

Team Apollo Final CAD Package

Course: ME-486C
Date: July 31st, 2018

Members:

Trenton Black
Esmael Abdullah
Fahad Esmael
Andres Rodriguez
Dakota Hanks

Project: Project #6 - Programming and Sensors
Instructor: Dr. Sarah Oman & GTA Amy Swartz
Client: Dr. Michael Shafer

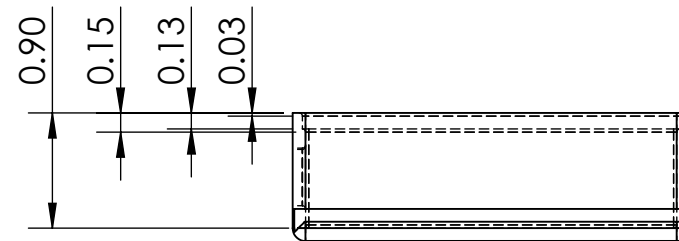
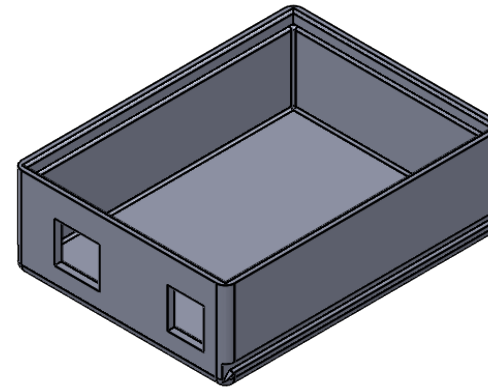
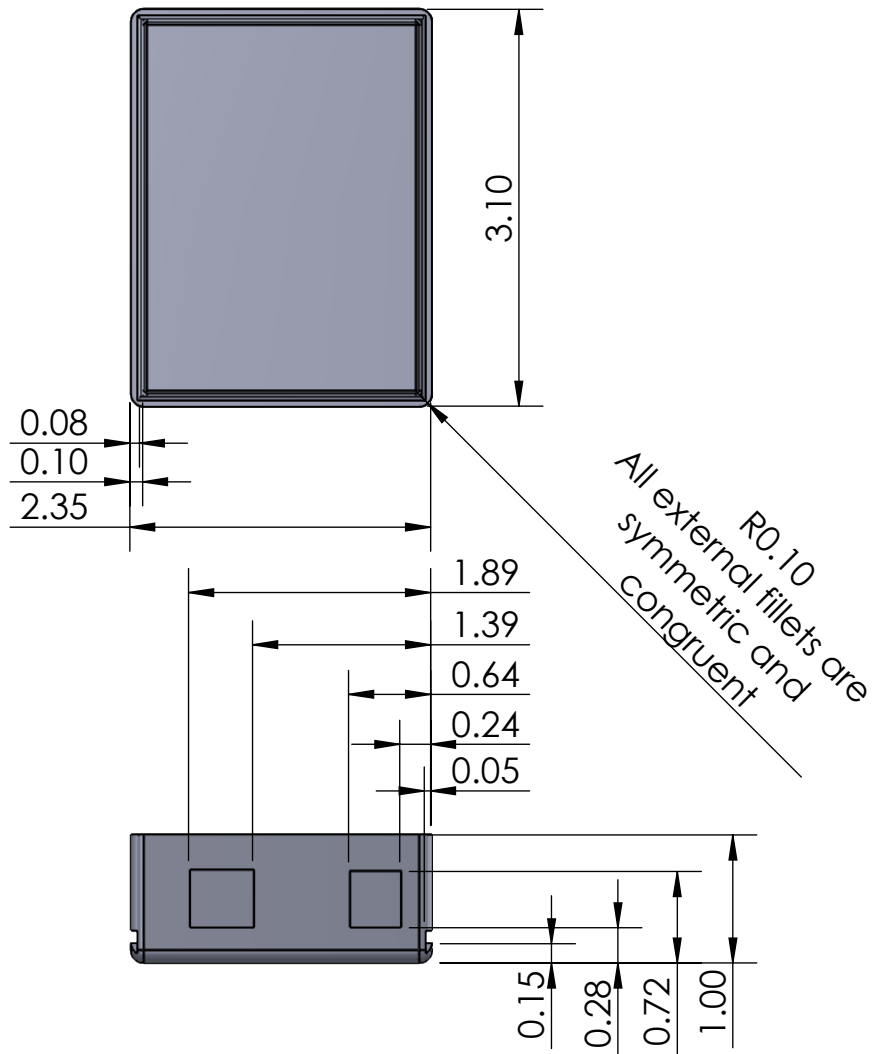
CAD Author:
Trenton Black

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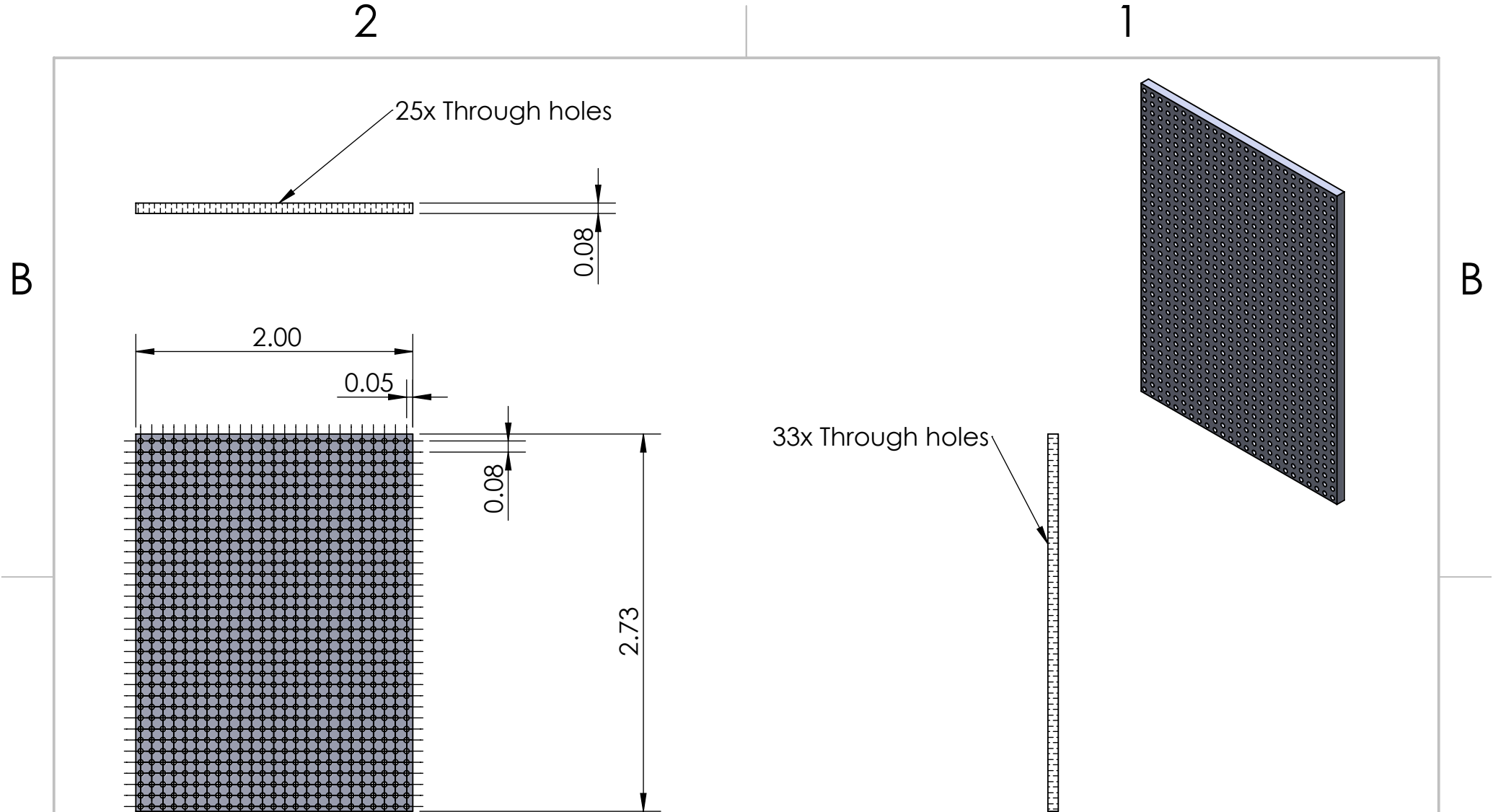
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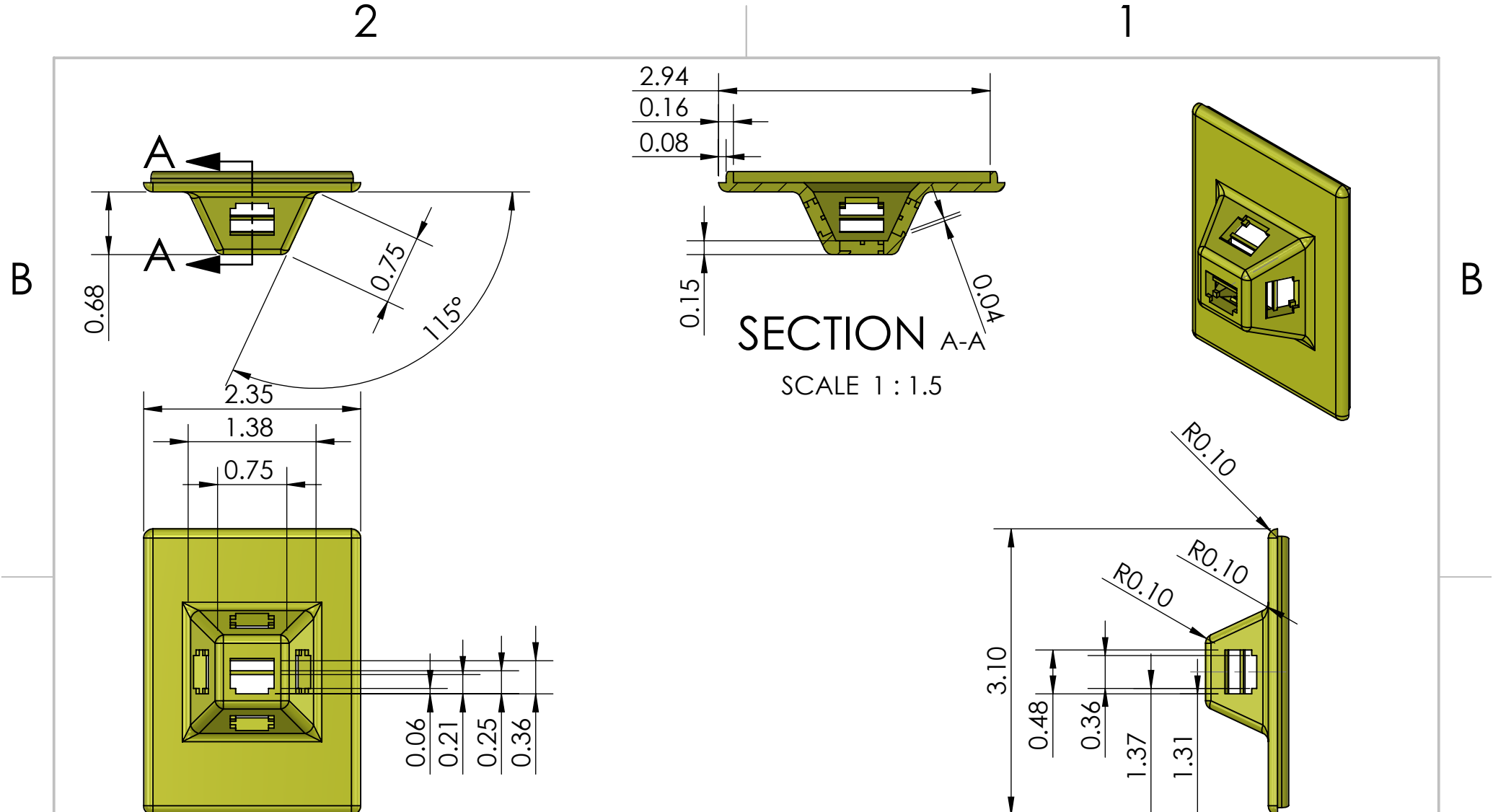
UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Arduino Housing 3x3x1.13
DIMENSIONS ARE IN INCHES		Trenton	07/31	
TOLERANCES: TWO PLACE DECIMAL ±.05	DRAWN	Black	2018	
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: Printer Tolerances & clearance non-slide mates - .025in Rapidlab Prints: non-slide mates - .007in slide Mate - .0145in			SIZE
MATERIAL PLA - Filament				DWG. NO.
FINISH				P.3 CPU Housing
DO NOT SCALE DRAWING				REV
				SCALE: 1:1
				WEIGHT:
				SHEET 2 OF 21

