

Station Platform as Urban Platform: A Case Study on Sholoshahar Railway Station, Chittagong, Bangladesh

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Abstract—As we know, the function of a railway station primarily focuses on the transportation. For the study area – Sholoshahar Railway Station, a regional, category B station; situated in the heart of city. This station is connected from the Chittagong railway station to the north Chittagong University (CU), Nazirhut and to the south Dohazari. Its major traveler is Chittagong University's students, where pressure volume is low and the ticketing system is weak, over the time it welcomes other functions that sometimes not even directly involved with the primary one. Again though the station is mainly used by CU students there often occurs gathering by others university students, college students & by other people. People (usually young aged) find this place as a free platform to celebrate their gathering. It creates functional diversity with as pedestrian, voluntary schooling, fair on festivals, common gathering place for students. This paper will focus on the functional diversity, identifying functions that ameliorating or exacerbating the condition and investigating future development proposals on the station for suggesting some guidelines to maintain the station as an urban platform.

Index Terms—transportation, functional diversity, station platform, urban platform

I. INTRODUCTION

Junction Station Sholoshahar – a regional, category B station; situated in the heart of city. This station is connected from the Chittagong railway station to the north Chittagong University (CU), Nazirhut and to the south Dohazari. An interesting identity of this station is 'Varsity Station' for its major traveler is Chittagong University's students. Again though the station is mainly used by CU students there often occurs gathering by others university students, college students & by hoi polloi.

As in Chittagong, here is a lack of urban pocket parks and street furniture, people (usually young aged) find this place as a free platform to celebrate their gathering; as the pressure of this station is low and its security & ticketing is poor. This 'Free Platform' is used by various kind of functions like - sitting, tong / food, three volunteer street children schools, festival fair, local seminar &

plethora of vendor shops; creates robust environment. Rail corridor from road intersection (2no gate) to intersection (Muradpur) is also used as pedestrian shortcut & why not? It is much safer & interesting than the major CDA road pedestrian.

Those are not even a function of a station though they are 'add on functions' invited by the context and condition of the station. When major proposal from Bangladesh railway to redevelop this station for future pressure, how this station will fit with this diverse functions.

II. METHODOLOGY

This station is under the observational survey using the station as meeting place with friends, roaming and as a place for visit than transit. Maximum survey data and issues are gathered from onsite observation. Survey run from September 2017 to January 2018. Formal data and resources are mainly –Railway masterplan, RCIP- Rail component, Final feasibility study report, Muja map, Project director, Dohazari –Cox's Bazar Railway project, Team leader, Deputy team leader and Additional chief Engineer -In joint venture with CANARAIL, SMEC, SYSTRA, ACE, STRATEGI design team (inception proposal meeting), Detail Area Plan (CDA)

III. SITE

A. Surgical Analysis of the Station

"Fig 1" "Sholoshahar a regional transit station. Operation terminated from Chittagong Rail way station through Sholoshar to north Ctg and south ctg. "Fig 2" A flow through transit station, where vertical circulation is needed to catch the platform.

Platform: "Ref [1]" Operated by Center or middle platform. Station operate through a middle platform for its lower pressure and efficiency but difficulty begins with "Fig 3" vertical circulation when it comes with paid and unpaid zoning definition. Platform is 512 ft. in length and 12ft+ 25ft +12 ft. in width.

User profile: "Fig 4" Major user of this station is students of Chittagong University. Daily eight to twelve set of shuttle train operated 16 time up & down. Local service to Dhozari 2 times and to Nazirhut 2 times up &

down per day. This station remains active from 6:48 am to 9:57 pm a day.

