Retrofitting the Everyday Landscape of Transportation Centers in New Jersey

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ABSTRACT

By examining the current use of the rail transportation center in New Brunswick, New Jersey, I intend to explore possible uses of areas adjacent to stations, and how that could enhance connectivity and mobility within the transit network and the local areas as well as improve the commuter experience.

Opportunities and challenges are revealed in order to create more vibrant communities that better serve train riders and other local residents, through activity observation, and a survey of train riders' walks. Everyday landscape like pedestrian paths, parking lots, and waiting areas is significant public place, contributing to communities as much as parks and plazas, both functionally and environmentally.

Small changes can make big differences- to activate street life with more sensitivity to human scale. Living a transit-oriented life style is becoming more doable for many people. The everyday landscape encompassing and accommodating such a life style is worth exploring, from the ground level, in the perspective of pedestrians and cyclists.
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1. Introduction

Everyday Landscape

Often we consider landscape design in terms of destinations, like a park or a garden - somewhere we go to and feel refreshed and relaxed, to kick a ball or bathe in the sun. How about the built landscape we experience much more often, even on a regular basis, like the streets we walk to get coffee, walk our dog, or get to school and work? What do we think about that kind of landscape? Does it matter less or more because we experience it every day? Do we get used to it no matter if it is good or bad? Things can always be better. What are the things that would make the most difference? What do people want to see happening the most?

I seek to study the transitional spaces, or marginal spaces, places people go briefly to, including parking lots, sidewalks, crosswalks, bus stops, bike racks, store fronts, waiting areas, etc. These are in between destinations. My premise is that how people get to destinations matters just as much as their arrival.
At a Train Station

An urban station, like the one in New Brunswick, is where business and retail concentrates, with busy movement of cars and goods, and movement of people in all kinds of transportation modes. I think it would be interesting to see how the area is used daily and what the issues are.

It is the everyday landscape for commuters, whether they are boarding the train or getting off at the station. From their origins or to get to their destinations, this movement in-between home and station marks the start and end of a work day, a different mode of life in a day. Do people who commute to another town feel at home when they get back? Do people who commute to work here find it just a work place?

Transit Oriented Development

High density, mixed use development within walking distance to a station has been proposed and promoted in New Jersey. (NJDOT 2012) It takes advantage of existing infrastructure and allows people to live and work with less reliance on a car, and it aims to create more resilient communities which are more self-sufficient and energy efficient. New Brunswick is one of those Transit Village Projects and there are a couple of mixed-use redevelopments which have been built or are under construction.

Transit Oriented Development (TOD) promotes a more active and healthy life style by encouraging people to work or bike more, which brings people closer to the life of a city, and as a result, creates a demand for more pedestrian oriented design that provides a good experience that respects human scale, functionally, aesthetically and socially. Wouldn’t it be great if a connected network of places is formed between work places and train stations, so that within walking distance to the station people can do all kinds activities with convenience?

Figure 2. Passengers at the station.
Walking

The station area is a pedestrian environment. More than half of the people living in New Brunswick who take the train get to the station on foot. Most arriving commuters get to the workplace from the station on foot, too. Even for people who drive to the station, many need to walk from where they park to get on the train. When walking, we are more sensitive to all design elements at a human scale, such as topographic changes, hardness and smoothness of ground pavements, air quality, noise levels, variety of sounds one can hear, and different smells. When walking, we are aware of how close people get to each other when they walk on the sidewalk or wait at the crosswalk, and we notice if there is seating where people need to wait. We are more aware of the weather, the changing seasons and the time of day when we walk places.

New Brunswick also has an existing community that walks a lot, including the big Rutgers student body and the Latino community. For the generation to come, demographics show that the millennial generation owns fewer cars and drives less than their predecessors. For a lot of people, a combination of biking, walking, using a car-sharing service and public transit becomes very doable.

In the everyday landscape, people’s every day activates intersect and interact with each other in some way, and the everyday landscape acts as a carrier to facilitate such an encounter. In the context of a rail station, layers of activities are more complex and thus more lively, involving people who live here, people who work here, and people who arrive at and leave from the station. Around a train station in a densely built and populated city in New Jersey, how can the everyday landscape be retrofitted to accommodate a transit-oriented lifestyle?
2. Context

New Brunswick is a city in Middlesex County, New Jersey, covering an area of 5.23 square miles. (U.S. Census Bureau 2013) The city is located on the Northeast Corridor rail line, on the southern bank of the Raritan River. It is 41 miles southwest of New York City and 66 miles northeast of Philadelphia. The largest campus of Rutgers, the State University of New Jersey, is located in New Brunswick and Piscataway Township on the other side of the river, which comprises several campuses. New Brunswick is also home to the world headquarters of Johnson and Johnson, along with several medical teaching and research institutions. Due to the concentration of medical facilities in the area, New Brunswick is known as “the healthcare city”.

