

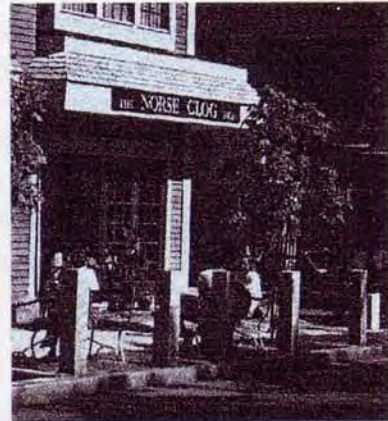
City of Fort Collins

Pedestrian Plan

Prepared by:
Balloffet and Associates, Inc.

with
Shapins Associates
Zimmer-Gunsul-Frasca

August 6, 1996



August 6, 1996

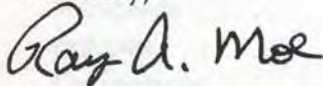
Kathleen Reavis
Transportation Planner II
Transportation Services
City of Fort Collins
210 East Olive
Fort Collins, Colorado 80522

Dear Ms. Reavis:

On behalf of Balloffet and Associates, Shapins Associates, and Zimmer-Gunsul-Frasca, it is with extreme pleasure that I submit the City of Fort Collins Pedestrian Plan. Over the past five months, you and members of City staff, the Pedestrian Plan Focus Group, Transportation Board, Planning Zoning Board, Growth Management Committee, and City Council have provided both leadership and dedication in the preparation of this Pedestrian Plan to make the City of Fort Collins a "Walkable City." I would like to personally compliment all the citizens of Fort Collins who attended the various workshops, took time to listen to what we were doing, and give us their opinions. This plan could not have been prepared without you all.

We believe that this Pedestrian Plan is an integral part of the City Plan. My hope is that this plan sparks interest and meaningful changes for the pedestrian in Fort Collins.

Sincerely,



Ray A. Moe
Director of Transportation Services

RAM/lkw

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Across the nation for the past fifty years, vehicular facilities have been improved while the needs of pedestrians have been largely ignored, and in many cases, eroded. Fort Collins is one of a handful of cities that not only recognizes the value to its community of restoring equity to those on foot, but is also preparing to bring about necessary changes and make substantial investments to make walking a viable and attractive mode of travel. There is no more farsighted solution to congestion than the conversion of vehicle trips to walking trips, a strategy for which is presented in this plan.

The Fort Collins Pedestrian Plan presents pedestrian issues and proposed solutions to existing and future problems besetting pedestrians. The majority of issues facing pedestrians in Fort Collins today are similar to those facing pedestrians throughout the Northern Front Range, Colorado, and the nation. Pedestrian issues pertain to design, implementation, traffic flow, and a lack of adequate and safe facilities for pedestrian travel.

Through meetings with the Pedestrian Focus Group, the Fort Collins Transportation Board, Street Standards Committee, attendance at numerous workshops and outreaches, national research, city staff interviews, and City Plan and Master Transportation Plan meetings, the culmination of this plan includes five action items to successfully create a walkable city. The Pedestrian Plan also includes a chapter on Pedestrian Plan Visions to complement the City Plan Process. The five action items are as follows:

Approve pedestrian level of service (LOS) measurements and target pedestrian LOS standards by development area within the city. The proposed pedestrian LOS measurements did not previously exist and were developed specifically for the City of Fort Collins. There are five LOS measures established, including:

**Number 1:
LOS
Measurements
and Standards**

- **Directness.** The direct pedestrian distance to destinations including transit stops, schools, parks, commercial, or activity areas.
- **Continuity.** The completeness of an identifiable sidewalk/walkway system with avoidance of gaps.
- **Street Crossings.** LOS definitions that address street crossing elements such as number of lanes to cross, signal indication, crosswalks, lighting, median type and width, visibility, corner ramps, and pedestrian signal phasing.
- **Visual Interest and Amenity.** Elements that define an aesthetically pleasing and functional pedestrian environment to promote pedestrianization.
- **Security.** Elements that define a sense of security, both through visual line of sight with others and separation from vehicles.

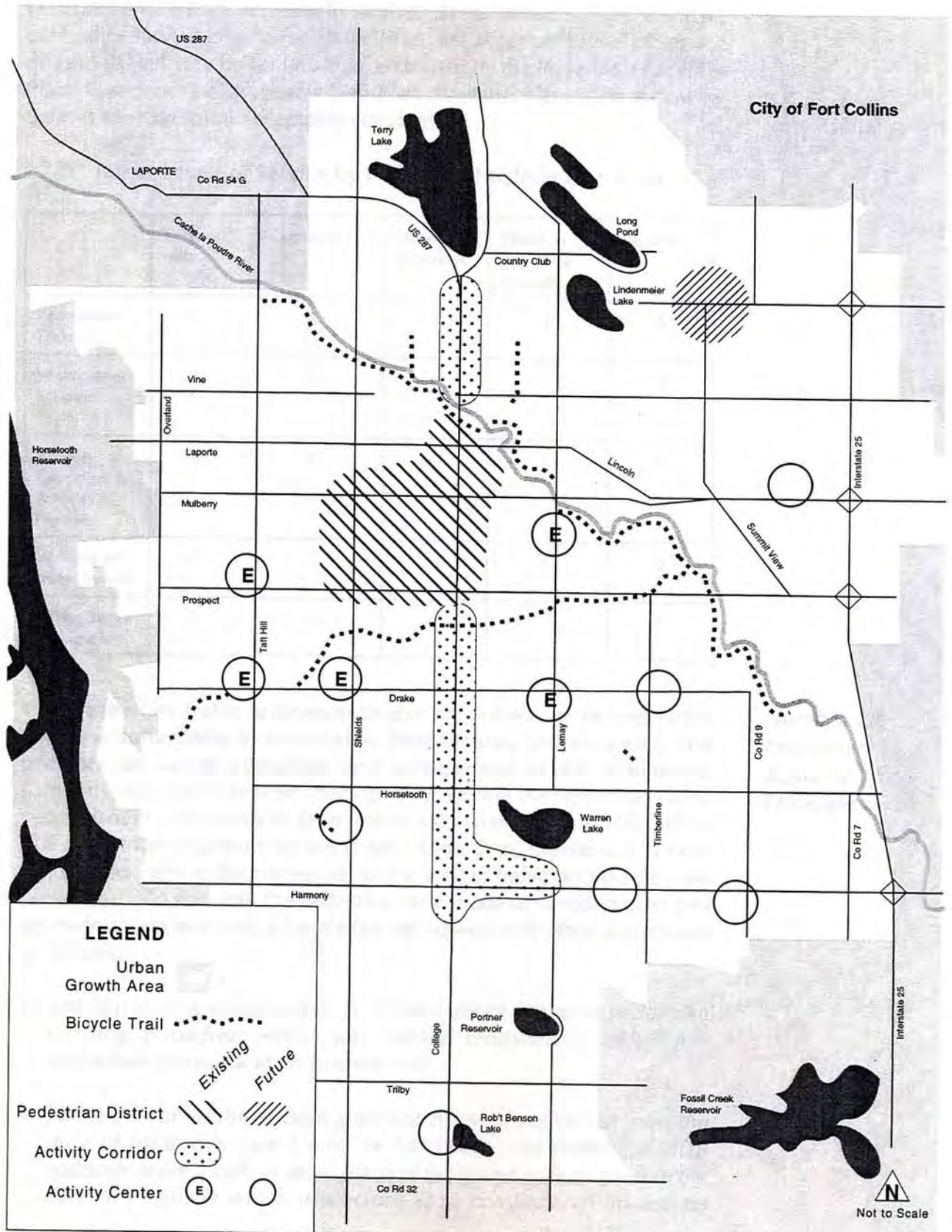
Fort Collins Pedestrian Levels of Service

	A	B	C	D	E	F
Directness	Excellent and direct connectivity through full utilization of urban space, streets, transit, activity centers with clear linear visual statements. (A/M Ratio < 1.2)*	Excellent and direct connectivity with clear linear and visual connection to transit facilities, streets and activities. (A/M Ratio 1.2 to 1.4)*	Minimum acceptable directness and connectivity standard. Perceptions and urban space become less coherent with the beginnings of discomfort with visual clarity and lack of linearity. (A/M Ratio 1.4 to 1.6)*	Increasing lack of directness, connectivity and linearity with incoherent and confusing direction and visual connection to pedestrian destinations. (A/M Ratio 1.6 to 1.8)*	Poor directness and connectivity. Pedestrians perception of a linear connection to desired destination falters and serves only the person with no other choice. (A/M Ratio 1.8 to 2.0)*	No directness or connectivity. Total pedestrian disorientation, no linearity and confusing (A/M Ratio > 2.0)*
Continuity	Pedestrian sidewalk appears as a single entity with a major activity area or public open space.	Continuous stretches of sidewalks which are physically separated by a landscaped parkway.	Continuous stretches of sidewalks which may have variable widths, with and without landscaped parkways.	Pedestrian corridors are not well connected with several breaches in the pedestrian network.	Significant breaks in continuity.	Complete breakdown in pedestrian traffic flow as each pedestrian selects a different route as no pedestrian network exists.
Signals**	3 or fewer lanes to cross; signal has clear vehicular and pedestrian indications, well marked crosswalks: good lighting levels; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	4 or 5 lanes to cross; signal has clear vehicular and pedestrian indications, well marked crosswalks: good lighting levels; pedestrian refuge area: raised medians at least 6' wide with low plantings or features; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 2 elements of A	6 or more lanes to cross; signal has clear vehicular and pedestrian indications, well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 4 elements of A Missing 2 elements of B	Missing 5 elements of A Missing 4 elements of B Missing 2 elements of C	Missing 6 elements of A Missing 5 elements of B Missing 4 elements of C	Missing 7 elements of A Missing 6 elements of B Missing 5 elements of C
Unsignalized, crossing the major street***	3 or fewer lanes to cross; Well-marked crosswalks; good lighting levels; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	4 or 5 lanes to cross; Well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 1 element of A	6 or more lanes to cross; Well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 2 elements of A Missing 1 element of B	Missing 3 elements of A Missing 2 elements of B Missing 1 element of C	Missing 4 elements of A Missing 3 elements of B Missing 2 elements of C	Missing 5 elements of A Missing 4 elements of B Missing 3 elements of C
Unsignalized crossing the minor street***	Well-marked crosswalks; good lighting levels; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	Missing 1 element of A	Missing 2 elements of A	Missing 3 elements of A	Missing 4 elements of A	Missing 5 elements of A
Mid-block major street crossing***	3 or fewer lanes to cross; amenities, signing and sidewalk and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. well marked crosswalks; good lighting levels; standard curb ramps.	4 or 5 lanes to cross; Raised median at least 10' wide with low plantings or features; amenities, signing and sidewalk and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. well marked crosswalks; good lighting levels; standard curb ramps. Missing 1 element of A	6 or more lanes to cross; Raised median at least 10' wide with low plantings or features; amenities, signing and sidewalk and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. well marked crosswalks; good lighting levels; standard curb ramps. Missing 2 elements of A Missing 1 element of B	Missing 3 elements of A Missing 2 elements of B Missing 1 element of C	Missing 4 elements of A Missing 3 elements of B Missing 2 elements of C	Missing 5 elements of A Missing 4 elements of B Missing 3 elements of C
Visual Interest and Amenity	Visually appealing and compatible with local architecture. Generous sidewalk width, active building frontages, pedestrian lighting, street trees and quality street furniture.	Generous sidewalks, visual clarity, some street furniture and landscaping, no blank street walls.	Functionally operational with less importance to visual interest or amenity.	Design ignores pedestrian with negative mental image.	Comfort and convenience non existent, design has overlooked needs of users.	Total discomfort and intimidation.
Security	Sense of security enhanced by presence of other people using sidewalks and overlooking them from adjacent buildings. Good lighting and clear sight lines.	Good lighting levels and unobstructed lines of sight.	Unobstructed lines of sight.	Sidewalk configuration and parked cars may inhibit vigilance from the street.	Major breaches in pedestrian visibility from street, adjacent land uses and activities.	Streetscape is pedestrian intolerant.

* A/M Ratio: Actual distance between pedestrian origin/destination divided by minimum distance defined by a firth angle grid street system.
** A signalized intersection LOS will go up one level of service with a dedicated pedestrian signal phase and/or a colored or textured crosswalk.
*** Unsignalized crossing at intersection of major street (minor arterial to major arterial) and minor street (local, connector and collector).

Executive Summary

Pedestrian Facilities Plan



Level of Service Requirements By Activity Area. Whereas there is one set of level of service criteria for all facilities, the acceptable level of service thresholds will vary by activity area as defined by the Pedestrian Facilities Plan, based on the proposed City Plan Structure Plan. The following defines the minimum acceptable standards.

Target Levels of Service by Pedestrian Facilities Plan Area

	Direct- ness	Continuity	Street Crossings	Visual Interest & Amenity	Security
Pedestrian District	A	A	B	A	B
Walking to Schools/ Parks	B	B	B	C	B
Activity Corridors & Activity Centers	B	B	C	B	B
Walking to/ from Transit	B	C	C	C	B
Other Areas within City	C	C	C	C	C

Change the City traffic ordinances to give right-of-way to the pedestrian over the automobile at crosswalks, intersections, and driveways and promote an active education and enforcement of this ordinance. Currently, state and city ordinances give the vehicle the right-of-way over pedestrians at a crosswalk or at an intersection without a crosswalk unless the pedestrian is already in the street. Even then, the vehicle is only required to yield to the pedestrian in the lane of traffic occupied by the pedestrian. To promote the pedestrian as a mode of transportation and promote access to transit, a pedestrian right-of-way ordinance is proposed as follows:

- *The driver of a vehicle shall yield the right-of way to a pedestrian crossing a roadway within any marked crosswalk or within any unmarked crosswalk at an intersection.*
- *The provision of this section shall not relieve a pedestrian from the duty of using due care for his or her safety. No pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close as to constitute an immediate*

Number 2: Pedestrian Right- of-Way Ordinances

hazard. No pedestrian shall unnecessarily stop or delay traffic while in a marked or unmarked crosswalk.

- The above provision shall not relieve a driver of a vehicle from the duty of exercising due care for the safety of any pedestrian within any marked crosswalk or within any unmarked crosswalk at an intersection.*
- The driver of any motor vehicle, prior to driving over or upon any sidewalk, shall yield the right-of-way to any approaching pedestrian.*

Education and enforcement must complement the change in ordinance. It is therefore proposed that the city develop an active education and enforcement program that could include the provision of signs at the entrance to the city that state "Fort Collins: The Walkable City. Where the Pedestrian Has the Right-Of-Way."

Require that all new developments conduct a Traffic Impact Analysis (TIA) that addresses pedestrian problems and mitigation. As part of the development review process, proposed developments are currently required to prepare a traffic impact analysis that addresses projected vehicular traffic impacts on the city's arterial street system and identifies mitigation to offset project impacts. Pedestrian analysis has not only not been required, but the proposed mitigation often led to a further degradation of the pedestrian environment through more vehicles and additional lanes to cross.

Number 3: Pedestrian Traffic Impact Analysis

It is therefore proposed that in order to improve pedestrian mobility, a pedestrian impact analysis be conducted for all development proposals. The following defines the topics to be included in the pedestrian TIA.

- Existing Conditions.** Address the pedestrian network, including a pedestrian LOS within the immediate study area, with routes to key destinations such as schools, parks, transit stops, activity areas, major centers of employment, and other significant destinations.
- Pedestrian Network Development Proposal.** Discuss the proposed development's pedestrian network including types of sidewalks (attached/detached), pathways, and connections to local internal and perimeter destinations.
- Project Pedestrian Future Conditions.** Analyze the impact of the proposed development and evaluate the resulting pedestrian LOS.

- **Recommended Mitigation.** Identify and recommend proposed mitigation to achieve acceptable pedestrian LOS.

Approve revised sidewalk, corner ramps, and other miscellaneous standards and policies that will elevate the pedestrian as a mode of transportation. The city has recently approved revised street standards that reflect the input from the Pedestrian Plan and provide for an improved pedestrian environment. In addition to the sidewalk/street standards, the following standards and policies are proposed.

Number 4: Sidewalks, Corner Ramps, and Stop Bars

Corner Ramps. To promote directness and continuity in our pedestrian sidewalks through the construction of the current city standard trough ramp design, the curb radius should be limited to 20 feet where possible. In addition to accommodating the design, the reduced curb radius will facilitate the trough ramp design and:

- Slow down turning vehicles.
- Place the pedestrian closer to the intersection and increase visibility.
- Reduce the width of the street the pedestrian must cross.
- The trough ramps tell the driver where the pedestrian is heading.

Stop Bars at Signalized Intersections. Place an 18-inch stop bar prior to all crosswalks located at signalized or stop-controlled intersections.

Approve an implementation and funding program to successfully achieve the vision of Fort Collins as “The Walkable City.” Currently the budget for pedestrian improvements is approximately \$1,250,000 to \$1,500,000 out of a \$23 to \$28 million total transportation budget, or 5 percent. Based on the recently completed origin-destinations survey for Fort Collins, the pedestrian accounts for 7 percent of all trips. The Transportation Demand Management Plan targets pedestrians to account for 11 percent of total trips.

Number 5: Funding and Prioritization

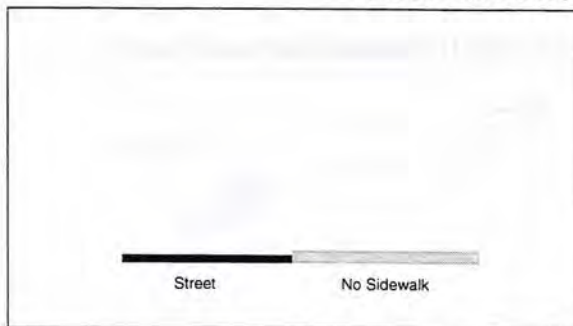
The Pedestrian Plan proposes an increase in the pedestrian for two areas. The first is an increase in the Transportation Services budget from \$120,000 to \$380,000. This would equate to a \$50,000 increase for neighborhood safety, a \$10,000 increase for sidewalk snow removal, and a \$200,000 increase for placing stop bars at crosswalks (\$100,000 is a one-time stop sign replacement program).

The second area is to increase the sidewalk program from \$400,000 to \$1,200,000 which would be used for providing new pedestrian linkages and sidewalk facilities that are lacking in Fort Collins.

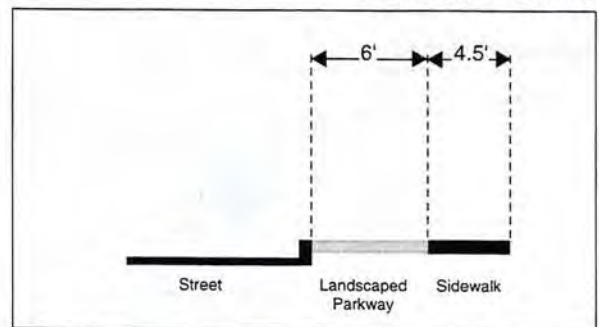
Executive Summary

Sidewalk Standards

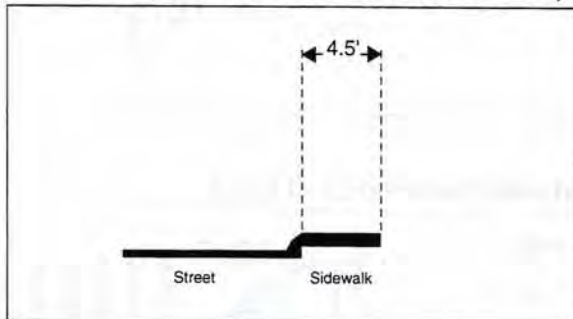
Rural Residential



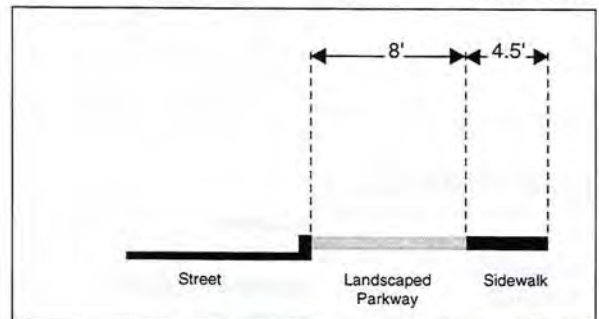
Residential Streets



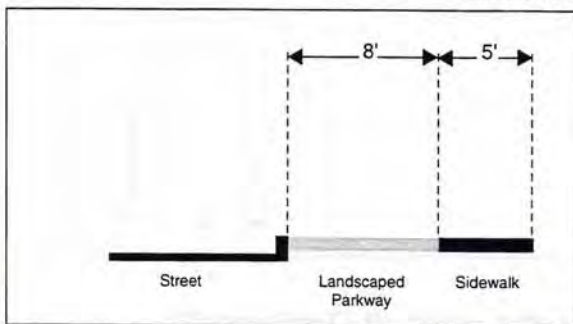
36' Residential (Attached, Infill Only)



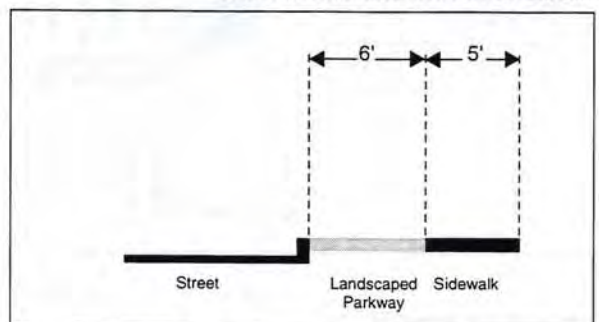
Connector



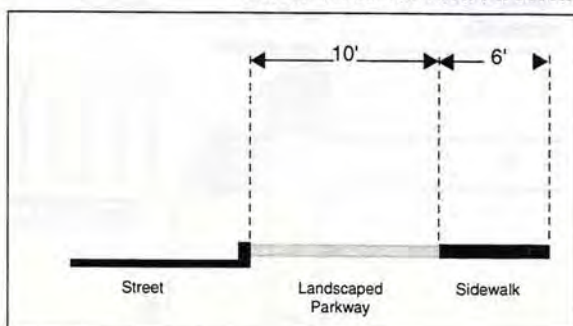
Collector



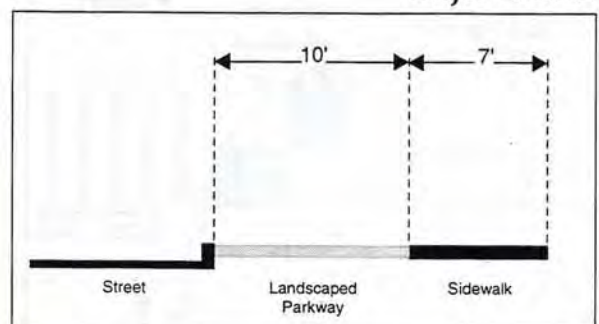
Industrial/Commercial Local



Minor Arterial and Arterial



Major Arterial

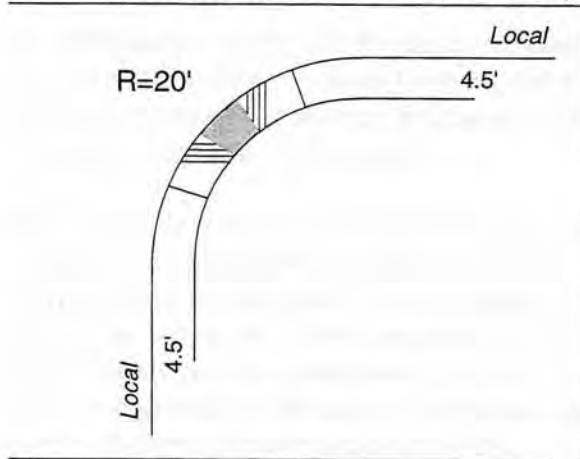


*Note: Sidewalk widths shown are minimum acceptable dimensions.
These may need to be expanded within and leading to activity areas.*

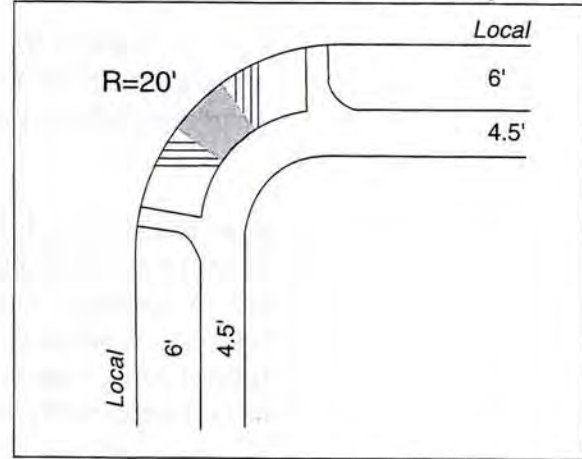
Executive Summary

Corner Ramps

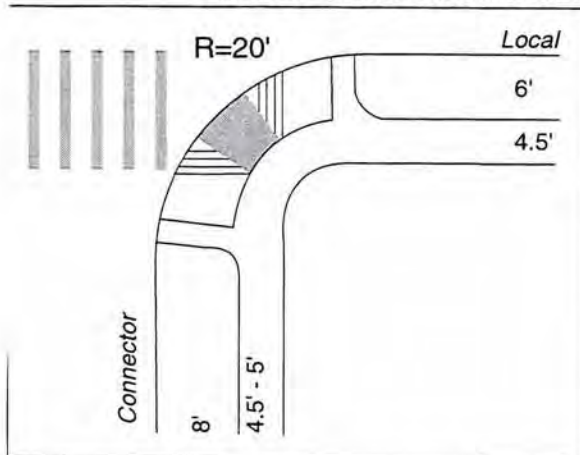
Local: Attached Sidewalk (Infill Only)



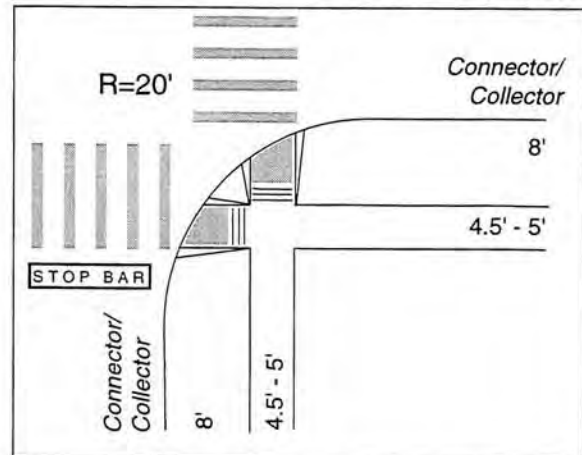
Local: Separated



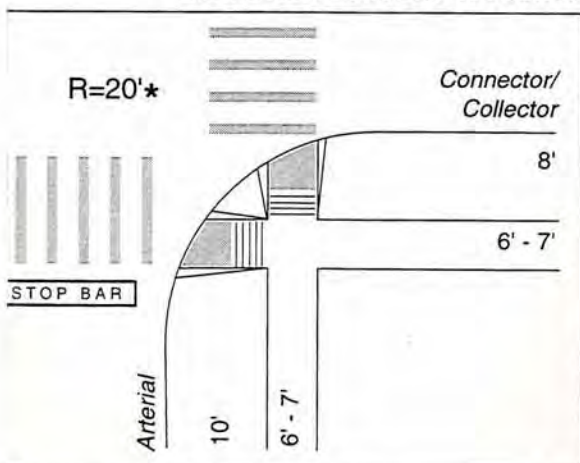
Local to Connector/Collector



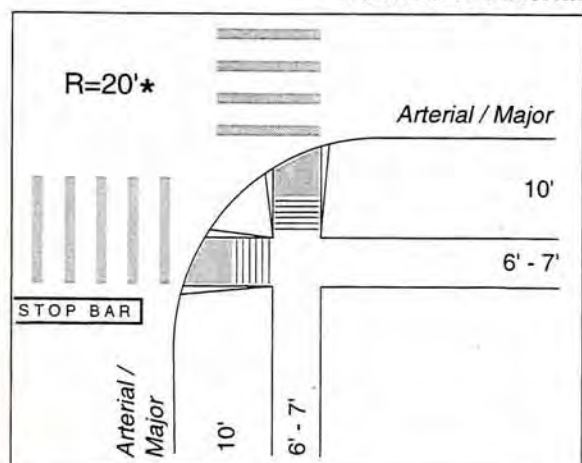
Collector/Collector



Connector/Collector to Arterial



Arterial to Arterial



* Where possible

The implementation of improvements will be based on a two-tiered prioritization program, based first on the Pedestrian Facilities Plan and second on specific location needs. The area prioritization is as follows:

- Pedestrian District and Routes to Schools/Parks - 50 percent
- Activity Corridors, Activity Centers, and Routes to Transit - 40 percent.
- Other areas within the city, education, encouragement, and implementation programs - 10 percent.

The above actions are just the first steps to elevate the pedestrian as a mode of transportation, capping the problem, and retrofitting the City of Fort Collins to become "The Walkable City." Due diligence in the implementation of these programs will require modifications and refinements over the next twenty years. A recommended place to start is with approval of the above five action items and implementation of some strategic demonstration projects.

The pedestrian is an integral part of the Fort Collins transportation environment. As the city's population grows, a pedestrian network that creates a safe and efficient environment for those on foot becomes increasingly important. Providing high quality pedestrian facilities both for local trips and for access to transit facilities is critical. Combined with investments in public transportation and associated pricing policies, support for non-motorized modes could aid long-term congestion relief and benefit community livability.

Investments in pedestrian facilities and encouragement of pedestrian-friendly development should accompany changes in local zoning codes, traffic laws, site planning requirements, and street design standards.

The City of Fort Collins is a forerunner in the development of a pedestrian plan. This plan enhances the walkability of Fort Collins consistent with the vision of the City Plan and Master Transportation Plan. Within this context, a fresh perspective on integrating walking in the transportation planning process has been taken.

The Pedestrian Plan is but one of many planning elements being prepared to help guide Fort Collins' growth from a city of 100,000 to 150,000 by the year 2015. The Pedestrian Plan is integral to the Master Transportation Plan, which in turn is integral to the City Plan.

To accommodate a fifty percent increase in population over the next twenty years, the city has recognized the need for preparing a City Plan that sets the physical and policy framework on how to accommodate growth. The physical framework is defined by the structure plan, which identifies and distributes future development within the city. The vision is a compact, walkable, multi-modal city. Specific policy plans define critical elements of the City Plan. These plans include:

City Plan

- Affordable Housing Plan
- City of Fort Collins Consolidated Plan
- Framework for Environmental Action
- Historic Resources Preservation Plan
- Natural Areas Policy Plan
- Parks and Recreation Master Policy Plan
- Master Transportation Plan

The successful future of Fort Collins will rely on a sound Master Transportation Plan which addresses all transportation modes. The Fort Collins Pedestrian plan is one of seven elements of the Master Transportation Plan for the City of Fort Collins. Master Transportation Plan elements include:

- Master Street Plan
- Bicycle Program Plan
- Transit Development Plan
- Parking Plan
- Congestion Management Plan
- Transportation Demand Management Plan
- Pedestrian Plan

The objective of the Master Transportation Plan is to seek changes in transportation planning and implementation within the City of Fort Collins through a policy and standards framework which defines a balanced transportation system plan for all modes, not just the automobile. Other components of the Master Transportation Plan include the development of Level of Service Standards for all modes and updates to the City's development guidelines and street standards.

A major theme of the proposed City Plan is "Fort Collins: The Walkable City." Whereas the City Plan states the vision of how the city should develop as a viable pedestrian environment, the Pedestrian Plan defines specific standards, policies, and ordinances for implementation. The standards, policies, and ordinances developed and recommended as part of this plan include:

- Pedestrian Level of Service (LOS) measurements and standards.
- Proposed ordinances to enhance the right-of-way of the pedestrian at crosswalks, intersections, and driveways, with recommendations for education and enforcement.
- Require that all new developments conduct a Traffic Impact Analysis (TIA) that addresses pedestrian problems and mitigation.
- Recommend revised sidewalk, corner ramps, other miscellaneous standards and policies, which will elevate the pedestrian as a mode of transportation.
- Develop visually-based pedestrian guidelines.
- Propose a funding level commensurate with current and projected pedestrian activity.
- Develop an implementation plan to prioritize improvements.
- Selection of pedestrian plan demonstration projects.

Master Transportation Plan

Pedestrian Plan

Process

The development of the plan was based on local and national research, input from citizens through public outreach, City Council and Board presentations, and interviews. Elements of the plan process are as follows:

Pedestrian Plan Focus Group. A focus group was assembled and met monthly for five months in preparation of the plan. Focus group members, represented staff, citizens, Poudre School District, CSU Transportation Board, planners, local businesses, and the Senior Advisory Board.

Case Studies. Ten study areas were selected at the outset of this project, representing a wide range of development patterns and potential pedestrian-related problems. As level of service (LOS) standards were developed, these case studies were used to assist in the refinement of the proposed LOS methodology and standards. (Appendix A)

Consultant/Staff Meetings. The consultant and staff met throughout the process in development of the Pedestrian Plan. Staff was involved in the field review of the case studies, development of standards, and overall guidance.

Literature Search. An extensive literature search was conducted with follow-up phone interviews with state, county, and local agencies that have developed pedestrian plans or are actively improving the pedestrian environment. (Appendix B)

City Staff Interviews. Interviews were conducted with City of Fort Collins staff who have some portion of the responsibility in planning, maintaining, or governing the pedestrian environment. (Appendix C)

Public Outreach. Preparation of the Pedestrian Plan also included three public workshops to share information on the work effort to solicit input from the residents of Fort Collins.

