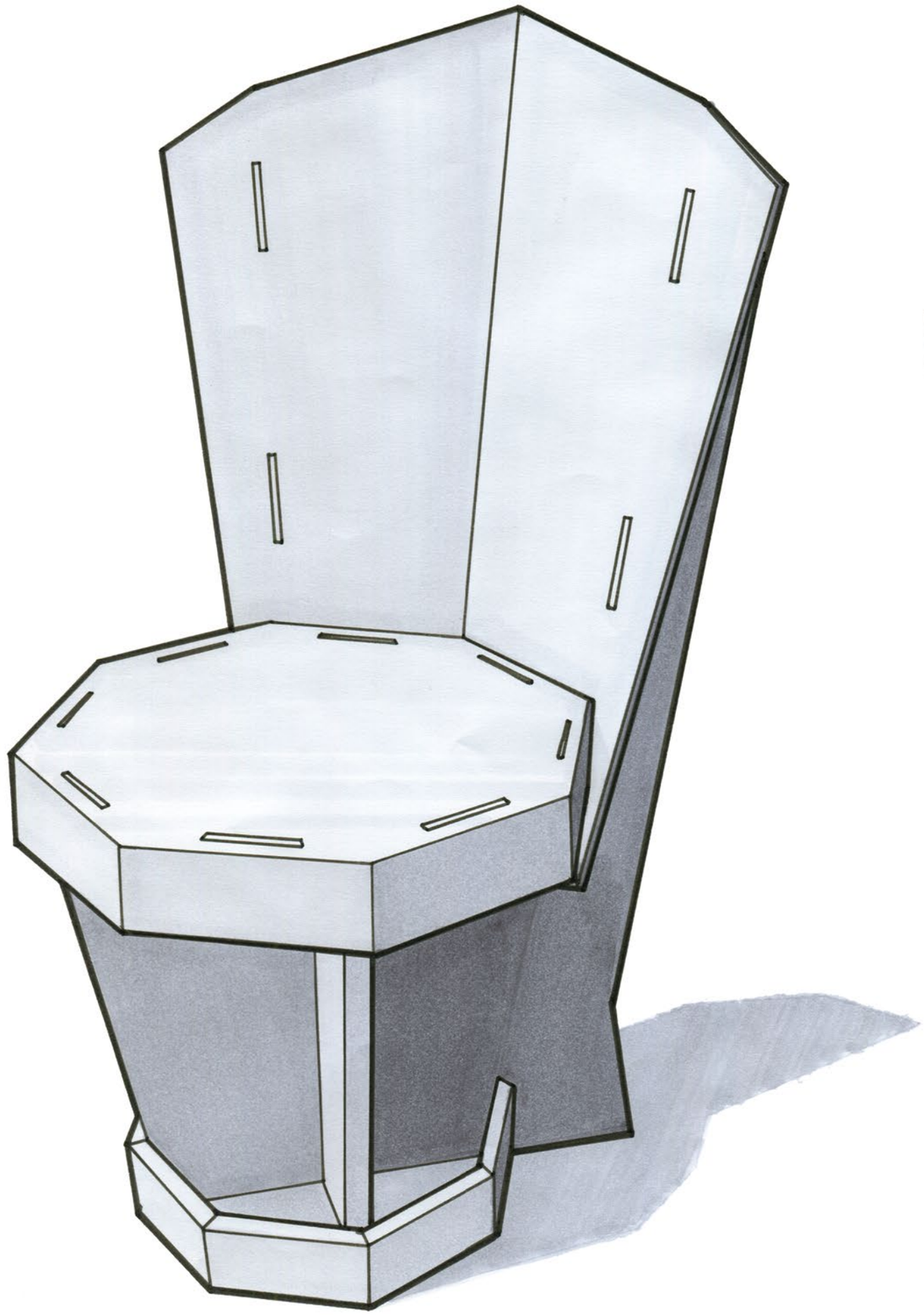

# OCTA-STOOL

THE OCTA-STOOL BY LUKE FRAHN (AKA DR. TRE) IS A UNIQUE SEATING DEVICE, MADE FROM CORRUGATED CARDBOARD AND INTENDED FOR CASUAL DINING USE IN THE FOOD AND HOSPITALITY INDUSTRY.

