MATCH: Memphis Alternative Transportation Community Hub

Jennifer Leigh Thompson

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To the University Council:

The Thesis Committee for Jennifer L. Thompson certifies that this is the final approved version of the following electronic thesis: "MATCH: Memphis Alternative Transportation Community Hub."

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MATCH
Memphis Alternative Transportation Community Hub

A Thesis
Presented for the
Master of Architecture
The University of Memphis

Jennifer L. Thompson
August 2010

The objective of this thesis is to successfully design a transit community hub that reintroduces the importance of multi-modal transportation as a social and experiential process by which healthy integrated communities are created.

Can effective community hub design change perception of alternative transportation?

The design solution to this thesis question is not necessarily the only solution, however, it is the best solution based on the research conducted.

Abstract

To my thesis committee, I sincerely thank all of you for your patience and time. At times it was a love and hate relationship, but I’m sure it was because of the growing pains and accomplishments.

To my closest friends Alžbeta and Jennifer, I sincerely thank you for the late nights and enjoyable days that had nothing to do with the thesis or architecture. It is those moments that kept me going when I thought I could not stay another minute.

To Chris, my wonderful partner, who weathered his first experience with an architectural student and is still around to share the good times and bad.

Finally, I am truly grateful for the spiritual guidance from my mom and my dear friends Marcia and Teen. And for my faith in a power greater than myself that carried me through when I could not.

Dedication

This thesis is dedicated to all species, for we are connected through our great evolutionary story.
On October 3rd of 2009, I participated in the 3rd Annual Summit for Neighborhood Leaders organized by the Coalition for Livable Communities (CLC), now called Livable Memphis. The theme of the event was "Sustainable Regions: People and Places", and the message delivered is that the neighborhoods have a place in the regional picture to make changes through community involvement.

Memphis is gearing up with programs such as Clean Memphis and Memphis City Beautiful that organize neighborhood cleanup, Transit Oriented Development and the Zipper Corridor Concept, Beyond the Car: WalkBike Memphis, and the Unified Development Code that provides the tools to get your neighborhood together so it can evolve effectively.

Along with Livable Memphis, The Memphis Metropolitan Planning Organization (MPO) has already announced it will present the 2035 Plan in 2012. The 2035 Plan proposes to plan for the future by integrating land use and transportation, and the MPO administrator Martha Lott said, "The future of the region is tied to transportation and land use together, because one can't operate without the other," said MPO administrator Martha Lott.

Memphis is looking at transportation through the lens of the community in collaboration with Memphis and Shelby County government. However, if these voices of the community and goodwill of the government are not put into action, these efforts will seem nothing more than wasted energy.

The following thesis outlines a smart transit community hub concept that, if implemented with the help of the Memphis community and support of the local, state and federal governments, can convert a city's current trend of unhealthy development into one of sustainable growth, equity and environmental stewardship.

The book, A Pattern Language (Alexander, Ishikawa, & Silverstein, 1977, p. 185), outlines the importance of interchanges (transit hubs) and three basic principles that must be followed in order to sustain a web of transportation:

1. Surround the interchange with workplaces and housing types.
2. Keep the interior of the interchange continuous with the exterior pedestrian network and maintain small shops and kiosks while keeping parking cleverly hidden within surrounding architecture.
3. Keep the transfer distance between different modes of transport to 300 ft. with a maximum of 600 ft.

Memphis already has neighborhoods with the existing infrastructure to achieve the first principle. The transit hub synergies that spin off of the development will improve the bus stops, spur community economy and unite neighborhoods already involved in sustainability efforts. As mentioned earlier, living in Memphis without a vehicle motivated me to get involved in community events.

The following is a personal account of how the spirit of my thesis evolved.

I live downtown on the corner of Union and Main, and I love it. One of the activities that I have enjoyed doing since moving to Memphis is participating in community events. When I did not own a car, I utilized the trolley and bus systems to explore the city. I was satisfied with the options available to me.

Why was I out of luck? The trolley is primarily set up for tourism and is not a reliable source of transportation due to its inconsistencies and maintenance issues. I have also limited the places I visit to those accessible by trolley or bus.

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The concept of MATCH is to introduce mobility options, within a built environment, that promote environmentally friendly alternatives to vehicular transportation and cultivate community development. Can effective transit community hub design change perception of alternative transportation?

Economy, Sustainability, and Perception. Each element has the ability to stand alone as an important part of the entire concept of a transit community hub, yet the solution to a successful transit community hub can only exist when all of the parts are acting in harmonious integrity.