Plan Presentations. The plan has or will be presented twice at the City Council, three times at the Transportation Board, twice at the Growth Management Committee, the Planning and Zoning Board, as well as other boards and committees.

This Pedestrian Plan is divided into six chapters. The following is a summary of these chapters.

Organization of the Pedestrian Plan

Introduction. A description of the interrelationship between the Pedestrian Plan with the Master Transportation Plan and the City Plan. This chapter also describes the process for research and public input.

The Problem. A discussion on why people do not walk, why we should promote the pedestrian, and what the key pedestrian problems are in Fort Collins. Key problem areas fell into five categories: directness, continuity, street crossings, visual interest and amenity, and security.

Goals. The presentation of the pedestrian goals as developed and approved by the Pedestrian Plan Focus Group. These goals become the basis for the development of the pedestrian plan visions, standards, and policies.

Visions. This chapter presents the pedestrian plan visions, both in text and pictures, which reflect concepts for the pedestrian environment of directness, continuity, street crossings, visual interest and amenity, and security.

Standards and Policies. Pedestrian level-of-service measurements and standards are presented, along with sidewalks standards, corner ramps, and mid-block crossing standards. Recommendations for revised traffic ordinances are presented, as well as maintenance practices.

Implementation. The closing chapter of the Pedestrian Plan provides recommendations for funding and prioritization of pedestrian improvements with a recommendation for conducting some demonstration projects.

Walking - A Historical Perspective

Walking is the oldest and most basic form of human transportation. It requires no fare, no fuel, no license and no registration. With the exception of devices to assist the mobility-impaired, walking demands no special equipment. Thus, walking is the most affordable and accessible of all modes.

However, throughout the 20th century, we have seen a decline in our pedestrian environment. When we examine the communities built prior to World War II, we recognize a pedestrian fabric: detached sidewalks, narrow streets to cross, entry ways to the front doors of our homes and businesses. Post World War II marked a major change in how Americans live, with an exodus to the suburbs and growing dependancy on the automobile. Developments in the 50s and 60s attempted to incorporate some of the pedestrian amenities, such as detached sidewalks. But the new development became homogeneous and lacked mixed uses and opportunities to walk to shop or work. Through the 70s, 80s, and 90s, the pedestrian environment continued to become less important as planners and engineers emphasized the automobile, adding new roads and travel lanes on existing roads.

The evolution of designing and planning for the automobile was at the expense of the pedestrian. Sidewalks were no longer provided in certain areas or if they were, it was to allow the passengers of the automobile to step out of their car onto a narrow attached sidewalk, rather than onto a landscaped parkway. As vehicle travel lanes were added to streets and automobile traffic volumes and speeds increased, it became increasingly more difficult for the pedestrian.

Past construction of pedestrian facilities, especially prior to the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, was more a function of roadway design standards than the product of a systematic plan for the pedestrian. For example, if the City required neighborhood streets to have sidewalks, and the standard was being enforced, all neighborhood streets were built with sidewalks. If sidewalks were not mandated for neighborhood streets, they were not built, regardless of where the street was within the system relative to schools, transit service, parks, or businesses.

Over the decades with the planning and engineering emphasis toward automobile travel, the art and recognition of the pedestrian as a viable form of transportation became lost. Even minimum standards of how a pedestrian system of sidewalks, paths, and linkages integrate is non-existing in most communities.

Why “think pedestrian”? Nationally, there is a growing sentiment among the public, elected officials, and transportation planners to improve provisions for walking, for transportation, health/fitness, and recreation. This movement both helped direct, and is benefitting from, changes in national transportation philosophy reflected in the ISTEA.

Why Plan for the Pedestrian?

There are a number of reasons to walk in our communities. The results of the Fort Collins Visual Preference Survey (VPS) determined that 70 percent of the participants think that the City should do what it can to reduce dependency upon the private automobile. Following are other reasons we should promote walking as a form of transportation in our community.

Quality of Life. Quality of life is a hard concept to clearly explain. However, it is something that most individuals seek either consciously or in a less-directed fashion. Through the Fort Collins VPS, it is possible to begin to understand this concept. Pedestrian opportunities, pedestrian connections to transit, continued development of street standards that embrace the pedestrian and reduce emphasis on the automobile, and detached sidewalks are but a few pedestrian-related quality of life objectives stated.

Why Promote Walking?

Air Pollution. Walking trips that replace vehicle trips reduce motor vehicle emissions, which are largely responsible for our air quality degradation. It is both a goal of the North Front Range Transportation and Air Quality Management Council and the City of Fort Collins to reduce per capita vehicle miles traveled by 10 percent over the next twenty years to improve air quality. Walking is an essential component in the strategy for achievement of this goal.

Energy. A shift of some short motor vehicle trips to walking can have a impact on our energy usage and reliance on imported oil. The short motor vehicle trip, due to the “cold start,” achieves significantly less miles per gallon than a longer trip.

Noise. Reductions in noise result from decreased auto usage. Thus, any reduction in motor vehicle use that can be achieved through pedestrian trips will be beneficial. Possibly more important is that to create a pedestrian friendly and safe environment, traffic calming techniques need to be implemented that slow traffic and have a corresponding reduction in motor vehicle noise.

Usage. The number one method of human transport in the world is walking. This may seem obvious, but has often been overlooked in the planning and development of our communities. Based on the recent origin-destination survey conducted for the North Front Range, pedestrians account for 7 percent of the total trips, yet account for only 5 percent of the City of Fort Collins' transportation budget. To achieve the Transportation Demand Management (TDM) Plan goals to reduce single occupancy vehicles (SOV) by 10 percent, the percentage of pedestrian travel would need to increase from 7 to 11 percent.

Demographics. Demographics play a role in transportation and pedestrian planning. Children and elderly are more likely to walk for trip purposes. In many cases if adequate provisions for walking are not made, these individuals can become transportation-dependent.

Older adults tend to be over-represented in pedestrian-involved traffic crashes. Nationally the elderly comprise almost one-quarter of pedestrian fatalities while comprising only 13 percent of the total population.

For years, most transportation and land use planning in this country has tended to overlook the needs of children. A major problem citywide is that many children no longer are able to walk to schools and parks, as we have constructed barricades between one residential neighborhood and another. This has resulted in ever-increasing costs in school busing that will be expended forever at taxpayers' expense, due to a simple lack of good planning and development review.

Latent Demand. The fifth annual "State of the Commute" survey in 1993 in Southern California found that twenty-three percent of workers were willing to consider walking to work, which is significantly higher than in previous surveys. Higher percentages of shopping and other local activity trips could be achieved with adequate facilities.

Reduce Motor Vehicle Parking Needs. Vast areas of valuable urban land have been devoted to the storage of automobiles. At \$2,000-\$3,000 per surface space and \$6,000-\$10,000+ for structured space, someone must pay for these spaces. The "free" parking available, for example, at shopping malls is actually reflected in the cost of goods purchased, whether or not a consumer drove to the center. This is, effectively, a subsidy to the motor vehicle mode.

Crash Analysis. One reason to plan for better pedestrian mobility is to reduce the number of traffic crashes involving pedestrians. Although there are many factors contributing to automobile/pedestrian crashes, they can be grouped into two areas: environment and behavior. The environment incorporates the physical design of our pedestrian system. Behaviors include our traffic laws and the education and enforcement of those laws. As an example, at a recent outreach of the Pedestrian Plan at Foothills Fashion Mall, most people we talked with believed that they as pedestrians had the right-of-way when crossing a street at an intersection or a crosswalk. On the contrary, Colorado and Fort Collins traffic law gives the right-of-way to the automobile. At a weight ratio of 3,000-4,000 pounds compared to 150 pounds, the pedestrian clearly is at a disadvantage.

Benefits to the Individual and Family. One major reason why individuals choose to walk is for psychological and physical health. Individuals and families can also save financial resources through reduction in motor vehicle use as well as reduced chauffeuring.

The pedestrian problem today varies widely throughout the City of Fort Collins. Whereas we have one of the more desirable pedestrian environments as exemplified by the Fort Collins Old Town area, it is contrasted by neighborhoods with no sidewalks or barriers that separate a neighborhood from an adjacent school. Defining the greater pedestrian problem was based on four different approaches summarized as follows:

Identifying the Pedestrian Problem

Case Studies. Ten study areas were selected at the outset of this project representing a wide range of development patterns and potential pedestrian-related problems. Consultant and staff conducted a field survey of each study area to determine the types of problems that exist in the city today. These case studies included both old and new residential areas, street crossings, downtown and commercial corridors along College, and barriers to walking. A complete description of the findings from these studies as well as application of the proposed level of service analysis is contained in Appendix A.

Literature Search. An extensive literature search was conducted with follow-up phone interviews with cities and municipalities that have developed pedestrian plans. An annotated bibliography of these plans and their contents is included in Appendix B.

City Staff Interviews. Interviews were conducted with City of Fort Collins staff who have some portion of the responsibility in planning, maintaining, or governing the pedestrian environment. A summary of these interviews regarding their perceptions on the current pedestrian problem is contained in Appendix C.


Observations of National Efforts in Pedestrian Planning

BALLOFFET

- The pedestrian has been neglected for decades.
- Young, old, and disabled are the most vulnerable.
- Funding levels are non-existent or disproportional to other modes.
- Pedestrian and transit use are closely tied.
- Three major pedestrian problems:
 - Continuity: Are there gaps along a route?
 - Directness: Are there connections between destinations?
 - Barriers: Major streets.
- Types of pedestrian areas:
 - Pedestrian Districts
 - City Walkways, Pedestrian Corridors, and Off-Street Paths
 - Local Service Walkways
 - Transit Connections
- There is a need for pedestrian standards and development review of pedestrian facilities.

*Display Board
presented at
Pedestrian Focus
Group Meeting
and Public
Workshops.*

Observations of Pedestrian Planning, Engineering, and Operations in the City of Fort Collins

BALLOFFET 

- Traffic laws do not favor the pedestrian.
Education of the law is lacking.
- Budgets for pedestrian improvements are woefully
inadequate to meet current needs.
- Prioritization of pedestrian districts, corridors,
and areas has been discussed but not identified.
- Planning for the pedestrian has been significantly
overlooked for the past thirty to forty years.
- Inadequate, discontinuous sidewalks and
pedestrian barriers are serious impediments to
pedestrian traffic in this city.
- Development proposals should adhere to
minimum pedestrian standards. Development
review should examine the proposed project,
both on- and off-site.

*Display Board
presented at
Pedestrian Focus
Group Meeting
and Public
Workshops.*

Public Input. A major effort of the determination of the pedestrian problems in Fort Collins was based on listening to the city's residents. This included the development of a Pedestrian Focus Group, public workshops and presentations to Council and Boards. In addition, various organizations, such as the Poudre School District, were interviewed as to what they believe is the pedestrian problem.

There is consistency in the observed pedestrian problems, whether they were identified through field observations, talking with our citizens and staff, or national research. In general, problems can be defined into one of three categories: facility, maintenance, and pedestrian/vehicle traffic laws.

The Problem in Fort Collins

Although there are many different ways to aggregate the pedestrian facility problems, five categories surfaced in the preparation of the Pedestrian Plan: Directness, Continuity, Street Crossings, Visual Interest and Amenity, and Security.

Facility

Directness

Directness is the minimum pedestrian distance to destinations including transit stops, schools, parks, commercial areas, or activity areas. The grid street pattern typifies the ideal system. Problems encountered are summarized as follows:

- Neighborhoods separated from one another and schools. Problems identified included residential areas within a short distance from a school where children will need to be bused forever, as there is not a direct connection.
- Neighborhood street designs that require residents to walk in a long circuitous fashion to reach local retail, an activity, or transit stop.
- Railroad and drainage channels that limit access to proximate commercial activities.
- Office buildings and shopping centers that do not have sidewalk connections to their entryways.
- Walls behind commercial buildings that block pedestrian access to local residents.

Continuity

Continuity is the completeness of the sidewalk/walkway system that avoids gaps. The problem ranges from major areas of the city, both residential and commercial, which do not have any sidewalks, to areas where there are major gaps in the sidewalk system which require pedestrians to cross to the other side or walk out into the street.

Street Crossings

There are basically four types of street crossings. Each has its own inherent problems.

- **Signalized Intersections.** Signalized intersections pose major problems for crossing pedestrians due to high volumes, turning vehicles, vehicles that stop on the crosswalk, a significant number of lanes to cross, signal indication that is difficult to read or understand, lack of visual connection with the automobile, lack of vehicle driver respect, lack of raised median protection, no corner ramps, and no or inconvenient pedestrian buttons.
- **Unsignalized Intersection Crossing the Major Street.** Problems are similar to signalized intersections with even greater concern for the number of lanes to cross, speed of vehicles, and lack of adequately marked crosswalks with good lighting, raised median, visibility, and corner ramps.
- **Unsignalized Intersection Crossing the Minor Street.** The problem at these locations is the vehicle traveling along the arterial turning right or left onto the minor street, while being urged along by a following vehicle.
- **Mid-Block Crossing.** Similar to unsignalized major street crossing, including number of lanes to cross, lack of crosswalk presence, lighting, raised median, and corner ramps.

Visual Interest and Amenity

To promote pedestrian activity and use of transit, the pedestrian system needs to have a basic visual interest with amenity. The attractiveness of the pedestrian network in Fort Collins ranges from visually attractive, active building frontages with environmental enhancements, such as pedestrian street lighting, fountains, and benches, to an experience of discomfort and intimidation, associated with absence of amenities.

Security

Pedestrians require a sense of security, both through visual line of sight with others and separation from vehicles. Areas within the city experience streetscapes that create poor lines of sight from the motorist and surrounding activities and are intimidating. Many of the city's arterials are served with narrow attached sidewalks adjacent to high volume and high speed travel lanes.

Maintenance

The City of Fort Collins, as most cities, has two general maintenance problems: snow removal and sidewalk maintenance. City ordinance requires the adjacent property owner to be responsible for sidewalk snow removal. If the Streets Department receives a complaint that snow is not removed from a sidewalk, Streets takes a proactive role and contacts the property owner or leaves a door hanger describing the property owner's responsibility and need for compliance. Follow-up is conducted to determine compliance. If snow has not been removed, the Streets Department retains a contractor for snow removal and forwards the invoice to the property owner. Streets policy for snow removal from sidewalks is "If we bury it, we uncover it." Therefore, if sidewalks are covered with snow through plowing snow off the streets, Streets will return and remove the snow off of the sidewalks.

The Engineering Department's Pedestrian Accessibility Program includes pedestrian ramp improvements as prescribed by the Americans with Disabilities Act (ADA), repairs of hazardous sidewalks, and construction of missing sidewalks near known high volume locations such as transit connections. Criteria used to evaluate locations include proximity to schools, public facilities, businesses, ADA considerations, and pedestrian volumes. Staff also consults citizens about where there are pedestrian access problems in their neighborhoods. A short list is then developed with candidate projects, and examined in the field for things like right-of-way conflicts, utility conflicts, expense of construction, and other engineering-related issues which may make some sites more effective than others.

A new strategy for this year's program is the addition of a grinding operation. By grinding the irregularities off of sidewalks in the older neighborhoods, there will be an increase in accessibility and an elimination of potential hazards at approximately 100 more locations at a fraction of the cost of removing and replacing sidewalks.

The Pedestrian Accessibility program also includes a 50/50 sidewalk program that assists the property owner in repairing or replacing a hazardous sidewalk. These sidewalks may not be improved because there is no active program, such as the City's "Pothole Patrol," to identify these hazardous areas. Reconstruction of bus stops to ADA-mandated standards are also not being actively pursued due to current funding levels, which were \$391,000 in 1996. Based on preliminary estimates of ADA ramp improvements and completion of critically missing sidewalks, it would take decades at the current funding level to mitigate existing problems.

Pedestrian/ Vehicle Traffic Ordinances

Contrary to popular belief, the pedestrian does not have the right-of-way when approaching a crosswalk or at an intersection that is unmarked. A vehicle is required to slow down or stop if the pedestrian enters the crosswalk after an acceptable gap is identified and the pedestrian begins to cross, but that right-of-way is only established one lane at a time. Pedestrians feel unsafe in crossing our streets, and rightfully so, as the typical automobile driver does not look for the pedestrian. Even at signalized intersections, the typical driver stops on the crosswalk and does not yield to the pedestrian when turning right or left across a crosswalk, even when a pedestrian has the walk light.

Many of the people we talked with believe that there is a growing disregard for pedestrian rights and safety on the part of motorists. Some believe this to be a part of a growing disregard for traffic law in general, possibly due to reduced priority given by the Police Department to traffic enforcement. These problems continue to grow as volumes and speeds increase.

Pedestrian Plan Goals

The Pedestrian Plan Goals were developed from a synthesis of review of the Fort Collins City Plan Community Vision and Goals 2015, examination of Fort Collins pedestrian problems, public workshops, and several months of meetings with the Pedestrian Plan Focus Group. These goals provide a firm foundation upon which to build a "Walkable City." The Pedestrian Plan Goals were the base from which the Pedestrian Level of Service, Visions and Implementation Plan were based. The goals are general in nature and are the basis for recommendations in this report.

- Pedestrian travel will be acknowledged as a viable transportation mode and elevated in importance to be in balance with all other modes.
- Increase pedestrian safety by identifying and correcting potentially dangerous locations with physical improvements.
- Ensure that all pedestrian facilities are designed and built so they can be used by children, mobility impaired, and elderly.
- Provide regular maintenance of all pedestrian facilities, including repair and replacement, snow removal, and sweeping.
- Heighten awareness of professionals (planners, engineers, police, architects, developers, policy makers, and the judicial system) to effectively address pedestrian matters.
- Change local ordinances and codes that will enhance pedestrian safety, develop educational programs, and increase enforcement.
- Promote the mix of land uses and activities that will maximize the potential for pedestrianization.
- Develop pedestrian standards that promote and direct safe pedestrian linkages to activities and transit.
- Prioritize pedestrian improvements that serve children, mobility impaired, and elderly. Prioritize pedestrian improvements to schools, parks, transit, and activity areas.
- Provide funding for pedestrian improvements at a level balanced with all other transportation modes.
- Implementation of the Pedestrian Plan shall include continuing outreach to tailor policies and facilities to the pedestrian community.

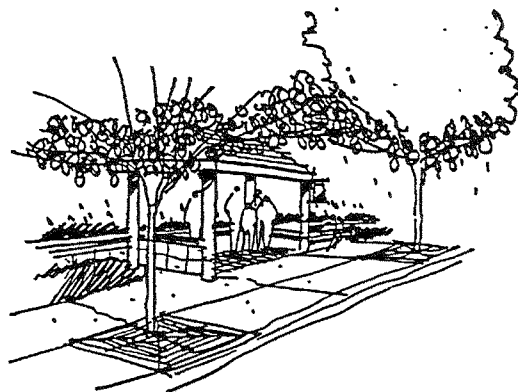
Pedestrian Plan Visions

The City Plan vision is for a walkable city, where pedestrians can easily walk to activity areas, transit stops, schools and parks. Two action items are needed to accomplish this vision. The first is to set forth sound pedestrian principles for new development so as to not perpetuate the problem. The second is to apply these principles to the existing environment and correct existing deficiencies. The purpose of the following section is to present the vision of the five pedestrian principles with words and pictures to show what should be incorporated into the pedestrian environment. These principles are:

- Directness
- Continuity
- Street Crossings
- Visual Interest and Amenity
- Security

Provide and encourage direct pedestrian connections

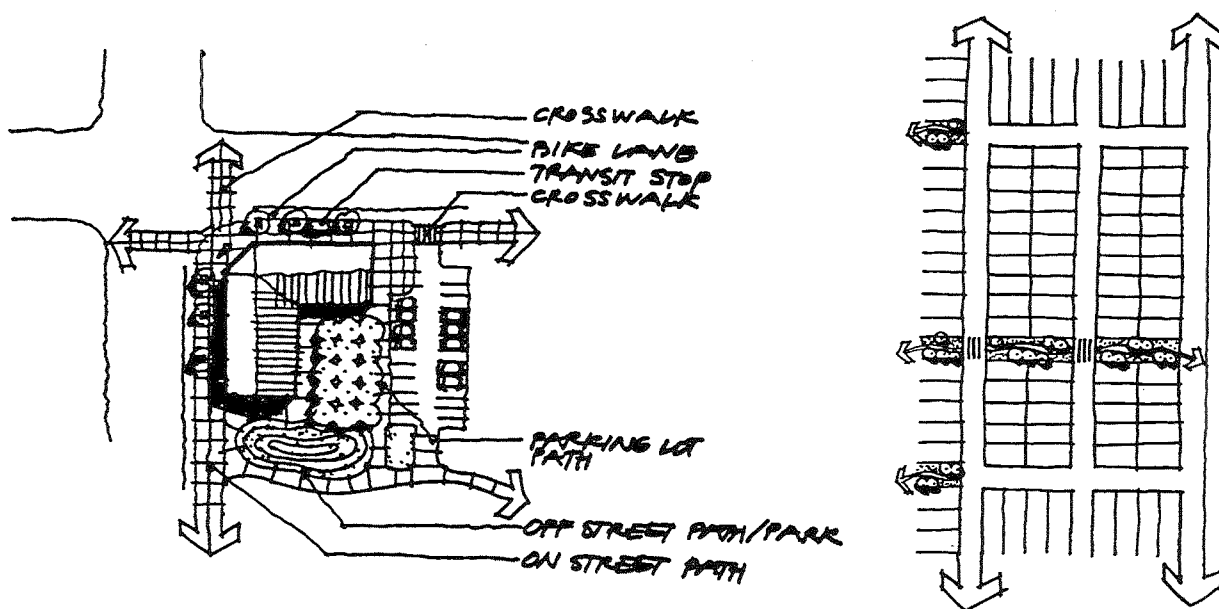
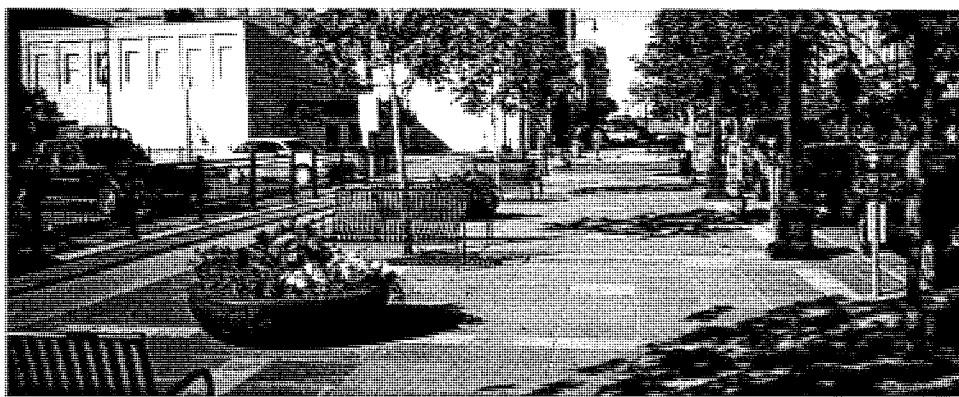
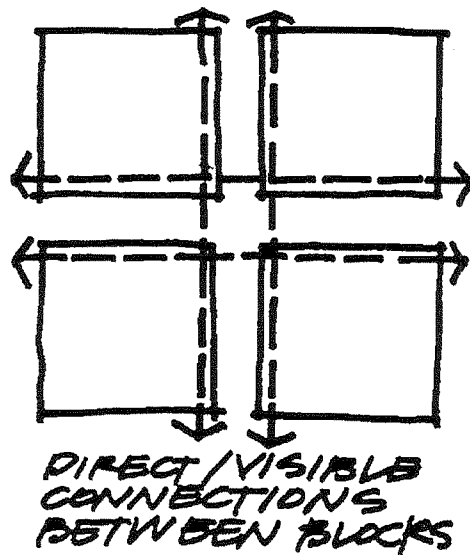
- Provide direct pedestrian connections to transit, schools, activity areas, and public facilities.
- Provide visible connections to key pedestrian destinations. Align and locate buildings, roadways, and open spaces so that pedestrians can see their destination before arriving there.
- Provide clearly marked building entries as viewed from the street. Entries from parking lots should be subordinate to those related to the street. Buildings should be sited in ways to make their entries or intended uses clear to pedestrians.
- The location and pattern of streets, buildings and open spaces must facilitate direct pedestrian access.
- Use light fixtures to provide directional indication for pedestrian traffic.
- Ensure that sidewalk uses, such as outdoor cafes, in high use retail pedestrian settings, are compatible with direct pedestrian access to buildings and other destinations.



Pedestrian Plan Visions

Directness

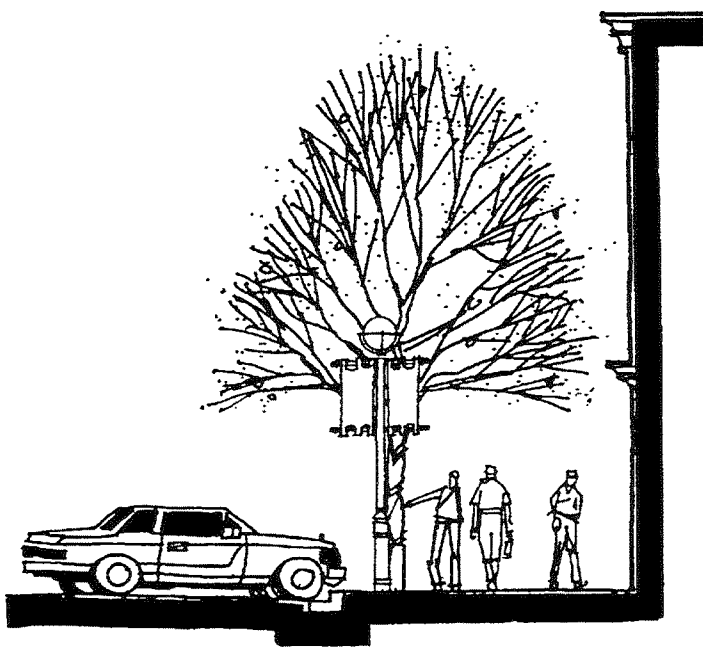
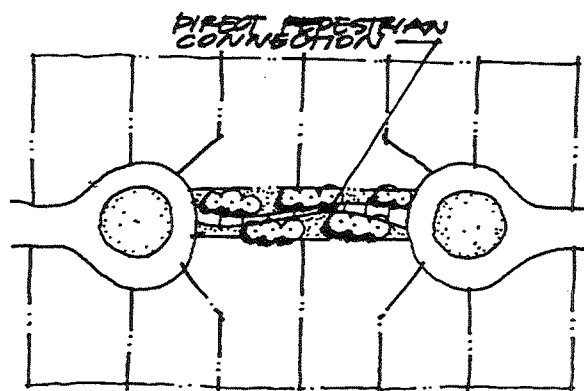
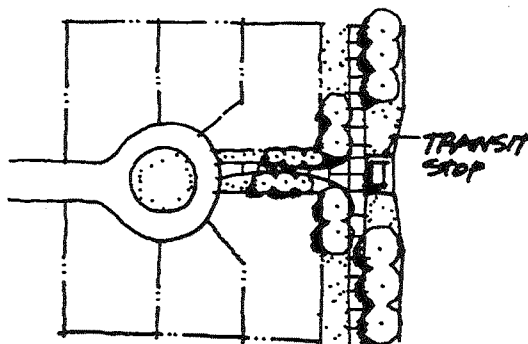
- Avoid barriers which separate commercial developments from residential development and transit.
- Locate buildings near street corners to improve access to bus stop and provide ped/bike connection to neighboring activities.
- Establish appropriate lot patterns which provide direct pedestrian connections from residential areas to schools, parks, and transit.
- Provide direct and visible connection of sidewalks between blocks.



Pedestrian Plan Visions

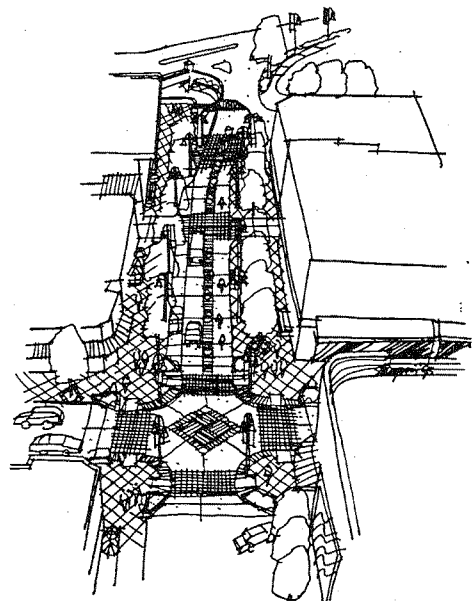
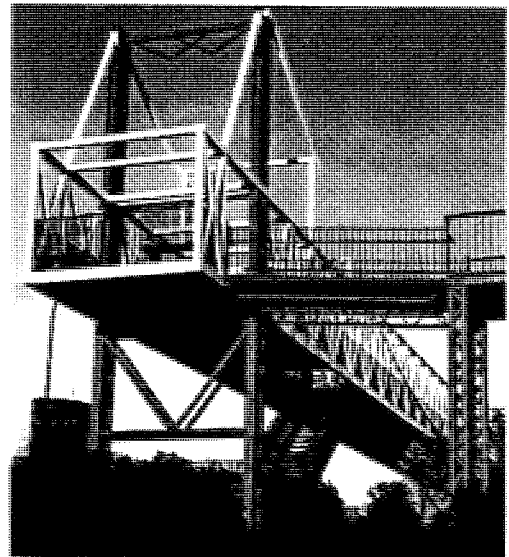
Directness

- Provide direct connection between cul-de-sac and transit.
- Provide direct connection between cul-de-sacs.
- Ensure appropriate width of sidewalks and street crossings to facilitate continuous movement of two people comfortably walking side by side and one to pass.
- Provide clear and direct pedestrian entries from the street, not just from parking areas.
- Minimize and remove physical obstructions/barriers that impede direct pedestrian access. Provide access through walls, fences and other obstructing features and elements.



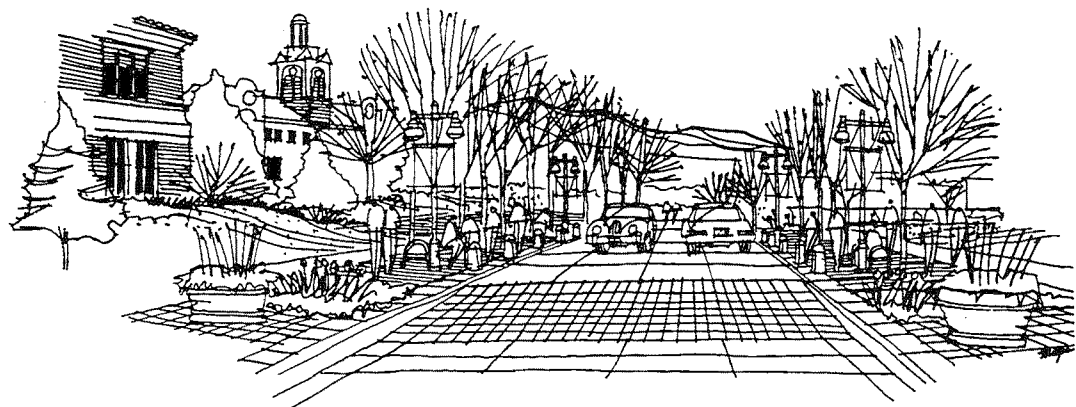
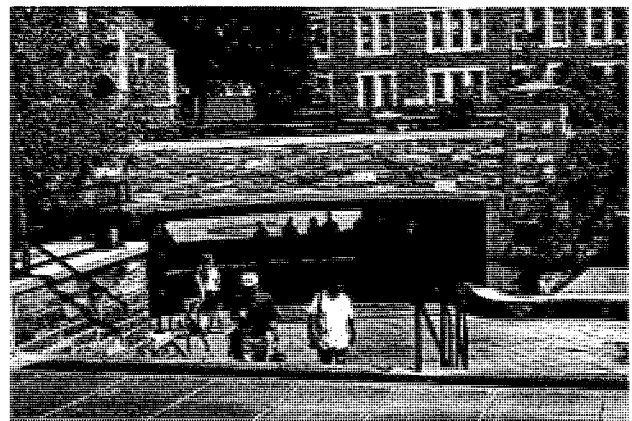
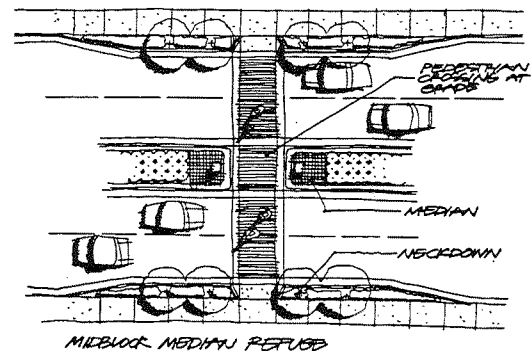
Link schools, neighborhoods, parks, activity centers and other destinations with a continuous pedestrian network

- Provide a continuous and understandable pedestrian network by incorporating the following facilities, features and elements:
 - continuous sidewalks on both sides of the street
 - a continuous alignment of building facades near the sidewalk
 - a consistent park strip between the curb and the sidewalk
 - consistent street trees
- Use pedestrian-scaled furnishings, signs, landscaping, and facilities that appear as unified and themed entities in pedestrian networks, areas, and corridors.
- Ensure that sidewalk cafes and other uses/features of the sidewalk area support rather than obstruct a continuous pedestrian network.
- Provide bridges and crossings over railroads, rivers, drainages, and other features that are major barriers to a continuous pedestrian network. Design these crossings to minimize out of direction travel.



