



# EBUBE MADUKA-UGWU

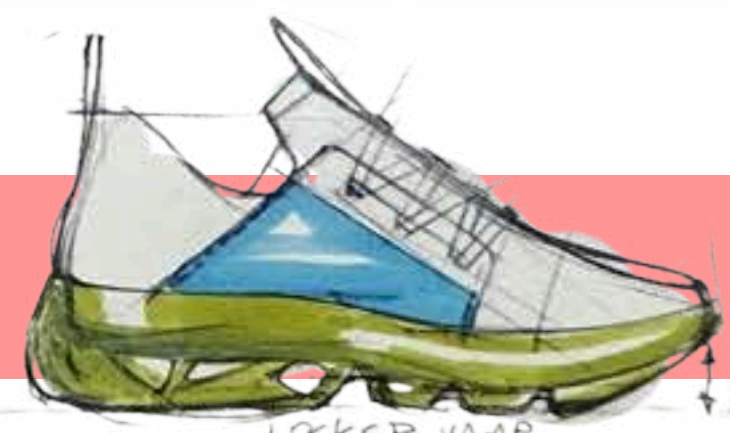
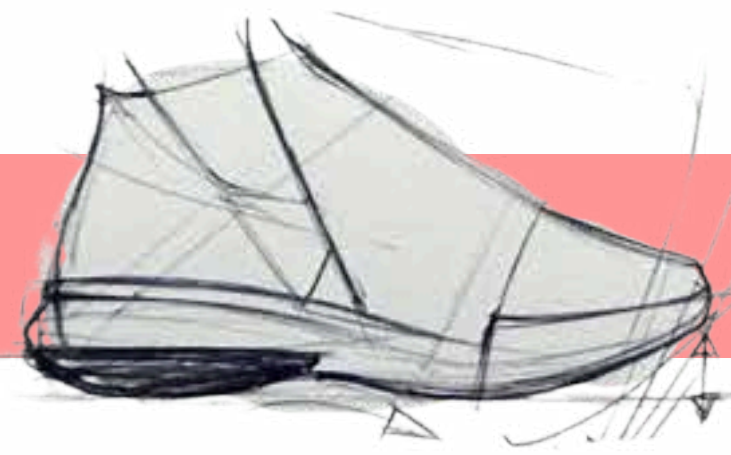
GEORGIA TECH M.I.D INDUSTRIAL DESIGN

Footwear concepts exploring the intersection of performance structure and lifestyle form, developed through iterative sketching, system thinking, and CAD construction.

# STRATA

Exploring the promotion of stability and preservation of midsole cushion structure at the intersection between lifestyle and performance

Image generated in FLORA AI



LOCKSP VAMP  
WRAPPED MIDSOLE



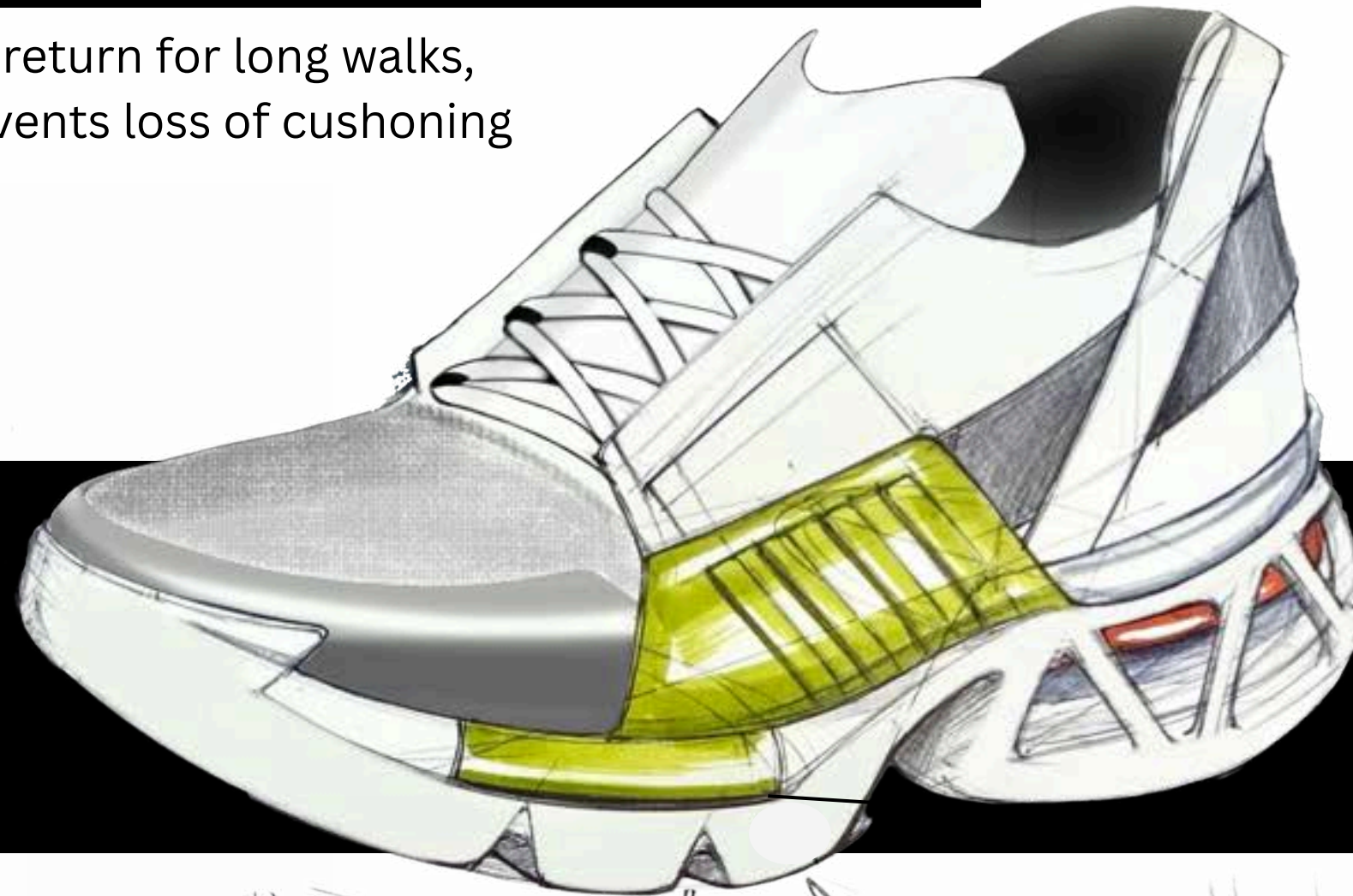
"SHARK-TOOTH" MIDSOLE  
STRUCTURE + FLEXIBILITY



SCAFFOLD-STYLE MIDSOLE  
EMPHASIS ON STRUCTURE

# STRATA: Midfoot support cage + Backfoot scaffolding

The support cage stabilizes the foot and offers energy return for long walks, and the scaffolding in the backfoot of the midsole prevents loss of cushioning

