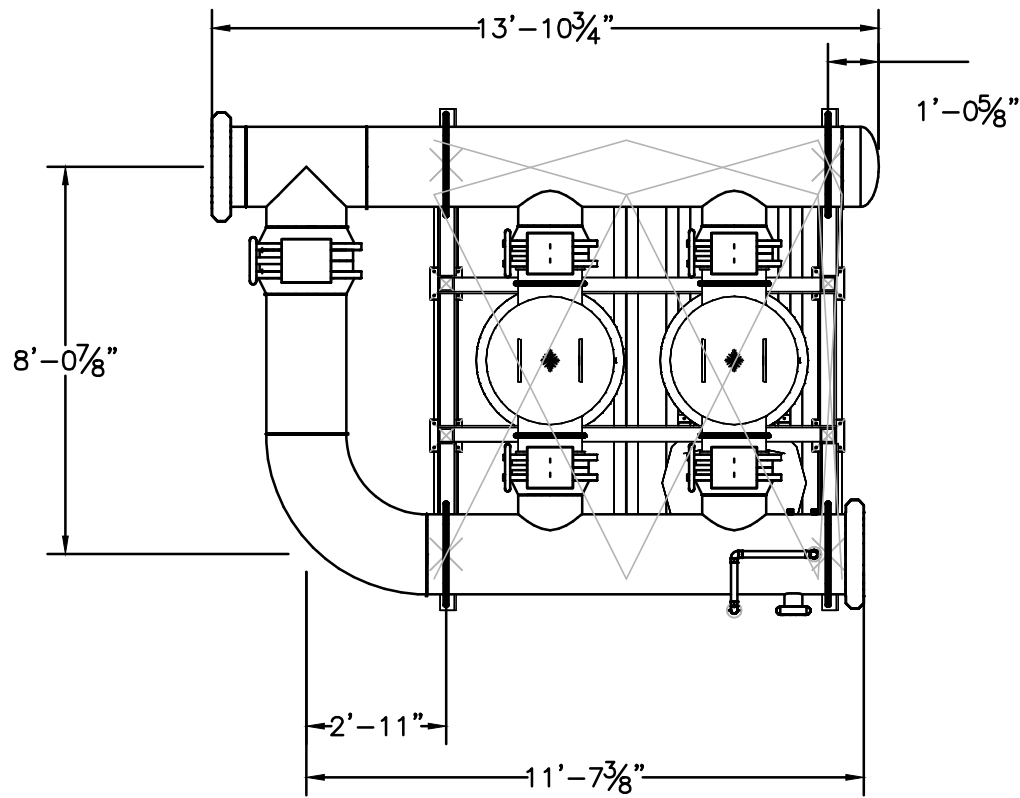
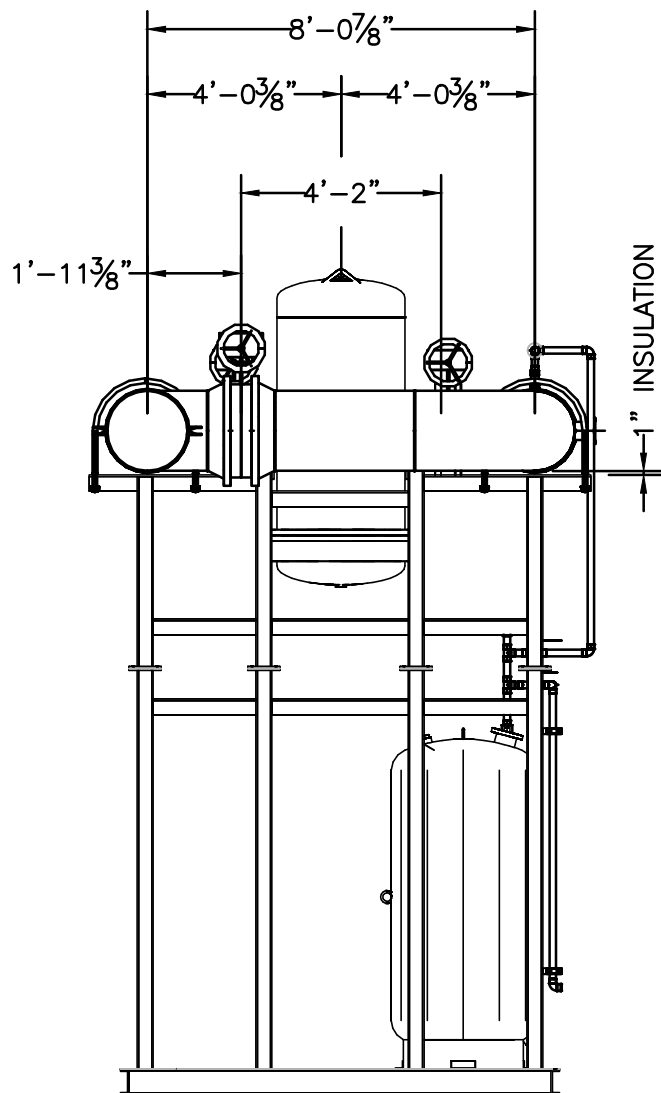


Copyright © 2015 Murphy Company Mechanical Contractors & Engineers. For use only by authorized bidders and contractors in connection with this project. Drawings are property of and all rights reserved by Murphy Company Mechanical Contractors and Engineers.  
413210140 WUSM Research Building NRB CHWR AS-01A/AS-01B.dwg  
03/10/2021 - 5:49pm  
jmurphy

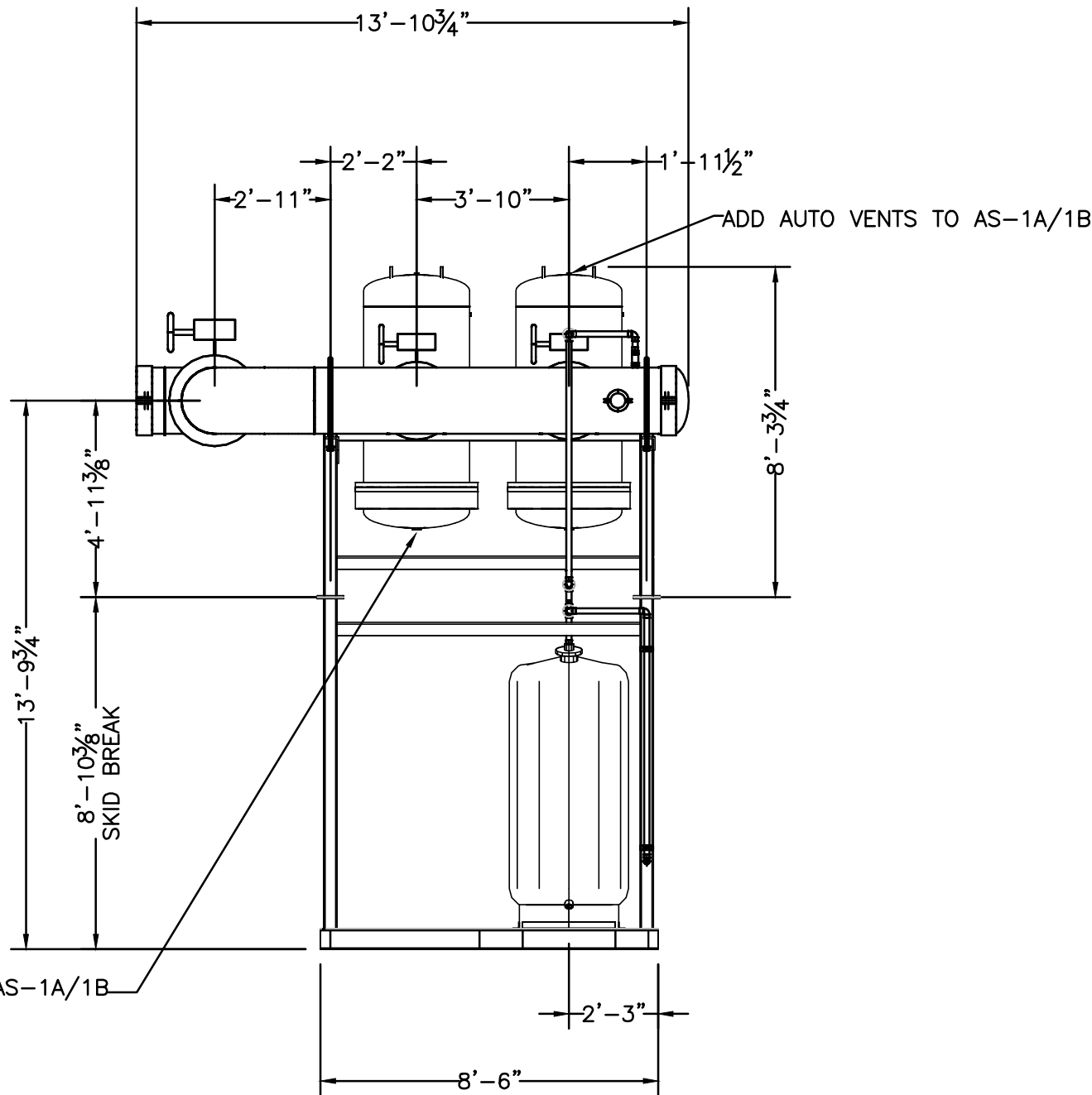
COATINGS	
PRIMER	<input checked="" type="checkbox"/>
color	GRAY
PAIN	<input type="checkbox"/>
color	N/A
GAL'V	<input type="checkbox"/>



