

Curriculum Ideas

For Metal Fabrication as suggested by
our PAC

Key Issues

- Work Ethics
- Safety
- Fabrication Skills
 - Math
 - Blueprint Reading/Interpretation
 - Layout
 - Cutting Skills

Time Card



on # GMAW BOOTH NO.: 9

		LAB 1	IN	MAY 7 19 2:03PM
	LAB 14		OUT	MAY 7 19 4:51PM
	NI			<u>12</u> MAY 9 19 2:05PM
		LAB 2	IN	
	LAB 13		OUT	MAY 9 19 3:47PM
	NI			<u>10</u>
		LAB 3	IN	
	LAB 12		OUT	MAY 14 19 2:05PM
	NI			<u>Foreman</u> <u>10:49</u>
		LAB 4	IN	
	LAB 11		OUT	
	NI			

- On Time!
- Cleanliness
- Shut Down
 - Machines
 - Tools
 - Gas
 - Fume Extractor
 - Work Stations

your supervisor must sign off on a safe working order

2) OXY-FUEL WELDING and BRAZING Checklist

- Are the gas lines closed
- Is the pressure released
- Did you back of the regulator adjusting screws
- Are the torch valves closed
- Are the hoses properly rolled up

3) SMAW Checklist

- Is the electrode holder empty
- Is the power supply shut down
- Are the cables removed and properly rolled up

4) GMAW Checklist

- Are the gas lines closed
- Is the pressure released
- Did you close the flowmeter
- Is the power source turned off

5) GTAW Checklist

- Are the gas lines closed
- Is the pressure released
- Did you close the flowmeter
- Is the power source turned off

Angle Grinder _____

Shear _____

Iron Worker _____

Gantry Crane _____

Work Ethics



Pay

Fleming College | MECH 260-126221P - GMAW I - 2019 Spr...      

Assessments ▾ Communication ▾ Resources ▾ Edit Course Class Progress Locker More ▾

Enter Grades Manage Grades Schemes Setup Wizard [Settings](#) [Help](#)

 Bulk Edit

☐	Grade Item	Type	Association	Max. Points	Weight
☐	Daily Lab Checklist ▾				25
☐	Lab 1 Checklist ▾	Numeric	-	12	3.571428571
☐	Lab 2 Checklist ▾	Numeric	-	12	3.571428571
☐	Lab 3 Checklist ▾	Numeric	-	12	3.571428571
☐	Lab 4 Checklist ▾	Numeric	-	12	3.571428571

Rewards

☐	Projects ▾				55
☐	Project 1 ▾	Numeric	-	40	16.666666667
☐	Project 2 ▾	Numeric	-	40	16.666666667
☐	Project 3 ▾	Numeric	-	40	16.666666667
☐	Project 4 ▾	Numeric	-	40	16.666666667
☐	Project 5 ▾	Numeric	-	40	16.666666667
☐	Project 6 ▾	Numeric	-	40	16.666666667
☐	Applied Project ▾	Numeric	-	40	20
☐	Course Feedback 🗣️ 📝 ▾	Numeric	-	5	5

Fabrication

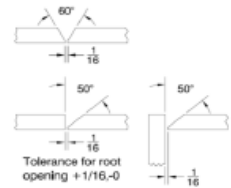
- Traveler
- Material List
 - Metric
 - Imperial
- Blueprint Skills
- Plate Layout
- Cutting