2.1. Transportation

Major vehicular transportation corridors crossing the city are US Route 1, and Route 18 and Route 27. Other major roads nearby include the Garden State Parkway, the New Jersey Turnpike (I-95) and I-287.

Land use

The downtown area of New Brunswick is a centralized area. Patterns of commercial and industrial land concentrate and locate near major corridors, surrounded by residential land use. The city surrounds the rail station while the downtown area of Highland Park follows Route 27 and is linear in form. Vegetation concentrates on the edge of Rutgers campuses and along the Raritan river front. Other major vegetation seems to follow the streams and scatter in the two municipalities. Overall, the two municipalities are densely developed for residential and commercial uses. 80% of land in New Brunswick and Highland Park, not including the area of the Raritan River, is urban land use.
Public Transportation

New Brunswick is served by New Jersey Transit and Amtrak trains on the Northeast Corridor (NEC) Line, which operates between Trenton Transit Center and New York Penn Station. It takes one hour to get to New York Penn Station and half an hour to Trenton Transit Center. The neighbor station on the NEC line is Edison to the north and Jersey Avenue to the South, which are both three miles from New Brunswick respectively. Highland Park Borough, to the north of New Brunswick and connected to the central with New Brunswick by Route 27, is also a service area of the New Brunswick station.
The New Brunswick station is located at the intersection of NJ 27 and high-speed NJ 18, in the central business district of the city. It is adjacent to downtown commercial and institutional areas, residential neighborhoods and the five local campuses of Rutgers University.

The city is also served by several NJ Transit intrastate bus routes (800 series), the Rutgers Campus bus network, the Middlesex County Area Transit (MCAT) shuttle system, DASH buses (stop at station entrance on Albany Street), BrunsQuick shuttles and NYC bound Suburban Trails buses. As you can see from the bus route map, bus lines intersect downtown at the train station.
NJ Transit’s 810, 811, 814, 815, 818 routes serve local New Brunswick and Highland Park. These routes arrive at New Brunswick once every half an hour or once every hour (NJ Transit 2013). The DASH buses, operated by Somerset County, run between residential areas in Bound Brook, New Brunswick and North Brunswick to businesses in the Somerset section of Franklin Township. There are only two buses in the morning and two in the afternoon rush hours. (Ridewise 2013) And the connecting service to DASH is the M1, M4 and M5 shuttle by MCAT-The Middlesex County Area Transit Bus Route (Middlesex County, NJ 2013). They are mini buses services developed to meet the needs of senior citizens, individuals with disabilities and the general public. The other minibuses are the BrunsQuick Shuttle by Rutgers serving the College Ave Campus (City of New Brunswick 2013).

The NYC-bound Suburban Trails buses by Coach USA operate between Princeton and NYC Port Authority Bus Terminal. There is one bus every half an hour and one in every fifteen minutes at rush hour. The bus stop is outside the train station on Albany Street. It becomes many students’ choice to get to New York City for a lower ticket price.

Bike Lanes

From observation, there are quite a lot of cyclists in New Brunswick. For students, it is a faster and more active way to travel between campuses. The distribution of public accessible bike racks in New Brunswick shows the city’s initiative to facilitate biking. However, from the damaged bikes at entrances of station and bikes locked to fences or sign poles throughout downtown, more work is needed to create safe and sufficient bike parking.

Figure 12. Bikes locked on railing at station entrance on George Street. (Left)

Figure 13. Bike racks at entrance in front of station building.
The majority of the local bike lanes are shared lanes with vehicles. Shared lanes are more dangerous than dedicated bike lanes, and you can see from the map that there doesn’t seem to be a sufficient number of bike lanes in the central downtown area, particularly around the train station. Some cyclists bike on the sidewalk when traffic on the street is heavy, even though they know there is a sign saying no biking on sidewalks. It reflects that the traffic volume of local roads and the road condition is competing with cyclists.

2.2. Redevelopment

In the 1960s-1970s, the downtown area became blighted as middle class residents moved to newer suburbs surrounding the city, an example of the phenomenon known as “white flight”. Beginning in 1975, Rutgers University, Johnson & Johnson, and the local government collaborated through the New Jersey Economic Development Authority to form the New Brunswick Development Corporation, with the goal of revitalizing the city center and redeveloping neighborhoods considered to be blighted and dangerous, via demolition of existing buildings and construction of new ones. Projects built included the new world headquarters building of Johnson & Johnson, the Hyatt Hotel and conference center and upscale housing (DevCo 2013).

The redevelopment process has been controversial. Debates concerning historic preservation, neighborhood composition shift, eminent domain abuses and tax abatements for developers are issues that DevCo, the hospitals, and the city government continually need to deal with.
In 2005, the station was designated the core of the New Brunswick Transit Village, a Smart Growth Initiative that promotes TOD which can include government incentives to encourage compact, high density and mixed use development within walking distance of a transit facility. New Brunswick is also one of nine cities in NJ designated as eligible for Urban Transit Hub Tax Credits by the State’s Economic Development Authority. Development of a minimum of $50 million within 0.5 mile of a train station is eligible for tax credits (NJEDA 2013).

