

It's Hip to be Square: Measurement, Blueprint Reading, and Quality Manufacturing in STEM

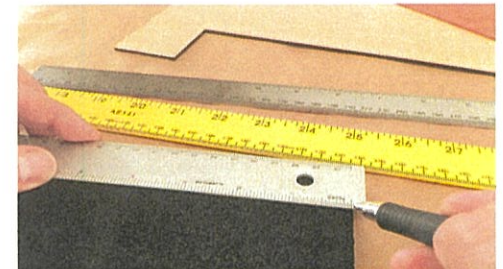
CTE Conference Grand Rapids, MI Monday January 27, 2020



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Van Buren Tech

250 South Street Lawrence, MI 49064

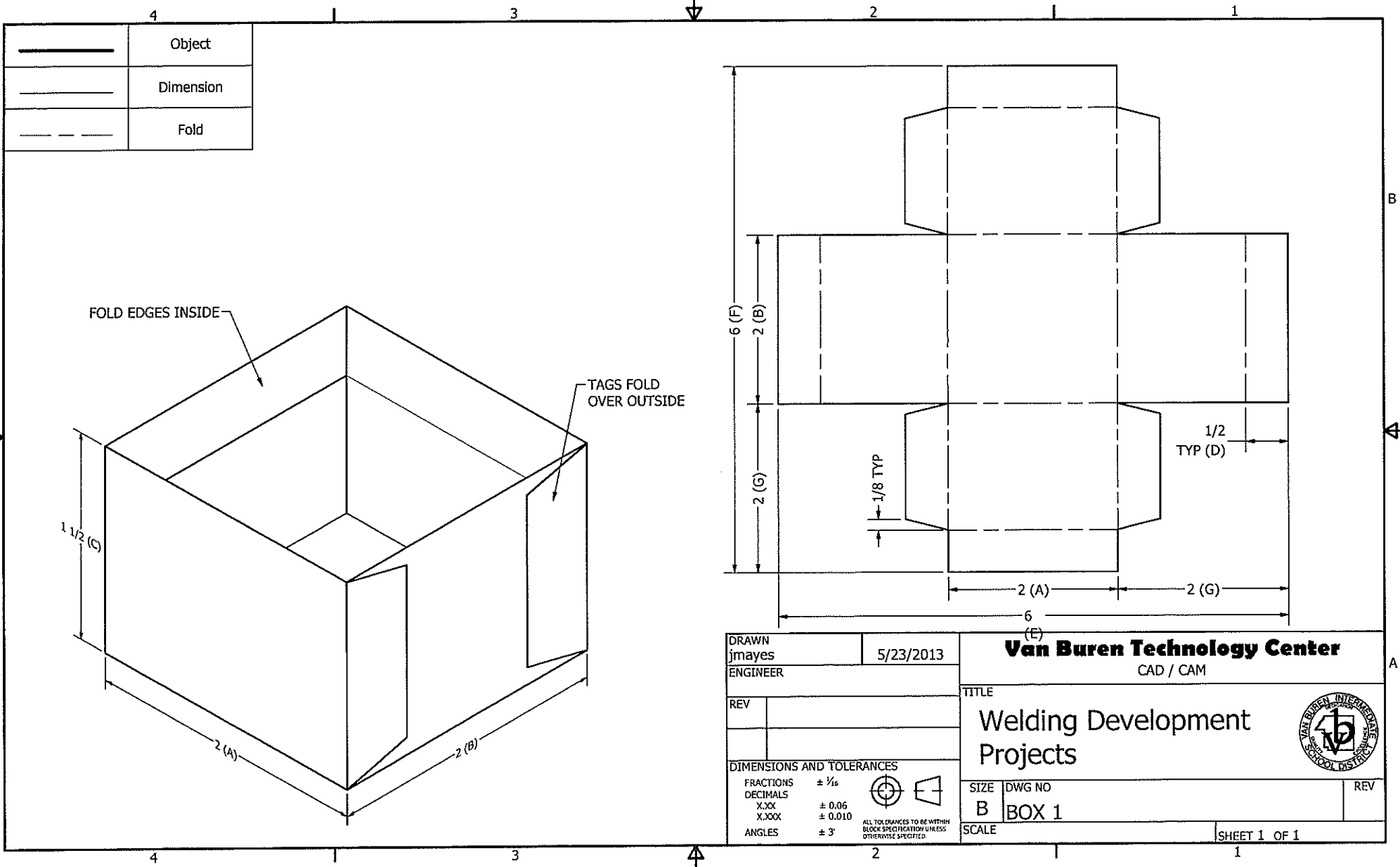


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	Object
	Dimension
	Fold

DRAWN
jmeyes
ENGINEER

5/23/2013

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CAD / CAM

REV	
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TITLE
**Welding Development
Projects**






