

Hillsborough County Board of County Commissioners

Sidewalk Retrofit Program

Sidewalk/School Sub-Area Optimization Planning

December 2003



Prepared for
Hillsborough County Department of Public Works, Engineering Division
Design & Engineering Support Section
under the Hillsborough County Sidewalk Master Plan/School-Focused
Sub-Area Optimization Planning Initiative

Table of Contents

Executive Summary	i
Introduction	1
Background Data	3
Ranking Methodology	15
Ranking Results	19
Recommendations	20

Appendix A: Alphabetical School Listing Cross-Referenced with Rankings

Appendix B: Ranked Order of Schools

Appendix C: Definitions and Abbreviations

Appendix D: Memorandum from Bernardo Garcia, Director, Public Works
Department, dated April 12, 2002 regarding Sidewalk
Requirements near Schools per Florida Statutes

Appendix E: Summary of Recommended Segments by Need Category

Appendix F: School Data and Maps (in ranked order)

Executive Summary

In April 2001, the Hillsborough County Board of County Commissioners approved the *Hillsborough County Sidewalk Master Plan* (“*Master Plan*”). The Master Plan is the planning-level tool used to provide an effective and comprehensive approach to proactive programming of sidewalk funding and construction throughout the unincorporated portion of Hillsborough County. The Master Plan contains two sidewalk needs rankings: school-focused and other-focused.

The Public Works Department desired to further refine sidewalk prioritization for the Master Plan’s school-focused rankings. A sub-area ranking was developed based on the *Master Plan*’s database, discussion with school principals or staff, and actual observation of walking patterns. This led to further grouping together sidewalk segments serving public elementary schools in the unincorporated County into sub-areas. This planning effort resulted in a sidewalk plan for each elementary school in the unincorporated area of the County. An aggregate relative ranking factor known as the average weighted benefit/cost (B/C) factor was developed for the proposed pedestrian network for each of the schools and, with an applied factor for percentage of walkers, each of the school sub-areas was ranked relative to the others. Segments that had been designated as hazardous walking conditions pursuant to Florida Statute 1006.23 were weighted significantly higher than segments not designated as hazardous. The school sidewalk networks having the highest School Average Weighted B/C Factors, with the factor for percentage of walkers, receive the highest priority ranking. Schools with no recommended sidewalk segments were not ranked. Of the eighty (80) public elementary schools in unincorporated Hillsborough County studied in this planning effort, sixty seven (67) schools were ranked.

Among the results of this sub-area optimization planning is the ability to develop a prioritized listing of candidate projects for the County’s Sidewalk Retrofit Program. County staff will consider the candidate sidewalk segments with respect to the constraints identified in this Report; conduct field reviews; hold public meetings; and record public input for a final determination of the segments to be included in the Retrofit Program each year.

Inherent in any retrofit project are difficulties in dealing with existing conditions. In addition, there are challenges associated with any construction project in today’s legal and regulatory climate. There are a number of programs under which sidewalks are constructed in Hillsborough County, including the Sidewalk Retrofit Program, and its associated Sidewalk Gap Construction Program. Many of the sidewalk programs are described in this Report. There are also programs for sidewalk construction by other entities as outlined in this Report.

Introduction

Each year, the Hillsborough County Public Works Department establishes the funded capital projects list for the upcoming fiscal year. In April 2001, the Hillsborough County Board of County Commissioners approved the *Hillsborough County Sidewalk Master Plan* (“*Master Plan*”). The County’s vision is for a plan that has broad community support and best addresses the pedestrian needs of its citizens. The Master Plan is the planning-level tool used to provide an effective and comprehensive approach to proactive programming of sidewalk funding and construction throughout the unincorporated portion of Hillsborough County. The Master Plan was designed to include the database and resultant plan developed in 1998 by the Hillsborough County Metropolitan Planning Organization (MPO), which prioritized the sidewalks along arterial and collector roadways in unincorporated Hillsborough County. Adding the MPO arterial and collector roadway segments, the Master Plan contains rankings that grossly prioritize, by benefit/cost factor, the 12,000± roadway segments throughout the unincorporated County as sidewalk retrofit candidates. There are two needs rankings: school-focused and other-focused. While pedestrian needs in the County have a broad spectrum, the Board of County Commissioners recognized the need to develop a plan that gives priority to providing safer facilities for children to access schools, specifically elementary schools.

