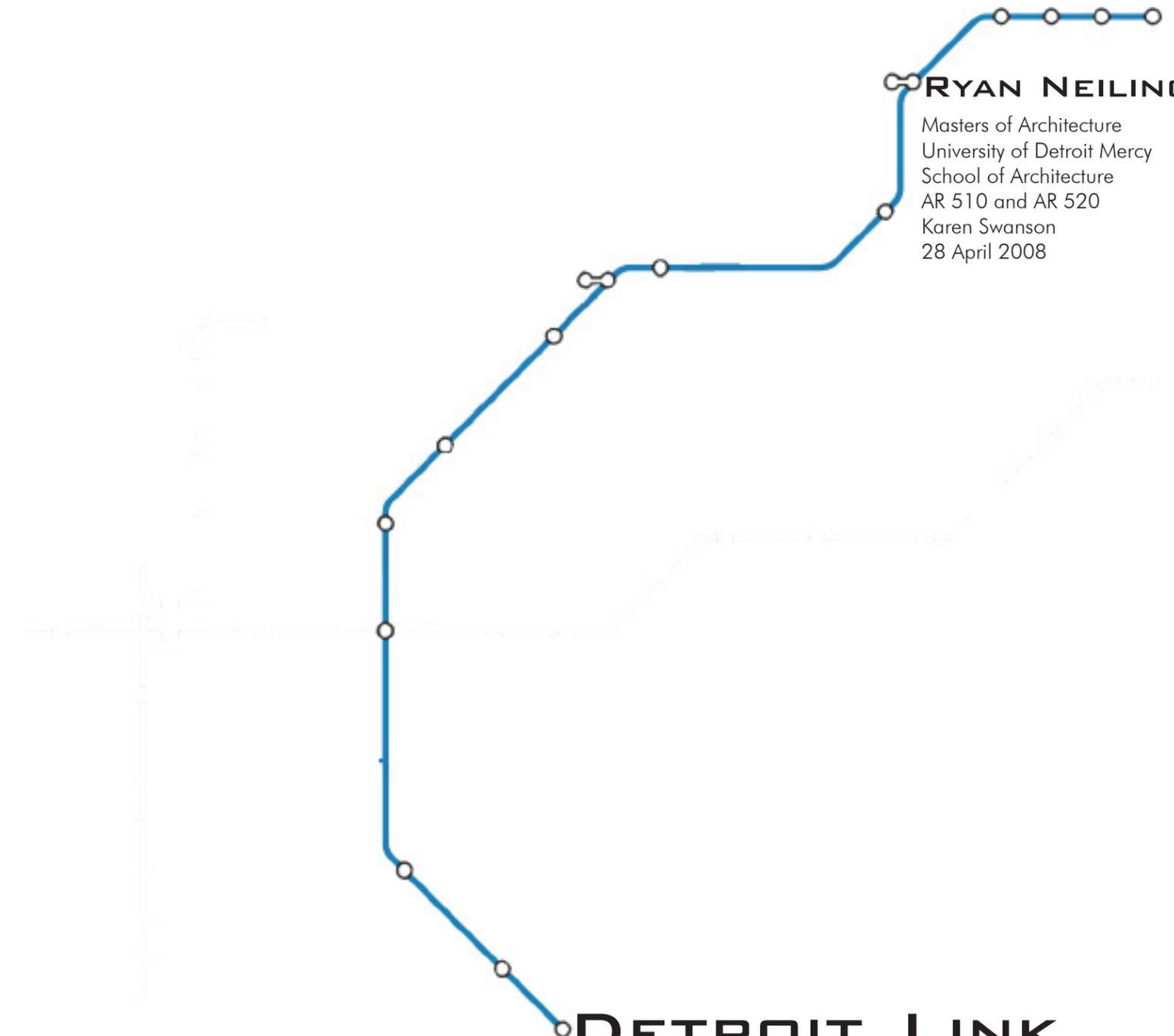




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28 April 2008

**DETROIT\_LINK**



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The decentralization of many metropolises began decades ago when people began moving from the city center to suburban areas. This effectively reduced the number of people concentrated in one area in case of nuclear war, and it became cheaper to live in the suburbs as jobs began moving outside the city, thus provoking movement. One of the biggest killers of the metropolis was the interstate highway and the mass-produced, independence-providing automobile. The automobile soon replaced motorized and non-motorized mass transit, and sprawling suburbs soon replaced dense urban development. Once these causes and effects of urban flight on the metropolis have been analyzed, then a master plan can be developed and implemented which will repopulate and revitalize our urban centers.

As the automobile became more popular and streets became increasingly congested, highways were the logical solution. This was thought to bring the people back into the city, but instead it took them out of the city even faster. The city of Detroit saw its population peak in the mid 1950's and then saw a rapid decline. Once around two-million inhabitants, it has lost over half of them and sits around nine-hundred thousand. The suburbs have seen a boom in population, gaining most of what the city lost. Today there is quite a disconnect between city and suburbs, not only between the physical appearance, but also within the population itself. There are some racial tensions and economic battles that the city faces, differences which are easily noticed when crossing from city into suburb. How do we go about re-connecting the city and suburbs?

The key to revitalization will be reuniting

the city and suburb in spirit and developing a better physical relationship between the two entities. Before the relationship of city and suburb can be mended however, first the city itself must be connected and reunited. Community involvement and interaction across Detroit is vital to its redevelopment. A stimulant for development and an element of unity within Detroit could be public mass transit. The system would link the pockets of dense population that currently exist. The existing bus system is unreliable, is not user friendly, and does not feel safe. Ideally the current bus system would be improved and then a light rail system could be implemented. Improving the mass transit system would hopefully create a denser urban environment and a stronger community. In order for people to interact throughout the city and eventually the suburbs, a link must be developed between the transit and station architecture on a personal scale. One way to create interaction is by providing a space at each bus stop or rail station for an art installation. These constantly changing and moving installations could all be done by local area artists. The stops could become a point of community interaction and a feature destination instead of passive architecture by incorporating a recycling center into them as well. The architecture of the stations would be interactive for the mass transit passengers and the public as well.



Detroit hasn't always been known as the Motor City, there hasn't always been an excess of five freeways running through the city, and lastly there once was an efficient mass transit system consisting of streetcars and buses. General Motors will quietly admit that it bought out the streetcar companies in order to replace them with GM built buses. At one time Detroit had the largest city owned and operated mass transit system, and now all Detroit has to show is an untimely bus route and some pictures of how things once were. The mass production of the automobile and its subsequent developments led to the quick rise and fall of the auto industry in Detroit, leaving it with not much more than the title of Motor City. One by-product of the auto that led to the division in the city was the development of interstate highways. These highways were built through the middle of lower class, African-American neighborhoods and destroyed communities. The highways, originally built by federal acts in case of war evacuation, created an easy way for whites to flee the city of Detroit into the suburbs in their automobiles. Outsourcing of production and the redistribution of manufacturing facilities outside the city and even to other states and countries drastically reduced the job market and economic gain in Detroit, forcing hundreds of thousands to find jobs by moving elsewhere. The ease of transportation due to the automobile and the interstate highways facilitated this abandonment. The dominant dependence on the auto industry left the Motor City with nothing to fall back on when they could no longer be relied on to support the region economically. So, what resources has Detroit been left

with to recover from this decline and period of stagnant growth? There is still a glimpse of hope for the future; there are hypothetical plans for a light rail system running on Woodward from Downtown Detroit all the way to Pontiac, along with lines up Michigan Ave and Gratiot Ave. Multiple mass transit plans have been thought up over the last thirty years, with the People Mover being the only one that materialized.

The region, local governments, and populations need to work together to create a less divided community between city and suburb, and they need to diversify the types of companies which provide the economic backbone for the city of Detroit and southeastern Michigan. The beginnings of regional government cooperation are underway through SEMCOG. Before the populace of the city and suburbs can be re-integrated, first the pockets of population and communities within the city must be connected. They must not only be connected physically but culturally as well. A driving force for the economy would be development around and between these pockets of population. What can provide this physical yet cultural link and provoke economic development in the City of Detroit? One way to accomplish these goals would be to develop and establish an efficient, friendly, and functional mass transit system. A mass transit system like light rail would physically connect the population and provide a more effective, reliable way to get to and from work, home, school, and entertainment venues. Light rail would also initiate a lot of physical and economic development by means of residential, commercial, and business/retail growth and expansion. The light

rail and bus stations could serve as points for community interaction and cultural engagement by incorporating things like a recycling center and moving/changing art exhibits done by local artists. The key is to link the transit and the architecture on a personal scale in order to provide the right environment for community interaction. For this idea to work, a plan must be developed for the big picture, but incorporated gradually from a small scale. So, what should the current plan of action be, what will the benefits be, and will there be any drawbacks?

Initially, there should be a three month, one year, ten year, thirty year, and etc plan for the mass transit system. A plan needs to be developed, implemented quickly, and modified as times change. The plan should first address the city's current transportation problems and needs. In the short term the city needs to address its bus system and the lack of efficiency and coordination between the Detroit (DDOT<sub>1</sub>) and suburban (SMART<sub>2</sub>) bus systems. Secondly the People Mover should be tied into a secondary route which would extend outward from the downtown, even if at first it was just a bus route. Along with these plans, the city should initiate an advertising campaign to make city residents and visitors aware of the bus routes, how and where they run, and take suggestions as to how they can improve the transportation system and what the residents would like to see in the way of new transit. In order to estimate the number of people the system could attract with a new system, the bus could offer free weekend rides to people for filling out surveys. Once the city has reached these basic goals, then they should

start looking at the bigger picture of deciding what kind of mass transit system they will use and what routes they will take. The biggest hurdles to mass transit have been funding, support, and organization, so establishing and maintaining these must be a main focus. From there it is a matter of planning for expansion, advances in technology, changes in lifestyle and living, and responding to the environment and urban landscape. As for long term goals, they should be developed to expand rail service throughout the city and into the suburbs. A long range goal for funding should be set in place for everyday operation and in the event that the economy hits a rough patch and funding or support is cut.

There are multiple government organizations and private sector interest groups which have been looking at mass transit in Detroit and are trying to improve the transportation system in general. The government organizations range from city, region, state, and federal being DDOT, MDOT<sub>3</sub>, SEMCOG<sub>4</sub>, and USDOT<sub>5</sub> or the FTA<sub>6</sub> respectively. Advocacy groups include TRU<sub>7</sub>, Michigan TOD<sub>8</sub>, Michigan Suburbs Alliance, WA3<sub>9</sub>, and MAC<sub>10</sub>, each with different goals and agendas, but share some common interests. TRU, an advocacy group for improving mass transit in Detroit, has been meeting recently to improve the bus system coordination between DDOT and SMART. TRU has met with the two organizations to negotiate bus passes that are valid on both systems for people with disabilities, making it easier for the passengers to ride the bus. At the Rider's Voice meeting on October 15, 2007, they discussed many items which the bus systems needed to improve upon. Mem-

bers/passengers discussed timeliness, signage, bike racks, advertising, and overall treatment of the passengers, which TRU will address with the appropriate bus service providers. TRU also supports rapid transit like light rail and sees it benefiting the city in terms of providing physical development and economic growth. MAC published some brochures in 2000 and 2001 which outlined how a bus rapid transit system could work and how it would affect the region; however, that proposal eventually lost steam and has apparently been forgotten. Local leaders from Wayne, Oakland, and Macomb Counties along with the City of Detroit have been trying to reestablish DARTA,<sup>11</sup> which would be the governing body and coordinator for mass transit in Southeastern Michigan. Re-establishing this government authority has been a vital factor missing in the organization and coordination of mass transit efforts. Without DARTA there has been no one to oversee funding, planning, or support of operations while coordinating with local, state, and federal entities. An article<sup>12</sup> in Metromode highlighted a preliminary plan these leaders submitted to Washington, DC in order to receive federal funding for a regional transit system. They are now working on a detailed cost analysis plan and transit options in order to gain public support in making rapid transit a reality in Detroit instead of just a proposal. TRU covered the proposal in its fall 2007 newsletter<sup>13</sup>, which is looking at light rail, street car, or bus rapid transit on Michigan, Woodward, and Gratiot Avenues which would all stop downtown and connect with the People Mover. It has also been suggested to extend the People Mover route a few miles North

into New Center to connect and provoke development between and around the two areas. This proposal is not very likely though because of the tremendous costs associated with an elevated rail line. Another proposal that is becoming reality is the Ann Arbor to Detroit commuter rail line, which is expected to materialize in the near future. These are only the major proposals in the City of Detroit, not to mention projects like the Rosa Parks Transit Center or the Birmingham Troy Transit Center, which are all signs that mass transit is coming to the city and suburbs.

Support for many of these plans and proposals come from examples of similar rapid transit systems that have worked in urban areas across the United States and Canada. Places like: Denver, Colorado, Dallas, Texas, Portland, Oregon, and Toronto, Ontario, all have light rail, street car, bus, and or subway systems which are successful and many of which were once dwindling, sprawling auto-based metropolises. Rapid transit has been proven to bring billions of dollars of investment to areas around light rail stops in these cities, sparking revitalization and growth. Dallas has implemented twenty-two miles of light rail between two lines; DART has been very successful with residents, developers, and public leaders.<sup>14</sup> There has been "over \$3.3 billion in private funds invested in nearby development" from its transit stops since it opened in 2000.<sup>14</sup> These are benefits which no one can turn down, not to mention the number of jobs that are created from transit operation and administration, and also all of the jobs which stem from rail car manufacturing and maintenance, all of which could be done locally.

