

**GENERAL NOTES**

**Preliminary Drawings:**  
Preliminary drawings may be provided with a quote to indicate the location of vacuum equipment, piping, and hoses. Drawings may be used in direct coordination with Architects' and Engineers' plans for city/AHJ/client approval. Accurate and complete site plans must be provided to ensure the quality of your vacuum area to coordinate issues such as vacuum parking space width/angle, traffic flow, and hose reach.

Drawings are preliminary until the final system order is signed by the client.

Changes made to a vacuum system without Vacutech's consultation voids all Vacutech responsibility as well as the system warranty.

**INSTALLATION NOTES**

**Installation By Others:**  
Installation drawings are provided with each project. Most projects require 2 or more installers and a forklift. Buried pipe, footings and concrete equipment pad(s) should be completed before installing Vacutech systems. J-bolt template kits for footings for vacuum arches and stanchions are available for purchase from Vacutech. Refer to drawings for footing requirements. Changes to vacuum piping, vacuum equipment location, and vacuum equipment enclosure will effect the performance of your system. Changes made to a vacuum system without Vacutech's consultation voids all Vacutech responsibility and the system warranty.

**Vacutech System Install:**  
Vacutech offers installation as an option when bidding a project.

Please note that the scope of Vacutech's installation only includes work above ground. Vacutech will install vacuum arches/stanchions to concrete footings, install vacuum piping and set vacuum equipment in place.

Vacutech does not dig trenches, auger footings, dig/backfill/bury pipe or conduit, or provide any work below grade.

Vacutech does not pour footings, install J-bolts, install concrete trenches with covers, pour concrete pads, pour grout or do concrete work of any kind. Vacutech does not do core drilling through walls or patch any type of wall coring.

Vacutech does not do any type of roof penetration sealing. I.e. rubber boots, flat room mating, or any other type of material.

Vacutech does not wire lights, producers, disconnects, VFDs, starters or any other electrical component. Vacutech does not pull wire through conduits. These items must be done by a Licensed Electrician.

**WARRANTY NOTES**

**CHANGES MADE TO VACUUM SYSTEM WITHOUT VACUTECH CONSULTATION VOIDS ALL VACUTECH RESPONSIBILITY AND SYSTEM WARRANTY**

**Equipment warranty information:** (if applicable)  
When vacuum equipment is installed in an enclosure with 4 walls and a roof it must be ventilated. Enclosure door must be louvered and an exhaust fan with thermostat set at 85°F must be installed to turn over air every 15 min. Vacuum producer must be exhausted outside with metallic pipe no smaller than 6" with exhaust pipe opening protected from elements. Equipment pad must be flat and level.

**Variable frequency drive (VFD) warranty information:** (if applicable)  
VFDs must be wired from main distribution panel in separate conduit (sized per code; based on producer H.P. and voltage) to each VFD and from each VFD to producer motor.

A separate conduit, sized per code, must also be installed from VFD to vacuum pressure transducer installed on filter separator. If two (2) or more VFD's are installed in one (1) enclosure, a separate conduit must be installed for each VFD. Install separate conduit from enclosure to each producer motor, and each filter separator if there is more than one (1).

**PIPE NOTES**

**Piping systems above ground**  
Piping system shall be schedule 40 (or sch 80) solid core PVC or ABS plastic pipe, with plastic D.W.V. (drain, waste and vent) fittings. Zinc, aluminum, or galvanized tubing, with directional flow zinc fittings of no less than 16 gauge, designed specifically for central vacuum systems are also acceptable.

**Buried piping systems cast iron no-hub**  
In-ground piping systems that are subject to ground freeze/thaw conditions or excessive movement shall be cast iron with no-hub fittings and no-hub couplings (w/ stainless steel band).

**Buried piping systems PVC sch 40 (or sch 80)**  
In-ground piping systems using PVC pipe shall be sch 40 (or sch 80) solid core, with PVC D.W.V. (drain, waste, and vent) fittings. Plastic pipe installed in-ground have a potential of possible cracking and wear. All plastic pipe systems in-ground must be below freeze line.

**System notes:**  
All interior surfaces shall be free of burrs and obstructions for a non-restrictive air flow. ABS and PVC piping shall be cut straight and removed of burrs. Piping shall be attached together using a primer, and a cement (clear PVC cement for PVC/ black abs cement for abs) for a 100% tight seal.

Overhead piping systems shall be supported by means of approved pipe hangers, and shall be installed at a maximum of six feet O.C. when using abs or PVC pipe and ten feet when using zinc or aluminum tubing. All fittings supporting vacuum drop/hose assemblies shall be supported with within one foot on each side of fitting connection.

Piping systems shall be tested to hold 10 psi for a minimum of 24 hours.

When vacuum system is installed in potentially explosive environment, the following may be required as a minimum: Explosion proof motor Class I - Group D & Class II - Group E, F & G. Aluminum piping with zinc fittings. Primary and filtered separators and hose assemblies require special grounding. Verify all conditions.

PVC and ABS plastic pipe are not U.V. rated and will discolor and soften/cause bowing when exposed to direct sunlight. It is recommended that all exposed plastic pipe and fittings be primed and painted to help prevent this. It is recommended to use zinc, or aluminum tubing and zinc fittings be used when exposed to sun.

**Plastic pipe exposed to elements:**  
PVC pipe will become brittle at 40° f and can crack/split when moving debris collides with it, it is recommended to use cast iron, zinc, or aluminum tubing for colder conditions.

**ADDITIONAL NOTES**

**VFD Systems:**  
Instructions for wiring VFD to producer and Filter Separator are available for your electrician. After wiring is complete, call our customer service to complete programming.

**Arch Systems: How Awnings are ordered (Coolaroo/Weblon)**  
**Step 1:** Arches are to be completely installed on site.  
**Step 2:** After installation, Vacutech will send an awning measurement form to be filled out with instructions on how and where to measure. The awning form must be filled out entirely, signed, dated, and faxed or emailed to Vacutech for production.  
**Step 3:** Awnings are shipped to site w/ instructions.

**Maintenance:**  
System longevity under continuous operation is extended by regular maintenance. Issues commonly result from failure to remove obstructions in the piping system, replace damaged or worn parts, or not regularly changing filter bags. Refer to Vacutech maintenance instructions

**Assign a person to central vacuum maintenance:**  
To ensure continued trouble free central vacuum system operation and to avoid downtime during periods of heavy use, assign an employee to follow a strict maintenance schedule. Refer to Vacutech recommended maintenance schedule.

# VACUTECH

Elevation: 1,027' ASL AN **NCS** COMPANY

SHEET INDEX		
NO.	NAME	REV.
V001	COVER SHEET	1
V002	GENERAL STRUCT. NOTES	1
V101	OVERALL SITE PLAN	1
V111	VACUUM SITE PLAN	1
V121	VACUUM SITE ISOMETRIC	1
V201	PIPE LAYOUT	1
V211	PIPE ISOMETRIC	1
V301	PARKING ELEVATION	1
V311	ARCH NUMBERING PLAN	1
V401	FOOTING LOCATION PLAN	1
V402	BASEPLATE TEMPLATE	1

SHEET INDEX		
NO.	NAME	REV.
V411	FOOTING DETAIL	1
V421	POS FOOTING DETAIL	1
V501	POS DETAILS	1
V601	EQUIPMENT SITE PLAN	1
V611	EQUIP. SITE ISOMETRIC	1
V621	EQUIPMENT ELEVATION	1
V701	EQUIPMENT DETAILS	1
V702	ELECTRICAL DIAGRAM	1
V711	ENCLOSURE DETAIL	1
V721	PIPE DETAILS	1

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**CLUB CW - OLDHAM VILLAGE**

1021 SOUTH WEST JEFFERSON STREET  
LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

<b>COVER SHEET</b>		<b>V001</b>
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
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**GENERAL STRUCTURAL NOTES**

**DESIGN CRITERIA:**

BUILDING CODE: INTERNATIONAL BUILDING CODE, 2018 EDITION (2018 IBC)

ROOF D.L. = 1.1 PSF (TRELLIS AWNING)  
 ROOF L.L. = 20 PSF  
 GROUND S.L. = 20 PSF

WIND:  
 BASIC WIND SPEED V = 103 MPH; ALLOWABLE WIND SPEED VASD = 79.78 MPH  
 RISK CATEGORY = I; EXPOSURE = C

SEISMIC:  
 IMPORTANCE FACTOR, I<sub>e</sub> = 1.0  
 MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS S<sub>s</sub> = 0.1 S<sub>1</sub> = 0.068  
 DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS SDS = 0.107 SD<sub>1</sub> = 0.109  
 SITE CLASS = D; SEISMIC DESIGN CATEGORY = B  
 SEISMIC RESISTING SYSTEM = STEEL ORDINARY CANTILEVER COLUMN SYSTEM  
 SEISMIC BASE SHEAR = (W x C<sub>s</sub>)  
 SEISMIC RESPONSE COEFFICIENT (C<sub>s</sub>) = 0.09  
 RESPONSE MODIFICATION FACTOR (R) = 1.25  
 ANALYSIS METHOD: EQUIVALENT LATERAL-FORCE PROCEDURE

ENGINEERING DESIGN PROVIDED BY OTHERS SHALL BEAR THE SEAL OF AN ENGINEER REGISTERED IN THE STATE OF MISSOURI.

**FOUNDATION:**

FOOTINGS SHALL BE CONSTRUCTED IN UNDISTURBED SOIL. SOIL SHALL MEET THE FOLLOWING REQUIREMENTS:  
 - DESIGN SOIL PRESSURES PER IBC TABLE 1806.2; SOIL CLASS 5  
 - DESIGN VERTICAL BEARING PRESSURE = 1500 PSF  
 - DESIGN LATERAL BEARING PRESSURE = 100 PSF/FT (X2 INCREASE PER IBC 1806.3.4)

PRESUMPTIVE LOAD BEARING VALUES WERE UTILIZED FOR THE FOUNDATION DESIGN. A SITE-SPECIFIC GEOTECHNICAL EVALUATION HAS NOT BEEN COMPLETED FOR THIS PROJECT. SML ENGINEERS ASSUMES NO LIABILITY WITH REGARD TO DIFFERENTIAL SETTLEMENT THAT COULD RESULT FROM FROST HEAVE OR THE PRESENCE OF EXPANSIVE OR COLLAPSIBLE SOILS. THIS STRUCTURE CAN TOLERATE SIGNIFICANT FOUNDATION MOVEMENT WITH A LITTLE EFFECT ON ITS INTEGRITY AND WITHOUT PRESENTING ANY UNDUE LIFE SAFETY HAZARDS.

PIER DESIGN IS BASED ON CONCRETE BEING CAST IN PLACE AGAINST EARTH. NO SONOTUBE OR CAISSON FROM SHALL BE PERMITTED.

**SPECIAL STRUCTURAL INSPECTION:**

CONTACT THIRD PARTY SPECIAL INSPECTION AGENCY

PROVIDE SAFE ACCESS TO THE WORK FACILITIES BY THE SPECIAL STRUCTURAL INSPECTOR. NOTIFY ENGINEER OF CONSTRUCTION START DATE AND COORDINATE INSPECTIONS. PROVIDE THE ENGINEER 24 HOURS NOTICE OF SPECIAL INSPECTIONS. SPECIAL INSPECTIONS MAY BE CONDUCTED AS NOTED IN PARENTHESES BELOW. SEE IBC CHAPTER 17 FOR MORE SPECIFIC INFORMATION

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION PER IBC CHAPTER 17:

- SPECIAL INSPECTION:**
1. STEEL CONSTRUCTION PER IBC 1705.2 & IBC 1705.12.1
    - a. FABRICATOR DOCUMENTATION
    - b. HIGH STRENGTH BOLTING – PERIODIC
  2. CONCRETE CONSTRUCTION: TABLE 1705.3
    - a. INSPECTION OF REINFORCEMENT AND VERIFICATION OF PLACEMENT.
    - b. INSPECTION OF ANCHORS CAST IN CONCRETE.
    - c. VERIFY USE OF REQUIRED DESIGN MIX.
  3. PIER FOUNDATIONS: SECTION 1705.8 AND TABLE 1705.8
    - a. OBSERVATION, COMPLIANCE AND RECORDS PER PIER –CONTINUOUS
    - b. PLACEMENT LOCATION, PLUMBNESS, DIAMETER, LENGTH, EMBEDMENT REQUIREMENT - CONTINUOUS

**CONCRETE:**

- ACI MANUAL OF CONCRETE PRACTICE, TYPE V CEMENT.  
 MINIMUM 28 DAY STRENGTH AS FOLLOWS:  
 • CONCRETE SHALL BE 3,000 psi AT 28 DAYS. (EXPOSURE CATEGORY F0, S0, W0, AND C0)  
 \* UNLESS ANY OF THE FOLLOWING CONDITIONS APPLY PER ACI 318 CONCRETE DURABILITY REQUIREMENTS.
1. CONCRETE EXPOSED TO FREEZE/THAW CYCLES
    - 1.1. LIMITED EXPOSURE TO WATER CONCRETE STRENGTH = 4,000 PSI., AIR ENTRAINMENT= 6% & W/CM= 0.55 (EXPOSURE CATEGORY F1)
    - 1.2. FREQUENT EXPOSURE TO WATER MIN CONCRETE STRENGTH = 4,500 PSI, AIR ENTRAINMENT= 7.5% & W/CM= 0.45 (EXPOSURE CATEGORY F2)
  2. LIMITED OR FREQUENT EXPOSURE TO WATER
    - 2.1. 4000 PSI W/OUT FREEZE/THAW EXPOSURE OR CHLORIDES. (EXPOSURE CATEGORY C1)
    - 2.2. W/ CHLORIDES (SUCH AS BRACKISH OR SALTWATER) =5,000 PSI. (EXPOSURE CATEGORY C2)
  3. IF SULFATES PRESENT REFER TO ACI 318 CHAPTER 19 FOR MIN. CONCRETE REQUIREMENTS (EXPOSURE CATEGORY S1, S2 & S3)
- ALL MIX DESIGNS SHALL BE ALKALI-SILICA REACTION (ASR) RESISTANT.
  - WATER REDUCING ADMIXTURES SHALL CONFIRM TO ASTM C494
  - FLY ASH: ASTM C-618 CLASS F, NOT TO EXCEED 15% OF THE CEMENTITIOUS MATERIALS BY WEIGHT.
  - MECHANICALLY VIBRATE WHEN PLACED, EXCEPT SLABS ON GRADE. MAXIMUM SLUMP 5"
  - NO ADDITIONAL ADMIXTURES WITHOUT APPROVAL.
  - NO ADMIXTURES CONTAINING CHLORIDES

CONCRETE SHALL BE DEPOSITED AS CLOSE AS POSSIBLE TO ITS FINAL POSITION. CONCRETE WITHOUT TYPE F OR G WATER REDUCERS SHALL NOT BE ALLOWED TO DROP MORE THAN 5 FEET FROM A CHUTE OR "ELEPHANT TRUNK". CONCRETE WITH TYPE F OR G WATER REDUCERS SHALL NOT BE ALLOWED TO DROP MORE THAN 12 FEET FROM THE CHUTE OR "ELEPHANT TRUNK". IF CONCRETE MUST BE DROPPED MORE THAN ALLOWED ABOVE, HOPPERS, TREMIE AND CHUTES, "ELEPHANT TRUNKS" ETC. SHALL BE USED TO PREVENT SEGREGATION.

CONCRETE PLACED INTO CAISSONS SHALL EMPLOY THE USE OF A TREMIE. CONCRETE SHALL NOT BE PLACED INTO CAISSONS WITH MORE THAN 2 FEET OF STANDING WATER AT THE BOTTOM OF THE CAISSON.

DRYPACK: NON-SHRINK NON-METALLIC GROUT.  
 MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 2 DAYS.  
 PLACE UNDER BEARING PLATES BEFORE INSTALLING FRAMING MEMBERS.

**REINFORCING:**

ASTM A615, GRADE 60 DEFORMED BARS. DETAIL PER LATEST A.C.I. CODE AND DETAILING MANUAL. PLACE REBAR PER C.R.S.I. STANDARDS.

\*\* OWNER RESPONSIBILITIES\*\*

\*\*THE STRUCTURAL ENGINEERING DESIGN IS APPLICABLE FOR THE CONFIGURATION PRESENTED IN THESE DRAWINGS AND ONLY FOR THIS LOCATION. THE OWNER SHALL BEAR ALL RISK ASSOCIATED WITH ALTERNATE CONFIGURATIONS, LOADING AND/OR LOCATION.

THE STRUCTURAL PORTIONS OF THESE PLANS HAVE BEEN REVIEWED BY STARLING MADISON LOFQUIST, INC. (SML) FOR COMPLIANCE WITH THE STRUCTURAL CALCULATIONS. SML IS NOT RESPONSIBLE FOR INFORMATION RELATED TO ANY OTHER DISCIPLINES.

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EXPIRES: 12/31/2026

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**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

GENERAL STRUCT. NOTES		V002
Project Number	1585523	
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**CONSTRUCTION NOTES**

**GENERAL NOTES:**

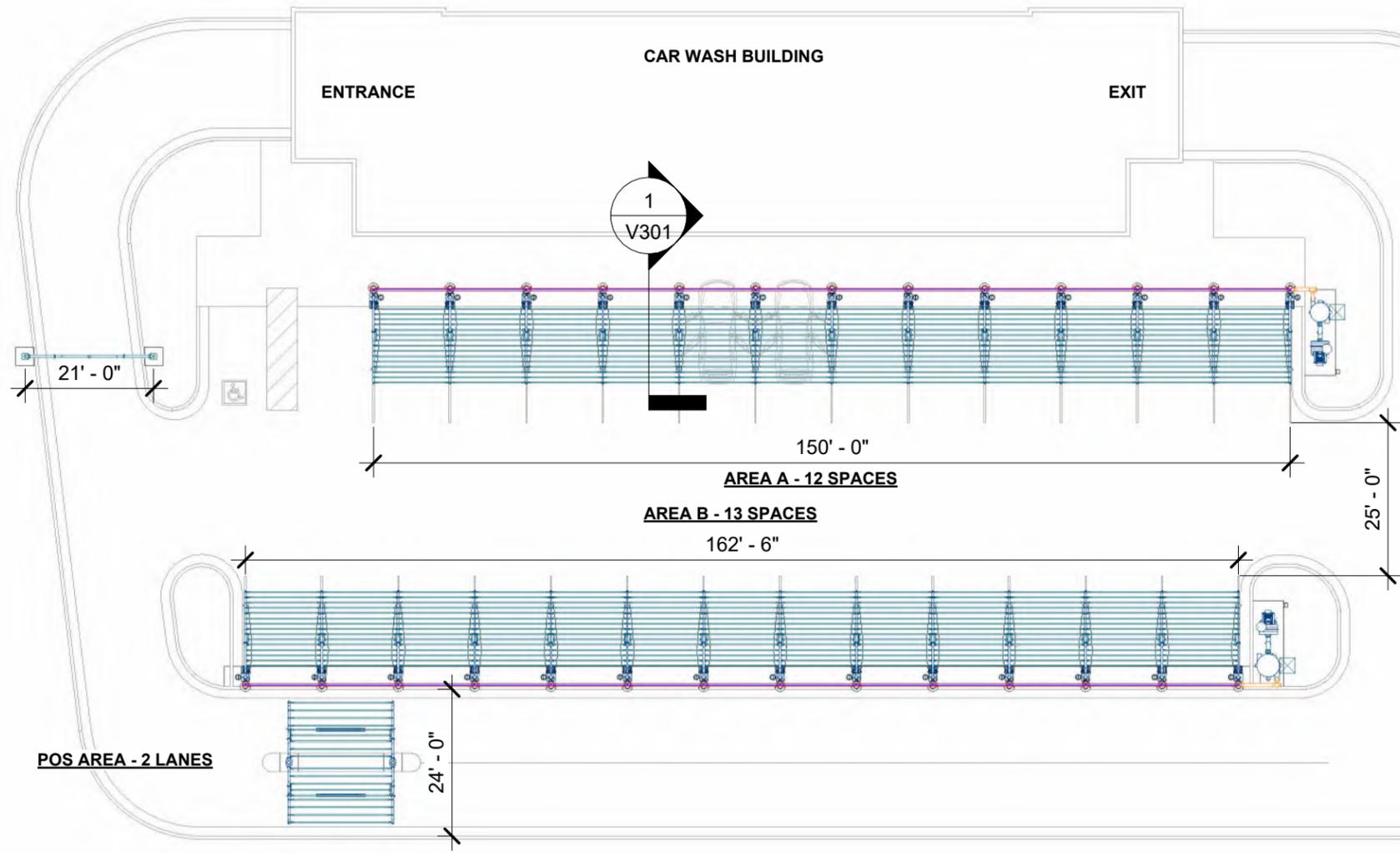
- a. ALL DIMENSIONS TO BE FIELD VERIFIED
- b. IF VACUUM EQUIPMENT IS ENCLOSED WITH ROOF/CEILING, REFER TO VENTILATION REQUIREMENTS UNDER EQUIPMENT WARRANTY INFORMATION
- c. PIER DESIGN AND REINFORCEMENT FOR CONCEPTUAL USE ONLY. CONSULT STRUCTURAL ENGINEER IN YOUR AREA FOR SPECIFIC DESIGN CRITERIA.
- d. COMPLY WITH ALL STATE/ COUNTY BUILDING CODES IN YOUR AREA

**EQUIPMENT & MATERIAL:**

- a. RUN COMPRESSED AIR TO AIR COMPRESSOR LOCATION (BY OTHERS)
- b. WALL PENETRATION: CORE DRILLING MAY BE REQUIRED FIELD VERIFY HEIGHT
- c. 14'Lx5'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE FLOOR SPACE REQUIRED FOR VACUUM EQUIPMENT
- d. 30"x30" MINIMUM SPACE REQUIRED TO REMOVE DEBRIS BUCKET FROM FILTER SEPARATOR

**VACUUM & PLUMBING:**

- a. SUPPORT SCHEDULE 40 PVC OVERHEAD DRY/WET VACUUM PIPE EVERY 6' MAXIMUM; USE UNISTRUT & CLAMP OR OTHER SUPPORT (PROVIDED BY OTHERS)
- b. ALL FITTINGS TO BE 'DWV'



**EXPIRES: 12/31/2026**

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POS AREA	
QTY	ITEM
2	10' FULL POS ARCH, TRELLIS
1	21 FT CAMERA ARCH
2	8' POS LED LIGHT W/ CROSSBAR MOUNT
18	SQUARE TUBE CROSSBAR

1 OVERALL SITE PLAN



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OVERALL SITE PLAN	
Project Number	1585523
Date	9/16/25
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<b>V101</b>	

**VACUUM AREA A**

QTY	ITEM
2	SINGLE USER PALM ARCH - TRELLIS
11	DUAL USER PALM ARCH - TRELLIS
24	CREVICE VACUUM TOOL & HOLDER
24	1-1/2"x15' RAPIDLOCK HOSE
13	AIR NOZZLE & HOSE
13	13" MAT RACK W/ DOOR PROTECTION
13	30 GALLON WASTE RECEPTACLE
13	TIGER EXPRESS TOWEL BIN
13	8' LED LIGHT
13	AIR TOOL HANGER
180	SQUARE TUBE CROSSBAR

**VACUUM AREA B**

QTY	ITEM
2	SINGLE USER PALM ARCH - TRELLIS
12	DUAL USER PALM ARCH - TRELLIS
26	CREVICE VACUUM TOOL & HOLDER
26	1-1/2"x15' RAPIDLOCK HOSE
14	AIR NOZZLE & HOSE
14	13" MAT RACK W/ DOOR PROTECTION
14	30 GALLON WASTE RECEPTACLE
14	TIGER EXPRESS TOWEL BIN
14	8' LED LIGHT
14	AIR TOOL HANGER
195	SQUARE TUBE CROSSBAR