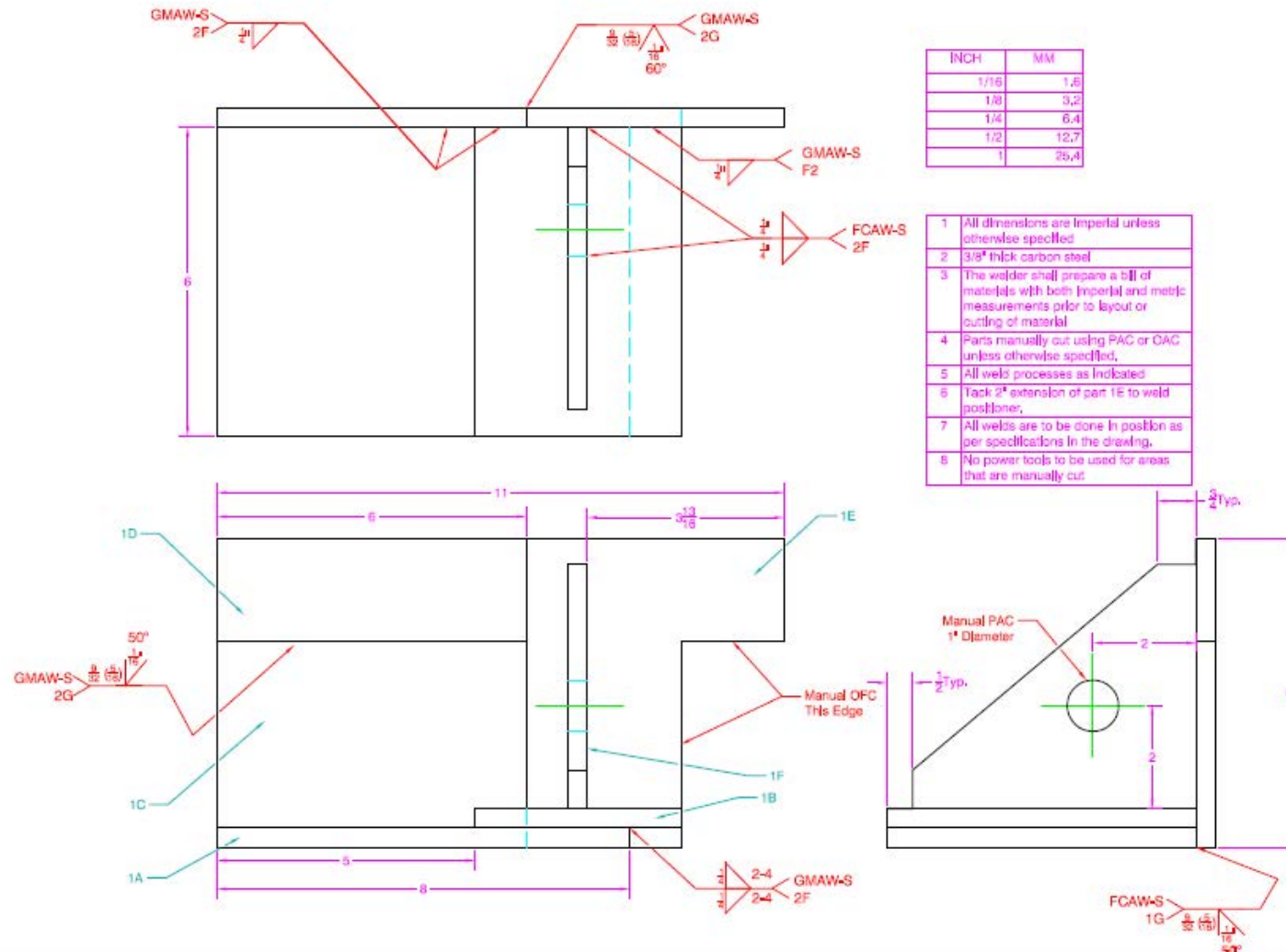
Grading Traveler for Applied Project		
Points Possible	Hold Points	Examiner's Evaluation
5 points	Blueprint Interpretation & Material Cut List 5 points = 0 errors, all parts labeled and sized correctly 3 points = 1 error in part sizing&/or identification 2 points = 2 errors or more rework required (max points)	
10 points	Material Layout and Cutting (Tolerances +/-1/16) 10 Points Layout and cutting to +/-1/16 Smoothness of cut edge to 1/32 7 Points Layout and cutting to +/-1/8 Smoothness of cut edge to 1/16 5 Points (rework required max points) Layout and cutting to +/-3/16 Smoothness of cut edge to 3/16	
10 points	Fit-Up and Tack Weld (Tolerances +/-1/16) 10 Points Tolerances +/-1/16 Straight and square to +/-1/16 7 Points Tolerances +/-1/8 Straight and square to +/-1/8 5 Points (rework required max points) Tolerances +/-3/16 Straight and square to +/-3/16	
15 points	Weld Quality Subtract 1 point for each weld discontinuity, incorrect weld size and incorrect spacing sequence	
35 Points	Minimum Points Acceptable As per AWS D1.1 code requirements	
Minus 10% for each safety violations Total Points		/40

Inspection Report			
Inspection	Pass/Fail	Inspector's Initial	Date
Layout			
Cutout			
Assembly			
Welding			
Tack			
Interpass			
Finish			
Overall Rating			
Accuracy			
Appearance			

Bill of Materials			
Part	No. Req'd	Size (imperial)	Metric conversion
1A			
1B			
1C			
1D			
1E			
1F			

Sketches of all Parts indicating angles & dimensions

WELDING PROCEDURE SPECIFICATION  Fleming College School of Trades and Technology													
SECTION 1: PROCEDURE IDENTIFICATION													
WPS I.D. No.: _____				GMAW-S				DATE: Winter 2016 Rev.: _____				0	
School Name: Fleming College								Course Name: GMAW I					
