



City of Trenton

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Route 29

# **Boulevard Study - Phase 1**

Conceptual Development Memorandum

- Project Orientation
- Data Collection
- Project Definition

Prepared for:  
The New Jersey Department of Transportation

June 2005

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## **1.0 INTRODUCTION**

## 1.0 Introduction

In 1988, the Capital City Redevelopment Corporation (CCRC) was formed to guide the redevelopment efforts of the capital district in the City of Trenton. As part of the redevelopment efforts, the CCRC and the City adopted a redevelopment plan for downtown Trenton that called for the conversion of Route 29 from a freeway, limited access facility, to an urban boulevard.

The reconstruction of the roadway would provide the City a better relationship to the Delaware River, gain additional land for redevelopment, and change the character of the district from an automobile-dominated environment to that of a balanced and connected place for motorists, bicyclists and pedestrians.

The New Jersey Department of Transportation (NJDOT), primarily concerned with the operations and maintenance of Route 29, was aware of the redevelopment potential for the Capital District, and understood the request for conversion of Route 29 to a boulevard, and the benefits that would bring to the City of Trenton.

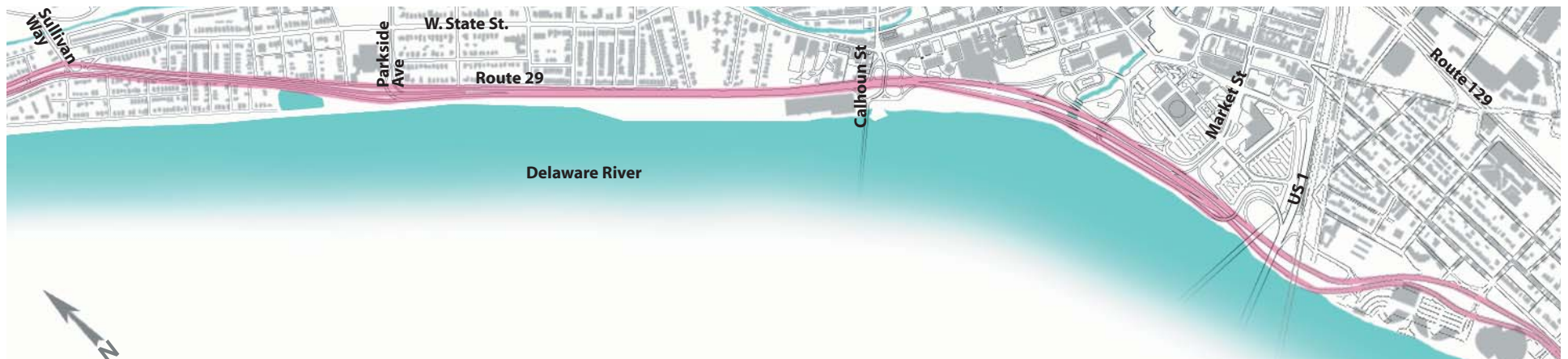
Increasing safety is also an important goal for both the NJDOT and the City of Trenton. Route 29, between Calhoun Street and Sullivan Way, is situated between a residential neighborhood to the east and a neighborhood and Stacy Park, along the waterfront, to the west. This section of Route 29 has experienced numerous collisions involving both vehicles and pedestrians, some involving fatalities. This two-mile long section of Route 29 is straight, flat, and without signals. Vehicles routinely exceed

the posted speed limit in this area which is a contributing factor in most of the collisions and their severity. Median barriers have been proposed to deter crossovers and head on collisions and deter pedestrian crossing until the reconstruction of the boulevard.

The construction of median barriers may not encourage motorists to slow down. Converting Route 29 to an Urban Boulevard by installing traffic signals and/or roundabouts, connecting the sidestreets to Route 29 and installing at-grade pedestrian crosswalks adding street trees, and narrowing the pavement, in conjunction with a reduction in speed limit may induce the desired safer motorist behavior. The conversion of Route 29 to an urban boulevard is intended to accomplish several goals: increase safety; connect the waterfront to the community, add value to the city, and increase non-motorized vehicle use.

The next stage of the process - the feasibility assessment for Route 29, including the downtown and surrounding areas - to be conducted by NJDOT, seeks to better understand the full implications of converting Route 29 to an urban boulevard. The adopted approach for this analysis is a collaborative effort with the City of Trenton, Mercer County, CCRC and other stakeholders to evaluate and develop a design alternative that best achieves the variety of goals and objectives of the many stakeholders.

The underlying goal of this effort is to plan a smarter transportation network that, over time, balances the travel expectations of the public while facilitating better connections between the city and its waterfront and fostering a sustained urban redevelopment of the Capital District in Trenton.



## 1.1 Purpose of Workbook

This workbook documents the collaborative planning effort resulting in the development of the Urban Boulevard concept to replace the existing limited access New Jersey Route 29 freeway within the City of Trenton as well as the supporting street network. The workbook describes the process used to build consensus among the NJDOT officials, local and state leaders, technical consultants, various stakeholders, and local residents for creating a plan that:

1. Respects the throughput function of the network while creating a safer city,
2. May reduce motor vehicle speeds,
3. Reconnects pedestrians and cyclists to the Delaware River, and
4. Helps to realize the development potential of portions of Trenton's underutilized downtown.

The concepts developed in this workbook, and accompanying technical appendices, will assist in the feasibility assessment portion of the overall design process, - the next step - once consensus regarding the future form of Route 29 and the accompanying street network has been reached.

## 1.2 Project Process

The planning process employed in this effort is guided by the belief that the people who are impacted the greatest by Route 29 on a daily basis: residents of the surrounding neighborhoods, adjacent land owners, local employers, commuters, users of the adjacent park land, NJDOT and other state agencies, law enforcement officials, and Mercer County and City of Trenton officials, must have influence over the development of the plan. This holistic approach encouraged the community to take ownership of the project as consensus was built. The project team solicited information from a wide variety of groups through stakeholder interviews, and by outreach public information sessions.

## 1.3 Building Consensus

The process of public consensus building began with a meeting of regional partners (representatives of the various state and local governments) on September 9, 2004. At that meeting the scope of the project was explained and input was sought related to identifying stakeholders and refining the project goals of: 1. reclaiming the Delaware River waterfront, 2. improving access to the waterfront, 3. improving safety and providing traffic calming, 4. promoting urban economic development, and 5. providing environmental enhancements along the Assunpink Creek and Delaware River. The NJDOT team explained that we cannot solve transportation issues; only manage them.

Following the regional partners meeting, stakeholder interviews were conducted during October 6-7, 2004, and October 18-20, 2004. Representatives from various agencies having control over corridor elements, adjacent neighborhood associations, law enforcement, elected officials, real estate professionals, and groups with regional interests were invited to discuss opportunities and concerns related to Route 29. Informal, one-on-one interviews provided insight into the function of the existing road and the desires for the boulevard. The results of these meetings were two fold: first, the project team developed a greater understanding of the area and, next, the participants were brought into the process of concept development and given the opportunity to take ownership of the boulevard development process. Stakeholders interviewed throughout the boulevard concept development included representatives from:

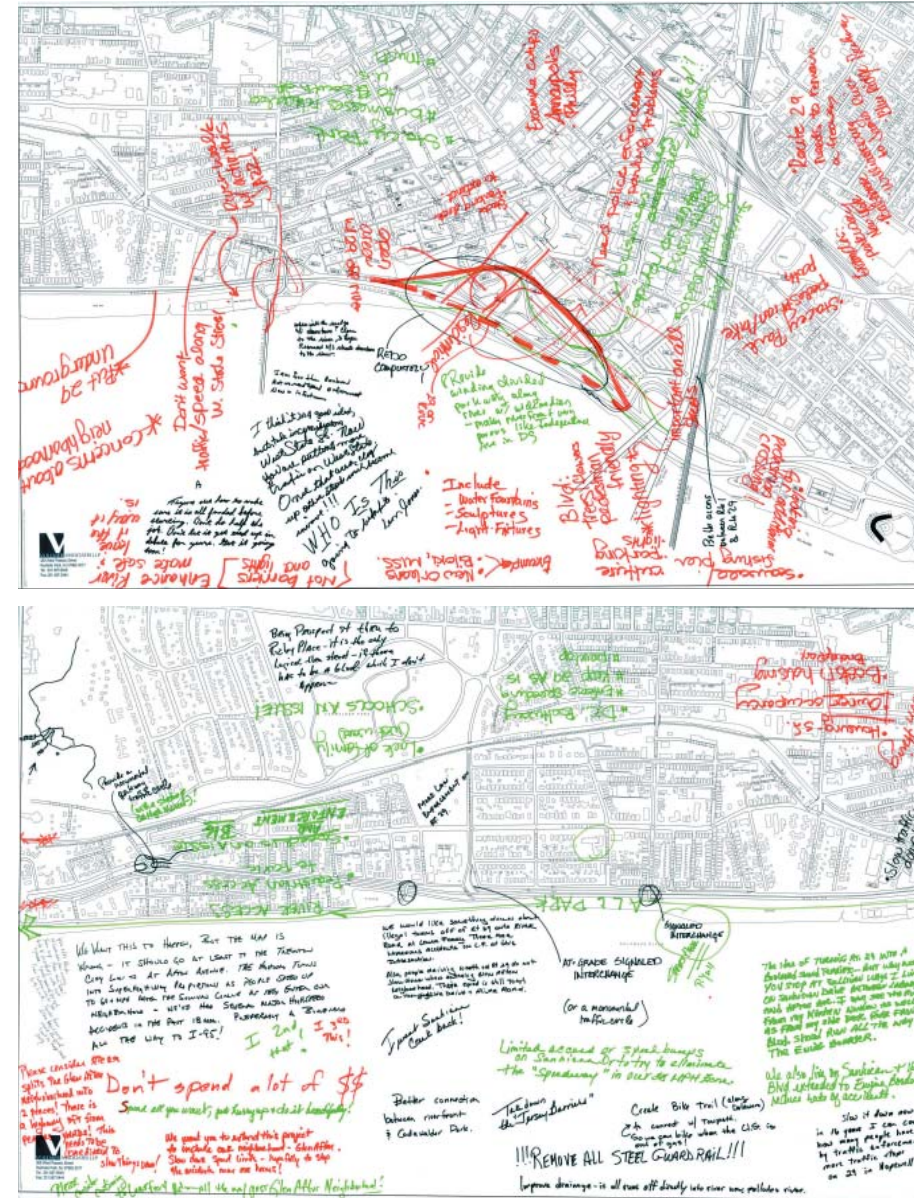
Berkeley Square Neighborhood Association  
Camiros Group  
Capital City Redevelopment Corporation  
City of Trenton Planning Department  
Delaware River Joint Toll Bridge Commission  
Delaware Valley Regional Planning Commission  
Federal Highway Administration  
Greater Mercer County Transportation Management Association  
Mercer County Economic Authority  
Mercer County Improvement Authority  
Mercer County Transportation and Infrastructure  
Mercer County Parks Department  
Mercer County Planning Department  
NJ Department of Environmental Protection  
NJ Department of Treasury  
NJDOT Bicycle/Pedestrian Coordinator  
NJDOT Drainage  
NJDOT Environmental Services  
NJDOT Geometric Design  
NJDOT Traffic and Signals  
NJ State Police  
NJ Office of Smart Growth  
NJ Transit  
PRC Group  
Princeton University  
Regional Planning Partnership  
Trenton Arts Connection  
Trenton Council Civic Association  
Trenton Downtown Association  
Trent Town Group and Wallace Roberts and Todd for PRC Group  
United States Army Corps of Engineers

During the interviews, participants were encouraged to document their ideas on maps of the project area. These annotated maps were used by project team members as the early boulevard concepts were being developed.

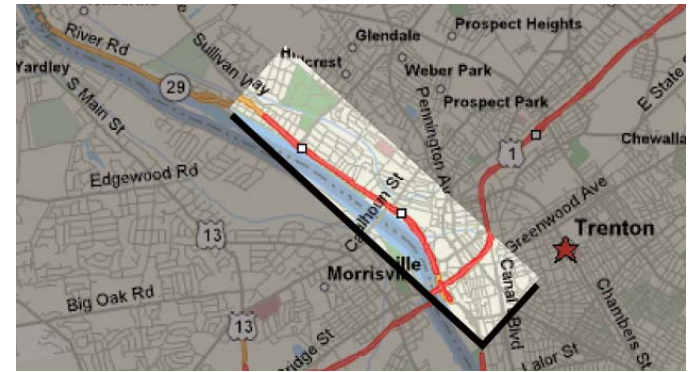
On October 18, 2004, another presentation was held to inform the regional partners about the findings from the stakeholder interviews and to discuss the preliminary ideas developed by the project team. The early project ideas, that were presented, were framed by existing traffic operations, urban form, and cultural amenities. Once again, the regional partners were asked to provide direction for the project team based on the early ideas. The session concluded with "table-top" discussions where participants documented their ideas, related to the early concepts, on plans provided by the NJDOT team.

Following the October 18, 2004 meeting, the project team refined the early concepts based on the stakeholder interviews, further corridor visits, other informal meetings with other stakeholders, transportation modeling, and other analysis. On December 21, 2004 two draft concepts were presented to the regional partners for final comments. The design team explained the merits of both concepts and sought direction regarding which alternative to present at public information centers.

After the regional partners meeting of December 2004, two public information sessions were conducted in January and February of 2005. The sessions, held at the West Trenton High School Campus, allowed the general public to view the concepts and provide their input. The community was able to view the concepts on large format presentation boards and through a PowerPoint presentation. Members of the NJDOT project team were available to answer questions from the public at the information center meetings.



