RAILWAY INFORMATION SYSTEM

By

JAIDEEP SINGH ARORA

R109231005

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IN

TRANSPORTATION DESIGN

Under the guidance of

Mr. Niren Parsai
Assistant Professor
School of Design Studies
UPES, Dehradun

Manas Ranjan Mishra
Head of Department
School of Design Studies
UPES, Dehradun

By

Jaideep Singh Arora
Enrolment No: R109231005
SAP ID: 500026874

University of Petroleum and Energy Studies, Dehradun

DECLARATION

I hereby declare that the project work entitled "Railway Information System" submitted by me in partial fulfilment of the requirements for the award of the degree of Master of Design (Transportation Design) at School of Design Studies, University of Petroleum and Energy Studies was carried out by me during 15 Jan 2015 to 16 April 2015 at "University of Petroleum and Energy Studies, Dehradun" under the supervision of "Mr. Niren Parsai, Assistant Professor".

Date: Sign:

Place: Name: Jaideep Singh Arora

                                                                   SAP ID: 500026874

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ABSTRACT

'Railway Information System' is actually a whole system which interacts with all the passengers and the people who use the service of Indian Railways in any manner. It maybe the parking sign outside the station to the complete IRCTC website which is used for ticket reservation, or even a mobile application.

The project started with a brainstorming session and was followed by extensive research at different stations, inside various trains and classes, and also among users. Many problems came into light which are faced by everyone on a daily basis. These problems occur to the people who come on station to book a ticket, to drop/pick someone, or to the one who is travelling in a train.

Solution began with setting the standards for the whole system so it can be applied anywhere in the country to any station. But in this project, it has been designed for New Delhi Railway Station. Everything has been kept simple and minimalistic so everyone is able to understand it easily and quickly and there's no need to ask anyone for any further details.

LIST OF FIGURES

INITIAL DESIGN BRIEF

To communicate all the necessary and important information on the railway station and in trains to the passengers.

Fig. 1 Inside Duronto Express

Fig.2 At a station

OBJECTIVE OF THE PROJECT

Indian Railways is one of the World's largest railway network. More than 23 million passengers a day (roughly half of whom are suburban passengers) use this service. The trains have a 5 digit numbering system and 12,617 passenger trains run every day. There's a lot of information which is shared in this process. Right from the moment a person enters a Railway Station, the whole system communicates with him. This maybe verbal or nonverbal. This information, which a person uses to make his travel easier and comfortable, is really important. And it should be very simple and direct so that everyone is able to understand it.

The **objective of this project** is to provide the passengers all the information regarding the facilities, enquires, offices etc. on the station and the information which is required while he is travelling in the train.

OUTCOMES OF BRAINSTORMING

This was the first stage of the project where the motive was to think of as many problems as possible which are faced by a passenger. A random traveller was taken into consideration and his travel was mapped right from the point he arrives at station, to the whole course of his journey and till the point he exits the station. Many problems came out and are listed below.

Following are the things whose information should be there at station:

- Stations entry/exit
- Parking location and charges
- Location of Reservation centre
- Clock at all places
- City Map
- Station Layout
- Tourist Spots
- Porter location and charges
- Train number, train name, platform number, arrival, departure
- Emergency Helpline Numbers
- Location of waiting rooms and restrooms
- Location of food joints at station
- Availability of drinking water

And following are the things whose information should be there inside the train:

- Last station, next station, current location
- Clock
- Charges for items in pantry
- If washroom is occupied or not
- Helpline Numbers
- Contact of Guard, TT or RPF
- Food joint at stations
- Reservation chart

OBSERVATIONS AT DIFFERENT STATIONS

During this research part, Pune main Junction, Shivaji Nagar (Pune) Station, Mumbai Central Junction, New Delhi Railway Station and Old Delhi Railway Station were visited.

Fig.3 Display board outside Dehradun Railway Station

Above board is seen outside the Dehradun Railway Station. The broken boards are not repaired at time and causes miscommunication to the people, may it be passengers or a person accompanying them. Also, ADs are placed above these important sign boards and information gets hidden. This scenario is scene at lot of places and no action is taken against them.

