Acknowledgments

The City of Anacortes wishes to thank WSDOT, City of Anacortes City Council, and community members who contributed to this project. This was a collaborative process that could not have happened without the input, creativity, vision, and participation of many people. Thank you all for your insight, comments, and enthusiasm for this exciting project!

“South Commercial Avenue is the entrance to our community.”

- Mayor Laurie Gere
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Executive Summary

In 2015, the City of Anacortes received a grant from the Washington State Department of Transportation (WSDOT) to develop a multi-modal vision plan for South Commercial Avenue to make the corridor safer for walking and biking and strengthen economic development.

In January 2016, the city held a public open house to solicit input from residents and business owners about design ideas for the South Commercial Avenue corridor. After the public open house, the project team developed three design alternatives. Two alternatives include wide sidewalks and curb protected bike lanes on each side of the street from 34th St. to 11th St., sidewalk plantings (extent of planting varies between the two alternatives), enhanced pedestrian zones (extents vary between alternatives) for outdoor gathering at the north end of South Commercial Avenue, in the Hospital Overlay district (as defined by the 2016 comprehensive plan) and the south end of South Commercial Avenue. The third alternative shows a two-way curb protected bike lane on the west side of the street.

These three alternatives were then evaluated by the project team and presented to the Anacortes City Council for input and feedback. After the presentation, City Council selected the Parkway Alternative, as the preferred alternative and gave approval to move forward with advancing the design.

In the Preferred Alternative chapter of this document you will find rendered plans of the entire South Commercial Ave Corridor which reflects the Parkway Alternative. Also, included in this section are three typical intersection enlargements of a signalized, non-signalized, and offset intersections.

After the entire corridor was designed, the project team conducted an initial traffic analysis and opinion of cost. The traffic analysis indicates that the design accommodates forecasted future traffic volumes and meets city and WSDOT LOS standards.

The last section of this document proposes interim design solutions for constructing a Quick Build Street featuring a protected bike lane using movable planters and striping. This low-cost, high impact design can help to build public support for permanent bicycle and pedestrian improvements along the corridor.

Project Goals:

- Improve access to destinations
- Increase capital investments in walking and biking
- Improve connections
- Strengthen economic development
- Make the corridor safer for walking and biking
- Minimize environmental impact
- Encourage physical activity
S. Commercial Ave. and 22nd St. (Looking NE)
Project Overview
Project Overview

South Commercial Avenue is a Main Street Arterial, a State Highway and a “Washington State Main Street Highway.”

Currently, South Commercial Avenue has minimal bicycle and pedestrian accommodations. Along the corridor there have been 10 pedestrian and bicycle collisions in the last three years. There is also public sentiment to improve the aesthetics and economic vitality of the South Commercial Avenue corridor. In late 2015, The City of Anacortes received a grant from the Washington State Department of Transportation (WSDOT) to develop a concept design that improves roadway facilities for non-motorized uses along South Commercial Avenue between 34th St. and 11th St. This report is the culmination of that work.

The 2016 draft comprehensive plan process identified South Commercial Avenue as a priority project that emphasizes non-motorized facilities; including protected bike lanes, wider sidewalks, safe pedestrian crossings, and plantings to enhance the aesthetics of the corridor.

WSDOT plans to begin work in 2019 to improve the pavement conditions and make ADA (Americans with Disabilities Act) accommodations along the corridor. This project is intended to communicate the city’s vision for the corridor, so that future improvements can be coordinated with this plan. The design concepts presented in this document were developed in accordance with NACTO Urban Bikeway Design Guide (which has been endorsed by WSDOT) and the WSDOT Design Manual.

This document presents the design and community process, design alternatives studied, and the preferred design selected. This work was completed by the City of Anacortes and the Alta Planning + Design project team between January 2015 and April 2016.
PROCESS

The visioning and engagement process for the South Commercial Avenue Corridor plan included three key meetings aimed at eliciting input and feedback from residents, business owners, City Council, and City of Ancortes Staff.

Public Open House

On Tuesday, January 12, 2016 from 4pm – 7pm, the project team led a Public Open House at City Hall in Anacortes, WA. The Open House was focused on collecting information from community members about the corridor and getting initial impressions about possible design elements that people liked and didn’t like. For example, people overwhelmingly expressed a preference for curb separated bike lanes and a dislike for angled parking.

City of Ancortes, Alternatives Review Meeting

On Friday, January 29, 2016, the project team presented three design alternatives to City of Ancortes Staff via Go-To Meeting. The group discussed bike lane configurations, pedestrian zone design options, lane widths, intersection alternatives, and stormwater management strategies. At the conclusion of the call the team gave approval to evaluate each of the alternatives.

City Council Presentation

On Monday, February 8, 2016, the project team presented three design alternatives, intersection concepts, and preliminary evaluations of each of the alternatives to the City of Ancortes City Council. This provided an opportunity for City Council members to ask questions about the three alternatives and provide design input. At the end of the presentation, City Council voiced support for moving forward with the Parkway Alternative. With this feedback from Council, City of Ancortes Staff advised the project team to continue moving forward with designing the entire corridor based on this design.
Project Overview

PROJECT GOALS

The project goals are used to guide the design process, define the project criteria, and establish project priorities.

Access
Develop design improvements that allow people to access destinations along the corridor safely and reliably, by foot, assistive device, bicycle, transit, and motor vehicle by creating a comprehensive, integrated, and multi-modal corridor.

Equity
Improve active transportation options for all through increased capital investments in walking and biking infrastructure.

Connectivity
Provide safe and frequent intersection crossings to allow people to easily travel along the corridor.

Economic Development
Develop design options that strengthen the visual appearance and support a vibrant economy along South Commercial Avenue.

Safety
Provide opportunities for all people to safely travel to their destinations along the South Commercial Avenue corridor and reduce the risk of collisions between people walking, biking, using transit, or traveling by motor vehicle.

Environment
Develop design solutions that minimize the impact of stormwater runoff and protect the environment.

Health
Encourage physical activity by increasing access to safe and reliable active transportation options along and across the corridor.
ECONOMIC BENEFITS

Investing in bicycling has tangible economic impacts. Studies show that the bicycle industry, bicycle tourism, and health benefits from bicycling create jobs, economic activity, and cost savings.

BIKEWAYS ARE VALUABLE NEIGHBORHOOD ASSETS

More than two-thirds of Americans say having bike lanes or paths in their community is important to them, and two-thirds of homebuyers consider the walkability of an area in their purchase decision.

BICYCLE INFRASTRUCTURE GENERATES TOURISM

In the North Carolina Outer Banks, an investment of $6.7 million in paths and wide paved shoulders has generated $68 million annual tourism revenue from bicyclists.

