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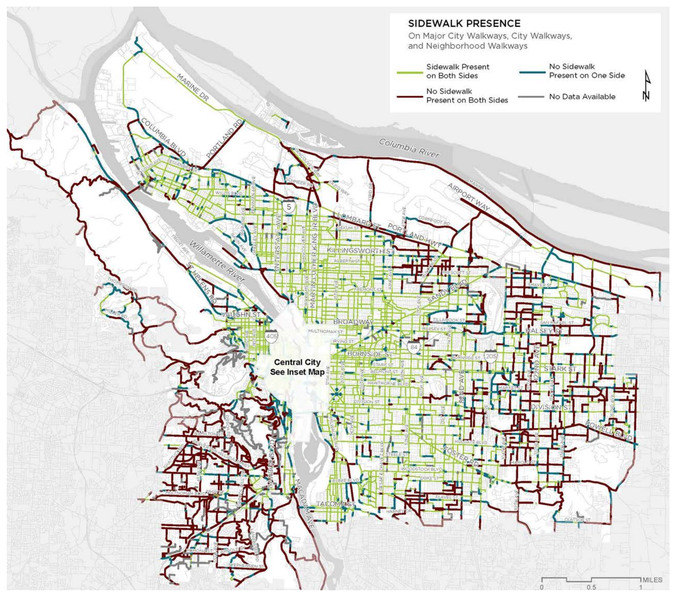
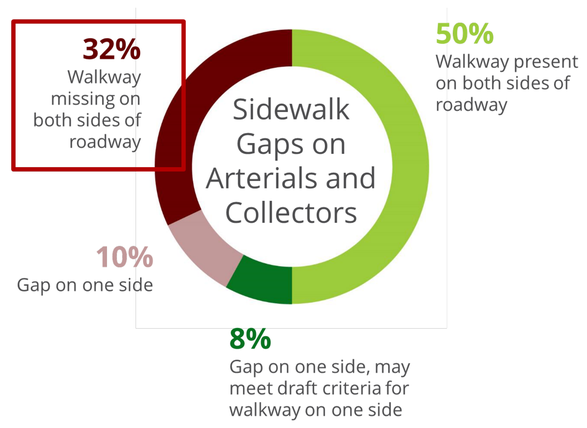
SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

BACKGROUND

One of the most basic transportation infrastructure needs throughout Portland are sidewalks. This is particularly true of SW Portland.

There are a variety of reasons for why this came to be, but the significant expense associated with building City standard sidewalks means they will not be completed for a significant amount of time. As such, an interim solution is needed.



