



nook
swing

A young child with light hair is shown in profile, looking down at a toy truck. The child's hand is on the truck, which has a red trailer and a white cab. The background is a soft, out-of-focus light gray. A blue oval graphic is positioned at the top left, containing the title text.

ROTOMOLD PROJECT

To design an outdoor product/playset for children with Autism Spectrum Disorder (ASD) that uses rotomolding manufacturing techniques.

WHY ROTOMOLDING?



capable of molding hollow shapes

• cost effective for mass production

• variety of sizes and complex geometries



products

- swings
- rockers
- hideaway spaces
- balance/coordination exercises



environments



SMALL BACKYARDS



LARGE BACKYARDS



EXISTING PLAYSETS



SPECIAL-ED ROOMS

user

children (ages 5-12) with
Autism Spectrum Disorder

WHAT IS AUTISM?

Autism is a general term used to describe a group of neuro-developmental disorders that are characterized by challenges related to:

- communication
- social interaction
- restrictive or repetitive behaviors and interests

KEY THINGS TO KNOW: children with ASD tend to...

- Avoid eye contact and want to be alone
- Not play “pretend” games
- Have unusual reactions to the way things smell, taste, look, feel, or sound



observation



- Comfy corners (pile of pillows),
- Tents
- Circle chairs
- Climbing objects

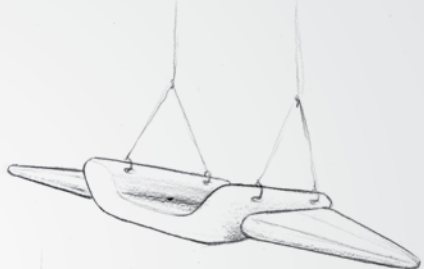
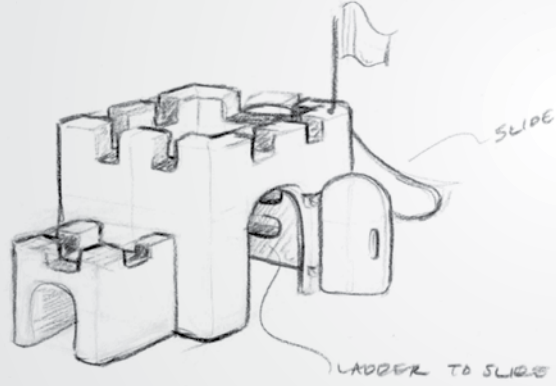
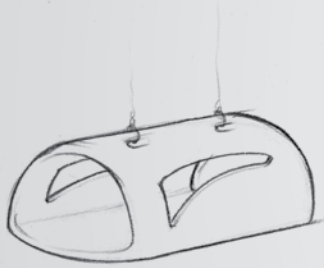
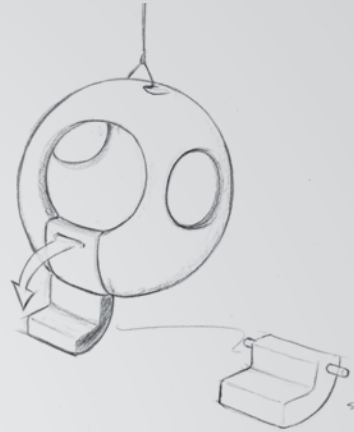
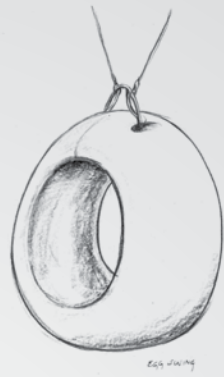
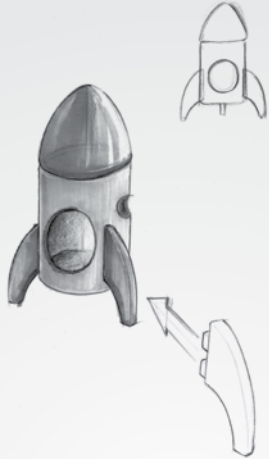
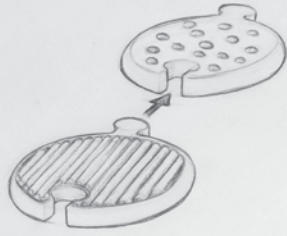
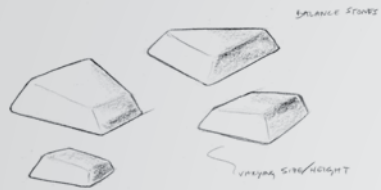
IMPLICATIONS:

The children are surrounded by comfort and safety in order to provide retreat to, seek seclusion and/or security enveloped in something (pillows, environment, etc.)

