DESIGN OBJECT MORPHOLOGIES

Spring 2022 Innovation Incubator

Perkins&Will

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Special Thanks

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Wyatt Beard
Rob Deering
Chris Hale
Bryan Schabel
Brian Weatherford
Eileen Jones
Thomas Mozina

Abstract

This Innovation Incubator “Design Object Morphologies” examines model building within Perkins&Will Architects. The first part of this research explored model building knowledge bases across our studios to understand how we fabricate models, what they look like, the resources they require, how we pay for them and why our searcclients love to see them. The second part of this research consists of Fourteen 11.5” square model case studies that illustrate collective knowledge within our studios of contemporary and traditional model building techniques and strategy. With scale, resolution, color, context, choreography, and materiality in mind, these case studies serve as “recipe starters” for our project managers when choosing visual tools to convey our work to our clients and ourselves.


FIG 1.


FIG 2.


FIG 3.

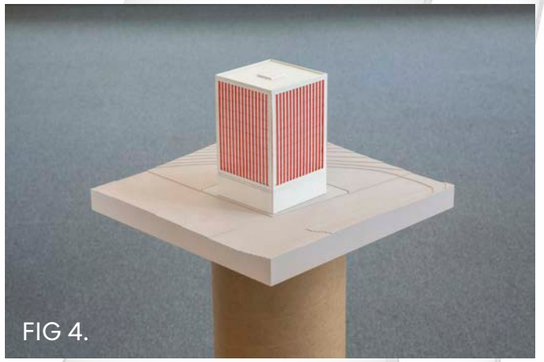
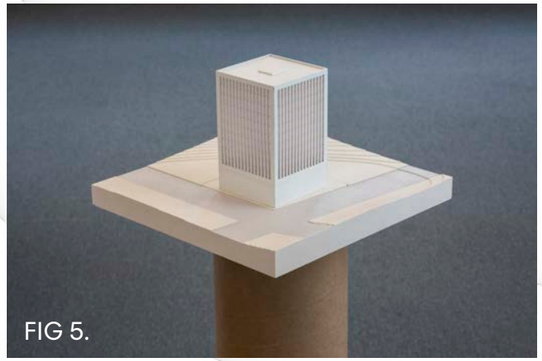


FIG 4.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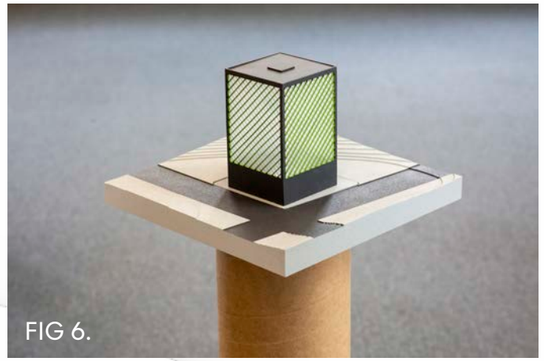
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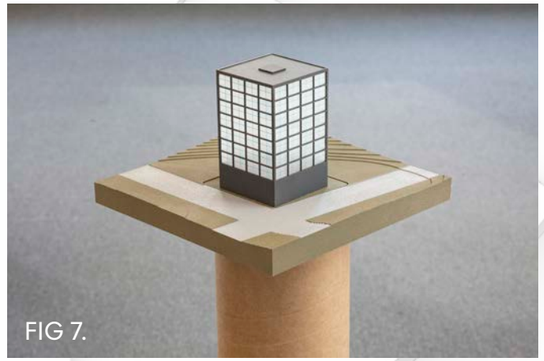
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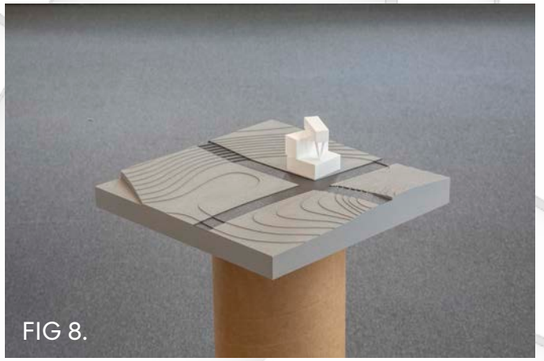


FIG 8.


FIG 9.

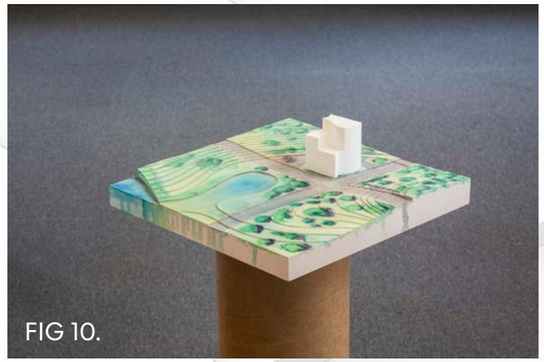


FIG 10.


FIG 11.

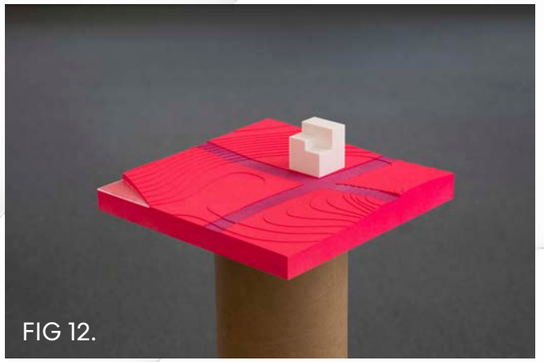


FIG 12.

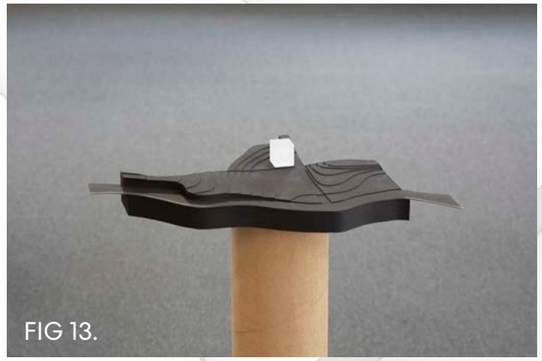


FIG 13.

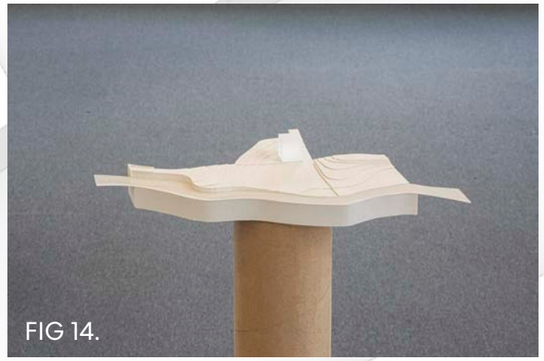


FIG 14.

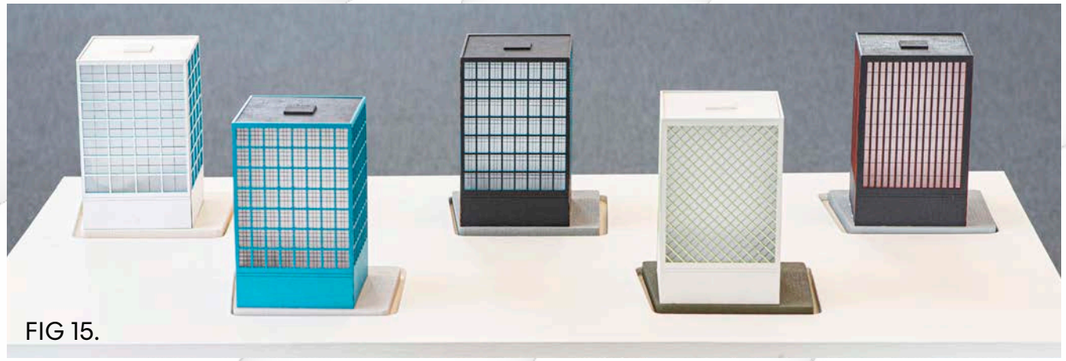
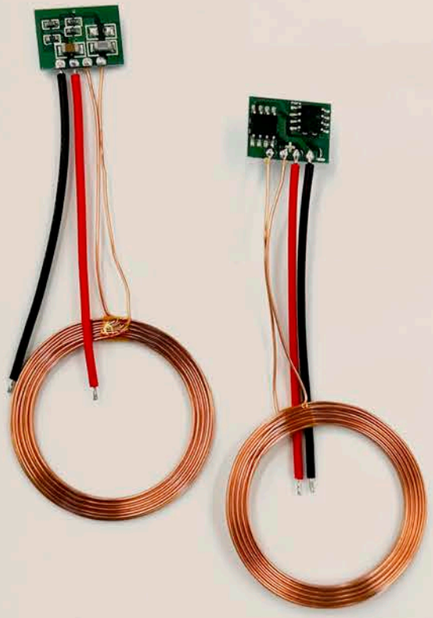


FIG 15.