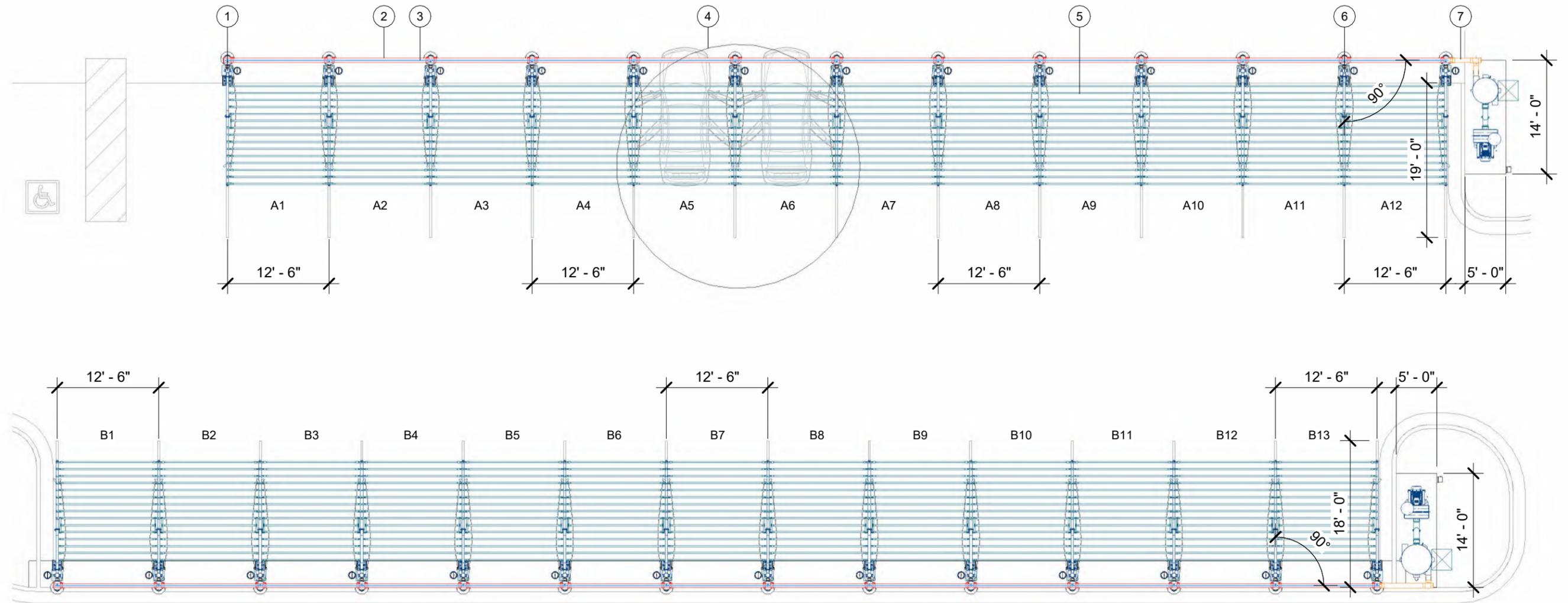
**VACUUM EQUIPMENT A**

QTY	ITEM
1	60HP T5 DIRECT DRIVE PRODUCER
1	8" T5 OUTDOOR EXHAUST MUFFLER
1	38x88 FILTER SEPARATOR
1	3" PRESSURE RELIEF VALVE

**VACUUM EQUIPMENT B**

QTY	ITEM
1	60HP T5 DIRECT DRIVE PRODUCER
1	8" T5 OUTDOOR EXHAUST MUFFLER
1	45x96 FILTER SEPARATOR
1	3" PRESSURE RELIEF VALVE

SITE PLAN	
ITEM	DESCRIPTION
1	SINGLE USER PALM ARCH AT ENDS OF VACUUM SPACES
2	6" OVERHEAD ALUMINUM VACUUM TUBE
3	1" OVERHEAD AIR TUBE
4	15' HOSE REACH
5	SQUARE TUBE CROSSBAR
6	DUAL USER PALM ARCH BETWEEN VACUUM SPACES
7	6" OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE



1 SITE PLAN



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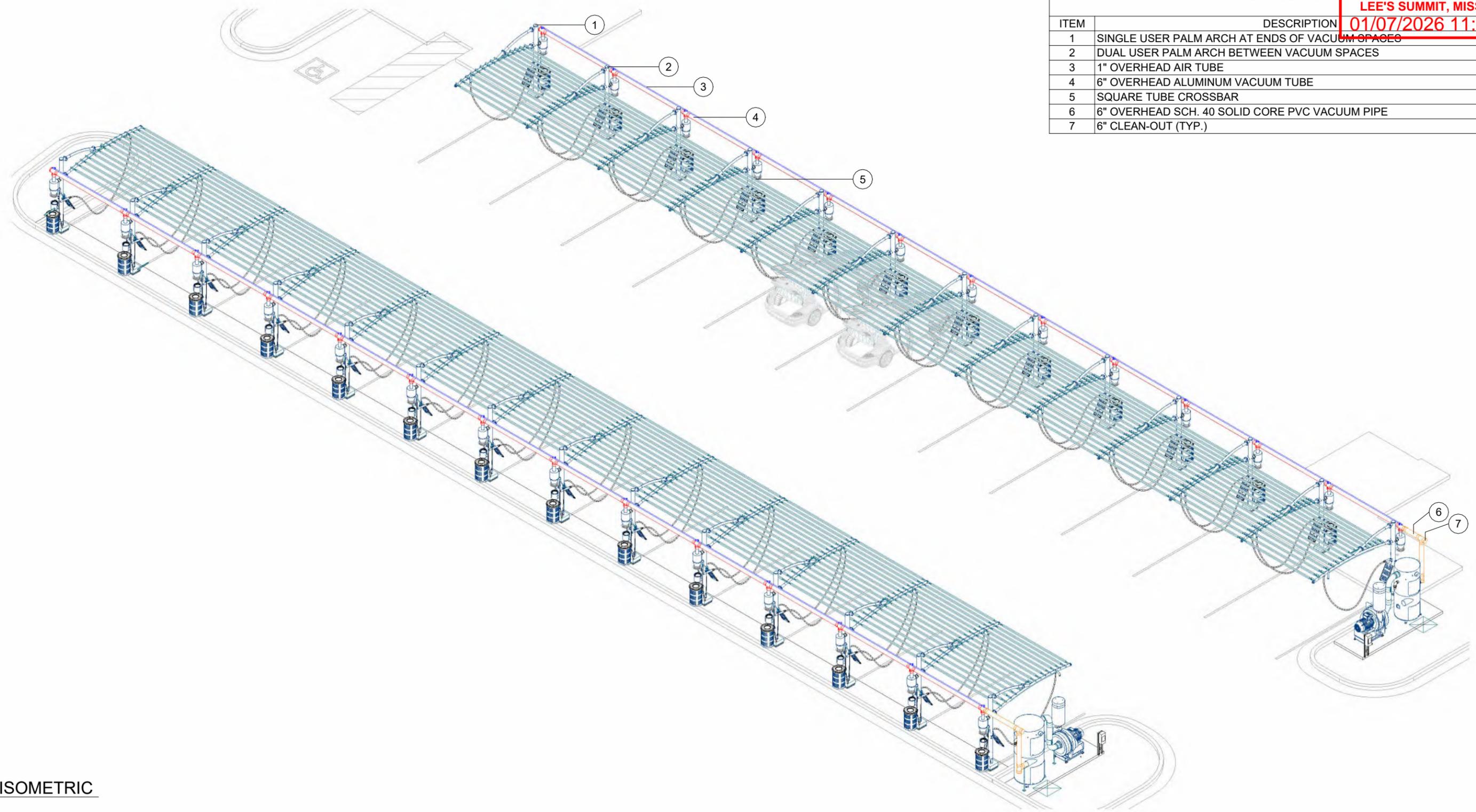
#	Revision	By	Chk	Date
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VACUUM SITE PLAN		V111
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SITE ISOMETRIC	
ITEM	DESCRIPTION
1	SINGLE USER PALM ARCH AT ENDS OF VACUUM SPACES
2	DUAL USER PALM ARCH BETWEEN VACUUM SPACES
3	1" OVERHEAD AIR TUBE
4	6" OVERHEAD ALUMINUM VACUUM TUBE
5	SQUARE TUBE CROSSBAR
6	6" OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
7	6" CLEAN-OUT (TYP.)



1 SITE ISOMETRIC

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**VACUUM SITE ISOMETRIC**

Project Number	1585523
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**V121**

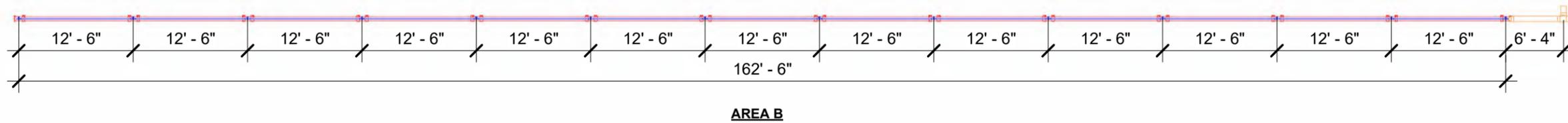
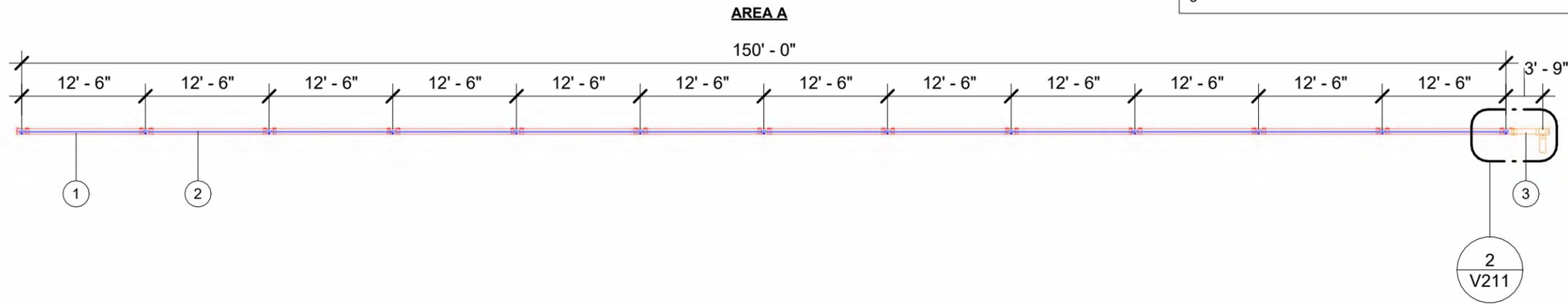
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PIPE LAYOUT	
ITEM	DESCRIPTION
1	6" OVERHEAD ALUMINUM VACUUM TUBE
2	1" OVERHEAD AIR TUBE
3	6" OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE

**PIPE NOTES:**

- a. FIELD VERIFY ALL DIMENSIONS
- b. SUPPORT SCHEDULE 40 PVC OVERHEAD DRY WET VACUUM PIPE EVERY 6' MAXIMUM; USE UNISTRUT & CLAMP OR OTHER SUPPORT PROVIDED BY OTHERS)
- c. RUN COMPRESSED AIR TO AIR COMPRESSOR LOCATION (BY OTHERS)
- d. COMPRESSED AIR RECOMMENDED WORKING PRESSURE IS 75PSIG AND 10SCFM AT INTERFACE
- e. WALL PENETRATION: CORE DRILLING MAY BE REQUIRED FIELD VERIFY HEIGHT
- f. REFER TO SHEET V721 FOR PIPE ASSEMBLY CUTSHEETS
- g. ALL FITTINGS TO BE 'DWV'



1 PIPE LAYOUT

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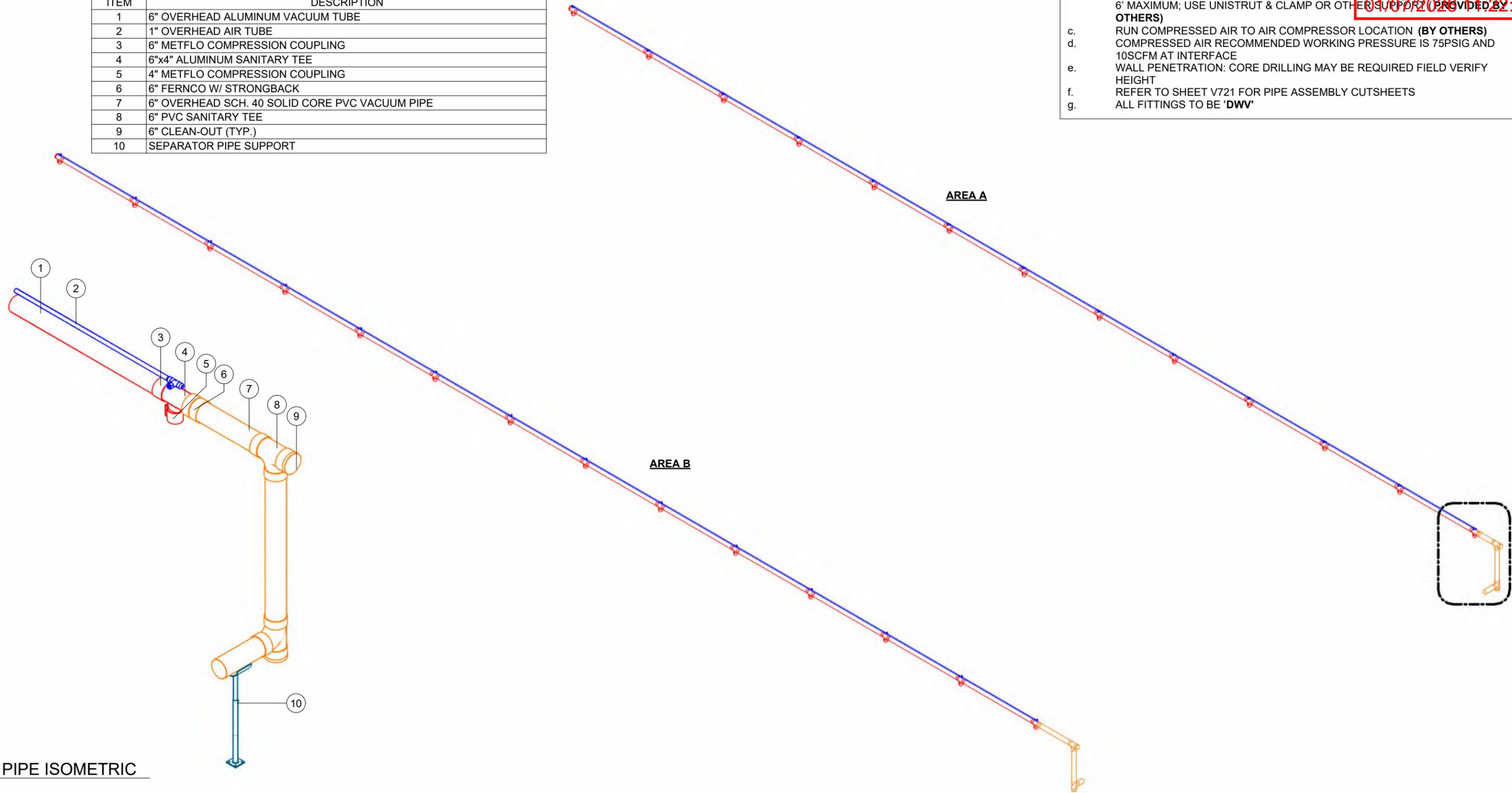
PIPE LAYOUT		V201
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PIPE ISOMETRIC	
ITEM	DESCRIPTION
1	6" OVERHEAD ALUMINUM VACUUM TUBE
2	1" OVERHEAD AIR TUBE
3	6" METFLO COMPRESSION COUPLING
4	6"x4" ALUMINUM SANITARY TEE
5	4" METFLO COMPRESSION COUPLING
6	6" FERNCO W/ STRONGBACK
7	6" OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
8	6" PVC SANITARY TEE
9	6" CLEAN-OUT (TYP.)
10	SEPARATOR PIPE SUPPORT

**PIPE NOTES:**

- a. FIELD VERIFY ALL DIMENSIONS
- b. SUPPORT SCHEDULE 40 PVC OVERHEAD DRY WET VACUUM PIPE EVERY 6' MAXIMUM; USE UNISTRUT & CLAMP OR OTHER SUPPORT PROVIDED BY OTHERS)
- c. RUN COMPRESSED AIR TO AIR COMPRESSOR LOCATION (BY OTHERS)
- d. COMPRESSED AIR RECOMMENDED WORKING PRESSURE IS 75PSIG AND 10SCFM AT INTERFACE
- e. WALL PENETRATION: CORE DRILLING MAY BE REQUIRED FIELD VERIFY HEIGHT
- f. REFER TO SHEET V721 FOR PIPE ASSEMBLY CUTSHEETS
- g. ALL FITTINGS TO BE 'DWV'



1 PIPE ISOMETRIC

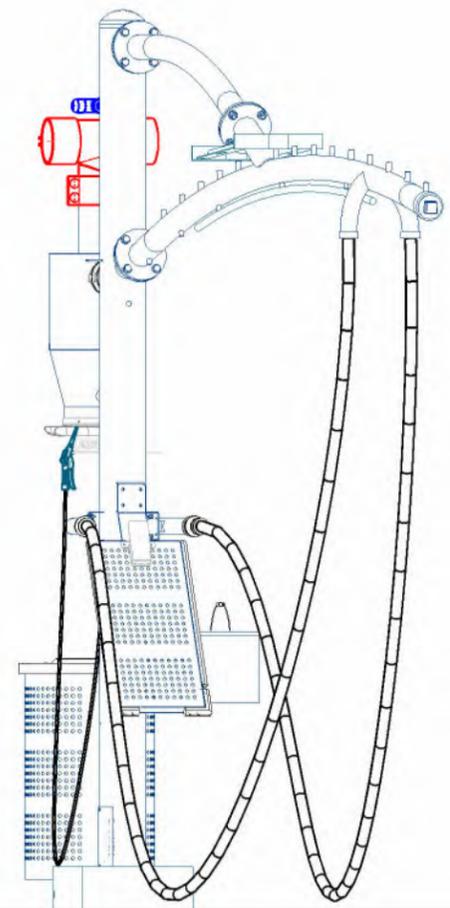
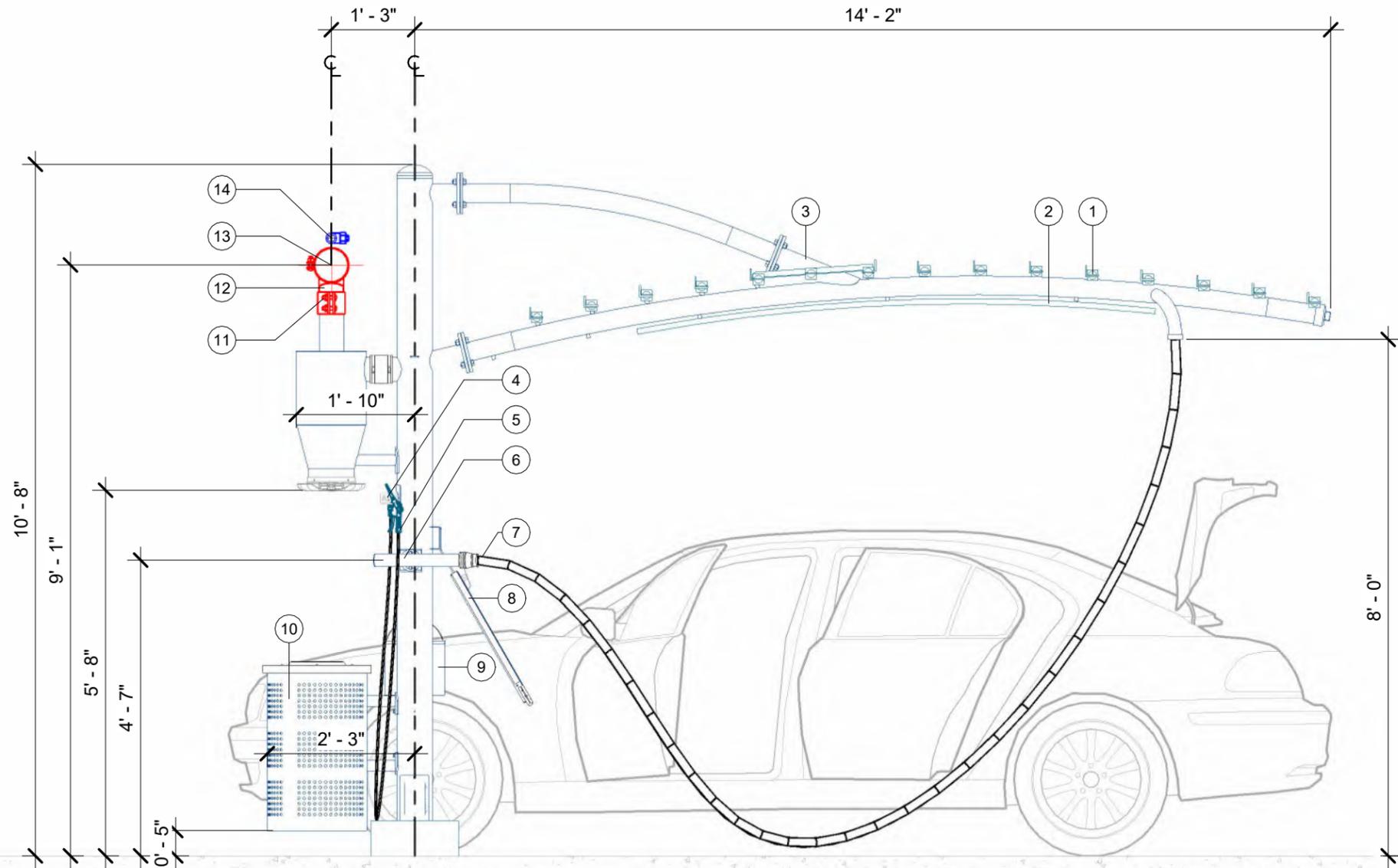
**VACUTECH**  
 AN **NCS** COMPANY  
 1350 HI-TECH DRIVE  
 SHERIDAN, WY 82801  
 PHONE: (307) 675-1982  
 EMAIL: vacinfo@ncswash.com  
 WEB: www.vacutechllc.com

**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

PIPE ISOMETRIC		V211
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
Checked By	TD	

RELEASE FOR CONSTRUCTION  
 FIELD VERIFIED DIMENSIONS / VIEW  
 DEVELOPMENT SERVICES  
 LEE'S SUMMIT, MISSOURI  
 01/07/2026 11:22:57



F.G.  
 0' - 0"

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 Phoenix, Arizona 85034  
 (602) 438-2500  
 fax. (602) 438-2505  
 Consulting Structural and Forensic Engineers  
 JOB # 25-0593



EXPIRES: 12/31/2026

1 PARKING ELEVATION

PARKING ELEVATION	
ITEM	DESCRIPTION
1	SQUARE TUBE CROSSBAR
2	8' LED LIGHT
3	DUAL USER PALM ARCH
4	AIR TOOL HANGER
5	AIR NOZZLE & HOSE
6	CREVICE VACUUM TOOL
7	1-1/2"x15' RAPIDLOCK HOSE

PARKING ELEVATION	
ITEM	DESCRIPTION
8	13" MAT RACK W/ DOOR PROTECTION
9	TIGER TOWEL BIN
10	30 GALLON WASTE RECEPTACLE
11	4" METFLO COMPRESSION COUPLING
12	6"x4" ALUMINUM SANITARY TEE
13	6" OVERHEAD ALUMINUM VACUUM TUBE
14	1" OVERHEAD AIR TUBE

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**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

PARKING ELEVATION	
Project Number	1585523
Date	9/16/25
Drawn By	RY
Checked By	TD
<b>V301</b>	

