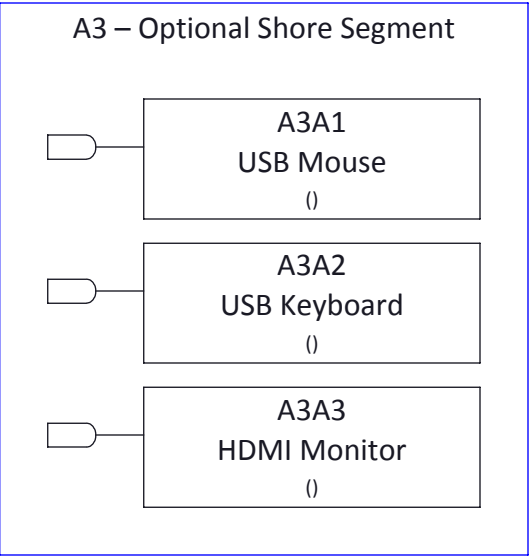

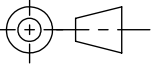


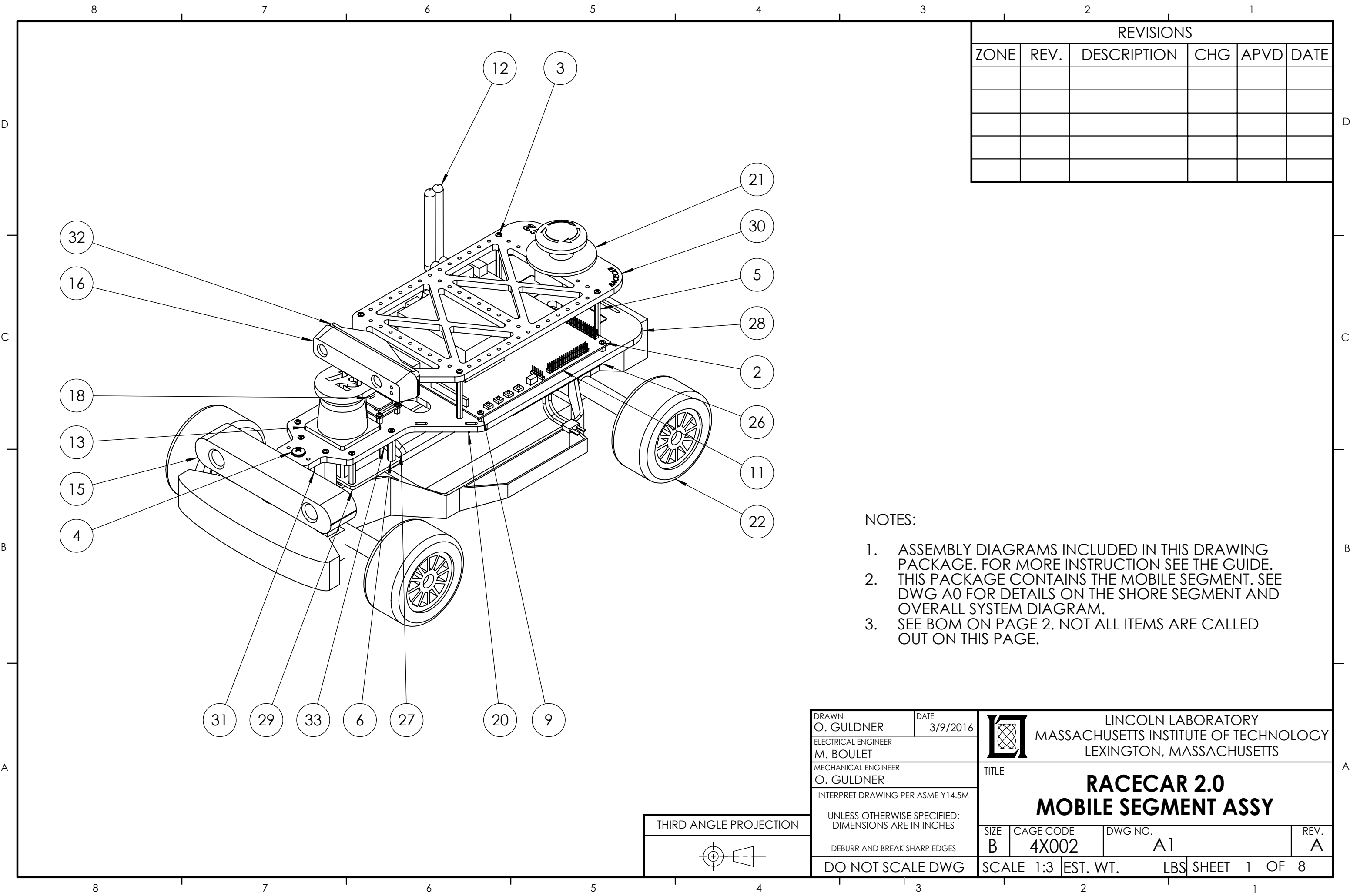
REVISIONS					
ZONE	REV.	DESCRIPTION	CHG	APVD	DATE



DRAWN M. BOULET		DATE 3/9/2016		<div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div>	
ELECTRICAL ENGINEER M. BOULET					
MECHANICAL ENGINEER O. GULDNER					
INTERPRET DRAWING PER ASME Y14.5M				TITLE RACECAR 2.0 BLOCK DIAGRAM	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES					
DEBURR AND BREAK SHARP EDGES					
DO NOT SCALE DWG		SIZE B	CAGE CODE 4X002	DWG NO. A0	REV. A
SCALE 1:1		EST. WT.	LBS	SHEET 1	OF 1


THIRD ANGLE PROJECTION



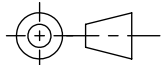


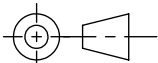
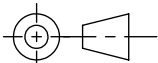
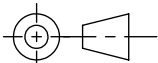
REVISIONS					
ZONE	REV.	DESCRIPTION	CHG	APVD	DATE

- NOTES:
- 1. ASSEMBLY DIAGRAMS INCLUDED IN THIS DRAWING PACKAGE. FOR MORE INSTRUCTION SEE THE GUIDE.
 - 2. THIS PACKAGE CONTAINS THE MOBILE SEGMENT. SEE DWG A0 FOR DETAILS ON THE SHORE SEGMENT AND OVERALL SYSTEM DIAGRAM.
 - 3. SEE BOM ON PAGE 2. NOT ALL ITEMS ARE CALLED OUT ON THIS PAGE.

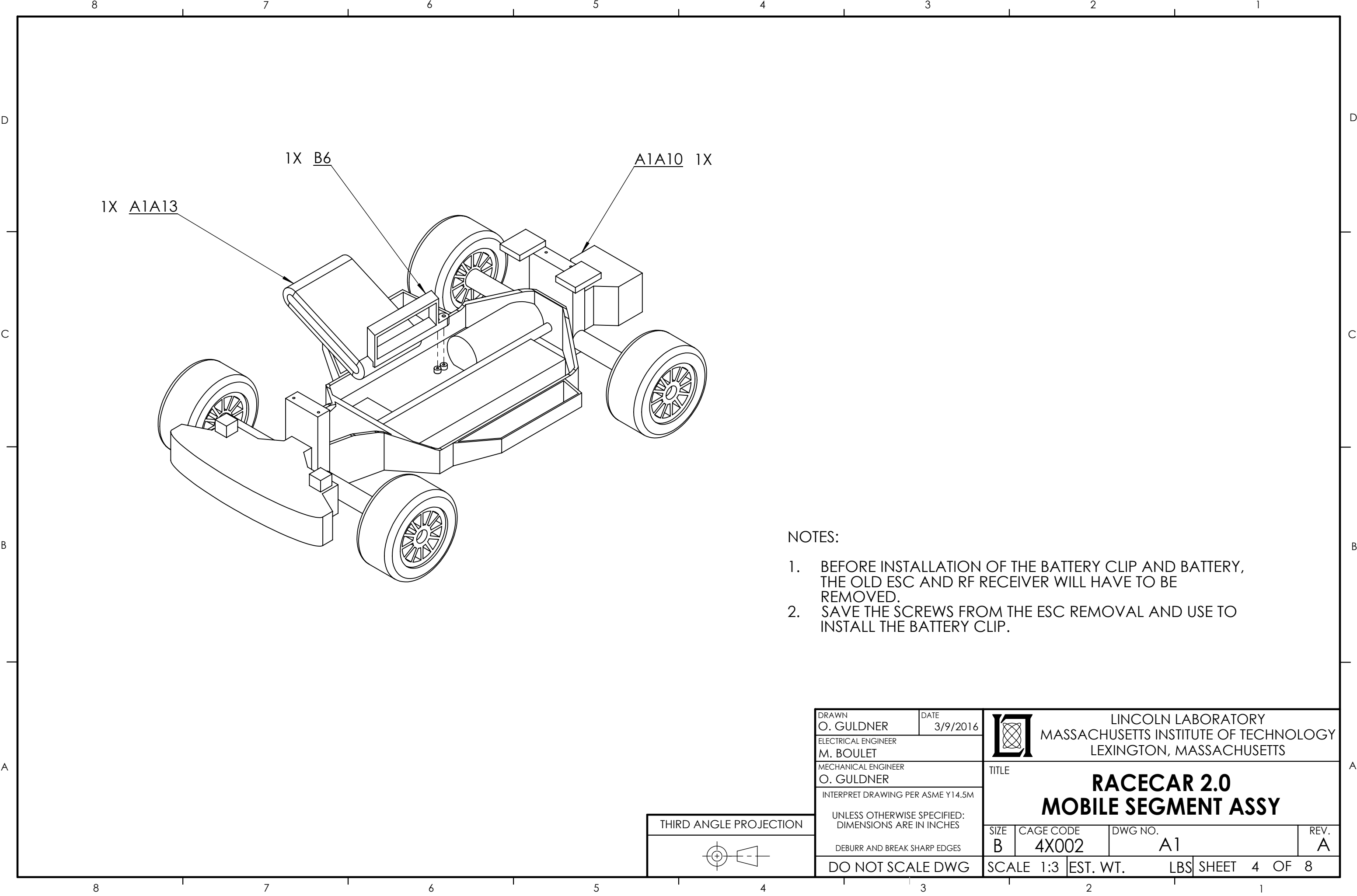
DRAWN O. GULDNER		DATE 3/9/2016		<div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div>	
ELECTRICAL ENGINEER M. BOULET					
MECHANICAL ENGINEER O. GULDNER					
INTERPRET DRAWING PER ASME Y14.5M				TITLE	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES				RACECAR 2.0 MOBILE SEGMENT ASSY	
DEBURR AND BREAK SHARP EDGES		SIZE B	CAGE CODE 4X002	DWG NO. A1	REV. A
DO NOT SCALE DWG		SCALE 1:3	EST. WT.	LBS	SHEET 1 OF 8

