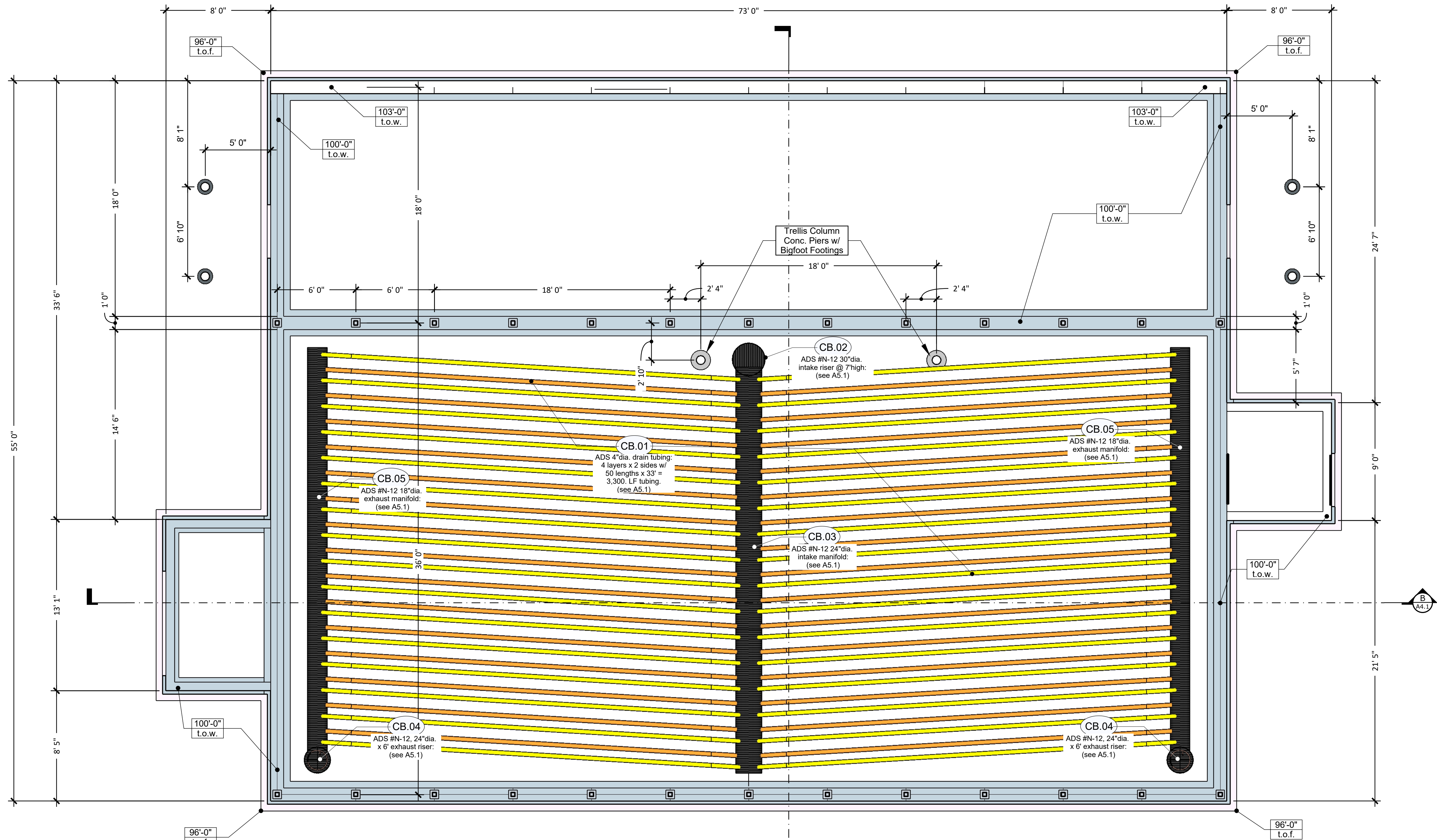


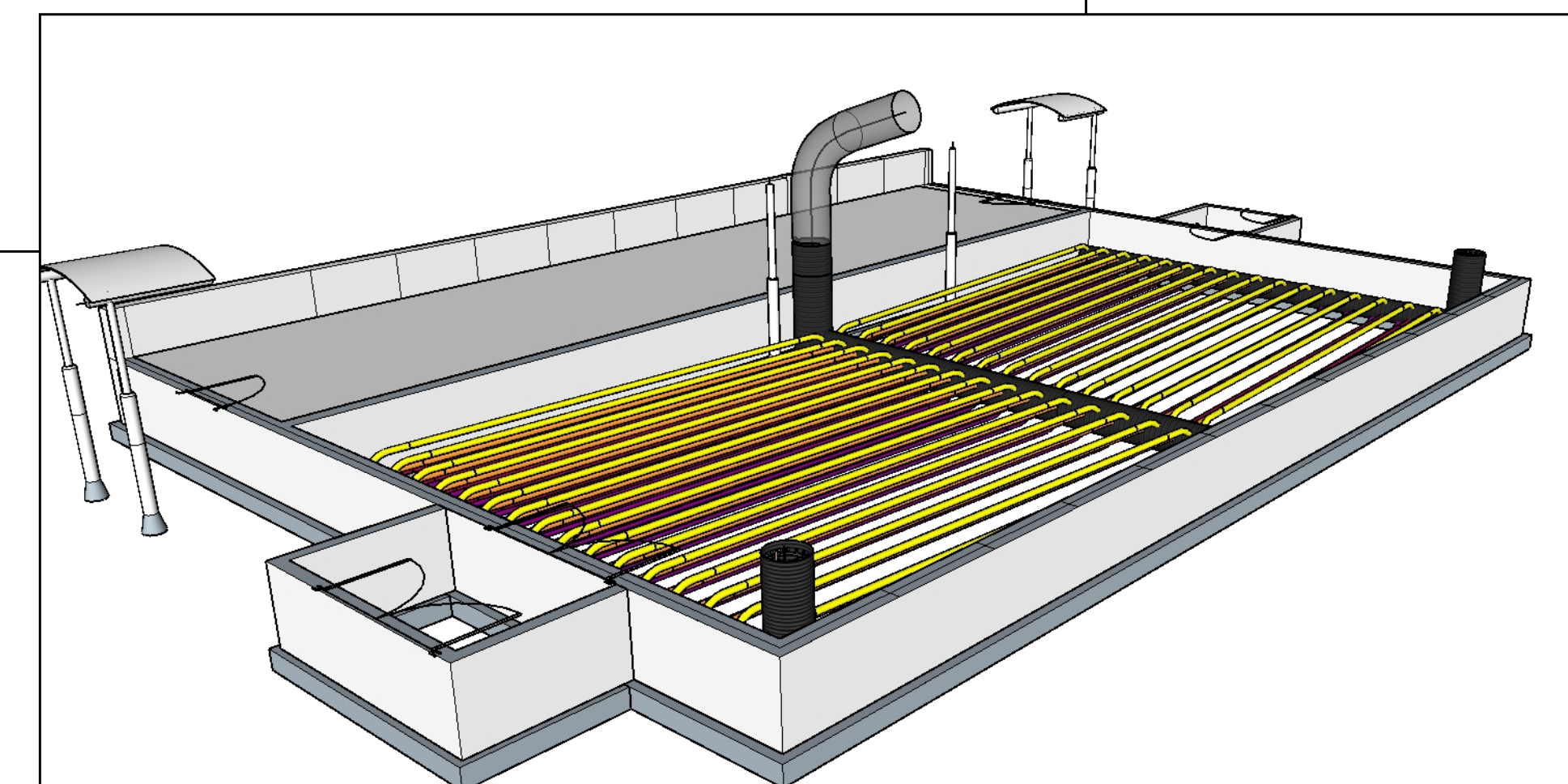
DRAWING LEGEND:	
INCLUDED THIS ISSUE:	
➤ A1.0	SITE PLAN, LOCATION
➤ A2.1	CLIMATE BATTERY PLAN
➤ A2.2	GREENHOUSE FLOOR PLAN
➤ E2.3	ELECTRICAL & CONTROLS PLAN
➤ A2.4	GREENHOUSE ROOF PLAN
➤ A3.1	GREENHOUSE ELEVATIONS
➤ A3.2	GREENHOUSE ELEVATIONS
➤ A4.1	GREENHOUSE SECTIONS
➤ A4.2	CLIMATE BATTERY DETAILS
➤ A5.1	CLIMATE BATTERY INSTALLATION
➤ A5.2	CLIMATE CONTROL SPECS
➤ A6.1	PLANTING BED LAYOUT & DETAILS
➤ A6.2	PLANTING PLAN - UNDERSTORY
➤ A6.3	PLANTING PLAN - OVERSTORY
➤ S1.0	GENERAL NOTES - FNDN STRUC.
➤ S1.1	FOUNDATION PLAN
➤ S5.1	FOUNDATION DETAILS

Home Ranch Greenhouse

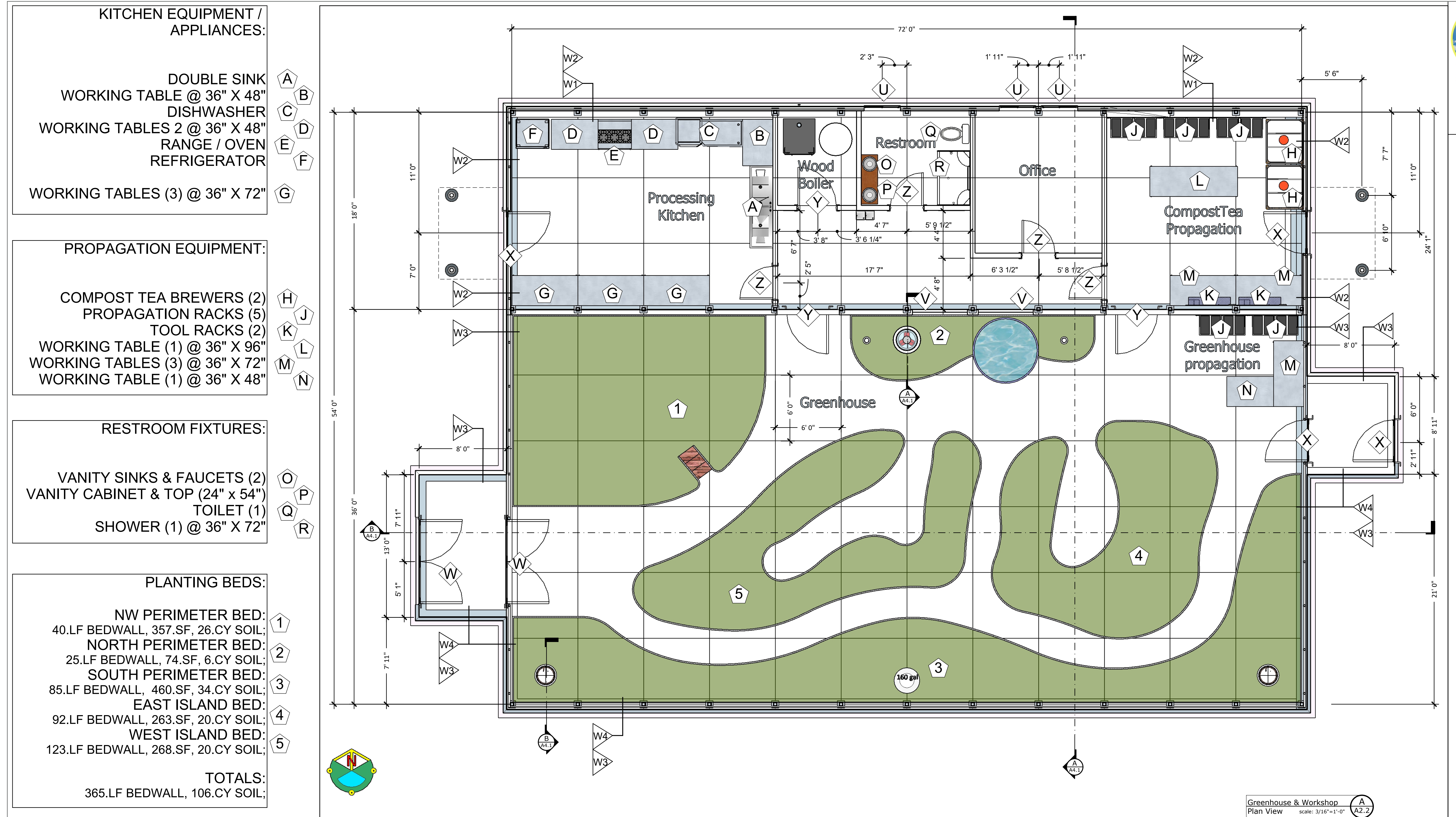
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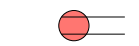
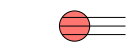








Fndn & Climate Battery
Plan View scale: 3/16"=1'-0" A2.1




Fndn & Climate Battery 3D perspective B A2.1

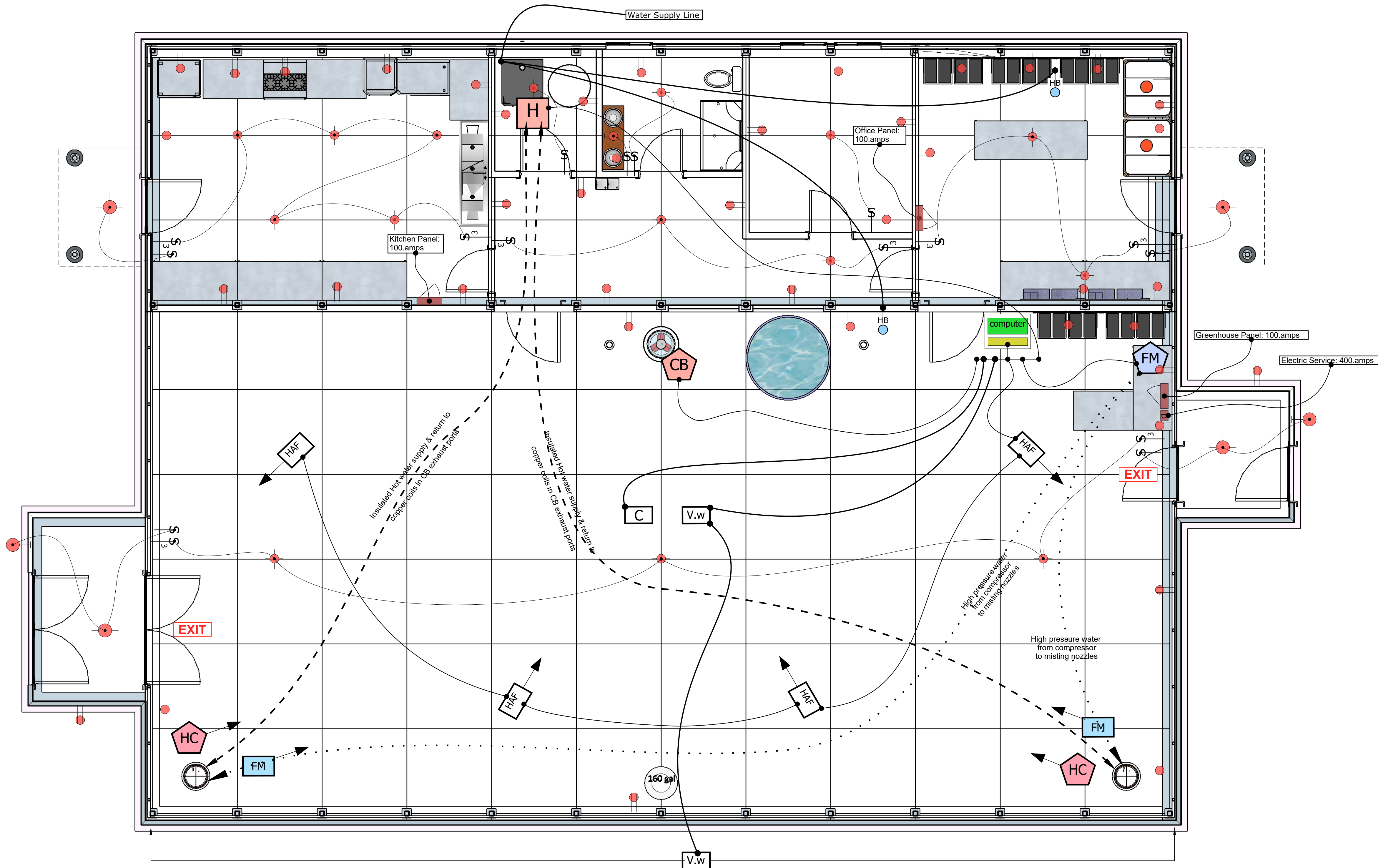


ELECTRICAL SYSTEMS:

-  - Power supply panel ~ 100.amps AC
-  - Cage Lights - see A5.2
-  - 110.V Duplex Receptacle
-  - 240.V Power Receptacle
-  - Climate Controls - see A5.2
-  - Climate Battery Fans - see A5.2
-  - Backup Heater & Heat Coil - see A5.2
-  - Fogging Mister evap.cooling - see A5.2
-  - Horizontal Air Flow fan - see A5.2
-  - Ventilation Panels - roof & sidewalls, by GH mfr, automated by Climate Controller
-  - Automated Insulating Curtain - see A5.2
-  - Backlit EXIT sign per code

PLUMBING SYSTEMS:

-  - Hose Bibb - Outdoor freeze-proof faucet
- Plant irrigation system and layout will be determined with planting and succession layouts, in accordance with best practices in regenerative agriculture, as determined by farm managers.