Address: 599 Brealey Drive, Peterborough, ON K9J-7B1								Course Code: MECH260					
SECTION 2: JOINT DETAILS													
Welding Processes:		1		GMAW		Pulsed: ☐ Yes ☒ No		2				Pulsed: ☐ Yes ☒ No	
Shielding Gas Type:				92% Argon/8%CO ₂									
Positions:													
Process Mode:		☐ Manual		☒ Semi-Auto		☐ Machine		☐ Auto		Joint Configuration & Pass/Layer Sequence  Tolerance for root opening +1/16,-0			
Joint Type:		☒ Groove		☐ Tee		☐ Corner		☐ Lap					
Penetration:		☐ Complete		☒ Partial									
Backing:		Material: N/A		Thickness:									
Backgouging:		☐ Yes Method:				☒ No Depth:							
Nozzle Diameter(s):		1/2"											
Tungsten Electrode:		Type: N/A		Dia.:									
Cleaning Procedures		Grind off Mill scale											
SECTION 3: BASE MATERIAL													
Part		Specification & Grade						Thickness and or Diameter		Special Requirements			
I		SA36						3/8"		6" FB			
II													
SECTION 4: FILLER METAL													
Process		AWS Specification				AWS Classification				F No.		Product Form	
GMAW-S		E70S -6				A5.18				F-6			
SECTION 5: WELDING PARAMETERS													
Thickness	Weld Size/ETT	Layer	Pass Number	Welding Process	Dia.	Wire Feed Speed	Current A	Volt V	Current Polarity	Welding Speed (ipm)	Gas Flow Rate	Heat Input (joules per inch)	
1/4" to 1/2"	1/4"	N/A	N/A	GMAW-S	.035	180 to 300ipm	90 to 120	15 to 19	DCEP	11.5	15 to 30	11895	
Preheat		50°F Minimum				Interpass				350°F Maximum			
SECTION 6: ADDITIONAL INFORMATION													
1 All weld areas need to be mechanically cleaned to ensure that joints are free of slag, scale rust, etc.													
2 Any roughness or notches deeper than 1/64 in weld joint must be ground smooth													
3													
4													
5													
6													
7													
8													
9													
10													

