



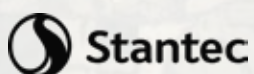
Thoroughfare Master Plan

August 2023

Prepared for the
the Town of Oakland



Through assistance of the
Tennessee Department of Transportation



Prepared by
Stantec

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1 Introduction and Background

1.1 Introduction to the Thoroughfare Plan

The Town of Oakland developed this Thoroughfare Master Plan through a Long-Range Planning Grant from the Tennessee Department of Transportation (TDOT) in 2022. The Master Plan is intended to guide the Town's rapid growth of recent years by defining where new development should add connections to the Town's transportation network and how it should help to enhance existing streets and roads.

This plan is also long-range framework for the Town of Oakland to use in guiding its own decisions on capital improvement projects and investing in transportation infrastructure. This may include Town-led projects as well as projects in partnership with TDOT, the Memphis Area Metropolitan Planning Organization (MPO), and other partner agencies.

At its heart, the Thoroughfare Plan offers a defined set of desired connections.

1.2 Why Develop a Thoroughfare Plan?

As Oakland matures as a community and its growing population introduces additional public services and functions, the Town will need to invest in long-range planning as a way of estimating future conditions and needs and setting organized, comprehensive programs

and action steps to address those needs. In the case of the Town's transportation system, this is primarily ensuring that the road and street network expand in tandem with the Town's growth. Reliance on the current Town transportation network will limit the Town's future economic development opportunity and quality of life.

With this in mind, the Thoroughfare Plan has three principal objectives:

1. **Provide an efficient, safe, and connected transportation system** that is coordinated with existing and projected needs and takes into consideration future growth.
2. **Provide a transportation system that is economical and responsive to future land use policies.**
3. **Consider planned development patterns, accessibility, and mobility needs** in the expansion of the transportation system, as well as the character of development that the Town wishes to preserve and promote.

1.3 How to Use This Plan

The Thoroughfare Plan is laid out in a series of sections, with **Sections 4 and 5 focused on recommended street connections** and design guidance for new and improved thoroughfare connections—the most critical sections of this document. **Sections 2 and 3** preceding the recommendations **offer guidance on the Town's background transportation conditions** and the criteria through which thoroughfares were

identified and included in this plan. Section 6 provides additional guidance for how the plan should be implemented, including with funding options for leading projects that the Town may take on directly.

For Staff and Agencies

For Town staff and other planning and reviewing agencies, including TDOT, the most useful information from the Plan will likely be the Thoroughfare Map and decision-making matrix on setting thoroughfare connections, discussed in Section 4.

For Developers

For development applicants who will be asked to ensure that development contributes to the street connections of this plan, the thoroughfare map in Section 4 and the street design guidance in Section 5 are likely to have the most practical information. These specify where connections should generally be made, but also provide typical street cross-section design standards to

use and other roadway-based design guidance to ensure that thoroughfares follow safe and modern designs that serve a variety of travel types.

The Thoroughfare Plan will be considered a requirement for developers to follow, and the Town's adoption of the plan will mean that it is effectively a required part of the development process. The Town may amend its Code of Ordinances to refer to or even incorporate sections of this Thoroughfare Plan from time to time.

For the Town's Leadership Bodies

For the Town's elected and appointed officials (especially the Board of Aldermen and the Planning Commission), the implementation guidance in Section 6 supplements the thoroughfare recommendations and design standards of Sections 4 and 5 in providing decision-making guidance for advancing projects.

HELPFUL PLAN SECTIONS FOR THE PLAN'S MAIN AUDIENCES

Using this Plan Developers



- **Thoroughfare Map**
(Section 4, begins on page 15)
- **Typical Street Sections**
(Section 5, begins on page 29)
- **Summary Table of Street Sections and their Applicability**
(page 44)

Using this Plan Town Staff



- **Connectivity Factors**
(Section 3, begins on page 9)
- **Typical Street Sections**
(Section 5, begins on page 29)
- **Summary Table of Street Sections and their Applicability**
(page 44)

Using this Plan Elected/ Appointed Officials



- **Thoroughfare Map**
(Section 4, begins on page 15)
- **Alternative Design Process**
(page 46)
- **Implementation Guidance**
(Section 6, begins on page 48)

1.4 Summary of the Plan's Recommendations

Overall, this plan is a framework to guide new development to help connect the Town of Oakland's transportation network as the Town continues to grow. Its recommendations are more policy-based than project-based, although the plan includes some significant changes to the Town's approach to development review and capital project planning and programming. These are summarized here.



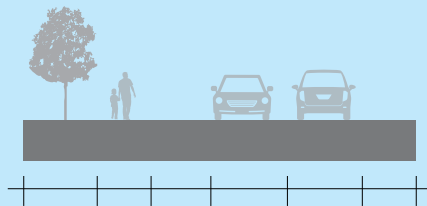
Guidance on How and Where to Connect

The plan provides a series of criteria and guidelines that help both the Town and private-sector developers understand overall expectations for expanding the street network. These are intended to be applied reasonably, but identified connections should be made wherever possible.



Map of Thoroughfare Connections

The plan includes a map, provided in detailed tiles in this report and available with the Town as a large-format map, identifying the general location of thoroughfare connections to be made.



Thoroughfare and Street Design

The plan offers a series of typical street sections that will serve as the Town's officially-designated preferred sections for both the Town and private developers to follow in their own projects or site plans.



Recommendations for Partnership

In addition to guidance for both the Town and its private-sector developer partners, the plan offers guidance for funding and implementation strategies that may include Fayette County, the Memphis MPO, and the Tennessee Department of Transportation.

2

Oakland's Transportation Conditions

2.1 Oakland's Growth

The Town of Oakland has grown rapidly since 2000, with a greatly accelerated rate of population increase occurring since the expansion of US Highway 64 in 1991 and the opening of the Interstate 269 freeway in 2007 (shown in Figure 2.1 below). Although most of the Town's growth has been in residential population, this has also brought significant expansion of commercial development as well, with most of this directly on the US 64 corridor.

As this growth has happened, US 64 has taken on more of a function of the Town's main street, although its regional highway role in the greater Memphis region and southwest Tennessee has led to a design focused on longer-range travel and mobility. This has increased daily traffic

on US 64, with the highest levels of this traffic occurring through Oakland's community center (generally between State Routes 194 and 196).

The diagrams in Figure 2.2 on the following page illustrate the degree to which this growth has occurred, along with overall population of the Town at each point. As growth has continued, there has not been a concurrent expansion in the Town's street and road network to allow alternatives to limited main thoroughfares.

Furthermore, growth that has occurred has also changed the built footprint of the Town and its surrounding urban area. More of greater Oakland's land is now subdivided into properties, primarily single-family residential lots, which can complicate the ability to add infrastructure as the Town's growth continues.

FIGURE 2.1 Oakland's Historic Population by US Census

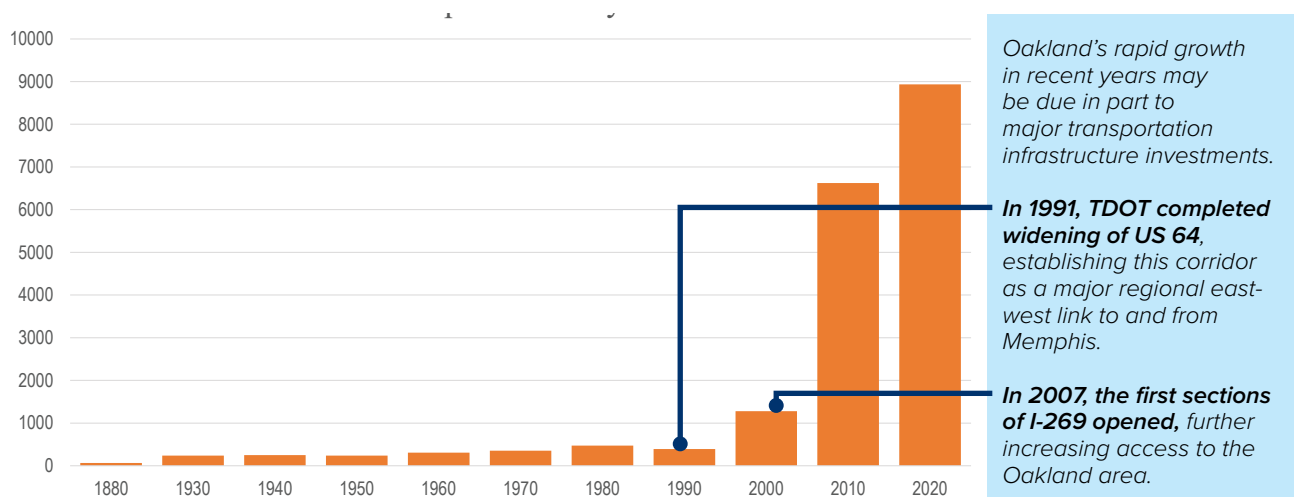


FIGURE 2.2 Oakland's Growth Patterns since 1990

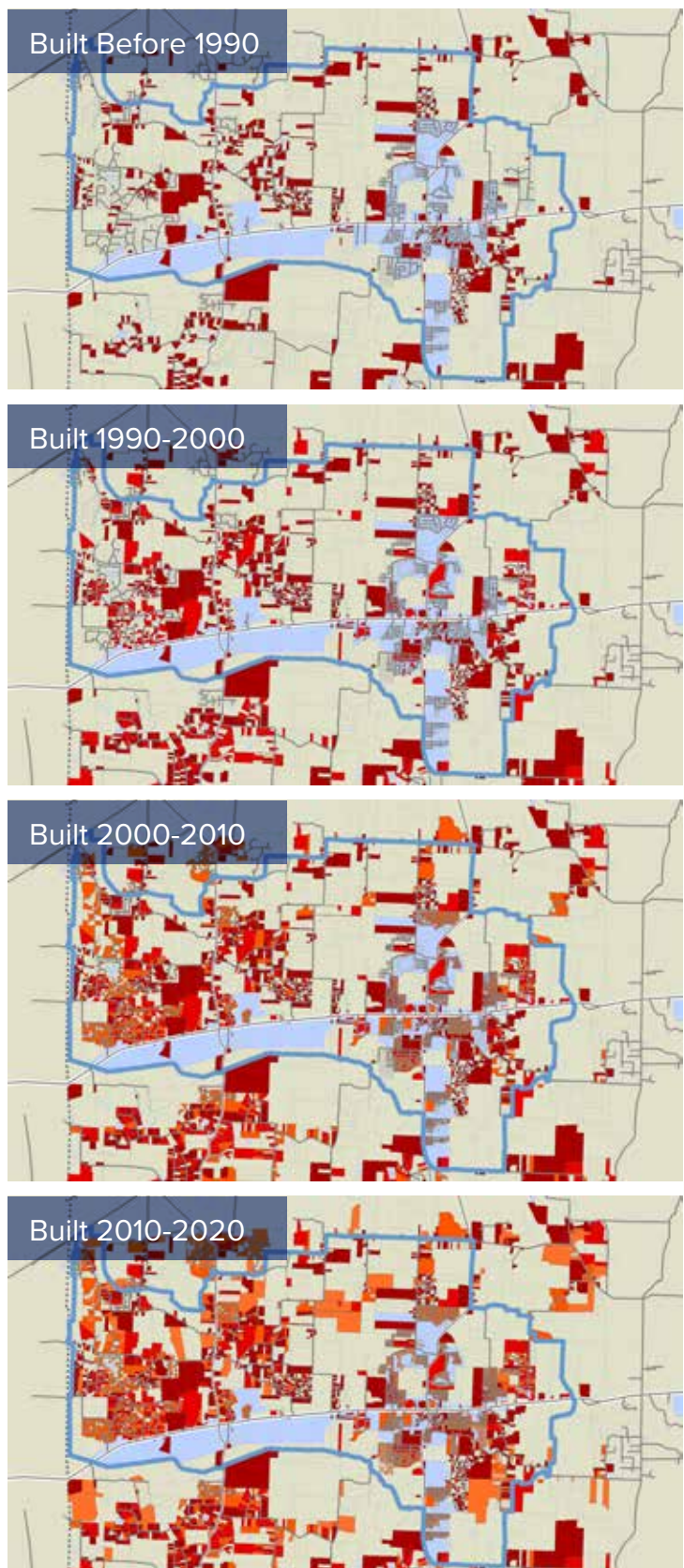
In each of the periods shown in these diagrams, new properties (noted by the date of building construction on the properties, per Fayette County property records), are illustrated in lighter shades of red.

Prior to 1990, much of Oakland's currently-defined urban growth area remained prominently rural, with residential and commercial buildings on a mix of smaller and larger lots.

In the 1990s, development began to accelerate along the Highway 194 and 196 corridors. More building also occurred on large lots that have still not been subdivided today.

In the 2000s, as shown in the growth patterns illustrated in Figure 2.1, growth accelerated further. Subdivisions continued to be approved around the Town and its planning area, especially in the Hickory Withe area west of SR 196 and north of US 64. The historic town center area around the intersection of SR 194 and US 64 also continued to expand with new subdivisions.

In the 2010s, growth continued, though in more of a mix of subdivisions and existing large lots. This suggests that fewer remaining properties left to be subdivided, though the Town's development activity has continued to be strong since 2020.

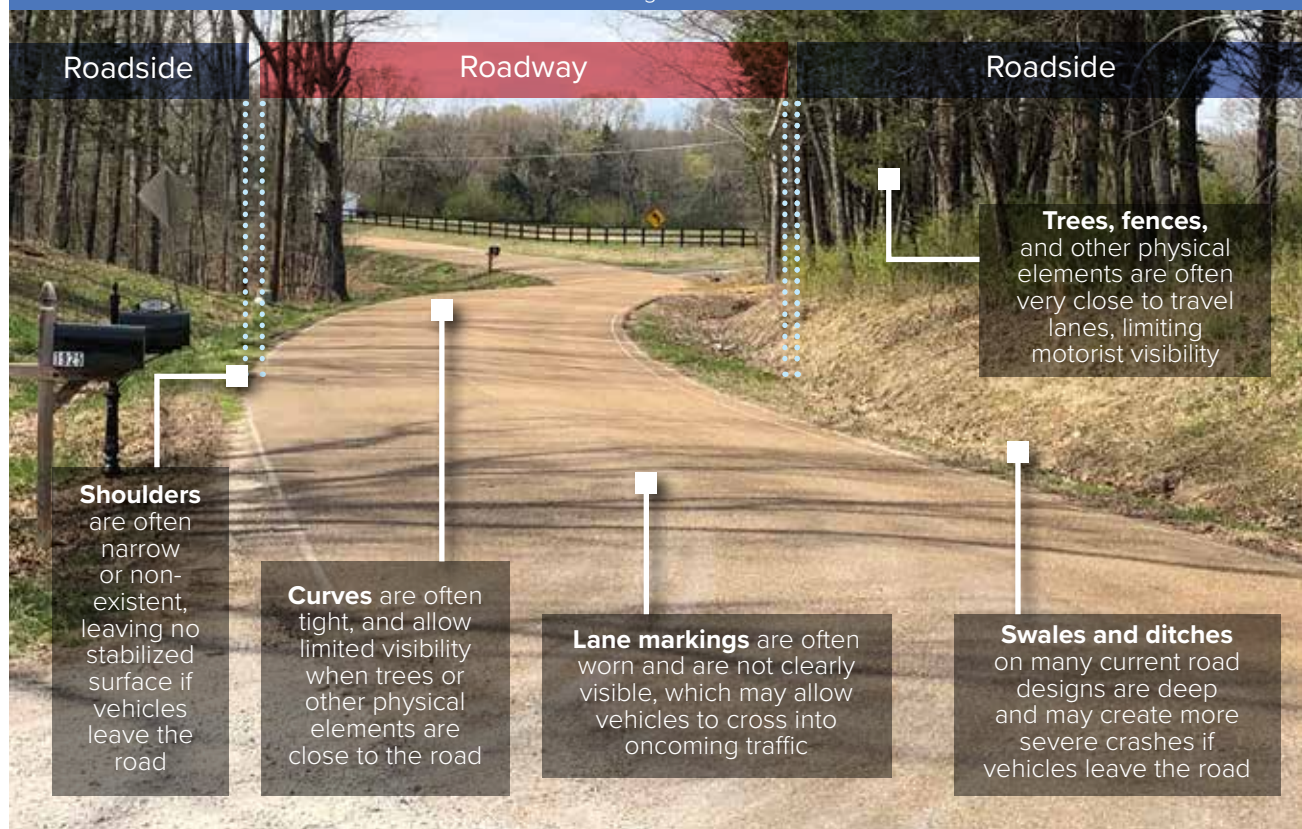


2.2 Roadway Network Characteristics

The Town's current roadway network is anchored on US 64 and State Routes 194 and 196, but it also includes several rural roads that existed prior to Oakland's growth. These roads generally provide connection around the Town's administrative limits and greater growth area, and allow alternative travel patterns to reach major destinations and thoroughfares. However, their current design is not suited to a growing population and set of service demands, as illustrated in Figure 2.3 below. In particular:

- Many roads have followed historic property patterns, and thus feature tight curves and narrow rights-of-way.
- The narrow rights-of-way in many of Oakland's forested areas limit visibility, especially approaching and around curves. This has also meant narrow roadway widths, with little or no paved shoulders or roadside area for vehicles that stray from the road to recover.
- Vertical curves, or how roads navigate changes in elevation and topography, are sometimes steep and contribute to limited visibility.
- Many of these roads feature swale and ditch drainage that has not been maintained regularly or reconstructed as needed. This has implications for long-term stability of roads themselves, as underlying erosion may impact the road base and pavement quality.

FIGURE 2.3 Characteristics of Current Oakland Thoroughfares



2.3 Traffic and Operations

Current traffic patterns reflect the heavy reliance on US 64 as discussed in previous sections, and although other major thoroughfares in Oakland carry higher traffic volumes than most local streets, no street carries a comparable level of traffic to US 64.

US 64 is a multi-lane arterial highway and as such as a higher vehicle-carrying capacity than any other street in Oakland. However, vehicle transportation capacity of roads in cities and towns is not a simple matter of traffic volume compared to the number of lanes: it includes

intersections, which limit how a road can serve traffic flow due to turning movements and other traffic control, and is further affected by driveways and development.