KITCHEN PANEL:

BREAKER IN: 200.Amps

- Kitchen Lights: 110.V 15.Amps
- Dishwasher: 110.V 20.Amps
- Range/Oven: 240.V 50.Amps
- Refrigerator/Freezer: 110.V 20.Amps
- North Power Outlets: 110.V 20.Amps
- South Power Outlets: 110.V 20.Amps

OFFICE PANEL:

BREAKER IN: 100.Amps

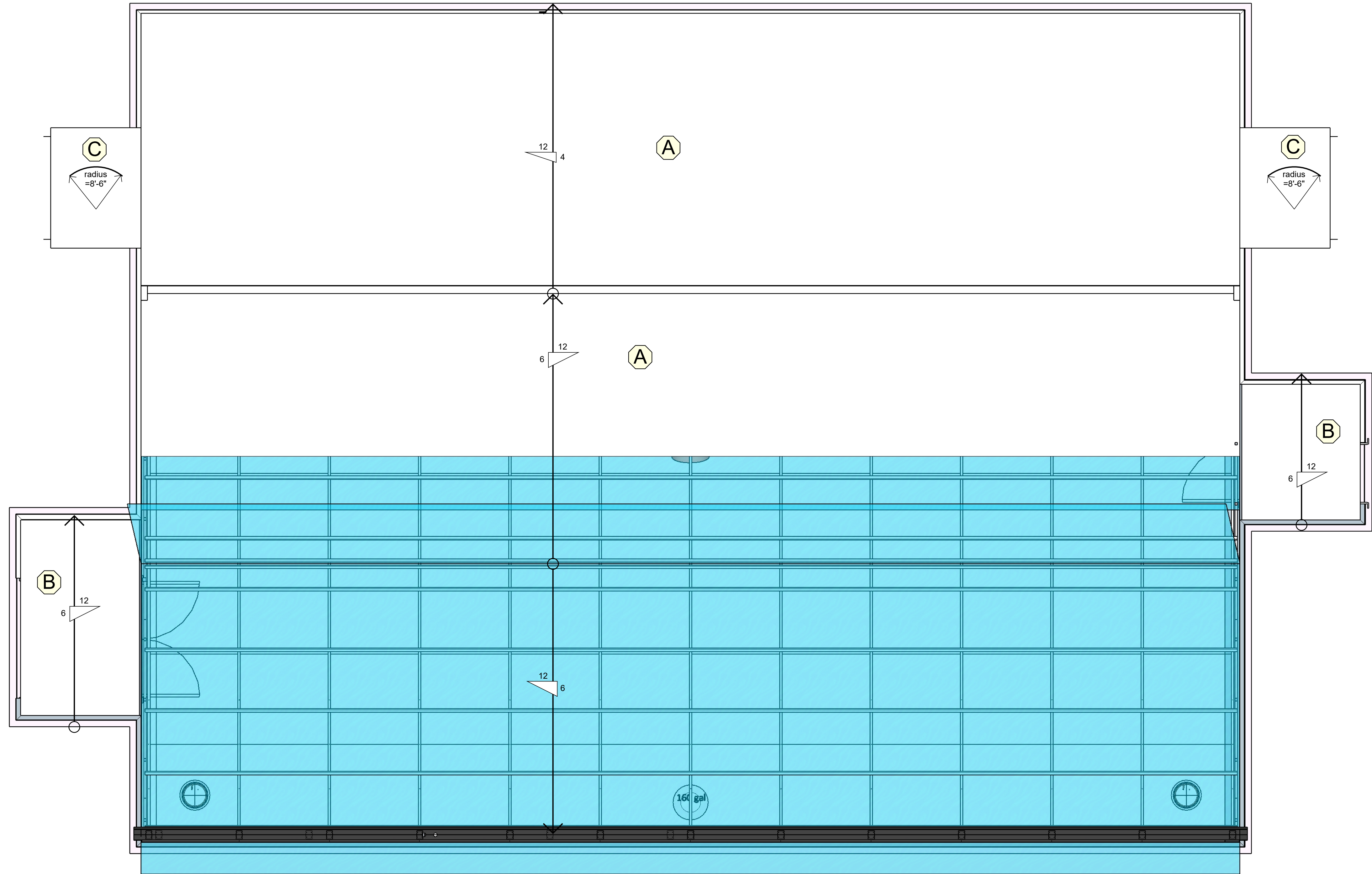
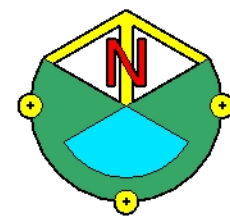
- Office/Prop.Lab Lights: 110.V 15.Amps
- Restroom/Boiler Lights: 110.V 15.Amps
- Prop.Lab Power Outlets: 110.V 20.Amps
- Restroom/Boiler Outlets: 110.V 20.Amps
- Hallway Power Outlets: 110.V 20.Amps

GREENHOUSE PANEL:

BREAKER IN: 400.Amps

- Out to Office Panel: 100.Amps
- Out to Kitchen Panel: 100.Amps
- Greenhouse Controller: 20.Amps
- ClimateBattery+HAF fans: 110.V 20.Amps
- Greenhouse Vent Motors: 110.V 20.Amps
- Greenhouse Curtain: 110.V 20.Amps
- Backup Heat Water Pump: 110.V 20.Amps
- Backup Cooling Compressor: 110.V 20.Amps
- GH Lights + Power Outlets: 110.V 20.Amps





(A)
(B)
(C)

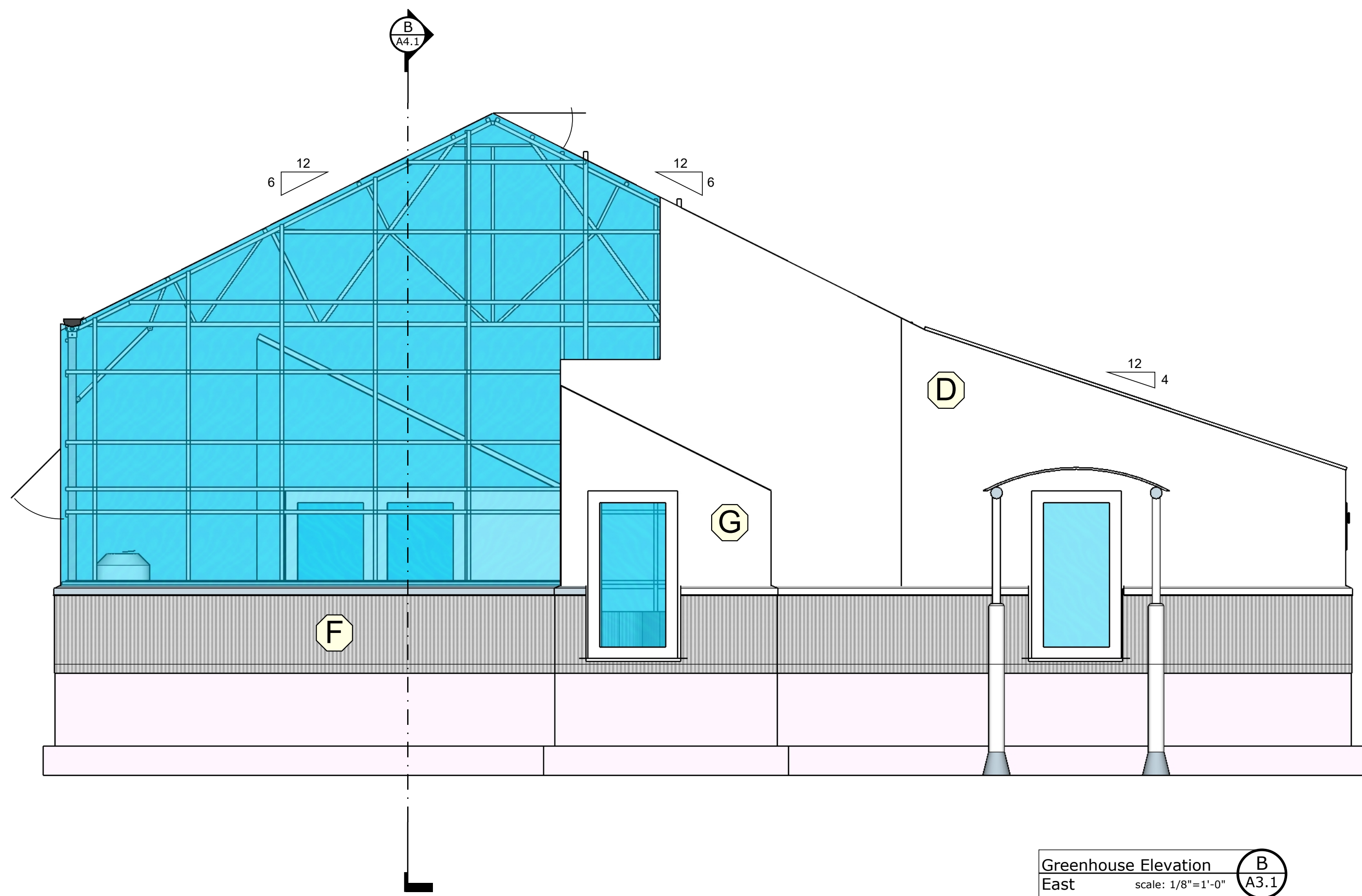
Area Description	Finish Material Description	Dimensions (WxLxH)	Area (ft²)
Exterior roof		73' x 31'- 8 5/16"	2313.57ft²
exterior vestibule roof(1 vestibule)		8' x 10' -3/4"	80.5 ft²
Exterior awning finish (1 awning)		6' x 8'-3 15/16"	49.96 ft²

Printer: this drawing prints to
scale on 24" x 36" paper.

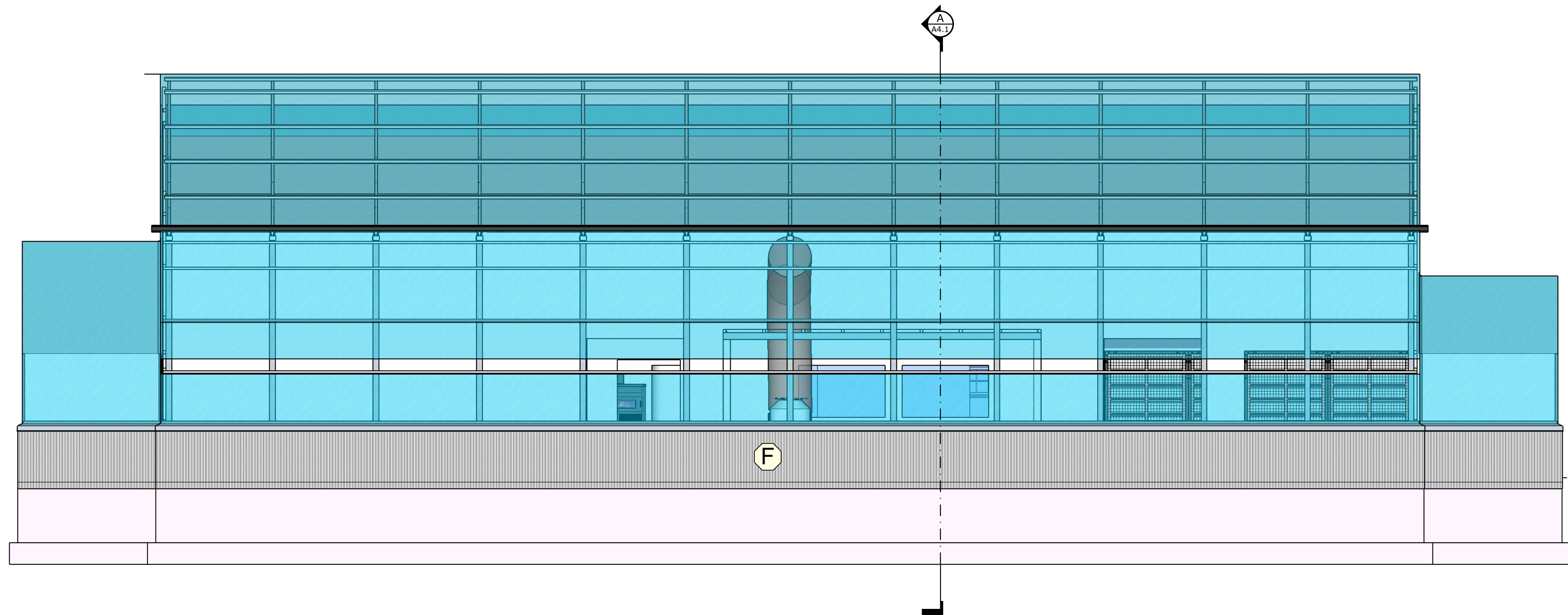
Date: 2020/August/14
Issue: Permit Application