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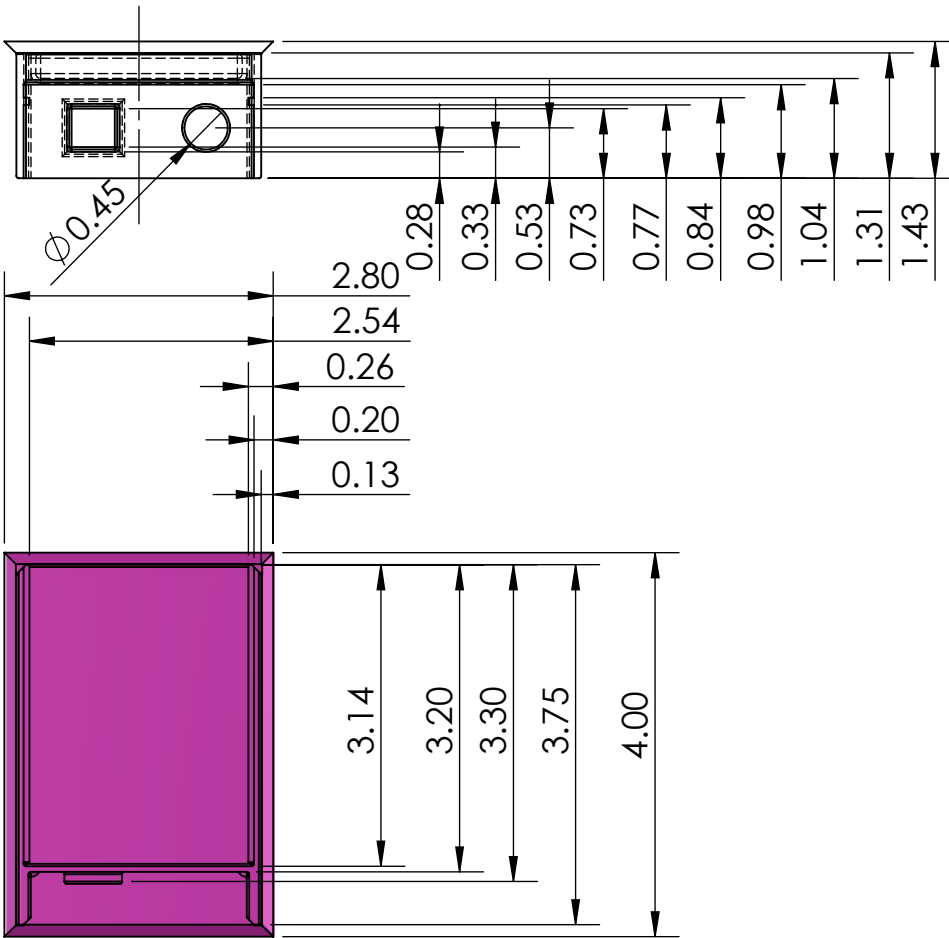


UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Wire Slot Grid 2.73 x 2.0 x .08	
DIMENSIONS ARE IN INCHES					
TOLERANCES: TWO PLACE DECIMAL ±.05	DRAWN	Trenton Black	07/31 2018	SIZE A	DWG. NO. P.18 Wire Slot
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: Printer Tolerances & clearance non-slide mates - .025in Rapidlab Prints: non-slide mates - .007in slide Mate - .0145in			REV	
MATERIAL				SCALE: 1:1	WEIGHT:
FINISH				SHEET 3 OF 21	
DO NOT SCALE DRAWING					

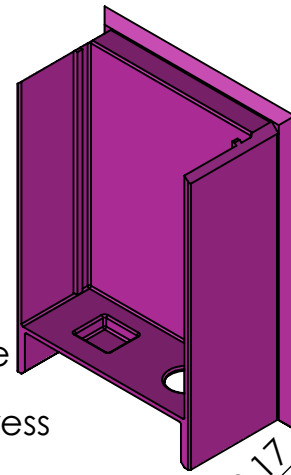
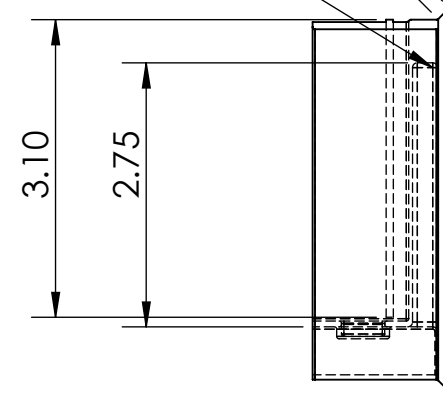


UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Solar Array at 65 Degrees 3x3x.68
DIMENSIONS ARE IN INCHES		Trenton	07/31	
TOLERANCES:		Black	2018	SIZE DWG. NO. REV A P.1 Array (65)
TWO PLACE DECIMAL ±.05	DRAWN			
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: Printer Tolerances & clearance non-slide mates - .025in Rapidlab Prints: non-slide mates - .007in slide Mate - .0145in			SCALE: 2:1 WEIGHT: SHEET 4 OF 21
MATERIAL PLA - Filament FINISH	DO NOT SCALE DRAWING			

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All internal fillets have R.05in are assymetric and congruent at Stress concentrations