PART CHAIR, PART STOOL, EXCITING IN FORM, WHILE SOLID IN FUNCTION; THE OCTA-STOOL WOULD BE WELL SUITED TO A MODERN JUICE BAR OR COFFEE SHOP.

CUSTOMERS WILL ENJOY THE CREATIVE, STYLISH AND COMFORTABLE DESIGN WHILE APPRECIATING THE ESTABLISHMENT'S COMMITMENT TO SUSTAINABLE MATERIALS AND THE ENVIRONMENT.

1. BEYOND HAND SKETCHES AND SCALE MODELS, THE OCTA-STOOL CONCEPT WAS DEVELOPED INTO A FULL SCALE PROTOTYPE WITH THE HELP OF COMPUTER ILLUSTRATION AND MODELLING.

2. THE DESIGN WAS RECREATED DIGITALLY IN FLAT ELEVATION VIEWS, PATTERNS WERE CREATED, PRINTED ON PAPER AND TRANSFERRED TO THE CARDBOARD USING PINS AND PENCIL. THIS WORK WAS PERFORMED TO A TOLERANCE OF 1MM.

3. TWO OCTAGONAL TRAYS WERE CONSTRUCTED AS THE STARTING POINT; USING TECHNIQUES OF SCORING, FOLDING, DEPTH CUTTING AND RELIEF TRENCHING. ACCURACY WAS OF GREAT IMPORTANCE, AS WAS INCLUDING MATERIAL FOR THE RADIUS OF BENDS.

4. EACH COMPONENT WENT THROUGH TWO OR MORE ITERATIONS WHILE THE DESIGN WAS REFINED AND PROBLEMS WERE SOLVED. THE CENTRE AND BACK SUPPORT PARTS INVOLVED ANGLES THAT WERE CHALLENGING TO FABRICATE.

5. THE BACK REST WAS CREATED BY MARKING, MEASURING AND MODIFYING A TEST PIECE IN SEVERAL STAGES. IT IS HELD TO THE VERTICAL SUPPORT AT THE REAR USING TAPERED TABS AND SLOTS LIKE THOSE FOUND ON THE TRAYS.

6. A SLOTTED PIN THAT CONNECTS TO THE UPPER TRAY WAS ADDED TO HELP THE BACK REST MAINTAIN ITS SHAPE.

7. SPARE MATERIAL ALLOWED FOR ANOTHER OCTAGON PIECE TO BE ADDED UNDER THE SEAT TRAY TO IMPROVE ITS RIGIDITY.

8. THE LIFE SIZE OCTA-STOOL CARDBOARD SEATING DEVICE TOOK TWO FULL DAYS TO DEVELOP. IT WAS PHOTOGRAPHED EXTENSIVELY PRIOR TO DESTRUCTIVE TESTING.