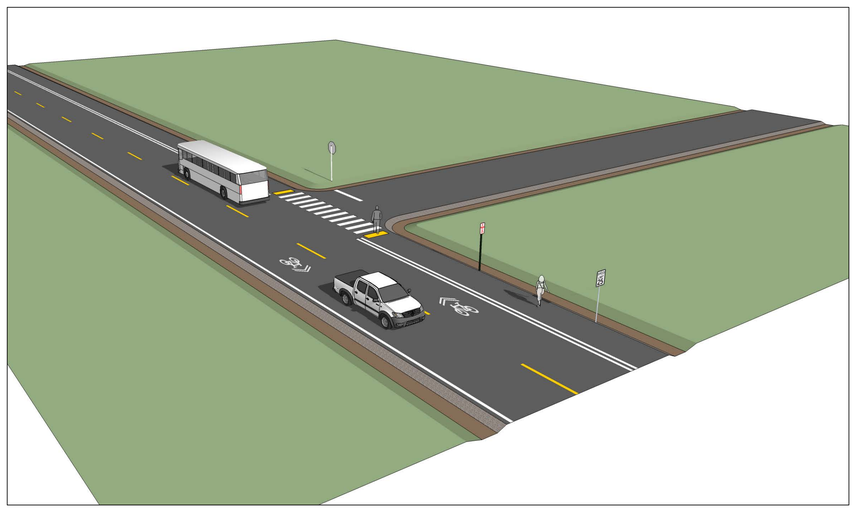


SAFER SHOULDERS PROGRAM

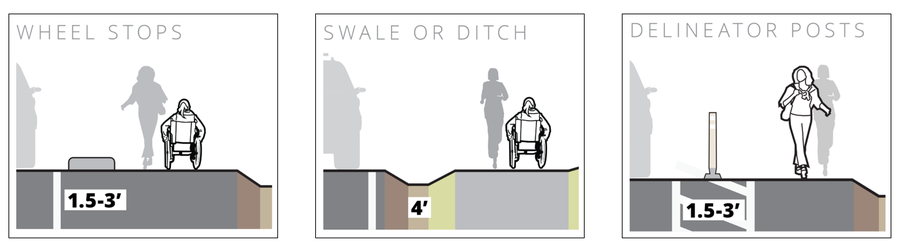
Safer Shoulders is a new program for providing interim pedestrian facilities throughout the City where sidewalk construction is not financially possible. These facilities are not meant to replace sidewalks, rather to provide a new low cost option for quickly upgrading priority pedestrian streets to be safer and more comfortable until sidewalks are built.

The concept is simple: widen the shoulder area of streets to provide enough space so pedestrians are not forced to walk in the street. The design concept can also incorporate additional physical separation, such as wands or curbs with stormwater gaps.

To maximize cost effectiveness, PBOT is taking advantage of opportunities to coordinate the work with the Bureau of Environmental Services (BES) stormwater facility improvements.



Safer shoulders concept



Several options are available for buffering of the shoulder area, which helps increase both safety and comfort.

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SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

BACKGROUND

COST OF SIDEWALKS

Total Construction Cost/ Mile (One Side of the Street/ 7 ft width)
Does not include ROW acquisition

- Infill with Existing Curb: **$5,000,000**
- Infill Without Curb: **$5,500,000**
- Infill in SW Portland: **$6,900,000**

SW Stephenson Missing Sidewalk North Side: approx. **5,000** lineal feet

Estimated Cost to Infill with Sidewalk: **$6,534,000**

SW Stephenson Safer Shoulders Budget: **$500,000**

Estimated feet of sidewalk per budget: approx**. 400** lineal feet
(8% of total need)

Estimated cost of Safer Shoulder/ mile: **$475,000 - $1,166,000**

Estimated feet of Safer Shoulder per budget: approx. **1,000** lineal feet

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SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

PHASE ONE IMPLEMENTATION

The Safer Shoulders Program was first piloted in 2016 on SW Stephenson and SW Hamilton with BES. Both are priority streets within SW Portland primarily because they are designated as Safe Routes to Schools streets.

Funding from both bureaus was set aside to fill in key gaps within each street's pedestrian network in conjunction with stormwater management improvements.

Safer shoulder improvements were provided at several locations along SW Stephenson, including this frontage west of SW Lancaster.

PHASE TWO

After Phase One was completed and evaluated, discussions with the Arnold Creek Neighborhood Association started in 2017 about addressing issues to improve their effectiveness.

For the Arnold Creek neighborhood, the pedestrian/ PBOT design issues to address include:

- Overall connectivity between the existing and new facilities was still incomplete.
- Width of extended shoulders is too narrow for safety and comfort.
- Speeding on SW Stephenson.
- Safety at the SW 35th Ave corner
- Need for more crosswalks to connect facilities on one side of the street to those on the other side.

For Arnold Creek neighborhood the stormwater management/ BES design issues include:

- Plants in the new swales are not surviving
- Grass seeding of swale banks are not working.