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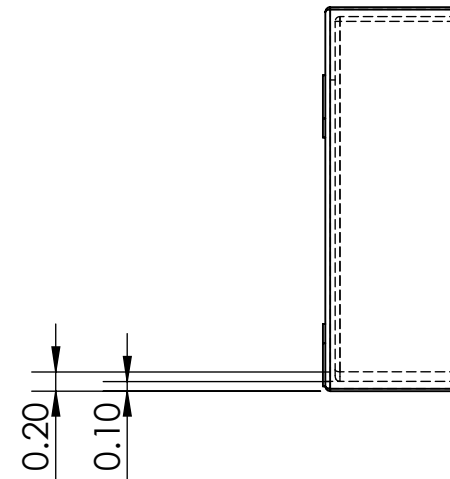
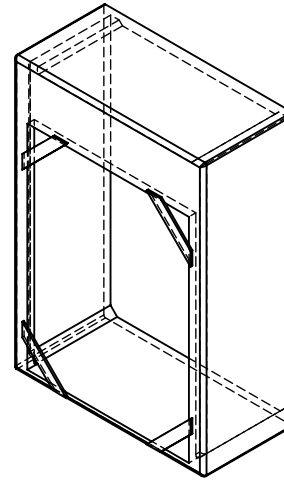
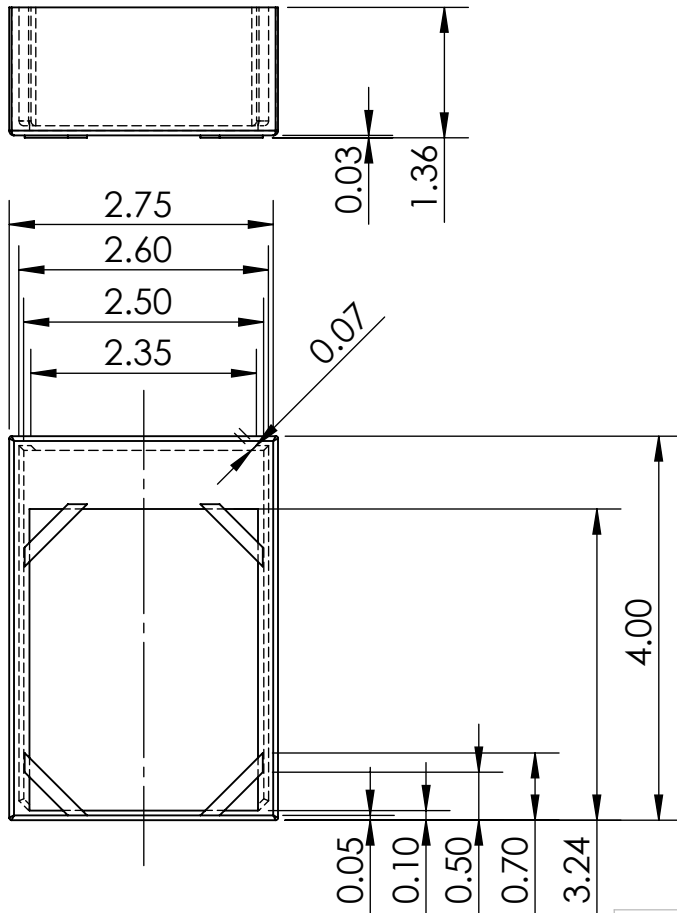
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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Battery Tray 4.4x3.9x2.0	
DIMENSIONS ARE IN INCHES					
TOLERANCES: TWO PLACE DECIMAL ±.05	DRAWN	Trenton Black	07/31 2018	SIZE	DWG. NO.
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: Printer Tolerances & clearance non-slide mates - .025in Rapidlab Prints: non-slide mates - .007in slide Mate - .0145in			A	P.2 Battery Tray
MATERIAL PLA - Filament				SCALE: 1:2	WEIGHT:
FINISH	DO NOT SCALE DRAWING				

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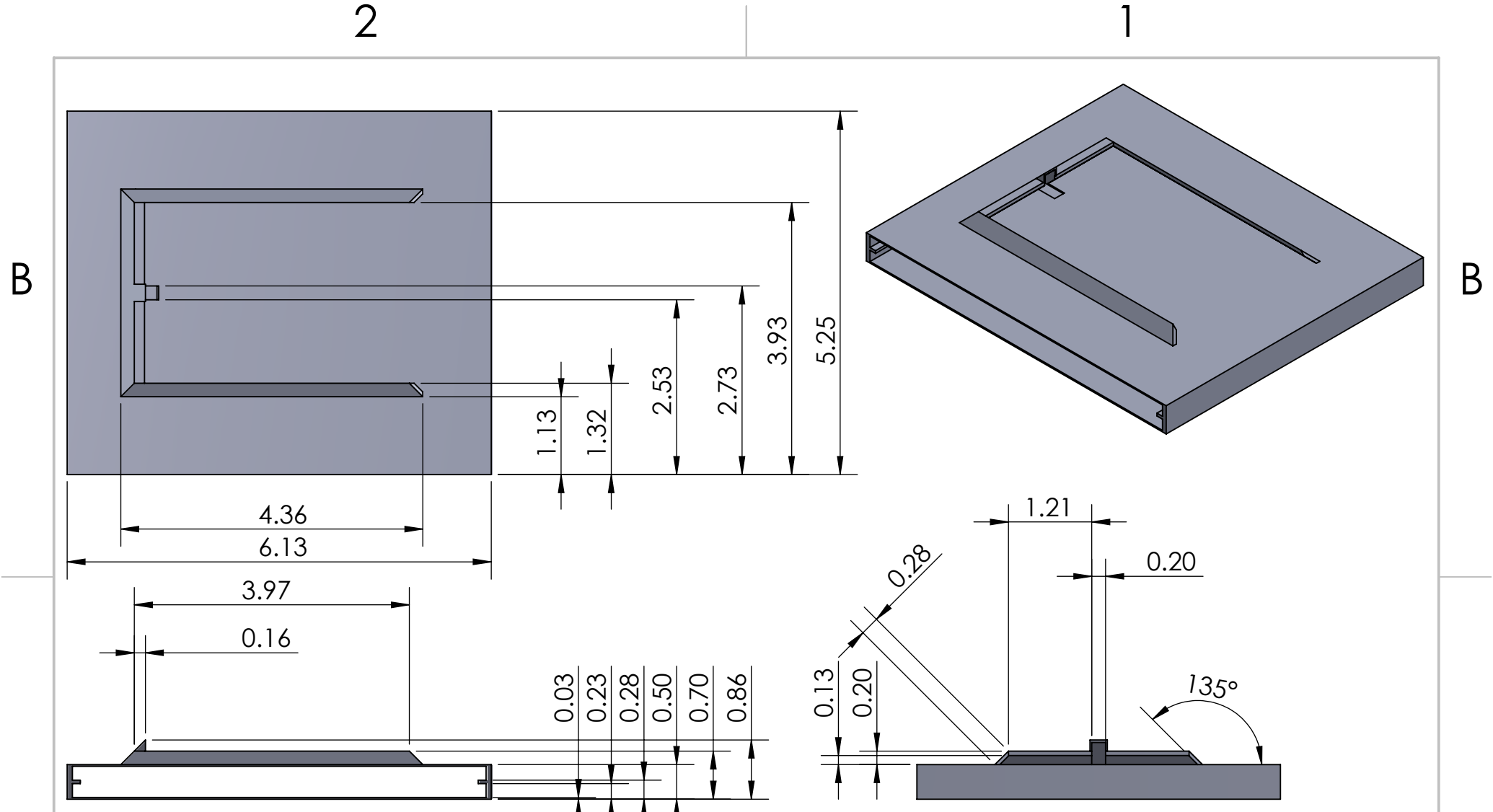
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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE:	
DIMENSIONS ARE IN INCHES		Trenton	07/31	Clear Cover	
TOLERANCES:		Black	2018	4.4x3.9x2.1	
TWO PLACE DECIMAL ±.05	DRAWN			SIZE	DWG. NO.
INTERPRET GEOMETRIC TOLERANCING PER:				A	P.7 Cover
MATERIAL	COMMENTS:				REV
PLA - Filament	Printer Tolerances & clearance			SCALE: 1:2	WEIGHT:
FINISH	non-slide mates - .025in				SHEET 6 OF 21
DO NOT SCALE DRAWING	Rapidlab Prints:				
	non-slide mates - .007in				
	slide Mate - .0145in				

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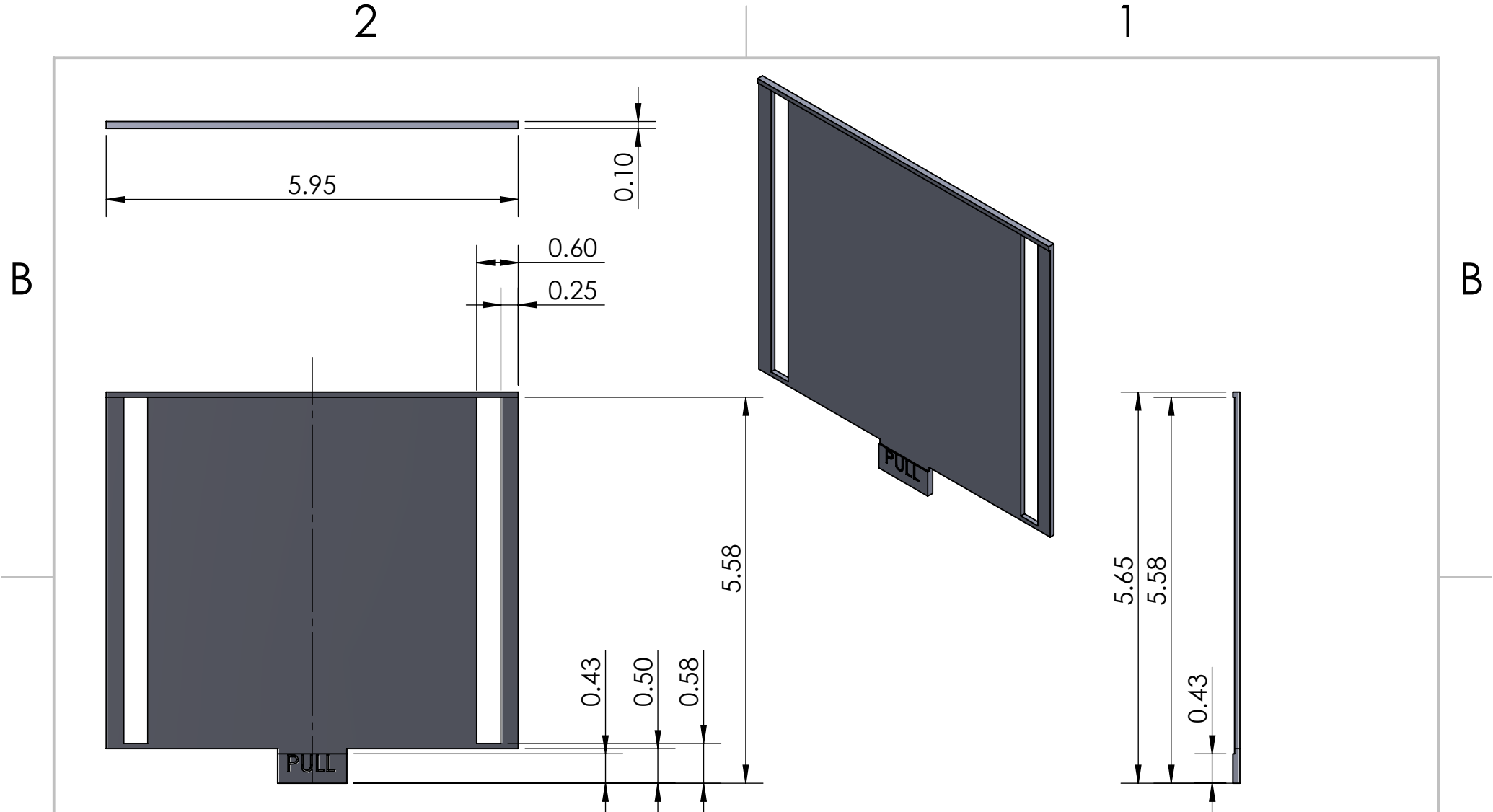
UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Solar Tray 6.13 x 5.25 x .86 in	
DIMENSIONS ARE IN INCHES					
TOLERANCES: TWO PLACE DECIMAL ±.05		DRAWN	Trenton Black	07/31 2018	SIZE A
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS: Printer Tolerances & clearance non-slide mates - .025in Rapidlab Prints: non-slide mates - .007in slide Mate - .0145in			
MATERIAL PLA - Filament					REV
FINISH					SCALE: 1:2
DO NOT SCALE DRAWING					WEIGHT:
					SHEET 7 OF 21