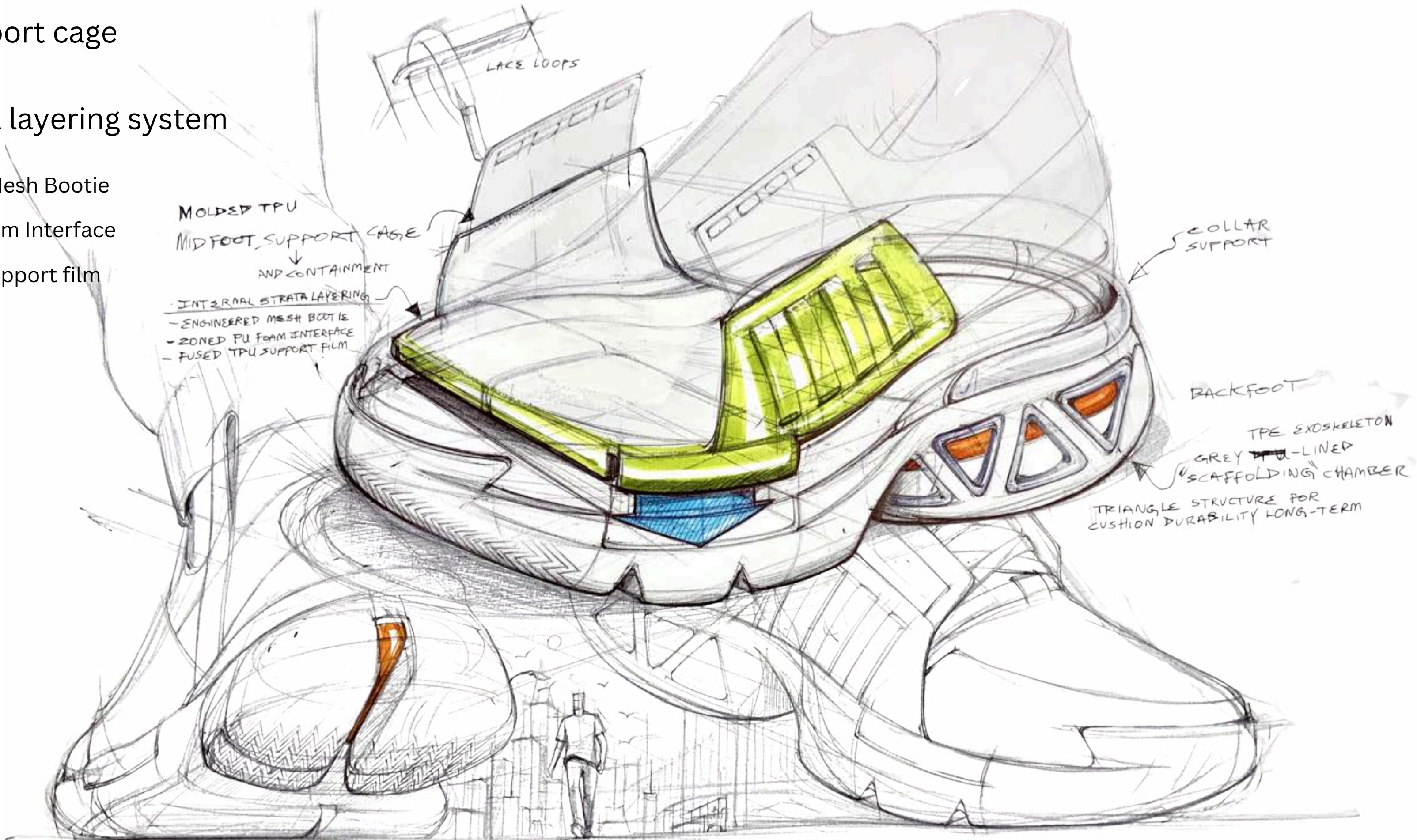


# STRATA: Containment system study

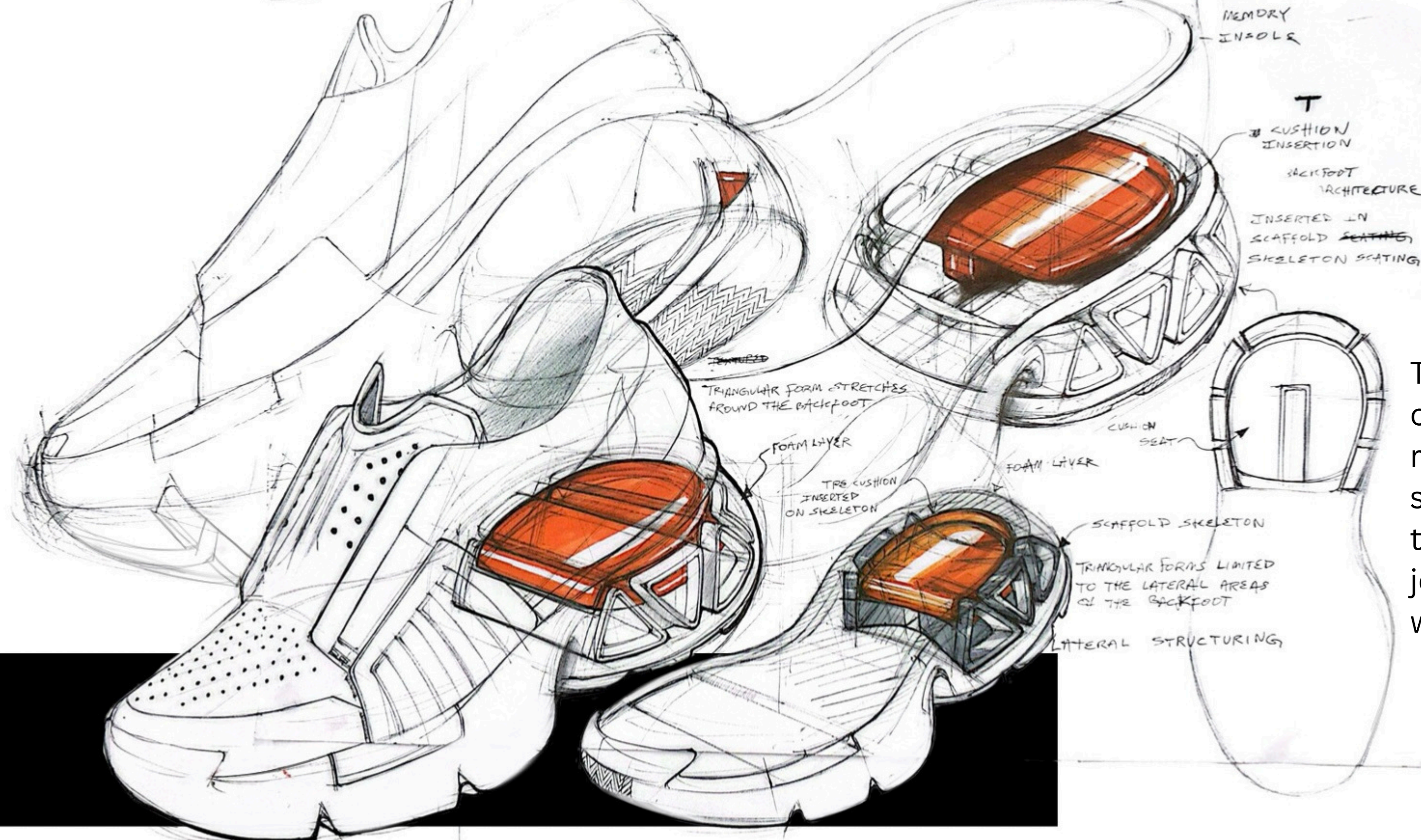
## Midfoot support cage

### The STRATA layering system

- 1. Engineered Mesh Bootie
- 2. Zoned PU foam Interface
- 3. Fused TPU support film