2.4 Transportation Safety

Safety is also a primary reason for expanding the thoroughfare network in Oakland, and crash data over the last two decades shows a high number of fatal and severe injury crashes occurring along Oakland’s non-arterial streets and roads. As illustrated in Figure 2.6 below, over half of the crashes with fatalities occurring since 2005 have occurred on roads other than US 64, although

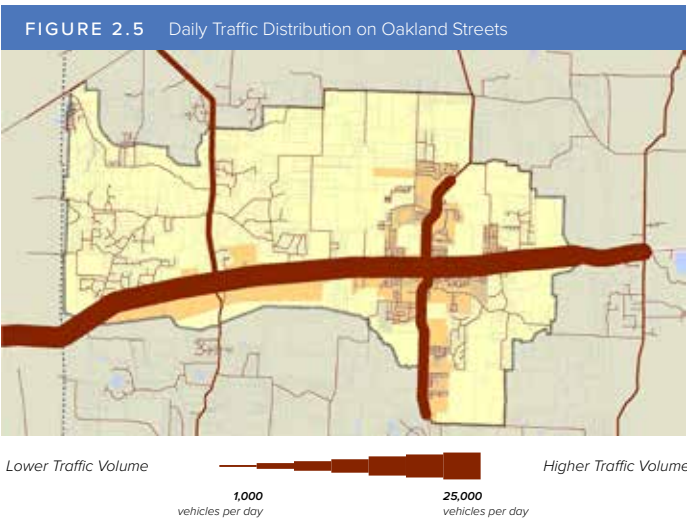
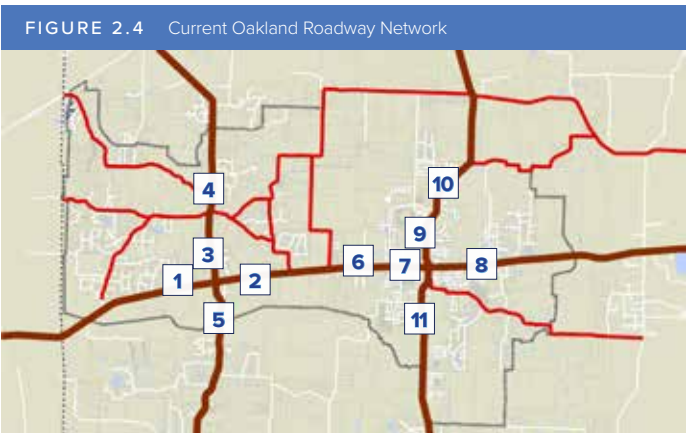
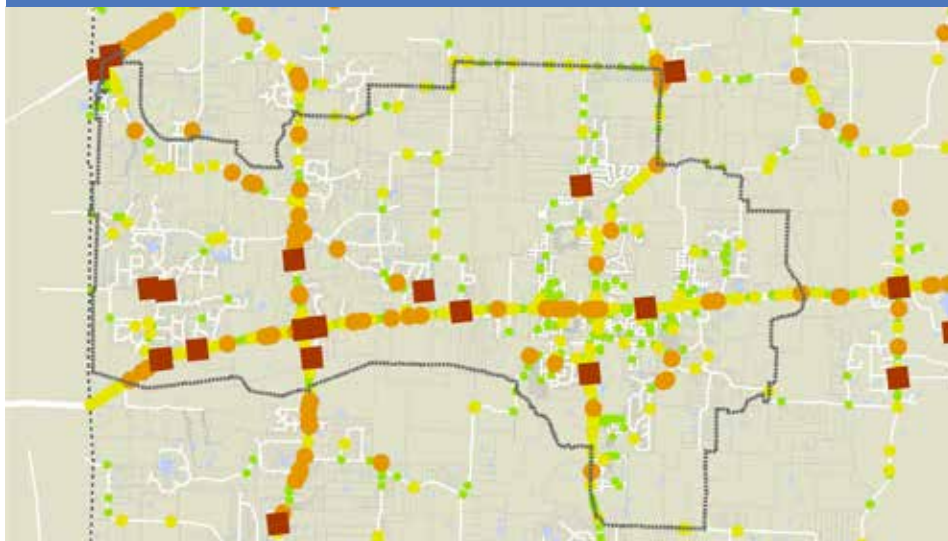


TABLE 2.1 Recent Daily Traffic Volumes

	Road Location (as indicated in numbers on Figure 2.4)	Daily Traffic Volume (vehicles per day, per 2021 TDOT counts or estimates)
1	US 64, west of SR 196	22,000
2	US 64, east of SR 196	22,000 - 24,000
3	SR 196, north of US 64	4,300
4	SR 196, north of Donelson Drive	3,900 - 4,300
5	SR 196, south of US 64	2,000
6	US 64 at Bowers Road-Mewborn Farm Road	22,000 - 24,000
7	US 64, west of SR 194	24,000
8	US 64, east of SR 194	20,000 - 22,000
9	SR 194, north of US 64	7,000 - 7,500
10	SR 194, north of Wirt Road	2,000 - 2,500
11	SR 194, south of US 64	5,500 - 6,000

US 64 carries the largest traffic volumes overall. Other severe-injury and even minor-injury crashes follow similar patterns, suggesting that current design of roads and the travel speeds of motorists using them are not compatible with a growing residential community. As new traffic and travel demand continues to grow along with Oakland’s development, these kinds of safety-related challenges may increase if the roadway network is not expanded to support this growth.

FIGURE 2.6 Summary of Crashes on Oakland Streets and Roads



Concentrating traffic on a few streets begins to compromise the safety of these streets. As shown here, crash locations over the last two decades illustrate that a high number of severe crashes (with injuries or fatalities) have occurred on Oakland’s main roads.

- Location of Crashes with Fatalities
- Location of Crashes with Severe Injuries
- Location of Crashes with Minor Injuries
- Location of Crashes with Property Damage Only

Overall, these current conditions underscore that Oakland’s rapid growth in recent years has added pressure to a primarily rural road network that was not originally intended to carry high volumes of traffic and support a residential community. The Thoroughfare Master Plan process identified ways that new street connections can help to support this network and be designed in a way to modernize the overall inventory of road and street infrastructure in the Town.

This process of setting network and street design criteria is detailed more in Sections 3, 4, and 5.

3

The Thoroughfares and Their Criteria

The Master Plan is intended to provide improved connectivity for the Town, and has generally identified any potential candidate locations for new thoroughfare connections and included them in the recommended Thoroughfare System Map shown in Section 4. However, these connection candidates were based on a series of technical criteria and not chosen freely. It is important to understand these criteria as broad objectives for the plan, as this will help the Town to consider alternative ways that the plan is to be implemented in the future should a particular development or capital project find that a thoroughfare is not feasible.

3.1 General Street Connectivity Targets

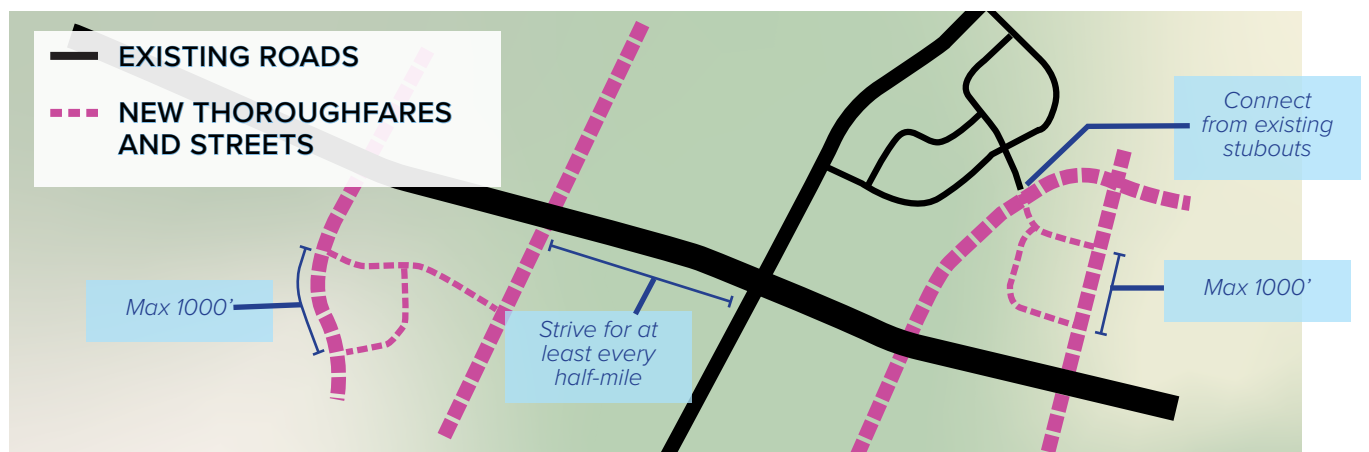
The Thoroughfare Plan's primary focus is to extend the Town's street network to provide a greater range of options for street network travel, or increasing the Town's overall street connectivity through added thoroughfares.

The major benefit of street connectivity is that it allows traffic to be redistributed across an entire street network, with more network streets and intersections absorbing a community's entire traffic profile. If local streets are poorly connected, local trips are forced to use Oakland's arterial streets, especially US 64, which are designed to handle longer trips.

The first criterion considered was setting basic distance-spacing targets as well as overall desired levels of connectivity. While the plan did not respond to a specific standard, it does strive for meeting the following broad objectives:

- Thoroughfares providing connections across Oakland's urban growth area, especially east to west to provide alternatives to US 64, **should ideally be located every half-mile.** Even if this does not include continuous roads spanning the Town's entire footprint, the Town should strive for connections of at least one mile in length along this half-mile spacing.

FIGURE 2.1 General Connectivity Approaches



- The length of individual **blocks in streets and subdivisions should be no longer than 1,000 feet, and preferably shorter.** Minimizing the block length allows better access for pedestrians, bicyclists and automobiles, and provides some flexibility for street connections.
- Any existing subdivision stub-outs (or similar street arrangements intended to provide future connection) will be honored by adjacent subdivisions and a thoroughfare connection made from them.

3.2 Understanding Potential Parcel Dimensions

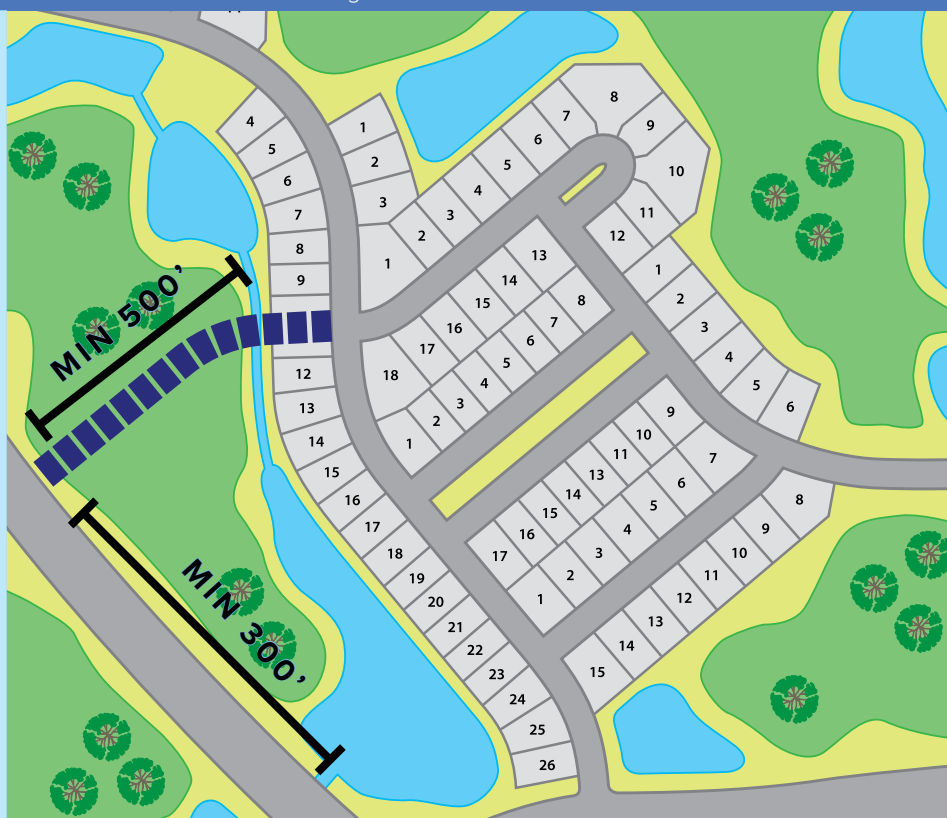
The planning process identified potential development areas in Oakland's Urban Growth Boundary based on larger parcels still likely to be subdivided. Although the size and dimensions of the Town's parcels vary considerably, undeveloped parcels still demonstrate some

basic patterns that helped to guide the Thoroughfare Plan's selection of candidates. These included:

- **Any parcels of at least five acres were identified as having potential for subdivision** and selected as potential locations for thoroughfares, regardless of the date of existing buildings on these properties.
- **Larger parcels over five acres sharing a rear lot line with other parcels over five acres** were identified as having potential for multiple intersections along a single connecting roadway, and the plan identified these connections as potential collector roadways (discussed in further detail in Section 4).
- **Any parcels with an overall frontage of at least 300 feet and a depth of at least 500 feet were considered for potential supporting connections**, even if these were shorter streets likely to connect to other future connections. This would select some

FIGURE 3.2 Typical Parcel Dimension Guidelines for Thoroughfare Connections

The Thoroughfare Master Plan intends to create a more connected network of streets and roads in the Town of Oakland, connecting undeveloped areas as well as established subdivisions and developed properties. Although properties do not need to meet certain size criteria to have connections, the plan considered parcel dimensions and how easily larger parcels may remain developable. It generally considered larger parcels (five acres or more) with larger existing frontage and lot depth for first candidates for making connections.



parcels smaller than five acres, but was intended to allow the Town and development applicants flexibility in how they might establish thoroughfare connections.

3.3 Site and Environmental Conditions

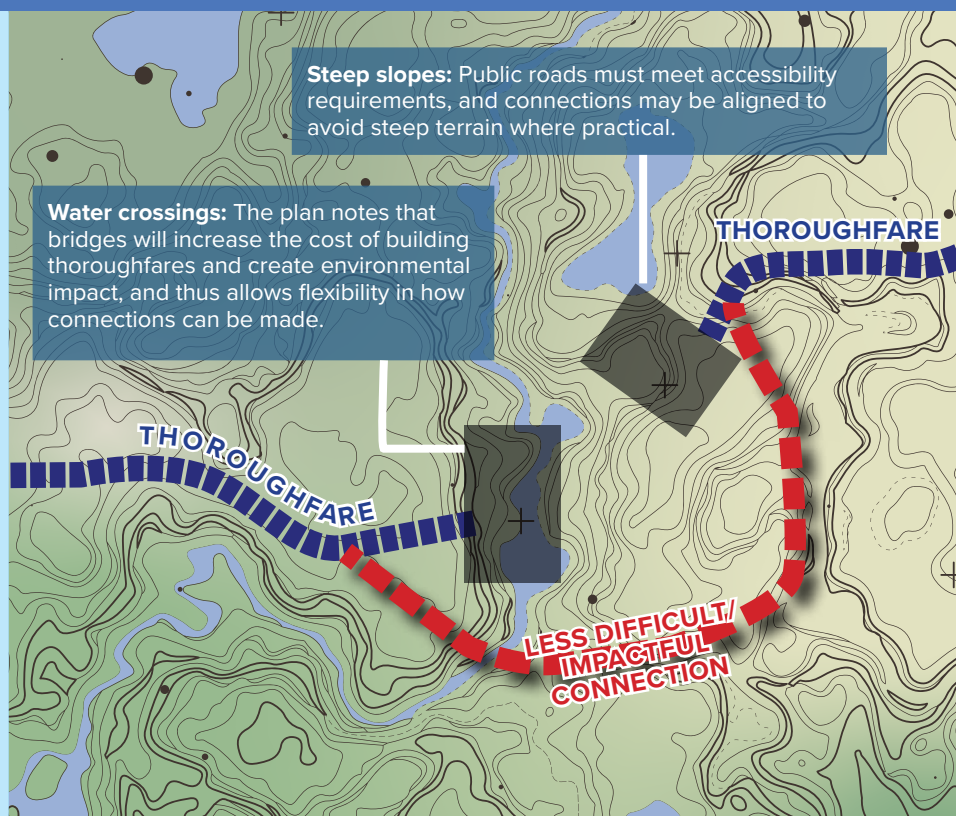
Although connections are important for the Town's roadway network, topography, floodplains, and other basic conditions of sites are important to consider for any streets and roads to be added. This is partly to ensure that they function as basic infrastructure and will not face flooding, erosion, or other impacts from environmental conditions, but also to manage overall environmental impact of new development. It is also tied to costs associated with new connections, understanding that bridges, culverts, berms, and other ways of designing around natural features are used judiciously.

These included detailed criteria such as the following:

- **The portion of a potential connection that would traverse streams, creeks, or other water features**, especially if bridges would be involved.
- **The portion of a roadway impacting floodplains**, which would likely require additional engineering and construction needs to mitigate environmental impacts and ensure roads are not subject to flooding.
- **The practical value of a connection** across these natural features, especially if a large part of a property that may be developed is accessible from existing roads without crossing these features.
- Apparent natural features not included in official mapping, such as **tree cover, wetlands, and other potentially sensitive natural resources**.

FIGURE 3.3 Considering Environmental Features

The Thoroughfare Master Plan considered both topography (terrain) and hydrology (creeks, streams, and ponds) in potential location of thoroughfares, though more detailed understanding of sites at the time of developing a site plan may identify challenges with making connections. The Town should work closely with applicants to find ways to continue thoroughfare connections whenever practical, and may consider partnerships to take on portions of a corridor as Town-led capital projects.



- **How topography would impact road connections**, especially in how the typical section of a road might be constructed (as opposed to a longer extent of the road itself). Oakland's topographic conditions are not extreme, with most area slopes at or under five percent (5%), which offers much greater flexibility in where roads can be constructed safely and within typical accessibility requirements of the Americans with Disabilities Act (ADA). However, topography was considered as a factor when extensive engineering may be needed on one side of a road or another, or as connections navigated changes in topography from undeveloped areas to existing subdivisions.
- How and where construction staging and logistics might be organized in an overall design, especially if a thoroughfare connection would be constructed adjacent to or near existing development or environmentally sensitive features.
- Relationship of thoroughfares to existing utilities, especially power lines that may involve relocation or coordination with utility companies.
- Accessibility of work areas, especially consideration of difficult access routes and safety of current corridors, and availability of access through other properties.

Although these factors influenced how thoroughfares were identified, the Thoroughfare Plan's review of these did not include detailed surveys, either of land or utilities, and the Town should advance any thoroughfare connections with more detailed study and information of site conditions where connections would be made.

3.4 Constructibility

Although the Thoroughfare Master Plan does not include detailed project designs for any proposed connections, it has considered basic constructibility factors in how thoroughfares were defined. These included:

- The practicality of construction certain connections, including where natural or other physical barriers only limit access to a small part of a property.
- Increased engineering and construction needs to ensure that roads can be safely designed, maintained, and are not subject to impacts from storms or other natural conditions.

3.5 Other Factors

The plan has not performed a detailed traffic analysis to determine specific mobility needs and locations, such as using the Memphis Urban Area MPO's regional travel demand forecasting model to understand future congestion levels; it has also not included a detailed analysis of infrastructure capacity (even beyond road infrastructure) to determine potential impacts of new growth. However, these should be considerations that the Town and its partners (especially TDOT) use in evaluating potential connections, setting thoroughfare alignments, and determining projects to advance as led by the Town or another public entity. Technical factors such as roadway and intersection level of service are useful ways to evaluate intersection performance and may be used to prioritize or even expand recommended thoroughfare connections as shown in the plan.

4

Thoroughfare Plan Map and Connections

This section includes the map for Oakland’s recommended thoroughfare connections. For legibility, this map is included in the page format of this report and broken down into detail maps, with a larger-format version of the map accompanying this report document.

This overall framework map is derived from a comprehensive review of the Town’s current street network, considering opportunities for new connections based on the criteria as discussed in Section 3.

