REUNIFYING SACRAMENTO

TRANSPORTATION PORTAL

A STUDY OF SACRAMENTO'S MULTIMODAL HUB AND URBAN TRANSPORTATION

Image 0.0: Cover Image (source: Brooks Taylor)

SIGNATURE PAGE

Brooks Taylor

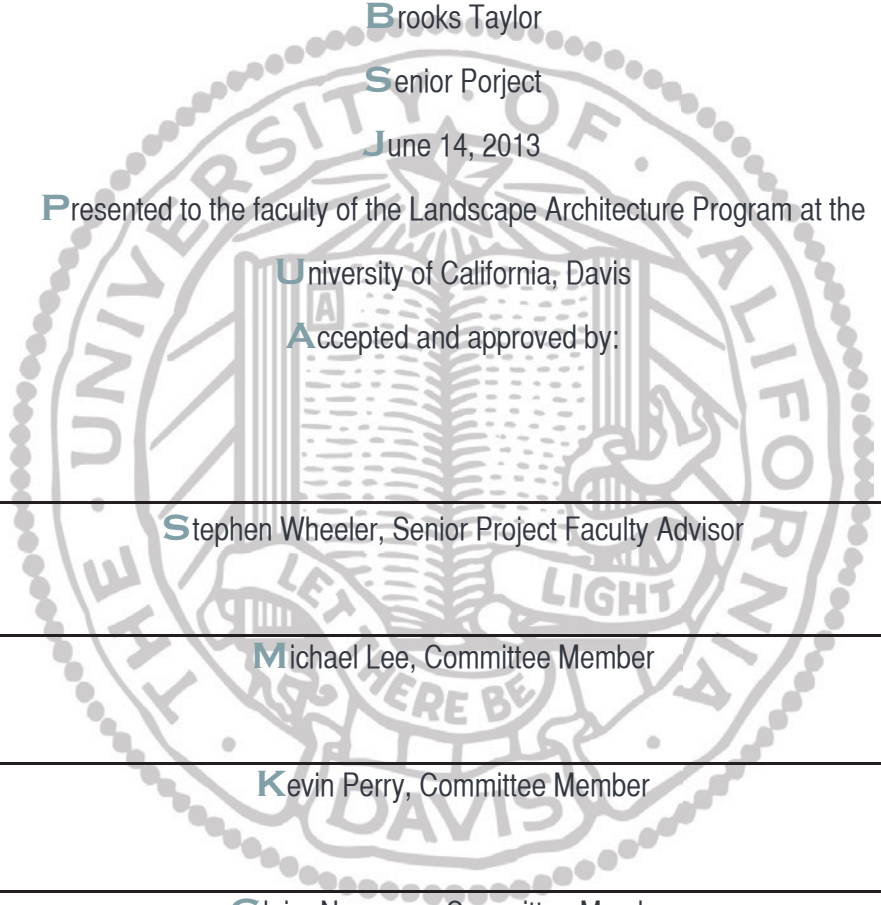
Senior Porject

June 14, 2013

Presented to the faculty of the Landscape Architecture Program at the

University of California, Davis

Accepted and approved by:



Stephen Wheeler, Senior Project Faculty Advisor

Michael Lee, Committee Member

Kevin Perry, Committee Member

Claire Napawan, Committee Member

Michael Rios, Committee Member

ABSTRACT

"Multimodal hubs are the quintessence of smart growth, acting as the centers of Transit Oriented Developments"

Multimodal transportation hubs have been around for a long time, they just have not had a name until recently. These places act as gateways to cities around the world, and they have been right before us hiding as a ferry terminal with a bus stop and a taxi stand, or a train station with a light rail connection and bus stop.

More recently, metropolitan areas have been adopting this form of transportation facility in a big way, making these facilities a message of sustainability and the future of transportation. Multimodal hubs work as focal points of transportation for travelers to conveniently switch modes of transportation. These hubs are placed in urban cores and act distribution centers for travelers.

Image 0.1: Old Rail Line (source: fineartamerica.com)

Sacramento has the perfect opportunity to develop this message on the site of their old railyards. The railyards have gone out of use and have become the largest infill development area in a big city downtown district, in the United States.

The multimodal facility will be the center of a larger community stemming from the accessible forms of transportation. Multimodal hubs are the quintessence of smart growth, acting as the centers of Transit Oriented Developments, carrying the sustainability philosophy by promoting alternative forms of transpor-

DEDICATION

I dedicate this book to my family for the many years of inspiration, encouragement, and support:

Mother: Stephanie, for the art guidance, business sense, and for being a perpetual source of strength.

Father: Bill, for the many econ, history and physics lessons, you have instilled in me a thirst for knowledge, and the countless number of delicious hamburgers.

I'd gladly give you two hamburgers tomorrow for a hamburger today. (Burgernomics 101)

Sister: Lauren, who has served as maharishi helping me find my way when I was most lost.

Brother: Greg, for teaching me that it's never too late to find what I love to do, and propel myself to do my best.

ACKNOWLEDGEMENTS

To all the faculty and staff of the landscape architecture department:

Thank you so much for guiding me along in my academic quest. You have challenged and excited me in a field that I have found a deep respect for. Only a few years ago I was lost, this program has given me a new perspective on life, shining its light on new subjects and details of the world that I didn't know existed.

TABLE OF CONTENTS

Chapter 3

- DESIGN

Closing

LIST OF IMAGES

PREFACE

Image 0.2: Focal Point Emergence (source: self)

This project describes the process and requirements of designing a Multimodal Transportation Hub. Following many of the procedures set forth in specific plans and design guideline books and applying many of the methods taught at UC Davis, I have created a distinct, sustainable and neighborly facility that is adaptable to its surroundings and progressive technologies

I like to call these facilities Transportation Portals or Trans-Portals.

CHAPTER 1

RESEARCH

Image 1.1: Railroad Crossing (source: people.tribe.net)

HISTORY

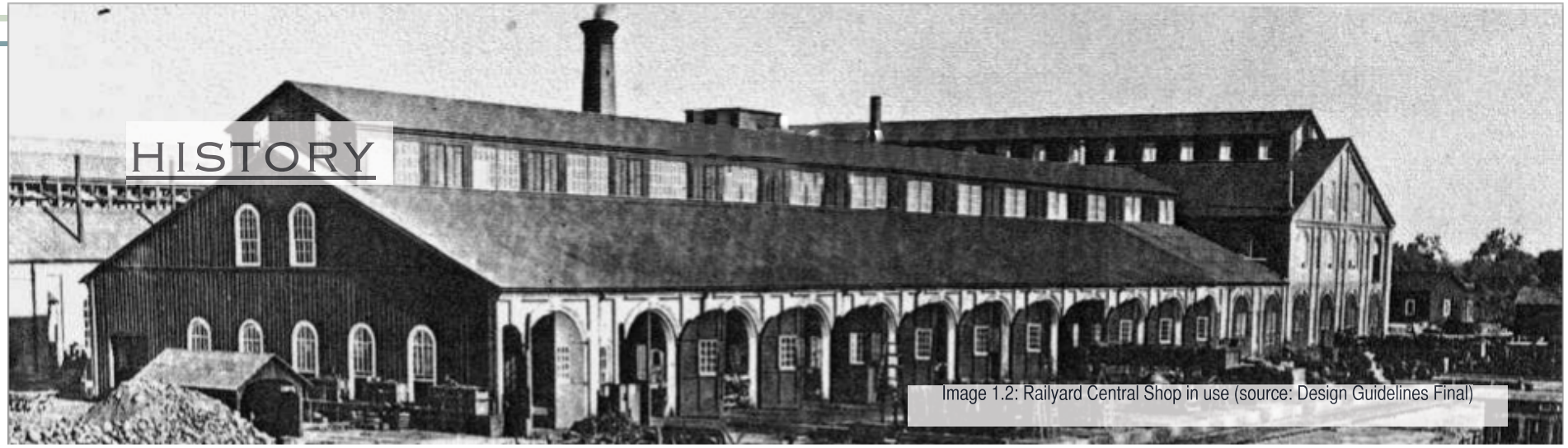


Image 1.2: Railyard Central Shop in use (source: Design Guidelines Final)

Sacramento's rail history began in 1856 under private ownership, the railyard would eventually change hands to "The Big Four" who created Central Pacific Railroad; in 1869 with the completion of the First Transcontinental Railroad, Sacramento became the most economically active area in Northern California. Sacramento's railyard was the western terminus for the rail line, steam boats then connected Sacramento to San Francisco by way of the Sacramento River.

Central Pacific Railroad merged with Southern Pacific Railroad in 1870, causing the Sacramento Railyard to expand even more. By the late 1800's the railyards were Sacramento's largest employer and the Central Shops District kept growing ("Railyards specific plan," 2007).

As railroad use gradually declined and the interstate system swept the nation, railyard upkeep became too much of a hassle and the railyards of the US began their slow decline. Eventually Sacramento's bustling railyard was shut down in the 1990's.

The railyards have been closed to the public due to toxic contamination from the years of industrial use, but recently went up for sale. The entire railyards were sold to a private investor, but has since changed hands due to further need for development funding ("Super-fund site progress," 2005).

The only existing elements left at the railyards are the historical central shops, which were used for repair, maintenance, and sometimes creation ("Railyards specific plan," 2007).

Image 1.3: Railyard Central Shop (source: Design Guidelines Final)

WHAT IS MULTI-MODAL?

Often referred to as inter-modal hubs, these transportation facilities are a conglomeration of all forms of transportation: bike, foot, car, bus, light rail, commuter rail, high-speed rail, or boat, some even provide car rental.

*In many cases, the opportunity exists to remake the train station into a mixed-use center of economic activity, while still accommodating train and bus service. In fact, the continual throughput of passengers makes train stations attractive locations for both office and retail. The new station facilities, which have included other uses, have stimulated employment and retail sales (Pucher, 2004).

In addition, intermodal public transport hubs tend to be strong attractors for transit-oriented development (TOD), often being transformed into destinations in their own right (Henry & Marsh, 2008).

WHY CHOOSE MULTI-MODAL?

◊ Multi-modal hubs create better connections between the available modes of transportation that a city provides, making it easy to transfer from conveyance to another at one convenient location.

◊ Create a balance between for all forms of alternative transportation.

◊ Avoid mass transit interruptions, by allowing easy transfer between modes.

◊ Create efficient way to increase capacity for commuter rail.

◊ Allow expansion for new forms of transportation, business growth, and other revenue generating opportunities.

◊ Remove people's dependence on automobiles, thereby alleviating the interstate and highway system.

◊ Creating safer ped and bike environment by removing many of the cars from the street

◊ These facilities are models of Transit Oriented Developments, they begin to create neighborhoods and not just districts("Sacramento Intermodal Transportation," 2012).