There is also a need to exercise and develop the children's balance, coordination, and dexterity.



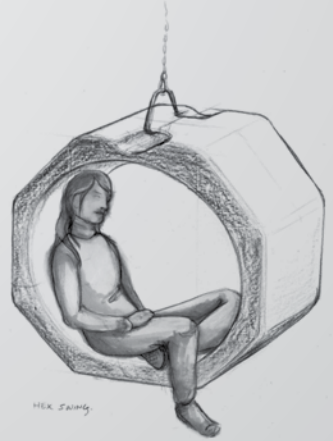
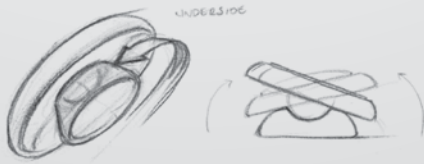
ideation



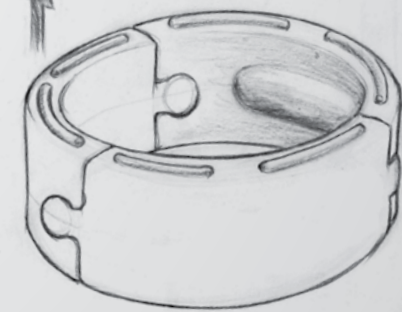
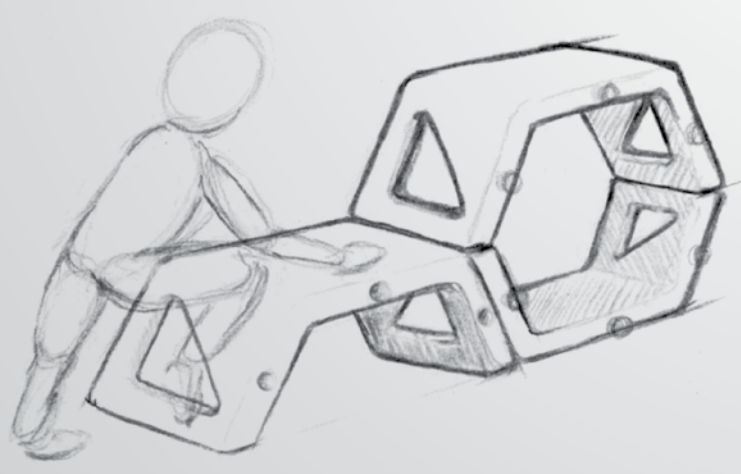
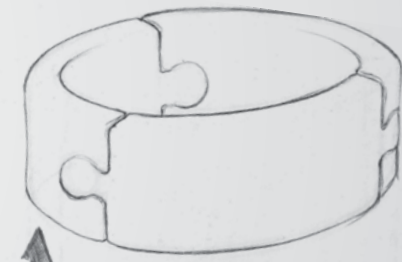
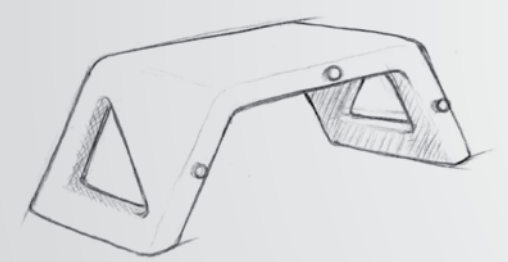
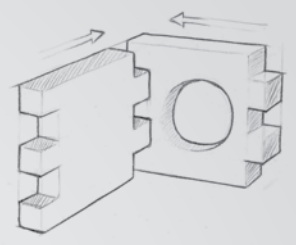
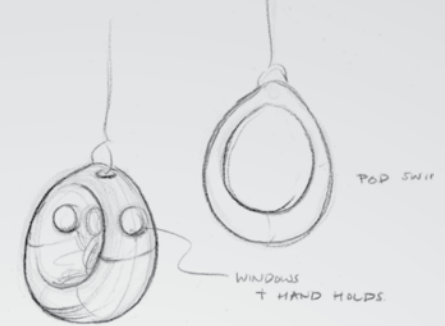
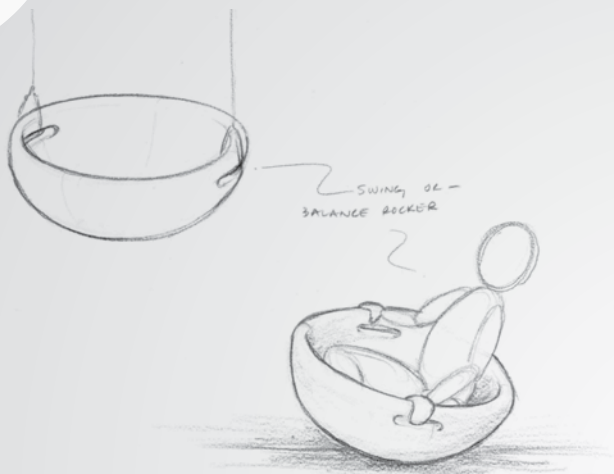
ROCKET/
BOAT → PLATFORM
W/ STAIRS



