The Minneapolis Transportation Hub

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THE TWIN CITIES TRANSPORTATION HUB

A Design Thesis Submitted to the Department of Architecture and Landscape Architecture of North Dakota State University

By

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In Partial Fulfillment of the Requirements for the Degree of Master of Architecture

Primary Thesis Advisor

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The purpose of this thesis is to examine the way that all the different modes of transport in an urban transportation system can be brought together into one seamless solution. This thesis is set in the metropolitan area of the Twin Cities, Minneapolis/St. Paul. Linking train, light rail, bus, automotive and pedestrian traffic will set Minneapolis/St. Paul apart from other metros and provide a way for its citizens to move quickly and efficiently around the urban area.
The idea and act of transportation is essential to our ever changing planet. The transport of goods, services and human beings is something that needs to be as efficient as possible to save time and in turn, money. As in many metropolitan areas around the world, designers and planners have been improving the system and ways in which we travel and move about in different types of transportation.

The various modes of transport have changed many different times throughout history. From foot, to horseback, to carriages, to trains, to the automobile, some modes have stuck around for longer than others, but the ease and quickness of moving from one place to the next has always been important to the advancement of society. As new methods of moving about have advanced, so does the need to have a place where you can quickly and efficiently move between them. Many cities around the world have begun to create systems and hubs to facilitate this, but others have either been behind or do not have the necessary need for these solutions at this moment.

Minneapolis has always been on the cutting edge of different transportation types. In the past, much of the Twin Cities, Minneapolis & St. Paul, were interconnected by streetcar systems, automobile highways and roads, and bus systems. With the addition of the light rail in the Twin Cities metropolitan area in the last few years, the necessity for a urban transportation hub has increased. With the proposed Urban Transportation Hub, automobile traffic, bus traffic, light rail, and foot traffic will all have a centralized location to meet and facilitate quick and efficient transfer between the different modes of transportation.
There are several examples of this typology present throughout the world. Some include, The Transbay Center in San Francisco, The Rotterdam Centraal Train Station and Paris Nord Train Station in Paris, France. These buildings serve millions of people every week and solve many transportation issues. Some issues include changing transportation modes, quick and efficient transfer, and allow citizens a public space to interact with one another.
FIGURE 6.2

TYPOLOGICAL RESEARCH

RATP BUS TRANSPORTATION CENTER
SAN FRANCISCO TRANSBAY TERMINAL
NEW YORK CITY WORLD TRADE CENTER HUB
KAMPPI CENTRE HELSINKI FINLAND
San Francisco Transbay Terminal

San Francisco, California

Under Construction

This new terminal located in San Francisco, California is revolutionary in many ways. It is breathing new life into the somewhat stale environment of downtown San Francisco. It will include multi levels of retail, office and transportation spaces. These spaces allow commuters to easily and quickly move from one mode of transportation to another. Even though the square footage of this building is large, the architects have incorporated a green roof and gardens to create inhabitable spaces in the otherwise inhabitable areas of a building.
NEW YORK CITY WORLD TRADE CENTER HUB

NYC WTC TRANSPORTATION HUB

New York City, New York

Under Construction

This new terminal located in New York City is revolutionary in many ways. This building was designed by Santiago Calatrava and Frank Gehry. Currently under construction, the transportation hub has faced much criticism for its outlandish design and budget issues. The structure is very unique and allows for massive amounts of natural light to enter the building.
Juhani Pallasmaa, Architect

This structure has several characteristics that I will have in my design. Many different modes of transport all converging into one area, parking for commuters, mixed restaurants and retail, apartments and housing and commercial office spaces for businesses. The building is a total of 5 floors over almost a half a million square feet of space.
FIGURES IN CLOCKWISE ORDER
FROM UPPER LEFT
FIGURE 10.1  1st FLOOR
FIGURE 10.2  REGION PLAN
FIGURE 10.3  SITE PLAN
FIGURE 10.4  2nd FLOOR
RATP BUS TRANSPORTATION CENTER