Greenhouse
Roof Plan

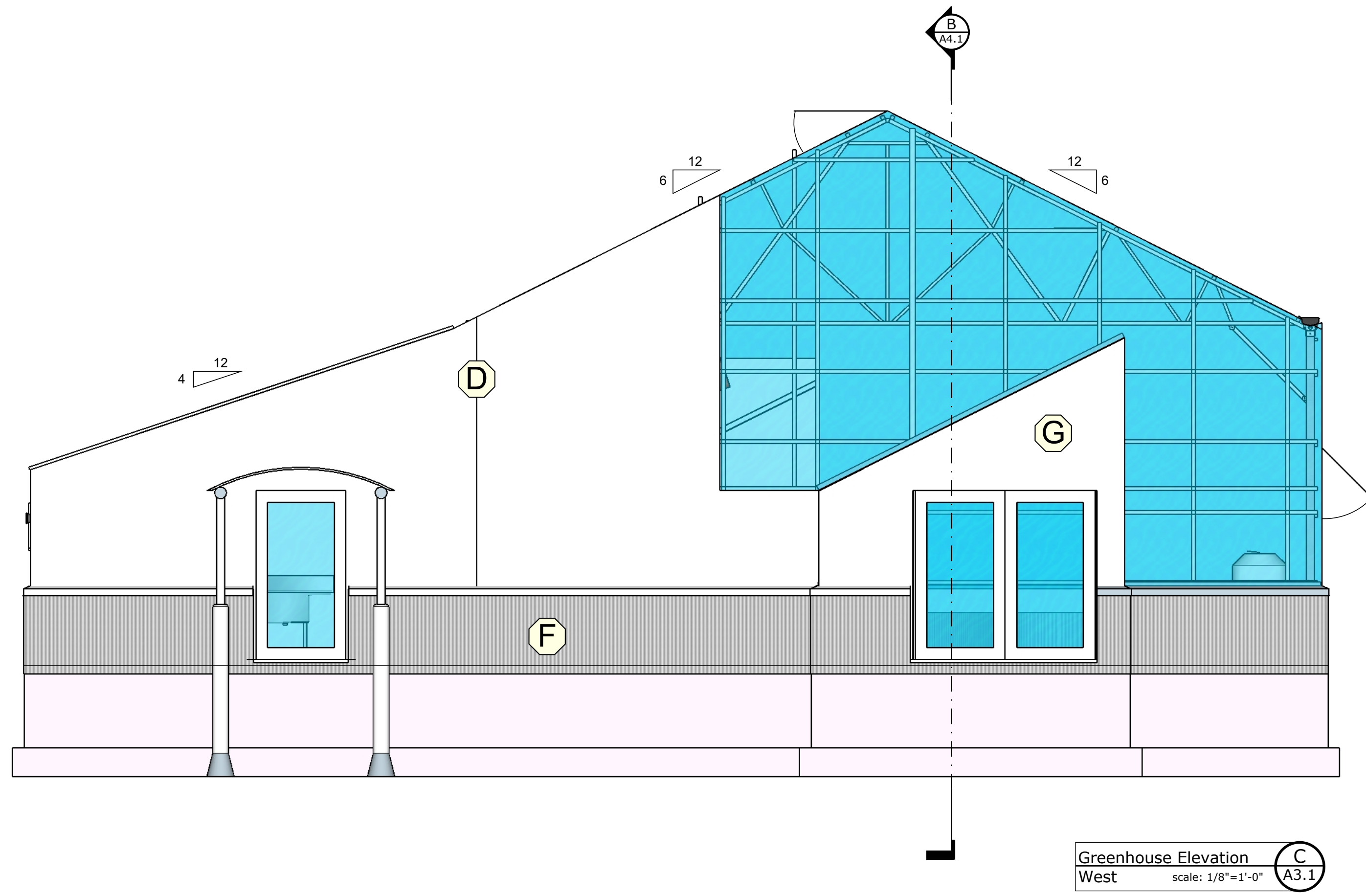
A2.4



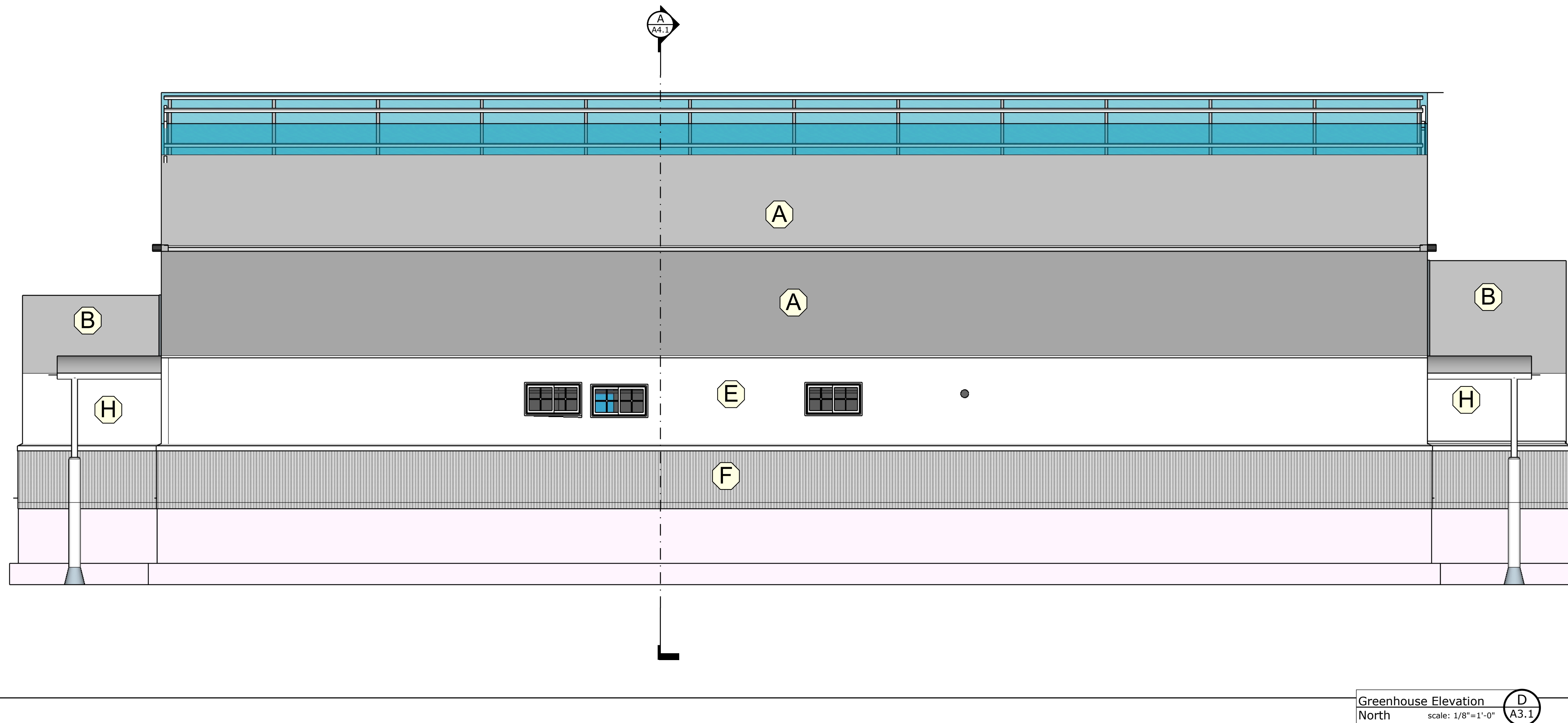
Area Description	Finish Material Description	Dimensions (WxLxH)	Area (ft²)
D exterior east & west wall surfaces		33'-7 1/4" x 16'-7 7/16"	781.9ft²
E Exterior north wall surface		73' x 4'-11 1/4"	351.72 ft²
F Exterior siding	corrugated metal	274'-7" x 3'-7 1/2"	989.09 ft²
G Exterior vestibule finish (door side)		9' x 8' - 8 1/4"	57.39 ft²
H Exterior vestibule finish (north side)		8' - 4' x 4 9/16"	57.5 ft²

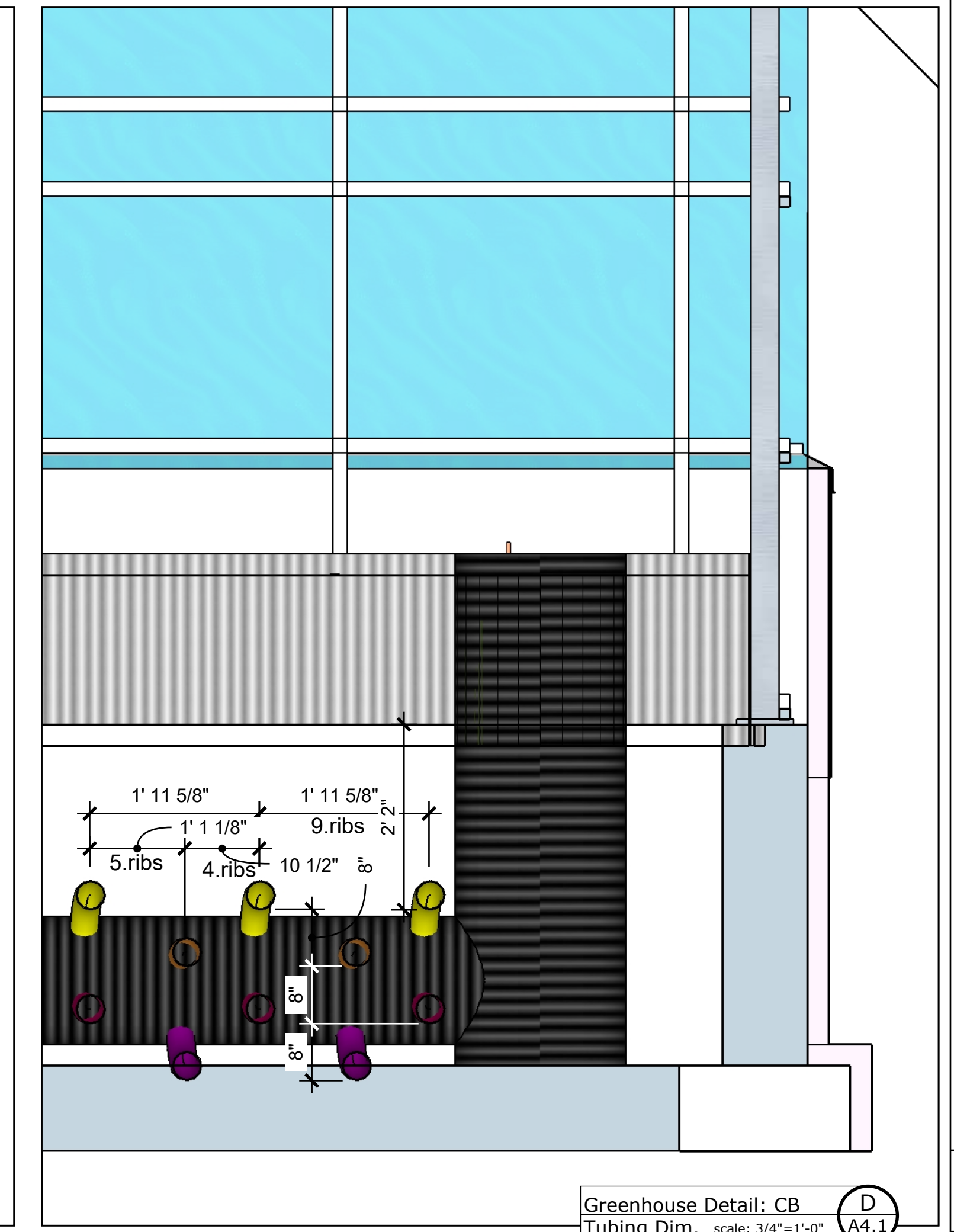
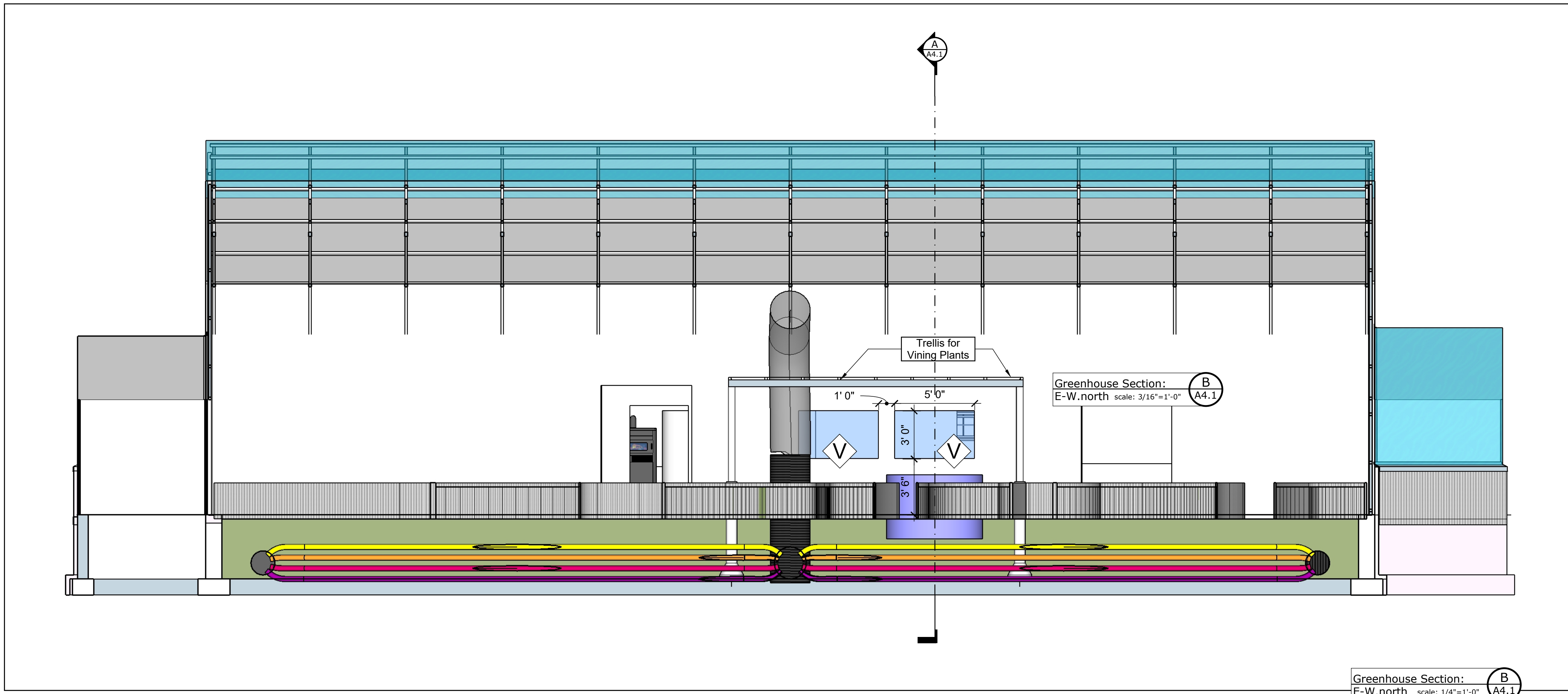
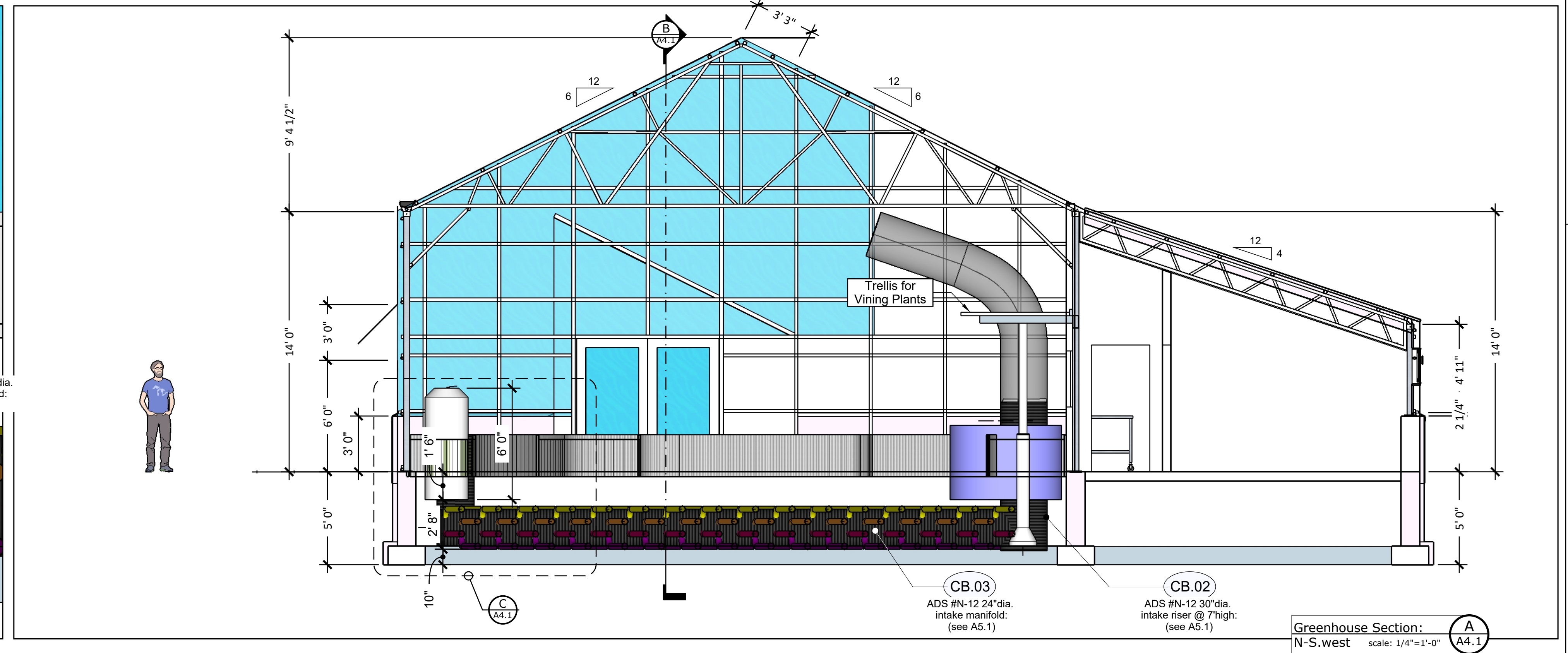
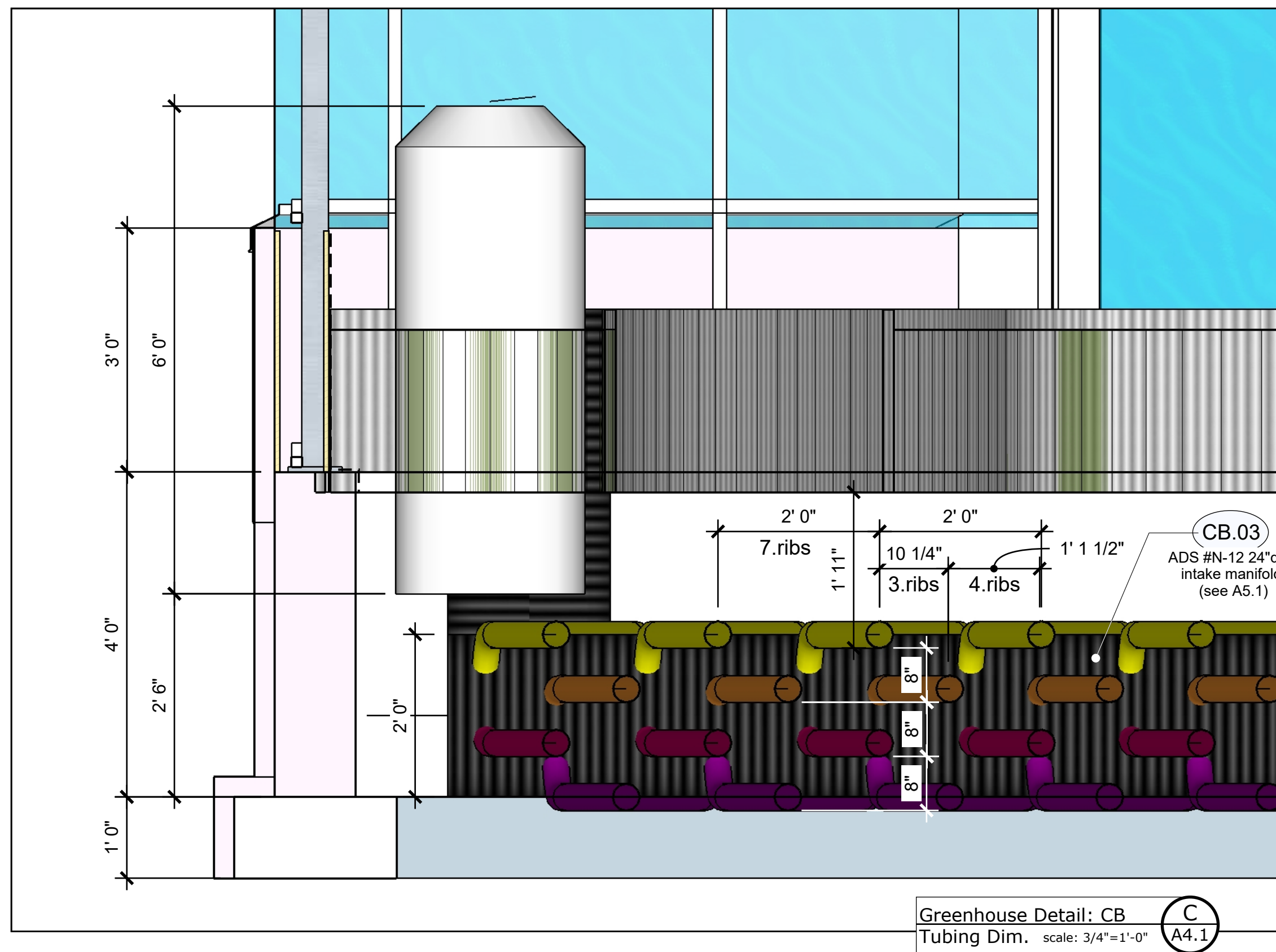


