OstoSeal: Waterproof and reusable ostomy pouch shower cover

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Advisor: Prof. Duc-Huy Nguyen
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Problem statement

This project will work towards the creation of a safe, comfortable and effective ostomy pouch and wafer adhesive cover meant to keep the two components dry during showering. Current methods of keeping ostomy pouches and adhesives are often unreliable or inconvenient which negatively impacts the users quality of life. This cover is intended to work with a schedule of at least daily showers, and must be durable and easy enough to use in order to accommodate this stipulation. This device should be firmly waterproof and compact to support a schedule of daily use. Also, it must fit the variety of pouch sizes and waistline shapes and sizes that a person could have.

Brief status update

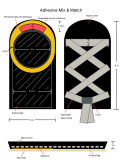
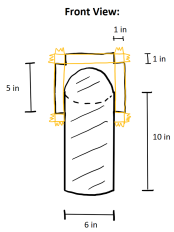
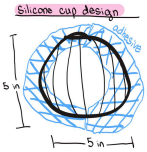
- 3D printed multiple new renditions of the rings
- Created bag prototype in order to test waterproofness of final silpoly material only (not ring-to-skin seal)
- Met as a group to test/fabricate in Wendt

Difficulties/advice requests

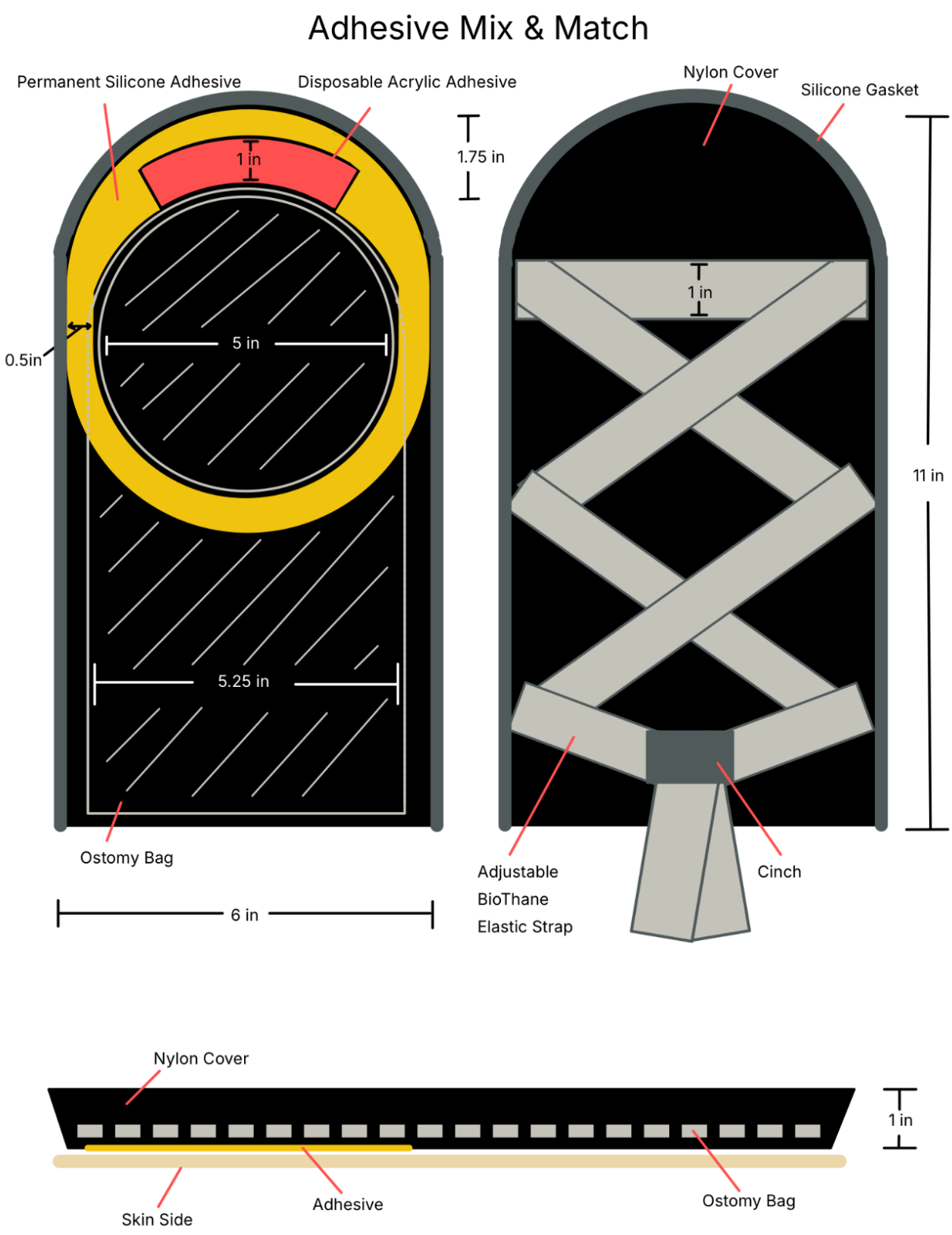
None at this time

Current design