WHY CHOOSE MULTI-MODAL? CONTINUED

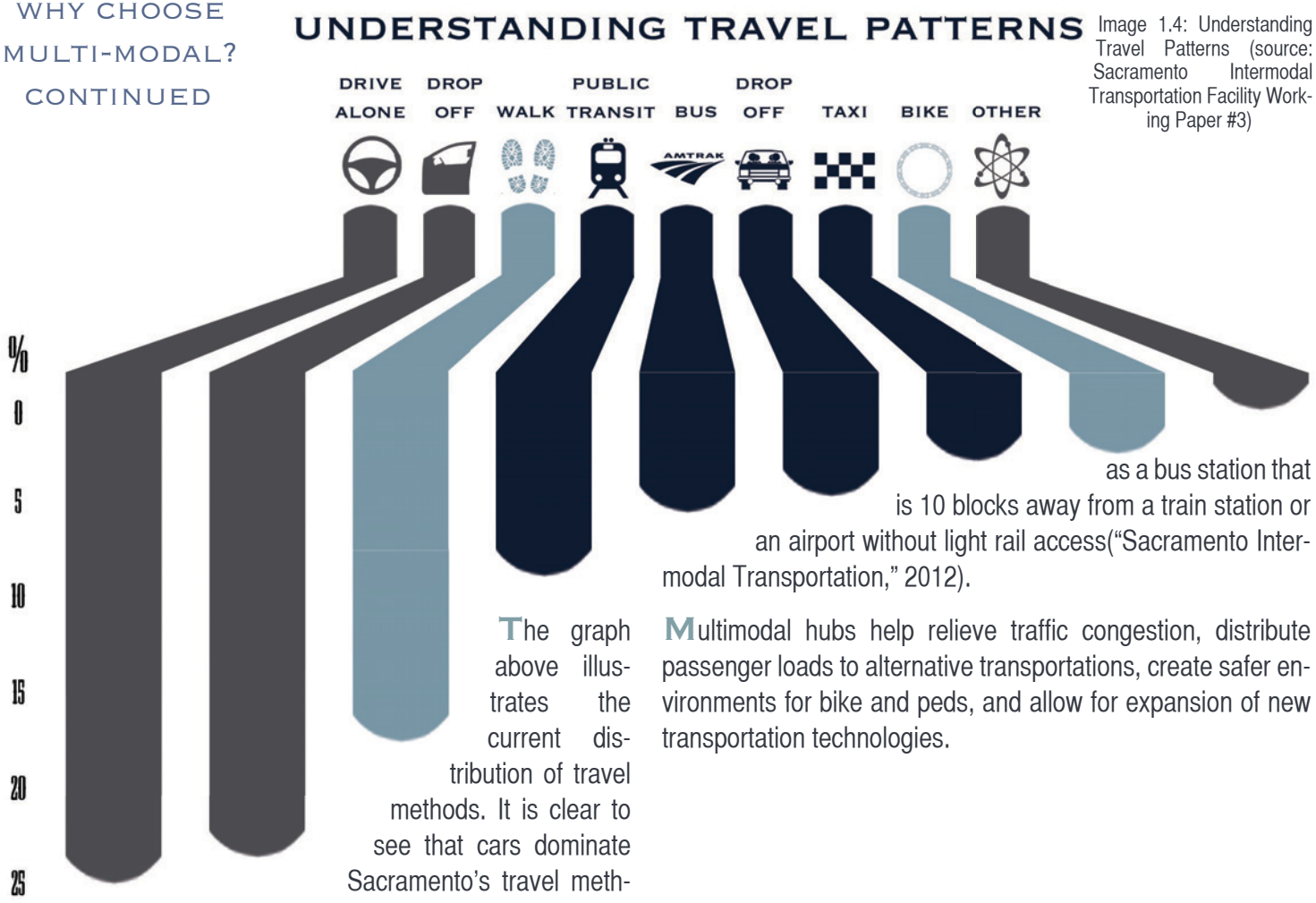


Image 1.4: Understanding Travel Patterns (source: Sacramento Intermodal Transportation Facility Working Paper #3)

The graph above illustrates the current distribution of travel methods. It is clear to see that cars dominate Sacramento's travel methods. Choosing Multimodal helps distribute the passenger load across the array of travel choices.

Multimodal transportation hubs help close the gap that has been created by America's car-dominated society. These facilities address many of the issues that face intermodalism, such as a bus station that is 10 blocks away from a train station or an airport without light rail access("Sacramento Intermodal Transportation," 2012).

Multimodal hubs help relieve traffic congestion, distribute passenger loads to alternative transportations, create safer environments for bike and peds, and allow for expansion of new transportation technologies.

CASE STUDIES

TRANSBAY TERMINAL, SAN FRANCISCO

On the large scale is San Francisco's New Transbay Terminal; this facility does an amazing job at mending the tear that public transportation creates in a city. San Francisco's existing subterranean infrastructure allows bus, taxi, and multiple forms of rail to be located so close together, while creating a safe, welcoming environment for pedestrians.

Just like Sacramento's rail yard, San Francisco's rail facility was outdated and presented a perfect opportunity to retrofit the metropolitan area's transportation facility.

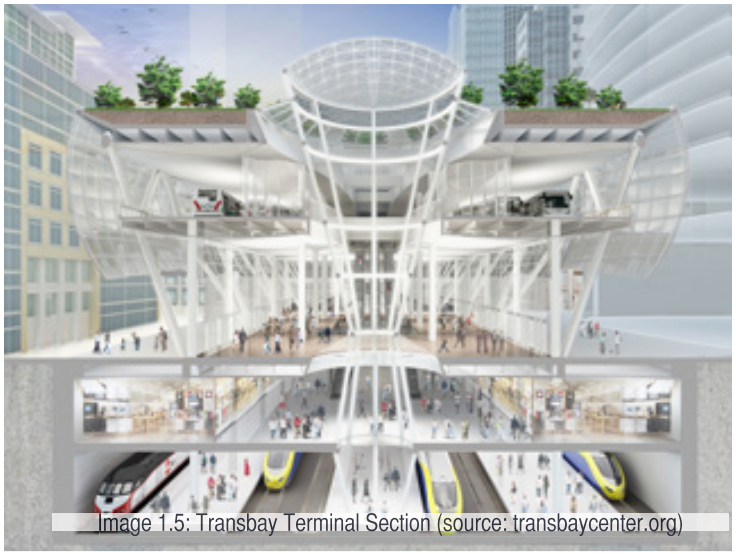


Image 1.5: Transbay Terminal Section (source: transbaycenter.org)

South Kirkland Transportation Hub, Greater Seattle Area

Image 1.6: South Kirkland Transportation Hub Section (source: cascadiprospectus.org)

On a smaller scale is a facility planned for Kirkland, Washington. This facility would act as a transportation hub for travelers to choose an alternative method of transport to get to and from Seattle. One of the main components of this facility is to create an adequate park and ride facility just outside of Seattle.

This facility shows the incorporation of multiple methods of transport with retail, cafes, and other amenities, while keeping pedestrians safe from automobile interference.

The Artic (Aneheim Regional Transit Intermodal Center), Aneheim

Image 1.7: Anaheim Regional Transportation Intermodal Center (source: metroprimaryresources.com)

The High Speed Rail Association has provided Anaheim with their new ARTIC building. It will serve as the southern terminus of the high speed rail line, where Sacramento will be the northern terminus for high speed rail.

This building is a statement about the future and adaptability of transportation, creating a center that will attract as many onlookers as it does travelers.

SITE ANALYSIS

Image 1.7: Greater Sacramento Area (source: mapresources.com)

DOWNTOWN SACRAMENTO

Image 1.8: Downtown Sacramento Aerial (source: cityofsacramento.org)

EXISTING SITE CONDITIONS

Image 1.9: Sacramento Railyards Aerial (source: cityofsacramento.org)

Only the Central Shops and Historic Water Tower remain on site after the Union Pacific Railroad shut it down in the 1990's.

Image 1.10: Existing Conditions Map (source: Brooks Taylor)

Image 1.11: Existing Conditions From I-5 (source: Brooks Taylor)

In figure 1.11, taken from the I-5 onramp, the old rail lines are in the bottom righ of the photo and the newly laid tracks lay in front of the historic Central Shops. The space between is ripe for intervention.

ACCESS

Circulation and Access. The public rights-of-way provide for circulation within and through the downtown, and access to individual buildings and sites. The public realm accommodates numerous travel modes--not just automobiles, but also delivery trucks, buses, trains, street cars, motorcycles, scooters, bicycles, and pedestrians (WRT & Solomon, 2007).

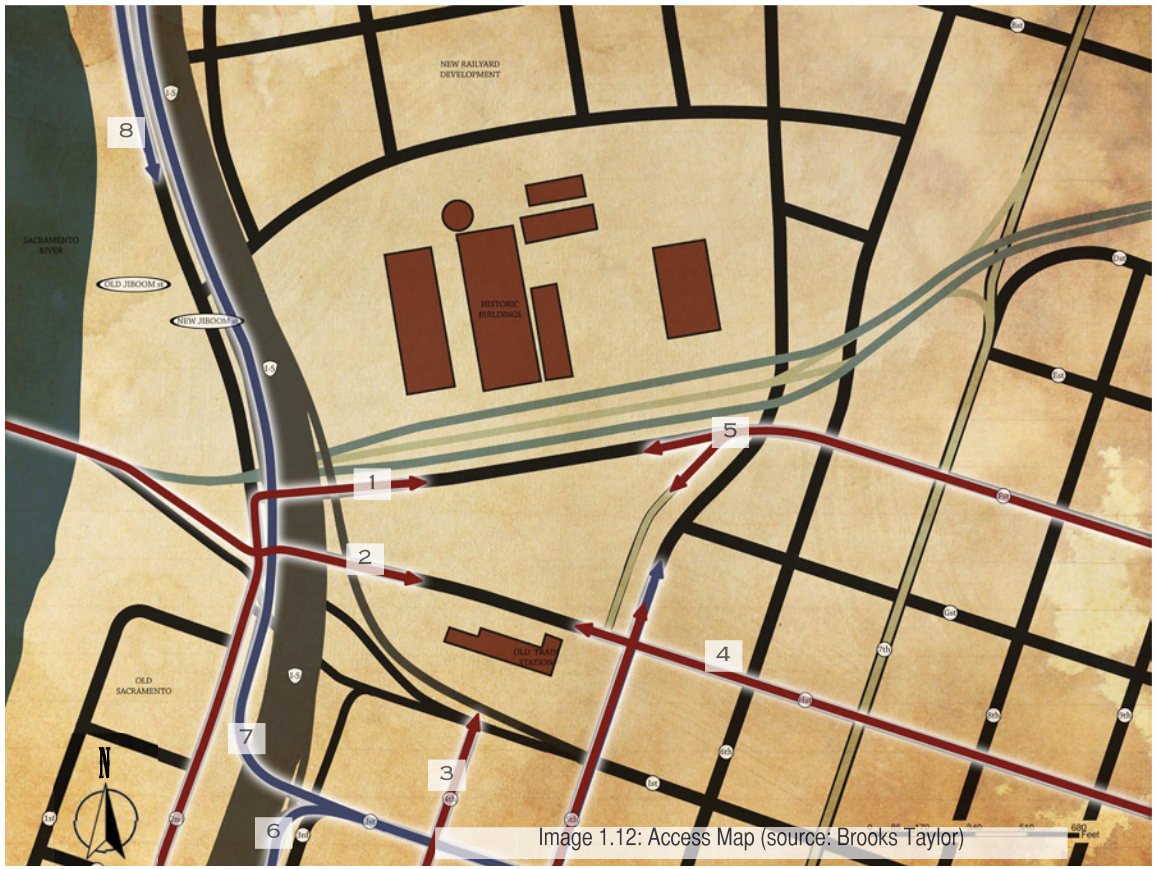


Image 1.12: Access Map (source: Brooks Taylor)

1) THE SITE IS ACCESSIBLE FROM THE OLD SACRAMENTO, THIS ROUTE ALSO PROVIDES ACCESS FOR DELIVERY AND MAINTENANCE VEHICLES

2) CURRENTLY THE SITE IS ACCESSIBLE FROM THE I STREET BRIDGE, WHICH IS OUT OF DATE FOR AUTOS

3) DOWNTOWN FEEDS INTO THE SITE THROUGH 4TH ST.