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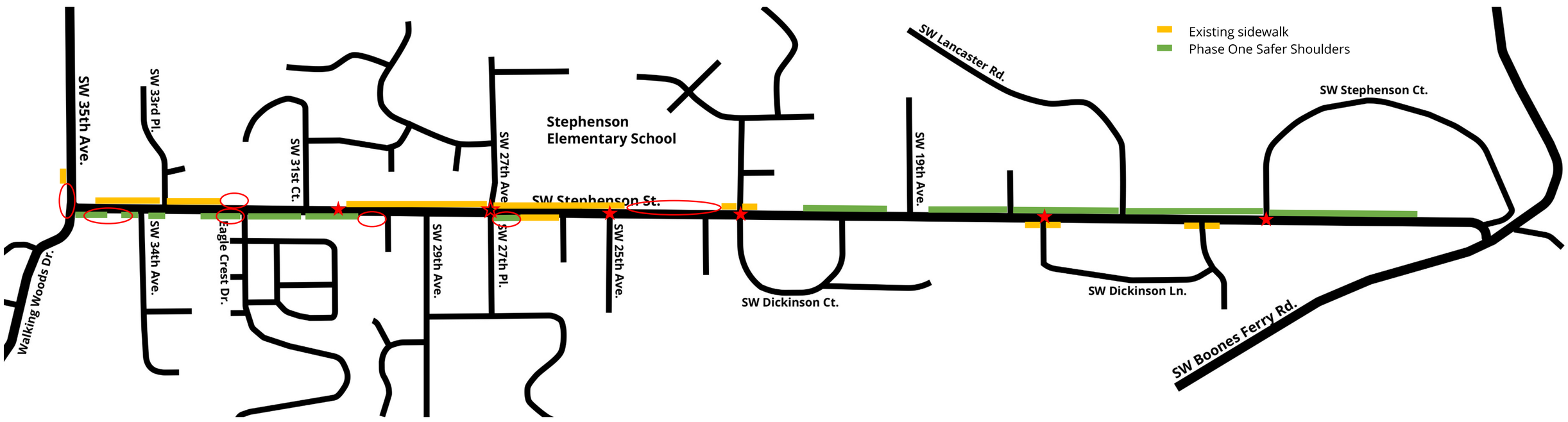
SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

PHASE TWO PROPOSAL

Additional PBOT funding, $500,000, through the Fixing Our Streets Program was allocated to the project to address the design issues resulting from Phase One.

CONNECTIVITY

- ⬭ Fill in gaps as budget allows to create a more continuous system
- ★ Provide new pedestrian crosswalks to link-up improved sections



FACILITY DESIGN

- Rebuild certain section to provide more width, where possible
- Add traffic wands to provide more separation from car traffic

SW Eagle Crest Dr

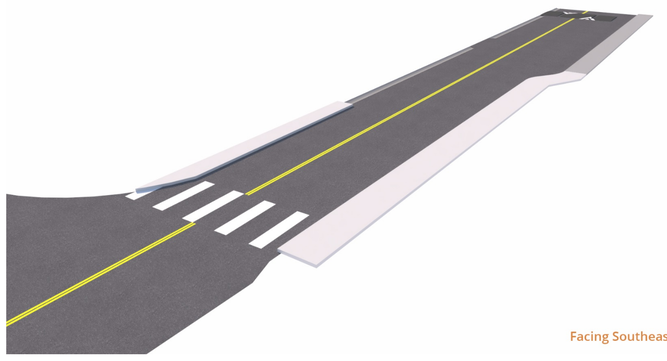
Facing Northwest

SW Dickinson Ct

Facing Northwest

TRAFFIC SPEEDS

- Add speed cushions to provide traffic calming



Facing Southeast

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SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

EXISTING CONDITIONS

HOW SW STEPHENSON IS INTENDED TO FUNCTION
Transportation System Plan Policy Classifications

- Traffic: Neighborhood Collector
  Intended to be the primary network for both trips within the neighborhood and feeder connections to the surrounding arterial network.
- Pedestrian: City Walkway
  Sidewalk on both sides of the street is the design standard
- Bicycle: City Bikeway
  Bicycle lanes are generally the design standard on collector streets