BICYCLING KEEPS MONEY IN YOUR POCKET

The average annual cost to own and maintain a vehicle is $8,698. The average annual cost to own and maintain a bicycle is $308.

BICYCLISTS SPEND MORE

Customers who arrive by automobile spend the most per visit across all of the establishments, but cyclists spend the most per month.

BUSINESS DOES BETTER

Merchants surveyed in San Francisco said that bike lanes had a positive overall impact on their business.

RETAIL SALES INCREASE

New York City found that constructing a protected bike lane had a significant positive impact on local business strength.

$6.7 MILLION

$68 MILLION

24% MORE

+49%

+3%
ALL AGES AND ABILITIES

There is a broad range of bicycle skill levels, from those who are unwilling to ride, to those who will ride anywhere regardless of roadway conditions or weather. The majority of cyclists fall somewhere in between, who ride on recreational trails or low volume streets, but for safety reasons do not ride on streets with heavy car traffic. All ages and abilities bicycle infrastructure is now being designed to appeal to these less confident users (Interested but Concerned) to encourage more users to choose to bicycle and have a comfortable experience. These all ages and abilities facilities, such as mode separated or parallel paths, are appropriate for cyclists of all skill levels, and create safe and predictable environments for all transportation modes.

A framework for understanding the characteristics and infrastructure preferences of different bicycle skill types is described below:

Strong and Fearless
These are fast and highly experienced bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists ride faster than other user types, and prefer direct routes on roadways shared with vehicles over indirect but separate bicycle facilities. This group includes users such as road cyclists, competitive racers, and couriers.

Enthused and Confident
This group of bicyclists are fairly comfortable riding on all types of bike ways, but usually choose low traffic streets or paths when available. These bicyclists may divert from a direct route in favor of a dedicated bicycle facility. This group includes many different users including commuters, recreational bicyclists, and utilitarian bicyclists.

Interested but Concerned
This group comprises the vast majority of bicyclists. They are bicyclists who typically only ride a bicycle on low traffic streets or trails in favorable weather conditions. These cyclists have traffic and safety concerns that deter them from cycling on high traffic volume roadways with little or no separation from vehicles. This group includes families, recreational riders, and people who are less confident riders.

No Way, No How
This category encompasses people who do not bicycle. Some may not ride under any condition, but others may just have safety concerns preventing them from riding with traffic.

Roger Geller, Portland Office of Transportation, 2009
HEALTH LOGIC MODEL

The health logic model below outlines how the South Commercial Avenue corridor can impact human health. It identifies key components of the project and links them to potential health benefits.

S. COMMERCIAL AVE. CORRIDOR PLAN

INCREASE SEPARATION BETWEEN VEHICLES & BIKES AND BIKES & PEDESTRIANS

DECREASE IN OBESITY RELATED DISEASES

REDUCE RISK OF TRAFFIC FATALITIES AND SERIOUS INJURY

REDUCE VEHICLE SPEED

Reduce stress of street to attract users of all ages and abilities

STRENGTHEN BONES & MUSCLES

IMPROVE MENTAL HEALTH

IMPROVE CARDIOVASCULAR HEALTH

Health Benefits

DECREASE IN OBESITY RELATED DISEASES

REDUCE RISK OF TRAFFIC FATALITIES AND SERIOUS INJURY

IMPROVE MENTAL HEALTH

IMPROVE CARDIOVASCULAR HEALTH

Reduce risk and severity of bike and pedestrian collisions with vehicles

30 MINUTES EVERY WEEK OF PHYSICAL ACTIVITY TO STAY HEALTHY

ADULTS NEED AT LEAST 150 MINUTES EVERY WEEK OF PHYSICAL ACTIVITY TO STAY HEALTHY

Footnotes

1 Tefft, B. C. Impact speed and a pedestrian’s risk of severe injury or death. Accident Analysis & Prevention 50 (2013) 871-878

2 http://www.cdc.gov/physicalactivity/basics/pa-health/


Health Benefits

Reduce stress of street to attract users of all ages and abilities

Increase physical activity (aerobic)

Decrease traffic noise (decibel)

Reduce traffic noise (decibel)

A PEDESTRIAN HIT BY A VEHICLE TRAVELING AT

25 MPH HAS A 89% CHANCE OF SURVIVAL

35 MPH HAS A 68% CHANCE OF SURVIVAL

45 MPH HAS A 35% CHANCE OF SURVIVAL

Decibel Level

SURVIVABILITY
South Commercial Avenue has a variety of opportunities and challenges along the corridor (see adjacent photos for existing conditions and the following page for the opportunities and challenges map).
OPPORTUNITIES AND CHALLENGES

The map to the right identifies the many opportunities and challenges along South Commercial Avenue. The project team identified these opportunities and challenges based on a site visit and feedback provided at the Public Open House, City of Anacortes Alternatives Review Meeting, and City Council Presentation.
Gateway into Old Town
ADT = 8234
from 11th St. and 12th St.
and North Commercial Ave.
transition between South
Strengthen connection and
marine identity.
Anacortes' historic character
development and embrace
pedestrian-oriented
Utilize new design standards
Highway 20 Spur
Route 12
Pedestrian
Commercial Ave.
13th St. 14th St.

Challenges:
numerous locations
the middle of the sidewalk in
Light poles are located in
Wide intersections
– establish
– utilize the
Planting
OPPORTUNITY
corridor
Explore adding public
OPPORTUNITY
Bike routes
that connect with future
Bike routes
– improve
– consolidate
– develop

Street
Stressful pedestrian
and contributes to
traffic is very noisy
flow of vehicle
– Constant

Driveways
locations, especially near
the number of conflict
driveways to reduce

OPPORTUNITY OPPORTUNITY OPPORTUNITY OPPORTUNITY OPPORTUNITY OPPORTUNITY
Curb Extensions
use curb extensions as a multifunctional
design tool for green
stormwater infrastructure (GSI), traffic calming,
reducing crossing distance for
pedestrians, creating space for
curb ramps, planting areas, and
parking

OPPORTUNITY
Explore removing on-street parking
on both sides along Commercial Ave., between
the roundabout and 33rd Ave., for
increased areas for stormwater treatment

OPPORTUNITY
Explore adding
turn pockets and medians slow
down traffic and
add vegetation to
corridor

OPPORTUNITY
Curb Extensions – use curb extensions as a multifunctional
design tool for green
stormwater infrastructure (GSI), traffic calming,
reducing crossing distance for
pedestrians, creating space for
curb ramps, planting areas, and
designing

OPPORTUNITY
Gateway and branding – opportunity to extend the sense of gateway along
the entire S. Commercial Ave corridor. This can be achieved with repeating
design elements such as curb
extensions, raised intersections, wide
planting areas, and unique crosswalk
markings

Opportunities:

- Pedestrian
- Activation
- Commercial
Ave.
- 13th St. 14th St.