The Public Works Department desired to further refine sidewalk prioritization for the school-focused rankings. This sub-area ranking is based, in part, on the *Master Plan’s* rankings, but groups roadway segments serving public elementary schools in the unincorporated County into sets or sub-areas. This sub-area optimization plan reflects the applicable portions of Florida Statute 1006.23 pertaining to sidewalk requirements near public elementary schools that have already been taken into consideration in the *Master Plan*. The sub-area optimization plan also takes into consideration: construction cost efficiency through benefit/cost factors; pedestrian transportation network completion by identifying viable walk routes to the schools; and the County’s general retrofit policy of completing construction of sidewalks on one side of all local roads before adding sidewalks on the second side (unless the School District identifies a safety issue along a roadway, in which case sidewalk along both sides of the road would be considered). The prioritization ranking of the schools will be based on an aggregated benefit/cost factor for the proposed pedestrian network for each school.

This planning effort will result in a sidewalk plan for each elementary school in the unincorporated County. Each of the school sub-areas will be ranked relative to the others.

Prior to implementing individual elementary school sub-area sidewalk plans for every elementary school in unincorporated Hillsborough County, the Public Works Department conducted a pilot program for five (5) elementary schools. Among the objectives of the pilot program was the establishment of a prioritization methodology for sub-area optimization, with ranking criteria and evaluation methods to rank the school sub-areas. This methodology was applied to rank all the elementary schools in unincorporated Hillsborough County. Hillsborough County Public Works Department will utilize this ranking for programming that portion of the County's sidewalk construction program dedicated to school-focused needs. This ranking provides general programming insight as to where the sidewalk needs are, but does not preclude segments from a lower-ranked school being constructed first due to constructibility, feasibility or even network continuity issues.

Background Data

Hillsborough County Sidewalk Retrofit Program

There are a number of programs under which sidewalks are constructed in Hillsborough County, including the sidewalk retrofit program, sidewalk gap construction program, Americans with Disabilities Act (ADA) compliance program for curb cuts and ramps, Capital Improvement Program, Community Development Block Grant program, the Transportation Equity Act (TEA-21) through the Florida Department of Transportation (FDOT) as well as construction by other entities. Among the other entities involved in sidewalk construction are FDOT (roadway construction projects), the School District of Hillsborough County (along frontage of schools in conjunction with school construction projects) and developers of new subdivisions, non-residential projects and major renovation projects.

Annually, the Hillsborough County Public Works Department establishes the list of sidewalk retrofit projects for the upcoming fiscal year, based on the Master Plan, public input and constructibility considerations.

Historical Funding Levels

Funding levels for sidewalk retrofit construction over the past four (4) fiscal years are shown in the table below. Also shown are the total lengths of sidewalk constructed in each of the years.

Fiscal Year	Construction Funding (\$000s)	Approximate Length of Sidewalks Constructed (miles)
2003	1,375	12
2002 *	4,500	38
2001	2,000	17
2000	1,264	11

* - Includes additional Community Investment Tax funds of \$3 million as part of a \$133 million transportation package approved by the BOCC in mid-FY02.

County Standards for New Sidewalk Construction

The County's design standards for new sidewalk construction are detailed in the *Hillsborough County Transportation Technical Manual for Subdivisions and Site Development Projects*. In general, sidewalks are to be concrete and five (5) feet in width. Current County criteria call for the sidewalk to be placed near the right-of-way line and as far from the edge of the driving lane as practical. In a non-

curbed section, a minimum of three feet from the edge of pavement is considered a last resort option to be utilized only when these criteria cannot be met due to drainage, right-of-way or other constraints.

As part of the County's master planning efforts, the *Sidewalk Construction Cost Study for PD&E's* was developed to provide criteria for the use of various sidewalk types based on ranges of existing conditions such as existing right-of-way width and roadside profile. The study also determined unit costs for the different types of sidewalks. These unit costs were in turn used to calculate the segment costs in the Master Plan.

Hazardous Walking Conditions for Elementary School Students

Florida Statute (FS) 1006.23 defines hazardous walking conditions for elementary school students. Hazardous walking conditions may apply within a 2-mile radius around the school. It should be noted that there are many instances where the school's boundary is actually less than two miles from the school. The following guidelines are used for determining hazardous walking conditions.

For a walkway parallel to the roadway (e.g., crosswalks), a 4-foot-wide walking space adjacent to the road is required. Note that the walking area does not have to be a paved surface. If there are no curbs and the speed limit is 55 mph, the walking area must be a minimum of 3 feet from the edge of pavement. No walking area is required if:

- it is located in a residential area with little or no transient traffic; or
- during the times when students walk to and from school the traffic volume is less than 180 vehicles per hour (vph) in each direction; or
- it is located in a residential area and the posted speed limit is 30 mph or less.