Let's not forget the drawbacks and potential negative effects that mass transit could have on Detroit and the region. Of course, people will bring up the point that these transit systems don't turn a profit and must be government subsidized. It is true that most mass transit systems can not pay for themselves with fare alone and are government subsidized, but the benefits far outweigh the costs. Public transit is an important service like water, police, and fire.<sup>15</sup> Transit is an invaluable investment for the region to provide growth, development, jobs, and connect all of these. MDOT assumes repairing, repaving, and building roadways is a better long-term investment than developing effective mass transit. Many residents and politicians have proposed that instead of wasting money on building a rail system in the region, Interstate 75 should be widened in each direction, putting state tax dollars to better use. However, this proposal fails to look at several things. Widening the roadway may shave seconds off of your travel time, but the fact is that there are no long term benefits that would come from that. Within a couple of years the highways would be just as congested as they once were, and there would be no new population growth or economic development to show for it, just a wider roadway that encouraged sprawl, pollution, and destruction. None of these arguments weigh the environmental and pollution factors, with light rail negating some of the pollution produced by autos. Although mass transit would most likely be propelled by electricity which is primarily produced in a pollutant fashion, it would still reduce the overall release of harmful emissions and toxins released

by automobiles by using less fuel to propel more people. Public money is invested to provide roadways for automobiles and the government contributes tax dollars to fund airports as well, so why isn't some of the federal transit dollars Michigan pays each year being given back to Southeast Michigan to invest in mass transit? Michigan is currently lacking the plan and support it needs in order to use this funding, but hopefully that will be changing with the new plans submitted recently and the re-establishment of DARTA.

Another cost factor and setback in the argument against mass transit is the problem of acquiring and clearing the right of ways for the rail system and its stations. Conveniently the avenues which the light rail would be implemented on once had rails for streetcars and were built as wide boulevards which can fairly easily and adequately handle two sets of light rail tracks. As for the stations and future land development, it is no secret that there is plenty of vacant land in Detroit, even around the intersection of the major avenues and mile roads. The cost associated with it would be discovering who once owned the vacant land and securing a cleared title to the land in order to avoid future land rights disputes and the cost of settlements. However, the acquisition of right of ways and land acquisition for rail stations would be much simpler and cost effective than acquiring the land and houses required in widening the stretch of Interstate 75 between downtown and Eight Mile by one lane in each direction. The service drives would then have to be moved further out, displacing homes and residents on either side of the highway for eight miles within the

city of Detroit. These would only further disconnect and enrage these communities in Detroit.

Another argument is that the current population can not fulfill ridership quotas to warrant mass transit or to cover the costs associated with a mass transit system. Authorities feel there would not be enough people riding a light rail system to make it cost effective. However, once a reliable, safe, and efficient mass transit system is in place, it would provoke more ridership through advertising and word of mouth. Ridership numbers in Southeast Michigan increased an average of 8.4 percent between 2005 and 2006.<sup>16</sup> "Approximately 31,000 people currently ride the buses that go up and down Woodward each day. That's more people than ride the new light rail lines in Minneapolis (16,000), Salt Lake City (19,000) and Denver (28,000 on two lines), and nearly as many as Dallas (42,000 over two lines). Transportation Riders United, a non-profit dedicated to improving mass transit in metro Detroit, estimates a Woodward light rail line would attract between 40,000 and 50,000 riders a day."<sup>17</sup> So, ridership on Woodward and other bus routes already have enough ridership to warrant a light rail line. More support for the current ridership numbers are that when Detroit hosted the Super Bowl in 2005, the amount of people who used public buses was over double DDOT's typical numbers for a weekend, reaching 816,220 riders.<sup>18</sup> The ridership of the People Mover has increased by 50 percent between 2005 and 2006.<sup>16</sup> So there has been a lot of positive response to mass transit in Detroit when given the chance, it just needs to be improved and expanded.

The key to having a successful mass tran-

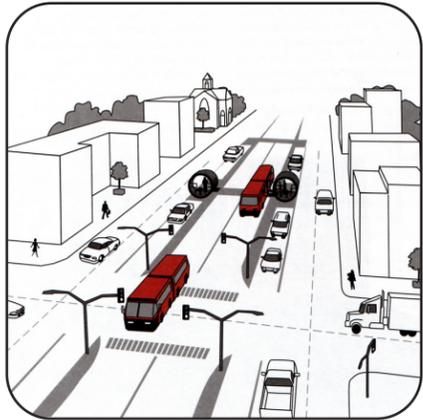
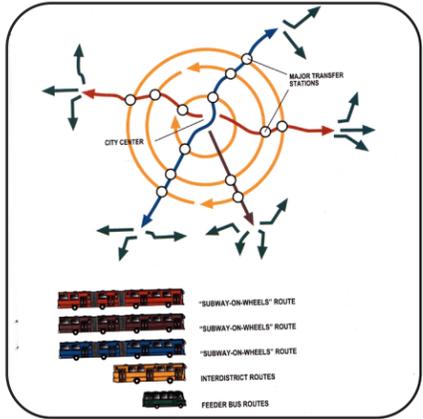
sit system will be to build incrementally and start small, rather than try to build the whole system at once. Detroit first needs to improve its current bus service, build a prototype rail line to prove that it will work, and then as the bus improves and the rail is successful, expand the transit system where the population demands. Eventually this will lead to a full scale light rail system reaching from the city into the suburbs, linking the entire metropolis. Ideally lines would extend from the downtown area on Jefferson to Grosse Pointe, Michigan to Dearborn, Grand River to Farmington, Woodward to Pontiac, Gratiot to Mt. Clemens and on Eight Mile from Grand River to Gratiot. Bus routes would run on the other Mile roads and on smaller streets to feed into the light rail lines. Although this overall plan will not be fully implemented for decades, laying the groundwork is the most important thing that can be done for this region in order for it to survive and thrive. Light rail is not a fix-all solution for Detroit's problems by any means, but can hopefully be a catalyst in setting the wheels in motion. It can provide business/economic development, physical/building development, and cultural interaction/exploration. Hopefully these factors can influence personal relationships between city/suburb governments and populations via perceived stereotypes as well. Mass transit will hopefully provide some competition for the auto and reduce some congestion and pollution as well. Detroit has been making moves to expand its economic resources, and implementing a mass transit system could be a key development tool in revitalizing Detroit and the region by connecting its people and resources.

- 1: DDOT (Detroit Department of Transportation)
- 2: SMART (Suburban Mobility Authority for Regional Transportation)
- 3: MDOT (Michigan Department of Transportation)
- 4: SEMCOG (South East Michigan Council of Governments)
- 5: USDOT (United States Department of Transportation)
- 6: FTA (Federal Transit Administration)
- 7: TRU (Transit Riders United)
- 8: Michigan TOD (Michigan Transit Oriented Design)
- 9: WA3 (Woodward Avenue Action Association)
- 10: MAC (Metropolitan Affairs Coalition)
- 11: DARTA (Detroit Area Regional Transit Authority)
- 12: Zemke, Jon. "Local leaders expect to move regional transit authority forward next year." *Metromode*. 15 November 2007. 5 January 2008 <<http://www.metromodemedia.com/devnews/regionaltransit0045.aspx>>.
- 13, 15: "DTOGS: Lower Woodward is Top Priority for Detroit Rapid Transit," "Transit Myths-Debunked." TRU Moving Forward. Fall 2007.
- 14: "TOD in Action." *Michigan's Golden Spike: Transit-Oriented Development for Southeast Michigan*.
- 16: "Mass transit ridership jumps in southeast Michigan." *Metromode*. 22 March 2007. 5 January 2008 <<http://www.metromodemedia.com/devnews/masstransit11.aspx>>.
- 17: Zemke, Jon. "Getting Woodward on Tracks." *Model D*. 16 January 2007. 5 January 2008 <<http://www.modeldmedia.com/features/wtransit77.aspx>>.

- 18: "DDOT Announces Ridership Exceeded 800,000 During Four-Day Super Bowl Period." DDOT. 8 February 2006. 5 January 2008 <<http://www.detroitmi.gov/ddot/newsmedia/pressreleases/2006/020806.html>>.

When looking at successful city plans and transit systems Curitiba, Brazil is often brought up as a prime example. Keep in mind though that Curitiba's master plan is developed based on growth instead of on urban decay and revitalization like many post-industrial cities in the United States. The city is planned around economic nodes which promote mobility by being pedestrian friendly. People are typically within walking distance or a short bus ride from retail, work, recreation, or entertainment. A vast majority of their commuters utilize the bus system and in turn helps Curitiba to have the lowest ratio of air pollution and fuel consumption in Brazil.

The mass transit system consists of five main bus routes which radiate from the center of the city and smaller routes feed into these main radials. The red routes are the five express routes with few stops. The orange routes transport from outlying areas to the express routes. The green route runs circular around the inner part of the city to connect the five main routes. The routes run in bus only center lanes and tubular bus stops keep the system efficient by having the riders pay in advance and having a closed system. This allows for fast loading and unloading and by making the platform the same height as the bus floor the process is handicapp accessible.

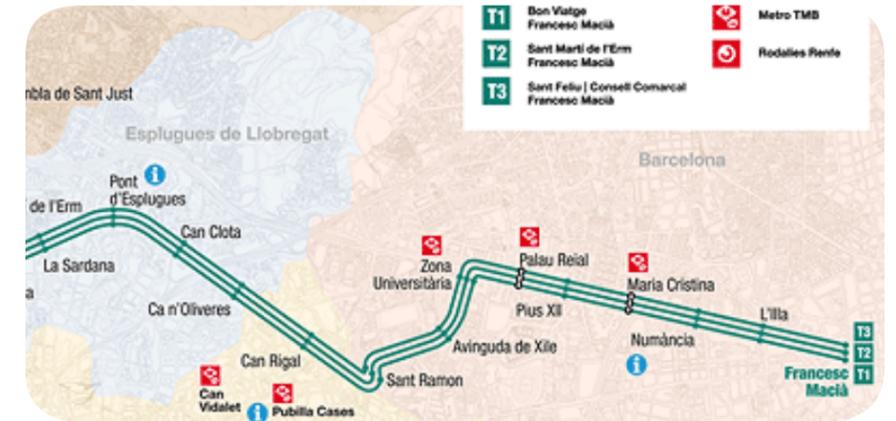


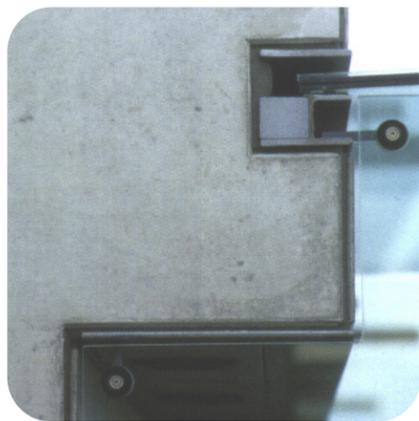


Barcelona's TRAM is safe, quick, punctual, and accessible as a result of many features. It travels at high speeds because it runs in a reserved tramway located in the center traffic lanes. Traffic lights are prioritized at intersections for vehicles and pedestrians. The train is environmentally friendly because it is electric and emits no polluting exhaust. The customers buy their tickets before boarding and validate them once onboard.

The platforms are fourteen inches above ground level with gently sloped ramps at each end for handicapp accessibility. Wheelchairs enter directly onto the TRAM at platform height at the specified loading door. The station is compact and user friendly with a machine to buy tickets, maps of the TRAM and subway routes, and an overhead monitor that shows the approximate time arrival and departure of the next train. Being located in the center of a reserved right of way allows it to have a grass median between and around the rail tracks.

The TRAM stations have glass and steel roofs that project over the portion where you buy your tickets but not cover the bench seating. While the layout and features of the stations are nice, they are still only the average station. There are no interactive components of the station and no covered seating is provided.

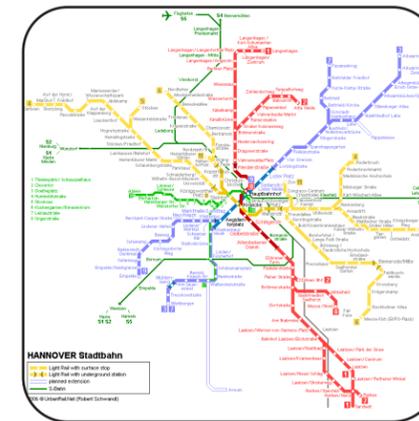




These tram stations were designed by Despang Architekten for the World Expo 2000 held in Hanover Germany. They were designed with many requirements in mind. The stations were designed and built as an easily mass-produced steel frame with a cladding specific to each station's location within a community. The architects took into consideration the scale and materials of the architecture surrounding each stop and applied a skin or cladding to each station accordingly. Materials include but are not limited to pre-patinated copper, brick, stone, or concrete veneer, and translucent skins of glass, wood slats, and metal mesh.

Sustainability was another factor taken into consideration when choosing the cladding materials; they were either renewable, recyclable, or have a long service life. The materials were also chosen to prevent graffiti to the stations with anti-graffiti coatings in susceptible areas. The stations have held up with fewer repairs than anticipated so far.

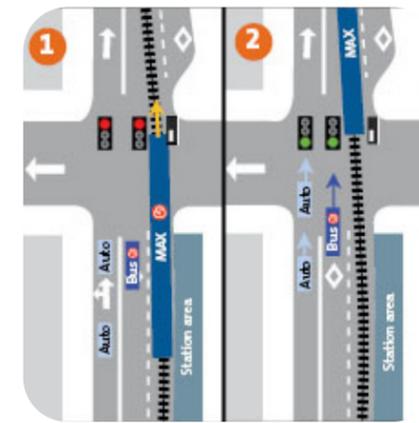
The steel frame beneath the cladding demonstrates the durability and universality of the pre-manufactured stations, while the different skins and claddings marked the varying characteristics and context. The constant form keeps the stations recognizable to residents, tourists, and passengers.





