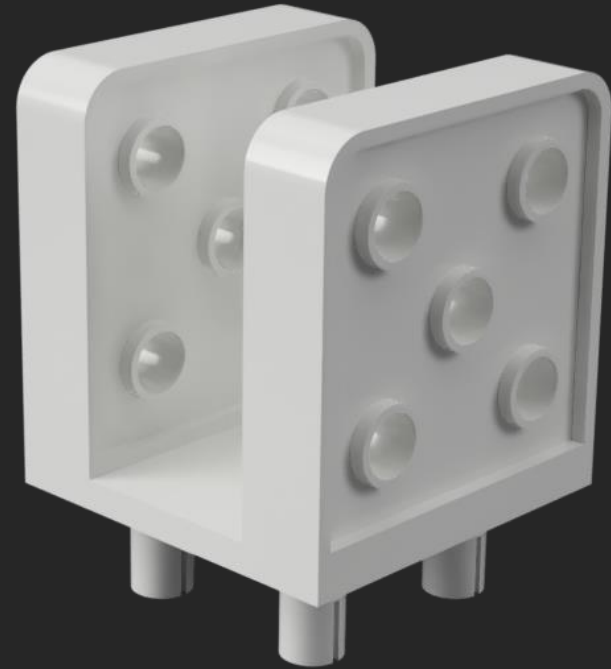


VEX IQ THREE SIDED CORNER CONNECTOR

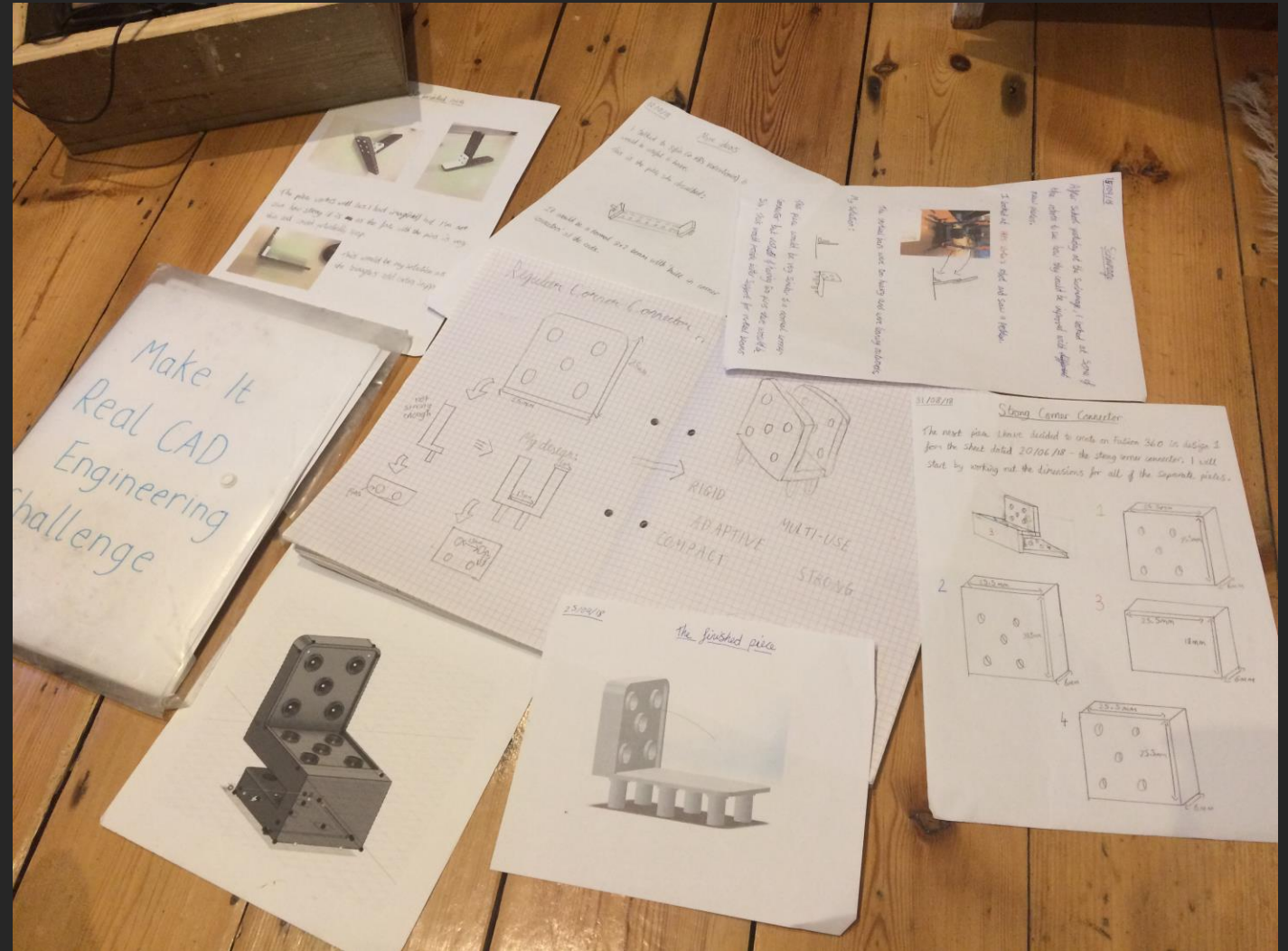


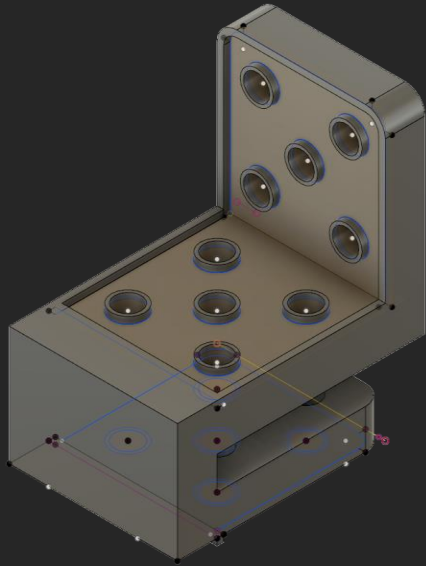
MY DESIGN PROCESS

AN INITIAL PROBLEM THAT MY TEAM FACED WAS THAT THE TWO VERTICAL TOWERS NEEDED TO BUILD A 4 BAR LIFT WERE SO HEAVY THAT THEY WERE UNABLE TO SUPPORT THEMSELVES, RESULTING IN STRUCTURAL MALFORMATION. THROUGH A PROCESS OF