

Holcomb Boulevard Pedestrian Enhancement Concept Plan



Adopted April 20, 2005
Ordinance 05-1003



Holcomb Boulevard Pedestrian Enhancement Concept Plan

Prepared for:

City of Oregon City
Clackamas County
Park Place Neighborhood Association

Prepared by:

Alta Planning + Design
George Hudson, ASLA, Principal
Allison Wildman, Senior Planner

In association with:

KPFF
Matt Keenan, P.E.

Adolfson Associates
Sarah Hartung, Project Ecologist

Acknowledgements

Nancy Kraushaar, P.E., City Engineer, Oregon City
Dan Drentlaw, Community Development Director, Oregon City

Ron Weinman, P.E., Clackamas County

Residents of the Park Place neighborhood

April 2005



Introduction

In early summer 2004, the Alta Planning + Design team was retained by the City of Oregon City and Clackamas County to study the existing roadway conditions on Holcomb Boulevard and develop a streetscape concept that would achieve the goals and objectives set by the neighborhood residents, City, and County.

Goals and objectives were derived from comments at the first public workshop on June 30, 2004 at the Oregon City Baptist Church and further refined after the second public workshop in early September, 2004, at Holcomb Elementary School.

GOAL 1: SAFETY

Provide pedestrian facilities that will enable all neighborhood residents to safely walk along and across Holcomb Boulevard.

Objectives:

- Provide a firm walking surface for pedestrians on at least one side of the roadway.
- Keep pathway consistent to minimize the number of forced crossings of Holcomb.
- Provide separation between roadway and pedestrian pathway.
- Slow motor vehicle speeds on Holcomb by utilizing traffic calming or stopping devices.
- Designate and improve pedestrian crossings on Holcomb Blvd.



Neighborhood residents reviewing the Holcomb Boulevard pedestrian enhancement concept

GOAL 2: PRESERVE NEIGHBORHOOD CHARACTER

Design pedestrian facilities to preserve and enhance the character of the neighborhood as the area continues to develop and grow.

Objectives:

- Preserve "rural" character of the roadway.
- Make a concerted effort to preserve mature vegetation in the public right-of-way, particularly older trees and shrubs.
- Keep right-of-way width to a minimum to lessen impact on houses facing Holcomb, particularly from Swan to Apperson.
- Consider the use of "green" street treatments that reduce impact on the environment.

GOAL 3: CONSISTENCY WITHOUT UNIFORMITY

Provide pedestrian facilities that are consistent but not redundant and pre-manufactured.

Objectives:

- Use a variety of trees and shrubs in the right-of-way.
- Design treatments so they respond to specific site conditions.
- Install street lighting that has historic character and does not contribute to light pollution.
- Limit the use of center medians.

Design Concepts

The design concepts used along Holcomb Boulevard are very site specific, changing from one treatment to another depending on the conditions of the immediate location.

Design concepts respond to specific conditions like topographical constraints (steep slopes), a desire for on-street parking, better street tree/vegetation treatments, and future land uses.

The roadway itself never changes. Instead, the sides of the roadway, or "edge conditions" will vary. Edge conditions can include a combination of 6' sidewalks, 5' - 10' planter strips, 10' - 12' bioswales, 9' on-street parking bays, pedestrian-scale lighting, and traffic calming treatments. We have developed seven typical "edge conditions" that will apply to areas along Holcomb Boulevard. They are shown in the applicable sections on the following pages.

Safety

The addition of sidewalks and buffers (plantings, bicycle lanes, etc.) will greatly improve the basic safety of all pedestrians. Stopping or slowing treatments at key intersections will improve safety for all roadway users, including pedestrians, bicyclists, and motorists. We recommend that the speed limit be transitionally lowered to 35 mph from the city limits to Swan and to 30 mph from Swan to Highway 213. It is also recommended that the section of Holcomb adjacent to Holcomb Elementary be designated as a "school zone" and posted 20 mph when children are present or during designated times. Enforcement of these speed zones will be critical to making the corridor safer.

History

Though not explicitly shown in the corridor drawings, Holcomb will have features to make it a distinct part of Oregon City. Pedestrian-scale lighting should be located throughout the corridor to improve safety and visibility. The lighting should reflect a style similar to the one used in the historic downtown and other parts of Park Place Neighborhood. Benches should be provided along the corridor, particularly where transit stops exist and are planned.

As part of the historic Barlow Trail, Holcomb Boulevard has a number of opportunities to integrate history, education, and artistry into the corridor. Local rock forms can be used as bases for placards to provide historical and environmental information about the area and the trail. A spring located just west of the Oregon City Baptist Church was thought to be a wayside watering hole for pioneers and their stock on the final push into Oregon City. Areas like these can be called out with art, information, or special plantings to accentuate the unique history of the area and contribute to an interesting and educational pedestrian environment. One idea is to use writings from pioneer journals and inscribe them on the sidewalk or on boulders.

Native Plantings

The introduction of bioswales provides an excellent opportunity to integrate native plants and grasses into the landscape. These plants typically need less water and maintenance than plant species that are not native to the area. They also provide interesting landscaping and can have a speed calming effect along the corridor. A list of recommended native trees, shrubs, and grasses by bio-region is located on the following page.



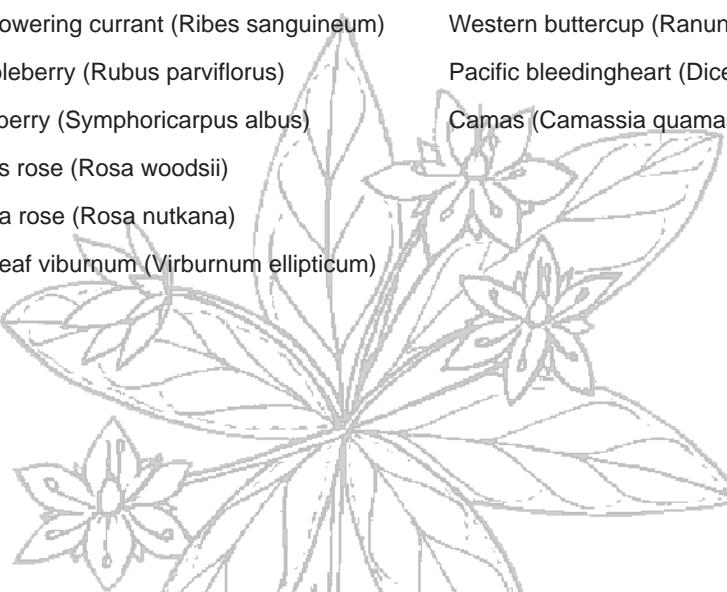
Plant List

The following native plants are recommended for landscaping the bioswales and planter strips along Holcomb Boulevard. Additional grasses, groundcovers, shrubs and trees can be found in Appendix F of the Stormwater Management Manual (2004) from the Portland Bureau of Environmental Services.

