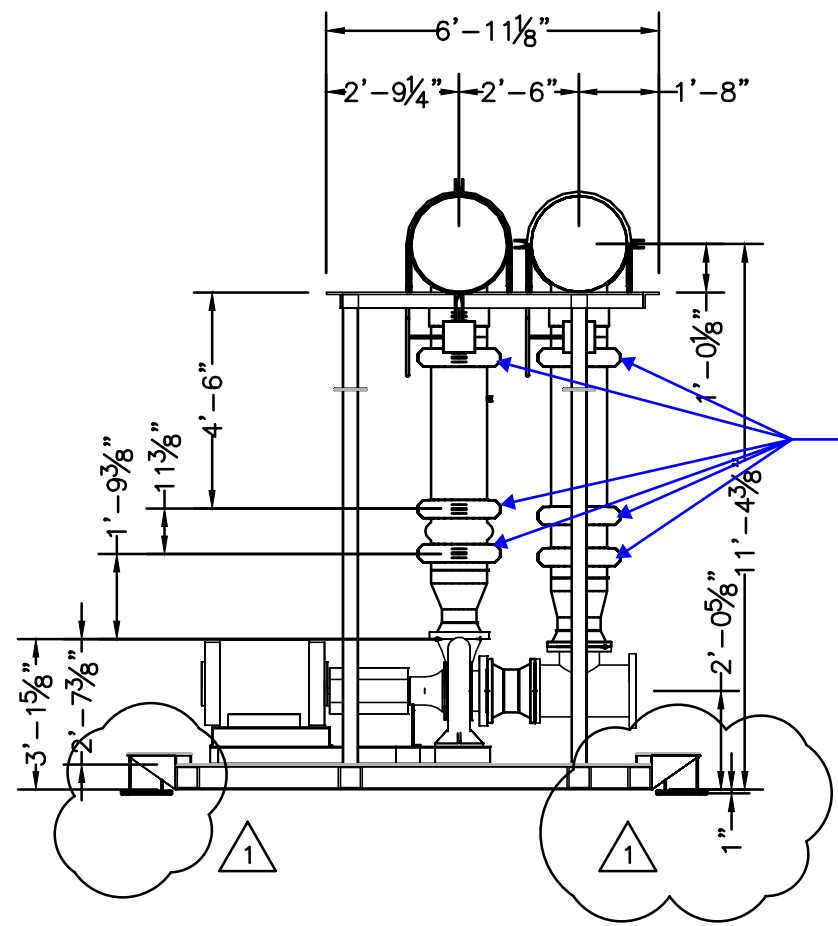


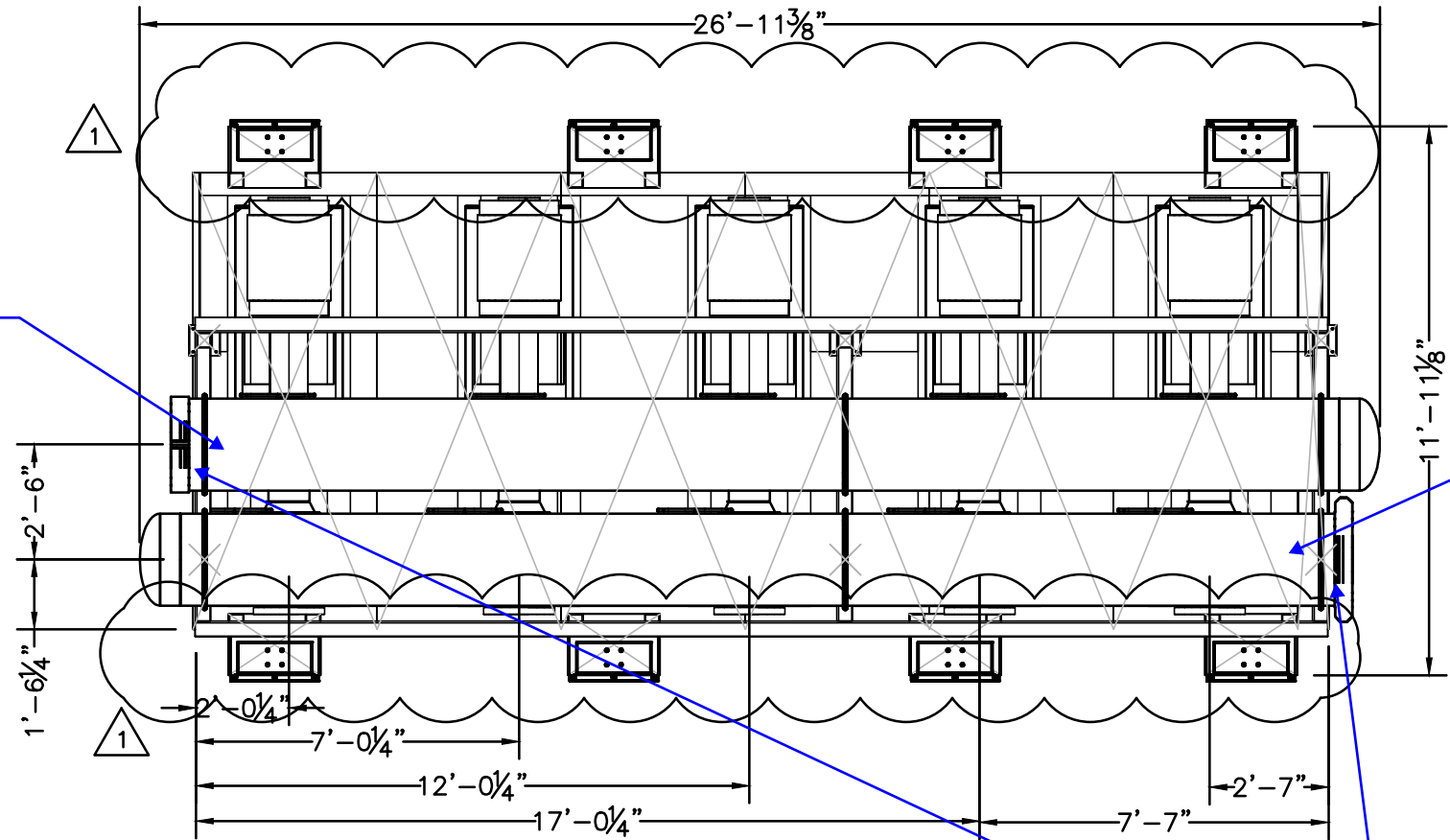
Copyright © 2015 Murphy Company Mechanical Contractors & Engineers. For use only by authorized bidders and contractors in connection with this project. Drawings are property of and all rights reserved by Murphy Company Mechanical Contractors and Engineers.