Legend:
- Roadway
- Driveway
- Sidewalk
- Parcel/Right of Way
- Fire Hydrant
- Sidewalk Gaps
- Bike Route
- Bus Route
- Bus Stop
- Street Light
- Sign/Pole
- Traffic Signal
- Place making
- Opportunities

Site Analysis
Site Analysis

PARKING UTILIZATION AND DATA

STUDY CONDUCTED OVER 4 DAYS BETWEEN FEB 2-4, 2016* Mon, Tues, Wed, Thurs
DATA WAS COLLECTED AT
9 am 12 pm 3 pm 5 pm

PARKING UTILIZATION
0%
1-10%
11-25%
26-50%
51%+

BETWEEN 4 FEB 2-4, 2016
9 am 3 pm
DATA WAS COLLECTED AT
5 pm
12 pm
233 total spaces along corridor
85% considered optimal utilization

IN USE DURING HIGHEST OBSERVED UTILIZATION PERIOD (3PM)

WITHIN PEDESTRIAN ACTIVATION ZONES (PAZ)
Less than 30% of parking is utilized during highest observed utilization period (3PM)

TO TOTAL SPACES LESS THAN
233 total spaces
OUT OF 100 total spaces

LESS THAN 85% OF PARKING IS UTILIZED DURING HIGHEST OBSERVED UTILIZATION PERIOD (3PM)

HIGHEST USE BLOCKS AVERAGE BETWEEN 65-80% USAGE (although individual times may be higher)
HOWEVER THESE SPACES CAN BE ACCOMMODATED IN BLOCKS IMMEDIATELY ADJACENT TO ZONE
PEDESTRIAN ACTIVATION ZONES WOULD RESULT IN A LOSS OF APPROXIMATELY 40 total spaces

INTERNET

N.T.S.

* The City recognizes that this study was conducted during the winter and results may vary during summer months.

1. Donald Shoup, The High Cost of Free Parking, 2005
EXISTING STREET NETWORK

Areas shown in gray in the diagram below represent superblocks, which are large blocks where the street network is an incomplete grid. These are important to identify as any future left turn restrictions in these locations would create long detours around the superblock. See the orange arrow below as an example of a long detour.
Design Alternatives
DESIGN ALTERNATIVES

DESIGN CONCEPTS

Three design concepts are explored in this section. Each includes two typical roadway sections, one along the primary segments of the corridor and another located within the designated Pedestrian Activation Zone; potential intersection treatments that correspond to the proposed section; and an evaluation of how the concept performs on the Evaluation Criteria (see Alternatives Evaluation chapter).

While there are key differences among the concepts, several elements are common among all concepts:

**Protected Bike Facilities**
Comments at the Open House made it clear that a protected facility was preferential to a painted bike line or shared-lane markings. While the type and width of separation varies among concepts, all three include a separated bike facility. Differences include presence of vegetation and two-way versus one-way facilities.

**Increased Vegetation**
Open House comments were also strongly in favor of introducing more vegetation along the corridor. Increasing the tree canopy or providing other plantings when possible are included in all three concepts.

**On-Street Parking**
Aside from locations within the Pedestrian Activation Zone, on-street parking is maintained throughout the corridor. This results in preservation of the majority of existing spaces. Within Pedestrian Activation Zones, options exist for preservation of some of the existing parking, although this is not recommended.

**Pedestrian Activation Zone**
These zones include elements that further increase the pedestrian comfort level. Controlled crossings, raised crosswalks, street furniture, and other amenities make the area more conducive to pedestrian activity and prioritize this mode of travel. Each concept includes three Activation Zones. The primary difference among the three relates to the section of the street -- location and type of bike facility, width of sidewalk, and presence of vegetation.
Design Alternatives

AVENUE ALTERNATIVE

Elements

The Avenue Alternative incorporates protected one-way bike lanes in the corridor segments and a planted buffer between vehicles and the bike lane in the Pedestrian Activation Zones. In addition sidewalks along the corridor will be wider than they are currently and include Silva Cells™ (see Streetscape Elements chapter for more information about Silva Cells™) in the corridor segments to enhance tree quality and health.

On-street parking remains on both sides of the street in the corridor segments, while in the Pedestrian Activation Zones the planting and activation area replaces on-street parking on one side of the street. According to the parking utilization study, the suggested activation zones either already do not allow on-street parking or in areas where on-street parking is permitted, is only utilized 50% or less of the time.

Tree species can vary between the corridor segments and Pedestrian Activation Zones in order to highlight the different zones.
PARKWAY ALTERNATIVE

Elements

The Parkway Alternative incorporates protected one-way bike lanes throughout the corridor. In the corridor segments where the planted buffer is not wide enough to accommodate trees, Silva Cells™ are recommended within the sidewalk to provide sufficient soil volume for optimal tree health.

On-street parking remains on both sides of the street in the corridor segments, while parking is recommended to be removed and replaced with planting (for treating stormwater) and elements such as street furniture in the Pedestrian Activation Zones.

The Pedestrian Activation Zones can highlight the marine character of Anacortes through plantings and/or marine artwork.
**Design Alternatives**

**INTERSECTIONS (FOR THE AVENUE AND PARKWAY ALTERNATIVES)**

**Curb ramps (signalized intersection)**

This concept can be applied to signalized intersections and accommodates the protected one-way bike lane and sidewalk on both sides of the street. The mixing zone provides space for bicyclists and pedestrians to wait before going through the crosswalk. In addition, the two stage turn box allows for bicyclists to safely make left turns.

**Raised crosswalks (non-signalized intersection)**

This concept could be applied to a non-signalized intersection and also accommodates the protected one-way bike and sidewalk on both sides of the street with the main difference being the raised crosswalk on East/West streets.
BOULEVARD ALTERNATIVE

Elements

The Boulevard Alternative suggests a protected two-way bike lanes throughout the corridor. In addition sidewalks with Silva Cells™ would be used along the east side of the street throughout the corridor.

On-street parking is maintained on both sides of the street in the corridor segments, while one side is removed in the Pedestrian Activation Zones. In these zones, the planting and activation area replaces one side of on-street parking.

Planting can vary between the corridor segments and the Pedestrian Activation Zones to highlight the zones.