Greenhouse Elevation
South scale: 1/8"=1'-0" A3.1



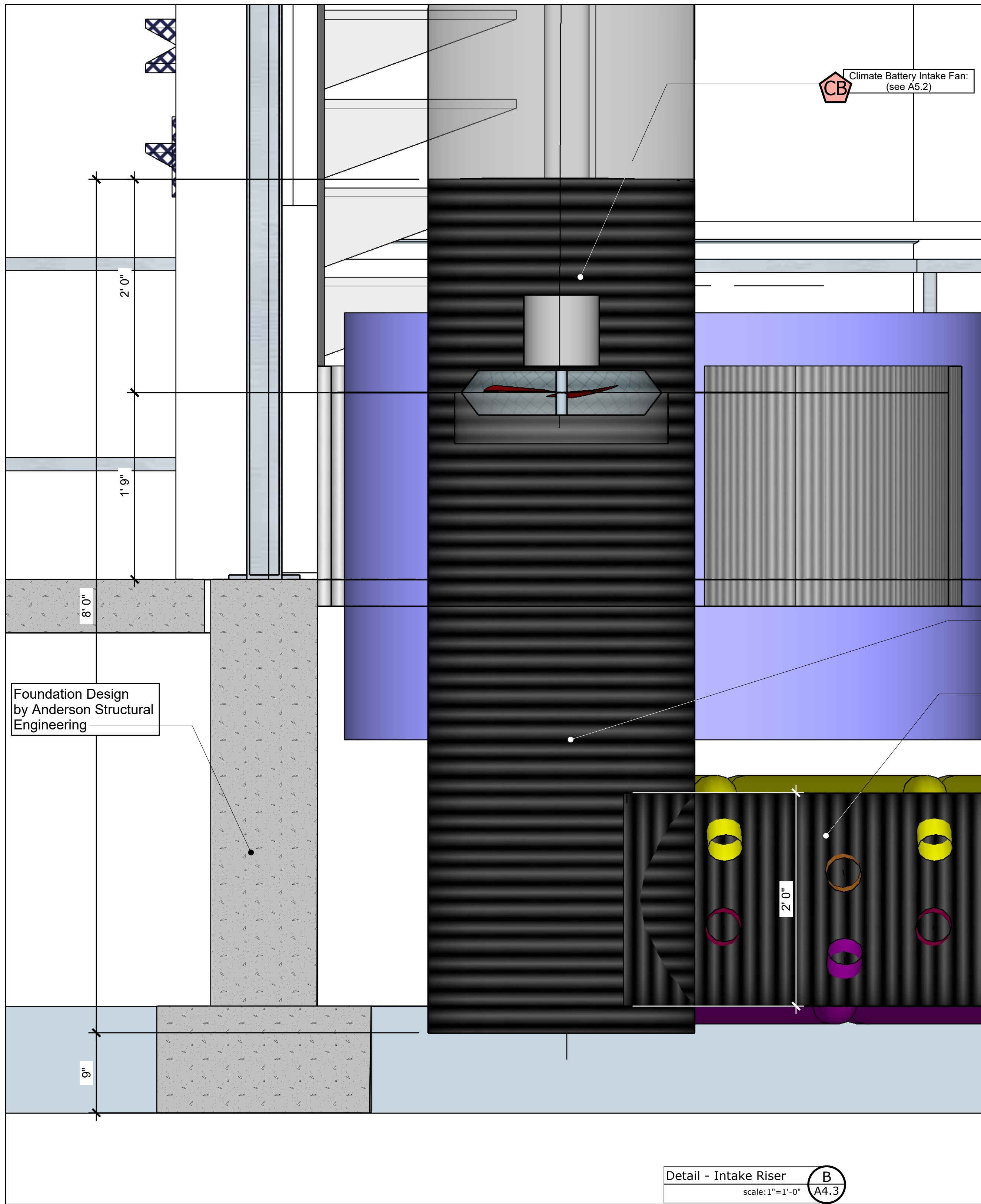
Area Description	Finish Material Description	Dimensions (WxLxH)	Area (ft²)
D exterior east & west wall surfaces		33'-7 1/4" x 16'-7 7/16"	781.9ft²
E Exterior north wall surface		73' x 4'-11 1/4"	351.72 ft²
F Exterior siding	corrugated metal	274'-7" x 3'-7 1/2"	989.09 ft²
G Exterior vestibule finish (door side)		9' x 8' - 8 1/4"	57.39 ft²
H Exterior vestibule finish (north side)		8' - 4' x 4 9/16"	57.5 ft²





Greenhouse Section: B A4.1
E-W, north scale: 3/16"=1'-0"

Greenhouse Detail: CB D A4.1
Tubing Dim. scale: 3/4"=1'-0"

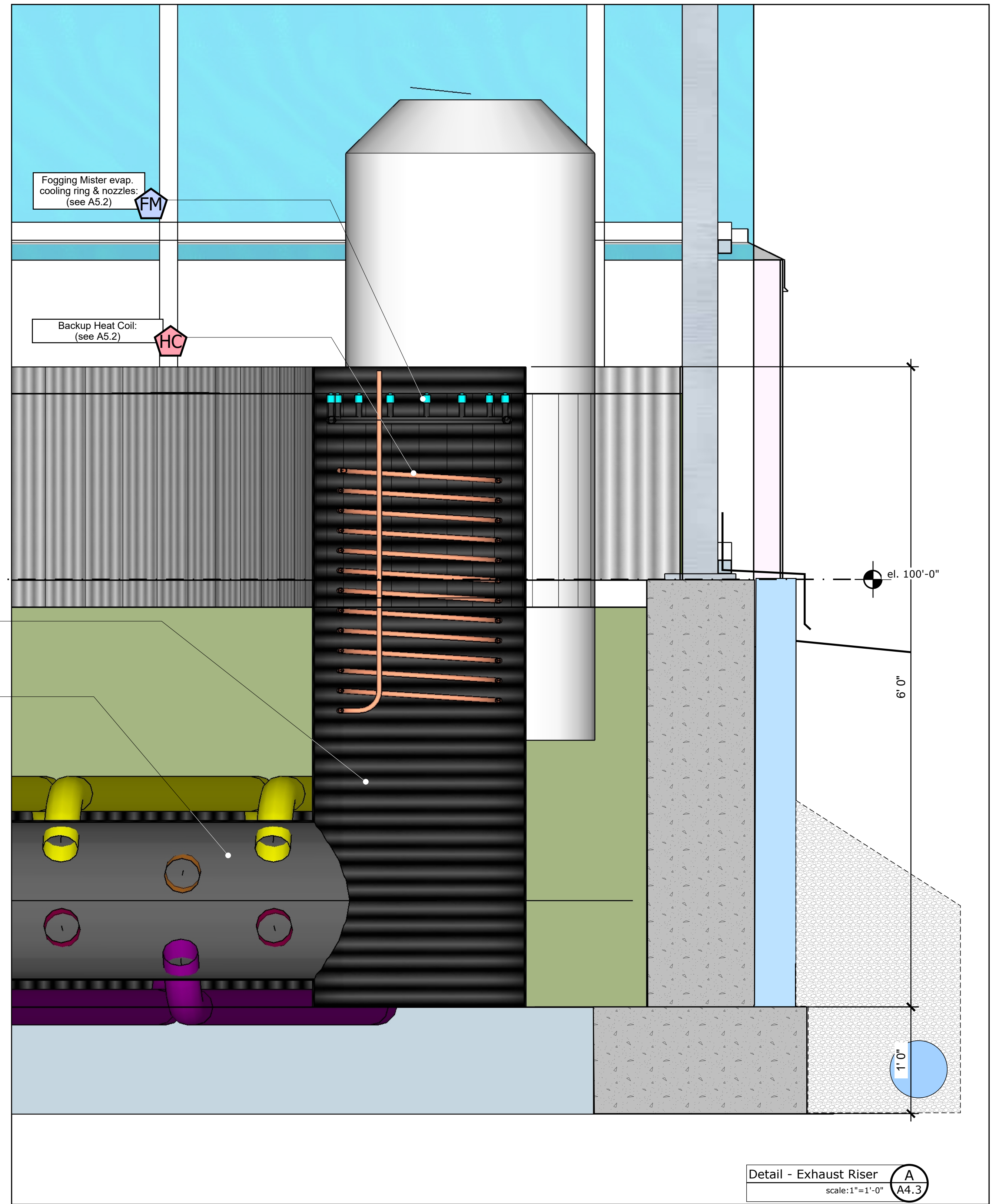


CB.02
ADS #N-12 30"dia.
intake riser @ 7"high:
(see A5.1)

CB.03
ADS #N-12 24"dia.
intake manifold:
(see A5.1)

CB.04
ADS #N-12, 24"dia.
x 6' exhaust riser:
(see A5.1)

CB.05
ADS #N-12 18"dia.
exhaust manifold:
(see A5.1)



Climate Battery Installation Instructions:

Excavate for Climate Battery to the extents shown in the plans, and the depth shown in the sections. Maintain the stability of the undisturbed grade around the perimeter, using shoring if necessary. For a concrete pier foundation, over-dig to 18" outside the line of piers, lay out sonotube forms, set them in place and brace them to plumb, with reinforcing set, and pour concrete to specified elevation. Place anchor bolts into wet concrete, or install expansion anchor bolts for sill plates, after concrete has set.

Install insulation board and rodent barrier as shown around the foundation perimeter of the excavation and brace in place. Pre-shape grade beneath intake and exhaust manifolds before placing them, to assure solid fill beneath and behind them, against the insulation or foundation wall. Cut riser and manifold pipes to length, and fasten manifolds to risers, either with cut detail shown, or with pre-manufactured elbow fittings.

Build Climate Battery:

Use hole-saws (4-3/4" dia holes for tubing with sock, 4-5/8" dia holes for tubing w/o sock) to bore holes through Intake and Exhaust manifold walls, for insertion of 4" dia climate battery tubing. Center each hole on high center of manifold corrugation closest to spacing shown, and alternate holes according to layout shown on Climate Battery plan and details. Place manifolds, riser elbows (or direct cut-in of manifold to riser) and end caps in their locations, with tubing hole pattern facing the opposite manifold. Secure manifolds in place as necessary with backfill, while leaving tubing holes accessible. If manifold pipes need to be curved to fit a dome layout, place a rope from end to end of manifold pipe and tighten to bend pipe as needed, before securing in place with backfill.

Measure and pre-cut 4" ADS tubing to length, and insert end of each tube into holes in intake manifold and in exhaust manifold. If using tubing with sock, or fabric covers, be sure not to allow sock to cover ends of tubing inside manifold, by rolling ends back over tubing end, to maintain proper air flow in the tube. Repeat until lowest layer of tubes are all in place and evenly spaced across the span between intake and exhaust manifolds.

Backfill Climate Battery:

If backfill soil or site subsoil is suspected of toxic content or radon gas emissions, test as required before building the climate battery. If the climate battery needs to be isolated from surrounding soil, consult with local installers of subterranean radon mitigation systems to install the necessary system prior to installing climate battery. If mild radon is detected under a battery for a well-ventilated greenhouse, there may be little need for concern or mitigation. Consult with local health and building officials as required.

Backfill soil should be composed of no more than 15-20% clay, remaining balance silt and sandy soil. If perennial plant roots are intended to grow in the battery soil, then an organic soil of sandy loam is desired. Do not use soil with more than 15% of "sticky clay", as shown in this soil testing video:

<https://youtu.be/hh211b8b5FE>

Soil should be damp, but not wet or muddy, when being placed and compacted. If soil is too dry, moisten as necessary with water spray as it is being placed and compacted. Compaction should be to light-medium density if plants will be growing in the battery soil, made using manual flat-plate compaction only.

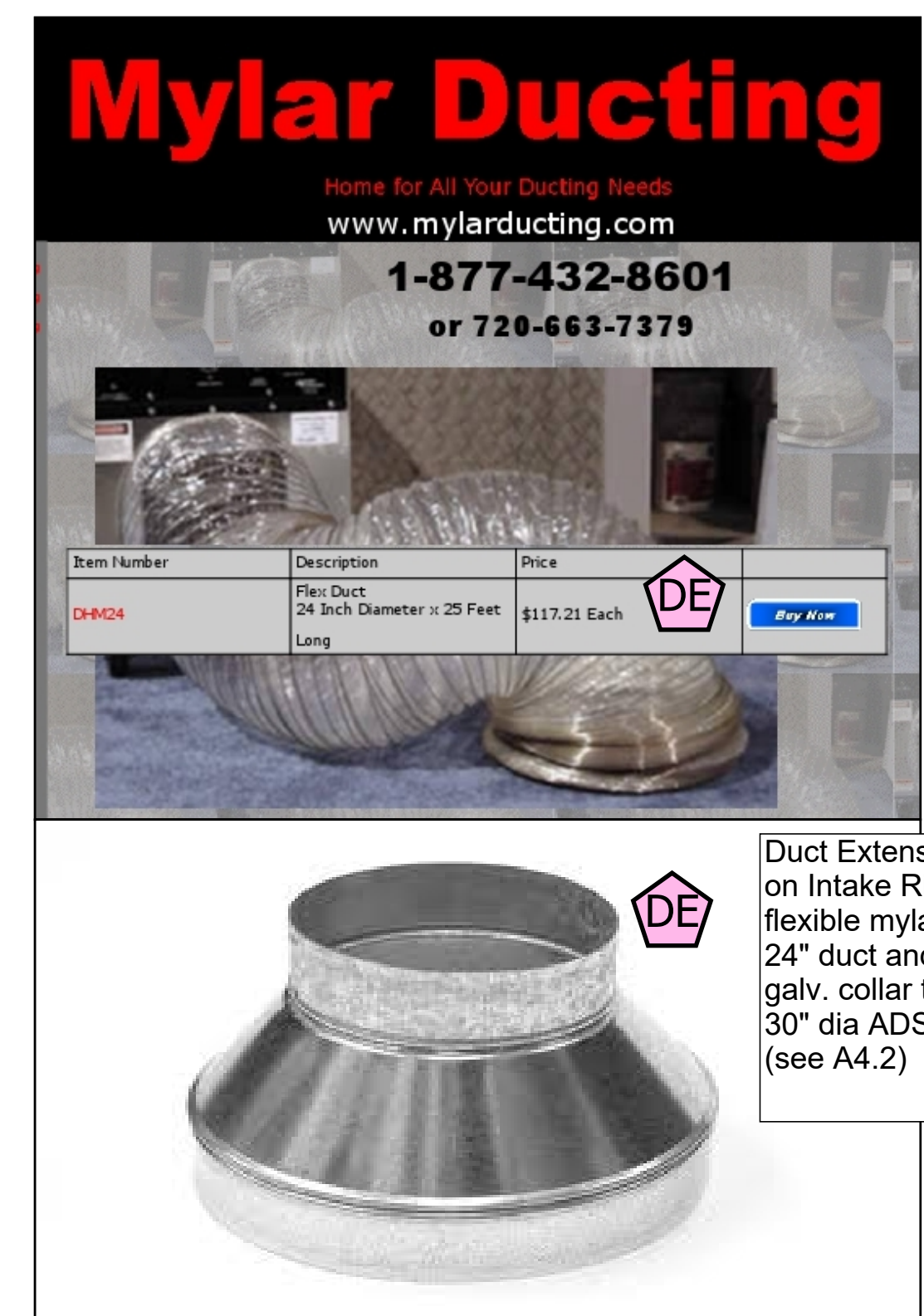
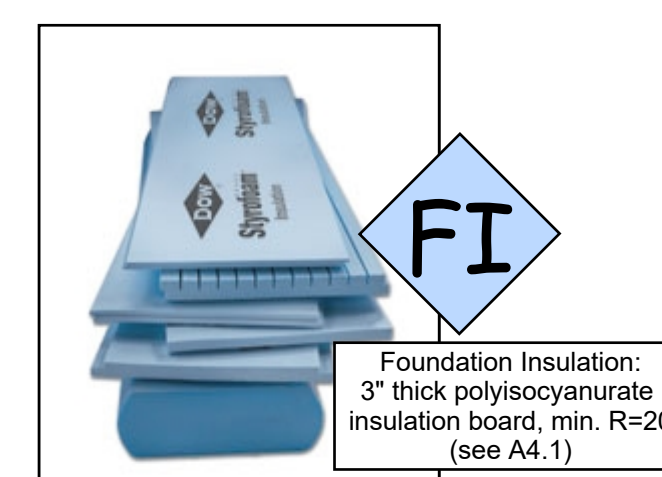
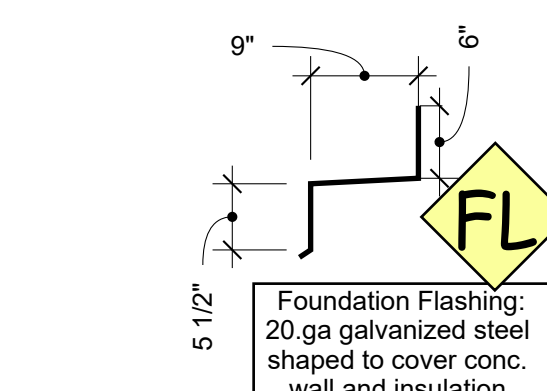
Backfill inside and outside of foundation simultaneously. Backfill with sufficient soil to cover tubes, compacting soil manually, just enough to hold tubing in place. Backfill with more soil and compact manually or with a flat-plate compactor, until backfill level reaches the bottom of the tubing layer above, then place next tubing layer and repeat until finished installing tubing, then backfill and compact until reaching top of soil level. If metal raised planting beds are to be installed, fill only to within 3" of final surface.