Thiais, France

Built

This terminal located in the southern suburbs of Paris, is revolutionary in many ways. It allows for people to transition from one form of transportation to the next. It also has allowed for a meeting place for the people of this suburb. It also has relocated offices for a few different types of transportation administrations.
FIGURES IN CLOCKWISE ORDER
FROM UPPER LEFT
FIGURE 11.1 DETAIL
FIGURE 11.2 DETAIL
FIGURE 11.3 DETAIL
FIGURE 11.4 DETAIL
FIGURE 11.5 FLOOR HEIGHT
FIGURES IN CLOCKWISE ORDER FROM UPPER LEFT
FIGURE 11.6 EXTERIOR
FIGURE 11.7 EXTERIOR
FIGURE 11.8 INTERIOR
FIGURE 11.9 EXTERIOR
FIGURE 11.10 EXTERIOR
FIGURE 11.11 DETAIL
FIGURE 11.12 EXTERIOR
From looking and experiencing many different types of case studies and different transportation centers around the world, one can grasp the main ideas of what this thesis project is about. The efficiency of human movement can always be improved upon and this is a way to help with this notion. The current world is changing so quickly and will have to keep up somehow, and this is the answer. A place where many different people from different walks of life all converge to a single type of building that all benefits them in a mutually exclusive manner.
The major project elements for this project will be as follows:

- a commuter hall
- residential apartments
- parking
- retail space
- services
- restaurants
- childcare facilities
- athletic facilities
- office spaces
- light rail station
- bus station
- train station
USER / CLIENT DESCRIPTION

CLIENT
This urban transportation hub will be designed for the community. The citizens of Minneapolis need some way to help to ease their despondence on oil and driving everywhere. Since this project would be a city owned building the client really becomes what the people need and what the people are currently lacking. In this case the project aims to fulfill the needs and address the current lack an urban transportation hub to allow and facilitate ease of transportation around the urban metro.

OWNER
The project itself would be owned by the City of Minneapolis and would be operated using city funds and employees. The city could operate this building year round and offer the ability to rent retail and residential space in the building.

USER
Users will include people of the city and tourists – peak days will handle several hundreds of thousands of people staggered throughout the day depending on peak traffic flow and holidays. There will also be a flow of users for the retail and residential portions of this project.

EMPLOYEES
5 employees for management of the different transportation lines
20 employees to be selling tickets and offering assistance to users
5 for required maintenance
6 employees for management of the retail and residential portions
5 for event planning and coordinating

PEAK USAGE TIMES
This building will have varying use and peak times, most of these will be during rush hour or times such as holidays where many people want to quickly travel to see their loved ones. There also will be a flow of people into the building to use the retail areas and when people are coming and going from their lofts located in the building.

PARKING
There will be a large parking structure located within the building to allow for many people to park and use the facility. This will also aid in the ease of transitioning from one mode of transport to the next.

SOCIAL, CULTURAL, ECONOMY
This proposed design would help increase all three factors of social, cultural, and economical factors respectively. Socially this building will be used primarily for allowing many people to meet and shop thus creating a sense of connection in the community. Culturally, the spaces created by this structure would allow for events and the like to ever increase people’s knowledge of new things. Economically the proposed plan will increase the amount of business in the vacant lots as well as allowing more business to be flowing into the city with people who will be working downtown thus revitalizing the stagnant downtown economy.
The site for this project is nestled in the metropolitan area of Minneapolis/St. Paul. The backdrop is one of forward thinking individuals who need a quicker and more sustainable way of commuting and traveling. The downtown area of Minneapolis is a vibrant and perfect location of such a project. The light rail lines that connect to the outlying areas, the bus lines, the interstates which run literally into the city center and the amount of business and culture in this area create a perfect site. The site is currently underutilized, with the majority of the space being taken up by parking lots with few built structures on these lots. This fact teamed with the new design for the Vikings stadium, will create a lot of buzz and excitement for this new and exciting project.
This thesis project will involve many types of people, places and things. It will need the support of the community of Minneapolis to make the project come together. The project sets out to facilitate movement between different modes of transport in a quick and efficient way. The implementation of new techniques for building, sustainable design and the close proximity to the new Vikings stadium make it an ideal setting for something of this typology to be successful.
Academic
The goal of this thesis project in the academic setting is to explore and create new and exciting structure and solutions to old and outdated problems. With the addition of new light rail lines in Minneapolis, it is a perfect time to learn more about urban planning while creating a project that is innovative and invigorating. I will learn new and improved ways of efficiency and planning to make this a successful project.