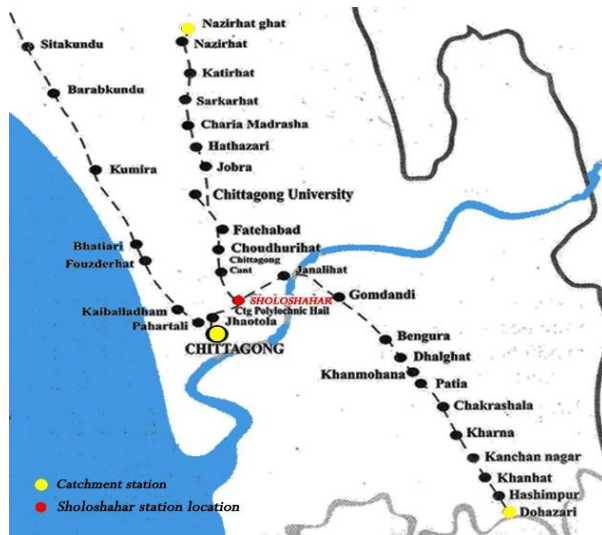


Figure 1. Station location and local catchment station

Station entry: Approach to the station is very narrow, around 30 ft approach road with no define pedestrian circulation. Again lack of visibility and identity.

Free platform: For its low pressure and lack of ticketing security, this platform became free platform. Again its inactive loop lines created the platform more static and safe.

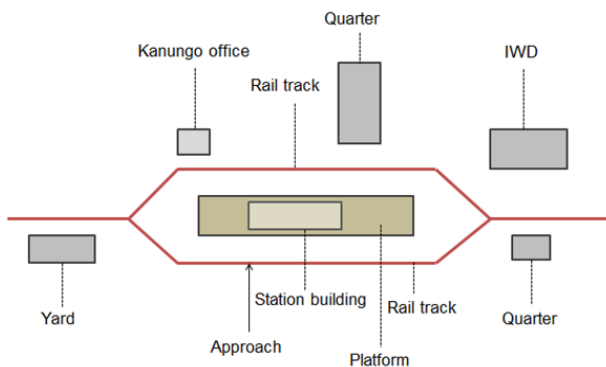


Figure 2. "Ref 5" Schematic existing station zoning (Source: Kanungo Office)

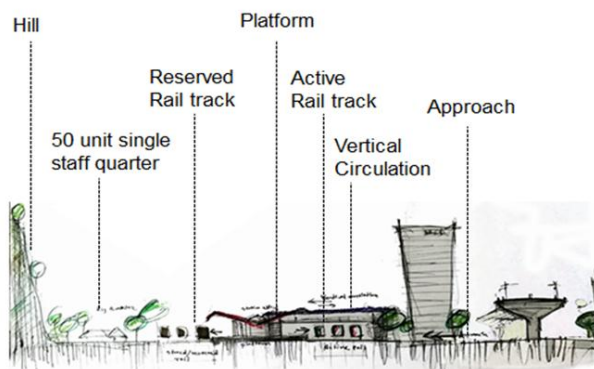


Figure 3. Existing cross section

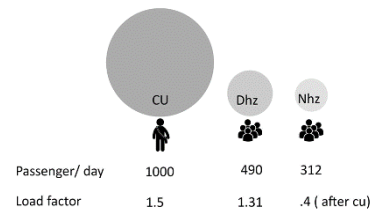


Figure 4. User profile, Number bubble (Source: Author)

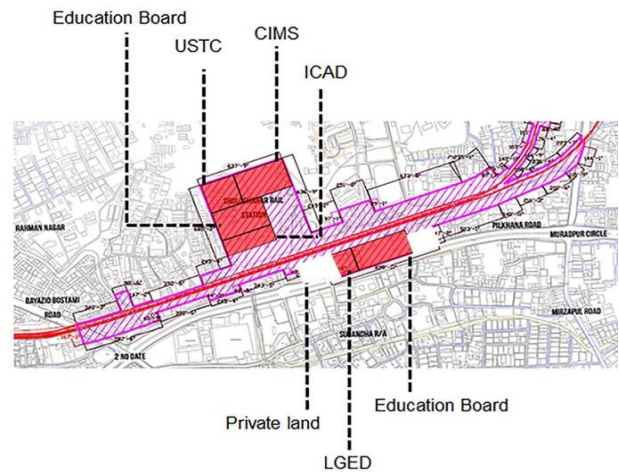


Figure 5. Landownership (Source: Land Office) "Ref [7]"

