TRANSPORTATION PLANNING IN WESTERN SOMA

Prepared for

Western SoMa Citizens Planning Taskforce

Transportation Focus Group

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Table of Contents

Figures & Tables

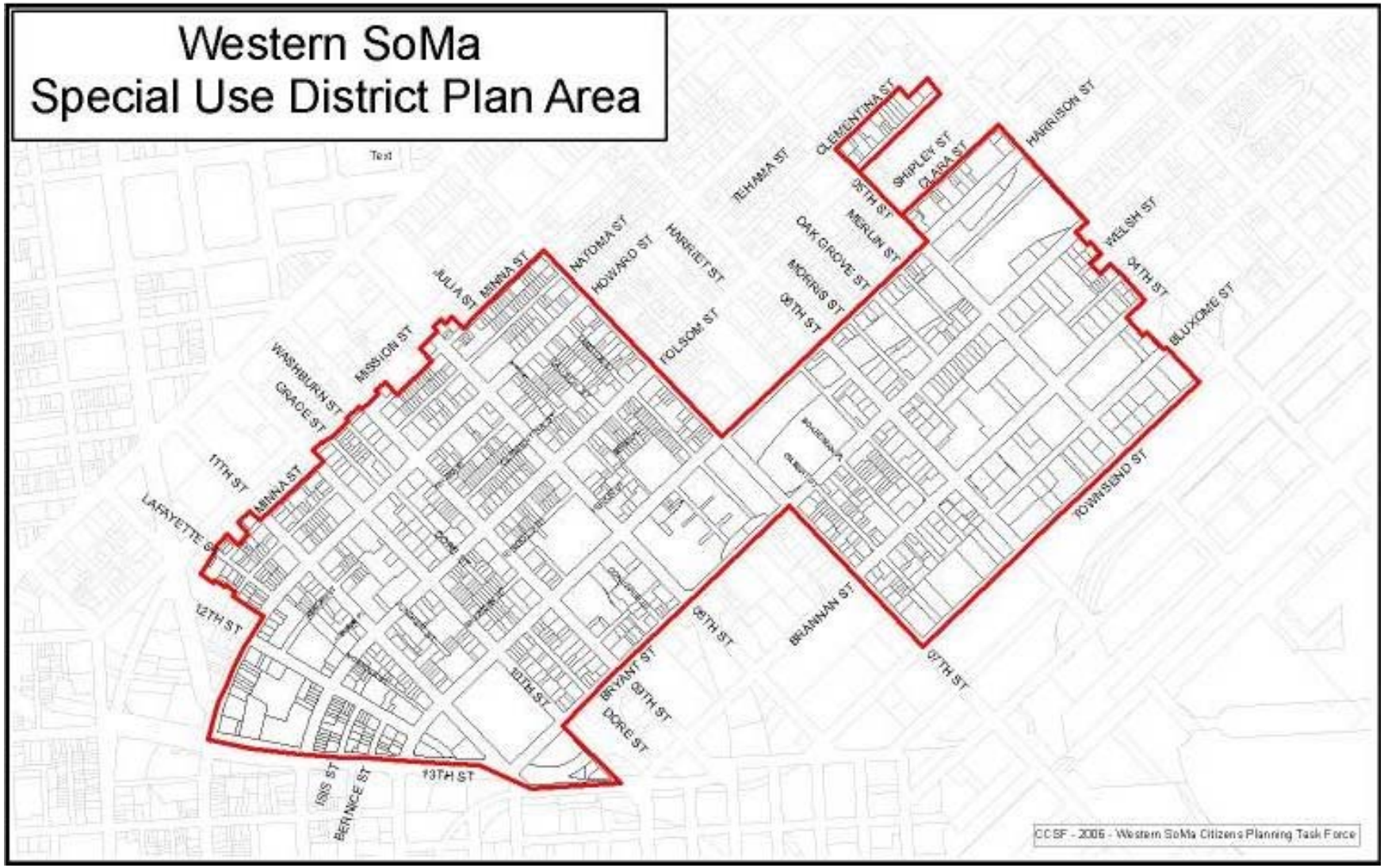
I. INTRODUCTION

The Western South of Market (SoMa) is a highly mixed use neighborhood of San Francisco that lies just to the south of the central business district. Within its boundaries lie the terminus of two freeways and access to the main connector for north south movements through the city. The average block size is ¼ mile, significantly larger than the average city block, which is ideal for the historical industrial land uses.

First laid out by Jasper O'Farrell in 1847, SoMa was initially designed as the city's industrial sector (NPS, 2007). Situated between the downtown and the Southern pacific rail yard, the area quickly attracted foundries, coal and gas works, slaughterhouses, and warehouses. Attracted by cheap land and accessibility to jobs, workers soon followed setting up boarding houses, shacks, and tenement housing within the area. Though the conditions were crowded, and the housing was dilapidated at best, the area thrived. By 1900, 1 in 5 people lived in the area (NPS, 2007). With deindustrialization factories began to close, and the area became a neglected, low rent region of San Francisco. The building of the central freeway, which went right through Western SoMa, further depressed the rents, and by 1960 the Western SoMa could be described as San Francisco's own "fly over country"; a region that most San Franciscans passed through as they entered and exited the freeway. Despite this, a small and healthy artist/bohemian community formed. During the 1970s and 1980s the area began to thrive as a late night entertainment capital. Western SoMa also began to attract a large Lesbian, Gay, Bisexual, Transgender (LGBT) population with the establishment of several venues catering to their interests.

The low rents, easy access to the freeway, and close proximity to downtown attracted many developers to the region during the Dot Com Boom of the 1990s. Using loopholes in planning policies and codes, many high end live work lofts were built in Western SoMa instead of the artist lofts desired by residents. The new influx of residents dramatically changed the flavor of the neighborhood. Rents began to increase, and older residents began to be displaced. As a rebuke to this trend, the Western SoMa Citizens Planning Task Force (Task Force) was set up to provide community input, and guide further development in the area.

This report covers three areas of transportation planning: policy analysis, traffic calming and urban goods movement. Transportation is not limited to neighborhood boundaries. While the primary intent of this report is to address Western SoMa broader analysis is required to provide comprehensive transportation planning.


Western SoMa
Special Use District Plan Area
Text
CLEMENTINA ST
TEHAMA ST
HARRISON ST
SHIPLEY ST
CLARA ST
05TH ST
MERLIN ST
OAK GROVE ST
MORRIS ST
07TH ST
WELSH ST
04TH ST
BLUXOME ST
NATOMA ST
HOWARD ST
HARRIET ST
TOLSOM ST
JULIA ST
MINNA ST
MISSION ST
WASHBURN ST
GRACE ST
11TH ST
MINNA ST
LAFAYETTE ST
12TH ST
DORE ST
10TH ST
ISIS ST
BERNICE ST
13TH ST
BRYANT ST
08TH ST
DORE ST
BRANNAN ST
08TH ST
07TH ST
TOWNSEND ST
CCSF - 2006 - Western SoMa Citizens Planning Task Force

II. BACKGROUND

In January 2002 the San Francisco Planning Department began the Eastern Neighborhoods Community Planning Process to address changing land use needs on the eastern side of the City. The Process originally consisted of five neighborhoods: South of Market (SoMa), the Mission, Showplace Square/Potrero/Central Waterfront, South Bayshore and Visitacion Valley. These neighborhoods were assessed for amenities available to current residents, land available for production, distribution and repair (PDR) businesses, and for appropriate distribution of new development. Historically zoned for industrial uses, the Eastern Neighborhoods have changed over the past twenty years with a decline in industrial uses. Furthermore, there is a housing shortage in San Francisco and the Eastern Neighborhoods process would ensure a balance and coexistence between industrial and residential uses. From the process, five area plans would be written to protect each neighborhood characteristic.

In October 2003, SoMa was separated into two community processes with Eastern SoMa remaining as part of the Eastern Neighborhoods and Western SoMa creating its own process. By Board of Supervisors Resolution 731-04, in 2004 the Western SoMa Citizens Planning Task Force was formed. The Task Force would serve as a citizen advisory council (CAC) to the San Francisco Board of Supervisors and the Planning Commission in planning for the Special Use District Area Plan. The Task Force consists of twenty-six (26) members, six of which are appointed one each by select City and County agencies. The other twenty are appointed by Supervisor Daly of District 6, representing a diverse body of residents and stakeholders (**Appendix A**). The Task Force works with the Planning Department to ensure that the Area Plan represents the neighborhoods best interests.

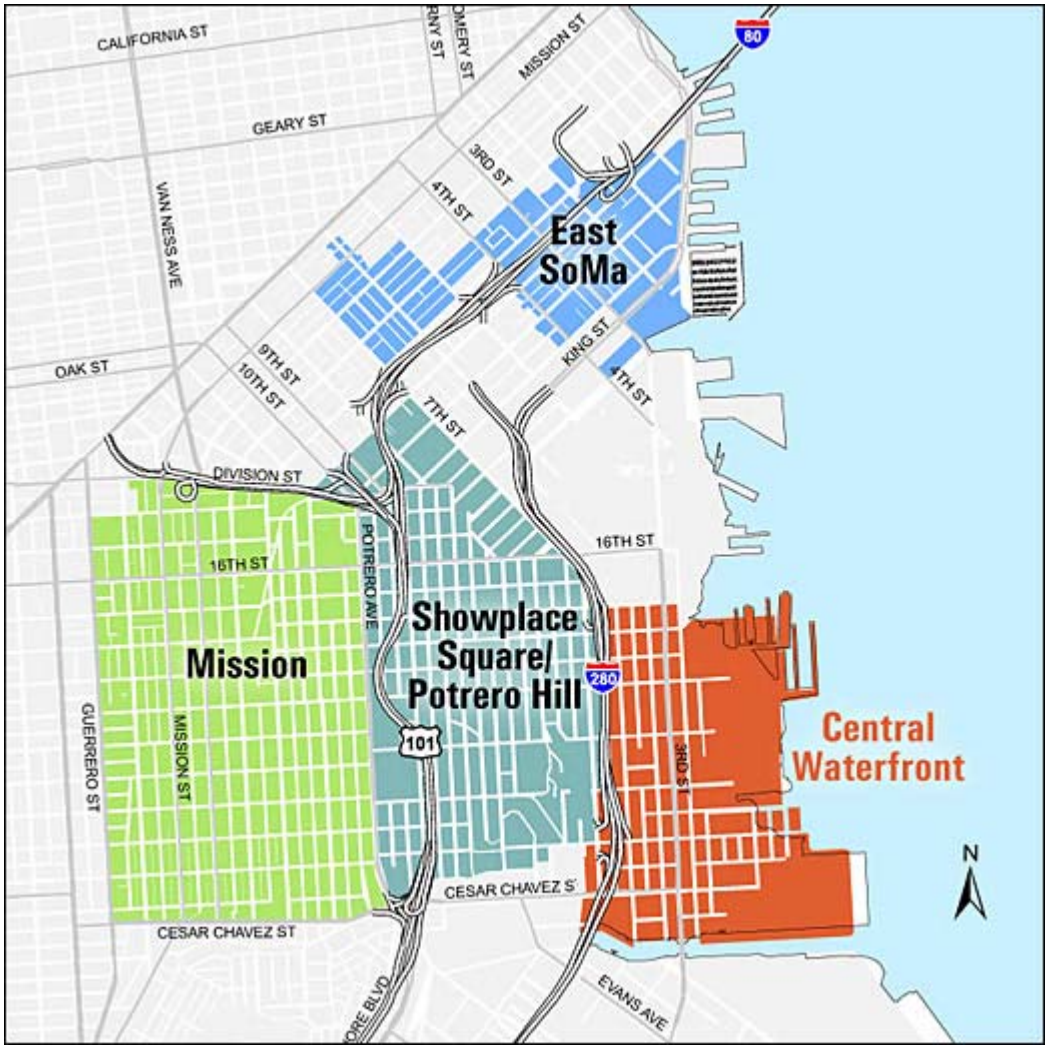
The Task Force has several smaller groups, each of which provides more in-depth discussions of the neighborhood issues and the elements of the Area Plan. The groups are the Complete Neighborhood Fabric Committee, Planning Principles Committee, Business and Land Use Committee, Arts and Entertainment Focus Group, and the Transportation Focus Group. The Full Task Force, committees and focus groups meet once a month. The Planning Principles Committee stopped meeting when the Planning Principles were adopted in August 2006 (**Appendix B**).

The Transportation Focus Group was created to In order to address transportation issues in the area and inform the Planning Department as the Transportation Element is written. The Transportation Focus Group first met in February of 2007, and in April adopted a work plan for the next seven months (Table 1.1)

Table 2.1 Transportation Focus Group Work Plan	
May	Transit/Para-transit
June	Pedestrian/Disabled
July	Cycling
August	Auto Traffic/Goods Movement
September	Folsom Boulevard and other specific projects
October	Present draft transportation plan for review, comment and discussion
November	Finalize transportation plan for presentation to full task force
Parking discussion to be determined.	

From the first meeting, the Focus Group had made it clear that their goal is not only to address transportation issues in Western SoMa, but also in the adjacent neighborhoods. In order to be truly comprehensive, transportation planning must look past neighborhood borders.

Figure 2.2 Western SoMa and Surrounding Neighborhoods



III. PROJECT DESCRIPTION

This report was prepared as a resource to assist the Transportation Focus Group as it works on the Transportation Element of the Area Plan. The Planning Department, acting as the representative to the Task Force, submitted a proposal to the Urban Studies Program at San Francisco State for the Spring 2007 Senior Seminar. For Senior Seminar, students work on a group project for an outside client. The course is designed to prepare students for professional work and bring together the information and resources from the Program curriculum.

The Transportation Focus Group was in very early stages when the project began, and it was determined that several small projects would serve as a better resource to the Focus Group than a larger project. The Planning Department proposed that the student team act provide resources to the Focus Group that would prove most beneficial in their work on the Transportation Element. The first project was to compile a comprehensive list of San Francisco's transportation policies to familiarize the Focus Group with existing policy and offer a foundation to begin the Transportation Element.

The Task Force adopted a set of Planning Principles to guide the community planning process. These principles were used as a guideline to determine the immediate needs of the Focus Group, providing parameters by which to explore transportation issues. Of the thirteen principles, two seemed to resonate throughout the transportation discussions the most:

3) *Promote safety in all areas of the public realm (e.g., streets, sidewalks, parks, etc.).*
6) *Maintain and promote diversity (e.g., day/night, living/working, spectrum of uses, etc.) of neighborhood land uses.*

From the third principle, it was determined that a Traffic Calming Toolbox would address many safety issues, especially for pedestrians. The deliverable was to provide the Focus Group with a set of possible traffic calming measures, feasible for San Francisco, appropriate for each classification of the Western SoMa street network. From the sixth principle, it was determined that one of the possible conflicts was between existing industrial and commercial land uses and future residential land uses. A preliminary analysis was performed of the urban goods movement and current freight routes in and through Western SoMa and the surrounding neighborhoods to ensure the balance of residential and commercial transportation.