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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:
TWO PLACE DECIMAL ±.05

INTERPRET GEOMETRIC
TOLERANCING PER:

MATERIAL
PLA - Filament

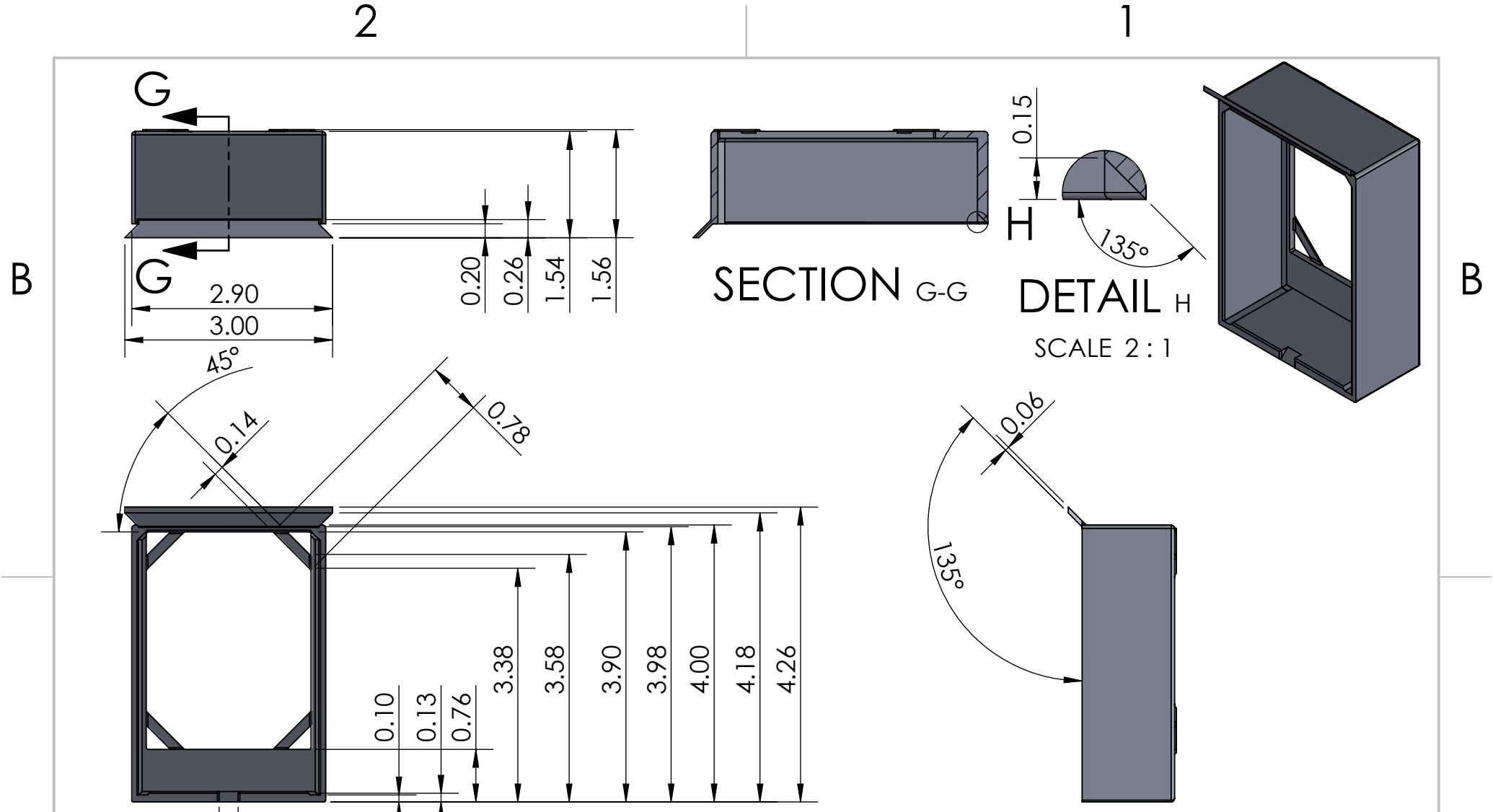
FINISH

DO NOT SCALE DRAWING

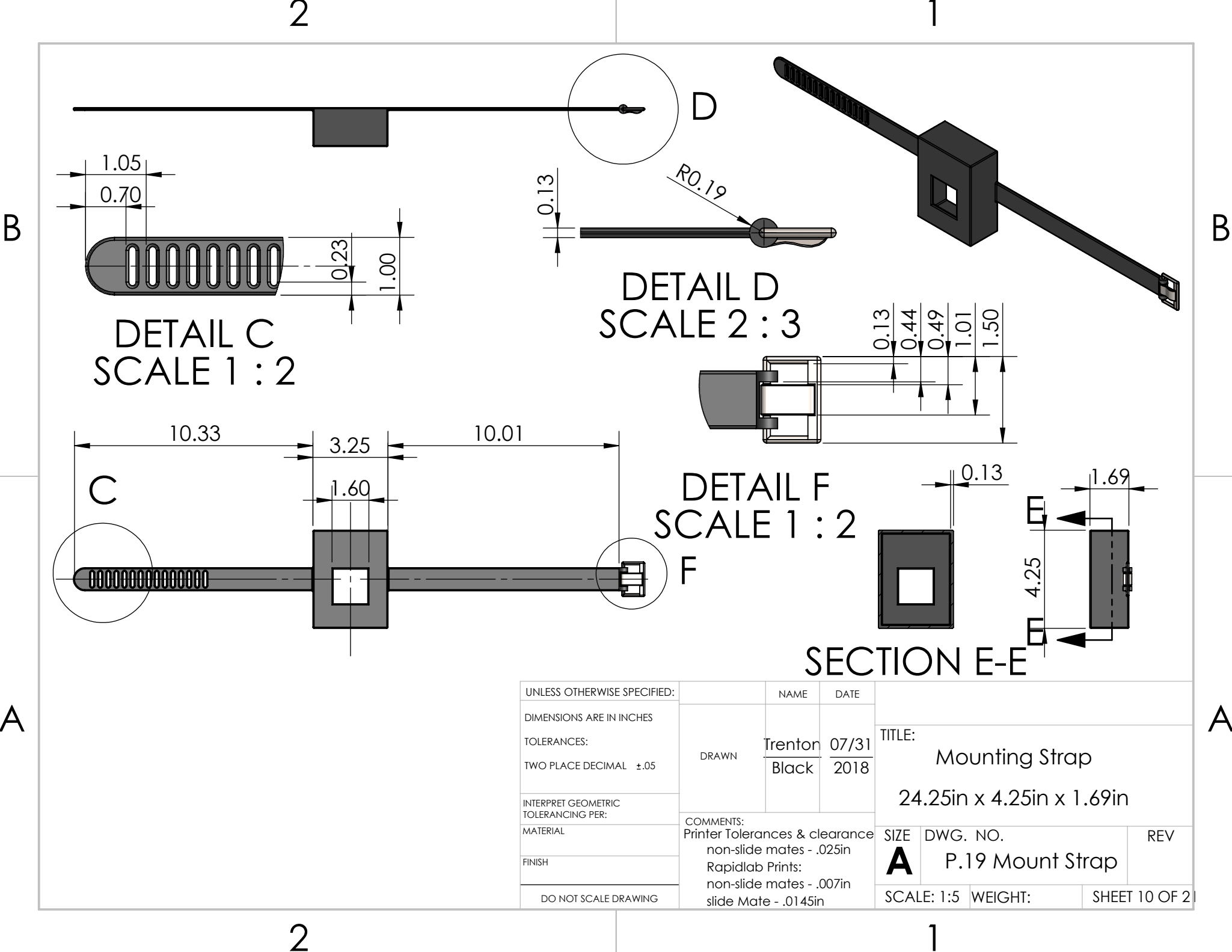
	NAME	DATE
DRAWN	Trenton	07/31
	Black	2018

COMMENTS:
Printer Tolerances & clearance
non-slide mates - .025in
Rapidlab Prints:
non-slide mates - .007in
slide Mate - .0145in