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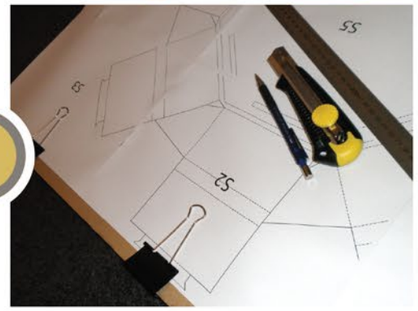
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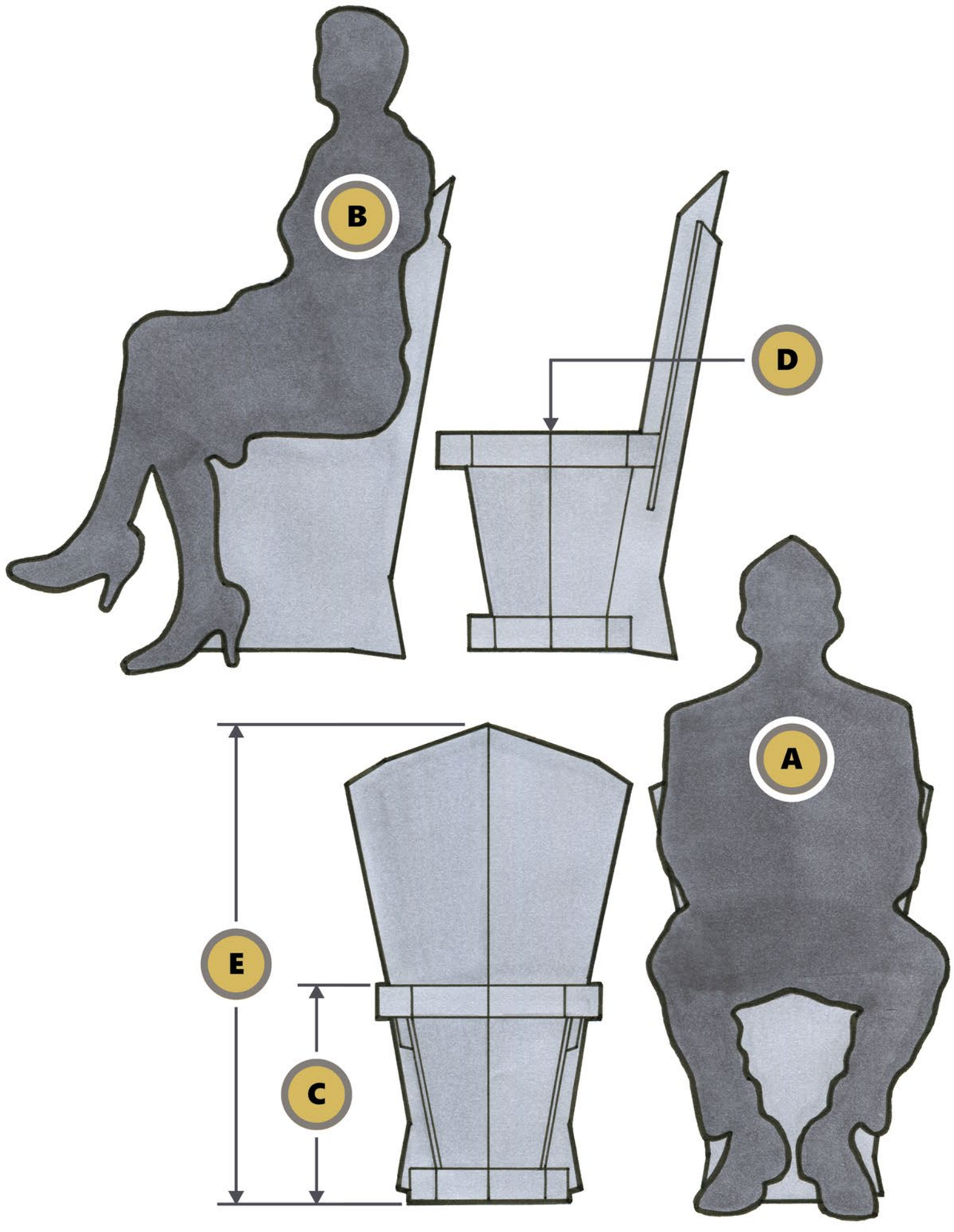



THE OCTA-STOOL WAS DESIGNED AND DIMENSIONED USING MEASUREMENTS TAKEN FROM EXISTING CHAIRS IN ADDITION TO ANTHROPOMETRIC DATA.

THE HUMAN PROPORTIONS DEEMED RELEVANT TO THIS SEATING DEVICE INCLUDE; ‘MAXIMUM SEAT HEIGHT’, ‘SHOULDER HEIGHT’, ‘HIP WIDTH’, ‘SHOULDER WIDTH’ AND ‘POPLITEAL LENGTH.’

IT WAS DECIDED THAT THE OCTA-STOOL SHOULD BE MADE TO ALLOW BOTH THE AVERAGE 50TH PERCENTILE MALE (A) AND FEMALE (B) TO SIT WITH COMFORT. MOREOVER, A 5TH PERCENTILE WOMAN, 95TH PERCENTILE MAN AND A LARGE CHILD SHOULD ALSO BE ABLE TO USE THIS DEVICE.

