South Grand Boulevard GREAT STREETS INITIATIVE
How to use this document

This document captures the process and outcomes of the master-planning effort by Design Workshop Inc. and their subconsultants undertaken from July through July, 2010. The metro planning organization for the bi-state (Missouri and Illinois) area, East-West Gateway Council of Governments, contracted Design Workshop Inc. and team for the South Grand Great Streets Initiative planning and design effort. The objective is to transform South Grand Boulevard, which is already a vibrant district, into a “Great Street” while also enhancing pedestrian safety, maintaining traffic flow and improving the appearance and functionality of the corridor and providing opportunities for continued economic development.

Design Workshop’s DW Legacy Design process® emphasizes a deliberate approach to sustainable design solutions that is comprehensive of four Legacy categories: Environment, Community, Art and Economics. All aspects of the design process and foundational thinking for the project are captured in this document. Issues associated with the project and our client’s Critical Success Factors were defined at the outset. The design team and client defined a project Vision, a problem statement called a Dilemma and a design solution called a Thesis. These steps are intended to build a strong foundational story for the project that aligns the design team and client with the same Principles and Legacy Goals. DW Legacy Design® metrics are employed to ensure that the project is accountable to comprehensive Legacy Goals determined at the beginning of the process.

This document is intended for client use in presenting the Master Plan vision to municipal officials for approvals and in attracting the interest of investors. It will serve as the foundation for subsequent phases of the design process.

Acknowledgements

Consultant Team:
Design Workshop | Landscape Architect and Planning
Nelson Nygaard | Transportation Planning
TND Engineering | Transportation Planning
Horner and Shifrin | Civil Engineering
RCLCO | Market Analysis
Via Partnerships | Art Planning
Hudson and Associates | Public Engagement
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Jim Urban | Street Trees
Kwame Building Group | Cost Estimating
Kowelman Engineering | Surveying
Austin Tao and Associates | Irrigation and Planting Design

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St. Louis City Mayor’s Office
St. Louis City Treasurer Department
St. Louis City Fire Department
St. Louis City Street Department
St. Louis City Board of Public Service
St. Louis City Commissioner for the Disabled
St. Louis Department of Public Safety
St. Louis METRO
South Grand Business District/CID
Tower Grove Park
Missouri School for the Blind
Paraquad
Gallaudet School
Tower Grove Heights Neighborhood
Tower Grove East Neighborhood
Tower Grove South Neighborhood
Metropolitan St. Louis Sewer District
St. Louis Regional Bicycle Federation
Trailnet
Missouri Coalition for the Environment
St. Louis Development Corporation
Project Background

South Grand Boulevard, known as the international community of St. Louis because of its diverse population and wealth of ethnic restaurants, contains unique retail and dining opportunities and serves as a destination for visitors and locals. A nationally recognized historic district, South Grand is a growing commercial district located near Tower Grove Park and the Missouri Botanical Gardens.

In 2009, South Grand Boulevard was selected as one of four Great Streets Initiative pilot projects in the St. Louis region. Since 2006, East-West Gateway Council of Governments (EWG) has been helping communities in the St. Louis region expand the way they think about streets. Local leaders and citizens are encouraged to think beyond the curb to understand how transportation decisions affect the total built environment.

EWG recognizes the importance of streets as community resources and through the St. Louis Great Streets Initiative intends to make them more than just a conduit for cars. Great Streets in St. Louis will emphasize all modes of travel, especially walking. Great Streets will address and reconsider the auto-centric approach that has dominated design over the years in order to transform these streets into great community resources.

Considering how street design choices affect the pedestrian realm and abutting land uses is central to the St. Louis Great Streets Initiative. Connecting communities requires more than just installing a sidewalk along the edge of a busy street. It requires the careful and intentional creation of an environment that suits walking, bicycling and transit. It requires taming traffic in a way that still allows for mobility, but at speeds that are safe and undamaging. Streets traverse through communities and should do so in a way that enhances the community.

Great Streets is a movement to create a new generation of streets that serve people well and make communities more vibrant and sustainable.
Pedestrian crossing distances are too wide to provide for safe crossings.

Sufficient pedestrian-scale lighting is lacking, causing safety issues at night.

Infrastructure (sidewalks, tree wells, brick pavers) is aging, degrading and hazardous.

Street trees do not have sufficient area to grow and remain healthy and are buckling the adjacent paving.

**OPPORTUNITIES**

Opportunity exists to create a consistent street identity for South Grand that represents the scale and character of the area.

Opportunity exists to allow people to walk comfortably and safely.

Opportunity exists to improve safety, both in terms of crime incidents and traffic accidents.

Opportunity exists to improve livability and usability of the street pertaining to noise, the heat-island effect, lighting and walkability.

Opportunity exists to incorporate environmentally sensitive design practices, improve stormwater management and incorporate native plantings.

Opportunity exists to improve the residential housing stock and availability.

Opportunity exists to diversify the retail and office market and capture additional revenues both locally and regionally to improve the economic vitality of the City.

Opportunity exists to increase mobility by improving alternative transportation opportunities, particularly bicycles, by connecting to the greater St. Louis bicycle trail network.

Opportunity exists to improve zoning regulations to provide a vision for the built environment.

Opportunity exists to improve lighting and safety.

Opportunity exists to engage two local user groups: Missouri School for the Blind and Gallaudet School for the Deaf, to identify the latest technologies and best practices in accessibility design.

**Client Critical Success Factors**

The team identified and confirmed the client’s critical success factors, which are the results that absolutely must occur as an outcome of the planning process in order for them to consider the project a success.

- The master plan must be implementable and have political and community shared support.
- The master plan must serve as a model of a “Great Street” for the City of St. Louis, setting new expectations for the relationship between transportation and community.
- The master plan must provide economic and social benefits to the district.
- The project must demonstrate cutting-edge approaches to sustainability and accessibility.
- The master plan must improve the long-term livability and vibrancy of the district.
Client Vision

The South Grand district will serve as a model “Great Street” for the City of St. Louis, as the Master Plan sets new expectations for the relationship between transportation and community. The client has the highest aspirations for improving the safety, walkability and aesthetics of the street, while setting a new standard for local sustainability and accessibility practices. The South Grand district will be recognized for its strong economic opportunities, community amenities and livability.

Project Dilemma

A dilemma is a storytelling device that describes a project’s predicament. It sums up the major challenges that must be reconciled to achieve a Legacy outcome. Beginning with a discussion of the project’s context, it answers the question: “What is standing in the way of a project’s potential for success?” A dilemma renders vivid the complexities of the project and the need for a comprehensive solution.

The South Grand district is becoming a regional destination and a desirable location for businesses and residents as the City repopulates. How can the master plan balance the desires of commuters driving through the corridor, residents and property owners, and business owners?

How do we address the functionality of the street and enhance the vitality of the neighborhood using limited funding to create a plan that is implementable and supported by the community?
Project Thesis

A thesis is an assertion about the project outcome that will be tested and resolved through the team’s design and planning investigations. It is a proposed solution to the central problem or question stated in the dilemma. Collectively articulating the big idea of the project aligns the team to a common goal or story.

Through a collaborative, transparent and educational public-outreach process, the “Great Street” will garner support both politically and financially, resulting in the implementation of Master Plan recommendations.

The Master Plan will build on the many strengths of the street to transform the district from a major thru-street into a destination, attracting both residents and visitors, while providing a safe place to live, work, visit and play.

The South Grand district will be recognized as a local and national precedent for a vital, mixed-use urban district.

Narrative Principles

South Grand is conceived as an extension of the historic landscapes of Compton Heights and Tower Grove Park, utilizing similar materials but interpreted in contemporary forms.
History of the South Grand Corridor

From the turn of the century through the 1920s, South Grand Boulevard from Lafayette Avenue to Utah Street quickly transformed into a cultural, entertainment and business district. Private homes were being converted to offices and small businesses were being built in between homes. Many of these offices included music, singing and dancing studios. In addition, tailors, barbers, dry cleaners, clothing stores, food stores, drug stores, insurance and realty offices, and jewelers lined the street. The area neighborhoods were losing their suburban character and becoming crowded and active.

The area’s population declined in the 1950s, a result of migration trends of escaping to the suburbs and creation of shopping malls on the edge of the City. Late Victorian homes began to age and show signs of wear and tear from overcrowding. Large department stores eliminated many smaller retailers found along South Grand Boulevard. But by the 1970s, the City began to repopulate as young families were starting to look at the City as a viable place to live, due to a renewed interest in old architecture and building materials, a lower cost of housing, and restoration and renovation efforts.

By the 1980s the South Grand area was viewed as convenient, with excellent neighborhood services. Landmarks such as the Botanical Garden, Tower Grove Park, the Compton Hill Water Tower and the neighborhood churches continue to give the area a sense of identity.

Tower Grove Park was a gift to the City from Henry Shaw in 1868 and is now a National Historic Landmark. A Victorian park designed much like parks he had visited in Europe in the mid 1800s, this park contains beautiful buildings, ruins, statuary, ponds, fountains, pavilions, grand entrances made of prominent stone columns and wrought iron detail, and over 340 varieties of trees. The park hosts concerts, festivals and cultural celebrations of all kinds, serving as a regional and national destination for over one million visitors each year.

source: A Grand Heritage - A History of the St. Louis Southside Neighborhoods and Citizens by Nini Harris

Tower Grove Park pavillion

Historic photos of the area (source: Missouri Historical Society)
Site Context

The South Grand district is located near Tower Grove Park and the Missouri Botanical Gardens, approximately three miles south of Highway 40/64 and one mile south of Interstate 44. The roadway serves as a major North-South corridor for the City.

Phase One Final Plan Documents are for improvements within the right-of-way and extend from Arsenal Street to Utah Street. The South Grand Master Plan extends from Magnolia Avenue to Chippewa Street along South Grand Boulevard and includes a study area with boundaries of Arkansas Street to the east and Gustine Avenue to the west.
Prior Studies

CH2M Hill was hired by East-West Gateway in 2008 to complete the first phase of the Great Streets Initiative: to create concept designs for South Grand Boulevard from Arsenal Street to Utah Street. These concept designs were used to inform the current design development and construction phases being carried out by Design Workshop, Inc. and team.

CH2M Hill developed three concepts for the district with each maintaining the existing curb line and right-of-way width of 12 feet, except at the intersections. The three concepts were:

1. 4-Lane Basic Enhancement
2. 4-Lane Enhancement Plus
3. 3-Lane Basic Enhancement

The 4-Lane Basic Enhancement would be the least invasive and the least expensive. The existing roadway and parking configurations remain the same as they are today (prior to pilot implementation on September 8, 2009).

4-Lane Basic Enhancement Key Features:
- Pedestrian – curb bulb-outs at intersections, crosswalks at every block, signal timing adjusted to encourage lower travel speeds and to provide pedestrian intervals
- Parking – existing parking configuration on Grand is maintained
- Infrastructure – reconstruction of sidewalks and tree wells, textured pavement and pavers at key locations, pedestrian scale white lighting, enhanced landscaping

4-Lane Basic Enhancement - Number of lanes and width of lanes would remain the same as they are today.

4-Lane Basic Enhancement Typical Block

South Grand: From Good to Great
St. Louis Great Streets Initiative

4-Lane Basic Enhancement
The 4-Lane Enhancement Plus provides everything that the 4-lane Basic concept provides. In addition, it increases the existing sidewalk space by removing existing trees from the sidewalk and replacing them in the parking lane between parking stalls. The tradeoff of this strategy, however, results in a loss of some parking on South Grand. Additional supply could be developed on side streets. For these reasons this would be the most expensive concept.

4-Lane Enhancement Plus Key Features:
- Pedestrian – curbs bulb-outs at intersections, trees moved off of sidewalk, signal timing adjusted to encourage lower travel speeds and to provide pedestrian intervals
- Parking – parking reduced by moving trees from sidewalk to parking lane between stalls (approximately 50 percent reduction of curbside parking supply on South Grand Boulevard)
- Infrastructure – reconstruction of sidewalks, trees moved to curb lane between parking stalls, textured pavement and pavers at key locations, pedestrian scale white lighting, enhanced landscaping
Prior Studies

The 3-Lane Basic Enhancement is identical to the 4-Lane Basic concept in the way that it treats the parking and sidewalks. The big difference is that it would re-stripe the existing roadway to be a 3-lane roadway: one through-lane in each direction and a center turn lane, with dedicated bicycle lanes on the outside of the travel lanes. Shifting South Grand to a 3-lane configuration would provide better operations for left turning vehicles on Grand, it would reduce the number of lanes for pedestrians to cross, and it would calm traffic more than a 4-lane concept. The tradeoff for these benefits are that the 3-lane may at times create “bottlenecks” at the ends of the corridor where the lane reductions take place, and may reduce the amount of through-traffic capacity on South Grand. The 3-lane would also present more “friction” for vehicles trying to park along Grand.

3-Lane Basic Enhancement Key Features:
• 3-Lane is the Same as the 4-Lane Basic Enhancement; the only difference is that it would be re-striped for 3 lanes plus dedicated bicycle lanes on each side
• Could easily go back to 4 lanes if it was attempted and not liked
DW Legacy Design® Metrics

Legacy Metrics are a discovery-oriented tool to shape a collective point of view about a project’s aspirations. They help to develop more thorough design solutions by setting goals, integrating strategies from all four circles and measuring outcomes. Metrics help clients understand how DW Legacy Design® will positively impact their project.

Metrics lead to a distilled and iterated set of goals that are applied to design solutions and that result in physical outcomes that reflect the comprehensive direction set by the team. Collectively set by a team and client, Legacy goals keep the project and team accountable by incorporating strategies from each of the Legacy circles and by measuring the results after implementation. The setting of Legacy goals is an iterative process that requires research into baselines and benchmarks in order to be realistic about aspirations and outcomes.

Process

To determine the Legacy Metrics most applicable to the South Grand project, the design team initially engaged in a quick facilitated team exercise. Design Workshop’s comprehensive lists of topics under the categories of Environment, Community, Art and Economics were posted on the wall in large font, then circled and annotated by team members to discover areas of opportunity, challenge and overlap.

This initial list was then shared to seek endorsement on which topics were relevant to pursue as goals for the project. The topics were captured in a matrix of goals, strategies and outcomes in order to track progress during the master-planning process. The following pages include matrices for Community, Art, Environment and Economics.

Narrative Principles

Narrative Principles are universal truths that are commonly understood and believed. The articulation of narrative principles in each Legacy Design category is central to a rigorous, comprehensive, discovery-oriented design process. They are assumptions against which a thesis can be tested. By providing insight and perspective, narrative principles help us to shape project stories and to iterate formal design solutions.
1. Environment Principles

- Responsible stormwater management can reduce runoff and erosion and can maintain water quality.
- Reducing heat island effects and noise levels creates a more comfortable pedestrian environment.
- Mixed-use districts and the availability of alternative transportation and local employment opportunities reduce traffic and air pollution.
- Utilizing efficient and/or alternative energy sources, reducing waste and promoting alternative transportation reduces the areas’ energy and carbon footprint.

### Environment Metrics

**Preliminary Goal**

**Baseline**

**Benchmark**

**SMART GOAL**

**Strategies**

<table>
<thead>
<tr>
<th>Environment Metrics</th>
<th>Preliminary Goal</th>
<th>Baseline</th>
<th>Benchmark</th>
<th>SMART GOAL</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Canopy</td>
<td>Increase tree canopy to provide savings with regard to energy, to improve air quality, to intercept stormwater interception and to increase property value and aesthetics.</td>
<td>Existing % canopy cover in Ward 8 is 7.7%; existing % canopy cover in Ward 15 is 8.9%.</td>
<td>Davey Resource Group: American Forests (2002) suggests canopy cover in a business district should be 15% of total land area.</td>
<td>Increase tree canopy to 15%</td>
<td>1) Replace existing street trees with healthy species, 2) Increase the quantity of trees and the size of the canopy</td>
</tr>
<tr>
<td>Planting Design</td>
<td>Use native plant materials to reduce water usage.</td>
<td>Improve the health of street trees</td>
<td>Existing tree pits of 4’x4’ 82% of trees in Ward 8 are in good condition. 88% of trees in Ward 15 are in good condition.</td>
<td>Davey Resource Group</td>
<td>Increase soil volume to 1,000 c.f. to provide healthier street trees</td>
</tr>
<tr>
<td>Heat Island Effect</td>
<td>Protect against and reduce urban heat island</td>
<td>Existing temps: Grass 74.9-90 degrees, Brick 77.5-112.6, Grey Concrete 82.7-112.6, Aggregate Concrete 84.2-110.4, Painted/ Colored Concrete 85.7-116, Asphalt 88.2-122</td>
<td>No net increase of ambient air temperatures post development, 50% paved area within the ROW is porous</td>
<td>Minimize the use of irrigation.</td>
<td>1) Specify native plant materials for street trees, rain gardens and street planting areas. 2) Salvage and reuse good existing subsols 3) Choose tree species with a Relative Performance Index of 1.0 or higher (Davey Resource Group: City of St. Louis Street Tree Resource Analysis)</td>
</tr>
<tr>
<td>Noise Pollution Reduction</td>
<td>Reduce noise levels</td>
<td>Existing noise levels: Bus Traffic- 76-81dB, General Traffic-64-74dB, Stopped Traffic-57dB</td>
<td>60dB - target noise level at posted speed limit of 25 mph</td>
<td>Reduce impacts to 60dB or less</td>
<td>1) Reduce vehicular speed through lane reduction, traffic-calming techniques and increased walkability of sidewalks.</td>
</tr>
<tr>
<td>Light Pollution Reduction</td>
<td>Improve night-sky visibility</td>
<td>Fluctuating light levels from very dark to extremely bright with all non-cut-off fixtures/liminaires</td>
<td>Minimize obstrusive light so that no light escapes above a horizontal plane</td>
<td>Increase alternative transportation ridership.</td>
<td>1) Increase the number of bike racks, 2) Provide shared bike lanes on South Grand to encourage more bicycle riding, 3) Provide shelters at transit stops.</td>
</tr>
<tr>
<td>Non-motorized Alternatives</td>
<td>Maintain the percentage of residents within walking distance to alternative transportation</td>
<td>Metro ridership on South Grand - average of 334 daily boardings</td>
<td>Increase the quantity of trees and the size of the canopy</td>
<td>Increase the total annual benefit of tree canopy on the street.</td>
<td>1) Provide healthy and adequately spaced street trees with ample (1,000 SF min.) planting pits, 2) Encourage green roofs in new development, 3) Provide plantings and rain gardens with plants that provide for the needs of birds, insects, etc. 4) Increase the amount of tree canopy on the street.</td>
</tr>
<tr>
<td>Stormwater Management</td>
<td>Contain and collect stormwater on-site and increase the quality of any runoff</td>
<td>Currently 99 percent impervious</td>
<td>Target: 50% porous pavement within the ROW</td>
<td>Direct stormwater to rain gardens. 2) Utilize porous pavement on 25% of the street cross section, 3) Maximize incorporation of planting areas and rain gardens.</td>
<td></td>
</tr>
<tr>
<td>Landscape Materials</td>
<td>Incorporate locally extracted and manufactured materials</td>
<td>Limestone quarried locally along Mississippi River</td>
<td>LEED®</td>
<td>Incorporate locally quarried limestone. 2) Recycle materials (see waste management) for wall caps, pavers or specialty architectural features.</td>
<td></td>
</tr>
<tr>
<td>Waste Management</td>
<td>Reduce the amount of landfill waste generated by construction</td>
<td>Existing concrete, curbing, asphalt, brick and subbases can be recycled for re-use</td>
<td>LEED®</td>
<td>Recycle 100% of materials removed during construction.</td>
<td></td>
</tr>
<tr>
<td>Support recycling programs</td>
<td></td>
<td></td>
<td></td>
<td>1) In the future, the district should provide recycle inserts for at least 50% of trash cans.</td>
<td></td>
</tr>
<tr>
<td>Wildlife</td>
<td>Provide habitat for urban wildlife</td>
<td>existing % canopy cover in Ward 8 is 7.7%; existing % canopy cover in Ward 15 is 8.9%. Bio Blitz Data</td>
<td>Davey Resource Group: American Forests (2002) suggests canopy cover in a business district should be 15% of total land area.</td>
<td>Increase tree canopy to 15%</td>
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<tr>
<td>Energy and Carbon</td>
<td>Minimize energy use</td>
<td>Total annual benefit of existing honey locust trees = $3,500</td>
<td>Davey Resource Group</td>
<td>Increase the total annual benefit of street trees by at least 30% ($7,034 annually)</td>
<td>1) Provide efficient street lighting, 2) Utilize materials with a long life cycle, 3) Promote solar as an energy source, 4) Promote alternative transportation options, 5) Ensure proper synchronization of traffic lights.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Improve air quality</td>
<td>Current Emissions: HC Emissions: 112 (g), CO Emissions: 3,050 (g), NOx Emissions: 364 (g)</td>
<td>Reduce Emissions: HC Emissions: at least 50% CO Emissions: at least 50% NOx Emissions: at least 50%</td>
<td>Reduce heat island effect, 2) Use low-volatile paints, 2) Run Synchro and Sim Traffic Emissions analysis, 3) Ensure proper synchronization of traffic lights.</td>
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</table>

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**Noise Pollution Reduction**

**Strategies**

- Reduce noise levels
- Existing noise levels: Bus Traffic- 76-81dB, General Traffic-64-74dB, Stopped Traffic-57dB
- 60dB - target noise level at posted speed limit of 25 mph
- Reduce impacts to 60dB or less
- 1) Reduce vehicular speed through lane reduction, traffic-calming techniques and increased walkability of sidewalks.

**Light Pollution Reduction**

**Strategies**

- Improve night-sky visibility
- Fluctuating light levels from very dark to extremely bright with all non-cut-off fixtures/liminaires
- Minimize obstrusive light so that no light escapes above a horizontal plane
- Increase alternative transportation ridership.
- 1) Increase the number of bike racks, 2) Provide shared bike lanes on South Grand to encourage more bicycle riding, 3) Provide shelters at transit stops.

**Non-motorized Alternatives**

**Strategies**

- Maintain the percentage of residents within walking distance to alternative transportation
- Metro ridership on South Grand - average of 334 daily boardings
- Increase the quantity of trees and the size of the canopy
- Increase the total annual benefit of tree canopy on the street.
- 1) Provide healthy and adequately spaced street trees with ample (1,000 SF min.) planting pits, 2) Encourage green roofs in new development, 3) Provide plantings and rain gardens with plants that provide for the needs of birds, insects, etc. 4) Increase the amount of tree canopy on the street.

**Stormwater Management**

**Strategies**

- Contain and collect stormwater on-site and increase the quality of any runoff
- Currently 99 percent impervious
- Target: 50% porous pavement within the ROW
- Direct stormwater to rain gardens. 2) Utilize porous pavement on 25% of the street cross section, 3) Maximize incorporation of planting areas and rain gardens.

**Landscape Materials**

**Strategies**

- Incorporate locally extracted and manufactured materials
- Limestone quarried locally along Mississippi River
- LEED®
- Average distance of materials not to exceed 500 miles
- Incorporate locally quarried limestone. 2) Recycle materials (see waste management) for wall caps, pavers or specialty architectural features.

**Waste Management**

**Strategies**

- Reduce the amount of landfill waste generated by construction
- Existing concrete, curbing, asphalt, brick and subbases can be recycled for re-use
- LEED®
- Recycle 100% of materials removed during construction.

**Support recycling programs**

**Strategies**

- 1) In the future, the district should provide recycle inserts for at least 50% of trash cans.

**Wildlife**

**Strategies**

- Provide habitat for urban wildlife
- existing % canopy cover in Ward 8 is 7.7%; existing % canopy cover in Ward 15 is 8.9%. Bio Blitz Data
- Davey Resource Group: American Forests (2002) suggests canopy cover in a business district should be 15% of total land area.
- Increase tree canopy to 15%
- Increase urban wildlife habitat
- 1) Provide healthy and adequately spaced street trees with ample (1,000 SF min.) planting pits, 2) Encourage green roofs in new development, 3) Provide plantings and rain gardens with plants that provide for the needs of birds, insects, etc. 4) Increase the amount of tree canopy on the street.