VARYING TOP TEXTURES



ideation



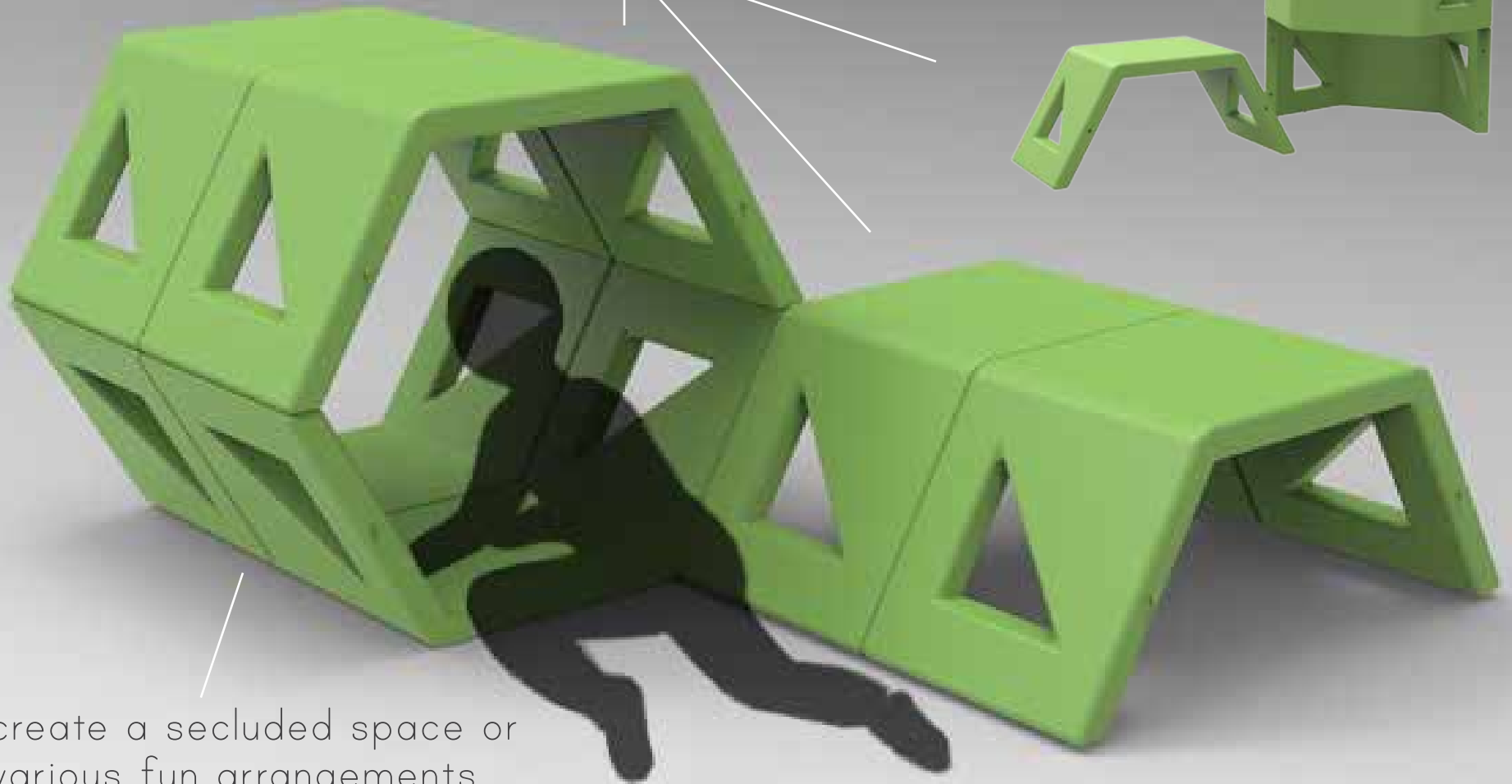
GATE FOR CONNECTING PIECES.