43910140 WUSM Research Building NRB1618aapipdwg210140-A003.dwg  
03/18/2021 - 12:48pm  
jmurphy

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



Add 2 additional  
1" threadolets on  
side of pipe.

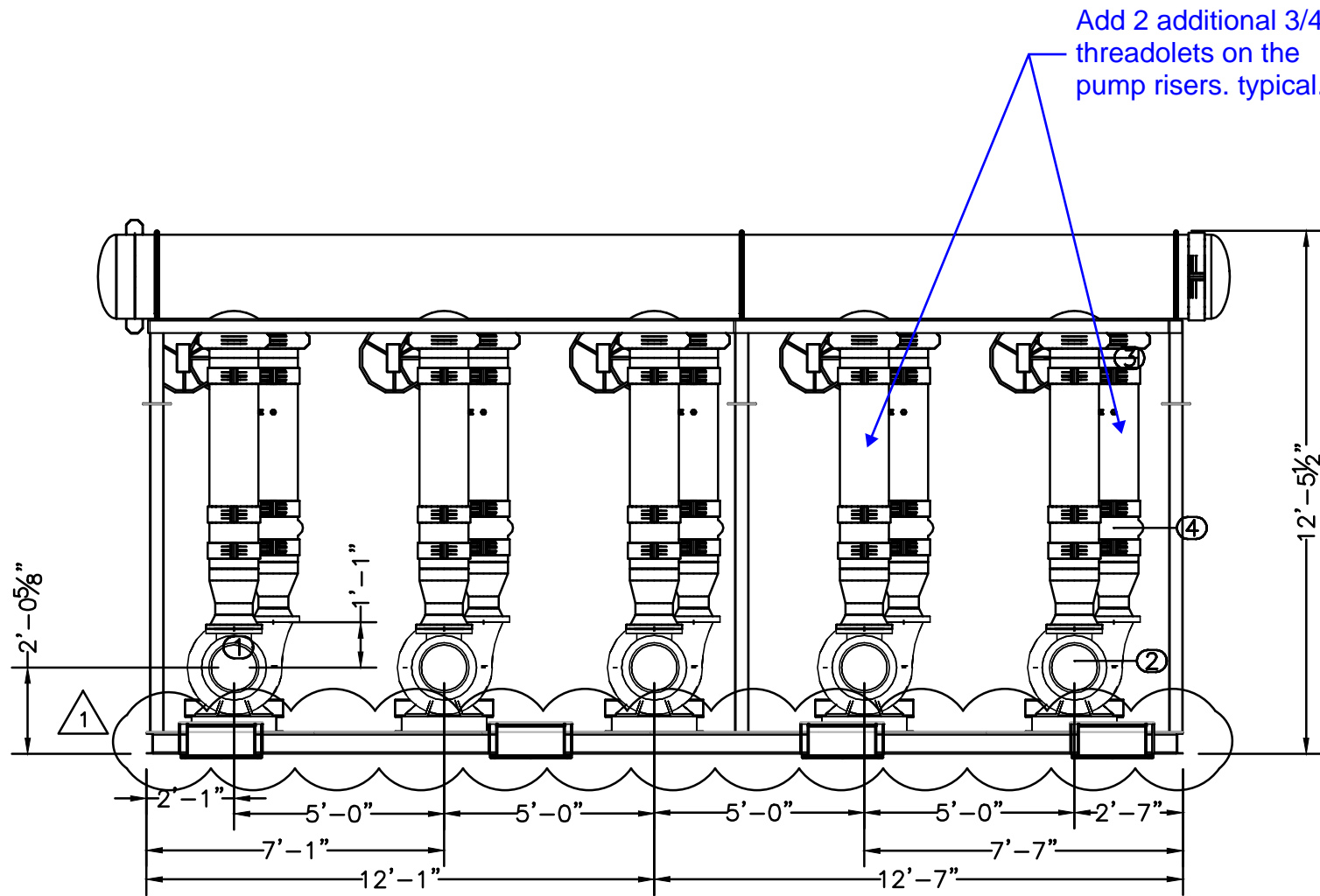


PLAN VIEW  
SCALE: N.T.S.

