

6/13/2023 2:13:00 PM

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, turbines, 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 turbine 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 turbine H.P. and voltage) to each VFD and from each VFD to turbine 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 turbine 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 Turbine 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.

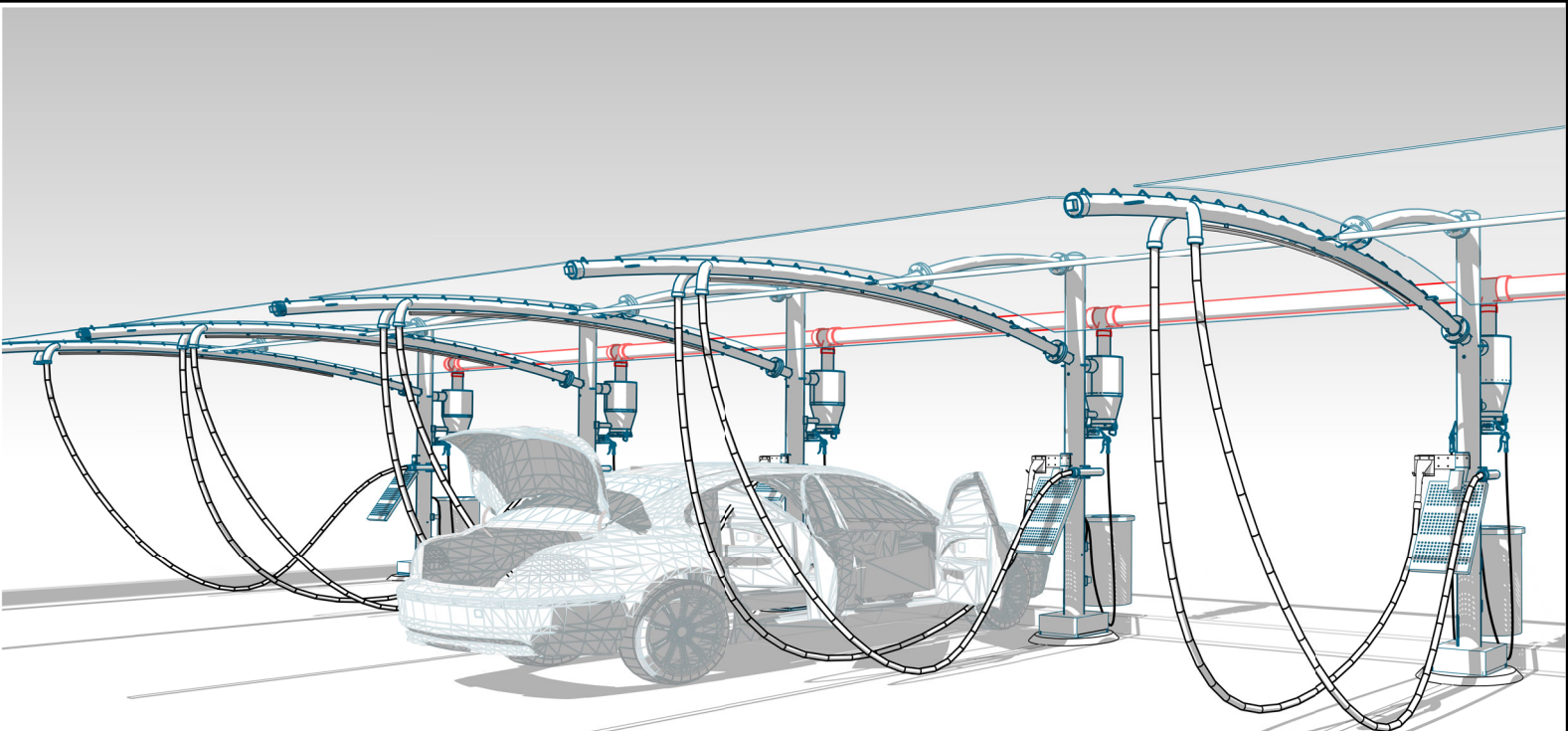
Step 3: Awnings are shipped to site w/ instructions.

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.



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Elevation: 1,000' ASL

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V211	PIPE ISOMETRIC	
V301	PARKING ELEVATION	
V311	ARCH NUMBERING PLAN	
V401	FOOTING LOCATION PLAN	
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SHEET INDEX

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V732	VFD B DETAILS	

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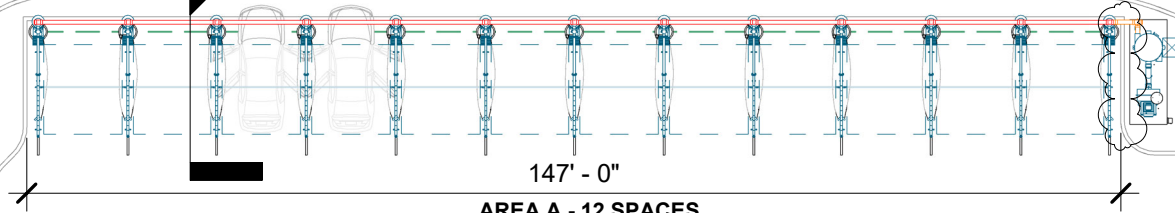
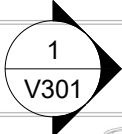
#	Revision	By	Chk	Date

COVER SHEET

Project Number	243686
Date	6/13/23
Drawn By	RY
Checked By	TD

V001

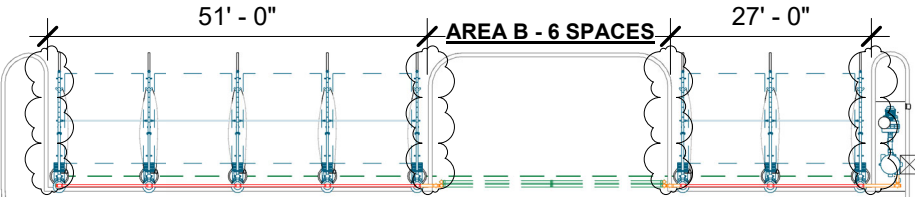
HIGHWAY 291



51' - 0"

AREA B - 6 SPACES

27' - 0"



EXIT

CARWASH BUILDING

ENTRANCE

THOMPSON DRIVE

DECKER STREET



NOTE: CURBS ADJUSTED 1'-6" FROM CENTER OF FOOTING TO FACE OF CURB TO ALLOW FOR ADEQUATE ARCH SPACING

CONSTRUCTION NOTES

GENERAL NOTES:

- a. ALL DIMENSIONS TO BE FIELD VERIFIED BY OWNER
- 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. AREA A 14'Lx5'Wx4"H, AREA B 12'Lx4'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE PAD REQUIRED FOR VACUUM EQUIPMENT

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'

1 OVERALL SITE PLAN

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MIDWEST WASH GROUP

SOUTH EAST DECKER
LEE'S SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date
1	generic			

OVERALL SITE PLAN

Project Number	243686
Date	6/13/23
Drawn By	RY
Checked By	TD

V101



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VACUUM AREA A

QTY	ITEM
2	SINGLE USER PALM ARCH
11	DUAL USER PALM ARCH
12	CREVICE VACUUM TOOL & HOLDER
12	CLAW VACUUM TOOL & HOLDER
12	SINGLE CLAW TOOL EXTENSION BRACKET
24	1-1/2"x15' RAPIDLOCK HOSE
24	AIR NOZZLE & HOSE
13	AIR TOOL HANGER
13	17" MAT RACK
13	30 GALLON WASTE RECEPTACLE
13	8' LED LIGHT
12	9' - 16'-6" ADJUSTABLE CROSSBAR
12	FABRIC AWNING

VACUUM AREA B

QTY	ITEM
4	SINGLE USER PALM ARCH
4	DUAL USER PALM ARCH
6	CREVICE VACUUM TOOL & HOLDER
6	CLAW VACUUM TOOL & HOLDER
6	SINGLE CLAW TOOL EXTENSION BRACKET
12	1-1/2"x15' RAPIDLOCK HOSE
12	AIR NOZZLE & HOSE
8	AIR TOOL HANGER
8	17" MAT RACK
8	30 GALLON WASTE RECEPTACLE
8	8' LED LIGHT
6	9' - 16'-6" ADJUSTABLE CROSSBAR
6	FABRIC AWNING

VACUUM EQUIPMENT A

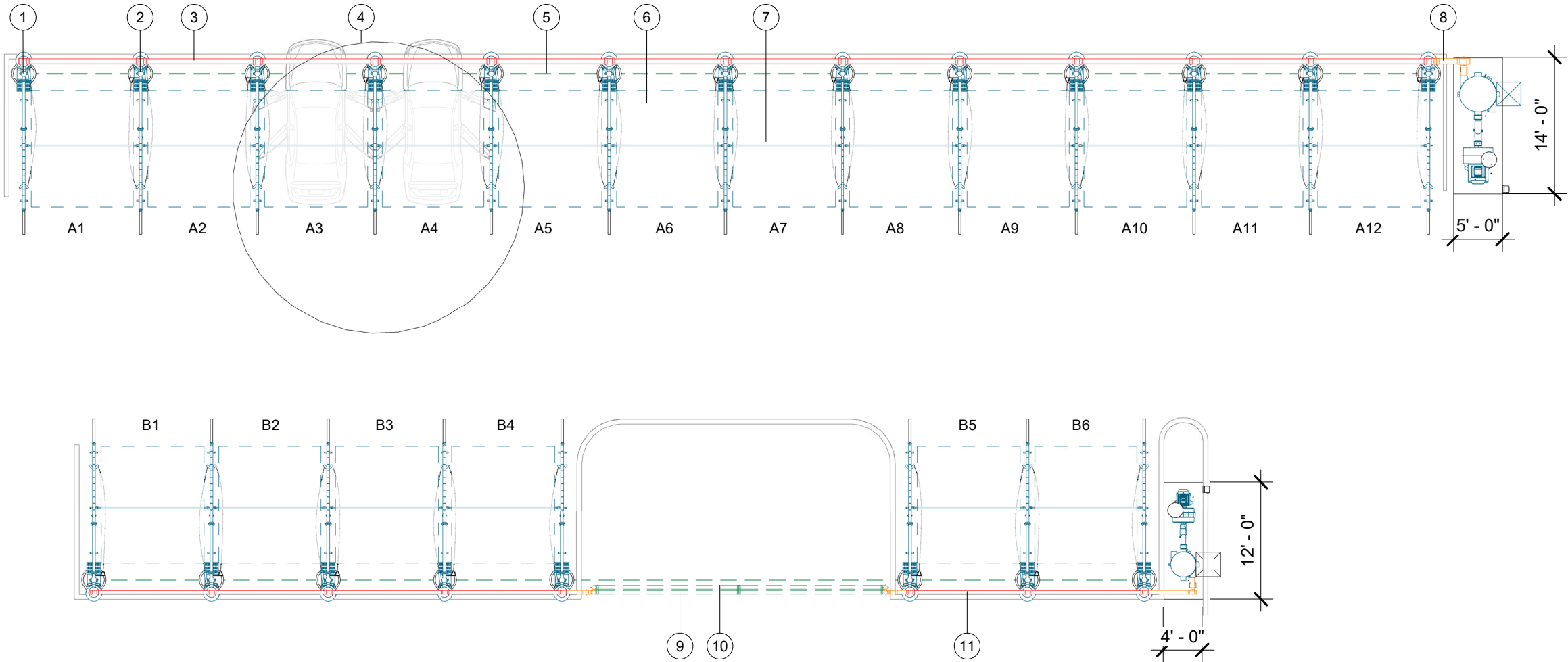
QTY	ITEM
1	60HP T5 DIRECT DRIVE TURBINE
1	8" T5 OUTDOOR EXHAUST SILENCER
1	45x96 FILTER SEPARATOR

VACUUM EQUIPMENT B

QTY	ITEM
1	30HP T3 DIRECT DRIVE TURBINE
1	6" T3 OUTDOOR EXHAUST SILENCER
1	31x79 FILTER SEPARATOR

SITE PLAN

ITEM	DESCRIPTION
1	SINGLE USER PALM ARCH AT ENDS OF VACUUM SPACES
2	DUAL USER PALM ARCH BETWEEN VACUUM SPACES
3	6" OVERHEAD ALUMINUM VACUUM TUBE
4	15' HOSE REACH
5	BURIED COMPRESSED AIR LINE (BY OTHERS)
6	FABRIC AWNING
7	9' - 16'-6" ADJUSTABLE CROSSBAR
8	OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
9	4" SCH. 40 SOLID CORE PVC BURIED PRIMARY VACUUM PIPE (BY OTHERS)
10	4" SCH. 40 SOLID CORE PVC BURIED BACK-UP VACUUM PIPE (BY OTHERS)
11	4" OVERHEAD ALUMINUM VACUUM TUBE



1 SITE PLAN

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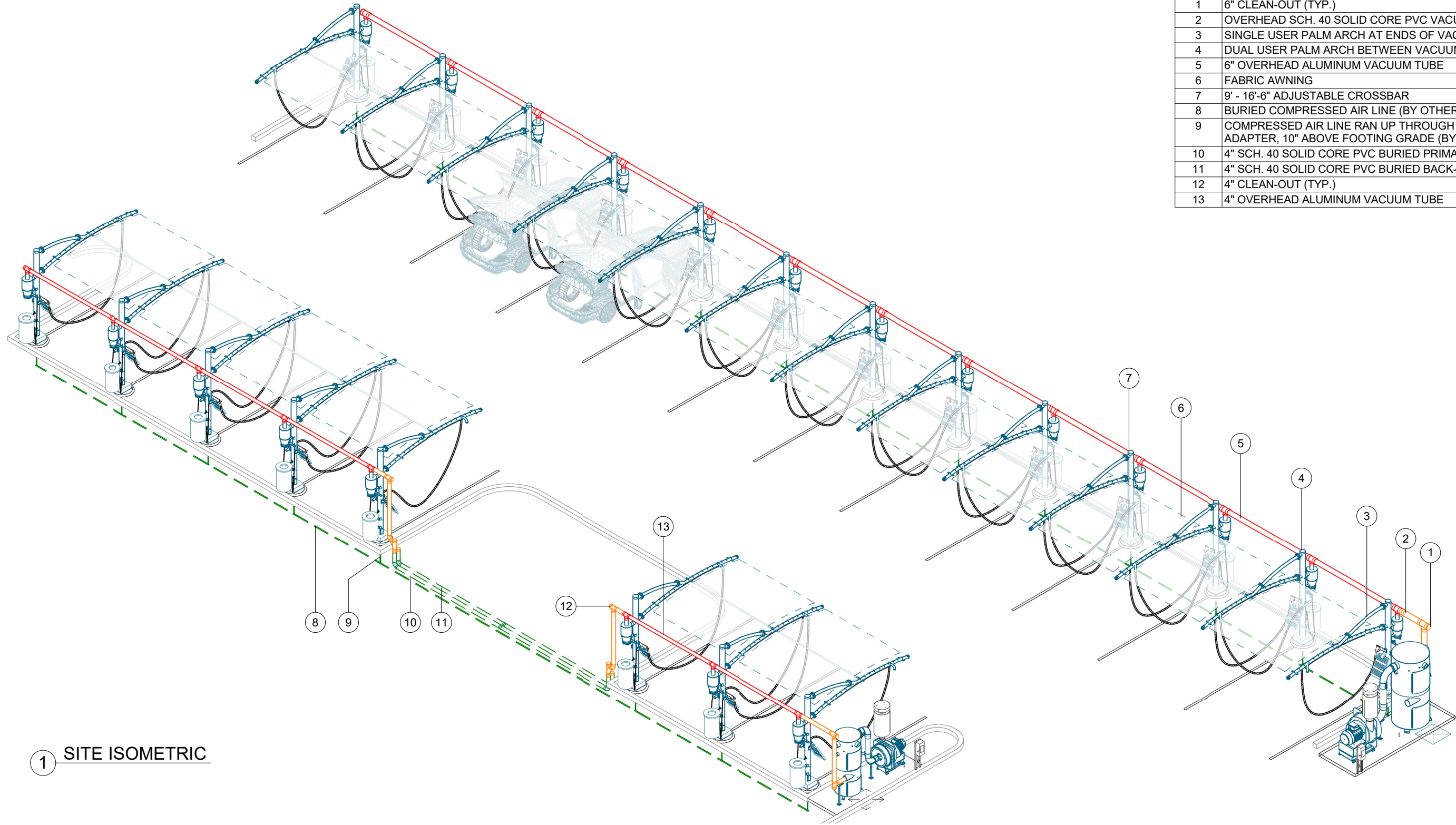
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VACUUM SITE PLAN

