

# Buzz Lightboard

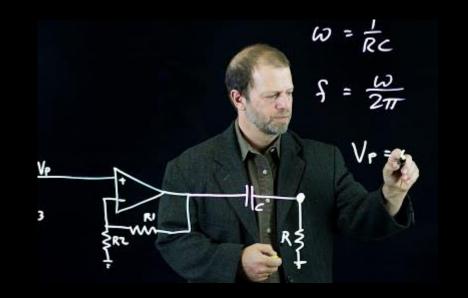
Talal Aldoussari, Jake Jermyn, Nate Sherwood, Taylor Spence

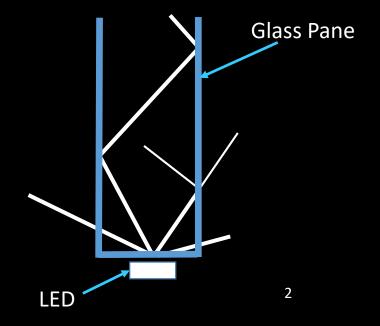
#### Overview

- How does it work?
  - Total internal reflection
  - Frustrated total internal reflection to illuminate the ink in contact with the glass

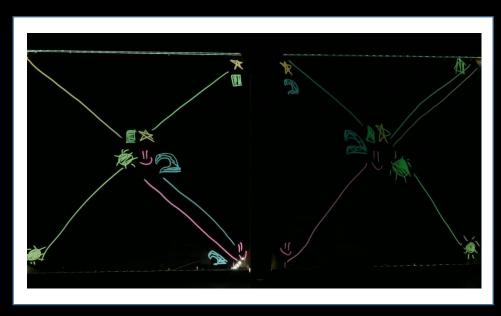
#### Problem Statement

 Create a financially palatable lightboard that will be specially designed to gain faculty buyin/interest via portability and user convenience.





#### Glass Decision



360° Lighting Scheme



Single Sided Light Test (Lighted from top)

The left side in both photos (Starphire Glass) has a more consistent color and light penetration, where the right side on both photos (Window Glass) fades to green as the writing travels away from the light.

#### Final Design

- Portable
  - Fits through doorways
  - Locking caster wheels
- Easy to Use
  - Simple plug and play
  - Easy adjust lighting
  - Adjustable shelf
- Accommodating
  - Ergonomic for users



### Final Design Details

• Height: 6' 5.65"

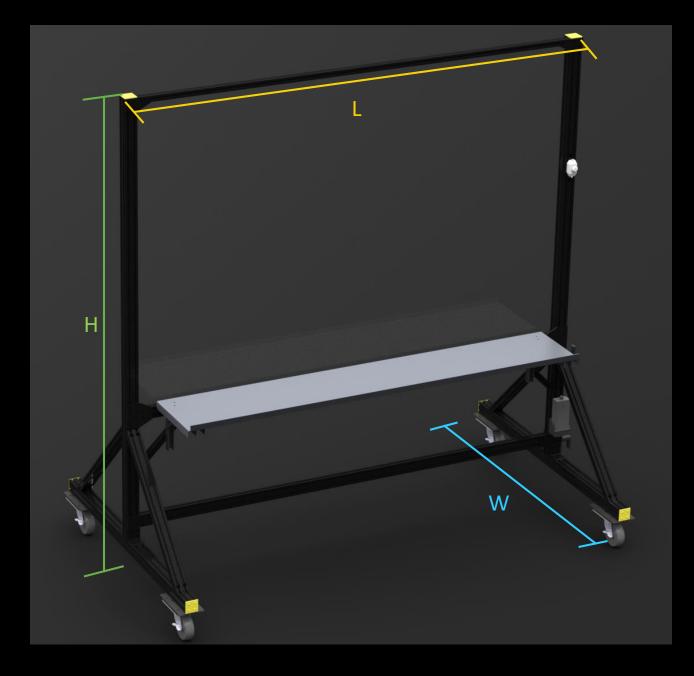
• Width: 3' 9"

• Length: 6' 5.7"