1

Add (2) additional  
3/4" threadolets on  
side of pipe

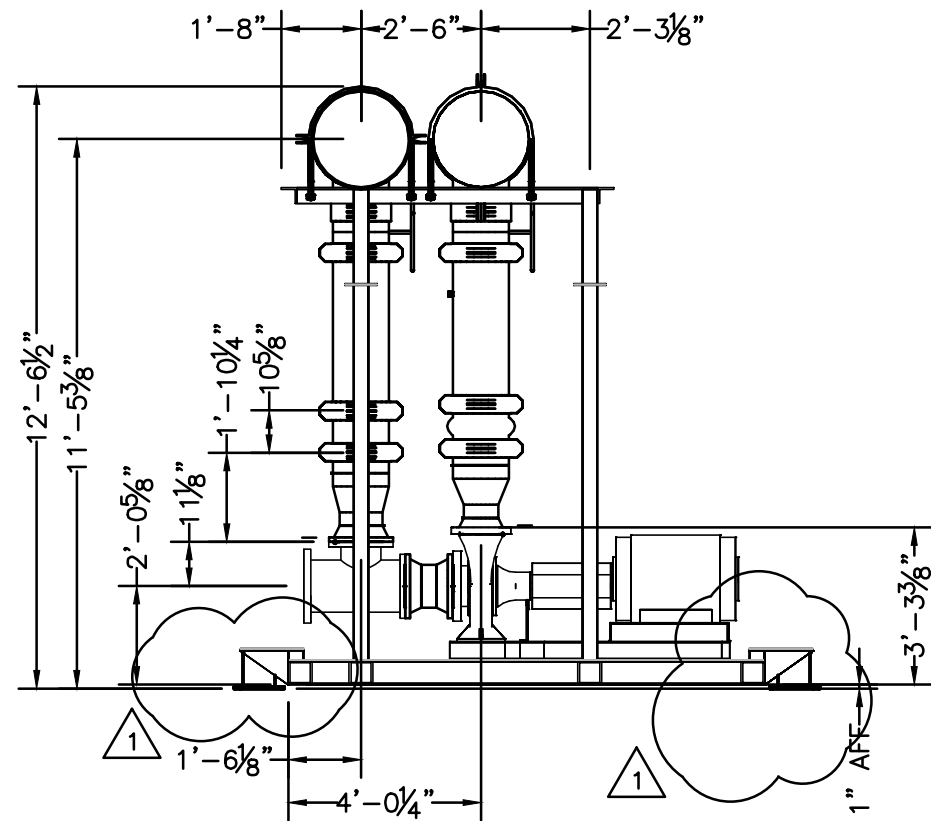
Add 3 Flexible  
Coupling to isolate  
skid



FRONT VIEW  
SCALE: N.T.S.

2

Add 2 additional 3/4"  
threadolets on the  
pump risers. typical.



<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	11/20/2020	WUSM RESEARCH BUILDING
CHK			NRB
APP			COOLING TOWER PUMP SKID
JOB NO.	210140	SERVICE NAME	TWS
REF. DWG.		QTY.	1
DRAWING NO./TRACKING NO.	210140-A003	SHT/NO	1 of 4
		REV	1
		DESCRIPTION	CHANGED SPRING ISOLATOR STEEL
		DATE	3/18/21
		NA	NA
		ASME	NA
		X-RAY	NA
		HYDRO TEST	NA
		VT	NA
		SPECIAL NDE	NA
		WELD MAP	NA
		QC	NA
		TACK	NA
		CUT	NA
		SHIP LOOSE MATERIAL	NA
		COMPLETION DATE	NA
		PWHT	NA
		COMMENTS	NA
		MURPHY WPS#	NA
		JMM	NA
		DRN	NA
		CHK	NA
		APP	NA

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.

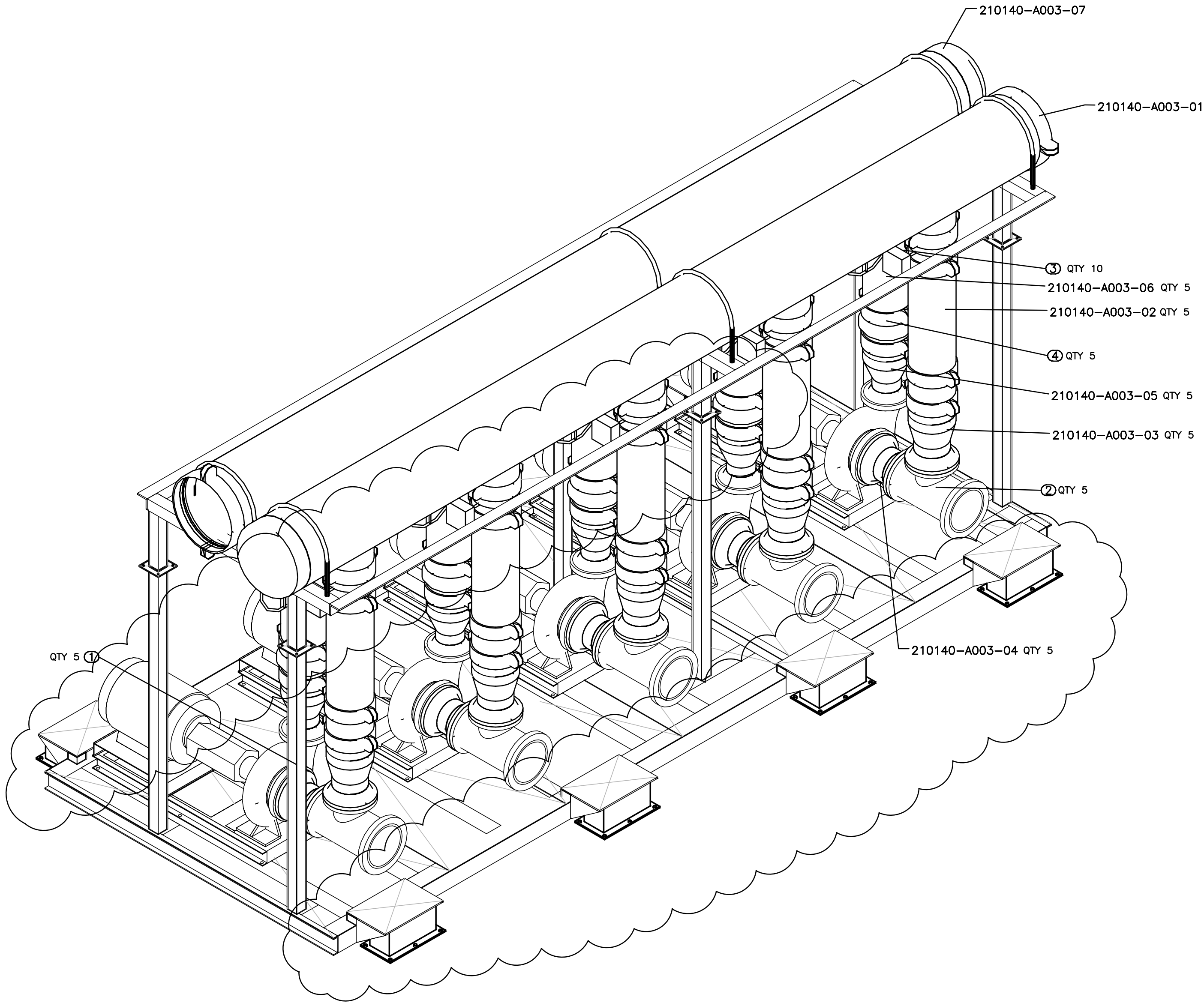
210140-WUSM Research Building NRB16-Appdwg210140-A003.dwg