# STRATA: BACKFOOT CONCEPT



MEMORY  
INSOLE

T  
CUSHION  
INSERTION

BACKFOOT  
ARCHITECTURE  
INSERTED IN  
SCAFFOLD SEATING,  
SKELETON SEATING

TRIANGULAR FORM STRETCHES  
AROUND THE BACKFOOT

FOAM LAYER

TPE CUSHION  
INSERTED  
ON SKELETON

FOAM LAYER

CUSHION  
SEAT

SCAFFOLD SKELETON

TRIANGULAR FORMS LIMITED  
TO THE LATERAL AREAS  
OF THE BACKFOOT

LATERAL STRUCTURING

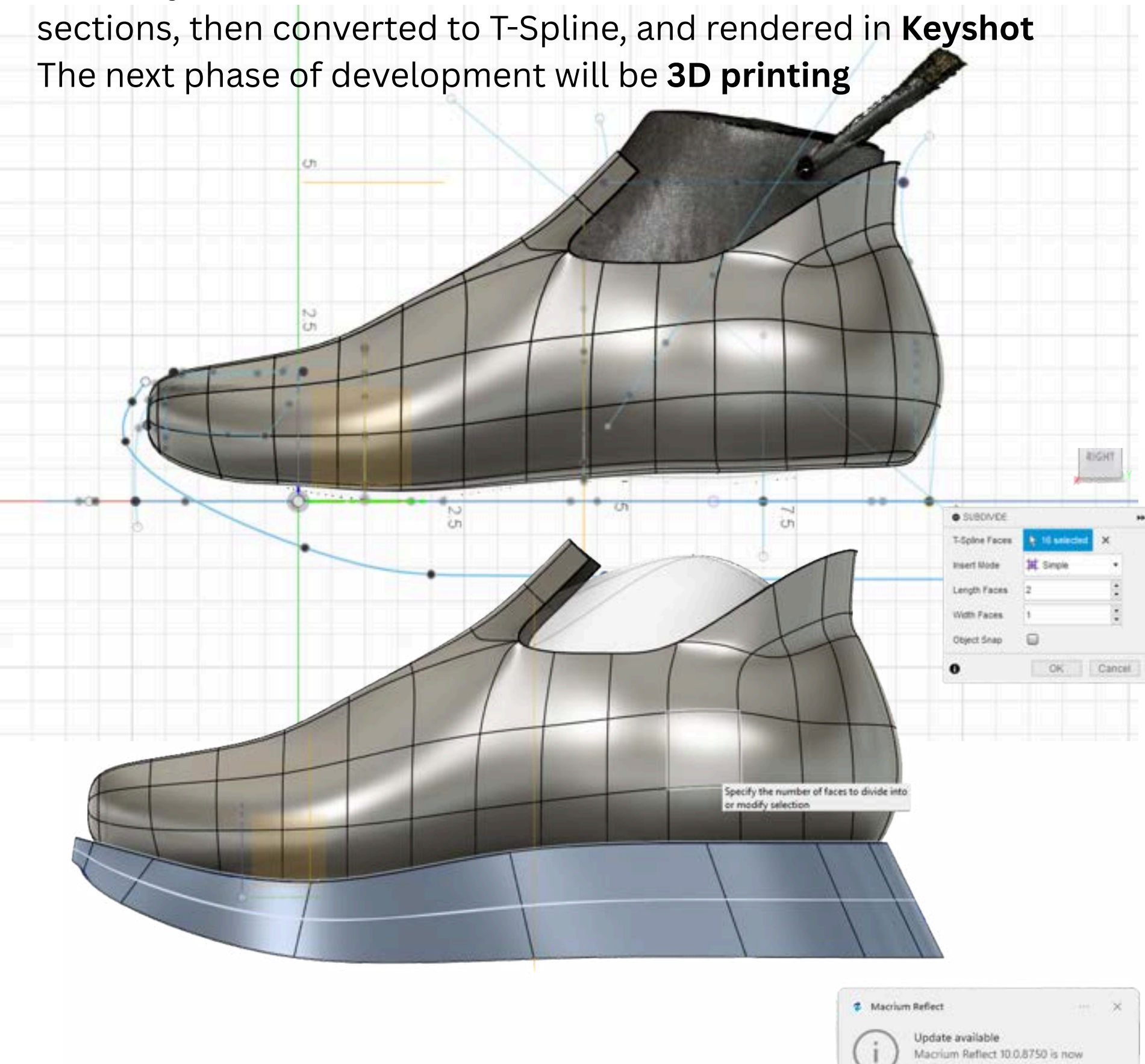
The orange TPE cushion plate rests inside a scaffold seating in the midsole, joining stability, with comfort



# LUXURY SLIP-ON CONCEPT

# CADSTRUCTION

The body of the shoe is constructed in **Fusion 360** with cut sections, then converted to T-Spline, and rendered in **Keyshot**  
The next phase of development will be **3D printing**



## CMF

- Color: 'Ash' Grey
- Molded **TPU** Toebox
- Textured **TPU** Upper
- **PEBAX** Midsole
- Rubber Outsole

# MODULARITY CONCEPTS

Midsole "Wrap"

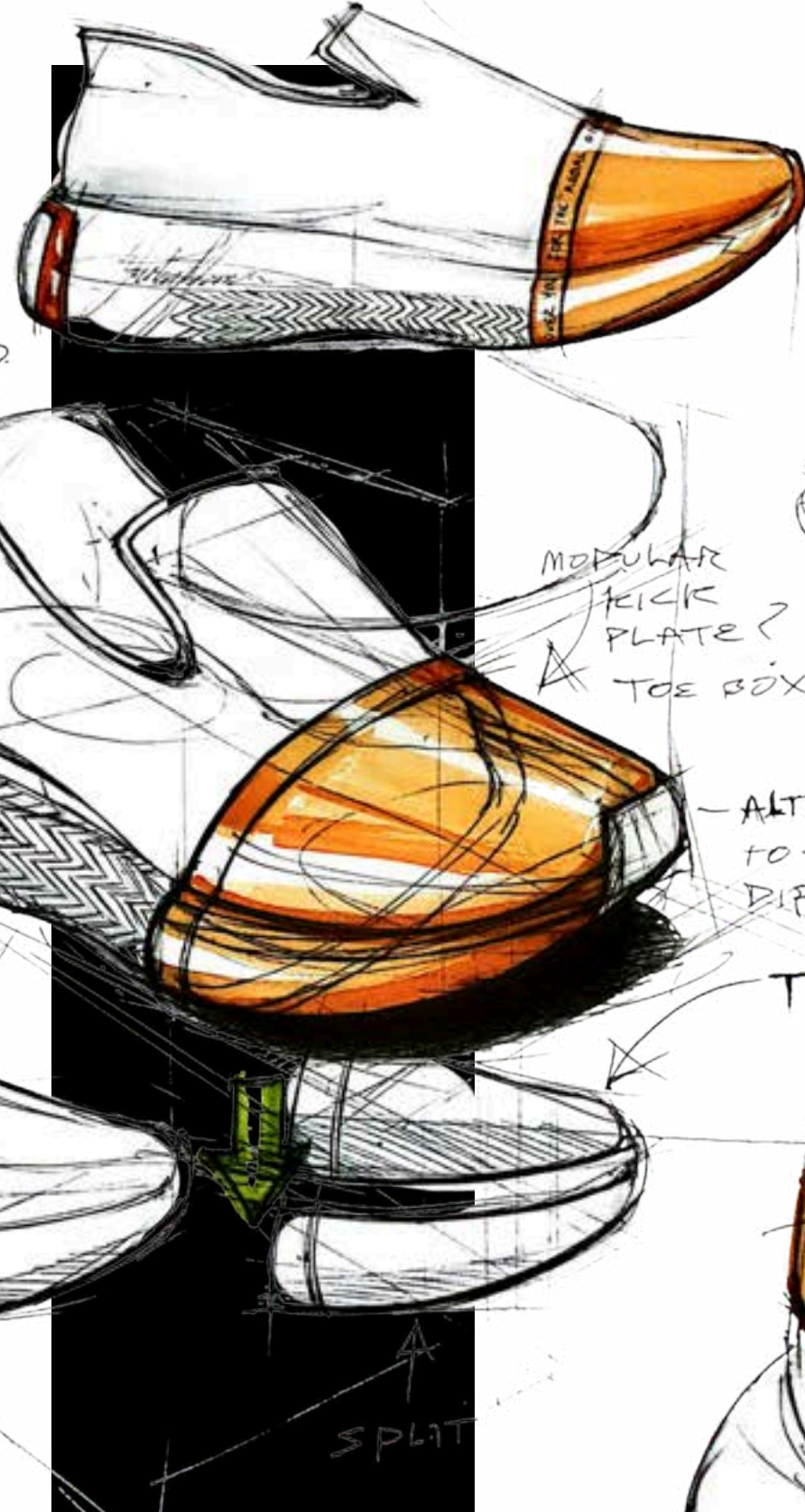


EMBOSSED?  
MOULDED?