THIRD ANGLE PROJECTION




D	ITEM NO.	PART NUMBER	DESCRIPTION	Overview/QTY.																																																			
	1	7-340-2PP-BA	CTS THERMAL MANAGEMENT PRODUCTS HEATSINK, 9W @ 60C	1																																																			
	2	91772A106	18-8 STAINLESS STEEL PAN HEAD PHILLIPS MACHINE SCREW, 4-40 THREAD, 1/4" LENGTH	20																																																			
	3	91772A108	SCREW, PH, 4-40 UNC X 0.375 IN LG, SS	22																																																			
	4	91772A535	18-8 STAINLESS STEEL PAN HEAD PHILLIPS MACHINE SCREW, 1/4"-20 THREAD, 3/8" LENGTH	3																																																			
	5	91780A038	ALUMINUM FEMALE THREADED HEX STANDOFF, 3/16" HEX, 1-3/4" LENGTH, 4-40 SCREW SIZE	5																																																			
	6	91780A167	STANDOFF, 4-40 UNC THRU X 1.0 IN LG, AL	4																																																			
	7	91845A029	18-8 STAINLESS STEEL HEX NUT, 1/4"-20 THREAD, 7/16" WIDE, 7/32" HIGH	2																																																			
	8	92000A120	18-8 STAINLESS STEEL METRIC PAN HEAD PHILLIPS MACHINE SCREW, M3 SIZE, 10MM LENGTH, .5MM PITCH	2																																																			
	9	93505A101	ALUMINUM FEMALE THREADED HEX STANDOFF, 3/16" HEX, 1/4" LENGTH, 4-40 SCREW SIZE	20																																																			
C	10	95345A043	18-8 STAINLESS STEEL PAN HEAD PHILLIPS MACHINE SCREW, #6-32 THREAD, 1/4" LENGTH, LOCK WASHER	2																																																			
	11	A1A1	NVIDIA EMBEDDED COMPUTER, TX1 DEVELOPMENT BOARD	1																																																			
	12	A1A1A1	DUAL BAND WIFI ANTENNA (2.4GHZ AND 5GHZ)	2																																																			
	13	A1A2	HOKUYO URG 10LX SCANNING LASER RANGEFINDER	1																																																			
	14	A1A3	AMAZONBASICS 7 PORT USB 3.0 HUB WITH 12V/3A POWER ADAPTER	1																																																			
	15	A1A4	ZED PASSIVE STEREO VISION SENSOR	1																																																			
	16	A1A5	STRUCTURE ACTIVE STRUCTURED LIGHT STEREO VISION SENSOR	1																																																			
	17	A1A5A1	STRUCTURE SENSOR SCREWS	1																																																			
	18	A1A6	RAZOR 9DOF INERTIAL MEASUREMENT UNIT	1																																																			
	19	A1A7	LOGITECH WIRELESS CONTROLLER RECEIVER	1																																																			
B	20	A1A8	VESC OPEN SOURCE ELECTRONIC SPEED CONTROLLER	1																																																			
	21	A1A9	RED MUSHROOM E-STOP PUSH BUTTON SWITCH	1																																																			
	22	A1A10	TRAXXAS RALLY 74076-1	1																																																			
	23	A1A10A1	MOTOR BATTERY; 8.4V 3000 MAH NIMH TRAXXAS 2940	1																																																			
	24	A1A10A2	STEERING SERVO; TRAXXAS 2075	1																																																			
	25	A1A10A3	BRUSHLESS MOTOR; TRAXXAS VELINEON 3500	1																																																			
	26	A1A12	CUSTOM CAPACITOR PCB	1																																																			
	27	A1A13	8000MAH BATTERY PACK	1																																																			
	28	B1	CHASSIS BASE; 8586K371, EASY-TO-MACHINE ABS SHAPES, 1/4" THICK, 12" x 24"	1																																																			
	29	B2	LIDAR PLATFORM; 1/8" THICK ALUMINUM PLATE	1																																																			
A	30	B3	CHASSIS ROOF; 8586K371, EASY-TO-MACHINE ABS SHAPES, 1/4" THICK, 12" x 24"	1																																																			
	31	B4	ZED MOUNT; CUSTOM 3D PRINTED PART	1																																																			
	32	B5	STRUCTURE SENSOR MOUNT; CUSTOM 3D PRINTED PART	1																																																			
	33	B6	BATTERY MOUNT; CUSTOM 3D PRINTED PART	1																																																			
	34	W100	JETSON & LIDAR POWER CABLE	1																																																			
	<table><tr><td colspan="2">DRAWN O. GULDNER</td><td colspan="2">DATE 3/9/2016</td><td colspan="2" rowspan="4"><div><div></div><div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div></div><div>TITLE RACECAR 2.0 MOBILE SEGMENT ASSY</div></td></tr><tr><td colspan="2">ELECTRICAL ENGINEER M. BOULET</td><td colspan="2"></td></tr><tr><td colspan="2">MECHANICAL ENGINEER O. GULDNER</td><td colspan="2"></td></tr><tr><td colspan="2">INTERPRET DRAWING PER ASME Y14.5M</td><td colspan="2"></td></tr><tr><td colspan="2" rowspan="2"><div>THIRD ANGLE PROJECTION</div><div></div></td><td colspan="2">UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES</td><td colspan="2">SIZE B</td><td colspan="2">CAGE CODE 4X002</td><td colspan="2">DWG NO. A1</td><td colspan="2">REV. A</td></tr><tr><td colspan="2">DEBURR AND BREAK SHARP EDGES</td><td colspan="2">DO NOT SCALE DWG</td><td colspan="2">SCALE 1:5</td><td colspan="2">EST. WT.</td><td colspan="2">LBS</td></tr><tr><td colspan="2"></td><td colspan="2"></td><td colspan="2">SHEET 2</td><td colspan="2">OF 8</td><td colspan="4"></td></tr></table>				DRAWN O. GULDNER		DATE 3/9/2016		<div><div></div><div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div></div> <div>TITLE RACECAR 2.0 MOBILE SEGMENT ASSY</div>		ELECTRICAL ENGINEER M. BOULET				MECHANICAL ENGINEER O. GULDNER				INTERPRET DRAWING PER ASME Y14.5M				<div>THIRD ANGLE PROJECTION</div> <div></div>		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES		SIZE B		CAGE CODE 4X002		DWG NO. A1		REV. A		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DWG		SCALE 1:5		EST. WT.		LBS						SHEET 2		OF 8				
DRAWN O. GULDNER		DATE 3/9/2016		<div><div></div><div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div></div> <div>TITLE RACECAR 2.0 MOBILE SEGMENT ASSY</div>																																																			
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		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DWG		SCALE 1:5		EST. WT.		LBS																																													
				SHEET 2		OF 8																																																	