**Energy and Carbon**

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- Minimize energy use
- Total annual benefit of existing honey locust trees = $3,500
- Davey Resource Group
- Increase the total annual benefit of street trees by at least 30% ($7,034 annually)
- 1) Provide efficient street lighting, 2) Utilize materials with a long life cycle, 3) Promote solar as an energy source, 4) Promote alternative transportation options, 5) Ensure proper synchronization of traffic lights.

**Air Quality**

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- Improve air quality
- Current Emissions: HC Emissions: 112 (g), CO Emissions: 3,050 (g), NOx Emissions: 364 (g)
- Reduce Emissions: HC Emissions: at least 50% CO Emissions: at least 50% NOx Emissions: at least 50%
- Reduce heat island effect, 2) Use low-volatile paints, 2) Run Synchro and Sim Traffic Emissions analysis, 3) Ensure proper synchronization of traffic lights.
In ranking the most important environmental issues on South Grand Boulevard, the community rated equally the importance of air quality, noise, healthy street trees and vegetation, stormwater management and water quality, temperature and urban heat island effect, and impacts of vehicle use.

**Stormwater**
Currently the project area is 99 percent impervious. The South Grand Master Plan achieves 25 percent of the total area to be porous including pedestrian sidewalks, planting areas and parking lanes. Porous pavers, pervious concrete and rain gardens will increase surface permeability and will store and utilize stormwater on-site. In the future, porous paving in alleys can further assist to reduce runoff in the district.

**Street Trees**
To be healthy, urban street trees need to have acceptable soil volume and root paths, as well as the ability to store water within the surrounding soil. The greatest threat to healthy trees is compaction. Large tree pits (5.5’x15’) provide air, soil volume and nutrients to the trees, while an underdrain system provides the proper drainage. The proper soil mix replicates the tree’s optimum soil horizon. By salvaging the good existing subsoils and supplementing with compost and amendments, we have dramatically cut down on the destructive environmental process of harvesting topsoil while also adding soil reuse to our sustainable design approach.

This strategy combined with the surrounding porous pavement, provides the maximum area for root volume and water storage. The target is 1,000CF - 1500CF rooting area per street tree. The Master Plan anticipates a planter area of 330 cubic feet (CF) per street tree and approximately 826 CF of area adjacent to the planter for rooting area. The existing trees currently have between 60-100 CF per tree of total soil volume and rooting area. Ultimately, healthy street trees decrease the urban heat island effect, improve air quality and decrease flooding. The proposed street trees have a higher annual dollar benefit compared to the existing tree species and will therefore provide additional savings to the City (source: City of St. Louis, Missouri Street Tree Resource Analysis, 2009).

Parking lanes and pedestrian surfaces will be constructed of pervious materials.

**Noise**
The feedback from the public process was that the current noise levels on South Grand Boulevard negatively affect the majority of people’s shopping and dining experience. Current noise levels of normal traffic range from 64-74 decibels, and increase to above 75dB with trucks and buses. As a point of measure, the level at which hearing is damaged is at 90-95 dB. Following implementation of the Master Plan recommendations, the targeted noise level on South Grand Boulevard is 60 dB which will allow for a comfortable shopping and dining experience on South Grand.

![Decibel Levels](https://via.placeholder.com/150)

**Air Quality**
Air quality along the street can be improved. Current and future (based on the proposed 3-lane design) emission rates were calculated. Due to poor signalization timing at traffic signals in the 4-lane configuration, which causes cars to idle at signals, more emissions are produced from vehicles than are produced with the 3-lane configuration and improved signalization timing. The emission rate calculations multiply fuel consumption by carbon monoxide, nitrogen oxides and volatile oxygen compounds and were determined in the SimTraffic program.

**Emission Rates**

<table>
<thead>
<tr>
<th>Emission Type</th>
<th>4-lane</th>
<th>3-lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Speed (mph)</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>HC Emissions (g)</td>
<td>112</td>
<td>35</td>
</tr>
<tr>
<td>CO Emissions (g)</td>
<td>3,050</td>
<td>1,369</td>
</tr>
<tr>
<td>NOx Emissions (g)</td>
<td>364</td>
<td>169</td>
</tr>
</tbody>
</table>
Noise Measurements: Analysis of Noise Levels Before/During the 3-Lane Pilot Test

Average ambient sound levels along the street have risen slightly, probably due to the more constant vehicle flow. The rise of 4 dB is just perceptible to the human ear, and 54 dB is only extremely annoying to about 5 percent of people.

Average peak levels have fallen noticeably, probably due to the lower overall speeds and inability of some drivers to race down the street. The 17 dB drop means the street is only about 1/3 as loud as it was previously. While no one will argue that 80 dB is quiet, it is only extremely annoying to about 15 percent of people according to studies.

It is interesting to note that while the ambient sound levels rose, the street seems quieter. This can be explained by the change in the range between ambient and peak levels. Previously it was 47 dB. For every 10 dB change in sound it seems twice as loud. So the traffic seemed almost four and ½ times as loud. Now it is only 3 and ½ times as loud.

### Average Sound Readings, in decibels

<table>
<thead>
<tr>
<th></th>
<th>Ambient</th>
<th>Peak</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Pilot Test</td>
<td>50 dB</td>
<td>97 dB</td>
<td>47 dB</td>
</tr>
<tr>
<td>During Pilot Test</td>
<td>54 dB</td>
<td>80 dB</td>
<td>36 dB</td>
</tr>
<tr>
<td>Change</td>
<td>+4 dB</td>
<td>-17 dB</td>
<td>11 dB</td>
</tr>
</tbody>
</table>

Environment Metrics

Surface materials play a large role in surface temperatures and thus the surrounding air temperature. An urban heat island is an urban area that is significantly warmer than its surrounding rural areas. Measurements taken on South Grand in early September show in the graphs to the right, demonstrate that the maximum asphalt temperature (122 degrees) was 47 degrees higher than that of the lowest grass temperature (76 degrees).

The graph to the right displays the average temperatures from highest to lowest, showing that colored concrete had the highest average temperature (102 degrees), while grass had the lowest average temperature (82 degrees).

Increased vegetative cover and the use of high-albedo (reflective) surface materials can reduce the impacts of the heat island effect and improve air quality.

Heat Islands

Measurements were taken using a hand-held infrared thermometer at 12" above the surface. All measurements were taken in the sun on the same day with the same ambient temperature.

Heat Island Effect Index

Proposed: 14.4 % Reduction

Environment Metrics

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Heat Island Effect Index

Proposed: 14.4 % Reduction
Benefits of Public Trees (Tree Canopy Volume)

The City of St. Louis, MO Street Tree Resource Analysis completed in March 2009 by Davey Resource Group outlines the benefits of public trees including energy savings (reduces radiant energy absorbed by built surfaces, reduces air temperature), reduces carbon dioxide in the atmosphere, improves overall air quality (absorbs gaseous pollutants, intercepts particulate matter, reduces emissions, releases oxygen), creates wildlife habitat, reduces stormwater runoff and erosion, improves the aesthetics of the street, and increases property values.

The charts to the right illustrate the increased tree canopy of the proposed streetscape design.

Energy Use

The City of St. Louis, MO Street Tree Resource Analysis completed in March 2009 by Davey Resource Group assigns an annual benefit per tree based on tree species with respect to the electricity reduction, air quality improvement, stormwater interception and property value benefit provided by street trees. Based on their research for the entire City, the annual benefits of the existing Honey Locust trees were extracted at about $55, while the proposed Pin Oak and Sycamore trees provide an annual benefit to the City of about $111 and $75 respectively. Therefore the proposed design would increase the total annual benefit to the City as about $7,000 compared to the current benefit of about $4,000.

When looking at the energy savings potential for street trees, the report assigned an average annual energy savings per tree species. The proposed design provides a total of about $800 in annual savings (Pin Oak - $11/ tree, Sycamore $12/tree) compared to the current energy savings of only $328 annually.
Urban Heat Island
Reduce peak temperature in streetscape environment by average of 5-7 degrees through low albedo materials, increasing planted areas and increasing tree canopy coverage.

Pervious Surfaces
Increase opportunity for pervious surfaces from 2% to 50% of ROW by utilizing porous pavement, increasing planting areas and constructing rain gardens.

Streetscape Planting Area
Increase opportunity for streetscape planting areas from 2% to 15% of ROW by narrowing South Grand Boulevard and creating bulbouts for rain gardens.

Air Quality
Reduce vehicle emissions by 50% by calming traffic by 15 mph, reducing stopping times and reducing traffic lanes.
2. Community Principles

- Plans that are supported by the community and its leaders are more likely to be implemented and successful.
- One of the primary indicators of the social health and civic awareness of a community is the evidence of people outside, walking on sidewalks; conversing with neighbors; and spending time on the streets and in the public parks, plazas and civic spaces.
- Design and planning can decrease crime.
- Communities are enhanced by integrating neighboring areas and systems.
- Integrated and diverse uses promote walkability and an attractive streetscape.
- Transportation options support a diversified, local, walkable, convenient community.
- A mix of uses will distribute both pedestrian and automobile traffic throughout the day, increase employment and entertainment opportunities and provide for the functional use and efficiency of the streets and in the public parks, plazas and civic spaces.

### Community Metrics

<table>
<thead>
<tr>
<th>Community Metrics</th>
<th>Preliminary Goal</th>
<th>Baseline</th>
<th>Benchmark</th>
<th>SMART GOAL</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Leaders</td>
<td>Achieve buy-in and support from the Aldermen, Neighborhood groups, CID and other local leaders</td>
<td></td>
<td></td>
<td>Consensus for Phase 1 and Master Plan Recommendations: at least 60% support from public surveys and 100% support from key community leaders</td>
<td>1) Consult all leadership groups in the formation of goals, issues and concerns and continue to engage them throughout a transparent process, 2) Attend neighborhood meetings, 3) Reach out to residents to attend neighborhood meetings and public input meetings, 4) Utilize fliers/handouts, postings, newspapers, News stations, radio and the internet to inform the public, 5) Develop the project design as a direct result of community input</td>
</tr>
<tr>
<td>Community Interaction</td>
<td>Achieve approval/ support from the City of St. Louis</td>
<td></td>
<td>Approval of Phase 1 construction documents</td>
<td></td>
<td>1) Actively engage, consult and collaborate with key City personnel and divisions in the generation of the technical design documents and plans</td>
</tr>
<tr>
<td>Arts, Culture and Entertainment</td>
<td>Design the street as a place that promotes community interaction</td>
<td>Existing quantity of seating (within the project area, not including dining patios) 1 bench</td>
<td>standards set forth for New York City, developed in part by William Whyte’s study of urban spaces.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historic Designation</td>
<td>Maintain and enhance historic designation</td>
<td>Established historic district</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Services</td>
<td>Maintain level of service for emergency vehicles to access the hospital and victims</td>
<td></td>
<td>Response times meet current LOS standards for each emergency service</td>
<td></td>
<td>1) Pilot test the 3-lane option to ensure emergency access is maintained</td>
</tr>
<tr>
<td>Improve pedestrian and driver safety</td>
<td>Current crosswalk timing is set at 4 ft/second to cross South Grand. 85 traffic accidents on South Grand in 2008. 85 accidents annually in the corridor.</td>
<td>Median external cost of a crash (PD, EMS, legal, property damage) is about $44K</td>
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<td>Target crossing speed for visually impaired and elderly is 2.5 ft/second, reduce the number of annual traffic accidents including those involving pedestrians and reduce accident costs</td>
<td>1) Reduce traffic speeds, 2) Increase sidewalk widths, 3) Provide improved lighting, 4) Provide longer crosswalk signals, 5) Provide shorter crosswalk distances, 5) Provide accessible pedestrian signals and technologies for assisting special populations (tactile, audible, visual).</td>
</tr>
<tr>
<td>Reduce crime rates</td>
<td>2008 Tower Grove East Incidents: burglary (214), auto theft (122), robbery (69). 2008 Tower Grove South Incidents: burglary (294), auto theft (233), robbery (100).</td>
<td></td>
<td>Maintain a lower crime rate than the yearly average City average</td>
<td></td>
<td>1) Encourage more people on the street by creating a vibrant mixed-use environment that is used throughout the day, 2) Improve lighting</td>
</tr>
<tr>
<td>Mobility</td>
<td>Improve accessibility</td>
<td>One bus route exists: 70 Grand. 4 northbound stops existing, 4 southbound stops existing. 2004-2009 transit ridership increase of 18%. (Metro 2009 Fiscal Year Annual Report)</td>
<td>Minimum of 20 daily boardings per stop, one bus every quarter mile, and exceeds 2007 boardings/day (Arsenal to Utah average 334 daily boardings)</td>
<td>Meet federal requirements for accessibility along the corridor and at all intersections. Continue to increase transit ridership by 18% every five years (targeting about 500 average daily boardings in 2012).</td>
<td>1) Collaborate with the local schools for the visually and hearing impaired, City commissioner for the disabled and City and MODOT accessibility specialists, 2) Provide tactile crosswalk striping, curb ramps with detectable warnings and signalization, and accessible parking spaces.</td>
</tr>
<tr>
<td>Employment</td>
<td>Improve alternative transportation for pedestrians, bikes and transit</td>
<td>Arsenal and Juriniata bus stops accommodate over 50 boardings a day, which necessitate a bus stop</td>
<td>Provide transit stops within 1/4 to 1/2 mile of surrounding neighborhoods, increase the number of cyclists on the street and patronage of local businesses</td>
<td></td>
<td>1) Increase safety (see above), 2) Reduce traffic congestion, 3) Utilize traffic calming techniques, 4) Maintain access to sheltered transit tops, 5) Provide a shared travel lane on the street for cars and bikes, 6) Provide bike lanes that connect to the Bike St. Louis bicycle trail network, 7) Provide frequent, convenient and accessible bicycle parking</td>
</tr>
</tbody>
</table>

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**SOUTH GRAND GREAT STREETS INITIATIVE | St. Louis, MO**

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22 | DW LEGACY DESIGN METRICS
Community Metrics

In ranking the most important community issues on South Grand Boulevard, the community expressed the most importance on improving neighborhood connectivity and pedestrian friendliness, improving the look of the streetscape, reducing crime and providing bike lanes on South Grand, as seen in the graph to the right.

Reducing speeds on South Grand Boulevard is an effective way to improve safety. Using strategies to reduce speeds to the posted 25 mph speed limit will provide easier access in and out of parallel parking spaces, promote a more friendly condition for bicycle circulation, and provide more time to stop or slow down to avoid conflicts between vehicles and between vehicles and pedestrians/cyclists. Slower speeds do not necessarily result in slower travel times. Improved signalization and traffic light placement can contribute to improved travel times, allowing for better progression and coordination between signals.

Which of these community considerations is most important to the design of South Grand? (select three)

- Improve neighborhood connectivity and pedestrian friendliness
- Improve the look of the streetscape
- Reduce crime
- Provide bike lanes on South Grand
- Increase outdoor dining opportunities
- Reduce speed
- Create a setting for community
- Reduce crash rates
- Increase the sidewalk widths
- Reduce the impacts to residential areas

The 4-lane configuration and signalization causes traffic to idle, resulting in higher noise levels and poor air quality.

Many existing crosswalks, such as the one at Arsenal Street and South Grand Boulevard pictured here, extend large distances and do not allow sufficient time for safe crossing.
Community Metrics

During the public engagement process, high vehicle speed and the ability to cross the street were considered major concerns. By converting to 3-lanes, adding bulb-outs at corners, adding traffic signals and crosswalks at all the intersections, and coordinating traffic flow, South Grand Boulevard is predicted to become a safer street. In fact, road diets such as this have been shown to reduce crashes by 47 percent. As such, the target crash total following implementation of the Master Plan is 50 or less annually.

Taking the 80 crashes per annum along this stretch of South Grand and multiplying by 47 percent yields 38 fewer crashes. Using the costs described in the box at the right, this will yield a savings of between $1.7 and $12 million per year. Over a 25-year period, the savings will be between $41.4 and $300.2 million, not counting for inflation.


Accident Costs

There have been an average of 80 traffic crashes (collision, accident) over the past five years (2004-2008) on South Grand Boulevard from Arsenal to Utah Streets.

According to the National Highway Traffic Safety Administration, the median external cost of a crash is about $44,000. This includes costs typically absorbed by local governments (police department, EMS services, property damage). The external and internal cost is about $159,000. This includes market productivity and household costs. The median cost is about $319,000. This estimate includes quantified economic impacts into perspective with the emotional impact that affects the lives of crash victims and their families.

In sum, the collisions along this section of South Grand cost between $3,500,000 and $25,500,000 dollars per year.

Traffic Accident Rates

Return on Public Investment (annual accidents savings + sales tax growth)

NPV $2,692,185.44
IRR 23%

Estimated Five-year Savings

with Implemented Master Plan

Accident Costs

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In sum, the collisions along this section of South Grand cost between $3,500,000 and $25,500,000 dollars per year.
**Seating Quantity**
The proposed design provides for more outdoor dining than currently exists. Although there are only 754 square feet of outdoor dining currently, the wider sidewalks and improved streetscape design will encourage additional seating area to be utilized. The amount of public seating accounts for the proposed benches as well as the curb seating along the tree planter areas. As a benchmark to measure the design against, the team utilized standards set forth for New York City, developed in part by William Whyte’s study of urban spaces. This study recommends the following in which the proposed design achieves:

- one linear foot of seating per 21 feet of street frontage
- receptacles within 50 feet of seating
- 4 bike racks per every 10,000 square feet of plaza
- one trash can per 2,000 square feet of plaza.

These calculations assume the entire sidewalk area to be a “plaza” space.

**Parking Spaces**
The inventory of on-streets spaces surveyed for this study includes spaces along South Grand from Utah to Arsenal. The proposed design will reduce parking spaces by two due to the provision of designated bus stops. The proposed CID parking lot behind Commerce Bank will provide an additional 202 parking spaces, and the master plan provides an additional 6 parking spaces once the recommended curb-cuts are closed and alley access is closed. See transportation chapter for further analysis and recommendations.

**Outdoor Dining Area**
Making the assumption that transit ridership will continue to increase as it has in the past five years, the proposed transit stops will support an increase of 18% by 2012.

**Bus Ridership**
Making the assumption that transit ridership will continue to increase as it has in the past five years, the proposed transit stops will support an increase of 18% by 2012.

**Crime Incidents**
Reducing crime incidents will also improve safety and livability on the street. Burglary and auto theft are major issues within Tower Grove East and Tower Grove South Neighborhoods. During the public engagement process many residents expressed concern for their safety.

Improving lighting, providing a diversified mix of uses, creating active spaces, creating components or programs that encourage people to be on the street, and creating defensible space are a few ways in which urban design can reduce crime. One additional way to reduce crime is by incorporating security cameras into urban design elements, such as at traffic signals.

Because the pilot test does not incorporate these strategies to reduce crime, it is not surprising that during the time of the pilot test, crime incidents in the month of September 2009 remained consistent and comparable to incidents recorded the previous year. Crime incidents will likely be reduced following implementation of the master plan recommendations.
Community Metrics

Light levels on South Grand Boulevard were measured with a hand-held light meter and compared to levels measured on Delmar Loop and Washington Ave. Overall, South Grand Boulevard appears to have inconsistent lighting levels throughout. The target light level is two foot candles at intersections and 1 f.c. along the street. Under-lit intersections along South Grand Boulevard include McDonald Avenue, the northern side of Utah Street, the northern side of Humphrey Street, Wyoming Street, Connecticut Street, the southern side of Juniata Street, and Hartford Street. Between Connecticut Street and Hartford Street, South Grand Boulevard is poorly lit with only one street corner with appropriate light levels (2.4) and the majority of the area being below one foot candle measurement all the way down to 0.3 foot candles.

Over-lit areas include the lighting of the parking of Holleywood Video at Hartford Street east of South Grand Boulevard (measuring 7.55), the intersection of Humphrey Street and South Grand Boulevard by the gas station (3.7), and in front of Sameem Afghan Restaurant (3.66) on South Grand Boulevard.

The light exhibit on the following page illustrate that overall, the Delmar Loop appears to achieve relatively appropriate lighting levels from Leland Avenue to Rosedale Avenue, with a few exceptions. The sidewalks between Westgate Avenue and Eastgate Avenue have consistent and appropriate lighting. The gas station at the intersection of North Skinker Boulevard and Delmar Boulevard is extremely over-lit (10.06) as is the intersection of Westgate Avenue and Delmar Boulevard (5.5). The eastern corner of North Skinker Boulevard is under-lit (0.18 and 0.65).

Overall, Washington Avenue between North 14th Street and North 10th Street appears to have inconsistent lighting, mostly with over-lit areas (up to 7.76 foot candles). The intersection of North 14th Street and Washington Avenue is under-lit (0.17- 0.83). A quarter block west of North 13th Street is one area that is over-lit as is the intersection of North Tucker Boulevard and Washington Avenue.

The new lighting on South Grand will achieve two foot candles at intersections and one foot candle along the street. The fixtures will be the first in the City to be...
### 3. Economics Principles

- **Understanding current market conditions will guide the economic success of the project.**
- **A diverse mixed-use plan will be more sustainable in the marketplace.**
- **A broad range of housing product types will promote higher absorption rates and attract and retain a vibrant and diverse community.**
- **Affordability across different spectrums of population and income levels will create diversity in the community.**
- **Leveraging existing assets will provide greater overall returns.**
- **Mixed-use retail districts that are authentic and vital incubate “third places,” which are an important part of community life between home and work.**
- **24-Hour communities create neighborhood stability through better retail sales, strong investment in homes and neighborhood pride.**
- **Foundation elements, such as Community Improvement Districts can serve a vital role in the success of a retail district.**

<table>
<thead>
<tr>
<th>Economic Metrics</th>
<th>Preliminary Goal</th>
<th>Baseline</th>
<th>Benchmark</th>
<th>SMART GOAL</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supply and Demand - Rental</strong></td>
<td>Attract more young renters to strengthen retail. Encourage the purchase of underutilized housing and incentivize buyers to reinvest and offer as rental housing.</td>
<td>Only 12% renters compared to 49 percent City-wide, 42% of rental stock is vacant</td>
<td>Capture 5-7% of market</td>
<td>1) Encourage the rehab and conversion of existing rental, 2) Encourage new construction, 3) Create opportunities for rental of office space</td>
<td></td>
</tr>
<tr>
<td><strong>Supply and Demand - Retail</strong></td>
<td>Bolster existing retail while appealing to new operators. Provide connective tissue to create a more coherent district and strengthen the brand.</td>
<td>$200M annual revenues, $100M taxable revenues, South Grand is a net dollar importer</td>
<td>Recapture $30M in revenues, Increase revenues 28.5% over 10-year period (to $219M)</td>
<td>1) Focus on Generation Y to drive the restaurant and entertainment venues, 2) Fill the ‘missing teeth’ in the built fabric, 3) Fill empty store fronts, 4) Diversify the retail base</td>
<td></td>
</tr>
<tr>
<td><strong>Supply and Demand - Residential</strong></td>
<td>Increase entrepreneurial investment in the corridor</td>
<td>400 sales/year = 6 percent of City</td>
<td>Encourage entrepreneurial investment community to purchase and reposition vacant and most dilapidated housing and resell at affordable prices, Market capture of $14K to $37K</td>
<td>1) Provide entry-level pricing, and all price-points, 2) Incentivize re-positioning of vacant stock east of South Grand</td>
<td></td>
</tr>
<tr>
<td><strong>Supply and Demand - Office</strong></td>
<td>Take advantage of South Grand’s niche markets</td>
<td>No empty storefronts north of Utah St.</td>
<td></td>
<td>1) Encourage locally-serving uses, 2) Market the area’s brand and quality of life</td>
<td></td>
</tr>
<tr>
<td><strong>Public Sector Incentives</strong></td>
<td>Capture additional funding for construction/implementation</td>
<td></td>
<td></td>
<td>1) Research alternative sources of funding (local, national, ARRA, FHWA, Local Public Grants)</td>
<td></td>
</tr>
<tr>
<td><strong>Private Sector Grants/Philanthropy</strong></td>
<td>Capture additional funding for construction/implementation</td>
<td>40% increase in CID revenues by 2020</td>
<td></td>
<td>1) Research alternative sources of funding (local, national, foundations), 2) Execute strategic planning for the CID as recommended by RCLCO</td>
<td></td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td>Encourage new jobs in the community</td>
<td></td>
<td>Increased pedestrian counts at all hours, especially daytime</td>
<td>(see above retail strategies)</td>
<td></td>
</tr>
</tbody>
</table>
Economics Metrics

Mixed-use neighborhoods create greater long term value compared to traditional suburbs as shown in the graphs to the right.