For a walkway perpendicular to the road, a hazardous walking condition exists if, during the times when students walk to and from school, the traffic volume exceeds 360 vph and the crossing site is uncontrolled, or if, during the times when students walk to and from school, the traffic volume exceeds 4,000 vph through a controlled intersection or crossing site, unless crossing guards or other traffic enforcement officers are also present.

If a hazardous walking condition exists, FS 1006.21 states that the school board is required to provide transportation. The Florida Department of Education then asks the jurisdiction responsible for the roadway (typically County, City or State) for a determination of when the condition will be corrected, with the intent for the correction to be made within a reasonable period of time.

In determining the sidewalk segments that would provide a useful network for student walkers, several factors were considered. These factors include: Master

Plan data and benefit/cost factors, observation of students walking to and from school, hazardous walking conditions, input of school administrators and staff, physical barriers to walking, usefulness in terms of a pedestrian or intermodal network, the overall walking experience, and the general attitude of students' families related to allowing their children to walk to school. Therefore, although the segments recommended for construction do not provide concrete sidewalks for all students living within two miles of the school, they represent those segments that are expected to be beneficial in eliminating hazardous walking conditions and in providing walk routes for students to walk to and from school.

The specific information used in developing each school plan, including a map for each school, is included in **Appendix F** to this report.

Challenges Faced in Implementation of the Sidewalk Retrofit Program

Inherent in any retrofit project are difficulties in dealing with existing conditions. In many instances, no provisions were made to accommodate future improvements. In addition, there are challenges associated with any construction project in today's legal and regulatory climate. These issues combine to constrain the County's Sidewalk Retrofit Program. Following is a discussion of the current constraining issues that come into play in the implementation of the Sidewalk Retrofit Program. The constraints are numbered for future use in documenting the limitations on individual sidewalk segment candidates being considered for inclusion in the program.

1. Unfunded State Mandate: As previously discussed, Florida Statute 1006.23 requires that, wherever a hazardous walking condition exists (by the statutorial definition), the County must provide to the Department of Education a determination of when the condition will be corrected, with the intent for the correction to be made within a reasonable period of time. There is, however, no state funding provided to finance this ongoing mandate. The remedies for many of these hazardous walking conditions are frequently difficult and costly to construct given the existing conditions.

2. Right-of-Way Limitations: Many County collector and local roadways have limited rights-of-way available. The roadways that were never deeded or platted have simply been historical travel routes. In many cases, the right-of-way consists only of the roadway pavement, minimal shoulder and roadside ditch, with the maintained right-of-way line being the back edge of the ditch. Even with some deeds and plats, properties were described as "less right-of-way" with no distances specified. Further right-of-way limitations exist where platted rights-of-way at intersections did not include a right-of-way flare, but

“squared off” the properties, creating a constrained area for roadway turnouts. Also located within the right-of-way are utility corridors for both above-ground and underground facilities. There is typically no area suitable for construction of a sidewalk. The County is undertaking a five-year surveying program to survey and map the County’s maintained roadway rights-of-way. This information should prove useful in implementing the Sidewalk Retrofit Program.

3. Right-of-Way Acquisition: Where insufficient right-of-way exists to construct a sidewalk, right-of-way acquisition would be required where piping of the roadside ditch is not possible or reasonable. Hillsborough County, to date, has not acquired right-of-way for sidewalk projects through eminent domain. This has been based on the difficulties of defending the need under eminent domain procedures, with the assumption that the adjacent property owners would not donate or sell the required property without orders of taking and subsequent eminent domain actions. The eminent domain procedures under which the County is required to operate result in a very time-consuming and costly endeavor. The impact of the use of eminent domain on a retrofit program with limited funding would be significant.
4. Americans with Disabilities Act (ADA): The ADA contains many requirements for sidewalk conditions, since sidewalks are the main transportation mode for many disabled citizens. The County Transportation Maintenance Division of the Public Works Department is responsible for proper maintenance of sidewalks as required to provide a safe walkway. The Public Works Department also has an ongoing ADA compliance retrofit program to remedy substandard curb cuts and ramps. In addition, there is a requirement for appropriate walkways for any implied travel way. The most common instance of deficiencies in implied travel ways is gaps in the pedestrian system. Under the Sidewalk Retrofit Program, the Public Works Department administers a flexible set-a-side program to fund construction to remedy gaps that have been identified through special needs requests from citizens or by communities. This gap program typically handles construction of short segments that are easily constructed. There are situations, however, where the gaps exist due to constructibility or right-of-way challenges that have historically deemed the segments infeasible or unreasonable.
5. Cost Feasibility: The Master Plan and this sub-area optimization planning effort used the unit costs contained in the *Sidewalk Construction Cost Study for PD&E’s* for planning purposes. These unit costs are very approximate, based on ranges of existing conditions such as existing right-of-way width and roadside profile. When specific

segment candidates are considered, a field visit is typically made and any conditions that are found that may be inconsistent with the underlying assumptions for that segment are noted. Further evaluation of the cost feasibility of the candidate, given the more specific information, is undertaken. Cost differences affect the benefit/cost factor of the candidate. If the cost is estimated to be much greater than the planning-level estimate in the Master Plan, re-prioritization of the segment is considered.