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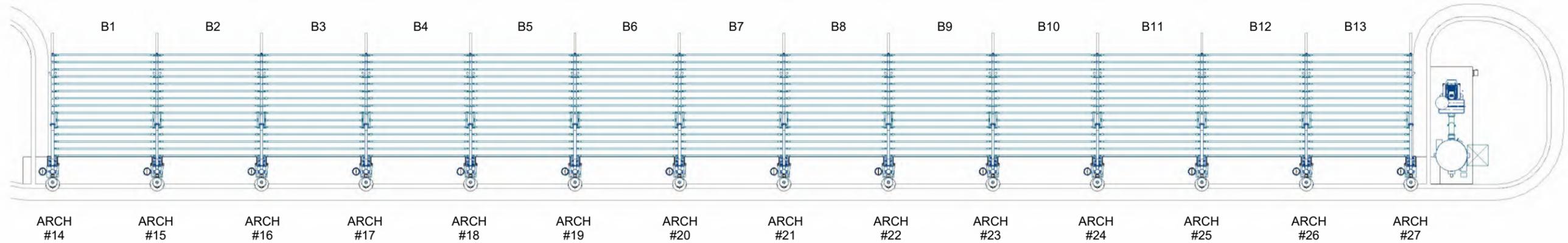
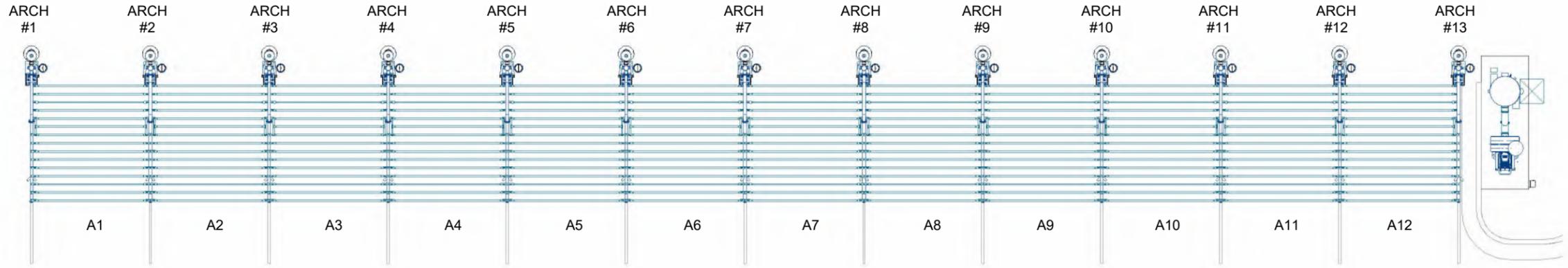
RELEASE FOR CONSTRUCTION  
 AS NOTED ON PLANS REVIEW  
 DEVELOPMENT SERVICES  
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EXPIRES: 12/31/2026

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 JOB # 25-0593



1 ARCH NUMBERING PLAN

**VACUTECH**  
 AN **NCS** COMPANY  
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 EMAIL: vacinfo@ncswash.com  
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**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

ARCH NUMBERING PLAN		V311
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
Checked By	TD	

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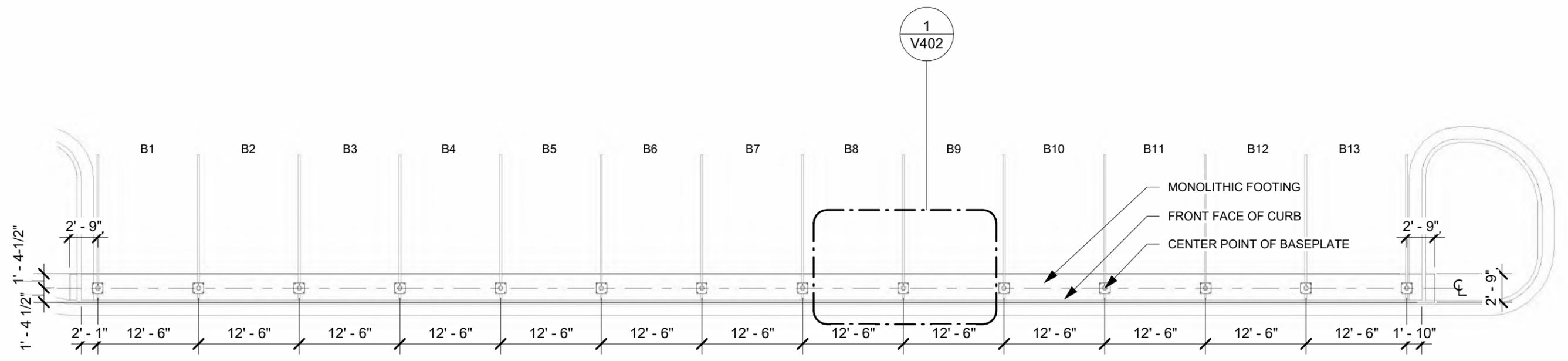
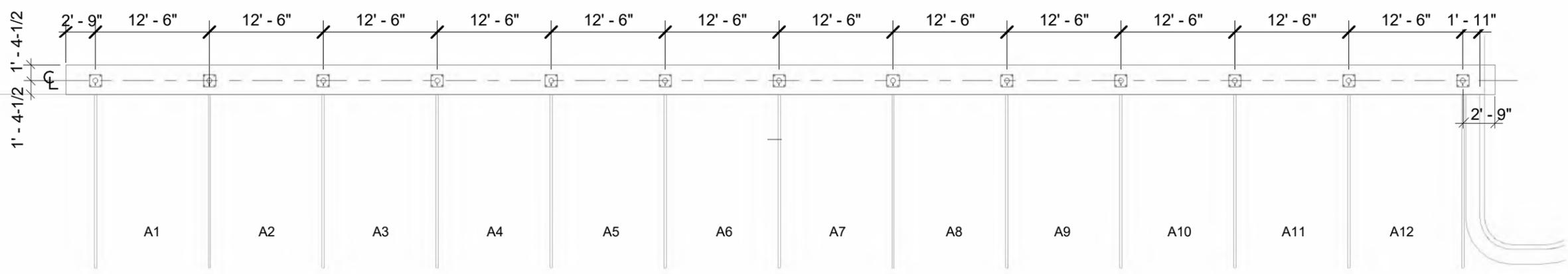
RELEASE FOR CONSTRUCTION  
 VERIFIED DIMENSIONS  
 DEVELOPMENT SERVICES  
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EXPIRES: 12/31/2026

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 fax. (602) 438-2505  
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 JOB # 25-0593



1 FOOTING LOCATION PLAN

**VACUTECH**  
 AN **NCS** COMPANY  
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 PHONE: (307) 675-1982  
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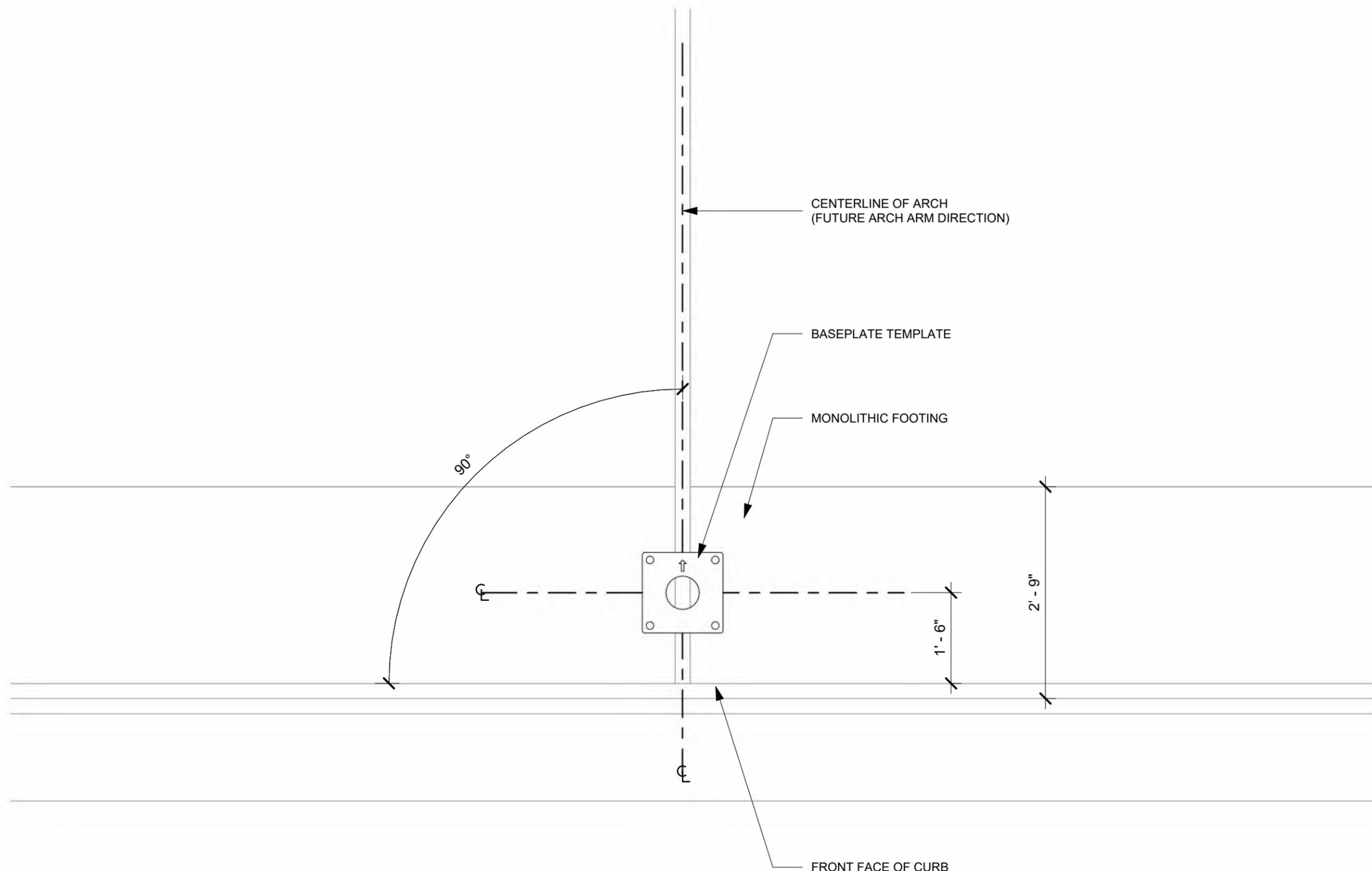
**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

FOOTING LOCATION PLAN	
Project Number	1585523
Date	9/16/25
Drawn By	RY
Checked By	TD
<b>V401</b>	

9/18/2025 10:11:55 AM

RELEASE FOR CONSTRUCTION  
 FIELD VERIFY ALL DIMENSIONS  
 DEVELOPMENT SERVICES  
 LEE'S SUMMIT, MISSOURI  
 01/07/2026 11:22:58



1 BASEPLATE TEMPLATE ORIENTATION

**VACUTECH**  
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 PHONE: (307) 675-1982  
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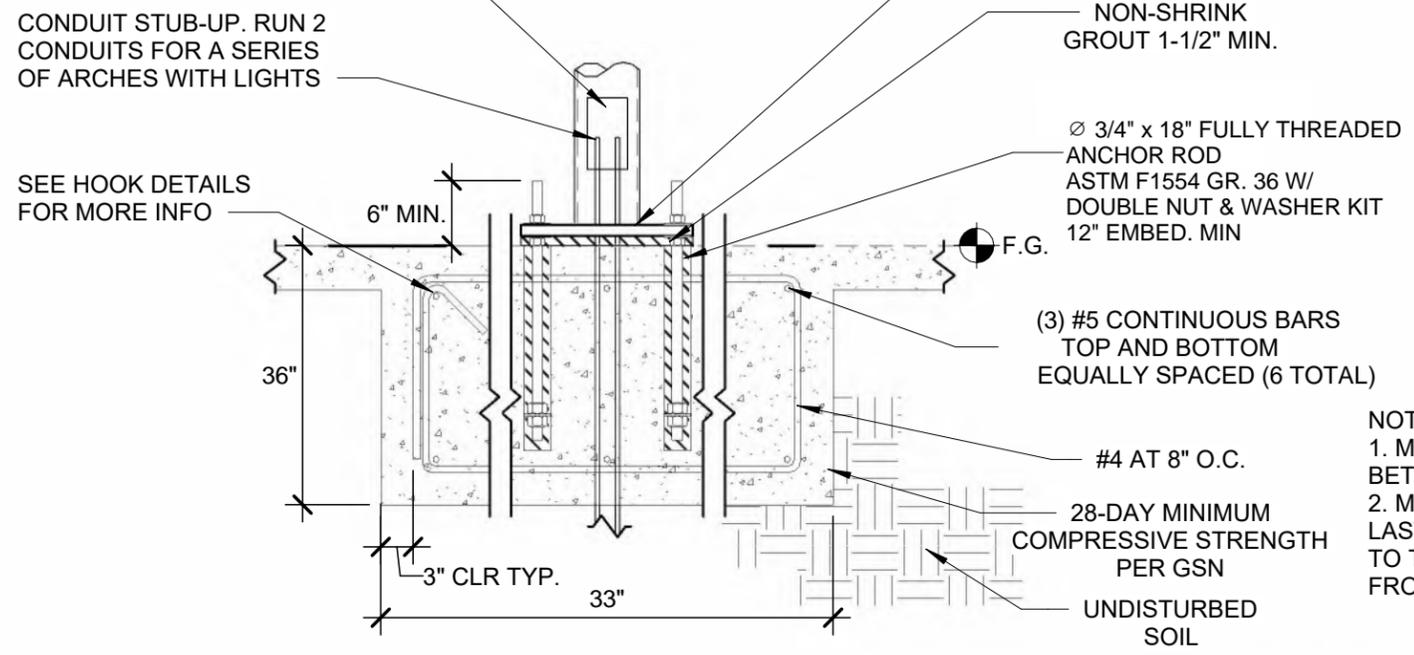
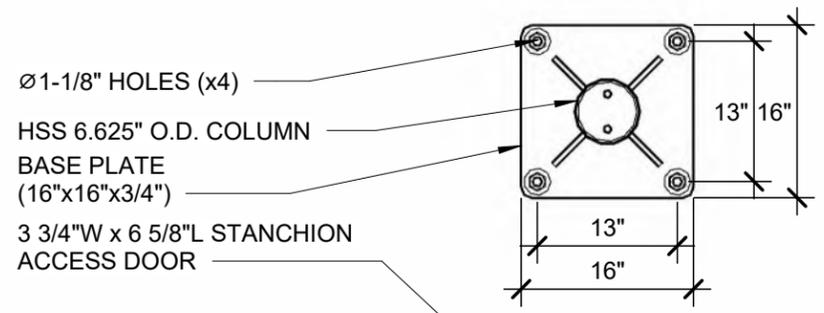
**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

BASEPLATE TEMPLATE		V402
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
Checked By	TD	

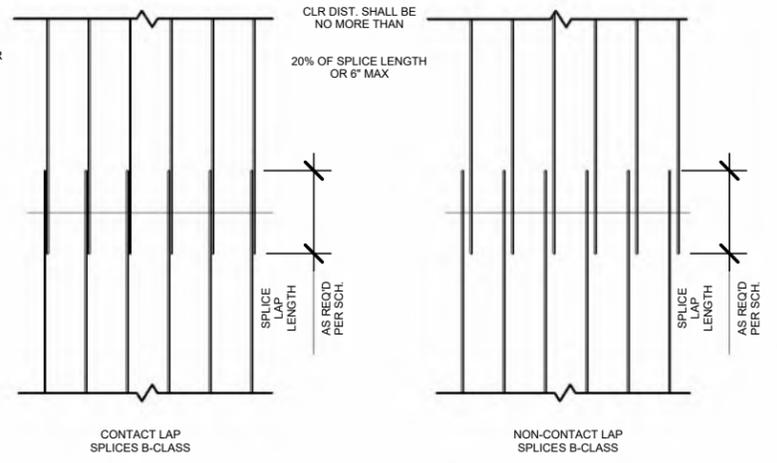
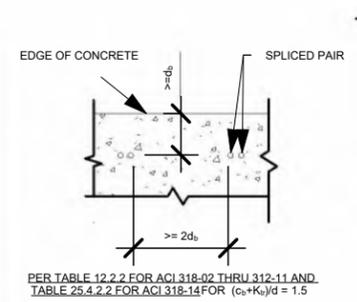
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RELEASE FOR CONSTRUCTION AS NOTED ON PLANS REVIEW FOR ASSEMBLY SHEETS  
 LEE'S SUMMIT, MISSOURI  
 01/07/2026 11:22:58

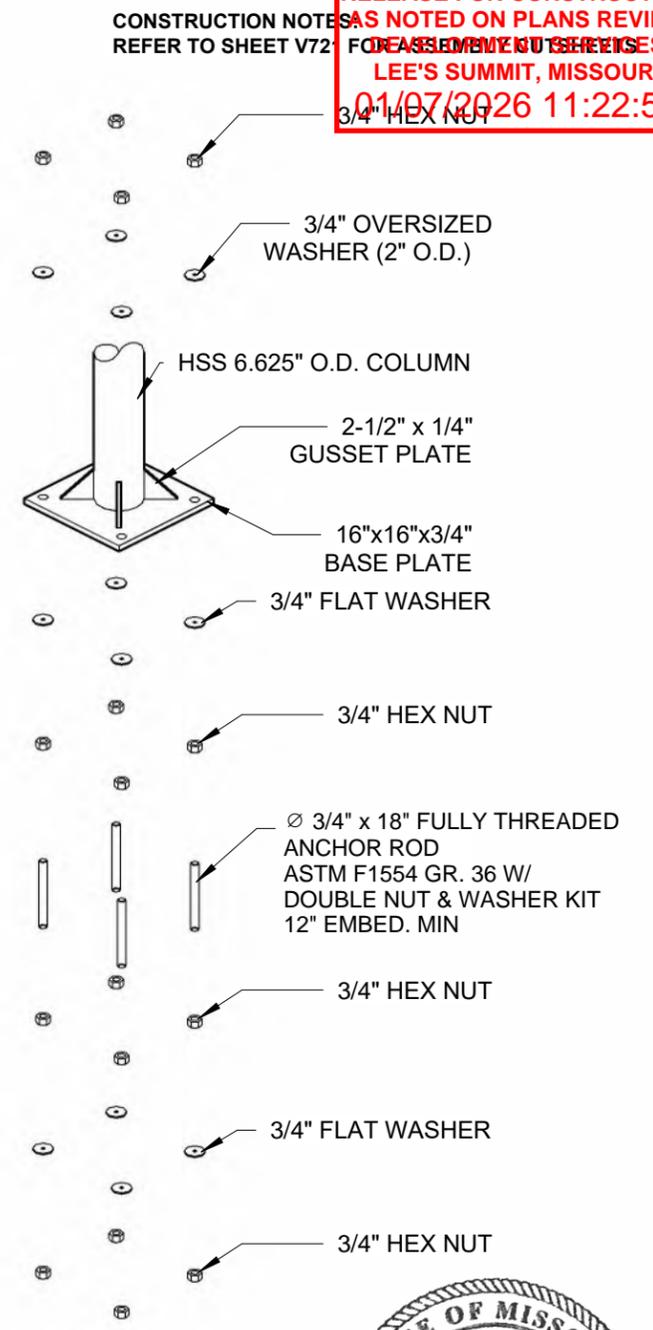
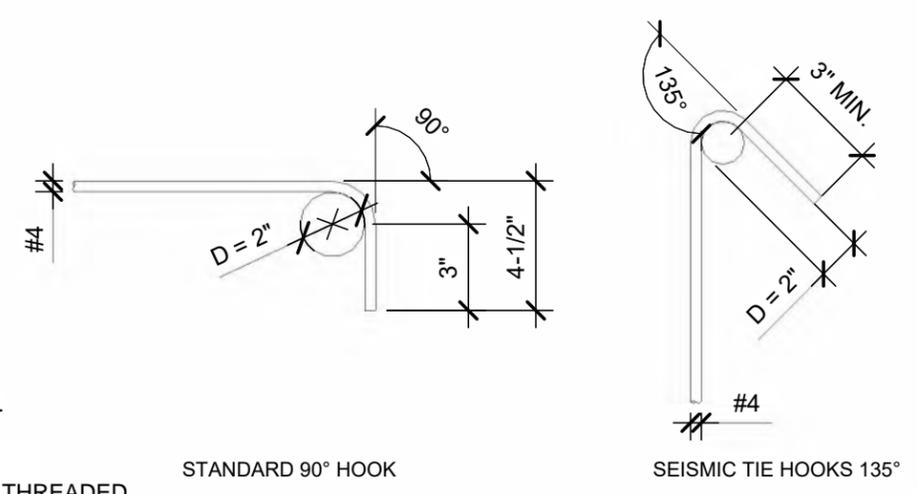


**SPLICE DETAILS**

TENSION LAP SPLICE LENGTHS							
FOR UNCOATED BARS IN NORMAL WEIGHT CONCRETE WITH NO MORE THAN 12" OF CONCRETE BELOW HORIZ. BASED ON ACI 318-02 THRU 318-11 SECTION 12.2 AND 318-14 SECTION 25.4 FOR $(c_b + K_{tr})/d = 1.5$							
CONC. PSI			$f_c$ (PSI)				
SPLICE TYPE			3,000	3,500	4,000	4,500	5,000
SIZE	$d_b$	$2d_b$	CLASS B	CLASS B	CLASS B	CLASS B	CLASS B
#4 (60ksi)	0.5"	1.0"	30"	29"	26"	24"	24"
#5 (60ksi)	0.625"	1.25"	37"	34"	32"	30"	29"
#6 (60ksi)	0.75"	1.5"	43"	41"	38"	36"	34"



**HOOK DETAILS**



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 (602) 438-2500  
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 Consulting Structural and Forensic Engineers  
 JOB # 25-0593

STATE OF MISSOURI  
 JESSE LIGHT  
 NUMBER PE-2022043335  
 9-24-2025  
 PROFESSIONAL ENGINEER

EXPIRES: 12/31/2026

1 MONOLITHIC FOOTING - PALM ARCH - SCH. 40 - ANCHOR RODS

**VACUTECH**  
 AN **NCS** COMPANY  
 1350 HI-TECH DRIVE  
 SHERIDAN, WY 82801  
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 EMAIL: vacinfo@ncswash.com  
 WEB: www.vacutecnhllc.com

**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

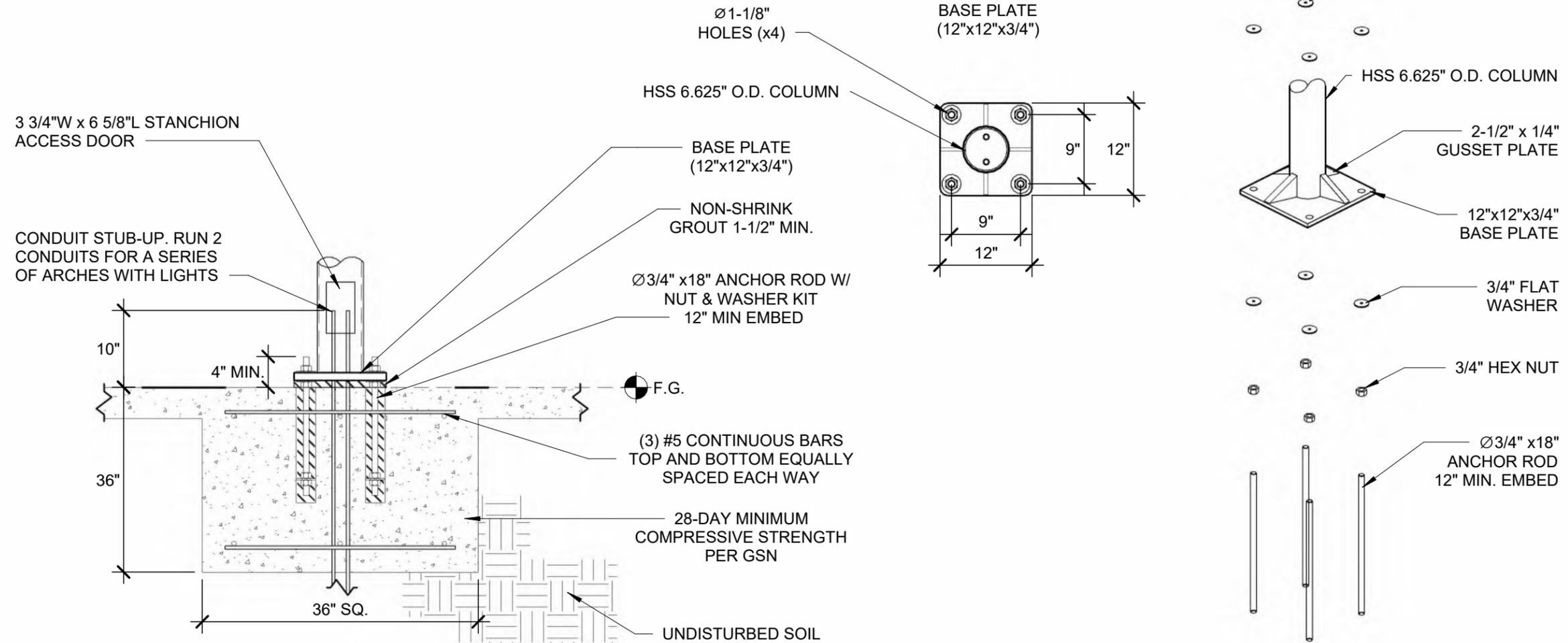
#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