4) H ST. WILL EXTEND INTO THE SITE TO PROVIDE GREATER THOROUGHFARE ACCESS FROM MIDTOWN

5) MIDTOWN AND ALKALI FLAT WILL FEED INTO THE SITE BY THE NEWLY EXTENDED F ST. THIS WILL ALSO ACT AS ACCESS FOR THE MAIN BUS STOP

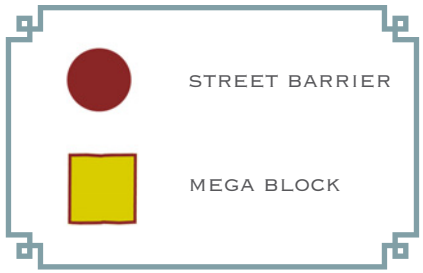
6) I-5 FROM THE SOUTH WILL FEED ONTO J ST AND THEN INTO THE SITE

7) I-5 FROM THE NORTH WILL ALSO FEED ONTO J ST AND THEN INTO THE SITE

8) I-5 FROM THE NORTH ALSO FEEDS INTO THE JIBBOOM DISTRICT WHICH WILL ACCESS THE SITE FROM THE NORTH

BARRIERS

"RAIL LINES PREVENT THE DOWNTOWN GRID FROM MERGING WITH THE RAILYARDS DEVELOPMENT, CREATING A DISCONNECT FROM THE REST OF THE DOWNTOWN DISTRICT"



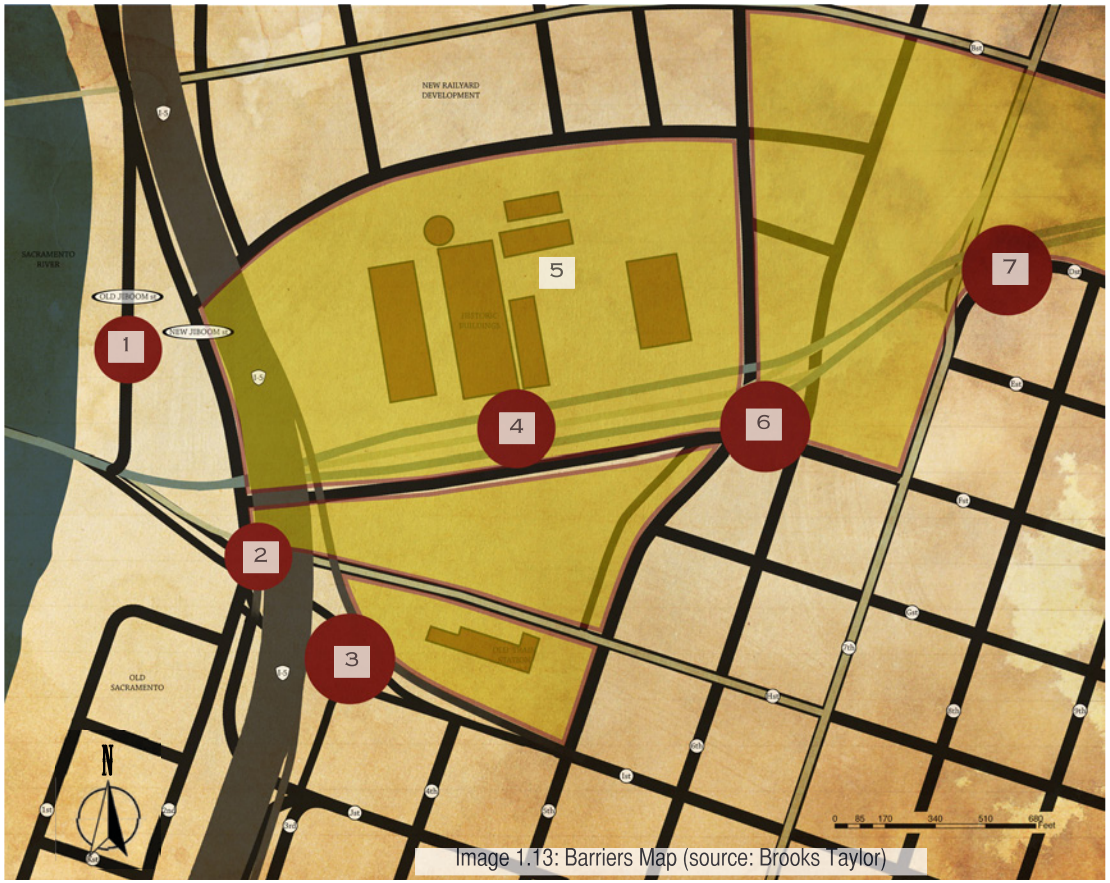


Image 1.13: Barriers Map (source: Brooks Taylor)

1) THE OLD JIBBOOM ST. BRIDGE CONNECTS THE RIVER DISTRICT AND NORTHERN I-5 OFFRAMP TO THE I ST. BRIDGE, BUT ACTS AS A BARRIER TO WESTWARD EXPANSION AND RIVER ACCESS

2) UNDER THE I-5 BRIDGE THERE ARE RETAINING WALLS WHICH PREVENT CERTAIN AUTO ACCESS

3) THE NORTHBOUND I-5 ON-RAMP CREATES MAJOR OBSTRUCTIONS TO SITE ACCESS

4) THE NEWLY LAID RAIL LINES CREATE A BARRIER BETWEEN THE DOWNTOWN DISTRICT AND THE CENTRAL SHOPS AND RAILYARDS

5) MEGA BLOCKS HAVE EMERGED FROM POOR INFRASTRUCTURE PLANNING AND CREATE MAJOR PROBLEMS FOR NEW ROADS TO BE LAID

6) IN ORDER FOR THE RAILYARD DEVELOPMENT TO HAVE ACCESS FROM DOWNTOWN AND MIDTOWN, EITHER BRIDGES OR TUNNELS MUST BE LAID TO CREATE PROPER THOROUGHFARES

7) THE OLD RAIL LINES PREVENT THE DOWNTOWN GRID FROM MERGING INTO THE RAILYARDS DEVELOPMENT, CREATING A DISCONNECT FROM THE REST OF THE DOWNTOWN DISTRICT

NEW OPPORTUNITIES

"INCREASE THE CONNECTIONS TO SURROUNDING DISTRICTS AND HELP TO MAKE THE RAIL YARDS THE FOCAL POINT OF THE DOWNTOWN DISTRICT"

Image 1.14: New Opportunities Map (source: Brooks Taylor)

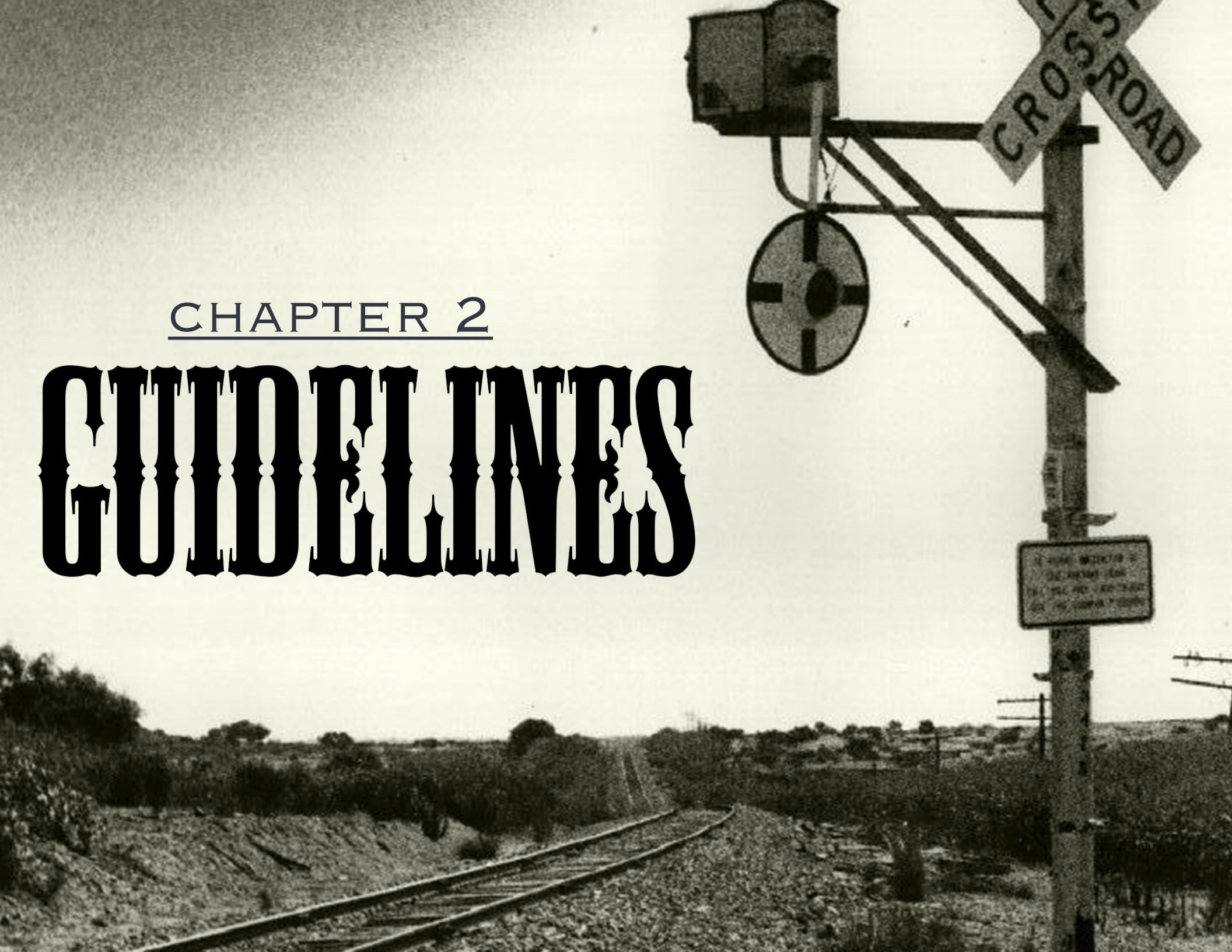
Image 1.15: Rail Perspective(source: bayoucityrail.com)

OPPORTUNITIES

1) ONCE THE OLD JIBBOOM ST. IS MOVED TO GROUND LEVEL, THERE IS AN OPPORTUNITY TO CREATE AN AUTOMOBILE BRIDGE OVER TO WEST SACRAMENTO; THIS WILL ALLOW THE OUTDATED I ST. BRIDGE TO BE CONVERTED INTO A PEDESTRIAN AND RAIL BRIDGE ONLY

2) INCREASING PEDESTRIAN FLOW OVER THE NEW RAIL ROAD TRACKS CREATES THE OPPORTUNITY TO INTERACT WITH THE CENTRAL SHOPS; CREATING A SECOND LEVEL BUILDING OVER THE RAILROADS TRACKS, THAT IS NAVIGABLE BY PEDESTRIANS, IS ESSENTIAL; THE CENTRAL SHOPS WILL ALSO ACT AS A WAY FINDING TOOL

3) INCREASING LIGHT RAIL PASSAGE NORTH AND SOUTH ALONG 7TH ST. AND EAST AND WEST ALONG THE NEW RAIL LINES WILL HELP INCREASE THE CONNECTIONS TO SURROUNDING DISTRICTS AND HELP TO MAKE THE RAIL YARDS THE FOCAL POINT OF THE DOWNTOWN DISTRICT



CHAPTER 2

GUIDELINES

TRANSIT

1) The loading areas of each method of transit should be within close proximity of each other or have appropriate access by another method of transit. This will ensure fluid traveler passage through the facility.