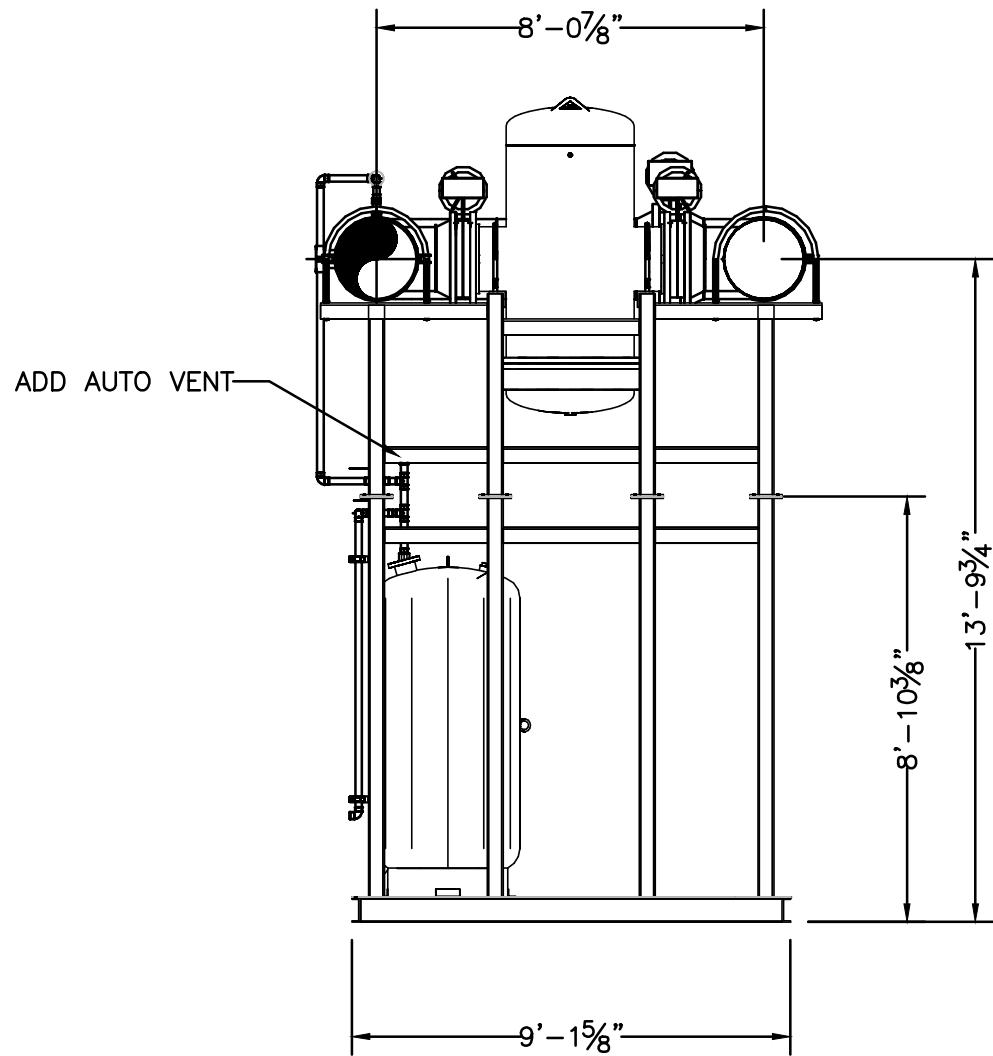
PLAN VIEW  
SCALE: N.T.S.



ADD BLOWDOWN VALVE TO AS-1A/1B



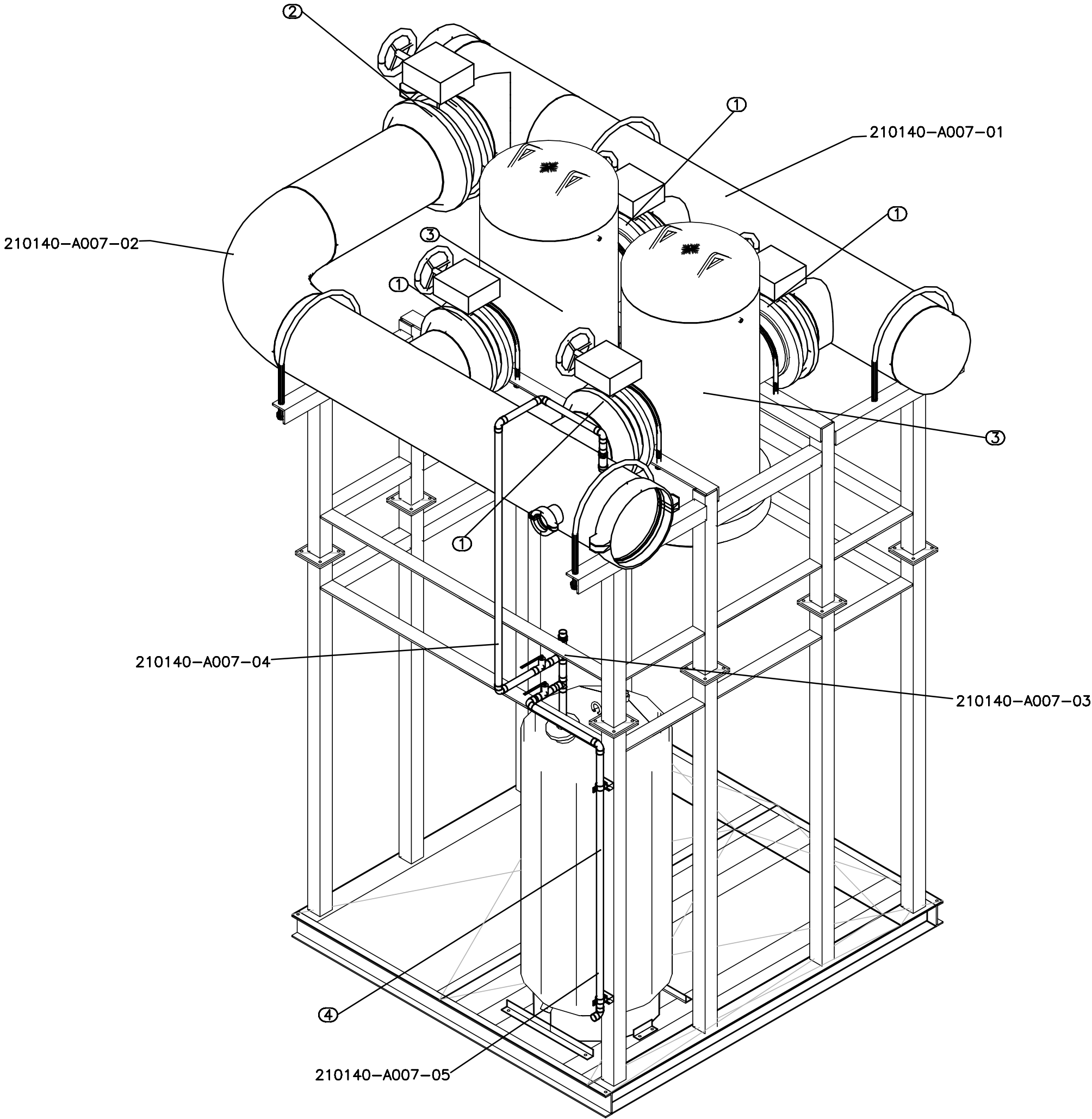
SECTION A-A  
SCALE: N.T.S.



<b>MURPHY</b> CONTRACTORS • ENGINEERS • MECHANICAL • INDUSTRIAL		1233 N. Price Rd. St. Louis, MO 63132-2303 314-997-6600 phone BIMCAD@murphy-stl.com	
DRN	JMM	3/6/21	WUSM RESEARCH BUILDING
CHK			NRB
APP			CHWR AS-01A/AS-01B
JOB NO.	210140		SERVICE NAME
REF. DWG.			CHWR
DRAWING NO./TRACKING NO.	210140-A007	QTY.	1
		SHT/NO	1 of 4
		REV	0
		DATE	
		DESCRIPTION	
		DRN	CHK
		APP	

COATINGS	
PRIMER	<input checked="" type="checkbox"/>
color	GRAY
PAIN	<input type="checkbox"/>
color	N/A
GAL'V	<input type="checkbox"/>

Murphy-PFFS-SPOOL-BOM							
Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
1	4	LD-1000 Butterfly Valve					16
2	1	LD-1000 Butterfly Valve					20
4	1	BG EXPANSION TANK					
3	2	AS-1A/1B BG_Coalescing Removal Separator-Air_Dirt-CRS_3300 GPM_16in Flanged_CRS					
5	8	150lb CS Flange Cap Screw Set					16 (1x3-1/4)
6	2	150lb CS Flange Cap Screw Set					20 (1-1/8x4)



ISOMETRIC VIEW  
SCALE: N.T.S.

