Chapter 2. Methodology

Pedestrian Master Plan – Phase 4

Development of the Pedestrian Master Plan required a series of steps from data collection to GIS mapping and from field investigation to community input. This section of the Plan outlines the steps taken to develop the Plan for each of the Phase 4 communities.



Pedestrian Route Type Development

All walkways in the City of San Diego fit into one of seven categories:

- **District:** A district route includes sidewalks in the more intensive mixed use and concentrated areas of the city.
- **Corridor:** A corridor sidewalk is associated with major arterials and linear corridors that provide for mixed uses with at least a moderate level of density.
- **Connector**: A connector sidewalk is often along a lower density corridor with few connections to adjacent land uses.
- **Neighborhood:** A neighborhood sidewalk is limited to areas of lower density and single use residential areas.
- Ancillary Facilities: A variety of special use facilities that do not fit the above definitions can be classified as ancillary. These are often away from street edges.
- Path: A path is a linear hard surface that is not connected to the edge of a street.
- **Trail:** A trail is unpaved and is not a focus of the Pedestrian Master Plan.

Phase I of the Pedestrian Master Plan went into great detail in developing the characteristics of each route type. Using these characteristics, all of the pedestrian routes in each of the seven Phase 4 communities were classified into one of the seven above listed Route Types. Although Route Types were initially developed using the Pedestrian Model, refinements were made based on field review of existing conditions, knowledge of existing land uses and other factors. Route types for each of the communities can be found in the community's section found later in this plan.

Focus Area Development

Although there are numerous pedestrian routes throughout each community, not all corridors meet the minimum criteria for inclusion in the Pedestrian Master Plan. Focus areas narrow down the corridors within each community that meet these minimum criteria. Those corridors that fall outside the Focus Area should be addressed through other City planning processes. In most cases, streets that are not within the Focus Area are typically low density residential streets, streets within industrial areas, or areas with a low demand for pedestrian activity.

The methodology incorporates two basic steps for creating Focus Areas that are then reviewed for potential pedestrian improvements in subsequent stages of the planning process. The two steps – Ranking Locations and Selecting Focus Areas – are described below:

1. Ranking Locations: The first step in the process uses five factors – Pedestrian Generators and Pedestrian Attractors (Pedestrian Demand), Pedestrian Detractors, Route Type, and Proximity to Public Facilities – to calculate a priority score for all roadway segments within each of the communities associated with the PMP phase in progress. Point values associated with each of the five factors are summed to provide an overall priority score for roadway segments in the relevant communities.

2. Selecting Focus Areas: The mean and standard deviation of the roadway segment priority score is calculated for each of the communities associated with the PMP phase in progress. The mean and standard deviation of the roadway segment priority score is expected to vary between the individual communities. Two tiers of priority are established using the mean Standard Deviation for Phase 4:

- Tier 1 priority includes roadway segments with priority scores greater than one Standard Deviation above the Mean.
- Tier 2 priority includes roadway segments with priority scores falling within one Standard Deviation above the Mean.

Tier 1 roadway segments formed the priority Focus Areas that were further examined via field review to identify potential pedestrian projects. Short Tier 2 segments that fall between Tier 1 segments were included in the field work.

The methodology used in Phase 4 slightly varies from that used in Phases 2 and 3. Unlike Phases 2 and 3, the communities in Phase 4 have a high variance in the levels of pedestrian activity and street patterns. As such, the application of a blanket Mean and Standard Deviation to all communities (mimicking Phase 2 and 3 methodologies) resulted in high amounts of Focus Areas in some communities, and little to no Focus Areas in other communities. Consequently, Phase 4 Focus Areas were developed by comparing a community to itself, calculating a Mean Priority Score and Standard Deviation unique to that community. This resulted in a more even distribution of Focus Area across communities.



Another issue with utilizing the Phase 2 and 3 methodology within the Phase 4 communities was a lack of connectivity in the Focus Area Tiers. By developing Focus Areas in each community individually, the Tiers had better uniformity and connected line segments, followed land use patterns, and confirmed field observations made by team members.

The proximity analysis used in Phase 4 utilized the existing road network to determine proximity to each attractor and detractor rather than concentric buffers that were used in all the previous phases. Using the road network provides accurate delineation of the actual paths of travel pedestrian would use within the given parameters.

Ranking Locations

Tables 1 and 2 summarize the factors included in the Ranking Locations process and the associated points assigned to each factor. The following discussion summarizes the rationale for including each of the factors in the Ranking Locations process and their respective point systems.

1. Pedestrian Demand Model (Attractors + Generators)

A GIS raster-based Pedestrian Demand Model was developed by summing the Attractor Model raster and the Generator Model raster values. Pedestrian Demand Model values were classified into four categories and assigned points based upon their relative pedestrian demand ranking (very high = 4, high = 3, medium = 2, and low = 1). All community roadways were then intersected with the Pedestrian Demand Model raster, resulting in all roadway segments having a pedestrian demand point value. Figure 1 shows the resulting pedestrian demand point values for roadway segments in Old Town.

2. Pedestrian Detractor Model

The GIS raster-based Pedestrian Detractor Model values are classified into five categories and locations are assigned points based upon relative pedestrian detractor ranking (very high = 5, high = 4, medium = 3, low = 2, very low = 1). All community roadways are then intersected with the Pedestrian Detractor Model raster, resulting in roadway segments being assigned a pedestrian detractor point value. Figure 2 shows a map of the pedestrian detractor point values for roadway segments in Old Town.

3. Route Types

Route Types were assigned point values with District Routes ranking highest and Neighborhood Routes ranking lowest. (District = 4, Corridor = 3, Connector = 2, Neighborhood = 1). Figure 3 shows route type rankings for roadway segments in Old Town.

4. Public Facilities

Proximity of a roadway segment to schools, parks, and libraries was used to assign priority point values. Three classes of proximity and point values were developed: roadways within one-eighth of mile were assigned a point value of 2, within one-eighth to one-quarter mile received a point value of 1, and greater than one-quarter mile received a point value of 0. Figure 4 shows public facility rankings for roadway segments in Old Town.

The priority point values associated with each of the factors were then summed, resulting in every roadway segment having a priority score ranging from 1 to 14. Priority points are summarized in Table 2-1.

Table 2-1: Factors and Point System used in Ranking Locations

Factors	Points	Basis for Points	
Pedestrian Demand Model	1 to 4	Identifies locations with relatively high pedestrian demand potential	
Pedestrian Detractor Model	1 to 5	Identifies locations with relatively low pedestrian quality	
Route Types	1 to 4	Identifies relative importance of facility as a pedestrian route	
Public Facilities	0 to 2	Identifies locations in close proximity to public facilities (parks, schools, and libraries)	

Factors	Points by Category				
Pedestrian Demand Model					
Very High	4				
High	3				
Moderate	2				
Low	1				
Pedestrian Detractor Model					
Very High	5				
High	4				
Moderate	3				
Low	2				
Very Low	1				
Route Type					
District	4				
Corridor	3				
Connector	2				
Neighborhood	1				
Proximity to Schools, Parks, and Libraries					
< 1/8 Mile	2				
1/8 – 1/4 Mile	1				
> 1/4 Mile	0				



Selecting Focus Areas

After calculating the priority score for all roadway segments, the Mean and Standard Deviation priority score was calculated for each community. A roadway segment who's priority score was determined to be greater than one Standard Deviation <u>above</u> the Mean priority score was included in the Tier 1 Priority Focus Areas. To be considered a Tier 2 Priority Focus Area, a roadway segment must have a priority score <u>within</u> one Standard Deviation above the mean priority score.

Although physically connected, Tier 1 Focus Areas may still have been segmented because of the priority scores from the original pedestrian model inputs. To connect the Tier 1 segments, a 100-foot buffer was created to capture Tier 2 segments that fall adjacent to Tier 1 segments. This creates focused geographic areas to be surveyed for improvements and pedestrian related projects. Refinement of the Focus Area was determined by team members on an as-needed basis.

 Table 2-2 provides a summary of Focus Areas for all seven of the Phase 4 communities.

	Total Mileage	Roadway Segment above one Standard Deviation		Roadway Segment within one Standard Deviation	
	of Community Roadways	Mileage	% of Total	Mileage	% of Total
College Area	48.2	10.4	3.9%	6.8	2.6%
Kensington-Talmadge	35.0	6.9	2.6%	7.3	2.7%
Midway-Pacific Highway	25.2	11.0	4.2%	8.0	3.0%
Ocean Beach	23.6	7.0	2.6%	5.6	2.1%
Old Town	7.9	3.3	1.2%	2.0	0.7%
Pacific Beach	89.4	22.6	8.5%	15.2	5.7%
San Ysidro	35.2	10.9	4.1%	6.0	2.3%
TOTAL	264.4	72.0	27.2%	50.8	19.2%

Table 2-2 Focus Area Summary

Existing Conditions Assessment

Once the Focus Areas were defined, an investigation of existing conditions was conducted to determine specific needs in each of the communities. Existing conditions data was collected from numerous sources:

- SANDAG Sidewalk Inventory
- City of San Diego Curb Ramp Inventory
- City of San Diego Accident Data (2009 2011)
- City of San Diego Existing Street Light Inventory
- Community Groups and Community Plan Update Public Input
- Community Walk Audits (received via email and internet)
- Project Team Walk Audits

Existing conditions maps were developed that identified locations where improvements to the walking environment would be beneficial to the community. Improvement Area boundaries were defined for each of the Phase 4 communities and are provided in the community sections found later in this document. Improvement areas are classified as Intersection Improvements, Corridor Improvements or Corridor Mobility Studies. The Pedestrian Master Plan aims to identify areas that would benefit from pedestrian related improvements. However, the Plan is not intended to fully vet the potential issues that may arise as a result of the recommendations identified in this plan. In nearly all cases, further design, analysis or environmental review will be necessary before improvements can be implemented.

Improvement Area Refinements

Once the Improvement Areas were defined, an investigation of potential improvements was conducted to determine what changes could be made to improve the walking conditions in one or more of the following areas:

- **Safety:** Create a safe pedestrian network free of barriers and tripping hazards, that has sufficient street crossings, buffer pedestrians from vehicles and has facilities wide enough to accommodate peak pedestrian use.
- Accessibility: Make facilities accessible to pedestrians of all abilities and meet all local, state and federal requirements.
- **Connectivity:** Develop a complete pedestrian network that provides direct and convenient connections for neighborhoods, employment centers, transit stations, public places and community destinations.
- Walkability: Create pedestrian facilities that offer amenities to encourage usage and to enhance the pedestrian experience.

The process for identifying Improvement Areas was multi-step and involved not only physical review of the existing conditions, but also input from the community, review of accident history and research of on-



going planning efforts within these planning areas. A detailed summary of the community outreach conducted for this project is provided in the Appendix to this report.

A potential repair or improvement to a pedestrian facility did not necessarily qualify to become an improvement area in this plan. An improvement recommendation was defined as new construction or a major retrofit that would likely require the development of design and engineering plans, a permit or other ministerial or discretionary review, and would likely be built by a contractor or substantial city work forces. An Improvement Area, as discussed in this chapter, is a grouping of intersection or roadway segment improvements that generally would cost more than \$25,000 to implement. Wherever possible, groupings of improvements were considered in order to obtain magnitude of cost savings.

Between 10 and 14 Improvement Areas were defined for each of the seven Phase 4 communities. For each Improvement Area several recommendations, including cost estimates, are provided along with a conceptual sketch of the recommendations. The Improvement Area details are provided in community sections later in this plan.

The City of San Diego was beginning the process of updating the comprehensive pedestrian crossing policy at the time this document was prepared. The policy will be used to assess the implementation of all new marked crosswalks and/or enhanced crosswalks City-wide. This plan includes several recommendations to evaluate the feasibility of implementing new marked crosswalks and/or enhanced crosswalks across all Phase 4 communities. As part of the feasibility assessment, all potential marked crosswalk locations shall be evaluated based on the updated city policy.

Enhanced marked crosswalks improve the visibility of crossings and pedestrians beyond the typical signage and striping on the pavement. Several additional features such as flashing beacons, in-pavement flashers, Hawk signals and overhead signage, curb extensions and median refuges could be added to a marked crosswalk to meet the goal of providing an enhanced marked crosswalk. The Pedestrian Master Plan includes recommendations to assess the feasibility of implementing enhanced marked crosswalks. A detailed assessment of the sites should be conducted to determine the features most appropriate for each location. This assessment should be based on the updated city policy.

Ranking and Prioritization

Following the development of recommendations by the community, each of the Improvement Areas received a priority score based on safety, accessibility, walkability and connectivity. Factors considered in ranking the projects included the following:

- Projects in areas of high pedestrian use that provide improvements for safety, access, connectivity and walkability issues, that also increase walking as an alternative transportation mode, should receive the highest scoring.
- Streets where collision data indicate potential safety concerns received the highest score for safety improvements.
- Projects that improve safety and connectivity to schools and other public facilities such as community centers, libraries and recreation centers, especially those attracting a high concentration of seniors, should be considered to be the second highest priority for pedestrian improvements.

- Walkways and crosswalks that are on wide, high speed, high traffic volume streets should take priority over residential and local collector streets with lower speeds and volume.
- Projects that modify a completely non-accessible route with fully accessible pedestrian routes in areas identified by this Master Plan as having high pedestrian activity (or by the most recent version of the ADA transition plan) will be given the highest score for accessibility improvements.
- Other pedestrian improvements that enhance accessibility along lower use pedestrian routes that already have some level of access will be given the next highest level of accessibility priority.
- Projects that increase connectivity around "smart growth" mixed use projects that will generate significant levels of pedestrian activity but are in need of off-site connections, should receive the highest connectivity scoring.
- Projects that remove barriers, close gaps or increase connectivity with other high pedestrian uses, should receive the second highest connectivity scoring.
- Projects that improve overall site amenities, protection from adjacent environmental conditions and improve clarity, comfort and interest for walking should receive the highest scoring for walkability.
- Projects that support greater interaction amongst the public should be given the second highest priority for walkability.

Based on these principles, ranking criteria were developed for the Phase 4 communities. The ranking criteria assigned points per category with the maximum number of points assigned to Safety. A maximum of 26 points could be assigned to any Improvement Area. Depending upon the Pedestrian Priority Model score the total number of points would be multiplied by a factor of 1 to 3 to reflect the potential for pedestrian activity and/or the overall benefit to pedestrian activity within approximately ¼ mile of the limits of the recommended improvements.



Table 2-3: Improvement Area Prioritization Scores

Table 2-5. Improvement Area I nor itization scores	
WEIGHTING SCORE - To be multiplied by the total score for items #2-5	
1. Pedestrian Use Levels (existing or potential)	Multi
In the Pedestrian Priority Model, the area's pedestrian priority rating is:	plier
Very High (50-75 points using the average GIS Mapping Score within 1/4 mile)	3
High (25-49 points using the average GIS Mapping Score within 1/4 mile)	2
Moderate (10-24 points using the average GIS Mapping Score within 1/4 mile)	1.5
Low (1-9 points using the average GIS Mapping Score within 1/4 mile)	1
2. Safety Score	
What are the current pedestrian safety issues that this project will address?	
Assign points as follows (select only one):	MAX: 10
10 pts: Pedestrian fatality, or =10 pedestrian accidents/mile in corridor, or =5 accidents at a single	
intersection ¹	
8 pts: =5 pedestrian accidents/mile in a corridor, or =3 accidents at a single intersection ¹	
5 pts: A pedestrian accident was reported within Improvement Area ¹	
2 pts: A safety concern was expressed by community or identified in visual inspection	
3. Accessibility Score	
What issues of accessibility will be addressed by this project?	
Assign points as follows (select all that apply, up to a max. of 8 points):	MAX: 8
2 pts: Completes missing segment of sidewalk	
2 pts: Eliminates obstacles in pedestrian pathway (directly or through pathway widening)	
2 pts: Adds curb ramp at crosswalk (marked or unmarked)	
2 pts: Installs accessible push-button and audible signal (1 pt without audible signal)	
1 pt: Replaces non-compliant curb ramp or driveway with ADA-compliant curb ramp or driveway	
4. Connectivity Score	
How will this project improve connectivity and what will it help connect to?	
Assign points as follows (select all that apply, up to a max. of 5 points):	MAX: 5
2 pts each attractor: Improves connectivity to regional attractors (trolley station, university, beach or	L
other regional recreation facility)	
1 pt each attractor: Improves connectivity to local attractors (school, park or other public facility, bus	
stop, business area)	
5. Walkability Score	
How will this project improve walkability?	
Assign points as follows for making physical changes to improve pedestrian comfort, movement, and	MAX: 3
safety (select all that apply, up to a max. of 3 points):	L
2 pts: Prevents or controls vehicle movement across pedestrian path (such as a stop sign)	
1 pt: Increases buffer between pedestrians and vehicles	
1 pt: Improves ease and comfort for street crossing	
1 pt: Creates more space or light in streetscape for pedestrian activity	

Community Input Process

Community input was the foundation for developing Improvement Area boundaries and developing recommendations. Although not all public comments could be accommodated through this process, most community concerns are addressed in this document. The Community Input Process occurred over several months and involved numerous involvement opportunities and avenues:

- **Project Website Survey:** An online survey was posted on the project website where participants could enter information regarding key areas of concern, recommendations and other comments. The survey also asked questions about walking routes, frequency of walking trips and purpose of walking trips in order to gain an understanding of the community responding to this survey.
- **Project Website Information:** Material from workshops, meetings and activities was posted on the City's website. Interested parties could download material and review as the project progressed from Focus Areas to Improvement Area recommendations.
- **Community Group Presentations:** Presentations were made by the project team to all seven community planning groups both at the project initiation as well as project wrap up.
- **Open House Meetings:** Two Open House meetings were conducted in December 2012 where the recommendations for six of the seven communities (San Ysidro excluded) were available for review. Participants could pick up a Fast Fact sheet for each community, which included a summary of the recommendations for that community. Participants also provided feedback to the project team by completing a survey. Surveys were also provided on-line following the Open House meetings.
- Special Presentations to Planning Groups: Due to special circumstances, two additional community presentations were conducted. The recommendations of the San Ysidro Plan were presented to the community at the Community Plan Update meeting where over 100 participants listened to a short presentation on the recommendations. A presentation was also made to the Pacific Beach Planning Group, which focused on responding to the Planning Group Subcommittees recommended modifications to the Draft Improvement Area recommendations.

In addition to the formal meetings and presentations listed above, the project team received numerous emails and phone calls pertaining to the project.

As stated previously, not all community comments are addressed in the Pedestrian Master Plan. Many requests by the community were more appropriately addressed by other departments within the City of San Diego. Street Division addresses street and street lighting maintenance issues. Participants at the Open House meetings were provided the opportunity to log-on to the City's website and submit specific requests to the Street Division as appropriate. Similarly, Transportation Engineering Operations Division evaluates needs for crosswalks and traffic signals, as well as signal timing issues. Traffic engineering concerns raised by participants that were not addressed by the Pedestrian Master Plan Phase 4 project were forwarded to this division for review as appropriate. City staff was on-hand at all community



meetings to help determine the appropriate course of action for participants whose concerns either fell outside the Focus Area of the Pedestrian Master Plan or would be better addressed through a different department.

Following the completion of this document, the City will present to the communities the ranking of Improvement Areas during regularly scheduled Community Planning Group Meetings. The intent of the presentations to the Community Planning Groups is to receive input on the rankings and document any comments received during the presentation. The comments received and associated responses will be summarized in a technical memorandum and will be provided as an attachment to the final Pedestrian Master Plan Phase 4 document.