# TECHNICALLY
# COMPLEX DEVICE

PREET PATEL

17BDI034

## ScareCrow Barricades

# Initial Design Brief ?

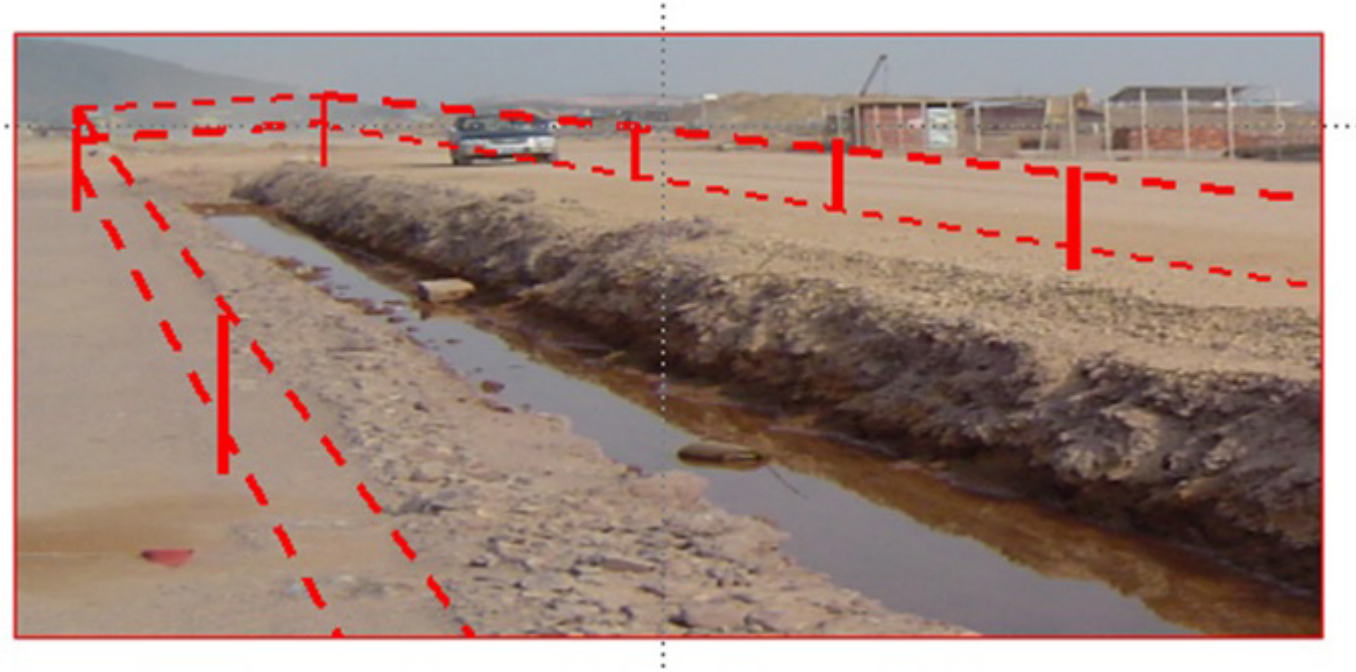
I M G . 0 2

**Reduce The Risk of Life Through Efficient Barricading.**

Barricading is essential to safeguard people and avoid any mishaps or causalities from happening. There are various types of barricades and all of them are used for various different situations. The further study will narrow down my focus of attention and intervention.

I M G . 0 1

# What Is The Context



IMG . 03

Barricading has been done over whereas situations like the one above and many more. The method is widely used all over the world to curb and control certain situations.

Barricading can broadly be classified into three sub categories that are :
1) Crowd Control
2) Traffic
3) Road Maintenance

# Crowd Control

Crowd Control is a requirement which every authority should take into consideration. It can take place for various situations like :

1) Riots
2) Protests
3) Public/Private Events
4) Resorts and Hotels
5) Festivities

I M G . 0 4

I M G . 0 5

I M G . 0 6

Different type of situations need different type of barricading as shown in the images. The main motto for the same is to regulate and control the crowd at a certain level for easy execution of the on-going event. This would vary a bit when situations like riots or protests are to be dealt with. In such situations the barricades need to be stronger and more durable. They also should be planned and placed properly for minimal causalities.

# Traffic

In today's world, traffic is one of a major problem. Every modern world city is facing this problem and it is one of the reasons to emission of greenhouse gas as well. Traffic control and regulation is a system which needs to be highly intelligent in its service to ensure smooth flow of vehicles and avoiding bottlenecks from occuring.
Such barricading needs to be done for :
1) Running Road
2) Parking
3) Regulation of Traffic on an Occasion


I M G . 0 7

I M G . 0 9

I M G . 0 8


I M G . 1 0

# Road Maintenance


IMG.11

Roads are constantly under maintenance either for short times or long times. Roads are an essential factor of transport and hence they have to be kept in the most suitable condition for efficient transport and hence a lot of workers risk their life and work on busy roads which sometimes has lead to adverse situations. Accidents can occur anytime and it is a need to safeguard and ensure a worker's health under such circumstances.
Activites like :
1) Fixing Potholes
2) Maintaining Plantations on diversion
3) Construction of flyovers, metro etc.
4) Fixing Road
are almost carried out on modern cities on a regular basis and this means the rworkers risk their life regularly.

IMG.12

IMG.13

A man is working on the edge of a busy road. There is no barricade for his safety.