THE CHAIR WAS ENGINEERED TO ACCOMMODATE A PERSON WEIGHING 85KG, WHICH IS THE AVERAGE WEIGHT OF AN AUSTRALIAN MALE. PHYSICAL VARIATIONS AND CIRCUMSTANCES SUCH AS OBESITY, OLD AGE, PREGNANCY AND DISABILITIES WERE CONSIDERED OUTSIDE THE SCOPE OF THIS PROJECT.

TAKING ALL FACTORS INTO ACCOUNT, THE OCTA-STOOL WAS DEVELOPED WITH AN OPTIMAL SEAT HEIGHT OF 475MM (C), A SEAT DIAMETER OF 485MM (D) AND AN OVERALL HEIGHT OF 1050MM (E).

ERGONOMIC PRINCIPLES FOR GOOD CHAIR DESIGN WERE ALSO IMPLEMENTED, SUCH AS AN ANGLED AND CURVED BACK REST, SPACE BEHIND THE USERS KNEES AND ROOM FOR FOOT MOVEMENT.

INSPIRED BY EXISTING SHEET MATERIAL FURNITURE AND ALSO COMMON PACKAGING TECHNIQUES, THE OCTA-STOOL DESIGN IS BASED AROUND TWO OCTAGON TRAYS CONNECTED USING INTERSECTING VERTICAL COMPONENTS (F).

LARGELY GEOMETRIC AND PLANAR IN APPEARANCE, THE FACES AND ANGLES OF THE OCTAGONAL PRISMS ARE REPLICATED THROUGHOUT THE CHAIR, IN THE BACK REST AND STRUCTURAL SUPPORTS.

IT WAS INTENDED FOR THIS CARDBOARD CHAIR TO APPEAR MORE TOP HEAVY, TO DISTINGUISH ITSELF FROM EXISTING DESIGNS WHICH OFTEN SUGGEST A LOWER CENTRE OF GRAVITY.

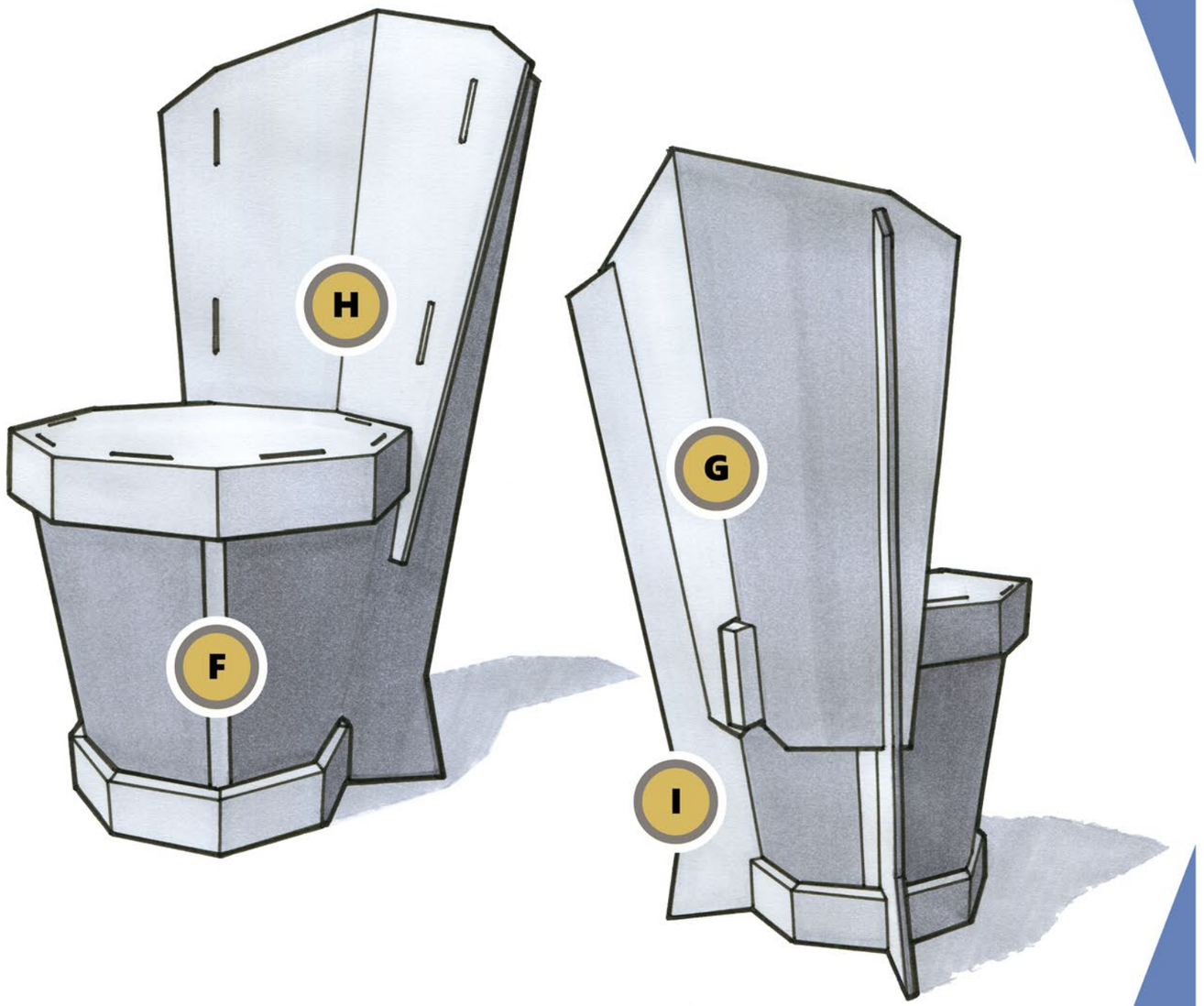
AS SUCH, THE TRANSITION FROM THE SMALLER TO LARGER TRAYS AND THE FLARED KITE SHAPED BACK REST HAVE BEEN USED TO PRODUCE AN EXAGGERATED TAPERING FORM (G).

