Citywide Sidewalk and Crosswalk Programs

Council Meeting

October 20, 2015

Presented by Rita Hu and Jamal Mahmoud

Program Goals

- Implement the City's comprehensive plan.

  - ✓ Provide pedestrian with safe walking routes to schools
  - ✓ Provide pedestrian access to public services
  - ✓ Fill in gaps in the pedestrian system

- Provide a priority list of pedestrian improvements with funding recommendation.

- Ensure that all the City's pedestrian facilities are in compliance with the Americans with Disabilities Act (ADA).

Sidewalk Inventory

- Surveyed ± 14.1 miles of streets within Downtown subarea.
- Surveyed ± 68.9 miles of streets in arterials, collectors, and some local streets.
- Identified 246 missing segments.
- Inventoried 55% of the streets.

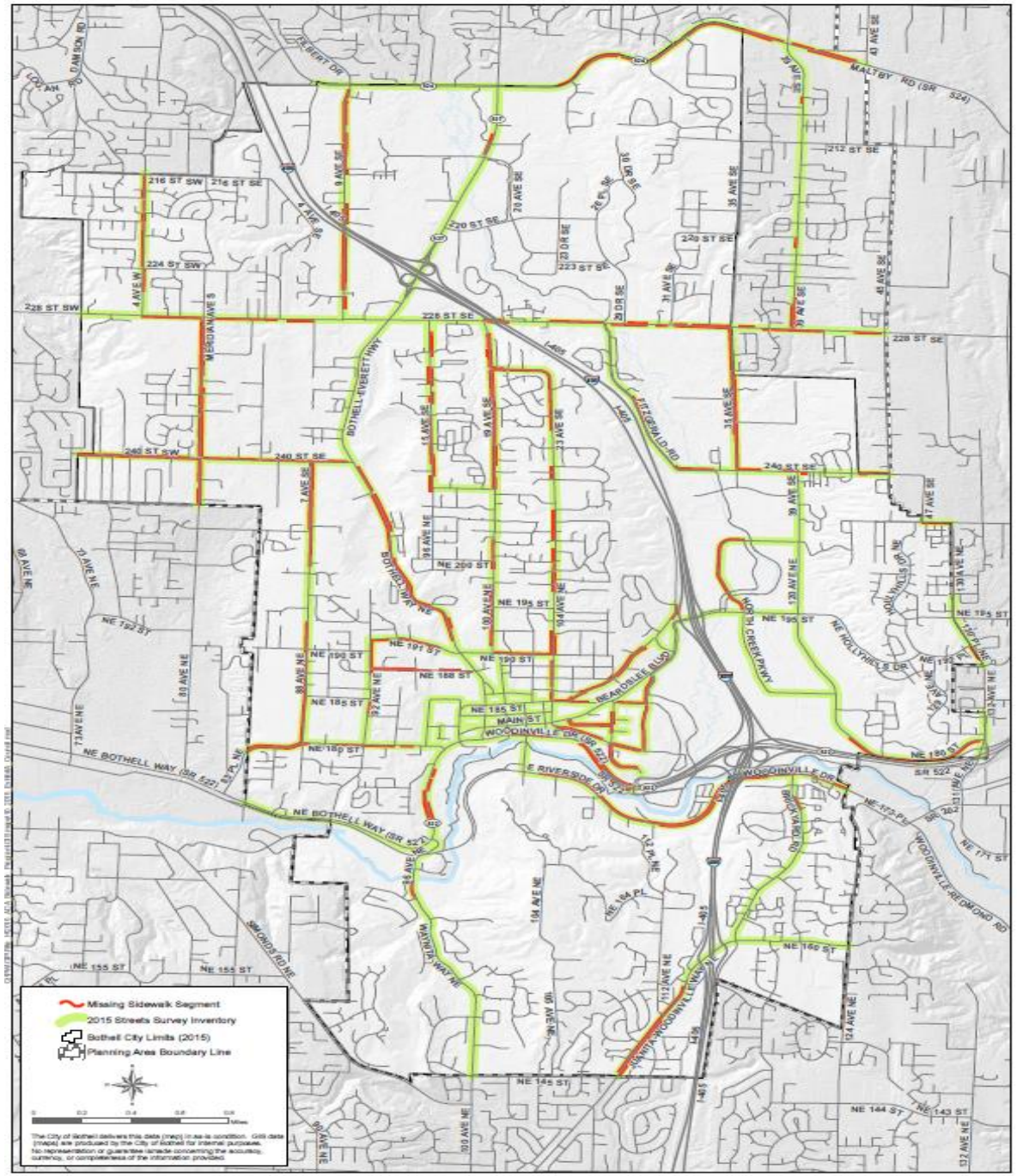
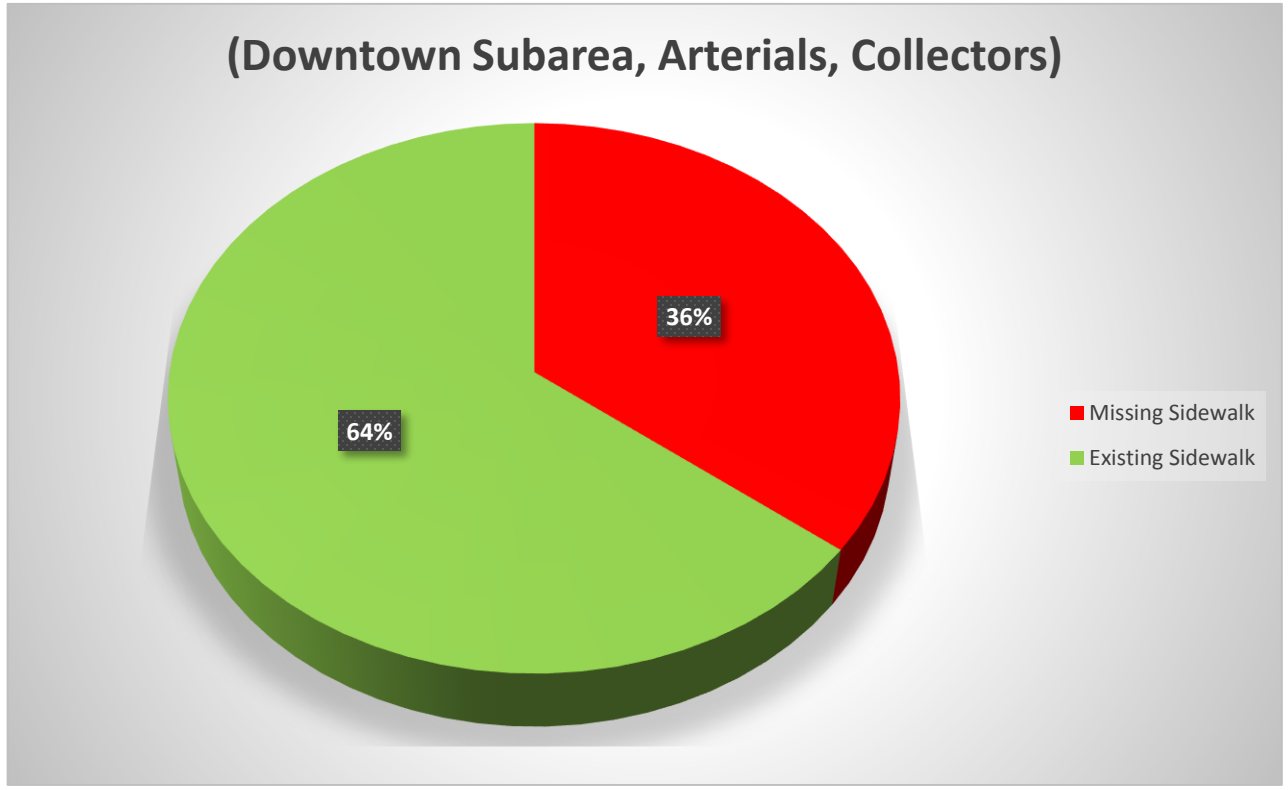