The following board series (Figures 3-16) outlines the initial investigation into these four elements and each describes briefly the thought process at the inception of the thesis research. The writing that corresponds with each board is the evolution of thought through further literature review and how this review influenced the design of MATCH.

Michel deVries (2008), author of Threat of God’s Evolution, states the existence of the thesis eloquently with the following thoughts throughout the book:

“Nothing is more important, it seems to me, from a practical as well as spiritual perspective, than co-creating synergistic patterns of governance that function—locally, expressly, regionally, globally, and interdependently—through interactions between individuals and groups with the environment of our planet as a whole. This is the heart of our great evolutionary work—our species’ divine calling. (p. 255)”

1. Introduce healthy communities to full-fledged understanding of the importance of the existence of evolution. The holistic community-based employees’ community-oriented activities and the creation accountability through awareness. The full provides an inclusion for connection of people-to-places, places-to-places, people-to-people, activities-to-activities, and activities-to-nature. The global result is a community that promotes smart growth, equity and sustainable living that incrementally will have an impact on a global scale.

Introduction
The evolution of transportation, for the purpose of this thesis, is about when pedestrian activity gave way to the automobile. It is almost as if the concept of community and local bases were redefined based on our contemporary system of transportation which is dominated by the car. The loss of pedestrian activities such as walking and biking can be looked at from several different perspectives, some social, some economic, and some environmental. The concept of community has also enabled societies to visually and socially integrate changes in the transportation system. The loss of pedestrian activities such as walking and biking can be looked at from several different perspectives, some social, some economic, and some environmental.

This study suggests that human relationships made through pedestrian travel, due to interaction, are very different than connections made through technological means. The overwhelming experience with the concept of traveling which is on a much faster pace than human interaction would like to accommodate.

The loss of respect for this language must be restored with the ownership involvement of the community and the inherent education element of the style changes that promote a healthier planet.

Evidence of Technological Travel
The Industrial Revolution brought much technological advancement. The first steam engine, automobile or airplane; it is about our social connections and lack thereof based on our contemporary system of transportation which is dominated by the car. The loss of respect for this language must be restored with the ownership involvement of the community and the inherent education element of the style changes that promote a healthier planet.

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MATCH will provide a community of people who exist within a well-structured opportunity for growth, employment, education, and overall well-being. The site selection for MATCH occurred from a series of site consideration and evaluation in the downtown Memphis, Tennessee. The location of the site was selected as a result of its potential for public place under the Memphis community, and the opportunities developed to define the location and the potential for future use of the property. The “Proposed Future Memphis ASTM” (Figure 31, Image 2, p. 18) is seen as a buffer zone of the city center of Memphis. The site that is selected for the current location of MATCH will provide an opportunity to create a “third place” on a public marke

Economy of Equity
Communities need economic growth that sustains equity underprivileged member of a community. What defines equity goes against the needs of an affluent environmentalist. Social justice for the underprivileged within redevelopment (Figure 34, p. 18). The design of MATCH brings awareness of fostering a strong economy of reduction. The site is designed with learning facilities and local government of forces of perception, politics, and economic drive the forces of transportation. For example, the ownership involvement of the community and the inherent potential for future use of the property. The “Proposed Future Memphis ASTM” (Figure 31, Image 2, p. 18) is seen as a buffer zone of the city center of Memphis. The site that is selected for the current location of MATCH will provide an opportunity to create a “third place” on a public market.

Economy of Subcultures and Their Boundaries
The integration of the subcultures at the learning center and conservation of effort in the operation or achievement of something; the production and consumption of goods and services of a community organized as a whole (ephemeral) reflection of the social and cultural landscapes of the site where they live that could ultimately benefit any subculture. As it relates to the definition of subculture, MATCH achieves effectiveness through contextually constructed environments. This enables the parents to easily drop off and pick up their children before heading to their next destination. If the boundaries are present, natural or man-made, then the opportunity for the character of the subculture to be preserved is increased. Once the separation of subcultures has occurred without the physical boundary, what can be called the “third place”, are grocery markets, workplaces, modes of transportation and cultural event spaces. The boundaries are present, solutions can occur, then the opportunity for the character of the subculture to be preserved is increased. Once the separation of subcultures has occurred without the physical boundary, what can be called the “third place”, are grocery markets, workplaces, modes of transportation and cultural event spaces. (Figure 34, p. 18). The design of MATCH brings awareness of fostering a strong economy of reduction. The site is designed with learning facilities and local government of forces of perception, politics, and economic drive the forces of transportation. For example, the ownership involvement of the community and the inherent potential for future use of the property. The “Proposed Future Memphis ASTM” (Figure 31, Image 2, p. 18) is seen as a buffer zone of the city center of Memphis. The site that is selected for the current location of MATCH will provide an opportunity to create a “third place” on a public market.