3

**MURPHY**  
CONTRACTORS • ENGINEERS • MECHANICAL • INDUSTRIAL

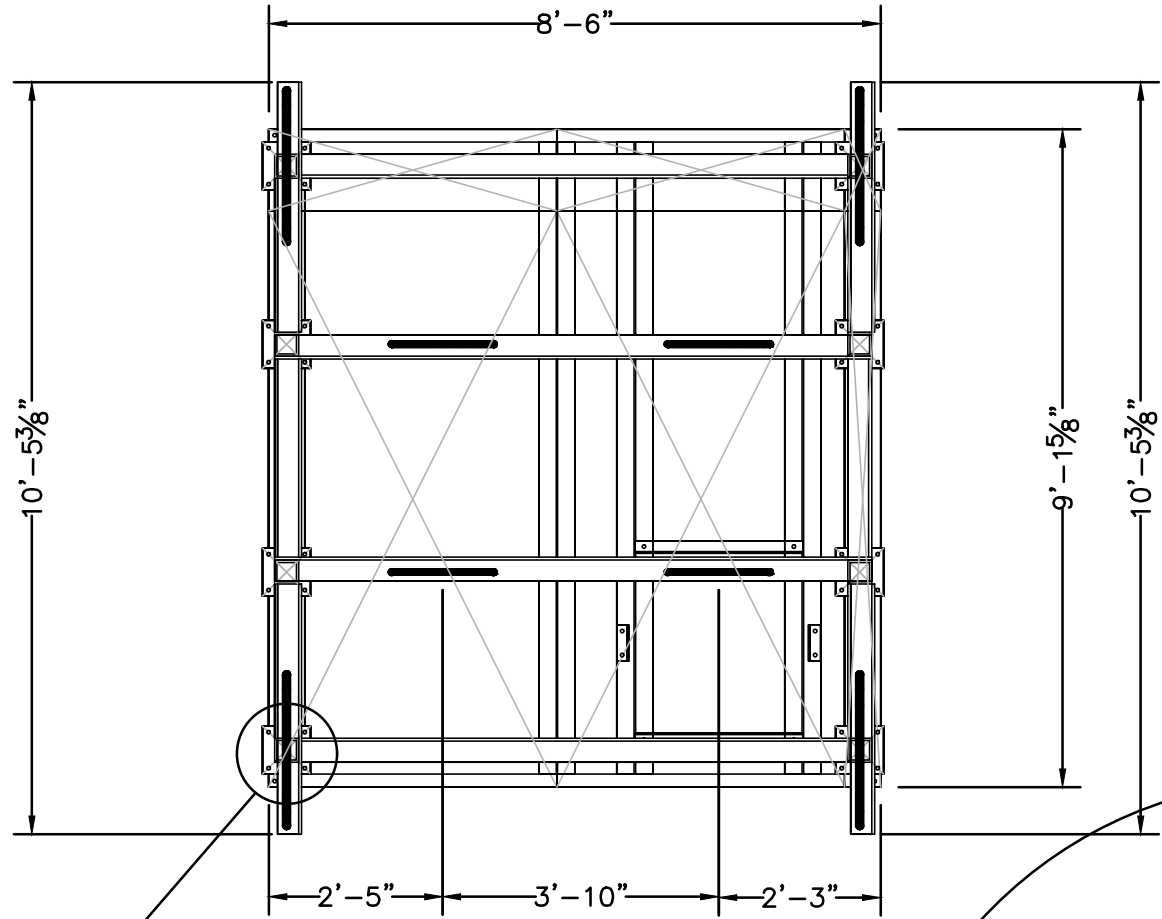
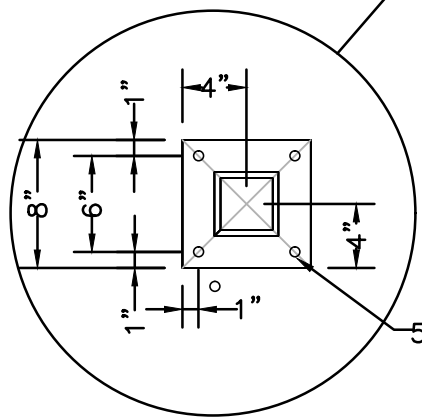
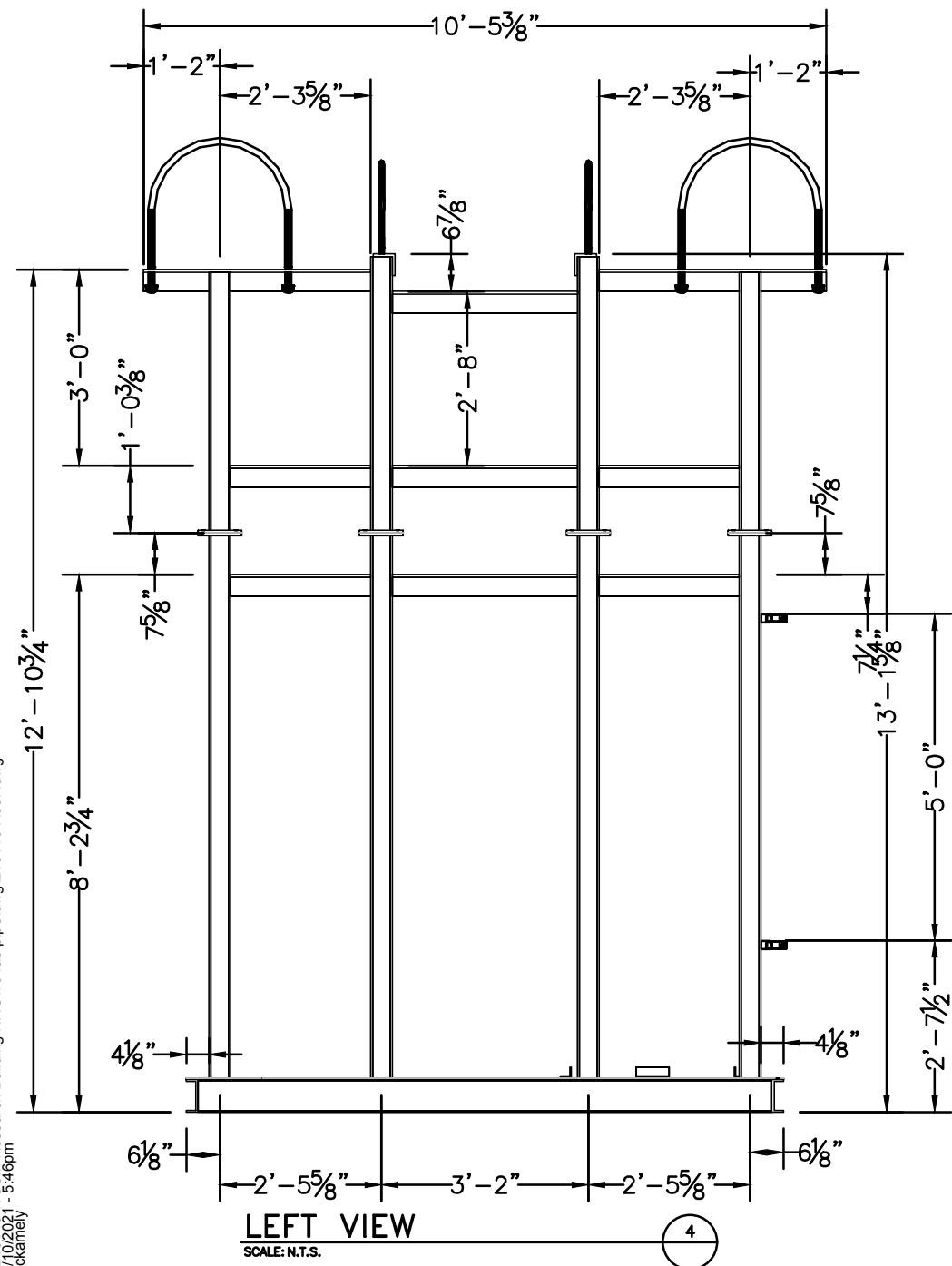
1233 N. Price Rd.  
St. Louis, MO 63132-2303  
314-997-6600 phone  
BIMCAD@murphy-stl.com

DRN	JMM	3/6/21	WUSM RESEARCH BUILDING				QC	TACK	CUT	APP
CHK			NRB				WELD MAP			
APP			CHWR AS-01A/AS-01B				SPECIAL NDE	SHIP LOOSE MATERIAL		
JOB NO.	210140		CHWR				WELD GAP	VT	COMPLETION DATE	
REF.DWG.			CHWR				SPEC.	ASME	X-RAY	COMMENTS
DRAWING NO./TRACKING NO.			CHWR				NA	NA	NA	MURPHY WPS#
210140-A007			1				REV	DATE	DESCRIPTION	DRN
			2 of 4				0			CHK
			0							APP

Copyright © 2013 Murphy Company Mechanical Contractors & Engineers. For use only by authorized bidders and contractors in connection with this project. Drawings are property of and all rights reserved by Murphy Company Mechanical Contractors and Engineers.

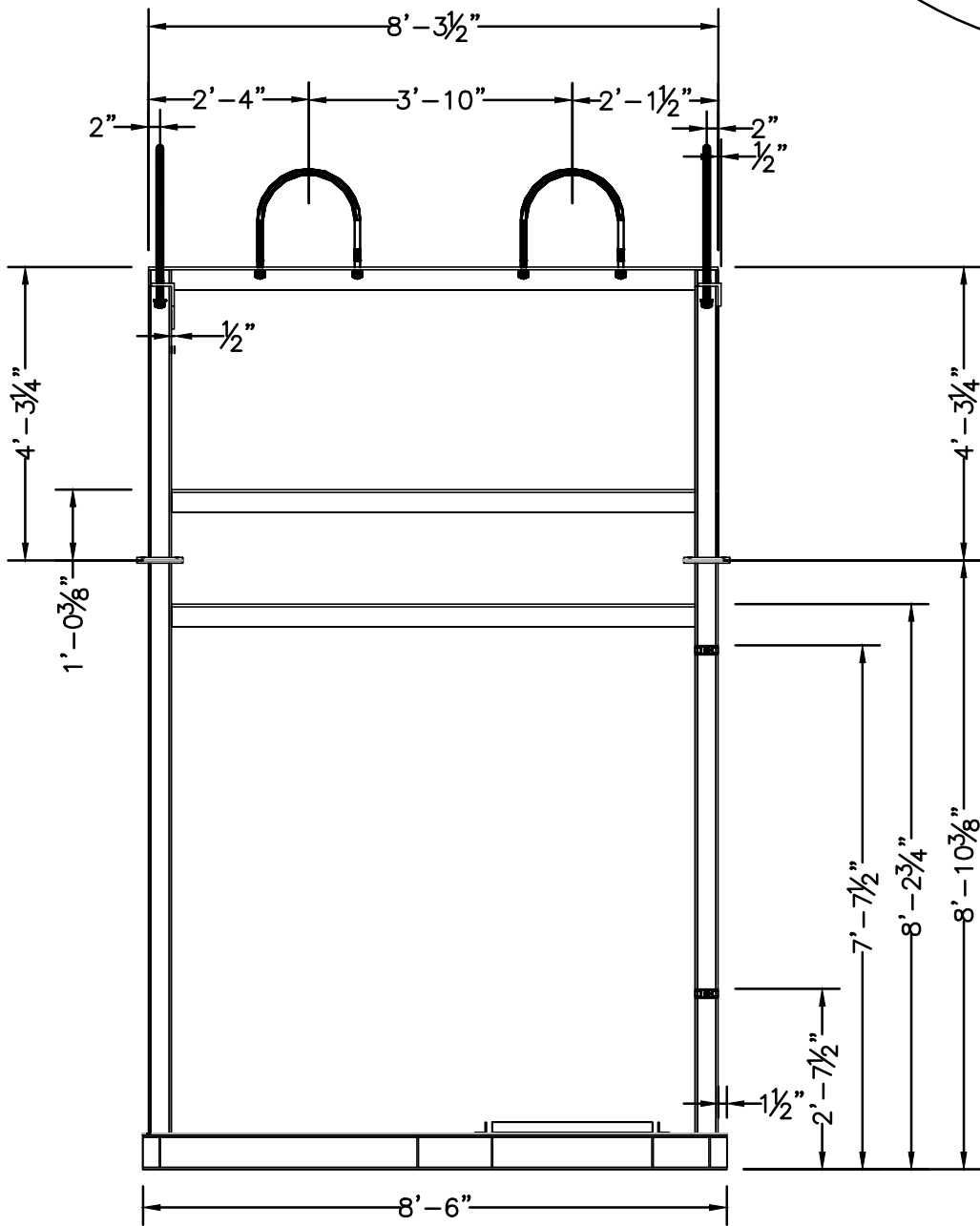
210140-WUSM Research Building NRB CHWR AS-01A/AS-01B.dwg  
03/10/2014 1:54pm  
jmurphy