2) Displaying of transit schedules should be clear and distinct, maintaining an efficient transportation hub. Major connections and route information should be posted and clearly direct passengers to the correct areas.

3) Providing comfortable seating in all areas of the Transportation Portal, creating a comfortable facility for all passengers.

4) Seating and shelter design should maintain consistent throughout the surrounding districts of the TOD. Architectural detail in these and other amenities should remain consistent.

5) State-of-the-art and sustainable technologies should be used wherever possible, like GPS schedule tracking and display, low energy lighting that reduces light pollution, solar panels and cutting edge trash and recycling facilities (WRT & Solomon, 2007).

Image 2.1: Oyster London's Multimodal Transit Card (source visitlondon.com)

Image 2.2: Hoouston's Intermodal Station (source perkinseastman.com)

BUIILDING CODES

Building sizes are controlled by three things: development densities, land use, and height regulations ("Railyards specific plan," 2007). Most of the building sizes in the depot district are dictated by the surrounding buildings; mainly in this case by the Historical Central Shops just north of the site.

Building codes create a framework between the public realm and the private realm, creating structure for the districts to follow (Rios, 2012). Height regulations and setbacks control the much of the ambiance of an area; building heights have an effect on sun/shade control, wind tunneling effects, and urban gestalt.

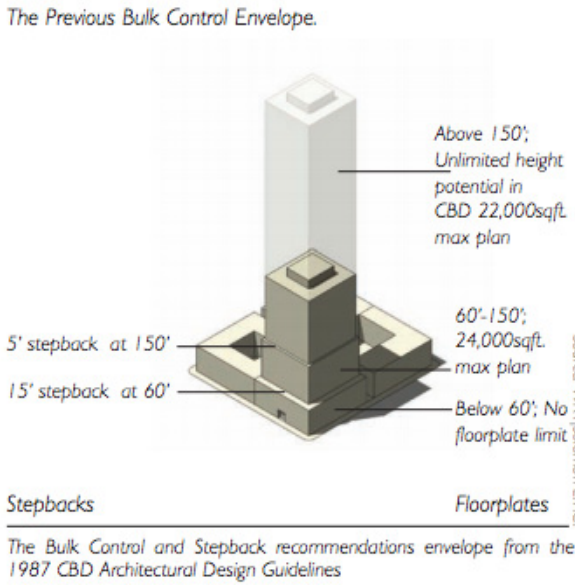


Image 2.3: Bulk Control Densities (source WRT & Solomon, 2007)

According to the Sacramento Railyards Design Guidelines, buildings next to historic Central Shops should respect the original site context and not exceed the height of the historic structures. No building shall be built within 30' of the Central Shops (WRT & Solomon, 2007). But in order to create a fluid design the mulitmodal facility must interact with the Central Shops' context and layout.

Image 2.4: Railyard Height Maximums (source Railyards Specific Plan)

SUSTAINABILITY

Sustainable development has become an active measure of a city's innovation in city planning and development. The railyards project provides Sacramento with the perfect opportunity to implement sustainable practices. Sustainability should be a priority in the project design wherever possible without jeopardizing accessibility and function (WRT & Solomon, 2007).

Sustainability techniques include:

-Urban infill

-Transit options relieve auto-dependence.

-Provision at bicycle and pedestrian facilities.

-Energy Conservation

-Protecting the Natural Environment

-Open Spaces and Public Gathering Areas/Lively public spaces promote vitality in cities.

-Extensive tree cover will provide shade and curb stormwater runoff.

-Recycling and reuse

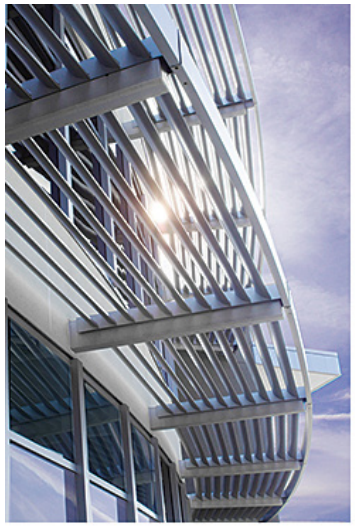


Image 2.5: External Window Shades (source: facilities.net)

Image 2.6: Fountain in Copenhagen (source: Stephanie Taylor)

GREEN STREET INITIATIVES

Image 2.7: Stormwater Management (source: Perry, 2009)

On street parking should have space for passengers to exit their cars and safely walk to the sidewalk without falling the bioswales located along the streets (Perry, 2009).

Creating safer conditions for pedestrians and bikers, while incorporating sustainable stormwater capture devices throughout the site will make the space feel much safer and inviting (Perry, 2009).

Image 2.8: Street Bioswale with Parking (source: Perry, 2009)

SIDEWALK REQUIREMENTS

Image 2.9: Sidewalk Curb Bulbout (source: Perry, 2009)

There are two clear zones that make up the public realm: the "travelway" zone, which includes the street from curb to curb, any area that is dedicated to automobile use, and the "pedestrian" zone, which includes any other public space abutting the street, including sidewalks and adjoining plazas (WRT & Solomon, 2007).

Vertical clearance should create a comfortable space for pedestrians to move, there should be at least an 8' clearance of signs and awning along the pedestrian zone. Trees must also maintain adequate clearance, 8' for pedestrians and 14' for automobiles.

Convenient public seating should be incorporated into the street design. Converting planter walls into seat-walls, or turning unused wall space into a bench.

Stormwater management should be incorporated into the design whenever possible (WRT & Solomon, 2007).

High activity areas should have sidewalk widths of 20 feet or more. Sidewalk widths in the Railyards shall not be less than 14 feet (WRT & Solomon, 2007).

Legend ------>

1) BIKE LANES SHOULD BE A MAJOR CONSIDERATION ON EVERY STREET

2) ON STREET PARKING SHOULD INCORPORATE STROMWATER MANAGEMENT BY INCLUDING PERVIOUS PAVERS

3) AN AUTOMOBILE LOADING ZONE, CREATING A SAFE PLACE FOR PASSENGERS AND DRIVERS TO MOVE FROM ON STREET PARKING TO THE SIDEWALK. WATER FLOWS FROM THE STREET UNDER THIS ZONE AND INTO THE BIOSWALES.

4) BIOSWALES WILL CAPTURE STORMWATER RUNOFF FROM SURROUNDING STREETS, SIDEWALKS, AND ROOFTOPS.

5) IRON GRATES OR OTHER BRIDGES WILL CREATE PASSAGE OVER THE BIOSWALE.

6) SEATING WILL BE INCORPORATED INTO THE DESIGN WHEREVER POSSIBLE TO CREATE A COMFORTABLE ZONE FOR TRAVELERS.

7) A COMFORTABLE HIGH USE PEDESTRIAN ZONE SHOULD BE AROUND 20' WIDE, BUT NO PEDESTRIAN ZONE SHALL BE LESS THAN 14'

8) HEIGHT LIMITATIONS ON SIGNS, TREES AND LIGHTING FIXTURES SHOULD BE NO LOWER THAN 8'.

Green Street Section with Details of Sidewalk Requirements

Image 2.10: Green Street Layout (source: Brooks Taylor)

PROGRAMMABLE OPEN SPACE

Public Open Space. Within the densely developed downtown, the public realm plays an important role as public open space—allowing for light, air, and landscaping and a respite from the enclosure of buildings. The public parks, plazas and streetscapes also serve as the "living room" for community life in the downtown—the places where the public can meet, interact and linger.

Development Framework. Following the fabric analogy, the public realm is the warp and weft that gives structure to the downtown and provides the framework that contains and organizes individual developments into a cohesive whole. It also serves as the entry to the private realm, a sort of public "forecourt" to individual buildings and developments.

Image 2.11: San Jose's Santana Row (source: bararch.com)

Open spaces should follow the framework set by the form of the buildings. In some cases open spaces are integrated into or on top of the surrouding buildings, creating a seamless coalesce between the open space and the building.

Human-scale elements should be incorporated into the open spaces to make the space more comfortable. These elements should take inspiration from the surrounding buildings in architectural form and design.

The paving, site furniture and light fixtures should honor the history and character of the Central Shops District.

6) In the interest of preserving sightlines to the turn- table, which is situated at the center of this plaza, as well as to historic buildings and structures on adja- cent sites, tree planting in the

Image 2.12: An effective Public Open Space (source: WRT & Solomon, 2007)

PUBLIC ART

Image 2.13: Public Art Temporary (source: arhithings.com)

Image 2.14: Public Art Sculpture (source: arhithings.com)

Capital Improvements and Development Projects. All capital improvement and development projects, should explore the integration of public art into the design of public streetscape elements (e.g. paving, street furniture, transit shelters, lighting, etc.).

2) Location. Public art should be located where it can be enjoyed by a large number of people, including sidewalks, intersections, plazas, and medians. Public art should also be included on buildings, whether as part of the facade, windows, door fixtures, or other.

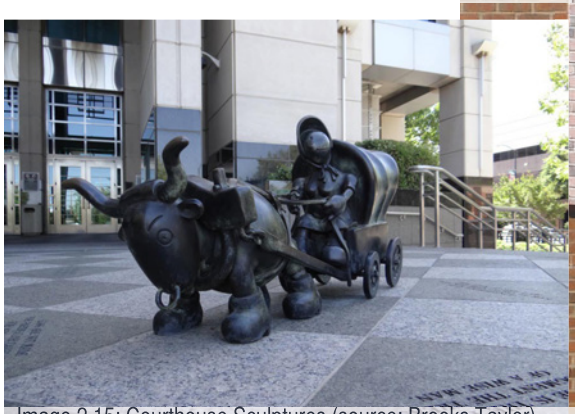


Image 2.15: Courthouse Sculptures (source: Brooks Taylor)

Enhance Challenging Pedestrian Areas. Public art should be incorporated into difficult pedestrian transition zones, such as the connections over and under the rail lines to the Downtown and below the freeway to the River, to facilitate pedestrian use by enhancing and animating these spaces.

4) Interactive Art. Interactive art is encouraged; exam- ples include pieces that either invite

Image 2.16: Railroad Museum Mural (source: Stephanie Taylor)

WAYFINDING & SIGNAGE

The City's existing wayfinding system should be ex- tended into the Railyards and enhanced to serve both the needs of out-of-town visitors as well as citizens of Sacramento.

The Railyards wayfinding system should:

2) Provide directional and information signs that are at- tractive, clear and consistent in theme, location, and design.