URBAN TRECKER  
PERFORMANCE  
LIFESTYLE  
FASHION FORWARD

WHOLE

Modular toe box



MODULAR  
KICK  
PLATE?  
TOE BOX?

ALTERNATES  
TO ACCOMMODATE  
DIFFERENT SIZE

TPU

SPLIT

Removable vamp: Laced vamp, laceless vamp



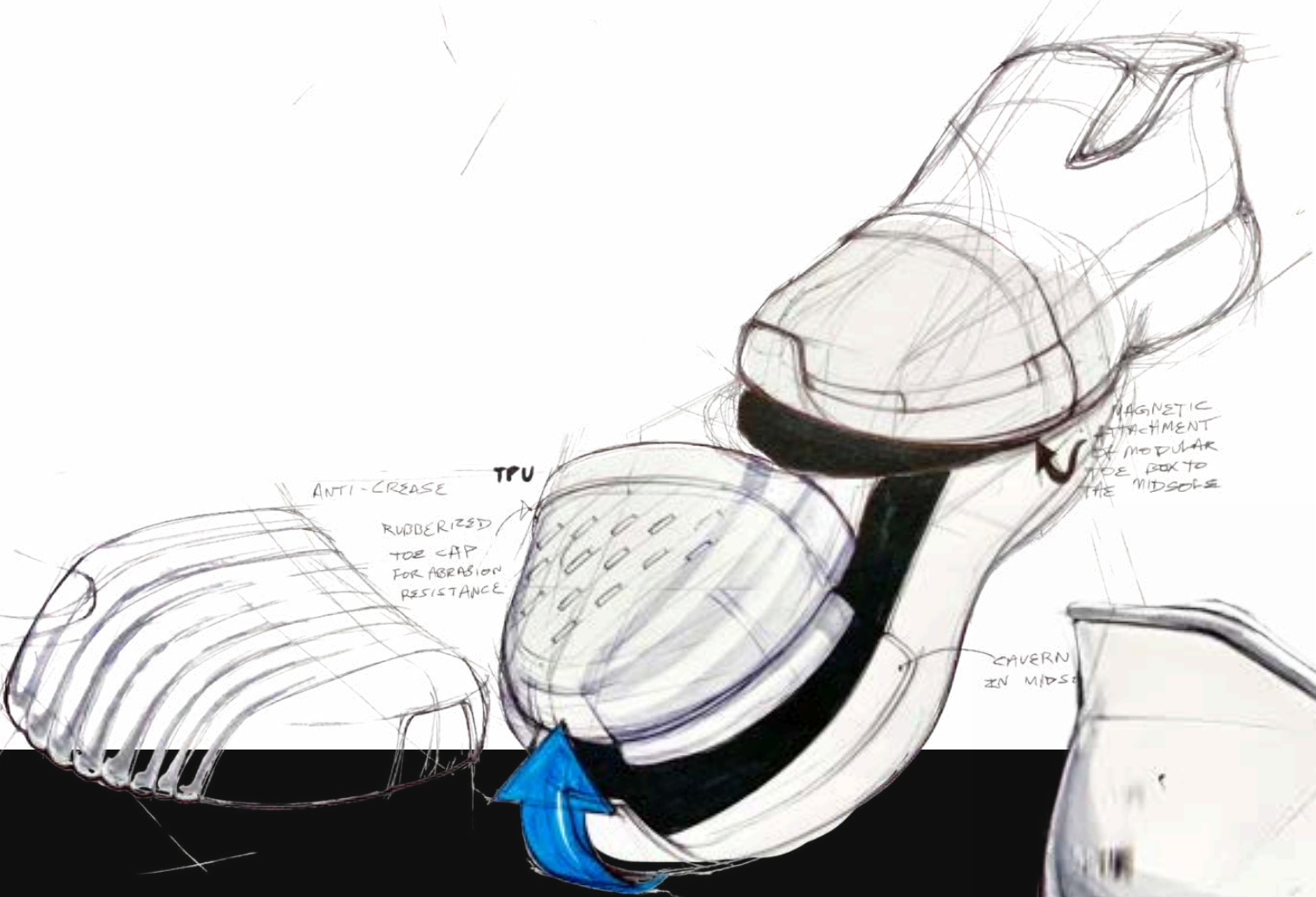
LACELESS VAMP OR LACED VAMP

SWAPPABLE  
VAMP

VAMP CAN BE SWAPPED  
WITH ONE THAT  
HAS LACES

LACELESS

LAC



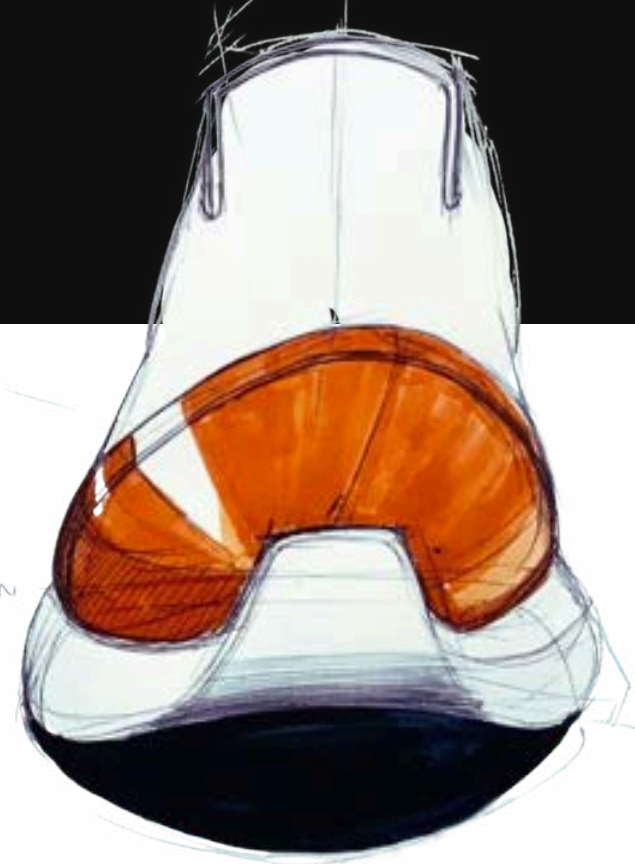
DETACHABLE -  
STRONG MAGNETIC  
PULL FORCE IN  
ATTACHMENT FLAP

MAGNETIC  
FACE - INSET  
FOR TOE BOX FLAP

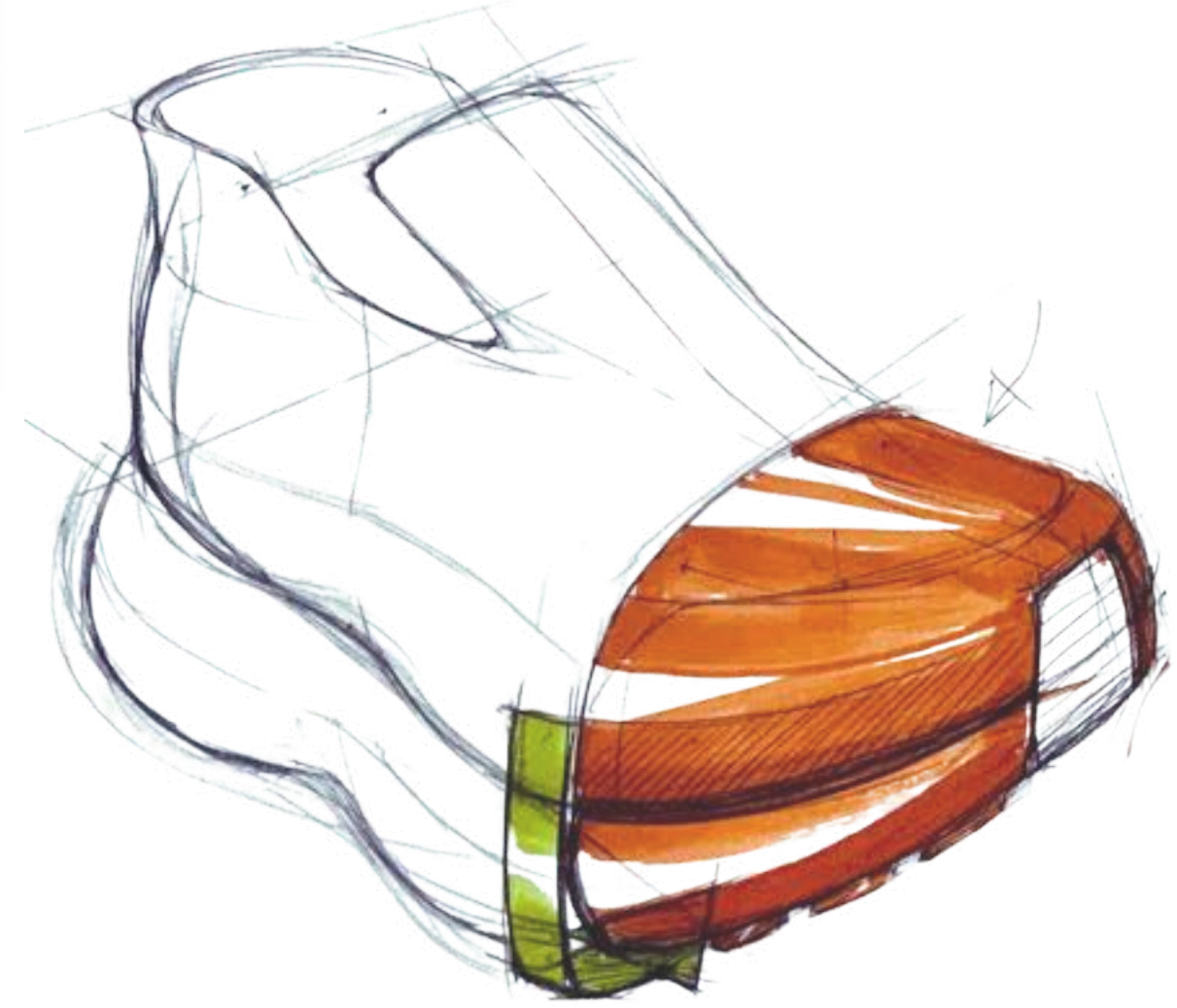
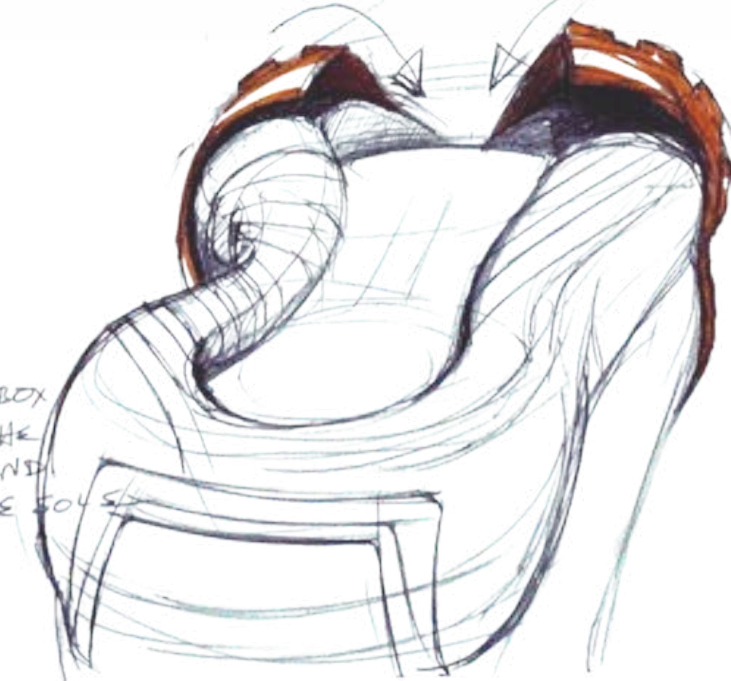
FLEXIBLE, BREATHABLE  
TPU -> HIGH PERFORMANCE