Project Number	243686
Date	6/13/23
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V111



SITE ISOMETRIC	
ITEM	DESCRIPTION
1	6" CLEAN-OUT (TYP.)
2	OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
3	SINGLE USER PALM ARCH AT ENDS OF VACUUM SPACES
4	DUAL USER PALM ARCH BETWEEN VACUUM SPACES
5	6" OVERHEAD ALUMINUM VACUUM TUBE
6	FABRIC AWNING
7	9' - 16'-6" ADJUSTABLE CROSSBAR
8	BURIED COMPRESSED AIR LINE (BY OTHERS)
9	COMPRESSED AIR LINE RAN UP THROUGH FOOTING WITH 1/2" FIPT ADAPTER, 10" ABOVE FOOTING GRADE (BY OTHERS)
10	4" SCH. 40 SOLID CORE PVC BURIED PRIMARY VACUUM PIPE (BY OTHERS)
11	4" SCH. 40 SOLID CORE PVC BURIED BACK-UP VACUUM PIPE (BY OTHERS)
12	4" CLEAN-OUT (TYP.)
13	4" OVERHEAD ALUMINUM VACUUM TUBE

1 SITE ISOMETRIC

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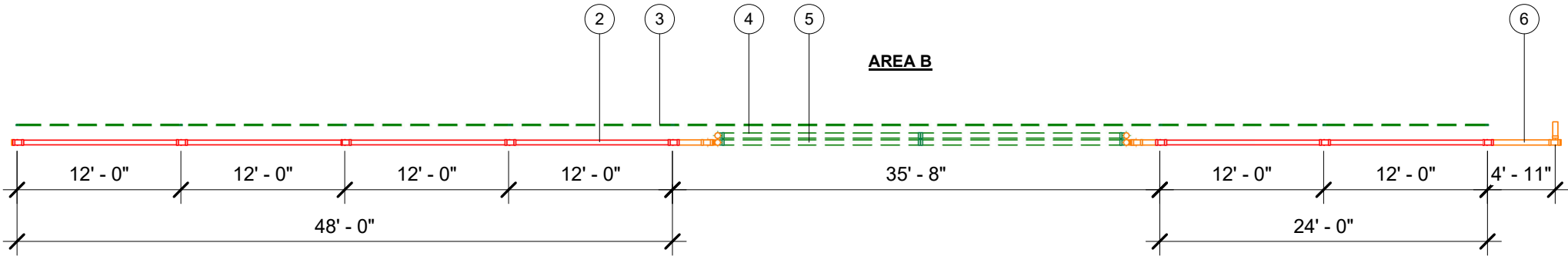
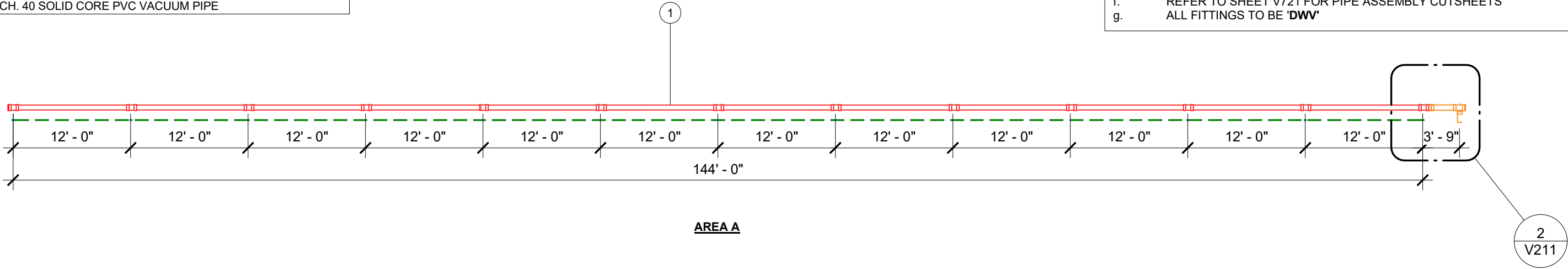
VACUUM SITE ISOMETRIC

Project Number	243686
Date	6/13/23
Drawn By	RY
Checked By	TD

V121

PIPE LAYOUT	
ITEM	DESCRIPTION
1	6" OVERHEAD ALUMINUM VACUUM TUBE
2	4" OVERHEAD ALUMINUM VACUUM TUBE
3	BURIED COMPRESSED AIR LINE (BY OTHERS)
4	4" SCH. 40 SOLID CORE PVC BURIED BACK-UP VACUUM PIPE (BY OTHERS)
5	4" SCH. 40 SOLID CORE PVC BURIED PRIMARY VACUUM PIPE (BY OTHERS)
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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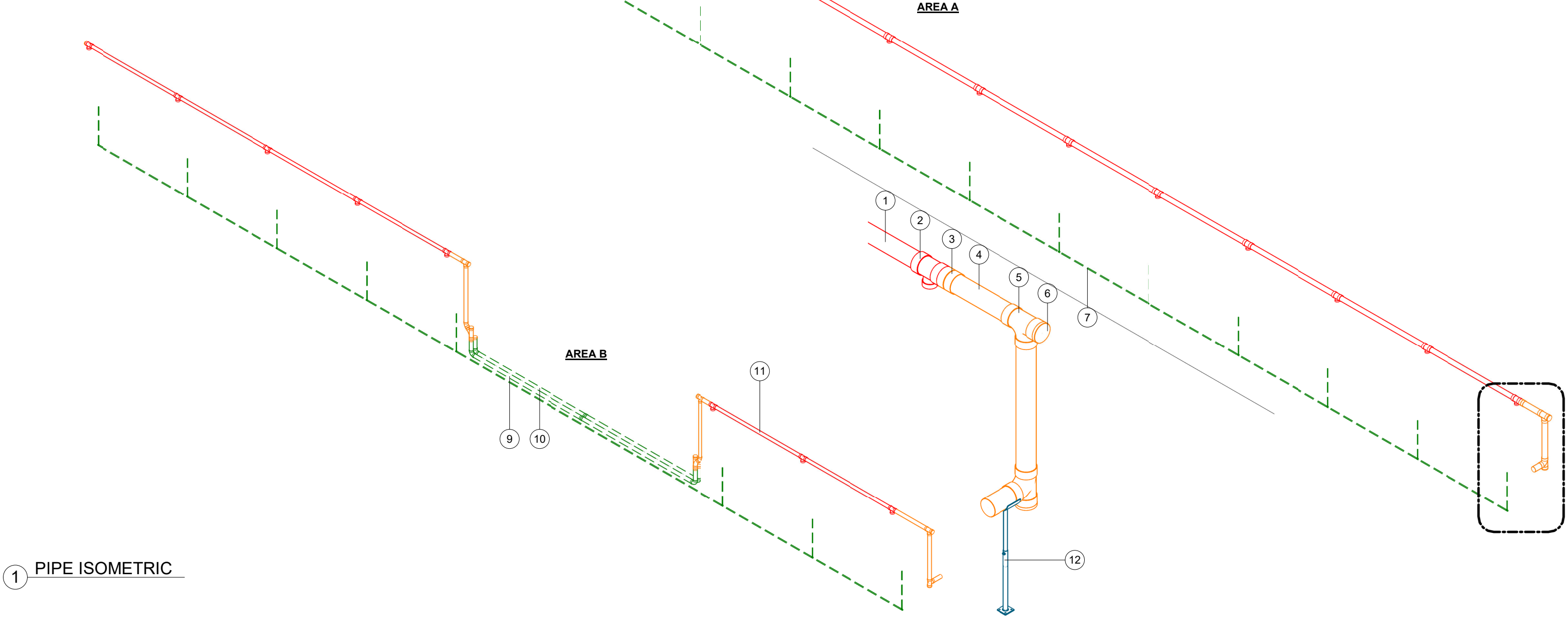
#	Revision	By	Chk	Date

PIPE LAYOUT		
Project Number	243686	V201
Date	6/13/23	
Drawn By	TD	
Checked By	ML	

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- 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'

PIPE ISOMETRIC	
ITEM	DESCRIPTION
1	6" OVERHEAD ALUMINUM VACUUM TUBE
2	6"x4" RAPIDLOCK SANITARY TEE
3	6" STRONGBACK FERNCO
4	OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
5	6" PVC SANITARY TEE
6	6" CLEAN-OUT (TYP.)
7	BURIED COMPRESSED AIR LINE (BY OTHERS)
9	4" SCH. 40 SOLID CORE PVC BURIED PRIMARY VACUUM PIPE (BY OTHERS)
10	4" SCH. 40 SOLID CORE PVC BURIED BACK-UP VACUUM PIPE (BY OTHERS)
11	4" OVERHEAD ALUMINUM VACUUM TUBE
12	SEPARATOR PIPE SUPPORT



1 PIPE ISOMETRIC

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SOUTH EAST DECKER
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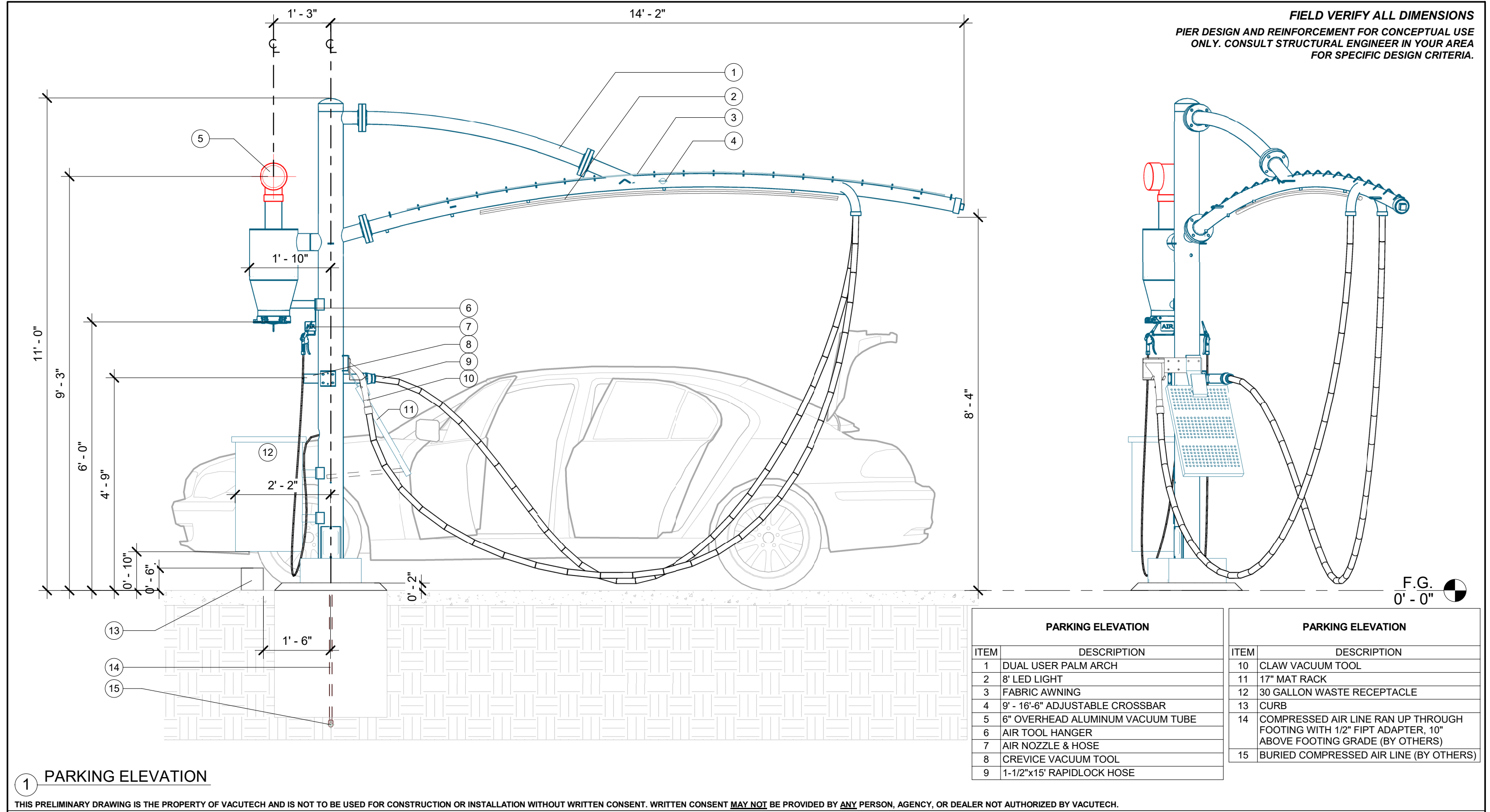
PIPE ISOMETRIC

Project Number243686
Date6/13/23
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V211