4.1 Thoroughfare Types

The system of thoroughfares in this Master Plan is intended to serve a broad variety of roadway and transportation network needs. It is primarily for vehicle traffic, but should feature designs appropriate to different roadway functions and purposes.

This Thoroughfare Plan has identified connections based on two of the categories of roadway functional classification defined by the

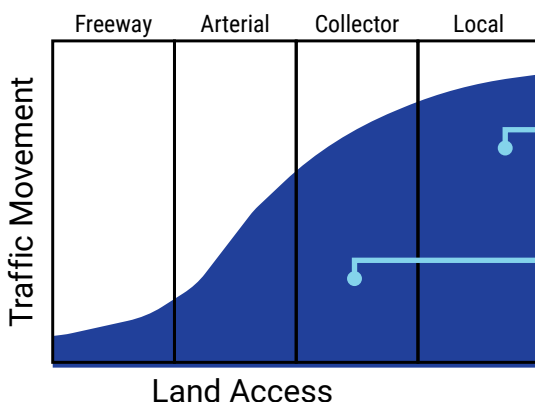
US Federal Highway Administration and assigned to Oakland-area roads by TDOT, the Memphis Urban Area MPO, and other partner agencies such as Fayette County. These two categories are collector and local streets, defined as follows.

Collector and Local Streets

Recommended connections in the Thoroughfare Plan are defined by their expected functional classification. They include collector streets, intended to carry local neighborhood traffic around Oakland and serve as an intermediate link in the roadway network between local access and regional mobility. These can be thought of as the ‘main streets’ of residential subdivisions, the primary connections between two subdivisions, and the existing roadway network that links multiple subdivisions today.

The recommendations also include local streets, the primary type of street for providing direct access to private properties, especially residential lots. Although the thoroughfare network for the Town is intended to provide

FIGURE 4.1 The Functional Classification System



The Thoroughfare Plan’s recommended connections are primarily local and collector streets.

Local streets emphasize property access as their primary function and should generally have low traffic volumes—but ensuring they make a connected street network is still an important priority for the Town.

Collector streets distribute traffic to and from local streets and provide a bridge to more regional thoroughfares, though they may still have direct property access themselves.

longer connections across the Town's geography, it is also important for any connections—even those that might carry lower volumes of traffic—to be included and guided when development applications are proposed.

Why no arterial thoroughfares?

As shown in the functional classification diagram on the preceding page, arterial roadways and freeways are higher forms of classification intended for greater traffic movement, typically over longer distances, where collector and local streets feature a greater degree of land use access as their primary purpose. Oakland has three roads classified as arterials today: US 64 and State Roads 194 and 196. With the primary purpose of this plan being to guide development-based street network contributions and to help the Town understand where it may need to support potential connections, it is not envisioned that any new arterial roadways should be added or needed with new development.

However, transportation agencies such as TDOT periodically review their roadway classification assignments and may change a road's classification if its travel patterns have evolved significantly. In growing communities, this change is often to raise the level of classification toward greater levels of vehicle travel (such as reassigning local roads as collectors, and collectors as arterials), and sometimes accompanies special capital projects that increase a road's capacity. For the near future, however, it is not envisioned that new arterial assignments will apply to Oakland streets not already classified as arterials, for the following reasons:

- Arterials prioritize traffic movement over longer distances and usually connect to other major roadways, such as freeways. Oakland's land area is largely developed with subdivisions and residential properties, lower-density and rural in character, and limited by property patterns and natural features such as streams. This pattern of growth is poised to continue, but a greater density of connecting local and collector streets are likely to be sufficient to serve

expected travel needs based on current land use policies.

- Existing arterials such as State Roads 194 and 196 already offer connections to US 64, Oakland's major travel thoroughfare to and from the Memphis metropolitan area, and to Interstate 40.

US 64 Parallel Connections

The Thoroughfare Plan also identifies a series of US 64 Parallel Connections. These may be classified as either collector or local streets, and should follow criteria for selecting an appropriate design as outlined in Section 5. However, these connections offer particular value to both the Town of Oakland and TDOT because they address the growing challenge of a regional thoroughfare like US 64 carrying a mix of regional and local traffic (especially traffic turning in and out of driveways).

Offering a set of parallel connections to US 64 greatly increases the Town's and TDOT's options for providing access to commercial properties and residential subdivisions directly accessing US 64. With parallel streets in place, properties may have more direct ability to provide service trips (especially freight- and delivery-related trips) directly from these side streets, reducing the amount of turns in and out of driveways along US 64 and concentrating turning movements at intersections.

The Thoroughfare Plan creates this separate designation so that the Town may provide incentives or bonuses in the development process to applicants completing these connections. These may include:

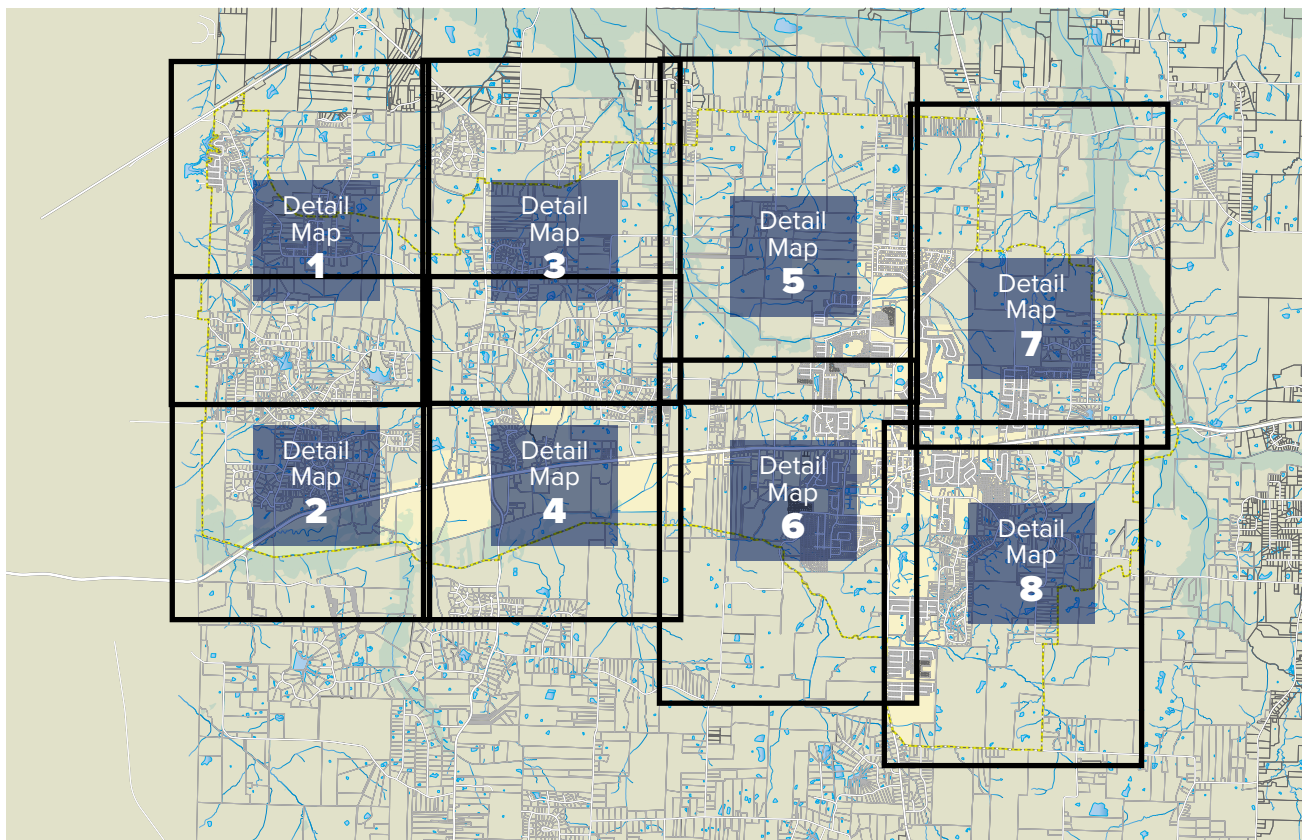
- Density bonuses or other increases to entitlements
- Reduction of other thoroughfare connections requested of the applicant
- Deferral of installing traffic signals or other traffic control as warranted by the development's traffic impacts

More detailed information on the design criteria for these thoroughfare types is included in Section 5 of this report.

4.2 Map of Thoroughfare Routes

The following pages illustrate a map of the recommended routes and connections for Oakland's thoroughfare system. For ease of legibility, these have been broken down into detail tiles, with a tile index map shown below.

On the pages following the map is a summary table of all proposed connections, with details on each connection as related to the evaluation criteria in Section 3. This information is intended to help both the Town and development applicants understand basic expectations for the Thoroughfare connection, as well as planning-level design and construction factors to consider early in the planning and subdivision process.



Detail Map 1



Thoroughfare Streets Plan

Map of Recommended Network Connections

- New Collector Street
- New Local Street
- New Greenway

- New US-64 Parallel Street
- Collector Upgrade Project
- Existing Street Network

Other Legend Items

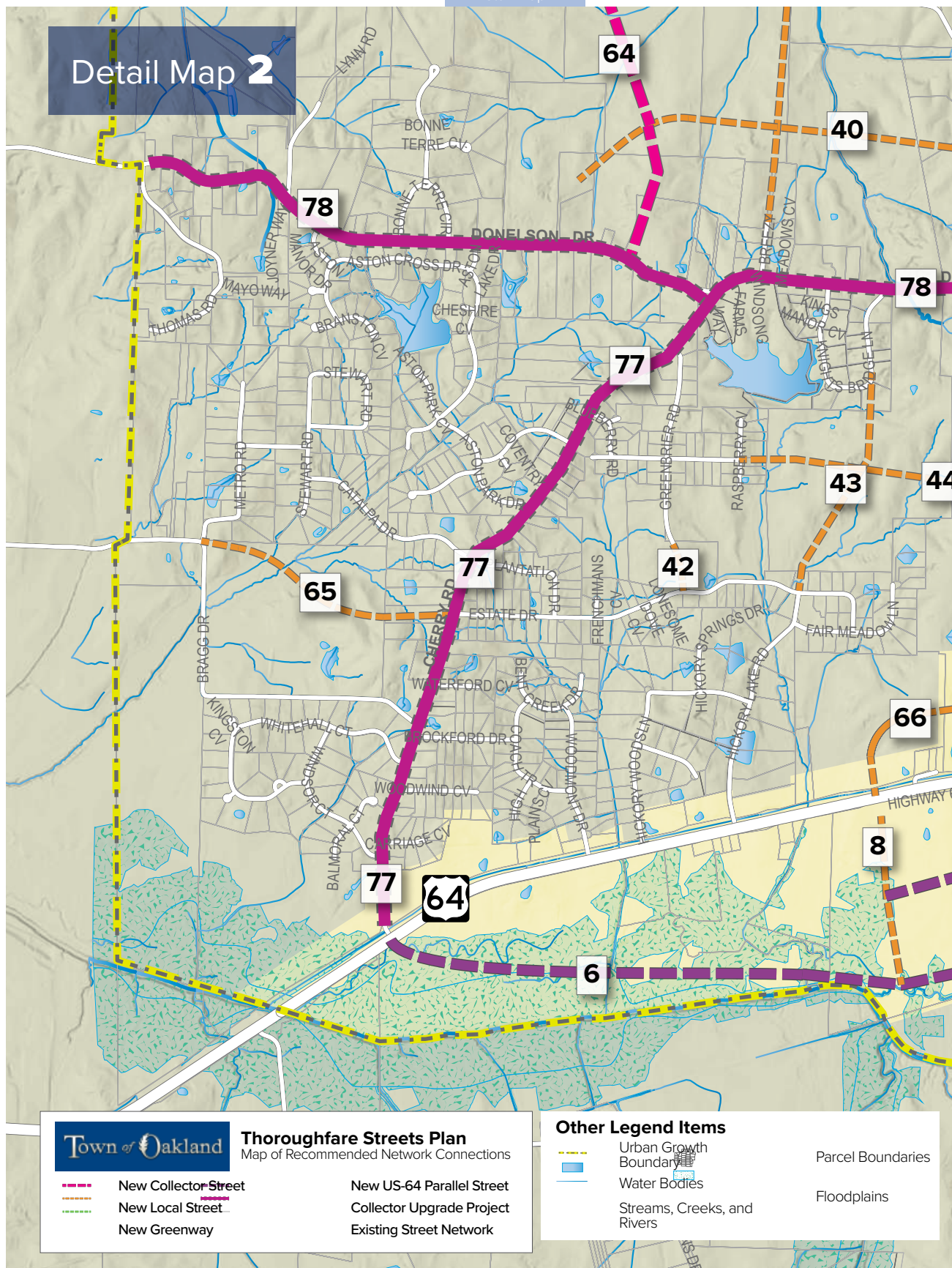
- Urban Growth Boundary
- Water Bodies
- Streams, Creeks, and Rivers
- Parcel Boundaries
- Floodplains