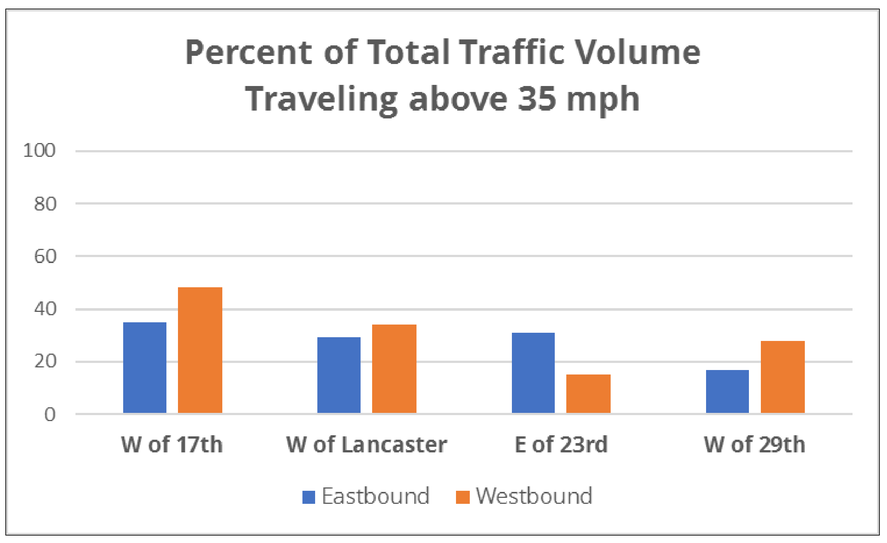
SW STEPHENSON DESIGN

• Length:	**6,775 ft**
• Right-of-Way width:	**45 – 65 ft**
• Average pavement width:	**26 - 34 ft**
• Sidewalks:	**1,675 ft north** **475 ft south**
• On-street parking:	**intermittent**

SW STEPHENSON FUNCTION

• Average daily traffic volume:	**1,570 – 2,540**
• Speed limit:	**30 mph**
• 85th percentile traffic speed:	**36 – 40 mph**

WHAT IS THE 85TH PERCENTILE SPEED?
This is the most standard measure of speed conditions used by traffic engineers. It is speed at which 85% of the traffic is traveling at or below.



A relatively high percentage of traffic is traveling above 35 mph, exposing pedestrians to high fatality rates (see 'Why Speed Matters')

Many sections of SW Stephenson lack both sidewalks and shoulder space.

Some sections of SW Stephenson have sidewalks on one side of the street with on-street parking.

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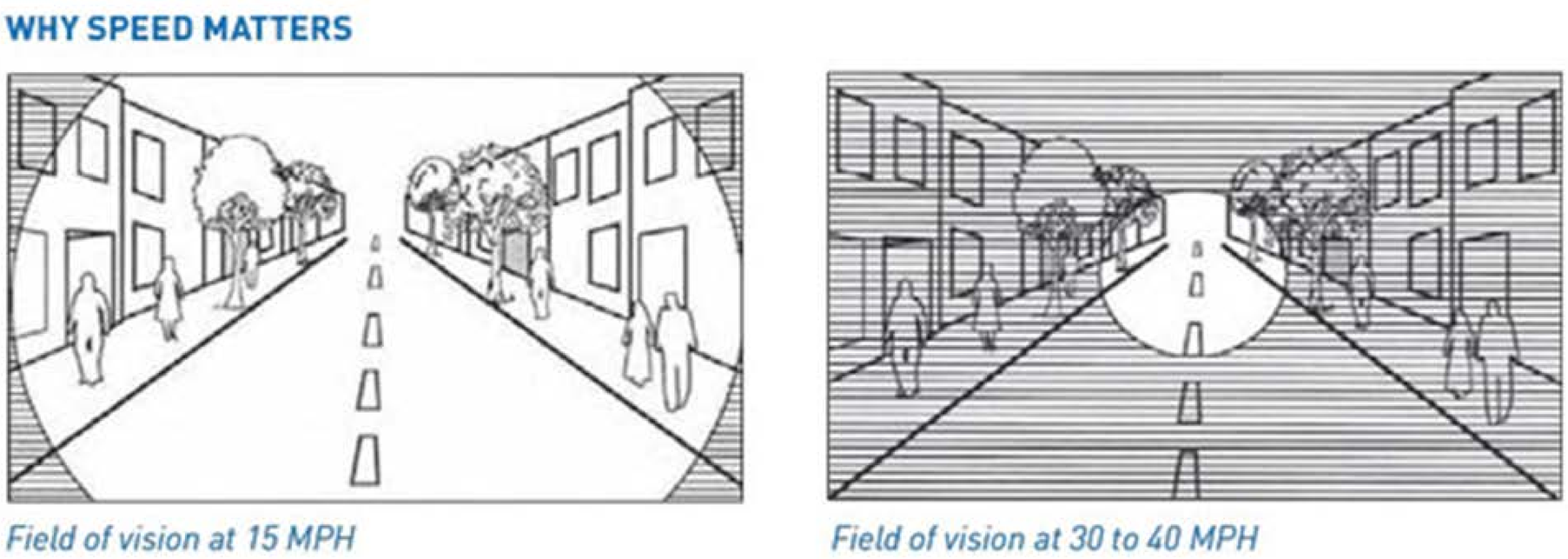
SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