Woodland / Upland Areas

Small Trees and Shrubs

Vine maple (*Acer circinatum*)
Cascara (*Rhamnus purshiana*)
Serviceberry (*Amelanchier alnifolia*)
Pacific yew (*Taxus brevifolia*)
Chinkapin (*Castanopsis chrysophylla*)
California hazel (*Corylus cornuta*)
Pacific dogwood (*Cornus nurrallii*)
Oceanspray (*Holodiscus discolor*)
Indian plum (*Osmaronia cerasiformis*)
Red elderberry (*Sambucus racemosa*)
Blue elderberry (*Sambucus cerulea*)
Western mock-orange (*Philadelphia lewisi*)
Common chokecherry (*Prunus virginiana*)
Bitter cherry (*Prunus emarginata*)
Tall Oregon grape (*Mahonia aquifolium*)
Dull Oregon grape (*Mahonia nervosa*)
Red huckleberry (*Vaccinium parvifolium*)
Evergreen huckleberry (*Vaccinium ovatum*)
Salal (*Gaultheria shallon*)
Red flowering currant (*Ribes sanguineum*)
Thimbleberry (*Rubus parviflorus*)
Snowberry (*Symporicarpus albus*)
Woods rose (*Rosa woodsii*)
Nootka rose (*Rosa nutkana*)
Oval-leaf viburnum (*Virburnum ellipticum*)



Riparian / Wetland Areas

Herbaceous plants and wildflowers

Vanilla leaf (*Achylyis triphylla*)
Wild ginger (*Asarum caudatum*)
Ladyfern (*Athyrium filix-femina*)
Deerfern (*Blechnum spicant*)
Swordfern (*Polystichum munitum*)
Bunchberry dogwood (*Cornus stolonifera*)
Twinflower (*Linnaea borealis*)
Miners lettuce (*Montia siberica*)
Oxalis (*Oxalis oregana*)
False solomonseal (*Smilacena racemosa*)
Starry solomonseal (*Smilacena stellata*)
Foamflower (*Tiarella trifoliata*)
Starflower (*Trientalis latifolia*)
Piggyback plant (*Tolmiea menziesii*)
Inside-out flower (*Vancouveria hexandra*)
Trillium (*Trillium ovatum*)
Wood violet (*Viola glabella*)
Snow queen (*Synthris reniformis*)
Red columbine (*Aquilegia formosa*)
Western buttercup (*Ranunculus occidentalis*)
Pacific bleedingheart (*Dicentra formosa*)
Camas (*Camassia quamash*)

Trees

Oregon ash (*Fraxinus oregonica*)

Western red cedar (*Thuja plicata*)

Cascara (*Rhamnus purshiana*)

Columbia willow (*Salix fluvialis*)

Pacific willow (*Salix lasiandra*)

Piper's willow (*Salix piperi*)

Rigid willow (*Salix rigida*)

Scouler willow (*Salix scouleriana*)

Soft-leaved willow (*Salix sessiliflora*)

Sitka willow (*Salix sitchensis*)

Red alder (*Alnus rubra*)

Shrubs

Red-osier dogwood (*Cornus stolonifera*)

Black twinberry (*Lonicera involucrata*)

Indian plum (*Oemleria cerasiformis*)

Pacific ninebark (*Physocarpus capitatus*)

Swamp rose (*Rosa pisocarpa*)

Salmonberry (*Rubus spectabilis*)

Blue elderberry (*Sambucus cerulea*)

Red elderberry (*Sambucus racemosa*)

Douglas spirea (*Spirea douglasii*)

Nootka rose (*Rosa nootkana*)

Herbaceous plants and wildflowers

Maidenhair fern (*Adiantum pedatum*)
Douglas aster (*Aster Douglasii*)
Lady fern (*Athyrium filix-femina*)
Big-leaf sedge (*Carex amplifolia*)
Columbia sedge (*Carex aperta*)
Slough sedge (*Carex obnupta*)
Henderson's wood sedge (*Carex hendersonii*)
Western corydalis (*Corydalis scouleri*)
Elegant rein-orchid (*Habenaria elegans*)
Soft rush (*Juncus effusus*)
Skunk cabbage (*Lysichitum americanum*)
Yellow monkey-flower (*Mimulus guttatus*)
Streambank springbeauty (*Montia parviflora*)
Candyflower (*Montia siberica*)
Forget-me-not (*Myostis laxa*)
Water parsley (*Oenanthe sarmentosa*)
Sweet coltsfoot (*Petasites frigidus*)
False solomon-seal (*Smilacena racemosa*)
Laceflower (*Tiarella trifoliata*)
Piggyback (*Tolmiea menziesii*)
Stream violet (*Viola glabella*)
Tufted Hairgrass (*Deschampsia caespitosa*)
Pointed Rush (*Juncus oxymeris*)
Slender Rush (*Juncus tenuis*)
Grooved Rush (*Juncus patens*)
Manna Grass (*Glyceria occidentalis*)



How does a bioswale work?

A bioswale is a shallow depression created in the earth to accept and convey stormwater runoff. A bioswale uses natural means, including vegetation and soil, to treat stormwater by filtering out contaminants being conveyed in the water.

When it begins to rain, the first "flush" of water that runs off a street or parking lot carries most of the contaminants (oil, dirt, etc.) that have collected on the pavement. Stormwater normally moves from a paved surface into a storm drain, where it is piped directly to the nearest stream and, eventually, to the Willamette River. The bioswale intercepts the stormwater runoff and starts the treatment process.



The bioswale channel, about 200 feet long and 10 feet wide, is where most of the contaminant removal takes place. The channel bed is covered with a thick mat of native sedges, rushes, and grasses, which slows the stormwater flow to about a nine minute trip through the swale. This slow flow allows stormwater to have plenty of contact time with channel vegetation. During the journey through the bioswale, the plants and soil filter the stormwater, trap sediments, and absorb contaminants.



Courtesy of the City of Salem, Oregon

Phasing

The primary purpose for a pedestrian improvement phasing plan is to ensure a logical sequence of implementation that provides a high degree of success as each phase is built, thereby building momentum for each subsequent phase of the project. Success is directly correlated with meeting the priorities established by the City, County, and neighborhood residents. When phasing projects for Holcomb Boulevard, safety, connections to pedestrian-oriented land uses (i.e., schools and commercial areas), and "fundable" projects were given the highest priority. Cost and ease of implementation were considered moderate priorities; development synergy was a low priority.

Phase 1: 5+ years

Phase 1 consists of projects and petitions that would vastly and immediately improve the safety of the corridor. This phase provides safe connections to Holcomb Elementary School from nearby residential areas and provides a connection from the public housing complex to the small commercial node just west of Front Street. This phase also recommends two petitions to reduce traffic speeds on Holcomb.

Phase 1-A. Holcomb Elementary School Connections

i. Design and construct the Holcomb Elementary intersection.

Possible treatments include stop signs, a pedestrian-activated signal, signage, crosswalks, warning flashing lights, illumination, and curb cuts.

ii. Design and construct a sidewalk on the north side of the roadway from Holcomb Elementary to the existing sidewalk at Winston. This project would require widening the roadway to stripe and mark two bicycle lanes at the time of construction.

iii. Design and construct a small section of sidewalk from the existing sidewalk west of Trailview Estates to Oak Tree Terrace.

iv. Design and construct a short section of sidewalk connecting the existing sidewalk from Holcomb Ridge to the improved Holcomb Elementary intersection.

v. Illuminate the intersection and mark crosswalks across Holcomb at Oak Tree Terrace.

vi. Petition Clackamas County to designate the area in front of the school as a school zone (signed 20 mph during school hours).