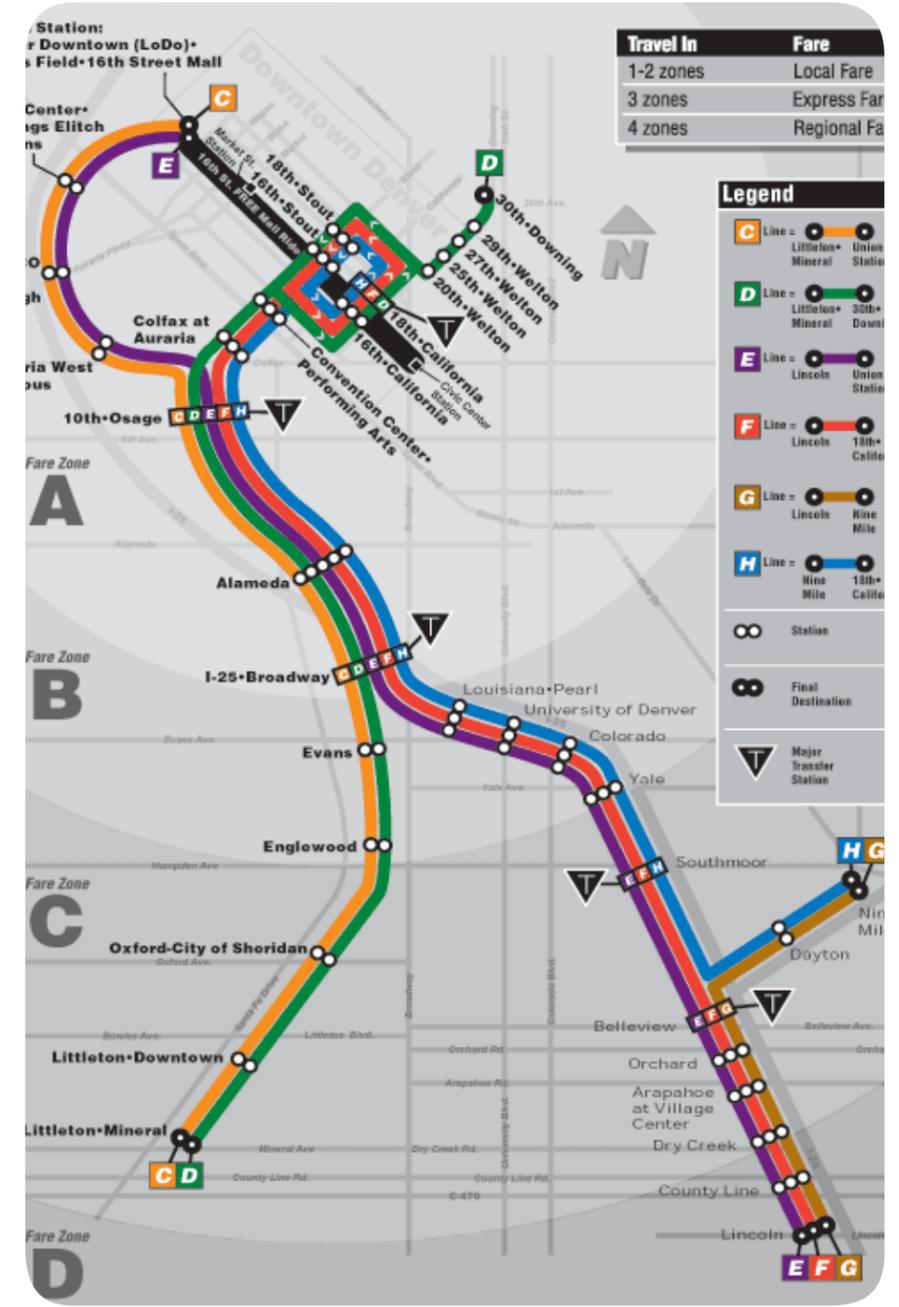
Portland's streetcar and light rail system has been quite successful and sparked a lot of growth. Transit oriented development is a popular term form of development that has caught on in many other cities. City officials of Portland have done many things to encourage positive growth such as setting urban growth boundaries and being pro-active about city planning. They have implemented parking policies and traffic calming to encourage higher transit ridership. The transit system and growth have been successful because of Portland's vibrant downtown, the development incentives offered along transit lines, and the fast-tracking of permits.

The light rail (MAX) and bus system have established right of ways and prioritized traffic signals to separate vehicle and pedestrian traffic. The train height at curb stations allows for easy loading and unloading of passengers and handicapp accessibility.





Denver is one of the first cities that light rail development started to occur in. It has older light rail vehicles with higher floor heights, so the stations have a concrete ramp which allow handicapp passengers to board the train without special provisions. The rails are primarily located adjacent to each other on one side of the street. In some cases, this allows for one-way traffic on the other side of the rails. For the most part the light rail is located in a light rail only right of way. Positive growth and developemnt has occurred around most of Denver's light rail stations.

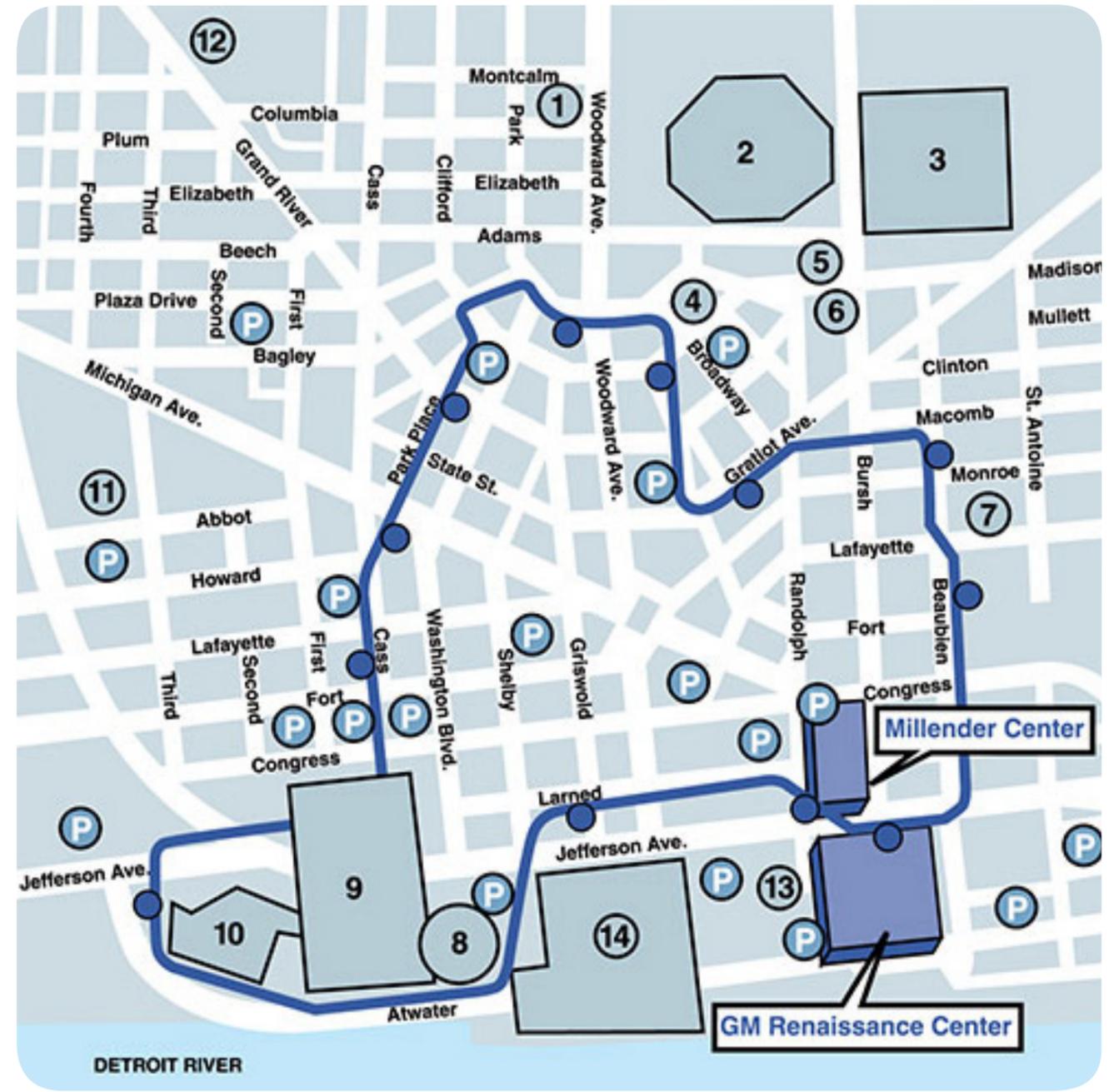


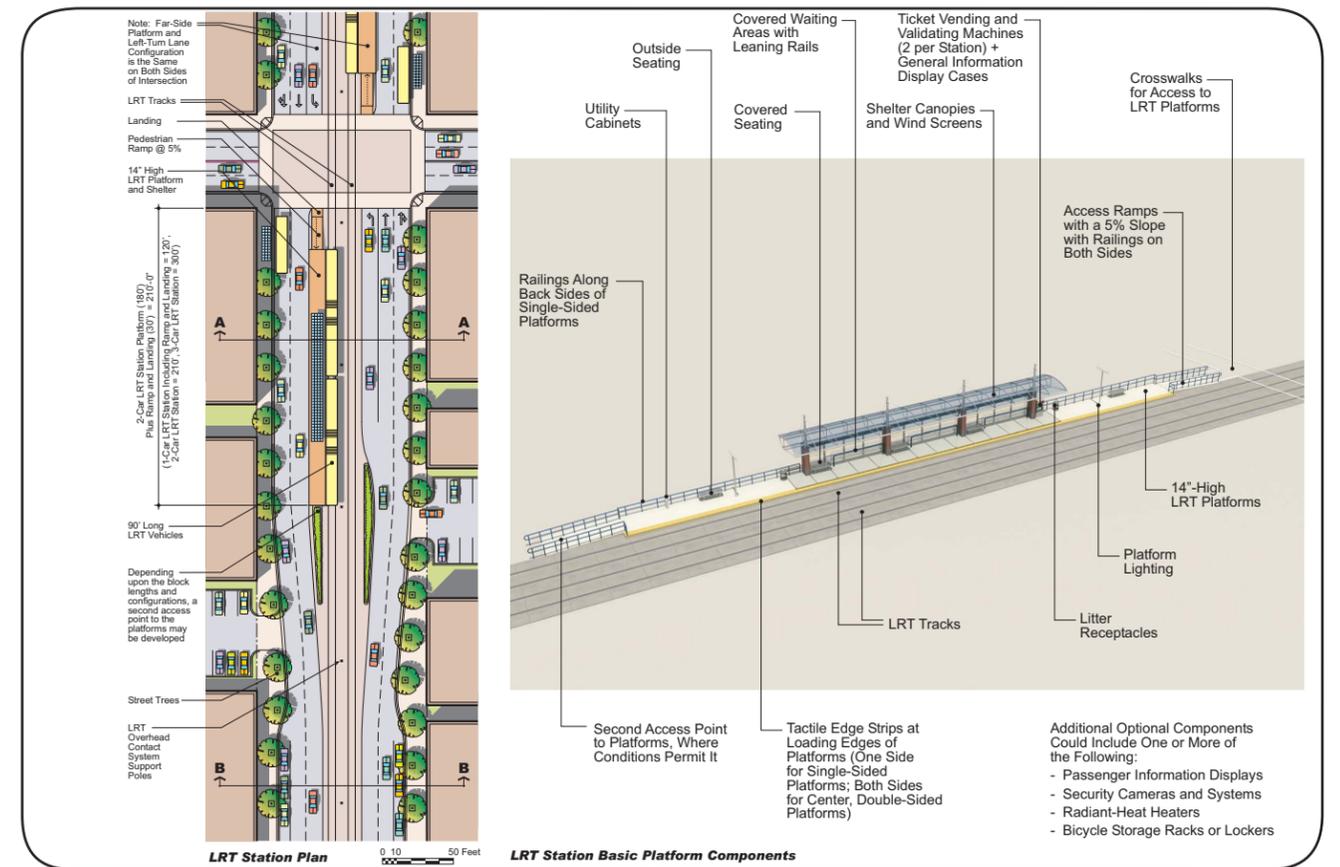




The People Mover downtown Detroit is an elevated rail system in a closed fifteen minute loop. Limited access is provided at its fourteen stops, each accessible at ground level in a stand-alone station or by a connection to the building it services. Each station along the route has a custom made art installation which is site specific. Most of the art is in the form of mosaics or large tile, while some are metal sculptures. The art not only gives the transit system an identity, but it also adds a vibrancy to the elevated rail.

Built with the intention of adding a line up Woodward Avenue, the People Mover is often criticized for not serving a large enough area and not being worth the amount of money it cost to build or maintain it. The system however is well maintained, is clean and safe, provides fast, efficient travel around downtown to some key locations, and the art provides a unique experience.





The Detroit Transit Options for Growth Study is being conducted by the Detroit Department of Transportation with assistance from URS Corporation. URS has assisted other United States cities such as Minneapolis, Denver, Dallas, and Portland to build light rail systems with government assistance in funding. The study has followed the government FTA New Start program's rules required to apply for federal funds for public transportation. Through this program the government will pay for fifty to sixty percent of construction and operation costs. The remaining funds must come from state, local, and city governments and any private funding available.

The initial analysis has concluded after eighteen months and narrowed the initial results of Michigan, Woodward, and Gratiot Avenues. As of April 21, 2008 DTOGS released the results of the study of the preferred alternative as a prototype light rail line on Woodward. The line will run from Downtown up to the Michigan State Fair Grounds near Eight Mile Road. The downtown stop may either be at the Rosa Parks Transit Center at Cass and Michigan or continue to Jefferson and conclude at the Renaissance Center.

The project will transition next into the preliminary engineering phase. Construction could begin as soon as 2011 at a cost of 371 million dollars and consist of thirteen to fifteen stops along the eight mile stretch. This of course is dependent on the continued cooperation of local governments, secured Federal funding, and continued public support. This plan is expected to succeed where past plans have failed because the regional plan is within the City of Detroit.