FOOTING DETAIL	
Project Number	1585523
Date	9/16/25
Drawn By	RY
Checked By	TD

V411

9/18/2025 10:11:56 AM

CONSTRUCTION NOTES:  
 REFER TO SHEET V721 FOR ASSEMBLY CUTSHEETS



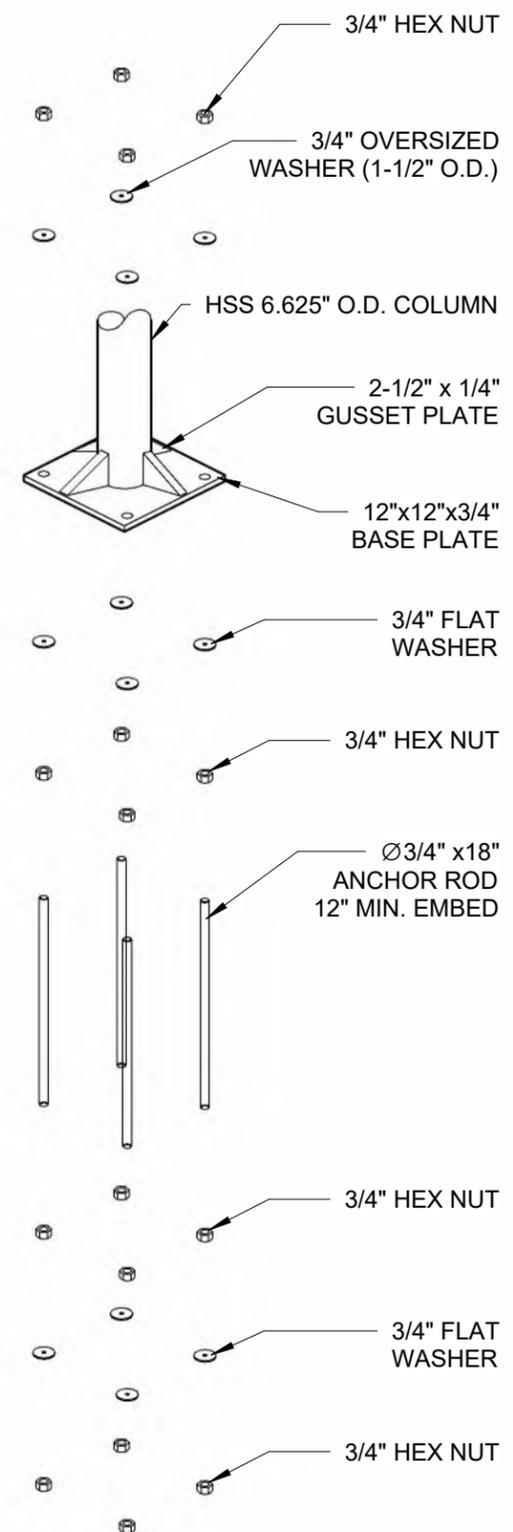
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 JOB # 25-0593



EXPIRES: 12/31/2026

1 SPREAD FOOTING - POS ARCH - ANCHOR RODS



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 SHERIDAN, WY 82801  
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 EMAIL: vacinfo@ncswash.com  
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**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
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#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

POS FOOTING DETAIL		V421
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
Checked By	TD	

9/18/2025 10:11:57 AM

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 DEVELOPMENT SERVICES  
 LEES SUMMIT, MISSOURI  
 04/07/2026 11:22:58

**POS AREA**

QTY	ITEM
2	10' FULL POS ARCH, TRELLIS
1	21 FT CAMERA ARCH
2	8' POS LED LIGHT W/ CROSSBAR MOUNT
18	SQUARE TUBE CROSSBAR



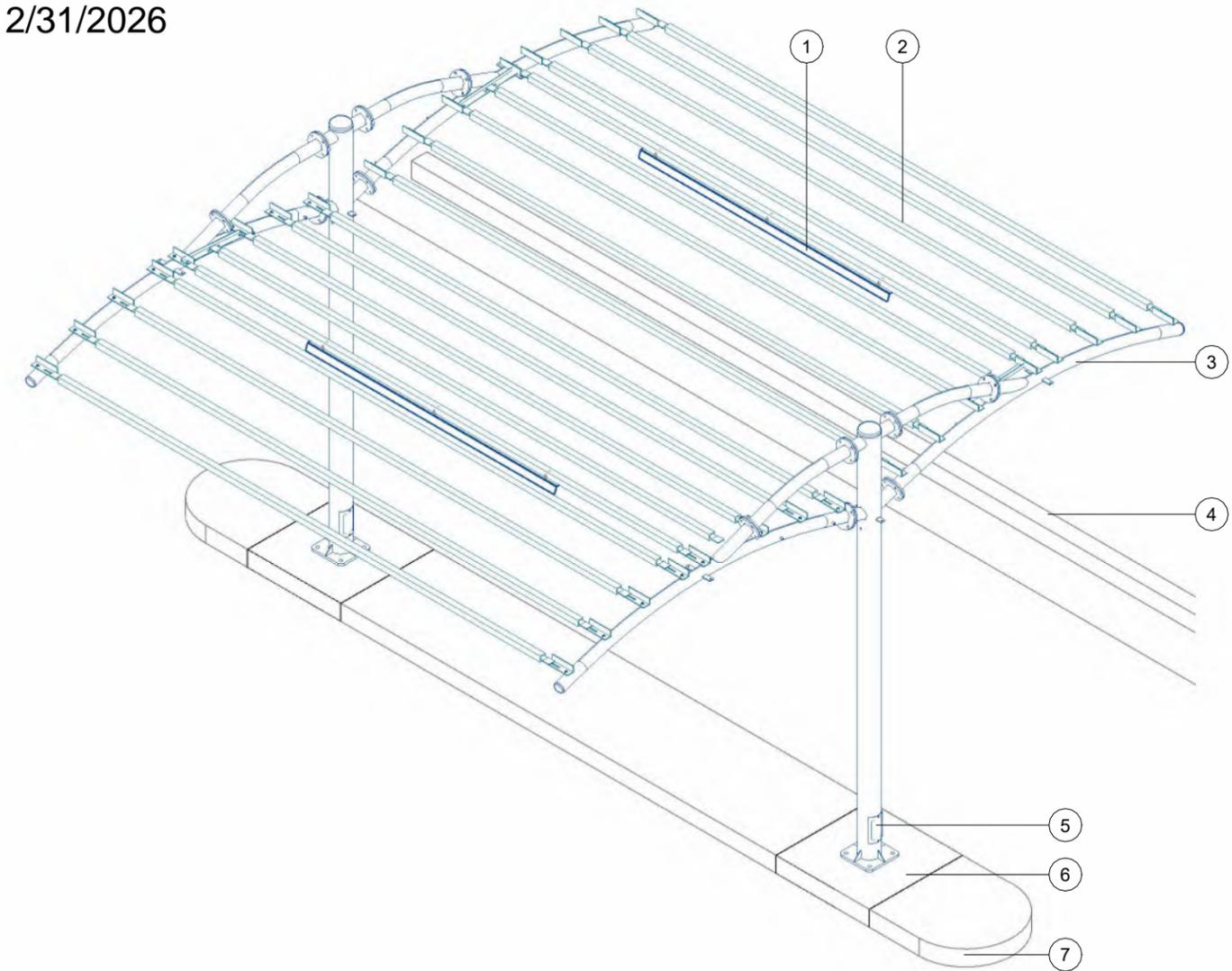
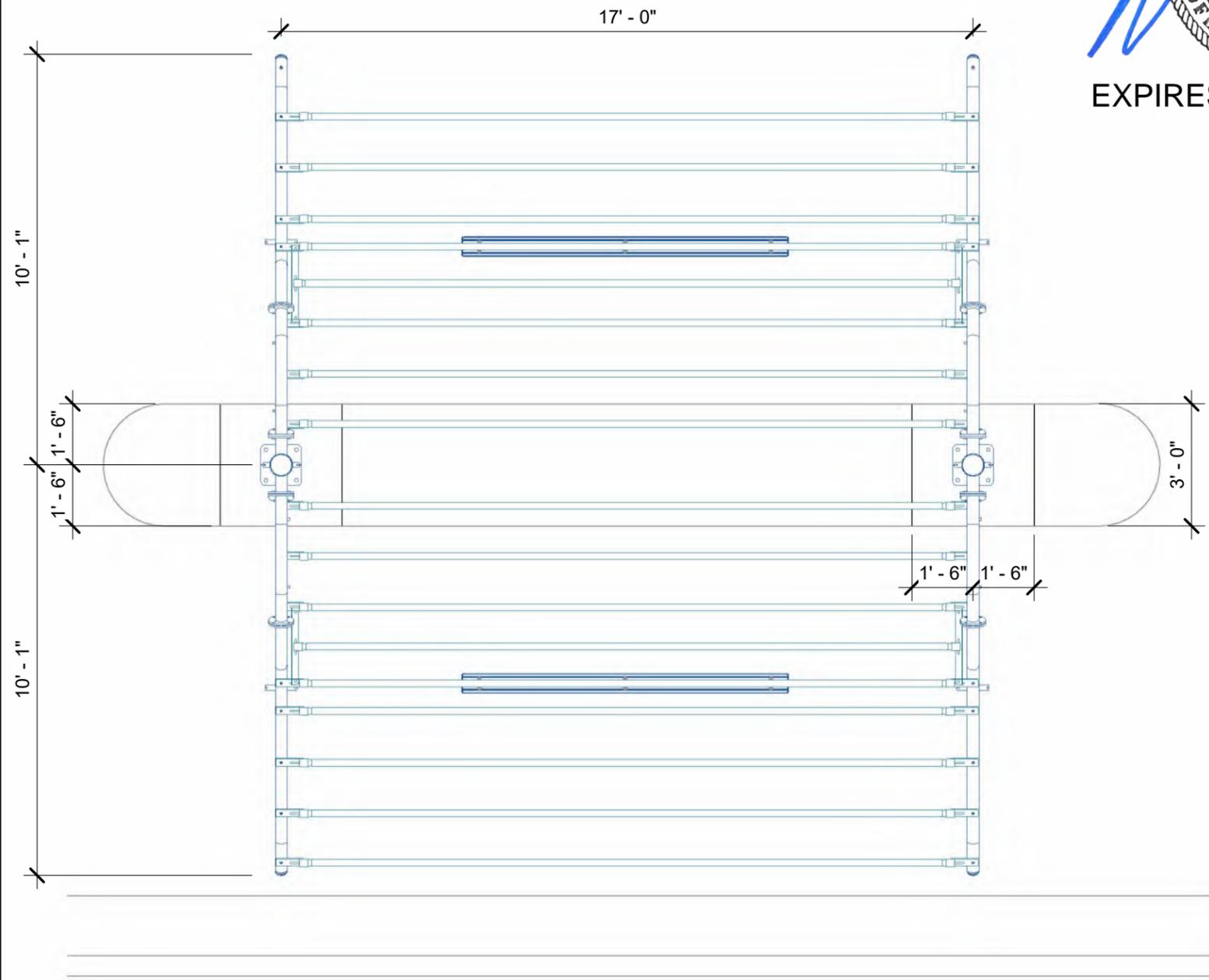
EXPIRES: 12/31/2026

POS SITE ISOMETRIC	
ITEM	DESCRIPTION
1	8' POS LED LIGHT W/ CROSSBAR MOUNT
2	SQUARE TUBE CROSSBAR
3	POS ARCH
4	CURB
5	ELECTRICAL ACCESS DOOR
6	SPREAD FOOTING
7	POS ISLAND

**FIELD VERIFIED DIMENSIONS/VIEW**

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 Phoenix, Arizona 85034  
 (602) 438-2500  
 fax. (602) 438-2505  
 Consulting Structural and Forensic Engineers  
 JOB # 25-0593



① POS SITE PLAN

② POS SITE ISOMETRIC

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 AN **NCS** COMPANY  
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 EMAIL: vacinfo@ncswash.com  
 WEB: www.vacutellc.com

**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

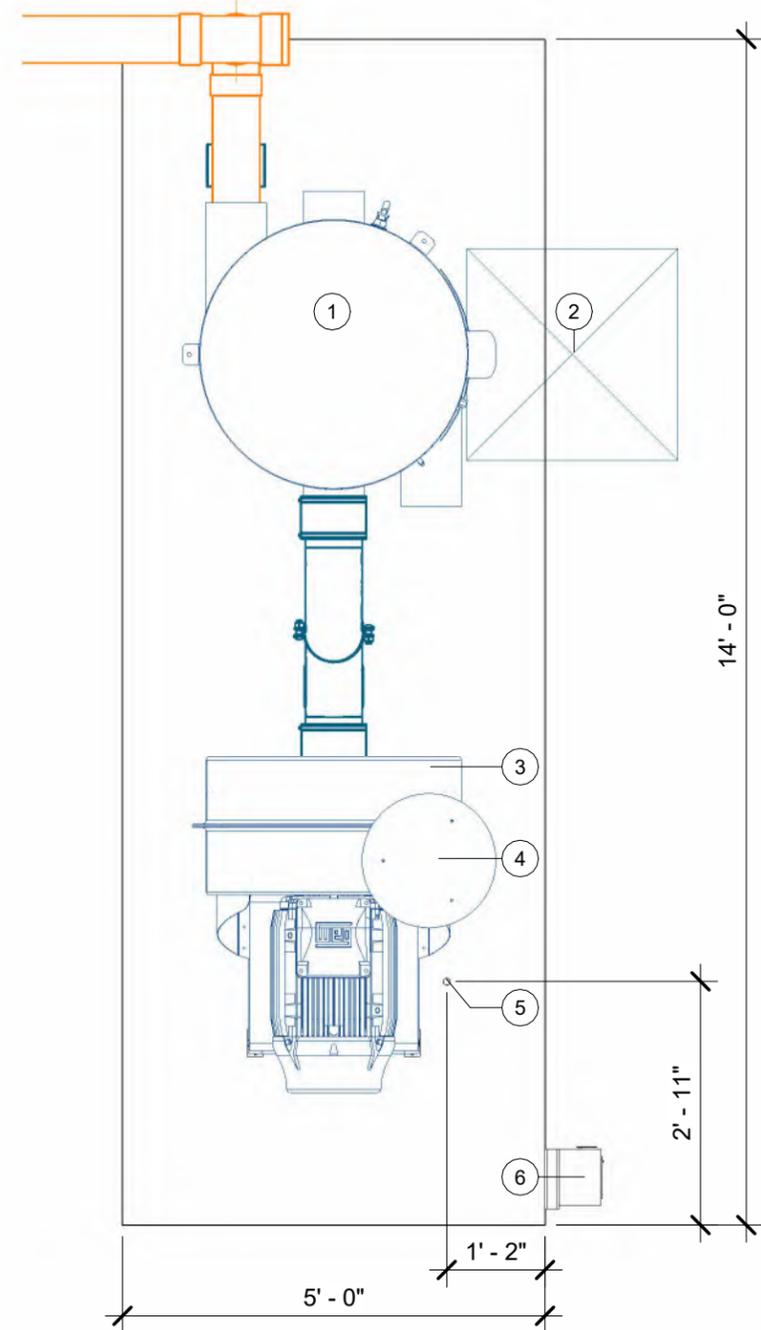
#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

POS DETAILS		V501
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
Checked By	TD	

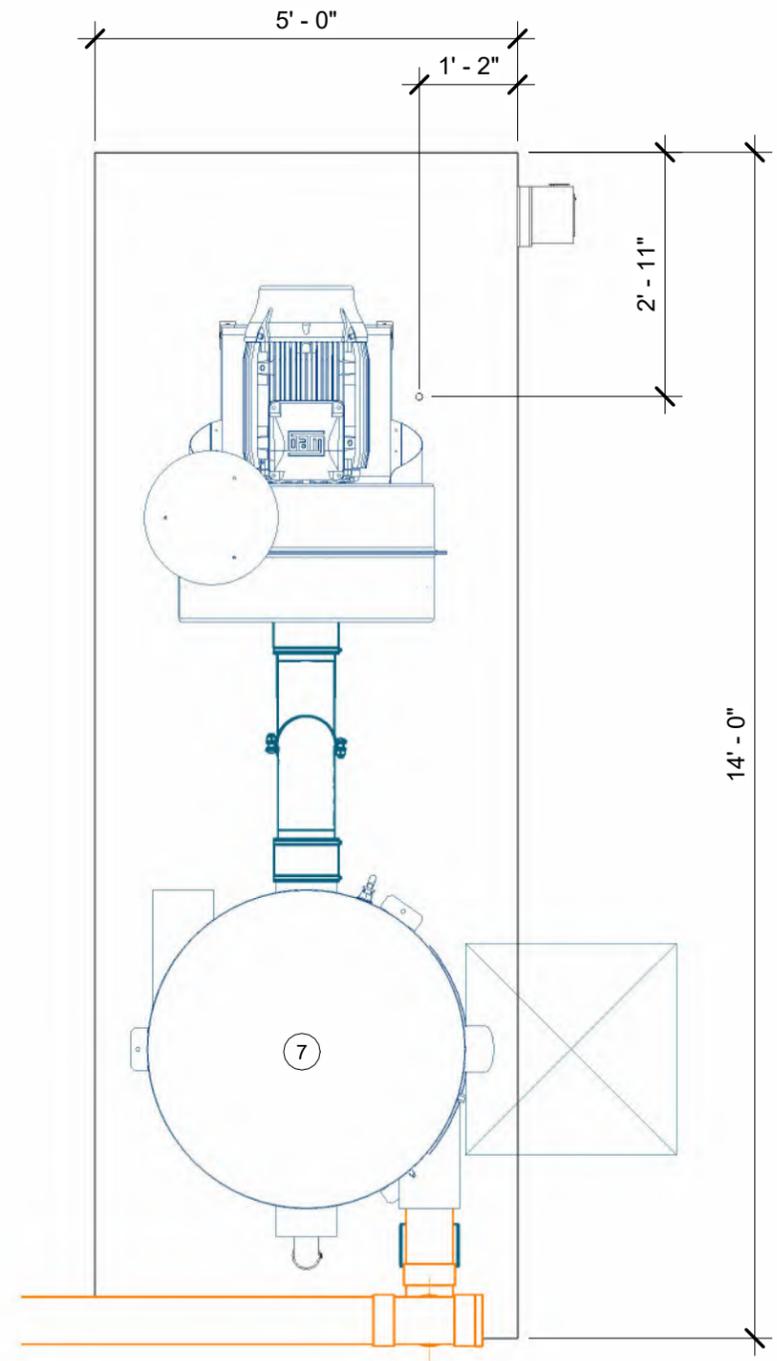
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- EQUIPMENT NOTES:**
- 14'Lx5'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE FLOOR
  - SPACE REQUIRED FOR VACUUM EQUIPMENT
  - WALL PENETRATION: CORE DRILLING MAY BE REQUIRED
  - FIELD VERIFY HEIGHT
  - NOTE: IF VACUUM EQUIPMENT IS ENCLOSED WITH ROOF/CEILING, REFER TO VENTILATION REQUIREMENTS UNDER EQUIPMENT WARRANTY INFORMATION
  - EXHAUST PRODUCER TO OUTSIDE AIR OR ATMOSPHERE W/ 8" ALUMINUM TUBE OR METAL PIPE
  - FIELD VERIFY ALL DIMENSIONS
  - SEE POWER EQUIPMENT DETAILS ON V701

EQUIPMENT SITE PLAN	
ITEM	DESCRIPTION
1	38x88 FILTER SEPARATOR
2	30"x30" MINIMUM SPACE REQUIRED TO REMOVE DEBRIS BUCKET
3	60HP T5 DIRECT DRIVE PRODUCER
4	8" T5 OUTDOOR EXHAUST MUFFLER
5	RECOMMENDED PRODUCER MOTOR CONDUIT STUB-UP LOCATION, SIZE PER N.E.C.
6	RECOMMENDED DISCONNECT LOCATION (WITHIN SIGHT OF PRODUCER), CLEARANCE REQUIRED IN FRONT
7	45x96 FILTER SEPARATOR



1 EQUIPMENT PLAN A



2 EQUIPMENT PLAN B

**VACUTECH**  
 AN **NCS** COMPANY  
 1350 HI-TECH DRIVE  
 SHERIDAN, WY 82801  
 PHONE: (307) 675-1982  
 EMAIL: vacinfo@ncswash.com  
 WEB: www.vacutecllc.com

**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

EQUIPMENT SITE PLAN	
Project Number	1585523
Date	9/16/25
Drawn By	RY
Checked By	TD
<b>V601</b>	

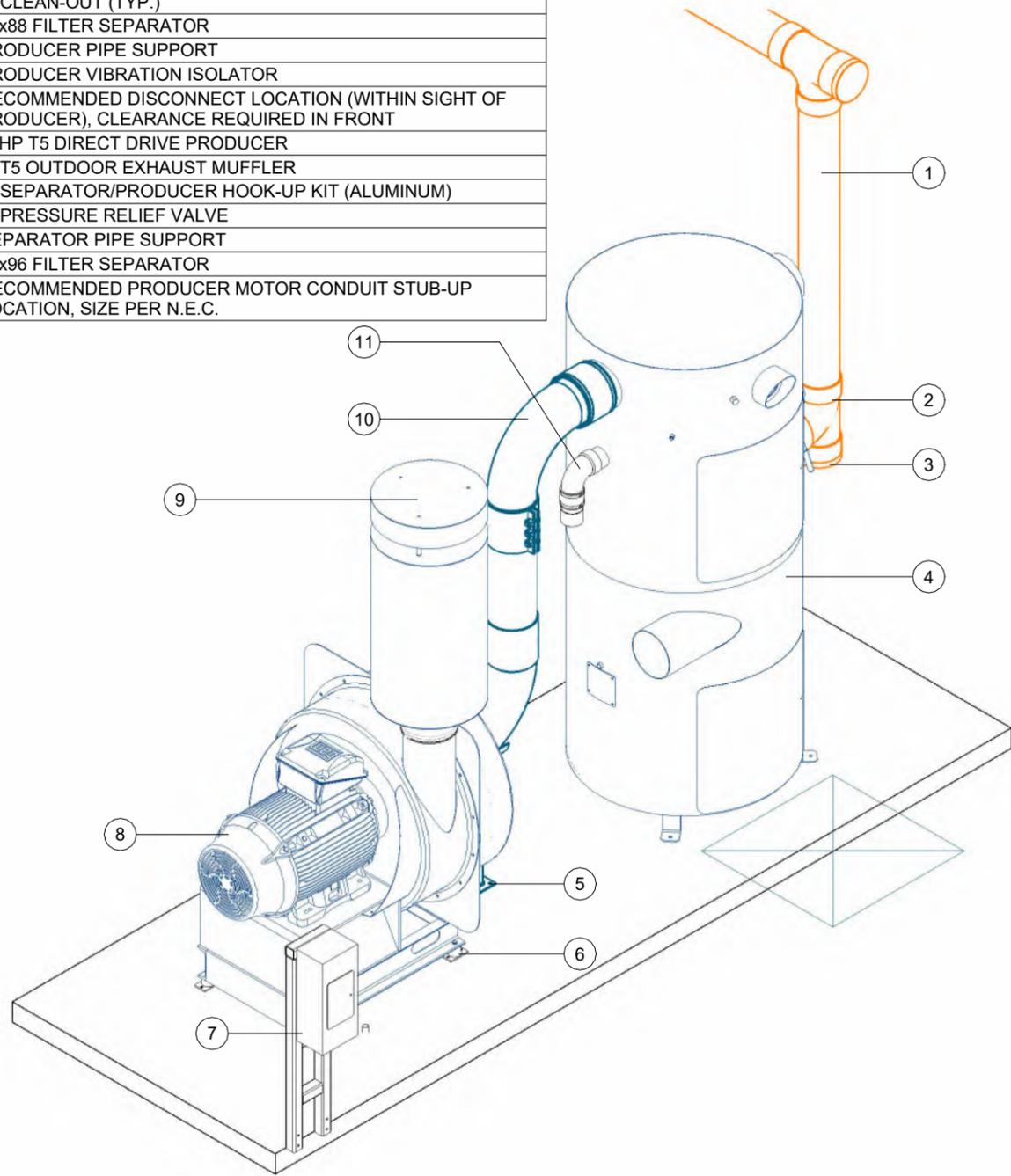
RELEASE FOR CONSTRUCTION  
 AS NOTED ON PLANS REVIEW  
 DEVELOPMENT SERVICES  
 LEES SUMMIT, MISSOURI  
 01/07/2026 11:22:58

