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SLIDER FOOT-BRIDGE ON RAILWAY STATION

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ABSTRACT

This project is used for automatically close or opens the slider bridges in between the track trains. The slider bridge connects the two platforms through which the passenger can walk on the platform to reach on the next platform. Weight Sensors are placed on the two sides of track. If the train reaches one Weight sensor the slider bridge will automatically slide down and allows the train to go through the tracks and then when the train leaves the second Weight sensor the slider bridge will automatically open and join back the platforms. The microcontroller will sense the presence of train by using weight/infrared sensor. So on sensing the train on one path controller will give pulses to the stepper motor to close the slider bridge automatically.

According to http://wonderfulmumbai.com website 10 people die every day in railway accidents in Mumbai. 36,152 people have died and 36,688 injured on Mumbai's Suburban (Local) Trains, during 2002 to 2012. Important is out of those 36,152 deaths, 2/3rd accidents are occurred while crossing tracks one platform to another platform. And hence it is very important to design or adopt such a technology which will reduce this method of crossing the track. For this condition we are trying to give a solution to overcome this problem by providing automated foot bridge in between two tracks, so that people can pass the tracks easily without climbing and getting down, as this foot bridge can be provided on same level of platform, passengers will use this foot bridge for sure and result of which will be less or no death due to accidents occurring due to crossing of tracks with saving time. In 2000 decades, 1900 operational, movable bridges in the United States, including 750 swings, 270 vertical lift, 770 bascules & 110 other miscellaneous types of movable bridges constructed in US.

Keywords*— *Folding Foot-Bridge, Pedestrian Crossing, Platform, Railway Station, Slider Foot-Bridge.

I. INTRODUCTION

This bridge is provided at the railway station for passing people and goods from one platform to another platform .The bridge is made such a way that it is slide and can be open when there is required need of this bridge . It is open where as when the train arrives it is slide and close. The bridge is usually use when the passenger who is aged and can't be able to walk by steps at that time use is very useful. Secondary the heavy luggage's when there is need to transfer from one platform to another platform that time this bridge is very useful. This is the railway station in which as usual the track is present and the Station consists of the passengers standing as well as sitting on benches. And mainly the specialty of this station is that it is made up of bridge from which passengers & Goods can be transferred from one platform to another as most fast as same level.

And the bridge is made such a way that it is folded and can be opened when required. When there is need of this bridge it is opened where as when the train arrives it is folded and closed. The bridge is usually used when

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the passengers who are aged and can't able to walk by the steps at that time this bridge is very useful. This is the railway station in which as usual the track is present and the Station consists of the passengers standing as well as sitting on benches. And mainly the specialty of this station is that it is made up of bridge from which passengers & Goods can be transferred from one platform to another as most fast as same level. And the bridge is made such a way that it is slide and can be opened when required.

1.1 NEED OF SLIDER BRIDGE:

[1.] Save The Time Of Passengers: Mainly the specialty of this station is that it is made up of bridge from which passengers & goods can be transferred from one platform to another as most fast as same level.

[2.] Reduces the Accident: Slider foot-bridge reduces the accident.

[3.] Good for Safety of People: Easy for older people to passing from one platform to other platform. The bridge is usually used when the passengers who are aged and cannot able to walk by the steps at that time this bridge is very useful.

[4.] Transportation: Slider foot-bridge is easily transfer goods from one platform to other platform.

[5.] Easy Approach: Easy for coulee people to do work. And secondly the heavy luggage's when there is need to transfer from one platform to another that time as well as bridge is very useful.

[6.] Easy Access: Slider foot-bridge is easy accessible for old age and handicapped peoples.

1.2 OBJECTIVES:

As India is fast growing country we are trying to develop our transportation system to fulfill the need of population and as we knows train is one of the best mode of transportation to travel from one place to another, but when time comes to use this mode of transportation people are being irritated due to the crowd and the systems adopted at railway stations to reach on platforms from one to another. And to avoid the time consumption and efforts many of the people choose to reach the platform by crossing the track directly and due to this many of the time accidents occur and many of the people lose their life. footbridge isn't implemented anywhere in the India and abroad too. There are so limitations of foot over bridge as well as escalator. Footbridge will be provided easy way pass way to the passengers to pass one platform to another and directly affected drop off on accidents due to the peoples cross tracks directly.

