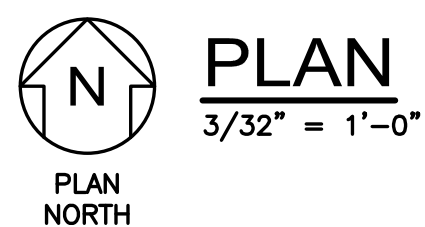


**LEGEND:**

- TP = PROCESS PIPE TO BELOW SLAB PIPE TIE POINT. SEE TIE POINT SCHEDULE SHEET 30-M-5.
- RD = 4" TIE POINT FOR PROCESS STRUCTURE ROOF DRAIN FOR STORMWATER SEE SHEET 30-M-2.
- FD = 4" AREA DRAIN FOR STORMWATER SEE SHEET 30-M-2.

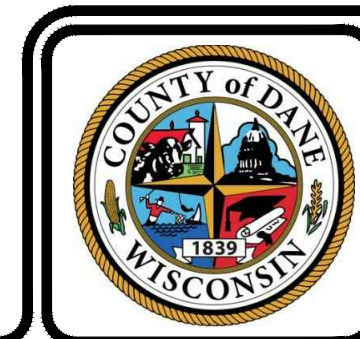


**NOTES:**

1. DIMENSIONS TO CS-3 AND STORM INLET NO. 4 ARE PROJECTED. STRUCTURES ARE TO BE SUPPLIED BY OTHERS. SEE PLAN SET BY CORNERSTONE ENGINEERING.

File: J:\0686 - Bioferm\0686PSA\0686PSA-1 PLAN.dwg Layout: 30-M-1 PLAN User: pepapich Jan 17, 2019 - 11:48am  
 1" 1/2" 0"

EDWARD A. LONGHINI  
 PE-34368-006  
 PEWAUKEE, WI  
 PROFESSIONAL ENGINEER  
 1/17/19



**FINAL DESIGN RECORD SET**

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE	8-21-2018	DRAWN BY J.C.S./J.T.H./P.C.G.			CHECKED BY E.A.L.	
		DESIGNED BY E.A.L./B.A.G./G.A.G.			APPROVED BY E.A.L.	



DANE COUNTY DEPT. OF PUBLIC WORKS  
 DANE COUNTY NO. 2 LANDFILL  
 MADISON, WISCONSIN  
**PSA SYSTEM PLAN**

SHEET NO.  
**30-M-1**  
 PROJECT NO.  
 6066

**JANUARY 2019**

1" 1/2" 0"

File: J:\066 - Bioferm\Drawings\Drawings\30-M-5 TIE-POINT SCHEDULE.dwg Layout: 30-M-5 TIE-POINT SCHEDULE User: pgsprach Jan 17, 2019 - 11:48am

TIE-POINT SCHEDULE				
Tie Point	Service	Pipe/Flange Size	Stub Up Thru Slab/Pad	Notes
1	Raw Biogas (from CS)	12"	No	- By others - See Cornerstone Drawing C507 for typical connection details
2	Conditioned Biogas (to CS)	4"	No	- By others - See Cornerstone Drawing C507 for typical connection details
5	Natural Gas	3"	No	- By others - See Cornerstone Drawing C507 for typical connection details
7 (1,2,3,4) 25	Condensate Drainage	2"	Yes - 10"	- See Drawing 30-M-3 - Dual-contained HDPE pipe by Asahi/America or equal - Install per manufacturer specifications - 2" carrier pipe x 4" containment pipe - Terminate containment pipe above grade - Continue pipe insulation to 4 ft min. below grade
10	Waste Gas (to CS flare)	6"	No	- By others - See Cornerstone Drawing C507 for typical connection details
11 (1,2) 12 (1,2)	Heating Water Supply/Return	3"	Yes - 10"	- See Drawing 30-M-4 - Pre-insulated/jacketed steel pipe system for below-ground service, by Rovanco or equal - Install per manufacturer specifications
15	pH System Effluent	3"	Yes - 10"	- See Drawing 30-M-3 - Dual-contained HDPE pipe by Asahi/America or equal - Install per manufacturer specifications - 3" carrier pipe x 6" containment pipe - Terminate containment pipe above grade - Continue pipe insulation to 4 ft min. below grade
16	Water Supply	3"	No	- By others - See Cornerstone Drawing C507 for typical connection details
21,22	Combustion Gas Safety Track	36"	Yes - 20"	- See Drawing 30-M-4 - HDPE pipe - confirm and install per manufacturer specifications
23.1, 24.2 26.1, 27.2	Bladder Tank Tail Gas/Recirculated Gas	12"	Yes - 10"	- See Drawing 30-M-4 - HDPE pipe - install per manufacturer specifications - Continue pipe insulation to 4 ft min. below grade - Includes intermediate stub ups - see Section A, 30-M-4
23.2, 24.1 26.2, 27.1	Bladder Tank Tail Gas/Recirculated Gas	12"	Yes - Flush	- See Drawing 30-M-4 - Provide flange installed flush with slab per equipment manufacturer requirements
General Notes:				
1. See thru-slab pipe details (15200) and (15205).				
2. Provide blank flanges for all pipes stubbed up through slab or equipment pads.				
3. Install pipe per Class B with crushed stone bedding/cover.				

FINAL DESIGN RECORD SET

EDWARD A. LONGHINI  
PE-34368-006  
PEWAUKEE, WI  
PROFESSIONAL ENGINEER  
1/17/19



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
	DATE OF ISSUE 8-21-2018	DRAWN BY J.C.S./J.T.H./P.C.G. DESIGNED BY E.A.L./B.A.G./G.A.G.			CHECKED BY E.A.L. APPROVED BY E.A.L.	



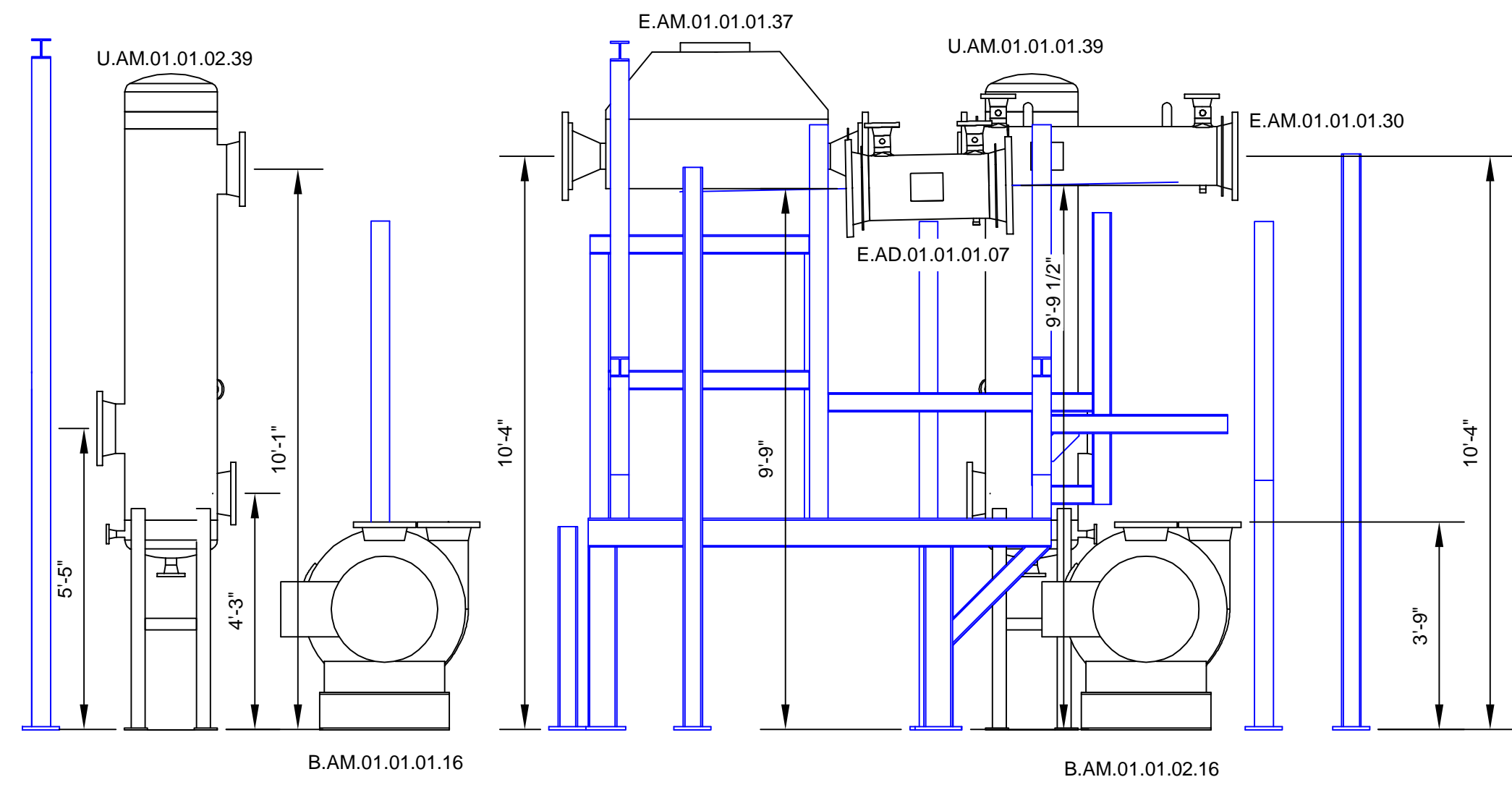
DANE COUNTY DEPT. OF PUBLIC WORKS  
DANE COUNTY NO. 2 LANDFILL  
MADISON, WISCONSIN