**EQUIPMENT SITE ISOMETRIC**

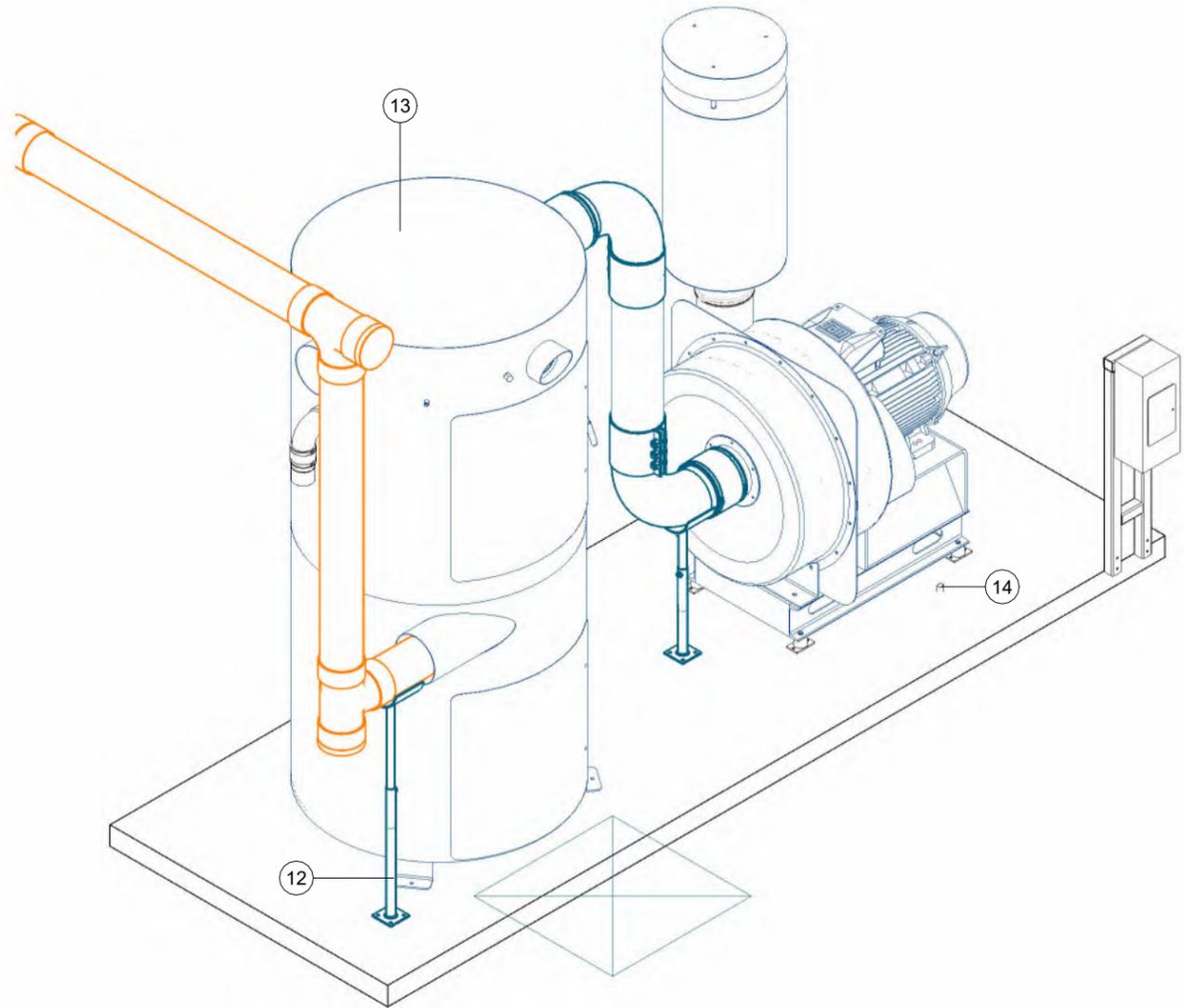
ITEM	DESCRIPTION
1	6" OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
2	6" PVC SANITARY TEE
3	6" CLEAN-OUT (TYP.)
4	38x88 FILTER SEPARATOR
5	PRODUCER PIPE SUPPORT
6	PRODUCER VIBRATION ISOLATOR
7	RECOMMENDED DISCONNECT LOCATION (WITHIN SIGHT OF PRODUCER), CLEARANCE REQUIRED IN FRONT
8	60HP T5 DIRECT DRIVE PRODUCER
9	8" T5 OUTDOOR EXHAUST MUFFLER
10	8" SEPARATOR/PRODUCER HOOK-UP KIT (ALUMINUM)
11	3" PRESSURE RELIEF VALVE
12	SEPARATOR PIPE SUPPORT
13	45x96 FILTER SEPARATOR
14	RECOMMENDED PRODUCER MOTOR CONDUIT STUB-UP LOCATION, SIZE PER N.E.C.

**EQUIPMENT NOTES:**

- 14'Lx5'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE FLOOR
- SPACE REQUIRED FOR VACUUM EQUIPMENT
- WALL PENETRATION: CORE DRILLING MAY BE REQUIRED
- FIELD VERIFY HEIGHT
- NOTE: IF VACUUM EQUIPMENT IS ENCLOSED WITH ROOF/CEILING, REFER TO VENTILATION REQUIREMENTS UNDER EQUIPMENT WARRANTY INFORMATION
- EXHAUST PRODUCER TO OUTSIDE AIR OR ATMOSPHERE W/ 8" ALUMINUM TUBE OR METAL PIPE
- FIELD VERIFY ALL DIMENSIONS
- SEE POWER EQUIPMENT DETAILS ON V701



① EQUIPMENT ISOMETRIC A



② EQUIPMENT ISOMETRIC B

**VACUTECH**

AN **NCS** COMPANY

1350 HI-TECH DRIVE  
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**CLUB CW - OLDHAM VILLAGE**

1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

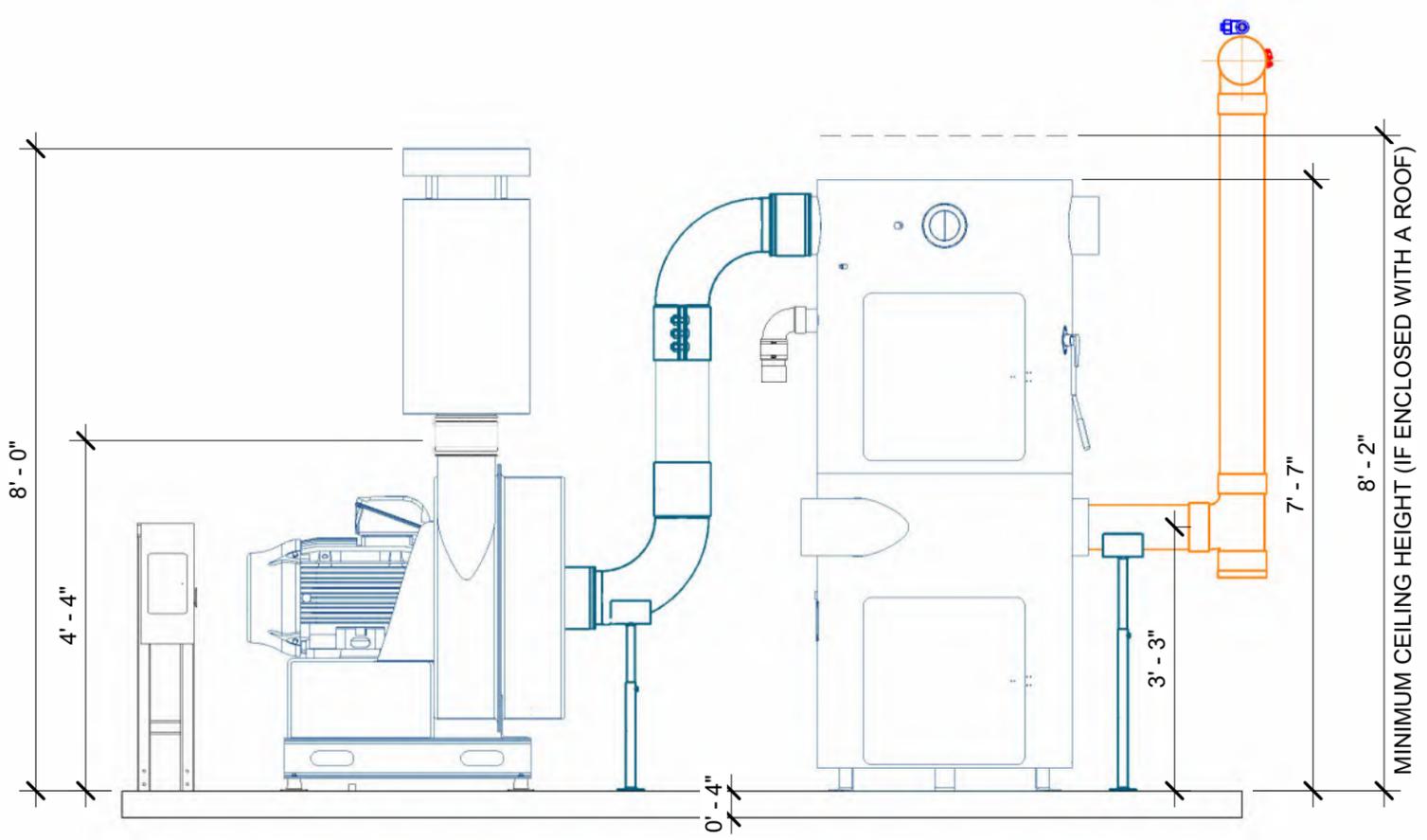
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Project Number	1585523
Date	9/16/25
Drawn By	RY
Checked By	TD

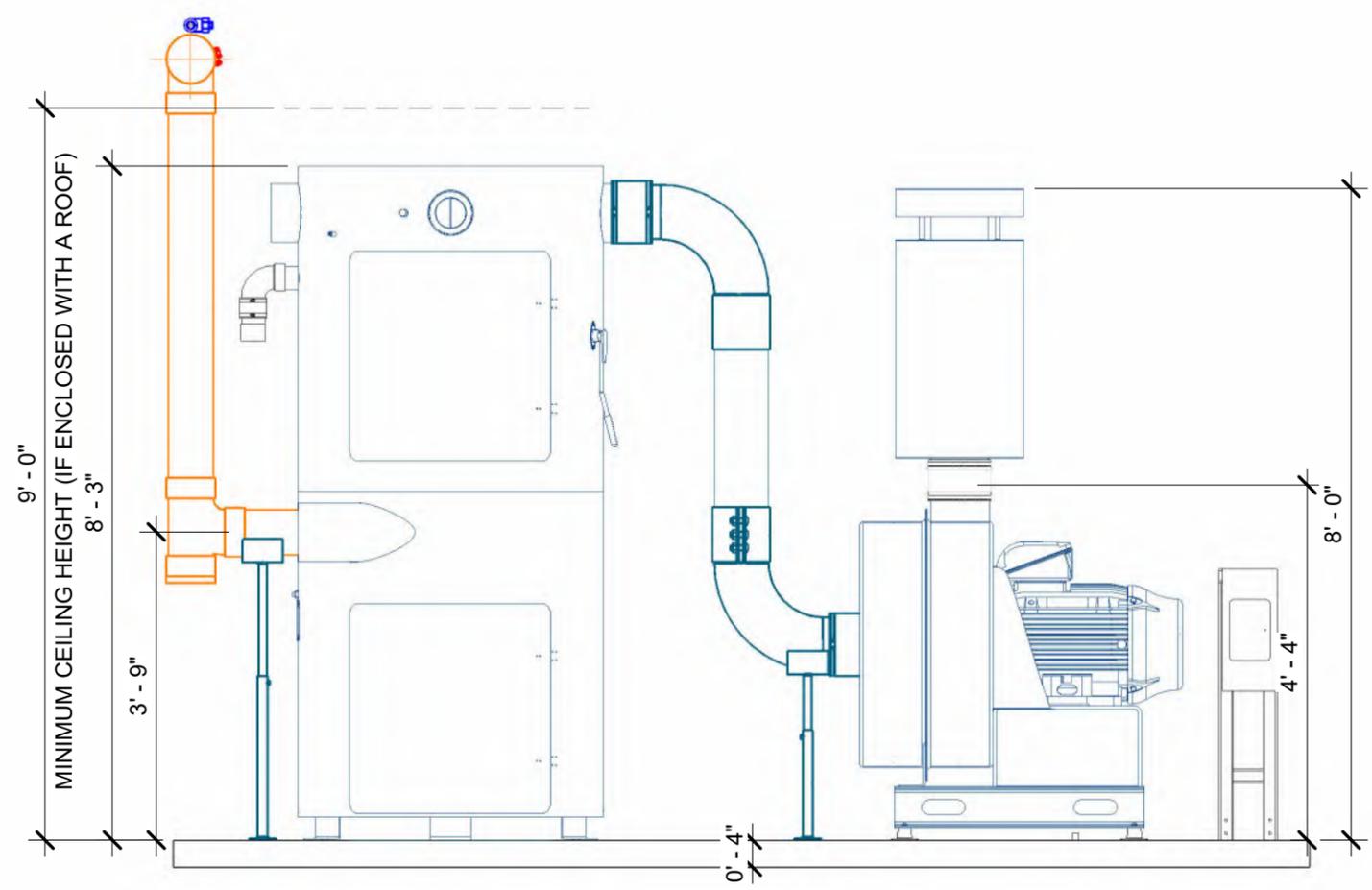
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9/18/2025 10:12:00 AM

- EQUIPMENT NOTES:**
- 14'Lx5'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE FLOOR
  - SPACE REQUIRED FOR VACUUM EQUIPMENT
  - WALL PENETRATION: CORE DRILLING MAY BE REQUIRED
  - FIELD VERIFY HEIGHT
  - NOTE: IF VACUUM EQUIPMENT IS ENCLOSED WITH ROOF/CEILING, REFER TO VENTILATION REQUIREMENTS UNDER EQUIPMENT WARRANTY INFORMATION
  - EXHAUST PRODUCER TO OUTSIDE AIR OR ATMOSPHERE W/ 8" ALUMINUM TUBE OR METAL PIPE
  - FIELD VERIFY ALL DIMENSIONS
  - SEE POWER EQUIPMENT DETAILS ON V701



1 EQUIPMENT ELEVATION A



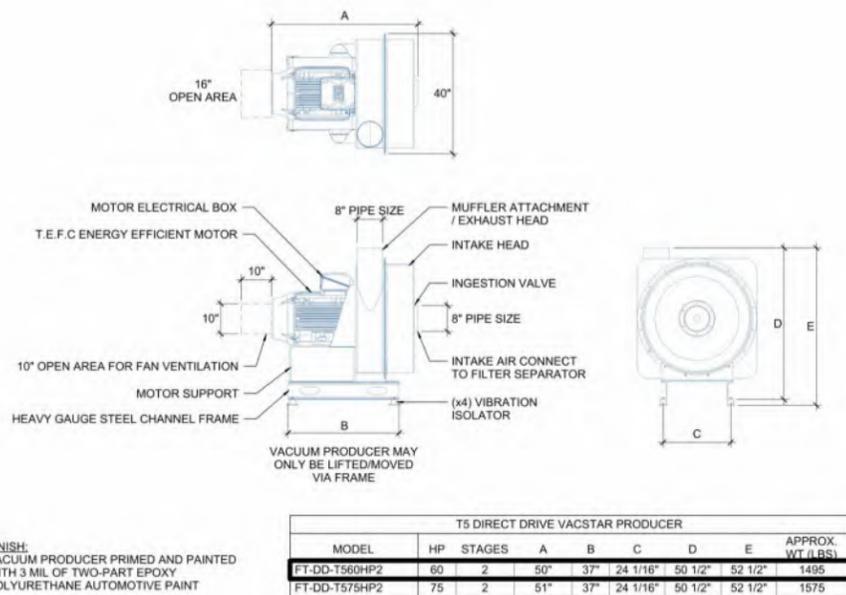
2 EQUIPMENT ELEVATION B

**VACUTECH**  
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 1350 HI-TECH DRIVE  
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 PHONE: (307) 675-1982  
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 WEB: www.vacutellc.com

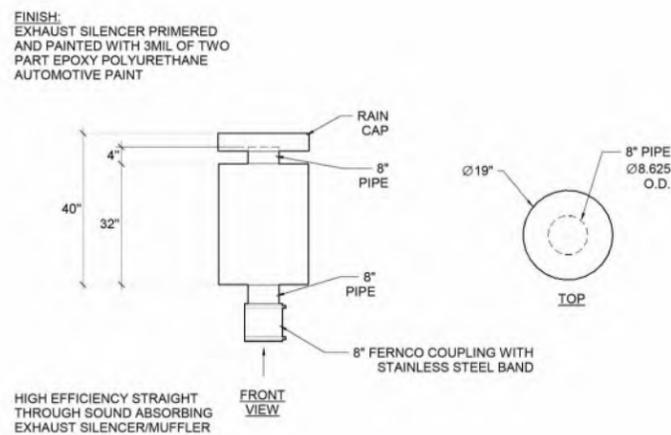
**CLUB CW - OLDHAM VILLAGE**  
 1021 SOUTH WEST JEFFERSON STREET  
 LEES SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

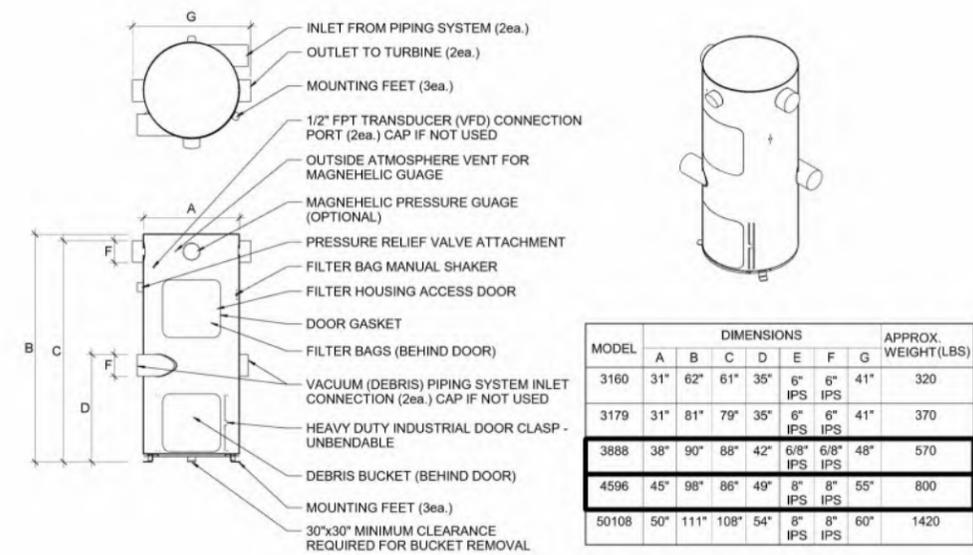
EQUIPMENT ELEVATION		V621
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
Checked By	TD	



1 PRODUCER - T5 DD



2 EXHAUST SILENCER - T5 OUTDOOR



3 SEPARATOR - FILTER

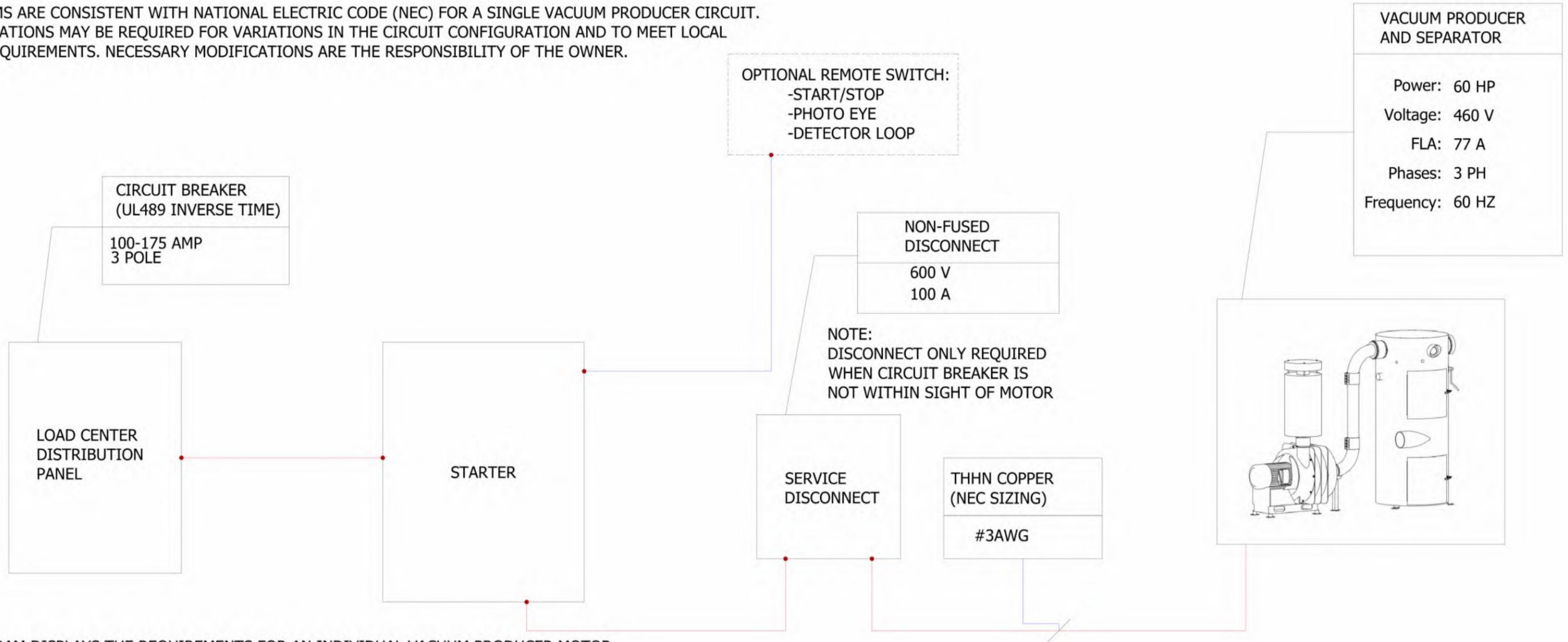
#	Revision	By	Chk	Date
1	PREPPED FOR ENGINEERING. ADDED GENERAL STRUCTURAL NOTES	SL	RY	9/18/25

EQUIPMENT DETAILS		
Project Number	1585523	<b>V701</b>
Date	9/16/25	
Drawn By	RY	
Checked By	TD	

# NOTE: ELECTRICAL CONTROLS PROVIDED BY OTHERS

**DISCLAIMER:**

DIAGRAMS ARE CONSISTENT WITH NATIONAL ELECTRIC CODE (NEC) FOR A SINGLE VACUUM PRODUCER CIRCUIT. MODIFICATIONS MAY BE REQUIRED FOR VARIATIONS IN THE CIRCUIT CONFIGURATION AND TO MEET LOCAL CODE REQUIREMENTS. NECESSARY MODIFICATIONS ARE THE RESPONSIBILITY OF THE OWNER.



**NOTE:**

1. DIAGRAM DISPLAYS THE REQUIREMENTS FOR AN INDIVIDUAL VACUUM PRODUCER MOTOR.
2. ALL MOTOR (LOAD) AND POWER (LINE) WIRES MUST BE RUN IN SEPARATE CONDUITS.
3. ALWAYS FOLLOW ALL NATIONAL AND LOCAL ELECTRICAL CODES.