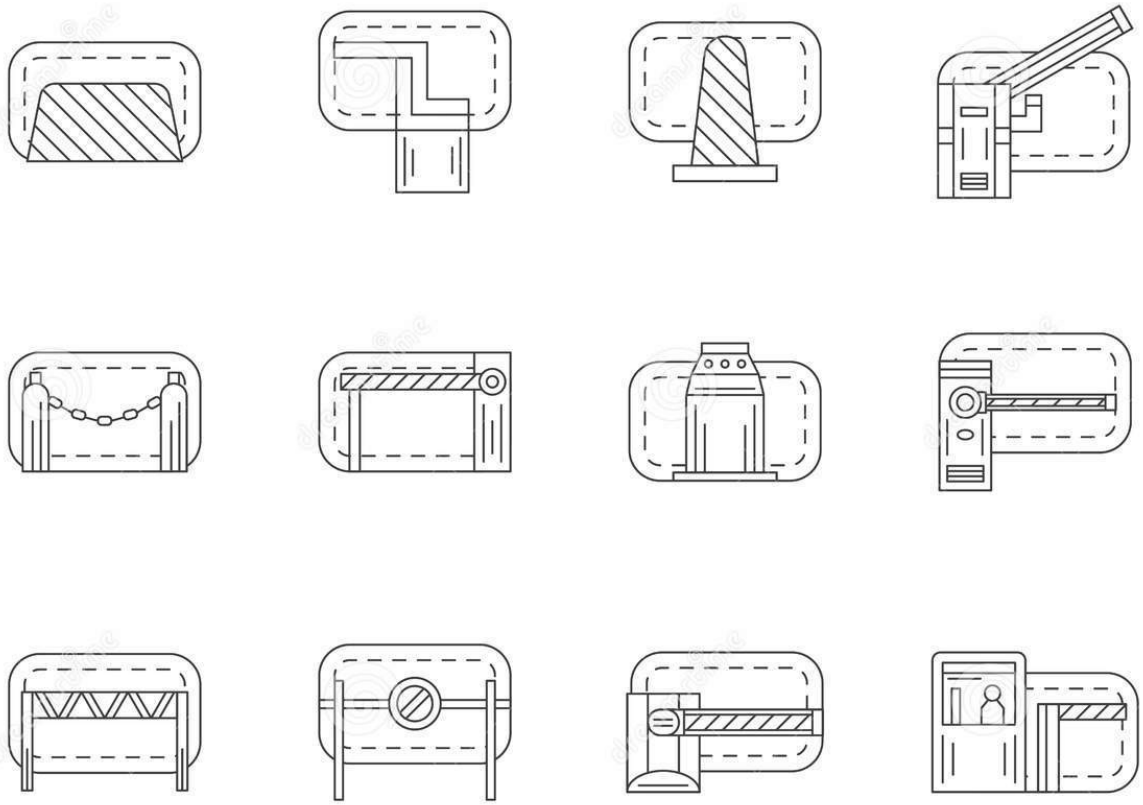
IMG.14

Men have to be present though two baricades of different types are arranged to enforce the traffic to follow the rerouting.

IMG.15

Metal barricades are used. The barricades do not have back support and hence heavy cement blocks are used to support them from adverse conditions.

# Market Research



IMG.16

There are a lot of types of barricades available in the market which attend to different purposes and situations. There are mainly three types of barricades :

1) Pedestrian Barricades
2) Traffic Barricades
3) Expanding Length Barricades

All the barricades serve some common issues of rerouting traffic, controlling huge crowds, regulating traffic in parking lots, defining pathways, safeguarding the environment to avoid any uncertain mishaps.

# Pedestrian Barricades

IMG.17

IMG.18

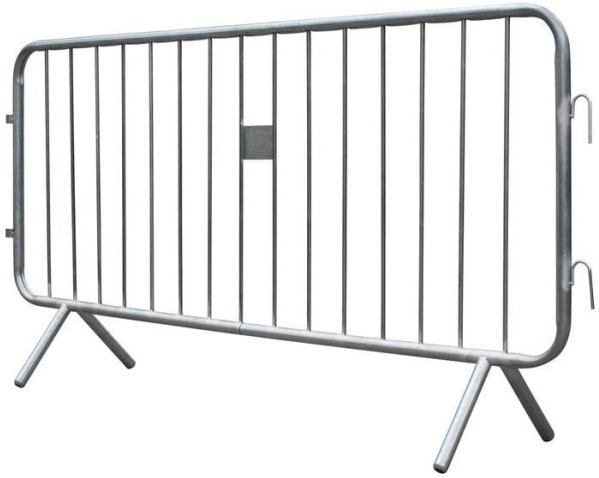
There are various types of Pedestrian Barricades like :

1) Metal
- Flat Feet
- Bridget Feet
- Swing Gates

2) Plastic

3) Vinyl Event Fencing

4) Sports Panel PVC Fencing



IMG.19

IMG.20

## Metal Barriers

Flat Feet barriers for flat surfaces
Bidged Feet barriers for uneven surfaces.

Swing gates are used in situations where there is an opening and closing system required. For eg. concerts and public events.

IMG.21


IMG.22

## Plastic Barriers

They  offer temporary walkways for pedestrians at construction sites, events etc.

IMG.23

IMG.24

## Vinyl Event Fencing

They look neat and interlock to form long chains of barriers. Commonly used at events and grand occasions.

IMG.25

IMG.26

## Sports Panel PVC

These are lightweight and weather resistant barriers used commonly on major ground sports such as soccer.

# Traffic Barricades

There are various types of Traffic Barricades like :

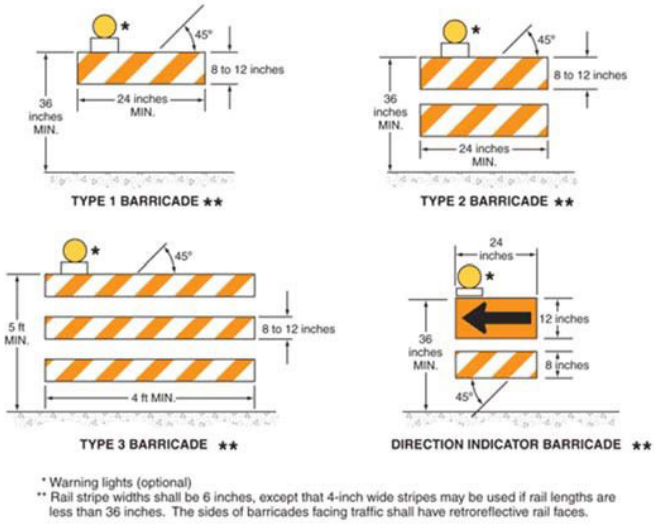
1) Jersey Barriers
2) Traffic Barrels
3) Traffic Cones
4) A-Frames
5) Type I/II/III

I M G . 2 7

I M G . 2 8

Jersey barriers are generally hollow and can be filled with sand and water and they reduce damage on impact. Barrels are placed for obstruction.