Professional
The goal of this thesis project in the professional setting is one of proving to myself and others that I am a capable designer in terms of workmanship, craftsmanship, thoroughness and dedication. I will show an understanding of advanced topics and solutions which in turn will show an employer my dedication to this profession.

Personal
The goal of this thesis project in my personal life is one of passion. Ever since first traveling, travel and the methods of doing so have peaked my interests. Seeing transportation hubs around the world both finished and under construction was something that sparked an underlying passion within myself. I will prove to myself that I can create and produce a thorough and thoughtful project that will be worth sharing and submitting into competitions.
A PLAN FOR PROCEEDING

RESEARCH DIRECTION
Research will be conducted through multiple sources of information. The library, internet, and visual sources will be used. Historical precedents, typologies, information on different modes of transport, spatial layout, codes and conduct will all be researched. The legality of mixed use and transportation will also be investigated. Site visits will also be regularly conducted.

DESIGN METHODOLOGY
Design methodology will be conducted several ways including through quantitative and qualitative reasoning. This will not be limited to any specific precedent.

DESIGN PROCESS & DOCUMENTATION
All process work will be documented and stored on multiple hard drives in case of failure. The design process will be researched and will be as thorough as possible with many different viewpoints and such taken into consideration.
HISTORY OF TRANSPORTATION
Throughout time, transportation has been one of the single most important pieces of human evolution. Without transportation, one could not have moved from one place to the next; they could have not brought food and goods into market and they would not have been able to conquer the world. The principles have remained nearly the same however the we use transportation for many things has greatly changed.

“Mass transit, also called mass transportation, or public transportation, the movement of people within urban areas using group travel technologies such as buses and trains. The essential feature of mass transportation is that many people are carried in the same vehicle (e.g., buses) or collection of attached vehicles (trains). This makes it possible to move people in the same travel corridor with greater efficiency, which can lead to lower costs to carry each person or—because the costs are shared by many people—the opportunity to spend more money to provide better service, or both” (Schofer 2013.)

“Public transit’s beginnings can be traced back to the early 1800s. During this time, public transit was concentrated around the usage of horse-drawn carriages called omnibuses. They operated under private ownership, and these modes of transit carried as many as 25-50 people through the muddy streets of the typical progressive city” (Schofer 2013.) “The first of these animal-driven vehicles made an appearance in the United States in New York City in 1829 – spreading to Philadelphia and Boston years later (Garrett 2004.) Although the service found itself to be quicker than walking, it did offer an unpleasant ride through the cold weather and uneven, cobblestone streets. The horses pulling the carriages were also known to become a hazard for the typical walking pedestrian” (Schofer 2013.)
“In an effort to improve the comfort and efficiency of travel, cities introduced rails alongside the city streets. With their origins again being in New York City, these new rail systems minimized the energy required by the horses - drastically improving the nature of city travel as a whole. As a result of its success, this new method of travel took off in popularity, becoming the earliest form of mass light-rail transit within the United States” (Garrett 2004.) The usage of rails improved the quality of life for city inhabitants immensely. The rails provided a smoother and sturdier ride for all travelers, and due to the carts reduced friction on the rails, it cut down on travel times as well (Schofer 2013.) Also, cabins were able to become bulkier and more insulted because of the ease of their pull.

By the 1870’s, horsecars usage within the United States took a pause, becoming obsolete with the introduction of the cable car (Schofer 2013.) Initially developed in the 1860s, cable cars relied on mechanical means of propulsion through the usage of large steam engines that moved underground cables (Garrett 2004.) They were able to move passengers further and at a faster pace through tougher terrains. They became very popular in cities like San Francisco where the topography limited travel.

In the following decades, advancements in technology changed the rail system drastically. In the beginning of the 20th century, the personal automobile entered the market as a toy for the rich American (Schofer, 2013). It became more and more popular as its prices became cheaper. It offered a never-ending list of freedoms for the American citizen. Unlike mass transit, the automobile provided a personal sanctuary for travel. Rather than having to walk to a rail station, the car increased our instant mobility, cutting time for travel drastically. It provided a refuge for storage while traveling, and the Americans life became much more efficient.
“Beginning in 1910 and lasting for the next half century, demand for public transportation decreased and the usage of the automobile began to abolish the forms of the streetcar” (Garrett 2004.) “People now, with the luxury of their own vehicles, were able to live further from the city’s central core while still maintaining the benefits that the urban environment provided. This shift decentralized the American city; it weakened the downtown center and moved the average inhabitant away from the close-knit social and cultural life... In some respects, the advent of the automobile continued the process of metropolitan growth promoted by the electric streetcars—hastening the decentralization of the population and pushing the suburbs further into the hinterland” (Melosi 2010.)

