



Design of a letterbox for Indian post

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Background of Letterboxes

- The concept of postal service , collecting and delivering letters is quite old in human history.
- Earlier People used to wait for the postman to come and collect the letters.
- After introduction of stamps, people were not required to go to the post offices to post their letters.
- Use of common box for the incoming and outgoing mails was a collecting method in some parts of the world.
- The concept of letterboxes as we see them today was started around mid of the 19'th century.



What is a letter box:

As post man can not come to collect the letters from every home. People can not go every time to the post office to post the letters. Letterbox is a middle way where a representative of the post office is installed at convenient places which accepts the letters from the people.

These letters are preserved safely, protected from weather conditions and theft till a senior (postman) comes and collects them.

The inlet :
Accepts the letter for
storing
Ensures only one way
traffic

The door and lock :
Allows the letters to be
taken out by authorized
people only.

The body:
Place to store the
letters
Protects the letters
from weather
Guards the letters



History and background

After the launch, the letter box has changed through various stages. The changing culture and taste of people, changed the external appearance in major way, the concept remained more or less same.

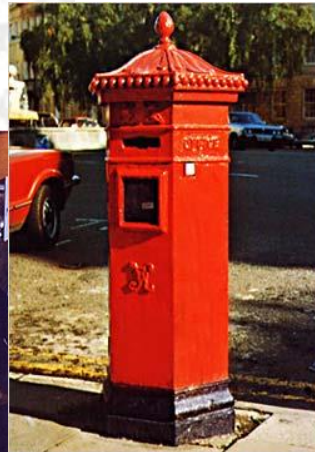
UK 1857



UK 1859



UK 1866



UK 1887



UK 1901



UK 1952



UK 1992



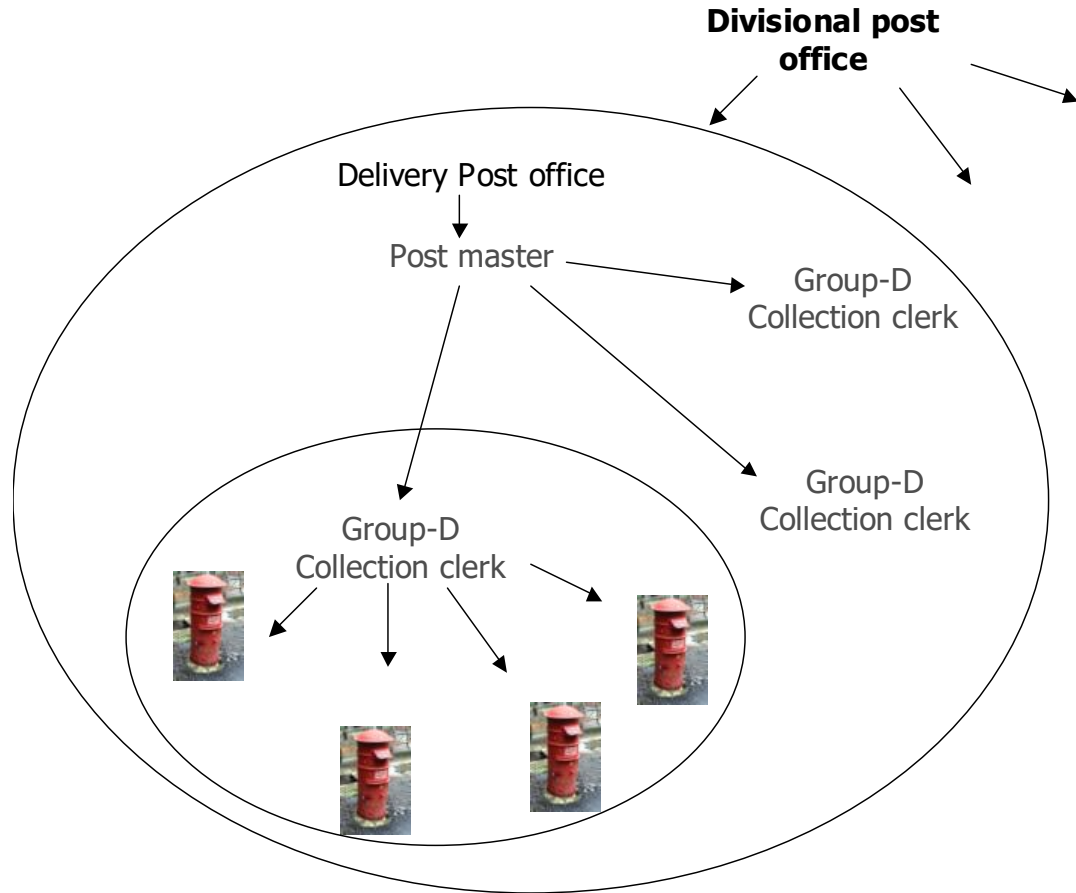
Postal service in India

- The postal services in India were started in second half of 19th century by British people.
- the Indian post is catering to ,
 - around 6.4 lakh villages
 - around 600 districts
 - around 5000 towns
- Indian post has
 - nearly 6 lakh employees including permanent and extra departmental
 - working in more than 1.5 lakh Post Offices all over the Country
- The postal traffic all over the country goes to a huge sum

Unregistered Traffic	1,39,58,089 (In Thousands)
Registered Traffic	2,45,195 (In Thousands)

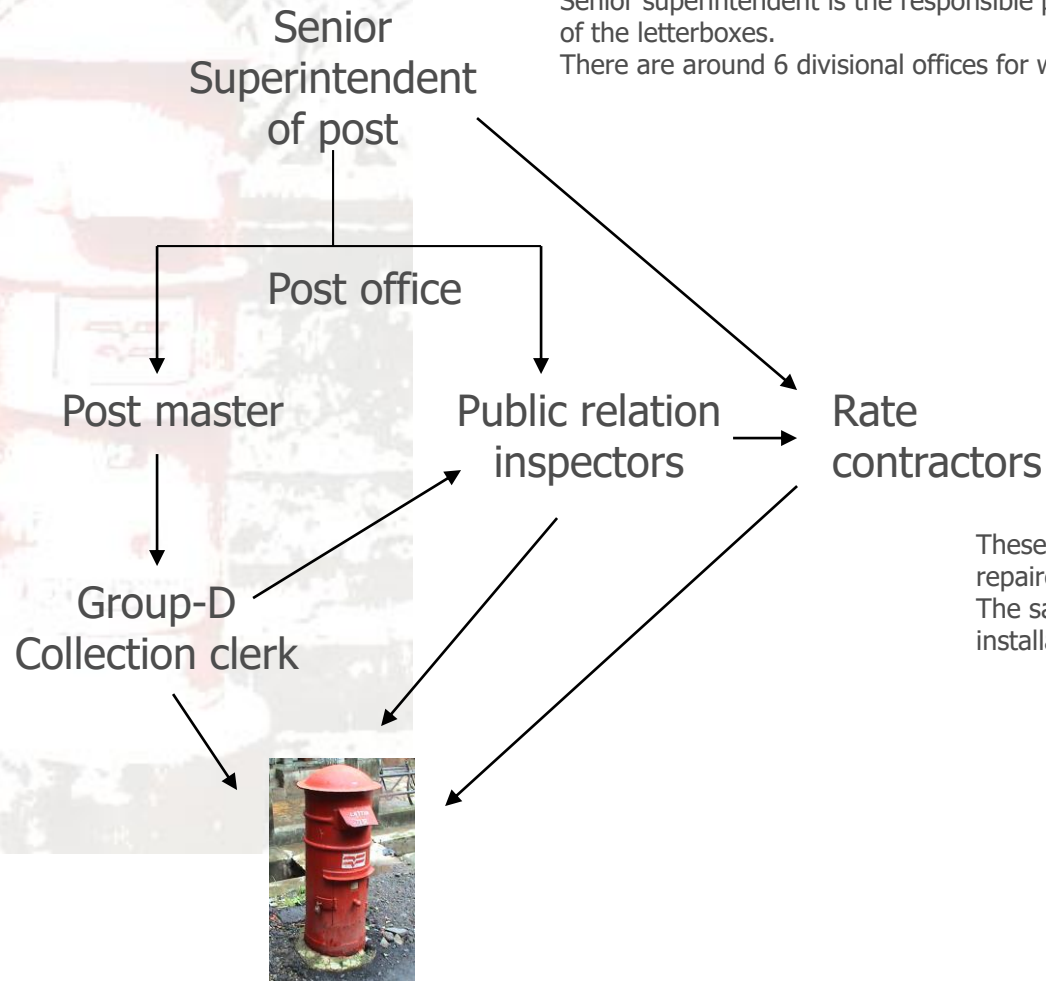
And there are over 6 lakh letterboxes all over India who take care of the unregistered letters.

The collection system and letter boxes



The city area is divided in small parts and the collection process happens systematically. It is worked out to go well with local conditions and working efficiently from years.

