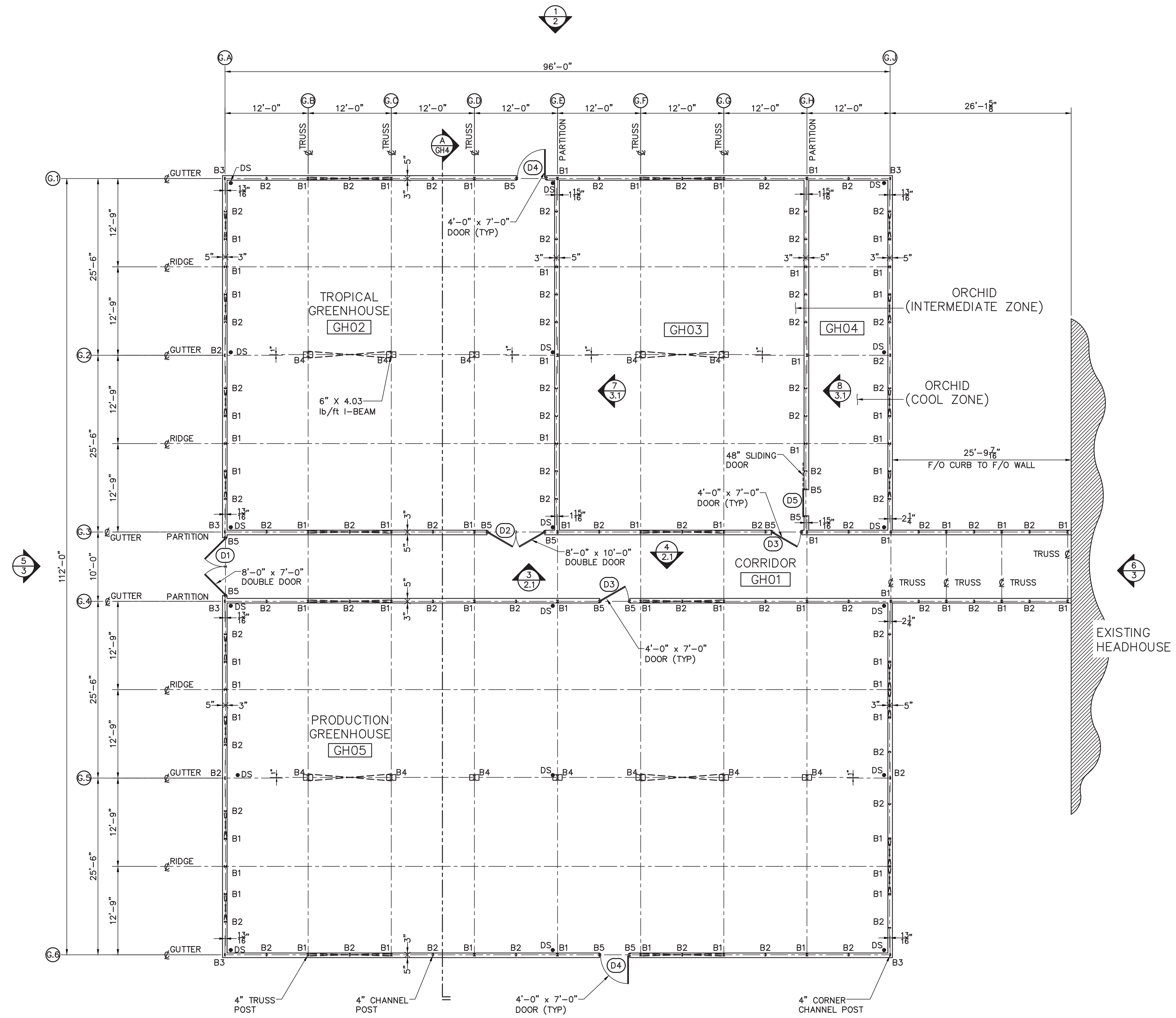


GOVERNING CODE:
INTERNATIONAL BUILDING CODE 2015

DESIGN LOADS:
DEAD LOAD _____ 10 PSF
LIVE LOAD _____ 12 PSF
GROUND SNOW _____ 30 PSF IMPORTANCE FACTOR 1.0
WIND LOAD _____ 115 MPH EXPOSURE 'B', IMPORTANCE FACTOR 1.0
SEISMIC LOAD _____ $S_{ds} = 0.090$
_____ $S_{d1} = 0.074$
SITE CLASS = D

CODES & SPECIFICATIONS:
STRUCTURE IS DESIGNED IN ACCORDANCE WITH:
THE ALUMINUM ASSOCIATION "SPECIFICATIONS FOR ALUMINUM STRUCTURES".

- GENERAL NOTES:
 - ALUMINUM SURFACES IN CONTACT WITH MASONRY TO RECEIVE A HEAVY COAT OF CLEAR POLYURETHANE COATING.
 - CAULKING TO BE G.E. SILGLAZE II 2809.
- STRUCTURAL ALUMINUM:
 - ALL DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO THE LATEST EDITION OF THE SPECIFICATIONS FOR ALUMINUM STRUCTURES.
 - FIELD CONNECTIONS TO BE BOLTED.
- MATERIALS:
 - ALUMINUM SHAPES: ALLOY 6061-T6 & 6063-T6.
 - ALUMINUM PLATE: ALLOY 6061-T6
 - ALUMINUM SHEET: ALLOY 5052-H32.
 - ALL BOLTS 1/4" DIA. AND LARGER TO BE GALVANIZED ASME J429 GRADE 5.
 - ALL BOLTS 3/16" AND SMALLER TO BE STAINLESS STEEL.
 - ALL SHEET METAL SCREWS TO BE STAINLESS STEEL.
 - ALL #8 AND #10 TEK SCREWS TO BE STAINLESS STEEL.
 - ALL #12 TEK SCREWS TO BE GALVANIZED.
- ANCHOR BOLTS:
 - ANCHOR BOLTS TO BE 316 STAINLESS THREADED ROD, SET WITH EPOXY IN FIELD DRILLED HOLES IN EXISTING KNEEWALL, ROD DIAMETER, LENGTH AND EMBEDMENT AS SPECIFIED ON ROUGH BROTHERS SHEET GH5.1.
 - EPOXY ANCHORS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS SUPPLIED WITH THE EPOXY CARTRIDGE.
- GLAZING:
 - ROOF GLASS (FULL LITES 23 1/16" x 26") TO BE 1/4" LAMINATED, CONSISTING OF 2 LAYERS OF 1/8" CLEAR HEAT STRENGTHENED GLASS WITH AN .030" CLEAR POLYVINYL BUTYRAL INNER LAYER, ROOF GLASS AT RIDGE AND OR VENT HEADER TO BE FIELD CUT FROM 1/4" LAMINATED CONSISTING OF 2 LAYERS OF 1/8" CLEAR ANNEALED GLASS WITH AN .030" CLEAR POLYVINYL BUTYRAL INNER LAYER.
 - SIDEWALL AND GABLE GLAZING (FULL LITES 24" x 26") TO BE 1/8" CLEAR TEMPERED GLASS, ODD SHAPE GLASS AT TOP OF GABLES SHALL BE FIELD CUT FROM 1/8" CLEAR ANNEALED GLASS.
 - ALL GLASS TO BE SET IN ELASTIC ROPE PUTTY, LAID WITH A 3/8" LAP.
 - ROOF GLASS TO BE TOP SEALED WITH BUTYL ELASTIC GLAZING COMPOUND.
- ALUMINUM FINISH:
 - ALL ALUMINUM TO BE MILL FINISH.
- SCREENS:
 - ALL ROOF VENTS TO HAVE 16 X 18 ALUMINUM MESH INSECT SCREEN WITH 5/16" x 7/8" EXTRUDED ALUMINUM, MILL FINISH FRAME WITH BRUSH SEALS AT VENT OPERATOR PENETRATIONS.
 - EVAPORATIVE COOLING PAD SYSTEMS IN COORIDOR TO HAVE 16 X 18 ALUM. MESH INSECT SCREEN.
 - LOUVER IN COORIDOR TO HAVE 16 X 18 ALUM. MESH INSECT SCREEN.
 - INSULATED DAMPERS OVER EVAPORATIVE COOLING PAD SYSTEM IN THE PRODUCTION ZONE TO HAVE 16 X 18 ALUM. MESH SCREEN BOX.
- VENTS:
 - ROOF VENTS TO BE 36" WITH 42" STRAIGHT ALUMINUM/STEEL RACK AND PINION OPERATORS.
- WORK BY OTHERS:
 - ALL COUNTERFLASHING TO BE FURNISHED AND INSTALLED BY SHEET METAL CONTRACTOR.
 - ALL PLUMBING AND GUTTER DOWNSPOUT PIPING TO BE FURNISHED AND INSTALLED BY PLUMBING CONTRACTOR.
 - ALL ELECTRICAL WORK INCLUDING WIRING, CONDUIT, PANELS AND LIGHTS TO BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
 - ALL MASONRY AND CONCRETE WORK TO BE BY MASONRY CONTRACTOR.
 - SEALING OF ALL PIPING AND CONDUIT PENETRATIONS THROUGH GREENHOUSE GLAZING TO BE PERFORMED BY THE RESPECTIVE TRADE CONTRACTOR INSTALLING THE GIVEN PIPE OR CONDUIT.



POST PLAN LAYOUT
SCALE: 1/8" = 1'-0"
TRUE PLAN

DRAWING INDEX	
DWG NO.	DRAWING DESCRIPTION
GH1	POST PLAN LAYOUT
GH2	SIDEWALL ELEVATIONS
GH2.1	CORRIDOR PARTITION ELEVATIONS
GH3	GABLE ELEVATIONS
GH3.1	GABLE PARTITIONS
GH4	TRUSS SECTION
GH4.1	TRUSS DETAILS
GH5	FOUNDATION PLAN
GH5.1	POST BASE ANCHOR DETAILS
GH6	EQUIPMENT PLAN
GH6.1	BENCH PLAN
GH6.2	EQUIPMENT SECTIONS
GH6.3	GREENHOUSE ONE LINE POWER DIAGRAM
GH6.4	CORRIDOR ONE LINE POWER DIAGRAM
GH6.5	INTERCONNECTION DIAGRAM
GH7	RIDGE SECTION
GH8	TYPICAL SIDEWALL SECTION
GH8.1	TYPICAL PARTITION SECTION
GH9	ROOF TO GABLE SECTION
GH10	DOOR DETAILS
GH11	CLOSURE DETAILS

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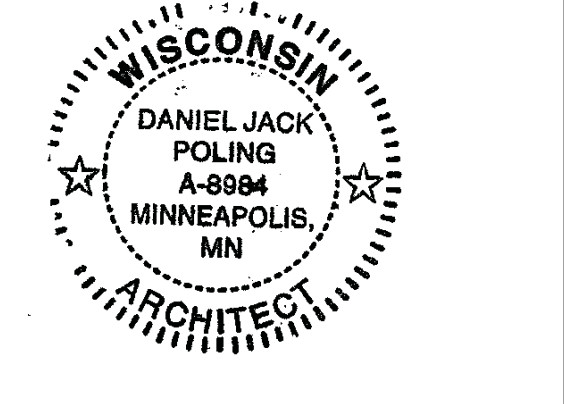
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**Olblich Botanical Gardens
Expansion Phase 1**
BPW Project #8162
3330 Atwood Avenue
Madison, WI 53704

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Signature: *Daniel Poling*
Print Name: Jack Poling
Date: MAY 4, 2018 License No.: A-8984

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	01.10.2018	DESIGN DEVELOPMENT SUBMISSION
	01.17.2018	DD SUBMISSION
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	04.06.2018	PARKING LOT AND SITE PLAN SUBMISSION
	05.04.2018	70% CD SUBMISSION
	06.01.2018	BID ISSUE
	06.04.2018	PERMIT ISSUE

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GREENHOUSE
POST PLAN
LAYOUT

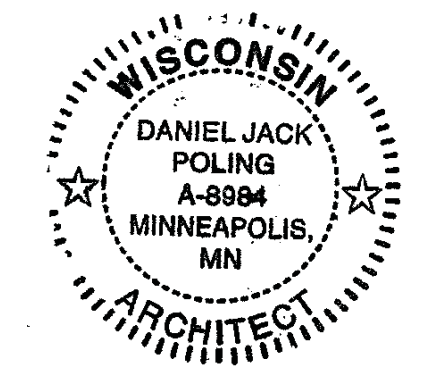
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GH1

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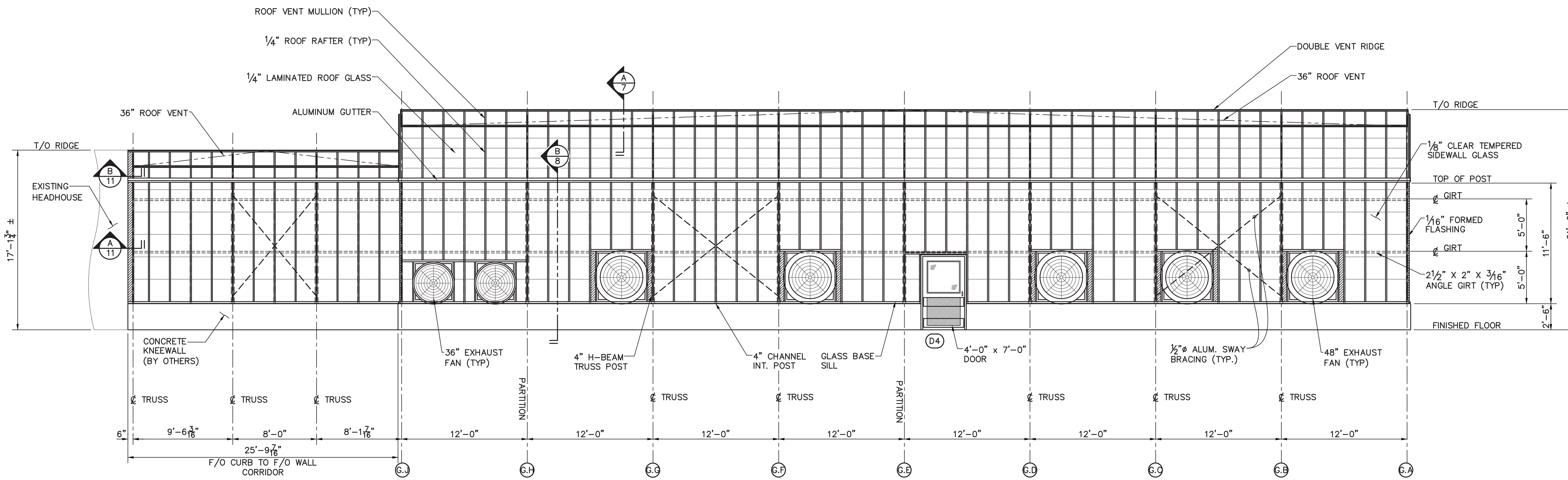
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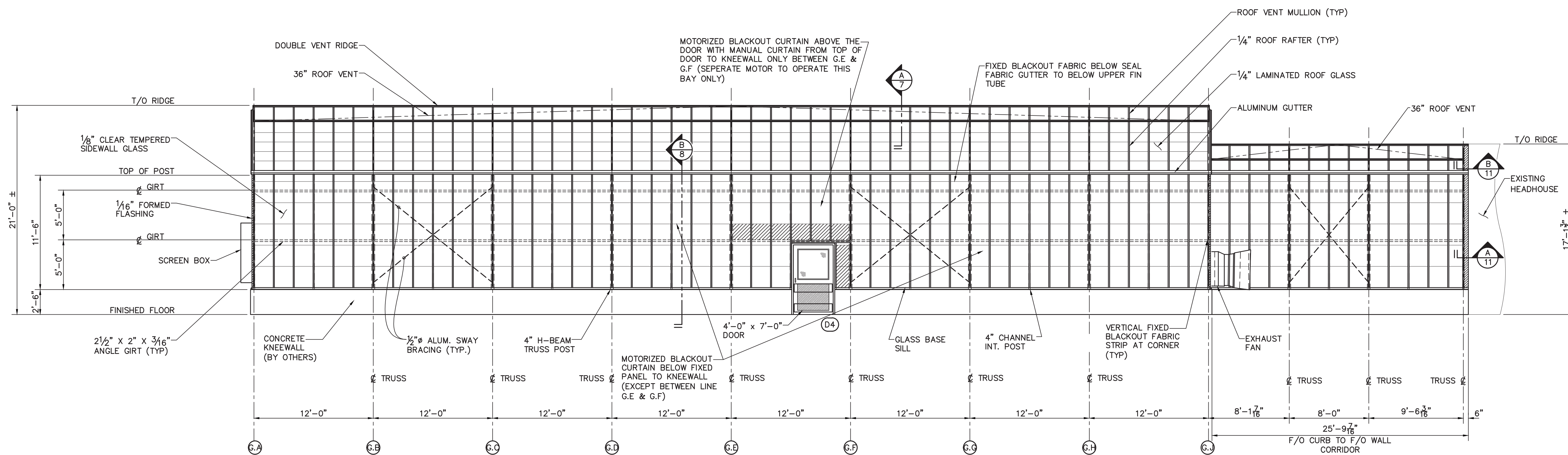
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**GREENHOUSE
 SIDEWALL
 ELEVATIONS**

**EXHIBIT H
 GH2**



NORTH SIDEWALL ELEVATION (1)
 SCALE: 3/16" = 1'-0"



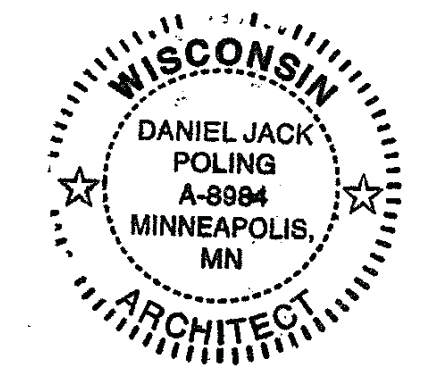
SOUTH SIDEWALL ELEVATION (2)
 SCALE: 3/16" = 1'-0"



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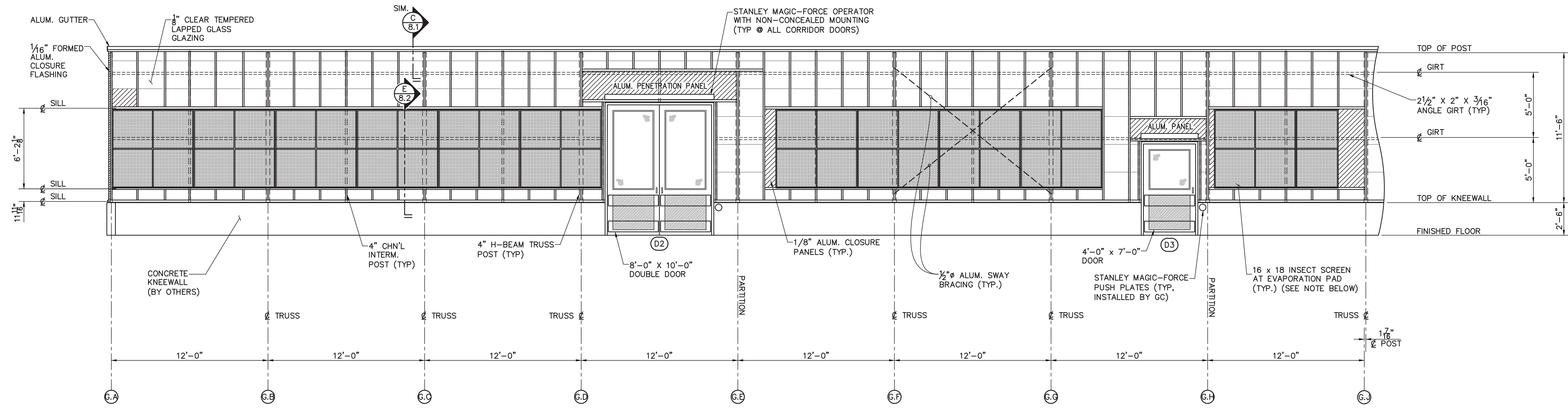
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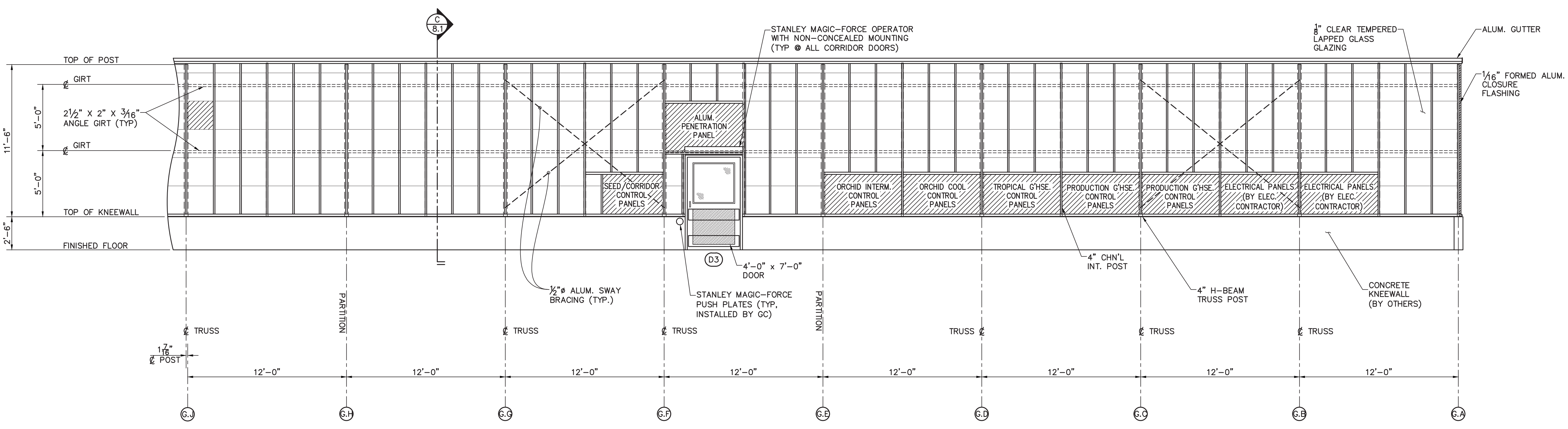
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**GREENHOUSE
 CORRIDOR PARTITION
 ELEVATIONS**

**EXHIBIT H
 GH2.1**



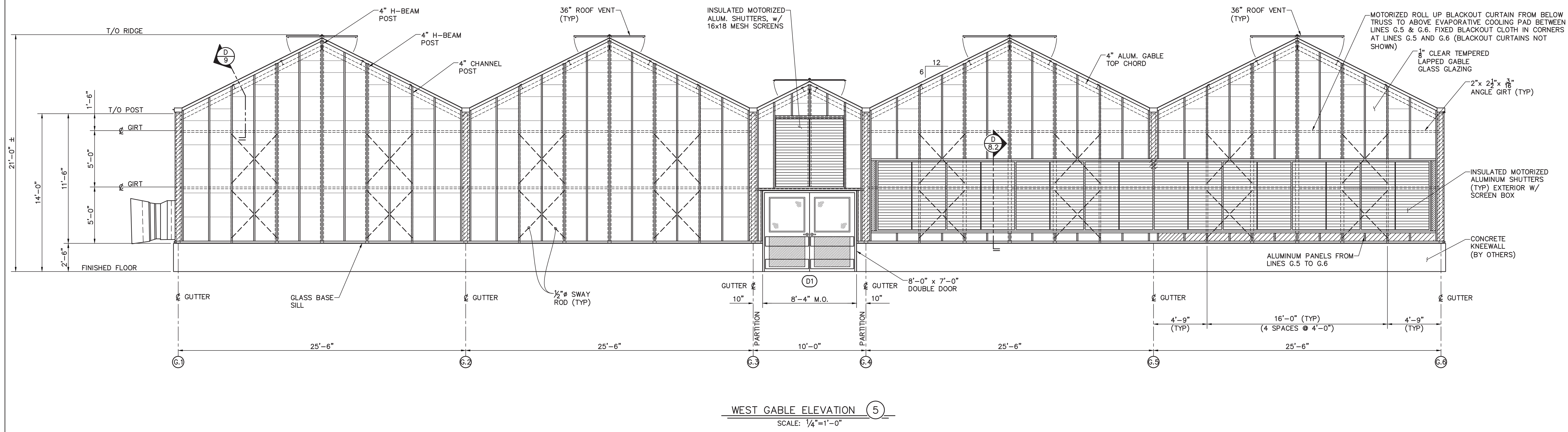
CORRIDOR PARTITION ELEVATION (LINE 3)
 SCALE: 1/4"=1'-0"



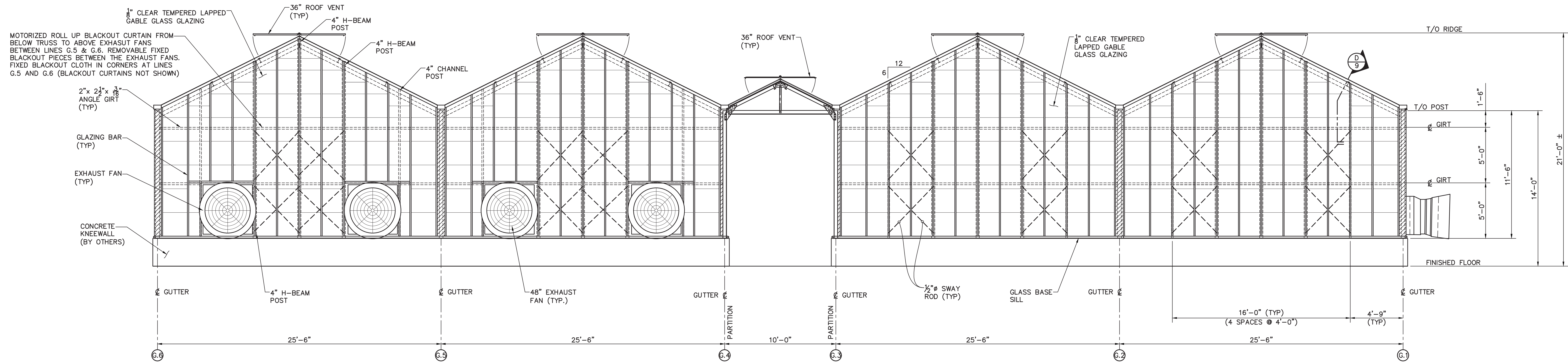
CORRIDOR PARTITION ELEVATION (LINE 4)
 SCALE: 1/4"=1'-0"

ENGINEERING NOTE:
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WEST GABLE ELEVATION (5)
SCALE: 1/4"=1'-0"



EAST GABLE ELEVATION (6)
SCALE: 1/4"=1'-0"

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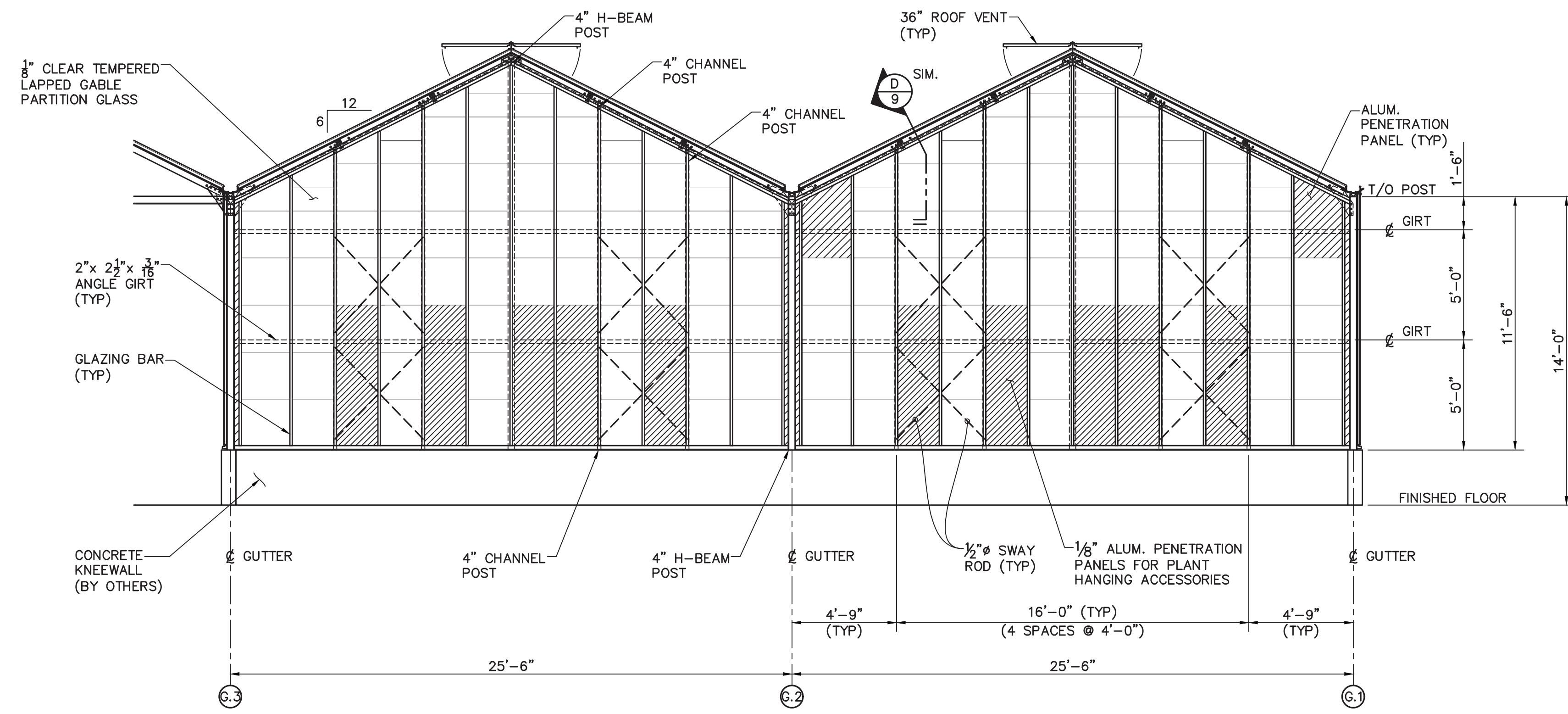
GREENHOUSE GABLE ELEVATIONS

EXHIBIT H GH3

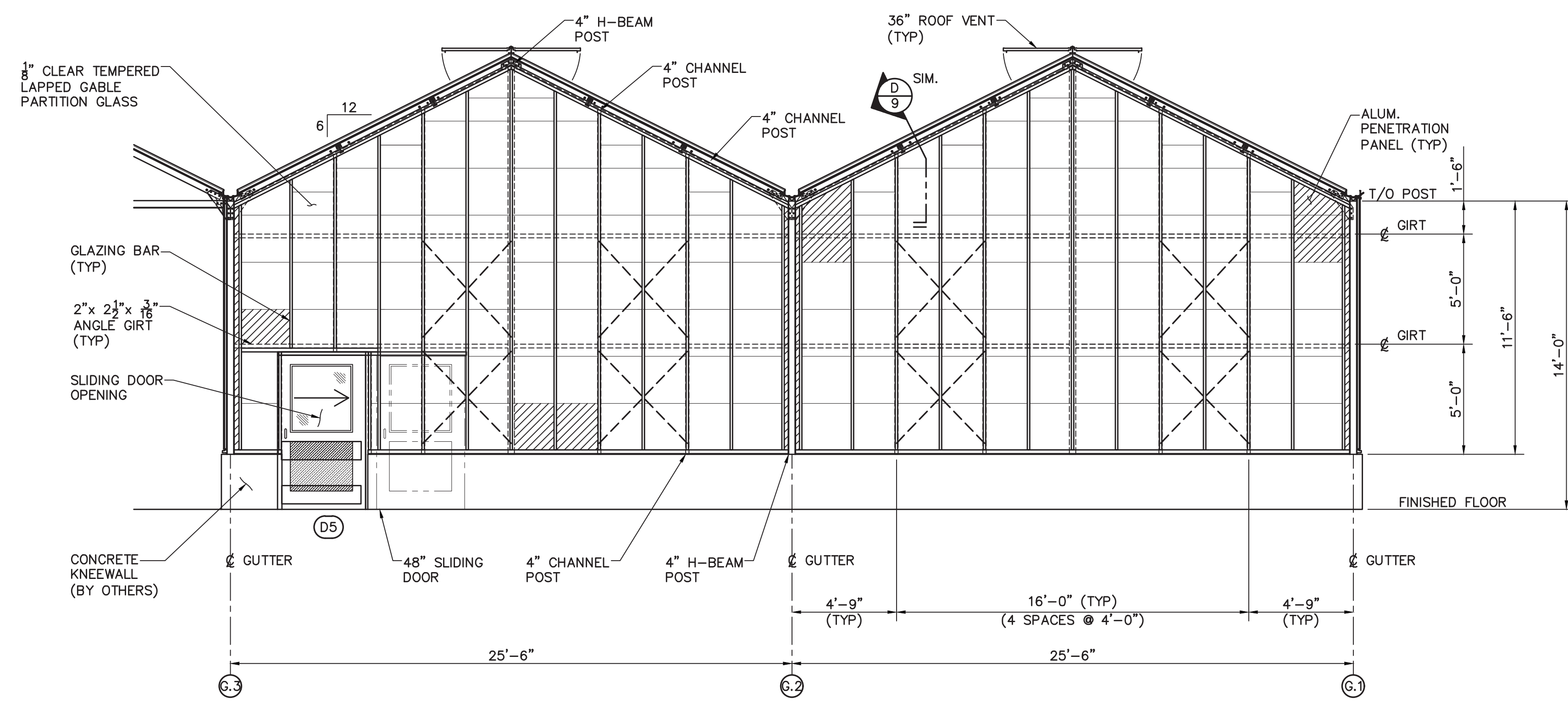
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GABLE PARTITION (LINE E) 7
SCALE: 1/4"=1'-0"