I M G . 2 9




I M G . 3 0

Cones are the most commonly used barriers. Type barriers just mean the increasing number of reflective panels for more visibility.

# User Research

## Questionnaire

1) Why are they used?
They are used to safeguard the workers and the traffic. Also for controlled flow of traffic.
2) How are they arranged?
The workers are trained and instructed beforehand for arranging them.
3) Who supplies and Maintains?
The engineering company buys and collects the barricades and they provide them on site.
4)How are they made?
Various methods llike injection moulding. blow moulding etc.
5) How are they chosen?
Traffic requirement or crowd control requirement. Depends on the situation.

**Sample Size** : Talked with On-Site leader and Engineer.

**Key Informant** : Someone who has experience with barricades on the road.

**Usage** :

**Why?**
- To safeguard the workers
- To control flow of traffic/pedestrians
- To minimise damage on impact
- To plan ahead of time to reduce probability of mishaps

**When?**
- Events
- Riots/Public Protests
- Hotels/Resorts
- Stores/Malls
- Parking Lots
- Roadwork
- Construction Sites

**How?**
- Assembly
- Arrange
- Bring in/out
- Planning/Mapping
- Dis-Assembly

# Critical Insights

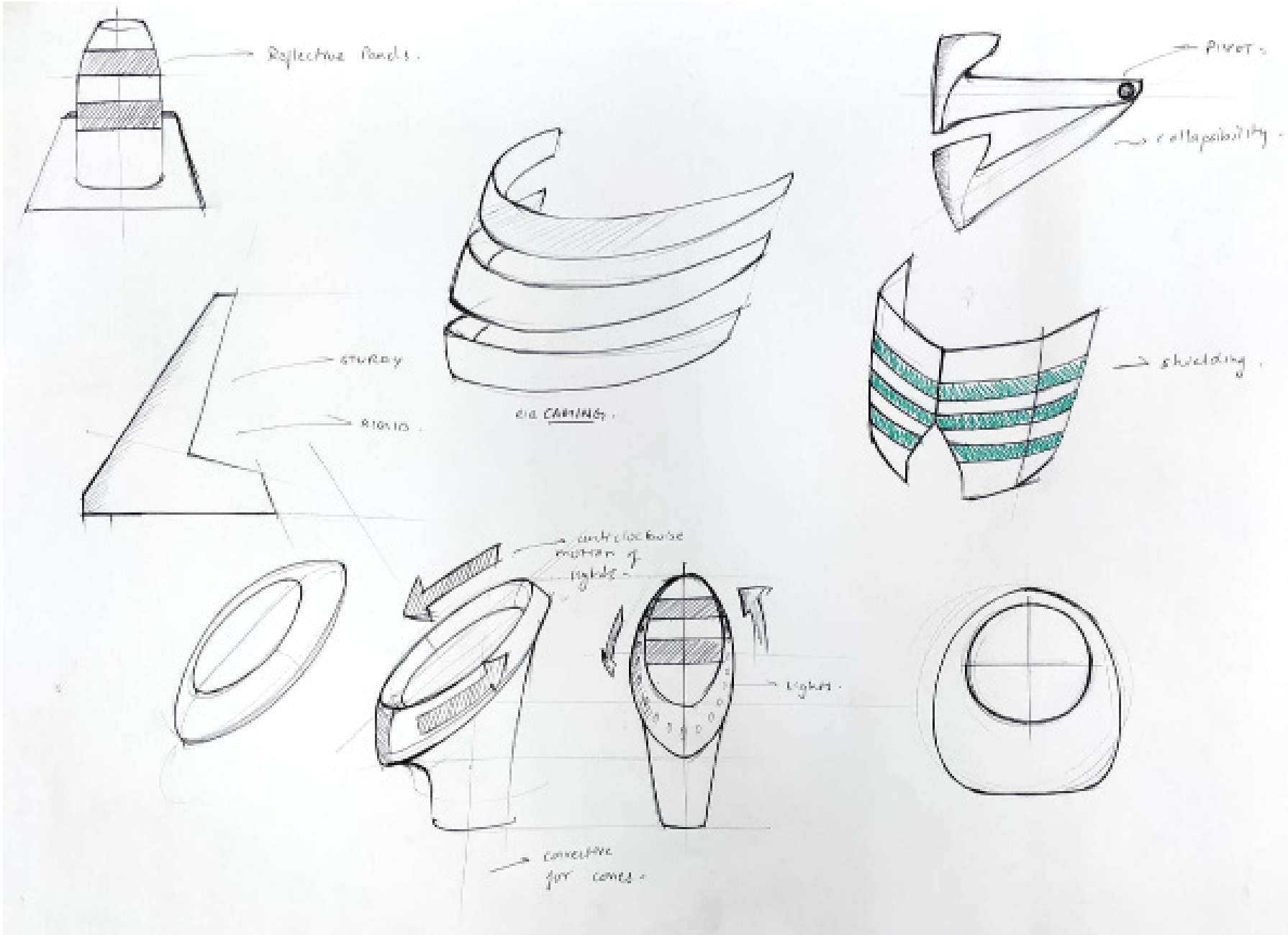
- Road Maintenance is one major concern
- Safety for workers working on road is required
- Study of different materials and why they are used to manufacture barricades needs to be compiled
- Barricade needs to be weatherproof
- Durability and Accessibility can be explored
- Understanding the system of barricading is important
- Anticipation and smart planning can cause less damage
- Different types of situations require different types of barricades
- Color and visibility remains undisputedly one of the important factors
- Companies maintain a stock of barricades and supply to their sites as and when needed
- Maintenance of barricade does not happen as it is not paid much attention
- Accidents happen even if barricades are present, they need to be more forceful and visible to prevent such accidents
- Scenario analysis, to study and examine the function of barricades in different day to day simulations
- Possible elimiination of manual barrier ( remove the need of person with red flag on busy roads )

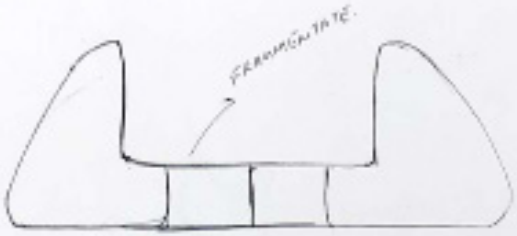
# Detailed Design Brief ?