Exhibit A
Streets Survey Inventory

City of Bothell

Sidewalk Inventory

	Missing Sidewalk (miles)	Existing Sidewalk (miles)	Total Surveyed Sidewalk (miles)
(Downtown Subarea, Arterials, Collectors)	29.50	53.50	83



Proposed Ranking System

Ranking Score = **Attributes (Max. Score = 50 Points)** **+** **Proximity (Max. Score = 50 Points)**

Attributes (proposed)

Attribute Criterion	Score Assigned
A. Missing sidewalk on both sides	
Conditions of missing segment: ● Paved Shoulder > = 4' with raised curbs	30
● Paved Shoulder > = 4' with no raised curbs	40
● Paved Shoulder < 4' (minimum shoulder width = 4')	50
B. Missing sidewalk on one side	
Conditions of missing segment: ● Paved Shoulder > = 4' with raised curbs	10
● Paved Shoulder > = 4' with no raised curbs	20
● Paved Shoulder < 4' (minimum shoulder width = 4')	30
Maximum Attribute Score	**50**

Proximity (proposed)

Proximity Criterion	Score Assigned
• Street Classification: Arterial or Collector (= 20 points); Local Access Street (= 10 points)	20 ~ 10
• School Zones: Elementary School, Junior High School, High School, or School Property within ¼ mile range	10
• Collision Data: Per WSDOT Pedestrian and Bicycle Collision Statistics within ¼ mile range	8
• Public Services (1): Downtown Area, Public Building, Community Center, Senior Center, or Clinic/Hospital within ¼ mile range	6
• Public Services (2): Transit Stop, Commercial Area, Post Office, or Park & Recreation within ¼ mile range	4
• Low Income Residence: Low Income Residence within ¼ mile range	2
Maximum Proximity Score	**50**

NE 188th St

(between Pop Keeney Stadium & 92nd Ave NE)

- No sidewalks on either side
- Paved shoulder < 4 feet

Scoring Sample #1 – South side of NE 188th St

Attribute Criterion	Point Index	Attribute Score
A. Missing sidewalk on both sides		50
Conditions of missing segment: ● Paved Shoulder > = 4' with C-Curbs	30	
● Paved Shoulder > = 4' with no C-Curbs	40	
● Paved Shoulder < 4' (minimum shoulder width = 4')	50	
B. Missing sidewalk on one side		
Conditions of missing segment: ● Paved Shoulder > = 4' with C-Curbs	10	
● Paved Shoulder > = 4' with no C-Curbs	20	
● Paved Shoulder < 4' (minimum shoulder width = 4')	30	
Proximity Criterion	**Point Index**	**Proximity Score**
• **Street Classification:** Arterial or Collector (= 20 points) Local Access Street or Local Neighborhood Street (= 10 points)	20	10
• **School Zones** (within 1/4 mile walk range): Elementary School, Junior High School, High School, or School Property	10	10
• **Collision Data** (within 1/4 mile walk range): Per WSDOT Pedestrian and Bicycle Collision Statistics (12/1/2010~11/13/2013)	8	8
• **Public Services** (within 1/4 mile walk range): Downtown Area, Public Building, Community Center, Senior Center, or Clinic/Hospital	6	6
• **Public Services** (within 1/4 mile walk range): Transit Stop, Commercial Area, Post Office, or Park & Recreation	4	4
• **Low Income Residence** (within 1/4 mile walk range) X	2	0
	Total Ranking Score	88

240th St SE
(between Meridian Ave S and 3rd Ave SE)

- Sidewalks on south side
- No paved shoulder on north side

Scoring Sample #2 – North side of 240th St SE

Attribute Criterion	Point Index	Attribute Score
A. Missing sidewalk on both sides		30
Conditions of missing segment: ● Paved Shoulder > = 4' with C-Curbs	30	
● Paved Shoulder > = 4' with no C-Curbs	40	
● Paved Shoulder < 4' (minimum shoulder width = 4')	50	
B. Missing sidewalk on one side		
Conditions of missing segment: ● Paved Shoulder > = 4' with C-Curbs	10	
● Paved Shoulder > = 4' with no C-Curbs	20	
● Paved Shoulder < 4' (minimum shoulder width = 4')	30	
Proximity Criterion	**Point Index**	**Proximity Score**
• **Street Classification:** Arterial or Collector (= 20 points) Local Access Street or Local Neighborhood Street (= 10 points)	20	20
• **School Zones** (within 1/4 mile walk range): Elementary School, Junior High School, High School, or School Property	10	0
• **Collision Data** (within 1/4 mile walk range): Per WSDOT Pedestrian and Bicycle Collision Statistics (12/1/2010~11/13/2013)	8	0
• **Public Services** (within 1/4 mile walk range): Downtown Area, Public Building, Community Center, Senior Center, or Clinic/Hospital	6	6
• **Public Services** (within 1/4 mile walk range): Transit Stop, Commercial Area, Post Office, or Park & Recreation	4	4
• **Low Income Residence** (within 1/4 mile walk range) X	2	0
	Total Ranking Score	60

Self-Evaluation (Curb Ramps)

- Reviewed 833 curb ramp locations

- Attribute Criteria
  - Slopes (cross, running, flare, counter, gutter, and landing slopes)
  - Landing Width
  - Grade Break
  - Detectable Warning Surface (DWS)
  - Obstruction
  - Orientation
  - Surface condition