The Gateway tower, a 22 story mixed use redevelopment project next to the train station, was completed in 2012. (DevCo 2013) And it is one of several new projects in the vicinity that has led to a revitalization of the downtown surrounding it. The Gateway tower is connected from the platform level to city level by a ramp located at the southern bound train platform.

Other mixed use, high density residential building will cluster around the train station. An apartment complex tower was just completed and open for leasing on George Street, one block from the Heldrich Hotel at the edge of the quarter mile radius from station. On Somerset Street close to the hospitals, an apartment complex with parking has just been proposed as well (NJ.com 2012).

Figure 16. Walking from south-bound train platform to the ramp towards College Avenue.

Figure 17. South-bound train platform stairs exit to Eastern Avenue and ramp exit to College Avenue.
2.3. Building Use and Parking Capacity

Looking around the five-minute walk range from the station, building use is divided into sections. From the north of the station looking counter clockwise are the corporate offices, Rutgers College Avenue Campus, Easton Avenue downtown and single family residential houses, hospital buildings, and George Street downtown with more office buildings, mixed use complex, and municipal court and offices. The station serves as an anchor point between the two downtown areas created by two elevated train tracts, and trespassed by lots of downtown goers, as well as commuters and local residents. And the new pedestrian ramp at the Gateway Tower has created a new, easy way to cross from one side of the city to another through the station infrastructure.

Within the 0.25 mile zone of the station, there are 9 public parking decks, offering 6,677 parking spots. As there are additional private garages for residential and corporate towers, a large amount of these 6,677 spots are for the use of commuters. In addition, there are many smaller surface parking lots within the area, too.
Figure 18. Building use around the station.
Figure 19. Parking around the station.
As of March 2, 2013, the Ferren Deck across from the station on Albany Street was closed entirely and permanently. Parkers are asked to use the deck at the adjacent Health and Wellness Plaza. For commuters, a new walkway from the plaza to the eastern platform of the station will be constructed within the next year. The city spokesman said the anticipated redevelopment plan for the Ferren Deck is still in the planning phases, and the new plan will include apartments, offices and commercial spaces (New Brunswick, NJ Patch 2012).

Parking land plays such an important role in the everyday landscape of downtown New Brunswick. Garage and parking lot design is most often merely functional and does not consider the aesthetic experiences of the people who pass by on their way to work or shop. This opens up a powerful opportunity for improving the pedestrian walk connection from the station to downtown New Brunswick, thus possibly attracting business and bringing more vitality to the city.

**Public Deck Parking Capacity: 6677 spots** (as of March, 2013)
Vacancy at peak: 15-20%
Source: New brunswick Parking Authority, NJ
2.4. Major Employers

The total number of workers employed in New Brunswick is 40,741, among which 38,208 live outside New Brunswick. The number of residents with jobs in New Brunswick is 16,293, and 13,760 of them are employed outside New Brunswick. Only 2,533 workers are both employed and live in New Brunswick (U.S. Census Bureau, Center for Economic Studies 2013).

According to the number of employees flowing in and out of the city, the daytime population change due to commuting is 24,448, which is about half of the city's total population. This explains the traffic volume and high demand for parking spaces in the city.

The number of employees from the largest employers in the city reached 19,000, which is about half of total workers in the city (City-Data.com 2013). They include Rutgers University, Johnson and Johnson, Robert Wood Johnson Hospital, St. Peter's University Hospital and the University of Medicine and Dentistry of New Jersey, which will merge most of its schools with Rutgers University forming a new Rutgers School of Biomedical and Health Sciences effective July 1st, 2013. The major employers are all located very close to the station.

As of fall 2012, there are 40,434 students enrolled in Rutgers University, New Brunswick, comprised of five campuses, in New Brunswick City and Piscataway Township across Raritan River (Office of Registrar, New Brunswick, Rutgers 2013). Students either live in surrounding areas, or commute to campus. And they are active users of downtown. There are nine campus bus routes operating between different campuses on weekdays.

There is a large and diverse group of people working or living in close proximity to the station, which are the target group for increasing train ridership and bringing more vibrancy to street life in the city.
Figure 20. Inflow/Outflow job counts in New Brunswick, 2010.
(Source: U.S. Census Bureau, Center of Economic Studies)

Employees from Major Employers: about 19,000
Total employees in New Brunswick: 40,741

Top Three Job Industries:
- Education Services 37.9%
- Health Care and Social Assistance 19.1%
- Public Administration 8.2%

Jobs by Workers Sex:
- Male 44.6%
- Female 55.4%

Figure 21. Major employers.
(Data Source: http://www.city-data.com/city/New-Brunswick-New-Jersey.html.)
2.5. **Demographics**

**New Brunswick City**

At the 2010 Census, the population of New Brunswick was 55,181, reflecting an increase of 6,608 (13.6%) from the 2000 Census. Highland Park's population was 13,982 in 2010, decreased only by 0.1% from 2000. The population growth in New Jersey and the United States is 8% and 9.7% from 2000 to 2010, respectively.