Develop safe, comfortable, and attractive street crossings

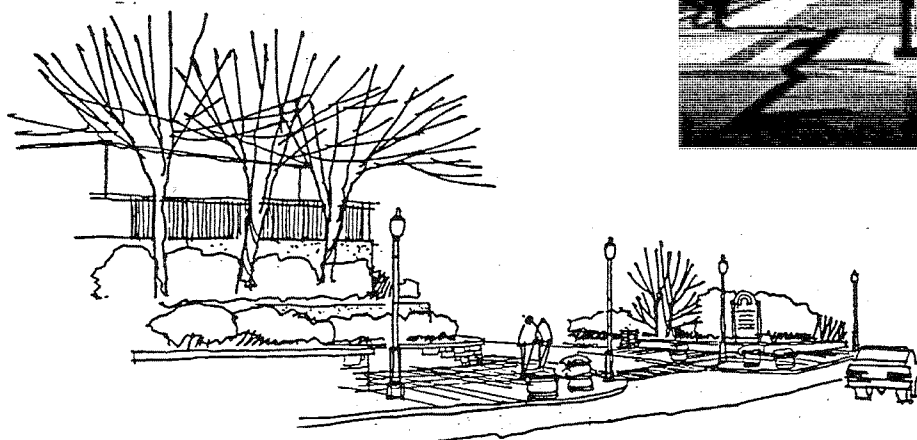
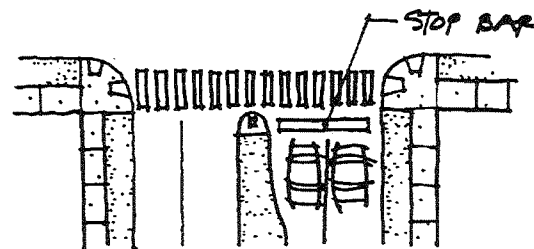
- Develop median refuges to improve the safety and comfort of arterial street crossings.
- Establish standardized street crossing improvements that include crosswalks, lighting, median refuges, corner sidewalk widenings, signs, signals, and landscaping.
- Develop and design crosswalks that:
 - are well-marked and visible to vehicles
 - fit and enhance the local urban design context and character
 - provide for safety for all age / ability groups



Pedestrian Plan Visions

Street Crossings

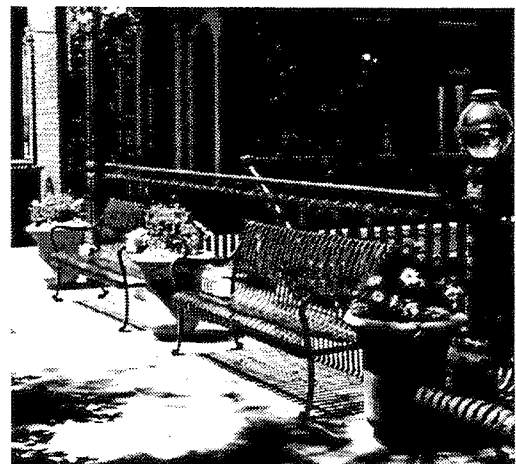
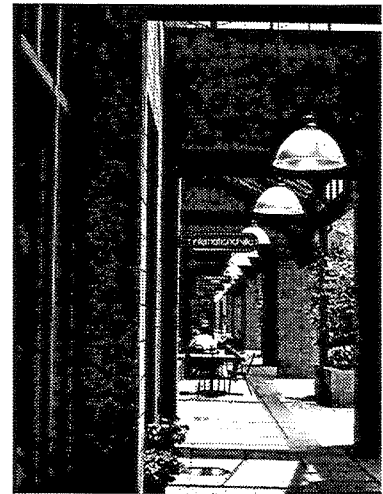
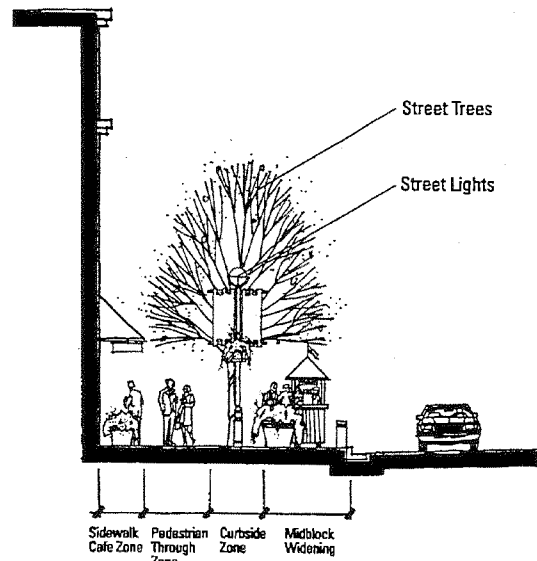
- Develop civic improvements including pedestrian scale elements, landscaping, and sidewalk widenings which improve the visibility and suggestion of pedestrians at street crossings.
- Develop street calming improvements to enhance the safety of street crossings.
- Ensure that signals, signs, and street markings have clear vehicular and pedestrian indications for street crossings.
- Ensure that street crossings are lit to reflect the patterns of use.
- Provide automatic pedestrian phases at high demand intersections and pedestrian buttons at low demand areas.
- Provide for an exclusive pedestrian signal phase to improve safety.
- Install stop bars on all approach legs at signalized intersections.
- Minimize curb radius to:
 - reduce the speed of right turning vehicles
 - reduce the distance for the pedestrian to cross the street
- Locate lighting, signal and signage poles so that they not conflict with safe pedestrian circulation.



Develop comfortable and attractive pedestrian facilities and settings to make an interesting pedestrian network

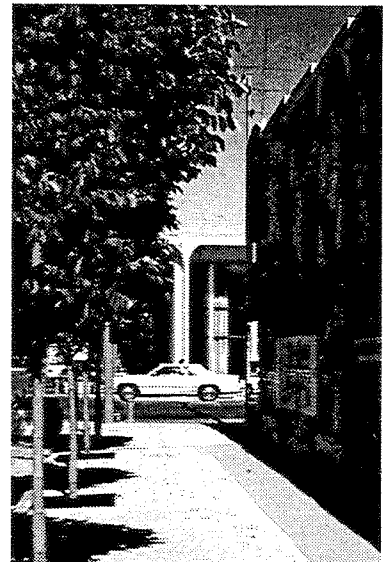
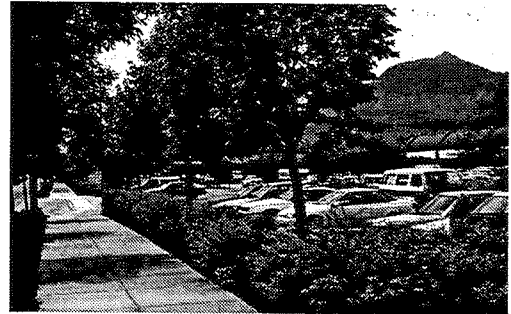
Pedestrian Facilities and Elements

- Provide pedestrian scale improvements that fit the urban context of the area. The color, materials, and form of pedestrian facilities and features should be appropriate to the area where it is located, as well as to the functional unity of the pedestrian network.
- Develop attractive improvements including landscaping, vertical treatments, sidewalk widenings, and furnishings which improve the character and pedestrian scale of the urban environment.
- Incorporate special design features, public art, and site details that can enhance the pedestrian scale of streets and become an urban amenity.
- Develop standardized lighting improvements which enhance the character of the pedestrian environment. Consider the following criteria:
 - varied light spacing and heights to be compatible with site specific issues.
 - poles to incorporate pedestrian scale features such as banners, potted plants, etc.
 - attractive luminaires to provide an organized and unified appearance throughout the pedestrian network.
- Use quality materials and designs which will minimize maintenance needs.
- Pedestrian facilities must be maintained.
- To enhance the character of the pedestrian environment and to encourage pedestrian activities along the sidewalks on key streets and corners, prohibit large surface parking lots in these locations.



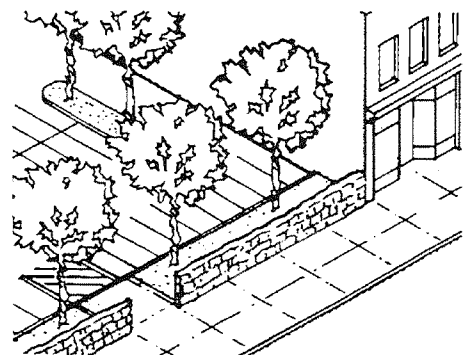
Landscaping

- Develop a continuous edge of deciduous canopy street trees on both sides of the street. Select species which provide shade, shelter and scale for the sidewalk/pedestrian environment, and the continuity for the pedestrian/sidewalk environment.
- Develop attractive landscaping by considering the following criteria:
 - reduce clutter of little plants and disorganized planting
 - establish patterns/spacing of street trees to provide a formal visual rhythm, linear edge and organization of the sidewalk area
 - use a limited range of tree species to provide a unified image and cohesive character for feature corridors and districts
 - use speciality landscaping themes to help distinguish districts
 - use landscaping selectively to soften harsh appearance of some buildings and parking lots at sidewalk edge
- Retaining walls should be of materials which reduce their apparent scale, like brick or stone, or treated architecturally to create an appropriate scale and rhythm. Hanging or climbing vegetation can soften the appearance of retaining walls. High retaining walls should be terraced down and include landscaped setbacks.
- Design attractive urban open spaces to have a distinctive and definite shape, enclosed by buildings on 2-3 sides so it feels like an "outdoor room," which is favored by pedestrians. These must be located in the right places to be useful. Locate at intersections of 2 or more pedestrian routes.
- Screen blank building walls and retaining walls with landscaping, architectural features, or art to enrich the pedestrian environment.
Refer to planting requirements as established by the City Forester.



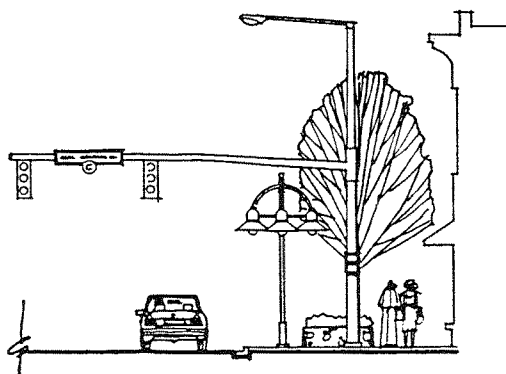
Buildings

- Encourage outdoor cafes and activity areas which provide pedestrian character and human scale to the sidewalk environment.
- Windows and other openings should relieve blank walls, adding visual interest, improving pedestrians' sense of security, and introducing a human scale to building frontages.
- Provide human scale character to the street with appropriate building design and details.
- Incorporate building entry details like porches and recesses, occupied spaces like bay windows and balconies.



Develop secure pedestrian settings by developing a well lit inhabited pedestrian network and by mitigating the impacts of vehicles

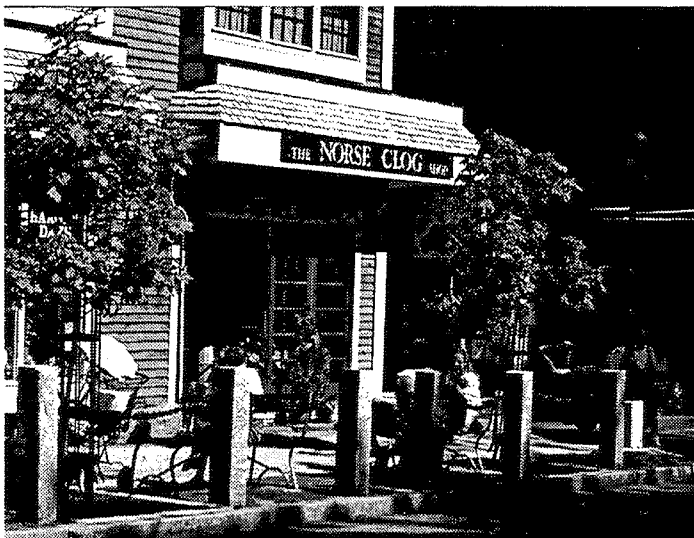
- Streets should appear inhabited to the greatest extent possible. New development should accommodate human activity by providing balconies, terraces, and yards for residents' use and interaction. In mixed use buildings, retail elements like large windows, canopies, and integrated signage add activity by enhancing the shopping experience. Entrances, porches, balconies, decks, and seating should be located to promote pedestrian use of the street edge by providing weather protection, security, and safety.
- Provide clear and direct lines of sight in pedestrian settings to increase feelings of security. Achieve this by minimizing use of shrubs, walls, berms and other vertical features which screen lines of sight to pedestrian facilities.



- Provide general illumination for security and visual safety of pedestrian areas and corridors.
- Use lighting fixtures to identify and highlight key pedestrian facilities and elements such as pedestrian intersections, paths, sidewalks, and entrances, while enhancing safety, and security. Provide a desirable and safe pedestrian environment by decreasing glare associated with tall, high intensity street fixtures. Provide indirect light to the sidewalk by lighting elements in the street environment such as trees, walkways, canopies, and entryways.
- Develop physical buffers / edges between sidewalks and streets / parking lots.
- Avoid over-illumination of pedestrian areas, since these create, by contrast, shadowy areas nearby which may be threatening to pedestrians.



INTERPLAN



Standards, Policies, and Ordinances

In addition to having a vision of Fort Collins as a walkable city as defined in part by pedestrian principles, it is also necessary to have standards, policies, and ordinances to achieve the vision. Standards are minimum requirements for all future developments. Standards are required for future city improvements. Policies are statements of principles and guidelines for achieving the vision. Ordinances are laws that govern the city. Even with these standards and policies, ordinances are required to make a difference and ultimately achieve success.

Standards are requirements for future development. Standards can and have changed. Previously, standards did not require sidewalks in all instances or attached sidewalks were permitted. The proposed Pedestrian Plan calls for two standards: Sidewalks and Pedestrian Levels of Service (LOS) Standards. The Sidewalks standards presented have recently been approved as part of the overall street standards. The Pedestrian LOS Standards have been developed specifically for the Fort Collins Pedestrian Plan.

Standards

As part of the Visual Preference Survey (VPS), over 1,000 Fort Collins citizens had the opportunity to comment on their visual preference on a number of topics including attached versus detached sidewalks. An overwhelming response was for the detached sidewalk with a landscaped parkway separating the sidewalk and the street. This overwhelming support of the detached sidewalk also originated from residents who live on streets with attached sidewalks. Aesthetically and functionally, detached sidewalks have much to offer. With appropriate parkway tree landscaping, the canopy effect can be quite stunning. The detached sidewalk separates the pedestrian from the vehicle, which significantly improves a pedestrian's sense of security. The separation also reduces the impacts of snowplowing onto the sidewalk.

Sidewalk Standards

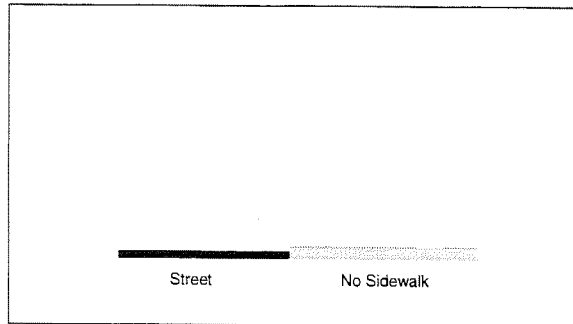
The proposed sidewalk standards were approved by City Council in June of 1996 as part of the revised street standards. A conceptual presentation of these standards for new development is shown on the following page. It should be noted that these are minimal standards, as sidewalks may need to be expanded within and leading to activity areas. Sidewalk standards by functional street type are discussed as follows:

Rural Streets: In specific situations where densities are very low and conflicts between the automobile and pedestrians are very low, it was recognized that it is acceptable to have a safe and walkable environment where there are no sidewalks. Locations where this design would be acceptable would be along the rural edge of the city and where there is no opportunity to extend the street system and increase the average daily traffic.

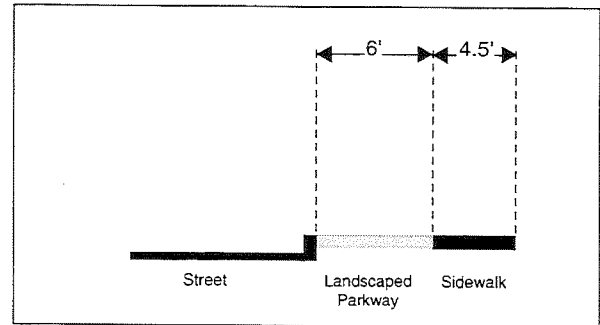
Standards, Policies, and Ordinances

Sidewalk Standards

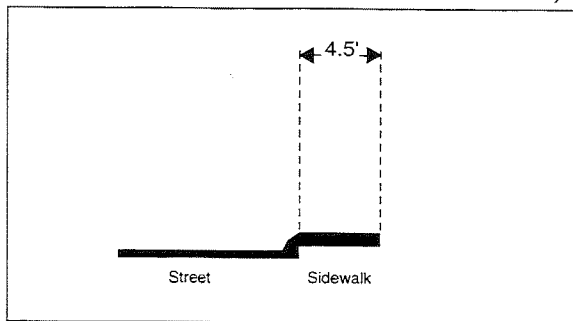
Rural Residential



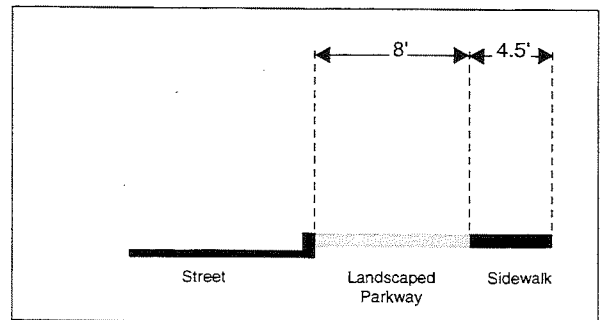
Residential Streets



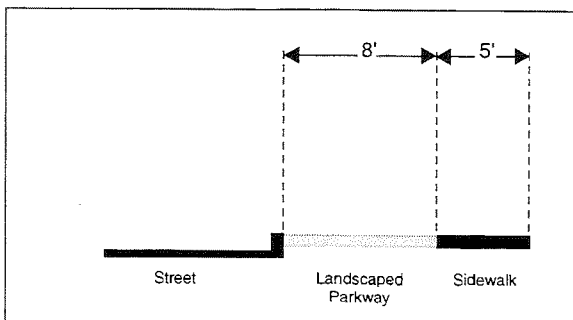
36' Residential (Attached, Infill Only)



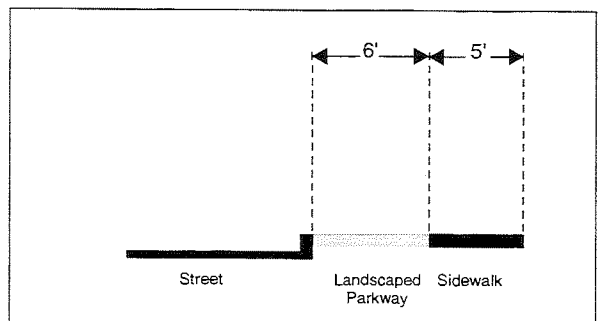
Connector



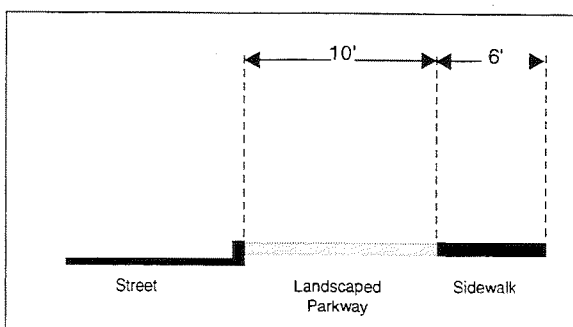
Collector



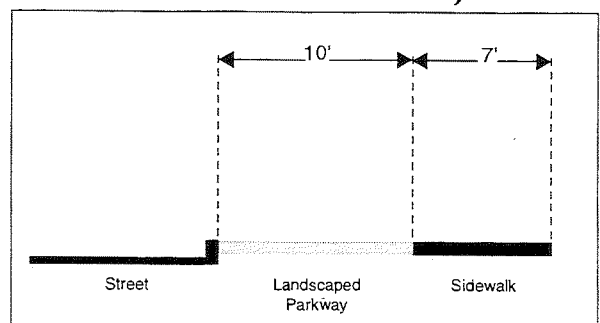
Industrial/Commercial Local



Minor Arterial and Arterial



Major Arterial



*Note: Sidewalk widths shown are minimum acceptable dimensions.
These may need to be expanded within and leading to activity areas.*

Residential Streets - Attached: One of the pedestrian principles is to have a homogeneous sidewalk system, thematic by the neighborhood. Because there have been many neighborhoods constructed with attached sidewalks, there needs to be some latitude for permitting infill projects to have the opportunity of using attached sidewalks where the adjacent neighborhood also has attached sidewalks. The minimum width of the attached sidewalks for new development is 4.5 feet, which is wide enough for two people to walk side by side and have a third person pass.

Residential Streets - Detached: The future residential street standard is for a detached sidewalk with a six foot landscaped parkway and a 4.5 foot sidewalk. This standard also complements the reduced street width standards with and without alleys. As sidewalks approach schools or other activities where a higher pedestrian population is expected, the sidewalks should be widened.

Connector/Collectors: These streets provide access to our residential areas and will experience higher traffic volumes and travel speeds than residential streets. These roads typically serve schools, parks, and surrounding arterials and will have a higher pedestrian need. Therefore, the parkway has been increased on these facilities to further separate the automobile and pedestrian.

Minor Arterial, Arterial and Major Arterial: As the street facility increases, the parkway and sidewalk width standard increases. Part of the reasoning for the wider sidewalk is the proportional balance between parkway and sidewalk. Currently, many of Fort Collins' arterials do not experience active pedestrian levels. Part of this is because many arterials do not even have sidewalks or the visual interest and amenity along the route is such that no one walks. Other communities that have invested in landscaped parkways and adequate sidewalk widths experience high use of these types of facilities. To achieve the vision of Fort Collins as "The Walkable City," arterial landscaped parkways and sidewalks need to be pronounced.

Industrial/Commercial Local: This parkway/sidewalk combination is for local streets within industrial and commercial areas. The sidewalk widths reflected in the standards are minimal and should be widened in higher activity areas that promote walking. Through use of tree wells, the sidewalks could expand out into the parkway areas to increase opportunities and space for the pedestrian.

Levels of Service

The City of Fort Collins Master Transportation Plan calls for the development of level of service (LOS) criteria for each travel mode including motor vehicle, public transit, bicycle, and pedestrian. The objectives of these LOS measurements would be to assist in the planning for all modes, not just the automobile.

It should be noted that unlike standardized automobile and transit LOS methodologies, pedestrian LOS procedures do not exist and were developed specifically for the City of Fort Collins. Furthermore, the determination of the methodologies is but one-half of the LOS analysis procedure, as LOS targets or standards also need to be defined.

Level of Service Measurements. As an outgrowth of the pedestrian problem definition, a pedestrian facility-specific level of service measurement procedures was established for each of the five problem areas: directness, continuity, street crossing, visual interest and amenity, and security. These level of service definitions are presented in the following table and explained as follows:

Directness. Distance is critical to the walking trip. As an example, research has closely correlated transit use to distance. No matter how many buses may run up and down an arterial, ridership will be low unless the pedestrian distance to and from the trip origin and destination is kept to a minimum.

The measure of directness is simply how well an environment provides direct pedestrian connections to destinations such as transit stops, schools, parks, commercial, or activity areas. The grid street pattern typifies the ideal system where one can go north or south, or east or west to easily get to one's destination. The common curvilinear residential subdivision which may have cul-de-sacs that back onto a commercial center, transit stop, school, or park but do not have a direct connection but instead require a circuitous route will deter potential pedestrians.

The directness LOS is based on a ratio of the actual distance from a trip origin to trip destination divided by the minimum distance between those two points. Actual is further defined by either existing or proposed. If one were to evaluate the directness of an existing neighborhood to transit, the actual route a person would take from the development to a destination would be plotted and measured. To measure the directness level of service requires selecting one or two trip origin locations in a smaller development and up to five or six representative trip origin locations in a larger development. Trip destinations are then identified.

Fort Collins Pedestrian Levels of Service

	A	B	C	D	E	F
Directness	Excellent and direct connectivity through full utilization of urban space, streets, transit, activity centers with clear linear visual statements. (A/M Ratio < 1.2)*	Excellent and direct connectivity with clear linear and visual connection to transit facilities, streets and activities. (A/M Ratio 1.2 to 1.4)*	Minimum acceptable directness and connectivity standard. Perceptions and urban space become less coherent with the beginnings of discomfort with visual clarity and lack of linearity. (A/M Ratio 1.4 to 1.6)*	Increasing lack of directness, connectivity and linearity with incoherent and confusing direction and visual connection to pedestrian destinations. (A/M Ratio 1.6 to 1.8)*	Poor directness and connectivity. Pedestrians perception of a linear connection to desired destination falters and serves only the person with no other choice. (A/M Ratio 1.8 to 2.0)*	No directness or connectivity. Total pedestrian disorientation, no linearity and confusing (A/M Ratio > 2.0)*
Continuity	Pedestrian sidewalk appears as a single entity with a major activity area or public open space.	Continuous stretches of sidewalks which are physically separated by a landscaped parkway.	Continuous stretches of sidewalks which may have variable widths, with and without landscaped parkways.	Pedestrian corridors are not well connected with several breaches in the pedestrian network.	Significant breaks in continuity.	Complete breakdown in pedestrian traffic flow as each pedestrian selects a different route as no pedestrian network exists.
Signals**	3 or fewer lanes to cross; signal has clear vehicular and pedestrian indications, well marked crosswalks; good lighting levels; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	4 or 5 lanes to cross; signal has clear vehicular and pedestrian indications, well marked crosswalks; good lighting levels; pedestrian refuge area: raised medians at least 6' wide with low plantings or features; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 2 elements of A	6 or more lanes to cross; signal has clear vehicular and pedestrian indications, well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 4 elements of A Missing 2 elements of B	Missing 5 elements of A Missing 4 elements of B Missing 2 elements of C	Missing 6 elements of A Missing 5 elements of B Missing 4 elements of C	Missing 7 elements of A Missing 6 elements of B Missing 5 elements of C
Unsignalized, crossing the major street***	3 or fewer lanes to cross; Well-marked crosswalks; good lighting levels; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	4 or 5 lanes to cross; Well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 1 element of A	6 or more lanes to cross; Well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 2 elements of A Missing 1 element of B	Missing 3 elements of A Missing 2 elements of B Missing 1 element of C	Missing 4 elements of A Missing 3 elements of B Missing 2 elements of C	Missing 5 elements of A Missing 4 elements of B Missing 3 elements of C
Unsignalized crossing the minor street***	Well-marked crosswalks; good lighting levels; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	Missing 1 element of A	Missing 2 elements of A	Missing 3 elements of A	Missing 4 elements of A	Missing 5 elements of A
Mid-block major street crossing***	3 or fewer lanes to cross; amenities, signing and sidewalk and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. well marked crosswalks; good lighting levels; standard curb ramps.	4 or 5 lanes to cross; Raised median at least 10' wide with low plantings or features; amenities, signing and sidewalk and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. well marked crosswalks; good lighting levels; standard curb ramps. Missing 1 element of A	6 or more lanes to cross; Raised median at least 10' wide with low plantings or features; amenities, signing and sidewalk and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. well marked crosswalks; good lighting levels; standard curb ramps. Missing 2 elements of A Missing 1 element of B	Missing 3 elements of A Missing 2 elements of B Missing 1 element of C	Missing 4 elements of A Missing 3 elements of B Missing 2 elements of C	Missing 5 elements of A Missing 4 elements of B Missing 3 elements of C
Visual Interest and Amenity	Visually appealing and compatible with local architecture. Generous sidewalk width, active building frontages, pedestrian lighting, street trees and quality street furniture.	Generous sidewalks, visual clarity, some street furniture and landscaping, no blank street walls.	Functionally operational with less importance to visual interest or amenity.	Design ignores pedestrian with negative mental image.	Comfort and convenience non existent, design has overlooked needs of users.	Total discomfort and intimidation.
Security	Sense of security enhanced by presence of other people using sidewalks and overlooking them from adjacent buildings. Good lighting and clear sight lines.	Good lighting levels and unobstructed lines of sight.	Unobstructed lines of sight.	Sidewalk configuration and parked cars may inhibit vigilance from the street.	Major breaches in pedestrian visibility from street, adjacent land uses and activities.	Streetscape is pedestrian intolerant.

*
**

A/M Ratio: Actual distance between pedestrian origin/destination divided by minimum distance defined by a fifth angle grid street system.
A signalized intersection LOS will go up one level of service with a dedicated pedestrian signal phase and/or a colored or textured crosswalk.
Unsignalized crossing at intersection of major street (minor arterial to major arterial) and minor street (local, connector and collector).

Trip destinations are those locations that may be outside the development to which pedestrians may travel, such as transit stops, schools, parks, trails, and commercial areas. These destinations should be within approximately one-quarter mile, but could be greater (i.e., junior high schools and high schools have a 1-mile and 1½-mile walking distance respectively). If there are no pedestrian destinations within the immediate study area, the directness LOS is not applicable. Connections to arterials that could eventually support transit should be evaluated.

If the minimum distance is defined by the grid system, then the measurement of the minimum distance for an existing or proposed development is the measurement from a representative trip origin to destination by a north/south measurement plus an east-west measurement characterized by the grid street pattern. An actual/minimum (A/M) ratio of between 1.0 to 1.2 would be considered an A, whereas an A/M ratio of 2.0+ would be considered a failure. In reality, an A/M ratio of below 1.0 could be achieved with the introduction of a diagonal street. Ideally, development proposals should be self-mitigated to achieve acceptable LOS standards prior to submittal to the City.

Continuity. Continuity is the measurement of the completeness of the sidewalk system with avoidance of gaps. The highest LOS A is when the pedestrian sidewalk appears as a single entity with a major activity area or public open space. LOS B provides a quality continuous stretch of pedestrian networks which are physically separated with landscaped parkways, characteristic of the proposed street standards. LOS C provides for a continuous pedestrian network on both sides of the streets; however, these sidewalks may not be built to current standards. LOS D reflects areas where there may not be sidewalks on both sides of the street or there are breaches in the system. LOS E reflects areas where there are significant breaks in the system. LOS F is a complete breakdown in the pedestrian flow where each pedestrian selects a different route because no pedestrian network exists. Off-site evaluations should generally be for the proposed development and routes used to evaluate directness.

Street Crossings. Street crossings may be the “Achilles heel” of the pedestrian system. If one cannot safely cross a street to get to one’s destination or transit stop, there is little likelihood that a change in mode from the automobile will take place. Because street crossings place the pedestrian out in the middle of the street with the automobile, the measurement of a street crossing becomes very complex, and the achievement of a high level of service requires significant investment. The following are key street crossing elements that need to be examined when measuring a street crossing’s LOS.

- **Number of Lanes:** The greater the number of lanes to cross, the greater the exposure of the pedestrian to vehicles. In addition, wider streets tend to carry higher volumes of traffic and higher speeds.
- **Crosswalks:** Are there crosswalks, and are they well marked?
- **Signal Indication:** Are the signal heads easily visible to the pedestrian and the motorist?
- **Lighting Levels:** Is the intersection and crosswalk well lit so that the pedestrian is visible at night?
- **Pedestrian Signal Indication:** Some signals have the walk automatically set for each phase. This is desirable for all activity areas, as it states the importance of the pedestrian. An alternative is the pedestrian button, where the pedestrian presses the button, waits for the cycle to repeat, and gets the walk phase. The third type of signal does not have any walk phase. This type of signal is unacceptable, as the only way a pedestrian may ever get a green light is when an automobile on the side street activates the cycle.
- **Median Refuge Areas:** Painted medians offer little refuge, other than getting out of a lane of traffic. Substantive raised medians of significant width provide some increase in security for the crossing pedestrian.
- **Amenity:** Amenity includes such elements as signing and design features that strongly suggest the presence of a pedestrian crossing.
- **Sight distance:** Unobstructed view between the motorist and the pedestrian. This can be particularly a problem when a vehicle driver intends to make a left turn under the permissive left turn phase and it is difficult to see around the opposing left turn vehicle.
- **Corner Ramps:** Either standard or non-standard corner ramps.

Street Crossings Types: There are basically four types of street crossings. Each has its own inherent problems.

- **Signalized Intersections:** Signalized intersections pose major pedestrian crossing problems due to high volumes, turning vehicles, vehicles that stop in the crosswalk, a significant number of lanes to cross, signal indication that is difficult to read or understand, lack of visual connection with the automobile, lack of vehicle driver respect, lack of raised median protection, no corner ramps, and no or inconvenient pedestrian buttons.
- **Unsignalized Intersection Crossing the Major Street:** Problems are similar to signalized intersections with even greater concern for the number of lanes to cross, speed of vehicles, and lack of adequately marked crosswalks with good lighting, raised median, visibility, and corner ramps.
- **Unsignalized Intersection Crossing the Minor Street:** The problem at these locations is the vehicle traveling along the arterial turning right

or left onto the minor street, while being urged along by a following vehicle.