concept 1 • hexagon builder playset

stack/connect together to create tunnels, towers, stairs, or tables

modular half hexagon pieces



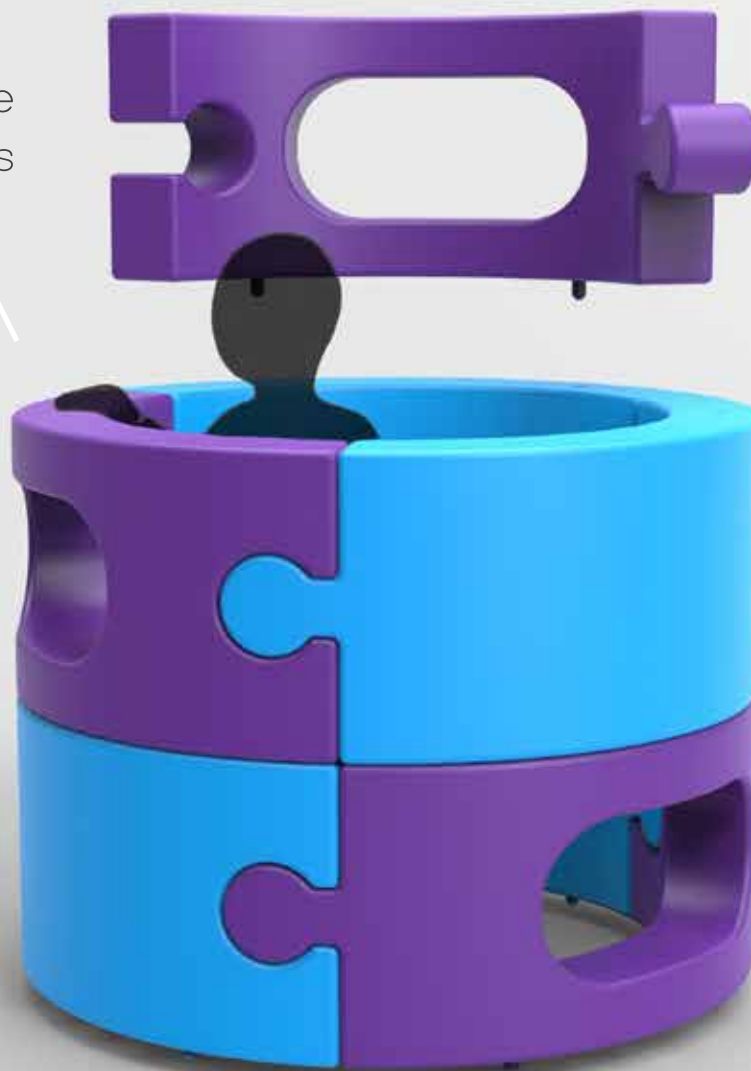
create a secluded space or various fun arrangements



concept 2 • puzzle piece playset

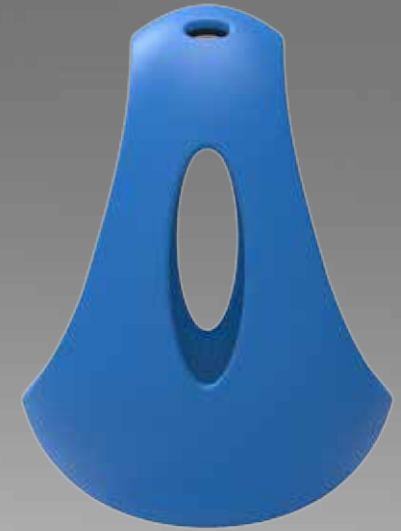
stack to create
towers and tunnels

use single puzzle piece as
rocker for vestibular therapy



concept 3 • swing

enclosed swing for vestibular therapy and sensory integration



provides security and enough enclosure when child needs it

WHY SWINGS?