COATINGS	
PRIMER	<input checked="" type="checkbox"/>
color	GRAY
PAIN	<input type="checkbox"/>
color	N/A
GAL'V	<input type="checkbox"/>



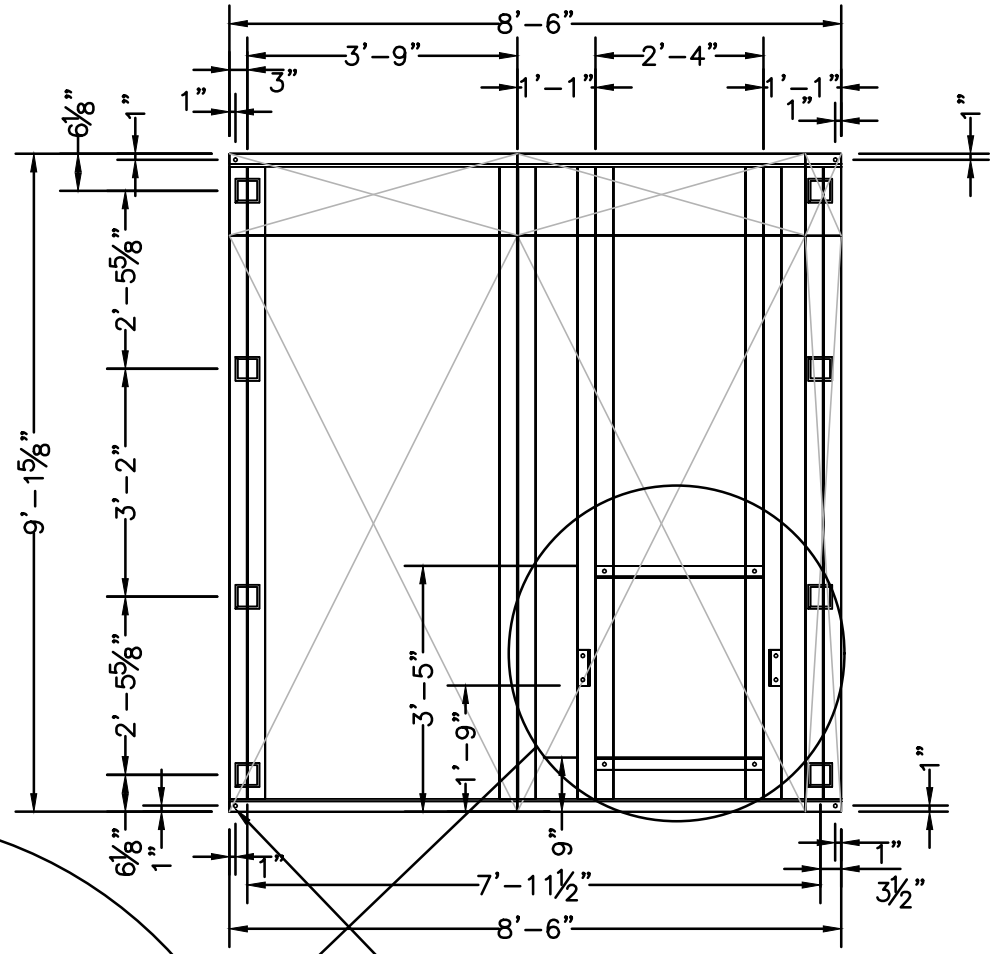
PLAN VIEW  
SCALE: N.T.S.

1



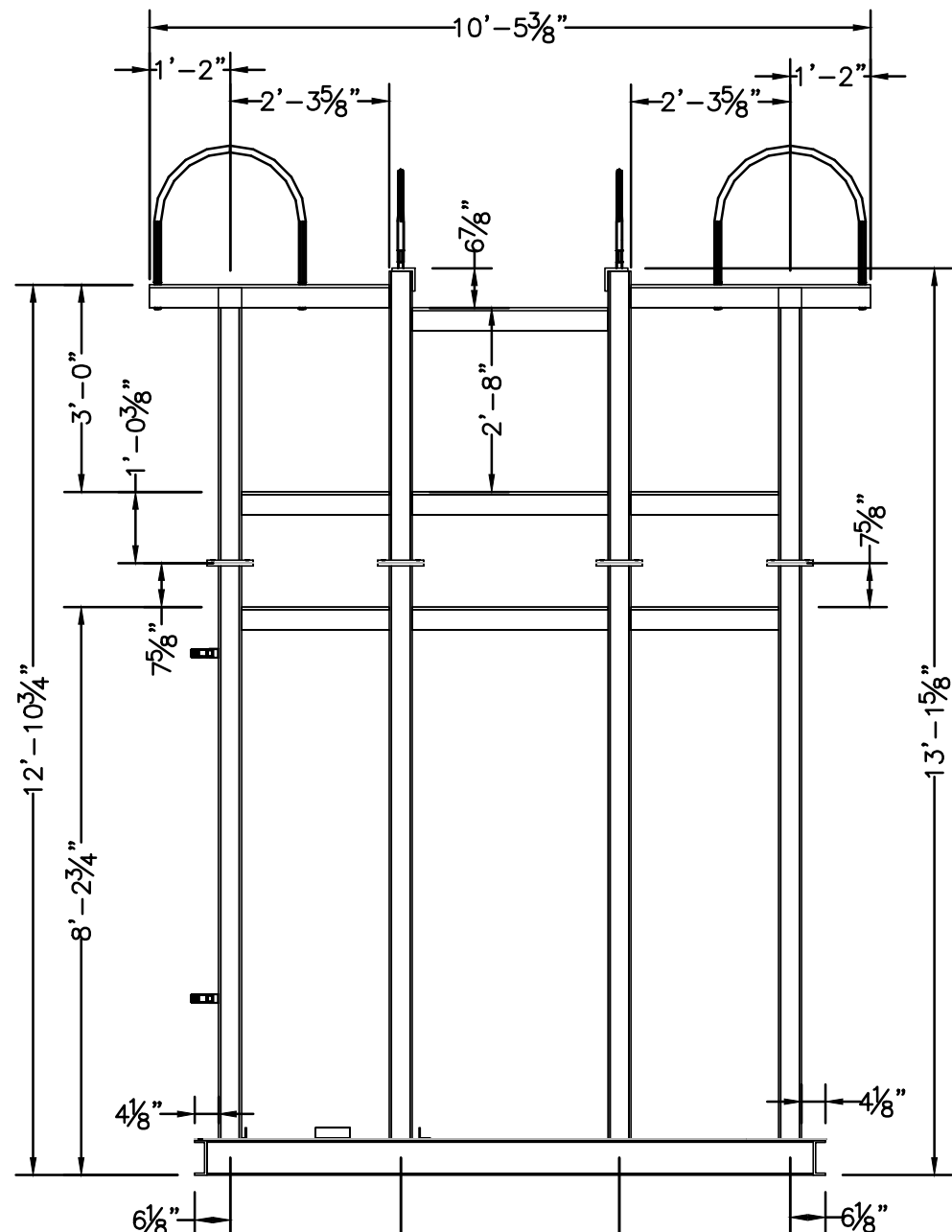
SECTION A-A  
SCALE: N.T.S.

2



BASE VIEW  
SCALE: N.T.S.

1



RIGHT VIEW  
SCALE: N.T.S.