- **Mid-Block Crossing:** Similar to unsignalized major street crossing, including number of lanes to cross, lack of crosswalk presence, lighting, raised median, and corner ramps.

Street Crossing LOS Measurements: For each street crossing type, the ideal condition with a minimum number of lanes has been defined for the highest levels of service. As design elements and features are reduced and/or additional lanes to cross are increased, the LOS is reduced.

Visual Interest and Amenity

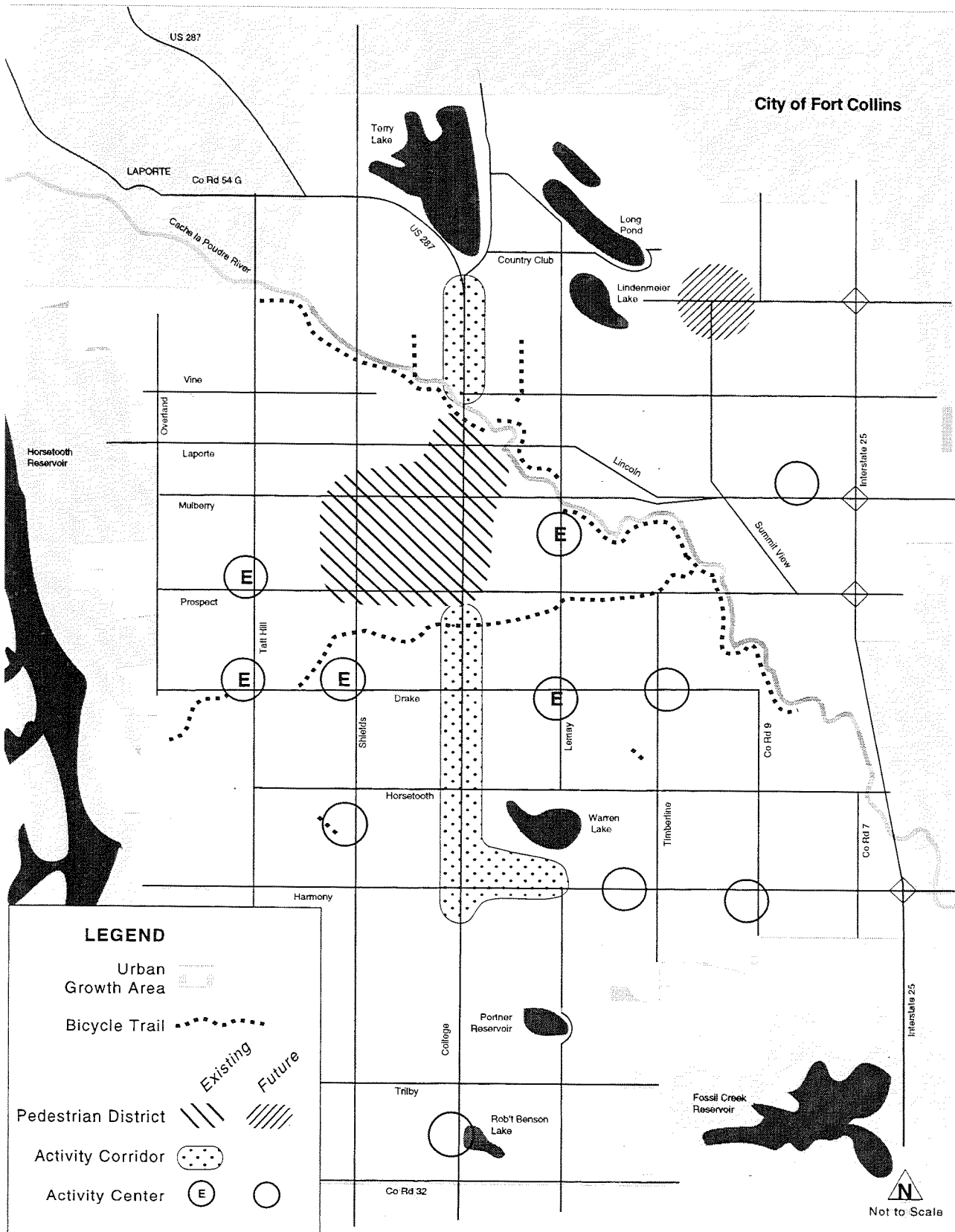
To promote pedestrian activity and use of transit, the pedestrian system needs to be aesthetically appealing. The attractiveness of the pedestrian network can range from visually attractive with environmental enhancements, such as pedestrian street lighting, fountains, and benches to an experience of discomfort and intimidation, associated with absence of amenities. These visual interest and amenity principles are presented in more detail in the Pedestrian Plan Visions Chapter.

Security: Pedestrians require a sense of security, both through visual line of sight with others and separation from vehicles. Major portions of the city's sidewalks along arterials are narrow and adjacent to high volume, high speed travel lanes. Other sidewalks are intimidating, because they are not visible from the motorist and surrounding activities. Representative pedestrian sidewalks and corridors within the study area should be examined based on lighting levels and sight distance.

Fort Collins Pedestrian Facilities Plan

Although there is one set of level of service measurement criteria to be used throughout the city, it would not be logical to require the same LOS standard everywhere. The needs and standards for the Fort Collins Old Town area, which is highly pedestrian dependent, is significantly different in character and need than an outlying residential area not proximate to schools or transit. Therefore a pedestrian plan was developed to complement the City Plan Structure Plan, which begins to define the existing and/or anticipated pedestrian activity areas from which to assign LOS standards. This pedestrian facilities plan is presented on the following page. There are four designations defined in this plan and presented as follows:

Pedestrian Facilities Plan



- **Pedestrian District:** This area reflects the highest pedestrian environment desired, a location where all LOS standards are "A" or "B." This area is defined by the existing Fort Collins downtown and CSU area, which currently has the highest pedestrian activity in the city. This pedestrian district would also reflect the proposed activity area at the northwest portion of the city as defined by the Fort Collins City Plan Structure Plan.
- **Activity Corridor:** This area is defined by the primarily commercial corridors of North and South College. Currently these areas have a very high automobile dependency. By providing linear connections between retail uses and from the adjacent residential areas, pedestrian activity along this corridor could be significantly improved. As one of the projected higher congested corridors, diversion to the pedestrian mode would provide a major benefit.
- **Activity Centers:** Areas within one-quarter mile from a neighborhood, and community commercial retail areas that would have a higher probability to walk if provided a higher pedestrian level of service.
- **Transit Routes:** Areas that are within one-quarter mile from transit.

LOS Thresholds

The following defines the minimum acceptable standards. It should be noted that there are numerous locations within the city that do not achieve the minimum level of service. Because of limited funding, improvements should be prioritized toward routes to schools, parks, transit, and activity areas. To cap the current problem, new developments, both public and private, as well as major street improvements and redevelopment, should adhere to the pedestrian level of service standards.

Target Levels of Service by Pedestrian Facilities Plan Area

	Direct- ness	Continuity	Street Crossings	Visual Interest & Amenity	Security
Pedestrian District	A	A	B	A	B
Walking to Schools/ Parks	B	B	B	C	B
Activity Corridors & Activity Centers	B	B	C	B	B
Walking to/ from Transit	B	C	C	C	B
Other Areas within City	C	C	C	C	C

Policies are less restrictive than standards. They are guidelines to consider and evaluate the environment with the objective of further assuring success in the implementation of the vision of Fort Collins as a walkable city. There are five policies that have been developed specifically for the Fort Collins Pedestrian Plan:

- Corner Ramps
- Crosswalks
- Pedestrian Traffic Impact Analysis
- Mid-block Crossings
- Maintenance.

Corner Ramps. As part of the development of the street and sidewalks standards, it became evident that the larger curb radii being used from arterial to arterial intersections reduced the parkway at the intersections to a point where the more desirable directional corner trough ramps could not be accommodated. Through review of various curb radii, it was determined that the corner trough ramp could be accommodated when the curb radii is reduced to 20 feet, down from the 30 or 35 foot radii common today. The argument for the larger curb radii is to accommodate the right-turning vehicle and minimize rear wheels of larger vehicles from rolling over the curb.

Policies

Corner Ramps

In review of the various turn templates used for determining geometric needs, it was determined that a larger vehicle with a large turn radius would not be able to turn into the curb lane, but could make the turn when turning into the number one lane near the median. Given that the larger vehicle can make the turn with a 20 foot radii and that the 20 foot radii can accommodate the directional trough ramp, it is recommended that the 20 foot radii as policy be used for developing future street plans. Locations with only one lane for trucks to turn into will require a larger radius to accommodate the truck turns. Benefits of the 20 foot radii which permit the trough ramp design for the pedestrian are as follows:

- Slows down the speed of right-turning vehicles.
- The smaller radius places the pedestrian closer to the intersection and increases the visibility of the pedestrian by the motorist.
- The smaller radius places the end of the ramp closer to the intersection, which reduces the width of the street and minimizes the distance the pedestrian must cross.
- Trough ramps tell the driver where the pedestrian is going.

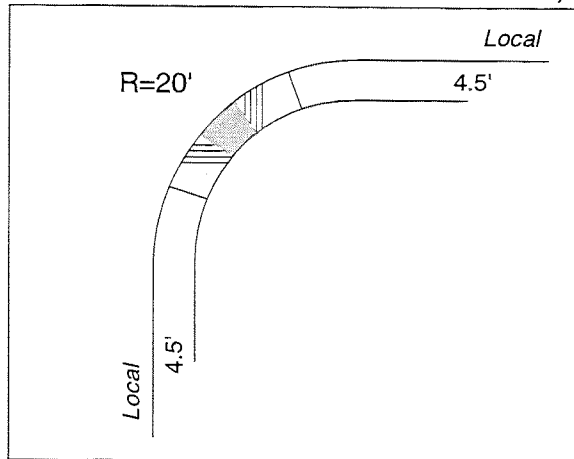
Typical corner ramp designs for various intersections are presented on the following page.

The crosswalks used in Fort Collins and common throughout Colorado are generally defined as Continental Crosswalks. Their origins are from Europe where they replaced the conventional two lines that crossed the intersection. The idea was that the parallel wide striped would increase the amount of paint on the street and better protect the pedestrian. The design as introduced in this state in the 1960s was modified by reducing the number of lines and strategically placing them to align with the traffic lanes and in the middle of the traffic lanes. The idea was that vehicles could travel through the crosswalk and extend the life of the pavement marking. The downside of the current design is that motorists rarely stop prior to the crosswalk, but instead travel through the crosswalk before stopping. Some jurisdictions require the placement of an 18-inch stop bar prior to the crosswalk in the approach lane at all signalized intersections. As policy, it is recommended that the City of Fort Collins install the 18-inch stop bar and relocate stop signs as necessary.

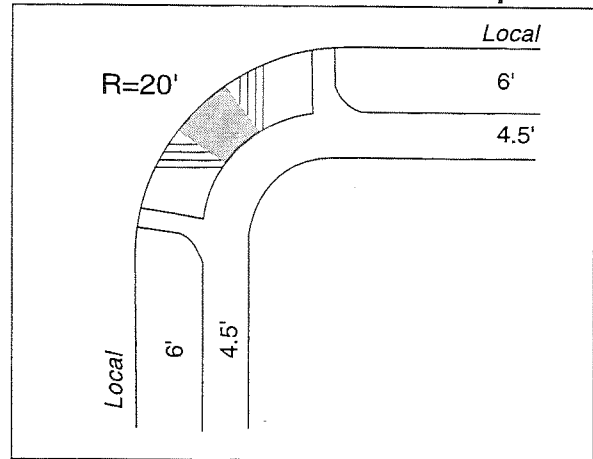
Crosswalks

Based on estimates provided by Transportation Services, it will cost approximately \$100,000 to install preformed plastic stop bars at signalized and stop-controlled crosswalks in Fort Collins. It is further estimated that there will be a one-time cost of \$100,000 to relocate stop signs to align with the crosswalks and check for adequate sight distance. Replacement costs are estimated at \$100,000 and they last for 2-3 years.

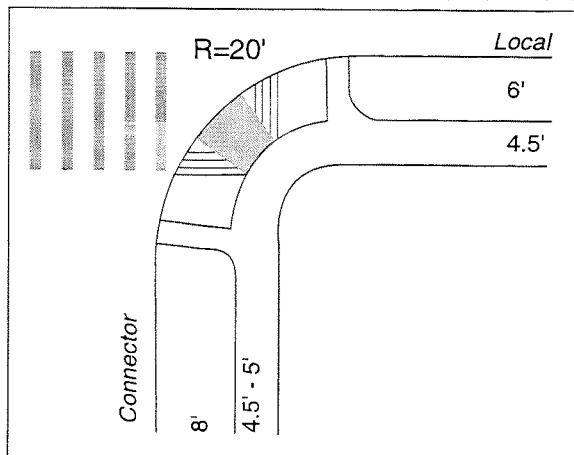
Local: Attached Sidewalk (Infill Only)



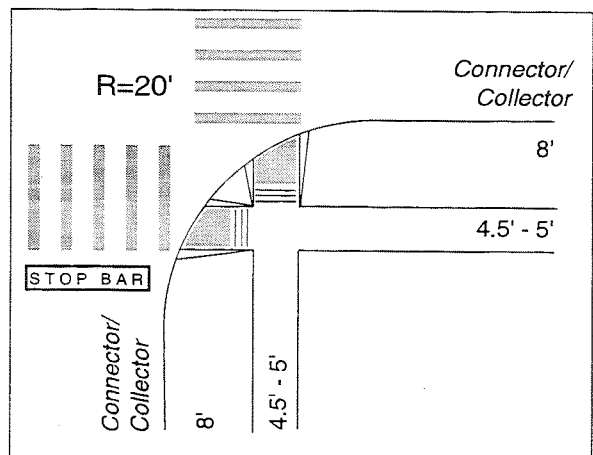
Local: Separated



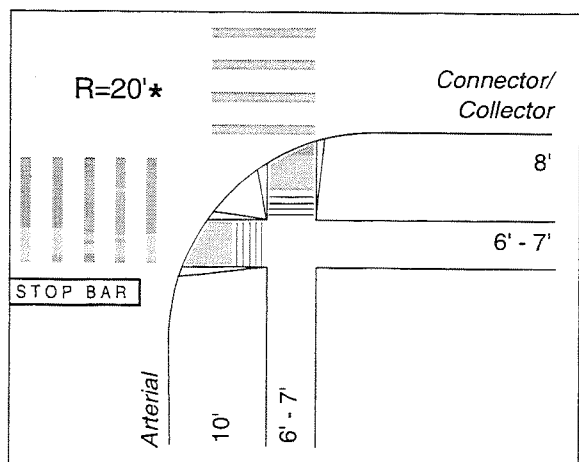
Local to Connector/Collector



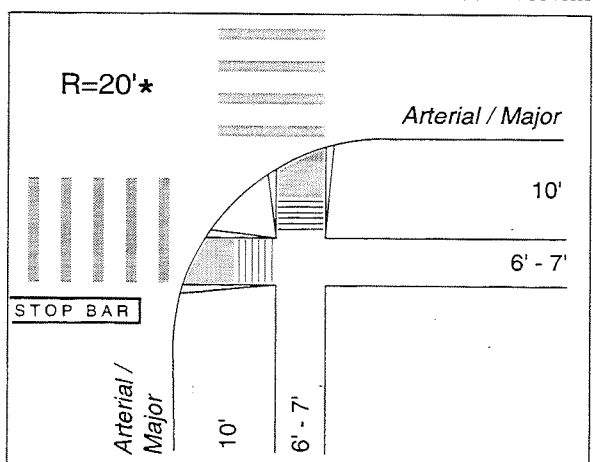
Collector/Collector



Connector/Collector to Arterial



Arterial to Arterial



* Where possible

As part of the development review process, proposed developments are required to prepare a traffic impact analysis which addresses projected vehicular traffic impacts on the city's arterial street system and identify mitigation to offset project impacts. An analysis of the pedestrian network is not required. Furthermore, the proposed vehicular mitigation often leads to a further degradation of the pedestrian environment through more vehicles, additional lanes to cross, and more curb cuts.

Pedestrian Traffic Impact Analysis

It is therefore recommended that as policy, the City of Fort Collins require a Pedestrian Traffic Impact Analysis (TIA) for all significant development proposals. This pedestrian TIA should cover the following topics:

- **Existing Conditions:** Typically, traffic impact analyses begin with some discussion regarding the surrounding street patterns, number of lanes, background traffic volumes, existing levels of service, and existing deficiencies. We would similarly suggest that an existing pedestrian facilities discussion be included in the TIA. This discussion would address the pedestrian network within the immediate study area, including routes to key destinations such as schools, parks, transit stops, activity areas, and other significant destinations.
- **Future Conditions:** Identify future developments that may be proposed within the study area, such as schools or parks, activity areas, and expanded transit that may become pedestrian destinations and require linkages.
- **Pedestrian Network Development Proposal:** Discuss the proposed development's pedestrian network, including types of sidewalks proposed (attached/detached), pathways, and connections to perimeter network.
- **Project Pedestrian Future Conditions:** Conduct a future conditions pedestrian level of service analysis and identify levels of service that do not achieve the Pedestrian Facilities Plan LOS objectives.
- **Recommended Mitigation:** Identify and recommend proposed mitigation to achieve acceptable pedestrian LOS.

The lack of effective pedestrian crossing opportunities along major streets is a significant deficiency in the pedestrian system. Pedestrian signals, four-way stop signs, mid-block stop signs, speed bumps, and marked crossings are typically requested as solutions. Even when properly applied and installed, drivers often do not respond, either out of ignorance or disregard for the traffic control and/or pedestrian.

Mid-Block Crossings

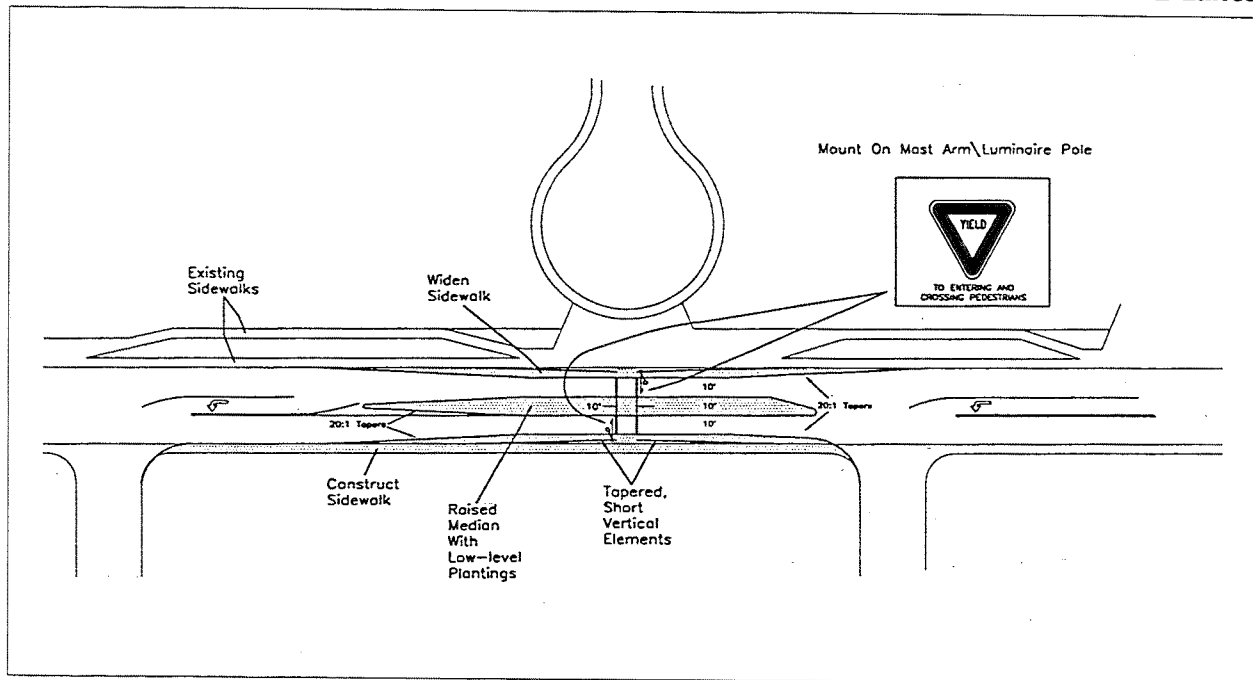
Drivers are most responsive to pedestrians when the pedestrians are visible, and when the roadway environment suggests the presence of pedestrians. Therefore, a crossing design has been developed that emphasizes pedestrian visibility and provides a change in the roadway character in the vicinity of the crossing. The following figure presents the nature of treatments at these crossings, which includes actual and visual narrowing of the street, overhead regulatory signing, and street lighting. It does not include a signal, although one could be included as a substitute for the regulatory signing if the warrants in the Manual on Uniform Traffic Control Devices (minimum pedestrian volume, gaps in traffic, signal proximity, etc.) are satisfied.

The following criteria are used to select potential sites for these pedestrian crossing treatments. These criteria are similar to signal warrants in that the satisfaction of key criteria will not guarantee implementation. The site will need to be investigated for compatibility with the proposed improvements and assessed according to its specific situation, not just according to these criteria. Prudent application of these treatments is necessary, since as with any traffic control application, improper applications tend to create disregard at the specific site and in general.

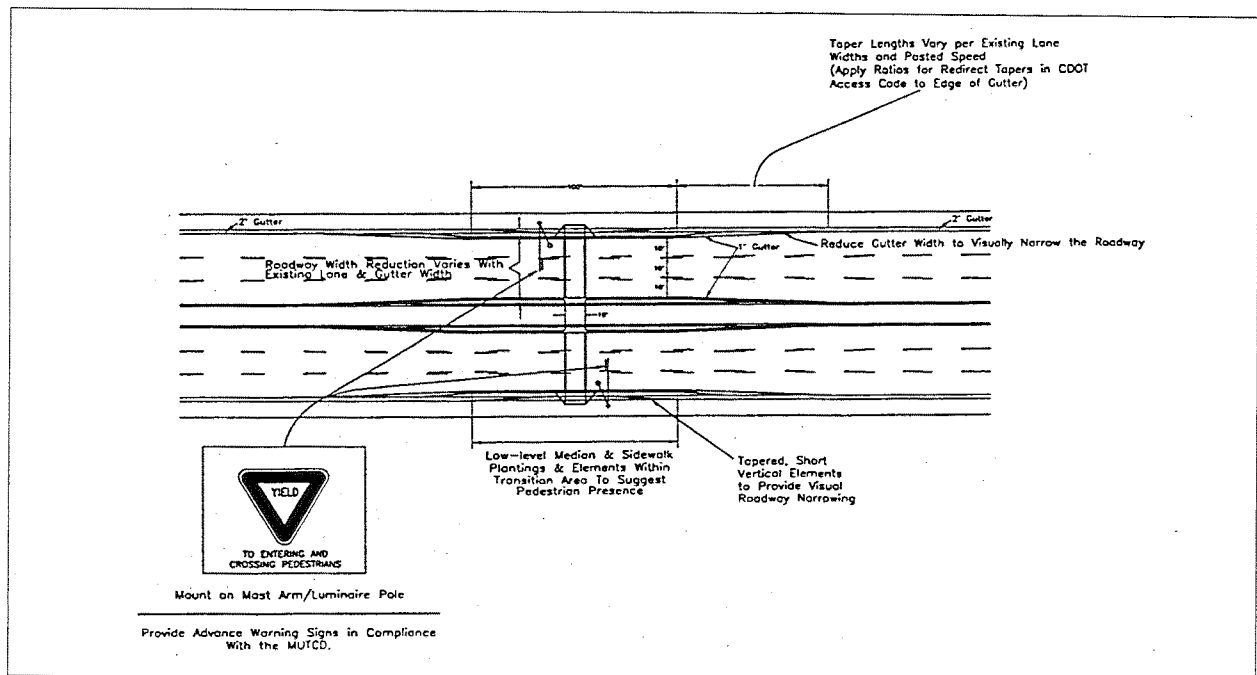
The first set of criteria are essential to establishing the viability of a mid-block crossing.

- The candidate site must have an existing pedestrian level-of-service below the adopted standard and at the nearest, reasonably viable alternative to the proposed crossing.
- The location must have at least stopping sight distance available along both approaches to the crossing, as specified by AASHTO.
- There must be an expectation on the part of drivers who routinely travel the section of street that pedestrians are crossing the street. The site should be extensively investigated and observed to assess the frequency of pedestrian use. Possible indicators include schools, bus stops, and some commercial and office facilities. Recreational uses can also contribute to the sense of pedestrian presence. This user group can be a factor during non-peak traffic periods, such as nights and weekends.
- The crossing must enhance the directness of significant components of the pedestrian system. Examples include connections to trails, mid-block entrances to major buildings, and parking areas opposite a park.
- Traffic stopped at the crossing must not block intersections.
- The crossing must not be located on a substantial grade.

2 Lanes



4/6 Lanes



- Ambient lighting conditions must be such that the crossing can be effectively illuminated without creating a bright spot transitioning too suddenly into the normal street lighting pattern for drivers passing the crossing.
- The crossing must not create any other undue hazards for pedestrians, cyclists, or vehicular traffic.
- The posted speed on the roadway must be 40 mph or less.

The following additional criteria establish factors that contribute to the viability the crossing, but are not considered essential.

- Pedestrians at the crossing should experience less than one gap in traffic per 40 seconds during the peak pedestrian times of use. This threshold is comparable to the 40 seconds-per-vehicle average delay that defines the lower limit of LOS D for vehicles at a traffic signal. This criteria tends to make pedestrian mobility more comparable to vehicular travel.
- The crossing should complement transit service, school routing, and other special user groups.

The City of Fort Collins has an ordinance that requires the adjacent property owner to repair or replace hazardous sidewalks. The City also has a 50/50 sidewalk program which is provided to assist the property owner in repairing or replacing these hazardous sidewalks. If the City is contacted by a citizen regarding a hazardous sidewalk, an engineer is sent to confirm the problem and estimate the cost of improvement. If an improvement is required, the adjacent property owner is notified of the problem, their requirement for improvement, and the cost for repair between the City and the property owner is shared equally. Because there are sidewalk problem areas within the city that are not reported, it is further recommended that the City consider expanding the "Pothole Program" to include the identification of problem sidewalks.

Maintenance

One of the issues of the program is that often, the sidewalk repair is in the older part of town and the property owner is on a fixed income and would find it difficult to pay for even one half of the sidewalk repair.

It is recommended that as policy, the City should continue with the 50/50 maintenance program. It is further recommended that in cases where the property owner is on a fixed income and cannot afford the improvement, that they apply for a waiver and the City pay 100 percent of the improvement. An alternative would be to repair/replace the sidewalk and place a lien on the property, which would be collected at the time of sale.

Current state and city ordinances give the vehicle the right-of-way over pedestrians at an intersection with or without a crosswalk unless the pedestrian is already in the street. Even then the vehicle is only required to yield to the pedestrian for the lane of traffic the pedestrian is within. To promote the pedestrian as a mode of transportation and promote access to transit, a pedestrian right-of-way ordinance is proposed as follows:

Ordinances

- The driver of a vehicle shall yield the right-of way to a pedestrian crossing a roadway within any marked crosswalk or within any unmarked crosswalk at an intersection.
- The provision of this section shall not relieve a pedestrian from the duty of using due care for his or her safety. No pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a vehicle which is so close as to constitute an immediate hazard. No pedestrian shall unnecessarily stop or delay traffic while in a marked or unmarked crosswalk.
- The above provision shall not relieve a driver of a vehicle from the duty of exercising due care for the safety of any pedestrian within any marked crosswalk or within any unmarked crosswalk at an intersection.
- The driver of any motor vehicle, prior to driving over or upon any sidewalk, shall yield the right-of-way to any approaching pedestrian.

Education and enforcement must complement the change in ordinance. An active education and enforcement program is therefore proposed, which could include the provision of signs entering the city which state "Fort Collins: The Walkable City. Where the Pedestrian Has the Right-of-Way."

Implementation Plan

The Pedestrian Implementation Plan outlines where to go from here. Key to this implementation is approval of the major action items proposed, including level-of-service measurements and standards, sidewalk, curb ramp and stop bar standards and policies, and pedestrian traffic impact analysis requirements. In addition, it would be desirable to modify the City statute to give the pedestrian the right-of-way at intersections. Based on interest expressed by the Cities of Boulder and Longmont, there may be some growing municipal interest to change these statutes with an effort toward a change at the state level.

There are a number of implementation issues that must be defined to make Fort Collins a "Walkable City" after the completion of this plan. One obvious implementation issue is funding, then prioritizing the projects given the limited funding. Enhancement and implementation of a traffic education and enforcement program is also critical to the success of the pedestrian plan. Finally, we recommend the selection and implementation of four demonstration projects to test some of the concepts and ideas presented in the plan.

The passage of ISTEA (Intermodal Surface Transportation Efficiency Act) in 1991 established a number of federal and state funding opportunities for pedestrian facilities. Fort Collins may apply for these funds through the North Front Range Transportation & Air Quality Planning Council (NFRT & AQPC). These potential federal and state funds are presented in Appendix D. As an active member of the NFRT & AQPC, the City of Fort Collins should pursue pedestrian funding when the opportunity arises. Given the current financially constrained Transportation Improvement Program, these opportunities may be limited.

Funding

The City of Fort Collins does have existing funding programs or opportunities to collect funds for pedestrian improvements. These include:

- Fort Collins Street Oversizing Program
- General Obligation Bonds
- Local Sales Tax
- Tax Incremental Financing (TIF)

Regardless of source, commitment to the pedestrian plan, in part, implies funding. The Fort Collins transportation-related annual budget averages between \$23 million and \$28 million, of which \$1.25 to \$1.5 million, or five percent is specifically pedestrian-related. This funding goes toward installation or replacement of sidewalks and ramps as part of the City's street Oversizing Program, Pavement Management, Construction and Minor Street Program, Neighborhood Safety Programs,

Implementation Plan

maintenance, replacement of deteriorated sidewalks, and strategic improvements, including installation of mobility-impaired intersection ramps as mandated by the federal government per the Americans with Disabilities Act (ADA). The current budget does not permit any significant effort toward retrofitting major portions of the city to achieve adequate pedestrian facilities.

A recently-completed origin-destination study for the North Front Range determined that walk trips account for 7 percent of total trips. Based on the goal *"Pedestrian travel will be acknowledged as a viable transportation mode and elevated in importance to be in balance with other modes,"* one argument would be to provide funding at a level equal to the percentage of existing use. Based on the current transportation budget of between \$23 and \$28 million, a fair share pedestrian transportation budget would be 7 percent of between \$1.6 and \$2.0 million. This assumption is based on maintaining the existing mode split. It is the objective of the NFRT & AQPC and the City of Fort Collins to reduce single occupancy vehicle trips by ten percent. To achieve this goal, walk trips as a percentage of total trips has been estimated at 11 percent. Applying this percentage to the total current transportation budget would yield an annual pedestrian budget of between \$2.5 and \$3.1 million.

The total transportation budget, current pedestrian budget, and proposed pedestrian budget is as follows:

	Total Transportation Budget	Current Pedestrian Budget	Proposed Pedestrian Budget
Transportation Services			
Services & Programs	\$13,800,000	\$120,000	\$380,000
<u>Street Oversizing</u>	<u>\$3,200,000</u>	<u>\$230,000</u>	<u>\$230,000</u>
Total	\$17,000,000	\$350,000	\$610,000
Construction (CIP)	\$ 2,000,000-\$7,000,000	\$100,000 to \$350,000	\$100,000 to \$350,000
Pavement Management (CIP)	\$ 3,500,000	\$350,000	\$350,000
Minor Street (CIP)	\$200,000	\$50,000	\$50,000
Sidewalk Program (CIP)	\$400,000	\$400,000	\$1,200,000
Total	\$23,100,000-\$28,100,000	\$1,250,000 to 1,500,000 5%	\$2,310,000 to 2,560,000 9-10%

As presented, the current Transportation Services & Programs budget related to pedestrian activity is \$120,000. This includes approximately \$100,000 for school safety programs and \$20,000 for sidewalk snow removal. Both of these programs have been cited as important and should be expanded. It is therefore recommended that this portion of the pedestrian budget be increased by fifty percent, to \$180,000. It is further proposed that the transportation services budget be increased by an additional \$200,000 to permit installation of stop bars at all signalized and stop-controlled crosswalks (includes a \$100,000 one-time budget to relocate stop signs to align with crosswalks) for a total budget of \$380,000.

The Transportation Services Street Oversizing Program, Pavement Management, and Minor Street Capital Improvement Programs all relate to street construction programs that have various elements of pedestrian improvements, including sidewalk replacement and construction of ADA ramps. Because the pedestrian improvement levels vary by project, there is no recommended change in funding for these categories.

The Street Oversizing and Construction Programs provide for some new pedestrian improvements. The Sidewalk Improvement Program allows discretion to construct missing pedestrian elements not tied to a larger public works project. Because missing pedestrian walkways, crossings, and facilities were identified as needing significant improvements, the funding recommendation for this category is proposed to increase by \$800,000 from \$400,000 to \$1,200,000. With the proposed changes, the total pedestrian budget would increase to approximately 9 to 10 percent of the total transportation budget.

Because of the overwhelming need to maintain our existing sidewalk system plus retrofit to an acceptable level-of-service, pedestrian improvements will require prioritization. The pedestrian plan calls for a two-tiered approach. The first tier of prioritization is to allocate a set percentage of funds by area of improvement. The second tier of prioritization is to identify a list of evaluation measures for assisting in the selection of improvements within a program area.