IV. POLICIES

Introduction

The Western SoMa Area Plan will be a policy document to guide development and growth in Western SoMa. The Transportation Element will serve as a guideline for how to approach pedestrian, bicycle, transit, urban goods movement, congestion and parking issues. A list of transportation policies and objectives was compiled from existing and proposed policies from the San Francisco General Plan (**Figure 3.1)**. Other plans were considered, however it was determined that the General Plan would provide enough of a policy framework to guide the Western SoMa Area Plan Transportation Element.

Background

The San Francisco General Plan consists of Plan Elements and Area Plans. California State Law requires that every city have a General Plan that includes seven issues: land use, circulation, housing, conservation, open space, noise and safety. San Francisco's General Plan covers more than State requirements with the following elements: air quality, arts, commerce and industry, community facilities, community safety, environmental protection, housing, recreation and open space, transportation and urban design. The Area Plans apply citywide guidelines to specific neighborhoods, tailoring existing and creating new localized polices and goals. The Western SoMa Area Plan will eventually go before the Planning Commission for adoption into the General Plan.

Figure 4.1
Policy and Objective Sources

Existing	Transportation Element Downtown Plan South of Market Area Plan
Proposed	Market/Octavia Better Neighborhoods Plan Eastern Neighborhoods Eastern SoMA Area Plan Mission Area Plan
Other plans considered but not included	4th & King Railyards Plan Streetscape Master Plan Pedestrian Transportation Master Plan Bicycle Transportation Master Plan Citywide Action Plan

The Better Streets Plan is a cooperative effort that involves the Planning Department, the Municipal Transportation Agency (MTA), Department of Public Works (DPW), San Francisco Public Utilities Commission (PUC), Mayors Office on Disability (MOD) and the San Francisco County Transportation Agency (TA). The Streetscape Master Plan and Pedestrian Transportation Master Plan are the elements of the Plan that will are separate entities but will be combined as one plan. The Streetscape Master Plan will be an urban design guidebook for street safety, appearance and amenities. The Pedestrian Transportation Master Plan will guide the development of a complete pedestrian network. The Bicycle Transportation Master Plan is a MTA endeavor to improve cycling conditions throughout the City. The Citywide Action Plan calls for capital improvements to City amenities, including streetscaping.

Findings

The complete list contains sixty-seven (67) transportation policy objectives and over three hundred (300) transportation policies.

Due to the time constraints of the project, it was determined that sorting out the objectives and looking for themes would provide the most assistance. The themes identified were:

- Street and sidewalk safety: policies that encourage pedestrian and bicycle safety and aim to enhance the experience on the street and sidewalk.
- Accessibility: Policies that encourage ease of mobility to all people, especially seniors and the disabled, that is affordable and accessible.
- Promote alternative modes: policies that encourage modes of transportation other than by automobiles and enhance the pedestrian, bicycle and transit experience.
- Improve transit service: policies that encourage fast, convenient and reliable transit.
- Protect neighborhood character: policies that preserve the appearance and dynamics of the neighborhood as relates to transportation and minimize the impacts of parking and new development.
- Parking strategy: policies that guide parking and minimize impacts to the neighborhood.
- Economic vitality: policies that use transportation to encourage economic growth and promote San Francisco as a hub for tourism, goods movement and the workforce.
- Environmental quality and health: policies that encourage minimizing pollution, enhancing the urban experience and promoting health and well-being.

In many cases, more than one theme applied to the objectives however the theme that had the strongest application was used in the sorting process.

Recommendations

- At each focus group meeting, a list of applicable policies should be distributed to enhance and inform the meeting topic.
- Identify policies and objectives that conflict with the goals and intentions of the Task Force.
- Host a discussion of the objective themes to determine which are the most important in Western SoMa.
- Reinforce existing policies whenever possible in the writing of the Transportation Element of the Western SoMa Area Plan.
- Include a policy directive to coordinate with other Agencies and existing programs.

V. TRAFFIC CALMING

Introduction

Traffic calming is a method of transportation planning implemented to address high traffic speeds and volumes. Traffic calming began in the late 1970's to address the growth of vehicles on the streets. As countries developed more and more roadways, automobiles became the primary mode of transportation. Traffic calming was used a measure to alleviate the volume and speed of vehicles on the streets. It is defined that traffic calming as a "combination of self-enforcing physical measures to improve safety on the streets". Some of the measures used in the traffic calming toolbox are bulb-outs, chicanes, pedestrian refuge center islands, road diets, paved driveways, etc. When neighborhoods implement traffic calming measures into their streets, transportation planners try to infuse all modes of transportation into their plans.

Western SoMa is one of the most widely used areas in the city. It contains many arterials, transit preferential streets, streets, and alleys. There are many thoroughfares which are used as pathways to enter and exit the city. The majority of the Interstate-80 freeway entrances and exits that feeds downtown San Francisco. Since there are entrances and exits to I-80, thoroughfares, and arterials are located in Western SoMa, the Western SoMa Planning Task Force has planned to integrate traffic calming in the Transportation element of the Western SoMa Plan.

Methodology

Extensive research was conducted relating to traffic calming at the international, national, and local level. In addition to gathering research, case studies were collected to rectify research involving traffic calming projects that were completed at an international, national, and local level. Besides a literature review, a window-survey and walk-through field work was conducted to learn more about the classified streets in Western SoMa.

History of Traffic Calming

Traffic calming began as a result of a grassroots movement in Europe. In the late 1960's, European residents were becoming impatient at the pro-vehicular designed streets in their communities and wanted a better solution to bringing their streets together. An approach known as the "Woonerven" approach was officially endorsed by the Dutch government in 1976, which turned their streets into shared areas. The streets were designed with benches, tables, sandboxes, etc. to make the area an extension of a home to the residents, and to hamper motor traffic. However, the "Woonerven" approach was too expensive and two other approaches were tested at a cost-effective basis. The traffic calming approach was considered the most cost-effective way and was endorsed by the Dutch government in 1983.

In the late 1970's, Germany examined traffic calming which marked the era for the coin term "traffic calming". The Germans analyzed area-wide traffic calming after discovering that traffic diversion was occurring as a result of calming on individual streets. They implemented measures such as chicanes, speed tables, turning one-way streets into two-way streets, and giving alternative travel modes higher priority over vehicles. There was such a positive result to these best practices that many countries decided to use the same approach in managing their traffic.

Other countries such as Britain, Australia, and the United States have taken the traffic calming approach due to the overwhelming demand for traffic management. The U.S. actually has used traffic calming measures since the late 1940's, early 1950's. The U.S. began installing traffic diverters and using street closures to cope with the early signs of traffic.

The Neighborhood Traffic Control Program (NTCP) is the traffic calming program that was adopted by Seattle, Washington's Department of Transportation. The program began in 1976 as part to the city's annual Capitol Improvement Program (SDOT, 2007). Currently the city of Seattle has installed over 800 traffic circles in an effort to combat the struggles of dealing with the speed and volume of vehicles (SDOT, 2007).

Berkeley, CA was known to be the first city to substantiate a full-scale traffic calming program. The city installed their first diverters in 1964-65 to keep traffic from running alongside San Pablo Park. After conducting research on traffic management strategies, the city of Berkeley adopted the Traffic Management Plan in 1975. The installation of diverters helped a great deal at converting traffic to main thoroughfares and arterial streets, however, speeding was beginning to arise as a new problem for Berkeley. In 1990 there were six speed humps were installed as a trial in a pilot program, and with the successful result of slowing the speed of vehicles a total of 156 speed bumps were installed by 1996 (Berkeley, 2007).

Figure 5.1 Traffic Calming in Berkeley, CA

Traffic Calming in San Francisco

San Francisco has worked on implementing traffic calming measures for neighborhoods throughout the City. The MTA has a Traffic Calming program which is part of the Livable Streets Program that Mayor Willie L.

Brown, Jr. helped launch in 2000. The Livable Streets is an effort to create a safer neighborhood for children, pedestrians, bicyclists, and motorists (MTA, 2007).

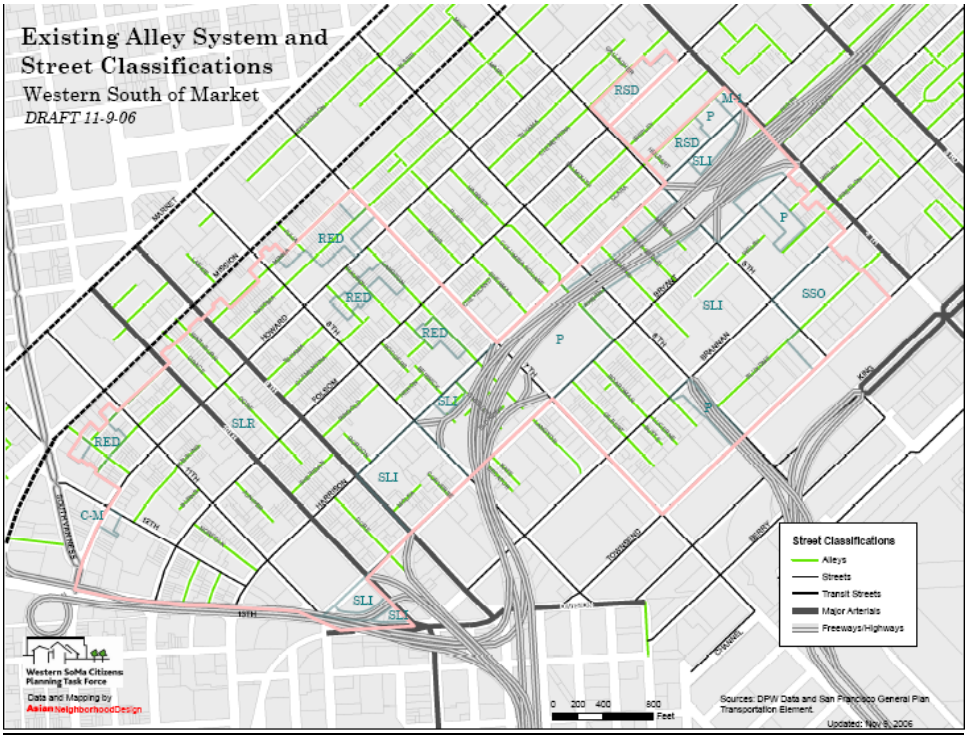
The traffic calming program utilizes measures from a toolbox that addresses traffic complications such as reckless driving, road rage, pedestrian safety, speeding, etc. The San Francisco project for traffic calming began as a pilot program in the year 2000 for the Bernal Heights district. The program concentrates mainly on local streets-site specific and area wide, school areas, and arterial and commercial streets. In order to establish eligibility for traffic calming on streets, intersections, and neighborhoods, a traffic calming guideline was created to follow the formation of the livable streets effort (MTA, 2007). The program has a traffic calming toolbox that is used to implement the certain measures for specific streets in the planning process.

The Central Freeway Replacement Ancillary Projects is part of the SoMa West Improvement Project. The SFCTA impelled the project in 2005 to fund public enhancements for the enrichment of urban fabric, traffic calming, and the revision of transportation safety in the Central Freeway/Octavia Boulevard area. The project is currently in the planning phase which is Phase I. This project will provide improvements such as the beautification for the McCoppin Street Improvements, traffic calming strategies for the alleys, and various aesthetic enhancements throughout the vicinity. As with other the projects and plans mentioned previously, the project consists of multiple agencies working together to provide the best result.

Western SoMa Street Classifications

Western SoMa streets have been classified into four different types: Major Arterials, Streets, Transit Preferential, and Alleys (**Figure 5.2)**. According to the Federal Highway Administration (FHA), an arterial street is defined as a street classification for streets serving major traffic movements (high-speed, high-volume) for travel between major points (FHA). Such examples of arterial streets in the Western SoMa area are 9th and 10th streets between Mission and

Figure 5.2 Western SoMa Street Classifications



Bryant Streets (Task Force, 2007). Transit Preferential streets are served by transportation services such as the San Francisco Municipal Railway (Muni). Although there are no major Transit Preferential streets classified in the Western SoMa area, there are some that feed into the area such as Mission and Market Streets.

Findings

Two case studies in San Francisco and two case studies in central California were used for research on traffic calming. The first case study relates to the arterials, Transit Preferential, and streets in Western SoMa. This case study is on the Potrero Avenue Livable Streets Corridor Project (LSCP), between 25th avenue and 17th avenue. The second study relates to the alleys in the Western SoMa area which is the Waverly Place alley in Chinatown. The City of Sacramento and San Mateo County were used as more comprehensive examples.

San Francisco, California

The Potrero Avenue LSCP was completed in 2005. The project focused between 25th street on the south and 17th street on the north. The Mission district lies on the west of this area and Potrero Hill lies on the east of this area. Since this portion of Potrero Avenue is a major thoroughfare for both of these districts, there was an outcry from local residents to improve safety on the streets for the pedestrians, and bicyclists. Some of the treatments for Potrero Avenue were: reducing traffic from three-way to two-way lanes in each direction, installing a center turn lane with a pedestrian refuge island, installing five-foot bike lanes, improving and lengthening bus zones and giving buses transit signal priority (MTA, 2007).

There were many traffic calming treatments that were applied to the Waverly Place in Chinatown. The Waverly Place alleyway project was an eighteen-month project that was completed by the DPW in 2005. In an effort to make the alley a livable and shared space for pedestrians, and vehicles, the project involved treatments such as choking the entrance down, creating the driveway as a curb, renovating the concrete into textured pavement, installing bollards to discourage parking on the curbside, and grounding the utilities.