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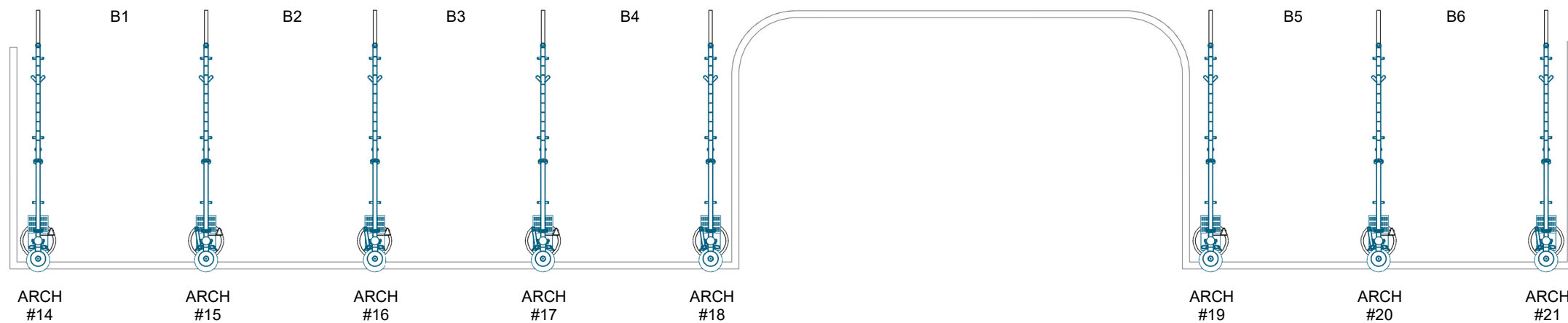
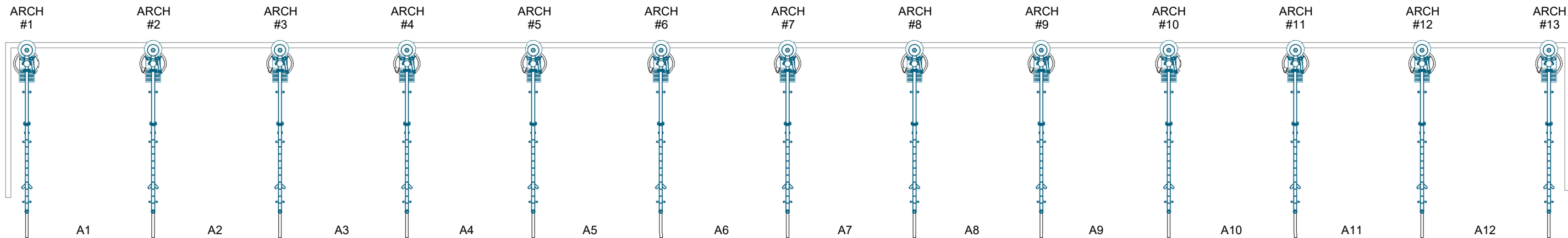
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#	Revision	By	Chk	Date

PARKING ELEVATION	
Project Number	243686
Date	6/13/23
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V301



1 ARCH NUMBERING PLAN

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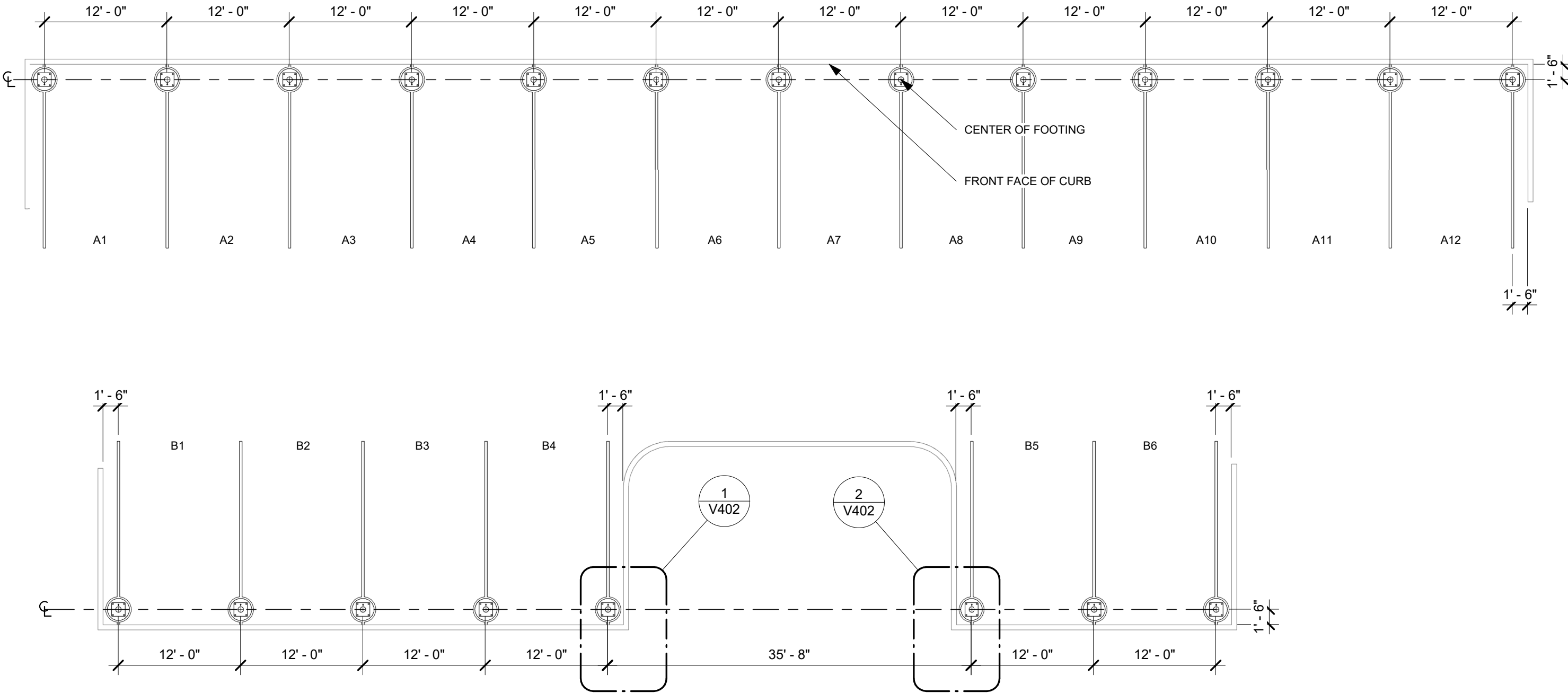
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#	Revision	By	Chk	Date

ARCH NUMBERING PLAN		
Project Number	243686	V311
Date	6/13/23	
Drawn By	TD	
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1 FOOTING LOCATION PLAN

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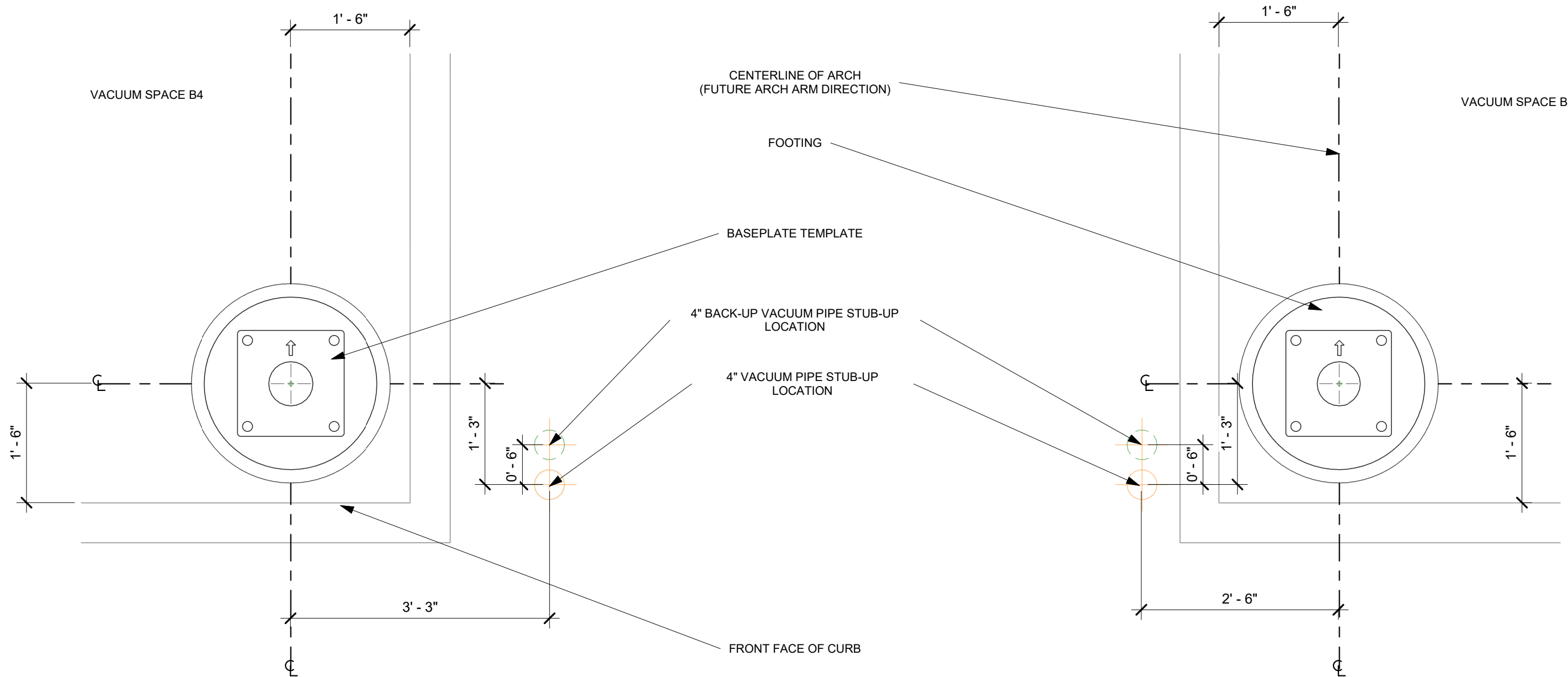
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FOOTING LOCATION PLAN

Project Number	243686
Date	6/13/23
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① PIPE STUB-UP LOCATION 1

② PIPE STUB-UP LOCATION 2

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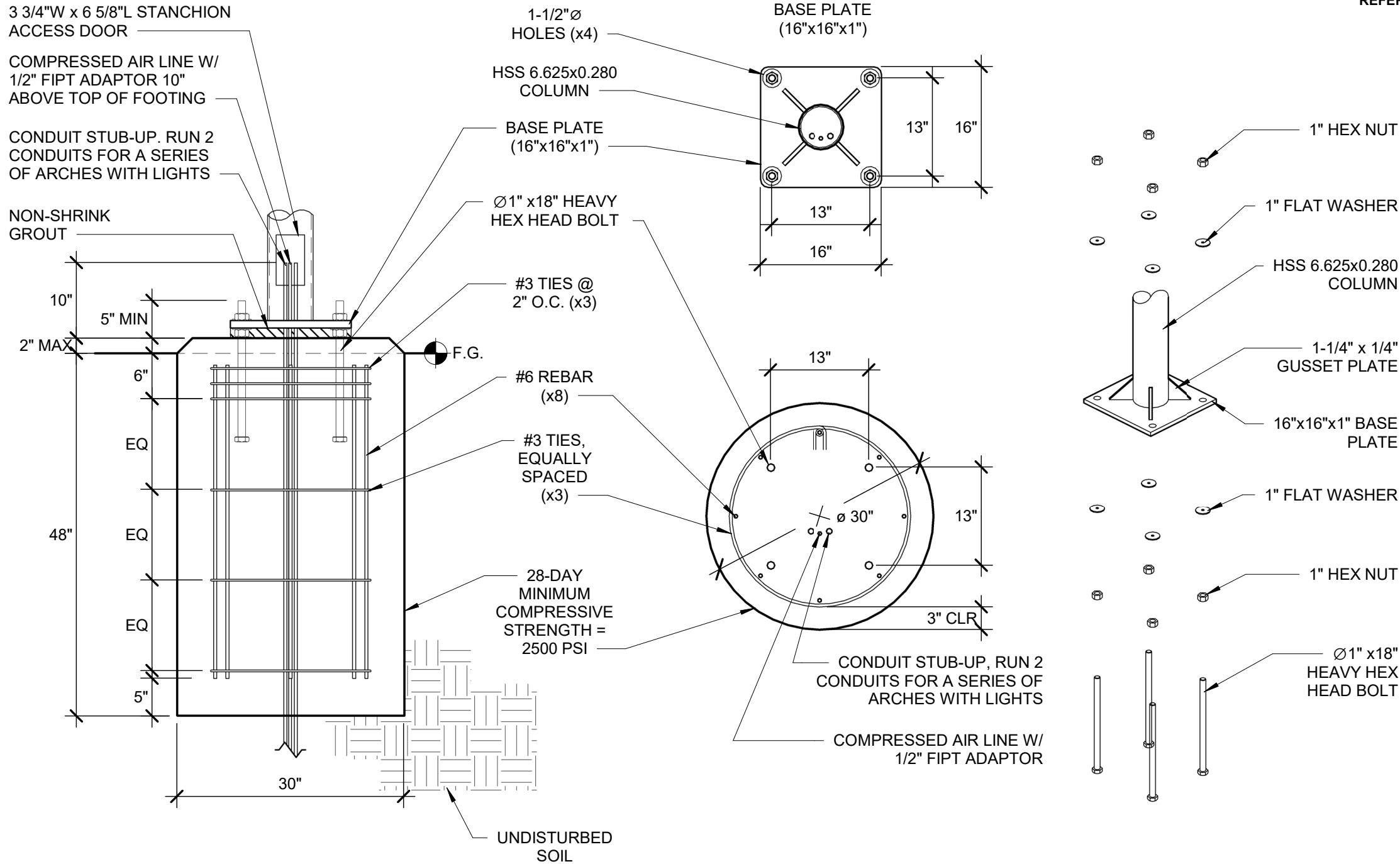
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SOUTH EAST DECKER
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#	Revision	By	Chk	Date

PIPE STUB-UP LOCATIONS		
Project Number	243686	V402
Date	6/13/23	
Drawn By	TD	
Checked By	ML	

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1 FOOTING - PALM ARCH W/ AIR

NOTE:
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MIDWEST WASH GROUP

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LEE'S SUMMIT, MISSOURI 64081