GABLE PARTITION (LINE H) 8
SCALE: 1/4"=1'-0"

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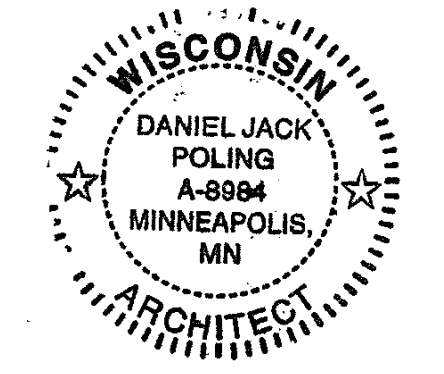
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Signature: *[Signature]*
Print Name: Jack Poling
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**GREENHOUSE
GABLE PARTITIONS**

EXHIBIT H
GH3.1

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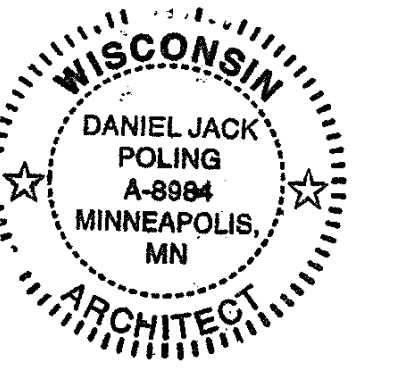
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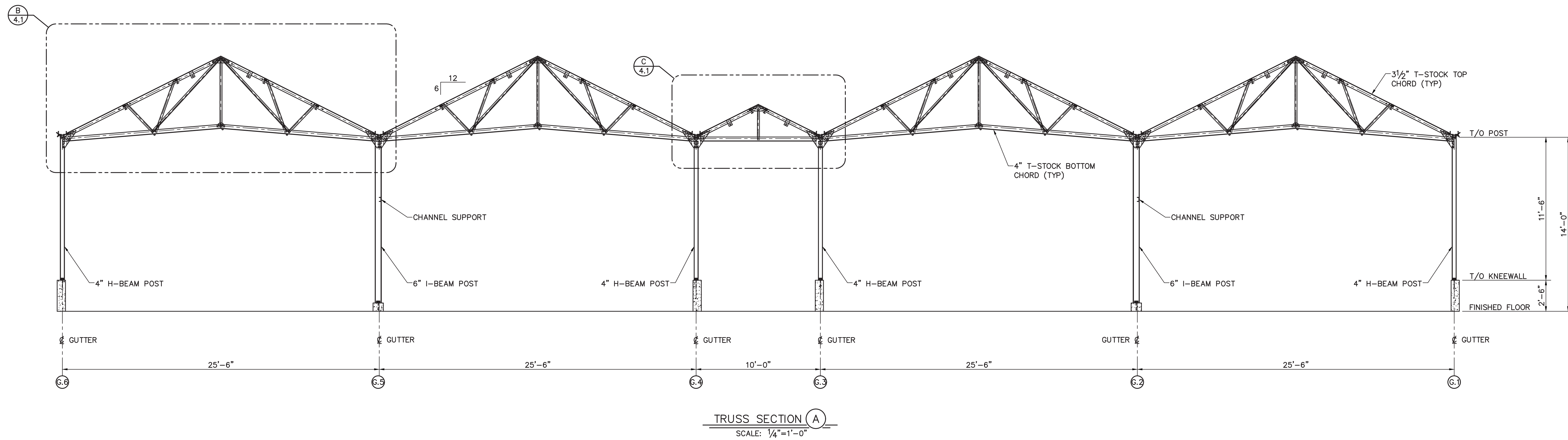
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GREENHOUSE TRUSS SECTION

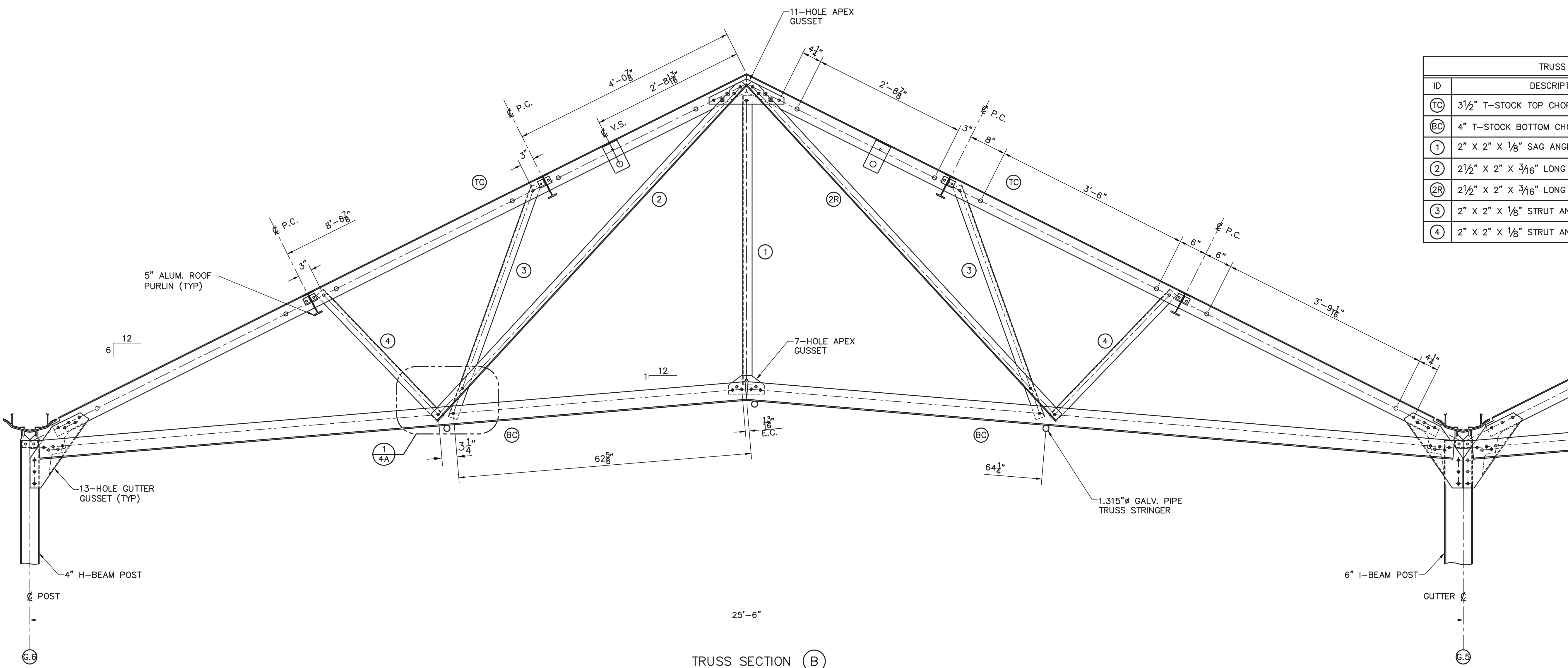
**EXHIBIT H
 GH4**



TRUSS SECTION (A)
 SCALE: 1/4"=1'-0"

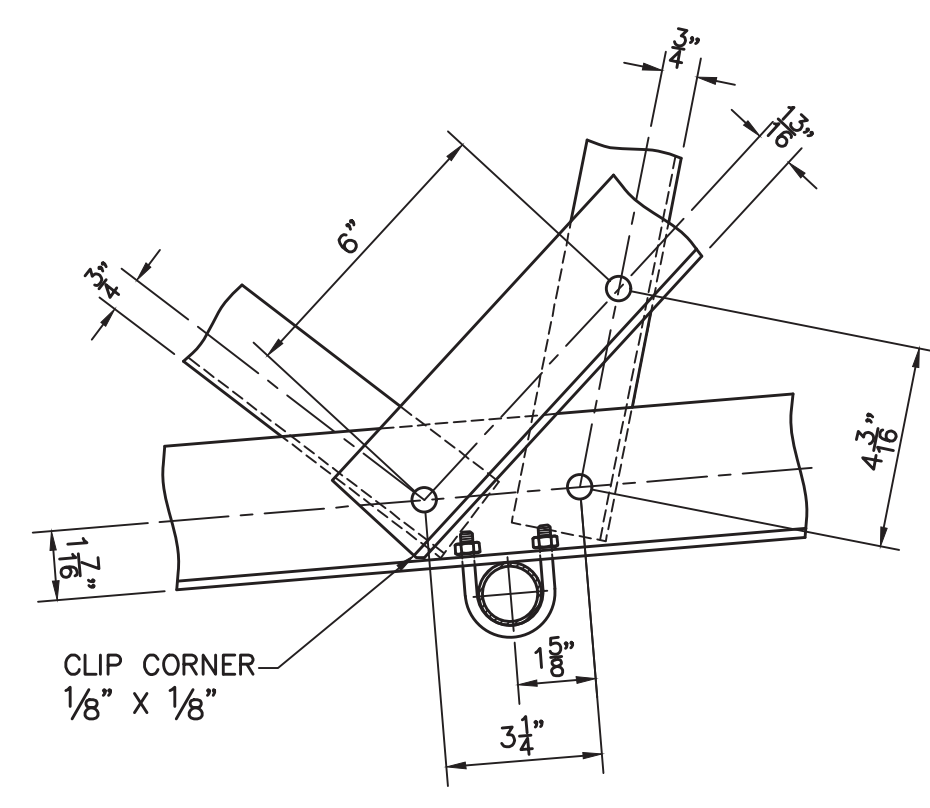


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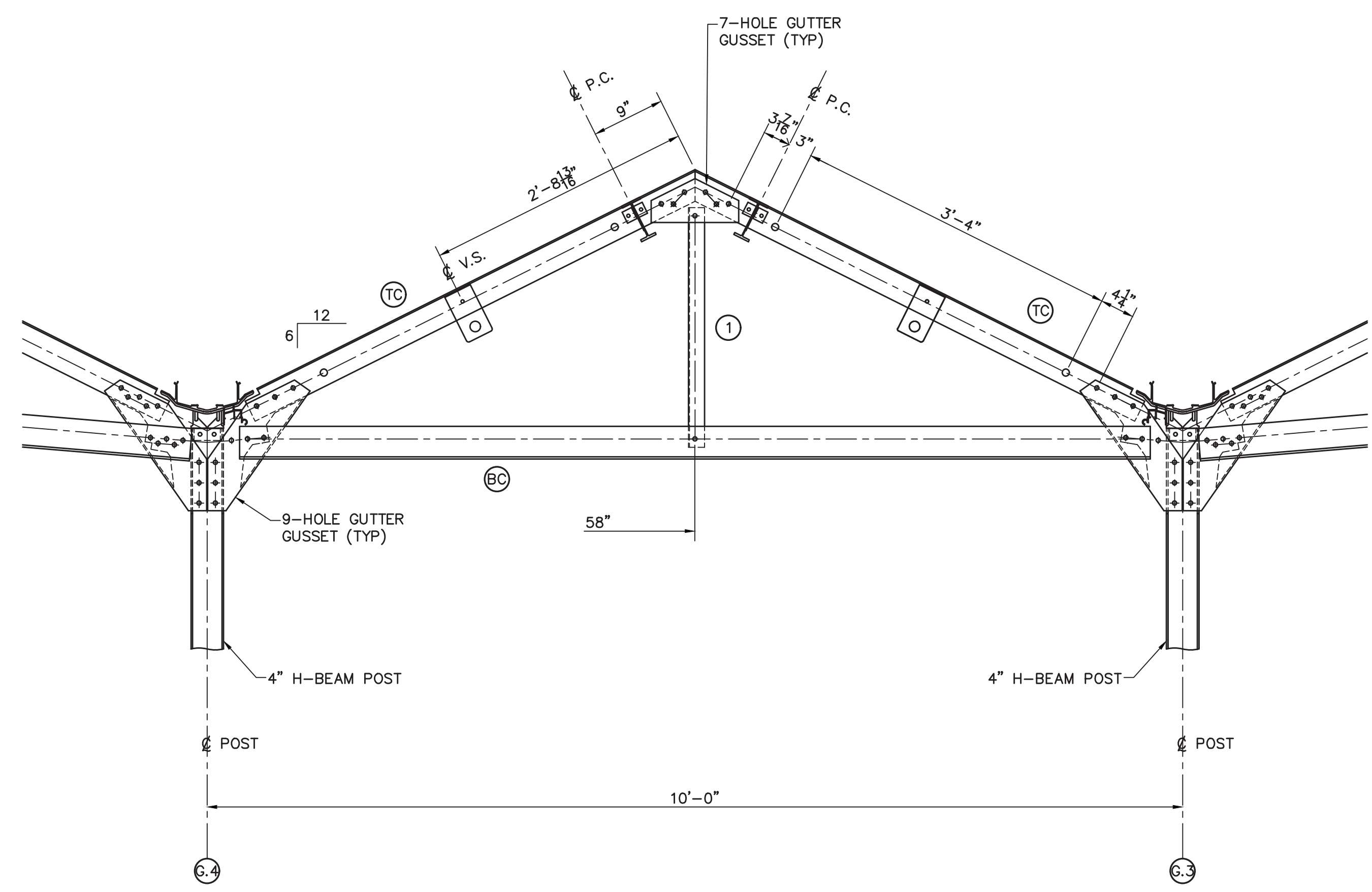


TRUSS SECTION B
SCALE: 1" = 1'-0"

TRUSS SCHEDULE		
ID	DESCRIPTION	LENGTH
TC	3 1/2" T-STOCK TOP CHORD	164.22"
BC	4" T-STOCK BOTTOM CHORD	151.34"
1	2" X 2" X 1/8" SAG ANGLE	61 1/2"
2	2 1/2" X 2" X 3/16" LONG DIAGONAL ANGLE	97 3/8"
2R	2 1/2" X 2" X 3/16" LONG DIAGONAL ANGLE	97 3/8"
3	2" X 2" X 1/8" STRUT ANGLE	52 3/8"
4	2" X 2" X 1/8" STRUT ANGLE	37 3/8"



DETAIL 1
SCALE: 3" = 1'-0"



TRUSS SECTION C
SCALE: 1" = 1'-0"

10'-0" TRUSS SCHEDULE		
ID	DESCRIPTION	LENGTH
TC	3 1/2" T-STOCK TOP CHORD	112.03"
BC	4" T-STOCK BOTTOM CHORD	60.24"
1	2" X 2" X 1/8" SAG ANGLE	29 1/2"



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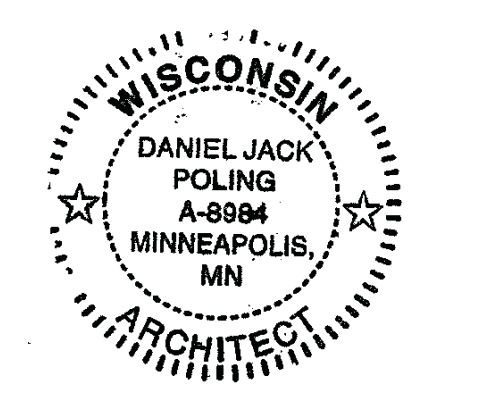
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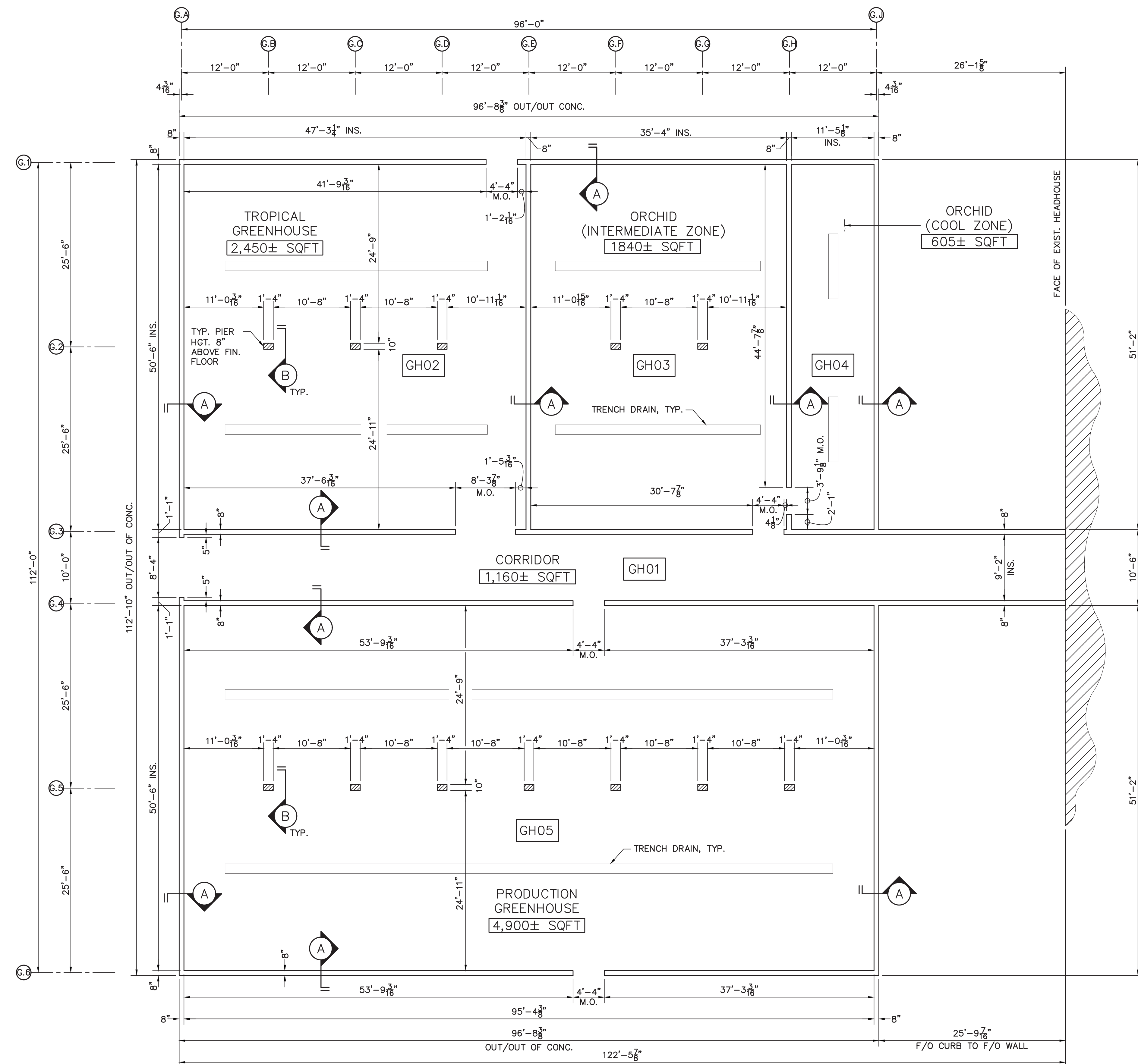
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**GREENHOUSE TRUSS
DETAILS**

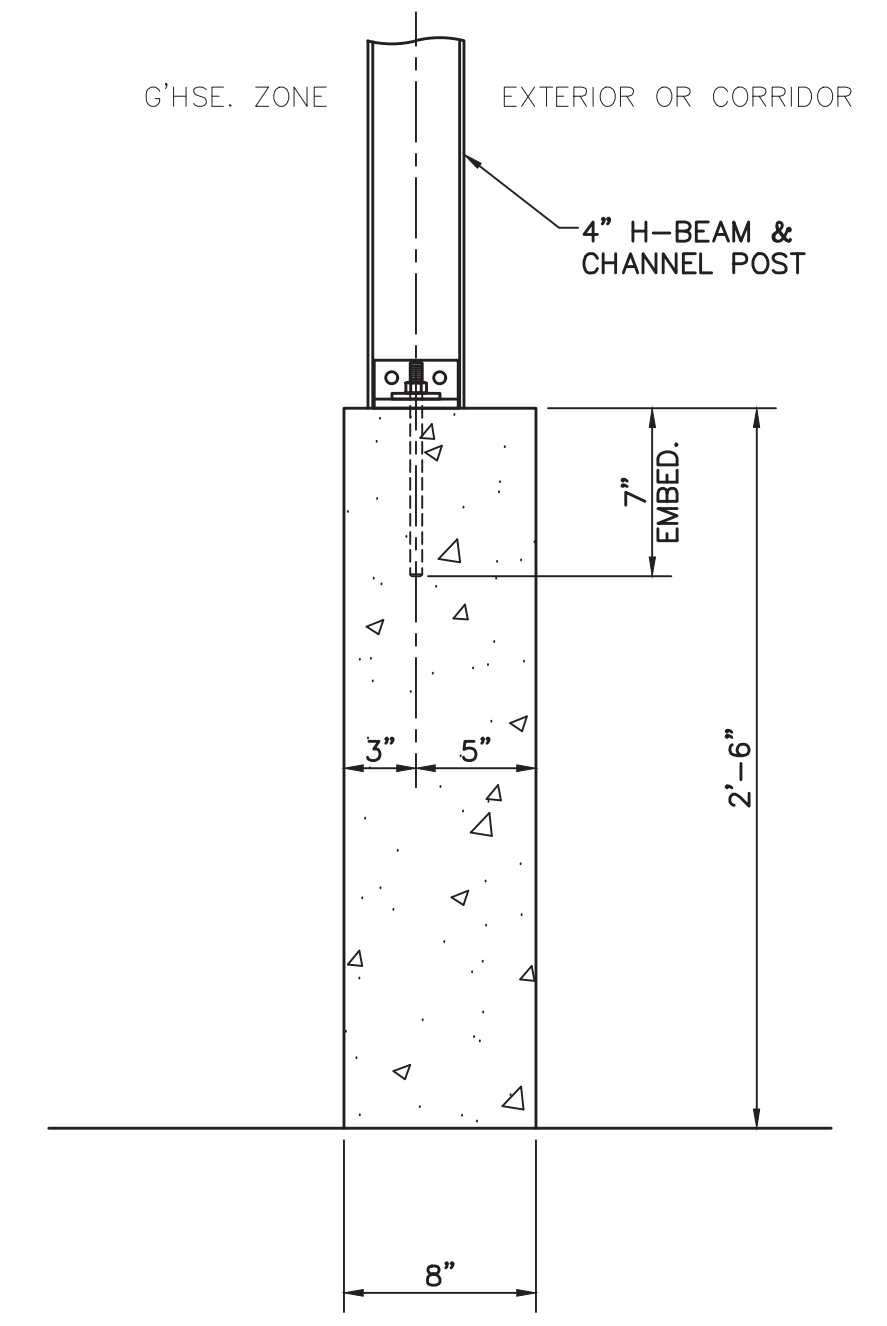
EXHIBIT H
GH4.1



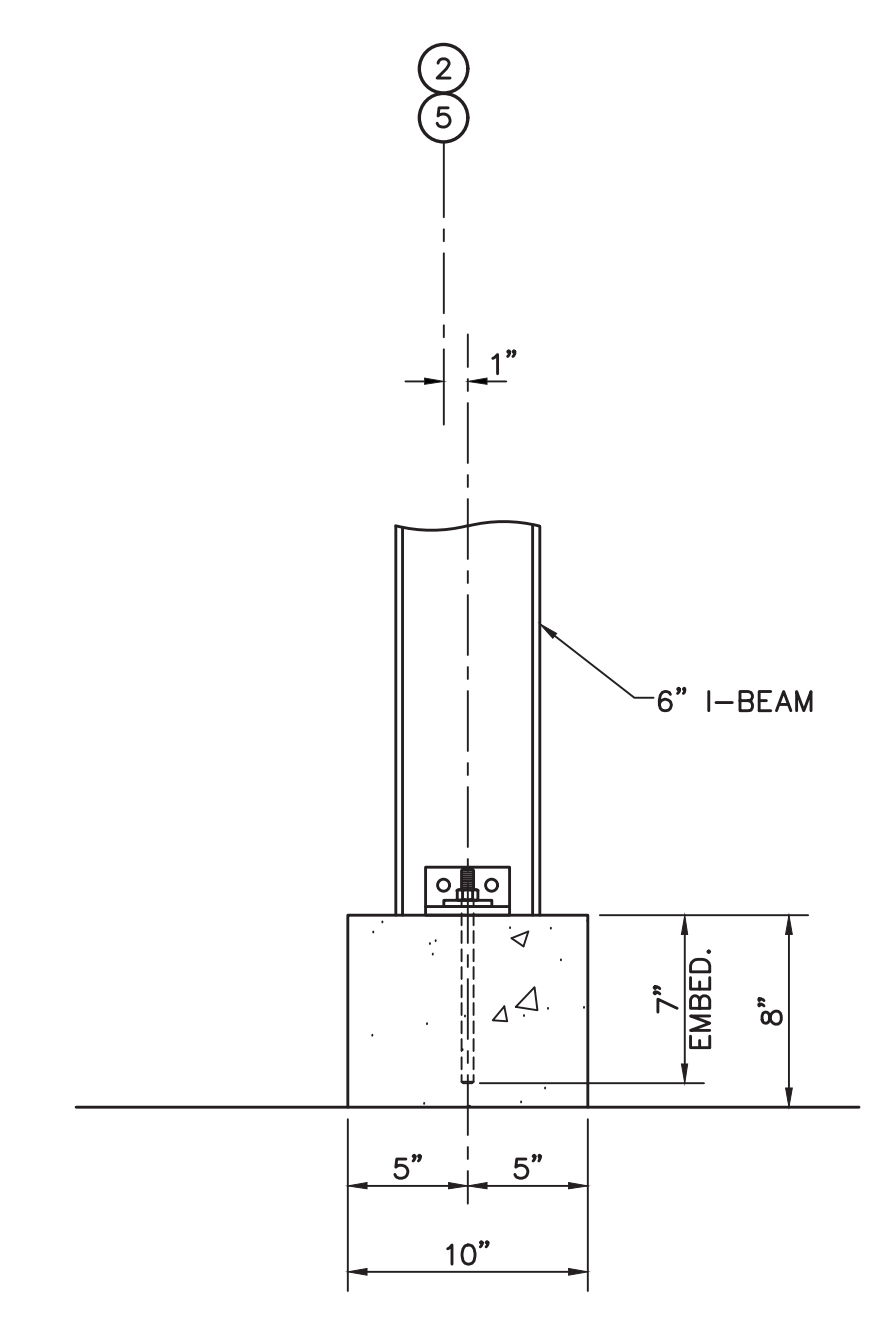
FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

- FOUNDATION NOTES:**
- GREENHOUSE MANUFACTURER IS NOT RESPONSIBLE FOR THE DESIGN, MATERIALS AND WORKMANSHIP OF THE FOOTING, CONCRETE/CMU KNEEWALLS AND FINISHED FLOOR.
 - THE ARCHITECT/ENGINEER SHALL ENSURE THAT FOOTING, CONCRETE/CMU KNEEWALLS & FINISHED FLOOR ARE PROPERLY DESIGNED TO ADEQUATELY SECURE THE ANCHOR BOLTS, AND RESIST THE LOADS IMPOSED BY THE GREENHOUSE SYSTEM.
 - IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ENSURE THAT THE FOOTING, CONCRETE/CMU KNEEWALLS & FINISH FLOOR ARE CONSTRUCTED PER THE ARCHITECT'S DESIGN, AND THAT THE FOUNDATION WALLS BE SQUARE AND TRUE WITHIN ±1/4" OF THE DIMENSIONS OF THE FOUNDATION SHOWN ON THE GREENHOUSE MANUFACTURER DRAWING, FOR PROPER GREENHOUSE INSTALLATION.
 - IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ENSURE THAT THE REBAR INSTALLATION IS COORDINATED WITH THE GREENHOUSE COLUMN LOCATIONS TO ALLOW DRILLING HOLES FOR THE EPOXY SET AND EXPANDING ANCHORS. SEE SHEET GH1 FOR POST LOCATIONS AND SHEET GH5.1 FOR POST BASE DETAILS.

LOADING	REACTION LOADS (lbs)							
	TRUSS COLUMN COL. LINE 1 & 6		TRUSS COLUMN COL. LINE 2 & 5		TRUSS COLUMN COL. LINE 3 & 4		GABLE COLUMN	
	V	Hx	V	Hx	V	Hx	V	Hx
DEAD	1837	0	3674	0	2583	0	247.5	0
LIVE	2021	0	4040	0	2837	0	297	0
UNIFORM SNOW LOAD	3367	0	6734	0	4728	0	495	0
UNBALANCED SNOW LOAD	870	0	7512	0	5696	0	1031	0
WIND L RIDGE	±2432	±873	±4861	±0	±3308	±0	±4895	±1704
WIND // RIDGE	±4588	±2705	±6370	±1742	±4546	±1742	±0	±0



SECTION A
SCALE: 1-1/2" = 1'-0"



SECTION B
SCALE: 1-1/2" = 1'-0"

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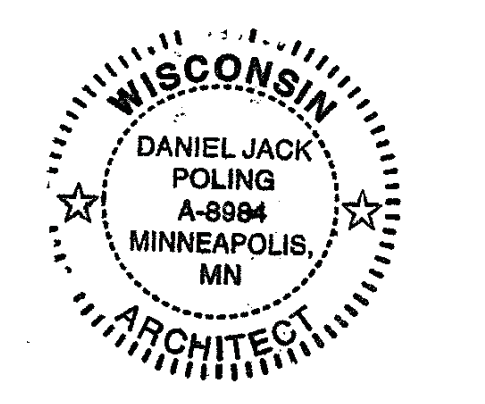
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Greenhouse Design
Rough Brothers, Inc.
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Olbrich Botanical Gardens Expansion Phase 1

BPW Project #8162
3330 Atwood Avenue
Madison, WI 53704

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the Laws of the State of Wisconsin.
ARCHITECT SEAL



Signature: *Jack Poling*
Print Names: Jack Poling
Date: MAY 4, 2018 License No.: A-8984

ISSUE	DATE	DESCRIPTION
MARK	09.29.2017	SCHEMATIC DESIGN SUBMISSION
	12.08.2017	100 PRICING SET
	01.10.2018	DESIGN DEVELOPMENT SUBMISSION
	01.17.2018	10% CD SUBMISSION
	03.30.2018	70% CD PRICING ISSUE
	04.06.2018	PARKING LOT AND SITE PLAN SUBMISSION
	05.04.2018	90% CD SUBMISSION
	06.01.2018	100% CD ISSUE
	06.04.2018	PERMIT ISSUE

PROJECT NO. 2017016
PROJECT PHASE BID DOCUMENTS
DRAWN BY: TLB CHECKED BY: SW

GREENHOUSE FOUNDATION PLAN

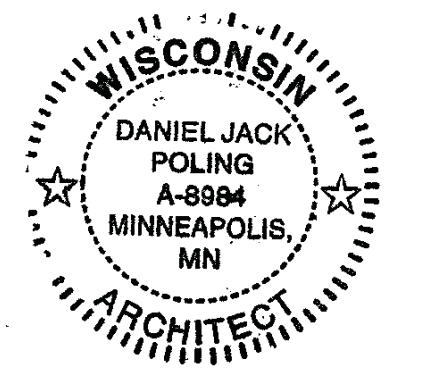
EXHIBIT H
GH5

ENGINEERING NOTE:
ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY



**Olbrich Botanical Gardens
 Expansion Phase 1**
 BPW Project #8162
 3330 Atwood Avenue
 Madison, WI 53704

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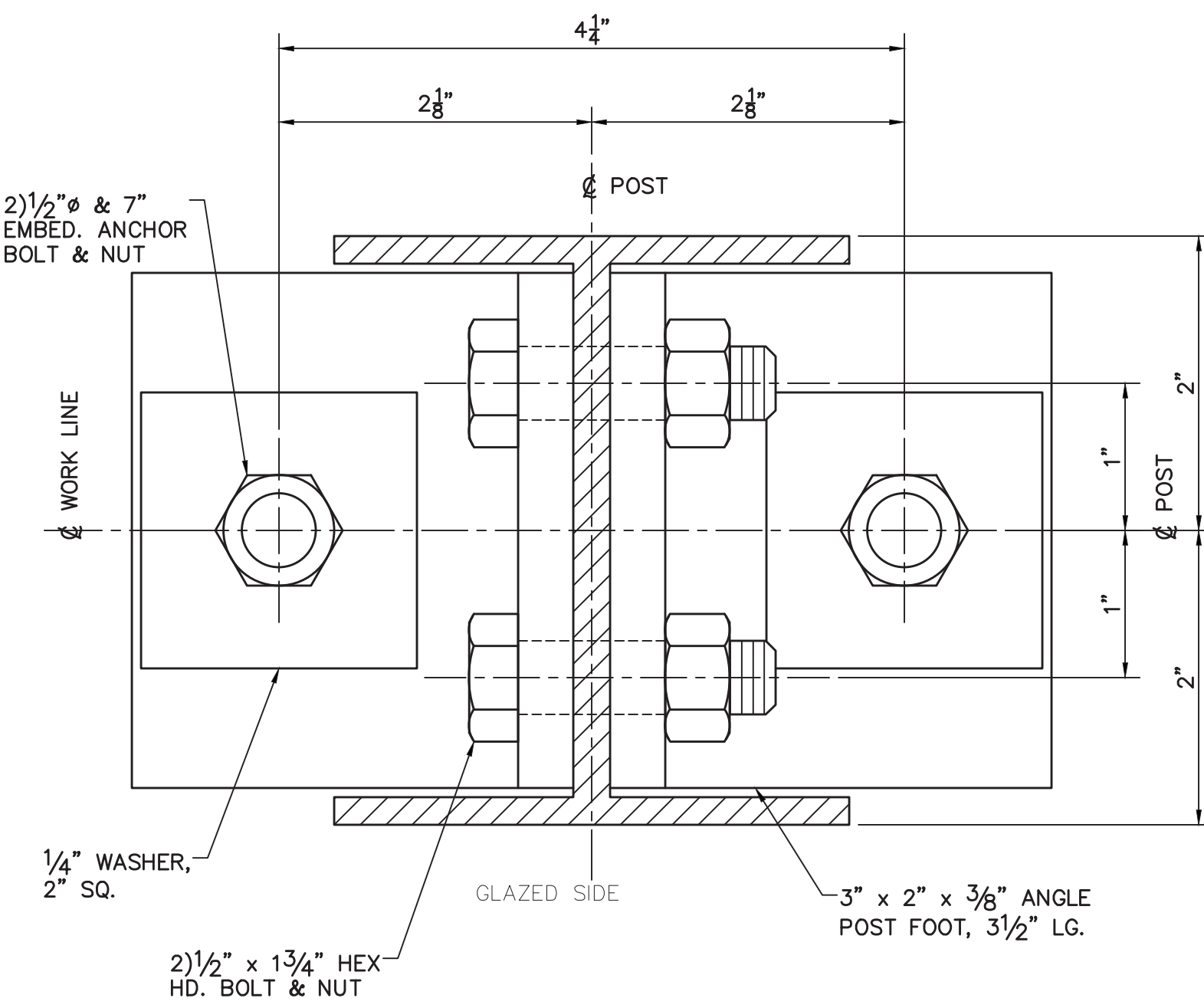
Signature: *Daniel Jack Poling*
 Print Name: Jack Poling
 Date: MAY 4, 2018 License No.: A-8984