The transit plan has received much support from Detroit Mayor Kwame Kilpatrick, "Light rail on Woodward Avenue is a major step in moving Detroit and the region forward. Detroit is the last major city in the nation that does not have a rapid transit system, but that is going to change with this plan. I am looking forward to see the economic landscape of the Woodward corridor transform as new development sparks investment in Detroit."

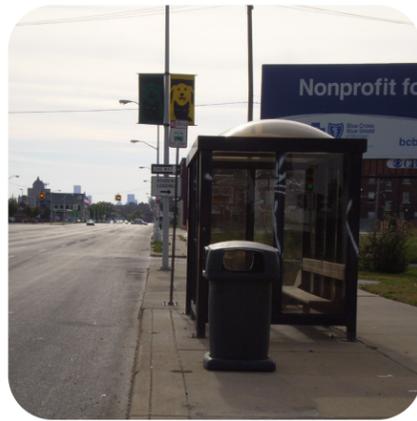
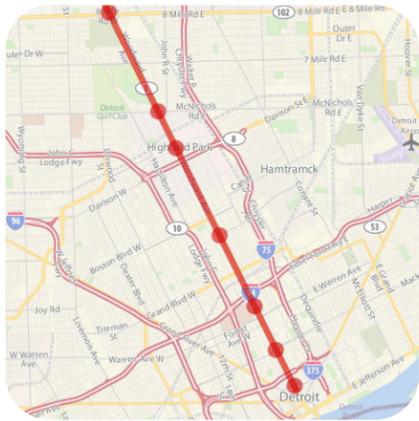
Congresswoman Carolyn Kilpatrick has been vital to the mass transit efforts in Detroit is positive in the results that have been achieved thus far and is positive about its effects on the future of Detroit. "Metropolitan Detroit is experiencing unprecedented growth and development. To continue this revitalization, Detroit and the region must provide efficient transportation alternatives. Rail transportation along Woodward is a good first step. I look forward to continuing to work with area transportation organizations, local leaders, and the community to secure the regional cooperation and funding needed to make rail transportation a reality for Michigan."

The system so far consists of two rail lines located in a center lane right of way and travels in both directions. Platforms will be inbetween the two rails and traffic signals will be prioritized to allow for fast travel for light rail and safe travel for pedestrians and vehicles. The rail stations will consist of transit maps, waste receptacles, covered seating, and ticket vending machines. Fourteen inch high platforms with ramps at each end will meet the floor height of light rail vehicles to allow handicapp accessibility.

**Circumstance** Low-Density  
Demolition Permits Outweigh Building Permits  
In-Efficient Transit  
Urban Sprawl  
Pre-Conceived Images from Past

**Criteria** Near Major Thoroughfare  
Near Transit Station  
Mixed Zoning Area  
Under-utilized Existing Buildings

**Node Development Criteria** Interior/Exterior Transit Station  
Multi-Income Residential Housing  
Restaurant/Bar  
Coffee Shop  
Small Retail Shops/Grocers  
Commercial Offices  
Bank or ATM



Series of Transit Stops and Nodes  
 Location: Woodward Avenue  
 Downtown to Eight Mile



Transit Station and Node Redevelopment  
 Ford Model T Plant: Retail, Offices, and Residential  
 Location: 14100 Woodward Avenue  
 Highland Park, Michigan

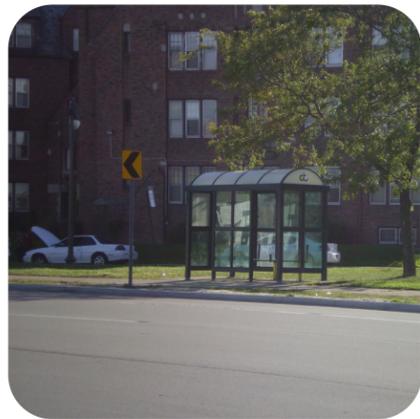
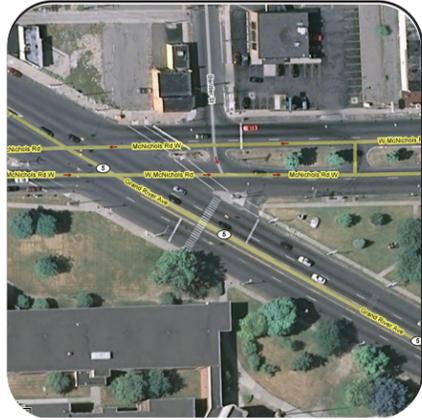
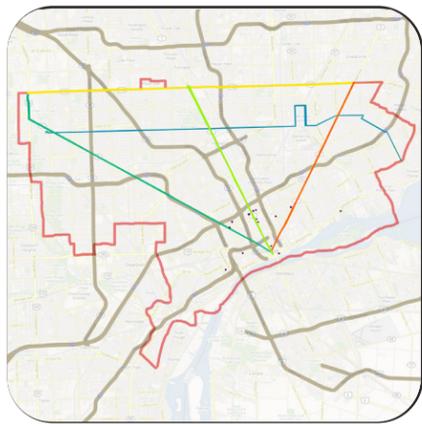


Transit Station and Node Redevelopment  
 David Whitney Building: Retail, Offices, and Residential  
 Location: 1553 Woodward Avenue  
 Detroit, Michigan

**Circumstance** Developing overall transit map with cultural links across the city of Detroit. Connect the west and east populations along the McNichols corridor via mass transit. Design bus stations along the McNichols bus route and lightrail stations where McNichols intersects Grand River, Woodward, and Gratiot.

**Bus Route Criteria** A semi-major street with an existing bus route serving a variety of people. Existing bus route and stops in need of improvement. Provides a way to connect pockets of population. Areas of low density in need of redevelopment.

**Light Rail Criteria** Intersects major avenues. Provides place for significant community interaction. Near Existing bus stops. Mixed Zoning area. Nearby vacant or under-utilized lots for expansion.

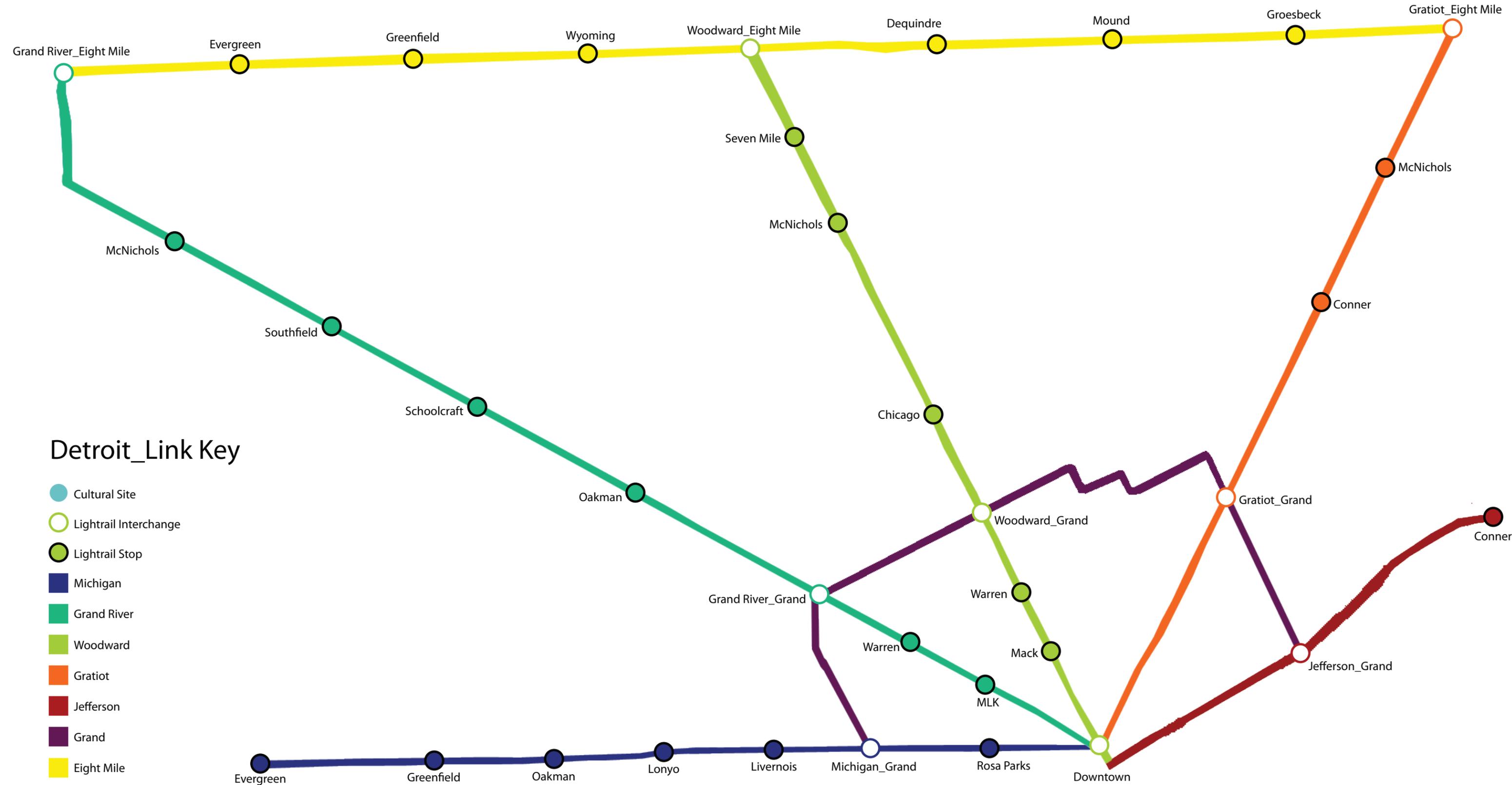


**Circumstance** Developing overall transit map with cultural links across the city of Detroit to connect pockets of population within the city of Detroit. Layout entire light rail map for City of Detroit and label the major stops. Develop interface to show how cultural links and population will be connected. Design typical station configuration for the stops on the light rail lines. Stations will be modular, which will allow flexibility and ease in changing moveable art exhibits.

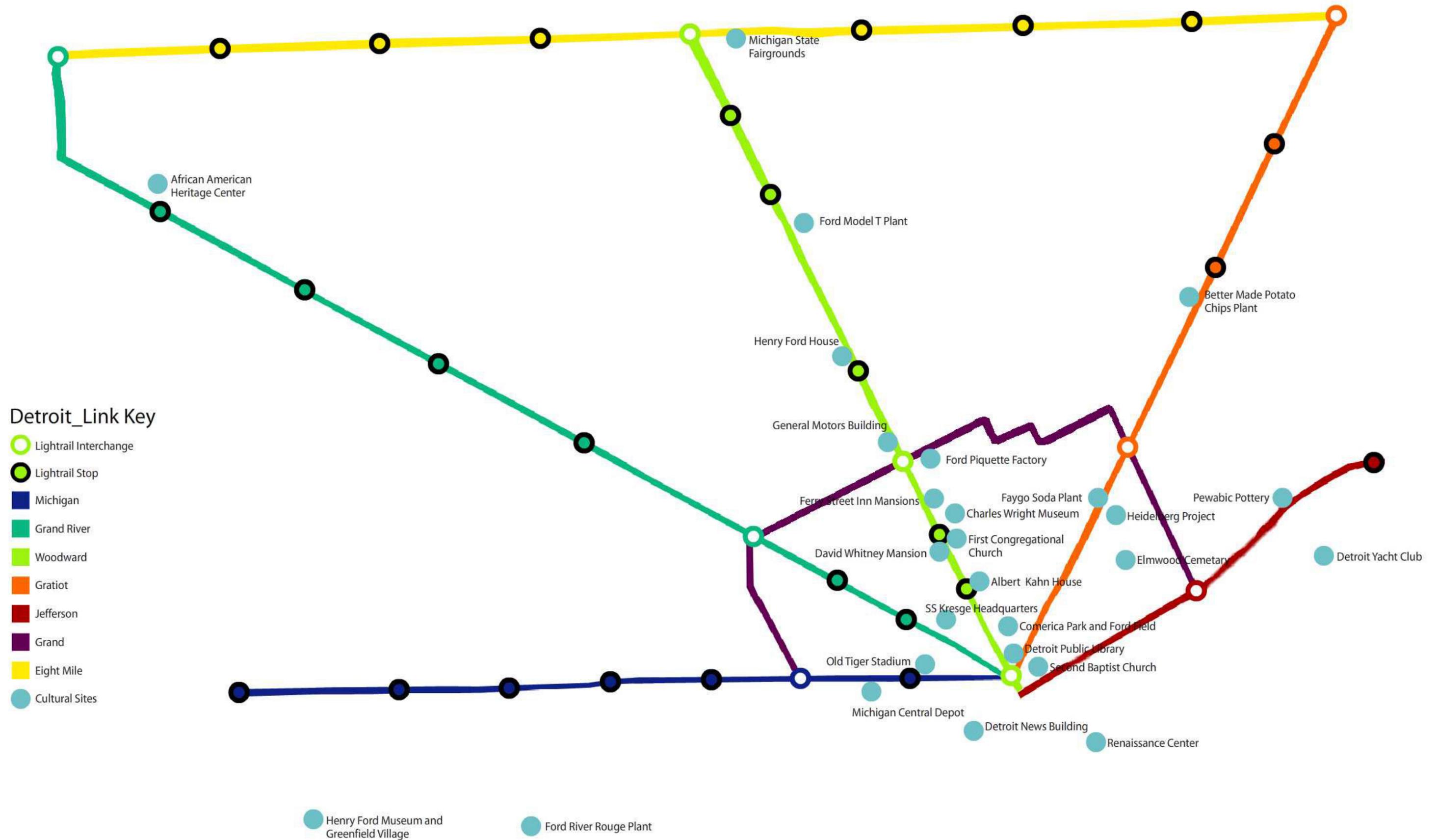
**Light Rail Criteria** Provides a way to connect pockets of population.  
 Areas of low density in need of redevelopment.  
 A semi-major street with an existing bus route serving a variety of people.  
 Intersects major avenues.  
 Provides place for significant community interaction.  
 Mixed Zoning area.  
 Nearby vacant/under-utilized lots for future development.



