

# GROSSE POINTE PUBLIC SCHOOL SYSTEM

## Trombly Elementary School

## Greenhouse Stabilization

Trombly Elementary School  
820 Beaconsfield  
Grosse Pointe Park, MI 48230  
313.432.5005

Contact: Mr. Tom Sears, Building Engineer

Grosse Pointe Public School System  
389 St. Clair Avenue  
Grosse Pointe, MI 48230  
313.432.3082

Contact: Mr. Richard VanGorder  
Manager of Buildings and Grounds



LOCATION PLAN   
NOT TO SCALE

### APPLICABLE CODES:

MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS	2012 EDITION
MICHIGAN MECHANICAL CODE	2012 EDITION
MICHIGAN PLUMBING CODE	2012 EDITION
NATIONAL ELECTRIC CODE (WITH MICHIGAN PART 8 RULES)	2014 EDITION
LIFE SAFETY CODE 101	1997 EDITION
FEDERAL ADA LAW	CURRENT EDITION
ACCESSIBLE AND USABLE BUILDINGS & FACILITIES ANSI A117.1	2009, 2011 EDITION

### OCCUPANCY GROUP:

E: EDUCATIONAL

### ZONING DISTRICT:

C.F.: COMMUNITY FACILITIES

### CONSTRUCTION TYPE:

TYPE 11 (000) WITHOUT SPRINKLER COVERAGE

### TOTAL FLOOR AREA:

REMODELED FLOOR AREA: 234 S.F.

### LIST OF ALTERNATES:

**ALTERNATE 1: ELECTRIC ROOF SUPPORTED HEATER**  
STATE THE AMOUNT TO BE ADDED TO THE BASE PROPOSAL AMOUNT TO INSTALL A SUPPLEMENTAL ROOF SUPPORTED HEATER AND CONTROLS. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR FURTHER INFORMATION.

**ALTERNATE 2: EVAPORATIVE COOLER**  
STATE THE AMOUNT TO BE ADDED TO THE BASE PROPOSAL AMOUNT TO INSTALL AN EVAPORATIVE COOLING SYSTEM WITH ASSOCIATED THERMOSTAT. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR FURTHER INFORMATION.

**ALTERNATE 3: HUMIDIFICATION SYSTEM**  
STATE THE AMOUNT TO BE ADDED TO THE BASE PROPOSAL AMOUNT TO INSTALL AN OSCILLATING TURBO FOGGER WITH HUMIDISTAT CONTROLS. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR FURTHER INFORMATION.

**ALTERNATE 4: IRRIGATION AND MISTING SYSTEM**  
STATE THE AMOUNT TO BE ADDED TO THE BASE PROPOSAL AMOUNT TO INSTALL A DRIP IRRIGATION AND MIST SYSTEM WITH CONTROLS. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR FURTHER INFORMATION.

**ALTERNATE 5: ENVIRONMENTAL CONTROL SYSTEM**  
STATE THE AMOUNT TO BE ADDED TO THE BASE PROPOSAL AMOUNT TO INSTALL AN ENVIRONMENTAL CONTROL SYSTEM THAT COORDINATED ALL OF THE MECHANICAL AND ELECTRICAL SYSTEMS. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR FURTHER INFORMATION.

PROJECT NO.: 9115

### LIST OF DRAWINGS:

#### ARCHITECTURAL DRAWINGS

TTL	TITLE SHEET
A00	GENERAL INFORMATION
A10	REMOVALS PLANS
A20	FLOOR PLANS
A30	EXTERIOR ELEVATIONS
A35	BUILDING SECTION
A80	DETAILS
A90	DOOR DETAILS & ELEVATION
A91	DOOR DETAILS & SCHEDULE

#### MECHANICAL DRAWINGS

M000	MECHANICAL LEGEND, SHEET INDEX AND GENERAL NOTES
M001	MECHANICAL SPECIFICATIONS
M100	MECHANICAL FLOOR PLANS

#### ELECTRICAL DRAWINGS

E001	ELECTRICAL SPECIFICATIONS, LEGEND, SHEET INDEX AND GENERAL NOTES
E100	ELECTRICAL FLOOR PLANS

### ARCHITECT:

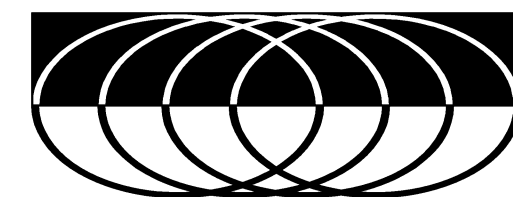
#### Ehresman Associates, Inc.

architects • engineers

803 West Big Beaver Road, Suite 350  
Troy, Michigan 48084-4734  
248.244.9710  
248.244.9712 (f)

email: architects@ehresmanassociates.com

### MECHANICAL and ELECTRICAL ENGINEERS:



MA ENGINEERING, INC.  
MECHANICAL & ELECTRICAL • CONSULTING ENGINEERS  
200 E. BROWN STREET  
BIRMINGHAM, MICHIGAN 48009 FAX (248) 258-3538  
Contact: Mr. Salim Sessine

Bidding: 16 February 2016

Title Sheet

Scale as Noted

Ehresman Associates, Inc.  
architects • engineers

Grosse Pointe Public School System  
Trombly Elementary School  
Greenhouse Stabilization

Project No. 9115

TTL

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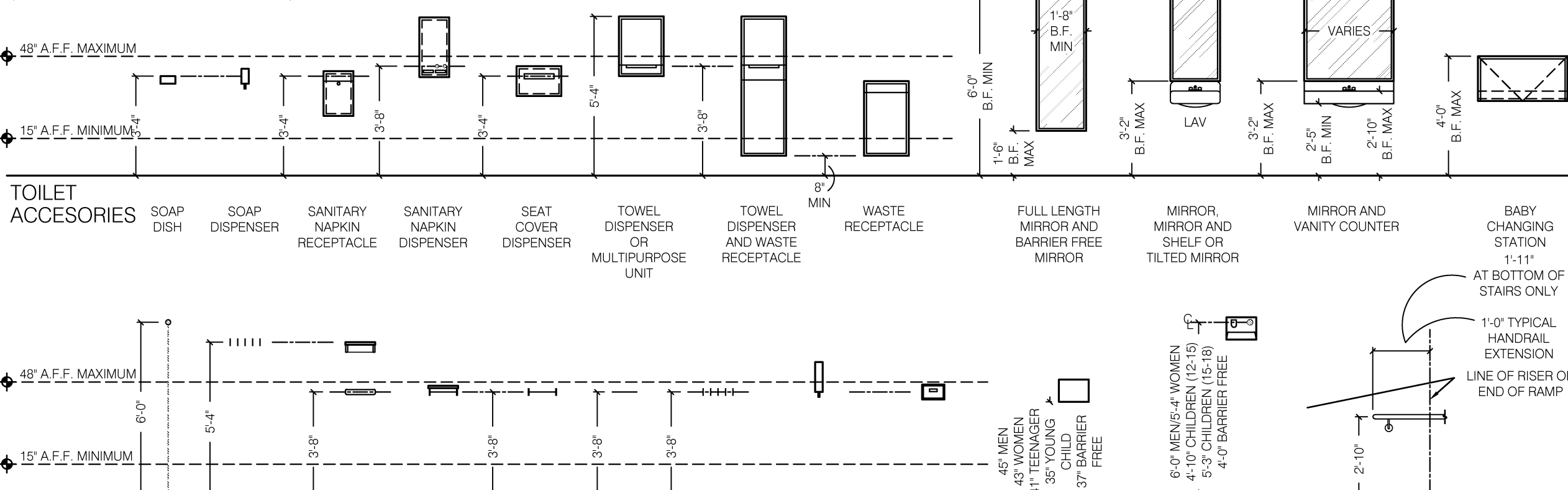
**ABBREVIATIONS**

<b>A</b>	ABV. ABOVE A.F.F. ABOVE FINISH FLOOR ACC. ACCESS ACC. PNL. ACCESS PANEL ACT. ACCUSTICAL CEILING TILE ADD. ADDENDUM ADDN. ADDITION ADJ. ADJACENT AC. AIR CONDITIONING A.C. AIR CONDITIONING COMPRESSOR A.C.U. AIR COOLED CONDENSING UNIT A.H.U. AIR HANDLING UNIT AL. ALUMINUM ALT. ALTERNATE ALUM./AL. ALUMINUM ANCH. ANCHOR A.S. ANCHOR BOLT & ANG./L OR Z ANGLE ANGD. ANGLEZED APT. APARTMENT APPR. APPROVED APPROX. APPROXIMATE ARCH. ARCHITECT/ARCHITECTURAL A.T.M. AUTOMATIC TELLER MACHINE ASPH. ASPHALT ASSY. ASSEMBLY @. AT AUTO. AUTOMATIC AUX. AUXILIARY AVG. AVERAGE	<b>E</b>	EA. EACH FACE E.F. EACH WAY E.W. EACH E.I.F.S. EXTERIOR INSULATION FINISH SYSTEM ELAST. ELASTOMERIC ELEC. ELECTRICAL ELEC. CAB. ELECTRICAL CABINET E.C. ELECTRICAL CONTRACTOR E.L.P. ELECTRICAL PANEL E.W.C. ELECTRIC WATER PANEL ELEC. OPER. ELECTRICALLY OPERATED EL. ELEVATOR ELEV. ELEVATOR EMERG. EMERGENCY ENCL. ENCLOSURE ENGR. ENGINEER ENTR. ENTRANCE EPO. EPOXY EPDM. ETHYLENE PROPYLENE DIENE MONOMER EQ. EQUAL EQUIP. EQUIPMENT EQUIV. EQUIVALENT ESC. ESCALATOR EST. ESTIMATE EXC. EXCAVATED EXH. EXHAUST E.F. EXHAUST FAN (E). EXISTING E.C.U. EXISTING CONDITIONS UNKNOWN (VERIFY) ETR. EXISTING TO REMAIN EXP. EXPANSION EXPJ. EXPANSION JOINT EXPOSED EXPOSED EXTN. EXTENSION EXT. EXTERIOR E.H. EXTRA HEAVY EXTR. EXTRUDED	<b>L</b>	LBL. LABEL LAB. LABORATORY LAD. LADDER LAG. LAG BOLT LAM. LAMINATE/LAMINATED LDG. LANDING LGE. LARGE LDRY. LAUNDRY LAV. LAVATORY L.H. LEFT HAND LGTH. LENGTH LEV. LEVEL LHT. LIGHT LGT. LIGHTING L.P. LIGHTING PANEL LMS. LIMESTONE LTL. LINTELO LNF. LINEAR FOOT/FEET LIQ. LIQUID LL. LIFT LOAD LOC. LOCATION LGH. LONG LL.H. LONG LEG HORIZONTAL LL.V. LONG LEG VERTICAL LVR. LOUVER L.O. LOUVER OPENING L.P. LOW PRESSURE LBS. OR # POUNDS	<b>S</b>	SAN. SANITARY S.N.D. SANITARY NAPKIN DISPENSER S.N.R. SANITARY NAPKIN RECEPTACLE SCHED. SCHEDULE STG. SEATING SEC. SECTION SERV. SERVICE SHT. SHEET SHWR. SHOWER SM. SIMILAR S.D. SOAP DISPENSER S.C. SOLID CORE STC. SOUND TRANSMISSION CLASS S. SOUTH SP. SPACE SPKR. SPEAKER SPEC. SPECIFICATIONS SQ. SQUARE S.F. SQUARE FEET S.S. STAINLESS STEEL STD. STANDARD STM. STEAM STL. STEEL STOR. STORAGE ST. STRUCTURE STRUC. STRUCTURAL STRUSP. STRUSS/SUSPENDED SWBD. SWITCHBOARD SWGR. SWITCHGEAR SYMB. SYMBOL SYS. SYSTEM	<b>M</b>	MACH. MACHINE M.A.U. MAKE UP AIR UNIT M.D.P. MAIN DISTRIBUTION PANEL M.S.B. MAIN SWITCH BOARD MAINT. MAINTENANCE M.H. MANHOLE M.F. MANUFACTURER MAR. MARBLE M.O. MASONRY OPENING M.AX. MAXIMUM MECH. MECHANICAL MED. MEDIUM MEMS. MEMBRANE T.G. TOP OF GUTTER M.D.S. METAL DIVIDER STRIP M.E. METAL EDGE M.L. METAL LATH M.L.&PLAS. METAL LATH & PLASTER M.Z. MEZZANINE M.DOT. MICHIGAN DEPARTMENT OF TRANSPORTATION MIN. MINIMUM MISC. MISCELLANEOUS MTO. MOUNTED MTG. MEETING	<b>T</b>	T.BD. TACKBOARD T.G. TONGUE & GROOVE TECH. TECHNICAL T.P. TELEPHONE TELEVISION TELEVISION TEMP. TEMPORARY TERR. TERRAZZO T. THERMOSTAT THRU. THROUGH T & G. TONGUE & GROOVE T & B. TOP & BOTTOM T/C. TOP OF CURB T/P. TOP OF FOOTING T/G. TOP OF GUTTER TRFR. TRANSFORMER TREAD. TREAD T.D. TRENCH DRAIN TYP. TYPICAL	<b>U.C.</b> UNDERCUT <b>U.G.</b> UNDER GROUND <b>U.L.</b> UNDERWRITERS LABORATORY <b>U.N.O.</b> UNLESS NOTED OTHERWISE <b>U.R.</b> URINAL	
<b>B</b>	B.B. BACK TO BACK B.F.P. BACK FLOW PREVENTOR B.F.D. BACK DRAFT DAMPER B.F. BARRIER FREE B.B.R. BASE BOARD RADIATION B.F. BASE PLATE B.SMT. BASEMENT SM. BEAM B.C. BACK OF CURB BRG. BEARING B.M. BENCHMARK BT. BOLT BTW. BETWEEN BEV. BEVEL BIT. BITUMINOUS B.I. BLACK IRON BLK. BLOCK BLKG. BLOCKING B.F. BOLT FIRM BOL. BOLTER B.K. SH. BOOK SHELVES BOT. BOTTOM BOT. EL. BOTTOM ELEVATION BLVD. BOULEVARD BDRY. BOUNDARY BRKT. BRACKET BTU. BRITISH THERMAL UNIT BLDG. BUILDING B.U.R. BUILT UP ROOFING BUZZ. BUZZER	<b>F</b>	FAB. FABRICATED F.F. FINISH FAS. FASTENER FT OR. FEET OR FOOT FPM. FEET PER MINUTE F.V. FENCE F.V. FIELD VERIFY F.G. FINISH F.N. FINISH/FINISHED F.N.F.L.R.F. FINISHED FLOOR F.F. FIRE FIRM F.D. FIRE DAMPER F. FIRE SMOKE F.E. FIRE EXTINGUISHER F.E.C. FIRE EXTINGUISHER CABINET F.C. FLASHING F.L.B. FLEXIBLE CONNECTION F.L. FLOOR F.C.O. FLOOR CLEAN OUT F.D. FLOOR DRAIN F.F. FLOOR FINISH F.L. FLOOR LUMINOUS F.T.G. FOOTING FND. FOUNDATION FR. FRAMING FRM. FRAMING FRZR. FREEZER FURN. FURNISH FURR. FURRING FUT. FUTURE	<b>N</b>	NRC. NOISE REDUCTION COEFFICIENT NOM. NOMINAL N. NORTH N/C. NOT IN CONTRACT N.T.S. NOT TO SCALE NO. OR # NUMBER	<b>V</b>	VAR. VARIABLE VARN. VARNISH VNR. VENEER VENT. VENT VTR. VENT THRU ROOF V.I.F. VERIFY IN FIELD V.M. VERIFY WITH MANUFACTURER V.S. VERTICAL/VERTICALLY VERT. VERTICALLY VEST. VESTIBULE VCT. VINYL COMPOSITION TILE V.R.S. VINYL REDUCER STRIP VIT. VITREOUS VOL. VOLUME V. VOLTS	<b>O</b>	Obs. OBS. OBTAIN O.C. ON CENTER O.P. OPAQUE O.P. OPENING OPER. OPERATOR OPR. OPPOSITE ORN. ORNAMENTAL OUNC. OUNCE O.A. OUTSIDE AIR O.D. OUTSIDE DIAMETER O.A. OVERALL OHD. OVERHEAD O.F. OVERFLOW	<b>W</b>	WAINS. WAINSCOT W.C.O. WALL CLEAN OUT W.H. WALL HYDRANT W.V. WALL VENT W.F. WASH FOUNTAIN W. WASTE W.C. WATER CLOSET W.H. WATER HEATER W.P. WATERPROOF WT. WEIGHT W.W.F. WELDED WIRE FABRIC W. WEST W. WIDE WIDTH W.B. WALL BASE W.O. WINDOW OPENING W.M. WIRE MESH W. WITH W/O. WITHOUT W.P. WORKING POINT		
<b>C</b>	CAB. CABINET CAP. CAPACITY CAR. CAR C.I. CAST IRON C.B. CATCH BASIN CLG. CEILING CLG. HT. CEILING HEIGHT CEM. CEMENT CEM. PLAS. CEMENT PLASTER CTR. CENTER CER. CERAMIC C.T. CERAMIC TILE C.B.D. CHALKBOARD CHAN. ORC. CHANNEL CHW. CHILLED WATER RETURN CHWS. CHILLED WATER SUPPLY CIRCUM. CIRCUMFERENCE CIR. BRK. CIRCUIT BREAKER CL. CLASSROOM C.O. CLEAN OUT C.L. CLOSURE C.W. COLD WATER COL. COLLAMIN COMP. COMPANY CA. COMPRESSED AIR CONC. CONCRETE C.M.U. CONCRETE MASONRY UNIT CWR. COLD WATER RETURN CWS. COLD WATER SUPPLY COND. CONDENSATION CONF. CONFERENCE CONSTR. CONSTRUCTION CONTR. CONTROL JOINT CONT. CONTINUOUS/CONTINUOUS CONTR. CONTRACTOR C.P. CONTROL PANEL CONV. CONVERTOR CRS. COURSE COV. COVER COV. PL. COVER PLATE CU.FT. CUBIC FEET/CUBIC FOOT CFV. CONTRACTOR FIELD VERIFY CULV. CULVERT CYL. CYLINDER CYC. CYCLE(S) CIRCUM. CIRCUMFERENCE	<b>G</b>	GA. GAUGE GALV. GALVANIZED G. GAS GASK. GASKET G.V.&B. GATE VALVE AND BOX G.R. GRADE RAIL GEND. GENERAL GL. GLASS/GLAZING G.H.T. GLAZED HARD TILE GRAB. GRAB BAR GRN. GRANITE G.T. GREASE TRAP GND. GROUND G.F.I. GROUND FAULT INTERRUPTOR GROUT. GROUT GYP. GYPSUM GYP.BD. GYPSUM BOARD	<b>H</b>	H.C. HANDICAPPED H.R. HAND RAIL H.W. HARDWARE HDWD. HARDWOOD HD. HEAD HDR. HEADER HTR. HEATER HV. HEATING AND VENTILATING H.V.A.C. HEATING, VENTILATING & AIR CONDITIONING HWR. HEATING HOT WATER RETURN HWS. HEATING HOT WATER SUPPLY HT. HEIGHT HEX. HEXAGON H. HIGH H.I.D. HIGH INTENSITY DISCHARGE H.P. HIGH POINT H.P. HIGH PRESSURE H.P.R. HIGH PRESSURE H.S. HIGH STRENGTH H.V. HIGH VOLTAGE H.W. HIGH WATT H.C. HOLLOW CORE H.M. HOLLOW METAL HK. HOOK HORIZ. HORIZONTAL HP. HORSEPOWER H.B. HOSE BIB H.W. HOT WATER H.W.H. HOT WATER HEATER HWR. HOT WATER RETURN HWS. HOT WATER SUPPLY HR. HOUR HYD. HYDRANT	<b>P</b>	PTD. PAINTED PR. PATCH AND REPAIR PANEL. PANEL P.T.D. PAPER TOWEL DISPENSER PKG. PARKING P.BD. PARTICLE BOARD PASS. PASSAGE WT. WELDED WIRE FABRIC W. WEST W. WIDE WIDTH W.B. WALL BASE W.O. WINDOW OPENING W.M. WIRE MESH W. WITH W/O. WITHOUT W.P. WORKING POINT	<b>X</b>	X. POLISHED PVC. POLYVINYLCHLORIDE PORC. PORCELAIN PORC.ENAM. PORCELAIN ENAMEL POR. POROUS P.L.F. POUNDS PER LINEAR FOOT PSF. POUNDS PER SQUARE FOOT P.S.F. POUNDS PER SQUARE FOOT PCF. POUNDS PER CUBIC FOOT P.P. POWER PANEL P.C. PRECAST PREFAB. PREFABRICATED PRN. PREFINISHED P.T. PRESSURE TREATED P.G. PRESSURE GAUGE P.R.V. PRESSURE REDUCING VALVE PRM. PRIMARY PROJ. PROJECT/PROJECTION PROP. PROPERTY/PROPOSED P.L. PROPERTY LINE P.A. PUBLIC ADDRESS P.S. PURSE SHELF P.B. PUSH BUTTON	<b>Y</b>	YD. YARD Y.P. YIELD POINT Y.S. YIELD STRENGTH YR. YEAR	<b>Z</b>	ZC. ZINC
<b>D</b>	DMPR. DAMPER DAMP. DAMPROOFING D.L. DEAD LOAD DB. DECEIBLE D. DEEP DMT.PARTN. DEMOUNTABLE PARTITION DEPT. DEPARTMENT DEPR. DEPRESSED DES. DESIGN DET. DETAIL D.E.C. DETROIT EDISON COMPANY DIAG. DIAGONAL DIA. OR Ø. DIAMETER DIFF. DIFFUSER DIM. DIMENSION DIR. DIRECTION DISC. DISCONNECT DW. DISHWASHER DISP. DISPENSER DIST. DISTANCE D.P. DISTRIBUTION PANEL DIV. DIVISION DR. DOOR D.O. DOOR OPENING DR. OP. DOOR OPERATOR DBL. DOUBLE HUNG D.H. DOUBLE DWL. DOWN DN. DOWNSPOUT D.S. DOWNSPOUT DRN. DRAIN D.T. DRAIN TILE D.T.C. DRAIN TILE CONNECTOR DWR. DRAWER DWG. DRAWING D.F. DRINKING FOUNTAIN DUP. DUPLICATE	<b>I</b>	I.D. INSIDE DIMENSION IND. INCH IN. OR". INCH/INCHES INCL. INCLUDE/INCLUDING IND. INDIRECT WASTE INFO. INFORMATION INST. INSTALL/INSTALLATION INSUL. INSULATE/INSULATION INT. INTERIOR INTER. INTERMEDIATE INV. INVERT IE. INVERT ELEVATION	<b>R</b>	R. RISER RAD. OR R. RADIUS R.C. ROOF CONDUCTOR RR. RAILROAD REF. REFERENCE REFL. REFLECT/REFLECTED REFR. REFRIGERATOR REINF. REINFORCE/REINFORCEMENT RECD. REQUIRED R.A. RETURN AIR REV. REVISED/REVISION RPM. REVOLUTIONS PER MINUTE R.H. RIGHT HAND R.O.W. RIGHT OF WAY RD. ROAD RF. ROOF R.D. ROOF DRAIN R.S. ROOF SUMP R.T.U. ROOF TOP UNIT RM. ROOM R.O. ROUGH OPENING R.B. RUBBER BASE	<b>J</b>	J.C. JANITOR CLOSET JT. JOINT JST. JOIST JB. JUNCTION BOX	<b>K</b>	K.P. KICKPLATE KV. KILOVOLT KVA. KILOVOLT AMPHRE KW. KILOWATT KIP. (1000) KIP KIT. KITCHEN K.D. KNOCK DOWN K.O.P. KNOCK OUT PANEL				

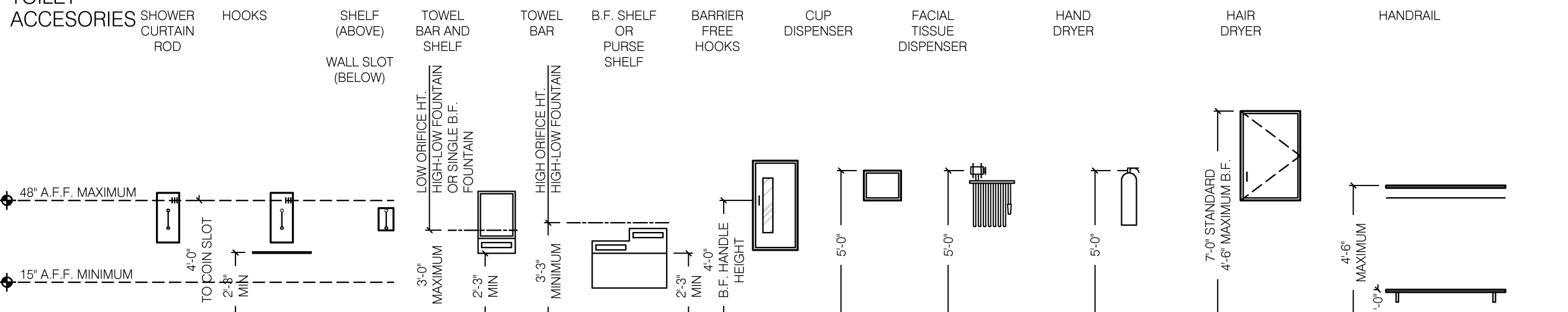
**TYPICAL MOUNTING HEIGHTS**

**MISCELLANEOUS ACCESSORIES, TOILET ACCESSORIES AND FIXTURES**

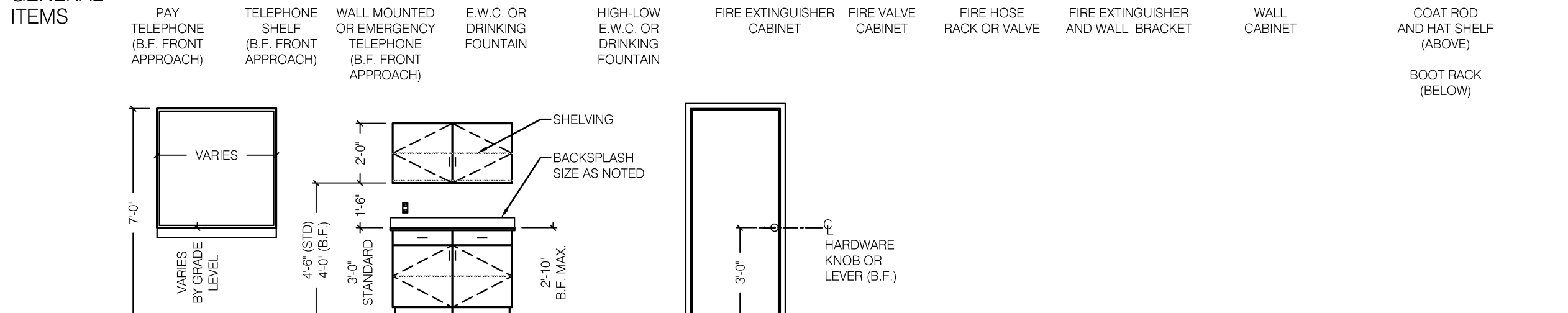
NOTE: MOUNTING HEIGHTS SHOWN ARE PROPOSED FOR ALL ACCESSORIES AND FIXTURES REQUIRED UNLESS OTHERWISE NOTED OR DIMENSIONED ON DRAWINGS FOR SPECIFIC CONDITIONS (B.F. DENOTES BARRIER FREE REQUIREMENTS)