3) Identify key historic, cultural, civic, and shopping destinations and facilities, e.g., public parking struc- tures, parks and open space areas, transit routes and stops, etc.

4) Be co-located with other streetscape furniture (e.g. light standards, transit shelters) where possible to re- duce visual clutter in the public realm.

5) Be expanded to cover the entire Rai-

Image 2.17: Sacramento's Street Signage (source: WRT & Solomon,

Image 2.18: Appropriate Street Signage (source: kent360.com)

Image 2.19: Clock Tower (source: ucollege.edu)

MATERIALS

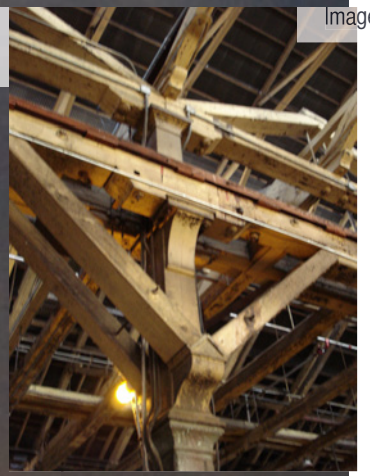


Image 2.20: Central Shop Rafters (source: Stephanie Taylor)

The materials used in the project should be a melange of historically

Image 2.21: Smart Use of Sustainable Building Materials (source: architectmagazine.com)

Image 2.22: Historic Central Shop (source: Steven Tze Photography)

Image 2.23: Gas Lamp in the Sunset (source: dublin.ie)

Image 2.24: U.S. Courthouse & Federal Building (source: wikipedia.org)

BICYCLE PARKING & CIRCULATION

Bicycle parking should be ubiquitous, consistent, and out of the way. The sidewalks still be able to fit a bike rack and leave enough room for pedestrians to move comfortably through the site. Bike racks should also be very sturdy to prevent theft and degradation.

Parking should be conveniently placed with 50 feet of all building entrances. There should also be bike parking lots near large gathering open spaces. Bike parking can also be a form of art as seen in the image to the right.

Bike parking should be located in highly visible areas, not garages or dark recesses of the site. They should accent the site as a furnishing, evoking the style of the area complimenting the other site furnishings.

Bike circulation is a necessity. Using traffic calming techniques, like curb bulbs seen in Image 2.9, the streets around the multimodal hub will be a perfect area for bikers and pedestrians to move throughout the site without having to worry about frantic drivers.

Parking day is growing in Northern California, where people reclaim on street parking spots previously reserved for autos. Now bikes will have a chance to park on the street.

Image 2.25: Bike Rack Sculpture (source: demilked.com)

Image 2.26: Industrial Bike Rack (source: oregonlive.com)

Image 2.27: Eloquent Bike Rack (source: landscapeforms.com)

CHAPTER 3

DESIGN

CITY OF SACRAMENTO'S DESIGN

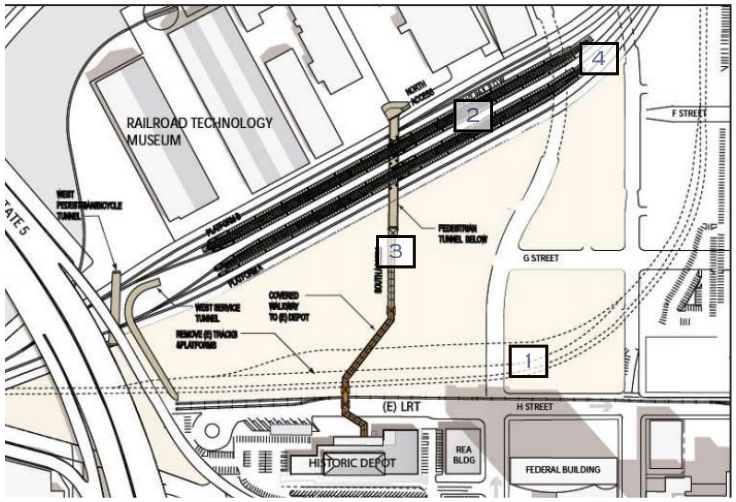


Image 3.1: Sacramento Specific Plan Layout (source: (ULI, 2011))

Sacramento's plan for the railyard is already underway with the repositioning of the rail road tracks, Image 3.1 illustrates the movement of the tracks from position 1, north of the old Amtrak Station, to position 2, now running perpendicular along the historic Central Shops.

A tunnel has been dug to allow passenger access to the loading platforms, indicated by position 3. The city has also started brining the street system into the site by extending 5th and 6th streets north; two bridges have been built at position 4 to allow automobiles, bikes, and pedestrians across the new tracks without conflict from the trains.

The city's plan for the multimodal hub can be seen in image 3.2, position 1 is the new terminal for the intermodal hub, which connects the old Amtrak Station to the new track platforms. In position 2 is the light rail track, which moves from H street to G street and then heads north along 7th street.

The intermodal hub is connected to the istoric Central Shops by way of a bridge that crosses the railroad tracks, seen in position 3. The city's plan also includes a parking structure on site, which is located to the west between the hub and the freeway.

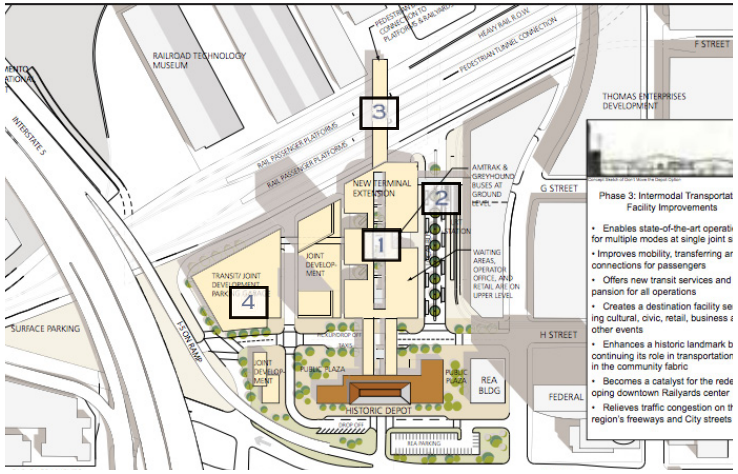


Image 3.2: Sacramento Specific Plan Design (source: (ULI, 2011)

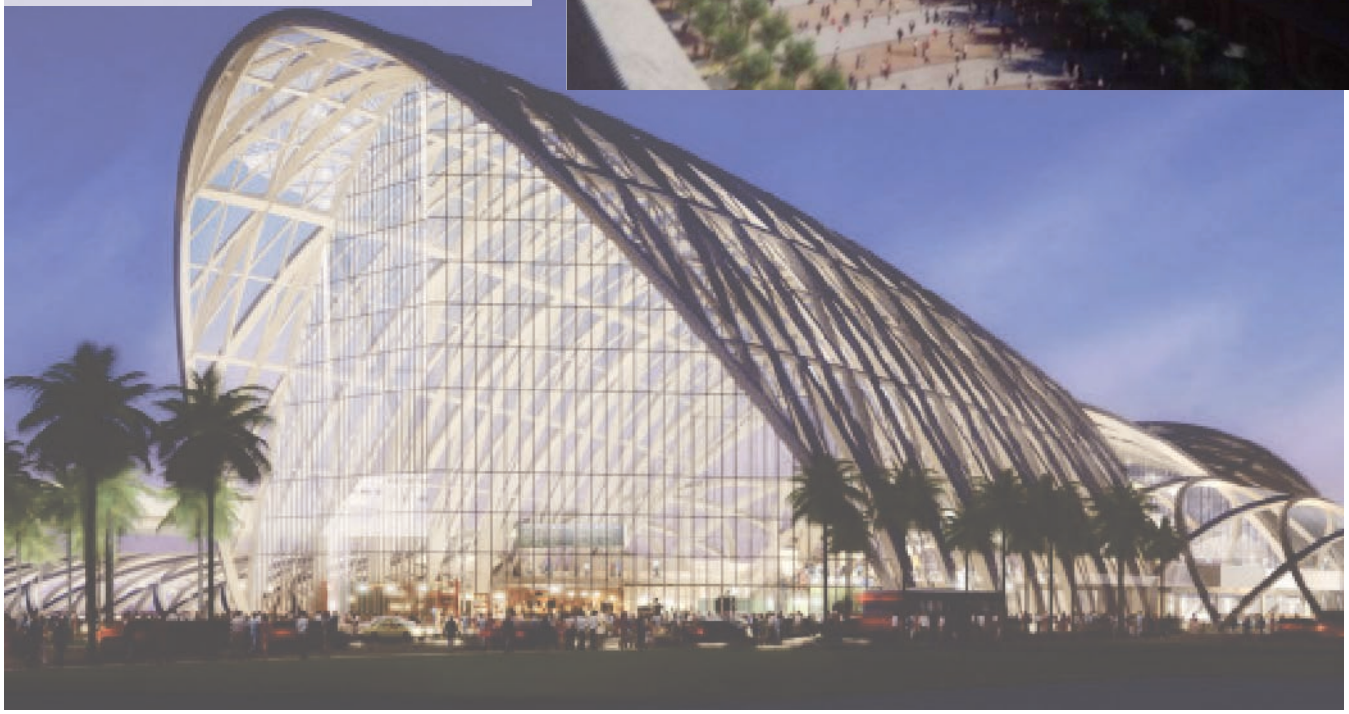
HIGH SPEED RAIL ASSOCIATIONS' DESIGN

Image 3.2 is a conceptual rendering that the High Speed Rail Association provided Sacramento for consideration in the Railyard Redevelopment Project.

Their concept overwhelmed the site by dwarfing the historic structures that it abuts. The structure is 30 feet taller than the 5th and 6th street bridges that have already been built, putting this conceptual design at around 60 feet tall (WRT & Solomon, 2007).

The building in a way creates another barrier between the downtown distric and the historic railyards, when the facility should be highlighting and interacting with the existing context and structures.