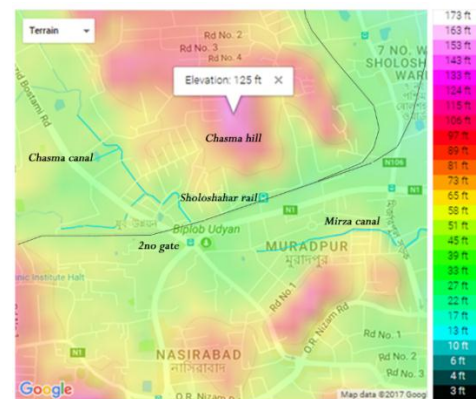


Figure 6. Topography (source: google map)

B. Land Ownership

Railway is the owner of almost one third of the Chittagong's land. "Fig 5" When it is in consideration of Sholoshahar station area, railway sold its land in a very considerable price to LGED, Education Board, USTC, CIM, and Institute of Chattered Accounts Bangladesh in different phases and, of course, it is for initiating development and occurring Private-Public Partnership.

C. Topography

"Fig 6" Surrounded by hilly terrain as well as intersected by two natural canals namely, Chasma khal and Mirza khal respectively. Though the resources are

merely been under consideration or rather been mistreated.

D. Functional Diversity

Apart from its transportation function and related amenities, other ambiguous functions are performing their acts. What are those functions, why and how they are performing; those questions will be discussed in this section.

1) Micro economy

The rail corridor, parking space and other reserved spaces are occupied with more than 300 temporary or semi-permanent stalls, shops and vendors. Mainly those shops are grocery, street food, tong/tea stalls and customers are passengers, the neighborhood community and passerby.

2) Fairs on the festivals

"Fig. 7" Fairs occur in this station area on the day of festivals like Majar Orosh, Durga Puja. Political, local & religious seminars are also held. Sometimes on the parking space and even on the platform (on the inactive side).

3) Schools

"Fig. 8" Schools like Nagarful, Embrace Humanity and Fulkoli are active in this station area, which are mainly volunteer schooling towards street children, and the teaching members are mostly students from the passenger profile who works for the street children, sometimes under NGO or social organization.

4) Rickshaw parking

Around 200-300 rickshaws are parked here daily. Again based on those rickshaws, nearly 20 rickshaw garages emerged on this corridor.

5) Ghetto for the migrants

Migrants, mainly work migrants, work as daily labor, rickshaw puller and other jobs, have created a ghetto around the railway quarter on the foothills.

6) Footpath

"Fig 9" From 2no gate to Muradpur node to node, people usually use rail corridor as pedestrian way & people find it more safe and interesting than CDA Avenue pedestrian along with the road.



Figure 7. Fairs on the platform



Figure 8. Schools for street children

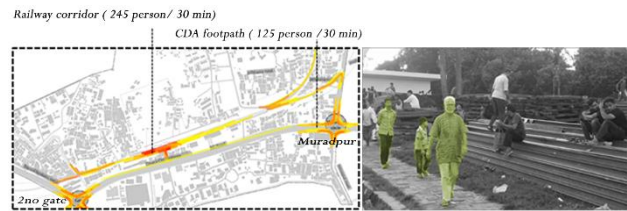


Figure 9. Pedestrian flow rate through railway corridor

7) Urban open space

"Fig 9" As lack of urban amenities like sitting, standing, staying and urban open spaces; neighborhood community, students find this station an urban open space. Street food corners, vertical circulation (foot over bridge), mound of railway materials are mainly the places for gathering, sitting and meeting.

IV. SWOT ANALYSIS

A. Strength

Strength of this station, defined by its multifarious aspects like its location, speed of the train while passing, passenger profile that are fomenting the functional diversity.

A memorizing context of Chittagong, hilly terrain on one side of the station and crossed by two natural canal namely Chasma khal, Mirza khal and also work as storm water reservoir. And two collector road orthogonally crosses the arterial road. Again distance between two nodes is 1 km and station location almost on the middle.

Train Speed: Station position and two gate crossing limited the train speed up to 16 MPH. Which makes the pedestrian corridor more safe & vibration level for train is mostly minimized.