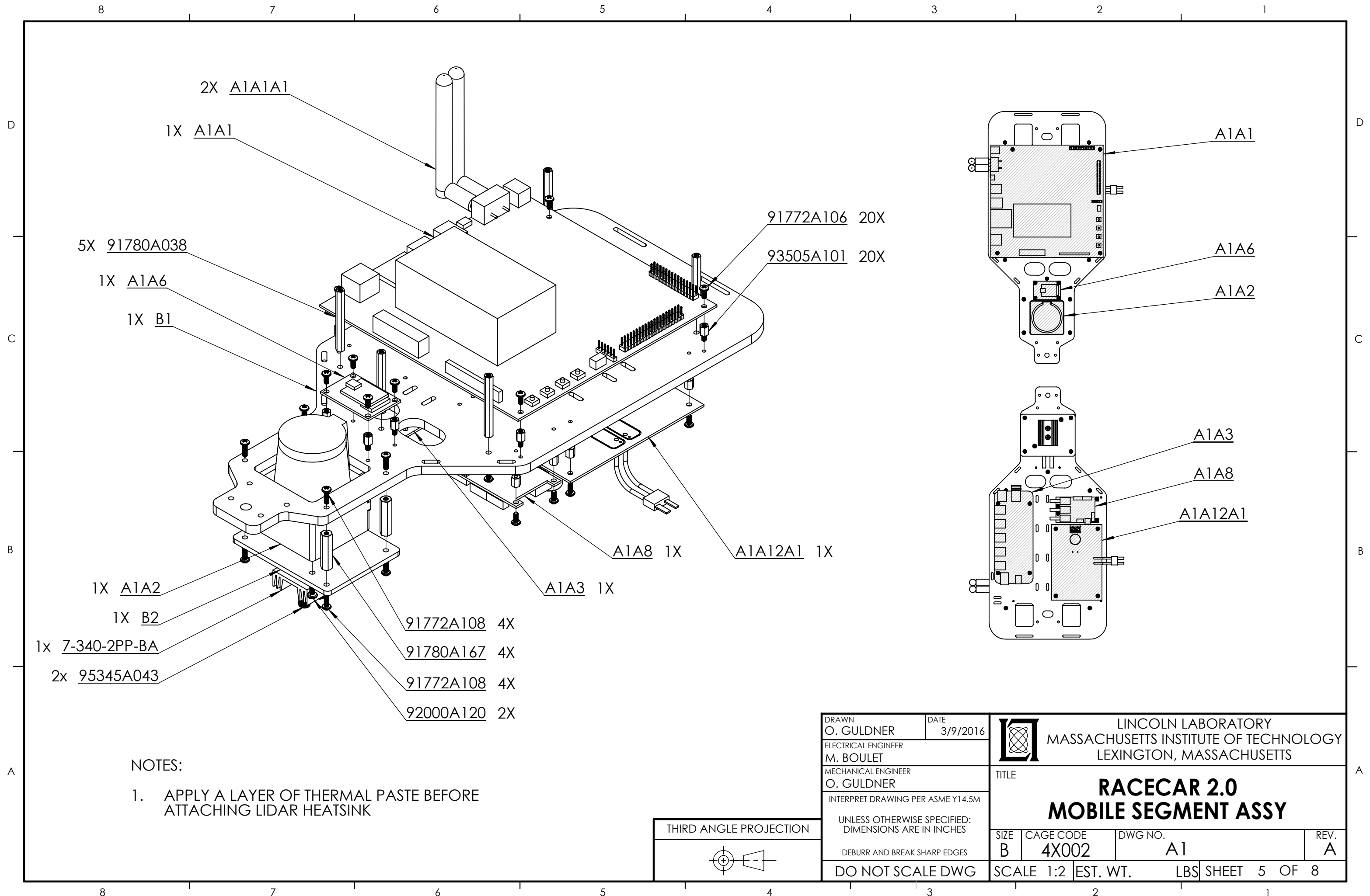
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ITEM NO.		PART NUMBER		DESCRIPTION								Overview/QTY.			
34		W101		USB HUB POWER CABLE								1			
35		W102		JETSON TO USB HUB DATA CABLE								1			
36		W103		STRUCTURE SENSOR HACKER CABLE								1			
37		W104		IMU USB DATA CABLE								1			
38		W105		VESC USB DATA CABLE								1			
39		W106		E-STOP CABLE								1			
		SHORE SEGMENT:													
40		A2A1		TRAXXAS 2976; 12V AC-DC CONV.								1			
41		A2A2		TRAXXAS 2975 OR 2974; NIMH CHARGER								1			
42		A2A3		19V AC-DC CONV.								1			
43		A2A4		WIFI AC-DC CONV.								1			
44		A2A5		WIRELESS ACCESS POINT								1			
45		A2A6		STUDENT LAPTOP								1			
46		A3A1		USB MOUSE (OPTIONAL)								1			
47		A3A2		USB KEYBOARD (OPTIONAL)								1			
48		A3A3		HDMI MONITOR (OPTIONAL)								1			



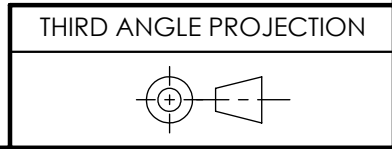
- NOTES:
- 1. BEFORE INSTALLATION OF THE BATTERY CLIP AND BATTERY, THE OLD ESC AND RF RECEIVER WILL HAVE TO BE REMOVED.
 - 2. SAVE THE SCREWS FROM THE ESC REMOVAL AND USE TO INSTALL THE BATTERY CLIP.


THIRD ANGLE PROJECTION

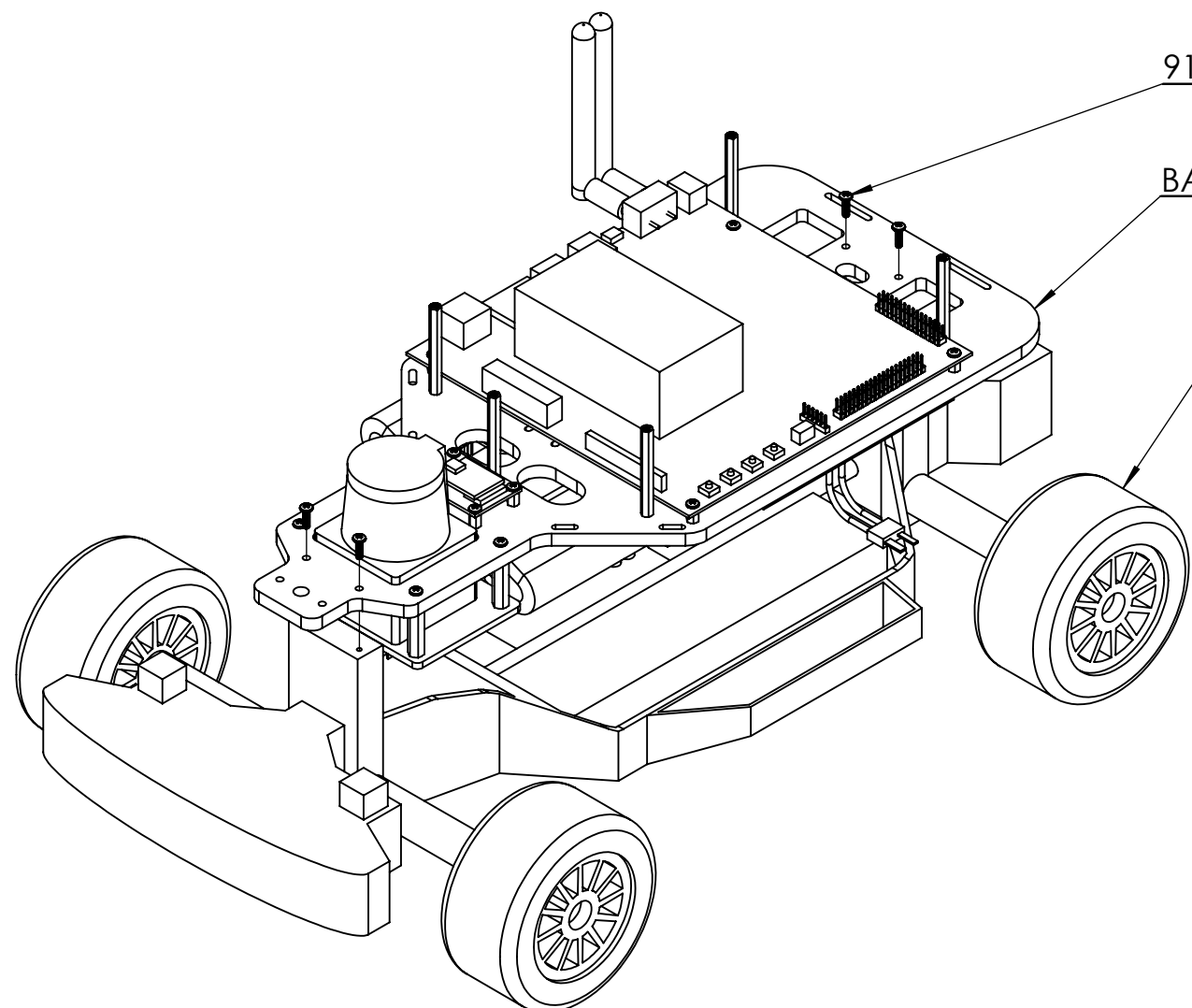
DRAWN O. GULDNER		DATE 3/9/2016		<div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div>			
ELECTRICAL ENGINEER M. BOULET							
MECHANICAL ENGINEER O. GULDNER							
INTERPRET DRAWING PER ASME Y14.5M				TITLE RACECAR 2.0 MOBILE SEGMENT ASSY			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES							
DEBURR AND BREAK SHARP EDGES							
DO NOT SCALE DWG		SIZE B	CAGE CODE 4X002	DWG NO. A1		REV. A	
DO NOT SCALE DWG		SCALE 1:3		EST. WT. LBS		SHEET 4 OF 8	