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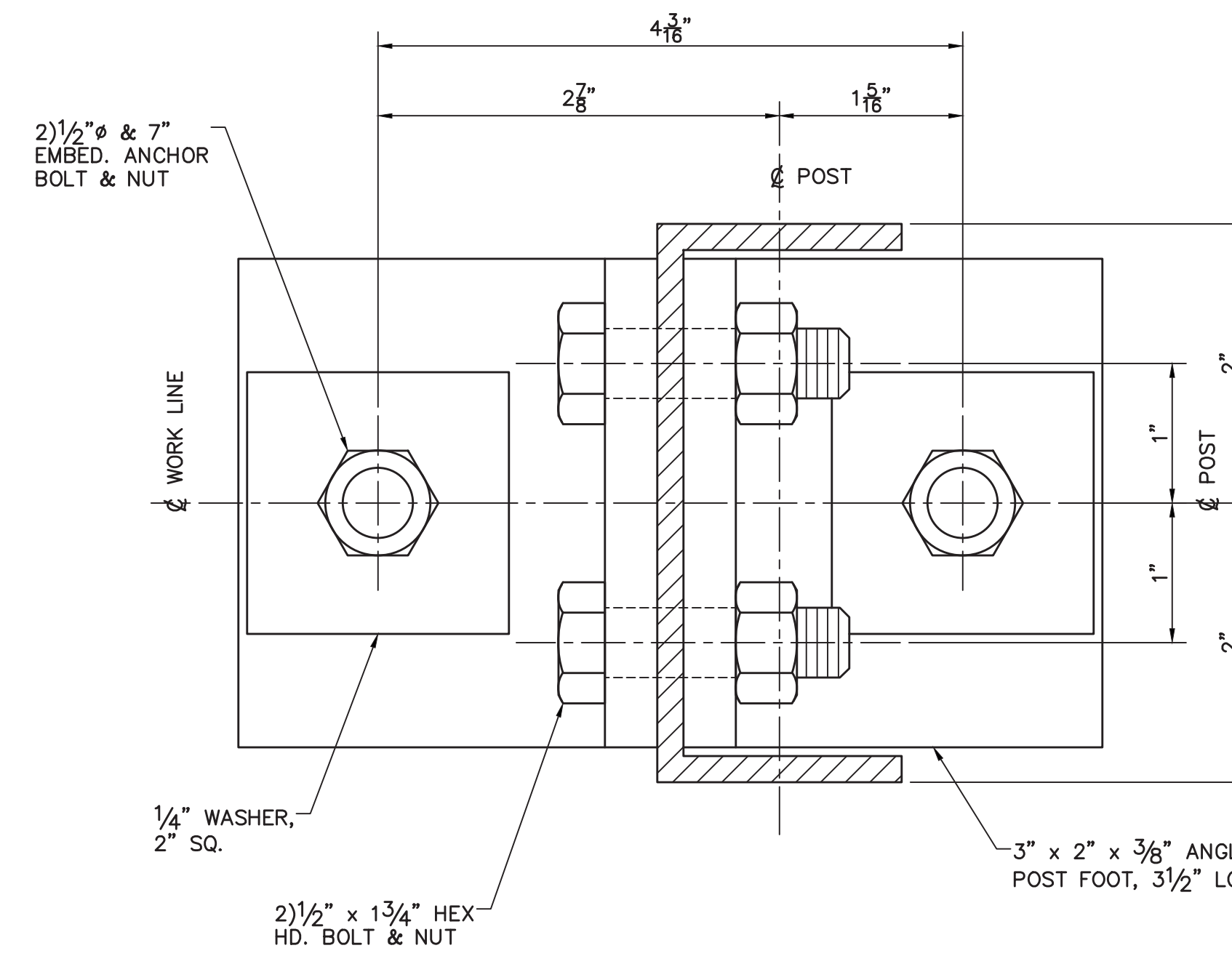
PROJECT NO. 2017016
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 DRAWN BY: TLB CHECKED BY: SW

**GREENHOUSE POST
 BASE ANCHOR
 DETAILS**

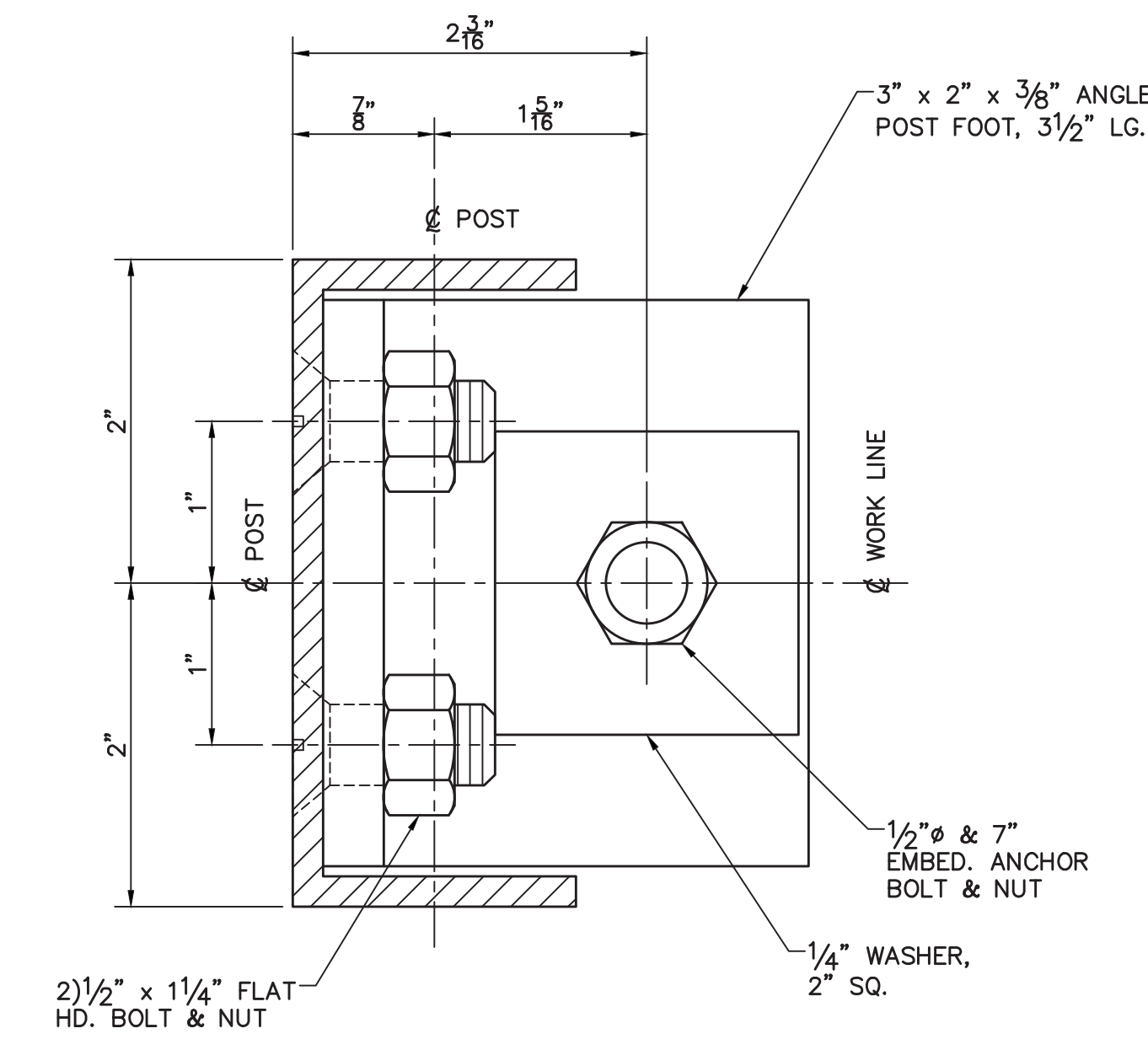
**EXHIBIT H
 GH5.1**



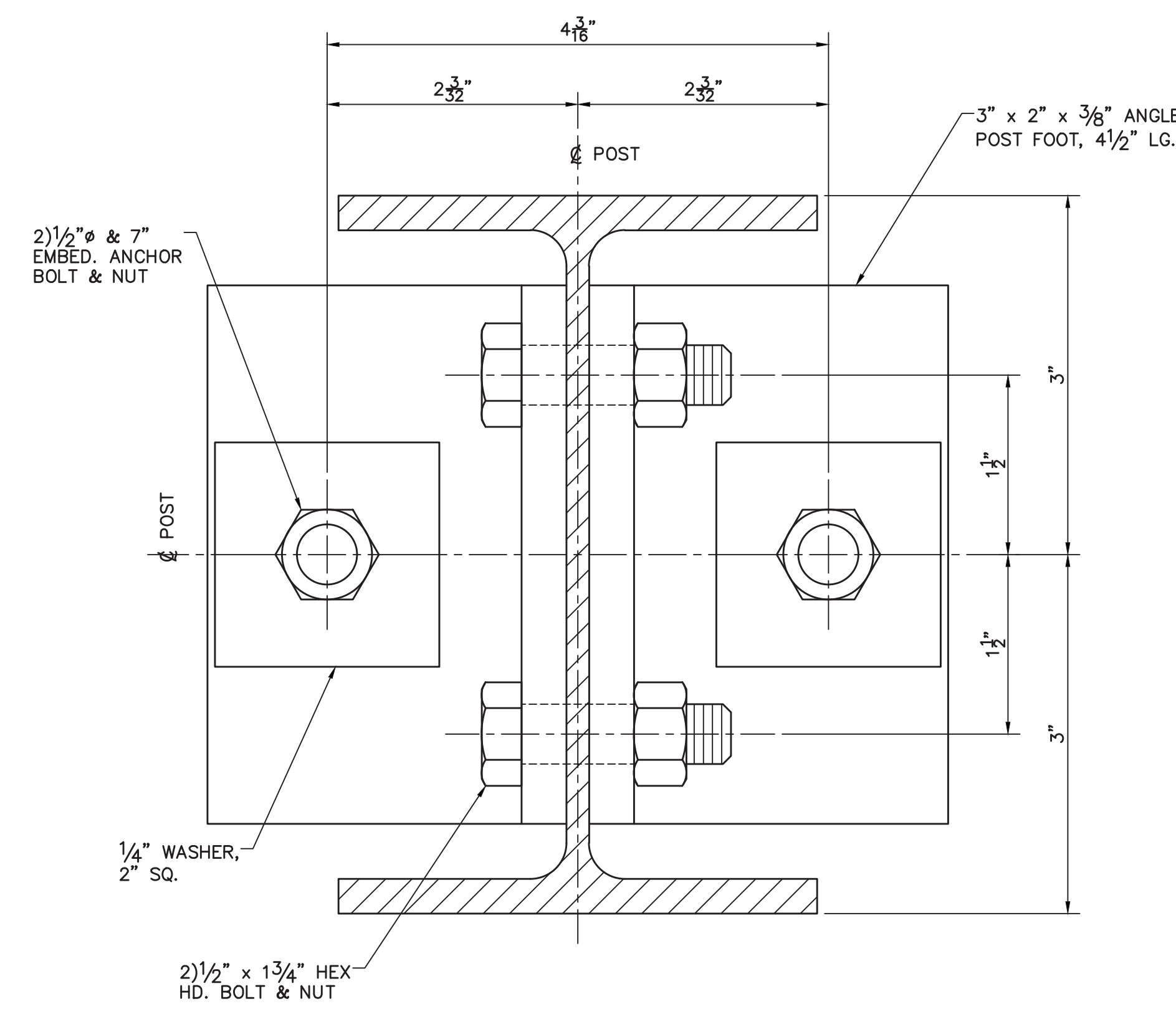
BASE DETAIL (B1)
 4" H-BEAM POST
 A.B. TEMPLATE T-1



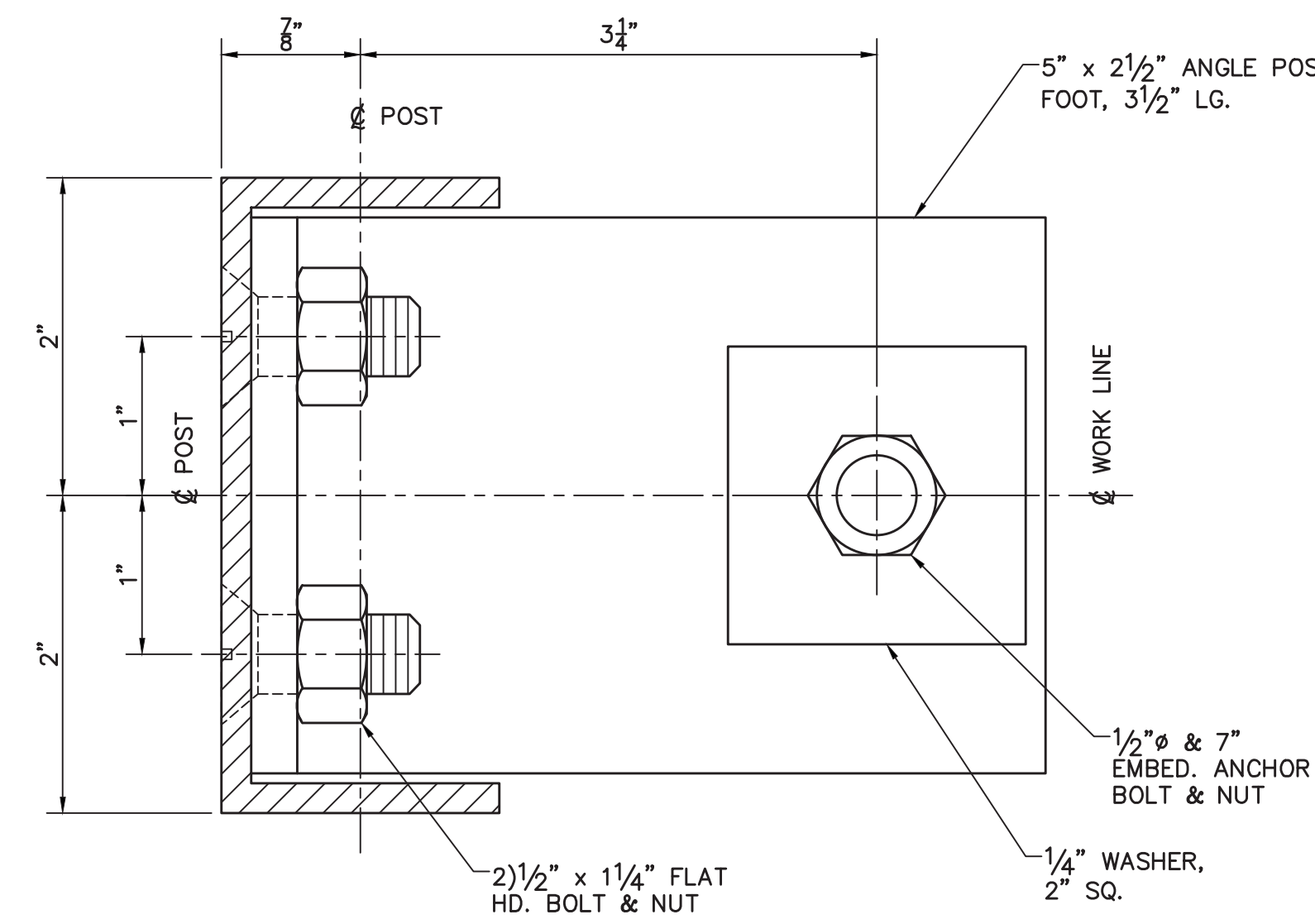
BASE DETAIL (B2)
 4" CHANNEL POST
 A.B. TEMPLATE T-2



BASE DETAIL (B3)
 4" CHANNEL CORNER POST
 A.B. TEMPLATE T-3



BASE DETAIL (B4)
 6" x 4.030#/FT I-BEAM POST
 A.B. TEMPLATE T-9

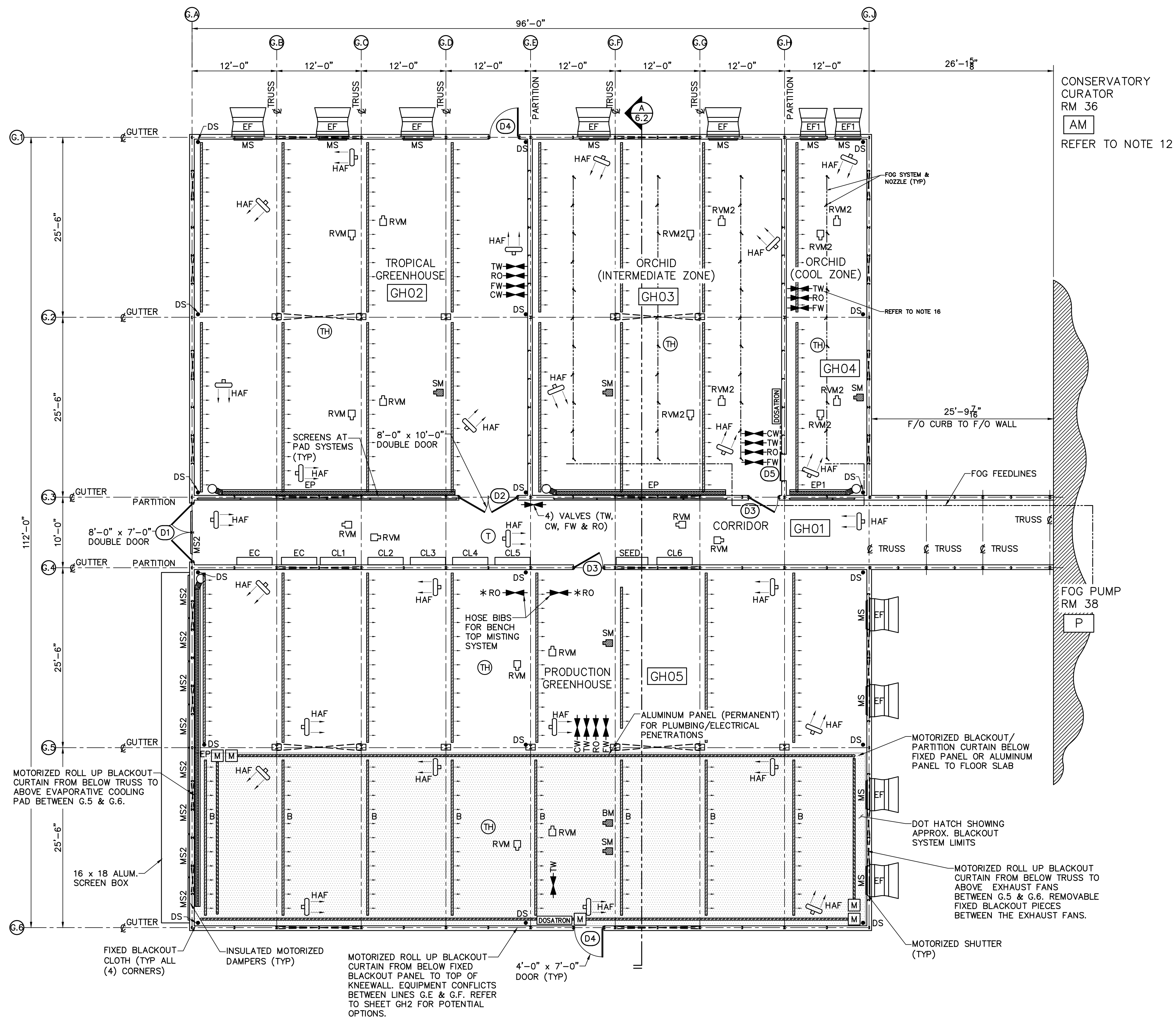


BASE DETAIL (B5)
 4" CHANNEL DOOR POST
 A.B. TEMPLATE T-4

- EPOXY-SET ANCHOR BOLTS:**
- 1/2" DIA. ANCHOR BOLTS TO BE 9" LG. ALL-THREAD ROD WITH 7" EMBEDMENT. ALL ANCHORS TO BE SET IN HILTI HIT-HY 200 +HAS ADHESIVE.
 - EPOXY ANCHORS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS SUPPLIED WITH THE ADHESIVE CARTRIDGE.



ENGINEERING NOTE:
 ENGINEER'S SEAL APPLIES TO DESIGN OF
 STRUCTURAL COMPONENTS ONLY



EQUIPMENT PLAN LAYOUT
SCALE: 1/8" = 1'-0"

ROOM	SQUARE FEET
TROPICAL GREENHOUSE	2,450 +/-
ORCHIDS (COOL ZONE)	605 +/-
ORCHIDS (WARM ZONE)	1,840 +/-
PRODUCTION GREENHOUSE	4,900 +/-

SYMBOL	QTY.	DESCRIPTION
TW	6	TEMPERED WATER
RO	7	REVERSE OSMOSIS WATER
FW	6	FERTILIZED WATER
CW	4	COLD WATER

* RO WATER COULD CAUSE DAMAGE TO FILTERS AND SOLENOID VALVES. O&G TO BE RESPONSIBLE FOR PROPER MAINTENANCE OF SYSTEM AFTER RO WATER HAS BEEN USED.

EQUIPMENT SCHEDULE - BASIS OF DESIGN						
SYMBOL	QTY.	DESCRIPTION	HP	VOLT	PH	AMP
RVM	12	ROOF VENT MOTOR, LOCK EWA 12, WITH OPEN/CLOSE LIMIT SWITCH. 150Nm	0.3	208	3	1.7
RVM2	8	ROOF VENT MOTOR, LOCK EWA 10, 50 Nm, WITH OPEN/CLOSE LIMIT SWITCH	0.15	208	3	.9
SM	5	ROOF SHADE MOTOR, LOCK EWA 10, 90Nm	0.15	208	3	1.0
BM	1	BLACKOUT SYSTEM MOTOR, LOCK EWA 10, 90NM	0.15	208	3	1.0
	4	MOTORIZED SUSPENDED ROOF SHADE/HEAT RETENTION CURTAIN SYSTEM, w/TREVIRA CS FLAME RETARDANT SHADE FABRIC WITH 50%-60% LIGHT REDUCTION, 50% ENERGY SAVINGS.	-	-	-	-
	1	MOTORIZED CABLE/DRAW ROOF BLACKOUT CURTAIN SYSTEM, w/OSSCORA 10075FR AB+BW FABRIC, w/99% LIGHT REDUCTION, AND 75% ENERGY SAVINGS.	-	-	-	-
	5	MOTORIZED VERTICAL BLACKOUT CURTAIN SYSTEM, WITH A RMA20.0512 TUBE MOTOR, W/SNYDER WEATHERSPAN 500 130Z.	.375	120	-	2.3
HAF	27	12" VK12 SCHAEFER HAF FAN	1/10	115	1	1.3
EF	9	48" MUNTERS DRIVE EXHAUST FAN WITH FIBERGLASS HOUSING, WITH MUNTERS MOTORIZED SHUTTERS, VX48DF21C-224-HR	1 1/2	208	3	6.0
EFT	2	36" MUNTERS DRIVE EXHAUST FAN WITH FIBERGLASS HOUSING, WITH MUNTERS MOTORIZED SHUTTERS, VX36DF21C-224-HR	3/4	208	3	3.3
MS	11	GREENHECK INSULATED MOTORIZED ALUMINUM SHUTTERS WITH HINGES AT EXHAUST FANS WITH BELIMO ACTUATORS	-	120	1	0.28
MS2	9	72" X 72" GREENHECK INSULATED MOTORIZED ALUMINUM SHUTTERS WITH (2) BELIMO ACTUATORS FOR PRODUCTION EVAPORATIVE COOLING PAD SYSTEM AND OVER THE WEST GABLE DOOR	-	120	1	0.28
EP	3	6'-0" TALL EVAPORATIVE COOLING PAD SYSTEM W/ PVC RETURN GUTTER, PLUMBING KIT, RESERVOIR TANK AND SUBMERSIBLE PUMP, TROPICAL AND PRODUCTION SYSTEMS EC:1122 PUMP, SUBMERS (LITTLE GIANT 509207)	1/10	115	1	13.0
EP1	1	6'-0" TALL EVAPORATIVE COOLING PAD SYSTEM W/ PVC RETURN GUTTER, PLUMBING KIT, RESERVOIR TANK AND SUBMERSIBLE PUMP, ORCHID SYSTEMS: EC:1319 PUMP, SUBMERS (LITTLE GIANT 506610/506801)	1/8	115	1	5.0
TH	5	ENVIRONMENTAL CONTROL SYSTEM - ASPIRATED TEMPERATURE/HUMIDITY SENSOR	-	-	-	-
T	1	ENVIRONMENTAL CONTROL SYSTEM - TEMPERATURE SENSOR	-	-	-	-
DS	18	4" DOWNSPOUT PIPING (BY PLUMBING CONTRACTOR) ESTIMATED LOCATIONS SHOWN	-	-	-	-
CL1-CL6	6	GREENHOUSE CONTROL PANELS	-	-	-	-
EC	2	ELECTRICAL PANEL (BY ELECTRICIAN)	-	-	-	-
SEED	1	SEED INTERFACE PANEL FOR WADSWORTH SYSTEM	-	-	-	-
P	1	FOG PUMP, 0.75 GPM, 1000 PSI, LOCATION RM 38	1.5	208	3	1725
	2	FOG ZONE 3-WAY VALVE WITH ZONE CONTROL PANEL, LOCATION TBD	-	24	-	-
		FOG SYSTEM LINES AND NOZZLES	-	-	-	-
DOSATRON	2	FERTILIZER INJECTOR WITH MONITOR SYSTEM, DOSATRON 14M22, 14 GPM-1:500 - 1:50	-	115	-	-

EQUIPMENT NOTES:

- ALL ELECTRICAL WIRING (LINE & LOW VOLTAGE), CONDUIT, CIRCUIT PANELS, OUTLETS, LIGHTING (NON-HPS, LED) SHALL BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
- ALL PLUMBING WORK INCLUDING HOSE BIBS, FLOOR DRAINS, AND DOWNSPOUT PIPING SHALL BE PROVIDED AND INSTALLED BY PLUMBING CONTRACTOR.
- ALL FIRE PROTECTION SHALL BE PROVIDED AND INSTALLED BY OTHERS & ALLOW FOR RIGHT OF WAY FOR SHADE SYSTEM.
- ROOF SHADE SYSTEM & BLACKOUT SYSTEMS MUST HAVE TRAVEL RIGHT OF WAY. DO NOT MOUNT OR INSTALL LIGHTS, CONDUIT, PIPING, J-BOXES, DISCONNECT SWITCHES OR ANY PIECE OF EQUIPMENT IN ANY WAY THAT WILL INTERFERE WITH THE TRAVEL OF EACH SHADE CURTAIN SYSTEM.
- SEE SHEET GH6.1 FOR BENCH PLAN.
- REFER TO SHEETS GH6.3-GH6.5 FOR WADSWORTH CONTROL SYSTEMS.
- HWR/HWS TEMP SENSORS AT MAIN CONNECTIONS IN CORRIDOR FOR MONITORING TEMPERATURES THROUGH THE SEED CONTROL SYSTEM.
- TEMPERATURE PROBES FOR EACH FLOOR HEAT VALVE FOR MONITORING TEMPERATURES THROUGH THE SEED CONTROL SYSTEM.
- PAR LIGHT SENSORS IN EACH ZONE (LED LIGHTS BY ELECTRICAL CONTRACTOR).
- COMPUTER STATION FOR CONTROL SYSTEM SHALL BE PROVIDED BY OTHERS AND LOCATED IN CONSERVATORY CURATOR RM 36.
- GREENHOUSE CONTROL SYSTEM SOFTWARE SHALL BE BY WADSWORTH CONTROL SYSTEMS.
- ALARM MANAGER PROVIDED WITH CONSERVATORY PORTION OF THE CONTROL SYSTEM IN CONSERVATORY CURATOR RM 36.
- GREENHOUSE CONTROL SYSTEM WEATHER STATION SHALL BE PROVIDED WITH THE CONSERVATORY PORTION OF THE CONTROL SYSTEM AND SHALL BE CONNECTED THROUGH THE NETWORK.
- EVAPORATIVE COOLING SYSTEM REQUIRES SUPPLY LINE WITH MANUAL SHUT OFF VALVE AT EACH TANK AND FLOOR DRAIN TO BE PROVIDED BY PLUMBING CONTRACTOR. SYSTEM APPROX. FLOW RATES ARE AS FOLLOWS: PRODUCTION GHSE--38 GPM, TROPICAL GHSE--27 GPM, ORCHID INTERM--23 GPM, ORCHID COOL--9 GPM.
- FOG SYSTEM SHALL INCLUDE FOG PUMP, ZONE VALVES, FEED LINES FROM PUMP TO FOG LINES WITH NOZZLES TO GH03 & GH04.
- FOG SYSTEM SHALL PROVIDE 50 TO 70% HUMIDITY; 1.0 GPM @ 30-60 PSI. A 3/4" DIA. RO INLET CONNECTION SHALL BE PROVIDED TO THE FOG PUMP BY PLUMBING CONTRACTOR, ALONG WITH A FLOOR DRAIN.
- FERTILIZER INJECTOR BY-PASS SYSTEM REQUIRES TEMPERED WATER, BACKFLOW PREVENTER, SHUT OFF VALVE AND 115V OUTLET PROVIDED BY PLUMBING & ELECTRICAL CONTRACTOR.
- FERTILIZER INJECTOR (TW) LINE SHALL BE PROVIDED FROM INJECTOR IN INTERMEDIATE ORCHID ZONE TO COOL ORCHID ZONE FOR HOSE ATTACHMENT BY PLUMBING CONTRACTOR.
- SUPPLY & RETURN LINES FOR FIN TUBE HEATING SYSTEM SHALL BE BROUGHT INTO THE GREENHOUSE CORRIDOR BY MECHANICAL CONTRACTOR WITH A FLANGED CONNECTION AND A BALL VALVE. BOILER BY MECHANICAL CONTRACTOR. FOR GHSE HEATING SYSTEMS, REFER TO THE 'H' SERIES DRAWINGS.
- PORTABLE GENERATOR FOR HOOK UP SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR TO SUPPORT ALL THE GREENHOUSE EQUIPMENT IN THE EVENT OF A POWER OUTAGE.
- ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL HPS SUPPLEMENTAL LIGHTING IN THE TROPICAL AND ORCHID ZONES AND LED SUPPLEMENTAL LIGHTING IN THE PRODUCTION ZONES AND UNISTRUT FOR HANGING FROM THE GREENHOUSE STRUCTURE. REFER TO E-SERIES DRAWINGS. ALL GH SUPPLEMENTAL LIGHTING SHALL BE CONTROLLED BY SEED CONTROL SYSTEM.