Station nature: Sholoshahar station itself a unique station for its user profile, its context. People are attracted by the station and gather around on the free platform.

B. Weakness

"Fig 10" Layer of paid and unpaid consumers are blending together. "Ref [6]" 1.5 million trips per year is run through this station and railway losses 6 million tk per year for ill ticketing system.

Entry approach to the station is very narrow, around 30 ft approach road with no define pedestrian circulation. Again lack of visibility and identity.

Again Railway land have been sold to GOV and NGO offices and institutions and that's why management of large define entry creates difficulties.



Figure 10. Poor waste management and a mix of paid and unpaid circulation

“Fig 10” Waste management system is poor and again 3 non operated loops and standby freight trains makes a visual blocks and creates place unsecure and polluted.

C. Opportunity

The station has the opportunity of upgrading from transit station to ‘A grade’ station facilitating more Transit oriented development. Regional and GOV offices, markets, educational institutes are taking the facilities of this station. So transit oriented development (TOD) is possible with its principles. Can provide more community services as urban free space as well as can gain the economic and environmental benefits to the city. By targeting the active hours and future demand also have the possibilities of night city development. Pedestrian oriented design (POD) is possible like providing walking, sitting, gathering and staying facilities. Shaded walkway for passenger and natural shade for community can easily be installed using its existing resources. Gathering of university students also can create and already creating a cultural and educational center of the city.

D. Threats

Encroachment of conserved hill site and hill cutting, infilling of natural canals by dumping wastes. Again gathering of young people, students and having negative spaces to sell drugs, fomenting crime zone within the station.

V. PROPOSED PROJECT INVESTIGATION

On the basis of Sholoshahar Station it's an investigation for is there any running or future project. In this site we may enter from different following approaches -

A. International Framework

“Ref [2]” ADB's Regional Strategy for South Asia 2011-2015 comprises both technical and financial assistance to support transport cooperation in South Asia. ADB's support focuses on the construction and improvement of transportation corridors connecting countries in neighboring regions and the construction and improvement of port facilities, civil aviation infrastructure, and logistics systems.

1ADB funding for the present Project falls within the South Asia Sub-regional Economic cooperation (SASEC) programme, which aims to help transform the poorest and most densely populated areas through promoting regional economic cooperation. The SASEC programme is intended to promote economic cooperation through the enhancement of cross-border connectivity and facilitation of trade among the member countries: Bangladesh, Bhutan, Nepal and India. The SASEC programme's motto is: From poverty to growth-transforming challenges into opportunities.

The principal activity of the SASEC programme is the identification², prioritization, and implementation of sub regional projects. Priority areas include energy and power,

transport, trade, investment, and the private sector. Other areas of work includes information and

Communications Technology (ICT), tourism and the environment ².

B. Bangladesh Government Policy

“Ref [2]” It is important to set the present project in the national context. The national land transport policy published in 2004 clearly states:

The policy is for railways to obtain a greater share of the freight market; and Government will remove regulations on Bangladesh railway (BR) regarding freight traffic, so that tariffs can be negotiated to maximize the market share.

The policy also establishes that: the government will subsidies directly the movement of certain types of goods by making up of the difference between cost and revenues.

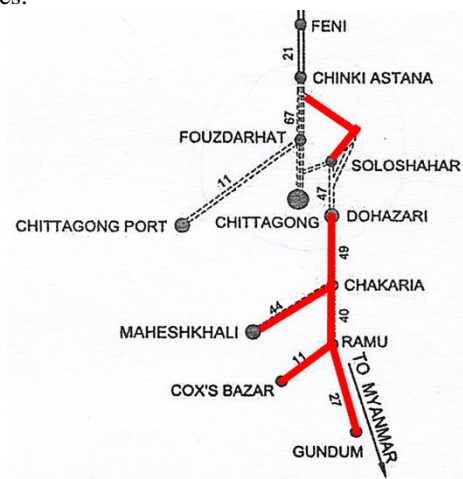


Figure 11. Map 1 new link from Chinkiashtana

BR will aim to operate freight trains to fixed time tables. BR will work with private patterns to offer integrated services; and BR will establish more container terminals around Dhaka. “Fig 11” The policy requires that international railway services be fostered and that the country play a greater role in international railway communications, provided there are clear benefits to Bangladesh. Objective is to facilitate tourism, economic development through deep sea port.