Collaboration
Watercolor

Architects often outsource presentation models when conditions aren't right to build them in the studio. Both advantages and disadvantages exist when using outside vendors for model building including time, budget, and capabilities. I find that these relationships are most successful when they are a partnership. Figure 10 is a case studio of a partnership between Ryan M. Odom and Laszlo Andrasi. Laszlo watercolor painted a vibrant landscape on top of a white model base. In addition to its artistic quality, this case study is a successful example of partnering with local artisans and fabricators to take our work to new places.

Special thanks to Laszlo Andrasi for collaborating on this model.



Cross X Pollination

Induction Coils

Through connecting with model builders across Perkins&Will, I found separate but thriving model building knowledge bases in many of our studios. Our work can only benefit from sharing knowledge, experiences, and resources with each other. One example of successful cross-pollination came from collaborating with Boston studio where LED's are wired into their models using conduction coils to enhance presentation choreography. With an induction coil embedded into the base of a model and inside a "plug", design options can be switched out during presentations without the need to make a physical power connection, all while being completely hidden from view. All five of the 1/16"-1" Incubator case studies are fitted with induction coils.

Special thanks to Aaron Williams for sharing this resource.

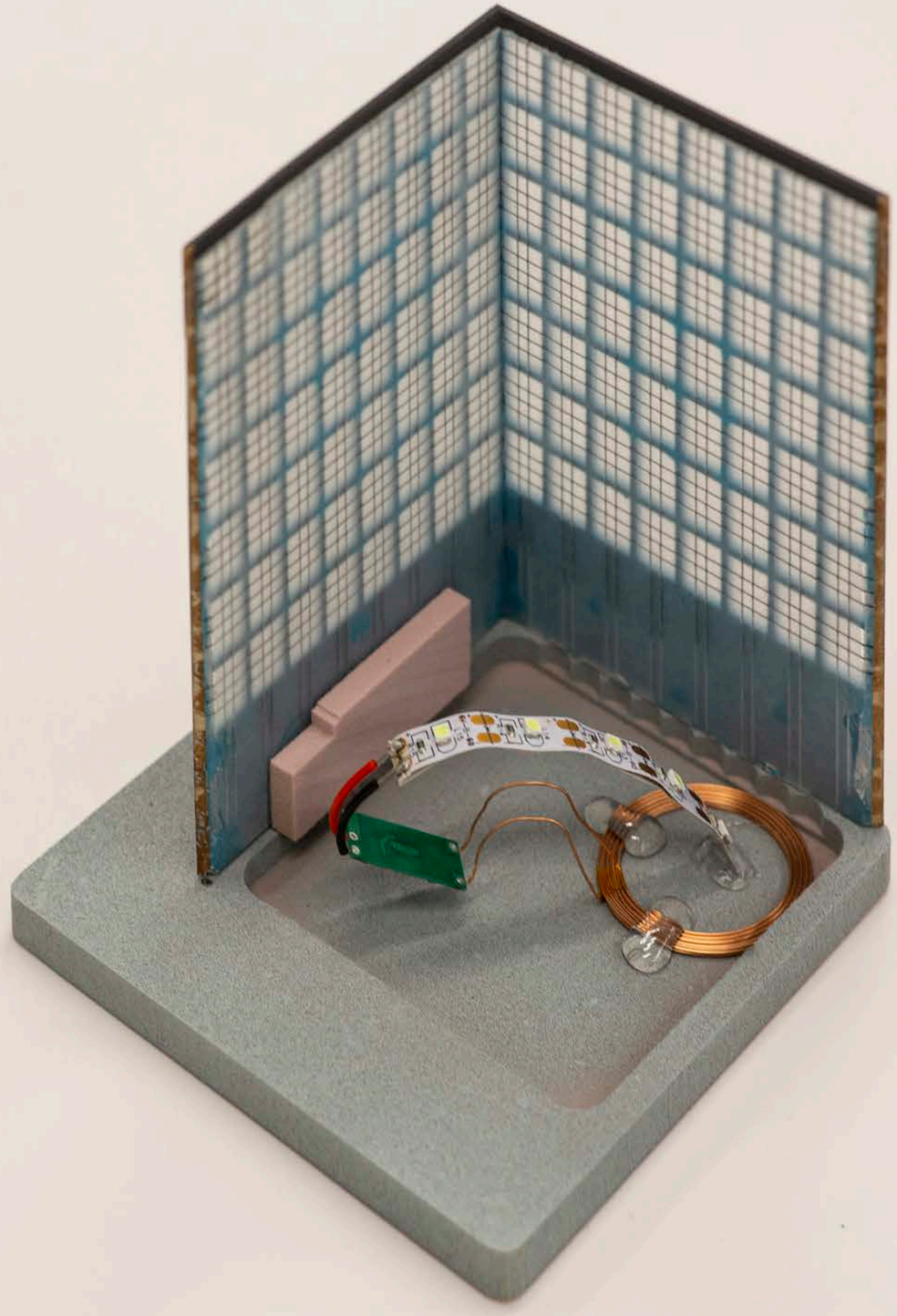


FIG 15.

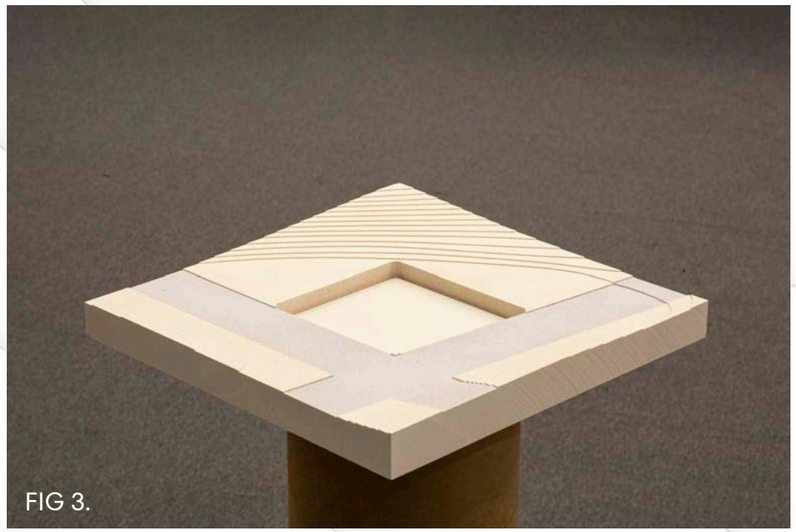
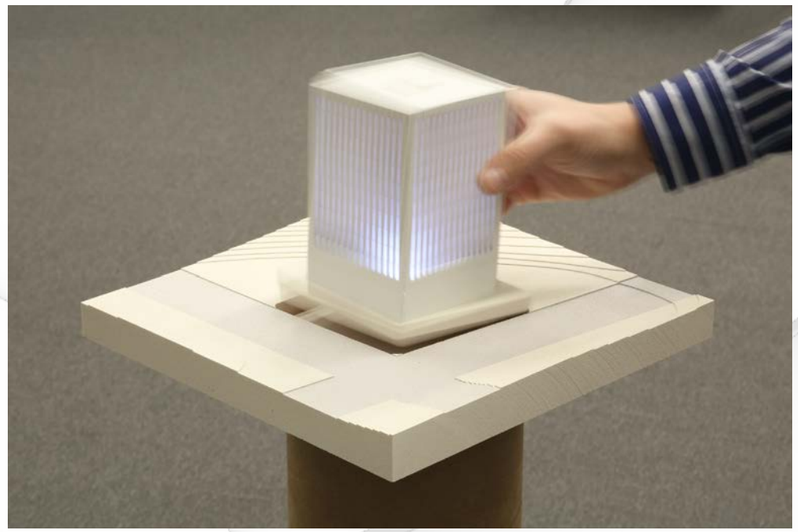
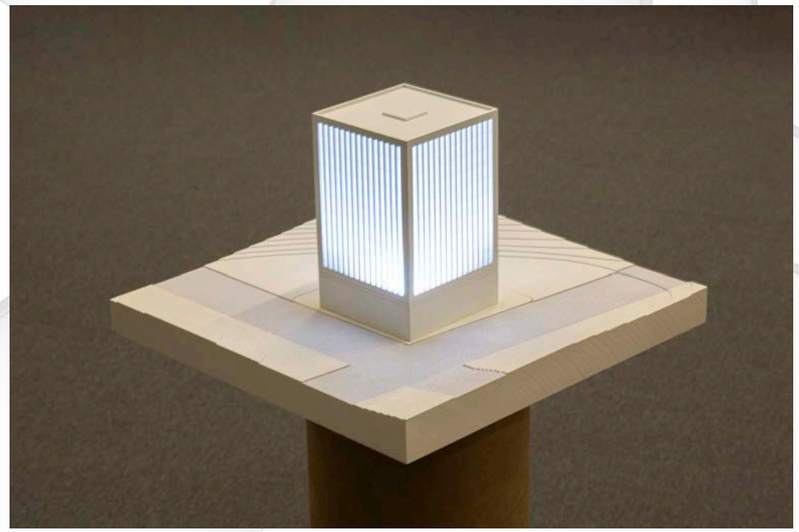


FIG 3.