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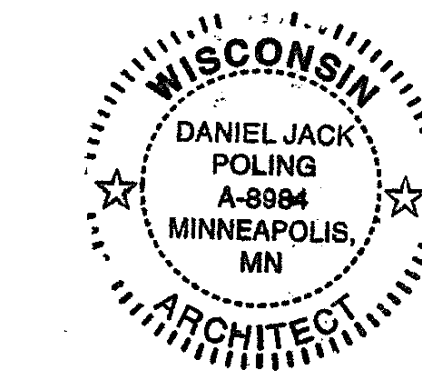
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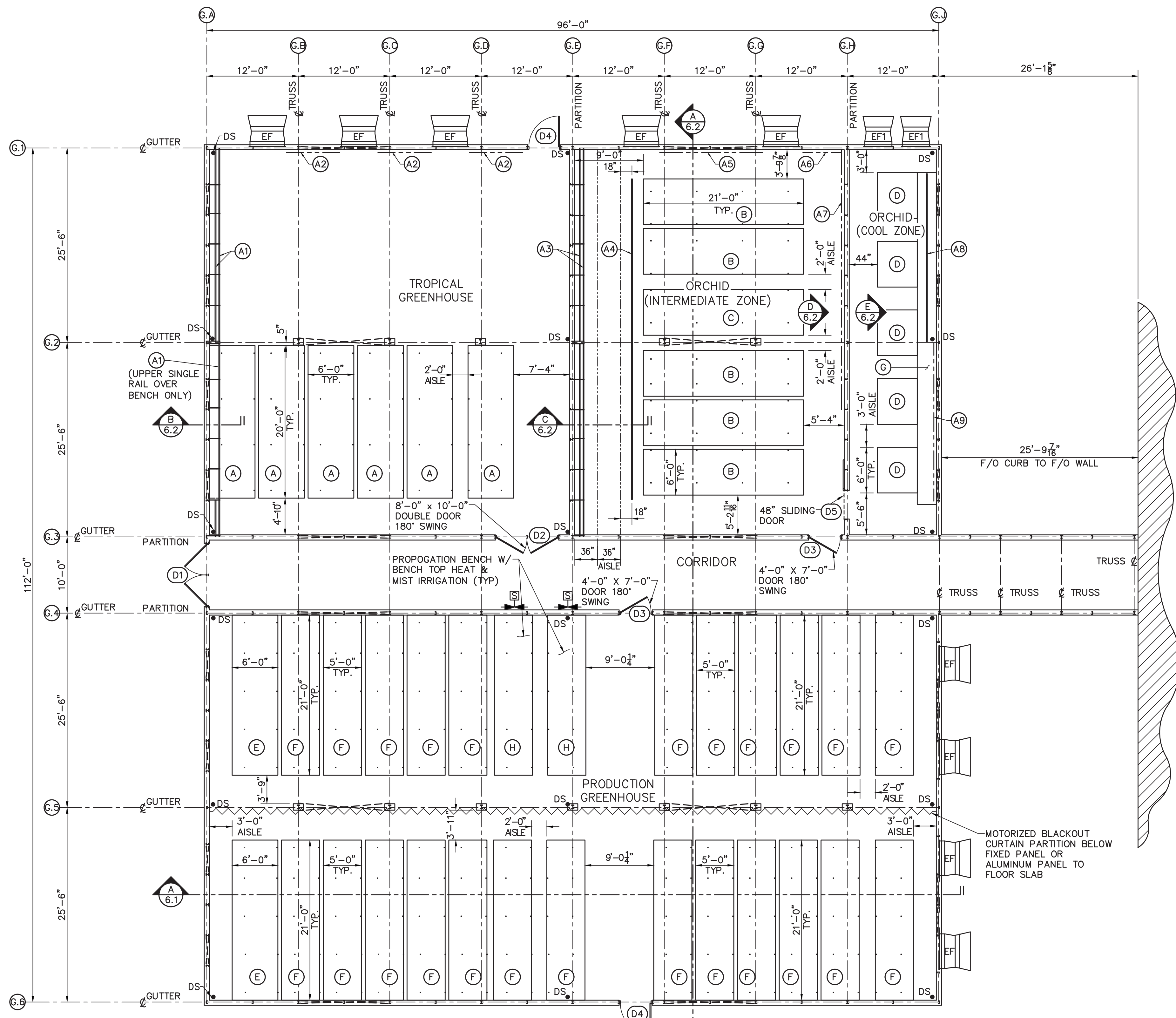
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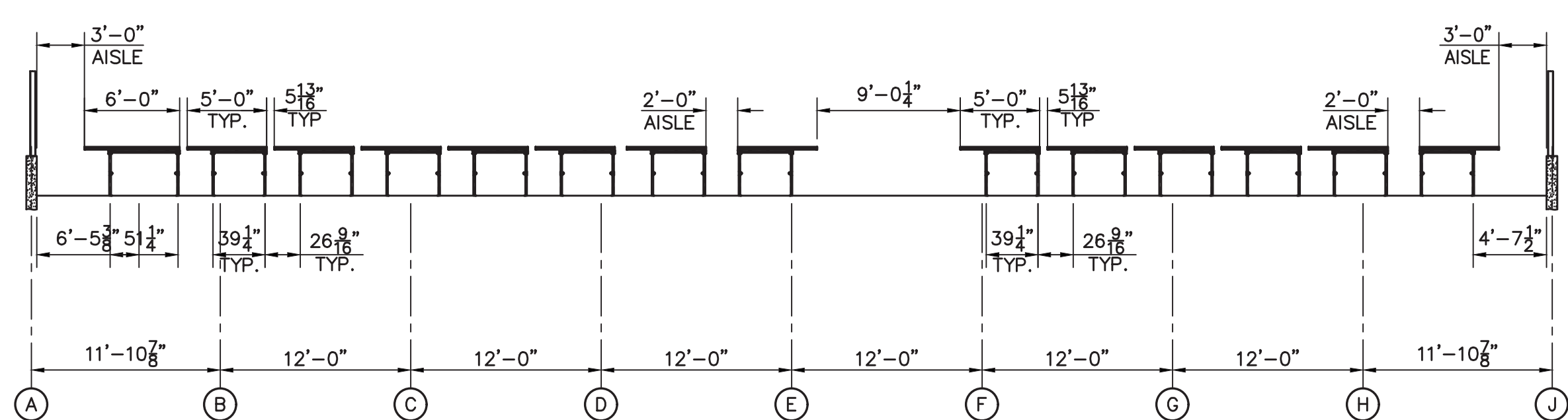
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**GREENHOUSE
EQUIPMENT
PLAN**

EXHIBIT H
GH6



BENCH LAYOUT
SCALE: 1/8"=1'-0"
TRUE PLAN



BENCH SECTION A
IN PRODUCTION GREENHOUSE

IRRIGATION SCHEDULE						
SYMBOL	QTY.	DESCRIPTION	HP	VOLT	PH	AMP
	2	3/4" SOLENOID VALVE	-	24	-	-

BENCH SCHEDULE					
I.D.	QTY.	DESCRIPTION	LENGTH	WIDTH	HEIGHT
A	6	RO-FLO ROLLING BENCH WITH CAST CORNERS	20'-0"	6'-0"	3'-0"
B	5	RO-FLO ROLLING BENCH WITH CAST CORNERS	21'-0"	6'-0"	3'-0"
C	1	RO-FLO ROLLING BENCH WITH CAST CORNERS ***THIS BENCH TO HAVE BENCH TOP HEATING SYSTEM***	21'-0"	6'-0"	3'-0"
D	5	RO-FLO STATIONARY BENCH WITH CAST CORNERS	6'-0"	5'-3"	3'-0"
E	2	RO-FLO ROLLING BENCH WITH CAST CORNERS	21'-0"	6'-0"	3'-0"
F	24	RO-FLO ROLLING BENCH WITH CAST CORNERS	21'-0"	5'-0"	3'-0"
G	1	RO-FLO STATIONARY BENCH WITH CAST CORNERS	43'-6"	2'-6"	3'-0"
H	2	RO-FLO STATIONARY BENCH WITH CAST CORNERS ***THESE BENCHES TO HAVE BENCH TOP HEATING, & MISTING***	21'-0"	5'-0"	3'-0"

BENCH NOTES:

- PROPAGATION MIST SYSTEM ESTIMATED FLOW RATE FOR EACH BENCH IS 5.5GPM @ 15-85 PSI. REFER TO NOTE ON SHT. GH6 REGARDING USE OF RO WATER WITH SYSTEM.
- BENCH TOP MISTING TO BE CONTROLLED BY TIME THROUGH SEED CONTROL SYSTEM.
- FOR BENCH TOP HEATING DETAILS REFER TO H-SERIES DRAWINGS.
- BENCH TOP HEATING SYSTEM SHALL BE AN EPDM SYSTEM MOUNTED TO THE BOTTOM OF THE BENCH WITH HIGH QUALITY EPDM RUBBER TUBING AND RIGID PLASTIC SPACERS. ALL RUBBER TUBING SHALL CONNECT INTO AN ONE-INCH SCH 80 PVC PIPE MANIFOLDS.
- HOT WATER SUPPLY TEMPERATURE TO BE 135°F WITH TOTAL 2.5 GPM FOR ALL THREE BENCHES.
- HEAT LOAD FOR THE PRODUCTION ZONE BENCHES IS TO BE AT 15,750 BTUH AND 13,000 BTUH FOR INTERMEDIATE ORCHID ZONE BENCH.
- HEAT SOURCE AND SUPPLY AND RETURN HEATING WITH 1" MTHD STUB OUTS WITH CAPS FOR CONNECTION TO EACH BENCH SHALL BE BY THE MECHANICAL CONTRACTOR.
- TEMPERATURE PROBES FOR BENCH TOP SOIL AND BENCH HEAT VALVE FOR MONITORING TEMPERATURES THROUGH THE SEED CONTROL SYSTEM.

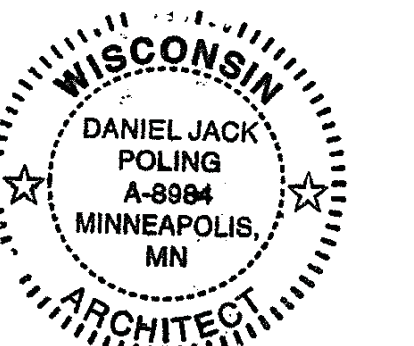
PLANT ACCESSORIES SCHEDULE			
ITEM	DESCRIPTION	QTY.	APPROX. LENGTH
A1	DOUBLE/SINGLE VERTICAL STACKED RAIL - TROPICAL	1	45'
A2	WALL MESH - TROPICAL	3	7'
A3	DOUBLE VERTICAL STACKED RAIL - ORCHID	1	96'
A4	SUSPENDED VERTICAL STACKED RAILS - ORCHID	1	78'
A5	WALL MESH - ORCHID	1	13'-6"
A6	WALL MESH - ORCHID	1	5'
A7	WALL MESH - ORCHID	1	32'
A8	SINGLE RAIL - ORCHID COOL	1	22'
A9	WALL MESH - ORCHID COOL	1	20'-9"

NOTES:

- PLANT HANGING RAILS AT BENCH TO BE 50" ABOVE BENCHES.
- PLANT HANGING RAILS ARE TO BE 60" ABOVE FF X 12" FROM THE WALL AND 92" ABOVE FF X 18" FROM THE WALL.
- DOUBLE STACKED HANGING RAILS ARE TO BE AT 60" AND 92" ABOVE FF.
- WALL MESH TO BE 5'-0" TALL FROM THE TOP OF KNEEWALL.

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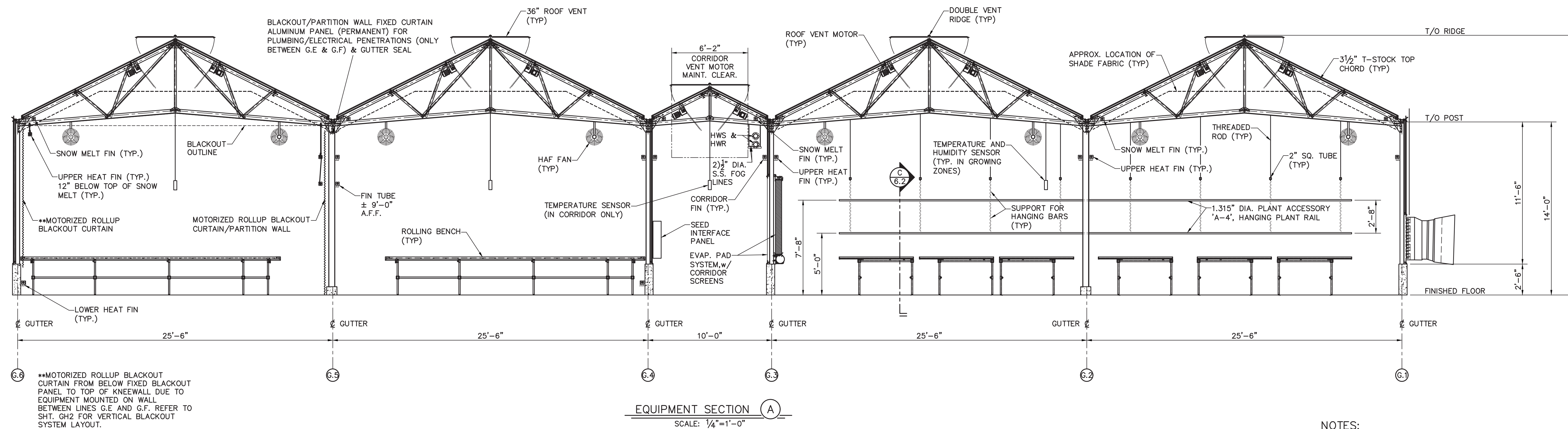
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PROJECT NO: 2017016
BID DOCUMENTS

DRAWN BY: TLB CHECKED BY: SW

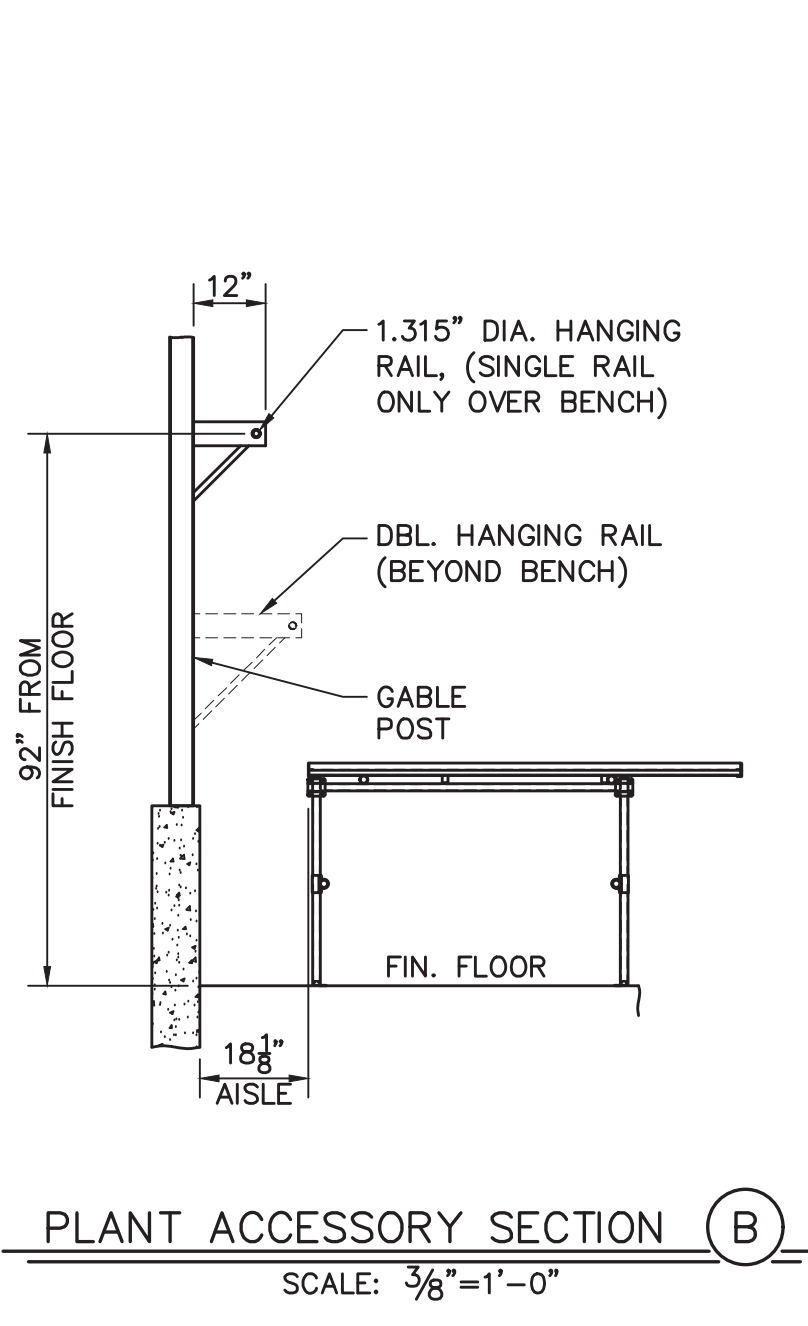
GREENHOUSE
BENCH PLAN

EXHIBIT H
GH6.1

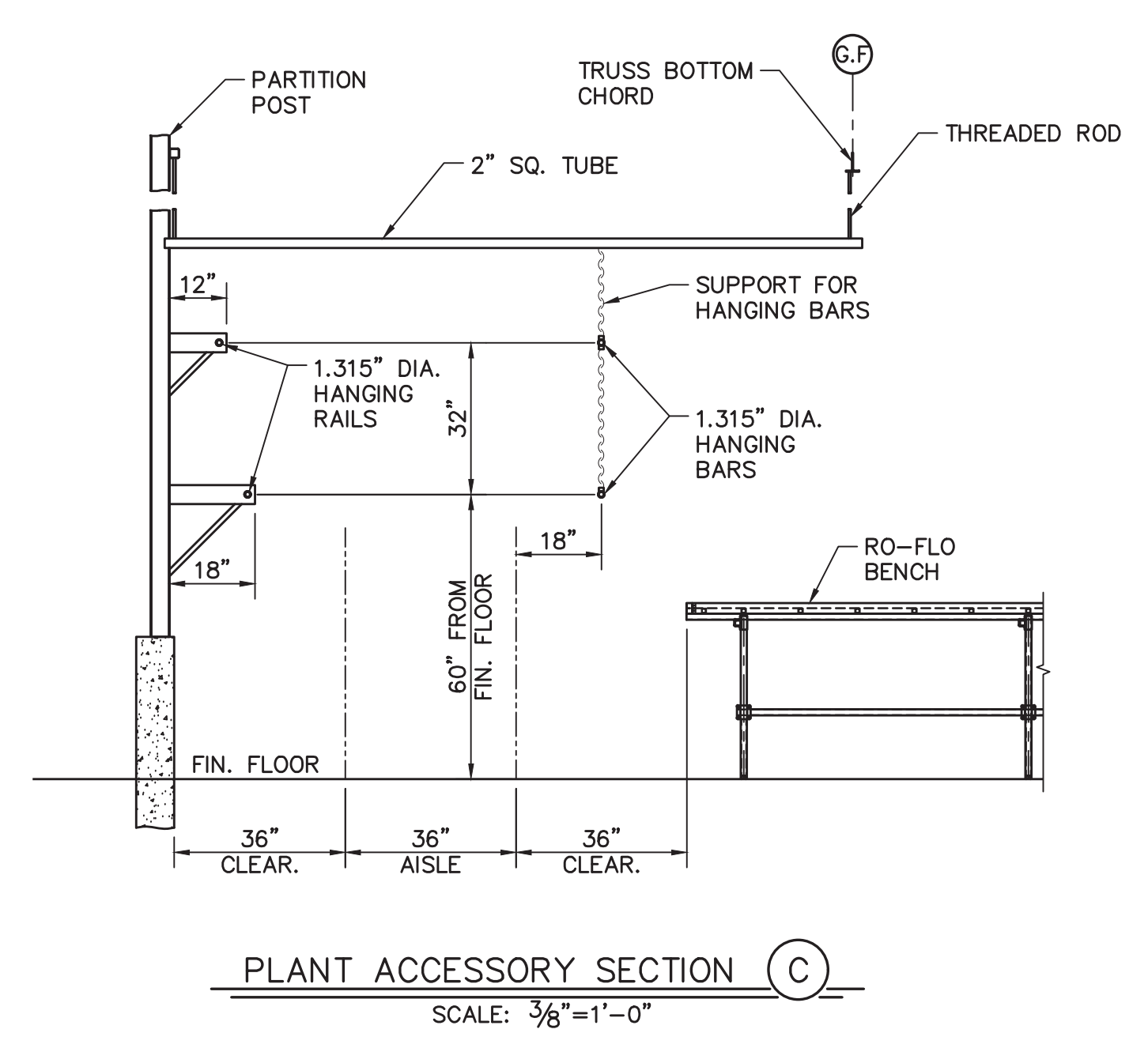


EQUIPMENT SECTION A
SCALE: 1/4"=1'-0"

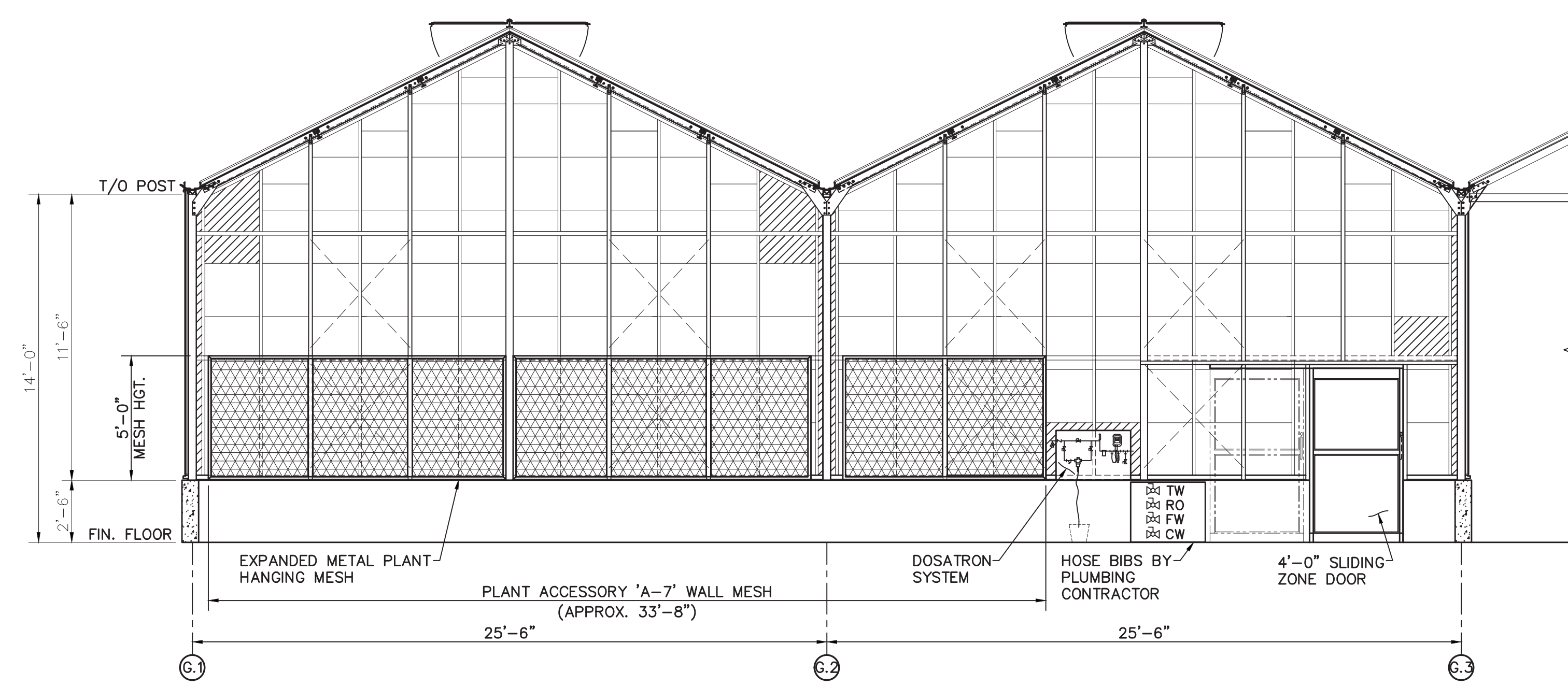
- NOTES:
- SEE SHEET GH6.1 FOR BENCH PLAN.
 - PLANT RAILS TO BE 50" ABOVE THE BENCHES. WEIGHT OF POTS TO BE LESS THAN 30lbs. TO 50lbs.
- LIGHT NOTE:
- GENERAL LIGHTING AND GROWTH LIGHTING (HPS & LED) AND SUPPORT BY ELECTRICAL CONTRACTOR. SEE NOTE 19 ON SHEET GH6.



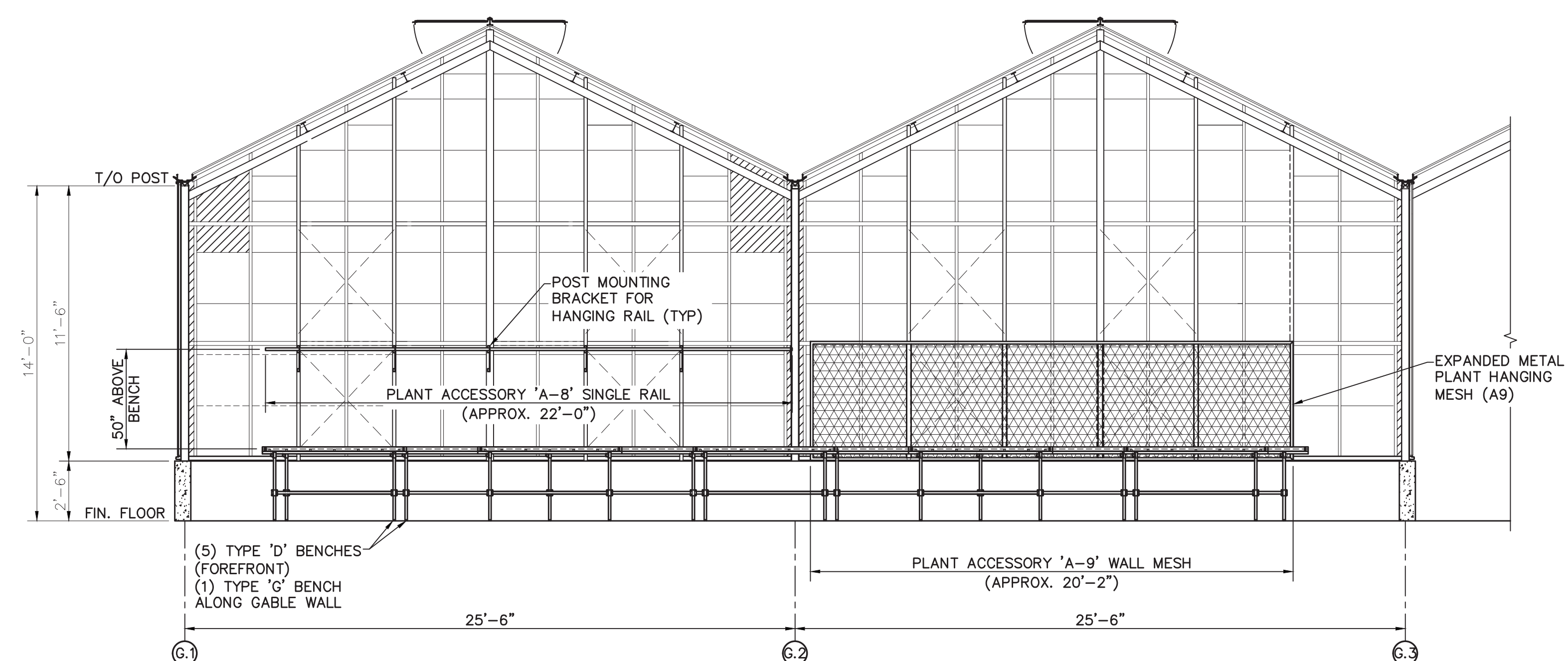
PLANT ACCESSORY SECTION B
SCALE: 3/8"=1'-0"



PLANT ACCESSORY SECTION C
SCALE: 3/8"=1'-0"



PLANT ACCESSORY ELEVATION D
SCALE: 1/4"=1'-0"



PLANT ACCESSORY ELEVATION E
SCALE: 1/4"=1'-0"

MSR 710 South 2nd Street, 8th Floor
Minneapolis, Minnesota 55401-2822
Architecture 612.375.0336 tel
Interiors and 612.342.2216 fax
Urban Design www.msrdesign.com

Civil Engineer
Vierbicher Associates, Inc.
999 Fourier Drive, Suite 201
Madison, WI 53717
608.826.0532 tel

Landscaper
Ken Saki Design, Inc.
303 South Paterson Street, Suite 1
Madison, WI 53703
608.251.3600 tel

Structural Engineer, Technology and AV
IMEG Corp.
1800 Deming Way, Suite 200
Madison, WI 53562
608.223.9600 tel

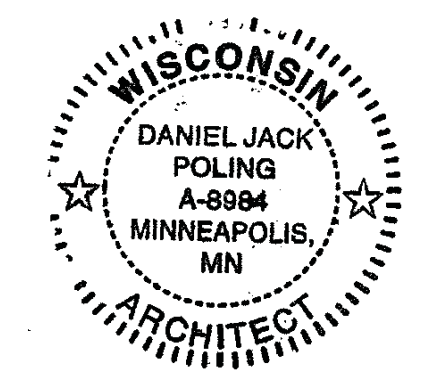
MEP Engineer
MEP Associates, LLC
980 Blue Garden Road, Suite 175
Eagan, MN 55121
651.379.9120 tel

Fire Protection Engineer and Code Consultant
Summit Fire Consulting
575 Minnehaha Ave West
St. Paul, MN 55103
651.251.1880 tel

Greenhouse Design
Rough Brothers, Inc.
5513 Vine Street
Cincinnati, OH 45217
513.242.0310 tel

Olbrich Botanical Gardens
Expansion Phase 1
BPW Project #8162
3330 Atwood Avenue
Madison, WI 53704

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Signature: *Daniel Jack Poling*
Print Name: Jack Poling
Date: MAY 4, 2018 License No.: A-8984

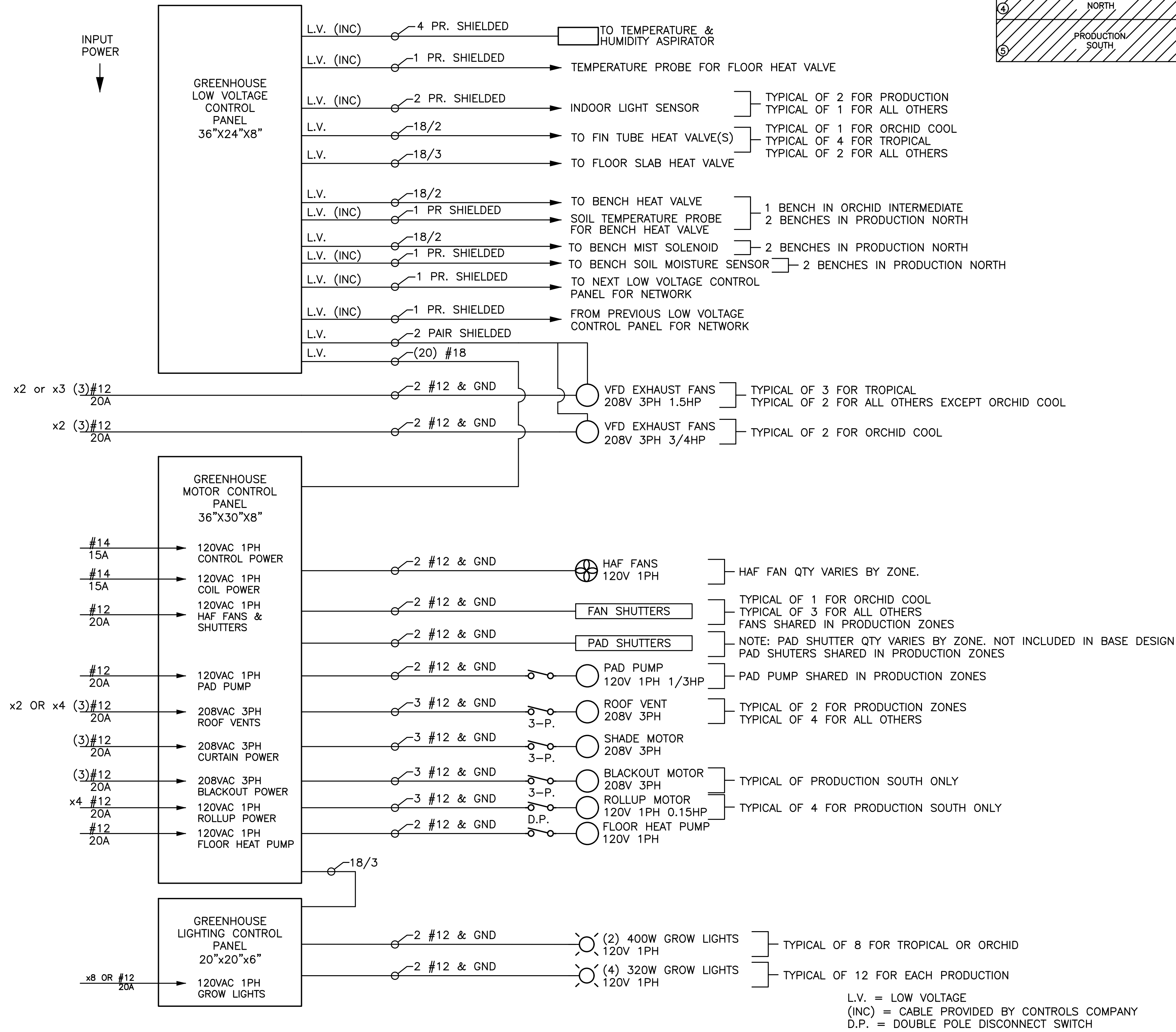
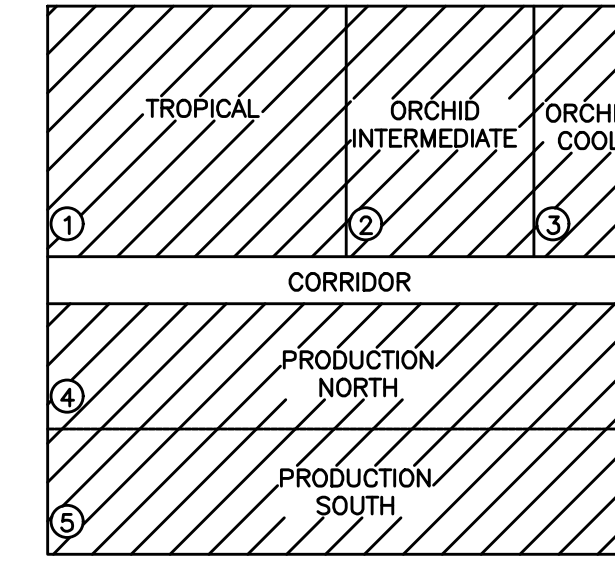
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01.10.2018	01.10.2018	DESIGN DEVELOPMENT SUBMISSION
01.17.2018	01.17.2018	JDC SUBMISSION
03.30.2018	03.30.2018	70% CD PRICING ISSUE
04.06.2018	04.06.2018	PARKING LOT AND SITE PLAN SUBMISSION
05.04.2018	05.04.2018	90% CD SUBMISSION
06.01.2018	06.01.2018	BID ISSUE
06.04.2018	06.04.2018	PERMIT ISSUE

