

Section 4: Inventory Methodology and Findings

Section 4.1: Purpose and Summary of the Inventory Effort

The purpose of the inventory is to show a baseline of existing pedestrian facilities in the City of Rancho Cordova. These data were used to improve pedestrian facilities and to comply with ADA and Title 24 requirements and City approved policies.

The City has a wide variety of facilities within the public right-of-way. These facilities include streets and roadways, vehicular and pedestrian bridges, underground and above-ground utilities, vehicular and pedestrian signal systems, signage systems, on-street parking facilities, walkways, sidewalks with curb ramps at intersections, improved planting strips, buffers, and pedestrian activity areas, and unimproved open spaces or natural areas. The goal of the overall project is to optimize the pedestrian experience and to provide safe and usable pedestrian facilities for all pedestrians in Rancho Cordova, and to assure compliance with all federal, state, and local regulations and standards.

A five-month long period of surveying pedestrian facilities was undertaken to document existing conditions within the public rights-of-way. Surveying, as used in this section, refers to visiting the particular location by a trained accessibility surveyor, and obtaining measurements, dimensions, gradients or other visual determinations as may be appropriate depending on the particular location.

Highlights of the survey process and inventory findings pertinent to the City are listed below:

- Approximately 72 miles of streets and roadways covering over 578 individual segments of roadway boundaries were traveled and surveyed to document physical conditions along the roadways, including conditions that might be barriers to persons with disabilities.
- The inventory focused on more heavily used roadways and intersections and on those roadways and intersections serving governmental, public service and commercial uses.
- For roadways surveyed, approximately 85 percent of City roadways have sidewalks on one or both sides, and 15 percent do not have sidewalks on either side of the street.
- Approximately 718 intersections or 1,685 street corners were surveyed, and measurements were taken for a variety of dimensions and gradients.
- Approximately 73 percent of all corners surveyed have rolled curbs, approximately 19 percent have vertical curbs, and 7 percent do not have curbs.
- Approximately 27 percent of all developed corners have curb ramps. Of these, approximately 58 percent were older perpendicular curb ramps with flared sides and approximately 38 percent were newer parallel pan-type curb ramps.

- Approximately three walkways leading to schools or park are not ADA compliant (Figure 1).



Figure 1: Walkway Examples

Moraine Court Walkway adjacent to Cordova Gardens School (left)
Van Nuys Way Walkway adjacent to Riverview School (center)
Atwood Drive Walkway at Ahlstron Park (right)

Section 4.2. Inventory Methodology

Field surveying began on June 3, 2002 and ended on November 8, 2002. During this five-month period, a total of 23 surveyors spent a total of over 9,000 hours collecting detailed measurements and other data within the unincorporated County. Each surveyor underwent at least 80 hours of training on equipment, data collection methods, procedures and ADA principles, including class and in-field instruction. Surveyors followed the procedures outlined in the previously submitted and approved *Surveyor's Manual*. Two full-time supervisors spent an additional 1,700 hours directing the surveyors' efforts, including preparing survey routes, handling assignments and personnel matters, answering questions and spot checking surveyors' completed data.

Prior to beginning all survey work, surveyors were given time goals to complete each type of survey. Time records for all surveyors and their activities were kept by supervisors throughout the survey process, and surveyors as a group met their time allotments to keep the project on schedule. All data for intersections and roadways were collected using personal digital assistants (PDA's) by Handspring. Surveyors typically worked in teams of two persons, with one person being the lead driver and navigator and the other person being the main PDA operator. Both surveyors would take measurements and collect data. Most teams worked either solely on intersections or on roadways, although a few teams worked on both aspects of data collection.

Completed data were downloaded into the master database program at regular intervals, usually at the end of each week, using Pendragon database software. Data were consolidated into tables sorted by data types, stored on compact disks, and transferred into the Microsoft Access database described in Section 4.6.

Section 4.3: Summary of Areas Surveyed and Priorities

All intersections and roadway segments in the survey area were classified as Priority Level 1 (High Priority), Priority Level 2 (Medium Priority) or Priority Level 3 (Lower Priority) based upon the criteria contained in these documents. A summary of these priorities and a description of each are as follows:

High Priority Intersections and Roadway Segments (Priority Level 1)

- ◆ Major roadways (Arterials or thoroughfares with a minimum 80-foot wide right-of-way) and intersections along these arterials or thoroughfares;
- ◆ Intersections and roadway segments serving Level 1 facilities including:
 - County-owned facilities;
 - Public schools (approximately one-quarter mile radius for the main streets);
 - Hospitals, health clinics and health centers (public and private);
 - Public housing and homeless shelters, including senior facilities and rehabilitation facilities;
 - Sheriff's facilities;
 - Transportation hubs (includes bus lines and transit stations);
 - Department of Motor Vehicles offices;
 - County parks; and
 - Prisons.