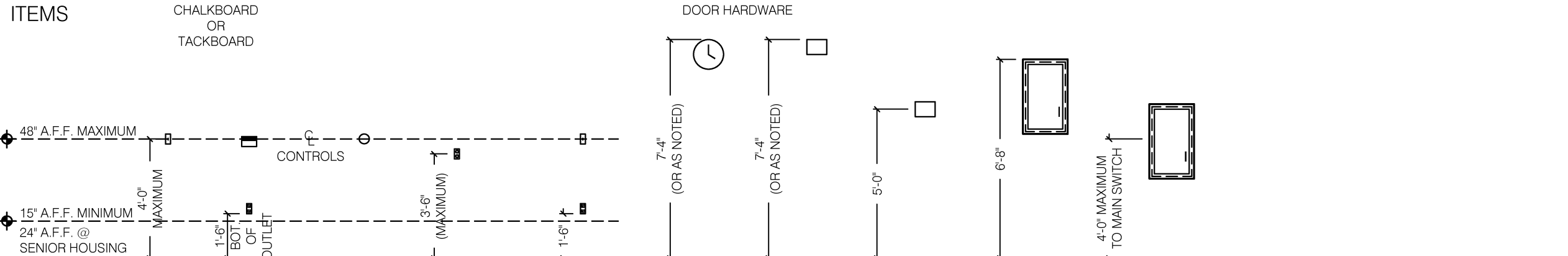
**TOILET ACCESSORIES**



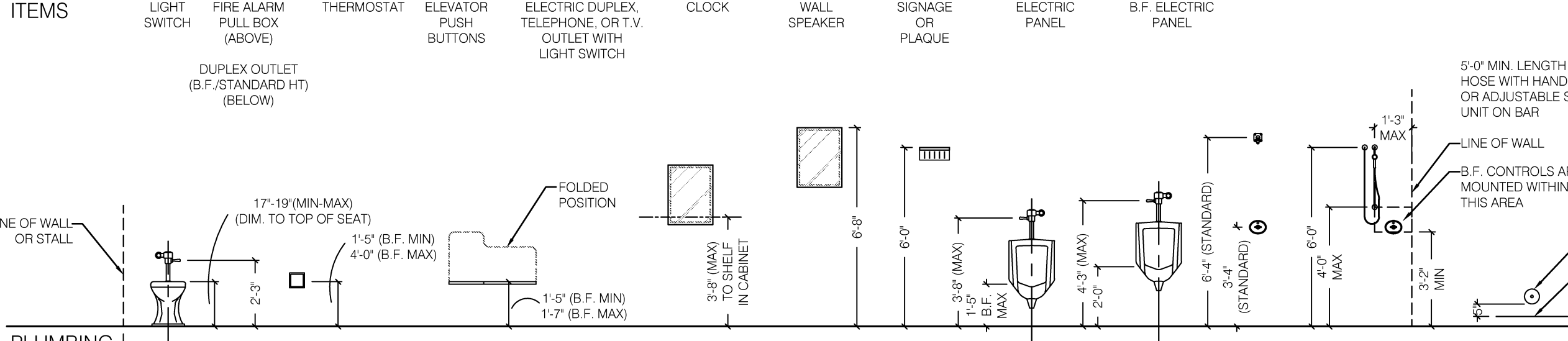
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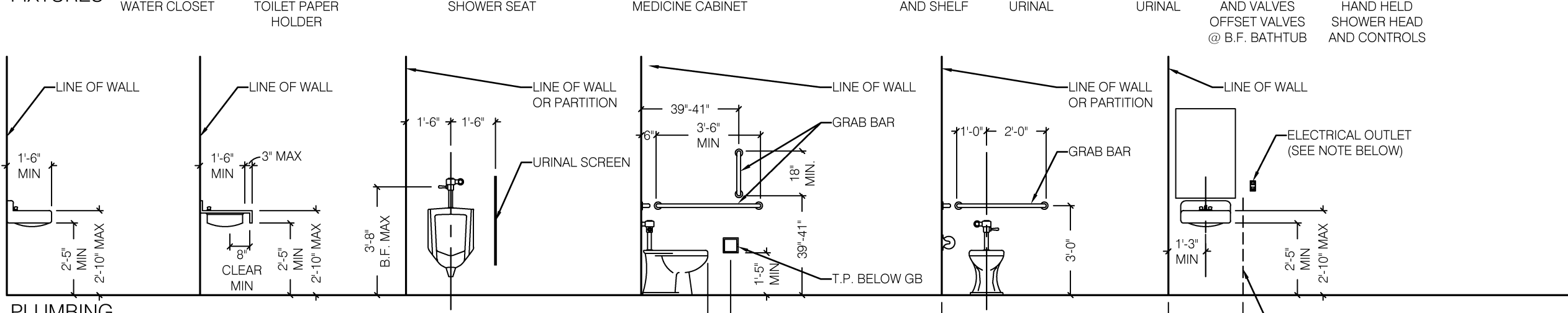
**GENERAL ITEMS**



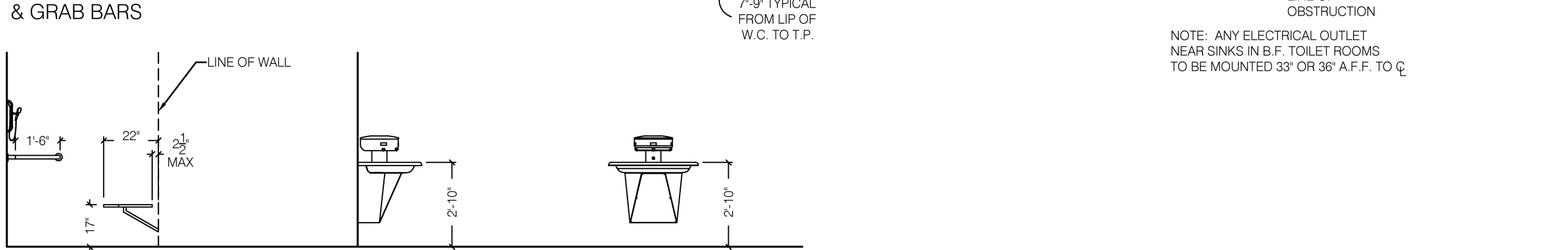
**ELECTRICAL ITEMS**



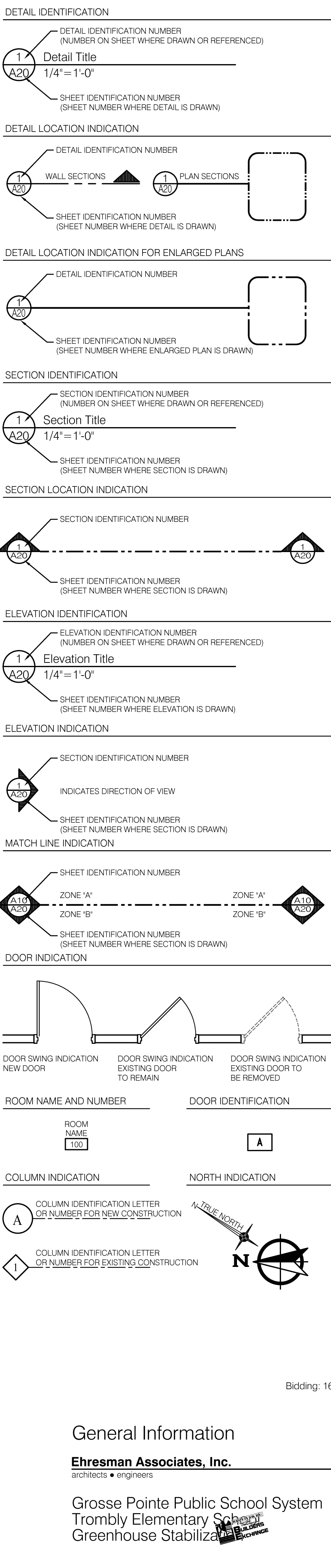
**PLUMBING FIXTURES**



**PLUMBING FIXTURES & GRAB BARS**

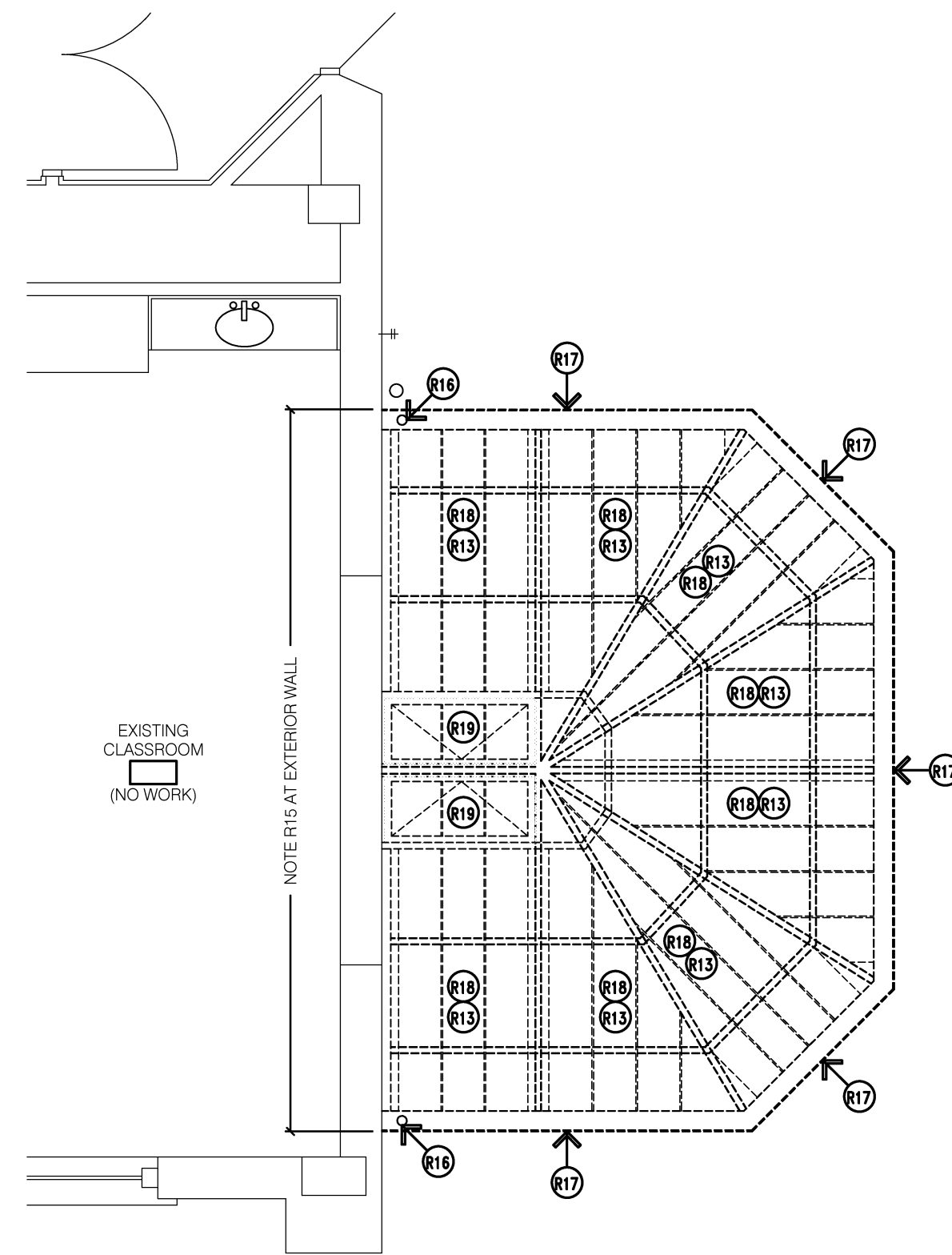


**REFERENCE SYMBOLS**

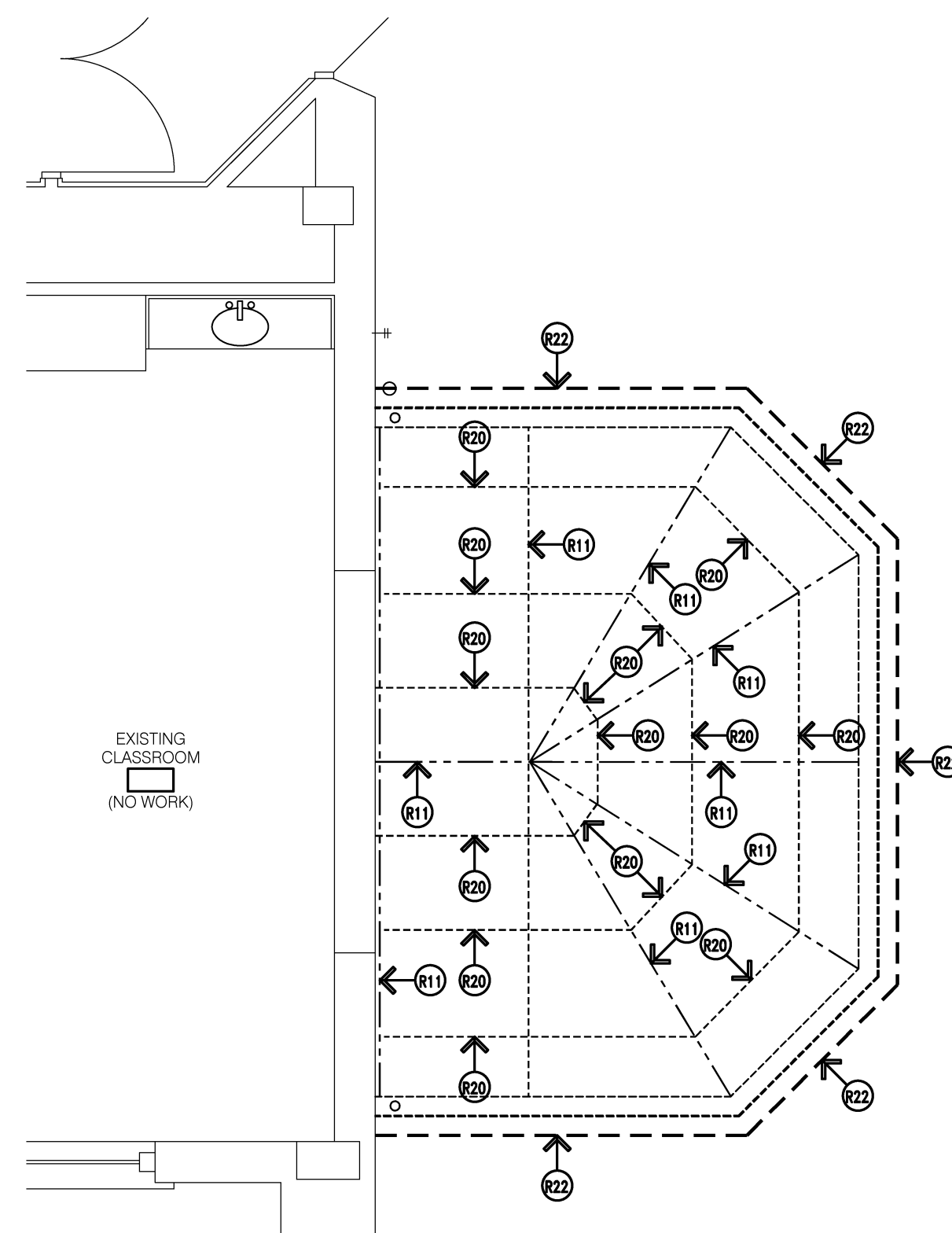


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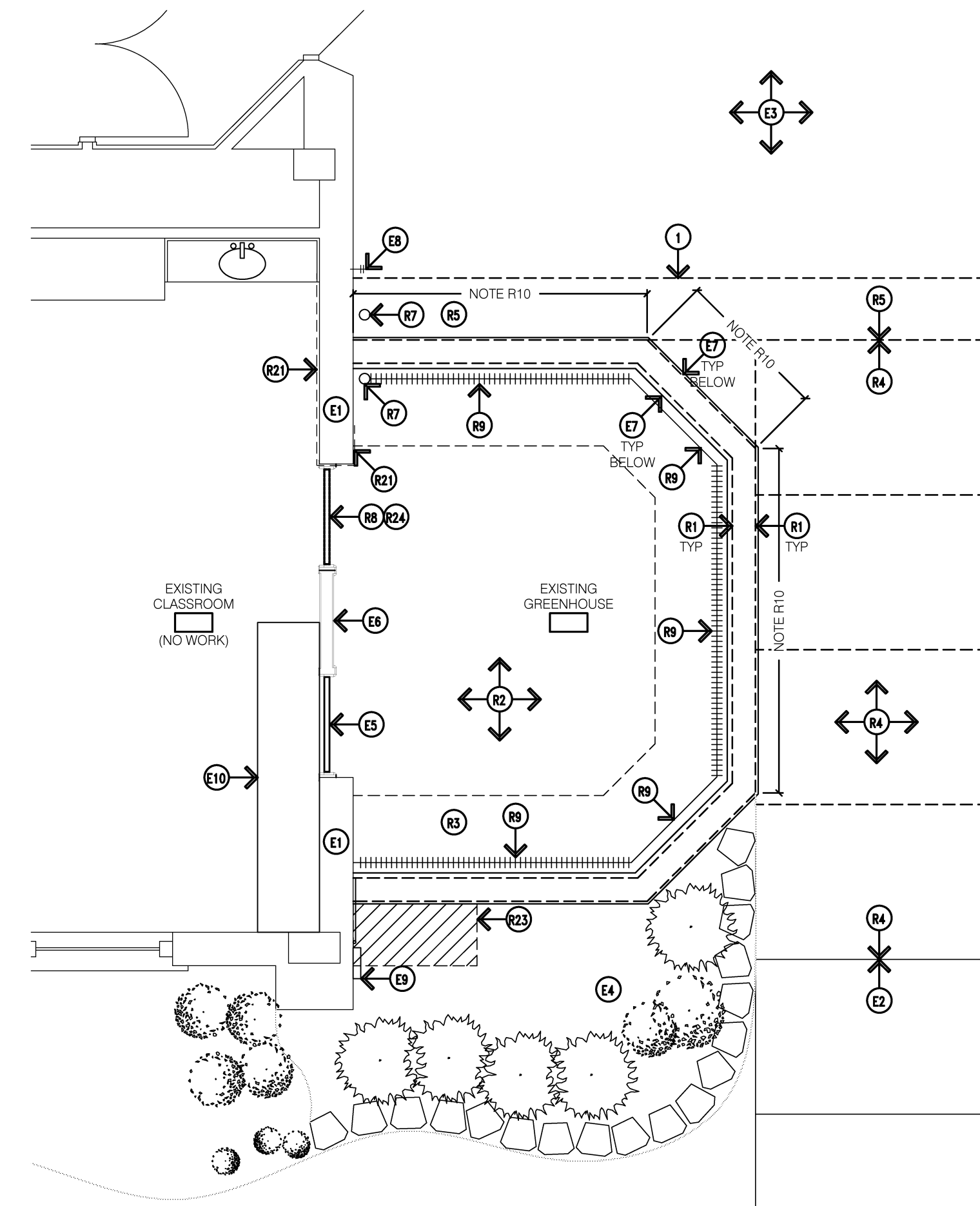
**General Information**  
 Scale as Noted  
**Ehresman Associates, Inc.**  
 architects • engineers  
**Grosse Pointe Public School System**  
 Trembly Elementary School  
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 Project No. 9115



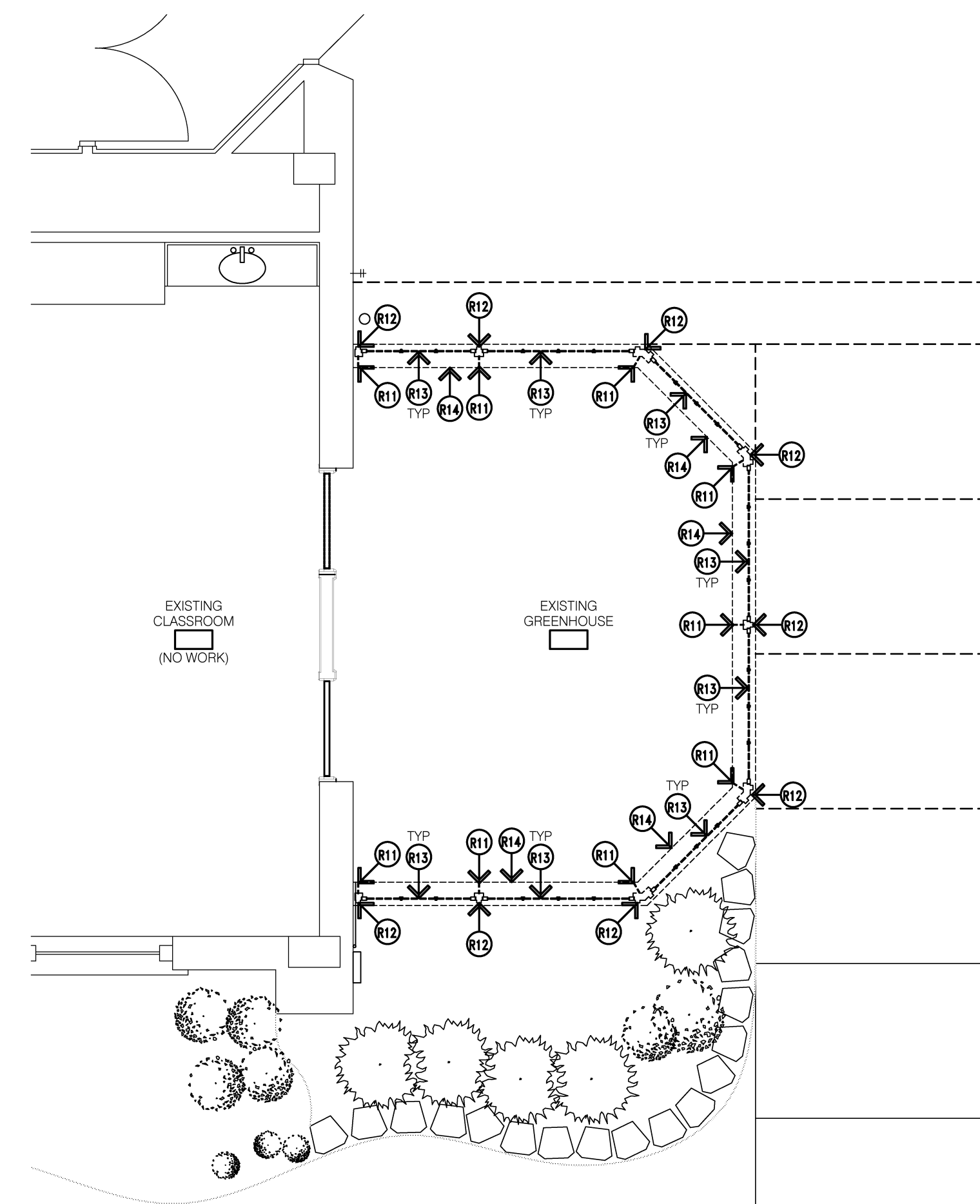
4 Roof Removals Plan  
1/4" = 1'-0"



5 Structural Removals Plan  
1/4" = 1'-0"



2 Removal Plan @ Masonry Base  
1/4" = 1'-0"



3 Removal Plan @ Window Glazing  
1/4" = 1'-0"

**GENERAL NOTES:**

- G1. DISPOSE OF ALL REMOVED ITEMS OFF SITE PER ALL LOCAL BUILDING AND SAFETY ORDINANCES. ANY ITEMS REQUESTED BY THE GROSSE POINTE PUBLIC SCHOOL SYSTEM TO BE SALVAGED SHALL BE RETURNED.
- G2. ALL AREAS DISTURBED OR DAMAGED DUE TO CONSTRUCTION OPERATIONS SHALL BE PATCHED / REPAIRED AND RESTORED BACK TO ITS EXISTING CONDITION.
- G3. CONTRACTOR TO COORDINATE TIMING OF REMOVAL WORK THAT AFFECTS SCHOOL OPERATIONS SO AS TO NOT CAUSE DISRUPTION TO NORMAL SCHOOL OPERATIONS.
- G4. CONTRACTOR TO FIELD VERIFY AND DOCUMENT EXISTING CONDITIONS AND FRAMING LOCATIONS FOR FUTURE REFERENCE PRIOR TO COMMENCING ON THE WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR DIRECTION IF CONDITIONS DIFFER FROM THOSE INDICATED.
- G5. NOT USED.
- G6. WEATHERPROOF AND SECURE ANY OPENINGS MADE INTO EXISTING OCCUPIED SPACES.
- G7. INTENT IS FOR BRICK BASE TO BE REMOVED, NEW AS INDICATED.
- G8. INTENT IS FOR ALL EXISTING GREENHOUSE COMPONENTS TO BE REMOVED INCLUDING BUT NOT LIMITED TO METAL CAGING, STEEL FRAMING, WOOD FRAMING, GLAZING, FLASHING, GEAR DRIVES, CEILING FAN, ETC. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS.
- G9. CONTRACTOR SHALL REFER TO THE MATERIAL TESTING REPORTS FOR FURTHER INFORMATION. COMPLY WITH ALL APPLICABLE REQUIREMENTS FOR ASBESTOS AND LEAD REMOVAL PROCEDURES.
- G10. CONTRACTOR SHALL NOTE THAT THE EXTERIOR WALL OF THE EXISTING BUILDING (INSIDE THE GREENHOUSE) IS EXTERIOR BRICK VENEER. INTENT IS FOR NEW GREENHOUSE FRAMING TO BE ALIGNED WITH THIS LOCATION EXACTLY.
- G11. EXISTING STEEL CAGING, GREENHOUSE FRAMING, AND GLAZING IS TO BE REMOVED BY OWNERS SEPARATE ENVIRONMENTAL CONTRACTOR DUE TO LEAD PAINT.

**DRAWING NOTES:**

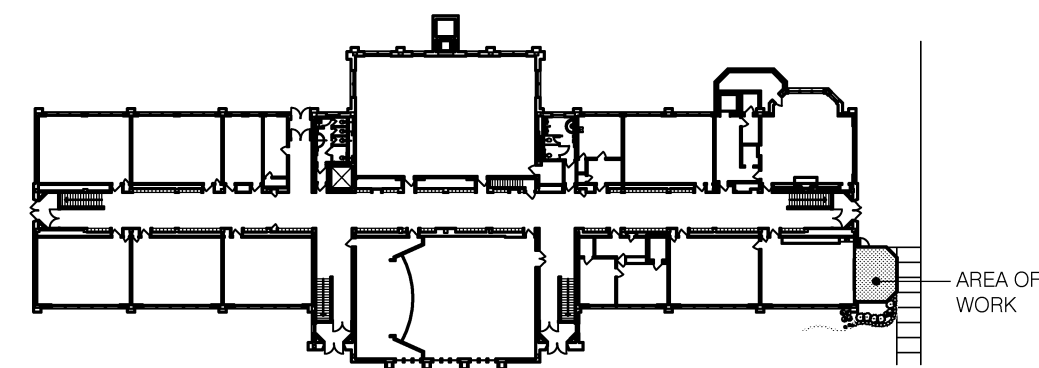
1. LINE OF ASPHALT PAVING SAWCUT

**EXISTING ITEMS TO REMAIN:**

- E1. MASONRY WALL - E.C.U.
- E2. CONCRETE SIDEWALK
- E3. ASPHALT PAVING
- E4. LANDSCAPING (TREES, SHRUBS, GRASS, MULCH, ETC.)
- E5. WOOD DOOR FRAME, TRIM, ETC.
- E6. WOOD SHELVES, TRIM, ETC.
- E7. FOUNDATION - E.C.U.
- E8. HOSE BIBB.
- E9. MISCELLANEOUS ELECTRICAL BOXES, CONDUIT, SPRINKLER TIMER, ETC. - C.F.V.
- E10. CLASSROOM STORAGE CABINET.

**REMOVAL NOTES:** (REMOVE THE FOLLOWING ITEMS)

- R1. MASONRY WALL - E.C.U. (ASSUMED DOUBLE WYTHE BRICK)
- R2. CONCRETE FLOOR SLAB - E.C.U.
- R3. GRAVEL
- R4. CONCRETE SIDEWALK
- R5. ASPHALT PAVING (AS REQUIRED)
- R6. NOT USED
- R7. DRAIN - REFER TO MECHANICAL
- R8. WOOD DOOR, FRAME, HARDWARE, COMPLETELY
- R9. FIN TUBE RADIANT HEATING COMPLETE, INCLUDING, SUPPORTS, ASSOCIATED PIPING, ETC. - REFER TO MECHANICAL
- R10. ISOLATION JOINT SEALANT AND EXPANSION JOINT MATERIAL
- R11. 3/8" X 4" STEEL PURLIN COMPLETELY - BY OWNERS SEPARATE CONTRACTOR
- R12. GREENHOUSE FRAMING - BY OWNERS SEPARATE CONTRACTOR
- R13. GLAZING - BY OWNERS SEPARATE CONTRACTOR
- R14. LIMESTONE SILL (ASSUMED TWO SEPARATE PIECES)
- R15. WALL FLASHING
- R16. DOWNSPOUT PIPING, COLLECTOR BOX, ETC. ABOVE GRADE.
- R17. STEEL GUTTER, BRACKETS, ETC. COMPLETE
- R18. WOOD GREENHOUSE FRAMING, ACCESSORIES, ETC. COMPLETE - BY OWNERS SEPARATE CONTRACTOR
- R19. VENTING SASH, GLAZING, GEAR DRIVE COMPONENTS, ETC. COMPLETE - BY OWNERS SEPARATE CONTRACTOR
- R20. STEEL ANGLE PURLIN, BRACKETS, ACCESSORIES, ETC. COMPLETE - BY OWNERS SEPARATE CONTRACTOR
- R21. WATER HOSE
- R22. WIRE MESH CAGE - BY OWNERS SEPARATE CONTRACTOR
- R23. LAWN AS REQUIRED TO ACCESS SEWER FOR DOWNSPOUT TIE-IN.
- R24. THRESHOLD.