Fig.4 Display board outside Dehradun Railway Station

Here also it can be seen a sign board is there outside Dehradun station and it is hidden by trees. Though it's a natural phenomenon and no one supports cutting trees, but then at least the board should be at such a location that these problems do not occur and everything which is written on the board is clearly visible from all angles.

Fig.5 Police Station outside Dehradun Railway Station

Even the board outside police station is not maintained properly, which is very shameful for the respective people.

Fig.6 ADs outside Dehradun Railway Station

These big hoardings which can be used to display many important information meant for the passengers are used to ADs which are not even so useful for this location. But just for the revenue generation and money purpose, all this opportunity goes into vain.

Fig.7 Board at Dehradun Railway Station

Though these boards are meant to be seen from close distance but not everyone comes close enough to read such a big pile of information. There are so many things written just on a single board that to find what you're looking for is a task, and it's not even sure that you'll find because you don't know what everything is there. And, there's no light behind it or around it so it can be seen at night also. Only the nearby lights which are in the premises make it visible, but not clear enough that it solves the purpose it's meant to do.

Fig.8 Digital Board at Dehradun Railway Station

These boards which display the information in digital form are installed in the booking hall of the station and as it can be seen, they don't work at all.

Fig.9 ADs outside Pune Railway Station

These small boards are present in huge numbers outside many stations and all one can see is same AD just copied on every board. It's such a waste of resources which can used to give a better output.
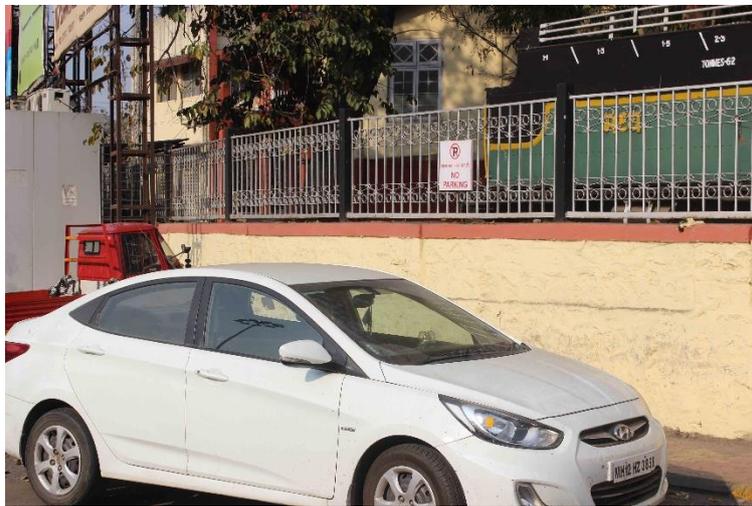
Fig.10 No parking board outside Pune Railway Station

Fig.11 No parking board outside Pune Railway Station

Fig.12 No parking board outside Pune Railway Station

Fig. 8, 9 and 10 are from the Pune station. It shows that no matter how many 'No Parking' signs government puts, people are still not going to follow it. So another measure is required where people follow all these rules properly.