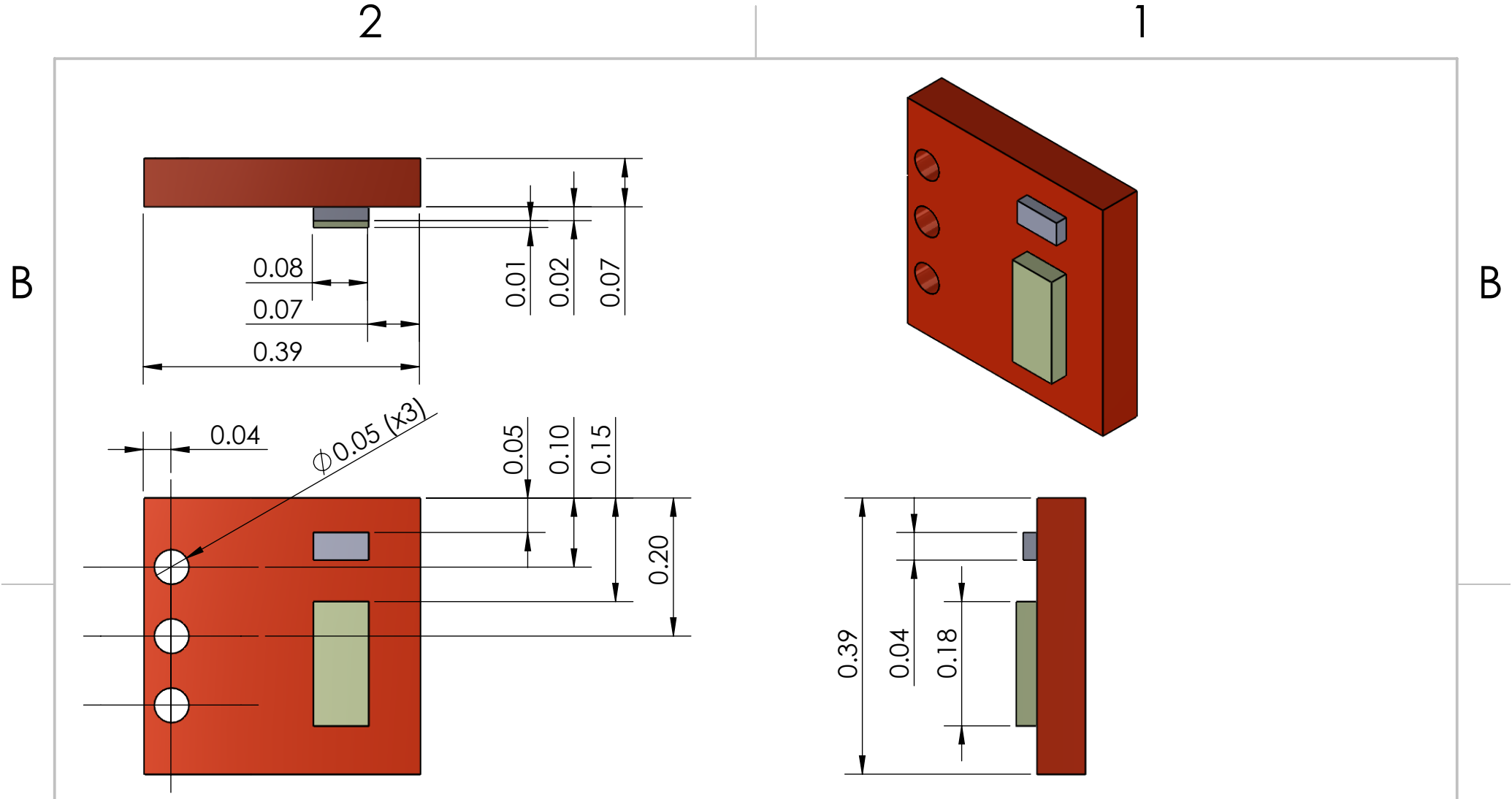
TITLE: Panel Tray 5.95 x 5.58 x .1		
SIZE A	DWG. NO. P.6 Panel Tray	REV
SCALE: 1:2	WEIGHT:	SHEET 8 OF 21



UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Solar & Battery Tray Cover 4.26 x 1.56 x 3.0 in	
DIMENSIONS ARE IN INCHES		Black	07/31 2018		
TOLERANCES: TWO PLACE DECIMAL ±.05		DRAWN	Trenton	SIZE DWG. NO. REV	
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS: Printer Tolerances & clearance non-slide mates - .025in Rapidlab Prints: non-slide mates - .007in slide Mate - .0145in		A P.4 Tray Cover	
MATERIAL PLA - Filament FINISH		DO NOT SCALE DRAWING		SCALE: 1:2 WEIGHT: SHEET 9 OF 21	



UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Mounting Strap 24.25in x 4.25in x 1.69in
DIMENSIONS ARE IN INCHES		Trenton	07/31	
TOLERANCES:		Black	2018	SIZE DWG. NO. REV A P.19 Mount Strap
TWO PLACE DECIMAL ±.05	DRAWN			
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: Printer Tolerances & clearance non-slide mates - .025in Rapidlab Prints: non-slide mates - .007in slide Mate - .0145in			
MATERIAL				SCALE: 1:5 WEIGHT: SHEET 10 OF 21
FINISH				
DO NOT SCALE DRAWING				



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

TWO PLACE DECIMAL ±.05
 [Non-Applicable]

INTERPRET GEOMETRIC
 TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	Trenton	07/31
	Black	2018

COMMENTS:

TITLE:

Ambient Light Sensor

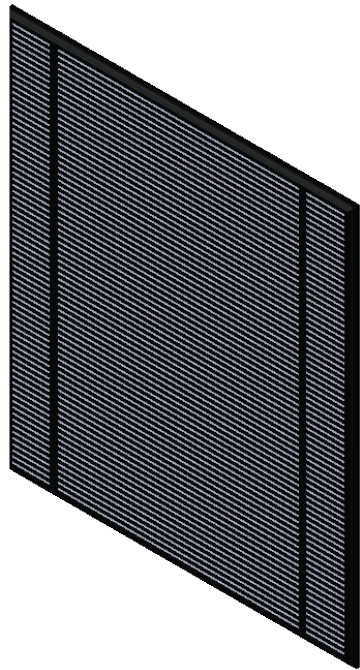
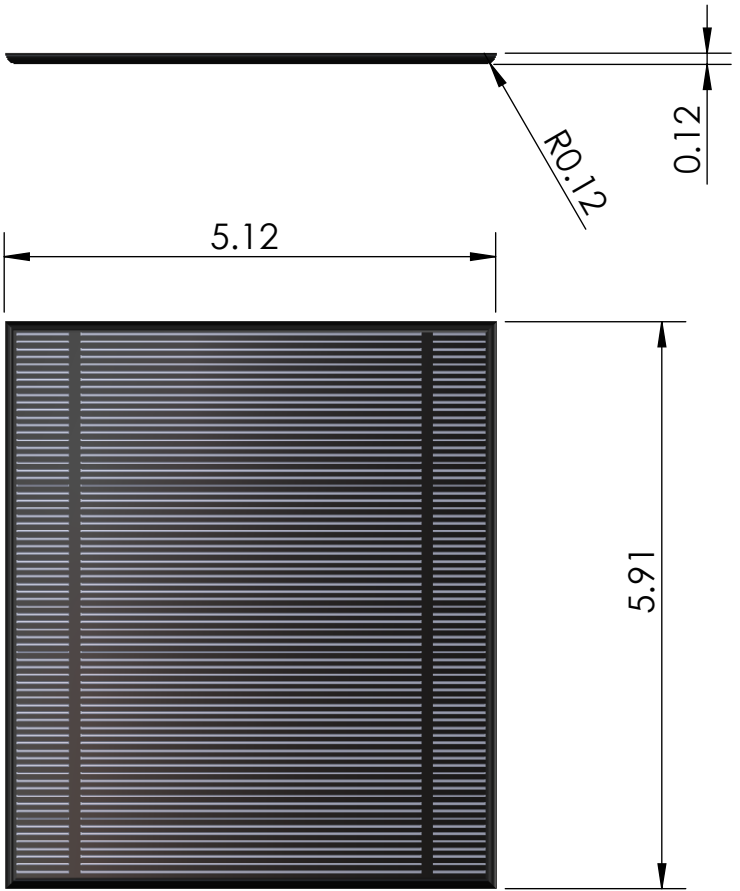
.39x.39x.07

SIZE	DWG. NO.	REV
A	P.9 Light Sensor	
SCALE: 5:1	WEIGHT:	SHEET 11 OF 2

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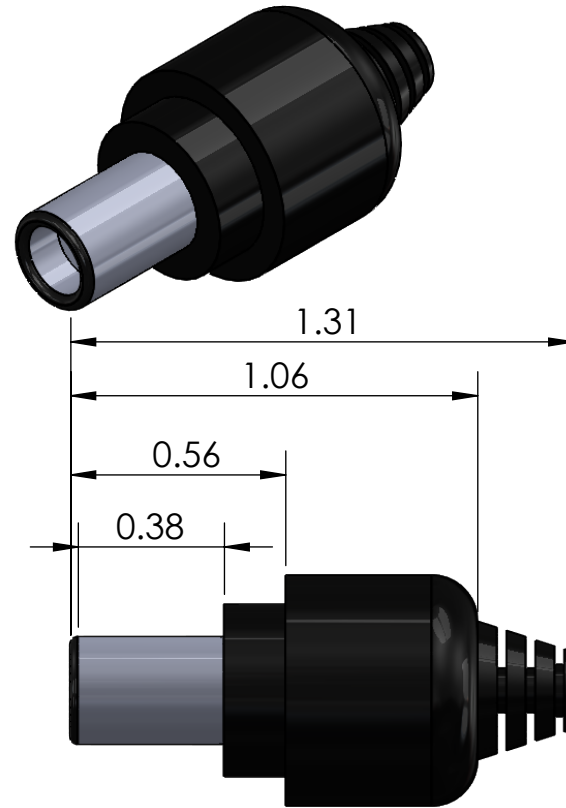
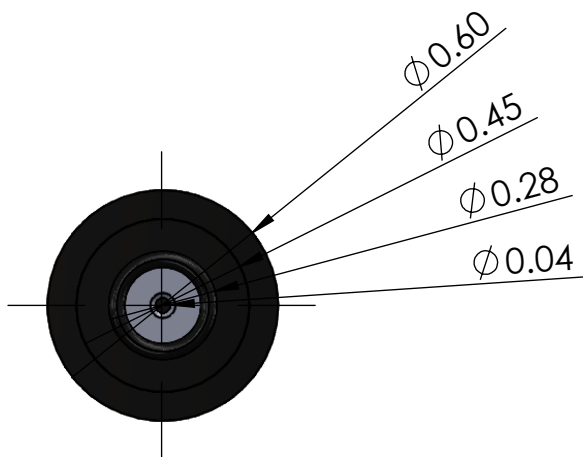
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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: ALLPOWERS 2.5W 5V .5Ah 5.91x5.12x.12	
DIMENSIONS ARE IN INCHES		DRAWN	Trenton Black		
TOLERANCES: TWO PLACE DECIMAL ±.05 [Non-Applicable]		COMMENTS: Solar Panel Selected in design process			SIZE A
INTERPRET GEOMETRIC TOLERANCING PER:					DWG. NO. P.8 Solar Panel 2
MATERIAL					REV
FINISH					SCALE: 1:2
DO NOT SCALE DRAWING					WEIGHT:
					SHEET 12 OF 21