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Spiritual Sustainability

The following section finds prototypes and deeply moving statements that may serve as examples for the scale of this project. Far is engaging; more thought might engage the very heart of the potential for a new era of human existence. In the book, "The Future of You" (see below), the re-orientation of our thinking towards what we are is a way to begin to heal the world. The architect will be highlighted in the example of the vigour and urgency of a new era of human existence. It is not just the task of the architect to design buildings, buildings that engage the viewer through anticipation and curiosity. The sustainable architectural features are exposed and accessible to site visitors. Those who encounter the site can learn about the building’s features and the way they are designed and built. These activities spur investigation enabling people to learn through interacting with the built environment.

“Reduced Heat Island Effect”

The concept of using interactive architecture as a learning tool is strongly connected with the idea of sustainable development and the goal of creating a more sustainable built environment. The concept of “Reduced Heat Island Effect” (USGBC, 2009) is a key principle in sustainable architecture, which aims to mitigate the urban heat island effect by creating green spaces in urban areas. These green spaces help to reduce the temperature of buildings and surrounding areas, making them more comfortable for people to live in.

Aesthetic Variation

Aesthetic variation in an environment in which people carry out their daily activities. Numerous studies have linked the presence of plants to improved human health and mental well-being (Green Screen Home, 2010). Building materials have embodied energy as energy used during the entire life cycle of the product, including its manufacture, transportation, and disposal, as well as the energy captured within the product itself. Figures 7-24, (pp. 13 - 14) are examples of the materials and methods used in MATCH.

Spirit of Transportation

The challenges of the next 250 years begin with climate change. The effects of climate change are already being felt around the world (CBO, 2009). There will be a continued loss of biodiversity, an increase in extreme weather events, and a rise in sea levels. The impact on living standards is essentially universal and is felt across all income levels. City planning and design aims to create livable cities and communities by ensuring that all people are able to live in a safe and healthy environment.

Vertical Markets

Vertical Markets would redistribute incomes produced in vertical and horizontal markets by establishing a minimum income system for all planetary members of society. This would guarantee that everyone received an income that was adequate to support them and their families. It would also ensure that incomes were sufficient to support their participation in society to afford their basic needs and to provide them with a living wage guarantee that everyone had sufficient purchasing power in the value of goods and services that they could afford.

The Learning Tower: interactive play and educational zone.

The Learning Tower is an interactive play and educational zone designed to engage children in learning about sustainability and environmental stewardship. It is an educational tool that provides a fun and interactive way for children to learn about the importance of sustainability and the need to protect the environment.

Evolution_Economy_Sustainability_Perception

The following section holds prophetic and deeply moving statements that may serve as examples for the scale of this project. Far is engaging; more thought might engage the very heart of the potential for a new era of human existence. In the book, "The Future of You" (see below), the re-orientation of our thinking towards what we are is a way to begin to heal the world. The architect will be highlighted in the example of the vigour and urgency of a new era of human existence. It is not just the task of the architect to design buildings, buildings that engage the viewer through anticipation and curiosity. The sustainable architectural features are exposed and accessible to site visitors. Those who encounter the site can learn about the building’s features and the way they are designed and built. These activities spur investigation enabling people to learn through interacting with the built environment.
For visitors to pause, placards are strategically placed calling out sustainable features. This infusion of knowledge and human interaction heightens the sense of empowerment and belonging thus strengthening the community.

By reinstituting the day care into a learning/daycare center for the children living within the MATCH community, the sounds of children comingle with the everyday activity generated from the central pedestrian mall. This sound of children playing appeals to the nurturing aspect of human behavior. The learning tower and mini bus station have water/rock ponds that filters rainwater for their own use. This is reminiscent of the old time town square and makes today’s space unique to the region.

Smell of Site

that, while in bloom, will emit fresh aromas based on the plant selected and reduce pollutants in the air.

Vandalism (Banning & Strange, 2001). An architectural variable of MATCH is the grafitti that is found throughout the public areas for “display of self” exist in the learning pod art galleries and public plaza, which displays the children's art work. These are referenced in earlier text.

Perception of Sustainability

The act of walking is a method of experiencing space and if the walk is not pleasant then the outcome is reduced enjoyment and a change in behavior.