New Brunswick is noted for its ethnic diversity. As of 2010, the racial makeup of the city was 45.5% White, 16% African American, 8.5% Asian, Pacific Islander or Native American, 26% from other races, and 4% from two or more races. Since the 1960s, many of the new residents of New Brunswick have come from Latin America. 50% of the overall population was Latino of any race in 2010.

According to the 2010 Census, there were 13,057 households in New Brunswick and the average household size was 3.23, while there were 5,875 households in Highland Park with average household size of 2.38. The median household income in the city was $36,080, compared to $78,821 in Highland Park and $61,446 in Middlesex County (U.S. Census Bureau 2013).
2010 Census Data

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**Population By Race**

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**Hispanic Ethnicity**

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<td>2000</td>
<td>39.0%</td>
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<tr>
<td>2010</td>
<td>50%</td>
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Figure 22. Change of population, race and ethnicity from 1980 to 2010. (Source: City of New Brunswick. http://thecityofnewbrunswick.org/planninganddevelopment/demographics/)
New Brunswick City and Highland Park Borough, By Census Tract

Residential neighborhoods concentrate around the station area, particularly southeast of downtown New Brunswick. Areas farther away from the station have a lower population density. When comparing to the population densities, Highland Park and downtown New Brunswick have the highest number of individual households, which implies that these areas have a smaller household size relatively.

There are larger numbers of children in areas with higher population densities and in the non-campus census tracts in New Brunswick. Due to a high number of 15-24 year olds in the Rutgers College Ave and Cook Campus areas, New Brunswick has as many 15-24 years old residents as 25-54 years old, which together make up 70% of the total population. All three census tracts in Highland Park have a higher amount of residents above age 55, and so do downtown and Southern New Brunswick.

Lower income groups (under $15,000 per year) are distributed amongst Rutgers campuses, and northern Highland Park. Middle-range income levels are spread relatively evenly in New Brunswick and Highland Park. Residents with the highest incomes live in Highland Park and downtown New Brunswick, which reflects the high-end residential development in New Brunswick in recent years. Within a ten-minute walk distance to station, income groups’ distribution is similar to that of the whole city overall.

From the expected population growth of the city, we can foresee the increase of public transportation use. And we need to keep in mind the diversity of the user groups public transit is serving in New Brunswick and their demand and preference, for example those from students at Rutgers University, people who work near the station and the Latino community, in order to increase public transit ridership and create a transit friendly environment.

Figure 23. Population density and total households, by census tract.
(Data Source: U.S. Census Bureau, American Fact Finder, American Community Survey, 2010)
Figure 24. Age groups and annual income and benefits of household in New Brunswick, by census tract.
(Data Source: U.S. Census Bureau, American Fact Finder, American Community Survey, 2010)
Figure 25. Means of transportation to work of residents in NJ, Middlesex County, New Brunswick and Highland Park. (Data Source: U.S. Census Bureau, American Community Survey 2010)

Figure 26. Transportation modes after arriving and before boarding at the station. (Data Source: NJ Transit’s passenger survey on NEC 2005)
2.6. Commuter Characteristics

Overall, NJ Transit ridership has increased consistently. There are 4,976 passengers who board at the New Brunswick station on an average weekday (NJ Transit Quarterly Ridership Trends Analysis, 2013). This amount of riders includes residents in the areas who take the train in the morning and commuters from other towns going home in the afternoon. This makes New Brunswick one of the busiest stations on the Northeast Corridor rail line, after Princeton Junction and Hamilton.

According to the American Community Survey by the Census Bureau, among residents with jobs in New Brunswick, only 64% of them drove to work (including drove alone and carpooled) compared to 83% in Middlesex County. 11% took public transportation, which is close to 10% in Middlesex County. 17% of workers walked to work in New Brunswick which is far higher than the 3% of total workers in Middlesex (U.S. Census Bureau 2013).

When comparing the percentage of people who take public transportation by age group to that of all workers, both in New Brunswick and Highland Park, the composition of people who took transit resembles that of the age group of all workers. The age groups with a higher percentage of workers who took public transportation than the corresponding percentage of all workers are 16-24 years old in New Brunswick and 25-54 years old in Highland Park. Whereas the lower groups are 25-54 years old in New Brunswick and above 55 years old in Highland Park. This tells us which groups are more dominant as users that we need to accommodate better and which groups are target to increase ridership.
Figure 27. Train ridership.
(Source: NJ Transit. Rail System Map; Quarterly Ridership Trends Analysis, First Quarter, Fiscal Year 2013.)
From the NJ TRANSIT's 2005 survey on the Northeast Corridor Line (NYC bound trains only), of people who boarded at New Brunswick, 37% walk to the station from their homes and 71% of people who got off at New Brunswick walked to their destinations.