Mixed-use, walkable housing is also more valuable, demonstrating a demand for walkability. Over time, there will be a demographic and preference shift resulting in a much higher demand for density. The proximity of housing to the South Grand district is already generating value today.

However, high densities alone are not enough to create a successful 24-hour community. The availability of jobs and housing will play a critical role. Economic consultants RCLCO compared South Grand to comparable places in St. Louis (Washington Avenue, The Loop, The Grove, Soulard, Lafayette Square, Downtown Clayton and the Central West End) as shown in the table provided. The South Grand district has the lowest concentration of daytime employment. There is no adjacent symbiotic anchor to drive daytime traffic to businesses and restaurants.

The South Grand district does have strong household densities, which is a good starting point for neighborhood retail and additional office space to support additional employment opportunities. However South Grand has a high vacancy rate, particularly in for-rent housing when compared to similar areas in St. Louis. There are many owner-occupied households, but lower incomes than these same comparable places.

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Households in St. Louis have an increased flexibility to work at home, however South Grand has a high vacancy rate, particularly in for-rent housing when compared to similar areas in St. Louis. There are many owner-occupied households, but lower incomes than these same comparable places.

Mixed-use neighborhoods create greater long-term value than traditional suburbs. The availability of jobs and housing will play a critical role in creating a successful 24-hour community. Economic consultants RCLCO compared South Grand to comparable places in St. Louis (Washington Avenue, The Loop, The Grove, Soulard, Lafayette Square, Downtown Clayton and the Central West End) as shown in the table provided. The South Grand district has the lowest concentration of daytime employment. There is no adjacent symbiotic anchor to drive daytime traffic to businesses and restaurants.

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The South Grand district does have strong household densities, which is a good starting point for neighborhood retail and additional office space to support additional employment opportunities. However South Grand has a high vacancy rate, particularly in for-rent housing when compared to similar areas in St. Louis. There are many owner-occupied households, but lower incomes than these same comparable places.

Potential Retail Expansion Opportunities on South Grand 2009-2019

Jobs Per Acre in Comparable St. Louis Districts

Sales Volumes per Household in Comparable St. Louis Districts

Household Earnings in Comparable St. Louis Districts

Price Per Square Foot: Mixed-use, walkable housing creates greater long-term value than traditional suburbs.

Price per Square Foot

Jobs per Acre

in selected walkable areas

Housing Ownership in Comparable St. Louis Districts
Economics Metrics

The study area on South Grand Boulevard is zoned Area Commercial. The buildings are generally two or three stories. The residential area surrounding the study area is zoned Two Family Dwelling District and with height restrictions of 2.5 stories or 35'. The building heights on South Grand Boulevard may exceed 100' in height provided they meet the required setbacks.

When asked for direction on future building height recommendations, half of the public input recommended that any future building on South Grand Boulevard should be eight stories or 100 feet as allowed by current zoning. Others (just under 50 percent) felt that future buildings should be three stories or 45 feet. Taller buildings would provide the opportunity for either increased housing density or office to support the retail below.

Uses within these zoning districts also have the potential to change the character of the area.

Existing Zoning - Allowed Uses

Two Family Dwelling District

This district allows/permits any use permitted in the 'A' Single-Family Dwelling District; and:

- Two-family dwellings;
- Semi-detached, two-family dwellings or multiple-family dwellings for not more than four families, which comply with the area and parking regulations of the "C" Multiple-Family Dwelling District, where 40 percent or more of the frontage of a street is occupied by semi-detached two-family or multiple family dwellings;
- Conversion town houses;
- Accessory structures and uses customarily incidental to any of the above uses;
- Temporary buildings for use incident to construction work, which buildings shall be removed upon the completion or abandonment of the construction.

Area Commercial

- This district allows/permits any use permitted in the F neighborhood commercial district;
- Bars and taverns, Dyeing and cleaning works, Laundries, Livery stables and riding academies, Milk distributing and bottling plants, Package liquor stores, Printing shops;
- Restaurants other than carry-out restaurants that operate as described in Section 26.40.026B provided that carry-out restaurants that meet the site requirements specified in Section 20.40.026B shall be permitted;
- Telephone, outdoor pay, if the proposed telephone is not located on a lot that is located contiguous with or directly across a street, alley, public or private easement from a dwelling district;
- Tinsmith or sheet metal shops;
- Wholesale business;

- Accessory structures and uses customarily incidental to any of the above uses;
- Temporary buildings for use incident to construction work, which buildings shall be removed upon the completion or abandonment of the construction;
- Any permitted use exceeding seven thousand (7,000) square feet provided it is not within a commercial structure to be erected, enlarged, structurally altered or moved.
4. Art Principles

- The consideration of appropriate scale and relationship between building and landscape is paramount.
- Beautifying a retail mixed-use district through streetscape enhancements increases dwell time and repeat visits, leading to increased revenues.
- Public art installations and district-wide events create community and build identity.
- Contributions by artists to the built environment will forge authentic city and sense of place.
- Rigorous detailing and material selection strengthen the identity and longevity of places.
- An integrated art program engages local artists and makes art an active component of the streetscape.

<table>
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<tr>
<td><strong>Identity/Character</strong></td>
<td>Ensure the design identifies with the community, the people and the history of the area. The art should relate or contextualize history in a contemporary interpretation.</td>
<td>Currently, 22% of participants feel the visual appearance of South Grand is good/very good</td>
<td>Following the proposed design, 81% of participants feel the visual appearance of South Grand will be good/very good</td>
<td>Increase perceived visual appearance by 50%</td>
<td>1) Coordinate the design, specified materials and site elements so they are contextually and historically correct</td>
</tr>
<tr>
<td><strong>Seasonality</strong></td>
<td>Ensure the design is aesthetically pleasing in all seasons</td>
<td></td>
<td></td>
<td></td>
<td>1) Provide durable and long-lasting elements that are suitable for the St. Louis climate, 2) Encourage temporary/rotating art that correlates with the St. Louis area seasons</td>
</tr>
<tr>
<td><strong>Functional Aesthetics</strong></td>
<td>Balance art and function</td>
<td></td>
<td></td>
<td>80% of public input feels the proposed design is good/very good.</td>
<td>1) Integrate art into the designed elements of the streetscape 2) Promote a 1% allocation of the construction budget toward the incorporation of art</td>
</tr>
<tr>
<td><strong>Collaboration with Artists</strong></td>
<td>Employ local artists to participate and contribute to the design</td>
<td></td>
<td></td>
<td>Commission an artist for street installation(s).</td>
<td>1) Engage a local artist to create an integrated solution for the streetscape 2) Encourage the CID to make art an active component of the district</td>
</tr>
<tr>
<td><strong>Public Art</strong></td>
<td>Utilize public art to contribute to the character and identity of South Grand</td>
<td></td>
<td></td>
<td>Dedicate 1% of the construction budget to public art</td>
<td>1) Ensure all construction budgets have budget established for the incorporation of art 2) Identify local sources of funding for establishment of a public art program</td>
</tr>
</tbody>
</table>

Art Metrics

Art is already a strong component of the South Grand streetscape. To further strengthen the vitality and identity of the South Grand district, the master plan budget recommends a one percent allocation of the budget for the arts in every phase.

The public outreach process strongly supported the integration of temporary, rotating and permanent installations, as well as collaboration and partnerships with local artists and art organizations. There was strong support for integrating art into the streetscape design (see also Street Furniture and Materials).

### How would you rate the appearance of South Grand today? (select one)
Keypad polling, 91 responses

<table>
<thead>
<tr>
<th>Rating</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very poor</td>
<td>4%</td>
</tr>
<tr>
<td>Poor</td>
<td>40%</td>
</tr>
<tr>
<td>Neutral</td>
<td>33%</td>
</tr>
<tr>
<td>Good</td>
<td>21%</td>
</tr>
<tr>
<td>Very good</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

### How do you rate the appearance of South Grand based on the proposed design? (select one)
Keypad polling, 88 responses

<table>
<thead>
<tr>
<th>Rating</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very poor</td>
<td>0%</td>
</tr>
<tr>
<td>Poor</td>
<td>2%</td>
</tr>
<tr>
<td>Neutral</td>
<td>16%</td>
</tr>
<tr>
<td>Good</td>
<td>32%</td>
</tr>
<tr>
<td>Very good</td>
<td>49%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Would you be in favor of a 1% allocation of the budget for arts?

- Yes: 74%
- No: 16%
- I don’t have an opinion, I would like to learn more: 10%
The design team kicked off the process by conducting Stakeholder Meetings involving interest group meetings, on-line surveying, project drawings required to complete the first phase of the project. Such activities included one-on-one briefings, special interest group meetings or site tours. Throughout the process, project history and overview; current conditions, economic opportunities, arts, preliminary concepts, cost and construction phasing. In addition, the public had an opportunity to participate in a survey polling and on-line survey exercise. The on-line survey showed that seventy-three individuals participated in the exercise. Information received aided the design team in modifying the preliminary concepts based on feedback and comments. Participants were also asked to submit general comments/issues that they wanted to express to the project team. Some of the general comments included:

- Appreciated the extra efforts given to notify the public about the meeting
- Appreciate the polling session; felt they were very insightful
- Information presented was very thorough and understandable
- Project is very much needed to brand the area and make it attractive.

The second meeting was hosted on Thursday, September 10 at St. Pius V Catholic Church. There were three sessions, 8am-10 am, 11am - 1pm and 7pm -9pm with one-hundred and forty (140) participants. All three meetings exhibited information that highlighted the project history, overview process, current conditions, economic opportunities, arts, preliminary concepts, cost and construction phasing. In addition, the public had an opportunity to participate in a survey polling and on-line survey exercise. The on-line survey showed that seventy-three individuals participated in the exercise. Information received aided the design team in modifying the preliminary concepts based on feedback and comments. Participants were also asked to submit general comments/issues that they wanted to express to the project team. Some of the general comments included:

- Appreciated the extra efforts given to notify the public about the meeting
- Appreciate the polling session; felt they were very insightful
- Information presented was very thorough and understandable
- Project is very much needed to brand the area and make it attractive.

The third and final meeting hosted on Tuesday, October 6, 2009 at Center for Divine Love encompassed two sessions, 11:00am – 1:00pm and 7:00pm – 9:00pm with a total of one-hundred and nineteen (119) participants. Both sessions began promptly with a short presentation highlighting the outcomes from the previously held public informational open houses that included the results from the polling sessions and on-line surveys. In addition, the public was presented with the Proposed Master Plan that they later provided their feedback on via keypad polling and an on-line survey. Participants were also asked to complete a public comment form upon concluding the public informational open house meeting expressing their comments/suggestions to the project team; below are a few of their sentiments:

- There was concern regarding bus stops and the ability to fully clear the driving lanes to avoid backing into traffic;
- Bump-outs go out too far into the driving lanes making it difficult/dangerous for vehicles to make turns off of side streets onto St. Grand and makes cycling dangerous for bicyclists when having to drive.

Participation in the South Grand Great Streets Initiative represented a diverse cross-section of the surrounding neighborhoods, as well as a diversity of ways that people utilize the area: most notably for dining and shopping.
merge with vehicular traffic to avoid bump-outs;
• Not enough parallel parking available to support the 3-lane configuration;
• Concern with vehicular traffic being forced to use side streets to avoid staying on S. Grand;
• Presentation given on project information was excellent;
• Appreciate the opportunity to be heard and to give suggestions; and
• Impressed with the 30-day pilot project because of the effect of slowing the speed of traffic on South Grand Boulevard.

Site Tour
A site tour was coordinated to allow those with special needs an opportunity to experience the existing conditions along South Grand Boulevard and to provide feedback to the design team as to what services/conditions aide them in their efforts to navigate or travel along the corridor. The meeting was attended by special interest groups that represent the disabled community and those who provide a service for that community.

Pilot Project Hotline
The public also had an opportunity to comment on the 30-day pilot project. On September 10, 2009 East West Gateway, City of St. Louis and the design team implemented a 30-day pilot project to test the viability of the 3-lane proposed changes under real traffic conditions before committing to a final preferred alternative for the corridor. To date the hotline has received over five-hundred (500) calls recorded.

Project Website
Another tool the public had an opportunity to be engaged is through the project website hosted by East West Gateway Council of Government (EWG). The website is designed to highlight the project status and next steps; various documents related to the project such as traffic data, utility conditions, aesthetics conditions; and exhibits from the previous public meetings. It was also an avenue in which the public could participate in the various on-line survey exercises presented during earlier public informational meetings.

Meeting Announcements
The team used several venues and techniques to announce opportunities for the public to be engaged in the design process. Such efforts included:
• Press Releases (local television and radio mediums)
• Door Hangers
• Post Card Mailers
• Window Posters
• Flyers
• Yard Signs
• Radio Announcements
• Website Announcements
• Web Links (Neighborhood Associations, Alderman Blog/Website, South Grand Business CID)

Evaluation
• 67 percent of participants felt they had a chance to provide meaningful input to the process.
• 89 percent of participants felt the planning process has been “transparent.”
• 81 percent of participants felt the process focused on the most important issues for South Grand.
• 88 percent of participants felt that using key-pad polling as a way to gather input was either effective or highly effective.
MASTER PLAN
ECONOMIC ANALYSIS AND STRATEGY
Economic Planning

Business owners, property owners and community residents largely share a vision of a more pedestrian-friendly environment with a first-rate retail and restaurant experience. Great walkable spaces have good urban design; a variety of local retail, strong daytime employment; a strong resident base; a cohesive brand, access and infrastructure; and a strong symbolic anchor.

Advantages of Great Walkable Places

24-Hour communities foster personal interaction and provide community gathering spaces.

A strong investment in homes in walkable places is created through increased sales volumes, stronger commercial and retail rents, stable residential rents, stronger sales prices and premiums and greater resiliency during downturns as properties retain their value.

Neighborhood pride is achieved through community ownership and the feeling of being part of something unique and special. Walkable places with neighborhood pride have strong community organizations and institutions that create a sense of place. Public spaces and regular community events can foster this sense of place.

Better Retail Sales in walkable places is the result of unique and authentic character, opportunities for outdoor dining, variety, diversity and local flavor, and the experience economy. These are unique environments that cannot be experienced in a mall. Walkable places can cultivate demand and have a very powerful ‘brand.’

Authentic neighborhoods can grow and change without losing diversity of unique character, but the market alone may not be enough. The South Grand district needs strategic direction and design improvements. Design should consider the number of travel lanes; the speed of traffic; parking availability; branding and theming of the pedestrian experience through streetscape, signage and building facades. Strategic direction will consider the economic issues, opportunities and strengths, as well as the role of the Community Improvement District (CID). The CID has the pieces in place to maximize the return on the current public investment and accelerate the investment climate on South Grand Boulevard.

Economic Development Strengths

• A relatively high residential density exists.
• A quality housing stock exists.
• A retail environment already exists.
• The commercial strip has a high degree of local and regional visibility.

Economic Development Issues

• There is a low daytime population (few employees within walking distance).
• There are fewer renters than in many comparable vibrant mixed-use urban districts.
• A symbiotic anchor does not exist (or at least, the potential symbiotic anchor is far away).
• The district lacks the “connective tissue” that is characteristic of great walkable retail environments.

Economic Development Opportunities

Aspiration: The South Grand district aspires to be a unique walkable place with a vibrant commercial environment similar to the Central West End and The Loop. How can we get there from here?

Situation: South Grand Boulevard has a great restaurant base but the area remains a “point and shoot” environment rather than a place people want to linger and support other retail options. A loose brand exists but the area lacks a coherent vision among consumers.

Opportunity: Adding the right connective tissue (both through infrastructure enhancement and retail strategy) will help create a more coherent district and a destination. A loose brand exists now but needs to be refined and strengthened.

South Grand Action Agenda

The diagram provided illustrates the most common and most successful trajectory of the development of great, walkable, mixed-use places that sustain the test of time. Key elements to remember:

• Foundation elements, such as catalytic uses and the creation of a CID are critical.
• Rental housing is critical to making the retail thrive in the long-term.
• The gestation period between foundations and long-term success may be twenty years or more.
• The South Grand district has already begun the work in bringing on-line urban entertainment (restaurants) and some retail.
• Office users will emerge when the founders of the company want to live in the neighborhood
Residential Market Potential

For-Rent Residential

The bulk of projected job growth in the area creates jobs with wages of $40,000 or less. This suggests a strong demand for rental housing through 2013 as shown in the graph provided, particularly for Generation Y which makes up 25 percent of the St. Louis Metropolitan Statistical Area. This generation will rent for several years and South Grand will need to have a product to accommodate them. Only 12 percent of South Grand’s housing stock is positioned as rental which is low compared to the City-wide renter propensity of 49 percent. Forty-two percent of the existing rental stock in the South Grand district is vacant. Opportunity exists to reposition these units to expand the capture of new renters. The rental stock can be increased and enhanced through public-private initiatives to catalyze investment, especially east of Grand Avenue. Occupied housing is better for retailers, safety, public perception, neighborhood aesthetics, tax base and neighborhood stability.

<table>
<thead>
<tr>
<th>Generation Y - Demand for Rental Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of 22 year-olds</td>
</tr>
<tr>
<td>3,200,000</td>
</tr>
<tr>
<td>4,000,000</td>
</tr>
<tr>
<td>3,800,000</td>
</tr>
<tr>
<td>3,600,000</td>
</tr>
<tr>
<td>3,400,000</td>
</tr>
<tr>
<td>3,200,000</td>
</tr>
<tr>
<td>Year</td>
</tr>
</tbody>
</table>

Largest group begins graduating in 2009 – Greatest demand for rental housing in this period

If this group rents for at least three years, there will be more first-time homeowners in the market in 2013-2018 than ever before

For-Sale Residential

Currently, the South Grand district provides sales at every price point including entry-level pricing. There is however, opportunities for increasing the strength of the for-sale market.

Today’s for-sale opportunity is confined to the following areas:

- Rehabbed single-family or multi-plex beginning in the $150k to $200k range east of Grand, and starting in the $220k range closer to Grand itself.
- “Fixer-upper” opportunity in the sub $150k (and often sub$100k) range, with rehab costs of $50k and up plus time/sweat equity.
- Limited opportunities for turnkey purchase/live below $150k – but that’s where the majority of the demand is.

Opportunity exists to encourage new construction (such as Compton Gate) and multifamily conversions. A balanced for-sale solution will provide locations for the next entrepreneur to live/invest in the neighborhood, further the trajectory towards stability (especially east of Grand) and increase ownership in South Grand.

Residential Market Fundamentals

St. Louis City Demand Distribution vs. South Grand Sales Distribution – 2008/2009
Retail Market Potential

Opportunity exists for retail and restaurants to capture more of area expenditures as shown in the table to the right. There is also opportunity for new stores and restaurants to enter the marketplace, which will benefit existing businesses. The ‘missing teeth’ along South Grand Boulevard are a barrier to success. There is a strong opportunity to use existing building footprints to make South Grand a great location for restaurant/food retailers that also want to wholesale their specialty foods, create a culinary cluster or provide niches in kitchen appliances, home and garden, and specialty and convenience.

Generations X and Y are the key to urban retail activation as they drive restaurant and entertainment revenues. These generations dine out 28 times per month on average and spend a higher proportion of their disposable income on urban retail than family households.

South Grand will remain a largely local-serving retail destination and not a natural location for national tenants to locate (significant space inventory on Wash Ave. will be first choice for most national retailers looking for a new St. Louis location).

South Grand currently captures $200 Million in annual revenues and is currently a net dollar importer. South Grand has the ability to recapture $30 Million in revenues, increasing revenues by 28.5 percent over a 10-year period. With consideration of increased sales tax revenues and savings in annual accident costs, the City has the potential to see a return on public investment as demonstrated in the graph to the right.

Catalytic Uses

Catalytic uses play a critical role as a foundation for growth in a commercial area. An example of this role are the entertainment-based uses in The Loop. These uses helped to define the district in the minds of consumers which created a regional draw that improved the position of all retail, restaurant and entertainment operators. Major changes such as this do not typically occur organically; a catalytic use will assist in this vision. The Community Improvement District can further this vision by working with property owners with vacant space to establish temporary art galleries, live music venues, etc. The CID can leverage the existing arts community in the neighborhood in a variety of ways to help brand the district. The CID can also encourage live music and open mic events at existing restaurants, bars and public spaces. The CID could also utilize capital expenditures funds to directly drive change.

### Retail Variety Improved

<table>
<thead>
<tr>
<th>Store Category</th>
<th>South Grand Retail Sales</th>
<th>Additional Potential Sales</th>
<th>Upside Absorbed By...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture &amp; Home Furnishings</td>
<td>$810,000</td>
<td>$960,000</td>
<td>Existing and New Stores</td>
</tr>
<tr>
<td>Household Appliances</td>
<td>$0</td>
<td>$760,000</td>
<td>New Store</td>
</tr>
<tr>
<td>Specialty Food Stores</td>
<td>$450,000</td>
<td>$340,000</td>
<td>Existing Stores</td>
</tr>
<tr>
<td>Beer, Wine, &amp; Liquor Stores</td>
<td>$1,500,000</td>
<td>$1,100,000</td>
<td>Existing and New Stores</td>
</tr>
<tr>
<td>Drug Stores</td>
<td>$7,650,000</td>
<td>$7,290,000</td>
<td>Existing and New Stores</td>
</tr>
<tr>
<td>Optical Goods</td>
<td>$0</td>
<td>$430,000</td>
<td>New Store</td>
</tr>
<tr>
<td>Sporting Goods</td>
<td>$120,000</td>
<td>$1,240,000</td>
<td>Existing and New Stores</td>
</tr>
<tr>
<td>Book Stores</td>
<td>$0</td>
<td>$1,050,000</td>
<td>New Stores</td>
</tr>
<tr>
<td>Office Supplies, Stationery, Gifts</td>
<td>$450,000</td>
<td>$1,380,000</td>
<td>Existing and New Stores</td>
</tr>
<tr>
<td>Full-Service Restaurants</td>
<td>$2,360,000</td>
<td>$8,960,000</td>
<td>Existing and New Stores</td>
</tr>
<tr>
<td>Drinking Places (Clubs &amp; Bars)</td>
<td>$140,000</td>
<td>$1,020,000</td>
<td>Existing and New Stores</td>
</tr>
</tbody>
</table>

---

I would shop here more often if (RANK):

- **Retail variety was improved** 35
- **Pedestrian safety was improved** 16
- **Noise was reduced** 9
- **Lighting was improved** 2
- **Traffic speed was reduced** 2

---

Return on Public Investment (annual accidents savings + sales tax growth)

NPV $2,692,185.44
IRR 23%

<table>
<thead>
<tr>
<th>Year</th>
<th>NPV</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>$2,000,000</td>
<td>23%</td>
</tr>
<tr>
<td>3</td>
<td>$4,000,000</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>$6,000,000</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>$8,000,000</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>$10,000,000</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>$12,000,000</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>$14,000,000</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>$16,000,000</td>
<td></td>
</tr>
</tbody>
</table>

---

Catalytic Uses play a critical role as a foundation for growth in a commercial area. An example of this role are the entertainment-based uses in The Loop. These uses helped to define the district in the minds of consumers which created a regional draw that improved the position of all retail, restaurant and entertainment operators. Major changes such as this do not typically occur organically; a catalytic use will assist in this vision. The Community Improvement District can further this vision by working with property owners with vacant space to establish temporary art galleries, live music venues, etc. The CID can leverage the existing arts community in the neighborhood in a variety of ways to help brand the district. The CID can also encourage live music and open mic events at existing restaurants, bars and public spaces. The CID could also utilize capital expenditures funds to directly drive change.
Office Market Potential

South Grand is a niche market with great appeal. Opportunity exists to attract creative firms that want walkability and unique space.

New office demand will come primarily from smaller tenants representing a variety of local-serving uses. Tenancy will be made up of office users that are not seeking high profile locations but rather storefront or second-level (above retail) spaces that are easily accessible and highly visible to neighborhood residents. Affordability will be a key location determinant for these tenants. Tenants might include medical offices (doctors, dentists, optometrists, etc.), small law offices, accountants, financial advisors.