# Detroit\_Link Map



# Detroit\_Link Map



**Project Program Summary** Create a place for public interaction and an enjoyable, reliable, and safe way to get from point A to Point B.

**Program Quantitative Summary**

**Project concentration** McNichols bus route and light rail intersections

**Typical light rail station platform** 1,200 square feet

**Typical bus shelter** 150 square feet

**Total stations** 3 (Grand River, Woodward, Gratiot)

**Total shelters** 4

**Uses at each station**

- Seating 8-18"x18"x36"benches
- Newspapers 8-18"x18"x36"distribution boxes
- Recycling (Metal, Glass, Plastic, Paper) 2-36"x18"x36" bins per material (8 total)
- Waste 2-36"x36"x36" bins
- Transit map 2-36"x36" panels
- Ticket machine 2-36"x36" machines
- Art exhibits Varies by exhibit
- Advertising 36"x36" panels

**Uses at each shelter**

- Seating 4-18"x18"x18"benches
- Newspapers 2-18"x18"x18"distribution boxes
- Recycling (Metal, Glass, Plastic, Paper) 1-36"x9"x18" bin per material (4 total)
- Waste 1-36"x18"x18" bin
- Transit map 1-36"x36" panel
- Ticket machine 1-36"x36" machine
- Art exhibits Varies by exhibit
- Advertising 36"x36" panel

**Space Detail Summary** Light Rail Station

**Quantities Required**

Unit capacity  $1,017 / (15\text{ft}^2/\text{person}) = 67$  occupants  
Number of units 3  
Net square feet/unit  $18' \times 60' = 1,080\text{ft}^2 - (21' \times 3') = 1,017\text{ft}^2$   
Total net area  $3,051\text{ft}^2$

**Purposes/functions** Provoke community interaction, draw people's attention to come ride the light rail or interact with the station, encourage people to put an art installation here.

**Activities** Sitting, standing, waiting, viewing, reading, recycling, buying tickets.

**Spatial relationships** Interactive waiting area makes people more aware of their surroundings, makes people aware of both sides of the platform, must be aware of people entering and exiting the trains.

**Qualitative considerations** Occupants should feel comfortable in most weather conditions, lighting at night should make the occupants feel safe.

**Equipment/furnishings** Seating is incorporated into the station design.

**Behavioral considerations** Should be enough room for passengers waiting for, entering, and exiting trains on platform.

**Site environment considerations** Platform should not interfere with vehicular traffic, should be positioned in accordance with the light rail tracks, and should be at the appropriate height to make it flush with the train floor. Platform should be easily accessible from more than one side.

**Space Detail Summary** Bus Shelter

**Quantities Required**

Unit capacity  $120 / (15\text{ft}^2/\text{person}) = 8$  occupants  
Number of units 4  
Net square feet/unit  $6' \times 20' = 120\text{ft}^2$   
Total net area  $480\text{ft}^2$

**Purposes/functions** Provoke community interaction, draw people's attention to come ride the bus or interact with the shelter, encourage people to put an art installation here.

**Activities** Sitting, standing, waiting, viewing, reading, recycling, buying tickets.

**Spatial relationships** Interactive waiting area makes people more aware of their surroundings, the street, people entering and exiting the bus, and pedestrians walking by.

**Qualitative considerations** Occupants should feel comfortable in most weather conditions, lighting at night should make the occupants feel safe.

**Equipment/furnishings** Seating is incorporated into the shelter design.

**Behavioral considerations** Should be enough room for passengers waiting, entering, and exiting buses, and pedestrians to walk through.

**Site environment considerations** Curb should not interfere with vehicular traffic, should be positioned in accordance with parking spaces, and should be at the appropriate height to make it flush with the bus floor. Shelter should be easily accessible from more than one side.

**Project Program Summary** Create a place for community interaction, cultural and urban exploration, and a safe, reliable way to get from point a to point b in Detroit.

**Program Quantitative Summary**

**Project concentration** Light rail map and individual stations

**Typical light rail station platform** 2,160 square feet

**Total light rail lines** 7 (Michigan, Grand River, Woodward, Gratiot, Jefferson, Grand Boulevard, Eight Mile)

**Total stations** 35

**Typical uses at each station**

Number Cubes-36" h, 36" w, 36" d  
 Cubes per station 42 (36 full, 6 half)  
 Seating 6-4 drawers per side (6"x36"x18")  
 Roof canopy 6-4 roof canopies per side (6"x36"x36")  
 Newspapers 2-4 distribution boxes per side (18"x18"x18")  
 Recycling (aluminum, glass, plastic) 2-1 bin per material per side (36"x12"x18")  
 Waste 2-1 bin per side (36"x36"x18")  
 Transit map interface 2-1 interface panel per side (36"x36"x6")  
 Ticket machine 2-1 machine per side (36"x36"x18")  
 Art exhibits Varies by exhibit  
 Advertising 2-1 panel per side (36"x36"x6")  
 Coke machine 2-1 machine per cube (36"x36"x36")  
 Light cubes 6-1 per cube (36"x36"x36")  
 Northbound Train Arriving 2-1 panel per side (18"x36"x6")  
 Southbound Train Arriving 2-1 panel per side (18"x36"x6")  
 Station name 2-1 panel per side (18"x36"x6")  
 D\_Link 1-1 panel per side (36"x36"x6")

**Other uses at stations**

ATM 1-1 per side (36"x36"x18")  
 Weather 2-1 per side (36"x36"x18")  
 Recycling (cardboard, paper, plastic bags) 2-1 bin per material per side (36"x12"x18")

**Space Detail Summary** Light rail station

**Quantities Required**

Unit capacity  $2,160 / (15\text{ft}^2/\text{person}) = 144$  occupants  
 Number of units 35  
 Net square feet/unit  $24' \times 90' = 2,160\text{ft}^2 - (36' \times 3') = 2,052\text{ft}^2$   
 Total net area 71,820ft<sup>2</sup>

**Purposes/functions**

Community interaction, inform about cultural attractions, draw interest to light rail, interact with the station, encourage people to do an art installation, provide place to recycle.

**Activities**

Sitting, standing, waiting, viewing, reading, recycling, buying tickets.

**Spatial relationships**

Interactive waiting area makes people more aware of their surroundings, more aware of both sides of the platform, and more aware of people entering and exiting the trains.

**Qualitative considerations**

Occupants should feel comfortable in most weather conditions, lighting at night should make the occupants feel safe.

**Equipment/furnishings**

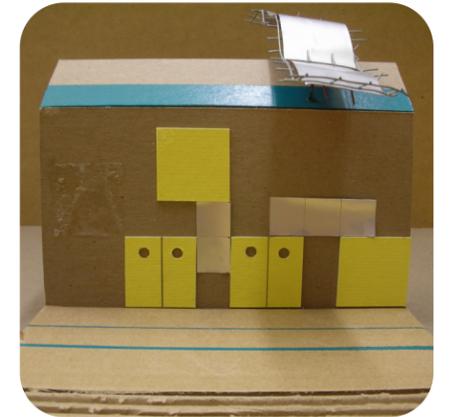
Seats and roof are incorporated into the station.

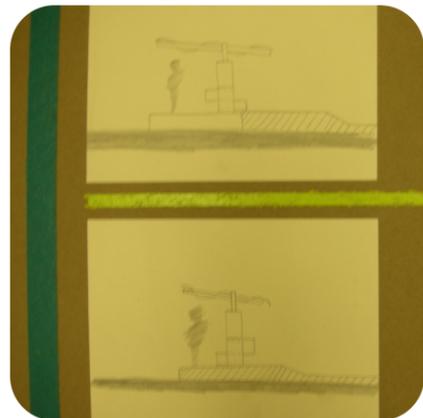
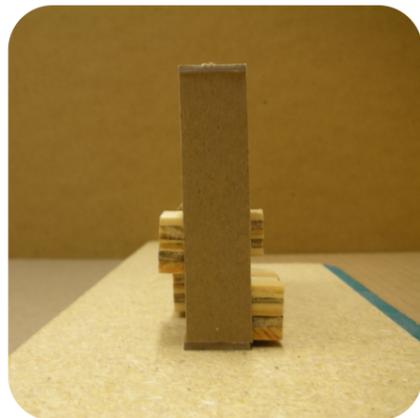
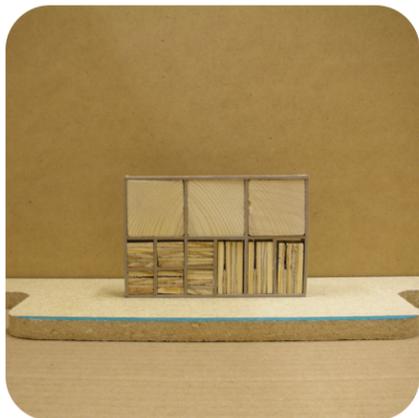
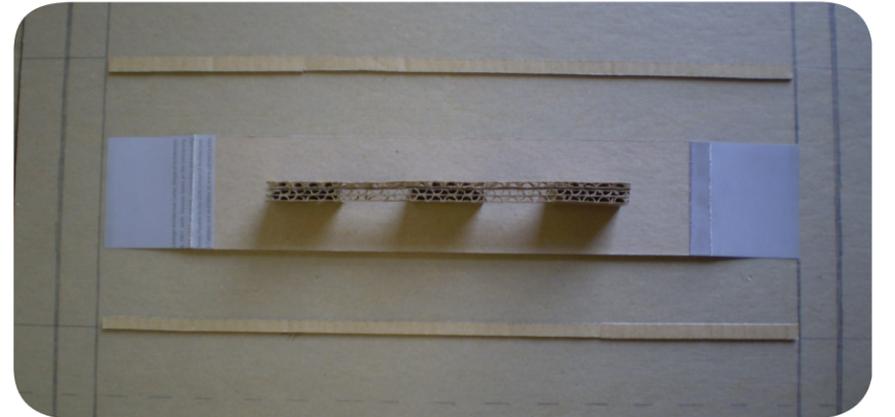
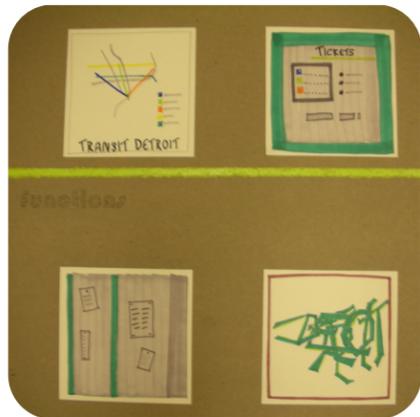
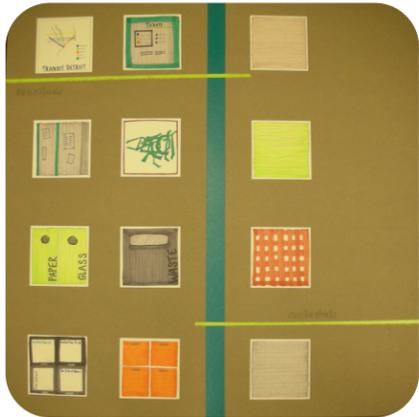
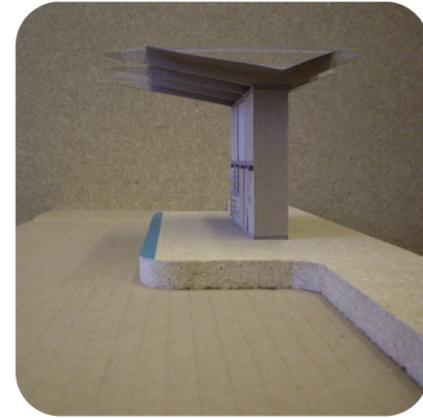
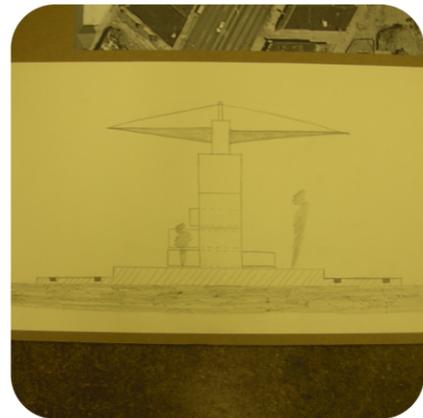
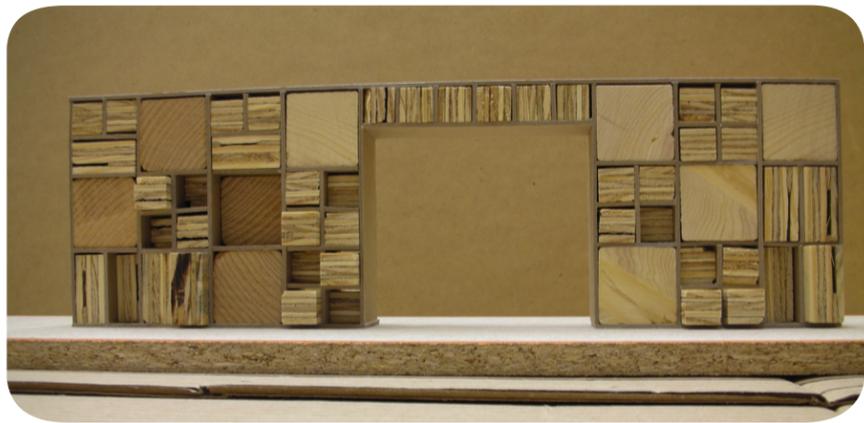
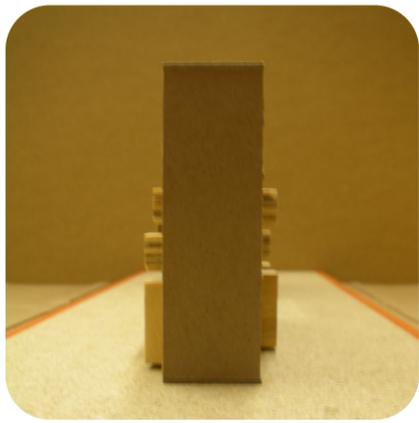
**Behavioral considerations**

Enough room on platform for passengers to comfortably wait on, enter, and exit trains.