More than 60% of train riders took the train 4 or more times a week, and about 22% of them took the train 1 to 3 times a week (NJ Transit 2005). These statistics prove that there are existing groups of people who commute by train and who walk to and from the station on a regular basis. They are one of the main target groups of this study.
2.7. The Walks

Circulation at Station

The north- and south-bound train platforms are rectilinear, 700 feet long and 8 feet wide. The platforms are elevated almost 25 feet above ground level. There are six major entrances/exits now, three on each side. Two elevators are in service. One is outside the station building, and the other is located at the back of the stairs next to the bus stop on Somerset Street. Except for the newly constructed ramp between the new Gateway building and the Catholic Center at Rutgers, other entrances get passengers to the station by stairs. There is a going up only escalator inside the station building. The station building is open from 5:30AM to 9PM on weekdays.

Passengers get from one side to the other through a lower level tunnel. That is the one and only connection passengers may take to get to the other platform without exiting and reentering the station.

Circulation for pedestrians from the northern platform to adjacent College Avenue campus and northwestern New Brunswick has been greatly improved since the construction of the new ramp at the Gateway tower.
Figure 29. Circulation at the station and illustration.
Figure 30. Five, ten and fifteen minutes walkway from station.
Walk Catchments

The ten-minute walk from the train station can be divided into pedestrian catchments corresponding to each exit based on walking distance. People tend to take the shortest walk possible to work places, or whenever they need to rush, or when the walk is not pleasant. It is interesting to find out the walkable but not designated to walk paths around the station and see if they should and can be transformed to facilitate a better walking experience.

Rather than clustering at the train station itself, the siting and set up of entrances/exits of New Brunswick station is more like a network of branches connecting the platform to the city. The bus stop, drop-off area, taxi stand, bike parking and street furnishing (benches, trash cans, etc.) are also dispersed at entrances/exits. If one think about the five-minute walk starting from each exit and its surrounding facility, it would be the union of all five-minute walk radiiuses of all exits and reaches farther than the one from the station building only.

Figure 31. Walk Catchments around station
Figure 32. Walking permeability of buildings near station (ground floor)

Figure 33. Building use of the more permeable buildings (public and services)
Sidewalk Experience

There are sidewalks on almost all roads within a five-minute walk distance from station; however, the walking experience varies, to a large extent based on the condition of sidewalks and views along walk. Here I categorize the walks into four groups, which are small storefronts good to walk, small storefronts bad to walk, uniform good to walk, and uniform bad to walk, based upon categories developed by Jan Gehl (Gehl 2010, 231-246).

The good pedestrian routes are located downtown, with varied storefronts and windows so pedestrians can see what’s happening in the stores (for example, a seasonal clothing display, people watching football at a bar, or people playing chess at a café). Other pedestrian routes that are good to walk are the ones with vegetation and are well maintained, like the walk along the Johnson and Johnson headquarter, Rutgers Old Queen Campus and the historic cemeteries near where Neilson Street crosses Route 27.

Other routes that are not good to walk are mainly tall buildings or parking deck façades without variation or interesting details to look at and small shops that doesn’t look inviting from the street.

The great to walk areas are usually new development and the preserved historic buildings. Clearly, there are more people walking on sidewalks that are good to walk than on the bad to walk. It is the intention of the downtown, to create an area that congregates business which attracts people that then contributes to the businesses. Areas that are further away receive less attention thus have less incentive to be more walkable, which makes them stay the way they are.
Traffic at Station Intersections

There are seven major intersections surrounding the station area. They are traversed daily by cars, taxis, buses, bicycles, city residents and commuters. It’s where Easton Avenue and George Street meet Albany Street, which is the major corridor connecting New Brunswick and Highland Park. A high volume of vehicles creates congestion for much of the day. Pedestrians often end up jaywalking after pondering walk signals. Buses, taxis and cars dropping off or picking up rail commuters add to this mix, not to mention the frequency of screaming ambulances swerving to hospitals located right next to the station.

There is no designated area for car drop-off now. The road margin next to or close to station entrances/exits is where people drop off train riders. This creates an interruption for the main traffic on one hand; and on the other hand, it is very difficult for cars to swerve aside and back in again, especially in high-volume traffic on a narrow one lane road. The main entrances, also the most heavily used ones, are located at the busiest intersections, thereby concentrating potential pedestrian-vehicular conflicts.

Rutgers Center for Advanced Infrastructure and Transportation is conducting a traffic study at these intersections to propose fixes to make foot and vehicle traffic move more smoothly and safely. (Rutgers Today 2013) According to the crash data from 2007 to 2009, these intersections have the most injury and property damage cases: Somerset Street crosses Easton Avenue, Albany Street crosses George Street, Albany Street crosses Easton Avenue and where Wall Street crosses Easton Avenue. Major crash types included making left or right turns, stopped in traffic.
Figure 36. Traffic counts sample at four selected intersections.

