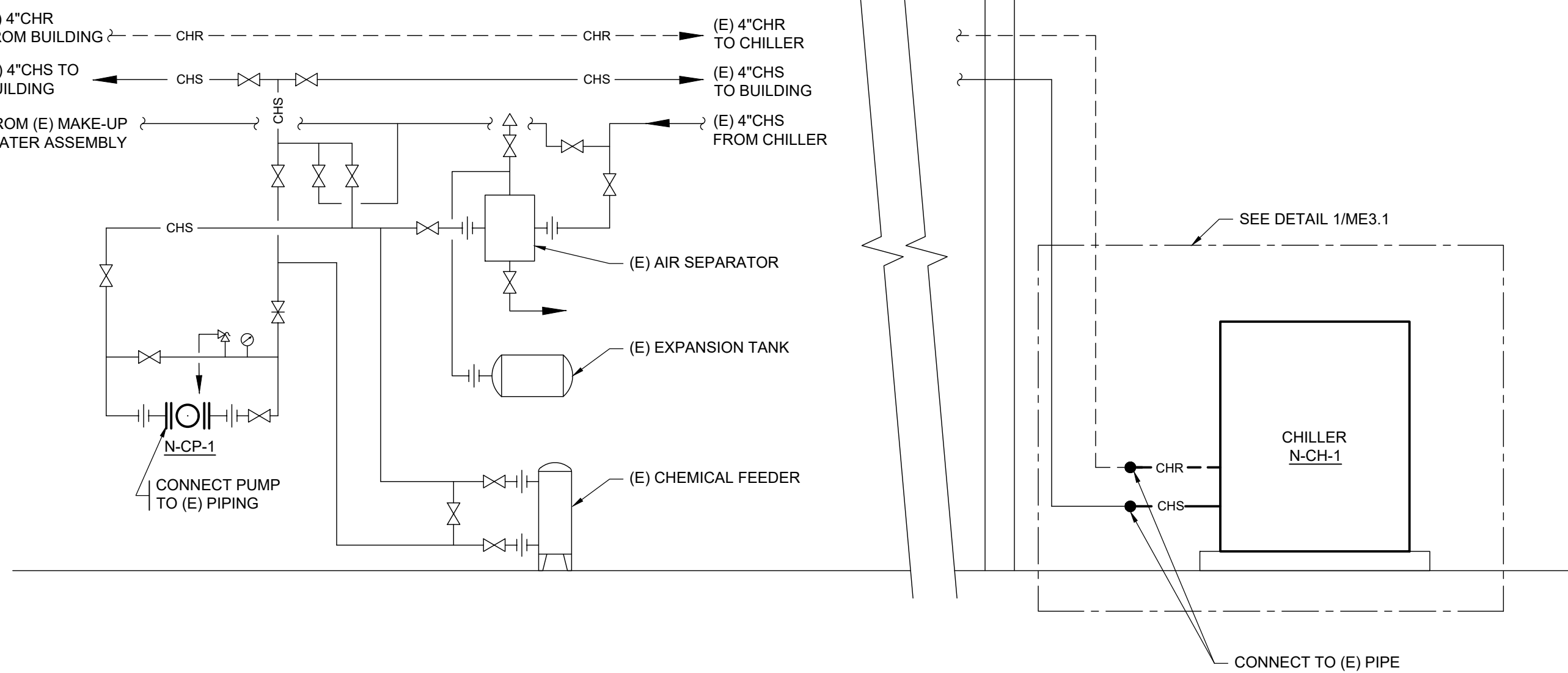
SIGNED
11/15/2022

integrus
ARCHITECTURE

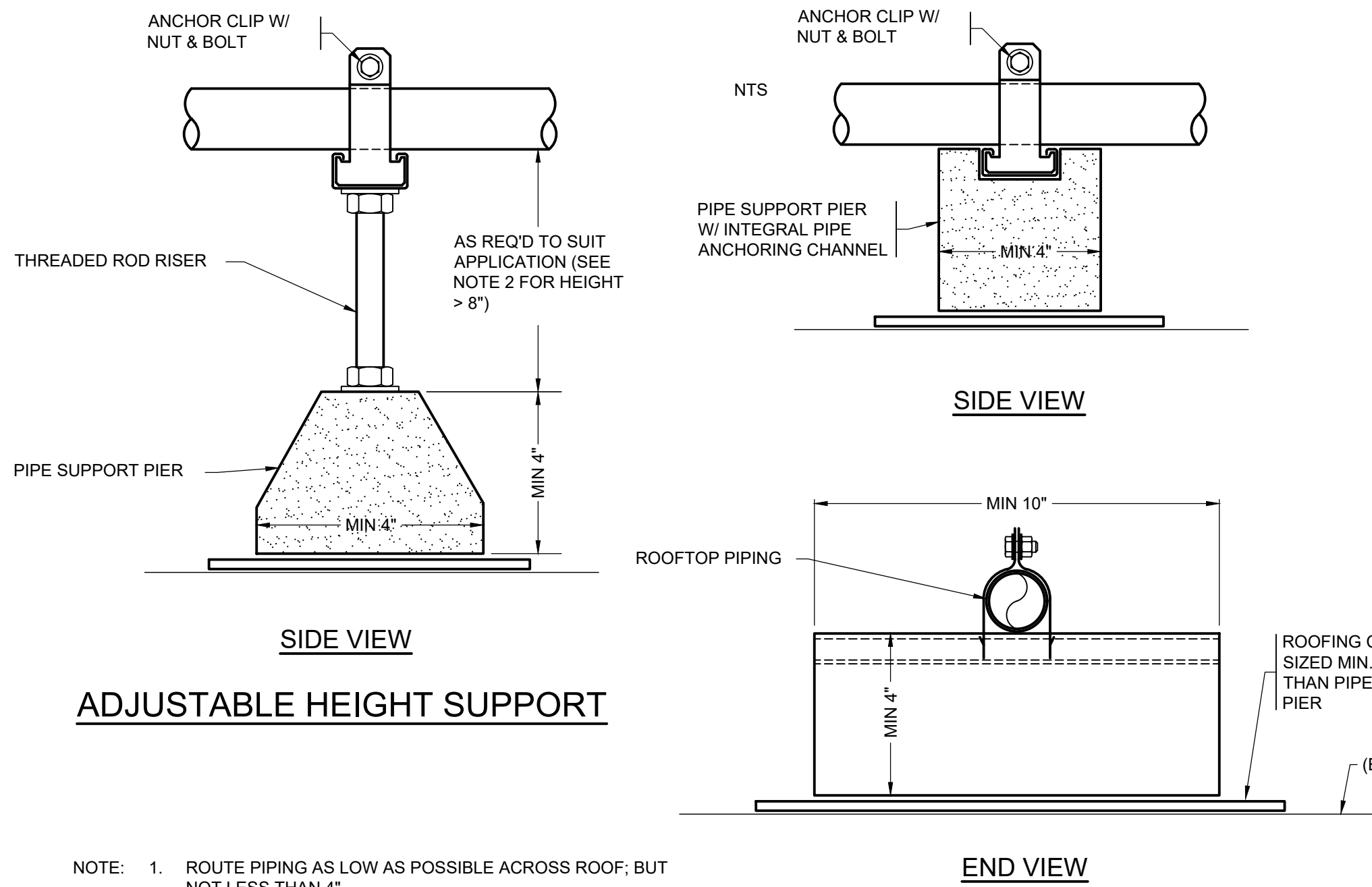
117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA 98104
TELEPHONE: (206) 467-5133 FAX: (206) 467-1158