The sector on Evolution discusses the deterioration of social connections based on the decline of pedestrian travel. Research has shown that, reestablishing walking as an active form of transport is one of the best ways to create a more sustainable form of social interaction at least at their destination. This is where the main hub creates a safe environment for pedestrians and integrating pedestrian activities into the interstices of the other modes of travel. Today, walking is considered more of a recreational activity; however, if it can be integrated into a network of non-motorized travel, it can indicate a change in behavior that enhances the quality of life.

Pervasive Perception

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The preceding pages have outlined the research and discussed the methodology for the design decisions of this thesis project. The next section examines the physical body of work that symbolizes the three-dimensional design of MATCH.

The following headings are a brief outline of the organization of this body of work and an opportunity to discuss items that were not explained in the previous text.

**Precedence:** Extensive research of Green Scapes, Building Materials and Methods, Transit Hub Design, and the Atlanta Beltline Concept.

**Site Selection:** Map studies, anthropological site and amenities investigations.

**Schematic Design:** The initial schematic sketches illustrated the concept of designing for a community based on the concepts of evolution, economy, sustainability, and perception (Figure 37, Image 1-4, p. 20). The design elements were then studied throughout the book finally culminating from a series of view diagrams. The field of vision was also investigated approaching the site from the cardinal directions and various positions (Figure 38, p. 20). These sketches were then layered to determine probable locations for community interaction zones (Figure 37, Image 5, p. 20).

**Schematic Sustainable Design:** This is included to bring attention to the importance of understanding the forms generated in the schematic design phase and their implications on the design process. After the base form of the site were developed the sustainable principles embedded in the design thought processes were then studied through axonometric and section sketches (Figure 39, p. 20). These proved extremely important in finalizing more detailed design characteristics of the site.

**MATCH Design Project:** This is the language of the design understood through three-dimensional representations utilizing REVIT Building Information Modeling software. After the project was enhanced through hand sketches that bring a sense of life to the hard edges of the computer renderings.
Green Screens

This series of green screens presents the versatility of the installation options. Figure 7 is an example of the MATCH plaza design. Figure 8 demonstrates the feeling achieved when implementing the screen along the pedestrian sidewalk. Figure 9 is an example of the MATCH plaza design. Figure 10 demonstrates plaza as art. Figure 11 demonstrates plaza as gathering space. Figure 12 demonstrates plaza as a place to evoke memories. The Holocaust Museum is used to illustrate the power of architecture to conjure memories of a certain time and place and not to indicate the MATCH plaza as a place to remember historical events.

Green Living Wall

Figure 8 is an example of using smart glass technologies that can be exposed to sunlight without creating heat gain. The psychological impact of this feature is to give the sense of transparency to the activities taking place within the building (Figure 22).

Sustainable Materials

- **Wood**: Wood is used in the design of the learning pods south shading device. It is used to introduce a soft material palate in the “front porch” play area. The wood used is harvested from FSC forest or reclaimed (Figure 16).

- **Metals**: Metals can be resurfaced, melted down and reformed and are highly recycled. Metals were primarily used as lightweight screening devices for east and west sun exposure, and for the site of MATCH. These reused metal pieces will be artistically welded together through local artists (Figure 21).

- **Concrete**: Concrete is the primary material used in the design of MATCH. The qualities of strength, flexibility, and the ability to be recycled prompted the selection of this material (Figure 20). Ground face concrete block is an elegant use of a simple building material that is inherently structural (Figure 23).

- **Rubble Rock**: Similar to concrete, reused demolition concrete is repurposed as a rock water filtration system in the learning tower (Figure 17).

- **Glass**: The community center that facilitates the mini bus service, local government office and sustainable resource center is made of smart glass technologies that can be exposed to sunlight without creating heat gain. The psychological impact of this feature is to give the sense of transparency to the activities taking place within the building (Figure 22).

Sustainable Methods

- **Concrete and metal louvers for all south shading (Figure 19)**

- **Recycled rubble rock and rock water filtration system for reuse in graywater function such as toilet flushing, janitorial activities and landscaping (Figure 17)**

- **Architectural screening elements typically made of metal are used for east and west shading (Figure 18)**

- **Smart glazing for solar shading utilizes low-e coating while maximizing daylight (Figure 22)**

- **Figure 16** is an example of indigenous planting that will be used throughout the site of MATCH, especially along the rail line boundary.

- **Figure 17** demonstrates plaza as a place to evoke memories. The Holocaust Museum is used to illustrate the power of architecture to conjure memories of a certain time and place and not to indicate the MATCH plaza as a place to remember historical events.