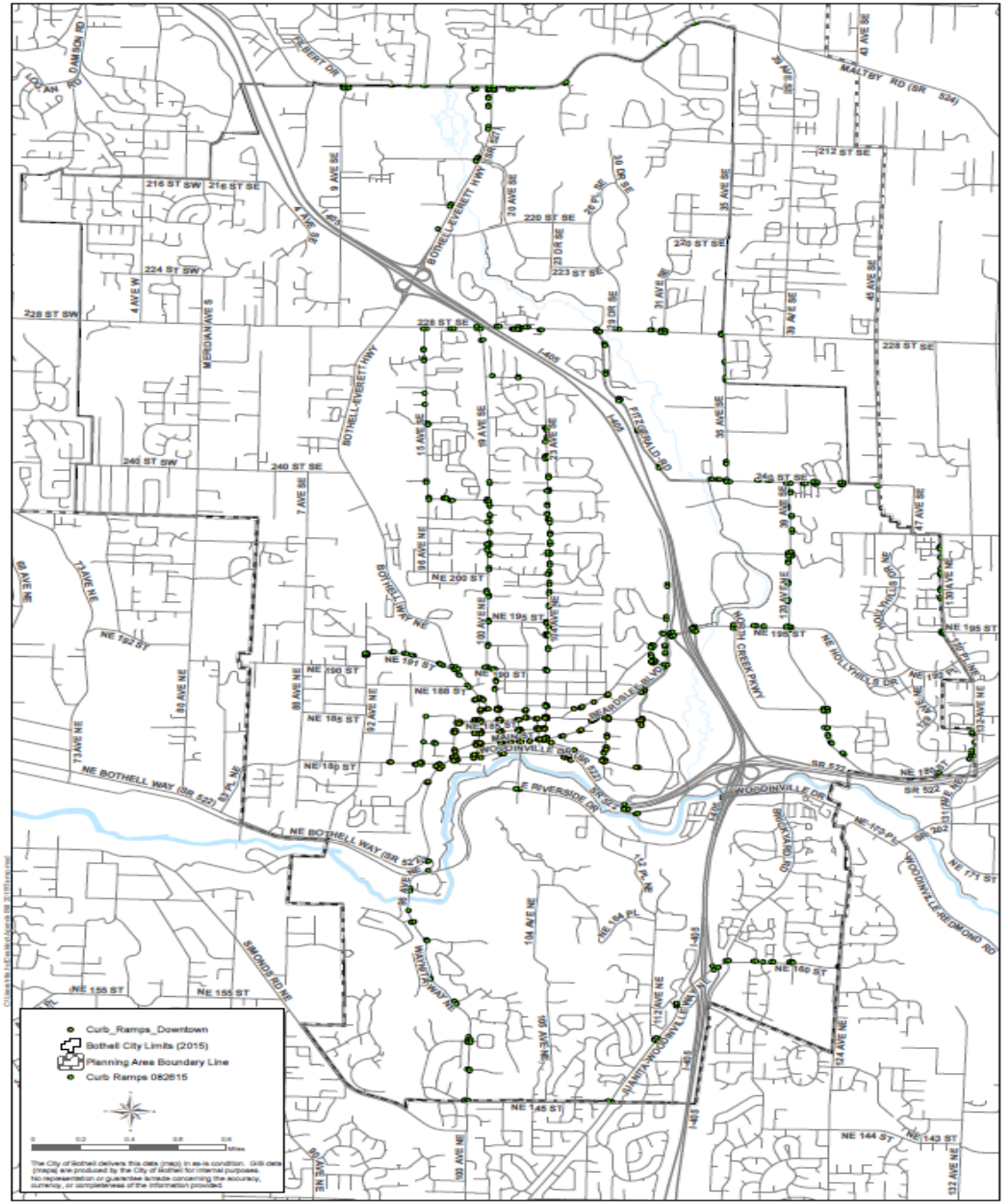
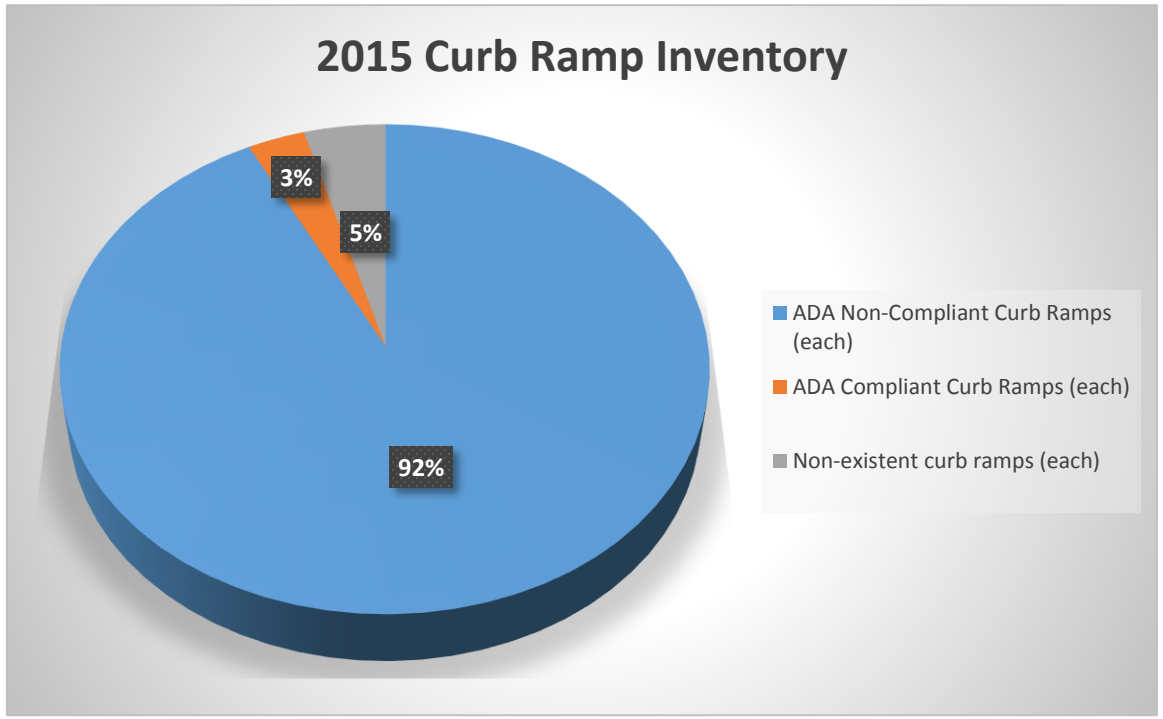