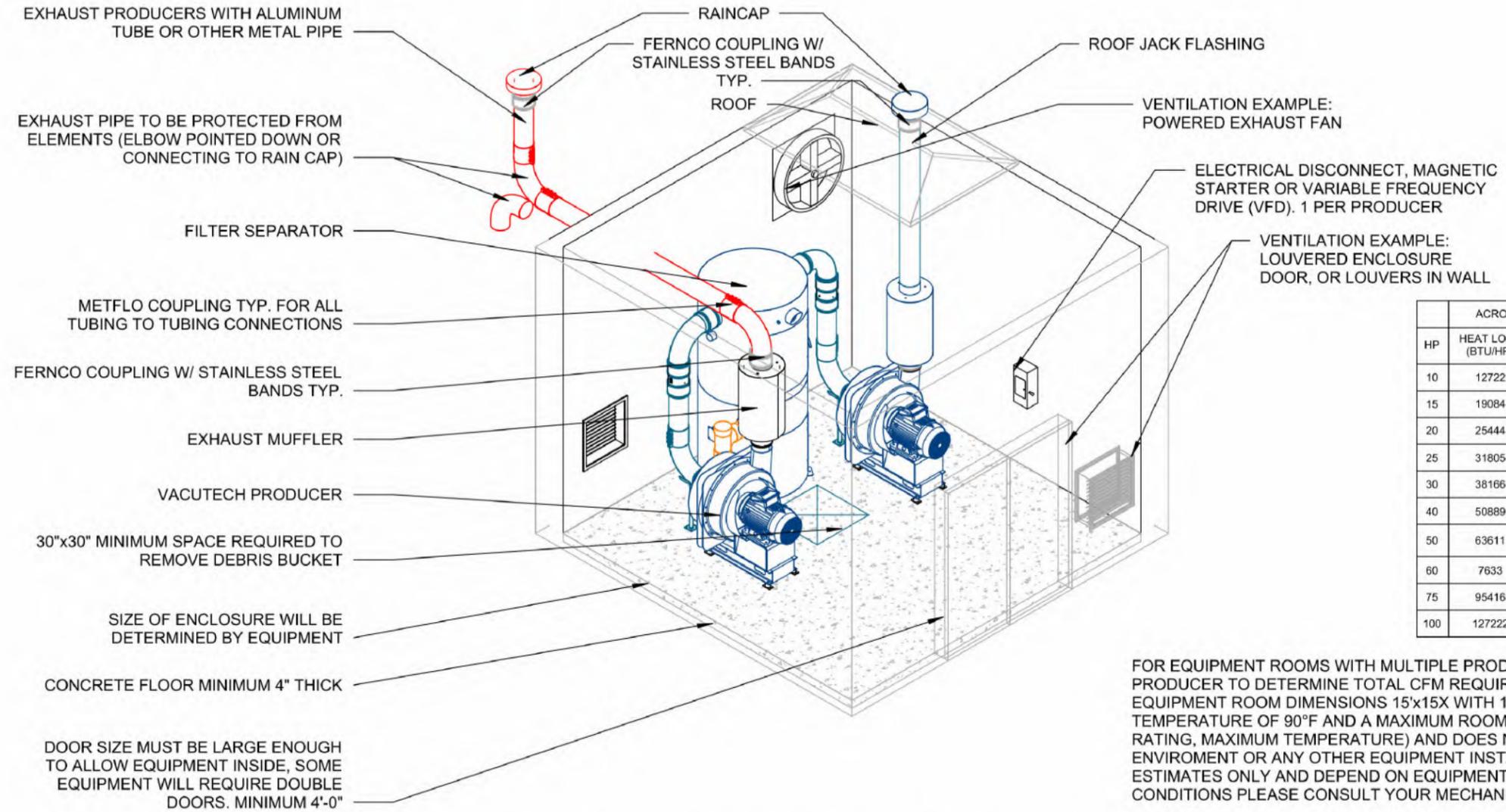
1 ELECTRICAL DIAGRAM - MAG - 60HP 460V

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ELECTRICAL DIAGRAM		V702
Project Number	1585523	
Date	9/16/25	
Drawn By	RY	
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HP	ACROSS THE LINE STARTER		VARIABLE FREQUENCY DRIVE (VFD)	
	HEAT LOAD (BTU/HR)	REQUIRED AIR FLOW (CFM)	HEAT LOAD (BTU/HR)	REQUIRED AIR FLOW (CFM)
10	12722	915	2544	284
15	19084	1373	3817	426
20	25444	1830	5089	568
25	31805	2288	6361	710
30	38166	2745	7633	852
40	50889	3660	10178	1163
50	63611	4575	12722	1704
60	7633	5490	15267	1704
75	95416	6863	19083	2130
100	127222	9150	25444	2840

FOR EQUIPMENT ROOMS WITH MULTIPLE PRODUCER SETUPS, ADD THE CFM REQUIREMENT PER PRODUCER TO DETERMINE TOTAL CFM REQUIREMENT FOR THE EQUIPMENT ROOM. THIS ASSUMES EQUIPMENT ROOM DIMENSIONS 15'x15'X WITH 10' CEILINGS. THIS ASSUMES AN OUTSIDE AIR TEMPERATURE OF 90°F AND A MAXIMUM ROOM TEMPERATURE OF 104°F (NEMA CLASS F INSULATION RATING, MAXIMUM TEMPERATURE) AND DOES NOT ACCOUNT FOR RADIANT HEATING FROM THE ENVIROMENT OR ANY OTHER EQUIPMENT INSTALLED IN THE EQUIPMENT ROOM. THESE VALUES ARE ESTIMATES ONLY AND DEPEND ON EQUIPMENT ROOM DIMENSIONS, GEOGRAPHIC LOCATION AND SITE CONDITIONS PLEASE CONSULT YOUR MECHANICAL HVAC DESIGNER AND ASHRAE STANDARDS.

VACUUM EQUIPMENT INSTALLED IN AN ENCLOSURE WITH 4 WALLS AND A ROOF MUST BE ADEQUATELY VENTILATED OR ROOM CONDITIONED IN ORDERED TO PROPERLY DISSIPATE THE HEAT GENERATED BY THE MECHANICAL AND ELECTRICAL EQUIPMENT. IMPROPER VENTILATION AND HEAT DISSIPATION CAN AND WILL RESULT IN DAMAGE TO THE MECHANICAL AND ELECTRICAL EQUIPMENT INCLUDING VFD'S, MOTOR STARTERS, ELECTRIC MOTORS AND VACUUM PRODUCERS. PLEASE REFERENCE THE HEAT GENERATION TABLE INCLUDED IN THIS DETAIL TO DETERMINE THE AMOUNT OF HEAT LOAD THAT THE PRODUCER(S) AND STARTING EQUIPMENT WILL GENERATE AND THE CORRESPONDING REQUIRED AIR FLOW OF EXHAUST AND AIR INTAKE TO DISSIPATE THE HEAT GENERATED BY THE VACUTECH EQUIPMENT. IF ADDITIONAL EQUIPMENT IS INSTALLED IN THE EQUIPMENT ROOM (AIR COMPRESSORS, ELECTRICAL PANELS, TUNNEL CONTROLS, ETC.) PLEASE CONSULT YOUR HVAC DESIGN ENGINEER FOR PROPER TEMPERATURE CONTROL DESIGN OF YOUR EQUIPMENT ROOM. OPERATING TEMPERATURES ABOVE 104°F (TYPICAL MAXIMUM ENVIROMENTAL TEMPERATURE FOR ELECTRICAL EQUIPMENT) WILL SHORTEN THE LIFE SPAN OF THE VACUUM EQUIPMENT AND MAY INVALIDATE THE VACUTECH LLC WARRANTY.

THE VACUUM PRODUCER MUST BE EXHAUSTED OUTSIDE WIHT METALLIC PIPE NO SMALLER THAN THE DIAMETER OF THE EXHAUST OUTLET OF THE PRODUCER. THE EXHAUST PIPE OPENING MUST BE PROTECTED FROM ELEMENTS. IF EXHAUST DISTANCE IS GREATER THAN 20 FEET USE ONE PIPE SIZE LARGER AFTER 10 FEET OF RUN (I.E. FOR A 20 FOOT RUN OF 8" EXHAUST, USE 8" FOR FIRST 10 FEET AND 10" FOR REMAININNING 10 FEET OF THE OVERALL 20 FOOT RUN).

1 ENCLOSURE - TYPICAL REQUIREMENTS

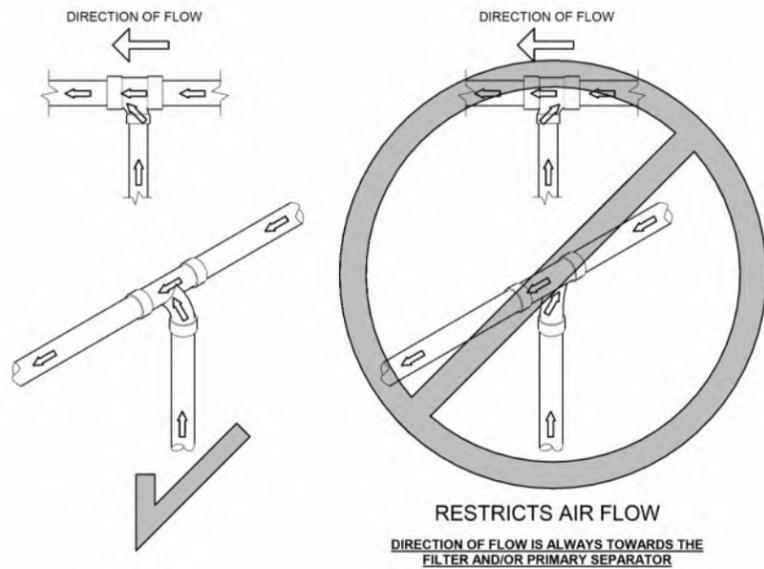
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**ENCLOSURE DETAIL**

Project Number	1585523	<b>V711</b>
Date	9/16/25	
Drawn By	RY	
Checked By	TD	



1 PIPE - PIPE FLOW

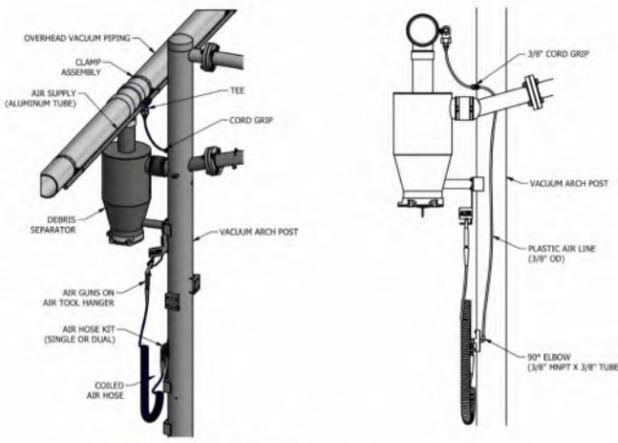
**ALUMINUM SANITARY TEE & ALUMINUM TUBING CONNECTION**



2 PIPE - 6x4 ALUMINUM TEE KIT

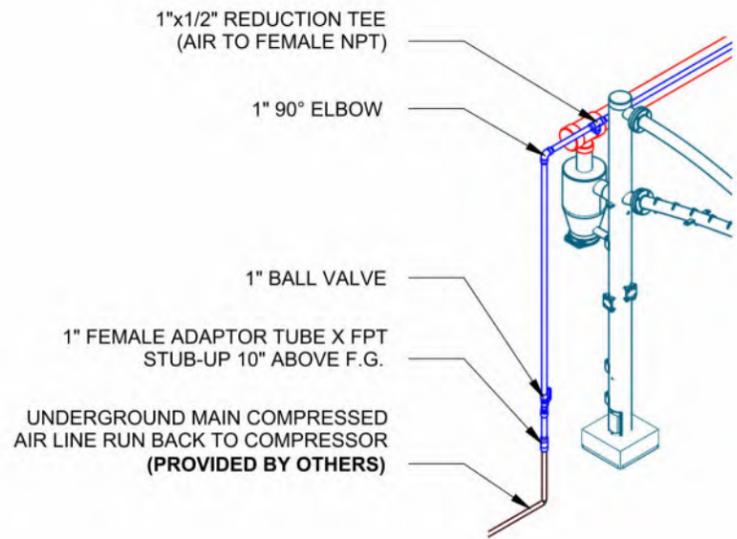
**PIPE NOTES:**

- a. FIELD VERIFY ALL DIMENSIONS
- b. SUPPORT SCHEDULE 40 PVC OVERHEAD DRY WET VACUUM PIPE EVERY 6' MAXIMUM; USE UNISTRUT & CLAMP OR OTHER APPROVED METHOD (BY OTHERS)
- c. RUN COMPRESSED AIR TO AIR COMPRESSOR LOCATION (BY OTHERS)
- d. COMPRESSED AIR RECOMMENDED WORKING PRESSURE IS 75PSIG AND 10SCFM AT INTERFACE
- e. WALL PENETRATION: CORE DRILLING MAY BE REQUIRED FIELD VERIFY HEIGHT
- f. REFER TO SHEET V721 FOR PIPE ASSEMBLY CUTSHEETS
- g. ALL FITTINGS TO BE 'DWV'

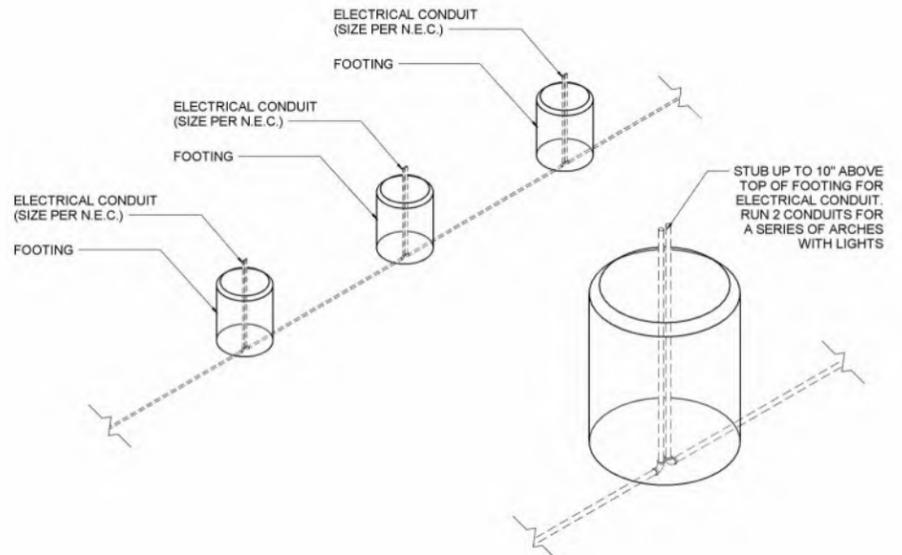


GENERAL NOTES:  
 1. ALL HARDWARE IS CORROSION RESISTANT.  
 2. REFERENCE: #1G301020 & #1G301021

3 PIPE - RAPID AIR INSTALLATION



4 PIPE - RAPID AIR STUB-UP



5 TRENCH - CONDUIT STUB-UP

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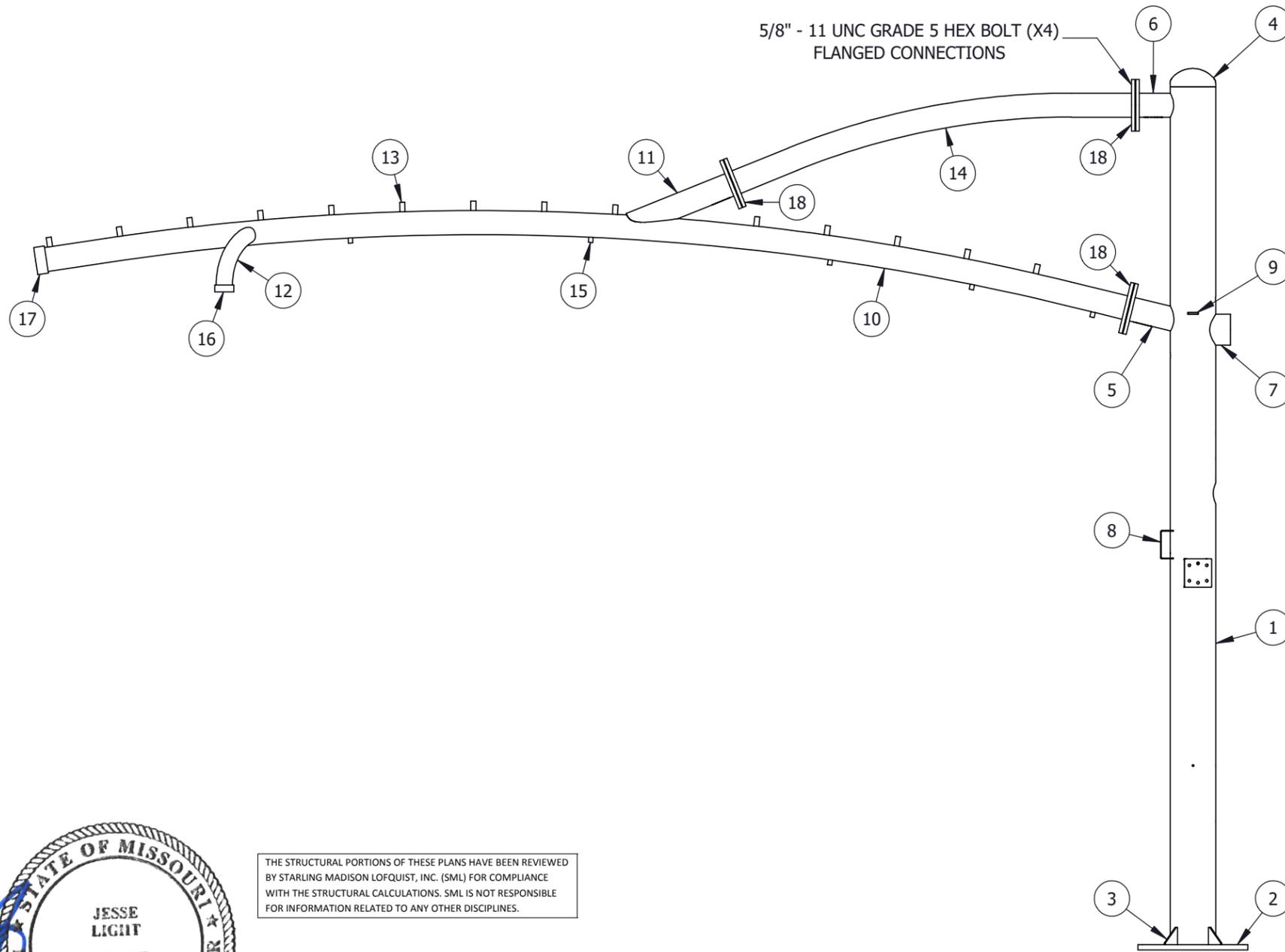
**CLUB CW - OLDHAM VILLAGE**  
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PIPE DETAILS		V721
Project Number	1585523	
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PARTS LIST			
	DESCRIPTION	MATERIAL	QTY
1	ROUND HSS 6.625x0.28 CUT TO 125"	CS A500B	1
2	BASE PLATE, 16" X 16" X 3/4" THK (CS)	CS A36	1
3	GUSSET, 1/4" X 2.5" X 2.5" LG, 45 DEGREE, NO CHAMFER	CS A1018	4
4	CAP, 6-5/8" OD X 10 GA (CS)	CS A36	1
5	ROUND HSS 3.5x0.216 CUT TO 13-3/8", COPED	CS A500B	1
6	ROUND HSS 3.5x0.216 CUT TO 5-7/16", COPED	CS A500B	1
7	ROUND HSS 4.5x0.12 CUT TO 3", COPED	CS A500B	1
8	MOUNT, UNIVERSAL TOOL, LOCATING TABS (CS)	CS A1008	3
9	TAB, 1/4" X 1-1/2" X 3" LG (CS)	CS A1018	2
10	ROUND HSS 3.5x0.216 CUT TO 159", ROLLED	CS A500 B	1
11	ROUND HSS 3.5x0.216 CUT TO 15-15/16", COPED	CS A500B	1
12	ROUND HSS 2.375x0.154 CUT TO 8", ROLLED	CS A500B	2
13	STUD, THREADED, 3/4" DIA X 1-3/8", 1/2-13 X 1" THREAD (CS)	CS A36	14
14	ROUND, 3.5x0.216 CUT TO 59-5/8", ROLLED	CS A500B	1
15	THREADED WELD BUNG, 1/4"-20 UNC X 3/4" LG X 5/8" OD	CS A36	5
16	MERCHANT HALF COUPLING, 2" NPT, CLASS 150	CS A53	2
17	MERCHANT HALF COUPLING, 3" NPT, CLASS 150	CS A53	1
18	FLANGE, SLIP-ON, PLATE, 3.00IN IPS-0.50IN THICK, 150LB (CS)	CS A1018	6



NOTE: ASTM A500B MATERIAL TO HAVE A MINIMUM YIELD STRENGTH OF 50 KSI.