1 Location Plan  
Not to Scale

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**Removals Plans**

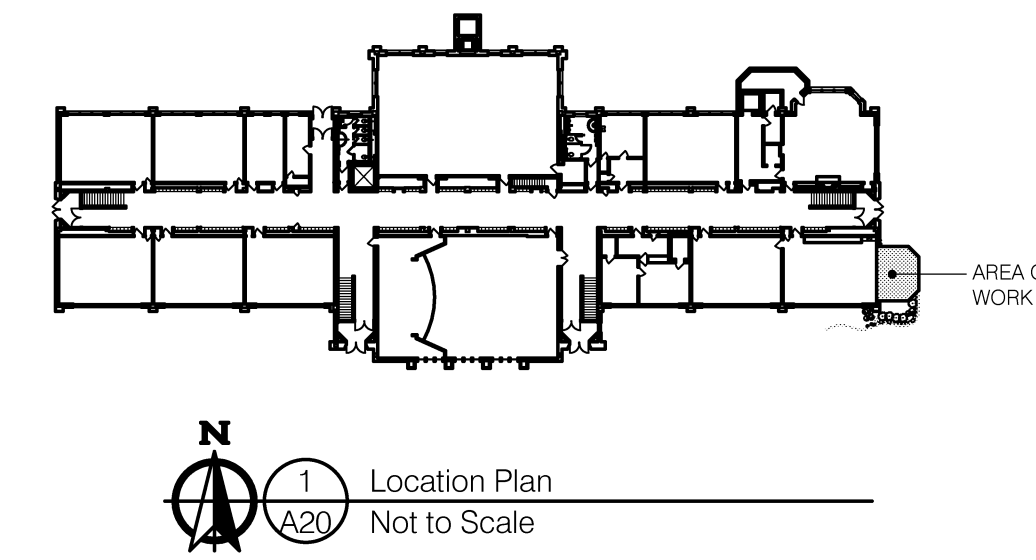
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A10



**GENERAL NOTES:**

- G1. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS.
- G2. INTENT IS FOR VERTICAL 'MUNTINS' TO ALIGN WITH THE EXISTING LAYOUT AS CLOSE AS POSSIBLE.
- G3. MANUFACTURER TO PROVIDE SIZE OF ALL FRAMING MEMBERS, ETC. BASED ON LOADING CRITERIA ESTABLISHED ON THE DRAWINGS. PROVIDE DRAWINGS SIGNED AND SEALED BY A REGISTERED STRUCTURAL ENGINEER IN THE STATE OF MICHIGAN.
- G4. FRAMING AND SEALANT COLORS TO BE SELECTED FROM STANDARD RANGE.
- G5. THE GREENHOUSE STRUCTURE SHALL RELY ON ITS OWN STRUCTURAL INTEGRITY, INDEPENDENT OF THE EXISTING BUILDING.
- G6. REFER TO REMOVALS PLANS FOR FURTHER INFORMATION.
- G7. PROVIDE WEEP HOLES AT 32" O.C. MAXIMUM ABOVE GRADE WITH FLEXIBLE MEMBRANE FLASHING WITH TERMINATION BAR AND SEALANT.
- G8. PROVIDE HORIZONTAL JOINT REINFORCING AT 16" O.C. VERTICALLY.
- G9. PROVIDE ADJUSTABLE VENEER ANCHORS AT 16" O.C. VERTICALLY AND HORIZONTALLY.
- G10. ALL ROOF GLAZING SHALL BE LAMINATED - REFER TO SPECIFICATIONS.
- G11. PROVIDE HEADER BRICK COURSE EVERY OTHER ROW.

**LEGEND:**

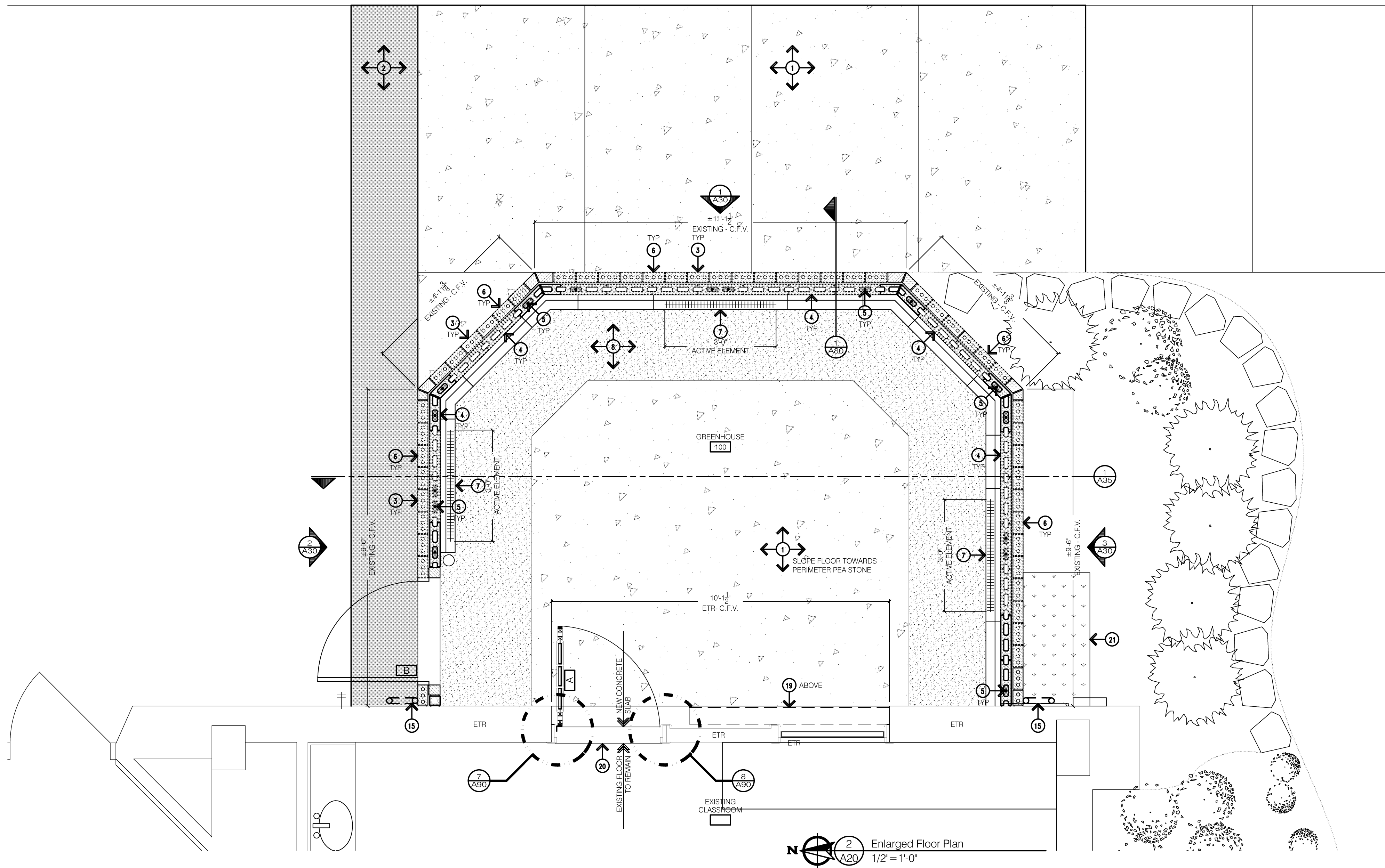
- NEW CONCRETE SLAB (ASSUMED 4" THICK)
- NEW PEA GRAVEL
- INDICATES GUTTER SLOPE TOWARD DRAIN
- NEW 4" CMU WITH GLAZED FINISH
- NEW BRICK VENEER TO MATCH EXISTING BUILDING

**DESIGN LOADING REQUIREMENTS:**

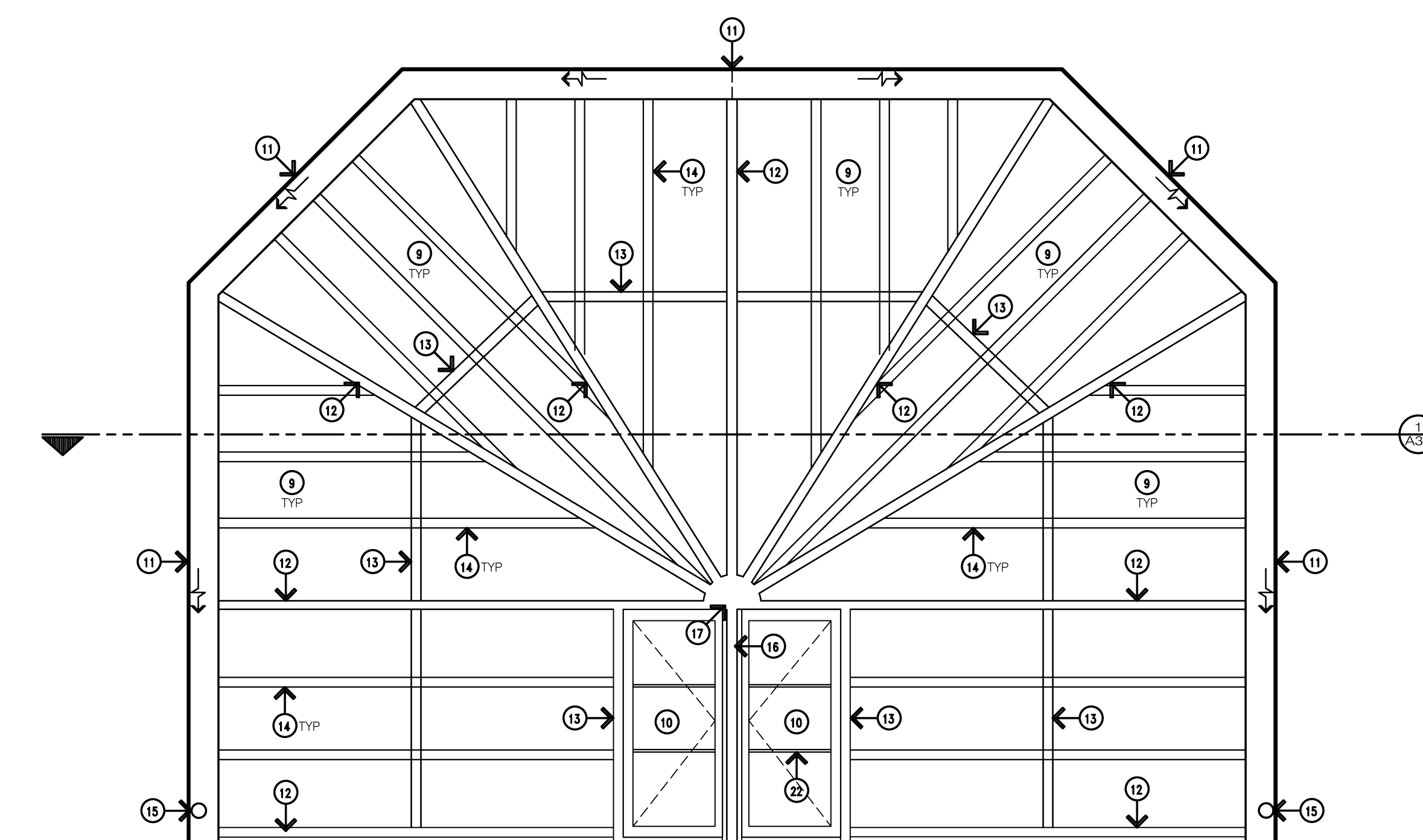
ROOF SNOW LOAD DATA	
UNIFORM GROUND SNOW LOAD DATA	PG 30 PSF
SNOW EXPOSURE FACTOR	CE 1.0
SNOW LOAD IMPORTANCE FACTOR	IF 1.25
THERMAL FACTOR	CT 1.0
SLOPED ROOF UNIFORM SNOW LOAD	PR 21 PSF
SNOW DRIFT LOAD	SD 58 PSF
SEISMIC LOAD DATA	
SEISMIC USE GROUP GROUP	II
SPECTRAL RESPONSE COEFFICIENTS	SDS 0.217
	SD1 0.074
SITE CLASS	D
WIND LOAD DATA	
BASIC WIND SPEED (3 SEC GUST)	90 MPH
WIND IMPORTANCE FACTOR	1.25
WIND EXPOSURE	B
INTERNAL PRESSURE COEFFICIENT	+/- 0.18

**DRAWING NOTES:**

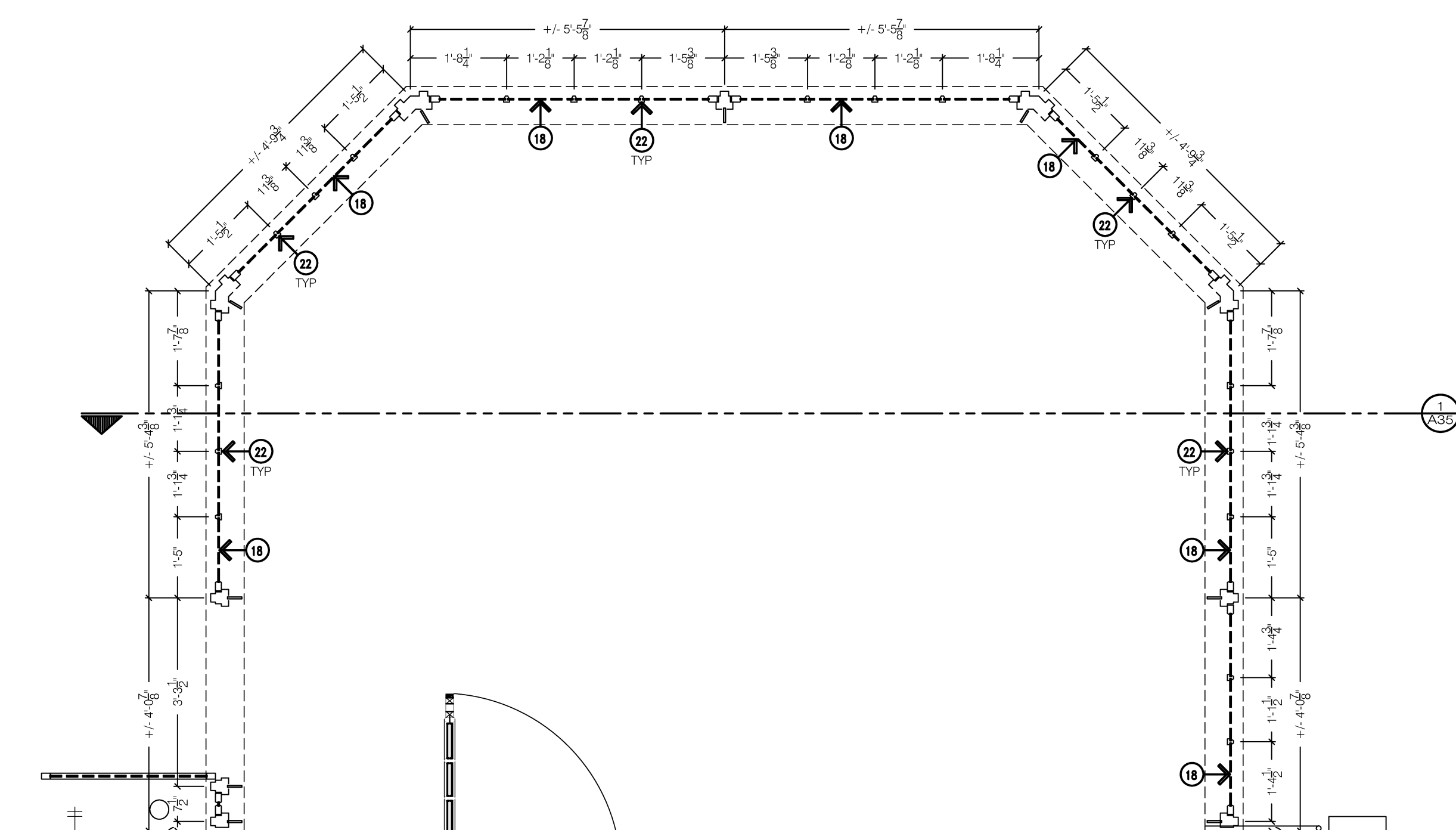
1. CONCRETE SIDEWALK - WHERE REMOVED FOR DOWNSPOUT TIE-IN OR ADJACENT WORK. INSTALL FLUSH TO EXISTING ADJACENT CONCRETE WALK. MATCH EXISTING. MINIMUM 4" THICK. (OR AS REQUIRED TO MATCH EXISTING THICKNESS).
2. ASPHALT PAVING - WHERE REMOVED AS REQUIRED FOR ADJACENT WORK. INSTALL FLUSH TO EXISTING ADJACENT ASPHALT. MATCH EXISTING GRADES.
3. PROVIDE 1/2" PREMOLDDED ISOLATION JOINT FILLER WITH SEALANT.
4. 3" CMU WALL WITH GLAZED FINISH AT EXPOSED FACE. \*ASTRA - GLAZE-SW BY TRENWYTH INDUSTRIES. WWW.TRENWYTH.COM. COLOR TO BE SELECTED BY ARCHITECT. PROVIDE HORIZONTAL JOINT REINFORCING AT 16" O.C. VERTICALLY.
5. #4 REBAR @ 48" O.C. MAX AND WHERE SHOWN ON PLAN. DRILL AND EPOXY 18" MIN INTO EXISTING FOOTING ( ECU).
6. BRICK VENEER TO MATCH EXISTING BUILDING WITH ADJUSTABLE ANCHORS AT 16" O.C. VERTICALLY AND HORIZONTALLY WITH WEEP HOLES AND FLEXIBLE MEMBRANE FLASHING ABOVE GRADE.
7. FINNED TUBE HEATING SYSTEM AND SLOPED SECURITY GRILLE ENCLOSURE COMPLETE WITH SECURITY LOCK ON ALL ACCESS PANELS AND SECURITY DAMPER. PROVIDE ALL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. SYSTEM TO BE BY ZEHNDER RITTLING. #10-3/4"x32 WITH S-SL ENCLOSURE (COLOR TO BE SELECTED BY ARCHITECT FROM STANDARD COLOR RANGE). PROVIDE SINGLE ROW OF FINNED TUBE. WITH 9'-0" OF TOTAL ACTIVE ELEMENT (9'-0" PER LOCATION). CONTRACTOR TO NOTE THAT THE ENCLOSURE IS TO BE PROVIDED AROUND THE ENTIRE PERIMETER. CONNECT TO EXISTING STEAM SUPPLY AND CONDENSATE RETURN IN THE TUNNEL BELOW.
8. PEA GRAVEL, MINIMUM 4" THICK.
9. STRAIGHT EAVE GLAZING
10. OPERABLE (VENTILATING) SKYLIGHT WITH SCREEN. PROVIDE MOTORIZED CONTROL WITH THERMOSTAT AND MANUAL OVERRIDE OPERATION.
11. PRE-FINISHED METAL GUTTER - SLOPE TO DOWNSPOUT
12. BEVELED CAP COVER (PURLIN BELOW)
13. BEVELED CAP COVER (GLAZING BAR BELOW)
14. GLAZING BAR CAP
15. PRE-FINISHED METAL DOWNSPOUT. PROVIDE RECTANGULAR TO ROUND ADAPTER AND TIE INTO EXISTING STORM PIPE (BELOW GRADE). EXACT LOCATION FOR TIE-IN UNKNOWN. ECU - CFV.
16. RIDGE VENT HEAD FLASHING.
17. COMPRESSION RING HUB ASSEMBLY.
18. AWNING WINDOW WITH SCREEN.
19. EXISTING SHELVES TO BE REINSTALLED
20. THRESHOLD - MATCH EXISTING MATERIAL, PROFILE, ETC. MEET ALL APPLICABLE BUILDING AND BARRIER FREE CODES.
21. RESTORE LAWN/LANDSCAPING AT SEWER TIE-IN.
22. GLASS MUNTIN (IN BETWEEN THE GLASS)



2 Enlarged Floor Plan  
1/2" = 1'-0"



4 Roof Plan  
1/2" = 1'-0"



3 Window Plan  
1/2" = 1'-0"

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**Floor Plans**

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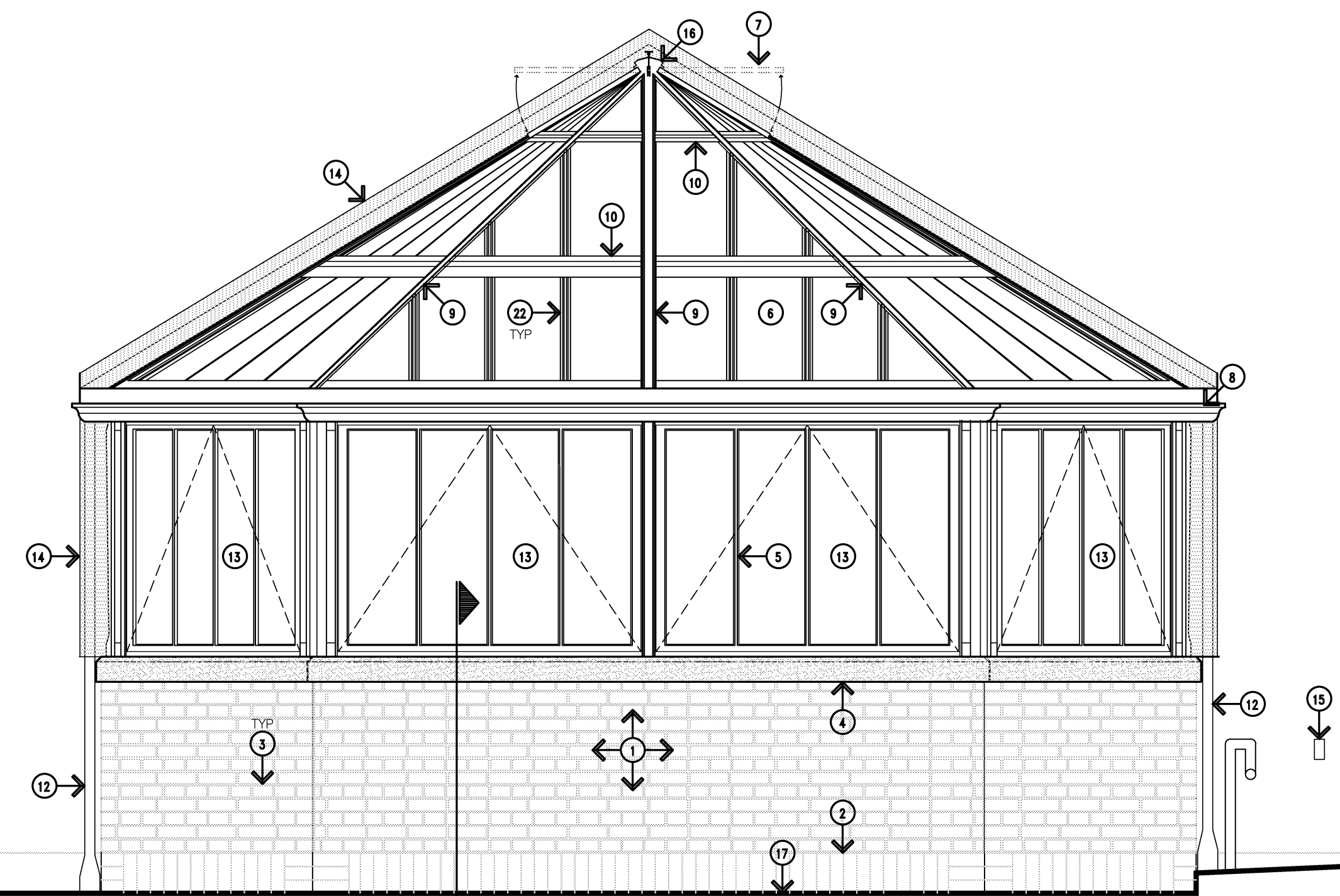
Project No. 9115

**A20**

F.F. = 113'-3"  
FIELD VERIFY

TOP OF MASONRY @ 3'-3"

F.F. = 100.00'



1 East Elevation  
1/2" = 1'-0"

**GENERAL NOTES:**

- G1. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS GREENHOUSE SKYLIGHT AND WINDOWS SHALL REPLICATE EXISTING SIZE AND SPACING AS CLOSE AS POSSIBLE.
- G2. INTENT IS FOR VERTICAL 'MUNTINS' TO ALIGN WITH THE EXISTING LAYOUT AS CLOSE AS POSSIBLE.
- G3. FRAMING AND SEALANT COLOR TO BE SELECTED FROM STANDARD RANGE
- G4. PROVIDE WEEP HOLES AT 32" O.C. MAXIMUM ABOVE GRADE WITH FLEXIBLE MEMBRANE FLASHING WITH TERMINATION BAR AND SEALANT.
- G5. PROVIDE HORIZONTAL JOINT REINFORCING AT 16" O.C. VERTICALLY.
- G6. PROVIDE ADJUSTABLE VENEER ANCHORS AT 16" O.C. VERTICALLY AND HORIZONTALLY.
- G7. ALL ROOF GLAZING SHALL BE LAMINATED - REFER TO SPECIFICATIONS.
- G8. PROVIDE HEADER BRICK COURSE EVERY OTHER ROW.

**GLAZING NOTES:**

- GLN1. SLOPED GLAZING UNITS TO BE 1" INSULATED GLASS UNITS - LAMINATED. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
- GLN2. VERTICAL GLAZING UNITS TO BE 1" INSULATED GLASS UNITS - TEMPERED. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

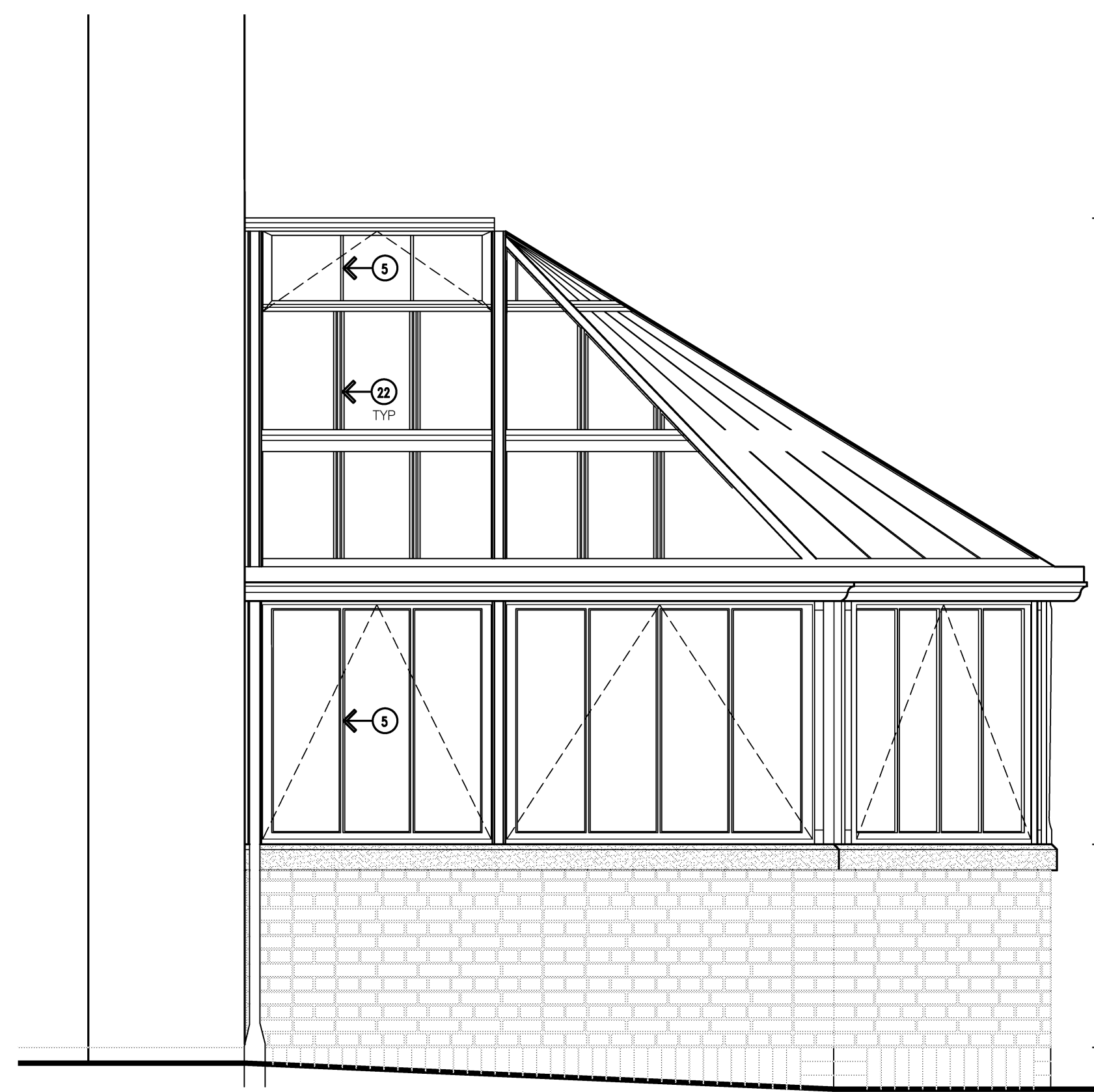
**DRAWING NOTES:**

- 1. BRICK TO MATCH EXISTING ADJACENT BUILDING WITH ADJACENT ANCHORS AT 16" O.C. VERTICALLY AND HORIZONTALLY.
- 2. BRICK SOLDIER COURSE TO MATCH EXISTING ADJACENT BUILDING
- 3. EVERY OTHER BRICK HEADER COURSE TO MATCH EXISTING ADJACENT BUILDING.
- 4. LIMESTONE SILL TO MATCH EXISTING ADJACENT BUILDING
- 5. GLASS MUNTIN (IN BETWEEN THE GLASS)
- 6. STRAIGHT EAWE GLASS
- 7. OPERABLE (VENTILATING) SKYLIGHT WITH SCREEN. PROVIDE MOTORIZED CONTROL WITH THERMOSTAT AND MANUAL OVER-RIDE OPERATION. REFER TO SPECIFICATIONS.
- 8. PRE-FINISHED METAL GUTTER - SLOPED TO DOWNSPOUTS
- 9. BEVELED CAP COVER (PURLIN BELOW)
- 10. BEVELED CAP COVER (GLAZING BAR BELOW)
- 11. PREFINISHED WALL FLASHING WITH SURFACE REBLET - REFER TO SPECIFICATIONS.
- 12. PRE-FINISHED METAL DOWNSPOUT. PROVIDE RECTANGULAR TO ROUND ADAPTER AND TIE INTO EXITING STORM PIPE (BELOW GRADE). EXACT LOCATION FOR TIE-IN UNKNOWN. ECU - CFV.
- 13. OPERATING AWNING WINDOW WITH SCREEN.
- 14. PRE-FINISHED METAL WALL FLASHING - PROVIDE SURFACE MOUNTED REGLET / FLASHING SYSTEM - PRE-FINISHED.
- 15. RECESSED WALL HYDRANT
- 16. RIDGE VENT HEAD FLASHING.
- 17. 1/2" ISOLATION JOINT FILLER WITH SEALANT
- 18. PREFINISHED INSULATED METAL PANEL TO MATCH GREENHOUSE FRAMING.
- 19. EXTERIOR DOOR WITH PROXIMITY CARD ACCESS.
- 20. SEALANT.
- 21. TIE-IN TO EXISTING OIG SEWER - ECO (CFV).
- 22. GLAZING BAR CAP.