- Helps with vestibular (sense of balance) therapy and sensory integration.
- “Those suffering from autism will often withdraw to avoid over stimulation, or try to sort out the input from their senses with self-developed soothing mechanisms and repetitive behaviours. A significant amount of occupational therapy for autism focuses on sensory integration through specially designed programs. Some of the greatest tools for sensory integration therapy for autism type disorders are various types of swings. People with various autism spectrum disorders such as Autism, PDD, ADHD, Asperger’s, proprioceptive dysfunction and tactile defensiveness will benefit from using swings as part of their therapy.”

Marina Mironov at <http://ezinearticles.com/?Swing-Therapy-For-Autistic-Children&id=2123345>

- “In the area of movement, the vestibular movement of activities such as swinging assists children in being able to process sensory input. Schools have long used swings to address vestibular sensory integration. In fact, many classes for autistic children have a swing hanging inside the classroom.”

Lynn Moore at (<http://www.sensory-processing-disorder.com/sensory-integration-products.html>





raised backrest for
increased comfort



lower/wider opening for
legs to hang out

final



lowered lip of opening of swing to ease pinching on legs

wider side windows to decrease chances of getting head stuck



higher back to fit children of varying ages comfortably



anthropometrics

MOTOR DEVELOPMENT

SOCIAL DEVELOPMENT

2.5 - 3 YEARS

- CANNOT TURN OR STOP SUDDENLY OR QUICKLY
- CAN JUMP A DISTANCE OF 15 TO 24 INCHES
- CAN ASCEND STAIRWAYS UNAIDED, ALTERNATING THE FEET

BEGINNINGS OF CONVERSATION; BREAKTHROUGH IN ATTENTION TO COMMUNICATION.

NEW WORDS ARE LEARNED ALMOST EVERY DAY. COMPREHENSION IS EXCELLENT, ALTHOUGH CHILD STILL MAKES MANY MISTAKES IN GRAMMAR.

VOCABULARY REACHES 1,000 WORDS, AND GRAMMAR IS CLOSE TO ADULT SPEECH, AND

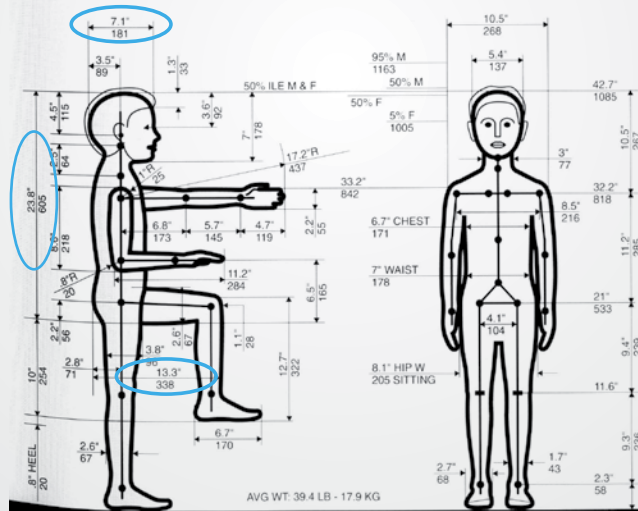
GROUNDWORK FOR LOGICAL THINKING; CHILDREN CAN THINK, BY USING MENTAL REPRESENTATIONS OF THEM, BUT THEY CAN

5 YEARS

- CAN START, TURN, AND STOP EFFECTIVELY IN GAMES
- CAN MAKE A RUNNING JUMP OF 28 TO 38 INCHES
- CAN DESCEND LONG STAIRWAYS UNAIDED, ALTERNATING THE FEET