DRAWN BY	JSV	09/18/2025
CHECKED BY		
CHECKED BY		
REVIEWED BY		

**VACUTECH**  
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	CLIENT ADDRESS	<b>1021 SOUTH WEST JEFFERSON STREET LEES SUMMIT, MISSOURI 64081</b>		
	SIZE	DRAWING NO.	REV	
	<b>B</b>	<b>1585523-ENG1</b>	<b>0</b>	
	SCALE: NTS	WEIGHT: 440.7450 LBS	SHEET 1 OF 5	

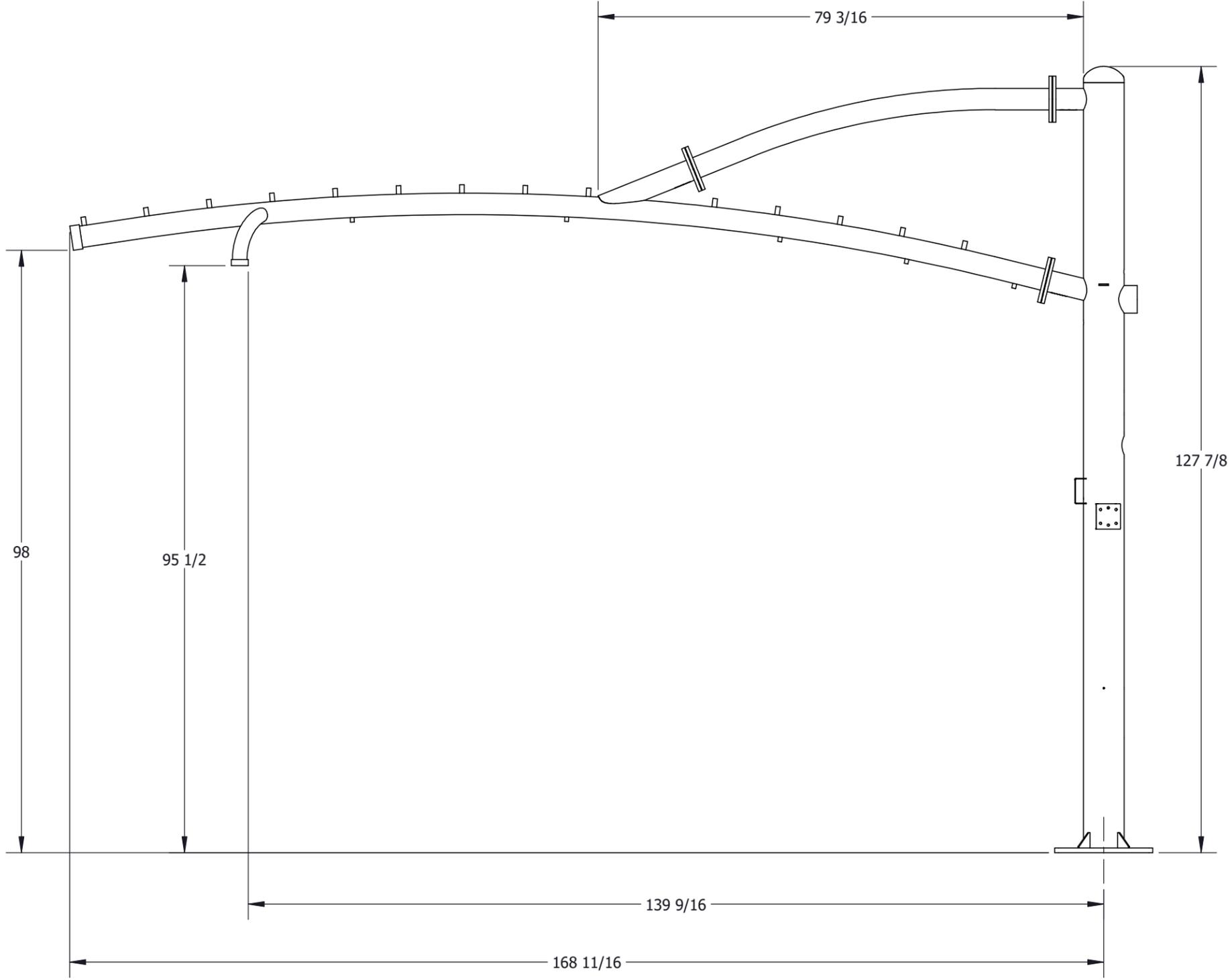
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 Phoenix, Arizona 85034  
 (602) 438-2500  
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 Consulting Structural and Forensic Engineers  
 JOB # 25-0593

STATE OF MISSOURI  
 JESSE LIGHT  
 NUMBER  
 PE-2022048335  
 9-24-2025  
 PROFESSIONAL ENGINEER  
 EXPIRES: 12/31/2026

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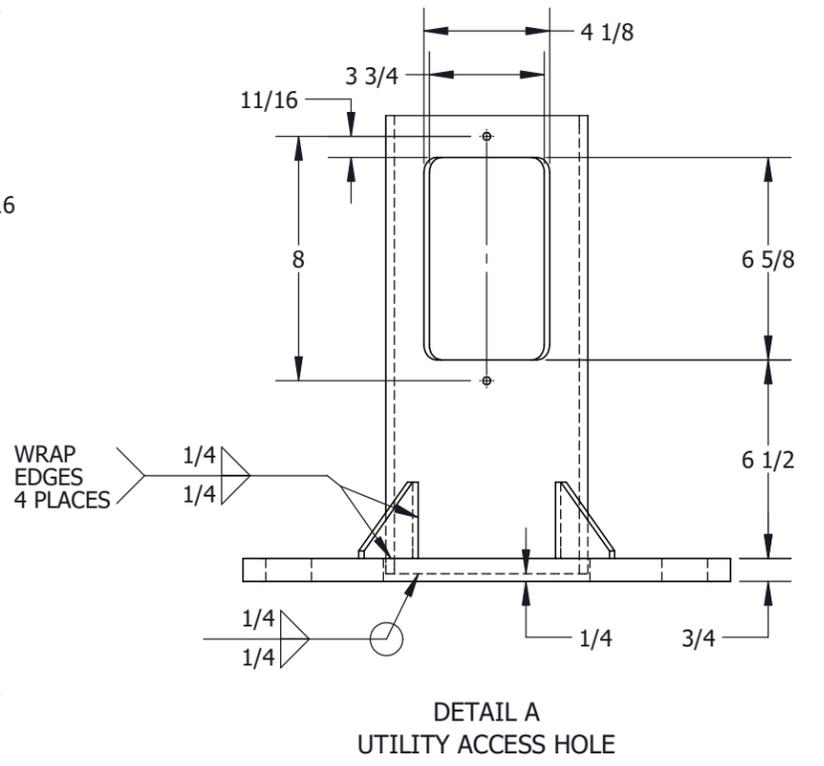
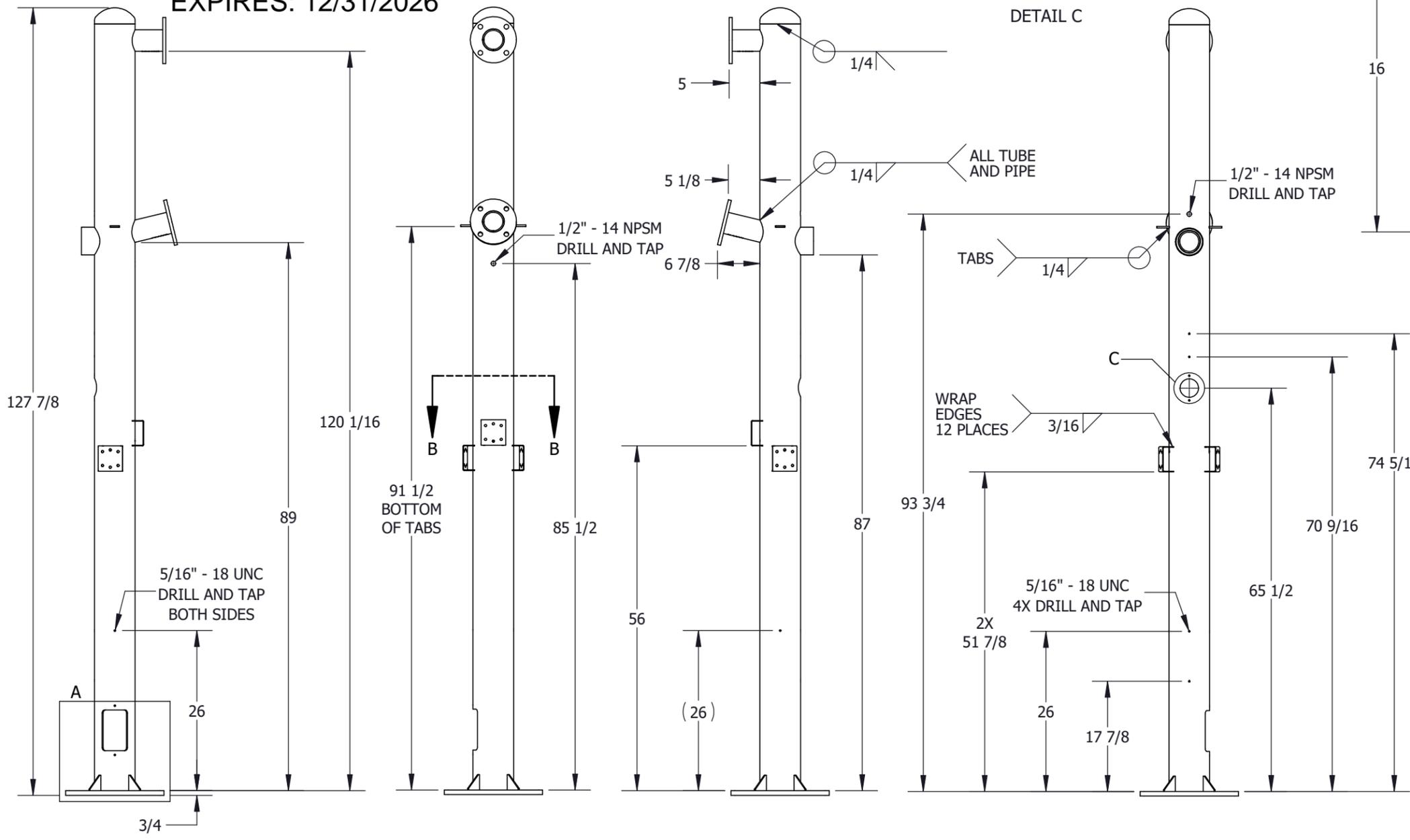
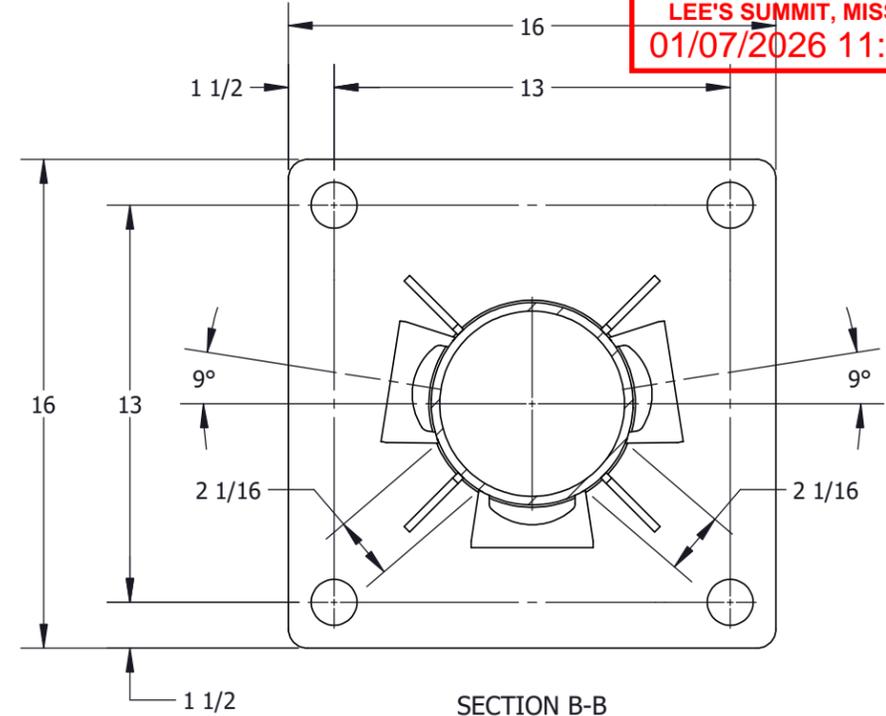
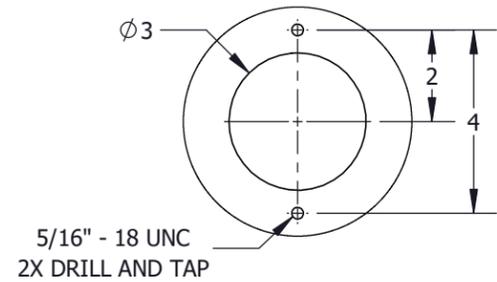
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SCALE:	NTS	WEIGHT: 440.7450 LBS	SHEET 2 OF 5	



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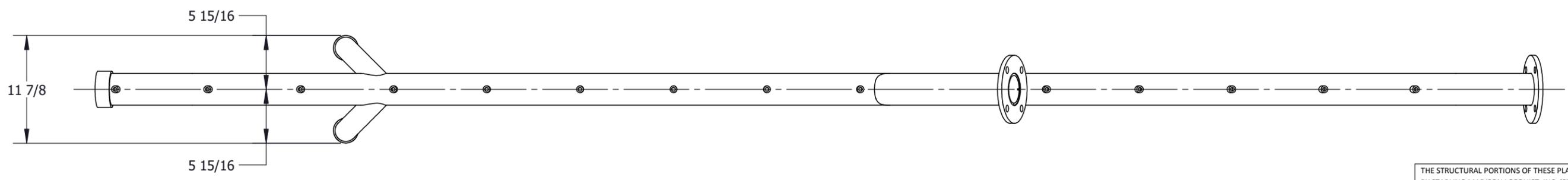
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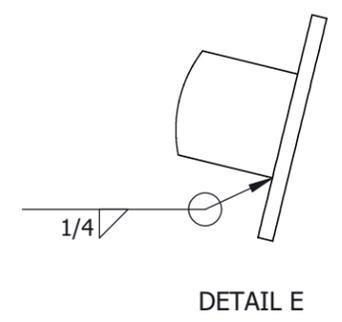
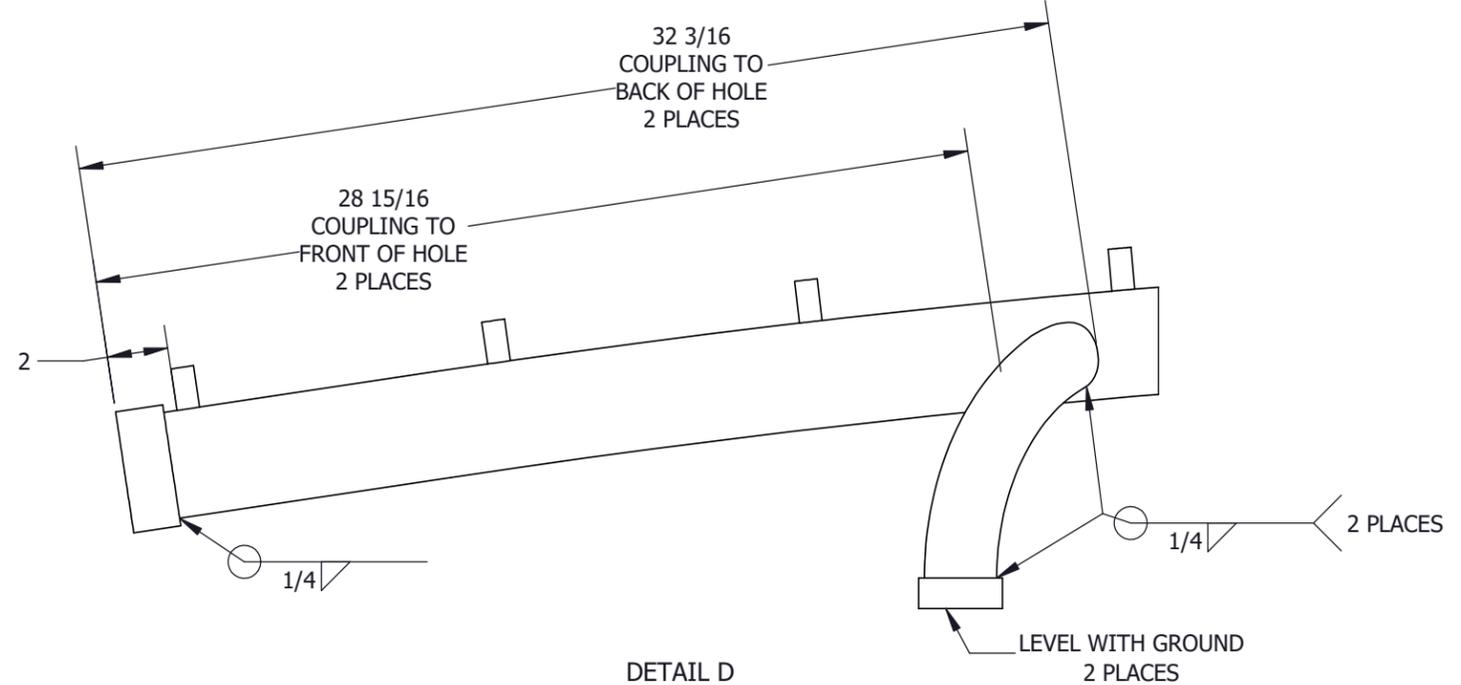
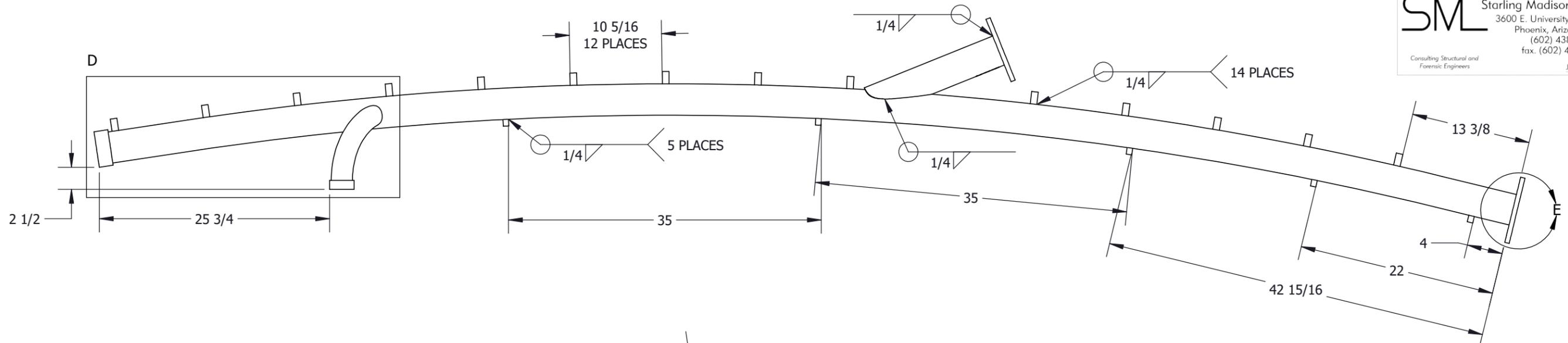
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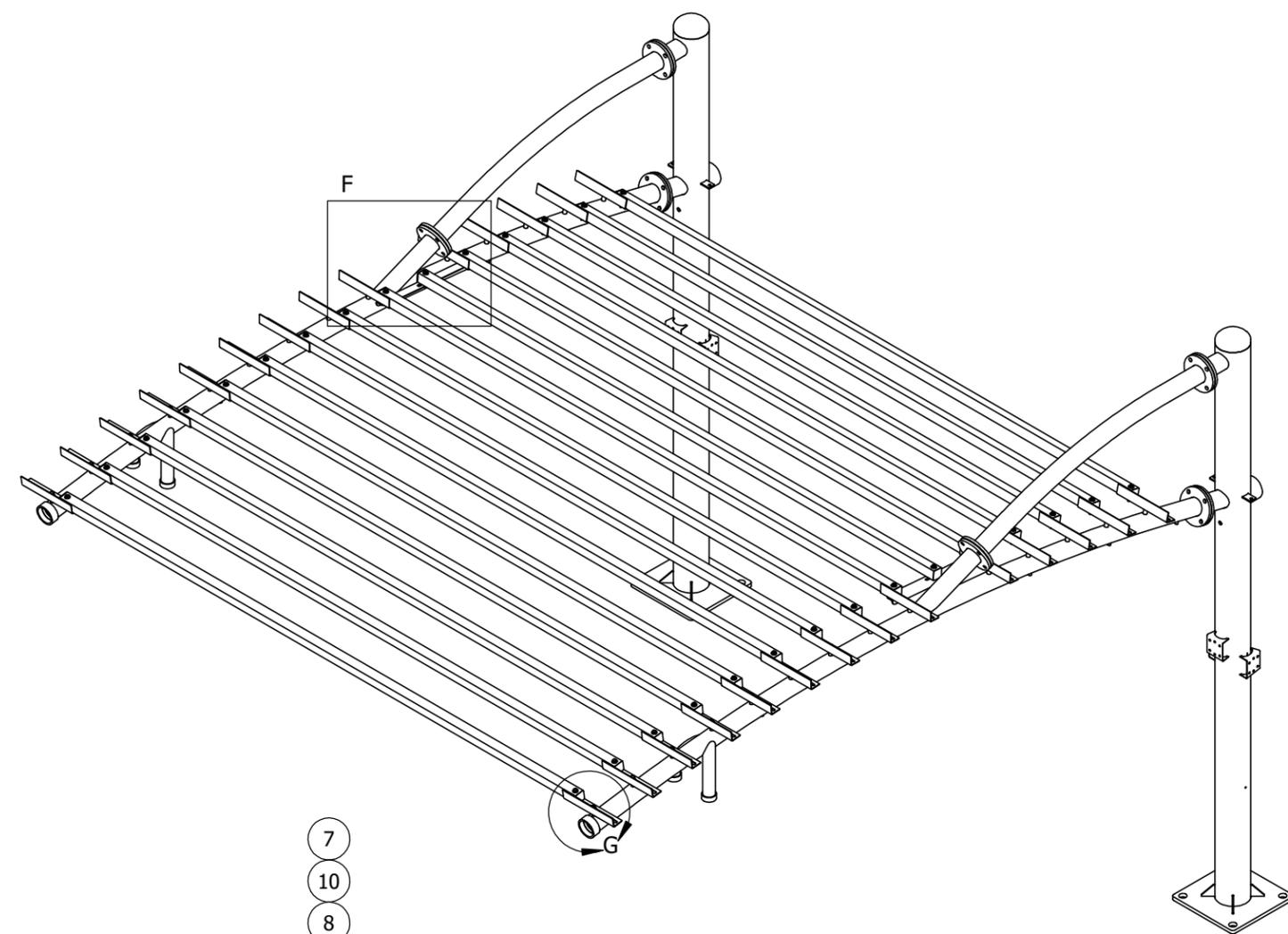
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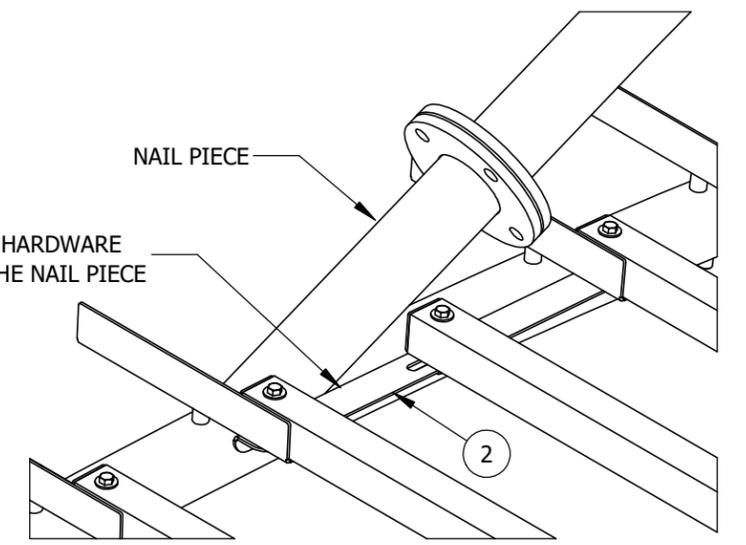
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**PARTS LIST**

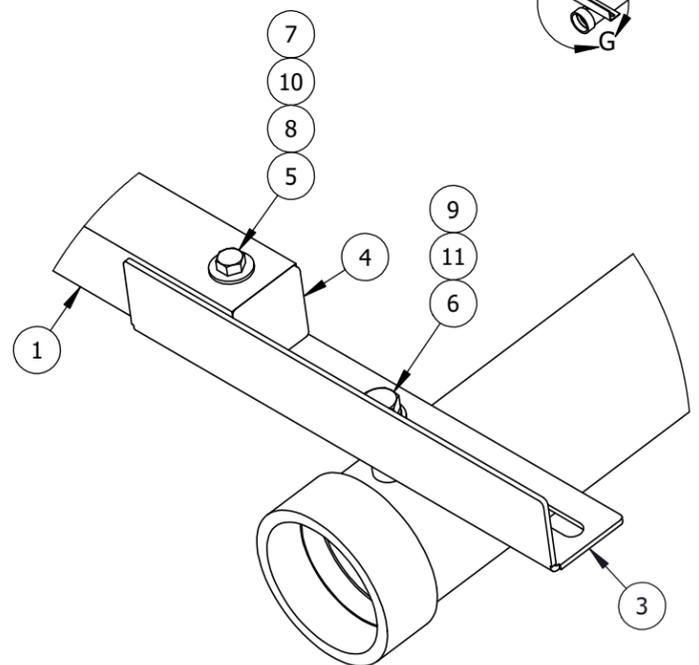
	DESCRIPTION	MATERIAL	QTY
1	SQUARE HSS 2x2x0.125 CUT TO 134-1/4"	AL B211 6061-T6	15
2	BENT, SHEET, 2x1x0.1345 NAIL BRACKET FOR TRELLIS (CS)	CS A1008	2
3	BENT, SHEET, 2x2x0.1345 ANGLE BRACKET FOR TRELLIS, 2 SIDED (CS)	CS A1008	28
4	SQUARE FINISHING PLUG FOR TUBING	PE PLASTIC, BLACK	30
5	HEX BOLT, 3/8"-16 UNC X 3" LG. (ZS GR 5)	ZS GR 5	30
6	HEX BOLT, 1/2"-13 UNC X 1" LG. (ZS GR 5)	ZS GR 5	28
7	HEX NUT, 3/8"-16 UNC (ZS GR 5)	ZS GR 5	30
8	WASHER, FLAT, USS, 3/8" X 1.000" OD X .083" THK. (ZS)	ZS	60
9	WASHER, FLAT, SAE, 1/2" X 1.062" OD X .095" THK	ZS	28
10	WASHER, SPLIT LOCK, 3/8" (ZS)	ZS	30
11	WASHER, SPLIT LOCK, 1/2"	ZS	28



NAIL SPAN MOUNT IS ATTACHED USING HARDWARE FROM TRELLIS BARS ON BOTH SIDES OF THE NAIL PIECE



DETAIL F  
 NAIL SPAN CONNECTION  
 DETAIL



DETAIL G  
 TRELLIS BAR CONNECTION  
 ATTACHMENT DETAIL

NOTE: ASTM A500B MATERIAL TO HAVE A MINIMUM YIELD STRENGTH OF 50 KSI.