Marked up maps from regional partner meetings, stakeholder interviews, and public information centers

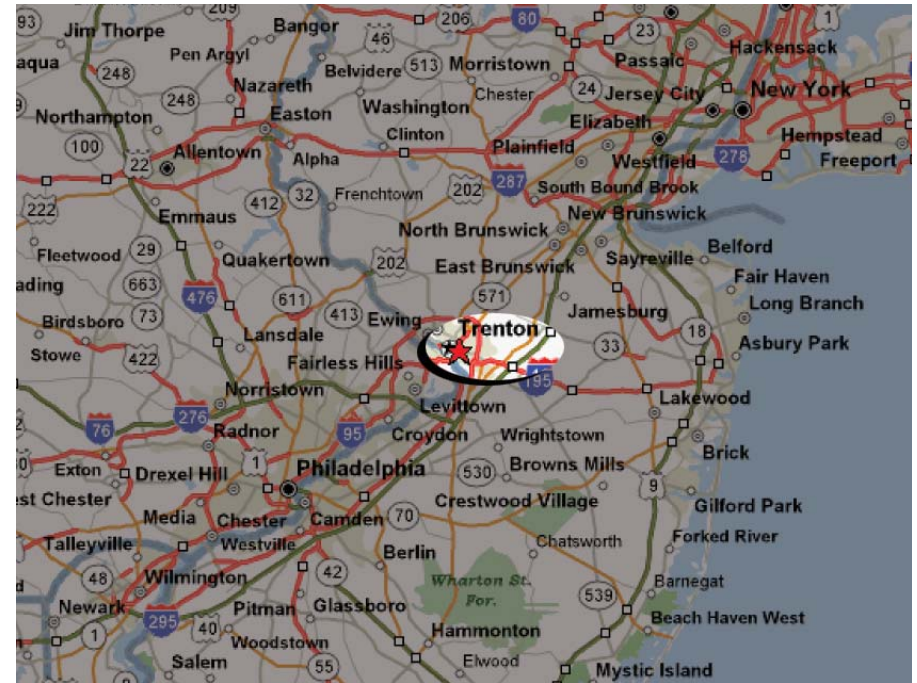


## 2.0 REGIONAL CONTEXT



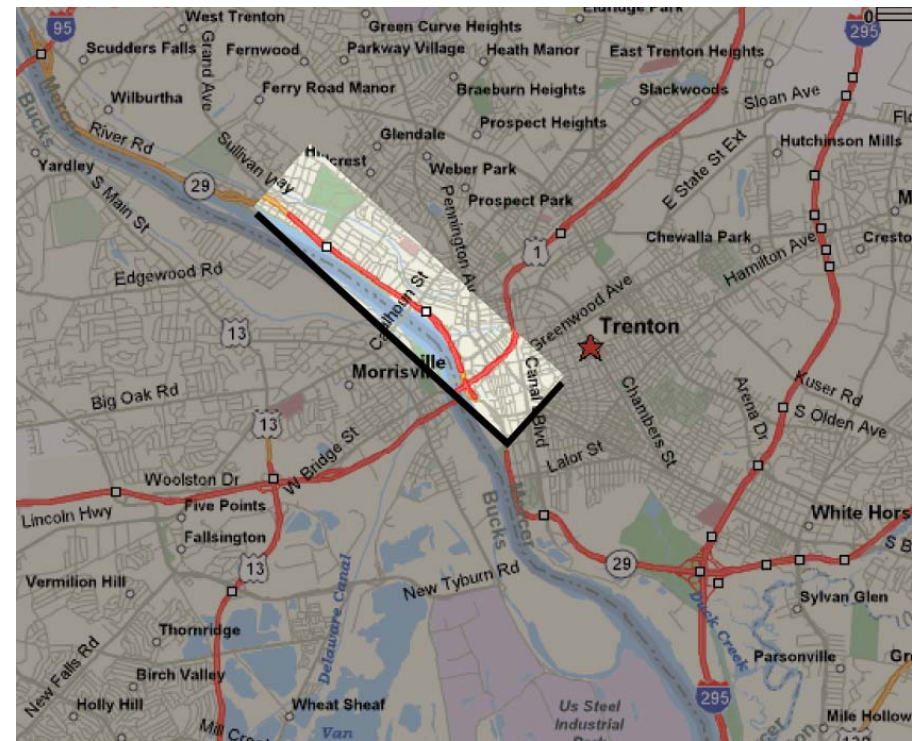
## 2.0 Regional Context

New Jersey Route 29 has historically served as a frontage road connecting the numerous towns located along the Delaware River. Currently the route is designated from Frenchtown, at its western terminus to Trenton at its eastern terminus. East of Trenton, Route 29 becomes Interstate 195. The majority of the designated Route 29 is a two-lane surface road, without paved shoulders, having a rural character. In several places, like in Lambertville and Trenton, the road section widens to four lanes. However, Lambertville, in cooperation with the NJDOT, is in final design to narrow Route 29 to one lane in each direction with left-turn lanes and slower design and travel speeds.

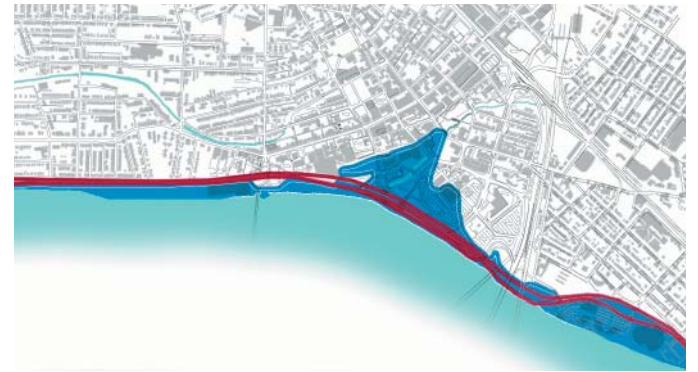


## 2.1 Location

The City of Trenton serves as the the capital of the State of New Jersey and the County Seat for the Mercer County. Additionally, the city serves as a base to numerous businesses as well as serving a great number of residents and government employees. Trenton is located approximately 45 miles northeast of Philadelphia and approximately 90 miles southwest of New York City. The area is served by US Highway 1, Interstate 195 and Interstate 295. The city's proximity to major northeast centers combined with transit and other transportation infrastructure, and the relative low cost of land, position the area both as a center and as a bedroom community.



The portion of Route 29 under study in this document, is located entirely within the limits of the City of Trenton. The project limits for Route 29 itself extend from Sullivan Way to the northwest to Cass Street at the southeast end. However, the success of the project requires the consideration and modification of the supporting street network up to Route 129 and the train station.



### **3.0 URBAN CONTEXT**

## 3.0 Urban Context

To inform the design of the boulevard concept, and the rest of the corridor plan, it is important to learn from the context. This understanding is accomplished through field visits, stakeholder interviews, and literature and document review. The following summarizes context through a brief description of the history, bio-physical conditions, built form, and cultural resources of area.

Route 29 runs in a north-south direction along the eastern banks of the Delaware River from Frenchtown to the north, to Trenton, its southern terminus. North of Trenton and except in built-up areas, Route 29 is typically a two-lane 50 mile-per-hour rural highway, with signalized intersections. Within the limits of Trenton, between the Route 1 interchange and the Sullivan Way signalized intersection, Route 29 exists as a four-lane Limited Access Urban Freeway with highway ramps to Market Street, State Office Complex, Warren Street, Calhoun Street and Park Street. The section south of the Calhoun Street Bridge to Cass Street, approximately one mile in length, is bounded on the west by the Delaware River and intermittent wooded lands, and on the east by the downtown Trenton area consisting primarily of state office buildings and expansive parking lots. The two mile portion of the Route 29 corridor, north Calhoun Street, is residential in nature and is bounded on the east with residential development, and on the west by Stacy Park, a city-owned park. Within the City of Trenton, Route 29 virtually precludes visual and physical access to the Delaware River. Prior to the construction of Route 29, this area was the southern and western extension of Stacy Park. Remnants of the park still remain in some areas between the Delaware River and Route 29.



*Route 29 and its access ramps cover what was Stacy Park.*



*The historic form of Stacy Park.*

### 3.1 History of Area

Settlement of the Trenton area began in 1679 by Quakers seeking refuge from persecution in England. The area was known as Falls of the Delaware. The name Trenton was derived in the 1700's from "Trent-towne" referring to William Trent, a major land owner. Trenton's role in the history of the United States is significant. George Washington crossed the Delaware River and defeated the Hessians in Trenton. The city briefly served as the young nation's capital and was a substantial manufacturing center for products made of steel, rubber, wire, rope, linoleum and ceramics during the nineteenth and twentieth centuries.

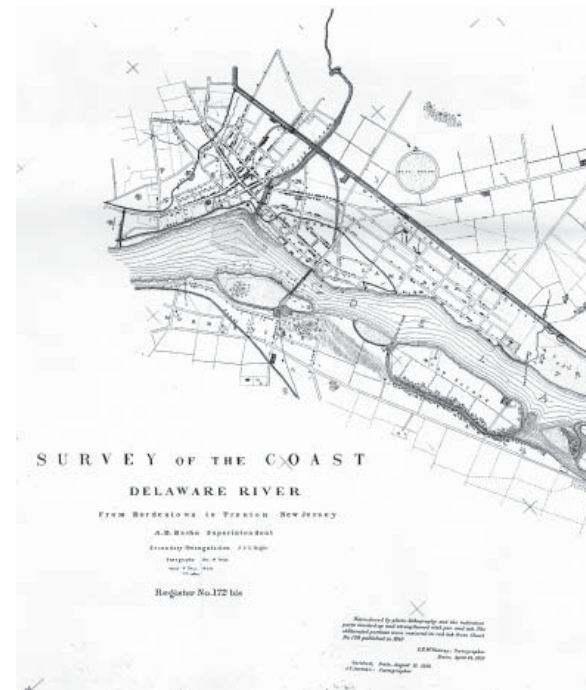
The success of the industrial city was evident in the investments made in the public realm such as the State Capital Building, Stacy Park (named for the family that sold William Trent the land upon which the city developed) and the many monuments located throughout the city. Material needed for industry was once transported along the canals that parallel the Delaware River connecting major east coast centers before rail and automobiles. In time, the function of the canal was diminished as rail and road cartage became more cost effective. The design choices that were made to accommodate the changing transportation modes significantly impacted the city's civic realm, walkability, and value. Pedestrian spaces were converted to automobile spaces. Route 29 replaced the canal closest to the Delaware River and ultimately transformed Stacy Park into a freeway barrier to the river.



Industrial uses once existed in the area adjacent to where Trenton's South Riverside Park now exists.



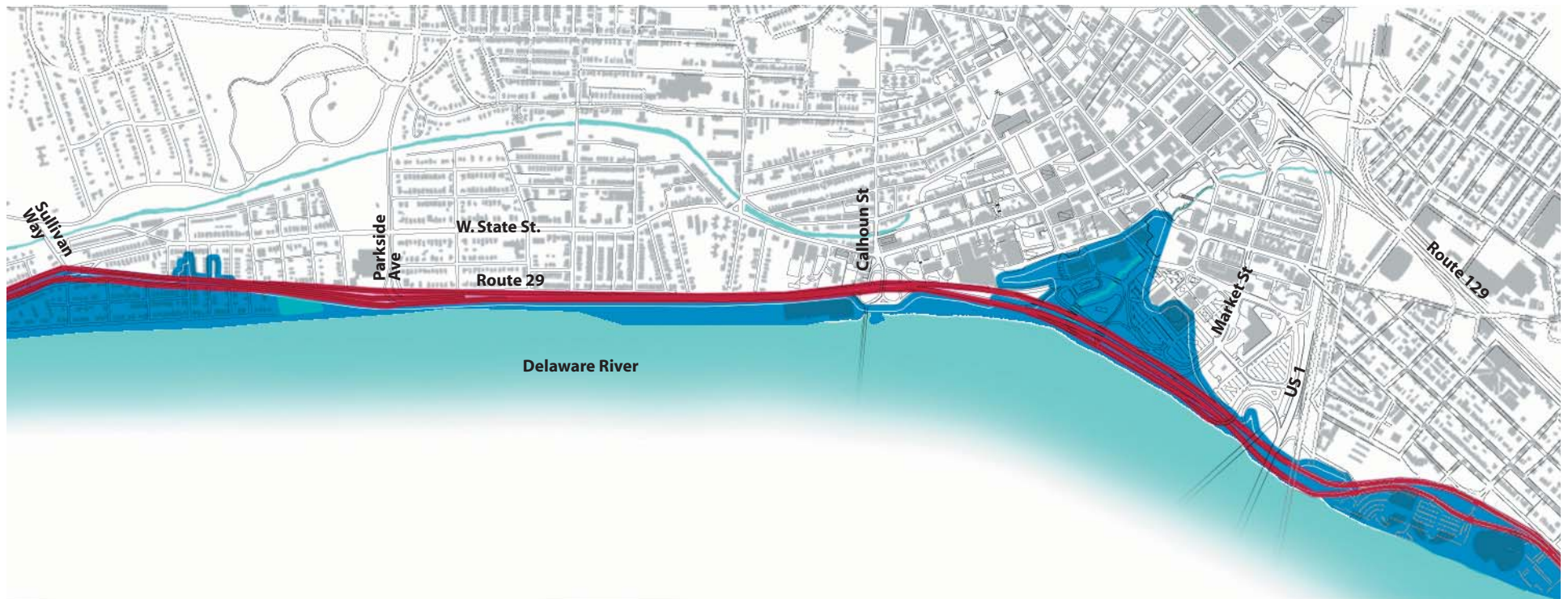
The State house was once visible from the Delaware River.



An early survey of the downtown Trenton area.

### 3.2 Floodplain

For most of its length Route 29 serves as the edge of the 100-year floodplain. The floodplain extends further inland in the area where the Assunpink River intersects with the Delaware River. In this location, flooding can be expected from the state capital parking structure along Lafayette Street to Broad Street then south back toward the Delaware River. The floodplain boundary is significant as it affects the development potential of some land area to be recaptured during the creation of the urban boulevard. Consideration will also have to be given to Department of Environmental Protection regulations for treating or storing stormwater runoff from the reconstructed boulevard.



### 3.3 Street Network

The existing street network, in the areas north and south of Trenton's downtown core, generally follow a grid pattern of roads parallel to the river intersected by roads perpendicular to the river. In the downtown core area the grid appears to have followed the historic edge of the marsh that formed where the Assunpink River intersected with the Delaware River. In this location the grid changes direction.

The street network is interrupted by Route 29 along its length. Route 29 forms a significant visual and pedestrian barrier between the city and the river. A frontage road exists parallel to Route 29 along the neighborhoods in the northwest portion of the corridor. It is important to note that Route 29 was constructed on top of a historic canal, perpetuating a practice of disconnecting the residents of the city from the river edge. In this regard, it is not only a barrier to the waterfront, but it removed the amenity of the historic canal.



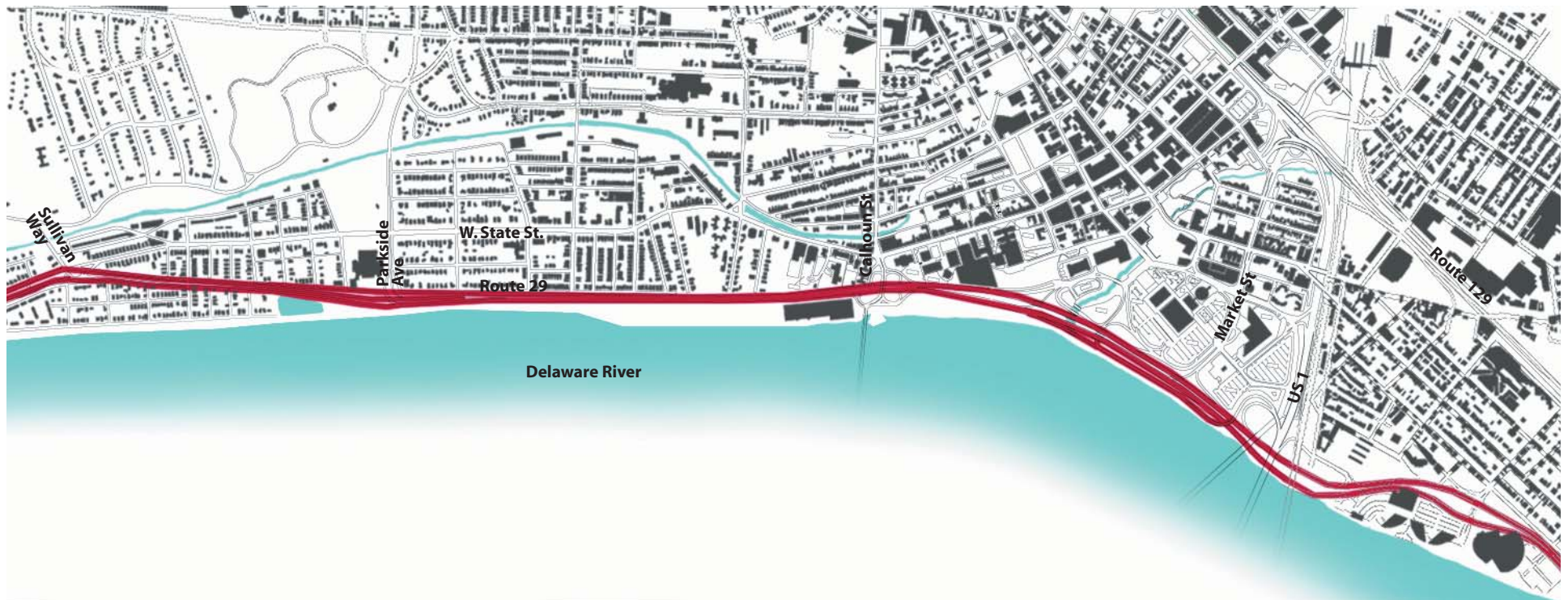
3.4 Effective Street Network

In general, the City of Trenton is served by a well connected street network. With the exception of the state government parking lots area (located between the Free Bridge, the Mercer County War Memorial, and the neighborhood areas fronting Route 29) the majority of the streets connect to two or more other connected streets. The parking lot area is particularly short on connections to the east due to the barrier effect of US 1 and the Amtrak Acela railroad tracks. The other major exception is the barrier to the waterfront created by Route 29.