PROJECT NO: 2017016
PROJECT PHASE: BID DOCUMENTS
DRAWN BY: MSW
CHECKED BY: SW

GREENHOUSE EQUIPMENT SECTIONS

EXHIBIT H
GH6.2

SIMPLIFIED ONE LINE POWER DIAGRAM
TYPICAL OF (5) GROWING ZONES EXCEPT AS NOTED



LOW VOLTAGE CONDUIT DESCRIPTION:

- 3/4" CONDUIT (1) 1PR SHIELDED - ALARM MANAGER (2) 1PR SHIELDED - SEED NETWORK
- 3/4" CONDUIT (1) 4PR SHIELDED - TEMP & RH ASPIRATOR (2) 2PR SHIELDED - LIGHT SENSOR
- 3/4" CONDUIT (1) 1PR SHIELDED - TEMP PROBE (1) 2 OR 4) 18/2 FIN HEAT VALVE(S) (1) 18/3 FLOOR HEAT VALVE
- 3/4" CONDUIT (1) 2PR SHIELDED - LIGHT SENSOR #2 (PRODUCTION ONLY) (1) ORCHID_INTERMEDIATE & (2) PRODUCTION NORTH (1) OR 2) 18/2 BENCH HEAT VALVE (1) OR 2) 18/2 BENCH MIST (1) OR 2) 1PR SHIELDED - TEMP PROBE

LIGHTING CONTROL PANEL CONDUIT DESCRIPTION:

- 2) 3/4" CONDUITS - TROPICAL (4) #12 GROW LIGHTS (4) #12 NEUTRAL (1) #12 GROUND
- 2) 3/4" CONDUITS - ORCHID_INTERMEDIATE (3) #12 GROW LIGHTS (3) #12 NEUTRAL (1) #12 GROUND
- 3/4" CONDUIT - ORCHID_COOL (2) #12 GROW LIGHTS (2) #12 NEUTRAL (1) #12 GROUND
- 2) 3/4" CONDUITS - EACH PRODUCTION (4) #12 GROW LIGHTS (4) #12 NEUTRAL (1) #12 GROUND

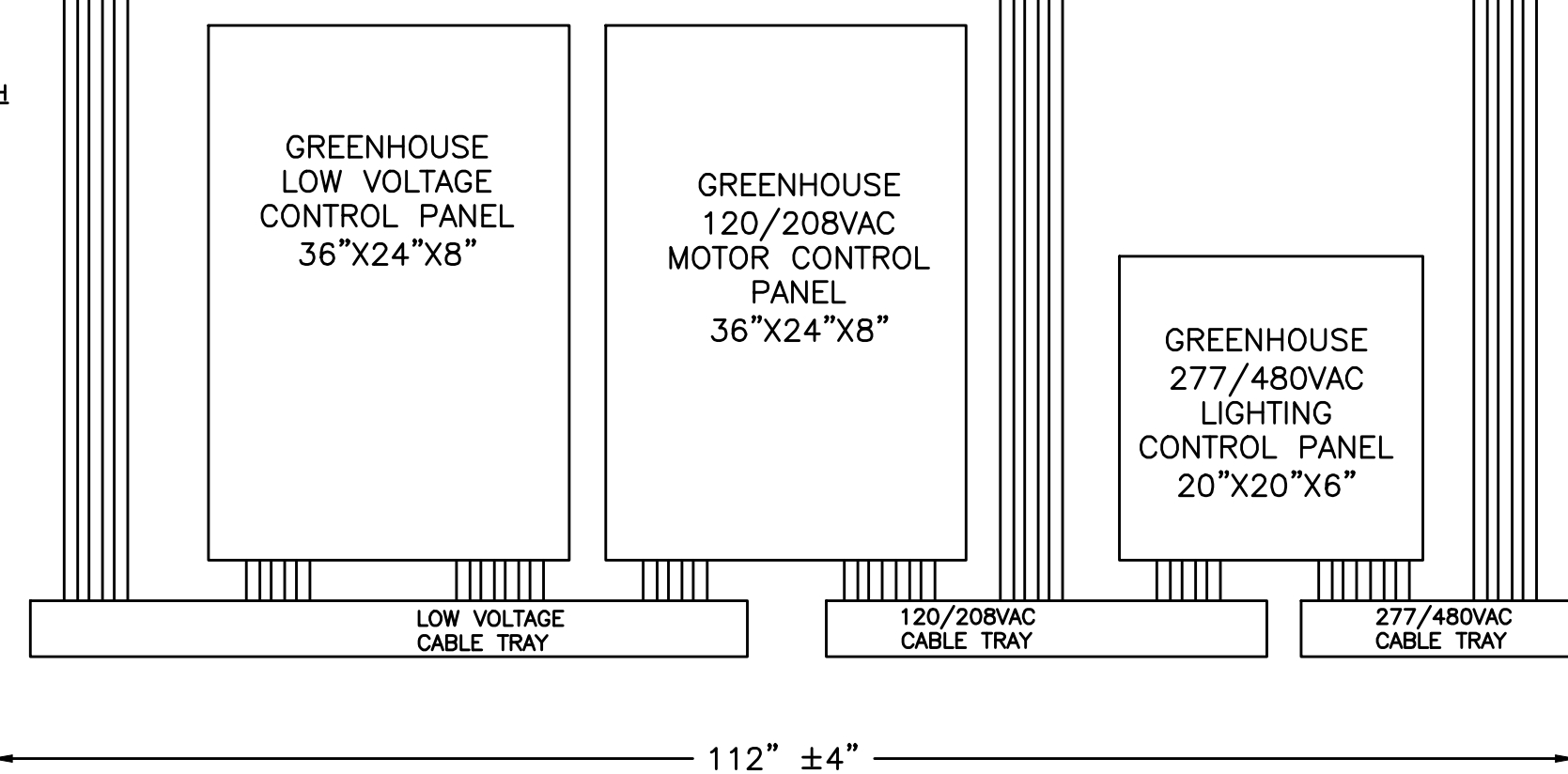
LOW VOLTAGE CONDUIT FOR SENSORS AND SIGNALS

CONDUIT TO EQUIPMENT

CONDUIT TO EQUIPMENT

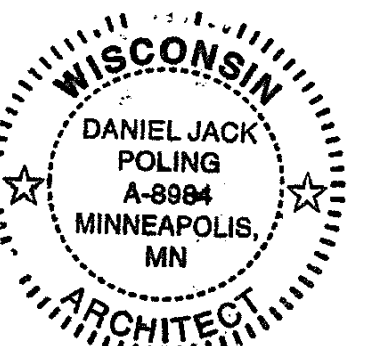
GREENHOUSE MOTOR CONTROL PANEL TO EQUIPMENT:

- 3/4" CONDUIT (1) #12 PAD SHUTTERS (1) #12 PAD PUMP (1) #12 HAF FANS (1) #12 FLOOR HEAT PUMP (4) #12 NEUTRAL (1) #12 GROUND
- 3/4" CONDUIT (2) #12 ROOF VENT #1 (2) #12 ROOF VENT #2 (2) #12 SHADE MOTOR (3) #12 NEUTRAL (1) #12 GROUND
- 3/4" CONDUIT - TROPICAL & ORCHID_COOL (2) #12 ROOF VENT #3 (2) #12 ROOF VENT #4 (2) #12 SHADE MOTOR (2) #12 NEUTRAL (1) #12 GROUND
- 3/4" CONDUIT - ALL EXCEPT ORCHID_COOL (1) #12 EXHAUST FAN #1 (1) #12 FAN SHUTTER #1 (1) #12 NEUTRAL (1) #12 GROUND
- 3/4" CONDUIT - ALL EXCEPT ORCHID_COOL (2) #12 EXHAUST FAN #2 & 3 (2) #12 FAN SHUTTERS #2 & 3 (3) #12 NEUTRAL (1) #12 GROUND
- 3/4" CONDUIT - PRODUCTION SOUTH ONLY (2) #12 BLACKOUT CURTAIN (2) #12 ROLLUP #1 (2) #12 ROLLUP #2 (3) #12 NEUTRAL (1) #12 GROUND
- 3/4" CONDUIT - PRODUCTION SOUTH ONLY (2) #12 ROLLUP #3 (2) #12 ROLLUP #4 (2) #12 NEUTRAL (1) #12 GROUND



Olbriich Botanical Gardens
Expansion Phase 1
BPW Project #8162
3330 Atwood Avenue
Madison, WI 53704

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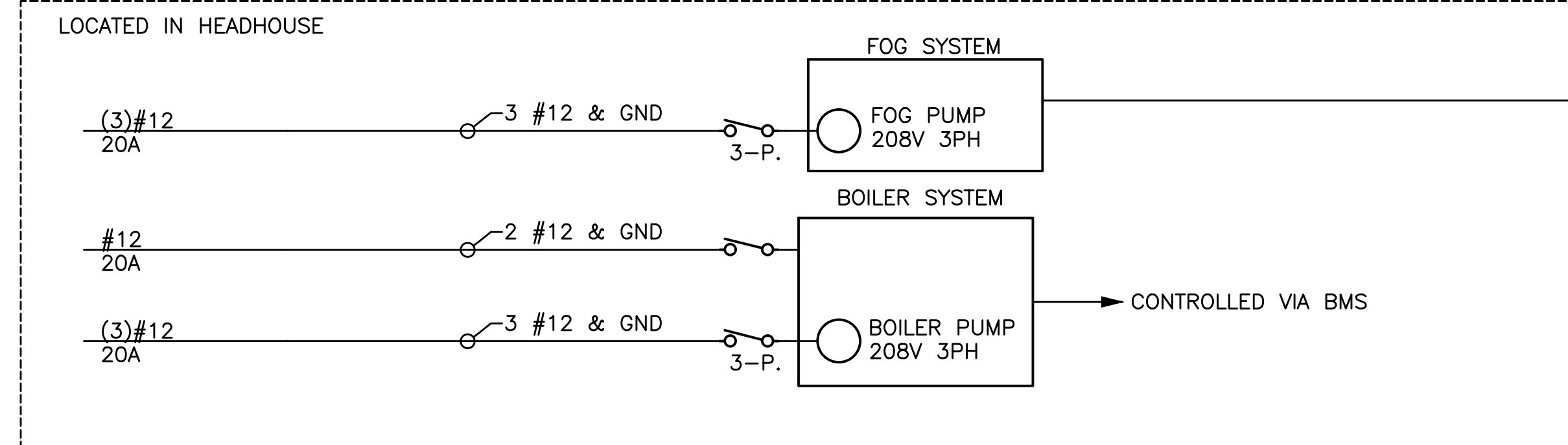
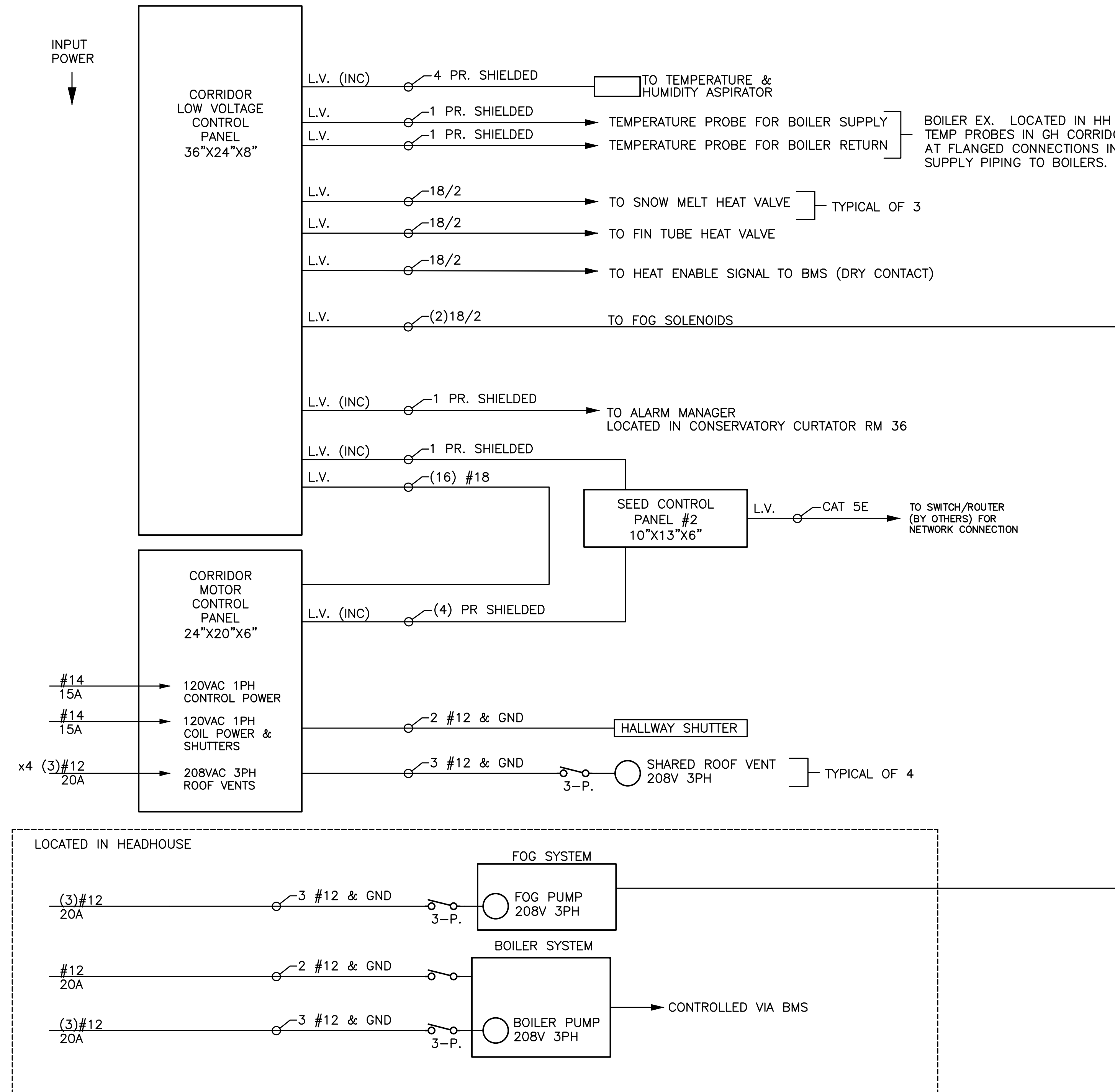
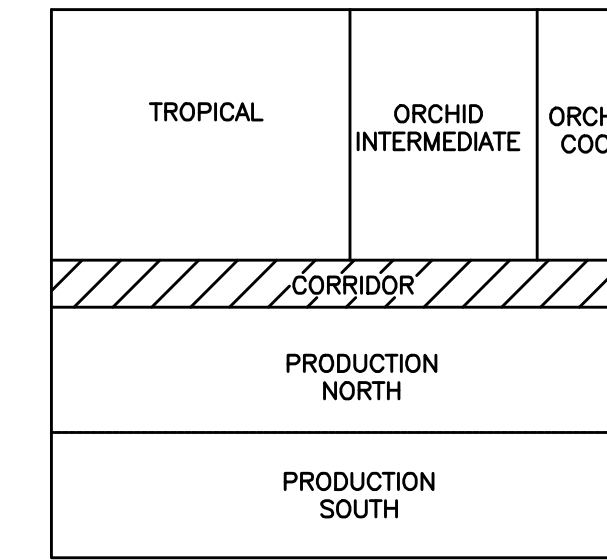
Signature: *Jack Poling*
Print Name: Jack Poling
Date: MAY 4 2018 License No. A-8984

ISSUE	DATE	DESCRIPTION
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	12.08.2017	CD PRICING SET
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	01.17.2018	UDC SUBMISSION
	03.30.2018	70% CD PRICING ISSUE
	04.08.2018	PARKING LOT AND SITE PLAN SUBMISSION
	05.04.2018	90% CD SUBMISSION
	06.01.2018	BD ISSUE
	06.04.2018	PERMIT ISSUE

PROJECT NO: 2017016
PROJECT PHASE: BID DOCUMENTS
DRAWN BY: CHECKED BY:

GREENHOUSE CONTROL (GROWING AREA)
EXHIBIT H
GH6.3

SIMPLIFIED ONE LINE POWER DIAGRAM
CORRIDOR AREA



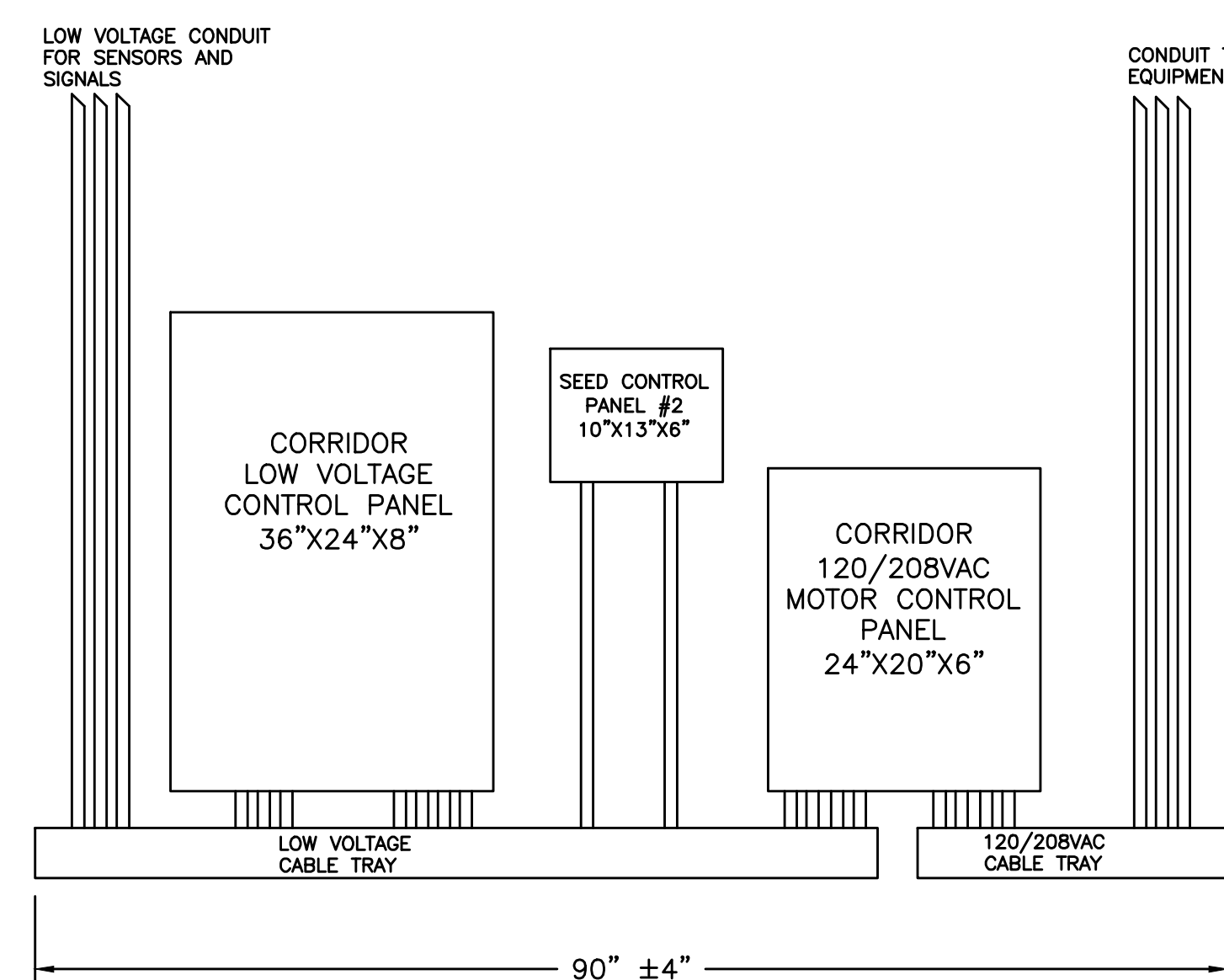
L.V. = LOW VOLTAGE
(INC) = CABLE PROVIDED BY CONTROLS COMPANY
D.P. = DOUBLE POLE DISCONNECT SWITCH
KT-4 = THREE POLE DISCONNECT SWITCH WITH THERMAL OVERLOAD

LOW VOLTAGE CONDUIT DESCRIPTION:

- 3/4" CONDUIT (1) 1PR SHIELDED - ALARM MANAGER
- 3/4" CONDUIT (1) 1PR SHIELDED - SEED NETWORK
- 3/4" CONDUIT (1) 4PR SHIELDED - TEMP & RH ASPIRATOR
- 3/4" CONDUIT (2) 18/2 FOG SOLENOID ENABLES
- 3/4" CONDUIT (1) 18/2 FOG PUMP ENABLE
- 3/4" CONDUIT (2) 1PR SHIELDED - TEMP PROBES
- 3/4" CONDUIT (3) 18/2 SNOW MELT HEAT VALVES
- 3/4" CONDUIT (1) 18/2 FIN HEAT VALVE(S)
- 3/4" CONDUIT (1) 18/2 BOILER ENABLE

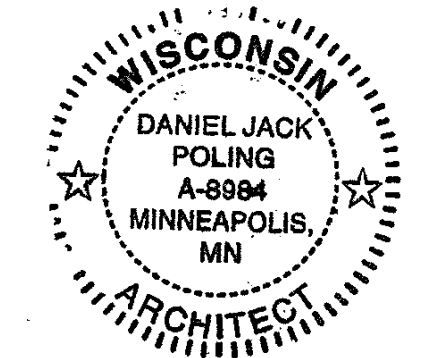
GREENHOUSE MOTOR CONTROL PANEL TO EQUIPMENT:

- 3/4" CONDUIT (3) #12 ROOF VENT #1
- 3/4" CONDUIT (3) #12 ROOF VENT #2
- 3/4" CONDUIT (1) #12 GROUND
- 3/4" CONDUIT (3) #12 ROOF VENT #3
- 3/4" CONDUIT (3) #12 ROOF VENT #4
- 3/4" CONDUIT (1) #12 GROUND
- 3/4" CONDUIT (1) #12 SHUTTERS
- 3/4" CONDUIT (1) #12 NEUTRAL
- 3/4" CONDUIT (1) #12 GROUND



Olbriich Botanical Gardens
Expansion Phase 1
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Madison, WI 53704

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Signature: *Jack Poling*
Print Name: Jack Poling
Date: MAY 4, 2018 License No.: A-8984

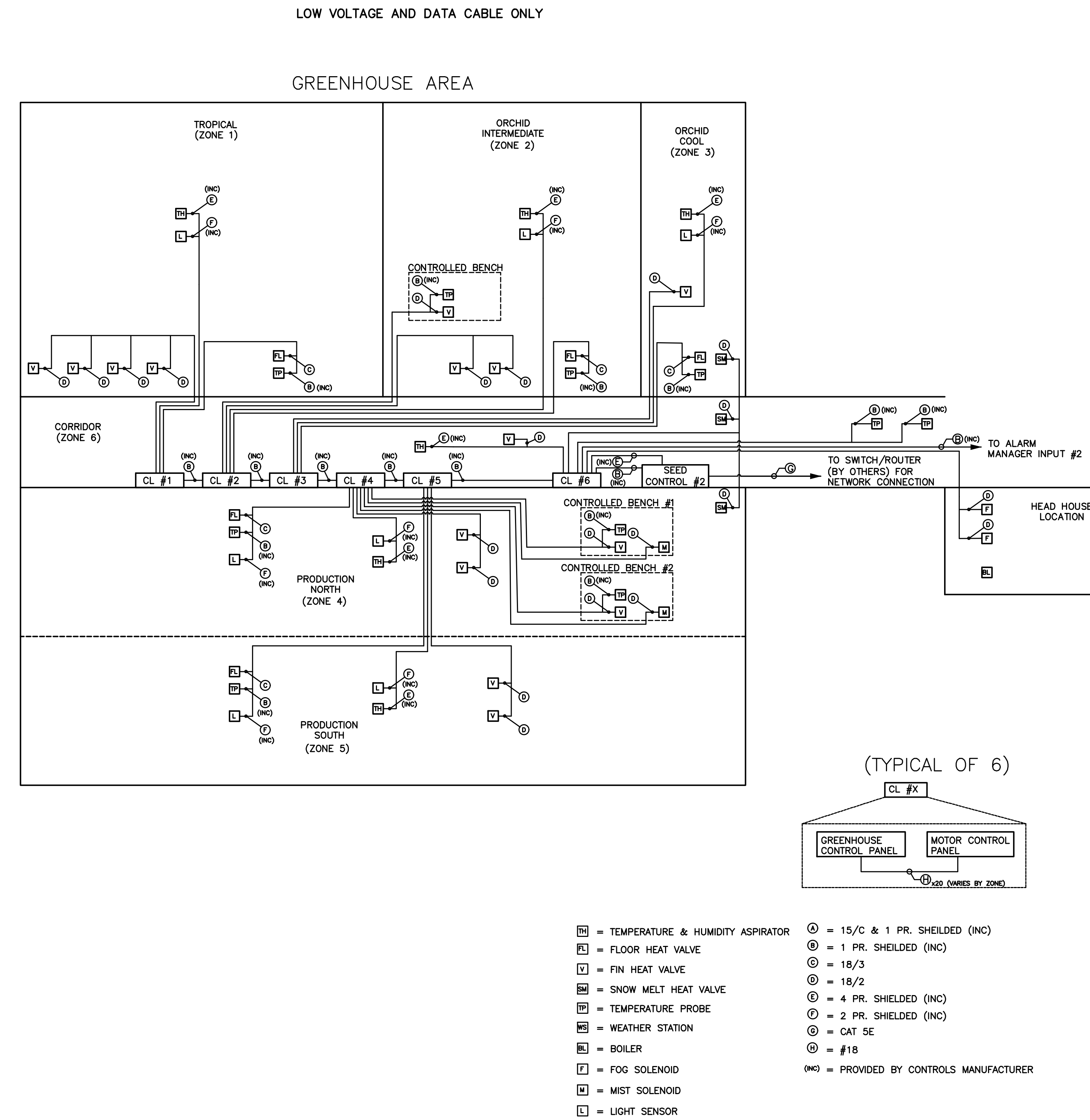
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	03-30-2018	70% CD PRICING ISSUE
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	05-04-2018	90% CD SUBMISSION
	06-01-2018	BID ISSUE
	06-04-2018	PERMIT ISSUE

PROJECT NO: 2017016
PROJECT PHASE: BID DOCUMENTS
DRAWN BY: MSR CHECKED BY: MSR

GREENHOUSE CONTROL (CORRIDOR)
EXHIBIT H
GH6.4

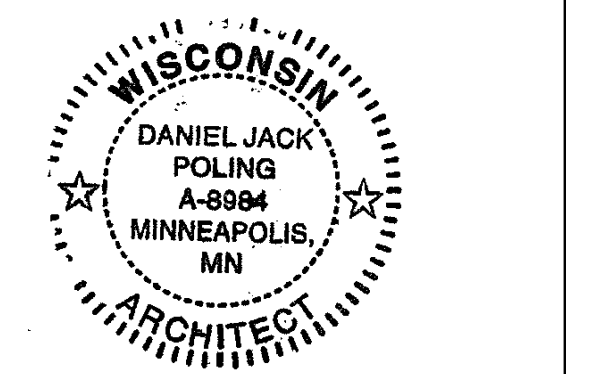
SIMPLIFIED GREENHOUSE INTERCONNECTION DIAGRAM

NOT TO SCALE



Olbrich Botanical Gardens Expansion Phase 1 BPW Project #8162 3330 Atwood Avenue Madison, WI 53704

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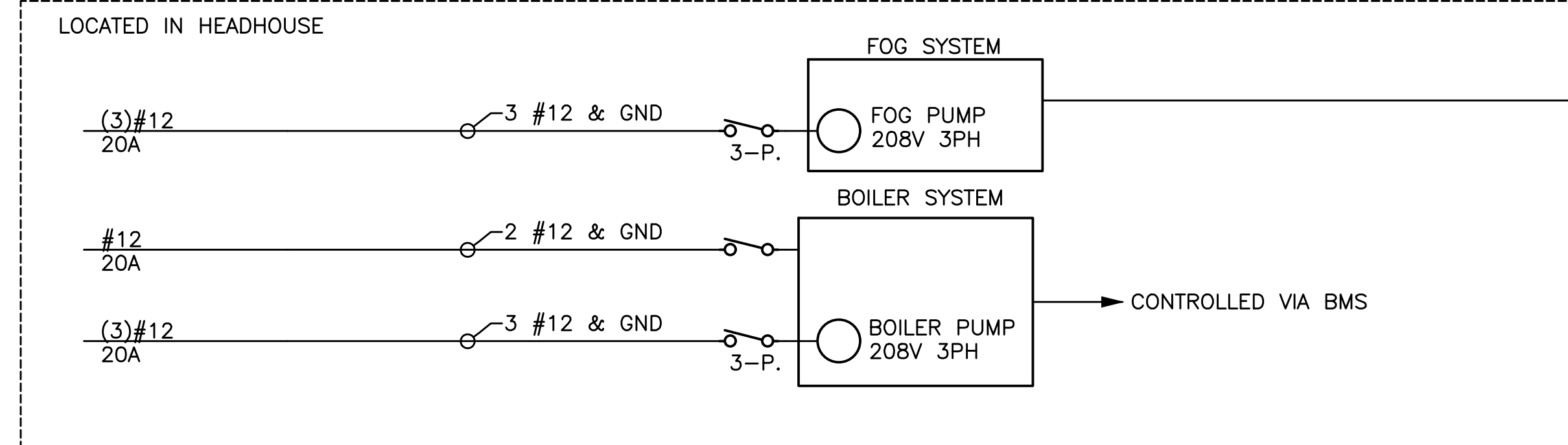
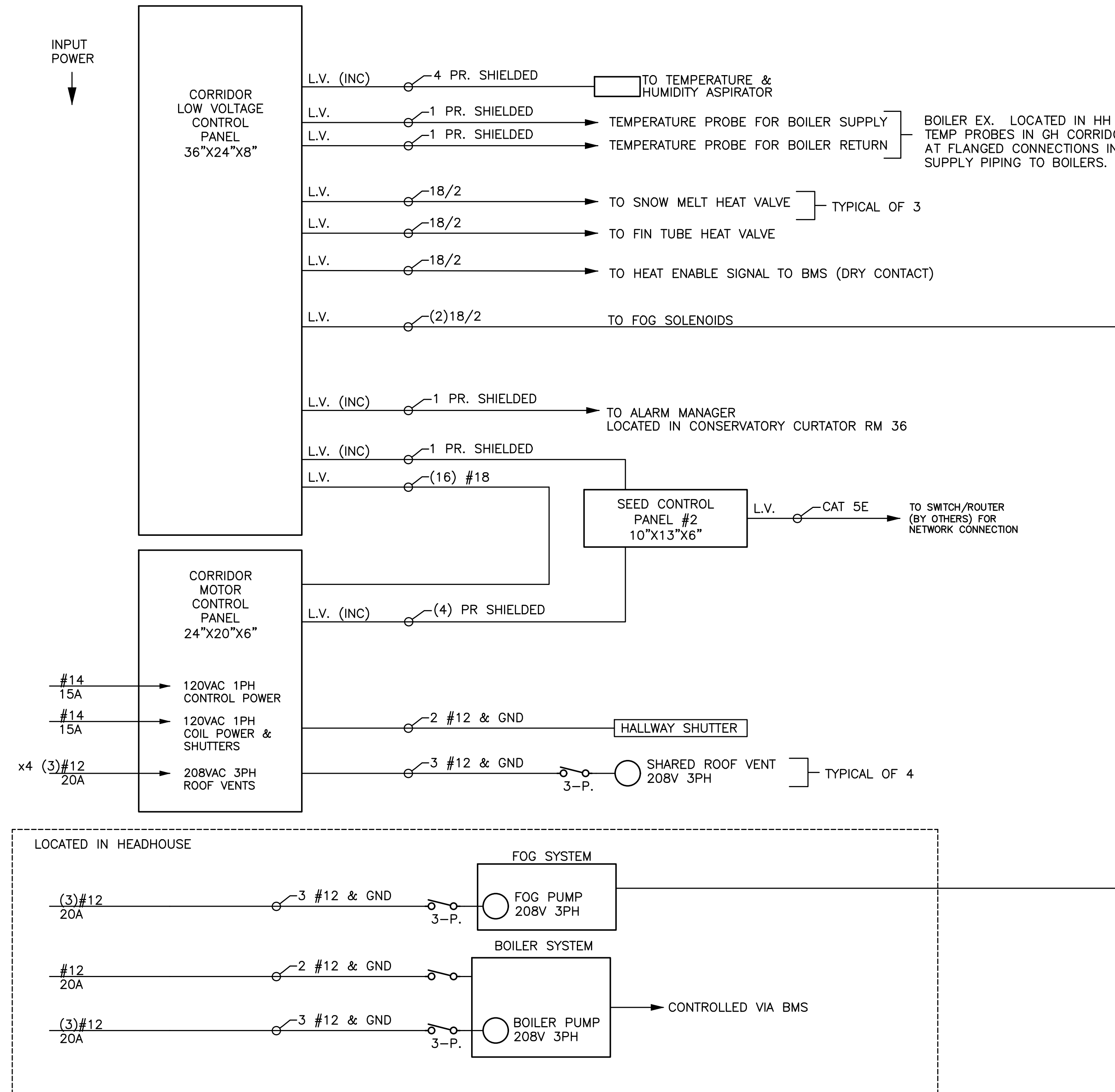
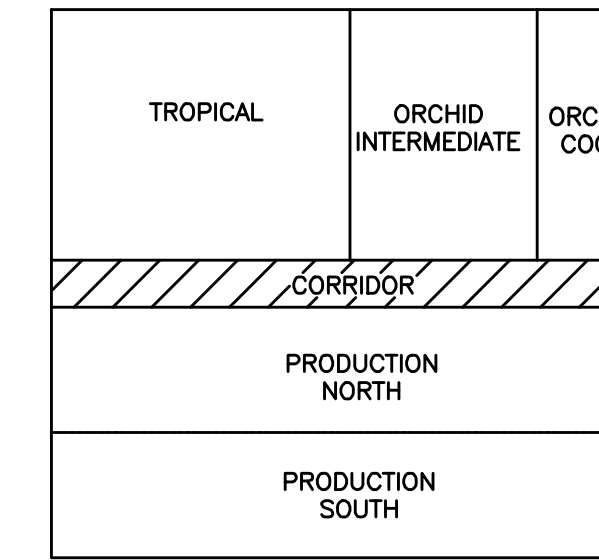
Signature: *Daniel Jack Poling*
Print Name: Jack Poling
Date: MAY 4, 2018 License No. A-8984