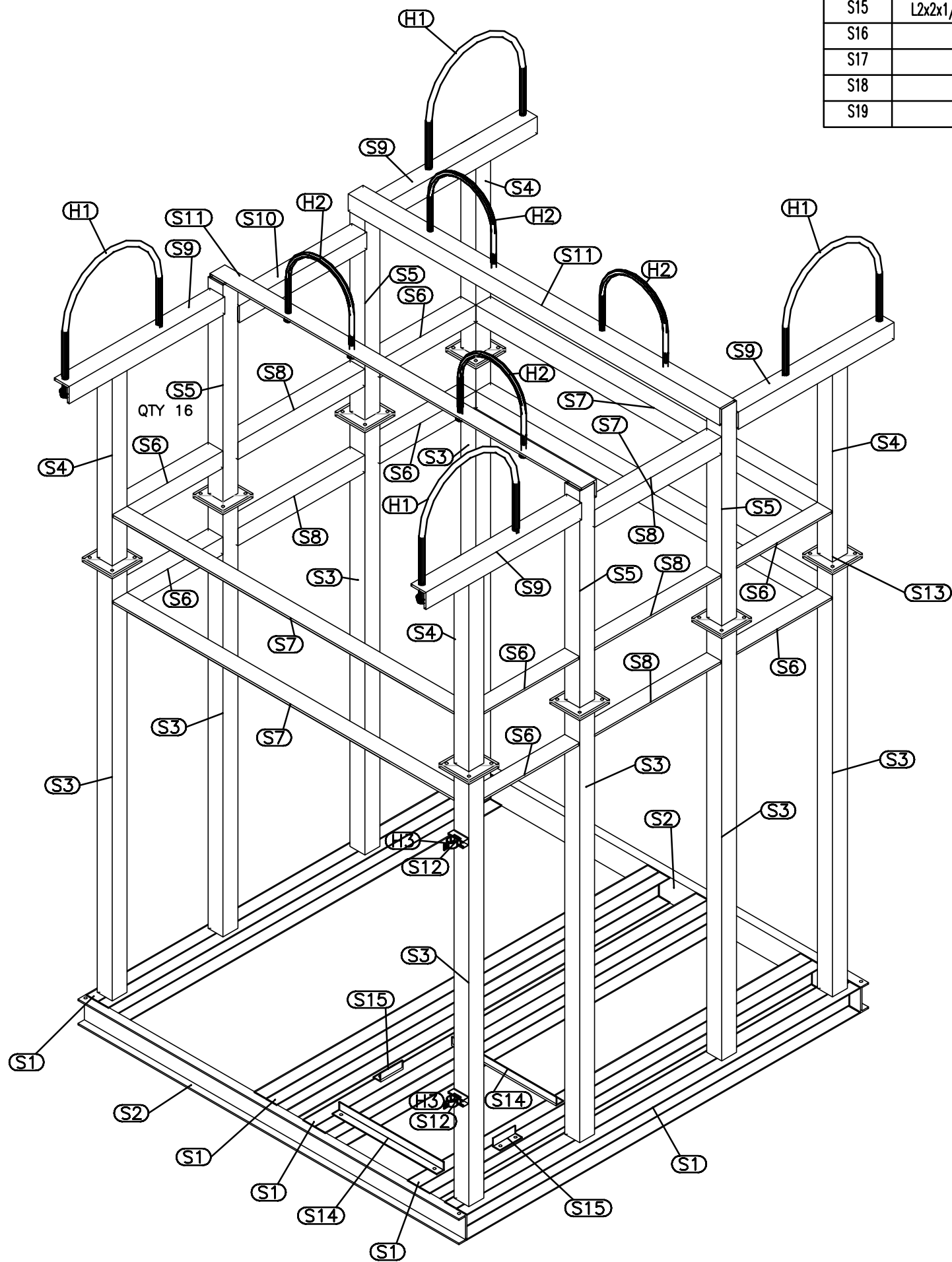
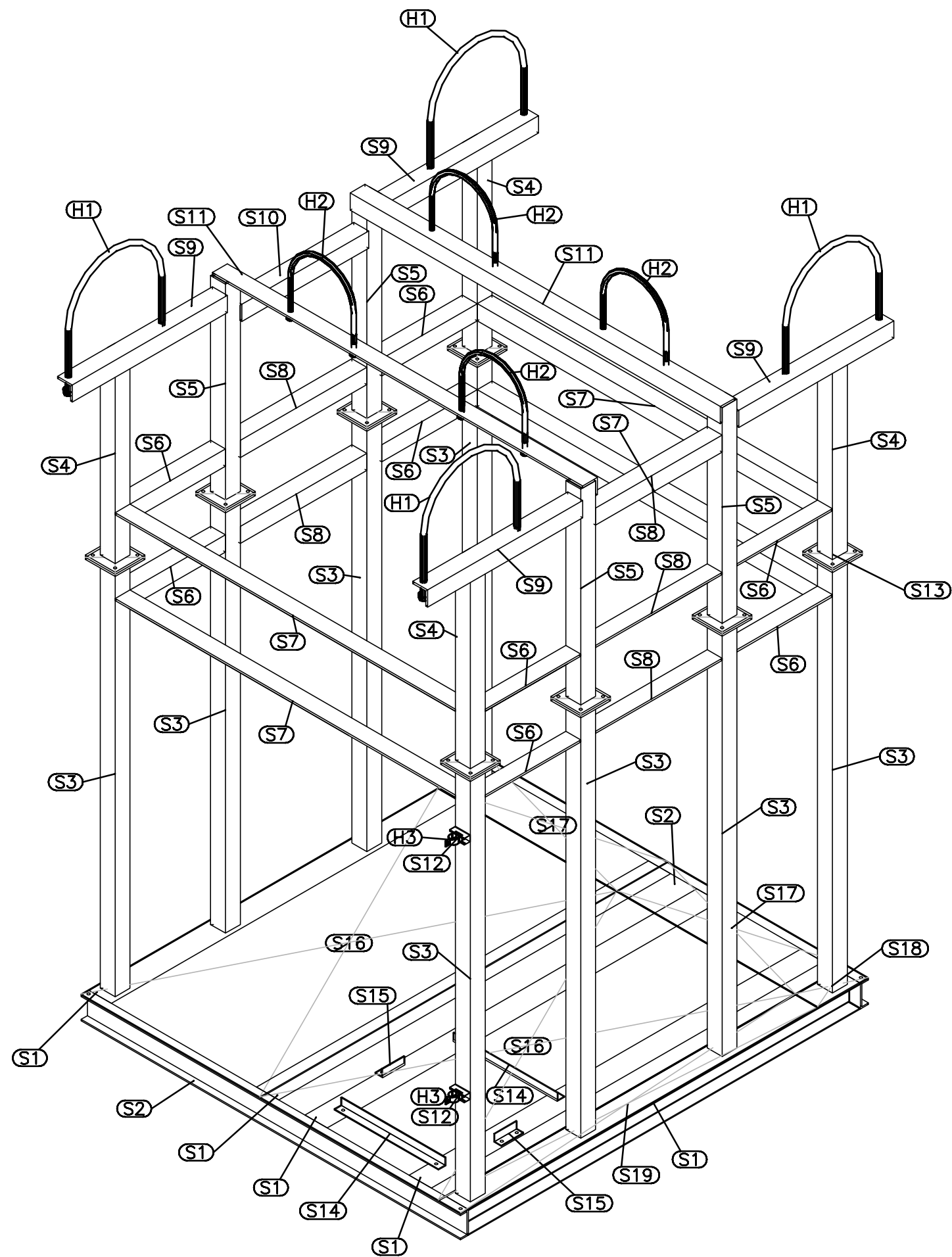
3

5/8"Ø MOUNTING HOLES 4 (TYP.)

1/2" TAP TO HOLD EX TANK

MURPHY									
CONTRACTORS • ENGINEERS • MECHANICAL • INDUSTRIAL									
1233 N. Price Rd. St. Louis, MO 63132-2303 314-997-6600 phone BIMCAD@murphy-stl.com									
WUSM RESEARCH BUILDING		DUE DATE		QC		TACK		CUT	
NRB		WELD INCHES		WELD MAP		SPECIAL NDE		SHIP LOOSE MATERIAL	
CHWR AS-01A/AS-01B		SPOOL WEIGHT		WELD GAP		VT		COMPLETION DATE	
CHWR		SPEC.		ASME		X-RAY		PWT	
CHWR		NA		NA		NA		NA	
CHWR		REV		DATE		DESCRIPTION		MURPHY WPS#	
210140-A007		QTY.		SHT/NO		REV		DRN	
210140-A007		1		3 of 4		0		CHK	
210140-A007		APP		APP		APP		APP	

COATINGS	
PRIMER	<input checked="" type="checkbox"/>
color	GRAY
PAIN	<input type="checkbox"/>
color	N/A
GAL'V	<input type="checkbox"/>



SHOWN WITHOUT PLATE

ISOMETRIC VIEW  
SCALE: N.T.S.