### 3.5 Building Patterns

The pattern of building development is best illustrated using the figure ground diagram. In this format, structures are highlighted in black. By examining the relationship of one building to another, the relative size and arrangement of buildings, the spaces defined by the buildings, and the density of buildings in a given area it can be determined: i) what type of street will serve the area best and ii) which buildings contribute to the walkability and comfort of the downtown and which buildings detract from the walkability of the city. Along Route 29, the building types and block layouts show lower density residential development near Sullivan Way. The building types transition to higher density, medium sized, development, near Calhoun Street and the State Capital, leading to high density, larger scale, buildings in the downtown area. The pattern transitions back to a residential scale and densities near Cass Street. Gaps in the building fabric are evident in the area of Cadwalader Park and in the vicinity of the state surface parking lots and sports facilities along the River and State Highway 129 (i.e., white space along the sides of streets).





3.6 Existing Land use

The land uses along and served by Route 29, within the portion of the corridor being examined, transitions from residential to parks and open space, then to state and local government lands, and finally to downtown core. The land uses have developed within a historic grid pattern of streets and blocks that have been flexible enough to accommodate change over time. It is obvious that the land uses have changed as a result of the construction of Route 29, most noticeably in the vicinity of the state parking lots and along the waterfront. The vast amount of surface parking spaces, and the visual and physical barrier created by grade separation and high-speed design of the existing Route 29, have hampered the area from redeveloping into higher value uses. The configuration of the road and the parking lots also contributed to the devaluation of adjacent residential and commercial lands.

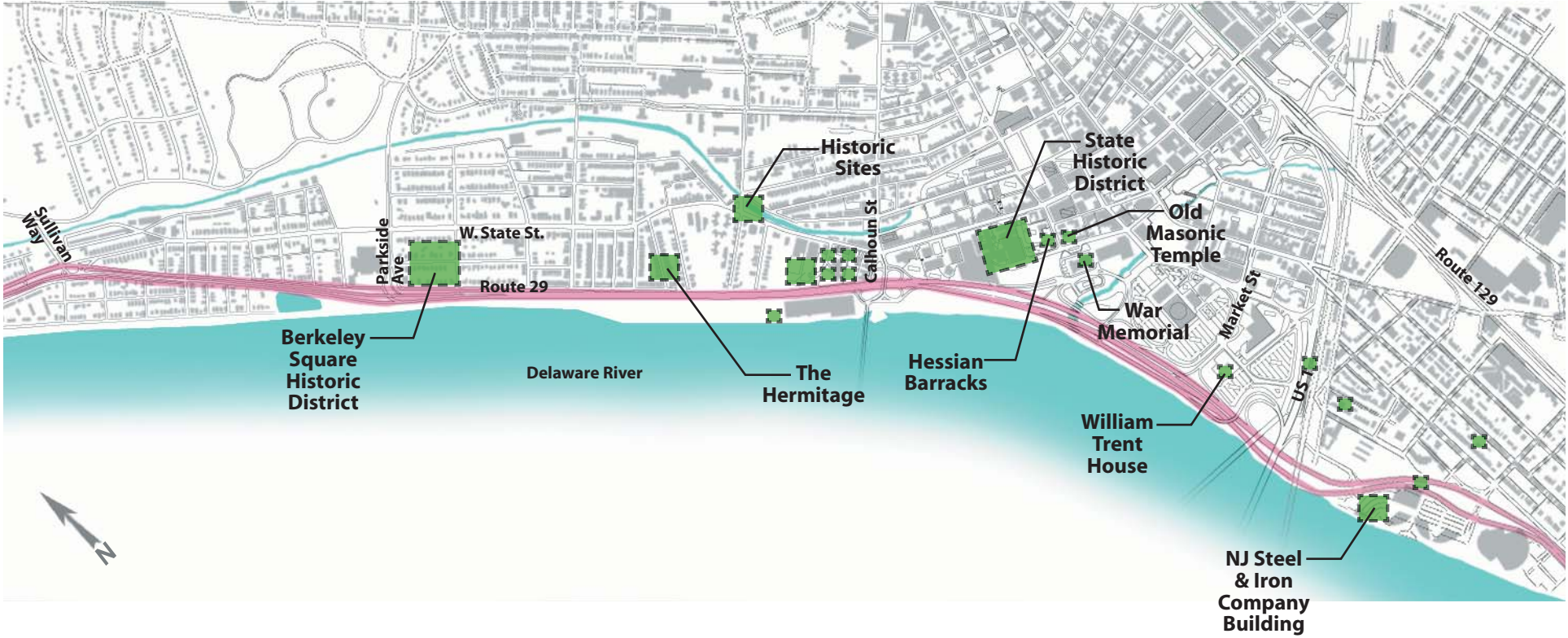
**Generalized Landuse Legend**

- Residential
- Parks & Open Space
- Government
- Industrial
- Downtown Core



3.7 Notable Sites

As noted previously, the City of Trenton has played a significant role in the history and culture of the area, the state, and the United States. Numerous sites of historic importance are located along the Route 29 corridor. Including evidence of native American civilizations, the Revolutionary War, industrial heritage, and historic neighborhoods.





## **4.0 PROJECT TOUR**



*The wide median and complicated turning routes at the Sullivan Way intersection with Route 29.*



The Sullivan Way intersection demarcates the western limit of the urban boulevard study. This area is residential in character with a gas station and convenience store at the intersection.



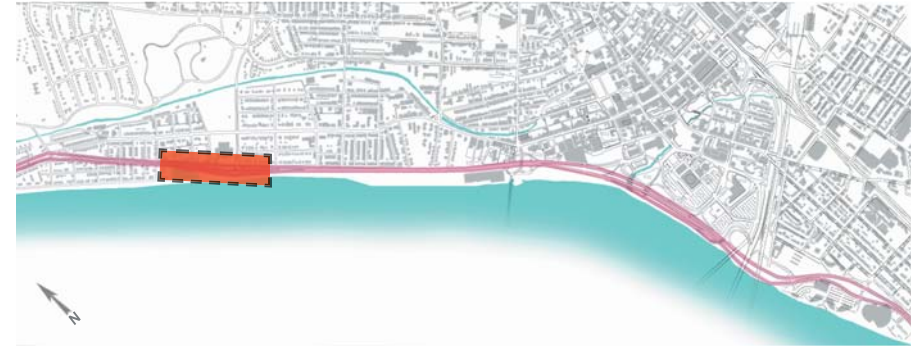
*Route 29 serves as a boundary and barrier between the Island Neighborhood and the neighborhood along State Street.*



*Lee Avenue connects the Island Neighborhood to Route 29 and State Street.*



*Pedestrian access to the Duck Pond in Stacy Park is poor due to the barrier effect of the high speed design and use of Route 29.*



Route 29 separates the neighborhoods along State Street, in the vicinity of Parkside Avenue, from Stacy Park and the Delaware River. The architecture of the West Trenton Campus of Trenton High School is a prominent landmark. The views of the buildings from Route 29 are hampered by the design of Route 29. Similarly, views of the waterfront from the buildings and Parkside Avenue are obliterated by Route 29.



*Grade-separated crossings, such as this one at Lenape Avenue, were constructed to address pedestrian access across Route 29.*



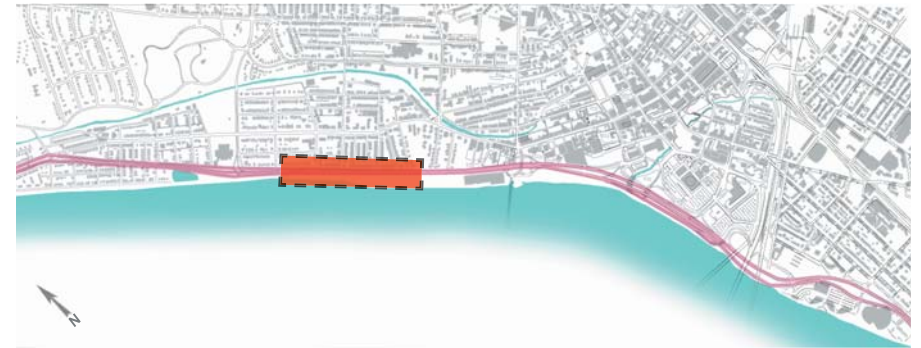
*The high speed ramps connecting northbound Route 29 to Parkside Avenue.*



*High speed slip ramps, such as the one at the base of Gouverneur Avenue, allow access to the neighborhood from Route 29 but encourage speeding.*



*A second grade-separated pedestrian crossing, at Hermitage Avenue, over Route 29.*



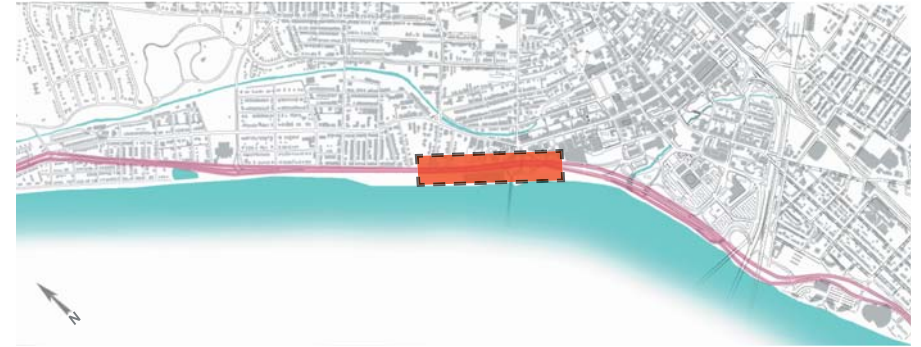
The density of homes increases as Route 29 nears Trenton's Downtown Core. Residents of the nearby mid-rise apartment buildings, along State Street, have poor access to the river and recreational trail within Stacy Park.



*Several streets, such as Atterbury Avenue, Fisher Place, Richey place, and Perdicas Place stop short of Route 29 to form cul-de-sacs. Consequently, they do not benefit from the value of the waterfront park and proximity to the River.*



*The water treatment facility, adjacent to the Calhoun Street bridge, combined with the long, straight, and flat section of Route 29 are formidable obstacles to getting to the river.*



Calhoun Street marks the transition between residential uses to government and commercial uses within the downtown. State buildings more recently constructed have utilized the Route 29 proximity for service access along the hostile road.



*The Calhoun Street bridge ramps promote speed, poor aesthetics, and consume a considerable amount of real estate.*

New Jersey Route 29 Boulevard Concept Development for Trenton



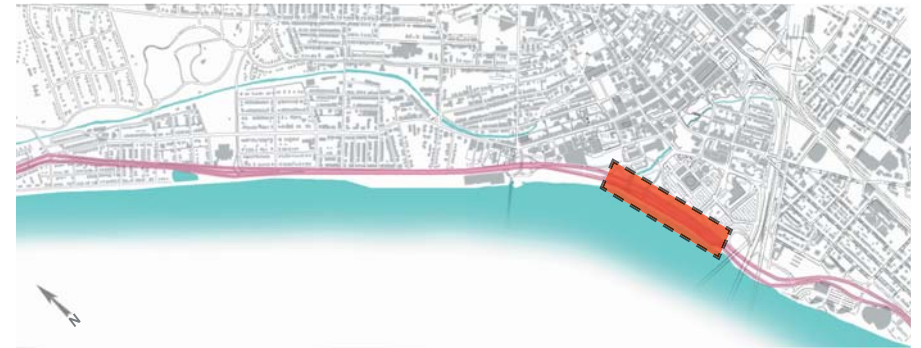
*A highway ramp from Route 29 leading to a surface parking lot behind a state library building.*



*The once prominent Mercer County War Memorial has been isolated in a sea of parking lots and highway access ramps.*



*The man-made edge of the Assunpink River as it passes under Route 29 bridges in proximity to ramps to and from Route 29 and the stste parking lots.*



Route 29 ridges over the Assunpink Creek and highway access ramps have destroyed the views to and from the prominent civic architecture of the State Capital and Mercer County War Memorial. Vast areas of surface parking have been located along Route 29 in this area to serve various office buildings.



*Market Street serves as a highway access ramp to Route 29 and a circulation route for the adjacent surface parking lots.*





*Suburban highway ramps between Route 29 and US1 consume significant amounts of real estate and promote high speed motorist behavior.*



Development patterns change from downtown uses back to neighborhood uses where the three bridges converge. US1, Amtrak Northeast Corridor, and Bridge Street bridges are prominent landmarks for the area. The few openings under bridges limit connections between downtown, the eastern neighborhood, and beyond.



*A wide median in Route 29 occurs at the "Trenton Makes," US Route 1, and Amtrak Acela Line bridges.*



*New office development and the baseball stadium between Route 29 and the river is oriented towards "private" river views, away from the hostile road,. Consequently, they don't add as much value inland as they could have.*



*The vast surface parking lots serving the state buildings hide the Assunpink Creek and consume large areas of potentially high value real estate.*



*A view of Trenton's downtown looking north toward Ewing.*



Two distinct land use patterns are evident within the downtown area. The historic street network follows what must have been the marsh edge of the Assunpink Creek where it meets the Delaware River. Secondly, the area that was filled in to construct Route 29 and the state office buildings lacks a discernible network of streets and is covered by vast surface parking areas with suburban-type office buildings.



*Trenton's downtown looking southeast toward Pennsylvania.*



*The illegible tangle of ramps and through roads at the intersection of US1, Market Street and Route 129, needs to be made safe for pedestrians and legible for vehicle users.*



Several areas adjoining the urban boulevard corridor will significantly affect the ultimate success of the concept. Projects proposed for these areas must be coordinated closely with the boulevard concept and the future street network to ensure that they promote a similar urban renaissance.



*The Governor's Urban Parks initiative will change the look of the area between the capital building and Route 29.*



*Highway access ramps are being reconfigured to US1 by the Delaware River Joint Toll Bridge Commission to make them more compatible with the more urban street network and to free up land in the downtown.*



## **5.0 EXISTING ROADWAY & TRAFFIC CONDITIONS**

## 5.1 Street Sections and Conditions

### *Existing Route 29*

Route 29 is currently classified as a divided urban Freeway/Expressway in the 2004 NJDOT Straight Line Diagrams and is included on the National Highway System (NHS) network. Route 29 is a State highway under the jurisdiction of the New Jersey Department of Transportation. The posted speed limit varies along the length of Route 29 within the project area. From Cass Street to Market Street the posted speed is 45 mph; from Market Street to Lee Avenue the posted speed is 50 mph; and from Lee Avenue to Sullivan Way the posted speed is 40 mph.

### *Existing Street Sections*

The existing Route 29 sections vary along the length of this project. It is typically a four-lane highway with two through lanes and a 12' right shoulder; however, throughout the project limits, auxiliary lanes are added to provide for acceleration/ deceleration lanes and left turn lanes. Lane widths vary from 11' to 13'. In addition, a negligible width (less than 1') left shoulder exists throughout the project limits, with the exception of a short section between South Warren Street and the Amtrak bridge where the left shoulder varies up to 4' wide. Concrete curbs are provided on both sides for the entire project length. Route 29 is divided by a varying-width grass median.