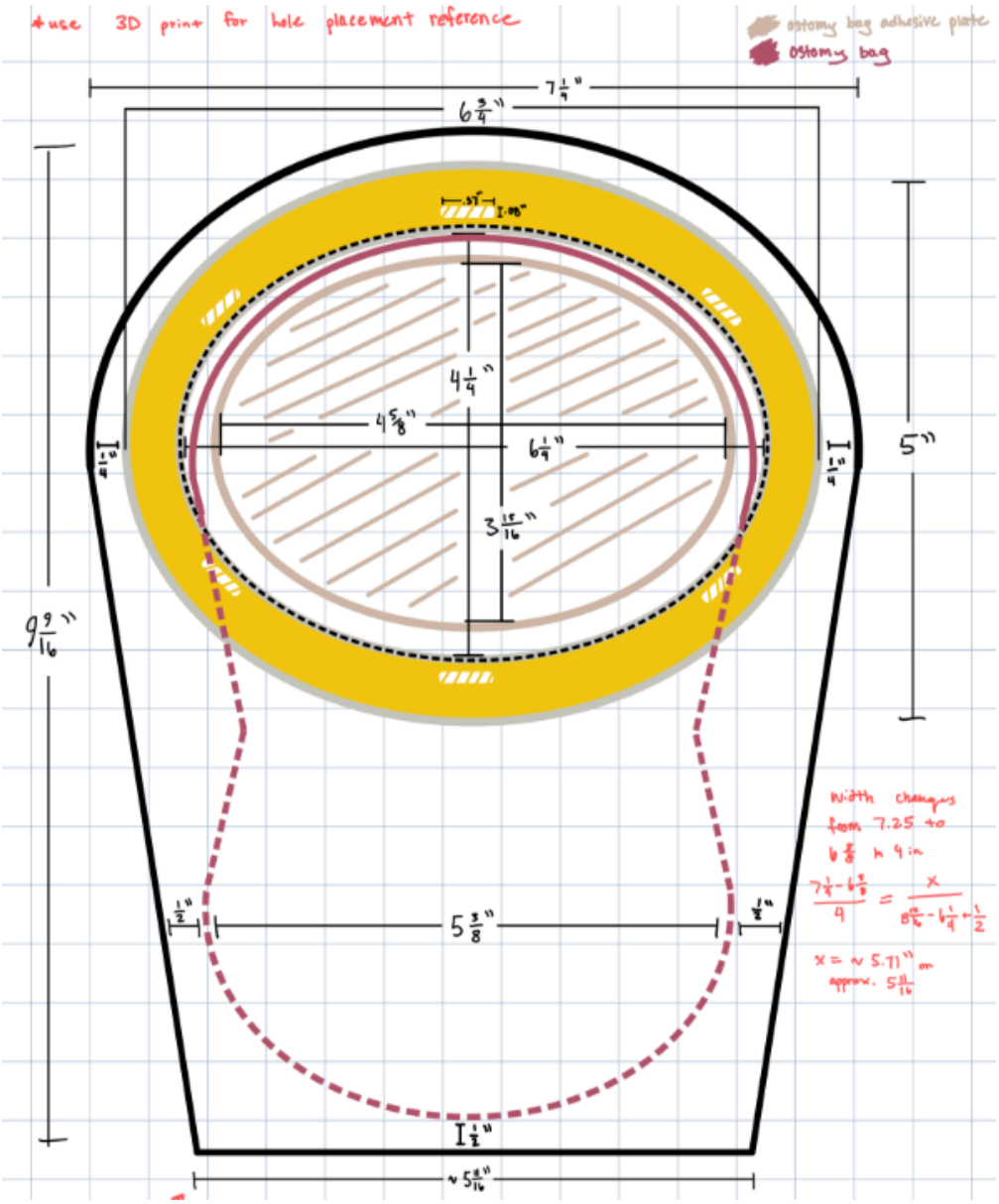
Ostomy Shower Pouch Design Matrix

		Adhesive Mix and Match 		**Adhesive Strips on Flaps** 		**Silicone Cup Design** 	
Criteria	Weight	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Waterproofness	25	4/5	20	5/5	25	2/5	10
Ease of Use	20	4/5	16	3.5/5	14	5/5	20
Reusability	15	3/5	9	2/5	6	5/5	15
Comfort	15	4/5	12	4/5	12	2/5	6
Ease of Fabrication	10	3/5	6	4/5	8	5/5	10
Adjustability	10	5/5	10	2/5	4	0/5	0
Cost	5	4/5	4	5/5	5	5/5	5
Total	100	**Sum**	**76**	**Sum**	**74**	**Sum**	**66**

Leading Design (9-30-2026)



Updated Design (10-27-2026)



Materials and expenses

BPAG Expense Spreadsheet

The team has ordered a silicone adhesive tape for skin attachment, waterproof silicone-coated polyester fabric for pouch fabrication, and Biothane elastic strap material for the adjustable component. The team has also completed 3D printing with resin filament provided by the UW–Madison Wendt Commons Makerspace (no reimbursement needed).

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Non-UW										
	Silicone Scar Sheets	LotFancy	N/A	Walmart	N/A	10/10/2026	1 pack	$27.41	$27.41	https://www.walmart.com/ip/LotFancy-Silico

										ne-Scar-Sheets-10-Pcs-Silicone-Scar-Tape-for-Scar-Treatment-Reusable-4-x-7-in/5440459187
	1.1oz Silpoly (Black)	Ripstop by the Roll	N/A	Ripstop by the Roll	N/A	10/10/2026	1 yd	$17.43	$17.43	https://ripstopbytheroll.com/products/1-1-oz-silpoly