DIMENSIONS AND TOLERANCES

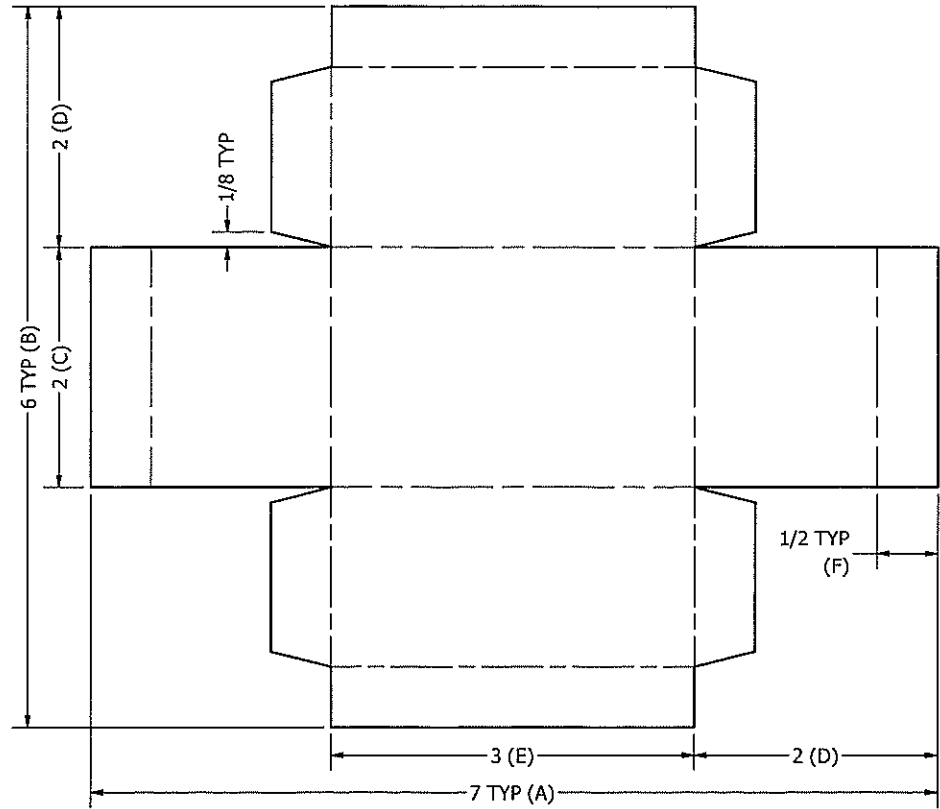
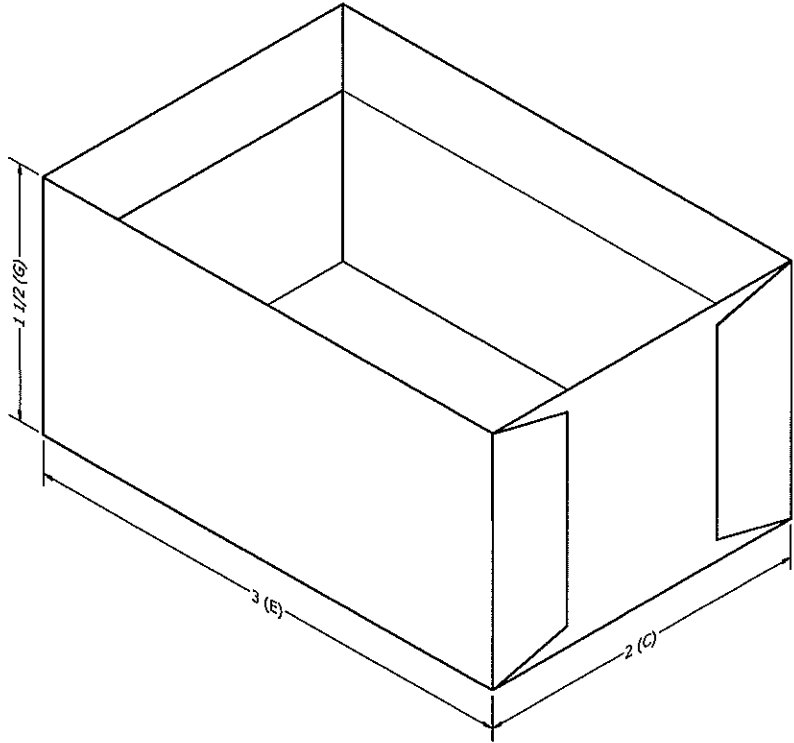
FRACTIONS	± 1/16
DECIMALS	± 0.06
X.XX	± 0.010
X.XXX	± 0.010
ANGLES	± 3'