6. Intermodal Connectivity: The Sidewalk Retrofit Program historically included sidewalk segments that had been requested by citizens. This process did not necessarily result in a utilitarian network for pedestrian mobility between major generators and attractors.
7. Connectivity with Greenways and Trails: In the past decade, Hillsborough County has undertaken an ongoing program to provide greenways and recreational trails throughout the County. To maximize the benefit from these facilities, it will be necessary to provide interconnecting sidewalks from the existing pedestrian network and user origins to the greenways and trails.
8. Roadside Stormwater Conveyance Systems: Many County roadways have rural typical sections, without curb and gutter. Most of these have an alternative method of conveying stormwater from the roadway and adjacent properties as appropriate to its ultimate discharge point. The most common method is the roadside swale or ditch. These swales and ditches pose a number of problems for sidewalk retrofit projects. First, they sometimes occupy all the available right-of-way outside the pavement, leaving no room for a sidewalk. The shoulder area between the pavement and the ditch should be at least ten (10) feet wide and nearly level to accommodate a 5-foot sidewalk (which meets ADA standards) with a 3-foot safety buffer between the roadway and the sidewalk and a 2-foot safety buffer between the sidewalk and the ditch. Some ditches have slopes that make it uncomfortable for pedestrians to use this area as a walk space. It is typically preferred to construct the sidewalk between the ditch and the right-of-way line. This would require at least seven (7) feet, nearly level, to accommodate the 5-foot sidewalk and a 2-foot safety buffer between the sidewalk and the ditch. This places the sidewalk directly on the right-of-way line, allowing limited construction area. Therefore, nine (9) feet is preferred to provide a 2-foot buffer between the sidewalk and the right-of-way line. In many situations, this scenario also involves the sidewalk crossing the ditch at crosswalks, requiring culverts or other crossing methods. Where sufficient right-of-way does not exist, either the ditch must be enclosed or right-of-way must be acquired. These

options are costly, historically resulting in unreasonable benefit/cost ratios for many candidates. On roadways where there is no stormwater conveyance system, there may be existing drainage problems that would be exacerbated by the construction of a sidewalk. And in these circumstances, draining the runoff from the sidewalk is frequently difficult.

9. Wetlands: In situations where wetlands are adjacent to a roadway, construction of sidewalks can impact wetlands. In an effort to minimize wetland impacts, the *Sidewalk Construction Cost Study for PD&E's* recommends, in certain circumstances, construction of raised walkways in lieu of concrete sidewalks on grade. However, raised walkways require additional maintenance. As a result, there is no consensus on a general policy regarding construction of raised walkways to avoid or minimize wetland impacts. The permitting regulations and requirements associated with construction impacting wetlands add time and cost to a sidewalk project.

10. Mature Vegetation: As with most linear projects, construction can frequently interfere with mature trees, tree canopies or landscaping planted and maintained by adjacent property owners regardless of the fact that the vegetation is planted within County right-of-way. This can be a serious concern to the adjacent property owners, as well as the traveling public who enjoy the tree-lined roadways. The Hillsborough County Planning and Growth Management Department has established the following requirements for County sidewalk retrofit projects:
 - Any single, protected tree under 24" DBH (diameter breast height measured 42 feet above the ground) is exempt from mitigation requirements. Also exempt are plant species designated as exempted trees in the Hillsborough County Land Development Code (LDC).
 - Any protected tree 24" DBH and larger and in good condition is subject to mitigation requirements. The condition of a tree is determined in accordance with the County's "Tree Condition Evaluation Form." The mitigation requirement for a single tree is 50% replacement based on diameter, with a minimum increment of one inch.
 - In lieu of mitigation planting, mitigation can be satisfied by paying the prevailing mitigation cost into "The Restoration Fund" sponsored by the Planning and Growth Management Department. The current mitigation cost is \$90.00/inch diameter of required mitigation.