COLLABORATIVE, TEAM BASED, REAL WORLD TESTING I DEVELOPED A SUCCESSION OF DESIGNS, AT FIRST ON CONSTRUCTION PAPER, LATER IN FUSION360. EACH DESIGN SOLVING A PROBLEM OF THE PREVIOUS ONE.

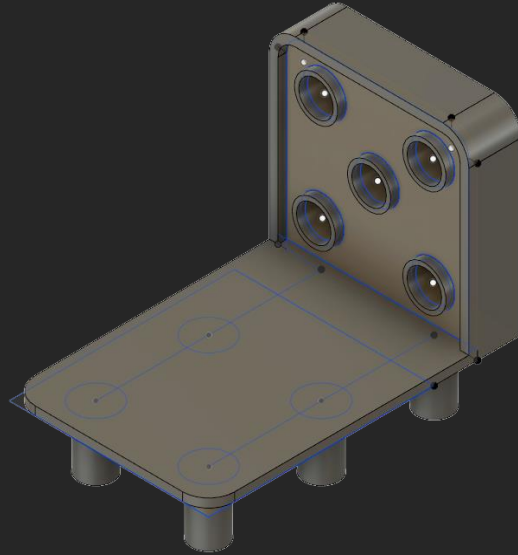
SKETCHBOOK

I FIRST DESIGNED A VARIETY OF PIECES TO SOLVE THIS PROBLEM. I THEN FURTHER DEVELOPED THESE AND DREW THEM ON FUSION 360, BEFORE DECIDING ON A FINAL DESIGN FOR THIS PIECE.