For these high priority intersections and roadway segments, surveyors measured a variety of detailed accessibility and pedestrian data, as described in Section 4.4.

Medium Priority Intersections and Roadway Segments (Priority Level 2)

- ◆ Collectors (streets with minimum 60-wide right-of-way) and other roadways, and intersections along these highways;
- ◆ Intersections and roadway segments serving Level 2 facilities including:
 - Shopping malls, supermarkets and strip retail centers;
 - Major employment sites; and
 - Housing complexes, including apartments.

For these medium priority intersections and roadway segments, surveyors also usually measured a detailed variety of accessibility and pedestrian data.

Lower Priority Intersections and Roadway Segments (Priority Level 3)

- Single-family residential areas;

City of Rancho Cordova ADA Transition Plan

- Industrial areas; and
- Other areas not classified as Priority Level 1 and 2.

For the ADA Transition Plan, lower priority intersections were surveyed using either the detailed survey or a simplified survey, specially designed to gather basic data. For these simplified surveys, surveyors were trained to visually inspect intersection elements to make a basic and objective determination of the overall compliance of the various elements, but did not collect all detailed data collection items if these data were not critical to the determination of overall compliance.

The survey team used the following criteria to determine which intersections in residential areas were surveyed using detailed measurements:

- Construction year of the adjacent land uses. For example, intersections and roadway segments within a specific subdivision are expected to be built with similar standards. These subdivisions were spot-checked to verify original assumptions;
- Geographic equity using zip codes: The survey team covered the City in an equitable manner;
- Highest pedestrian collision intersections; and
- Disabled person density using Paratransit, Inc.'s dataset of 8,000 active riders.

Section 4.4: ADA Data Collection Items

For detailed measurements at or near intersections, the survey team collected and analyzed the following data:

Crosswalks: Whether crosswalks are present at any or all crossings. If present, the width, type, alignment, presence of tactile guidestrips, presence of islands and disabled access.

Curb Ramps: Whether existing curb ramp(s) are present at any of the corners within the intersection (Figure 2).

Figure 2: Curb Ramp Needs Example - Winn Elementary School on Vanguard Dr and Jupiter Dr

Directional Corner of Intersection: NE, SE, SW and NW. (Note: All corners will be referred to by one of these compass points. If the street is not perfectly aligned north and south, the direction will be assigned within the nearest 45 degrees.)

Intersection Geometry: Whether the intersection is standard right angle, T-shaped, Y-shaped, skewed, or any other irregular geometry. Whether there are pedestrian island(s) or right turn lanes.

Islands: If present, then presence of curb ramps and push buttons.

Obstructions and Obstacles: The general presence and nature of abrupt changes in sidewalk level of greater than one-half inch, paving obstructions or accessibility obstacles immediately adjacent to the corner. The following obstacles near a corner will be recorded: utility pole, traffic light pole, drain inlet, fire hydrant, street furniture and newsstand. (Figure 3)



Figure 3: Utility Pole Obstruction Examples - Mather Field Road at the Mather Sports Complex and Senior Center

Pedestrian Signals: Whether visual or accessible pedestrian signals are present. If present, the type, size, height and location of actuator buttons. The location parameters are “at curb,” “on landing,” “on ramp slope – arm length” and “on ramp slope – not arm length.” Another location question asks if the pedestrian push button is parallel to the crosswalk alignment.

Sidewalk Present: Whether a sidewalk leading to and from the curb is present. If present, the paved sidewalk width at the intersection.

Tactile Guidestrips: Whether tactile guidestrips are present at any crosswalk. If present, the location, height, width and color of the tactile guidestrips.

Traffic Control: Whether traffic signals, stop signs (all way vs. two-way vs. one-way), yield control, roundabout or no control.

Transit Stop Type: The parameters of the transit stop type are none, light rail, bus and other (Figure 4).



Figure 4: Bus Stop Path-of-Travel Example - Folsom Blvd and Routier Rd

If a curb ramp is not present at a particular corner, the following data was collected:

Curb Type: Whether a curb is present, and if present, the type (vertical or rolled).

Flush Corner: If there is no curb, whether a flush transition from the street to the sidewalk is present.

If a curb ramp is present (either one or two at a corner), the following data was collected for each curb ramp:

Car Obstruction: Curb ramp not located so that it could be obstructed by parked vehicle.

Common Landing: Dimensions of any common landing for two curb ramps.

Curb Ramp Type: A general description of the curb ramp: flared, pan, chute, blended corner or built-up.

Detectable Warnings/Truncated Domes: Whether truncated domes are present. If present, the dome location, size, type (e.g., plastic, concrete, concrete tile, brick or other) and color. Truncated domes are placed at level landings to alert visually-impaired individuals of a transition between the sidewalk and the street or railroad tracks.