Exhibit C
Curb Ramps Inventory

Curb Ramp Inventory

	ADA Non-Compliant Curb Ramps (each)	ADA Compliant Curb Ramps (each)	Non-existent curb ramps (each)	Total Surveyed Locations (each)
2015 Curb Ramp Inventory	770	26	37	833



Summary of Sidewalk Program

- Conducted a self-evaluation of the sidewalk/curb ramp inventory.
- Proposed a ranking system to prioritize pedestrian facilities.
- Developed a missing sidewalk project improvement list based on the proposed ranking system.

Next Steps for Sidewalk Program

- Conduct public outreach to get citizens, including people with disabilities, involved in our sidewalk program.
- Provide a planning level cost estimate for each project identified.
- Apply for grants and implement the prioritized sidewalk projects.
- Develop a preliminary ADA Transition Plan of the pedestrian facilities.

Introduction

- Pedestrians are legitimate users of the transportation system and should be able to use this system safely and without unreasonable delay.

- Planners and engineers have a professional responsibility to plan, design, and install safe and convenient crossing facilities.

- Pedestrians are at risk whenever they cross the roadway.

- The degree of risk depends on:
  - Complexity of the vehicular and pedestrian traffic patterns.
  - Effectiveness of supplementary information provided about the crossing location, direction, and duration.

Crosswalk – General Definition

- **Crosswalk** at an intersection is defined as “the extension of the sidewalk or the shoulder across the intersection, **regardless of whether it is marked or not**.”

Crosswalk Markings – MUTCD

- Crosswalk markings provide guidance for pedestrians.

- Crosswalk markings also serve to alert road users of a pedestrian crossing point across roadways that are not controlled by traffic signals or stop signs.

The Law

- The operator of an approaching vehicle shall stop and remain stopped to allow a pedestrian or bicycle to cross the roadway within an unmarked or marked crosswalk.

  (RCW 46.61.235)

- No pedestrian or bicycle shall suddenly leave a curb and move into traffic so that the driver cannot stop.

  (RCW 46.61.235)