Sacramento, California

The City of Sacramento Department of Transportation "Central City Two-Way Conversion Study" is applicable to the South of Market area in San Francisco, California. The two areas possess a similar street grid system consisting of mostly one-way streets. Both areas also contain highway systems with on and off ramps (highways I-5, I-50, I-80, CA 99 and CA 160 in Sacramento, and U.S. 101, I-80 and I-280 in San Francisco). Initiated in 2001, the City of Sacramento is in Phase 2 of the process which is the Analysis of Conversion Options which followed the first phase to Define Evaluation Criteria and Conversion Options, and precedes the final phase of Implementation Plan and Community Plan Amendment (Sacramento, 2007). According to the City of Sacramento the guiding principle of the study is based on, "the prevailing wisdom is that two-way

Figure 5.3 City of Sacramento Traffic Calming Measures

Table 1 – Traffic Calming Measures and Problem Types

Types of Measures	Type of Problem				
	Speeding	Traffic Volume	Vehicle Accidents	Pedestrian Safety	Noise
Phase I Non-Restrictive Measures					
Targeted Speed Enforcement	●	○	◒	◒	◒
Radar Trailer	●	○	○	○	◒
Lane Striping	●	○	○	○	○
Speed Limit Signage	●	○	○	○	○
Speed Legends	●	○	○	○	○
Truck Restriction Signs	○	◒	○	○	●
"Cross Traffic Does Not Stop" Signage	○	○	●	◒	○
Botts Dots/Raised Reflectors	○	○	●	◒	○
High-Visibility Crosswalks	◒	○	○	●	○
Angled Parking	●	◒	○	○	○
Phase I Vertical Measures					
Speed Humps	●	●	◒	◒	×
Speed Lumps	●	●	◒	◒	×
Speed Tables	●	◒	◒	◒	×
Raised Crosswalks	●	◒	◒	●	×
Raised Intersections	●	◒	◒	●	×
Textured Pavement	◒	○	○	◒	×
Phase I Horizontal Measures					
Traffic Circles	●	◒	●	◒	○
Roundabouts (Single-Lane)	◒	◒	●	○	●
Lateral Shifts	◒	◒	○	○	○
Chicanes	●	◒	○	○	○
Realigned Intersections	●	◒	○	○	○
Phase I Narrowing Measures					
Neckdowns	●	◒	○	●	○
Two-Lane Chokers	●	◒	○	○	○
Center Island Narrowings/ Pedestrian Refuges	●	◒	◒	●	○
One-Lane Chokers	●	●	◒	◒	×
Phase II Measures					
Full Closures	●	●	○	○	○
Half Closures	●	●	○	○	○
Diagonal Diverters	●	●	○	○	○
Median Barriers	○	●	◒	○	○
Forced Turn Islands	○	●	◒	○	○

Key: ● = Strongly Appropriate ◒ = Moderately Appropriate × = Inappropriate/Counterproductive ○ = Indifferent

Figure 5.4 City of Sacramento Traffic Calming Measures

Table 2 – Traffic Calming Measures and Location Types

Types of Measures	Residential			Non-Residential	
	Midblock	Intersection	Boundary of Area	Midblock	Intersection
Phase I Non-Restrictive Measures					
Targeted Speed Enforcement / Radar Trailer	●	●	●	●	●
Lane Striping	●	×	×	●	×
Speed Limit Signage / Speed Legends	●	●	●	●	●
Truck Restriction Signs	×	×	●	×	●
"Cross Traffic Does Not Stop" Signage	×	○	●	×	○
Botts Dots/Raised Reflectors	On Curves	×	×	●	×
High-Visibility Crosswalks	●	Unsignalized Intersections	Unsignalized Intersections	●	Unsignalized Intersections
Angled Parking	●	×	×	●	×
Phase I Vertical Measures					
Speed Humps / Speed Lumps	●	×	×	×	×
Speed Tables	●	×	×	○	×
Raised Crosswalks	●	○	○	○	×
Raised Intersections	×	●	●	×	●
Textured Pavement	●	●	●	●	●
Phase I Horizontal Measures					
Traffic Circles	×	Especially 4-Ways	○	×	○
Roundabouts (Single-Lane)	×	○	○	×	●
Lateral Shifts / Chicanes	●	×	×	●	×
Realigned Intersections	×	●	●	×	●
Phase I Narrowing Measures					
Neckdowns	×	●	●	×	●
Two-Lane Chokers	●	×	×	●	×
Center Island Narrowings/ Pedestrian Refuges	●	●	●	●	●
One-Lane Chokers	●	×	×	×	×
Phase II Measures					
Full Closures	×	●	●	×	×
Half Closures	×	●	●	×	×
Diagonal Diverters	×	●	×	×	×
Median Barriers	×	○	●	×	×
Forced Turn Islands	×	○	●	×	●

Key: × = Seldom or never applicable. ● = Generally applicable.
○ = Not applicable except in some cases.

streets can enhance a neighborhood's environment, reduce speeds to levels that are more compatible with pedestrian traffic, and that a 'busy' street can be an indicator of a healthy business environment" (Sacramento, 2007). The objectives of the conversion study in the City of Sacramento are to:

- Enhance neighborhood livability.
- Supports continued revitalization of the commercial area of the Central City.
- Promotes a pedestrian friendly and safe environment.
- Is feasible and can be implemented.
- Is developed with stakeholder and community participation.
- Maintains a viable transit strategy.
- Supports a balanced transportation system.

San Mateo, California

The City of San Mateo developed a Neighborhood Traffic Calming Program to respond to citizen's request to address vehicular speeding and cut-through traffic in residential neighborhoods. The program only addresses residential areas where traffic volumes and traffic speeds are not (subjectively) high (HTC, 2002). Several traffic calming programs from California cities were surveyed to provide a best practices overview to inform San Mateo's program (HTC, 2002). Cities surveyed include:

- City of Belmont
- City of Burlingame
- City of Concord
- City of Fremont
- City of Los Altos
- City of Mountain View
- City of Oakland
- City of Palo Alto
- City of Palos Verdes Estates
- City of Redwood City
- City of Sacramento
- City of San Carlos
- City of San Jose
- City of Santa Clara
- City of Sunnyvale

The definition of traffic calming is defined using the Institute of Transportation Engineers (ITE) definition: "Traffic calming is the combination of *mainly physical measures* that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users (bicyclists, pedestrians, etc…)." The City of San Mateo also included ideas of education and enforcement.

The City of San Mateo categorizes traffic calming into two levels. Step 1 measures may be applied to any city street and include "neighborhood traffic safety campaigns, radar speed display units, neighborhood speed watch programs, targeted police enforcement, most sign installations (excluding stop signs and turn-prohibition signs), and pavement striping changes." These measures often do not require strong community support to implement. Step 2 includes measures that aim to alter travel patterns and impede travel flows. Measures in included in this

step consist of speed control devices such as speed humps, chokers, raised intersections, curb extensions, and traffic circles/round-a-bouts. The purpose of stop signs is mainly to clarify the right-of-way and they are not intended to calm traffic or address traffic issues. Possible one-way street conversions from two-way streets and channelizations are offered as well. This step also includes traffic diversion measures such as diverters, median islands, and street closures. Step 2 measures may be controversial and therefore community support is sought. There are several minimum requirements that must be met before consideration of any Step 2 measures, and all applicable Step 1 measures must have been exhausted before considering any Step 2 measure. The City of San Mateo does exclude four categories of streets from receiving Step 2 treatments. Thee four categories include arterial and collector streets as they are designated in the City's General plan; any street used as a "primary response route for emergency vehicles"; streets that are used as bus routes; or any street designated as "Truck Traffic Routes" per the City Municipal Code (HTC, 2002).

A summary of Traffic Calming methods that the City of San Mateo has chosen to include in its toolbox is contained in **Figure 5.5**. Of interest is the City of San Mateo's inclusion of traffic calming device removal. The process is similar to requests to install traffic control devices. The flowchart in **Figure 5.6** shows the traffic calming request process as it relates to the City of San Mateo.

Figure 5.5 San Mateo County Traffic Calming Measures

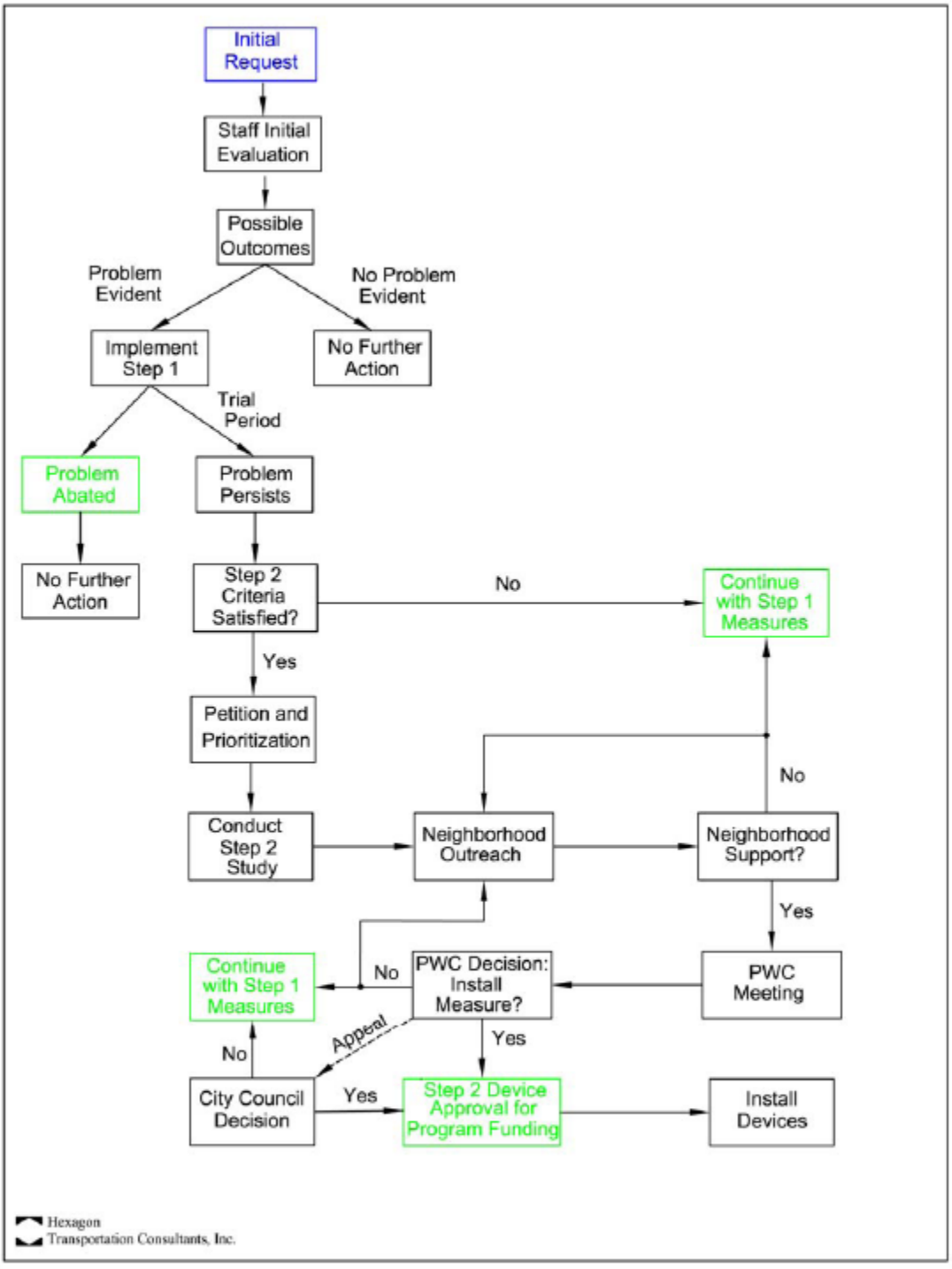
Table 1
Summary of Traffic Calming Methods

		Beneficial Effects			Undesirable Effects					
Method	Step	Reduces Speed	Improves Safety	Reduces Volume	Increases Noise	Parking Loss	Restricts Access	Impacts Emergency Response	Increases Street Maintenance	Cost*
Community Outreach	1	Possible	Possible	Possible	No	No	No	No	No	Varies
Police Officer Decoys	1	Yes	Yes	Possible	No	No	No	No	No	$75 per location
Police Enforcement of Speed Limits	1	Yes	Yes	Possible	No	No	No	No	No	$75 per hour
Speed Display Units	1	Yes	Possible	No	No	No	No	No	No	$250 per day
High Visibility Crosswalks	1	Possible	Possible	No	No	Possible	No	No	Yes	$1,000-$5,000
Speed Limit Signs	1	Possible	Possible	No	No	No	No	No	No	$200 per sign
Narrow Lane Striping	1	Yes	Yes	Possible	No	No	No	No	Yes	$1,000-$3,000
Stop Signs	2	Possible	Possible	No	Yes	Possible	No	Yes	No	$200 per sign
Turn Restriction Signs	2	No	Possible	Yes	Possible	No	Yes	No	No	$200 per sign
Curb Extensions	2	Yes	Yes	Possible	No	Yes	No	Yes	Possible	$10,000-$20,000
Speed Humps & Raised Surfaces	2	Yes	Yes	Yes	Yes	Possible	No	Yes	Yes	$5,000-$50,000
Traffic Circles & Round-a-bouts	2	Yes	Yes	Possible	No	Yes	No	Yes	Yes	$25,000-$35,000
Median Barriers	2	Possible	Possible	Yes	No	No	Yes	Yes	Possible	$5,000-$30,000
Street Closures	2	Yes	Yes	Yes	No	Yes	Yes	Yes	Possible	$35,000-$50,000
Diagonal Diverters	2	Yes	Yes	Yes	No	Possible	Yes	Yes	Possible	$25,000-$35,000
Channelization	2	Yes	Yes	Possible	No	Yes	Yes	Yes	Possible	$15,000-$20,000
One-Way Street Conversions	2	No	Possible	Possible	No	No	Yes	No	No	$5,000-$10,000

*These costs represent device construction and/or installation costs. They do not include program development or CEQA review.

Figure 5.6 San Mateo County Traffic Calming Procedure

Figure 4
Traffic Calming Procedure



City of San Mateo Traffic Calming Policy

Social Equity

Social impacts of transportation plans and policies within San Francisco may be addressed on a regional scale by the Metropolitan Transportation Commission (MTC). In 2004 the MTC Transportation 2030 Equity Analysis Report was released to address social and environmental justice issues relating to the transportation system in the Bay Area. MTC identified minorities and low-income communities as "communities of concern". The report addressed the consideration of whether certain communities are disproportionately baring a greater burden of the negative externalities of the transportation system while receiving fewer benefits in mobility and accessibility to the system (MTC, 2004). MTC is involved in several programs to address issues of equity such as the "Low Income Flexible Transportation (LIFT) program; ADA and paratransit funding; Transportation for Livable Communities (TLC) and Housing Incentive Program (HIP) projects in disadvantaged communities; various planning studies such as the Older Adults Transportation Study; Transportation Costs Study; Community-Based Transportation Plans; and social equity analysis for Transportation 2030" (MTC, 2005). Policy 1.7 of the Transportation Element of San Francisco's General Plan, which states, "Assure expanded mobility for the disadvantaged" also addresses "communities of concern" (Planning, 2007).

At the city level, social and environmental equity issues may be addressed by the Municipal Transportation Agency (MTA), the San Francisco County Transportation Authority (SFCTA), the San Francisco Planning Department, as well as the Mayor, Board of Supervisors, or other governmental agencies. San Francisco experiences a wide range of participation from neighborhood organizations, citizen advisory groups, and not for profit organizations.

Recommendations

The traffic calming toolbox was developed for the Transportation Focus Group to provide an overview of existing measures to help inform the group in their quest to create a transportation plan for the Western SoMa neighborhood. Research was conducted on existing traffic calming measures and created a spreadsheet was created listing known measures and specifying what street classification the measures most apply to within the neighborhood (**Appendix D**). The following traffic calming measures appear to most suitable for the Western SoMa neighborhood. For a more comprehensive list of measures consult the appendix.

<u>Chicanes</u>

Chicanes, which are curb bulges or planters (usually 3) on alternating sides, forcing motorists to slow down, work primarily on alleys and streets. Chicanes have the advantage of reducing speed while this may conflict with emergency vehicle access. Additionally there may exist liquid draining issues with the construction of a chicane, parking may be removed, and the costs are $67,000 or more (Velasco, 2007). An alternative to constructing a physical chicane is to utilize the positioning of parked vehicles in creating a chicane effect. In

this instance vehicles park at either 45 or 90 degree angles on one side of the street while on the opposite side there is the option of having parallel parking. With a parking chicane the costs are decreased.