F.F. = 113'-3"  
FIELD VERIFY

TOP OF MASONRY @ 3'-3"

F.F. = 100.00'



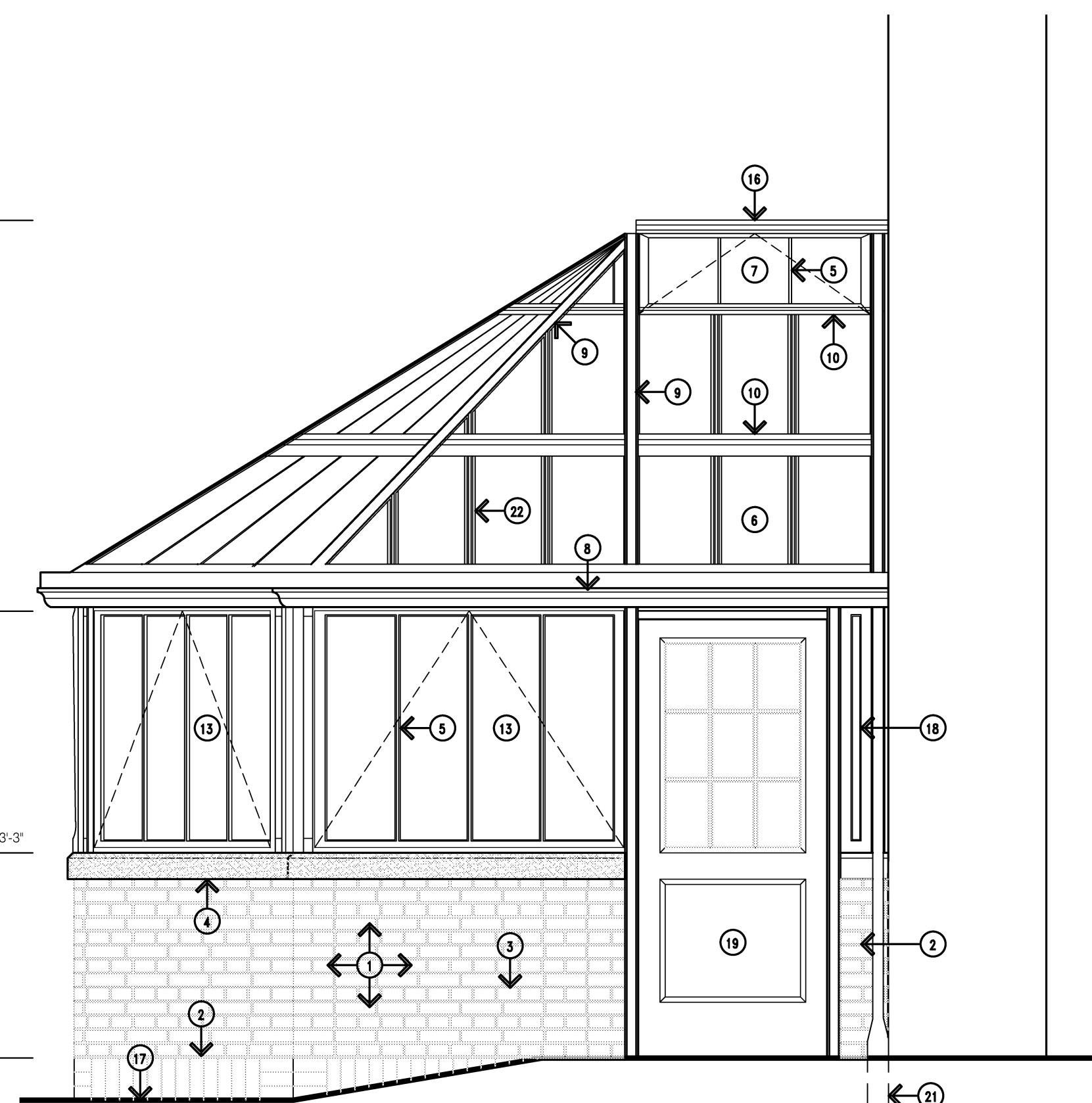
3 South Elevation  
1/2" = 1'-0"

F.F. = 113'-3"  
FIELD VERIFY

TOP OF DOOR @ 7'-1"  
FIELD VERIFY

TOP OF MASONRY @ 3'-3"

F.F. = 100.00'



2 North Elevation  
1/2" = 1'-0"

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**Exterior Elevations**

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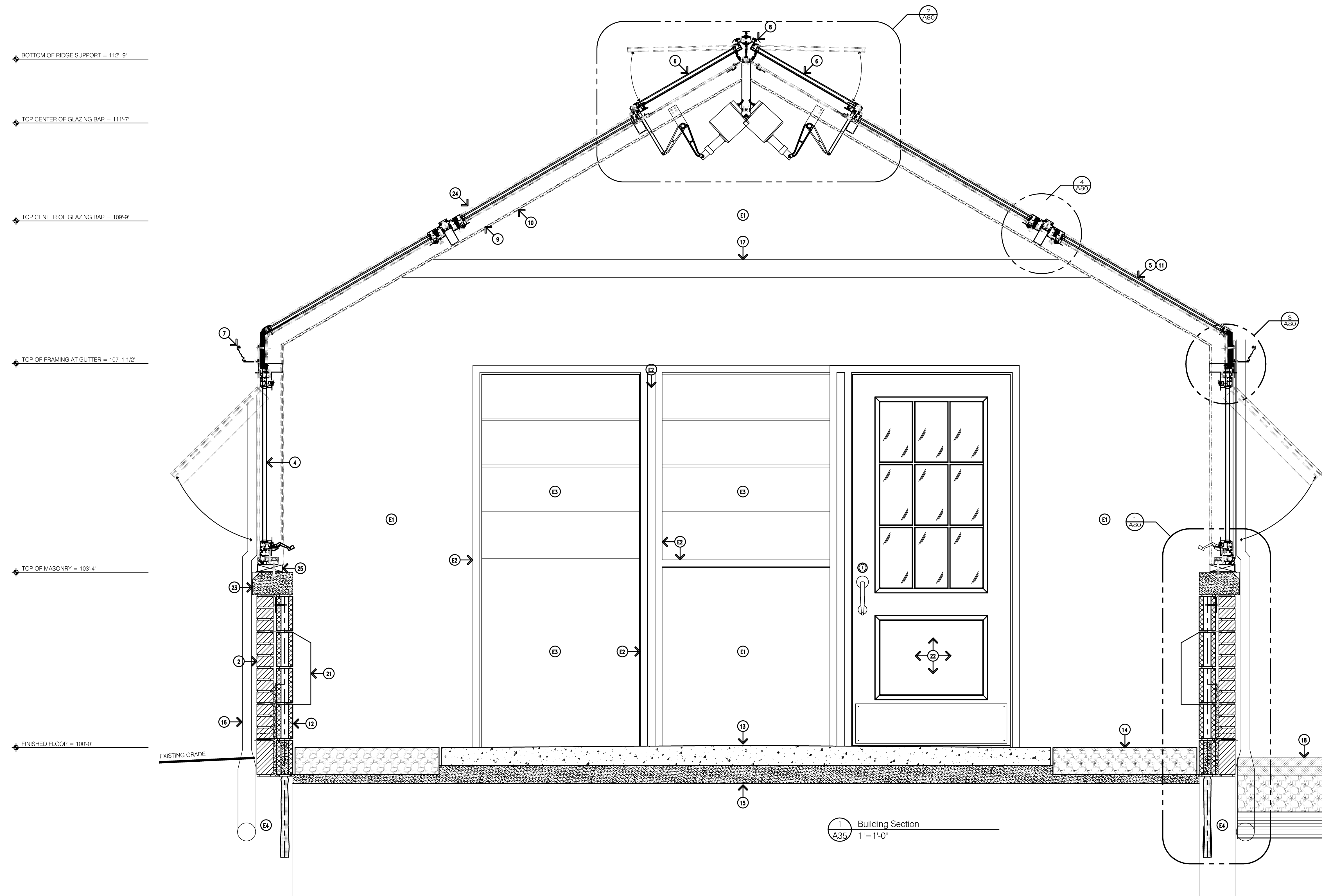
A30

**EXISTING ITEMS TO REMAIN:**

- E1. BRICK
- E2. WOOD TRIM - E.C.U.
- E3. WOOD PANEL - E.C.U.
- E4. FOUNDATION - E.C.U.

**DRAWING NOTES:**

1. NOT USED
2. BRICK TO MATCH EXISTING ADJACENT BUILDING
3. BEVELED CAP COVER
4. AWNING WINDOW
5. STRAIGHT EAVE GLASS
6. OPERABLE (VENTILATING) SKYLIGHT WITH SCREEN REFER TO SPECIFICATIONS.
7. PRE-FINISHED METAL GUTTER - SLOPE TO DOWNSPOUTS.
8. VENTING WINDOW SUPPORT FRAME AND RIDGE AS REQUIRED BY GREENHOUSE MANUFACTURER - SIZE BY MANUFACTURER
9. GLAZING BAR - SIZE BY MANUFACTURER (SIZE SHOWN IS APPROXIMATE)
10. PURLIN - SIZE BY MANUFACTURER (SIZE SHOWN IS APPROXIMATE)
11. GREENHOUSE SYSTEM GLAZING
12. 2" CMU WALL WITH GLAZED FINISH AT EXPOSED FACE. USED 'ASTRA-GLAZE-SW BY TRENWYTH INDUSTRIES WWW.TRENWYTH.COM ARCHITECT TO SELECT COLOR
13. 4" THICK CONCRETE FLOOR SLAB OVER 6 MIL VAPOR BARRIER OVER MINIMUM 4" COMPACTED SAND FILL, SLOPE TOWARD PEA GRAVEL.
14. PEA GRAVEL
15. MINIMUM 4" COMPACTED SAND FILL
16. DOWNSPOUT - CONNECT TO EXISTING SEWER UNDERGROUND - E.C.U. (C.F.N.)
17. CROSS TIE - SIZE BY MANUFACTURER (SIZE SHOWN IS APPROXIMATE)
18. ASPHALT PAVING AS REQUIRED
19. COMPACTED AGGREGATE BASE AS REQUIRED
20. WOOD SHELVES ON STANDARDS
21. FIN TUBE HEATING - REFER TO MECHANICAL PLANS
22. WOOD DOOR, FRAME, HARDWARE.
23. LIMESTONE SILL
24. GLAZING BAR CAP
25. REFINISHED INTERIOR TRIM TO MATCH GREENHOUSE FRAMING.



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**Building Section**

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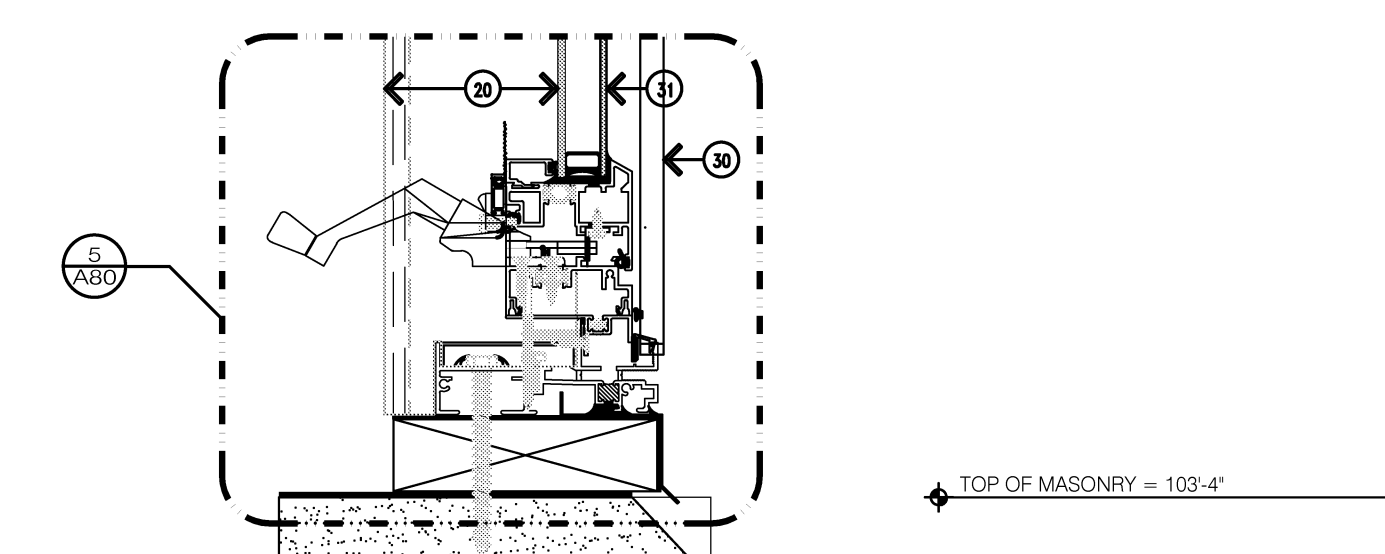
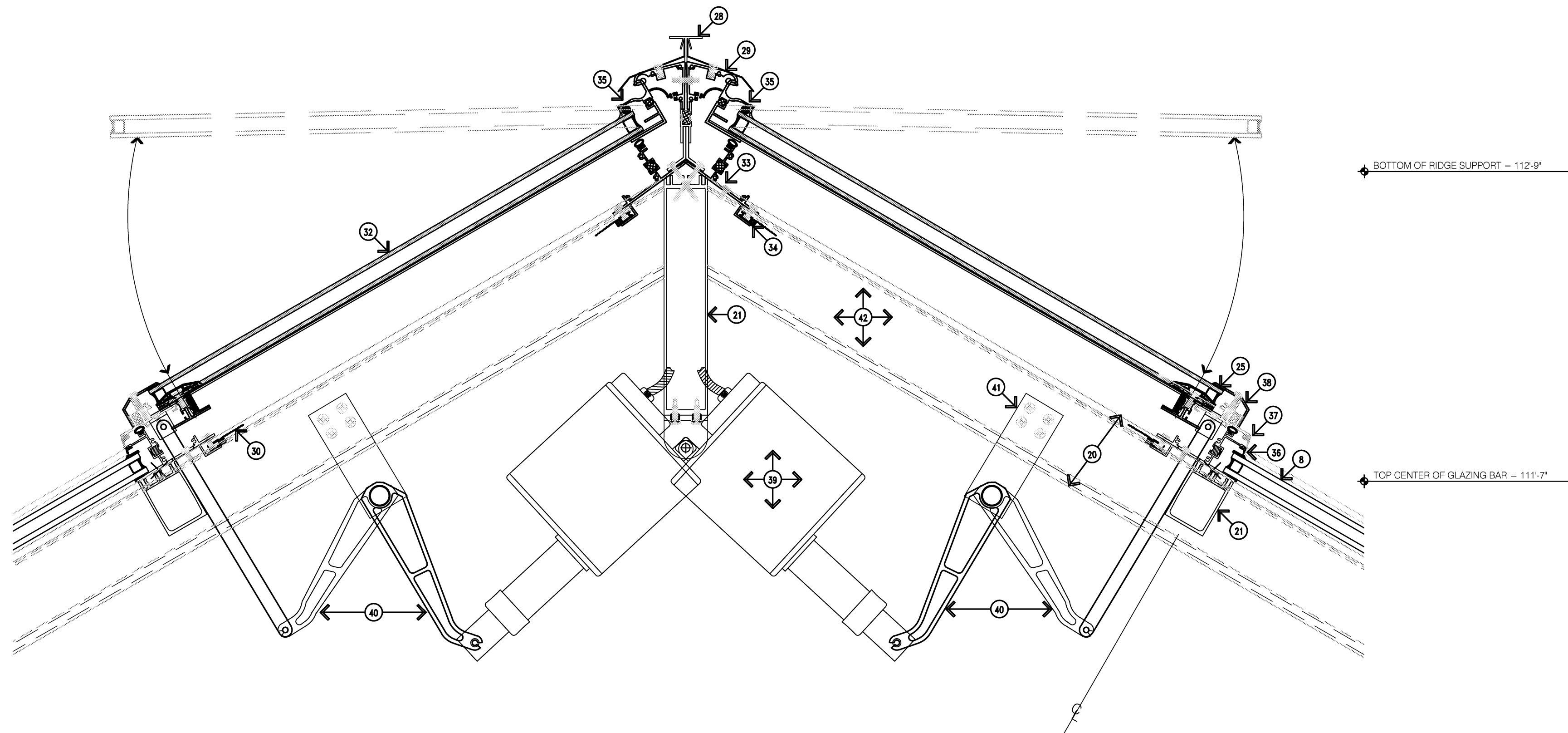
**A35**

**EXISTING ITEMS TO REMAIN:**

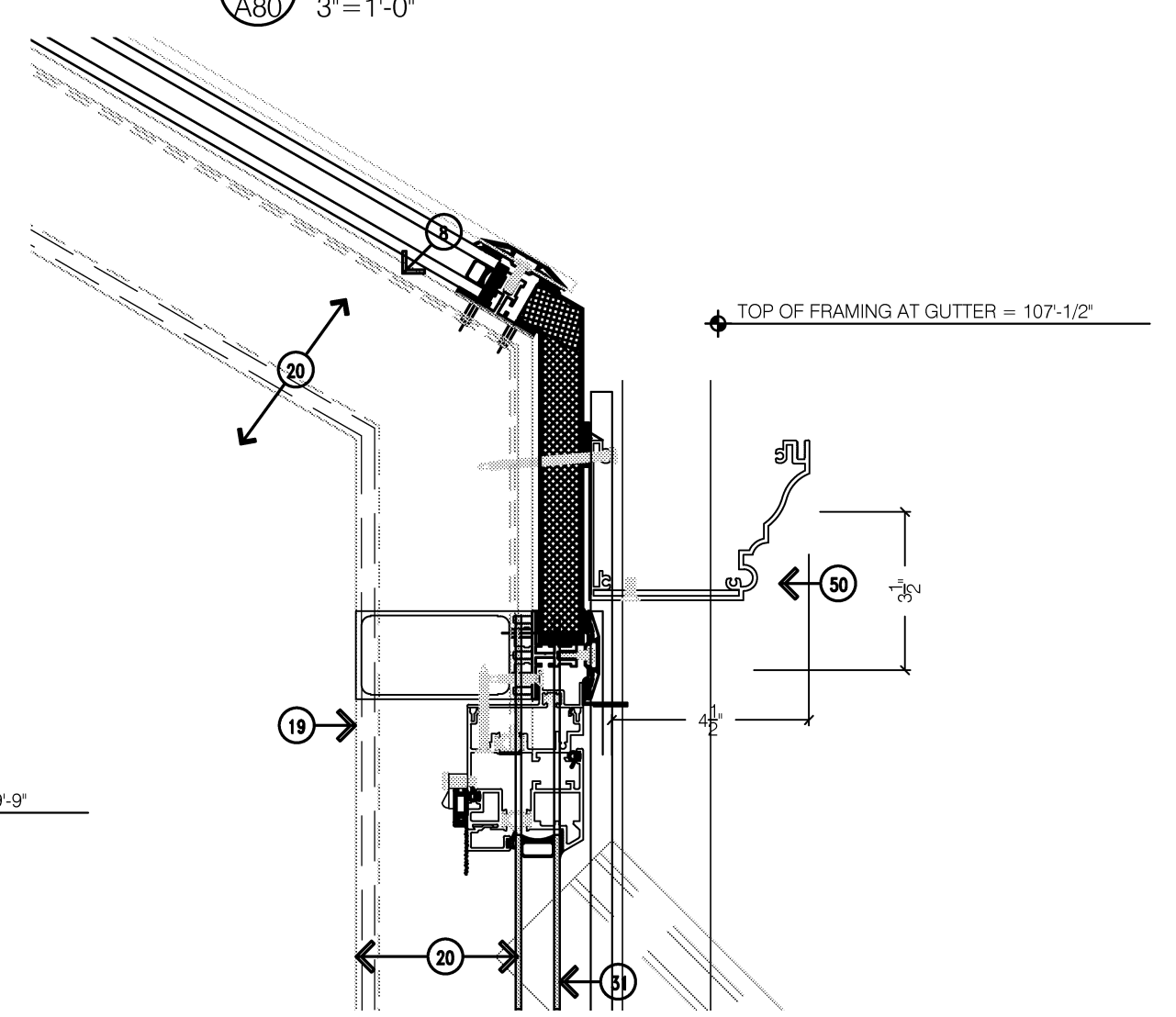
- E1. FOUNDATION - E.C.U., CFV
- E2. MASONRY (BRICK) WALL - E.C.U., CFV

**DRAWING NOTES:**

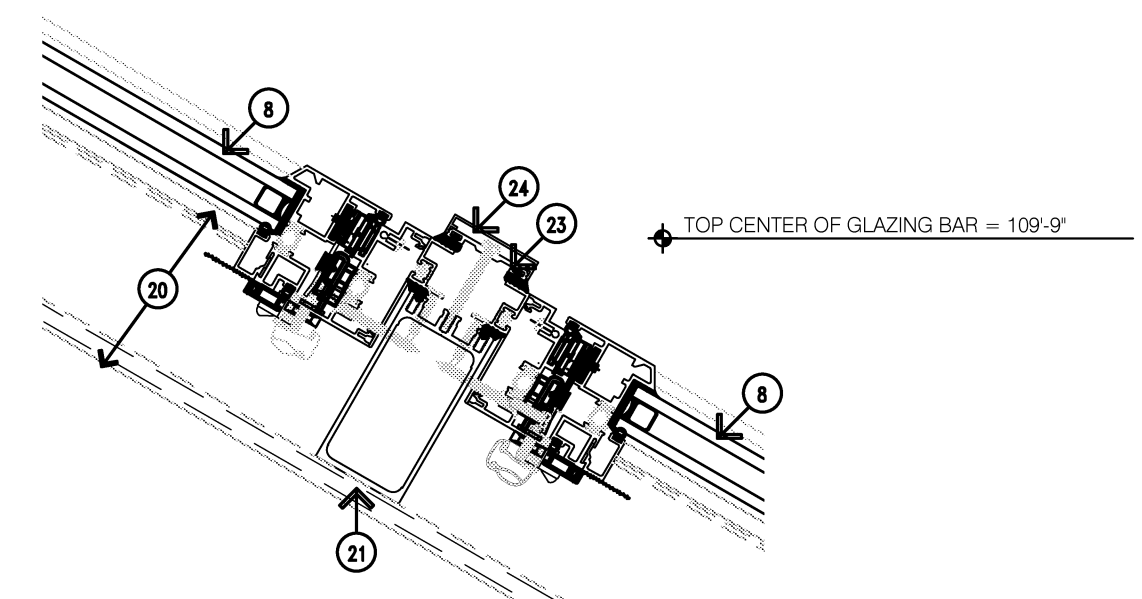
1. FLEXIBLE FLASHING MEMBRANE FULLY ADHERED.
2. 2X PRESERVATIVE TREATED WOOD SILL PLATE, SIZE AS NEEDED TO FIT CONDITIONS.
3. ANCHOR SILL TO MASONRY WITH 1/2" ANCHOR BOLTS @ 32" O.C. MAXIMUM WITH THREADED ROD WITH 3" WASHER AND NUT, GROUTED SOLID INTO BLOCK 3" MIN. COUNTER SINK INTO PLATE TO ALLOW LEVEL SURFACE.
4. FLEXIBLE FOAM GASKET SILL SEAL.
5. CONTINUOUS SILL PAN (PART OF MANUFACTURER GREENHOUSE SYSTEM).
6. GROUT SOLID BELOW SILL.
7. PRESSURE CAP AND COVER CAP (PART OF MANUFACTURER SKYLIGHT SYSTEM).
8. 1 1/2" INSULATED GLAZING - LAMINATED
9. FLEXIBLE FLASHING MEMBRANE FULLY ADHERED (WITH TERM. BAR AND SEALANT).
10. MECHANICALLY FASTENED TERM BAR WITH CONTINUOUS SEALANT AT TOP.
11. GROUT SOLID AT BOTTOM OF WALL CAVITY, SLOPE 1/4" PER FOOT TOWARD WEEP VENT
12. ALUMINUM TRIM (BRAKE METAL) 24 GAUGE MIN. EXTEND MINIMUM 1/2" BEYOND BRICK JOINT
13. STAINLESS STEEL STRAP ANCHOR WITH DOWEL SECURED INTO MASONRY WALL BELOW. AT HEAD JOINT.
14. STAINLESS STEEL U STRAP ANCHOR. SECURE INTO MASONRY, TWO MINIMUM EACH PANEL.
15. SILL COVER (PART OF MANUFACTURER GREENHOUSE SYSTEM).
16. HEAVY INSULATED SILL. (PART OF MANUFACTURER GREENHOUSE SYSTEM).
17. BACKER ROD
18. SEALANT
19. GREENHOUSE FRAMING / GUTTER SUB-FRAME SUPPORT
20. PURLIN
21. GLAZING BAR
22. MUNTIN BAR
23. BEVELED CAP
24. BEVELED CAP COVER
25. POLYOLEFIN FOAM TAPE
26. SETTING BLOCK
27. RIDGE BEAM AS SIZED BY GREENHOUSE MANUFACTURER
28. RIDGE VENT CREST
29. RIDGE VENT HEAD FLASHING
30. SCREEN AND SCREEN FRAME
31. AWNING WINDOW WITH 1" INSULATED GLAZING - TEMPERED
32. VENTING SKYLIGHT WITH 1 1/2" INSULATED GLAZING - LAMINATED
33. RIDGE VENT FRAME
34. SCREEN FRAME
35. RIDGE VENT SASH HINGE
36. ALUMINUM
37. GASKET
38. CLOSURE CAP
39. OPERABLE VENT ACTUATOR MOTOR
40. OPERABLE VENT ACTUATOR ARMS
41. FLAT PLATE SHAFT HANGAR
42. GLAZING BAR/PURLIN REINFORCING AS REQUIRED BY GREENHOUSE MANUFACTURER.
43. 3/4" X 1-1/2" PLASTIC WEEP HOLES @ 2'-8" O.C.
44. SEALANT
45. SURFACE MOUNTED REGLET
46. PRE-FINISHED ALUMINUM FLASHING - PROVIDE 4" MIN. OVERLAP
47. STAINLESS STEEL DRIVE PIN WITH NEOPRENE GASKET
48. 1/2" REBAR @ 48" O.C. MAX AND WHERE SHOWN ON PLAN. DRILL AND EPOXY 18" MIN INTO EXISTING FOOTING (E.C.U.)
49. 3/8" CMU WALL WITH GLAZED FINISH AT EXPOSED FACE. USED "ASTRA" GLAZE-SW BY TRENWYTH INDUSTRIES. WWW.TRENWYTH.COM COLOR TO BE SELECTED BY ARCHITECT.
50. GUTTER
51. LIMESTONE SILL
52. 4" BRICK VENEER TO MATCH EXISTING ADJACENT BUILDING, WITH GALV. METAL TIES TO CMU BACK-UP WALL. MATCH EXISTING BUILDING BRICK. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION. PROVIDE WEEPHOLES AT 2'-8" O.C.
53. HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICALLY
54. 4" THICK CONCRETE FLOOR SLAB, SLOPE TOWARD PEA GRAVEL
55. 6" PEA GRAVEL OVER COMPACTED SAND FILL
56. 4" MINIMUM COMPACTED SAND FILL
57. FIN TUBE HEATING SYSTEM