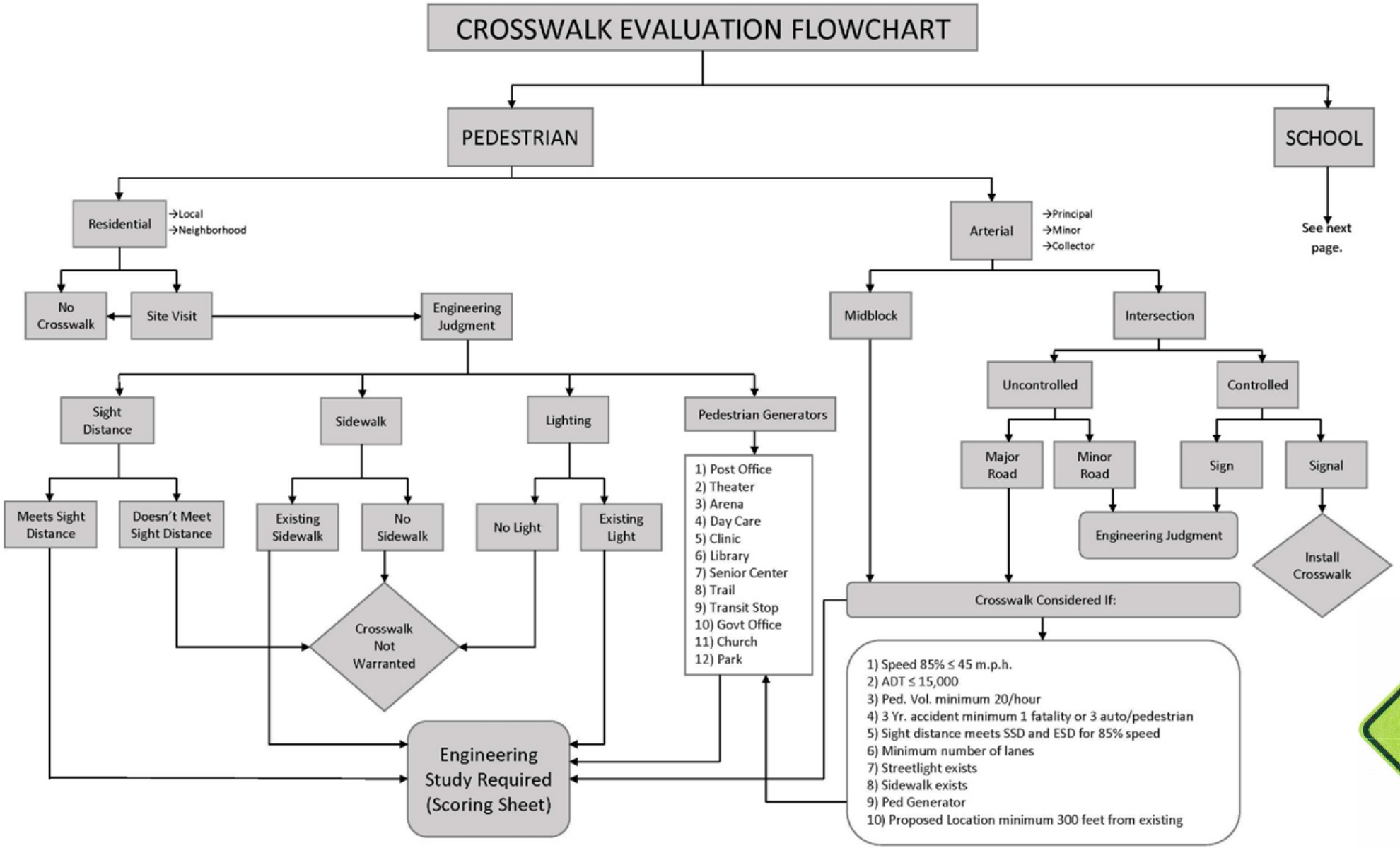
Two Crosswalk Types

- Pedestrian crosswalk
- School crosswalk

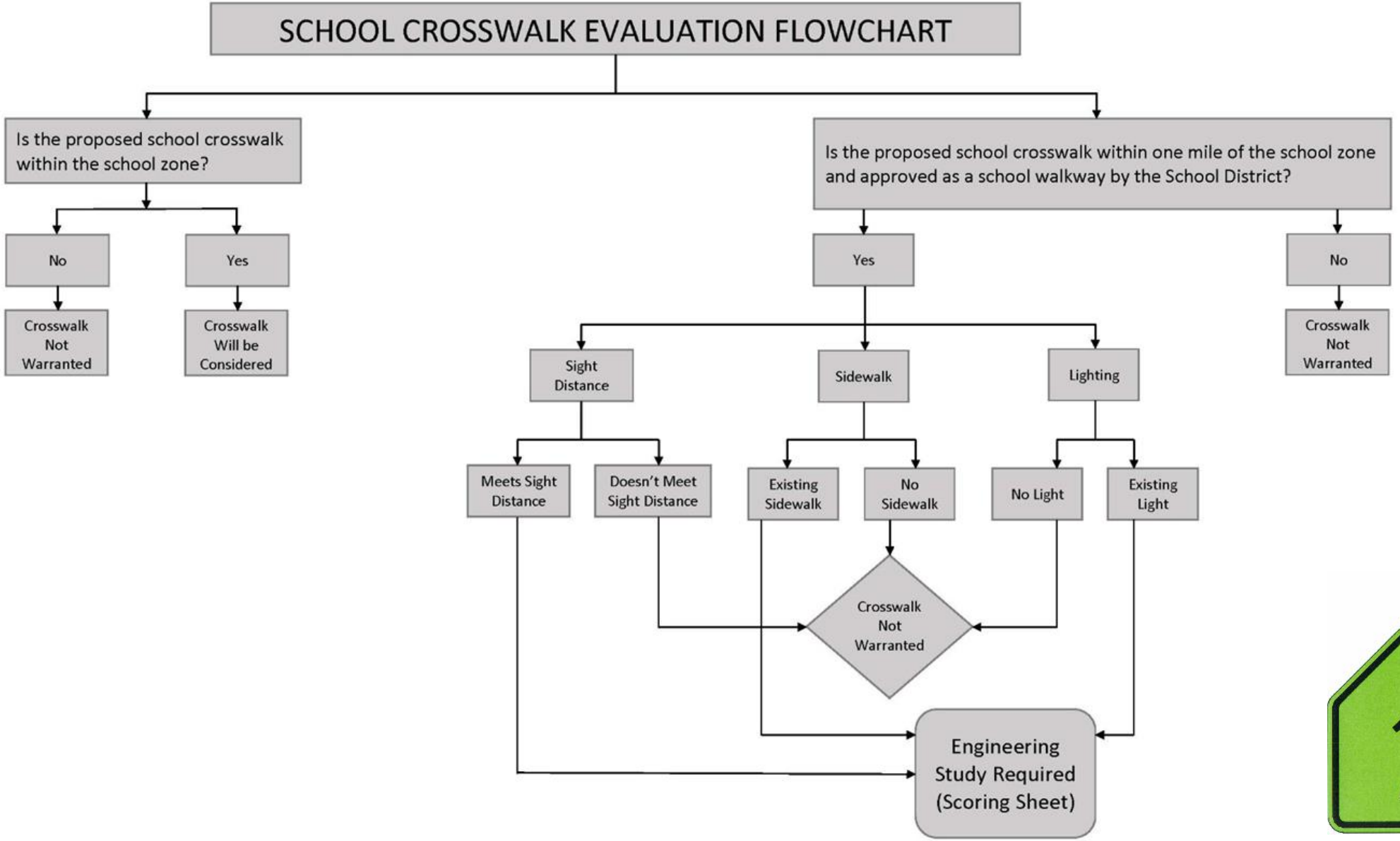
Pedestrian Crosswalk

School Crosswalk

Process for Pedestrian Crosswalk



Process for School Crosswalk



Date:	Proposed X-Walk location:

Scoring Criteria

#		Total Score	Elements	Max. Score	Pos. Score	Remarks
1	Schools	15				Max. score 15 points
			Elementary	15		School route?
			Middle	8		School route?
			High	3		School route?
2	85% Speed	15				Max. score 15 points
			> 40 and < 45	15		
			> = 35	10		
			> = 30	7		
			> = 25	3		
			> = 20	1		
3	ADT	10				Max. score 10 points
			< 10,000	3		
			10000 to 15000	8		
			> 15000	10		
4	Acc./Ped/bike	15				Max. score 15 points
			0 to 3 yrs			
			1 accd.	8		
			> 1	13		
			Fatality	15		
5	Acc./veh.	3				Max. score 3 points
			0 to 3 yrs			For rear end collision
			1 accd.	2		
			> 1 accd.	3		
6	Traffic Signal/ or	4				Max. score 4 points
	ext. marked x-walk		Within 300-ft	1		of proposed location
			Within 500-ft	4		
7	Arterial	5				Max. score 5 points
			Principal	5		
			Minor	4		
			Collector	3		
			Local	1		
9	Ped. Volume	12				
			> 20 ped/peak hr.	12		Max. score 12 points
			< 20 ped/peak hr.	5		
10	Site Condition	7	Eng. Judgment	7		Side trail connection, ped generator
11	Implementation	4	Meet goals	4		Meet community goals, costs,...
12	Travel Lanes	10				Max. score 10 points
			Through lanes	2		score for each
			Ext. center turn	3		score for each
			Ext. bike lane	3		score for each
			Ext. parking	2		score for each

Crosswalk Liability

- There has been considerable controversy in the United States about whether marked crosswalks increase or decrease pedestrian safety at crossing locations that are not controlled by a traffic signal or stop sign.