“The automobile brought unfavorable consequences to the American city, and with the addition of roads, highways and even interstates, communities lost their significance. Neighborhoods became separated, the residential function of urban cores declined, housing stock was reduced and the well being of the poor was made even worse... The construction of a highway or freeway through an existing neighborhood, by its very act disrupted, degraded, and in some cases destroyed a community. Property values plummeted, but more significantly people were displaced and their neighborhood attachments undermined. One person’s blight and slum clearance was another’s life ripped asunder” (Melosi 2010.)

In the 1950s, people began realizing the problems associated with automobile-based design. They started to acknowledge the fact that communities were getting destroyed and the environment was getting polluted. Although public rail transportation in the United States was the best in the world at the beginning of the 20th century, the invention of the automobile and its affordability to the average person in the 1910s reduced the demand for public rail transportation.
As a result, ridership and public funding for rail systems declined throughout the first half of the 20th century. Rail public transit was revitalized in the 1960s. As more American cities began to experience increased traffic congestion and pollution, transit experts once again turned to rail as a possible cure. Light-rail systems were seen as a way to remedy congestion and pollution, as well as a means to create economic development in conjunction with careful city planning. This focus on transit-oriented development and the interest of public officials and citizens have all contributed to a rebirth of rail transit in American cities that continues to this day and is likely to persist into the future (Schofer 2013.)

“More than 50 cities in the United States currently provide rail transit as a means of regional public transportation. Regional rail systems in America logged more than 900 million vehicle miles and 24 billion passenger miles in 2002. In comparison, bus service nationwide amassed 1.8 billion vehicle miles and 19.5 billion passenger miles, and private automobiles logged 1.6 trillion vehicle miles and 2.5 trillion passenger miles. Each day, millions of commuters, tourists and students rely on regional rail transit as their primary source of transportation, and dozens of metropolitan areas across the country see rail transit as a form of public transportation that can encourage economic development in the local area” (Hauge 3.)

“Although the rails are gone from the city streets, the urban fabric that defined a way of life a century ago is still present, and the streetcar city is still able to inform a new way of life as we move into the future… Currently, The Hamline-Midway neighborhood is undergoing a transformation at the rails of the new Green Line light rail system. Because the neighborhood was designed around the streetcar, it is primed and ready for a renaissance era. With the re-introduction of the Green Line light rail extension on University Avenue, looking to the past will prove to be successful. By re-instituting at-grade transit in Minneapolis and St. Paul, the shift toward a new era of development oriented to public transit will soon begin. It can move into the future as a powerful example of successful transit-oriented development that is tailored directly to the regions around it. The observance of the historical will help design move forward, and provide a framework for the upcoming years of the Green Line light rail. Designs that are molded to the existing urban form, rather than working against it, will prove to be more successful” (Condon, 2010.)
The topic of an urban transportation hub is important to myself and our society as a whole for many different reasons. The first being that as our lives become more and more efficient, our transportation has stayed the same as it was 30 years ago. We need a way to quickly and effectively move between different modes of transport in an effort to cut our urban sprawl and carbon emissions. If commuters and citizens had an easier way of getting to work and for leisure activities, they might start using mass transit more readily.

The topic of urban sprawl is one that plagues our country as a whole. We have expanded our cities further and further out in turn making our citizens rely on automobile traffic, instead of walking places or being able to take the bus or train. I have traveled extensively throughout the world and have had first hand experience in this type of urban hub. It is easier for the normal person to move from one place to another as well as facilitating ease for the traveller. In the United States, I think that one of the main items that needs to change is the building of transpiration centers like this one. This will make this type of seamless transition possible in a country that is many years being in mass transit technology.
HISTORICAL CONTEXT

Throughout history, there have been many different methods of combining transportation systems into one that is more effective and efficient. The history of transportation is one of technology and innovation. As technology has progressed, transport has allowed people to travel farther, explore more territory, and expand their influence over larger and larger areas. Transport is important because it enables trade between persons, which was and has been essential for the development of civilizations throughout history.
SOCIAL CONTEXT