C. Regional Cooperation and Integration Project, Rail Component

The present project, the regional cooperation and integration project, Rail component (RCIP- rail component), was initiated by the Bangladesh Government, and is being implemented through BR. Its objectives are to improve the integration of BR with other railways in the region and to enhance the effectiveness and efficiency of the country's transport sector.

D. Detail Area Plan (DAP)

“Fig 12” “Ref [3]” In Detail Area plan from Chittagong Development Authority, this area was marked under mixed use development (MU-05-01, MU-05-02) , commercial development (Com 05-01, Com 05-02) as

¹ ADB Loan No 2688-BAN (SF)

² <http://sasec.asia/web/index.php/en>

well as showed concern about environment and mitigating risk factors under the area of En-05-05, R-05-02,03 respectively by rehabilitation of Chashma hill, Chashma Khal (canal) and relocation of squatters on the foothills.



Figure 12. Urban development guideline from DAP

VI. GUIDELINE

To recognize an Urban Platform from a station platform, a meticulous input of functions and programs that are integrated, non-conflicting are required. Keeping in mind that for the future development proposals, the pressure volume of this station will increase and a major redevelopment will take place; so to this transition of Platform, we may focus on those following factors to implement -

- An active define entry
- Collocation of important functions
- Smoothness of Transition
- A defined paid layer
- Security and safety
- POD (Pedestrian oriented development)
- Community services
- Enhancing facilities for city people
- Land management for proposed program
- Public-Private Partnership
- Environmental preservation
- Economic successiveness & Delight

A. Land Management

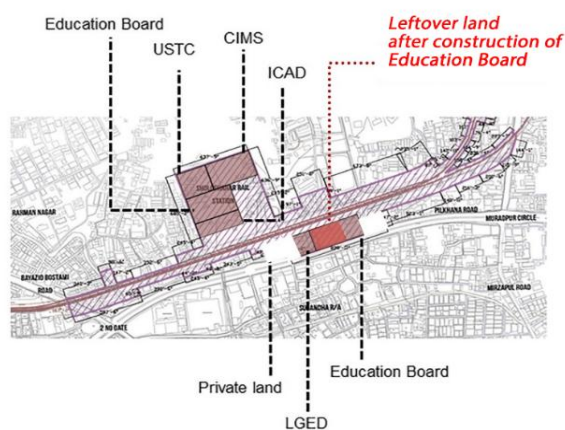


Figure 13. Land management for an active define entry

For redevelopment works, land could be managed by land sharing policy. “Fig. 13” Land that’ve been sold to education board, after their construction of education

board around 250'x250' land is reserved can run as a defined entry for the station. Acquiring land from illegal installments, relocation with a proper design guideline concerning safety from hill sliding and accidents.

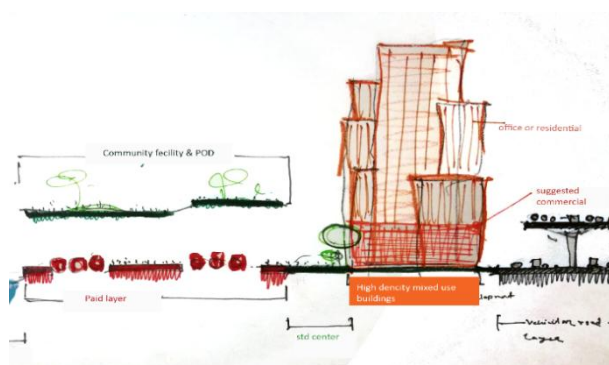


Figure 14. Schematic layering

B. Paid vs Unpaid Layering

“Fig 14” A clear, defined threshold line should be introduced towards the paid zone for smooth transit as it is the primary function of the station. Again partial free platform could be introduced for the students where their related functions can run or a center for education and culture can be formed. By ensuring the security and safety the rest may kept as free platform. Layering to the flow of passengers, commuters and public is required for the smoothness of flow.