- In the case of an oak clump (not necessarily from the same root stock and within five feet of each other), mitigation is required for 2 or more stems having a combined DBH measurement of 36" or larger.

Tree mitigation typically involves planting small diameter trees that take years to mature. The mitigation also increases the cost of the sidewalk project. Furthermore, to avoid future damage to the sidewalk, the new trees should not be planted too close to the new sidewalk. Within constrained rights-of-way, it may be necessary to find alternative locations for tree mitigation. This becomes a concern to adjacent property owners who have lost the benefit of the removed trees and do not receive the benefit of the replacement trees.

Even if trees do not need to be removed for sidewalk construction, building sidewalks adjacent to large trees with substantial root systems, such as oaks, causes significant problems. Over time, the roots can destroy the sidewalks and the sidewalks become a walking hazard, with resultant maintenance costs.

11. Bridges: Where roadways cross significant bodies of water, bridges, large culverts or cross-drains are installed. To retrofit the roadways to include sidewalks, a bridge must be widened or a separate structure constructed to accommodate only the sidewalk. A culvert or cross-drain would have to be extended without blocking the flow from adjoining ditches or structures. The design, permitting and construction required make both of these alternatives costly and time-consuming. As a result, such sidewalk crossings are often infeasible or unreasonable and are not constructed, leaving uncontrolled gaps in sidewalk projects.
12. Railroad Crossings: Installing pedestrian railroad crossings is currently a time-consuming and costly process. Obtaining the necessary permit from the railroad company can take over three years. The crossing must be equipped with proper signalization and gates. To avoid the delays and costs associated with the crossings, there have been sidewalk retrofit projects that have proceeded and been forced to omit the crossing walkway. This leaves a gap in the sidewalk, diminishing its usefulness and creating an implied travel way that results in potential compliance issues relative to ADA requirements. The Public Works Department is currently completing the permitting process for a CSX railroad crossing that should serve as a prototype for future sidewalk crossings. The hope is that the time and cost associated with the design, permitting, legal reviews and construction of these sidewalk crossings will be reduced by the use of this prototype design and

process. Regardless, the cost of railroad crossings has often rendered these retrofit candidates unreasonable and in the near term impossible.

13. Bicycle Lanes: The demand for bicycle lanes to be added to roadways throughout the County is increasing. This is an added challenge in limited roadway rights-of-way, as there is rarely room to accommodate both bicycle lanes and sidewalks in a retrofit scenario. The needs of bicyclists and pedestrians must be balanced while competing for limited funding and rights-of-way.
14. Students as Pedestrians: The intent of FS 1006.23 is to eliminate hazardous walking conditions for public elementary school students living within two miles of the school. Experience suggests that students typically will walk only about 0.6 mile to reach their school and will bicycle up to 2 miles. Therefore, despite the statute, there is debate about the usefulness of sidewalks at distances greater than 0.6 miles from the schools. In addition, the attitudes of school administration and staff, parent-teacher organizations and individual families have a tremendous impact on the willingness of the school administration and parents to allow or encourage students to walk to school. This may be further complicated with the coming implementation of school choice within the Hillsborough County School District. Transportation patterns may change significantly, although at the elementary school level, the changes may be less. The numbers of walkers for some schools may be impacted, resulting in changes to the demand for sidewalks.
15. State Funding for Busing: The State provides transportation funding to schools that must bus students due to hazardous walking conditions. This per-student funding may serve to eliminate the urgency on the part of the School District for sidewalk construction, with the District allowing all students within some school boundaries to be bused based on the funding provided.
16. Neighborhood Opposition: Many older, mature neighborhoods and subdivisions built prior to the requirement for sidewalks do not have sidewalks along their streets. No provisions were made for sidewalks when the neighborhoods were developed, or for future sidewalks. In the public meetings and workshops held in conjunction with the Master Plan and subsequent sidewalk retrofit programs, neighborhood opposition to some retrofit candidates was voiced. The underlying reasons behind the opposition vary.