ALL TOLERANCES TO BE WITHIN
BLOCK SPECIFICATION UNLESS
OTHERWISE SPECIFIED.

SIZE DWG NO
B BOX 1

SCALE SHEET 1 OF 1

	Object
	Dimension
	Fold



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jmayer
ENGINEER

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REV

TITLE
**Welding Development
Projects**



DIMENSIONS AND TOLERANCES

FRACTIONS ± 1/16
DECIMALS ± 0.06
X.XX ± 0.010
X.XXX
ANGLES ± 3°



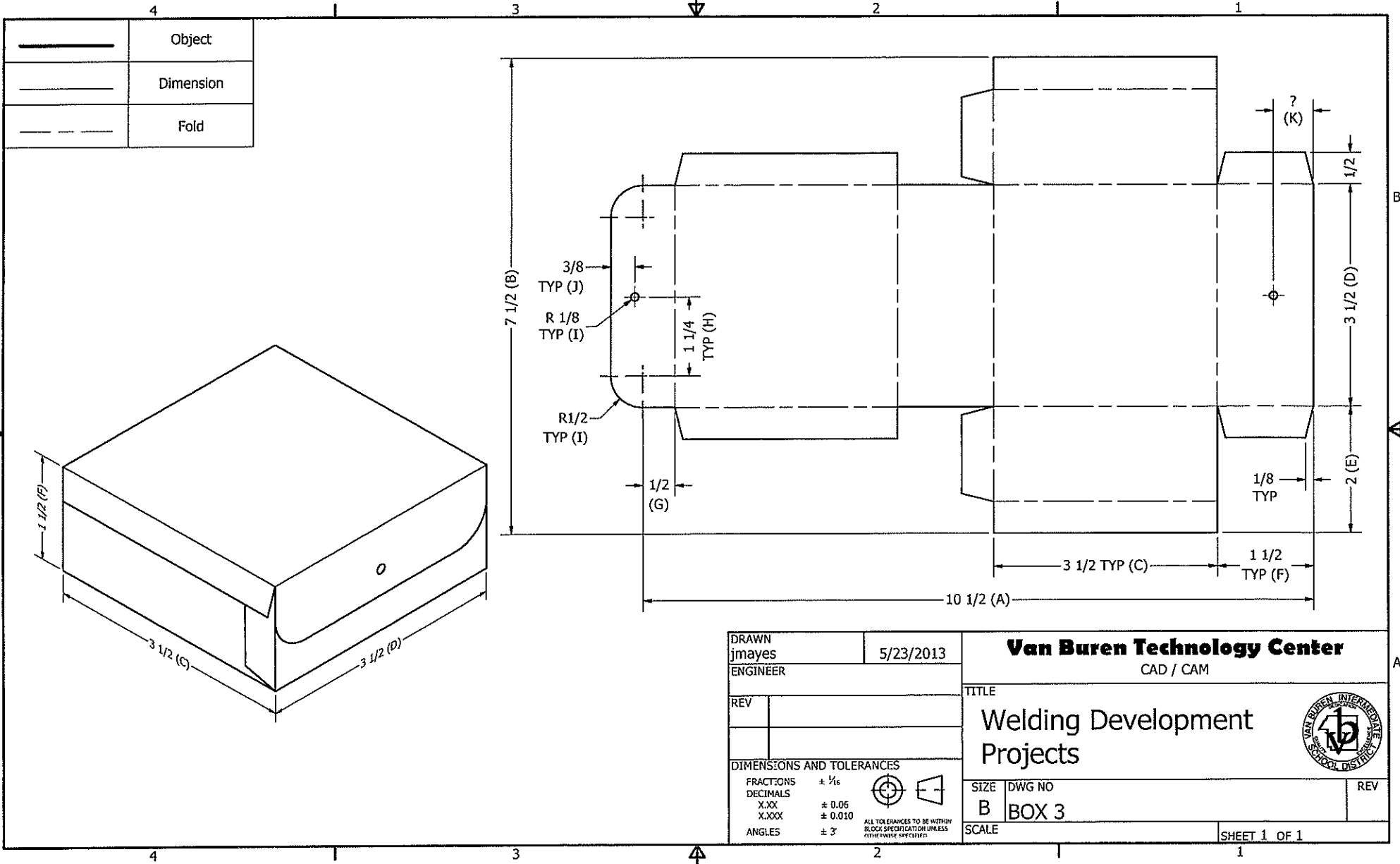