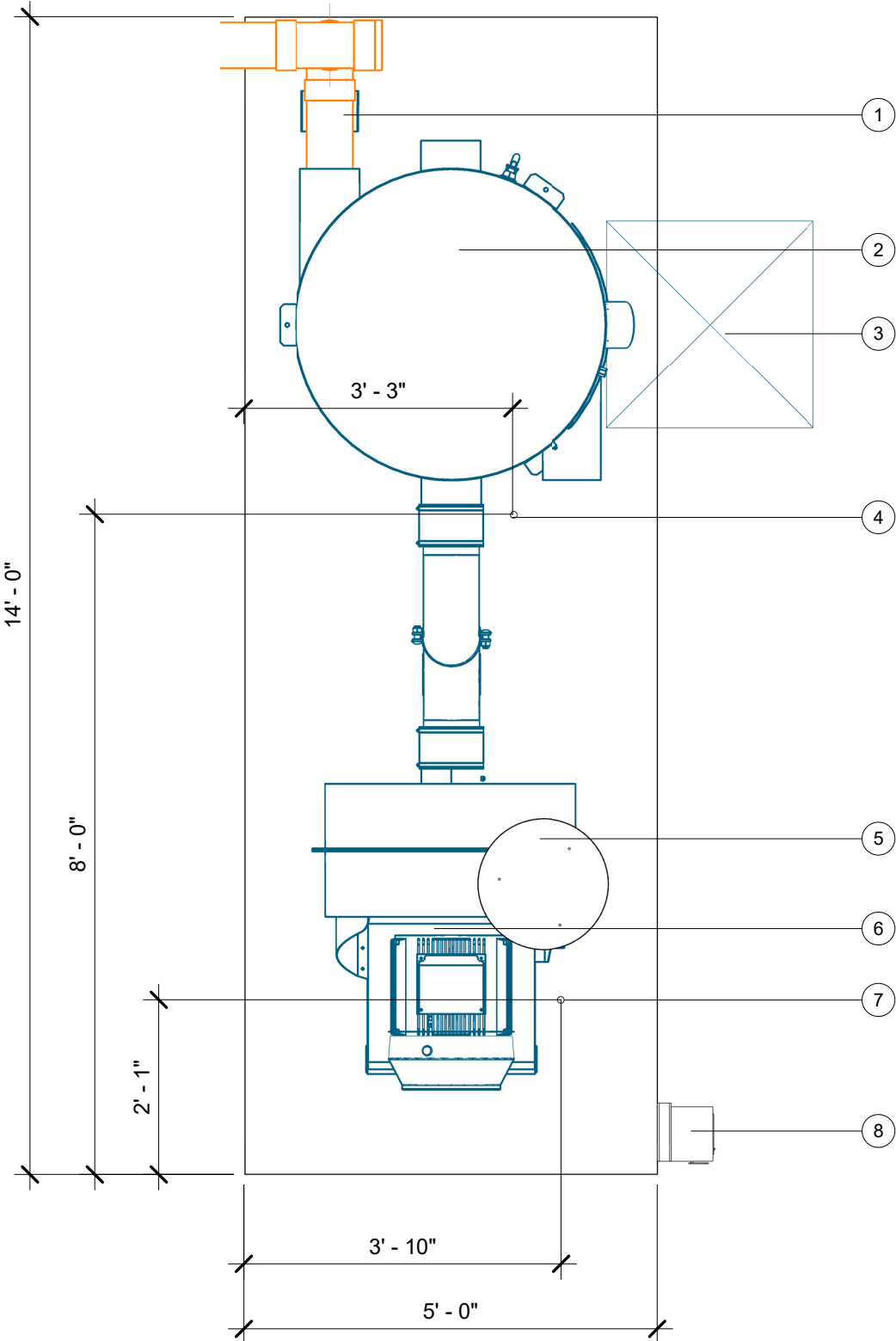
#	Revision	By	Chk	Date

FOOTING DETAIL

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V411

- EQUIPMENT NOTES:**
- 14'Lx5'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE PAD 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 TURBINE TO OUTSIDE AIR OR ATMOSPHERE W/ 8" ALUMINUM TUBE OR METAL PIPE
 - FIELD VERIFY ALL DIMENSIONS
 - SEE POWER EQUIPMENT DETAILS ON V701
 - SEE VFD DETAILS ON V731



EQUIPMENT A SITE PLAN	
ITEM	DESCRIPTION
1	OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
2	45x96 FILTER SEPARATOR
3	30"x30" MINIMUM SPACE REQUIRED TO REMOVE DEBRIS BUCKET
4	3/4" CONDUIT STUB-UP LOCATION FOR TRANSDUCER WIRE; SEE CONDUIT REQUIREMENT FOR VFD & TURBINE
5	8" T5 OUTDOOR EXHAUST SILENCER
6	60HP T5 DIRECT DRIVE TURBINE
7	RECOMMENDED TURBINE MOTOR CONDUIT STUB-UP LOCATION, SIZE PER N.E.C.
8	RECOMMENDED DISCONNECT LOCATION (WITHIN SIGHT OF TURBINE), CLEARANCE REQUIRED IN FRONT

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EQUIPMENT A PLAN

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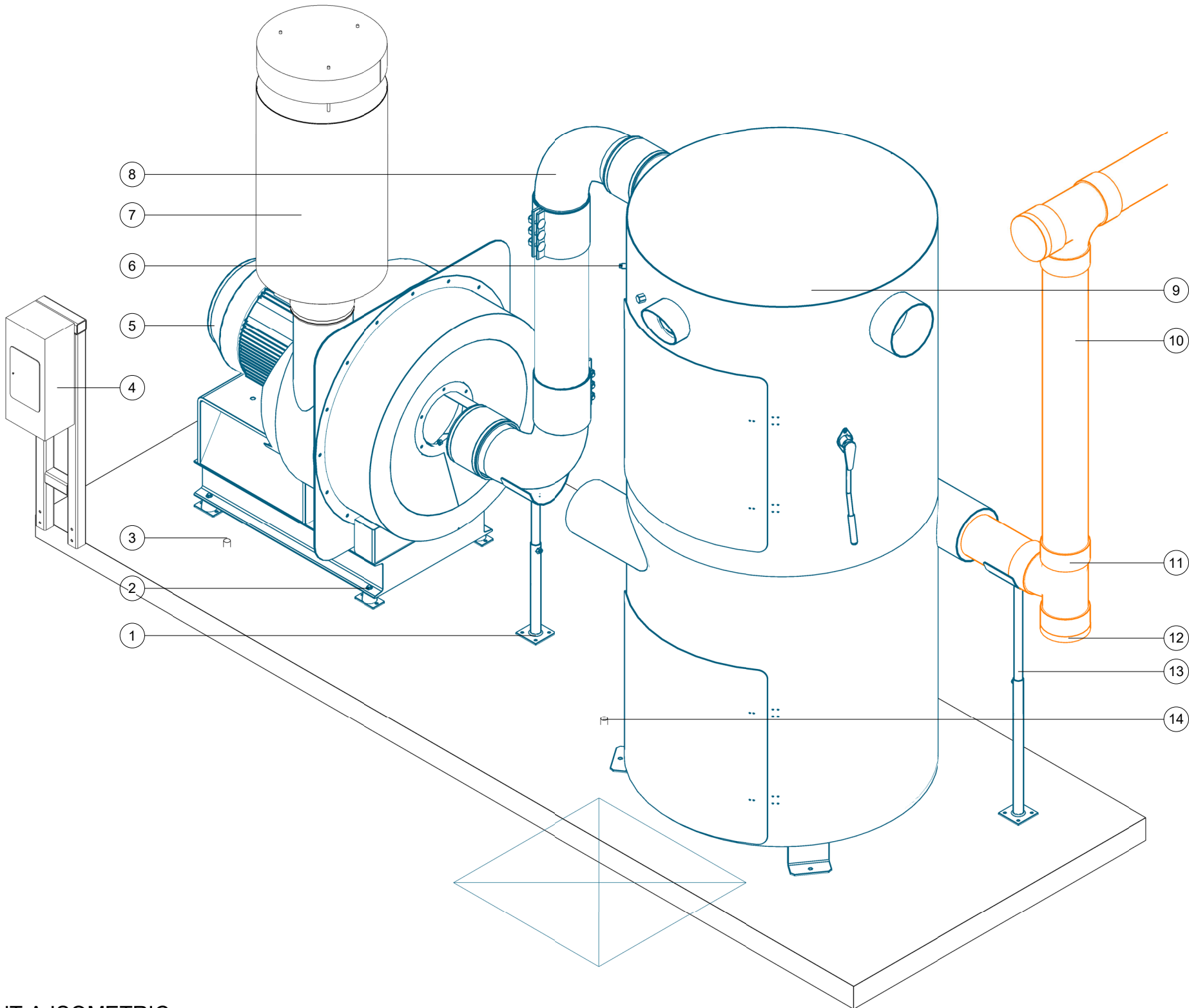
SOUTH EAST DECKER

LEE'S SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date

EQUIPMENT A SITE PLAN		
Project Number	243686	V601
Date	6/13/23	
Drawn By	TD	
Checked By	ML	

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- EQUIPMENT NOTES:**
- 14'Lx5'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE PAD 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 TURBINE TO OUTSIDE AIR OR ATMOSPHERE W/ 8" ALUMINUM TUBE OR METAL PIPE
 - FIELD VERIFY ALL DIMENSIONS
 - SEE POWER EQUIPMENT DETAILS ON V701
 - SEE VFD DETAILS ON V731

EQUIPMENT A SITE ISOMETRIC	
ITEM	DESCRIPTION
1	TURBINE PIPE SUPPORT
2	TURBINE VIBRATION ISOLATOR
3	RECOMMENDED TURBINE MOTOR CONDUIT STUB-UP LOCATION, SIZE PER N.E.C.
4	RECOMMENDED DISCONNECT LOCATION (WITHIN SIGHT OF TURBINE), CLEARANCE REQUIRED IN FRONT
5	60HP T5 DIRECT DRIVE TURBINE
6	TRANSDUCER CONNECTION LOCATION ON SEPARATOR
7	8" T5 OUTDOOR EXHAUST SILENCER
8	8" SEPARATOR/TURBINE HOOK-UP KIT (ALUMINUM)
9	45x96 FILTER SEPARATOR
10	OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
11	6" PVC SANITARY TEE
12	6" CLEAN-OUT (TYP.)
13	SEPARATOR PIPE SUPPORT
14	3/4" CONDUIT STUB-UP LOCATION FOR TRANSDUCER WIRE; SEE CONDUIT REQUIREMENT FOR VFD & TURBINE

1 EQUIPMENT A ISOMETRIC

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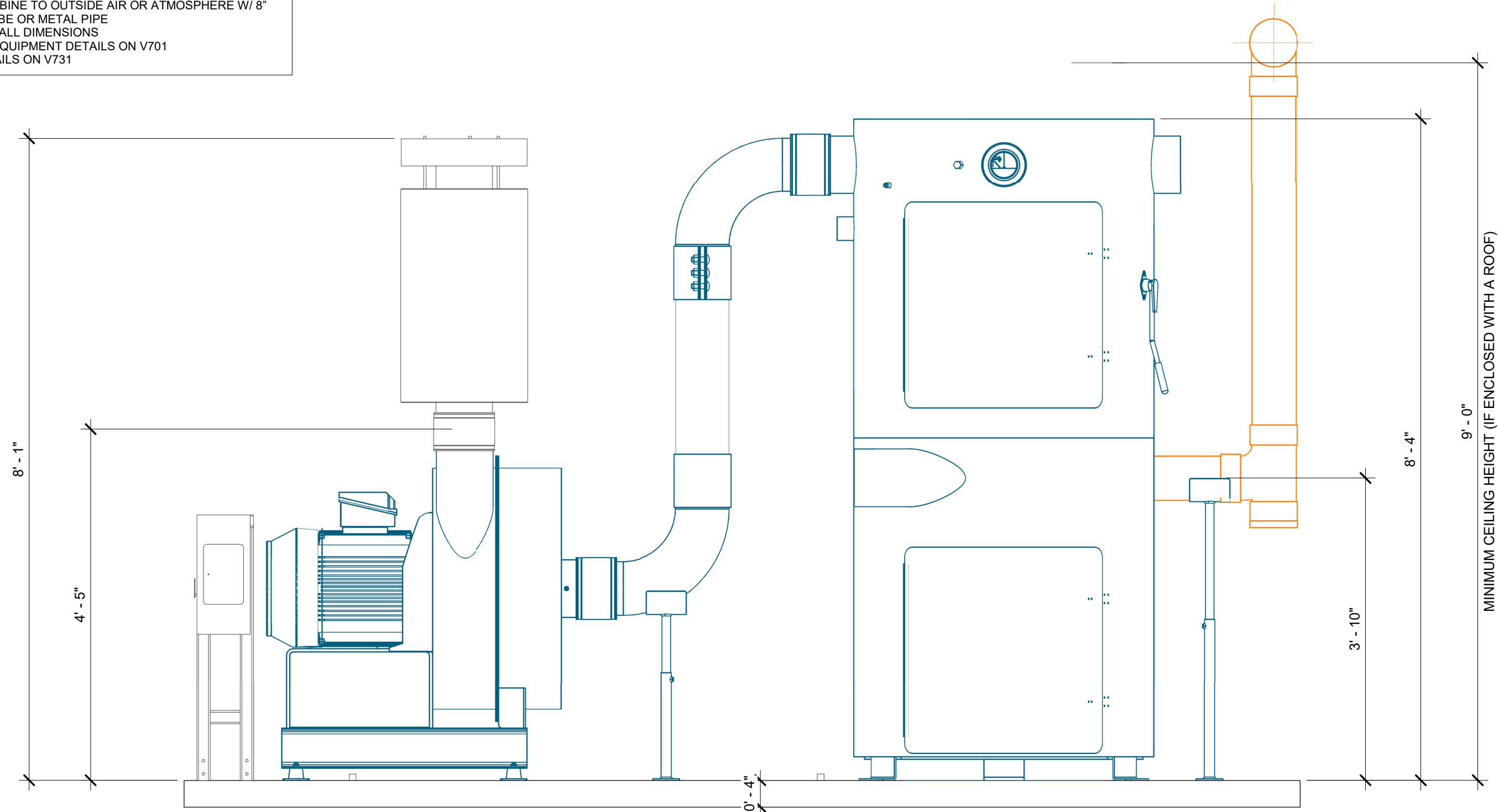
#	Revision	By	Chk	Date

EQUIP. A SITE ISOMETRIC

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V611

- EQUIPMENT NOTES:**
- 14'Lx5'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE PAD 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 TURBINE TO OUTSIDE AIR OR ATMOSPHERE W/ 8" ALUMINUM TUBE OR METAL PIPE
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SOUTH EAST DECKER
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#	Revision	By	Chk	Date