Prioritization

As identified in the Pedestrian Facilities Plan, different areas of the city require different levels of pedestrian improvement. These areas include pedestrian districts, routes to school, activity corridors, activity centers, routes to transit, and other areas within the city. One argument would be to invest all short-term funds into the highest pedestrian activity area until all facilities within that area are improved. At such time, the next pedestrian activity area is funded.

Area Prioritization

The difficulty with the above approach is that it may be in the City's interest to raise a dangerous street crossing from LOS E or F to a C to get neighborhood residents to a transit stop, then raise a street crossing in Old Town from a C to a B. Therefore, some funding has to be distributed to all programs to address the critical problems. A suggested funding target by pedestrian area and type is as follows:

Pedestrian District and Routes to School/Parks - 50 Percent

The downtown/CSU pedestrian district was identified as one of the most important pedestrian areas within the city and as such has the highest level of service targets. Similarly, safe routes to schools/parks used by children and developing routes to schools to reduce the long-term burden of busing was also deemed one of the highest priorities. Fortunately, the pedestrian district as a whole is reasonably well served and has an adequate level of service. There are but a handful of improvements that would significantly improve our routes to schools and parks. Through a concentrated implementation program and an adequate pedestrian budget, pedestrian problems within these two areas could reasonably be mitigated in the near future. Upon completion of these improvements, funds from this area could be re-diverted to other categories.

Activity Corridors, Activity Centers and Routes to Transit - 40 Percent

Although activity corridors, centers and routes to transit have LOS target levels less than the pedestrian district and routes to schools/parks, they experience major deficiencies and will require significant funding levels to retrofit. Because of the seriousness of this category, it was recognized that funding needs to begin immediately, not after the higher service area activities are mitigated.

Other - 10 Percent

This category would include education, encouragement, and implementation programs. In addition, this category includes primarily outlying residential areas not proximate to schools, parks, transit, or activity areas. As such, these areas were identified as requiring only the minimal pedestrian LOS standards. However, there are some major pedestrian improvements that should be considered and, as such, an annual budget should be provided.

Within a funding facility area prioritization category, competing projects with a limited budget require prioritization. It is recommended that the prioritization of sidewalk projects include the following factors, which would improve the city's urban and suburban walkability.

Project-Specific Prioritization Within a Facility Area

- Proximity to pedestrian destination
 - School
 - Health care, commercial or government activity
- Mobility-impaired
- Pedestrian volumes
- Potential demand from adjacent land uses
- Pedestrian accidents
- Route continuity to complete sidewalks
- Functional classification of the roadway
- Geometric conditions
 - Available walking space
 - Alignment
 - Street Lighting
 - Design Speed
 - Site distance

Education programs should be offered to people of all ages from pre-school children to senior citizens. Walking is an essential mode of transportation for school-aged children. The leading cause of death of children in the United States is motor vehicles, with the majority of children killed while walking or bicycling. As such, traffic safety education should be required for all school-aged children to teach them the critical skills and knowledge needed to safely negotiate in traffic. The elderly tend to be over-represented in pedestrian-involved traffic crashes. Education programs should stress the benefits of walking while emphasizing the safe behaviors that must be practiced. The following actions are proposed:

Traffic Education and Enforcement

- Work with school officials to bring a pedestrian safety program into the curriculum.
- Organize speakers to inform PTAs in our schools of the merits of parental reinforcement of program principles.
- Upgrade existing pedestrian education programs presently offered on a limited basis by the Fort Collins City Police.
- Enforce existing and future pedestrian laws.

Demonstration Projects

One of the objectives of the Implementation Plan is to identify a limited number of demonstration projects, which would permit the opportunity to test some of the key findings identified in the pedestrian plan. Although there are a number of different types of demonstration projects that could be explored, the following were selected for consideration:

- Retrofitting a neighborhood without sidewalks.
- Constructing an intersection median with a refuge area.
- Modifying a signal to include a dedicated pedestrian phase.
- Install a traffic-calming crossing.

Based on this list, the following selected demonstration projects are described:

Neighborhood Sidewalk Retrofit

Neighborhood bound by College, Prospect, Stuart, and Stover

This is an area selected for one of the ten case studies. The area either lacks sidewalks entirely, or has narrow two-foot sidewalks. The proposed improvement would be to strategically install two-foot sidewalks on streets where the sidewalks are missing and the daily traffic volumes are in excess of 300 daily trips. A 4 ½-foot sidewalk is proposed for Parker Street from College to Stuart, as this facility is a major east-west connection to commercial and transit on College and Barton Elementary School on Stover. (Planning Level Cost Estimate - \$150,000-\$200,000)

Intersection Median with Refuge Area

Boardwalk and Lemay

Lemay is currently a 2-lane facility south of Harmony. Lemay is proposed to be widened to its ultimate 4-lane arterial status in the near future. The intersection of Boardwalk and Lemay has a high pedestrian presence from children who travel from the east side of Lemay to Werner Elementary School. Incorporating the proposed 6-foot median standards will allow examination of the adequacy of this proposed design. (Cost - Nominal if incorporated in overall proposed improvement plan.)

Modifying a Signal to Include a Dedicated Pedestrian Phase.

College Avenue and Drake Road

This intersection is currently proposed to be widened to include a second north and southbound left turn lane, additional right turn lanes, and bike lanes on Drake. These additional lanes will further increase the width the pedestrian will need to cross College. Unfortunately, the proposed intersection design will not accommodate the wider 6' refuge island as proposed. Therefore, this intersection would be an ideal location to test a signal with a dedicated pedestrian phase, which would provide for a three to five second walk-only phase, followed by a

through movement-only phase to preclude rights and lefts from turning across the crosswalks. (Planning Level Estimate - \$25,000 additional costs)

Traffic Calming Intersection Crossing

Boardwalk/Westshore Parkway

City traffic engineering has received complaints regarding crossing Boardwalk at Westshore Parkway to access the park. Because of the limited parking at the park, people park along Westshore Parkway and cross Boardwalk to get to the park. Complaints are about excessive speeds, even with a crosswalk in place. It is therefore proposed that the traffic calming proposal for mid-block crossings be modified for an intersection and installed at this location. (Planning Level Estimate - \$40,000 - \$60,000)

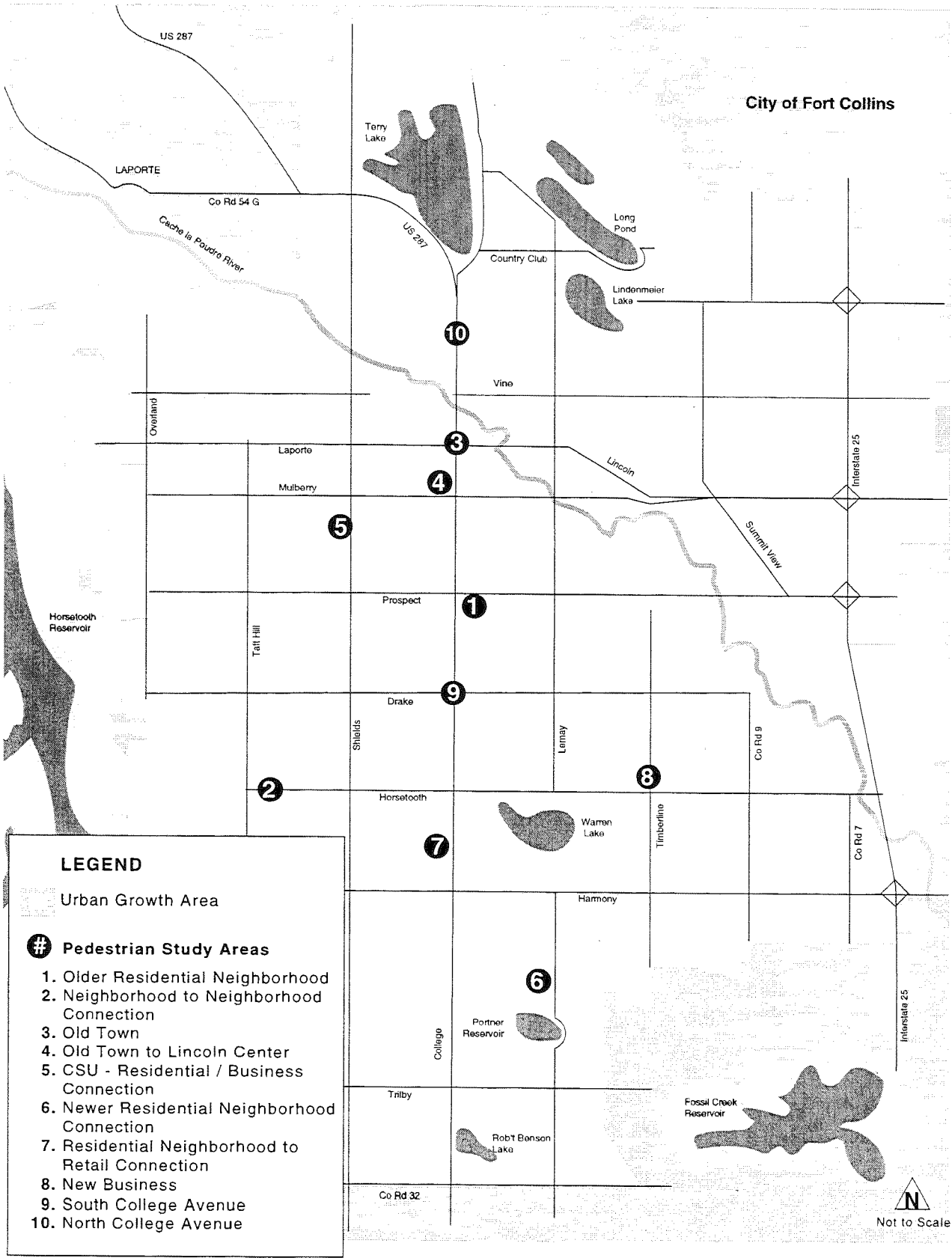
This plan offers no quick fix. It took Fort Collins fifty years to develop such an intense problem. It will require at least one full generation of residents (20 years) to be educated and to buy into pedestrian friendly environments and to pay sufficient transportation monies to bring existing roadways, parking lots, and other physical features up to standards. The implementation of this plan will require the collective efforts of the City of Fort Collins, its residents and businesses, developers, Larimer County, the North Front Range Transportation & Air Quality Planning Council, and the State of Colorado. This plan demands a high level of effort from all.

No Quick Fix

Appendix A

Case Studies

Pedestrian Study Areas



City of Fort Collins Pedestrian Plan Case Studies

A major focal point in the preparation of the Pedestrian Plan was the selection of ten case studies within Fort Collins to conduct field reviews to determine typical pedestrian problems that may be endemic of the rest of the city and apply proposed pedestrian levels of service. The ten selected case study areas are presented graphically in the following map. These areas represent a broad range of old to new development areas, residential and commercial land uses, as well as intersection and street crossings.

The initial field surveys of the case studies were conducted with consultant and City staff representing different departments including engineering and transportation planning. The purpose of the field surveys was to examine various pedestrian problems that may not just be endemic to the area under review, but could be expected throughout the city. The joint consultant/City staff review allowed dialog, which raised questions and issues which should be addressed in the preparation of the Pedestrian Plan. Presentations to the Pedestrian Focus Group and through Public Outreach further confirmed and refined the issues facing a much larger Fort Collins.

Key to these case studies was the recognition of the five problem types which became a theme throughout the Pedestrian Plan process: Directness, Continuity, Street Crossing, Visual Interest and Amenity, and Security.

These topics also became the foundation for the development of the proposed Pedestrian Levels of Service (LOS). Through application of the proposed pedestrian LOS procedures and discussions with staff, the Pedestrian Focus Group, and Transportation Board, the pedestrian LOS description and procedures evolved into what is presented in this report.

The following sections of this appendix provide a description of the ten case studies including photos and maps to illustrate the problems and issues facing our community. In addition, the LOS methodology is applied to each area, including preliminary recommendations, if any on how to mitigate existing problems.

Following these ten case studies is a discussion about safe routes to school, which was an additional concern raised at the Focus Group meeting, and some minor miscellaneous issues that were identified throughout the process.

Older Residential Area

This residential neighborhood is located at the southeast corner of College and Prospect. It was built in the 1960s and was at the time of construction located within Larimer County, not the City of Fort Collins. The neighborhood is characterized by relatively minor volume streets with little, if any, sidewalk facilities. Sidewalks are either totally missing, or were constructed at a minimum two-foot width to allow exiting passengers to step out onto the sidewalk instead of the parkway.

In review of the proposed LOS procedures, it was deemed that this neighborhood had a "B" level of service for "Directness" based on spot location measurements to the school located north of Prospect and east of Stover, the Spring Creek Trail to the south, and the retail opportunities located along College. As this study area did not include any major street crossings, that LOS measurement was not applicable. The unsignalized minor street crossing for Remington, Mathews, and Stover at Prospect was examined and determined acceptable. LOS "C" was identified for Visual Interest/Amenity and Security. This neighborhood met the minimum Pedestrian Level of Service standards as defined by the Pedestrian Facilities Plan.

	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	B	D	-	-	C	-	C	C
<i>Target</i>	B/C	B/C	-	-	C	-	C	B/C
<i>With Improvements</i>	-	C	-	-	-	-	-	-

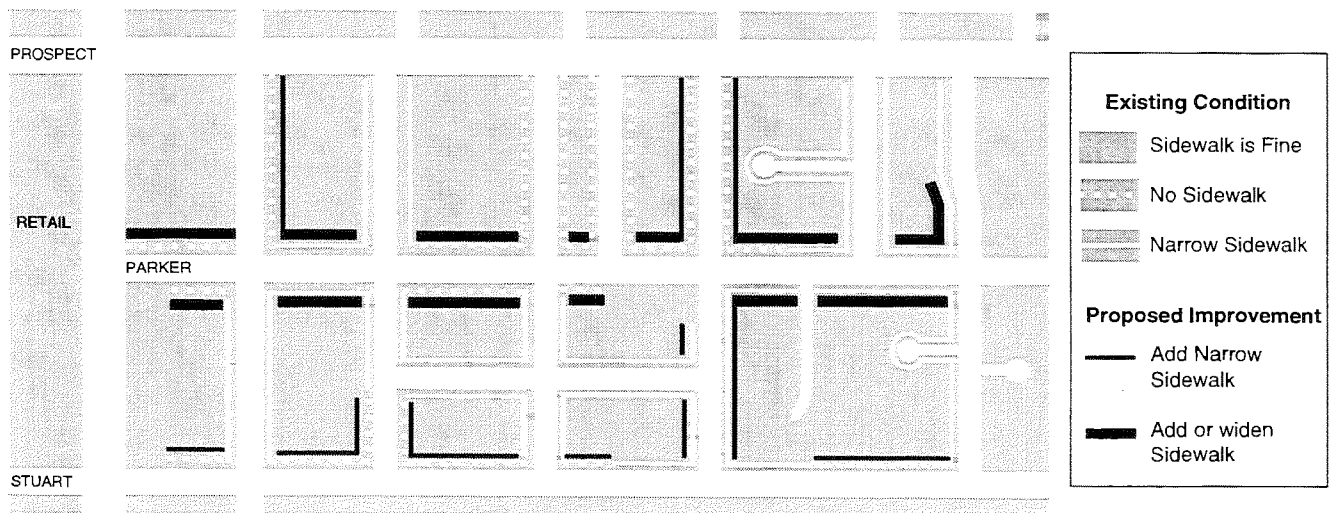
From a Pedestrian Level of Service perspective, the major issue is continuity and whether a major retrofit should be proposed to accommodate sidewalks on all streets or if only selected streets should be selected. Other issues included how to construct or widen a sidewalk, if recommended. Should the sidewalk be widened in the existing residential lots, requiring right-of-way purchasing and major relocation of landscaping, utility poles, and retaining walls, or could the streets be reduced in width with the sidewalks expanded into the streets, or a combination of both?

From the perspective of where the improvements should be provided, it is necessary to consider that the recently-approved street standards do not require sidewalks on streets where daily traffic is less than 300 trips per day. Because there are a number of streets within the study area that experience less than 300 daily trips, no new improvements would be proposed for those facilities. As a rule of thumb, each dwelling unit generates about 10 trips per day. Therefore, the maximum number of units using a street that would generate traffic less than 300 trips per day is 30 homes. This could be higher if there are multiple outlets for the street in study. Also, if the street is connected to an adjacent development, the volumes could be higher, even if the actual street has 30 or less dwellings.

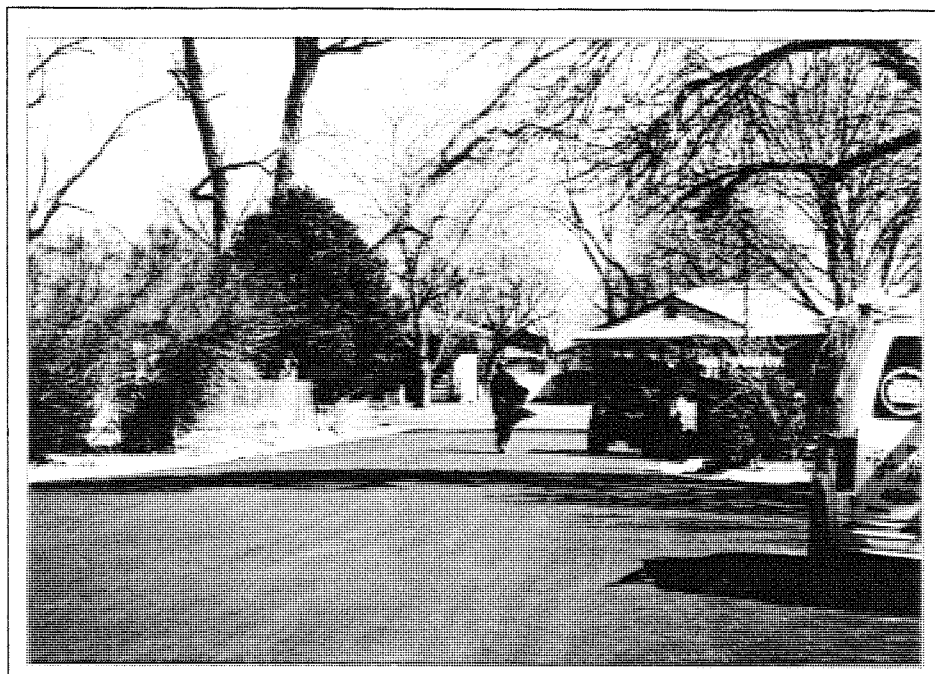
Streets that have volumes greater than 300 per day that are lacking sidewalks would suggest at a minimum narrow sidewalks, consistent with the neighborhood character. These streets include parts of Remington, Mathews, Whedbee and the north side of Stuart. Because Parker provides access to the neighborhood school and is a direct connection to the College Avenue commercial corridor, this street should be improved with a four and one-half foot sidewalk.

In general, the narrow two-foot sidewalks could be accommodated on back of curb for the streets selected for improvement. It is recommended that the four and one-half foot sidewalks on Parker be constructed forward, into the streets. The right-of-way on Parker would be wide enough to accommodate attached sidewalks, parking on both sides, and a travel lane in each direction. This would reduce the cost for the purchase of additional right-of-way and avoid the major redesign of landscaping and retaining walls. Widening or constructing the sidewalk into Parker would require more detailed drainage studies to determine the impacts of widening of the sidewalk into the street. Current curb ramp standards should also be used along Parker if they can be accommodated with storm drains.

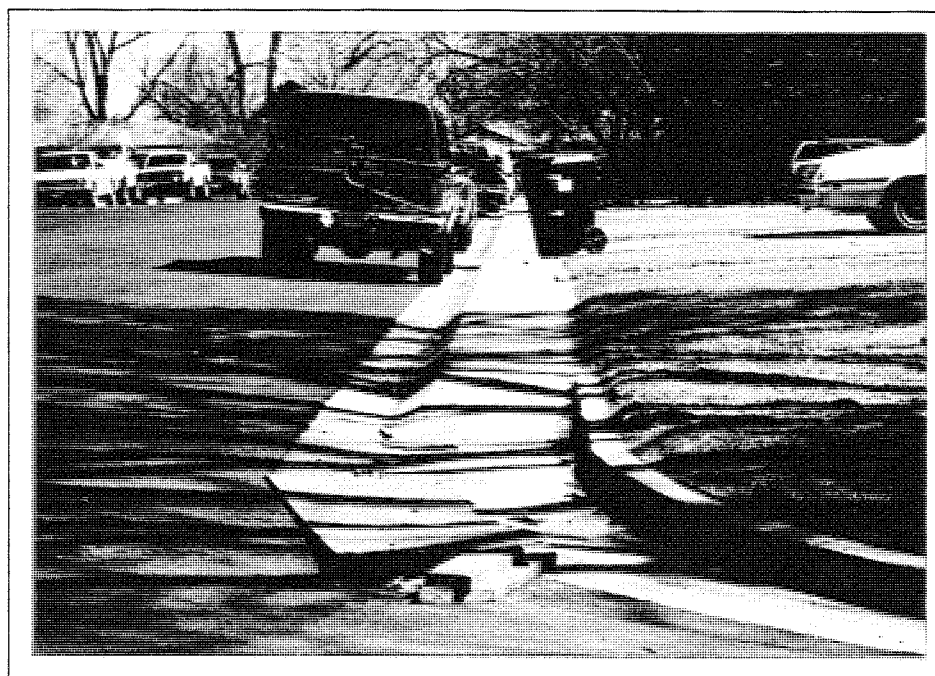
Area 1



Pedestrian LOS	Existing	Target	Mitigated	Recommendation:
Directness	B	B/C	-	Strategically install / widen sidewalks.
Continuity	D	B/C	C	
Street Crossing	B	B	-	
Visual Interest/Amenity	C	C	-	
Security	C	B/C	-	



*Older neighborhood
with deficient
sidewalks.*



*Substandard sidewalks
and ADA ramps.*

Neighborhood-to-Neighborhood and Transit Connection

This case study was selected to examine the arterial street crossing of Horsetooth. Horsetooth divides the city neighborhood with attached curb and sidewalks and the county neighborhood to the south where there are no curbs or sidewalks. The primary issue at this location is the safety of pedestrians crossing Horsetooth to get to and from the local parks and transit stops. Based on current conditions and the higher speeds and volumes along Horsetooth, this crossing was deemed a LOS "D" with a target of LOS "C."

	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	-	-	-	-	-	D	-	-
<i>Target</i>	-	-	-	-	-	C	-	-
<i>With Improve- ments</i>	-	-	-	-	-	A-C	-	-

There are three basic design objectives to improve this arterial street crossing:

- make the pedestrian more visible,
- slow traffic down, and
- provide a pedestrian refuge.

The design presented on the following page provides for significantly improved visibility through notification to drivers of a yield sign, direct illuminations, and a change in driving surface and width. This change in driving width also narrows the travel lanes from twelve to ten feet, which begin to pinch the driver, who will be required to slow down at this location. The third element of the design is the provision of median refuge area, to protect the pedestrian.

Although this crossing technically receives a "D" LOS, improvements are not recommended at this time because the roadway is not currently widened to its ultimate standards. Once Horsetooth is ultimately improved to four lanes, a mid-block crossing could be reconsidered based on the proposed mid-block crossing guidelines.



Pedestrian LOS

Existing
Target
Mitigated

Directness	-	-	-
Continuity	-	-	-
Street Crossing	D	C	A/C
Visual Interest/Amenity	-	-	-
Security	-	-	-

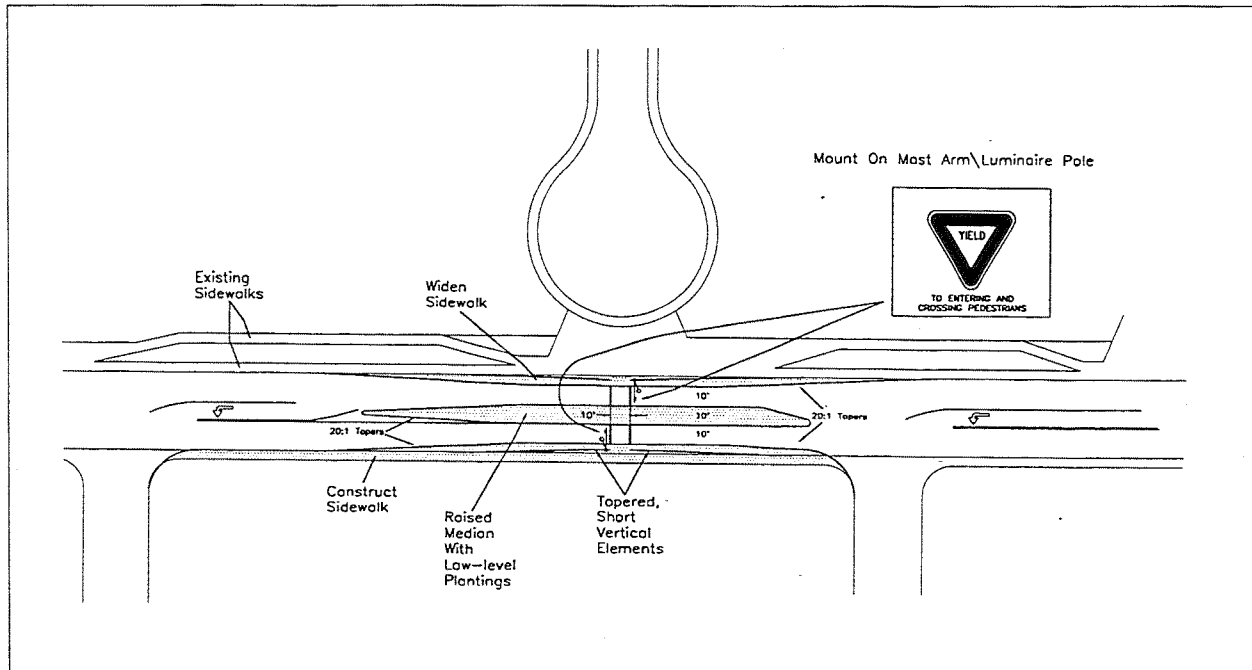
Recommendation:

No action at this time.
Consider 4 lane design when
Horsetooth is widened.