The system for letter boxes



The divisional office looks after all the letterboxes in that region. 12-15 delivery post offices. As per requirements they keep asking the higher level offices for the letterboxes.

Senior superintendent is the responsible person about the maintenance and installation of the letterboxes.

There are around 6 divisional offices for whole Mumbai region

These people have a year wise contract for the repairer work and maintenance of the letterboxes. The same contract includes painting and new boxes installation work.

Problems with current letter boxes

- Repair jobs are with contract people.
Maintenance work takes a lot of time.
Even a simple problem like replacing a lock takes a lot time.
- The next clearance tag and locks many times missing



Problems with current letter boxes

- a typical letter box lasts for 3-6 years. depends on the location, shade etc.
- Installation charges around 750 Rs. (contractors)
- Maintenance work 4-5 times minimum in the lifetime.
- Painting done yearly by contractors.

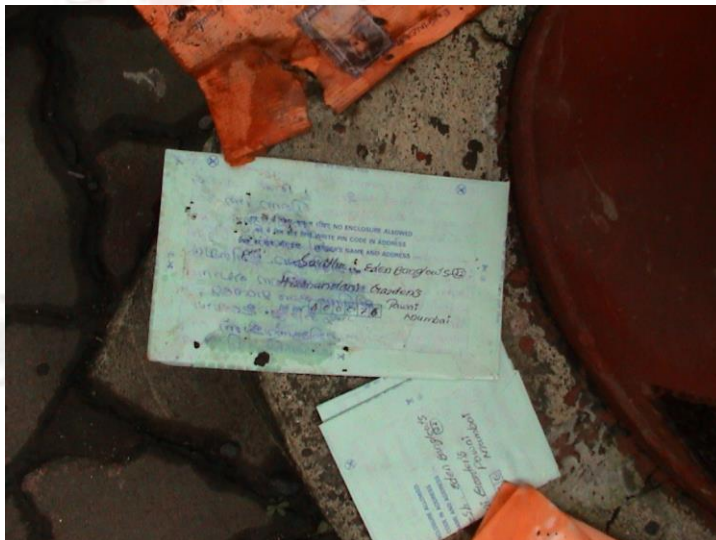
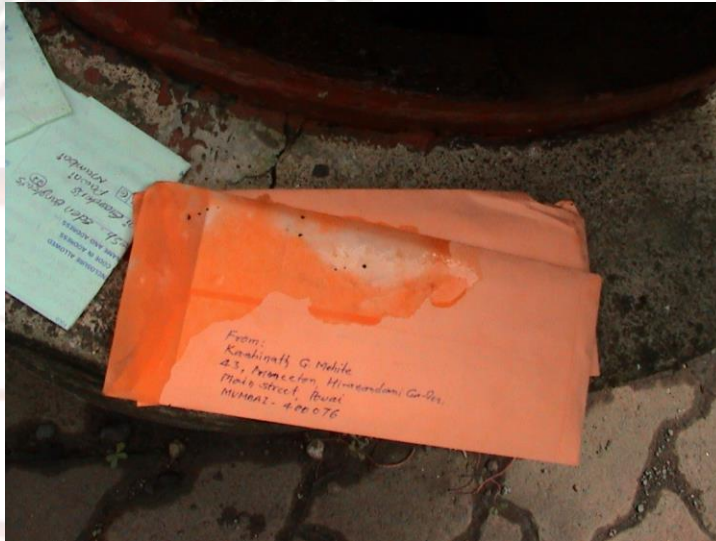


Problems with current letter boxes



- the sheet metal construction does not withstand with the environmental conditions

Problems with current letter boxes



Problems with current letter boxes



- the deciding people are not much bothered about the design issues.

Problems with current letter boxes



- the surfaces are such that they collect water and the water stays there to deteriorate the metal.

Problems with current letter boxes



- the workmanship and maintenance work is of inferior quality

Problems with current letter boxes



- once the installation is done nobody looks after the boxes.

Problems with current letter boxes



- lot of other stuff than letters

Problems with current letter boxes



- some letterboxes are overprotected and Some are not taken care of.

Similar products



- other similar structures



The postman has to go through a complex interaction with the current boxes.
The way he handles the bag, opens a lock and in rainy seasons carries an umbrella, all this interaction can be simplified.





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The way he handles the bag, opens a lock and in rainy seasons carries an umbrella, all this interaction can be simplified.



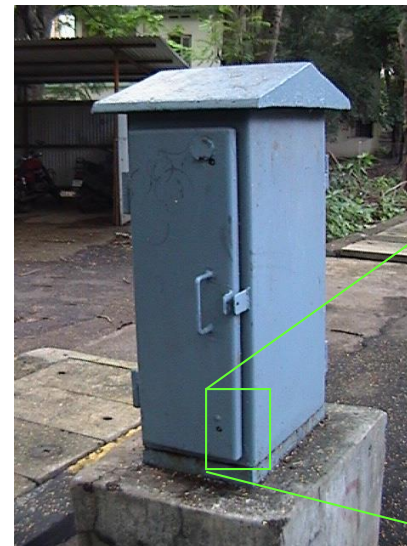
locks like electrical boxes can be used which are not so easy for opening for a passer-by and it can be opened only by the post person.

Present lock system:

- the person has to carry a bunch of keys with him.

- the locks when starts rusting the postman only breaks it and the new lock is requested.

- the action of opening a lock is inconvenient specially in rainy seasons.



locks like electrical boxes can be used which are not so easy for opening for a passer by but it can be opened only by the post person.

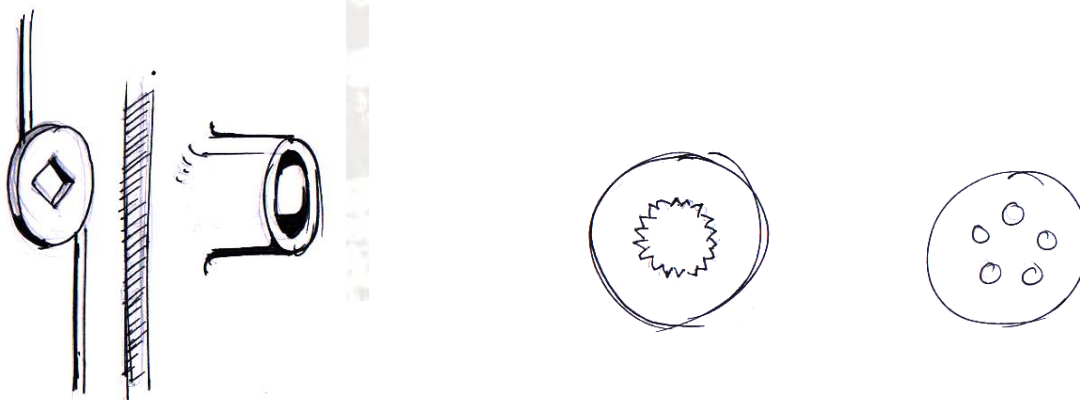
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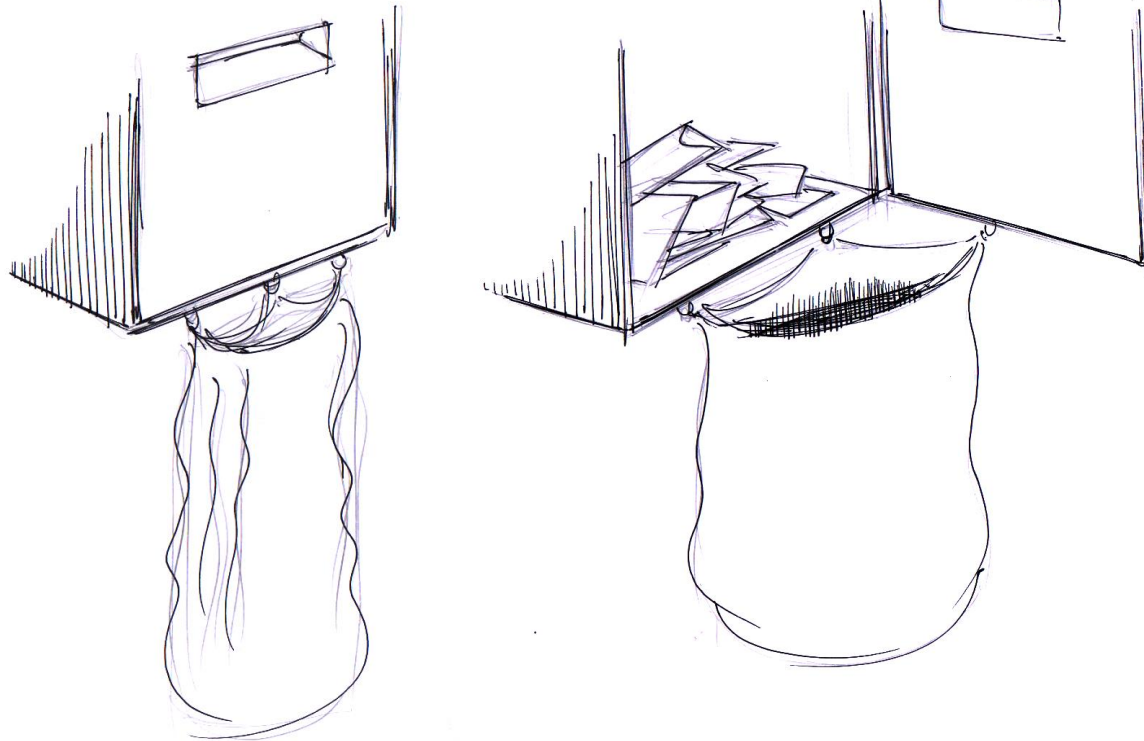
- the locks when starts rusting the postman only breaks it and the new lock is requested.