NOTES:
1. APPLY A LAYER OF THERMAL PASTE BEFORE ATTACHING LIDAR HEATSINK




DRAWN O. GULDNER		DATE 3/9/2016		<div></div> <div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div>	
ELECTRICAL ENGINEER M. BOULET					
MECHANICAL ENGINEER O. GULDNER					
INTERPRET DRAWING PER ASME Y14.5M				TITLE RACECAR 2.0 MOBILE SEGMENT ASSY	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES					
DEBURR AND BREAK SHARP EDGES					
DO NOT SCALE DWG		SIZE B	CAGE CODE 4X002	DWG NO. A1	REV. A
SCALE 1:2		EST. WT.		LBS	SHEET 5 OF 8

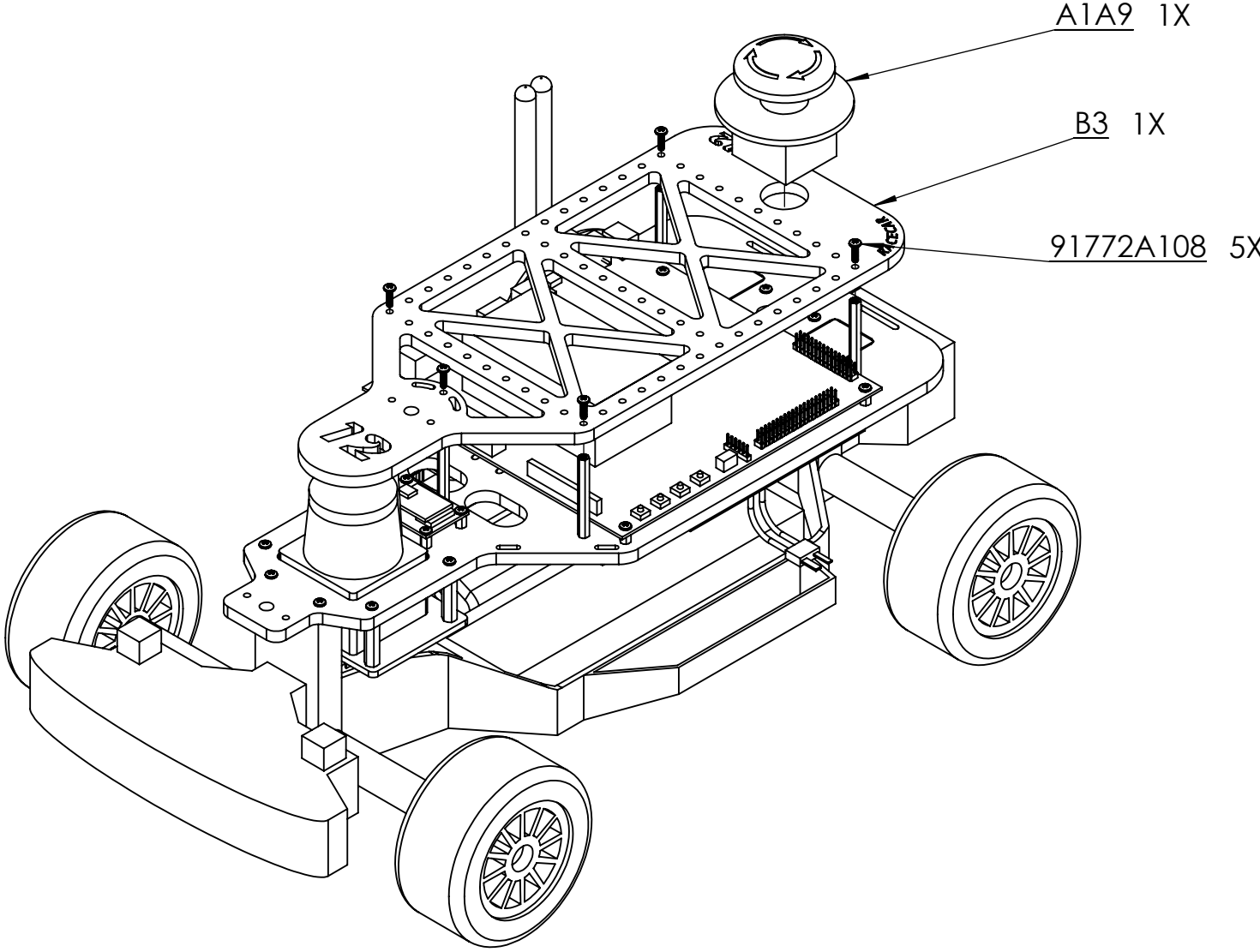


NOTES:

1. ALIGN BASE ASSEMBLY WITH HOLES IN TRAXXAS BASE.
2. CONNECT VESC CABLES BEFORE MOUNTING BASE ASSEMBLY.

THIRD ANGLE PROJECTION


DRAWN O. GULDNER		DATE 3/9/2016		<div></div> <div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div>			
ELECTRICAL ENGINEER M. BOULET							
MECHANICAL ENGINEER O. GULDNER							
INTERPRET DRAWING PER ASME Y14.5M				<div>TITLE</div> <div>RACECAR 2.0 MOBILE SEGMENT ASSY</div>			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES							
DEBURR AND BREAK SHARP EDGES							
DO NOT SCALE DWG		SCALE 1:3		EST. WT.		LBS	SHEET 6 OF 8

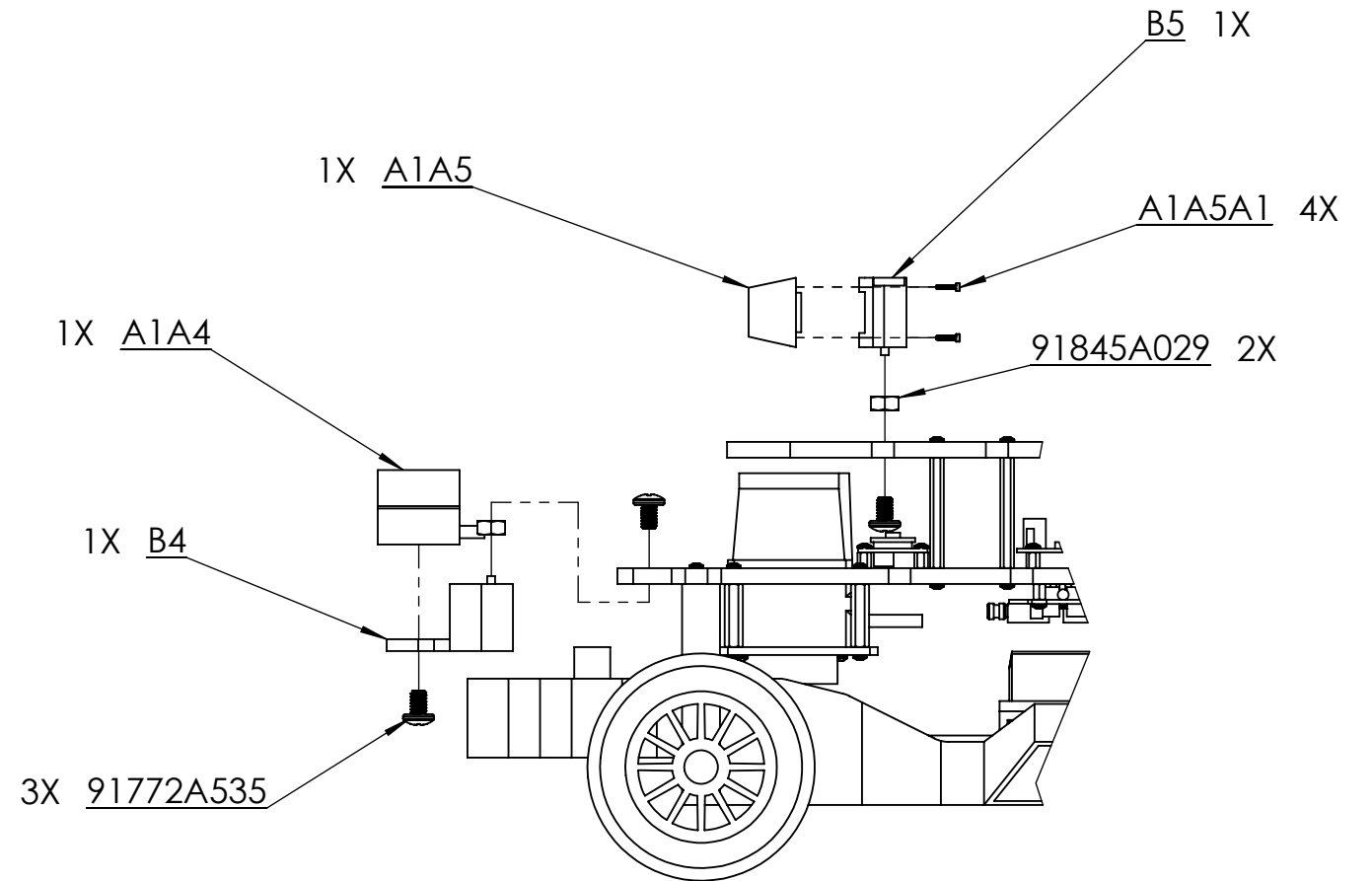
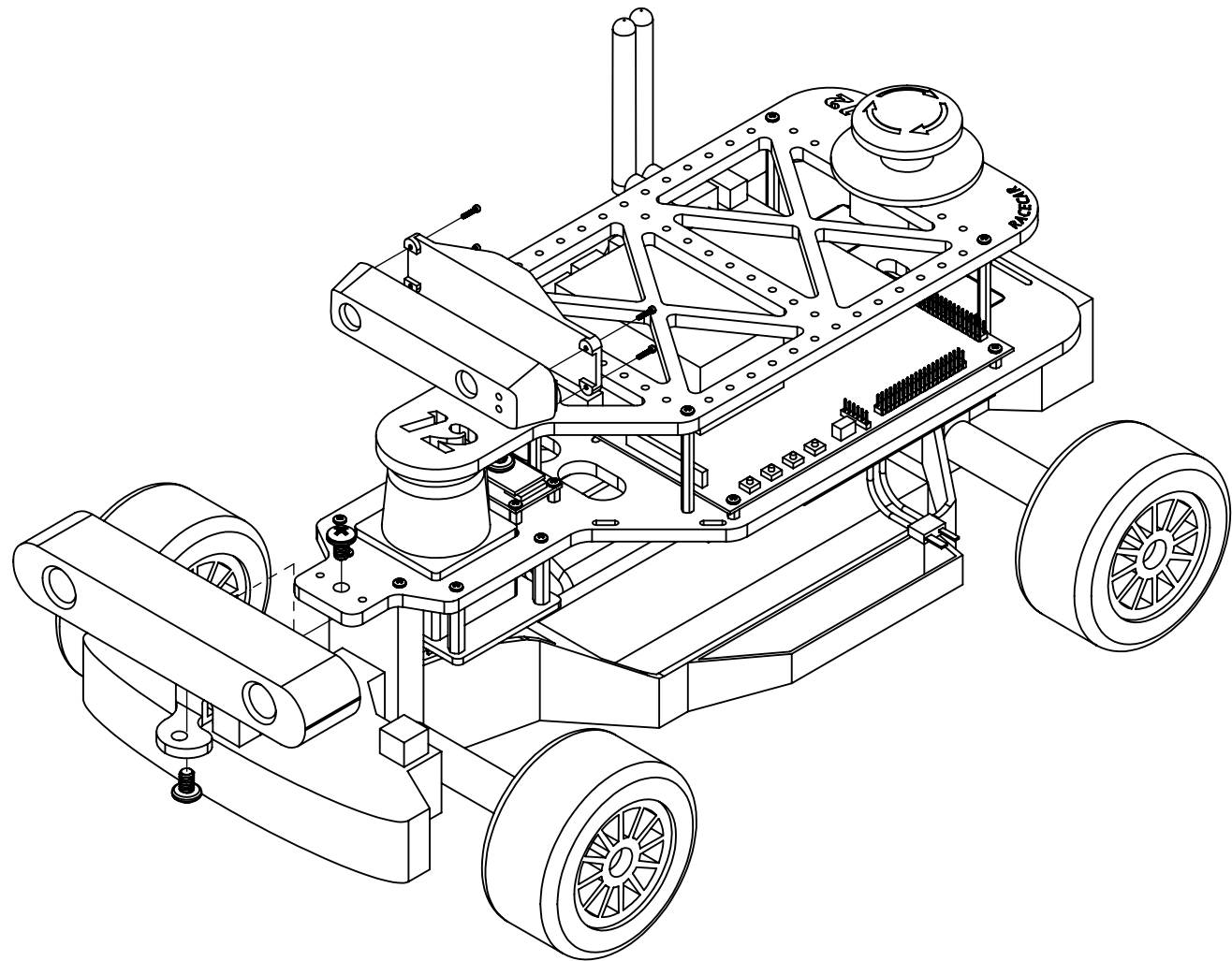