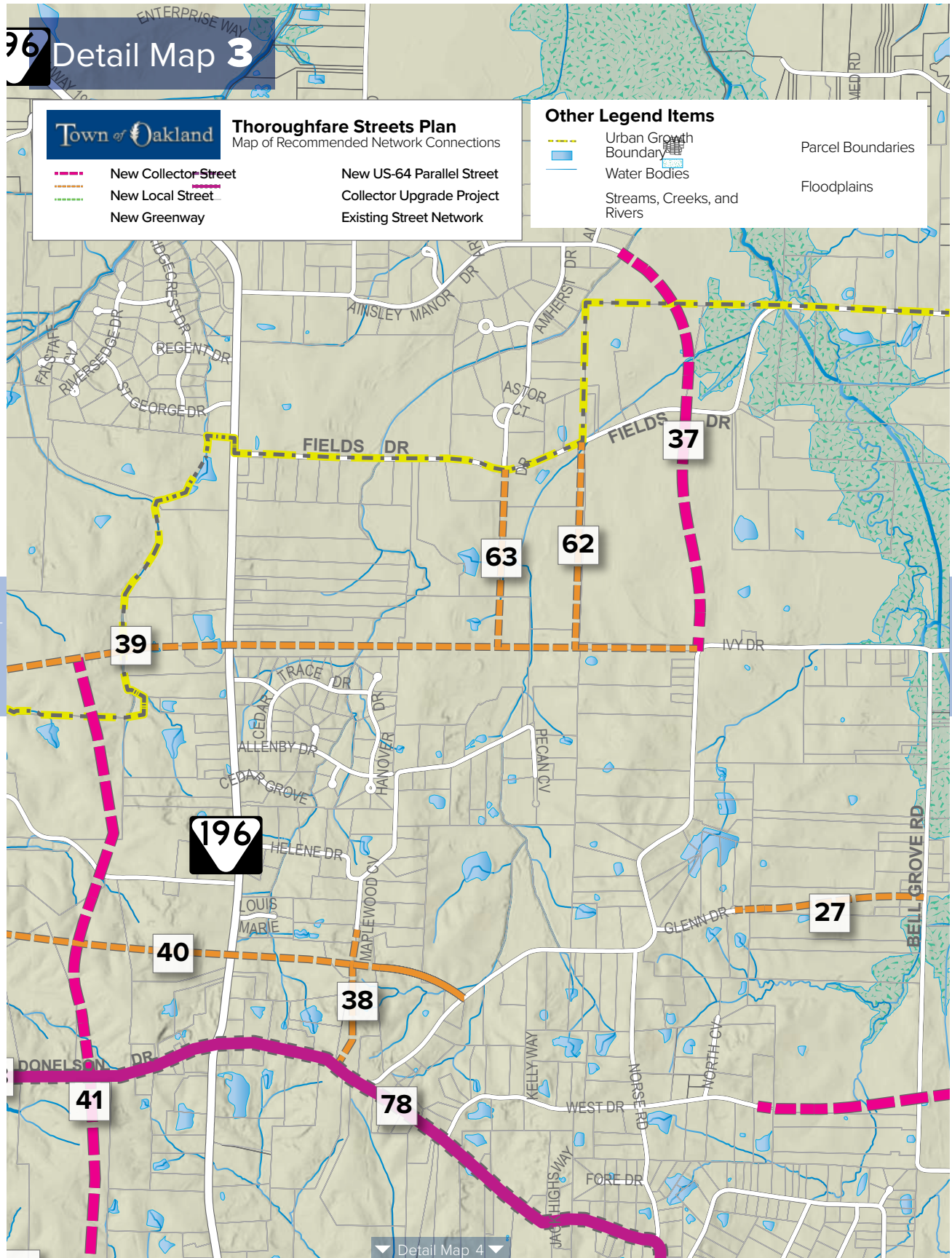


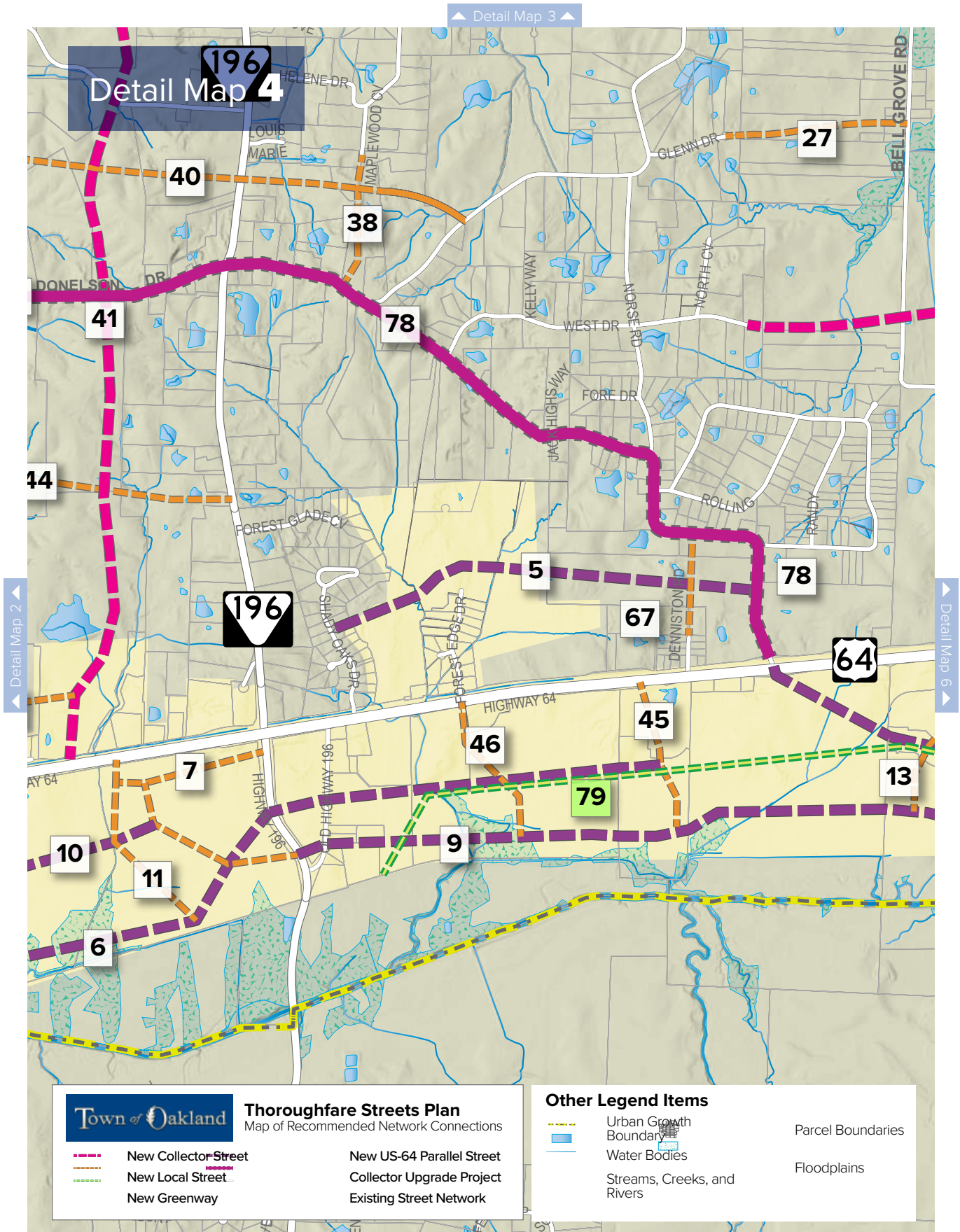
Detail Map 3

Detail Map 1

Detail Map 2





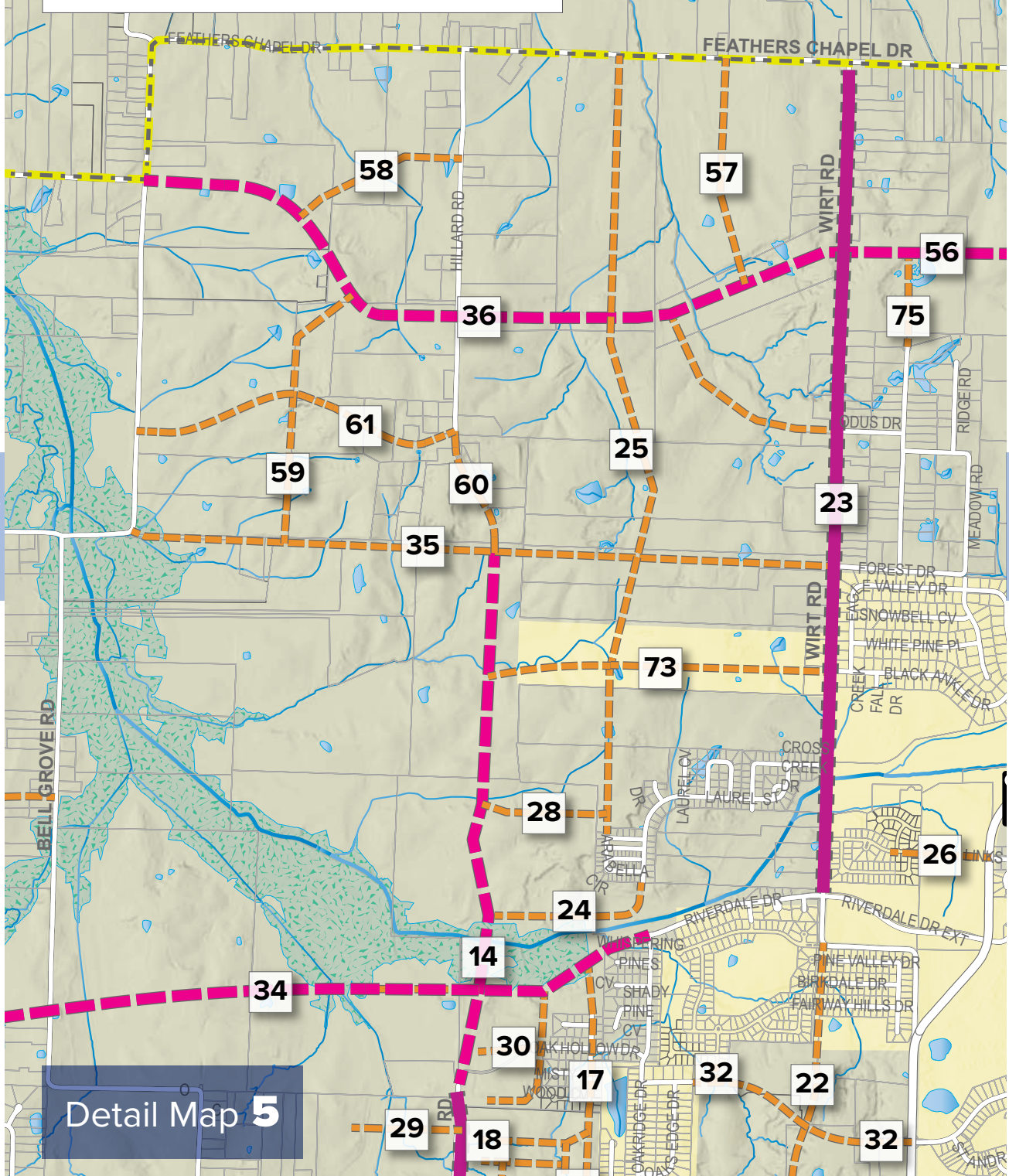


--- New Collector Street
--- New Local Street
--- New Greenway

New US-64 Parallel Street
 Collector Upgrade Project
 Existing Street Network

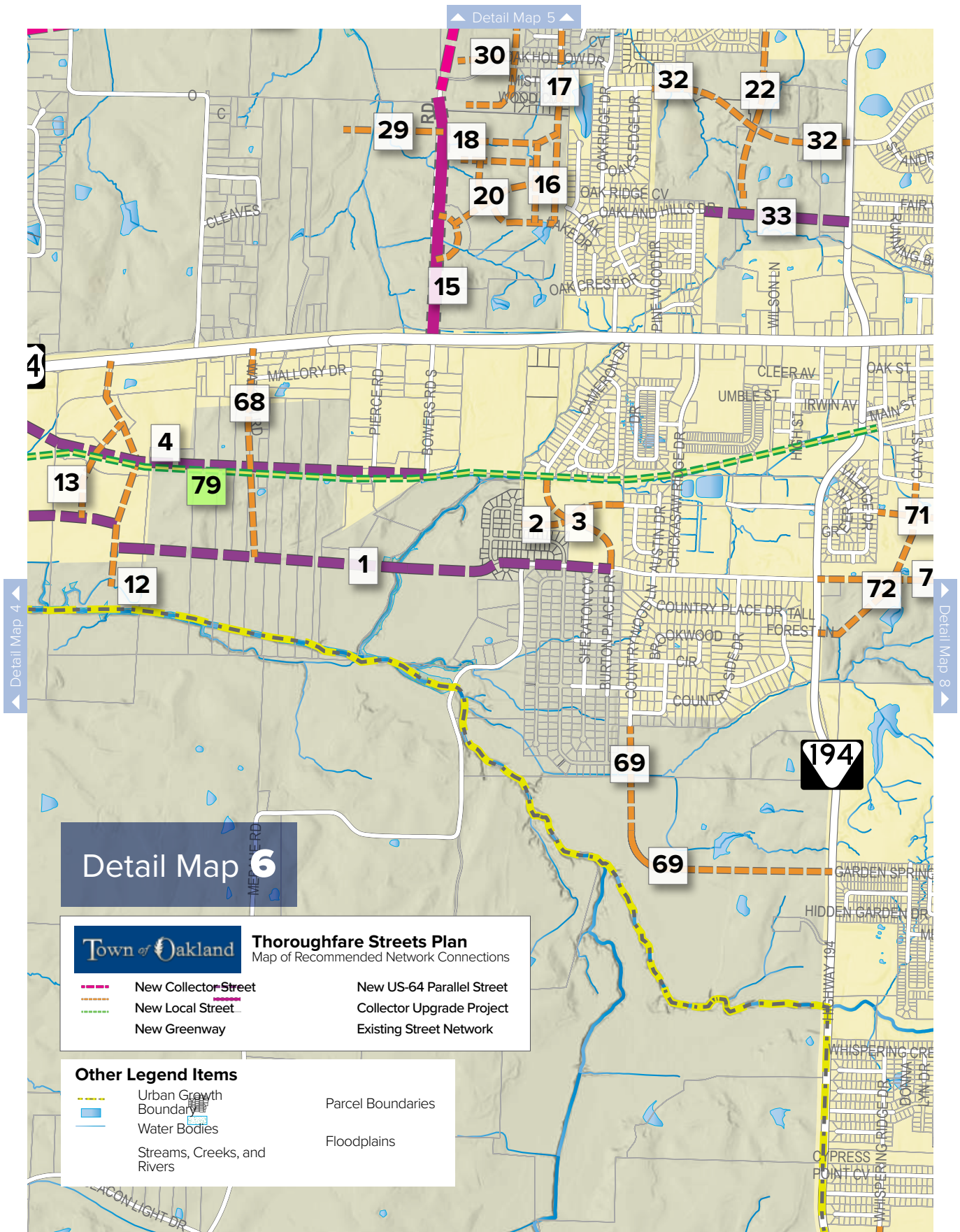
Other Legend Items

--- Urban Growth Boundary
--- Water Bodies
--- Streams, Creeks, and Rivers
--- Parcel Boundaries
--- Floodplains



Detail Map 5

Detail Map 6



Detail Map 7



Thoroughfare Streets Plan Map of Recommended Network Connections

- New Collector Street
- New Local Street
- New Greenway
- New US-64 Parallel Street
- Collector Upgrade Project
- Existing Street Network

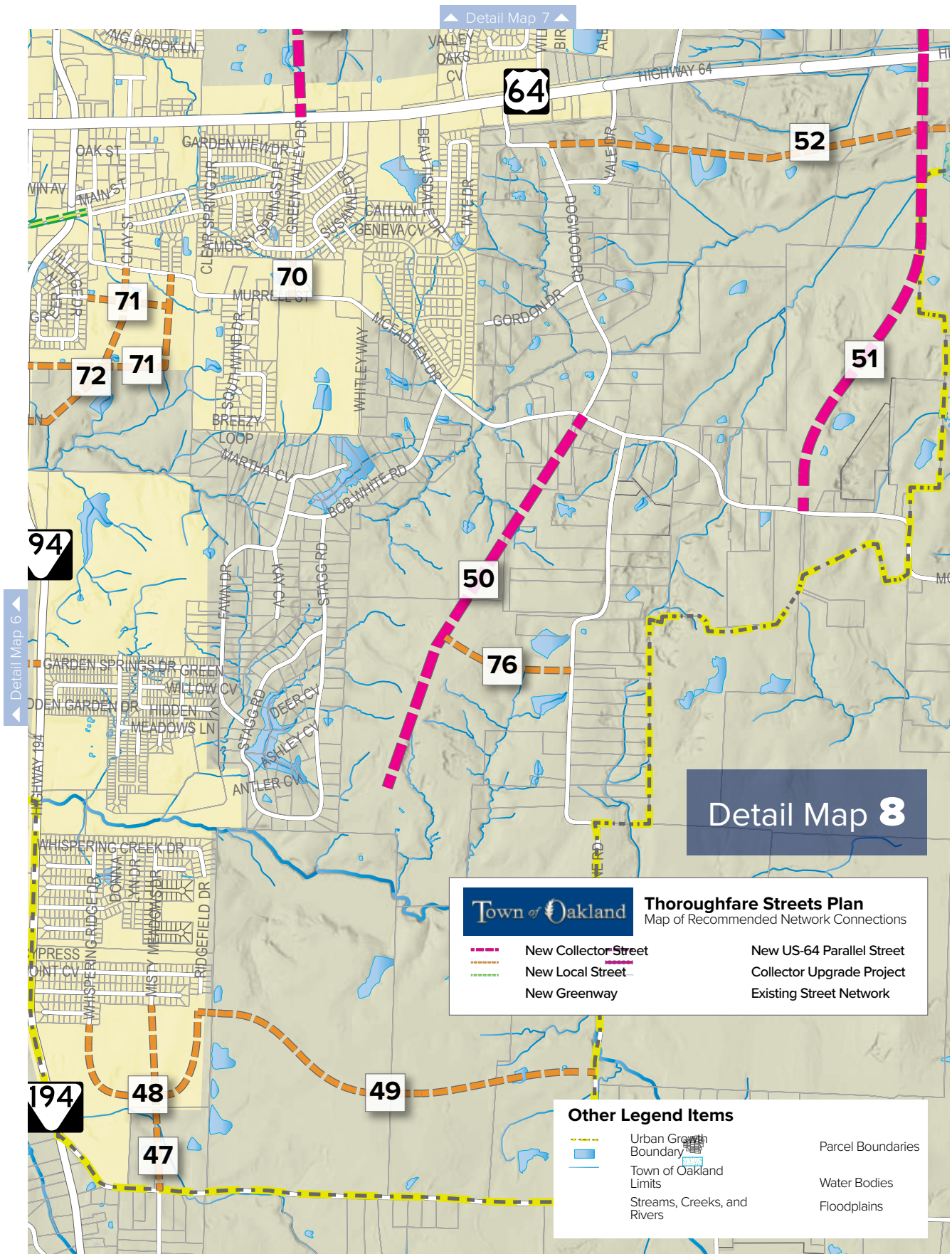
Other Legend Items

- Urban Growth Boundary
- Town of Oakland Limits
- Streams, Creeks, and Rivers
- Parcel Boundaries
- Water Bodies
- Floodplains

Detail Map 5



Detail Map 8



Summary Table of Thoroughfare Connections

The tables on the following pages provide more detail on the individual tables as illustrated in the Detail Map series on pages 14-21. In particular, they link the potential thoroughfare alignments as shown in the map series to potential design information as detailed in Section 5, and they identify any potential natural or environmental constraints to consider in designs.

Project ID	Working Road Name <i>(for plan purposes only: thoroughfares can be named as part of subdivision process or through negotiations with Town)</i>	Roadway Category <i>Presumed for plan purposes: development application may show that another type is more appropriate</i>	Future Lanes	Future ROW (in feet)	Does this cross a stream?	Does this cross a floodplain?	Is this part of an already-platted subdivision?	Intersections with current roads or other thoroughfares	Bridge Length (ft)	Length (mi)	Parcels Crossed
1	Mebane Rd Extension	Collector Subdivision	2L	50	Yes	No	Yes	4	0	1.41	11
2	Donald Ave Extension	Collector Subdivision	2L	50	No	No	No	2	0	0.31	1
3	Burton Place Dr Extension	Collector Subdivision	2L	50	No	No	No	3	0	0.36	1
4	Bowers Rd Extension	Collector Median	3L	60	No	No	Yes	5	0	1.29	12
5	Northern Connector to Donelson Dr	Collector Subdivision	2L	50	Yes	No	No	3	0	1.25	3
6	Southern Connector to Cherry Rd	Collector Median	3L	60	Yes	Yes	Yes	7	0	3.46	7
7	Village at Windy Ridge (Road Connection 1)	Local	2L	50	No	No	Yes	3	0	0.43	1
8	Village at Windy Ridge (Road Connection 2)	Local	2L	50	No	No	Yes	3	0	0.46	1
9	Village at Windy Ridge (Road Connection 3)	Collector Subdivision	2L	50	Yes	No	Yes	7	0	2.41	8
10	Village at Windy Ridge (Road Connection 4)	Collector Subdivision	2L	50	No	No	Yes	3	0	0.51	2
11	Village at Windy Ridge (Road Connection 5)	Local	2L	50	No	No	Yes	3	0	0.55	1
12	Beaumont at Bryan Farms - Road 1	Local	2L	50	No	No	Yes	5	0	0.67	3
13	Beaumont at Bryan Farms - Road 2	Local	2L	50	No	No	Yes	3	0	0.30	3
14	Mewborn Farm Road	Collector Median	3L	60	Yes	No	Yes	11	0	2.07	3

SUMMARY TABLE OF THOROUGHFARE CONNECTIONS (Continued, page 2 of 5)

Project ID	Working Road Name <i>(for plan purposes only: thoroughfares can be named as part of subdivision process or through negotiations with Town)</i>	Roadway Category <i>Presumed for plan purposes: development application may show that another type is more appropriate</i>	Future Lanes	Future ROW (in feet)	Does this cross a stream?	Does this cross a floodplain?	Is this part of an already-platted subdivision?	Intersections with current roads or other thoroughfares	Bridge Length (ft)	Length (mi)	Parcels Crossed
15	Twin Oaks - Road 1	Local	2L	50	No	No	Yes	2	0	0.19	1
16	Twin Oaks - Road 2	Local	2L	50	No	No	Yes	3	0	0.31	2
17	Misty Birch Ln Extension	Local	2L	50	No	No	Yes	5	0	0.68	3
18	Twin Oaks - Road 3	Local	2L	50	No	No	Yes	3	0	0.33	1
19	Twin Oaks - Road 4	Local	2L	50	No	No	Yes	2	0	0.16	1
20	Twin Oaks - Road 5	Local	2L	50	No	No	Yes	4	0	0.34	1
21	Twin Oaks - Road 6	Local	2L	50	No	No	Yes	4	0	0.22	1
22	Wirt Rd Extension	Local	3L	60	No	No	No	5	0	0.71	3
23	Wirt Rd	Upgrade Existing	2L	60	No	No	No	7	0	2.26	0
24	Laurel St Extension	Collector Subdivision	2L	50	Yes	No	No	1	0	0.44	1
25	Joseph Ct Extension	Local	2L	50	No	No	No	5	0	2.03	10
26	Links View Dr Extension	Local	2L	50	No	No	No	2	0	0.26	2
27	Glenn Dr Extension	Local	2L	50	Yes	Yes	No	2	150	0.52	2
28	Mewborn Farm Rd - Joseph Ct Connector	Local	2L	50	No	No	Yes	2	0	0.32	1
29	Mewborn Farm Rd Connector	Local	2L	50	No	No	No	2	0	0.28	1
30	Oak Hollow Dr Extension	Local	2L	50	No	No	Yes	2	0	0.17	1
31	Riverwood Gardens - Road 1	Local	2L	50	No	No	Yes	3	0	0.43	1
32	Fair Oaks Dr Extension	Local	2L	50	No	No	No	6	0	0.65	5
33	Whispering Meadows Dr Extension	Local	2L	50	Yes	No	No	3	0	0.41	3
34	Riverdale Dr Extension	Collector Subdivision	2L	50	Yes	Yes	No	3	150	2.01	4
35	Forest Dr Extension	Collector Subdivision	2L	50	Yes	No	No	5	0	1.80	5

SUMMARY TABLE OF THOROUGHFARE CONNECTIONS (Continued, page 3 of 5)