3

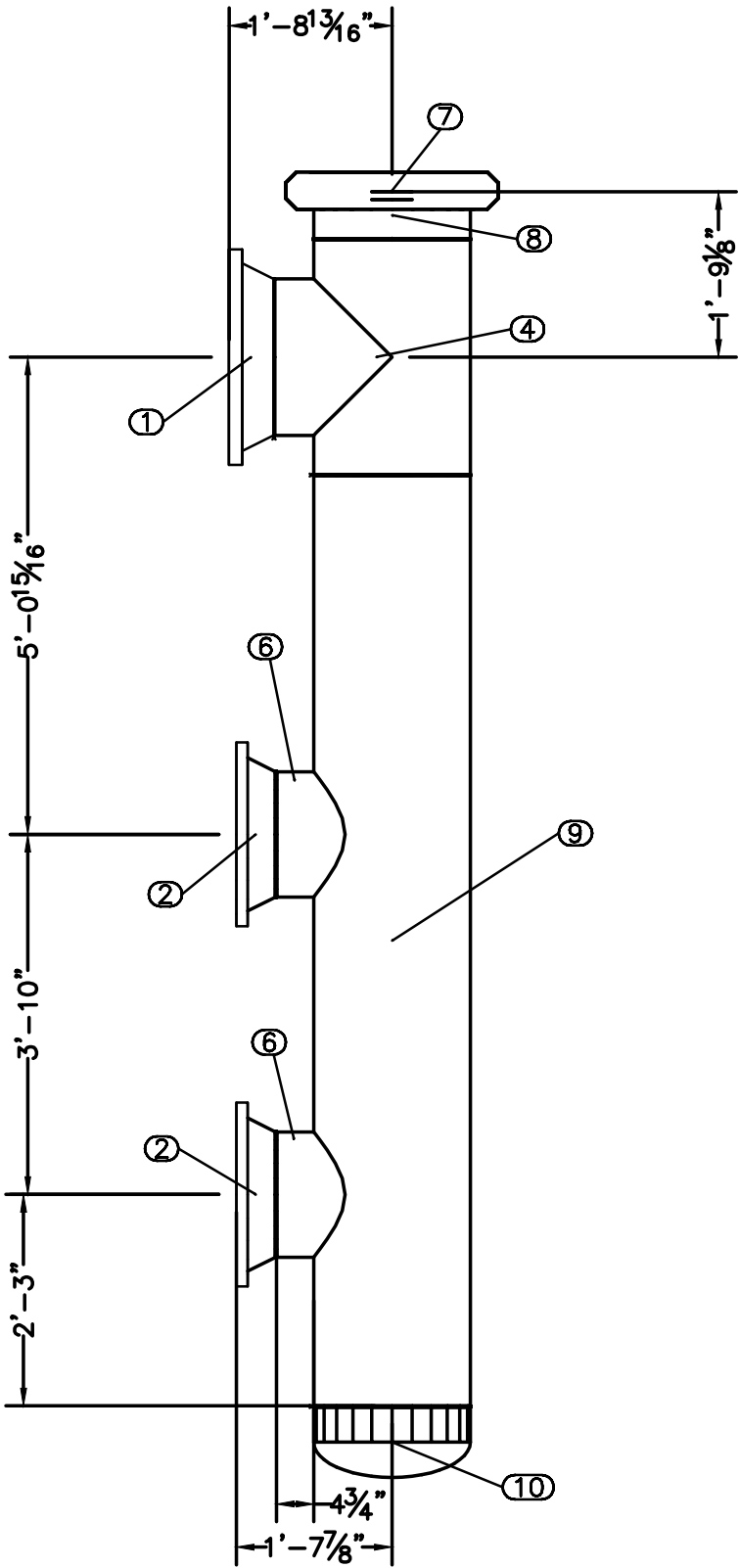
## BOM-STEEL

Item No	Order	Description	Qty	Size	Steel L
H1	Fig137	Fig.137 U-Bolt (4)-Nut Black	4	24	
H2	Fig137	Fig.137 U-Bolt (4)-Nut Black	4	16	
H3	B2011 DCU	B2000 Copper Tubing Clamp DURA COPPER	2	1-1/2	
S1	W6x15	ASTM A36 CS Wide Flange	5	W6x15	105 1/4"
S2	C6x13	ASTM A36 CS C-Channel	2	C6x13	102"
S3	CS SQ Tube	ASTM A36 CS Square Tube	8	SQ4x4x3/8	100"
S4	CS SQ Tube	ASTM A36 CS Square Tube	4	SQ4x4x3/8	47 1/4"
S5	CS SQ Tube	ASTM A36 CS Square Tube	4	SQ4x4x3/8	50 1/4"
S6	L4x4x1/2	ASTM A36 CS Equal Angle	8	L4x4x1/2	25 3/4"
S7	L4x4x1/2	ASTM A36 CS Equal Angle	4	L4x4x1/2	91 1/2"
S8	L4x4x1/2	ASTM A36 CS Equal Angle	5	L4x4x1/2	34"
S9	L4x4x1/2	ASTM A36 CS Equal Angle	4	L4x4x1/2	41 3/4"
S10	L4x4x1/2	ASTM A36 CS Equal Angle	1	L4x4x1/2	34"
S11	L4x4x1/2	ASTM A36 CS Equal Angle	2	L4x4x1/2	99 1/2"
S12	B22 GRN	1-5/8 GRN 12GA 2in Slotted Unistrut	2	1-5/8x1-5/8	4"
S13		ASTM A36 CS Plate 1/2" Thick	16	8x8x1/2	
S14	L2x2x1/4	ASTM A36 CS Equal Angle	2	L2x2x1/4	28"
S15	L2x2x1/4	ASTM A36 CS Equal Angle	2	L2x2x1/4	6"
S16		ASTM A36 CS Plate 1/4" Thick	2	48x96x1/4	
S17		ASTM A36 CS Plate 1/4" Thick	2	48x13 5/8x1/4	
S18		ASTM A36 CS Plate 1/4" Thick	1	6x13 5/8x1/4	
S19		ASTM A36 CS Plate 1/4" Thick	1	6x48x1/4	

**MURPHY**

1233 N. Price Rd.  
St. Louis, MO 63132-2303  
314-997-6600 phone  
BIMCAD@murphy-stl.com

DRN JMM	3/6/21	WUSM RESEARCH BUILDING									
CHK		NRB									
APP		CHWR AS-01A/AS-01B									
JOB NO.	210140	SERVICE NAME									
REF.DWG.		CHWR									
DRAWING NO./TRACKING NO.		QTY.	SHT/NO	REV							
210140-A007		1	4 of 4	0							



Murphy-PFFS-SPOOL-BOM

Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
4	1	Std Wt SA234 WPB CS BW TEE					20
6	2	Sch 40 SA-53B CS ERW Pipe Saddle			4 3/4"	4.750	20x16
2	2	150lb RF Sch 40 Bore SA105 CS WN Flg					16
1	1	150lb RF Sch 40 Bore SA105 CS WN Flg					20
7	1	Style W07 Rigid Coupling					20
10	1	Std Wt SA234 WPB CS BW Cap					20
8	1	Std Wt SA-53B CS ERW Pipe PE	Grooved End	BEV	6"	6.000	20
9	1	Std Wt SA-53B CS ERW Pipe PE	BEV	BEV	9'-10 13/16"	118.817	20

**MURPHY**  
SINCE 1907

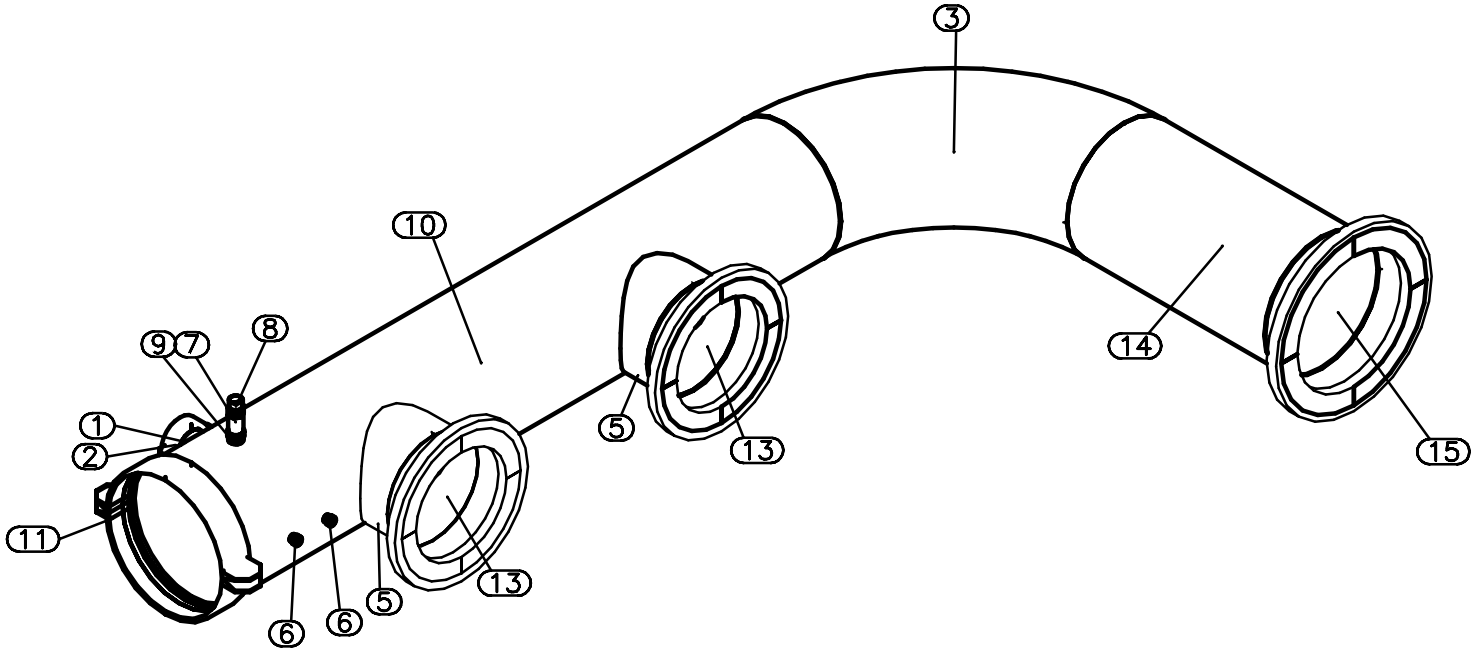
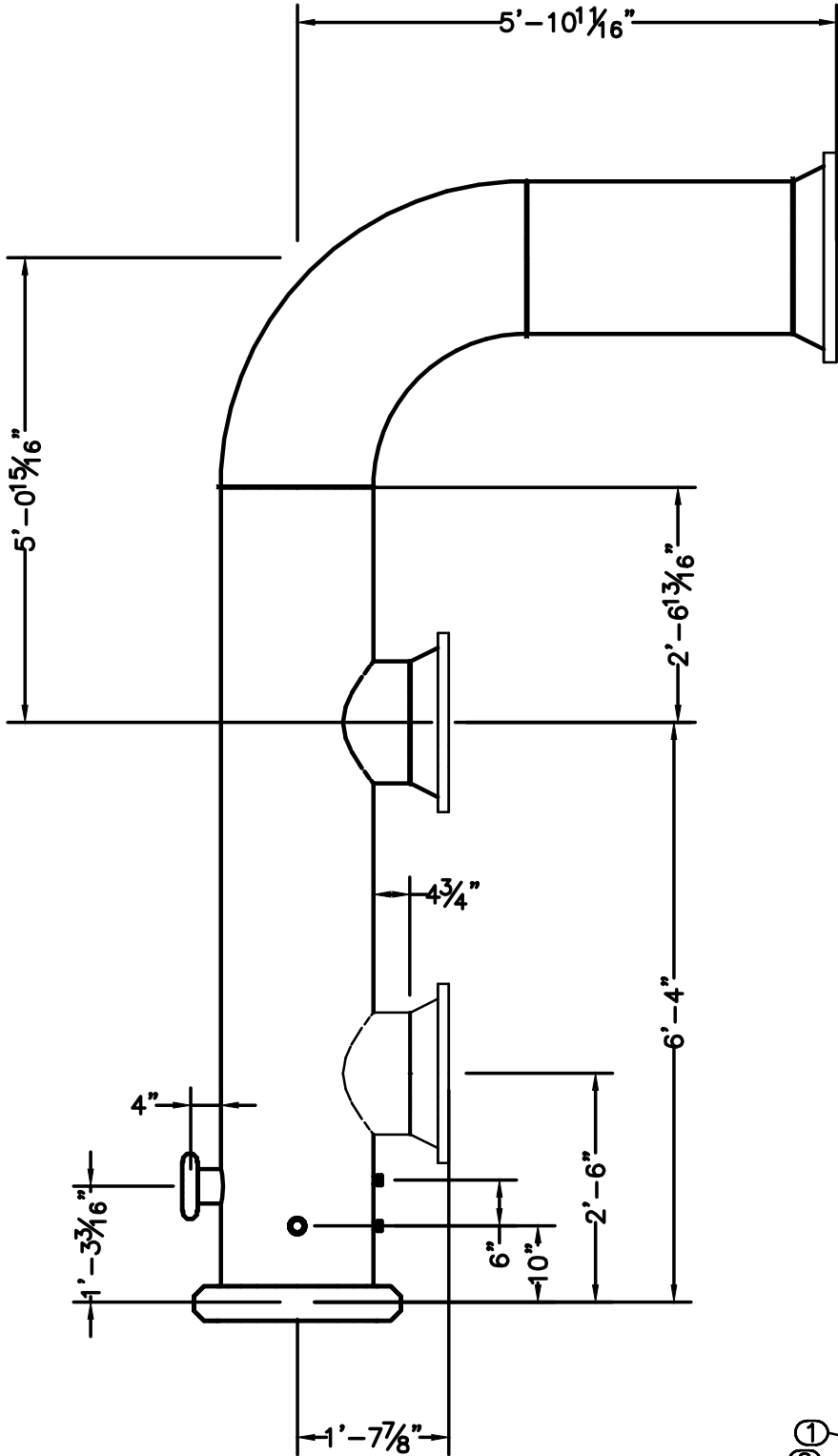
CONSTRUCTORS • ENGINEERS    MECHANICAL • INDUSTRIAL