NOTES:

1. INSTALL EMERGENCY STOP BEFORE MOUNTING ROOF.
2. MAY BE HELPFUL TO MOUNT STRUCTURE SENSOR BEFORE MOUNTING ROOF.

THIRD ANGLE PROJECTION

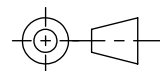
DRAWN O. GULDNER		DATE 3/9/2016		<div></div> LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS			
ELECTRICAL ENGINEER M. BOULET							
MECHANICAL ENGINEER O. GULDNER							
INTERPRET DRAWING PER ASME Y14.5M				TITLE RACECAR 2.0 MOBILE SEGMENT ASSY			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES							
DEBURR AND BREAK SHARP EDGES							
SIZE B		CAGE CODE 4X002		DWG NO. A1		REV. A	
DO NOT SCALE DWG				SCALE 1:3		EST. WT. LBS	
				SHEET 7		OF 8	



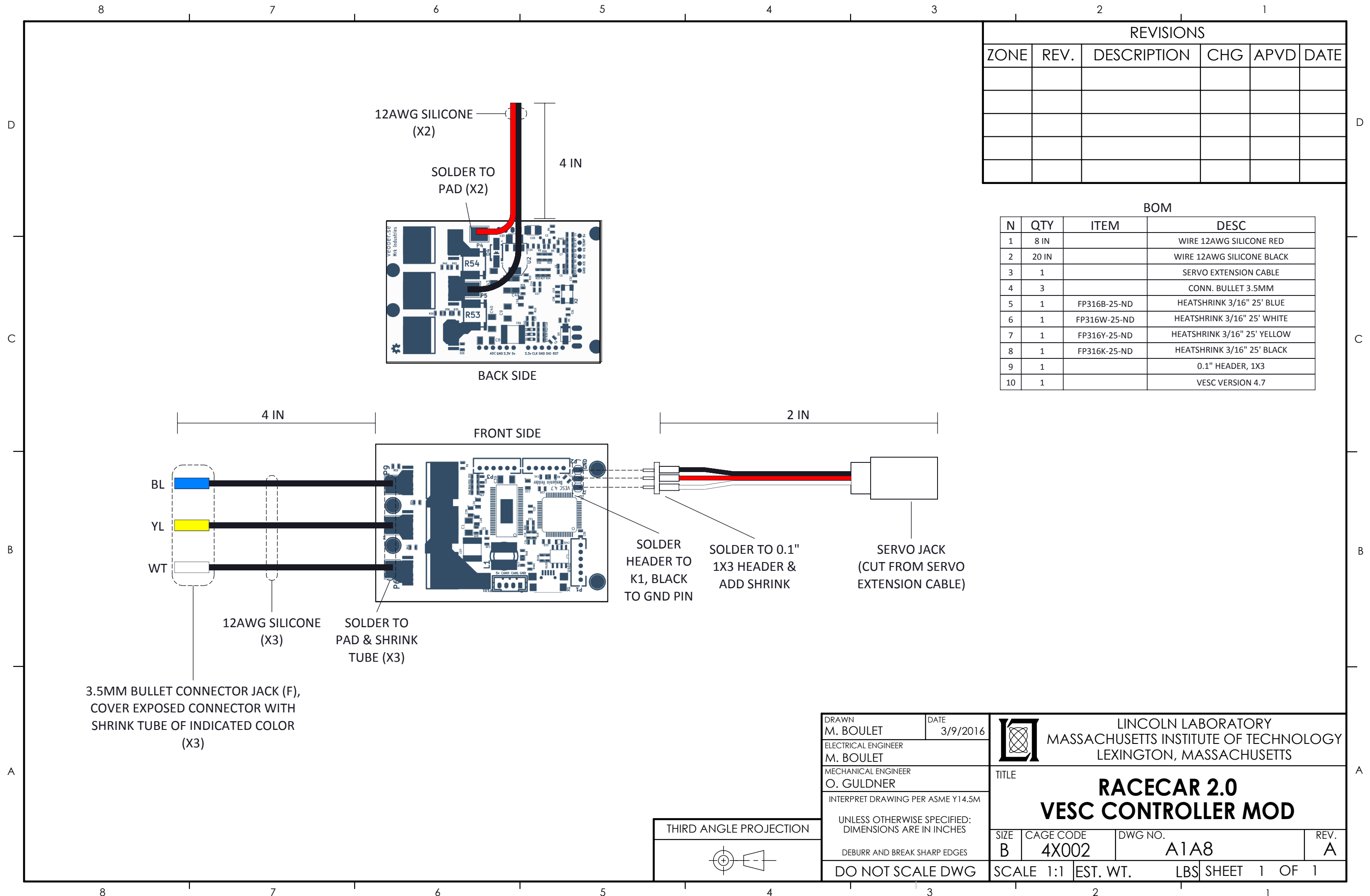
NOTES:

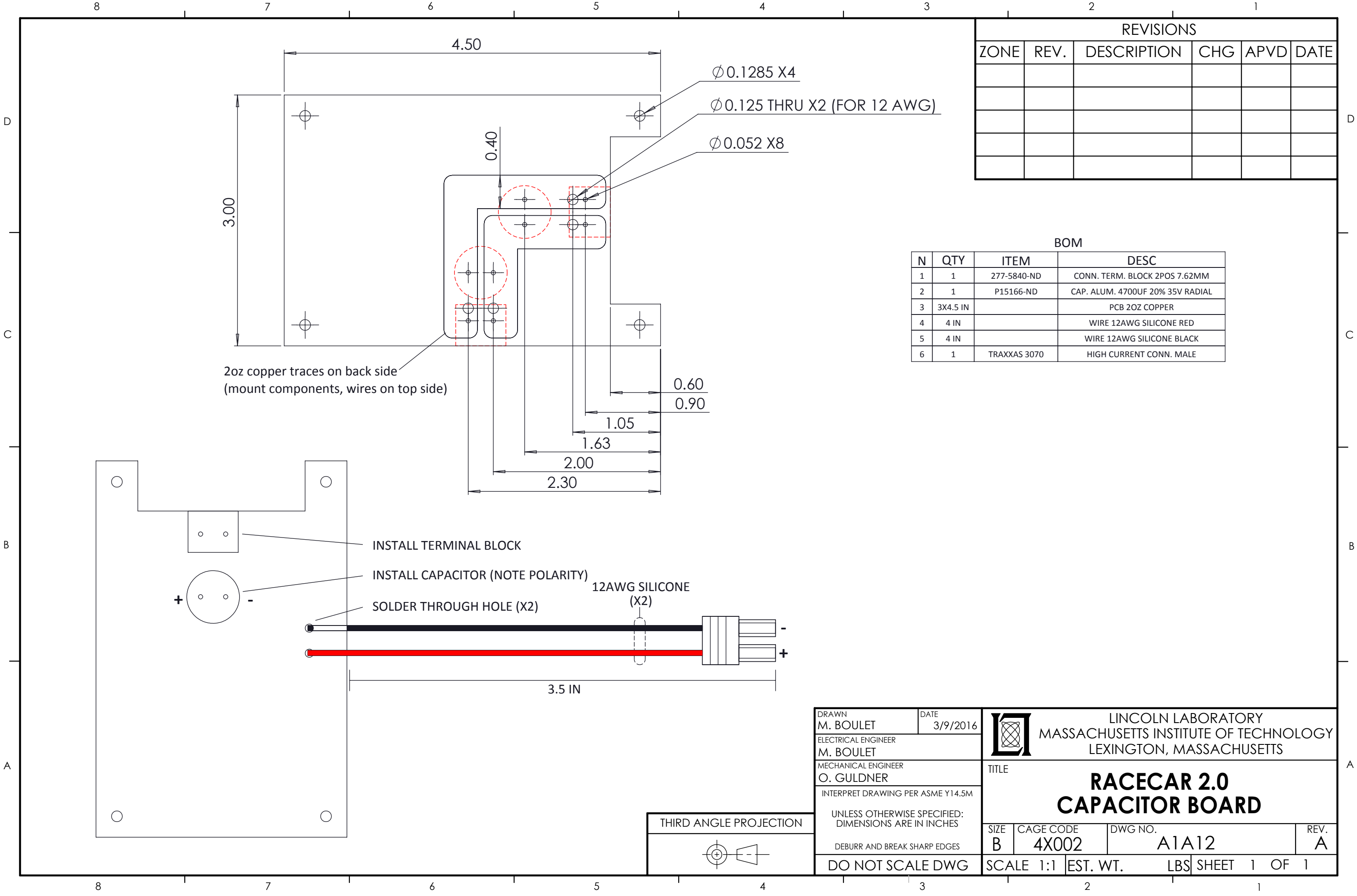
1. PRESS 91845A029 NUTS INTO MOUNT PIECES BEFORE INSTALLING ONTO RACECAR. USE A DAB OF EPOXY TO ENSURE HOLD.
2. THREAD ZED USB CABLE THRU FRONT SUPPORT BLOCK BEFORE INSTALLING.
3. STRUCTURE SENSOR MAY BE EASIER TO INSTALL BEFORE MOUNTING ROOF.

THIRD ANGLE PROJECTION




DRAWN O. GULDNER		DATE 3/9/2016		<div></div> <div>LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS</div>	
ELECTRICAL ENGINEER M. BOULET					
MECHANICAL ENGINEER O. GULDNER					
INTERPRET DRAWING PER ASME Y14.5M				<div>TITLE</div> <div>RACECAR 2.0 MOBILE SEGMENT ASSY</div>	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES					
DEBURR AND BREAK SHARP EDGES					
DO NOT SCALE DWG		SIZE B	CAGE CODE 4X002	DWG NO. A1	REV. A
SCALE 1:3		EST. WT.		LBS	SHEET 8 OF 8

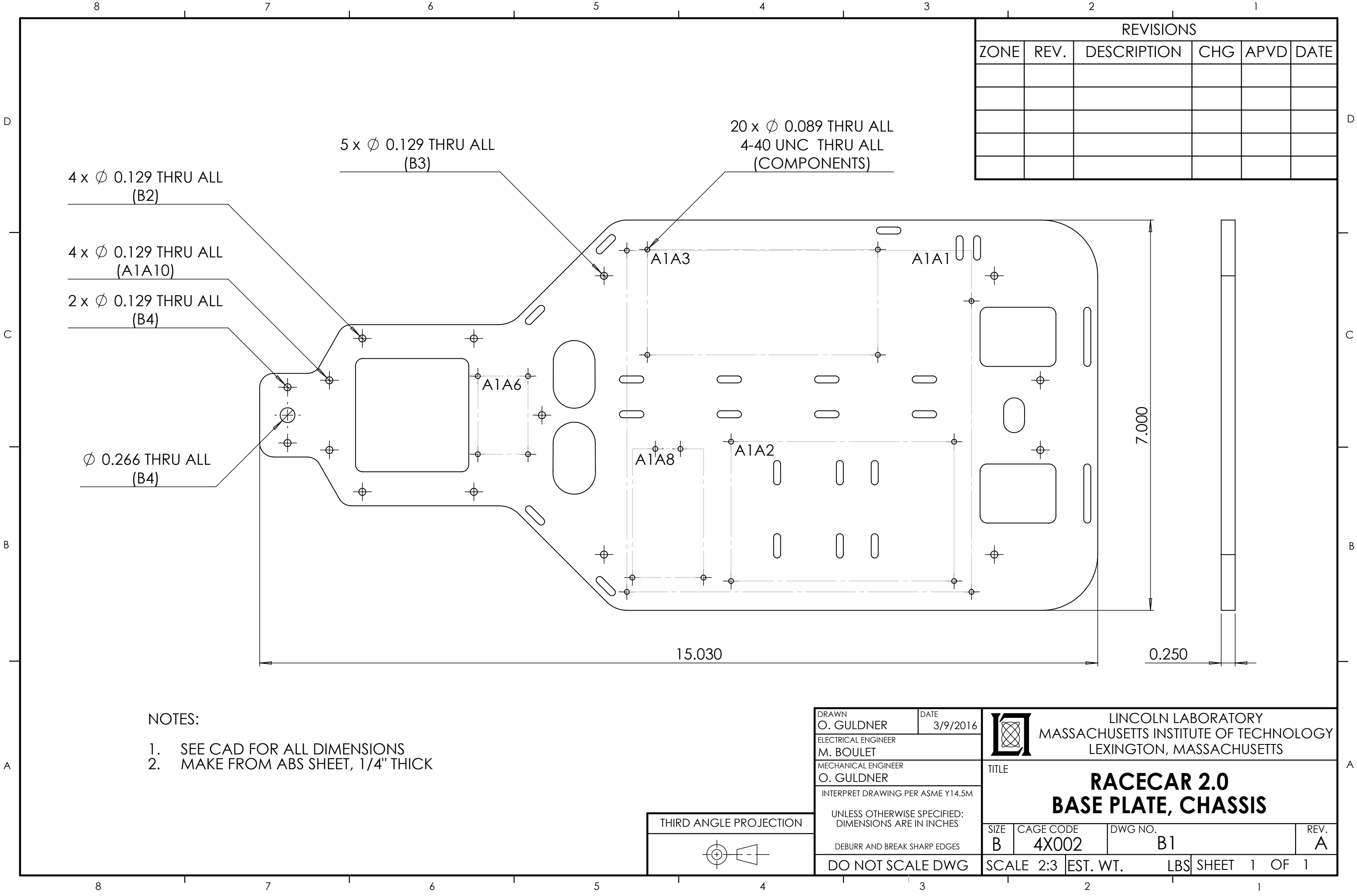




REVISIONS					
ZONE	REV.	DESCRIPTION	CHG	APVD	DATE

BOM			
N	QTY	ITEM	DESC
1	1	277-5840-ND	CONN. TERM. BLOCK 2POS 7.62MM
2	1	P15166-ND	CAP. ALUM. 4700UF 20% 35V RADIAL
3	3X4.5 IN		PCB 2OZ COPPER
4	4 IN		WIRE 12AWG SILICONE RED
5	4 IN		WIRE 12AWG SILICONE BLACK
6	1	TRAXXAS 3070	HIGH CURRENT CONN. MALE

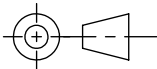
DRAWN M. BOULET		DATE 3/9/2016		 LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS	
ELECTRICAL ENGINEER M. BOULET					
MECHANICAL ENGINEER O. GULDNER					
INTERPRET DRAWING PER ASME Y14.5M					
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES				TITLE RACECAR 2.0 CAPACITOR BOARD	
DEBURR AND BREAK SHARP EDGES					
DO NOT SCALE DWG		SIZE B	CAGE CODE 4X002	DWG NO. A1A12	REV. A
SCALE 1:1		EST. WT.		LBS	SHEET 1 OF 1