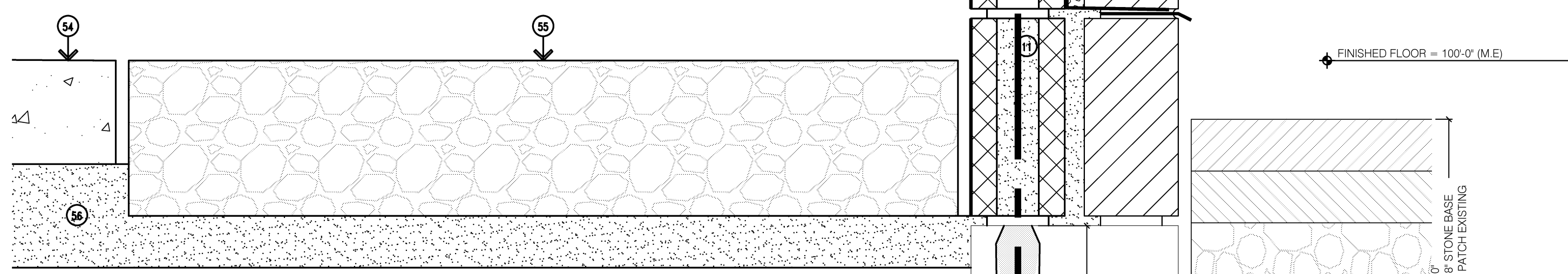
2 Venting Skylight Ridge Detail  
3'-1'-0"



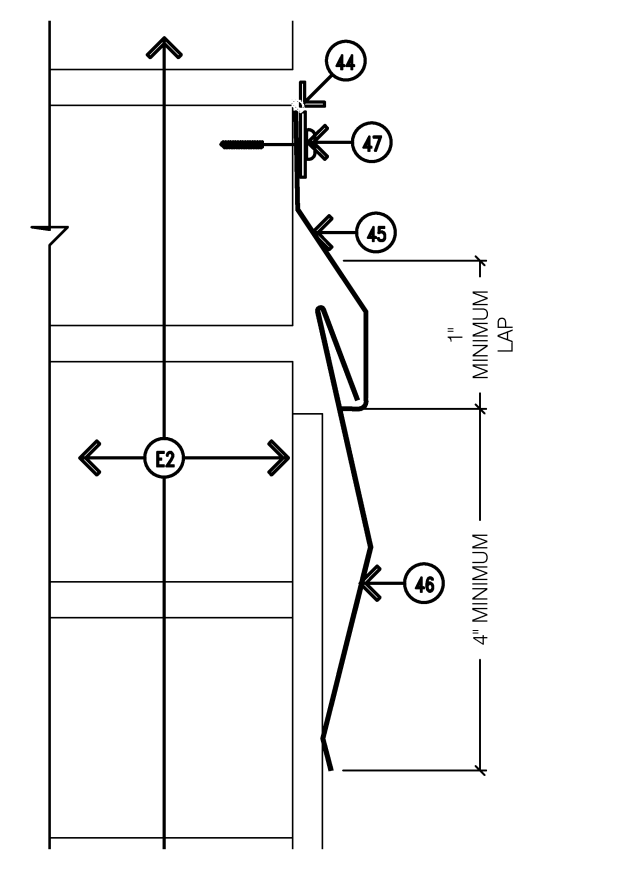
3 Gutter Detail  
3'-1'-0"



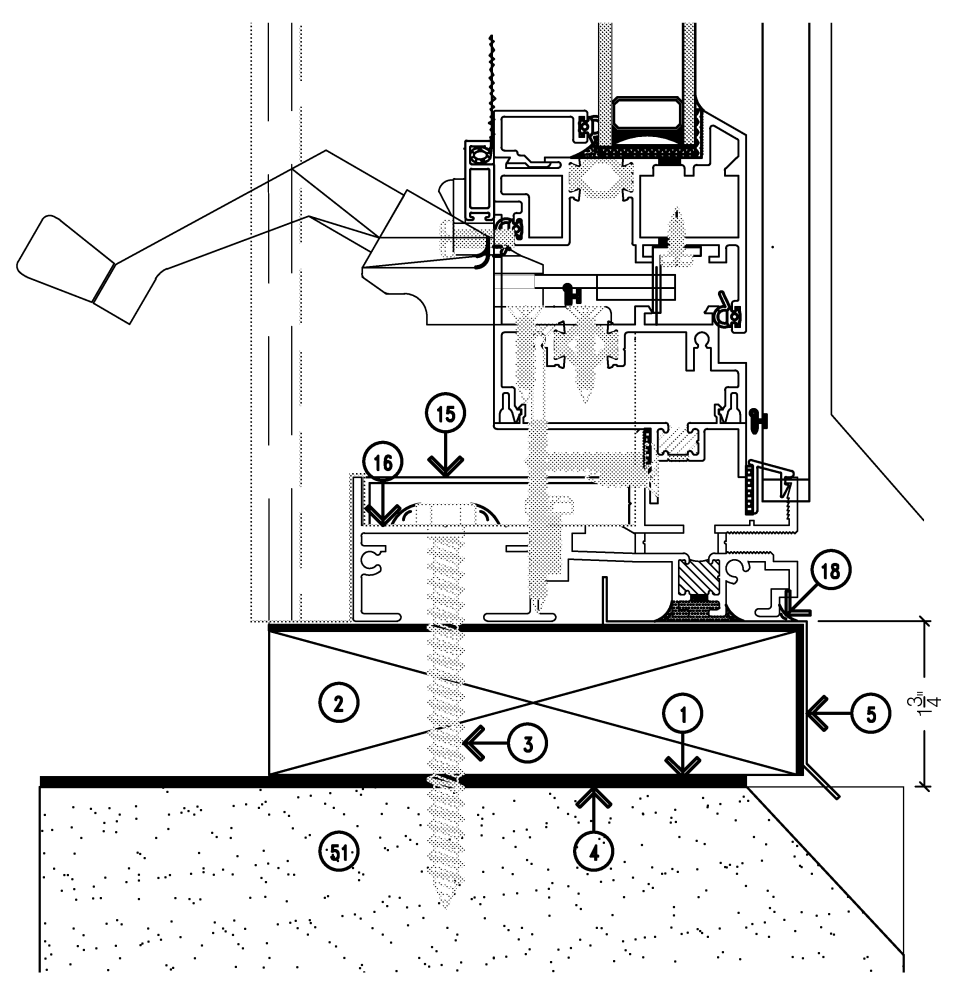
4 Beveled Cap Detail  
3'-1'-0"



1 Wall Section  
3'-1'-0"



6 Stepped Flashing Detail  
6'-1'-0"



5 Sill Flashing Detail  
6'-1'-0"

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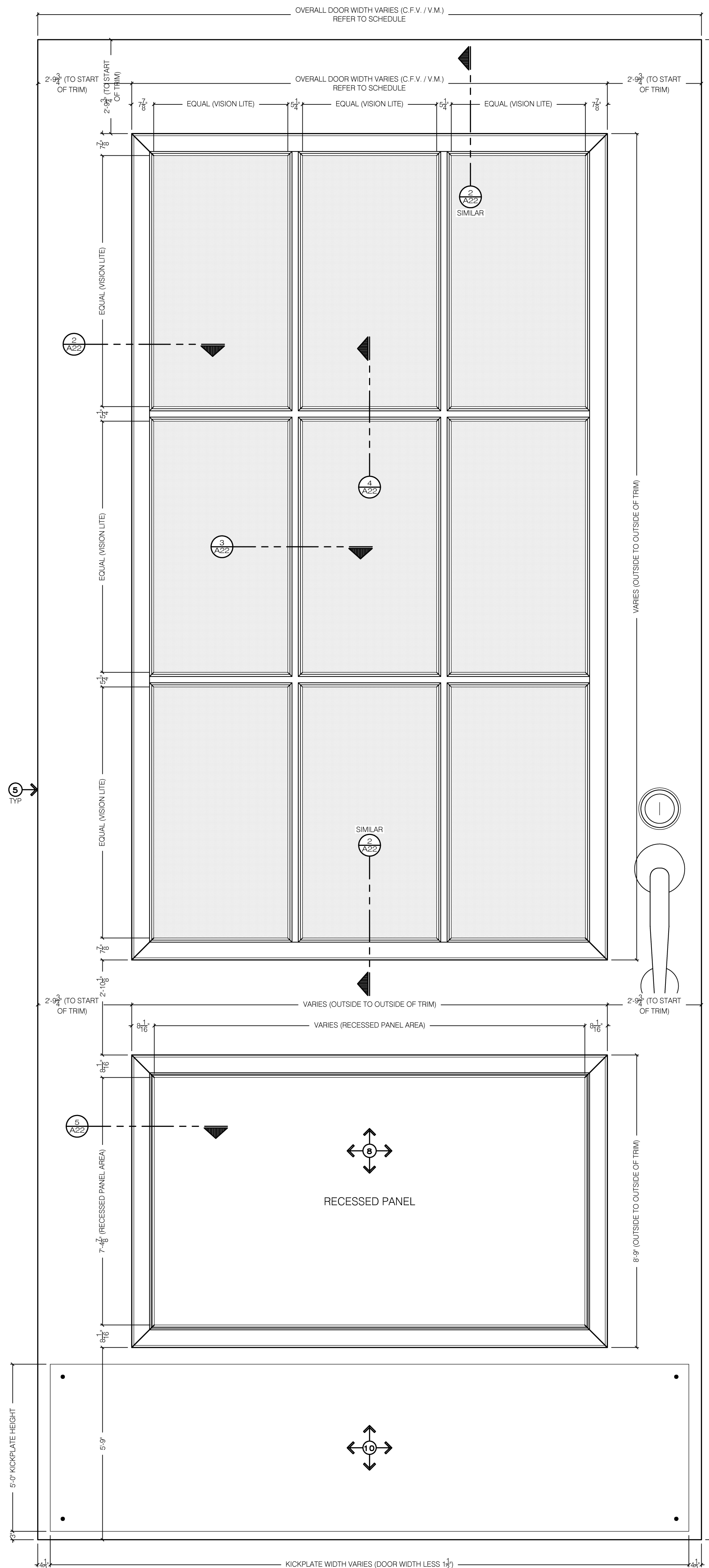
Details Scale as Noted

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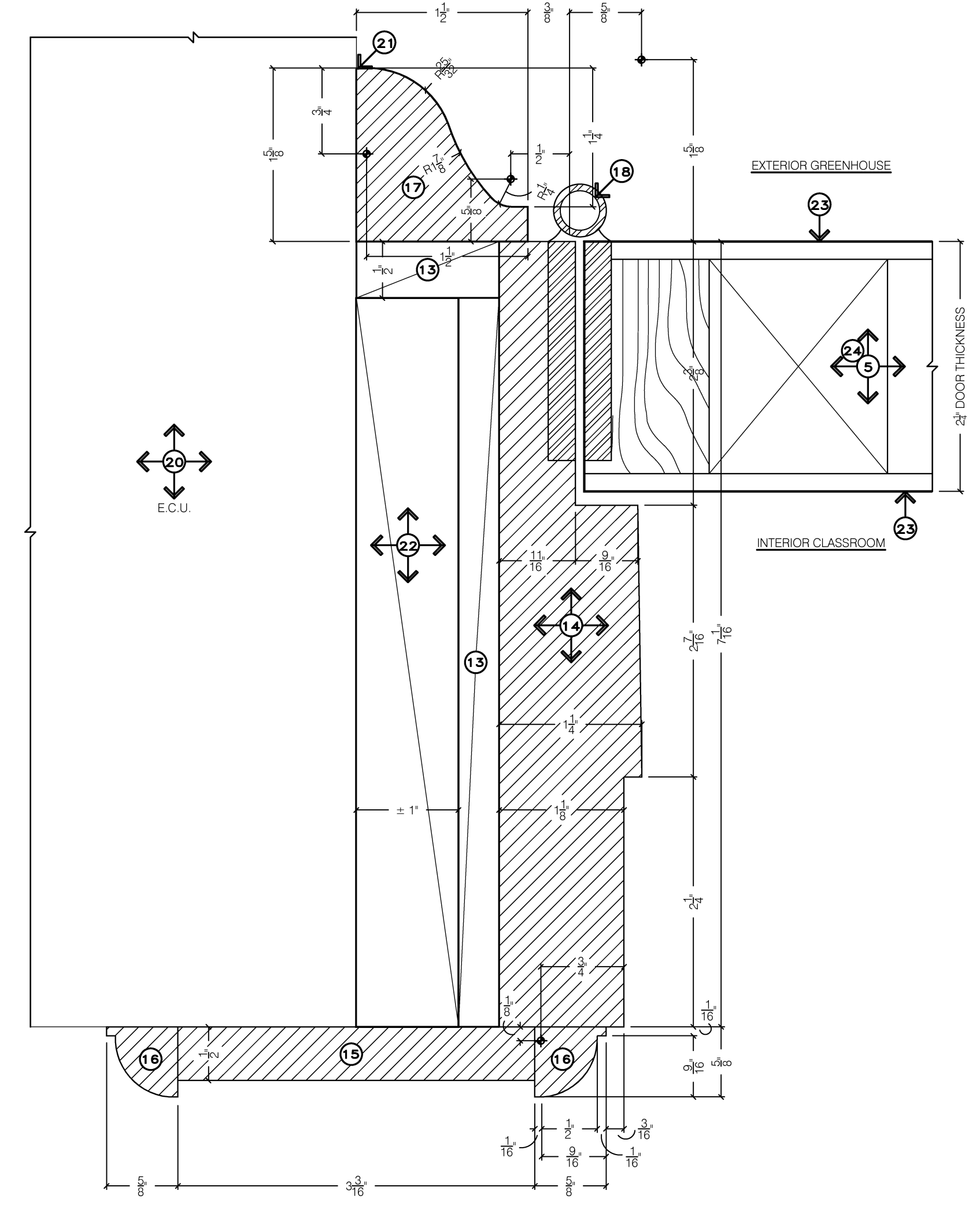
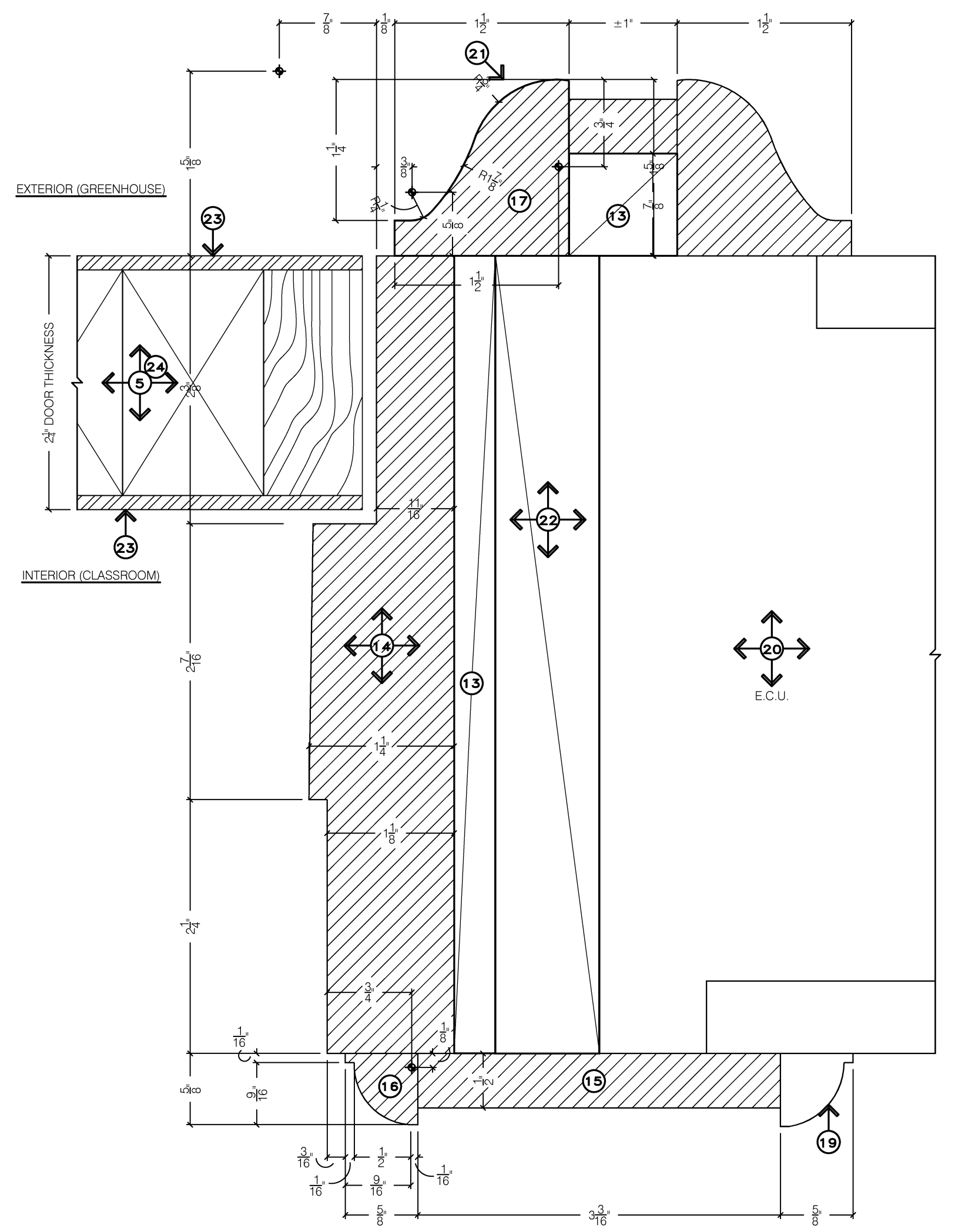
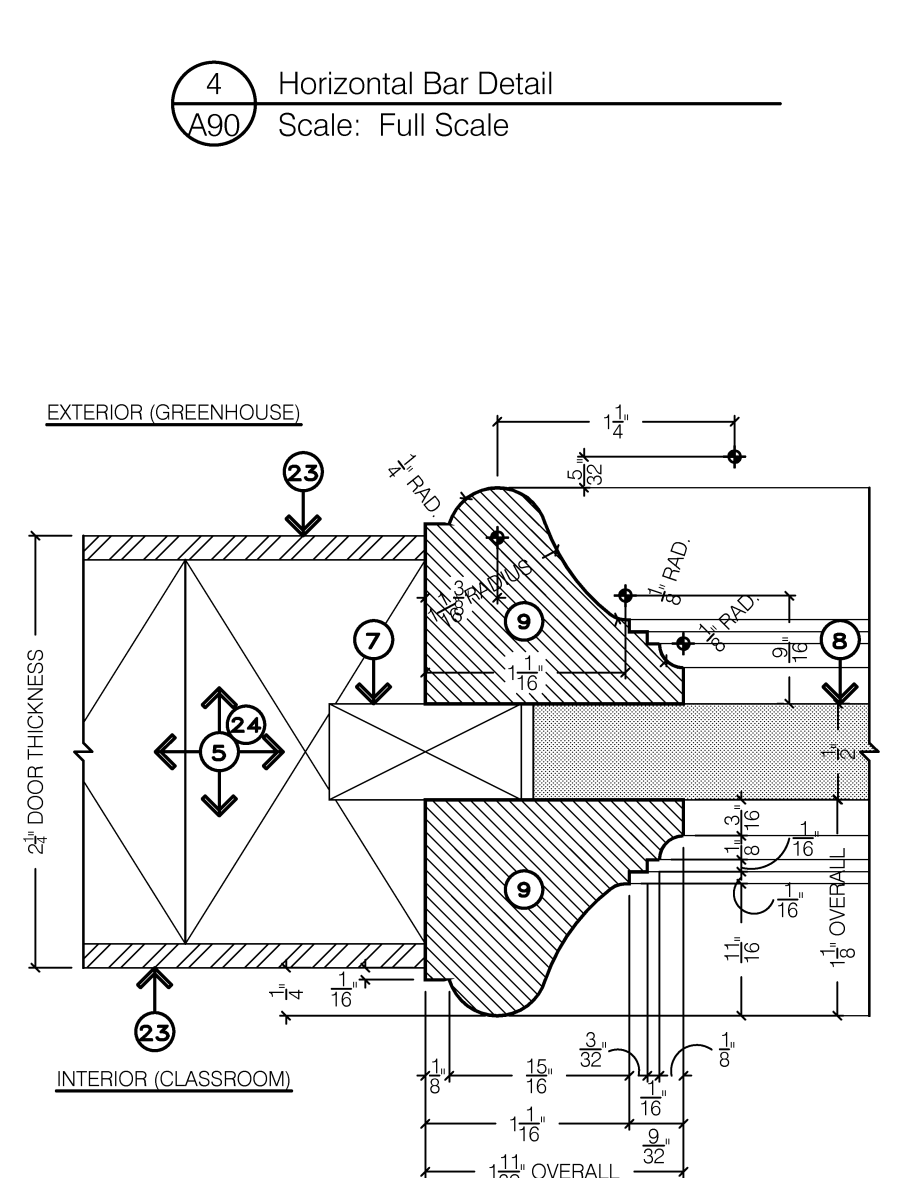
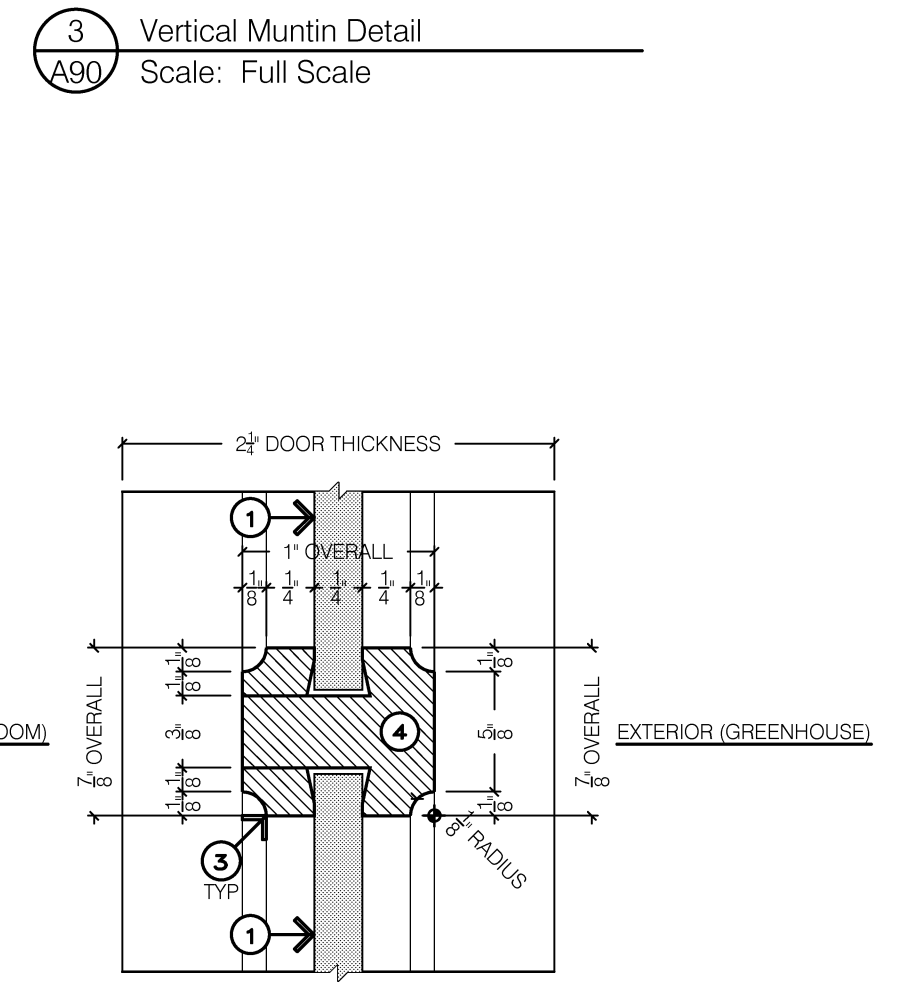
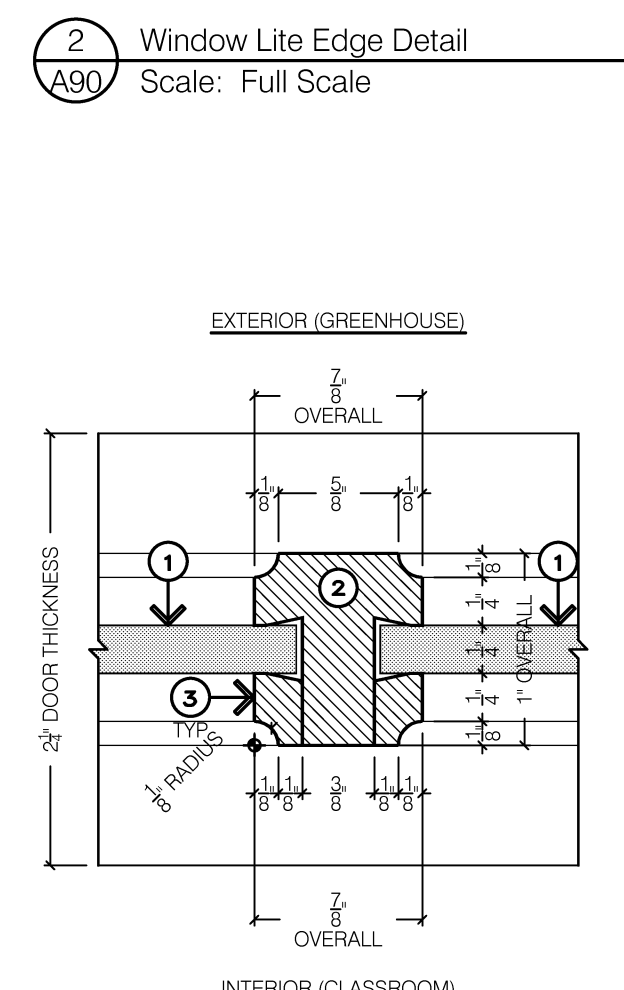
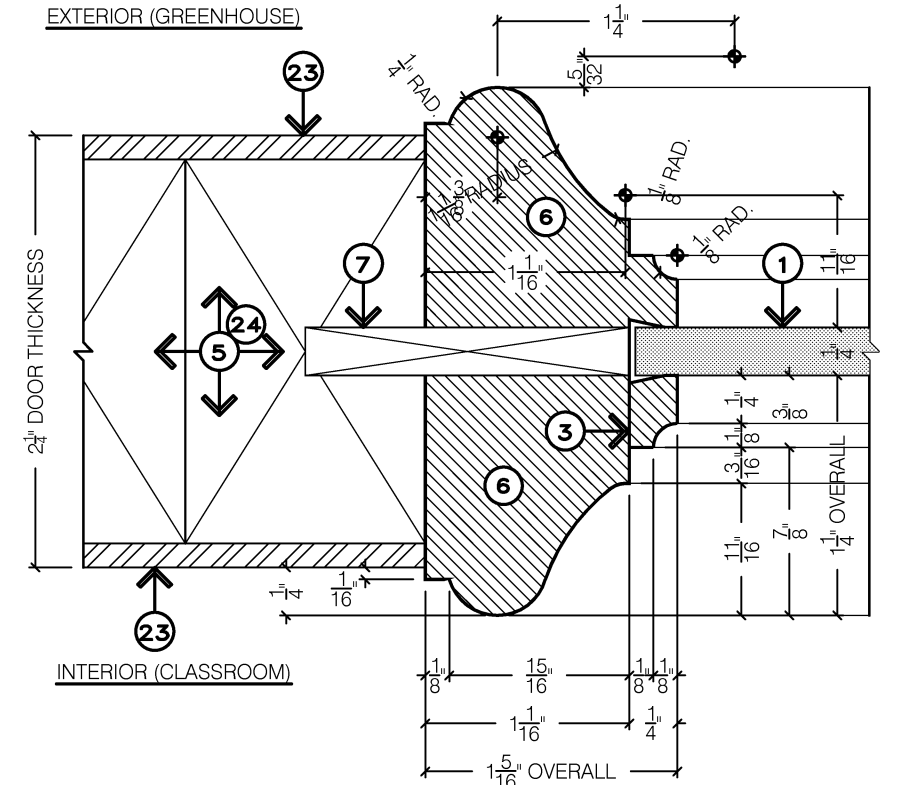
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Greenhouse Stabilization

Project No. 9115 A80

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email: architects@ehresmanassociates.com  
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OVERALL DOOR HEIGHT VARIES (C.F.V. / V.M.) REFER TO SCHEDULE



- GENERAL NOTES:**
- CONTRACTOR TO FIELD VERIFY EXISTING OPENING DIMENSIONS PRIOR TO ORDERING ANY MATERIAL. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR DIRECTION PRIOR TO COMMENCING ON THE WORK.
  - INTENT IS TO MATCH THE EXISTING HISTORICAL DOOR DESIGN AND DETAILS EXACTLY.
  - CONTRACTOR TO FILL ALL FASTENER HOLES WITH MATERIAL SUITABLE FOR STAINING PRIOR TO FINISHING THE DOOR.
  - DOOR TO BE FINISHED ON ALL SIDES AND ALL EDGES FOR COMPLETE COVERAGE.