Fig.13 At Pune Railway Station

This is just an example of many cases which can be seen at stations. Many important information, just like shown above, is either hand written or printed in such a casual manner that not everybody tends to see or understand it.
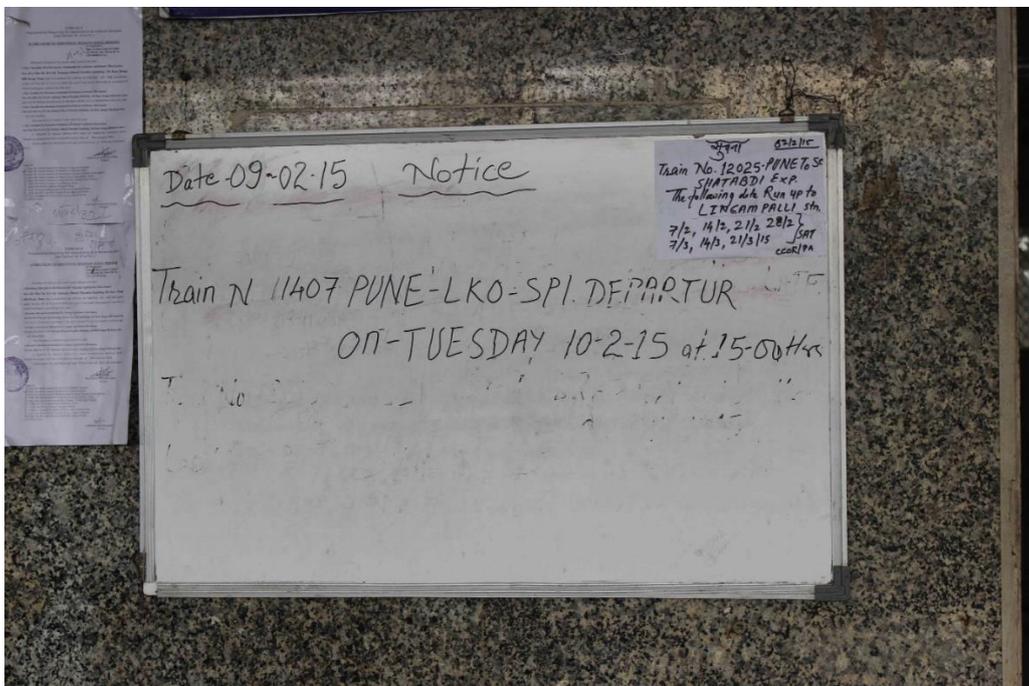

Fig.14 At Pune Railway Station

At many places, important information like this is handwritten and displayed in a lame manner.

Fig.15 At Pune Railway Station

Picture shown above tells the same problem as it was mentioned in the similar type of picture above. Information is congested, and low visibility.

Fig.16 Digital board at Pune Railway Station

The glare on these display boards are also a problem. So if you've to see your train information you either have to bend down or rise up or move yourself to avoid the glare and see the information.
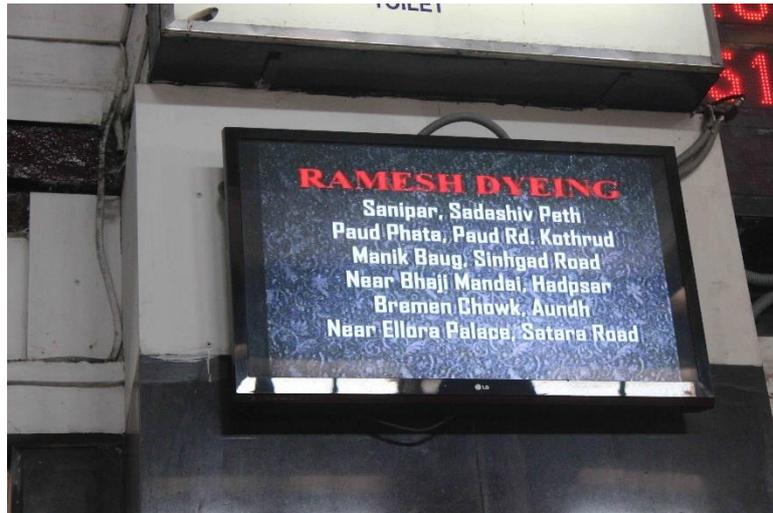
Fig.17 TV at Pune Railway Station

TV like the one shown above are now installed in many numbers on the station. They're used to display the live info of trains. But they are also used to display ADs like this which destroys it's whole purpose of being installed.

Fig.18 TV at Pune Railway Station

Again the same problem with TVs and ADs shown above.

Fig.19 Boards at Pune Railway Station

Fig.20 Boards at Pune Railway Station

Both of the photos shown above are from the same station and from the same foot over bridge but there's no standardisation in any of them.

Fig.21 Clock at Pune Railway Station

Fig.22 Clock at Pune Railway Station

Time in the clock at stations is not visible from all angles.

Fig.23 Display board at Pune Railway Station

Above board is not visible at night time and also it is put up so casually.

Fig.24 Night time at Shivaji Nagar Station, Pune

At night time, the edge of the platform is not clearly visible and there exists possibility that someone may fall down. Some marking or warnings should be there at these palces.

Fig.25 Night time at Shivaji Nagar Station, Pune

Small stations like these should have a warning sign about the local criminals present at the end of the platforms.