WHY TRAFFIC CALMING?

There are a variety of reasons PBOT uses traffic calming on city streets, but the most important reason in the context of the Safer Streets Program is **safety**.

For pedestrians to use the space provided by Safer Shoulders projects they need to feel that the space is both safe and comfortable.

In terms of safety, there is a strong correlation between speed and pedestrian fatalities. Traffic calming on high speed streets like SW Stephenson significantly enhances both the safety and comfort of walking along the street.



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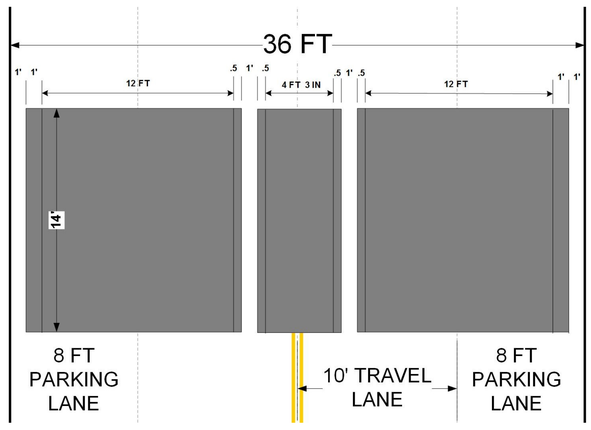
SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

‘FIRE FRIENDLY’ SPEED CUSHIONS

DESIGN

‘Fire Friendly’ speed cushions are a new design developed by PBOT in conjunction with the Portland Fire Bureau and have been tested at several locations over the past several years. They are intended to be used on emergency response routes where traffic calming is also desired.



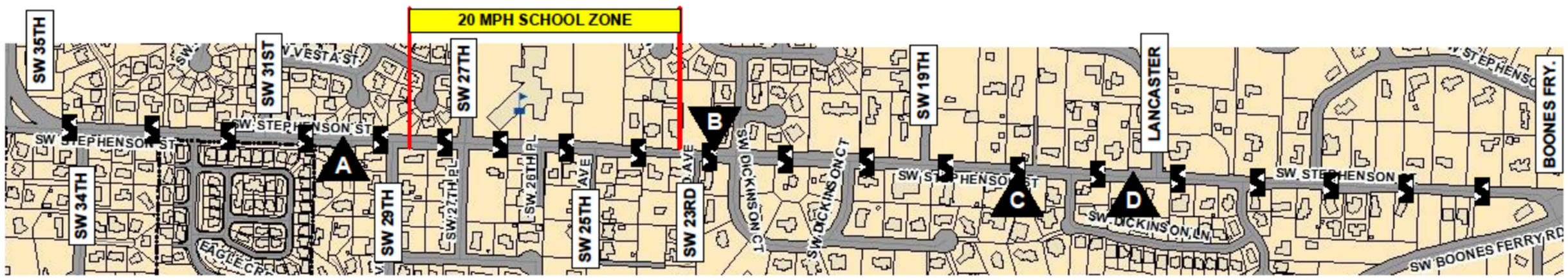
Plan view of a speed cushion- width dimensions vary with based on the street width

Their design allows emergency response vehicles to position themselves on the roadway such that they are able to drive through, instead of over, the speed cushion, and thus minimize delay to response times.