1233 N. Price Rd.  
St. Louis, MO 63132-2303  
314-997-6600 phone  
BIMCAD@murphy-stl.com

<input type="checkbox"/>	FLANGE WEIGHT/ORIENTATION
<input type="checkbox"/>	FITTING ORIENTATION
<input type="checkbox"/>	BOLTS/CPLG'S/TH'D TIGHT
<input type="checkbox"/>	SPOOL IDENTIFICATION

QA/QC ACCEPT		X-RAY		ASME	HYDRO TEST	PWHT		COMMENTS	
		NA	NA	NA	NA	NA	NA	MURPHY WPS#	
0									
REV	DATE	DESCRIPTION		DRN	CHK	APP			

DRN	JMM	3/10/2021	WUSM RESEARCH BUILDING				
CHK			NRB				
APP							
JOB NO.	210140	SERVICE NAME					
REF.DWG.		A007 AS SKID					
DRAWING NO./TRACKING NO.	210140-A007-01	QTY.	1	SHT/NO	1 OF 1	REV	0



Murphy-PFFS-SPOOL-BOM

Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
2	1	Sch 40 SA-53B CS ERW Pipe Saddle			4°	4.000	20x4
5	2	Sch 40 SA-53B CS ERW Pipe Saddle			4 3/4°	4.750	20x16
7	1	No.647 TT Dielectric Transition Fitting	MPT	MPT	4°	4.000	1-1/2
13	2	150lb RF Sch 40 Bore SA105 CS WN Flg					16
15	1	150lb RF Sch 40 Bore SA105 CS WN Flg					20
1	1	Style 107 EHP Pnt QuickVic Rigid Coupling					4
11	1	Style W77 Rigid Coupling					20
8	1	Wrot 603 Adapter CxF					1-1/2
3	1	Std Wt SA234 WPB CS BW LR 90 Deg Ell					20
9	1	3000# FS Thread-O-Let			1 3/8"	1.375	1-1/2x20
6	2	3000# FS Thread-O-Let			1 1/16"	1.063	3/4x20
10	1	Std Wt SA-53B CS ERW Pipe PE	Grooved End	BEV	8'-10 13/16"	106.817	20
14	1	Std Wt SA-53B CS ERW Pipe PE	BEV	BEV	2'-10 3/4"	34.764	20

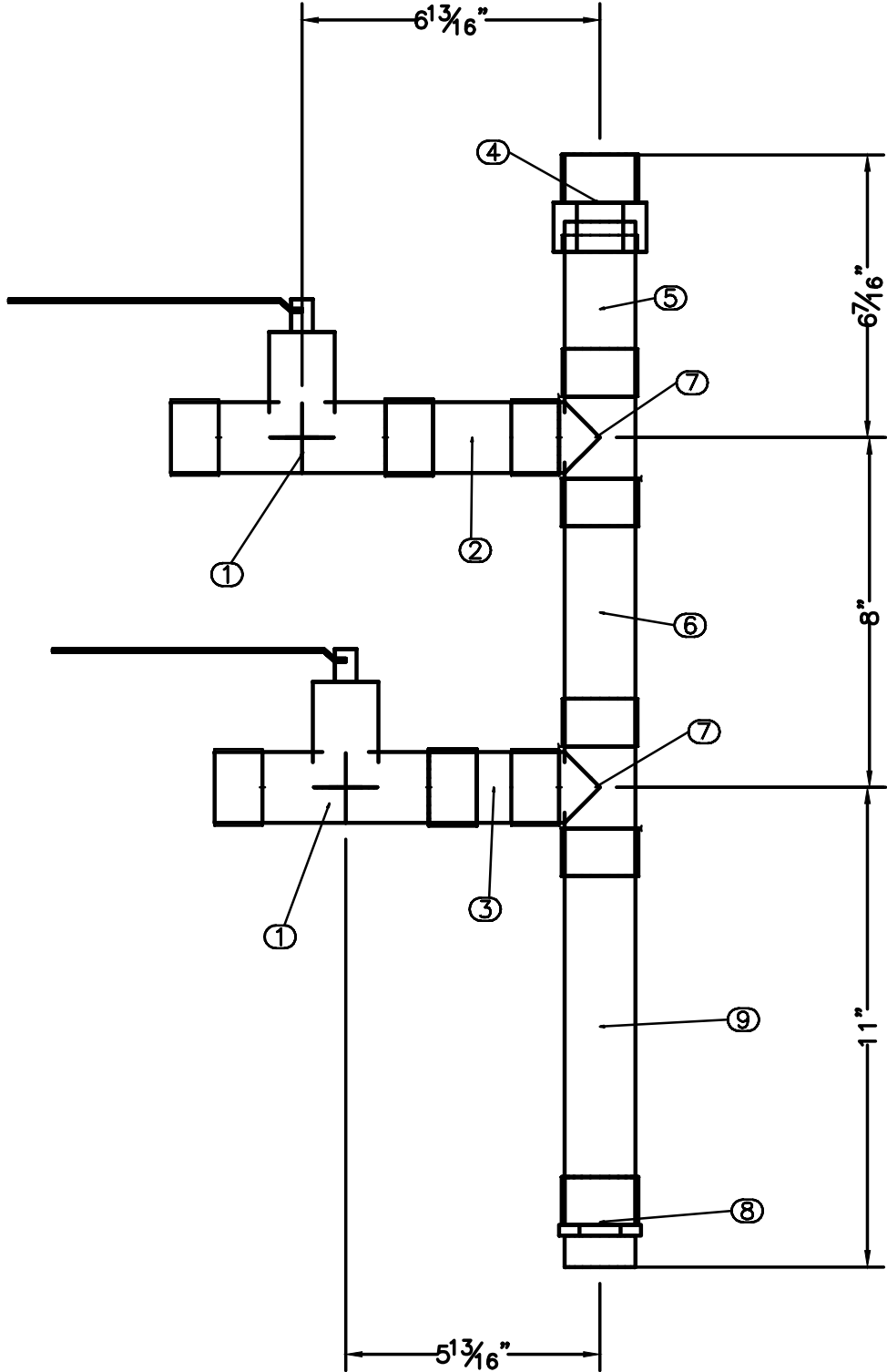
**MURPHY**  
SINCE 1907

CONSTRUCTORS • ENGINEERS  
MECHANICAL • INDUSTRIAL

1233 N. Price Rd.  
St. Louis, MO 63132-2303  
314-997-6600 phone  
BIMCAD@murphy-stl.com

<input type="checkbox"/> FLANGE WEIGHT/ORIENTATION		QA/QC ACCEPT		WUSM RESEARCH BUILDING	
<input type="checkbox"/> FITTING ORIENTATION				NRB	
<input type="checkbox"/> BOLTS/CPLG'S/TH'D TIGHT				SERVICE NAME	
<input type="checkbox"/> SPOOL IDENTIFICATION				A007 AS SKID	
SPEC.	ASME	X-RAY	HYDRO TEST	PMHT	COMMENTS
NA	NA	NA	NA	NA	MURPHY WPS#
0					
REV	DATE	DESCRIPTION		DRN	CHK
					APP

DRN	JMM	3/10/2021			
CHK					
APP					
JOB NO.	210140				
REF.DWG.					
DRAWING NO./TRACKING NO.	210140-A007-02	QTY.	1	SHT/NO	1 of 1
		REV	0		



Murphy-PFFS-SPOOL-BOM

Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
7	2	Wrot 611 CxCxC Tee					1-1/2
1	2	S-585-70 Ball Valve					1-1/2
8	1	Wrot 604 Adapter CxM					1-1/2
4	1	Wrot 603 Adapter CxF					1-1/2
2	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	4"	3.973	1-1/2
3	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	3"	2.974	1-1/2
5	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	4"	4.000	1-1/2
6	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	6 1/8"	6.123	1-1/2
9	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	9 1/16"	9.062	1-1/2