- the action of opening a lock is inconvenient.

The key and lock concept can be eliminated.



bag hanged to the door and frame which can facilitate easy putting the letters in the bag.



The letters are usually scattered inside the letterbox.

The reason being the height and the cross section of the box.

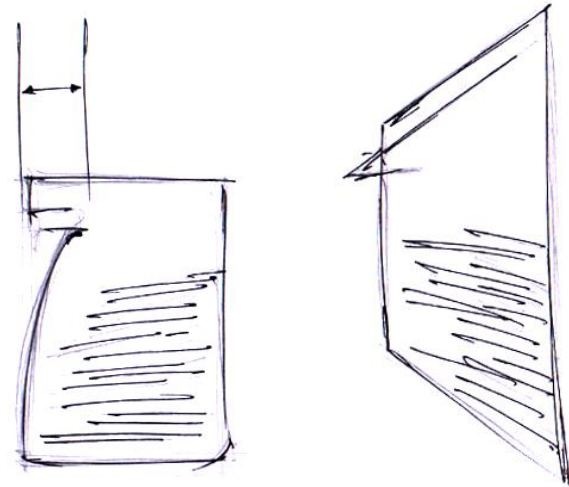
the less heighten boxes if made rectangular in cross section and less in size will help collect the letters more systematically.

the letters gets arranged like a pile.

the letters will remain safe and unfolded inside the box.

The systematic collection of letters can make it easy for the postman to collect the letters .

even the bottom surface if made tilted at an angle can facilitate the collection of letters in a systematic way.

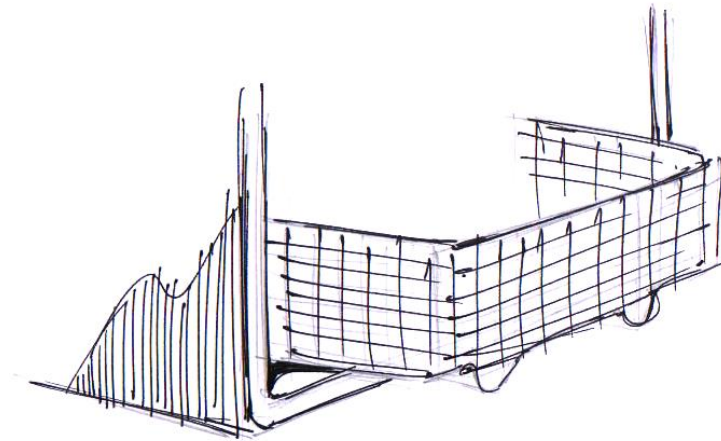
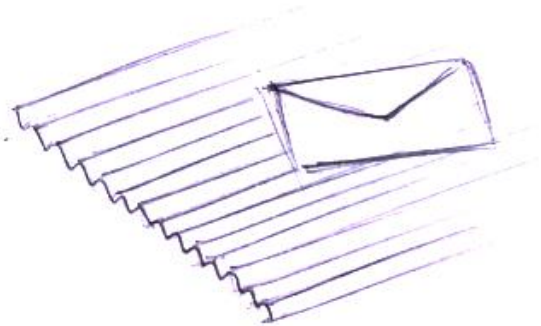


many times the surfaces are such that they collect water, when water goes inside due to manufacturing defects the inside surfaces also collect water and deteriorates letters.

Additional surface like net/ perforated sheet can be used to collect the letters to avoid direct damage to the letters.

grooves on the surfaces, curvy surfaces, inclined faces can easily remove water from inside the box.

Small holes at the bottom which won't allow the water to come inside.



The postman carries the next clearance tags with him. At every collection at box the tags are replaced with the new next clearance timings. The timing doesn't change for long periods.

Simple option can be provided to change the timing locally at every box. So that no carrying of tags is required.

Any other information like care taking post office contact no. /complaint no etc. Use of graphical symbols for displaying information on the letterboxes like intercity, metro city, all over, air mail on boxes.



installing the boxes at some height from the ground helps
Accessibility

Postman collecting the letters.
Visibility gets blocked due to parking of bikes etc.



Using existing structures to fix the box.

Electric poles or for that matter any other poles can be used according to convenience which will reduce the cost of installation.

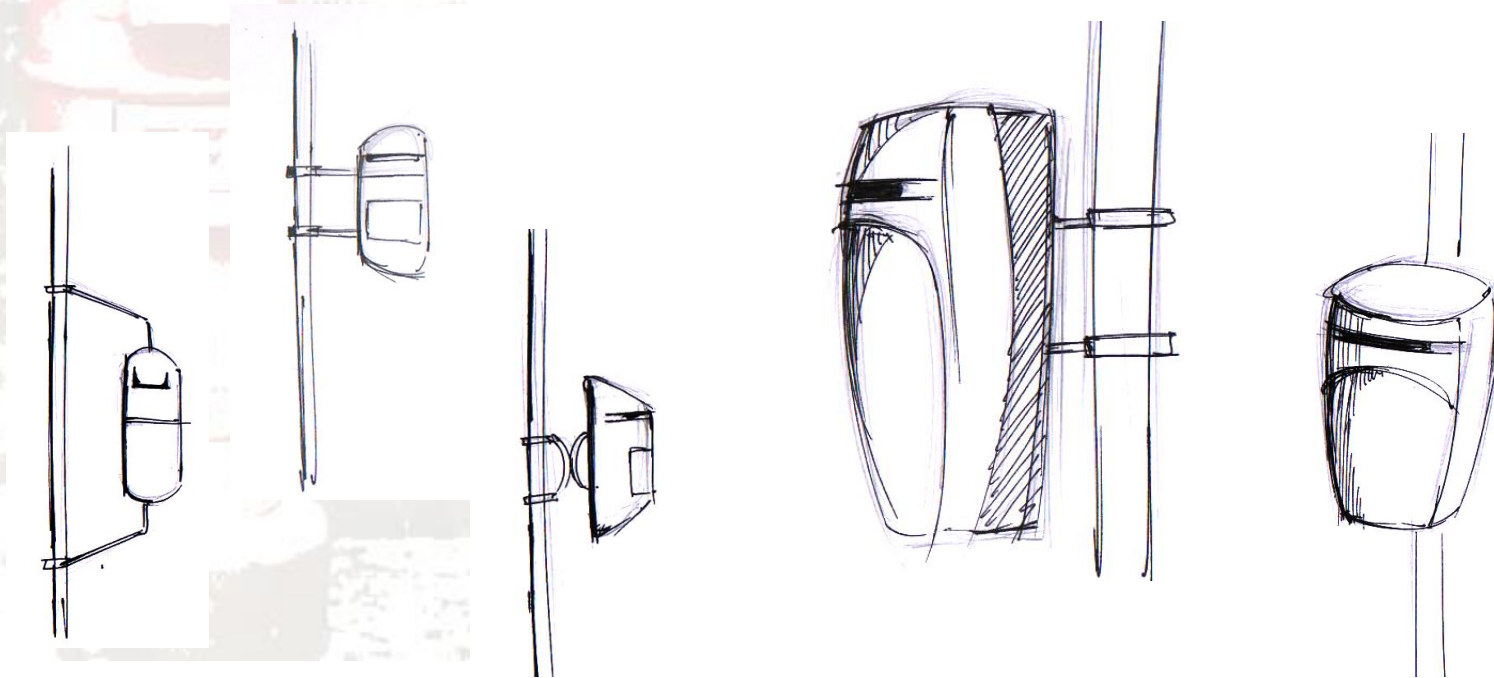
In the case of electric poles the boxes have the advantage of night visibility.

These poles are also on the road sides to have more light on the road.

Again these are much more in number so that choice of location can be done.



Poles are the most common structures and are equally available at village levels.



The sheet metal boxes construction people don't care about functional effects due to very small defects in manufacturing. The TV type boxes is an example.





The letterboxes are fixed within a cement base so as to give structural **stability and security**. The fixing of the box at one place makes it compulsory to have all the further **maintenance on the spot** only.

This means the maintenance people have to carry the required material, tools and workshop facilities with them to each and every letter box location.