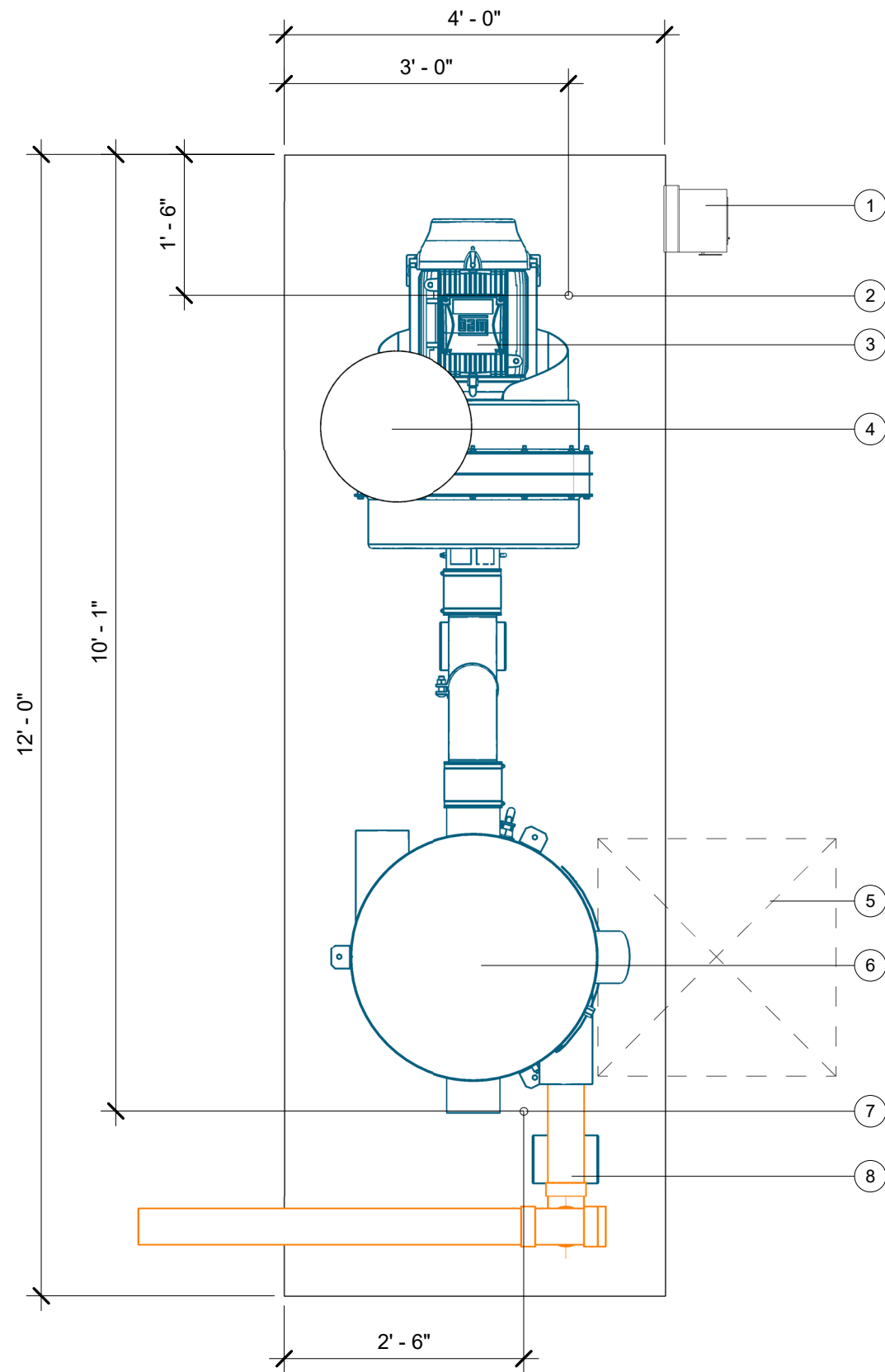
EQUIPMENT A ELEVATION

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V621

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1 EQUIPMENT B PLAN



- EQUIPMENT NOTES:**
- 12'Lx4'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE PAD 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 TURBINE TO OUTSIDE AIR OR ATMOSPHERE W/ 6" ALUMINUM TUBE OR METAL PIPE
 - FIELD VERIFY ALL DIMENSIONS
 - SEE POWER EQUIPMENT DETAILS ON V701
 - SEE VFD DETAILS ON V731

EQUIPMENT B SITE PLAN	
ITEM	DESCRIPTION
1	RECOMMENDED DISCONNECT LOCATION (WITHIN SIGHT OF TURBINE), CLEARANCE REQUIRED IN FRONT
2	RECOMMENDED TURBINE MOTOR CONDUIT STUB-UP LOCATION, SIZE PER N.E.C.
3	30HP T3 DIRECT DRIVE TURBINE
4	6" T3 OUTDOOR EXHAUST SILENCER
5	30"x30" MINIMUM SPACE REQUIRED TO REMOVE DEBRIS BUCKET
6	31x79 FILTER SEPARATOR
7	3/4" CONDUIT STUB-UP LOCATION FOR TRANSDUCER WIRE; SEE CONDUIT REQUIREMENT FOR VFD & TURBINE
8	OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE

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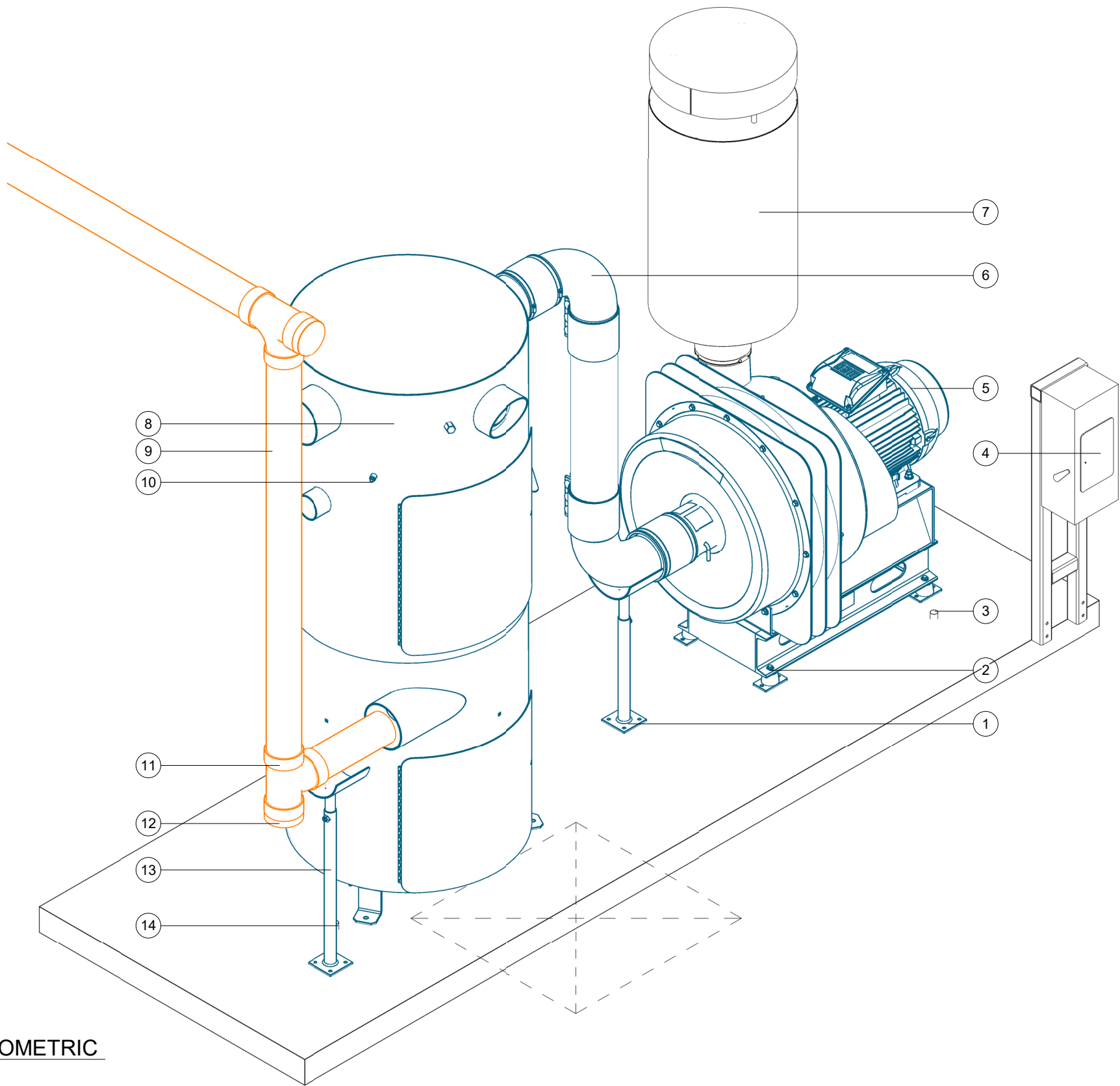
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SOUTH EAST DECKER
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#	Revision	By	Chk	Date

EQUIPMENT B SITE PLAN		
Project Number	243686	V622
Date	6/13/23	
Drawn By	TD	
Checked By	ML	



- EQUIPMENT NOTES:**
- 12'Lx4'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE PAD REQUIRED FOR VACUUM EQUIPMENT
 - WALL PENETRATION: CORE DRILLING MAY BE REQUIRED
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 - SEE POWER EQUIPMENT DETAILS ON V701
 - SEE VFD DETAILS ON V731

EQUIPMENT B SITE ISOMETRIC	
ITEM	DESCRIPTION
1	TURBINE PIPE SUPPORT
2	TURBINE VIBRATION ISOLATOR
3	RECOMMENDED TURBINE MOTOR CONDUIT STUB-UP LOCATION, SIZE PER N.E.C.
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7	6" T3 OUTDOOR EXHAUST SILENCER
8	31x79 FILTER SEPARATOR
9	OVERHEAD SCH. 40 SOLID CORE PVC VACUUM PIPE
10	TRANSDUCER CONNECTION LOCATION ON SEPARATOR
11	4" PVC SANITARY TEE
12	4" CLEAN-OUT (TYP.)
13	SEPARATOR PIPE SUPPORT
14	3/4" CONDUIT STUB-UP LOCATION FOR TRANSDUCER WIRE; SEE CONDUIT REQUIREMENT FOR VFD & TURBINE

1 EQUIPMENT B ISOMETRIC

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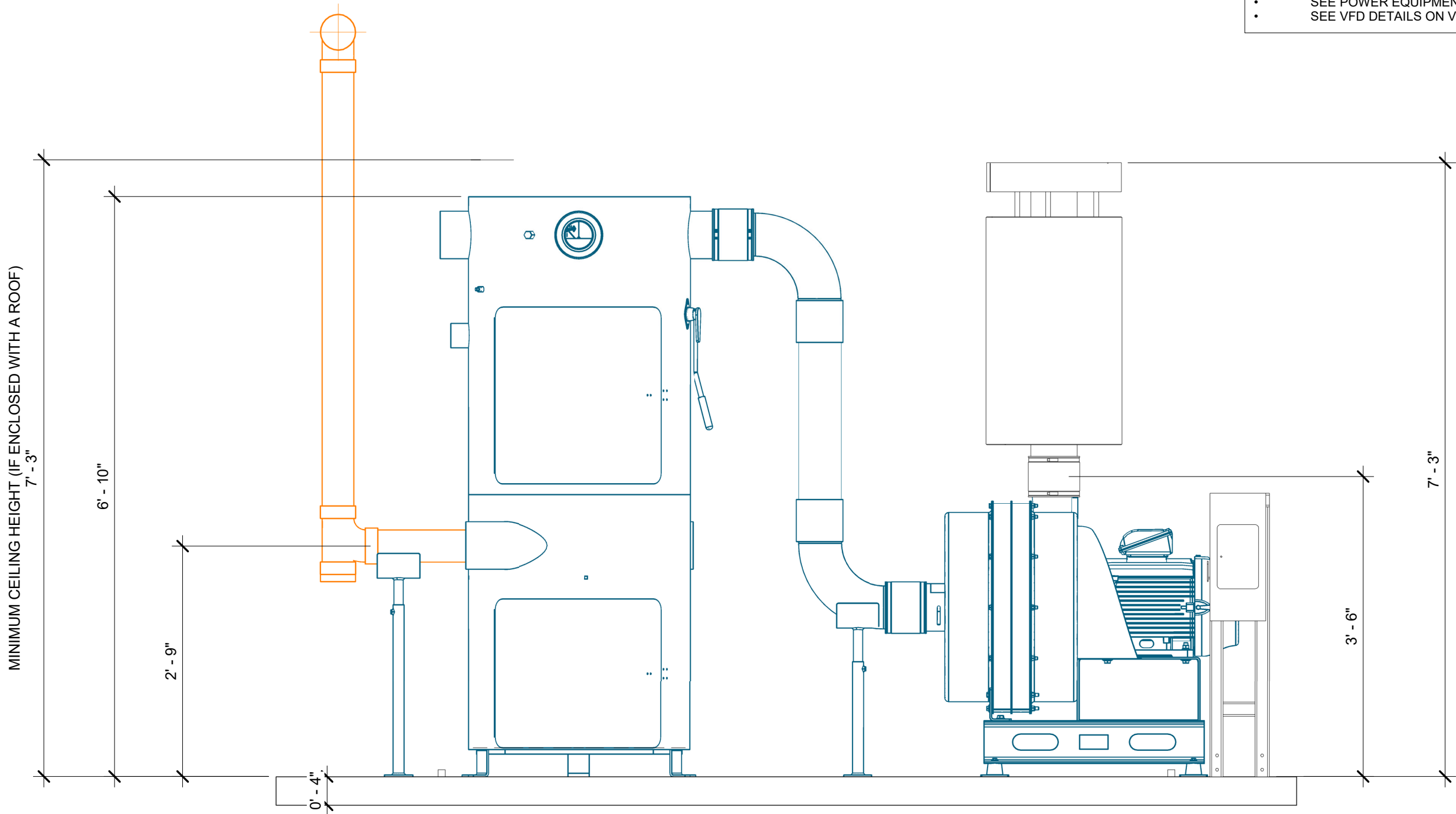
#	Revision	By	Chk	Date