This project closely relates to social trends and developments in our society. “Freight and passenger carriers deploy large hub- and-spoke transportation networks to provide efficient service between many origins and many destinations. These networks use hub facilities that provide a connecting, sorting and/or consolidation function designed to concentrate flows on the inter-hub links to exploit the strong economies of scale in transportation (Hörhammer, 1994.) Socially, an urban transport hub would be able to do wonders for the economy and revitalizing a dying downtown environment surrounding the site. The site will be ever changing over the next few years when the new Vikings stadium is finished, allowing for more people accessing the areas in immediate proximity to the site. A transportation hub is the perfect solution for this area allowing for people to easily and quickly enter the downtown area without having to worry about finding places to park.
The physical context that the building is located in is one of upcoming promise. The new stadium will soon be completed and much new development is occurring in close proximity to the project location. There are several high end apartment complexes being built nearby and the downtown life is being radically changed after many years of non use.
This site is located in downtown Minneapolis nestled right next to the new Viking stadium and sitting on the light rail lines that flow through downtown Minneapolis. The site is currently home to parking ramps, parking lots, some retail and some residential, however, it is not densely populated. In this section, I will take a look at the quantitative and qualitative aspects of his site. For this downtown location, there are several points that need to be taken into consideration and expanded upon. The residential spaces and parking are two issues that will be addressed in the new structure and spacial planning and will not be lost in this rejuvenation of space.
EXISTING GRIDS
Existing grids of the downtown site consist of roads, sidewalks, light rail tracks and their relationships to the building and urban context.

EXISTING TEXTURES IN PLAN
Existing textures consist of concrete roads, blacktop roads, concrete sidewalks, paved parking lots, grass, sand and gravel, some plantings, residential, industrial, and commercial buildings.

MATERIAL TEXTURES
Material textures around the site are metal, steel, concrete, wood, and natural materials.

GEOMETRIC RELATIONSHIPS
Geometric relationships are apparent in the relationships between buildings, roads, and urban greenery.

SHADE AND SHADOW CHARACTERISTICS IN PLAN
Shade and shadow on my site will impact the surrounding buildings. The amount will depend on the finalized height and floor ratios of the final floor plans. The site is very open to all directions, with only a few taller buildings surrounding the area.

TOPOGRAPHY
There is little to no topographic change on the site which will be the best for a site that will be linking different modes of transport that can not easily climb or descend elevation changes.

The topographic elevations are as follows:
Northern Point- 830ft
Western Point- 839ft
Eastern Point- 830ft
Southern Point- 845ft

By looking at the many topographic elevations, I have deduced a good, build able site which will handle the proposed building with little to no problems.
SHADE AND SHADOW

This site for the most part is empty with the random parking lot or residential structure located on it. There will be a need to include these into the finalized design for the project. The shade is cast from some of the higher structures located to the Southwest of the site and the new stadium that will be located on the Southernmost edge of the site. These shadows should not affect the site in detrimental ways, only exhibiting some shade on days where the sun is low. There are no great sights that need to be preserved on the site, only ones that will be created and enhanced to downtown and to the stadium.
LIGHT QUALITY

The light quality of the site is one that is of importance. Having the kind of climate we do, sun rises and Sun sets can be beautiful things that need tone capitalized upon. Having a lower laying structure would maximize views to the sun and allow the natural light to stream into the site. Having a few high rise areas on the site will allow for the gain of solar heat and energy. The intensity varies throughout the seasons and can vary from diffused light on winter mornings to harsh over head sunlight in the middle of the summer. Light temperature varies as well but for the most part is lighter yellow to white in color.
Existing built features on the site include several restaurants, some residential lofts, and businesses. For the most part though, the site is void of built structures, only parking lots and open urban spaces. These structures can be dealt with and several different ways. The existing buildings can be left as is with the new proposed structure going up around them, or they can be demolished and recreated into a new piece of architecture with the new building. The one that makes the most sense since none of these buildings are considered historic structures is to demolish them and start fresh with a clean slate. There will be multi-use spaces in the new building to accommodate for these lost structures.
VEGETATION