Project ID	Working Road Name <i>(for plan purposes only: thoroughfares can be named as part of subdivision process or through negotiations with Town)</i>	Roadway Category <i>Presumed for plan purposes: development application may show that another type is more appropriate</i>	Future Lanes	Future ROW (in feet)	Does this cross a stream?	Does this cross a floodplain?	Is this part of an already-platted subdivision?	Intersections with current roads or other thoroughfares	Bridge Length (ft)	Length (mi)	Parcels Crossed
36	Ivy Dr - Wirt Rd Connector	Collector Subdivision	2L	50	Yes	No	No	6	0	2.01	6
37	Ansley Manor Dr Extension	Collector Subdivision	2L	50	Yes	No	No	3	0	1.16	3
38	Maplewood Cove Extension	Local	2L	50	No	No	No	3	0	0.37	1
39	Breezy Meadows Cove Extension	Local	2L	50	Yes	No	No	12	0	4.20	11
40	Ivy Dr - Orr Rd Connector	Local	2L	50	Yes	No	No	8	0	2.72	11
41	Donelson Dr - Ivy Rd Ext Connector	Collector Median	3L	60	Yes	No	No	6	0	2.45	6
42	Green Brier Rd Extension	Local	2L	50	No	No	No	1	0	0.13	1
43	Hickory Lake Rd Extension	Local	2L	50	No	No	No	3	0	0.64	2
44	Blackberry Dr Extension	Local	2L	50	Yes	No	No	4	0	1.10	3
45	Village of Cypress Creek - Road 1	Local	2L	50	No	No	Yes	3	0	0.48	2
46	Forest Edge Dr Extension	Local	2L	50	No	No	No	3	0	0.44	2
47	Misky Meadows Dr Extension	Local	2L	50	No	No	No	3	0	0.52	1
48	Whispering Ridge Dr Extension	Local	2L	50	No	No	No	3	0	0.64	1
49	Ridgefield Dr - Wilbourne Rd Connector	Local	2L	50	No	No	No	2	0	1.18	3
50	Dogwood St Extension	Collector Subdivision	2L	50	Yes	No	No	3	150	1.43	3
51	US 64 - McFadden Dr Connector	Collector Subdivision	2L	50	Yes	No	No	5	0	1.88	4

SUMMARY TABLE OF THOROUGHFARE CONNECTIONS (Continued, page 4 of 5)

Project ID	Working Road Name <i>(for plan purposes only: thoroughfares can be named as part of subdivision process or through negotiations with Town)</i>	Roadway Category <i>Presumed for plan purposes: development application may show that another type is more appropriate</i>	Future Lanes	Future ROW (in feet)	Does this cross a stream?	Does this cross a floodplain?	Is this part of an already-platted subdivision?	Intersections with current roads or other thoroughfares	Bridge Length (ft)	Length (mi)	Parcels Crossed
52	Dogwood St - Meadow Glen Dr Connector	Local	2L	50	Yes	No	No	8	0	2.18	5
53	Black Ankle Dr Extension	Collector Subdivision	2L	50	No	No	No	4	0	1.27	4
54	US 64 - Stevens Dr Connector	Collector Median	3L	60	Yes	No	No	5	150	2.00	4
55	Whispering Meadows Dr Extension	Collector Subdivision	2L	50	Yes	No	No	3	0	0.66	2
56	Wirt Rd - Oakland Rd Connector	Collector Subdivision	2L	50	Yes	No	No	6	0	1.57	3
57	Feathers Chapel Dr Connector	Local	2L	50	No	No	No	2	0	0.58	1
58	Hillard Rd Connector	Local	2L	50	Yes	No	No	5	0	0.45	4
59	Forest Dr - Ivy Dr Connector	Local	2L	50	Yes	No	No	2	0	0.70	4
60	Hillard Rd Extension	Local	2L	50	No	No	No	3	0	0.34	2
61	Ivy Dr - Hillard Rd Connector	Local	2L	50	No	No	No	3	0	0.87	4
62	Ivy Dr - Fields Dr Connector	Local	2L	50	No	No	No	2	0	0.56	1
63	Amherst Dr Extension	Local	2L	50	No	No	No	2	0	0.48	3
64	Orr Rd Extension	Collector Subdivision	2L	50	Yes	No	No	4	0	0.92	4
65	Estate Dr Extension	Local	2L	50	No	No	No	2	0	0.72	2
66	US 64 Connector	Local	2L	50	No	No	No	2	0	0.47	2
67	Denniston Rd Extension	Local	2L	50	No	No	No	2	0	0.29	3
68	Watson Rd Extension	Local	2L	50	No	No	No	3	0	0.59	3
69	Countrywood Ln Extension	Local	2L	50	Yes	No	No	3	0	0.96	2
70	Green Valley Dr Extension	Local	2L	50	No	No	No	2	0	0.11	2

SUMMARY TABLE OF THOROUGHFARE CONNECTIONS (Continued, page 5 of 5)

Project ID	Working Road Name <i>(for plan purposes only: thoroughfares can be named as part of subdivision process or through negotiations with Town)</i>	Roadway Category <i>Presumed for plan purposes: development application may show that another type is more appropriate</i>	Future Lanes	Future ROW (in feet)	Does this cross a stream?	Does this cross a floodplain?	Is this part of an already-platted subdivision?	Intersections with current roads or other thoroughfares	Bridge Length (ft)	Length (mi)	Parcels Crossed
71	Mebane Rd Extension	Local	2L	50	No	No	No	5	0	0.87	1
72	Clay St Extension	Local	2L	50	No	No	No	4	0	0.56	1
73	Black Ankle Dr Extension	Local	2L	50	No	No	No	3	0	0.88	2
74	Northwood Dr Extension	Local	2L	50	No	No	No	2	0	0.84	4
75	Hicks Rd Extension	Local	2L	50	No	No	No	2	0	0.23	2
76	Wilbourne Rd Connector	Local	2L	50	No	No	No	2	0	0.39	1
77	Cherry Rd	Upgrade Existing	2L	60	No	No	No	12	0	2.08	0
78	Donelson Rd	Upgrade Existing	2L	60	No	No	No	20	0	5.68	0
79	Rail Trail	Rail Trail	--	0	No	No	No	0	0	4.01	0

5

Design Guidance for New Streets

5.1 Typical Street Sections

The Thoroughfare Master Plan not only provides guidance for the location of thoroughfares and where critical connections should be made, but also provides standards and guidance for the design of these thoroughfares to ensure consistent street types for the Town.

The standards shown in this user guide are intended to provide a selection of typical cross-sections that applicants may use as their designs. Any of these designs is considered allowed as long as applicants meet other Town Code requirements for utilities and other infrastructure, especially stormwater and wastewater management. In addition, each of the standards provides options for elements of the street that an applicant may wish to add.

Standards and Guidance

This document provides both standards, or requirements that must be met for subdivisions to be compliant with the Town's Thoroughfare Master Plan and Code, and guidance, or reflections of best practices in street design that the Town wishes to achieve in all of its streets (whether public or private). The cross-sections shown in the following pages identify both of these in a single set of design dimensions. Standards are outlined in the detailed annotation on each section and are defined for pedestrian space, landscaping and swale space, and the

traveled way. With limited exceptions, standards are defined as minimum design values that must be met. Applicants may exceed these values if they desire (for instance, they may provide sidewalks that are 8' in width instead of 6'), provided that they do not lead to deficiencies in other infrastructure or engineering factors of the subdivision design (such as wider streets creating stormwater runoff that the subdivision's proposed systems cannot accommodate).

Right-of-Way

Each street section is to be based on a right-of-way dimension that will serve as the primary envelope in which the street's transportation functions and potentially some utility functions are located. Per the Town's subdivision ordinance, this is to be legally conveyed to the Town or other public agencies, and although right-of-way typically includes utilities, it should not be used for anything that impedes a safe and functional transportation system.

Within the right-of-way, the main components of streets are a traveled way carrying moving and potentially parked vehicles, an edge of pavement that may include various types of curb-and-gutter drainage, and sidewalks or other pedestrian accommodation. Parking is considered optional in the conditions where it can be allowed, and if applicants wish to design streets to serve on-street parking the dimensions for this parking should be added to the overall right-of-way for that cross-section.

Specific Design Elements

This guide is intended to inform subdivision applicants and the general public about the required design factors when subdivisions are to be served with private streets. Although the basic street types have been developed with residential subdivisions in mind, these standards could be applied to subdivisions of land intended for other land uses, and the basic minimum standards proposed in these sections allow applicants to design to greater values.

However, based on characteristics of Oakland's terrain, typical landscape and flora, and the kinds of street designs commonly used in the Town to manage development impacts, specific design concepts have been used in these standards. These are as follows.

Traveled way: this is the term used to refer to the road or street bed where moving vehicles travel and, if applicants so desire, where on-street parking may be allowed.

For purposes of this document, the traveled way space generally includes any auxiliary space for drainage or vehicle recovery (such as shoulders). Past subdivision private street designs in Oakland have used a variety of curb types: typical raised curbs with attached gutter pans, lower-profile mountable curbs ("valley gutters") that allow encroachment without vehicle damage, or no curb and gutters at all.

These standards emphasize use of some kind of concrete edge against asphalt pavement, intended to allow greater longevity from asphalt edges and to help manage stormwater by promoting flow from traveled way surfaces. One design required in several circumstances in these standards is a concrete edge flush with asphalt pavement of a typical traveled way. This neither channels stormwater nor assists in deflecting vehicles that have turned off a street's path. However, it does provide an edge to the traveled way asphalt and strengthens the shoulder portions of an asphalt traveled way.

Medians: Newer subdivision designs in Oakland have used landscaped medians in street design, sometimes for an entire typical section and sometimes in shorter extents on what is otherwise a single two-lane traveled way. These medians offer several potential benefits: in addition to the shade from trees and their aesthetic improvements to subdivisions, they may also be designed to collect and manage stormwater, and the horizontal deflection they can create for motorists (shifting one's driving path to the side) can help to calm traffic in neighborhoods. These have also been installed in a variety of configurations, but these standards emphasize using them as ways to collect stormwater and to allow runoff to collect in them. This means they tend to have an equal or lower elevation profile relative to the street around them and curb delineation should allow stormwater to infiltrate them.

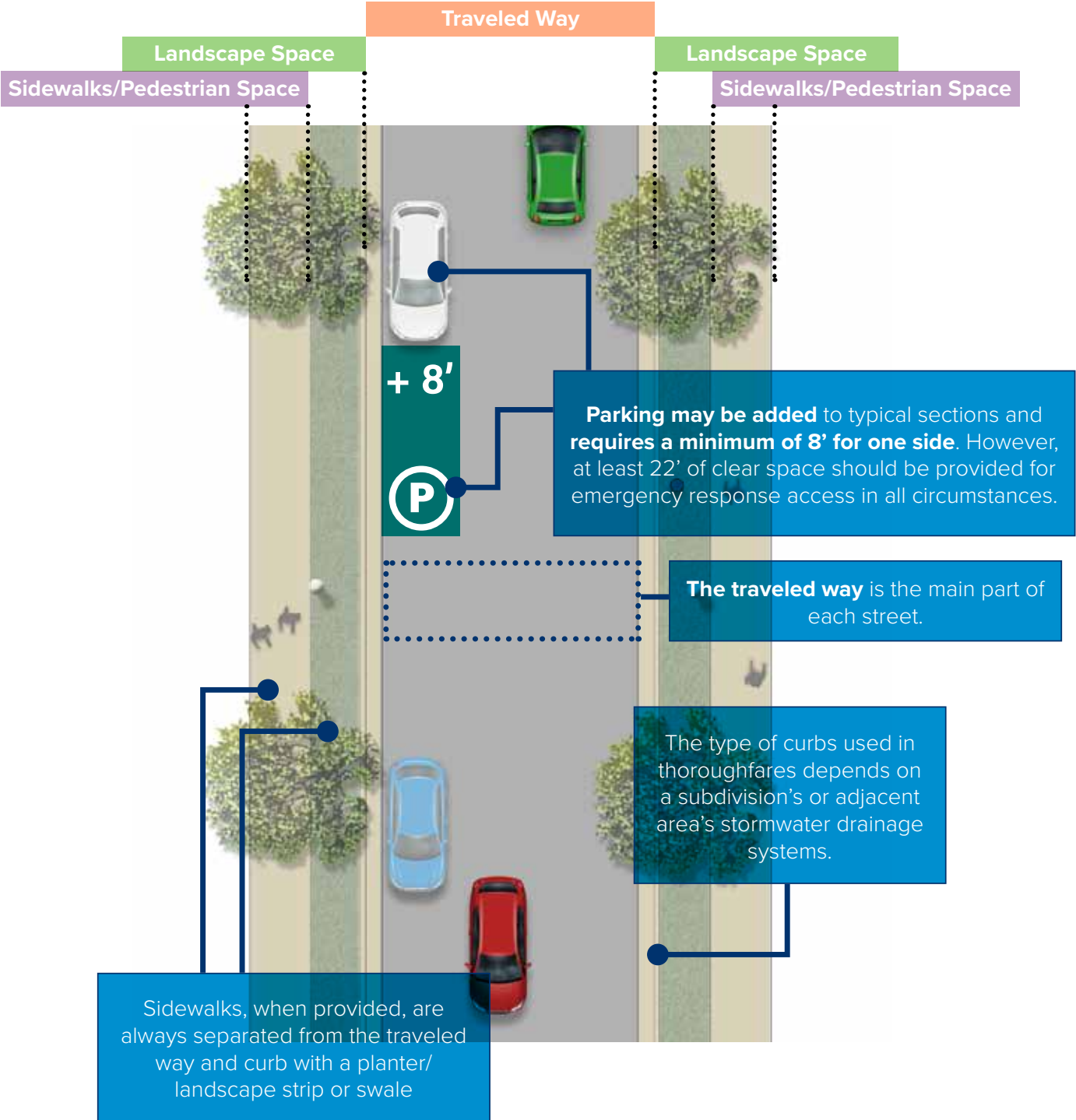
Landscape Space: Past subdivisions in the Town have used these in varying ways with sidewalks, although they appear most commonly to contain low-height landscaping and do not support trees. The standards require them in sections with sidewalks and do not allow sidewalks, when used, to be placed directly adjacent to curbs.

Sidewalks and Pedestrian Space: these standards have allowed options for adding sidewalks on streets treated as local streets; applicants may select no-sidewalk designs if they prefer, but these designs require additional right-of-way to ensure a buffer of space remains should sidewalk additions be desired later.

Sidewalks are required on all collector-designated streets and are required to be separated by a landscape strip or swale drainage area. Sidewalks may be substituted with a wider multi-use path intended to accommodate pedestrians and bicycles, though these paths may only be selected when curb cuts along their same side of the street are limited to certain spacing. The multi-use path option is offered to allow applicants to create amenities in their own subdivision or to connect to other trail

systems outside of the subdivision. However, they must follow best practices in safe design when they are located within a street right-of-way and, particularly for bicycles, provide a safe environment that reduces the number of conflict points between vehicles in driveways and users of the path.

FIGURE 5.1 Illustration of Major Street Design Components



Collector Thoroughfares for Subdivisions

This section is a standard for collectors used specifically in subdivisions that will manage stormwater through a central system and that will use underground pipes or flumes for distribution. It should continue to include required clear space in the traveled way. As shown in the variant on the following page, this may include on-street parking.

Sidewalks and Pedestrian Space

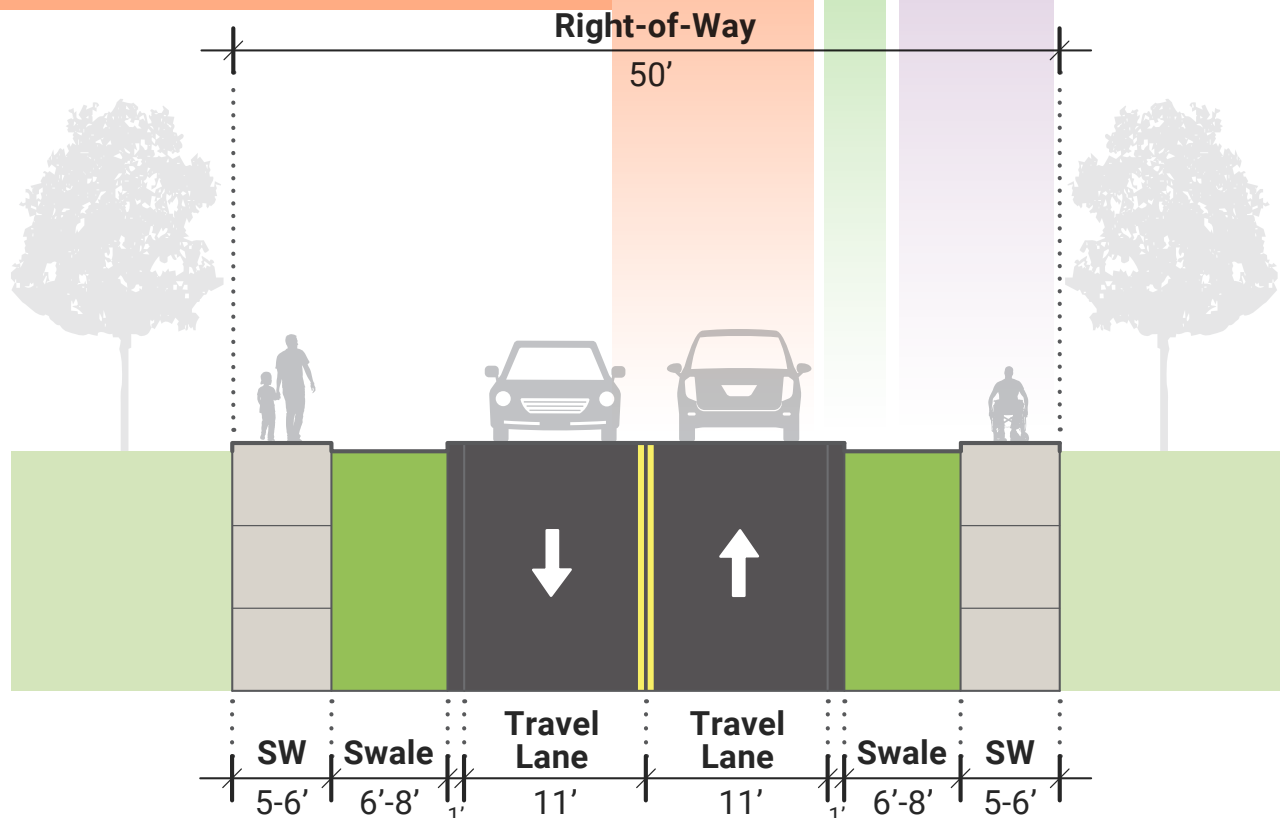
Pedestrian space may substitute a multi-use path on one side of a street for a sidewalk. These should generally avoid driveways as much as possible, with a target of no more than six driveway crossings per mile.

Landscape Space

Curb-and-gutter designs may be used when master stormwater systems are included in developments and drainage inlets and pipes channel stormwater to treatment facilities (such as detention ponds).

Traveled Way

If curb-and-gutter sections are used to support a central stormwater collection system for a development, at least 22 feet of clear space should be provided for fire trucks.



Section

CS-1

On-Street
Parking

This section is the same basic cross-section as the standard subdivision collector, but includes on-street parking. Parking will need to comply with Town fire code standards and requirements, which generally allow parking but require a minimum width of 22 feet of clear, unobstructed space in the street.