CHILLER SCHEMATIC - CASCADE MS

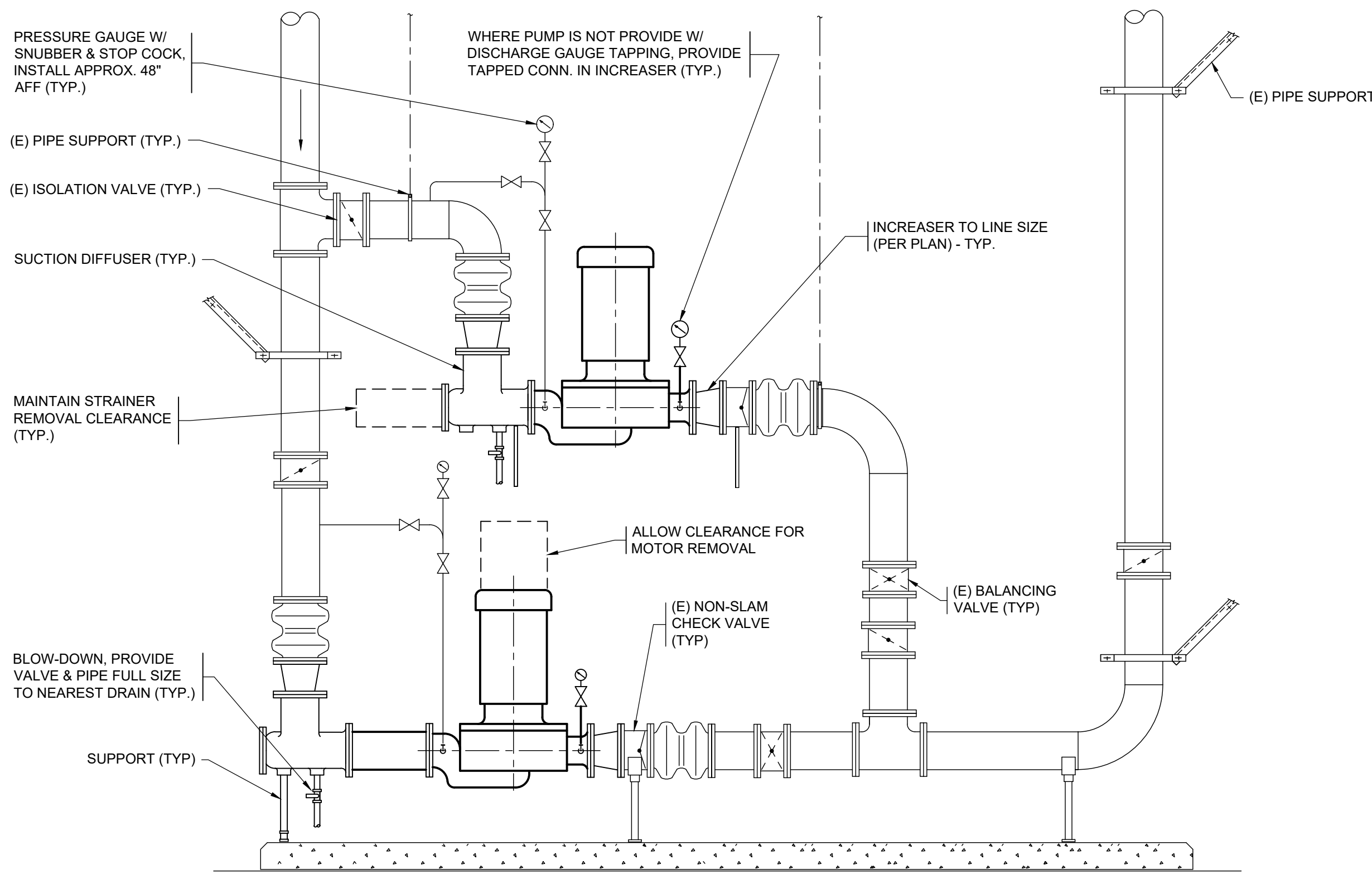


CHILLER SCHEMATIC - NORTHLAKE ES

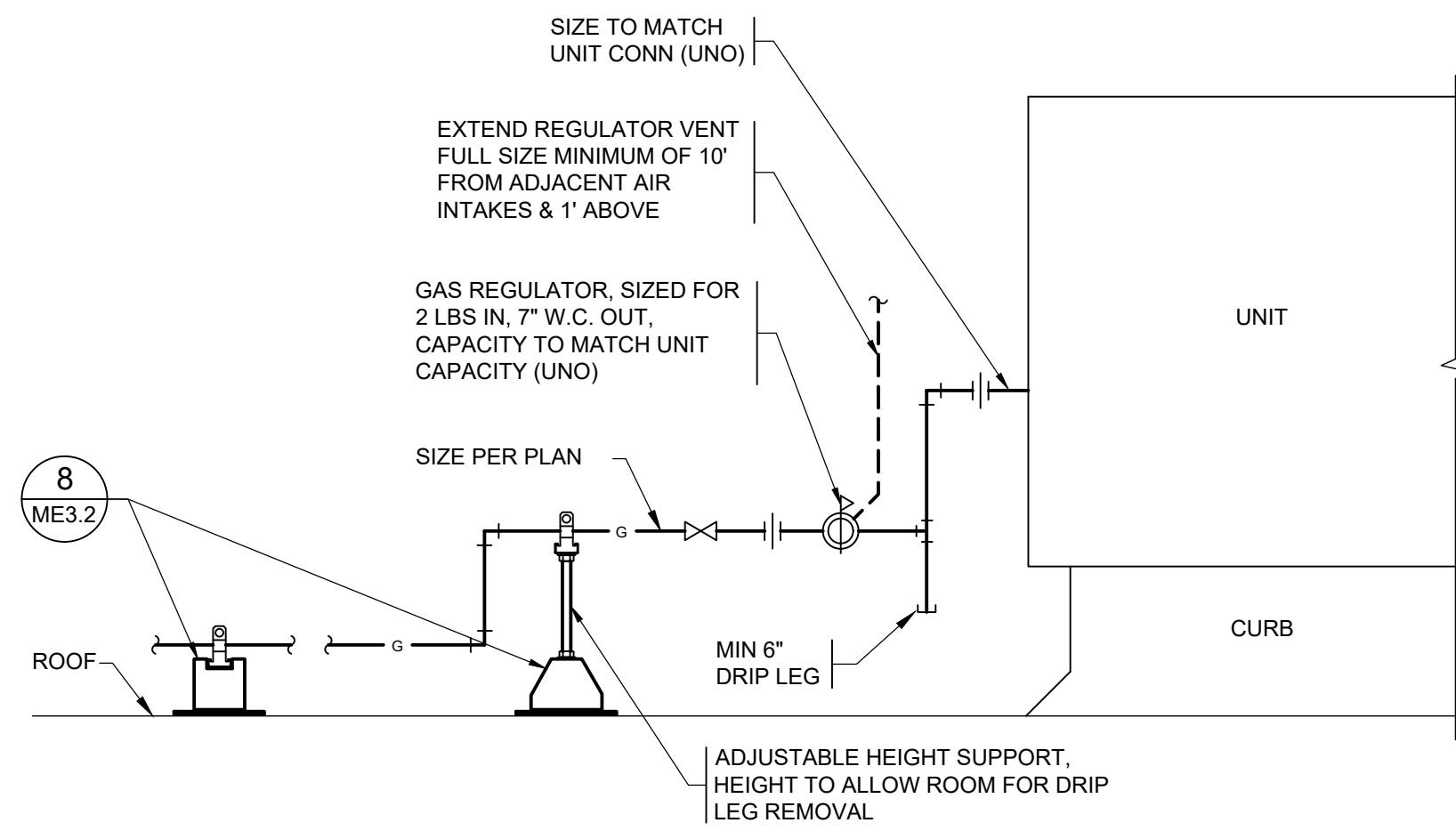


- NOTE: 1. ROUTE PIPING AS LOW AS POSSIBLE ACROSS ROOF; BUT NOT LESS THAN 4".
2. WHERE PIPE HEIGHT ABOVE ROOF EXCEEDS 12", PROVIDE MULTIPLE PIER SUPPORTS W/ "H" FRAME CHANNEL SUPPORT BETWEEN.