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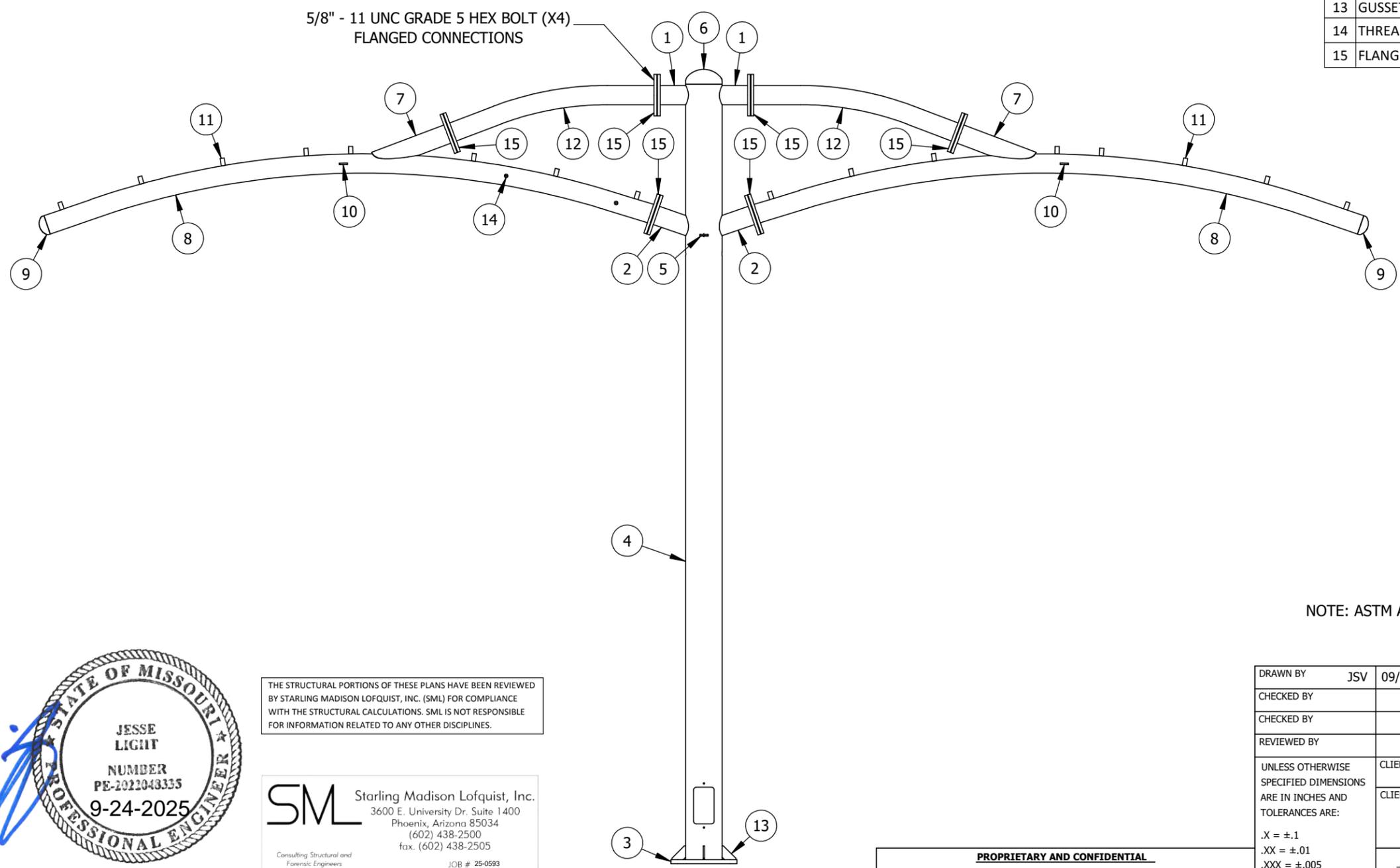
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PARTS LIST			
	DESCRIPTION	MATERIAL	QTY
1	ROUND HSS 3.5x0.216 CUT TO 5-5/8", COPED	CS A500B	2
2	ROUND HSS 3.5x0.216 CUT TO 8"	CS A500B	2
3	BASE PLATE, 12" X 12" X 3/4" THK	CS A36	1
4	ROUND HSS 6.625x0.280 CUT TO 141"	CS A500B	1
5	TAB, 1/4" X 1-1/2" X 2" LG (CS)	CS A1018	2
6	CAP, 6-5/8" OD X 10 GA (CS)	CS A36	1
7	ROUND HSS 3.5x0.216 CUT TO 14-1/2", COPED	CS A500B	2
8	ROUND HSS 3.5x0.216 CUT TO 112-1/2", ROLLED	CS A500B	2
9	CAP, 3-1/2" OD X 10 GA	CS A36	2
10	TAB, 1/4" X 1-1/2" X 3" LG (CS)	CS A1018	4
11	STUD, THREADED, 3/4" DIA X 1-3/8", 1/2-13 X 1" THREAD (CS)	CS A36	16
12	ROUND HSS 3.5x0.216 CUT TO 38-1/2", ROLLED	CS A500B	2
13	GUSSET, 1/4" X 2-1/2" X 2-1/2" LG, 45 DEGREE, CHAMFER CORNERS (CS)	CS A1018	4
14	THREADED WELD BUNG, 1/4"-20 UNC X 3/4" LG X 5/8" OD	CS A36	4
15	FLANGE, SLIP-ON, PLATE, 3.00IN IPS-0.50IN THICK, 150LB (CS)	CS A1018	12

B

B



NOTE: ASTM A500B MATERIAL TO HAVE A MINIMUM YIELD STRENGTH OF 50 KSI

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 3600 E. University Dr. Suite 1400  
 Phoenix, Arizona 85034  
 (602) 438-2500  
 fax. (602) 438-2505  
 Consulting Structural and Forensic Engineers  
 JOB # 25-0593

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND TOLERANCES ARE:  .X = ±.1 .XX = ±.01 .XXX = ±.005 FRACTION = ±1/16 ANGULAR = ±.5°	CLIENT NAME	<b>CLUB CAR WASH OLDHAM VILLAGE</b>		
	CLIENT ADDRESS	<b>1021 SOUTH WEST JEFFERSON STREET LEES SUMMIT, MISSOURI 64081</b>		
	SIZE	DRAWING NO.	REV	
	<b>B</b>	<b>1585523-ENG2</b>	<b>0</b>	
	SCALE: NTS	WEIGHT: 526.9464 LBS	SHEET 1 OF 5	

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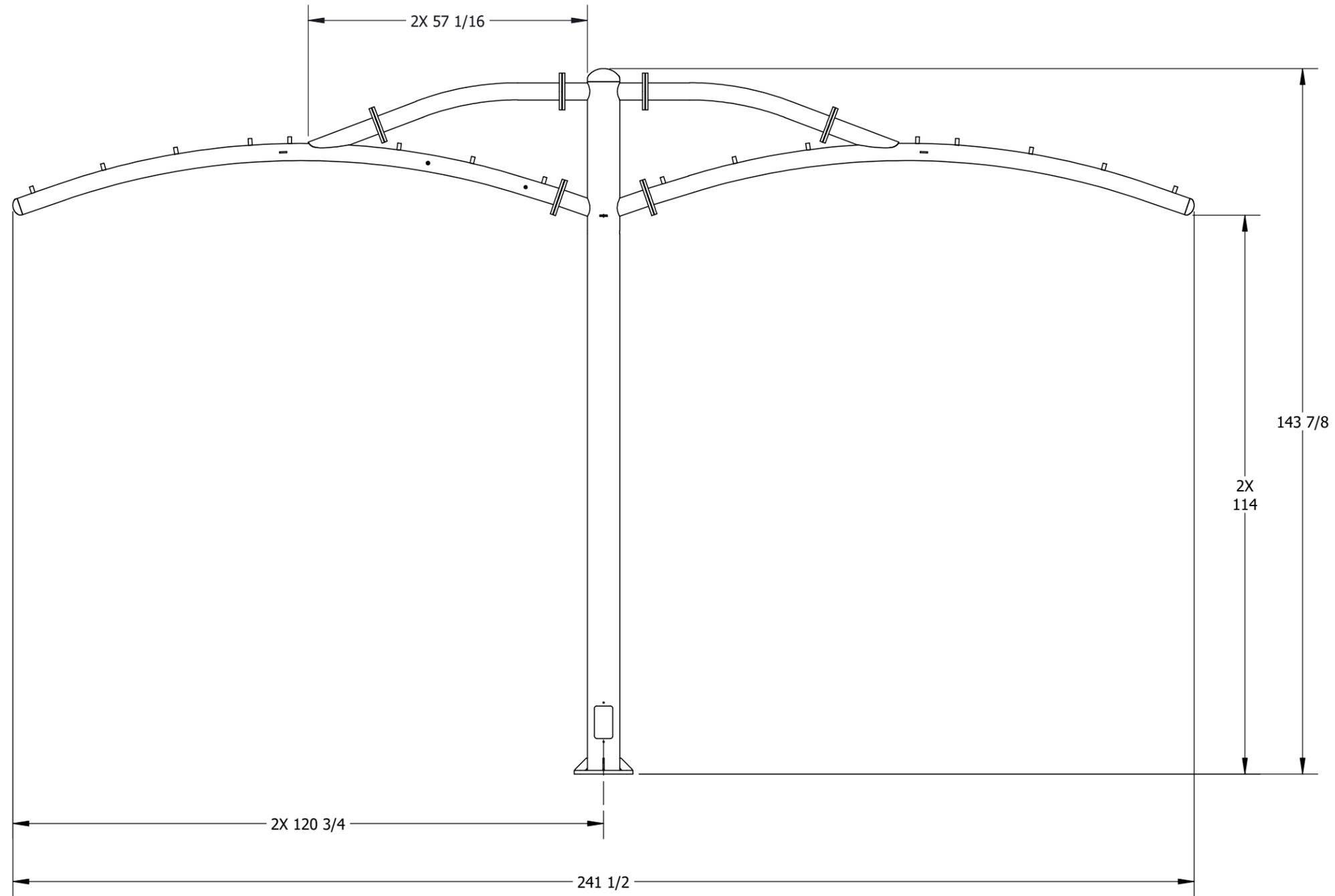
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RELEASE FOR CONSTRUCTION  
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 DEVELOPMENT SERVICES  
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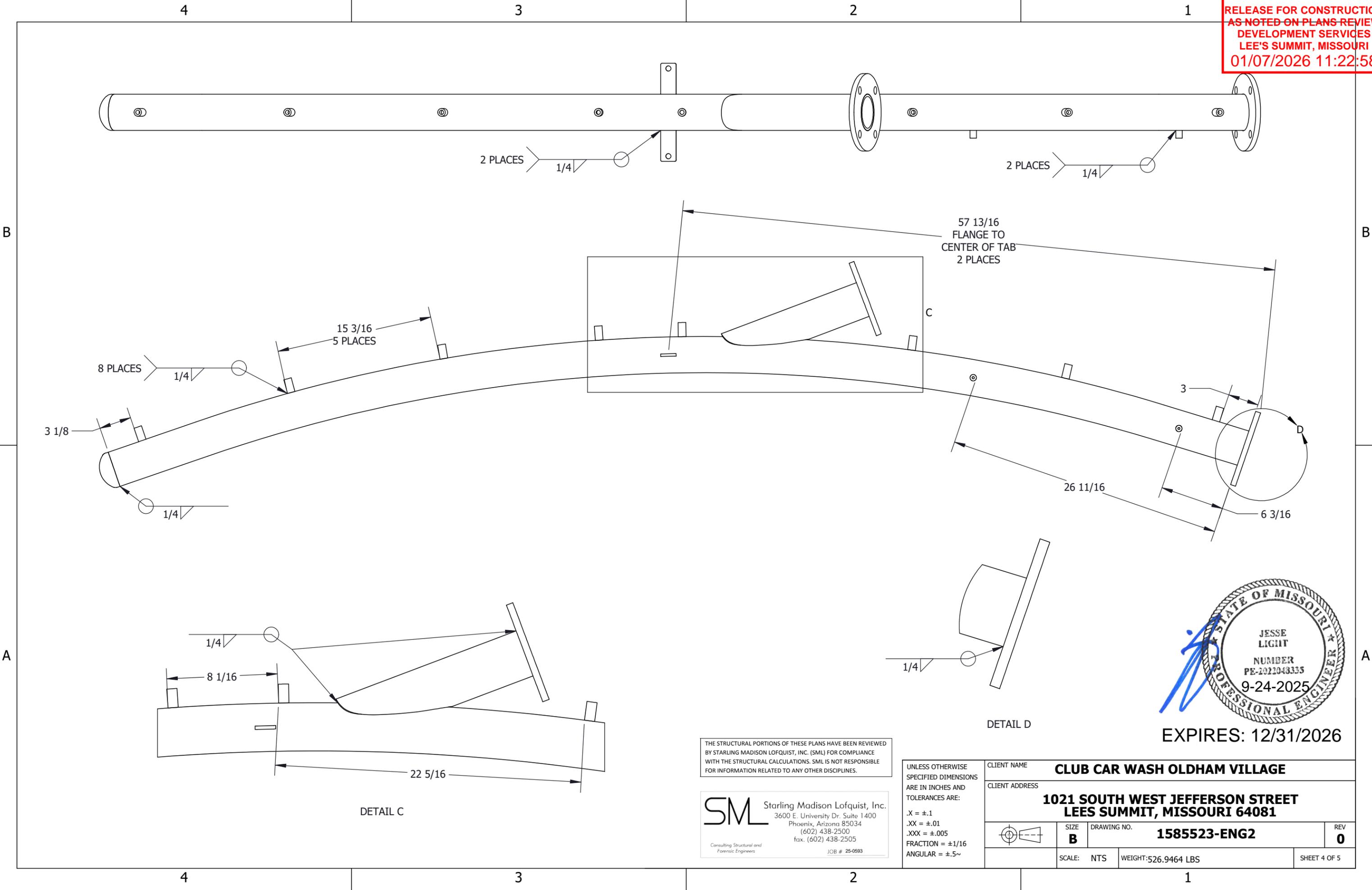
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SCALE:	NTS	WEIGHT:	526.9464 LBS	SHEET 2 OF 5



RELEASE FOR CONSTRUCTION  
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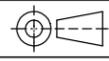
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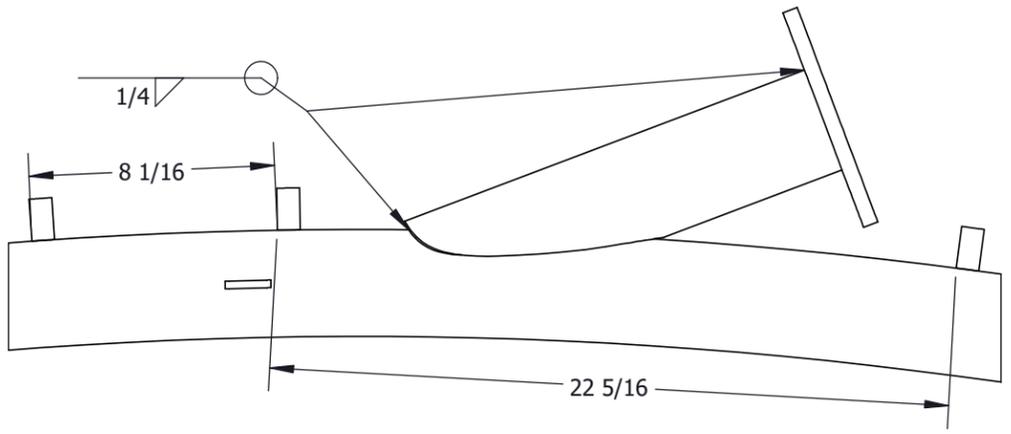
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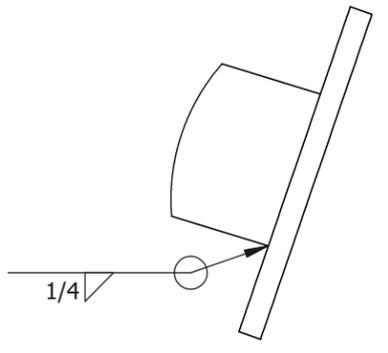
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SCALE:	NTS	WEIGHT: 526.9464 LBS	SHEET 4 OF 5	



EXPIRES: 12/31/2026



DETAIL C

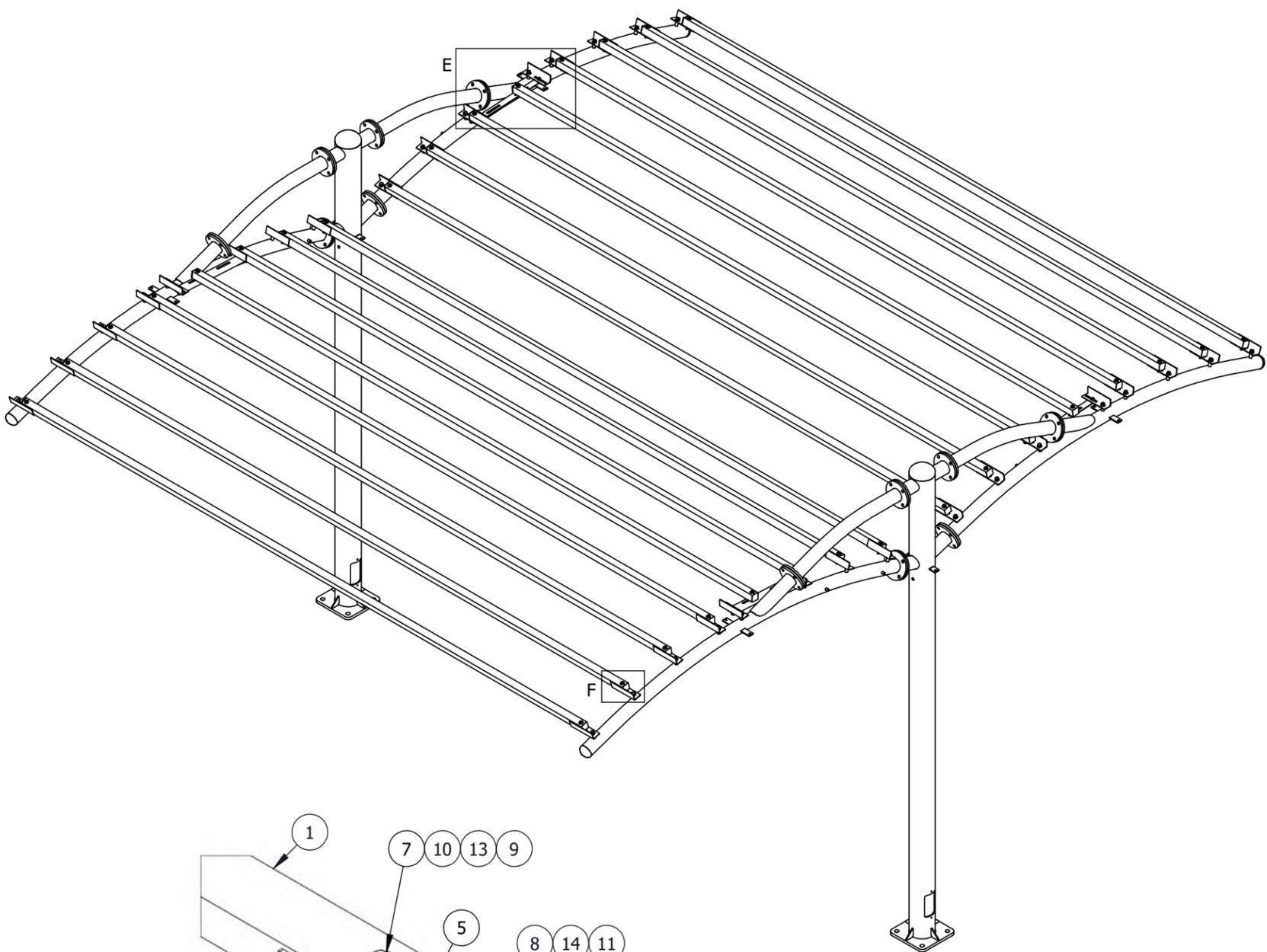


DETAIL D

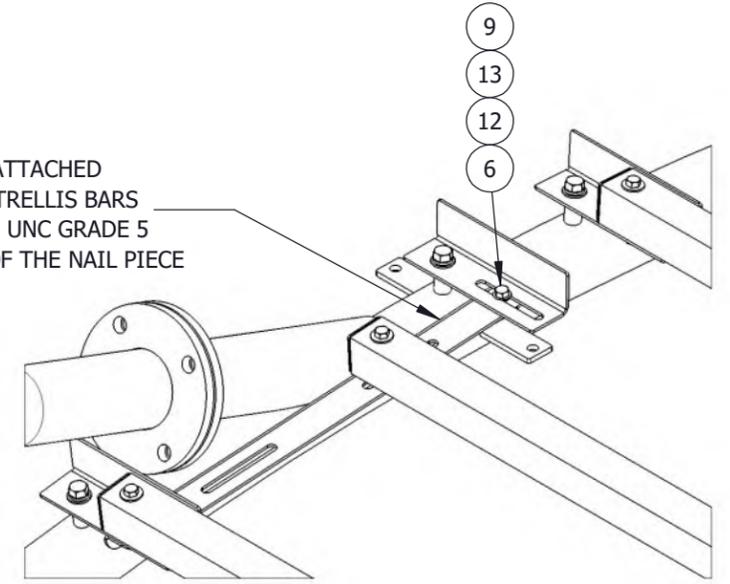
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**PARTS LIST**

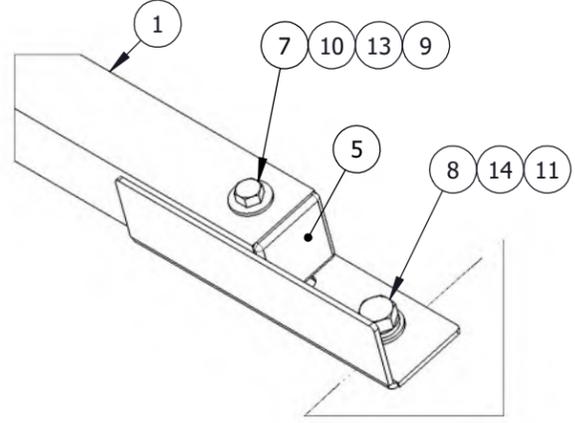
	DESCRIPTION	MATERIAL	QTY
1	SQUARE TUBE, 2" X 1/8" WALL X 199" LONG, 197" HOLE CENTERS (AL)	AL B211 6061-T6	16
2	BENT, SHEET, 10GA ANGLE BRACKET FOR TRELLIS, RIGHT (CS)	CS A1008	16
3	BENT, SHEET, 10GA ANGLE BRACKET FOR TRELLIS, LEFT (CS)	CS A1008	16
4	TRELLIS NAIL SPAN CONNECTOR, EXTENDED (CS)	CS A1008	4
5	SQUARE FINISHING PLUG FOR TUBING	PE PLASTIC, BLACK	32
6	HEX BOLT, 3/8"-16 UNC X 1" LG. (ZS GR 5)	ZS GR 5	4
7	HEX BOLT, 3/8"-16 UNC X 3" LG. (ZS GR 5)	ZS GR 5	32
8	HEX BOLT, 1/2"-13 UNC X 1" LG. (ZS GR 5)	ZS GR 5	32
9	HEX NUT, 3/8"-16 UNC (ZS GR 5)	ZN GR 5	36
10	WASHER, FLAT, USS, 3/8" X 1.000" OD X .083" THK. (ZS)	ZN GR 5	64
11	WASHER, FLAT, SAE, 1/2" X 1.062" OD X .095" THK	ZS	32
12	WASHER, FLAT, SAE, 3/8" X .812" OD X .065" THK. (ZS)	Zn GR 5	8
13	WASHER, SPLIT LOCK, 3/8" (ZS)	Zn GR 5	36
14	WASHER, SPLIT LOCK, 1/2"	ZS	32



NAIL SPAN MOUNT IS ATTACHED USING HARDWARE FROM TRELLIS BARS ON ONE SIDE AND 3/8" - 16 UNC GRADE 5 HARDWARE ON EITHER SIDE OF THE NAIL PIECE



DETAIL E



DETAIL F  
 TRELLIS BAR CONNECTOR ATTACHMENT DETAIL



EXPIRES: 12/31/2026

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