The typical footprint demand for office will be between 2,000 and 4,000 square feet; however, many will be below 2,000 square feet as few tenants will have substantial expansion needs. Office rental rates will range from $10 to $12 full-service gross.

### South Grand Opportunities by Product Type

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Typical Unit Size</th>
<th>Optimal Pricing</th>
<th>Candidate Tenant(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For-Rent Residential</td>
<td>650 SF (1BR/1Ba)</td>
<td>$1.00/SF</td>
<td>Young professionals and students, roommates</td>
</tr>
<tr>
<td></td>
<td>950 – 1,150 SF (2BR/2Ba)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Under 1,400 SF (3BR/2Ba)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For-Sale Residential</td>
<td>750 – 800 SF (1BR/1Ba)</td>
<td>$100 - $215/SF</td>
<td>Young professional singles and couples and empty-nesters (secondary audience)</td>
</tr>
<tr>
<td>(Condos)</td>
<td>1,100 – 1,300 SF (2BR/2Ba)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 1,900 SF (3BR/2Ba)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For-Sale Residential</td>
<td>Varies, but homes typically in the</td>
<td>$100/SF for a nicely-rehabbed unit</td>
<td>Mature families and empty nesters Some younger families/couples that do not mind the pain and suffering of living through a renovation</td>
</tr>
<tr>
<td>(Existing SF/Plex)</td>
<td>2,000 to 2,500 range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail</td>
<td>1,500 to 3,000 SF</td>
<td>$12 - $16/SF (NNN)</td>
<td>Furniture/Home Furnishings, Drug Store, Optical Goods, Sporting Goods, Book Store, Office Supplies/Stationery/Gifts, Full-service Restaurants, Drinking Places (Bars &amp; Clubs)</td>
</tr>
<tr>
<td>Office</td>
<td>2,000 to 4,000 SF</td>
<td>$10 - $12/SF (full-service gross)</td>
<td>Local-serving office users/retail hybrid (including medical professional offices)</td>
</tr>
</tbody>
</table>

### Potential Additional Occupied Office Space on South Grand through 2019

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Additions</th>
<th>Cumulative Annual Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>2014</td>
<td>100,000</td>
<td>150,000</td>
</tr>
<tr>
<td>2015</td>
<td>150,000</td>
<td>200,000</td>
</tr>
<tr>
<td>2016</td>
<td>200,000</td>
<td>400,000</td>
</tr>
<tr>
<td>2017</td>
<td>250,000</td>
<td>650,000</td>
</tr>
<tr>
<td>2018</td>
<td>300,000</td>
<td>950,000</td>
</tr>
<tr>
<td>2019</td>
<td>350,000</td>
<td>1,300,000</td>
</tr>
</tbody>
</table>
Community Improvement District Role

High impact and low cost alternatives are easy victories for the CID. As shown in the table to the right, priorities with a high transformative impact and low cost include improving the sidewalk condition, reducing vehicular speeds and making the area bicycle friendly.

Key trends and issues for the CID to consider in its future role include the following:
- St. Louis is gaining households.
- The district’s retail strategy implies a rental strategy.
- Generation Y renters are critical for retail and office success.
- The ‘missing teeth’ of the building fabric must be connected with retail.
- South Grand must clearly define a ‘brand’ and maintain the international flavor and ‘edginess.’

<table>
<thead>
<tr>
<th>Factors</th>
<th>Qualitative Assessment</th>
<th>South Grand</th>
<th>Central West End</th>
<th>The Loop</th>
<th>Weight</th>
<th>Transformative Impact</th>
<th>Cost</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk Width</td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Moderate</td>
<td>High</td>
<td>X</td>
</tr>
<tr>
<td>Sidewalk Condition</td>
<td></td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>High</td>
<td>Low</td>
<td>XXXX</td>
</tr>
<tr>
<td>Percieved Safety</td>
<td></td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>10</td>
<td>High</td>
<td>Moderate</td>
<td>XX</td>
</tr>
<tr>
<td>Wayfinding</td>
<td></td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>Low</td>
<td>Moderate</td>
<td>X</td>
</tr>
<tr>
<td>Lighting</td>
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<td>3.26</td>
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* Weight reflects importance of factor in positively-influencing economic development. Values total to 100.
**Traffic Analysis and Recommendations**

**Traffic Volume**

Based on a charrette workshop held in St. Louis the week of August 10, 2009 and subsequent online polling, the desire to convert South Grand Boulevard from its current fairly high-speed 4-lane configuration into a slower 3-lane configuration is strong. Such a conversion is widely known as a “Road Diet.” Road diets are usually successful where traffic volumes are below 20,000 vehicles per day and peak hourly approach volumes are below 1,000 vehicles. Initial traffic data collection showed a significant drop in volume south of Arsenal, from 28,643 to 19,209 vehicles/day.

However, additional data collection gathered during the charrette has since shown that either the data collectors malfunctioned (as some did on Gravois), or the traffic along South Grand Boulevard varies significantly from day to day. The later data showed a drop south of Arsenal to 25,408 and in the 22,000 range southerly for the balance of the study area (between Arsenal and Utah).

Traffic volumes exhibit peak flows in the AM, Midday and PM peak hours. Left turns from even lane collectors malfunctioned (as some did on Gravois), or the traffic along South Grand Boulevard varies significantly from day to day. The later data showed a drop south of Arsenal to 25,408 and in the 22,000 range southerly for the balance of the study area (between Arsenal and Utah).

Traffic volumes exhibit peak flows in the AM, Midday and PM peak hours. Left turns from even lane approaches at LOS E. It is different for signalized and unsignalized intersections as described to the right.

**Traffic Speeds**

The area residents and business people have the perception that traffic flows much faster on Grand Boulevard than the 25 mph speed limit would otherwise permit. The data collected by the traffic counts supports these perceptions. The 85th percentile speeds (a value often used to create a speed limit) as it means that 85 percent of the vehicles are traveling at or below that speed) are typically 35-40 mph, but as high as 46 mph in the left southbound lane South of Magnolia. Average speeds range from 34 to 39 mph with many examples of speeds over 50 mph.

Vehicle Emissions

It is well-understood that vehicles traveling more slowly generally produce more emissions than do vehicles traveling continuously and at higher speeds. To test the proposed change from 4-lanes to 3-lanes, the St. Louis Department of Public Works re-paved the street as 3-lanes and mocked up the proposed curb bulbouts with jersey barriers at the intersections.

Slowing vehicle speeds was one of the goals of the road diet. The traffic data gathered during the 3-lane test period has proven that the 3-lane cross section did slow vehicle speeds within the test area. While some difficulties, including apparent vandalism, occurred with some of the automatic traffic data recorders (ATR), we were able to collect some comparative data at the same “before” and “during” test locations. These comparisons showed 85th percentile speed reductions from 39.9 and 37.8 mph to 32.5 mph for the northbound traffic south of Wyoming; an estimated 39.6 and 32.8 mph to 33.8 mph for southbound at Hartford and 33.8 and 33.6 mph to 29.1 mph for northbound at Hartford. The average speed reduction was 5 mph.

The emissions produced by the vehicles traveling through the study area were examined a few times, using both Synchro and SimTraffic software (both produced by Trafficware Corporation). Synchro is a well-accepted software package that allows sophisticated signal synchronization and static traffic analysis; SimTraffic a microsimulation package that allows the Synchro traffic input data to be animated and then analyzed from a different, microsimulation perspective.

The existing traffic signal timing and coordination plan was compared with the proposed 3-lane road diet plan and, in balance, it may be fairly stated that there is little difference between the two, taking into consideration the existing 4-lane traffic signal timings and coordination plans. The proposed 3-lane conversion will compare favorably with the existing 4-lane configuration with respect to vehicle emissions production.

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Traffic volumes exhibit peak flows in the AM, Midday and PM peak hours. Left turns from even lane configurations are difficult with heavier traffic volumes, and a 3-lane cross section affords ample left turn storage opportunities. On South Grand Boulevard presently, however, left turns are not allowed except for the southbound left at Arsenal.

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On September 10, 2009 a pilot test of the 4 lane to 3 option was conducted along South Grand Boulevard. The pilot test consisted of the following changes:

A merging lane was created north of Arsenal to move traffic into one southbound lane at the intersection of Arsenal and South Grand. Both a right and a left turn lane were provided. South of the alley between Arsenal and Hartford, the west side parking lane had a restriction placed on it from 4-6 pm, during which time there would be no parking. During this time period this parking lane would be used as a dedicated right turn lane. Northbound between Hartford and Arsenal, the dedicated turn lane became a second through travel lane for northbound traffic.

South of Hartford to Utah the roadway was reduced from 4 lanes to 3 lanes. South of Utah, merge lanes were created for northbound traffic, while southbound traffic had two lanes. At the intersections south of Hartford, curbs were extended 8.5’ from the existing curbline using Jersey barriers and pipe pots.

## Recommendations

Additional analysis was completed to examine changes to the existing 4-lane cross section with adjusted signal timings to reduce travel speeds, as well as analysis of the possible 3-lane configuration. Side street volumes were estimated based on some manual counts and observations.

This analysis was first done with Synchro software from the Trafficware Corporation. In Synchro, the link speeds are set, in this case at 25 mph. A small number of left turns were added on all approaches except Northbound at Arsenal. This analysis found that if the signal timings are reduced, levels of service may actually be improved. At Arsenal, for example, the overall LOS increases to C and no approach is at LOS F in this option.

However, to slow traffic, the signals were changed from their vehicle-efficient “actuated coordinated” status to “pre-lim” (pre-lit). The overall street throughput, established by the busier Arsenal intersection, is 70 seconds. The other intersections, however, run individually more efficiently with shorter cycles, typically 50 seconds. By setting the signals in this manner, vehicles are more assured to need to stop along the corridor, ultimately slowing traffic speeds.

## Simulation

To simulate traffic operations, software termed SimTraffic is used. This software takes the data from Synchro and then simulates driver behavior with an animation that may be run at real-time speed or faster or slower.

These simulations show the potential to slow traffic through signal timing, as average South Grand Boulevard travel speeds in simulation reduce to 20 to 25 mph. It should be noted, however, that the software assumes that drivers will try to stay within 15 percent of the speed limit (21 to 29 mph). For sections such as the block from Arsenal to Hartford or, if you like, southbound 90 mph at the 5000 series, this is a reasonable option; for the unsignalized section from Hartford to Wyoming, it is less likely to be effective. In fact, driver frustration with reduced speeds associated with the signals would likely lead to speeding and possibly “slalomming” by drivers through the unsignalized portions. For these reasons, it is not recommended to implement the signal timing change unless additional signals are installed at all of the unsignalized intersections.

### 3-Lane Option

This option was analyzed in some detail, due to the public desire for it and its potential to dramatically change the character of the street. After considerable analysis, it was determined that the 3-lane cross section will perform acceptably. A key to making this option perform well is a change to the signal timing plans at Arsenal and Hartford, specifically changing the three left turn phases from protected only to protected and permitted.

With these changes, at Arsenal the overall LOS actually improves from its existing LOS D to LOS C, with the Eastbound left approach at LOS E. Westbound through at LOS F and Southbound left approach improving to LOS A.

The short left-turn phases added south of Arsenal are also protected and permitted in this option and even the small volumes assumed (5 to 20) left-turning vehicles will experience little delay. Together, the small interruptions in North-South throughput, combined with a reduction in capacity, act together to effectively reduce vehicle speeds. Given the results of the analysis, South Grand Boulevard is a relatively high volume street for a “road diet,” but it appears that a reduction to 3 lanes will function effectively and will reduce the speeds of the traffic, acknowledged to be problematic at present. There will have to be a sort of giving in just north of Arsenal, for southbound traffic where the lane reduction occurs, but that should work itself out with a “Do Not Block Intersection” sign and driver education. There is plenty of queuing space at that location.

From a review of the literature and the results of the analysis, it also appears that a change in South Grand Boulevard to 3 lanes should not create a long-lasting shift in traffic to other routes.

### Future Trolley Potential

The new three-lane cross-section on South Grand Boulevard would work well with a future streetcar line. Assuming that the streetcar would have doors on both the left and right sides, then the stations could be placed either on curb extensions, or platforms in the center turn lane. The tracks would ply the travel lanes. Of course this would impact auto travel times, as they would need to queue behind streetcars at stations. Given the relative narrowness of South Grand Boulevard, options to have lanes for both streetcars and autos are limited.

The one-way street system - implications on the functionality of the 3-lane option

The City of St. Louis has a long history of traffic calming via street closings, diagonal diverters, one-way streets, bollards, gateways and other progressive measures. In the project area, Hartford and Halliday Streets are one-way westbound; Juniata, Cherokee and McDonald Streets are one-way eastbound. Hartford is closed between Louisiana and South Compton Avenues. In addition left turns were restricted off South Grand at signalized intersections. The road diet creates a center turn lane and the turn restrictions were removed.

In the course of this project, the subject of one-way streets has been raised. This is a much larger question involving through traffic on neighborhood streets, crime prevention, vehicle speeds, bicycle circulation, etc. One-way streets, for example, are problematic for cyclists. One technique to mitigate is to maintain a two-way street, but restrict entry for cars (but not bikes). However, one-way streets benefit pedestrians as they are easier to cross and one can install refuge island where there are no turns. One-way streets allow higher speeds, but can be designed to limit through traffic.

The new three-lane section along South Grand Boulevard works with both one- and two-way street patterns. It will be up to the community to decide if one created street should remain or be converted back to 2-way operation. Should the one-way streets remain permanently (only Hartford and Juniata Streets are one-way in the study area, elsewhere there are only a few others such as Cherokee Street and McDonald Avenue) the intersections with South Grand can be narrowed accordingly.

### Intersection Level of Service Criteria

<table>
<thead>
<tr>
<th>LOS</th>
<th>Unsignalized Intersections</th>
<th>Signalized Intersections</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.</td>
<td>Delay of 1 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all</td>
</tr>
<tr>
<td>B</td>
<td>Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A but no queuing occurs on the minor street.</td>
<td>Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.</td>
</tr>
<tr>
<td>C</td>
<td>Delay of 15 to 20 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.</td>
<td>Delay of 20 to 30 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.</td>
</tr>
<tr>
<td>D</td>
<td>Delay of 25 to 30 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.</td>
<td>Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.</td>
</tr>
<tr>
<td>E</td>
<td>Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.</td>
<td>Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.</td>
</tr>
<tr>
<td>F</td>
<td>Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.</td>
<td>Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.</td>
</tr>
</tbody>
</table>

Transit Analysis and Recommendations

Transit is an integral component of a Great Street, as it allows residents and visitors from throughout the City and surrounding region to access South Grand Boulevard without requiring a personal vehicle. Ensuring bus stops are safe and pleasant, keeping travel times short, and easing transfers between routes and modes are important means for attracting and maintaining ridership. The following text describes existing transit and paratransit available on South Grand Boulevard, photos of existing conditions at bus stops, customer survey results, and transit recommendations from the 2002 Parking Study.

Existing Bus & Metro

One bus route, 70 Grand, runs on South Grand Boulevard throughout the study area. The route travels from the North Broadway MetroBus Center over to Grand and south to Loughborough Commons. Major destinations include Grand Water Tower, Fairgrounds Park, John Cochran VA Medical Center, Grand Metrolink Station, St. Louis University medical buildings, Tower Grove Park and Carondelet Park. At Arsenal Street, Route 70 riders may transfer to route 30 Soulard. Just south of the focus area, Route 10 Gravois-Lindell runs east-west.

Route 70 runs seven days per week, from 5 AM to midnight. The bus maintains 12-minute headways from 6 AM-6 PM, 20-minute headways off-peak and 30-minute headways during late night service, 10 PM-midnight. On Saturdays, the 70 runs at 20-minute headways from 7:30 AM - 5 PM and at 30-minute headways off-peak, including Sundays. The 70 runs roughly north-south while the majority of MetroBus routes run east-west. The 70 therefore offers connections to services for the majority of MetroBus routes, including, from north to south, routes: 70, 36, 74, 41, 4, 30, 32, 94, 97, 10, 13, 42, 57, 59, 11 and 73.

Figure 1 shows the configuration of 70 Grand and its bus stops, as well as the Grand Metrolink station.

Bus stop conditions along South Grand vary. Stops within the area are placed close together, compared to the MetroBus standard of one bus every quarter mile. In the 0.4 mile corridor from Arsenal to Utah, there are four stops northbound and four stops southbound. Figure 2 lists all stops, their location at the intersection (near or far) and the amenities present. The primary issues surrounding bus stops involve lack of shelters, benches, information and skinny waiting areas that expose customers to traffic. The chart shows that Juniata has the most amenities (see also Figure 9).

During July 2009 fieldwork, a series of photos was taken of bus stops on and around Route 70 (see Figure 4 through Figure 10).
Figure 5: Stop at Humphrey Southbound

Figure 6: Northbound at Connecticut

Figure 7: Stop at Juniata

Figure 8: Bicycle on MetroBus - a common sight

Figure 9: Bus Shelter on Juniata

Figure 10: Shaded stop along Route 30 on Arsenal at Arkansas
Metro Bus Stop Guidelines

In 2009, Metro published bus stop guidelines to identify requirements for a standard bus stop; create design guidelines for stops and amenity placement; and to describe how to manage, operate and improve stops.

Required elements

- Bus Stop Sign – each must indicate the route or routes serving the stop.
- ADA Landing Pad – Per ADA guidelines, this pad must be made of clear, firm, stable, slip-resistant material; must be level; and measure a minimum of 5' x 8'. This pad is required at all new, existing and rehabilitated stops. When funding is available for retrofitting existing stops, priority will be given to stops with moderate to heavy ridership (minimum 20 boardings per day) or a stop with consistent lift activity.

Optional Elements

- Bus Shelter – Provision of shelters should be determined by ridership activity. Shelters may also be provided in locations that are close to senior or group homes, where lift usage occurs often, when multiple bus lines serve the stop, in locations close to large new activity centers, or upon special request from a certain government or local group.
- Benches – These may be installed if ridership figures warrant them.

Placement

Bus Stop Zones – In determining bus stop location, the following issues should be considered:
- Safety – Ensure that passengers can board and alight safely, consider traffic conflicts and pedestrian sight distance at crosswalks and intersections.
- Traffic Flow – Look at turning movements when considering near or far side stops and ensure the bus stop is long enough so that the vehicle does not interfere with car traffic.

Bus Stop Location – In general, bus stops should be placed at intersections. Far side stops are preferred at signalized intersections, as they cause fewest traffic delays, allow better pedestrian and auto sight lines and minimize parking restrictions. Bus stops should be paired at the same intersection, where possible.

Bus Stop Spacing – Stops should be placed to maximize efficiency. In dense urban areas, stops should be placed no closer than ½ mile apart. Metro policy calls for local bus service within ¼ mile of at least 90 percent of residents in the service area with high need for transit. High needs is defined as areas with high densities of population in general, as well as minorities, older adults, lower income households, persons with disabilities and households without automobiles.

Partnerships – Metro should develop and maintain relationships with state and local governments, communities and developers to fund infrastructure improvements and improve bus routing.

Bus stop best practices

Required and recommended elements at bus stops have been established at many transit agencies. Following is a list of the amenities and principles that should guide bus stop design, with most matching Metro’s Guidelines.

Infrastructure & Amenities

 While bus operations may be the heart of a transit system, bus stops that are easy to find and use are critical to passengers getting on and off the buses. Adequate pedestrian accessibility and enhanced passenger amenities at transit stops are critical to attracting people to transit. Provision of bus stop infrastructure is frequently tied to the number of riders who board and alight at each stop. The greater the number of riders, the greater the capital investment.

All stops should have:
- A level concrete pad;
- Reliable pedestrian access;
- Adequate lighting for safe and comfortable night use; and
- Route and schedule information.

Stops with more than 50 boardings a day (including transfers) should have the following: Currently boardings at Arsenal exceed 50 boardings/day and Juniata stops currently have 48 and 49 boardings/day.
- Bus shelter with bench;
- System map; and
- Trash receptacles.
Stops with more than 300 boardings a day (including transfers) should also have:

- Super stop shelter; and
- Real time travel information.

Rider amenities should be added to routes where the highest number of boardings and alightings occur as funding becomes available.

These amenities support transit service by making the bus riding experience comfortable and convenient. As described in TCRP Report 46: The Role of Transit Amenities and Vehicle Characteristics in Building Transit Ridership, provision of certain physical amenities will draw more riders. The TCRP study was built around the Transit Design Game Workbook, a survey distributed to bus passengers in five cities: Rochester, New York; Ann Arbor, Michigan; Aspen, Colorado; Portland, Oregon; and San Francisco, California. The survey allowed people a budget of 12 to 18 points to spend on amenities, and also had the respondents weigh spending money on amenities or lowering the fare. Spending 18 points on amenities roughly equated to $450,000 in annualized costs for a 300-bus system, and resulted in a 1.5 to 3 percent increase in ridership. A study recently completed by the University of North Carolina at Charlotte also has indicated that improved bus stop amenities increases ridership.

Another important component of bus stops consists of safety and security measures, which increase transit effectiveness. Safety and security requires transit operators to provide a predominantly controlled transit experience comfortable and convenient. Ridership.

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Providing a safe and secure environment requires transit operators to provide a predominantly controlled transit experience comfortable and convenient. Ridership.

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Transit Analysis and Recommendations

Based on existing conditions and past analysis, the following figure shows the locations of recommended bus stops for the South Grand Boulevard focus area. The stops at Connecticut and Humphrey are removed, with Humphrey customers moving to the Utah stop and Connecticut riders boarding at Juniata. This is in keeping with the 2002 Parking Study recommendations of consolidating bus stops as well as Metro bus stop guidelines. Note that even with the elimination of stops, the distance between Juniata and Utah is the length of a six-minute walk, assuming a walk speed of 3.5 feet per second. Per the Metro guidelines, the near-side Juniata northbound stop will be switched to far-side.

Design & policy improvements

Metro only requires a route sign and ADA landing pad as part of its bus elements. The agency should consider adding schedules to bus route sign posts, and incorporating safe pedestrian access and lighting at all stops. In terms of phasing in improvements, the agency should set a ridership threshold to help prioritize funding; for example, stops with at least 50 daily boardings will be retrofitted first.

Future buildout

On September 10, 2009, the pilot test of conversion of the four lanes to three-lanes was installed and observed for 30 days. Transit observations showed that around two-thirds of bus drivers stopped in the travel lane, as planned, while the rest continued to pull over as usual. For those buses that did board and alight in the travel lane, some queuing occurred, but if transit is to be prioritized, that should not be a major issue. According to TCRP Report 19: Guidelines for the Location and Design of Bus Stops, buses should pull over into stops when:

- Traffic in the curb lane exceeds 250 vehicles in the peak period;
- Bus volumes exceed 10 vehicles per hour in the peak period;
- Traffic speed along the arterial road is greater than 40 mph.

South Grand Boulevard meets the first two criterion; however, the report states that bus drivers will not use bus bays when traffic volumes exceed 1,000 vehicles per hour per lane since this makes it very difficult for the bus to pull back into traffic, causing an unacceptable delay in service. South Grand Boulevard experiences traffic volumes at this level, thus forcing drivers to pull over will not improve transit travel times. Per the direction of the City which required this be a design feature implemented in the renovation of the streetscape, drivers are given the opportunity to pull over at all stops.

Although Metro’s current fiscal situation has put service expansions on hold, the agency does have a tentative plan for BRT along the South Grand corridor. If South Grand Boulevard is to be fitted in a way to prioritize transit, several design options are possible. A future discussion should be undertaken to figure out what type of transit street South Grand Boulevard should be and how to make that happen. Some options include:

- **Bus Bulbs** – At each bus stop, a 40’ curb extension could function as the bus stop. This allows buses to stop in the travel lane, decreasing running time since drivers do not have to wait to pull back out into traffic. By using bus bulbs, the bus stop length is half of what is required when buses must pull over (80’ bus stop), which allows for more on-street parking.

- **Side-Running Transit-Only Lanes** – This option would remove on-street parking and run bus-only lanes along the curb. This would allow Metro to continue using buses with right-side doors.