This fact eliminates many of the maintenance options like welding, precise cutting. Thus only surface treatment is possible.

The quality of the maintenance work is inferior.

The proper coloring cannot be done at the outside in the open environment.

Modular and removable fixing with base can be a solution.

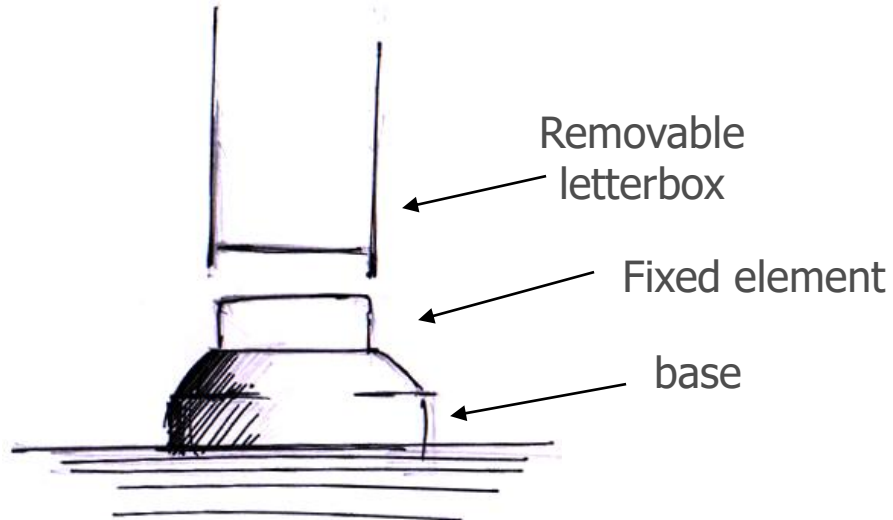
A permanent part will be fixed to the ground. The upper assembly can be fastened to the base part and can be removed from the base for maintenance work.

The advantages of maintenance at factory

- quality of work is better.

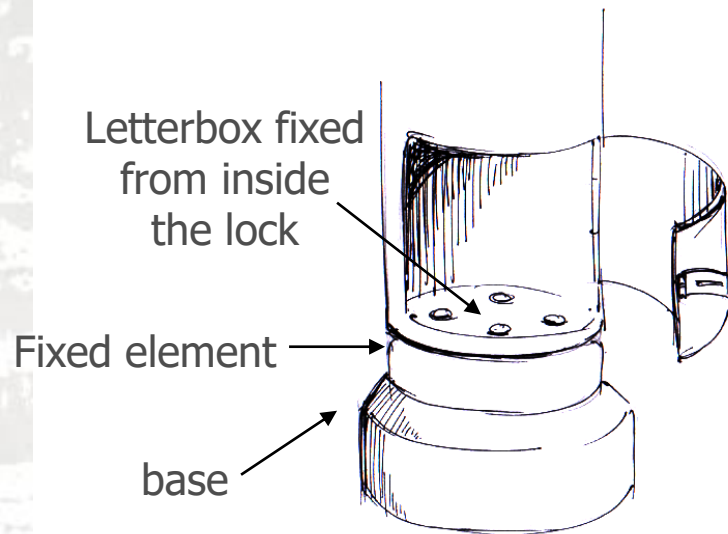
- advanced treatments and mass productions techniques can be implemented.

- proper quality checking by inspectors is possible.



Fixing of the box to the base part can be from inside the lock.

The detaching is possible only for post people.
The fitting elements are protected from weather.
As the fitting is secure it can be less complex.



4.3 Product Brief :

1. Letter boxes should be in two sizes
 - Smaller sized can be fitted on walls/poles or placed on pedestals.
 - Large boxes installed at 15 inch clearance from the ground.
2. The letterbox
 - should have a strong identity .
 - should reflect a modern new image for postal dept.
3. Materials and manufacturing
 - Using contemporary mfg processes and materials to make the letterbox weatherproof.
4. More comfortable letter collection process .
 - Guiding of letters in the bag should be easier.
 - Interaction with the box in rains should be comfortable.
5. The letterbox should display following information :
 - Next clearance timing.
 - Post office authority
 - Contact number.
 - Reference no. of the box.
 - pin code number of region.

Preliminary concepts

Concept

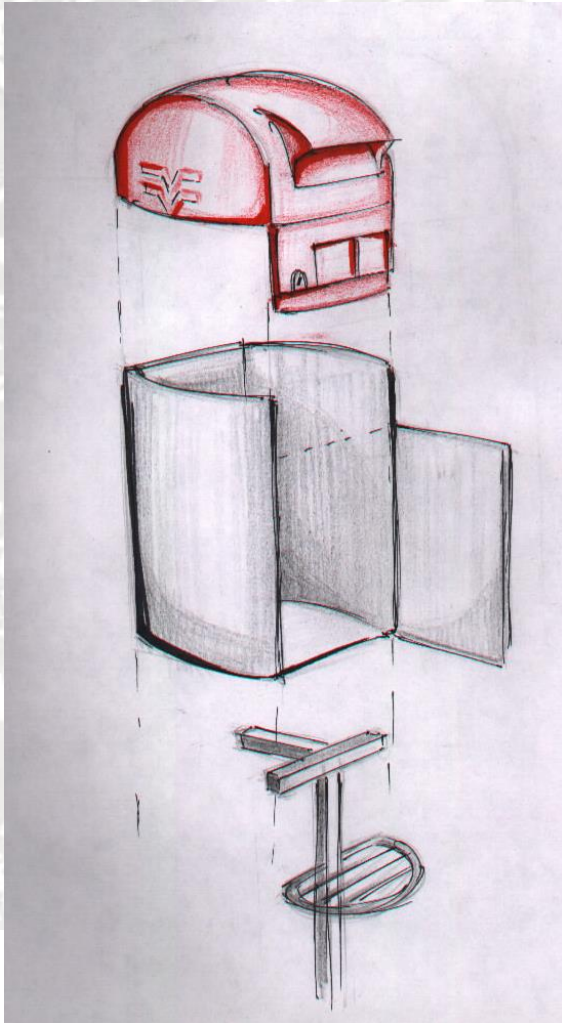
- Cap made in plastic
Common for both sizes
- modular construction
- lock and display
integrated in cap
- lock stationary