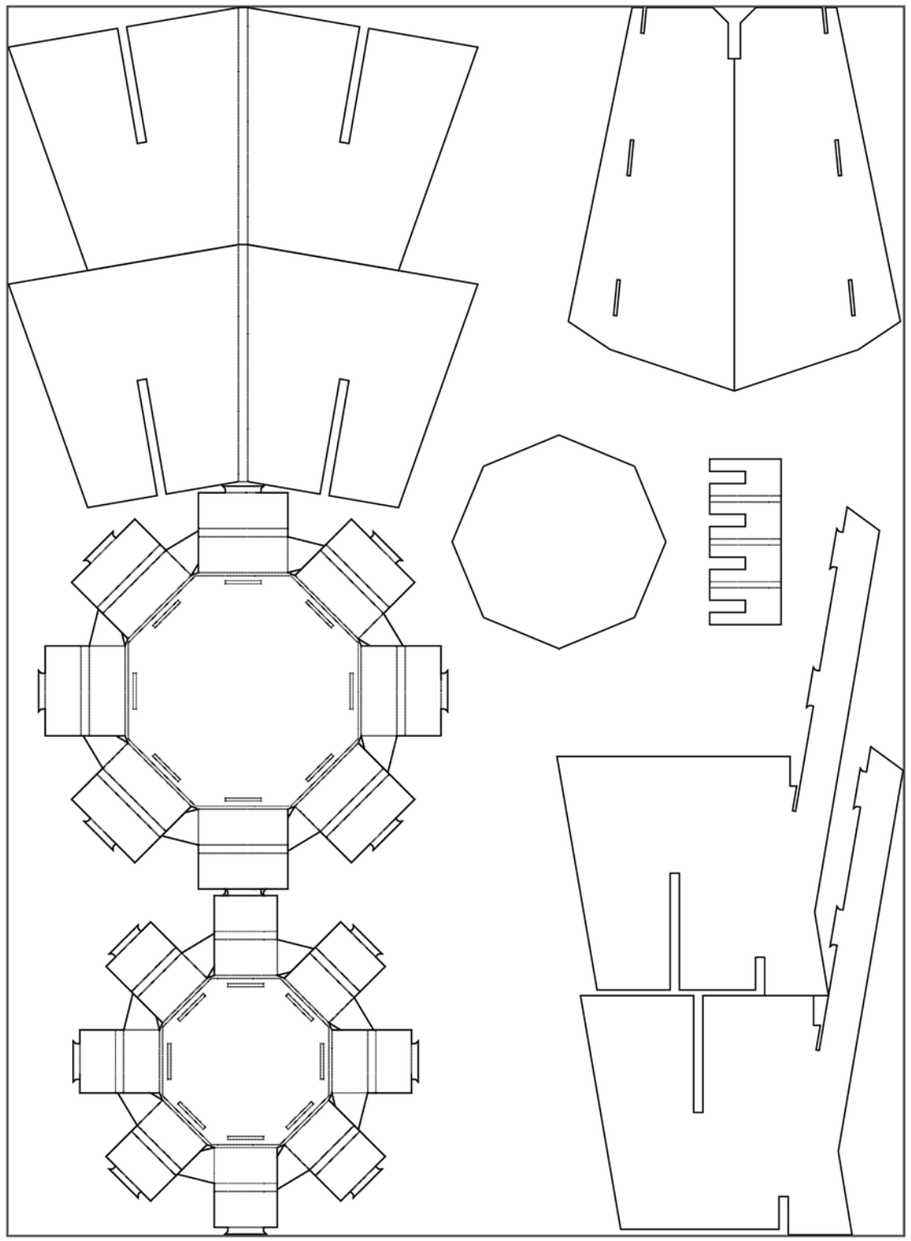
A MAJORITY OF THE RAW EDGES ARE HIDDEN BY HAVING CARDBOARD WRAPPED AROUND THEM, WHILE THE TABS AND SLOTS USED IN ASSEMBLY HAVE RESULTED IN AN INTERESTING AND UNIFYING VISUAL FEATURE (H).