Car and pedestrian counts in five minutes, surveyed on February 1st, 2013, with temperature high 33°F low 22°F

Figure 36. Traffic counts sample at four selected intersections.
Figure 37. Traffic volume near station at rush hours
(Source: Google Maps)

Figure 38. Pedestrians jaywalking at station building entrance.
Time lapse pictures taken on a weekday morning, 8 to 9 AM.
### Jurisdictional Map

Blue - City of New Brunswick  
Red - County of Middlesex  

Figure 39. Accidents at station intersections.  
(Image Source: Google Maps  
Data Source: Rutgers, Center for Advanced Infrastructure and Transportation,  
http://www.rci.rutgers.edu/~eg344/NewBrunswickRSA.pdf.)

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<th>C Somerset St &amp; Wall St</th>
<th>D Somerset St &amp; George St</th>
<th>E Albany St (Route 27) &amp; George St</th>
<th>F Albany St (Route 27) &amp; Easton Ave</th>
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<td>1</td>
<td>2</td>
<td>12</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

- Making Left Turn  
- Going Straight Ahead  
- Making Right Turn (not turn on red)  
- Stopped at Traffic  
- Slowing or Stopping  
- Parked
Sample Walks

I sampled people’s walks after they left the station one morning in March and one afternoon in April, to discover their walking routes from the station. After a train arrived, I observed people walking out from one selected exit, followed a random group, took sequential pictures on the way to record the paths they selected, and I stopped at where they reached their final destination or at the edge of a fifteen-minute walk radius if they walked further. I walked a good distance behind them so they were less likely to feel disturbed and so that the street context could also be included in the pictures.

The selection of people was random. I first followed a crowd and kept track of the main crowd as they got dispersed into different directions, finally focusing on one person. The starting points I selected in the morning were the station building front exit and the new ramp connected to the south bound train platform. The time was between 8 AM to 9 AM. I followed 4 different passengers. The directions the exiting passengers walked to were Voorhees Mall at Rutgers College Ave Campus, Easton Avenue northwest direction, New Street southwest of the station, and the Law Offices on George Street downtown.

In one afternoon from 5 PM to 6 PM, I started from the station building front at the exit stair onto George Street. The two walks led to Bayard Street to the back of the School of Planning and Public Policy, and to Highland Park across the Raritan River, respectively. One way that the morning walks differed was that after following the person to his or her destination, I was able to follow another person or several people toward the station direction on my way back. One person walked from the Planning School to Eastern Avenue, the other walked from the bridge over the Raritan River to the bus stop on George Street across the stairs to the north bound train platform.
Although these were only a very small sample of walks around the station on a weekday, I got a better idea that the station acts like an anchor point between the downtown areas on George Street and on Easton Avenue, and between Highland Park and New Brunswick, for pedestrian not taking the train, as well as those who do.

For people walking between Highland Park downtown and the station, the walk along the allee of trees next to the corporate office is nice, and sidewalks separated from car traffic are on both sides of the bridge leading to Highland Park Main Street. However, because Route 18 borders the east edge of New Brunswick, the exits from the highway bring in lots of car traffic, competing with walking and cycling at the same spot. For people to get from the border of New Brunswick to the Raritan Ave Bridge, they need to cross two intersections, by car flows between the two municipalities to Route 18. And the same situation applies in the opposite direction.

Even though it takes more than fifteen minutes to walk from the station to the edge of Highland Park, walking or bicycling are many people’s choice to reach to and from the two downtown areas. Joggers crossing the river are common. It is likely that more people would walk or bike if the circulation were more walk- and bike- friendly. What’s needed is to send the message to both everyday and occasional drivers coming from and to the highway, that this is also a shared space with pedestrians and cyclists, too.

I have documented these walks in the following pages not only in plan but also through a series of photographs that document the pedestrian experience. These experiential pathways have been considered relative to the overall sidewalk experiences diagrams (figure 32 &33) This leads to the walks that are most in need of improvement are the portion of Route 27 outside the station building, and its connection to downtown on George Street by Spring Street, as well as to downtown Highland Park.
Figure 40. Sample walks from station.
Weekday, 5:00-6:00 PM

- Spring Street to Planning School, Rutgers

- Raritan Avenue/Route 27
3. **Design**

After layering diagrams of walk catchments of each entrance of station (figure 29), the existing good walks (figure 32) and the walk samples from station, I discovered the walks that need to be retrofitted to join the existing good walks and connect to all catchments. The design suggestions is to improve the experience starting at the station and then extending to the city.