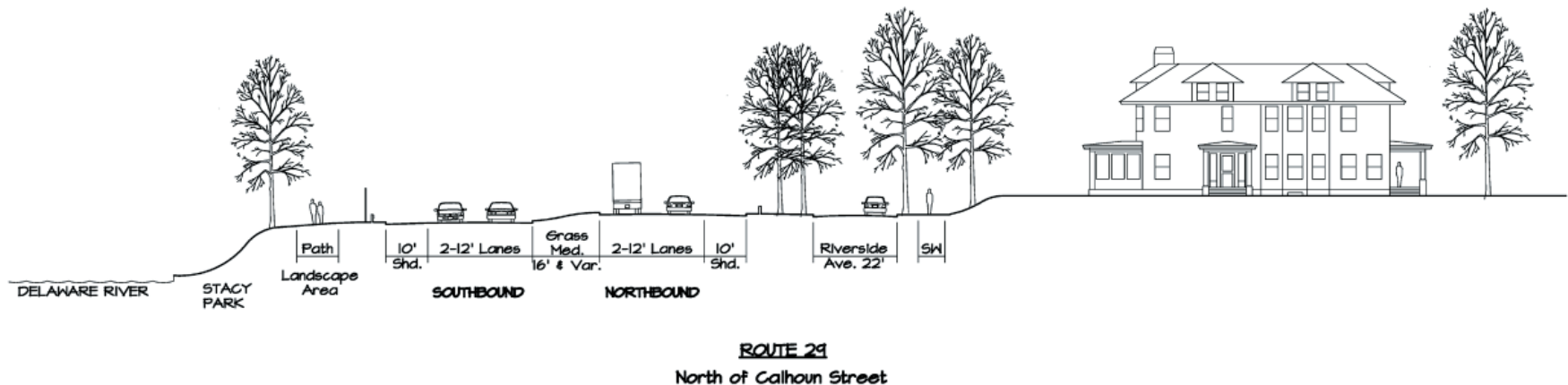
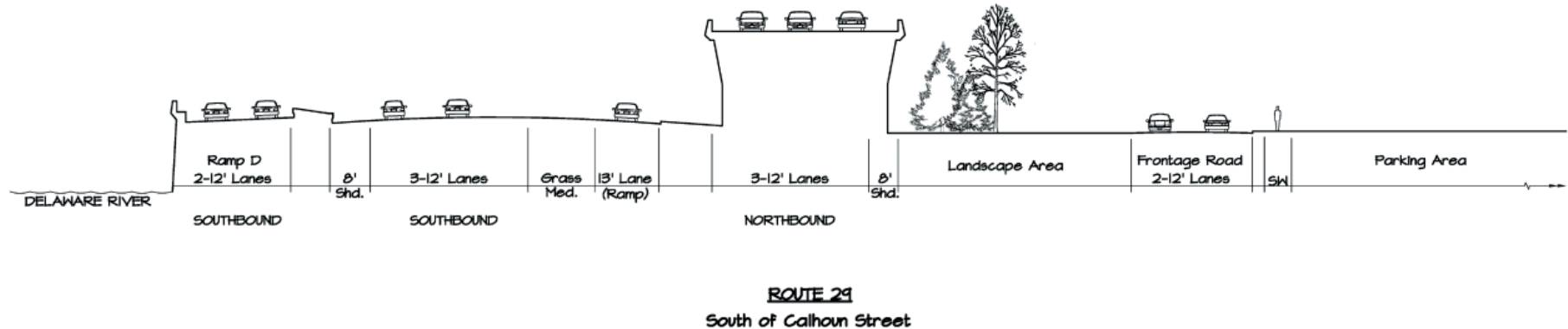
Route 29, within the project area, has two distinct cross-sections. The southern section, south of and including the Calhoun Street intersection, is bounded on the west by the Delaware River and areas of unmaintained woodlands; and on the east by downtown Trenton, consisting primarily of state office buildings and expansive surface parking lots. Route 29 in this area has the characteristics of a high-speed highway with grade-separated interchanges, multiple bridge structures, ramps, and minimal landscaping.

The northern section, north of the Calhoun Street interchange, is residential in nature and is bounded on the east by residential neighborhoods and on the west by Stacy Park, a city-owned Riverfront Park. Two pedestrian bridges provide poor access across Route 29 to Stacy Park. Route 29 in this area exhibits the potential to be a scenic parkway, in that it has a great context along the river, at-grade intersections (except for the NB roadway over Parkside Ave), occasional slip ramps into the community, a landscaped median and two signalized intersections at the northern limits as it enters the Glenafton Neighborhood.

## Existing Pavement Types and Conditions

Route 29 consists of three distinct pavement types within the project area: (1) bituminous concrete, (2) reinforced concrete, and (3) superpave hot mix asphalt over reinforced concrete. The area between the Calhoun Street interchange to the Sullivan Way intersection was milled and paved in 2004 as part of the NJDOT Maintenance Roadway Safety Improvements. Overall, the Route 29 roadway pavement falls within the NJDOT higher range of the "Good" category with typical average ratings over 3.50, which indicates that the pavements exhibit few visible signs of surface deterioration and that it provides a good quality ride.

Most of the bridges in the project area are in need of minor maintenance repairs, and some have substandard clearances, below 16.5 feet. However, this does not effect the functionality of the bridges and the overall rating condition of the bridges range from "satisfactory" to "good." Roadway pavement and bridge structure evaluations were performed and are included in the Appendices.



## 5.2 Review of Existing Studies

The City of Trenton Access and Circulation Study Phase I and Phase II prepared by Michael Baker Jr., Inc. was reviewed to gain an understanding of the existing traffic operations and to identify any proposed developments within the vicinity of Route 29 in Trenton, NJ. The traffic volumes contained in the diagrams, prepared by Baker, were compared to those obtained by Vollmer Associates to determine growth in the study area and to verify the more recent vehicle turning movement counts.

The Trenton Morrisville Toll Bridge Rehabilitation and One Auxiliary Northbound Lane Technical Coordination Briefing prepared by The Louis Berger Group, Inc. was reviewed to understand the objectives of the study and how the proposal might affect the feasibility of the boulevard concept for Route 29. The traffic volumes from the Berger Group study were also used for comparison purposes.

## 5.3 Data Collection

Automatic Traffic Recorder (ATR) machines were placed at thirteen locations along the study area during the study period starting on Thursday, June 10, 2004 and ending on Monday, June 21, 2004. The ATRs recorded traffic volumes on a 24-hour basis for a continuous, twelve-day period. The ATR data were then compared to the traffic data collected from the manual turning movement counts and obtained from the aforementioned studies.

Manual turning movement counts were performed on Wednesday, June 16, 2004 during the AM (7:00 AM to 9:00 AM) and the PM (4:00 PM to 7:00 PM) peak periods at seven area intersections. These counts were performed to determine the predominant traffic movements at the area intersections and also to identify the peak hours of the traffic volume in the roadway network. The weekday peak hours were found to be 7:30 AM to 8:30 AM and 4:30 PM to 5:30 PM.

## 5.4 2004 Existing Condition Traffic Volumes

The existing peak hour traffic volumes in the study area were determined using the ATR and vehicle turning movement count data. The peak hour traffic volumes have been compared with traffic volumes obtained in the City of Trenton Access and Circulation Study Phase I and Phase II and balanced to calculate the most conservative, worst-case scenario traffic volume data. (Refer to the supplemental Traffic Report for the exhibits depicting these data)

## 5.5 2004 Existing Travel Time Runs

Travel time runs were conducted in the northbound and southbound directions along the 3.24-mile Route 29 study corridor between Cass Street and Sullivan Way.

Three separate travel time runs were conducted during the AM Peak Hour in the northbound direction and the PM Peak Hour in the southbound direction on Wednesday, June 10, 2004 to verify the areas of heavy congestion and high-speed travel which contribute to the existing safety concerns along Route 29. The total travel time northbound through the corridor during the AM Peak Hour was nineteen minutes and fifty-six seconds (19min 56sec), which includes the northbound delay through the tunnel approaching Cass Street. During the PM Peak Hour, the total travel time southbound through the corridor was ten minutes and seven seconds (10min 7sec). The following observations were made:



2004 Existing Condition Travel Time Runs - AM Peak Hour



## Existing Roadway & Traffic Conditions

### ***Between Cass Street and Calhoun Street***

During the AM Peak Hour, Route 29 Northbound traffic at the intersection of Cass Street queued back to the Interstate 195 overpass, and the travel time from the back of the queue through Cass Street was thirteen minutes and twenty-six seconds (13min 26sec).

During the PM Peak Hour, the traffic signal at South Warren Street created significant queuing in the southbound direction of Route 29 that extended to the off ramp to Market Street. The longest recorded travel time through this section was six minutes and twenty seconds (6min 20sec).

### ***Between Calhoun Street and Parkside Avenue***

Once through the South Warren Street intersection, Route 29 becomes an Urban Expressway with average travel speeds reaching 55 mph. At times during the AM Peak Hour, queuing along the Route 29 Northbound off ramp to Calhoun Street Eastbound extended back onto the mainline of Route 29.

During the PM Peak Hour, motorists traveled ten to fifteen miles above the posted speed along this section of Route 29 Southbound. The only area of congestion was at the Route 29 Southbound off ramp to Calhoun Street Bridge, which experienced significant queuing that occasionally extended back onto the mainline.

### ***Between Parkside Avenue and Sullivan Way***

Motorists destined for Sullivan Way traveled at free-flow speeds until reaching the traffic signal at Lee Avenue and Sullivan Way. The northbound right turn lane of Route 29 Northbound extended back to Lee Avenue during the AM Peak Hour. Due to this queuing, the maximum travel time through the 1500-foot section of roadway between Lee Avenue and Sullivan Way was two minutes and forty seconds (2min 40sec).

During the PM Peak Hour, vehicles traveling from Sullivan Way Westbound destined for Route 29 Southbound experienced significant delay. This can be attributed to "lost time" at the intersection which results from the various clearance phases incorporated into the signal timing plan for the intersection of Sullivan Way, Route 29 and Sanhican Drive. Once on Route 29 Southbound, motorists were able to travel at free-flow speeds. The high operating speeds along Route 29 confirm that it is a barrier between the city and its waterfront.

## 5.6 2004 Existing LOS/Capacity Analysis

### *Methodology*

Capacity analysis, a procedure used to estimate the motor-vehicle-carrying ability of roadways over a range of defined operating conditions, was performed using the 2000 Highway Capacity Manual (HCM) and the Trafficware® Synchro software Version 6 (Build 612). The Level of Service (LOS) for motor vehicle users were estimated at each intersection.

For a signalized intersection, Level of Service (LOS) A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 80 seconds per vehicle. For an unsignalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle.

### *Results*

The 2004 Existing Conditions capacity analysis' results were calculated for each lane group at the study area's intersections. The results are based on the existing signal timing plans as provided by the NJDOT or through field verification.

The analysis results show that the following intersections have lane groups that operate at LOS F:

- Route 29 Northbound and Cass Street – AM Peak Hour
- Route 29 Southbound and Cass Street – AM and PM Peak Hours
- Route 29 and South Warren Street – AM and PM Peak Hours
- West State Street and Calhoun Street – AM and PM Peak Hours
- West State Street and Parkside Avenue – AM Peak Hour
- Route 29 Northbound and Sullivan Way – AM and PM Peak Hours

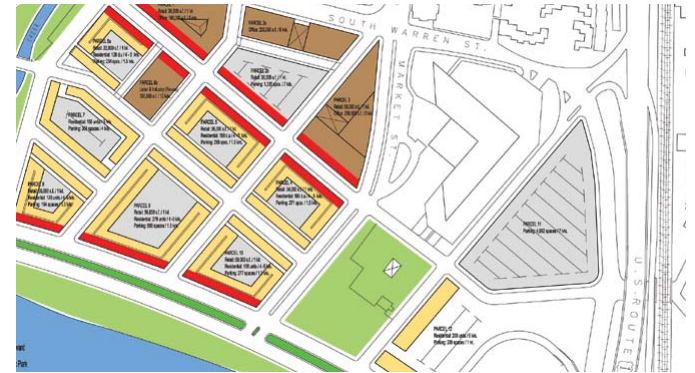
## 5.7 2001-2003 Route 29 Collision Analysis

Collision records along Route 29 have been reviewed to understand the safety situation along Route 29 and the possible countermeasures that could be implemented to reduce collisions and their severity.

Overall, collision occurrence along Route 29 exceeds the Statewide Average for roadways of this type. Three hundred six (306) collisions occurred over a three-year period as compared to the Statewide Average of two hundred fifty-two (252) collisions. From 2001 through 2003, the location of highest collision incidence was the Calhoun Street Interchange where ninety-nine (99) collisions occurred, seventy-three (73) of these being rear-end collisions. In addition, three (3) fatal collisions occurred between Calhoun Street and Lee Avenue during this time frame resulting in six (6) fatalities. Excessive violations of the 40 mph speed limit combined with jaywalking/poor crossing ability activity between Calhoun Street and Lee Avenue create hazardous conditions.



2001 - 2003 Accident Data Summary



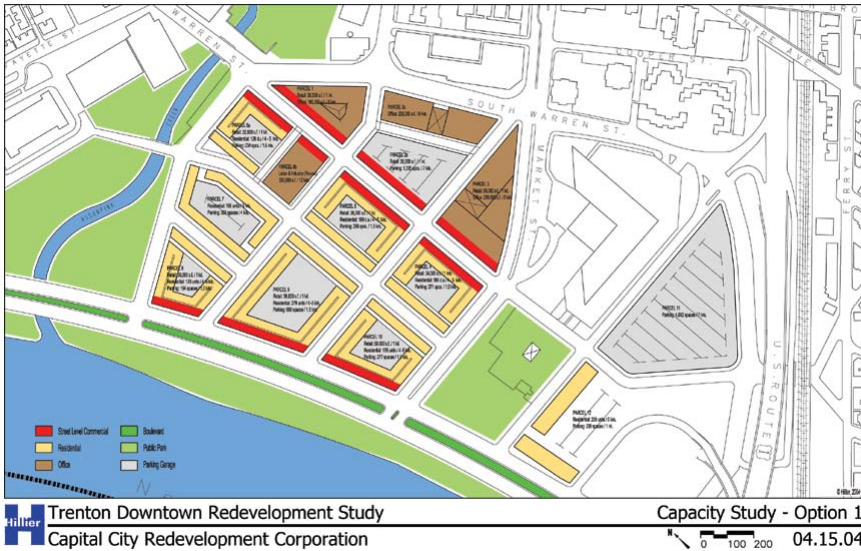
## 6.0 PLANNING & DEVELOPMENT INITIATIVES

6.0 Planning & Development Initiatives

Several planning initiatives have been undertaken in the area or are ongoing. Both private and public entities have developed scenarios for reinvigorating the neighborhoods and core.

6.1 CCRC Renaissance Plan

In 1989, the Capital City Redevelopment Corporation, a state initiative, developed a twenty-year vision plan for the downtown Trenton area. The plan was intended to guide public and private development decisions by creating policies aimed at creating a desirable physical, social, and economic context. This plan introduced the idea of creating an at-grade boulevard where Route 29 currently exists and reestablishing a connected network of streets within the state parking facilities area.