Design Alternatives

CORRIDOR SEGMENT (SECTION A)

PEDESTRIAN ACTIVATION ZONE (SECTION B)
Design Alternatives

INTERSECTION

Curb ramps

This concept can be applied to signalized and non-signalized intersections and accommodates a two-way protected bike lanes on one side of the street and sidewalks on both sides of the street. Similar to the Avenue and Parkway Alternatives the mixing zone provides space for bicyclists and pedestrians to wait before going through the crosswalk.
**MEDIAN LOCATIONS**

The design alternatives include medians located at the entry and exit points north of Highway 20 and south of 11th St. to serve as visual gateway cues and to slow vehicle traffic entering the South Commercial Avenue corridor. Plantings can be added to the medians between the blocks of 22nd St. and 26th St., as part of the pedestrian activation zone. With the exception of the gateway median from the roundabout at Highway 20, these medians are located mid-block and will not inhibit vehicle turning movements at intersections. Note the final design of the medians will take emergency vehicle access into consideration.

*Final design will take into consideration emergency access.*
Alternatives Evaluation
Alternatives Evaluation

INTRODUCTION

This chapter describes the evaluation analysis of three alternatives for the South Commercial Avenue multi-modal corridor study. The three alternatives explore possible roadway configurations that incorporate improved bicycle and pedestrian facilities, support multimodal travel through the corridor, and help create a sense of identity.

The basis for the concepts and the evaluation criteria come not only from the industry’s best practices, but are also derived from input from three key sources: the public, City Council, and City of Anacortes staff. The process included several meetings, site visits, and work sessions:

- December 17, 2015: Project Team Site Visit
- January 12, 2016: Public Open House, Anacortes City Hall
- January 29, 2016: Internal stakeholder presentation of concepts
- February 8, 2016: City Council Work Session

The following sections explore the existing conditions of the corridor, define the evaluation criteria, detail and evaluate each of the three alternatives, and consider the possible intersection configurations for each concept.

METHODOLOGY

The design alternatives for the South Commercial Avenue corridor were compared relative to each other and to the existing baseline condition, on a variety of factors. Given that the alternatives are conceptual designs that have not been directly field tested in the corridor, this evaluation relies primarily on qualitative measures, evaluated through the use of relevant policies and best practices when applicable. In some cases, quantitative data was available.

Alternatives were rated utilizing a “high,” “medium,” or “low” scale to rank how that alternative performed on the overarching criteria, with “high” representing the most favorable score.

- **Ranking: High**
  Alternative performs well on this measure relative to existing conditions and additional alternatives. Option represents best case scenario for the corridor given known constraints.

- **Ranking: Medium**
  Alternative performs well on this measure relative to existing conditions and additional alternatives, but does not represent the best case scenario for the corridor given known constraints.

- **Ranking: Low**
  Alternative does not perform well on this measure relative to existing conditions and additional alternatives.
**EVALUATION CRITERIA**

**Connectivity**
How does the design enhance connectivity along the corridor? An alternative will perform well if it enhances connections:

- To other bicycle and pedestrian facilities
- To businesses, for all modes
- That extend the bicycle network

**Safety**
Integration of bicycle and pedestrian facilities, reducing vehicle speed, and enhancing crossings can improve corridor safety for all modes. The following areas contribute to improved corridor safety:

- Mode prioritization (mode separation, signal phasing, visibility)
- Separation of modes (type, width)
- Driveway crossings (total number, frequency, proximity to intersection)
- Vehicle speed (speed management strategies, posted speed, lane width, field of view, vertical barriers, vegetation, etc.)
- Intersections (signal cycles, turn radius)

**Environmental Impact**
Reconfiguration of the corridor provides the opportunity for reducing the roadway’s environmental impact. Integration of vegetation and storm water management techniques can reduce the urban heat island effect and positively impact the noise levels associated with the corridor.

**Health**
Comfortable bicycle and pedestrian facilities can positively affect public health by impacting the following areas:

- Promoting physical activity
- Increasing bicycle mode share by providing connections to destinations
- Providing comfortable connections to areas with higher density
- Enhancing social cohesion through activation of the public realm

**Parking**
All options provide minimal impact to existing parking supply. By consolidating parking and reducing parking options in pedestrian zones, the proposed concepts address the project goal of providing equitable access to all modes.

**Phasing**
Project phasing allows for project implementation over time, providing more opportunity for funding options as well as demonstrating project benefit earlier in the process. Projects that can be implemented over time will score better in this area.

**Economic**
Economic considerations address the impact the new facility may have on a corridor. It considers both distribution of the facility (do both sides of the street benefit or only one?) along with the benefits of providing improved facilities for biking and walking. Studies have shown that individuals traveling by non-motorized modes are more likely to be repeat customers of local businesses, and that quality, visible cycling facilities can draw in bicycle tourism, currently a multi-billion dollar industry in the state.
## Alternatives Evaluation

### Alternatives Summary

<table>
<thead>
<tr>
<th>EVALUATION CRITERIA</th>
<th>Avenue</th>
<th>Parkway (Preferred Alternative)</th>
<th>Boulevard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
</tr>
<tr>
<td>Safety</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
</tr>
<tr>
<td>Environmental Impact</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
</tr>
<tr>
<td>Health</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
</tr>
<tr>
<td>Parking</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
</tr>
<tr>
<td>Phasing</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
</tr>
<tr>
<td>Economic</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
<td>![Thumb Up]</td>
</tr>
</tbody>
</table>
AVENUE ALTERNATIVE

The Avenue Alternative, preserves several key elements in the corridor, including on-street parking and a center turn lane, while adding protected bike lanes, expanding the sidewalk, and adding vegetation. Although the concept performs well on all measures, it does not perform as well on Environmental and Safety criteria. The narrow buffer between the parking lane and the bike lane does not provide the vertical separation that would increase the perceived comfort of the facility. Without a planted buffer, the stormwater treatment area is also reduced. Wide sidewalks, a continuous tree canopy, and protected bike lanes on both sides of the roadway provide a typically low-stress corridor that facilitates connectivity to nearby facilities, businesses, housing, and recreation destinations.