03/18/2021 - 12:48pm

jmcadney

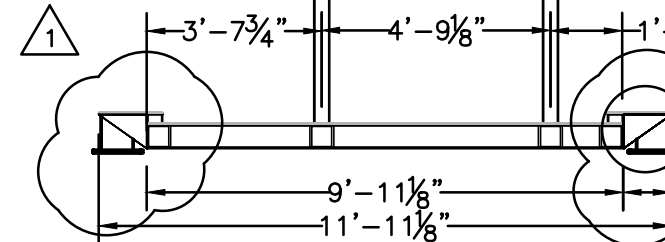
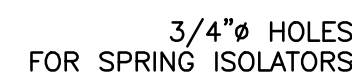
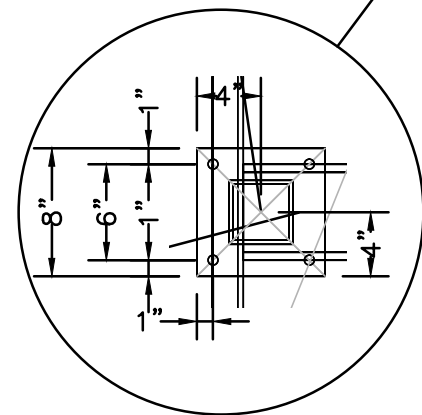
COATINGS	
PRIMER	<input checked="" type="checkbox"/>
color	GRAY
PAIN	<input type="checkbox"/>
color	N/A
GAL'V	<input type="checkbox"/>

Murphy-PFFS-SPOOL-BOM							
Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
2	5	JJ-3 NPT/FLG TYPE X SUCTION DIFFUSER					10 x 10
4	5	Check Valve W-715					14
5	5	150# CS Flange Bolt Set					8 (3/4x3-3/4)
6	15	150# CS Flange Bolt Set					10 (7/8x4)
7	5	150# RF Garlock Gasket 1/16 Thick					8
8	15	150# RF Garlock Gasket 1/16 Thick					10
3	10	Vic-300BFV GearOp ElastomerSeat					14
1	5	BG_Base_Mounted_Centrifugal_Pump_Series_e-1510_8 GB_444TS-XL Standard					10x8



CONTRACTORS		ENGINEERS		MECHANICAL		INDUSTRIAL	
1233 N. Price Rd. St. Louis, MO 63132-2303 314-997-6600 phone BIMCAD@murphy-stl.com							
DRN	JMM	11/20/2020	WUSM RESEARCH BUILDING	QC	WELD MAP	TACK	CUT
CHK			NRB	WELD INCHES	SPECIAL NDE	SHIP LOOSE MATERIAL	
APP			COOLING TOWER PUMP SKID	SPOOL WEIGHT	VT	COMPLETION DATE	
JOB NO.	210140		SERVICE NAME	WELD GAP	ASME	X-RAY	NA
REF.DWG.			TWS	SPEC.	NA	HYDRO TEST	NA
DRAWING NO./TRACKING NO.	210140-A003	QTY.	1	3/18/21	CHANGED	SPRING ISOLATOR STEEL	JMM
		SHT/NO	2 of 4	REV	DATE	DESCRIPTION	DRN
			0				CHK
							APP