Fig.26 Foot over bridge at Shivaji Nagar Station, Pune

Fig.27 Foot over bridge at Shivaji Nagar Station, Pune
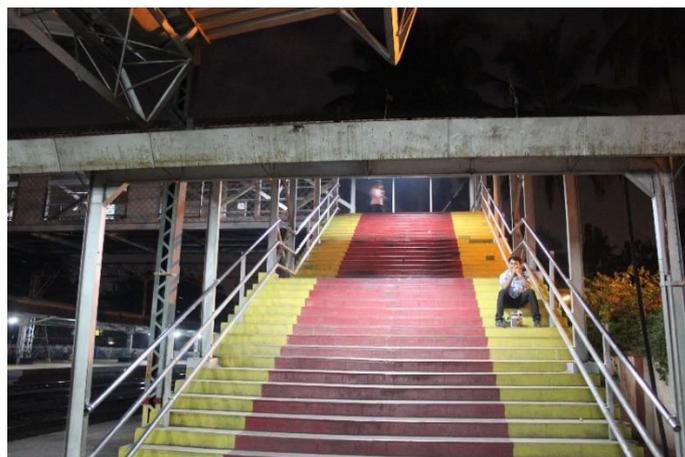
Fig.28 Foot over bridge at Shivaji Nagar Station, Pune

Above pictures are again from Shivaji Nagar station at Pune. Foot over bridges at small stations like these don't have any signs at their entry/exit and also on the path above. There's no information about the direction of different platforms and arriving/departing trains.

Fig.29 At Mumbai Central
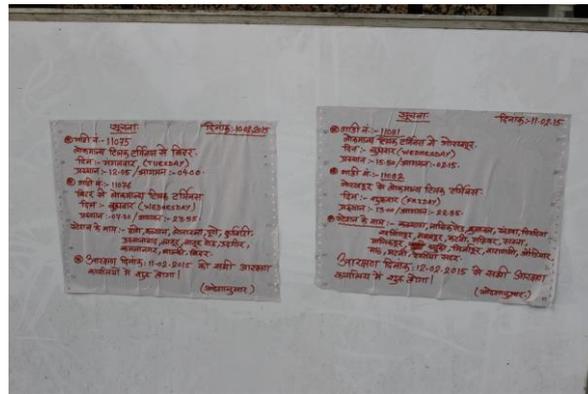
Fig.30 At Mumbai Central

Again important information like Tatkal ticket details etc are written casually by hand.

Fig.31 Platforms of Mumbai Central

There platforms of Mumbai Central have no information whatsoever. It seems like no information is necessary, this is the kind of negligence there from the officials.

Fig.32 TVs at Mumbai Central

There are so many TVs which are meant for information display but none of them work. If this is the scenario at big stations like Mumbai Central, then imagine the situations at small stations.

Fig.33 Digital board at Old Delhi Railway Station

This is at Old Delhi Railway Station where glare can be clearly seen on the display board meant for railway information.

Fig.34 Digital board at Old Delhi Railway Station

Non-functioning boards at Old Delhi Railway Station.

Fig.35 At Old Delhi Railway Station

Fig.36 At Old Delhi Railway Station

At stations with multiple entries and exits, new people often face difficulties as to which way to go. Only thing which helps is the direction of metro station but that is still not sufficient.

Fig.37 Reservations chart board at New Delhi Railway Station

Reservation charts are either not present of they are torn off which makes many people helpless.

Fig.38 Outside New Delhi Railway Station

Here the board of station is overlapped by another board of railways.

USER SURVEY

In this process, different types of users (male, female, young, adult) were interviewed and in some cases, just their actions were observed silently.

1. USER 1

Gender: Male   Age: 60+

Location: At Old Delhi Railway station

Observations:-

- Unable to read the board which displays the train information

- Dependent on either family member or random people at station

2. USER 2

A Marathi Family

Location: At New Delhi Railway station

Observations:-

- Language is a barrier when it comes to reading the displayed information or asking someone

- Problems are faced while booking a ticket or catching a train

3. USER 3

Gender: Female   Age: Around 22

Location: At New Delhi Railway station

Observations:-

- Passengers from some other city don't know about the station layout

- They don't know about different entries or exits of the station, reservation counters or waiting rooms etc.