Medians and Chokers

Medians, which are a raised barrier on a street centerline that may continue through an intersection to prevent through traffic, may be implemented on any street classification in Western SoMa. A two lane choker which is a midblock curb extension that narrows the traffic lane and widens the sidewalk on one or both sides of the street would be most applicable to alleys. A curb bulge or center island that narrows a 2-lane road down to 1-lane, forcing traffic from each direction to take turns is know as a one lane choker and applies mainly to streets. The main advantages of medians and chokers are speed reduction of vehicles, they provide an area that can be landscaped, and they provide a pedestrian refuge. There is the potential of drainage issues depending on the location of construction, parking may be removed, and there is the potential of vehicular conflicts with bicycles where a road narrows. The estimated cost to implement medians and chokers is $16,000 (Velasco, 2007).

Sidewalk Bulb Outs

Sidewalk bulb outs have the greatest advantage for pedestrians. They may be defined as rounded curb extensions at intersections that narrow traffic lanes. Bulb outs narrow the pedestrian crossing path from one side of a street to another and increase the visibility of pedestrians for other street users. They have the added benefit of being able to be applied to any street classification within Western SoMa. Additionally, the bulb outs may slow turning vehicles while also creating a more user-friendly space for buses. The disadvantages of bulb outs include drainage issues at intersections created by new construction, difficulty for larger trucks making turns where bulb outs are located, and the possibility of parking removal. The estimated cost for one bulb out is $67,000 (Velasco, 2007) while an entire intersection with four bulb outs costs around $268,000.

Speed Cushions and Speed Humps

The primary purpose of speed cushions and speed humps is to reduce the speed of vehicles. The difference between speed cushions and speed humps is that speed cushions allow emergency and transit vehicles to pass through without being impeded through slots created within a hump. The general effect is to create speed reduction and vehicular volumes may decrease based on human behavior and perception. Either measure may be implemented on alleys or streets, while speed cushions are preferred over speed humps on transit preferential streets. Parking spaces are retained with the implementation of speed cushions or speed humps while audible noise may increase due to a variance of speeds made by vehicles in the vicinity. The cost is generally low in comparison to other traffic calming measures at $6,000 each.

VI. URBAN GOODS MOVEMENT

Introduction

The movement of goods is not a new problem. We have been dealing with the question of how to move goods for a very long time. The earliest societies learned to float goods down waterways, use animals for carrying materials, and build roads to connect far flung cities. Over time, as modes of transportation evolved, societies have had to adapt them into goods movement. The United States itself has followed these trends. It has progressed from trade via water transport, to transport via train, vehicles, and most recently, air. While all modes of transport are still used to move goods, in the United States (U.S.), trucks dominate. Estimates show that in the U.S. trucks carry 71% of all tonnage and 80% of the value of all freight shipments in all modes (Center for Transportation Studies, 2007).

Economic deregulation, combined with a continued shift toward a more service oriented economy, has had a dramatic effect on the trucking industry. Mergers, consolidations, price reductions, and streamlined shipping have all resulted from these trends. Deregulation has increased competition in all areas of freight transport, but nowhere has its effects been more widely felt than in the trucking industry. In the ten year period from 1990 to 2000, the number of interstate motor carriers in the U.S. increased from 216,000 to 500,600 (Center for Transportation Studies, 2007). Combine this with the globalization of production, and the practice of just in time inventory (JIT), and vehicle miles traveled (VMT) is expected to increase by more than 3% annually. At this rate truck VMT is expected to double by 2020 (Center for Transportation Studies, 2007). This results in an increased demand for road space.

Unfortunately, road space is in short supply. Diminished funding, regulatory changes, and community activism have all rendered large scale road building and expansion projects a thing of the past (ITE, 2006). In its place a new emphasis has been place on the need for better management of the existing roadway. Reality has created a set of constraints that demand for funding to go into existing infrastructure, stretching roadway facilities to accommodate a wider array of transportation users (ITE, 2006). Especially in urban areas, the needs of the freight industry have to be balanced with the needs of transit, bicyclists, pedestrian, and private automobile users (ITE, 2006).

As part of the Task Force directive, they seek to preserve the existing light industry in the area, and create policies that encourage the development of new industry, especially in the SLI zoned area to the south of the freeway. To better facilitate this, a study was conducted examining trends in urban goods movement, existing

routes through the area, and policies that will encourage industry in the region while balancing the needs of other stakeholders in Western SoMa.

Methodology

The project deliverables consist of an examination of the current trends in urban goods movement, and the development of preliminary policy directions to guide the Task Force in crafting its urban freight policy. A possible preferred truck route was created, placing an emphasis on the portion of Western SoMa located to the north of the freeway. Emphasis was place on this northern region as it has been designated as more residential in nature. A literature review was conducted examining current practices in commercial goods movement, using a wide array of transportation literature, including books, magazine articles, and peer reviewed journals. .

Policy directions were developed through another literature review. Past studies had informed us of the existence of the Best Urban Freight Solutions Study (BESTUFS), conducted in Europe. There limited our finding to only those that were either urban in nature or located in confided areas, as San Francisco has traits found in both.

The preferred truck route was limited to an examination of east west couplets in Western SoMa. It was felt that the north south access to this area was sufficient, and not as invasive as the east west movements. An attempt was made to address an assumed goods movement from the Bay View Hunters Point Region, through Showplace Square, and Western SoMa. Maps were generated on ArcGIS, from data supplied by the Planning Department and Asian Neighborhood Design. Data dumps were analyzed and imported into ArcGIS. After importation, an examination of existing PDR and Retail/Entertainment locations within Western SoMa was conducted. A PDF map of existing roadway restrictions was downloaded form the Municipal Transportation Agency's (MTA) website, and compared with the Western SoMa region. As no restrictions were found within Western SoMa, a de-facto truck route map was drawn depicting the main east west movement achievable through the region. Two additional preferred truck route maps were created that would implement different policy directions to achieve a greater balance between the needs of the community and the needs of urban goods movement.

Findings

Western SoMa is much more suited to the needs of urban goods movement than its more famous sister neighborhoods to the north of Market Street. The larger block size and the abundance of four lane one way streets make the Western SoMa easily accessible to large truck traffic. This is no accident.

BESTUFS and BESTUFS II

The Best Urban Freight Solutions II (BESTUFS II) project aims to expand on the success of the BESTUFS project to maintain and expand an open European network between urban freight transport experts, user groups/associations, ongoing projects, representatives of national, regional and local transport administrations and transport operators in order to identify, describe and disseminate best practices, success criteria and bottlenecks with respect to City Logistics Solution (BESTUFS, 2007).

This study reviewed the freight needs of the European community, and came up with three main areas of concern for urban freight. San Francisco has much in common with the centralized and compact cities of Western Europe. Like many European cites, San Francisco has a small and compact Central Business District (CBD). It also has an urban infrastructure that was largely built before the advent of the car. These similarities make the findings of the study very relevant to the needs of San Francisco's urban freight. .

- A lack of Adequate Infrastructure: San Francisco has a CBD that was designed before the advent of the truck. Streets are very narrow, highly congested, and not friendly to trucking needs. Loading area in many buildings do not adequately service the needs of trucks.
- Lack of Access: The central freeway has two off ramps that lead into the CBD. These off ramps are used for moving private autos and freight vehicles. They are often congested. This leads to reduced efficiency in freight movement and an increase in idle time for all vehicles.
- Pollution: Noise pollution and carbon dioxide pollution are great concerns in urban freight. Trucks are noisy, trucks are bi polluters. Efforts need to be made to curb the need for noisy downshifting, and absorbent idle times.

The study also involved four recommendations as to how to remedy these concerns. While these recommendations are aimed at a city wide approach to urban goods movement, many of them can be applied to the needs of goods movement in Western SoMa.

Bayview Transportation Improvements Project

Bayview Hunters Point is an area located in the south eastern section of San Francisco. It is the main industrial area of the city, and houses the Port of San Francisco. Much like Western SoMa, Bayview Hunters Point is experiencing residential and business growth. Truck traffic in the area is mainly generated from commercial and industrial business areas located east of Third Street and the Hunters Point Shipyard, which is nestled between India and South Basins.

The purpose of the Bayview Transportation Improvements Project is to reduce truck traffic on Third Street and

residential streets; and develop a more direct truck route between U.S. 101 and the existing and planned industrial areas in Bayview and Hunters Point Shipyard (Bayview, 2007). The new truck route seeks to reduce conflicts between truck traffic and residential uses, and provide safe and efficient roadways for trucks to access the Bayview Hunters Point area, and reduce wear and tear on residential streets.

Working closely with the community and area businesses, two northern truck routes and four southern truck routes have been selected for further analysis in the environmental study. These routes, along with the current existing, but unsigned route will be evaluated as to their environmental impacts, and possible effects on the community.

Technical studies are currently being conducted to document potential impacts associated with the project. These findings will be included in the Draft Environmental Impact Study (EIS)/Environmental Impact Report (EIR), which should be available for public review and comment following spring 2007. A study like this could provide a template for Western SoMa's examination of probable truck routes.

Current Trends in Goods Movement

Freight traffic is expected to increase by 2/3 from 2006 to 2020 (Center for Transportation Studies, 2007). Trucks take up as much room as two to three regular sized automobiles, which only further increase the demands on road capacity. As there is little chance of increasing urban road capacity, the increase in volume will only add to congestion. Congestion translates to increased travel times, adding to costs. The trucking industry has shown that shippers place a dollar value on transit time ranging form $25.00-$200.00 per an hour depending on the product being shipped (Center for Transportation Studies, 2007). Studies have also shown that the number of tons shipped via highway will grow by 75% (Center for Transportation Studies, 2007). This will have an immediate impact on Western SoMa. According to the Metropolitan Transportation Commission (MTC), truck traffic through Western SoMa currently exceeds 12,500 a day (MTC, 2007). A 75% increase in overall truck traffic is expected, and this could lead to more than 20,000 trucks a day passing through Western SoMa.

The current trend toward Just In Time (JIT) inventory systems will only add to this. JIT is an inventory strategy that has had a dramatic effect on the quantity of trucks moving freight on Interstate highways (Center for Transportation Studies, 2007). This system of inventory only allows for enough inventories on hand to meet customer needs. It is highly dependent on timely accurate information regarding customer demand, and fast reliable transportation to meet that demand. When implemented correctly, JIT can drastically improve a company's return on investment through an increase in quality and efficiency (Center for Transportation

Studies, 2007). However, as the system is dependent on small inventories, demand for bulk shipping and bulk freight carriers has been reduced. Instead, an emphasis has been placed on smaller shipments, and a desire for more flexible deliveries. The trucking industry has begun to change accordingly, which has had the effect of increasing the number of trucks on our nation's roads. While JIT can increase a return on investment, the fact that it seldom makes use of delivery vehicle capacity, and requires more frequent deliveries means that it will have an adverse impact on Western SoMa. Policies should be examined to recognize the trend toward JIT, and advocate for smaller delivery vehicles that have the required maneuverability to deliver to dense urban areas such as Western SoMa.

Recommendations

The following policy directions are for the Task Force to consider in relation to urban goods movement. It is important to stress that any one of these policy directions will not solve the problems associated with goods movement in and through Western SoMa. There is no one solution for addressing all of the needs of urban freight, while balancing those needs with other interested parties. Instead, several different solutions should be applied to the urban freight needs of Western SoMa. The following four recommendations could address the needs of freight traffic in the region while still allowing for the needs of the community at large. These measures should be used together as a tool to achieve a balance between industry and family in the Western SoMa region as a whole.

Delivery Windows

Delivery windows establish a set time frame in which to make deliveries to an area. Delivery windows are crucial to decreasing the strain caused by urban goods movement in an urban area. During the day San Francisco is full of traffic. Truck traffic only adds to this congestion. Inadequate loading facilities force trucks to block several lanes of traffic when loading and unloading goods. This acts to narrow lanes, which only further increases congestion. This adds to increased traffic delays for motorists, and an increase in idle time for trucks, which only adds to pollution and noise in the neighborhood. Mandating that goods to enter the region at low traffic times, primarily in the early morning and late evening would drastically reduce the truck's impact on the surrounding community. During these times, traffic in the area is greatly reduced, and trucks often would have the whole streetscape to maneuver in. In some cases demand for street space would be so low as to transform a four lane road into a six lane road, due to an absence of parked vehicles. This would greatly enhance the maneuverability of trucks within the area during this time. To increase the likelihood of car absence, cars not residing in the area could be taxed to enter, and access by car could be denied, or highly restricted during delivery window times.

Enforcement and Expansion of Loading Zones

Loading zones are defined areas, usually the size of a parking space, that are set aside for delivery vehicles during defined hours. While large trucks should only be granted access to Western SoMa during the delivery window times, smaller and more maneuverable vehicles should be granted access during non-delivery hours. However, these smaller delivery vehicles need dependable availability of loading zones so as to not block traffic. Standardizing and expanding loading zones in Western SoMa would prove beneficial.

Loading zones need to reflect current trends in vehicle design, though, policies could be enacted to mandate smaller vehicles if current trends toward larger trucks cause vehicle size to become excessive. Loading zones need to be located near the most convenient loading area of businesses, and need to be rigorously enforced. One method of doing this could be to use roving tow trucks, available on a moments notice to tow parked vehicles out of loading zones, much like the system used by the California Highway Patrol (CHP) to address the issue of stranded motorists on freeways. In an effort to reduce pollution, tow trucks could be housed near key clusters of loading zones, instead of kept in operation roving about. The increase of loading zones, and the rigid enforcement of them would lead to quicker load times and a decrease in both idling vehicles, and congestion in Western SoMa.

Licensing of Delivery Vehicles

Licensing of delivery vehicles should be explored. Licenses, granting access to pre defined areas of Western SoMa would further reduce demands on loading facilities and street space within this area. Licenses could be used within Western SoMa to grant access to areas with prime loading and unloading facilities, as well as defined residential enclaves (RED) and should be given to freight carriers that met certain pre-defined goals. As an example, one goal could be that licenses are given to only those freight providers whose loads are at near or maximum capacity. This was done in Copenhagen, where licenses granting access to prime areas of the city were only given to those vehicles that carried 60% or above capacity. Within a year and a half 80 companies have licensed 300 vehicles. Virtually all of the participants in the study were able to increase their loads to the required 60% (BESTUFS, 2007). Ways such as this, that encourage an increase in load capacity will lead to a decrease in the amount of trucks that enter the city, and a decrease in the frequency that these trucks enter the city. These decreases will help to lower pollution, noise, and the impacts that trucks have on the area, as less truck traffic will be generated through this incentive system.

Preferred Truck Routes

It is often assumed that truckers know the cities into which they deliver goods. This is not always the case. San Francisco currently has no city wide truck route. Western SoMa should take the lead, and come up with a

preferred route of roads that trucks should take to given areas within the neighborhood. These roads should be chosen as avenues that can handle an increase in truck traffic, and that adequately and expediently facilitate the movement of goods throughout the city. This truck route should be mapped and then given to all truckers who plan to enter Western SoMa. This would help truckers navigate through the neighborhood, and also keep a majority of trucks to a few main roads that could more adequately handle them.