CHILD THINKS THAT HIS OR HER OWN POINT

CHILD LEARNS NOT ONLY BY SENSING AND BASIC UNDERSTANDING OF CAUSE AND EFFECT



MOTOR DEVELOPMENT

SOCIAL DEVELOPMENT

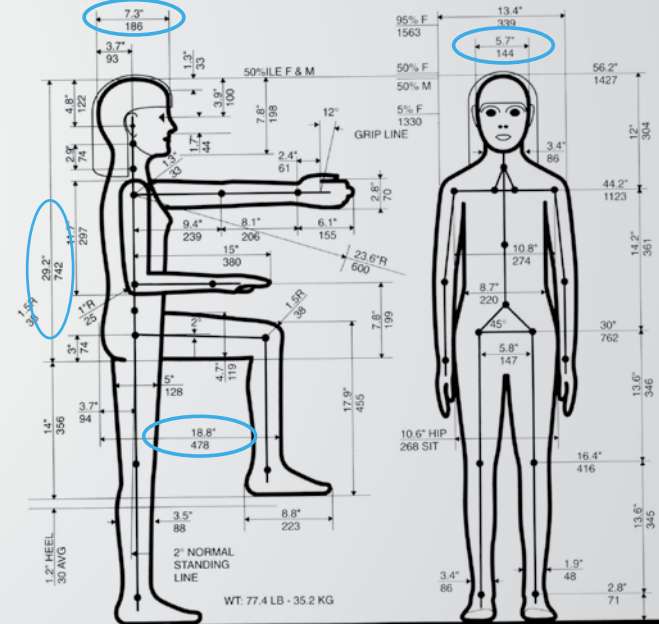
11 YEARS GIRLS TALLER THAN BOYS

STANDING BROAD JUMP OF 5 FEET IS POSSIBLE FOR BOYS;
4 1/2 FEET FOR GIRLS.

CHILD CAN IMAGINE A THIRD PERSON'S PERSPECTIVE, TAKING

ABILITY TO THINK ABSTRACTLY.
CAPABLE OF HYPOTHETICAL-DEDUCTIVE REASONING.

BOYS SHOW SLIGHT MATHEMATICAL AND SPATIAL SUPERIORITY.
GIRLS SHOW SLIGHT VERBAL SUPERIORITY.



DRAWING 3

THE MEASURE OF TODDLERS

DRAWING 7

THE MEASURE OF YOUTHS

KEY AREAS OF CONCERN: for children roughly from ages 5-12

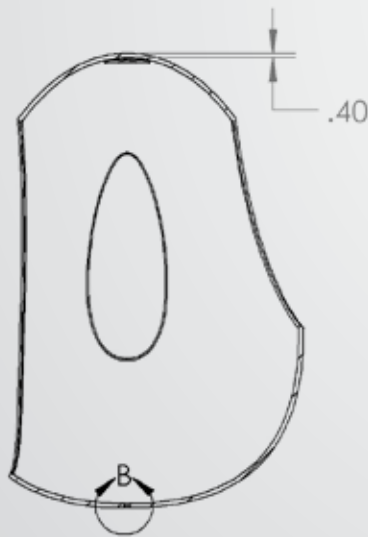
- head width and length (avoidance of child's head getting stuck in side windows)
- sitting height (bottom to head)
- thigh length

manufacturing details

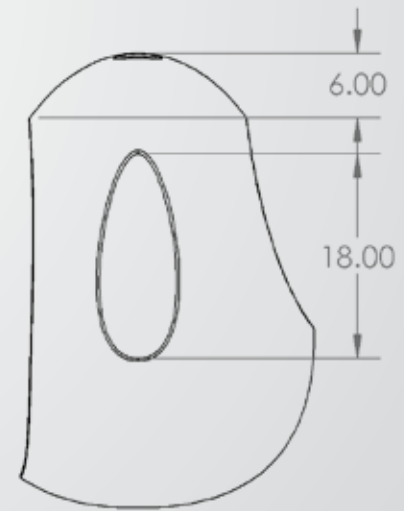
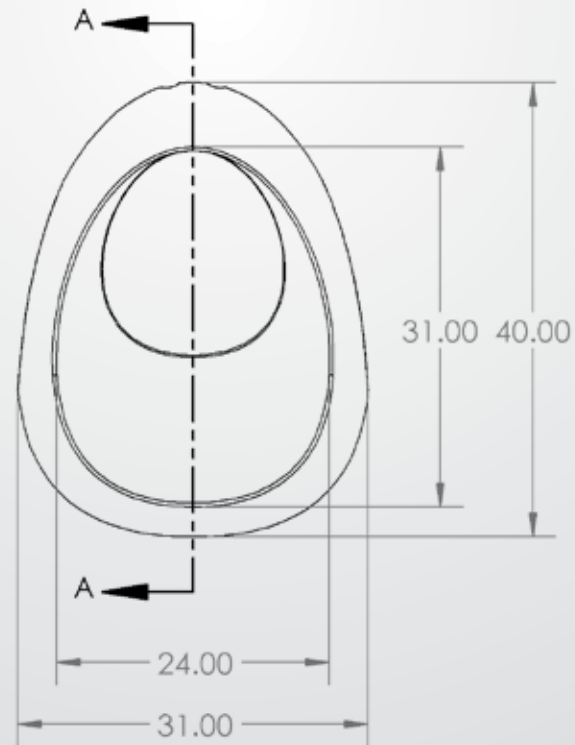
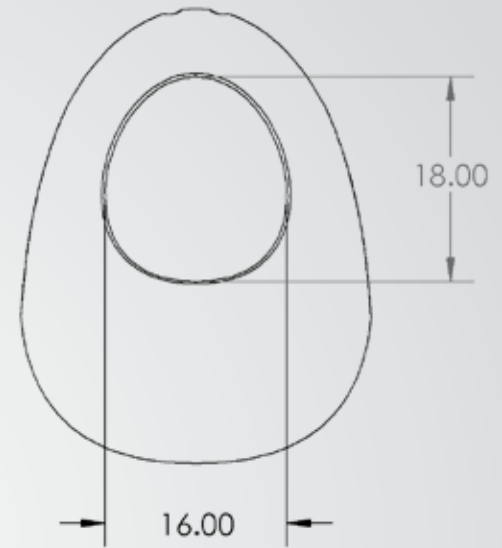
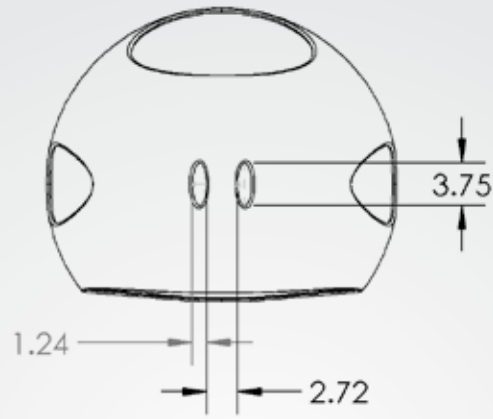
rain water outlet