Vegetation on the site is little to none. The majority was destroyed when the buildings and pavement were laid many years ago. The remaining vegetation is primarily weeds, small scrubs and smaller tress with little grassy spots. This needs to change. There is nothing better than having spaces in an urban context where one can escape into a small path of grass with the shade of a tree protecting them from the sun. Landscaping the site into a positive addition to the downtown framework will be an important part of the upcoming design process.
There is no water that is present on the site as it stands today. The only chance there is for some water to be potentially there is as run off from a storm or from a building. Water is a very important of the culture of Minnesota, so bringing some sort of water feature into the site is of upmost importance. The lack of topographic change of the site leads to water standing still and not moving very frequently unless directed through man made processes. The water would be polluted once it mixes with the contaminants found on the ground, but could easily be harvested from the sky. It is found intermittently on site without any sort of permanent streams or reservoirs.
WIND
There is a bit of wind that comes through the site, although most is blocked by the taller buildings to the northwest of the site. There are winds that reach the site in the summer though with the warm breezes from the south. The amount of wind varies on the season, but there is not much wind to worry about being in the middle of a downtown metropolis such as this.
The site shows many signs of human intervention. I don’t think that there is any portion of the site that I have found that has not been developed by humans for some purpose whether it is to build upon or to park your automobile. A small portion of the site to the Southwest remains in pretty good condition and upkeep, however the more North one travels, the less well taken care of it becomes. This is something that is important for me to address in the final design. The bridging of different communities that exist simultaneously without much intermixing. People have all but ruined most of the urban site. With many years of building and demolishing of structures, there are many remnants that need to be cleaned up and improved. The site is one that is perfect to facilitate the flow from the new stadium as well as the light rail lines that run straight through the twin cities. There is much improvement to be made and this proposal is ready to accomplish just that.
SOILS AND WATER TABLE

The geology and soil makeup of Minneapolis is attributed to the movement and remaining from two different glacial ice lobes—the Superior lobe and Grantsburg sublobe. My site, which is located in Minneapolis is primarily composed of three soil categories: Meltwater Stream Sediment, Till, and Till with Stream-Modification (Metrocouncil). These types of soils can be easily built upon, but need deep caissons and footings to help the building not move about.

The depth of which the water table can be found is highly variable in this region. In Minnesota, the water table is usually close to the land’s surface, lying at depths of a few tens of feet.
OTHER SITE ANALYSIS

Utilities
This site contains hookups for water, sewer, gas and allows for large scale garbage collection as well as many different types of recycling methods.

Vehicular Traffic
There is a lot of vehicular traffic coming by this site. This is one of the reasons that a nice noise breaking device will have to be implemented around the site to cut this noise and to allow for a peaceful area to relax in this urban oasis. People travel fairly quickly around and near this site, so having people slow down would be of the utmost importance with the amount of traffic that this site will be reaching when at full occupancy.

Pedestrian Traffic
There is a fair amount of pedestrian traffic around this site, and this number will only increase after the building is constructed and allowing citizens to quickly and efficiently transfer between the different modes of transportation.

Slope Analysis
The slope on the site is under 4% which is ideal and usable for all kinds of activity.
WIND SPEED (5-13 MPH)
- CITY AVERAGE
- US AVERAGE

SNOWFALL (0-12 IN.)
- CITY AVERAGE
- US AVERAGE

SUNSHINE (30-90%)
- CITY AVERAGE
- US AVERAGE
WIND ROSES (MPH)

SPRING SOLSTICE

SUMMER SOLSTICE

FALL EQUINOX

WINTER SOLSTICE
SUN PATH DIAGRAM

- Summer Solstice
- Spring / Fall Equinoxes
- Winter Solstice
These photos were taken of the site this fall in September. The various angles of the photos show the many different kinds of lots that the site is comprised of.
ENTRY AND VESTIBULE (3000 SQ FT)
vestibule
atrium

ADMINISTRATION (40000 SQ FT)
directors office
administrative offices
break room
conference
transit support

TRANSIT FACILITIES (150000 SQ FT)
ticket
waiting
customer and transit display
platform

EXHIBITION (2000 SQ FT)
temporary public art display

SUPPORTING (50000 SQ FT)
mechanical
circulation
restrooms
janitorial
storage

RESIDENTIAL (28000 SQ FT)
Studio Apartments and Parking
Parking (60000)
Subgrade Parking

SERVICES (20000 SQ FT)
restaurant
cafe
retail
market

EXTERIOR (32000 SQ FT)
public square
performance
exhibition
streetscape
bus stop
waiting
bikeshare station

RESIDENTIAL (28000 SQ FT)
Studio Apartments and Parking

PARKING (60000 SQ FT)
Subgrade Parking
EXHIBITION [2000]
The exhibition spaces would allow for different people throughout the community to show off their art. This is an important space because it allows for the hub to become more of a public space than just for private ventures.