- As discussed previously, many residents have planted landscaped areas within the right-of-way that would be disrupted by the construction of sidewalks. Also, some have installed fences, walls, expensive mailboxes and other hardscape features that could be affected.
- Some residents have indicated that they would prefer their tax dollars be spent on maintenance of existing roadways and sidewalks, traffic signals or speed humps for the local roadways.
- Residents of some neighborhoods park in the County right-of-way, which would reduce the usefulness and safety of sidewalks.
- There are some security concerns. For instance, residents indicated construction of sidewalks through their neighborhood would encourage unwanted pedestrian traffic. In addition, pedestrians and strangers would be walking closer to their homes.
- Relocation of public facilities (such as water or sewer service, water meters, utility poles and pedestals for power and telecommunication) within the County right-of-way may be required for sidewalk construction.
- Dogs in front yards (fenced or not) can be a source of concern for both pedestrians and the dogs' owners.
- The lots in some neighborhoods were simply not designed to accommodate sidewalks. Many have small yards with minimum setbacks. Some have streetscape where a sidewalk would normally be constructed.
- Some residents have pointed out that the County should place priority on constructing sidewalks where there are hazardous walking conditions on collector and arterial roadways.
- Construction of sidewalks will increase lawn maintenance, since edging will be required.
- Sidewalks may make the "usable" front yards of the adjacent properties smaller and make the front yards appear smaller.
- Some residents feel it would be more beneficial to add sidewalks to the second side of a collector or arterial road instead of constructing sidewalks along local neighborhood streets.
- In some cases the majority of the residents in a particular older subdivision are mature and do not have children living with them and, therefore, sidewalks are not required to provide safe access to schools.
- There may be pedestrian traffic along a roadway without a sidewalk, but not a perceived safety issue based on the existing conditions.

The programming of public works projects is based on many need factors, such as safety and demand, and cost-effectiveness. Through the Master Plan public input process, the County seeks and considers

input from the citizens affected by a proposed project. If there is significant opposition in a neighborhood to a particular sidewalk retrofit candidate project and the location has not been deemed a hazardous walking condition, the neighborhood can request removal of the candidate through the County's opt-out process, which is outlined in Hillsborough County's "Sidewalk Programs Handbook."

17. Mailbox Relocation: In most areas in the unincorporated County, mail is delivered by the United States Postal Service (USPS) to rural mailboxes along the roadside. There are USPS requirements for the location of rural mailboxes, such as distance from the roadway and accessibility. Sidewalk retrofit projects sometimes require the relocation of mailboxes. Some relocations may require the approval of the USPS to ensure the location requirements are met. There may be circumstances in which there are no reasonable accommodations that can be made.
18. Sidewalks Along Both Sides of a Roadway: The MPO Plan and recent County sidewalk retrofit policy have focused on providing a sidewalk along one side of a roadway under a general concept that all County roads should have a sidewalk along one side before a second sidewalk is built on the other side of a road. This policy has some flexibility, particularly when considering segments on collector and arterial roadways or when the School District indicates the need for safety concerns. On higher-speed multi-lane roads with significant traffic volumes, it can be an unreasonable distance for pedestrians to reach designated crosswalks, which may be spaced at long intervals, especially outside the urban service area. Therefore, this policy is modified where conditions dictate.
19. Priority on School-Focused Sidewalks: The County's current policy is to split the construction portion of the funding for the Sidewalk Retrofit Program as follows: 60% for segments prioritized through the school-focused needs list (for public elementary schools) and 40% for segments prioritized through the "other-focused" needs list. This split is subject to change as the retrofit program progresses and makes more relative progress on construction of segments from one needs list or the other.
20. New Developer-Constructed Sidewalks: The LDC requires that sidewalks be constructed for specific development construction. For example, all non-residential developments must construct sidewalks along the entire length of their property frontage. Likewise, residential subdivisions must construct sidewalks internally and along the entire frontage of roads to which they connect. When these sidewalks are

constructed along the development frontage, they frequently do not connect to any other sidewalk in the County's sidewalk network. This in turn can lead to a missing segment in the pedestrian network, which becomes the responsibility of the County.

21. New School Construction: As new public schools are built in the County, the School District is responsible for construction of sidewalks along the County roads fronting the new schools' properties. The Hillsborough County Planning and Growth Management Department reviews and provides comments to plans for proposed school sites regarding infrastructure needs associated with each proposed new school site. Those comments include the sidewalk segments needed to provide students safer access to and from school. These sidewalk segments, which are intended to provide connectivity to the surrounding neighborhoods, become candidates for the Sidewalk Retrofit Program. Like the developer-constructed sidewalks, this can also result in retrofit needs to comply with ADA requirements and it can prompt the County to remedy any hazardous walking condition within the new elementary school area that meets the definition contained in FS 1006.23.

22. Florida Department of Transportation Sidewalks: Many of the roads within unincorporated Hillsborough County are under the jurisdiction of FDOT. Residents frequently request sidewalks on many of these major roadways. It is FDOT policy in an urban environment to include sidewalks as part of new roadway construction and widening projects where feasible. Under this policy, FDOT has constructed many miles of sidewalk in the County. However, FDOT generally does not retrofit their existing roads with sidewalks. Therefore, there is unmet demand for sidewalks along certain FDOT-maintained roadways and within FDOT rights-of-way.