Plastic cap + plastic box

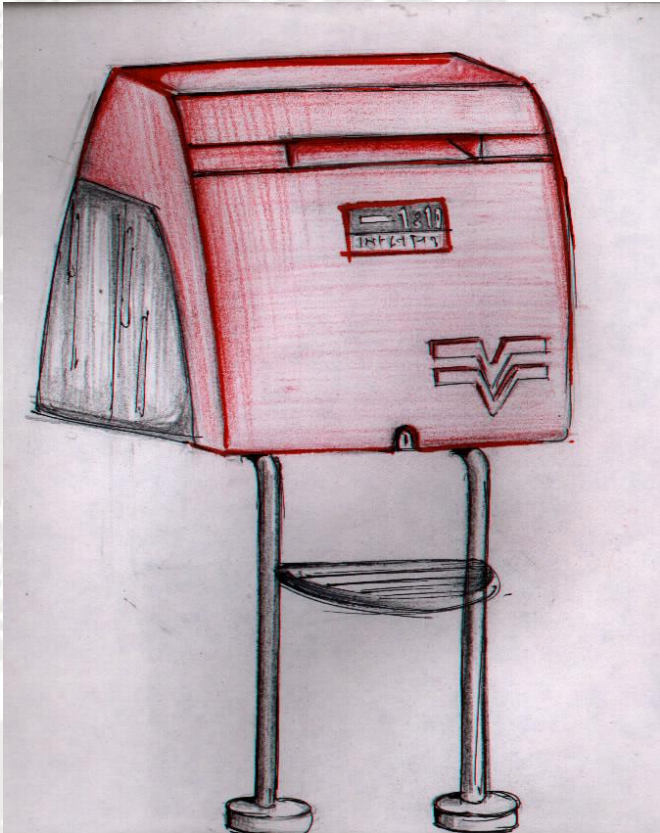


Plastic + sheet metal box



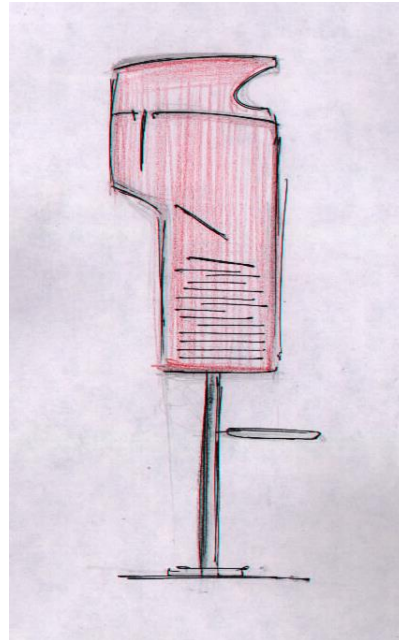
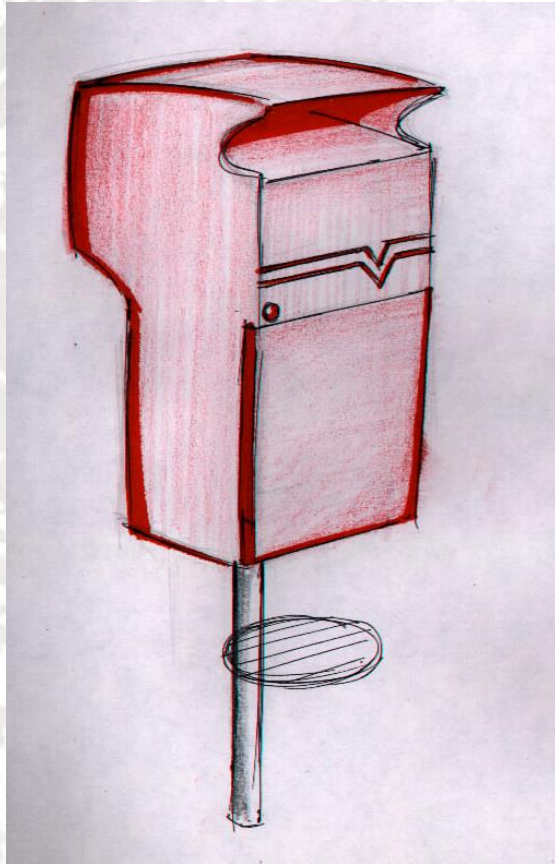
- plastic top providing a good sealing
- bag resting on provided rest surface
- easy letter collection process

Preliminary
concepts



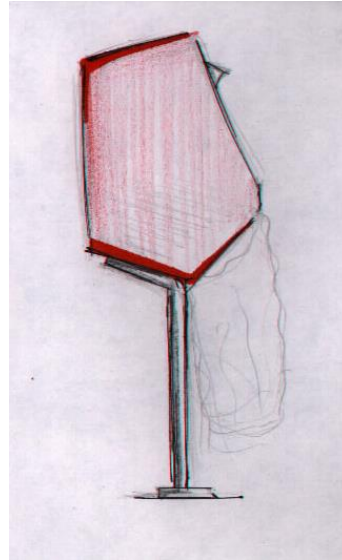
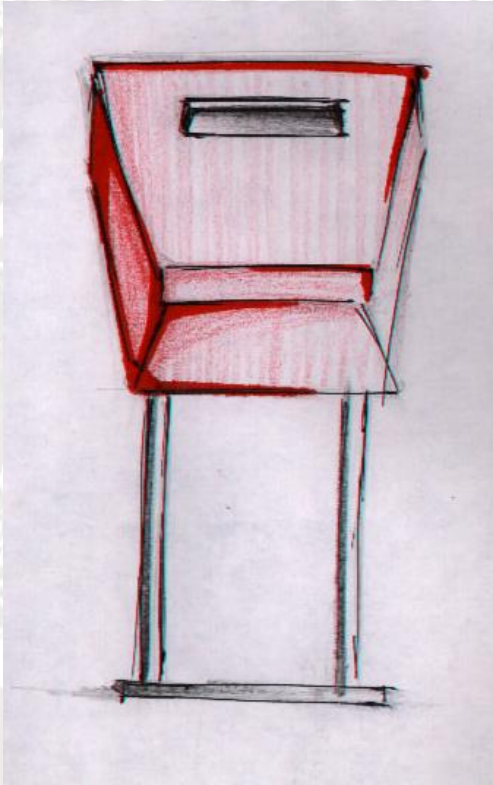
- Cap made in FRP
- full access to the box
- lock and display integrated in cap
- lock stationary
- bag resting on provided rest surface

Preliminary
concepts

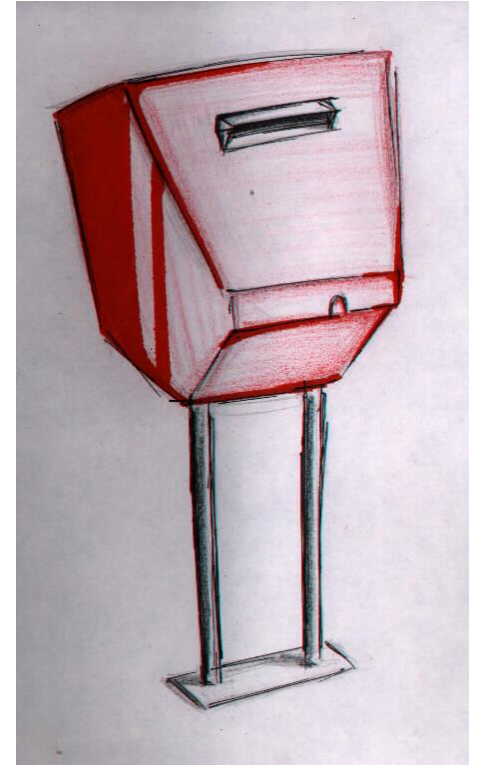


- from bank cheque collection box
- letters collected systematically
- bag resting on provided rest surface

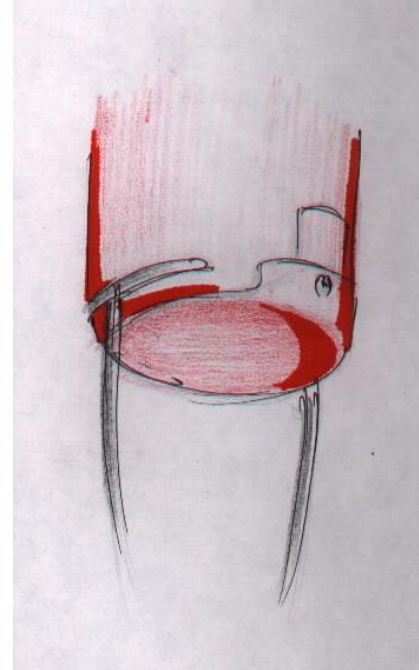
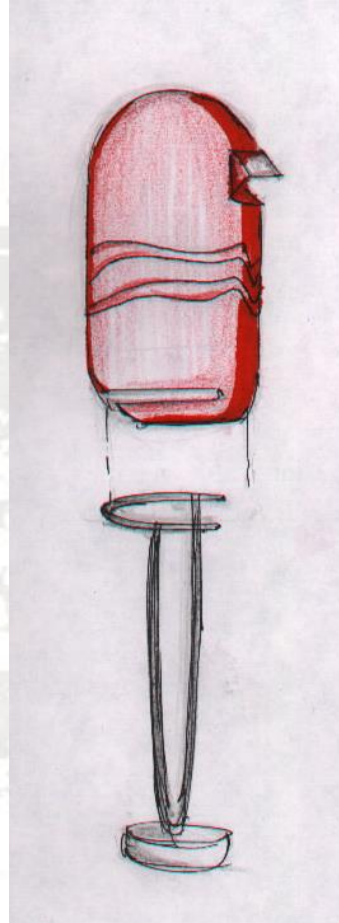
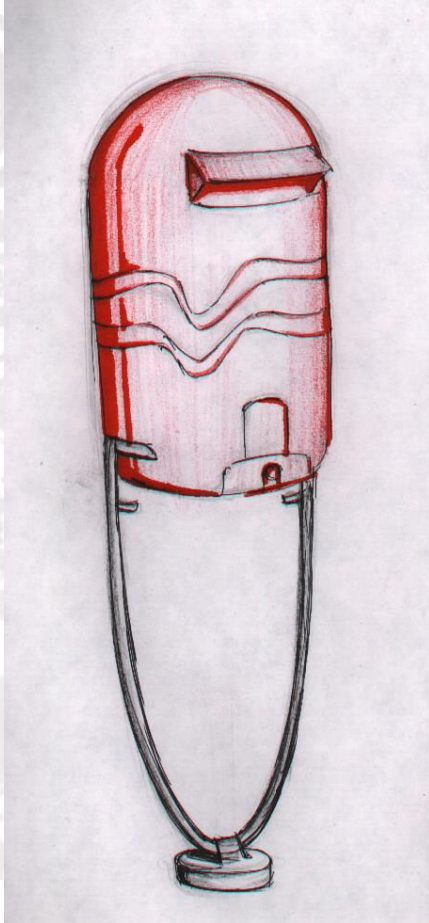
Preliminary
concepts