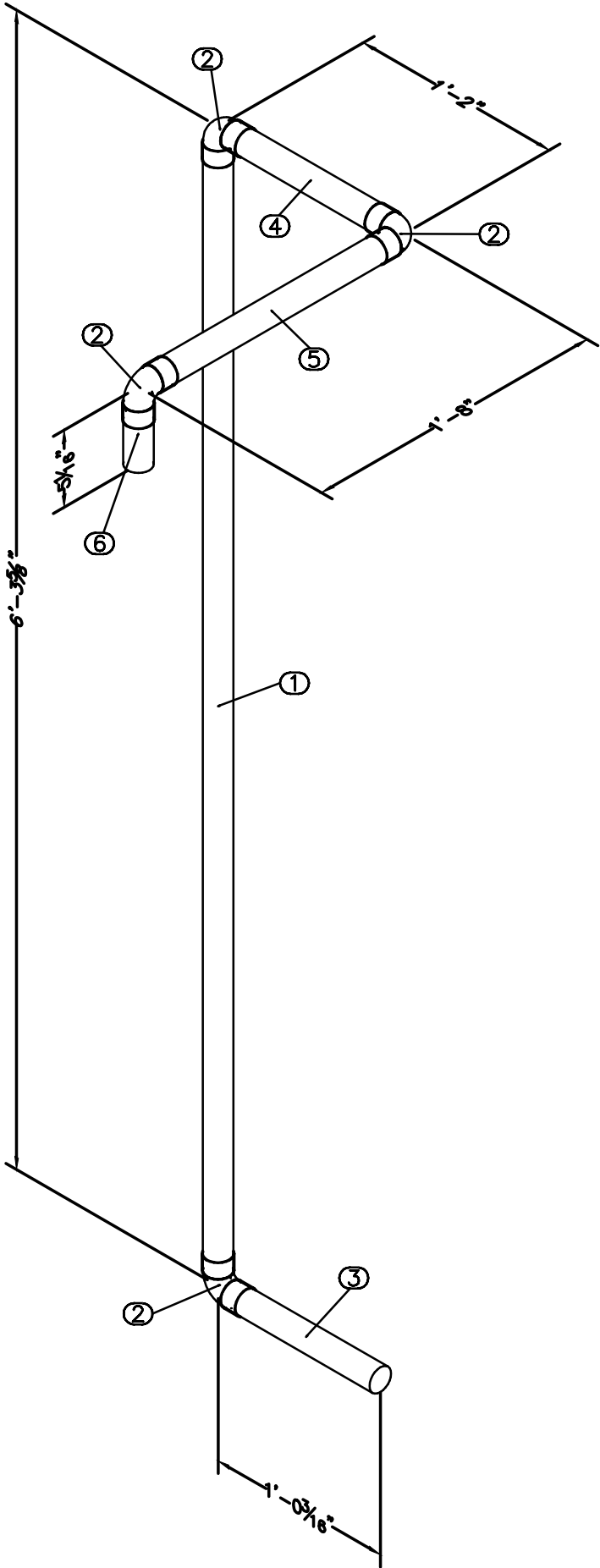
**MURPHY**  
SINCE 1907

CONSTRUCTORS • ENGINEERS    MECHANICAL • INDUSTRIAL

1233 N. Price Rd.  
St. Louis, MO 63132-2303  
314-997-6600 phone  
BIMCAD@murphy-stl.com

<input type="checkbox"/> FLANGE WEIGHT/ORIENTATION <input type="checkbox"/> FITTING ORIENTATION <input type="checkbox"/> BOLTS/CPLG'S/TH'D TIGHT <input type="checkbox"/> SPOOL IDENTIFICATION	QA/QC ACCEPT			
	SPEC.	ASME	X-RAY	HYDRO TEST
	NA	NA	NA	NA
	0	REV	DATE	
COMMENTS				
MURPHY WPS#				
DESCRIPTION				
DRN	CHK	APP		

DRN JMM	3/10/2021	WUSM RESEARCH BUILDING			
CHK		NRB			
APP					
JOB NO.	210140	SERVICE NAME			
REF.DWG.		A007 AS SKID			
DRAWING NO./TRACKING NO.	210140-A007-03	QTY.	SHT/NO	REV	
		1	1 of 1	0	



# Murphy-PFFS-SPOOL-BOM

Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
2	4	Wrot 607 90 Deg Ell CxC					1-1/2
1	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	6'-1 9/16"	73.575	1-1/2
3	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	11 3/16"	11.184	1-1/2
4	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	11 15/16"	11.940	1-1/2
5	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	1'-5 15/16"	17.936	1-1/2
6	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	4"	4.000	1-1/2

**MURPHY**  
SINCE 1907

CONSTRUCTORS • ENGINEERS    MECHANICAL • INDUSTRIAL

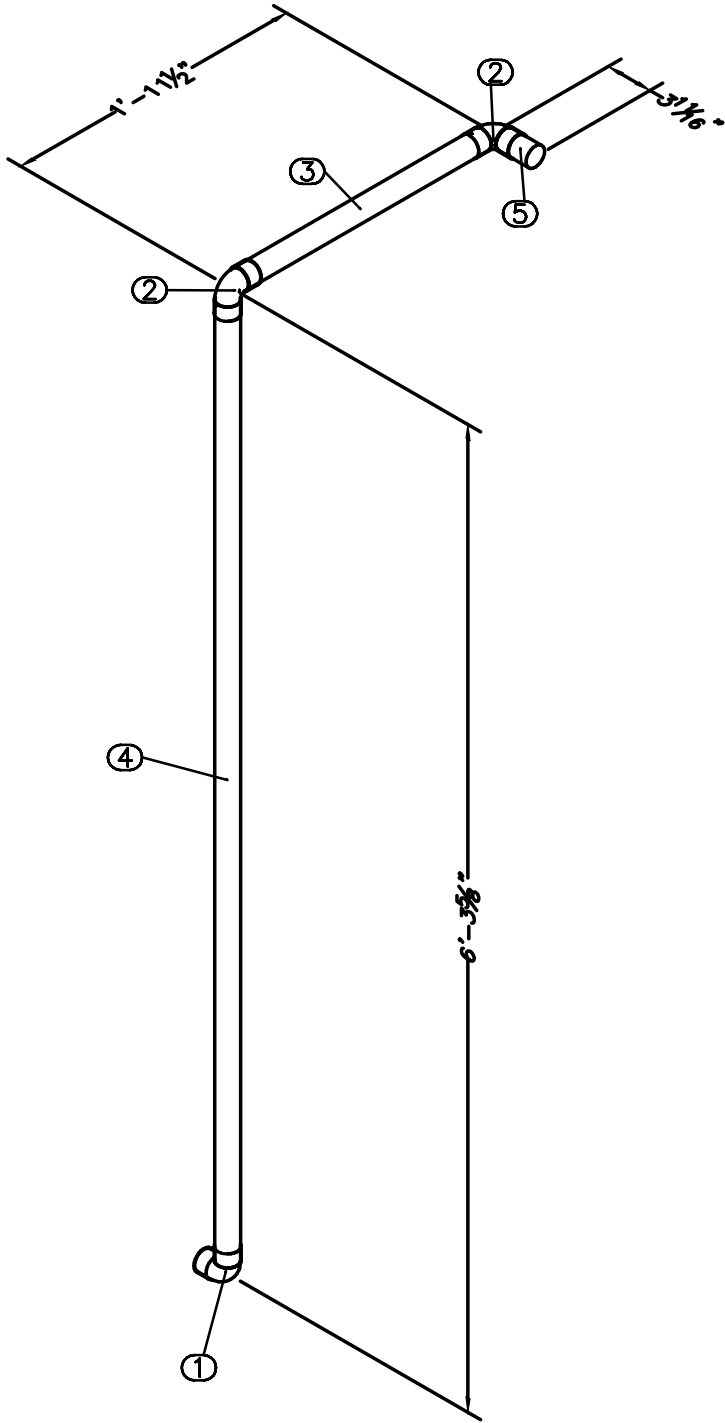
1233 N. Price Rd.  
St. Louis, MO 63132-2303  
314-997-6600 phone  
BIMCAD@murphy-stl.com

<input type="checkbox"/> FLANGE WEIGHT/ORIENTATION	
<input type="checkbox"/> FITTING ORIENTATION	
<input type="checkbox"/> BOLTS/CPLG'S/TH'D TIGHT	
<input type="checkbox"/> SPOOL IDENTIFICATION	

QA/QC ACCEPT		SPEC.		ASME	X-RAY	HYDRO TEST	PWHT	COMMENTS	
		NA	NA	NA	NA	NA	NA	MURPHY WPS#	
0	REV	DATE	DESCRIPTION		DRN	CHK	APP		

DRN JMM	3/10/2021	WUSM RESEARCH BUILDING					
CHK		NRB					
APP							
JOB NO.	210140	SERVICE NAME					
REF.DWG.		A007 AS SKID					
DRAWING NO./TRACKING NO.	210140-A007-04	QTY.	1	SHT/NO	1 of 1	REV	0





Murphy—PFFS—SPOOL—BOM							
Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
1	1	Wrot 607 90 Deg Ell CxC					1-1/2
2	2	Wrot 607 90 Deg Ell CxC					1-1/2
3	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	1'-9 7/16"	21.436	1-1/2
4	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	6'-1 9/16"	73.554	1-1/2
5	1	Type K Hard Copper Pipe	Copper Ftg	Copper Ftg	2 5/8"	2.656	1-1/2

**MURPHY**  
SINCE 1907

CONSTRUCTORS • ENGINEERS    MECHANICAL • INDUSTRIAL

1233 N. Price Rd.  
St. Louis, MO 63132-2303  
314-997-6600 phone  
BIMCAD@murphy-stl.com

QA/QC ACCEPT		FLANGE WEIGHT/ORIENTATION		<input type="checkbox"/>		
		FITTING ORIENTATION		<input type="checkbox"/>		
		BOLTS/CPLG'S/TH'D TIGHT		<input type="checkbox"/>		
		SPOOL IDENTIFICATION		<input type="checkbox"/>		
SPEC.	ASME	X-RAY	HYDRO TEST	PWHT	COMMENTS	
NA	NA	NA	NA	NA	MURPHY WPS#	
0						
REV	DATE	DESCRIPTION		DRN	CHK	APP

DRN JMM	3/10/2021	WUSM RESEARCH BUILDING				
CHK		NRB				
APP						
JOB NO.	210140	SERVICE NAME				
REF.DWG.		A007 AS SKID				
DRAWING NO./TRACKING NO.	210140-A007-05	QTY.	1	SHT/NO	1 of 1	REV
						0