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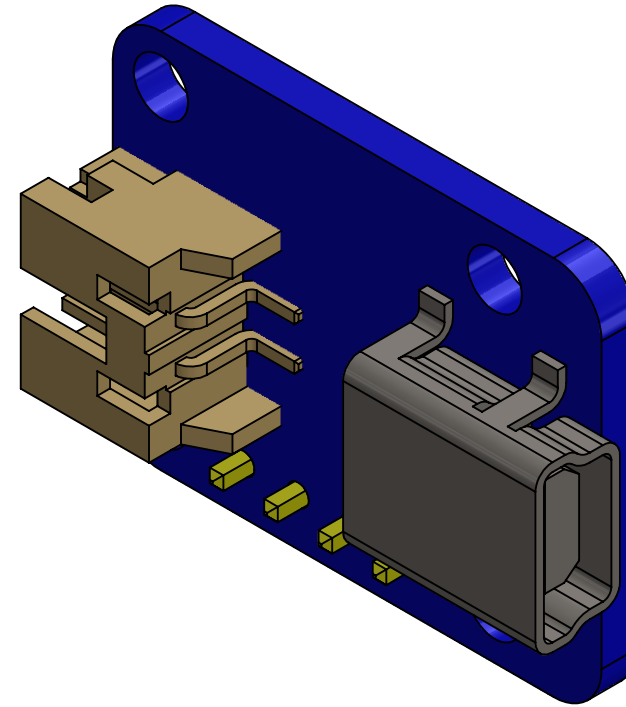
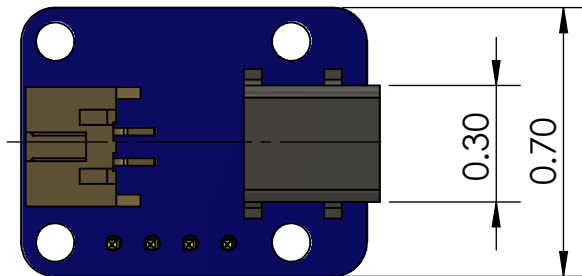
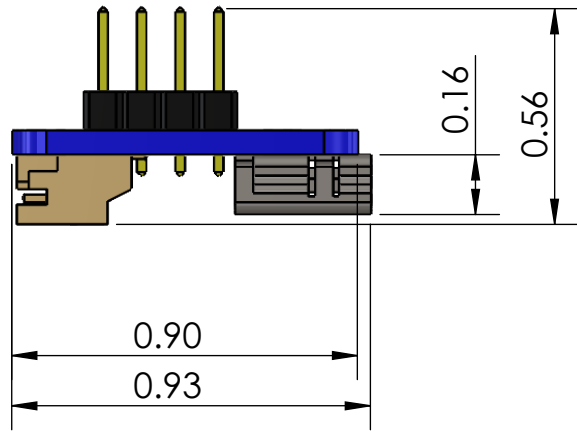
UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Male Barrel Jack Power Cable	
DIMENSIONS ARE IN INCHES					
TOLERANCES:		DRAWN	Trenton	07/31	SIZE
TWO PLACE DECIMAL $\pm .05$ [Non-Applicable]			Black	2018	
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS: For fit and model dimensioning			REV
MATERIAL					
FINISH					
DO NOT SCALE DRAWING				SCALE: 2:1	WEIGHT:
					SHEET 13 OF 21

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Adafruit Li-Po Charger 0.93x0.7x0.56			
DIMENSIONS ARE IN INCHES							
TOLERANCES: TWO PLACE DECIMAL ±.05 [Non-Applicable]		DRAWN	Trenton Black	07/31 2018	SIZE DWG. NO. REV A P.11 Li-Po Charger		
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS: Created and Modeled by DavidrMillar https://grabcad.com/library/arduino-mini-lipo-usb-1905-1					
MATERIAL							
FINISH					SCALE: 2:1	WEIGHT:	SHEET 14 OF 21
DO NOT SCALE DRAWING							

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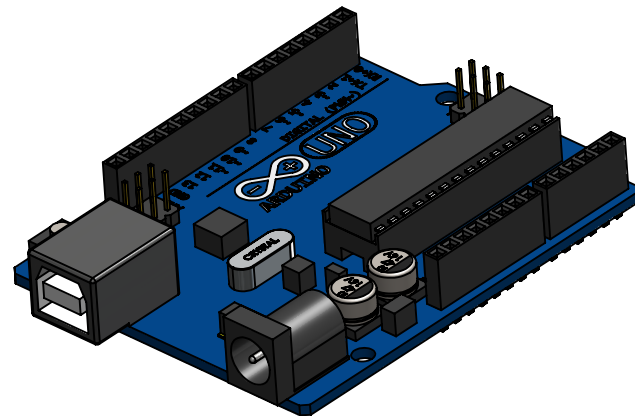
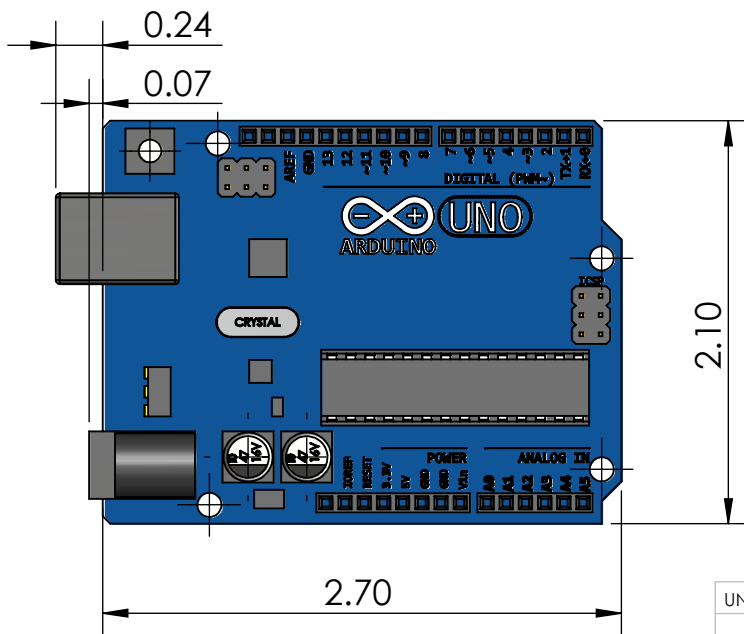
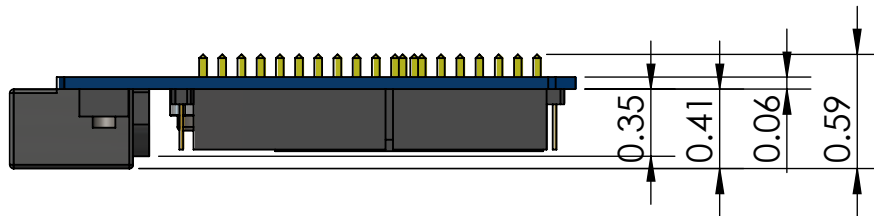
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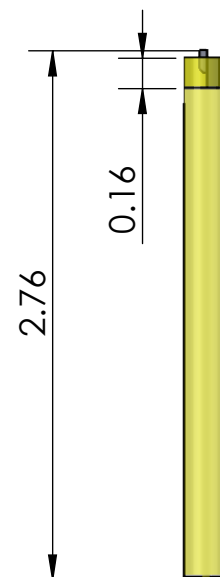
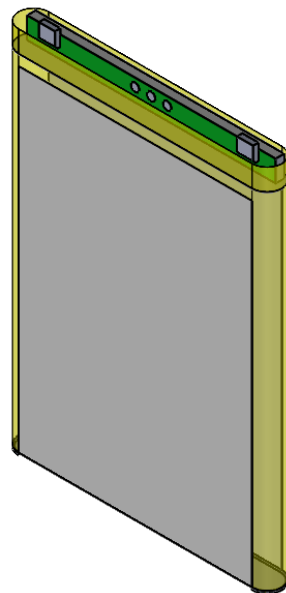
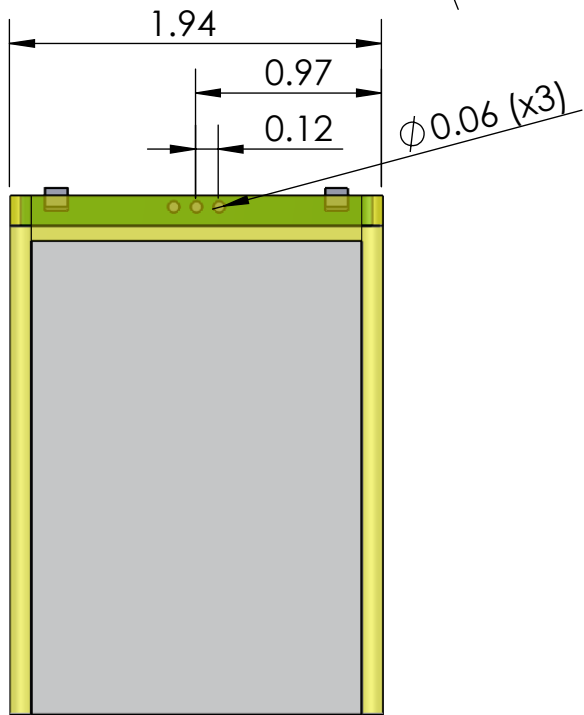
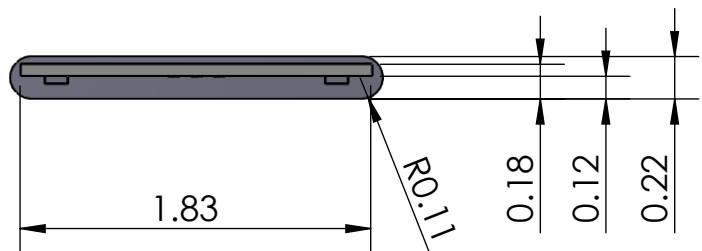
A