FUNCTIONAL ELEMENTS LIKE THE PIN AND SMALL PROP EXTENSIONS ALSO ENHANCE WHAT MAY HAVE OTHERWISE BEEN A PLAIN LOOKING VIEW OF THE REAR (I).

IN THE INTEREST OF PRESENTATION, THOUGHT WAS GIVEN TO WHICH SIDE OF THE DIFFERENT COLOURED MATERIAL WOULD BE VISIBLE, AS WAS TAKING GREAT CARE AND BEING ACCURATE DURING CONSTRUCTION.

THE OCTA-STOOL SEEKS TO ACHIEVE CONCINNITY IN ITS DESIGN, USING PRINCIPLES OF SYMMETRY, PROPORTION AND ALIGNMENT TO CREATE INSTINCTUAL NEATNESS, VISUAL UNITY AND AN OVERALL PLEASING AESTHETIC.





THE OCTA-STOOL COMPRISES OF 9 SEPARATE COMPONENTS THAT USE 60% OF A 1750X2400X6MM SHEET OF DOUBLE WALL CORRUGATED CARDBOARD. THE CUT PLAN SHOWN HERE IS AT 1:12 SCALE.

THE ORIENTATION OF THESE PIECES IS IMPORTANT TO TAKE ADVANTAGE OF THE INHERANT STRENGTH ALONG THE FLUTING, WHICH RUNS LENGTH WAYS IN THE SHEET SUPPLIED

DUE TO THE NATURE OF THE DESIGN, MAKING ONE OCTA-STOOL FROM ONE SHEET WILL RESULT IN A SUBSTANCIAL AMOUNT OF WASTE WITH MANY ANGULAR OFFCUTS.

IN ADDITION TO BEING A RENEWABLE RESOURCE HOWEVER, LEFT OVER CARDBOARD IS ALSO CONVENIENTLY CHEAP AND EASY TO RECYCLE.

AS A PRODUCT INTENDED FOR MASS MANUFACTURING, MAKING MULTIPLE OCTA-STOOLS FROM NUMEROUS SHEETS WOULD ALLOW FOR MUCH MORE EFFICIENT USE OF THIS MATERIAL.