Mount Climate Battery Fans inside Intake Risers:

Mount Fan on plywood ring cut to fit inside 24" riser, with hole in center for 12" fan (measure in field to ensure fit). Air seal around fan and plywood mounting ring with foam pipe insulation, fit snugly against inside of ADS riser to prevent back flow of air. Mount plywood on plastic-tube covered, 3/8" threaded rod as shown, with washers and nuts to fasten rods to ADS Riser. Fan mounts motor up, forcing air down.

Intake Extension Ducts:


Install extension ducts to ADS intake risers, as shown in the drawings. Hang Indoor Air Intake duct extensions securely from Greenhouse truss frame using nylon cord or galvanized strap, taking warm air from high up in the greenhouse.



DAYTON

21" Tubeaxial Fan, Motor HP 1, Voltage 230, 1 Phase

Item # 4TM84 Mfr. Model # 166004A Catalog Page # 2941 UNSPSC # 40101604



Your Price

\$1,590.00 / each

This item requires special shipping, additional charges may apply.

One Time Delivery

Auto Reorder

1

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CB

Add Extended Protection Plan for \$375.00 each. Plan Details & Exclusions

How can we improve our Product Images?

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Jump to: Replacement Parts

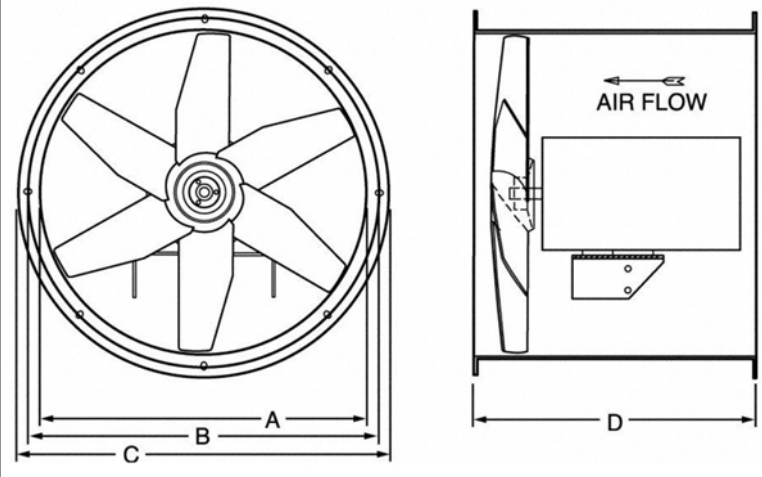
Shipping Weight 90.5 lbs.

Technical Specs

Item	Tubeaxial Fan
Voltage	230
Phase	1
Number of Speeds	2
Blade Dia.	21"
CFM @ 0.000-in. SP	6193/4106
CFM @ 0.125-in. SP	5970/3760
CFM @ 0.250-in. SP	5738/3341
CFM @ 0.375-in. SP	5489/2167
CFM @ 0.500-in. SP	5211
Spikes @ 0.250-in. SP @ 6 ft	26/15.2
Full Load Amps	5/3
Motor HP	1
Max. BHP	1.1/6.33
Motor RPM	1750/1160

Hz	60
Max. Inlet Temp.	104 Degrees F
Max. Ambient Temp.	104 Degrees F
Motor Type	Capacitor Start
Motor Enclosure	Totally Enclosed Air Over
Fan RPM	1750/1160
Bearing Type	Ball
Drive Type	Direct
Height	23-7/8"
Width	23-7/8"
Max. Depth	16"
Housing Dia. w/Mtg. Flange	23-7/8"
Housing Dia. w/o Mtg. Flange	21-5/16"
Inlet Dia.	21-1/4"
Outlet Dia.	21-1/4"
Mounting Position	Vertical/Horizontal

Housing Material	Steel
Housing Finish	Baked Enamel
Number of Blades	6
Blade Material	Aluminum
Companion Flange Stock No.	1UWN9
Dimension A	21-5/16"
Dimension B	22-19/32"
Dimension C	23-7/8"
Dimension D	16"
Standards	UL Listed and AMCA Certified



AC Smith

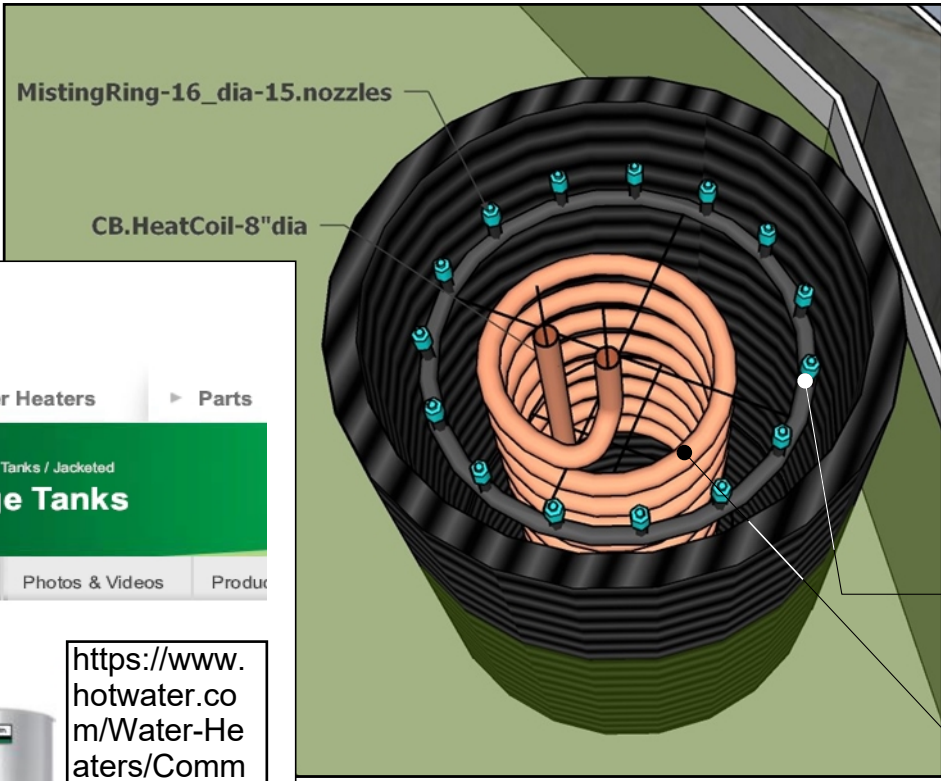
Home Water Heaters Parts

Jacketed Storage Tanks

Features Tech Specs Photos & Videos Prods

H

https://www.hotwater.com/Water-Heaters/Commercial/Storage-Tanks/Jacketed/



MistingRing-16_dia-15.nozzles


CB.HeatCoil-8"dia

https://www.northernbrewer.com/collections/wort-chillers/products/copperhead-wort-chiller-50-ft

HC

https://www.advancedmistingsystems.com/high-pressure-misting-system-1000-psi/

FM




Copperhead® Wort Chiller - 50 ft.

★★★★★ 5 reviews

\$139.99 & FREE SHIPPING Details


or 4 interest-free payments of \$35.00 with 0% \$6221e ⓘ



Climate Control Computer:
Wadsworth SEED Controller:
https://wadsworthcontrols.com/controls/seed/

Sensors:
Weather station
Soil sensors T & RH

Controls:
Climate Battery Fan
HAF circulation fans
Passive vent panels
Energy Curtain
Backup Heater
Backup cooling



Home Ranch Greenhouse: Climate Control Equipment:	MFR:	MODEL:	Quantity:	Volts:	Amps:	Watts:
Climate Battery Fan:	Dayton	4TM84	1	230	6.0	1,380
HAF Fans:	Schaefer	GAVS20	4	115	3.8	1,748
Wadsworth Roof Vent:	Wadsworth	VC-2000	1	115	2.5	288
Wadsworth Sidewall Vent:	Wadsworth	VC-100A	1	115	0.7	78
Wadsworth Energy Curtain:	Wadsworth		1	115	2.5	288
Backup Heating Boiler:	Royall	6200-NS	1	115	3.0	345
Backup Heating Tank & Pump:	AO.Smith	500.gal	1	115	5.0	575
Backup Cooling Compressor & Pump:	AMS	1000.psi	1	115	9.0	1,035
Total Power:					32.5	5,736

WINTER TEMPERATURE SETTINGS:	Greenhouse Temperature ° F:	Climate Battery:	Vents:	HAF Fans:	Energy Curtain:	Fogging Mister:	CB Heat Coils:	Backup Heater:
Cooling Stage 3:	90	ON	OPEN 2/3	ON	CLOSED	off	off	off
Cooling Stage 2:	85	ON	OPEN 1/3	ON	open	off	off	off
Cooling Stage 1:	80	ON	closed	ON	open	off	off	off
Neutral - everything OFF:		off	closed	off	open	off	off	off
Heating Stage 1:	55	ON	closed	ON	CLOSED	off	off	off
Heating Stage 2:	45	off	closed	ON	CLOSED	off	off	ON

SUMMER TEMPERATURE SETTINGS:	Greenhouse Temperature ° F:	Climate Battery:	Vents:	HAF Fans:	Energy Curtain:	Fogging Mister:	CB Heat Coils:	Backup Heater:
Cooling Stage 3:	90	ON	OPEN 3/3	ON	CLOSED	ON	off	off
Cooling Stage 3:	80	ON	OPEN 2/3	ON	open	off	off	off
Cooling Stage 2:	75	ON	OPEN 1/3	ON	open	off	off	off
Cooling Stage 1:	70	ON	closed	ON	open	off	off	off
Neutral - everything OFF:		off	closed	off	open	off	off	off
Heating Stage 1:	50	ON	closed	off	CLOSED	off	off	off
Heating Stage 2:	40	off	closed	ON	CLOSED	off	off	off

Schaefer Air Ventilation System

The Features & Benefits of a Plant - Air Ventilation System for Horizontal Air Flow

The engineers at Schaefer Fan Company have been innovators in air circulation technology since 1951. The Plant Air system was created with this experience, vigorously tested and patented. The Schaefer Plant Air Circulation Fan is much more efficient in air-to-energy usage than other fans. The Schaefer guards are wider, with less restrictive wire spacing, allowing for twice the air flow of typical basket fans. The Plant Air fan design spreads air currents to insure efficient air circulation and optimum distribution of mist, fog, CO₂, and spray chemicals. The Plant Air fan is no-maintenance. The totally enclosed motor never needs oiling and uses heavy-duty moisture resistant bearings for long life.

Air, light, water...

...you know what it takes to make your greenhouse thrive. Schaefer Plant Air Circulation Fans are your solution to healthy air circulation and healthy plant growth. Use Schaefer Plant Air Circulation Fans to implement Horizontal Air Flow (HAF) patterns throughout the greenhouse. The HAF system places small circulation fans strategically in the greenhouse creating a 'race-back' air flow pattern. This system created with Schaefer Plant Air fans encourages plant performance by:

Reducing humidity and moisture condensation.

Prevent mildew and disease.

Encourage healthy plant growth.

Reduce heat loss from conduction through wet glazing.

Improving carbon dioxide availability:

Improve photosynthesis by increased fresh air flow across plant leaf surface.

Lower Levels of additional CO₂ needed.

Equalizing greenhouse temperature:

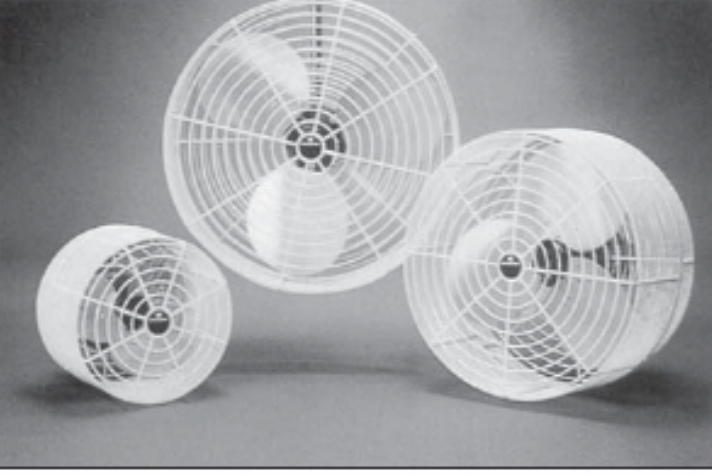
Eliminate air stratification - moving hot air down from the peak.

Uniform temperature, lower thermostat settings - save up to 5% in heating costs.

Reduce burning of exposed leaves, flowers or fruit on warm days.

HAF x4

- Maintain consistent greenhouse temperatures.
- Motor mount provides for each installation
 - Solid aluminum blades
 - Moisture resistant variable speed motor.
 - White vinyl housing prevents shadowing.
- Fan holes are larger than traditional basket fans and provide double the circulation of traditional models.
- The fan's heavy duty bearing motors are maintenance-free and highly energy efficient.
- Noise levels are low-well below OSHA noise level requirements for plant environments.
- The fan mounts closer to the ceiling trusses for more headroom clearance.





GENERAL

1.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS AND METHODS OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, SHORING, BRACING, SLOPE STABILITY AND TEMPORARY EXCAVATION. THE CONTRACTOR AT HIS DISCRETION SHALL EMPLOY A LICENSED PROFESSIONAL TO DESIGN TEMPORARY SYSTEMS.
2.

THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, AND THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. ALL APPLICABLE JOB RELATED SAFETY STANDARDS SUCH AS OSHA SHALL BE FOLLOWED.
3.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS PRIOR TO PROCEEDING WITH WORK. VARIATIONS BETWEEN THE PLANS AND ACTUAL CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.

DESIGN CRITERIA

1.

GOVERNING BUILDING CODE: INTERNATIONAL CODE COUNCIL (ICC)
"INTERNATIONAL BUILDING CODE 2015"
2.

REFERENCE CODES;

A.

AMERICAN CONCRETE INSTITUTE (ACI)
"BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318

B.

AMERICAN INSTITUTE FOR STEEL CONSTRUCTION (AISC)
"SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISC 360
"CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", AISC 305

C.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)
"MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", ASCE 7

D.

AMERICAN WELDING SOCIETY (AWS)
" STRUCTURAL WELDING CODE" AWS D1.1

E.

AMERICAN WOOD COUNCIL
"NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION", NDS
3.

LOADS

A.

FLOOR LIVE LOADS50 psf

B.

GROUND SNOW LOAD108 psf

C.

WIND LOADS
BASIC WIND SPEED, V115 mph
WIND EXPOSURE CATEGORY.....B
TOPOGRAPHIC FACTOR, Kt1.0
IMPORTANCE FACTOR1.0

D.

SEISMIC LOADS
OCCUPANCY CATEGORY1.0
SITE CLASSD
SEISMIC DESIGN CATEGORYB
Sds0.282
Sd10.119
IMPORTANCE FACTOR1.0

SUBMITTALS

1.

SUBMITTALS OF SHOP DRAWINGS MILL TESTS, AND PRODUCT DATA SHALL BE MADE PRIOR TO CONSTRUCTION. SUBMITTAL SHALL BE MADE IN DUE TIME TO ALLOW FOR A TEN (10) WORKING DAY TURNAROUND.
2.

SHOP DRAWING REVIEW BY THE ENGINEER IS FOR GENERAL CONFORMANCE WITH CONTRACT DOCUMENTS ONLY. DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER AND SHALL BE VERIFIED BY THE CONTRACTOR. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. WHERE SHOP DRAWINGS DIFFER FROM OR ADD TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE ENGINEER SHALL REVIEW AND MAKE REQUIRED REVISIONS.
3.

DEFERRED SUBMITTALS OR ITEMS DESIGNED BY OTHERS SHALL INCLUDE CALCULATIONS, SHOP DRAWINGS AND PRODUCT DATA AND SHALL BE SUBMITTED PRIOR TO CONSTRUCTION. REVIEW OF DEFERRED SUBMITTALS BY THE ENGINEER DOES NOT RELIEVE CONTRACTOR OR DESIGNER FOR COMPLIANCE WITH THE DESIGN CRITERIA AND COMPATIBILITY WITH THE PRIMARY STRUCTURE. DEFERRED SUBMITTALS INCLUDE BUT ARE NOT LIMITED TO;

PREFABRICATED WOOD TRUSSES

OPEN WEB STEEL JOISTS

INSPECTIONS

1.

SPECIAL INSPECTIONS SHALL BE MADE IN ACCORDANCE WITH IBC 2015 SECTION 1704. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING SPECIAL INSPECTIONS IN A TIMELY MANNER. SPECIAL INSPECTORS MUST BE RECOGNIZED AND APPROVED BY THE BUILDING OFFICIAL. SPECIAL INSPECTION REPORTS SHALL BE SUBMITTED TO THE ENGINEER TO RESOLVE ANY DISCREPANCIES.
2.

STRUCTURAL OBSERVATIONS MAY BE PERFORMED BY THE ENGINEER. A REPORT WILL BE ISSUED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. STRUCTURAL OBSERVATIONS ARE NOT A SUBSTITUTE FOR SPECIAL INSPECTIONS. OBSERVATIONS WILL BE MADE TO DETERMINE GENERAL CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS AND DOES NOT RELIEVE THE CONTRACTOR FOR COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS.

SOILS & FOUNDATIONS

1.