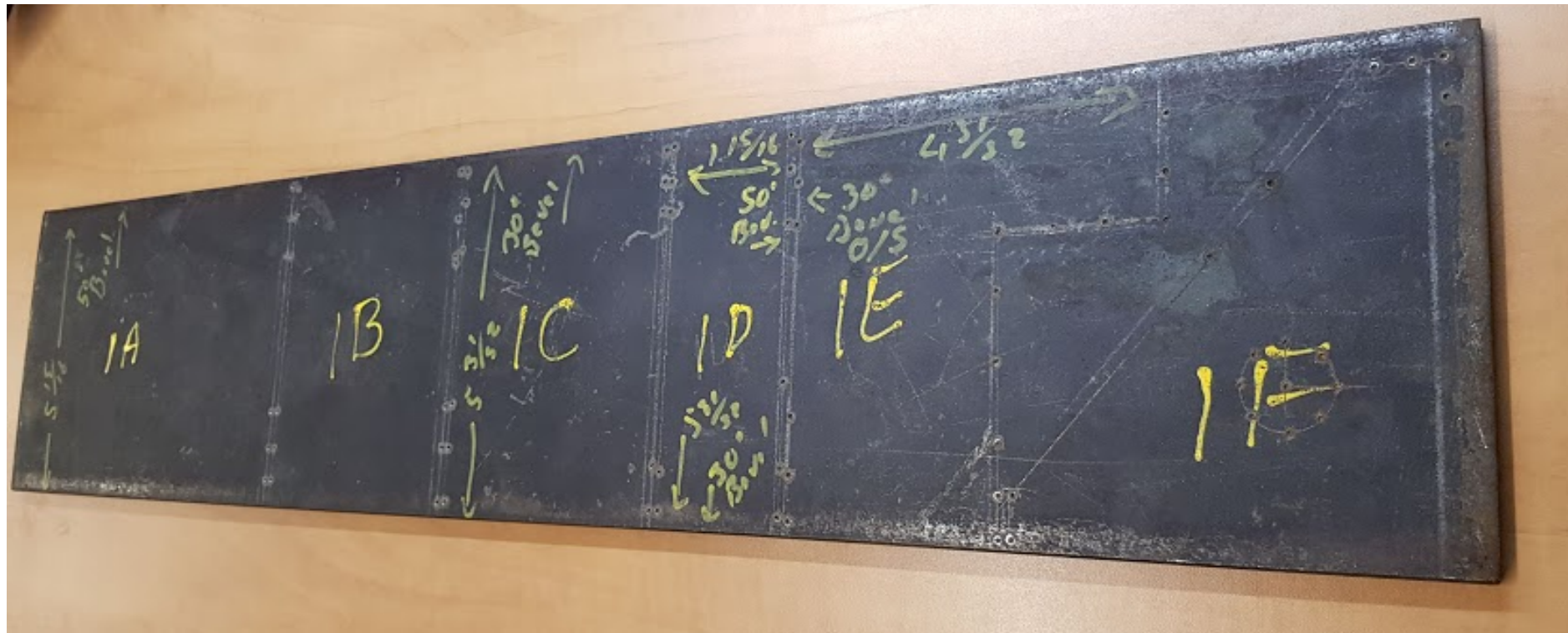


Final Applied Project

May 2016



Layout



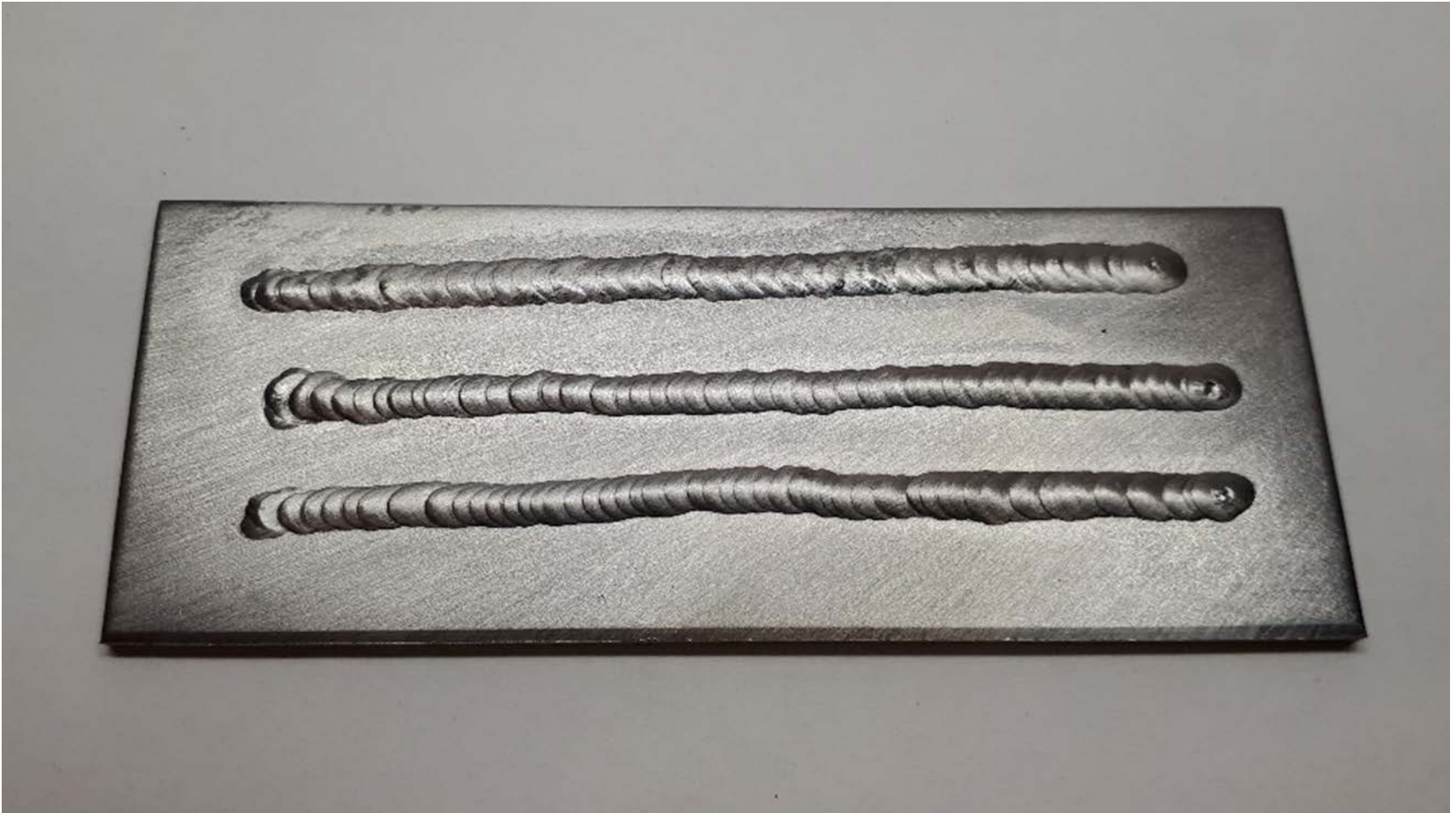
Material Prep



Fit Up



Pass/Fail



Pass/Fail



Pass/Fail



Pass/Fail



Pass/Fail



Pass/Fail



Pass/Fail



Pass/Fail



Pass/Fail