Federal funding administered by FDOT is available through the Transportation Equity Act (TEA-21) Enhancement program and, presumably, its successors. Hillsborough County typically applies for Enhancement funds annually, which can be used to fund retrofitting State-maintained roads with sidewalks. Due to the restrictive TEA-21 criteria, these projects typically are constructible and feasible.

23. Urban Service Area Considerations: Prioritization for providing most County infrastructure is given to the urban service areas, where demand is typically highest and benefit/cost ratios are greatest. Similarly, FDOT policy provides for sidewalks on FDOT facilities typically only within one mile of urban areas. However, the Public Works Department must provide the citizens of Hillsborough County

with a safe pedestrian network and pedestrian needs are not limited to the urban service areas. Due to demographic and other factors, the number of pedestrians is not necessarily less in outlying areas. Therefore, benefit/cost ratios for sidewalk projects are not necessarily tied to the projects' locations with respect to the urban service area boundary.

The combined effect of these constraints presents challenges to implementation of the Master Plan. These limitations affect the cost, constructibility and public acceptance of proposed sidewalk projects. As candidate lists are developed for the retrofit program, candidate segments will be evaluated with respect to these factors.

Ranking Methodology

The school sub-areas will be ranked based on an enhanced, aggregate relative ranking factor known as the average weighted benefit/cost (B/C) factor developed for each school sub-area. This factor is derived from the benefit/cost factor for each segment as derived from the Master Plan, the unit cost for the segment facility type, hazardous walking condition location, and the segment need value, as defined herein. This average weighted benefit/cost factor is, therefore, a measure of the overall cost effectiveness of the sidewalk plan for the school and is based on several criteria.

Criteria

The following criteria were utilized in determining, in aggregate, the average weighted benefit/cost (B/C) factor for each school sub-area.

Segment Master Plan B/C Factor – The Master Plan B/C Factor for each segment was taken directly from the School-Focused Master Plan database. If the length of the candidate segment within the qualifying boundaries was different than in the school-focused Master Plan original database, the adjusted segment cost was calculated utilizing the following formula:

$$\text{Segment Improvement Cost in Master Plan Database} \times \\ (\text{Adjusted Segment Length/Length of Segment in Master Plan Database})$$

The segment unit cost utilized in the School-Focused Master Plan takes into account the roadside condition and therefore, to a degree, reflects the generalized constructibility and right-of-way constraints of the segment.

Qualifying Boundaries – Only segments both within the school’s official boundary and within a two-mile radius of the school were considered, in accordance with the hazardous walking conditions definition in Florida Statute (FS) 1006.23.

Segment Need Value – For each candidate segment within the qualifying boundaries, a segment need value was assigned according to the following guidelines:

- Need Value = 0 Segment is not a priority because there is already an existing sidewalk on one side of the road or no students walk or will walk along the segment or it does not fall into the hazardous walking conditions category.
- Need Value = 1 Segment is “preferred” because it has utility (students walking to school will use it) but it does not appear to satisfy the definition of hazardous walking conditions.

These segments are shown on the school maps as purple.

Need Value = 10 Segment is “hazardous” or “needed.” The segments that have been determined to meet the definition contained in the Florida Statutes and have been formalized by the Florida Department of Education are shown as yellow on the school maps and are termed “hazardous.” Segments shown as blue on the school maps are those that appear to meet the criteria for hazardous walking conditions, however have not yet been deemed hazardous by the School District. These segments are termed “needed”. It is possible that unsafe segments may be located along roadways that do not experience the level of traffic or have the posted speed limit to qualify it for “hazardous” according to the Florida Statutes. A listing of the “needed” segments will be submitted to the School District for their consideration as hazardous. If the School District does not deem a segment as hazardous, the segment can be re-categorized as “preferred.”

The need values of 0, 1 and 10 were derived through sensitivity analyses in order to achieve an appropriate differentiation between segments that were needed rather than only preferred. A variety of ranges for the need values were analyzed to arrive at an appropriate range to give sufficient weight in the final school rankings to schools having segments with hazardous walking conditions. This weighting is intended to reflect the Department’s focus on giving priority to hazardous walking conditions in the vicinity of public schools. The final ranking of the five pilot schools were used to confirm this calibration.

Average Weighted B/C Factor for School

The average weighted B/C factor for each school, based on the needed and preferred segments in aggregate, is calculated utilizing the following process.