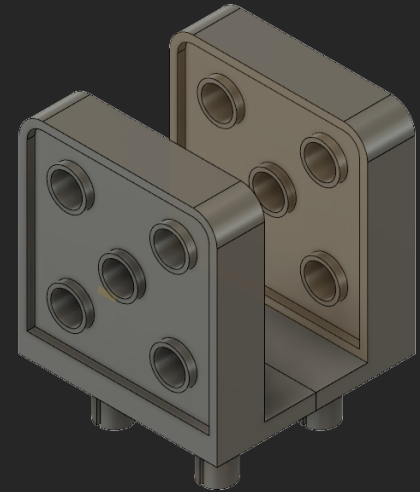




STRONG CORNER CONNECTOR
INITIAL DESIGN



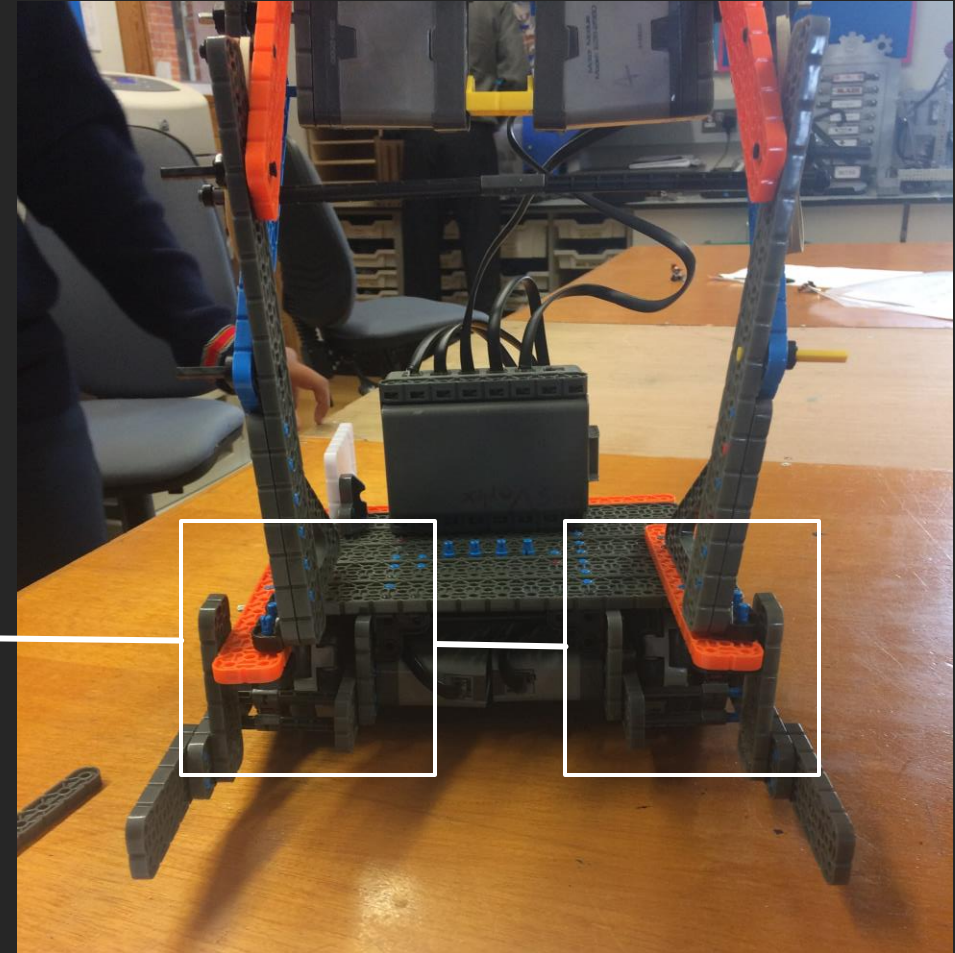
LONG CORNER CONNECTOR
SECOND ITERATION



THREE SIDED CORNER CONNECTOR
FINAL DEVELOPMENT

PROBLEM AND SOLUTION

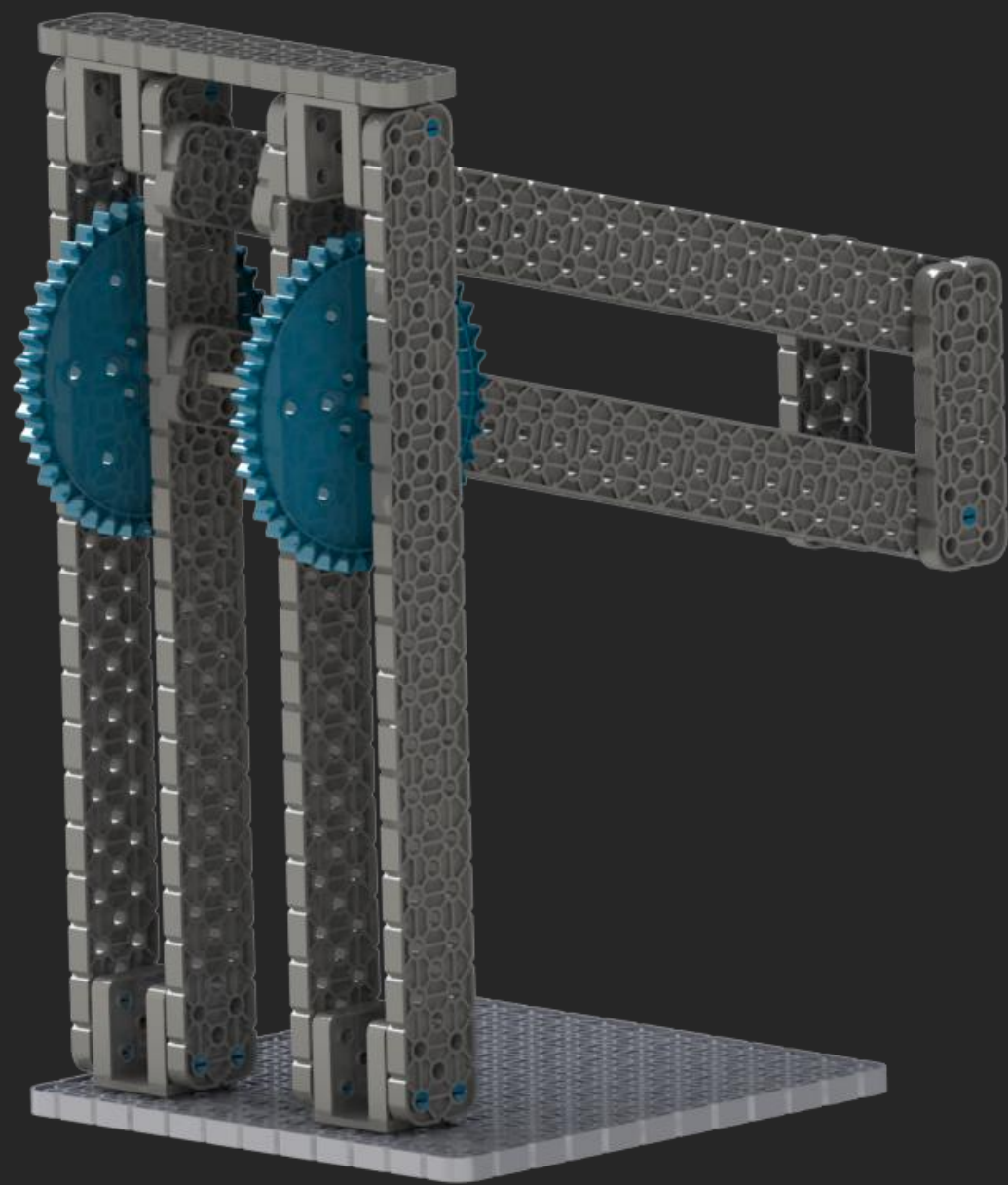
EXAMPLE OF VERTICAL TOWERS LEANING OUTWARDS DUE TO INSUFFICIENT SUPPORT AT THE BASE.



HOW IT WORKS

FOR A ROBOT WITH A FOUR OR SIX BAR LIFT, TWO 'THREE SIDED CORNER CONNECTORS' WOULD BE PLACED ONTO THE BASE (USING THE FOUR PINS AT THE BOTTOM). A BEAM WOULD THEN BE CONNECTED TO EACH SIDE OF THE PIECE (USING THE TWO FACES WITH FIVE PIN HOLES IN EACH). THESE BEAMS THEN HAVE A LONG METAL SHAFT THROUGH THE TOP HOLE, ON WHICH THE ARM IS ATTACHED. THE ADVANTAGE OF USING THIS PIECE RATHER THAN ANOTHER TYPE OF CORNER CONNECTOR IS THAT THE THREE SIDES MAKE IT STRONG AND VERSATILE, WHILE STILL COMPACT. IT ALSO HAS FOUR PINS ON THE BOTTOM FACE, MEANING IT HAS A STRONG CONNECTION TO THE FACE IT IS PUT ON.