ALL TOLERANCES TO BE WITHIN
BLOCK SPECIFICATION UNLESS
OTHERWISE SPECIFIED

SIZE DWG NO
B BOX 2

SCALE

REV

SHEET 1 OF 1



	Object
	Dimension
	Fold

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jmayer
ENGINEER

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REV	

TITLE
**Welding Development
Projects**



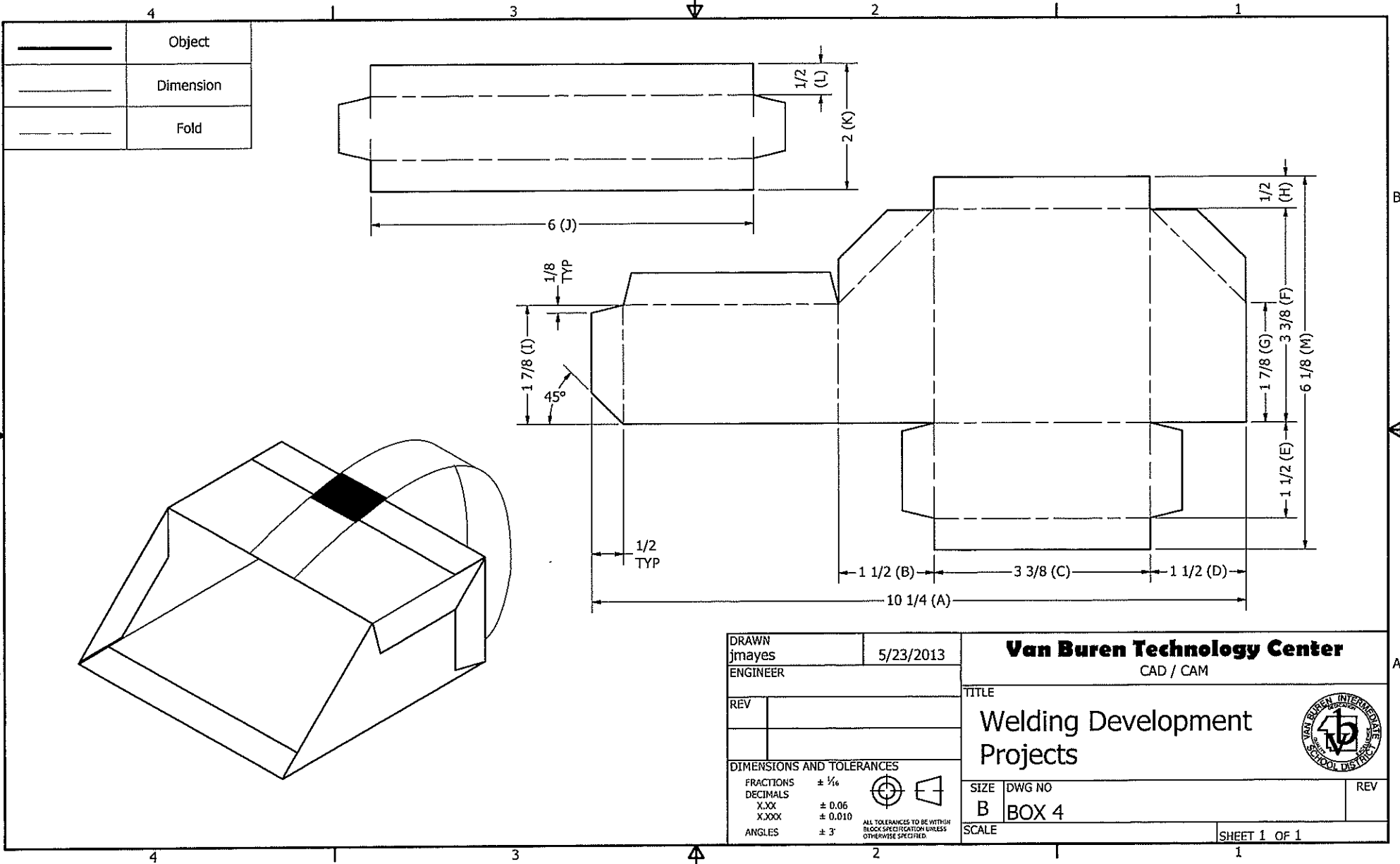
DIMENSIONS AND TOLERANCES

FRACTIONS	± 1/16
DECIMALS	± 0.06
X.XX	± 0.010
X.XXX	± 3'
ANGLES	± 3'