Reduce the risk of life through barricading which ensures to create a safe environment that reduces injuries or accidents with a combination of visual directions and physical barricades.
The barricades should ideally be :

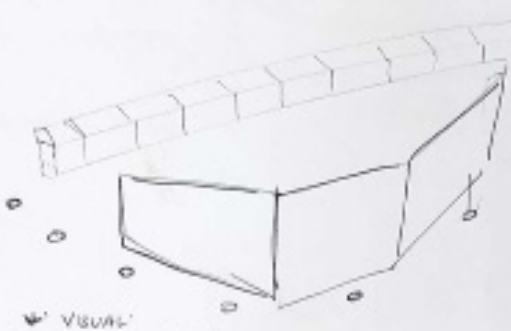
- Durable and Weatherproof
- Self-Supporting
- Lightweight and Heavy at the same time
- Should be deployed on uneven terrain
- Have visual cues
- of manufacturing scale
- Color coded for faster interpretation
- Patternable, can be arranged in patterns for efficiency
- Impact resistent, scalable
- Have enough visibility

# Ideation


Reflective Panels
PIVOT
collapsibility
sturdy
rigid
via CARVING
shielding
anti-clockwise
motion
rigid
light
connective
for cones




LIGHTS!!!
- COGNITIVE
- FAST INTERPRETATION
- VISUAL




- WE USE PROJECTION TO SHOW VISUALS FOR BETTER ENFORCEMENT.
- THE SPACE IS BARRICADED FOR WORKER SAFETY.

VISUAL ASPECT OF THE SITUATION.

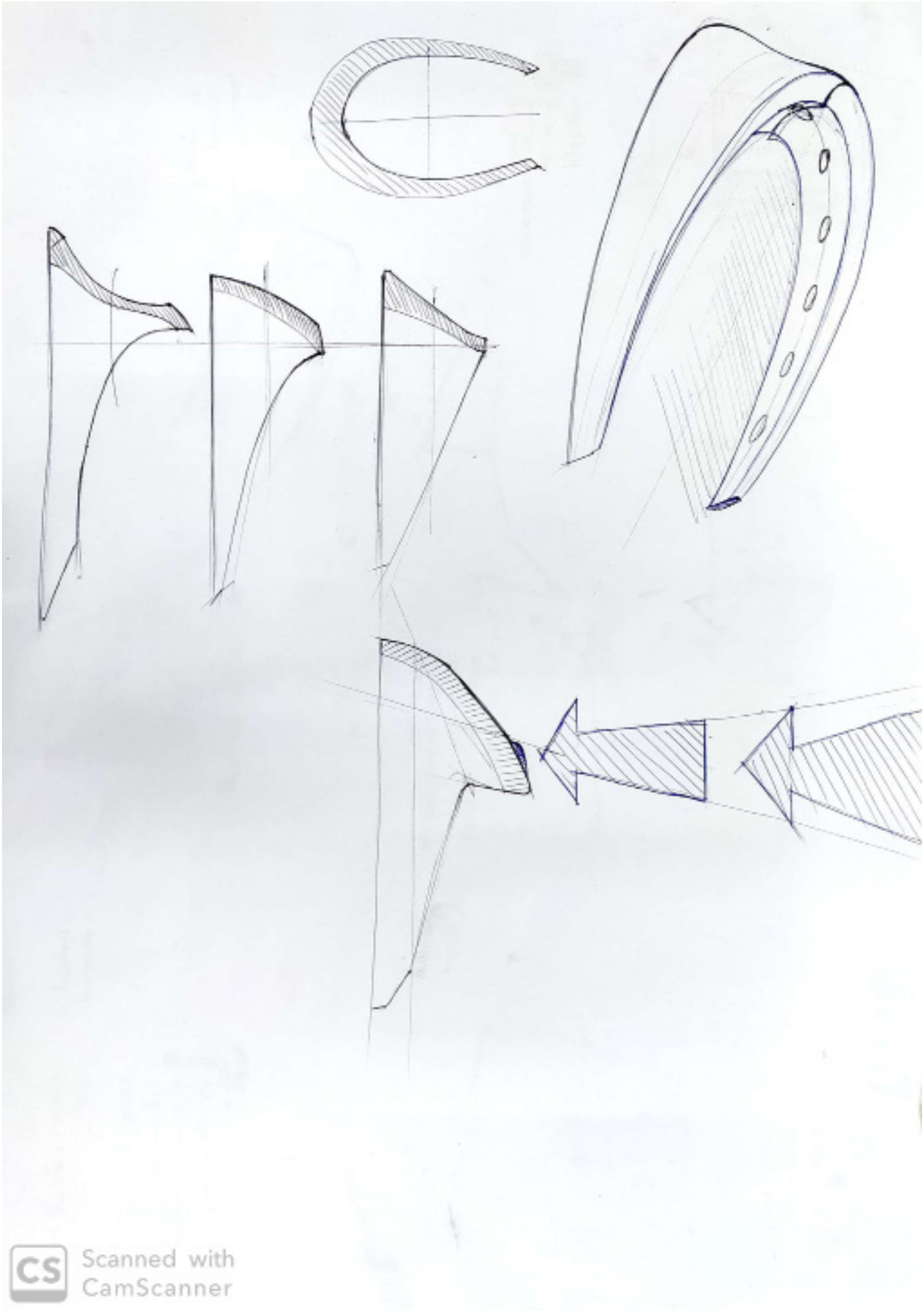

HOW MANY WAYS CAN I SAFEGUARD THE WORKER?
- barrier
- visual enforcement
- awareness
- visible barricades.
- Physical Aspect
- Visual Aspect.