- **Center-Running Transit** – Generally preferred for safety reasons, center-running transit requires left-door buses. A median would be built, with stations located in the center of the street and transit running on either side.
Pilot Test: Method and Assessment

Transit Transportation Network

During the pilot test, it was observed that many busses do not pull over to the curb to drop off passengers. (Since the observations, conversations with Metro Bus and changing of parking meter locations have sought to resolve this issue.) This did stop through traffic and there were no major backups observed as a result of this. There were a few examples of impatient motorists attempting to pass stopped buses on the left side of the bus. Unfortunately, there will always be cases of road users of all types operating unsafely; which even the best designs can not change that.

Traffic Network

During the pilot period, field work was conducted to observe how traffic operated along South Grand. In addition, traffic counts, vehicle classifications and speed surveys were conducted. The intersection of South Grand and Arsenal was the most problematic place along the corridor both before and during the test. This intersection processes the most vehicles and is wider than the rest of the intersections. It is also the transition point between the residential, large educational and institutional uses that line South Grand north of Arsenal and the smaller, commercial uses that line South Grand south of Arsenal. The field observations taken at 2:00 PM September 30, 2009 are as follows:

There were some traffic flow issues on northbound South Grand between Arsenal and Hartford. Between Arsenal and Hartford there are two through northbound lanes. It seems that drivers were not always aware of this since very few used the left through lane. As a result, traffic backed up, blocking both through traffic and turning movements on Hartford. Even vehicles turning left onto northbound South Grand from Hartford moved into the right through lane. This area was also observed during the 5:00-5:30 PM peak where it was noted that traffic flowed well and the earlier issues of congestion were not observed. It was determined that providing better roadway markings to indicate the intended movement of each lane could help to alleviate the congestion issues in the morning. In turn, once the pilot design is better understood by motorists these issues may resolve themselves.

At Arsenal and Grand there are still issues with vehicle speed as motorists transition in and out of the pilot corridor. The speed data collected showed an average speed of 33 mph, with an 85th percentile speed of 39 mph for the left lane of Grand north of Arsenal and an average speed of 36 mph, with an 85th percentile speed of 43 mph for the right lane.

Motorists traveling east and west bound on Arsenal across South Grand had almost identical speed measurements; with an average speed of 27 mph and an 85th percentile speed of 35 mph.

Additional speed recordings were made at the northbound lane of Grand at Wyoming. At this location, the average speed was 23 mph and the 85th percentile speed was 34 mph. This shows the pilot does have the desired impact of reducing motor vehicle speed within the corridor.

Emergency Response Network

There was initial concern about response times from the Fire Department regarding the conversion of South Grand Boulevard from four lanes to three. During the pilot test, field observations were conducted during peak travel periods. During one observation period, from 4:45 PM to 7:30 PM, three to four emergency vehicles were noted on South Grand Boulevard. The emergency vehicles moved efficiently through the corridor and there were no observations of delays associated with the pilot project.
Parking Analysis and Recommendations

Data Collection

To begin an evaluation of parking conditions within the South Grand corridor, Nelson\Nygaard performed a parking inventory of the area during the week of July 13th, 2009. Occupancy counts were subsequently conducted to assess demand conditions, including utilization levels for all spaces during typical weekly peak periods including weekday midday, weekday evening and Friday night, and turnover patterns for spaces along South Grand Boulevard.

Inventory

The inventory of on-streets spaces surveyed for this study includes spaces along:

- South Grand Boulevard between Arsenal Street and Utah Place;
- The blocks between Spring Street and Arkansas Avenue for all east-west aligned streets between Arsenal Street and Utah Place.

This inventory constituted a total of just less than 1,000 on-street spaces, including 118 metered spaces located primarily along and adjacent to South Grand Boulevard. All metered spaces allow for two-hours of parking at a rate of $0.50 per hour. Non-metered spaces are generally unregulated beyond once-a-month restrictions for street cleaning. Figure 1 to the right provides a summary of the on-street spaces included in the review.

In addition to on-street spaces, 472 off-streets spaces were surveyed among key parking facilities, including parking lots of either significant size or prominent location in the area bounded by Arsenal Street, Arkansas Avenue, Utah Place and Spring Avenue. These facilities are primarily accessory parking lots, reserved for the tenants and visitors of specific, adjacent destinations. The total for accessory lots is 389 spaces. A few lots are designated or appear to be public lots, totaling 83 parking spaces. Two of the public parking lots include 26 metered parking spots. Figure 2 provides a summary of off-street facilities included in the review of parking conditions.

<table>
<thead>
<tr>
<th>Location</th>
<th>Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Grand Boulevard</td>
<td>83</td>
</tr>
<tr>
<td>Side Streets</td>
<td>908</td>
</tr>
<tr>
<td>All</td>
<td>991</td>
</tr>
</tbody>
</table>

Figure 1: Key On-Street Parking Facilities

<table>
<thead>
<tr>
<th>Location</th>
<th>Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Grand and Arsenal (NE) - back lot</td>
<td>57</td>
</tr>
<tr>
<td>South Grand and Arsenal (SE) - back lot</td>
<td>82</td>
</tr>
<tr>
<td>Commerce Bank - rear lots</td>
<td>74</td>
</tr>
<tr>
<td>Commerce Bank - far rear lots</td>
<td>134</td>
</tr>
<tr>
<td>Jay International Foods Lot - North</td>
<td>32</td>
</tr>
<tr>
<td>Jay International Foods Lot - South</td>
<td>16</td>
</tr>
<tr>
<td>Metered Lot - b/w Juniata and Hartford</td>
<td>16</td>
</tr>
<tr>
<td>Metered Lot - b/w Humphrey and Wyoming</td>
<td>10</td>
</tr>
<tr>
<td>Church of Pope Pius lot</td>
<td>108</td>
</tr>
<tr>
<td>All</td>
<td>472</td>
</tr>
</tbody>
</table>

Figure 2: Key Off-Street Parking Facilities

Utilization

Objective: Maximizing the effectiveness of all available supplies is the primary objective of parking management for traditional, urban commercial corridors. Space constraints, high land and construction costs, and the need to preserve dynamic, walkable, destination-rich streetscapes combine to underscore the importance of extracting the maximum benefit from each space within the area.

Performance Target: Blocks and lots that are almost-full, but never quite full, most all of the time. This means that, during weekly peaks:

- On-street spaces average about 85 percent utilization; and
- Off-street lots average between 90 percent and 95 percent utilization.

The first step in seeking efficient parking management is therefore a review of how spaces are being used today during typical weekly peak periods. Following is a summary of findings from peak-hour surveys, beginning with the weekday midday peaks.

Weekday Midday Findings

Figure 3 presents a geographic summary of on- and off-street parking demand patterns evident during weekday midday surveys. Utilization was found to be well-below optimal levels for most on-street blocks and off-street facilities (indicated in blue, which represents observed utilization rates of 69 percent or lower). Preferences for certain parking locations are, however, evident within these inventories. The central blocks along South Grand, for example, are well-utilized as are the two lots that straddle Arsenal Street just east of South Grand. Figure 4 provides a summary of utilization rates at specific parking locations.

As shown in Figure 4, there were nearly 500 available, public parking spaces during the weekday midday peak. Of those, however, over 400 were located on side streets. Along South Grand itself, 26 spaces were available, approximately one out of every three spaces. The most popular public lots were essentially full at this time, while 10 spaces remained open within the metered-lots just off of South Grand. Among these primary public parking options, therefore, supplies appear to be fairly optimally utilized, although a significant level of availability remains among secondary locations (primarily along side streets) for those willing to walk a short distance.
Weekday Evening Findings

Figure 6 presents a geographic summary of on- and off-street parking demand patterns evident during weekday evening surveys. As shown, relative to the midday period, on-street utilization increases significantly during the evening, particularly along South Grand, while off-street utilization moderates, particularly at accessory lots. This is reflective of a number of factors with predictable influences on parking demand, including:

- The end of parking charges and time-limits at metered-spaces, increasing demand for spaces along South Grand;
- A significant increase in dining activity – increasing demand for spaces along South Grand;
- A sharp drop in employee parking demand reducing demand for off-street parking and non-metered, on-street spaces; and
- A significant increase in residential parking demand increasing demand for spaces along side streets.

Once again, on-street demand indicates a discernable preference for spaces along the central and northernmost blocks of South Grand. Figure 5 provides a summary of utilization rates within specific parking locations.

Compared to the midday period, fewer spaces remain available along South Grand and within the two, small metered lots. Off-street opportunities however, are in general significantly more abundant. The two lots straddling Arsenal just east of South Grand offer over 60 available spaces, compared to just one space during midday-peak. This may reflect the influence of employee-based parking demand at these locations, or it may simply reflect the influence of expiring meter rates and time-limits along South Grand. In either case, these off-street opportunities represent a significant asset for evening-oriented businesses.
Parking Analysis and Recommendations

Friday Night Findings

Figure 8 presents a geographic summary of on- and off-street parking demand patterns evident during the Friday night surveys.

As indicated, Friday night surveys found parking demand to be higher than any other survey period. Availability on blocks along South Grand, and even many side streets, are constrained at this time. Off-street facilities also indicate significantly higher demand levels compared to other periods. Even lots accessory to uses that are closed at this time including Jay International Foods, for example, appear to be accommodating significant parking demand. This indicates a certain amount of shared-parking currently supports evening businesses, even if informally.

In contrast to weekday midday and evening findings, on-street demand at this time appears to favor the southernmost blocks in the area. Figure 7 below provides a summary of utilization rates within specific parking supply locations.

Availability along South Grand is at its lowest level of any survey period, with just 12 spaces available during surveys. This, however, is in line with standard targets for on-street availability, representing 14 percent of spaces overall. This represents about one space in six remaining available, or one to two spaces available on a typical block, even at this most constrained time. Additionally, 200 spaces remain available on adjacent side-street blocks. Considering the high availability along South Grand Boulevard and side street blocks, survey findings are more indicative of a healthy, urban commercial corridor than an area under-supplied with parking. While the northernmost off-street lots offer few available spaces, accessory lots that appear to accommodate public parking at this time, for example the Commerce Bank lots do offer a significant amount of available parking.

The parking lot serving the Pope Pius church remains under-utilized, although parking levels are at their highest levels of any survey period, indicating the likelihood that some level of church-based activity is ongoing at this time. At this level of utilization, it would be unlikely that this lot could be made available under a formal, shared arrangement for public parking on Friday nights.

While Friday night conditions indicate the highest levels of observed constraint, it is useful to keep in mind that within the overall public inventory of 1,074 spaces, utilization is just shy of 80 percent, leaving over 230 spaces available to accommodate additional demand. Within an urban, commercial corridor of modest size (walking from Arsenal to Utah takes less than 10 minutes at typical walking speeds), it is important to focus on this collective inventory as supporting the whole district, while identifying demand-management opportunities to address specific points of constraint within it. Even on Friday night, therefore, existing supply should be seen as sufficient to meet current demand, even moreso if shared-parking activity were allowed to and encouraged to expand.

<table>
<thead>
<tr>
<th>Location</th>
<th>Spaces</th>
<th>Occupancy</th>
<th>Utilization</th>
<th>Spaces Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Grand Boulevard</td>
<td>83</td>
<td>71</td>
<td>86 percent</td>
<td>12</td>
</tr>
<tr>
<td>Side Streets</td>
<td>908</td>
<td>597</td>
<td>77 percent</td>
<td>211</td>
</tr>
<tr>
<td>South Grand and Arsenal (NE) - back lot</td>
<td>57</td>
<td>46</td>
<td>81 percent</td>
<td>11</td>
</tr>
<tr>
<td>South Grand and Arsenal (SE) - back lot</td>
<td>82</td>
<td>80</td>
<td>98 percent</td>
<td>2</td>
</tr>
<tr>
<td>Commerce Bank - rear lots</td>
<td>74</td>
<td>60</td>
<td>81 percent</td>
<td>14</td>
</tr>
<tr>
<td>Commerce Bank - far rear lots</td>
<td>134</td>
<td>9</td>
<td>7 percent</td>
<td>125</td>
</tr>
<tr>
<td>Jay International Foods Lot - North</td>
<td>32</td>
<td>30</td>
<td>94 percent</td>
<td>2</td>
</tr>
<tr>
<td>Jay International Foods Lot - South</td>
<td>16</td>
<td>16</td>
<td>100 percent</td>
<td>0</td>
</tr>
<tr>
<td>Metered Lot - b/w Juniata and Hartford</td>
<td>16</td>
<td>14</td>
<td>88 percent</td>
<td>2</td>
</tr>
<tr>
<td>Metered Lot - b/w Humphrey and Wyoming</td>
<td>10</td>
<td>10</td>
<td>100 percent</td>
<td>0</td>
</tr>
<tr>
<td>Church of Pope Pius lot</td>
<td>108</td>
<td>55</td>
<td>51 percent</td>
<td>53</td>
</tr>
<tr>
<td>Public Parking</td>
<td>1,074</td>
<td>838</td>
<td>78 percent</td>
<td>236</td>
</tr>
<tr>
<td>Accessory Parking</td>
<td>446</td>
<td>250</td>
<td>56 percent</td>
<td>196</td>
</tr>
<tr>
<td>All</td>
<td>1,520</td>
<td>1,088</td>
<td>72 percent</td>
<td>432</td>
</tr>
</tbody>
</table>

Figure 7: Friday Night Utilization Summary

Figure 8: Friday Night Utilization
Hourly Analysis – South Grand On-Street

Spaces along South Grand can be considered a leading indicator of public, short-term parking demand in the area. These are the spaces that, prices and time-limits aside, typically generate the highest levels of demand from customers. They are the first to fill up once parking rates and time limits begin to expire at the end of the day.

Furthermore, for many visitors to the South Grand area, perceptions of parking capacity are likely formed by availability along South Grand Boulevard itself. For many, lack of availability along a particular block of South Grand can create a strong perception that the area lacks parking. Managing these spaces effectively is therefore a critical component of parking management for this area. To allow more detailed analysis of these spaces, the project team conducted daylong surveys along South Grand to assess demand patterns throughout a typical workday, when competition between employees and customers for on-street spaces is traditionally sharpest. Hourly occupancy and turnover surveys were conducted between 11:00 AM and 6:00 PM on Thursday, July 16, 2009.

Utilization

With the exception of the lunch hour, weekday daytime utilization is well-below optimal levels. During the lunch-time peak (roughly Noon to 2:00 PM) many blocks on South Grand begin to reach optimal utilization rate and some blocks begin to fill completely. The overall utilization rate for South Grand between Arsenal Street and Utah Place at this time, however, peaked at around 70 percent. Considering that this is having a significant impact on space availability.

From these observations it can be concluded that current meter rates and/ or time-limit enforcement are effectively mitigating commuter (daylong) parking along South Grand.

Current and Recent Plans

The 2002 Study

In 2002, the South Grand Commercial District Parking Study was completed to address perceived parking shortages within the South Grand area. A summary of key parking recommendations produced at the conclusion of that study, each followed by a response based on the observations and analysis conducted for the current study, is presented as an appendix to this report.

Redevelopment of the Commerce Bank Parking Lots

The South Grand Community Improvement District (CID) expects to soon implement a plan to purchase the larger, far-rear lots behind the Commerce Bank and convert them into a public parking lot. Currently, the 130+ spaces located on these lots are signed as accessory to the bank, to be used only by those conducting business inside. Conversion of these spaces to public parking will add significant public parking capacity for the area, more than doubling the current off-street parking supply of 83 spaces. Figure 11 provides a visual overview of the planned lot.

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Arsenal to Hartford</th>
<th>Hartford to Juniata</th>
<th>Juniata to Connecticut</th>
<th>Connecticut to Wyoming</th>
<th>Wyoming to Humphrey</th>
<th>Humphrey to Utah</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>East</td>
<td>West</td>
<td>East</td>
<td>West</td>
<td>East</td>
<td>West</td>
<td>East</td>
</tr>
<tr>
<td>11 AM</td>
<td>25</td>
<td>75</td>
<td>13</td>
<td>86</td>
<td>0</td>
<td>44</td>
<td>20</td>
</tr>
<tr>
<td>12 PM</td>
<td>100</td>
<td>38</td>
<td>25</td>
<td>86</td>
<td>100</td>
<td>78</td>
<td>40</td>
</tr>
<tr>
<td>1 PM</td>
<td>50</td>
<td>100</td>
<td>75</td>
<td>100</td>
<td>0</td>
<td>33</td>
<td>80</td>
</tr>
<tr>
<td>2 PM</td>
<td>50</td>
<td>50</td>
<td>13</td>
<td>43</td>
<td>50</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>3 PM</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>14</td>
<td>0</td>
<td>44</td>
<td>20</td>
</tr>
<tr>
<td>4 PM</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>5 PM</td>
<td>25</td>
<td>75</td>
<td>25</td>
<td>43</td>
<td>0</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>6 PM</td>
<td>50</td>
<td>63</td>
<td>38</td>
<td>57</td>
<td>0</td>
<td>11</td>
<td>40</td>
</tr>
</tbody>
</table>
Parking Analysis and Recommendations

Pilot Test: Method and Assessment

During the pilot test period, 10 parking meter spaces were "bagged" or taken out of service in locations that will eventually be extensions of the curb. One meter was removed. Existing metered parking was maintained on Grand between Arsenal and Juniaita. The locations shown in figure 12 were modified for the pilot.

### Pilot Test Period

**During the pilot, field observations were conducted to measure parking utilization and the impact of removing 11 parking spaces. The first observation period took place at 2:00 PM on September 30, 2009. One location, the East side of Grand between Wyoming and Humphrey, had no vacant parking spaces. Every other location had vacant spots during this period. In total, there were 39 parking spaces filled during this period and 36 vacant spaces. The utilization rates are shown in figure 13.**

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>WEST</th>
<th>EAST</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand - Between Juniaita and Connecticut</td>
<td>3 bagged meters, 6 spaces maintained</td>
<td>one parking meter removed, 2 spaces maintained</td>
<td>The lot in back of the businesses was 1/3 full</td>
</tr>
<tr>
<td>Grand - Between Connecticut and Wyoming</td>
<td>1 bagged meter; 10 spaces maintained</td>
<td>1 bagged; 4 spaces maintained</td>
<td></td>
</tr>
<tr>
<td>Grand - Between Wyoming and Humphrey</td>
<td>2 bagged meters; 4 spaces maintained</td>
<td>2 bagged meter; 7 spaces maintained</td>
<td></td>
</tr>
<tr>
<td>Grand - Between Humphrey and Utah</td>
<td>5 spaces maintained</td>
<td>1 bagged meter, 4 spaces maintained; 4 unmetered spaces maintained</td>
<td></td>
</tr>
</tbody>
</table>

### Figure 13: Parking Utilization

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>WEST</th>
<th>EAST</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand- Between Arsenal and Harford</td>
<td>8 parked cars / 2 vacant spaces</td>
<td>3 parked cars / 1 vacant space</td>
<td>Mid Block lot had 15 parked cars / 2 vacant spaces. One of the parked cars was illegally parked. Approximately 20 cars were parked in the lots adjacent to Commerce Bank and on back of Commerce Bank</td>
</tr>
<tr>
<td>Hartford West</td>
<td>9 parked cars / no vacant spaces – 1 of the 9 cars was parked illegally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hartford East</td>
<td>3 parked cars / 4 vacant spaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand - Between Hartford and Juniaita</td>
<td>6 parked cars / 2 vacant spaces</td>
<td>8 parked cars / 1 vacant space</td>
<td></td>
</tr>
</tbody>
</table>

### Figure 12: Meter Assessment

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>WEST</th>
<th>EAST</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand - Between Arsenal and Harford</td>
<td>4 parked cars / 6 vacant spaces</td>
<td>2 parked cars / 2 vacant spaces</td>
<td>One car was illegally parked</td>
</tr>
<tr>
<td>Grand - Between Hartford and Juniaita</td>
<td>4 parked cars / 3 vacant spaces</td>
<td>7 parked cars / 1 vacant space</td>
<td></td>
</tr>
<tr>
<td>Grand - Between Juniaita and Connecticut</td>
<td>5 parked cars / 1 vacant space</td>
<td>1 parked car / 1 vacant space</td>
<td></td>
</tr>
<tr>
<td>Grand - Between Connecticut and Wyoming</td>
<td>5 parked cars / 5 vacant spaces</td>
<td>3 parked cars / 1 vacant space</td>
<td></td>
</tr>
<tr>
<td>Grand - Between Wyoming and Humphrey</td>
<td>No parked cars / 4 vacant spaces</td>
<td>7 parked cars / no vacant spaces</td>
<td></td>
</tr>
<tr>
<td>Grand - Between Humphrey and Utah</td>
<td>No parked cars / 5 vacant spaces</td>
<td>No parked cars / 4 vacant spaces</td>
<td></td>
</tr>
</tbody>
</table>

### Figure 13: Parking Utilization

The second observation period was conducted at 8:30PM, on September 18, 2009. This observation period also included utilization rates on the side streets. During this observation period, 63 cars were parked along Grand, with 22 spots remaining vacant. On the side streets, 49 parking spots were utilized, with 20 remaining vacant. The parking lot behind the business between Arsenal and Harford were 1/3 full, the lot between Hartford and Juniaita had 15 cars and two vacant spots, and the lot behind the Commerce bank had 20 parked cars.

After these observation periods it can be assumed that the removal of 11 parking spaces did not negatively impact parking utilization rates on Grand, the side streets or the parking lots.
Conclusions and Recommendations: The South Grand Parking Management Plan (PMP)

Analysis Summary
The South Grand area has more than ample supply to meet evident current and projected future parking demand. Isolated conditions of constraints are an indication of management opportunities rather than actual supply shortage. Furthermore, planned investment to convert the existing Commerce Bank rear parking lots into a shared, public facility as well as the Great Streets re-design emphasis on multi-modal accessibility and pedestrian mobility make it imperative that parking management focus on managing rather than expanding upon current resources. Strategies for developing new supply are therefore not included in the recommended PMP.

The South Grand PMP - Immediate and Short-Term Steps
Key immediate and short-term opportunities to improve the effectiveness of current supply include:

- Maximizing the opportunities presented by the re-development of the Commerce Bank rear lots;
- Adjusting on-street pricing hours to better respond to current demand patterns;
- Improving wayfinding and information to identify and promote current parking opportunities;
- Negotiating for the use of large, private facilities to accommodate seasonal and events-based demand; and
- Capitalizing on the access and mobility improvements in the re-design of South Grand to develop a “park-once” management approach.

The Commerce Lots
The redevelopment of the rear lots currently serving Commerce Bank will add over 140 centrally located off-street parking spaces to the public inventory. Beyond this significant expansion of capacity, the development of these lots into a public resource also represents a number of significant parking management opportunities for the area, including:

- Opening up the parking lot to the South Grand streetscape to better integrate it with the sidewalk, making the lot more visible and appealing;
- Bridging the gap between South Grand Boulevard and Arkansas Avenue, gradually making the parking resources along Arkansas more familiar and viable for visitors during events and other periods of unusually high demand.

Adjusting Meter Hours
Current meter hours result in on-street spaces that are over-priced in the mornings and mid-afternoons but are offered for free during evening hours when demand is highest. Shifting meter hours to cover both lunch-hour and evening-dining peaks (from 11:00 AM to 9:00 PM, for example) would help maintain availability along South Grand in the evening hours, while encouraging more activity during the morning hours.

Wayfinding and Information

Clearly Mark Opportunities
Off-street options need to be more apparent. One example is the lot behind the northeast corner of Arsenal Street and South Grand. There is no sign indicating that this is a private parking lot, so presumably it is a public lot. The fact that it is directly behind businesses, however, likely makes it “feel” like a reserved facility.

Ensure that this and all lots are clearly marked to indicate when they are available for public parking. Low-cost signage investments could increase the utilization of a number of lots, significantly expanding the inventory of convenient, off-street parking spaces available during evenings and weekends.

Direct Drivers and Pedestrians to Destinations
Invest in wayfinding to direct drivers to parking opportunities and pedestrians to nearby uses. This will reduce unnecessary driving by shortening searches for parking, while expanding pedestrian trips by promoting the wealth of pursuits along South Grand.

Include information on all parking locations, including when and where public parking is accommodated as well as rate information, on South Grand websites and brochures.

Figure 12: An Information Kiosk can quickly and effectively communicate all parking and access opportunities and the South Grand destinations they serve

Figure 13 - An example of wayfinding maps currently serving downtown

Figure 14 - This map would be a medium to promote parking options
Seek Formal Shared-Parking Arrangements

While the primary parking supplies, identified in blue, are sufficient to meet demand at most times, additional supply opportunities are available that can temporarily expand the area’s capacity to accommodate visitor parking demand during evenings, weekends, holidays and events.