ALL TOLERANCES TO BE WITHIN BLOCK SPECIFICATION UNLESS OTHERWISE SPECIFIED

SIZE DWG NO
B BOX 3

SCALE SHEET 1 OF 1



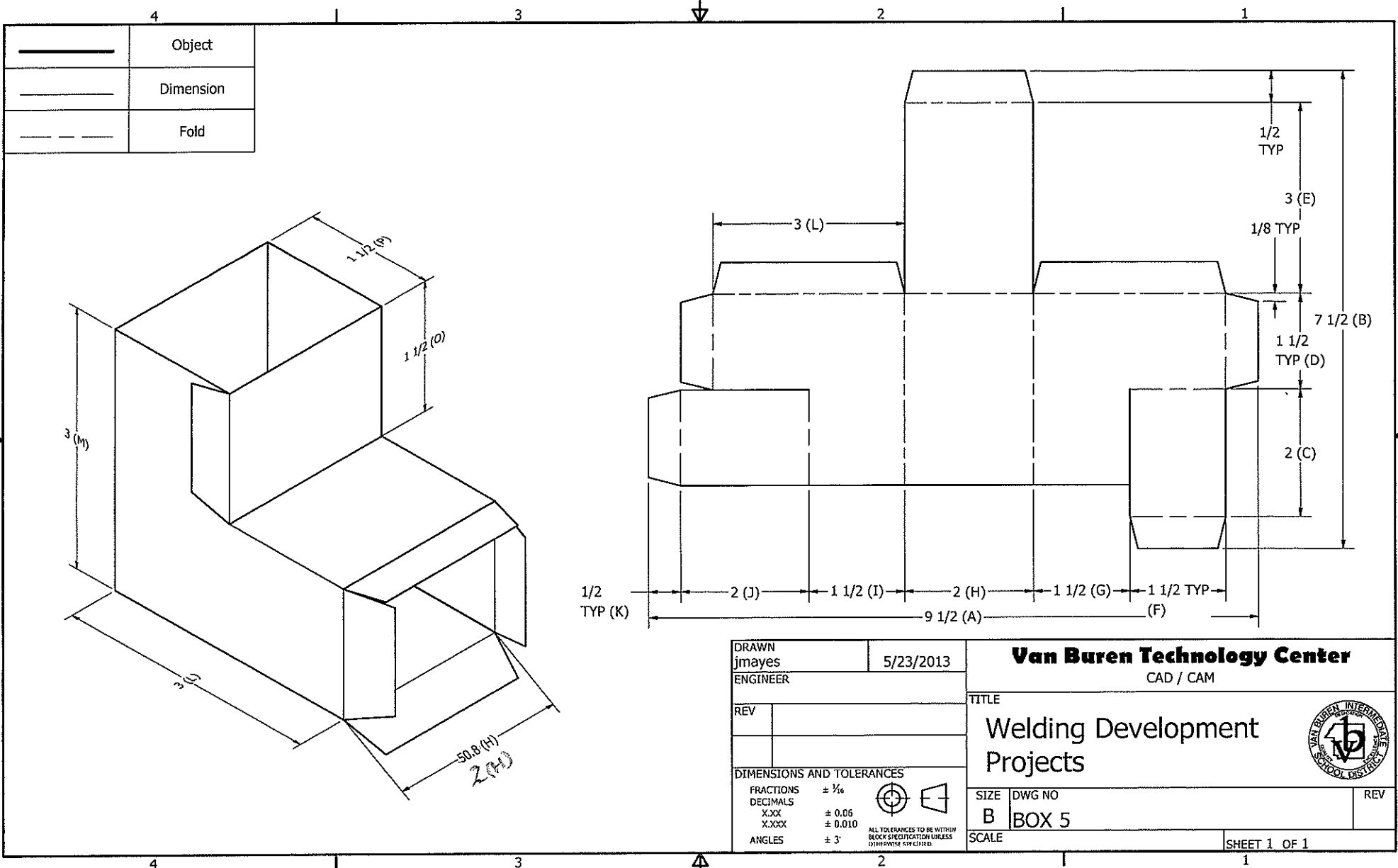
	Object
	Dimension
	Fold

DRAWN jmayer	5/23/2013
ENGINEER	
REV	
DIMENSIONS AND TOLERANCES	
FRACTIONS	± 1/16
DECIMALS	± 0.06
X.XX	± 0.010
X.XXX	± 0.010
ANGLES	± 3'