<table>
<thead>
<tr>
<th>Area</th>
<th>Roadway Configuration</th>
<th>Parking Impact</th>
<th>Bicycle Facility Type</th>
<th>Vegetation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor</td>
<td>10’ travel lanes, center turn lane, parallel parking (both sides)</td>
<td>No parking lost in corridor segments</td>
<td>One-way protected bike lane, both sides; protection provided by parked vehicles and 2’ physical buffer</td>
<td>Trees along sidewalk with tree grates</td>
</tr>
<tr>
<td>Pedestrian Activation Zone</td>
<td>11’ travel lanes, 9’ planted median with turn pockets at key intersections, parallel parking (one side)</td>
<td>Parking removed on one side of roadway in two of three pedestrian activation zones</td>
<td>One-way protected bike lane both sides; buffered planting separates lane from general purpose travel lane</td>
<td>Planted median, planted buffers along bike lanes</td>
</tr>
</tbody>
</table>

Alternatives Evaluation
Connectivity
- Connects to future bike routes and easier transitions
- Easy access to businesses with protected bike lanes on each side of the street
- Vehicle left turn lane only between pedestrian activation zones

Safety
- Separates all modes, wide sidewalks and bike facilities
- Reduced lane width and planted medians for speed management
- No planted buffer in segment
- Signal or RRFB’s at bike crossings

Environmental Impact
- Limited area to treat stormwater
- Continuous tree canopy

Health
- Lowest stress bike facilities
- Improved crossings to housing and park
- Parklets increases opportunity for social interaction

Parking
- Consolidated parking
- Reduced parking in pedestrian activation zone

Phasing
- More flexible for implementation; can be installed in phases

Economic
- Most equitable distribution of infrastructure
PARKWAY ALTERNATIVE (PREFERRED ALTERNATIVE)

The Parkway Alternative, builds on the Avenue Alternative by adding vegetation along the entire corridor. A planted buffer between the protected bike lane and the parking lane adds a vertical element, which can increase the perception of comfort and safety. The vegetation also provides additional stormwater treatment areas. Preservation of the center turn lane maintains connectivity for motor vehicles, while wide sidewalks and bike lanes on both sides of the roadway encourage connectivity to nearby facilities, businesses, housing, and recreation destinations.

Pedestrian Activation Zones feature planted buffers and medians, all measuring nine feet in width. Although this configuration requires the removal of parking within Pedestrian Activation Zones only, existing demand can be accommodated in adjacent blocks.

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<td>No parking lost in corridor segments</td>
<td>One-way protected bike lane, both sides; protection provided by parked vehicles and 4’ planted buffer</td>
<td>Trees along sidewalk with tree grates, planted buffer along bike lanes</td>
</tr>
<tr>
<td>Pedestrian Activation Zone</td>
<td>11’ travel lanes, 9’ planted median with turn pockets at key intersections. No parking.</td>
<td>Parking removed on both side of roadway in two of three pedestrian activation zones</td>
<td>One-way protected bike lane, both sides; 8’ planted buffer separates lane from general purpose travel lane</td>
<td>Planted median, planted buffers along bike lanes</td>
</tr>
</tbody>
</table>
Connectivity
- Connects to future bike routes and easier transitions
- Easy access to businesses with protected bike lanes on each side of the street
- Vehicle left turn lane occurs only between pedestrian activation zones

Safety
- Separates all modes, wide sidewalks and bike facilities
- Reduced lane width and planted medians for speed management
- Signal or RRFB's at bike crossings

Environmental Impact
- Most area to treat stormwater
- Continuous tree canopy

Health
- Lowest stress bike facilities
- Improved crossings to housing and park
- Parklets increases opportunity for social interaction

Parking
- Consolidated parking
- No parking in pedestrian activation zone

Phasing
- More flexible for implementation

Economic
- Most equitable distribution of infrastructure
### BOULEVARD ALTERNATIVE

The Boulevard Alternative, provides a different approach than either the Avenue and Parkway Alternatives. Although the corridor features added vegetation and wide sidewalks, bicycles are instead accommodated in a two-way protected bike lanes located along the west side of the roadway. The consolidated bike facility allows for wide, planted buffer and can incorporate additional pedestrian amenities within the Pedestrian Activation Zone. However, opportunities for easy connections to nearby businesses and other bicycle facilities is reduced. For example, a north-bound cyclist attempting to access a business on the east side of the roadway must navigate a designated crossing in order to reach his destination. Although a variety of intersection treatments could facilitate this crossing, the additional steps may be perceived by some as more stressful than the bike lane options presented in the previous two concepts.

<table>
<thead>
<tr>
<th>Area</th>
<th>ROADWAY CONFIGURATION</th>
<th>Parking Impact</th>
<th>Bicycle Facility Type</th>
<th>Vegetation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor</td>
<td>11’ travel lanes, 10’ planted median with turn pockets; 7’ parking on both sides of the roadway</td>
<td>No parking lost in corridor segments</td>
<td>Two-way protected bike lanes, west side; protection provided by parked vehicles and 4’ planted buffer</td>
<td>Trees along sidewalk with tree grates, planted buffer along bike lanes</td>
</tr>
<tr>
<td>Pedestrian Activation Zone</td>
<td>11’ travel lanes, 10’ planted median with turn pockets at key intersections. Parking on west side of roadway.</td>
<td>Parking removed on one side of roadway in two of three pedestrian activation zones</td>
<td>Two-way protected bike lanes, both sides; 11’ planted buffer separates lane from parking lane</td>
<td>Planted median, planted buffers along bike lanes</td>
</tr>
</tbody>
</table>
Connectivity
- Most difficult to access businesses
- Left turn only at signals
- Transitions in and out of two-way protected bike lanes more difficult

Safety
- Separates all modes, wide sidewalks and two-way protected bike lanes
- Reduced lane width and planted medians for speed management
- Signal or RRFB’s at bike crossings

Environmental Impact
- More area to treat stormwater
- Continuous tree canopy

Health
- Connections more stressful
- Less direct access to housing and park
- Parklets increases opportunity for social interaction

Parking
- Consolidates parking
- Reduced in pedestrian activation zone

Phasing
- Least flexible for implementation

Economic
- More difficult to access business on both sides of the street
Preferred Alternative
As future development occurs along the corridor, consider the following design guidelines:

- Consolidate driveways to reduce conflict points
- Locate parklets adjacent to retail and outdoor dining establishments
- Locate medians in pedestrian activation zones as development allows
Preferred Alternative

- Transition from protected bike lane to shared lane facility on north side of 11th St.
- Transition from shared lane facility to protected bike lane on south side of 11th St.
- Driveways consolidated to minimize conflict points
- Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

Key:

- Sidewalk
- Planting
- Bike lane
- Mixing zone
- Corner apron
- Decking
- Right of way
- Bike rack
- Pedestrian light
- Vehicular light
- Signalized Intersection

Legend:

- Existing gateway
- R 15’ curb, Typ.
- R 25’ curb, Typ.
- R 15’ corner apron, Typ.
- Limit of work, Typ.
- Safeway Parking Lot
- Commercial Avenue
- 11th Street
- 12th Street
- DRW 20 to ferries
- Designated east-west Bike Route 12
- Old Town
- Existing gateway
- CROSSBIKE
- CORNER APRON
- TWO-STAGE TURN BOX
Preferred Alternative