- **Figure 18** is an example of indigenous planting that will be used throughout the site of MATCH, especially along the rail line boundary.
The Alicante tram stop is a project designed to give a blighted pedestrian square new life. The project is used as a precedence study to demonstrate the lighting design for MATCH.

The Congonhas inter-change station is used as an example of 'everyday' materials such as corrugated metal used in an innovative and contemporary way. The MATCH transit administration office is designed with a similar language to the first image in this precedence series.

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The Nordpark Railway demonstrates the use of form within the design of the MATCH train platform. MATCH uses concrete to achieve the curvilinear forms. The forms create a flow that takes the roof plane down which then transforms into the seating.

The Atlanta Beltline's inception was delivered in 1999 by a forward thinking graduate student from Georgia Tech University. Ryan Gravel conceived the idea of resurrecting the old rail lines and from that point on he formed the Atlanta Beltline Partnership.

In 2004, Alexander Garvin, a recognized greenspace designer, determined the concept envisioned by Gravel was worth realizing, and he subsequently developed a revitalization plan to include a park, trail and transit system called the Atlanta Beltline. The Beltline was a visionary idea that needed innovative financing strategies to support the plan.

Another critical funding step came with MARTA’s approval of the Beltline as its preferred mode of transit. The Beltline, as a stand alone concept, needed federal/State collaboration and inclusion of the Beltline in an Alternatives Analysis Study, which was part of the Inner Core Feasibility study for transit. This study, submitted in January of 2005, MARTA's board approved the 20-mile long corridor.

Public/Private Partnerships are critical for Atlanta redevelopment initiatives. In 2005, Mayor Franklin put together the Beltline Partnership that fused the private and public sectors, and continue to ensure community engagement, the Atlanta Beltline, Inc. (ABI) was subsequently formed in 2006.

The implementation plan includes an extensive array of benefits and revitalization procedures. There are eleven efforts embodied in the plan including: Affordable Workforce Housing, Atlanta Beltline Arboretum, Community Benefits, Economic Development, Funding, Land use, Park and Greenspace, Planning, Public Art, Streets and Sidewalks, Trails and Transit (Figure 28).

The Atlanta Beltline

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Madison Trolley Line
Main Street Trolley Line
Norfolk Southern Rail Line
Proposed MATA Light Rail

Legend :: Macro Research
Proposed Sites
Secondary Sites
1/2 Mile Community
Green Line

Major Roads
Rail Lines

Zipper Zone :: Proposed Future
Figure 30.

MATCH Site :: Boundaries and Major Roads
Figure 34.

MATCH Site :: Community Character Study
Figure 36.

Images 1 - 4

Proposed Green Line
Existing Green Line

1. Northeast Corner
2. Northwest Corner
3. Southwest Corner
4. Southeast Corner
**Trapeze View Itineraries**

http://matatransit.com:83/hiwire

**Schematic Thoughts:**
Successful spatial experiences require changing visual interest as the pedestrian moves along a path. Strolling from one view to another.

Creating the “non-tourist” tourist site:
Views seduce, through sights to destinations, the pedestrian into experiencing where they are going and where they came from (Urry, 2007).

**Connection Gap:**
Expresses the decay of the “human experience” through the evolution of technology, globalization, and cars. (Pappano, 2001)

**MATCH:**
Changing perception of multi-modal transit through community engagement, enhanced human experience, and sustainable design.

**Anthropological Investigation**

**Figure 36.** Anthropological Investigation
Source: By author

**Schematic Sketches**

**Figure 37.** Schematic Sketches

**Sustainable Site Axon**

**Figure 38.** Sustainable Site Axon

**Sustainable Site Section: Tower Study**

**Figure 39.** Sustainable Site Section

**Process:**

**Sustainable Site Axon:**

**Sustainable Site Section:**

**Tower Study:**

**Process:**

**MPO Bike Plan: Bike Shoren**
The far left image is the interactive bike plan map, which illustrates the proposed bike lane improvements. A more detailed iteration of this plan can be found on the Memphis & Shelby County MPO/TTA’s website. The next image is an example of a bike riding shuttle for the built environment. The remaining two images are examples of people riding their bikes within the MATCH site location.

**Improveiments - Green Streets**
The image to the far left is a diagram created to illustrate the potential routes that are viable candidates for what MPO Bike Plan plans to improve. It is a visual representation of primary pedestrian walking paths. The next two images provide an examination of street improvement options and indigenous planting selections.