PSA SYSTEM  
TIE-POINT SCHEDULE

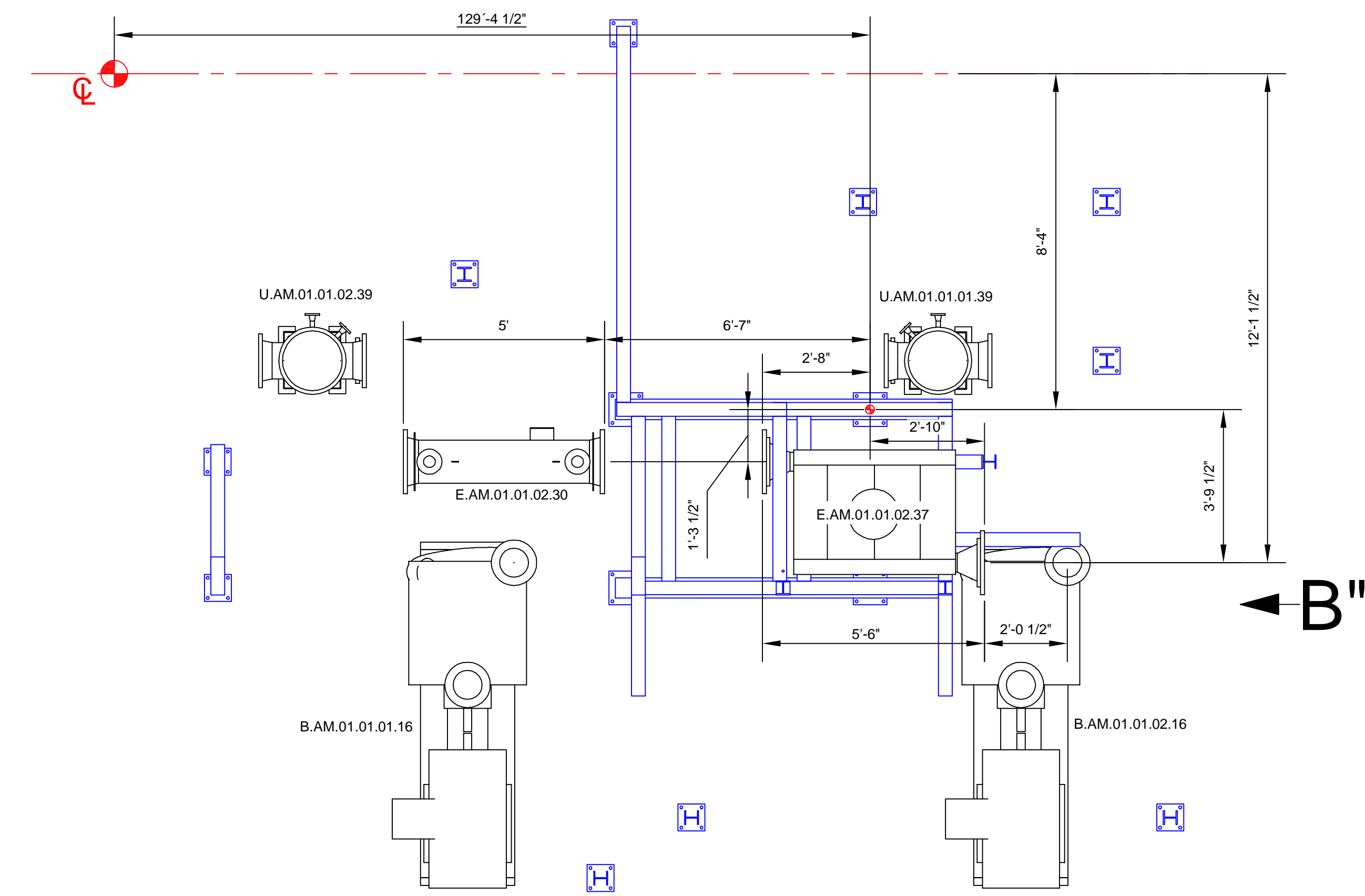
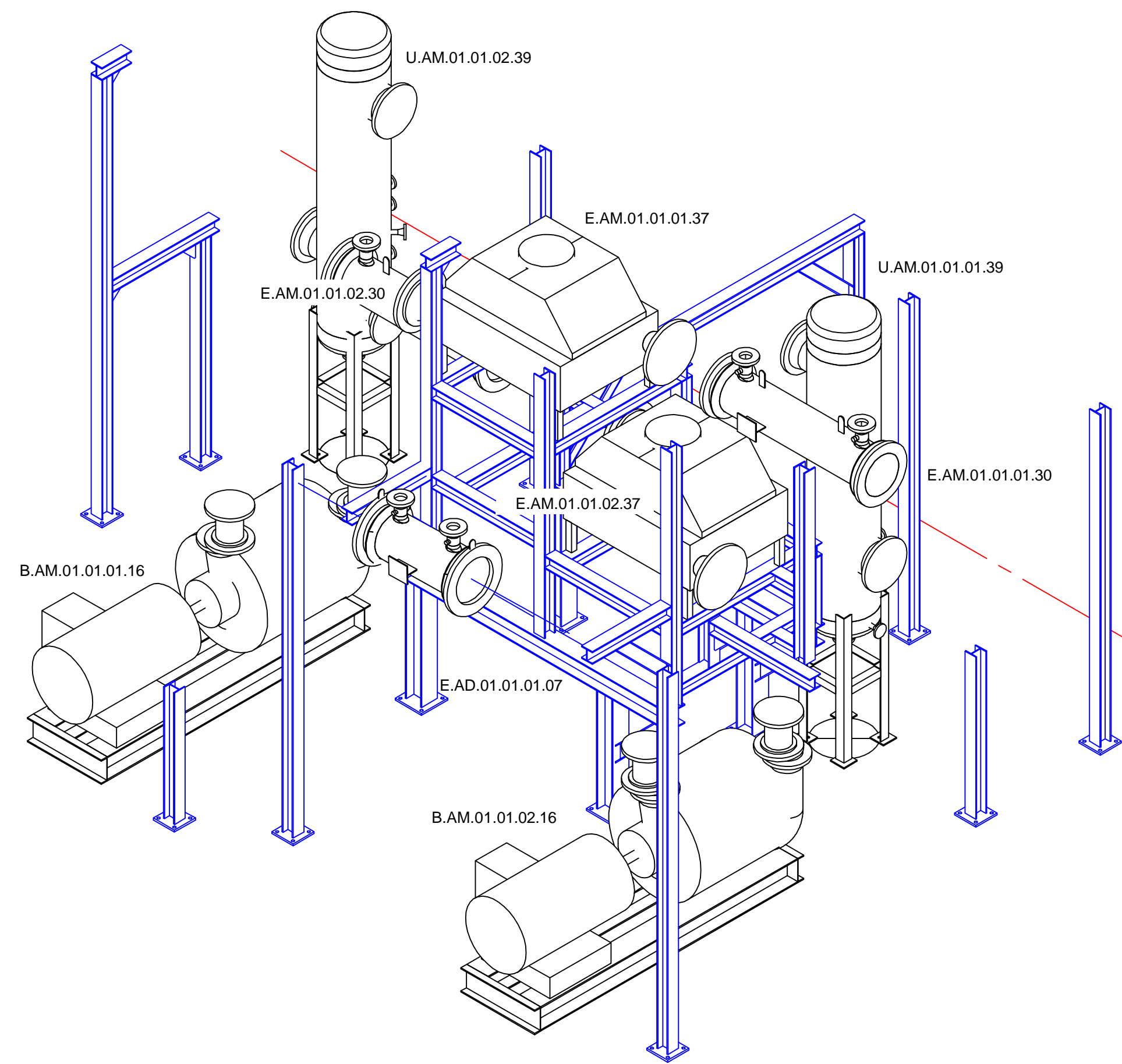
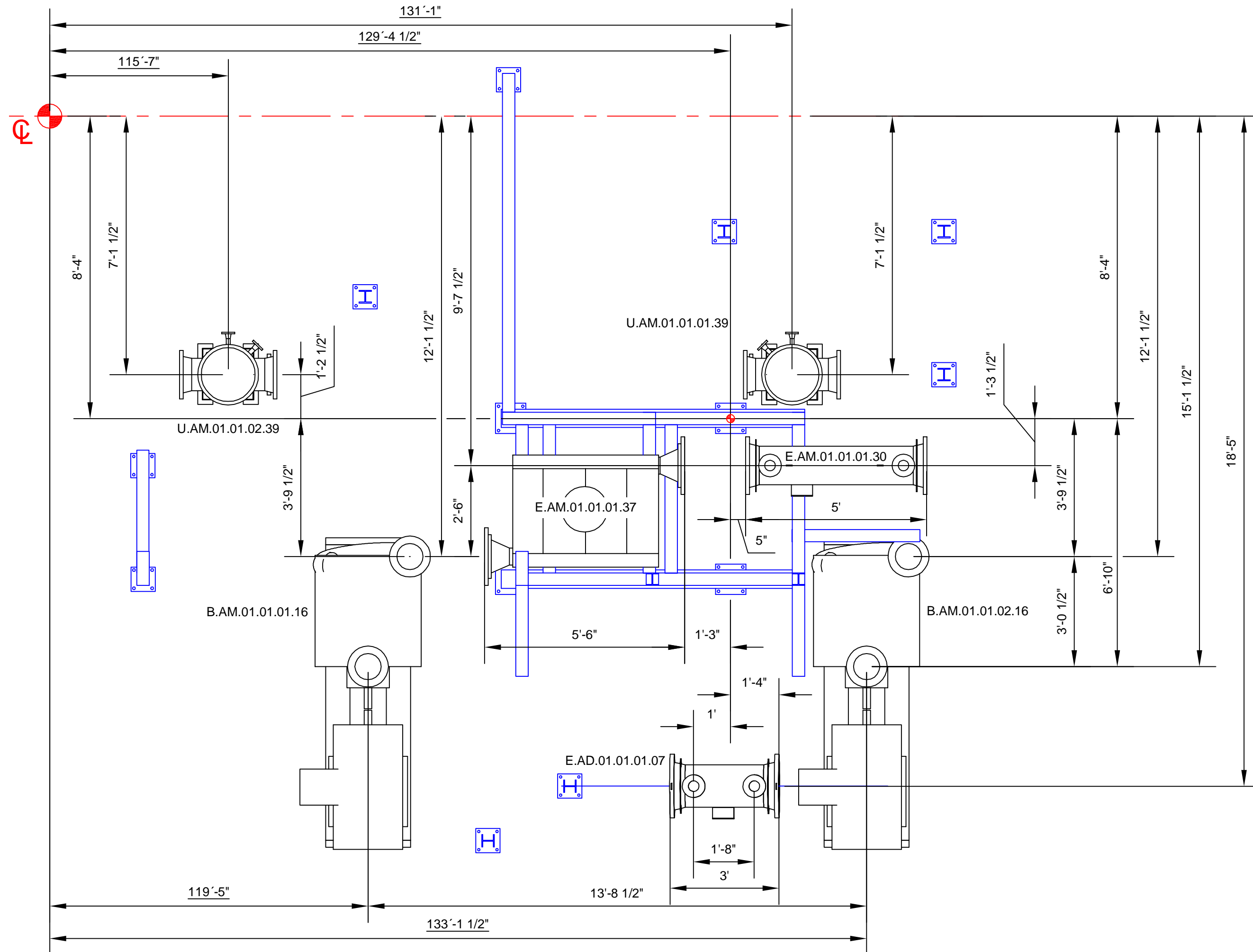
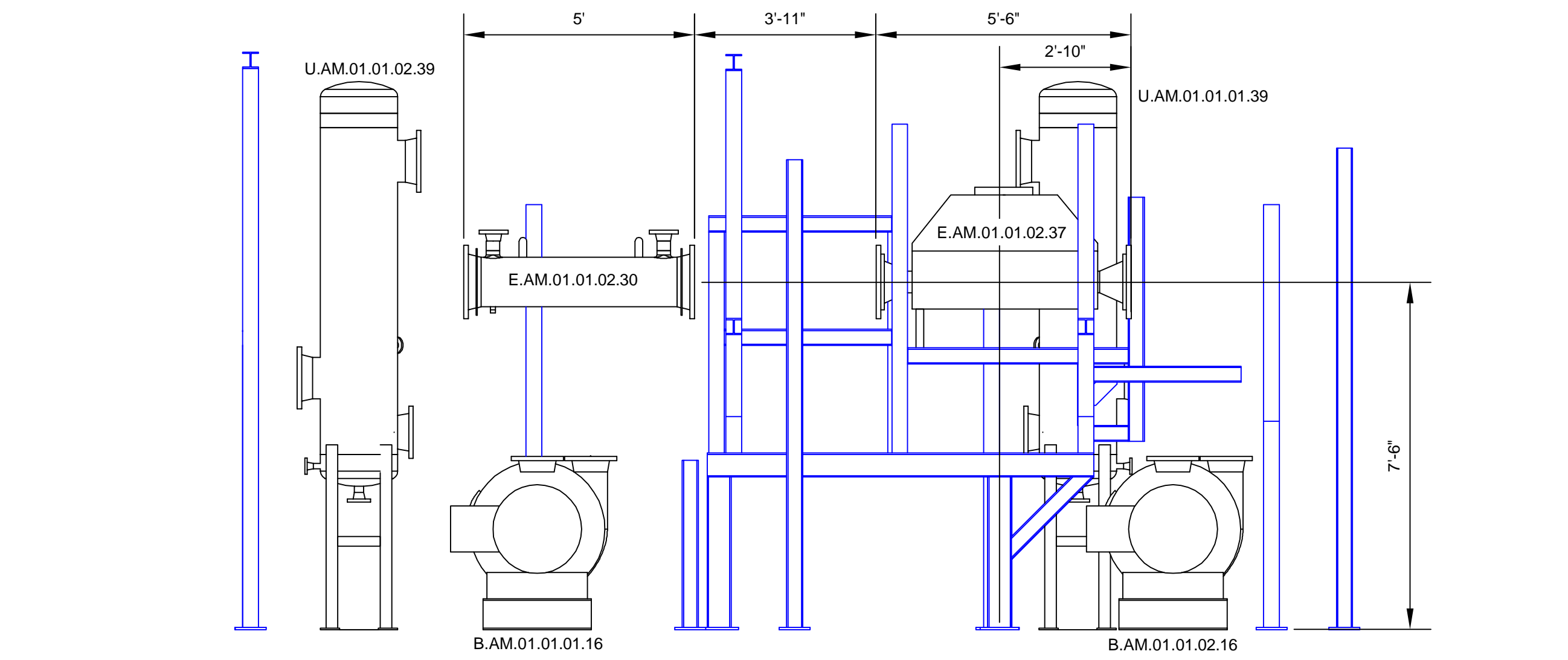
SHEET NO.  
30-M-5  
PROJECT NO.  
6066

JANUARY 2019

View A



View A''