Cost Estimate for Different Crosswalk Treatments

- There are a variety of treatments available to heighten motorists’ awareness of a crosswalk, increasing the level of safety for pedestrians at that crosswalk.

Pedestrian Warning Signs

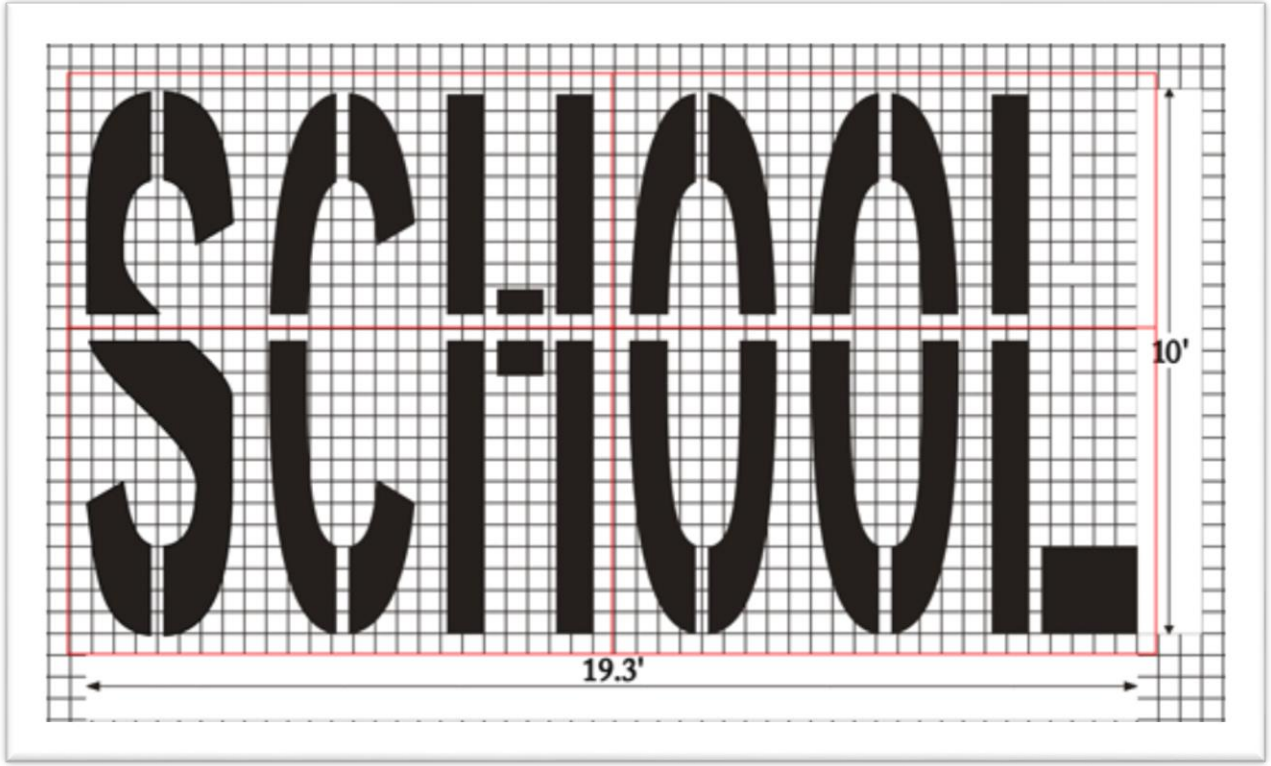
- Placed on the approach and/or at the crossing
- Cost is $750

Rumble Strips

- Located on the approaches to crosswalks
- Cost is $650

Pedestrian Crossing Pavement Stencils

- Located on the approach to the crosswalk
- Cost is $400



In-Pavement Flashing Lights

- Activated by push-button or automatic pedestrian detectors
- Cost is $22,000

Variations of Overhead Pedestrian Crosswalk Signs

- May be warning or regulatory and may be illuminated and/or convey a message when activated crosswalk lighting
- Cost is $45,000

Raised Medians or Pedestrian/Refuge Islands

Flat-Topped Speed Humps

- Sometimes called speed tables, pedestrians may cross the street on the raised flat top
- Cost is $40,000

Traffic-Calming Measures

- Includes curb extensions and lane reductions to reduce crossing distance
- Cost is $30,000

High-Intensity Activated Crosswalk Signals (HAWK)

- Only added at pedestrian crossings when warranted
- Cost is $150,000

Rectangular Rapid Flashing (RRFP)

- A push button activates flashing beacons at the crosswalk
- Cost is $14,000