ISSUE	DATE	DESCRIPTION
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	12-08-2017	30% PRICING SET
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	01-17-2018	LEDC SUBMISSION
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	05-04-2018	90% CD SUBMISSION
	06-01-2018	BID ISSUE
	06-04-2018	PERMIT ISSUE

PROJECT NO. 2017016
PROJECT PHASE BID DOCUMENTS
DRAWN BY: MSR CHECKED BY: MSR
MSR MSR

GREENHOUSE CONTROL (INTERCONNECT) EXHIBIT H GH6.5

SIMPLIFIED ONE LINE POWER DIAGRAM
CORRIDOR AREA



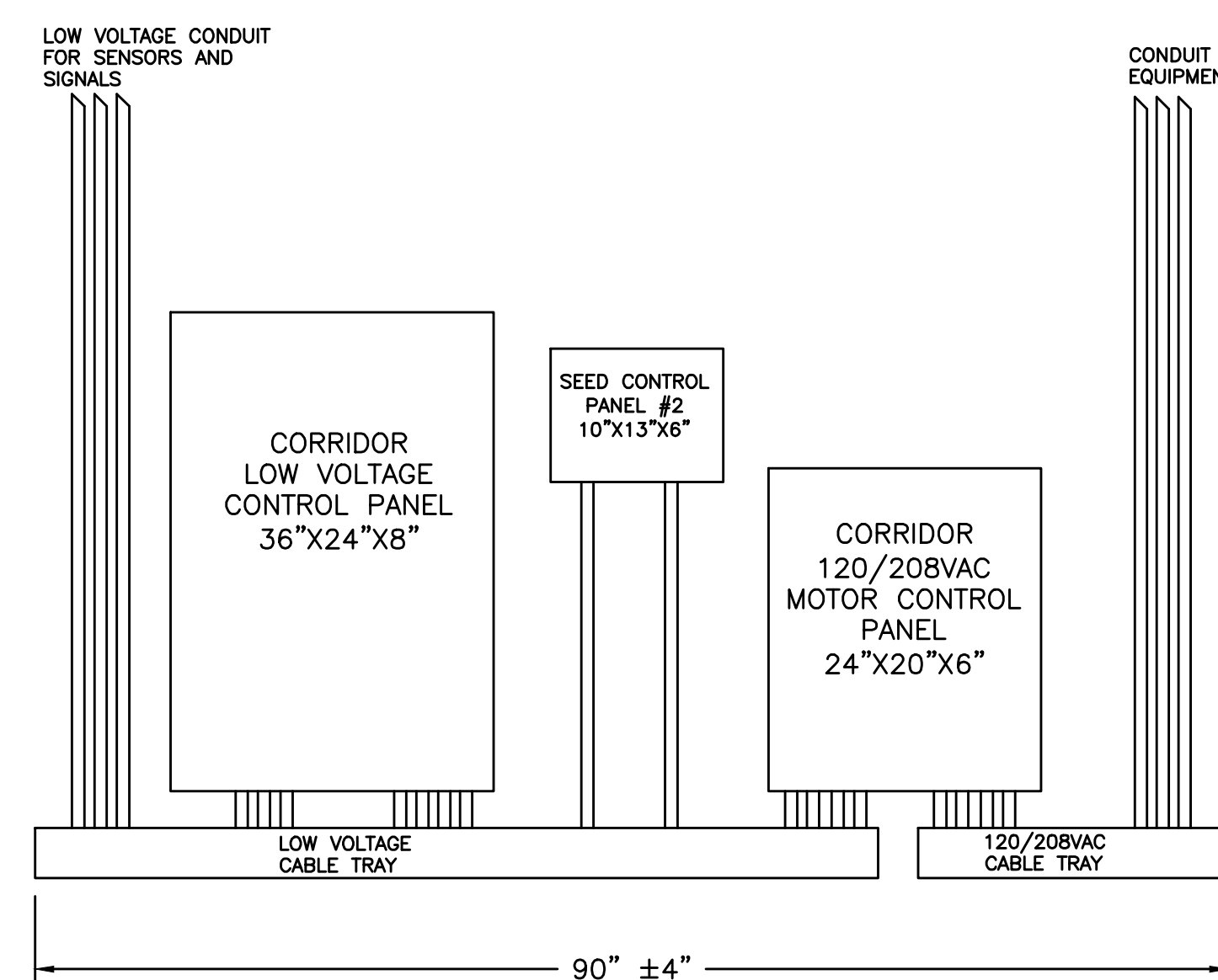
L.V. = LOW VOLTAGE
(INC) = CABLE PROVIDED BY CONTROLS COMPANY
D.P. = DOUBLE POLE DISCONNECT SWITCH
KT-4 = THREE POLE DISCONNECT SWITCH WITH THERMAL OVERLOAD

LOW VOLTAGE CONDUIT DESCRIPTION:

- 3/4" CONDUIT
- (1) 1PR SHIELDED - ALARM MANAGER
- (1) 1PR SHIELDED - SEED NETWORK
- 3/4" CONDUIT
- (1) 4PR SHIELDED - TEMP & RH ASPIRATOR
- 3/4" CONDUIT
- (2) 18/2 FOG SOLENOID ENABLES
- (1) 18/2 FOG PUMP ENABLE
- 3/4" CONDUIT
- (2) 1PR SHIELDED - TEMP PROBES
- (3) 18/2 SNOW MELT HEAT VALVES
- (1) 18/2 FIN HEAT VALVE(S)
- (1) 18/2 BOILER ENABLE

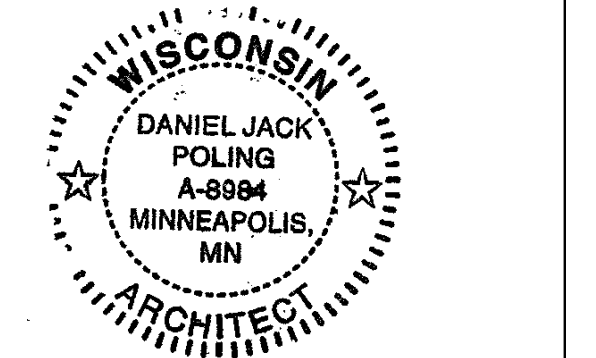
GREENHOUSE MOTOR CONTROL PANEL TO EQUIPMENT:

- 3/4" CONDUIT
- (3) #12 ROOF VENT #1
- (3) #12 ROOF VENT #2
- (1) #12 GROUND
- 3/4" CONDUIT
- (3) #12 ROOF VENT #3
- (3) #12 ROOF VENT #4
- (1) #12 GROUND
- 3/4" CONDUIT
- (1) #12 SHUTTERS
- (1) #12 NEUTRAL
- (1) #12 GROUND



Olbriich Botanical Gardens
Expansion Phase 1
BPW Project #8162
3330 Atwood Avenue
Madison, WI 53704

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Signature: *Jack Poling*
Print Name: Jack Poling
Date: MAY 4, 2018 License No.: A-8984

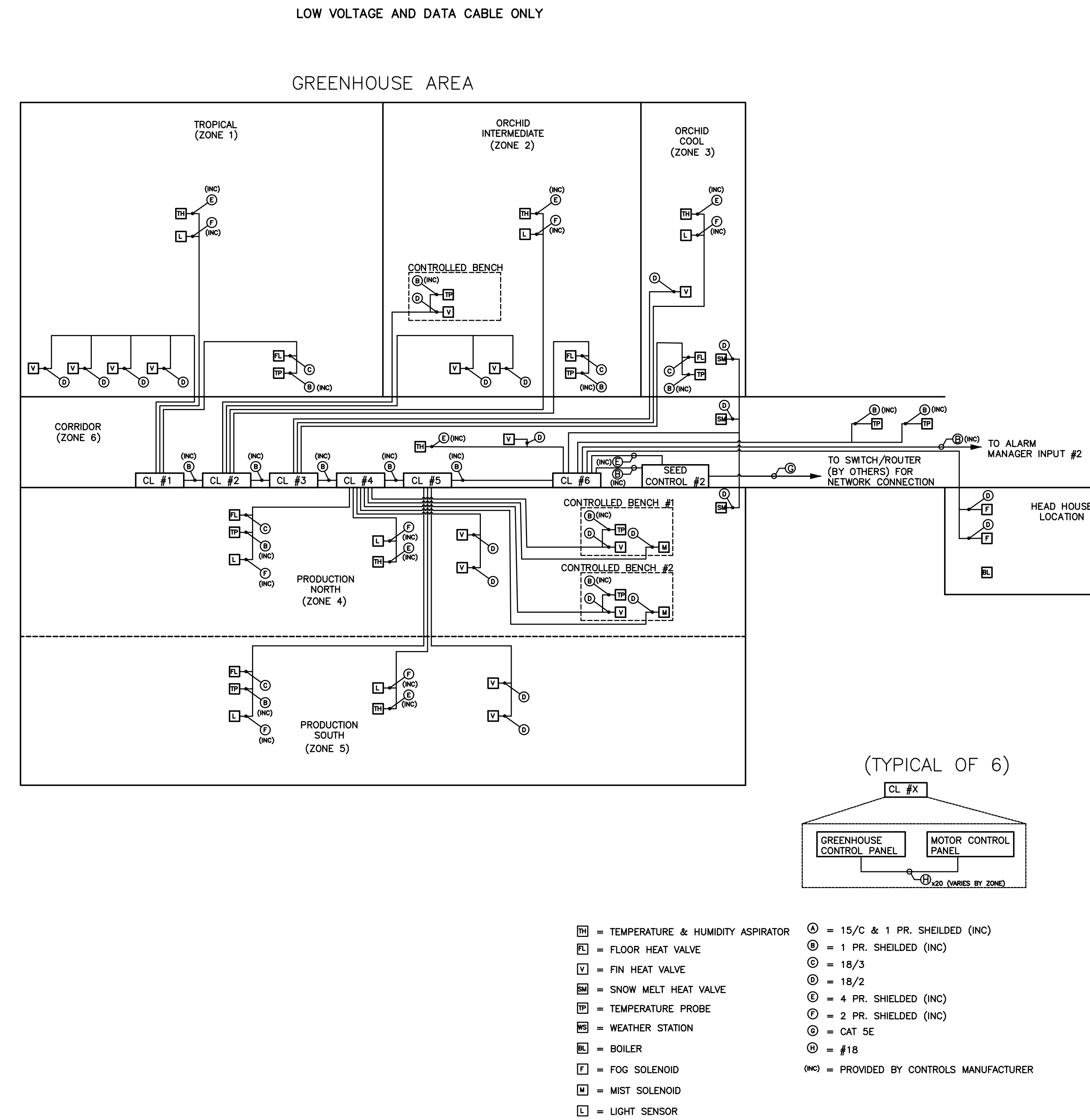
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	01-17-2018	20% SUBMISSION
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	05-04-2018	90% CD SUBMISSION
	06-01-2018	BID ISSUE
	06-04-2018	PERMIT ISSUE

PROJECT NO: 2017016
PROJECT PHASE: BID DOCUMENTS
DRAWN BY: MSR CHECKED BY: MSR

GREENHOUSE CONTROL (CORRIDOR)
EXHIBIT H
GH6.4

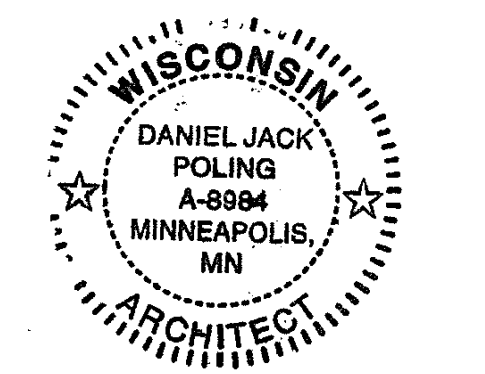
SIMPLIFIED GREENHOUSE INTERCONNECTION DIAGRAM

NOT TO SCALE



Olbrich Botanical Gardens Expansion Phase 1 BPW Project #8162 3330 Atwood Avenue Madison, WI 53704

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Signature: *Daniel Jack Poling*
Print Name: Jack Poling
Date: MAY 4, 2018 License No.: A-8984

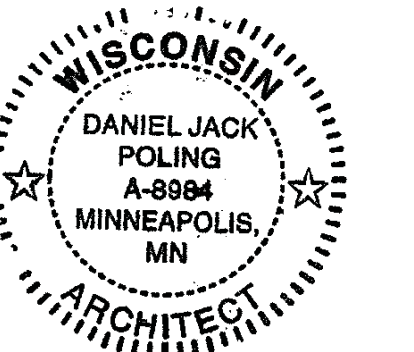
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	01-10-2018	DESIGN DEVELOPMENT SUBMISSION
	01-17-2018	LEDC SUBMISSION
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	05-04-2018	90% CD SUBMISSION
	06-01-2018	BID ISSUE
	06-04-2018	PERMIT ISSUE

PROJECT NO: 2017016
PROJECT PHASE: BID DOCUMENTS
DRAWN BY: MSR CHECKED BY: MSR

GREENHOUSE CONTROL (INTERCONNECT) EXHIBIT H GH6.5

**Olbrich Botanical Gardens
 Expansion Phase 1**
 BPW Project #8162
 3330 Atwood Avenue
 Madison, WI 53704

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 ARCHITECT SEAL



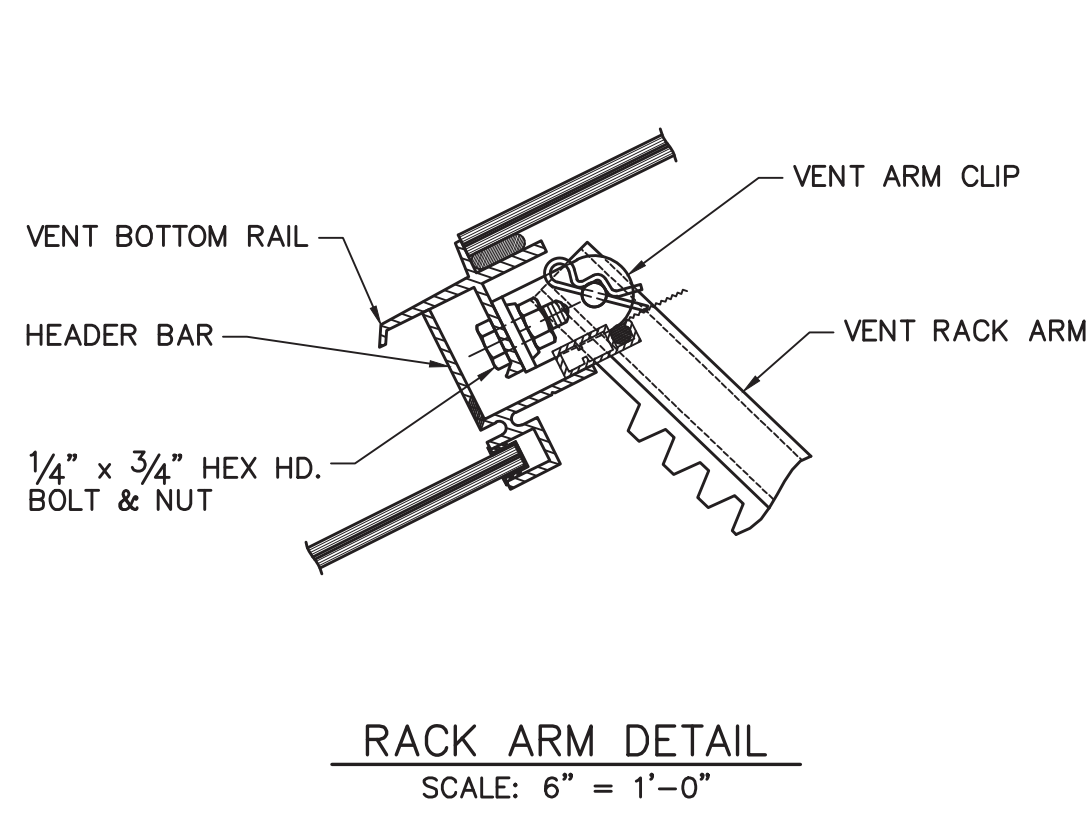
Signature: *Jack Poling*
 Print Name: Jack Poling
 Date: MAY 4, 2018 License No.: A-8984

ISSUE	DATE	DESCRIPTION
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	12.08.2017	CD PRICING SET
	01.10.2018	DESIGN DEVELOPMENT SUBMISSION
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	06.01.2018	BID ISSUE
	06.04.2018	PERMIT ISSUE

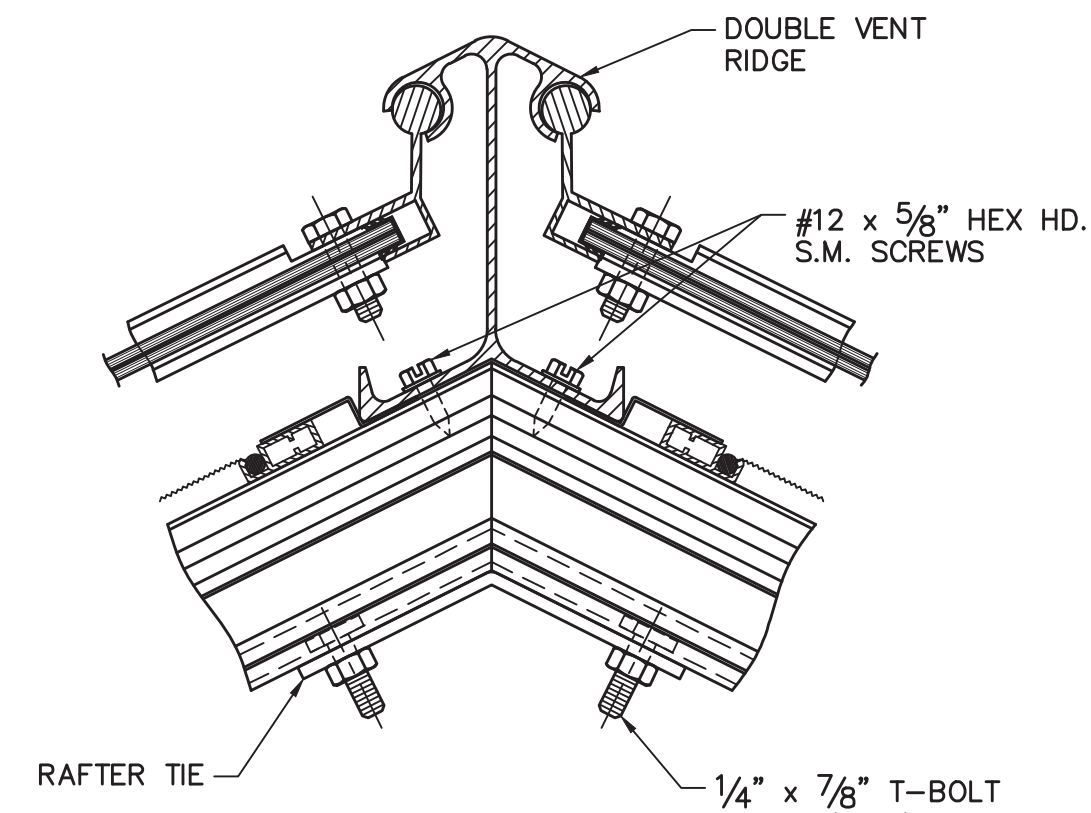
PROJECT NO. 2017016
 PROJECT PHASE BID DOCUMENTS
 DRAWN BY: TLB CHECKED BY: SW
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GREENHOUSE RIDGE SECTION

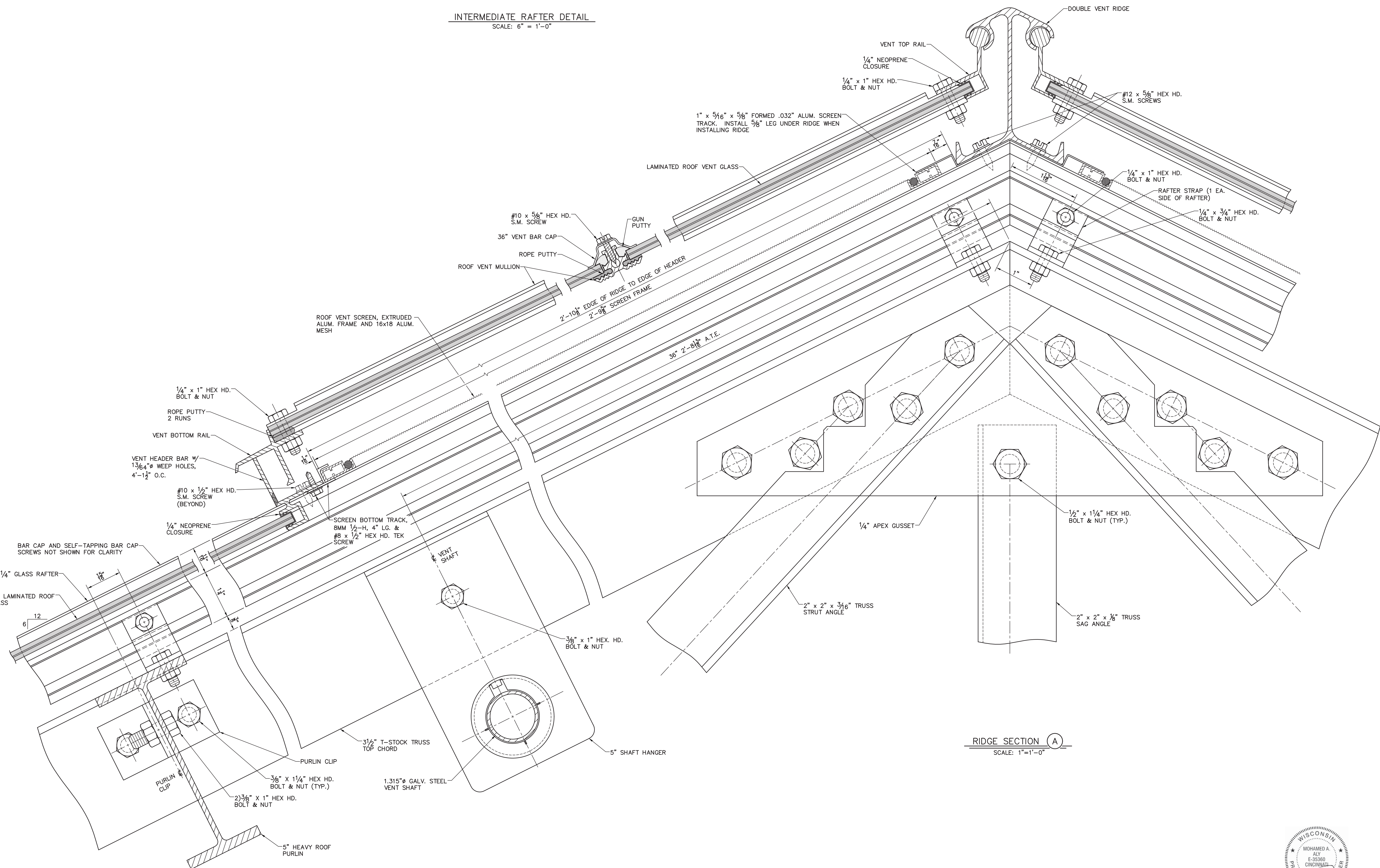
**EXHIBIT H
 GH7**



RACK ARM DETAIL
 SCALE: 6" = 1'-0"

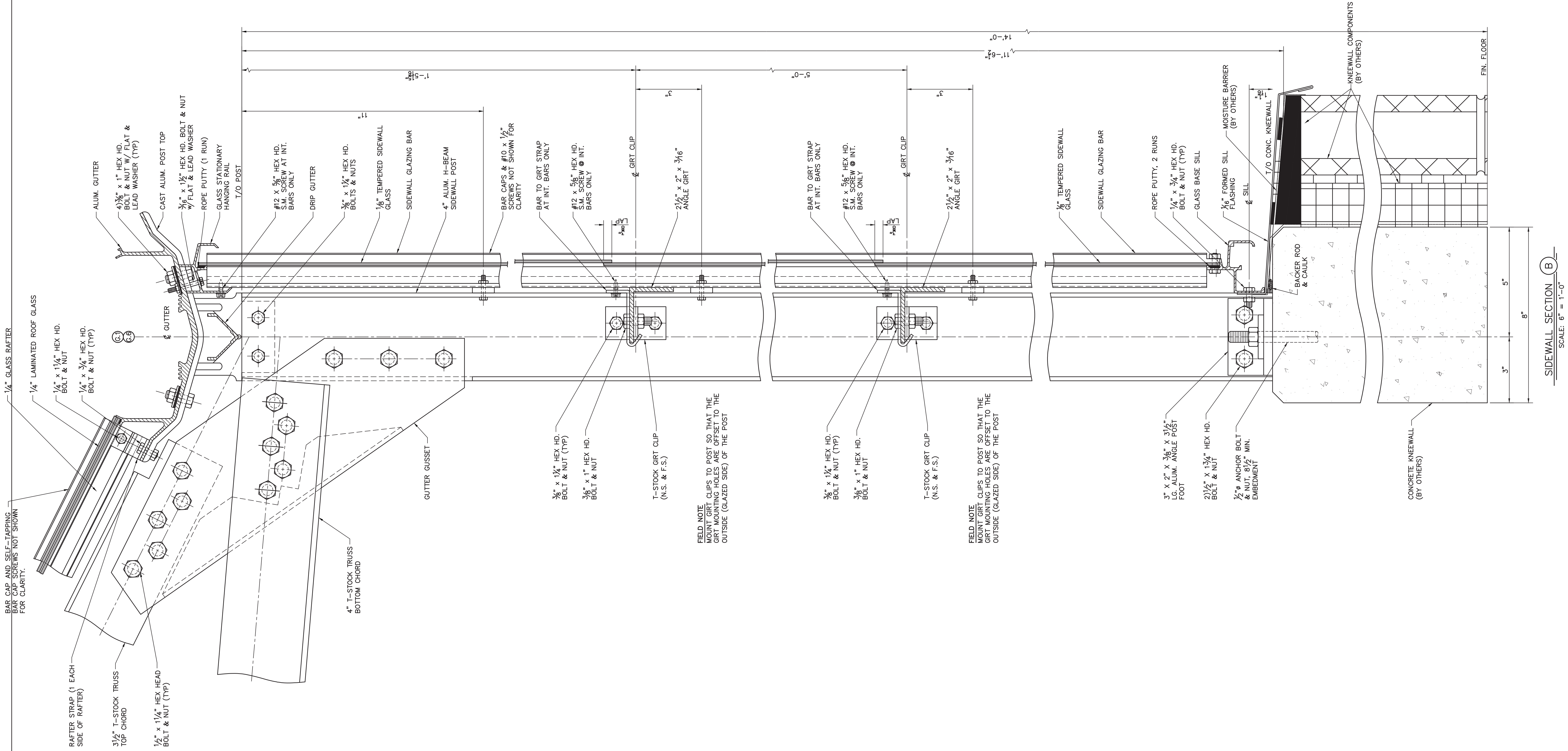


INTERMEDIATE RAFTER DETAIL
 SCALE: 6" = 1'-0"



RIDGE SECTION A
 SCALE: 1" = 1'-0"

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BAR CAP AND SELF-TAPPING SCREWS NOT SHOWN FOR CLARITY.

FIELD NOTE
MOUNT GIRT CLIPS TO POST SO THAT THE GIRT MOUNTING HOLES ARE OFFSET TO THE OUTSIDE (GLAZED SIDE) OF THE POST

FIELD NOTE
MOUNT GIRT CLIPS TO POST SO THAT THE GIRT MOUNTING HOLES ARE OFFSET TO THE OUTSIDE (GLAZED SIDE) OF THE POST

ENGINEERING NOTE:
ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY

SIDEWALL SECTION (B)
SCALE: 6" = 1'-0"

MSR 710 South 2nd Street, 8th Floor
Minneapolis, Minnesota 55401-2282
Architecture 612.375.0336 tel
Interiors and 612.342.2216 fax
Urban Design www.msrdesign.com

Civil Engineer
Vierbicher Associates, Inc.
999 Fourier Drive, Suite 201
Madison, WI 53717
608.826.0532 tel

Landscape Architect
Ken Sasaki Design, Inc.
303 South Paterson Street, Suite 1
Madison, WI 53703
608.251.3600 tel

Structural Engineer, Technology and AV
IMEG Corp.
1800 Deming Way, Suite 200
Middleton, WI 53562
608.223.9600 tel

MEP Engineer
MEP Associates, LLC
860 Blue Geranium Road, Suite 175
Eagan, MN 55121
651.379.9120 tel

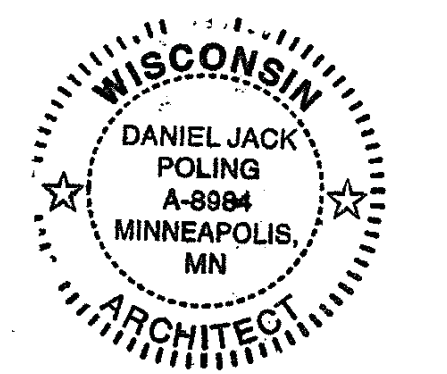
Fire Protection Engineer and Code Consultant
Summit Fire Consulting
575 Minnehaha Ave West
St. Paul, MN 55103
651.251.1880 tel

Greenhouse Design
Rough Brothers, Inc.
5513 Vine Street
Cincinnati, OH 45217
513.242.0310 tel

Olbrich Botanical Gardens Expansion Phase 1

BPW Project #8162
3330 Atwood Avenue
Madison, WI 53704

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ARCHITECT SEAL



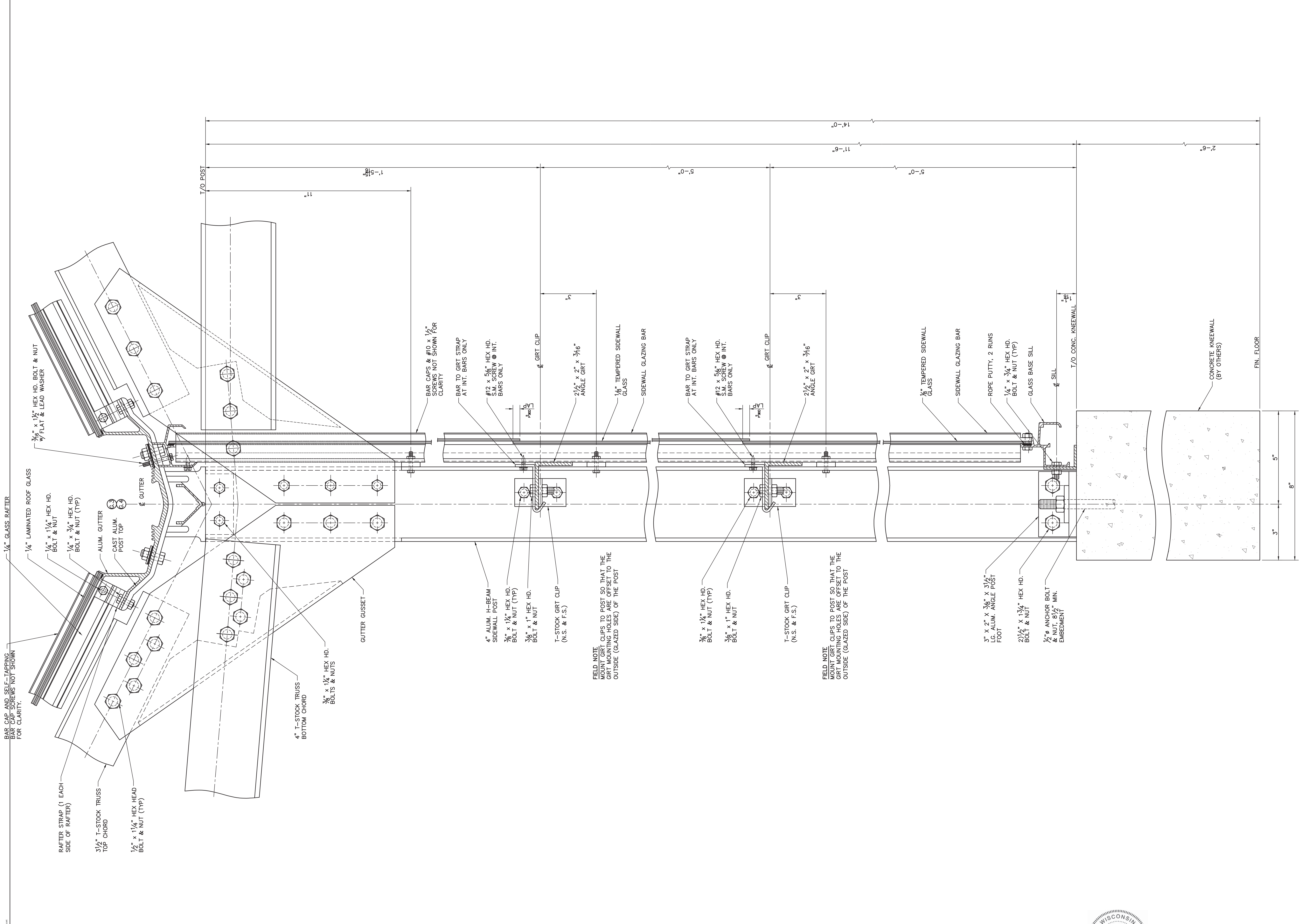
Signature: *Jack Poling*
Print Names: Jack Poling
Date: MAY 4, 2018 License No. A-8984

ISSUE	DATE	DESCRIPTION
MARK	09.29.2017	SCHEMATIC DESIGN SUBMISSION
	12.08.2017	CD PRICING SET
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	06.01.2018	BID ISSUE
	06.04.2018	PERMIT ISSUE

PROJECT NO. 2017016
PROJECT PHASE BID DOCUMENTS
DRAWN BY TLB CHECKED BY SW

TYPICAL GREENHOUSE SIDEWALL SECTION

EXHIBIT H
GH8



PARTITION SECTION (C)
SCALE: 8" = 1'-0"

BAR CAP AND SELF-TAPPING SCREWS NOT SHOWN FOR CLARITY.
 RAFTER STRAP (1 EACH SIDE OF RAFTER)
 3/2" T-STOCK TRUSS TOP CHORD
 1/2" x 1/4" HEX HEAD BOLT & NUT (TYP)
 1/4" LAMINATED ROOF GLASS
 1/4" x 1/4" HEX HD. BOLT & NUT
 1/2" x 3/4" HEX HD. BOLT & NUT (TYP)
 ALUM. GUTTER
 CAST ALUM. POST TOP
 GUTTER
 4" T-STOCK TRUSS BOTTOM CHORD
 3/8" x 1/4" HEX HD. BOLTS & NUTS
 GUTTER GUSSET
 4" ALUM. H-BEAM SIDEWALL POST
 3/4" x 1/2" HEX HD. BOLT & NUT (TYP)
 3/8" x 1" HEX HD. BOLT & NUT
 T-STOCK GIRTS (N.S. & F.S.)
 BAR CAPS & #10 x 1/2" SCREWS NOT SHOWN FOR CLARITY
 BAR TO GIRT STRAP AT INT. BARS ONLY
 #12 x 5/8" HEX HD. S.M. SCREW @ INT. BARS ONLY
 2 1/2" x 2" x 3/16" ANGLE GIRT
 1/4" TEMPERED SIDEWALL GLASS
 SIDEWALL GLAZING BAR
 BAR TO GIRT STRAP AT INT. BARS ONLY
 #12 x 5/8" HEX HD. S.M. SCREW @ INT. BARS ONLY
 2 1/2" x 2" x 3/16" ANGLE GIRT
 1/4" TEMPERED SIDEWALL GLASS
 SIDEWALL GLAZING BAR
 ROPE PUTTY, 2 RUNS
 1/4" x 3/4" HEX HD. BOLT & NUT (TYP)
 GLASS BASE SILL
 T/O CONG. KNEEWALL
 SILL
 CONCRETE KNEEWALL (BY OTHERS)
 FIN. FLOOR

FIELD NOTE:
GIRT CLIPS TO POST SO THAT THE GIRT MOUNTING HOLES ARE OFFSET TO THE OUTSIDE (GLAZED SIDE) OF THE POST

FIELD NOTE:
MOUNT GIRT CLIPS TO POST SO THAT THE GIRT MOUNTING HOLES ARE OFFSET TO THE OUTSIDE (GLAZED SIDE) OF THE POST



ENGINEERING NOTE:
ENGINEER'S SEAL APPLIES TO DESIGN OF STRUCTURAL COMPONENTS ONLY.