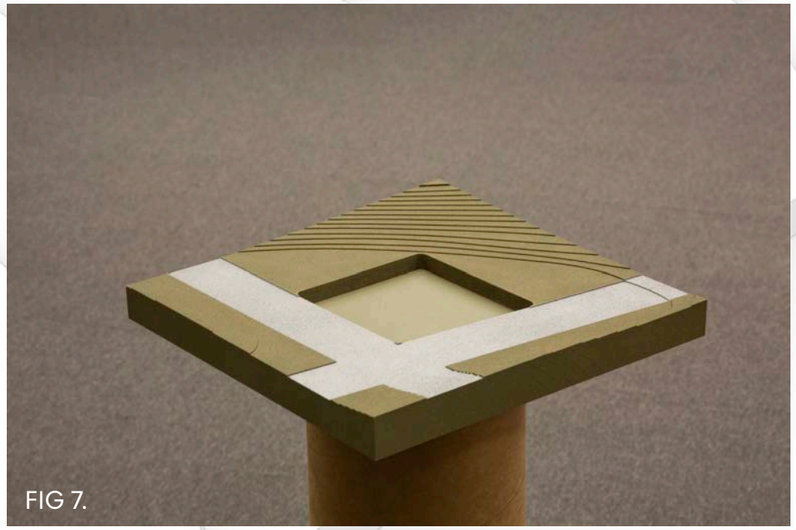
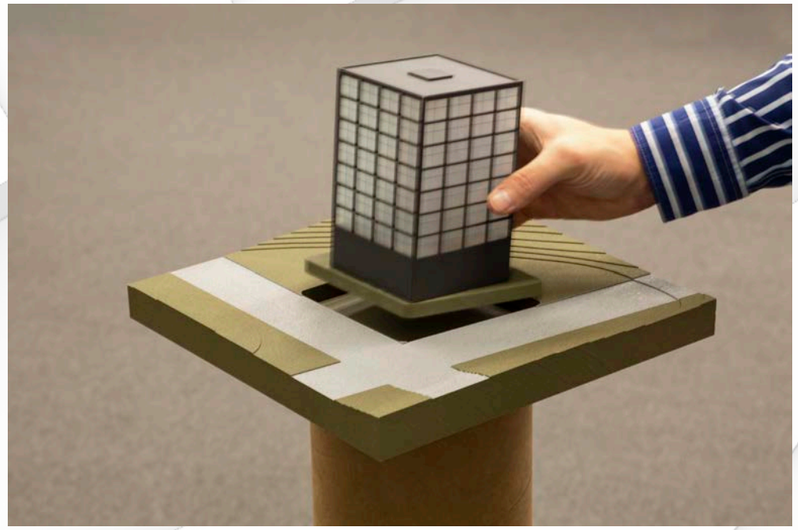
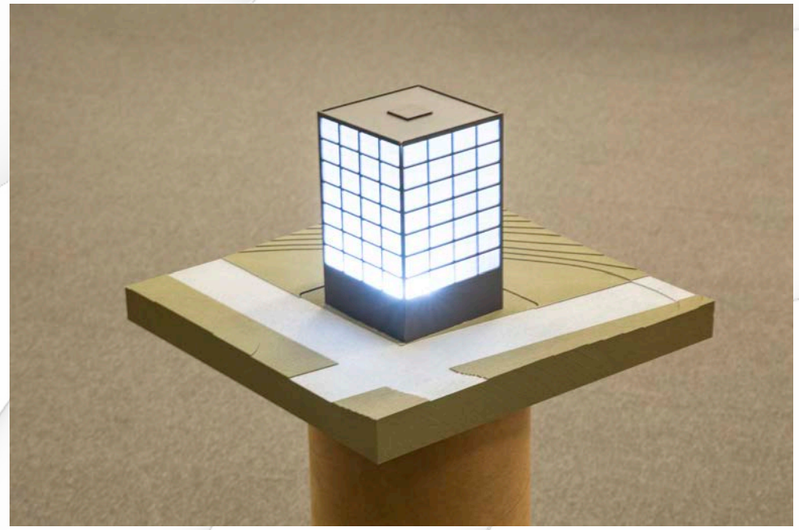


FIG 7.





Bryan Schabel -

“Models are not precious.”

Thomas Mozina –

“Nothing gets people out of their seat at an interview like a model.”

Chris Hale –

“I know of a few times where if we had built models early on during schematic design to define spatial relationships, it would have saved us headache down the road.”

Ryan M. Odom –

Architectural models are art at work. We use them to sell our work to our clients and each ourselves for the betterment of the communities we serve,

Figure 1
Monochromatic 1/64” - 1’

FIG 1.

Scale:	1/64” - 1’
Materials:	- 20lb Precision Board - Montana Gold - White spray paint - Sanded Acrylic
Concepts explored:	- Monochromatic color - Scale - Resolution

Figure 2

Monochromatic 1/32” - 1’

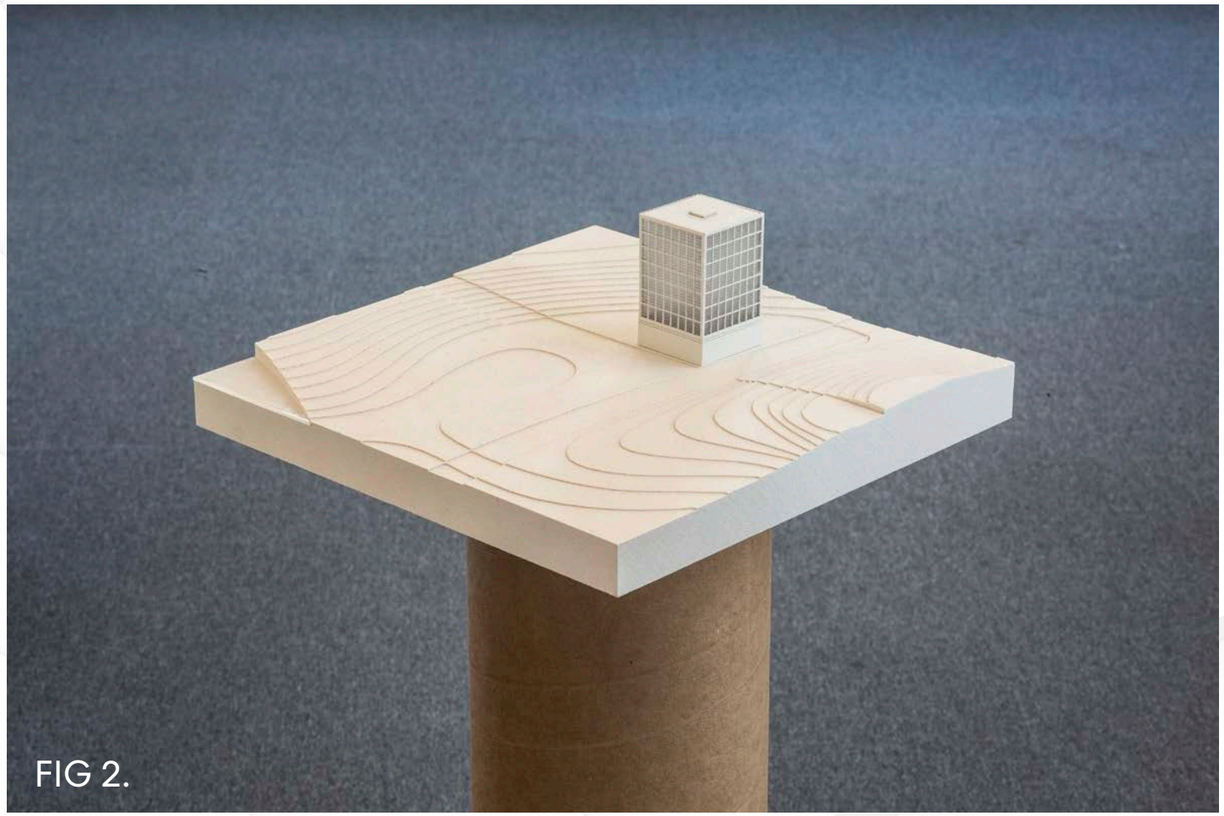


FIG 2.