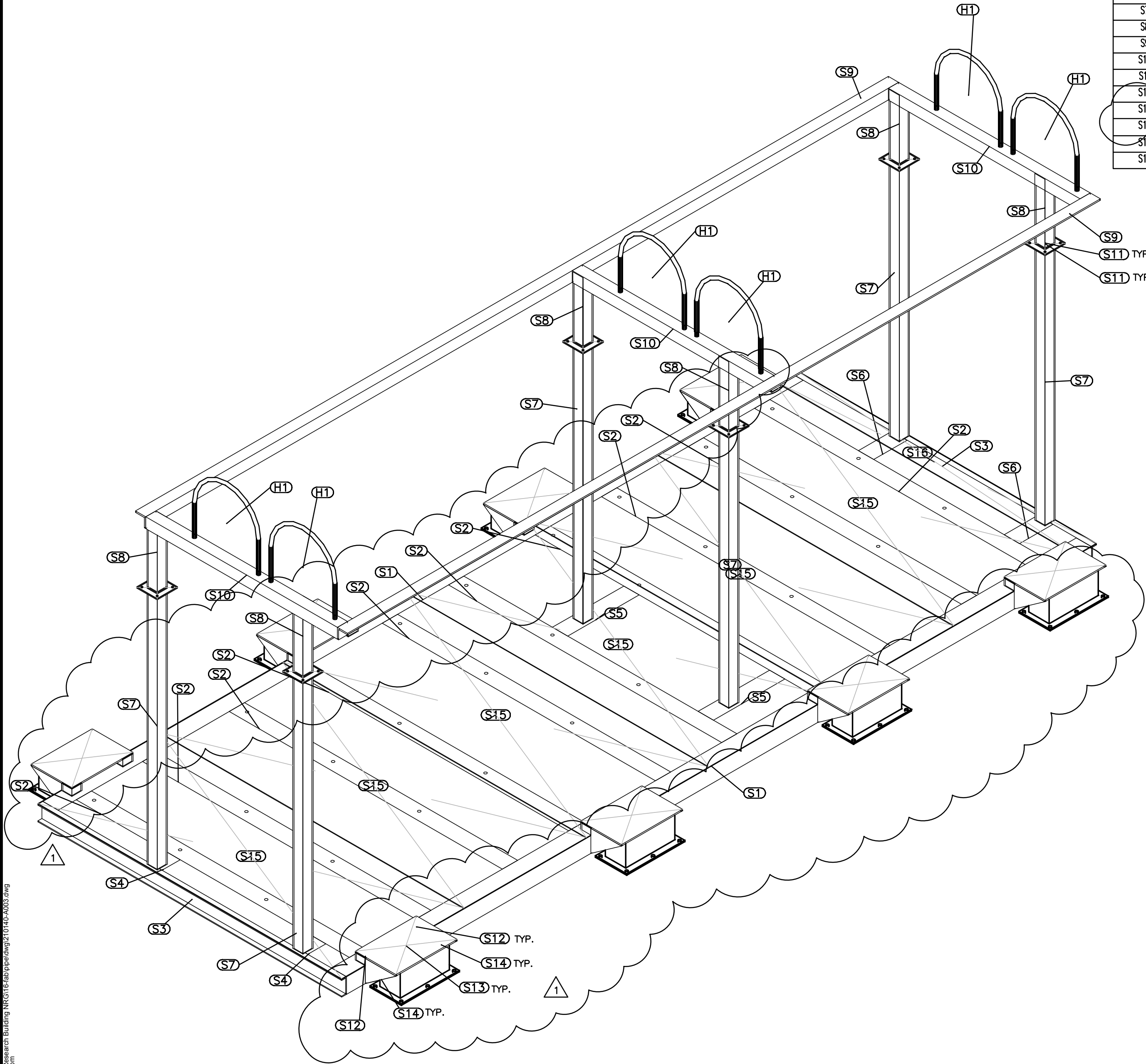
Copyright © 2015 Murphy Company Mechanical Contractors & Engineers. Drawings are property of and all rights reserved by Murphy Company Mechanical Contractors and Engineers.

[illegible]

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.

WUSM Research Building NRB Cooling Tower Pump Skid  
210140-A003.dwg  
11/20/2020 11:42:47pm  
jmurphy