8/10

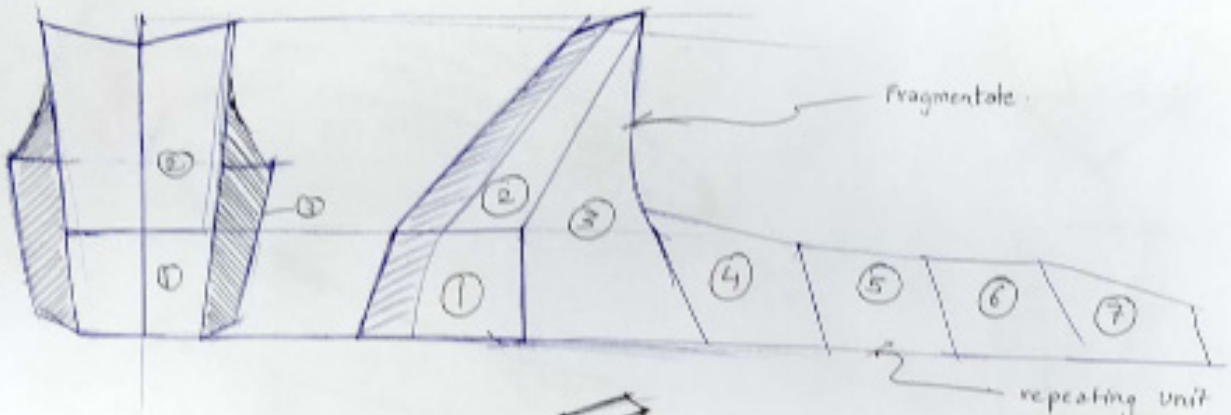
- assembly.
- stacking.

- Fixing.
- beacon/ projecting.
- modularity.

materials.
No obstruction.
situation mapping.
regulation.
Details.