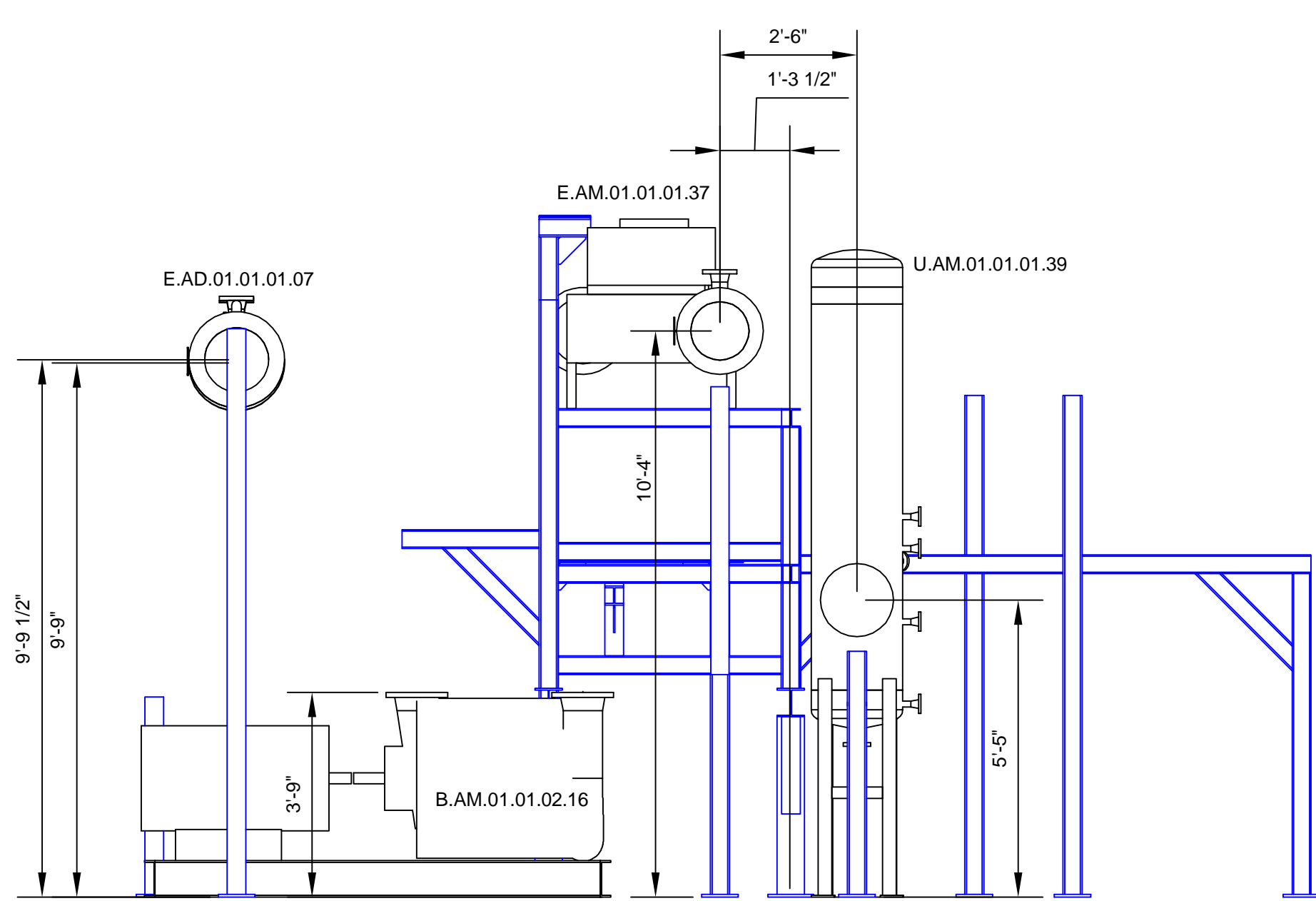
A

B

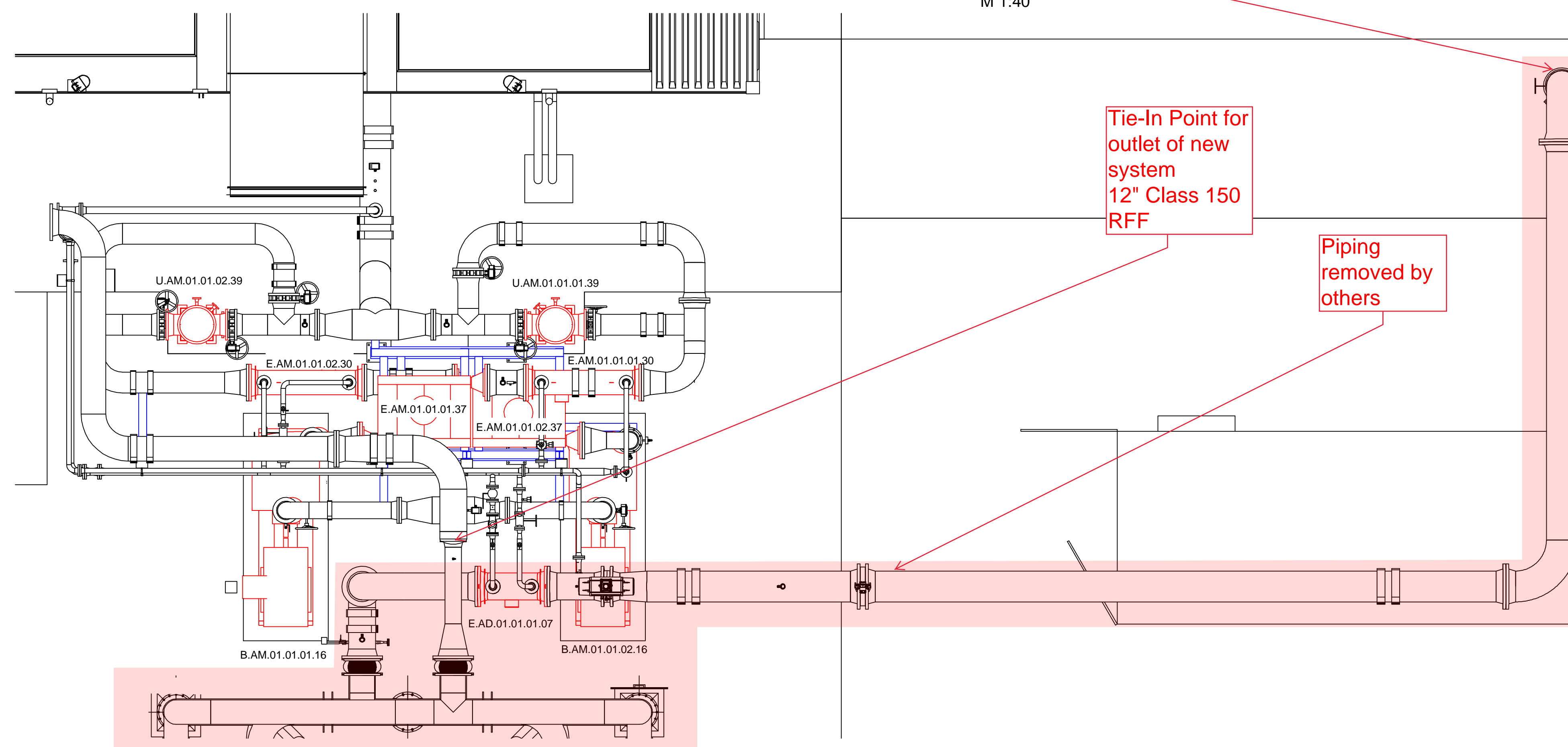
A''

B''

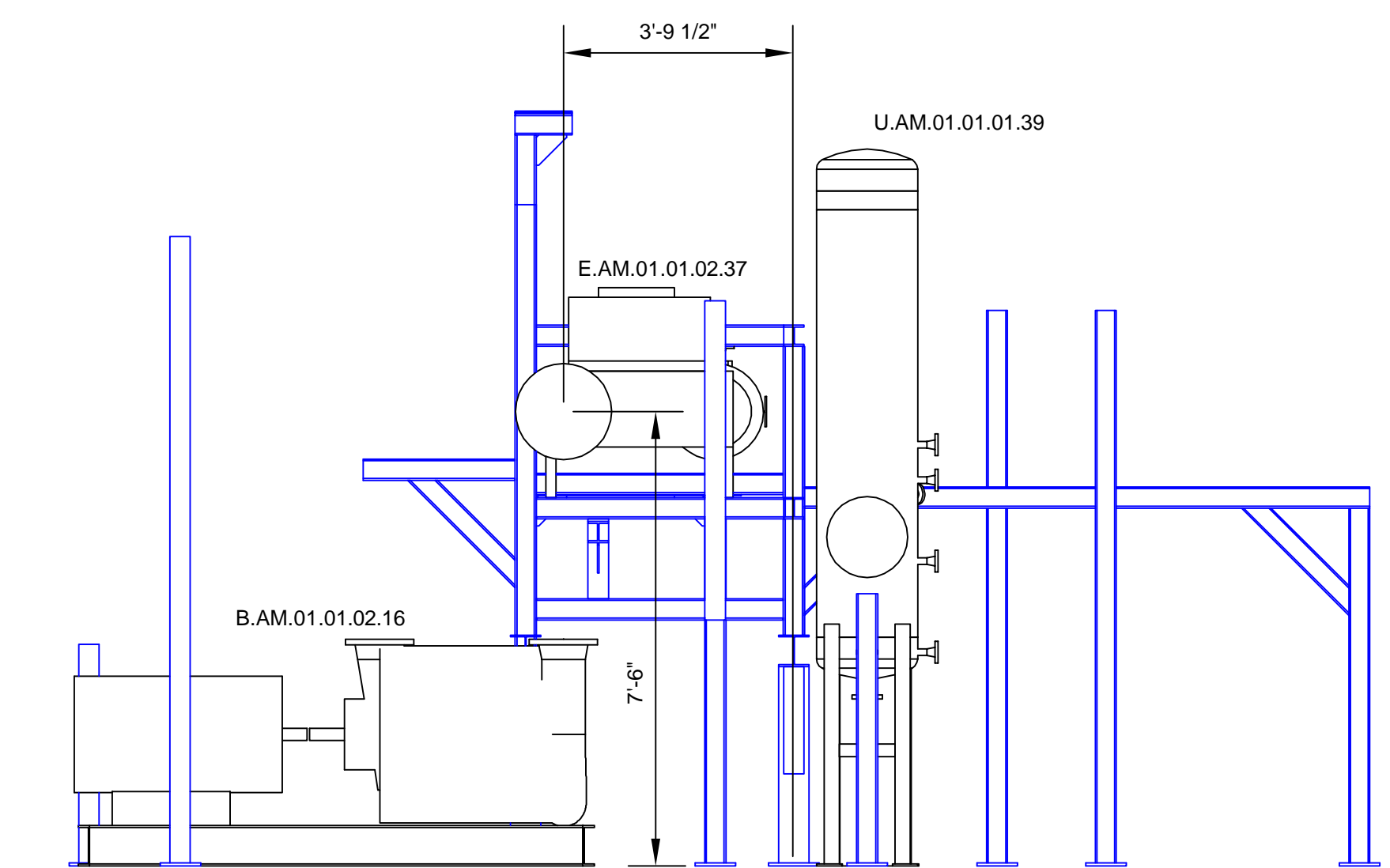
View B



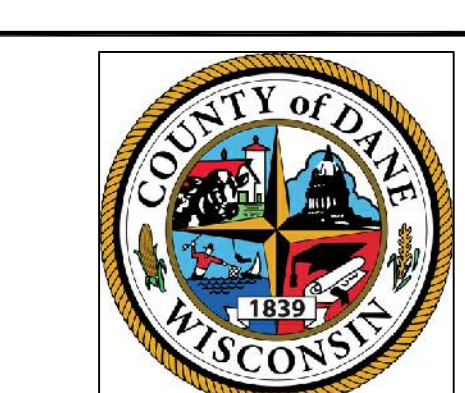
Top-View with Pipes M 1:40



View B''



NO.	REVISION	DATE	CONFIDENTIAL WORK COPYRIGHT



SHEET TITLE Assembly plan  
AF02  
biogas blower

PROJECT TITLE  
Dane County WI BUP25001  
Dane County

PROJ. NO.  
AUC201

DATE: 08/03/18

SCALE: 1:30 / 1:40

PAGE NO.