Shared parking activity is evident during evening hours among the handful of accessory parking lots just off of South Grand. Formalizing arrangements to share these resources as shopping hours transition to dining hours can be an opportunity for all parties to share the benefits of this effective means of parking accommodation. For lot owners, assistance in meeting maintenance costs can be a powerful incentive to keep lots accessible after hours, while a formal arrangement to share parking can allow South Grand stakeholders to sign and promote these opportunities in order to maximize their benefits.

For evening parking, arrangements should be sought with owners of small- and medium-sized lots to provide accommodation for dining peaks. These sites, highlighted in orange, can complement the primary parking supply, expanding capacity during peak times without requiring additional, new supplies.

For seasonal and events-based demand, arrangements to share larger lots should be pursued. Providing on-site supervision in addition to contributing to the care and maintenance of these lots can be a cost-effective means of significantly expanding parking capacity to accommodate infrequent periods of outsized demand.

particularly during daytime events, the spaces along Arkansas Avenue should be seen as viable as well. figure 16 shows the existing parking that is available for accommodating demand during infrequent events and seasonal peaks. Coupled with the secondary supplies made available more regularly and the primary supply serving South Grand, these tertiary parking resources can place over 2,000 parking spaces into play when parking demand is greatest.
Create a “Park-once” District
Convert drivers to pedestrians when they enter the South Grand area by allowing and encouraging them to leave their cars parked while remaining in the area. Parking management plans that assume customers are unwilling to walk a block or two between parking and their primary destination will poorly serve traditional, urban districts such as the South Grand area. Competing with suburban shopping centers by replicating their supply-first approach to parking management not only plays to the competition’s strengths, it undermines one of the key virtues of traditional urban commercial centers—vibrant walkable environments in which one leaves the car behind and participates in an authentic urban environment.

By providing convenient, attractive and well-signed public parking options, the benefits of a successful park-once strategy will be shared among all downtown businesses and stakeholders, and include:

- Making parking more customer-friendly (fewer “... Towed at Owner’s Expense...” signs);
- Placing parking where it can be most beneficial — close to where people want to be, but designed and organized to keep sidewalk disruptions off primary commercial streets; and
- Keeping sidewalks busy by allowing visitors to leave their car behind and see more of the area’s pleasures and pursuits on foot.

Most importantly, a “Park-once” District reduces the number of parking spaces required to support a thriving South Grand district. A trip that includes a trip to Kinko’s, a stop at Commerce Bank, and a dinner of fine Ethiopian food requires one space rather than three.

There are two keys to making this strategy work:

- Making walking as attractive, rewarding and safe as possible — this is a key objective of the re-design plan.
- Shifting off-street parking from isolated, reserved, accessory lots to inviting, shared, public facilities — as outlined above.

Figure 17: Parking Opportunities for Events and Holidays
Figure 18: The “Park Once” District (based on an original illustration by Walter Kulash)
Car-Sharing Accommodation
There are currently a number of on-street spaces reserved for car-share vehicles in downtown and around Washington University. These spaces support the easy access to car-share vehicles — which members can rent by the hour or by the day via a speedy, on-line reservation system — for local residents and employees. This supports a number of options that can, in turn, reduce parking demand across the South Grand district, including:

- Transit commuting - Providing a short-term, quick-access rental option makes transit a more viable commute option for employees who periodically need to drive during the work day, or who might otherwise worry about being called home early or having to work late; and
- Reduced car ownership - A car-share membership commonly takes the place of a second (or even first) car, particularly in urban areas where parking is more challenging and alternatives to driving are more viable relative to suburban neighborhoods.

The metered spaces just off of South Grand offer an ideal location for car-share spaces, offering prominent visibility to visitors strolling along South Grand and an ideal location for car-share spaces, offering prominent visibility to visitors strolling along South Grand and a convenient location for nearby residents.

The South Grand PMP – Longer-Term Considerations

Create a Parking Benefit District
The creation of a parking benefit district is the ultimate means for maximizing the benefits of existing parking resources in urban areas. Pricing strategies maintain available spaces even during peak times and in the most popular locations. This makes parking less stressful by eliminating the need to hunt for a space or "get lucky". Instead, drivers make a price-based choice of location, balancing cost vs. convenience to best meet their needs.

The steps for creating such a district can vary, but common recommendations include the following:

- Focusing on availability: Set a formal performance target of 15 percent availability for all blocks.
- Using pricing to maintain availability: Raise and lower rates, whenever and wherever availability consistently fails to approach the target level.
- Investing in new meter technology: Multi-space pay stations can reduce sidewalk clutter while expanding management options and payment convenience. They can also allow pricing to reduce daylong demand without raising rates for short-term parking or even offer first-hour-free parking strategies.
- Eliminating time-limits: When consistent availability can be maintained through pricing alone, time-limits are unnecessary. Removing them can make parking significantly more customer-friendly, particularly during evening hours.
- Providing low-cost alternatives: In areas where high on-street demand results in high on-street parking rates, providing nearby options on side streets or in off-street facilities is essential.
- Investing revenues locally: The revenue generated from private parking areas can be used to directly benefit paying customers by funding conspicuous improvements in streetscapes, open spaces, and off-street parking supplies. If the public and downtown businesses can draw a direct connection between the price of parking and improvements that affect them, they are more likely to see the merit in the rates being charged.

Case Study Brief: In recent years, Old Pasadena (CA) has re-emerged from serious decline from Skid Row status. In 1993, the district's nascent revival was being hindered by a serious lack of convenient, available, front-door parking spots for customers. Old Pasadena then had no parking meters, and proposals to install them were opposed by local merchants who feared charges would drive customers away. In order to gain their support, the City agreed to maintain all meter revenue for investments in downtown improvements. Today, the $1-per-hour meters have funded the district's beautified alleys, street furniture, trees, tree grates, historic lighting fixtures, marketing, mounted police patrols, daily street sweeping and steam cleaning of sidewalks. Sales tax revenues quadrupled from 1992 to 1999, showing, perhaps counter-intuitively, that charging for parking can go hand-in-hand with remarkable, "big-picture" revenue increases.

Focusing Investments on Multi-Modal Access
Constructing new parking can often be the least economically effective means of providing access to, and mobility within, urban, commercial corridors. Expansion of bicycle facilities including routes, wayfinding, storage and services or commuter benefits such as bus passes or discounts, parking cash-out programs, carpool/vanpool coordination, etc. — can often provide more access for less money. The expansion of bicycle facilities or commuter benefits also has the advantage of getting more people out of their cars and enlivening area streets and sidewalks.

Case Study Brief: In the 1970's, downtown Boulder (CO) was dying, saddled with a shortage of convenient customer parking and very little transit. Its economic revival has been catalyzed on the transportation side by several key policies: the complete abolition of parking requirements for all non-residential uses; charging for parking, with all revenues used to benefit the downtown; and a policy of funding the most cost-effective mix of transportation modes, instead of only parking garages. Recognizing that "the economics of parking garages are dismal", as one planner put it, the business-led downtown district now uses parking meter revenues to fund a range of demand-reduction alternatives, including free transit passes for every downtown employee.
Pedestrian Analysis and Recommendations

Existing Conditions

Understanding the pedestrian environment requires analysis of the condition of the sidewalk and the condition of the roadway crossings at each intersection and throughout the corridor.

Between Arsenal and Connecticut the sidewalk is in good repair and of decent width. There are sidewalk cafes set up on both sides of the street throughout this section. The sidewalk in the southern section of the study area is older, in general in poor shape and in some cases, as narrow as two feet. During two full days of field work, it was observed that there were very few people walking around the study area. The greatest number of walkers were around the St. Louis Bread Company on the east side of Grand between Arsenal and Hartford. While pedestrians were few, there were a number of pedestrians crossing at the midblock points between each intersection.

At Arsenal and Utah, the crossings are much longer than at other intersections in the study area, though the amount of time to cross the street remains the same. Of the 120 seconds that make up the traffic signal cycle, pedestrians are given five seconds of "WALK" and 11 seconds of "DON'T WALK." Given the crossing distance, this is approximately a 3.5 feet-per-second walking speed; though it may feel considerably constrained because most of the crossing phase occurs with a flashing "DON'T WALK." After taking into account the lag time between signals to clear the intersection, pedestrians have considerable constraint because most of the crossing distance, this is approximately a 3.5 feet per second walking speed; though it may feel considerably constrained because most of the crossing phase occurs with a flashing "DON'T WALK." After taking into account the lag time between signals to clear the intersection, pedestrians have considerable constraint.

Humphrey street: The northwest corner has two large curb cuts to access the Phillips station. The sidewalk on the east side of the street is six feet wide without tree pits and two feet wide where there are tree pits. The retaining wall lining the sidewalk is caving into the sidewalk, forcing the walker away from the wall. The effective width throughout the section is almost seven feet north of the midblock alleyways on both sides of the street.

Humphrey/Grand: All curbs are ramped. Humphrey is controlled by stop signs. There are no crosswalk markings. In 15 minutes of observation, three people crossed the south leg of the intersection, roughly where a cross walk would be.

Sidewalk between Humphrey and Wyoming: There is good sidewalk width on both sides of the street. It is typically 10 feet wide, with three feet of brick paving to the curb. The sidewalk is clear and even on both sides of the street. Slightly south of Wyoming are alleyways on both sides of the street. The alleyway has a posted speed of 15 miles per hour.

Wyoming/Grand: All curbs are cut, though the cut is directed into the street rather than into the crosswalk. There are crosswalks across Grand, but not along Wyoming. Several pedestrians were observed crossing against the light as they didn't want to wait for the long cycle on Grand.

Sidewalk between Wyoming and Connecticut: There is good sidewalk width on the west sidewalk. There are tree pits on the east sidewalk, but there is still a good amount of sidewalk. At the northeast corner of Connecticut there is an alley and then a BP gas station. This creates one long curb ramp almost until the end of the sidewalk. Motorists turn quickly and at wide angles into the gas station.

Connecticut/Grand: There are curb ramps on each corner. There are no crosswalk markings. Connecticut is controlled with stop signs. There is a mid-block crossing between Connecticut and Juniata that is pedestrian activated, otherwise there is about 422 feet between traffic signals.

Sidewalk between Connecticut and Juniata: On the east side of the street the sidewalk has several driveways as well as a bus shelter near the northeast corner that is surrounded by tree pits. This only allows a few feet of sidewalk to try to get around the front of the shelter. On the west side of the sidewalk, close to the southwest corner, there is a large sidewalk café, Petra Cafe, that has outside seating.

Juniata/Grand: Juniata is slightly wider than the other cross streets, with stop controls.

Sidewalk between Juniata and Hartford: The sidewalks on both sides of the street are in good condition and are good widths. On the west side of the street there are several small sidewalk cafes.

Hartford/Grand: Hartford has painted crosswalks and standard curb ramps.

Sidewalk between Hartford and Arsenal: The sidewalk on the east and west sides of the street are in good condition and adequate width. On the east side of the street there are two sidewalk cafes.

Arsenal/Grand: The north crossing of South Grand is 100 feet, while the south crossing is 60 feet. The east crossing of Arsenal is 41 feet, where as the west crossing is 80 feet. Each of the corners has a different design. The south east to west crossing is controlled by a pedestrian-activated button, the other crossings are not controlled by push buttons. The northwest corner, though the convergence of the two longest legs, does not have a pedestrian signal. This makes
it difficult to understand when to cross the street or where the pedestrian is in the signal cycle. There are pedestrian signals at the other three corners.

The crosswalks are marked on every leg. The crosswalk markings across Arsenal on the west side of the intersection is striped into the south-bound bicycle lane on South Grand rather than into the curb. Apparently, when South Grand was redesigned to include a dedicated left-turn lane, the corner island in the northwest corner was removed. Not only does this make the crossing difficult and long, but the curb now has such a wide turning radius that southbound motorists turn very quickly to westbound Arsenal.

Analysis of Existing Conditions

This pedestrian analysis looks at the various ways to measure the influence of the physical environment on how enjoyable it is to walk around an area, as well as providing metrics to determine the impact of changes to the roadway on levels of potential safety and comfort for walkers.

While all transportation trips begin by walking, the amount of time people will spend walking for recreation, or as an alternative to driving, depends primarily on two things: perceived safety and the presence of continuous sidewalks. The relative safety of a street can be a measure of crime, a measure of how many people are involved in motor vehicle crashes each year and the perceived risk associated with easily accessible places to walk are diminished, such as narrow or no sidewalks and extended periods of time delayed crossing the street. There are numerous methods for calculating pedestrian LOS. The standard method is the Highway Capacity Manual (HCM). There are generally two calculations involved in understanding the entire pedestrian network: one that looks at a street crossing and one that looks at the pedestrian environment from the sidewalk level. Because of data restraints, the LOS based on the sidewalk environment was used for this LOS.

The Florida Department of Transportation (DOT) LOS manual bases pedestrian levels of service on four variables with relative importance (T statistic) ordered in the following list:

- Existence of a sidewalk
- Lateral separation of pedestrians from motorized vehicles
- Motorized vehicle volumes
- Motorized vehicle speeds

The formula used to calculate pedestrian level of service is:

\[ PLOS = -2.276 \ln (Wl + Wb) + fp \ (percentOSP) + fb \ (Wb) + fsw \ (Ws) + 0.0091 \ (Vol15/L) + 0.0004 \ (SPD2) + 6.0468 \]

Under the existing conditions, this yields a pedestrian LOS of 2.866 or LOS “C.” Converting the street from four lanes to three brought the LOS closer to “B” at 2.74 because change in curbside lane width factors heavily in this calculation. In addition, while crossing distance and the amount of time given to pedestrians to make the crossing is not part of this LOS calculation, the proposed recommendations to extend the curbs to shorten the crossing distance and extending the time pedestrians have to cross the street would also positively influence the pedestrian environment.

Test: Method and Assessment of Results

The pilot test to improve the South Grand Boulevard has several elements that will improve the walking environment: retiming the signals, reducing the road from four lanes to three lanes to reduce vehicle speed, providing additional time for pedestrians to cross the street and extending the curbs to reduce the crossing distance. With the restriping and curb extensions, the roadway was narrowed from 56’ to 37’. There were no additional crosswalks added as part of the pilot test.

ADA Accessibility

Current conditions along the corridor do provide ADA (Americans with Disabilities Act) ramps to cross the streets, but there are no detectable warnings at the bottom of the ramps. Many of the ramps exceed the recommended slope. Plus, the ramps are not directional and therefore risk pedestrians crossing in the middle of the street rather than at a direct crossing. Current sidewalk conditions are poor and in many areas exceed the maximum allowable grade change between surfaces. Lastly, the crosswalks do not currently provide audible signals.

The following were engaged in planning for ADA improvements along the corridor:

- Disabled users of the street
- St. Louis City Board of Public Service and ADA Specialist
- Missouri School for the Blind
- Paragard
- Gallaudet School
- City of St. Louis Board of Public Service
- City of St. Louis Office of the Disabled
- Missouri Department of Transportation
- PROW team, Federal Access Board

### Table: Pedestrian Level of Service

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln</td>
<td>Natural Log</td>
</tr>
<tr>
<td>Wol</td>
<td>Width of Outside Lane</td>
</tr>
<tr>
<td>Wl</td>
<td>Width of Shoulder or Bicycle Lane</td>
</tr>
<tr>
<td>fp</td>
<td>On-street Parking Effect Coefficient</td>
</tr>
<tr>
<td>percentOSP</td>
<td>Percent of Segment with On-street Parking</td>
</tr>
<tr>
<td>fb</td>
<td>Buffer Area Barrier Coefficient</td>
</tr>
<tr>
<td>Wb</td>
<td>Buffer Width (Distance Between Edge of Pavement and Sidewalk)</td>
</tr>
<tr>
<td>fsw</td>
<td>Sidewalk Presence Coefficient</td>
</tr>
<tr>
<td>Ws</td>
<td>Width of Sidewalk</td>
</tr>
<tr>
<td>Vol 15</td>
<td>Volume of Motorized Vehicles in the Peak 15 Minute Period</td>
</tr>
<tr>
<td>L</td>
<td>Total Number of Directional Lanes</td>
</tr>
<tr>
<td>SPD</td>
<td>Average Vehicle Speed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level of Service Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Less than 1.5</td>
</tr>
<tr>
<td>B</td>
<td>Greater than 1.5 and Less than 2.5</td>
</tr>
<tr>
<td>C</td>
<td>Greater than 2.5 and Less than 3.5</td>
</tr>
<tr>
<td>D</td>
<td>Greater than 3.5 and Less than 4.5</td>
</tr>
<tr>
<td>E</td>
<td>Greater than 4.5 and Less than 5.5</td>
</tr>
<tr>
<td>F</td>
<td>Greater than 5.5</td>
</tr>
</tbody>
</table>

Figure 22: Source: Highway Capacity Manual

Figure 23: Source: Florida Department of Transportation LOS Manual, 2002
Field observations were conducted during the pilot test to understand where pedestrians were crossing South Grand and how the new lane configuration influenced pedestrian behavior. Observations were made for 30-minute periods during the afternoon peak period on a weekdays, and during the evening on a Friday. Observations of pedestrian volumes at each intersection were taken for 15-minute periods during the afternoon peak period on a weekday.

Not surprisingly, the pedestrian crossing at South Grand and Arsenal is still difficult. Most notably, the northwest corner, with the free right turn from southbound South Grand to westbound Arsenal continues to be a point of concern. Both before and during the test, motorists at this location would not slow down to make this turn. This location is also difficult to understand because there is no pedestrian signal at the corner. However once this is installed, along with high visibility crosswalks and a build up channelizing area, speeds should be reduced. If turning movements continue to be a problem, this section may require additional traffic-calming measures to force safer driving.

Pedestrians crossing at midblock locations rather than at designated crosswalks was an issue before and during the pilot. Of the total pedestrians crossing South Grand Boulevard during the observation period, 31 people crossed at crosswalks and 32 people crossed at mid-block locations. The 32 people crossing at mid-block locations includes 12 people using the controlled mid-block crossing between Connecticut and Juniata.

The distance between controlled crosswalks makes it difficult to change the rate of people crossing at mid-block locations. The recommended new signal timing plan will give pedestrians more time to cross the street, in turn reducing the time people have to wait to cross the street. Once this has been formalized and other pedestrian crossings are improved, some percentage of the people crossing at mid-block will hopefully switch to formal crossings. In addition, it is believed that once the intersections have built out extensions of the curb there will be greater numbers of people using these crossings as the crossing distance is shorter. Pedestrian volumes and crossing locations during the pilot are shown in the charts provided.

### Table: Pedestrian Behavior

<table>
<thead>
<tr>
<th>Type</th>
<th>Location</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-minute survey of the number of people walking along Grand, between Hartford and Juniata on Wednesday, September 30, 2009 at noon.</td>
<td>Pedestrians east side of South Grand</td>
<td>23</td>
</tr>
<tr>
<td>30-minute survey of the number of people walking along Grand between Hartford and Juniata on Friday, September 18, 2009 at BPM</td>
<td>Pedestrians west side of South Grand</td>
<td>45</td>
</tr>
<tr>
<td>15-minute survey of the people crossing South Grand at each intersection, Arsenal to Utah between Noon and 2 PM.</td>
<td>Pedestrians east side of South Grand</td>
<td>34</td>
</tr>
<tr>
<td>15-minute survey of people crossing Grand at each mid block, Arsenal to Utah between noon and 2 PM</td>
<td>Pedestrians west side of South Grand</td>
<td>92</td>
</tr>
<tr>
<td>15-minute survey of people crossing Grand at each mid block, Arsenal to Utah between noon and 2 PM</td>
<td>*count taken for 30 minutes</td>
<td></td>
</tr>
<tr>
<td>*count taken for 30 minutes</td>
<td>Hartford St.*</td>
<td>8</td>
</tr>
<tr>
<td>*count taken for 30 minutes</td>
<td>Juniata St.*</td>
<td>2</td>
</tr>
<tr>
<td>*count taken for 30 minutes</td>
<td>Connecticut St.</td>
<td>0</td>
</tr>
<tr>
<td>*count taken for 30 minutes</td>
<td>Wyoming St.</td>
<td>11</td>
</tr>
<tr>
<td>*count taken for 30 minutes</td>
<td>Humphrey St.</td>
<td>1</td>
</tr>
<tr>
<td>*count taken for 30 minutes</td>
<td>Utah St.</td>
<td>5</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Arsenal - Hartford: East to West</td>
<td>2</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
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</tr>
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<td>Hartford - Juniata*: East to West**</td>
<td>11</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Hartford - Juniata*: West to East</td>
<td>2</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>***Juniata - Connecticut: East to West</td>
<td>5</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>***Juniata - Connecticut: West to East</td>
<td>7</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Connecticut - Wyoming: East to West</td>
<td>0</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Connecticut - Wyoming: West to East</td>
<td>0</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Wyoming - Humphrey: East to West</td>
<td>0</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Wyoming - Humphrey: West to East</td>
<td>2</td>
</tr>
<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Humphrey - Utah: East to West</td>
<td>0</td>
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<tr>
<td>**Most of the east - west crossings were from parked cars on the east side of South Grand to the three restaurants along the west side of Grand. A group of 8 arrived in two cars and crossed together. Almost everyone who parked their car in this area crossed the street in mid-block</td>
<td>Humphrey - Utah: West to East</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 24: Pedestrian Behavior

**Recommendations**

Improving the pedestrian environment along South Grand Boulevard to make crossing each intersection easier and walking on the sidewalk more pleasant is one of the main goals of this project. These changes are critical as South Grand Boulevard is a main walking route for students from the Missouri School for the Blind. All of the recommendations are in compliance with the requirements under the Americans with Disabilities Act (ADA).

Each intersection will have curb extensions of seven feet, with ADA compliant curb ramps. The pedestrian signals will be retimed for a walking rate of between 2.5-3.5 feet per second. Given the shortened crossing distance, a walking rate of 3.5 feet per second should be adequate. In turn, by providing more time to cross the street to pedestrians, the actual time pedestrians have to wait to cross the street will also be shortened.

All existing crosswalks will be marked using thermoplastic so they are most visible to motorists and easier to track for people with visual impairments.

The intersections of Arsenal at South Grand and Utah at South Grand will be reconfigured to reduce the overall crossing distances and improve the sight lines for motorists and pedestrians.
Bicycle Analysis and Recommendations

The current bicycle network around the study area consists primarily of signed routes or shared traffic lanes, with a bicycle lane beginning and ending at Arsenal Street and South Grand Boulevard.

During field observations, cyclists were seen using the bicycle lanes on South Grand Boulevard, but would typically ride on the sidewalks along South Grand Boulevard at the terminus of the bicycle lane. In fact more cyclists were observed riding on the sidewalk than riding on the street through the study area. This is an indication that cyclists either don’t feel safe riding on the road, that their destination is easier to get to by riding on the sidewalk (regardless of distance), or that they don’t know the rules of the road. In addition, more cyclists were observed riding on Arkansas Avenue in both directions than at any time on South Grand Boulevard. Arkansas Avenue is a wide street, is a good north/south connector for cyclists and does not carry the volume of traffic of South Grand Boulevard. Stakeholder interviews indicate a strong base of cyclists in and around South Grand Boulevard.

Indicators of the desire to bicycle for whatever purpose can be seen on the buses running along South Grand Boulevard, as the racks on the front of the buses were generally full during field observations.

Bicycle Level of Service

Bicycle Compatibility Index (BCI) methodology was developed for urban and suburban roadway segments (i.e., midblock locations that are exclusive of major intersections) and incorporated those variables that bicyclists typically use to assess the “bicycle friendliness” of a roadway (e.g., curb lane width, traffic volume and vehicle speeds). The BCI model developed and the subsequent level of service (LOS) designations provide practitioners the capability to assess their roadways with respect to compatibility designations provide practitioners the capability to develop and the subsequent level of service (LOS) that bicyclists typically use to assess the “bicycle friendliness” of a roadway (e.g., curb lane width, traffic volume and vehicle speeds). The BCI model developed and the subsequent level of service (LOS) can be used to evaluate changes in the design necessary to improve the bicycle LOS.

Planning: Data from long-range planning forecasts can be used to assess the bicycle compatibility of roadways in the future using projected volumes and planned roadway improvements. The model provides the user with a mechanism to quantitatively define and assess long-range bicycle transportation plans.