LEGO STYLE  
INSERTION



DETACHABLE TOE BOX  
EXTENDS INTO THE  
MIDSOLE AND  
ATTACHES AT THE SOLE



# URBAN COMPACT RUNNER

*Footwear for the urban nomad. Move light, live free!*

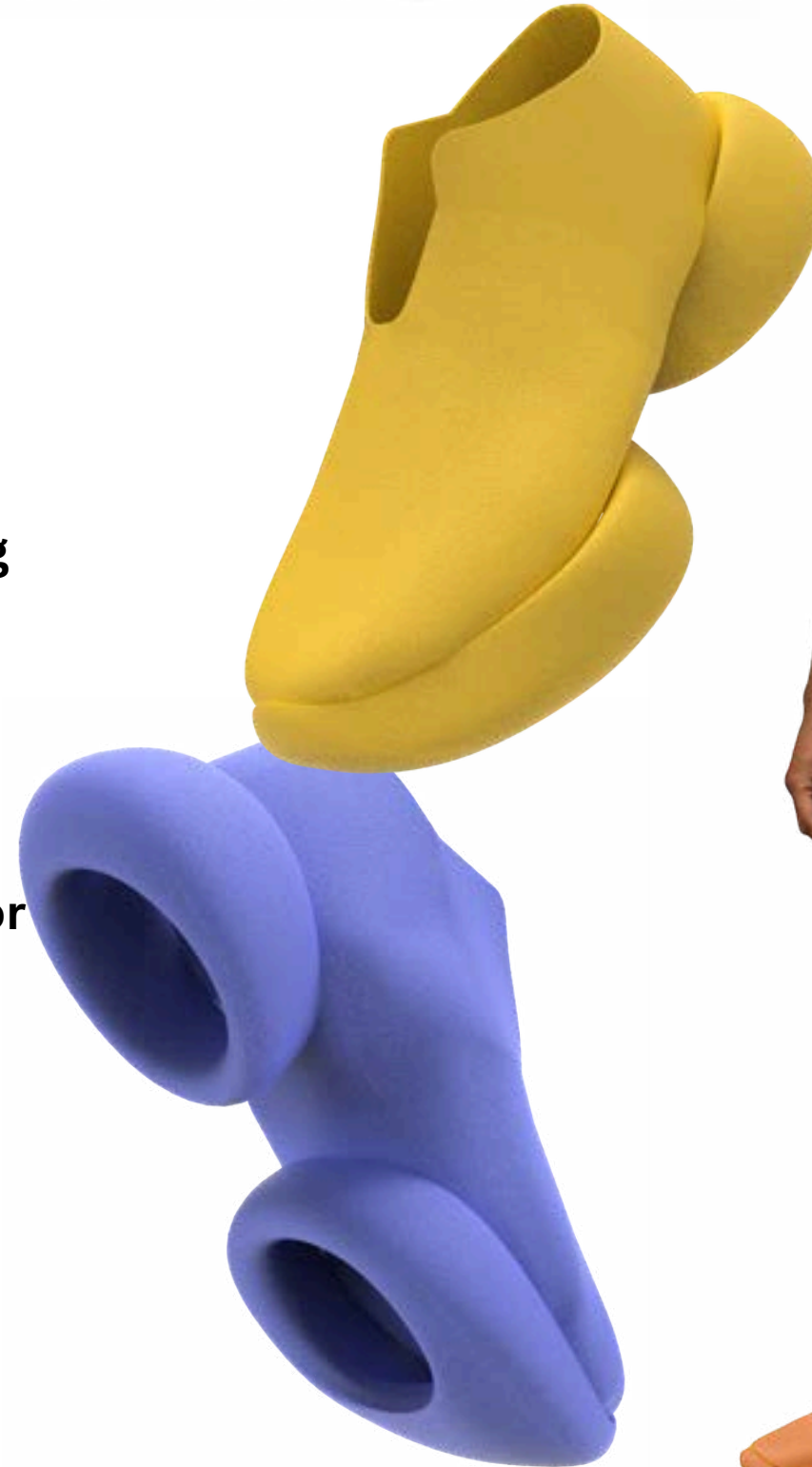


# FOR THE **ATHLETIC** **URBAN** **ADVENTURER**



## **TRAVEL & LEISURE**

- packable, space-saving design
- Slip-on for effortless transitions
- Style meets comfort for travel days and city exploration