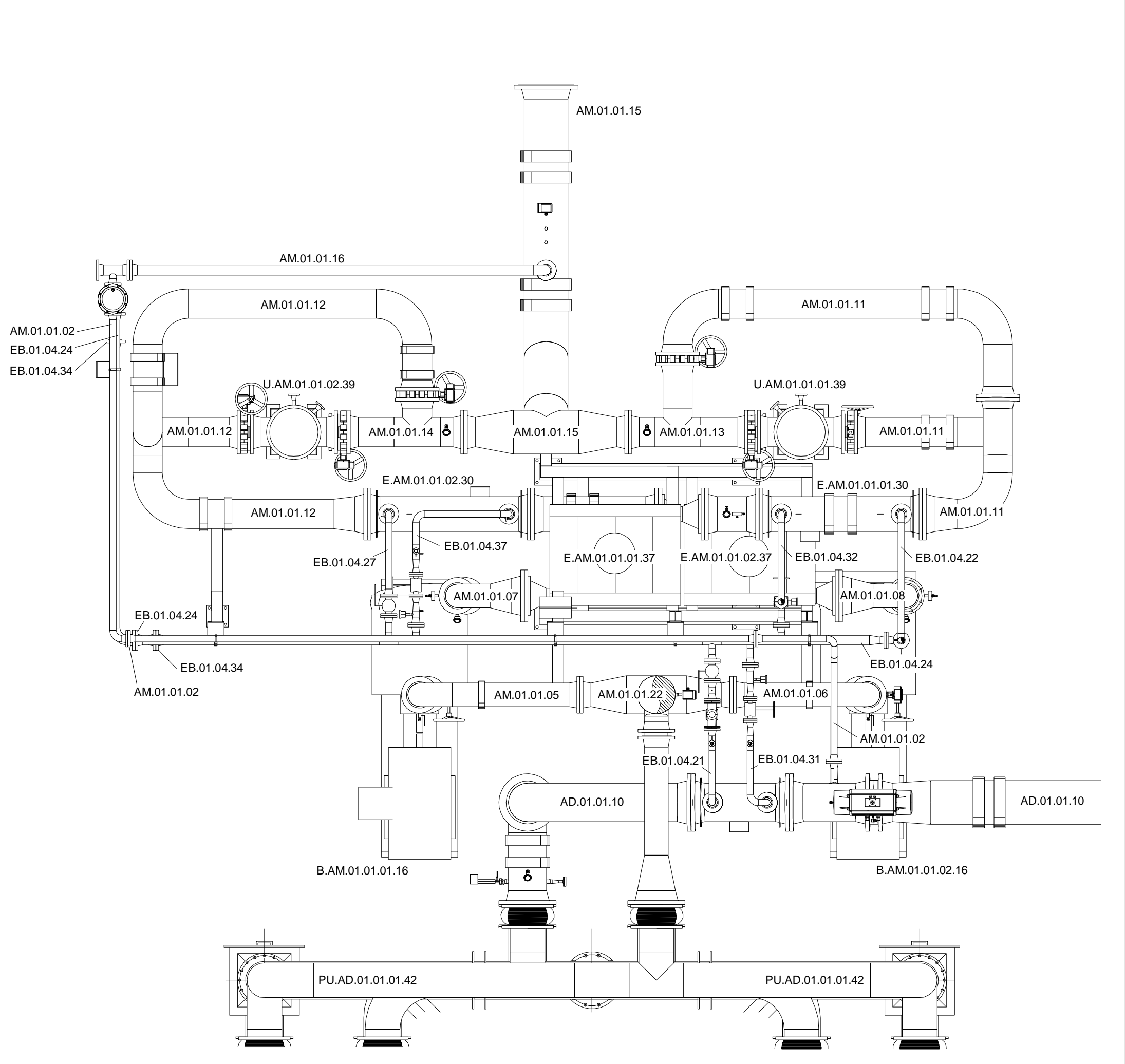
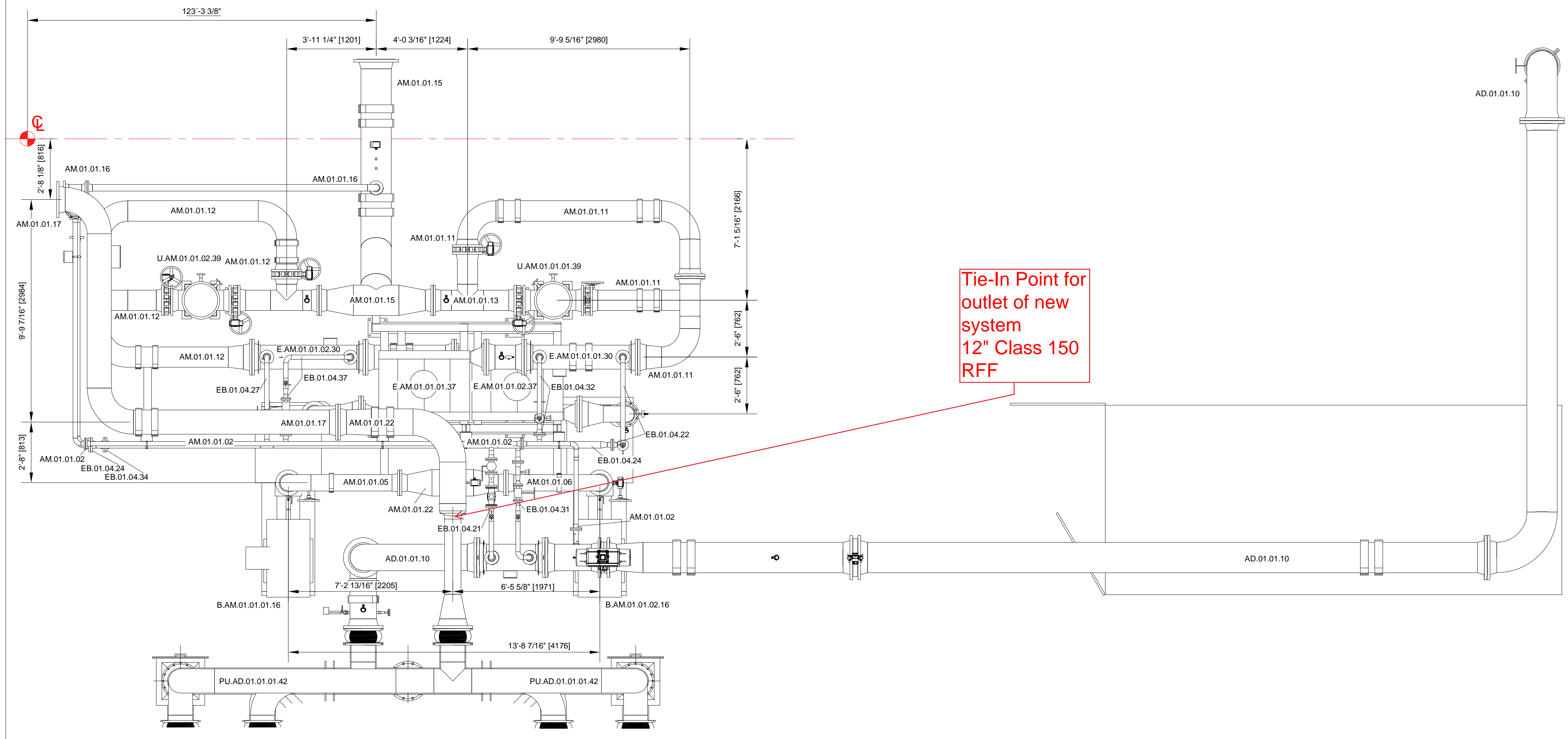
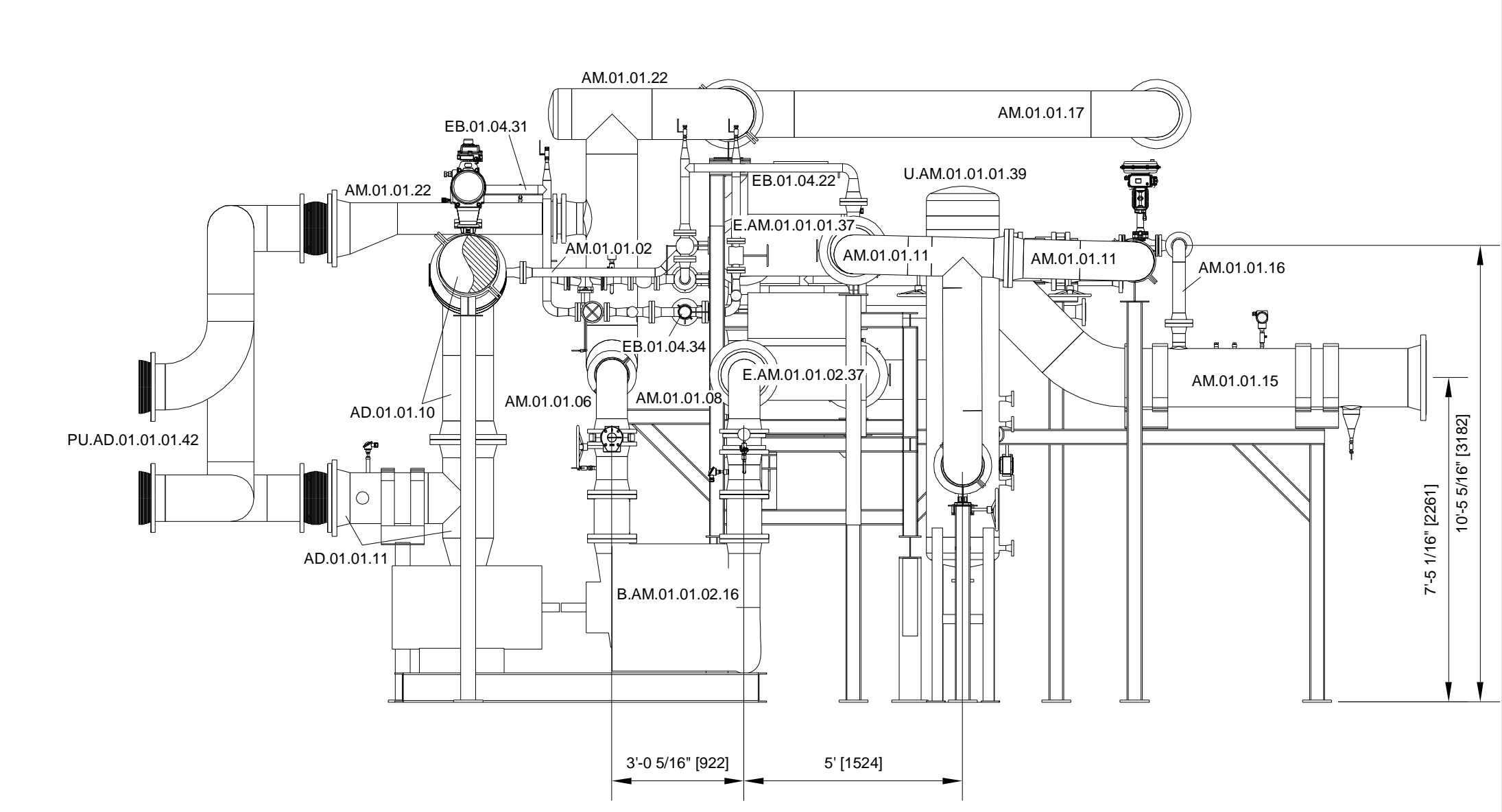
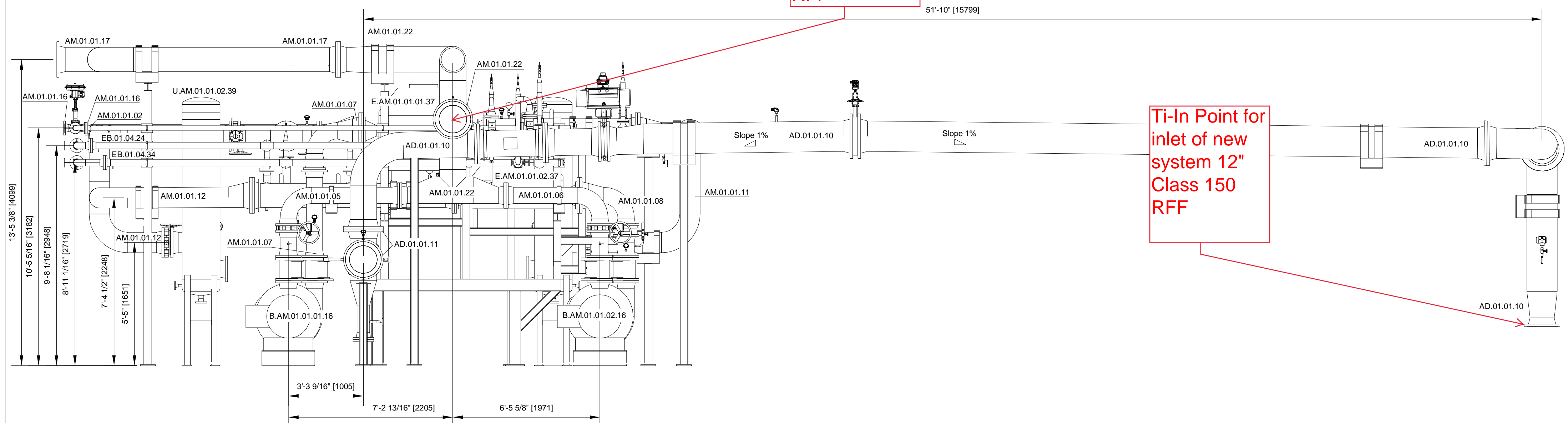
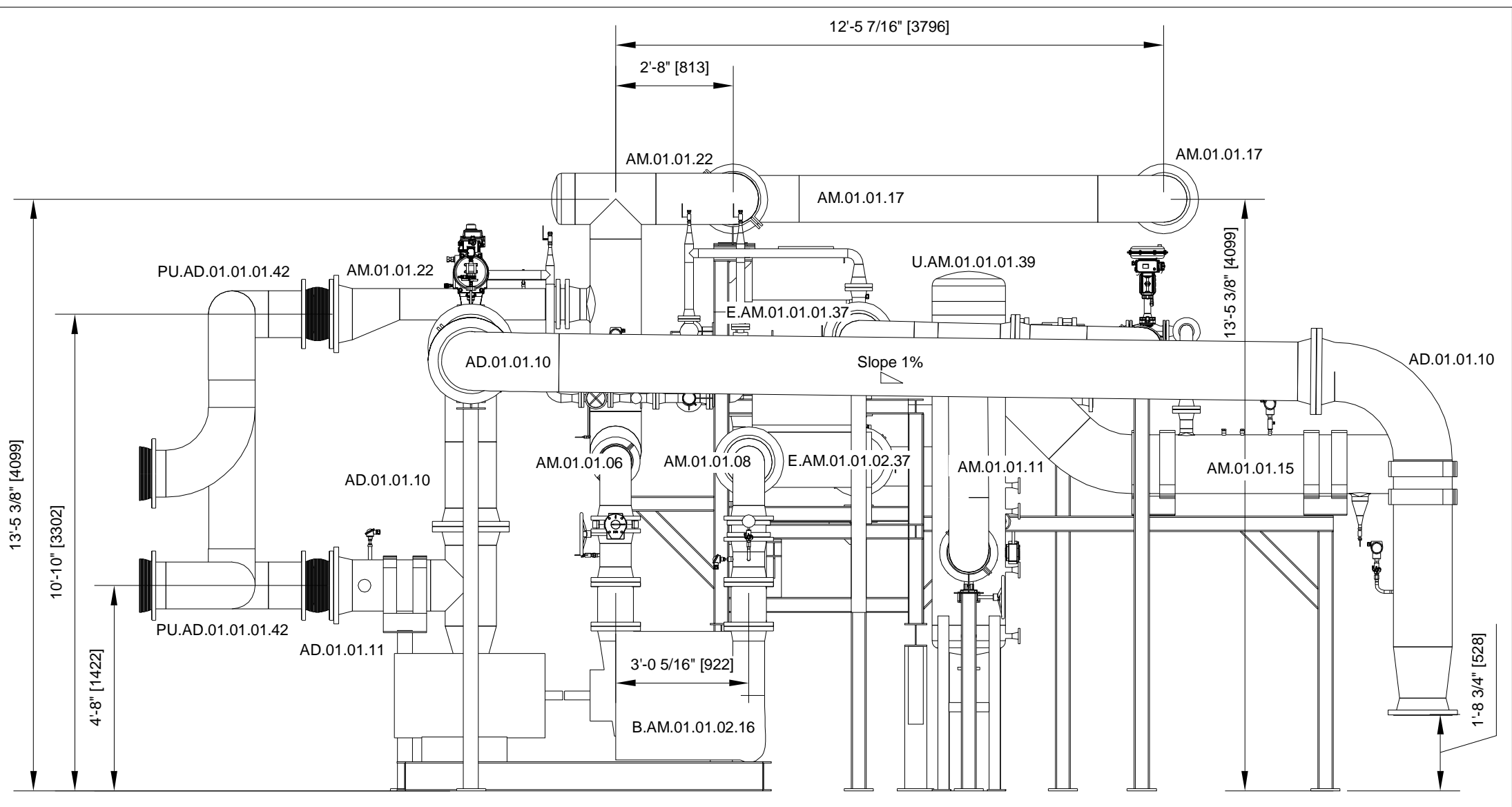
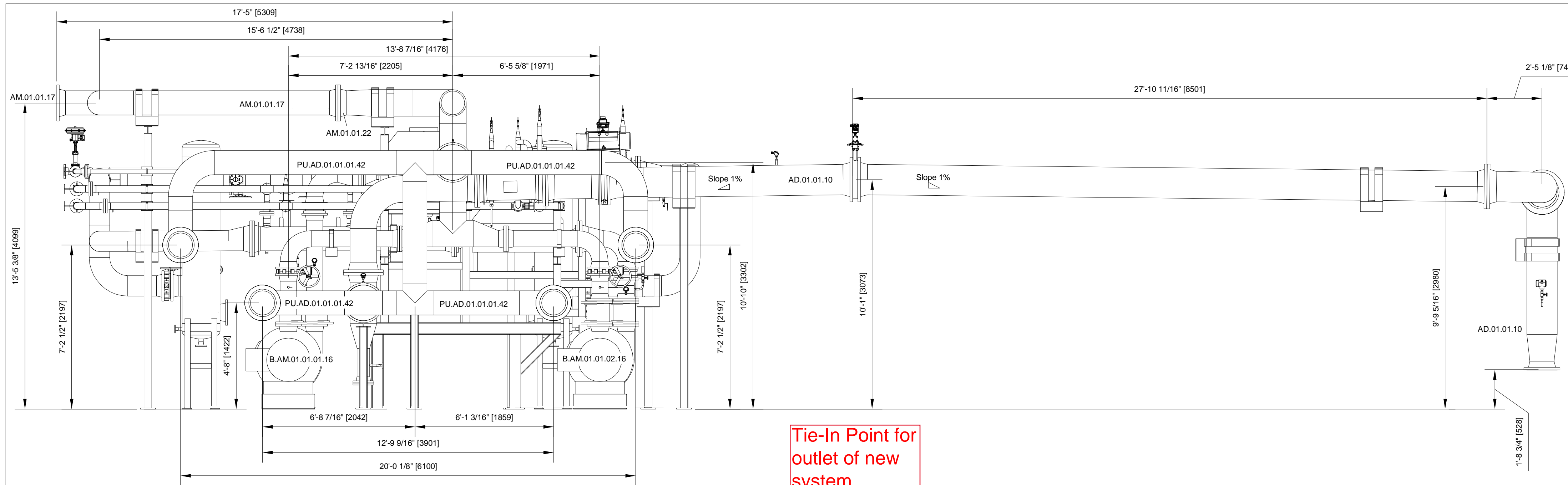
DRAWING NO.  
AUC201-ABP-AF02-01

DATE: 08/03/18

SCALE: 1:30 / 1:40

PAGE NO.