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

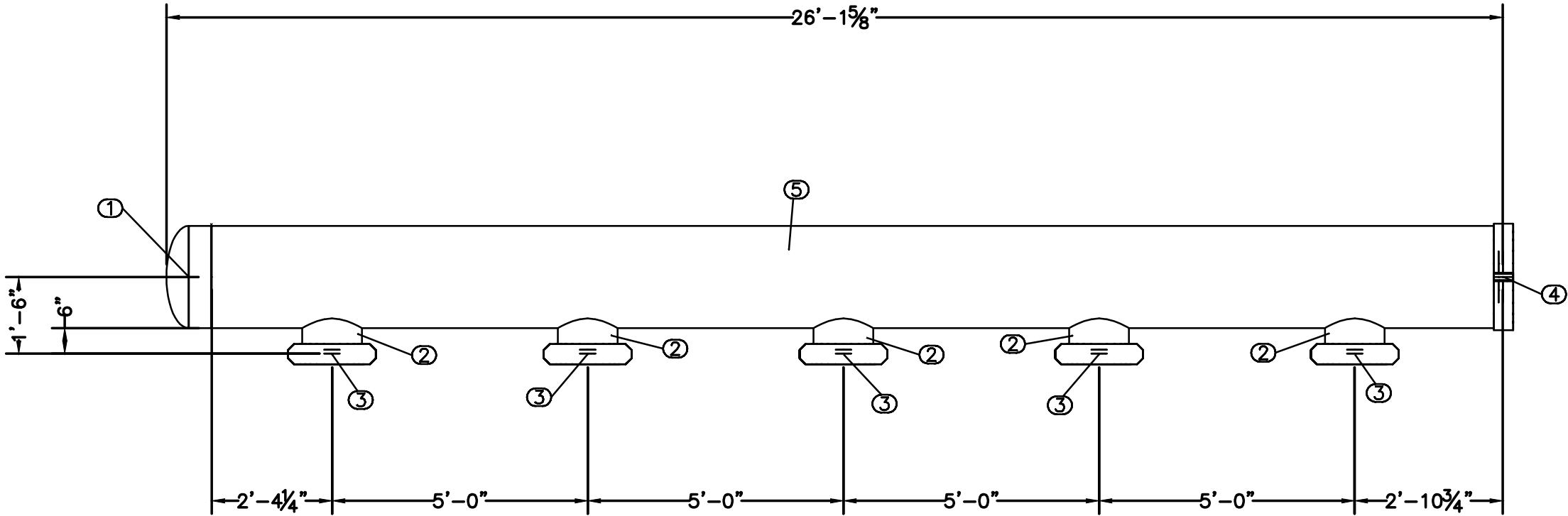


BOM-STEEL					
Item No	Order	Description	Qty	Size	Steel L
H1	Fig137	Fig.137 U-Bolt (4)-Nut Black	6	24	
S1	CS SQ Tube	ASTM A36 CS Square Tube	2	SQ6x6x1/2	292 1/4"
S2	CS SQ Tube	ASTM A36 CS Square Tube	10	SQ6x6x1/2	107"
S3	C6x8.2	ASTM A36 CS C-Channel	2	C6x8.2	119"
S4	CS SQ Tube	ASTM A36 CS Square Tube	2	SQ6x6x1/2	7"
S5	CS SQ Tube	ASTM A36 CS Square Tube	2	SQ6x6x1/2	28"
S6	CS SQ Tube	ASTM A36 CS Square Tube	2	SQ6x6x1/2	13"
S7	CS SQ Tube	ASTM A36 CS Square Tube	6	SQ4x4x1/4	93 3/4"
S8	CS SQ Tube	ASTM A36 CS Square Tube	6	SQ4x4x1/4	23 1/2"
S9	L4x4x1/2	ASTM A36 CS Equal Angle	2	L4x4x1/2	295 1/4"
S10	L4x4x1/2	ASTM A36 CS Equal Angle	3	L4x4x1/2	75 1/4"
S11		ASTM A36 CS Plate 1/4" Thick	12	8x8x1/4	
S12	CS SQ Tube	ASTM A36 CS Square Tube	16	SQ4x4x1/4	2 1/2"
S13		ASTM A36 CS Plate 1/2" Thick	8	24x16x1/2	
S14		ASTM A36 CS Plate 1/2" Thick	16	12x8.5x1/2	
S15		ASTM A36 CS Plate 1/4" Thick	6	48x119.125x1/4	
S16		ASTM A36 CS Plate 1/4" Thick	1	8x119.125x1/4	

**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		11/20/2020		DRN JMM	
NRB				CHK	
COOLING TOWER PUMP SKID				APP	
JOB NO. 210140				JOB NO. 210140	
SERVICE NAME				REF. DWG.	
TWS				DRAWING NO./TRACKING NO.	
QTY. 1		SHT/NO 4 of 4		REV 1	
210140-A003				DESCRIPTION	
				REV DATE	
				SPEC. NA	
				ASME NA	
				X-RAY NA	
				HYDRO TEST NA	
				VT NA	
				SHP LOOSE MATERIAL	
				COMPLETION DATE	
				PWHT NA	
				COMMENTS	
				MURPHY WPS#	
				JMM	
				DRN	
				CHK	
				APP	



Murphy-PFFS-SPOOL-BOM

Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
2	5	Sch 40 SA-53B CS ERW Pipe Saddle	SADDLE	Grooved End	6"	6.000	24x14
3	5	Style W07 Rigid Coupling					14
4	1	Style W77 Rigid Coupling					24
1	1	Std Wt SA234 WPB CS BW Cap					24
5	1	Std Wt SA-53B CS ERW Pipe GRV	Grooved End	BEV	25'-3"	303.000	24

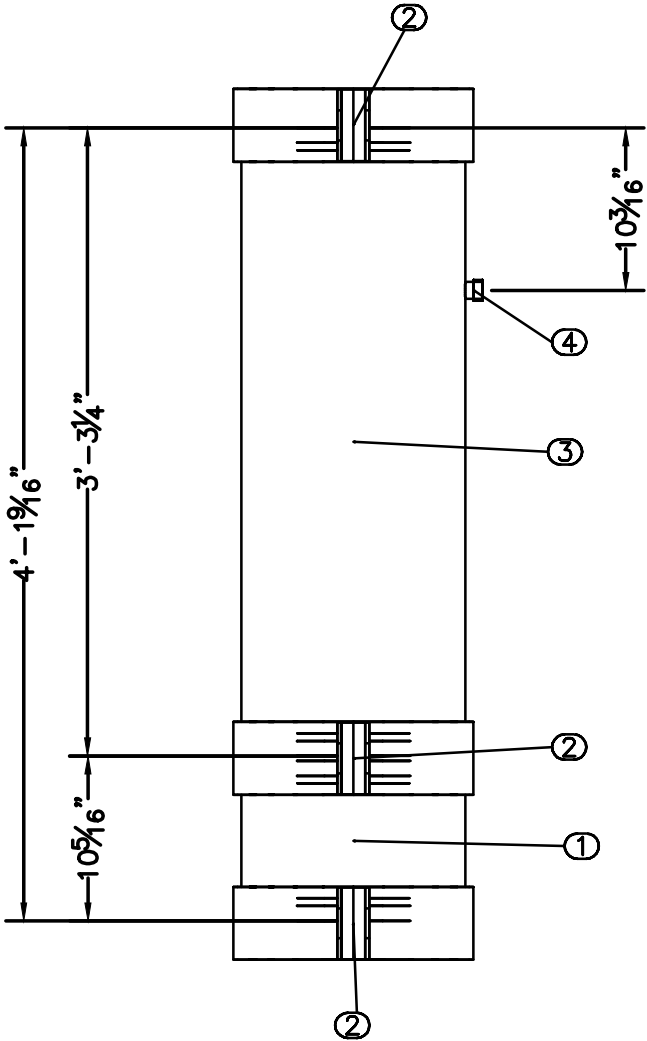
**MURPHY**  
CONSTRUCTORS • ENGINEERS MECHANICAL • INDUSTRIAL  
SINCE 1907

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

DRN JMM	12/10/2020	WUSM RESEARCH BUILDING			
CHK		NRB			
APP					
JOB NO.	210140	SERVICE NAME			
REF.DWG.		210140-A003			
DRAWING NO./TRACKING NO.	210140-A003-01	QTY.	1	SHT/NO	1 of 1
				REV	0



Murphy-PFFS-SPOOL-BOM

Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
2	14	Style W77 Rigid Coupling					14
4	5	3000# FS Thread-O-Let			1 1/16"	1.063	3/4x14
1	5	Std Wt SA-53B CS ERW Pipe PE	Grooved End	Grooved End	10"	10.000	14
3	5	Std Wt SA-53B CS ERW Pipe PE	Grooved End	Grooved End	3'-3 1/4"	39.254	14