Phase 1-B. Corridor Connections

i. Design and construct a sidewalk on the north side of the roadway from approximately Swan Avenue to Front Street. This project would require widening the roadway to stripe and mark two bicycle lanes at the time of construction.

ii. Mark crosswalks and traffic control devices at Swan Avenue.

iii. Add landscaping and trail treatments (boulders, etchings, etc.) at strategic locations along the corridor.

Phase 1-C. Traffic Calming

i. Petition Clackamas County to lower the speed limit to 35 mph from the city limit to Swan and 30 mph from Swan to the Highway 213 bridge.

Planning-Level Cost Estimate: Phase 1

ITEM	QUANTITY	UNIT	UNIT COST	ITEM COST	SUBTOTAL
GENERAL REQUIREMENTS					
Mobilization	1	LS	\$95,000	\$95,000	
Construction Traffic Control	1	LS	\$70,000	\$70,000	
Erosion Control	1	LS	\$24,000	\$24,000	
					\$189,000
DEMOLITION					
Sawcut AC	9,000	LF	\$1	\$9,000	
Clearing and Grubbing	1	LS	\$11,500	\$11,500	
Tree Removal	1	EA	\$250	\$250	
Relocating Power Poles	14	EA	\$400	\$5,600	
Protect Existing Utilities	1	LS	\$5,000	\$5,000	
Adjust manholes, valves, meters, vault lids	1	LS	\$1,000	\$1,000	
					\$32,350
SUBGRADE					
General Excavation	4,600	CY	\$15	\$69,000	
					\$69,000
STREET					
AC Pavement	992	TON	\$30.00	\$29,760	
Aggregate Base (8" thickness)	2,497	TON	\$10	\$24,970	
Street Light-Ornamental	34	EA	\$5,000	\$170,000	
Street Light-Cobra	2	EA	\$4,000	\$8,000	
Lighting	1	LS	\$45,000	\$45,000	
Pedestrian Signal	1	LS	\$100,000	\$100,000	
Crosswalk Marking	150	LF	\$0.30	\$45.00	
Warning Flashing Lights	1	LS	\$50,000	\$50,000	
Signage	12	EA	\$250	\$3,000	
					\$430,775
CURB AND SIDEWALKS					
Standard Curb	4,544	LF	\$10	\$45,440	
Concrete Sidewalk	27,354	SF	\$3.00	\$82,062	
					\$127,502
STORM DRAIN					
12" RCP	2,362	LF	\$35	\$82,670	
Relocating Catch Basin	4	EA	\$300	\$1,200	
					\$83,870
SITE FURNISHINGS					
Stone corner bollards	15	EACH	\$50	\$750	
					\$750
STRUCTURES					
Retaining Wall	6,598	SF	\$30	\$197,940	
					\$197,940
MISCELLANEOUS					
Roundabout	1	LS	\$225,000	\$225,000	
Engineering, Surveying and Designing	1	LS	\$203,428	\$203,428	
					\$203,428
				TOTAL	\$1,559,615
				CONTINGENCY 40%	\$623,846
				GRAND TOTAL	\$2,183,461

Right of Way Acquisition Not Included

Phasing

Phase 2: 5-10 years

Phase 2 continues to make safe connections throughout the corridor by connecting the small commercial node to the existing sidewalks on the bridge over Highway 213 and along the frontage of the Clackamas County Housing property. These connections complete the north side sidewalk through the study area. The Holcomb curve to Redland Road is included in Phase 2 but has not been through an estimate of probable cost. The costs reflect everything but the improvements from the Highway 213 bridge to Redland Road.

Planning-Level Cost Estimate: Phase 2

ITEM	QUANTITY	UNIT	UNIT COST	ITEM COST	SUBTOTAL
GENERAL REQUIREMENTS					
Mobilization	1	LS	\$27,000	\$27,000	
Construction Traffic Control	1	LS	\$20,000	\$20,000	
Erosion Control	1	LS	\$7,000	\$7,000	
					\$54,000
DEMOLITION					
Sawcut AC	8,000	LF	\$1	\$8,000	
Clearing and Grubbing	1	LS	\$10,000	\$10,000	
Relocating Power Poles	7	EA	\$400	\$2,800	
Protect Existing Utilities	1	LS	\$4,000	\$4,000	
Adjust manholes, valves, meters, vault lids	1	LS	\$1,000	\$1,000	
					\$25,800
SUBGRADE					
General Excavation	4,000	CY	\$15	\$60,000	
					\$60,000
STREET					
AC Pavement	917	TON	\$30.00	\$27,510	
Aggregate Base (8" thickness)	2,310	TON	\$10	\$23,100	
Street Light-Ornamental	15	EA	\$5,000	\$75,000	
Lighting	1	LS	\$20,000	\$20,000	
					\$145,610
CURB AND SIDEWALKS					
Standard Curb	3,496	LF	\$10	\$34,960	
Concrete Sidewalk	20,976	SF	\$3.00	\$62,928	
					\$97,888
Engineering, Surveying and Designing					
	1	LS	\$57,495	\$57,495	
					\$57,495
				TOTAL	\$440,793
				CONTINGENCY 40%	\$176,318
				GRAND TOTAL	\$617,110

Phasing

Phase 3: 5-15 years

Phase 3 consists of projects that greatly enhance the aesthetic condition of the roadway but are not critical for immediate pedestrian safety. Phase 3 projects will provide on-street parking in front of many properties that face the road, stormwater treatment with bioswales, vertical traffic calming, planter strips, and continuous sidewalks on the south side of Holcomb.

Phase 3-A. Lower Holcomb

Holcomb Ridge Trail to Highway 213 Bridge

- i. Design and construct on-street parking bays, bioswales, planter strips, and sidewalks.
- ii. Design and mark crosswalks at Front Street. Illuminate intersection. Due to the width of the road, consider a pedestrian refuge. The refuge will also help slow traffic through this area.
- iii. Stripe bicycle lanes that haven't been implemented in Phases 1 and 2.