K:\Projects\_FPD\Dane County\_AUC201\_VI\_BUP25001\2D\_Cad\Installation\Measuring\AUC201-ABP-AF02-01-assembly plan AF02.dwg



K:\Projects\_PSD\Bioscience\_County\_AUC201\_WI\_BUP2500\CDs\_Installation\AUC201-ABP-AF02-02\_assembly plan AF02 with pipes.dwg

NO.	REVISION	DATE	CONFIDENTIAL WORK COPYRIGHT



SHEET TITLE  
assembly plan  
AF02 with Pipes  
biogas blower

PROJECT TITLE  
Dane County WI BUP2500  
Dane County

PROJ. NO.  
AUC201

DATE: 08/06/18

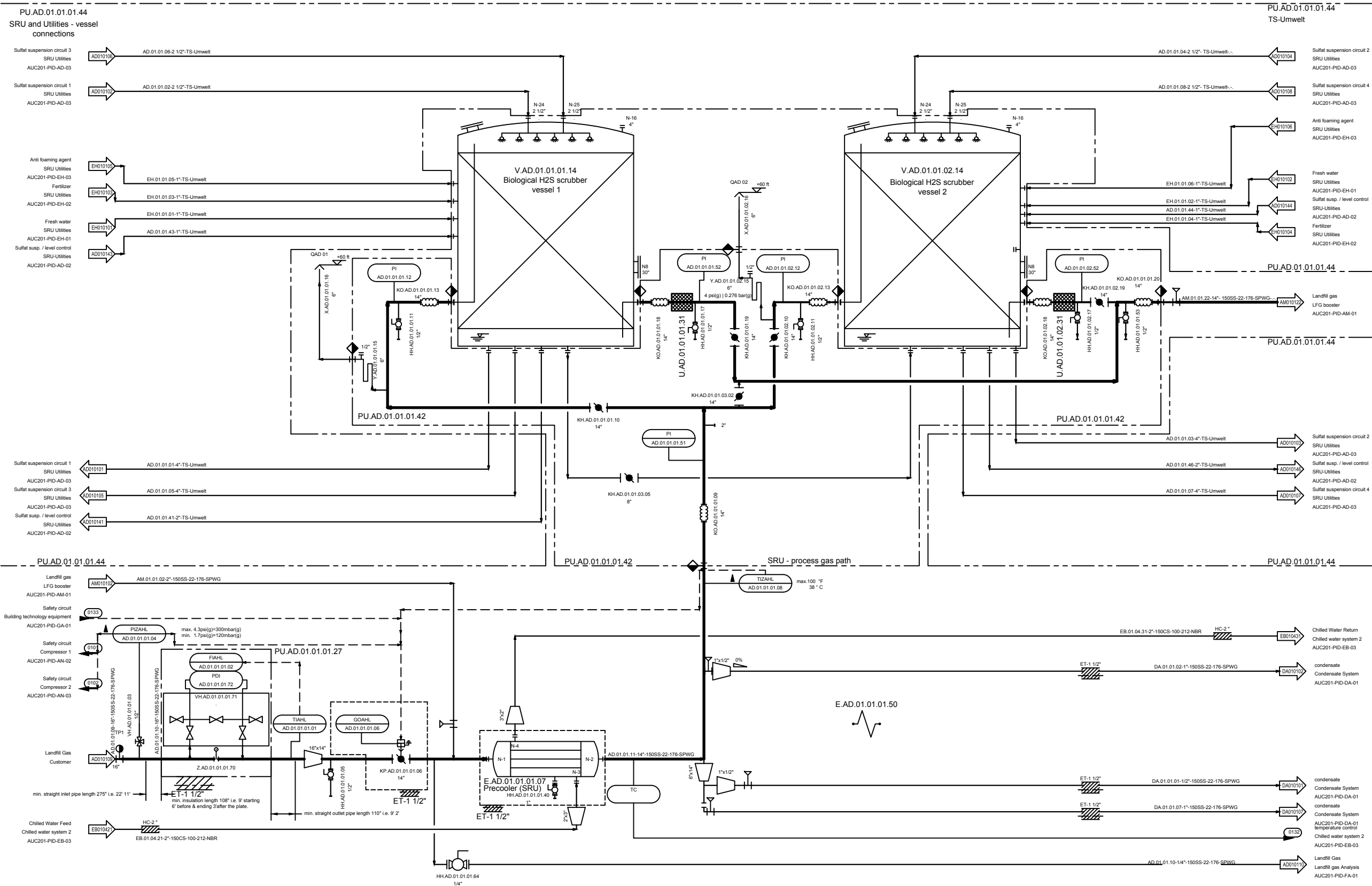
SCALE: 1:30 / 1:40

PAGE NO.  
/

DATE: 08/06/18

SCALE: 1:30 / 1:40

PAGE NO.  
/



Primary Gas Treatment	AD01 -> AM -> AN -> AF -> AE -> AC -> AA -> AO -> AP
Secondary Gas Treatment	DD -> DE -> DF -> DA
Utilities	EA -> EB -> EG -> EE -> ED -> AD02+03 -> EC -> EH -> EM -> EN
Analysis	FA -> FB -> FC -> FF -> FL -> FM -> FN -> FO
Building Technology	GA

NO.	REVISION	DATE	CONFIDENTIAL WORK COPYRIGHT
1	First Draft	11/22/17	All rights reserved. This document is a confidential work protected by copyright and trade secret law and neither it or any of the information contained therein may be disclosed, used or reproduced in any manner, or for any purpose, except by written permission of BIOFerm Energy Systems.
2	change from 4 to 6 vessels	03/14/18	BIOFerm Energy Systems reserves all rights in and to all BIOFerm Energy Systems intellectual property.
3	generally revised	04/23/18	
4	Revision 3	12/01/18	
5	Issue for construction / IFC	01/31/19	
6	AS BUILT	07/25/19	

**BIOFERM**  
ENERGY SYSTEMS

BIOFerm Energy Systems  
440 Science Drive, Suite 300, Madison, WI 53711

**Carbotech**  
Gas Systems GmbH

Kronprinzstrasse 30, D-45128 Essen, Germany



SHEET TITLE P&ID  
Sulfur removal unit - SRU

PROJECT TITLE  
Dane County WI BUP25001  
Dane County

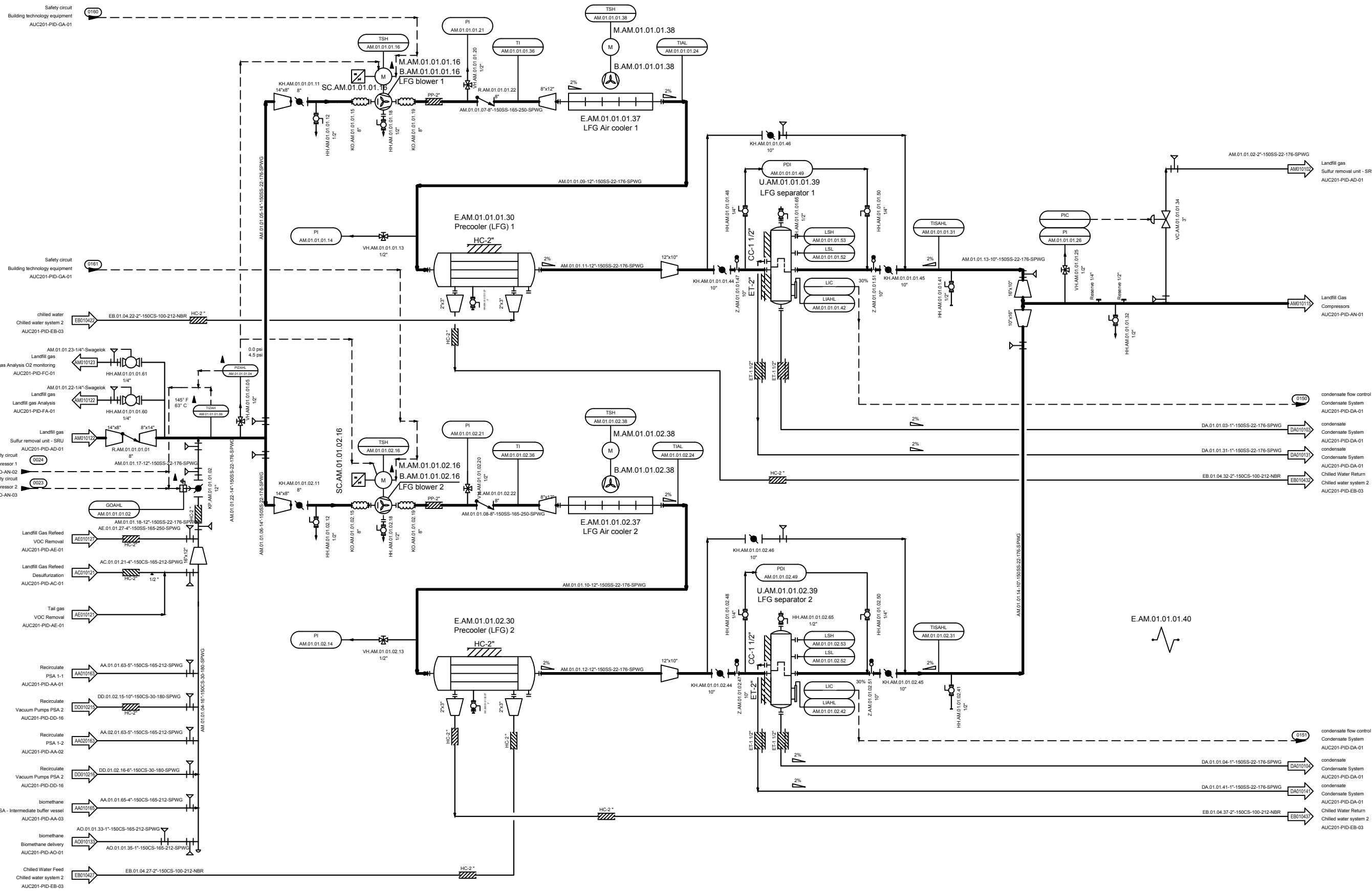
PROJ. NO. AUC201

DRAWING NO. AUC201-PID-AD-01

DATE: 2019-01-31

SCALE:

PAGE NO. 01 / 72



Primary Gas Treatment	AD01 -> AM -> AN -> AF -> AE -> AC -> AA -> AO -> AP
Secondary Gas Treatment	DD -> DE -> DF -> DA
Utilities	EA -> EB -> EG -> EE -> ED -> AD02+03 -> EC -> EH -> EM -> EN
Analysis	FA -> FB -> FC -> FF -> FL -> FM -> FN -> FO
Building Technology	GA

NO.	REVISION	DATE	CONFIDENTIAL WORK COPYRIGHT
1	First Draft	11/22/17	All rights reserved. This document is a confidential work, protected by copyright and trade secret law and neither it or any of the information contained therein may be disclosed, used or reproduced in any manner, or for any purpose, except by written permission of BIOFerm Energy Systems. BIOFerm Energy Systems reserves all rights in and to all BIOFerm Energy Systems intellectual property.
2	change from 4 to 6 vessels	03/14/18	
3	generally revised	04/23/18	
4	Revision 3	12/01/18	
5	Issue for construction / IFC	01/31/19	
6	AS BUILT	07/25/19	

**BIOFERM**  
ENERGY SYSTEMS

BIOFerm Energy Systems  
440 Science Drive, Suite 300, Madison, WI 53711

**Carbotech**  
Gas Systems GmbH

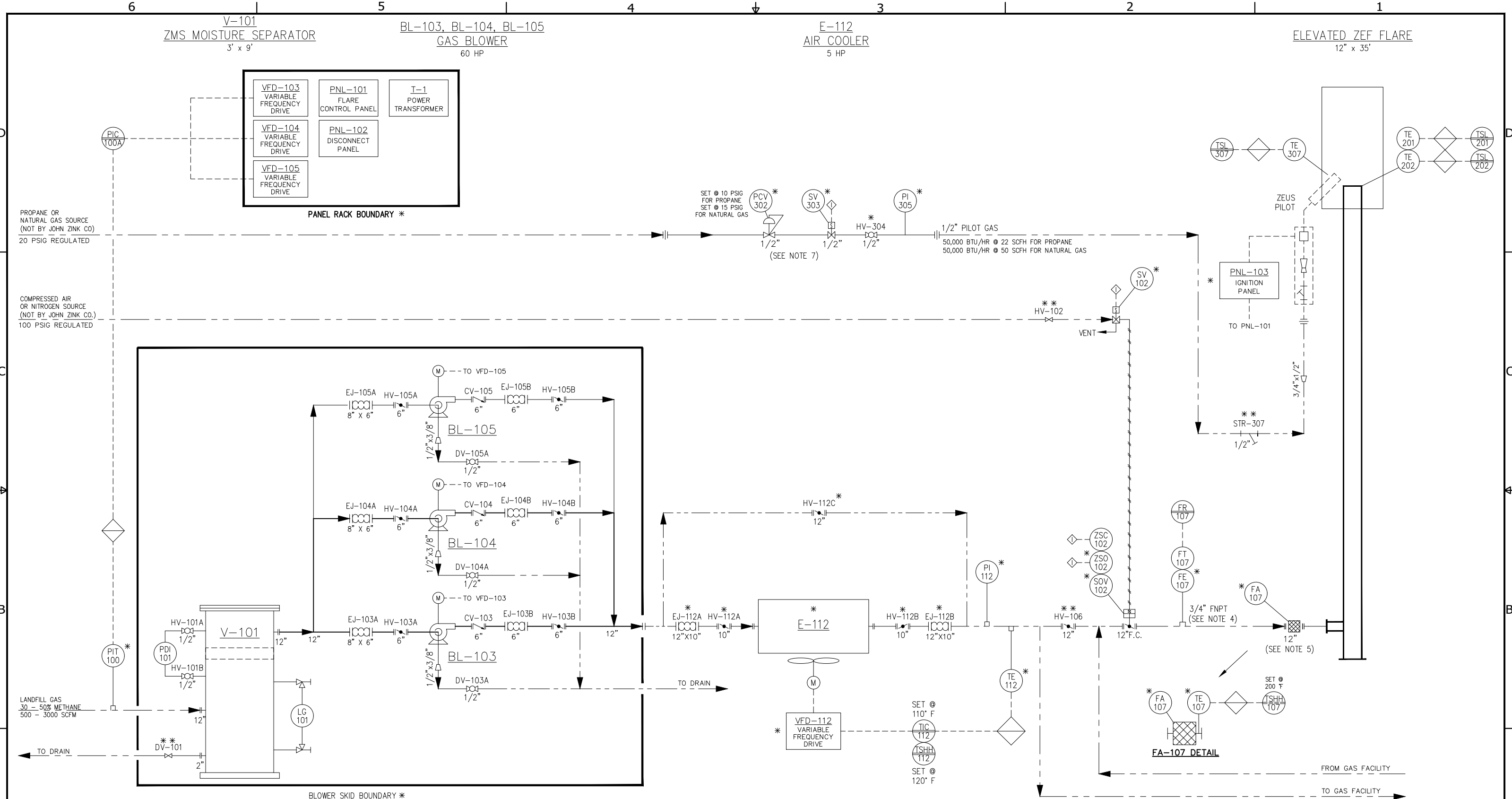
Kronprinzstrasse 30, D-45128 Essen, Germany



SHEET TITLE	P&ID LFG booster
PROJECT TITLE	Dane County WI BUP25001 Dane County

PROJ. NO.	AUC201
DRAWN BY	SciP
CHK. BY	ZimT
APP. BY	
DRAWING NO.	AUC201-PID-AM-01

DATE	2019-01-31
SCALE	
PAGE NO.	02 / 72



- NOTES:**
- \* - SUPPLIED BY JOHN ZINK CO. AND SHIPPED LOOSE FOR FIELD INSTALLATION
  - \*\* - SUPPLIED BY OTHERS (NOT BY JOHN ZINK CO.)
  - ELECTRICAL AREA CLASSIFICATION: NON-HAZARDOUS (CLASS 1, DIVISION 2, GROUP D BLOWER SKID ONLY)
  - LOCATE FLOW ELEMENT WITH 10 PIPE DIAMETERS OF STRAIGHT UNDISTURBED FLOW UPSTREAM AND 5 PIPE DIAMETERS DOWNSTREAM.
  - LOCATE ARRESTER AT FLARE INLET WITH 5 PIPE DIAMETERS OF STRAIGHT UNDISTURBED FLOW UPSTREAM.
  - THERMOCOUPLE WIRE AND IGNITION WIRE SUPPLIED BY JOHN ZINK CO. AND SHIPPED LOOSE FOR FIELD INSTALLATION.
  - INSTALL PILOT GAS PIPE WITHIN 5' OF FLARE INLET.