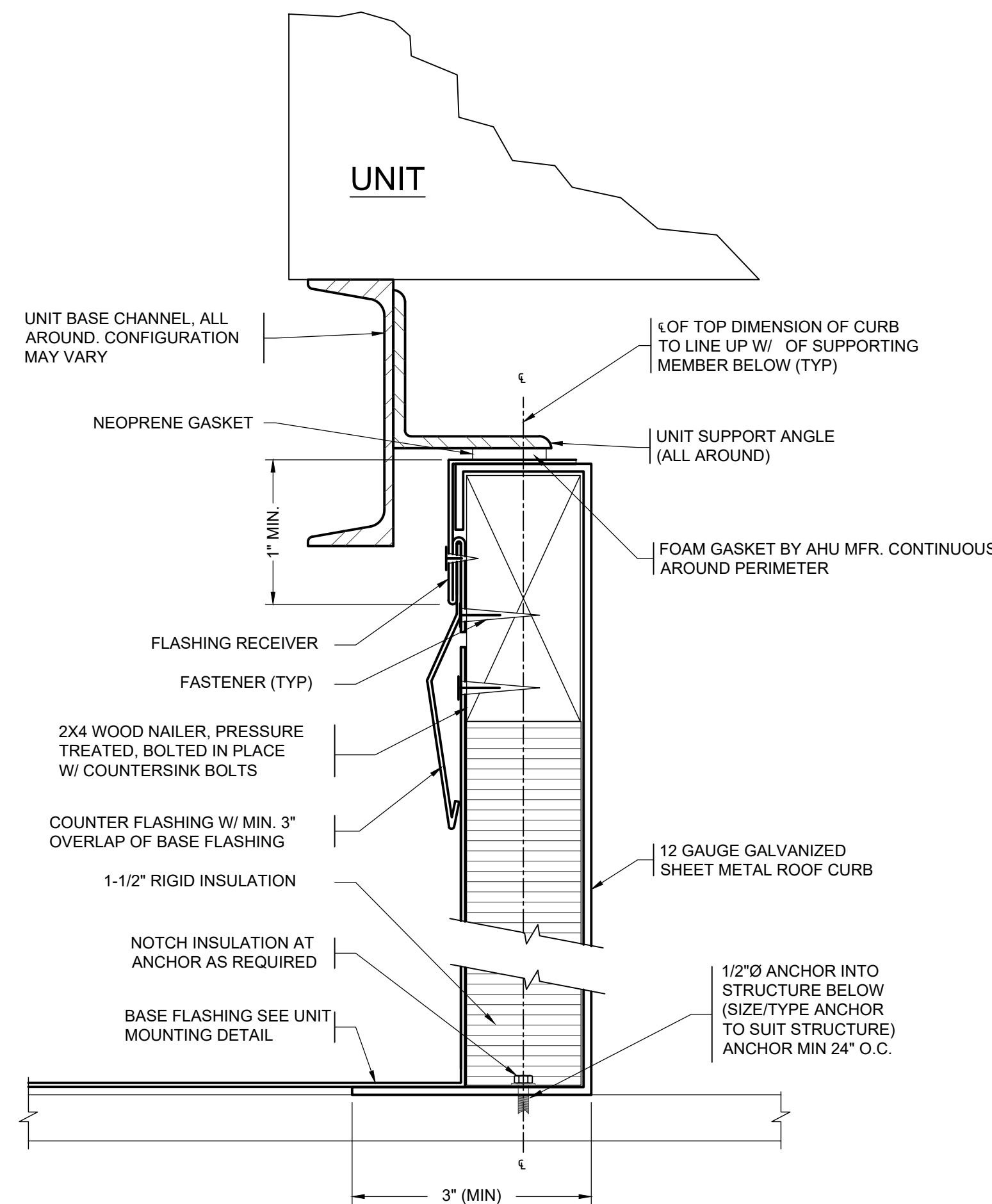
ROOFTOP PIPE SUPPORT



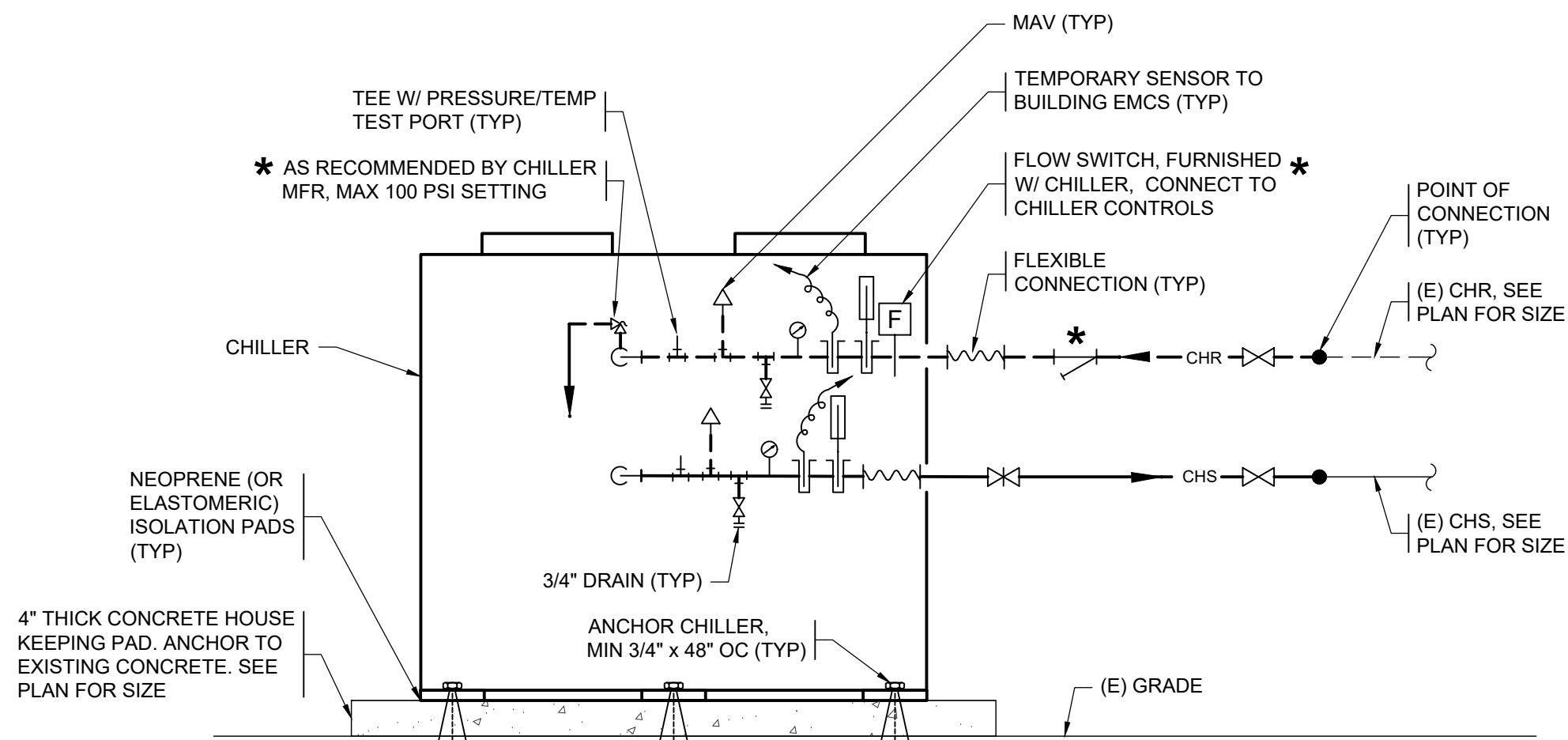
INLINE PUMP DETAIL



ROOFTOP UNIT GAS CONNECTION

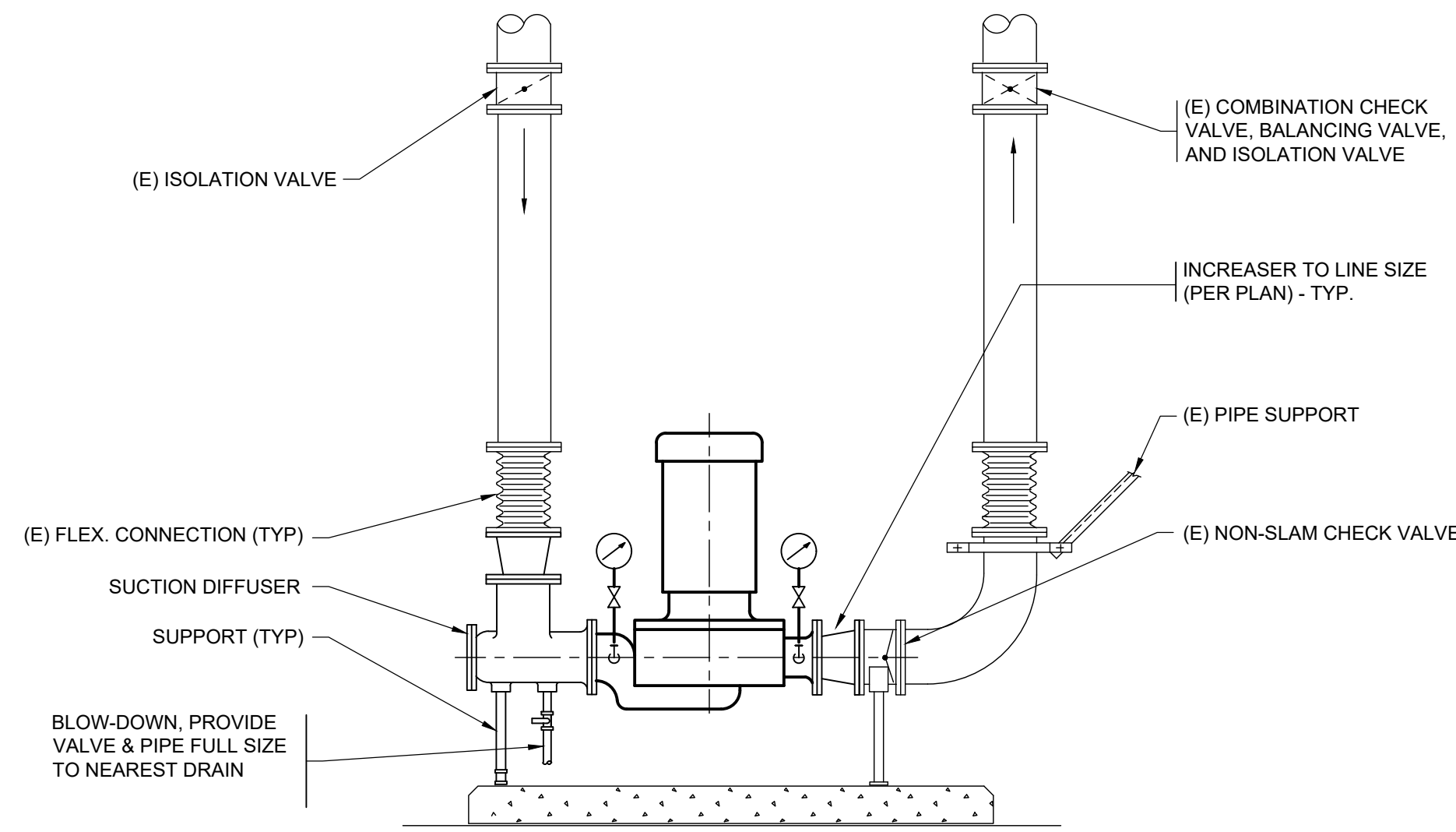


CURB FLASHING



- NOTES:
1. INSULATE ALL SURFACES & ITEMS IN CONTACT WITH CHILLER WATER SO NO CONDENSATION CAN OCCUR; PROVIDE W/ METAL JACKETING. PROVIDE REMOVABLE INSULATION AT STRAINER, BALANCING VALVE, MAV'S, DRAINS, RELIEF VALVE & TEST PORTS.
 2. PROVIDE HEAT TRACE ON ALL ITEMS SUBJECT TO FREEZING.
- * NOT REQUIRED EXTERNAL OF UNIT WHERE FACTORY INSTALLED IN UNIT; VERIFY W/ CHILLER MFR.

CHILLER CONNECTIONS



INLINE PUMP DETAIL



FLOOR PLAN - VENTILATION
NTS

1
ME4.1

NORTHLAKE ELEMENTARY SCHOOL

OA VENTILATION CALCULATION
PER IMC 2018

Project: Northlake ES

Single Zones	Zone #	Room Name	Outdoor Airflow
	1	Resource	550.0
	2	Title 1	550.0
	3	Resource	550.0
	4	Library	1050.0
	5	ELL	525.0
	6	2nd	525.0
	7	2dn	525.0
	8	1st	525.0
	9	1st	525.0
	10	1st	550.0
	11	Gym	3750.0
	12	Stage	400.0
	13	K	575.0
	14	K	550.0