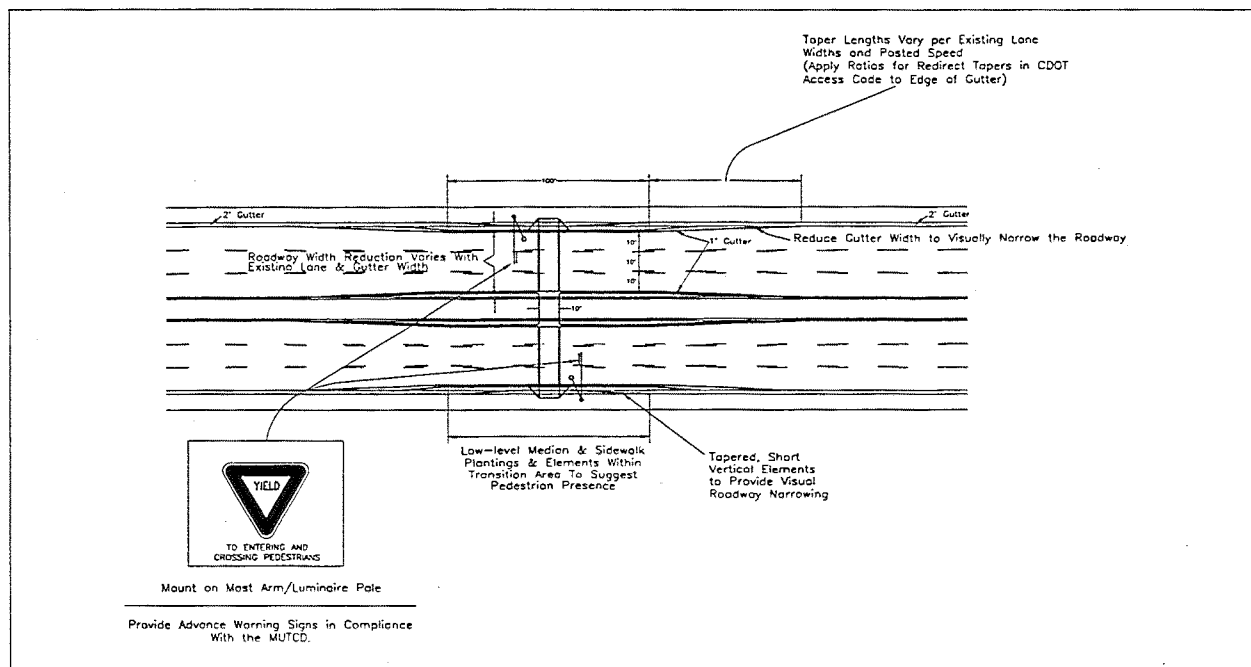
Area 2

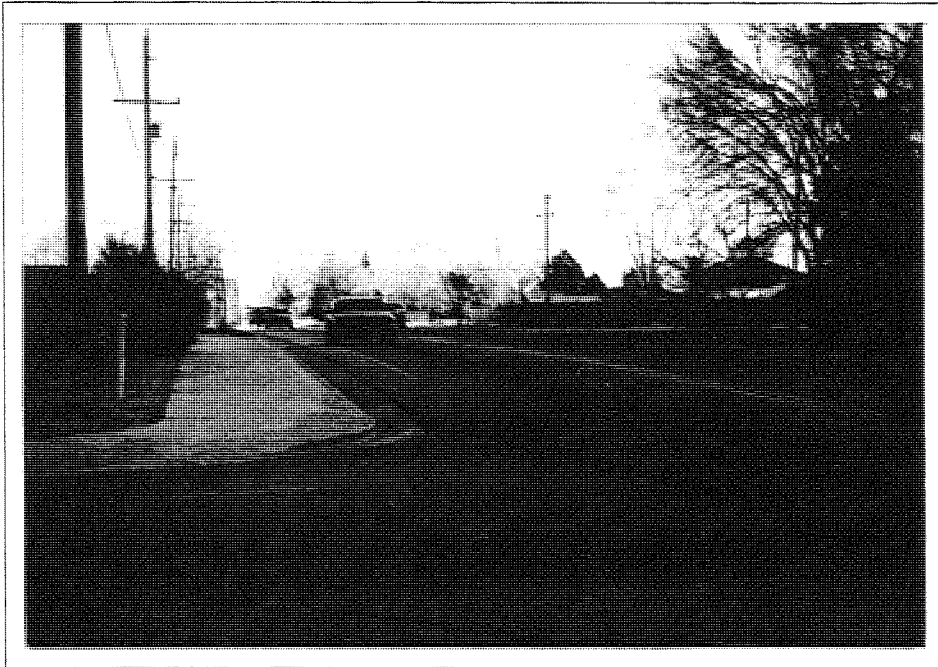
Mid-Block Crossing Design

2 Lanes

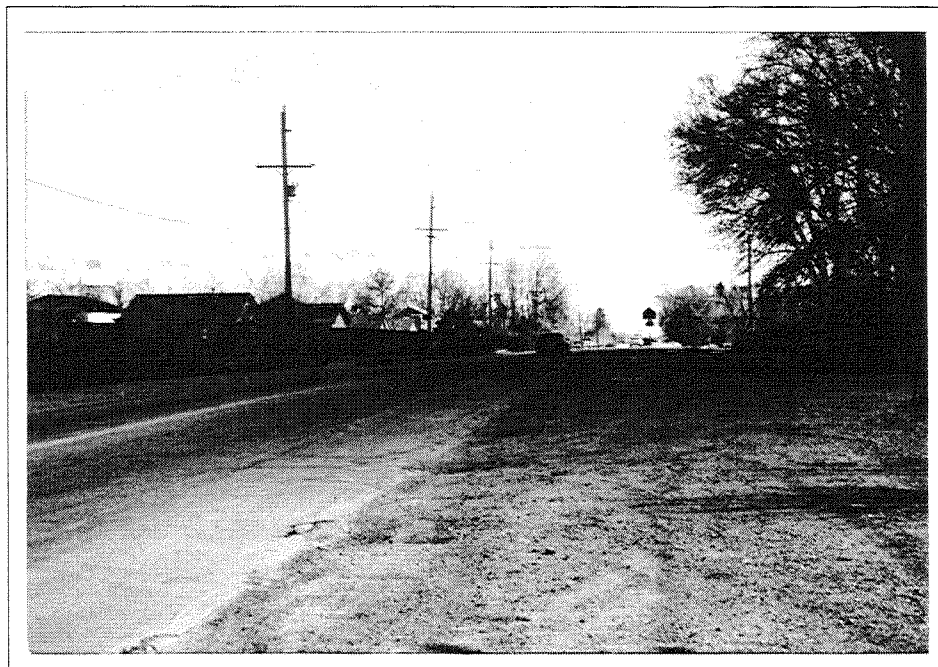


4/6 Lanes

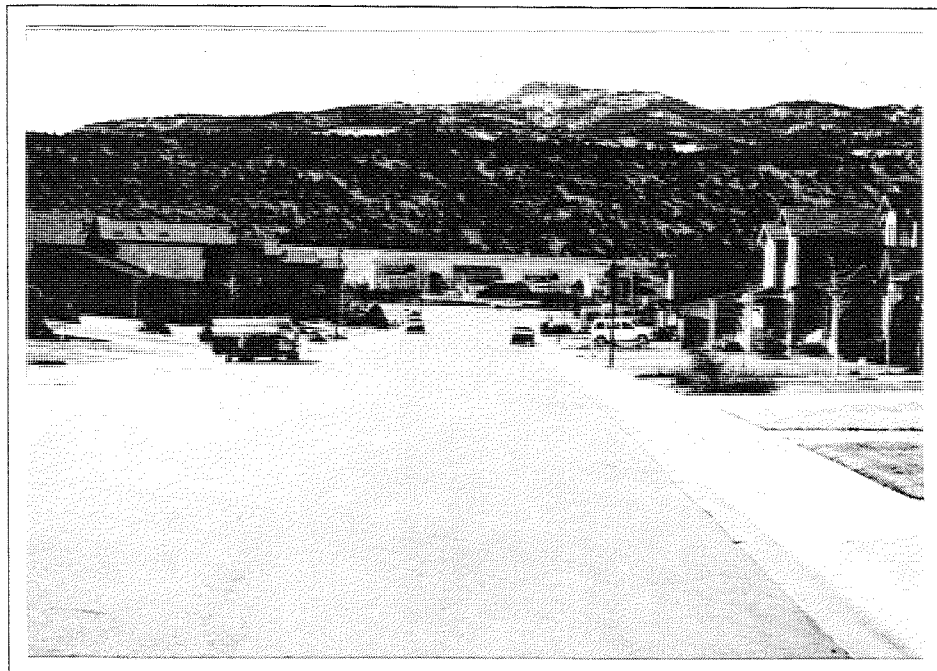




*Arterial street crossing
on north side of
Horsetooth.*



*Arterial street crossing
on south side of
Horsetooth.*



*Fort Collins,
attached side-walks
and driveways.*



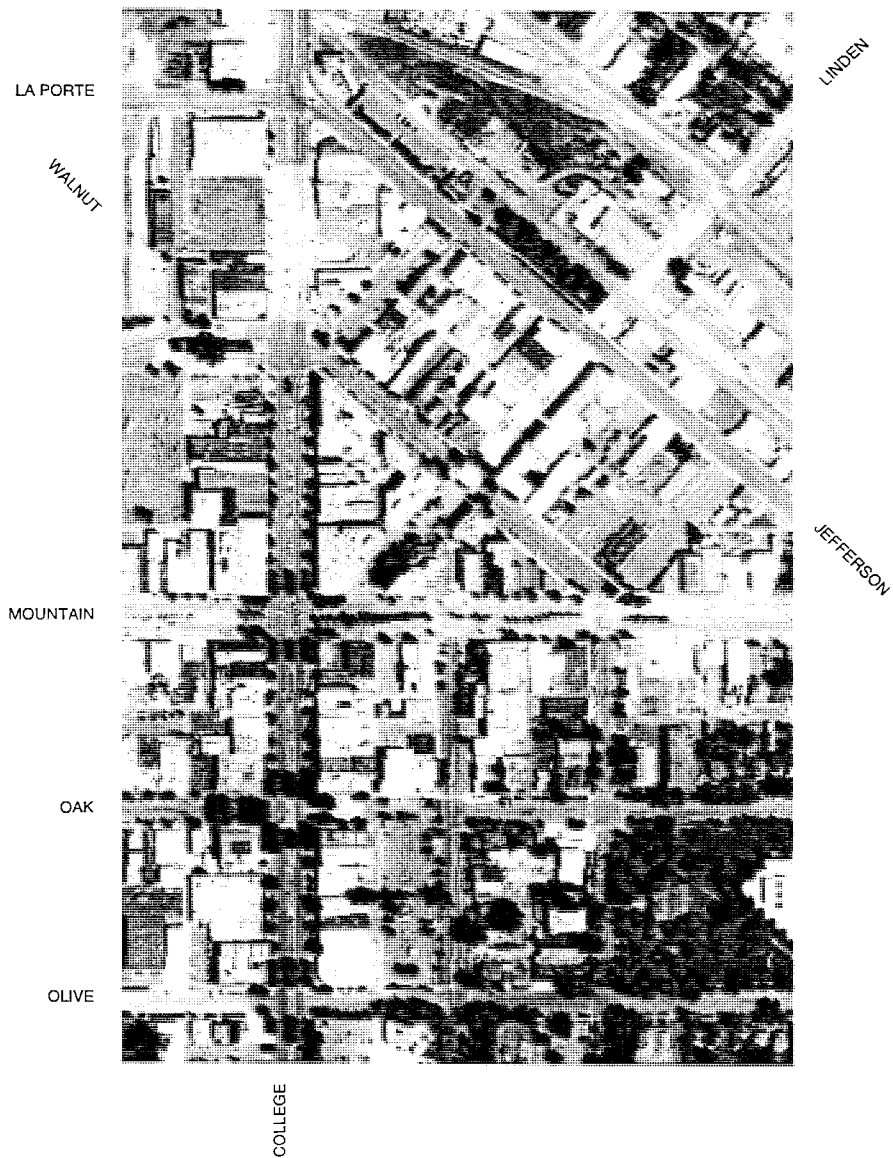
*Larimer County,
no sidewalks.*

Old Town

Old Town is Fort Collins' example of a desirable pedestrian environment—a place to bring out-of-state friends and relatives to walk around and shop. Based on the proposed Level of Service criteria, Old Town provides the targeted level of service for a pedestrian district and no improvements are required. The one area of future consideration is the connection of Old Town to the Poudre River. Although Linden Street has recently been improved to Riverside, the barrier of Riverside/U.S. 287 makes a north connection intimidating.

	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	A	A	B	B	B	-	A	B
<i>Target</i>	A	A	B	B	B	-	A	B
<i>With Improve- ments</i>	-	-	-	-	-	-	-	-

The one short-term concern is that some of the sidewalks in this area are beginning to lift because of tree roots, creating a potential tripping condition. It is therefore critical that an adequate budget be available to maintain this valuable resource.



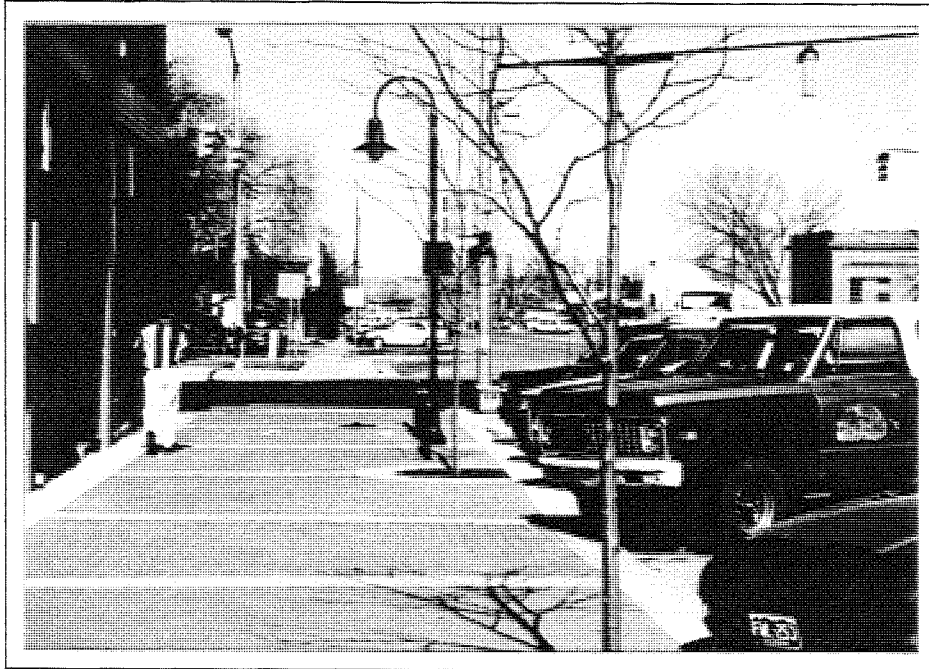
Pedestrian LOS	Existing	Target	Mitigated	Recommendation:
Directness	A	A	-	Maintenance
Continuity	A	A	-	
Street Crossing	B	B	-	
Visual Interest/Amenity	A	A	-	
Security	B	B	-	



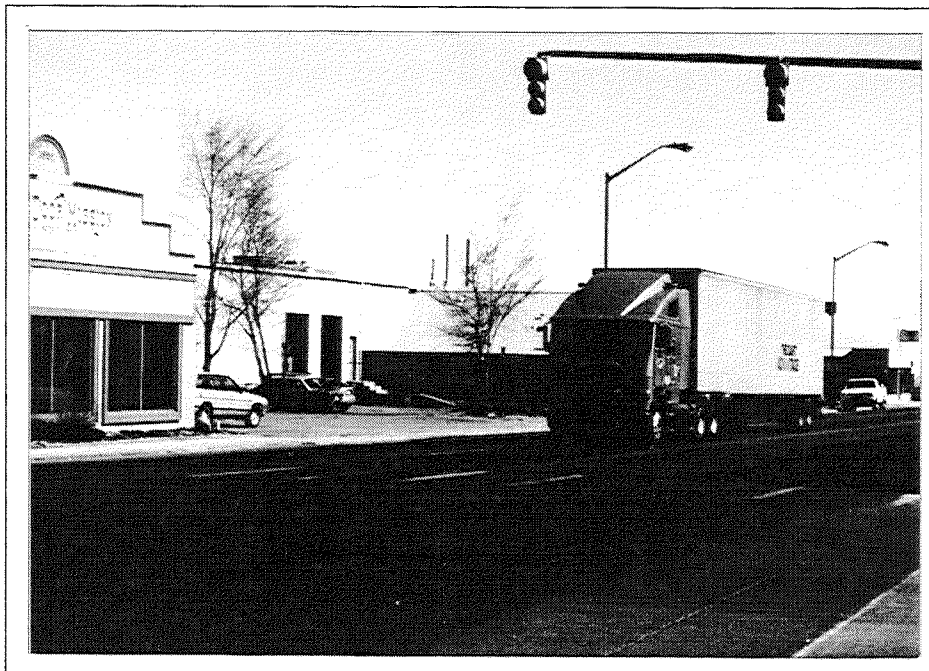
*Old Town,
a place to walk.*



*Old Town, a place
to stop and point.*



Pedestrian level street detail with sidewalk treatment, pedestrian streetlights, and tree wells.



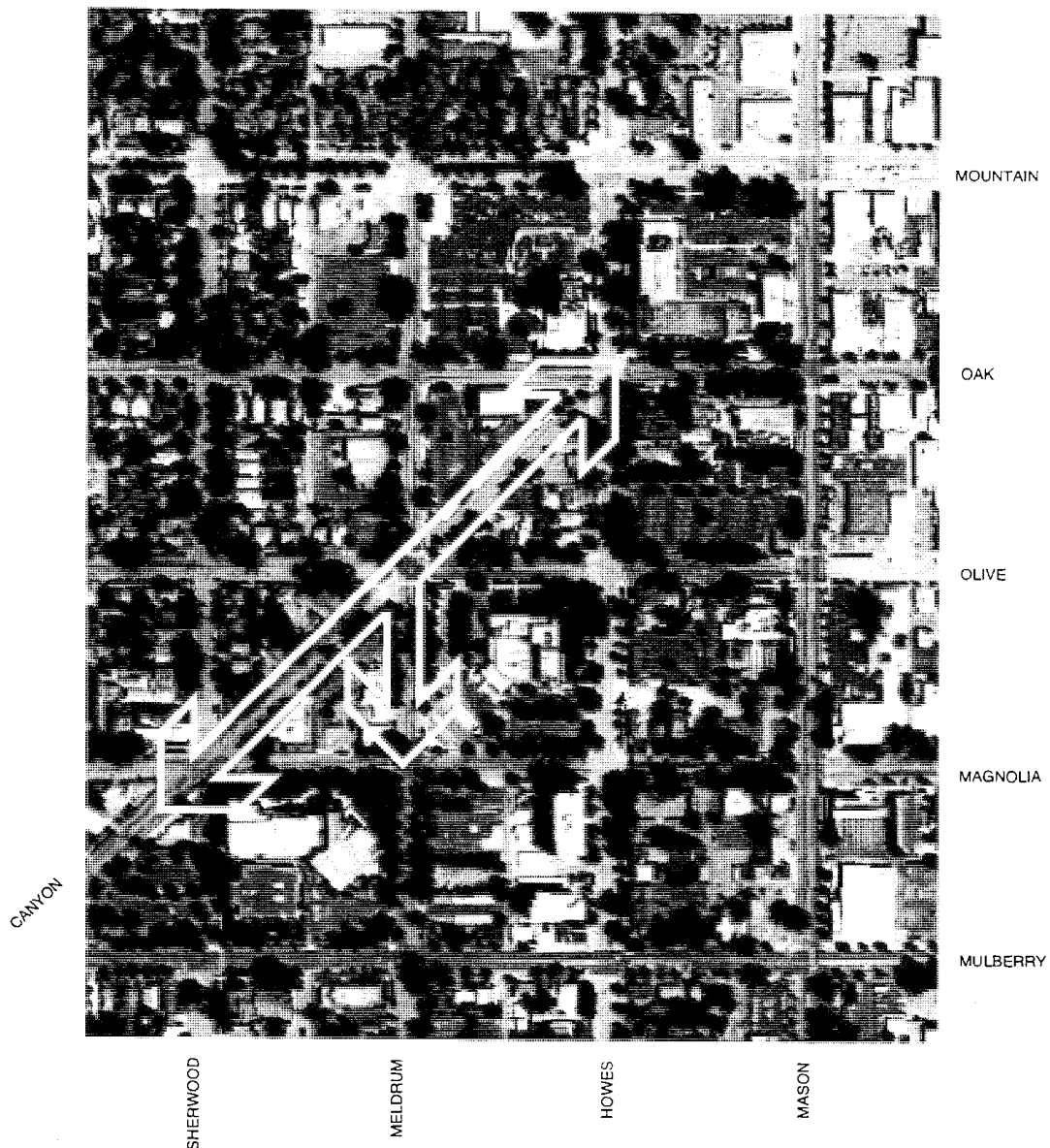
Traveling north Riverside Ave. / US 287 truck route is a barrier to Old Town.

Old Town to Lincoln Center

Area 4 is a transitional area from the Fort Collins Civic Center and Larimer County Government Center to residential. Strategically placed in this transition area is the Lincoln Center, a Fort Collins cultural focal point. The area is characterized with wide, low volume streets with mature landscaped parkways and detached sidewalks. This area scores high in all LOS measures and reaches all category targets for a pedestrian district, except for Visual Interest/Amenity.

	Direct-ness	Con-tinuity	Street Crossing				Visual Interest/Amenity	Secur-ity
			Signal-ized	Unsig-nalized Major	Unsig-nalized Minor	Mid-block		
<i>Existing</i>	A	A	B	-	-	-	B	A
<i>Target</i>	A	A	B	-	-	-	A	B
<i>With Improve-ments</i>	-	C	-	-	-	-	A	-

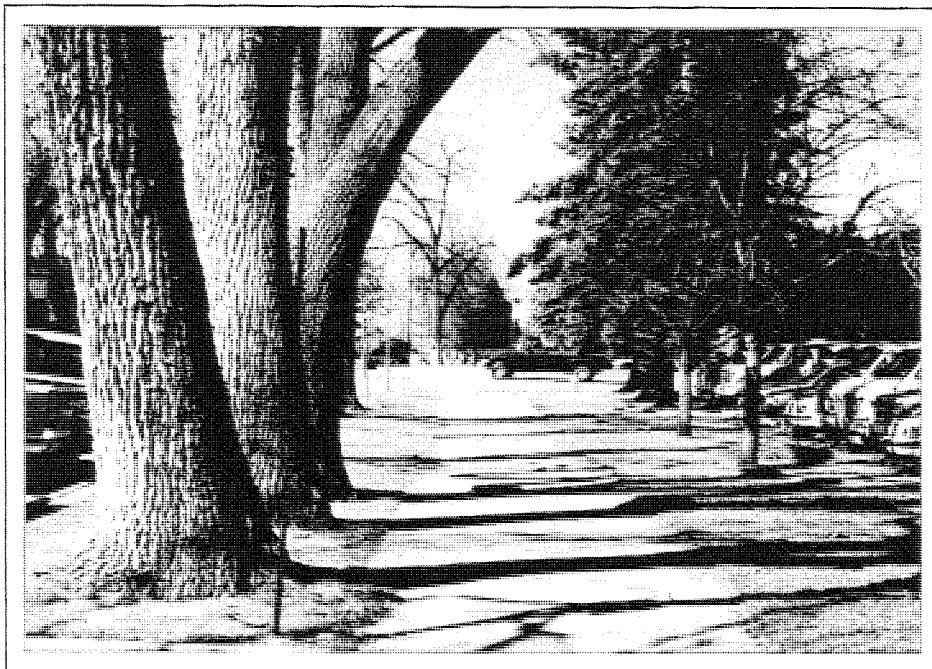
Improvements to increase this area to a LOS "A" for Visual Interest/Amenity could be as simple as adding some pedestrian streetlights, furniture, fountains, and/or art work to the environment. This area could also become a significant pedestrian art walk from downtown to Lincoln Center, including some major urban design features such as roundabouts, major sidewalks, lighting, and art.



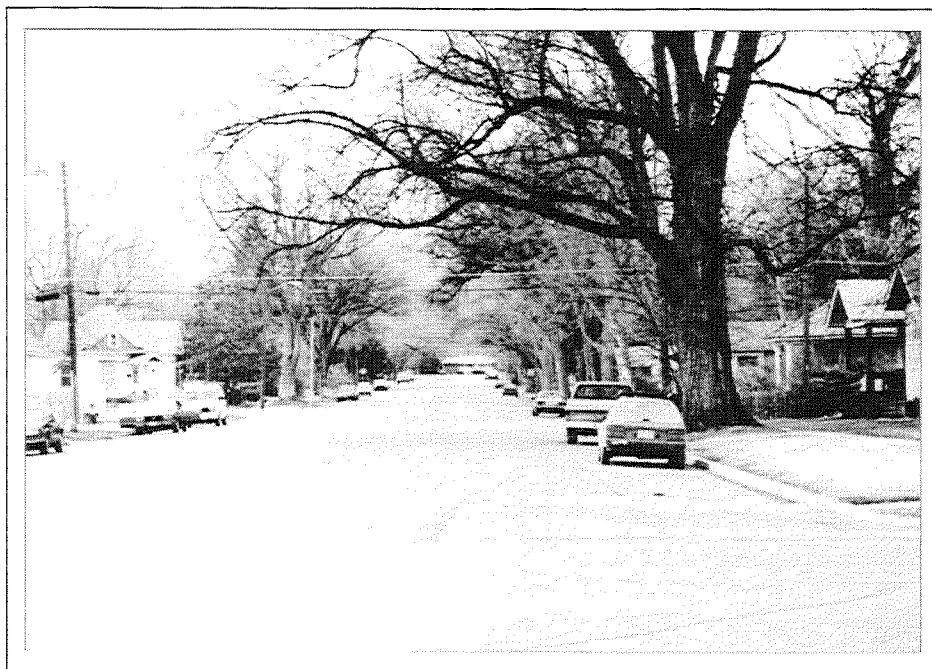
Pedestrian LOS	Existing	Target	Mitigated
Directness	A	A	-
Continuity	A	A	-
Street Crossing	B	B	-
Visual Interest/Amenity	B	A	A
Security	A	A	-

Recommendations:

- Consider enhancing the walk from downtown to the Lincoln Center.
- Urban Design
 - Roundabout
 - Lighting
 - Pedestrian Amenities
 - Public Art
 - Maintenance



*Tree lined parkways
are a legacy from our
forefathers.*



*Tree lined parkway
still provides a canopy
effect, even on wide
streets.*

CSU - Residential Neighborhood Connection

The Campus West Area 5, located west of Colorado State University and Shields, is a commercial and higher density residential area that primarily serves the University. Pedestrian activity is high along both Elizabeth and Plum, the two east-west streets that lead into the campus. Through years of redevelopment, intensification, and street widening, with little consideration for the pedestrian, this area has become a pedestrian unfriendly area.

Examples of pedestrian problems include:

- No sidewalks along some commercial shops where pedestrians must walk in parking drive aisles in competition between vehicles backing out of parking spaces and high volumes on Elizabeth (Continuity).
- Portions of the sidewalk removed to accommodate streetlight and traffic control sign (Continuity/Visual Interest and Amenity).
- Narrow sidewalks on Plum, which requires one of two pedestrians to walk in the street with trash containers blocking sidewalks (Continuity/Visual Interest and Amenity).
- No connection between the higher density residential area along Plum and the commercial district along Elizabeth (Directness).

	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	D	D					D	B
<i>Target</i>	A	A	-	-	-	-	A	B
<i>With Improve- ments</i>	B	B/B					B	

This area is defined by the Pedestrian Facilities Plan as a Pedestrian District, which requires the highest standards due to high pedestrian activity. Improvements to be considered would include:

- Construction of sidewalk adjacent to the curb in the drive aisle used for parking. Because the width is inadequate to have both a separate drive aisle and sidewalk, the sidewalks should be constructed with a

separate surface texture and color to highlight the fact that the vehicle is entering the pedestrian's space when parking or leaving.

- Relocate utility pole out of the sidewalk and place in landscaped area to the west on Elizabeth.
- Because Plum provides a direct route from the residential student housing to the CSU campus, widening and completing its sidewalk is also recommended. It is recommended that the east-west travel lanes be reduced in width from 12 to ten feet, which would calm the traffic through this area. This would permit widening of the sidewalk by an additional two feet per side.
- Explore the opportunity for an access easement between the residential and commercial areas.

Existing Problems

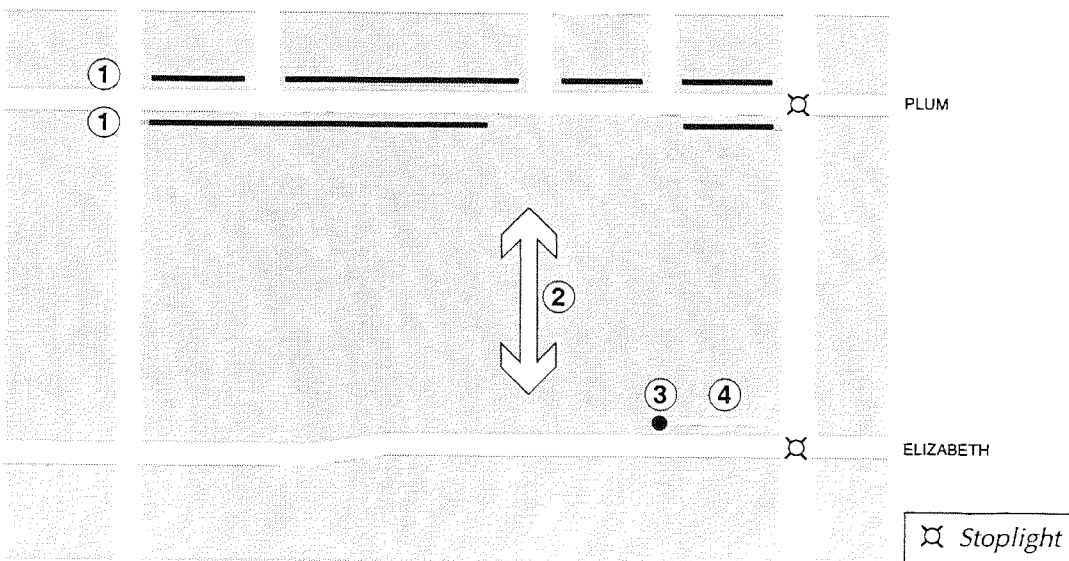


PLUM

ELIZABETH

CITY PARK

SHIELDS



PLUM

ELIZABETH

Stoplight

Pedestrian LOS

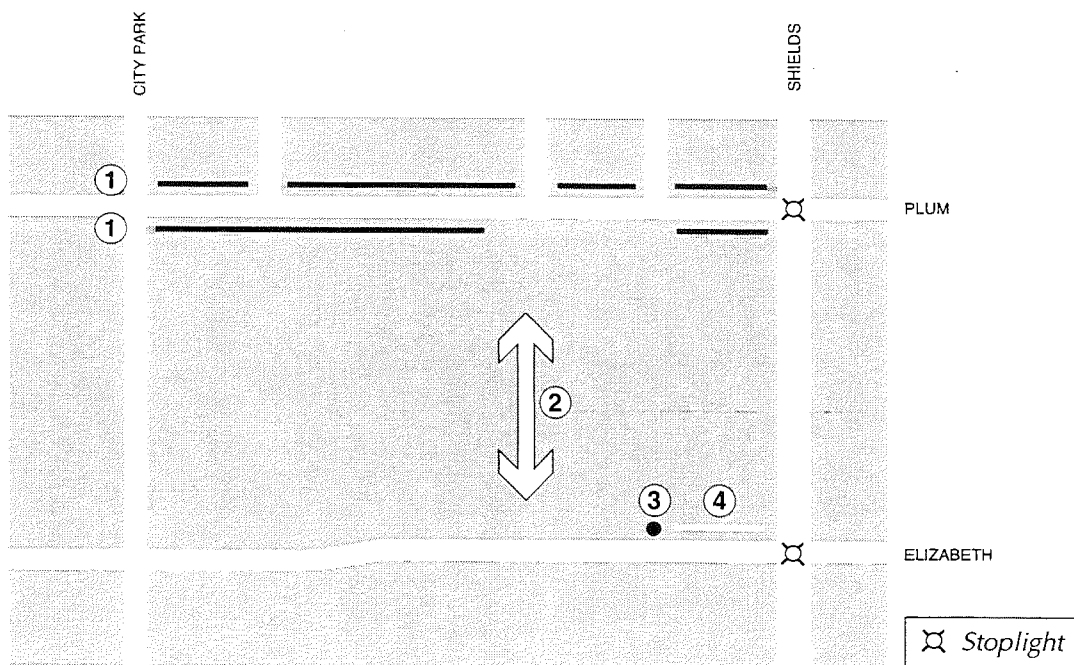
Existing Target

Directness	D	A
Continuity	D	A
Street Crossing	-	-
Visual Interest/Amenity	D	A
Security	B	B

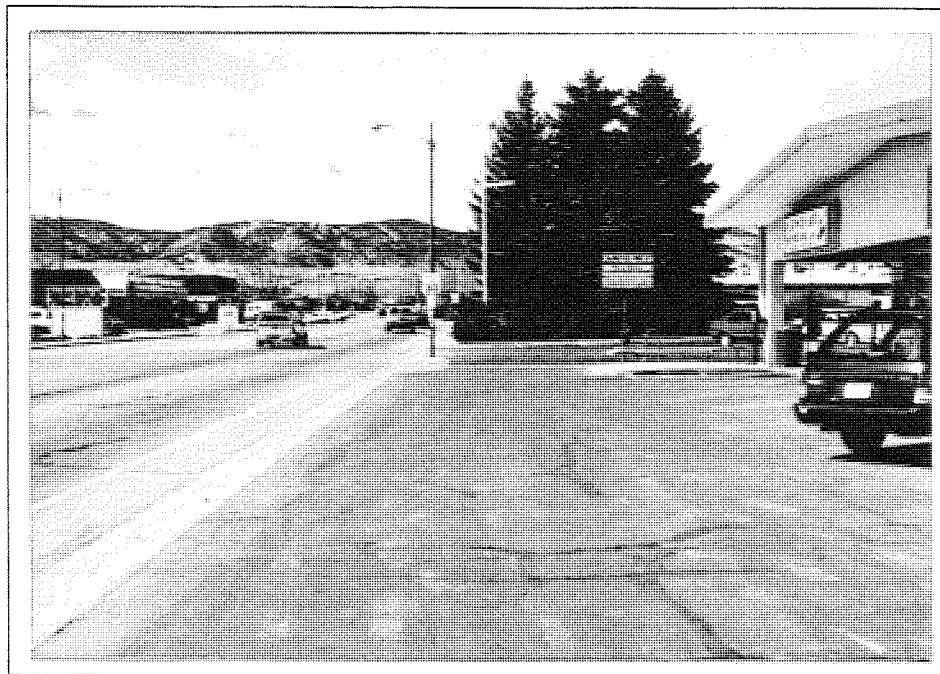
Problems:

- Two foot sidewalks
- No directness
- Streetlight in sidewalk
- No sidewalk, must walk in drive aisle

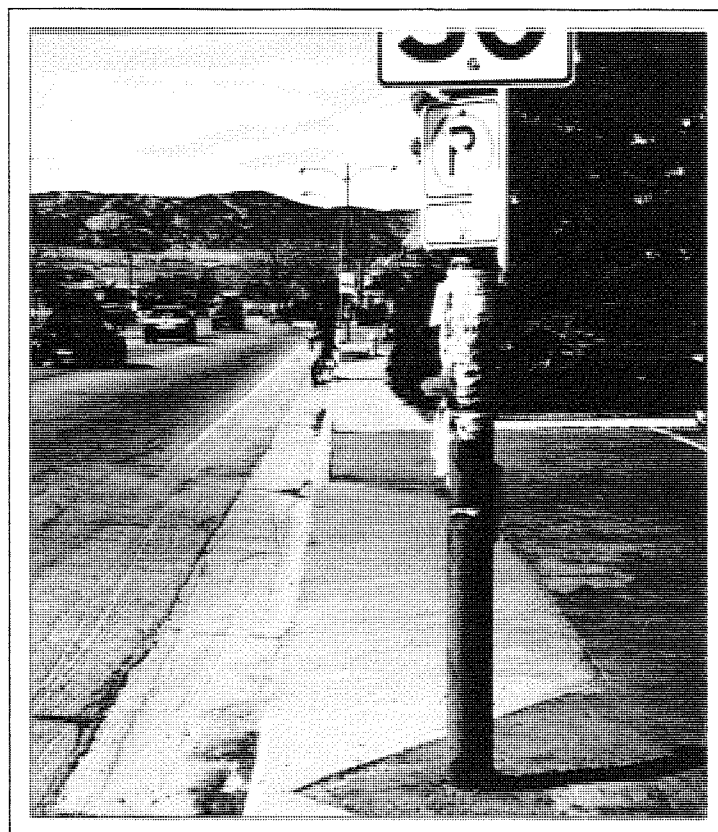
Recommendations



Pedestrian LOS	Existing	Target	Mitigated	Recommendations:
Directness	D	A	D	1 Widen sidewalks
Continuity	D	A	B	2 Explore opportunity for access agreement
Street Crossing	-	-	-	3 Relocate streetlight
Visual Interest/Amenity	D	A	C	4 Construct sidewalk within existing drive aisle
Security	B	B	B	



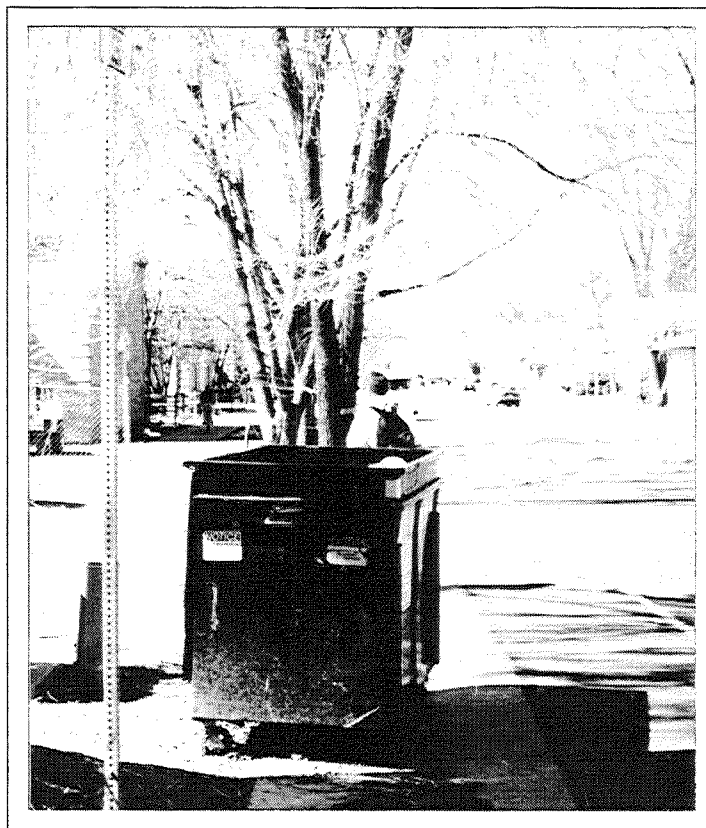
Elizabeth Street has portions with no sidewalk - where pedestrians negotiate passage through the drive aisle.



Elizabeth Street sidewalk is foresaken for traffic control.



Plum Street, a heavy pedestrian corridor to CSU, requires pedestrians to walk in the street.



Plum Street has areas with no sidewalk.

Newer Residential Connection

This development area was selected because it is under construction and reflects current development trends and City staff review. Although this development provides for attached sidewalks on all its streets, the major problem identified was the lack of any connection—vehicular, bicycle or pedestrian—to the older residential area located to the west in Larimer County. This older residential area was similarly disconnected from the Fossil Creek Neighborhood. Because this connection is lacking to the older residential area, local access to Werner Elementary School has been cut off. Without a connection, the school district is required to bus the children to the residential school because of the long walking distance.

	Direct-ness	Con-tinuity	Street Crossing				Visual Interest/Amenity	Secur-ity
			Signal-ized	Unsig-nalized Major	Unsig-nalized Minor	Mid-block		
<i>Existing</i>	F	B	-	-	-	-	C	B
<i>Target</i>	B	B	-	-	-	-	C	B
<i>With Improve-ments</i>	C	-	-	-	-	-	-	-

There is a dirt path that connects the intersection of Palmer/Hogan to Boardwalk and provides some access to the school. It is recommended that the access be temporarily improved with some form of asphalt path. It is further recommended that future development be required to provide a more formal connection as a condition of development approval.