Image 3.3: Sacramento Specific Plan Design (source: (ULI, 2011)



MY DESIGN ALTERNATIVE

THE DESIGN MASTER PLAN

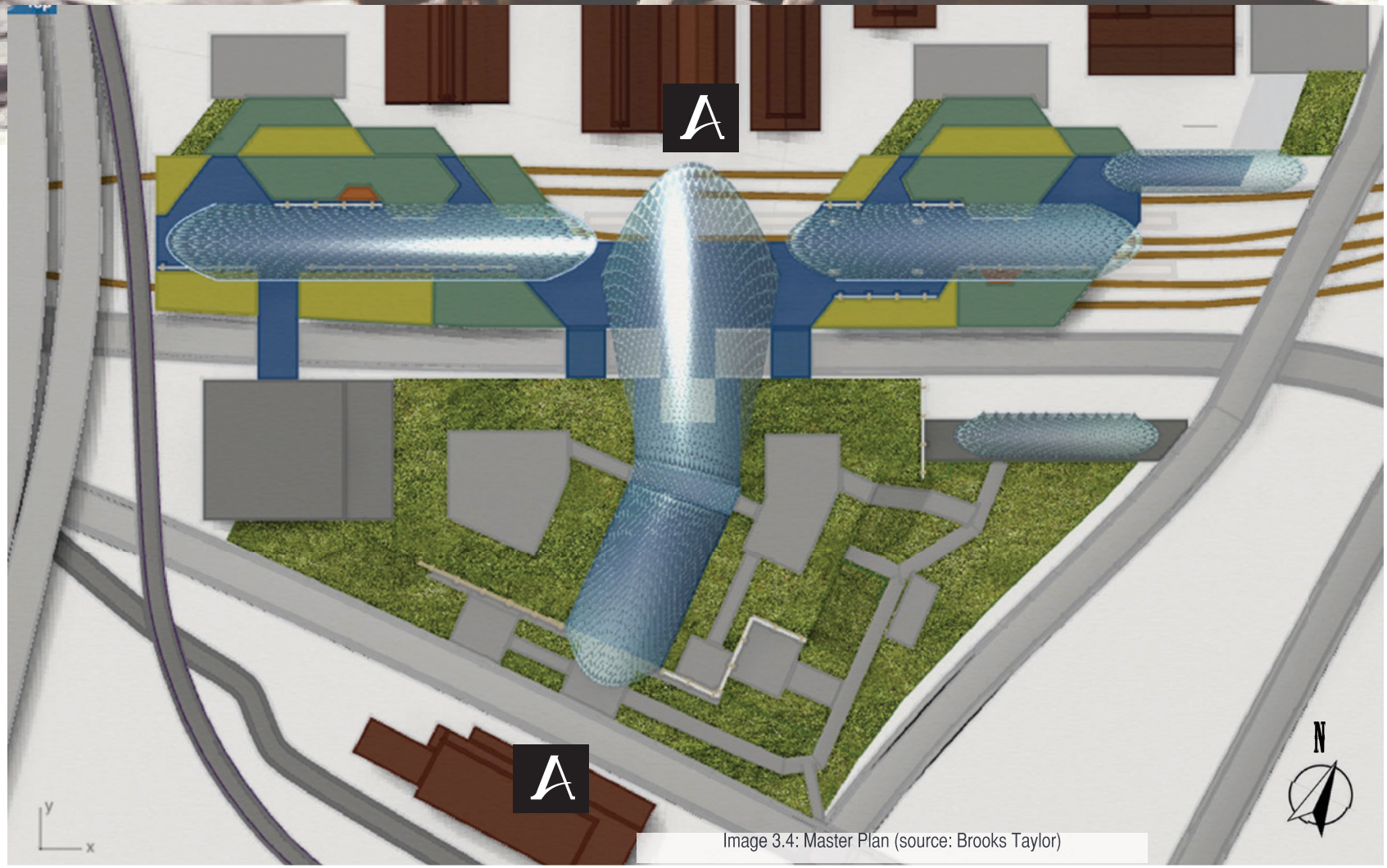


Image 3.4: Master Plan (source: Brooks Taylor)

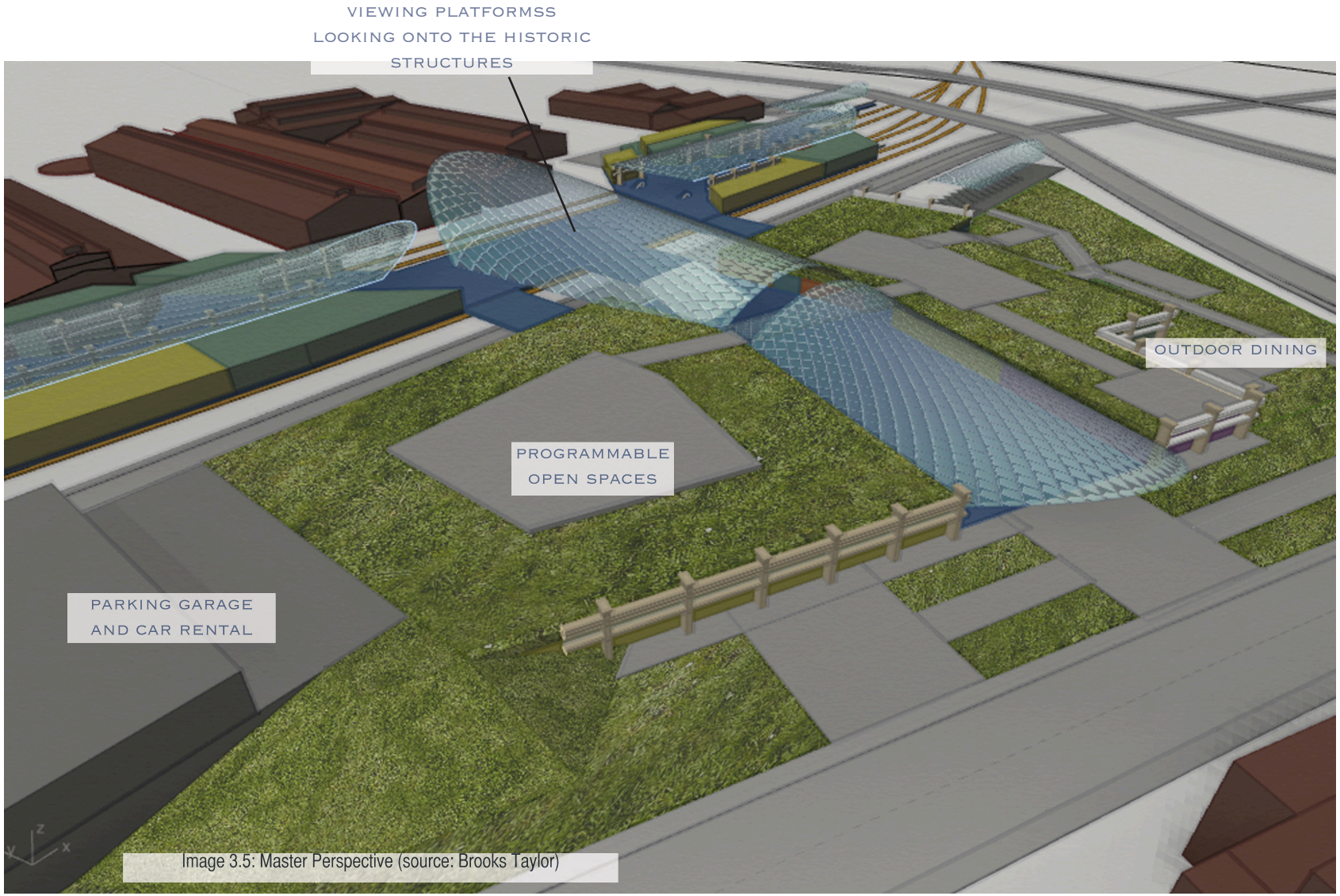


Image 3.5: Master Perspective (source: Brooks Taylor)

DESIGN APPROACH

A multimodal transportation hub should:

-Incorporate state-of-the-art technology and operations for multiple forms of transportation in a single unified site.

-Improve mobility, transfer between modes, and connections for passengers and visitors.

-Be adaptable for new technologies in the future.

-Act as destination point and not just a point of convergence/divergence, it should incorporate retail, dining, amenities, and civic space.

-Enhance the existing surrounding conditions, in this case the historic buildings.

-Be a catalyst for a TOD (Transit Oriented Development), which is the future of urban design.

-Promote expansion and smart growth in the surrounding areas.

-Alleviate traffic congestion on streets and freeways.

SECTION

Image 3.6: Section (source: Brooks Taylor)

The design approach can be broken down into three categories: Stitching, Connections, and Civics.

Stitching. By bridging the gap created by the rail lines, this transportation center will cennect the downtown district and new railyards development. Travelers, pedestrians, tourists, and residents will all be able to cross the tear which has been laid down in the form of steel, wood, and spikes.

Connections. By creating a multimodal hub that facilitates many forms of transportation in one location in close proximity to each other, travelers will be able to transfer, and connect between all the forms of transportation available.

Civics. Revitalizing the old grand train stations, and evoking the feeling of the beautiful old French train stations, will create a defined ground for people to meet. Creating civic spaces throughout the site in uniform fashion, will assist in the flow through the space from one side to the other.

Image 3.7: Transportal Card (source: Brooks Taylor)

STITCHING

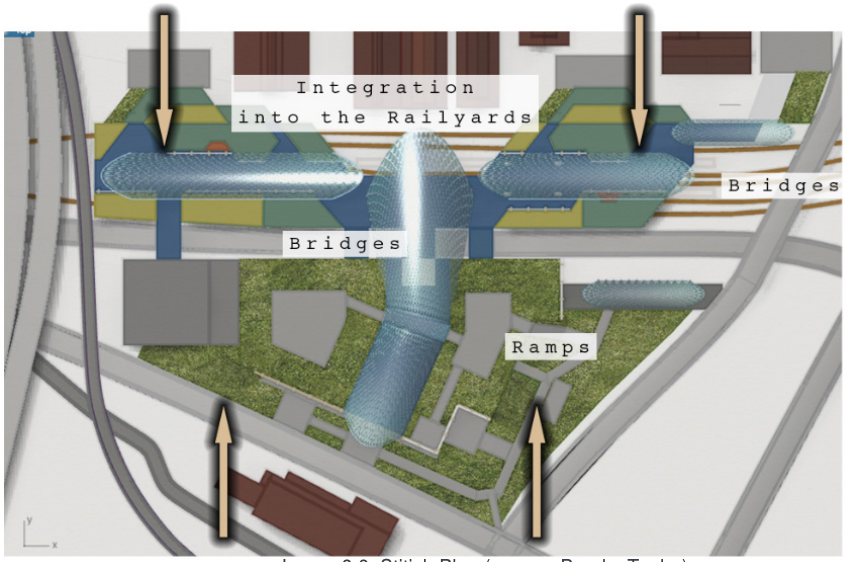


Image 3.8: Stitich Plan (source: Brooks Taylor)

From the downtown district to the railyard development in one fluid motion,except to stop by that cafe you love.

Like the bear crossing in Image 3.9, the Transportal will create fliuid motion over a dangerous gash created by human infrastructure.

People will go the long way to their destination just to move across the Transportal's beautifully stitched open spaces.