EQUIP. B SITE ISOMETRIC

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V623

- EQUIPMENT NOTES:**
- 12'Lx4'Wx4"H MINIMUM FLAT AND LEVEL CONCRETE PAD REQUIRED FOR VACUUM EQUIPMENT
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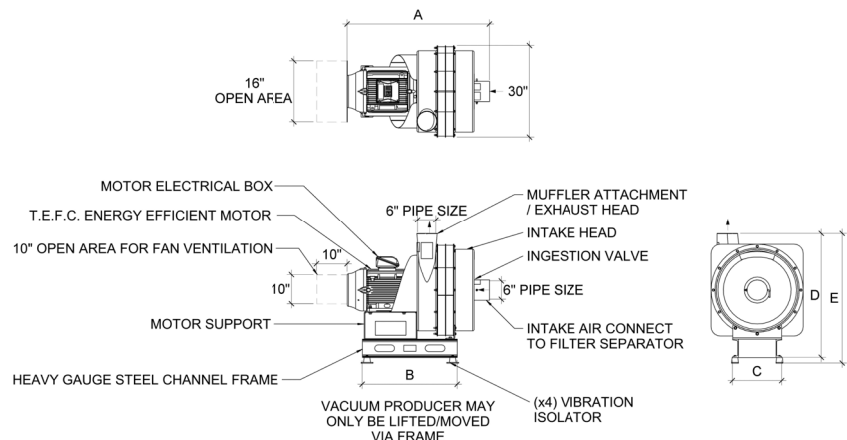
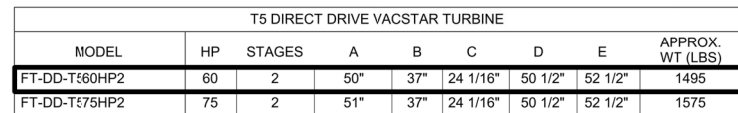
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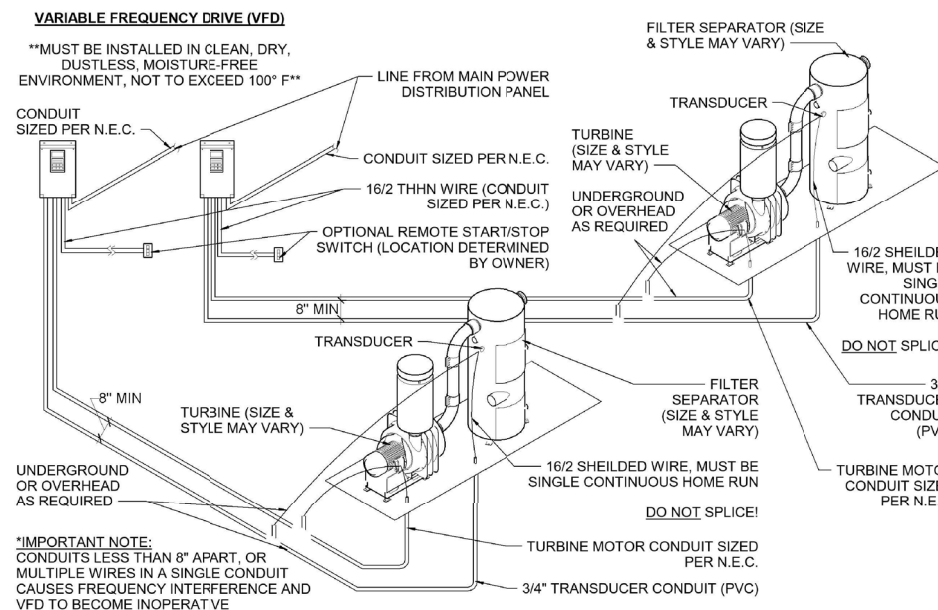
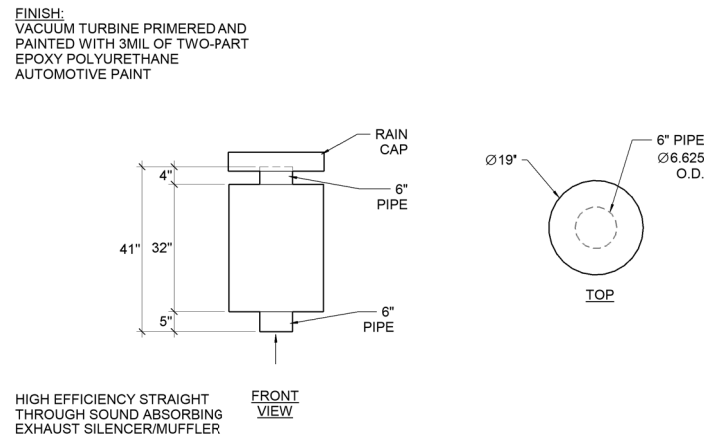
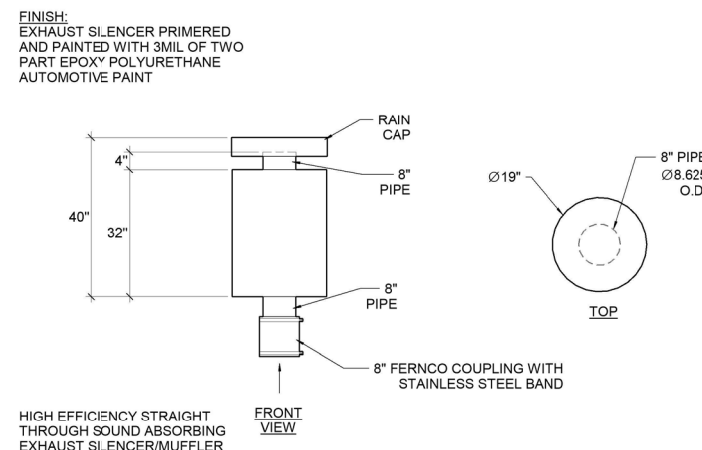
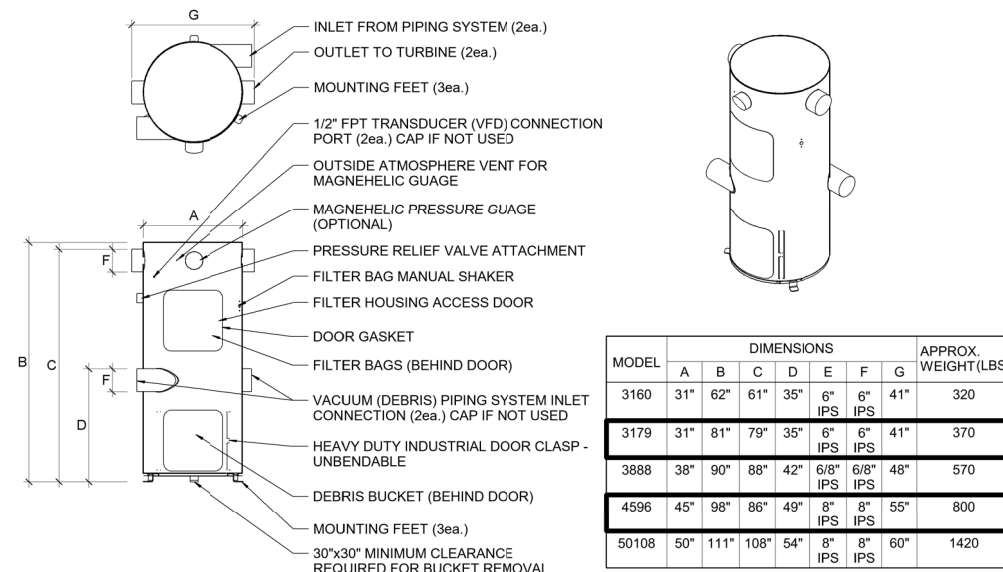
#	Revision	By	Chk	Date

EQUIPMENT B ELEVATION			
Project Number	243686	V624	
Date	6/13/23		
Drawn By	TD		
Checked By	ML		

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T3 DIRECT DRIVE VACSTAR TURBINE								
MODEL	HP	STAGES	A	B	C	D	E	APPROX. WT (LBS)
FT-DD-T325HP4	25	4	47"	31"	16"	40 3/4"	42 3/4"	875
FT-DD-T330HP4	30	4	48"	31"	16"	40 3/4"	42 3/4"	900



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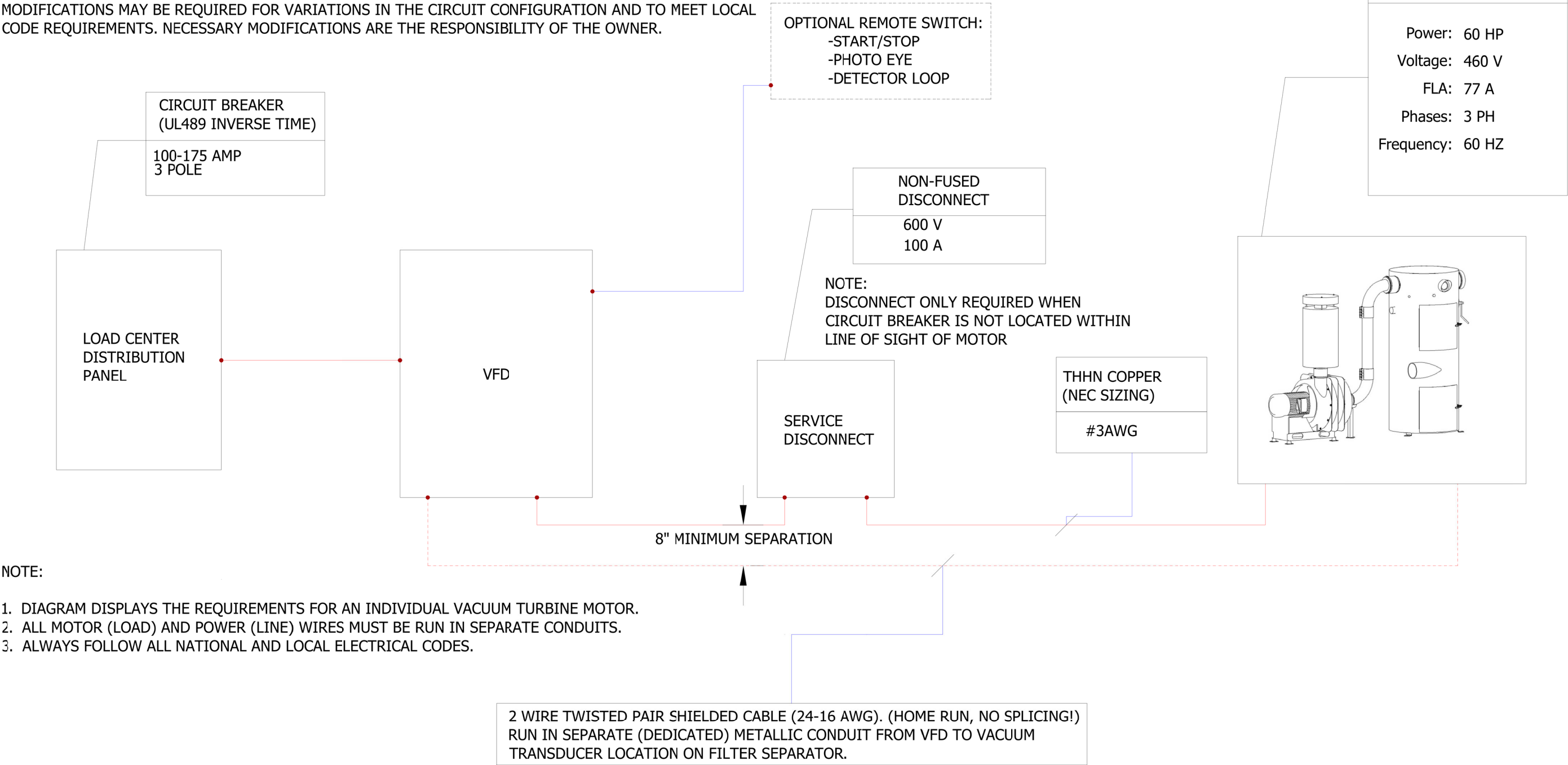
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Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V701

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.



1 ELECTRICAL DIAGRAM - VFD - 60HP 460V

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#	Revision	By	Chk	Date

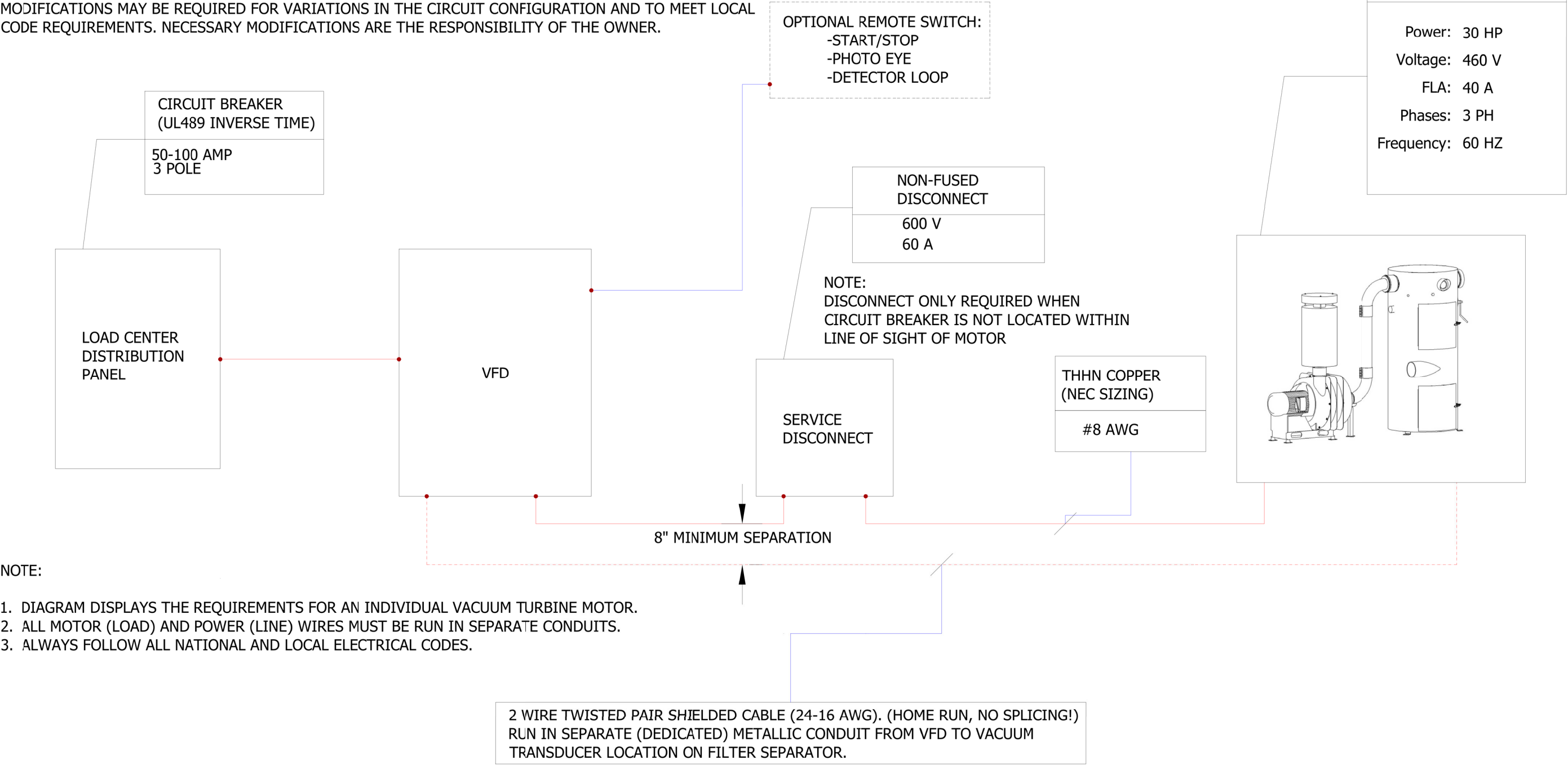
ELECTRICAL A DIAGRAM

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V702

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1 ELECTRICAL DIAGRAM - VFD - 30HP 460V