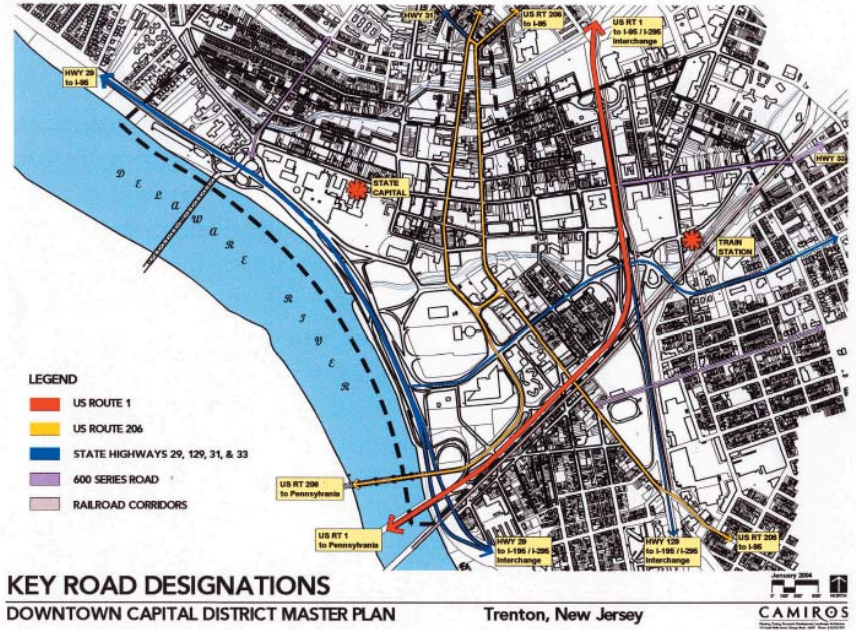
6.2 CCRC Plan Update

In 2004, the Capital City Redevelopment Corporation commissioned the Hillier Group to update the Renaissance Plan by examining development potential yields within the framework of the original Renaissance Plan.

6.3 City of Trenton Plan by Camiros

The City of Trenton commissioned the Camiros Group to examine economic development potential within the downtown core. The city's process occurred concurrently with the development of the boulevard alternative. The Camiros Group tested the merits of the Route 29 boulevard concept in the economic development evaluation prepared for the city. The results of the evaluation was not available when this report was produced.

Comment: Common to all three of the above plans is a connected street network and an at-grade boulevard. However, the common weakness of the plans is that the relationship with US 1, the waterfront, Route 29 to the west, and the history of Trenton was not fully explored. Consequently, the plans did not add enough value to become widely endorsed, supported, or implemented. However, these plans did lay the groundwork for this effort to evolve from. Hopefully this generation of the Vision for Trenton will prevail.

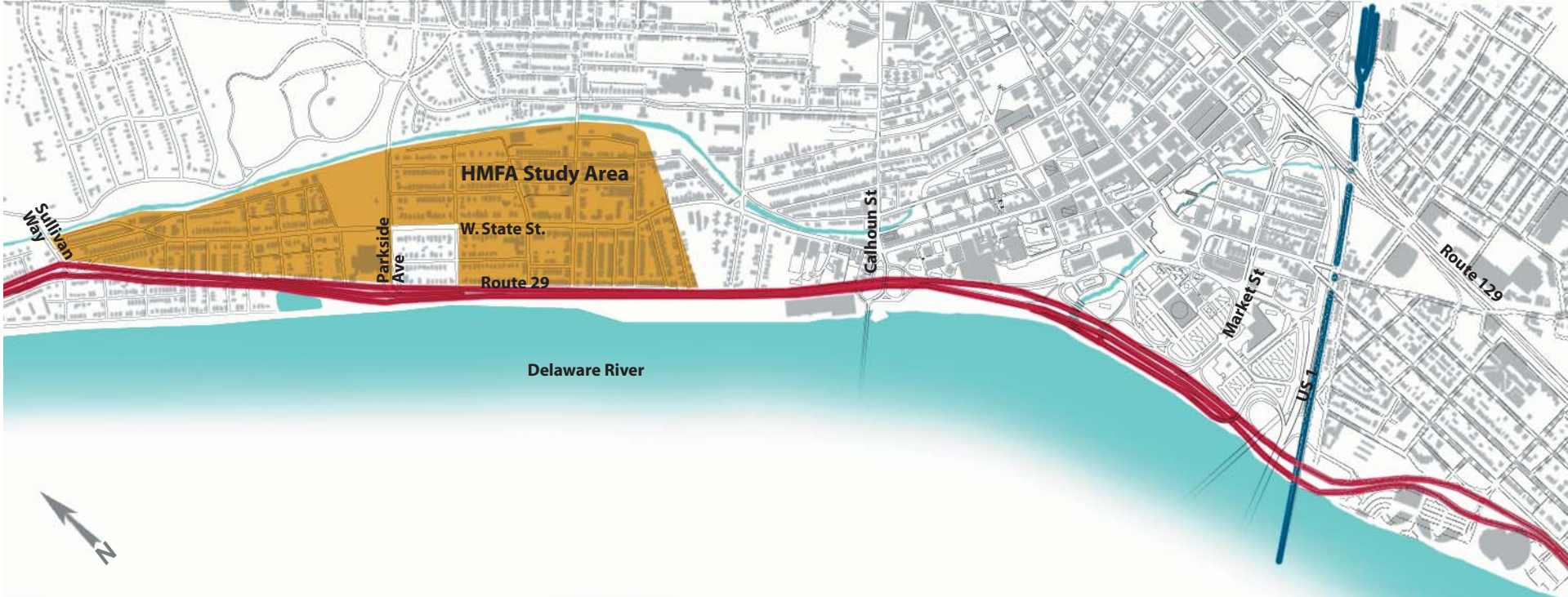


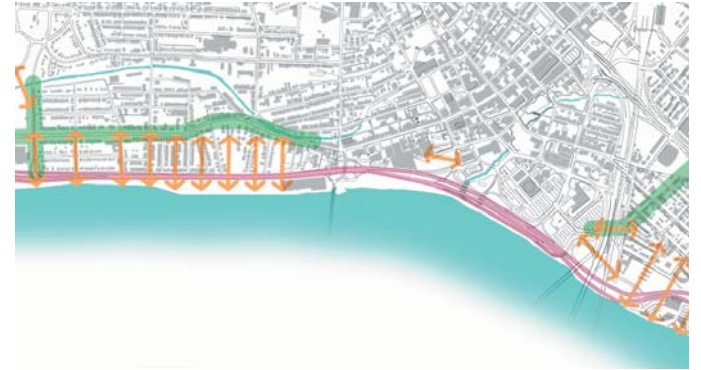
6.4 Woodrow Wilson School of Public and International Affairs Study

The Home Mortgage Finance Agency (HMFA) commissioned the Woodrow Wilson School of Public and International Affairs to examine issues related to the physical condition of deteriorating housing stocks in areas located between Route 29 and the D and R Canal from Sullivan Way to Fisher Place.

6.5 Public Initiatives

Many public initiatives are in process along the corridor. The damaged fishing wharf at the base of Warren Street is under reconstruction, a new Mercer County Courthouse was proposed at Livingston Street and New Warren Street, Mercer County is performing a parking assessment for county facilities, and a State Urban Parks Initiative for the area between the State House and Route 29 was proposed. Several school initiatives are planned as part of the state’s initiative to improve the quality of the urban schools.





## **7.0 PLAN FRAMEWORK**

## 7.0 Plan Framework

Throughout the stakeholder interviews and the project research phase, several themes emerged. These themes form a framework that guided the development of the conceptual design.

### 7.1 Access the Capital

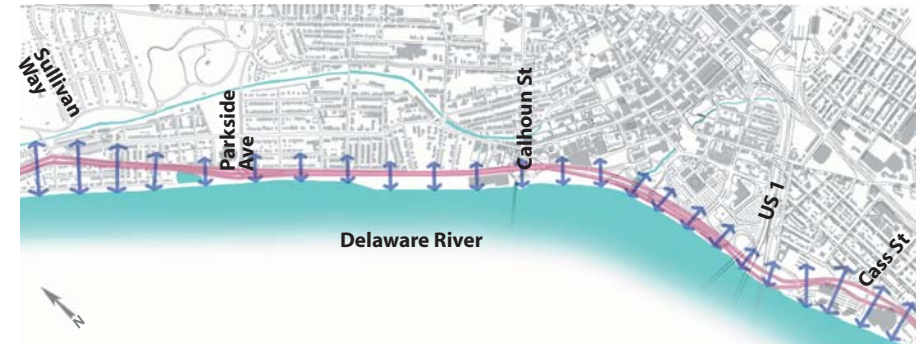
The Route 29 Boulevard should celebrate and respect the beauty of the State House. The boulevard should present a public face to the seat of power for the State of New Jersey.



*Provide access, and frame the views, to the State House and surrounding monuments.*

### 7.2 Reconnect to the River

The Route 29 Boulevard should reconnect Trenton’s open spaces, neighborhoods, downtown, and state facilities to the river. The river should be accessible by foot, bicycle, and automobile. People should be able to see the river from the city. Future buildings should be oriented to take advantage of the views.



*Create a boulevard that allows people to see and crossover to the Stacy park and the river.*

### 7.3 Strengthen Established Areas

A reconfigured Route 29 should enhance adjacent uses. A network of streets will share the traffic load with the boulevard, which will create a human scale and high quality pedestrian environment. The behavior of drivers will be “self regulated” through traffic calming (e.g., narrow street sections, street trees, on-street parking, etc.).

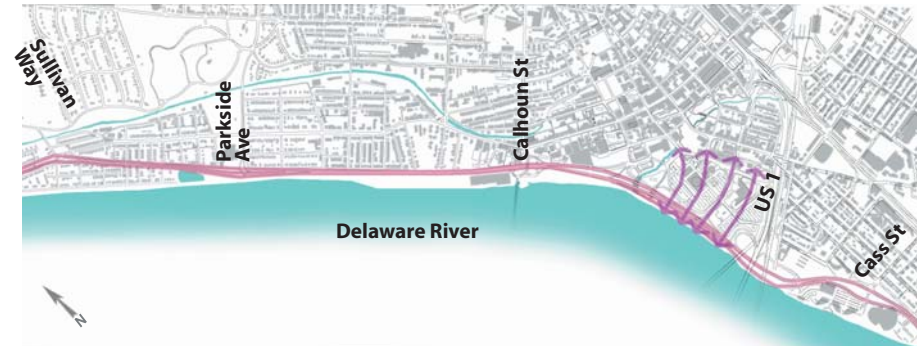


*Provide aesthetic and functional enhancements to the surrounding civic infrastructure.*



## 7.4 Facilitate Change in Redevelopment Areas

The substantial public investment expended to convert Route 29 from its current freeway form to an urban boulevard, and provide a connected network of streets, will yield positive, desirable redevelopment. The boulevard and accompanying streets will be planned, designed, and constructed in a manner that catalyzes the reestablishment of urban fabric. The idea is that if the downtown gets its “fundamentals” in order (i.e., good network, walkable streets, good access, great amenities), then private development will naturally respond with quality projects.



*Reintegrate areas underutilized areas into the fabric of the city through appropriately scale d redevelopment.*

## 7.5 Design the Streets to Fulfill Desired Roles

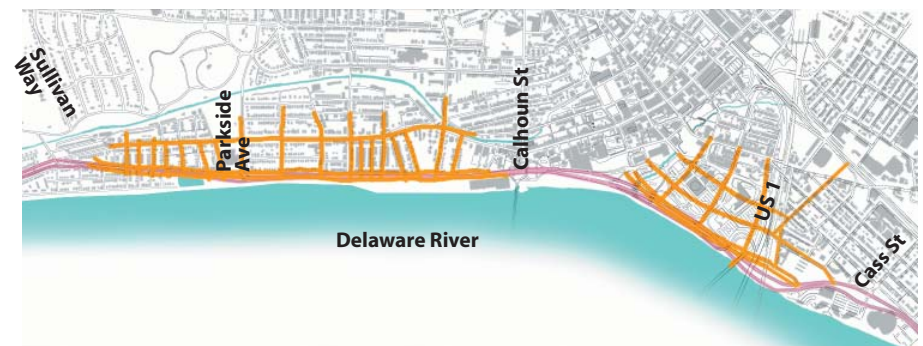
The boulevard and new streets should be purposely designed. The streets must be part of a hierarchy where important streets have buildings oriented to them and other streets are designed to be walkable and functional for the activities they serve.



*Understand the influence that different types of streets have on development then design the streets to meet your desires.*

## 7.6 Create Network

The boulevard will be a key element in the street network. The network of streets will connect the existing downtown network to the river. The network will offer multiple routing options for travelers on foot, bike, public transit, and motor vehicles.



*Reconnect missing portions of the network.*



## 8.0 THE CONCEPT

## 8.0 The Concept

A concept was developed with two distinct variations for Route 29 through the downtown core. The concept returns Route 29 to a surface street that operates at a speed that allows adjacent neighborhoods, the state capital grounds, and downtown core access to the river while maintaining the regional throughput (e.g., 30 mph to 35 mph outside of the downtown, and 25 mph in the downtown). The following describes the concept in three segments: Sullivan Way to Calhoun Street, Calhoun Street to the Free Bridge through the downtown core, and Free Bridge to Cass Street.

The conceptual treatment from Sullivan Way to Calhoun Street retains two travel lanes northbound and two travel lanes southbound divided by a planted median of varying width of no less than 22 feet wide. Within this segment, the intersections of Sullivan Way and Parkside Drive are reconstructed as conventional T-intersections with either traffic signals or roundabouts. A new intersection is introduced at Hermitage Avenue and a northbound left turn lane is introduced at Lee Avenue.

Where feasible, right-in and right-out intersections are regularly from the perpendicular neighborhood streets. The median of these intersections will be wide to allow left turns into the side street and allow left turns out of the side street to be done in two movements (i.e., the driver looks to the left and, when clear, proceeds to the refuge, and then looks to the right and, when clear, completes his/her turn).

Conceptually, Route 29 between the Free Bridge and Cass Street shows a new right-in, right-out connection to Union Street and an urbanizing of the Cass Street intersection to remove the high-speed right turn onto Route 29 while eliminating the awkward Coates Street intersection.

Multiple options were created for the Calhoun Street Bridge area, the portion of corridor leading to the downtown core, and connections to US 1. These options are further discussed in the following sections.