- Middle of the road
- sides of the road
- Nightscape




* Not only light- but a visibility- from the far

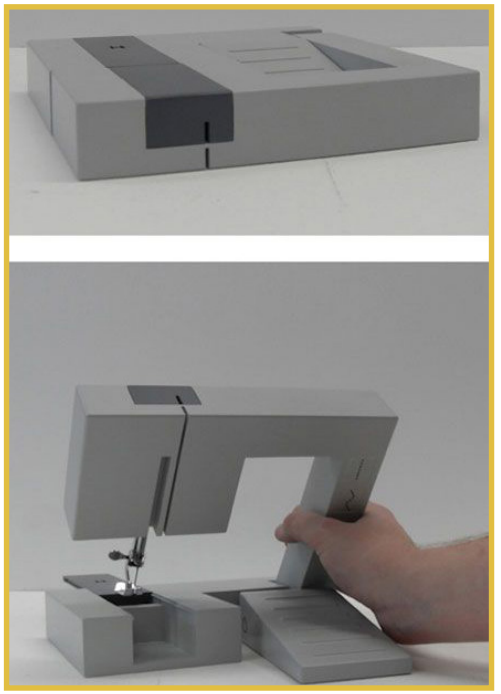

HITACHI
HITACHI

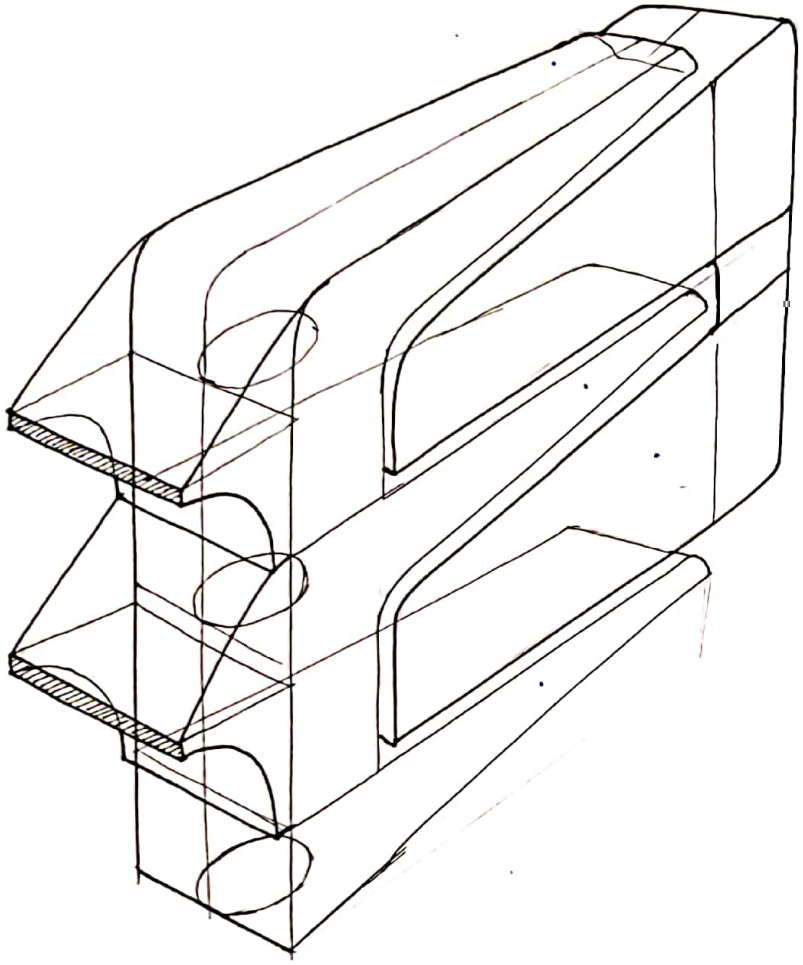

RIDGID

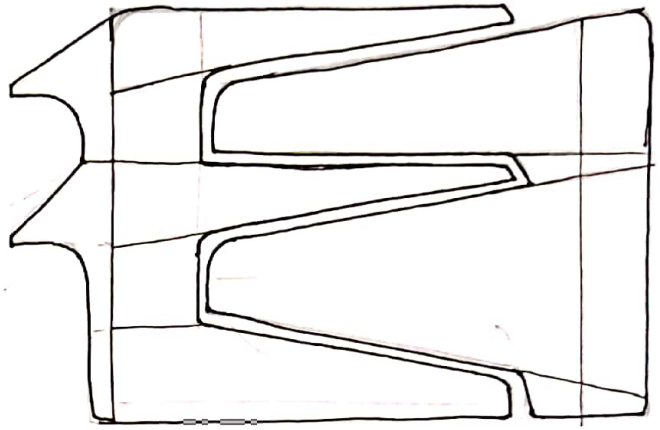