Segment Sub-area B/C Factor – The sub-area B/C factor for each segment represents a “school-only” focus. The sub-area B/C factor for each segment with a non-zero segment need value (needed and preferred segments) was calculated utilizing the following formula:

$$\frac{\text{Segment Need Value} \times 500,000}{\text{Facility Type Unit Cost}}$$

(The constant of 500,000 was derived to establish sub-area B/C factors in the same numerical range as, or normalize, the Master Plan B/C factors.)

Segment Weighted B/C Factor – The weighted B/C factor for each segment represents a “blend” of the Master Plan B/C Factor and the Sub-area B/C factor for each segment. The weighted B/C factor for each segment with a non-zero segment need value was calculated utilizing the following formula:

$$0.1 \times \text{Segment Master Plan B/C Factor} + 0.9 \times \text{Segment Sub-area B/C Factor}$$

School Average Weighted B/C Factor – The average weighted B/C factor for each school sidewalk network is a measure of the average B/C factors of the needed and preferred segments within the qualifying boundaries. The average weighted B/C factor for each school sidewalk network is calculated utilizing the following formula:

$$\frac{\sum \text{Weighted B/C Factors segments within the qualifying boundaries with a non-zero segment need value}}{\text{Number of segments within the qualifying boundaries with a non-zero segment need value (needed and preferred segments)}}$$

School Average Weighted B/C Factor With Factor for Percentage of Walkers – This average weighted B/C factor for each school sidewalk network is a measure of the average B/C factors of the needed and preferred segments within the qualifying boundaries and takes into account the percentage of students walking to school. The average weighted B/C factor with the percentage of walkers factored in for each school sidewalk network is calculated utilizing one of the following formulas:

- If the % of Students Walking < 10%, nothing is added to the Average Weighted B/C
- If the % of Students Walking \geq 10% and < 25%, then Average Weighted B/C * 0.1 is added to the Average Weighted B/C
- If the % of Students Walking \geq 25% and < 50%, then Average Weighted B/C * 0.25 is added to the Average Weighted B/C
- If the % of Students Walking \geq 50%, then Average Weighted B/C * 0.50 is added to the Average Weighted B/C

Ranking

The sidewalk network plan for each elementary school in unincorporated Hillsborough County is ranked relative to each other based on the School Average Weighted Benefit-Cost Factor, with the factor for percentage of walkers, reflecting an aggregate measure of the benefit/ cost effectiveness to develop a utilitarian sidewalk network for each school. The school sidewalk networks having the highest School Average Weighted B/C Factors, with a factor for percentage of walkers, received the highest priority ranking. Schools with no needed or preferred segments (all segments have need values of zero) have a

score of zero and were not ranked. Of the 80 schools studied in this planning effort, 13 schools were not ranked.

This methodology was developed during the pilot program of five schools and refined during completion of the program.

Ranking Results

The following table summarizes the results of the ranking of the aggregate utility of the sidewalk networks for the school sub-areas. The Hillsborough County Public Works Department will utilize this ranking as a general basis and starting point for programming the County's elementary school sidewalk network construction. This plan will satisfy the State's unfunded mandate to Hillsborough County to have a plan (to construct pedestrian facilities) to address hazardous walking conditions under the Florida Statutes.

For convenience in locating school data, an alphabetical listing of schools showing each school's rank is included as **Appendix A**.

Appendix E contains a summary of the recommended sidewalk segments subtotaled by need category (hazardous, needed or preferred) and listed in order of B/C factor for the individual segments.

This planning document does not preclude the prudent use of engineering judgement when selecting proposed candidates for funding and construction. Consideration of the constraints identified in the Background Data section of this Report and others is essential to determine feasibility and constructibility of each segment being considered. Redirection in distributing allocated funds out of ranking sequence may be dictated by feasibility, constructibility or even network continuity issues, or by direction from the Board of County Commissioners.

Recommendations

Programming of Sidewalk Retrofit Program Funds

Among the results of this sub-area optimization planning is the ability to develop a prioritized listing of candidate projects. County staff will consider the sidewalk segments included in the listing with respect to the constraints identified in the Background Data section of this Report and for their value to the pedestrian network system, conduct field reviews, hold public meetings and record public input for a final determination of the segments to be included in the Retrofit Program.

Future Plan Update Strategy

It is the intent of the Hillsborough County Public Works Department to update this sidewalk/school sub-area optimization plan ranking periodically. The updates will incorporate newly constructed elementary schools in unincorporated Hillsborough County, changes to school boundaries, effects of the School District's School Choice Plan, newly constructed sidewalks, public input and construction constraints identified by County staff through the programming process.