Sidewalks and Pedestrian Space

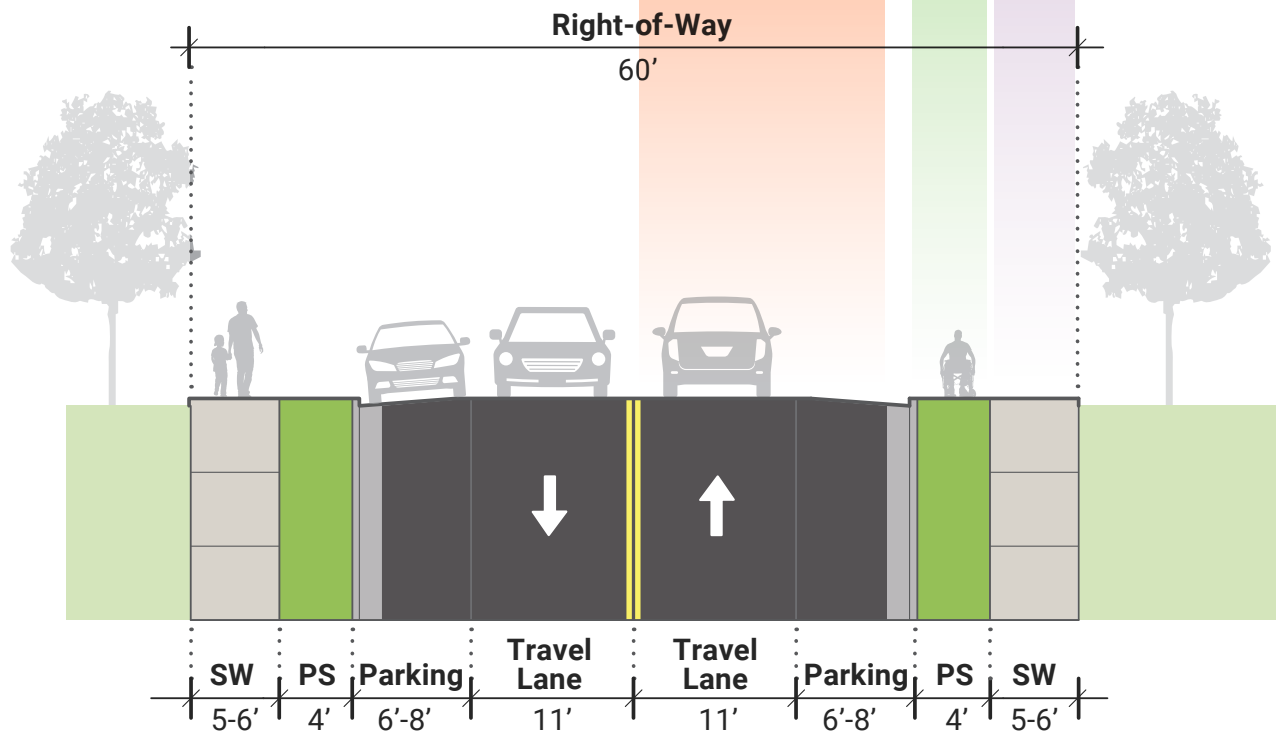
Collectors should include sidewalk on both sides of the road, resulting in safer streets for roads with expected higher traffic volume

Landscape Space

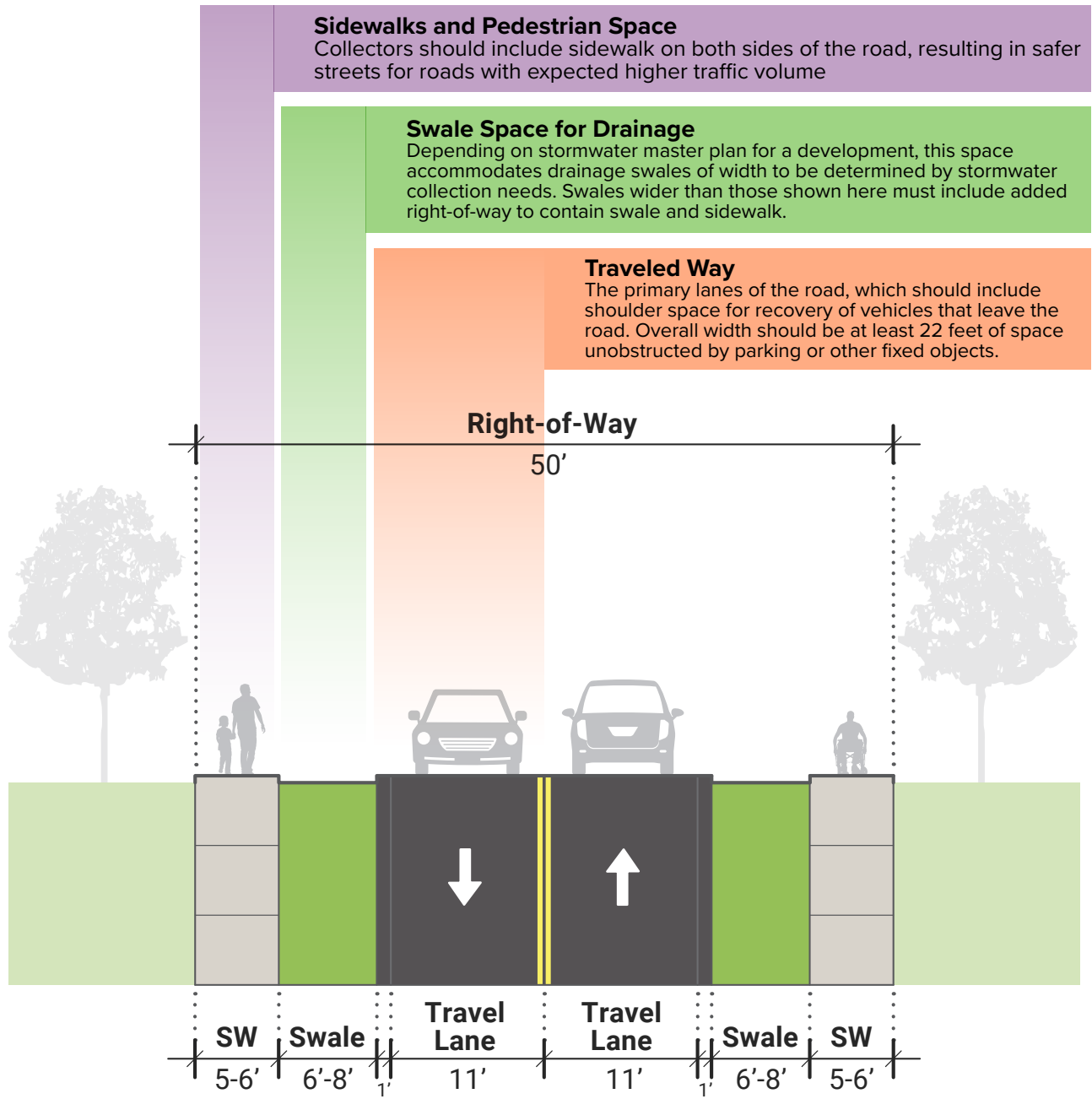
Curb-and-gutter designs may be used when master stormwater systems are included in developments and drainage inlets and pipes channel stormwater to treatment facilities (such as detention ponds).

Traveled Way

Parking is allowed in the traveled way, but all 22 feet of clear space (the travel lanes) must continue to be provided for emergency access, especially fire trucks. Fire Department review may continue to set other Fire Code requirements or restrictions on parking locations, especially around hydrants or other connections.

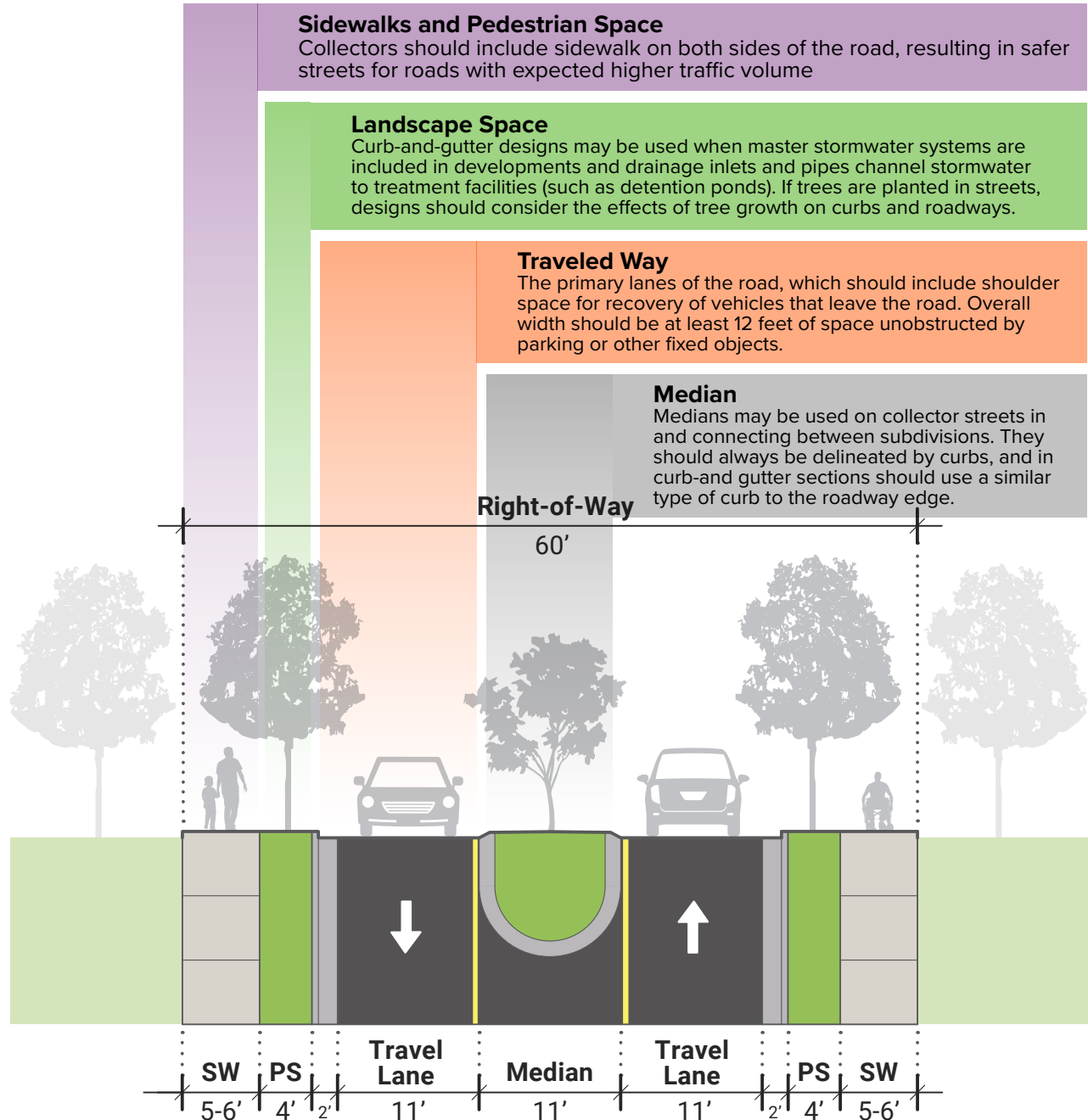


This section is a variant of the standard collector section, and is intended primarily for new thoroughfares in subdivisions. This section may be used to extend into adjacent subdivisions when they are later developed, but generally is not for use on the expansion of current roads into modern collectors. This section may only be used when an applicant has demonstrated that a subdivision's stormwater system will allow treatment and mitigation on multiple lots, without a central system.



Collector Thoroughfares with Medians

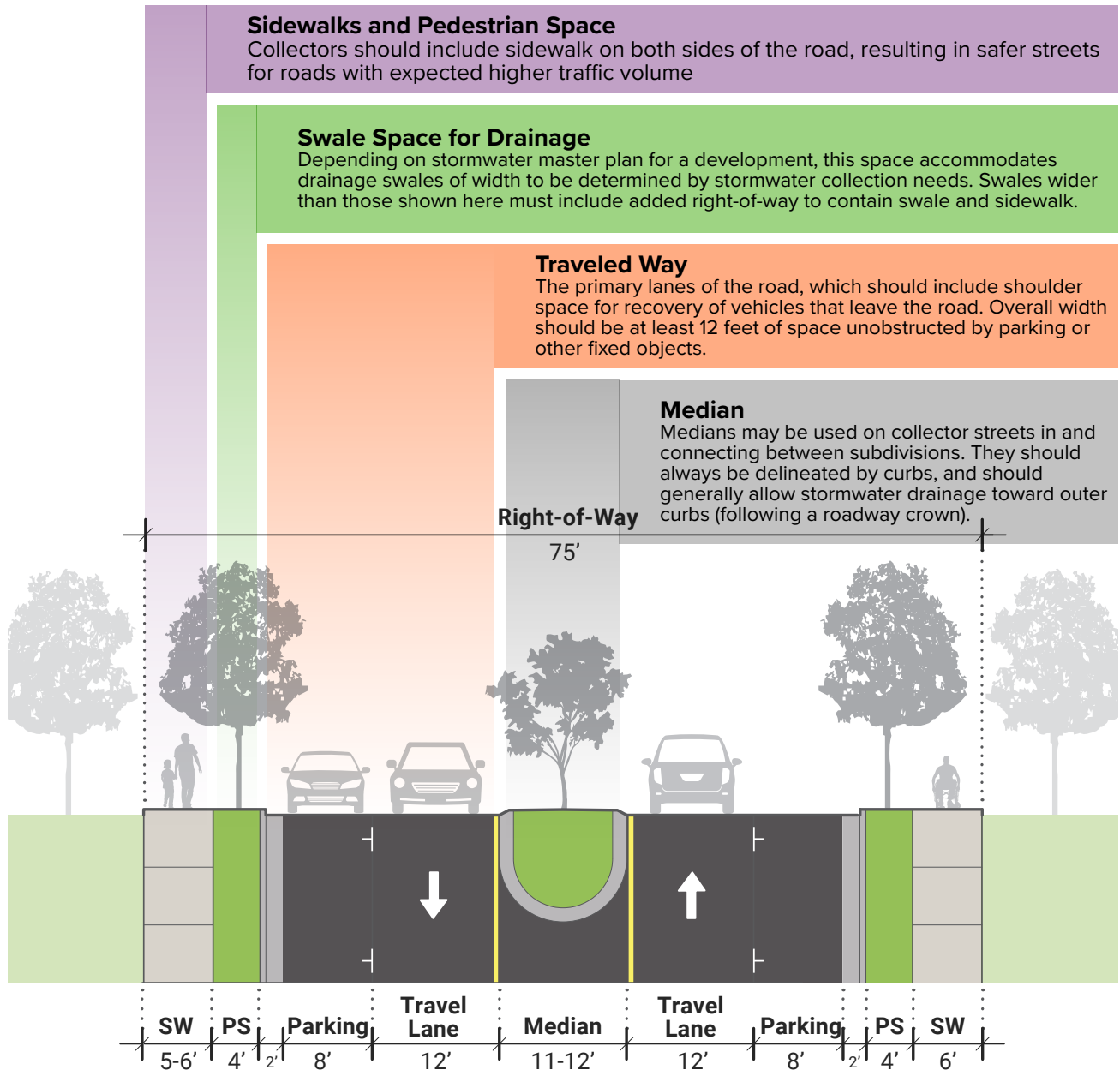
This section is a standard for collectors used specifically in subdivisions and where developers wish to provide medians. An alternative variant to this type, as shown in Section CM-1, allows for on-street parking.



Section
CM-1

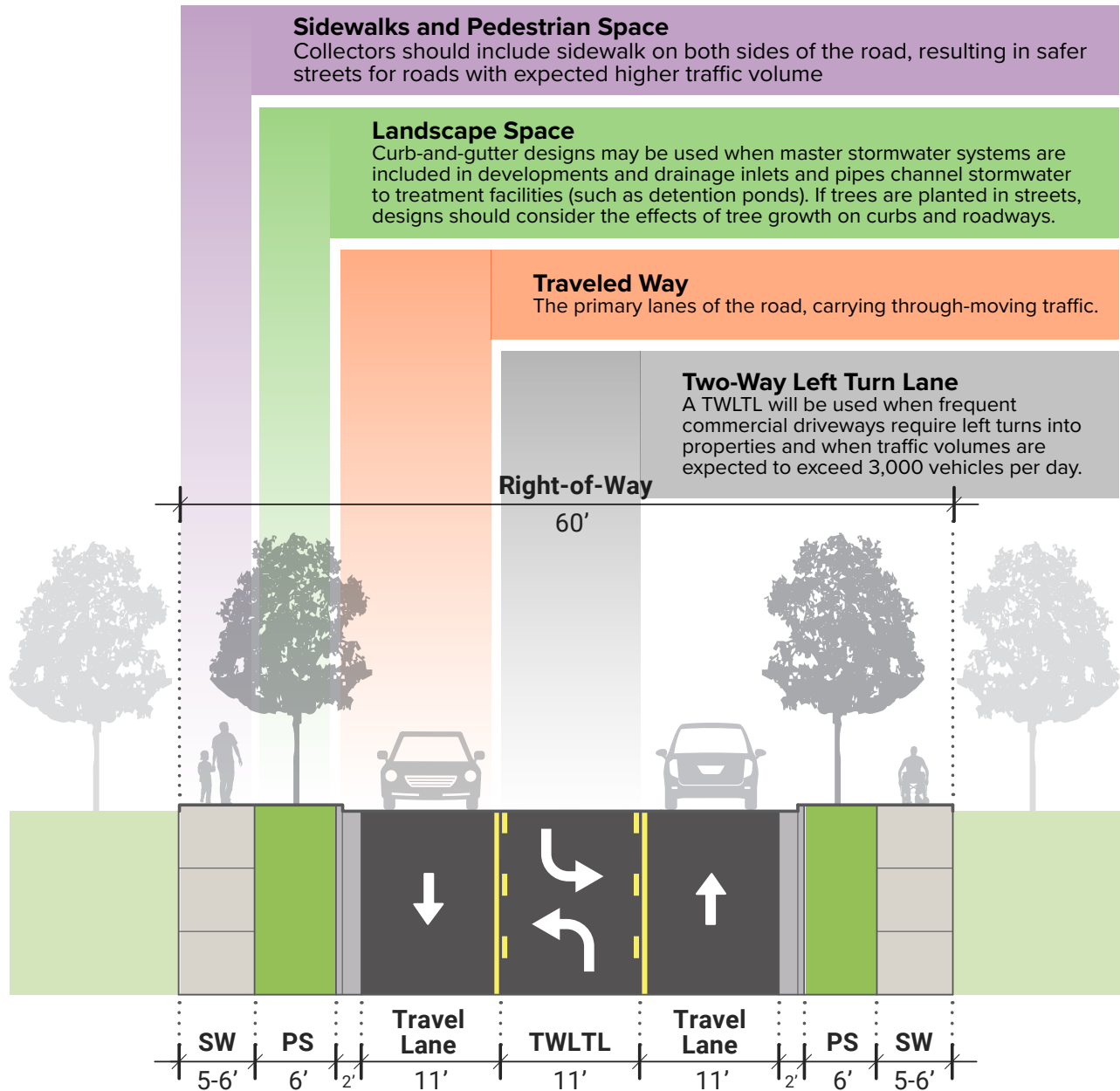
On-Street
Parking

This variant is used specifically in subdivisions that will manage stormwater through a central system and that will use underground pipes or flumes for distribution. It should continue to include required clear space in the traveled way. When developers wish to add medians to streets, these should be delineated with curb and gutter sections similar to those on the outer traveled way.