	15	K	550.0
	16	4th	550.0
	17	4th	550.0
	18	Kitchen	125.0

OA VENTILATION CALCULATION
PER ASHRAE IMC 2018

Project: Northlake ES

Multi-Zone	Sub Zone	Room Name	SPACE SA
MZ-1 Admin	A	breakroom	
	B	workroom	
	C	reception	
	D	principal	
	TOTAL		
MZ-2 Nurse	A	nurse	
	B	counselor	
	TOTAL		
MZ-3 Speech	A	speech	
	B	homeless	
	C	office	
	TOTAL		

BALANCING NOTES

- CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
- WHERE AN HVAC UNIT SERVES MULTIPLE ZONES, CONTRACTOR SHALL MEASURE EXISTING SUPPLY AIR FLOW TO EACH SPACE AND THE TOTAL AIRFLOW OF THAT HVAC UNIT. SUBMIT MEASUREMENTS TO MECHANICAL ENGINEER WHO WILL USE INFORMATION TO PROVIDE FOR OUTSIDE AIR CALCULATIONS FOR THAT UNIT.
- WHERE EXISTING HVAC SYSTEM IS PROVIDED WITH CO2 CONTROLS, THE SCHEDULED MINIMUM OUTDOOR AIR CFM MAY BE REDUCED TO 90% OF THE CALCULATED VALUE.

KEYED NOTES

- Single Zone System
- MZ-1 Multiple Zone System

NORTHLAKE ES NOTES

- HVAC SYSTEM IS INDIVIDUAL HYDRONIC FAN COIL UNITS. UNITS MAY BE SUSPENDED FROM ROOF STRUCTURE CONCEALED ABOVE CEILINGS, OR BE ROOF MOUNTED.