- Lack of information regarding travel inside the train

4. USER 4

Gender: Male   Age: Around 22

Location: At Hazrat Nizamuddin Railway station

Observations:-

- No mention of 'No Parking' in the station premises and still Policeman fines the Biker or a Car Driver

- No fixed place for getting a porter. Have to look around to find one.

- Lack of information regarding travel inside the train

5. USER 5

Gender: Female   Age: 64 and 72

Location: At Mumbai Central Railway Station

Passengers were from South Africa

Observations:-

- Unaware about different stations, booking methods, different trains

- Language is a BIG barrier

6. USER 6

A Policeman

Location: At Shivaji Nagar Station, Pune

Observations:-

- No warnings about the local criminals who may harm a passenger

7. USER 7

A Policeman

Location: At Mumbai Central Railway station

Observations:-

- People are unaware about the facilities available for Disabled people

- They don't know about the medical facilities provided at the station

- Many people don't know how the ticket is booked, what information is required, where to get the forms, which window is for what etc.

PROBLEM IDENTIFICATION

- There is no standardised way of Information Display at various stations

- People are unaware of the facilities available at stations

- Due to corruption, the system is in a bad state and doesn't function properly

- The boards are not maintained properly and get damaged after a while

- The information of trains on the display boards is not visible from all angles

- On some clocks, time is not visible from all angles

- Reservation charts are either not present or torn off

- No station layout

- No City Map

- No information about the tourist spots at a station of a city with tourist attractions.

- Too many ADs are present on the station, instead of the important information

- An outsider faces problems when there are multiple entries/exits at a station

- No information of trains inside waiting rooms

- Passengers are unaware of the Vending Machines present at station

- At many places, handwritten information is there which is unreadable for many people

- Even big stations don't have any information at all on the platforms

- No warnings about the local criminals present at station who harm the people

- Absence of parking signs and train information outside small stations

- Some important information like Helpline Numbers or notice about missing persons is on posters which get torn off

- Some display boards have light bulbs inside them, so when it gets fused the information is not visible at night. And it doesn't get replaced due to carelessness of the staff.

- No information about different Foot Over Bridges and entries of the station

- No coach position information on the platform

- Passenger doesn't gets to know if the train has pantry until he asks someone

- No information about medical services, ATMs, food court or restrooms at station

- No information about the porter and parcel facility

- No travel information inside the train

- Absence of the contact number of guard, TT and RPF inside the train

- No contact number of station inside the train and on the station

- Overcharging by TT, train staff and vendors

- No system to find the correct station, entry, foot over bridge, coach position, platform etc.

- No information inside the train about any Food Joint at a station

- Absence of Reservation charts inside the train

- No clock inside the train

MAJOR PROBLEM AREAS

- There is no standardised way of Information Display at various stations

- People are unaware of the facilities available at stations

- An outsider faces problems when there are multiple entries/exits at a station

- Some important information like Helpline Numbers is on posters which get torn off

- No information about different Foot Over Bridges and entries of the station

- No coach position information on the platform

- Passenger doesn't gets to know if the train has pantry until he asks someone

- No information about medical services, ATMs, food court or restrooms at station

- No information about the porter and parcel facility

FINAL DESIGN BRIEF

To re-design the Railway Information System of New Delhi Railway Station in a standardised way so that it helps to solve the following problems to the passengers in a simple and minimalistic manner and everyone is able to understand it.

- Standardisation

- Unaware of the facilities at station

- Information of multiple entries/exits of station and Foot Over Bridges

- Information of Helpline Numbers

- Coach position information and availability of pantry car

- Information about medical services, ATMs, food court or restrooms at station

- Information about the porter and parcel facility

STANDARDISATION

Indian Railways has specifically decided and laid down the ground rules for all the signage and information display system on the stations. All the colours, font size, board size, board height, the placing of boards has been fixed and documented. But in this project the standards have been improvised.

8. COLOUR CODING

- **Yellow:** In almost every culture yellow represents sunshine, happiness, and warmth. Yellow is the colour most often associated with the deity in Hinduism.

- **Blue:** It signifies trust, strength, dependability, peace, intelligence.