*Conceptual Section with on street parking*



*Conceptual Section*



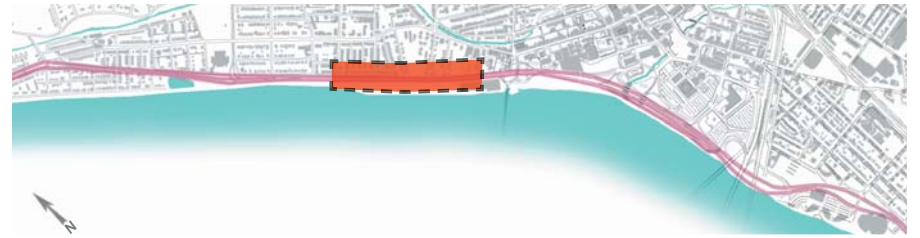
Route 29 - Sullivan Way to Calhoun Street Segment



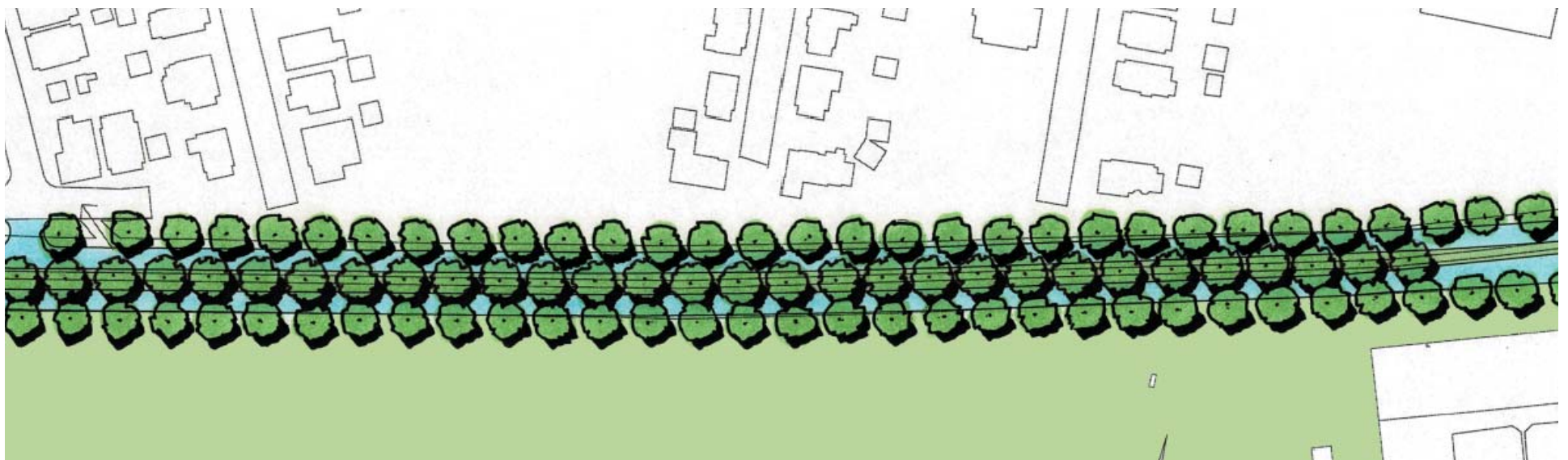


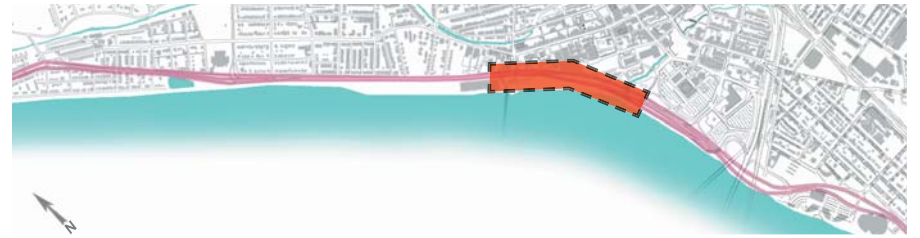
Route 29 - Sullivan Way to Calhoun Street Segment



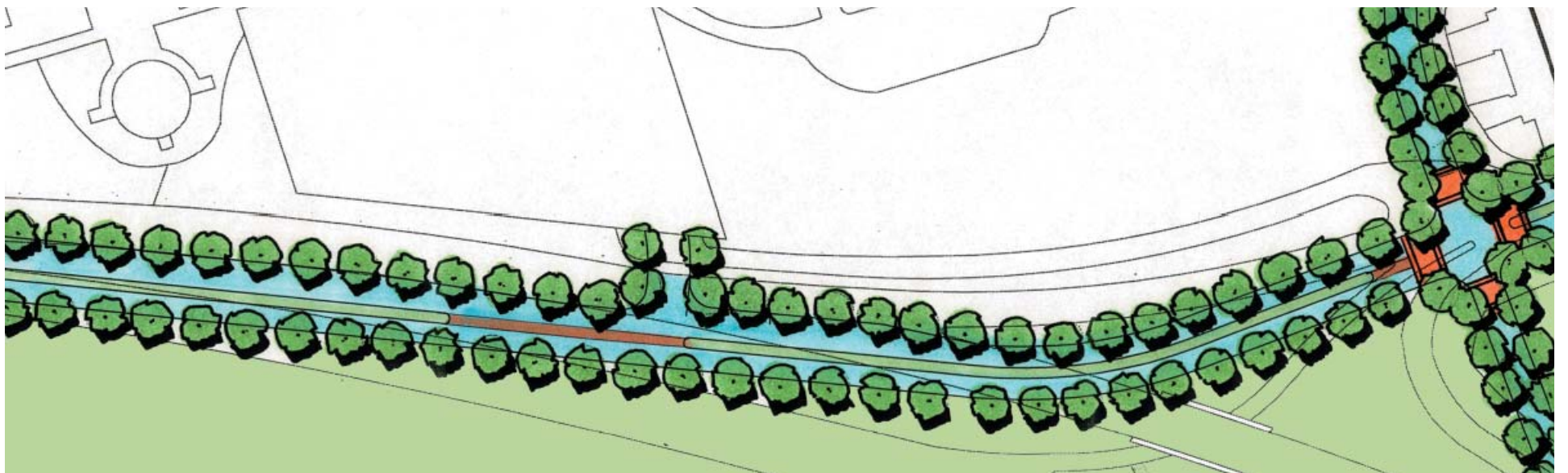


Route 29 - Sullivan Way to Calhoun Street Segment

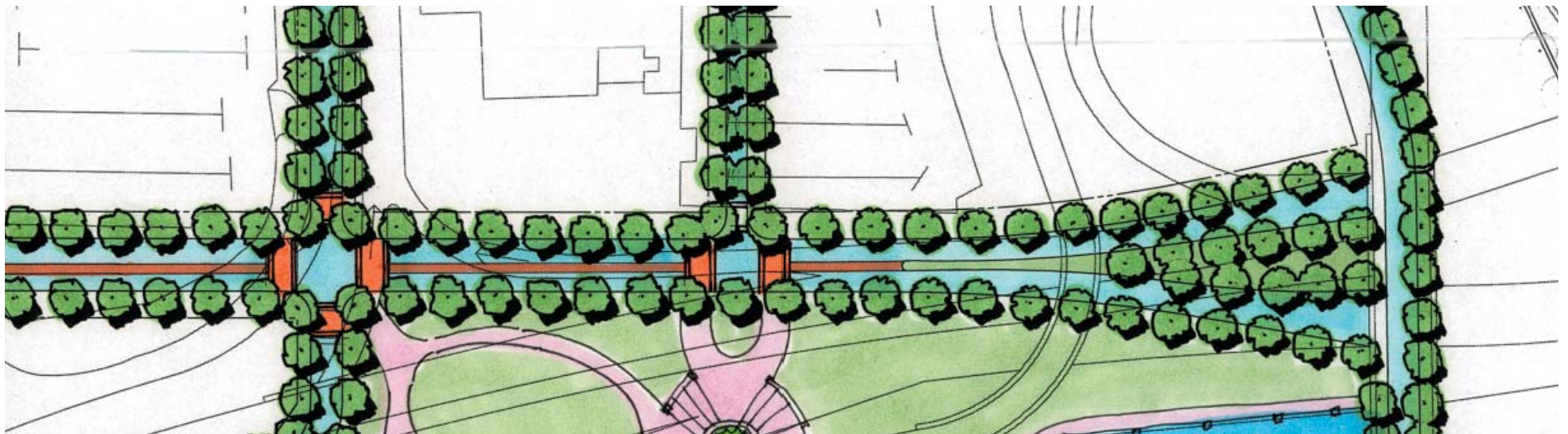
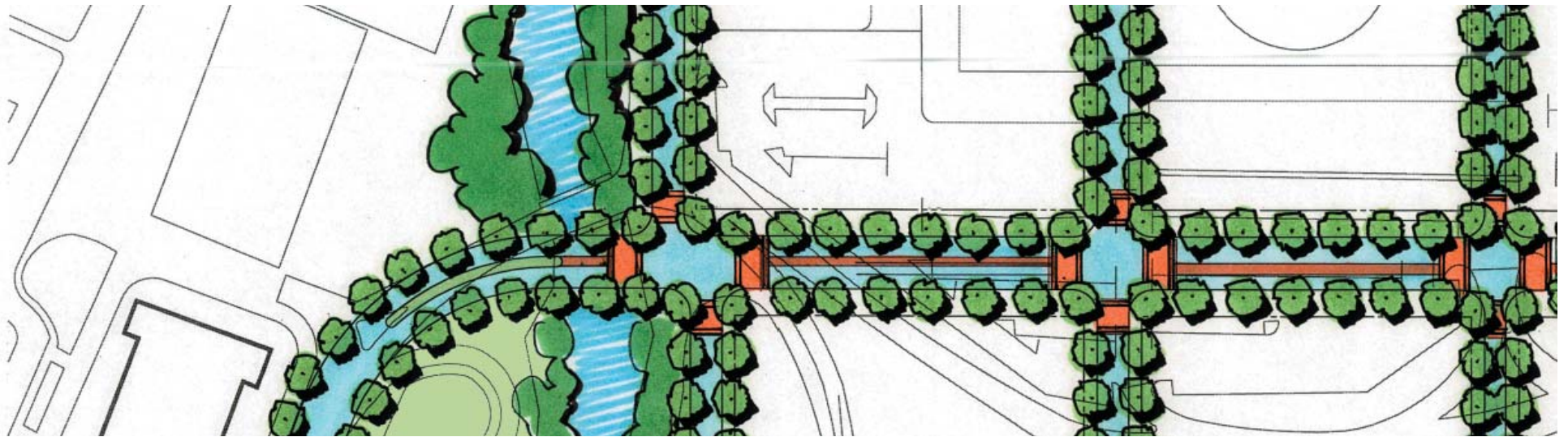




Calhoun Street to Bridge Street Segment



Calhoun Street to Bridge Street Segment and Bridge Street to Cass Street Segment





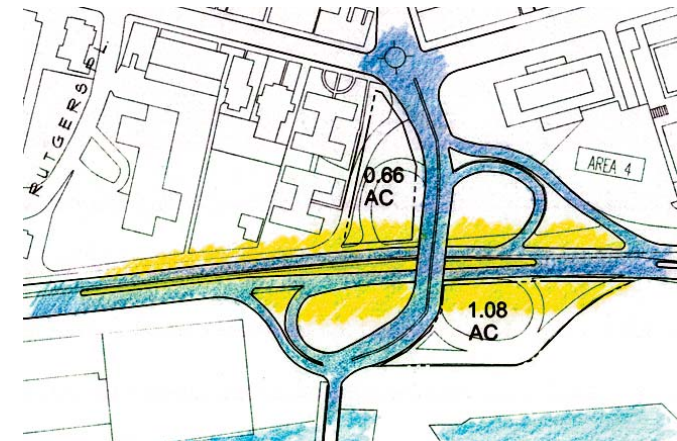
## 8.1 Calhoun Street Bridge

Several options were examined to address the connection of Route 29 to the Calhoun Street Bridge. One option maintains the ramps serving the dominant on and off movements to and from Route 29 while eliminating the other, less used, ramps. A second option maintains the ramps leading to the bridge from Route 29. A third, more novel option completely disconnects Route 29 from the Bridge. All of these options rely on the existing street network to accommodate any movements that have been eliminated.

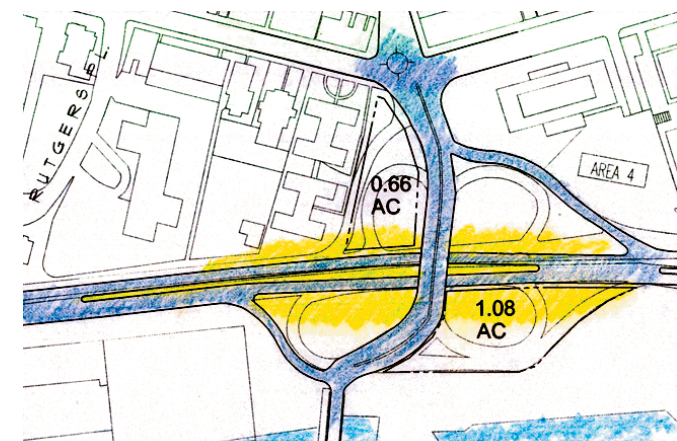
The approach selected by the project team is a hybrid of the options. In the preferred option, ramps leading to and from southbound Route 29 are retained while all other ramp movements are eliminated. Two new network streets connecting Route 29 to West State Street are created north and south of the bridge. The new streets, having at-grade intersections with Route 29, allow motorists to access the bridge via State Street. The new network also permits motorists to enter the downtown core at two points along State Street.

The sizing and locating of these new streets will be further advanced in future phases of the project. In the concept the streets have been shown as being two lanes, the northern street following the alignment of Rutgers Place, and the southern street being aligned through a state-owned parking lot.

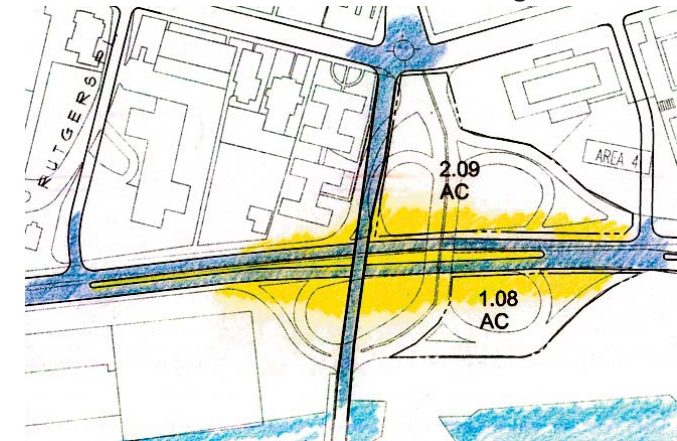
The elimination of the ramps recaptures land area for redevelopment purposes or to augment existing development on the east side of Route 29. Little land is gained on the park side through ramp elimination.



The Dominant To and From Movement



The Dominant Movement to the Bridge



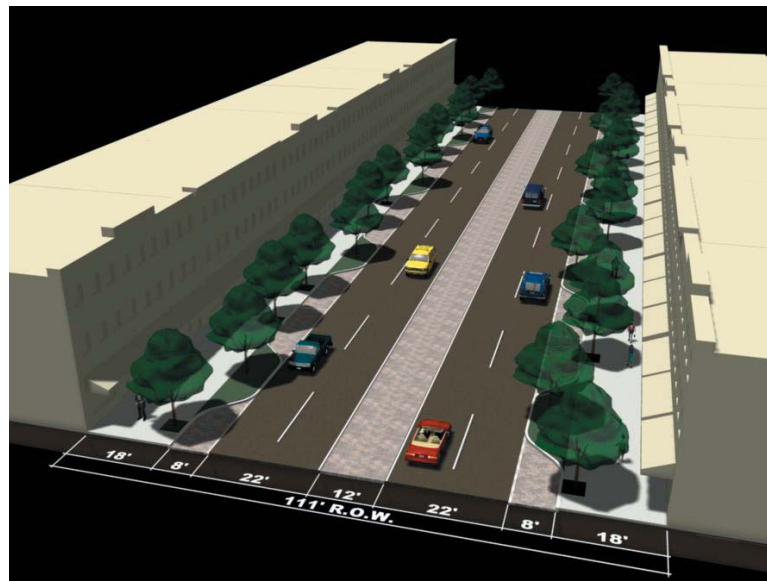
Disconnected from the Bridge

## 8.2 The Downtown Core

The availability of state controlled land within, and adjacent to, the Route 29 right-of-way, through the downtown core, provides many opportunities. Two variations of the concept were developed for this area. The first approach shows Route 29 remaining within the right-of-way in which it currently resides. The second realigns Route 29 further inland within the urban fabric of the city.

In both variations, the reconfigured Route 29 is shown as a five-lane, at-grade, street having two northbound lanes, two southbound lanes, a continuous left turn lane where appropriate, and parallel on-street parking. In the downtown core area, Route 29 Urban Boulevard serves as a spine for the new network of streets and creates the framework for a great waterfront promenade. The network of streets will serve as the foundation for redevelopment of prime, under-utilized, urban, waterfront land.

Both variations will recapture approximately eighteen acres of land from under ramps or surface parking lots. The shape of the redevelopment that will occur in this area is somewhat dependent upon the 100-year floodplain. Approximately 30% of the area is in the floodplain. There may be opportunities to mitigate the floodplain issue downstream of this location if the land value is high enough or the city desires to do so.