1.3 THEME

The present railway systems in India are not automated but are working fully manmade. In railway stations normally we use foot-bridges. It is very difficult for the elderly persons or handicapped persons to use the bridge. Through this paper we would like to aware public about this slider bridge. Mainly the tracking of a train is sensed by weighted sensor, this is used for automatically close/open the slider bridge. Sensors are placed on two sides of track to sense the motion of train. The microcontroller will sense the presence of trains by using Weight/infrared sensors. So on sensing the train on one path, the controller will give pulses to the motor to close the slider bridge automatically.

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II. SYSTEM MODELLING:

2.1 SURVEY REPORT:

The Survey report shows following survey work which are taken by our group members which gives detail information about Aurangabad, Maharashtra, India railway station.

Table No. 2.1: Survey of Aurangabad Railway Station

Sr. No.	Description	Size
1	Width of platform	12.6m
2	Height of platform	1.0m
3	Height of electric wire from sleepers	5.8m
4	Width of 1st railway track (outer rail)	1.8m
5	Width between 2 platform	12m
6	Width between 2 track	6.5m
7	No. of steps (With Landing & only one side)	41 no
8	Width of steps	2.4m
9	Rise	0.15m
10	Trade	0.30m
11	Footbridge length (C/C distance in between two platforms)	21m
12	No. of footbridge	2 no.
13	C/C distance in between two footbridge	16.2m

Distinguish Between Footbridge, Escalator And Slider bridge:

Foot bridge	Escalators	Slider bridge
Foot bridge has many stairs	Escalators has automated stairs	As it is a slider bridge there are no stairs
Foot bridge required much travel time than slider bridge (1.30Min.)	Escalator required more travel time than slider bridge as well as footbridge (1.45Min.)	Slider bridge required less travel time than footbridge and escalator. (20Sec.)
Old age and handicapped people are not able to travel a footbridge	Old age people are travel by Escalator but again handicapped persons are not capable to travel by using escalator	Slider bridge is easily accessible for Old age people and handicapped peoples.
Footbridge is not suitable for crossing the trolley of goods and wheelchairs	Escalator is not suitable for crossing the trolley of goods and wheelchairs	Slider Bridge is suitable and easily access for trolley of goods and wheelchairs

III. EXECUTION WORK

3.1 CASE STUDY:

The case study shows following survey work which are taken by our group members which gives detail information about railway station .

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Table No. 3.1: Case Study of Railway Station:

Sr. no.	Description	Remark
01	Number of passenger at platform 2 (before train arriving)	1100
02	Number of passenger at platform1 (before train arriving)	1000
03	Time required for train arrive at platform from visible of train	2.3min.
04	Middle distance between 2 train	3.24m
05	Time required for travelling passenger from 1st platform to 2nd platform by using footbridge	1.30min
06	By using escalator (Time consuming due to slow movement of escalator) travelling	1.45min

3.2 CALCULATIONS:

1) Width of one platform = 12.6m
2) No. of passengers going to platform 2=1000 passengers
3) One person occupied 1 Sq.m area with luggage
4) Distance between two platform =12m
5) Smart bridge length =2m then 2 person go to one platform to another platform at same time
6) As per survey of railway station the 12m distance is travelled by one person with carry 10kg weight is 20sec.
7) So assume 30min. Time is available between schedules of two trains.
8) So, total passenger 1000x1.5(factor of safety)=1500 passengers
9) In 30min. Time we considered bridge is require maximum 5min. Time for opening and 5min. Time for closing bridge.
10) So 20min. Is in our hand
11) 2x12=24 passengers travel a distance between two platforms in just 20sec.
12) 20min = (24x60) =1440 passengers travel distance 12m by smart bridge in just 20min.

Similarly,

Table No. 3.2: Passengers travelling time from one platform to another.