ASSUMED SOILS ARE CLAY PER IBC TABLE 1806.2. PRESUMPTIVE LOAD BEARING VALUES ARE AS FOLLOWS;

ALLOWABLE BEARING PRESSURE1500 psf

ASSUMED ACTIVE LATERAL PRESSURE.....45 pcf

ASSUMED AT REST LATERAL PRESSURE35 pcf

PASSIVE LATERAL PRESSURE100 psf/ft.
2.

THE CONTRACTOR SHALL REVIEW THE GEOTECHNICAL REPORT AND SHALL FOLLOW ALL RECOMMENDATIONS PROVIDED THEREIN.
3.

THE GEOTECHNICAL ENGINEER SHALL INSPECT ALL EXCAVATIONS AND FILL PLACEMENT TO ENSURE CONFORMANCE WITH THE SPECIFICATIONS. ASSUMED VALUES SHALL BE VERIFIED BY A GEOTECHNICAL ENGINEER OR THE BUILDING OFFICIAL PRIOR TO PLACING CONCRETE.
4.

FOOTING EXCAVATIONS SHALL BE CLEAN AND FREE FROM LOOSE DEBRIS, STANDING WATER, OR UN-COMPACTED MATERIAL AT TIME OF CONCRETE PLACEMENT.
5.

FOUNDATIONS SHALL BEAR ON UNDISTURBED SOIL OR COMPACTED FILL PER THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.

CONCRETE

1.

CONCRETE SHALL BE DESIGNED, SUPPLIED AND CONSTRUCTED IN ACCORDANCE WITH ACI 318 LATEST EDITION.
2.

CONCRETE STRENGTH f'c @ 28 DAYS SHALL CONFORM TO THE FOLLOWING;

FOOTINGS, WALLSf'c = 3000 psi

FLATWORK, SLABSf'c = 4000 psi
3.

PORTLAND CEMENT SHALL CONFORM TO ASTM C-150 TYPE I/II.
4.

WATER FOR MIXING CONCRETE SHALL CONFORM TO ASTM C1602.
5.

COURSE AND FINE AGGREGATE SHALL CONFORM TO ASTM C-33.
6.

SLUMP SHALL CONFORM TO ACI 301 AND SHALL BE TAKEN AT THE POINT OF PLACEMENT. SLUMP SHALL NOT EXCEED 4 INCHES.
7.

FLYASH SHALL CONFORM TO ASTM C618 CLASS C OR F. FLYASH SHALL NOT EXCEED 20% OF THE TOTAL CEMENTITIOUS MATERIAL.
8.

HOT WEATHER PLACEMENT SHALL CONFORM TO ACI 305, "SPECIFICATION FOR HOT WEATHER CONCRETING".
COLD WEATHER PLACEMENT SHALL CONFORM TO ACI 306, "GUIDE TO COLD WEATHER CONCRETING".
9.

ADMIXTURES FOR WATER REDUCTION AND SETTING TIME MODIFICATION SHALL BE IN CONFORMANCE WITH ASTM C494.
10.

ADMIXTURES FOR USE IN FLOWING CONCRETE SHALL CONFORM TO ASTM C1017.
11.

ADMIXTURES SHALL NOT CONTAIN CALCIUM CHLORIDE. CONCRETE SHALL NOT BE PLACED IN CONTACT WITH ALUMINUM.
12.

AIR ENTRAINMENT SHALL BE 4.0 – 7.0% AIR ENTRAINMENT ADMIXTURES SHALL CONFORM TO ASTM C260.
W/C RATIO SHALL NOT EXCEED 0.45
13.

HEADED STUDS AND HEADED STUD ASSEMBLIES SHALL CONFORM TO ASTM A1044.
14.

HIGH STRENGTH NO SHRINK GROUT SHALL BE MASTERBUILDERS 928 OR APPROVED EQUAL.
15.

ADHESIVE FOR DRILL & EPOXY ANCHORS SHALL BE HIT RE500 AS MFG. BY HILTI INC. OR APPROVED EQUAL.

STRUCTURAL STEEL

1.

STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION.
2.

MATERIALS;

A.

WIDE FLANGE SHAPESASTM A992 GRADE 50

B.

PLATES, ANGLES, CHANNELSASTM A36

C.

HOLLOW STRUCTURAL SECTIONS (HSS)ASTM A500, GRADE B

D.

PIPEASTM A53 GRADE B

E.

HIGH STRENGTH BOLTSASTM A325–X

F.

MACHINE BOLTSASTM A307

G.

ANCHOR BOLTSASTM F1554 GRADE 36
3.

CONNECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH AISC 360. ALL BOLTED CONNECTIONS SHALL HAVE A MINIMUM OF 2 BOLTS. MINIMUM BOLT SIZE SHALL BE 3/4"Ø U.N.O. MINIMUM WELD SIZE SHALL CONFORM TO AISC 360. HIGH STRENGTH BOLTS SHALL BE TIGHTENED TO A SNUG TIGHT CONDITION PER ASTM A325 U.N.O.
4.

ANCHOR BOLTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
5.

STRUCTURAL STEEL SHALL BE CLEANED TO MEET THE REQUIREMENTS OF SSPC–SP2. STRUCTURAL STEEL SHALL BE COATED WITH SHOP COAT RED OXIDE PRIMER.
6.

HOLES, NOTCHES, AND CUTS SHALL NOT BE MADE IN STRUCTURAL STEEL MEMBERS WITHOUT ENGINEER'S APPROVAL.
7.

COLD FORMED STEEL PERLINS SHALL CONFORM TO AISI, "COLD FORMED STEEL DESIGN MANUAL". STEEL SHALL CONFORM TO A607, GR. 50.
8.

STEEL STUD AND HEADER FRAMING SHALL BE AS MFG. BY CLARK DIETRICH BUILDING SYSTEMS, LLC OR APPROVED EQUAL. STEEL SHEET SHALL CONFORM TO ASTM A1003, Fy=50 ksi. STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A653 G90.

REINFORCING STEEL

1.

FABRICATION AND PLACEMENT OF REINFORCING BARS SHALL CONFORM TO; ACI 301 "SPECIFICATION FOR STRUCTURAL CONCRETE"
ACI SP-66 "ACI DETAILING MANUAL".
2.

REINFORCING BARS SHALL BE DEFORMED AND IN ACCORDANCE WITH ASTM A615 GRADE 60.
3.

WELDING OF REINFORCING BARS IS PROHIBITED WITHOUT PRIOR APPROVAL. WELDED BARS SHALL CONFORM TO ASTM A706 GRADE 60. WELDING SHALL CONFORM TO AWS D1.4.
4.

CONCRETE COVER SHALL BE AS FOLLOWS;

CAST AGAINST OR PERMANENTLY EXPOSED TO EARTH3"

EXPOSED TO EARTH OR WEATHER

#5 BAR OR SMALLER 1 1/2"

#6 BAR AND LARGER2"

NOT EXPOSED TO EARTH
SLABS WALLS AND JOISTS

#14 AND #18 BARS 1 1/2"

#11 BARS AND SMALLER3/4"

BEAMS AND COLUMNS
PRIMARY REINFORCEMENT, TIES,
STIRRUPS AND SPIRALS1 1/2"

5.

REINFORCING BARS #5 AND SMALLER SHALL BE BENT COLD ONE TIME ONLY. ALL OTHER BARS REQUIRE PREHEAT.

6.

LAP SPLICES SHALL BE CLASS "B" AND SHALL BE STAGGERED. SPLICES SHALL BE PROVIDED AS REQUIRED PER THE THE FOLLOWING TABLE;
- | REINFORCING SPLICE LENGTHS | | |
|----------------------------|--|---------------------------------|
| BAR SIZE | SPLICE LENGTH (in.)
VERTICALS & BOTTOM BARS | SPLICE LENGTH (in.)
TOP BARS |
| #3 | 20" | 24" |
| #4 | 24" | 30" |
| #5 | 30" | 39" |
| #6 | 35" | 46" |
| #7 | 63" | 82" |
| #8 | 72" | 94" |
| #9 | 81" | 106" |
| #10 | 89" | 116" |
| #11 | 98" | 128" |
- * TOP BARS = HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST IN MEMBER BELOW THE SPLICE.
- WOOD
1.

WOOD CONSTRUCTION SHALL CONFORM WITH THE FOLLOWING REFERENCE STANDARDS;

A.

NDS "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION"

B.

ANSI / TPI 1 " NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION"

C.

TPI H11B "COMMENTARY AND RECOMMENDATIONS FOR HANDLING, INSTALLING & BRACING METAL PLATE CONNECTED WOOD TRUSSES"

2.

MATERIALS;

A.

SAWN LUMBER

2x STUDSDOUG–FIR No. 2

SILL PLATESPT DOUG–FIR No. 2

JOISTS, RAFTERSDOUG–FIR No. 2

POSTS & BEAMSDOUG–FIR No. 1

B.

ROUGH SAWN LUMBER (U.N.O.)

8x AND SMALLERDOUG–FIR No. 1

10x AND LARGERDOUG–FIR No. 2

C.

LAMINATED VENEER LUMBER (LVL)

Fb = 2600 psi

Fv = 285 psi

E = 1,900,000 psi

D.

GLUE LAMINATED BEAMS (GLB) SHALL BE 24–V4 FOR SIMPLE SPANS AND 24–V8 FOR CANTILEVERED SPANS.

Fb = 2400 psi

Fv = 210 psi

E = 1,700,000 psi

E.

LAMINATED STRAND LUMBER (LSL)

Fb = 1700 psi

Fv = 150 psi

E = 1,300,000 psi

3.

ALL SAWN LUMBER AND ENGINEERED LUMBER SHALL BE IDENTIFIED BY A GRADE MARK ISSUED BY WWPA, WCLB OR NLGA.

4.

NAILS SHALL BE COMMON NAILS. DESIGN IS BASED ON THE FOLLOWING SIZES;

SIZE	DIAMETER	LENGTH
8d	0.131"	2 1/2"
10d	0.148"	3"
12d	0.150"	3"
16d	0.162"	3 1/2"
20d	0.192"	4"

5.

BOLTS FOR WOOD CONNECTIONS SHALL BE IN ACCORDANCE WITH ASTM A307. GRADE A. LAG SCREWS SHALL BE IN ACCORDANCE WITH ASTM A307 GRADE A.

6.

CONNECTION HARDWARE SHALL BE AS MANUFACTURED BY SIMPSON STRONG–TIE OR APPROVED EQUAL.

7.

SHEATHING SHALL CONFORM TO STANDARDS PS–1 AND PS–2 AND SHALL BEAR THE STAMP OF THE AMERICAN PLYWOOD ASSOCIATION (APA). SHEATHING MAY BE PLYWOOD OR OSB FOR WALLS AND ROOFING. FLOOR SHEATHING SHALL BE TONGUE & GROOVE PLYWOOD STURDI–FLOOR.

USE	THICKNESS	SPAN RATING	GRADE	EXPOSURE
ROOF	19/32"	32/16	C–D	1
FLOOR	23/32" T&G	48/24	STURDI–FLOOR	1
WALLS	15/32"	32/16	C–D	1

8.

ALL WOOD PRODUCTS SHALL BE KILN DRIED WITH A MAXIMUM MOISTURE CONTENT OF 19%. MOISTURE CONTENT SHALL BE DETERMINED IN ACCORDANCE WITH ASTM D4442.

9.

PROVIDE DOUBLE JOISTS UNDER STUD WALLS U.N.O.

10.

CONTINUOUS INSULATION SHEATHING IF NOTED SHALL BE HUBER ZIP PANEL SYSTEM OR APPROVED EQUAL. ZIP PANELS REQUIRE 0.148"Ø MIN. NAILS THAT WILL PENETRATE A MINIMUM OF 1 1/2" INTO STUDS.

11.

PROTECTION AGAINST DECAY AND TERMITES SHALL BE PROVIDED BY NATURALLY DURABLE WOOD OR PRESERVATIVE–TREATED WOOD IN ACCORDANCE WITH IBC 2304.12. PRESERVATIVE TREATED WOOD USING WATER BORN PRESERVATIVES SHALL BE IN ACCORDANCE WITH AWPA U1 FOR ABOVE GROUND USE. PROTECTION SHALL APPLY TO THE FOLLOWING;

A.

JOISTS, GIRDERS AND SUBFLOOR SHALL BE TREATED IF CLOSER THAN 18 INCHES TO EXPOSED GRADE FOR JOISTS AND STRUCTURAL FLOORS. WOOD GIRDERS SHALL BE TREATED IF CLOSER THAN 12 INCHES TO EXPOSED GROUND.

B.

WOOD FRAMING MEMBERS THAT ARE IN CONTACT WITH EXTERIOR FOUNDATION WALLS AND LESS THAN 8 INCHES FROM EXPOSED EARTH SHALL BE TREATED.

C.

WOOD FRAMING MEMBERS IN DIRECT CONTACT WITH THE INTERIOR OF EXTERIOR CONCRETE WALLS BELOW GRADE SHALL BE TREATED.

D.

SLEEPERS AND SILLS ON CONCRETE THAT IS IN DIRECT CONTACT WITH EARTH SHALL BE TREATED.

E.

OTHER LOCATIONS AS SPECIFIED IN IBC 2304.12.2.1 THROUGH 2304.12.2.5

ASE

ANDERSON STRUCTURAL
ENGINEERING, INC.

823 GRAND AVE.
SUITE 340
GLENWOOD SPGS, CO. 81601
(970) 984–0320

HOME RANCH GREENHOUSE

54880 COUNTY RD. 129
CLARK, CO 80428
ROUTT COUNTY

ASE Project No.:2000–29
Drawn By: ADC
Checked By: LKA

Revision	Date
COORDINATION	8–13–20
PERMIT	8–14–20

GENERAL NOTES

Sheet

S1.0

HOME RANCH GREENHOUSE
54880 COUNTY RD. 129
CLARK, CO 80428
ROUTT COUNTY

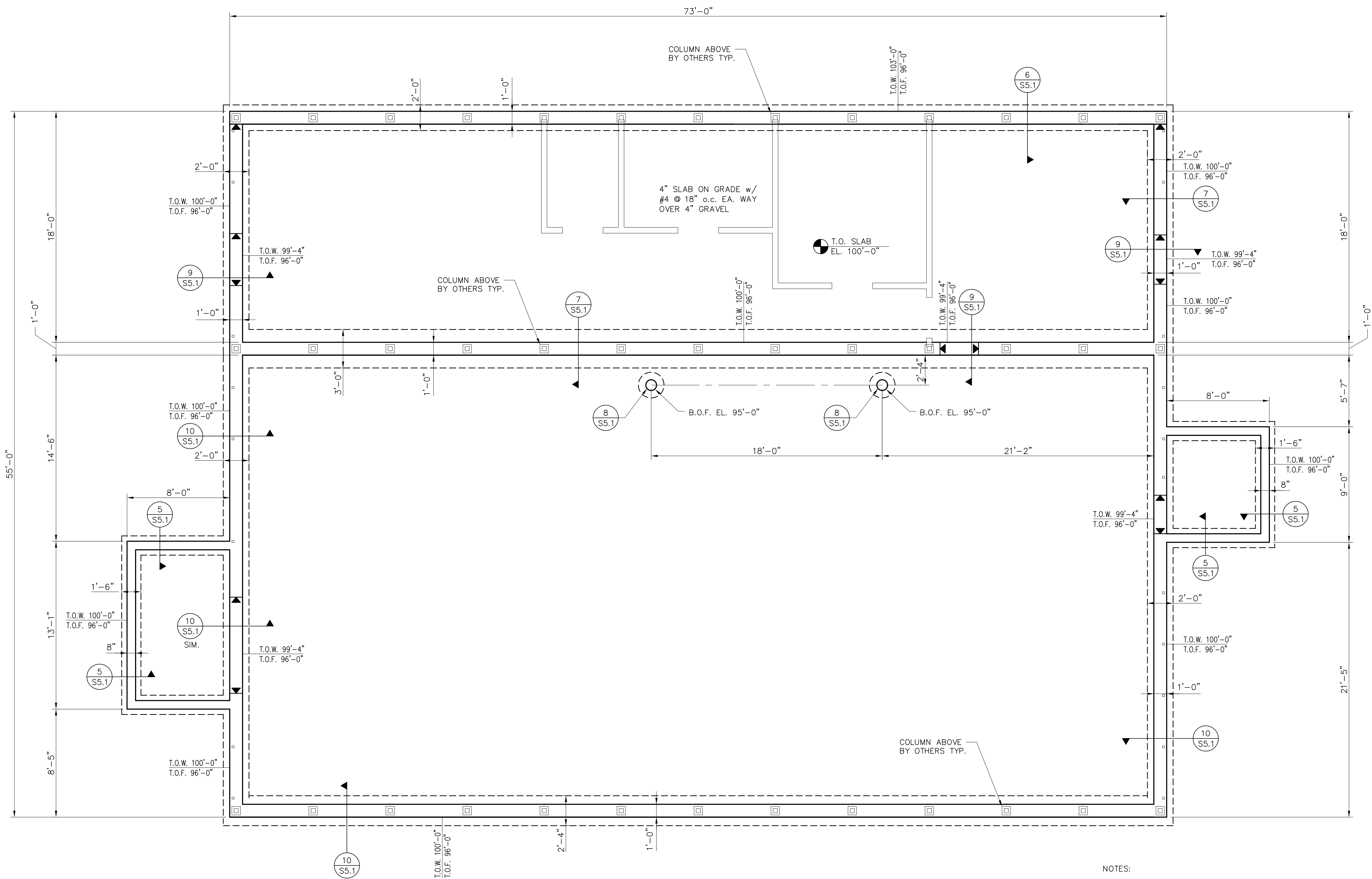
ASE Project No.:2000-29
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FOUNDATION
PLAN

Sheet

S1.1



FOUNDATION PLAN

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

NOTES:

- SEE DRAWING S1.0 FOR GENERAL NOTES.
- SEE DTL. 4/S5.1 FOR TYPICAL HEADER FRAMING.
- PROVIDE 2x STUD PACKOUTS EQUAL TO THE WIDTH OF THE BEAM U.N.O.