**MATA - Bus Experience**
The adjacent series describes the MATA experience. One of the thesis methodology exercises was observing a typical journey on the MATA system. This included investigating the map, understanding the scheduling system and then documenting the trip through photographic means.

**Process:**

**Bike Share**
The far left image is the Memphis bike plan map which illustrates the proposed bike lane improvements. A more detailed iteration of this plan can be found on the Memphis & Shelby County MPO/TTA’s website. The next image is an example of a bike riding shuttle for the built environment. The remaining two images are examples of people riding their bikes within the MATCH site location.

**Green Streets**
The image to the far left is a diagram created to illustrate the potential routes that are viable candidates for what MPO Bike Plan plans to improve. It is a visual representation of primary pedestrian walking paths. The next two images provide an examination of street improvement options and indigenous planting selections.

**MATA - Bus Experience**
The adjacent series describes the MATA experience. One of the thesis methodology exercises was observing a typical journey on the MATA system. This included investigating the map, understanding the scheduling system and then documenting the trip through photographic means.
1. Pedestrian view looking northwest juxtaposed against the existing site conditions. The building is color-coded as a wayfinding system to designate the multiple functions of the facility which include, Mini Bus Services, Local Government Office, Community Resource Center for Sustainable Practices. The facility is designed with shared shower services for employees and pedestrians accessing the site.

2. As indicated in the research, successive views and experiences provide "chance encounter" square along pathways. The entrance to the Community Center is marked and the scale is broken up with the rhythmic exterior canopy.

3. The interior lobby is designed with contemporary technological advancements in sustainable design. There are computer controlled operable windows that use smart technologies to read temperature, light, and wind conditions, and respond accordingly. The orientation of the building is set to maximize the predominant south west winds.

4. The only parking on site is located behind the Community Center. It is available to the center workers that do not live within the half mile MATCH community. The carbon emissions are offset with the green screens that create a pollution filtering canopy, shading and visual interest.

5. View of Community Center walkway coming from the north.

6. Roof top garden exclusively for the Community Center employees. The roof captures rainwater and reuses it in graywater functions. The seating is screened with custom perforated metal panels that allow for visibility and intimacy while shading.

7. Mini Bus service for half mile community shuttle service with wrapping concrete structure to carry train platform language through the design. The exterior waiting zones is enhanced with the rock and conveyor capturing system and cooling pond.

The image numbers correspond with the view being experienced by the viewer as if physically being at the site. The following explain the design concepts:

MATCH Project Design

MATCH Project Design Sustainability through Community :: Community Center

Figure 40.

1. Community Center Northwest Pedestrian View
2. Community Center Exterior Pedestrian Walkway
3. Community Center Interior Lobby
4. Community Center Employee Parking Zone
5. Community Center Elevated Pedestrian Walkway
6. Community Center Employee Roof Garden
7. Mini Bus Station Exterior Waiting Zone
8. Community Center Exterior Pedestrian Walkway
9. Community Center Shaded Pedestrian Walkway
10. Community Center Axonometric
11. Existing Northwest Corner Condition
12. Second Floor Site Plan

Scale: 1" = 40' - 0"
MATCH Project Design: Sustainability through Community :: Learning Tower Center

1. Aerial view of northeast corner learning tower: learning pods, transit center, and administration area juxtaposed against the existing site conditions.
2. View from pedestrian bridge of learning pods and learning tower playground. This is the access bridge from the light rail platform. Parents that bring their children to the learning pods may walk around the pedestrian corridor (see red highlighted area on the second floor plan) to pick up or drop off their children. The walkway provides an art gallery for displaying the children’s work. The pods have salvage wood louvers that act as southern shading devices.
3. This is the public access lobby for the learning tower. Here site visitors can view the expansive rock wall that filters rain water from a height of 35 feet down the wall into the reflecting pond in the lobby which serves as an evaporative cooling feature. The water is ultimately stored in storage tanks under the site for use in graywater activities such as landscape watering, toilet flushing and janitorial needs. The audible experience is also enhanced with the sounds of the water cascading down the wall.
4. The MATCH transit administration office utilizes the easternmost boundary of the site as private office space and restroom facility. To create a space that allowed light to filter in and still viewed the entire east wall in alternation with rock and vegetation, the entire wall is storefront.
5. The site supports a local market that provides basic needs to the community. The concept is to sell local produce, some that is harvested from the learning pod gardens, and sell these goods as a healthy alternative to normal convenient store foods.
6. This is the view to the exterior plaza from the transit administration office. It is in close proximity to the primary pedestrian walkway. The design is highly transparent, inviting and approachable for those visitors desiring to know more about their local transit system or to ask for basic information.
MATCH Project Design