	BioThane®, 520 Beta, 2.5mm Thick	Buckleguy		Buckleguy		10/19/2026	6x1ft	$1.38	$18.21 ($8.28 + $8.99 shipping)	
UW Makerspace (@Wendt)										
	Resin Filament			Wendt Makerspace		10/20/2026			$1.87	
									$0.00	
								TOTAL:	**$64.92**	

Major team goals for the last week

1. Finalize design (with specific materials, dimensions, fit) of the two rings.
2. Start testing how the material interfaces will work in the design (ring to silpoly, ring to silicone adhesive).
3. Begin connecting different parts of the first prototype that will contain the finalized materials.

Major team goals for the next week

1. Figure out the most viable option for cutting the small and large holes in the silpoly fabric.
2. Continue experimenting with fabric-to-ring, ring-to-silicone adhesive, ring-adhesive-skin connections.
3. Finalize ring design.

Last week's individual goals

- Addison Tanner: Cut the fabric using a stencil that we will create from the laser cutting machine and then use that to cut our material. Start conducting waterproofing testing.
- Eve Vosters: Create a prototype using the Silpoly material and 3D printed ring. Perform testing on the rims of the sewed seams of the silpoly to ensure their waterproofness. Brainstorm ring and bag connection techniques that will ensure security of the ring.