SE Thorburn

SPACING

The spacing of the cushions is important to the resulting amount of speed reduction achieved. The recommended average spacing between each is 320 ft. This spacing is intended to achieve 85th percentile speeds in the range of 26 to 30 mph. Increasing the spacing increases the resulting range of 85th percentile speeds. If the spacing is increased to 350-370 ft, the resulting range of 85th percentile speeds is 28 to 32 mph which reduces the total number of cushions from 20 to 18.



A 11/2/16

	SPEED	VOLUME
→	36 MPH	1243
←	37 MPH	1299
		2542

B 11/2/16

	SPEED	VOLUME
→	38 MPH	782
←	35 MPH	790
		1572

C 11/1/16

	SPEED	VOLUME
→	38 MPH	812
←	40 MPH	810
		1622

D 11/3/16

	SPEED	VOLUME
→	37 MPH	774
←	38 MPH	747
		1521

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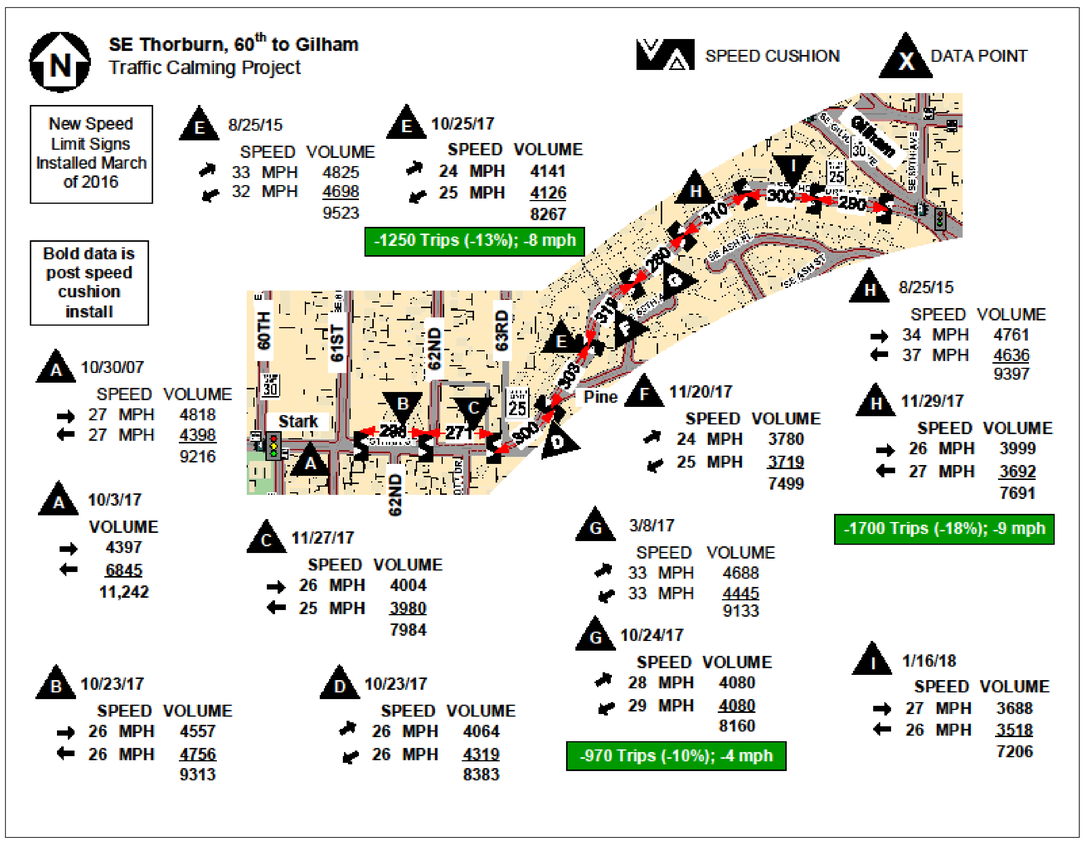
SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

‘FIRE FRIENDLY’ SPEED CUSHIONS

EXPERIENCE

Portland has now several decades of experience with the installation of speed bumps. They are considered our most effective tool for reducing speeding.