## **ATHLETIC RECOVERY**

- Built to recharge the athlete
- smooth on the feet. Ideal for post-game or post-practice recovery
- A Versatile statement that bridges performance and rest

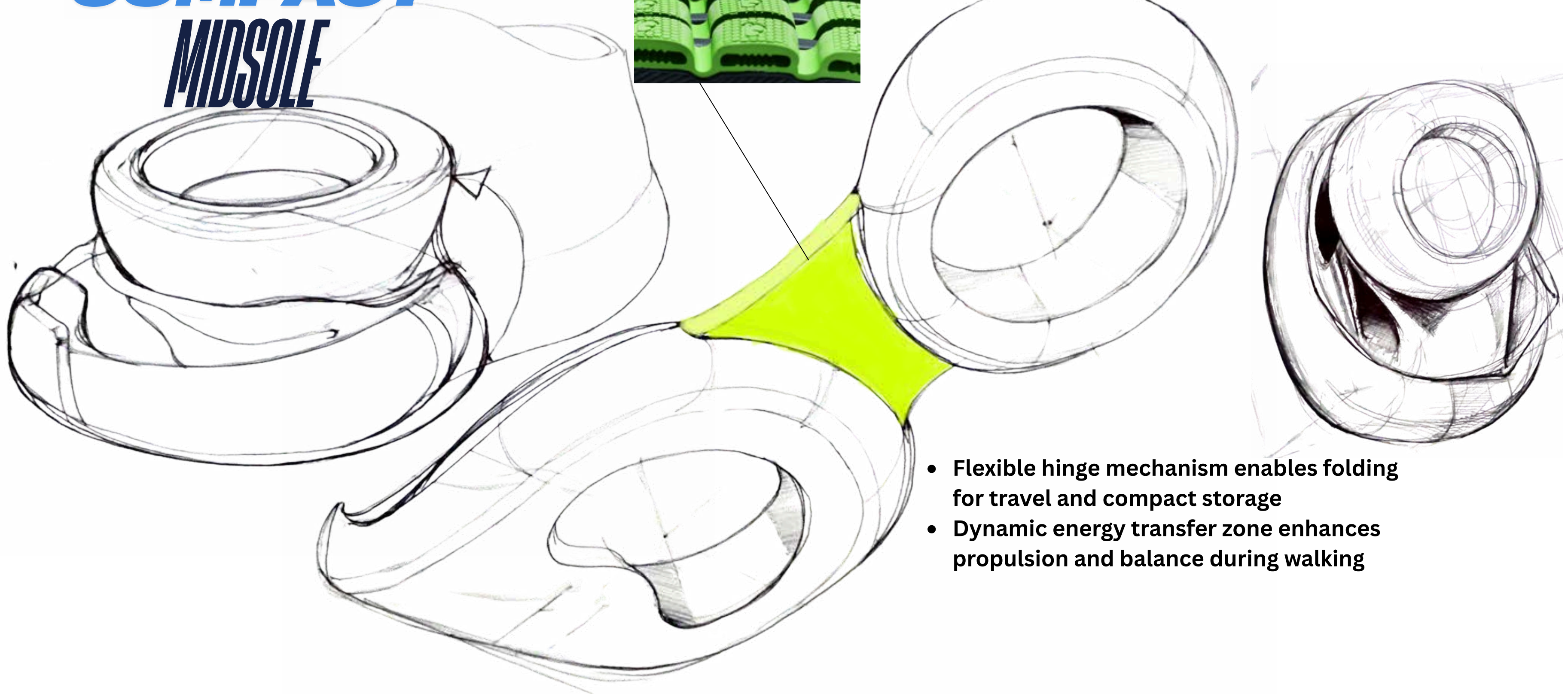
# IDEATION

**FLEXIBILITY AS FOUNDATION**

## COMPACT MIDSOLE



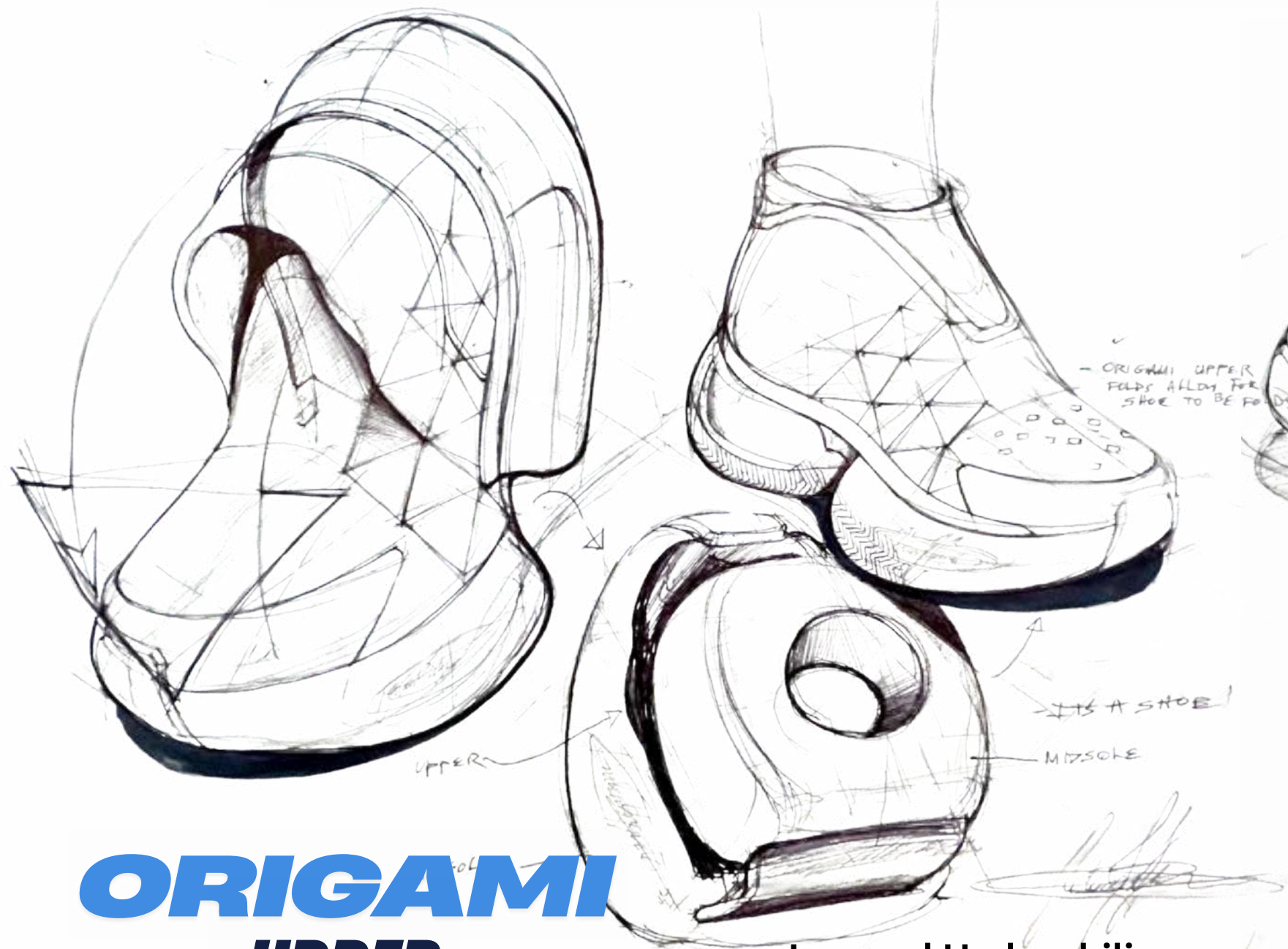
Sustainably sourced Pebax® Rnew elastomer providing a soft yet responsive compression layer within the shank zone.