- Limit of work, Typ.
- Raised crosswalk, Typ.
- R 15’ curb, Typ.
- Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.
- Driveways consolidated to minimize conflict points

Key

<table>
<thead>
<tr>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidewalk</td>
</tr>
<tr>
<td>Planting</td>
</tr>
<tr>
<td>Corner apron</td>
</tr>
<tr>
<td>Decking</td>
</tr>
<tr>
<td>Mixing zone</td>
</tr>
<tr>
<td>Right of way</td>
</tr>
<tr>
<td>Bike rack</td>
</tr>
<tr>
<td>Pedestrian light</td>
</tr>
<tr>
<td>Vehicular light</td>
</tr>
<tr>
<td>Signalized Intersection</td>
</tr>
</tbody>
</table>

BIORETENTION SWALE

13th Street
14th Street

Feet

20 80 40 0
Preferred Alternative

Rectangular Rapid Flashing Beacons (RRFB) are located at all four corners of the intersection.
Preferred Alternative

Key

Legend

- Sidewalk
- Planting
- Corner apron
- Decking
- Mixing zone
- Right of way
- Bike rack
- Pedestrian light
- Vehicular light
- Signalized intersection

Limit of work, Typ.

Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

R 25' curb, Typ.
R 15' corner apron, Typ.

Designated east-west Bike Route 17
Preferred Alternative

Driveways consolidated to minimize conflict points

Limit of work, Typ.

R 15' curb, Typ.

Raised crosswalk, Typ.

Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

Key

Legend

Sidewalk

Planting

Corner apron

Decking

Right of way

Pedestrian light

Vehicular light

Signalized Intersection

Bike rack

Bike lane

Commercial Avenue

18th Street

19th Street

Limit of work, Typ.

R 15' curb, Typ.

Raised crosswalk, Typ.

Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

Driveways consolidated to minimize conflict points
Prepared Alternative

**Commercial Avenue**

- Preferred Alternative

---

Key

Legend

- Sidewalk
- Planting
- Corner apron
- Designated east-west Bike Route 22
- Decking
- Bike lane
- Mixing zone

- Right of way
- Bike rack
- Pedestrian light
- Vehicular light
- Signalized Intersection

---

**20 80 40 0 Feet**

**22nd Street**

**23rd Street**

**Commercial Avenue**

**Limit of work, Typ.**

**Raised crosswalk, Typ.**

**Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.**

**R 25' curb, Typ.**

**R 15' corner apron, Typ.**

**R 15' curb, Typ.**

**Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.**

**Designated east-west Bike Route 22**

**PARKLET**

**CORNER APRON**

**TWO-STAGE TURN BOX**

---

SOUTH COMMERCIAL AVENUE CORRIDOR PLAN | CITY OF ANACORTES, WA

ALTA PLANNING + DESIGN | APRIL 2016
Preferred Alternative

Rectangular Rapid Flashing Beacons (RRFB) are located at all four corners of the intersection.

Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

Limit of work, Typ.

In-lane RRFB push button

R 15' curb, Typ.

PROTECTED BIKE LANE

Signalized Intersection

Pedestrian light

Vehicular light

Corner apron

Decking

Planting

Bike lane

Sidewalk

Mixing zone

Legend

20 80 400

25th Street

26th Street

Commercial Avenue

South Commercial Avenue Corridor Plan | City of Anacortes, WA

Alta Planning + Design | April 2016
Preferred Alternative

Key

Legend

- Sidewalk
- Planting
- Corner apron
- Mixing zone
- Decking
- Right of way
- Bike rack
- Pedestrian light
- Vehicular light
- Signalized Intersection

Limit of work, Typ.

27th Street

28th Street

Commercial Avenue

R 15' curb, Typ.

Raised crosswalk, Typ.

Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

BIKE RACKS
Preferred Alternative

Rectangular Rapid Flashing Beacons (RRFB) are located at all four corners of the intersection.

Limit of work, Typ.
In-lane RRFB push button
R 15’ curb, Typ.
In-lane RRFB push button
Raised crosswalk, Typ.
Driveways consolidated to minimize conflict points
Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.
Limit of work, Typ.

Key
Legend
Sidewalk
Planting
Corner apron
Decking
Right of way
Bike rack
Pedestrian light
Vehicular light
Signalized Intersection

Designated east-west Bike Route 29

Rectangular Rapid Flashing Beacons (RRFB) are located at all four corners of the intersection.

Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

Limit of work, Typ.
In-lane RRFB push button
R 15’ curb, Typ.
In-lane RRFB push button
Raised crosswalk, Typ.
Driveways consolidated to minimize conflict points
Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.
Limit of work, Typ.

Key
Legend
Sidewalk
Planting
Corner apron
Decking
Right of way
Bike rack
Pedestrian light
Vehicular light
Signalized Intersection

Designated east-west Bike Route 29
Preferred Alternative

- Corner Apron
  - Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.
  - R 15’ curb, Typ.

- Two-Stage Turn Box
  - Driveways consolidated to minimize conflict points

Key
- Limit of work, Typ.
- R 25’ curb, Typ.
- R 15’ corner apron, Typ.
- Designated east-west Bike Route 32

Legend
- Sidewalk
- Planting
- Corner apron
- Decking
- Right of way
- Bike rack
- Pedestrian light
- Vehicular light
- Signalized Intersection

0 20 40 80 Feet
Transition from protected bike lane to existing bike lane on north side of 34th St.

Transition from existing bike lane to protected bike lane on south side of 34th St.

Limit of work, Typ.

R 15’ curb, Typ.

Tie curb, sidewalk, plantings, and other street elements into side-street conditions, Typ.

Preferred Alternative
S. Commercial Ave. and 29th St. (Looking NW)
Streetscape Elements
FURNISHINGS AND AMENITIES

- Concrete pavers in mixing zones
- Wood decking in Parklets
- Asphalt bike lanes
- High quality bike racks
- Covered bike parking
- Public bike repair stations
- Adirondack chairs in Parklets
- Metal and wood benches along the street
- Tree Grates
- Public art
- Wood docking in Parklets
- Movable tables and chairs in Parklets
**TREES AND PLANTINGS**

Street trees can provide numerous environmental and health benefits including, shade, habitat, improving air quality, traffic calming, color, and providing seasonal and visual interest along the street.

If trees are not properly selected or planted they can create problems such as sidewalk heaving. The city has indicated that they have had significant problems with heaving sidewalks in various locations and appropriate measure should be taken to reduce this risk along South Commercial Avenue.