**LEGEND**

	FIELD MOUNTED INSTRUMENT		LOCATED IN PROCESSOR (PLC)
	REMOTE PANEL MOUNTED NORMALLY ACCESSIBLE TO OPERATOR		INTERLOCK TO/FROM CONTROL PANEL.
	LOCAL PANEL MOUNTED NORMALLY ACCESSIBLE TO OPERATOR		PIPE & FITTINGS BY OTHERS (NOT BY JOHN ZINK CO.)
	REMOTE SUB-PANEL MOUNTED NORMALLY INACCESSIBLE TO OPERATOR		ELECTRICAL INTERCONNECTIONS
	LOCAL SUB-PANEL MOUNTED NORMALLY INACCESSIBLE TO OPERATOR		INSTRUMENT CONTROL AIR LINE
			PIPE & FITTINGS BY JOHN ZINK CO.

FOR PARTS AND SERVICE: • TEL: 1-800-755-4252 • FAX: (918) 234-1968

NO.	REVISION DESCRIPTION	BY	CHK	APP	DATE
1	PER SUBMITTAL COMMENTS	YT	JPR	BP	7-3-18

FOR A LIST OF RELEVANT PATENTS AND TRADEMARKS, PLEASE SEE [johnzinkhamworthy.com/legal-notice](http://johnzinkhamworthy.com/legal-notice)

**JOHN ZINK HAMWORTHY COMBUSTION**  
JOHN ZINK COMPANY, LLC

FOR: BIOFERM ENERGY SYSTEMS  
USER: DANE COUNTY LANDFILL  
JOB SITE: MADISON, WI

**PROCESS & INSTRUMENT DIAGRAM FOR AN ELEVATED ZEF FLARE SYSTEM**

S.O. NO: BF-9195133  
P.O. NO: PO-0000669  
SCALE: NONE

DATE: 5-29-18  
DRAWING NUMBER: D-F-9195133-150

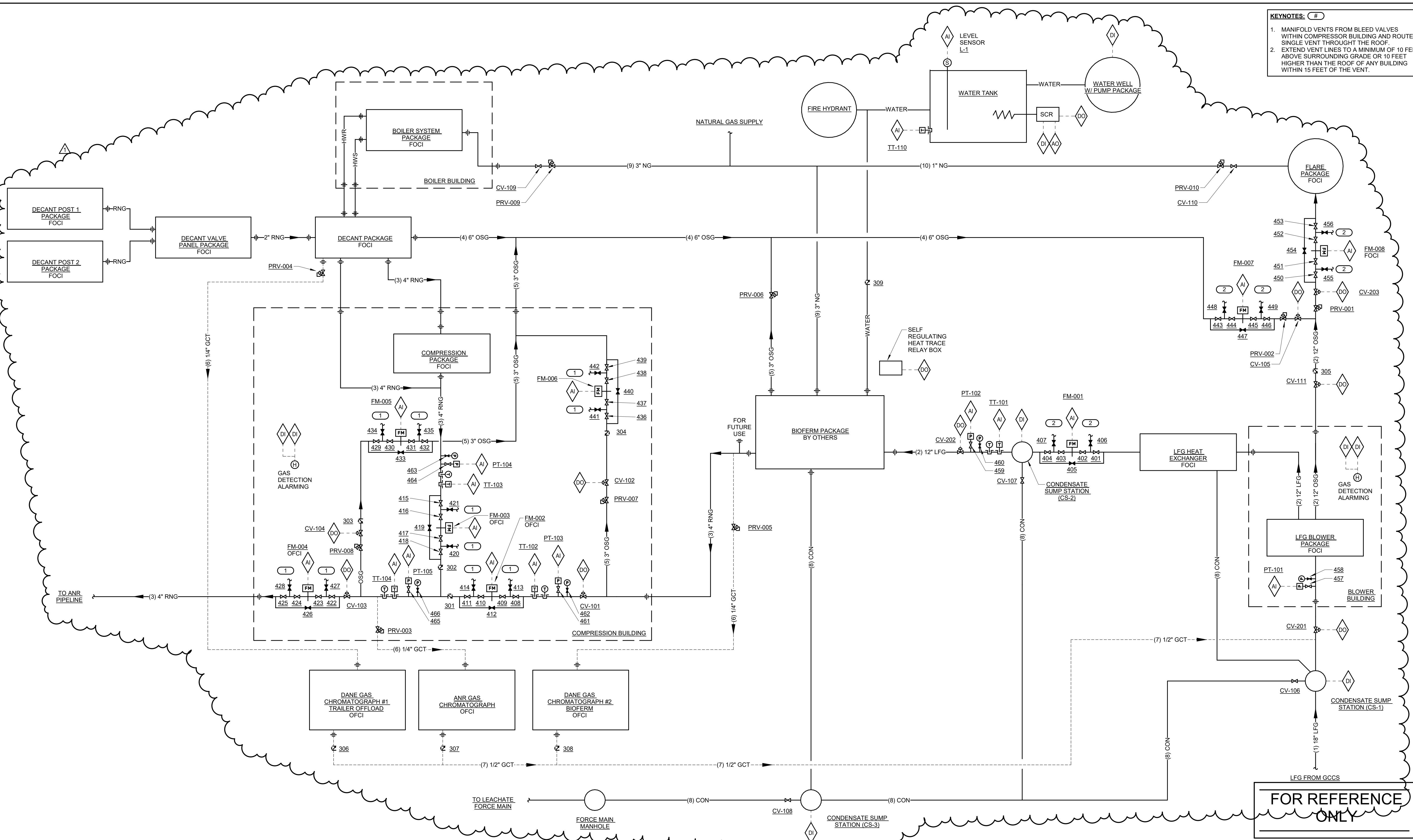
CHK: JPR  
APP: JPR  
DATE: 5-29-18

SHEET: 1 OF 1

REV: 1

File Name: c:\active\p-vapor\9195133\drafting\drawings\150811.dwg Plot Date: 7/10/2018 10:32 AM

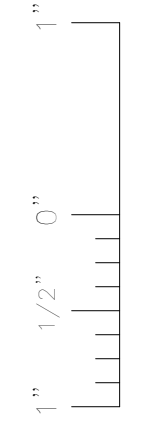
- KEYNOTES:** (#)
- MANIFOLD VENTS FROM BLEED VALVES WITHIN COMPRESSOR BUILDING AND ROUTE A SINGLE VENT THROUGH THE ROOF.
  - EXTEND VENT LINES TO A MINIMUM OF 10 FEET ABOVE SURROUNDING GRADE OR 10 FEET HIGHER THAN THE ROOF OF ANY BUILDING WITHIN 15 FEET OF THE VENT.



**1 PIPING AND INSTRUMENTATION FLOW DIAGRAM**  
NO SCALE

**FOR REFERENCE ONLY**

**ISSUED FOR CONSTRUCTION**



**IMEG**  
1800 DEMING WAY, SUITE 200  
MIDDLETON, WI 53562  
608.223.8600 FAX: 608.836.0415  
www.imegcorp.com  
PROJECT # 17002439.00

IMEG CORP. RESERVES PROPRIETARY RIGHTS, INCLUDING COPYRIGHTS. TO THIS DRAWING AND THE DATA SHOWN THEREON. SAID DRAWING AND/OR DATA ARE THE EXCLUSIVE PROPERTY OF IMEG CORP. AND SHALL NOT BE USED OR REPRODUCED FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN APPROVAL AND PARTICIPATION OF IMEG CORP. © 2018 IMEG CORP.

REFERENCE SCALE IN INCHES  
0 1 2 3

REV	DATE	DESCRIPTION	OWN BY	DES BY	CHK BY	APP BY
1	06/01/18	Change Order #1				
	DATE OF ISSUE	DRAWN BY	SCOWIL	CHECKED BY	RYAJES	APPROVED BY
	3/27/2018	DESIGNED BY	SCOWIL	APPROVED BY	SCOWIL	

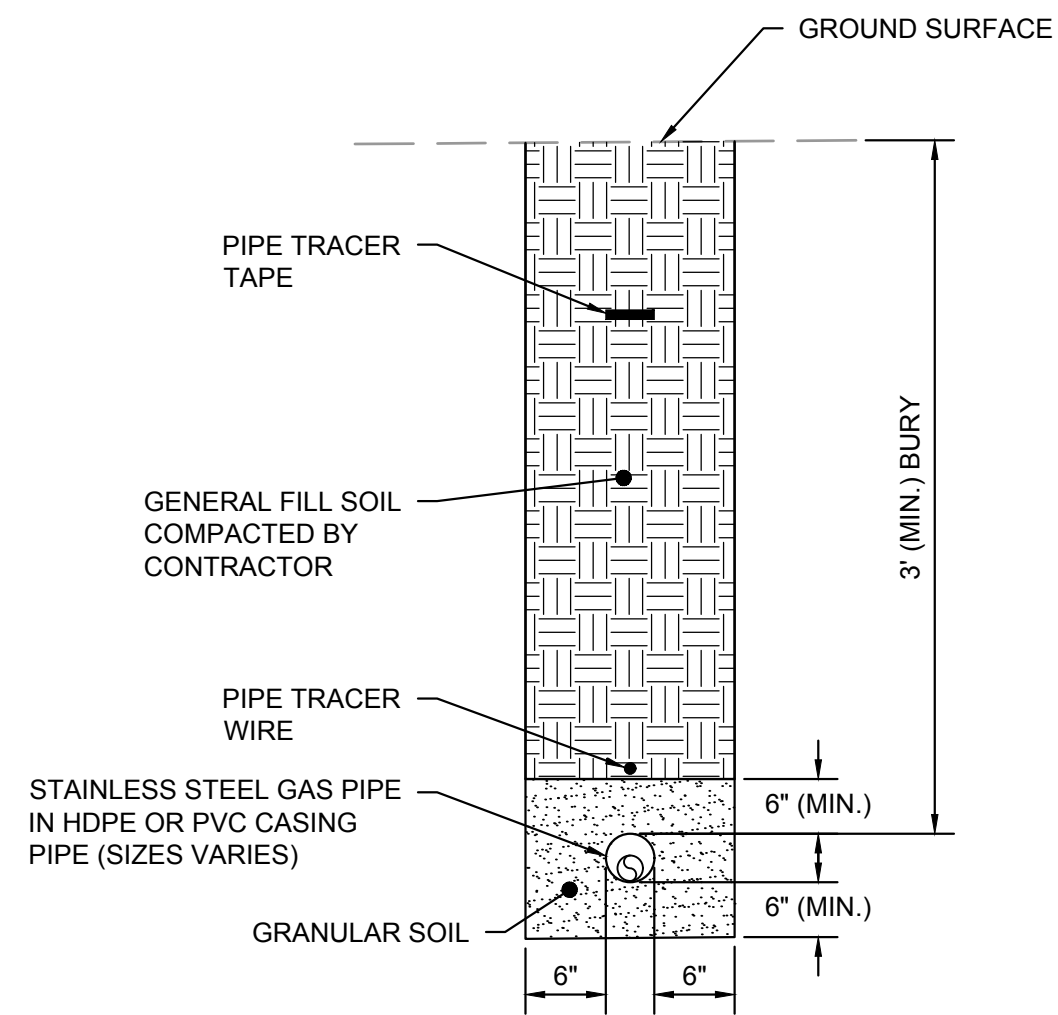
**cornerstone**  
A TETRA TECH COMPANY

This drawing represents intellectual property of Cornerstone Environmental Group LLC. Any modification to the original by other than Cornerstone Environmental Group LLC personnel violates its original purpose and as such is rendered void. Cornerstone Environmental Group LLC will not be held liable for any changes made to this document without express written consent of the originator.