2F, 1G & 2G



Lap Joint & Outside Corner



T Joint



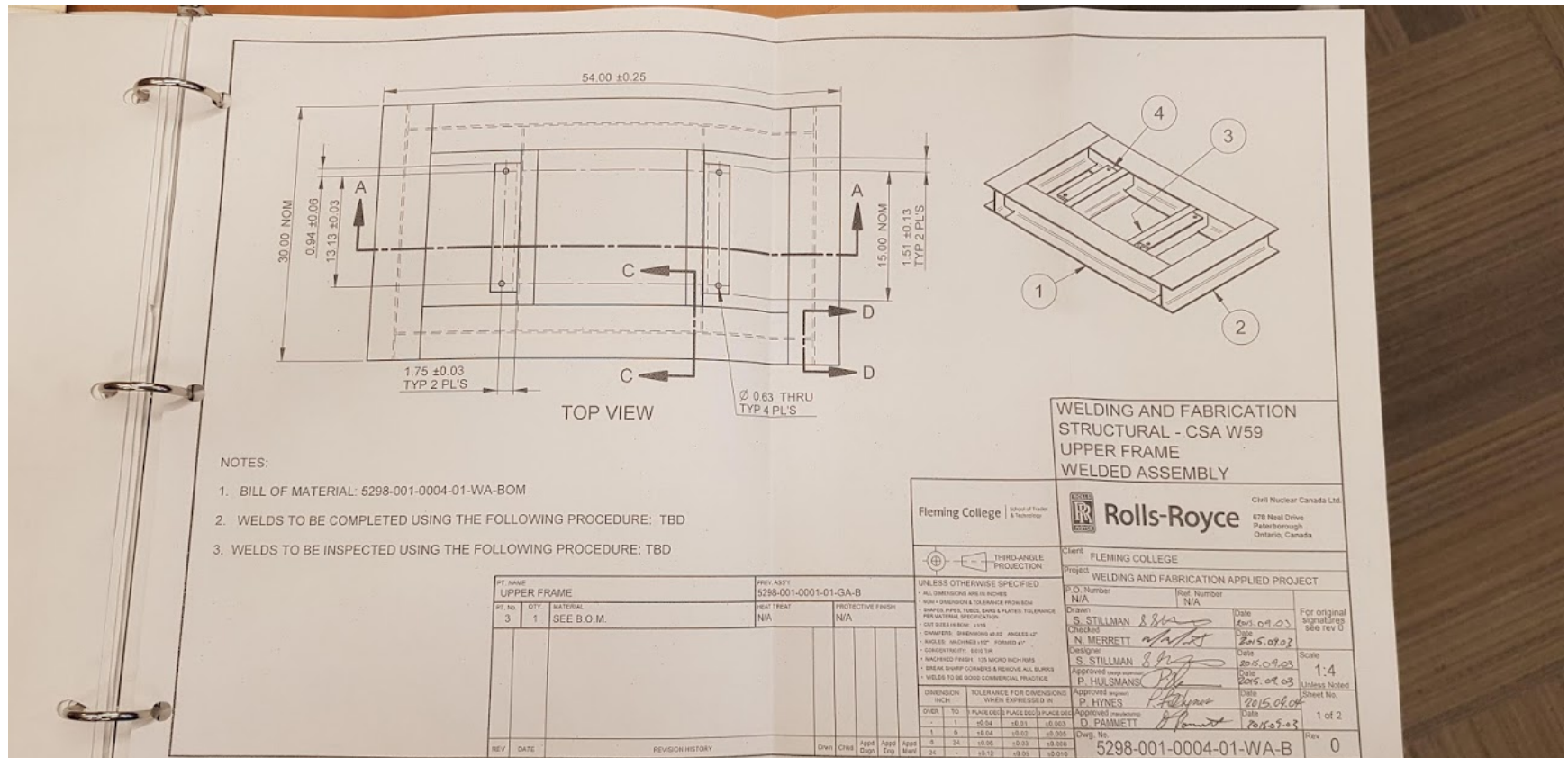
Second Year Students

- Vessel Layout
- Pattern Making
 - Piping
 - Structural
- Gantt Charts
- Progress Reporting
- Material list
 - weight and price calculations