Van Buren Technology Center CAD / CAM	
TITLE Welding Development Projects	
SIZE B	DWG NO BOX 4
SCALE	SHEET 1 OF 1



ALL TOLERANCES TO BE WITHIN
BLOCK SPECIFICATION UNLESS
OTHERWISE SPECIFIED.



	Object
	Dimension
	Fold

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jmayer
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REV	

TITLE
Welding Development Projects

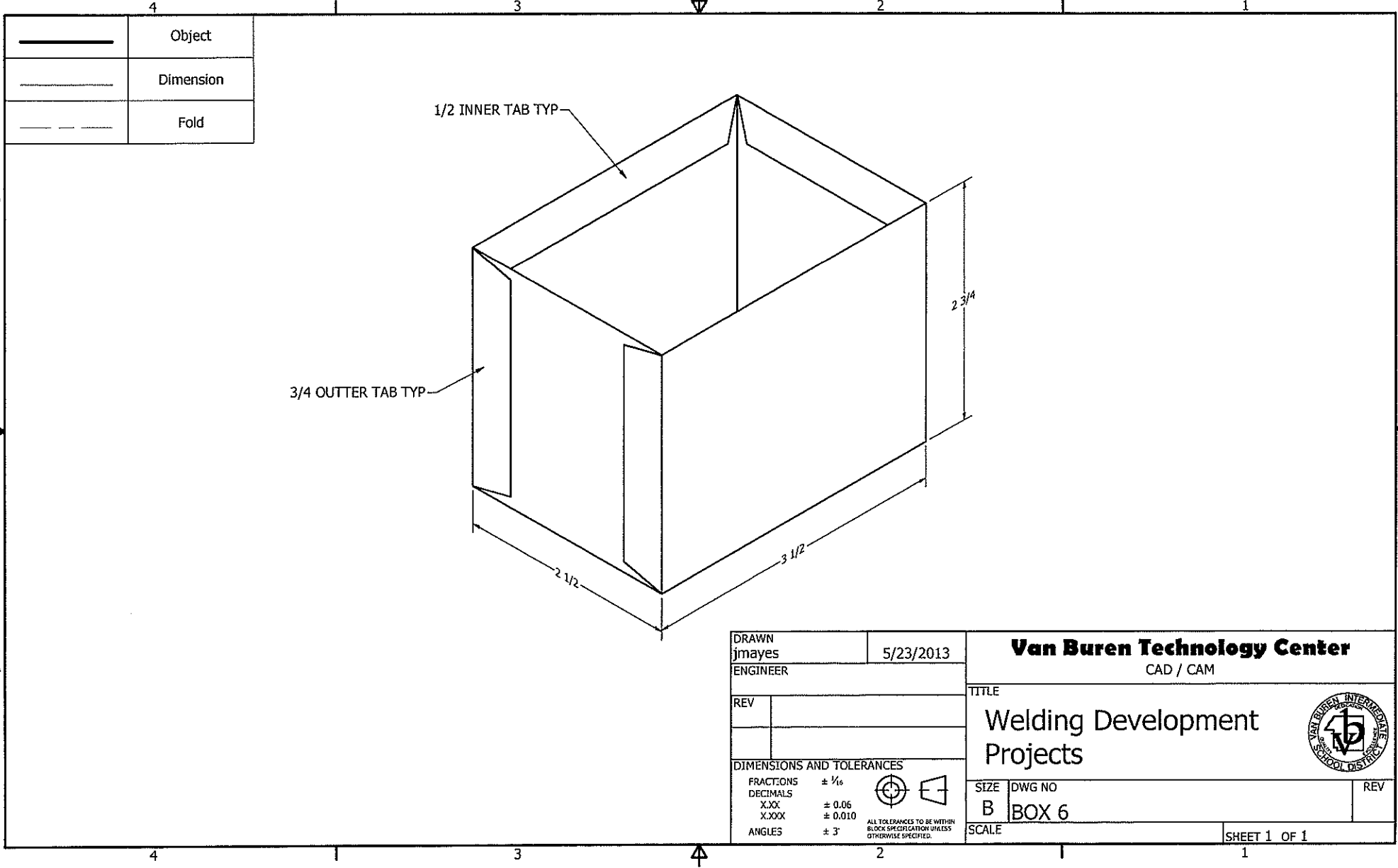


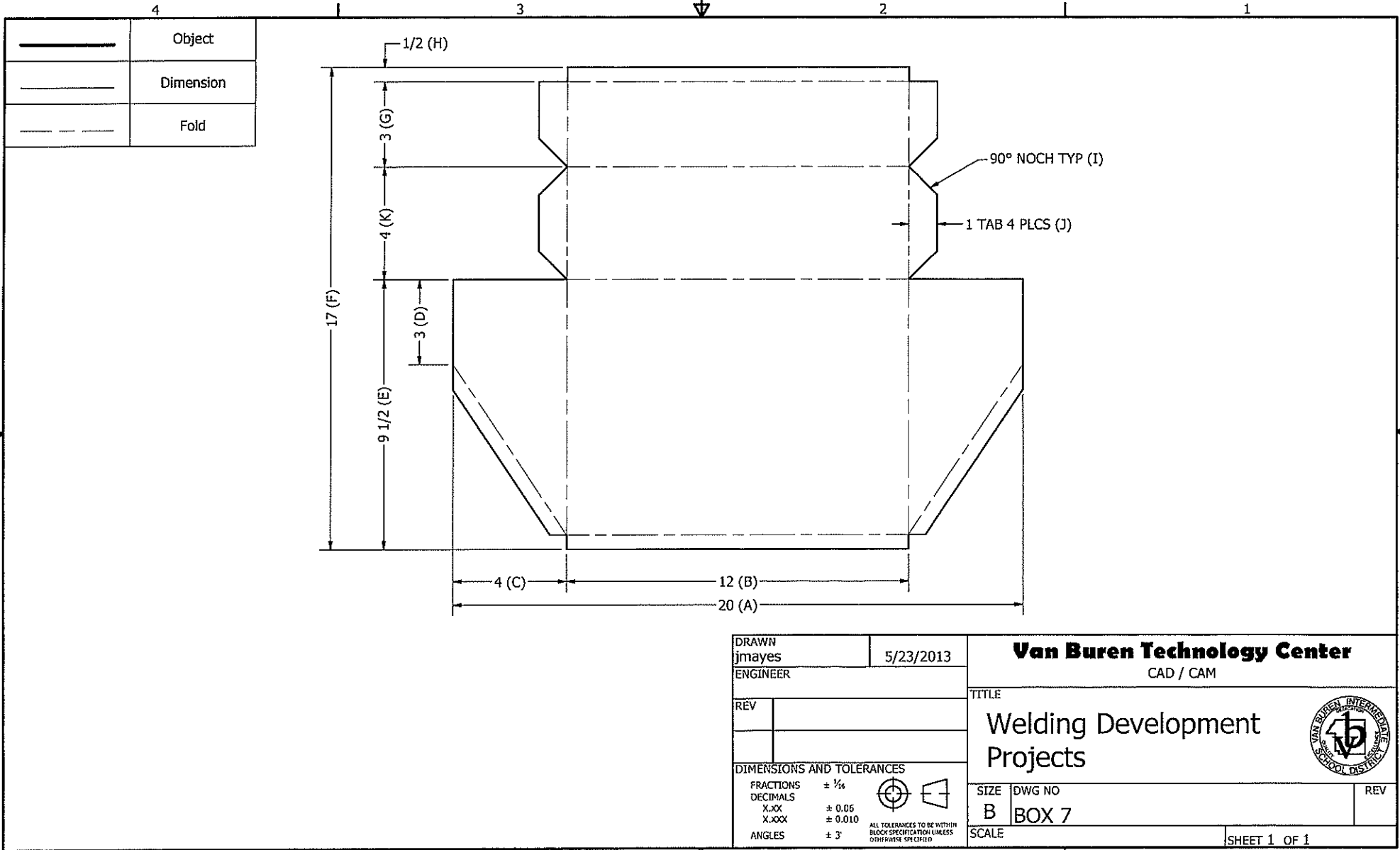
DIMENSIONS AND TOLERANCES

FRACTIONS	± 1/16
DECIMALS	± 0.06
X.XX	± 0.010
X.XXX	± 0.010
ANGLES	± 3'

ALL TOLERANCES TO BE WITHIN BLOCK SPECIFICATION UNLESS OTHERWISE SPECIFIED.