REVISIONS					
ZONE	REV.	DESCRIPTION	CHG	APVD	DATE

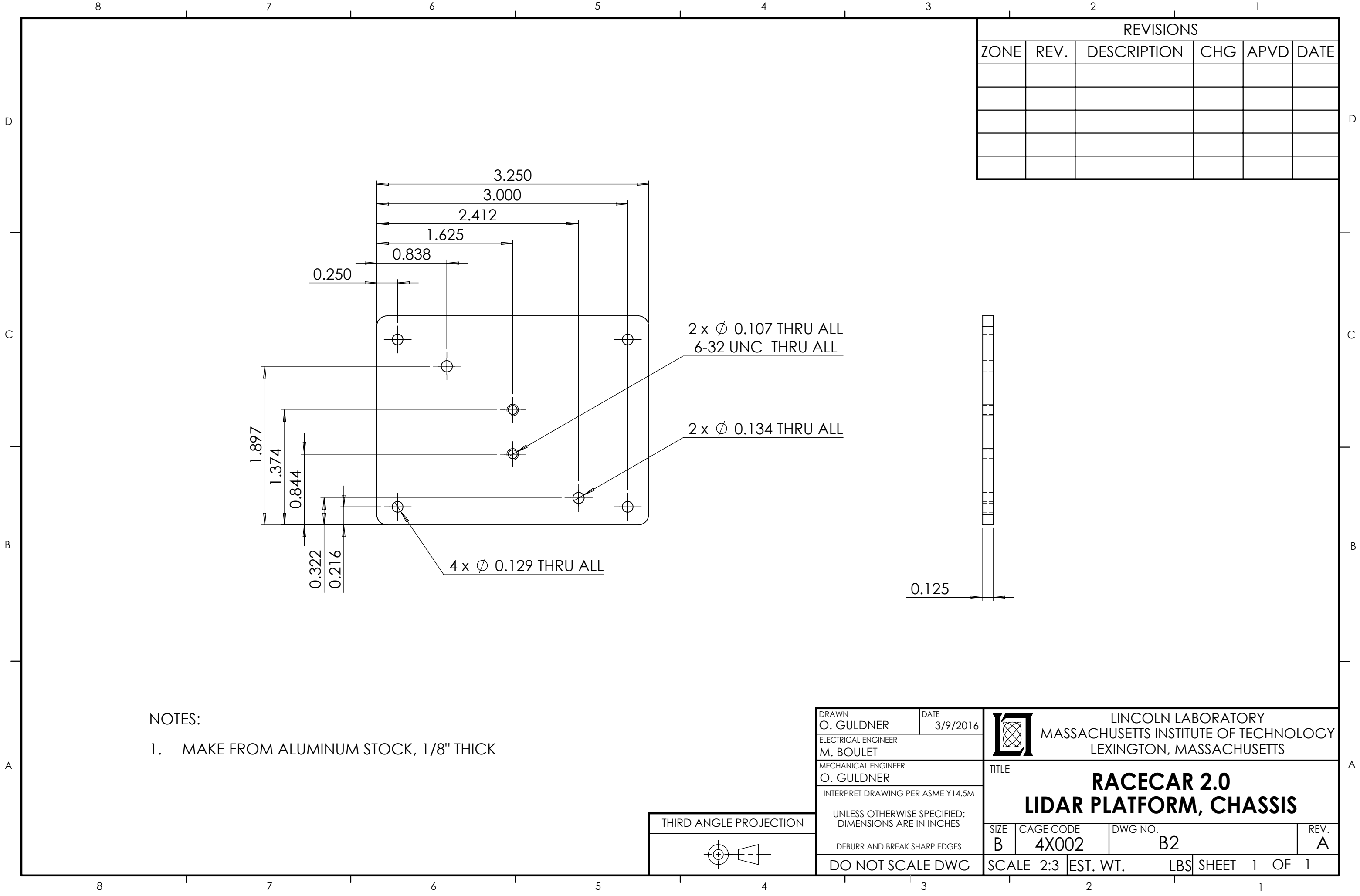
- NOTES:
- SEE CAD FOR ALL DIMENSIONS
 - MAKE FROM ABS SHEET, 1/4" THICK

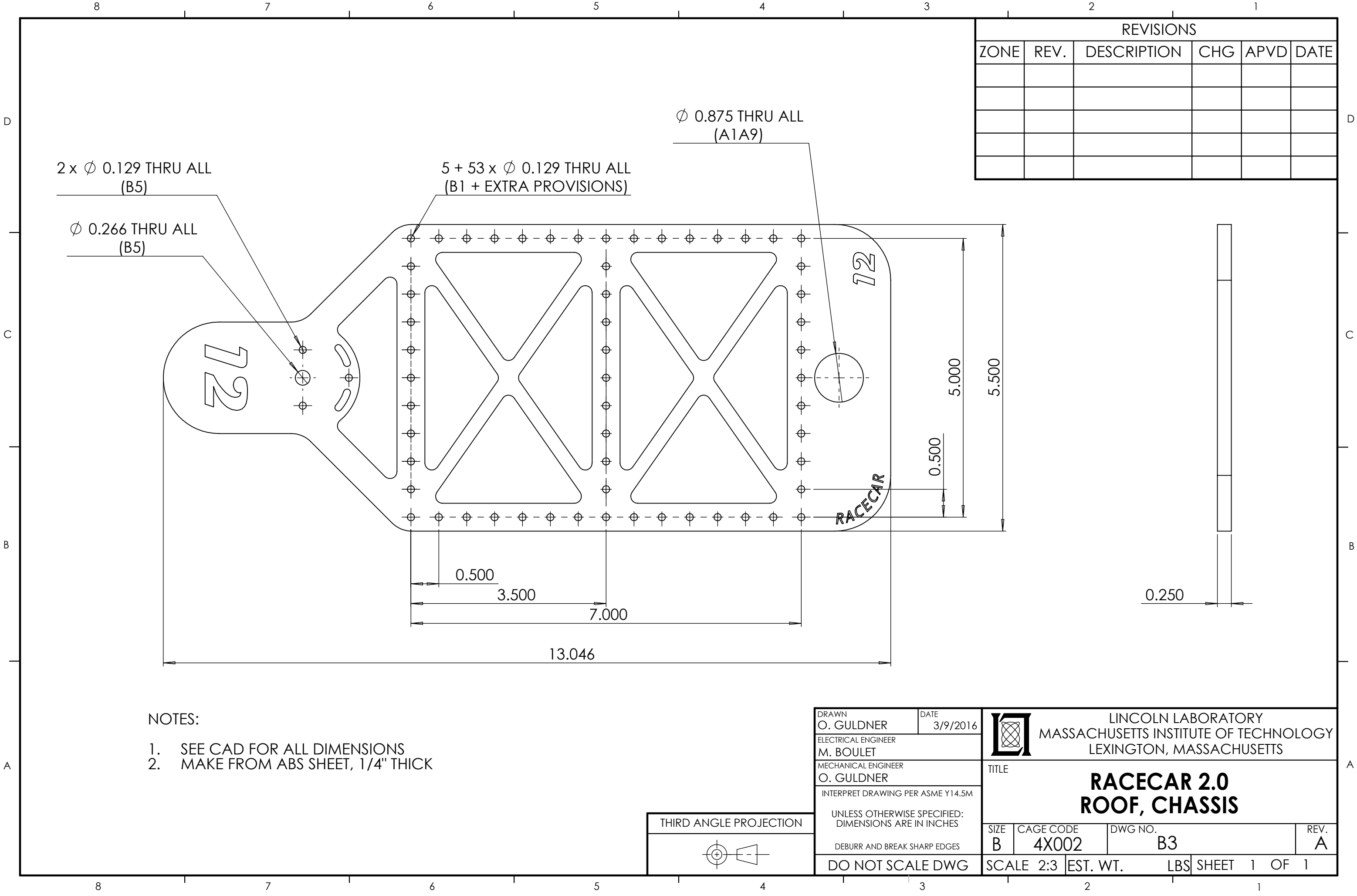
THIRD ANGLE PROJECTION

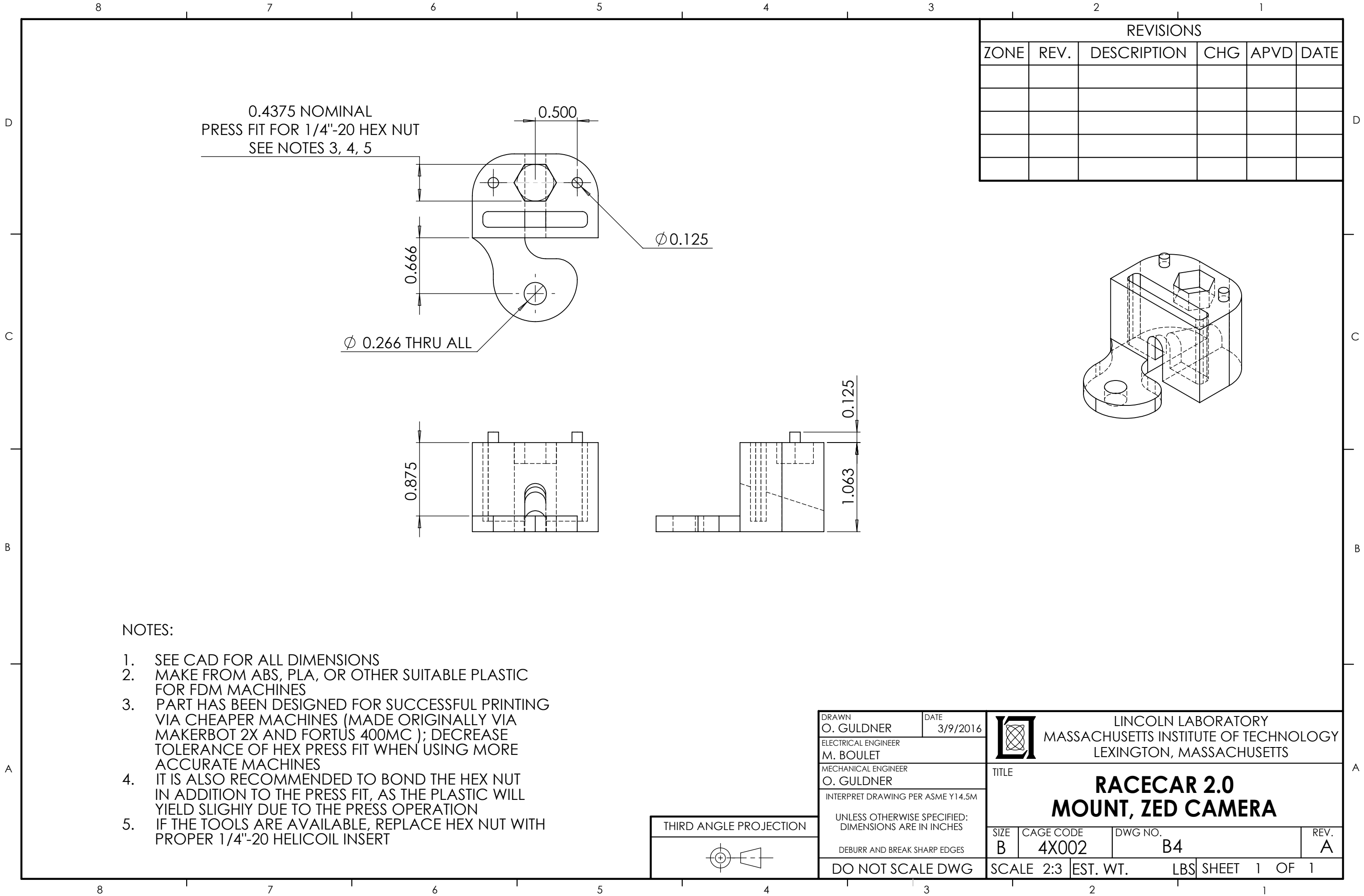


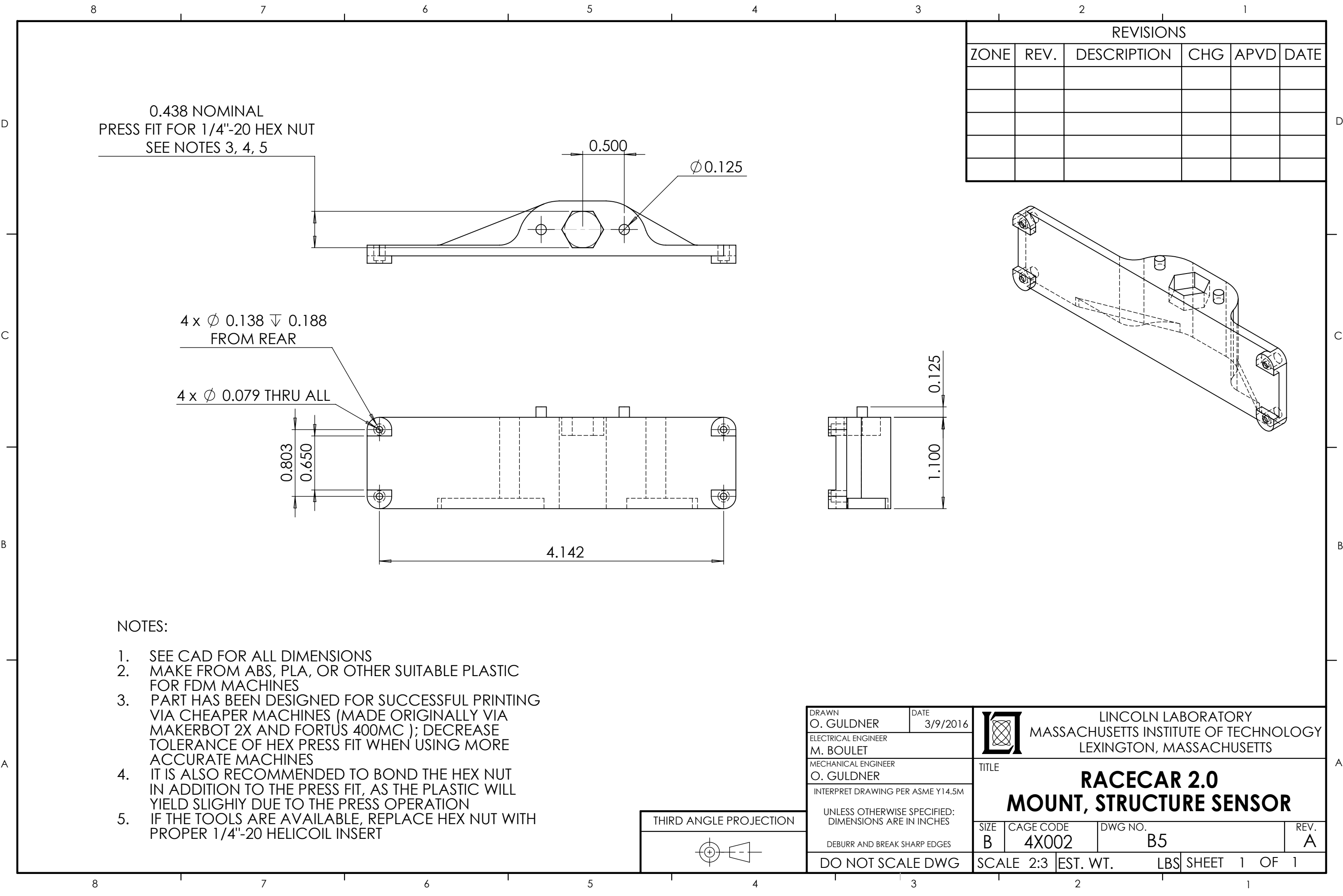
DRAWN O. GULDNER	DATE 3/9/2016
ELECTRICAL ENGINEER M. BOULET	
MECHANICAL ENGINEER O. GULDNER	
INTERPRET DRAWING PER ASME Y14.5M	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES	
DEBURR AND BREAK SHARP EDGES	
DO NOT SCALE DWG	

 LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS			
TITLE RACECAR 2.0 BASE PLATE, CHASSIS			
SIZE B	CAGE CODE 4X002	DWG NO. B1	REV. A
SCALE 2:3	EST. WT.	LBS	SHEET 1 OF 1







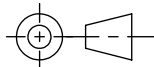


REVISIONS					
ZONE	REV.	DESCRIPTION	CHG	APVD	DATE


NOTES:

1. SEE CAD FOR ALL DIMENSIONS
2. MAKE FROM ABS, PLA, OR OTHER SUITABLE PLASTIC FOR FDM MACHINES