Bridge Width → / Travel time ↓	2m	2.5m	5m
20 min.	1440	2160	4320
15 min.	1080	1620	3240
10 min.	720	1080	2160
5 min.	360	540	1080

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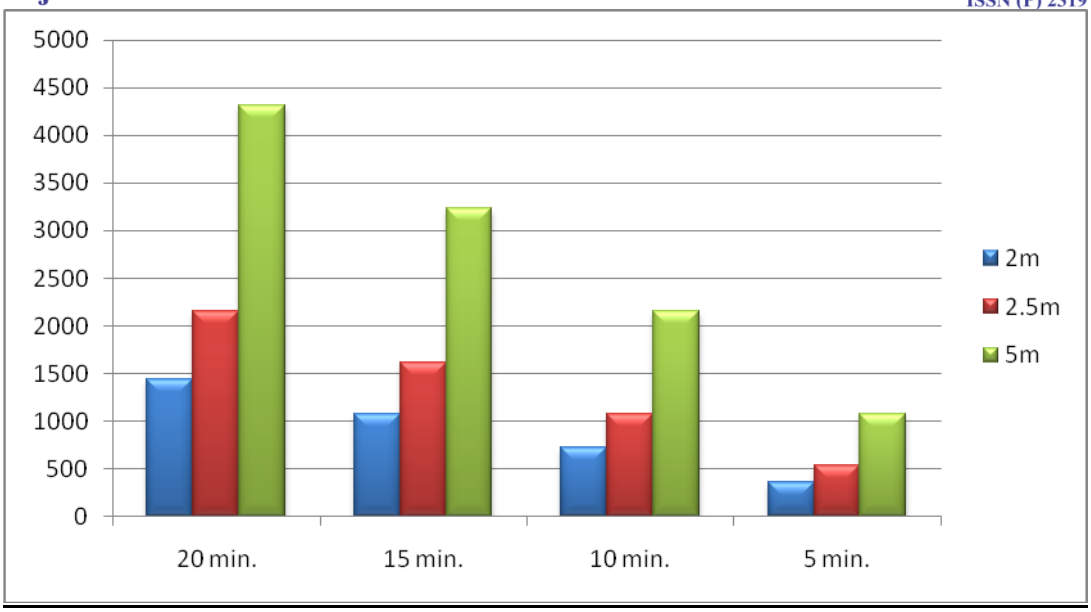

Passengers Traveling Time from One Platform to Another.

3.3 COMPARISON BETWEEN SLIDING AND FOLDING BRIDGE

Following Table No.3.3 shows comparison between sliding and folding bridge.

Table No: 3.3 Comparison between Sliding and folding bridge

Sr. No.	Slider Foot-bridge	Folding Foot-bridge
1	Slider foot-bridge is allows easy maintenance and repair.	In folding foot-bridge is difficult in maintenance and repair.
2	Slider foot-bridge is easy in operation, As station master easily handled its operation.	Folding foot-bridge is difficult in operation then slider foot-bridge.
3	Slider foot-bridge is doesn't have restriction in heights	In folding foot-bridge is restriction in certain heights.
4	Operation time is less as compare to folding foot-bridge	Operation time is more than slider foot-bridge.

Picture No. 3.1 Slider Foot-bridge

Picture No. 3.2: Folding Bridge

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IV. CONCLUSION

We have concluded following points:

1. The idea of automating the process of railway platform operation will enhance safety for the pedestrians who are disabled and unable to use the staircase.
2. As the system is completely automated, it avoids manual errors and thus provides ultimately safety to pedestrians.
3. The whole work took place in this project heading towards trying to avoid accidents and reduce the number of fatalities in the field of railway transportation system.
4. To help people those who are physically ill and aged because they are not having enough stamina to climb and cross the track with the aid of flyover.
5. This kind of foot-bridge is not adopted anywhere in the India and abroad too.
6. This bridge will provide comfort to the passengers to pass one platform to another.
7. The people will not cross tracks directly and thereby accidents will reduce.
8. Train can be arriving on last platform to as passenger can pass tracks easily.

V. ACKNOWLEDGEMENT

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