Grooved Border: Whether a 12 inch grooved border around all sides is present and its width.

Gutter Slope: Slope in percent of the gutter or street transition.

Lip: Whether a lip is present at the bottom of the curb ramp, and if present, the height to the nearest 0.25 inch.

Location in Crosswalk: Curb ramp wholly contained in marked crosswalk, if applicable.

Main Slope: Main slope of the curb ramp or level landing in percent adjacent to and perpendicular to the street.

Main Cross Slope: Cross slope of the main slope of the curb ramp or level landing, parallel to the street. The cross slope is perpendicular to the main slope of a curb ramp.

Side Slope(s): Whether a side slope or parallel slope is present, and if present, the slope of each sloping side or flare parallel to the street in percent.

Slip-resistant Surface: Whether or not the surface is slip-resistant.

Street the curb ramp is facing, or if facing the intersection (diagonal).

Top Landing Depth: Whether a 48 inch deep level landing is provided at the top of the curb ramp, or at the top of each slope of a parallel curb ramp.

Transition Slope: Slope of the transition to the sidewalk, verifying slope of five percent or less for the right and left sides.

Width: Width of the curb ramp or pan. A pan or level landing exists when there is a lack of vertical separation between the sidewalk and the street.

Section 4.5 Inventory Findings

Listed in this section are basic statistics for the survey findings in Rancho Cordova. These statistics generally include only citywide statistics and not a detailed analysis of the findings. Where the maximum allowable dimensions or gradients are noted for specific elements, these dimensions are the proposed standards for new construction.

Intersection Survey Statistics

Total number of intersections: 718
 The survey records include partially completed intersection information.

Total number of all corners: 1,685

Corner Statistics

Types of corners

Curb Type	Count	%
Rolled	1215	73%
Vertical	315	19%
No Curb	121	7%
Flush Transition	8	0%
Total	1659	

Corners with sidewalks at corners

Sidewalk Present	Count	%
N	198	12%
Y	1461	88%
Total	1659	

Average sidewalk width at corners: 52.98 in.

Corners with sidewalks with changes in level or gaps greater than ½"

Changes In Level	Count	%
N	1324	80%
Y	335	20%
Total	1659	

Corners with sidewalk obstacles limiting access:

Obstacles Near Corner	Count	%
No Obstacle	1099	66.2%
Drain Inlet	438	26.4%
Drain Inlet;Landscaping	34	2.0%
Fire Hydrant	1	0.1%
Landscaping	61	3.7%
Other	8	0.5%
Street Furniture	1	0.1%
Traffic Light Pole	7	0.4%
Traffic Light Pole;Drain Inlet	2	0.1%
Utility Pole	3	0.2%
Utility Pole;Drain Inlet	2	0.1%
Utility Pole;Drain Inlet		
Inlet;Landscaping	1	0.1%
Utility Pole;Landscaping	1	0.1%
Utility Pole;Traffic Light Pole	1	0.1%
Total	1659	

Curb Ramp Statistics

Number of Curb Ramps Surveyed: 451

Types of curb ramps

Ramp Style	Count	%
Flared/Perpendicular (with side slopes)	261	58%
Pan/Parallel (landing level with street)	170	38%
Chute	15	3%
Other	4	1%
Blended Corner	1	0%
Total	451	

Gutter slopes at curb ramps (5% maximum allowed):

Less than or equal to 5%	120	26%
Greater than 5%	314	70%
Greater than 7%	147	33%
Total	451	

Main slopes on curb ramps (8.33% maximum allowed):

Less than or equal to 8.33%	255	57%
Greater than 8.33%	179	40%
Greater than 10%	117	26%
Total	451	

Cross slopes on curb ramps (2% maximum allowed):

Less than or equal to 2%	297	66%
Greater than 2%	137	30%
Greater than 3%	65	14%
Total	451	

Side slopes on perpendicular / flared curb ramps (10% maximum allowed)

Less than or equal to 10%	242	54%
Greater than 10%	192	43%
Greater than 12%	104	23%
Total	451	

Widths of curb ramps (48" minimum preferred)

Less than or equal to 36"	9	2%
Less than 48"	28	6%
Greater or Equal to 48"	415	92%
Total	451	

Beveled lip height on curb ramps (no lip preferred, 1/2" max.)