MSR 710 South 2nd Street, 8th Floor
Minneapolis, Minnesota 55401-2282
Architecture 612.375.0336 tel
Interiors and 612.342.2216 fax
Urban Design www.msrdesign.com

Civil Engineer
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608.826.0532 tel

Landscape Architect
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608.251.3600 tel

Structural Engineer, Technology and AV
IMEG Corp.
1800 Deming Way, Suite 200
Middleton, WI 53562
608.223.9600 tel

MEP Engineer
MEP Associates, LLC
860 Blue Genitan Road, Suite 175
Eagan, MN 55121
651.379.9120 tel

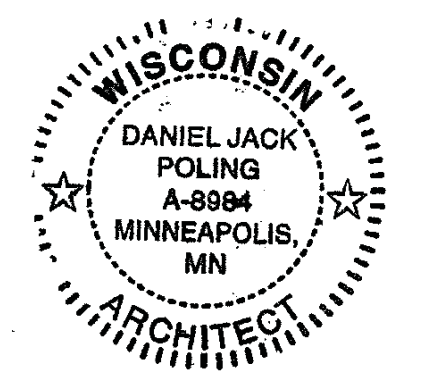
Fire Protection Engineer and Code Consultant
Summit Fire Consulting
575 Minnehaha Ave West
St. Paul, MN 55103
651.251.1880 tel

Greenhouse Design
Rough Brothers, Inc.
5513 Vine Street
Cincinnati, OH 45217
513.242.0310 tel

Olbrich Botanical Gardens Expansion Phase 1

BPW Project #8162
3330 Atwood Avenue
Madison, WI 53704

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the Laws of the State of Wisconsin.
ARCHITECT SEAL



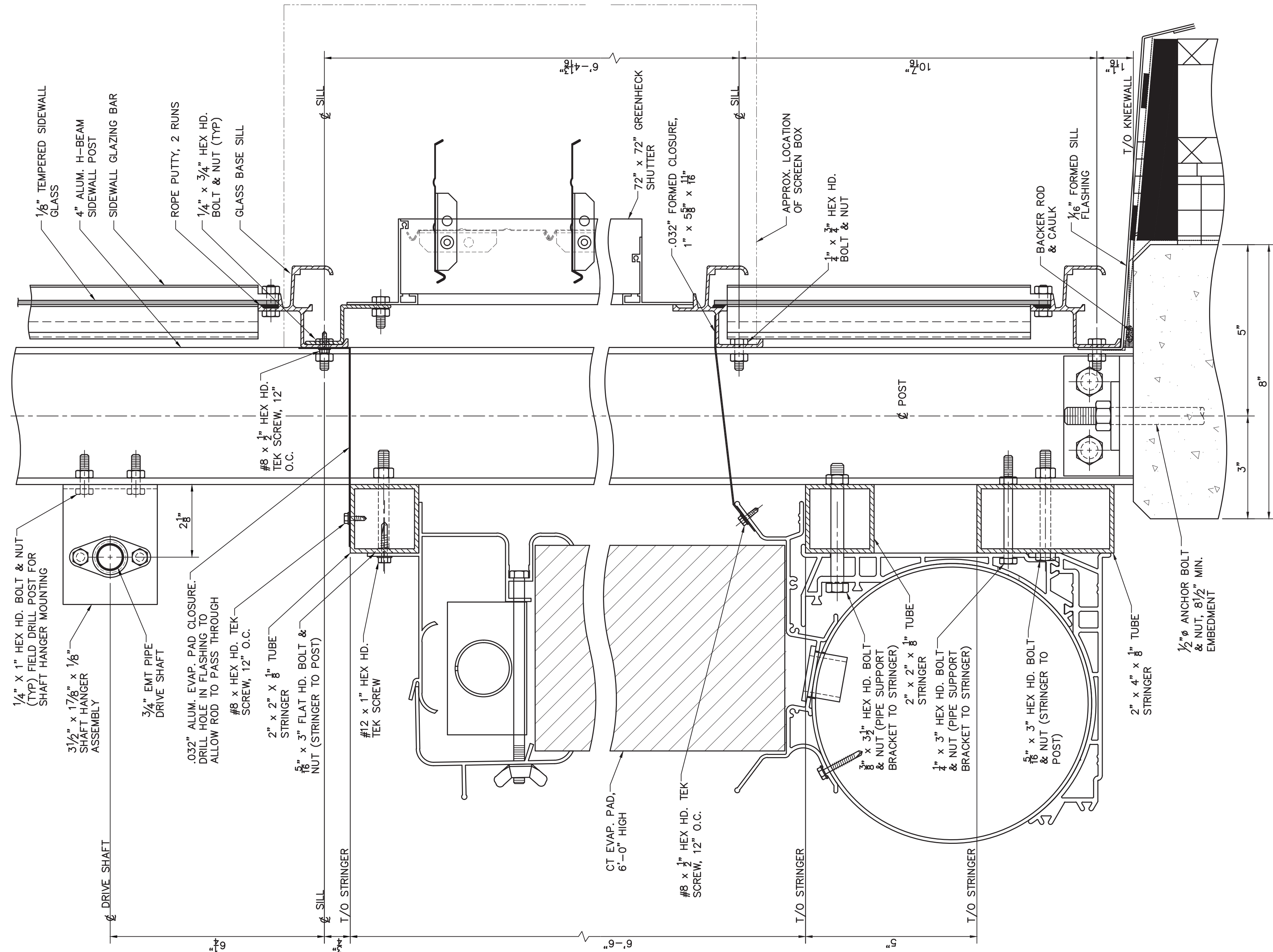
Signature: *Daniel Jack Poling*
Print Names: Jack Poling
Date: MAY 4, 2018 License No. A-8994

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	12-08-2017	CD PRICING SET
	01-10-2018	DESIGN DEVELOPMENT SUBMISSION
	01-17-2018	UDC SUBMISSION
	03-30-2018	70% CD PRICING ISSUE
	04-08-2018	PARKING LOT AND SITE PLAN SUBMISSION
	05-04-2018	90% CD SUBMISSION
	06-01-2018	BID ISSUE
	06-04-2018	PERMIT ISSUE

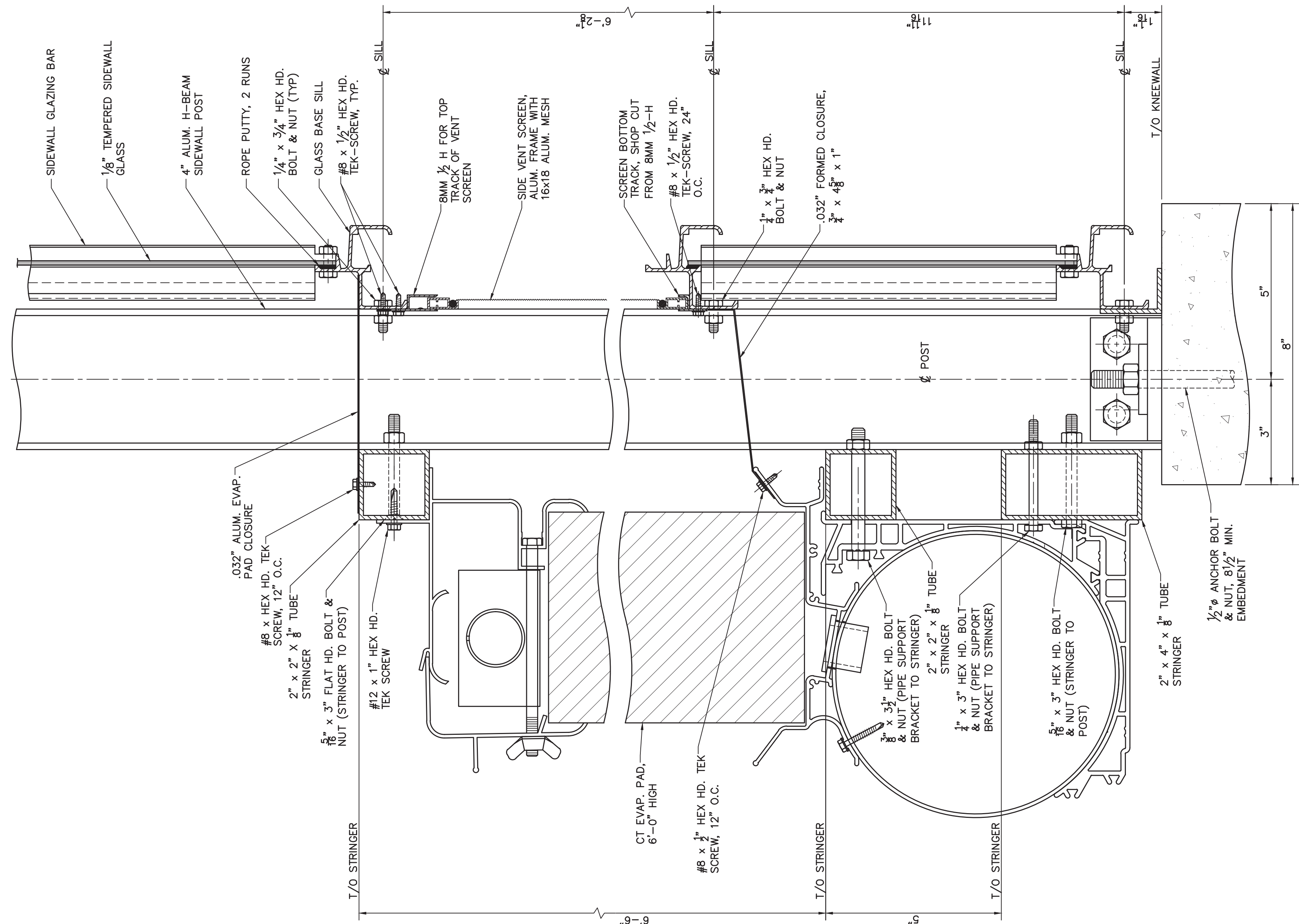
PROJECT NO. 2017016
PROJECT PHASE BID DOCUMENTS
DRAWN BY: TLB CHECKED BY: SW

TYPICAL GREENHOUSE PARTITION SECTION

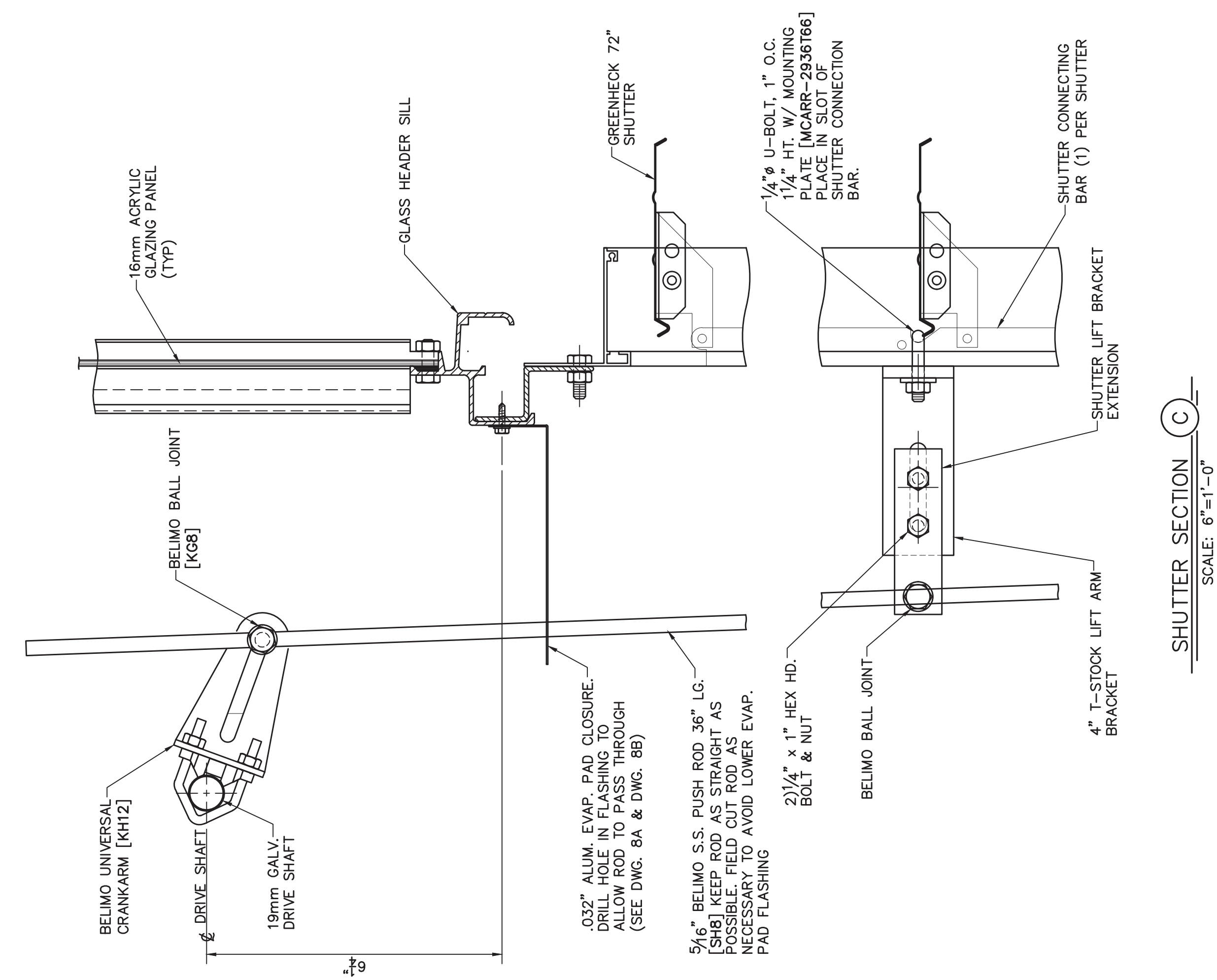
EXHIBIT H GH8.1



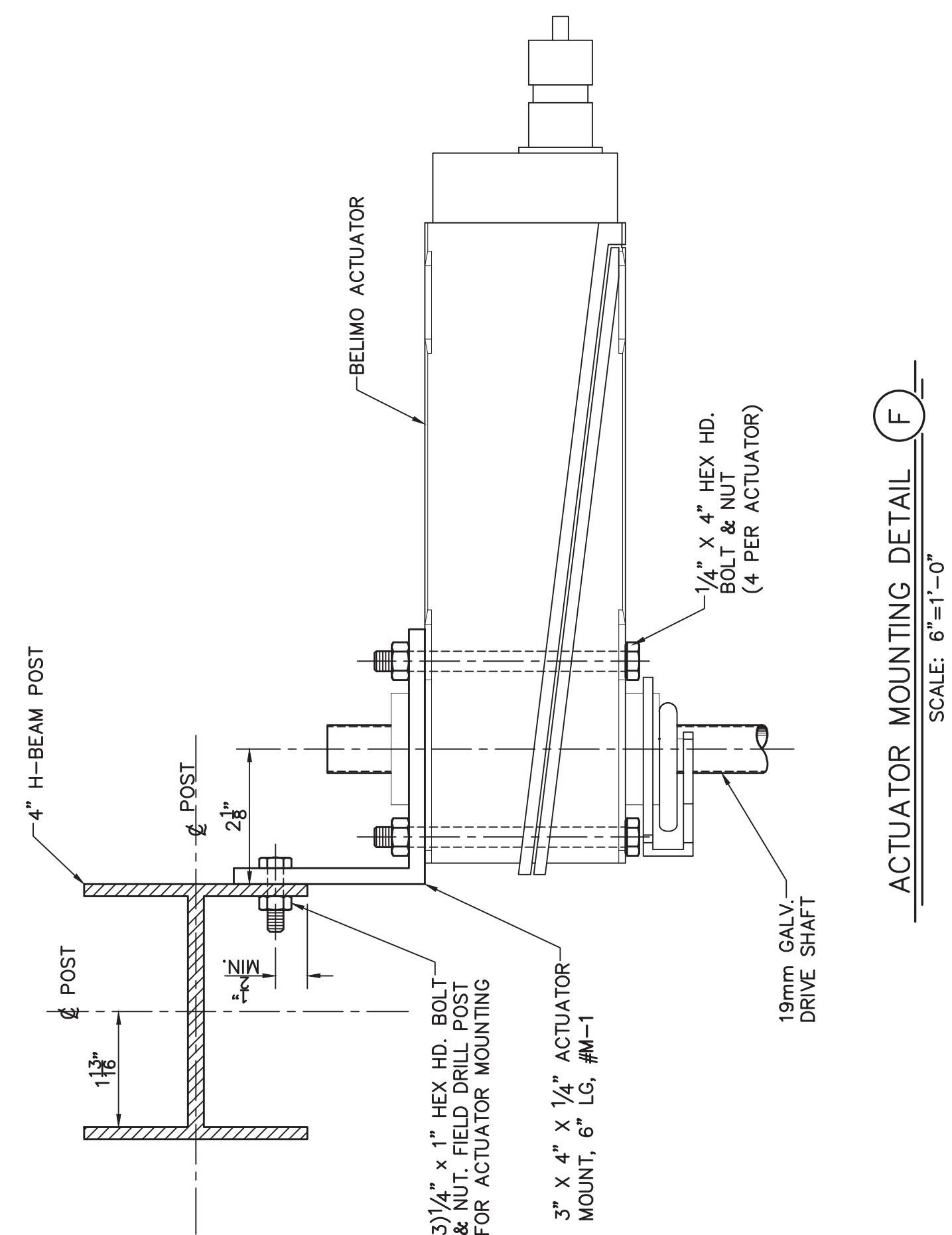
EVAPORATIVE PAD SECTION D
SCALE: 6"=1'-0"
AT EXTERIOR GABLE



EVAPORATIVE PAD SECTION E
SCALE: 6"=1'-0"
AT INTERIOR SIDEWALL PARTITION



SHUTTER SECTION C
SCALE: 6"=1'-0"



ACTUATOR MOUNTING DETAIL F
SCALE: 6"=1'-0"

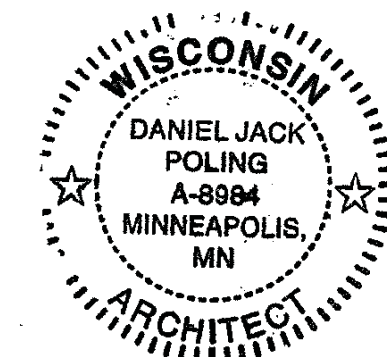
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Olbrich Botanical Gardens Expansion Phase 1

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3330 Atwood Avenue
Madison, WI 53704

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Signature: *Daniel Poling*
Print Name: Jack Poling
Date: MAY 4, 2018 License No.: A-8984

ISSUE	DATE	DESCRIPTION
	09-23-2017	SCHEMATIC DESIGN SUBMISSION
	12-08-2017	CD PRICING SET
	01-10-2018	DESIGN DEVELOPMENT SUBMISSION
	01-17-2018	JDC SUBMISSION
	03-30-2018	70% CD PRICING ISSUE
	04-08-2018	PARKING LOT AND SITE PLAN SUBMISSION
	05-04-2018	90% CD SUBMISSION
	06-01-2018	BD ISSUE
	08-04-2018	PERMIT ISSUE

PROJECT NO: 2017016
BID DOCUMENTS
DRAWN BY: TLB
CHECKED BY: SW

TYPICAL GREENHOUSE COOL CELL DETAILS

**EXHIBIT H
GH8.2**

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andscape Architect
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MEP Engineer
MEP Associates, LLC

980 Blue Garden Road, Suite 175
Eagan, MN 55121
651.379.9120 tel

Fire Protection Engineer and Code Consultant
Summit Fire Consulting

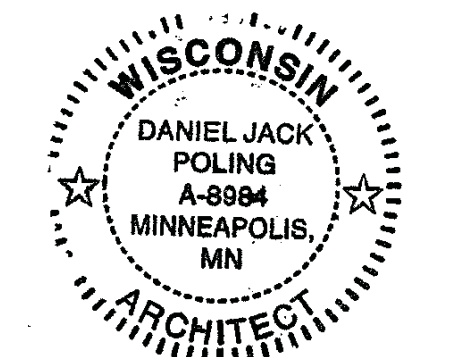
575 Minnehaha Ave West
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651.251.1880 tel

Greenhouse Design
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Cincinnati, OH 45217
513.242.0310 tel

**Olbrich Botanical Gardens
 Expansion Phase 1**
 BPW Project #8162
 3330 Atwood Avenue
 Madison, WI 53704

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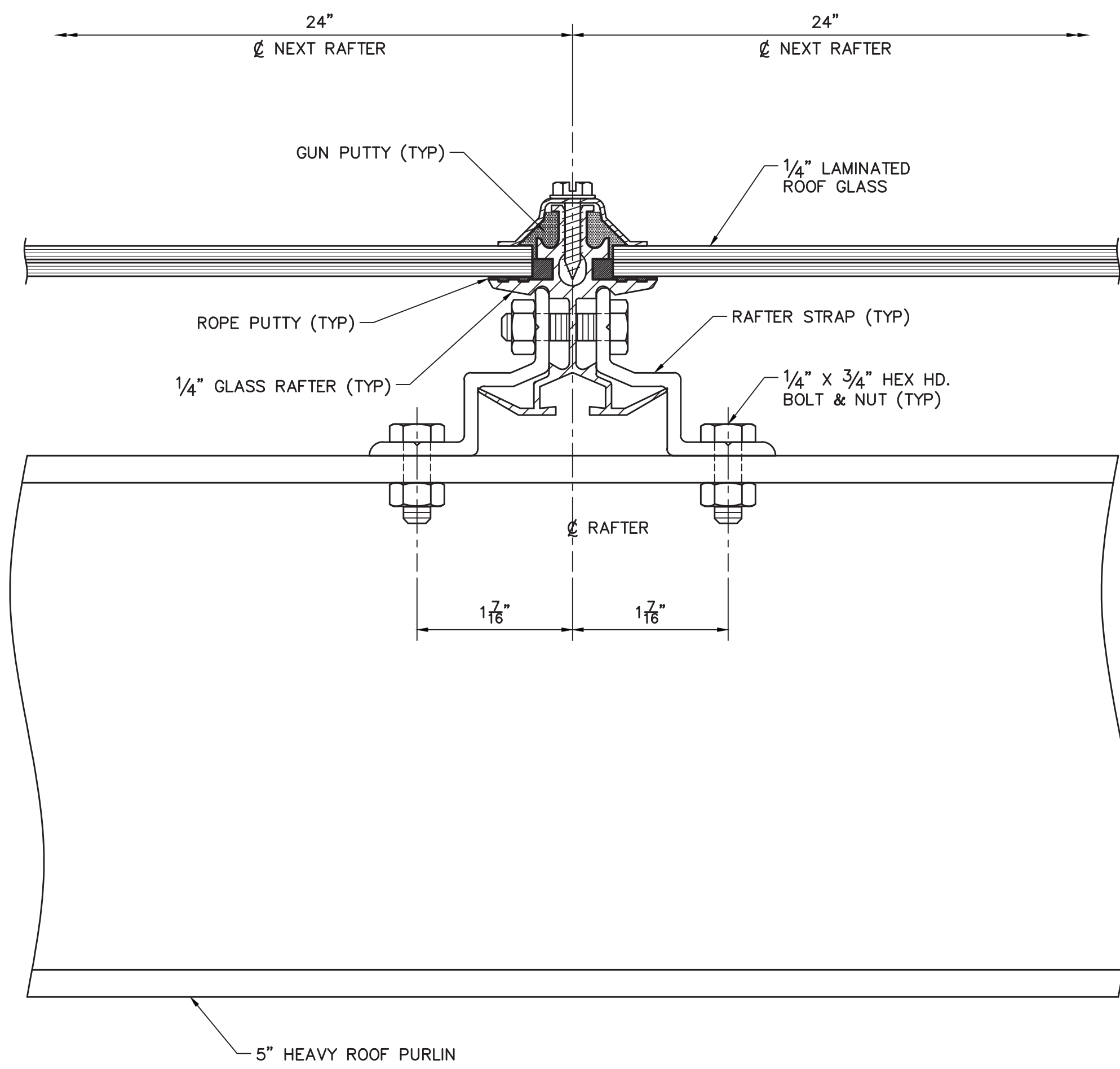
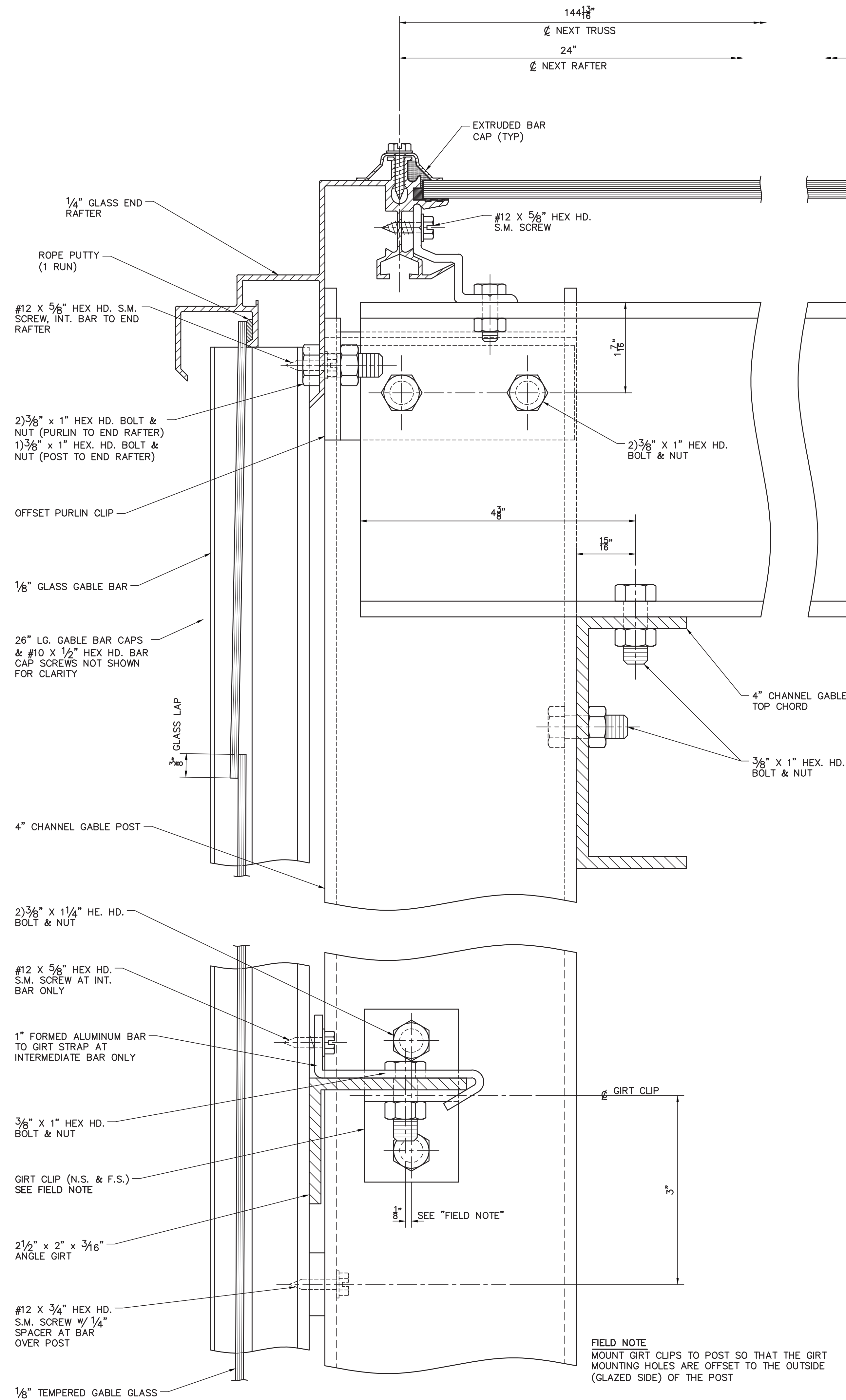
Signature: *[Signature]*
 Print Name: Jack Poling
 Date: MAY 4, 2018 License No.: A-8984

ISSUE	DATE	DESCRIPTION
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	12.08.2017	DD PRICING SET
	01.10.2018	DESIGN DEVELOPMENT SUBMISSION
	01.17.2018	IFDC SUBMISSION
	03.30.2018	70% CD PRICING ISSUE
	04.06.2018	PARKING LOT AND SITE PLAN SUBMISSION
	05.04.2018	90% CD SUBMISSION
	06.01.2018	BID ISSUE
	06.04.2018	PERMIT ISSUE