- provision for hanging the bag
- opening at bottom



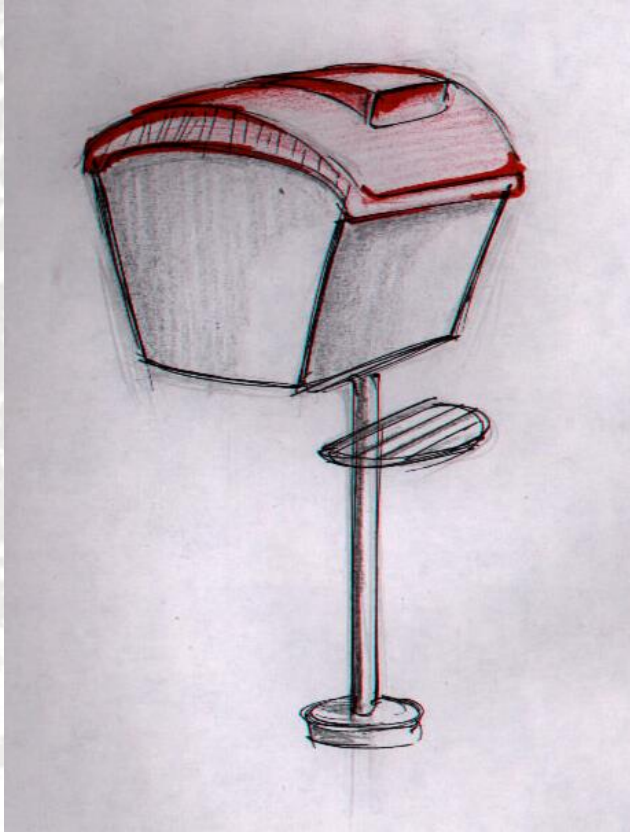
Preliminary
concepts



- provision for hanging the bag
- opening at bottom
- fully roto molded box.

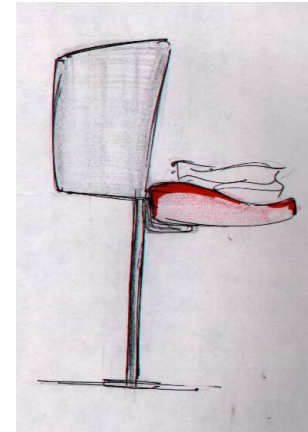
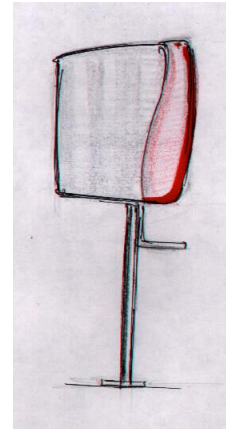
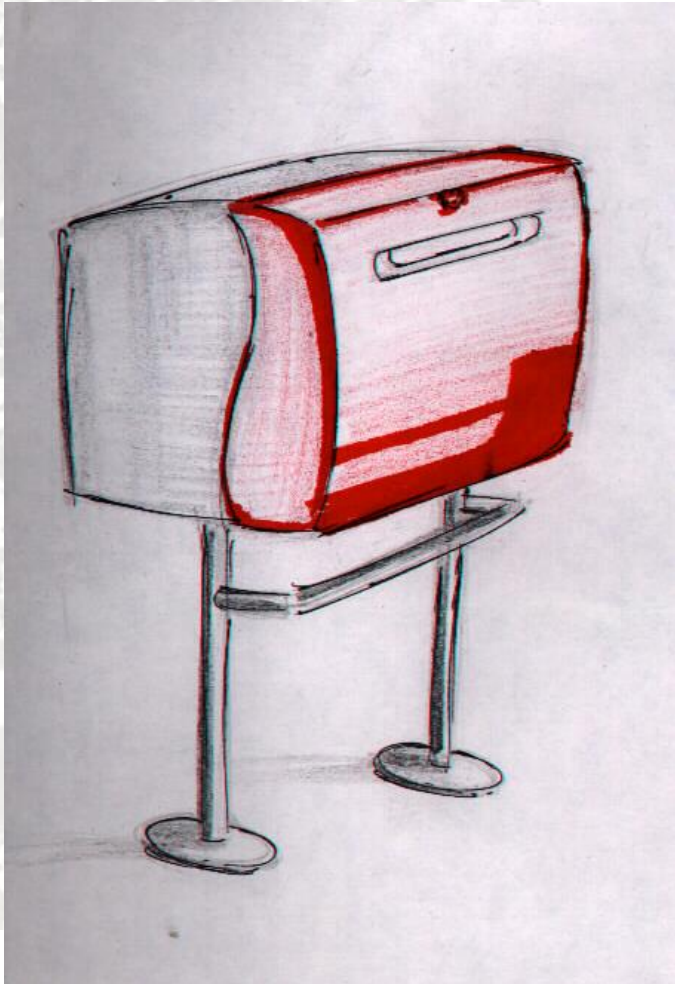
Roto molding
in plastic

Preliminary
concepts



- plastic cap opening upwards
- plastic cap providing a good sealing for the sheet metal box
- the box doesn't have any door

Preliminary
concepts



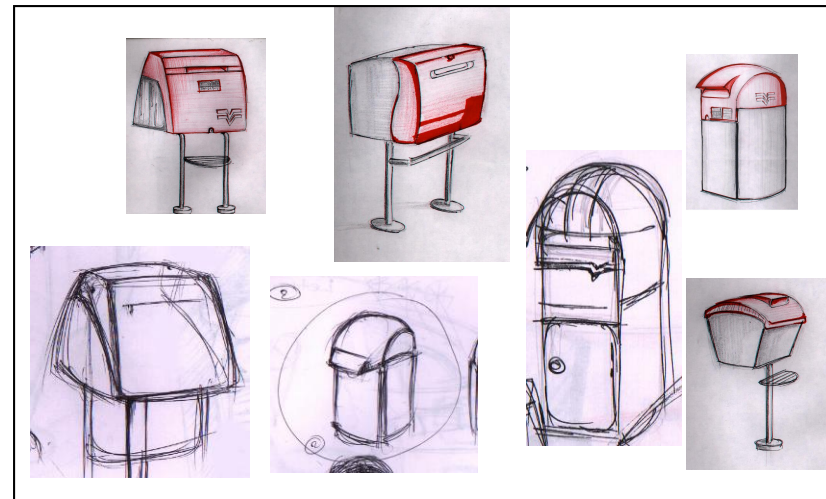
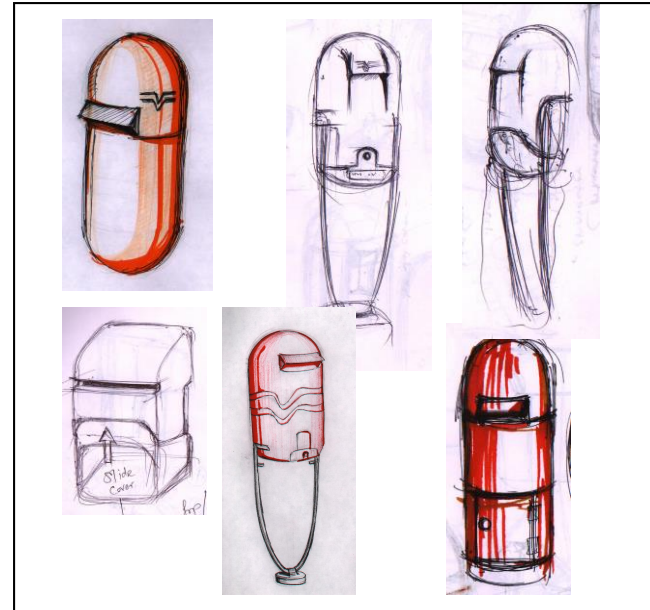
-plastic cap opening on front
side and providing a place
for the bag

clusters

Putting all similar concepts together and make a group

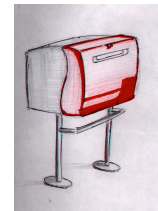
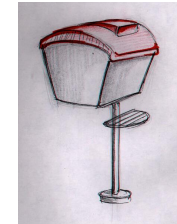
- maintenance free
- mfg processes