SIZE	DWG NO	REV
B	BOX 5	
SCALE	SHEET 1 OF 1	





	Object
	Dimension
	Fold

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ENGINEER	

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REV	

TITLE
Welding Development Projects



DIMENSIONS AND TOLERANCES	
FRACTIONS	± 1/16
DECIMALS	
X.XX	± 0.06
X.XXX	± 0.010
ANGLES	± 3'

SIZE	DWG NO	REV
B	BOX 7	
SCALE	SHEET 1 OF 1	



ALL TOLERANCES TO BE WITHIN
BLOCK SPECIFICATION UNLESS
OTHERWISE SPECIFIED

**ASSESSMENT RUBRIC
STUDENT ASSESSMENT
WELDING PROGRAM
MATHNET PROJECT
VAN BUREN TECHNOLOGY CENTER**

Student Name: _____ Session: _____ Date: _____

Assignment: Module 3 -- Box with Lid

As you layout and measure box 3, fill in the correct dimension for each dimension letter on the print. After completing the assembly of your box with lid, measure each dimension again and fill out the actual measurement and assess whether it is within tolerance. Complete your assessment rubric and hand in along with your final product.

Dimensions	Tolerance	Actual Measurement	Measurement within tolerance	
			Yes	No
A _____	±1/8"			
B _____	±1/8"			
C _____	±1/8"			
D _____	±1/8"			
E _____	±1/8"			
F _____	±1/8"			
G _____	±1/8"			
H _____	±1/8"			
I _____	±1/8"			
J _____	±1/8"			
Fold tabs 1/2"	± 1/16"			
Assembly tabs 3/4"	±1/8"			
Workmanship				
Corners meet correctly				
Edges are straight				
Box is assembled neatly				

		Name	
		Class	
Rubric for Paper Box			
		Student Self Eval	Teacher Eval
4	Meets below criteria for 3 and Teach help others		
3	All dimensions match Tab location correct Corners smooth to touch Corners are square Overall Appearance		
2	1-3 Dimensions are wrong Tab location wrong Corners are greater than 1/16 off Corners are not square		
1	More than 3 dimensions are wrong Tab Location wrong Corners are off Corners not square		
0	Did not complete Gave up Refused to do it		

	Advanced = 4	Proficient = 3	Progressing = 2	Beginning = 1	No Evidence = 0
Dimensions and Layout	All dimensions are true to print within 1/16" tolerance All components are present and situated exactly as stated on the print	All but one dimension are correct to the print within a 1/16" tolerance All components are present and situated exactly as stated on the print	More than one, but no more than four dimensions are greater than 1/16" outside of print dimensions Overall layout is 1/8" more or less than specified print dimensions All components are present and situated exactly as stated on the print	Multiple components (top, side, bottom) are 1/8" or more out of original dimensions All components present but placement is incorrect.	No measurable attempt has been made No complete paper box has been turned in
Corner tabs & Safety tabs	All tabs are present and correct size according to print All tabs are in correct position according to print	Tabs are all present and in correct position according to print Tab measurements are correct with up to 1/16" variance from print dimensions	Only one safety or corner tab is improperly positioned and/ or tab measurements are correct with up to 1/8" variance from print dimensions	More than one safety or corner tab is improperly positioned or missing entirely and/ or measurements are beyond 1/8" outside of	Tabs are non existent or no attempt has been made No complete box turned in

Squareness	All corner to corner measurements are perfectly square Box sits completely flat on table	Corner to corner measurements are within 1/16" Box is within 1/16" of sitting flat on the table	Corner to corner measurements are within 1/8" Box is within 1/8" of sitting flat on the table	Corner to corner measurements are off by more than 1/8" Box is more than 1/8" from sitting flat on the table	Box exhibits no squareness Box not complete or not turned in
Fit and finish	Corners are crisp All edges line up Folds are crisp and straight	All but one corner is crisp All edges line up Folds are crisp and straight within 1/16"	All but one corner is crisp All but one edge line up Folds are not crisp, but still within 1/16"	Multiple corners are not crisp More than one edge does not line up Folds are not crisp, or more than 1/16 off	Mushy corners Edges don't line up at all Sloppy folds Box not complete or not turned in