COUNTY OF DANE, DEPT. OF PUBLIC WORKS  
RODEFELD LANDFILL  
DANE COUNTY, WISCONSIN  
DANE COUNTY NO. 2 (RODEFELD) LANDFILL  
BIOGAS FACILITY CONSTRUCTION  
PIPING AND INSTRUMENTATION DIAGRAM

SHEET NO.  
**M001**  
PROJECT NO.  
170651



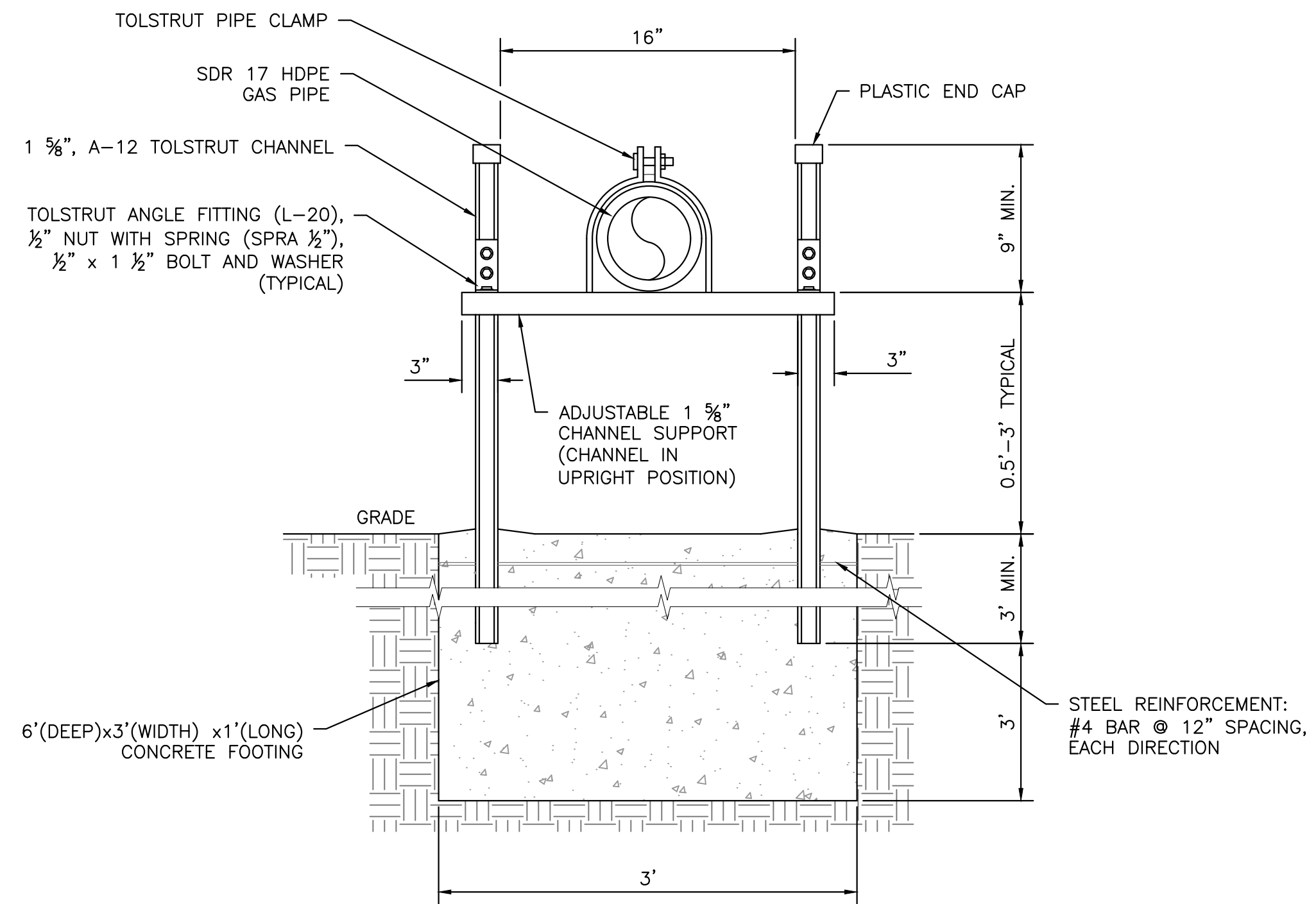


**STAINLESS STEEL PIPE IN CASING PIPE**

**DETAIL 1**  
SCALE: NOT TO SCALE C507

NOTE:

- METALLIC PIPE TRACER TAPE MAY BE USED AS A SUBSTITUTE FOR PIPE TRACER TAPE/WIRE IF APPROVED BY OWNER.

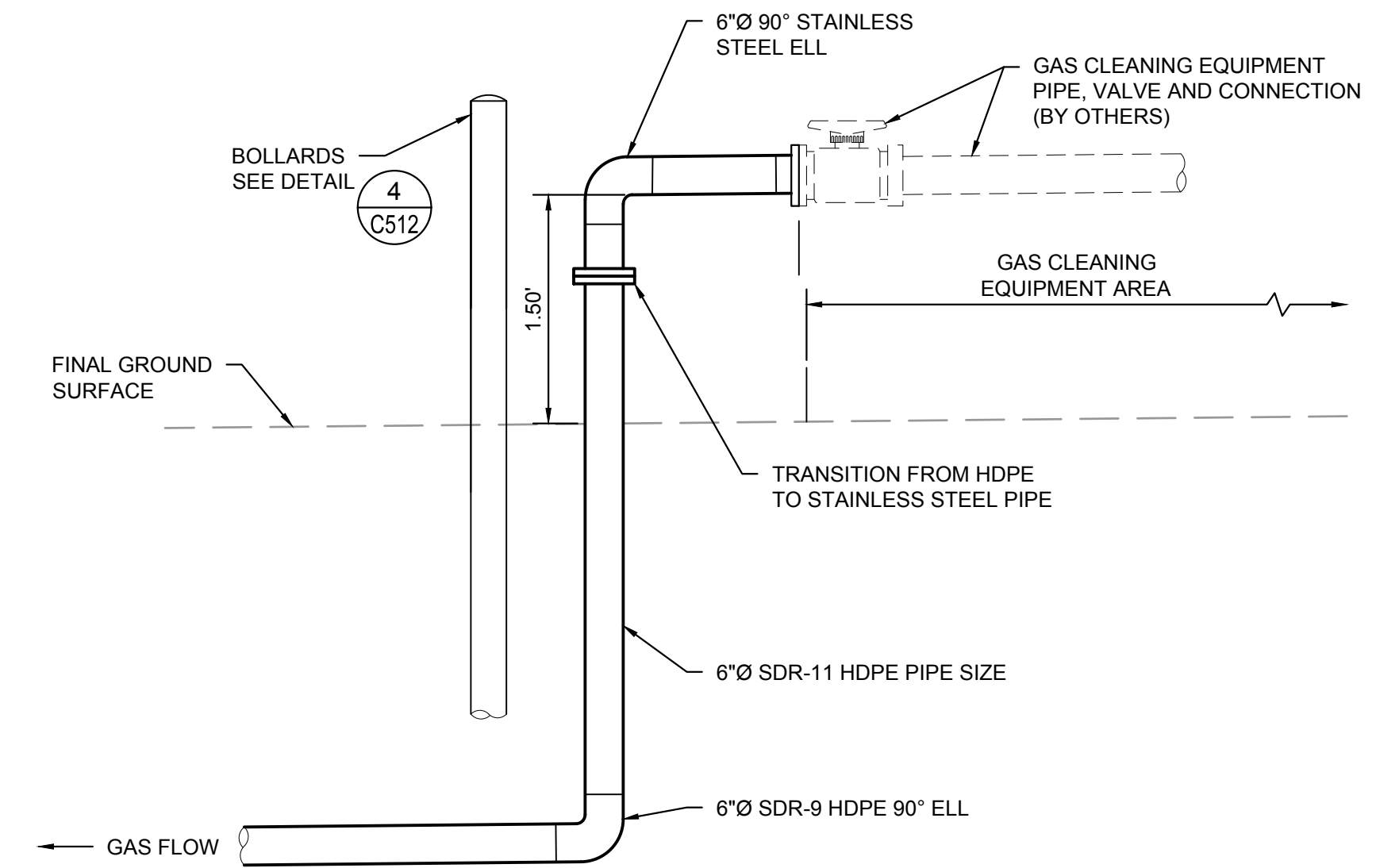


**SINGLE PIPE  
ADJUSTABLE PIPE SUPPORT**

**DETAIL 2**  
SCALE: NOT TO SCALE C507

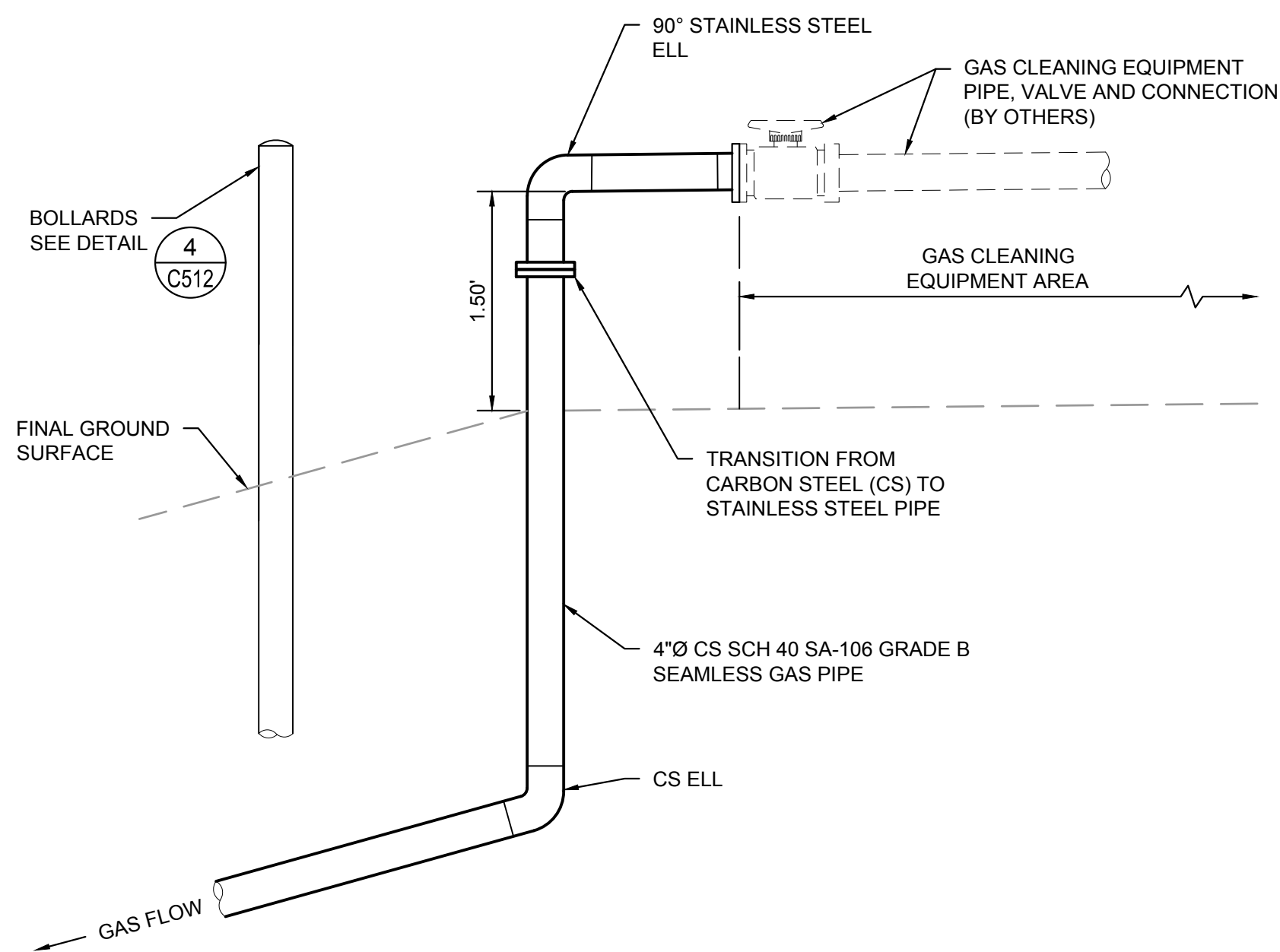
**ADJUSTABLE PIPE SUPPORT NOTES:**

- ALL MATERIALS SHALL BE GALVANIZED STEEL.
- CONCRETE SHALL BE 3000 PSI.
- CHANNEL SUPPORT SHALL HAVE THE CHANNEL IN THE UPRIGHT POSITION.
- MAXIMUM SPACING OF SUPPORT SHALL NOT EXCEED 10' ON-CENTER.