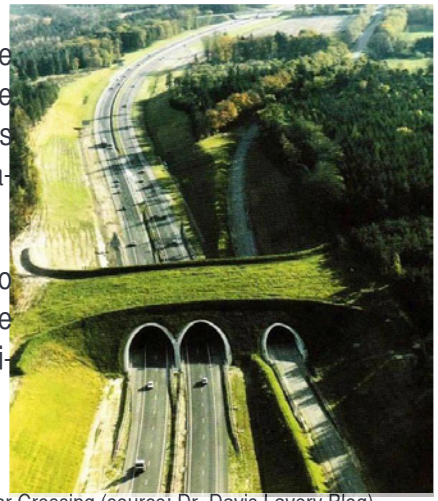


Image 3.9: Bear Crossing (source: Dr. Davis Lavery Blog)

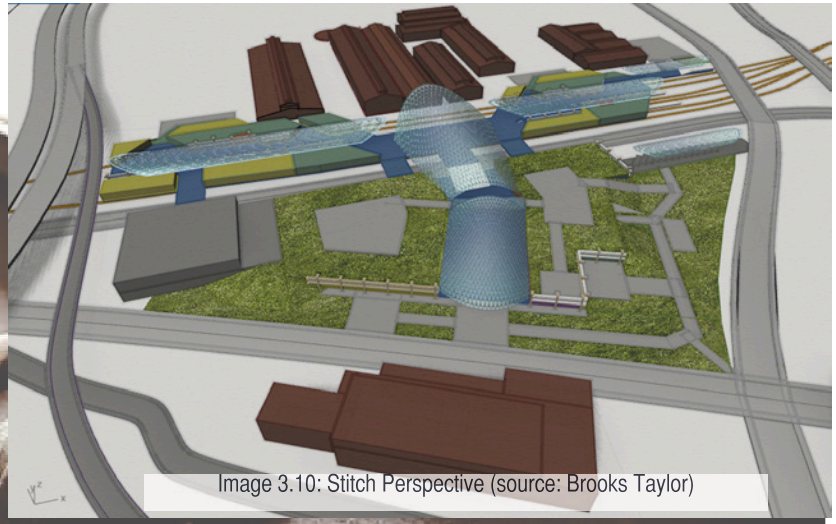


Image 3.10: Stitch Perspective (source: Brooks Taylor)

CONNECTIONS

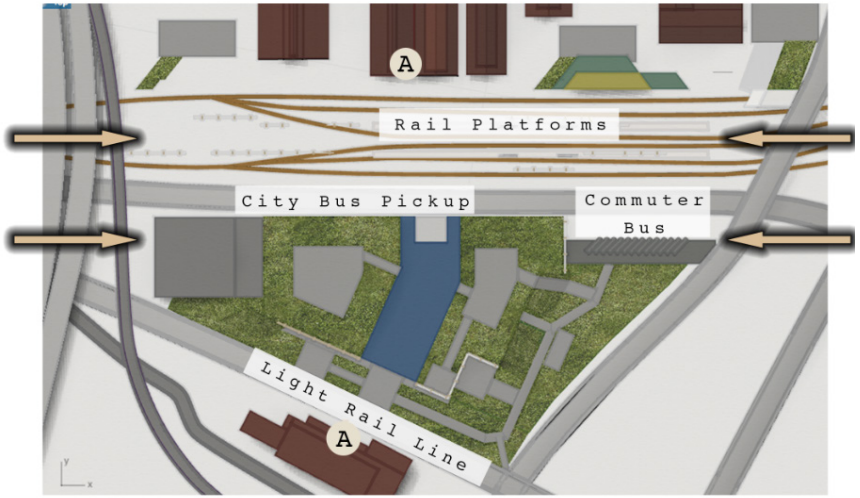


Image 3.11: Connection Plan (source: Brooks Taylor)

Creating an efficient and quick transportation hub is one of the priorities for a high capaity facility like this. Joining all forms of transportation in one place creates possible hazards, But creating a safe fluid environment through a high traffic area is the goal of the multimodal hub. People with long commutes will start using this mutliple form, method of transportation instead of driving to work.

Connect people to their destinations in the fastest most efficient way possible, first they have to get out of their cars.

Image 3.12: Connection Perspective (source: Brooks Taylor)

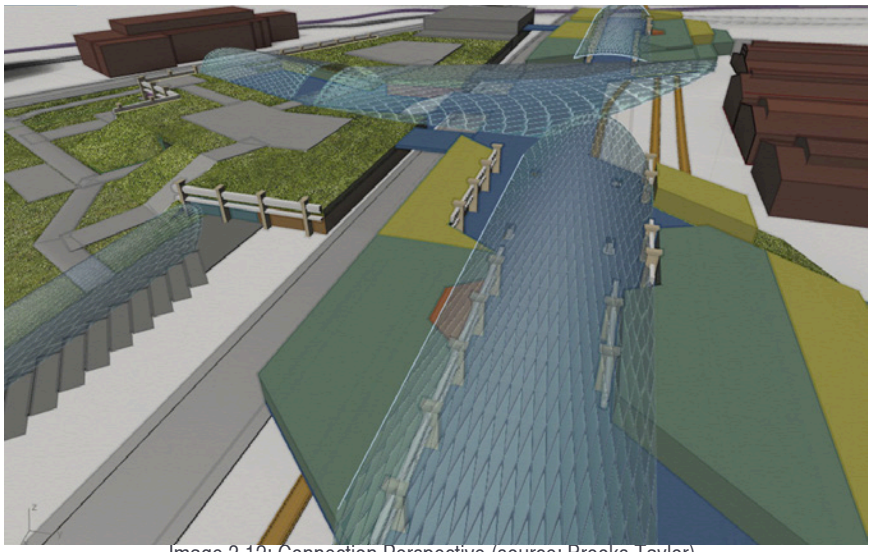


Image 3.12: Connection Perspective (source: Brooks Taylor)

CIVICS

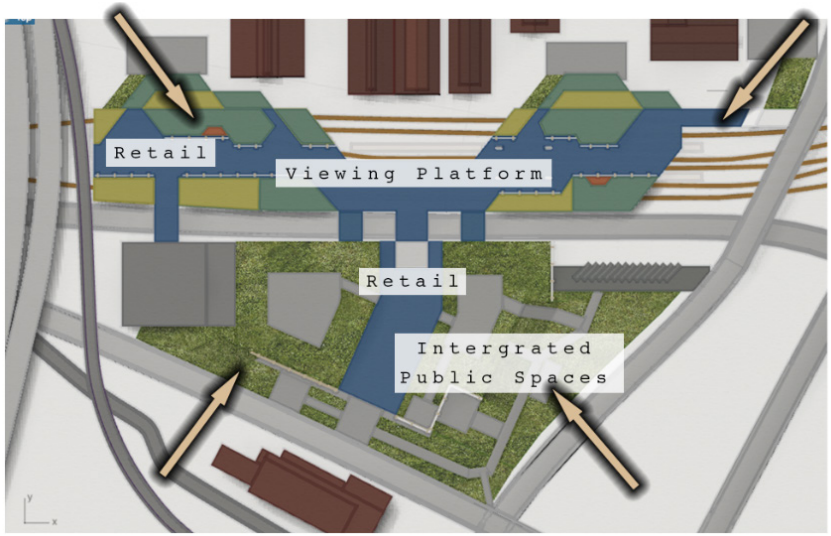


Image 3.13: Civics Plan (source: Brooks Taylor)

Grand train stations are still coveted by architects and travel afficianados around the world, but they have been lost and forgotten in America. The multimodal transportation hubs will revitalize America's outlook on civic space and alternative transportations.

Fall in love with the feeling you get from the beautiful grand structures that bring you back to that classic old french train station feeling.

Image 3.14: Civics Perspective (source: Brooks Taylor)

INFRASTRUCTURE ROUTES

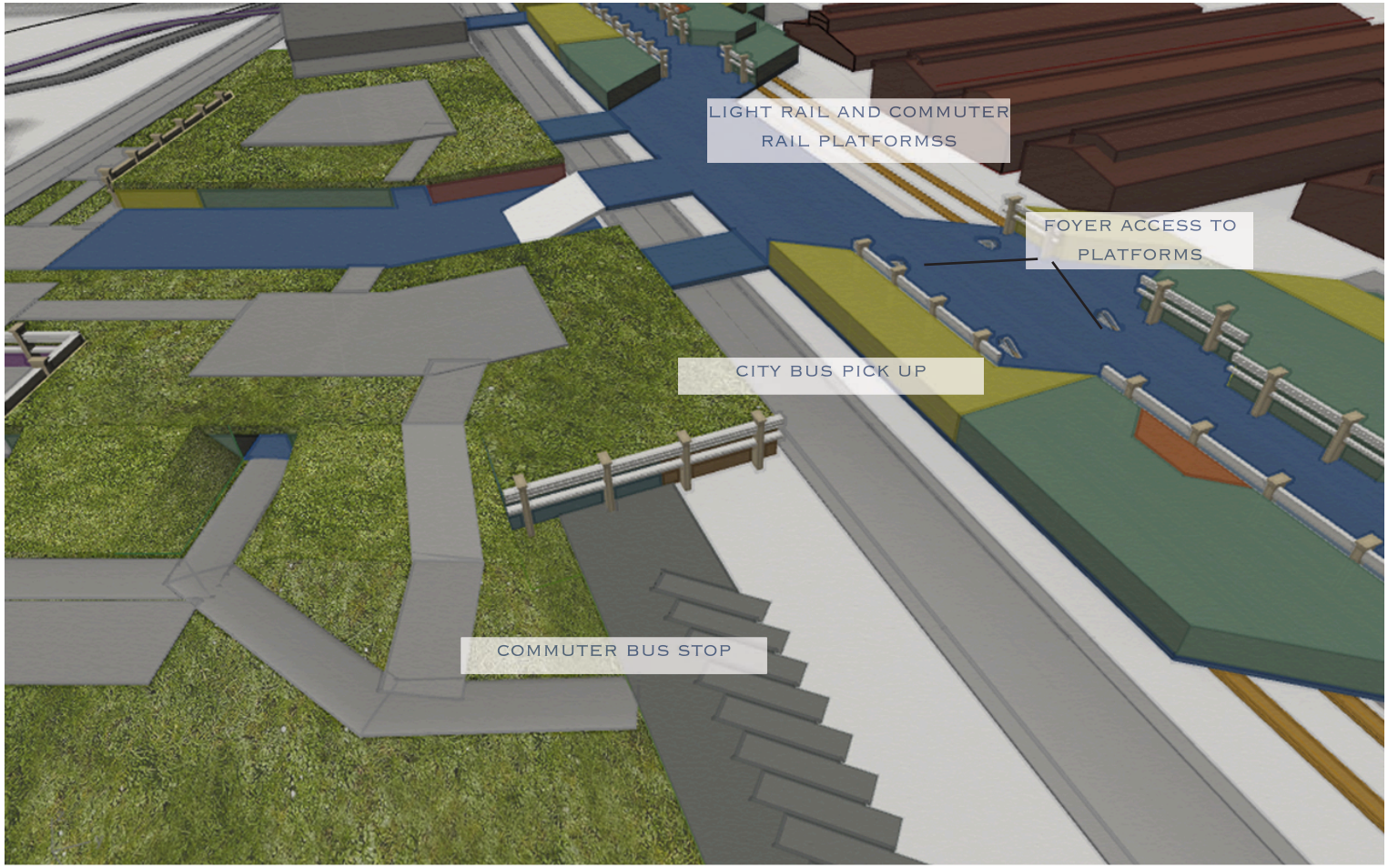


Image 3.15: Transit Routes (source: Brooks Taylor)