- THERE ARE NO MECHANICAL AS-BUILT PLANS AVAILABLE. CONTRACTOR SHALL INVESTIGATE AND VERIFY LOCATIONS OF ALL HVAC EQUIPMENT AND THE SPACES THEY SERVE. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING UNIT LOCATIONS, UNIT NAMEPLATE DATA, AND SPACES SERVED.
- MULTIPLE ZONE SYSTEMS SHOWN ARE PRELIMINARY. CONTRACTOR SHALL VERIFY EQUIPMENT SERVING ALL SPACES WITHIN A ZONE.

LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22
Job No.:	22220.00
Drawn By:	MB
Checked by:	BW
Revisions	
#	Date Description

VENTILATION
CALCULATIONS -
NORTHLAKE ES

ME4.1

integrus
ARCHITECTURE

117 SOUTH MAIN STREET, SUITE 100, SEATTLE, WA 98104
TELEPHONE (206) 467-5133 FAX (206) 467-1158

SIGNED
11/15/2022

HULTZ & BHU
engineers inc

1111 Fawcett Ave Suite 100 Tacoma, WA 98402
Phone: (253) 383-3257 Fax: (253) 383-3283
general@hultzbhu.com Job Number: 22-187

BUILDING A LOWER LEVEL
GROSS 32,901 SF.
1 CLASSROOM 16,843 SF.
3 CORRIDORS 7,079 S.F.
4 SERVICE AREAS 3,389 SF.
5 LIBRARY 3,380 S.F.



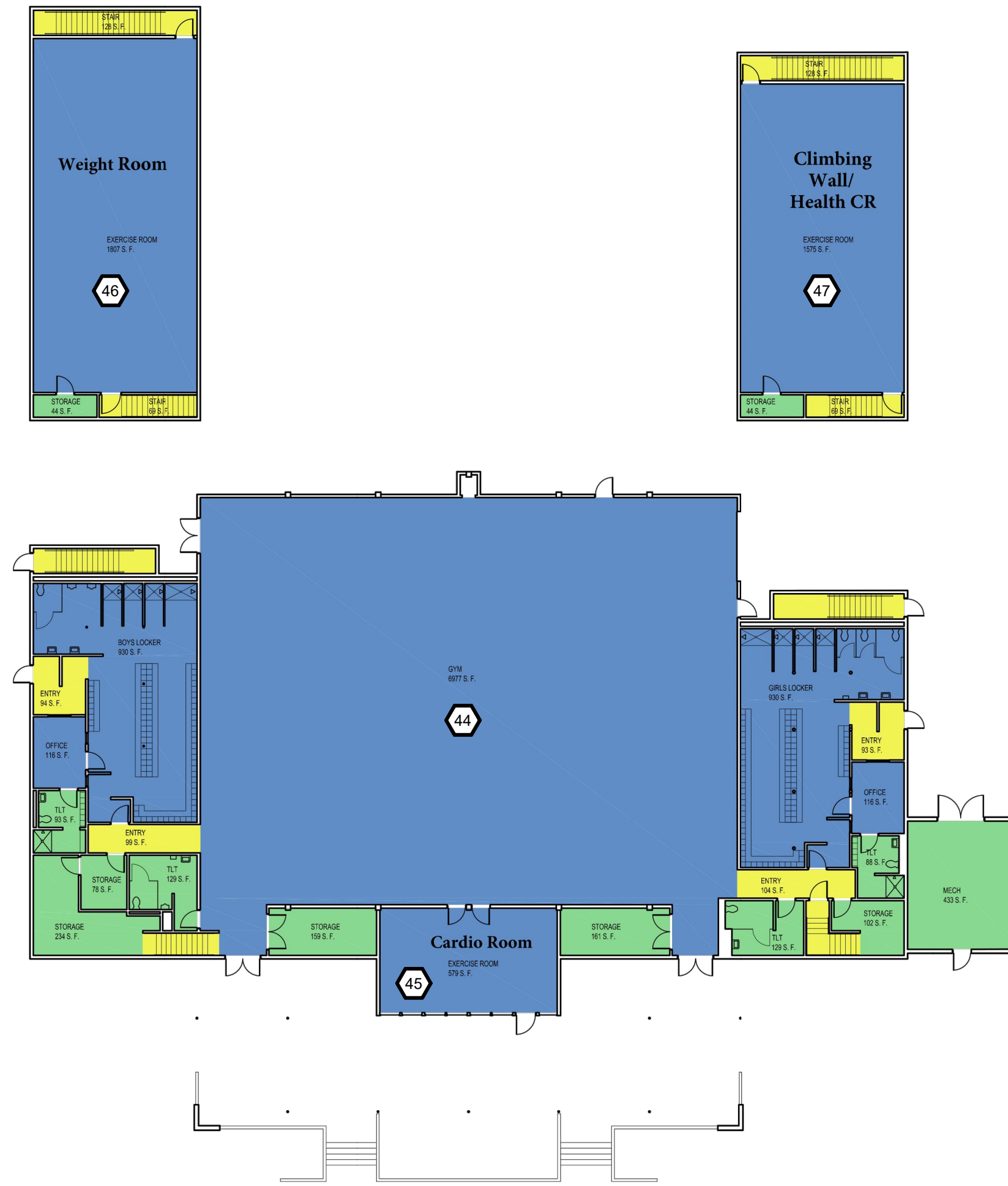
LOWER LEVEL

BUILDING "A" LOWER LEVEL FLOOR PLAN - VENTILATION

NTS

1
ME4.2

BUILDING B
GROSS 16,844 SF.
3 CORRIDORS 1,097 S.F.
4 SERVICE AREAS 1,694 SF.
6 GYM 13,030 S.F.

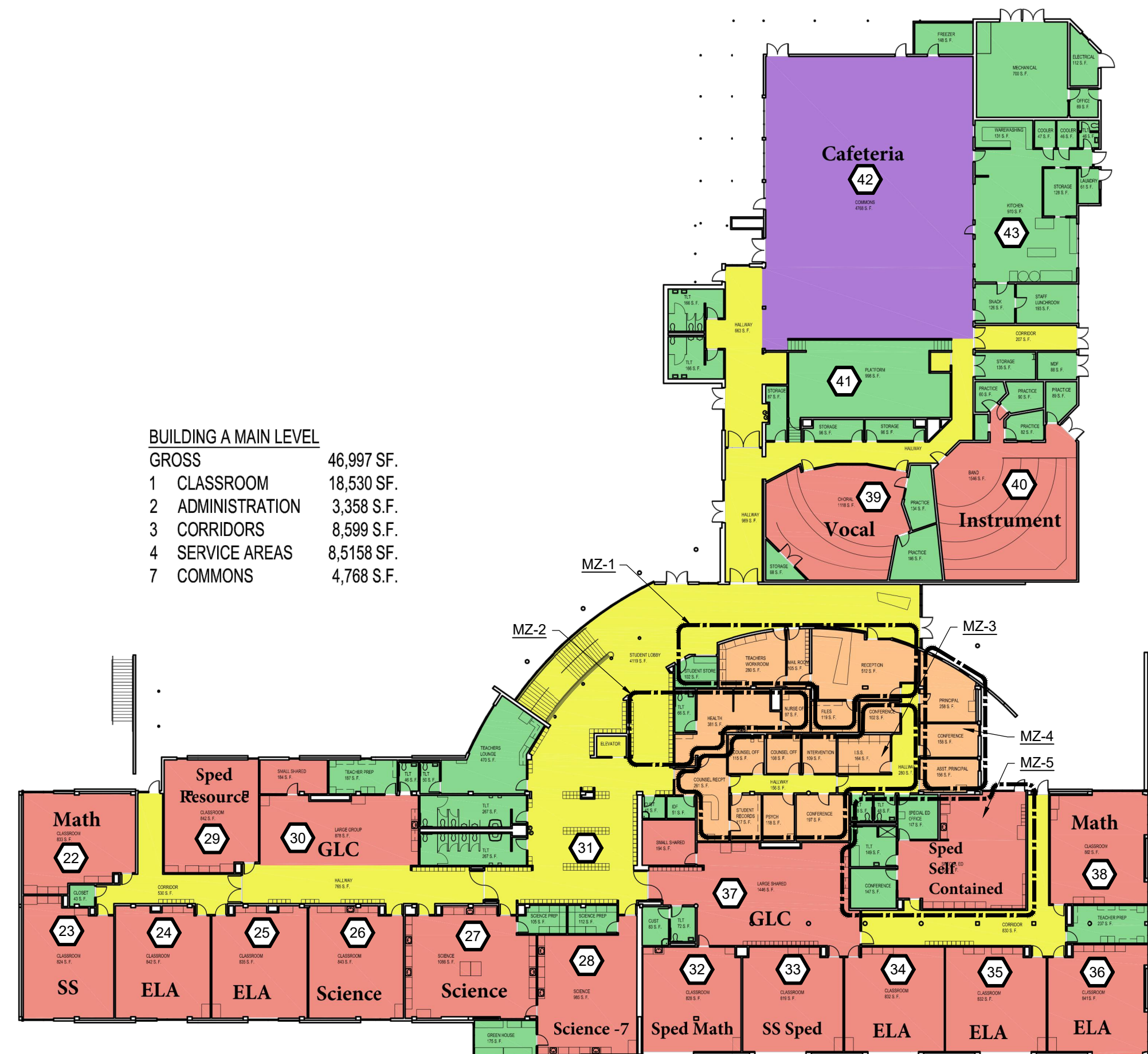


BUILDING "B" FLOOR PLAN - VENTILATION

NTS

3
ME4.2

BUILDING A MAIN LEVEL
GROSS 46,997 SF.
1 CLASSROOM 18,530 SF.
2 ADMINISTRATION 3,358 S.F.
3 CORRIDORS 8,599 S.F.
4 SERVICE AREAS 8,518 SF.
7 COMMONS 4,768 S.F.