Scale:	1/32” - 1’
Materials:	- 20lb Precision Board - Montana Gold - White spray paint - 0.039mm Acrylic - 1/16” MDF
Concepts explored:	- Monochromatic color - Scale - Resolution

Figure 3

Monochromatic 1/16” - 1’

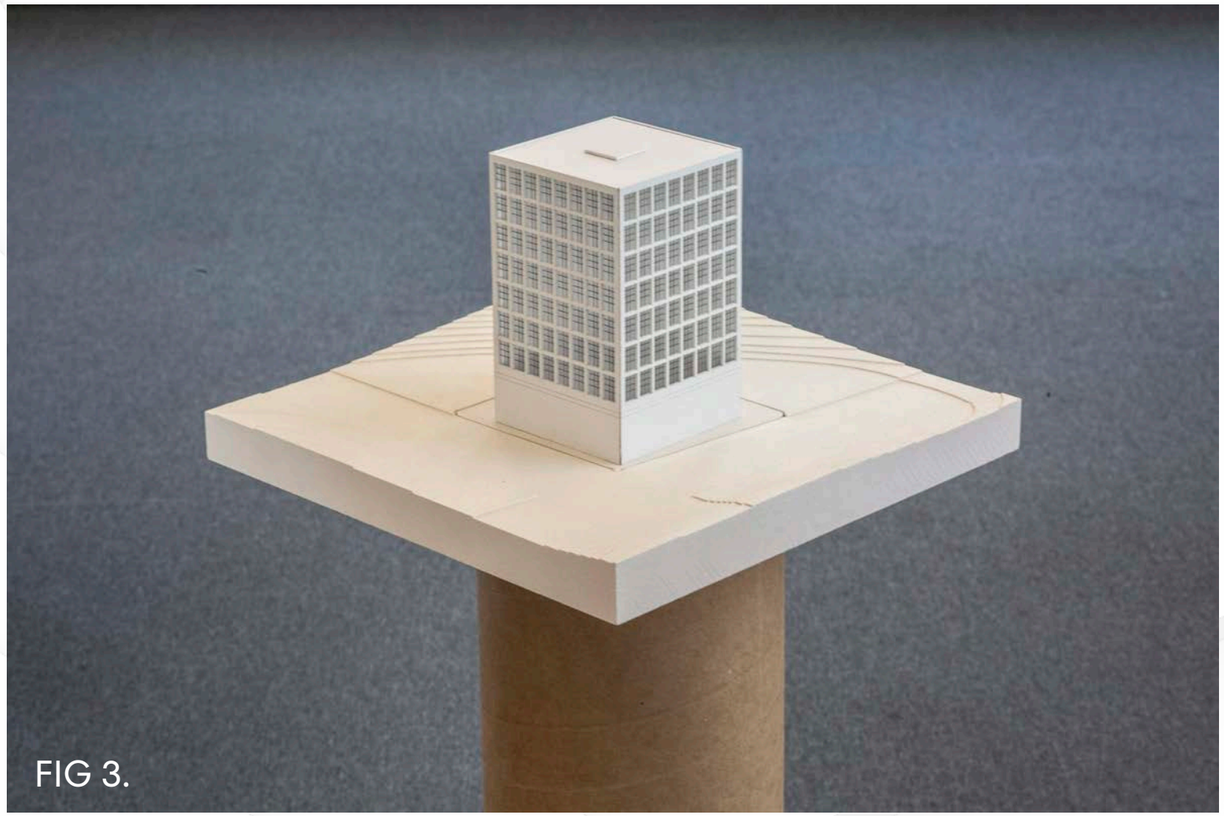


FIG 3.

Scale:	1/16” - 1’
Materials:	- 20lb Precision Board - Montana Gold - White spray paint - 0.039mm Acrylic - 1/16” MDF
Concepts explored:	- Monochromatic color - Scale - Resolution

Figure 4
Monochromatic Grey

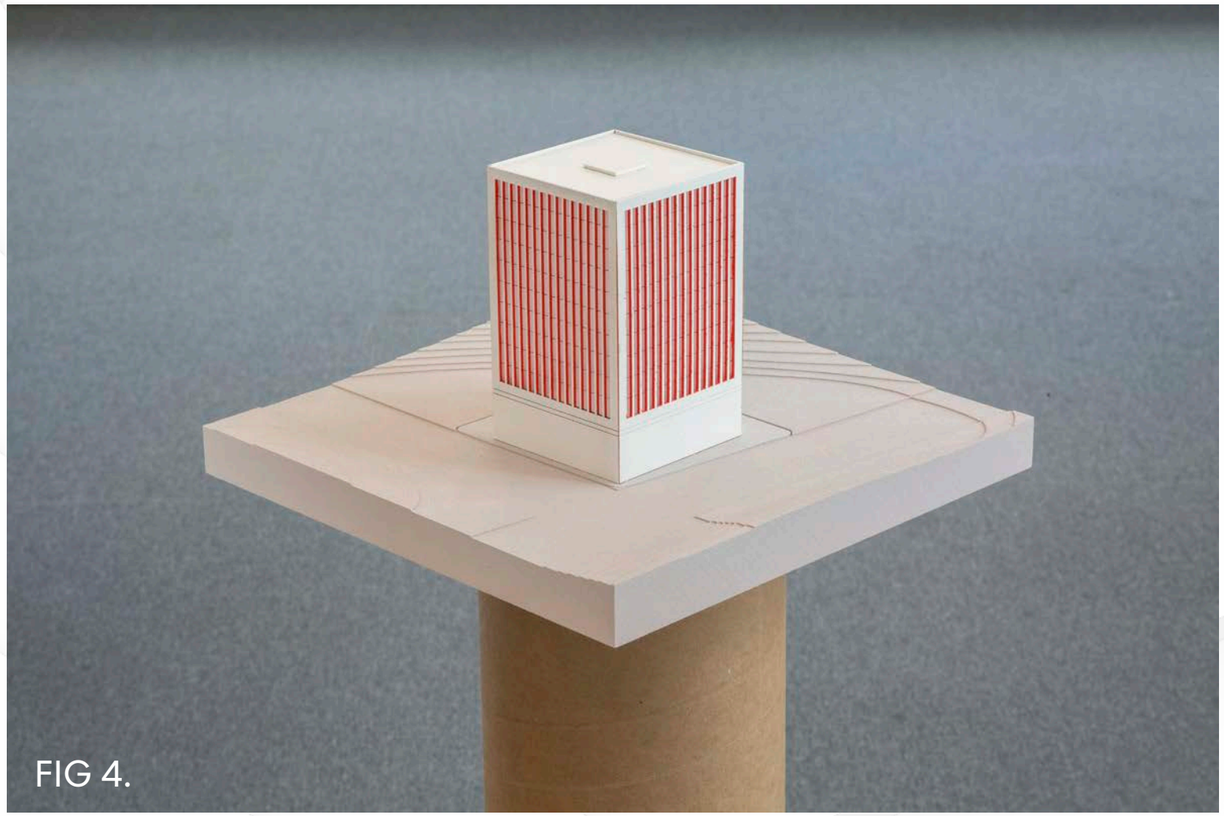


FIG 4.

Scale:	1/16 - 1’
Materials:	- 20lb Precision Board - Montana Gold - White - Montana Gold - Pebble - Montana Gold - Red - 0.039mm Acrylic - 1/16” MDF
Concepts explored:	- Monochromatic color - Scale - Fenestration color

Figure 5
White and Light Grey

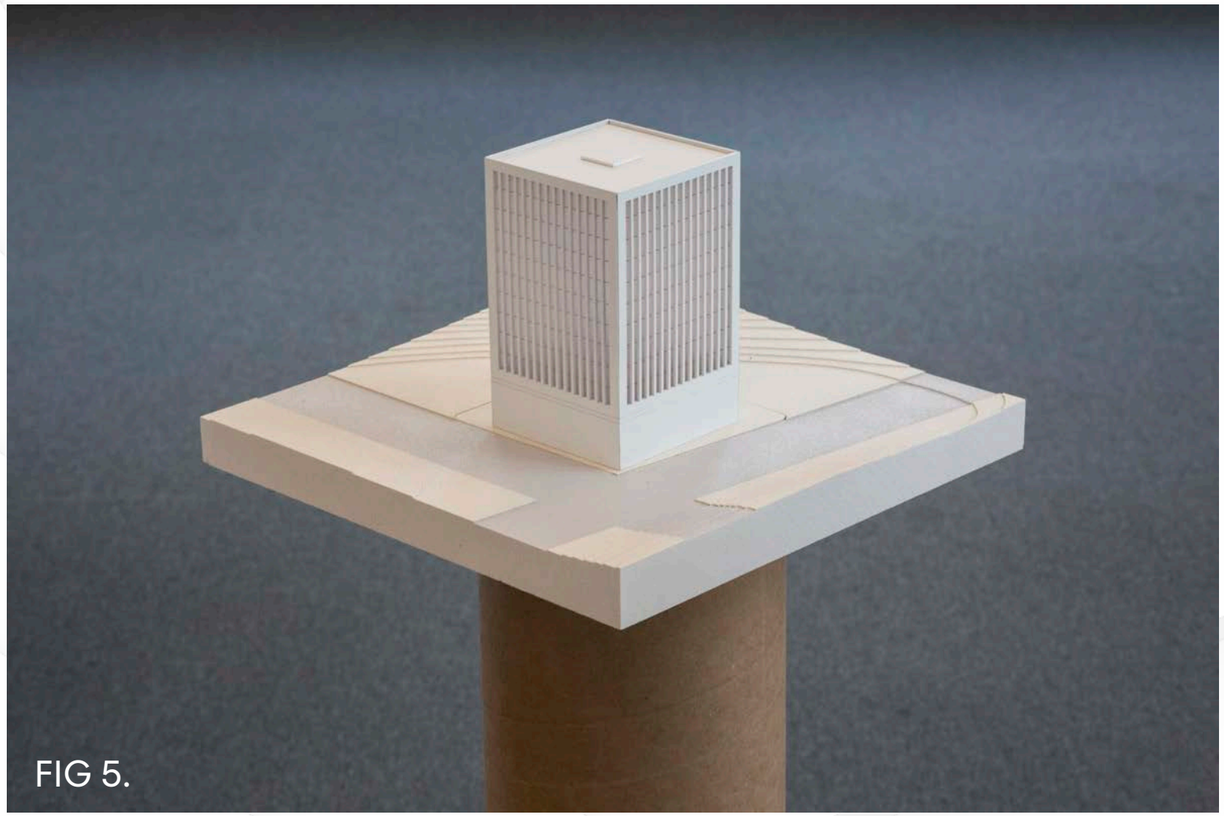


FIG 5.

Scale:	1/16” - 1’
Materials:	- 20lb Precision Board - Montana Gold - White - Montana Gold - Pebble - Montana Gold - Red - 0.039mm Acrylic - 1/16” MDF
Concepts explored:	- Monochromatic color - Scale - Fenestration color

Figure 6

Grey and Dark Grey

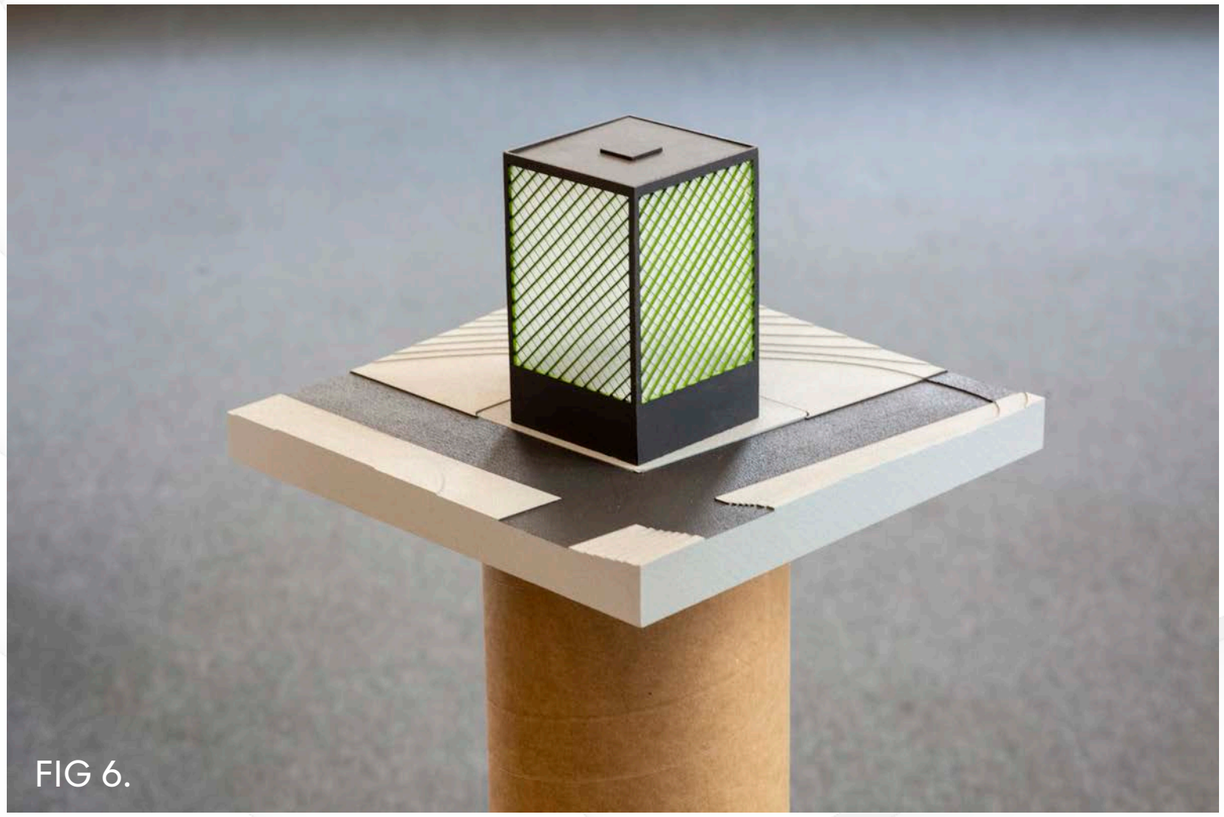


FIG 6.

Scale:	1/16” - 1’
Materials:	- 20lb Precision Board - Montana Gold - Green - Montana Gold - Pebble - Montana Gold - Stealth - 0.039mm Acrylic - 1/16” MDF
Concepts explored:	- Monochromatic color - Scale - Fenestration color

Figure 7
Green and Grey'

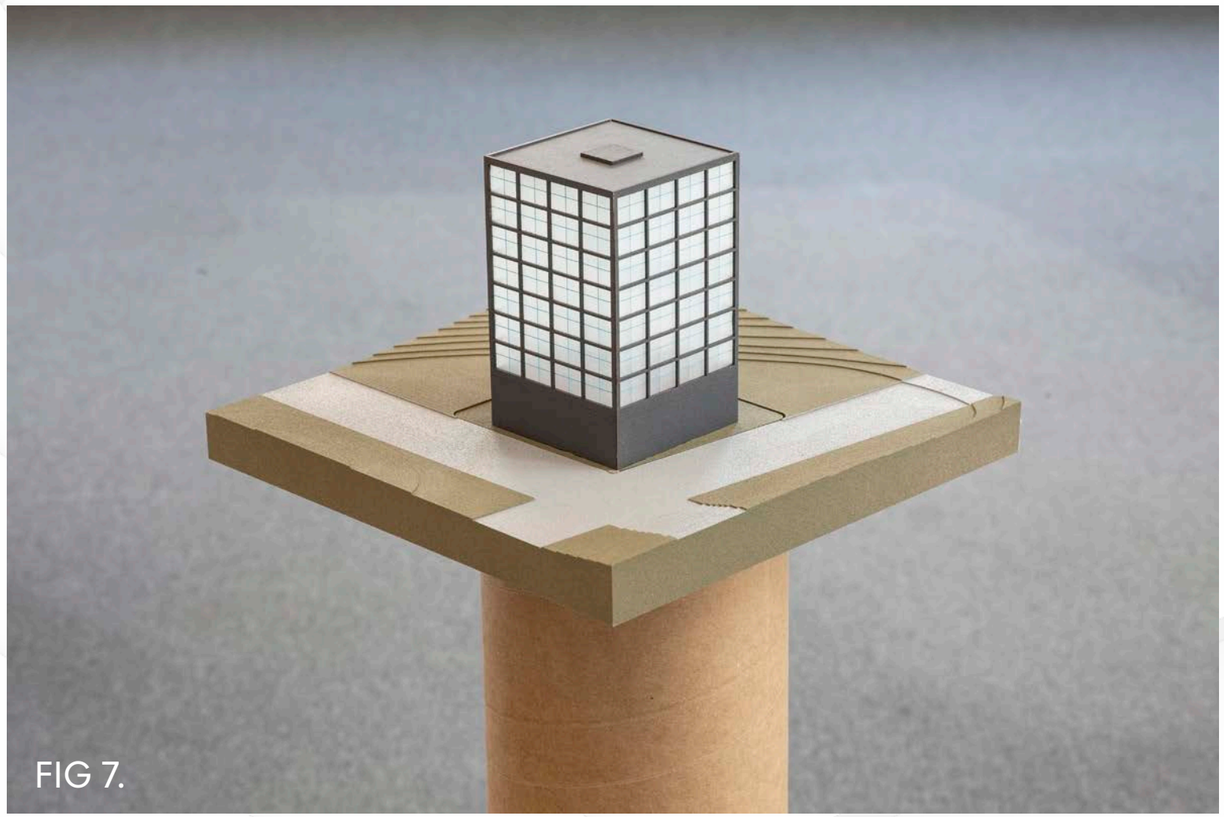


FIG 7.

Scale:	1/16" - 1'
Materials:	- 20lb Precision Board - Montana Gold - Camo - Montana Gold - Pebble - Montana Gold - Stealth - 0.039mm Acrylic - 1/16" MDF
Concepts explored:	- Monochromatic color - Fenestration color

Figure 8

Grey and Dark Grey

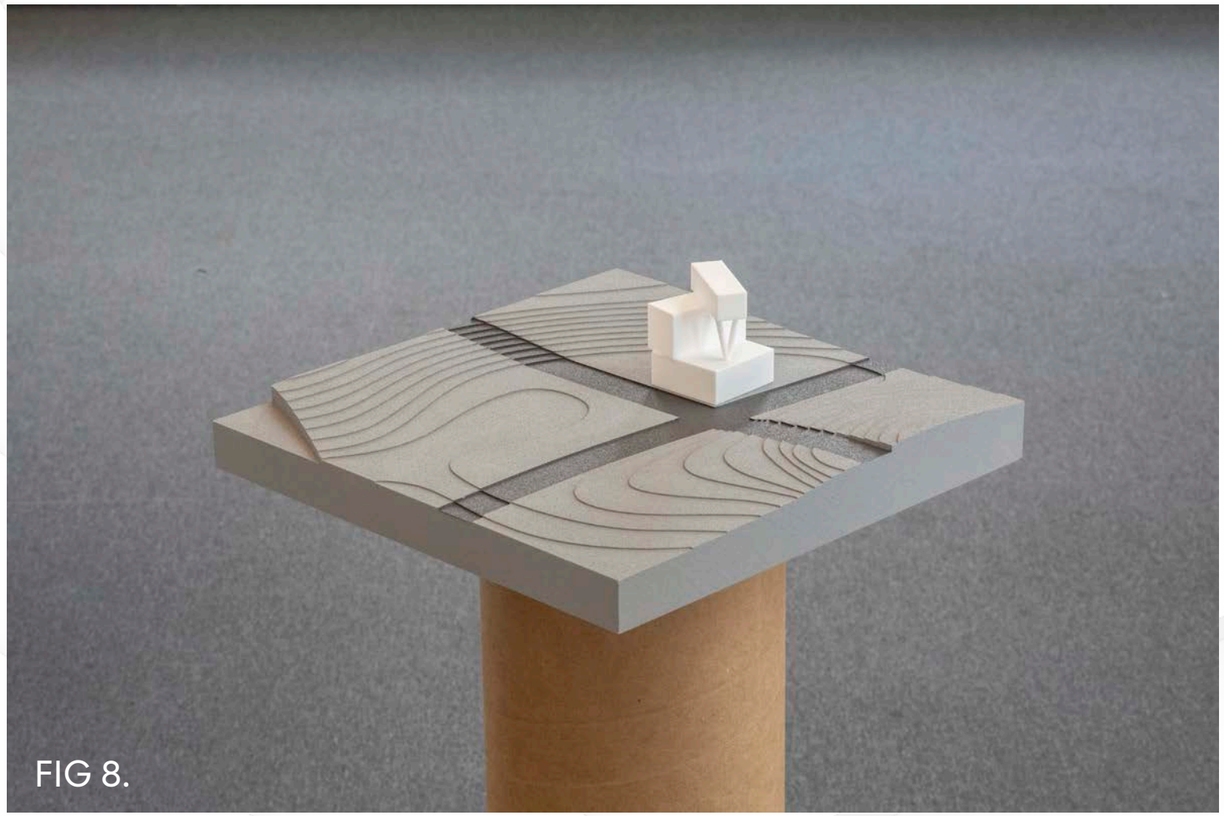


FIG 8.

Scale:	1/32” - 1’
Materials:	- 20lb Precision Board - Montana Gold - Grey - Montana Gold - Stealth - 0.039mm Acrylic - White Nylon 3D print
Concepts explored:	- Grey Tones - Form

Figure 9

Walnut and Black Acrylic

FIG 9.

Scale:	1/64” - 1’
Materials:	- Walnut - Montana Gold - Black - 1/16” Acrylic - White Nylon 3D print
Concepts explored:	- Material - Contrast

Figure 10
Watercolor

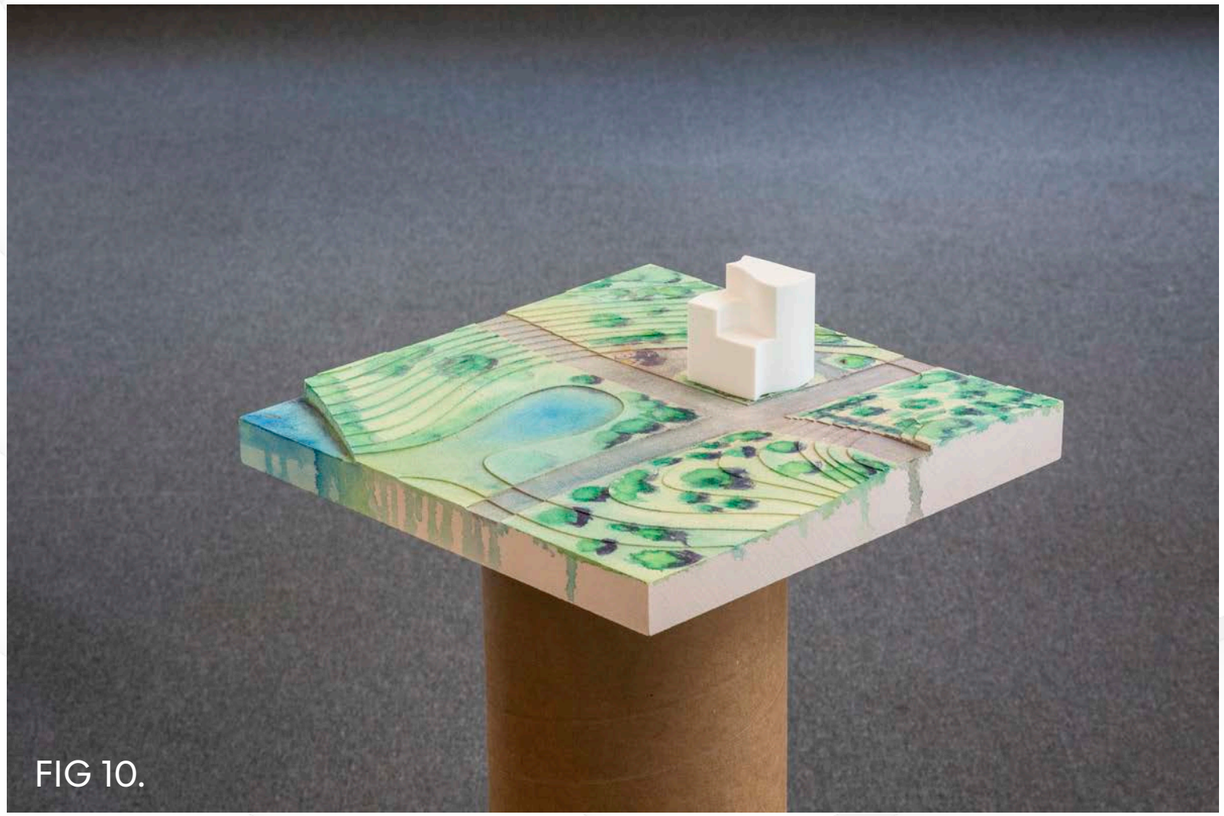


FIG 10.

Painted by Laszlo Andrasi

Scale:	1/32” - 1’
Materials:	- 20lb Precision Board - Montana Gold - White - Watercolor paints - White Nylon 3D print
Concepts explored:	- Color - Realism - Form

Figure 11
Black 3.0

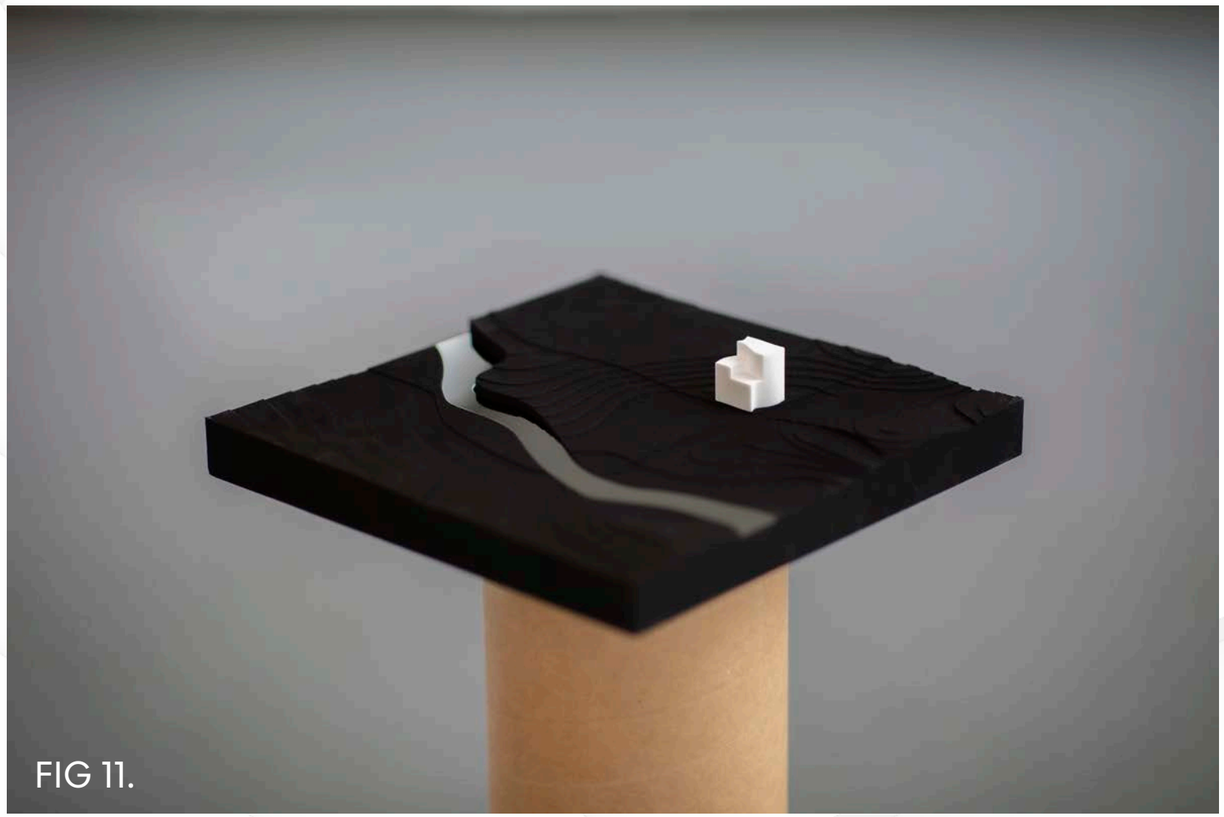


FIG 11.

Scale:	1/64” - 1’
Materials:	- 20lb Precision Board - Black 3.0 - Montana Gold - Black - 1/16” Acrylic - White Nylon 3D print
Concepts explored:	- Material - Contrast - Color

Figure 12
Pink

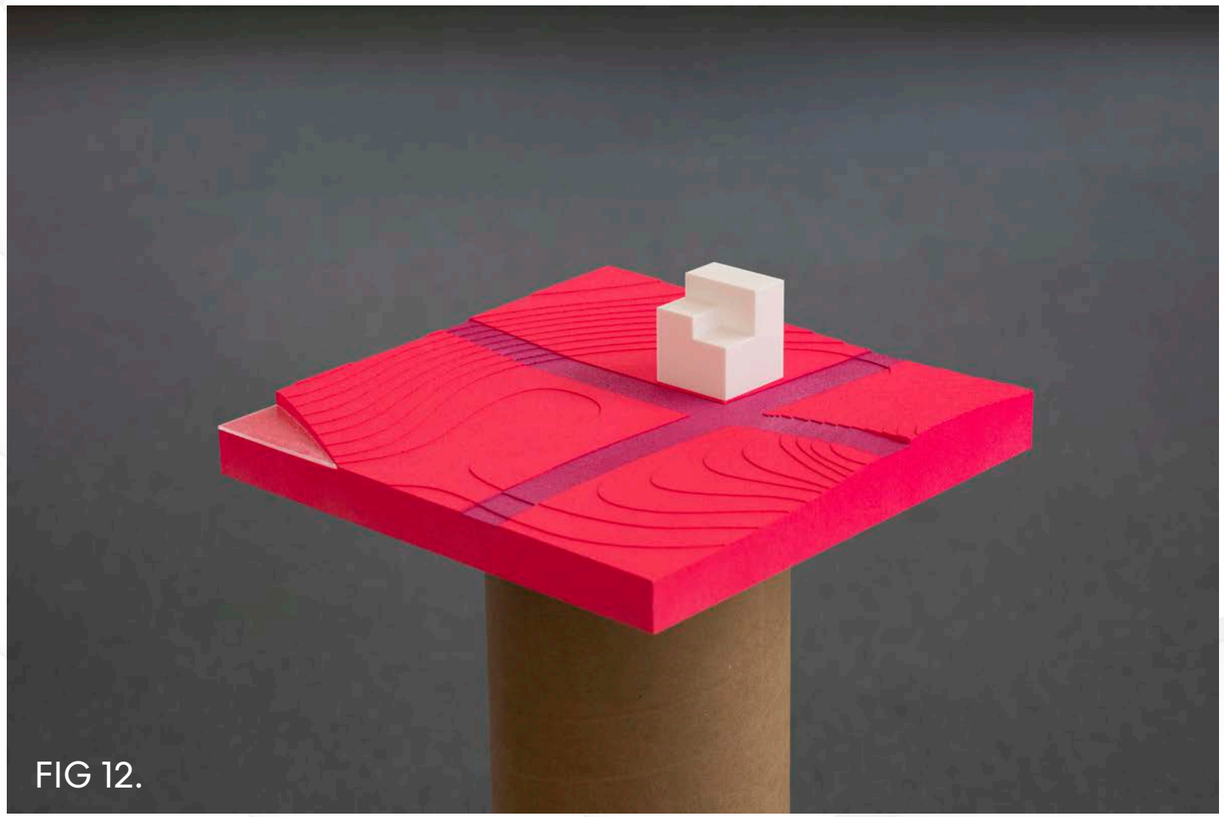


FIG 12.

Scale:	1/32” - 1’
Materials:	- 20lb Precision Board - Montana Gold - Hot Pink - Montana Gold - Bubble Gum - 1/16” Acrylic - White Nylon 3D print
Concepts explored:	- Color - Form

Figure 13
Omitted Context Dark Grey

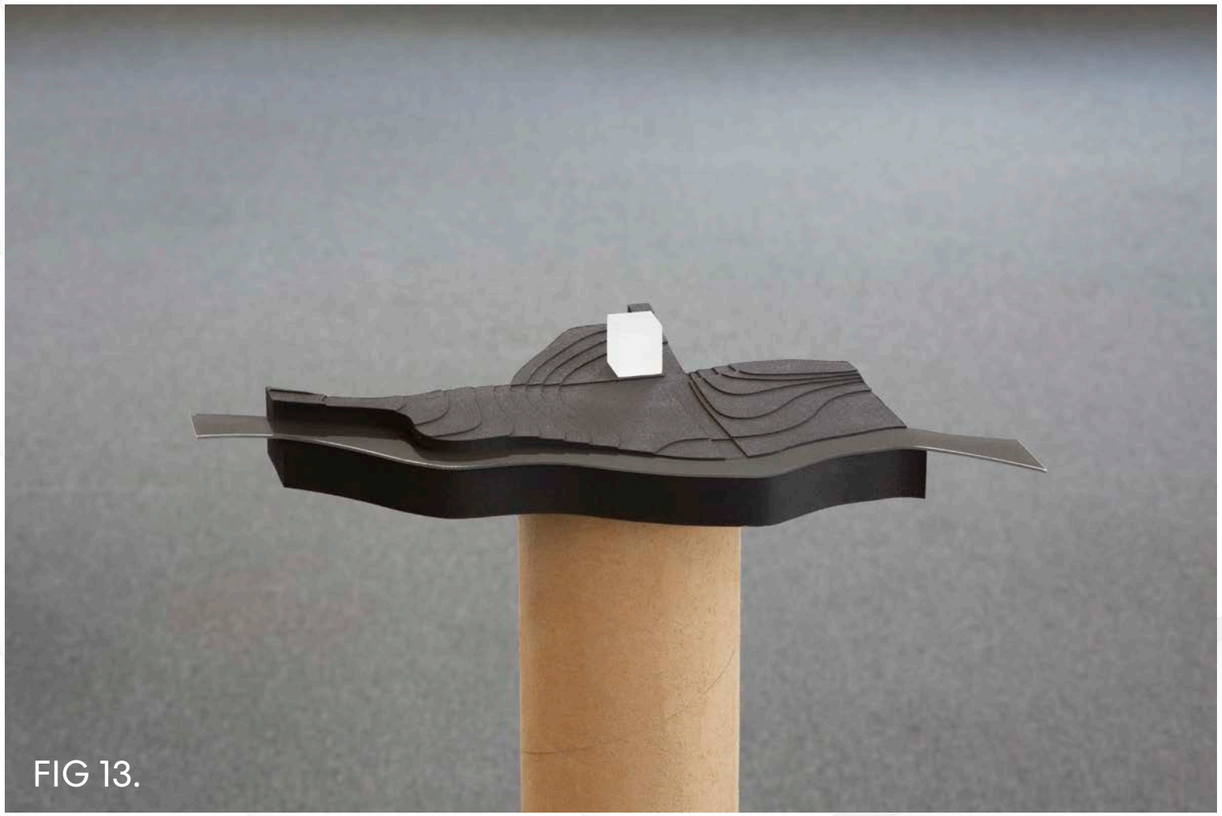


FIG 13.

Scale:	1/64” - 1’
Materials:	- 20lb Precision Board - Montana Gold - Stealth - Sanded Acrylic
Concepts explored:	- Context - Color

Figure 14
Omitted Context White

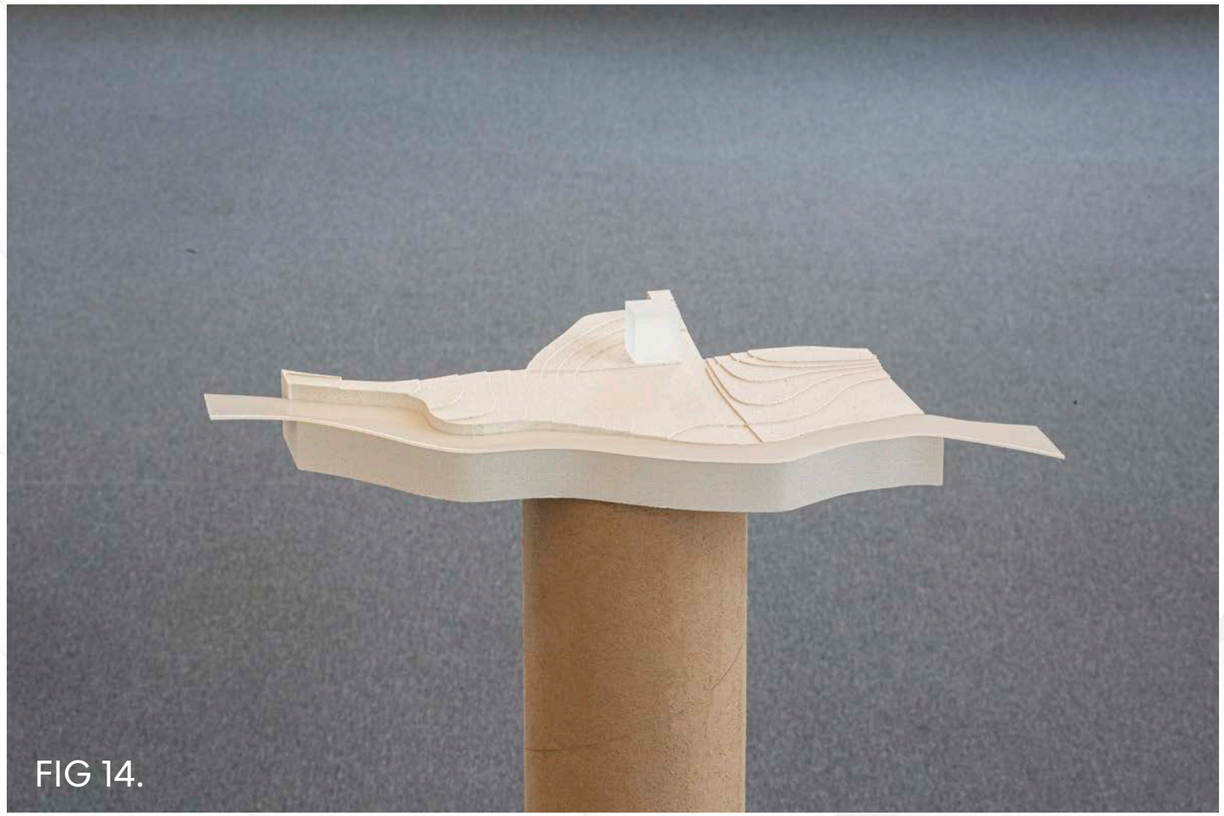


FIG 14.

Scale:	1/64” - 1’
Materials:	- 20lb Precision Board - Montana Gold - White - Sanded Acrylic
Concepts explored:	- Context - Color

Figure 15

Additional Plugs for 1/16” - 1’ Models

Scale:	1/64” - 1’

FIG 15.

Material Cost

Material		Cost
Precision Board		$349.80
LED’s, Induction Coils, and Power supplies		$107.60
Spray Paint		$154.93
Black 3.0		$39.33
Hardwood - Walnut		$64.14
3D printing		$292.14
	Subtotal	$1,007.94
Adjustment to include scrape materials Used		
0.039mm Clear Acrylic		$127.09
1/16” Clear Acrylic		$42.27
1/16” MDF		$60.06
	Subtotal	$229.42
	TOTAL	$1,237.36

Material Cost by Model

Description	Figure	Scale	Precision Board	LED's, Induction Coils, Etc.	Spray Paint	1/16" MDF	Hardwood	Black 3.0	3D printing	0.039mm Clear Acrylic	1/16" Clear Acrylic	Total
Monochromatic White	Figure 1	1/64" - 1'	$26.91		$12.91						$5.28	$45.10
Monochromatic White	Figure 2	1/32" - 1'	$26.91		$12.91	$10.01				$21.18		$71.01
Monochromatic White	Figure 3	1/16" - 1'	$26.91	$21.52	$12.91	$10.01				$21.18		$92.53
Monochromatic Grey	Figure 4	1/16" - 1'	$26.91	$21.52	$12.91	$10.01				$21.18		$92.53
Grey on Grey	Figure 5	1/16" - 1'	$26.91	$21.52	$12.91	$10.01				$21.18		$92.53
Light Grey on Grey	Figure 6	1/16" - 1'	$26.91	$21.52	$12.91	$10.01				$21.18		$92.53
Green on grey	Figure 12	1/16" - 1'	$26.91	$21.52	$12.91	$10.01				$21.18		$92.53
Dark grey on grey	Figure 7	1/32" - 1'	$26.91		$12.91				$58.43		$5.28	$103.53
Walnut	Figure 11	1/64" - 1'					64.14		$58.43		$5.28	$127.85
Watercolor	Figure 10	1/32" - 1'	$26.91		$12.91				$58.43		$5.28	$103.53
Black 3.0	Figure 9	1/64" - 1'	$26.91					39.33	$58.43		$5.28	$129.95
Pink	Figure 8	1/32" - 1'	$26.91		$12.91				$58.43		$5.28	$103.53
Contextual Steel White	Figure 13	1/64" - 1'	$26.91		$12.91						$5.28	$45.10
Contextual Steel Grey	Figure 14	1/64" - 1'	$26.91		$12.91						$5.28	$45.10
												$1,237.35

Number of Steps in Fabrication Sequence and Estimated Labor Hours if Completed Individually

Description	Figure	Scale	CNC File Prep [10]	3D Printing File Prep [4]	Facade File Prep [10]	CNC Machining [10]	Base Painting [2]	Masking [4]	Laser Cutting [6]	LED Assembly [2]	Façade Painting [4]	Façade Assembly [4]	Sanding [2]	Watercloring [5]	Woodworking [5]	Airbrishing [3]	Number of Steps	Weighted Hours
Monochromatic White	Figure 1	1/64" - 1'	10			10	2										4	22
Monochromatic White	Figure 2	1/32" - 1'	10		10	10	2		6	2	4	4					8	22
Monochromatic White	Figure 3	1/16" - 1'	10		10	10	2		6	2	4	4					8	48
Monochromatic Grey	Figure 4	1/16" - 1'	10		10	10	2		6	2	4	4					8	48
Grey on Grey	Figure 5	1/16" - 1'	10		10	10	2	4	6	2	4	4					9	52
Light Grey on Grey	Figure 6	1/16" - 1'	10		10	10	2	4	6	2	4	4					9	52
Green on grey	Figure 7	1/16" - 1'	10		10	10	2	4	6	2	4	4					9	52
Dark grey on grey	Figure 8	1/32" - 1'	10	4		10	2	4									5	30
Walnut	Figure 9	1/64" - 1'	10	4		10							2		5		5	31
Watercolor	Figure 10	1/32" - 1'	10	4		10	2							5			5	31
Black 3.0	Figure 11	1/64" - 1'	10	4		10		4								3	5	31
Pink	Figure 12	1/32" - 1'	10	4		10	2	4									5	30
Contextual Steel White	Figure 13	1/64" - 1'	10			10	2	4									4	26
Contextual Steel Grey	Figure 14	1/64" - 1'	10			10	2	4									4	26