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Arduino Uno R3 2.7x2.1x.59	
DIMENSIONS ARE IN INCHES					
TOLERANCES:				SIZE DWG. NO. REV A P.12 Arduino	
TWO PLACE DECIMAL ±.05 [Non-Applicable]	DRAWN	Trenton Black	07/31 2018		
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: Created and Modeled by Luis Enrique grabcad.com/library/ard uino-uno-18			SCALE: 1:1 WEIGHT: SHEET 15 OF 2	
MATERIAL					
FINISH					
DO NOT SCALE DRAWING					

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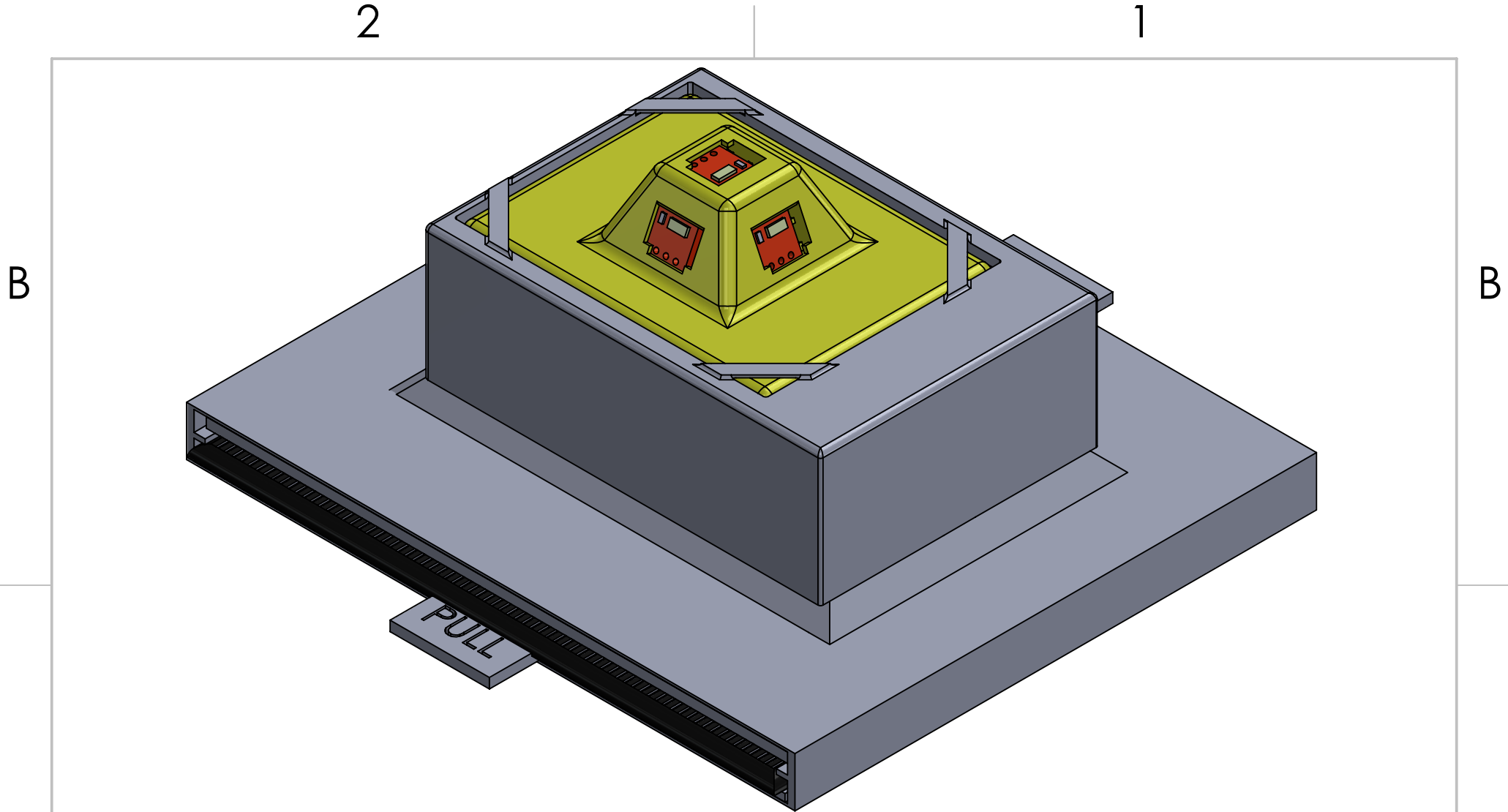
A

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Lithium Ion Polymer Battery 3.7V 2Ah		
DIMENSIONS ARE IN INCHES		Trenton	07/31			
TOLERANCES:		Black	2018	2.76x1.94x.22		
TWO PLACE DECIMAL ±.05 [Non-Applicable]	DRAWN					
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: one of these components exist in the Assembly			SIZE	REV	
MATERIAL				A	DWG. NO.	P.13 Li-Po Battery
FINISH				SCALE: 1:1	WEIGHT:	SHEET 16 OF 21
DO NOT SCALE DRAWING						

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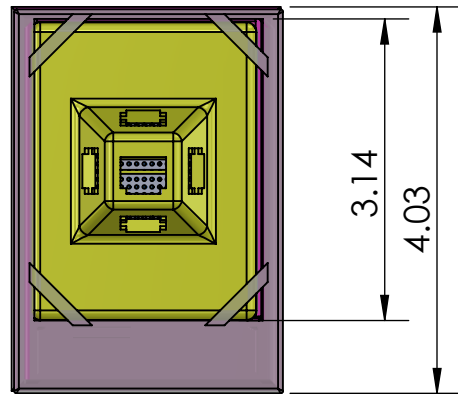
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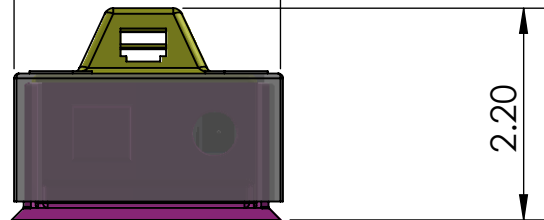
UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Solar Charging Assembly	
DIMENSIONS ARE IN INCHES					
TOLERANCES:		DRAWN	Trenton	07/31	REV
TWO PLACE DECIMAL ±.05			Black	2018	
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:		SIZE	DWG. NO.
MATERIAL PLA - Filament		Complete Mate Assembly in stored mode		A	P.14 Assembly
FINISH				SCALE: 1:5	WEIGHT:
DO NOT SCALE DRAWING				SHEET 17 OF 21	

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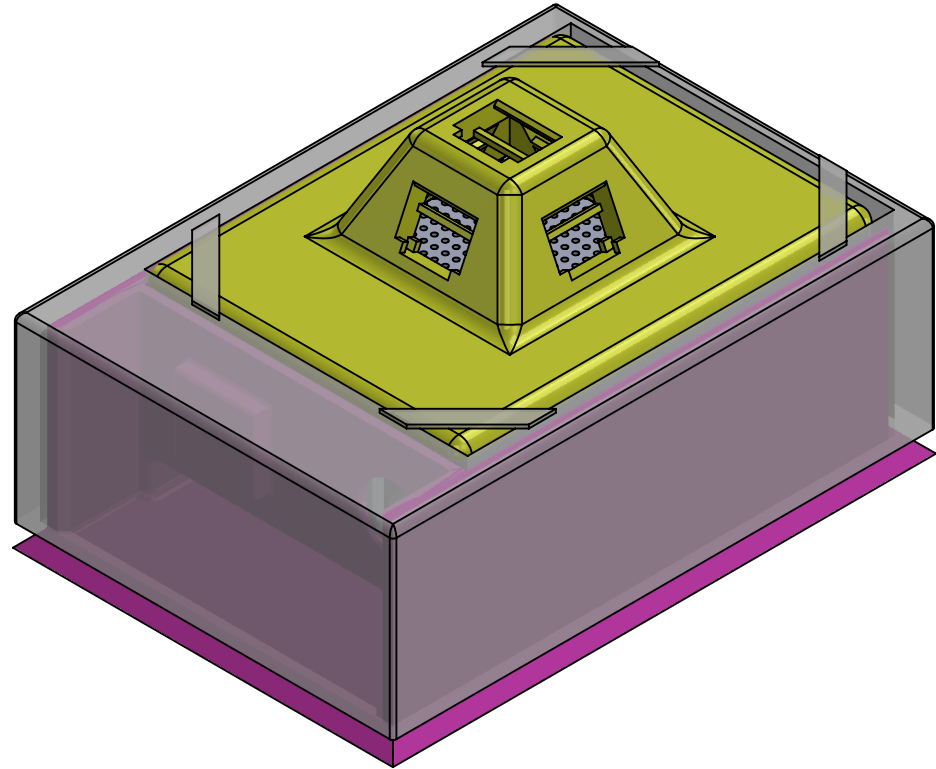
2.83