Below are tree planting guidelines to consider:

- Select trees that are columnar or pyramidal shape to minimize trees being clipped by tall trucks and reducing visual obstructions to businesses
- Coordinate street tree locations with merchants to reduce blocking signs and views into windows
- Choose trees that do not produce fruit or berries to minimize maintenance
- Use native or regionally appropriate trees
- Plant deciduous trees to provide summer shade and allow winter sun
- Select trees with relatively small leaf size to allow filtered sunlight and minimize maintenance (e.g., clogging storm drains, major leaf removal program)
- Choose trees with open irregular branch structure to allow views and sunlight to penetrate surrounding buildings and serve as a counterpoint to the strong lines of existing background architecture
- Select trees that provide interest and color in more than one season if possible (particularly spring and fall)

**Street Trees**

- *Acer rubrum*, Red Maple
  - Source: Flickr.com Nicholas Wang
- *Carpinus betulus fastigiata* – Columnar Hornbeam
  - Source: https://Google/jQH00l
- *Ulmus parvifolia* “emer II” – Lacebark Elm
  - Source: http://goo.gl/mM3SQ1

**Soils**

Access to uncompacted soil is key for tree root health and to prevent sidewalk heaving.

Give tree roots more room to grow by providing tree roots access to uncompacted soil. Research by James Urban and others, suggest providing 1,000 cubic feet (28 cubic meters) of soil per tree. In locations where uncompacted soils is not available we recommend using technologies such as Silva Cells™ to provide adequate soil for optimal tree health.

**Silva Cell™**

The Silva Cell™ is a modular suspended pavement system that uses soil volumes to support large tree growth and provide powerful on-site stormwater management through absorption, evapotranspiration, and interception.

**Streetscape Elements**
**Shrubs and Ground covers**

The sidewalk extensions at tree planters, and individual planting strips can be planted with ornamental plants or ground covers to provide visual interest, reinforce the separation between the street and the sidewalk, and to help mitigate the impacts of traffic on pedestrians.

Design criteria for selection of ornamental planting include:

- Low maintenance
- Hardy and able to withstand occasional foot traffic
- Bright color, preferably in all seasons
- Seasonal color

**Shrubs**

- *Lavandula angustifolia*
  
  source: Flickr.com Dana (danakisko)

- *Cornus sibirica*
  
  source: Flickr.com Andrey Zharkikh

- *Polystichum munitum*
  
  source: Flickr.com Forest Service - Pacific Northwest

**Grasses**

- *Calamagrostis × acutiflora*
  
  source: Flickr.com Sue Lanning

- *Helictotrichon sempervirens*
  
  source: Flickr.com Drew Aney

- *Pennisetum alopecuroides ‘Hameln’*
  
  source: Flickr.com John Tann

**Ground Covers**

- *Fragaria chiloensis*
  
  source: Flickr.com Forest Service - Pacific Northwest

- *Geranium macrorrhizum*
  
  source: commons.wikipedia.org A. Barra

- *Ajuga reptans*
  
  source: flickr.com Cristina (nociveglia)

- *Allium globemaster*
  
  source: Kim Capesider

- *Narcissus*
  
  source: Flickr.com Laura Bittner

- *Tulipa*
  
  source: flickr.com Sergey Rodovnichenko
STORMWATER MANAGEMENT

The drainage concept approach for South Commercial Avenue includes green and gray infrastructure analysis to meet stormwater quality requirements.

Anacortes identifies the King County Surface Water Design Manual, Ecology’s Manual for Western Washington and the current Stormwater Management Plan for Anacortes as guidance documents for stormwater requirements and standards in the city. SvR|MIG referenced the King County Surface Water Design Manual for the following concept-level requirements and stormwater modeling.

The South Commercial Avenue design will be required to provide water quality treatment for flows discharging from the new impervious surface proposed as part of the roadway design. MGS Flood modeling software was used to model bioretention facilities and Silva Cell™ units. Infiltration is assumed to be zero based on input from City staff. The stormwater modeling calculations were completed for two types of treatment facilities, a Silva Cell™ facility and a bioretention facility. Each facility was modeled with a footprint size of 250sf to approximate the area of impervious surface that could be treated by each facility type. A concept-level cost estimate was also completed for each facility type. The concept design, facilities and costs can then be scaled for proposed improvements based on drainage area and pollution generating surfaces and applied to all blocks. This stormwater toolbox for South Commercial Avenue allows the street concept plans to evolve through planning without continual reanalysis of stormwater.

During the next phase, as the plans move to 30% and beyond, the lane geometry and facilities become more defined, stormwater analysis will include each individual block refining the technical approach and budget.
**Streetscape Elements**

**BIORETENTION HYBRID SWALE**

250 SF of installed Bioretention Hybrid Swale can provide water quality treatment for roughly 2,480 SF of impervious surface.

**SILVA CELL™**

250 SF of installed 3x-sized Silva Cell™ can provide water quality treatment for roughly 9,000 SF of impervious surface.

**BIORETENTION SWALE**

250 SF of installed bioretention swale provides water quality treatment for approximately 1,480 SF of impervious surface.
Traffic Analysis and Opinion of Cost
TRAFFIC ANALYSIS

TSI conducted an initial traffic analysis of the preferred design alternative which shows that the design accommodates forecasted future traffic volumes and meets City and WSDOT LOS standards.

The proposed narrow lane widths in the design are offset by a continuous two-way left-turn lane or median to accommodate expected truck traffic. The mixing of bicycles and pedestrians at the intersection crossings may create conflicts between the two modes. However, vehicle/bicycle conflicts are greatly reduced along the corridor. Below further describes in more detail TSI’s traffic analysis.

Current and Future Signalized Intersection Operations

Overall intersection level of service (LOS) will continue to meet WSDOT and City LOS standards under existing and future traffic demand with the revised intersection configurations and channelization.

The signal timing and phasing at the intersection of 12th Street and South Commercial Avenue was optimized under the proposed channelization to include permissive/protected left-turn phasing on the east/west approaches. This resulted in improved LOS under existing and future traffic demand as compared to the current split phase configuration.

Vehicle delays are expected to increase slightly over existing and future traffic demand at intersections south of the intersection of 12th Street and South Commercial Avenue compared to the existing channelization but pedestrian crossing distances are generally reduced. Traffic signals in the corridor operate at an LOS that would allow special bicycle phasing while still meeting WSDOT and City LOS standards, but likely increasing vehicle delays slightly.

Current and Future Unsignalized Intersection Operations

Unsignalized intersections will continue to operate similar to existing channelization. The current channelization allows for two-stage left-turns at most unsignalized side streets and driveways. Raised center medians would preclude two-stage left-turns and increase side street delays. Additional signals could be required to accommodate future growth but channelization and intersection layout would not likely require modification.