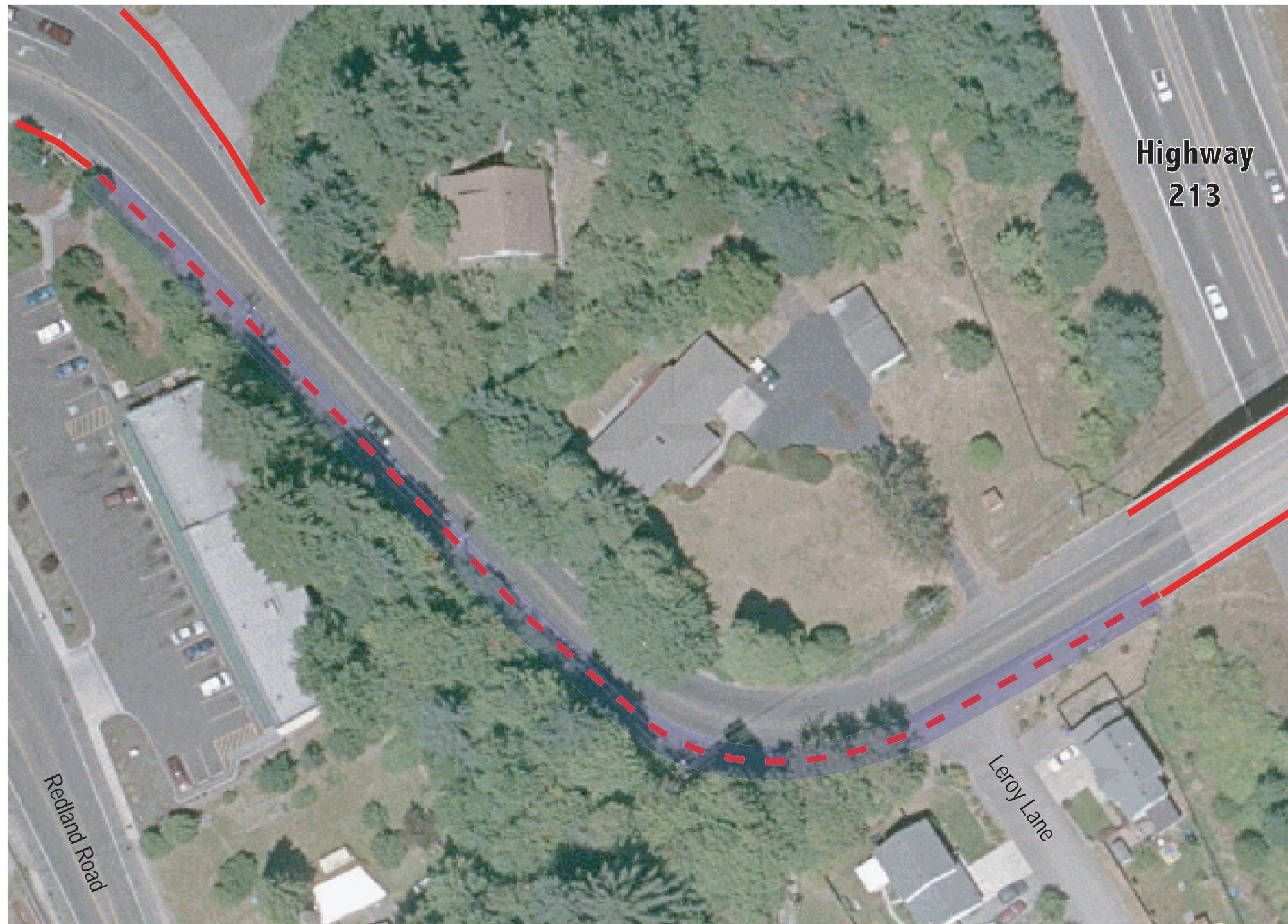
Phase 3-B. Upper Holcomb - Trailview Estates

- i. Grind out 5' of existing sidewalk/planter and 6' of existing pavement to create bioswales on the south side of Holcomb.
- ii. Illuminate intersections and replace existing lighting with pedestrian-scale light fixtures.
- iii. Stripe and mark bicycle lanes.

Planning-Level Cost Estimate: Phase 3

ITEM	QUANTITY	UNIT	UNIT COST	ITEM COST	SUBTOTAL
GENERAL REQUIREMENTS					
Mobilization	1	LS	\$45,000	\$45,000	
Construction Traffic Control	1	LS	\$33,000	\$33,000	
Erosion Control	1	LS	\$11,000	\$11,000	
					\$89,000
DEMOLITION					
Sawcut AC	2,200	LF	\$1	\$2,200	
Clearing and Grubbing	1	LS	\$8,000	\$8,000	
Asphalt Pavement Demolition	75	CY	\$25	\$1,875	
Protect Existing Utilities	1	LS	\$1,000	\$1,000	
Adjust manholes, valves, meters, vault lids	1	LS	\$3,000	\$3,000	
					\$16,075
SUBGRADE					
General Excavation	1,850	CY	\$15	\$27,750	
					\$27,750
STREET					
AC Pavement	5,285	TON	\$30.00	\$158,550	
Aggregate Base (8" thickness)	605	TON	\$10	\$6,050	
Street Light-Ornamental	29	EA	\$5,000	\$145,000	
Lighting	1	LS	\$100,000	\$35,000	
Lane Striping	28,000	LF	\$0.15	\$4,200.00	
					\$348,800
CURB AND SIDEWALKS					
Standard Curb	3,317	LF	\$10	\$33,170	
Concrete Sidewalk	19,902	SF	\$3.00	\$59,706	
					\$92,876
STORM DRAIN					
Water Quality Swales	22728	SF	\$2	\$45,456	
					\$45,456
SITE FURNISHINGS					
Planter	325	LF	\$20	\$6,500	
Irrigation	3,877	SF	\$2	\$7,754	
					\$14,254
Engineering, Surveying and Designing					
	1	LS	\$95,131.65	\$95,132	
					\$95,132
					TOTAL
					\$729,343
CONTINGENCY 40%					
					\$291,737.06
					GRAND TOTAL
					\$1,021,080

Holcomb Curve



- Existing sidewalk
- - - Proposed sidewalk

SECTION SUMMARY

The focus of the Holcomb Boulevard Pedestrian Enhancement Concept Plan is to concentrate more on making walkable, short-trip connections (one mile round trip) along Holcomb Boulevard (schools to homes, homes to neighborhood commercial, etc.) and less on long-trip connections to the rest of the city. However, the curve section of Holcomb is an integral link for many neighborhood residents to places outside of the neighborhood should be addressed on a cursory level in this Plan.

This section of Holcomb Boulevard is extremely physically constrained and the site of numerous motor vehicles crashes caused by excessive speed. A study of the curve by the neighborhood association revealed that a sidewalk is needed on the south side of the roadway. This Plan concurs with this recommendation as well as the addition of a low guardrail along the length of the sidewalk to deflect errant vehicles. The sidewalk should be at least 6' wide but additional width is very desirable to assist bicyclists climbing the hill. A sign should be placed at the intersection of Leroy Lane to guide bicyclists to the bicycle lane on the bridge. Without major reconstruction at extraordinary cost, bicycle lanes are not feasible in this section. Further analysis is needed to determine how substantial the retaining walls need to be in order to determine an opinion of probable cost.

This section should be included in Phase 2 to provide the link across the bridge and the Phase 2 facilities in Section 1.

PHASING

- Phase 1 Improvements
- Phase 2 Improvements
- Phase 3 Improvements



not to scale

Section 1: Highway 213 to Steve's Marketplace



SECTION SUMMARY

South side

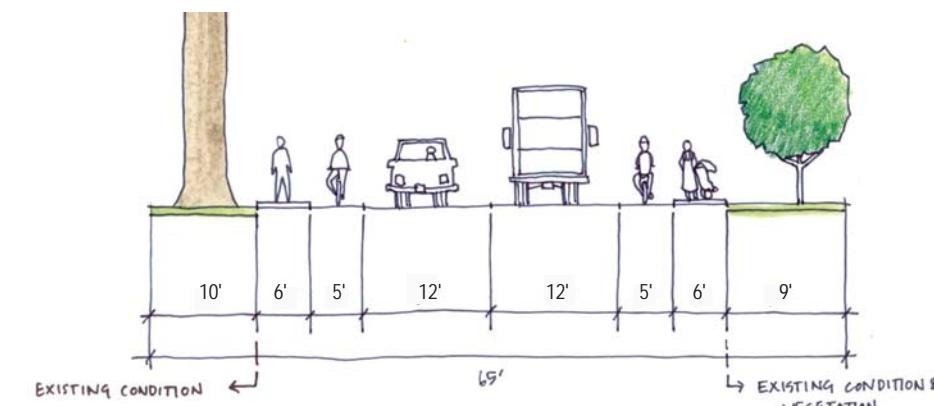
A sidewalk will connect from Apperson to the existing sidewalks on the bridge over Highway 213. The sidewalk will transition to a gravel path at Apperson in order to save mature vegetation in the public right-of-way and contribute minimal impact to the riparian area across from Steve's Marketplace.