LEGEND

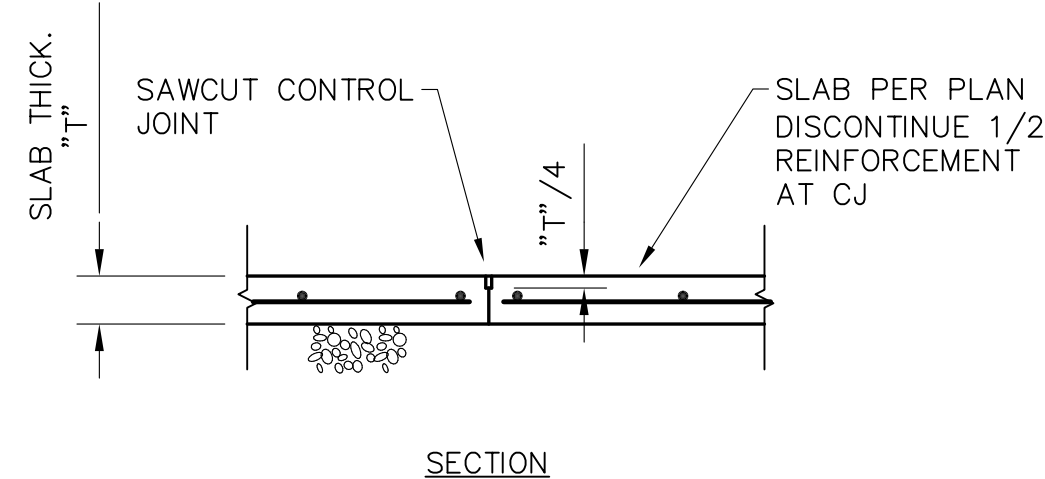
- ☒ 2x SOLID PACKOUT COLUMN U.N.O.
- ➔ BEARING CONNECTION
- ⌋ HANGING CONNECTION
- ⌋ FLOOR STEP
- ▲ WALL STEP
- ✓ FOOTING STEP
- T.O.W. = TOP OF WALL
- T.O.F. = TOP OF FOOTING
- Ⓐ SOLID PACKOUT COLUMN ABOVE
- Ⓑ SOLID PACKOUT COLUMN BELOW
- ⒶⒷ SOLID PACKOUT COLUMN ABOVE AND BELOW
- ①

ANCHOR BOLT SCHEDULE (SEE GREENHOUSE MFG. DRAWINGS FOR SIZE & LOCATION)		
ANCHOR SIZE	EMBEDMENT	MIN. EDGE DISTANCE
5/8"Ø ALL THREAD	12 1/2"	4"
1/2"Ø ALL THREAD	10"	1 3/4"
3/8"Ø ALL THREAD	7 1/2"	1 3/4"

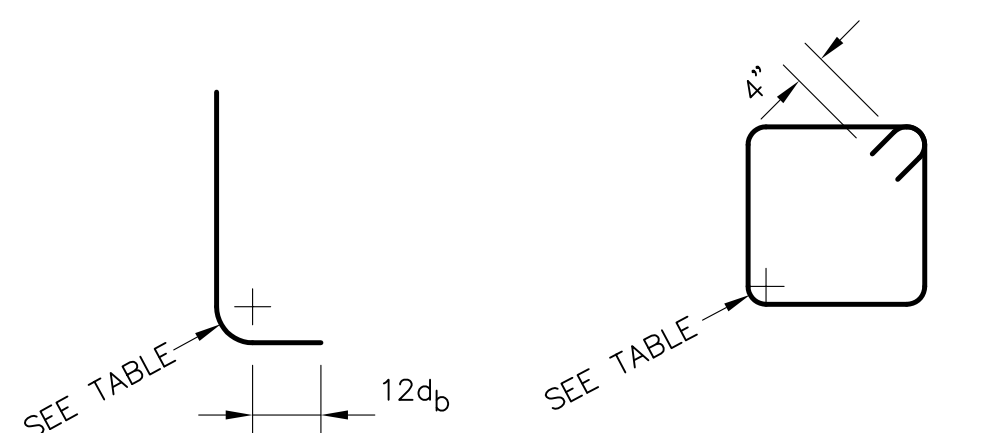


NOTES:

1. SAWCUT CONTROL JOINTS SHALL BE MADE WITHIN 24 HOURS OF POUR.
2. CONTROL JOINTS SPACING SHALL NOT EXCEED 15'-0" IN EACH DIRECTION.

**1 TYPICAL SLAB CONTROL JOINTS**

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



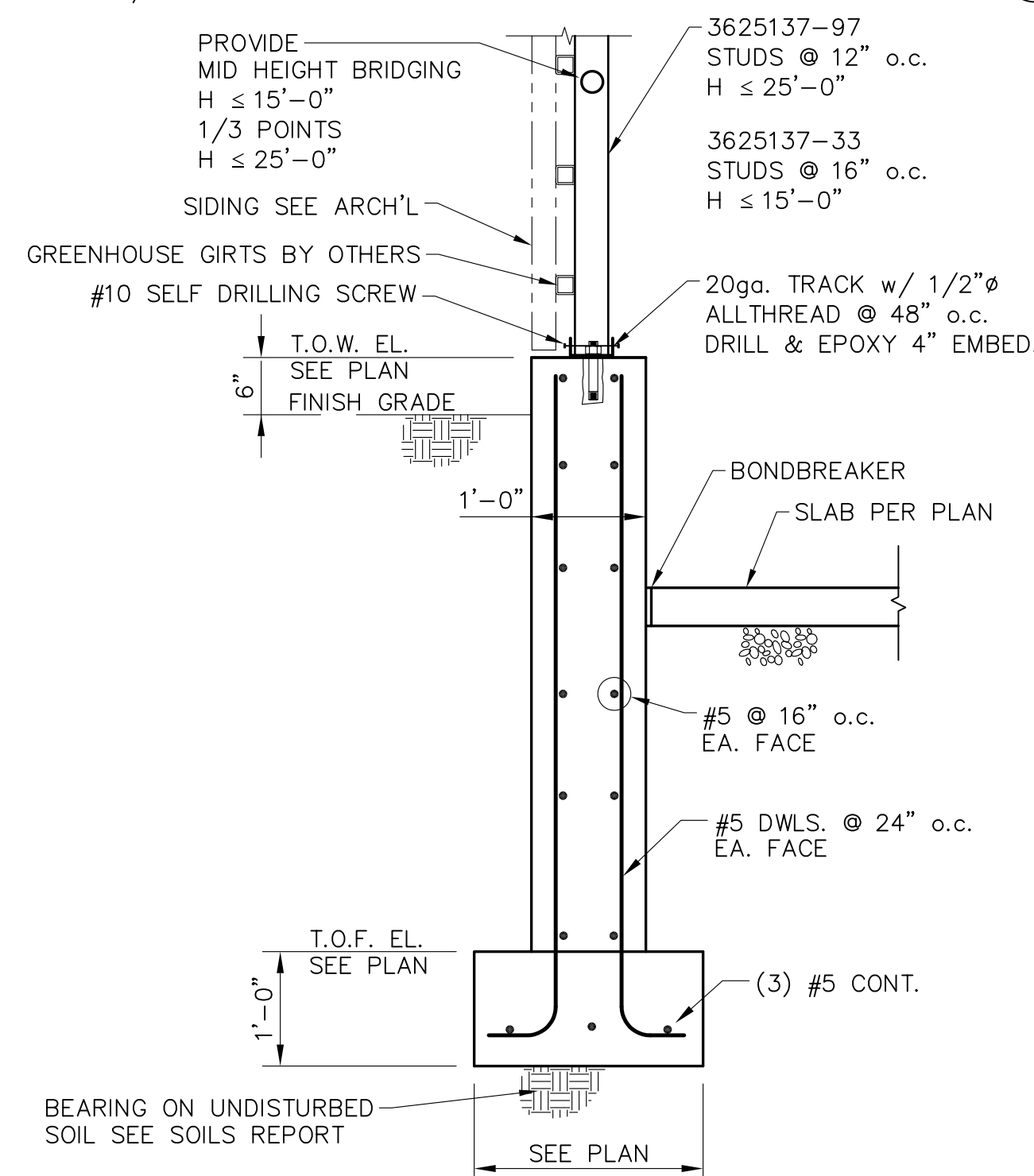
STD. 90° HOOKS

STD. STIRRUPS & TIES

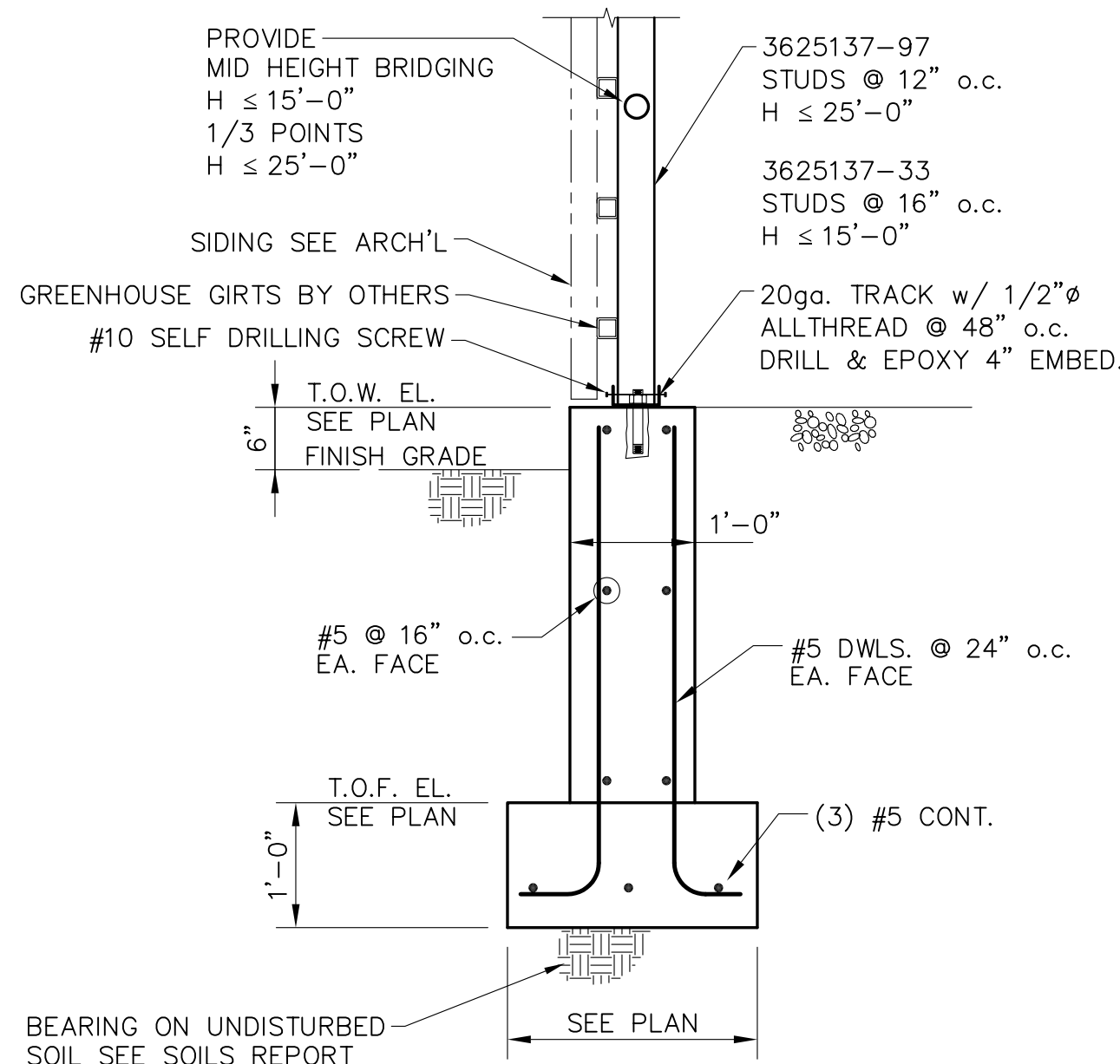
MINIMUM DIAMETERS OF BEND	
Bar Size	Minimum Diameter
No. 3 through 8	6d _b
No. 9, 10 and No. 11	8d _b
No. 14 and No. 18	10d _b

d_b = DIAMETER OF BAR**2 TYPICAL REINFORCEMENT DETAILS**

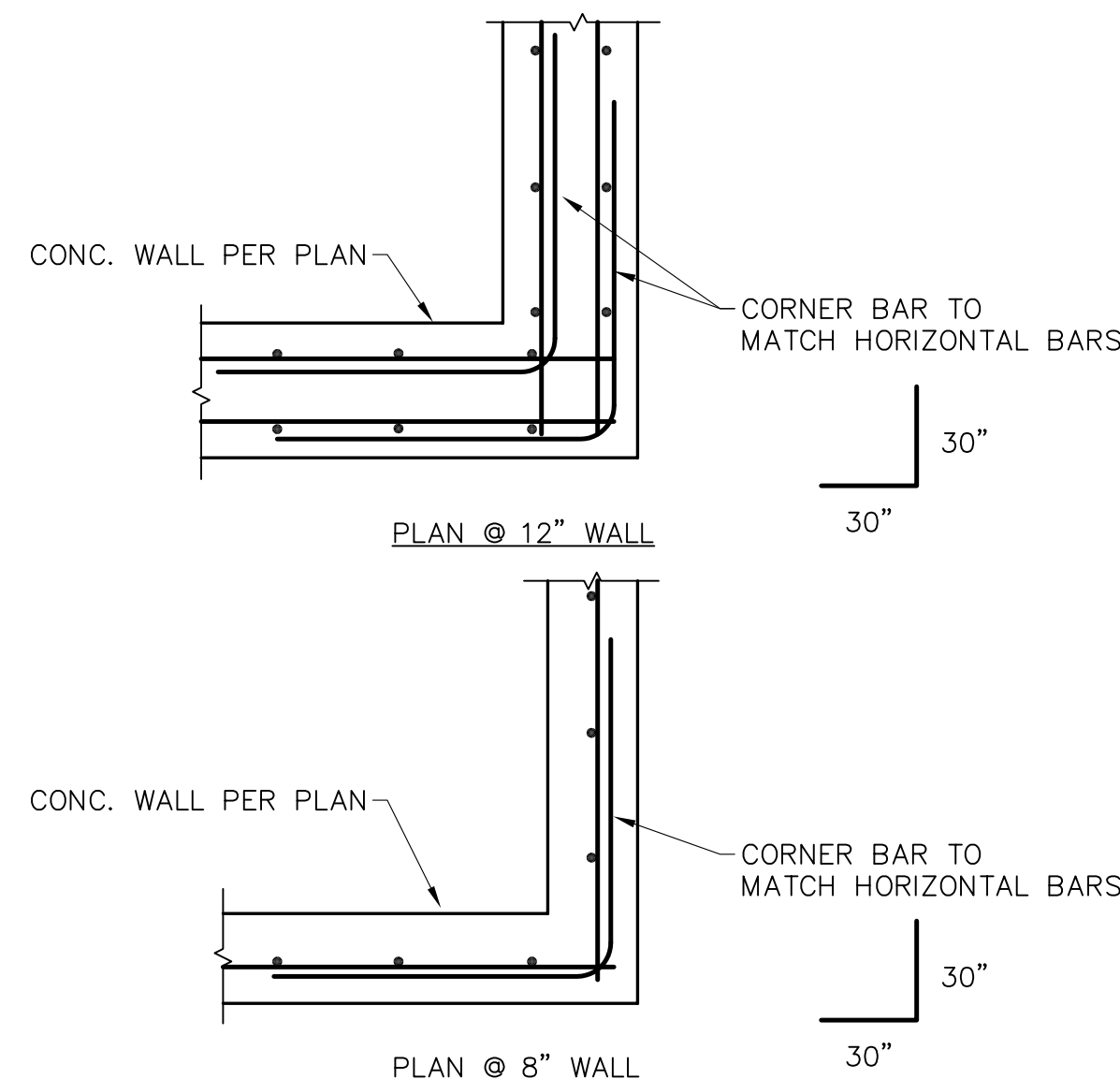
SCALE: 3/4" = 1'-0"