Current and Future Parking Demand/Operations

On-street parking demand is currently less than available supply and would likely meet future needs. Parking utilization may drop during peak traffic periods as drivers may be reluctant to interrupt heavy traffic flows to parallel park and could be concerned about exiting their vehicles. Additional parking supply could be created on minor street approaches to South Commercial Avenue with the elimination of left-turn pockets for east/west left-turns. Future consolidation or elimination of driveways on South Commercial Avenue could increase future parking supply.

Pedestrian Accommodations at Intersections

The reduction in lane widths, intersection curb radii, and number of approach lanes reduces crossing distances for pedestrians which in turn improves safety and mobility. Reducing crossing lengths can also improve traffic signal efficiency by reducing minimum green times for walk phases.

Bicycle/Vehicle Interactions

The separation of the protected bike lanes from both moving and parked vehicles will improve bicycle LOS between intersections. At intersections the bicycle and pedestrian faculties are combined introducing potential conflicts between the two modes.

Freight and Heavy Vehicles

The proposed lane widths are minimized to provide additional area for non-motorized and urban amenities within the right-of-way. The narrow lanes will tend to slow all vehicles. Local freight vehicles are currently directed to R Avenue at SR 20. Regional freight vehicles use Commercial Avenue to access the WSF Ferry terminal which provides service to the San Juan Islands. Left turn volumes are generally light on the corridor and are consist primarily of passenger vehicles. The probability of large vehicles opposing one another in the narrow lanes is low. The intersection of 12th Street and South Commercial Avenue will be required to accommodate heavy trucks making both right and left turns on SR 20. This could require a wider lanes widths and/or curb radii at the intersection.
CORRIDOR PARKING COUNTS

The preferred alternative provides 193 parking spaces along the corridor between 13th St. and 32nd St. According to the parking study described in the Parking Utilization and Data section of this document, less than 100 total parking spaces were in use (out of approximately 233 total spaces) during the highest observed utilization period.

Displaced parking in the pedestrian activation zones (22nd St. - 26th and 32nd St. 34th St.), can be accommodated on adjacent blocks where there is lower utilization and side streets.

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>Preferred</th>
<th>Alternative</th>
<th>Eliminated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total # of Spaces (SB + NB)</strong></td>
<td>233</td>
<td>193</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

### COMMERCIAL AVENUE - SOUTHBOUND

**From** | **To** | **# of Spaces** | **Existing** | **Preferred Alternative** |
---|---|---|---|---|
12th | 13th | 0 | 0 |
13th | 14th | 0 | 3 |
14th | 15th | 8 | 4 |
15th | 16th | 8 | 6 |
16th | 17th | 8 | 8 |
17th | 18th | 8 | 8 |
18th | 19th | 5 | 6 |
19th | 20th | 8 | 6 |
20th | 21st | 3 | 4 |
21st | 22nd | 5 | 4 |
22nd | 23rd | 8 | 0 |
23rd | 24th | 8 | 0 |
24th | 25th | 2 | 0 |
25th | 26th | 7 | 2 |
26th | 27th | 10 | 8 |
27th | 28th | 5 | 7 |
28th | 29th | 8 | 6 |
29th | 30th | 5 | 6 |
30th | 31st | 0 | 10 |
31st | 32nd | 0 | 5 |
32nd | 33rd | 0 | 0 |
33rd | 34th | 3 | 0 |
**TOTAL** | | **109** | **91** |
# Traffic Analysis and Opinion of Cost

## OPINION OF COST

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Cost Low</th>
<th>Unit Cost High</th>
<th>Total Cost Low</th>
<th>Total Cost High</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEMOLITION</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>REMOVE CEMENT CONC. CURB AND GUTTER</td>
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<td>$859,635</td>
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<tr>
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<td>LF</td>
<td>$10</td>
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<td>$859,635</td>
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<td>REMOVE CONCRETE SIDEWALK</td>
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<td>REMOVE STORM/SANITARY STRUCTURE</td>
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<tr>
<td><strong>DRAINAGE</strong></td>
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<td>ADJUST EXISTING STORM/SANITARY STRUCTURE</td>
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<td>CATCH BASIN/MAINTENANCE HOLE DRAINAGE STRUCTURE</td>
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<td>STORM/SEWER PIPE TYPE 6 - 18 IN. + BEDDING</td>
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<tr>
<td>SILVA CELL SYSTEM</td>
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<td>$85</td>
<td>$120</td>
<td>$4,474,400</td>
<td>$6,316,800</td>
</tr>
</tbody>
</table>
### Traffic Analysis and Opinion of Cost

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Cost Low</th>
<th>Unit Cost High</th>
<th>Total Cost Low</th>
<th>Total Cost High</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURB AND GUTTER</td>
<td>15982</td>
<td>LF</td>
<td>$30</td>
<td>$40</td>
<td>$479,461</td>
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<td>CURB CUT (AT BIORETENTION)</td>
<td>111</td>
<td>EA</td>
<td>$300</td>
<td>$800</td>
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<td>$88,800</td>
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## Traffic Analysis and Opinion of Cost

**Unit prices do not include any hard or soft cost mark-ups or contingency.**

Cost Estimate and excludes the Following: engineering, bidding, permitting, city staff and management, city design review, surveying, erosion control/swppp/tree protection, traffic control and signs, relocation of existing utilities impacted by roadway construction incl. water/fire services, communication and/or gas facilities, hazardous material excavation, removal and/or haul, plant establishment, irrigation, special inspections and testing, demolition of existing miscellaneous poles, signs, and lights, and assumes no federal funding.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Cost Low</th>
<th>Unit Cost High</th>
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<th>Total Cost High</th>
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PILOT PROJECT

Quick Build Street

The Quick Build Street approach is a strategy for quickly constructing low cost, high impact, street demonstration projects.

The premise of this approach is to focus efforts on short term actions to ensure long term change. It is an implementation tool for demonstrating the design concepts presented in this document and presents an immediate project the city can implement while funding is secured for the preferred long term solution.

As a demonstration project it will allow the city to test design strategies (such as protected bike lanes), solicit feedback, and evaluate performance.

Quick Build Streets entail the following:

- Installed within a year (roughly) of the start of planning
- Planned with the expectation that it may undergo change after installation
- Built using off the shelf materials
- Scheduled performance evaluation process

We recommend installing a Quick Build Street along South Commercial Ave, between 34th St. and 11 St, by re-striping the travel lanes to 11’, striping 7’ parking lanes, and installing planters to delineate protected bike lanes. See the section plans (on page 70) for more detailed information about two proposed options.

Existing Section
Pilot Project

Quick Build Street
OPTION 1 - ONE-WAY PROTECTED BIKE LANES

Quick Build Street
OPTION 2 - TWO-WAY PROTECTED BIKE LANES