- **Red:** It is the international colour for stop. It's used for warnings as it captures attention. It is one of the most visible colours, second only to yellow.

9. FONTS

The font which is used at every place is 'Open Sans'. Font size depends on board to board. It ranges from 48pt to 110pt.

Fig. 39 References. Board Size: 297mm*210mm Font Size Used: 48pt

PROPOSED DESIGN OF INFORMATION SYSTEM

This is the new proposed design for the New Delhi Railway Station.

Fig. 40

This is the board for the entry gate. Board Size: 500mm*150mm Font Size: 60pt

Fig. 41 Board Size: 297mm*210mm Font Size: 48pt

Fig. 42 Board Size: 297mm*210mm Font Size: 48pt

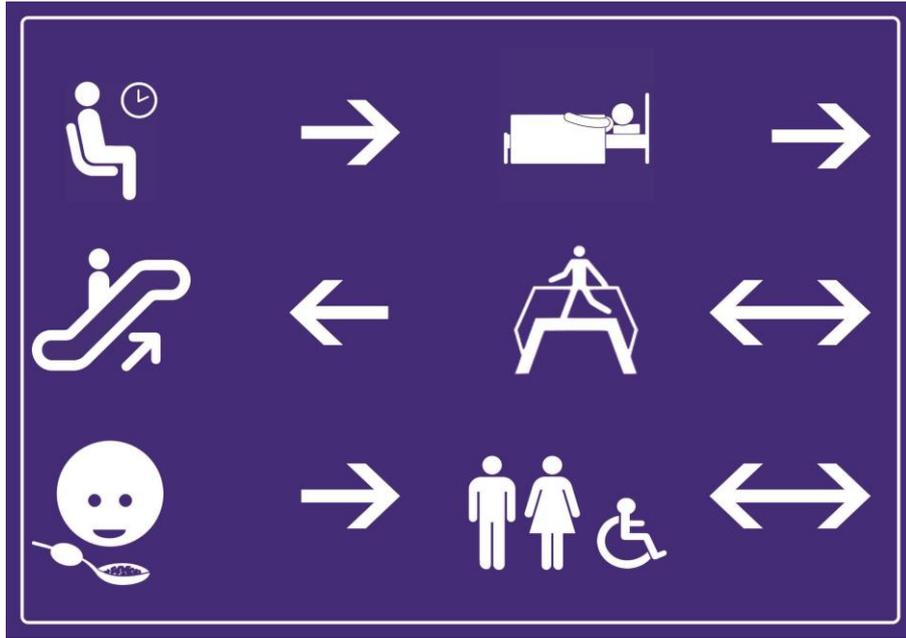Fig. 43 Board Size: 297mm*210mm Font Size: 48pt
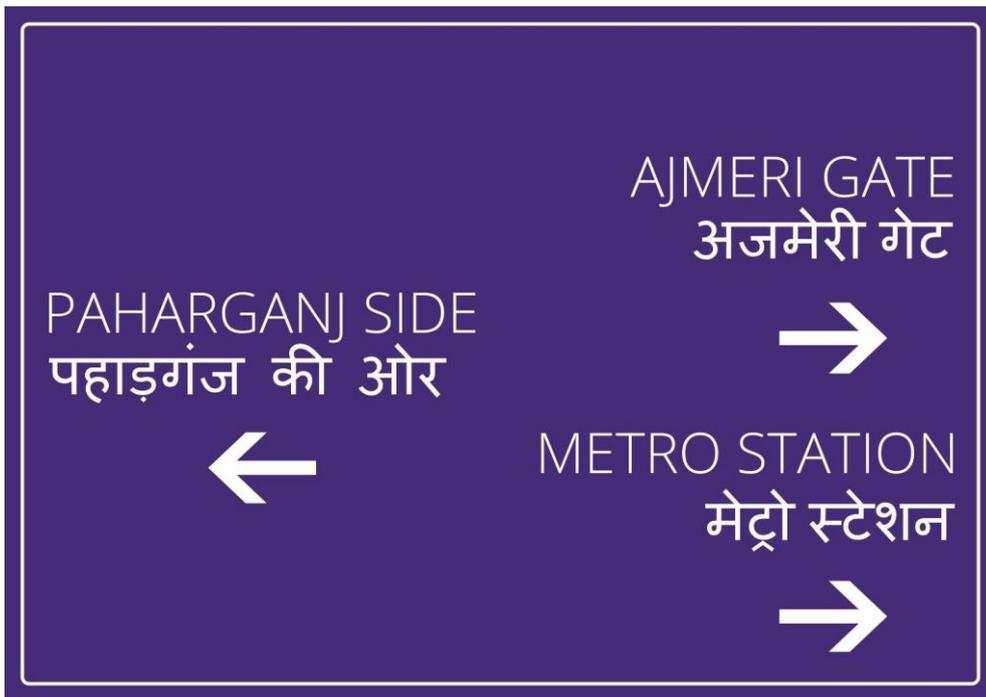
Fig. 44 Board Size: 297mm*210mm