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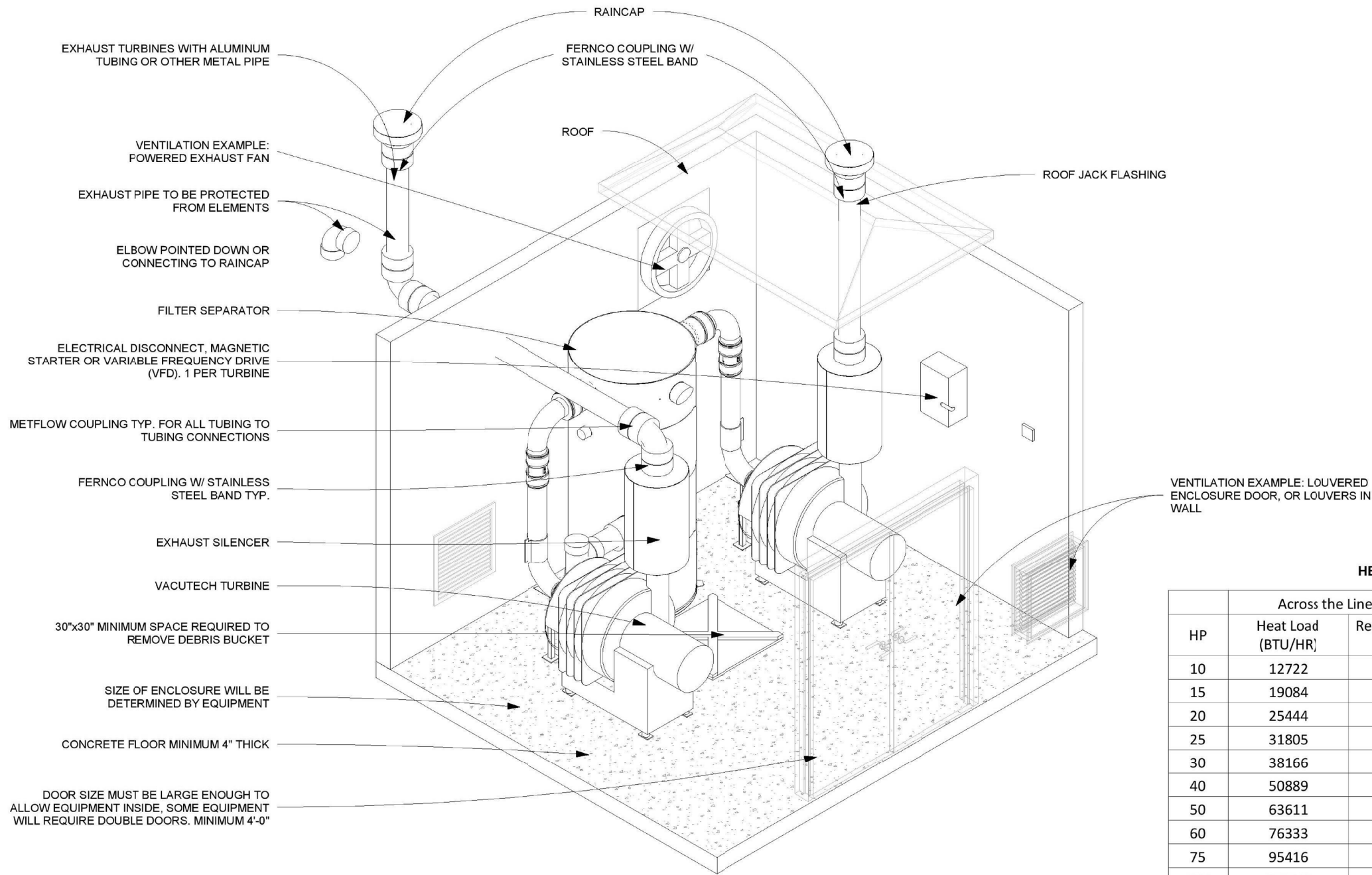
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#	Revision	By	Chk	Date

ELECTRICAL B DIAGRAM			
Project Number	243686	V703	
Date	6/13/23		
Drawn By	TD		
Checked By	ML		



VACUUM EQUIPMENT INSTALLED IN AN ENCLOSURE WITH 4 WALLS AND A ROOF MUST BE ADEQUATELY VENTILATED OR ROOM CONDITIONED IN ORDER 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 TURBINE(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 (A/R 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 ENVIRONMENTAL TEMPERATURE FOR ELECTRICAL EQUIPMENT) WILL SHORTEN THE LIFE OF THE VACUUM EQUIPMENT AND MAY INVALIDATE THE VACUTECH LLC WARRANTY.

THE VACUUM TURBINE MUST BE EXHAUSTED OUTSIDE WITH METALLIC PIPE NO SMALLER THAN THE DIAMETER OF THE EXHAUST OUTLET OF THE TURBINE. 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 REMAINING 10 FEET OF THE OVERALL 20-FOOT RUN).

HEAT GENERATION TABLE				
HP	Across the Line Starter		Variable Frequency Drive (VFD)	
	Heat Load (BTU/HR)	Required Airflow (CFM)	Heat Load (BTU/HR)	Required Airflow (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	1136
50	63611	4575	12722	1420
60	76333	5490	15267	1704
75	95416	6863	19083	2130
100	127222	9150	25444	2840

FOR EQUIPMENT ROOMS WITH MULTIPLE TURBINE SETUPS, ADD THE CFM REQUIREMENT PER TURBINE TO DETERMINE TOTAL CFM REQUIREMENT FOR THE EQUIPMENT ROOM. THIS ASSUMES EQUIPMENT ROOM DIMENSIONS 15' X 15' 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 ENVIRONMENT OR ANY OTHER EQUIPMENT INSTALLED IN EQUIPMENT ROOM. THESE VALUES ARE ESTIMATES ONLY AND DEPEND ON EQUIPMENT ROOM DIMENSIONS, GEOGRAPHIC LOCATION AND EQUIPMENT SETUP. TO CALCULATE YOUR SPECIFIC CONFIGURATION AND SITE CONDITIONS PLEASE CONSULT YOUR MECHANICAL HVAC DESIGNER AND ASHRAE STANDARDS.

1 ENCLOSURE - TYPICAL REQUIREMENTS

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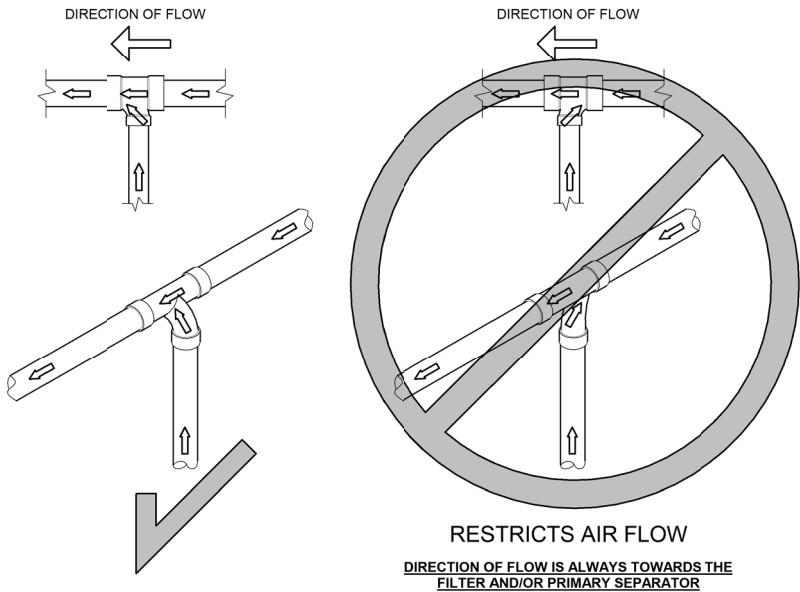
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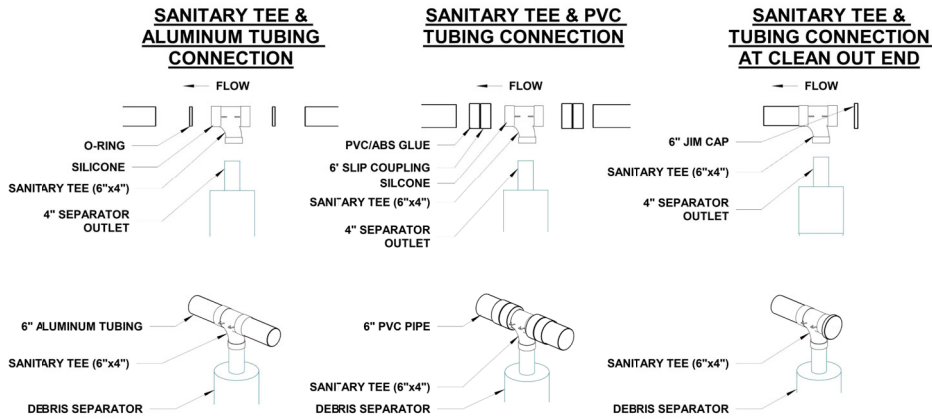
#	Revision	By	Chk	Date

ENCLOSURE DETAIL			
Project Number	243686	V711	
Date	6/13/23		
Drawn By	TD		
Checked By	ML		

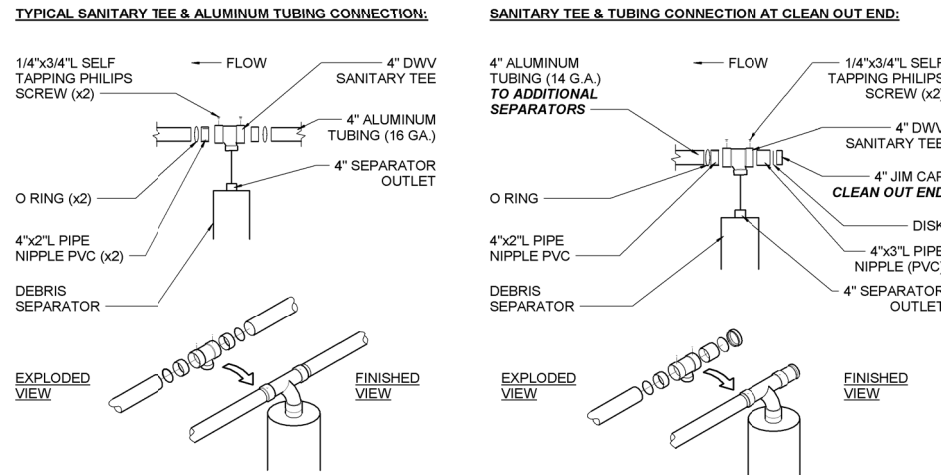
- PIPE NOTES:**
- a. FIELD VERIFY ALL DIMENSIONS
 - b. SUPPORT SCHEDULE 40 PVC OVERHEAD DRY/WET VACUUM PIPE EVERY 6' MAXIMUM; USE UNISTRUT & CLAMP OR OTHER SUPPORT **(PROVIDED BY OTHERS)**
 - c. RUN COMPRESSED AIR TO AIR COMPRESSOR LOCATION **(BY OTHERS)**
 - d. COMPRESSED AIR RECOMMENDED WORKING PRESSURE 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 - PIPE FLOW



2 PIPE - 6x4 TEE KIT



3 PIPE - 4x4 TEE KIT

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EMAIL: vacinfo@ncswash.com
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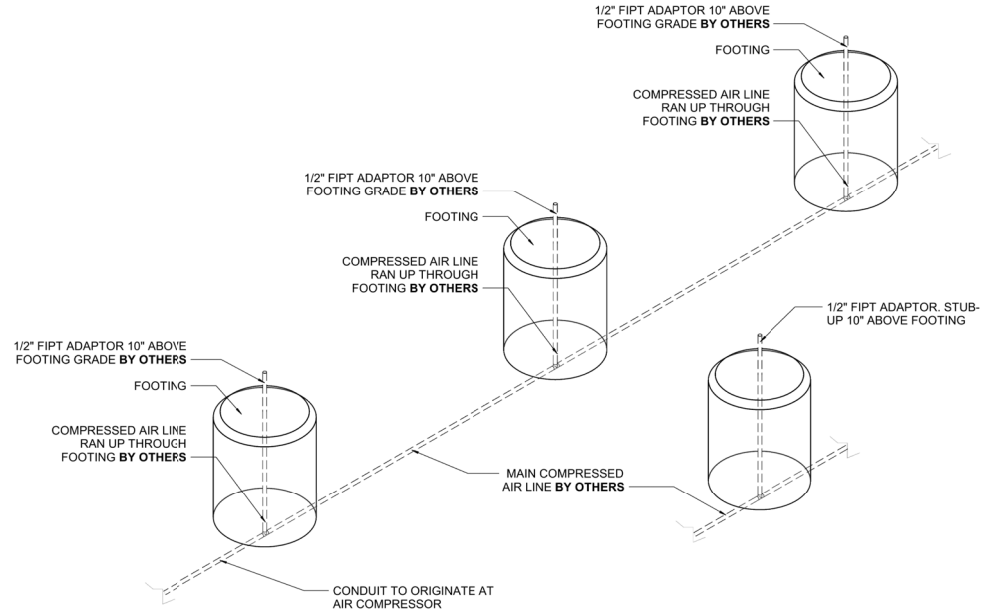
MIDWEST WASH GROUP
SOUTH EAST DECKER
LEE'S SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date

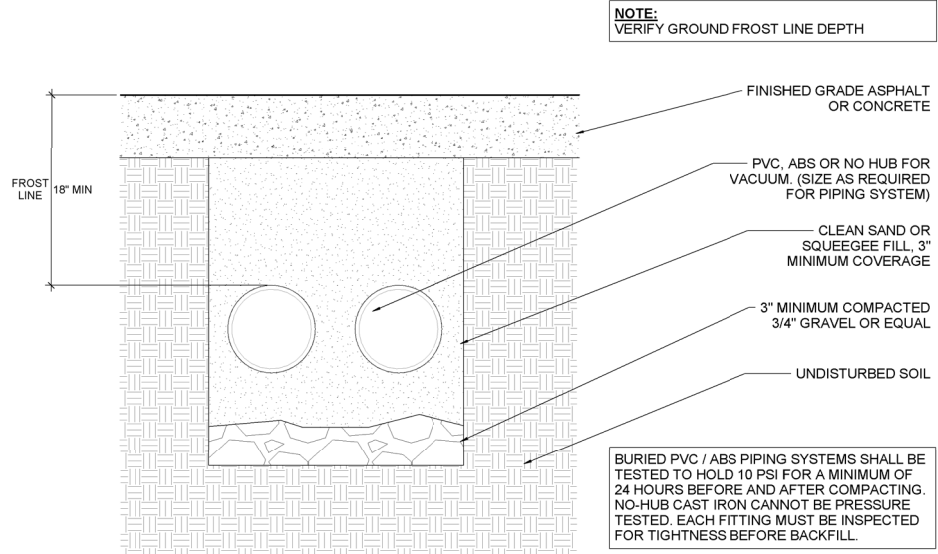
PIPE DETAILS

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

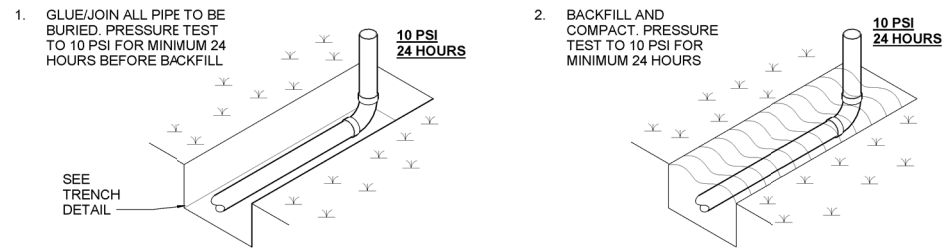
V721



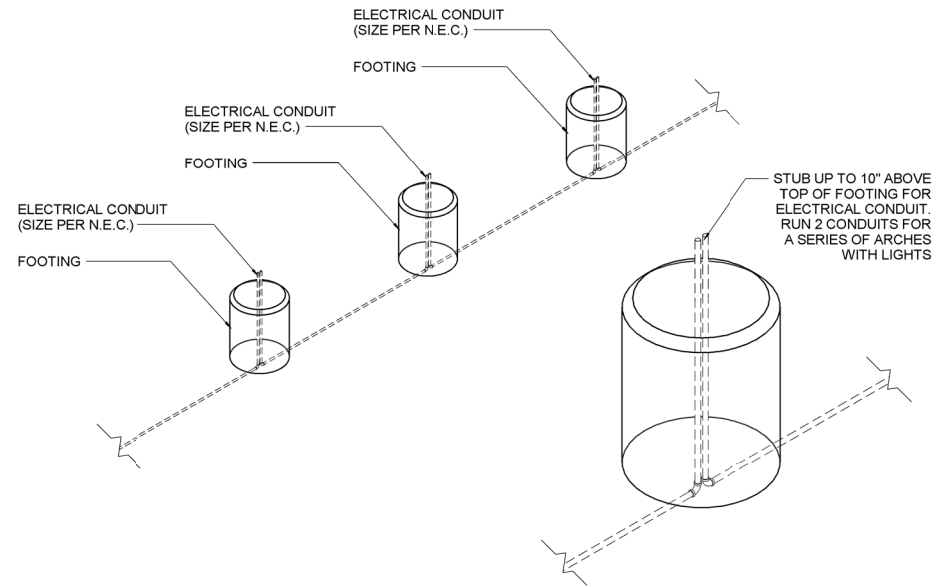
1 TRENCH - AIR LINE STUB-UP



2 TRENCH - DUAL LINE



3 TRENCH - PRESSURE TEST



4 TRENCH - CONDUIT STUB-UP

- 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'