SUPPORTING [50000]
The supporting areas of the building allow the building to function as efficiently as possible. There is storage spaces available for different decorations for the different holidays and seasons and for equipment used for special events. The supporting spaces also include restrooms, circulation space, janitorial and the mechanical spaces.

SERVICES [20000]
The service sector of this building includes all restaurants, cafes, coffee shops, all retail and the farmers market which is available in the warmer months of the year.

ENTRY AND VESTIBULE [3000]
This area of the proposed building would be used to great and allow for the users to wait and meet friends or others. There would be a large open air area in the entry to allow for the seamless transition between the open air of the exterior and the interior of the building.

ADMINISTRATION [40000]
The administration office of the building The administration offices of the building would be where all management and operations of the building would be housed. This would include representatives from the light rail, Amtrak, bus systems, civil organizations of the city as well. There would be many different spaces available for the offices of the different retail and residential users of the space.

EXTERIOR [32000]
The exterior of the building includes different spaces that could be used by the public for relaxation, meeting and general activities. There is also space for performance, bus stops, bike racks, seating and for exhibitions.

RESIDENTIAL [28000]
The residential areas of the building would be rentable until the users as a whole decide to purchase. There would be many types of units available at various prices and sizes. The residential sector of this building is something that is necessary on account of the residential area of the site being displaced during construction.

PARKING [60000]
There will be space for parking at the transportation hub to allow for the seamless translation between modes of transport. The parking will also allow for public parking with easy access to the downtown area.

TRANSIT FACILITIES [150000]
The transit facilities of the building would consist of the many different platforms for the rail, light rail, and bus stops. There would also be spaces for client drop off and pick up from bus and automobile traffic.
Spaces needed:
Transit hall
- ticketing, waiting, platform

Entry 3k
Admin 40k
Transit areas 150k
Exhibition 2k
Support 50k
Residential 20k
Services 20k
Exterior 32k

Matrix of solutions of transfer or transport.

- Walk/Ride
- BIKES

2-16 wall not stopping.
22 space 6 for 22' 6"}

Levels:
- 2 TRAIN TRAFFIC
- 1 LIGHT RAIL

Ground: Main spaces / bus.
1. Admin
2. Parking OK - 1?
3. Roof gardens.

1230 5th St N.
Laura's corner sign

5-34

REOUIE
Pavilion roof - allow little light to get through.

1. Create plate for thickness (dahm)
2. Create springs
3. Fold diagonals, create box lifting
4. Select surface
5. Partially faceted cover

Path left and horizontal left. Select to Dach. Space between.
NOTES:
APPROPRIATE DESIGN INPUT FOR HP.
THEORETICAL PREMISE:
THE PURPOSE OF THIS THESIS IS TO EXAMINE THE WAY THAT ALL THE DIFFERENT MODES OF TRANSPORT IN AN URBAN TRANSPORTATION SYSTEM CAN BE BROUGHT TOGETHER INTO ONE SEAMLESS SOLUTION.

INFORMATION:
THIS THESIS IS SET IN THE METROPOLITAN AREA OF THE TWIN CITIES, MINNEAPOLIS/ST. PAUL. LINKING TRAIN, LIGHT RAIL, BUS, AUTOMOTIVE AND PEDESTRIAN TRAFFIC WILL SET MINNEAPOLIS/ST. PAUL APART FROM OTHER METROS AND PROVIDE A WAY FOR ITS CITIZENS TO MOVE QUICKLY AND EFFICIENTLY AROUND THE URBAN AREA.