Fig. 45 Board Size: 297mm*210mm Font Size: 48pt

Fig. 46 Board Size: 381mm*381mm Font Size: 110pt

Fig. 47 Board Size: 381mm*381mm Font Size: 110pt

Fig. 48 Board Size: 1016*762mm Font Size: 110 and 100 pt

Fig. 49 Board Size: 1143mm*381mm Font Size: 110pt

Fig. 50 Board Size: 381mm*381mm Font Size: 110pt

HELPLINE NUMBERS
हेल्पलाइन नंबर

|	
RAILWAY ENQUIRY रेलवे पूछताछ	139 011-23366177 011-23348787
RAILWAY POLICE FORCE रेलवे पुलिस बल	+919503013705 011-23303983
FOR WOMEN महिलाओं के लिए	1322
Automated Enquiry स्वचालित पूछताछ	1330 (English) 1335 (हिन्दी)
Centralised Railway Enquiry केंद्रीयकृत रेलवे पूछताछ	011-23366101
Train Running Position ट्रेन की चल स्थिति	011-23313535 011-23717171

Fig. 51 Board Size: 1016mm*889mm Font Size: 110 and 100 pt
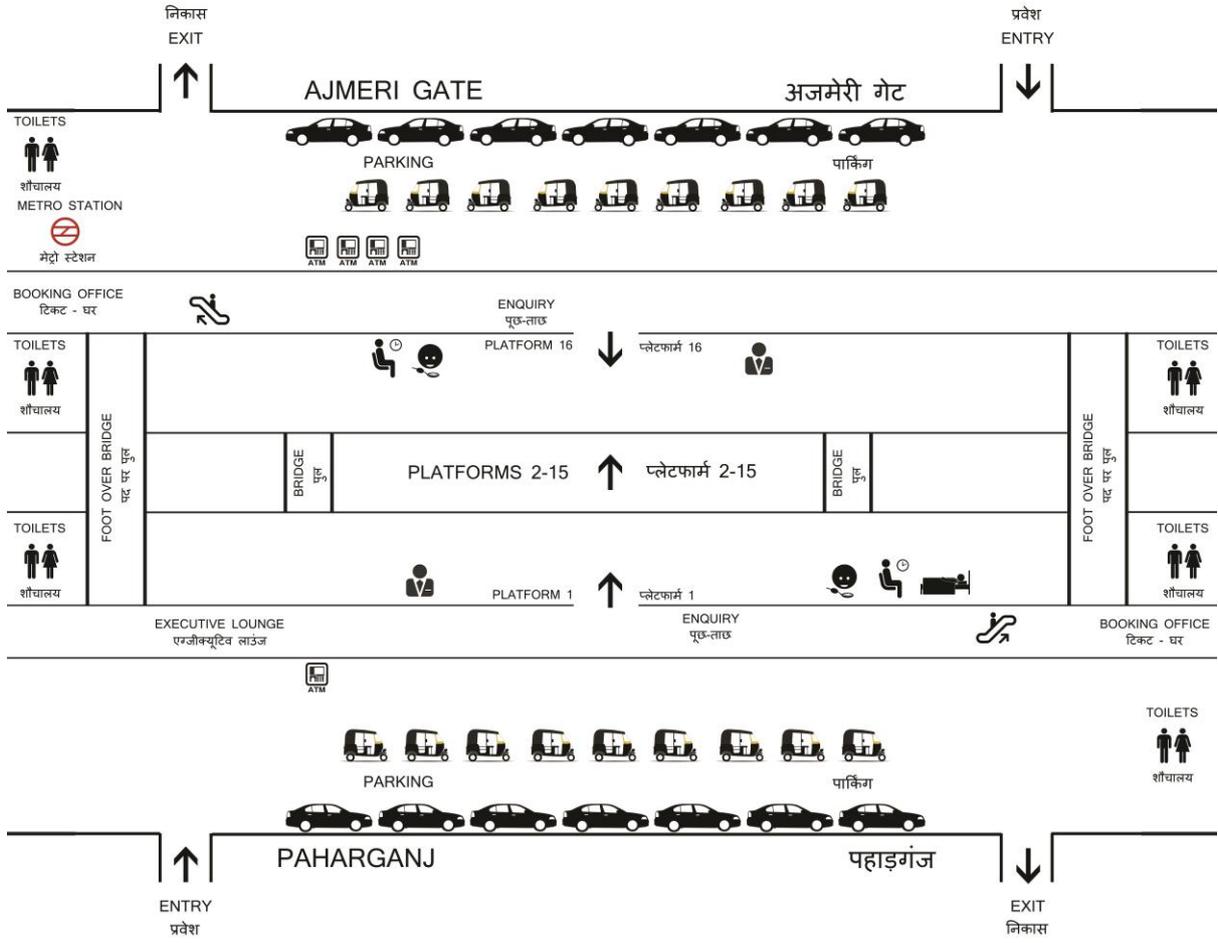
Fig. 52 Board Size: 1700mm*1500mm Font Size: 100, 60 and 48 pt