A Preferred Truck Route for Western SoMa

Currently there is no defined truck route in Western SoMa. Street restrictions are limited to height restricts imposed by overhead used by Muni on select streets. North South movements are primarily restricted to two couplets, those of 9th/10th Streets, and 3rd/4th Streets. On a larger scale, these two couplets provide very good access to much of Western SoMa and give adequate access to the larger freeway system. With this said, our emphasis was on finding an east west passage through Western SoMa that provided the same levels of access found in the north south movements.

The map in **Figure 6.1** depicts the existing east west movements of trucks in Western SoMa. As there are no existing restrictions placed upon truck movements within this area, this map can be considered the de-facto truck route depicting east west truck movements within Western SoMa. The existing route is made up of two parallel couplets, connected together via the north south couplets of 9th/10th Streets, and 3rd/4th Streets mentioned earlier. These two couplets are the Howard/Folsom couplet, serving the northern area of Western SoMa, and the Harrison/Bryant couplet, serving the immediate freeway area. There is also a three block stretch of Brannan that passes through the southern extreme of Western SoMa, which was omitted from examination as only three blocks of it pass within Western SoMa.

Looking at **Figure 6.1**, one can observe that there are two main clusters of PDR and Retail/Entertainment in Western SoMa. The first cluster is located along the eastern side of Harrison and Bryant, immediately surrounding the freeway. This area to the south of this is zoned as SLI, and any preferred truck route needs to provide high levels of access to this area. It should be noted that this area is also less residential in nature than the area served by the Howard/Folsom couplet to the north. The second cluster is primarily PDR and bounded by 13th Street, 10th Street, and Bryant. There is very little residential use. The 9th/10th Streets couplet acts to cut off this area from the Howard/Folsom couplet, enabling trucks to access these businesses without passing through the more residential areas to the east. Currently, all streets acting as couplets are four lane one way streets. Howard and Harrison carry westbound movements, and Folsom and Bryant carry east bound movements. In the current configuration, these four lane “expressways” provide great access to the PDR and Retail/Entertainment in the Western SoMa area; yet it is at the expense of neighborhood fabric.

The many wide one way streets that pass through Western SoMa act to isolate each block. Small clusters of residences are to be found along the alleys, but it is rare that these clusters extend across the larger roadways in the area. Any truck route that is developed must seek to allow for the connection of residential enclaves. **Figure 6.2** highlights the housing opportunity sites examined by a San Francisco State University (SFSU) consulting team in 2007. These sites are all bordered by the Howard/Folsom couplet. The majority of the sites are between 7th and 9th Streets. This section of Western SoMa has very little PDR and Retail/Entertainment. This makes these sites ideal for housing. If infill does happen, measures need to be taken to promote a more residential feeling in this area.

The light levels of PDR and Retail/Entertainment, along with the desire for residential infill in this area, require restrictions on commercial goods movement. **Figure 6.2** highlights the areas for goods movement restrictions in purple. Restrictions in this highlighted area could be in the form of delivery windows, or in licenses granting access to vehicles that meet certain predefined requirements, such as meeting certain size and weight limitations. These restrictions have the advantage that they could be enacted rather quickly as no modification to the existing traffic flow would be made.

In the longer term it is recommended that traffic flow in Western SoMa be modified to reflect the more residential and mixed use nature of the area north of the freeway. By running two way traffic on Folsom Street, and the creation of pedestrian improvements along this corridor support this proposal. Modifying Folsom Street to two way traffic will necessitate a rethink of the Howard/Folsom couplet. A large two way circular route could be created as a preferential truck route serving the northern portion of Western SoMa (**Figure 6.3**). This circular route would leave the north south couplets intact, and provide for two way traffic on Howard and Harrison Streets. This would coincide with the Task Force's desire to designate residential infill to the northern section of Western SoMa. If Howard and Harrison were to be converted to two way traffic, and the Folsom Street improvements were to be made, then all of the east west street in the region north of the freeway would be converted to two way corridors. This would aloe for a greater diversity of pedestrian improvements on these corridors, and open up a much greater variety of traffic calming measures to these streets. To preserve freight access to the area, the aforementioned policy directions (those of delivery windows, licensing and increased enforcement and expansion of loading zones) should be used.

The existing conditions of the southern couplet appear to be satisfactory. The Task Force's desire to preserve industry in this area gives us no reason to augment the current balance of needs in this southern region. A circulation study needs to be conducted to examine the circulation patterns from the Mission District to the southern area of Western SoMa. Efforts should be directed at improvising the circulation through 13th Street,

with a specific eye toward establishing the best route of connection between the two districts. The possibility of establishing a southern preferred truck route, which incorporated Brannan and Townsend Streets, should also be examined in order to link Showplace Square with this area of Western SoMa.

The 13th Street corridor should also be examined. The current suggested route allows connectivity via Bryant between the 13th Street corridor and the southern portion of Western SoMa. Studies need to examine if Brannan would make the better connection point. Studies should also try to link the Mission District/13th Street corridor areas with Showplace Square and the southern portion of Western SoMa. If light industry is truly to propagate in this area, these regions will need to be connected.

Figure 6.1 Western SoMa Existing Truck Route

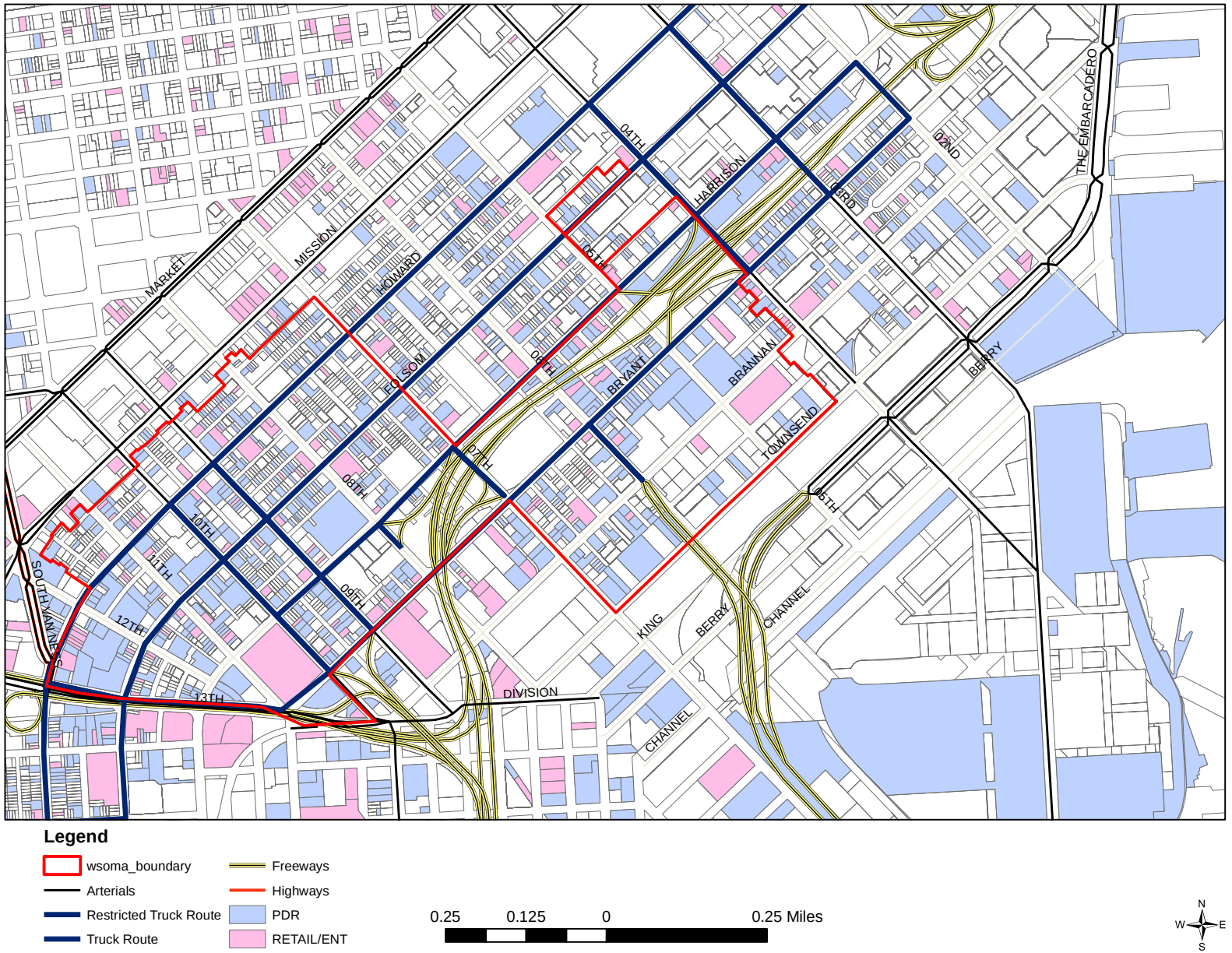


Figure 6.2 Time Restricted Truck Route

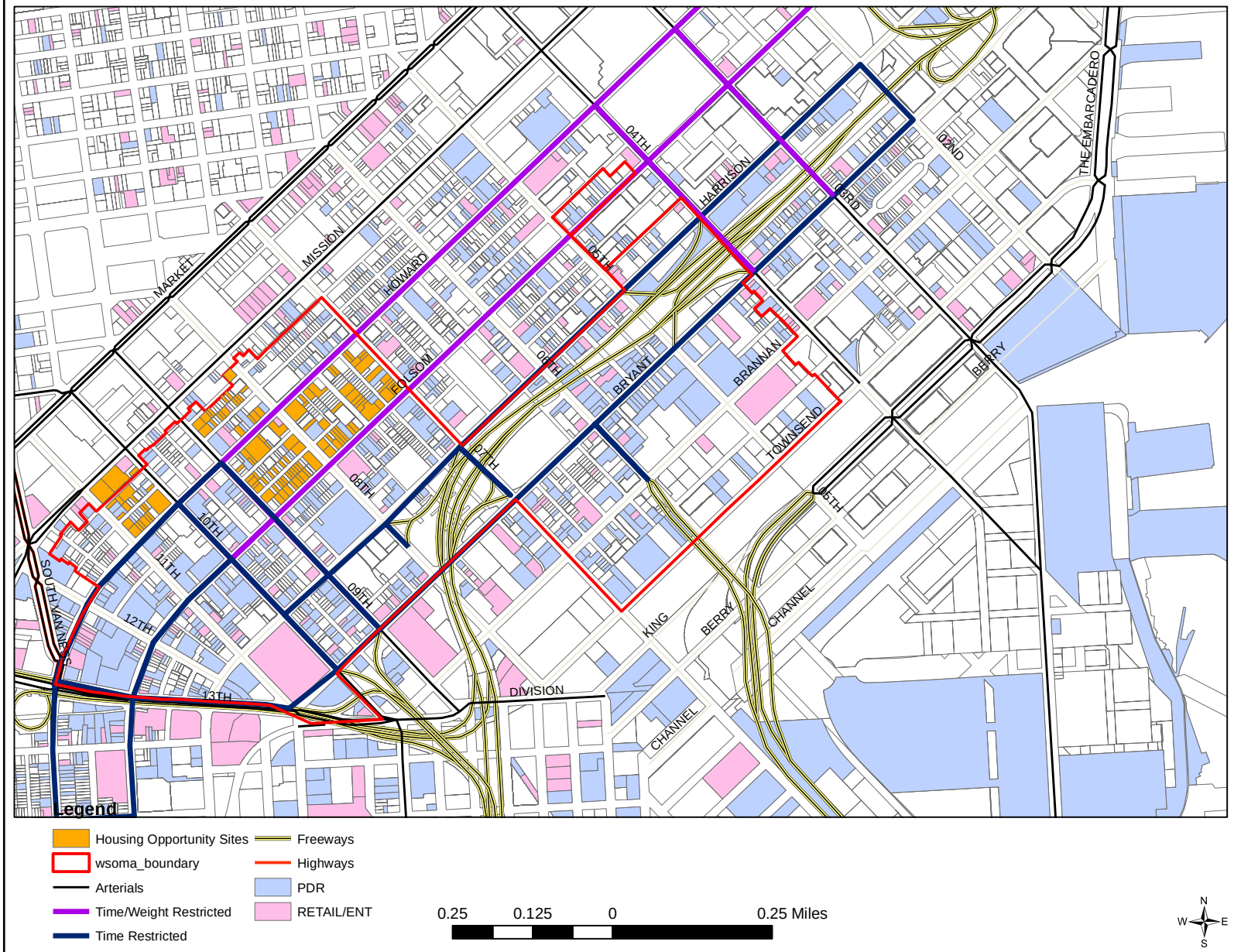
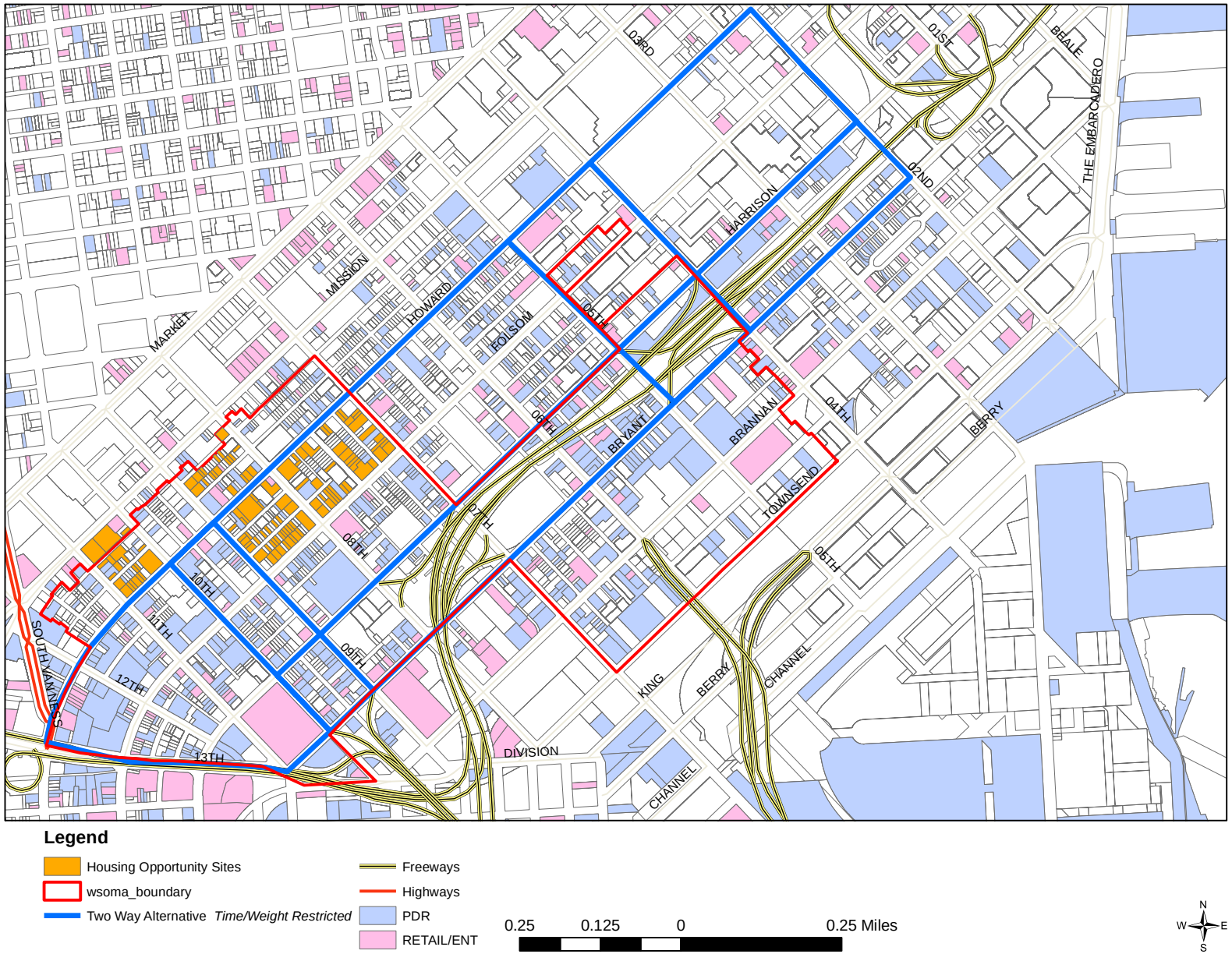


Figure 6.3 Two-Way Time Restricted Truck Route



VII. REFERENCES

Bayview (San Francisco) (2006). Bayview Transportation Improvements Project. Retrieved May 17, 2007, from http://www.bayviewtrans.org

Berkeley (City of Berkeley, Office of Transportation) (2007). Traffic Calming in Berkeley. Retrieved May 17, 2007, from http://webserver.ci.berkeley.ca.us/transportation/TrafficCalming/TrafficCalming.html

BESTUFS (Best Urban Freight Solutions) (2007). Retrieved May 17, 2007, from http://www.bestufs.net

Better Streets San Francisco (2007). Better Streets Plan. Retrieved May 15, 2007, from http://www.sfbetterstreets.org/

Center for Transportation Studies. (2007). *An Analysis of State DOT Options for Transporting Future Freight Flows on the U.S. Interstate Highway System, Freight on the Interstate Highway System: Current State, Forecasts, and Alternatives.* (Research Report No. UVACTS-14-5-112).