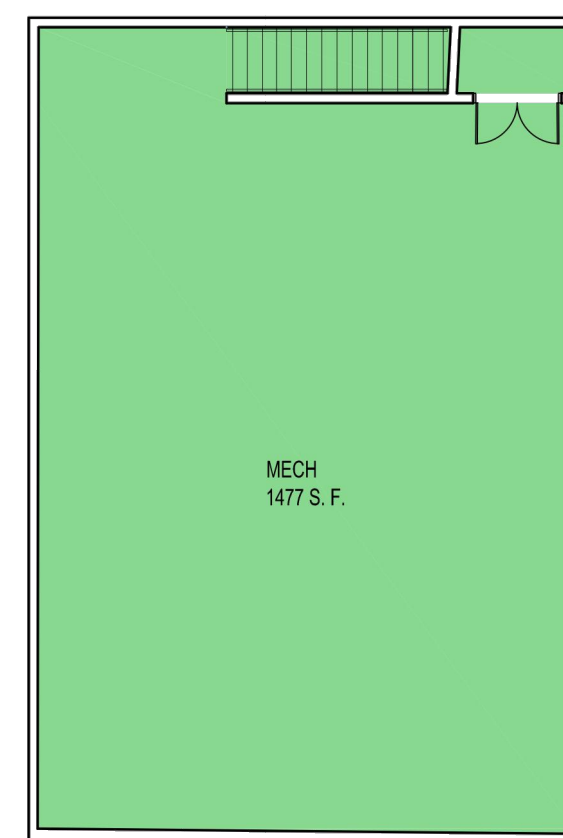
MAIN LEVEL

BUILDING "A" MAIN LEVEL FLOOR PLAN - VENTILATION

NTS

2
ME4.2

BUILDING C
GROSS 6,6777 SF.
3 CORRIDORS 81 S.F.
4 SERVICE AREAS 2,034 SF.
6 GYM 4,174 S.F.



BUILDING "C" FLOOR PLAN - VENTILATION

NTS

4
ME4.2

OA VENTILATION CALCULATION
PER ASHRAE IMC 2018

Project: Cascade MS

Multi-Zone	Sub Zone	Room Name	SPACE SA
MZ-1 Admin	A	student store	
	B	workroom	
	C	mailroom	
	D	reception	
	E	files	
TOTAL			
MZ-2 Health	A	Health	
	B	Nurse	
	C	Hall	
TOTAL			
MZ-3 Counselor	A	reception	
	B	counselor	
	C	counselor	
	D	intervention	
	E	ISS	
	F	conference	
	G	records	
	H	psych	
	I	conference	
TOTAL			
MZ-4 Principal	A	principal	
	B	conference	
	C	asst. princ.	
TOTAL			
MZ-5 Spec Ed	A	special ed	
	B	office	
	C	conference	
TOTAL			

OA VENTILATION CALCULATION
PER IMC 2018

Project: Cascade MS

Single Zone	Zone #	Room Name	Outdoor Airflow
Bldg A Lower Level	1	SS	510.0
	2	Math	510.0
	3	Health	510.0
	4	SPED	510.0
	5	ELA	510.0
	6	ELA 6th	510.0
	7	Science	625.0
	8	GLC	560.0
	9	Library/Lobby	475.0
	10	Library	1850.0
	11	Computer Lab	475.0
	12	Computer Lab	475.0
	13	Shop	525.0
	14	Computer Lab	480.0
	15	Art	675.0
	16	Home Ec	750.0
	17	After School	325.0
	18	Computer Lab	450.0
	19	Spec Ed	300.0
	20	Spec Ed	300.0
	21	Spec Ed	175.0
Upper Level	22	Math	500.0
	23	SS	500.0
	24	ELA	510.0
	25	ELA	510.0
	26	Science	510.0
	27	Science	650.0
	28	Science 7	600.0
	29	Sped resource	510.0
	30	GLC	650.0
	31	Student Lobby	600.0
	32	Sped Math	500.0
	33	SS Sped	500.0
	34	ELA	500.0
	35	ELA	500.0
	36	ELA	510.0
	37	GLC	775.0
Bldg B	38	Math	525.0
	39	Vocal	675.0
	40	Instrument	925.0
	41	Platform	600.0
	42	Cafeteria	550.0
	43	Kitchen	350.0
	44	Gym	2650.0
Bldg C	45	Cardio	650.0
	46	Weight Room	625.0
	47	Health	600.0
	48	Gym	1250.0

BALANCING NOTES

- CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
- WHERE AN HVAC UNIT SERVES MULTIPLE ZONES, CONTRACTOR SHALL MEASURE EXISTING SUPPLY AIR FLOW TO EACH SPACE AND THE TOTAL AIRFLOW OF THAT HVAC UNIT. SUBMIT MEASUREMENTS TO MECHANICAL ENGINEER WHO WILL USE INFORMATION TO PROVIDE FOR OUTSIDE AIR CALCULATIONS FOR THAT UNIT.
- 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

- ① SINGLE ZONE SYSTEM
MZ-1 MULTIPLE ZONE SYSTEM

CASCADE MS NOTES

- HVAC SYSTEM IS INDIVIDUAL HYDRONIC FAN COIL UNITS. UNITS MAY BE SUSPENDED FROM ROOF STRUCTURE CONCEALED ABOVE CEILINGS, OR BE LOCATED IN MECHANICAL MEZZANINES.
- LIMITED MECHANICAL AS-BUILTS ARE AVAILABLE FOR CONTRACTOR'S USE. CONTACT ENGINEER.
- MULTIPLE ZONE SYSTEMS SHOWN ARE PRELIMINARY. CONTRACTOR SHALL VERIFY EQUIPMENT SERVING ALL SPACES WITHIN A ZONE.

LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS

2715 LILAC STREET
LONGVIEW, WA 98032

Date:	11/14/22	
Job No.:	22220.00	
Drawn By:	MB	
Checked by:	BW	
Revisions		
#	Date	Description

VENTILATION
CALCULATIONS -
CASCADE MS

ME4.2



Phone: (253) 383-3257
Fax: (253) 383-3283
Email: general@hultzbu.com
Lab Number: 23 197

Single Zones	Zone #	Room Name	Airflow
Bldg A	1	K	625.0
	2	K	480.0
	3	K	480.0
	4	1st	480.0
	5	1st	480.0
Bldg B	6	Library	725.0
Bldg C	7	Gym/Stage	4450.0
	8	Kitchen	60.0
Bldg D	9	CL	525.0
	10	4th	575.0
	11	Intervention	525.0
	12	5th	675.0
	13	5th	550.0
	14	corridor	300.0
Bldg E	15	Music	610.0
	16	1st	610.0
	17	Resource	610.0
	18	2nd	610.0
Bldg F	19	2nd/3rd	610.0
	20	2nd/3rd	610.0
	21	3rd	610.0
	22	4th	610.0
	23	3rd	610.0
	24	4th/5th	610.0

OA VENTILATION CALCULATION PER ASHRAE IMC 2018

Project: **Columbia Heights ES**

Multi-Zone	Sub Zone	Room Name	SPACE SA
MZ-1 Admin	A	office	
	B	office	
	C	reception	
TOTAL			
MZ-2 Break	A	breakroom	
	B	nurse	
	C	workroom	
TOTAL			
MZ-3 Counselor	A	office	
	B	office	
TOTAL			

BALANCING NOTES

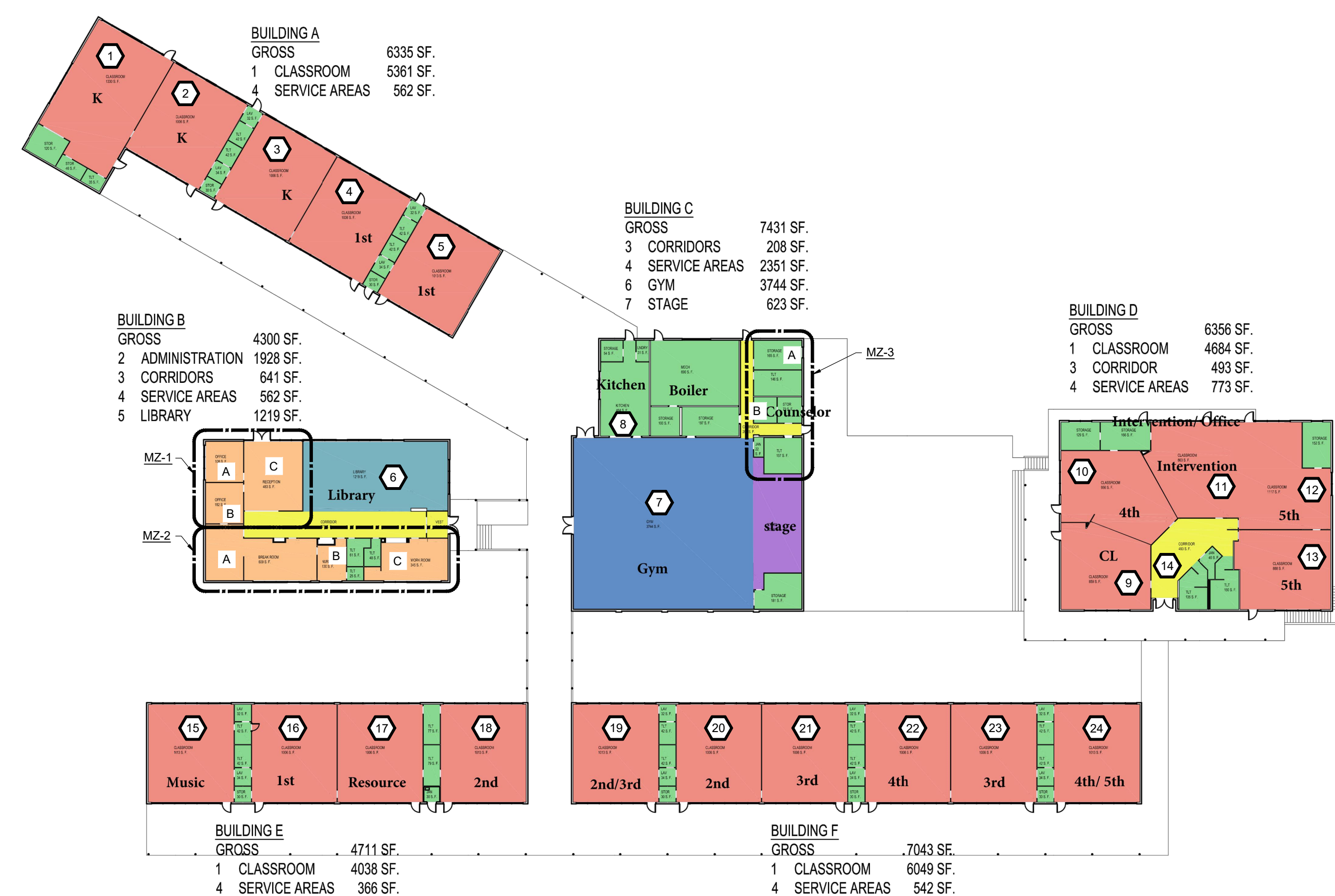
1. CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS TO PROVIDE THE MINIMUM OUTDOOR AIR CFM AS SCHEDULED.
2. WHERE AN HVAC UNIT SERVES MULTIPLE ZONES, CONTRACTOR SHALL MEASURE EXISTING SUPPLY AIR FLOW TO EACH SPACE AND THE TOTAL AIRFLOW OF THAT HVAC UNIT. SUBMIT MEASUREMENTS TO MECHANICAL ENGINEER WHO WILL USE INFORMATION TO PROVIDE FOR OUTSIDE AIR CALCULATIONS FOR THAT UNIT.
3. 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

1 SINGLE ZONE SYSTEM
MZ-1 MULTIPLE ZONE SYSTEM

COLUMBIA HEIGHTS ES NOTES

1. EXISTING HVAC SYSTEM CONSISTS OF PACKAGED ROOFTOP GAS HEAT / ELECTRICAL COOLING UNITS AND GAS FIRED FURNACES WITH COOLING COILS AND OUTDOOR COMPRESSOR / CONDENSER UNITS.
2. LIMITED MECHANICAL AS BUILTS ARE AVAILABLE FOR USE BY CONTRACTOR. CONTACT ENGINEER.



FLOOR PLAN - VENTILATION

NTS

1

ME4.

**LONGVIEW SCHOOL DISTRICT
HVAC CHILLER REPLACEMENT AND INDOOR AIR
QUALITY IMPROVEMENTS**
2715 LILAC STREET
LONGVIEW, WA 98632

Date:	11/14/22	
Job No.:	22220.00	
Drawn By:	MB	
Checked by:	BW	
Revisions		
#	Date	Description

VENTILATION CALCULATIONS - COLUMBIA HEIGHTS ES

ME4.3