Sustainability through Education

1. Indigenous Planting
2. Filtration Systems
3. Water Harvesting
4. Wind Harvesting
5. Sustainable Technologies

- Permeable paver system to filter water prior to entering the drainage system.
- Green Screen parking canopy for carbon cleaning, shading and screening.
- E-fueling station for electric car plug-in accessible to Community Center employees.
- Roof garden graywater filtration system for reuse in restroom, janitorial and garden irrigation as necessary.
- Smart Wall with environmental sensors for human and environmental condition.
- Smart windows controlled by smart wall sensoring to exhaust carbon or excess heat from the building.
- Green Screen canopy for Community Center entry shading and visual interest.
- Exterior perforated metal for learning tower shading and visual interest, greeting zone perforated metal canopy for shading.
- Operable window system to allow south west winds to engage the rubble rock wall passive evaporative cooling system.
- Water collection system for graywater reuse.
- Rock Wall as filtration system and sustainable educational tool.

Sustainability through Education :: Site Section

Figure 42.

Indigenous Planting
Filtration Systems
Water Harvesting
Wind Harvesting
Sustainable Technologies

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- Operable window system to allow south west winds to engage the rubble rock wall passive evaporative cooling system.
- Water collection system for graywater reuse.
- Rock Wall as filtration system and sustainable educational tool.

Figure 43. First Floor Site Plan

Scale: 1" = 40' - 0"

This image demonstrates the accessibility to the interactive wall and the ability of the children to engage with the general public from a safe distance above.

This image shows the public access zone where children are picked up and dropped off. The screen creates a sense of security without giving the impression that crime is an issue.

The interactive plaza zone demonstrates the use of the space as a public gathering. This is an example of architecture serving to slow people down and allow for interaction or “social encounters.” The screen displays transit schedules, upcoming events, and local art work from the learning pods and community.
The aerial view exhibits the sustainable features embedded in the design of the transit interchange. There are wind powered generators that extend to the east along with surrounding indigenous landscaping. This design choice emphasizes the commitment to sustainability and energy efficiency. The bike sharing facilities define a pedestrian scale entrance when approaching the site from the east. The bikes will be purchased with a swipe card and returned at other bike sharing facilities or buildings. The mini bus station was explained earlier in the “sustainability on community” section. It is addressed again at this juncture to stress the integration of the multiple modes of transportation available to the MATCH community.

The sloping entrance to the light rail platform signifies an elegant procession that welcomes users from the south despite the fact that they are using a secondary entrance. This further strengthens the notion that users of this facility are important and their choice to use this transit is appreciated.
These four solstice diagrams focus on the peak traveling times, 8am and 6pm, during the summer which is the most critical time of the year for Memphis. The summer solstice was used for the Memphis site location because of consistency with typical sun angle measurements taken in most studies, however, further investigation into all of the critical seasonal attributes of Memphis is the most prudent approach.

The summer solstice happens on June 21 of every year. It signifies the time of the year when the sun has reached its highest point in the sky before it begins to descend as the months progress towards winter. Something to note is that the summer solstice is not the hottest time of the summer season for the Memphis region.

**Sustainability through Green Scapes**

**Figure 45. Learning Pods:**
- Green roof for heat island reduction, water mitigation techniques for greywater systems.
- Green Screen roof system that creates a shading canopy to reduce heat gain and shading the pods. The light weight system also minimize and protect the impact on the structure.
- Community garden concept adds learning benefits and healthy alternatives to traditional fruits and vegetables that are normally shipped from long distance and have many pesticides. There is a final heat reduction as well.

**Figure 46. Learning Pods:**
- Pedestrian Plaza, Light Rail Platform and Community Center Walkway: Green Screens are implemented over much of the site to create outdoor rooms for more intimate seating options. They also help with heat island reduction and provide healthier breathing air.
- Community Center: The community center is unique in that it provides a roof garden only for the employees of the facility. This amenity is used to strengthen ownership with the employees. The garden also reduces heat gain and filters water for graywater activities.
- MATCH Site: The site is landscaped with indigenous planting that typically will not need additional watering and so water is reutilized. The landscaping reduces the overall heat island reduction and the overall aesthetic appeal of the site and sequence of approach.