**Site environment considerations**

Platform should not interfere with vehicular traffic, should be positioned in accordance with the light rail tracks, and should be at the appropriate height to make it flush with the train floor. Platform should be handicapp accessible from both sides.



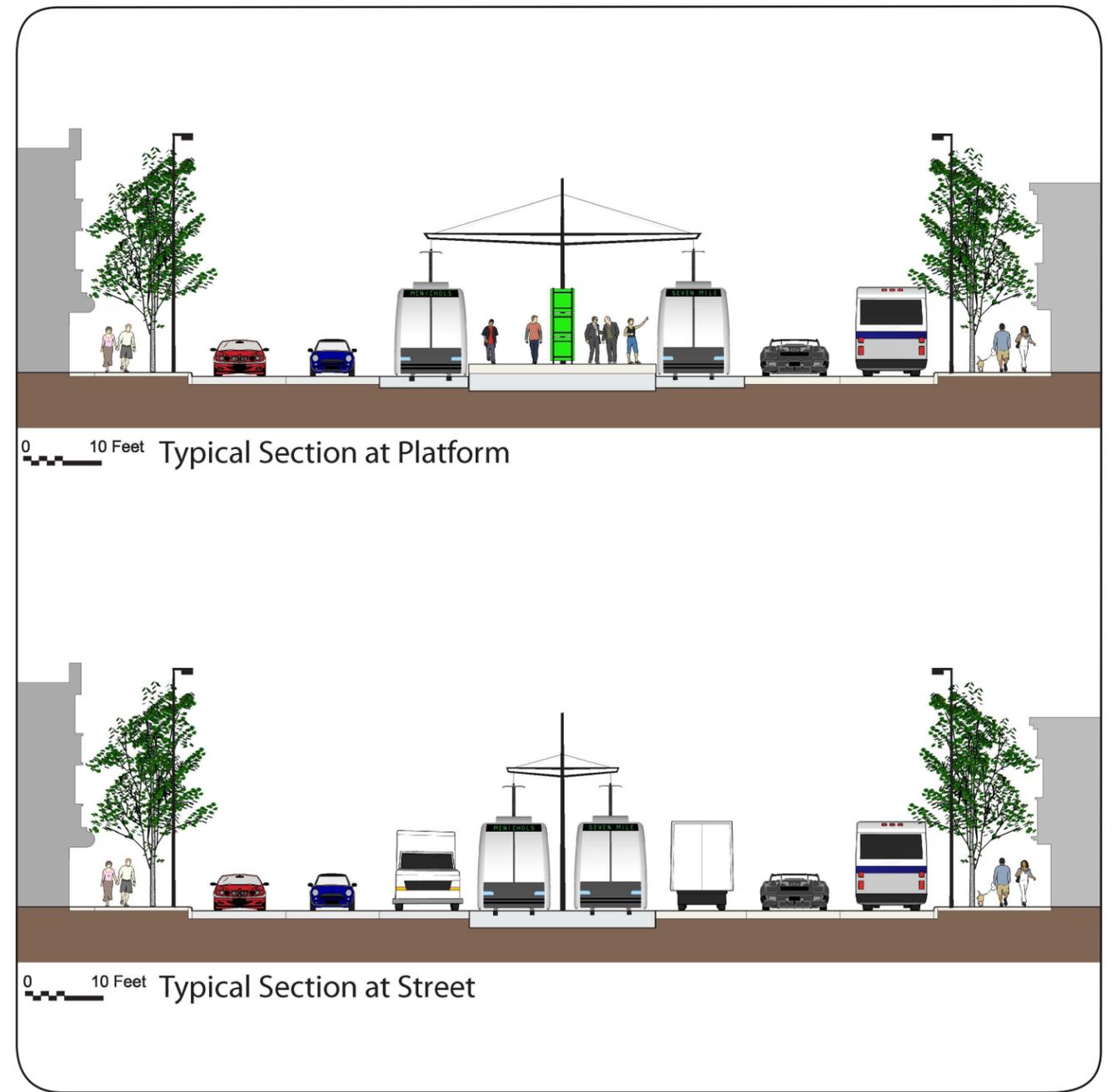
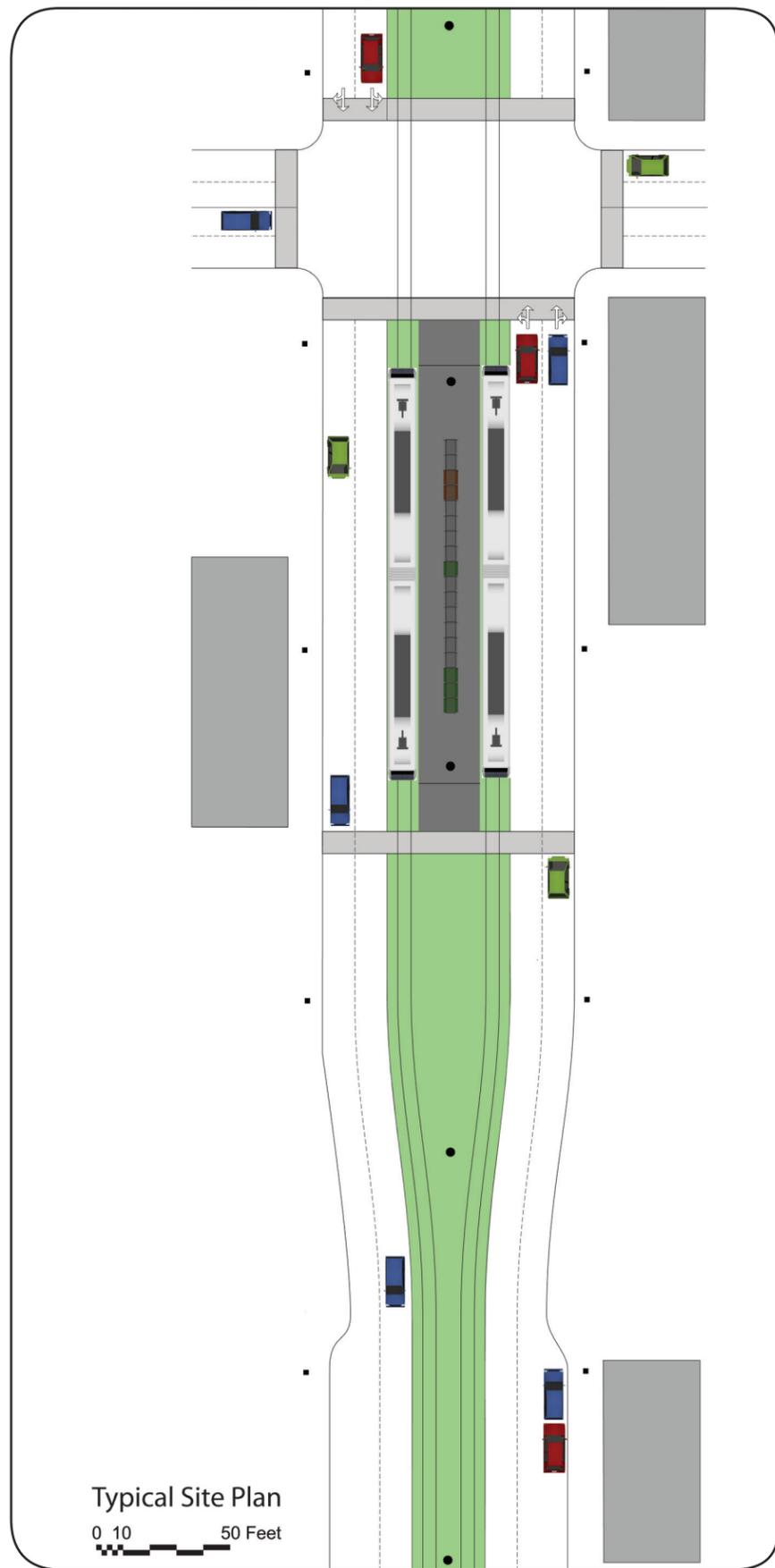


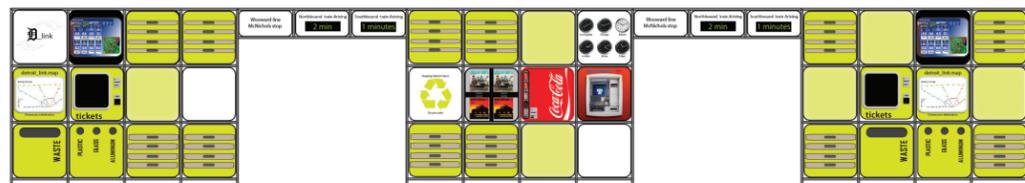
In order to connect the people of Detroit, I am proposing a light rail system coupled with dynamic, moving museums, which will serve as the transit stations. These will serve to connect the people physically and culturally. The light rail system would be developed to tie into the People Mover downtown and eventually the suburbs. The initial proposal however is for a feasible and practical approach to implementing light rail. The rail lines will go on the major radials: Michigan, Grand River, Woodward, Gratiot, Jefferson, Grand Boulevard, Eight Mile. The train will run in both directions in a center lane right of way. By keeping the infrastructure together and causing minimal disturbances to traffic flow patterns and parking, this should keep the costs down. Street level transit is a far more cost effective solution than an underground or elevated system which require denser populations, and it also keeps more people on the streets providing safer and friendlier communities.

Prioritized signals will be implemented for the light rail vehicles along with designated pedestrian crosswalks and signals. The stations have a simple ramp approach with a typical width of twenty-four feet and ninety foot long platforms to accommodate ninety foot trains. The structure is a simple steel tubular system which creates a framework for the modular recycled plastic cubes inside. This allows for a very flexible and easy to maintain system. The cubes can be interchanged via a light rail lift crane that can move the cubes between stations. Cultural and historical exhibits can be constantly exchanged throughout the city and with local artist installations. Maintenance is simple because the waste

and recycling cubes can just be pulled out and replaced with a new one. The functions of each station vary according to context, so each location is site specific.



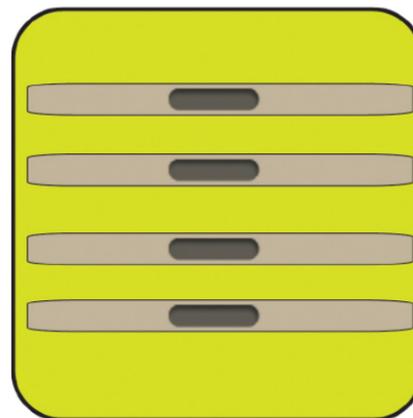
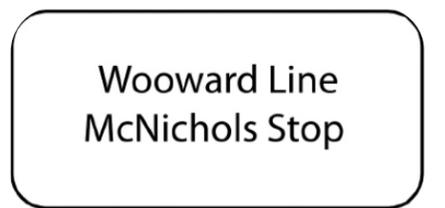
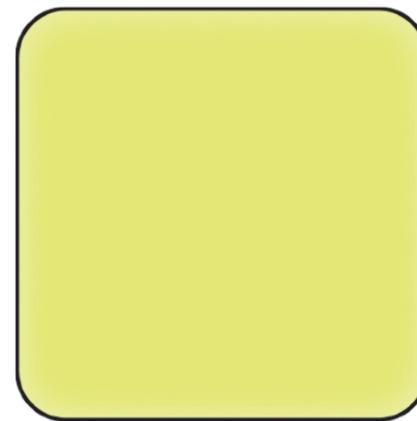




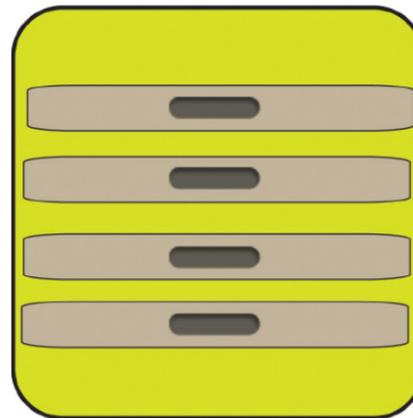
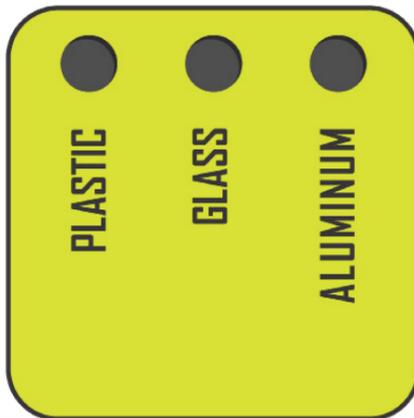
Station Elevations 1/4"=1'-0"