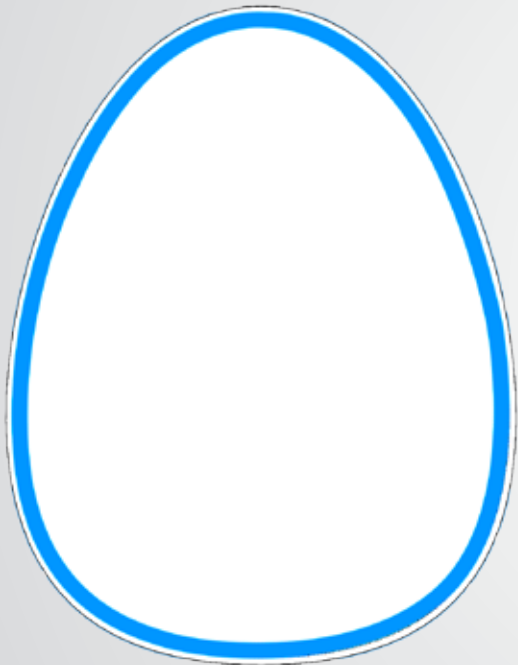
DETAIL B
SCALE 1 : 8



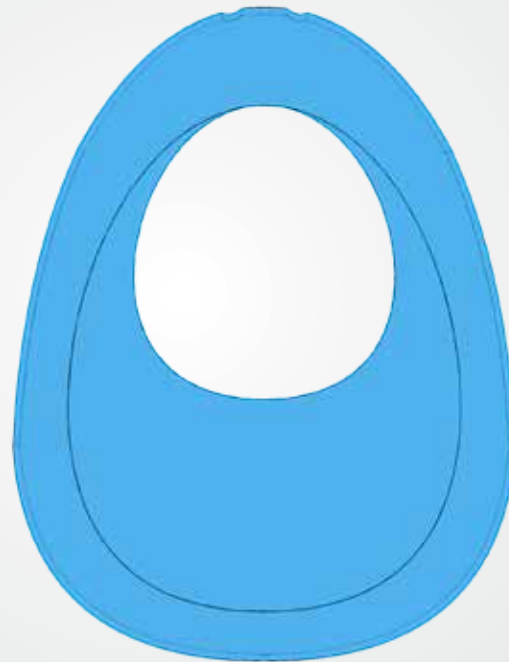
SECTION A-A
SCALE 1 : 16



manufacturing process



STEP 1: Rotomold swing as a single egg-shaped mold



STEP 2: Cut out openings and refine edges

Made of weather-resistant polyethylene.

- Winsell Inc. texture options:
- Coral Reef #14550, 14521
- Winsell #13392
- Temple Granite #11929
- Winsell #14554



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