North side

A sidewalk will connect to existing sidewalks on the bridge over Highway 213 and travel the length of the section. A center turn lane will be installed in front of the parcels that are zoned "neighborhood commercial" to accommodate future turning movements from Holcomb into the commercial area. Treatments require relocating the existing power poles and acquiring a small amount of right-of-way, which could be implemented when or if the site redevelops.

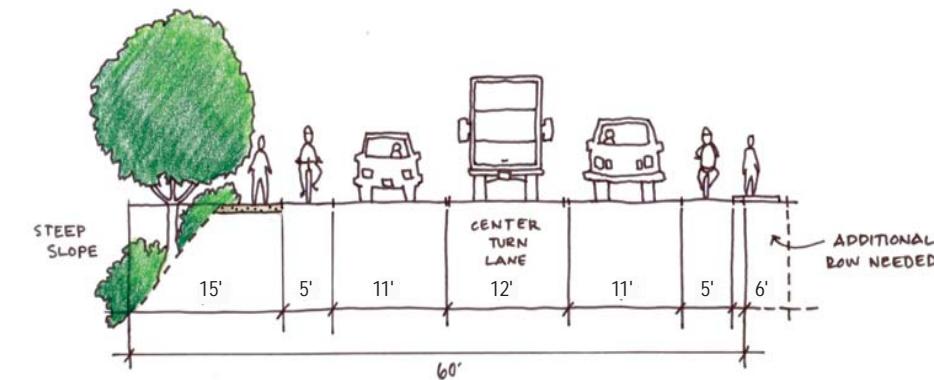
CROSS-SECTIONS

A



Curb-tight sidewalks and existing vegetation in the public right-of-way

B



Curb-tight sidewalk on one side of the roadway; gravel path on opposite side

PHASING

Phase 1 Improvements

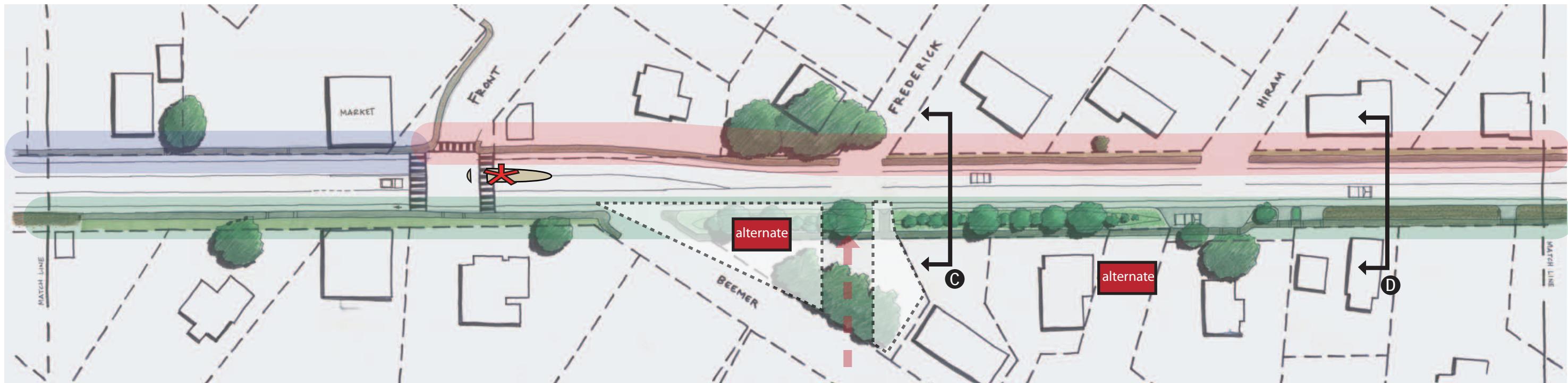
Phase 2 Improvements

Phase 3 Improvements



not to scale

Section 2: Steve's Marketplace to east of Hiram



SECTION SUMMARY

South side

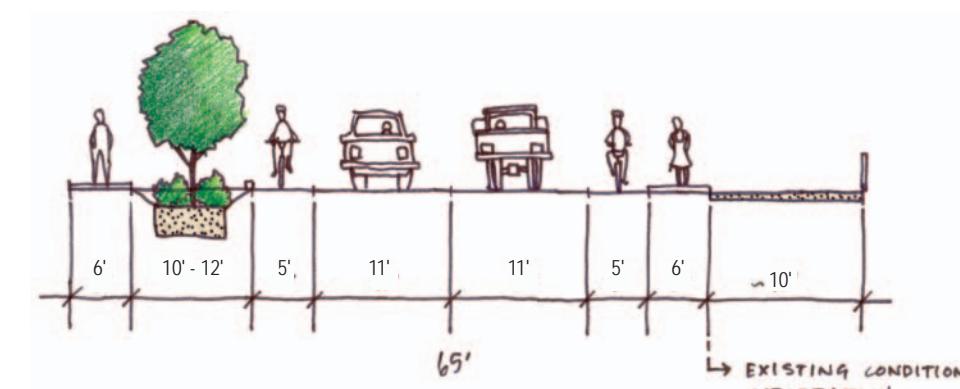
A sidewalk will pick up in front of the last house before the riparian area and connect to Beemer. A swale and sidewalk will continue to approximately Frederick and then transition to on-street parking with intermittent planters. Marked crosswalks and illumination will improve the crossing at Front Street.

North side

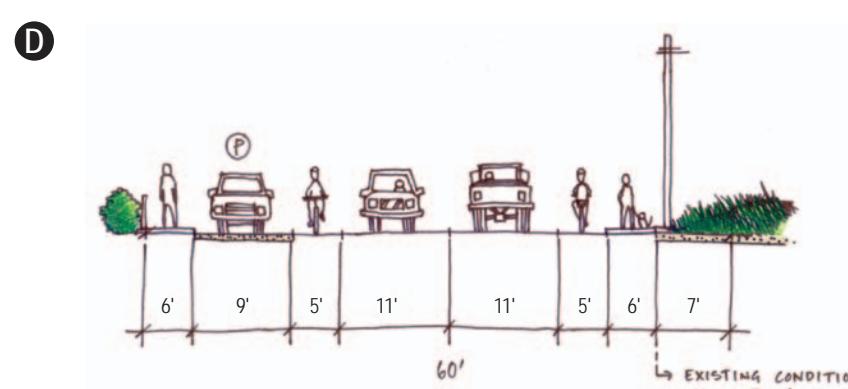
A curb-tight sidewalk will travel the length of the section. Any public right-of-way not impacted will keep existing encroached vegetation. Treatments require relocating the existing power poles and acquiring a small amount of right-of-way at the Front Street intersection due to the taper for the center turn lane. The corner property will be impacted by this improvement.

* There is an opportunity to add a pedestrian island on the east side of the Front Street crossing in the median. This will greatly improve pedestrian safety as the roadway is wide in this location.