C. Transit Oriented Development

Transit oriented development (TOD) is though running with a capricious motivation, should follow an integrated combination. [4] Six primary principles like development density that is greater than the community average, a mix of uses, “Fig 15“ compact high quality pedestrian oriented environment, an active defined center, limited managed parking and public leadership ; can be followed to mitigate unplanned chaos.

D. Risk Minimize

“Ref [1]” When station peak pressure is more than 1500 a water body is needed for fire safety and dust control. Again hill cutting and water clogging for hill valley site should be minimized. Shifting of railway quarter and ghetto is required to mitigate life injuries, shifting negative spaces and a clear visible sight to the natural resources.

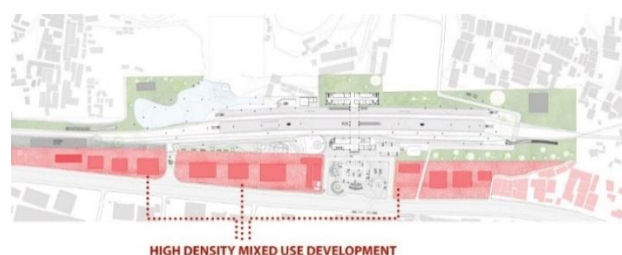


Figure 15. High density mixed use development on the road side.

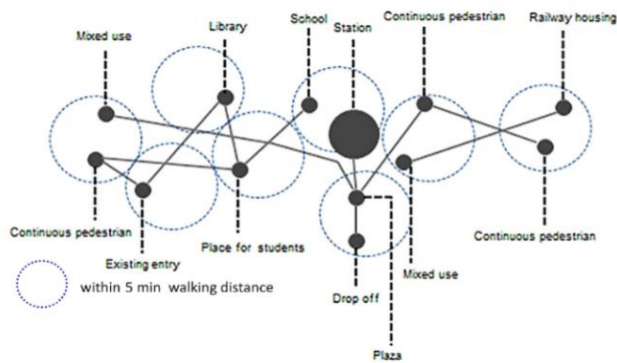


Figure 16. Possible matrix for pedestrian oriented development

E. Pedestrian Oriented Development

“Fig.14” Pedestrian oriented environment with having facilities of standing, sitting, walking and waiting along the corridor which would be under the free layering. “Fig 16” An active functional matrix can be plotted where within five min walking distance some facilities will be found to maintain robustness and security.

F. Using and Maintaining Environmental Resources

With the conservation of Chasma Hill a secured access to the nature, can work as urban park. This will mitigate the hill cutting tendency and omit a negative barrier. Proper waste management program should be taken to restore the Chasma khal.

G. Night City Develop

In near future with the redevelopment of the station, active hours will be increased at around 18 to 20 hours a day. This station, then can play as an active center for night city with proper lighting facilities.

VII. CONCLUSION

Potential planning plans for the redevelopment (see at v. Proposed project investigation) of this station if merely focus on the smoothness of transportation, has possible chances to eradicate the diversity of functions, a breathing place that have been generated with the city and community demand, over the time. Mitigating risks and vulnerabilities by putting ersatz functions on the functional matrix which is reciprocal in relation rather than conflicting with the surroundings. Layering on the circulation works to minimize risk, financial loss and that at the same time provide facilities for the neighborhood and the city as well. Student oriented functions are appreciated to create an educational center in the city center and they would provide services like free schooling for society. Restoration of natural resources (hills, canals) and putting public functions to minimize hill cutting and death due to hill sliding. Transit oriented development is also important to maximizing decentralization of work migrants to reduce numbers of floating people.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

NB initiated the study work, topic selection, conducted the survey resource collection moreover further conceptualized the overall study process & guideline development. Also wrote & manuscript the research work. MZH filtered & analyzed the data & critically checking of survey outcomes. NS Checked the relevancy & organization of data. All authors reviewed the final work.

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