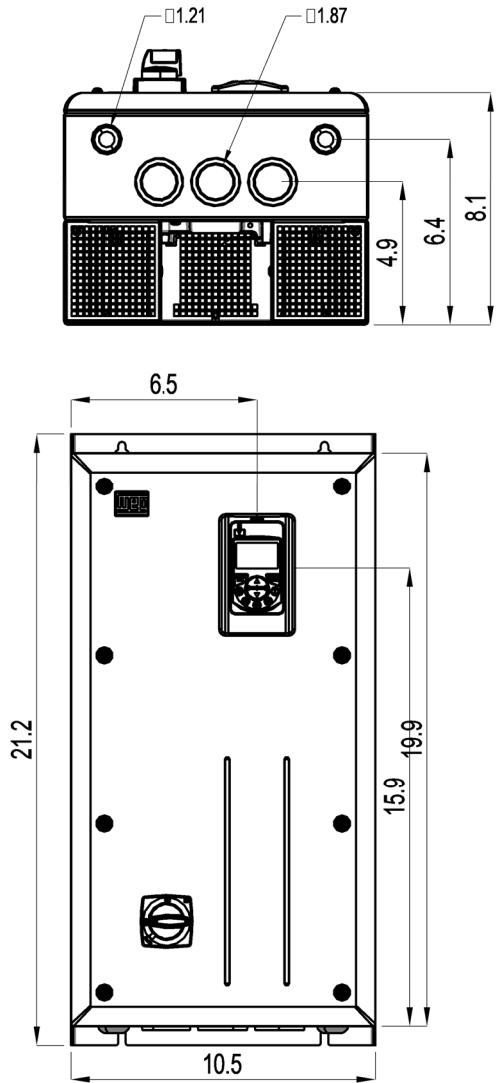
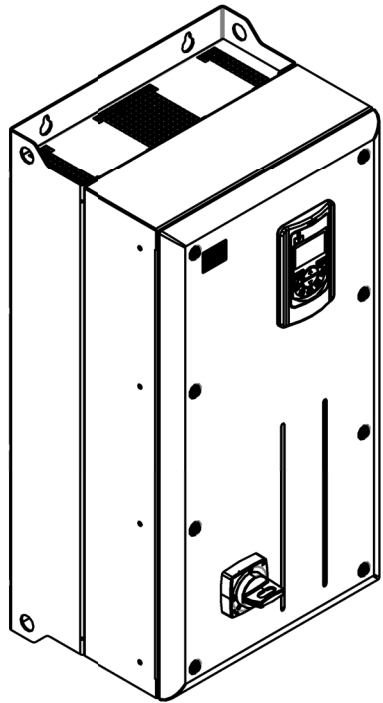
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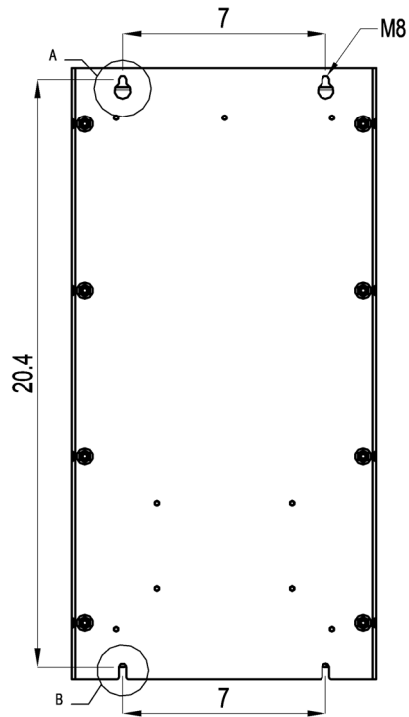
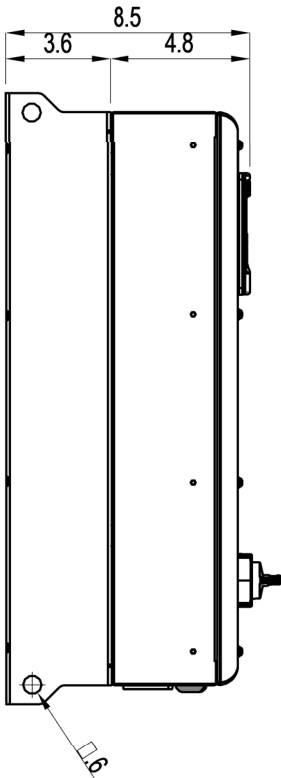
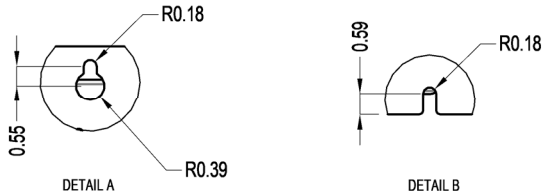
MIDWEST WASH GROUP
SOUTH EAST DECKER
LEE'S SUMMIT, MISSOURI 64081

#	Revision	By	Chk	Date

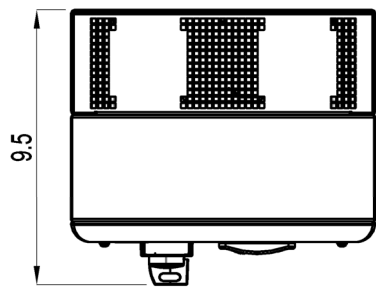
TRENCH DETAILS			
Project Number	243686	V722	
Date	6/13/23		
Drawn By	TD		
Checked By	ML		



Variable Frequency Drive (VFD) - 60 HP , 480V - NEMA 12					
Voltage	Power	Height	Width	Depth	Weight
480V	60 HP	29.7	14.8	13.3	108



OPERATING CONDITIONS	
MIN. TEMPERATURE:	14 °F [-10 °C]
MAX. TEMPERATURE:	104 °F [40 °C]
HUMIDITY:	5% TO 95% NON-CONDENSING



WEG ELECTRIC NEMA 12 VARIABLE FREQUENCY DRIVE (VFD)

AVOID:

- DIRECT EXPOSURE TO SUNLIGHT, RAIN, HIGH HUMIDITY, OR SEA-AIR
- INFLAMMABLE OR CORROSIVE GASES OR LIQUIDS
- EXCESS VIBRATION
- DUST, METALLIC PARTICLES, AND OIL MIST

WARRANTY INFORMATION

VFD NOT TO BE OPERATED IN CONDITIONS OUTSIDE OF THOSE SPECIFIED IN 'OPERATING CONDITIONS'.

EACH VFD MUST BE WIRED FROM THE MAIN DISTRIBUTION PANEL IN SEPARATE CONDUIT (SIZED PER NEC) TO EACH VFD AND FROM EACH VFD TO PRODUCER MOTOR.

VFD NOTES

'VFD' OR 'VARIABLE FREQUENCY DRIVE' IS AN OPTIONAL STARTER CONTROL.

- VFD MUST BE INSTALLED IN A CLEAN, DRY, DUST-FREE, OIL-FREE & MOISTURE-FREE CLIMATE CONTROLLED ENVIRONMENT NOT TO EXCEED 104 DEGREES FAHRENHEIT.
- EXTERIOR RAIN-TIGHT NEMA 12 VFD ENCLOSURES ARE AVAILABLE FOR ADDITIONAL EXPENSE.
- CONDUIT FOR TRANSDUCER MUST BE 8" AWAY FROM ALL OTHER WIRING/CONDUIT AND MUST BE A HOME RUN (NO SPLICING) THAT SHALL NOT EXCEED 100'.
- ALL CONDUIT RUNS FOR VACUUM SYSTEM VFD(s) & MOTOR(s) MUST BE IN A SEPARATE CONDUIT A MINIMUM OF 12" APART.
- WHEN USING PVC CONDUIT, HIGH VOLTAGE LINE & LOAD WIRE MUST BE SHIELDED.

CARWASH EQUIPMENT ROOM IS NOT RECOMMENDED FOR VFD INSTALLATION, AND WILL AFFECT PRODUCT WARRANTY.

VFD MUST BE INSTALLED IN A DRY, CLEAN, OIL FREE, DUST FREE, MOISTURE FREE, CLIMATE CONTROLLED ENVIRONMENT

1 VFD - 1B001126 - NEMA 12 - 60 HP 460V

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MIDWEST WASH GROUP

SOUTH EAST DECKER
LEE'S SUMMIT, MISSOURI 64081

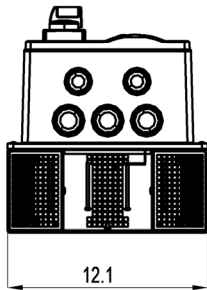
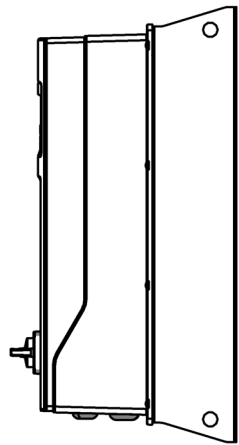
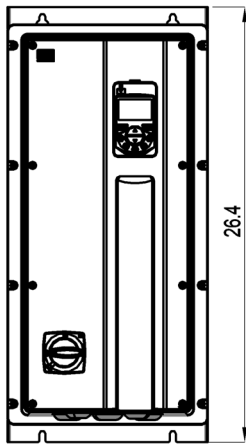
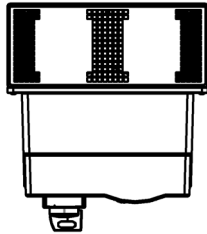
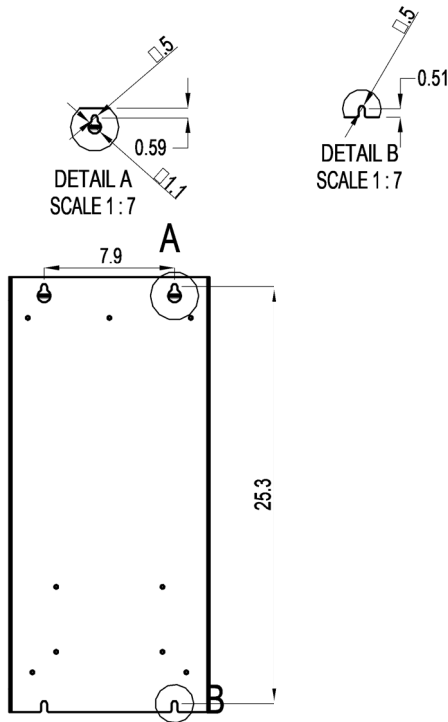
#	Revision	By	Chk	Date

VFD A DETAILS

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V731

Variable Frequency Drive (VFD) - 30 HP , 480V - NEMA 12					
Voltage	Power	Height	Width	Depth	Weight
480V	30 HP	26.4	12.1	13.7	66.2



WEG ELECTRIC NEMA 12 VARIABLE FREQUENCY DRIVE (VFD)

AVOID:

- DIRECT EXPOSURE TO SUNLIGHT, RAIN, HIGH HUMIDITY, OR SEA-AIR
- INFLAMMABLE OR CORROSIVE GASES OR LIQUIDS
- EXCESS VIBRATION
- DUST, METALLIC PARTICLES, AND OIL MIST

WARRANTY INFORMATION

VFD NOT TO BE OPERATED IN CONDITIONS OUTSIDE OF THOSE SPECIFIED IN 'OPERATING CONDITIONS'.

EACH VFD MUST BE WIRED FROM THE MAIN DISTRIBUTION PANEL IN SEPARATE CONDUIT (SIZED PER NEC) TO EACH VFD AND FROM EACH VFD TO PRODUCER MOTOR.

OPERATING CONDITIONS

MIN. TEMPERATURE: 14 °F [-10 °C]
MAX. TEMPERATURE: 104 °F [40 °C]
HUMIDITY: 5% TO 95% NON-CONDENSING

VFD NOTES

'VFD' OR 'VARIABLE FREQUENCY DRIVE' IS AN OPTIONAL STARTER CONTROL.

- VFD MUST BE INSTALLED IN A CLEAN, DRY, DUST-FREE, OIL-FREE & MOISTURE-FREE CLIMATE CONTROLLED ENVIRONMENT NOT TO EXCEED 104 DEGREES FAHRENHEIT.
- EXTERIOR RAIN-TIGHT NEMA 12 VFD ENCLOSURES ARE AVAILABLE FOR ADDITIONAL EXPENSE.
- CONDUIT FOR TRANSDUCER MUST BE 8" AWAY FROM ALL OTHER WIRING/CONDUIT AND MUST BE A HOME RUN (NO SPLICING) THAT SHALL NOT EXCEED 100'.
- ALL CONDUIT RUNS FOR VACUUM SYSTEM VFD(s) & MOTOR(s) MUST BE IN A SEPARATE CONDUIT A MINIMUM OF 12" APART.
- WHEN USING PVC CONDUIT, HIGH VOLTAGE LINE & LOAD WIRE MUST BE SHIELDED.

CARWASH EQUIPMENT ROOM IS NOT RECOMMENDED FOR VFD INSTALLATION, AND WILL AFFECT PRODUCT WARRANTY.

VFD MUST BE INSTALLED IN A DRY, CLEAN, OIL FREE, DUST FREE, MOISTURE FREE, CLIMATE CONTROLLED ENVIRONMENT

1 VFD - 1B001123 - NEMA 12 - 30 HP 460V

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#	Revision	By	Chk	Date

VFD B DETAILS

Project Number	243686
Date	6/13/23
Drawn By	TD
Checked By	ML

V732