CROSS-SECTIONS



Bioswale with sidewalk



On-street parking pockets with planting strips

PHASING

Phase 1 Improvements

Phase 2 Improvements

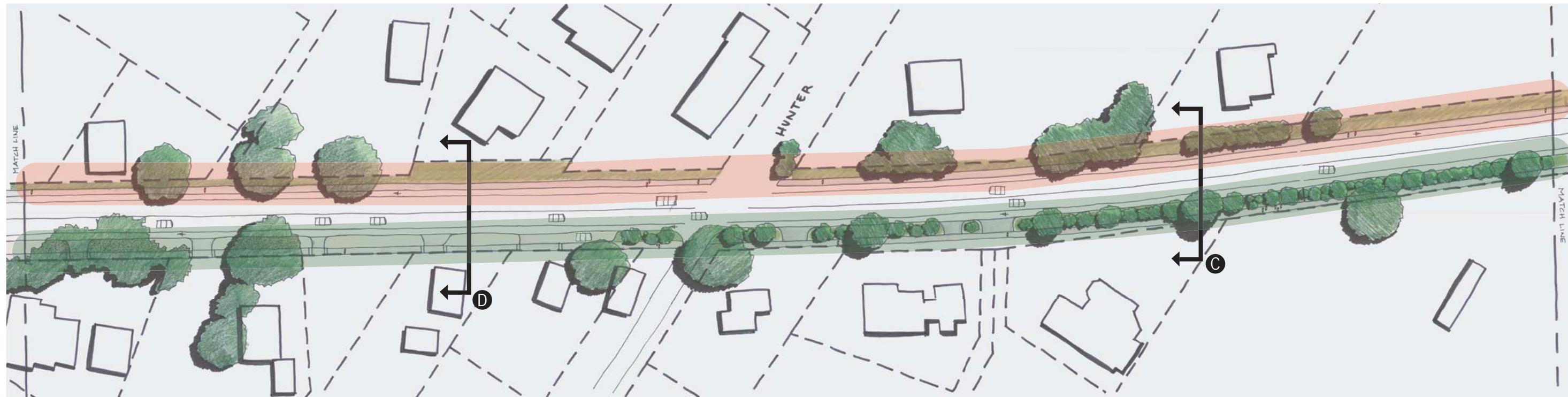
Phase 3 Improvements

alternate BE-ALIGN BEEFIER WAY

To improve the safety of all roadway users, Beemer Way should be re-aligned to meet Frederick or Hiram. The original entrance of Beemer would be closed and a bioswale and sidewalk should be established in this segment. A pedestrian accessway should be provided at the original entrance of Beemer Way.



Section 3: Frederick to Oregon City Baptist Church



SECTION SUMMARY

South side

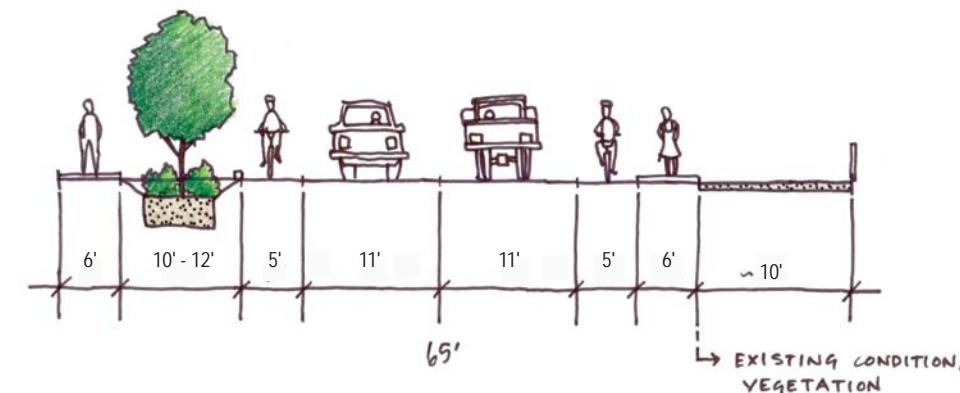
A sidewalk continues from Section 2 with a combination of planter strips, on-street parking bays, and a bioswale. Access will be available to bus stops.

North side

A curb-tight sidewalk will travel the length of the section. Any public right-of-way not impacted will keep existing encroached vegetation.

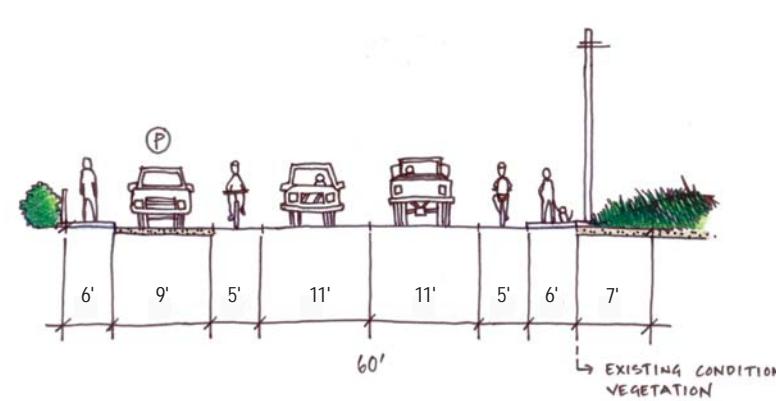
CROSS-SECTIONS

C



Bioswale with sidewalk

D



On-street parking pockets with planting strips

PHASING

Phase 1 Improvements

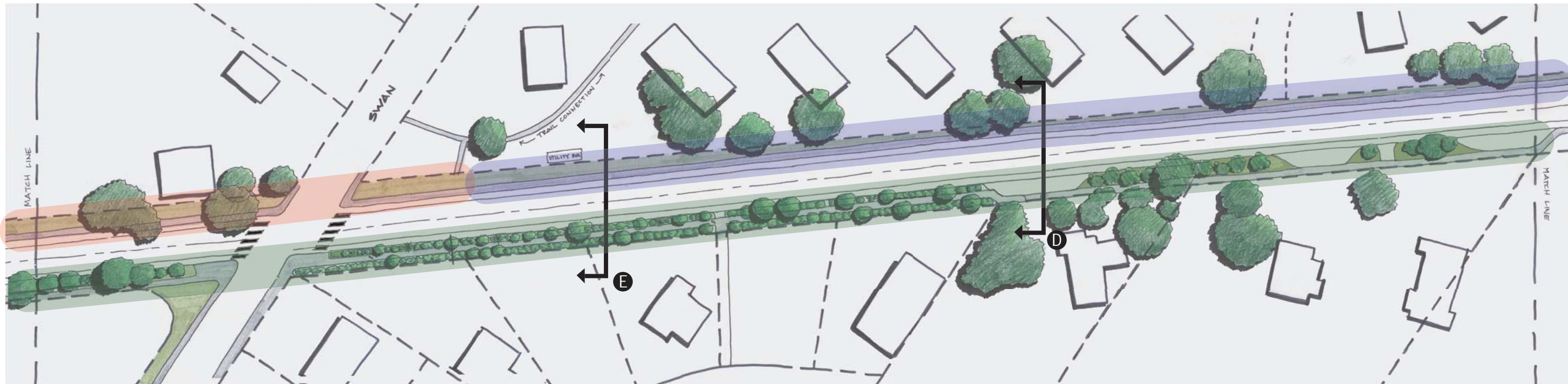
Phase 2 Improvements

Phase 3 Improvements



not to scale

Section 4: Oregon City Baptist Church to Holcomb Ridge Trail



SECTION SUMMARY

South side

A sidewalk continues from Section 3 with a combination of planter strips and on-street parking bays.