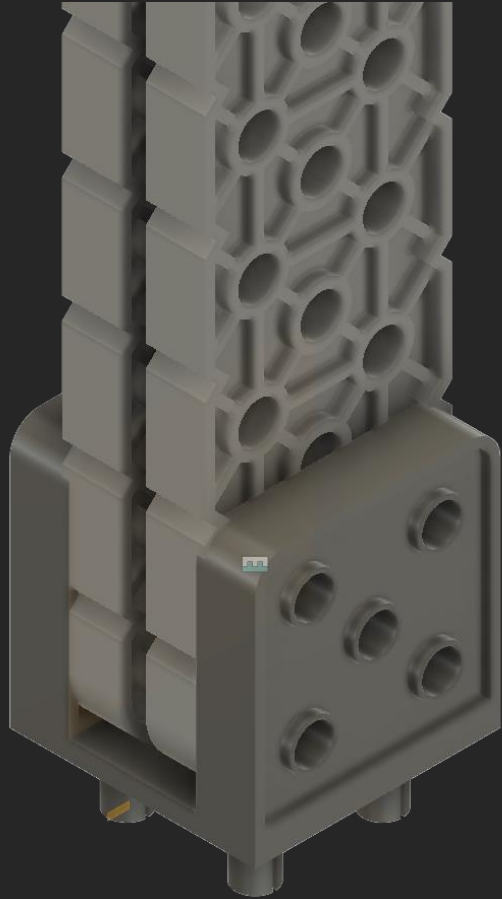




POTENTIAL USES

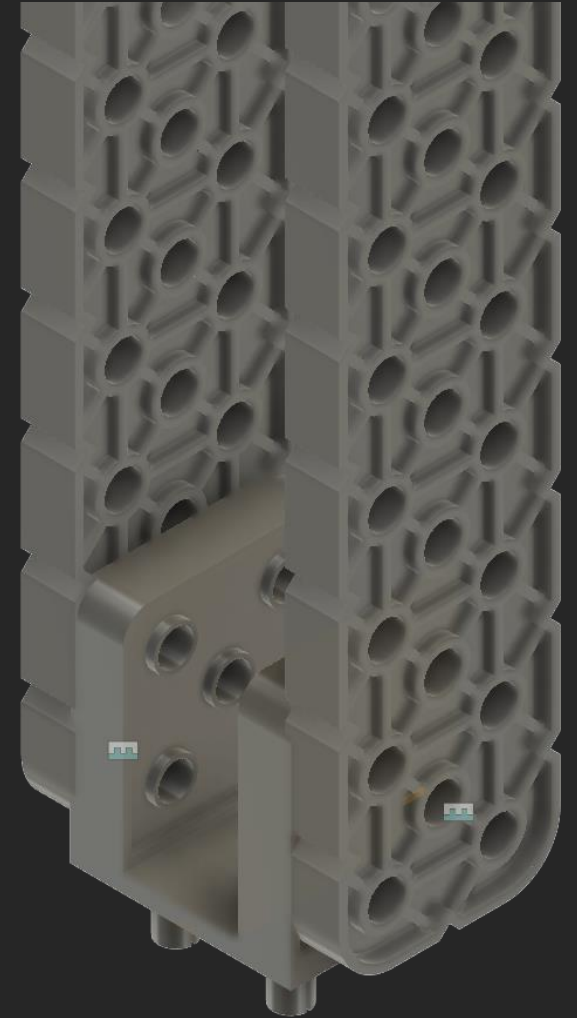
HERE ARE TWO EXAMPLES OF THIS PIECE BEING USED IN AN ASSEMBLY. THE BEAMS REPRESENT THE VERTICAL TOWERS TO WHICH THE 4 BAR LIFT WOULD BE ATTACHED.