REFERENCES

Blue - The meaning of Blue. (2015). Retrieved from Color Matters: http://www.colormatters.com/the-meanings-of-colors/blue

Centre for Railway Information Systems. (2015, April 2). Retrieved March 11, 2015, from Wikipedia: http://en.wikipedia.org/wiki/Centre_for_Railway_Information_Systems

Express News Service. (2014, October 14). Railways Releases All India Helpline Number for Passengers. *Indian Express*. Retrieved from http://www.newindianexpress.com/states/tamil_nadu/Railways-Releases-All-India-Helpline-Number-for-Passengers/2014/10/14/article2477702.ece

Indian Railways. (2015, April 24). Retrieved from Wikipedia: http://en.wikipedia.org/wiki/Indian_Railways

MINISTRY OF MINISTRY OF RAILWAYS (RAILWAY RAILWAYS (RAILWAY BOARD). (2009, June). *MANUAL FOR STANDARDS AND SPECIFICATIONS FOR INDIAN RAILWAYS.* Retrieved March 5, 2015, from http://www.indianrailways.gov.in/railwayboard/uploads/directorate/land_amen/downloads/Manual%20for%20WCS%20(Vol%201-%20Main%20Report).pdf

PTI. (2012, Jan 4). Security helpline number '135' to come up for train passengers. *The Economic Times*. Retrieved from http://articles.economictimes.indiatimes.com/2012-01-04/news/30588830_1_rpf-railway-property-helpline-number

Railway Enquiry in Delhi. (2015). Retrieved from AllDelhi.com: http://alldelhi.com/railways.html

Railway Protection Force (RPF) – New delhi Address , Phone number , Website Details. (2012). Retrieved from Cusotmer Care Info: http://www.customercareinfo.in/railway-protection-force-rpf-new-delhi-address-phone-number-website-details-india.html

Red - The meaning of Red. (2015, March). Retrieved from Color Matters: http://www.colormatters.com/the-meanings-of-colors/red

Research Design and Standards Organization. (2015, April 2). Retrieved from Wikipedia: http://en.wikipedia.org/wiki/Research_Design_and_Standards_Organization

Staff Reporter. (2012, May 1). Railway police launches two helplines. *The Hindu*. Retrieved from http://www.thehindu.com/news/cities/chennai/railway-police-launches-two-helplines/article3371573.ece

Yellow - The meanings of yellow. (2015). Retrieved from Color Matters: http://www.colormatters.com/the-meanings-of-colors/yellow