North side

A curb-tight sidewalk will travel the length of the section. Any public right-of-way not impacted will keep existing encroached vegetation. Marked crosswalk, lighting, and traffic calming/stopping device at Swan. Small retaining walls may be necessary at the end of the section.

Swan Intersection

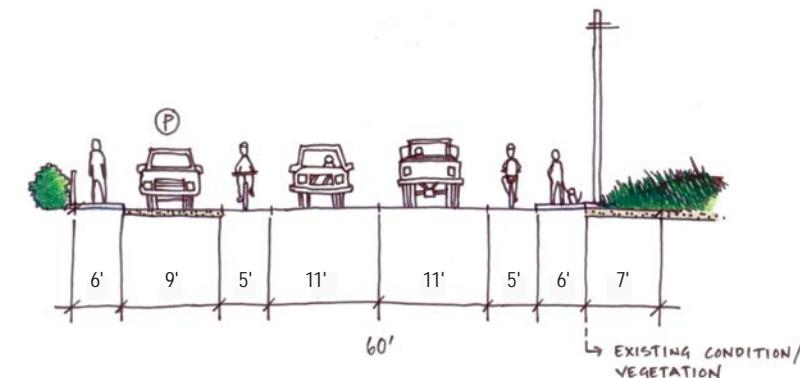
There are several slowing/stopping treatments available for Swan. Some of the combinations include:

- *Traffic circle with crosswalks*
- *Stop signs with crosswalks*
- *Roundabout with crosswalks on approach legs*
- *Pedestrian refuge with crosswalks*

The recommended treatment for this intersection is a roundabout with crosswalks on the approach legs.

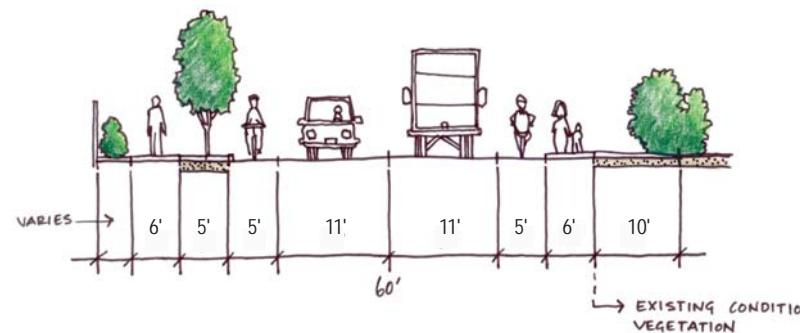
CROSS-SECTIONS

D



On-street parking pockets with planting strips

E



Sidewalk and planter strip

PHASING

Phase 1 Improvements

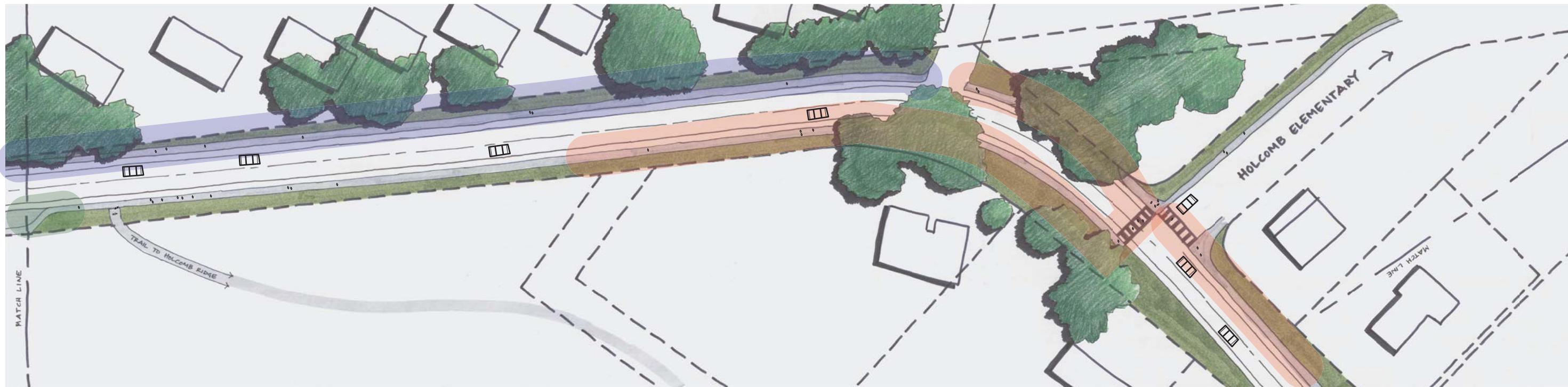
Phase 2 Improvements

Phase 3 Improvements



not to scale

Section 5: Holcomb Ridge trail to Holcomb Elementary



SECTION SUMMARY

South side

A curb-tight sidewalk continues from the existing sidewalk from Holcomb Ridge to Holcomb Elementary intersection due to topographical constraints. The sidewalk can be routed around existing vegetation in the public right-of-way but a large Douglas fir should be removed to improve sight distance at the corner. The sidewalk will terminate at the crosswalk due to severe topographic constraints.

Pedestrian safety is paramount at the Holcomb Elementary intersection. A collection of treatments should be considered to slow or stop traffic and improve pedestrian visibility. Treatments may include:

- Marked crosswalks at the intersection
- Full signalization
- Pedestrian-activated traffic signal
- Stop signs
- Crossing guard

All treatments should consider a petition to make the area a school zone, signed 20 mph when children are present, and implement a period of stringent enforcement.