The new ‘fire friendly’ speed cushion design was used in several recent projects, with the results from the SE Thorburn Project shown on the right. The Fire Bureau has approved their use on Emergency Response Routes.



Speed Reduction

The 85th percentile speed was reduced between 4 and 9 mph.

Volume Changes

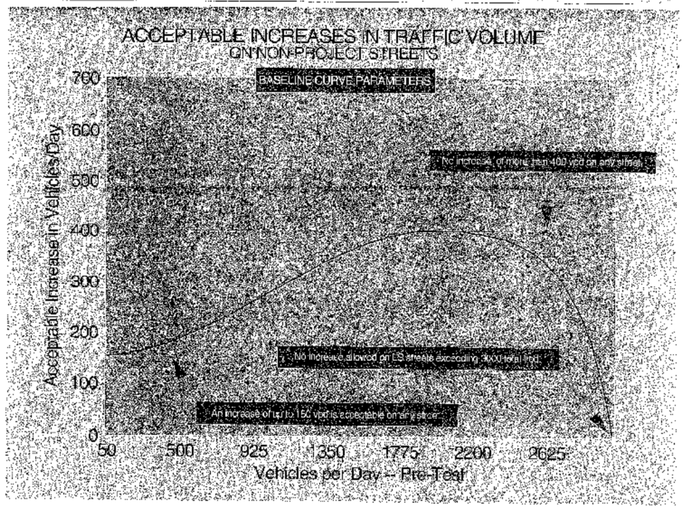
Daily total traffic volumes on the street were reduced by 10 to 18%. This represents diversion to alternative routes.

City policy generally allows diversion from one collector street to another, but generally not significant amounts from a collector street to a local street.

Diversion potential:
Some diversion of traffic to adjacent streets is also possible. In the context of the street network surrounding SW Stephenson the only likely option is SW Arnold.
If speed cushions are installed on SW Stephenson, monitoring of traffic volumes will be performed to see if volumes exceed the ‘threshold curve’. If they do, mitigation is required.

Monitoring Diversion

PBOT uses what is known as the ‘Impact Threshold Curve’ to establish if diversion to another similarly classified street is too much, which is based on be percentage change in volumes.



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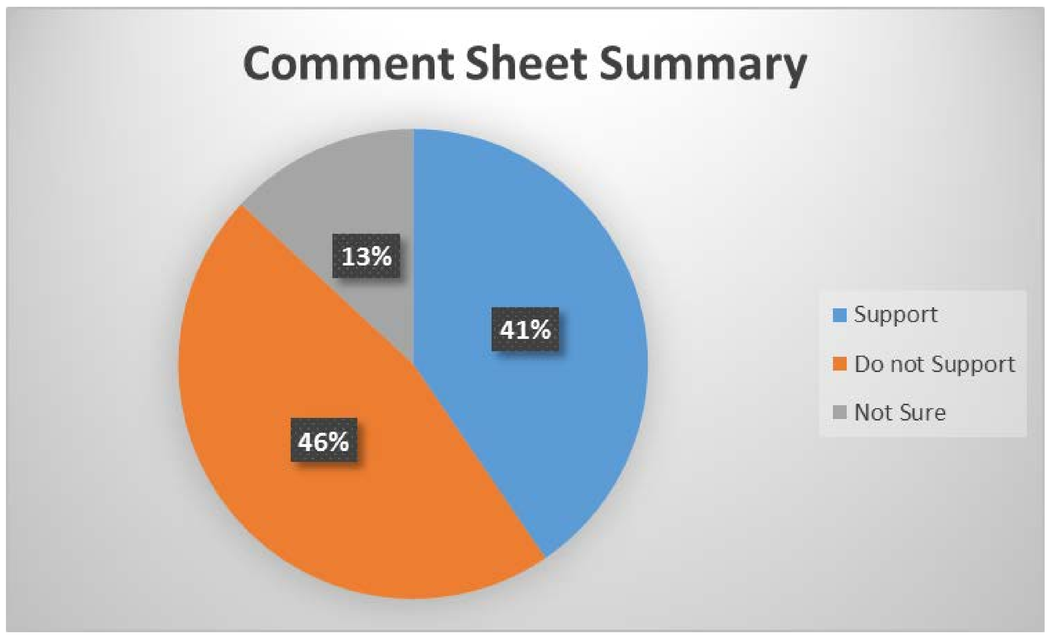
SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