Collectors for Commercial Districts

This section is a standard for collectors used specifically in areas where frequent driveways, left turn movements onto cross-streets, and other complex traffic operations call for left turn storage space. The two-way left turn lane used in this section may be substituted with medians in sections with no driveway cuts.



Collector Enhancement for Existing Roads

This section provides standards for how upgrades to existing roads should be designed. They are similar in overall design to many current roads, but feature additional space for vehicle recovery, including four-foot shoulders, and adequate swale drainage space. At least one side of the road should accommodate pedestrians, and multi-use paths may be used to provide for both pedestrian and bicycle use.

Sidewalks and Pedestrian Space

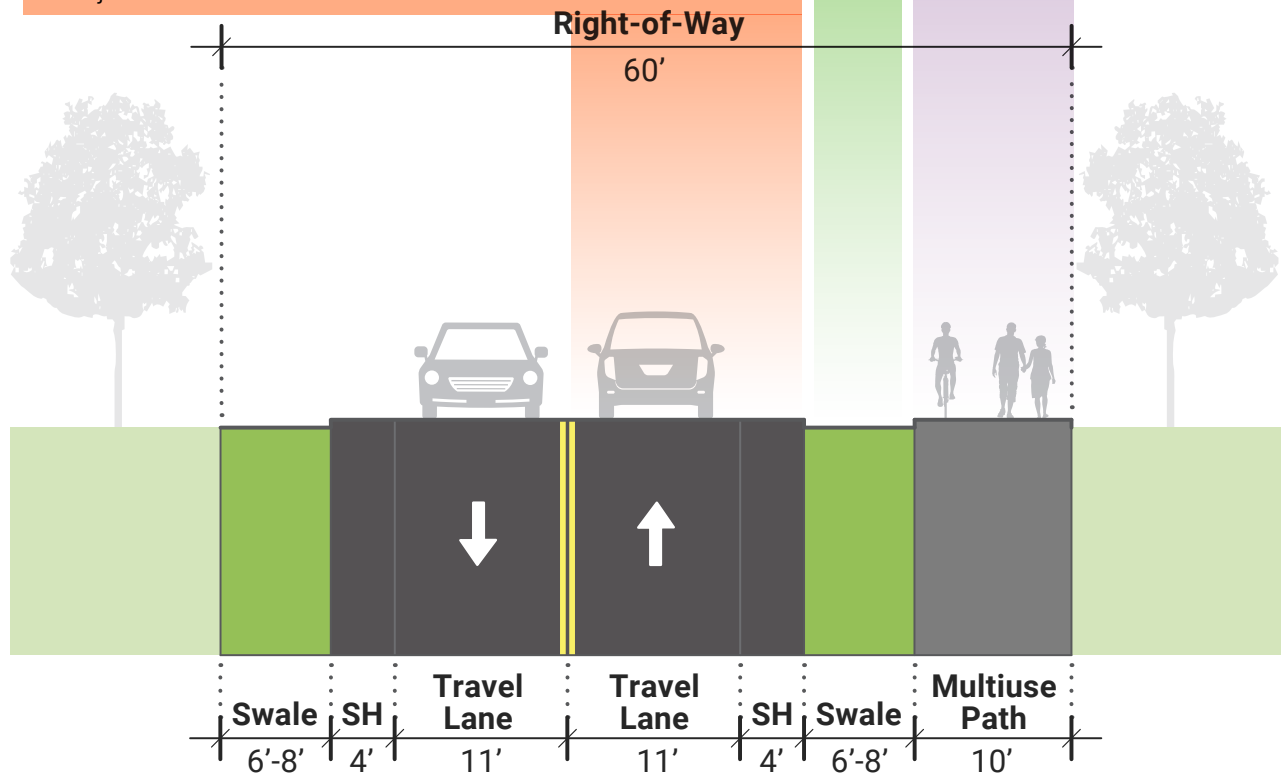
When upgrading existing roads, pedestrian accommodation should be made on at least one side of the road, though sidewalks may be substituted with a multi-use path.

Swale or Landscape Space

Depending on stormwater master plan for a development, this space accommodates drainage swales of width to be determined by stormwater collection needs. Swales wider than those shown here must include added right-of-way to contain swale and sidewalk.

Traveled Way

The primary lanes of the road, which should include shoulder space for recovery of vehicles that leave the road. Overall width should be at least 22 feet of space unobstructed by parking or other fixed objects.



New Local Streets

Local streets may generally occupy a smaller right-of-way and footprint, though should be suitable for critical types of vehicle passage that would use collectors, especially fire trucks and other emergency vehicles.

Sidewalks and Pedestrian Space

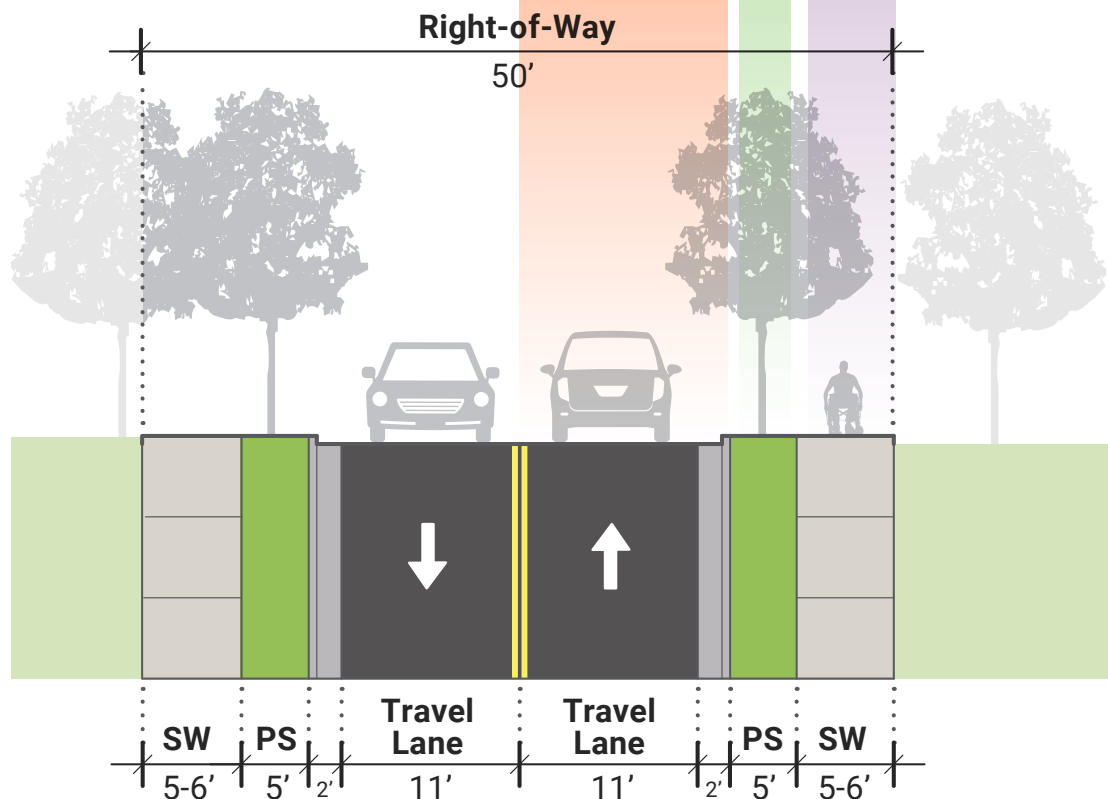
Local streets are only required to provide sidewalk on one side of the road, though applicants are encouraged to provide them on both sides.

Swale or Landscape Space

Depending on stormwater master plan for a development, this space accommodates drainage swales of width to be determined by stormwater collection needs. Swales wider than those shown here must include added right-of-way to contain swale and sidewalk.

Traveled Way

The primary lanes of the road, which should include shoulder space for recovery of vehicles that leave the road. Overall width should be at least 22 feet of space unobstructed by parking or other fixed objects.



Section

L-1

Curb and Gutter with Parking (60')

Local streets may generally occupy a smaller right-of-way and footprint, though should be suitable for critical types of vehicle passage that would use collectors, especially fire trucks and other emergency vehicles.

Parking may be added on one or both sides, but this added width must be included in dedicated right-of-way.

Sidewalks and Pedestrian Space

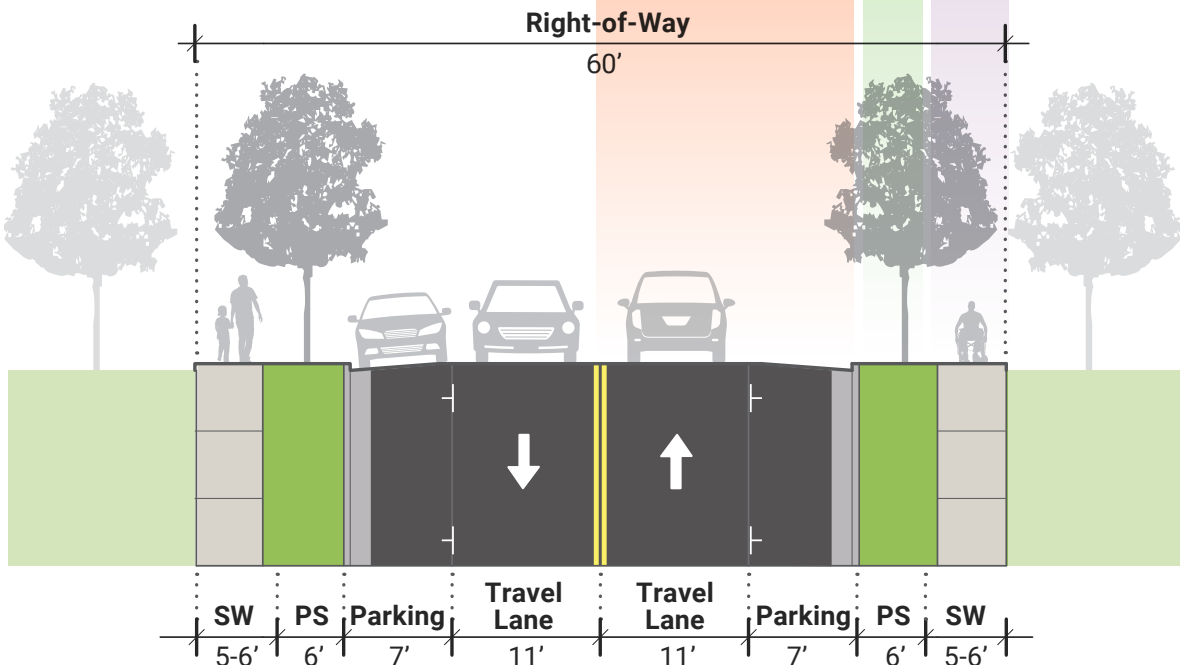
Collectors should include sidewalk on both sides of the road, resulting in safer streets for roads with expected higher traffic volume

Swale or Landscape Space

Depending on stormwater master plan for a development, this space accommodates drainage swales of width to be determined by stormwater collection needs. Swales wider than those shown here must include added right-of-way to contain swale and sidewalk.

Traveled Way

The primary lanes of the road, which may include parking, as long as 22 feet of space unobstructed by parked vehicles or other fixed objects.



Section

L-2

Curb and Gutter with Parking (50')

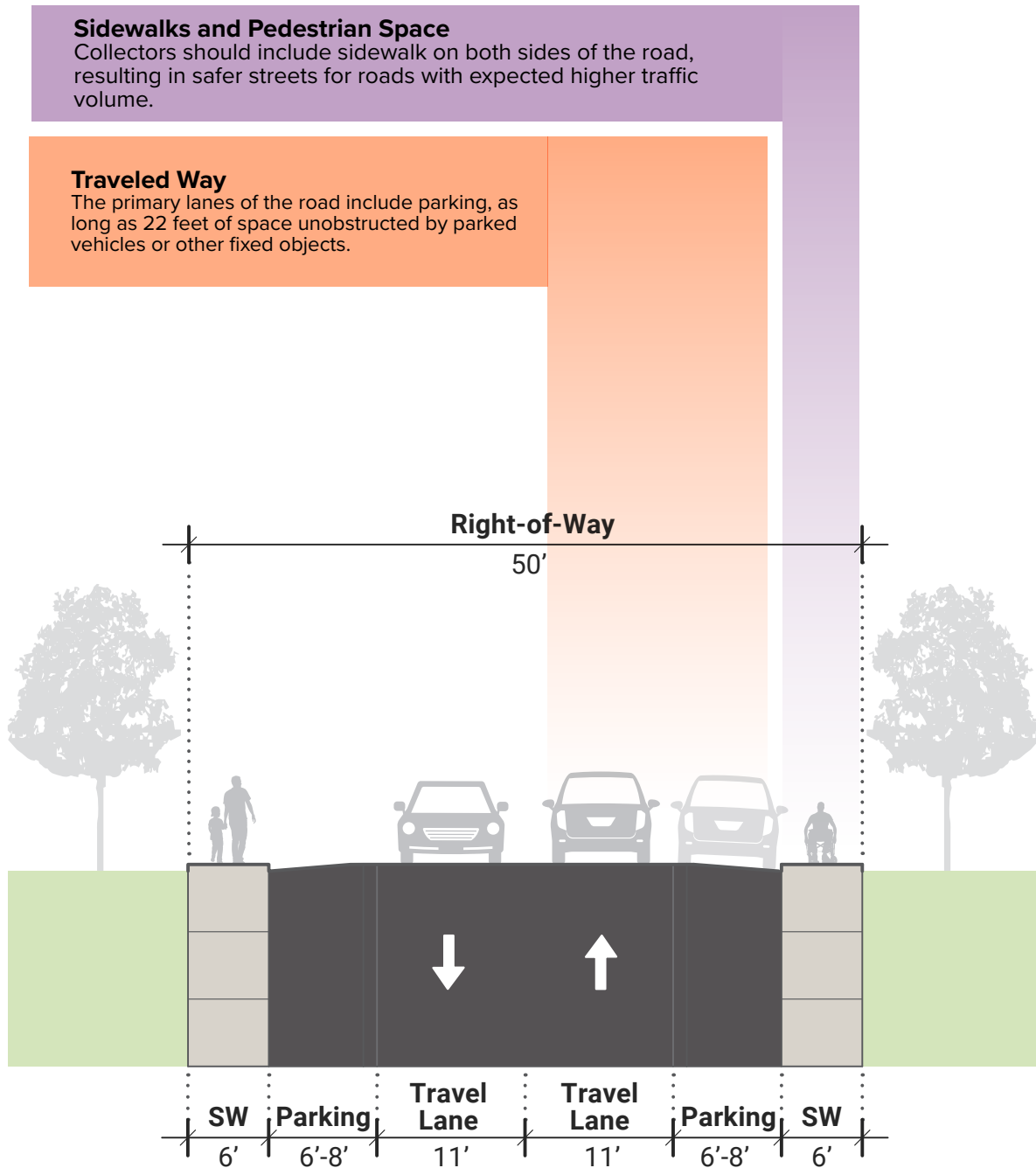
This variant of the typical local street design allows smaller right-of-way but also allows on-street parking on both sides of the street. Unlike most other sections illustrated in this Thoroughfare Master Plan, this section contains no planter strip, swale, or other curbside landscaping within right-of-way.

Sidewalks and Pedestrian Space

Collectors should include sidewalk on both sides of the road, resulting in safer streets for roads with expected higher traffic volume.

Traveled Way

The primary lanes of the road include parking, as long as 22 feet of space unobstructed by parked vehicles or other fixed objects.



Section

L-3

Swale
Drainage

Local streets may generally occupy a smaller right-of-way and footprint, though should be suitable for critical types of vehicle passage that would use collectors, especially fire trucks and other emergency vehicles.

Sidewalks and Pedestrian Space

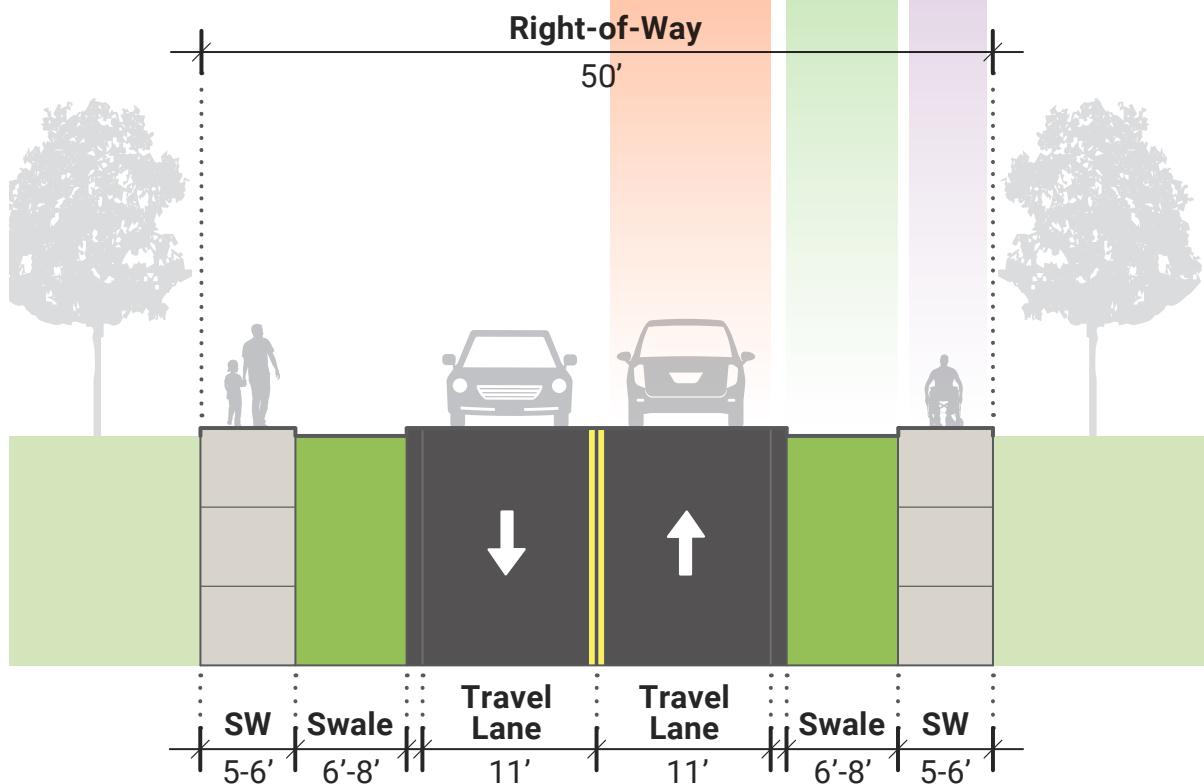
Collectors should include sidewalk on both sides of the road, resulting in safer streets for roads with expected higher traffic volume

Swale or Landscape Space

Depending on stormwater master plan for a development, this space accommodates drainage swales of width to be determined by stormwater collection needs. Swales wider than those shown here must include added right-of-way to contain swale and sidewalk.