Christiansen, D. (1979). Urban Transportation Planning for Goods and Services. FHWA

Christiansen, D. Wegmann, Chatterjee, Lipinski, Jennings, and McGinnis (1995). Characteristics of Urban Freight Systems. FHWA, Dot T-96-22.

Crouse, D. (2004). Traffic calming: a social issue. *Bulletin of Science, Technology & Society, 24*, 2, p138-144.

Daganzo, C. (2007). Urban gridlock: Macroscopic modeling and mitigation approaches. *Transportation Research, 21*, 1, p49-62.

DPW (Department of Public Works) (2007) Soma West Improvement Projects-Phase I http://www.sfgov.org/site/sfdpw_page.asp?id=54346

Eno Foundation for Transportation, Inc. (1982). Off-Street Truck-Loading Facilities in Downtown Areas: Requirements and Design. Australia.

Ewing, R. (1999). Traffic Calming: State of the Practice. Washington, D.C.: Institute of Transportation Engineers.

Ewing, R. (2001). Impacts of traffic calming. *Transportation Quarterly, 55*, 1, p33-45.

Garrick, N. (2005, August). Care to share. *Roads & Bridges*, 20-22.

HTC (Hexagon Transportation Consultants) (2002). *City of San Mateo Traffic Calming Policy and Procedures.* San Mateo, California. Retrieved May 6, 2007, from http://www.ci.sanmateo.ca.us/downloads/pubworks/traffic_policy.pdf

Hubbard, J. (2005). Cost-effective traffic management: a good plan can fight congestion and increase public safety. *Public Works 136.5*, p155-157.

ITE (Institute of Transportation Engineers) (2006). Designing for All Users, Mega Issue White Paper. University of Virginia Washington, D.C.

ITE (Institute of Transportation Engineers) (2007). Traffic Calming for Communities. Retrieved May 12, 2007, from http://www.ite.org/traffic/index.html

King, M. (2003). Pedestrian safety through a raised median and redesigned intersection. *TRB Annual Meeting.*

Litman, T. (1999). Traffic calming: benefits, costs and equity impacts. *Victoria Transport Policy Institute*.

MTA (Municipal Transportation Agency) (2007). DPT (Department of Parking and Traffic). Retrieved May 18, 2007, from http://www.sfmta.com/cms/home/sfmta.sfmta

MTC (Metropolitan Transportation Commission), (2004). Regional Goods Movement Study for the San Francisco Bay Area, Final Summary Report.

MTC (Metropolitan Transportation Commission), (2005). Mobility for the Next Generation: Transportation 2030 Plan for the San Francisco Bay Area. Final. Oakland, California.

Noel, E.C. (1983). Night Delivery: Institutional Restraints. *Journal of Urban Planning and Development*, Vol. 109 No. 1. American Society of Civil Engineers.

NPS (National Park Service) (2007). History of the South of Market. Retrieved May 17, 2007, from http://www.cr.nps.gov/seac/market.htm

Ogden, K. W. (1992). Urban Goods Movement. London. Ashgate Publishing Company.

Planning (San Francisco Planning Department) (2007). *General Plan.* San Francisco, CA. Retrieved May 12, 2007, from http://www.sfgov.org/site/planning_index.asp?id=41423

Randall, T. A., Churchill, C. J., Baetz, B.W. (2005). Geographic information system (GIS) based decision support for neighbourhood traffic calming. *Canadian Journal of Civil Engineering, 32*, p86-98.

Sacramento (City of Sacramento Department of Transportation) (2002). City of Sacramento Traffic Calming Guidelines. Sacramento, CA. Retrieved May 18, 2007, from http://www.cityofsacramento.org/transportation/dot_media/engineer_media/pdf/trafficcalming.pdf

Sacramento (City of Sacramento Department of Transportation) (2007). *Central City Two-Way Conversion Study*. Sacramento, California. Retrieved May 8, 2007, from http://www.cityofsacramento.org/transportation/engineering/fundingcentral.html

SDOT (Seattle Department of Transportation) (2007). Neighborhood Traffic Control Program. Retrieved May 8, 2007, from http://www.seattle.gov/transportation/trafficcontrol.htm

Task Force (Western SoMa Citizens Planning Task Force) (2007). Retrieved February 10, 2007, from http://www.sfgov.org/westernsoma

Velasco, M. (2007). Traffic Calming Presentation. SFMTA (San Francisco Municipal Transportation Agency). San Francisco, CA.

West, J. (2000). Arterial traffic calming: is it an oxymoron? *ITE Annual Meeting Compendium.*

APPENDIX A

Western SoMa Citizens Planning Task Force Members
(As of May 20, 2007)

Name	Representing
Jim Meko, Chair	Residents
Toby Levy, Vice Chair	Supervisor Daly
Terrance Alan	Entertainment Activities
Charles Breidinger	For-profit Developers
MC Canlas	Supervisor Daly
Skot Kuiper	Arts
Jazzie Collins	Supervisor Daly
John Elberling	Non-profit Developers
Lisa Young	Transportation Authority
Susan Hagen Contreras	Open Space
Paul Lord	Planning Department
Lili Farhang	Public Health
Tom Radulovich	Transportation
Bob Rhine	New Residents
Marc Salomon	Bicycle Advocacy
Antoinetta Stadlman	Single Room Occupancy Hotel Residents
April Veneracion	Community Organizations
Dan Becco	Labor
Henry Karnilowicz	Businesses
Anthony Faber	Preservation
Lynn Valente	SOMA West
Kaye Griffin	Disabled
Catherine Ann Swineford	Homeless Interests
Luke Lightning	Recent Resident
Vacant	Families
Vacant	Seniors
Vacant	Youth

Planning Principles

of the Western SoMa Citizens Planning Task Force
(adopted August 23, 2006)

Only the headings in bold face constitute principles; the sub-text is provided as examples of how principles could be applied.

1) Mitigate to the fullest extent possible neighborhood impacts resulting from new development.

a. Direct a significant portion of any extra development value resulting from conditional use approvals, up zonings, etc. to important SOMA community needs/benefits.

i. Examples: Intercontinental Hotel and Rincon Hill special community benefit programs.

b. Require new development – individually and collectively – to mitigate directly any specific local problems it creates, such as traffic impacts, business displacement, etc.

i. Examples: Downtown Plan (transportation, child care, art, job placement, etc.). Rincon Hill (Community Benefits program)

2) Stabilize the neighborhood against speculative land use proposals and developments.

a. Residential Enclave Zoning expansions

i. Example: More REDs with strict design guidelines within and in surrounding buffer areas.

b. Historic Preservation Districts

3) Promote safety in all areas of the public realm (e.g., streets, sidewalks, parks, etc.).

a. Work with Public Agencies to recommend specific programs that promote street safety.

i. Examples: Work with TA on reducing the traffic speed throughout SOMA, including restoring two-way streets, creating safe cross walks. (New developments could be required to contribute towards/create nearby traffic crossings, bulb outs or traffic lights). Work with Rec and Park, re safety in neighborhood parks, with park monitoring (as done by NPC). Work with Police to establish Neighborhood Watch program.

4) Maintain and encourage the existing community cultural diversity.

a. Cultural Preservation Districts

i. Example: Consider the creation of "Cultural preservation zones" by identifying communities and their support services and business in order to protect and promote these communities centers. (Filipino, LGBTQ, entertainment, arts)

b. Creation of more Residential Enclaves

i. Preserves existing housing stock and the opportunities for current residents to remain a part of the neighborhood.

5) Proposed new land use development shall primarily serve the needs of existing residents and businesses. Citywide and regional needs are subordinate to existing local needs.

a. Give priority to SOMA residents for new affordable housing and jobs developed in SOMA as reasonably practicable and legal allowable, so they benefit from its development instead of becoming victims of it.

i. Example: SFRA housing and job policies for its SOM project.

6) Maintain and promote diversity (e.g., day/night, living/working, spectrum of uses, etc.) of neighborhood land uses.

a. Require each new development in Western SOMA to incorporate major element(s) in its design and mixture of uses that maintain or advance the character of the Neighborhood that this Plan is trying to maintain/ achieve.

ii. Example: Require mixed income housing in the air rights above new off-street parking for large retail/commercial developments.

b. Employment Incentive Programs

i. Example: In order to create a greater jobs/housing balances create employment incentives or broaden the type of allowable business in SOMA.

7) Provide clear and simple community planning policies and zoning recommendations.

a. Use where possible existing planning definitions, concepts

i. Example: Existing or proposed Eastern Neighborhoods district designations, set backs, FAR, height, etc and language in order to promote proper implementation of intent of the planning principals. If possible modify "correct" existing language rather than invent new.

8) Generally maintain the existing scale and density of the neighborhood.

a. Preservation Programs and Contextual Development Scale Controls

i. Examples: Review existing maximum development envelopes for all areas and revise to reflect existing scale and density.

9) Promote environmental sensitivity in new development projects.

a. Design Neighborhood Environmental Development Incentives

i. Examples: 1. Create new setback requirements to require public and private green space. 2. Give 10% density or FAR bonus if a project meets specific environmental goals.

10) Encourage nurturing characteristics and maximize opportunities for seniors, families, youth and children.

a. Unit Mix Requirements

i. Example: Require new projects to have 40% of units be 2BR units and developments above 10 units include some amenities.

11) Develop and maintain local accountability and monitoring mechanism.

a. When practicable, empower SOMA community-based groups/organizations that are familiar with, based within, and committed to the SOMA community to implement such community benefits projects/programs.

i. Example: Community Benefit District concept, and various nonprofit project/programs.

ii. Example: Create a Neighborhood Review Board with specific review of projects and the reflection of their adoption of these goals.

12) Provide periodic reassessment of the community plan.

a. Establish a SOMA community advisory body or planning board with public processes to monitor this Plan's implementation, realization, and adjustment to changing conditions over the long term, providing accountability to the community.

i. Example: PAC's; NYC planning boards.

ii. Example: Create a Neighborhood Review Board with specific review of projects and the reflection of their adoption of these goals. Recommend modifications of planning language to fix unintended consequences.

13) Maximize general environmental quality and health.

a. Create new setback requirements to require public and private green space.

i. Example: Give 10% development bonuses if a project meets specific green space goals

APPENDIX C: Policy Objective Themes

Theme	Type	Objective	Source
Accessibility	General	MEET THE NEEDS OF ALL RESIDENTS AND VISITORS FOR SAFE, CONVENIENT AND INEXPENSIVE TRAVEL WITHIN SAN FRANCISCO AND BETWEEN THE CITY AND OTHER PARTS OF THE REGION WHILE MAINTAINING THE HIGH QUALITY LIVING ENVIRONMENT OF THE BAY AREA.	Transportation Element
Accessibility	Parking	MANAGE EXISTING PARKING RESOURCES TO MAXIMIZE SERVICE AND ACCESSIBILITY TO ALL.	Market Octavia (Proposed)
Accessibility	Pedestrian	DEVELOP A CITYWIDE PEDESTRIAN NETWORK.	Transportation Element
Accessibility	Regional	MAINTAIN AND ENHANCE REGIONAL PEDESTRIAN, HIKING AND BIKING ACCESS TO THE COAST, THE BAY AND RIDGE TRAILS.	Transportation Element
Accessibility	Regional	IMPROVE BICYCLE ACCESS TO SAN FRANCISCO FROM ALL OUTLYING CORRIDORS.	Transportation Element
Accessibility	Transit	DEVELOP TRANSIT AS THE PRIMARY MODE OF TRAVEL TO AND FROM OTHER PARTS OF THE CITY AND REGION.	SoMa
Economic vitality	Regional	MAINTAIN AND ENHANCE SAN FRANCISCO'S POSITION AS THE HUB OF A REGIONAL, CITY-CENTERED TRANSIT SYSTEM.	Transportation Element
Economic vitality	Regional	SUPPORT AND ENHANCE THE ROLE OF SAN FRANCISCO AS A MAJOR DESTINATION AND DEPARTURE POINT FOR TRAVELERS MAKING INTERSTATE, NATIONAL AND INTERNATIONAL TRIPS.	Transportation Element
Economic vitality	Regional	DEVELOP REGIONAL, MULTI-MODAL FACILITIES FOR THE EFFICIENT MOVEMENT OF FREIGHT AND GOODS	Transportation Element
Economic vitality	Regional	DEVELOP A PARKING STRATEGY THAT ENCOURAGES SHORT-TERM PARKING AT THE PERIPHERY OF DOWNTOWN AND LONG-TERM INTERCEPT PARKING AT THE PERIPHERY OF THE URBANIZED BAY AREA TO MEET THE NEEDS OF LONG-DISTANCE COMMUTERS TRAVELING BY AUTOMOBILE TO SAN FRANCISCO OR NEARBY DESTINATIONS.	Transportation Element
Economic vitality	Urban Goods Movement	PROMOTE FREIGHT DELIVERY/PICKUP TRAFFIC AS NECESSARY FOR THE ECONOMIC VITALITY OF SAN FRANCISCO AND THE BAY REGION.	Transportation Element
Economic vitality	Urban Goods Movement	CREATE A PHYSICAL AND ECONOMIC ENVIRONMENT CONDUCIVE TO THE EXPANSION OF SAN FRANCISCO'S INDUSTRIAL, MARITIME, AND AIRPORT ACTIVITIES BY ENSURING TRUCK/SERVICE VEHICLE AND RAIL ACCESS AND EGRESS TO THESE USES.	Transportation Element
Economic vitality	Urban Goods Movement	DEVELOP AND MAINTAIN SELECTED MAJOR AND SECONDARY ARTERIALS TO PROVIDE EFFICIENT AND DIRECT ROUTES FOR TRUCKS/SERVICE VEHICLES INTO AND THROUGH SAN FRANCISCO WITHOUT DISTURBING NEIGHBORHOOD AREAS AND INHIBITING THE SAFE MOVEMENT OF TRANSIT VEHICLES, BICYCLES AND PEDESTRIANS.	Transportation Element
Economic vitality	Urban Goods Movement	MAKE FREEWAY AND MAJOR SURFACE STREET IMPROVEMENTS TO ACCOMMODATE AND ENCOURAGE TRUCK/SERVICE VEHICLE TRAFFIC IN INDUSTRIAL AREAS AWAY FROM RESIDENTIAL NEIGHBORHOODS.	Transportation Element
Economic vitality	Urban Goods Movement	IMPROVE FACILITIES FOR FREIGHT DELIVERIES AND BUSINESS SERVICES.	Downtown Element
Economic vitality	Urban Goods Movement	MAINTAIN AND INSURE THE AVAILABILITY OF RAIL FREIGHT SERVICE THROUGH THE SOUTH OF MARKET AREA TO THE PORT OF SAN FRANCISCO.	SoMa
Environmental quality and health	Circulation	IMPROVE VEHICULAR CIRCULATION THROUGH THE AREA.	Market Octavia (Proposed)
Environmental quality and health	Congestion Management	DEVELOP AND IMPLEMENT PROGRAMS IN THE PUBLIC AND PRIVATE SECTORS, WHICH WILL SUPPORT CONGESTION MANAGEMENT AND AIR QUALITY OBJECTIVES, MAINTAIN MOBILITY AND ENHANCE BUSINESS VITALITY AT MINIMUM COST.	Transportation Element
Environmental quality and health	General	USE THE TRANSPORTATION SYSTEM AS A MEANS FOR GUIDING DEVELOPMENT AND IMPROVING THE ENVIRONMENT.	Transportation Element
Environmental quality and health	Pedestrian	IMPROVE THE AMBIENCE OF THE PEDESTRIAN ENVIRONMENT.	Transportation Element
Environmental quality and health	Pedestrian	CONSIDER THE SIDEWALK AREA AS AN IMPORTANT ELEMENT IN THE CITYWIDE OPEN SPACE SYSTEM.	Transportation Element
Improve transit service	Circulation	PROVIDE FOR THE EFFICIENT, CONVENIENT AND COMFORTABLE MOVEMENT OF PEOPLE AND GOODS, TRANSIT VEHICLES AND AUTOMOBILES WITHIN THE DOWNTOWN.	Downtown Element
Improve transit service	Congestion Management	ESTABLISH PUBLIC TRANSIT AS THE PRIMARY MODE OF TRANSPORTATION IN SAN FRANCISCO AND AS A MEANS THROUGH WHICH TO GUIDE FUTURE DEVELOPMENT AND IMPROVE REGIONAL MOBILITY AND AIR QUALITY.	Transportation Element

APPENDIX C: Policy Objective Themes

Theme	Type	Objective	Source
Improve transit service	Transit	GIVE FIRST PRIORITY TO IMPROVING TRANSIT SERVICE THROUGHOUT THE CITY, PROVIDING A CONVENIENT AND EFFICIENT SYSTEM AS A PREFERABLE ALTERNATIVE TO AUTOMOBILE USE.	Transportation Element
Improve transit service	Transit	DEVELOP AND IMPROVE DEMAND-RESPONSIVE TRANSIT SYSTEMS AS A SUPPLEMENT TO REGULAR TRANSIT SERVICES.	Transportation Element
Improve transit service	Transit	IMPROVE PUBLIC TRANSIT	Eastern SoMa (Proposed)
Improve transit service	Transit	IMPROVE PUBLIC TRANSIT TO BETTER SERVE THE MISSION	Mission (Proposed)
Improve transit service	Transit	IMPROVE PUBLIC TRANSIT TO MAKE IT MORE RELIABLE, ATTRACTIVE, CONVENIENT, AND RESPONSIVE TO INCREASING DEMAND.	Market Octavia (Proposed)
Parking strategy	Bicycles	PROVIDE SECURE AND CONVENIENT PARKING FACILITIES FOR BICYCLES.	Transportation Element
Parking strategy	Congestion Management	DEVELOP AND IMPLEMENT PROGRAMS THAT WILL EFFICIENTLY MANAGE THE SUPPLY OF PARKING AT EMPLOYMENT CENTERS THROUGHOUT THE CITY SO AS TO DISCOURAGE SINGLE-OCCUPANT RIDERSHIP AND ENCOURAGE RIDESHARING, TRANSIT AND OTHER ALTERNATIVES TO THE SINGLE-OCCUPANT AUTOMOBILE.	Transportation Element
Parking strategy	Congestion Management	DEVELOP AND IMPLEMENT PARKING MANAGEMENT PROGRAMS IN THE DOWNTOWN THAT WILL PROVIDE ALTERNATIVES ENCOURAGING THE EFFICIENT USE OF THE AREA'S LIMITED PARKING SUPPLY AND ABUNDANT TRANSIT SERVICES.	Transportation Element
Parking strategy	Urban Goods Movement	ENFORCE A PARKING AND LOADING STRATEGY FOR FREIGHT DISTRIBUTION TO REDUCE CONGESTION AFFECTING OTHER VEHICULAR TRAFFIC AND ADVERSE IMPACTS ON PEDESTRIAN CIRCULATION.	Transportation Element
Promote alternative modes	Bicycles	CITY GOVERNMENT SHOULD PLAY A LEADERSHIP ROLE IN INCREASING BICYCLE USE.	Transportation Element
Promote alternative modes	Bicycles	PROMOTE AND IMPROVE INFRASTRUCTURE FOR BICYCLING AND WALKING AS IMPORTANT MODES OF TRANSPORTATION.	Eastern SoMa (Proposed)
Promote alternative modes	Bicycles	PROMOTE BICYCLE USE AS AN ALTERNATIVE TO THE AUTOMOBILE	Mission (Proposed)
Promote alternative modes	Circulation	ENCOURAGE ALTERNATIVES TO CAR USE AND OWNERSHIP	Mission (Proposed)
Promote alternative modes	Congestion Management	DEVELOP AND EMPLOY METHODS OF MEASURING THE PERFORMANCE OF THE CITY'S TRANSPORTATION SYSTEM THAT RESPOND TO ITS MULTI-MODAL NATURE.	Transportation Element
Promote alternative modes	Congestion Management	PROMOTE THE DEVELOPMENT OF MARKETING STRATEGIES THAT ENCOURAGE AND FACILITATE THE USE OF TRANSIT AND OTHER ALTERNATIVES TO THE SINGLE-OCCUPANT AUTOMOBILE FOR SHOPPING, RECREATION, CULTURAL AND OTHER NON-WORK TRIPS.	Transportation Element
Promote alternative modes	Congestion Management	ENCOURAGE ALTERNATIVES TO THE AUTOMOBILE AND REDUCED TRAFFIC LEVELS ON RESIDENTIAL STREETS THAT SUFFER FROM EXCESSIVE TRAFFIC THROUGH THE MANAGEMENT OF TRANSPORTATION SYSTEMS AND FACILITIES.	Transportation Element
Promote alternative modes	Congestion Management	REDUCE TRAFFIC CONGESTION BY ES-TABLISHING PARKING POLICIES THAT ENCOURAGE TRAVEL BY PUBLIC TRAN-SIT OR OTHER ALTERNATIVE TRANS-PORTATION MODES	Mission (Proposed)
Promote alternative modes	Congestion Management	REDUCE TRAFFIC CONGESTION BY ES-TABLISHING PARKING POLICIES THAT ENCOURAGE TRAVEL BY PUBLIC TRAN-SIT OR OTHER ALTERNATIVE TRANS-PORTATION MODES	Mission (Proposed)
Promote alternative modes	Parking	ESTABLISH PARKING RATES AND OFF-STREET PARKING FARE STRUCTURES TO REFLECT THE FULL COSTS, MONETARY AND ENVIRONMENTAL, OF PARKING IN THE CITY.	Transportation Element
Promote alternative modes	Parking	ESTABLISH PARKING POLICIES THAT IMPROVE THE QUALITY OF NEIGHBORHOODS AND REDUCE TRAFFIC CONGESTION BY ENCOURAGING TRAVEL BY PUBLIC TRANSIT OR OTHER NON-AUTO TRANSPORTATION MODES	Eastern SoMa (Proposed)
Promote alternative modes	Parking	DEVELOP AND IMPLEMENT PARKING POLICIES FOR AREAS WELL SERVED BY PUBLIC TRANSIT THAT ENCOURAGE TRAVEL BY PUBLIC TRANSIT AND ALTERNATIVE TRANSPORTATION MODES AND REDUCE TRAFFIC CONGESTION.	Market Octavia (Proposed)
Promote alternative modes	Pedestrian	PROMOTE AND IMPROVE INFRASTRUCTURE FOR BICYCLING AND WALKING AS IMPORTANT MODES OF TRANSPORTATION.	Eastern SoMa (Proposed)

APPENDIX C: Policy Objective Themes

Theme	Type	Objective	Source
Promote alternative modes	Transit	DEVELOP TRANSIT AS THE PRIMARY MODE OF TRAVEL TO AND FROM DOWNTOWN AND ALL MAJOR ACTIVITY CENTERS WITHIN THE REGION.	Transportation Element
Promote alternative modes	Transit	DEVELOP TRANSIT AS THE PRIMARY MODE OF TRAVEL TO AND FROM DOWNTOWN.	Downtown Element
Protect neighborhood character	Circulation	ENSURE THAT THE NUMBER OF AUTO TRIPS TO AND FROM DOWNTOWN WILL NOT BE DETRIMENTAL TO THE GROWTH OR AMENITY OF DOWNTOWN.	Downtown Element
Protect neighborhood character	Circulation	MINIMIZE THE IMPACT ON THE LIVABILITY OF THE AREA OF AUTO TRAFFIC THROUGH AND TO/FROM THE SOUTH OF MARKET.	SoMa
Protect neighborhood character	Congestion Management	ESTABLISH A STREET HIERARCHY SYSTEM IN WHICH THE FUNCTION AND DESIGN OF EACH STREET ARE CONSISTENT WITH THE CHARACTER AND USE OF ADJACENT LAND.	Transportation Element
Protect neighborhood character	Parking	ENSURE THAT THE PROVISION OF NEW OR ENLARGED PARKING FACILITIES DOES NOT ADVERSELY AFFECT THE LIVABILITY AND DESIRABILITY OF THE CITY AND ITS VARIOUS NEIGHBORHOODS.	Transportation Element
Protect neighborhood character	Parking	LIMIT PARKING IN DOWNTOWN TO HELP ENSURE THAT THE NUMBER OF AUTO TRIPS TO AND FROM DOWNTOWN WILL NOT BE DETRIMENTAL TO THE GROWTH OR AMENITY OF DOWNTOWN.	Transportation Element
Protect neighborhood character	Parking	CONTAIN AND LESSEN THE TRAFFIC AND PARKING IMPACT OF INSTITUTIONS ON SURROUNDING RESIDENTIAL AREAS.	Transportation Element
Protect neighborhood character	Parking	RELATE THE AMOUNT OF PARKING IN RESIDENTIAL AREAS AND NEIGHBORHOOD COMMERCIAL DISTRICTS TO THE CAPACITY OF THE CITY'S STREET SYSTEM AND LAND USE PATTERNS.	Transportation Element
Protect neighborhood character	Parking	MEET SHORT-TERM PARKING NEEDS IN NEIGHBORHOOD SHOPPING DISTRICTS CONSISTENT WITH PRESERVATION OF A DESIRABLE ENVIRONMENT FOR PEDESTRIANS AND RESIDENTS.	Transportation Element
Protect neighborhood character	Parking	ENSURE THE LEAST POSSIBLE NEGATIVE IMPACT FROM PARKING ON THE PHYSICAL CHARACTER AND QUALITY OF THE NEIGHBORHOOD	Eastern SoMa (Proposed)
Protect neighborhood character	Parking	ELIMINATE OR REDUCE THE NEGATIVE IMPACT OF PARKING ON THE PHYSICAL CHARACTER AND QUALITY OF THE NEIGHBORHOOD.	Market Octavia (Proposed)
Protect neighborhood character	Regional	MAINTAIN AND ENHANCE SAN FRANCISCO'S POSITION AS A REGIONAL DESTINATION WITHOUT INDUCING A GREATER VOLUME OF THROUGH AUTOMOBILE TRAFFIC.	Transportation Element
Protect neighborhood character	Urban Goods Movement	SUPPORT THE CIRCULATION NEEDS OF EXISTING PDR USES IN EAST SOMA	Eastern SoMa (Proposed)
Protect neighborhood character	Urban Goods Movement	SUPPORT THE CIRCULATION NEEDS OF EXISTING PDR USES IN THE MISSION	Mission (Proposed)
Street and sidewalk safety	Bicycles	ENSURE THAT BICYCLES CAN BE USED SAFELY AND CONVENIENTLY AS A PRIMARY MEANS OF TRANSPORTATION, AS WELL AS FOR RECREATIONAL PURPOSES.	Transportation Element
Street and sidewalk safety	Bicycles	PROVIDE FOR SAFE AND CONVENIENT BICYCLE USE AS A MEANS OF TRANSPORTATION.	Downtown Element
Street and sidewalk safety	Bicycles	ESTABLISH A BICYCLE NETWORK THAT PROVIDES A SAFE AND ATTRACTIVE ALTERNATIVE TO DRIVING FOR BOTH LOCAL AND CITYWIDE TRAVEL NEEDS.	Market Octavia (Proposed)
Street and sidewalk safety	Congestion Management	DEVELOP AND IMPLEMENT A PLAN FOR OPERATIONAL CHANGES AND LAND USE POLICIES THAT WILL MAINTAIN MOBILITY AND SAFETY DESPITE A RISE IN TRAVEL DEMAND THAT COULD OTHERWISE RESULT IN SYSTEM CAPACITY DEFICIENCIES.	Transportation Element
Street and sidewalk safety	Congestion Management	PROVIDE FOR CONVENIENT MOVEMENT AMONG DISTRICTS IN THE CITY DURING OFF-PEAK TRAVEL PERIODS AND SAFE TRAFFIC MOVEMENT AT ALL TIMES.	Transportation Element
Street and sidewalk safety	Pedestrian	IMPROVE THE CITY'S PEDESTRIAN CIRCULATION SYSTEM TO PROVIDE FOR EFFICIENT, PLEASANT, AND SAFE MOVEMENT.	Transportation Element
Street and sidewalk safety	Pedestrian	IMPLEMENT A DOWNTOWN STREETSCAPE PLAN TO IMPROVE THE DOWNTOWN PEDESTRIAN CIRCULATION SYSTEM, ESPECIALLY WITHIN THE CORE, TO PROVIDE FOR EFFICIENT, COMFORTABLE, AND SAFE MOVEMENT.	Downtown Element

APPENDIX D: Traffic Calming Measures

Traffic Calming & Management	Description
	Alleys
“Neotraditional” street design	Streets with narrower lanes, shorter blocks, T-intersections, and other design features to control traffic speed and volumes.
Bike Lanes & Paths	Marking bikelanes narrows traffic lanes.
Botts Dots and Raised Reflectors	Raised pavement markers that can be used in place of striping or to create rumble strips.
Bulb-outs	Rounded curb extensions at intersections narrow traffic lanes.
Channelization islands	A raised island which forces traffic in a particular direction, such as right-turn-only.
Chicanes	Curb bulges or planters (usually 3) on alternating sides, forcing motorists to slow down.
Choker: Two Lane	Midblock curb extension narrows the traffic lane and widens sidewalk on one or both sides of the street.
Crosswalks	Pavement treatments that identify pedestrian crossing at intersections or mid-block requiring traffic to stop when pedestrians are present.
Cul-de-sac	A street that ends in a in a radial shape that will prevent through traffic.
Curb extensions "pinch points"	Curb extensions, planters, or centerline traffic islands which narrow traffic lanes to control traffic and reduce pedestrian crossing distances. Also called “chokers.”
Curb Ramps	Ramped surface that extends the curb length, narrowing the traffic lane.
Diagonal Diverters	Raised barriers that cross an intersection from diagonal points, preventing through traffic.
Education	Informing drivers of safe roadway practices.
Entry Feature	Elevated roadway to signify a change in road type.
Forced Turn Islands	Raised islands that force traffic to turn and prevent through traffic.
Horizontal shifts	Lane centerline that curves or shifts.
Lane Striping	Narrows traffic lanes to reduce speeds.
Medians	Raised barrier on a street centerline that may continue through an intersection to prevent through traffic.
Mini-circles	Small traffic circles at intersections.
Neckdowns	Rounded curb extensions at intersections narrow traffic lanes and shorten pedestrian crossing.
Parking: Angled	Increases the number of parking spaces and narrows traffic lane.
Parking: Perpendicular	Increases the number of parking spaces and narrows traffic lane, especially on steep grades.
Paving Treatments	Special pavement textures (cobbles, bricks, stamped asphalt, etc.) and markings to designate special areas.
Pedestrian Malls	Street closure to automobiles that allows pedestrian and bicycle access; usually in a high retail area.
Perceptual Design Features	Patterns painted into road surfaces and other perceptual design features that encourage drivers to reduce their speeds.
Pervious Paving Treatments	Alternate paving material that can cause traffic to slow.
Radar Trailer	Measuring device that displays the speed of oncoming traffic compared to that of the posted limit, reminding drivers to slow to the speed limit.
Raised Intersections	Ramped surface above intersection that can be level with the sidewalk to enhance pedestrian access.
Realigned Roadways	Changes in alignments which convert T-intersections with straight approaches into curving roadways meeting at right angles.
Rumble Strips	Low bumps across road which make noise when driven over.
Semi-diverters, partial closures	Restrict entry/exit, to/from neighborhood. Limit traffic flow at intersections.
Sidewalks & Walkways	Narrow lanes of traffic to accommodate wider pedestrian thoroughfares.
Signage	Speed limits, restrictions, cautionary

APPENDIX D: Traffic Calming Measures

Traffic Calming & Management	Description
	Alleys
Speed Cushions	Curved 3 1/4" to 3 3/4" high, 3ft long humps that stretch across the roadway and decreases traffic speed but allows emergency response vehicles to pass through.
Speed Humps	Curved 3 1/4" to 3 3/4" high, 12ft long hump that decreases traffic speed.
Speed Legend	Speed limit painted on the roadway to reinforce legal speed limit.
Speed Reductions	Traffic speed reduction programs. Increased enforcement of speeding violations.
Speed tables, raised crosswalks	Ramped surface above roadway that is flat on top, 3 1/4" to 3 3/4" high, 12ft long; can be painted like crosswalks to encourage pedestrian access.
Street closures: Full	Closing off streets to through vehicle traffic at intersections or midblock
Street closures: Half	Closing off streets to through vehicle traffic at intersections or midblock for one direction of traffic.
Street Trees	Planting trees along a street to create a sense of enclosure and improve the pedestrian environment.
Targeted Speed Enforcement	Setting speed limits and posting fines that requires local enforcement.
Tighter corner radii	The radius of street corners affects traffic turning speeds. A tighter radius forces drivers to reduce speed. It is particularly helpful for intersections with numerous pedestrians.
Traditional Narrow Streets	Streets with narrower lanes, shorter blocks, T-intersections, and other design features to control traffic speed and volumes.
Woonerf	Streets mixed with vehicle and pedestrian traffic, where motorists are required to drive at very low speeds.

APPENDIX D: Traffic Calming Measures

Traffic Calming & Management	Description
	Arterials
“Neotraditional” street design	Streets with narrower lanes, shorter blocks, T-intersections, and other design features to control traffic speed and volumes.
“Road diets”	Reducing the number and width of traffic lanes; particularly on arterials.
Bike Lanes & Paths	Marking bikelanes narrows traffic lanes.
Bulb-outs	Rounded curb extensions at intersections narrow traffic lanes.
Crosswalks	Pavement treatments that identify pedestrian crossing at intersections or mid-block requiring traffic to stop when pedestrians are present.
Curb extensions "pinch points"	Curb extensions, planters, or centerline traffic islands which narrow traffic lanes to control traffic and reduce pedestrian crossing distances. Also called “chokers.”
Curb Ramps	Ramped surface that extends the curb length, narrowing the traffic lane.
Education	Informing drivers of safe roadway practices.
Lane Striping	Narrows traffic lanes to reduce speeds.
Medians	Raised barrier on a street centerline that may continue through an intersection to prevent through traffic.
Neckdowns	Rounded curb extensions at intersections narrow traffic lanes and shorten pedestrian crossing.
Parking: Angled	Increases the number of parking spaces and narrows traffic lane.
Parking: Perpendicular	Increases the number of parking spaces and narrows traffic lane, especially on steep grades.
Perceptual Design Features	Patterns painted into road surfaces and other perceptual design features that encourage drivers to reduce their speeds.
Pervious Paving Treatments	Alternate paving material that can cause traffic to slow.
Radar Trailer	Measuring device that displays the speed of oncoming traffic compared to that of the posted limit, reminding drivers to slow to the speed limit.
Raised Intersections	Ramped surface above intersection that can be level with the sidewalk to enhance pedestrian access.
Refuge Islands	Raised island in the road center (median) narrows lanes and provides pedestrian with a safe place to stop.
Sidewalks & Walkways	Narrow lanes of traffic to accommodate wider pedestrian thoroughfares.
Signage	Speed limits, restrictions, cautionary
Speed Legend	Speed limit painted on the roadway to reinforce legal speed limit.
Speed Reductions	Traffic speed reduction programs. Increased enforcement of speeding violations.
Street Trees	Planting trees along a street to create a sense of enclosure and improve the pedestrian environment.
Targeted Speed Enforcement	Setting speed limits and posting fines that requires local enforcement.
Tighter corner radii	The radius of street corners affects traffic turning speeds. A tighter radius forces drivers to reduce speed. It is particularly helpful for intersections with numerous pedestrians.
Unvegetated/Unplanted Medians	Raised island in the road center (median) that narrows lanes and separates opposing directions of traffic.
Vegetated/Planted Medians	Raised island in the road center (median) with planted trees and vegetation that narrows lanes and separates opposing directions of traffic.

APPENDIX D: Traffic Calming Measures

Traffic Calming & Management	Description
	Streets
"Neotraditional" street design	Streets with narrower lanes, shorter blocks, T-intersections, and other design features to control traffic speed and volumes.
"Road diets"	Reducing the number and width of traffic lanes; particularly on arterials.
Bike Lanes & Paths	Marking bikelanes narrows traffic lanes.
Botts Dots and Raised Reflectors	Raised pavement markers that can be used in place of striping or to create rumble strips.
Bulb-outs	Rounded curb extensions at intersections narrow traffic lanes.
Chicanes	Curb bulges or planters (usually 3) on alternating sides, forcing motorists to slow down.
Choker: One Lane	Curb bulge or center island narrows 2-lane road down to 1-lane, forcing traffic from each direction to take turns.
Crosswalks	Pavement treatments that identify pedestrian crossing at intersections or mid-block requiring traffic to stop when pedestrians are present.
Cul-de-sac	A street that ends in a in a radial shape that will prevent through traffic.
Curb extensions "pinch points"	Curb extensions, planters, or centerline traffic islands which narrow traffic lanes to control traffic and reduce pedestrian crossing distances. Also called "chokers."
Curb Ramps	Ramped surface that extends the curb length, narrowing the traffic lane.
Diagonal Diverters	Raised barriers that cross an intersection from diagonal points, preventing through traffic.
Education	Informing drivers of safe roadway practices.
Entry Feature	Elevated roadway to signify a change in road type.
Forced Turn Islands	Raised islands that force traffic to turn and prevent through traffic.
Horizontal shifts	Lane centerline that curves or shifts.
Lane Striping	Narrows traffic lanes to reduce speeds.
Medians	Raised barrier on a street centerline that may continue through an intersection to prevent through traffic.
Mini-circles	Small traffic circles at intersections.
Neckdowns	Rounded curb extensions at intersections narrow traffic lanes and shorten pedestrian crossing.
Parking: Angled	Increases the number of parking spaces and narrows traffic lane.
Parking: Perpendicular	Increases the number of parking spaces and narrows traffic lane, especially on steep grades.
Paving Treatments	Special pavement textures (cobbles, bricks, stamped asphalt, etc.) and markings to designate special areas.
Pedestrian Malls	Street closure to automobiles that allows pedestrian and bicycle access; usually in a high retail area.
Perceptual Design Features	Patterns painted into road surfaces and other perceptual design features that encourage drivers to reduce their speeds.
Pervious Paving Treatments	Alternate paving material that can cause traffic to slow.
Radar Trailer	Measuring device that displays the speed of oncoming traffic compared to that of the posted limit, reminding drivers to slow to the speed limit.
Raised Intersections	Ramped surface above intersection that can be level with the sidewalk to enhance pedestrian access.
Refuge Islands	Raised island in the road center (median) narrows lanes and provides pedestrian with a safe place to stop.
Roundabouts	Medium to large circles at intersections (Kittelson, 2000).
Rumble Strips	Low bumps across road which make noise when driven over.
Semi-diverters, partial closures	Restrict entry/exit, to/from neighborhood. Limit traffic flow at intersections.
Sidewalks & Walkways	Narrow lanes of traffic to accommodate wider pedestrian thoroughfares.
Signage	Speed limits, restrictions, cautionary
Speed Cushions	Curved 3 1/4" to 3 3/4" high, 3ft long humps that stretch across the roadway and decreases traffic speed but allows emergency response vehicles to pass through.
Speed Humps	Curved 3 1/4" to 3 3/4" high, 12ft long hump that decreases traffic speed.
Speed Legend	Speed limit painted on the roadway to reinforce legal speed limit.

APPENDIX D: Traffic Calming Measures

Traffic Calming & Management	Description
	Streets
Speed Reductions	Traffic speed reduction programs. Increased enforcement of speeding violations.
Speed tables, raised crosswalks	Ramped surface above roadway that is flat on top, 3 1/4" to 3 3/4" high, 12ft long; can be painted like crosswalks to encourage pedestrian access.
Street closures: Half	Closing off streets to through vehicle traffic at intersections or midblock for one direction of traffic.
Street Trees	Planting trees along a street to create a sense of enclosure and improve the pedestrian environment.
Targeted Speed Enforcement	Setting speed limits and posting fines that requires local enforcement.
Tighter corner radii	The radius of street corners affects traffic turning speeds. A tighter radius forces drivers to reduce speed. It is particularly helpful for intersections with numerous pedestrians.
Unvegetated/Unplanted Medians	Raised island in the road center (median) that narrows lanes and separates opposing directions of traffic.
Vegetated/Planted Medians	Raised island in the road center (median) with planted trees and vegetation that narrows lanes and separates opposing directions of traffic.

APPENDIX D: Traffic Calming Measures

Traffic Calming & Management	Description
	Transit Preferential Streets
"Road diets"	Reducing the number and width of traffic lanes; particularly on arterials.
Bike Lanes & Paths	Marking bikelanes narrows traffic lanes.
Bulb-outs	Rounded curb extensions at intersections narrow traffic lanes.
Crosswalks	Pavement treatments that identify pedestrian crossing at intersections or mid-block requiring traffic to stop when pedestrians are present.
Curb extensions "pinch points"	Curb extensions, planters, or centerline traffic islands which narrow traffic lanes to control traffic and reduce pedestrian crossing distances. Also called "chokers."
Curb Ramps	Ramped surface that extends the curb length, narrowing the traffic lane.
Education	Informing drivers of safe roadway practices.
Lane Striping	Narrows traffic lanes to reduce speeds.
Medians	Raised barrier on a street centerline that may continue through an intersection to prevent through traffic.
Neckdowns	Rounded curb extensions at intersections narrow traffic lanes and shorten pedestrian crossing.
Parking: Angled	Increases the number of parking spaces and narrows traffic lane.
Parking: Perpendicular	Increases the number of parking spaces and narrows traffic lane, especially on steep grades.
Perceptual Design Features	Patterns painted into road surfaces and other perceptual design features that encourage drivers to reduce their speeds.
Pervious Paving Treatments	Alternate paving material that can cause traffic to slow.
Radar Trailer	Measuring device that displays the speed of oncoming traffic compared to that of the posted limit, reminding drivers to slow to the speed limit.
Refuge Islands	Raised island in the road center (median) narrows lanes and provides pedestrian with a safe place to stop.
Sidewalks & Walkways	Narrow lanes of traffic to accommodate wider pedestrian thoroughfares.
Signage	Speed limits, restrictions, cautionary
Speed Cushions	Curved 3 1/4" to 3 3/4" high, 3ft long humps that stretch across the roadway and decreases traffic speed but allows emergency response vehicles to pass through.
Speed Legend	Speed limit painted on the roadway to reinforce legal speed limit.
Speed Reductions	Traffic speed reduction programs. Increased enforcement of speeding violations.
Street Trees	Planting trees along a street to create a sense of enclosure and improve the pedestrian environment.
Targeted Speed Enforcement	Setting speed limits and posting fines that requires local enforcement.
Tighter corner radii	The radius of street corners affects traffic turning speeds. A tighter radius forces drivers to reduce speed. It is particularly helpful for intersections with numerous pedestrians.
Unvegetated/Unplanted Medians	Raised island in the road center (median) that narrows lanes and separates opposing directions of traffic.
Vegetated/Planted Medians	Raised island in the road center (median) with planted trees and vegetation that narrows lanes and separates opposing directions of traffic.