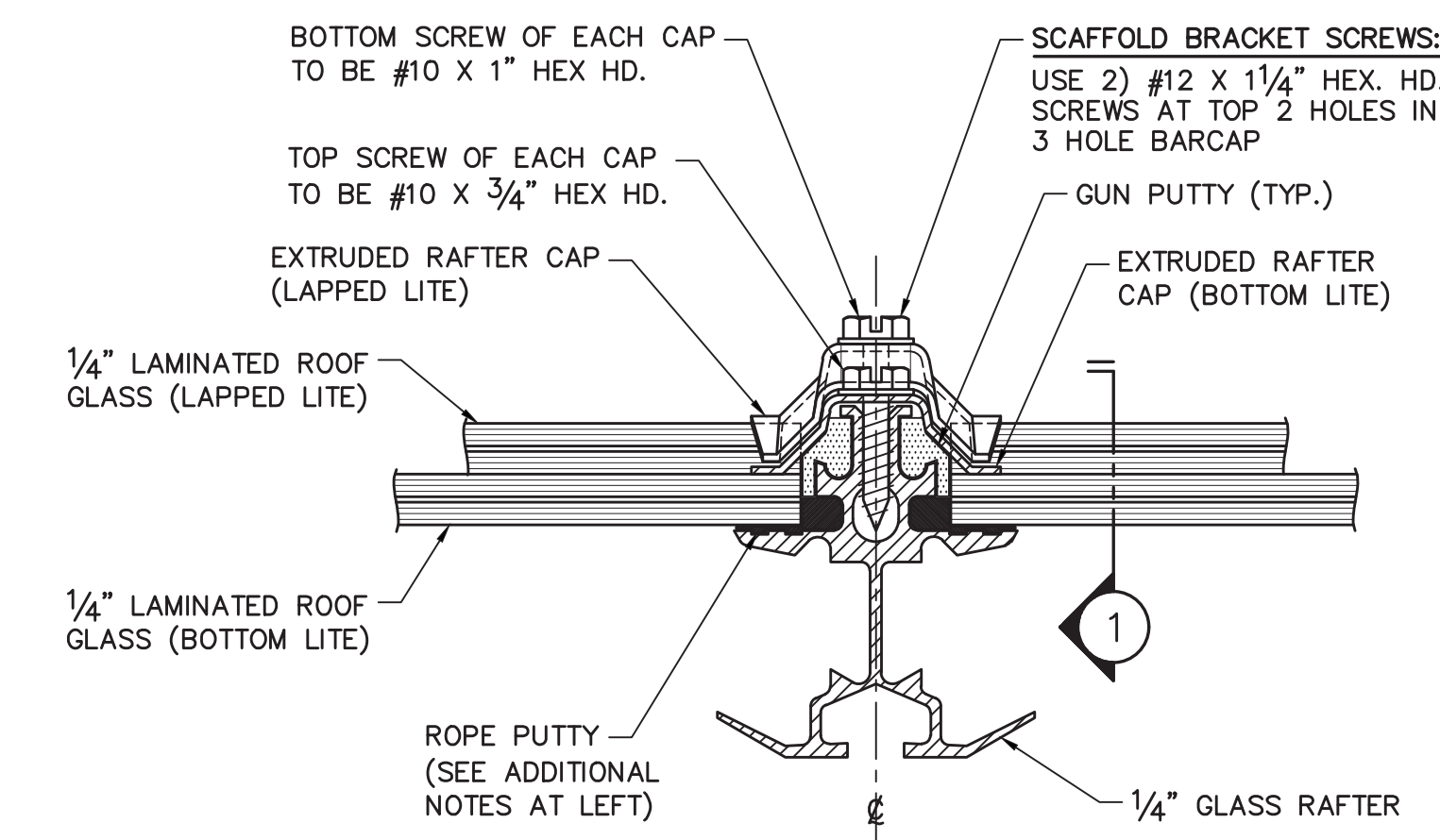
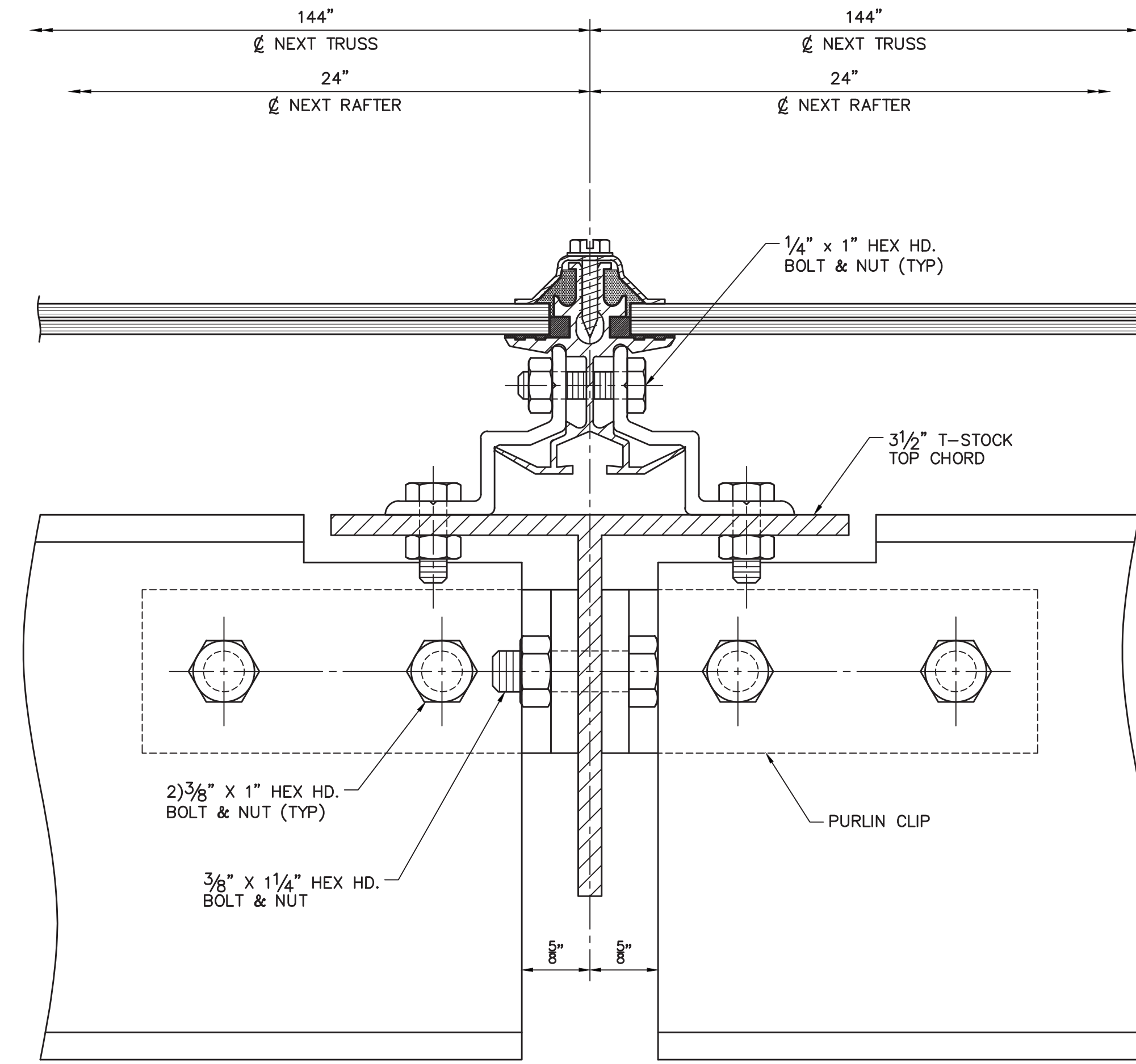
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 PROJECT PHASE BID DOCUMENTS
 DRAWN BY: TLB CHECKED BY: SW
Drawing 2017 Copyright Meyer, Seltzer & Robinson, Ltd.

**GREENHOUSE
 ROOF TO GABLE
 SECTION**

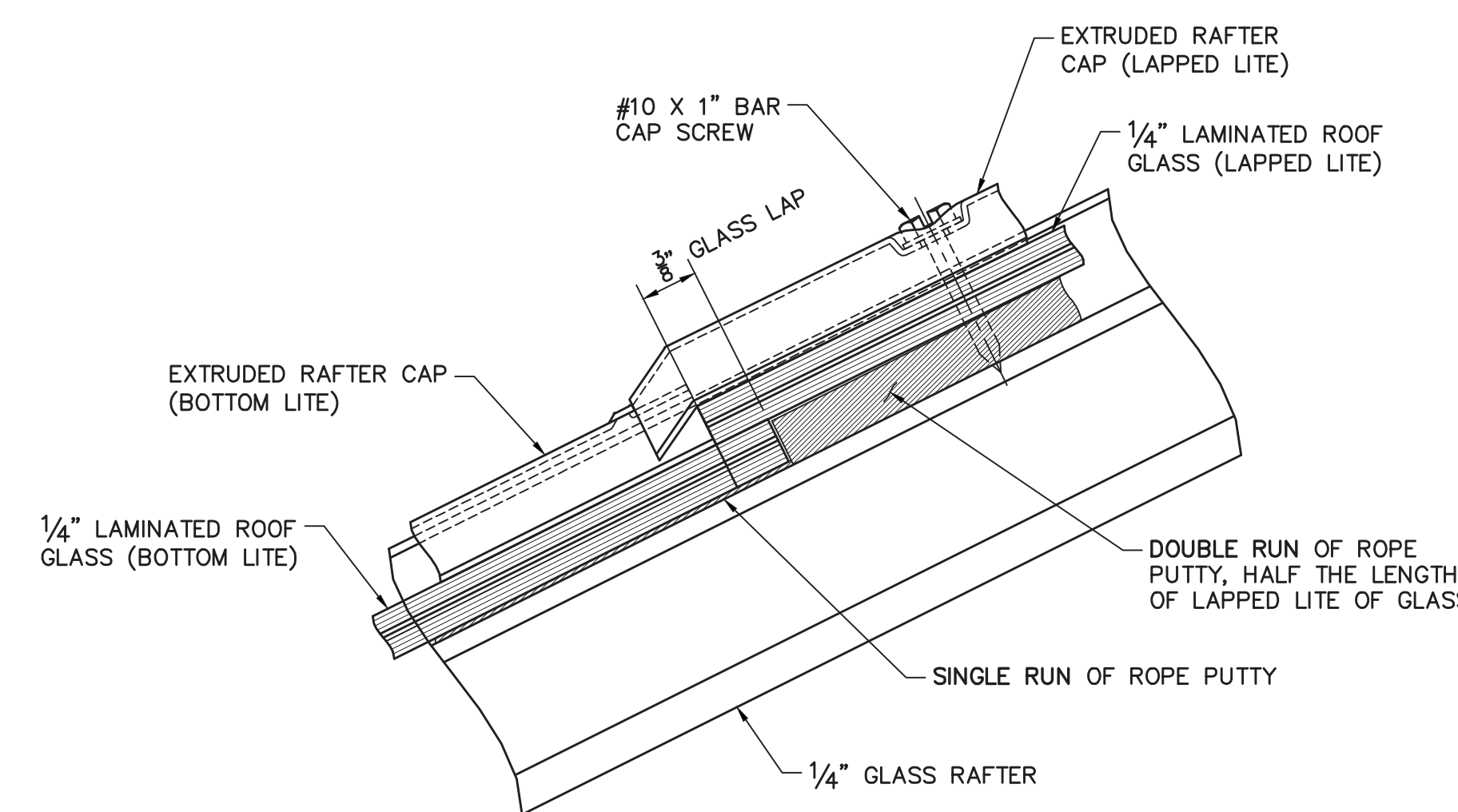
EXHIBIT H
GH9



ROOF TO GABLE SECTION (D)
 SCALE: FULL



SECTION AT ROOF GLASS LAP (B)
 SCALE: FULL (LKG UP SLOPE)

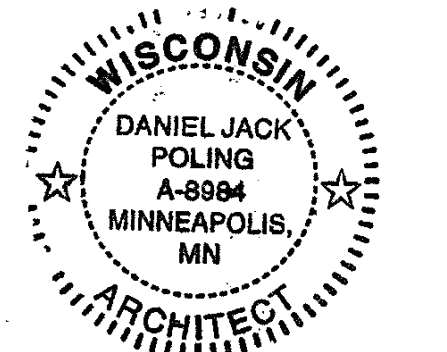


SECTION 1
 SCALE: FULL



**Olbrich Botanical Gardens
 Expansion Phase 1**
 BPW Project #8162
 3330 Atwood Avenue
 Madison, WI 53704

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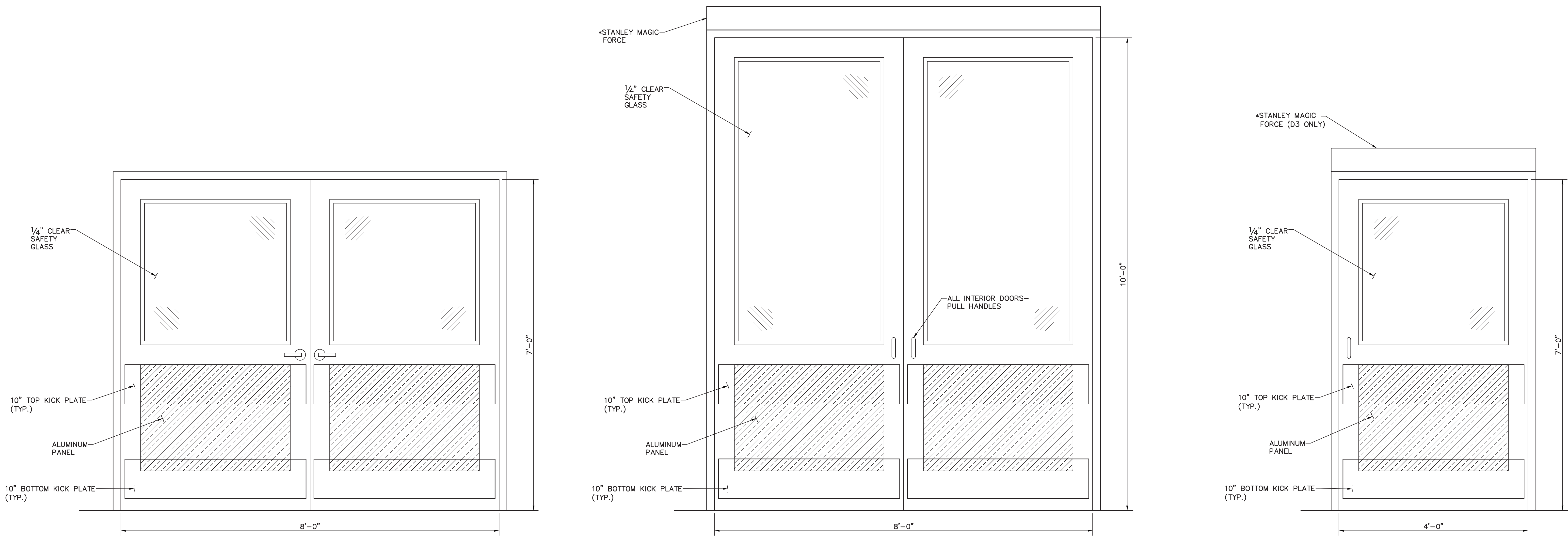
Signature: *Daniel Jack Poling*
 Print Name: Jack Poling
 Date: MAY 4, 2018 License No.: A-8984

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	05.04.2018	90% CD SUBMISSION
	06.01.2018	BID ISSUE
	06.04.2018	PERMIT ISSUE

PROJECT NO. 2017016
 PROJECT PHASE BID DOCUMENTS
 DRAWN BY: TLB CHECKED BY: SW

**GREENHOUSE
 DOOR SCHEDULE**

**EXHIBIT H
 GH10**



DOOR ELEVATION (D1)
 WEST CORRIDOR ENTRY DOOR
 SCALE 1" = 1'-0"

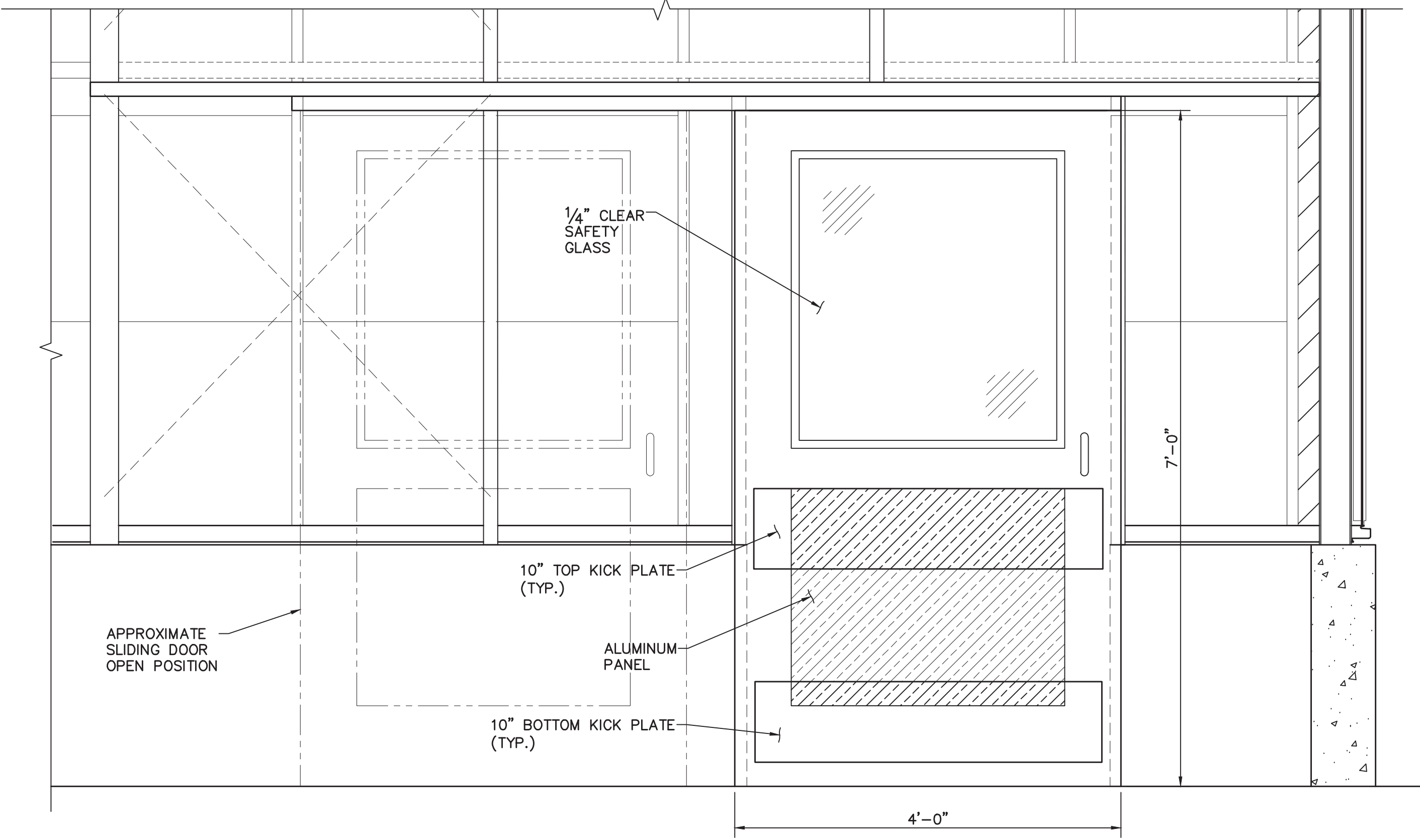
DOOR ELEVATION (D2)
 TROPICAL G'RISE, CORRIDOR ENTRY DOOR
 SCALE 1" = 1'-0"

DOOR ELEVATION (D3)
 TYPICAL G'RISE, ZONE INTERIOR DOOR
 SCALE 1" = 1'-0"

DOOR ELEVATION (D4)
 TYPICAL G'RISE, ZONE EXTERIOR DOOR
 SCALE 1" = 1'-0"

ID	QTY	DESCRIPTION	HARDWARE
D1	1	(2) 4'-0" X 7'-0" ALUMINUM HALF PANEL DOOR w/ 1/4" CLEAR TEMPERED UPPER PANEL LITE AND 1" ALUMINUM INSULATED SMOOTH FINISH LOWER PANEL. DOOR FINISH TO BE CLEAR ANODIZED.	HINGES: STD. SS BUTT HINGES LOCK: SCHLAGE GR.1 MORTISE L SERIES L9453 626 (LATCH & DEADBOLT, KEY OPERATED FROM OUTSIDE, 6 PIN CYLINDERS) CLOSER: LCN 4040XP w/ HOLD-OPEN FUNCTION (TYP.) NOTE: LOCK CORES w/ MASTER KEYING BY OWNER KICK PLATE: (4) IVES 8400 10" 628/LEAF THRESHOLD: ZERO INTERNATIONAL 540-SERIES OR SIMILAR 12" FLUSH BOLTS FB458-2 US26D FOR INACTIVE LEAF ASTRAGAL: EXTRUDED ALUMINUM FOR INACTIVE LEAF DOOR SWEEP & SEALS
D2	1	(2) 4'-0" X 10'-0" ALUMINUM HALF PANEL DOOR w/ 1/4" CLEAR TEMPERED UPPER PANEL LITE AND 1" ALUMINUM INSULATED SMOOTH FINISH LOWER PANEL. DOOR FINISH TO BE CLEAR ANODIZED.	HINGES: HAGER ROTON 780-111 (120 DEGREES LIMITED BY MAGIC FORCE)** PULL HANDLES: IVES STRAIGHT PULL (1" DIA., 10" CTC) 8103-0 PUSH PLATE: IVES 8303 CLOSER: LCN 4040XP w/ HOLD-OPEN FUNCTION (TYP.) AUTOMATIC OPERATOR: ELECTRO-HYDRAULIC STANLEY MAGIC-FORCE w/PUSH PADS WIRING: BY ELECTRICAL CONTRACTOR NOTE: INSTALLATION OF PUSH BUTTON PADS AND ELECTRICAL WORK BY ELECTRICIANS. KICK PLATE: (4) IVES 8400 10" 628/LEAF DOOR SWEEP & SEALS
D3	2	4'-0" X 7'-0" ALUMINUM HALF PANEL DOOR w/ 1/4" CLEAR TEMPERED UPPER PANEL LITE AND 1" ALUMINUM INSULATED SMOOTH FINISH LOWER PANEL. DOOR FINISH TO BE CLEAR ANODIZED.	HINGES: HAGER ROTON 780-111 (120 DEGREES LIMITED BY MAGIC FORCE)** PULL HANDLES: IVES STRAIGHT PULL (1" DIA., 10" CTC) 8103-0 PUSH PLATE: IVES 8303 CLOSER: LCN 4040XP w/ HOLD-OPEN FUNCTION (TYP.) AUTOMATIC OPERATOR: ELECTRO-HYDRAULIC STANLEY MAGIC-FORCE w/PUSH PADS WIRING: BY ELECTRICAL CONTRACTOR NOTE: INSTALLATION OF PUSH BUTTON PADS AND ELECTRICAL WORK BY ELECTRICIANS. KICK PLATE: (4) IVES 8400 10" 628/LEAF DOOR SWEEP & SEALS
D4	2	4'-0" X 7'-0" ALUMINUM HALF PANEL DOOR w/ 1/4" CLEAR TEMPERED UPPER PANEL LITE AND 1" ALUMINUM INSULATED SMOOTH FINISH LOWER PANEL. DOOR FINISH TO BE CLEAR ANODIZED.	HINGES: STD. STN. STL. BUTT HINGES LOCK: SCHLAGE GR.1 MORTISE L SERIES L9453 626 (LATCH & DEADBOLT, KEY OPERATED FROM OUTSIDE, 6 PIN CYLINDERS) CLOSER: LCN 4040XP w/ HOLD-OPEN FUNCTION (TYP.) NOTE: LOCK CORES w/ MASTER KEYING BY OWNER. KICK PLATE: (4) IVES 8400 10" 628/DOOR THRESHOLD ZERO INTERNATIONAL 540 SERIES OR SIMILAR DOOR SWEEP & SEALS
D5	1	4'-0" X 7'-0" ALUMINUM HALF PANEL SLIDING DOOR w/ 1/4" CLEAR TEMPERED UPPER PANEL LITE AND 1" ALUMINUM INSULATED SMOOTH FINISH LOWER PANEL. DOOR FINISH TO BE CLEAR ANODIZED.	DOOR HANGER: PEMKO 284 DOOR CLIP STOP: PEMKO 287HD DOOR GUIDE: PEMKO 106R/94 ALUMINUM 280 DOOR TRACK: PEMKO 200A/B FACIA: F134C END PLATE: K134EO EXTERIOR FLUSH DOOR PULL: IVES RECTANGLE FLUSH PULL w/ BLACK INSET 962 BOTH SIDE OF THE DOOR ALUMINUM DOOR BOTTOM CHANNEL: PEMKO 94A KICKPLATE: (4) IVES 8400 10" 628 DOOR SWEEP & SEALS

- * STANLEY MAGIC MOUNTING TO BE SURFACED MOUNTED - NON-CONCEALED
- ** DOORS WITH HANGER ROTON HINGES ARE TO SWING OPEN 120 DEGREES INTO CORRIDOR. COORDINATE THE DOOR FRAME LOCATION WITH THE MOUNTING OF THE STANLEY MAGIC FORCE AND DOOR CLOSER



DOOR ELEVATION (D5)
 SLIDING DOOR
 SCALE 1" = 1'-0"

Civil Engineer
Vierbicher Associates, Inc.
 999 Fourier Drive, Suite 201
 Madison, WI 53711
 608.826.0532 tel

Landscape Architect
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 303 South Paterson Street, Suite 1
 Madison, WI 53703
 608.251.3600 tel

Structural Engineer, Technology and AV
IMEG Corp.
 1800 Deming Way, Suite 200
 Middleton, WI 53562
 608.223.9600 tel

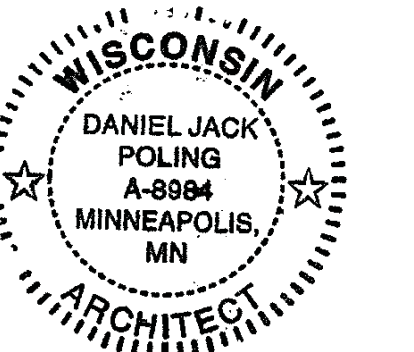
MEP Engineer
MEP Associates, LLC
 980 Blue Garden Road, Suite 175
 Eagan, MN 55121
 651.379.9120 tel

Fire Protection Engineer and Code Consultant
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 575 Minnehaha Ave West
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**Olbrich Botanical Gardens
 Expansion Phase 1**
 BPW Project #8162
 3330 Atwood Avenue
 Madison, WI 53704

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 ARCHITECT SEAL



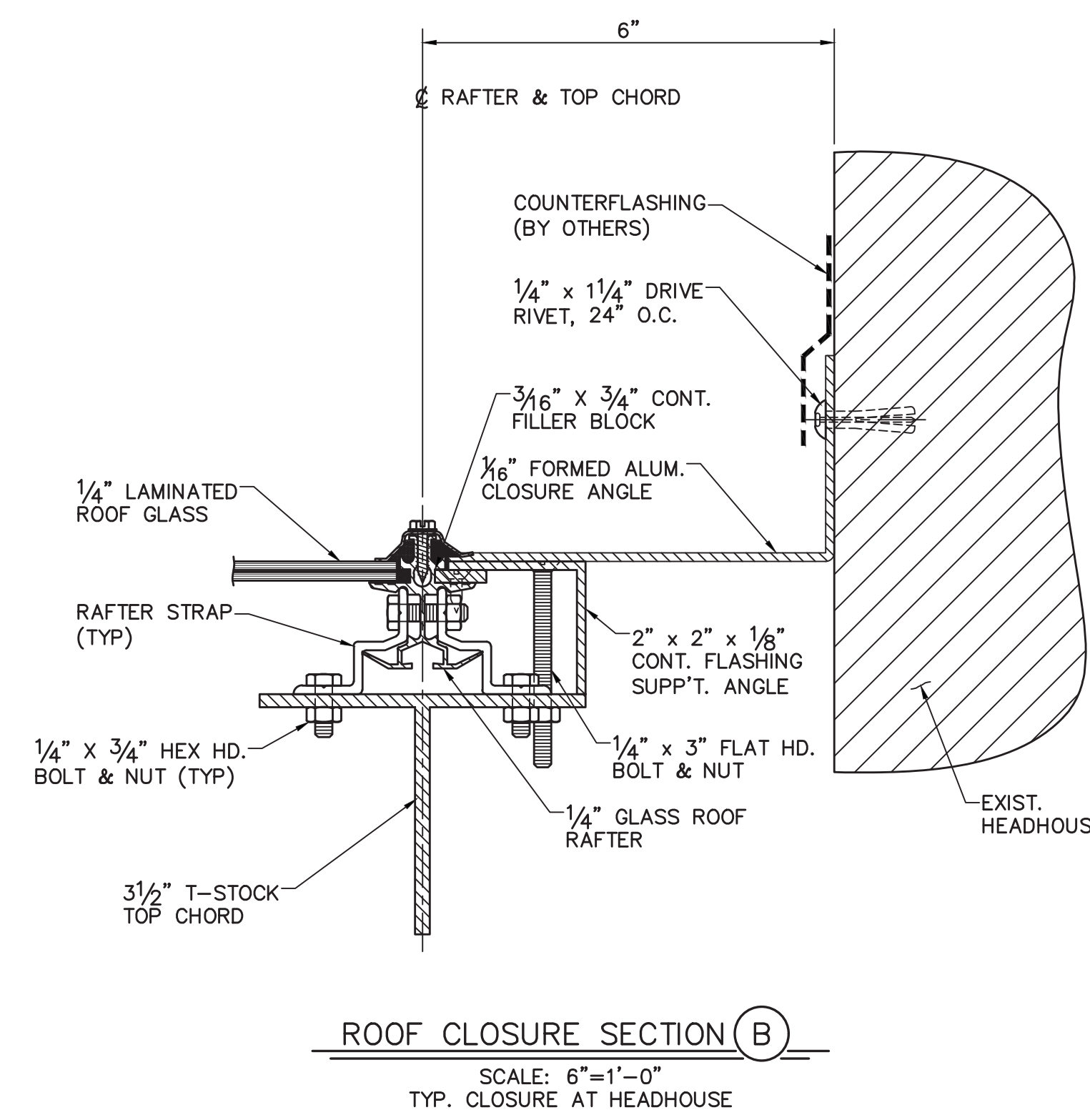
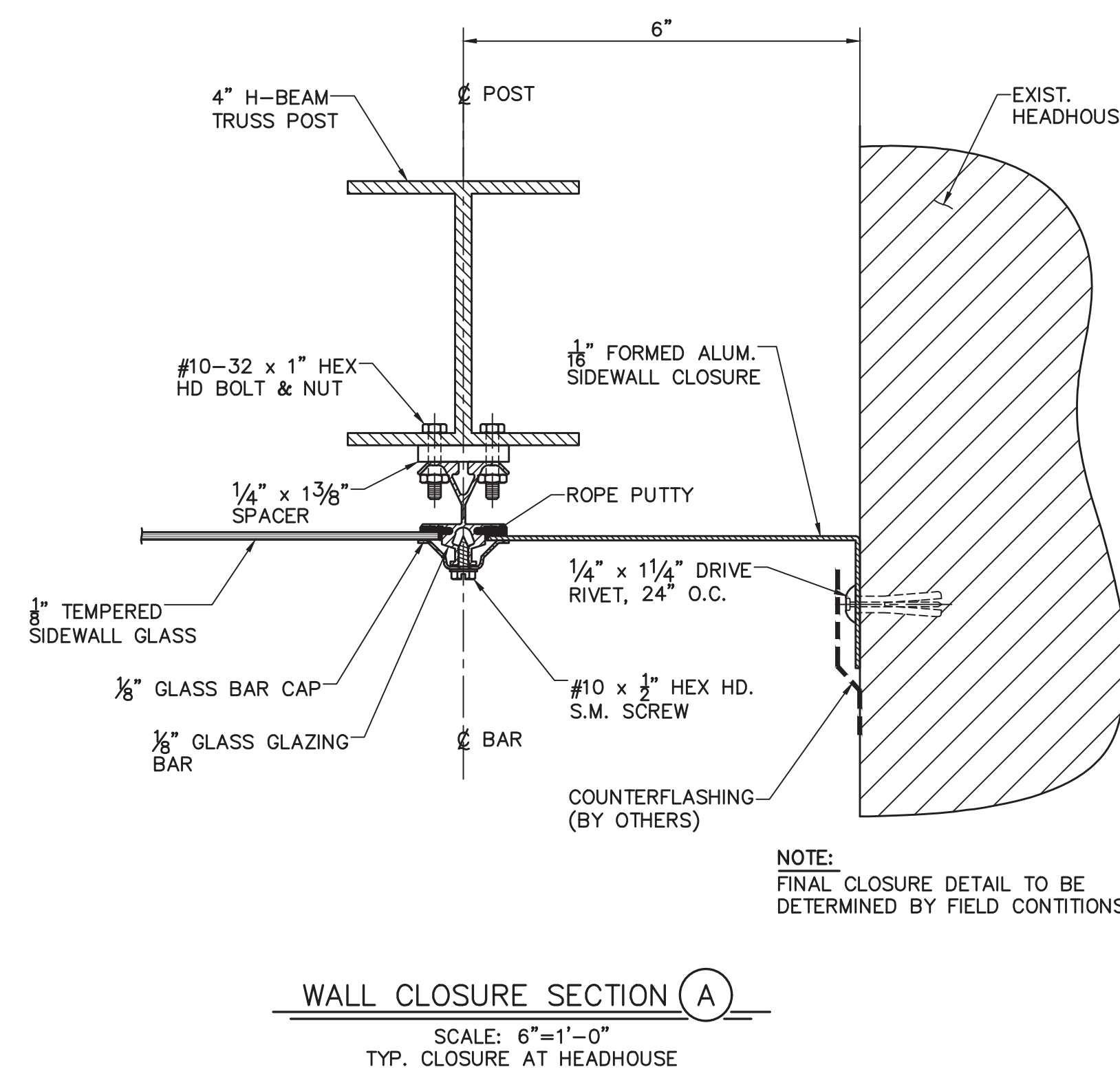
Signature: *Daniel Jack Poling*
 Print Name: Jack Poling
 Date: MAY 4, 2018 License No.: A-8984

ISSUE	DATE	DESCRIPTION
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	06.04.2018	PERMIT ISSUE

PROJECT NO: 2017016
 PROJECT PHASE: BID DOCUMENTS
 DRAWN BY: SR CHECKED BY: SW
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**GREENHOUSE
 CLOSURE DETAILS**

**EXHIBIT H
 GH11**



ENGINEERING NOTE:
 ENGINEER'S SEAL APPLIES TO DESIGN OF
 STRUCTURAL COMPONENTS ONLY