Traveled Way

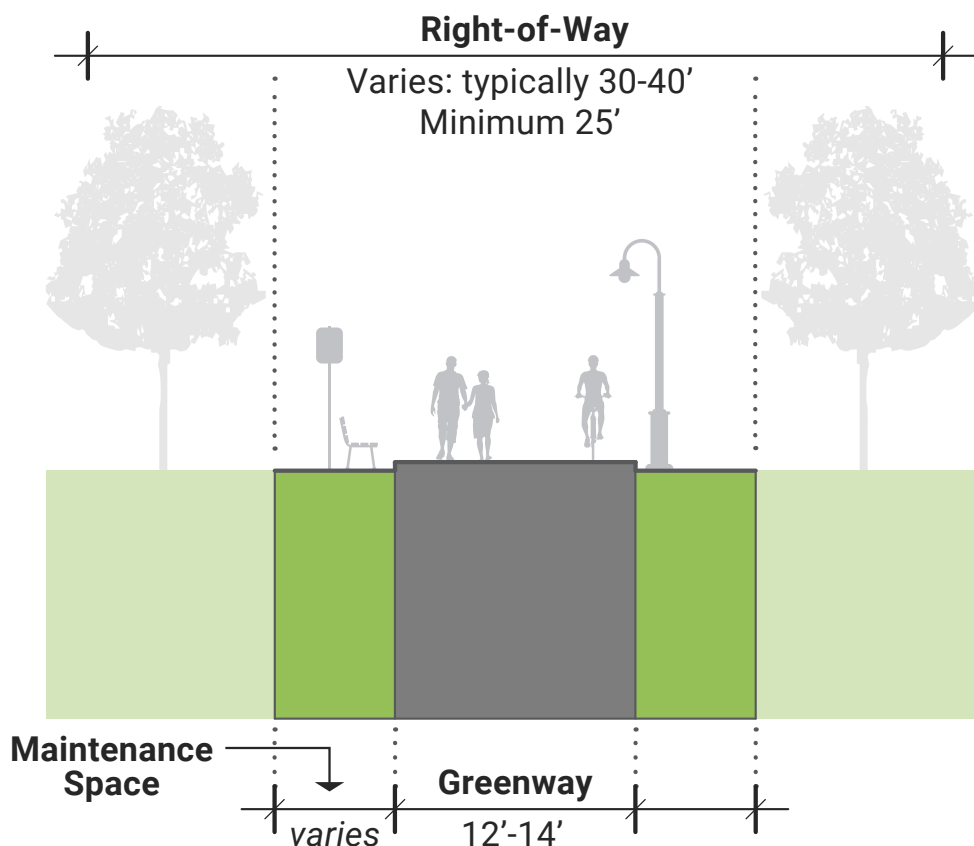
The primary lanes of the road, which should include shoulder space for recovery of vehicles that leave the road. Overall width should be at least 22 feet of space unobstructed by parking or other fixed objects.



Multi-Use Paths Not On Thoroughfares

Multi-use paths are facilities on exclusive right-of-way and with minimal crossings of streets and other facilities used by motor vehicles. Where shared use paths are called trails, they should meet all design criteria for shared use paths to be designated as bicycle facilities. Users are non-motorized and may include but are not limited to: bicyclists, in-line skaters, roller skaters, wheelchair users (both non-motorized and motorized) and pedestrians, including walkers, runners, people with baby strollers, people walking dogs, etc. These facilities are most commonly designed for two-way travel, and the guidance shown in this typical section assumes a two-way facility is planned unless otherwise stated.

This guidance also allows flexibility in defining a separate right-of-way or envelope for these paths, but this should be at least wide enough for the path itself as well as space for maintenance vehicles to access the path corridor.



Summary of Cross-Sections and Applicability

This table summarizes the cross-sections as shown in the previous pages. The basic criteria for determining what type of road to use in a subdivision are defined in the first three columns, and if those criteria are met, applicants may use any of the street sections as defined in the Section and Description columns. The following columns state what is required by default under the surrounding conditions, what may be allowed as of right, and when applicants must use an alternative process as defined in Section 5.3.

If a road meets these conditions...			These cross-sections may be used to provide required thoroughfare connections as defined in the Plan							
Land Use Character of Development	Estimated Daily Traffic with Development	Number of Intersections on the Corridor	Section	Description	Required by Default	Allowed as an Option by Right	Allowed with Special Exception (see Sec. 5.3)	ROW Requirement	Minimum Sidewalk Requirement	Multi-Use Path Allowed instead of one sidewalk?
Primarily Commercial	At least 1,000 vehicles per day	Four intersections in a subdivision or six intersections per mile on a mapped roadway link, whichever is less	CC	Collector for Commercial/ industrial districts	YES			60'	Both Sides	No
Primarily Residential			CS	Collector for Subdivisions	YES			50'	Both Sides	Yes
			CS-1	Collector for Subdivisions, on-street parking		YES		60'	Both Sides	Yes
			CS-2	Collector for Subdivisions, open drainage		NO	YES	50'	Both Sides	No
			CM	Collector with Medians		YES		60'	Both Sides	Yes
Any			CM-1	Collector with Medians, on-street parking		YES		75'	Both Sides	Yes
	N/A	CE	Collector Enhancement				60'	One Side	Yes	
Primarily Residential	Fewer than 1,000 vehicles per day	Fewer than four intersections	L	Local street	YES			50'	One Side	No
			L-1	Local, on-street parking		YES		60'	One Side	No
			L-2	Local, on-street parking		YES		50'	One Side	No
			L-3	Local, open drainage		NO	YES	50'	One Side	No
Any	N/A	N/A	MU	Multi-Use Path	YES			25'	N/A	N/A

5.2 Choosing Alternative Designs

The Town's intent with these standards is to streamline the review process for subdivisions providing thoroughfare connections based on this Master Plan, with the previously-defined typical sections to be allowed as of right subject to other site plan review conditions. However, this Thoroughfare Plan envisions other possible circumstances and needs where development applicants will propose different street designs. Indeed, it is not practical to capture every potential combination of street layouts and environmental conditions in these standards. For this reason, applicants may prepare alternative street designs, following the guidance in Table 5.1 below.

The Town acknowledges that even inclusive definitions of standards cannot capture all possibilities for specific conditions of sites that may limit design possibilities or make some types of design impractical. For this reason, applicants have options for how to select street designs not illustrated in these cross-sections. This set of standards is intended to provide a basic set of street types reflective of design patterns that have been used in similar Oakland subdivision streets.

TABLE 5.1 Guidance for Alternative Street Designs

Design Element	Acceptable Departures from Standard	Where Alternative Design Process is Needed
Right of Way	Any expansions related to specific design elements as listed below	No alternative design needed if greater ROW is the only change proposed from standards
Traveled Way (TW) in typical sections	Up to 2' above minimum standard	Any width below minimum; any width greater than 2' above minimum
TW adjacent to fire hydrants	Up to 2' above minimum standard	Any width below minimum; any width greater than 2' above minimum
TW adjacent to fire hydrants (median)	Up to 2' above minimum standard	Any width below minimum; any width greater than 2' above minimum
Median	Up to 15' above minimum standard	Any width below minimum; any width greater than 15' above minimum; any non-uniform widths (such as tapering medians or other non-linear layouts)
On-Street Parking (either side)	Total width for each side of parallel parking up to 8'	Any width where less than 20' of clear space in traveled way would be created; any parallel parking space of more than 8' per side
Curb/Gutter	Other low-profile mountable curbs (such as AASHTO Type G or TDOT Shoulder Berm Gutter) may be used	Raised curb with inlets requires more detailed engineering plans for a street-based stormwater system; no curbs requires special design for pavement depth and edge treatment
Landscape Strip for Sidewalks	Any width above minimum as needed to support desired planting or open swale drainage	No landscape strip with sidewalks used (i.e. sidewalks flush with curb) requires
Sidewalk Width	Concrete sidewalk, 4" depth	Special materials for construction; widths below 5'

5.3 Alternative Design Process

To propose and include alternative designs from the basic cross-sections, applicants will follow the three steps defined below. This places extra effort on the applicant, but ensures that the Town has a comprehensive and consistent way of evaluating street designs that differ from the standards of this document.

Step 1: Determine Eligibility and Complete Design Checklist

Applicant must prepare a checklist for Town review that compares each of the typical section designs to the cross-sections in the Thoroughfare Plan and provides a purpose or justification for any different designs being used. The table on the following page outlines how this process should be used relative to specific design components.

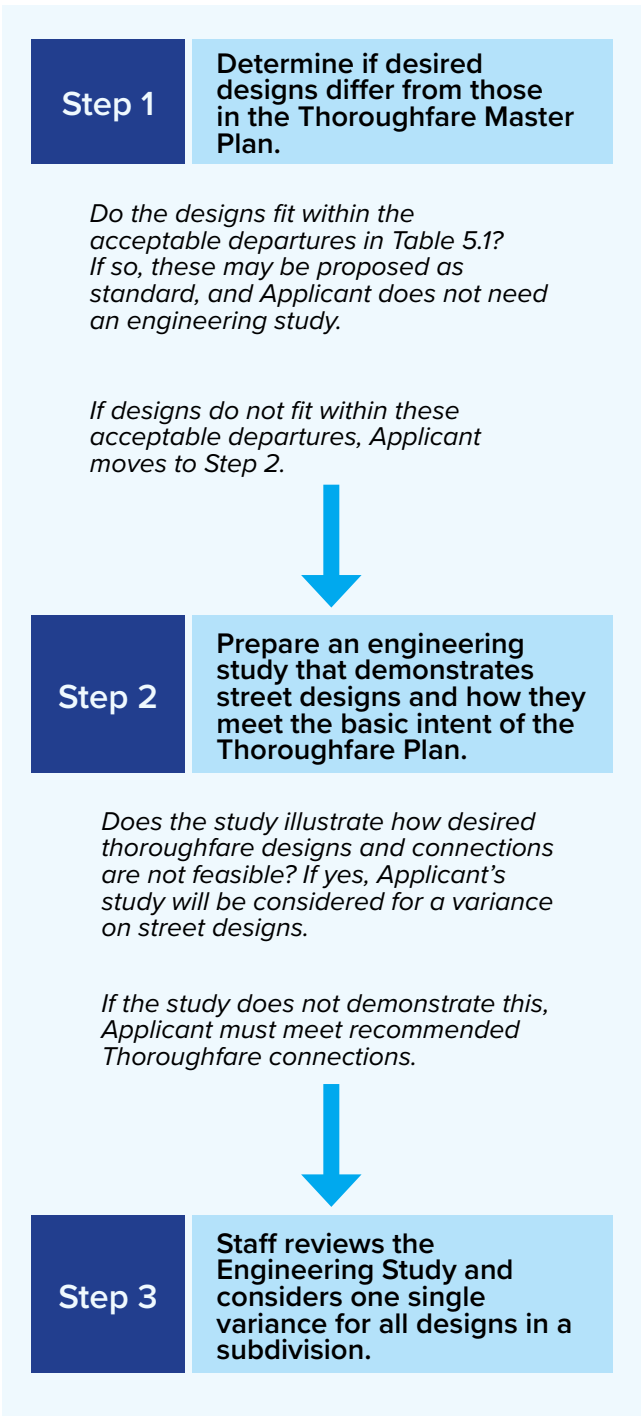
Step 2: Engineering Study

Applicant must perform an engineering study from a Tennessee-licensed professional engineer that assesses potential traffic impact, ingress and egress points and distribution of traffic, and site conditions (such as topography, hydrological features, and soil types) that would necessitate different types of designs. This study would propose the typical cross-sections to be used, where they are applied to a subdivision's streets, and any other design considerations (such as intersections, turnarounds, and transitions around special features such as medians).

Step 3: Street Variance

Upon completion and staff review of the first two steps, Applicant will be eligible for a single variance on all alternative street designs in the subdivision, and this should be issued along with other variances in development review.

FIGURE 5.1 Process for Selecting and Reviewing Alternative Street Designs



5.4 Guidance for Other Transportation Needs

Beyond basic street network connections, developers may consider or propose design details of subdivisions that affect overall transportation conditions on the Town's roadway system, especially the layout and connection of local streets internal to a subdivision. Although the Thoroughfare Master Plan is intended primarily to develop and ensure roadway network connections as the Town's development continues, it also provides the Town guidance on

how to ensure that other factors of development do not have adverse impacts.

As detailed in Table 5.2 below, these include ways to address dead-end and cul-de-sac streets when subdivisions are smaller and do not have a practical way of providing thoroughfare connections outside of a property being developed. They also include how gated subdivisions are to be allowed and access provided, so that any thoroughfare or local street connections added through these areas can still allow critical transportation functions (such as emergency access).

TABLE 5.2 Additional Design Factors for Other Transportation Needs

Design Option/ Design Factors	Description	Required Standard
Maximum Loop Street Length	Total length of no-outlet loop streets	0.75 miles
Maximum Dead-End/Cul-de-sac Street Length	Length as determined from intersecting centerline to endpoint centerline. Dead-end street lengths apply only to streets intended as 'permanent' dead-ends in the overall subdivision plat, not temporary dead-ends such as stub-outs to adjacent properties.	800'
Gated Entry Placement	Distance of gate away from the edge of intersecting street's right-of-way	25'
Gated Entry Mount Placement	Distance of gate mounting apparatus away from the edge of traveled way	3'

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Implementation Guidance

6.1 Decision-Making Process for Advancing Projects

The Thoroughfare Master Plan not only provides guidance for how streets should be designed and led, but also identifies a series of steps that the Town and its development applicants should take in determining suitability of a project to be constructed as part of private development.

The Town should use a process similar to the following in making these decisions:

- **Update development regulations in the Town's code of ordinances** to require conformity to the Thoroughfare Plan and that development applicants must demonstrate their ability to meet requirements.
- **Allow applicants to demonstrate that conformity cannot be met by using the alternative design process as defined in Section 5**, wherein an applicant prepares an engineering study that demonstrates why connections are not feasible within the overall intent of the site plan or why they do not have a proportional relationship to the amount of development that is allowed under zoning and other land use regulations.
- Determine if an overall connection can be met through partnership with the Town or other public agencies, based on the Engineering Study from private development applicants.
- For any projects that can be feasibly met, but do not have a proportional relationship

to the scale of the development that would create required thoroughfare connections, the Town should identify and program capital improvement projects for the Town to complete that fill gaps in the Thoroughfare Plan network as it is implemented through development projects.

This process should be used in considering all connections in the plan, reserving the Town's resources for capital improvement projects for the most critical connections that development applicants cannot provide.

6.2 Process for Selecting Thoroughfare Alignments

As stated in previous sections, this Thoroughfare Plan defines recommended and desired connections to increase the overall capacity of the Town's street and road network, but it operates at a master plan level and cannot foresee the site-specific conditions that may make certain connections challenging.

The most direct and flexible method of addressing these types of site challenges is to **select a different alignment for the thoroughfare connection**. This plan provides a broad level of flexibility for this, provided that an alternative alignment to what is shown on the Thoroughfare Plan map meets the following conditions:

- Design controls such as curves, superelevation, sight distances, and slope

are able to conform to the standards of this Thoroughfare Plan.

- Alignments intersecting with TDOT-owned and maintained roads do not violate standard intersection spacing policies as defined in TDOT's roadway design policies.
- No intersections on potential collector roadways are designed with angles of less than 75 degrees, and no intersections for local roadways are designed with angles of less than 60 degrees. The highest-class roadway in an intersection will set the overall standard for that intersection's minimum angle.

6.3 Fair-Share Contributions

The Town of Oakland already maintains a requirement for development to pay a fair share of roadway improvements associated with a development's traffic and transportation impact. This should continue to be used as a measure for achieving development contributions to the Thoroughfare Plan's recommended network, including for projects that would upgrade existing facilities.

The Town may also elect to use this approach to allow a development to proceed if the Town has already added one of the thoroughfare connections as a transportation improvement project to the five-year schedule of capital improvements in the next annual update of its capital improvement plan. If the Town does not have sufficient funds to fully fund construction of a thoroughfare connection, it may still enter into a binding proportionate fair-share agreement with a developer, authorizing the developer to construct that amount of development on which the proportionate fair share is calculated. In this case, the proportionate fair-share amount must be sufficient to pay for one or more improvements which will significantly benefit the impacted transportation system.

6.4 Funding Opportunities for Publicly-Led Projects

Although the Town is using this plan as the basis for guiding developer contributions, it also offers candidate transportation projects that the Town and other partner agencies may implement directly. It is common for projects like the recommendations of this Thoroughfare Plan to be funded from a combination of federal, state, and local sources. Although there are numerous formula-based funding sources and grant programs available, Federal transportation funding comes primarily from the Highway Trust Fund established by the United States Congress, state-level funding comes primarily from gasoline and motor fuel taxes, as well as motor vehicle registration fees, and local funding sources that could potentially supply revenue for the roadway recommendations come from the issuance of bonds or taxes, with property tax being the main source of tax funds.

The following sections provide a brief description of funding opportunities.

Federal Funding Sources

Federal funding is available from the Highway Trust Fund, which was established by the Highway Revenue Act of 1956 during the development of the interstate highway system. These funds are generated primarily from motor fuel taxes and are distributed to a variety of different funding programs addressing different components of the nation's roadway system. These include the **National Highway System (NHS)**, provide funding for rural and urban roads and highways, including the interstate highway system, as well as other major projects of national significance, and the broader **Surface Transportation Block Grant (STBG)** funds that provide funding for projects on functionally classified roadways, including the NHS, as well as bridge projects on any public road. STBG funds can also be used to fund bikeway and sidewalk

programs, in addition to other transportation applications. Of particular significance to Oakland, a portion of funds reserved for rural areas may be spent on rural minor collectors.

Typically, these programs require local match participation at a minimum of 20 percent of total project costs, and this may be drawn from state funds—it simply cannot be Federal funds.

Another Federal program, the Bridge Replacement & Rehabilitation Program (BRR), provides funding for the rehabilitation and replacement of public road bridges over 20 feet in length that are in the lower half of a bridge condition metric called bridge sufficiency rating, only rehabilitation or replacement. The BRR does not currently provide funding for bridge repair. TDOT administers this funding even for local communities, and prioritizes bridge projects based on a point system using criteria of weight capacity, traffic levels, and condition and design of the bridge.

Tennessee Funding Sources

In addition to Federal sources, Oakland may also be able to draw from state funding sources administered through TDOT and other state agencies. These include the following.

The TDOT Transportation Alternatives Program (TAP) supports various transportation and multimodal improvements with the overarching goal to improve a community's travel choices, experience, history, and culture, and equitable access. TAP provides funding for programs and projects defined as transportation alternatives, including:

- Bicycle and pedestrian improvements
- New paths, trails, or sidewalks
- Reconstruction of pedestrian infrastructure
- Pedestrian and bike facilities, including parking, repair stations, and water fountains
- Striping, curb ramps, ADA-compliant ramps
- Safe Routes to School (SRTS) projects, such as pedestrian infrastructure plans, design,

construction, and education to connect neighboring residential areas to local schools.

TAP grant projects are funded through a competitive selection process, with a typical local share of 20% of net costs.

In addition to the TAP, the **Tennessee Department of Environment and Conservation (TDEC) Recreation Grant** includes the Recreational Trails Program (RTP). The RTP would provide funding for trail land acquisition, maintenance, restoration, construction, and facilities. These funds are distributed in the form of an 80% grant with a 20% local match.

These funds are only available on projects where is publicly owned, meaning the Town would need to secure right-of-way prior to pursuing this funding source.