Lip Height	Count	%
No response	5	1%
0	223	49%
0.05	7	2%
0.25	88	20%
0.5	69	15%
0.75	20	4%
1	27	6%
1.25	2	0%
1.5	1	0%
2	8	2%
3	1	0%
Total	451	

Grooved borders on curb ramps (12" grooved border preferred)

Curb ramps with grooved border: 56%
 Curb ramps without grooved border: 44%

Curb ramps with top landing for perpendicular / flared curb ramps, where top landing is required (48" minimum)

Greater than or equal to 48": 47%
 Less than 48": 53%

Curb ramps with truncated domes

Without truncated domes: 94%
 With truncated domes: 6%

Crosswalk Statistics

Number of Crosswalks Surveyed **167**

Types of intersections with crosswalks:

Traffic Control	Count	%
Traffic Signals	105	63%
No Control	22	13%
4-Way Stop	3	2%
3-Way Stop	14	8%
2-Way Stop	11	7%
1-Way Stop	12	7%
Total	167	

Types of crosswalks:

Crosswalk Type	Count	%
Yellow Lines; Ladder Pattern	11	7%
Yellow Lines, parallel	31	19%
White Lines; Ladder Pattern	1	1%
White Lines, parallel	104	62%
Other (diagonal stripes)	20	12%
Total	167	

Width of crosswalks (96" minimum required)

Greater than or equal to 96":	72%
Less than 96":	28%

Number of crosswalks with crooked alignment:

Without crooked alignment:	96%
With crooked alignment:	4%
With tactile guidestrips installed (if crooked alignment):	0%

Pedestrian Signal Statistics

Number of Pedestrian Signals Surveyed **270**

Signalized intersections with accessible pedestrian signals: 11.0%
(where pedestrian signals are present)

Push Button Type	Count	%
Other	32	12%
Visual	208	77%
Visual and Audible	30	11%
Total	270	

Pedestrian signal push button sizes (2" preferred)

With ½" diameter push buttons:	77.0%
With 2" diameter push buttons:	23.0%

Push button heights (48" preferred, 54" maximum)

Less than or equal to 48" height:	84%
Between 48" and 54" height:	15%
Greater than 54" height:	1%

Roadway / Sidewalk Survey Statistics

Total miles of roadway: 72 miles approx.

Total number of roadway segments: 578

Roadway lane configurations

Lane Config.	Total	%
Center Turning Lane	44	8%
Divided	57	10%
Undivided	477	83%
Total	578	

Number of lanes on roadways

Lanes	Total	%
2	474	82%
4	67	12%
5	5	1%
6	32	6%
Total	578	

Percentage of sidewalk coverage,

Sidewalk %	Total	%
0	100	15%
25	7	1%
50	6	1%
75	10	2%
100	538	81%

Average sidewalk width, when present: 4.3 ft.

Sidewalk condition, when present:

Sidewalk Condition	Total	%
1 worse	18	3%
2	14	2%
3	504	87%
4	21	4%
5 Best	17	3%
No Data	5	1%

Number of fixed obstructions (reducing width to less than 48") along sidewalk

Fixed Obstruction	Total	%
0	329	73
1	98	22
2	12	3
3	4	1
4	5	1
5	1	0
7	1	0
Total	450	100%

Number of non-fixed obstructions (reducing width to less than 48") along sidewalk

Non Fixed Obstruction	Total	%
0	312	66
1	125	27
2	24	5
3	3	1
4	6	1
9	1	0
Total	471	100%

Percentage of sidewalks segments with level changes > 1/2"

No level changes: 51%
 1 or more level changes: 49%

Types of curb along roadway segments

Rolled curb: 78%
 Vertical curb: 16%
 No curb (open shoulder): 6%

Percentage of shoulder types, where no curb or sidewalk is present

Shoulder	Count
Ditch or Canal	13
Flat	38
Swale	17

Percentage of roadway segments with parking allowed

Parking allowed: 72%
 No parking: 28%

Type of parking (where allowed)

Parallel: 99.3%
 Angled/Diagonal: 0.7%

Percentage of occupied parking, where parking is allowed

Occupied %	%
0	67%
25	26%
50	4%
75	1%
100	1%

Total number of transit stops: 78

Transit Stop	Count
Bus	77
Light Rail	1
None	1071

Number of transit stops with cross-slope pad > 3%: 32

Number of bus shelters: 6

Section 4.6: ADA Public Rights-of-Way Database Preparation and Contents

All survey findings are contained in a Microsoft Access database. The database is designed to be user-friendly, with interactive screens available to access the summary report and reports for each individual intersection or roadway segment. When the database is opened, a "welcome" screen guides the user through a series of buttons, which access the next layer of screens. An "Intersections" or "Roadway" button opens a search screen for finding data for each particular intersection or roadway segment. Data for a specific intersection or roadway segment may be found by either finding a street name or by selecting the intersection ID number. A series of one-page reports are available through buttons on the screen.



It should be noted that for those experienced in using and programming Microsoft Access, all data stored in tables and all queries, forms, and reports that manage the presentation of the data are available by opening the "database window". Nevertheless, for those inexperienced in using Access, it should be noted that such usage is not recommended, since data can be easily erased or altered if incorrect procedures are used.