A BCI was calculated for existing and recommended conditions. The existing conditions BCI for South Grand Boulevard was a “D,” with the proposed conditions ranking between “D” and “C.” The primary reasons that the proposed changes to the street have little impact on the BCI are that parking volume and turnover are not likely to change on South Grand and the vehicle volume may or may not change. These two variables are weighted higher than vehicle speed and bicycle markings. In addition, the BCI doesn’t measure how roadway improvements for cycling work together as a network, nor does it allow an input for volumes of bicyclists. One of the primary safety factors for cyclists is having other cyclists on the road; some would even say the “safety in numbers” factor is more important than the type of bicycle facility, the volume of motor vehicles or the speed.

While the BCI can provide some information to planners, the decision to add bicycle markings or not should not be made with this tool alone. In the case of South Grand the proposed recommendations to this street and adjacent streets for cycling has a positive influence that is not indicated using this tool.

Pilot Test: Method and Assessment

The pilot project did not include any new roadway markings for bicyclists. As noted in the existing conditions, cyclists were observed riding on the sidewalks as well as on South Grand. Field observations to count cyclists were conducted at several locations for 30-minutes during noon-2 pm on a weekdays and during the evening on a weekday.

Cycling volumes at these locations are as follows:

30-minute survey of the number of cyclists on South Grand, between Hartford and Juniata on Wednesday, September 30, 2009 at noon:

- Northbound Cyclists: 2
- Southbound Cyclists: 5
- On sidewalks east side of Grand: 2
- On sidewalks west side of Grand: 3

30-minute survey of the number of cyclists on South Grand, between Hartford and Juniata on Friday, October 2, 2009 at 8 PM:

- Northbound Cyclists: 4
- Southbound Cyclists: 1
- On sidewalks east side of Grand: 2
- On sidewalks west side of Grand: 0

With the exception of children, it is important to eliminate cyclists riding on the sidewalk, as this creates unsafe conditions for pedestrians, especially the elderly and people with visual and mobility impairments. Once sharrow is installed along South Grand and alternative routes are marked, cyclists may have a better understanding of their place on the roadway. However in some cases it will be necessary to conduct an educational campaign to change the behavior of riding on the sidewalk, especially for delivery cyclists.
Recommendations - Bicycle Circulation

Goals

During the course of the South Grand Boulevard Great Streets project, discussion has revolved around how to accommodate cyclists. Any “complete street” has facilities for cyclists, and this usually means marked bike lanes. However, the existing right-of-way width, the desire for maintain parking, the desire to widen sidewalks, and the need to accommodate motor vehicle traffic (perhaps in only three lanes) are the tradeoffs for marked bike lanes. The conclusions from this analysis follow this logic: if speeds on South Grand Boulevard can be reduced to a more reasonable, main-street 25 mph and can keep the lanes narrow and add sharrows, then the road will be a more comfortable place to ride for experienced cyclists.

Bearing in mind that not all cyclists will want to ride in traffic on South Grand Boulevard, we analyzed the surrounding network, including existing facilities, destination, and street type. Figure 25 plots the general recommendations. Bike parking will be provided in front of stores; locations can be seen in the illustrative drawing in the Master Plan section.

The “wayfinding” markings along South Grand Boulevard, Pestalozzi, South Spring, Arkansas, Utah and Hartford Streets are called “sharrows.” This type of marking is relatively new and has been developed in order to establish shared space on a roadway that is too narrow for a standard bicycle lane (the minimum width for a bicycle lane is five feet). Sharrows are markings placed at each intersection and, once or twice per block depending on length, placed outside of the “dooring” area, about 11-12 feet from the curb.

In sum, what is gained is an integrated network of facilities on and surrounding South Grand Boulevard between Utah and Arsenal Streets, and along the greater South Grand corridor from Magnolia to Chippewa. This is expected to accommodate experienced cyclists who want to ride in the road, cyclists who are destined for the shops along South Grand Boulevard and others who are simply trying to make their way through the neighborhood to the parks, schools, libraries and other destinations.

The standard manual for street markings, the Manual of Uniform Traffic Control Devices (MUTCD), does not currently include this marking, though it is under consideration for the next version of the guide. However, the MUTCD can be modified by each State to include such markings. The California, Oregon and Washington MUTCDs include sharrows, and many other places use them without formally adopting them into this guide. Photo source: bikeithaca.org

I prefer to see a designated bike lane on South Grand

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>89%</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>I don’t know, I would like to learn more</td>
<td>11%</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Sharrows: The bicycle lanes on South Grand Boulevard south of Utah Street are the standard width of five feet, with or without a buffer (see image above). This type of marking helps delineate the roadway and creates a more comfortable environment for cycling. Most importantly, the bicycle lane helps to build the bicycle transportation network by linking people from where they are to where they want to go. Image source: la.streetblog.org

A potential future street car

If and when a streetcar is placed on South Grand Boulevard, the interaction with bicycles will have to be considered. Placing a streetcar on the street will involve reconstructing the roadway for the tracks, relocating the curbs at the streetcar stops (similar to bus bulbs), redesigning intersections to accommodate streetcar turns and locating bicycle facilities so that cyclists can interact safely with the streetcar. Critical streetcar-bicycle issues include: minimizing interaction between bicycle wheels and streetcar tracks, routing bicycle facilities at streetcar stops and providing enough operating space for both the streetcar and bicycle.
Bike St. Louis lane designation (source: onsl.org)

Existing designated bike lane in the St. Louis area (source: flickr-ahconway)

Bike St. Louis wayfinding sign (source: bikestlouis.org)

Figure 27: Bike St. Louis Map (source: bikestlouis.org)
**Pilot Test**

The pilot test was implemented on September 9, 2009 to demonstrate the three-lane option. When asked how they would assess the pilot test, 66 percent of participants felt it was either a success or a great success. After one month of the pilot test, 73 percent of participants felt the pilot test should continue until permanent construction next year. In addition:

- 78 percent of participants felt automobile speeds were reduced or greatly reduced.
- 35 percent of participants expressed concern for increased traffic on secondary streets, while the remaining 65 percent felt traffic was unchanged or reduced.
- 56 percent of participants felt that pedestrian safety was improved or greatly improved.
- 48 percent of participants felt that noise was reduced or greatly reduced, while 36 percent felt it was unchanged.
- 64 percent of participants felt that crossing the street by foot was easier and safer.

### Should the pilot test configuration on South Grand be continued until permanent construction next year? (select one)

<table>
<thead>
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<th>Option</th>
<th>Percentage</th>
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<tr>
<td>Yes</td>
<td>73%</td>
</tr>
<tr>
<td>No</td>
<td>21%</td>
</tr>
<tr>
<td>I do not have an opinion</td>
<td>6%</td>
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### How would you assess the pilot test of the three lane option? (select one)

<table>
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<th>Option</th>
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</thead>
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<tr>
<td>A great success</td>
<td>30%</td>
</tr>
<tr>
<td>A success</td>
<td>36%</td>
</tr>
<tr>
<td>Mixed results</td>
<td>18%</td>
</tr>
<tr>
<td>A failure</td>
<td>6%</td>
</tr>
<tr>
<td>A great failure</td>
<td>7%</td>
</tr>
<tr>
<td>Too soon to tell</td>
<td>3%</td>
</tr>
</tbody>
</table>
The tree lane configuration still accommodates emergency vehicle access.

Bulb-outs claim un-used space for pedestrians.

Pilot Test Hotline

A telephone hotline was provided during the pilot test for residents and commuters to express any issues or concerns, as well as to learn about the project and opportunities to become involved. 591 calls were received; 37 percent in support of the project.

Residents and businesses of the neighborhood were clearly more in support of the project than commuters. Commuters opposed to the project felt that their commute took longer, traffic was congested, getting around parallel parkers and buses was difficult, and that South Grand Boulevard should remain a main arterial.

Residents and business owners in favor of the project liked the slower traffic, increased safety, traffic calming, decreased speeds, better pedestrian environment and decreased noise on the street.

Those opposed to the project were generally concerned with traffic congestion, availability of parking, slow moving traffic, congestion due to buses unable to pull over, gentrification, congestion due to parallel parking, emergency vehicles being impeded, increased danger of accidents, difficulty to turn onto side streets, difficulty to enter onto South Grand Boulevard from side streets and difficulty for trucks to back out of closed alleys.

Those in favor of the project felt that it would benefit businesses and residents, that it would result in fewer accidents, that traffic would be slower and safer, and that it would be more pedestrian and shopper friendly.
Design Process

In order to execute a transparent and engaging process, the design team began by illustrating all possible scenarios including the pros and cons of each. The public was able to engage the design team in Q and A and was then asked to participate in a polling process to rank the options.

Schematic Design Option - 1

No Change

Option 1 - No Change proposed to leave the street as is. This option would save time and energy, and allow stimulus funding to be allocated elsewhere in the City. There would be no added value to the street and surrounding neighborhoods.

Schematic Design Option - 2

Beautification Only

Option 2 - Beautification Only would include the update and enhancement of sidewalk paving, crosswalk paving, street tree plantings and would enhance the overall aesthetics of the existing streetscape. This approach would allow more funds to be applied across the corridor, but would not address key concerns with safety and traffic speed.

Schematic Design Option - 3

More Travel Lanes

Option 3 - More Travel Lanes, illustrated to the right, would allow a higher volume and speed of vehicles on South Grand Boulevard as well as benefit from the beautification enhancements outlined in Option 2. This approach also does not address concerns with safety and traffic speeds, and parking availability is decreased greatly. There are no traffic-calming techniques applied in this option.
Schematic Design Option - 4
No On-street Parking, Wider Sidewalks

Option 4 - No On-street Parking, Wider Sidewalks would remove the existing parallel parking to increase the sidewalk width. The number of travel lanes would remain as existing, as well as benefit from overall beautification enhancements to sidewalk paving, crosswalk paving and street tree plantings. Although sidewalk width is increased, this approach results in a significant decrease in parking, does not address safety concerns and traffic speeds, and does not employ traffic-calming techniques.
Schematic Design Option - 5

4-Lane Basic Enhancement

Option 5, the 4-Lane Basic Enhancement begins to address safety and traffic concerns through the use of bulb-outs at intersections, while maintaining four travel lanes. Bulb-outs slow traffic and provide a short crossing distance for pedestrians. In addition, this option would enhance the overall beauty of the streetscape. Sidewalks would remain the existing width of 12 feet.
Schematic Design Option - 5
Schematic Design Option - 6

Trees in Parking

Option 6, the Trees in Parking option includes the overall beautification of the streetscape and moves the street trees into the existing parking lanes. This would allow the sidewalks to feel wider and accommodate additional pedestrian traffic and dining opportunities. This approach also employs the use of bulb-out at intersections, while maintaining four travel lanes. Bulb-outs slow traffic and provide a short crossing distance for pedestrians. This approach would result in a reduction in parallel parking along the street and could result in tree damage.
Schematic Design Option - 7

3-Lane Basic Enhancement

Option 7, the 3-Lane Basic Enhancement would reduce the number of travel lanes from four to three, complete the overall beautification of the streetscape and provide bulb-outs at intersections to slow traffic and to provide a short crossing distance for pedestrians. This option maintains the existing sidewalk width to provide for both north-bound and south-bound bike lanes.
Option 8, the 3-Lane Enhancement Plus would reduce the number of travel lanes from four to three, complete the overall beautification of the streetscape and provide bulb-outs at intersections to slow traffic and provide a short crossing distance for pedestrians. This option provides wider sidewalks for increased pedestrian safety and traffic, as well as additional outdoor dining space.
Schematic Design Option - 9

Center Median

Option 9, the Center Median option would reduce the number of travel lanes from four to three, complete the overall beautification of the streetscape and provide bulb-outs at intersections to slow traffic and to provide a short crossing distance for pedestrians. This option provides wider sidewalks for increased pedestrian safety and traffic, as well as additional outdoor dining space. The center turn lane would double as a planted median to add to the overall aesthetics of the street.
Design Development

The outcome of the public's top ranked options were then further developed and illustrated at a more detailed level. The nine options were narrowed to three including:

- 3-Lane Option
- 4-Lane Option
- Asymmetrical Option.

3-Lane Option

The 3-lane option would reduce the number of travel lanes from four to three, complete the overall beautification of the streetscape and provide bulb-outs at intersections to slow traffic and to provide a short crossing distance for pedestrians. The overall beautification would update and enhance the sidewalk paving, crosswalk paving, street tree plantings, lighting and site furniture. This option provides widened sidewalks for increased pedestrian safety and traffic, as well as for additional outdoor dining space.
Design Development

4-Lane Option

The 4-lane option begins to address safety and traffic concerns through the use of bulb-outs at intersections, while maintaining 4 travel lanes. Bulb-outs slow traffic and provide a short crossing distance for pedestrians. In addition, this option would enhance the overall beauty of the streetscape. The overall beautification would update and enhance the sidewalk paving, crosswalk paving, street tree plantings, lighting and site furniture. Sidewalks would remain the existing width of 12 feet.
4-Lane Option

- Junia St.
- Hartford St.

- Porous paving
- Alley access to be closed
- Bus stop and shelter
- Ground-cover planting
- Improved crosswalks
- Sharrow bike lane
4-Lane Option
Design Development

Asymmetrical Option

The asymmetrical option would reduce the number of travel lanes from four to three, complete the overall beautification of the streetscape and provide bulb-outs at intersections to slow traffic and to provide a short crossing distance for pedestrians. The overall beautification would update and enhance the sidewalk paving, crosswalk paving, street tree plantings, lighting and site furniture.

This option provides wider sidewalks for increased pedestrian safety and traffic, as well as for additional outdoor dining space. This option allows the curb to remain in the same location on the east side of the street, while moving the west-side curb to create a wider sidewalk. The east sidewalk would widen where right-of-way is available, and future redevelopment would ensure a six foot setback from the right-of-way which would result in 15’ sidewalks on both sides. This approach would need to incorporate a strategy to acquire the appropriate right-of-way which could present challenges.
Asymmetrical Option

- Juniata St.
- Hartford St.

- Porous paving
- Alley access to be closed
- Designated bike lane
- Improved crosswalks
- Bus stop and shelter
- Ground-cover planting
Design Development

Public Input

At the final public meeting in October 2009, one month after the pilot test, 80 percent of the participants preferred the three lane enhancement. Therefore, the design team moved forward with the development of the tree lane design as a master plan from Dunnica Street to Magnolia Avenue.

Key-pad Polling

The plan for South Grand I prefer is: (select one)

95 responses

- Three Lane Enhancement: 80%
- Four Lane Enhancement: 20%
At the onset of this project, South Grand Boulevard was 4-lanes (2+2) from Chippewa Street to Interstate 44. South of Chippewa Street, South Grand had 3-lanes, including a center turn lane. North of Interstate 44, it has six lanes (3+3). At various points (i.e. Gravois Avenue) parking is restricted to create a third lane. At other points there are center turn lanes and/or medians.

This project resulted in a preferred alternative of a three-lane section between Utah and Arsenal Streets, thus bringing up the question: should the “road diet” be extended to the north and south.

Extending the three-lane section to the south would create a continuous three-lane section from the beginning of the boulevard at Carondolet Park all the way to Tower Grove Park. A center turn lane already exists south of McDonald Street; it would only need to be extended one block to Utah Street. Vehicle volumes below Utah Street are less than 20,000 average daily traffic, so there is no capacity argument against a three-lane section. At Gravois Avenue parking could continue to be restricted for a right turn lane. Where no turn lane is needed curb extensions could be added. Bicycle lanes from Utah Street south would make South Grand Boulevard a “complete street.”

Further transportation, economic/market and infrastructure analysis and study will be required prior to implementation to verify feasibility. The graphic to the right is for illustrative purposes only to show what a 3-lane option would look like if it were to be considered.
Utah to Arsenal: 3 Lane

The 3 lane section will reduce the number of travel lanes from four to three, complete the overall beautification of the streetscape and provide bulb-outs at intersections to slow traffic and to provide a short crossing distance for pedestrians. The overall beautification would update and enhance the sidewalk paving, crosswalk paving, street tree plantings, lighting and site furniture.
Arsenal to Magnolia: 3 Lane

The master plan recommends the transition to 3-lanes would occur just south of Magnolia Ave. Two modifications could occur in this area: The center medians could be extended to provide places of pedestrian refuge or the medians could be removed providing additional area along Tower Grove Park.

Implementation of this recommendation would require further transportation, economic/market and infrastructure analysis and studies prior to implementation to verify feasibility. The graphic to the right is for illustrative purposes only to show what a 3-lane option would look like if it were to be considered. Ideally, the 3-lane section would continue north to the interstate.
1. Outdoor Dining
2. Pervious Parking Lane
3. Rain Garden
4. Left-Turn Lane
5. Travel Lane/Bike Sharrow
6. Bus Shelter
7. Bus Stop
8. Accessible Parking Space
9. Pervious Concrete Sidewalk
10. Intersection Bulbout
11. Proposed Street Tree
12. Street Lamp
13. Planting Area

Typical Block Plan

Typical Block Cross Section
Process Renderings of 3-Lane Composition and Streetscape
Process Renderings of 3-Lane Composition and Streetscape
Lighting

When asked if night sky preservation is important to them, 42 percent of respondents answered yes, while 24% had no opinion. Given a list of City-approved light fixtures, the community preferred a light standard that was International Dark Sky Association compliant and was in keeping with the use of historic materials and forms in a contemporary way.

The City of St. Louis however does not have an approved dark-sky-compliant light standard at this time, so the model to the right is a new introduction but of a style similar to the popular choice selected by the community during the polling sessions. The pole is a concrete pole to match the style, color and finish of the poles adjacent to Tower Grove Park. The pole specification was directed by the City of St. Louis.

Smart Parking Meters

Another viable option in lieu of pay stations and one that is more direct for the parking patron is the incorporation of parking meters that accept credit cards or change. This allows the user the maximum flexibility for payment. Meters would be integrated with the light poles and spaced 40' on center providing two meters per light pole.

However at this time, the City has opted for providing standard meters on poles, some of which will be two meter poles.

Paving Materials

The visual preference survey illustrated a strong interest in utilizing permeable paving materials in the streetscape. Permeable concrete will increase surface permeability and store and utilize stormwater on site. The Master Plan achieves 23 percent of the ROW as porous including pedestrian gathering areas and parking lanes. Planting areas and rain gardens have also been provided to increase the permeability of the streetscape.

Site Furniture

The visual preference survey of the key-pad polling and on-line survey suggested that the design utilize historic materials (brick, limestone, etc.) but in more contemporary forms. Using Tower Grove Park as a precedent, historical site furniture and accessories are of a Victorian style using black wrought iron with gold accents. The selected site furniture interprets historic forms and materials in a contemporary way.

The current streetscape design incorporates the reuse of the existing trash receptacles. Should budget become available in the future, the district could investigate other trash receptacle options as necessary. The Master Plan envision the incorporation of receptacles for recycling. The design of these receptacles should complement the trash receptacles.

Bike racks were chosen with the support of Trailnet, providing two points of contact for securing the bicycle.

Smart Parking Meters

Another viable option in lieu of pay stations and one that is more direct for the parking patron is the incorporation of parking meters that accept credit cards or change. This allows the user the maximum flexibility for payment. Meters would be integrated with the light poles and spaced 40' on center providing two meters per light pole.

However at this time, the City has opted for providing standard meters on poles, some of which will be two meter poles.
Bus Shelters

It is recommended that shelters be provided at stops that exceed 50 boardings per day. Therefore shelters will be located at Arsenal/Grand (west side), Juniata/Grand (west side) and at the library. During Phase One of the streetscape, the existing bus shelters will be salvaged and relocated to the east side of Grand at the Arsenal and Juniata stops. In the future, the Master Plan envisions a bus shelter design similar to the model depicted below. There are three pairs of bus stops (north bound/south bound) envisioned between Arsenal and Utah. Upon completion of the project, all stops will have shelters.

Newspaper Corrals

The visual preference survey illustrated a strong interest in incorporating art into the streetscape. Using the metal work at Tower Grove Park as inspiration, the following design was developed for the newspaper corrals. These corrals could be fabricated and installed in the future to contain newspaper boxes at key locations along the street.
Planting

Street Trees

The goal of the planting design is to utilize native plant materials to maximize growth, health and adaptability; reinforce water conservation; and attract wildlife. Raised planter areas with 12” height curbs have been provided to maximize soil volume, protect the trees and plant material, and prevent soil compaction typical of most streetscapes.

The proposed trees comply with the City-approved plant list and the recommendations set forth by the Davey Resource Group in their Street Tree Resource Analysis prepared in March 2009. Plant diversity, alkaline tolerance, tree size and shade-producing qualities were other factors considered in our selection.

Additional Plantings

Rudbeckia fulgida 'Goldstrum'  (Black Eyed Susan)

Sporobolus heterolepis (Prairie Dropseed)

Liriope muscari 'Variegated'  (Variegated Lilyturf)

Quercus palustris  (Pin Oak)

Platanus occidentalis  (America Sycamore)

Tilia americana  (American Linden)

The proposed additional plantings were selected to add seasonal interest and provide a durable groundcover to planting areas along the corridor.
Planting - Rain Gardens

Rain gardens are designed to filter and absorb stormwater run-off from impervious surfaces such as the roadway and parking lots to reduce the amount of water flowing into storm drains and to reduce erosion, water pollution and flooding from surface run-off. The rain gardens are defined by a sunken garden contained by raised curbs. Check dams are provided to control water flow and encourage infiltration. A special planting soil will be specified to ensure maximum infiltration into the ground with a perforated pipe provided for emergency overflow to existing catch basins.

The following plant list was selected based on recommendations from the Landscape Guide for Stormwater Best Management Practice Design, St. Louis Missouri and the Missouri Botanical Gardens. These native plant species were selected due to their ability to thrive in wet conditions, and their tolerance of frequent flooding and salt, their ability to thrive in full or partial sun, their ability to attract birds and butterflies, and their availability in the local nursery trade. All of these plants are native and part of Missouri’s natural heritage, providing a high-aesthetic value.

<table>
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<th>Latin Name</th>
<th>Common Name</th>
<th>Seasonal Interest</th>
<th>Color</th>
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<td>May-June</td>
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<tr>
<td>Asclepias tuberosa</td>
<td>Butterfly Milkweed</td>
<td>Orange</td>
<td>June-August</td>
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<tr>
<td>Echinacea purpurea</td>
<td>Purple Coneflower</td>
<td>Purple</td>
<td>June-August</td>
<td></td>
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<tr>
<td>Schizachyrum scoparium</td>
<td>Little Bluestem</td>
<td>Blue/Bronze</td>
<td>May-August</td>
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</table>

Iris fulva (Copper Iris)  
Echinacea purpurea (Purple Coneflower)  
Schizachyrum scoparium (Little Bluestem)  
Asclepias tuberosa (Butterfly Milkweed)
Green Stormwater Design Overview:
Utah Street to Arsenal Street

The South Grand design achieves 23 percent permeability in the street cross-section, from the right-of-way to the centerline of South Grand Boulevard. The design team is proposing the following as amenities to help achieve the goal:
1. Pervious concrete paving for pedestrian gathering surfaces,
2. Permeable pavers for all parking spaces,
3. Rain gardens at bulb-outs,
4. Planting areas.

- **Pervious Concrete**
  - Locations: All pedestrian sidewalks
  - Quantity: 13,516 square feet

- **Permeable Pavers**
  - Locations: All parking spots
  - Quantity: 13,422 square feet

- **Rain Gardens and Softscape**
  - Locations: Bulb-outs and tree pits
  - Quantity: 23,112 square feet
MASTER PLAN
SIGNAGE AND WAYFINDING
Signage and Wayfinding

WHAT WORKS?

• Inherent Character
• Eclectic Quality
• Architecture
• Tenant Mix/variety
• Sense of Civic Pride
• Select Tenant Signs
• An Existing Urban Destination
• Well Maintained
• Strength of Adjacent Neighborhoods
• Community Improvement District

Examples of streetscapes on South Grand

Example of a decorative door design adding to a rich visual environment

Example of a tiled utility box. Using art in unexpected ways results in a distinctive environment
WHAT COULD WORK BETTER?