- Flexible hinge mechanism enables folding for travel and compact storage
- Dynamic energy transfer zone enhances propulsion and balance during walking

# IDEATION

EXPLORING STRUCTURE & FLEXIBILITY



## ORIGAMI UPPER



### Layered Hydrophilic TPU

- Waterproof and breathable membrane system
- Expands with heat, promoting circulation and comfort
- Supports recovery through adaptive airflow and temperature regulation

## INFLATABLE UPPER



- Raft-inspired Hypalon-PVC layer
- Anti-puncture material assembly
- Modular inflation zones for foot support

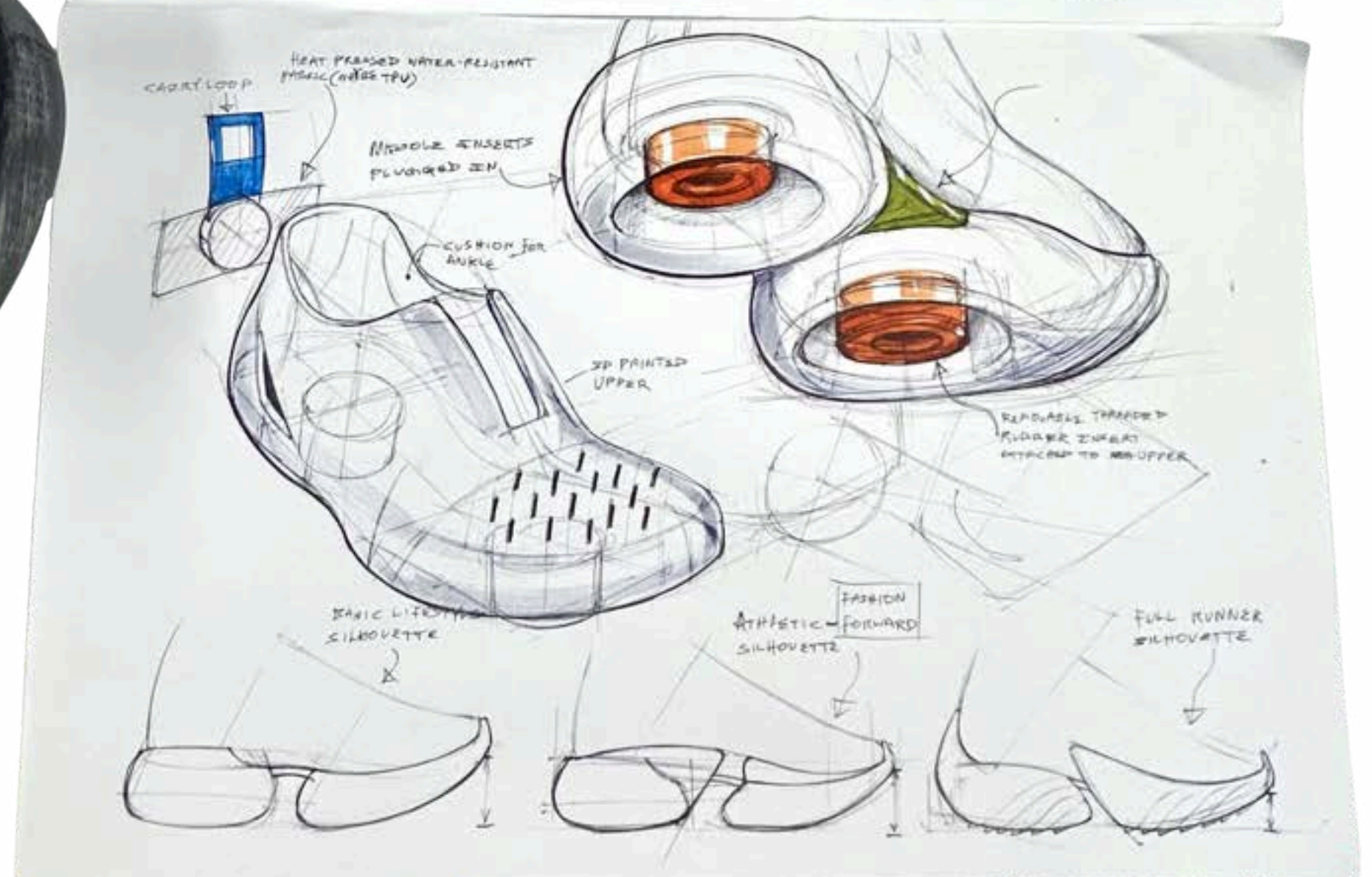
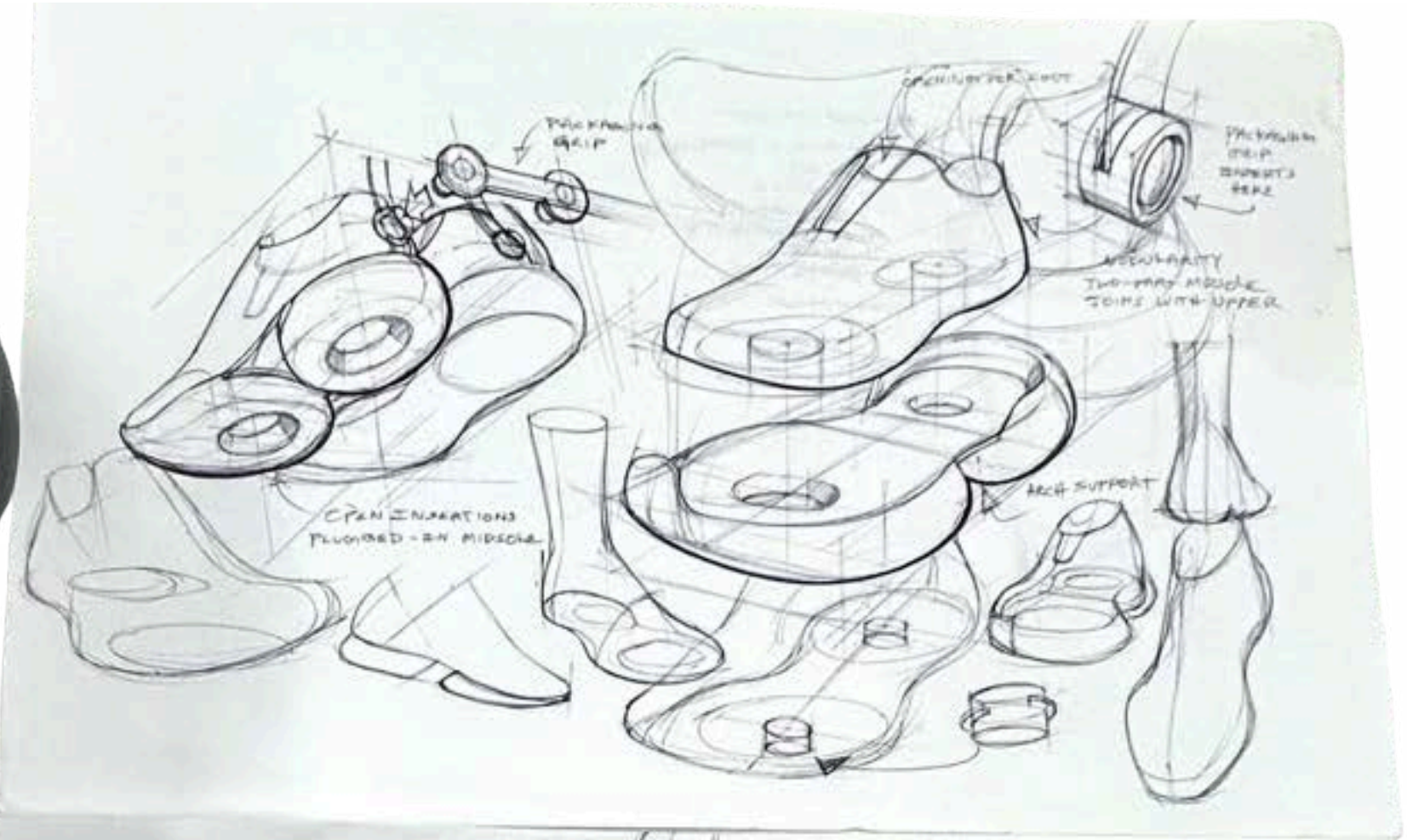