2.78



2.20

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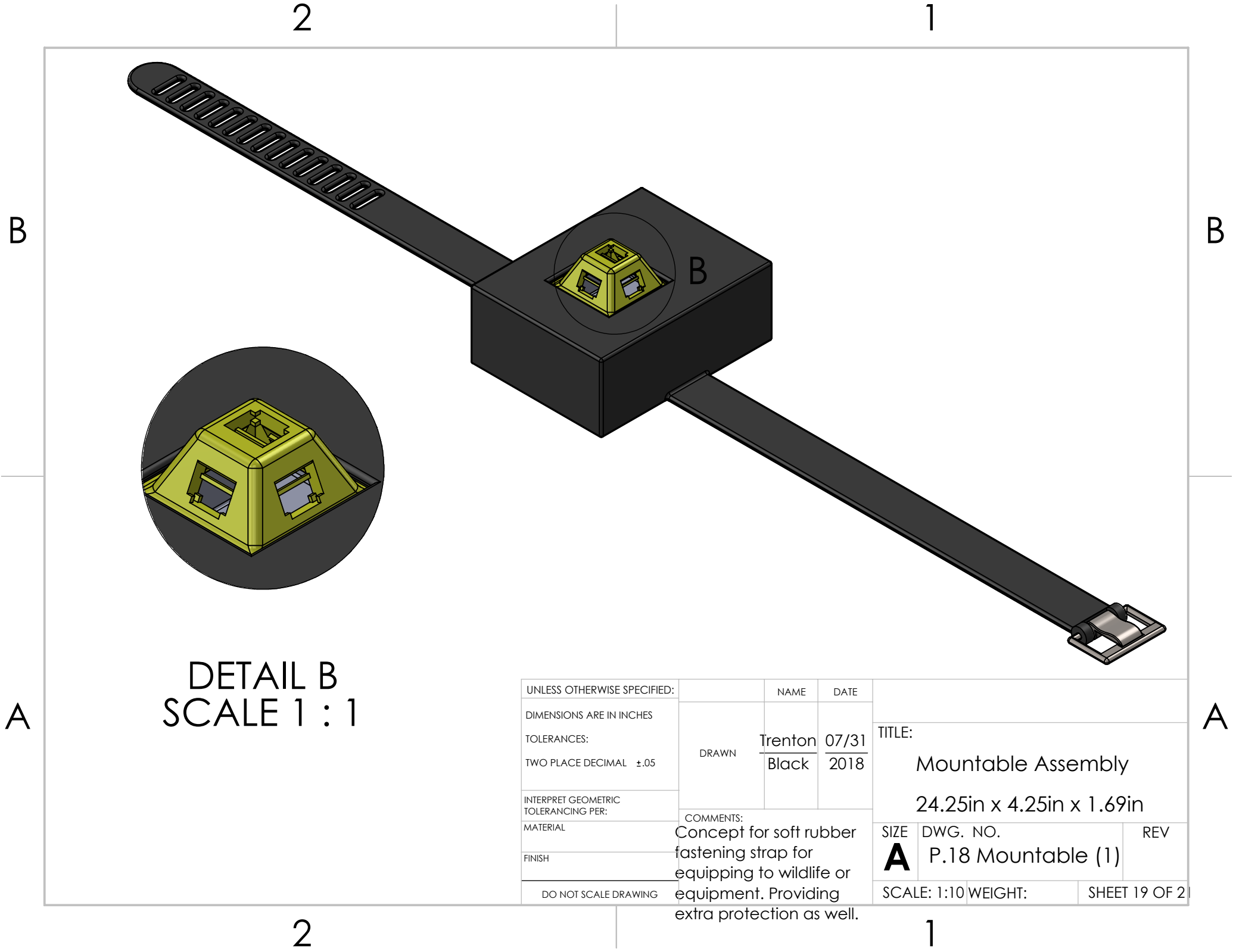
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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Simply Assembly using translucent cover 4.04 x 2.78 x 2.2
DIMENSIONS ARE IN INCHES		Trenton	07/31	
TOLERANCES:		DRAWN	Black	2018
TWO PLACE DECIMAL ±.05		COMMENTS: Most Basic design incorporating battery charging attachment		SIZE
INTERPRET GEOMETRIC TOLERANCING PER:				DWG. NO.
MATERIAL				P.15 POD
FINISH				REV
DO NOT SCALE DRAWING				SCALE: 1:2
				WEIGHT:
				SHEET 18 OF 21

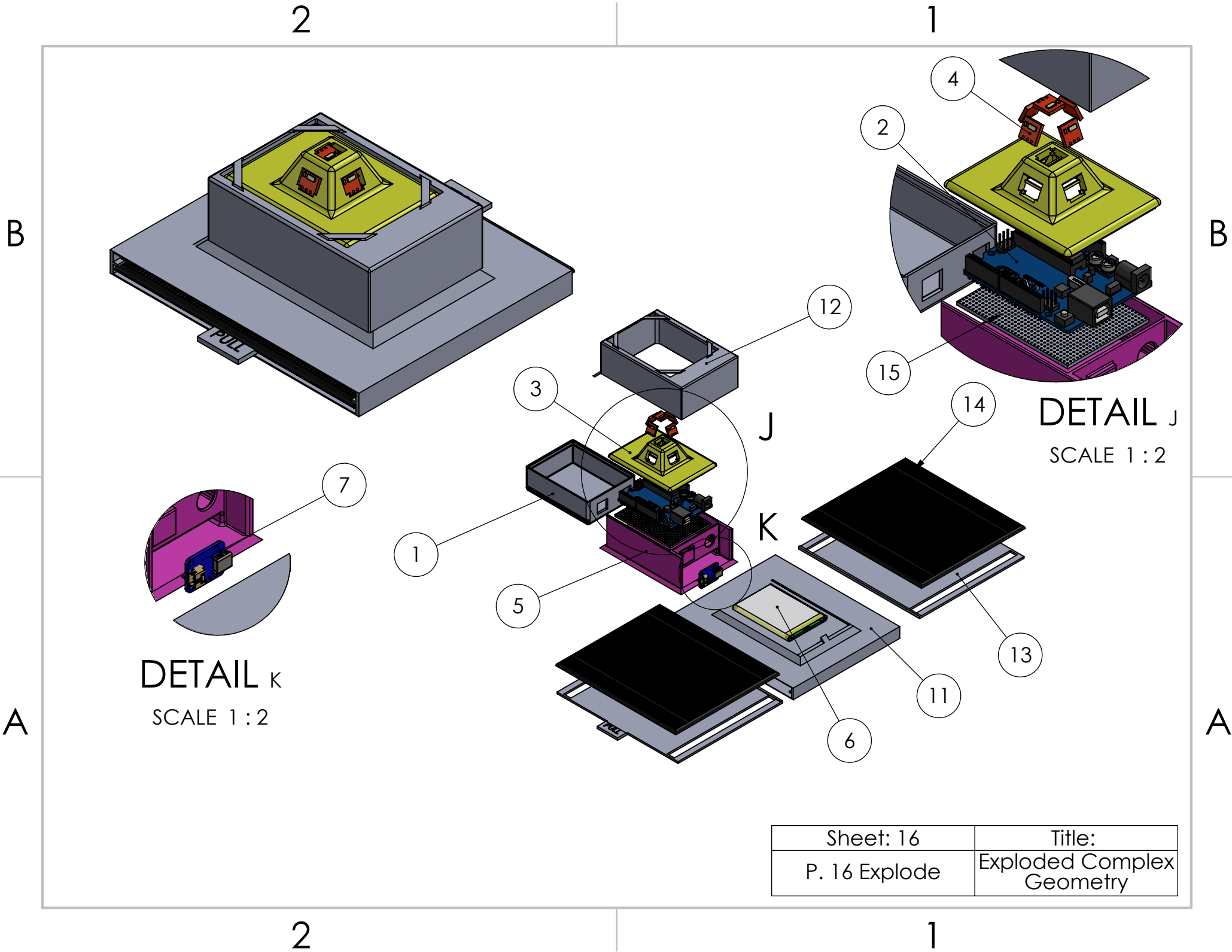
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DETAIL B
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Mountable Assembly 24.25in x 4.25in x 1.69in
DIMENSIONS ARE IN INCHES				
TOLERANCES: TWO PLACE DECIMAL ±.05	DRAWN	Trenton Black	07/31 2018	SIZE DWG. NO. REV
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS: Concept for soft rubber fastening strap for equipping to wildlife or equipment. Providing extra protection as well.			A P.18 Mountable (1)
MATERIAL				SCALE: 1:10 WEIGHT: SHEET 19 OF 21
FINISH				
DO NOT SCALE DRAWING				



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ITEM NO.	PART FILE NAME	DESCRIPTION	QTY.
1	Arduino Housing	Arduino Housing 3x3x1.13	1
2	Arduino UNO	Arduino Uno R3 2.7x2.1x.59	1
3	Array3_65	Solar Array at 65D 3x3x.68	1
4	Ambient Light Sensor	Ambient Light Sensor .39x.39x.07	5
5	Battery_Tray	Battery Tray 4.4x3.9x2.0	1
6	Li-Po_Batt	Lithium Ion Polymer Battery 3.7V 2Ah 2.76x1.94x.22	1
7	ARDUINO MINI LIPO USB 1905	Adafruit Li-Po Charger 0.93x0.7x0.56	1
11	Solar Tray	Solar Tray 6.13 x 5.25 x .86 in	1
12	Mounting_Cover(2)	Solar & Battery Tray Cover 4.26 x 1.56 x 3.0 in	1
13	Panel Tray	Panel Tray 5.95 x 5.58 x .1	2
14	Solar_Panel(2)	ALLPOWERS 2.5W 5V .5Ah 5.91x5.12x.12	2
15	Wire Slot	Wire Slot Grid 2.73 x 2.0 x .08	1

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Bill Of Materials	
DIMENSIONS ARE IN INCHES					
TOLERANCES: TWO PLACE DECIMAL ±.05	DRAWN	Trenton Black	07/31 2018	SIZE DWG. NO. REV A P.17 BOM	
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:				
MATERIAL					
FINISH					
DO NOT SCALE DRAWING	SCALE: 1:5		WEIGHT:	SHEET 21 OF 21	

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