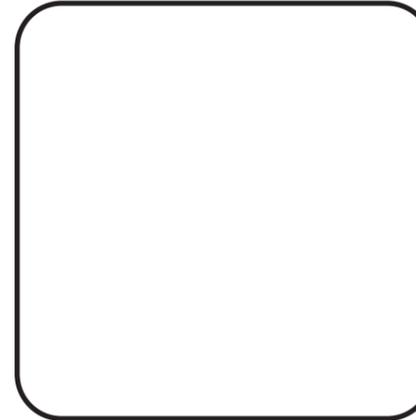
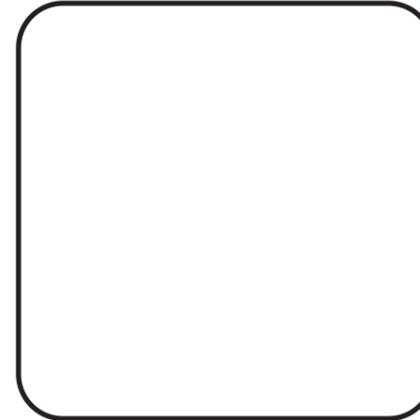
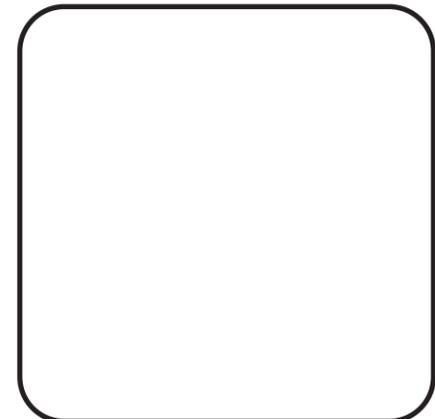
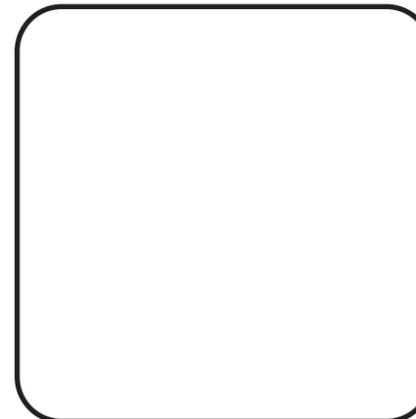
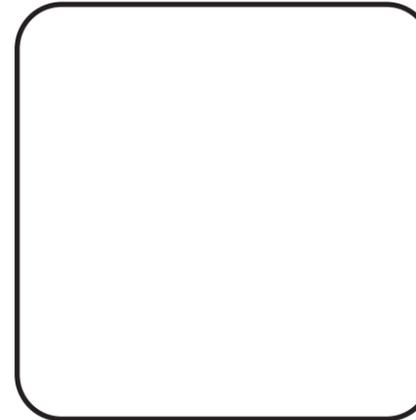
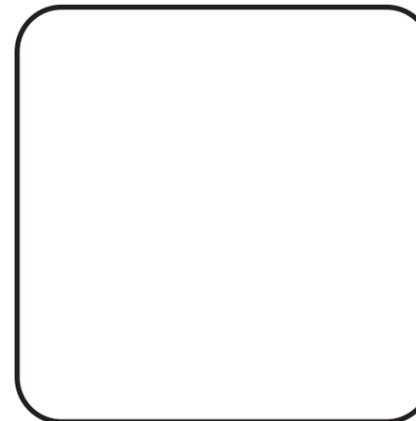
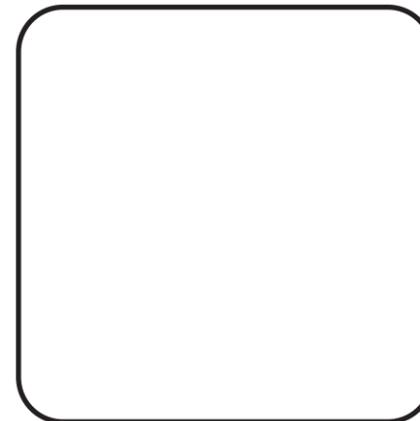


Station Elevations 1/4"=1'-0"

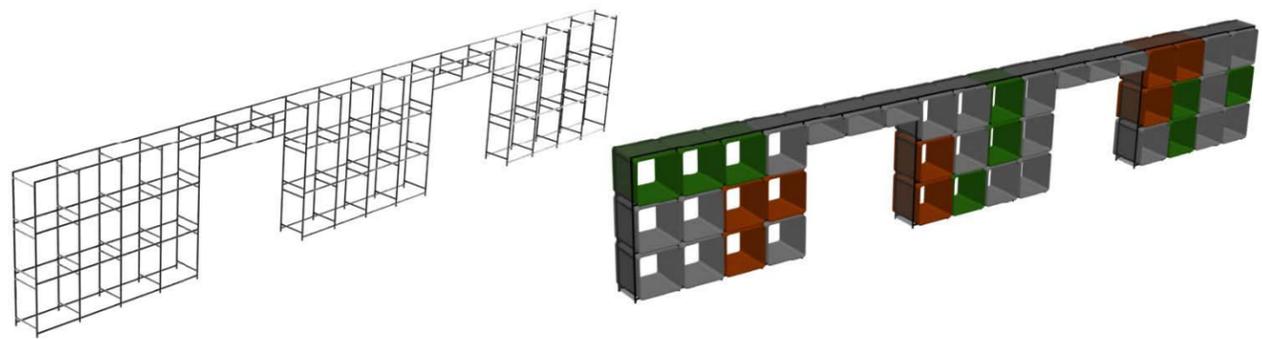


Individual roof and seat drawers are pulled out as needed according to the required height requirements. The lower drawers can function as a place to tie your shoe, as a place to sit, or even as a desk for your laptop while you wait for your train. The roofs are made of varying materials to accomodate the weather conditions. Slatted will provides shade, while a solid glass will provide shelter from rain or snow.

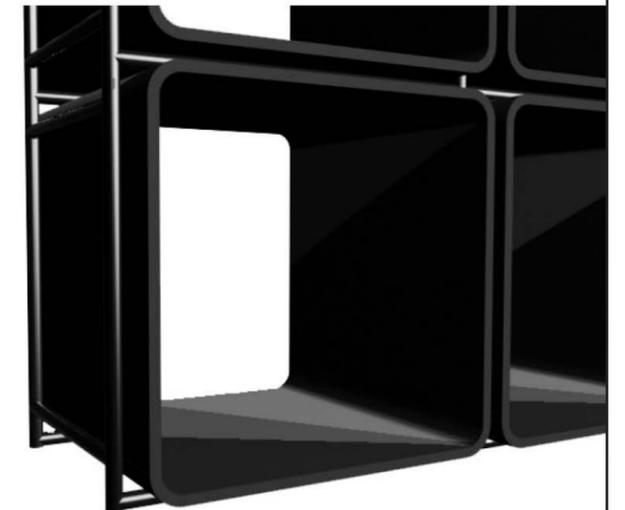
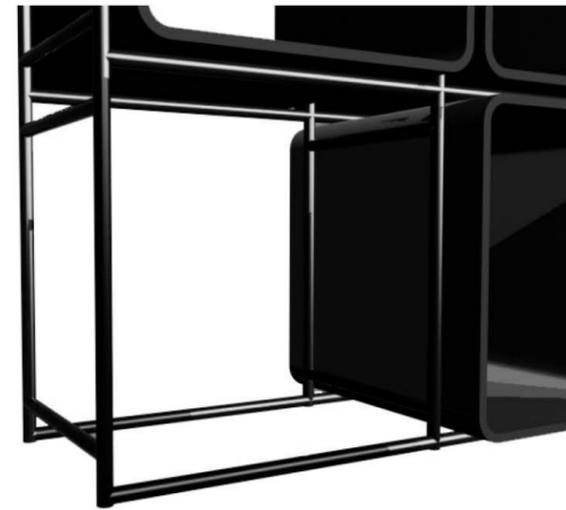
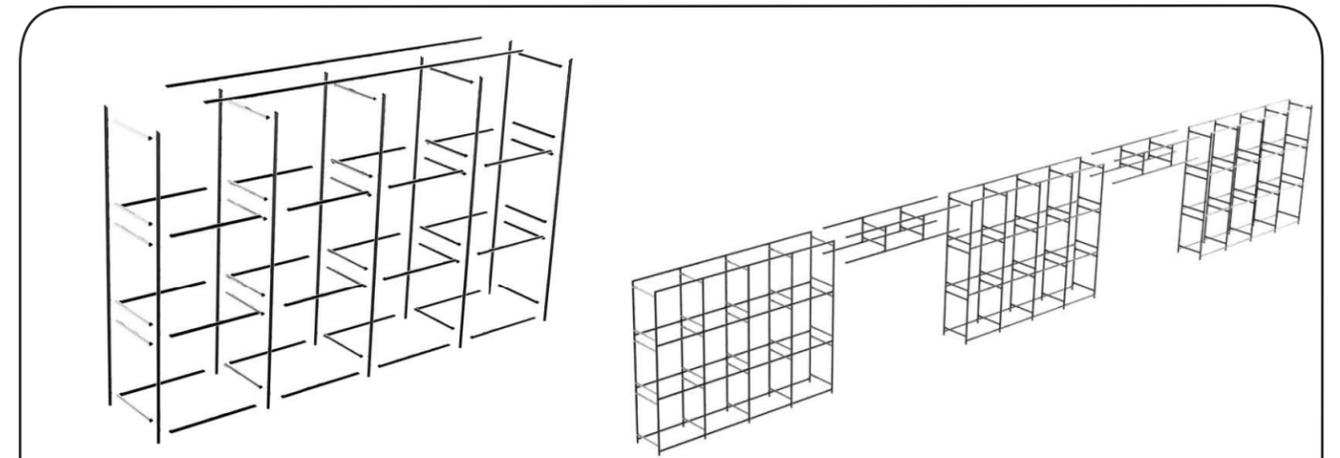




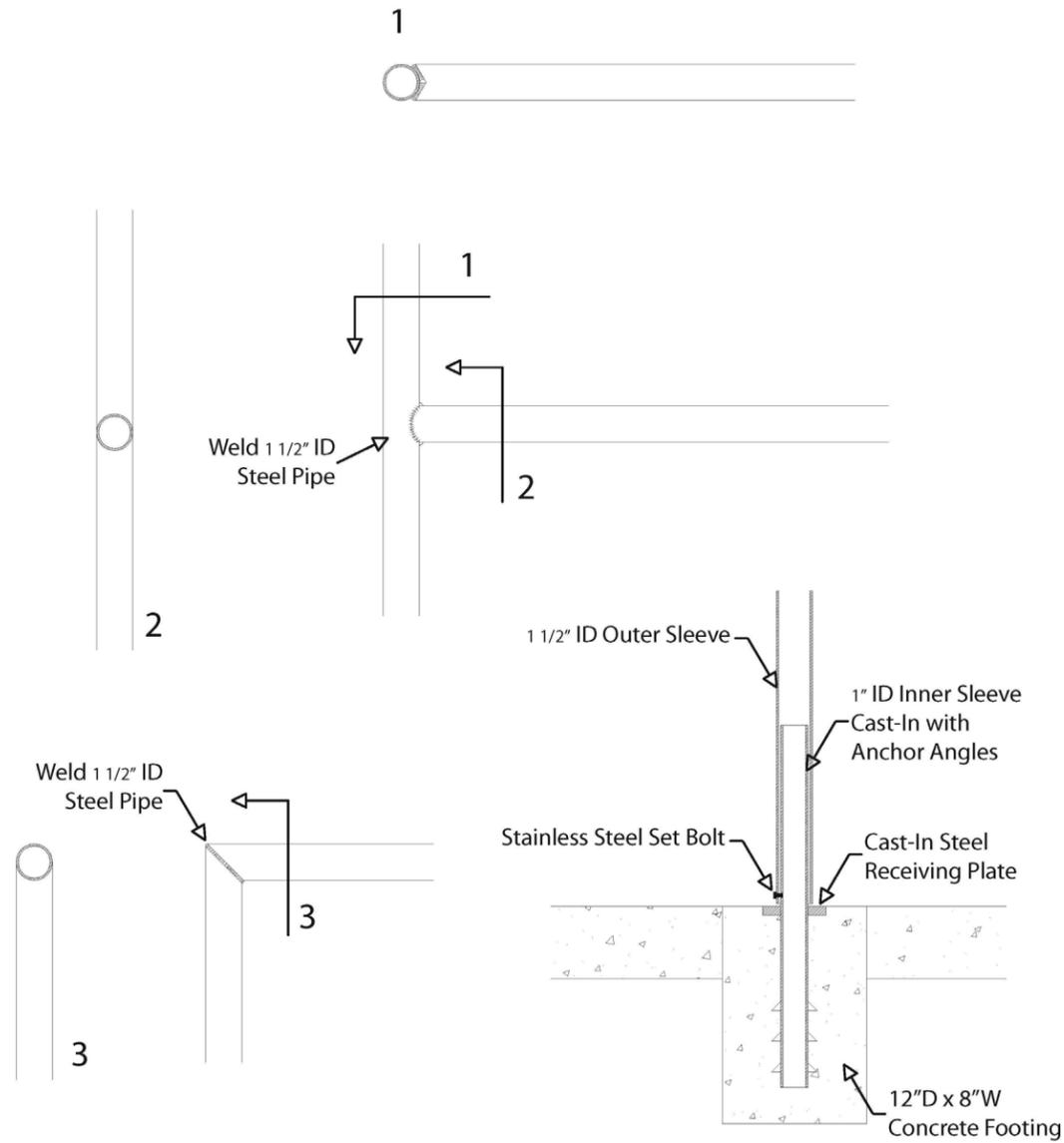
There are an endless possibiltiy of new cubes to be discovered and countless arrangements to be made. The stations will be constantly changing according to season, holiday, needs, or wants.