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**Figure 49. Community Center:**
- Community Center: The community center is unique in that it provides a roof garden only for the employees of the facility. This amenity is used to strengthen ownership with the employees. The garden also reduces heat gain and filters water for graywater activities.
- MATCH Site: The site is landscaped with indigenous planting that typically will not need additional watering and so water is reutilized. The landscaping reduces the overall heat island reduction and the overall aesthetic appeal of the site and sequence of approach.
1. This image illustrates the "Behavior Zones" and is juxtaposed against the existing conditions of the southwest corner of the site. The dynamics of the currents appear to reflect the identity of certain cultures. By defining these and what they entail, the site appears to define itself as a particular area and so does in a given way that is determined.

2. This pedestrian seating is fully engaged at the street level and yet has the appearance of being semi-private. The green screen helps create a loose enclosure and the tall planting acts as privacy screens without blocking views or air circulation.

3. This pedestrian seating is directly adjacent to the market and transit office. The concept to influence the seating devices for the southern and western exposed facades as a soft enclosure for seating. Each space under this canopy is designed to have a different feel through the use of pavers, grass, landscape and structural variability.

4. The pedestrian bridge leading to and from the light rail service is designed to function as a place to pause and absorb the surroundings. The integrated seating is part of the structure and shading device yet does not obstruct views or air circulation to maximize the predominant southwest wind.

Something to note is that the seating is not only a mixture of public and private spaces, it is also varied in its integration of the design. In most cases the seating is built into the structure but there are opportunities to have different pieces of furniture. These options increase the sense of ownership due to being able to modify its use in the public and area personalized against the perception of the individual. This is a benefit of fluid design that is not only inclusive but also in place by platform but arrange itself into places that people make their own.
The pedestrian walkway is designed to move people through the space while granting them the capability to pause and engage in their surroundings. The street edge must be held by building in the city. The idea is to let the people that are engaged in the screen be the "street wall" (Sucher, 2003, p. 47).

The community center roof garden is designed for the center employees. The view demonstrates how site features can enhance the experience of another space that is physically removed by height and distance.

An example of visual interest through anticipated architecture is seen in the pedestrian experience across the bridge. From this perspective, viewers can engage both the community center and the learning tower as a destination point yet have a sense of where they will arrive.

Images 5-8 show approaches to the site which is a very important aspect to this thesis. The northeast approach is about activity and the immediate introduction of another mode of transportation which is bike sharing.

The southeast introduces two modes of transportation, bus stop and light rail. A buffer of landscaping follows the edge without obstructing views to maintain a sense of safety and inclusion.

Approaching from the northwest, the viewer is engaged in the behavior zone, landscaping and a bus stop.

The approach from the southwest is held with the community center, however, there are openings to add visual to the structure and a secondary walking path establishes the architectural anticipation of the plaza and leaving there across the street.
While researching the transit community hub concept, one dichotomous question kept coming to the surface. Which comes first…the community that can help change perception of alternative transportation or an efficient system of transportation that shifts perception? The thesis question which asks, “Can effective community hub design change perception of alternative transportation?” suggests that the scale of community involved design can change perception.

The answer to the dichotomy lies in an assurance that if the stars are aligned and governmental policy makers, plus community leaders and organizers, plus financial gains all come to the same redevelopment effort and leave having heard the same information with a shared vision for a new experience, then both community and transportation come together. The design profession alone cannot solve the problems with perception and alternative modes of transportation. The research shows that if the systems are not more efficient, clean, safe, accessible and above all, better than the sense of identity achieved through owning a car, good design will not be the answer to solving ridership. The issues of social inequalities and environmental concerns make the concepts of public transit stagnant before they leave the drawing board.

There are conclusions that may be drawn however. First, good design for a community should be centered on creating spaces of involvement and interactions. It is the act of engagement with the surroundings that matters. Good design is most successful when successful design happens and people are interested and involved in the place they inhabit. Urry (2007) expressed that successful spatial experiences require changing visual interest as the pedestrian moves along a path, strolling from one view to another. This revelation is a fundamental first step to creating the community that can in effect change perception of alternative transportation. If there is a collective community ownership of a common space, the identity is most successful when successful design happens and people are interested and involved in the place they inhabit. Urry (2007) expressed that successful spatial experiences require changing visual interest as the pedestrian moves along a path, strolling from one view to another. This revelation is a fundamental first step to creating the community that can in effect change perception of alternative transportation. If there is a collective community ownership of a common space, the identity is most successful when successful design happens and people are interested and involved in the place they inhabit.

Conclusion Perception of Site ::  9.  Approaching North

The southern approach funnels the pedestrian into the site by angling the building so that the eye is carried along the community center terminus and learning tower.


References