JUNE 4TH OPEN HOUSE RESULTS

- **Attendance: 105 sign ins**

- **Comments received: 84**

- **Comments in support: 34**
- **Comments against: 39**
- **Comments unsure: 11**



Against Staff Proposal:

- Number of bumps is overkill
  - Only needed in vicinity of school
- Lack of consideration of other options
- Money better spent on more pedestrian facilities
- Prefer enforcement
- Poor process

- Bumps not effective
- Dangerous in winter conditions
- Diversion to other residential streets
- Decreased property values
- Impact to emergency response times
- Noise
- Impacts to vehicles and drivers

Unsure:

- More of a combination of bumps and stop signs
- Too many bumps
- Start with, test small number of bumps
- Bumps should be last resort, not first

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SAFER SHOULDERS PROGRAM
SW STEPHENSON PROJECT

REVISED TRAFFIC CALMING PROPOSAL

- **Maintain spacing pattern in vicinity of the school (~300 ft)**
- **Double spacing pattern outside the school zone (~600 ft)**
- **Evaluate effectiveness and public opinion**
- **Infill additional cushions based on evaluation**

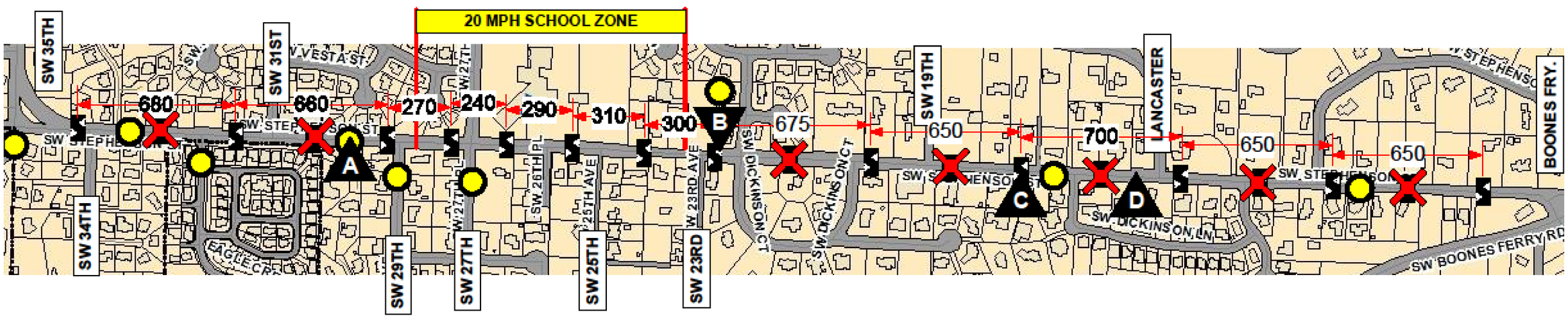
N

SW Stephenson, 35th Avenue to Boones Ferry Road
Traffic Data

PROPOSED SPEED CUSHION (13)

DATA POINT

NEW DATA REQUESTED



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	SPEED	VOLUME
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