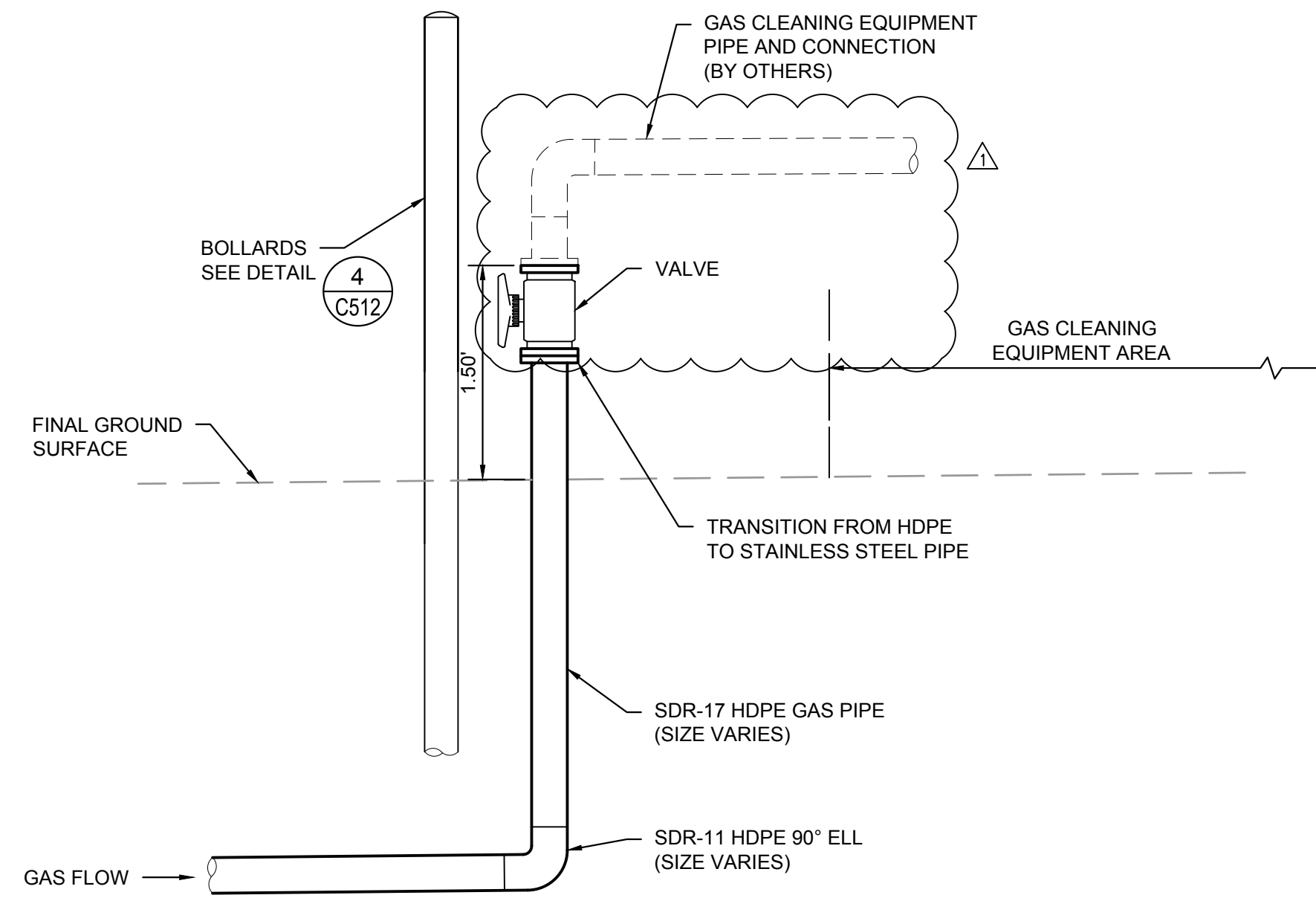
**GAS CLEANING EQUIPMENT OFF-SPEC.  
GAS CONTROL VALVE**

**DETAIL 3**  
SCALE: NOT TO SCALE C507



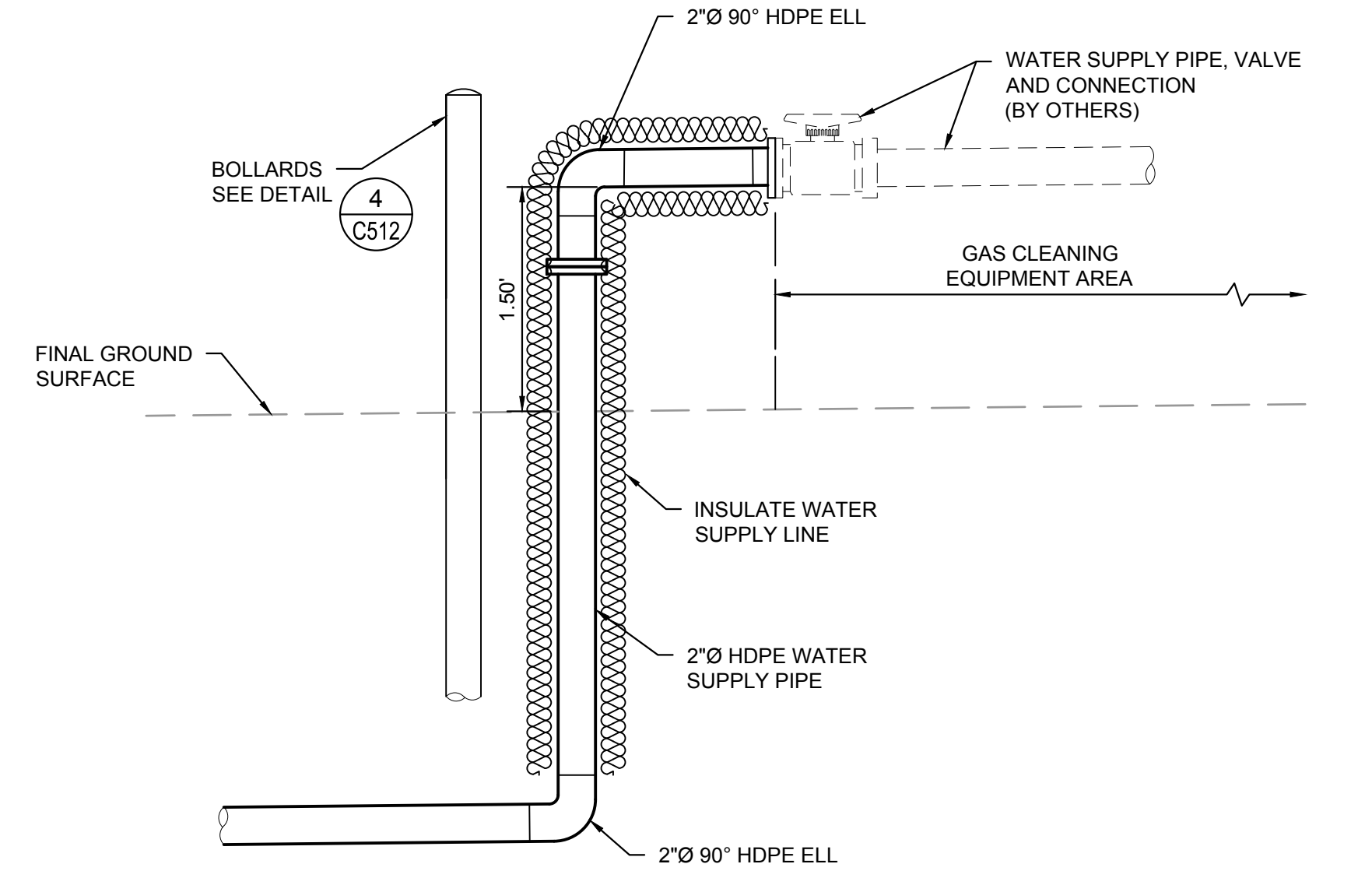
**BIOFERM PROCESSED GAS CONNECTION  
GAS CONTROL VALVE**

**DETAIL 4**  
SCALE: NOT TO SCALE C507



**BIOFERM RAW GAS CONNECTION  
GAS CONTROL VALVE**

**DETAIL 5**  
SCALE: NOT TO SCALE C507



**BIOFERM  
WATER SUPPLY CONNECTION**

**DETAIL 6**  
SCALE: NOT TO SCALE C507

1" 1/2" 0"

File: X:\PROJECTS\DAKE COUNTY\170651 - RFG ENGINEERING SERVICES\_Plan Set\13-MADC-5-BS-C506.dwg Layout: C507 User: ahun.cummings Jun 13, 2018 - 12:26pm

**ISSUED FOR CONSTRUCTION**

1	5/30/18	CHANGE ORDER NO. 1	SRC	SRC	-	-
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE	DRAWN BY SRC		CHECKED BY CLD		APP BY MJT	
6/5/2018	DESIGNED BY SRC/BB		APPROVED BY			



This drawing represents Intellectual property of Cornerstone Environmental Group LLC. Any modification to the original by other than Cornerstone Environmental Group LLC personnel violates its original purpose and as such is rendered void. Cornerstone Environmental Group LLC will not be held liable for any changes made to this document without express written consent of the originator.

COUNTY OF DANE, DEPT. OF PUBLIC WORKS  
RODEFELD LANDFILL  
DANE COUNTY, WISCONSIN

**DANE COUNTY NO. 2 (RODEFELD) LANDFILL  
CIVIL DETAIL SHEET 7**

SHEET NO.

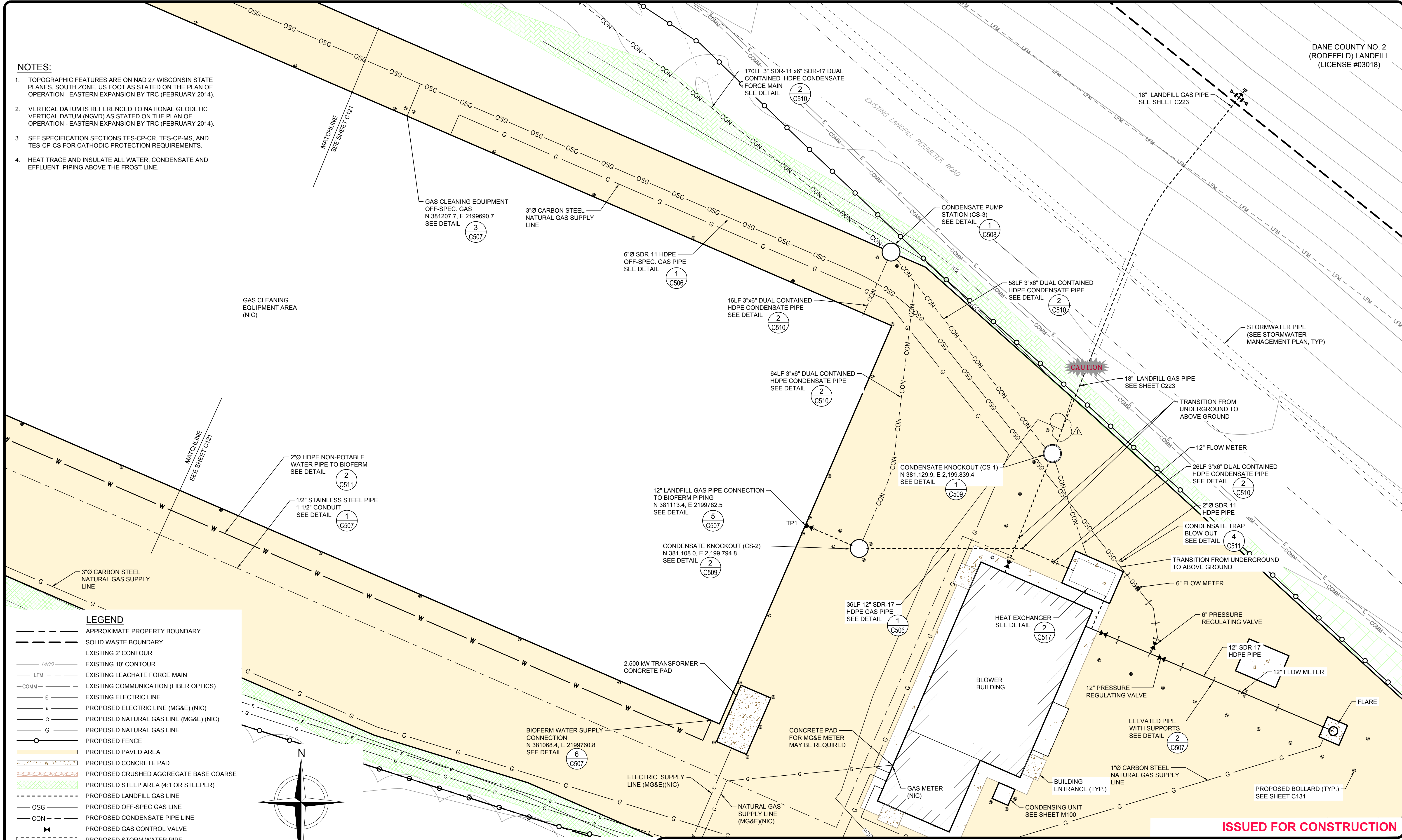
**C507**

PROJECT NO.

170651

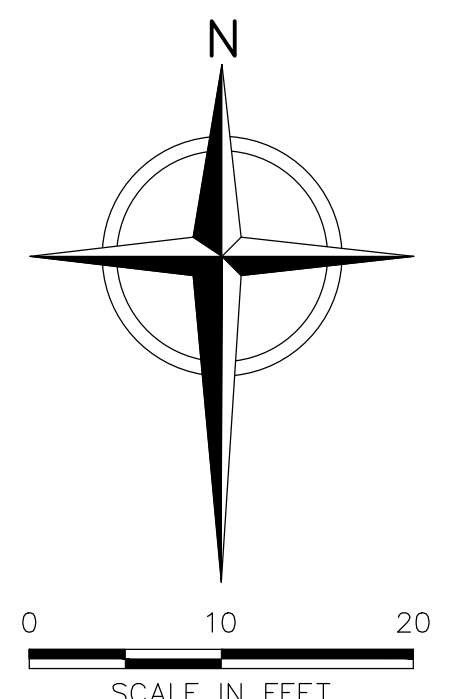
**NOTES:**

1. TOPOGRAPHIC FEATURES ARE ON NAD 27 WISCONSIN STATE PLANES, SOUTH ZONE, US FOOT AS STATED ON THE PLAN OF OPERATION - EASTERN EXPANSION BY TRC (FEBRUARY 2014).
2. VERTICAL DATUM IS REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM (NGVD) AS STATED ON THE PLAN OF OPERATION - EASTERN EXPANSION BY TRC (FEBRUARY 2014).
3. SEE SPECIFICATION SECTIONS TES-CP-CR, TES-CP-MS, AND TES-CP-CS FOR CATHODIC PROTECTION REQUIREMENTS.
4. HEAT TRACE AND INSULATE ALL WATER, CONDENSATE AND EFFLUENT PIPING ABOVE THE FROST LINE.



**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- SOLID WASTE BOUNDARY
- EXISTING 2' CONTOUR
- 1400 --- EXISTING 10' CONTOUR
- LFM EXISTING LEACHATE FORCE MAIN
- COMM EXISTING COMMUNICATION (FIBER OPTICS)
- E EXISTING ELECTRIC LINE
- E PROPOSED ELECTRIC LINE (MG&E) (NIC)
- G PROPOSED NATURAL GAS LINE (MG&E) (NIC)
- G PROPOSED NATURAL GAS LINE
- PROPOSED FENCE
- PROPOSED PAVED AREA
- PROPOSED CONCRETE PAD
- PROPOSED CRUSHED AGGREGATE BASE COARSE
- PROPOSED STEEP AREA (4:1 OR STEEPER)
- PROPOSED LANDFILL GAS LINE
- OSG PROPOSED OFF-SPEC GAS LINE
- CON PROPOSED CONDENSATE PIPE LINE
- PROPOSED GAS CONTROL VALVE
- PROPOSED STORM WATER PIPE
- PROPOSED CHECK VALVE
- PROPOSED FLOW METER
- PROPOSED BOLLARD
- PROPOSED PIPE SUPPORT



2	7/13/18	CHANGE ORDER NO. 1 UPDATE (REMOVED LFG VALVE)	SRC	SRC	CLD	MJT
1	6/5/18	CHANGE ORDER NO. 1	SRC	SRC	CLD	MJT
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE 6/5/2018			DRAWN BY SRC		CHECKED BY CLD	
			DESIGNED BY SRC/BB		APPROVED BY MJT	

**cornerstone**  
A TETRA TECH COMPANY

This drawing represents intellectual property of Cornerstone Environmental Group LLC. Any modification to the original by other than Cornerstone Environmental Group LLC personnel violates its original purpose and as such is rendered void. Cornerstone Environmental Group LLC will not be held liable for any changes made to this document without express written consent of the originator.

COUNTY OF DANE, DEPT. OF PUBLIC WORKS  
RODEFELD LANDFILL  
DANE COUNTY, WISCONSIN  
**DANE COUNTY NO. 2 (RODEFELD) LANDFILL  
BIOGAS FACILITY CONSTRUCTION  
SITE PLAN WITH PIPING (EAST)**

SHEET NO.  
**C122**  
PROJECT NO.  
170651

**ISSUED FOR CONSTRUCTION**