The Urban Boulevard Concept yields approximately 18 acres of developable real estate

There are distinct advantages for each boulevard route in the downtown core area. The variation built upon Route 29, remaining within the current right-of-way, along the Delaware River requires less coordination among various state agencies as the right-of-way is entirely within the control of the New Jersey Department of Transportation. There may be construction cost savings related to reusing existing bridges over the Assunpink River. In this variation, the character of redevelopment along the boulevard will be less versatile than that of the boulevard away from the water. The tenant mix of future buildings located along the water may be less diverse as market-rate forces price the land beyond certain uses.

The boulevard located away from the water also has advantages. There may be tremendous cost savings associated with being able to build the new Route 29 boulevard offline while the existing freeway continues to function. In addition, partnerships may be established among various developers vying for the ability to build on the surface parking lot areas and the old right-of-way owned by the New Jersey Department of Transportation. Developers may share the cost of boulevard construction as a catalyst for making the land available sooner than if state funding sources were to be depended on.

This inland urban boulevard alignment approximates the route of the older riverfront road. It sets up the reestablishment of a continuous Stacy Park and helps to frame the State House and Mercer County War Memorial prominently from the boulevard and river. This alignment also allows for a varying mix of tenant uses within future development. The downtown section of the boulevard supports active ground floor uses, with the potential for office or residential above. Additionally, the smaller, crossable (by pedestrians) streets along the waterfront can also support many destination-type developments.



The Waterfront Boulevard Concept yields approximately 18 acres of developable real estate

## 8.3 Connections to US 1

The existing connection between US 1 and Route 29 has been experiencing stacking problems at the Warren Street ramp. During the morning peak-hour traffic backs up across a portion of the bridge. To address this issue the Delaware River Joint Toll Bridge Commission (JTC) had proposed introducing a triple left turn from Warren Street to Route 29. The Route 29 team, working with the JTC, developed another option. The JTC is proceeding with the triple left turn option recognizing that the Route 29 team's proposal does not alter the perceived short-term need.

The approach for dealing with the connection between Route 29 and US 1, developed during the Route 29 process, takes advantage of the existing bridge "portals" under the Amtrak northeast corridor line and US 1 alignments. Currently, the portal serving the Warren Street ramp does not connect to the downtown core. It serves cars headed for Route 29, from US 1, on the south side and cars headed east, on US 1, from Free Bridge Road, on the north side of the portal. The William Trent Place portal connects neighborhoods to the south to a road bisecting the state parking lots and Market Street north of the portal.

The Route 29 Urban Boulevard concept reconnects neighborhoods on opposite sides of the Amtrak Acela rail line through the existing Warren Street portal. Eastbound traffic from US 1 exits from the bridge, however vehicles may continue to the William Trent portal via a new road connection between the Amtrak line and US 1 alignment. The intersection of the ramp and Warren Street may be signalized to ensure that traffic from the bridge is not impeded during peak hours. At the much wider William Trent Place portal, left-turn lanes will be established for vehicles headed onto US 1 toward Pennsylvania as well as vehicles headed north. The currently existing triangular planted island serving, south of the William Trent portal, will be reconfigured to serve as a roundabout. Vehicles headed to State Highway 129 will now be given the option of using a new Bridge Street intersection with Highway 129.

Finally, the high speed ramps connecting southbound Route 29 to US 1 is inconsistent with the desire to create the boulevard and a walkable, pedestrian-friendly downtown. These existing high-speed ramps consume developable land, encourage speeding, and are pedestrian-unfriendly. The connected network of streets to get vehicles to the ramp to US 1 from William Trent Place. This will liberate land for redevelopment and foster slower speeds.





## 9.0 TRAFFIC IMPACTS OF THE BOULEVARD CONCEPT

## 9.1 Analysis Objective

The purpose of this analysis is to identify and define the potential effects of the proposed plan for Route 29 in Trenton on motorists and pedestrian and bicycle traffic.

## 9.2 Future Motor Vehicle Traffic Projections

The proposed redevelopment activity in the downtown area was not quantified in this stage of the feasibility assessment. It was assumed for the purpose of this study that the existing land uses would be replaced with future uses that generate comparable traffic activity and volumes to the State Offices and other land uses operating today. Given the trip generation characteristics of the existing uses and the significant peak hour traffic volumes currently experienced within the downtown area, it was conservatively assumed that redevelopment of this area would not significantly increase the existing traffic volume primarily because of the constrained traffic conditions experienced today during the peak hours. Additional trips created by intensified land uses was assumed to be countered by increases in internal capture of downtown trips, modal shifts, and shorter trip lengths. Reflecting the aforementioned considerations, the existing traffic volumes were used as a base to determine the future traffic situation described in the following sections.

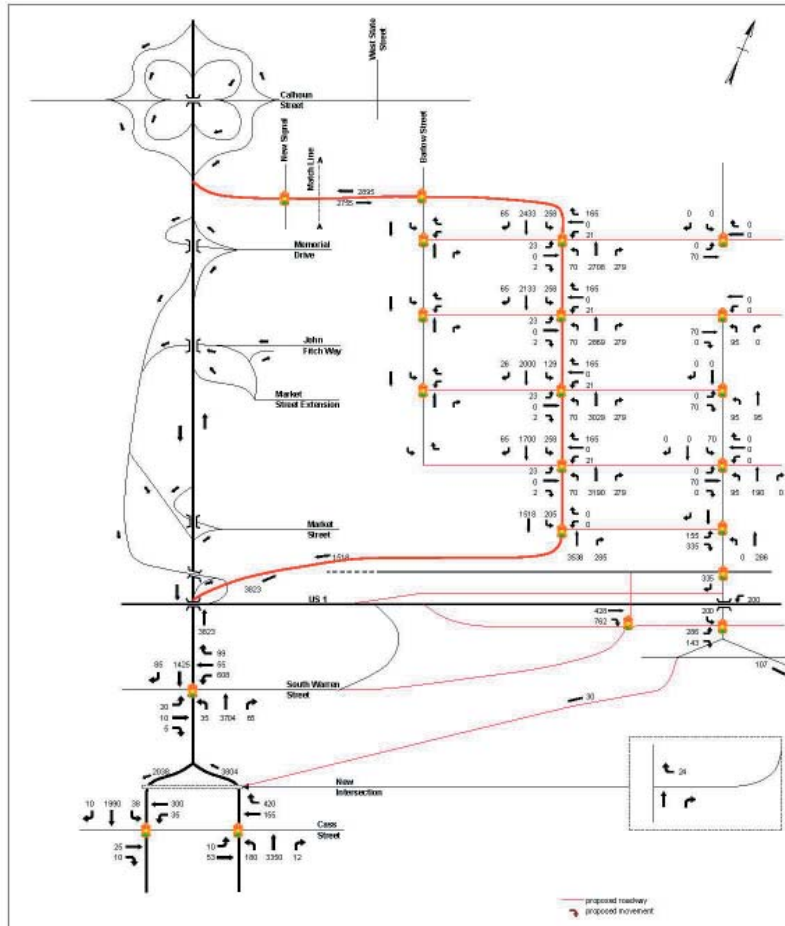
## 9.3 Motor Vehicle Rerouting

Given the proposed modifications to Route 29, some traffic would reroute when compared to the existing travel patterns of motorists. A preliminary traffic rerouting analysis was completed to quantify the effects on the relevant intersections and to examine the ability of the expanded street network to facilitate the rerouted traffic.

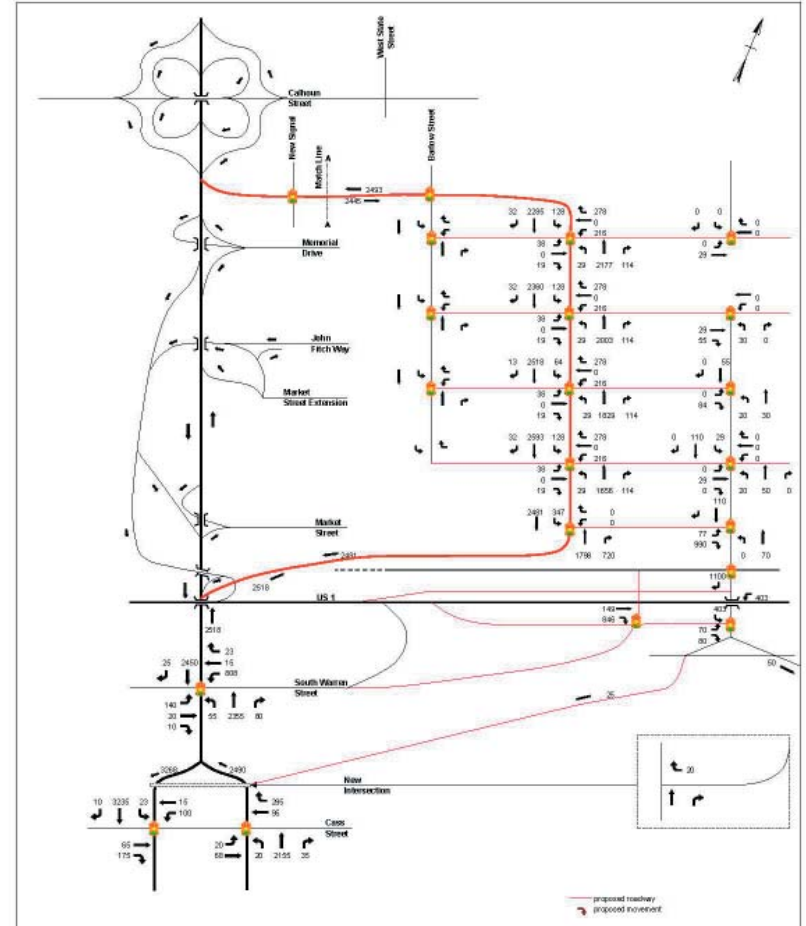
## 9.4 Reassigned Motor Vehicle Traffic Volumes

The 2004 Existing Condition volumes were reassigned to reflect the rerouting of motor vehicle traffic on the street network.

# Traffic Impacts of the Boulevard Concept



Proposed Condition Traffic Volumes  
AM Peak Hour (7:30 AM - 8:30 AM)



Proposed Condition Traffic Volumes  
PM Peak Hour (4:30 PM - 5:30 PM)

## 9.5 Proposed LOS/Capacity Analysis

### ***Downtown Trenton***

The proposed plan will employ a combination of signal control and roundabouts along Route 29 resulting in reduced travel speeds/increased travel time. Conventionally, an increase in “delay” is considered a negative impact; however, considering that speeding is adding to the danger and barrier-effects along Route 29, slow speeds are considered a desirable outcome. With the implementation of traffic signals, queuing in the northbound direction will be expected on the boulevard during the AM Peak Hour and in the southbound direction during the PM Peak Hour. The presence of traffic signals throughout the boulevard will improve and promote pedestrian traffic in downtown Trenton.

### ***Calhoun Street Interchange***

The proposed plan at Calhoun Street Interchange would provide motorists with options to enter and exit Route 29 from Calhoun Street. Vehicular traffic will use the proposed Rutgers Street and Museum Street to connect with Route 29. The vehicular traffic that currently uses the Calhoun Street Interchange reassign themselves throughout the new signalized intersections eventually establishing an equilibrium condition which optimizes the traffic operations.

### ***Parkside Avenue and Sullivan Way***

The presence of mid-block pedestrian signals at Gouverneur Avenue, Overbrook Avenue, Richey Place and to and from for Stacy Park. In addition, the proposed signalized intersections at Hermitage Avenue and Delawareview Avenue would provide relief to the intersections of Parkside Avenue and West State Street. The redesign of Parkside Avenue and Route 29 and the additional adjacent intersections would improve the traffic operations along West State Street and Parkside Avenue. The option of using roundabouts was not investigated in this phase of the project but may be during the future feasibility assessment.

The traffic operations at the realigned intersection of Sullivan Way and Route 29 would improve drastically as a result of the new signal timing plan. No analyses have been done to date to test the feasibility of employing roundabouts instead of traffic signals. This will be completed in subsequent work.

## 9.6 Corridor Travel Time Comparison

The Performance Report produced by the SimTraffic Simulation Software was utilized to estimate the projected travel time through the study corridor of Route 29. According to the simulation model, the AM Peak Hour total travel time beginning at the end of queue from the northbound approach at Cass Street through Sullivan Way would increase by two minutes and one second (+ 2min 1sec) compared to the Existing Condition. The new total corridor travel time becomes twenty-one minutes and fifty-seven seconds (21min 57sec) - up from nineteen minutes and fifty-six seconds (19min 56sec). During the PM Peak Hour, in the southbound direction along Route 29, the total corridor travel time would increase by fifty-four seconds (+ 54sec) bringing the total travel time to eleven minutes and one second (11min 1sec) - up from ten minutes and fifty-three seconds (10min 53sec). Again, considering that high speeds are a significant problem in the downtown area, these results are very encouraging.

### ***Between Cass Street and Calhoun Street***

During the AM Peak Hour, the travel time through the proposed urban boulevard section of Route 29 in downtown Trenton will increase, reflecting the installation of signal control and pedestrian facilities along this currently signal-free segment of the road.

During the PM Peak Hour, the existing southbound backup occurring at the approach to South Warren Street will be dissipated because the delay will be distributed over the entirety of the proposed traffic signals in the downtown section of Route 29. The overall travel time will not increase significantly.

### ***Between Calhoun Street and Parkside Avenue***

The travel time between Calhoun Street and Parkside Avenue will not increase significantly during both the AM and PM Peak Hours.

### ***Between Parkside Avenue and Sullivan Way***

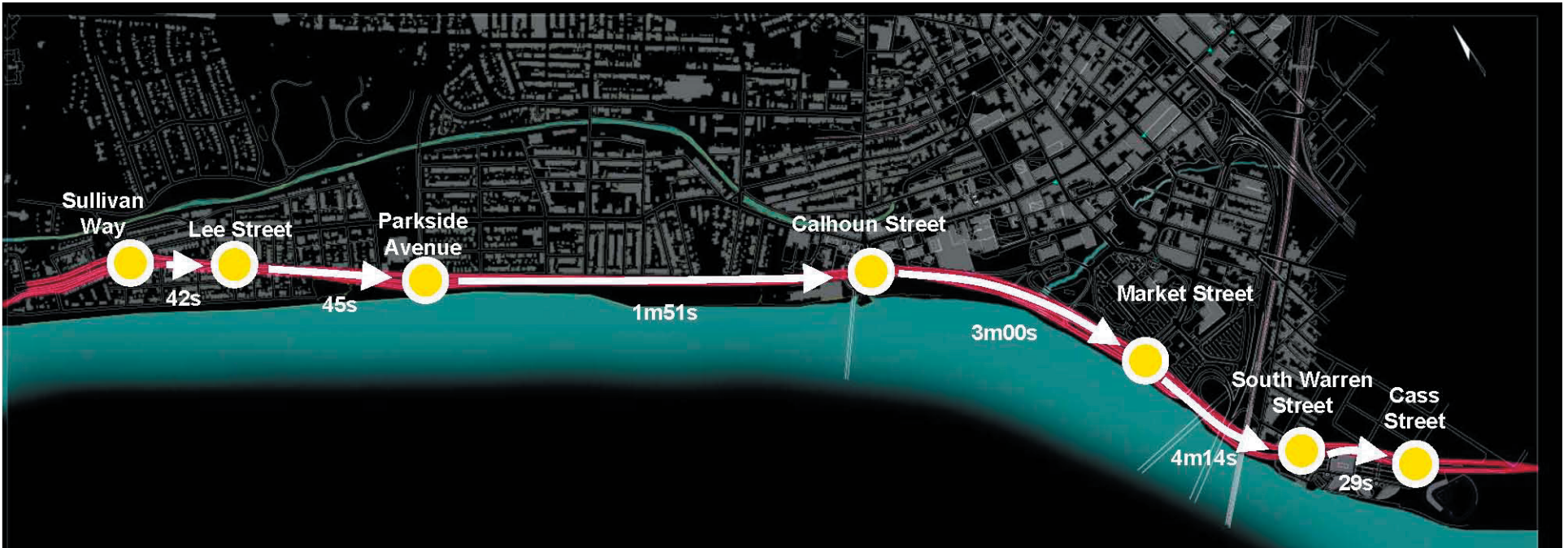
During the AM Peak Hour, the current queuing occurring on Route 29 northbound in the right lane of the northbound approach to the Sullivan Way intersection will dissipate. The delay for this lane group will decrease, and travel time in this section of the corridor will significantly decrease.