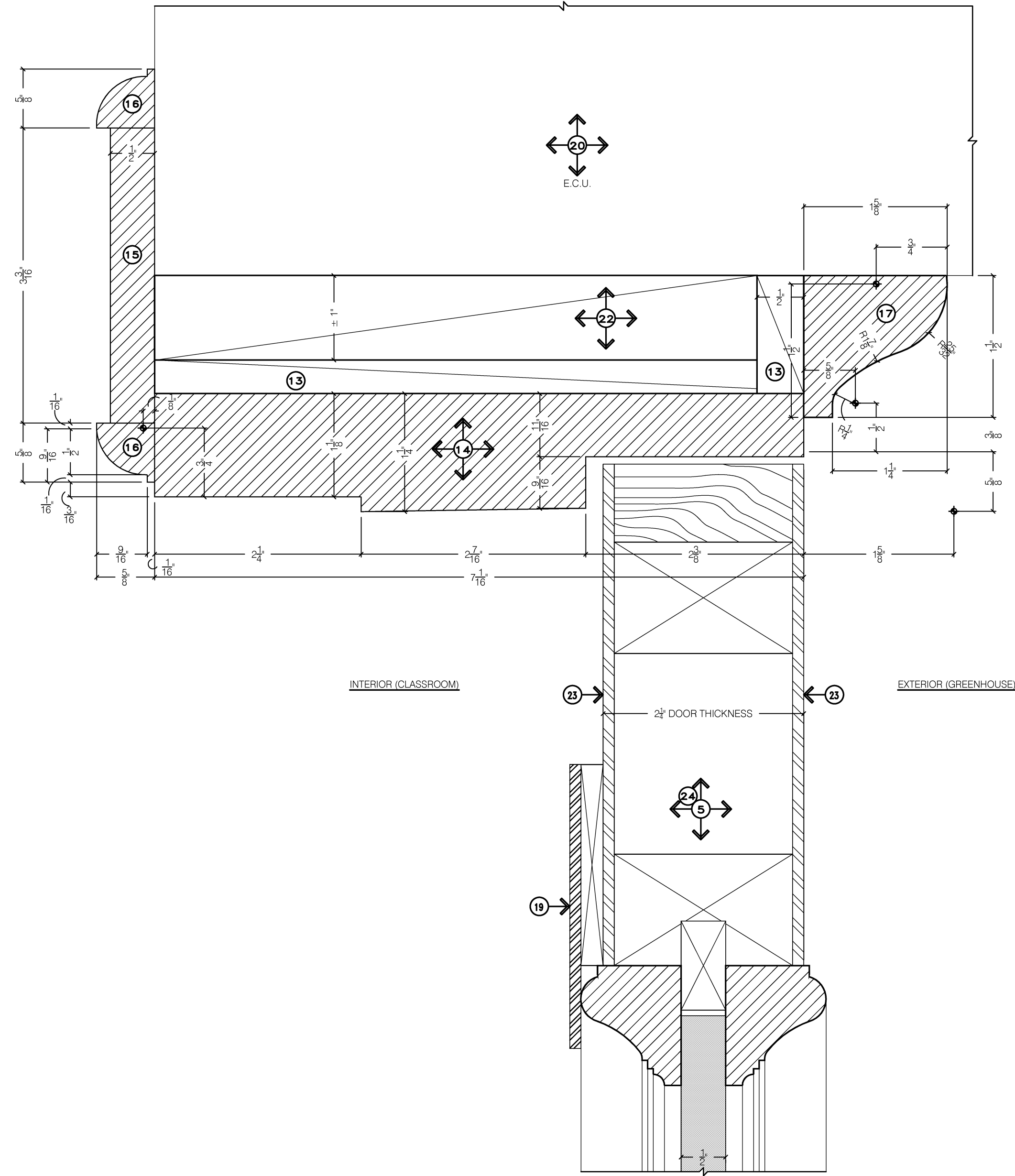
- DRAWING NOTES:**
- 1/4" TEMPERED GLASS WINDOW LITE PANELS
  - 1" SHAPED SOLID WOOD MUNTIN (BACK BEVELED FOR GLAZING TAPE OR CAULK)
  - SOLID WOOD GLAZING BEAD (BACK BEVELED FOR GLAZING TAPE OR CAULK). CONTRACTOR TO DOWEL MUNTIN BARS TO VISION LITE FRAME.
  - 1" SHAPED SOLID WOOD BAR (BACK BEVELED FOR GLAZING TAPE OR CAULK)
  - 2-1/4" ENGINEERED STILE & RAIL DOOR
  - SOLID WOOD DOOR LITE EDGE MOULDING (CUT PROFILE AS INDICATED)
  - WOOD SPLINE FOR ENGINEERED STILE & RAIL DOOR
  - 1/2" THICK WOOD RECESSED PANEL--STOP PANEL SHORT TO ALLOW FOR THERMAL EXPANSION AND MOISTURE (HUMIDITY) IN THE MATERIAL
  - WOOD MOULDING AT FLAT RECESSED PANEL
  - PREFINISHED METAL KICKPLATE
  - 2" x 6" VERTICAL WOOD STUD ANCHORED TO LINTEL AND FLOOR
  - 1-1/4" x 3" x 1-1/4" HIGH STEEL CLIP ANGLE--OFFSET AS NEEDED TO AVOID SCREW CONFLICT FROM EACH SIDE. BOLT TO LINTEL AND FLOOR AS SHOWN
  - SHIM SPACE
  - 5/4" SOLID STOCK BOARD MATERIAL--CUT TO PROFILE INDICATED
  - 1/2" SOLID STOCK BOARD MATERIAL--CUT TO PROFILE INDICATED
  - INTERIOR SOLID WOOD TRIM--CUT TO PROFILE INDICATED
  - EXTERIOR SOLID WOOD TRIM--CUT TO PROFILE INDICATED
  - METAL HINGE--REFER TO SPECIFICATIONS
  - EXISTING TRIM TO REMAIN
  - (E) EXTERIOR WALL CONSTRUCTION--EXACT CONDITIONS ARE UNKNOWN
  - PERIMETER SEALANT AROUND ENTIRE INTERIOR AND EXTERIOR--TYPICAL WHETHER PARTICULARLY SHOWN OR NOT
  - SOLID WOOD BLOCKING ATTACHED SECURELY TO THE BUILDING STRUCTURE
  - MINIMUM 1/8" VENEER
  - LOW DENSITY GLUED UP LUMBER CORE, INTERRUPTED LENGTHS, WITH WATER-PROOF GLUE AND SOLID LUMBER EDGES

- LEGEND:**
- FINISHED WOOD MATERIAL
  - WOOD BLOCKING



DOOR SCHEDULE																	
DOOR NO.	OPENING LOCATION	FIRE RATING	HARDW. HEADING	LOCK FUNCTION	FRAME INFORMATION						DOOR INFORMATION						
					OPENING WIDTH	OPENING HEIGHT	FRAME ELEV.	JAMB DEPTH	FRAME MATER.	FRAME FINISH	FRAME REMARKS	DOOR SIZE	DOOR THICK	DOOR ELEV.	DOOR MATER.	DOOR FINISH	DOOR REMARKS
A	TO GREENHOUSE FROM EXISTING CLASSROOM	N/A	SET #1	CLASSROOM	ETR	ETR	ETR	ETR	WOOD	STAIN	NOTE F1, F2, F3 AND H1	3'-0" x 6'-10"	1-3/4"	HG	WOOD	STAIN	NOTE D1, D2, D3, D4
B	TO EXTERIOR FROM GREENHOUSE	N/A	SET #2	EXIT	3'-4"	7'-0"	1.1	--	ALUM	PREFIN	NOTE F2, F4	3'-0" x 6'-10"	1-3/4"	HG	ALUM	PREFIN	NOTE D2, D4, D5

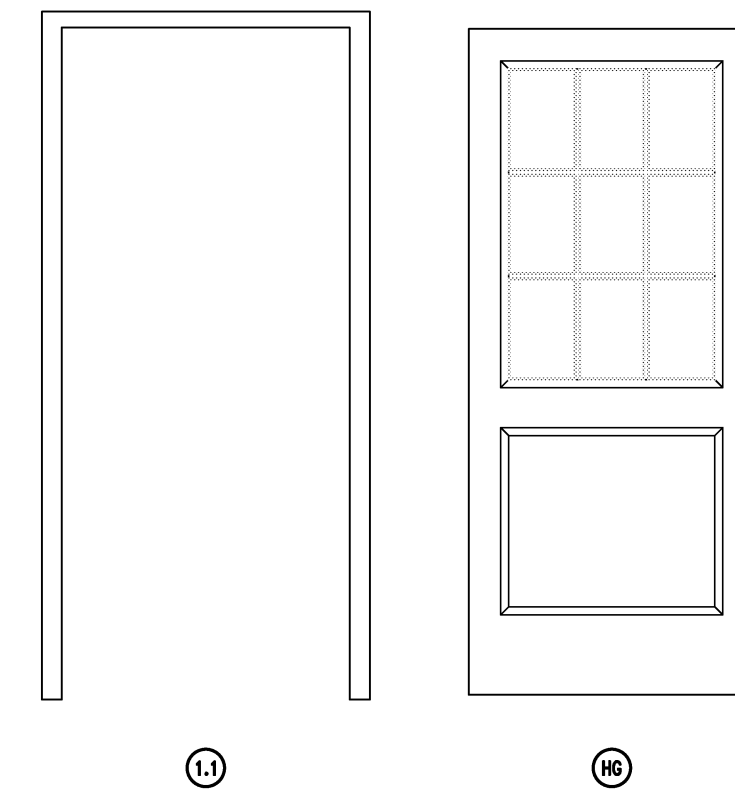
HARDWARE SCHEDULE					
HARDWARE SET #1: (1 DOOR)					
ITEM QTY.	ITEM DESCRIPTION	ITEM MANUFACTURER	ITEM MODEL #	ITEM FINISH	HARDWARE REMARKS
(3)	HINGES	HAGER	BB1199 5" x 5"	US10B	NOTE HS1, HS2, HS3
(1)	CLOSER	LCN	P411-N6ST3447	695	NOTE HS1, HS4, HS6
(1)	CYLINDER		E-72	US10B	PROVIDE 'BEST-CORE'
(1)	PUSH PLATE	ROCKWOOD	70PC	US10B	
(1)	EXTERIOR TRIM	BALDWIN HARDW.	# 2608	US10B	NOTE HS5
(1)	AUXILIARY DEADBOLT	SCHLAGE	L463	US10B	PROVIDE 'BEST-CORE'
(1)	THRESHOLD	NAT. GUARD	426DKB 34-1/2"	DKB	ALUMINUM WITH DARK BRONZE
(1)	WEATHERSTRIPPING	NAT. GUARD	170NDKB	DKB	
(2)	KICKPLATE	ROCKWOOD	10 x 34-1/2" 050	US10B	
HARDWARE SET #2: (1 DOOR)					
ITEM QTY.	ITEM DESCRIPTION	ITEM MANUFACTURER	ITEM MODEL #	ITEM FINISH	HARDWARE REMARKS
(3)	HINGES	HAGER	BB1199 5" x 5"	US10B	NOTE HS1, HS2, HS3
(1)	CLOSER	LCN	P411-N6ST3447	695	NOTE HS1, HS4, HS6
(1)	ELECTRIC STRIKE	VON DUPRIN	HES #9600	US10B	
(1)	EXIT DEVICE	VON DUPRIN	99 SERIES	US10B	
(1)	EXTERIOR TRIM	BALDWIN HARDW.	# 2608	US10B	NOTE HS5
(1)	PROXIMITY CARD READER	ALLEGION	MT11	--	NOTE HS7
(1)	THRESHOLD	NAT. GUARD	426DKB 34-1/2"	DKB	ALUMINUM WITH DARK BRONZE
(1)	WEATHERSTRIPPING	NAT. GUARD	170NDKB	DKB	
(2)	KICKPLATE	ROCKWOOD	10 x 34-1/2" 050	US10B	



1 Door Head Detail  
A91 Scale: Full Scale

FRAME ELEVATION:

DOOR ELEVATION:



**DRAWING NOTES:**

- 1/4" TEMPERED GLASS WINDOW LITE PANELS.
- T<sup>1</sup>-SHAPED SOLID WOOD MUNTIN (BACK BEVELED FOR GLAZING TAPE OR CAULK).
- SOLID WOOD GLAZING BEAD (BACK BEVELED FOR GLAZING TAPE OR CAULK). CONTRACTOR TO DOWEL MUNTIN BARS TO VISION LITE FRAME.
- T<sup>1</sup>-SHAPED SOLID WOOD BAR (BACK BEVELED FOR GLAZING TAPE OR CAULK).
- 2-1/4" ENGINEERED STILE & RAIL DOOR.
- SOLID WOOD DOOR LITE EDGE MOULDING (CUT PROFILE AS INDICATED).
- WOOD SPLINE FOR ENGINEERED STILE & RAIL DOOR.
- 1/2" THICK WOOD RECESSED PANEL--STOP PANEL SHORT TO ALLOW FOR THERMAL EXPANSION AND MOISTURE (HUMIDITY) IN THE MATERIAL.
- WOOD MOULDING AT FLAT RECESSED PANEL.
- PREFINISHED METAL KICKPLATE.
- 2" x 6" VERTICAL WOOD STUD ANCHORED TO LINTEL AND FLOOR.
- 1-1/4" x 3" x 1-1/4" HIGH STEEL CLIP ANGLE--OFFSET AS NEEDED TO AVOID SCREW CONFLICT FROM EACH SIDE. BOLT TO LINTEL AND FLOOR AS SHOWN.
- SHIM SPACE
- 5/4" SOLID STOCK BOARD MATERIAL--CUT TO PROFILE INDICATED.
- 1/2" THICK WOOD RECESSED PANEL--CUT TO PROFILE INDICATED.
- INTERIOR SOLID WOOD TRIM--CUT TO PROFILE INDICATED.
- EXTERIOR SOLID WOOD TRIM--CUT TO PROFILE INDICATED.
- METAL HINGE--REFER TO SPECIFICATIONS.
- 4010-18 STEEL DROP PLATE
- (E) EXTERIOR WALL CONSTRUCTION--EXACT CONDITIONS ARE UNKNOWN.
- PERIMETER SEALANT AROUND ENTIRE INTERIOR AND EXTERIOR--TYPICAL WHETHER PARTICULARLY SHOWN OR NOT.
- SOLID WOOD BLOCKING ATTACHED SECURELY TO THE BUILDING STRUCTURE.
- MINIMUM 1/8" VENEER.
- LOW DENSITY GLUED UP LUMBER CORE, INTERRUPTED LENGTHS, WITH WATER-PROOF GLUE AND SOLID LUMBER EDGES.

**LEGEND:**

- FINISHED WOOD MATERIAL
- WOOD BLOCKING

**GENERAL NOTES:**

- CONTRACTOR TO FIELD VERIFY EXISTING OPENING DIMENSIONS PRIOR TO ORDERING ANY MATERIAL. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR DIRECTION PRIOR TO COMMENCING ON THE WORK.
- CONTRACTOR TO PROVIDE SEALANT AROUND THE PERIMETER OF THE INTERIOR AND EXTERIOR OF THE DOOR FRAME. PROVIDE ACTUAL COLOR SAMPLE CHART OF TREMCO SEALANTS FOR COLOR SELECTION BY THE ARCHITECT.
- CONTRACTOR TO COORDINATE 'BEST' CORE WITH EXISTING BUILDING SYSTEM. CONTACT BUILDING ENGINEER FOR ADDITIONAL INFORMATION.
- EXISTING GRANITE/MARBLE SILLS ARE TO REMAIN. CONTRACTOR TO CLEAN EXISTING SILL OF ANY DEBRIS, MARKINGS, ETC. PRIOR TO INSTALLATION OF NEW DOOR.
- REFER TO PROJECT MANUAL FOR SPECIFICATIONS ON DOOR CONSTRUCTION, MATERIALS, JOINTS, ETC.
- CONTRACTOR TO VERIFY WOOD DOOR FRAME IS SECURELY ATTACHED TO THE BUILDING STRUCTURE. CONTRACTOR REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO INSTALLING NEW DOORS.
- EXISTING EXTERIOR BRICK TO REMAIN INTACT. CONTRACTOR TO INFORM ARCHITECT OF ANY LOOSE OR MISSING COMPONENTS PRIOR TO INSTALLING NEW DOORS.
- EXISTING INTERIOR WOOD TRIM TO REMAIN. CONTRACTOR TO REPLACE ANY DAMAGED TRIM PIECES CAUSED BY CONSTRUCTION OPERATIONS.
- CONTRACTOR TO VERIFY EXISTING HINGE LOCATION ON FRAME FOR PROPER ALIGNMENT TO DOOR. CONTRACTOR ALSO TO MORTISE EXISTING FRAME AS REQUIRED FOR NEW HINGES (DEPTH, THICKNESS AND/OR HEIGHT).

**FRAME NOTES:**

- FRAME TO BE STAINED COLOR TO MATCH EXISTING INTERIOR WOOD TRIM.
- PROVIDE SEALANT AROUND ENTIRE INTERIOR AND EXTERIOR PERIMETER OF FRAMED OPENING.
- FILL ALL EXISTING HOLES PRIOR TO RE-FINISHING FRAME, WITH MATERIAL APPROPRIATE TO BE STAINED.
- INTENT IS FOR FRAME TO BE PART OF GREENHOUSE FRAMING PACKAGE

**HARDWARE NOTES:**

- CLASSROOM DEADBOLT FUNCTION SIMILAR TO MODEL #L463 BY SCHLAGE.

**DOOR NOTES:**

- DOOR TO BE STAINED COLOR TO MATCH EXISTING INTERIOR WOOD TRIM.
- DOOR VISION LITES ARE TO BE 1/4" THICK (MINIMUM), INDIVIDUAL PANES OF GLASS. PROVIDE CLEARANCE AS NECESSARY FOR THERMAL EXPANSION, CLEAR, FLOAT, TEMPERED, SAFETY GLASS.
- DOOR TO BE CONSTRUCTED OF WOOD MATERIAL, WHITE OAK SPECIES, AND PLAIN SLICED CUT WITH TRANSPARENT FINISH ON BOTH FACES AND ALL EDGES.
- PROVIDE BRONZE TONE ANODIZED ALUMINUM FLASHING AT TOP AND BOTTOM OF DOOR (SEE SPECIFICATIONS).
- INTENT IS FOR DOOR TO BE PART OF GREENHOUSE PACKAGE

**HARDWARE SET NOTES:**

- HEAVY DUTY CONSTRUCTION
- BRASS BASE METAL OR NONFERROUS MATERIAL
- PROVIDE DECORATIVE BALL TIP AT BOTH ENDS OF HINGE PIN (TYPICAL)
- PROVIDE HOLD OPEN FEATURE AND LIMIT STOP.
- PRODUCT MUST BE THRU-BOLTED TO THE DOOR.
- STEEL DROP BOARD SHIM AND #4010-18 STEEL DROP PLATE TO CLEAR WINDOW LITE TRIM - REFER TO DETAIL X/A90.
- CONNECT TO EXISTING SECURITY MANAGEMENT SYSTEM (CONTROLLER, INTERFACE, ETC.) PROVIDE ELECTRICAL AND DATA CABLING AND CONNECTIONS AS REQUIRED

Bidding: 16 February 2016

**Door Details & Schedule**

Scale as Noted

**Ehresman Associates, Inc.**  
architects • engineers

Grosse Pointe Public School  
Trombly Elementary School  
Greenhouse Stabilization

Project No. 9115

A91

# ABBREVIATIONS

ACCU	AIR CONDITIONING CONDENSING UNIT	F	FAHRENHEIT	RA	RETURN AIR
AD	ACCESS DOOR	FEC	FIRE EXTINGUISHER CABINET	RD/SP	ROOF DRAIN/STAND PIPE
AFF	ABOVE FINISHED FLOOR	FD	FLOOR DRAIN	BAL.	BALANCE
AHU	AIR HANDLING UNIT	FLR.	FLOOR	RET	RETURN
AP	ACCESS PANEL	FPM	FEET PER MINUTE	RF	RETURN FAN
ASR	AUTOMATIC SPRINKLER RISER	FR	FIRE RISER	RH	REHEAT COIL
		FS	FLOW SWITCH	Rh	RELATIVE HUMIDITY
		FT.	FEET	RPM	REVOLUTIONS PER MINUTE
BTU	BRITISH THERMAL UNIT				
		GPM	GALLONS PER MINUTE	SA	SUPPLY AIR
CC	COOLING COIL	HB	HOSE BIBB	SAN	SANITARY WASTE
CF	CENTRIFUGAL FAN	HO	HUB OUTLET	SD	SMOKE DETECTOR
CFM	CUBIC FEET PER MINUTE	HP	HORSEPOWER	SF	SUPPLY FAN
CHWS	CHILLED WATER SUPPLY	HW	HOT WATER (POTABLE)	SG	SPECIFIC GRAVITY
CHWR	CHILLED WATER RETURN			SP	STATIC PRESSURE (INCHES OF WATER)
CI	CAST IRON	IN	INCHES	SP	STAND PIPE
CO	CLEAN OUT	INL	INLET	SPR	SPRINKLER
COND	CONDENSATE	INV	INVERT	SPR/STP	SPRINKLER STANDPIPE
CONT.	CONTINUATION	LAT	LEAVING AIR TEMPERATURE	SPS	STATIC PRESSURE SENSOR
CUH	CABINET UNIT HEATER	LAV	LAVATORY	STK	STACK
CW	COLD WATER	LBS/HR	POUNDS PER HOUR		
		LWT	LEAVING WATER TEMPERATURE	TP	TOTAL PRESSURE
				Typ	TYPICAL
Db	DRY BULB TEMPERATURE, °F	MAX.	MAXIMUM	UH	UNIT HEATER
dB	DECIBELS	MBH	1000 BTU/HR	UON	UNLESS OTHERWISE NOTED
DDC	DIRECT DIGITAL CONTROL	MECH	MECHANICAL		
DET	DETAIL	MIN.	MINIMUM	V	VALVE
DIA	DIAMETER	MISC	MISCELLANEOUS	VAC	VACUUM
DN.	DOWN			VAV	VARIABLE AIR VOLUME
DS	DOWNSPOUT	NC	NORMALLY CLOSED		
DWG.	DRAWING	NIC	NOT IN CONTRACT	VE	VOLUME EXTRACTOR
		NO	NORMALLY OPEN	VTR	VENT THRU ROOF
		NOM.	NOMINAL		
EA	EXHAUST AIR	OA	OUTSIDE AIR	W	WASTE
ECUH	ELECTRIC CABINET UNIT HEATER	OF	OVERFLOW	WG	WATER GAUGE
EF	EXHAUST FAN			WH	WALL HYDRANT
ELEV.	ELEVATION	P	PUMP		
ESP	EXTERNAL STATIC PRESSURE	PD	PRESSURE DROP (FEET OF WATER)		
EUH	ELECTRIC UNIT HEATER	PSI	POUNDS PER SQUARE INCH		
EWC	ELECTRIC WATER COOLER	PRV	PRESSURE REDUCING VALVE		
EX.	EXISTING				
EXH	EXHAUST				
EXIST	EXISTING				

# PLUMBING, PIPING & FIRE

	DEMOLITION WORK WORK		BALANCING VALVE
	EXISTING WORK		TWO-WAY MODULATING CONTROL VALVE
	NEW WORK		THREE-WAY MODULATING CONTROL VALVE
	ISOLATION VALVE		MANUAL AIR VENT
	CHECK VALVE		TEST PLUG (PRESSURE/TEMPERATURE)
	WATER FLOW SWITCH		NEW CONNECTION
	VALVE IN RISER		SANITARY LINE ABOVE GRADE
	STRAINER		SANITARY LINE UNDERGROUND
	PIPE ANCHOR		VENT PIPE
	EXPANSION JOINT - SLIDING		COLD WATER PIPING
	ALIGNMENT GUIDE		HOT WATER PIPING (TEMPERATURE)
	UNION		HOT WATER RETURN PIPING
	SPRINKLER HEAD (PENDANT )		MAIN FIRE SPRINKLER
	SPRINKLER HEAD ( UPRIGHT )		GAS PIPING
	CLEANOUT		STORM LINE
	CLEANOUT FLOOR		HEATING HOT WATER SUPPLY
	CLEANOUT WALL		HEATING HOT WATER RETURN
	CLEANOUT GRADE		STEAM
	FLOOR DRAIN (FD)		CONDENSATE RETURN
	REDUCER - CONCENTRIC		
	PRESSURE GAUGE WITH COCK		
	THERMOMETER		
	CAP OR PLUG		
	ELBOW - TURNED DOWN		
	ELBOW - TURNED UP		
	TEE OUTLET - DOWN		
	TEE OUTLET - UP		
	DIRECTION OF FLOW		
	REDUCED PRESSURE BACKFLOW PREVENTOR		
	PRESSURE REDUCING VALVE		
	RELIEF VALVE		

# HVAC LEGEND & SYMBOLS

	INDICATES RECTANGULAR DUCT WITH DUCT SIZE 18 INCHES WIDE (IN PLANE OF DRAWING) AND 6 INCHES DEEP. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT UNLESS OTHERWISE NOTED.
	INDICATES FLAT OVAL DUCT WITH DUCT SIZE 22 INCHES WIDE (IN PLANE OF DRAWING) AND 14 INCHES DEEP. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT UNLESS OTHERWISE NOTED.
	INDICATES ROUND DUCT WITH DUCT SIZE OF 6 INCHES IN DIAMETER. SIZE PERTAINS TO THE ENTIRE RUN OF DUCT (FROM DUCT ORIGIN AT TAP TO END OF DUCT) UNLESS OTHERWISE NOTED.
	VANE TURN ELBOW & AIR SPLIT TYPE DUCT TAKE-OFF
	INCLINED RISE IN RESPECT TO AIR FLOW
	INCLINED DROP IN RESPECT TO AIR FLOW
	VANED ELBOW ( PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES )
	VANED ELBOW (SHORT RADIUS)
	INDICATES FLEXIBLE DUCT (RUNOUT) OF SIZE AS SCHEDULED OR SHOWN. LENGTH SHALL NOT EXCEED 5 FT.
	DUCT TURNING UP
	DUCT TURNING DOWN
	VERTICAL FIRE DAMPER
	HORIZONTAL FIRE DAMPER
	POINT OF NEW CONNECTION
	DUCT SMOKE DETECTOR
	COMBINATION FIRE / SMOKE DAMPER
	VOLUME CONTROL DAMPER (MANUAL)
	FLEXIBLE CONNECTION OR FLEXIBLE DUCT CONNECTOR
	MOTORIZED DAMPER

## GENERAL HVAC NOTES:

- THE FOLLOWING NOTES APPLY TO ALL HVAC DRAWINGS, EXCEPT WHERE OTHERWISE INDICATED.
- WHEREVER VOLUME DAMPERS OCCUR ABOVE CEILINGS WITHOUT REMOVABLE TILE AND AN ACCESS PANEL IS NOT FURNISHED, PROVIDE AN EXPOSED DAMPER REGULATOR TO ALLOW DAMPER ADJUSTMENT FROM BELOW CEILING. UNIT TO BE EQUAL TO VENTLOCK No. 666 IN 1/2"x3/8" SIZE.
- ALL DIMENSIONS SHOWN FOR DUCTWORK ARE NET INSIDE DIMENSIONS.
- DIFFUSER AND REGISTER LOCATIONS SHALL BE COORDINATED WITH ARCHITECTURAL REFLECTED CEILING PLAN.
- THOUGH SOME OFFSETS & TRANSITIONS ARE SHOWN IN PIPING AND SHEET METAL TO HELP INDICATE THE PHYSICAL RELATIONSHIP BETWEEN THEM, IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL PIPING AND SHEET METAL OFFSET & TRANSITIONS REQUIRED. THE CONTRACTOR SHALL FULLY COORDINATE THE MECHANICAL WORK WITHIN ITSELF AND WITH THE WORK OF ALL TRADES TO PROVIDE COMPLETE AND OPERABLE SYSTEMS WITHOUT INTERFERENCES.
- DUCT PRESSURE CONSTRUCTION CLASSIFICATION SHALL BE AS SPECIFIED.
- ALL ROUND RUNOUTS AND DROPS TO DIFFUSERS SHALL BE SAME NOMINAL SIZE AS INDICATED ON THE DRAWINGS.
- ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN FURRED CHASE OR SUSPENDED CEILING.
- ACCESS PANELS AND DOORS ARE REQUIRED THROUGH BUILDING CONSTRUCTION ASSEMBLIES SUCH AS WALLS, CEILING, PARTITIONS AND FLOORS TO SERVICE AND MAINTAIN DAMPERS, CONTROL MOTORS, REGULATORS, VALVES, FLEXIBLE DUCT CONNECTIONS AND OTHER ITEMS OR DEVICES INCORPORATED IN MECHANICAL WORK. SUCH PANELS AND DOORS SHALL BE PROVIDED AND INSTALLED UNDER THE ARCHITECTURAL SPECIFICATIONS. MECHANICAL CONTRACTOR SHALL COORDINATE LOCATION OF ACCESS DOORS AND PANELS AND VERIFY THE EXACT QUANTITY, SIZE, FIRE-RATING AND LOCATION AFTER THE SYSTEMS AND EQUIPMENT REQUIRING ACCESS HAVE BEEN INSTALLED AND PRIOR TO THE CLOSURE OF THE AFFECTED CEILING AND BUILDING ASSEMBLIES. MINIMUM ACCESS PANEL AND DOOR SIZE SHALL BE 24 INCHES BY 18 INCHES UNLESS OTHERWISE NOTED.
- ALL DUCTWORK PENETRATIONS FIRE-RATED WALLS AND FLOORS SHALL BE PROVIDED WITH FIRE DAMPERS AND ACCESS DOOR.

## PLUMBING GENERAL NOTES:

- FOR PIPE SIZES TO INDIVIDUAL PLUMBING FIXTURES AND VARIOUS PIECES OF EQUIPMENT REFER TO SPECIFICATIONS.
- IN ALL WASTE DRAINAGE PIPING THE CONTRACTOR SHALL FURNISH AND INSTALL CLEANOUTS (IN ADDITION TO THE CLEANOUTS INDICATED ON DRAWINGS AS REQUIRED BY THE GOVERNING PLUMBING CODE).
- REFER TO HVAC GENERAL NOTE-4
- FOR ADDITIONAL NOTES COMMON TO PLUMBING REFER TO HVAC NOTES.

MECHANICAL DRAWING INDEX	
SHEET	DESCRIPTION
M000	MECHANICAL LEGEND, SHEET INDEX & GENERAL NOTES
M001	MECHANICAL SPECIFICATIONS
M100	MECHANICAL FLOOR PLANS



Mechanical Legend,  
Sheet Index &  
General Note  
Ehresman Associates, Inc.  
architects • engineers

Grosse Pointe Public School System  
Trombly Elementary School  
Greenhouse Stabilization

Project No. 9115

M000

## MECHANICAL SPECIFICATION

### MECHANICAL MATERIALS, METHODS AND EXECUTION WORK INCLUDED:

#### WORK INCLUDED:

- A. FURNISH ALL LABOR AND MATERIAL, APPLIANCES, EQUIPMENT AND SUPERVISION TO PUT IN PLACE A COMPLETE AND FUNCTIONING MECHANICAL INSTALLATION READY FOR OPERATION, AS SPECIFIED HEREIN AND AS INDICATED ON THE DRAWINGS. SYSTEMS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO THE FOLLOWING MAJOR EQUIPMENT OR OPERATIONS:
- HEATING, VENTILATING AND AIR CONDITIONING.
  - INSULATION.

#### DEFINITIONS:

- A. "PROVIDE": TO FURNISH AND COMPLETELY INSTALL SPECIFIED PRODUCTS AND INCIDENTALS, WHETHER SPECIFICALLY INDICATED OR NOT, NECESSARY FOR A COMPLETE, FUNCTIONAL INSTALLATION. INCLUDES ALL GENERAL AND SPECIALIZED LABOR, EQUIPMENT AND TOOLS NECESSARY TO COMPLETE THE INSTALLATION.
- B. "PIPING": A COMPLETE SYSTEM, INCLUDING PIPE, TUBING, FITTINGS, HANGERS, SUPPORTS, VALVES, AND ALL SPECIALTIES THAT COMPRISE A FULLY FUNCTIONAL PIPING SYSTEM, WHETHER SPECIFICALLY INDICATED OR NOT.

#### CODES, ORDINANCES, AND STANDARDS:

- A. ALL WORK SHALL CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE LATEST ADOPTED FEDERAL, STATE AND LOCAL CODES, ORDINANCES, AND STANDARDS HAVING JURISDICTION OVER THE WORK.
- B. WHERE CONTRACT DOCUMENT REQUIREMENTS EXCEED THE REQUIREMENTS OF THE REFERENCED CODES, ORDINANCES, AND STANDARDS, THE CONTRACT DOCUMENT REQUIREMENTS SHALL BE TAKEN AS MINIMUM.
- C. ALL EQUIPMENT CONTAINING ELECTRICAL WIRING AND/OR ELECTRICAL COMPONENTS SHALL HAVE A UNDERWRITERS LABORATORIES (UL) "PACKAGE" LABEL.
- D. ALL GAS FIRED EQUIPMENT SHALL HAVE THE AMERICAN GAS ASSOCIATION (AGA) LABEL.

#### PERMITS, FEES AND INSPECTIONS:

- A. SECURE ALL NECESSARY PERMITS, CONNECTION FEES, TAD FEES, LICENSES AND APPROVALS AND ARRANGE FOR ALL INSPECTIONS, INCLUDE ALL RELATED COSTS.
- B. FURNISH CERTIFICATES OF FINAL INSPECTION AND APPROVAL UPON COMPLETION OF PROJECT.

#### EXAMINATION OF SITE:

- A. VISIT PROJECT SITE AND BECOME FULLY COGNIZANT OF ALL EXISTING ARCHITECTURAL, MECHANICAL, ELECTRICAL, STRUCTURAL AND SITE CONDITIONS, OR EXISTING CODE VIOLATIONS WHICH MAY AFFECT THE WORK.
- B. NOTIFY ARCHITECT PRIOR TO SUBMITTING BID IF REVISIONS TO CONTRACT DOCUMENTS ARE NECESSARY TO RECTIFY ANY OF THE AFOREMENTIONED EXISTING CONDITIONS.
- C. NO "EXTRAS" TO CONTRACT PRICE WILL BE ALLOWED AFTER RECEIVING BID IN ORDER TO RECTIFY EXISTING CONDITIONS IN ORDER TO MEET THE DESIGN INTENT OF THE CONTRACT DOCUMENTS OR SATISFY CODE REQUIREMENTS.

#### COORDINATION WITH OTHER TRADES:

- A. COORDINATE ALL WORK BEFORE AND DURING CONSTRUCTION WITH ALL OTHER AFFECTED TRADES.
- B. WHERE INTERFERENCES DEVELOP, NOTIFY ARCHITECT FOR RESOLUTION OF CONFLICT.
- C. RELOCATION OF CONFLICTING INSTALLED WORK, DUE TO LACK OF COORDINATION, OR POOR COORDINATION WILL NOT BE CONSIDERED EXTRA WORK.

#### APPROVED MANUFACTURERS:

- A. USE ONLY MATERIALS SPECIFICALLY INDICATED IN CONTRACT DOCUMENTS, OR COMPARABLE MATERIALS BY OTHER LISTED ACCEPTABLE MANUFACTURERS. NOTE THAT "ACCEPTABLE MANUFACTURERS" DOES NOT CONSTITUTE AUTOMATIC APPROVAL OF SPECIFIC MATERIALS BY ONE OR ALL OF THE LISTED ACCEPTABLE MANUFACTURERS. ARCHITECT AND/OR ENGINEER OF RECORD RESERVES THE RIGHT OF FINAL DETERMINATION OF ACCEPTABILITY OF EACH ITEM.

#### SHOP DRAWINGS:

- A. SUBMIT COMPLETE SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT INTENDED FOR USE ON THIS PROJECT.
- B. SHOP DRAWINGS SHALL CLEARLY INDICATE ALL PHYSICAL, PERFORMANCE AND ELECTRICAL CHARACTERISTICS FOR ALL MATERIALS AND EQUIPMENT.
- C. SUBMIT ELECTRONIC COPY OF ALL SHOP DRAWINGS FOR REVIEW.
- D. NO WORK IS TO BE INSTALLED PRIOR TO RETURN OF ARCHITECT REVIEWED SHOP DRAWINGS.

#### OPERATION AND MAINTENANCE MANUALS:

- A. UPON COMPLETION OF PROJECT, SUBMIT TWO (2) COMPLETE BOUND SETS OF OPERATING AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND SYSTEMS INSTALLED IN THIS PROJECT.
- B. MANUALS SHALL INCLUDE GUARANTEE(S), COMPLETE OPERATING INSTRUCTIONS, REPAIR PARTS LIST, PREVENTATIVE MAINTENANCE SCHEDULE, BELT AND FILTER SCHEDULE, AND LIST OF ALL SUBCONTRACTORS ASSOCIATED WITH THE WORK, INCLUDING TELEPHONE NUMBER AND CONTACT PERSON.

#### OPERATING AND MAINTENANCE INSTRUCTIONS:

- A. PRIOR TO FINAL ACCEPTANCE BY OWNER, PROVIDE ALL PERSONNEL, EQUIPMENT, AND LABOR AS NECESSARY TO INSTRUCT OWNER'S PERSONNEL IN PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS AND EQUIPMENT INSTALLED IN THIS PROJECT. PROVIDE INSTRUCTIONAL SESSION DURING TIME PERIOD AGREED TO WITH OWNER.

#### CUTTING AND PATCHING:

- A. ALL CUTTING AND PATCHING SHALL BE PROVIDED BY THE GENERAL TRADES UNDER THE DIRECTION OF THE MECHANICAL TRADES. COST WILL BE PAID BY THE MECHANICAL TRADE REQUESTING THE WORK.
- B. RESTORED SURFACES SHALL BE OF SAME MATERIALS AND QUALITY AS ADJACENT SURFACES, AND SHALL MATCH SURROUNDING SURFACES, AND/OR BE RESTORED TO PRE-CONSTRUCTION CONDITION.

#### PROTECTION OF EXISTING SERVICES:

- A. PROTECT FROM ALL DAMAGE, EXISTING SERVICES (I.E., GAS, WATER, ELECTRICAL, ETC.), ENCOUNTERED IN THE WORK, NOT SPECIFICALLY INDICATED TO BE DEMOLISHED. INCLUDE ALL RELATED COSTS.
- B. REPAIR AND/OR REPLACE EXISTING ACTIVE SERVICES INTENDED TO REMAIN IN SERVICE, BUT DAMAGED DURING THE COURSE OF CONSTRUCTION. ABSORB ALL RELATED COSTS. NO "EXTRAS" WILL BE PAID TO RESTORE EXISTING ACTIVE SERVICES DAMAGED DURING CONSTRUCTION.
- C. ARCHITECT WILL DETERMINE COURSE OF ACTION WHEN EXISTING INACTIVE SERVICES ARE DAMAGED DURING COURSE OF CONSTRUCTION. ABSORB ALL COSTS RELATIVE TO ADDITIONAL DEMOLITION, TERMINATION, RELOCATION AND/OR RESTORATION OF EXISTING, DAMAGED INACTIVE SERVICES AS DIRECTED BY ARCHITECT.

#### ELECTRICAL WORK:

- A. PROVIDE ALL ELECTRICAL WORK ASSOCIATED WITH, AND NECESSARY TO COMPLETE THIS PROJECT, WHICH IS NOT INCLUDED AS ELECTRICAL TRADES WORK.
- B. PROVIDE ALL ELECTRICAL WORK, AS APPLICABLE, IN ACCORDANCE WITH DIVISION 16 REQUIREMENTS.
- C. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION (WITH ELECTRICAL TRADES) OF CORRECT VOLTAGES FOR ALL MECHANICAL EQUIPMENT. IN CASE OF DISCREPANCY, NOTIFY ENGINEER IMMEDIATELY AND PRIOR TO SHOP DRAWING SUBMITTALS. FAILURE TO COMPLY WITH THIS REQUIREMENT HOLDS THE CONTRACTOR FULLY RESPONSIBLE FOR ANY SUBSEQUENT PROBLEMS.

#### CLEANING AND FINISHING:

- A. PRIOR TO FINAL ACCEPTANCE BY OWNER, THOROUGHLY CLEAN ALL WORK INSIDE AND OUT AS APPLICABLE, AND LEAVE ALL SYSTEMS AND EQUIPMENT IN PERFECT WORKING ORDER. THOROUGHLY CLEAN ALL PLUMBING FIXTURES, EXPOSED PIPING, FLOOR DRAIN GRATES, AND CLEANOUT COVERS AS APPLICABLE.

#### GUARANTEE:

- A. REFER TO ARCHITECTURAL SPECIFICATIONS FOR GUARANTEES, IF NONE EXIST THE FOLLOWING MINIMUM GUARANTEES SHALL BE PROVIDED:
- PROVIDE A ONE (1) YEAR GUARANTEE COVERING ALL LABOR AND MATERIAL PROVIDED IN THIS PROJECT. GUARANTEE SHALL INCLUDE ALL SHIPPING AND TRANSPORTATION CHARGES NECESSARY TO RETURN DEFECTIVE MATERIALS TO MANUFACTURER, AS WELL AS LABOR CHARGES NECESSARY TO REMOVE AND REPLACE DEFECTIVE MATERIALS.
  - PROVIDE 5 YEAR GUARANTEE FOR ALL COMPRESSORS.
  - DEFECTIVE MATERIALS AND/OR EQUIPMENT MAY BE REPAIRED IN LIEU OF REPLACED WITH PRIOR APPROVAL OF ARCHITECT AND/OR OWNER.

#### PIPING:

##### SANITARY WASTE AND VENT PIPE AND FITTINGS:

BELOW GRADE AND/OR BELOW FLOOR SLABS WITHIN BUILDING WALLS AND EXTENDING 5'-0" OUTSIDE:  
UP TO 6" DIAMETER:  
PIPE: ASTM D2685 SCHEDULE 40 PVC-DWV INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.  
FITTINGS: ASTM D1554 SOLVENT CEMENTED.  
SOLVENT CEMENT: ASTM D2654.  
INSTALLATION: IN ACCORDANCE WITH ASTM D2321.

##### STEAM AND CONDENSATE PIPING SYSTEMS:

###### STEAM PIPING (UP TO 100 PSI):

2" AND UNDER:

PIPE: SCHEDULE 40 BLACK STEEL JOINTS: SCREWED, FITTINGS: 150 LB. - 300 LB. (WOG), BLACK MALLEABLE IRON, BANDED, ASTM A197, ANSI B16.3. UNIONS: 250 LB. - 500 LB. (WOG), BLACK MALLEABLE IRON, GROUND JOINT WITH BRASS SEAT.

###### CONDENSATE PIPING:

2" AND UNDER:

PIPE: SCHEDULE 80 BLACK STEEL JOINTS: SCREWED, FITTINGS: 150 LB. - 300 LB. (WOG) BLACK MALLEABLE IRON, BANDED, ASTM A197, ANSI B16.3. UNIONS: 250 LB. - 500 LB. (WOG) BLACK MALLEABLE IRON, GROUND JOINT WITH BRASS SEAT.

###### VALVES:

GENERAL:

PROVIDE ALL VALVES NECESSARY FOR THE PROPER OPERATION AND DRAINAGE OF THE SYSTEMS. PROVIDE DRAIN VALVES AT ALL LOW POINTS IN ALL SYSTEMS. PROVIDE DRAIN VALVES IN EACH HORIZONTAL RUNOUT FROM EACH RISER ON ALL FLOORS SO THAT ALL HORIZONTAL PIPING ON ALL FLOORS CAN BE INDIVIDUALLY DRAINED WITHOUT DRAINING THE ENTIRE PIPING SYSTEM.

PROVIDE BALL VALVES AT EACH PIECE OF EQUIPMENT REQUIRING A WATER CONNECTION, IN RISERS AND MAIN BRANCHES AT POINTS OF TAKE-OFF FROM THEIR SUPPLY AND RETURN MAINS, ADJACENT TO CONTROL VALVES AND ALL EQUIPMENT REQUIRING DISCONNECTION FOR REPAIRS.

PROVIDE CHECK VALVES WHERE SHOWN OR NECESSARY TO PREVENT BACKFLOW.

PROVIDE BALANCING VALVES IN LINES WHERE IT IS NECESSARY TO REGULATE THE QUANTITY OF WATER FLOWING IN A CIRCUIT.

ALL VALVES SHALL BE LINE SIZE UNLESS OTHERWISE INDICATED.

ALL PRODUCTS THAT CONSTITUTE A PART OF ANY VALVE ASSEMBLY SHALL BE ASBESTOS-FREE.

MILWAUKEE CATALOG NUMBERS ARE USED UNLESS OTHERWISE INDICATED TO ESTABLISH A STANDARD.

###### GLOBE VALVES:

GLOBE VALVES 2" AND SMALLER: MILWAUKEE 580T BRONZE, RENEWABLE TEFLON DISC, SCREWED ENDS, SCREWED BONNET, RISING STEM, 150 POUNDS STEAM, 300 POUNDS WOG WORKING PRESSURE.

###### CHECK VALVES:

CHECK VALVES 2" AND SMALLER (HORIZONTAL INSTALLATION): MILWAUKEE 508 BRONZE SWING CHECK, REGRINDING BRONZE DISC, SCREWED ENDS, SCREWED CAP AND STOP PLUG, 125 POUNDS STEAM, 200 POUNDS WOG WORKING PRESSURE.

###### PIPING INSTALLATION:

INSTALL ALL PIPING PARALLEL OR PERPENDICULAR TO BUILDING WALL AND COLUMNS IN LOCATIONS TO AVOID INTERFERENCE WITH DUCTWORK, STRUCTURE, OTHER PIPING, LIGHTING AND ELECTRICAL EQUIPMENT OR OTHER EQUIPMENT.

DO NOT LOCATE PIPING ABOVE OR WITHIN 3 FEET HORIZONTALLY OF ELECTRICAL PANELS OR EQUIPMENT.

FOR PIPING PASSING THROUGH WALLS, PACK VOID BETWEEN PIPE AND STRUCTURE WITH APPROVED, NON-COMBUSTIBLE MATERIAL.

DO NOT ALLOW CONTACT BETWEEN PIPING AND MASONRY OF CONCRETE SURFACES.

PROVIDE ALL THE NECESSARY HANGERS, RODS, SUPPORTS, CHANNELS, ANGLES, STRUCTURAL MEMBERS AND CONCRETE INSERTS TO PROPERLY SECURE PIPING AND RELATED EQUIPMENT. ALL SUPPORTS AND PARTS SHALL CONFORM TO THE LATEST REQUIREMENTS OF ANSI CODE FOR PRESSURE PIPING B31.1, AND MSS STANDARD PRACTICE SP-58.

PROTECT ALL INSULATED PIPE LINES AGAINST INSULATION DAMAGE AT ALL HANGERS BY THE USE OF 1 FOOT LONG, 12 GAUGE STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES WITH 12" OD AND LESS (INCLUDING INSULATION) AND 2 FOOT LONG, 1/2" STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES OVER 12" OD (INCLUDING INSULATION). SECURELY CEMENT ALL SHIELDS TO THE INSULATION. PROVIDE RIGID PIPE INSULATION AT EACH HANGER.

###### PIPING INSULATION:

ALL ADHESIVES, SEALERS AND COATINGS SHALL BE INCOMBUSTIBLE. INSULATION SHALL BE APPLIED BY EXPERIENCED PIPE COVERERS AS PER BEST TRADE PRACTICE. WHERE EXISTING INSULATED PIPING AND SURFACES ARE EXPOSED DUE TO RENOVATIONS, RE-INSULATE EXPOSED SURFACES TO MATCH THE EXISTING INSTALLATION. APPLY INSULATION TO PIPE LINES AND EQUIPMENT ONLY AFTER TESTING AND INSPECTION, AND ALL SURFACES HAVE BEEN THOROUGHLY CLEANED.

EXPOSED AND CONCEALED STEAM AND CONDENSATE RETURN PIPING SHALL BE INSULATED WITH 1 1/2" THICK FIBERGLASS INSULATION. PIPING INSULATION AND COVERING SHALL HAVE FLAME SPREAD RATING OF 25 AND SMOKE DEVELOPED RATING OF 50 AND SHALL BE SIMILAR TO OWENS-CORNING FIBERGLAS ASJ-SSL-II "ONE PIECE" PIPE INSULATION WITH FACTORY APPLIED JACKET WITH SELF-SEALING LAP.

###### TESTING AND BALANCING:

TEST AND ADJUST ALL NEW PIPING SYSTEMS INSTALLED IN THIS PROJECT. PROVIDE ALL TESTING INSTRUMENTS, GAUGES, PUMPS AND OTHER EQUIPMENT REQUIRED OR NECESSARY FOR TEST. REPAIR ALL DEFECTS DISCLOSED BY TESTS WITHOUT ADDITIONAL COST TO THE OWNER. REPEAT TESTS AFTER ANY DEFECTS DISCLOSED ARE REPAIRED OR REPLACED, UNLESS WAIVED BY ARCHITECT. ARRANGE AND PAY THE COST OF ALL UTILITIES USED ON TESTS. COMPLETE ALL TESTS BEFORE COVERING IS APPLIED. ISOLATE ALL PIPING SYSTEM COMPONENTS NOT CONSTRUCTED TO WITHSTAND TEST PRESSURES.

###### PIPE IDENTIFICATION:

IDENTIFY ALL NEW PIPING INSTALLED IN THIS PROJECT IN ACCORDANCE WITH ANSI A13.1 1981, OSHA, AND OWNER'S STANDARDS.

###### DEMOLITION:

DEMOLITION DRAWINGS ARE DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF THE WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, PLUMBING FIXTURES, DUCTS, PIPING AND APPROXIMATE SIZES AND APPROXIMATE LOCATIONS. DO NOT SCALE DRAWINGS FOR EXACT MEASUREMENTS.

ALL MECHANICAL WORK SHOWN ON THE DEMOLITION DRAWINGS HAS BEEN TAKEN FROM THE OWNER'S RECORD DRAWINGS AND/OR CERTAIN FIELD OBSERVATIONS. EXACT SIZES, LOCATIONS, ARRANGEMENT AND ELEVATIONS OF ALL EXISTING MECHANICAL EQUIPMENT, EXISTING PLUMBING FIXTURES, EXISTING DUCTWORK, EXISTING PIPING AND EXISTING MECHANICAL DEVICES SHALL BE VERIFIED IN THE FIELD.

THE CONTRACTOR SHALL INCLUDE, IN HIS QUOTE, ALLOWANCES FOR REASONABLE DEVIATIONS BETWEEN WHAT IS SHOWN AND ACTUAL JOB CONDITIONS IN ORDER TO COMPLETE THE WORK IN THE SCOPE INDICATED.

REMOVE, RECONNECT, CAP, PLUG AND REPLACE EXISTING PIPING AND DUCTWORK ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS. REMOVE AND/OR REPLACE EXISTING EQUIPMENT, VALVES, CONTROLS, ETC., ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS.

INTERRUPTION OF EXISTING ACTIVE PIPING: WHERE THE WORK MAKES TEMPORARY SHUT-DOWNS OF SERVICE UNAVOIDABLE, SHUT-DOWN AT TIME AS APPROVED BY THE OWNER, WHICH WILL CAUSE LEAST INTERFERENCES WITH ESTABLISHED OPERATING ROUTINE. ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVERTIME, IF REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

UNLESS SPECIFICALLY NOTED TO THE CONTRARY, REMOVED MATERIALS SHALL NOT BE REUSED IN THE WORK.

SALVAGE MATERIALS THAT ARE TO BE REUSED SHALL BE STORED SAFE AGAINST DAMAGE AND TURNED OVER TO THE APPROPRIATE TRADE FOR REUSE. SALVAGED MATERIALS OF VALUE THAT ARE NOT TO BE REUSED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. THE MATERIALS ARE TO BE REMOVED FROM THE SYSTEMS BY THIS CONTRACTOR AND TURNED OVER TO THE OWNER IN THEIR ORIGINAL CONDITIONS. THE OWNER SHALL MOVE AND STORE THE MATERIALS. WHERE THE OWNER WAIVES POSSESSION RIGHTS, THESE MATERIALS SHALL BECOME THE PROPERTY OF THIS CONTRACTOR, WHO SHALL REMOVE AND LEGALLY DISPOSE OF THE SAME, AWAY FROM THE PREMISES.



## Mechanical Specifications

**Ehresman Associates, Inc.**  
architects • engineers

Grosse Pointe Public School System  
Trombly Elementary School  
Greenhouse Stabilization

Project No. 9115

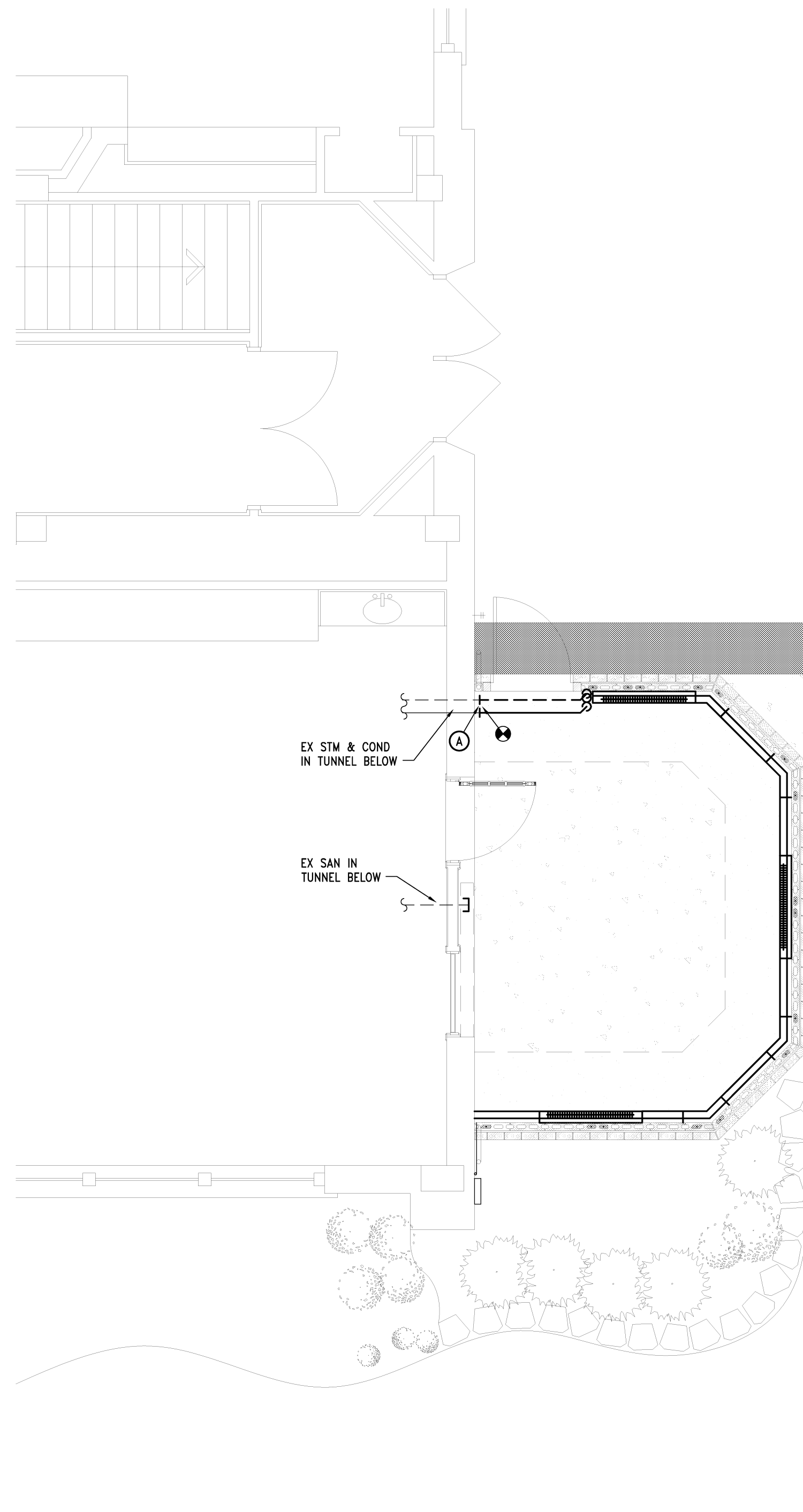
M001

**DEMOLITION KEY NOTES:**

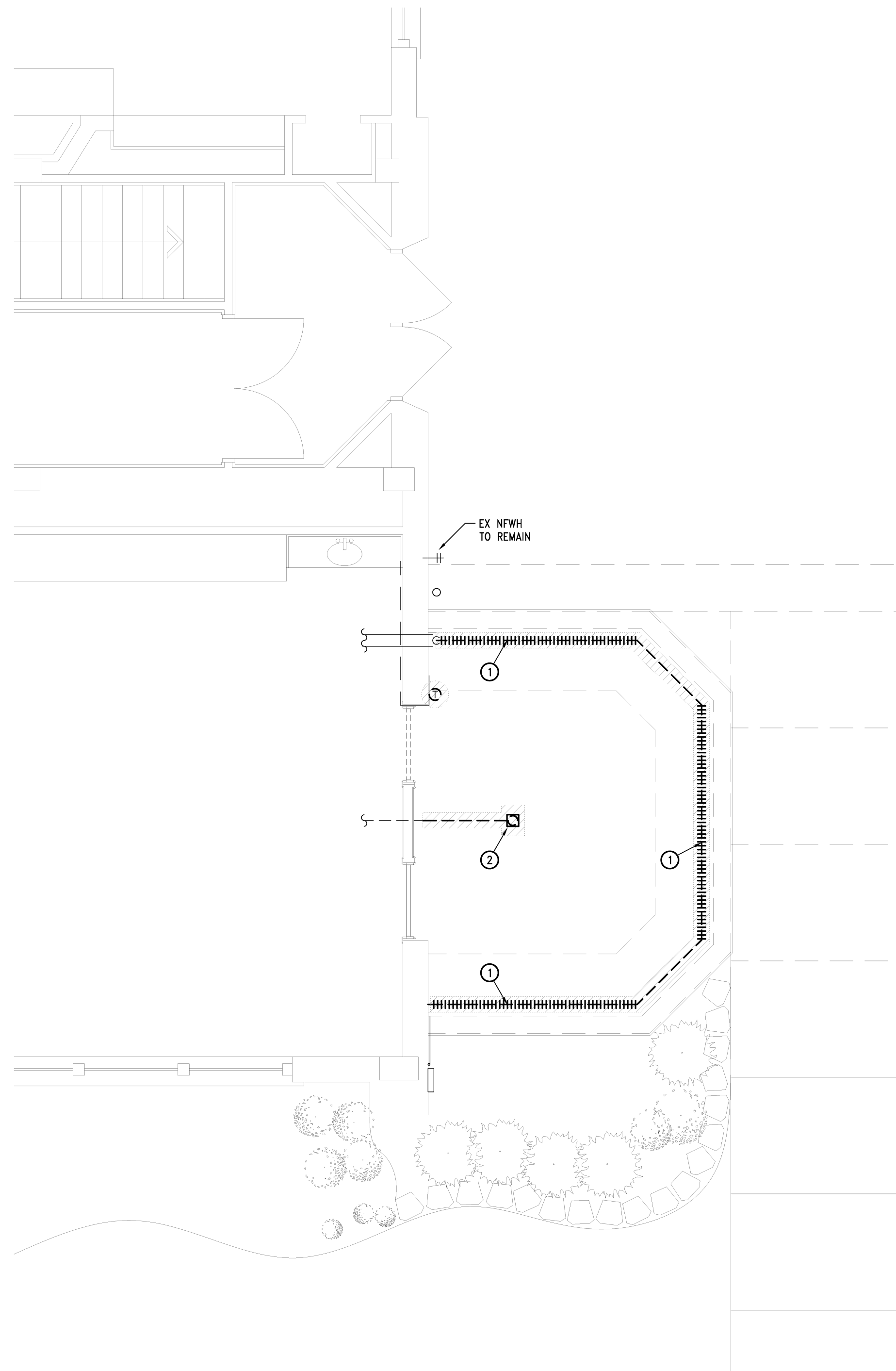
- ① DISCONNECT AND REMOVE FINNED TUBE RADIATION, RELATED STEAM AND CONDENSATE PIPING (TO A POINT IN TUNNEL BELOW AND PREPARE FOR NEW CONNECTIONS), CONTROLS AND ACCESSORIES. FIELD VERIFY EXACT LOCATIONS.
- ② DISCONNECT AND REMOVE FLOOR DRAIN AND RELATED SANITARY PIPING (TO MAIN IN TUNNEL BELOW AND CAP). FIELD VERIFY EXACT LOCATIONS.

**NEW WORK KEY NOTES:**

- ① CONNECT NEW STEAM AND CONDENSATE PIPING IN TUNNEL BELOW AND EXTEND UP TO NEW FINNED TUBE RADIATION SYSTEM. FIELD VERIFY EXACT LOCATIONS.

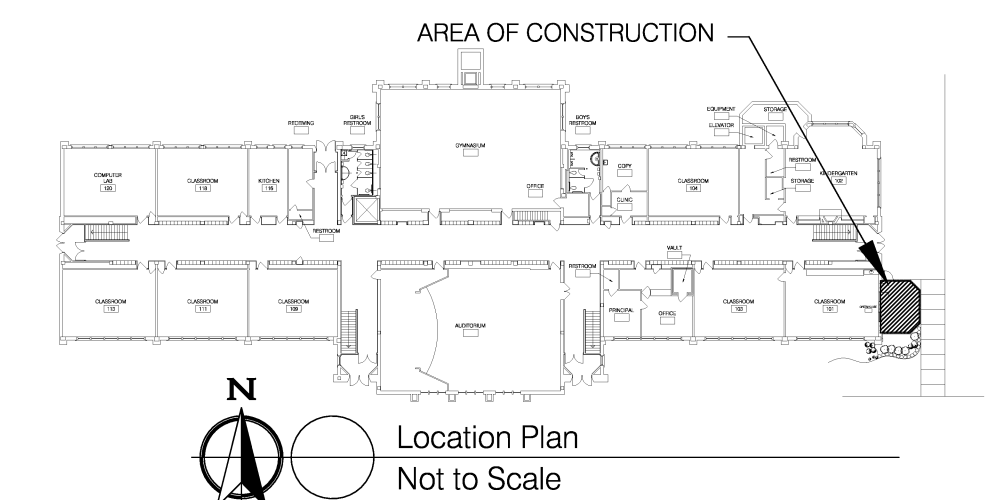


2 Mechanical New Work Plan  
M100 1/4" = 1'-0"



1 Mechanical Demolition Plan  
M100 1/4" = 1'-0"

FIN TUBE RADIATION SCHEDULE												
TAG	MANUFACTURER & MODEL NO.	CAPACITIES			ELEMENT					COVER		NOTES/ACCESSORIES
		MBH/FT	EDR/FT	STEAM PRESS.	PIPE SIZE	MATERIAL	FIN SIZE	FINS/FOOT	ROWS	TYPE	HEIGHT	
FTR-1	RITTING #1C-3 1/4"x3 1/4"-32	--	--	--	--	--	--	--	1	--	--	A B C D E
NOTES AND ACCESSORIES DESIGNATION												
A	MANUAL OPERATED DAMPER					D		ENCLOSURE COLOR AS SELECTED BY ARCHITECT				
B	SLOPPED SECURITY GRILLE ENCLOSURE					E		PROVIDE THERMOSTAT WITH LOCKABLE COVER				
C	SECURITY LOCK ON ALL ACCESS PANELS AND SECURITY DAMPER											



Mechanical Floor Plans  
Ehresman Associates, Inc.  
architects • engineers

Grosse Pointe Public School System  
Trombly Elementary School  
Greenhouse Stabilization

Project No. 9115

M100

**ELECTRICAL SPECIFICATIONS**

**GENERAL REQUIREMENTS:**

ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, LATEST EDITION, AND ALL LOCAL AND STATE AUTHORITIES HAVING JURISDICTION THEREOF.

ALL EQUIPMENT SHALL BE SPECIFICATION GRADE AND SHALL HAVE U.L. LABEL FOR INTENDED USE.

ELECTRICAL SYSTEMS SHALL BE COMPLETE IN EVERY DETAIL, INCLUDING ALL INCIDENTAL ITEMS FOR A PROPER AND FUNCTIONING INSTALLATION SUBJECT TO FINAL APPROVAL OF ARCHITECT/ENGINEER.

ALL REQUIRED PERMIT AND INSPECTIONS SHALL BE OBTAINED BY CONTRACTOR AND SUCH COSTS SHALL BE INCLUDED IN BID PRICE FOR THIS WORK.

PROVIDE UL LISTED SYSTEM FOR FIRE STOPPING PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. PROVIDE SYSTEM WITH EQUAL OR GREATER RATING THAN ASSEMBLY. REFER TO ARCHITECTURAL DOCUMENTS FOR RATINGS AND LOCATIONS OF ASSEMBLIES.

EXAMINATION OF SITE IS MANDATORY. CONTRACTOR IS HEREBY HELD TO HAVE EXAMINED THE SITE AND HAVE INCLUDED IN HIS BID PRICE ALL COSTS DUE TO SITE AND FIELD CONDITIONS.

COMPLETE IDENTIFICATION OF PROJECT ELECTRICAL COMPONENTS IS REQUIRED. IDENTIFY ALL PANELS, DISCONNECTS, CONTROL DEVICES, ETC., WITH THE NOMENCLATURE INDICATED ON THE DOCUMENTS AND WITH POWER SOURCE AND ELECTRICAL RATINGS USING PLASTIC LAMINATE NAMEPLATE. INSTALL TYPED DIRECTORIES OF ALL CIRCUITS ON INSIDE OF PANELS. IDENTIFY WIRING DEVICE COVERPLATES WITH PANELBOARD AND BRANCH CIRCUIT NUMBER SERVING DEVICE, E.G. "A-15" PROVIDED BY MACHINE-WRITTEN BLACK LETTERING ON CLEAR PLASTIC ADHESIVE TAPE. LOCATE ON BOTTOM FRONT OF COVERPLATE, CENTERED BELOW WIRING DEVICE(S). SUBMIT SAMPLE OF LABELED TAPE WITH WIRING DEVICE/COVERPLATE SUBMITTAL. SAMPLE MAY BE ADHERED TO PAPERWORK IN SUBMITTAL, RATHER THAN TO A COVERPLATE.

PROVIDE TEMPORARY POWER AND LIGHTING DURING CONSTRUCTION. REMOVE TEMPORARY WIRING UPON COMPLETION OF THE PROJECT. TEMPORARY SERVICES SHALL BE AS REQUIRED, BY N.E.C. AND OSHA.

GROUND CONTINUITY SHALL BE MAINTAINED THROUGHOUT THE ELECTRICAL SYSTEM. INSTALL EQUIPMENT GROUNDING CONDUCTOR WITH EVERY CIRCUIT.

COORDINATE SIZE AND LOCATION OF ANY REQUIRED ACCESS PANELS IN WALLS OR FINISHED CEILINGS WITH ARCHITECT PRIOR TO INSTALLATION.

**WARRANTY:**

UNLESS A LONGER PERIOD IS SPECIFIED IN INDIVIDUAL PARAGRAPHS, PROVIDE A MINIMUM OF A ONE YEAR WARRANTY ON ALL ELECTRICAL WORK BEGINNING THE DATE OF FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER.

**SUBMITTALS:**

SUBMIT SHOP DRAWINGS FOR ALL MAJOR COMPONENTS OR SYSTEMS OF THE PROJECT. SUBMIT ADDITIONAL SHOP DRAWINGS IF REQUESTED BY ENGINEER.

NO APPARATUS OR EQUIPMENT SHALL BE SHIPPED FROM STOCK OR FABRICATED UNTIL SHOP DRAWINGS FOR SAME HAVE BEEN STAMPED "REVIEWED" OR "REVIEWED AS NOTED". SUBMIT DATA REQUIRED FOR TRANSFORMERS SUCH AS EFFICIENCY, REGULATION, CORE LOSS AND SOUND LEVELS. (SEE APPLICABLE SECTIONS).

SUBMIT SYSTEM COMPONENTS, PRODUCT DATA AND SHOP DRAWINGS COMPLETE FOR EACH SYSTEM UNDER ONE SUBMITTAL. DO NOT BREAK OUT EQUIPMENT FOR ONE SYSTEM BETWEEN MULTIPLE SUBMITTALS.

ALL SHOP DRAWINGS MUST BE CLEARLY MARKED TO SHOW EQUIPMENT SUBMITTED AND ANY DEVIATIONS FROM SPECIFICATIONS SHALL BE NOTED THEREON. DO NOT INCLUDE ONLY MODEL NUMBERS TO INDICATE SUBMITTED EQUIPMENT. STRIKE OUT ANY INFORMATION ON PRODUCT DATA THAT IS NOT PROJECT SPECIFIC, AND EDIT RELEVANT INFORMATION TO SHOW ACTUAL EQUIPMENT SUBMITTED. ELECTRICAL CONTRACTOR MUST SIGN AND APPROVE ALL SHOP DRAWINGS PRIOR TO SUBMITTAL.

UNIQUELY NUMBER EACH PAGE IN SUBMITTAL.

IF DIFFERENT SYSTEMS ARE INCLUDED IN ONE SUBMITTAL, CLEARLY SEPARATE INFORMATION AND PROVIDE DIFFERENT SUB-NUMBERING OF SYSTEMS. SHOP DRAWINGS THAT ARE INCOMPLETE, UNSIGNED AND NOT PLAINLY MARKED WILL NOT BE REVIEWED.

**DEMOLITION AND RENOVATION WORK:**

DISCONNECT, REMOVE, RELOCATE, REWIRE OR DISPOSE OF ANY EQUIPMENT INTERFERING WITH NEW CONSTRUCTION OR AFFECTED BY RENOVATION WORK.

ANY ELECTRICAL EQUIPMENT OR SYSTEMS WHICH ARE TO REMAIN, AND ARE AFFECTED BY THIS WORK, SHALL BE IMMEDIATELY RESTORED TO FULL OPERATING CONDITION AND AT NO ADDITIONAL COST TO THE CONTRACTOR.

EQUIPMENT REMOVED SHALL BE DISPOSED OF AS DIRECTED, EITHER TO STORAGE OR OFF THE PREMISES.

WHERE SERVICES OR CIRCUITS ARE DISCONNECTED OR DISCONTINUED, IT IS MANDATORY THAT ANY EXISTING UNUSED WIRING BE REMOVED TO THE SOURCE UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. IT IS THE INTENT OF THIS ARTICLE TO PERMANENTLY DISCONNECT ALL UNUSED CIRCUITS AT THE MAIN SOURCE WHENEVER POSSIBLE. NO ENERGIZED CIRCUIT SHALL BE TAPED AND ABANDONED IN OUTLET BOXES UNLESS SO SPECIFIED ON DRAWINGS.

CIRCUIT TRACE EXISTING TO REMAIN CIRCUITS AS NECESSARY FOR PROPER IDENTIFICATION, AND AS REQUIRED TO PERFORM WORK.

REMODELING WORK INVOLVING EXISTING BRANCH CIRCUIT PANELBOARD SHALL BE SUCH THAT, WHEN ALL WORK IS COMPLETED EXISTING PANELS ARE PROVIDED WITH NEW AND UPDATED ACCURATE DIRECTORIES. ALL VACATED CIRCUITS SHALL BE MARKED SPARE. WHEN NEW BREAKERS ARE REQUIRED, THEY SHALL BE INSTALLED IN EXISTING SPACES AND SHALL MATCH THOSE THAT ARE EXISTING, IN THE EVENT THAT MORE BREAKERS ARE REQUIRED THAN THE SPACES AVAILABLE, CONTRACTOR SHALL CONSULT ENGINEER FOR DIRECTION.

CONTRACTOR MAY USE EXISTING CONDUITS AND OUTLET BOXES, PROVIDED THEY ARE IN GOOD ELECTRICAL CONDITION. RE-SUPPORT EXISTING TO REMAIN CONDUIT, AND BOXES IN RENOVATION AREA IF INADEQUATELY SUPPORTED. PROVIDE SUPPORT AS REQUIRED TO COMPLY WITH NEC AND LOCAL AUTHORITY REQUIREMENTS.

IT IS THE INTENT OF THE OVERALL DESIGN TO CONCEAL ALL WORK EXCEPT IN UNFINISHED AREAS. IN CASES WHERE IT IS IMPOSSIBLE TO CONCEAL THE WORK, SHORT EXPOSED METAL RACEWAYS MAY BE USED SUBJECT TO APPROVAL OF ENGINEER.

ALL ELECTRICAL OPENINGS THAT ARE ABANDONED IN WALLS, CEILINGS OR FLOOR SHALL BE PROVIDED WITH SUITABLE BLANK COVER PLATES. ABANDONED FLOOR OUTLET SHALL BE PROVIDED WITH 040 BRASS PLATES.

CONDUITS AND OTHER PARTS OF ELECTRICAL SYSTEMS THAT BECOME EXPOSED AS A PART OF NEW WORK SHALL BE REMOVED AS REQUIRED TO A POINT WHERE THE ABANDONED PORTION IS TOTALLY CONCEALED.

ALL SURFACES DAMAGED BY THIS CONTRACTOR IN THE COURSE OF PERFORMING WORK SHALL BE RESTORED TO SATISFACTORY CONDITION, AS DIRECTED BY THE ARCHITECT AND ALL COSTS OF REPAIRS SHALL BE PAID FOR BY THE CONTRACTOR.

REMOVE SERVICES TO MECHANICAL, ELECTRICAL AND BUILDING EQUIPMENT INDICATED AS REMOVED OR DISCONNECTED. MAINTAIN CIRCUITS TO EXISTING TO-REMAIN EQUIPMENT. IDENTIFY UNUSED, REMOVED CIRCUITS ON PANEL SCHEDULE AS SPARE. COORDINATE WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR EXISTING TO REMAIN EQUIPMENT AND FOR DEMOLITION WORK.

SERVICE SHUTDOWN AND POWER OUTAGES SHALL BE SCHEDULED WITH THE OWNER PRIOR TO PERFORMING ANY WORK ON EXISTING SERVICE. SCHEDULE SHALL BE IN WRITING AND SHALL SHOW A DETAILED DESCRIPTION OF THE PROPOSED WORK AND THE DURATION OF OUTAGE.

**ELECTRICAL EQUIPMENT AND DEVICES:**

RECEPTACLES SHALL BE SPECIFICATION GRADE, GROUNDING TYPE, 2-POLE, 3-WIRE, AND POLARIZED. RECEPTACLES IN GENERAL SHALL BE 15A, 125 V., HUBBELL #HBL5262 OR EQUAL MOUNTED 16" AFF EXCEPT AT COUNTERS WHERE THEY SHALL BE 6" ABOVE COUNTER AND IN TOILET ROOMS AT 48" AFF. RECEPTACLES ON SINGLE CIRCUIT SHALL BE 20 AMPERES, HUBBELL #HBL3362. HIGH AMPERE RATINGS AND VOLTAGES ARE INDICATED ON DRAWINGS.

RECEPTACLES DESIGNATED "GFR" SHALL BE GROUND FAULT RECEPTACLES, SIMILAR TO HUBBELL #GF-5362. FOR OUTDOOR OR WET LOCATIONS, PROVIDE WEATHERPROOF BOX AND GASKETED COVER PLATE. WIRE "GFR" RECEPTACLES FOR SELF PROTECTION AND NOT DOWNSTREAM PROTECTION OF OTHER WIRING DEVICES.

SWITCHES SHALL BE SINGLE POLE, TWO POLE, OR THREE-WAY, AS INDICATED, TOGGLE TYPE, 20A, 120/277V., QUIET TYPE, HUBBELL #1221/1222/1223 OR EQUAL PILOT TYPE SWITCHES HUBBELL #1251.

WIRING DEVICE COLORS SHALL BE AS SELECTED BY THE OWNER/ARCHITECT.

DEVICE COVER PLATES SHALL BE OF TYPE AND NUMBER OF GANGS FOR DEVICES INSTALLED. SMOOTH EDGED 302/304 GRADE BRUSHED STAINLESS STEEL. PROVIDE BRANCH CIRCUIT IDENTIFICATION ON ALL COVERPLATES AS SPECIFIED UNDER "GENERAL REQUIREMENTS". COVERPLATES FOR DEVICES CONNECTED TO THE EMERGENCY SYSTEM SHALL ALSO BE FACTORY LABELED WITH BLACK LETTERING TO READ "EMERGENCY".

**CONDUCTORS:**

ALL CONDUCTORS SHALL BE SOFT-DRAWN COPPER OF SIZES INDICATED ON THE DRAWINGS. ALL CONDUCTORS SHALL BE INSULATED FOR 600 VOLTS AND WITH 75 DEGREES (CENTIGRADE) CODE GRADE INSULATION.

CONDUCTORS SIZED #10 AND SMALLER SHALL BE SOLID. ALL CONDUCTORS LARGER THAN #10 SHALL BE MADE UP OF STRANDED SINGLE CONDUCTOR CABLE. CONDUCTORS SHALL HAVE THWN OR THHN INSULATION AS APPLICABLE. CONDUCTORS IN UNDERGROUND CONDUIT AND FOR SERVICE ENTRANCE CONDUCTOR SHALL HAVE XHHW OR THWN INSULATION.

#12 AWG SHALL BE THE MINIMUM WIRE SIZE ALLOWED EXCEPT #14 AWG MAY BE USED FOR CONTROL WIRING.

TYPICAL BRANCH CIRCUITS FROM 20A, 1-POLE BRANCH OVERCURRENT DEVICES ARE 1/2", 2 #12 AND 1 # 12c.

**STARTERS, SAFETY SWITCHES, FUSES AND HEATERS:**

MANUAL MOTOR STARTERS SHALL BE 600V TOGGLE TYPE WITH THERMAL OVERLOAD ELEMENT FOR MOTOR PROTECTION STAINLESS STEEL COVER PLATE AND PILOT LIGHT, FLUSH IN ALL AREAS EXCEPT IN UNFINISHED SPACES. CONTRACTOR TO COORDINATE AND PROVIDE QUANTITY OF POLES AS REQUIRED FOR BRANCH CIRCUIT AND LOAD SERVED. MANUAL MOTOR SWITCHES SHALL BE THE SAME AS MANUAL STARTERS EXCEPT WITHOUT OVERLOADS AND USED AS DISCONNECTING MEANS.

MAGNETIC MOTOR STARTERS SHALL BE 600 VOLT 3-PHASE WITH 3 THERMAL OVERLOAD ELEMENTS, HOA SWITCH AND RESET BUTTON IN COVER AND GREEN RUNNING PILOT LIGHT. NEMA ENCLOSURE AND SIZE AS INDICATED. COMBINATION STARTERS SHALL HAVE BUILT-IN FUSED DISCONNECT. PROVIDE START-STOP PUSH BUTTONS FOR USE IN HAND (MANUAL) MODE.

PROVIDE THERMAL ALLOY MELTING TYPE HEATER ELEMENTS FOR ALL MOTORS BASED ON MOTOR NAMEPLATE DATA.

SAFETY AND DISCONNECT SWITCHES SHALL BE 250 OR 600 VOLTS AS REQUIRED, HEAVY DUTY TWO OR THREE POLE, QUICK-MAKE QUICK-BREAK SWITCH MECHANISM AND COVER INTERLOCK. SWITCHES SHALL BE FUSED OR UNFUSED AS INDICATED AND SHALL HAVE PAD LOCK PROVISIONS, WITH NEMA TYPE ENCLOSURE FOR LOCATION USED. SWITCHES SHALL BE SQUARE "D" CLASS 1110 OR APPROVED EQUAL.

PROVIDE ALL NECESSARY FUSES AND REPLACE ALL THOSE BLOWN DURING CONSTRUCTION. ALL FUSES SHALL BE TIME LAG, DUAL ELEMENT, BUSSMAN LOW PEAK YELLOW OR EQUAL.

**INSTALLATION AND METHODS OF EXECUTION:**

ALL WIRING SHALL BE IN CONDUIT, MINIMUM #6 FLEXIBLE METAL CONDUIT SHALL BE USED FOR SHORT CONNECTION TO MOTORS, FINAL CONNECTION TO RECESSED LIGHTING FIXTURES FROM RIGIDLY MOUNTED OUTLET BOX (NOT BETWEEN FIXTURES), VIBRATING EQUIPMENT, ETC., BUT NEVER LONGER THAN 6 FEET. PROVIDE LIQUID TIGHT FLEXIBLE METAL CONDUIT FOR ALL APPLICATIONS EXPOSED TO WATER OR WEATHER. PROVIDE ANTI-SHORT BUSHINGS FOR ALL FLEXIBLE CONDUIT ARMOR TERMINATIONS. PROVIDE SEPARATE EQUIPMENT GROUND WIRE IN ALL CONDUIT RUNS.

CONDUIT CONCEALED IN CEILING, WALLS OR FURRED SPACES OR EXPOSED IN DRY LOCATIONS SHALL BE EMT, THIN WALL ELECTRIC METALLIC TUBING, CONDUIT EXPOSED TO WEATHER, IN CONTACT WITH CONCRETE, BURIED IN SLAB, OR IN HAZARDOUS AREAS, SHALL BE HEAVY WALL, RIGID. ALL CONDUITS SHALL BE HOT DIPPED GALVANIZED STEEL.

PLASTIC CONDUIT PVC-40, SHALL BE USED ONLY AS INDICATED ON THE DRAWINGS. PLASTIC CONDUIT SHALL BE APPROVED FOR UNDERGROUND USE. PVC BURIAL DEPTH SHALL BE 36" MINIMUM BELOW FINISH GRADE. IN PVC CONDUIT SYSTEMS, RISERS ABOVEGROUND SHALL BE RIGID HEAVY WALL STEEL.

CONDUIT RUNS SHOWN ON DRAWINGS ARE DIAGRAMMATIC. EXACT ROUTING OF CONDUIT RUNS SHALL SUIT JOB CONDITIONS. EXPOSED CONDUIT SHALL BE RUN ONLY IN UNFINISHED AREAS SUBJECT TO FINAL APPROVAL OF ENGINEER AND SHALL RUN PARALLEL TO BUILDING LINES, NEVER DIAGONALLY.

CONNECTION TO EQUIPMENT SHALL BE DONE IN ACCORDANCE WITH MANUFACTURER'S SHOP AND INSTALLATION DRAWINGS. REQUIREMENTS GENERALLY VARY FROM ONE MANUFACTURER TO ANOTHER AND CONTRACTOR IS BOUND TO COMPLY AND PROVIDE ALL WORK AS REQUIRED ALTHOUGH CERTAIN DISCREPANCIES MAY EXIST REGARDING THE REQUIREMENT FROM ONE MANUFACTURER TO ANOTHER.

PROVIDE POWER WIRING, DISCONNECTS, AND PROTECTION DEVICES TO ALL MECHANICAL EQUIPMENT AND MAKE FINAL CONNECTIONS, INCLUDING TESTING OF MOTORS FOR PROPER ROTATION.

OUTLET BOXES MAY BE SURFACE MOUNTED ON EXISTING WALLS (CMU, BRICK OR CONCRETE) WITH SMALLEST SURFACE RACEWAY AS REQUIRED FOR WIRING INSTALLED. PROVIDE FLUSH OUTLET BOXES AND CONDUIT AT NEW CONSTRUCTION WALL AND AT EXISTING WALLS WHICH ARE NOT CMU BRICK OR CONCRETE CONSTRUCTION. CUT AND PATCH EXISTING WALLS AS REQUIRED FOR FLUSH INSTALLATION.

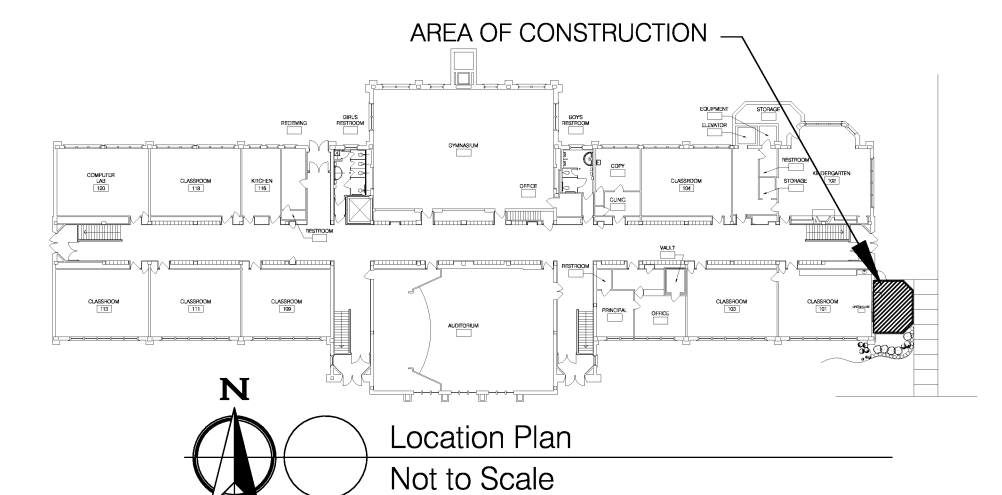
**ELECTRICAL LEGEND**

- "A" LIGHTING FIXTURE TYPE
- WALL MOUNTED LIGHTING FIXTURE
- ⊙ EXIT LIGHTING FIXTURE
- S SINGLE POLE LIGHT SWITCH
- ⊕ DUPLEX RECEPTACLE
- ⊙ JUNCTION BOX
- ⊕ GFR DUPLEX RECEPTACLE
- ⊕ INTERCOM
- ⊕ TIME SWITCH
- ⊕ FIRE ALARM AUDIBLE/STROBE
- AFF ABOVE FINISHED FLOOR
- WP WEATHERPROOF
- EX. EXISTING ITEM TO REMAIN
- ER. EXISTING ITEM TO BE RELOCATED
- RE. RELOCATED EXISTING ITEM
- GFR GROUND FAULT RECEPTACLE
- NEC NATIONAL ELECTRIC CODE

**GENERAL NOTES:** (APPLY TO ALL DRAWINGS)

- REFER TO ARCHITECTURAL SPECIFICATIONS FOR SCHEDULE OF ALTERNATES, COORDINATE ALL DEDUCT AND ADD ALTERNATE WORK REQUIREMENTS WITH ARCHITECT AND OTHER TRADES PRIOR TO BID.
- COORDINATE ELECTRICAL WORK REQUIREMENTS WITH OTHER TRADES AND OWNER PRIOR TO BID.
- SERVICES TO PORTIONS OF THE BUILDING OUTSIDE THE AREA OF WORK SHALL BE MAINTAINED AT ALL TIMES.
- COORDINATE SERVICES AND SCHEDULE SHUTDOWNS WITH THE OWNER.

ELECTRICAL DRAWING LIST	
E001	ELECTRICAL SPECIFICATIONS, LEGEND, SHEET INDEX AND GENERAL NOTES
E100	ELECTRICAL FLOOR PLANS



Electrical Specifications, Legend, Sheet Index and General Notes  
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