Plastic
Sheet metal
Mix

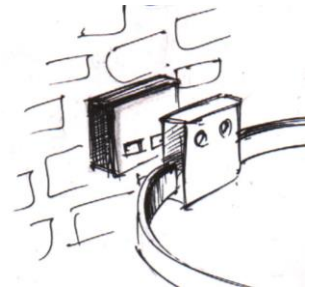
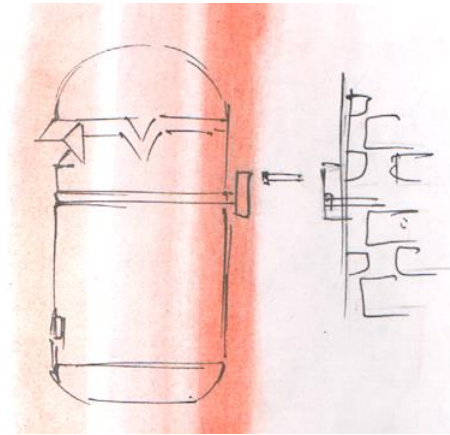
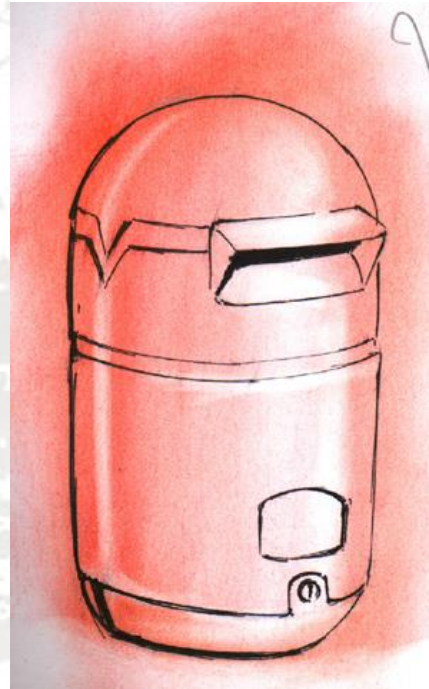
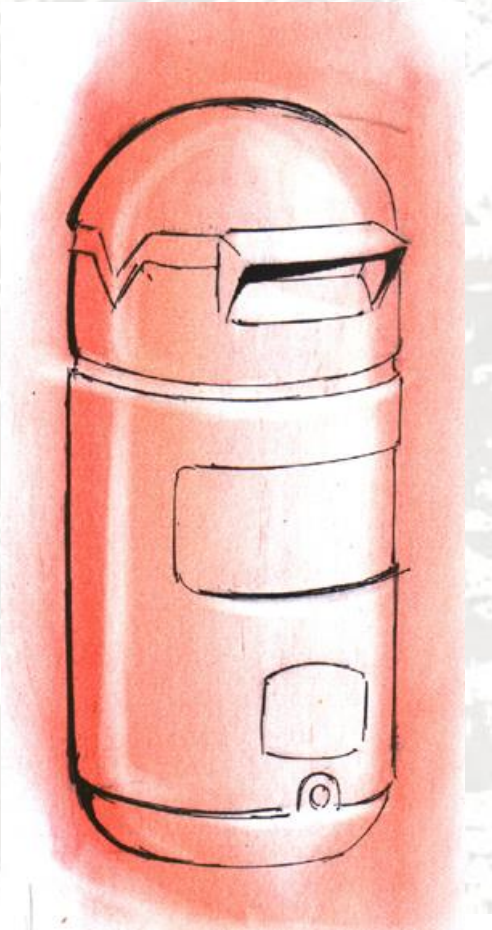


Integrating all the compatible points in a cluster
Into one concept

Combinations of different concepts to combine
all the good points into one concept

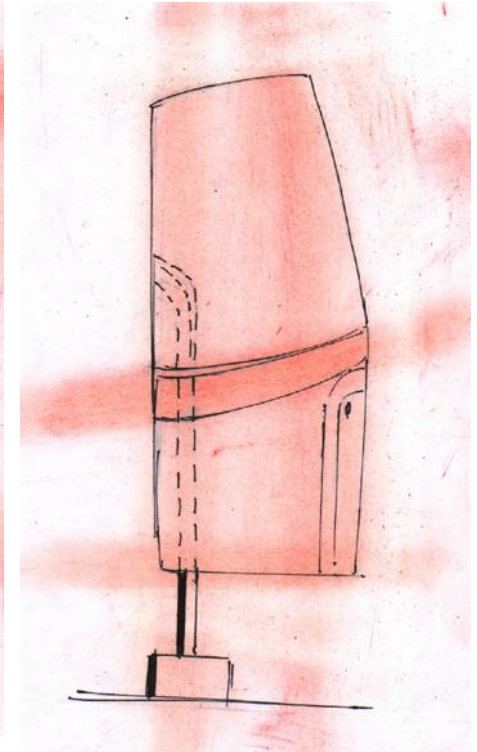
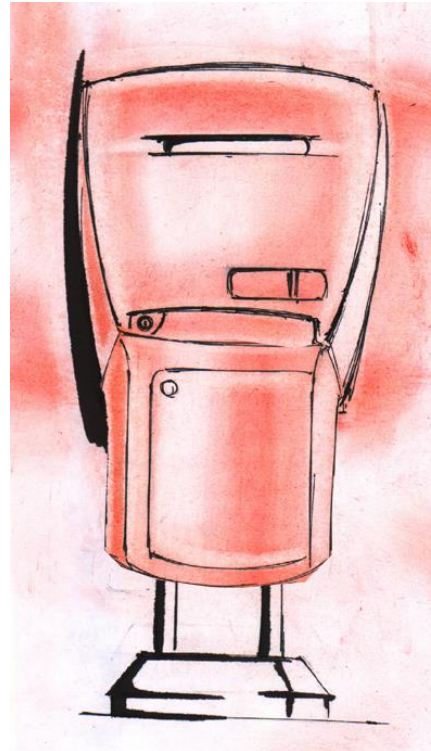
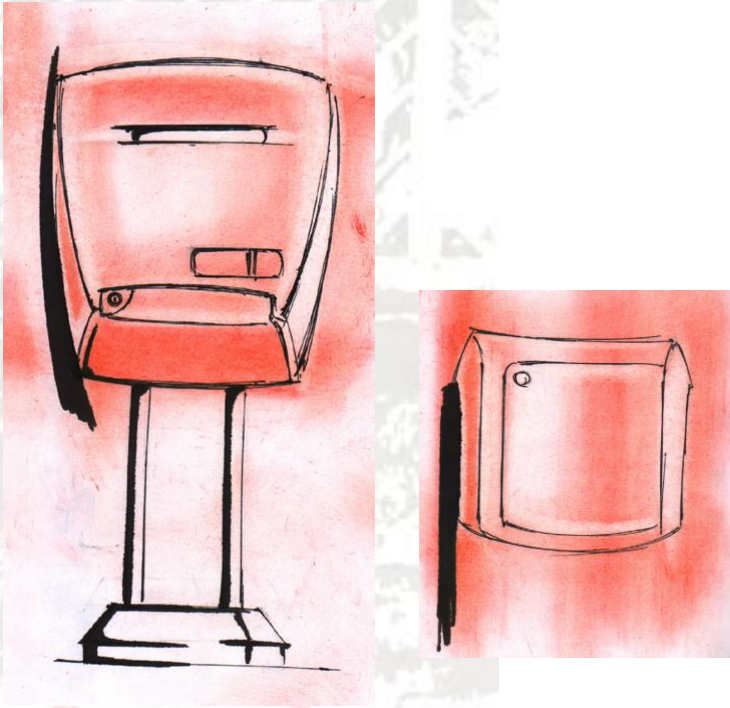


concepts



Common top
Completely in plastic
Suitable for roto molding
Collecting the letters from bottom
Derived from existing box

concepts



Completely in plastic -roto molding
Can be converted from small to large box
Collecting the letters from bottom - when small box
from door -when large box

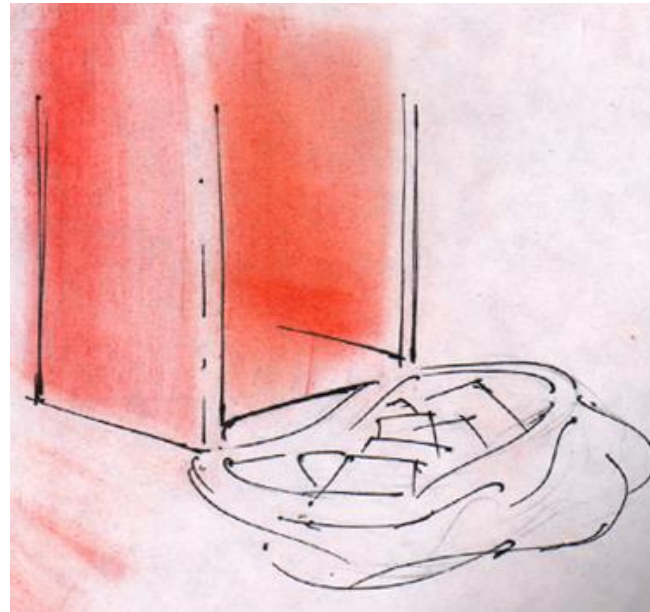
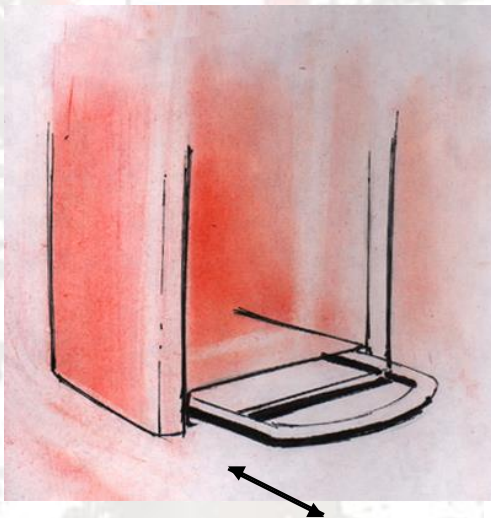
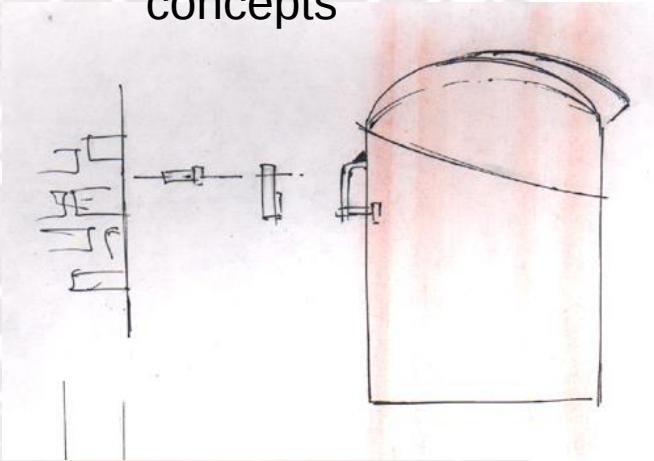
concepts