Steel Frame Assembly

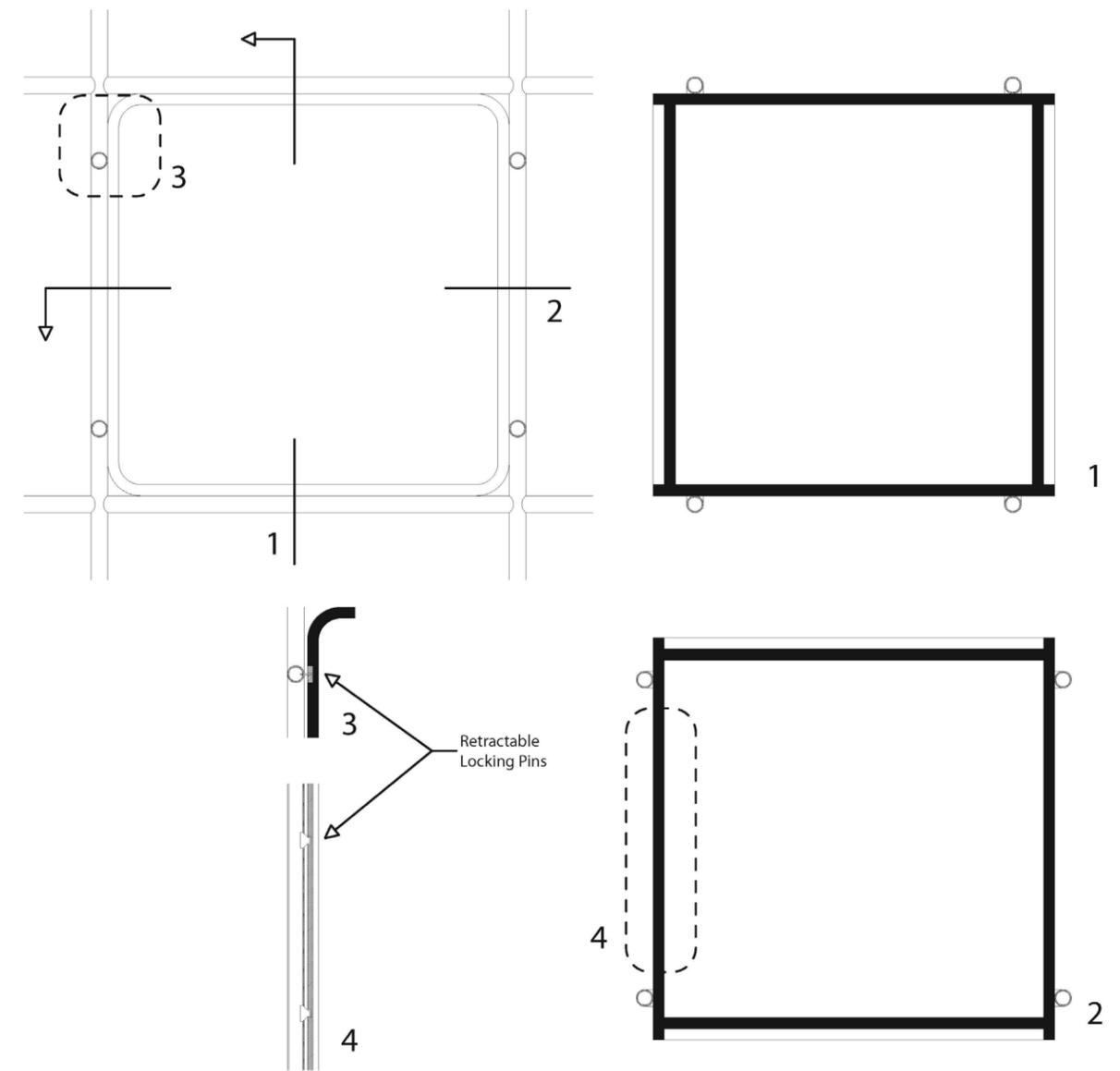


The frame will be welded steel pipe construction. The top most corners will welded at a forty-five degree miter while the other connections will be cut at an angle to fit around the vertical pipes. The frame would be welded offsite and brought to the site in sections. The frame would slide over cast-in-place steel tube sleeves and be fastened with a stainless steel bolt. Then the remaining frame pieces can be welded together.



Steel Frame Connection Details 2"=1'-0"

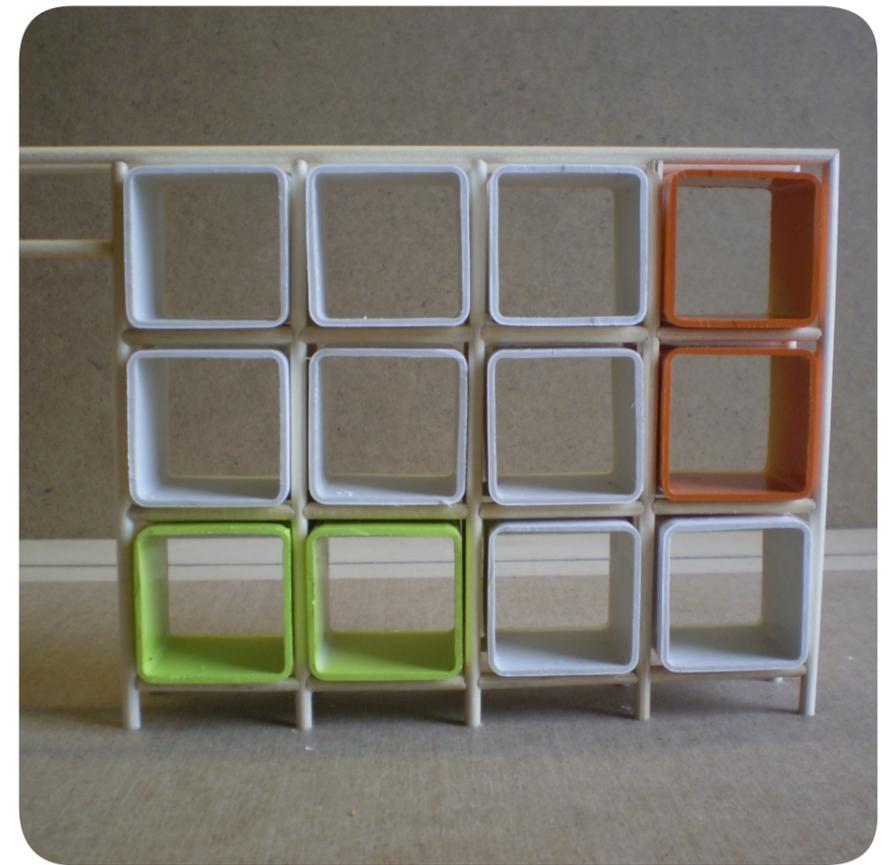
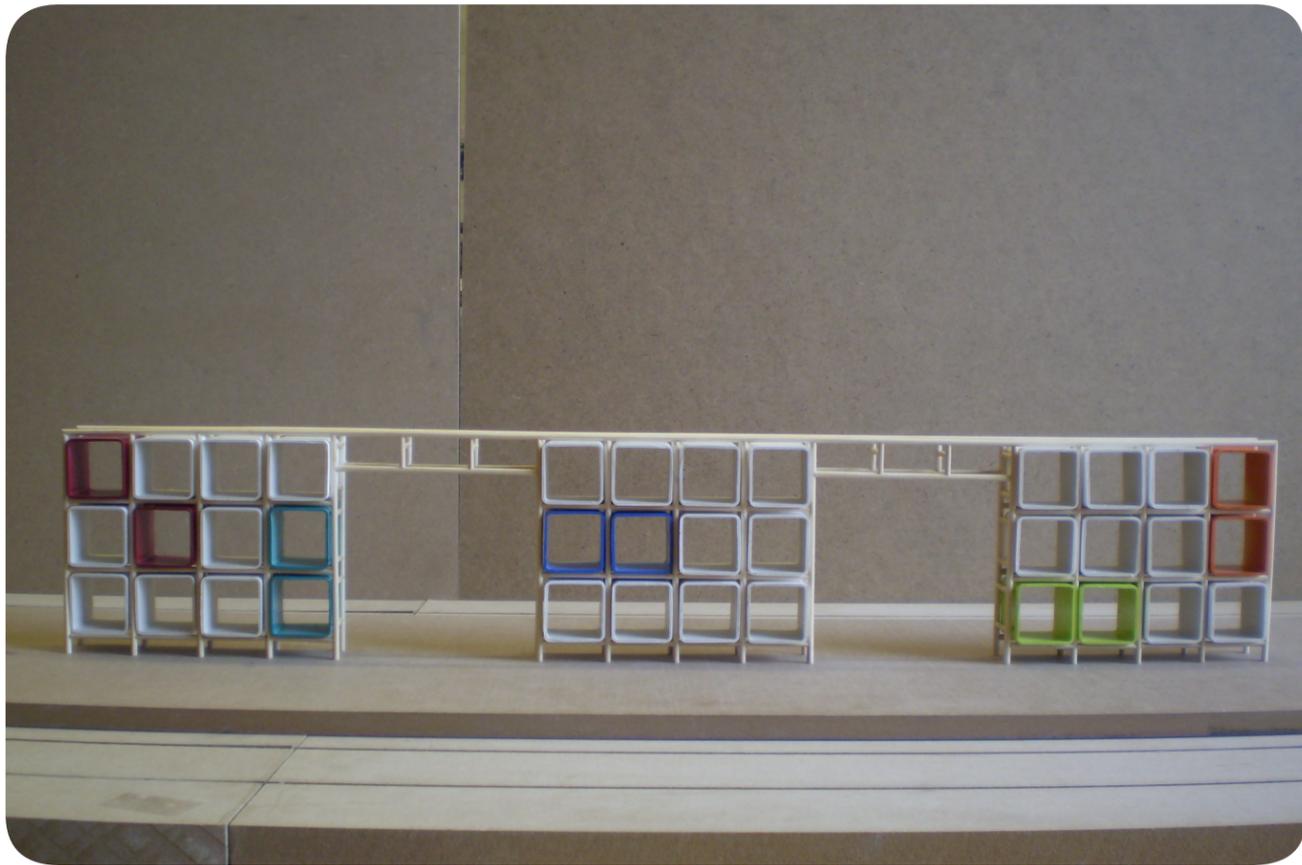
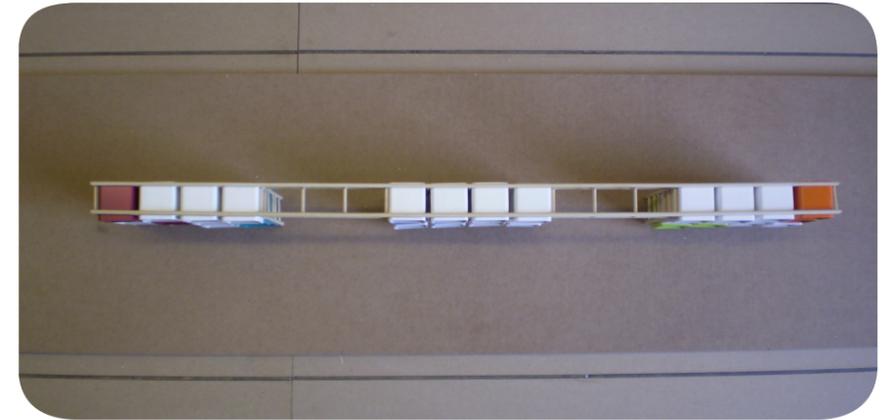
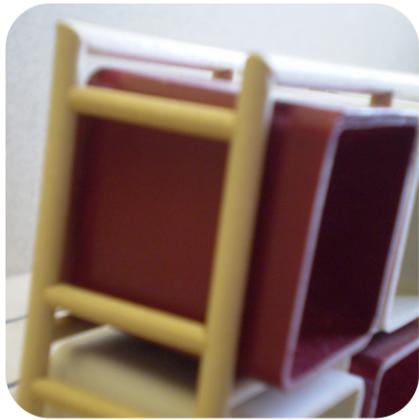
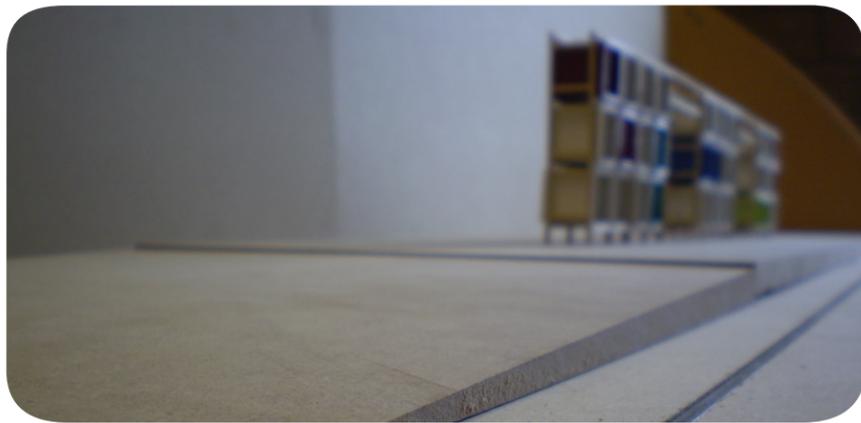
The cube has cast in metal strips to receive the metal pins of the steel frame when it slides into place. The mechanism locks the cube into place in eight locations on the sides of the cube. It can only be released by the action of the lifting crane which interchanges the cubes. Electricity also runs through these frame to cube connections to supply power to each cube when it is required.



Cube Connection Details 2"=1'-0"



WELDED STEEL FRAME SECTION



1/2" = 1'-0" SCALE MODEL

This project is not meant as a way to fix-up or revitalize Detroit by any means. It is merely meant as an economic stimulus to provoke some development along the light rail stations and hopefully infuse some life into potential nodes. Whether or not it would work in the way I am intending is another question however. Through the modular cubes, my intentions are to educate residents, visitors, and passengers about culture, history, art, or any other topic that is deemed important. The interactive component is also meant to create lively light rail stations where people feel safe to ride the train and will interact with people they may meet. The light rail system and the modular stations are not an ends but merely a means to improve the conditions of areas of Detroit where possible and improve the quality of life for those residents who have persisted. Although my project is an academic exercise, hopefully the DTOGS light rail proposal for Detroit will be successful and will achieve some of the goals of Detroit\_Link.

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