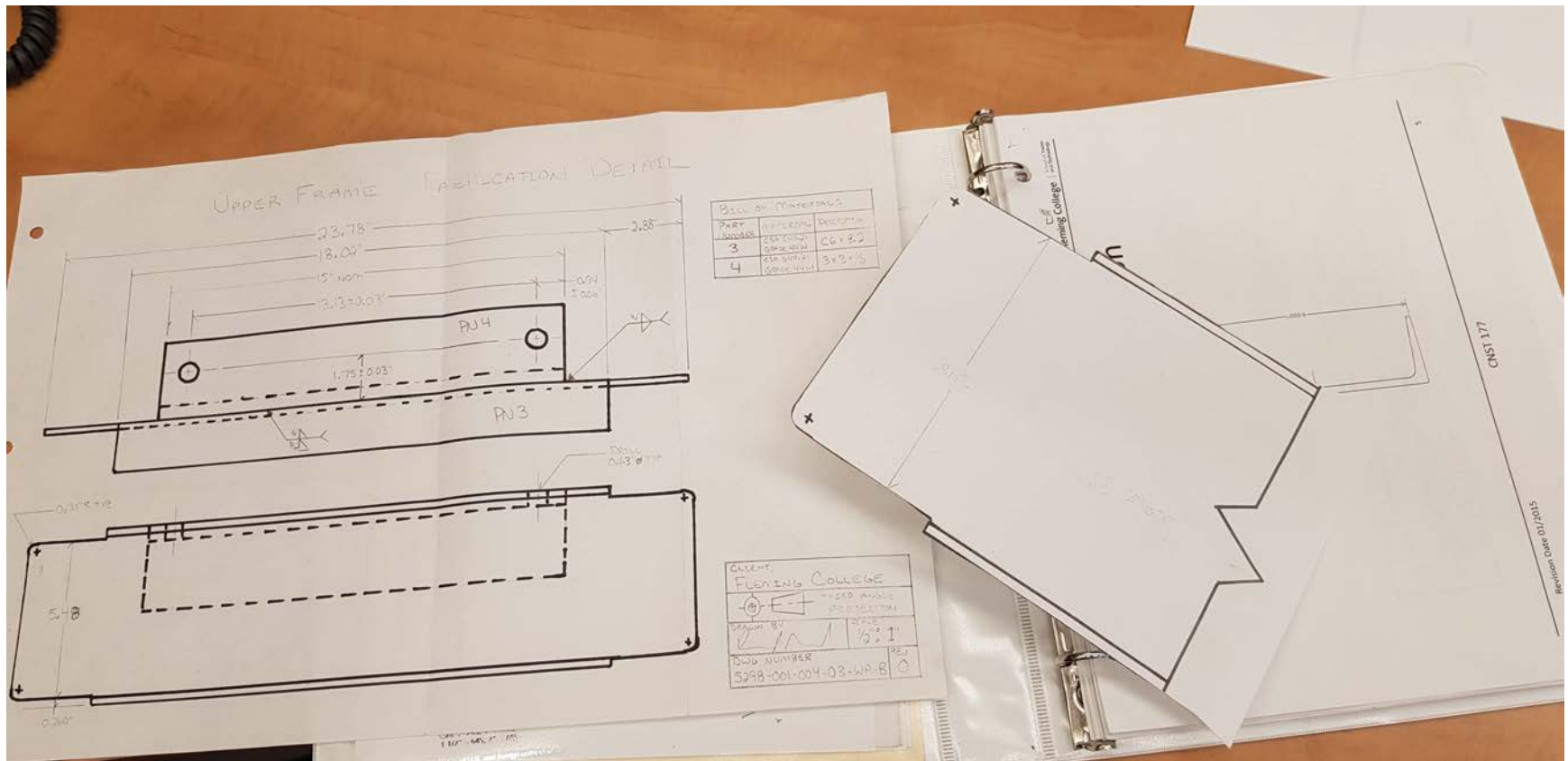
Material Cut List

 Rolls-Royce Rolls-Royce Civil Nuclear Canada Ltd. PO Box 3776, 678 Main Drive Peterborough, Ontario K9B 7N6 Canada www.rolls-royce.com		THIS DOCUMENT IS PROPRIETARY TO ROLLS-ROYCE CIVIL NUCLEAR CANADA LTD. INFORMATION CONTAINED HEREIN SHALL NOT BE LOANED, TRANSFERRED OR RELEASED WITHOUT PRIOR WRITTEN CONSENT OF ROLLS-ROYCE CIVIL NUCLEAR CANADA LTD.		BOM NUMBER: 5298-001-0004-01-WA-BOM				
				BOM REVISION: 0				
PROJECT/SYSTEM NAME: WELDING AND FABRICATION		CUSTOMER / SITE/APPLICABLE UNITS		Fleming College School of Trades & Technology				
TITLE: STRUCTURAL - CSA W59		FLEMING COLLEGE						
WELDED ASSEMBLY								
REVISION HISTORY								
REV	DESCRIPTION	DATE OF ISSUE (YYYY.MM.DD)	PREPARED BY	CHECKED	DESIGNED	VERIFIED	SRE	APPROVED
0	INITIAL ISSUE	2018	KEY		S. STILLMAN			
BOM Number:		5298-001-0004-01-WA-BOM				BOM Revision:		0
ITEM NO.	QTY REQ'D	UOM	PART OR IDENTIFYING NUMBER	MATERIAL	DESCRIPTION	QUOTED PRICE	COST	NOTE OR REMARK
					2 MARKS / 1 MARK ± 1"	2 MARKS / 1 MARK ± 5"		
1	2	EA	SIDE BEAM	CSA G40.21 GRADE 44W	W6 x 15 x 47.78" LG	119.45 lbs	1.59/lb	189.93 PROFILE CUT, FIT AT ASSY
2	2	EA	END BEAM	CSA G40.21 GRADE 44W	W6 x 15 x 30" LG	75 lbs	1.59/lb	119.25 FINISHED LENGTH
3	2	EA	CHANNEL	CSA G40.21 GRADE 44W	C6 x 8.2 x 23.78" LG	32.49 lbs	1.87/lb	60.77 PROFILE CUT, FIT AT ASSY
4	2	EA	ANGLE	CSA G40.21 GRADE 44W	3 x 3 x 1/2 x 15 LG	23.5 23.545 24.6675	6.86/ft x 3	20.58 FINISHED LENGTH
TOTAL MATERIAL COST FOR ASSEMBLY						8390.53		2 MARKS
TOTAL WEIGHT FOR ASSEMBLY						250.449 → 251.665		1 MARK ± 10" 2 MARKS 1 MARK ± 20 lbs
END OF LIST								
NOTES:								
PIPES, PIPES, TUBES, BARS & PLATES: TOLERANCE PER MATERIAL SPECIFICATION								
SIZES IN BOM: ±1/16								