Area 6



HARMONY

OAKRIDGE

Fence separating residential neighborhoods and school

Recommended temporary path

COLLEGE

BOARDWALK

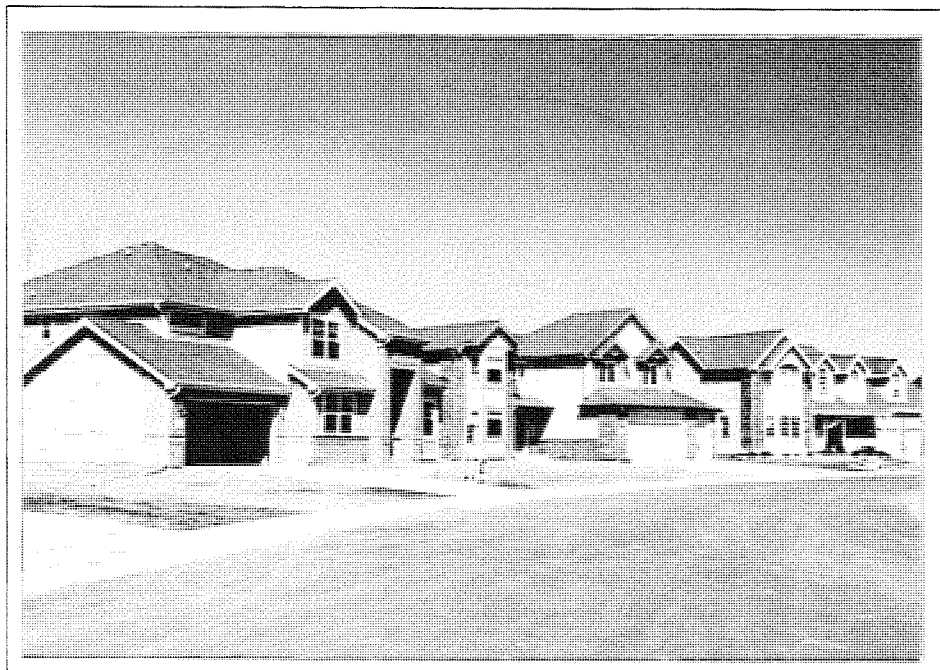
LEMAY

Pedestrian LOS

	Existing	Target	Mitigated
Directness	F	B	C
Continuity	B	B	-
Street Crossing	-	-	-
Visual Interest/Amenity	C	C	-
Security	B	B	-

Recommendations:

- Construct temporary path
- Require integrated path with future development



New development area with sidewalks to driveways.



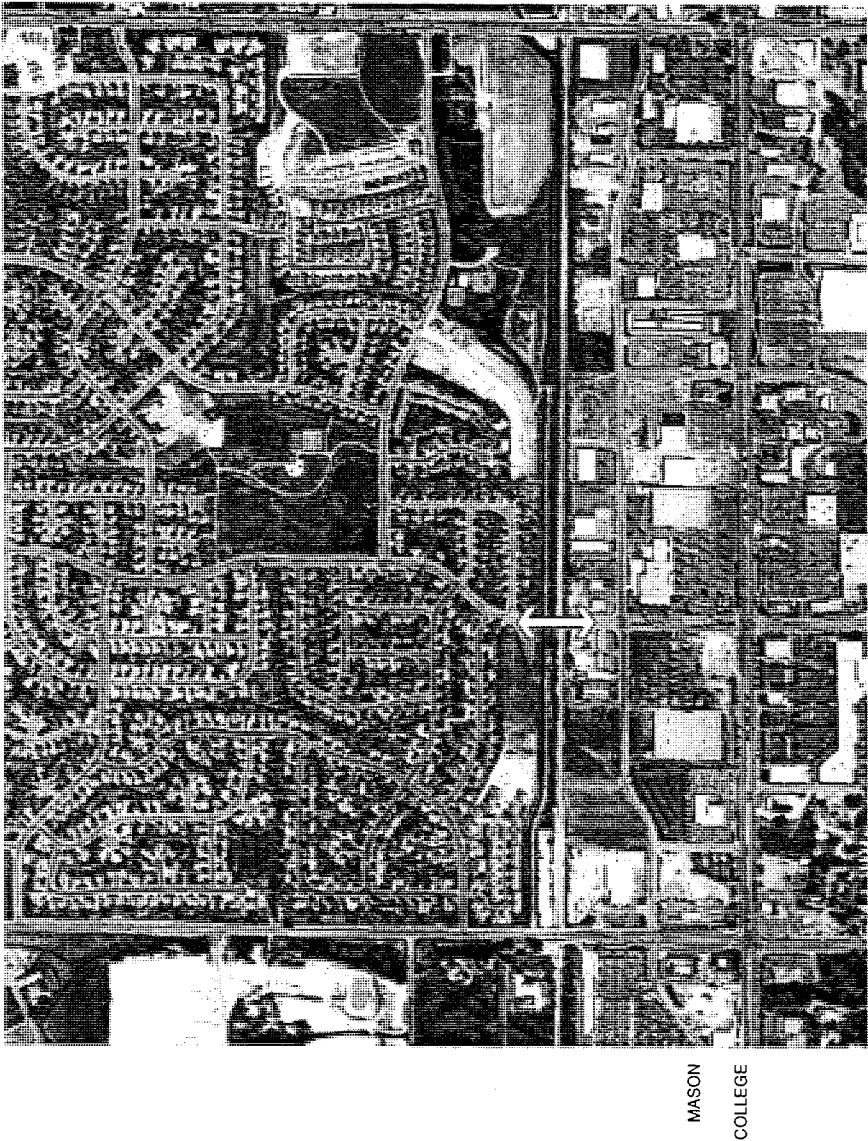
New development becomes a barricade between neighborhoods, requiring children in older neighborhood to be bussed to school because there is no pedestrian connection.

Residential Connection to Retail

The basic problem for this case study area is that the fenced-in railroad and drainage channel does not permit a direct connection between the residential neighborhood around Troutman and the commercial retail and restaurant developments along Mason and College. The only pedestrian connection between these two areas is to travel one-half mile to the south along a makeshift path to get to Horsetooth, cross the tracks and drainage channel, and then back one-half mile to the north.

	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	F	-	-	-	-	-	-	-
<i>Target</i>	B	-	-	-	-	-	-	-
<i>With Improve- ments</i>	B	-	-	-	-	-	-	-

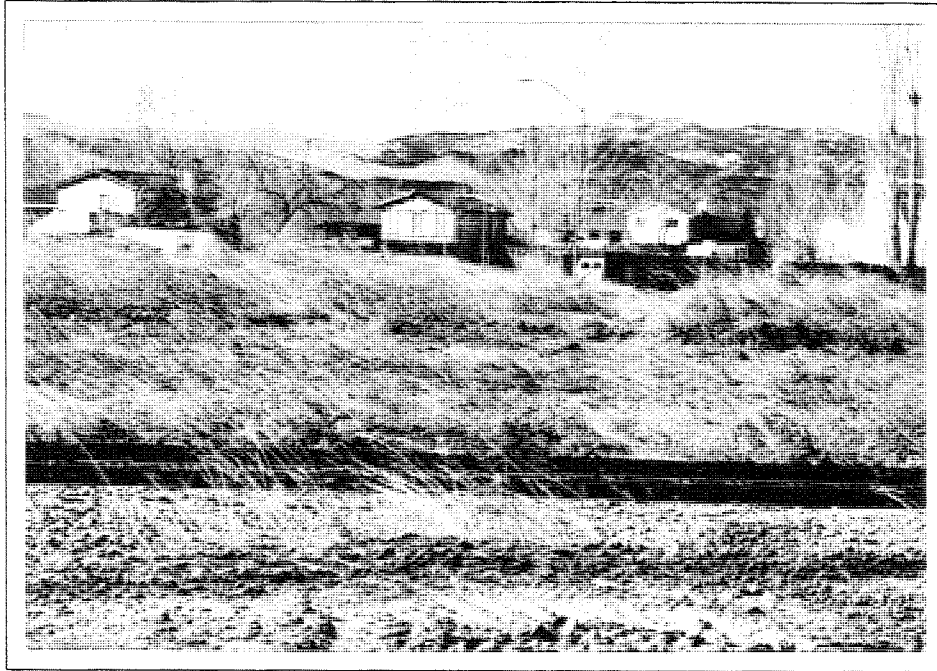
According to the Fort Collins Master Street Plan, Troutman is connected over the tracks and drainage channel. This connection had been controversial, as it would introduce increased traffic volumes in the residential developments along Troutman. If this connection is made, adequate pedestrian directness will be provided. If it is determined that the Troutman connection should be removed from the Master Streets Plan, a grade-separated bicycle and pedestrian connection could provide the desirable connection.



Pedestrian LOS	Existing	Target	Mitigated
Directness	F	B	B
Continuity	-	-	-
Street Crossing	-	-	-
Visual Interest/Amenity	-	-	-
Security	-	-	-

Recommendation:

Provide grade-separated pedestrian / bicycle crossing over railroad and drainage channel.



Railroad creates a barrier between residential and commercial area.



The pedestrian must take a long walk for a short trip.

New Business

Area 8 is a new commercial office district located west of the new Fort Collins High School on Timberline Road. Similar to the selection of Area 6, this area was selected to determine the adequacy of planning and development review process for new commercial office developments. Although there were basic attached sidewalks located throughout this area, details like a pedestrian linkage from the transit stop to the office development located adjacent to the transit stop were missing. Instead, a potential transit user will be required to walk across the landscaped frontage, or take the sidewalk around the block and enter the back of the building through the parking lot.

	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	F	-	-	-	-	-	-	-
<i>Target</i>	B	-	-	-	-	-	-	-
<i>With Improve- ments</i>	A	-	-	-	-	-	-	-

The mitigation to a failing level of service for directness is to construct a sidewalk from the transit stop/Timberline sidewalk to the building entrance.



Pedestrian LOS	Existing	Target	Mitigated
Directness	F	B	A
Continuity	-	-	-
Street Crossing	-	-	-
Visual Interest/Amenity	-	-	-
Security	-	-	-

Recommendation:

Construct sidewalk from arterial street sidewalk to front door of commercial building.



New office development without a pedestrian connection from the street to the building.



Bus bench located in dirt.

South College Avenue

This area is generally defined as the intersection of College and Drake and along the College Avenue commercial corridor. It is characterized as an unfriendly pedestrian environment where sidewalks are missing and the crossing of the College/Drake intersection is intimidating. If there is an overall objective to improve the pedestrian activity along College, this area does not achieve the target level of service thresholds for an activity corridor.

This area fails in both continuity and street crossing. The failure in continuity is the lack of sidewalks on both sides of College, south of Drake. Moving south along College, not only are the sidewalks missing, but there are major uncontrolled access locations which leave the pedestrian vulnerable to inbound and outbound traffic. The signalized intersection crossing of Drake and College is also intimidating because of the number of travel lanes to cross and the right and left turning vehicles over the crosswalks.

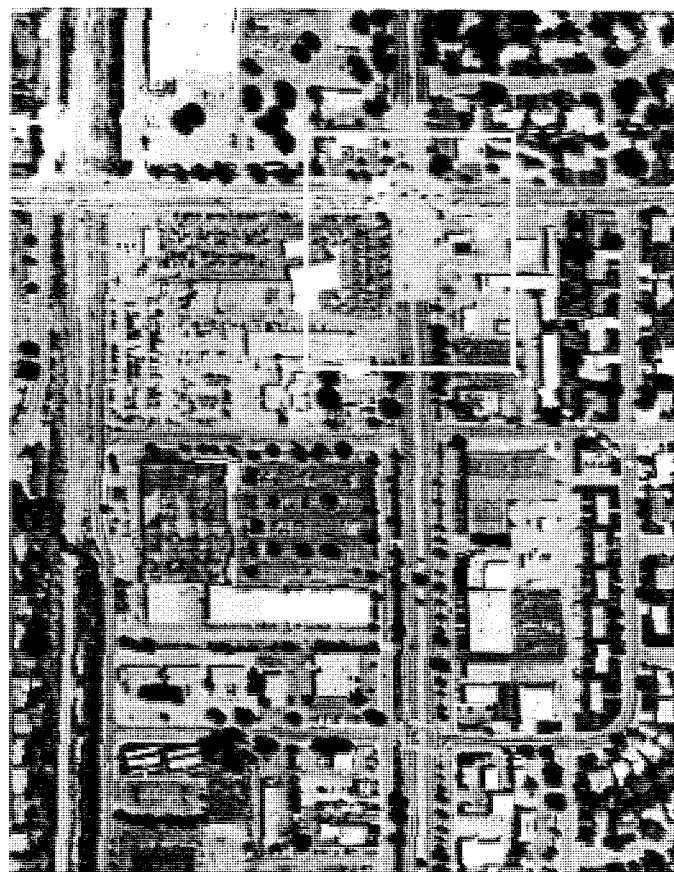
	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	A	E	E	-	-	-	E	B
<i>Target</i>	B	B	C	-	-	-	B	B
<i>With Improve- ments</i>	-	B	C	-	-	-	B	-

On the east side of College, a sidewalk should be constructed from the College/Drake intersection to the south. It is further proposed that the wide service station access, which blends into the eastern frontage road, be significantly reduced to minimize the conflict area between the pedestrian and automobile. South of the intersection, where the pedestrian sidewalks cross the frontage road, it is further proposed that a painted crosswalk be added to clarify the pedestrian route.

On the west side of College, the sidewalk should be provided from Drake down to the frontage road. It is further proposed that the wide unmarked driveway to the Ford dealership and the paint store be significantly reduced to minimize vehicle and pedestrian conflicts.

Signal improvements will also be needed to make this a safe intersection to cross. Improvements such as providing a six-foot median refuge area, an exclusive pedestrian signal phase, and enhanced amenities will improve this intersection to a “C” level of service.

It should be noted that this intersection is scheduled for improvement, which would include dual left turn lanes on College to Drake and an east-west bike lane on Drake. These improvements, however, will not provide for an adequate median refuge area for the pedestrian. Therefore, considering a dedicated pedestrian signal phase as a demonstration project should be considered.



McCLELLAND

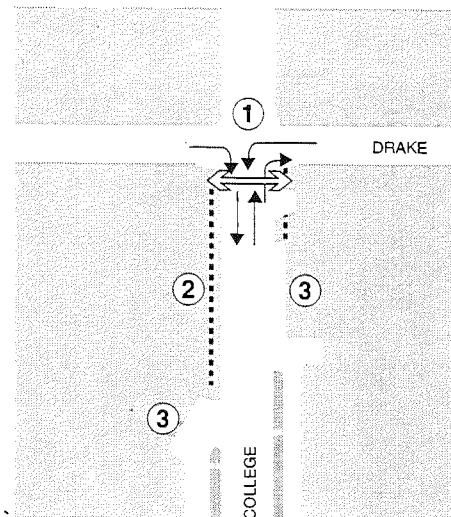
COLLEGE

DRAKE

THUNDERBIRD

HARVARD

Existing Problems

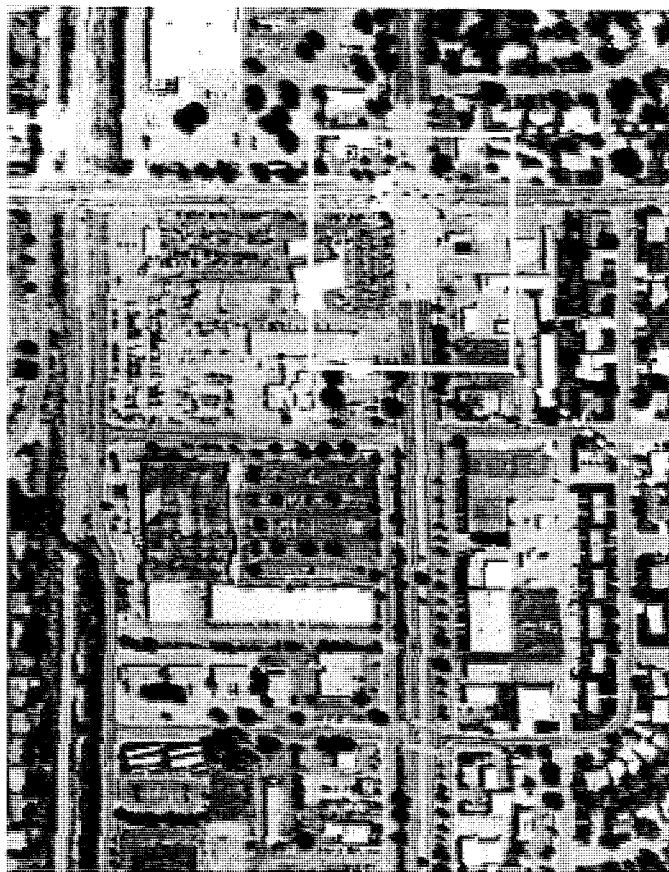


Pedestrian LOS

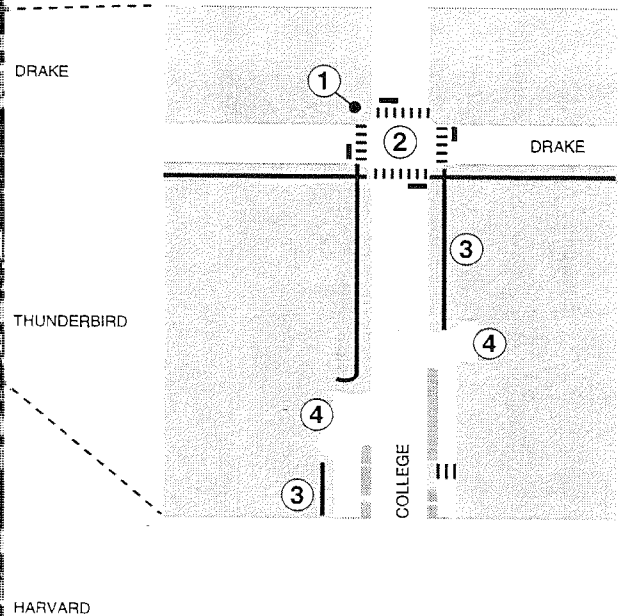
	Existing	Target
Directness	A	B
Continuity	E	B
Street Crossing	E	C
Visual Interest/Amenity	E	B
Security	B	B

Problems:

- 1 Pedestrian turn conflicts
- 2 Missing sidewalks
- 3 No access control



Recommendations



Pedestrian LOS	Existing	Target	Mitigated
Directness	A	B	-
Continuity	E	B	B
Street Crossing	E	C	C
Visual Interest/Amenity	E	B	B
Security	B	B	-

Recommendations:

- 1 Add pedestrian signal phase
- 2 Add stop bars
- 3 Install sidewalk
- 4 Consolidate Access



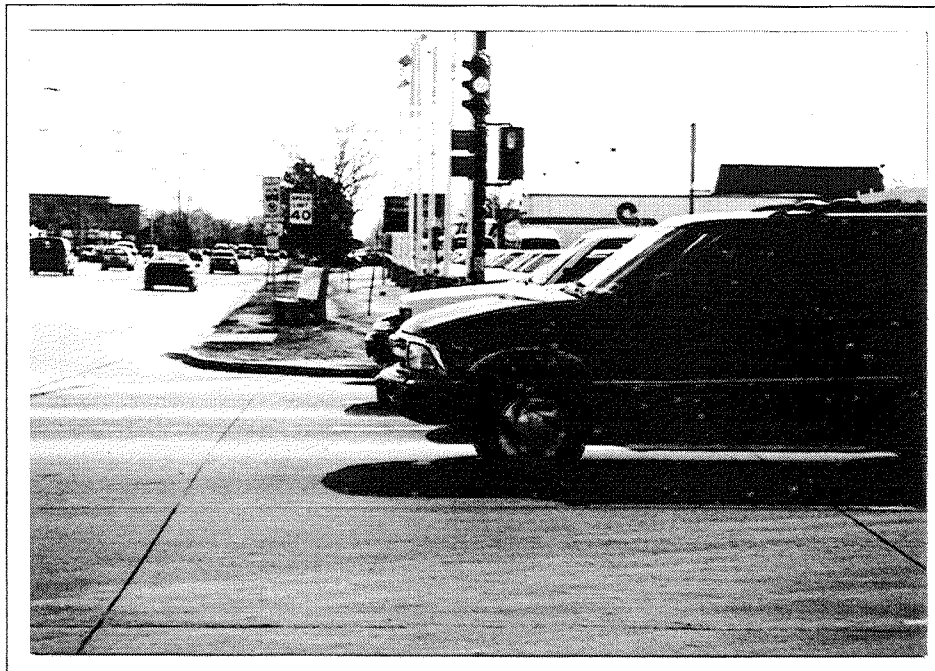
Missing sidewalk.



Missing ramp.



Pedestrian is in conflict with the automobile.



Vehicles line up on crosswalk.

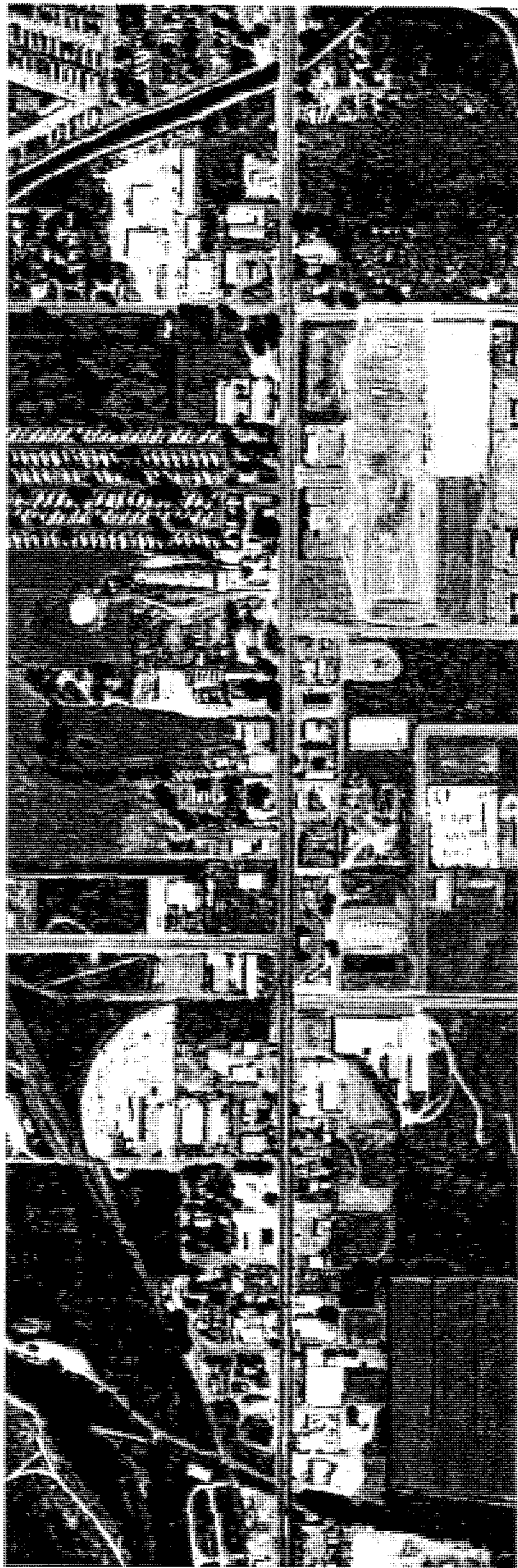
North College Avenue

The North College Avenue corridor is an extremely unsafe and non-friendly pedestrian environment. Lack of sidewalks, lack of access control, and minimum opportunities to cross College make this area a candidate for major redesign and pedestrian enhancement.

Even the few signals along this long stretch of roadway are pedestrian unfriendly, as they have no pedestrian indication or push button. If a pedestrian approaches a signal to cross College, he or she is forced to wait for a vehicle to activate the east/west green phase. Given the minor volumes on the side street, this wait can be long enough to cause the pedestrian to cross on the red.

	Direct- ness	Con- tinuity	Street Crossing				Visual Interest/ Amenity	Secur- ity
			Signal- ized	Unsig- nalized Major	Unsig- nalized Minor	Mid- block		
<i>Existing</i>	B	F	F	-	-	-	F	B
<i>Target</i>	B	B	C	-	-	-	B	B
<i>With Improve- ments</i>	-	B	C	-	-	-	B	-

The City of Fort Collins has prepared the North College Avenue Corridor Plan, Standards, and Guidelines for the North College Avenue Corridor. As development occurs along this corridor, the Level of Service Analysis should be addressed, particularly for street crossings. To provide a level of comfort for the pedestrian to cross North College, a raised median of sufficient width to accommodate a refuge area should strongly be considered. At a minimum, pedestrian indication and buttons should be placed on all signals.



WILCOX

HICKORY

COLLEGE

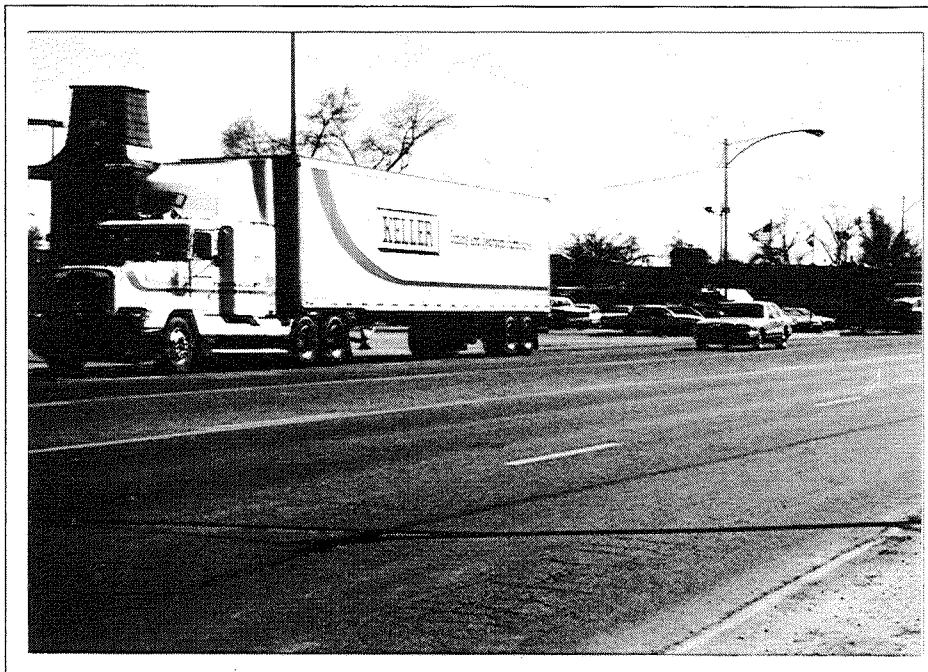
Pedestrian LOS	Existing	Target	Mitigated
Directness	B	B	-
Continuity	F	B	B
Street Crossing	F	C	C
Visual Interest/Amenity	F	B	B
Security	B	B	-

Recommendations:

- Install curb, gutter, parkway, and sidewalk
- Implement traffic access control plan
- Install raised medians with refuge
- Improve signalization with automatic pedestrian phase or pedestrian push buttons



Activity corridor is missing basic pedestrian facilities.



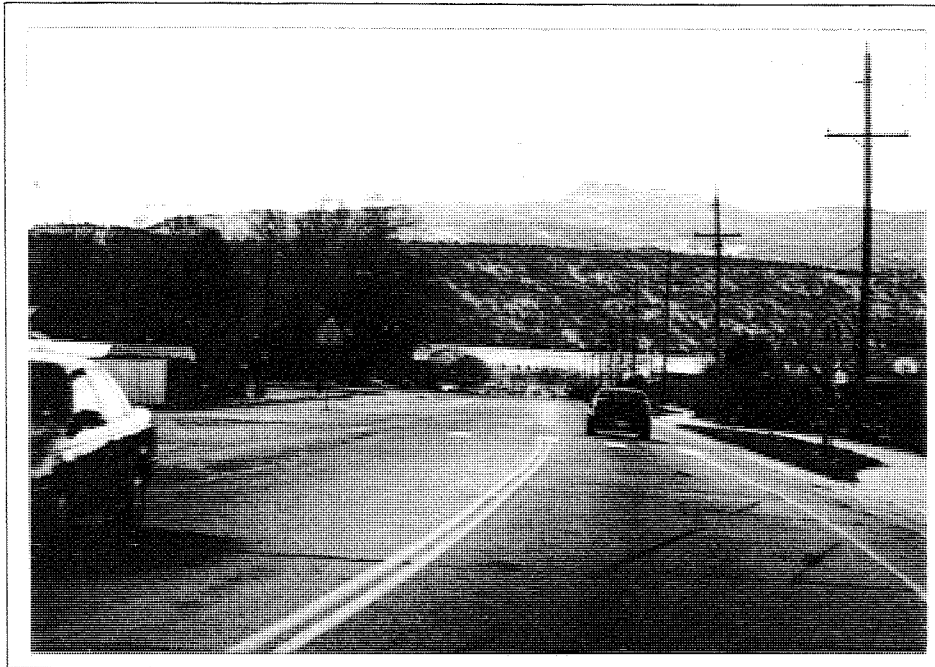
High volume of trucks on corridor.



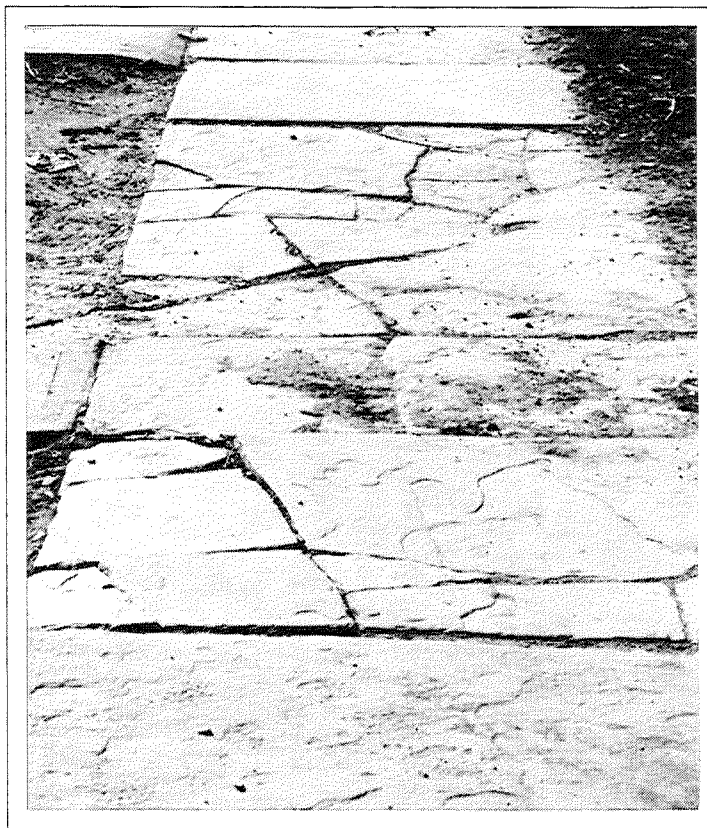
*Lack of sidewalk
between transit stop
and building.
Pedestrian is pinched
between street and
sign.*



*Pedestrian bridge
providing continuity.*



Poor pedestrian planning where crosswalk does not align with sidewalk.



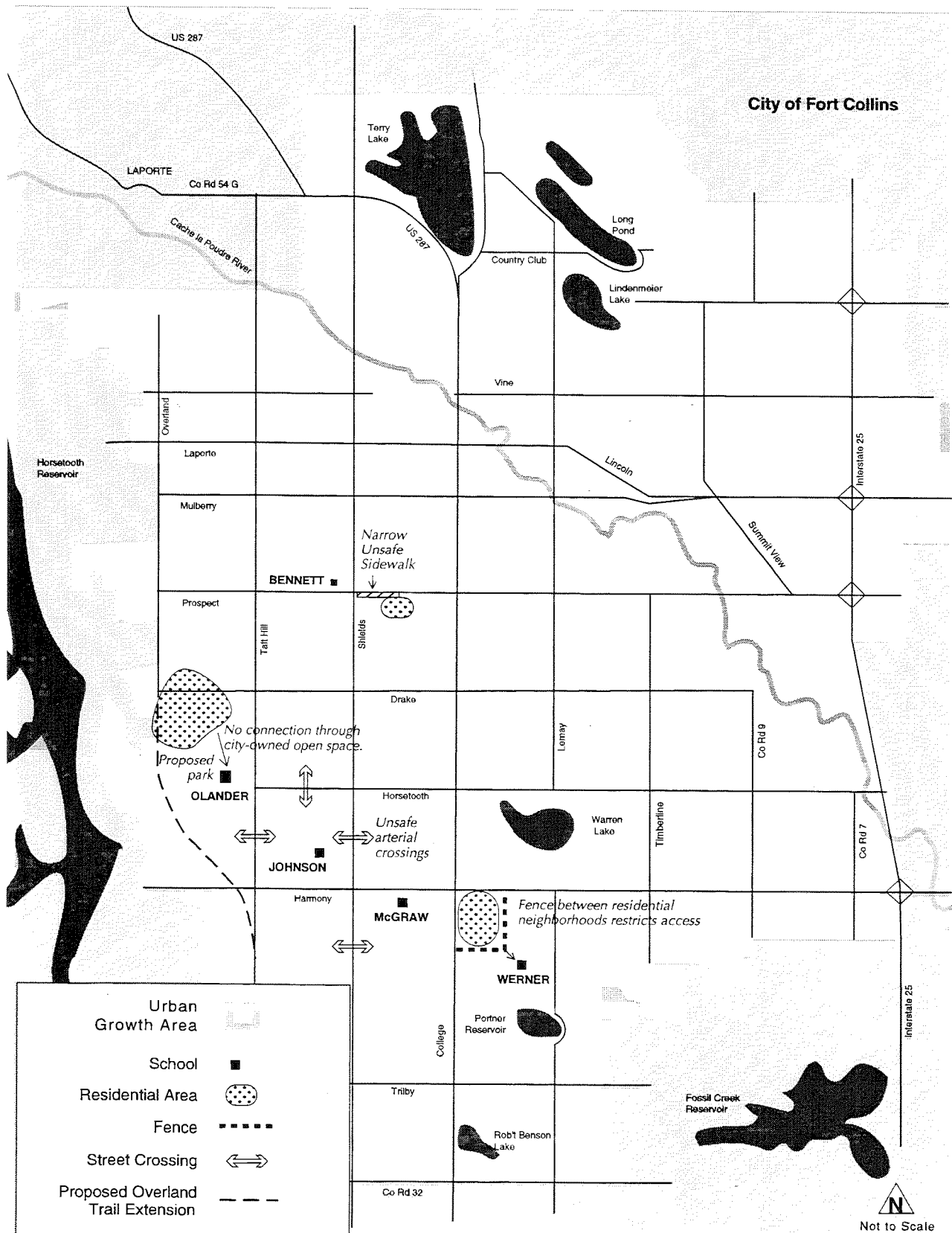
Maintenance is a serious issue.