3.1. **Station building and pedestrian zone**

In order to provide safer circulation for pedestrians and cyclists and to make the train station a more vibrant anchor point connecting two downtown streets, I decided to make a design proposal at the major crossing outside the station building as follows:

First is to remove current curbs and create an on-grade plaza area paved with walk enhancement pavers. The area would be slightly raised toward the center in the Albany Street section. The pavement and slight change of elevation is planned to make cars slow down and be more aware that this is a pedestrian traffic zone. A drop-off lane for buses, taxi and cars is located next to the driving lanes surrounding the station building, with the capacity of parking eight cars and one bus at the same time. Bordering it is the pedestrian walk zone on the other side next to the building separated by bollards.

To address pedestrian jaywalking and difficulty crossing due to short crossing intervals and turning traffic at the pedestrian crossing phase, the three major car stops are pushed further away from the station building and located at the edge of the walk enhancement pavement. There is a longer pedestrian crossing interval when car traffic from all three directions stops at the same time for people to walk carefree.

![Figure 41. Walks to retrofit](image1)

![Figure 42. Categories of Walks to retrofit](image2)
1. Station plaza

2. Sidewalk Improvement

3. Surface Parking Garden

3. Alley Improvement

Figure 43. Plan of proposed design
The doorway on the southeast side of the building is relocated in my design proposal to avoid the awkward turn to get to the stairs or escalator to the second floor after arrival. The station building first floor is three feet higher than the ground level. There are lots of people with wheeled luggage or strollers who need to get up to the platforms. A new ramp replaces the existing stairs to make the climb easier and more efficient.

Taxi stands and people drop off areas are located at present in between the station building and the corporate office/parking deck. Cars and taxis entering need to drive in this narrow space and turn around to exit, which conflicts with people walking a lot on the sidewalk to and from the station.

In the proposed design, only cars needing to enter the parking deck are allowed, through a two way driveway pushed closer to the parking deck. A new two-floor building with restaurants and a convenient store is between the driveway and the station building. The new building will block ugly views of the adjacent parking garage, and the restaurant and store will activate the public plaza. The service area for the station will be located behind the new building. It is out of sight but still accessible through the driveway. A fountain/planter with seat wall in front of the new building for people waiting for the bus and trees planted at the edge of driveway, complete the pedestrian zone and makes it visually more attractive.

On the ground floor of the proposed new building at the existing Ferren Mall are shops and restaurants to provide amenities for everyday life while enhancing an environment that's more sensitive to human scale. The new building will have a wider setback for street trees, planter boxes, café seating, benches and bicycle parking.

The overall intention is to instill a sense that the space is intended for people, walking, biking, as well as driving and dispel the sense that pedestrians or cyclists are infringing the space.
Figure 44. Station intersection improvement.

1. Train Station Building
2. New Restaurant & Stores
3. Bike Racks
4. Bus Waiting & Car Drop-off Lane
5. Enhanced Pavement Pedestrian-friendly Street
6. Pedestrian & bike friendly Street
7. Multi-function Open Space for Farmers’ Market and Event Gathering
8. Surface Parking Garden
3.2. Connection to Highland Park

Car traffic from the ramps of Route 18 competes with foot and bike circulation. Drivers do yield to pedestrians and cyclists, even at rush hours, by observation. The change of color at sidewalk helps signal drivers to wait for and respond to pedestrians. In rush hours, lots of cars move slowly, therefore they see people. On the other hand, the existing sidewalks on the bridge and those on Route 27 are too narrow for pedestrians and cyclists to share at the same time. The existing cross walks are perpendicular to the car traffic, to raise drivers’ attention, but pedestrians need to make a 60 degree turn to reach the designated crosswalks then turn again and continue walking onto the same direction.

To communicate that this is a street people walk on, I propose the introduction of a couple of pedestrian and bike friendly design elements. Cross walks crossing ramp traffic are widened and extended so people can walk more directly in a straight line within the safety zone. Pedestrian paths from where they intersect Route 18 to where they reach the bridge are colored, signaling a walking zone.

A transition zone is designed to signal cars from Route 18 that they are entering a street shared with pedestrians and cyclists. The surface of the ramps is paved with colored and textured pavement upon reaching the intersections. On the two sides of ramps trees are planted. Planters of pedestrian scale are placed to soften the edge of highway and also make the transition of a walking zone. And they are not going to block the view of people crossing.

I decided not to convert one of the car lanes into bike paths based on the current car traffic volume crossing the bridge. After people reach Highland Park, cyclists can share the sidewalks with pedestrians. Without removing existing curbs, a pedestrian- and cyclist-shared path are constructed to accommodate non-vehicular traffic. They are eight feet wide, with the bike path on the car lane side. It might require taking up some space in front of some buildings or shops facing Route 27, but overall this is a practical solution to solve the conflict between cyclists and pedestrians.
Figure 47. Proposed design at crosswalks.

Figure 48. Proposed view from Rt18 to Albany Street.
3.3. **Connection to Downtown Streets: Easton Avenue and Spring Street**

To better facilitate the station’s role as an anchor point to the two downtown streets, one of the major tasks is to provide a better circulation and trespassing experience to get to and from these two downtown Streets with lots of traffic.