DreamWave

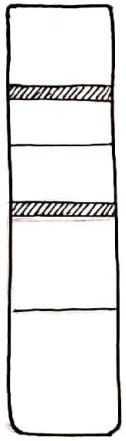

PELI

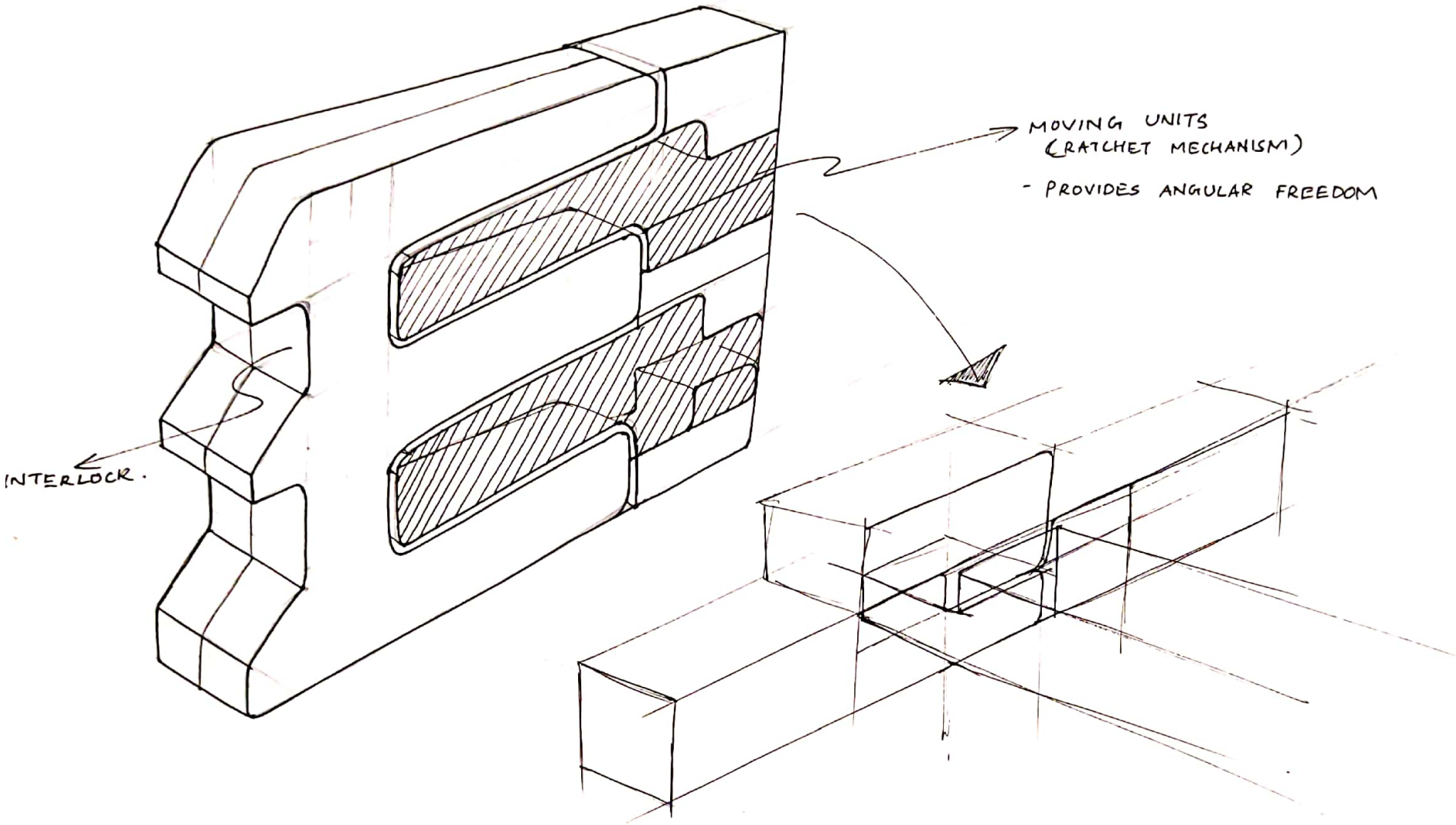

ARPINO







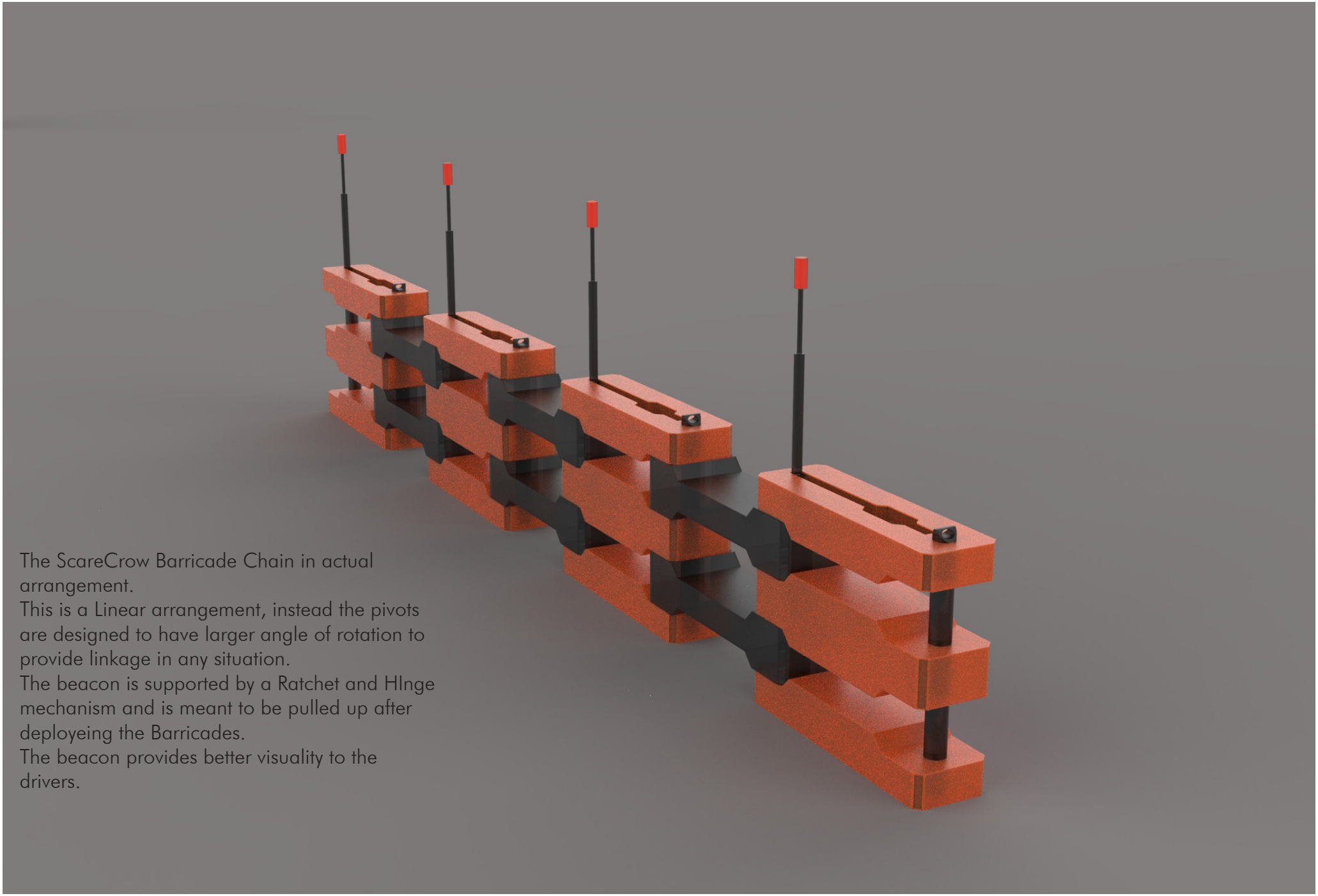



MOVING UNITS
(RATCHET MECHANISM)
- PROVIDES ANGULAR FREEDOM
INTERLOCK.