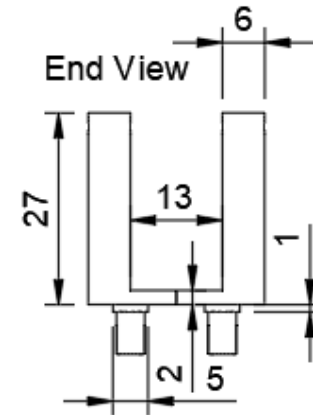
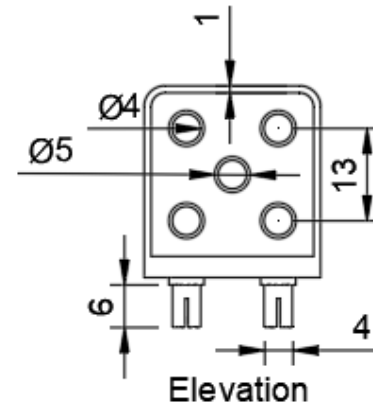
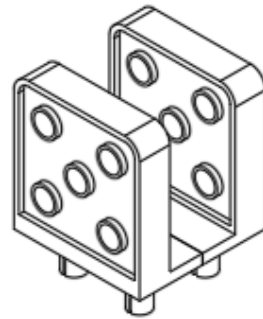
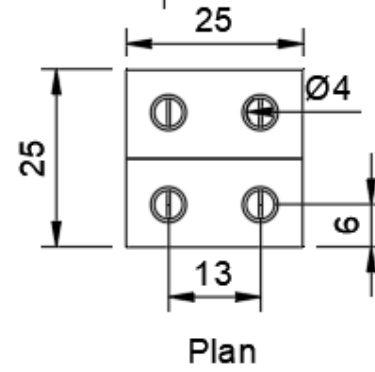
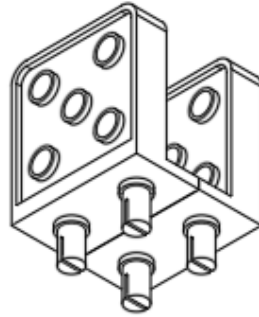




THE VERSION
ON THE LEFT
SHOWS THE
BEAMS
CONNECTED
ON THE
INSIDE, WHICH
ADDS
STABILITY AS
THEY ARE
SUPPORTED
FROM BOTH
SIDES.

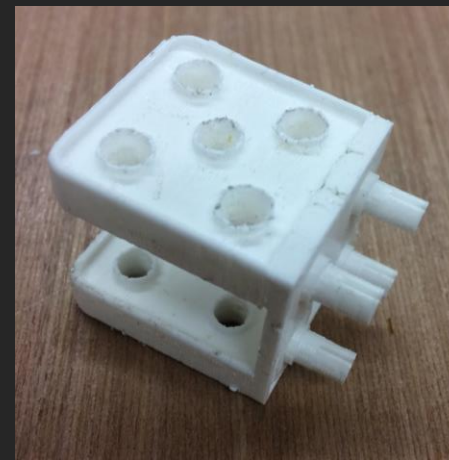
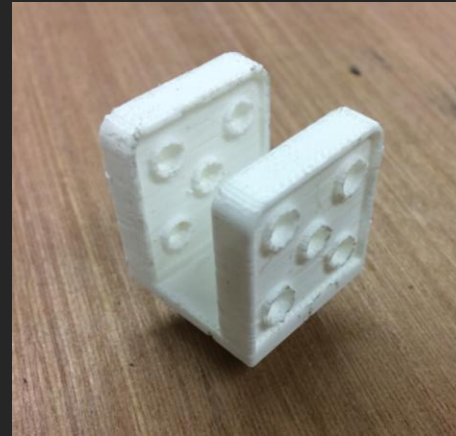
THE VERSION ON
THE RIGHT SHOWS
THE BEAMS
CONNECTED
FROM THE
OUTSIDE,
MEANING THERE IS
ROOM FOR
COGS,
SPROCKETS OR
SHAFTS TO GO
INBETWEEN THE
BEAMS.





3 SIDED CORNER CONNECTOR	
VEX IQ	10173E
ORTHOGRAPHIC	HBS ROBOTICS
10TH JAN 2019	DRAWING #1

REAL WORLD TESTING



I 3D PRINTED THIS VERSION OF MY PIECE AS WELL AS THE FINAL DEVELOPMENT, TO SHOW HOW THE ITERATIVE DESIGN HAD DEVELOPED.



THANK YOU

Score to beat: 237

MY TEAM (10173E) AT
WORLDS 2018