PHASING

Phase 1 Improvements

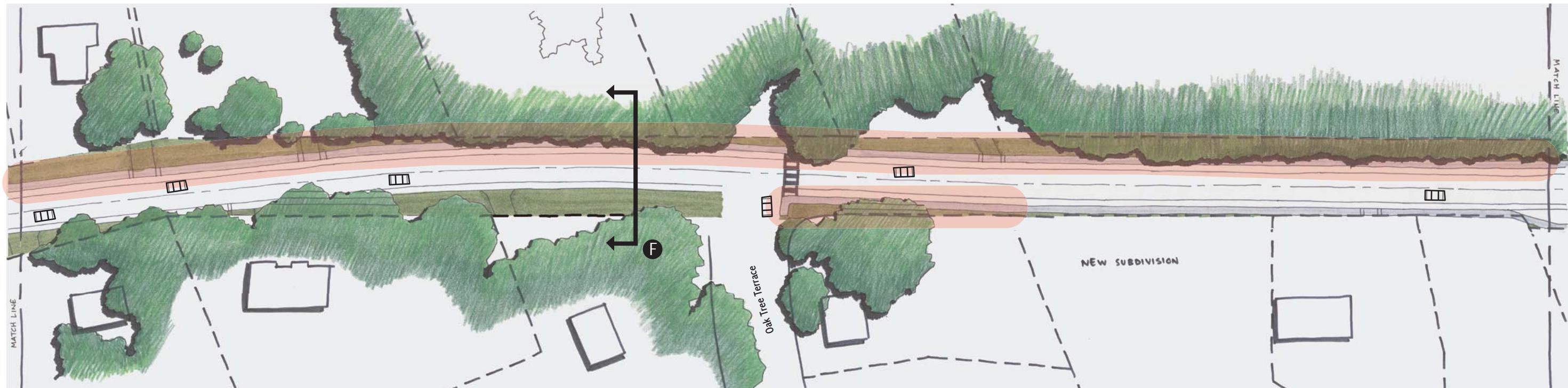
Phase 2 Improvements

Phase 3 Improvements



not to scale

Section 6: Holcomb Elementary to Trailview Estates



SECTION SUMMARY

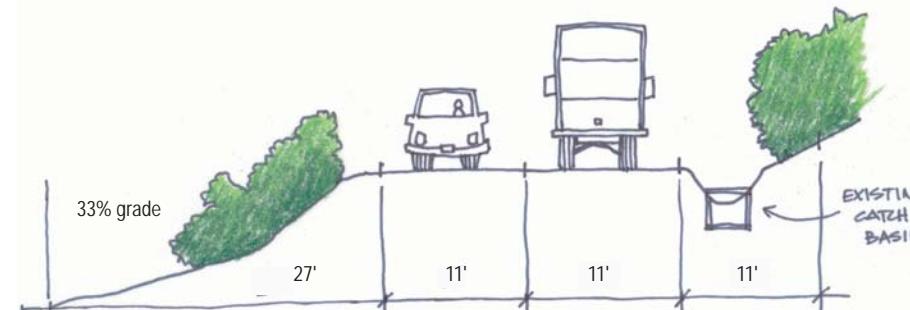
South side

Due to topographic constraints, a curb-tight sidewalk starts at Oak Tree Terrace and continues east to the existing sidewalk at the new subdivision adjacent to Trailview Estates. A marked crosswalk and intersection lighting should be provided across Holcomb at Oak Tree Terrace to accommodate pedestrians, particularly children walking to school. A full engineering analysis of this intersection should take place before installation of this crosswalk to ensure its safety. Retaining walls may be necessary to support widening the road in this area.

North side

A curb-tight sidewalk will travel the length of the section. Small to moderate retaining walls may be necessary throughout the section. If physically possible, sidewalks should be enhanced on the north side from Holcomb Elementary east to make up for no sidewalks on the south side of the roadway.

CROSS-SECTIONS



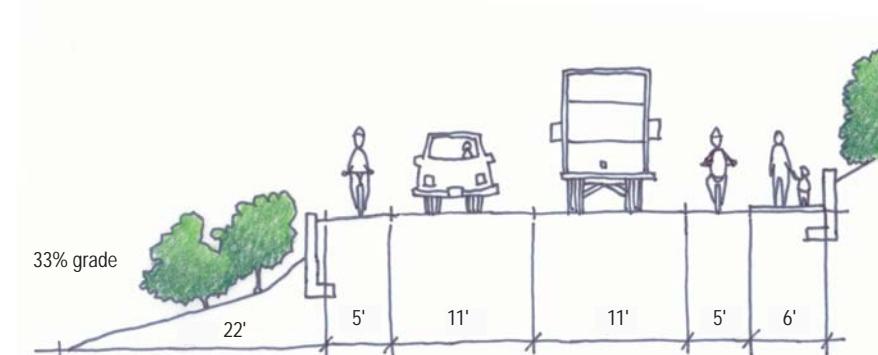
Existing constrained conditions west of Oak Tree Terrace

PHASING

Phase 1 Improvements

Phase 2 Improvements

Phase 3 Improvements



Curb-tight sidewalk on the north side of the roadway



not to scale

Section 7: Trailview Estates to Barlow



SECTION SUMMARY

South side

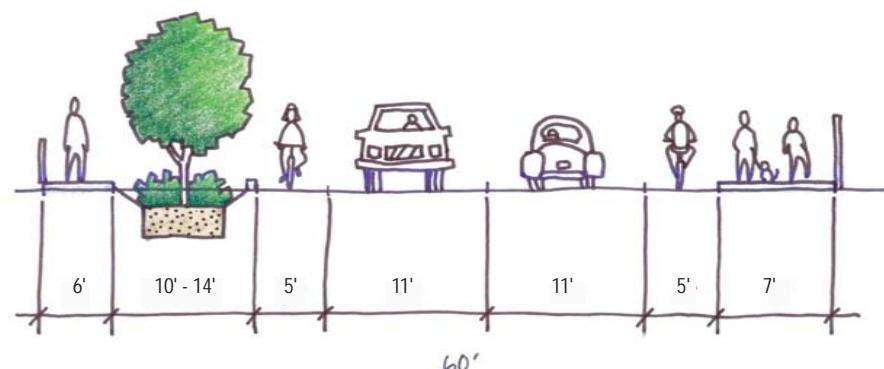
A bioswale and sidewalk replaces the existing planter strip along Trailview Estates. This process involves grinding out the concrete between the planter, removing 5' of roadway asphalt, and adding a 10' - 12' bioswale. Existing sidewalks will be retained.

North side

Existing sidewalks are retained.

CROSS-SECTIONS

G



Bioswale with existing sidewalk

PHASING

- Phase 1 Improvements
- Phase 2 Improvements
- Phase 3 Improvements



not to scale

Section 8: Barlow to Urban Growth Boundary



SECTION SUMMARY

South side

Bioswale and sidewalk transitions to an 8' shared bikeway/pathway as the area transitions to the rural area.

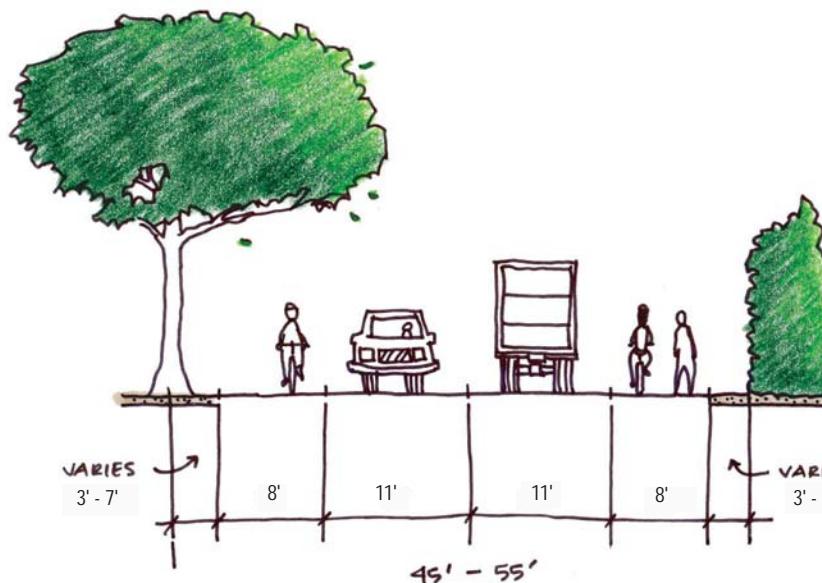
North side

The existing sidewalk transitions to an 8' shared bikeway/pathway as the area transitions to the rural area.

Note: A future road connecting Holcomb and Redland will emerge in this location to serve new residential and commercial areas to the south. As development occurs in this section, it is recommended that the City require additional right-of-way dedication and improvements consistent with the Transportation System Plan to accommodate modernization in this area.

CROSS-SECTIONS

H



Shoulder bikeway shared with pedestrians

PHASING

Phase 1 Improvements

Phase 2 Improvements

Phase 3 Improvements