Second Year Students



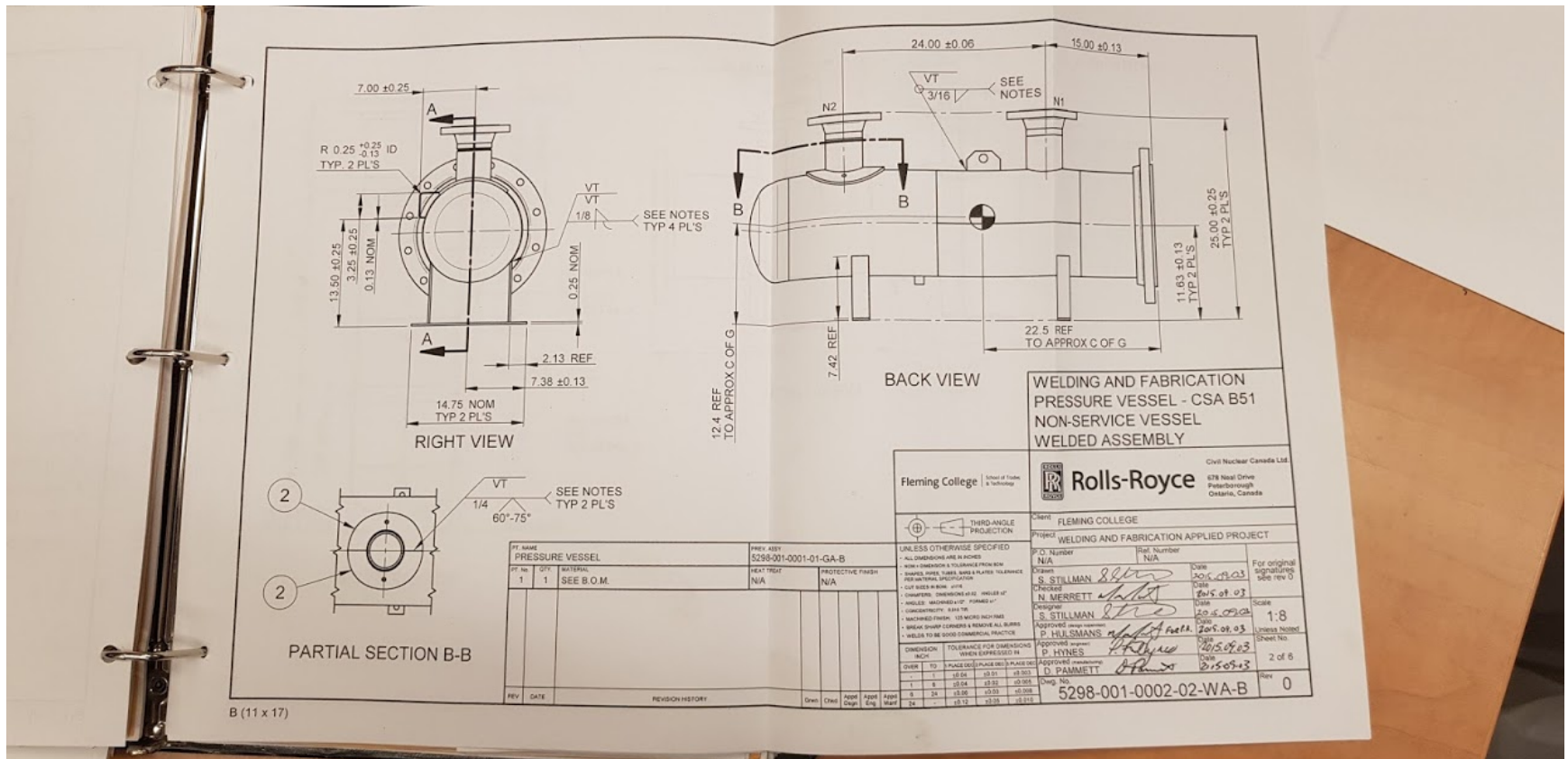
Templates



Layout & Fitting Structural



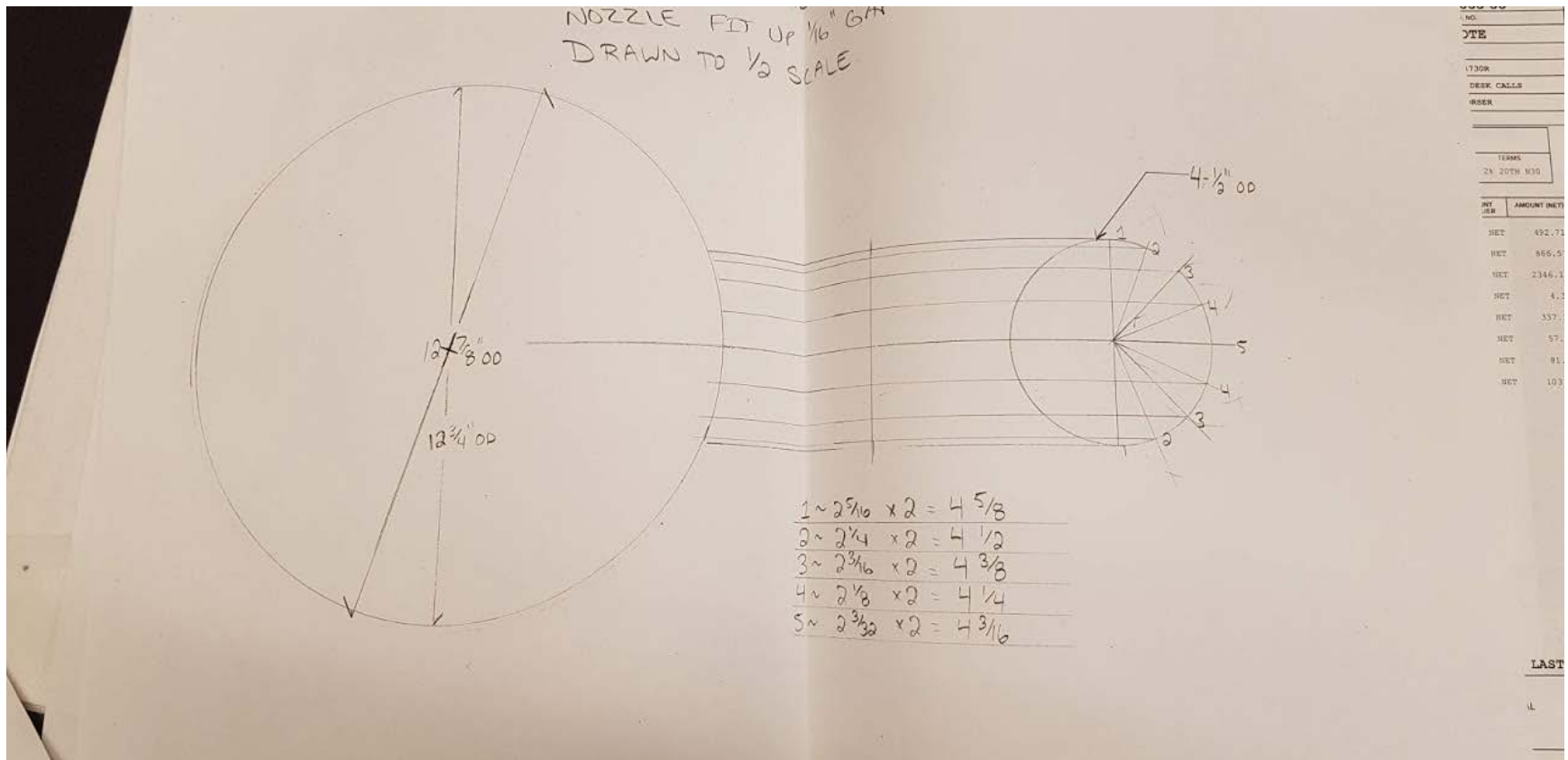
Blue Print Vessel



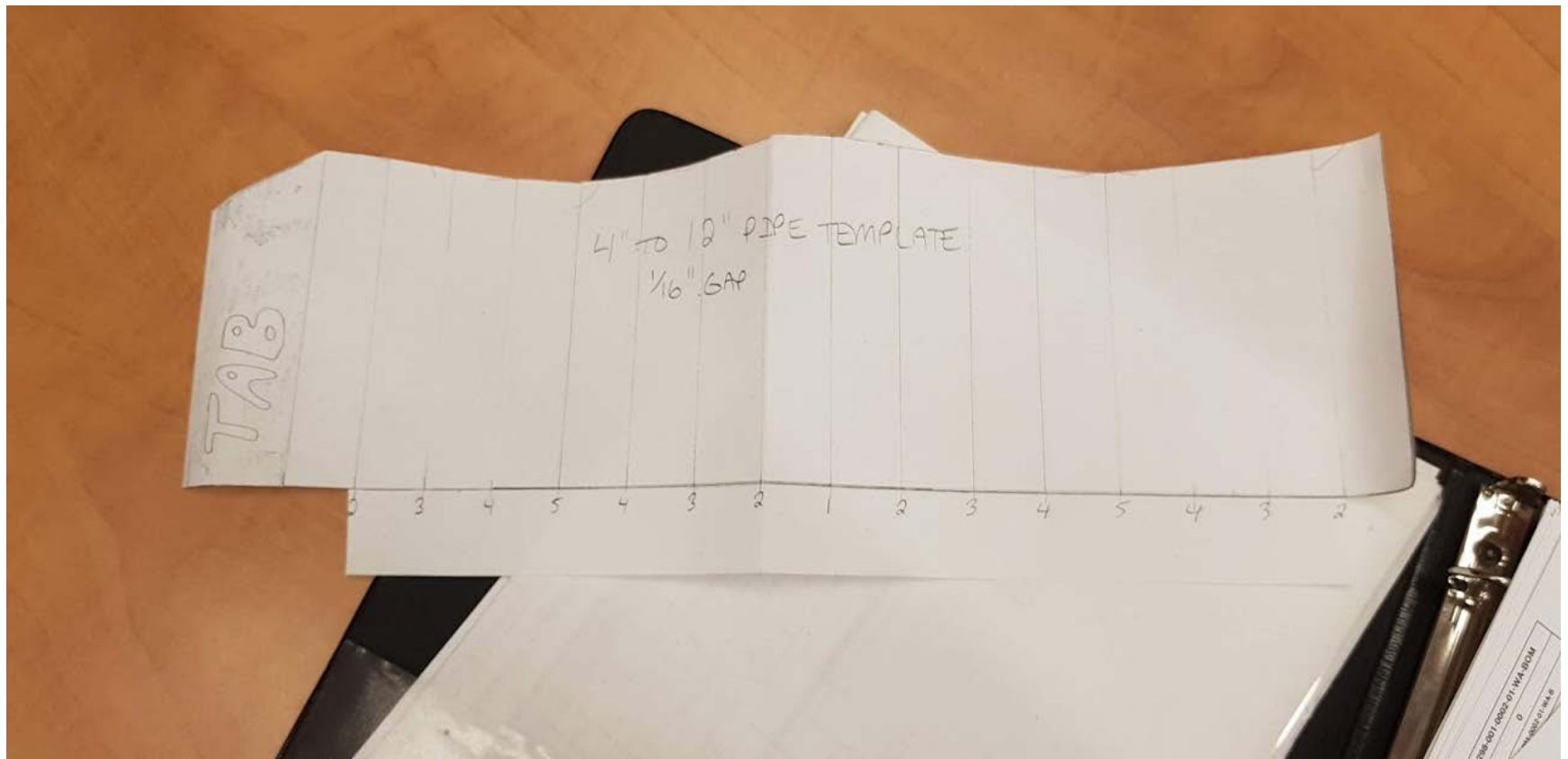
Layout & Fitting -Vessel



Template



Template



Spool Pieces



Piping



Various Weld Processes



- GMAW
 - Pulse & Short Circuit on Spool Pieces
- RMD
 - Circ Seam Root Pass (Backing for SAW)
- SAW
 - Circ Seam Fill Passes
- SMAW
 - Structural
- GTAW
 - Piping

Hold Points



Hold Points





Hold Points



Industry Showcase





Rewarding for All