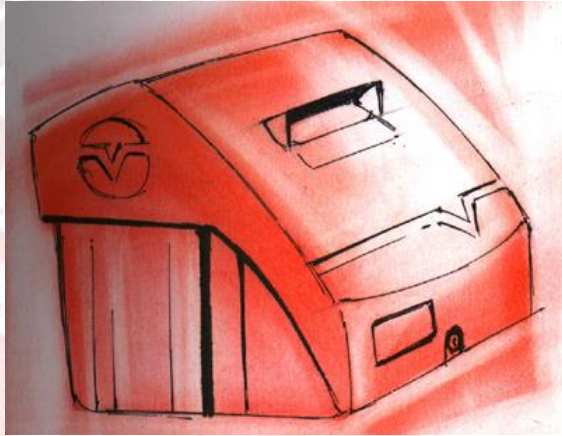
Common top made in plastic
Box made in sheet metal
Collecting the letters from front
Door
Proximity with existing box

concepts

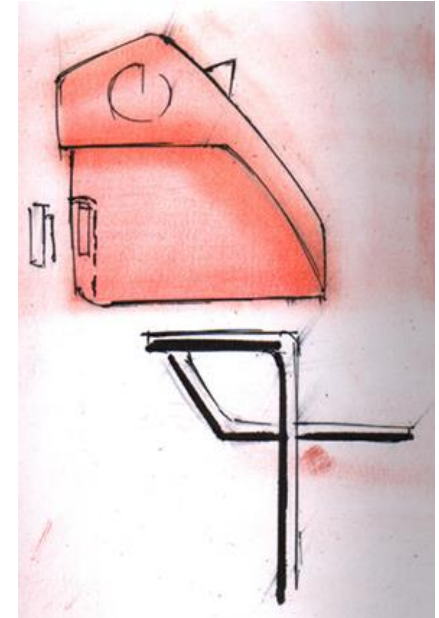
Bottom sliding frame as support for bag



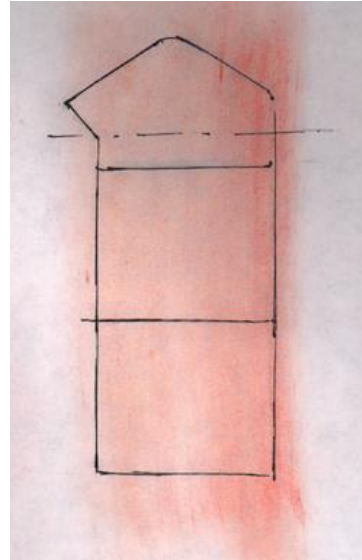
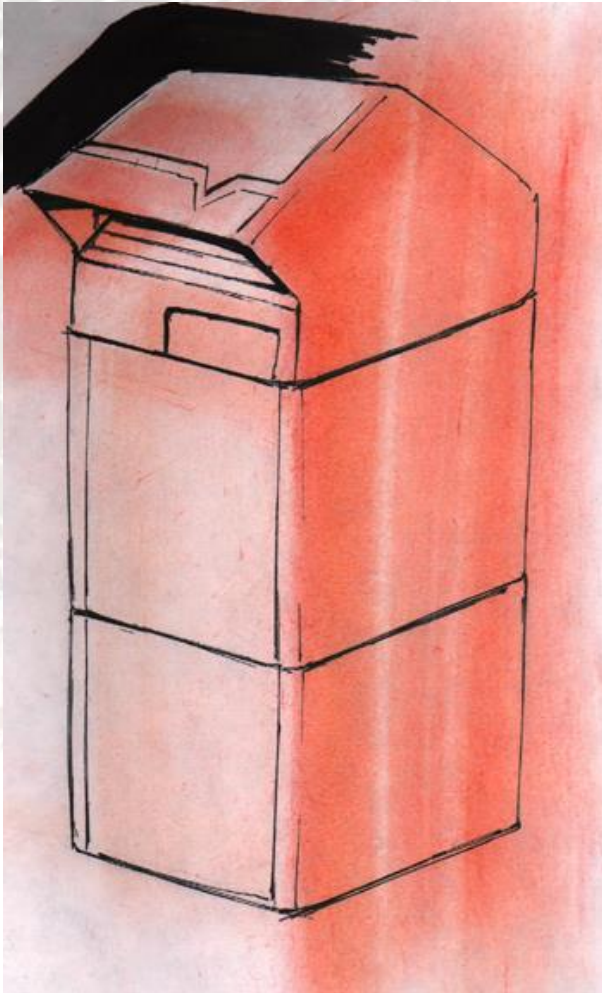
concepts



Plastic cap enclosing all joints
Not modular
Complete access to letters

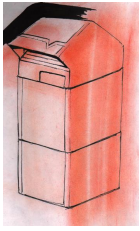


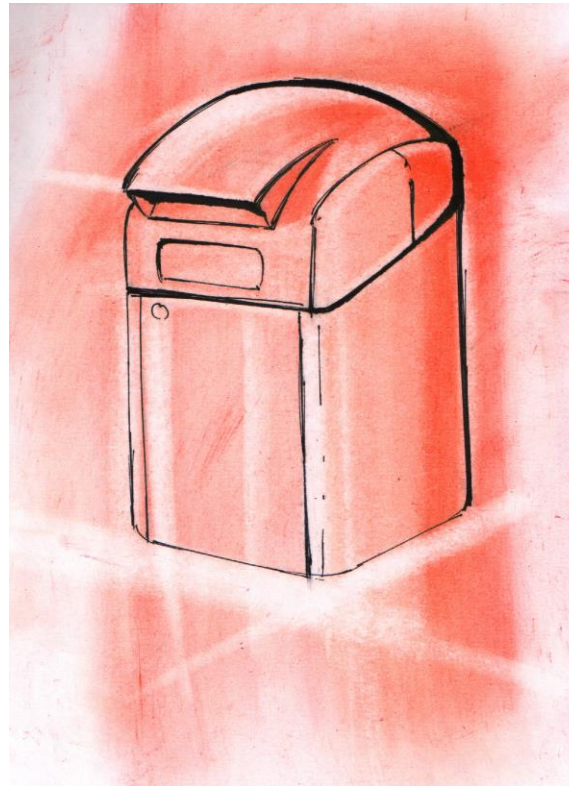
concepts



Sheet metal construction
with sheet metal cap
Simple design
modular

Evaluation

				
Longevity of product Robust detailing Finish and repainting Modular design User convenience Cost of product Weather ability (insulation from envn.) Unique identity Perception as letterbox	- how long the product can sustain - how much robust detailing can be done - what finish and for how long - how well modular is the design - easy interaction - overall cost (including investment) - insulation from environment - different from surrounding - image of letterbox			



Materials

- Use of SS or powder coated MS for the box
- Cap made with deep drawing / roto molding or FRP
- Supported on cement base and steel box.



After the discussions at the time of third presentation, The option of making the common top in metal was also kept open.

As vandalism can be a major problem plastic or FRP top may not hold a good option compared to a deep drawn top.

The basic box was fixed to a square size and the dimensions were fixed.

1. Square box is a quite common structure to make the box different. a generous radius is provided at the corners .

2. The Two sides of the boxes are made with of large radius. giving a sense of protection and care from both sides.

considering the complexity and matching of the cap with the basic box the square box with corner radius was finalized.

As the basic structure of the box has to be simple, the form of the cap was going to dictate the overall statement of the letterbox.

Different variations of the cap were tried out.











The cap will be made in tow parts.

1. The basic cap element will be done with deep drawing in sheet metal and
2. 2. The front complex part which will host all the elements i.e.
 - The stationary lock.
 - The space for display.
 - The sheet metal edges protection which will cover all the sharp edges of the cap .

The part can be made in polycarbonate with injection molding.

The part will fit in between cap and the box.