THE TWIN CITIES HAVE ALWAYS BEEN ON THE CUTTING EDGE OF DIFFERENT TRANSPORTATION TYPES. IN THE PAST, MUCH OF THE TWIN CITIES, MINNEAPOLIS & ST. PAUL WERE INTERCONNECTED BY STREETCAR SYSTEMS, AUTOMOBILE HIGHWAYS AND ROADS, AND A LARGE BUS SYSTEM. WITH THE ADDITION OF THE LIGHT RAIL IN THE TWIN CITIES METROPOLITAN AREA IN THE LAST FEW YEARS, THE NECESSITY FOR AN URBAN TRANSPORTATION TERMINAL HAS INCREASED. WITH THE PROPOSED TWIN CITIES TRANSPORTATION TERMINAL, AUTOMOBILE TRAFFIC, BUS TRAFFIC, LIGHT RAIL, AND FOOT TRAFFIC WILL ALL HAVE A CENTRALIZED LOCATION TO MEET AND FACILITATE QUICK AND EFFICIENT TRANSFER BETWEEN DIFFERENT MODES OF TRANSPORTATION.

WITH THE SITE BEING IN CLOSE PROXIMITY TO THE MAIN HEART OF COMMERCIAL BUSINESS OF DOWNTOWN MINNEAPOLIS, NEXT TO TARGET FIELD, AND A BLOCK AWAY FROM TARGET CENTER, IT IS IN A PRIME LOCATION FOR A TRANSPORTATION TERMINAL. PEOPLE COMING IN TO THE AREA FOR WORK OR PLEASURE, WILL BOTH BE ABLE TO BENEFIT FROM THIS PROPOSED SOLUTION.
DOWNTOWN MINNEAPOLIS WITH BUS LINES, LIGHT RAIL AND TRAIN LINES IN COLOR

- BUS LINES: 4, 6, 12, 61
- BUS LINES: 3, 7, 14, 16, 50, 94
- BUS LINES: 10, 11, 17, 18, 25
- BUS LINES: 5, 9, 19, 22
- LIGHT RAIL LINES: BLUE AND GREEN
- COMMUTER TRAIN LINE

- ALL PROPOSED ADDITIONS TO BUS LINES SHOWN AS A DASHED LINE
SITE PLAN: DOWNTOWN MINNEAPOLIS, COMMUTER
TRANSPORTATION SYSTEMS SHOWN IN COLOR
EAST VIEW FROM TRAIN APPROACH
LATITUDINAL SECTION
FINAL DISPLAY SET-UP ON FIFTH FLOOR
After examining the proposed site from the initial submittal, it was not as feasible to move all the different modes of transport to a new location. Looking at the current routes of all the modes, train, light rail, auto and bus traffic, it was determined that the vacant lot adjacent to Target Field in Downtown Minneapolis would be a much better option. The issue with this site however was that there were two large sets of buildings blocking a pedestrian entrance to the proposed structure. By removing this buildings, the transportation terminal was better linked to downtown Minneapolis. The next issue that was resolved through innovative design was the fact that there were on and off ramps from I-94 North coming right through the site. By using an undulating roofing structure, these were accounted for and celebrated. By using the existing bus terminal on site, and the parking ramp that is able to accommodate 1600 cars, the project gained necessary solutions to make the project work the best it could.
This design that I proposed is exactly what the metropolitan area of Minneapolis-St. Paul needs. The premise of this thesis project was to proposed a solution that would make the transfer between different modes of transportation the most efficient it could possibly be. I think that I achieved this goal for the simple reason that I combined all of the different modes of transportation in the same building, maximizing the floor plan to allow for the riders to quickly get between all the different modes. Through research, the triangle was found to be the quickest shape that accomplished this. The interior spaces maintain a triangular path of circulation, while allowing for the best use of space. There are many services contained in this building. A clinic, daycare, offices, a gym, restrooms, restaurants and bars. This is a place that would draw citizens to use public transport and to recommend using this building to all of their loved ones.
PERFORMANCE ANALYSIS: RESPONSE TO GOALS AND PROJECT EMPHASIS

This thesis project set out to improve the way that we transition from one mode of transportation to another. By linking all of them together in one location, the user of the spaces would be able to quickly and efficiently move from each to the others. The project also aimed to bring European-like ingenuity to this type of building type, taking from case studies and improving upon them. By having all the transport types at the same level, or near to it, the rider has quick access and options to improve their commute. With the project having so many amenities in the building, and the proximity to everything else for entertainment and work, it is a one stop shop for commuters. It allows for a more relaxing time on public transportation.
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