- Kira Schienke: Test laser cutting silpoly material using a small piece of fabric. Create a prototype using silpoly fabric and TPU ring. Change dimensions of design drawing.
- Lana Schardt: Cut silpoly fabric using the solidworks stencil. Ensure that bag dimensions can accommodate the TPU ring. Attach the straps to the prototype. Start conducting waterproofness testing.
- Lilli Tanner: Finalize dimensions (adjusting for ample sewing tolerance, ring connection, and ease of use) and create a prototype using the SilPoly material and 3D printed ring. Test fraying/ripping of silpoly from creating holes when our purchased silicone glue surrounds the holes due to attachment of the ring.
- Cassity Dechenne: Test out ring design and make sure ring wedges/holes fit with each other. Decide on a final method of fabric cutting and continue design fabrication. Make a final decision on material of both rings.

Next week's individual goals

- Addison Tanner: Figure out if we are going to use the laser cutter or if there is a different fabrication technique that we should use. Refine the ring design to make sure that it is easy to use for the client. Make sure we have a steady plan for the rest of the semester by talking with the other 300s
- Eve Vosters: Brainstorm replaceability of the silicone adhesive to ensure long term use of the entire product. Refine ring design and bag to ring connections using different fabrication techniques. Improve sewing techniques to make bag shape more accurate to design and ensure waterproofness of corners.
- Kira Schienke: Cut fabric for prototype using laser cutter or rotary cutter if laser cutter produces complications. Sew together cover using silpoly fabric. Adhere silicone adhesive to TPU ring. Attach TPU ring to cover without silicone epoxy.
- Lana Schardt: Test the final ring and bag prototype connection and see if any changes need to be made. Examine laser cut fabric for fraying or ripping and find solutions to reinforce fabric edges if needed. Help the team keep the labarchives notebook up to date.
- Lilli Tanner: Test waterproofness of seams in the most current bag prototype and improve sewing technique to make the final bag form more uniform and accurate to design dimensions.
- Cassity Dechenne: Create a final formulation of the ring design. Figure out the final process for cutting silpoly fabric (both the small and large holes). Test silicone with ring designs in shower-like conditions.

Timeline

OstoSeal Project Timeline

Activities

Name	Date	Activity/Previous Week's Accomplishments	Time (h)	Week Total (h)	Sem. Total (h)
Addison Tanner	11/6/2026	• Met with the team and tested different waterproof material cutting techniques using a Cricut and the rotary cutter. Brainstormed how to improve the ring connections. • Updated the team lab archives notebook • Met with the team at ECB to use the laser cutter and see if our material can be cut there	1.5 1 1	3.5	33.5

Eve Vosters	11/6/2026	• Met with the team at Wendt D&I Labs and tested different waterproof material cutting techniques using the Cricut and rotary cutter. Brainstormed how to improve the wedge connection between the rings. • Conducted seam waterproof testing and recorded findings in team notebook	1.5 1	2.5	36
Kira Schienke	11/6/2026	• Worked with the team to compare the Cricut and rotary cutter at Wendt for cutting holes of various sizes. Prepared for laser cutting reservation. • Conducted testing to determine if the laser cutter can reliably cut the holes and edges of the silpoly fabric.	1.5 1	2.5	32
Lana Schardt	11/6/2026	• Met with the team at Wendt Design Lab to test different cutting techniques for the silpoly fabric. • Met with the team at ECB Design Lab to laser cut the fabric. • Updated the Labarchives with pictures of our solidworks drawings for the fabric template.	1 1	2	29
Lilli Tanner	11/6/2026	• Reiterated prototype with SilPoly fabric and new dimensions to allow for extra seam tolerance • Met with the team at ECB to laser cut fabric	2 1	3	31.5
Cassity DeChenne	11/6/2026	• Modeled and printed multiple iterations of the ring designs • Tested the “cricut” cutting machine on the silpoly fabric • Consulted Wendt staff on cutting options for silpoly • Tested the laser cutting machine with the silpoly fabric • Updated Labarchives on fabrication process	2 1 2	5	32