# Traffic Impacts of the Boulevard Concept



Proposed Condition Travel Time Runs - AM Peak Hour



Proposed Condition Travel Time Runs - PM Peak Hour

## 9.7 Capacity Analysis Comparison

### ***Downtown Trenton***

The significant motorized traffic volume traveling northbound on Route 29 through the Cass Street intersection during the AM Peak Hour will remain at this intersection with the proposed plan. However, further investigation of rerouting onto Union Street and Bridge Street (having a new connection to Route 129) would decrease congestion displayed in the traffic simulation model. Under existing conditions, once through the Cass Street and South Warren Street intersections, vehicles enter the freeway section of Route 29. This portion of the freeway is unsignalized and characterized by free-flow speeds exceeding the speed limit by approximately 10 mph. The proposed realignment of Route 29 through downtown Trenton will decrease travel speeds and create a pedestrian-friendly boulevard.

### ***Calhoun Street Interchange***

The proposed addition of signal control north and south of the existing Calhoun Street Interchange will eliminate unsafe weaving conditions as well as eliminating ramp queues that back vehicles up onto the boulevard. The Calhoun Street Interchange currently experiences long queues at the Route 29 Northbound off ramp to Calhoun Street Eastbound during the AM Peak Hour and at the Route 29 Southbound off ramp to Calhoun Street Bridge during the PM Peak Hour. Additionally, the proximity of the intersection of Calhoun Street and West State Street to the interchange creates a highly congested condition during both the AM and PM Peak Hours. The proposed modifications to the interchange will better manage these areas of congestion through signal control and the provision of more routing options to motorists in the area. Currently, this interchange is the only full access interchange providing motorists with opportunities to access West State Street, a very important street running parallel to Route 29. The addition of intersections at Hermitage Avenue and Delawareview Avenue will provide additional options for motorists residing in West State Street communities destined for Route 29.

### ***Parkside Avenue and Sullivan Way***

The creation of an at-grade intersection at Parkside Avenue and Route 29 will resolve existing excessive unsafe ramp transitions as well as slow travel speeds in an area where serious injuries and fatalities have occurred. Parkside Avenue will provide full access to Route 29 in contrast to the limited access currently provided. The existing unsafe pedestrian corridor will be made safer with various traffic control devices or traffic calming measures such as pedestrian actuated signals or roundabouts. This will increase access to and encourage use of the parks along the scenic Delaware River as well as result in the use of more non-motorized modes of transportation.

The travel time through the Sullivan Way intersection will be significantly reduced due to the elimination of phases from the timing plan. The queue experienced during the AM Peak Hour along Route 29, sometimes extending to Lee Avenue, would be dissipated with the reallocation of green time to this movement. In addition, during the PM Peak Hour significant queuing occurs along westbound Sullivan Way. Again with the simpler timing of the signal at this intersection, the motorists would be better accommodated.

## Traffic Impacts of the Boulevard Concept

### 9.8 Multimodal Improvements

The Route 29 Freeway in its present condition discourages most forms of multimodal transportation. Pedestrians and cyclists are prohibited on the freeway, and since this is a limited access facility, there are also no transit facilities.

Included in the Boulevard concepts is a linear waterfront park located between the Boulevard and Delaware River. Stacy Park already exists between Route 29 and the Delaware River, north of Calhoun Street, however in its present condition, the park has limited access. Fences separate the park from Route 29 and access to the park can only be accomplished from two pedestrian bridges over Route 29, or from the island neighborhood to the north or Calhoun Street interchange to the south. The proposed Boulevard between Calhoun Street and Sullivan Way will remove the existing fences and pedestrian bridges and provide as many as nine signalized pedestrian crossings into the park. Sidewalks and a parking lane are proposed along the southbound roadway to attract pedestrians to the park and a continuous north/south pathway already exists in the park to further encourage pedestrian activity.

Stacy Park presently terminates north of the Calhoun Street interchange. The proposed Boulevard will be moved to the east creating room for a new waterfront park connecting to Stacy park to the north and Mercer County's Riverfront Park to the south, creating a continuous waterfront park along the Delaware River in Trenton. Eight additional signalized pedestrian crossings will be provided in this section to provide pedestrian access to the riverfront park. Retail development is also planned along the Boulevard and Riverfront Road in this area. This will further encourage pedestrian activity, and travel in an east/west direction as well as a north/south direction along the River.

The new continuous waterfront park will also provide for bicycle use. Several multi-use bike/ped trails converge on Trenton, including: D&R Canal Trail, Delaware River Heritage Trail, East Coast Greenway and the proposed Capital to Coast Trail. The proposed bike paths in the waterfront park will connect these paths together, creating a continuous multi-use trail network in New Jersey.

Providing retail and destination points along the Boulevard will also encourage transit facilities. NJ Transit operations a light rail system commuter rail line and a bus network in the City of Trenton. These transit facilities are in close proximity to the Boulevard thus providing easy access to and from the waterfront. Once the Boulevard is created, NJ Transit will have the opportunity to provide bus service along the boulevard.



## 10.0 PRIVATE DEVELOPMENT RESPONSE

## 10.1 Private Development Response

A private development initiative was moving forward between the City of Trenton and Westrum Development Company in proximity to the Route 29 Boulevard. The site of the project, controlled by the city, is bounded by US Route 1 on the south, existing Route 29 to the west, the Trent House and Justice Center properties to the north, and New Warren Street to the east. The initial plan called for town homes, with internal amenity and parking areas, to be constructed on the site, based on the existing street network. This was problematic since the Route 29 Boulevard concept required that New Warren Street be shifted further away from US Route 1 into the proposed development.

Recognizing that the Route 29 Boulevard would impact the proposed development, the NJDOT facilitated a one day workshop, on April 22, 2005, where representatives from the City of Trenton, Capital City Redevelopment Corporation (CCRC), Westrum Development Company, the New Jersey Office of Smart Growth, and the Municipal Land Use Center met to develop an alternative to the proposed site plan. This meeting presented an opportunity to create a plan that would benefit all involved.

The collaborative plan that resulted follows the network of streets proposed as part of the Route 29 Boulevard concept. The developer was able to alter the original program for the site to include denser development, meeting the expectation of the city and CCRC, along the proposed street network. The new site plan included mid-rise, eight to ten story buildings, served by parking structures adjacent to US Route 1. Buildings located closer to the boulevard and waterfront, were lower in scale, three to four stories, and oriented in a manner that maximized views to the Delaware River. A sight line was preserved from the Trent House to the "Trenton Makes Bridge" through the creation of a park that would serve the occupants of surrounding buildings.

The site plan assumed that the ramps to, and from, US Route 1 and Route 29 would one day be removed. The new site plan was designed to allow portions of the area to be redeveloped while the ramps remain in service. In the future, the remaining buildings would be developed when the ramps are removed. Additionally, the ramps and New Warren Street were owned by the Delaware River Joint Toll Bridge Commission. In order for redevelopment to occur the NJDOT had to facilitate the transfer of the land to the City of Trenton.

New Jersey Route 29 Boulevard Concept Development for Trenton



*The site plan that was developed during the NJDOT workshop by representatives of the NJDOT, Westrum Development Company, The City of Trenton, and the Capital City Redevelopment Corporation.*



### A - Streets:

- Primary pedestrian street
- Pedestrian streetscape amenities requires
- On-street parking (not on this section of Rt. 29)
- 10' sidewalks
- Landscape buffer along street
- Development must front and Orient toward these streets
- No Driveway cuts will be allowed
- Pedestrian articulation and detailing is encouraged on buildings
- Ground floor commercial activity is encourage on these streets

### B - Streets:

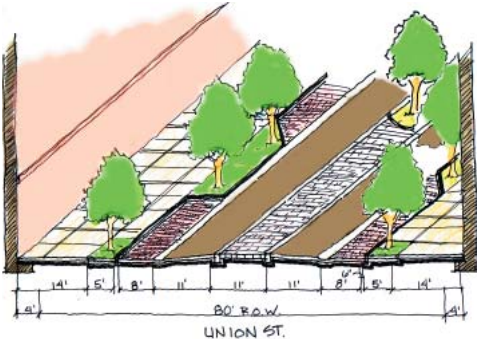
- Secondary pedestrian streets
- Pedestrian streetscape
- 8' sidewalks
- Landscape buffer along street
- Service and parking for private development allowed (not encouraged)
- Driveway cuts are allowed
- Residential ground floor allowed

# Private Development Response

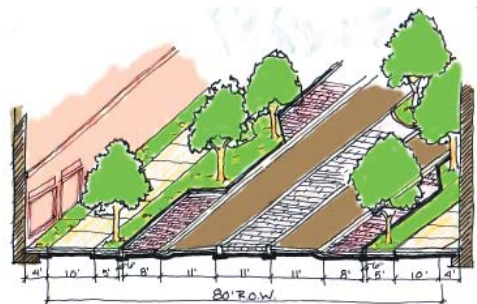
An artist's rendition of the buildout scenario for the site plan developed during the NJDOT facilitated workshop. The rendering illustrates building massing and the relationship to the Justice Complex, US Route 1, and the Delaware River. The buildout scenario includes the future removal of the ramps to and from US Route 1 from Route 29.



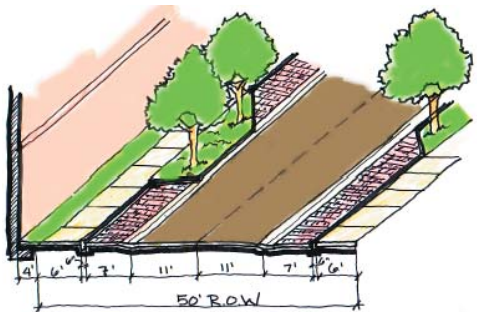
Before



UNION ST.

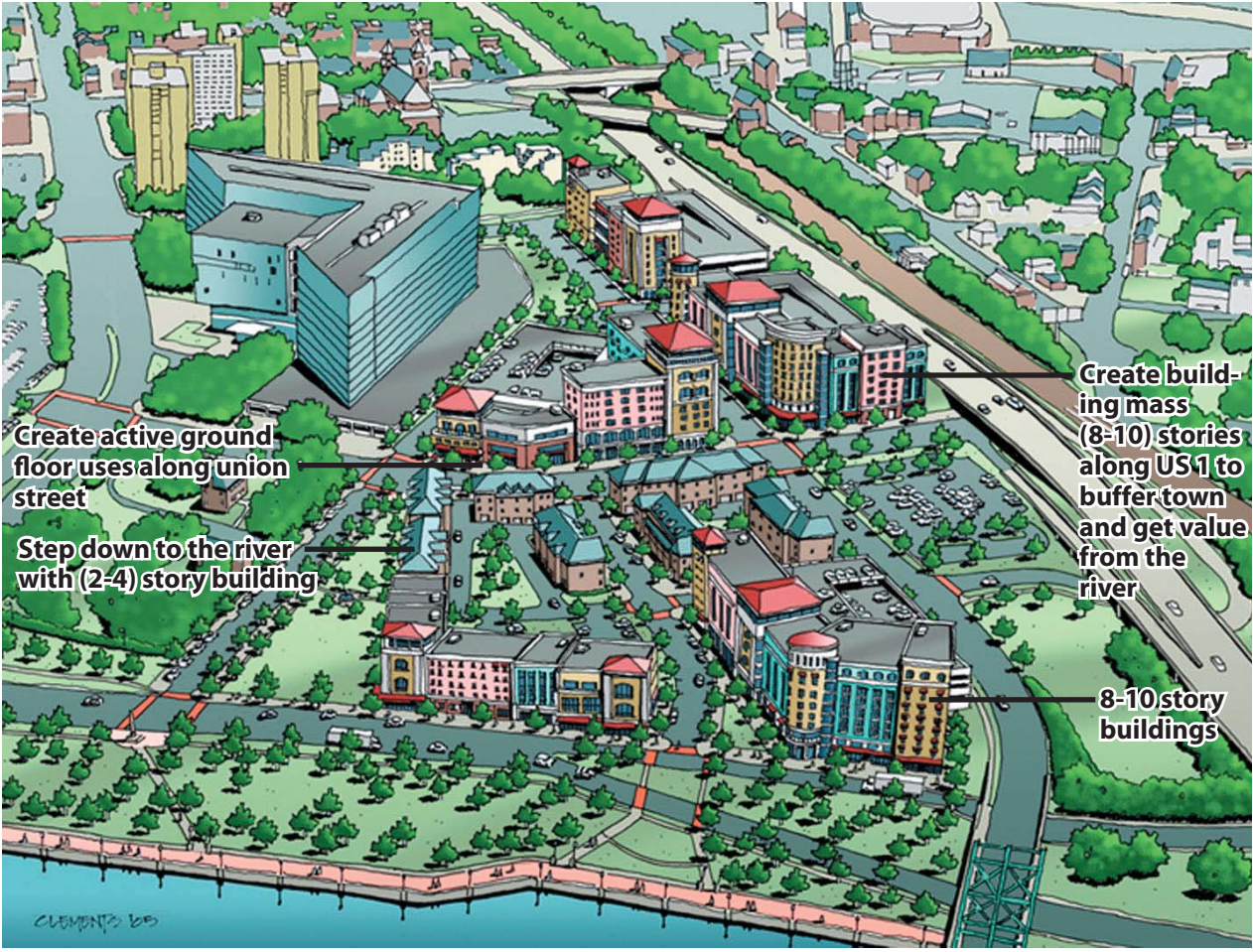


BRIDGE ST.



50' R.O.W.

Proposed sections for streets within the Westrum Development Company.



After



## 11.0 CONCLUSION

## 11.0 Conclusion

The Route 29 Boulevard project will significantly contribute to the City of Trenton for years to come. The NJDOT project team created and followed a process of building a consensus while developing the boulevard concept. The process translated residents' and officials' vision for the future of the city, into the design concept of the boulevard and surrounding area. During the process, the team developed alternatives that would reclaim, and increase access to, the Delaware River waterfront, increase safety, promote good urban form, enhance environmental features, and create an increasingly walkable and economically successful downtown.

The boulevard concept balances mobility needs with access by:

- Improving the overall quality of drive within the corridor
- Influencing motorists to behave appropriately in an urban corridor through design: by eliminating shoulders and high speed ramps, and narrowing the width of pavement; adding vertical curbs, street trees, changes in paving material, sidewalks, on-street parking, creating at-grade intersections; and by adding additional streets and intersections to share the traffic load.
- Promoting other mode choices through the provision of pedestrian crossings, connections to adjacent trail facilities, neighborhood sidewalks, and a safe walking environment.
- Respecting the access needs of existing and future land uses and serving as a catalyst for redevelopment.

The NJDOT team's innovative and collaborative approach to this project is intended to serve as a template for future transportation projects in New Jersey and elsewhere.