# MODULAR CONSTRUCTION CONCEPTS

Re-Thinking the shoe engineering for interchangeability to accommodate for performance, recovery and casual use

## Open Packaging

The concept also addresses the containment of the pair of shoes for easy pick-up and drop/release



# ***BUILDING THE RUNNER***

Bulky shoes restrict movement and packing efficiency, especially for modern travelers who value style on the go.

The Compact Runner collapses into itself, reimagining how urban explorers pack light, move freely, and live efficiently.



Collapsed form: Upper retreats into the midsole

Expanded form: Ready for movement

# PROTOTYPE 1

The goal of the initial prototyping phase was to produce a full-scale, wearable model for test evaluation, translating digital form studies into physical feedback. This stage focused on deconstructing the upper and midsole concepts into compact, manufacturable elements.

UNISEX

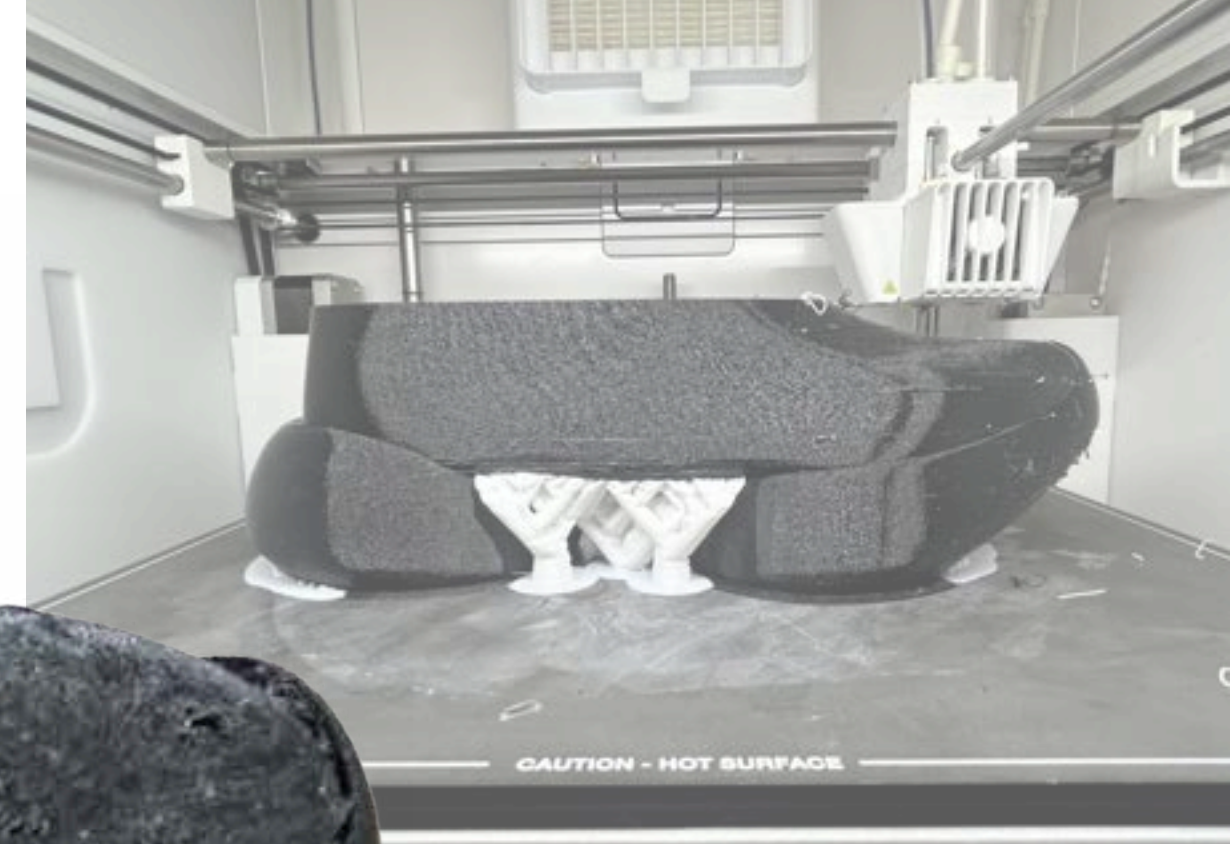
SIZE: 7.5

## WORN & TESTED

Tested primarily on female users to evaluate comfort, flex, and everyday usability. The prototype delivered solid cushioning and arch support but revealed stiffness in heel-to-toe roll. These insights informed a more elastic shank and improved material blending for the next iteration.

## 3D-PRINTED

Fabricated with flexible TPU to explore how digital manufacturing could generate an organic, compact midsole form. Rapid iteration allowed direct testing of comfort, scale, and material behavior in real-world use.



## **PURPOSE**

This iteration focused on improving the heel-to-toe transition and flex profile identified during initial testing. Adjustments were made to wall thickness, shank elasticity, and upper-midsole bonding to create a smoother roll and adaptive support.

## **MATERIAL INSIGHT**

Flexible TPU with optimized infill density provided measurable gains in cushioning and rebound, marking a critical step toward a compact yet high-performance recovery shoe.

# **PROTOTYPE 2**

## **WORN & TESTED BY THE DESIGNER**

Evaluated through extended on-foot sessions to observe real-time comfort, grip, and temperature behavior. Direct designer testing enabled immediate feedback loops and iterative adjustments within the 3D-printed form.

**TO BE CONTINUED.....**

**DESIGN EVOLUTION IN PROGRESS**