**6 FOUNDATION DETAIL**

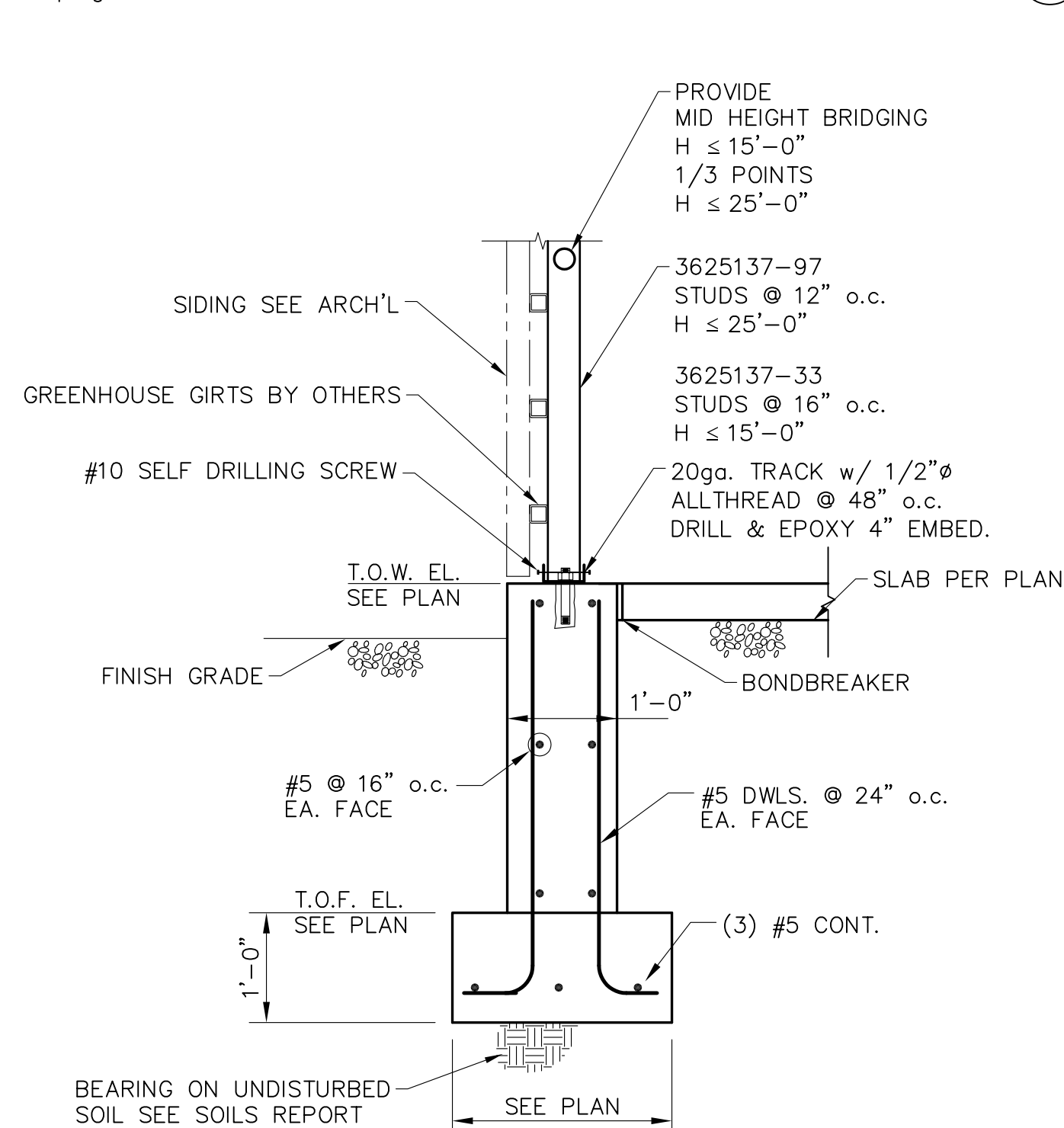
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**10 FOUNDATION DETAIL**

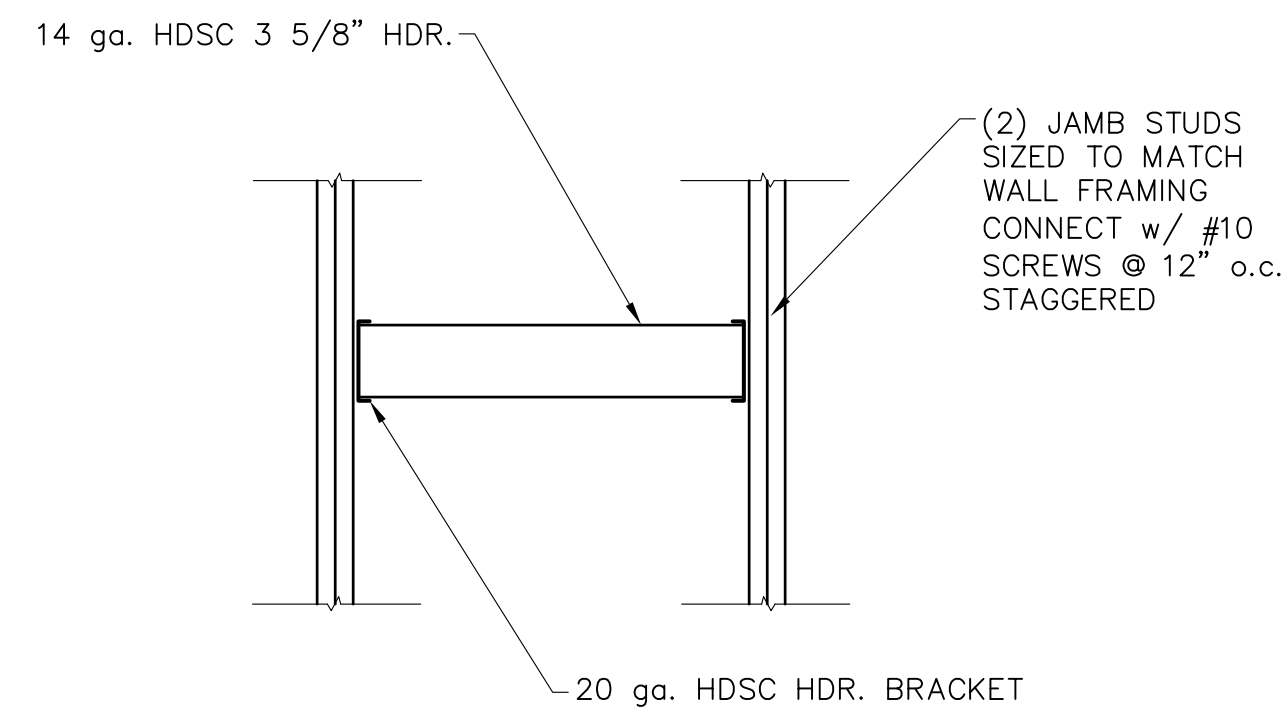
SCALE: 3/4" = 1'-0"

**3 TYPICAL CORNER REINFORCEMENT**

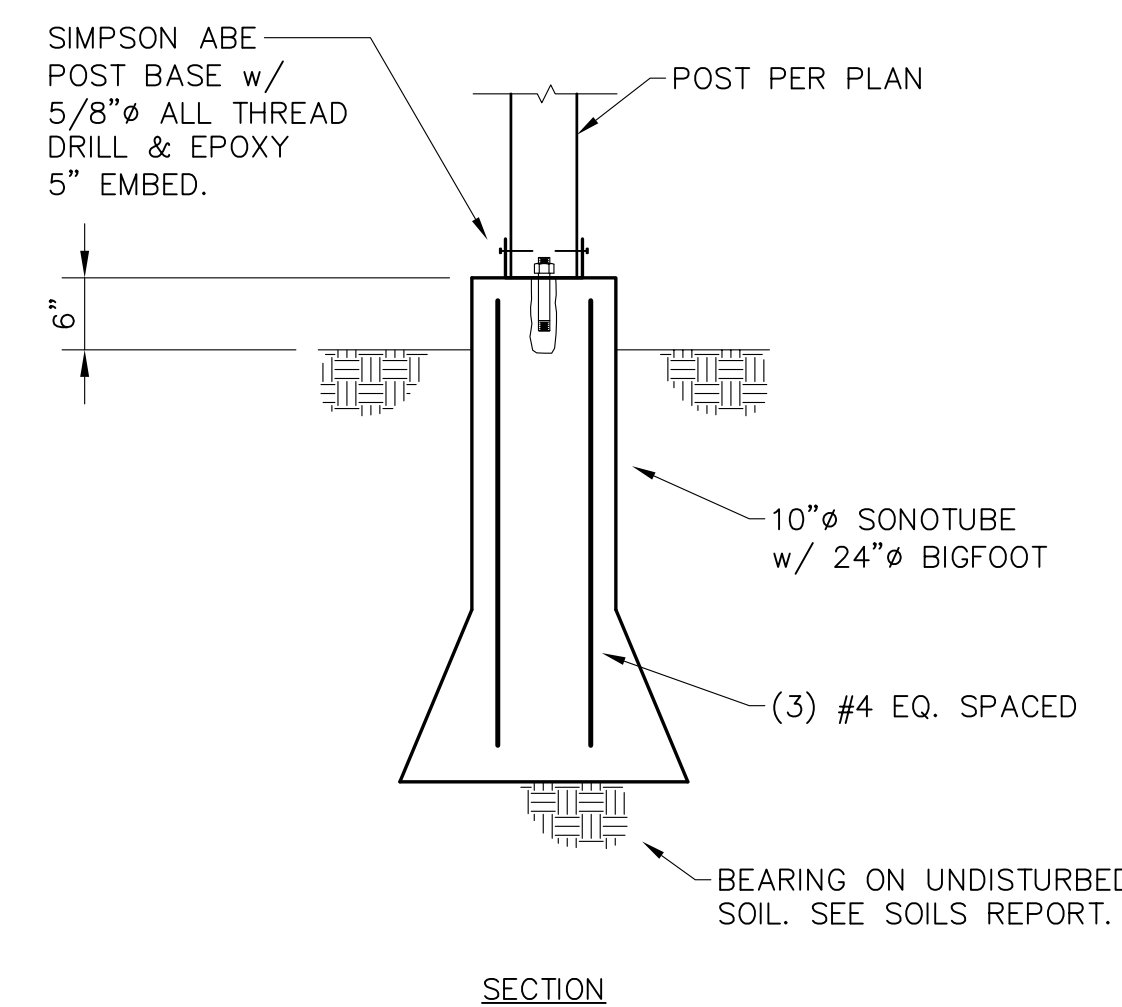
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**7 FOUNDATION DETAIL**

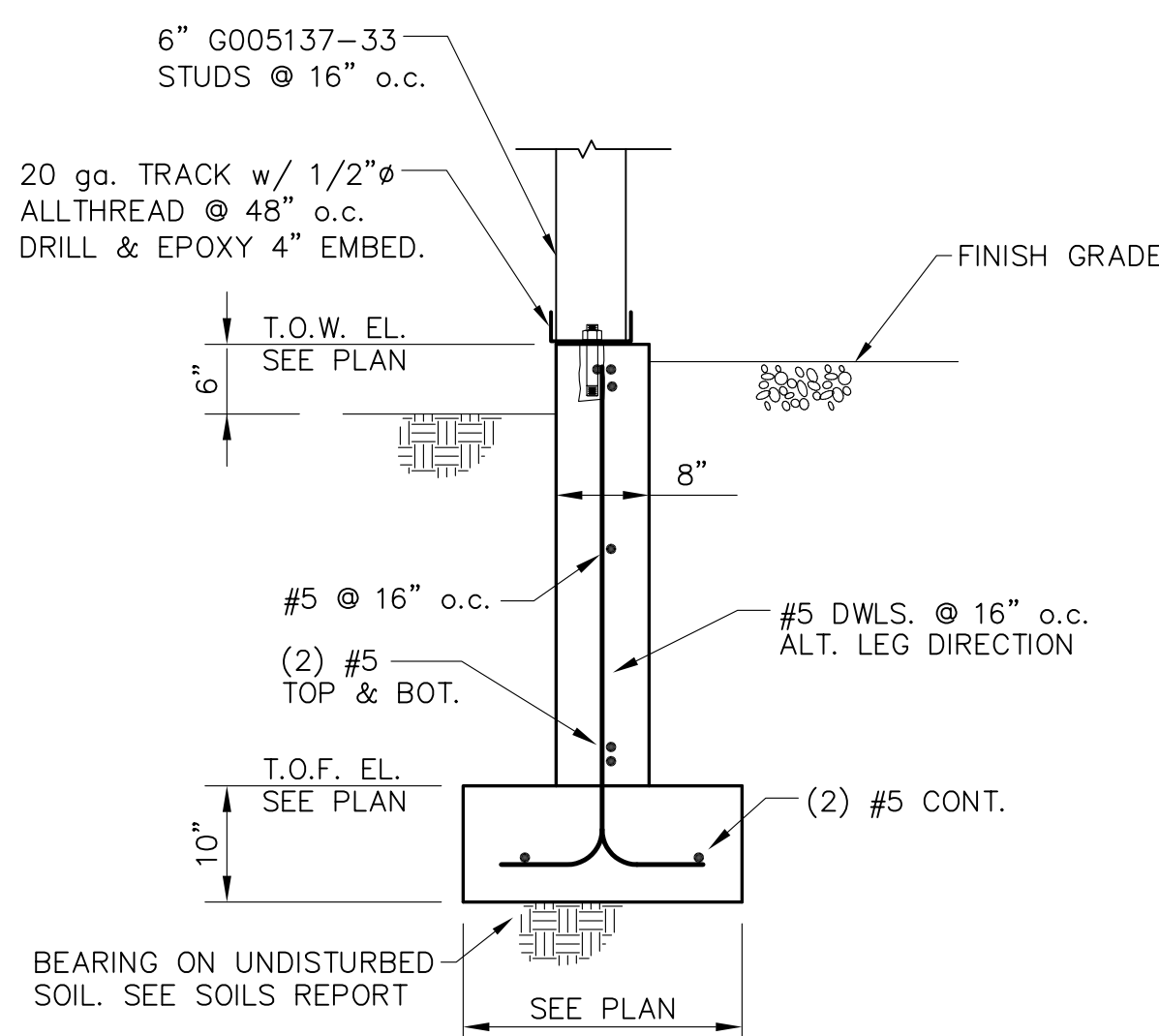
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**4 TYPICAL HEADER FRAMING**

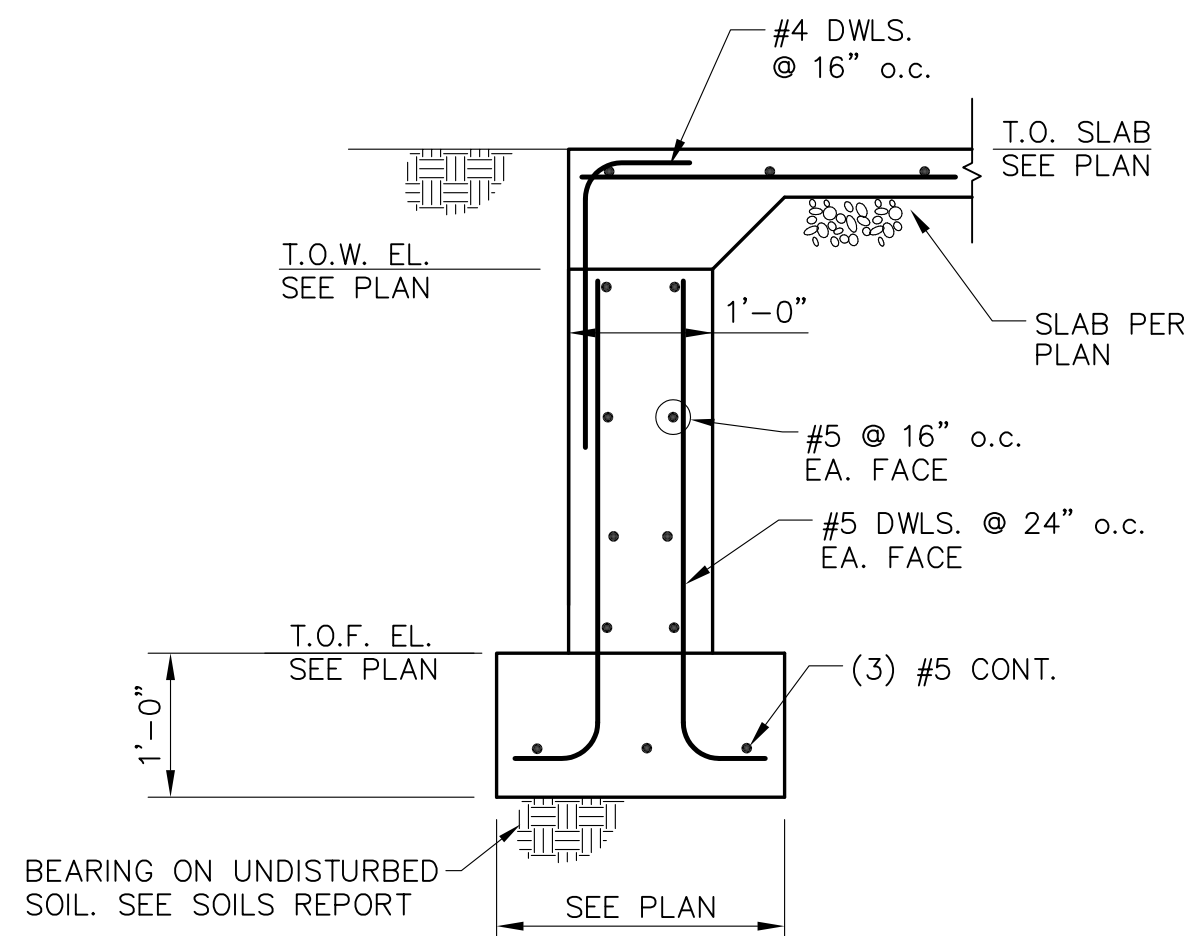
SCALE: 3/4" = 1'-0"

**8 FOUNDATION DETAIL**

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

**5 FOUNDATION DETAIL**

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

**9 FOUNDATION DETAIL**

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

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**SECTIONS
AND
DETAILS**

Sheet

S5.1