3. PART HAS BEEN DESIGNED FOR SUCCESSFUL PRINTING VIA CHEAPER MACHINES (MADE ORIGINALLY VIA MAKERBOT 2X AND FORTUS 400MC); DECREASE TOLERANCE OF HEX PRESS FIT WHEN USING MORE ACCURATE MACHINES
4. IT IS ALSO RECOMMENDED TO BOND THE HEX NUT IN ADDITION TO THE PRESS FIT, AS THE PLASTIC WILL YIELD SLIGHIY DUE TO THE PRESS OPERATION
5. IF THE TOOLS ARE AVAILABLE, REPLACE HEX NUT WITH PROPER 1/4"-20 HELICOIL INSERT

THIRD ANGLE PROJECTION



DRAWN O. GULDNER	DATE 3/9/2016
ELECTRICAL ENGINEER M. BOULET	
MECHANICAL ENGINEER O. GULDNER	
INTERPRET DRAWING PER ASME Y14.5M	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES	
DEBURR AND BREAK SHARP EDGES	
DO NOT SCALE DWG	

 LINCOLN LABORATORY MASSACHUSETTS INSTITUTE OF TECHNOLOGY LEXINGTON, MASSACHUSETTS			
TITLE RACECAR 2.0 MOUNT, STRUCTURE SENSOR			
SIZE B	CAGE CODE 4X002	DWG NO. B5	REV. A
SCALE 2:3	EST. WT.	LBS	SHEET 1 OF 1