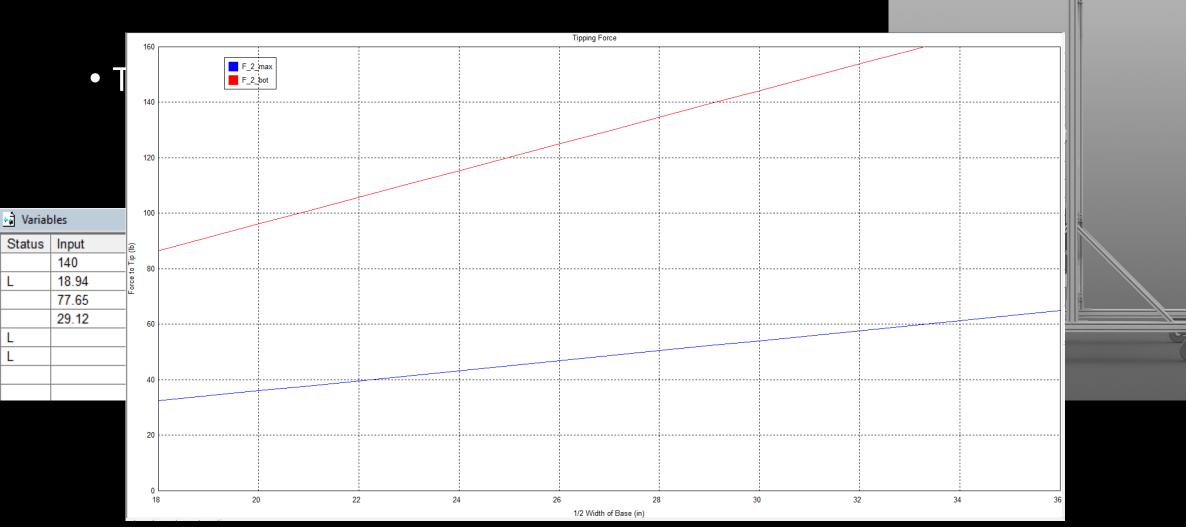
• Weight: 148 lb

• Frame Matl.: Aluminum T-Slot

• Glass Sheet: 4' x 6'