On Easton Avenue, I propose to convert one on-street parking lane into two four feet wide bike lanes on both sides. The remaining on-street parking is on the Eastern Avenue to the station direction because that side has a higher volume of traffic compared to the other and can act as a buffer from car traffic to the bike lane. This portion of proposed bike lane will connect to the existing bike lanes northeast of New Brunswick City.

From observation of pedestrian traffic from station, there are quite a lot of people who walk along Spring Street to reach downtown on George Street, after leaving the station, and vice versa.

The proposition on Spring Street is a one-way car traffic shared lane (more pedestrian and bike oriented), visually connected to the back of theaters, the planning school and art school. One bike lane is on each side of the street next to the sidewalk. Only one on-street parking lane is kept on the municipal court house side. It is not intended to compete commercially with George Street, but as a model of calming ground traffic to make walking, biking and driving coexist better in the community. Socially, other than restaurants and cafes, it also provides some multi-purpose space, for public art and outdoor gathering.
Figure 51. Existing condition on Spring Street.

Figure 52. Proposed design on Spring Street.
3.4. Surface parking garden

Surface parking lots that are along sidewalks, in close proximity to the station, connecting to major employers, or on well-traveled but under-designed sidewalks are proposed to be retrofitted. They are the one next to the bus stop at the southbound train exit on Somerset Street, the one between Little Albany Street and French Street towards hospital buildings, and the one at the back of the theaters at Bayard Street. The proposed parking gardens are linear parklets formed by trees and low shrubs along edge of parking lot next to the sidewalk.

They soften the parking edge and provide shade for the sidewalk and gathering and rest space in the urban city. According to its specific location, the parking garden is multipurpose. For example, the one at the back of the theaters can be an exhibition space for works of student artists, leading proposed landscape improvements to the alley between buildings to the front entrance of theaters. And the parklet located near the hospitals can be a healing garden for hospital visitors.
4. CONCLUSION

By onsite observation and following pedestrians leaving the station exits, I found out that pedestrian movement flow and directions are influenced a lot by the nature of the pedestrian route and what’s in proximity, the level of street activity and potential for vehicular-pedestrian conflicts. In order to enrich the everyday experience for the way people get to places, areas that attract the most people become the priority. Retrofitting these daily experience must meet different user groups’ needs, the regular commuters, the Latino families taking a stroll, or the occasional campus visitors.

It is both a challenge and a wonderful opportunity to experiment with how a transit oriented downtown like New Brunswick should be planned from the perspective of walking and biking where it is densely built and with a high volume of traffic. Many of the decisions that made New Brunswick vehicle-friendly made it difficult for pedestrians and cyclists.

A transit oriented lifestyle starts from the ground level, from designing streets where people feel it is safe to be in. If streets become safer and more attractive to walk on, people are more likely to walk and be part of the street life to make it better.

Doing this project made me see more and brought to my attention to quiet, ‘invisible’ things I didn’t realize but which make the everyday environment we live in. Much of the everyday environment is comprised of experiences that we are only partially conscious of experiencing. By consciously noticing and documenting my own route as well as others, I was able to “see” the everyday more consiously. Many small discoveries along the way made me think about designing sympathetically to human scale. For example, what we need when we are waiting for the train or bus is a place to put our coffee or purse. Outdoor spaces should be attuned to climate throughout the year (blocking the winter wind while letting the warm sunshine in); for example, the glass panels at the bus stop should be designed to block the predominant wind and rain without obstructing views and circulation.
One group that energizes spaces makes it better for others. People stay at a place for different lengths of time, with various frequencies. One person's everyday is made of many others' everyday or unusual days. We might just experience it as our routine and so easily be lightened up by other people's everyday.

With consideration of many user groups in mind, the recommendation or solution to exiting issues are more generic than I thought. If I'm continuing my research on this topic, I'd like to come up with more detailed design solutions that are more tailored to the city's particular characteristic and represent life in this specific city.

If we design cities only in plan we can design for optimal traffic flow but we can’t also optimize the pedestrian experience of the city. Getting to the ground level and studying space in between buildings and observing how people use the space is crucial in my design process. It complements the analysis I conduct in a bigger scale of the context and adds another layer of understanding of the site perceptually and spatially.

In summary, in order to create a vibrant everyday city, we should design first and foremost from the perspective of energizing our city street. Instead of accommodating vehicular traffic first and foremost, we should plan instead from the perspective of the people who, by walking and cycling, invigorate our cities.
SOURCES

BOOKS AND ARTICLES


WEB AND DATA RESOURCE


IMAGES


Figure 46. Existing view of one ramp from Route 18 to Albany Street. Bing Maps Street-side. Accessed April 22, 2013.

Figure 49. Existing view looking east on Easton Avenue. Bing Maps Streetside. Accessed April 22, 2013.

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