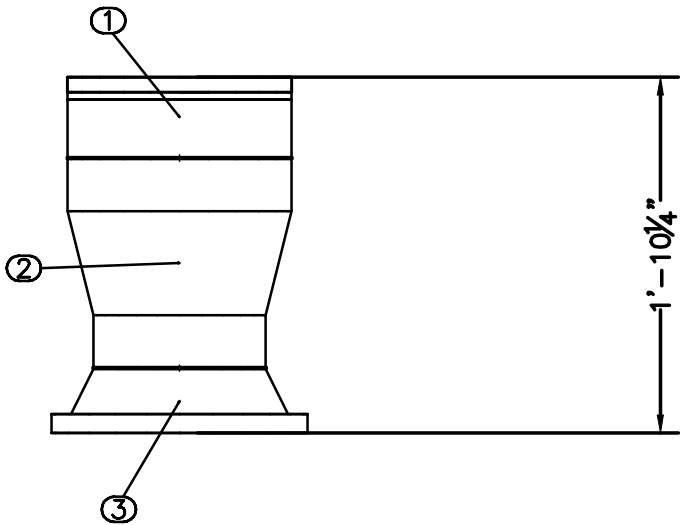
QTY 5

**MURPHY**  
SINCE 1907

CONSTRUCTORS • ENGINEERS  
MECHANICAL • INDUSTRIAL

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

DRN JMM CHK APP JOB NO. 210140 REF.DWG. DRAWING NO./TRACKING NO. 210140-A003-02	WUSM RESEARCH BUILDING NRB				SERVICE NAME 210140-A003				REV																						
	QTY. 5				SHT/NO 1 of 1				REV 0																						
	DATE				DESCRIPTION				DRN CHK APP																						
	SPEC. NA				ASME NA				X-RAY NA				HYDRO TEST NA				PWHT NA				COMMENTS										
	0																MURPHY WPS#														
QA/QC ACCEPT																FLANGE WEIGHT/ORIENTATION FITTING ORIENTATION BOLTS/CPLG'S/TH'D TIGHT SPOOL IDENTIFICATION															



QTY 5

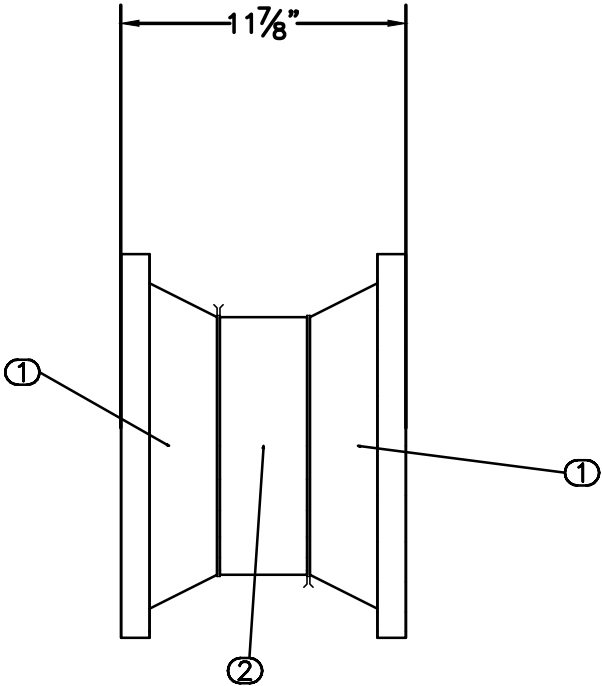
Murphy-PFFS-SPOOL-BOM							
Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
2	5	Std Wt SA234 WPB CS BW CONC RED					14x10
3	5	150lb RF Sch 40 Bore SA105 CS WN Flg					10
1	5	Std Wt SA-53B CS ERW Pipe PE	BEV	Grooved End	5"	5.000	14

**MURPHY**  
CONSTRUCTORS • ENGINEERS MECHANICAL • INDUSTRIAL

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

DRN JMM CHK APP JOB NO. 210140 REF.DWG. DRAWING NO./TRACKING NO. 210140-A003-03	12/10/2020			WUSM RESEARCH BUILDING NRB			QA/QC ACCEPT			FLANGE WEIGHT/ORIENTATION FITTING ORIENTATION BOLTS/CPLG'S/TH'D TIGHT SPOOL IDENTIFICATION							
	SERVICE NAME 210140-A003			SPEC. NA			ASME NA			HYDRO TEST NA			PWHT NA		COMMENTS MURPHY WPS#		
	QTY. 5			SHT/NO 1 of 1			REV 0			DATE			DESCRIPTION			DRN CHK APP	
	REV 0			REV 0													





QTY 5

Murphy—PFFS—SPOOL—BOM							
Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
1	10	150lb RF Sch 40 Bore SA105 CS WN Flg					10
2	5	Sch 40 SA-53B CS ERW Pipe PE	BEV	BEV	3 5/8"	3.625	10