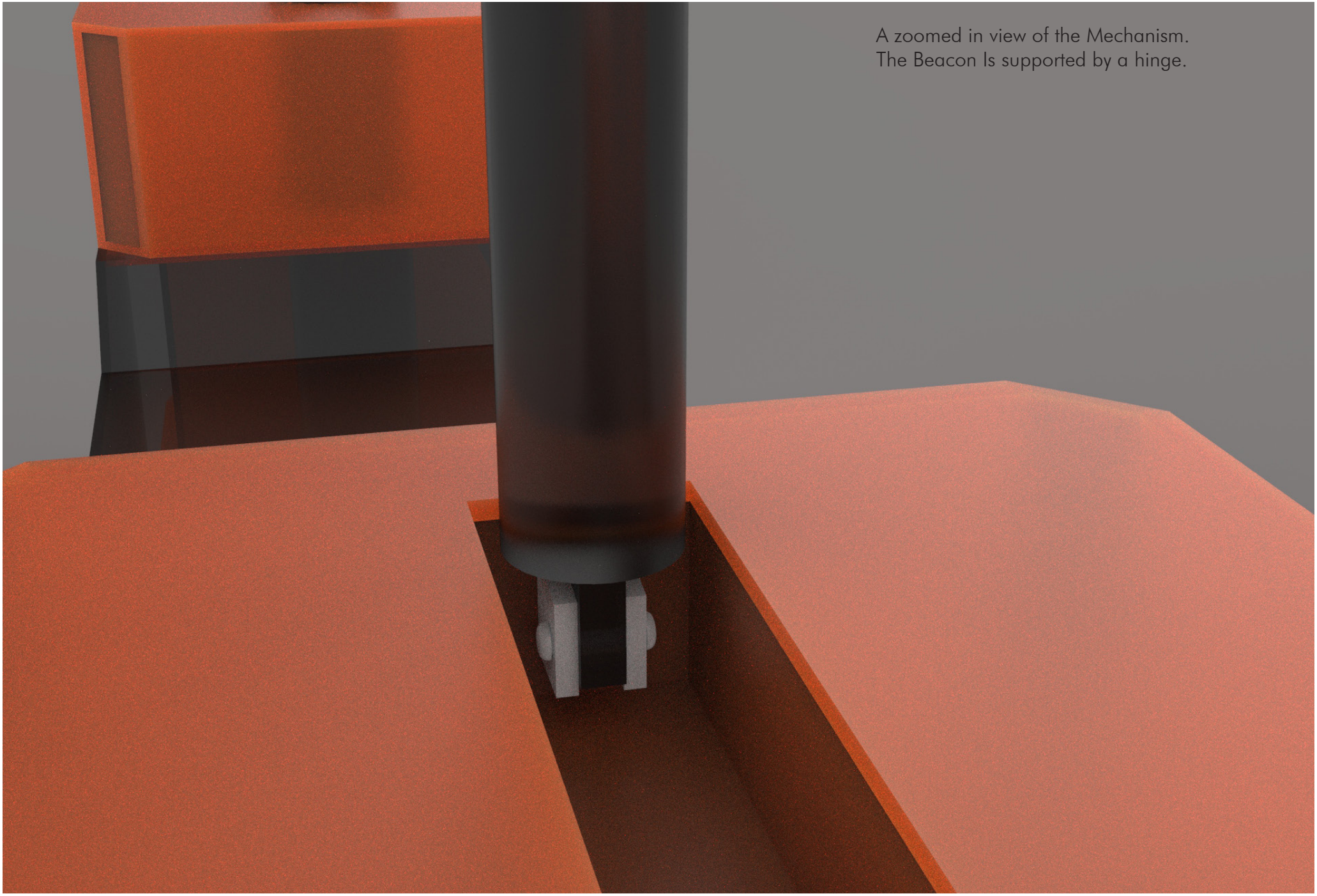
# Final Concept

The concept is based on the ideology of a scarecrow protecting the farms.
hence, it derives the same name '**ScareCrow Barricades**'.
Just similar to a Scarecrow's functionality, the barricades are sterile objects that are to be arranged/deployed at the desired place to maintain and control the traffic flow and to aware the drivers of work going on. A scarecrow in the farm protects the farm just by staying in it. The birds stay away just because of the presence of the scarecrow. Essentially the birds can feed on the cultivated crops as they want but they assume the scarecrow to be a human protecting the farm.

The ScareCrow Barricades also function similarly, they are not impact resistent but they have benefits of awaring the drivers using the beacon feature and hence maintain traffic control.

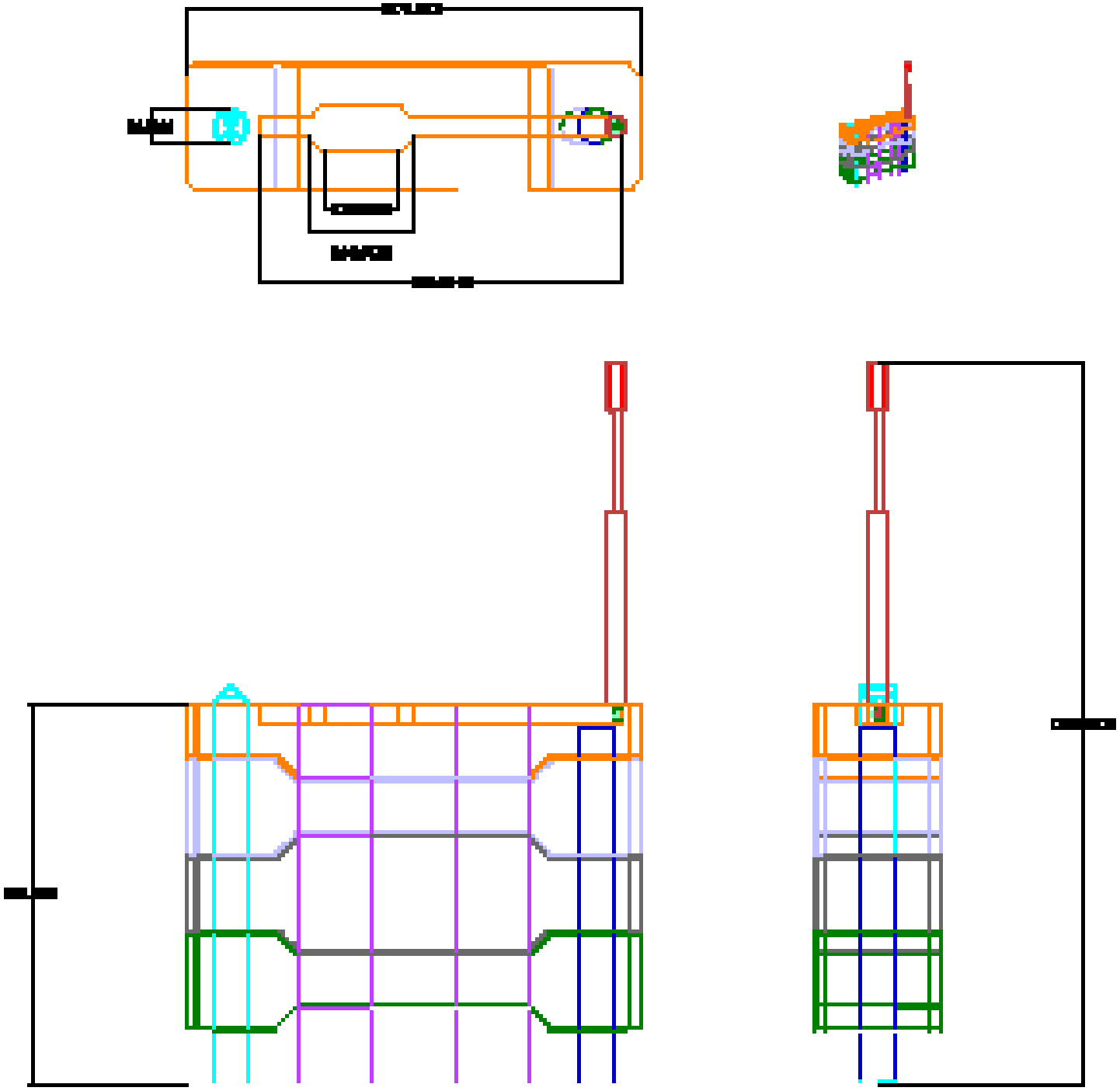


The ScareCrow Barricade Chain in actual arrangement.
This is a Linear arrangement, instead the pivots are designed to have larger angle of rotation to provide linkage in any situation.
The beacon is supported by a Ratchet and HInge mechanism and is meant to be pulled up after deployeing the Barricades.
The beacon provides better visuality to the drivers.



A zoomed in view of the Mechanism.
The Beacon Is supported by a hinge.

This is a single module/unit of the ScareCrow Barricades. The module can be used to barricade very small areas.
It is advised to use atleast an arrangment of three to properly ensure safety and control of the situation.



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