OPEN SPACES

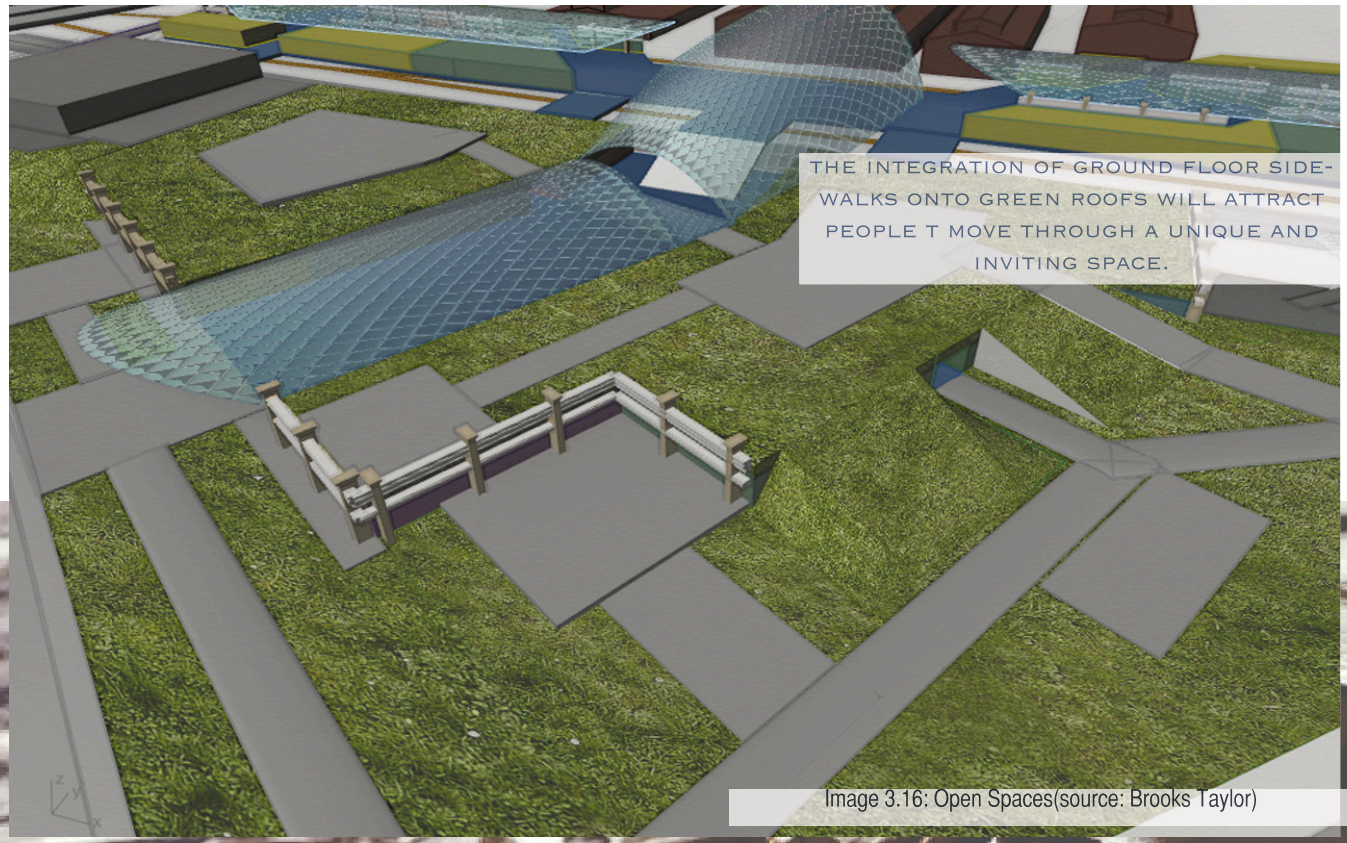


Image 3.16: Open Spaces(source: Brooks Taylor)

Image 3.17: Washington's Union Station (source: greatergreaterwashington.org)

Image 3.17 illustrates the common open space that can result from an effective design, free movement through a space, with plenty of seating, clear directional movement and open environment.

PHYSICAL MODEL ANALYSIS

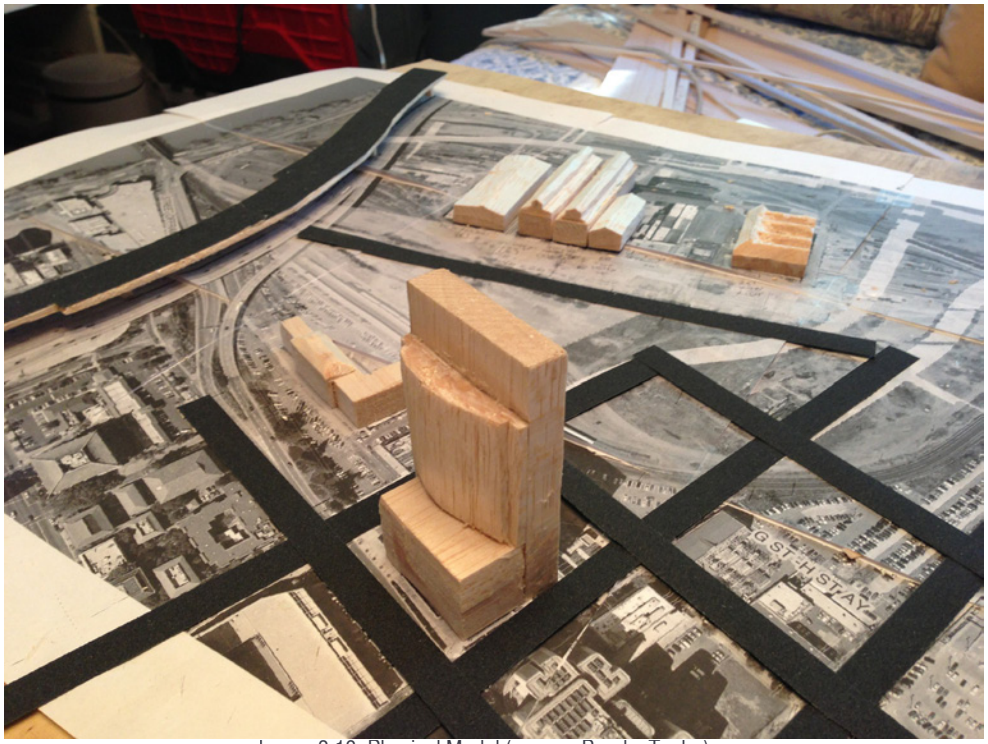


Image 3.18: Physical Model (source: Brooks Taylor)

In order to get a better spatial understanding of the site, I built a physical model. The model helped coordinate alternative transportation routes, where the modes of transportation actually meet up and size context of the buildings.

THE ORIGINAL TRANSPORTAL

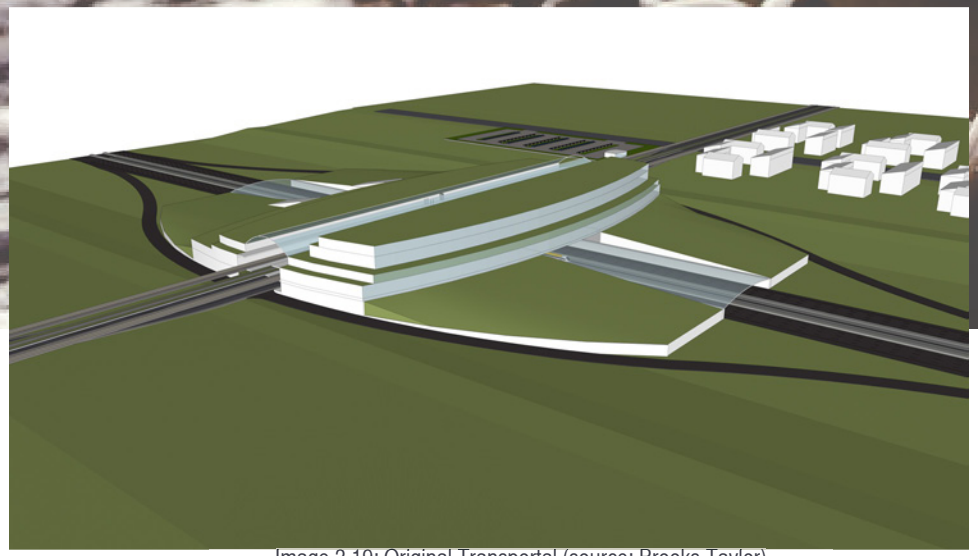


Image 3.19: Original Transportal (source: Brooks Taylor)

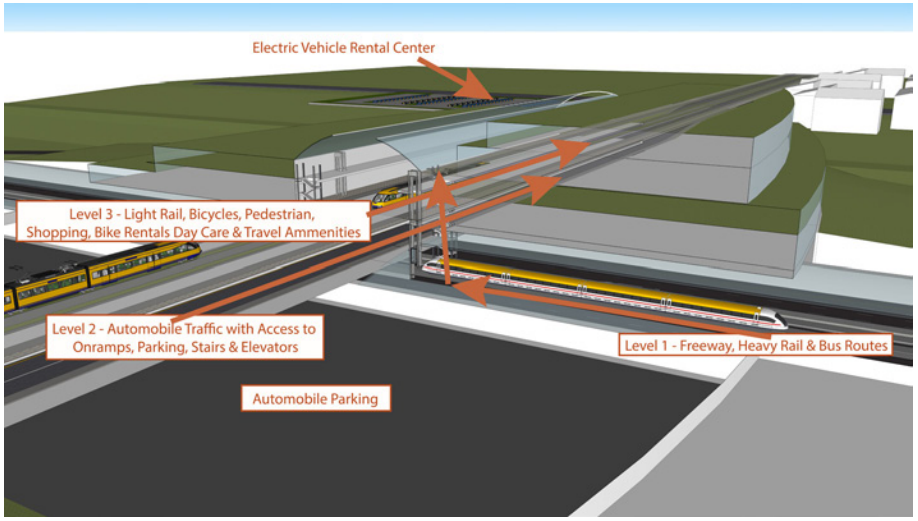


Image 3.20: Transportal Layout (source: Brooks Taylor)

CONCLUSION

Multimodal transportations have a long standing tradition in the transportation realm. Many of them have been forgotten due to neglect and America's concentration on its car-dominated society. Today multimodal transportation hubs are becoming revitalized, promoting all forms of transportation, and not just automobiles. Many metropolitan areas are updating and retrofitting their old train stations and rail yards, and they are using new forms of architecture to promote their image of alternate transportation and sustainability.

These transportation centers are more than just a facility but the beginning of a trend toward smart growth, revolving around Transit Oriented Developments. Multimodal hubs incorporate retail, amenities, and civic space in order to attract not only passengers but also shoppers, residents, and tourists. Incorporating all the forms of transportation also helps build a strong, quick, and efficient transportation system.

Multimodal hubs are the future of transportation.

ABOUT THE AUTHOR

Image 3.21: California Map (source: Brooks Taylor)

Brooks Taylor was born and raised in Sacramento, Ca. He has been interested in architecture and urban design since a very young age. He has a deep loving interest in the development and greatness of Sacramento.

REFERENCES

◊ City of Sacramento, Director's Office & Business Services. (2012). Sacramento intermodal transportation facility. Sacramento:

◊ Henry, L., & Marsh, D. Capital Metropolitan Transportation Authority, (2008). Intermodal surface public transport hubs. Austin:

◊ Perry, K. San Mateo County, Water Pollution Prevention Program. (2009). Sustainable green streets and parking lots design guidebook

◊ Pucher, J. (2004). Public transportation. In S. Hanson & G. Giuliano (Eds.), The geography of urban transportation-New York: Guilford.

◊ Sacramento City Council, (2007). Railyards specific plan (2007-908). Berkeley: Design Community & Environment.

◊ ULI. (2011). Sacramento california: Redeveloping the railyards to strengthen the urban core. A ULI Daniel Rose Fellowship Program City Study Visit Report,

◊ U.S. Environmental Protection Agency, Superfund Information Systems. (2005). Superfund site progress profile jibboom junkyard (CAD980737613)U.S. EPA.

◊ WRT., & Solomon, (2007). Sacramento railyards design guidelines. In Central City Urban Design Guidelines and Plan (Ed.), (Vol. 1). Sacramento: