I. PROJECT OVERVIEW

The District 3 Sidewalk Study was undertaken by the City of San Diego in response to requests from community groups representing portions of the Mid-city area within Council District 3. The study area encompasses the communities of Normal Heights, Greater North Park, and South Park.

The purpose of this study is not to identify streets that lack sidewalk improvements. Rather, the purpose is to identify locations where engineering issues such as inadequate curb height or adverse sidewalk slopes prevent the development of pedestrian enhancements, and to recommend a program of public improvements that can alleviate these obstacles to the fullest extent possible. The objective of the project is to develop a prioritized list of recommended improvement projects within the study area, with associated cost estimates, to assist the City in identifying appropriate capital improvement projects that can be implemented as various levels of funding become available.

The City of San Diego has an on-going program in which sidewalk improvements are installed on a cooperative basis between the City and homeowners, when requested by the property owner. Currently the City shares the cost of this work with the homeowners by performing the work using City forces or contractors, then billing the property owners for half the cost. Within Council District 3, the Councilmember has in recent years chosen to use part of the available discretionary funds to increase the percentage of City cooperation to 75% in order to encourage increased participation in the program.

In some locations, the construction of new curb and sidewalk improvements is complicated by engineering issues. Often this is a result of many years of resurfacing projects which have left the street surface nearly at the elevation of the top of curb. This causes an adverse drainage condition in which curbs cannot be raised to the standard height above the adjacent pavement without blocking drainage from the adjacent lot. Other impediments within older neighborhoods include non-standard grading conditions within private lots, and street configurations that do not support ADA-compliant improvements.

II. SUMMARY

The District 3 Sidewalk Study scope of work included three separate phases. The first phase consisted of an inventory of pedestrian resources for the entire area encompassed by the communities of Normal Heights, North Park and South Park within Council District 3. Data were collected regarding reported drainage problems and indicators of pedestrian demand. The data were reviewed with representatives of the three community groups and input from the communities was used as the basis for determining which streets within the overall study area were the most appropriate candidates for more detailed study. Base mapping was prepared as part of the first phase, and the work product consisted of GIS-based maps showing the locations of pedestrian demand attractors and known drainage issues. Phase I maps also identified the streets selected for study in subsequent phases.

Phase II was referred to as the "focused" study. Special GPS-based equipment was used to assess existing conditions on all of the street segments identified in Phase I. The field data collection included the following elements of street condition:

- Existing curb heights, expressed as ranges
- Existing pavement cross-slopes
- Existing sidewalk cross-slope (i.e., identifying non-standard slope conditions that could present an engineering issue, such as sidewalks that drain away from the street toward private property)
- Locations where sidewalks and/or street improvements do not exist.

During this Phase II data collection process, photographs of the selected streets were taken and catalogued. In addition, data regarding existing pavement conditions was also gathered during the Phase II field data collection. Though not required by the scope of work, this data could be useful in determining appropriate improvement projects to enhance the pedestrian environment. For example, a street with very poor pavement condition would be deemed a better candidate for complete pavement replacement than one with excellent pavement conditions, even if other engineering conditions are similar.

Other work performed during Phase II included the use of GIS-based methods to develop numeric rankings of pedestrian priority levels to each street in the detailed study area. The rankings were expressed on a scale from 1 to 20 to describe the relative importance of each street segment in providing pedestrian mobility within the community.

The work product for Phase II included a report of the field data collection results with color-coded maps, a GIS-based map indicating pedestrian priority levels, and a graphic exhibit showing existing curb conditions in the "focused study" area.

III. OUTLINE OF PHASE III SCOPE

3.1 Detailed Study Area

A total of 227 block segments were included in the Detailed Study Area. In order to provide a convenient basis for referring to these locations in the remainder of this report, each block has been assigned a number. The block numbers can be seen on several of the figures in this report, including **Figure 1, Proposed Improvements** (see map pocket). The numbers are preceded by the prefixes NP, SP or NH to indicate which community planning area (North Park, South Park or Normal Heights) they are located in. The block numbers, address ranges and street names are also listed in **Table 3-1**.

TABLE 3-1
DETAILED STUDY AREA

Street Names	# of Blocks	Street Names	# of Blocks	Street Names	# of Blocks
South Park		North Park		Normal Heights	
Ash Street	11	Nutmeg Street	2	38th Street	2
Gregory Street	4	Felton Street	2	McClintock Street	2
Beech Street	2	33rd Street	1	Meade Ave.	7
Cedar Street	1	Palm Street	3	37th Street	2
31st Street	6	Bancroft Street	2	Cherokee Ave	4
Date Street	2	Redwood Street	3	36th Street	2
29th Street	1	30th Street	7	Wilson Ave.	2
Fern Street	6	Grim Ave	7	35th Street	6
33rd Street	5	Herman Ave	1	Monroe Ave	15
Elm Street	6	Thorn Street	5	Hawley Blvd	7
Bancroft Street	1	Upas Street	16	34th Street	2
Felton Street	2	Florida Street	2	32nd Street	4
Fir Street	1	Pershing Place	5	Madison Ave	12
Grape Street	3	Ray Street	5	Adams Ave	5
Hawthorn Street	5	Myrtle Ave	3	East Mtn View Dr	8
Ivy Street	5	Dwight Street	4	Collier Ave	6
Juniper Street	3	31st Street	1	Copley Ave.	2
		North Park Way	5	Arthur Ave.	2
		Utah Street	5	Eugene Place	2
		Ohio Street	4	North Mtn View Dr.	5
		Lincoln Ave	5	Cromwell Court	1
		Texas Street	3		
		Meade Ave	1		
		Idaho Street	2		
		Kansas Street	3		
		Illinois Street	3		
		Monroe Ave.	3		
		Oregon Street	1		
		Adams Ave.	5		
		Hamilton Street	1		
		Madison Ave.	2		

3.2 Phase III Scope of Work

The Scope of Work for Phase III of this study consisted of the following tasks:

Task III-1: Drainage Analysis

KHA performed field visit in which all streets in the Detailed Study Area will be visually assessed by a hydrologic engineer. The purpose of the field reconnaissance was to outline the limits of surface drainage basins affecting the Detailed Study Area, to identify the location of drainage facilities such as curb inlets or cross-gutters, and to identify locations where drainage conditions are likely to affect pedestrian movement. Major flow paths were identified, and preliminary level drainage calculations were performed. The calculations provide order-of-magnitude runoff quantities for identifying problem areas but are not intended to be at a level suitable for final design.

Task III-2: Identify Surface Grade Ranges

The longitudinal slope of each street segment is a key element that affects whether curb-and-gutters can be replaced without extensive street reconstruction. This is because the runoff carrying capacity of the curbs is dependent not only on the curb height but also on slope. An approximate slope was identified for each street segment. In most cases, the slope was estimated from contours shown on existing City topographic mapping. In some areas where terrain is very flat, surveying was performed to obtain existing top of curb elevations, which was used to calculate the slope of the street. Cross-slope also impacts the runoff carrying capacity a street, as well as limiting the available options for street repair. Data on existing cross-slopes was gathered as part of Phase II and used in the Phase III analysis.

Task III-3: Develop Criteria for Street Repair

In general, streets segments having standard-height curbs do not require engineering work for sidewalk replacement projects. Areas with reduced curb heights may require grinding of the roadway edge, or the deficiency may be so severe that only complete pavement replacement will be adequate. In consultation with City staff, criteria were developed for the level of design and construction work for a given set of conditions.

Task III-4: Prepare Ranked List of Locations Most in Need of Engineering Work

In consultation with the City's Project Manager and community representatives, ranking criteria were established for prioritizing the locations most in need of engineering work. The criteria assign point values to assess the relative severity of the following conditions:

- Reported problems within a segment
- Curb height
- Curb slope
- Runoff volume
- Importance of the segment as a pedestrian corridor
- The degree of engineering work to correct the segment

Task III-5: Graphics

A series of CAD-based color-coded maps were prepared to depict the street segments having high, medium and low levels of priority based on the point ranking described above and recommended improvements by street segment, along with other graphical representations of the study results. These graphic maps can be found throughout this report.

Task III-6: Improvement Recommendations

The results of the study were used to develop a series of design or improvement projects that can serve as the basis for future design efforts. KHA attempted to identify logically connected segments of work, usually proceeding from the downstream end of drainage basins, to maximize community benefits and to avoid constructing isolated improvements that cannot achieve their full benefit without improvement of adjacent blocks.

Task III-7: Cost Estimates

Design and opinions of probable construction cost were prepared for each identified program of recommended improvements. The cost opinions are correlated with the priority ranking to develop a program of improvement work for various levels of available funding.

IV. SURFACE GRADE RANGES

4.1 Longitudinal Slopes of Streets

The Detailed Study Area is mostly characterized by flat terrain and streets having limited gradients. A few hilly areas can be found, especially in the southern areas of South Park, but most parts of the study area exhibit street slopes that fall short of current city standards. The current Street Design Manual establishes a minimum slope of 0.6% for streets in newly developing communities, but many of the streets in the study area have slopes of 0.3% or less. In a few cases, field surveying performed for this study revealed streets having literally no slope at all.

These flat gradients impact pedestrian improvements in two ways: First, the ability of the flat streets to convey runoff is severely limited (see **Table 5-1**, Section 5.4 below). This results in frequent inundation of sidewalks and a difficult walking environment for pedestrians during rainy weather. Second, the flat grades present a significant obstacle for construction of new curb, gutter and sidewalk in conformance with City standards. Particularly on streets having near-zero slopes, it may be difficult or impossible to undertake a curb reconstruction that is even close to meeting City standards without having to extend the construction a great distance upstream or downstream – resulting in a major project that is beyond the means of individual homeowners.

The longitudinal slope of each block segment was estimated primarily using available City topographic mapping. Some of the block segments were so flat that it was not possible to estimate the slope rate from topo mapping, or even to assess the direction of drainage from visual observation in the field. In those areas, field surveying was performed to establish actual curb and gutter elevations. The estimated slope rates for each block segment are presented in **Figure 12** (see map pocket).

4.2 Cross-slope of Streets

Most of the streets in the Detailed Study Area have cross-slopes that exceed the City standard of 2%. This is typically because of pavement overlay projects that, over many years, have tended to raise the central part of the pavement while being constrained by curbs at the edges. As part of the Phase II field data collection, cross slopes were measured and displayed on a graphic exhibit. The average cross-slope in the study area was found to be about 4 to 5%, with a few steeper locations.

The cross slope affects the runoff carrying capacity of the streets by increasing the concentration of flows near the curb. This is detrimental to pedestrian travel because it tends to increase sidewalk flooding.

The steeper cross-slopes place a constraint on available reconstruction options. Where cross-slopes are already unusually steep, it is less feasible to use grinding of the parking lane to re-establish the curb height (see Section 6.4 below). In addition, the newest ADA regulations require that crosswalks have a longitudinal grade of no more than 5%. It is difficult or impossible to comply with this regulation on streets having steep cross-slopes.