- District Identity is Weak
- Boundaries are Unclear
- Inconsistent Tenant Signs
- Too Few Pedestrian Scaled Signs
- Too Few Perpendicular Tenant Signs
- Sign Code not Enforced
- Surface Parking Lots not Identified
- Visitors Park in Neighborhoods
- Some Trees Block Tenant Signs
- Confusion with the Name: South Grand?
  South Grand Boulevard?
  Grand South Grand?
  South Grand District?

Examples of an effective perpendicular tenant sign on Juniata and South Grand Boulevard

Examples of adjacent neighborhood identification signs and banner

Example of the South Grand Community Improvement District area brochure

Example of a streetscape with no perpendicular mounted tenant signs

Example of an awning identifying the tenant address, but not the tenant
IDENTITY DESIGN PRINCIPLES

- The design should reflect an urban experience and lifestyle.
- The identity should be versatile with the ability to be applied in a wide variety of uses and media.
- The identity will be bold, integrated with the surrounding neighborhoods, distinctive and memorable.
- The identity should appear elegant and timeless.
- The identity should appeal to all ages.
- Design should reference St. Louis and South Grand history and precedents.

Typography can reflect historic characteristics without appearing overly themed or stylized based on a certain era.
To date, based on polling results, the name “South Grand” for the corridor has been favored by half of the polling participants. The simplicity of “South Grand” works well with existing neighborhood precedents as seen in the photos shown below.

The logos shown at the right represent a distillation of the historic precedents mixed with the more eclectic present.

The goal for South Grand is to present a visual identity that is integrated with the existing and very familiar—yet new.
DISTRICT GATEWAY

Local St. Louis neighborhoods, parks and districts have entry gateways defining their territory. Some are very ornate, while others are more simple and understated.

Historic precedents are sprinkled throughout St. Louis. Adjacent examples include entrances to Tower Grove Park, Compton Heights and Flora Boulevard.

A more recent example includes the St. Louis University gateway arch.

RECOMMENDATIONS

To complete the existing neighborhood fabric, a District Gateway for “South Grand” is recommended.

The column locations should define the perimeter. One recommended location for the northern end is at the median on South Grand Boulevard right after the north edge of Tower Grove Park at Magnolia Avenue.

The southern boundary is not as clear or defined, but the column can be located at the median on Utah Street.

The examples at the right show the design intent for a new District Gateway. The stone column is a strong symbolic marker for the area. More contemporary detailing and banding can freshen the historic precedent. The “finial” for the column can be a project identification sign or an opportunity for sculpture. While the gateway is scaled for cars, it also has pedestrian scale and proportions.

Examples of local historic and new gateways and entry sign treatments.

Example of a rough and smooth stone veneer treatment on a building on South Grand Boulevard.
DISTRICT BANNERS

In St. Louis, banners are the rule for defining districts—whether commercial or neighborhoods. Another common precedent are banners adjacent to local churches. Periodic events are also featured on banners, whether on lighting poles or spanning the roadway.

South Grand Boulevard has banners identifying the Tower Grove Heights neighborhood and St. Pius V Catholic Church. The taller, more contemporary “cobra” street posts have armatures for banners, but none are present today on South Grand Boulevard.

RECOMMENDATIONS

1. Adjacent Neighborhoods: Instead of banners, more permanent signs are recommended to identify adjacent neighborhoods such as Tower Grove Heights and Tower Grove East.

2. A District Banner Program on South Grand Boulevard: To reinforce the identity of the district, a new banner program is recommended. The primary function is to identify “South Grand.”

3. Permanent vs. Temporary: The results of polling show 1/3 of the people voted for either interchangeable or permanent banners on South Grand Boulevard. A permanent system can be a digital print on metal while a temporary program can be printed fabric banners. In either case, UV coatings should be specified for longevity.

Examples of various light post banners, an event banner that spans the street and permanent neighborhood identification signs. Above: A light post with an empty banner armature.
RECOMMENDATIONS, Continued:

4. Photography can be a bold, powerful and easily accessible format for district banners. The adjacent Tower Grove Park can provide images to reinforce the sense of place. Lifestyle images can also reinforce the district as a shopping and dining destination.

5. District Identity: Banners are a great medium to reinforce the new identity/logo. A “header” in silhouette makes reference to existing neighborhood signs in the area. The logo can also be printed over a photo or solid color background.
DISTRICT WAYFINDING

While there is a perception of adequate street parking for South Grand visitors, there are additional parking lots available. However, there is no indication from South Grand Boulevard (or the neighborhood side streets) where they are located.

RECOMMENDATIONS

Implement a stronger system of vehicular parking directional and identification signs that are distinctive, bold and readable from a distance. Utilize the widely known “P” for parking symbol, but in a more appropriate typeface in harmony with the overall district.

Because the Community Improvement District is making great efforts informing visitors of the restaurants, shops and available services via their brochure, website and other media, other wayfinding signs are not necessary because of the intimate scale of the district. However, a directory and/or event kiosk should be considered as an additional layer of updatable information.

Examples of Parking Directional signs from the City of Clayton and Washington Avenue. Below is an example of a district directory and events kiosk.

The printed South Grand business directory brochure.
TENANT STOREFRONT SIGNS EVALUATION

The current state of retail tenant storefront signs on South Grand Boulevard is inconsistent with a lot of variety. While this adds to the eclectic visual environment, it also under-identifies certain tenants. While some storefronts have large illuminated storefront signs, other storefronts do not have perpendicular mounted signs, preventing the pedestrian from knowing the shops and restaurants ahead and inside. Many tenant signs are still oriented to the automobile with oversized addresses and signs mounted parallel to the storefront.

Examples of effective perpendicular retail tenant storefront signs on South Grand Boulevard

Examples of fascia mounted signs that are more oriented towards cars and not as visible to pedestrians
While over-cluttering the environment is not the goal, making it more consistent is. By allowing more variety of perpendicular storefront signs at a smaller scale, more storefront tenants will be visible to pedestrians as they walk down the street. Where possible, all sign types should be encouraged for each tenant. A fascia mounted storefront sign, a perpendicular sign and tenant identification on the storefront windows.

The current sign ordinance is customized for South Grand and appears adequate for the current environment. However, there are cases where signs are installed without approval of the Community Improvement District. The ordinance should be enforced and tenants should be encouraged to design creative and effective signs per the code.
Public Art

In addition to indicating a desire to see improvements in the connectivity and pedestrian friendliness of the streetscape, polling sessions during the Great Streets meetings indicated that participants want to improve the look of the streetscape and that they feel the historic character of the buildings and the mix in architectural styles contribute to the overall look and feel of the South Grand district. Public art can help to build this identity without inhibiting views to buildings or blocking pedestrian activity along the already crowded sidewalks.

Public art is already an important component of the South Grand corridor. Starting in 2006, Alderwoman Jennifer Florida and Alderman Steve Conway with the assistance of the St. Louis Development Corporation commissioned an artist to mosaic electrical boxes along South Grand Boulevard in the Grand Tower Grove Betterment Association district. These boxes, by St. Louis artist Laura Marrs, bring elegance and a design sensibility that keeps with the streetscape and suggests a creative community. This program has been extended into the Community Improvement District and further south. Historically, public art and sculpture along the South Grand corridor, such as The Naked Truth at Compton Hill Reservoir Park and the Gates to Tower Grove Park, have been monumental in scale, celebrating civic achievements in infrastructure and park planning.

The public engagement process demonstrated that art is an essential element of the South Grand Great Street project. Discussion around the public art boards indicated a strong level of enthusiasm for including artists in the design process and an understanding that public art will help to strengthen the identity of the District. As a result of these conversations and the key-pad polling and on-line polling, the overall goals for public art on South Grand Boulevard should be to:

• Strengthen the identity of the district by inviting artists to create artworks that reflect the unique social, cultural and spatial aspects of the area.
• Reinforce the South Grand district as a cultural destination for dining, shopping and doing business by highlighting its distinct identity.
• Enhance and support efforts to “green” South Grand by commissioning artworks that reveal environmental aspects of the streetscape or directly provide environmental remediation.
• Create partnerships with neighborhood schools, arts organizations and others to present high-quality artworks and to engage with artists.

Polling also suggests that participants strongly support the notion of a percent-for-art model with this project as a demonstration of public art’s importance to the overall project. It is recommended that one percent of the overall Great Streets budget should be set aside for public art and public art programming.

“Great Streets have great art.”
- attendee of a South Grand Great Street Initiative open house

Electrical box on South Grand Boulevard

The Naked Truth, Wilhelm Wandschneider, Compton Hill Reservoir Park - Russell and Grand, 8’ H, 20’ W, 15’ D, 1913, Bronze on granite pedestal, owned by the City of St. Louis, donated by the German American Alliance and private donors

The Gates to Tower Grove Park, unknown artist, 15’ H, 8’ W, 5’ D, c. 1880s, Zinc on limestone pedestals, owned by Tower Grove Park, donated by Henry Shaw
Public Art Recommendations

There are several approaches to including the work of artists in the South Grand streetscape improvements. In the near term, an artist or artist team can be invited to develop permanent, integrated artwork as part of the overall streetscape design. An ongoing program of temporary art installations can begin immediately and become a part of the South Grand experience. Finally, a permanent sculpture or sculptures can be installed concurrent with the streetscape improvements, or at a later date.

Permanent, Integrated Artwork

Works of art can be infused into the design of new streetscape elements on South Grand, helping define the district and announce the importance of arts and culture to the neighborhood. An integrated approach to including artists in the streetscape design will enhance the design without cluttering the pedestrian realm.

Phase 1 - Building Identity
An artist should be commissioned to work with the design team to develop a linear project that speaks to the character of the neighborhood and strengthens the pedestrian experience.

An artist should be included in Phase 1 of the streetscape project to integrate an artwork into the area where the sidewalk will be widened. An artist would develop a design and work with durable materials that complement the re-purposed material that has been selected to extend the sidewalk. Examples of material may include litho-mosaic, re-used brick, terrazzo inserts or other colored aggregate. Examples of this type of work can be seen below.

Phase 2 - Green Street
An environmental artist should be engaged to highlight the environmental features of the streetscape, such as developing functional and artistic ways to capture stormwater, slowing its infiltration and filtering the water as it re-enters the natural system. By commissioning an artist to work in this way the green infrastructure will be more readily noted and valued.

Other Opportunity – Permanent Sculpture
Beyond the scope of this immediate streetscape project, the South Grand district is considering developing a dining area on the west side of the block between Juniata and Connecticut. A large sculpture on this block could act as an indicator of activity and draw people to the area, becoming a new landmark. This work could be included as the plaza is developed or be installed at a later date. It could be site-specific or purchased specifically for the site. Or it could be a good opportunity to look for a gift or long-term loan. It should take into account the uses of the plaza; the scale of the buildings, street and plaza; and the character of the neighborhood.
Public Art

Temporary Installations

Through the leadership of the South Grand Community Improvement District and in partnership with local arts and cultural organizations, temporary artworks should be commissioned for the South Grand district. Temporary or changing art projects can reflect the vitality and dynamic nature of South Grand and bring new work to all that frequent the neighborhood.

Temporary art installations should be commissioned that will meet the following goals:

- Create artworks that raise the creative profile of South Grand as viewed by residents and by outsiders.
- Build relationships with local galleries and cultural institutions by creating opportunities for display of work in an unusual, but highly trafficked location.
- Attract visitors to South Grand.

Before, During and After Construction
Phase 1 - Construction Mitigation

Temporary works can be commissioned to help mitigate the construction obstacles created while the street is being rebuilt and to create excitement around the upcoming changes resulting from the South Grand Great Streets project.

Phase 2 – Celebration

To celebrate the completion of the South Grand Great Street improvements, an artist should be commissioned to highlight the changes and draw attention the project. This effort can be sculptural or performative, but should encourage community involvement.

Ongoing Temporary Art Programming

The South Grand Community Improvement District should consider including temporary public art programming as part of their annual program to continue to bring fresh ideas to the street. These works can celebrate the identity of the district, bring visibility to local events and festivals, and engage local businesses and residents.

Artists were commissioned by the Lower Manhattan Cultural Council to design construction fencing and barrier painting patterns. On Delmar Boulevard in St. Louis, local artist Patrick Schuchard led a team that created banners with portraits of people who live and work along Delmar. The back of the banners declare “Take a Look,” drawing attention to the improvements that were taking place as part of the streetscape project.

Seyed Alavi, Where is Fairfield?, 1995, Fairfield, CA

Artists can infuse fun and wonder in everyday experiences, such as with this bus shelter in Philadelphia. Or, projects such as Patterns Without Borders: Flags for our Human Unity by Seyed Alavi in Sonoma, CA can stimulate thought and dialogue.

Seyed Alavi, Where is Fairfield?, 1995, Fairfield, CA

Artists can raise questions about community identity as Seyed Alavi has done in his project Where is Fairfield?, 1995, Fairfield, CA. He engaged community members, merchants, school kids and others in the discussion.
Ben Fehrmann was selected as the result of a Call to Artists or Request for Qualifications limited to artists residing in Missouri and Illinois. An artist selection committee consisting of five to seven South Grand stakeholders including representatives from the Community Improvement District, residents, and local artists and arts professionals convened to select an artist for the project. Representatives from the Great Streets project team, from the City’s Board of Public Service and East-West Gateway were invited to provide technical assistance. The committee reviewed qualifications and selected three artists/artist teams as finalists. The three finalists were paid an honorarium to develop a design concept. The committee reconvened to review the finalist’s concepts and select one for the corridor. The committee’s recommendation was forwarded to the Board of Public Service for approval and contract development. The artist-selection process was facilitated by Via Partnership, working as representatives of the South Grand Great Streets design team.

TwelveMetre has proposed an art installation called South Grand Point, which is a proposal for a work of public art which intends to strengthen connections along the space of the district and contribute to the perception of South Grand as a single unified place. The device employed is a series of steel panels which function to enhance pedestrians’ awareness of the effects of motion parallax on their understanding of space and distance and, thus, their awareness of the space of the street beyond their immediate realm.

The locations of the individual panels have been established with consideration of numerous parameters and constraints. Chief among these is the intention to keep the piece some distance from intersections (for pedestrian safety) and in the planted areas (to avoid interference with pedestrian traffic). The most basic description of the piece is that it is a device which focuses attention forward in an effort to enhance the experience of the energy of South Grand.

The final effect is after the location of the panels is established by binocular vision. At this point the panels on the alternate side of the street on the next block appear to emerge from behind the nearer panel and travel from left to right towards the further panel. This effect is repeated with systematic variations for the length of the district and terminates at Tower Grove Park. This device is not intended to be a dramatic event, but rather a durable companion against which the residents and visitors to South Grand can measure the change of the place over time, and ultimately to contribute to a richer understanding of the place.

The plan to the right shows the device locations assumed in concept design. Generally the device marks a path from south to north along Grand Avenue towards Tower Grove Park. Consecutive devices alternate from the west to the east side of the street. While the device marks a procession from south to north, pedestrians moving from north to south will perceive a forced perspective effect which, while not discussed in detail, will have a similar effect of heightening awareness of motion parallax. The devices are located in consecutive rectangular planters indicated in orange. The materials are steel panels, stainless steel or mild steel support structures, and concrete.
Budget and Phasing - Phase 1

Key-pad and on-line polling participants were asked how they would prefer dollars be spent if funding is inadequate to build out the entire corridor. Seventy-seven percent of key-pad polling and 59 percent of on-line polling participants felt the budget should be applied uniformly across all blocks in order to complete some level of improvements across the entire area and build out the other blocks as funding becomes available.

The master-plan improvements include the area between Utah St. to Arsenal St. The improvements will occur in a minimum of three phases: Phase 1 ($1.8M), Phase 2 ($1.25M) and Phase 3 ($2M+). Further planning will occur for improvements from Dunnicra St. to Utah St. and Arsenal St. to Magnolia Ave. sections of the master plan.

Phase 1 ($1.8 M) includes the following:
- Site demolition and recycling of materials.
- Move all curbs from Arsenal to Humphrey to their new locations, including construction of the island north of Arsenal.
- Painting of all roadway striping: travel lanes, turn arrows, stop bars, parking stall lines, bike lane “sharrows” and crosswalks.
- Accessible, audible and tactile traffic signals at Arsenal, Hartford and Wyoming for the visually and hearing impaired and tactile crosswalks for the visually impaired at each of these intersections.
- New concrete paving at bulb-outs and all sidewalks within ROW, including pervious concrete paving between curb and 6’ offset from ROW.
- ADA Ramps with detectable warnings at bulb-outs.
- Perennial planting at tree planters and in bulb-outs along South Grand.
- Turfgrass sod at bulb-outs (along the side streets).
- Relocation of trash receptacles based on overall site furnishings plan.
- Reinstalled salvaged parking meters.
- ADA parallel parking spaces on Grand (1 per block as recommended in accessibility guidelines).
- Accessible bus stops, including the relocation of two existing Metro bus shelters.

Phase 2 ($1.25 M) includes the following:
- Site demolition and recycling of materials.
- Relocation of mid-block traffic signal to Juniata.
- Reconfiguration of Utah intersection including new traffic signals and ADA ramps with detectable warning at bulb-outs.
- Rain gardens at each intersection (Arsenal to Utah).
- New street trees planted from Arsenal to Utah.
- New street lighting.
- Planter curbs around all planter areas.
- New site furnishings including benches and bicycle racks.
- New retaining wall at apartments near Utah.
- $30,000 of incorporated Art (one percent of Phase 1 and Phase 2 construction budgets).
- Accessible, audible and tactile traffic signals at Juniata and Utah for the visually and hearing impaired and tactile crosswalks for the visually impaired at each of these intersections.
- Accessible bus stop at Utah.
- Painting of roadway striping: travel lanes, turn arrows, stop bars, parking stall lines, bike lane “sharrows” and crosswalks.
- New concrete paving at bulb-outs and all sidewalks within the ROW, including pervious concrete paving between curb and a 6’ offset from the ROW.
- Relocation of fire hydrants to comply with the City Water Division requirements.

Phase 3 and beyond include the following:
- Newspaper corrals.
- Permeable pavers in parking lanes.
- District wayfinding/signage including neighborhood monumentation.
- Adding traffic signals to Humphrey and Connecticut.
- Providing new bus shelters with seating at all bus stops.
- Additional public art.
- Changing one way streets at Juniata and Hartford into two-way streets.
- Changing traffic signals at Arsenal to allow full turning movements northbound.
- Closing the alley on the west side of Grand between Humphrey and Wyoming and providing streetscape improvements.
- Closing the driveway aprons at the two gas stations, City parking lots and two parking lot entries to the property on the northeast corner of Juniata and adding streetscape improvements.
- Creating public parks at both City-owned parking lots along South Grand.
Maintenance and Management

The following matrix should be utilized as a working document to clarify maintenance and management responsibilities between the various departments within the City of St. Louis, the Community Improvement District, the Metropolitan Sewer District, property owners and other entities.

A memorandum of understanding (MOA) should be agreed upon between the Community Improvement District and the City of St. Louis to clarify maintenance and management responsibilities.

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<th>City of St. Louis Streets</th>
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<th>City Parks</th>
<th>CID</th>
<th>Individual Property Owners</th>
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Parking - Next Steps

Short-term steps

- Maximize the opportunities presented by the re-development of the Commerce Bank rear lots;
- Adjust on-street pricing hours to better respond to current demand patterns;
- Improve wayfinding and information to identify and promote current parking opportunities;
- Resolve a shared parking agreement with Pope St. Pius V Catholic Church;
- Negotiate for the use of large, private facilities to accommodate seasonal and events-based demand; and
- Capitalize on the access and mobility improvements in the re-design of South Grand to develop a “Park-once” management approach.

Create a Parking Benefit District

A parking benefit district will maximize the benefits of existing parking resources. Pricing strategies maintain available spaces even during peak times and in the most popular locations. This makes parking less stressful by eliminating the need to hunt for a space, or “get lucky.” Instead, drivers make a price-based choice of location, balancing cost vs. convenience to best meet their needs.

Car-Sharing Accommodation

There are currently a number of on-street spaces reserved for car-share vehicles in downtown and around Washington University. These spaces support the easy access to car-share vehicles — which members can rent by the hour or by the day via a speedy, on-line reservation system — for local residents and employees. This supports a number of options that can, in turn, reduce parking demand across the South Grand district.
Design - Next Steps

3-Lane Master Plan
Implementation of the master plan recommendations from Dunnica Street to Utah Street and Arsenal Street to Magnolia Avenue will require further transportation, economic/market and infrastructure analysis and studies prior to implementation to verify feasibility.

Urban Design Criteria
An urban design overlay or form-based code should be established to supplement the existing zoning code. This overlay should memorialize the building setbacks on the side streets (Arsenal St., Hartford St., Juniata St., Connecticut St., Wyoming St., Humphrey St., Utah St.) to provide for outdoor seating areas and/or additional parking. In addition, the overlay should maintain the setback on the west side of South Grand Boulevard between Juniata Street and Connecticut Street for a dining plaza. This setback should become a more deliberate dining plaza, defined by fencing, shade structures, planting and paving improvements. Future construction or renovation on this block should maintain the existing setback.

The overlay should also address such issues as fabric canopies for shade, building lighting and signage, building materials and building massing and articulation. This is particularly important for new buildings as new construction and renovation begins to infill the gaps along South Grand Boulevard.

Green Alleys
As funds are available and maintenance warrants, existing alleys should be replaced with ‘green alleys’ (porous pavement/pavers) to further increase stormwater infiltration. In addition the closed alleys should also have ‘green’ pedestrian paving and incorporate planting, seating and shade structure improvements.

Green Building
It is recommended that the Community Improvement District adopt green building standards for all future renovation and new construction. These standards should incorporate LEED® (Leadership in Energy and Environmental Design) technologies and strategies including green roofs, stormwater management, light pollution reduction, water-efficient landscaping, water-use reduction, materials reuse and energy efficiency. For example, the new parking lot behind Commerce Bank should utilize porous paving and light fixtures should meet night sky standards.

Funding - Next Steps

Future funding should come from a diverse range of sources to ensure implementation of the master plan. Sources may include local government, the Community Improvement District, local businesses, membership programs, fund raising, community groups, corporate sponsors or foundation donations.

National Trust for Historic Preservation
The National Trust for Historic Preservation provides funding opportunities for historic properties; most applicable is the Transportation Enhancements Funding which provides assistance with street furniture, lighting, public art and landscaping along streets and at transit stops.

Funding - Next Steps

The setback on the west side of South Grand between Juniata St. and Connecticut St. should be maintained.

Future closed alleys should become ‘green alleys’ and incorporate seating and planting improvements.

Recognition - Next Steps

Sustainable Sites Initiative
The Sustainable Sites Initiative (SSI) is a voluntary rating system for sustainable landscapes that promotes sustainable land development and management practices. The SSI focuses on hydrology, soils, vegetation, materials and human health and well-being. South Grand will apply to be a pilot project to test this rating system. Serving as a pilot project will increase publicity of the district and facilitate education on sustainable design.

LEED Certification
LEED® certification should be pursued for new buildings or renovations of existing buildings. LEED® certified buildings are designed to:

Lower operating costs and increased asset value.
Reduce waste sent to landfills.
Conserve energy and water.
Be healthier and safer for occupants.
Reduce harmful greenhouse gas emissions.
Quality for tax rebates, zoning allowances and other incentives in hundreds of cities.
Demonstrate an owner’s commitment to environmental stewardship and social responsibility.

The Preserve America Community Grant is an initiative in cooperation with the Advisory Council on Historic Preservation. This grant could provide an opportunity for funding for signage and wayfinding.

Other funding opportunities
• Pursue the Metropolitan Sewer District grants for stormwater improvements including porous paving in parking areas and sidewalks and green alleys.
• Fully utilize the Community Improvement District sales-tax capabilities to bond against an increased sales tax rate.
• Increase parking rates: Maintain the City treasurer’s current level of income and apply additional revenue to maintenance and capital improvements.
• Engage private donors: CID and neighborhood organizations should solicit a donor program for site furnishings (i.e. a family could donate a bench).
• Submit a request for financial assistance for public art, lighting and/or landscaping from the Gateway Foundation.
• Engage the St. Louis Regional Bike Federation in partnerships for programming and infrastructure.
• Engage Missouri Coalition for the Environment for support in clean water through South Grand’s rain gardens and permeable paving.
• Engage the Missouri Foundation for Health for support in increasing community access to physical activity through bike infrastructure and programming.