Although not part of the selection of the ten study areas, a strong recommendation from the Pedestrian Advisory Group was to examine pedestrian routes to school problems. Based on a meeting between consultant and the Poudre R-1 School District, a number of routes to school problem types were identified as follows:

- Children in the residential development located south of Drake near Overland Trail are bused to Olander Elementary School because there is not a direct connection between the residential area and the school across the open space area. This could be corrected with the construction of a seven-foot path, which would be wide enough to accommodate a pickup with snow blade. This connection should be provided in conjunction with the development of the proposed park and/or extension of Overland Trail.
- Because of difficulty crossing Taft Hill, Horsetooth and Shields, children are bused to Johnson Elementary School.
- Children in the residential area south of Prospect and east of Shields are bused to Bennett Elementary because of the unsafe narrow sidewalk adjacent to Prospect.

The above are but a few problems identified in getting children safely to school without the expense of a perpetual busing program. Particularly avoidable are those developments which could provide connection and those that create barriers through a discontinuous pedestrian network. Proper siting of the schools themselves is also critical in providing a sound pedestrian system to serve our schools.

Route to School Problem Areas



Appendix B

National Efforts in Pedestrian Planning

National Efforts In Pedestrian Planning

A literature search was conducted to determine what jurisdictions in the United States are preparing pedestrian plans, and the elements of these plans that might be appropriate for the City of Fort Collins. In general, efforts in pedestrian planning are very limited and many of these plans are within bicycle/pedestrian efforts. The State of Florida and jurisdictions within Florida are the most aggressive in planning for the pedestrian. Other jurisdictions that have taken the lead in this effort include the City of Portland, the Central Puget Sound Region in the State of Washington, and a handful of other jurisdictions around the United States.

The table on the following page summarizes the various subjects contained in the pedestrian plans obtained. A more detailed bibliography follows the table. The following are themes that were consistent to many of the plans:

- The pedestrian has not been adequately accommodated in the auto-dependent suburban environment.
- Funding for pedestrian improvements is not existent or is disproportionate with other transportation investments.
- Pedestrian and transit use is closely tied to higher density, proximity to employment, grid pattern streets, sidewalk continuity, and ease of street crossings.
- Although there are many measures of a pedestrian system, there are three that stand out; street crossings, sidewalk continuity, and directness.
 - Ease of street crossings is based on street width, extent of signalization, and traffic volumes.
 - Sidewalk continuity is the extensiveness of sidewalks (is the sidewalk system complete or are there missing segments that create a barrier?).
 - Directness (can you get there from here?).
- There were a number of methods for defining pedestrian areas. One approach that may be applicable for the City of Fort Collins is as follows:
 - Pedestrian District (i.e. activity areas, transit connections)
 - City Walkways (along major streets to provide connections between neighborhoods, transit, and activity areas)
 - Local Service Walkways (connections between residential areas and local destinations such as schools, parks, and neighborhood centers)
 - Off-Street Path (intended to serve both recreational and other walking trips)
 - Transit linkages

National Efforts In Pedestrian Planning

- Many of the pedestrian plans propose the following:
 - Pedestrian standards (i.e. to promote safety, connectivity, and directness),
 - Methods for measuring an existing or proposed environment,
 - Pedestrian plan goals, objectives and action items, and
 - Pedestrian design guidelines that address where sidewalks should be provided, definition of a sidewalk corridor (curb, planting zone, clear through zone-sidewalk and frontage zone), preferred and allowable ramp configurations, median island refuge areas, pedestrian-activated signals, prohibition of crossings, and guidelines for transit stops, etc.
- It is recognized that pedestrian accidents account for one of the highest death rates in automobile crashes, in spite of the fact that not many people walk. Still, many states and jurisdictions do not have pedestrian codes favorable to the pedestrian. Education and enforcement of pedestrian traffic laws is also lacking, in large part because of the gray area of automobile versus pedestrian right-of-way.
- Pedestrian standards developed for various communities include signal requirements, crosswalk ramps, crosswalk design, refuge islands in medians, and pedestrian path facility furniture.
- School facilities and elderly pedestrians need the greatest investment in pedestrian planning.

Summary Table - National Efforts In Pedestrian Planning

Pedestrian Subjects									
Ordinances/Codes	Maintenance	Enforcement	Design Standards	Education	Encouragement	Funding	Policy	Goals and Objectives	Evaluation

1. The Pedestrian Environment, Portland, OR									X
2. Building Orientation, Portland, OR	X						X		X
3. Pedestrian Master Plan, Portland, OR	X		X	X	X	X	X	X	X
4. Comprehensive Pedestrian Plan, Pinellas County, FL	X		X	X	X			X	
5. Collier County Comprehensive Pathway Plan, Collier County FL			X	X	X			X	
6. The MPO's Guide to Pedestrian Planning for Polk County, Borrow, FL	X			X	X	X		X	X
7. Hernando County Comprehensive Pedestrian Plan, Spring Hill/Hernando County FL			X	X	X	X		X	X
8. Pedestrian/Bicycle Component for the MPO, Central Puget Sound Region, WA						X	X	X	
9. Spokane Regional Pedestrian/Bikeway Plan, Spokane Regional Transportation Council, WA	X	X	X	X	X	X			X
10. MACOG Regional Bicycle/Pedestrian Plan, South Bend, IN			X	X	X	X			
11. Creating a Comprehensive Pedestrian System, OKI Regional COG, Cincinnati, OH			X	X	X	X	X	X	
12. A Regional Bicycle and Pedestrian Facilities System Plan, Southeastern Wisconsin RPC, Waukesha, WI	X	X		X	X	X	X	X	X
13. Bicycle and Pedestrian Action Plan for the Rochester Metro Area, Genesee Transportation Council, Rochester, NY		X	X	X	X			X	
14. Wisconsin Pedestrian Planning Guidance, Wisconsin DOT	X		X	X	X	X	X	X	
15. 1994/1995 Walking and Running, Maine Department of Parks and Recreation									
16. The Pedestrian Plan, Maine DOT		X		X		X	X	X	
17. Developing Pedestrian Plans, Florida DOT			X	X	X	X		X	
18. Florida Pedestrian Safety Plan, Florida DOT			X	X	X	X			
19. Florida Pedestrian System Plan			X	X	X	X	X	X	X

Pedestrian Planning Annotated Bibliography

1. **The Pedestrian Environment, Making the Land Use Transportation Air Quality Connection (LUTRAQ), Portland Oregon, Parsons Brinkerhoff Quade and Douglas, Inc., Cambridge Systematics, Inc., and Calthorpe Associates, Sponsored by 1000 Friends of Oregon, December 1993**

This report examines and quantifies the relationships between household travel mode choices and the following variables—quality of the pedestrian environment, residential density, transit level-of-service, and proximity to employment activity. The report identified that pedestrian and transit use is closely tied to higher density, proximity to employment, grid pattern streets, sidewalk continuity, and ease of street crossings. Ease of street crossings is based on street width, extent of signalization, and traffic volumes. Sidewalk continuity is the extensiveness of sidewalks (is the sidewalk system complete or are there missing segments that create a barrier?) and connectivity (can you get there from here?). This report also develops a concept referred to as the pedestrian environment factor (PEF). In the second part of this report, multiple regression techniques are employed to statistically confirm the hypothesis that these land use variables do in fact affect household mode choice decisions.

2. **Building Orientation - A Supplement to the Pedestrian Environment, Making the Land Use Transportation Air Quality Connection (LUTRAQ), Parsons Brinkerhoff Quade and Douglas, Inc., Cambridge Systematics, Inc., and Calthorpe Associates, Sponsored by 1000 Friends of Oregon, Portland Oregon, December 1993**

This document provides supplemental information to the LUTRAQ, The Pedestrian Environment document by identifying the relationship between pedestrian activity and building orientation. The study concluded that in areas where commercial buildings are set back, the typical driver travels 50% more miles per day than areas where buildings are oriented toward the street. The study further recommends that ordinances and policies designed to regulate the built environment should be changed. Information from this study was incorporated into the Portland Pedestrian Master Plan.

3. **Pedestrian Master Plan (Preliminary Discussion DRAFT), City of Portland Oregon, Office of Transportation Engineering and Development, Vanderslice, Ellen, October, 1995**

This plan is Portland's first step in developing the Pedestrian Element of the Transportation System Plan (TSP). The purpose of this document is to establish a twenty-year framework for improvements that will enhance the pedestrian environment and increase opportunities to choose walking as a mode of transportation.

The report proposes pedestrian goals and objectives and recommends four pedestrian classifications: Pedestrian District (i.e. activity areas, transit connections), City Walkway (along major streets to provide connections between neighborhoods, transit and activity areas), Local Service Walkway (connections between residential areas and local destinations such as schools, parks, and neighborhood centers) and Off-Street Path (intended to serve both recreational and other walking trips).

Pedestrian Planning Annotated Bibliography

The Pedestrian Master Plan also proposes pedestrian design guidelines (i.e. to promote safety, directness, and continuity) and provides a method for measuring an existing or proposed environment. The report concludes with implementation action items to meet the pedestrian plan goals and objectives. The report also contains a Pedestrian Design Guidelines Appendix which address where sidewalks should be provided, definition of a sidewalk corridor (curb, planting zone, clear through zone-sidewalk and frontage zone), preferred and allowable ramp configurations, median island refuge areas, pedestrian activated signals, prohibition of crossings, and guidelines for transit stops. A second appendix also presents the current Oregon Pedestrian Codes, which are significantly more pedestrian supportive as compared to Colorado Code.

4. Comprehensive Pedestrian Transportation Plan, Pinellas County Planning Department, April 1991

Through integration with state programs and policies, the MPO has made a firm commitment to improving pedestrian conditions in Pinellas County. This plan outlines a comprehensive program designed to address the pedestrian issues facing Pinellas County, and to meet the goals established by the MPO through their Pedestrian Transportation Advisory Committee. The report identifies land use generators and attractions where pedestrian linkages should be enhanced and presents a survey on why people do not walk. The report also included a pedestrian accident analysis showing that 72% of all pedestrian accidents occurred when pedestrians did not cross the street at an intersection. The report identified the fact that education and enforcement of pedestrian traffic laws are lacking. The plan discussed pedestrian design standards for bus stop locations, crosswalk and pavement markings, pedestrian signal warrants, traffic signal timing, pedestrian signal actuation. The report also addresses both positive and negative barriers to the pedestrian.

5. Collier County Comprehensive Pathway Plan, The Naples (Collier County) Florida Metropolitan Planning Organization, Collier County Long Range Planning - Graphics Section, Chapman, Anita L., December 1994

This document provides for the development and maintenance of pathways and promotes their safe use. Key to implementation is the enormous need for pedestrian sidewalks and safe arterial crossings and public support. Key issues raised include the need for a complete pathway network, pedestrian access and mobility from residential areas, and transit stops to activity areas, and retrofitting suburbia. The plan is to guide the MPO's Bicycle/Pedestrian Program with six essential areas: 1) establishment; 2) engineering, 3) education 4) enforcement, 5) encouragement, and 5) economics with specific pedestrian goals and objectives for each area.

6. The MPO's Guide to Pedestrian Planning for Polk County, Polk County Planning Commission, November 1991

This plan emphasizes the process of developing, disseminating, and implementing pedestrian safety programs, as well as methods of incorporating engineering countermeasures in new highway design and retrofitting existing facilities. Consideration is also given to legislation, ordinances, policies, standards, and reallocating transportation funds designed to

Pedestrian Planning Annotated Bibliography

improve and expand the attention given to pedestrians and to walking by highway, transportation, planning and traffic safety agencies. The plan defines walkability including safety, security, convenience, directness, system cohesiveness, comfort, and attractiveness.

7. **Hernando County Comprehensive Pedestrian Plan, Spring Hill/Hernando County Metropolitan Planning Organization, November 1993**
This plan identifies and examines school facility and elderly pedestrian needs and proposes solutions to existing and future problems besetting pedestrians. The study presents requirements for pedestrian crossings at intersections, including signal requirements, crosswalk ramps, crosswalk design, refuge islands in medians, and pedestrian path facility furniture.
8. **Pedestrian/Bicycle Component - 1995 Update of the Metropolitan Transportation Plan for the Central Puget Sound Region, Central Puget Sound Metropolitan Planning Organization, Seattle Washington. 1995**
This document focuses on policy considerations for developing and implementing bicycle and pedestrian improvements. Topics discussed include the their Vision 2020 update and strategies, issues to be addressed (by pedestrian plans), proposed activities, and federal regulations.
9. **Spokane Regional Pedestrian/Bikeway Plan, Spokane Regional Transportation Council, David Evans and Associates, September 1995**
This plan provides Spokane with comprehensive bicycle and pedestrian-specific transportation plans and the necessary justification and information for the implementation of a successful non-motorized transportation system over a 20-year time frame.
10. **MACOG Regional Bicycle/Pedestrian Plan (DRAFT), Metropolitan Area Council of Governments, South Bend Indiana, June 1995**
The bicycle/pedestrian plan is intended to encourage the use of alternate modes of transportation through widening and improving the arterial street system, zoning policies, and education. Sidewalks are proposed for all streets on both sides that are within one-quarter mile of commercial destinations. The plan further states that pedestrians should cross all major streets at signalized intersections except when signalized intersections are one quarter mile or farther apart where an alternate means may be proposed, such as a pedestrian signal. The plan further proposes higher design requirements for residential streets and cul-de-sacs.
11. **Creating a Greater-Cincinnati Metropolitan Area Comprehensive Pedestrian System, Ohio-Kentucky-Indiana Council of Governments, Craig, Robert T., June 1983**
Documents the status of the pedestrian as a means of transportation, discusses current legislation, and examines characteristics of pedestrian behavior. This report identified maximum walking distances ranging from a low of 800 to 1,000 feet for walking to transit to 2,000 feet for long-term destinations. Recommendations are made for a wide range of policy goals/objectives, as well as physical improvements, with the target of making provision for a complete, viable pedestrian circulation system.

Pedestrian Planning Annotated Bibliography

12. **A Regional Bicycle and Pedestrian Facilities System Plan for Southeastern Wisconsin: 2010, Southeastern Wisconsin Regional Planning Commission, December 1994**
This plan address a wide range of bicycle and pedestrian topics including basic concepts and principles, existing facilities and systems, existing plans and policies, safety and operational considerations, standards and design guidelines, recommended facilities, and plan adoption and implementation.
13. **Bicycle and Pedestrian Action Plan for the Rochester Metropolitan Area, Genesee Transportation Council, February 1996**
This plan introduces pedestrian goals and objectives developed for the Rochester Area. The plan provides an assessment of their current conditions, activities and action items required to meet their goals. Each chapter issues in the context of engineering, education, enforcement, encouragement, and economic development.
14. **Wisconsin Pedestrian Planning Guidance - Guidelines for Metropolitan Planning Organizations & Communities in Planning & Developing Pedestrian Facilities, Wisconsin Department of Transportation, September, 1993**
This document sets forth recommendations for a proposed process and possible contents of a pedestrian plan. Several states have just recently endorsed state pedestrian plans and were consulted in the development of these guidelines. The document summarizes the recommended elements of a pedestrian plan. The pedestrian guidelines recommend the following components: goals/objectives, current conditions and inventory of existing facilities, facility planning, education/enforcement, land use/site design, and implementation.
15. **1994/1995 Walking and Running Survey of Household Residents, Maine Department of Parks and Recreation, Department of Conservation, November 1995**
This study provides a survey of Maine residents of walking and running use, opinions, and preferences from November, 1994 to February, 1995. The findings and conclusions are used in the development of state bicycle, pedestrian, and trail plans.
16. **The Pedestrian Plan, Maine Department of Transportation, January 1995**
The key elements of this study include: a statewide inventory of on-road transportation routes and recreational trails; a scientific sample of residential households to ascertain user profile, opinions, preferences and travel practices; focus groups to discuss topics of particular interest; and a series of regional workshops to identify issues and solutions associated with multi-use travel corridors.
17. **Developing Pedestrian Plans, The Pedestrian Coordinators Manual, Florida Department of Transportation**
The Florida Department of Transportation (FDOT) is responding to changes. FDOT is launching a major campaign to identify what must be done to make Florida a great place to walk, and to establish planning mechanisms for giving pedestrians their proper status in the transportation system. This manual is an outgrowth of the FDOT initiative. Some of the other important features of the FDOT initiative include:

Pedestrian Planning Annotated Bibliography

- Establishing a pedestrian system plan for the department
- Developing public service announcements and brochures on the benefits of walking
- Providing training and assistance to local pedestrian coordinators

The Pedestrian System Plan will establish a five-year agenda for statewide improvement of pedestrian transportation and establish long-range goals for making Florida a great place to walk.

18. Florida Pedestrian Safety Plan, Florida Department of Transportation, Safety Office, February 1992

This plan serves as the 1990s guide to implementing counter measures to the problem of pedestrian safety (Pedestrians account for nearly 50% of all urban traffic deaths and crashes claim more lives of children than any other cause.). The plan makes engineering, education, and enforcement recommendations. The document was produced in response to an alarming number of pedestrian fatalities in Florida during the 1980s (highest rate per capita of largest states).

19. Florida Pedestrian System Plan, Applied Science Associates, Inc., Florida Department of Transportation, Division of Planning, Tallahassee, State Project No. 99000-1737, 1989

This plan addresses pedestrian issues from a statewide perspective. The plan identifies three specific findings and a recommendation for addressing each finding. In general, it identified that 1) Florida has the highest fatality rate for pedestrians of any state in the country, 2) the environment in most urban and suburban areas is not conducive to walking, and 3) there is minimal support at the state and local level for pedestrian issues.

Appendix C

Fort Collins Department / Staff Interviews

Fort Collins Department/Staff Interviews: Pedestrian Planning & Engineering

Balloffet & Associates conducted telephone and personal interviews of City of Fort Collins staff regarding pedestrian planning and engineering. The objectives were to determine 1) what role they have in pedestrian planning and engineering within the city, 2) how they perform their work, and 3) the problems or obstacles they face in performing this work.

Traffic Engineering

The City Traffic Engineer is responsible for the placement of pedestrian crosswalks and signs, installation of traffic and pedestrian signals, installation and maintenance of school signs, and pedestrian signal timing. The traffic engineer receives calls regarding safety and traffic concerns. These calls can generally be categorized as follows:

- Development-Related
 - Developer feels mitigation costs are too high.
 - Neighborhoods say there is too much traffic.
- Speeding in neighborhoods,
- Timing of signals, and
- People wanting signals, signs, or pedestrian crossings.

The traffic engineer meets with the person making the call at the location of concern. Typically, concerns are valid and improvements are implemented, such as signs, pedestrian crosswalks, or signals installed and traffic control (such as a fence to limit pedestrian access).

Pedestrian signals cost about \$20,000 each for installation. In almost all cases, pedestrian signals have been tied to schools or parks. General criteria used when considering pedestrian signals include pedestrian volume warrants, traffic flows, the physical characteristics of the study area, and pedestrian counts if associated with a school. (Contact: Eric Bracke)

Engineering

Engineering has two programs related to sidewalk repair and replacement: the Sidewalk Program and the Street Overlay and Sealcoat Pavement Management Program. In addition, Engineering prepares standards for public and private improvements.

Fort Collins Department/Staff Interviews: Pedestrian Planning & Engineering

The 1996 engineering sidewalk program budget is approximately \$400,000. The following generalizes current sidewalk expenditures by the Engineering Department:

50/50 Sidewalk Replacements	\$ 20,000
Concrete & Asphalt Sidewalk and Ramp Improvements and Replacements	\$330,000
Miscellaneous (Emergency Replacement and Govt. Building Improvements)	\$ 50,000

City ordinance requires the adjacent property owner to repair or replace hazardous sidewalks. The 50/50 sidewalk program is provided to assist the property owner in repairing or replacing these hazardous sidewalks. If the City is contacted by a citizen regarding a hazardous sidewalk, an engineer is sent to confirm the problem and estimate the cost of improvement. If an improvement is required, the adjacent property owner is notified of the problem, their requirement for improvement, and the cost for repair per the 50/50 program. The City then has the adjacent property owner pay in advance fifty percent of the cost.

The City has a high priority sidewalk improvement program. This program started in 1995 with advertisement in the newspaper asking citizens to identify locations where sidewalks and/or ramps should be provided or repaired. This advertising resulted in approximately 100 locations being identified as candidate projects. The list was intended to provide locations for several years. The prioritization was not only to trim the list size, but to determine which sidewalks are most used and/or needed. Engineering developed a priority ranking to select the top locations. The following presents this criteria and ranking:

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Service Criteria	Points
1 Bus Route, Government, School or Health Care Facility	Yes = 10, No = 0
2 Is the Facility on a Pedestrian Corridor?	Yes = 10, No = 0
3 Will the improvement serve handicapped residents?	Yes = 15, No = 0
4 Shopping and/or Employment Center	Yes = 8, No = 0
5 Is the current condition hazardous?	Yes = 8, No = 0
6 Handicapped Bonus (1, 3, 5)	Yes = 20, No = 0
7 Pedestrian Corridor Bonus (Along a shopping or pedestrian corridor or bus route) (1, 2, 4)	Yes = 25, No = 0
8 Street Classification	Residential = 0 Collector = 4 Arterial = 8
9 Type of Repair	Ramp = 10, Walk = 5
Total	Sum of 1-9

Engineering reserves a miscellaneous budget for emergency projects. Engineering has the Street Overlay and Sealcoat Pavement Management Program. When streets are overlaid, the project includes adjacent ramp improvements to comply with current standards. The City currently overlays three and one-half to four miles of streets per year. Ideally each street should be overlaid every 15 years; however, because of budget limitations, overlays are exceeding the 15-year period.

Engineering also develops and updates standards. The standards currently used in Fort Collins were prepared in 1986. Revised standards for intersection pedestrian ramps were updated in 1996. Engineering is in the process of updating other street standards, scheduled for approval this year. (Contact: Tom Chapel)

Engineering (Development Review)

The Engineering Department provides an engineer to the Planning Department for development review of all new projects submitted to the City for approval. Part of Engineering's responsibility is to review public improvements proposed by developers. This would include adjacent streets, parkways, sidewalks, etc. Part of this review is to look at sidewalk arrangement to see if handicapped accessibility is incorporated into the design. The engineer reviews basic sidewalk linkages from the public

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street system to on-site development for PUDs and subdivisions. Engineering does not review the linkages of "Use By Right" projects.

Problems facing Engineering include lack of detailed standards and policies for general review, and more specifically, standards for private streets and drives. Engineering also commented on conflicts that arise between older and new developments, where the older development does not want any connections or extensions of stub streets. In the past, they have vacated the stub streets with a pedestrian/bicycle easement to connect the old and new communities. (Contact: Mike Herzig)

Police Department

The vehicle traffic code is based on the 1977 Model Traffic Code, revised for the City of Fort Collins. The State and City do not have pedestrian-friendly traffic laws as compared to other jurisdictions such as California, Washington, Arizona, and the City of Longmont. State and city laws do not give the pedestrian exclusive right-of-way at intersections or crosswalks. Instead, it is the responsibility of pedestrians to wait for an acceptable gap and only then do they have the right-of-way for the lane they are in. Vehicles have the right-of-way in both the lane the pedestrian is approaching and the lane the pedestrian has left. Given that many of our streets have high traffic volumes with few gaps in traffic, it can be extremely difficult to cross the arterials.

Because there are only three traffic officers for the entire City of Fort Collins and because pedestrian/vehicular right-of-way is difficult to identify, there is very little pedestrian-related enforcement. In 1994, the City of Longmont passed an ordinance, similar to the State of Washington, that requires the driver of a vehicle to yield the right-of-way to a pedestrian lawfully crossing the roadway within a marked or unmarked crosswalk for all lanes in the direction of travel the pedestrian is crossing. Although this law does not give the right-of-way to the pedestrian to enter the opposite direction of traffic flow until an acceptable gap, the full right-of-way does improve the opportunity for law enforcement. The California law is further favorable to the pedestrian in that it requires the vehicle in the opposite direction of travel to yield to the pedestrian approaching the center of the street. All laws, however, state that no pedestrian shall suddenly leave a curb or other place of safety and move into the path of a vehicle which is so close as to constitute an immediate hazard.

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Education of pedestrians as well as vehicular traffic laws could be improved. The best effort has been through working with schools and parents in preparing route-to-school maps. The population group that tends to have the most difficulty is the senior citizen. Whereas they pride themselves in maintaining their mobility, their confidence in crossing wide streets with high traffic volumes is challenged. (Contact: Rita Davis)

Streets

The Streets Department is responsible for all maintenance of streets including overlays, pothole patching, grading of alleys, storm water, mowing of shoulders, and snow removal. Streets has little involvement with the actual maintenance of the sidewalk system other than emergency patching. Typically, calls to Streets for sidewalk repair are forwarded to Engineering. Health and Sanitation staff works with homeowners and refuse collection services to make sure garbage cans are not placed on sidewalks, which would interfere with the pedestrian. Inoperable motor vehicles are also removed by Streets.

Streets policy for snow removal from sidewalks is "If we bury it, we uncover it." Therefore, if sidewalks are covered with snow through plowing snow off the streets, Streets will return to remove the snow off of the sidewalks. Removal of snow from the sidewalks is the responsibility of the adjacent property owner. If Streets receives a complaint that snow is not removed from a sidewalk, Streets takes a proactive role and contacts the property owner or leaves a door hanger describing their responsibility and need for compliance. Follow-up is conducted to determine compliance. If snow has not been removed, Streets retains a contractor for snow removal and forwards the bill to the property owner.

The Parks Department is responsible for snow removal on sidewalks adjacent to parks, pathways within the parks, and some of the downtown blocks. Streets removes snow on school pedestrian-ways that are off-street connections. Streets strongly prefers sidewalks to be removed four to five feet from the curb, as it is this area where snow is plowed. Streets also gets involved in development review, where there has been major headway in providing sidewalks offset from the curb edge on arterials and collectors. (Contact: Larry Schneider)

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Risk Management

Risk Management receives claims for injuries resulting from falls or trips on the City's sidewalks. The average number of claims per year is six, primarily received from the elderly. Once a claim is received, Risk Management assigns a claims adjuster to investigate the site and interview the injured person. Claims adjustments are generally settled out of court for medical cost. The major problem areas are uplifted sidewalks due to tree roots. Occasionally, Risk Management will receive a complaint about a hazardous sidewalk, which is forwarded to Engineering. (Contact: Stewart Ellenberg)

Transportation Planning (Neighborhood Safety Program)

As the City of Fort Collins continues to focus on the promotion of a balanced transportation system, enhancing the pedestrian and bicycling environment for all age groups and ability levels is a critical element. Neighborhood safety plays a key role in fostering a convenient, comfortable, usable, local (neighborhood level) transportation network throughout the community.

The Neighborhood Safety Program allows the City's Transportation Planning Department to work in partnership with the Poudre School District (including administration, schools [K-12], parent/teacher organizations), Colorado State University, Front Range Community College, neighborhoods, developers, Larimer County, and other city departments to provide safe roadways, bikeways, and pedestrian ways within the school areas/neighborhoods of Fort Collins.

As part of Neighborhood Safety, the Safe Route to School/Crossing Guard programs will continue to be expanded as needed and monitored on a periodic basis working cooperatively with the Poudre School District administration, schools, parent/teacher organizations, and neighborhoods.

The Neighborhood Safety staff will continue to participate in the development review process as related to bikeway and pedestrian system safety, connectivity, and continuity.

In addition, staff will work cooperatively with other city departments on neighborhood traffic calming and safety education.

Work will also include the implementation of the 1996 Pedestrian Plan, including the identified demonstration project areas as well as the update of standards, policies, and practices.

Appendix D

Transportation Funding Source

Transportation Funding Sources

The passage of ISTEA (Intermodal Surface Transportation Efficiency Act) in 1991 established a number of funding opportunities for bicycle and pedestrian facilities. Local communities may apply for these funds through their designated Metropolitan Planning Organization (MPO). The following list identifies these sources:

Federal

National Highway System (NHS) Funds (Section 1006 of ISTEA)

These funds may be used for construction of bicycle transportation facilities and pedestrian walkways on land adjacent to any highway on the National Highway System (other than the interstate system). The funding split is 80% federal/20% local; the project must be included in the MPO's Long Range Transportation Plan, and the annual Transportation Improvement Program (TIP).

Surface Transportation Program (STP) Funds (Section 1007 of ISTEA)

The STP program funds may be used for either construction of bicycle and pedestrian facilities or for non-construction projects such as brochures, public service announcements, and route maps. As with all the ISTEA funds, these projects are to be principally for transportation, not recreation. The funding split is 80% federal/20% local; the project must be included in the MPO's Long Range Transportation Plan, and the annual Transportation Improvement Program (TIP).

Ten percent of each state's annual STP funds are set aside for Transportation Enhancement Activity (TEA) funds. This funding program targets 10 types of projects:

- Provision of facilities for pedestrians and bicycles
- Acquisition of scenic easements and scenic or historic sties
- Scenic or historic highway programs
- Landscaping and other scenic beautification
- Historic preservation
- Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals)
- Preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian or bike trails)
- Control and removal of outdoor advertising
- Archaeological planning and research
- Mitigation of water pollution due to highway runoff

Congestion Mitigation and Air Quality (CMAQ) Funds (Section 1008 of ISTEA)

CMAQ funds may be used for the construction of bicycle and pedestrian projects, as well as the types of non-construction projects mentioned above. Currently, this funding type is restricted to areas that have been deemed to have poor air quality according to the U.S. Environmental Protection Agency. To qualify for funding, projects must show the emissions reductions as a result of the project. The funding split is 80% federal/20% local; and the project must be included in the MPO's Long Range Transportation Plan, and the annual Transportation Improvement Program (TIP).

Federal Lands Highway Funds (Section 1032 of ISTEA)

These funds can be used for the construction of bicycle and/or pedestrian facilities in conjunction with roads, highways, and parkways. The funding for this type of project is 100% federal money (no local match); also, the state must be the applicant and the amount is discretionary.

Scenic Byways Program Funds (Section 1047 of ISTEA)

This program may be used for the construction of bicycle and/or pedestrian facilities along the highway. The funding split is 80% federal/20% local; and the project must be included in the MPO's Long Range Transportation Plan, and the annual Transportation Improvement Program (TIP).

National Recreational Trails Fund (Section 1032 of ISTEA)

This fund can be used for an assortment of recreational trail programs that benefit bicyclists, pedestrians, and other non-motorized and motorized users. These projects must be consistent with a Statewide Comprehensive Outdoor Recreation Plan required by the Land and Water Conservation Fund Act.

Section 402 Funding (Title II, Section 2002 of ISTEA)

This type of funding provides money for pedestrian and bicycle safety projects.

Federal Transit Funding (Title III, Section 25 of ISTEA)

This Federal Transit Administration fund allows transit funds to be used to provide bicycle and pedestrian access to transit facilities. Projects can include shelters, parking facilities for bikes, installation of bike racks on buses or other equipment to transport bicycles on transit vehicles. These funds are split 90% Federal, 10% Local.

Transportation Funding Sources

Impact Fees

This fund is an important source of revenue for the city. The funds are collected at time of development and are dedicated for engineering, construction or reconstruction of roads, streets, or bridges, as well as for the payment of bonds and interest to finance a project of this type.

**Fort Collins/
North Front
Range**

General Obligation Bonds

General Obligation Bonds are used for debt financing of non-proprietary functional expenditures such as roads and schools.

Dedicated Local Sales Tax

The City in the past has had local sales tax approved by the voters for specific transportation projects, such as Choices 95.

Tax Incremental Financing (TIF)

The TIF finances specific projects and can be used by local public agencies for construction projects. The TIF system is set up by the local government in a specific area, and the taxes collected from that area are used to finance projects only in that area. Cities have developed TIF areas for developing funds to support highway projects.

General Fund

Pedestrian improvements can be provided through non-designated local sales and property tax. The existing 1996 sidewalk program is part of the existing Transportation Services operating budget. Future sidewalk improvements could be part of the City's overall Capital Improvement Program (CIP).