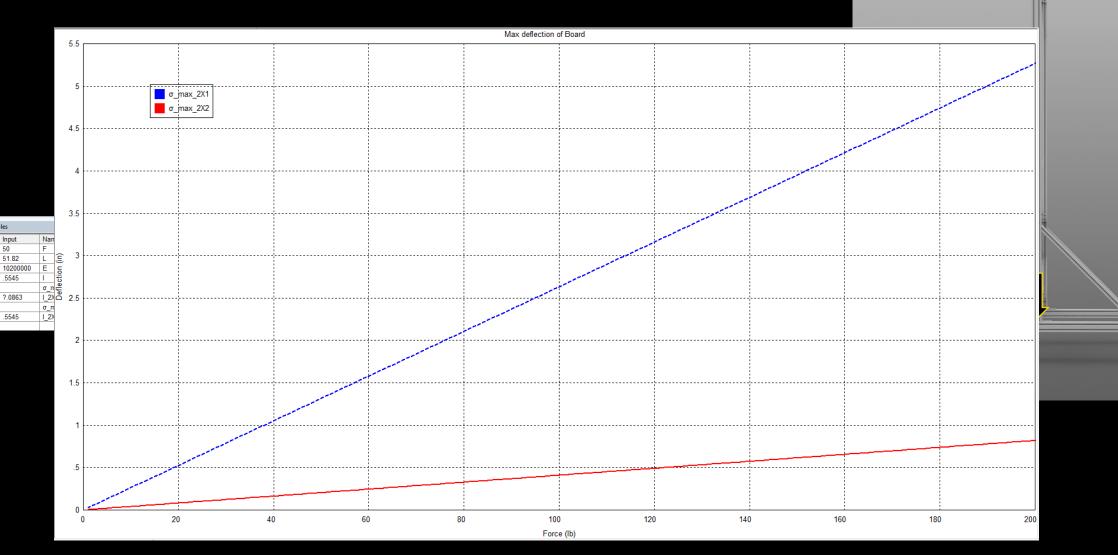
### Safety Calculations



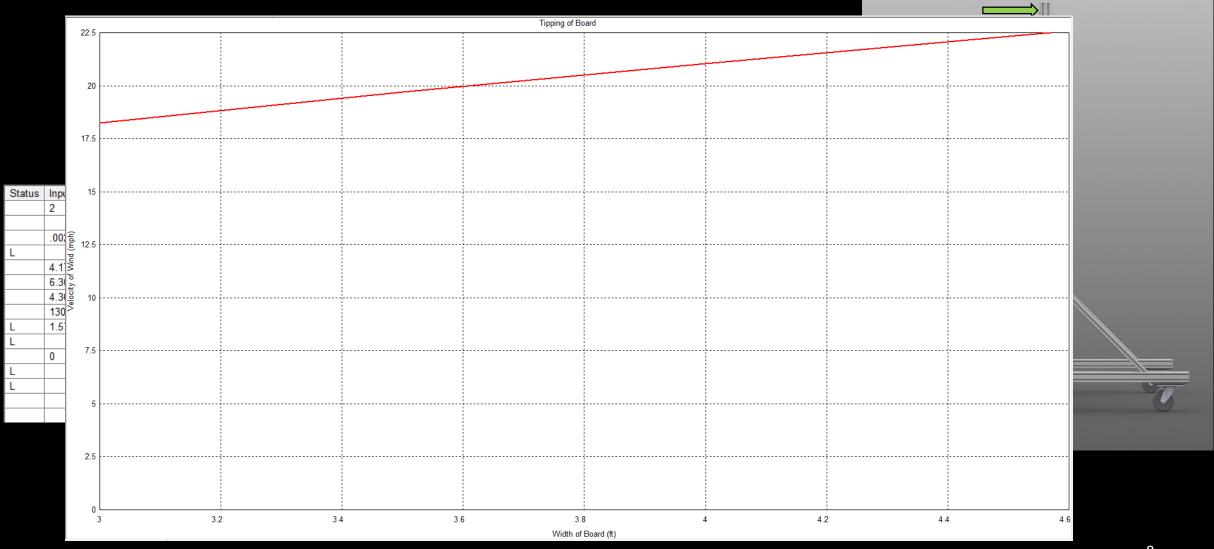
# Safety Calculations

Status Input 51.82

.5545



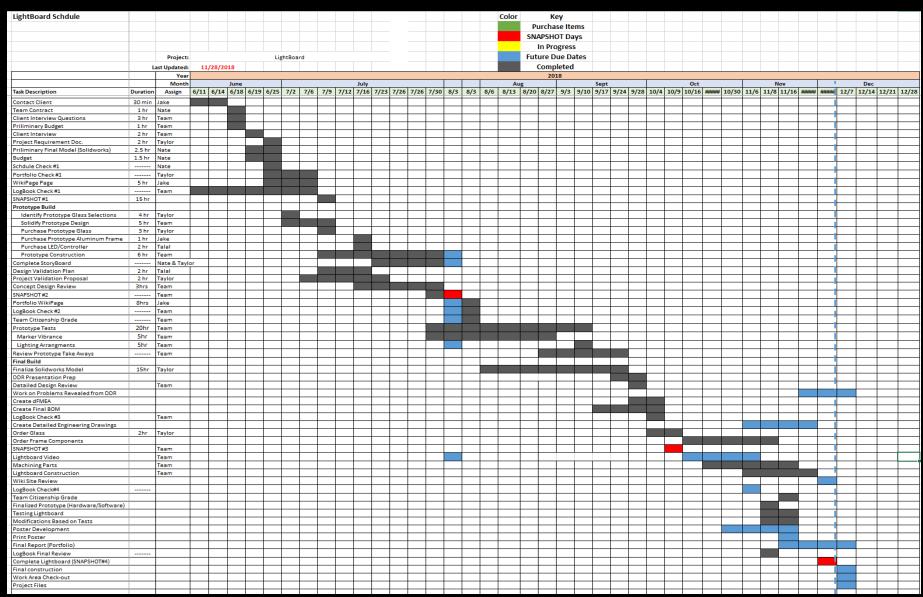
### Safety Calculations



# Budget

Capstone Project Bud			ımmer/F	all							
Project:	CETL Lig										
Last Updated	11/14/2018	3					-				
			1	2018				_	Item		
Expense Items	June	July	Aug	Sept	Oct	Nov	Dec		Total		
Equipment/Tools:											
								\$	-		
Supplies / Parts / Services:											
4'x6' Glass Board					X			\$	500.00		
	Extrude	d Aluminu	m Frame (E	Black Price	)						
1x1 Beam					Χ			\$	36.37		
2x1 Beams					Χ			\$	95.68		
2x2 Beams					Χ			\$	120.74		
2x2 Beams					Χ			\$	155.73		
8 hole flat brackets					Χ			\$	15.32		
12 hole flat brackets					Χ			\$	23.56		
8 hole corner brackets					Х			\$	26.04		
6 hole flat brackets					Χ			\$	14.62		
6 hole corner brackets					Χ			\$	13.12		
4 hole corner brackets					Х			\$	9.92		
2 hole corner brackets					Х			\$	7.34		
Decorative ylw end caps					X			\$	9.30		
45 degree connectors					X			\$	36.70		
2x1 Angle support beams					X			\$	74.36		
Frame Shipping					X			\$	69.08		
Shelf Material						X		\$	88.00		
Shelf Brackets						X		\$	42.40		
Caulk Gun				Х		, A		\$	1.52		
Silicon Sealant				X				\$	2.92		
Under Glass Rubber				, , , , , , , , , , , , , , , , , , ,	X			\$	15.83		
LED Dimmer		Х			, , , , , , , , , , , , , , , , , , ,			\$	7.97		
LED Lights (X3)		X		1					110.91		
12V Power Supply 60W		X		1				\$	24.97		
20ft Power Cord		Α		1		X		\$	16.15		
Neon Expo Markers		X		1		, A		\$	7.40		
Sindoh 3D Filament		Α		1		X		\$	29.99		
Caster Wheels				1		X		\$	69.72		
Wheel Rubber				1		X		\$	26.45		
Combined Misc Ship Cost				1		X		\$	36.51		
Building Material					1	X		\$	6.87		
Prototype Glass		X		1		X		_	105.49		
Prototype Glass Prototype Frame		X			1			\$	-		Expenses
r tototype i raine		^						ڔ			LAPETISES
				1						\$ 1.801	Subtotal
ME Shop Usage (est. Hrs):				1					Hours	\$ 1,601	Jubiotai
		V			1		-	+-			
Prototype		X		<b> </b>	+	X		+	5 25		
Aluminum Frame (Board)				<del>                                     </del>	1	۸		+	0		
									U		
					Graduate Student Support			\$	-	including fringe	
					Shop Overhead			\$	-		
							Totals	\$	1,801	\$ 2,000	\$ 199
								Ť		Budget	

#### Schedule



# Questions?