**MURPHY**  
SINCE 1907

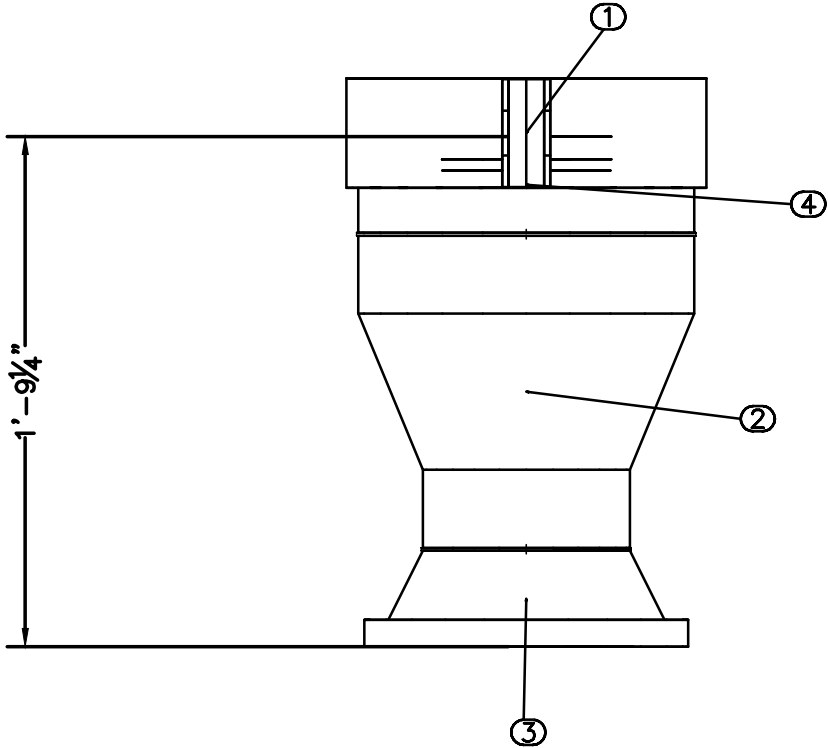
CONSTRUCTORS • ENGINEERS  
MECHANICAL • INDUSTRIAL

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

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

DRN	JMM	12/10/2020	WUSM RESEARCH BUILDING			
CHK			NRB			
APP						
JOB NO.	210140	SERVICE NAME	210140-A003			
REF.DWG.						
DRAWING NO./TRACKING NO.	210140-A003-04	QTY.	5	SHT/NO	1 of 1	REV
						0





Murphy–PFFS–SPOOL–BOM

Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
2	5	Std Wt SA234 WPB CS BW CONC RED					14x8
3	5	150lb RF Sch 40 Bore SA105 CS WN Flg					8
1	5	Style W77 Rigid Coupling					14
4	5	Std Wt SA-53B CS ERW Pipe PE	BEV	Grooved End	4"	4.000	14

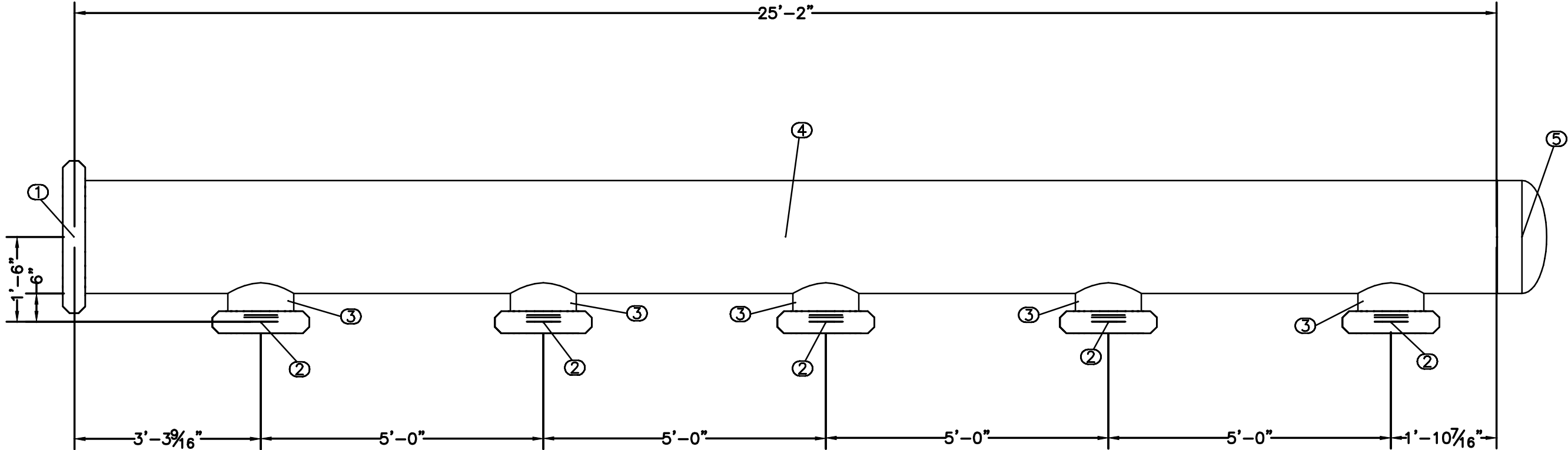
QTY 5

**MURPHY**  
SINCE 1907  
CONSTRUCTORS • ENGINEERS    MECHANICAL • INDUSTRIAL

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

DRN JMM		12/10/2020		WUSM RESEARCH BUILDING				QA/QC ACCEPT		FLANGE WEIGHT/ORIENTATION		<input type="checkbox"/>				
CHK				NRB						FITTING ORIENTATION		<input type="checkbox"/>				
APP										BOLTS/CPLG'S/TH'D TIGHT		<input type="checkbox"/>				
JOB NO. 210140				SERVICE NAME						SPOOL IDENTIFICATION		<input type="checkbox"/>				
REF.DWG.				210140-A003				SPEC. NA		ASME NA	HYDRO TEST NA	PWHT NA	COMMENTS			
DRAWING NO./TRACKING NO.				QTY. 5				SHT/NO 1 of 1		REV 0		MURPHY WPS#				
210140-A003-05										REV 0		DATE		DRN	CHK	APP
								DESCRIPTION								





Murphy-PFFS-SPOOL-BOM							
Mark	Qty	Description	End 1	End 2	Lft	LDec	Size
3	5	Sch 40 SA-53B CS ERW Pipe Saddle	SADDLE	Grooved End	6"	6.000	24x14
2	5	Style W07 Rigid Coupling					14
1	1	Style W07 Rigid Coupling					24
5	1	Std Wt SA234 WPB CS BW Cap					24
4	1	Std Wt SA-53B CS ERW Pipe GRV	BEV	Grooved End	25'-2"	302.000	24

**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	ASME	X-RAY	HYDRO TEST	COMMENTS
	NA	NA	NA	
SPEC.	NA	NA	NA	MURPHY WPS#
0				
REV	DATE	DESCRIPTION	DRN	CHK APP

DRN JMM	12/10/2020	WUSM RESEARCH BUILDING	
CHK		NRB	
APP			
JOB NO.	210140	SERVICE NAME	
REF.DWG.		210140-A003	
DRAWING NO./TRACKING NO.	QTY.	SHT/NO	REV
210140-A003-07	1	1 of 1	0